



GENERAL CATALOGUE 2004

# Motion & Drives



- Motion Controllers
- Servo Systems
- Frequency Inverters
- Software

Advanced Industrial Automation

Cat. No. Y203-EN2-01 DRIVES

**OMRON**

**WELCOME TO OMRON-YASKAWA'S WORLD OF MOTION**

# **WE MAKE IT EASY**

With over 100 years of experience in motion and automation manufacturing between them, Omron and Yaskawa offer the best in class solutions. Omron, with its proven pioneering technologies in sensing and control and Yaskawa with its leading edge technology in servo and inverter technology and robotics, make it your safest option for a reliable and long term partnership. Omron-Yaskawa will also support your global business through a network of over 200 offices world-wide. Welcome to Omron's motion and drives catalogue, a world of innovation.



## **2 Product Positioning**

## **30 Product Selection Table**

## **33 Catalogue Content**



2

## Advanced Industrial Automation

# MOTION & DRIVES: SCALABLE, FLEXIBLE, EASY AND

### **Motion controllers: Machine flexibility & scalability made easy**

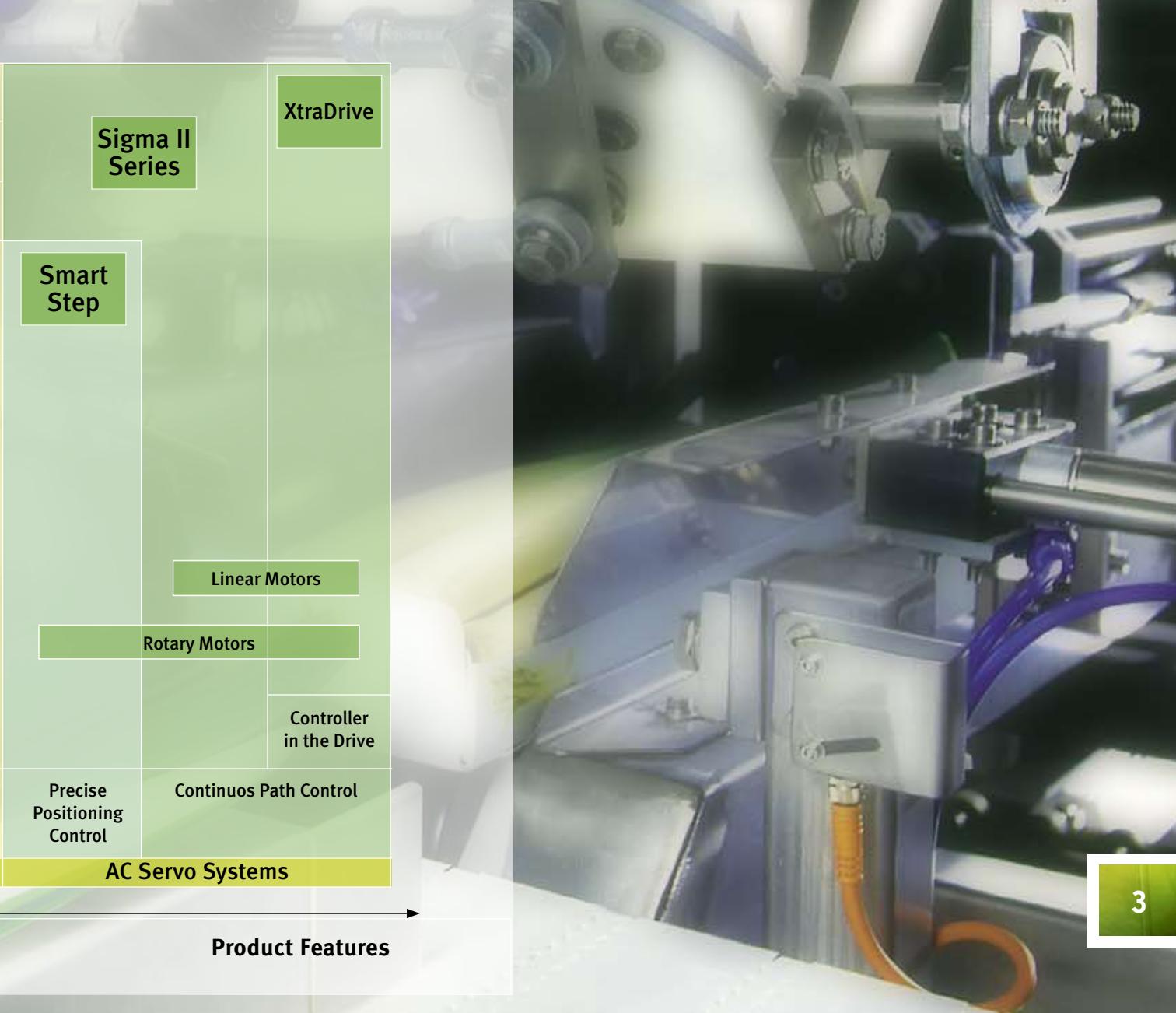
Omron's range of motion controllers offer the programming simplicity without compromising on system performance. Functions like axes interpolation, master-slave, e-cam and now multi-axes synchronisation over a digital servo-link are readily available.

Hence demanding applications like high speed packaging, precision electronic assembly, wood-profiling machinery, plastic injection moulding,

etc. are all easily performed. Omron's range of motion controllers offer a choice of being PLC or servo based. Hence offering you optimum machine flexibility and scalability.

### **Servodrives: Unequalled reliability**

Omron Yaskawa's range of servodrives are unique in offering the highest dynamic performance in the most compact size. Add to that an unparalleled reliability and you begin to understand why our range of servo's enjoy the largest installed base world-wide. The SmartStep series is aimed



## ABOVE ALL, RELIABLE

at stepper motor applications, whilst the Sigma-II series is a dynamic servo range made for high precision positioning and higher duty operation. The Sigma-II series includes rotary motors from 30W to 55kW and linear motors up to 10,000 N. The servo amplifiers are available as standard with analogue and pulse inputs, and options allow fieldbus connectivity including Mechatrolink.

**Frequency inverters: Setting higher standards**  
Building on Yaskawa's world leading innovative design principles, the latest impressive range of

inverter drives boasts everything from the micro J7, to the rugged mini V7, up to the full flux vector drive F7.

The power range is from fractional horsepower right through to 300kW. The latest releases also include market specific inverters like the E7 for HVAC applications and the L7 for the lift market. Needless to say, a host of option units are available to provide comprehensive connectivity to popular fieldbuses such as DeviceNet, Profibus and CAN.

# MULTI-AXES MOTION CONTROL GOES "ALL DIGITAL"



CS1-MCH • Up to 30 axes positioning via Mechatrolink motion bus.



4

The CS1-MCH fulfils the ultimate need in advanced motion control. It combines the accuracy, simplicity and functionality of a true multi-axes unit and the full transparency down to the motor that a digital servo-link should provide.

The MCH allows full synchronisation of up to 30 axes over the field proven Mechatrolink bus, greatly simplifying system wiring, improving noise immunity and significantly reducing the chance of wiring errors. The

network cycle time of the Mechatrolink-II is as low as 500µs in a typical multi-axes configuration. The functionality also includes comprehensive features such as master-follower, e-cam, linear and circular interpolation as well as print registration. All are programmable via a motion BASIC language.

The MCH is the ideal motion controller for high speed packaging, electronic assembly, continuous path profiling and many other applications.

### Features CS1W-MCH

- PLC-based motion controller
- Complete digital control of drives via Mechatrolink II
- Controls a total of 30+2 axes
- Simplified wiring saves cost and design time
- Real multi-tasking and parallel programming
- Simple to develop and modify using BASIC
- Access to the complete system from one point
- Linear and circular interpolation
- Electronic axes synchronisation
- Electronic CAM profiles
- One hardware registration per axis
- Dedicated inputs / outputs on the controller
- All features of the Sigma-II Series  
Servo Drives are available

- Mechatrolink is a digital servo bus that provides the user with a system that reduces system wiring complexity and hence saves valuable time during installation and commissioning.



# ADVANCED MOTION... INTUITIVELY

R88A-MCW151 • Servo-based motion controller

C200HW-MC402 • PLC-based motion controller

6



Both the PLC-based MC402 and the Servo-based MCW151 motion controllers are multi-tasking and programmable with the same user friendly Motion Perfect Windows programming tool, which also provides very helpful debugging. The BASIC type programming language has a complete command set, allowing applications such as flying shears, rotating knives or any synchronisation and Electronic CAM to be easily programmed. The MCW151 is an advanced motion controller option unit for the Sigma II Series drives. It connects directly to the servo drive, acquiring complete access to all driver parameters and functions. It provides network connectivity,

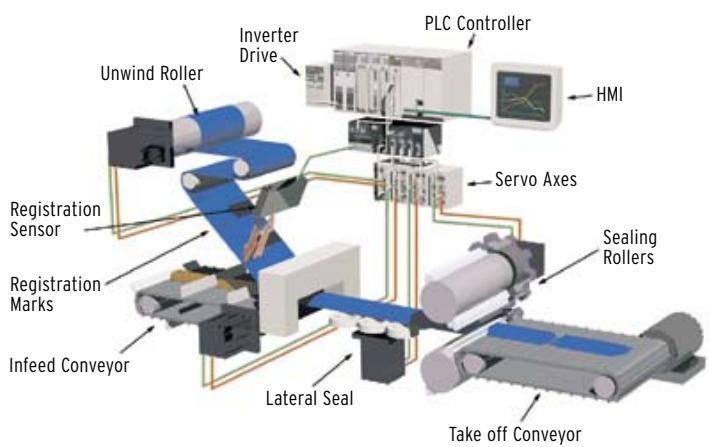
and an additional encoder input/output allows the Sigma II Series servo system to be synchronised with any process. An integrated HostLink protocol allows easy connection of peripheral devices such as PLCs and NT terminals. An additional variant with a DeviceNet interface is also available.

The MC402 is a PLC-based advanced motion controller. It controls 4 axes and up to 16 modules can be installed in the same PLC. The module controls the position, speed or torque of the servo drive via an analogue output, and its PLC-based condition opens the controller to the whole system.



## Features R88A-MCW151

- Sigma II Series servo based Advanced Motion Controller
- Connects directly to the Sigma II Series, providing access to all driver parameters
- Controls 1 real axis, 1 virtual axis and a configurable third axis
- Provides an additional encoder Input/Output to the servo drive
- Provides 2 additional hardware registration inputs
- Network Connectivity via HostLink or DeviceNet



## Common features

- Multi-task BASIC motion control language
- Programmed using Windows-based Motion Perfect software with debugging, monitor and oscilloscope functions
- Speed and torque control
- Dedicated inputs/outputs on the controller
- Linear and circular interpolation
- Electronic axes synchronisation
- Electronic CAM profiles

### ▲ Flow wrap machine

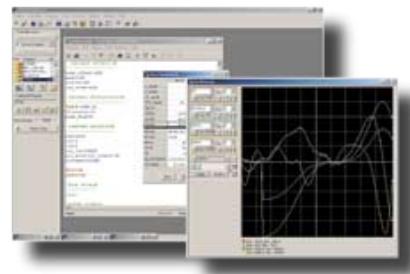
The flow wrapper machine requires various servo axes working in synchronisation. The PLC-based MC402 is the ideal solution. It provides a centralised motion control while seamlessly integrating with different parts of the system.

### ▼ Motion Perfect software

Friendly and powerful software for programming and debugging. Programming is done in a BASIC type language. Motion Perfect provides versatile test and monitoring functions including a 4-channel software oscilloscope to display the selected signals.

## Features CS1W-MC402

- PLC based Advanced Motion Controller
- Analogue output control of the servo drives
- Controls 4 real axes and 4 virtual axes
- 4 hardware registration inputs



- ▶ A single MOVE-LINK instruction in the MCW151 ensures perfect synchronisation between the film wrapper and the feeder conveyor.



# POINT-TO-POINT POSITIONING IN NANO SIZE

CJ1W-NC • 4 axes PLC-based position controller

8

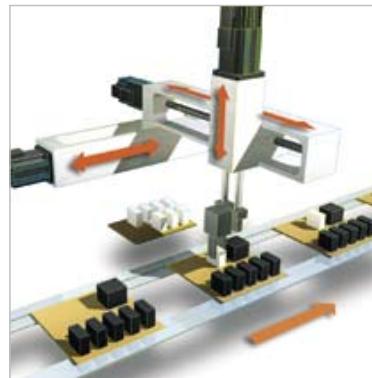


For Point to Point (PTP) applications The CJ1W-NC range combined with the CJ1 PLC offers the best performance/size ratio on the market. There are 3 models with 1, 2 or 4 axes capability, with the ability to handle up to 100 positions and a pulse rate of 500kbps.

The motion commands can be set directly from the PLC ladder program making it simple and easy to use. The NC units are ideal for all PTP applications such as pick & place, gantry robots, electronic assembly, labelling stations, etc.

## Features CJ1W-NC

- PLC based Positioning Controller
- Pulse Train Output (1pps to 500kpps)
- Available units for 1, 2 and 4 axes
- Dedicated inputs / outputs on the unit
- Positioning can be done by direct Ladder commands
- Positioning of 100 points done from memory
- Position and speed control
- Linear interpolation
- Interrupt feeding function
- Origin search, S-curves, Backlash compensation, Teaching and other common functions are available
- CX Position Support software for easy data set-up



## Assembly systems

A list of interpolated or individual moves can be executed directly from the unit memory, up to 100 points per axis can be stored in the positioning unit. Direct operation and forced interrupt operation can be easily programmed in the PLC.

## ▶ Feeders

Feeder applications can be easily solved using the feeding function, the axis can be moved a specified amount after the interruption signal. S-curve acceleration/deceleration improves feeding precision while reducing slipping.



- ▶ A high-precision positioning system can be constructed to meet a broad range of applications by combining the Position Control Unit with a high-speed, high-precision Omron servo motor and servo driver.

## ▼ Software:

CX Position provides easy data input, editing, transfer, saving and printing, as well as status monitoring.



SYSMAC CJ-series  
Programmable Controller

**Position Control Unit**  
CJ1W-NC113 or CJ1W-NC133 (for 1-axis control)  
CJ1W-NC213 or CJ1W-NC233 (for 2-axis control)  
CJ1W-NC413 or CJ1W-NC433 (for 4-axis control, available soon)

External input  
(1 to 4 axes)  
CW limit input  
CW limit input  
Origin proximity input  
Emergency stop input



SMARTSTEP Series  
R7D-APA  
Servo Driver



SMARTSTEP Series  
R7M-AP  
Servomotor

# SERVODRIVES DESIGNED WITH ZERO COMPROMISE

Sigma-II Series • When reliability and size matter



The Sigma-II servo series was designed with ZERO compromise on quality, reliability or performance. The motors come in an IP67 housing, making them suitable for use in the most demanding environments.

The servo amplifiers are ultra-compact with pulse and analogue inputs as standard, plus an auto-tuning function that ensures set-up time is minimised.

Plug-on option cards offer enhanced functionality, including Point-To-Point indexing and master/slave synchronisation, plus fieldbus connectivity including Mechatrolink and sercos. The Sigma series power range spans from 30W up to 55kW in speeds up to 6000rpm.

## Features Sigma-II

- Output range from 30W to 55kW
- Rated motor speeds from 1000 rpm to 6000rpm
- Motor protection class IP67
- Peak torque 300% of nominal
- Analogue control for speed and torque
- Pulse train control for positioning
- Encoder resolution up to 17 bits
- Incremental and Absolute encoder
- On-line auto-tuning with 10 levels of rigidity
- 2% torque precision
- Hardware registration Input
- Automatic motor recognition
- Optional Units for system openness
- Easy to connect with pre-assembled cables
- Configuration and commissioning via SigmaWin tool
- Easy design using the Motor selection tool

### ► Motor Selection Software

With the sizing software package you can design your machine and the software will size your required Sigma-II Series servo motor.



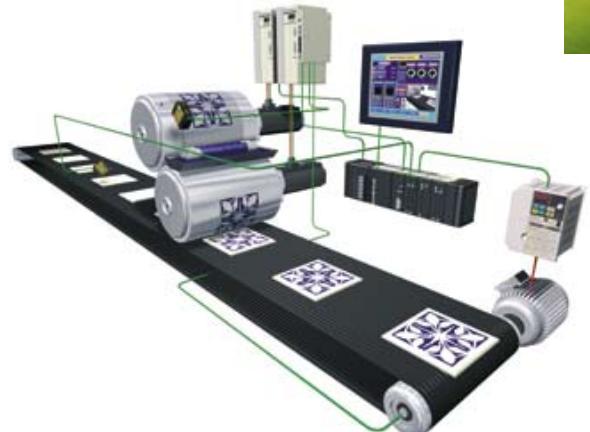
### ► SigmaWin Software Tool

In addition to easy configuration and parameter setting of the servo, SigmaWin provides advanced monitoring features, like the oscilloscope, for fast commissioning.



### ► Printing tiles using a rotary print process

The machine uses printing techniques to print patterns onto ceramic tiles. The procedure must be very accurate, as the tile has to go through the same process four times, one for each of the primary colours plus black. This is solved using the Sigma-II Series servo system because its dynamic performance and control features meet all the application requirements.



### ► Openness and flexibility

The Sigma-II Series drive is compatible with any system in the world via the Dual-Port RAM interface.

The following option units are available:

- R88A-MCW151(DRT)-E Servo Based Advanced Motion Control Unit. DeviceNet connectivity is available.
- JUSP-NS300 DeviceNet Option Unit with positioning functionality.
- JUSP-NS500 Profibus Option Unit with positioning functionality.
- JUSP-NS600 Indexer Unit. Versatile point-to-point positioning.
- JUSP-NS115 Interface Unit for Mechatrolink II. Multi-axes wireless solution.



# SERVO CAPABILITY WITH STEPPER SIMPLICITY

SmartStep • Smart alternative to stepper motors



SmartStep is designed and engineered to provide you with an easy way to migrate from steppers to servos in minutes. It accepts pulse train input, can be configured quickly via simple dip switches and has an on-line auto-tuning function. Thus the SmartStep offers all the simplicity and cost-effectiveness of a stepper with the added advantages of the servo drive capability. As such, continuous torque over nominal speed, 300% peak torque, 4500 rpm peak speed and a 1000:

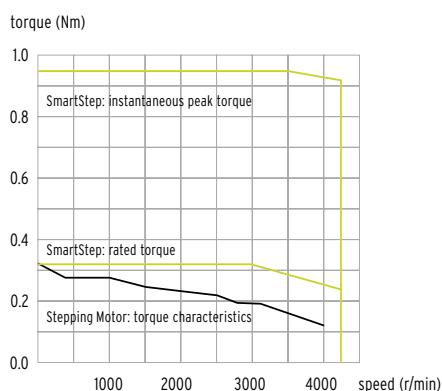
1 speed range are all available from the SmartStep, giving the user true servo performance. The SmartStep is available in sizes from 30 to 750W. For applications like labelling stations, pick & place, indexing and transfer stations the Smart-step, coupled with the CJ1W-NC range, provide an extremely cost effective solution. Pre-wired cables and ready-made programming libraries ensure installation and commissioning time is reduced to a minimum.

## Features SmartStep

- Output range from 30 W to 750 W
- Rated Motor speed of 3000 rpm, peak 4500 rpm
- Peak torque 300% of nominal
- Control via pulse train (speed and position)
- Position Resolution of 8000 steps per revolution
- On-line auto-tuning with 10 levels of rigidity
- Dynamic brake setting
- Simple start-up possible with DIP switches
- Diagnostic code display
- Easy to connect with pre-assembled cables
- Oscilloscope available via SigmaWin tool
- Easy design using the Motor selection tool

### ▼ Smart alternative to stepper motors

Torque performance comparison for a 100W motor.



### ▼ Easy to set up

Dip switches on the front panel enable you to program all basic parameter settings, including auto-tuning. The SigmaWin (Wmon) tool software can be used, providing advanced features such as the oscilloscope.



13



### ▲ SmartStep in labelling machines

This labelling machine sticks self-adhesive labels to objects, like boxes or bottles that pass through the machine on a conveyor belt. It is solved using a Smartstep to perform a fast, precise and repetitive move of the labeller axis in order to stick all the labels at the right place.



◀ Servo motors for the output range from 0.03 to 0.75 kW.

# EXTRA FLEXIBILITY AND EASY CONNECTIVITY

XtraDrive • Built in intelligence via open fieldbus



If your application demands the highest positional accuracy combined with the shortest cycle times, the most compact size and an ability to connect to a Profibus network then look no further than XtraDrive. As a result of the revolutionary algorithms residing within the drive, XtraDrive offers the tightest control, providing near zero settling time, beneficial in a host of applications such as Point-To-Point control.

Furthermore, the Xtradive has a simple Autotune function, so no expert tuning knowledge is required. As standard in the Xtradive unit is a controller capable of Point-To-Point, e-cam and master-slave motion control. Virtually any servo motor, including linear versions, can connect to Xtradive, plus a further version includes Profibus DP connectivity that can be easily configured in a Siemens Step 7 environment. The range is available in power ratings from 30W to 5kW.

## Features XtraDrive

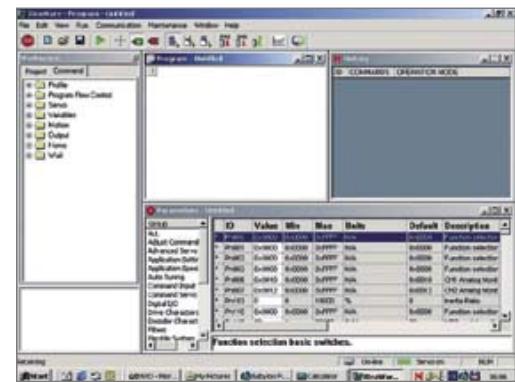
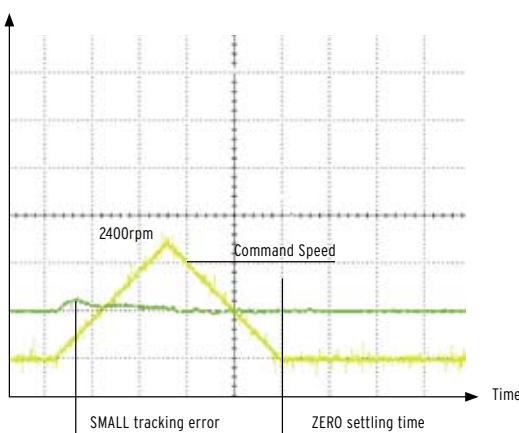
- Patented non-linear technique for tight position control
- Very low tracking error with no overshoot and zero settling time
- Patented PWM enables highest torque bandwidth
- Integrated positioner with various programmable motion profile modes and intelligent control
- Embedded PROFIBUS available
- Ideal for controlling Omron-Yaskawa linear motors
- 1.5 Axis (Master-Slave with automatic offset correction)
- Oscillation Canceling Algorithm (OCA)

### NCT

Non-linear control, adaptive feed-forward algorithm and digital processing of encoder pulses, provide both small tracking error and zero settling time.

- Increased throughput
- Reduced influence of external perturbations

### XtraDrive Product



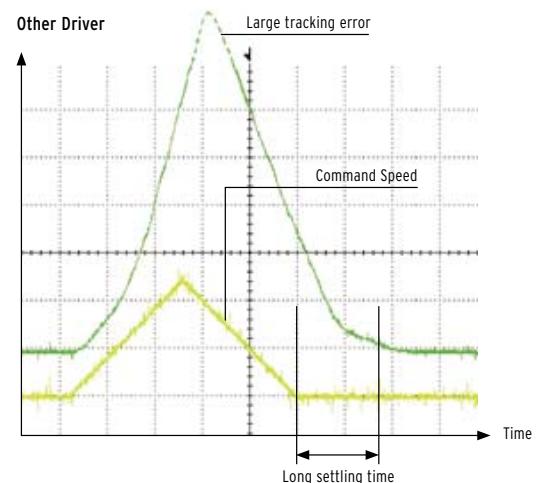
### Xtraware Software

Xtraware is an advanced software tool for setup, optimal tuning and user programming of the XtraDrive



▲ XtraDrive-DP provides all the benefits of XtraDrive family while running on PROFIBUS network

15



▲ Small tracking error, zero settling time

# WHEN SPEED MATTERS, LINEAR IS THE ANSWER

Sigma LM • Making the difference



16

Driven by ever-increasing demands for higher speed, higher precision, plus quieter and cleaner operations, many industry sectors such as semiconductors, electronic assembly, medical and packaging are increasingly turning to linear motor technology.

They offer unchallenged performance in terms of force thrust and speed. As well as the performance advantages, the Omron-Yaskawa linear drive ranges, thanks to their simplicity

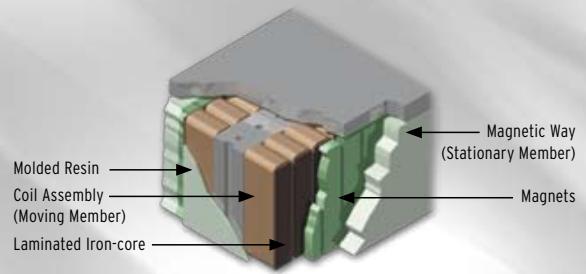
and reliability, are now gaining even wider acceptance in the printing, textile, machine tools and plastics sectors.

We offer as standard the iron core FW series with speeds up to 5.0 m/s and force from 86 to 2400N. On request we can supply the coreless GW type or core-type TW with magnetic attraction cancellation (MAC). The latter is a unique design offering ultra-compact size, high thrust and minimum load on bearings factor.

## Features Sigma Linear Motors

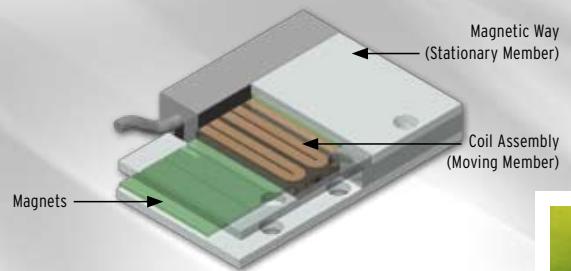
- Can reach speeds up to 5 meters per second with a resolution of  $0.078 \mu\text{m}$
- Coreless and Iron core types available
- Direct control of the motors using XtraDrive and Sigma-II drives
- Improved machine performance
- Ease of operation & high reliability
- Designed for high force density in compact packages
- Exhibit exceptional Force Linearity even near the peak force regions
- Extremely energy efficient. Due to its optimised magnetic circuitry design and high-density windings

## Coreless TW Type



▲ Iron-core TW linear motors with magnetic attraction cancellation

## Iron Core GW Type



17

▲ Coreless GW linear motors construction results in zero-attraction force and zero-cogging

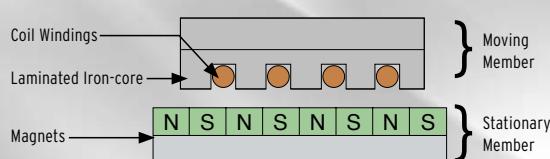
▼ The coil assembly of the FW linear motors are composed of laminated iron-core and pre-wound coil bobbins inserted into the slots located on the laminated iron-cores. The entire coil unit, after the precision assembly process, is permanently encapsulated in a thermally conductive resin body to give structural rigidity.

The magnetic way of the FW is made from a row of rare-earth magnets accurately placed on one side of the nickelized steel carrier plate.

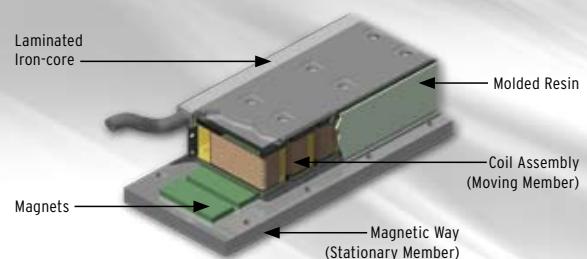
Stainless-steel magnet covers against minor accidental damages protect the magnets on the FW magnetic ways.

▼ Magnetic attraction force between the moving and the stationary parts can be used to increase the rigidity of the system by pre-loading the linear motor bearings

## Construction



## Iron Core FW Type



# SMALL, SIMPLE AND SMART

Varispeed J7 • Simplicity



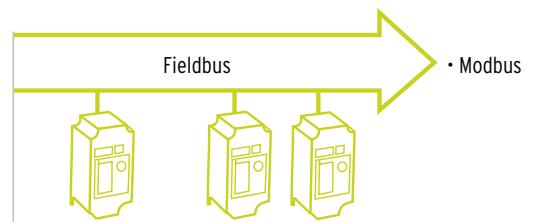
Simplicity and cost effectiveness are the key design features for the J7. Using Volts/Frequency control with on-line torque compensation the drive provides 100% torque down to 1.5Hz. The J7 has a built-in speed setting potentiometer, 4 configurable inputs, one configurable relay output as well as a multi-function analogue output.

The J7 can drive motor sizes from 0.1 to 4kW. By adding an interface card it can be configured via a PC with Sysdrive configurator, a package allowing off-line parameter set-up, ideal for setting multiple drives. On request the J7 can communicate with popular fieldbuses.



### Features J7

- Power range 0.1-4kW
- V/f control
- Compact size
- Frequency setting signal 0-10V /4-20mA
- 150% overload / 60sec.
- 100% torque at 1.5Hz
- Overload detection
- Motor thermal protection
- Freely configurable V/f curve
- DC injection braking
- 8 configurable fixed frequencies
- 4 programmable digital inputs
- 1 programmable relay output
- 1 programmable analogue output
- Optional RS232/485
- PC configuration tool Sysdrive Configurator

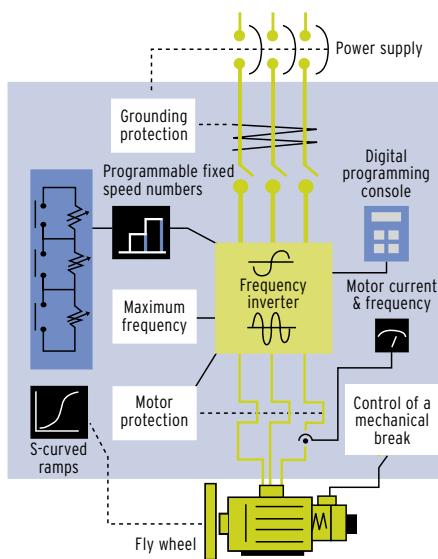


▲▼ 6-track folding machine for large laundry facilities:  
frequency inverter J7 allows variable speeds on the  
different track.

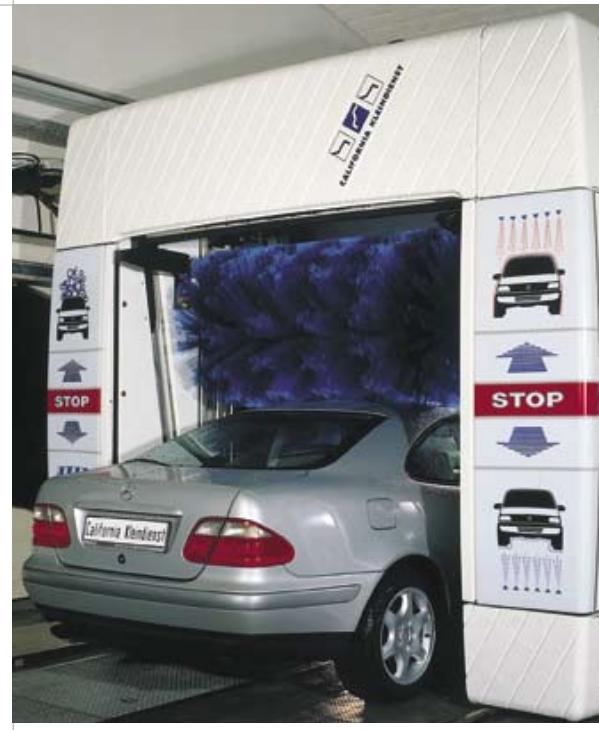


19

▼ Block diagram for frequency inverter J7.



▼ Inverter J7 controls the speed and  
positioning of a car wash station



# SENSORLESS FLUX VECTOR IN A POCKET SIZED INVERTER

3G3MV • Designed for your needs



PLC Option • Intelligence into the inverter

## The 3G3MV series

For such a small sized drive, the 3G3MV offers all the functionality you'll need. Sensorless vector control ensures 100% torque down to 0.5 Hz, full motor protection is standard, and interfaces to the popular fieldbuses are available. In addition, a PLC option unit turns the 3G3MV into the most complete and versatile drive on the market today.

The 3G3MV accepts analogue and pulse input, hence simplifying the interface for simple positioning control. The 3G3MV range includes sizes from 0.1 to 7.5kW with built-in dynamic brake.

## The PCD / PLC option

Based on established Omron PLC technology, the PCD option offers all the advantages of an Omron PLC for the 3G3MV inverter. It comes as standard with a high speed counter, Real Time Clock, 4kWord memory and 10 I/O, and is programmed with CX Programmer.

This ultra-compact configuration is ideal for applications where compact system size and quick development are essential such as automatic door control, small scale hoists, indexing tables, modular conveyor systems, etc.

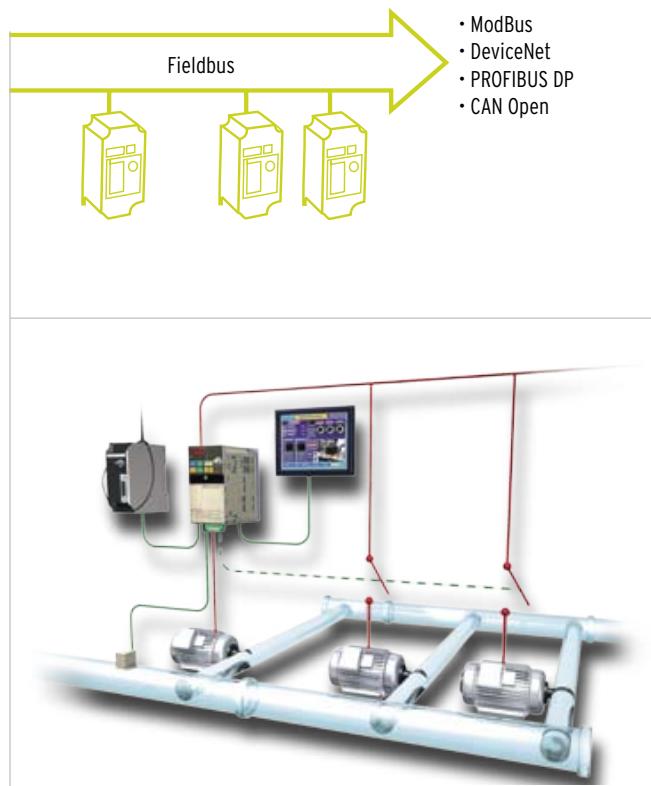


### Features PLC Option Unit

- Fully featured Omron PLC embedded into the inverter
- Direct connection to MV Inverter via Dual Port Ram
- Complete control of inverter parameters
- Encoder Input, Interrupt inputs and Pulse outputs
- Real time clock and calendar available
- Control of inverter hardware (analog input, digital I/O)
- Mechatronics functions (Counter, PID, filter, etc.)
- Single point programming
- Programmed using the standard Omron PLC software
- RS-422/485 serial port available

### Features 3G3MV

- Power range 0.1-7.5 kW
- Sensorless vector controlled inverter
- Compact size
- Frequency setting signal 0-10V/4 -20mA
- 150% overload/60 sec
- 100% torque at 0.5 Hz
- Customised application firmwares
- Overload detection
- Pulse input for speed reference
- Programmable second analogue input integrated PID controller
- 16 programmable fixed frequencies
- DC injection braking
- Built-in operator/copy unit
- PC configuration tool Sysdrive Configurator



#### ▲ Pump sequencer

The MV inverter and the PLC option unit provide a continuous closed loop control of the first pump, plus ON/OFF control on the others.



#### ▲ Powder coating system

The 3G3MV frequency inverter is connected to the PLC via the ModBus field bus. In this way, various conveyor circuits can be monitored and synchronised.

# DRIVE YOUR ENERGY COST DOWN

Varispeed E7 • Designed for pumps and fans



22

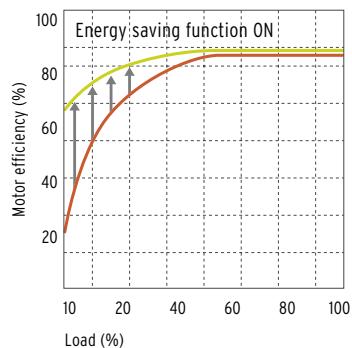
The E7 series is designed to be the ultimate inverter for driving your energy cost down. An energy saving algorithm, an IP54 housing, a PID loop and a 12 pulse converter are part of the E7 standard features. The energy saving algorithm allows up to 20% energy saving against conventional Volts/Frequency control through near perfect auto-adaptive control of motor flux and load.

The 12 pulse converter is available on units from the 22 kW model and above, significantly reducing harmonic distortion, hence eliminating the need for external AC reactors in most applications. The E7 is available in sizes from 0.4 up to 300 kW as standard and up to 800 kW on request.

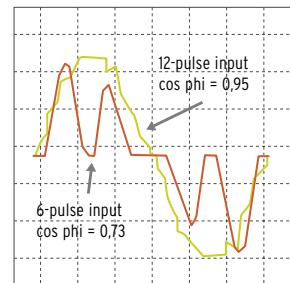


### Features E7

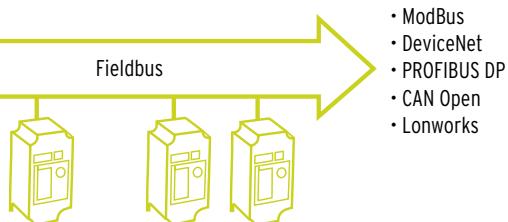
- Power range 0.4-300kW
- V/f controlled frequency inverter
- Frequency setting signal 0-10V/4-20mA
- Silent operation
- Energy saving function
- Integrated PID controller with sleep function
- Programmable second analogue input
- 12 pulse operation (22kW and above)
- Built-in DC reactor (22kW and above)
- DC injection braking
- Rotating motor pick up
- Customised application firmwares
- PC configuration tool Sysdrive Configurator
- PLC Option Unit. Same unit used with Varispeed F7
- IP54 Enclosure available



▲▼ Energy-saving function and improved power factor lower energy costs.



23



▲ Liquid handling: fan and pump drives.

# TOWARDS SERVO PERFORMANCE FROM AC MOTORS

Varispeed F7 · A new generation of flux vector drives



PLC Option • Intelligence into the inverter

Building on the phenomenal success of the previous 3G3RV model, Omron-Yaskawa have improved upon the flexibility and functionality to produce a drive for today's market. Examples include a non-rotating auto-tune function, a comprehensive LCD display, customisable software (CASE) and a host of features that make the F7 one of the easiest and most versatile flux vector drives.

Option cards are available to connect to Mechatrolink, Profibus, DeviceNet and CAN networks. The F7, as with the V7, can host a true PLC option board. The power range of the F7 is from 0.4 up to 300 kW as standard and up to 800 kW on request. The F7 is ideal for all heavy duty, high precision torque and speed control applications.

## The PCD / PLC option

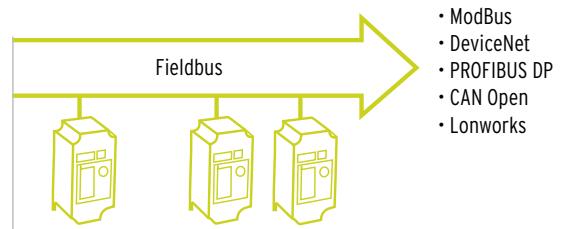
Based on established Omron PLC hardware technology, the PCD option offers all of the features of the V7 option, and in addition provides the possibility to have DeviceNet slave connectivity and CompoBus-S master capability. This means that the F7 can sit within the Omron automation platform, and have expandable I/O through CompoBus-S I/O units. This configuration is ideal for hoists, cranes and palletiser systems.

## Features F7

- Power range 0.4-300kW
- Open and Closed loop flux vector control
- Silent operation
- 200% starting torque
- Rotating and Non-Rotating auto-tuning modes
- Customised application firmware
- Intelligent dynamic braking
- Integrated PID controller with sleep function
- Pulse input and output, for speed reference
- 12 pulse operation (22 kW and above)
- Inbuilt DC reactor (22 kW and above)
- Position synchronisation via optional card
- PC configuration tool Sysdrive Configurator

## Features of PLC-Option

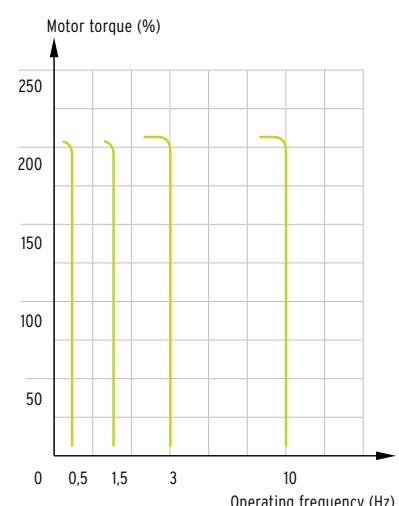
- Fully featured Omron PLC embedded into the inverter
  - PLC Board directly connected in to the Inverter
  - Complete control of inverter parameters
  - Encoder Input, Interrupt inputs and Pulse outputs
  - Real time clock and calendar
  - Control of inverter hardware (analog input, digital I/O)
  - Mechatronics functions (Counter, PID, filter, etc.)
  - Single point programming
  - Programmed using the standard Omron PLC software
  - RS-232 serial port
  - RS-422/485 serial port
  - CompoBus/S master capability
  - DeviceNet available
- ▼ Auto-tuning at zero speed and excellent low-speed torque characteristics ensure easy start-up and optimal running behaviour.



25

▲ High starting torque and stable torque performance even at low speeds are particularly important in mixer and extruder applications.

▼ Over 200% torque even at low speeds.



# STOP THE SEARCH, ENJOY THE RIDE



Varispeed L7 · Made to drive lifts

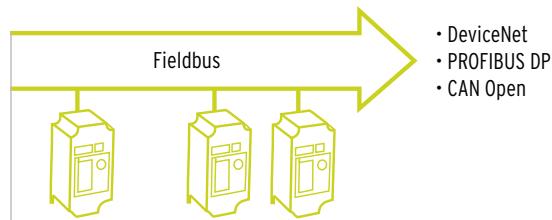
The Varispeed L7 is based on years of experience in inverter design, and uses the latest proven technology to provide reliability and safety. Furthermore, lift-specific features have been developed in response to market needs.

These standard features include direct control of motor brake and motor contactor, short floor operation, door opening control and hardware base block. In addition, both open loop and closed loop vector control is available in the Varispeed L7, providing the optimum speed regulation to suit the application.

Ease of use has been considered from the outset. An LCD operator is available to provide plain text set-up and monitoring of the inverter, while a non-rotating auto-tuning function ensures the inverter can obtain all of the required motor information without the need to decouple the motor from the gearbox. Option cards are available to integrate the L7 series into communication networks such as CANopen, DeviceNet or Profibus-DP.

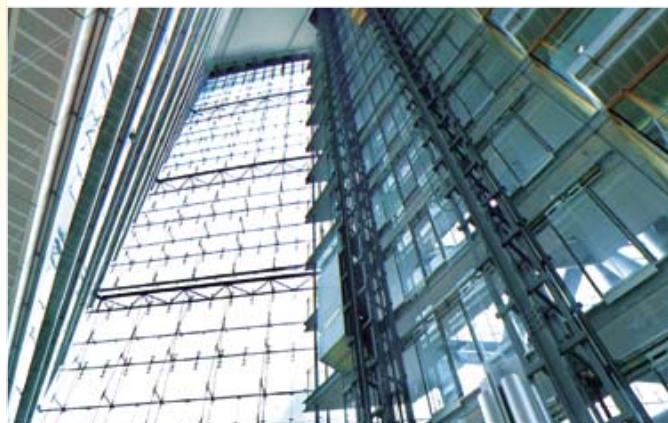
## Features L7

- High rated output current
- Direct control of motor brake and contactor
- Dedicated Lift sequence
- Emergency evacuation (battery operation)
- Short floor operation
- Door opening control
- Auto-tuning at standstill
- Connectivity to all popular fieldbuses
- PC configuration and commissioning tool
- PLC Option Unit. Same unit used with Varispeed F7



### ▼ High reliability

Omron-Yaskawa's frequency inverters are currently being used in over 100,000 lifts around the world! The L7 ensures 3 million full load starts during its lifetime.



27

- Designed specifically for the lift market, the L7 series ensures that lifts exceed the ride quality and safety demands of the market.

Available in power ratings from 3.7 kW up to 55 kW, the Varispeed L7 offers a cost-effective solution for all your lift requirements.



# COMPLETE OVERVIEW OF THE OMRON MOTION AND DRIVES RANGE

Servo Drives			
Type	Sigma-II Series	SmartStep	XtraDrive
Output Range	0,03 - 55 KW	30W - 750 W	30W- 3kW
Rated Torque	0,095 - 350 Nm	0,095 - 2,39 Nm	0,095-18,6 Nm
Peak Torque	0,296 - 700 Nm	0,286 - 7,1 Nm	0,286 - 45,1 Nm
1 x 230 V	Yes	Yes	Yes
3 x 230 V	Yes	No	Yes
3 x 400 V	Yes	No	Yes
Speed Regulation	Analogue ±10V	No	Analogue ±10V
Torque Regulation	Analogue ±10V	No	Analogue ±10V
Positioning	Pulse Train Input	Pulse Train Input	Pulse Train Input
Torque Loop Cycle	62,5 MicroSec	62,5 MicroSec	62,5 MicroSec
Motors 1000 rpm	Yes	No	Yes
Motors 1500 rpm	Yes	No	Yes
Motors 2000 rpm	Yes	No	Yes
Motors 3000 rpm	Yes	Yes	Yes
Motors 6000 rpm	Yes	No	Yes
Encoder Resolution	max. 17 bit	2000 ppr x 4	max. 17 bit
Serial Interfaces	RS-232C / 422 DeviceNet Profibus DP Mechatrolink II	RS-232C / 422	RS-232C / 422 DeviceNet Profibus DP

28

Motion Controllers				
Type	MCH	MC402	MCW151	CJ1W-NC
Total No. of Axes	32	8	3	1 to 4
No. of Real Axes	30	4	1	1 to 4
Type of controller	PLC Based	PLC Based	Servo Based	PLC Based
Programming	Basic Type Language			Ladder
Servo Control	Mechatrolink II	Analogue ±10V	Direct Connection	Pulse Train Input
Cycle time	0,5 to 8 ms	1 ms	0,5 to 1 ms	N/A
Memory Size	2 MB	128 KB	128 KB	N/A
Hardware Registration	1 per axis	1 per axis	3	N/A
Point-to-Point Moves	Yes	Yes	Yes	Yes
Interpolated Moves	Yes	Yes	Yes	Yes
Axes Synchronisation	Yes	Yes	Yes	No
Electronic CAMs	Yes	Yes	Yes	No
Serial Interfaces	PLC Based Mechatrolink II	PLC Based	RS-232C/485/422 HostLink DeviceNet	PLC Based

<b>Frequency Inverters</b>					
Type	J7	3G3MV	E7	F7	L7
<b>Output range</b>	0.1 - 4.0 kW	0.1 - 7.5 kW	0.4 - 300 kW	0.4 - 300 kW	4 - 55 kW
<b>1 x 230 V</b>	Yes	Yes	No	No	No
<b>3 x 230 V</b>	Yes	Yes	Yes	Yes	Yes
<b>3 x 400 V</b>	Yes	Yes	Yes	Yes	Yes
<b>Regulation process</b>	V/f	V/f	V/f	V/f	V/f
		Sensorless flux vector		Sensorless flux vector	Sensorless flux vector
				Closed loop flux vector	Closed loop flux vector
<b>Digital inputs</b>	5	7	7	7	8
<b>Digital outputs</b>	1	3	3	4	4
<b>Analogue inputs</b>	1	2	2	2	1
<b>Analogue outputs</b>	1	1	2	2	No
<b>Pulse input</b>	No	Yes	No	Yes	No
<b>Pulse output</b>	No	Yes	No	Yes	No
<b>Int. braking transistor</b>	No	Yes	To 18.5 kW	To 18.5 kW	To 18.5 kW
<b>Ser. interfaces</b>	ModBus	ModBus, DeviceNet, Profibus DP CAN Open	ModBus, DeviceNet, Profibus DP, CAN Open Lonworks	ModBus, DeviceNet, Profibus DP , CAN Open Lonworks	DeviceNet, Profibus DP CAN Open

# PRODUCT SELECTION TABLE



## Motion Controllers

### PLC based Controllers

- Position Control Units
  - CJ1-NCs
  - CS1-NCs
- Motion Control Units
  - CS1-MCs
  - C200HW-MC402
  - CS1W-MCH

### Servo based Controllers

- DeviceNet Unit NS300
- Profibus-DP Unit NS500
- Indexer Unit NS600
- 1.5 Axis Motion MCW151



## Servo Systems

- SmartStep Series
- Sigma-II Series
- Sigma-II Large Capacity
- Sigma Linear Motors
- XtraDrive



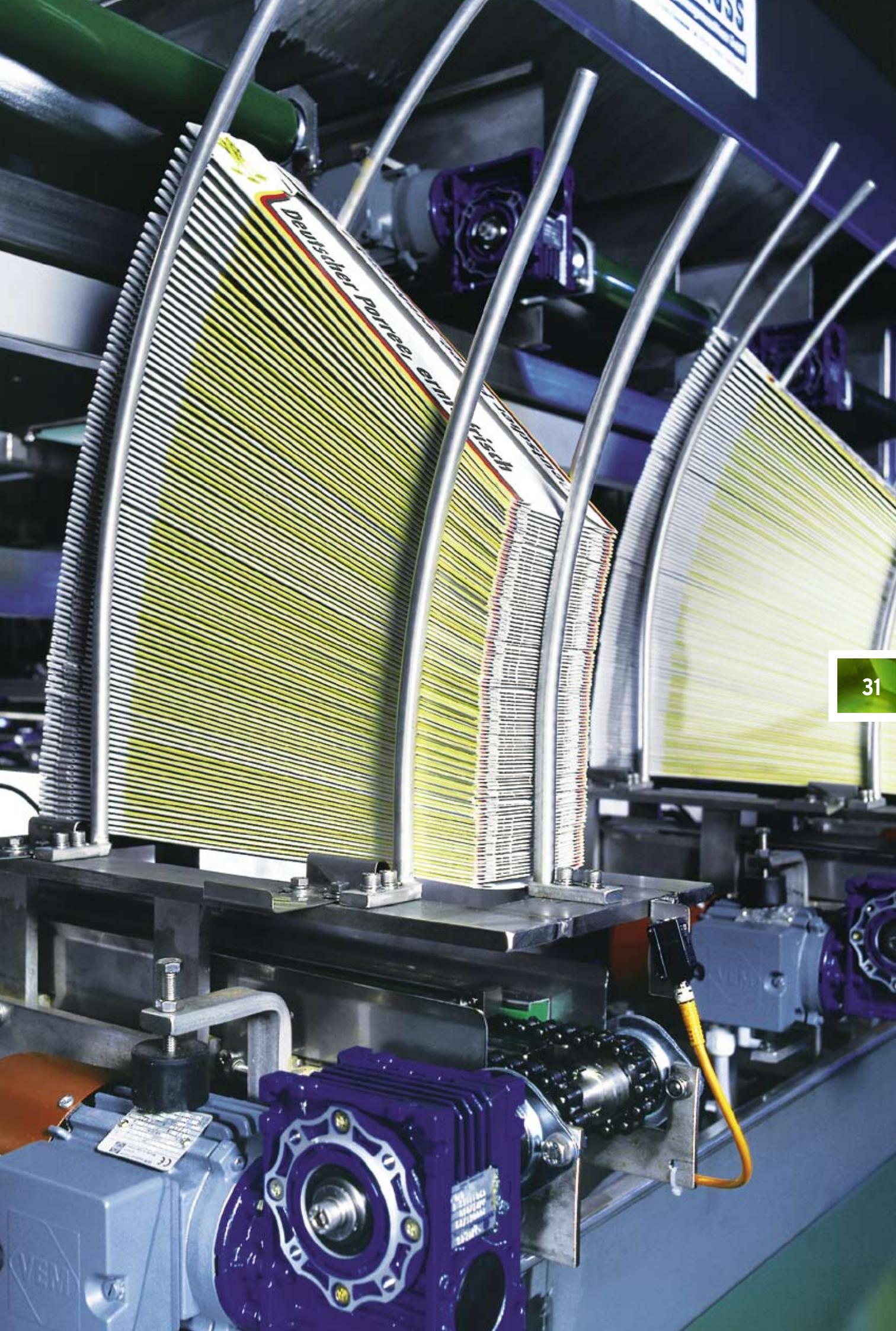
## Frequency Inverters

- Varispeed J7
  - Sysdrive 3G3MV
  - Varispeed E7
  - Varispeed L7
  - Varispeed F7
- PLCs in the Inverter:**
- 3G3MV Inverter PLC
  - F7/L7/E7 Inverter PLC



## Software

- CX-Position
- CX-Motion
- Motion Perfect
- MCH Tool
- XtraWare
- SigmaWin+
- Sysdrive Configurator



# Main Content

## Motion Control 35

PLC based Controllers		
Position Control Units	CJ1-NCs	37
	CS1-NCs	39
Motion Control Units	CS1-MCs	41
	C200HW-MC402-E	43
	CS1W-MCH71	45
Servo based Controllers		
DeviceNet Unit	JUSP-NS300	51
PROFIBUS-DP Unit	JUSP-NS500	57
Indexer Unit	JUSP-NS600	63
1.5 Axis Motion Controller	R88A-MCW151	69

## AC Servo Systems 75

SmartStep Series	77
Sigma-II Series	95
Sigma-II Large Capacity	129
Sigma Linear Motors	143
XtraDrive	169

## Frequency Inverters 191

Varispeed J7	193	
SYS DRIVE 3G3MV	205	
Varispeed E7	219	
Varispeed L7	237	
Varispeed F7	253	
Inverter PLCs	3G3MV Inverter PLC	271
	F7/L7/E7 Inverter PLC	279

## Software 287

CX-Position	289
CX-Motion	291
MCH-Tool	293
Motion Perfect	295
SigmaWin+	297
XtraWare	299
SYS DRIVE Configurator	301

## Technical Information 303

## Technical Documentation 307

## Contact Information 309

## Index 327



# Motion Control

PLC based Controllers		
Position Control Units	CJ1-NCs	37
	CS1-NCs	39
Motion Control Units	CS1-MCs	41
	C200HW-MC402-E	43
	CS1W-MCH71	45
Servo based Controllers		
DeviceNet Unit	JUSP-NS300	51
PROFIBUS-DP Unit	JUSP-NS500	57
Indexer Unit	JUSP-NS600	63
1.5 Axis Motion Controller	R88A-MCW151	69



CJ1W-NC□□

# Position Control Units

## High-speed, High-precision Positioning with 1, 2, or 4 Axes

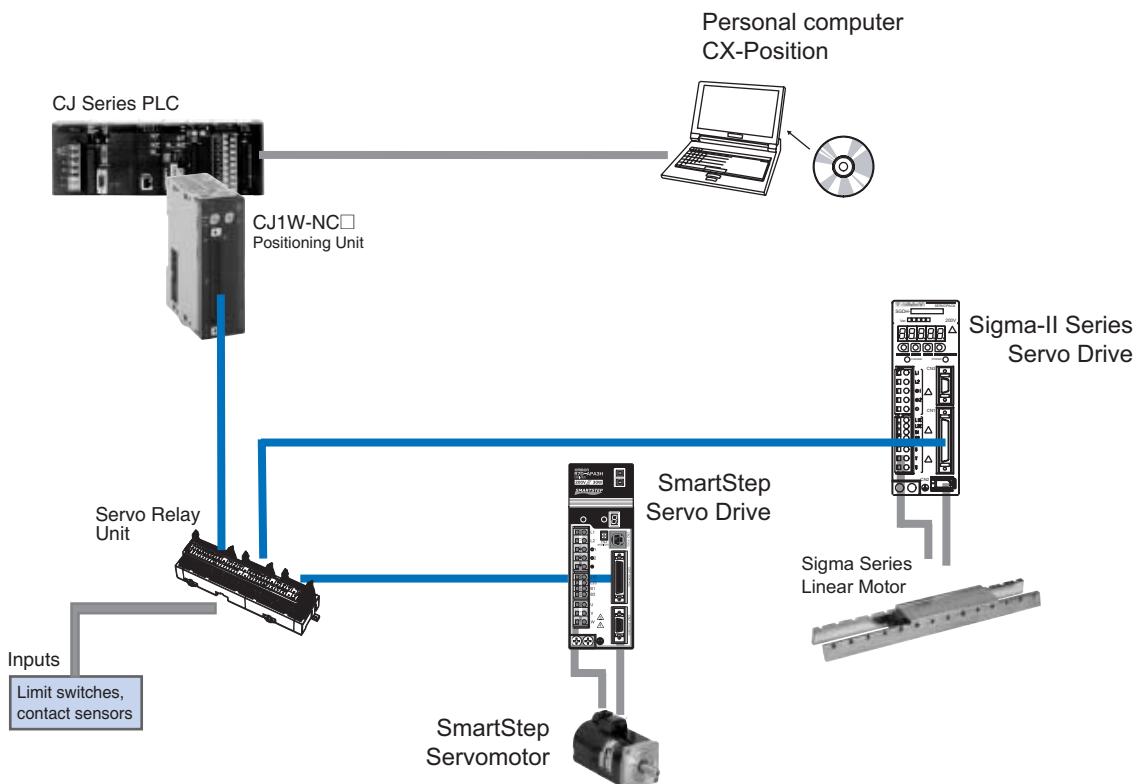
- Positioning can be done by direct Ladder commands
- Position and speed control
- Linear Interpolation
- Interrupt feeding function
- Positioning of 100 points stored in memory
- S-curve acceleration/deceleration, origin search, backlash compensation, and other features are also supported.
- Positioning data is saved in internal flash memory, eliminating the need to maintain a backup battery.
- Use Windows-based Support Software (CX-Position) to easily create positioning data and store data and parameters in files.



## Function

These Position Control Units support positioning control via pulse-train outputs. Positioning is performed using trapezoid al or S-curve acceleration and deceleration. Models are available with 1, 2, or 4 axes control, and can be used in combination with servo drives or stepping motors what accept pulse-train control.

## System Configuration



## Specifications

Model	CJ1W-NC113 CJ1W-NC133	CJ1W-NC213 CJ1W-NC233	CJ1W-NC413 CJ1W-NC433
Unit name	Position Control Unit		
Classification	Special I/O Unit		
Unit numbers	0 to 95		
Control method	Open-loop control by pulse train output		
Control output interface	CJ1W-NC□13: Open-collector output CJ1W-NC□33: Line-driver output		
Controlled axes	1	2	4
Operating modes	Direct operation or memory operation		
Data format	Binary (hexadecimal)		
Affect on scan time for end refresh	0.29 to 0.41 ms max./unit		
Affect on scan time for IOWR/IORD	0.6 to 0.7 ms max./instructions		
Startup time	2 ms max. (Refer to operation manual for conditions.)		
Position data	-1,073,741,823 to +1,073,741,823 pulses		
No. of positions	100 per axis		
Speed data	1 to 500 kpps (in 1-pps units)		
No. of speeds	100 per axis		
Acceleration/ deceleration times	0 t 250 s (time to max. speed)		
Acceleration/ deceleration curves	Trapezoidal or S-curve		
Saving data in CPU	Flash memory		
Windows-based Support Software	CX-Position (WS02-NCTC1-E)		
Ambient operating temperature	0 to 55 °C	0 to 50 °C	
External power supply	24 V DC ±10%, 5 V DC ±5% (line driver only)	24 V DC ±5%, 5 V DC ±5% (line driver only)	

## Ordering Information

### Position Control Unit

Name	Model
1 Axis Position Control Unit. Open-collector output.	CJ1W-NC113
2 Axes Position Control Unit. Open-collector output.	CJ1W-NC213
4 Axes Position Control Unit. Open-collector output.	CJ1W-NC413
1 Axis Position Control Unit. Line-driver output.	CJ1W-NC133
2 Axes Position Control Unit. Line-driver output.	CJ1W-NC233
4 Axes Position Control Unit. Line-driver output.	CJ1W-NC433

### Servo Drive Cables

**Note:** Refer the selected Servo Systems section for cable and servo relay units information.

### Computer Software

Specifications	Model
CX-Position, Windows-based Support Software	WS02-NCTC1-E

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

CS1W-NC□□□, C200HW-NC□□□

# Position Control Units

## High-speed, High-precision Positioning with 1, 2, or 4 Axes

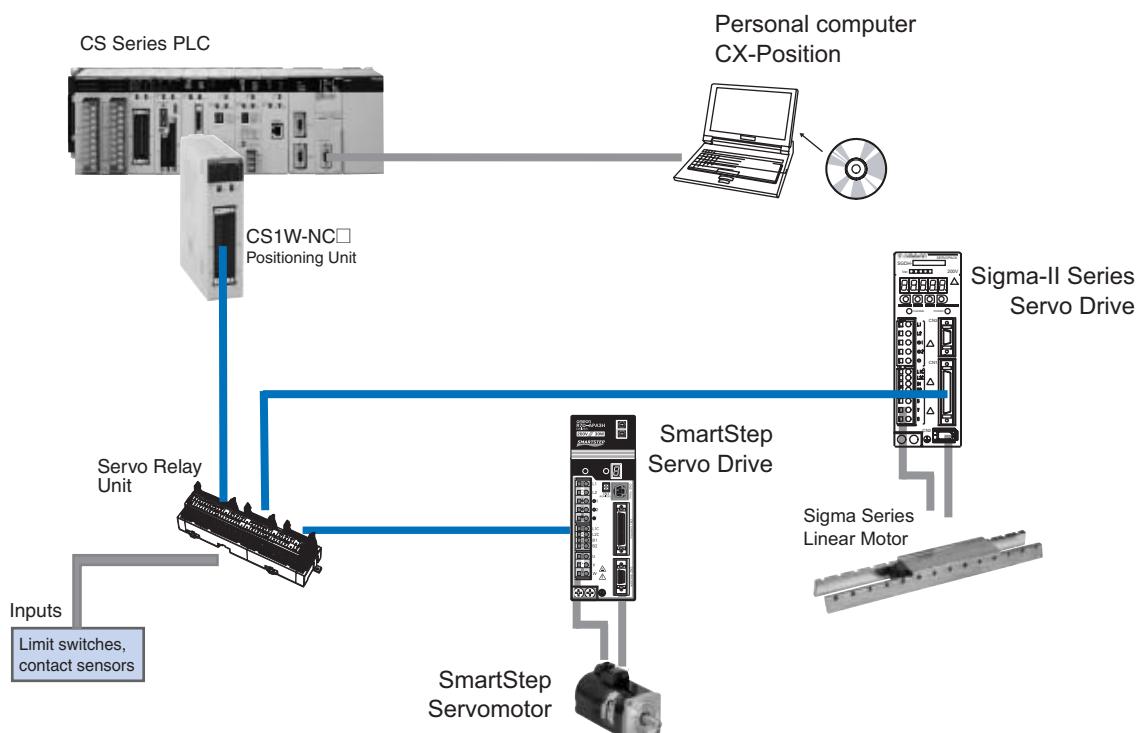
- Positioning can be done by direct Ladder commands
- Position and speed control
- Linear Interpolation
- Interrupt feeding function
- Positioning of 100 points done from memory
- S-curve acceleration/deceleration, origin search, backlash compensation, and other features are also supported.
- Positioning data is saved in internal flash memory, eliminating the need to maintain a backup battery.
- Use Windows-based Support Software to easily create positioning data and store data and parameters in files.



## Function

These Position Control Units support positioning control via pulse-train outputs. Positioning is performed using trapezoidal or S-curve acceleration and deceleration. Models are available with 1, 2, or 4 axes control, and can be used in combination with servo drives or stepping motors that accept pulse-train control.

## System Configuration



## Specifications

<b>Model</b>	CS1W-NC113 CS1W-NC133	CS1W-NC213 CS1W-NC233	CS1W-NC413 CS1W-NC433	C200HW-NC113	C200HW-NC213	C200HW-NC413
<b>Unit name</b>	Position Control Unit					
<b>Classification</b>	CS1 Special I/O Units			C200H Special I/O Units		
<b>Unit numbers</b>	0 to 95		0 to 15 (0 to F)			
<b>Control method</b>	Open-loop, automatic trapezoid acceleration/deceleration					
<b>Control output signals</b>	OS1W-NC□13: Open-collector outputs CS1W-NC□33: Line-driver outputs			Open-collector		
<b>Controlled axes</b>	1	2	4	1	2	4
<b>Operating modes</b>	Direct operation or memory operation					
<b>Data format</b>	Binary (hexadecimal)			BCD		
<b>Affect on scan time for end refresh</b>	0.29 to 0.41 ms max./unit			2.6 to 4.5 ms max./unit		
<b>Affect on scan time for IOWR/IORD</b>	0.6 to 0.7 ms max./instructions			2.6 to 5.5 ms max./instructions		
<b>Startup time</b>	2 ms min. (Refer to operation manual for conditions.)			7.51 ms min. (Refer to operation manual for conditions.)		
<b>Position data</b>	-1,073,741,823 to +1,073,741,823 pulses			-9,999,999 to +9,999,999 pulses		
<b>No. of positions</b>	100 per axis					
<b>Speed data</b>	1 to 500 kpps (in 1-pps units)			1 to 500 kpps (specified as factor)		
<b>No. of speeds</b>	100 per axis					
<b>Acceleration/ deceleration times</b>	0 to 250 s (time to max. speed)					
<b>Acceleration/ deceleration curves</b>	Trapezoidal or S-curve					
<b>Saving data in CPU</b>	Flash memory					
<b>Windows-based Support Software</b>	CX-Position			SYSMAC-NCT (WS01-NCTF1-E)		

## Ordering Information

### Position Control Unit

Name	Model
1 Axis Position Control Unit. Open-collector output.	CS1W-NC113
2 Axes Position Control Unit. Open-collector output.	CS1W-NC213
4 Axes Position Control Unit. Open-collector output.	CS1W-NC413
1 Axis Position Control Unit. Line-driver output.	CS1W-NC133
2 Axes Position Control Unit. Line-driver output.	CS1W-NC233
4 Axes Position Control Unit. Line-driver output.	CS1W-NC433
1 Axis Position Control Unit. Open-collector output.	C200HW-NC113
2 Axes Position Control Unit. Open-collector output.	C200HW-NC213
4 Axes Position Control Unit. Open-collector output.	C200HW-NC413

### Servo Drive Cables

**Note:** Refer to selected Servo Systems section for cable and servo relay units information.

### Computer Software

Specifications	Model
CX-Position, Windows-based Support Software	WS02-NCTC1-E
SYSMAC-NCT	WS01-NCTF1-E

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

CS1W-MC421/MC221

# Motion Control Units

## High-precision, Motion Controller with Multi-tasking G-language Programming

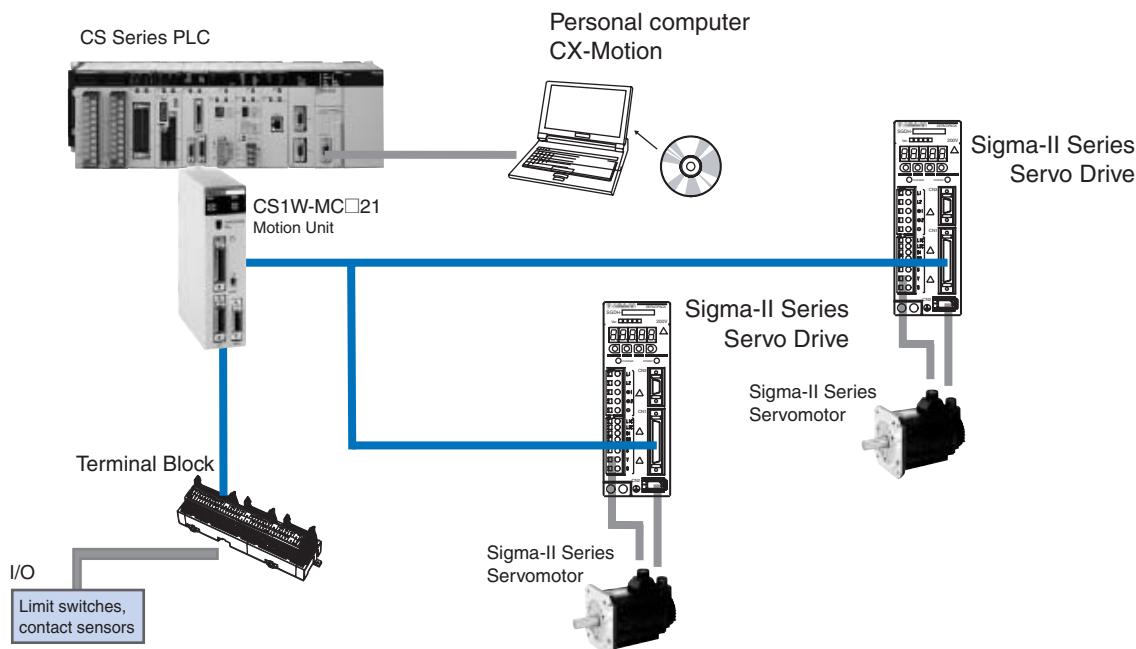
- High-speed control of up to 4 axes with one Unit and up to 76 axes with one PLC (19 Units x 4 axes) (assumes that Power Supply Unit capacity is not exceeded).
- Winding operations easily controlled at high-speed using traverse positioning control.
- High-speed response to commands from CPU Unit (8 ms for 2 axes, 13 ms for 4 axes).
- Encoder response of 2 Mpps possible with 4x frequency multiplication for applications with high-speed, high-precision servomotors.
- D interrupt code outputs to CPU Unit at end of positioning or at specified positions (D code output time: 3.3 ms max.).
- CX-Motion Windows-based Support Software Define user mnemonics to use in place of G codes to simplify MC program development and analysis.
- Servo trace function from CX-Motion to trace error counter changes or motor speeds.
- Automatic Loading Function MC programs and positioning data can be automatically downloaded from computer memory when required by the MC Unit.



## Function

The Motion Controller provides closed-loop motion control via analog outputs for up to 4 axes, and supports the G language for advanced, high-speed, high-precision position control. Multi-tasking allows you to run the axes independently for a wider range of application.

## System Configuration



## Specifications

### General

<b>Model</b>	<b>CS1W-MC421-V1</b>	<b>CS1W-MC221-V1</b>
<b>Classification</b>	CS1 Special I/O Unit	
<b>Control method</b>	Closed loop with automatic trapezoid or S-curve acceleration/deceleration	
<b>Control output signals</b>	Analog	
<b>Internal programming language</b>	G language (Program started by command sent from CPU Unit's ladder program.)	
<b>Controlled axes</b>	4 axes max.	2 axes max.
<b>Maximum position value</b>	-39,999,999 to 39,999,999 (for minimum setting unit of 1)	
<b>Synchronous axis control</b>	4 axes max.	2 axes max.
<b>Positioning</b>	<b>Linear interpolation</b>	4 axes max.
	<b>Arc interpolation</b>	2 axes max. in a plane
	<b>Helical interpolation</b>	2-axis arc interpolation in a plane + feed axis
	<b>Traverse</b>	2-axis traverse feeding
	<b>Infinite feed</b>	Infinite feeding of one or more axes
	<b>Interrupt feed</b>	Interrupt feeding for specified axes (Positioning can be specified for when there is no interrupt.)
<b>Task programming capacity</b>	<b>Number of tasks</b>	4 tasks max.
	<b>Number of programs</b>	25 programs when using 4 tasks
	<b>Program capacity</b>	500 blocks per task when using 4 tasks
		1,000 blocks per task when using 2 tasks

### CX-Motion: Windows-based Support Software

<b>Model</b>	WS02-MCTC1-EV□
<b>Supported MC Units</b>	CS1W-MC221/421, C200H-MC221, and CV500-MC221/421
<b>Applicable computer</b>	DOS, OS: Windows 95/98 or Windows NT Version 4.0
<b>Functions</b>	Functions required for MC Unit control: Creating/editing/saving/printing system parameters, positioning data, and MC programs; monitoring MC Unit operation

## Ordering Information

### Motion Control Unit

Name	Model
2 Axes Motion Control Unit.	CS1W-MC221-V1
4 Axes Motion Control Unit.	CS1W-MC421-V1

### Sigma-II Series Servo Drive Cables

Description	Connect to	Model
Axis Control Cable (1 Axis)	Motion Control Units	1 m R88A-CPW001M1
	CS1W-MC221 (1 cable needed)	2 m R88A-CPW002M1
	CS1W-MC421 (2 cables needed)	3 m R88A-CPW003M1
		5 m R88A-CPW005M1
Axes Control Cable (2 Axis)	Motion Control Units	1 m R88A-CPW001M2
	CS1W-MC221 (1 cable needed)	2 m R88A-CPW002M2
	CS1W-MC421 (2 cables needed)	3 m R88A-CPW003M2
		5 m R88A-CPW005M2

### I/O Terminal Block and Cables

Description	Connect to Motion Control Unit	Model
Terminal Block	CS1W-MC221	- XW2B-20J6-6
	CS1W-MC421	- XW2B-40J6-7
Cable form PLC Unit to Terminal Block.	CS1W-MC221	1 m XW2Z-100J-F1
	CS1W-MC421	

### Computer Software

Specifications	Model
CX-Motion, Windows-based Support Software	WS02-MCTC1-EV□

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

C200HW-MC402-E

# Motion Control Unit

## Advanced multi-axes Motion Control made perfectly intuitive

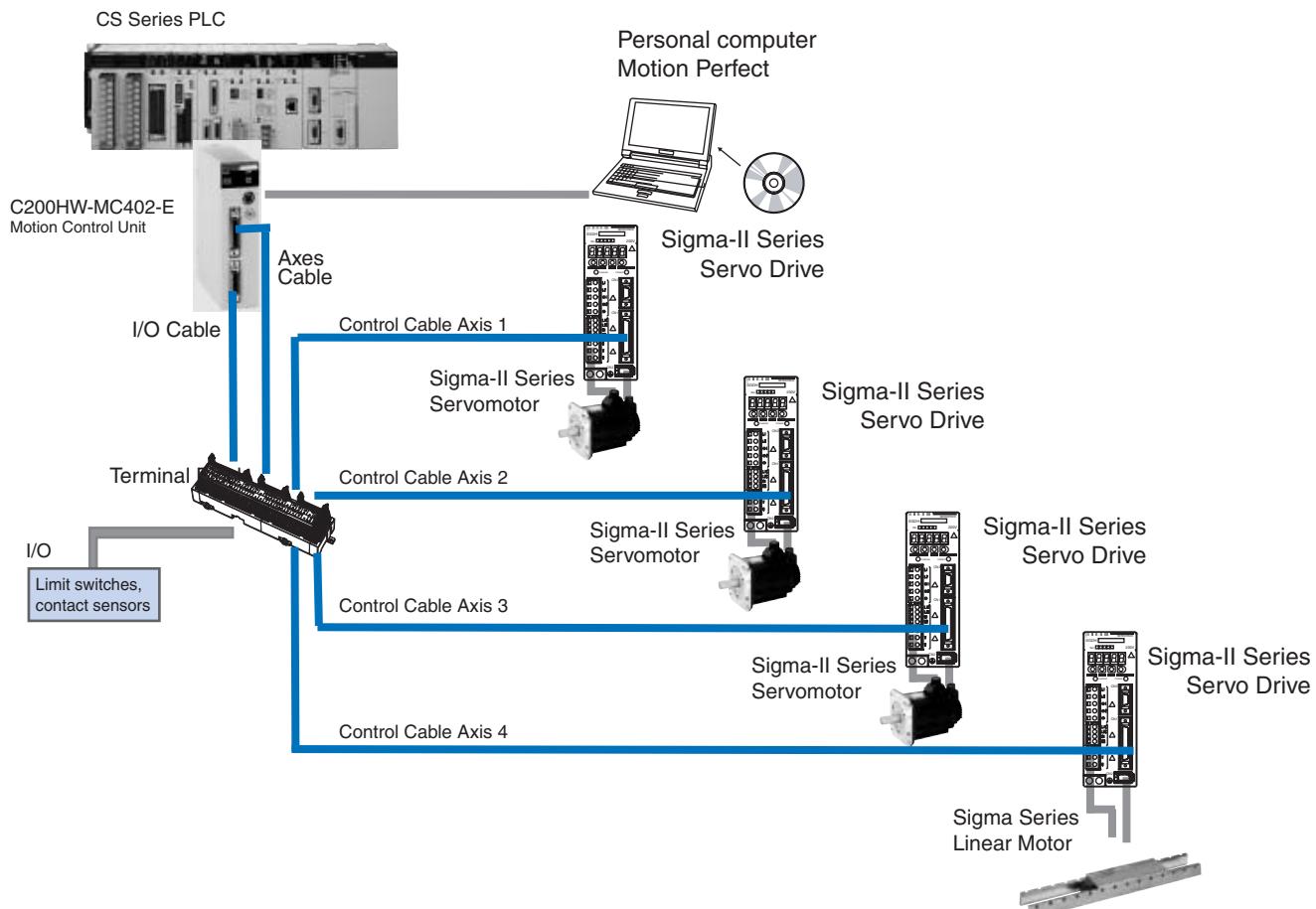
- Advanced Motion control of 4 real axes and 4 virtual axes per unit. Up to 16 modules can be installed in one PLC
- Analogue outputs for Position, Speed and Torque control
- Simple to develop and modify using BASIC
- Multi-tasking programming
- Hardware registration input for every axis
- Electronic CAM profiles and axes synchronization
- Friendly Motion Perfect Windows-based programming and debugging software. Provides versatile test and monitoring functions including a 4-channel software oscilloscope.



## Function

The advanced Motion control unit provides closed-loop control of up to 4 axes, it is programmed in a multi-task BASIC type language and supported by the powerful software tool. The unit provides a complete command set, allowing applications such as flying saws, rotating knives, any synchronization and electronic CAM profile to be easily programmed.

## System Configuration



## Specifications

Model	<b>C200HW-MC402-E</b>	
Classification	C200H Special I/O Unit	
Control Output signals	Analogue	
Programming language	BASIC type motion control language	
Basic Specifications	Power Supply Voltage	5 VDC (Supplied from Backplane). 24 VDC (Supplied from external power supply)
	Approx. Mass	500 g
	External Dimensions	130 x 34.5 x 100.5 mm (H x W x D)
	Controlled axes	4 real axes 4 virtual axes
	Control method	Closed loop with incremental encoder and with PID and speed command outputs
	Servo Loop Cycle	1.0 ms
Functional Specifications	Speed Control	Speed control of up to 4 axes. Up to 1 MHz pulse input frequency after quadrature
	Measurement units	User definable
	Linear interpolation	4 axes
	Arc interpolation	For any 2 axes
	Helical interpolation	For any 3 axes
	Axes Synchronization	For any 2 axes
Motion Control	Axes Linked CAM profile	For any 2 axes
	Hardware Registration Interrupt	4 axes
	Acceleration/deceleration curves	Trapezoidal or S-curve
	Number of tasks	Up 5 tasks simultaneous plus interface task
	Number of programs	14
	Data storage capacity	251 (VR) + 16000 (Table) max.
External I/O	Encoder Input	Line receiver inputs for 4 axes (1 MHz after quadrature)
	Servo Drive relationships	The following signals are provided per axis Inputs: Drive Alarm Signal Outputs: Drive Enable (RUN or SERVO ON) Drive Alarm Reset SPEED command
	Digital Inputs	Up to 16 digital inputs can be wired to control MC Unit funtions. These include limit switches, rapid stop switches and proximity inputs.
	Digital Outputs	Total of 8 digital outputs can be wired and used for position dependent switching or other general purposes.
	Registration inputs	Each axis has a registration input that can be used to record the current position of the encoder feedback signals in hardware for use within the software enviroment
	Serial Communications	RS-232C
Connection to PC (Motion Perfect Software)		

## Motion Perfect Software

Model	<b>Motion Perfect</b>	
Supported MC Units	C200HW-MC402-E, R88A-MCW151-E, R88A-MCW151-DRT-E	
Applicable computer	Windows 95/98/2000/NT4.0	
Functions	Programming and debugging software tool. Test and moitoring functions including a 4-channel software oscilloscope.	

## Ordering Information

### Motion Controller Unit

Name	Model
4 Axes Advanced Motion Controller	C200HW-MC402-E

### Sigma-II Series Servo Drive Cables

Description	Model
Servodrive connecting Cable, 1 Axis. (It is required 1 cable for each Servo drive)	1 m R88A-CMUK001J3-E2

### Serial cable

Name	Model
Programing cable.	2 m R88A-CCM002P4-E

### Computer Software

Specifications	Model
Motion Perfect Software	MOTION TOOLS CD

### Terminal Block and Cables to Motion controller unit

Description	Model
Terminal Block for MC402 unit	- R88A-TC04-E
PLC Unit Control Cable (I/O signals)	1 m R88A-CMX001S-E
PLC Unit Control Cable (Axes control)	1 m R88A-CMX001J1-E

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

CS1W-MCH71 - MECHATROLINK-II

# Motion Control Unit

## Multi-axes Motion Control over high-speed MECHATROLINK-II

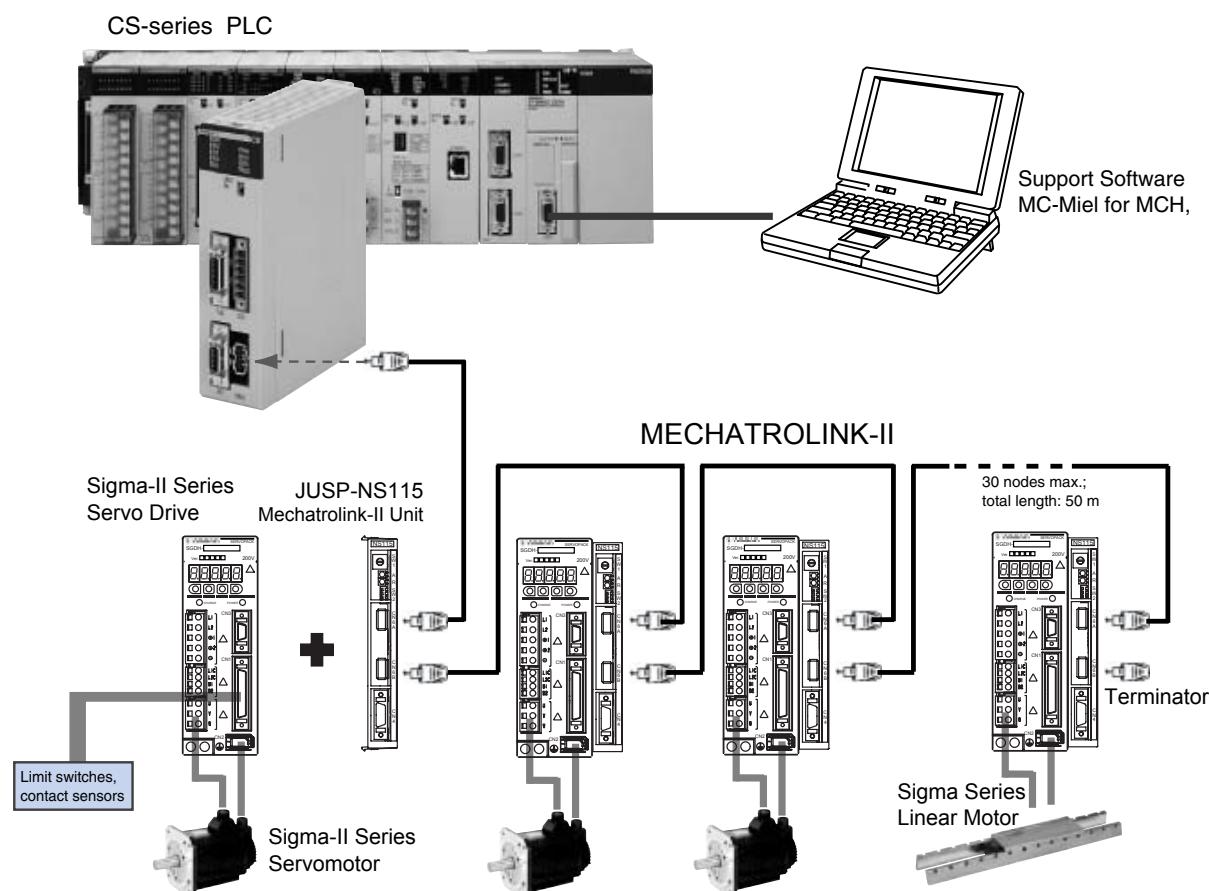
- Up to 30 axes controlled with minimum wiring
- High-speed bus MECHATROLINK-II is specially designed for Motion Control
- Supports Position, speed and Torque control
- Electronic CAM profiles and axes synchronization
- Hardware registration input for every axis
- Program control commands, like Multi-task programming and branching commands, and various arithmetic operations for maximum program efficiency
- Access to the complete system from one point



## Function

Multi-axes control is made easy by freely combining control axes. Up to 32 axes can be used, including 30 physical axes and two virtual axes, and each axis can be set individually. Position Control, synchronized control (electronic gear, electronic Cam, follow-up), speed control, and torque control are all supported, enabling a wide range of applications. By using the high-speed servo communications MECHATROLINK-II, motion programs, system parameters, system data, and servo drive parameters can be set and read from the software tool.

## System Configuration



## Specifications

### Motion Control Unit

Model	CS1W-MCH71	
Classification	CS-series CPU Bus unit	
Applicable PLCs	CS-series, new version (CS1□-CPU□□H)	
Backplanes on which MC Unit can be mounted	CPU Backplane or CS-series Expansion I/O Backplane	
Control Method	MECHATROLINK-II (Position, Speed and Torque control )	
Controlled devices	Sigma-II series Servo Drives (ver. 38 or later) with MECHATROLINK-II Interface and various I/O Units.	
Programming language	BASIC type motion control language	
Controlled axes	32 max, including 30 physical or virtual axes and 2 virtual axes	
Operating modes	RUN Mode, CPU Mode, Tool Mode/System (depending on Tool)	
Automatic/Manual Mode	Automatic Mode: Mode for executing programs in the Unit Manual Mode: Mode for executing commands from the CPU Unit (via allocated words)	
Minimum setting unit	1, 0.1, 0.01, 0.001, 0.0001 (Unit: mm, inch, degree, pulse)	
Maximum command value	-2,147,483,648 to 2,147,483,647 pulses (32 bits with sign); infinite axis feed mode supported. Example: 16,384 pulses/rev after multiplication, a minimum setting unit of 0.001 mm and 1 mm/rev would result in -1,310,720,000 to 1,310,719,999 command units.	
Control functions by command from CPU Unit	Servo lock/unlock Jogging Origin search Absolute origin setting Machine lock Single block	Locks and unlocks the servo driver.
		Executes continuous feeding for each axis independently at the speed system parameter times the override.
		Determines the machine origin in the direction set in the system parameters. Can be executed with an absolute encoder.
		Sets the origin for when an absolute encoder is used. (Offset value: 32 bits [pulses] with sign)
		Stops the output of move commands to axes.
		Executes motion programs one block at a time.
Control functions by motion program	Positioning (PTP) Linear interpolation Circular interpolation Other functions	Executes positioning independently for each axis at a specified speed or the speed system parameter. (Simultaneous specification: Up to eight axes/block, Simultaneous execution: Up to 32 blocks/Unit)
		Executes linear interpolation for up to eight axes at a time at the specified interpolation feed speed. (Simultaneous specification: Up to eight axes/block, Simultaneous execution: Up to 32 blocks/system)
		Executes circular interpolation for two axes in either clockwise or counterclockwise at the specified interpolation feed speed. Helical circular interpolation is also possible with single-axis linear interpolation added. (Simultaneous specification: Two or three axes/block, Simultaneous execution: Up to 16 blocks/system)
		Origin searches, interrupt feeding, timed positioning, traverse positioning, independent electronic CAM, synchronized electronic CAM, link operation, electronic gear, follow-up synchronization, speed reference, torque reference
Acceleration/deceleration curve, acceleration/deceleration time	Trapezoidal or S-curve, 60,000 ms max. (S-curve: Constant 30,000 ms max.)	
External I/O	One port for MECHATROLINK-II Servo communications, one deceleration stop input, two general inputs, two general outputs	
Feed rate	Rapid, interpolation feed rate: 1 to 2,147,483,647 (command units/min)	
Override	0.00% to 327.67% (setting unit: 0.01%; Can be set for each axis or task.)	
Motion programs	Number of tasks, number of programs Program numbers Program capacity Data capacity Subroutine nesting Start Deceleration stop Block stop Single block	Up to 8 tasks and 256 programs/Unit (8 parallel branches per task max.)
		0000 to 0499 for main program; 0500 to 0999 for subroutine
		In motion program conversion, 8,000 blocks/Unit max. (2 Mbytes); number of blocks: 800
		Position data: 10,240 points/Unit; Cam data: 32 max.; 16,000 points/Unit
		Five levels max.
		Programs in other tasks can be started from a program.
		Decelerates to a stop regardless of the block.
		Decelerates to a stop after the block being executed is ended.
Data exchange with CPU Unit	Words allocated to Unit in CIO Area Words allocated to Unit in DM Area Any area (bits) Any area (data) Any area (data)	Uses one unit number (25 words). Used for Unit and tasks: 11 to 25 words (depending on the number of tasks)
		Uses one unit number (100 words). Used for Unit and tasks: 32 to 74 words (depending on the number of tasks)
		Axes: 0 to 64 words (depending on the maximum axis number used)
		Axes: 0 to 128 words (depending on the maximum axis number used)
		General I/O: 0 to 1,280 words (depending on the settings)
Saving programs and data	Memory Card backup (in CPU Unit, 100,000 times max.)	
Self-diagnostic functions	Watchdog, RAM check, etc.	
Error detection functions	Deceleration stop inputs, unit number errors, CPU errors, software limit errors, etc.	
Error log function	Read by IORD instruction from CPU Unit.	
Support Software	Microsoft Windows 2000 or NT 4.0 (Processor: Pentium, 100 MHz min., with at least 64 MB of memory)	
External power supply voltage	24 V DC (21.6 to 26.4 V DC)	
Internal current consumption	0.8 A or less for 5 V DC; 0.3 A or less for 24 V DC	
Weight (not including connectors)	300 g max.	

**Note:** 1. Take the following factors into account when mounting Motion Control Units under a single CPU Unit:

- The maximum number of CPU Bus Units that can be allocated words in the CPU Unit
- The capacity of the Power Supply Unit on each CPU Rack or Expansion I/O Rack and the current consumption of the Units mounted on the Rack (For details, refer to the Operation Manual for the CPU Unit.)

2. The required power supply must be provided by the user.

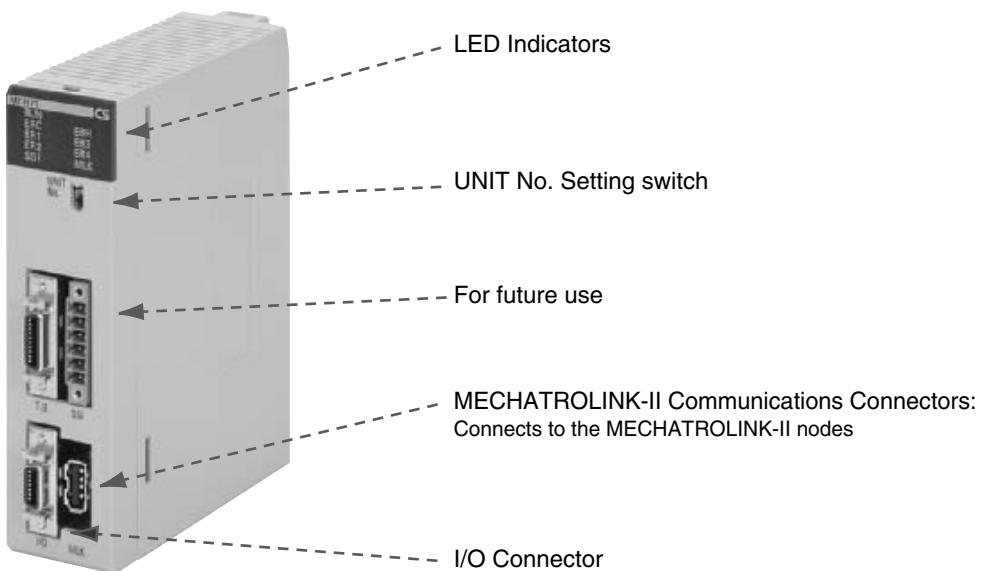
3. A Memory Card must be used to add system software functions to the CPU Unit in order to use IOWR and IORD.

**JUSP-NS115 - Mechatrolink-II Interface Unit**

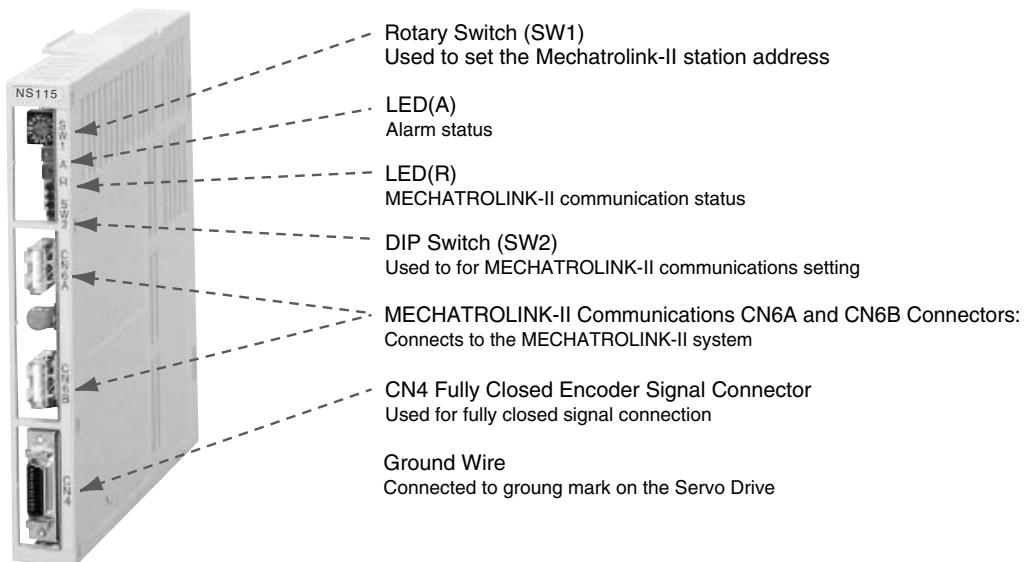
Item		Details
Type		JUSP-NS115
Applicable Servo Drive		SGDH-□□□E models (Version 38 or later)
Installation Method		Mounted on the SGDH Servo Drive side: CN10.
Basic Specifications	Power Supply Method	Supplied from the Servo Drive control power supply.
	Power Consumption	2 W
MECHATROLINK -II Communications	Baud Rate / Transmission Cycle	10 MHz / 500 ms or more. MECHATROLINK-II communications (4 MHz / 2 ms for MECHATROLINK-I communications)
Command Format	Operation Specification	Positioning using MECHATROLINK-I/II communications.
	Reference Input	MECHATROLINK-I/II communications Commands: Motion commands (position, speed), Interpolation commands, Parameter read/write, Monitor output
Position Control Functions	Acceleration/Deceleration Method	Linear first/second-step, asymmetric, exponential, S-curve
	Fully Closed Control	Position control with fully closed feedback is possible.
Fully Closed System Specifications	Fully Closed Encoder Pulse Output Form	5 V differential line-driver output (complies with EIA Standard RS-422A)
	Fully Closed Encoder Pulse Signal Form	90° Phase difference 2-phase differential pulse (phase A, phase B)
	Maximum Receivable Frequency for Servo Drive	1 Mpps
	Power Supply for Fully Closed Encoder	To be prepared by customer.
Input Signals	Signal Allocation Changes Possible	Forward/reverse run prohibited, Zero point return deceleration LS External latch signals 1, 2, 3 Forward/reverse torque control
Internal Functions	Position Data Latch Function	Position data latching is possible using phase C, and external signals 1, 2, 3
	Protection	Parameters damage, Parameter setting errors, Communications errors, WDT errors, Fully closed encoder detecting disconnection
	LED Indicators	A: Alarm R: MECHATROLINK-I/II Communicating

## Nomenclature

### CS1W-MCH71 - Motion Control Unit



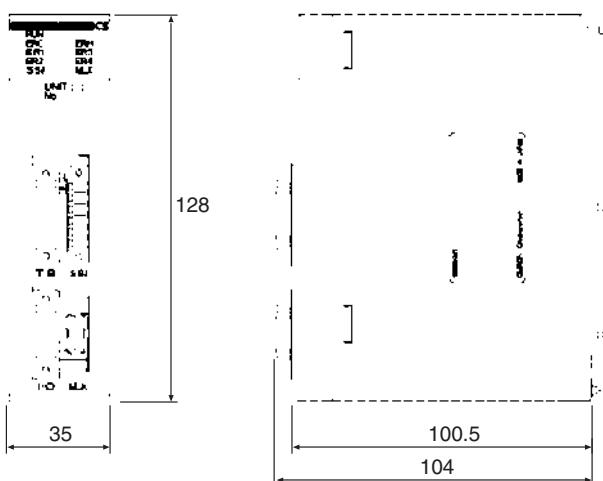
### JUSP-NS115 - Mechatrolink-II Interface Unit



## Dimensions

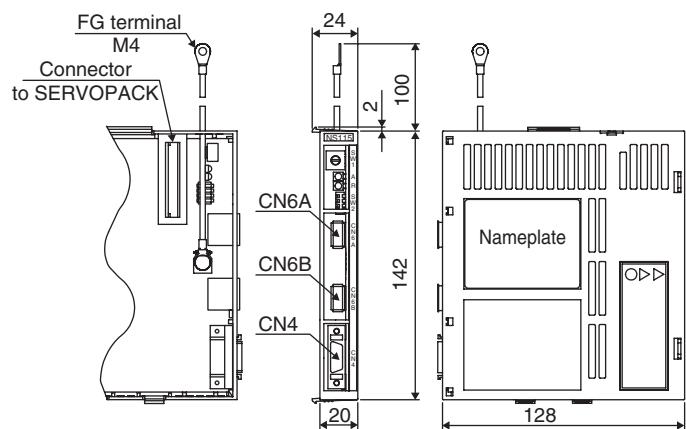
### CS1W-MCH71 - Motion Control Unit

Units: mm Approx. mass: 0.3 kg



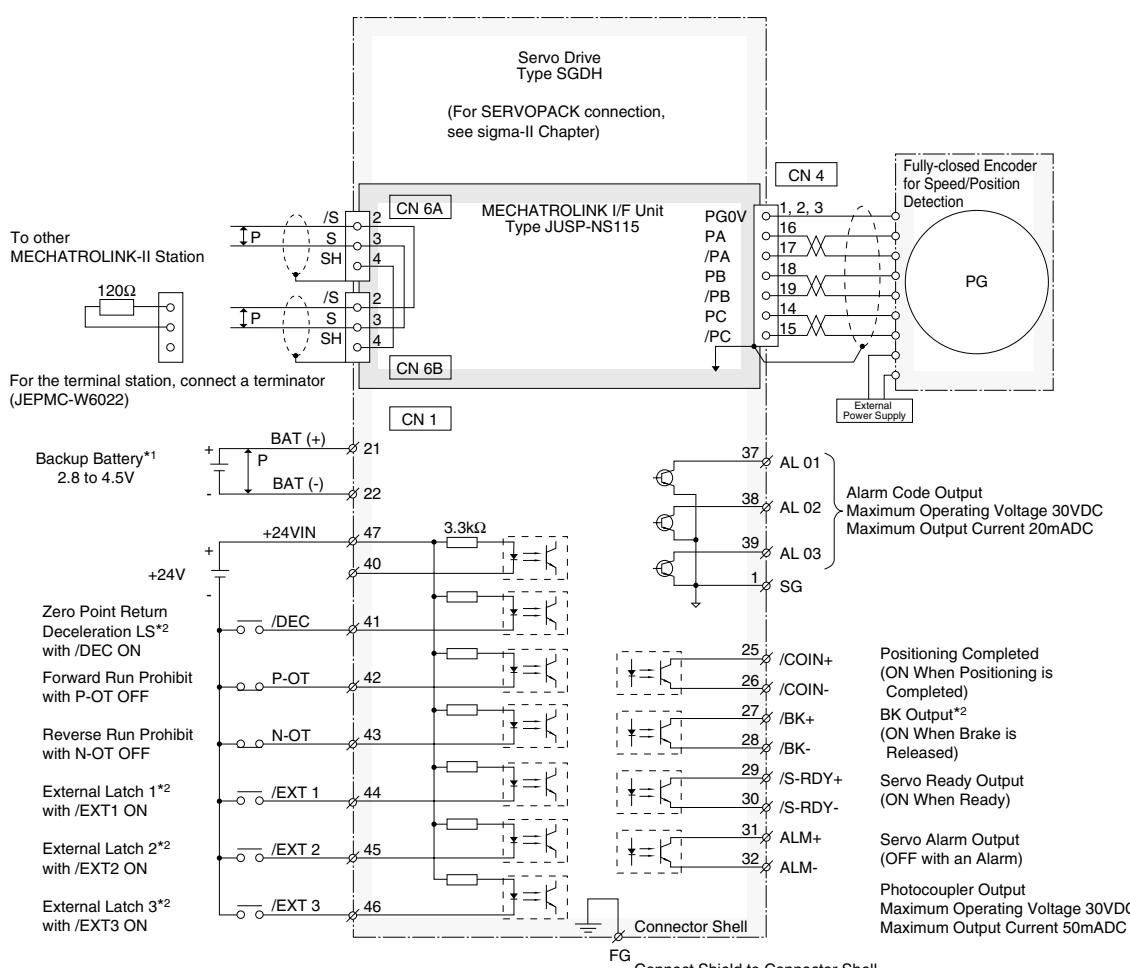
### JUSP-NS115 - Mechatrolink-II Interface Unit

Units: mm Approx. mass: 0.2 kg



## Installation

### Mechatrolink-II Interface connections



† P represents twisted-pair wires.      ◊ represents shield.

\*1 Connect when using an absolute encoder and when the battery is not connected to CN8.

\*2 Set the signal assignment with the user constants.

## Ordering Information

### Motion Controller

Name	Model
Mechatrolink-II Motion Control Unit	CS1W-MCH71

### Mechatrolink-II related devices

Name	Remarks	Model
Mechatrolink-II Interface Unit	For Sigma-II series Servo drives. (Firmware version 38 or later)	JUSP-NS115
Mechatrolink-II Terminator	Terminating resistor	JEPMC-W6022
Mechatrolink-II Cables	0.5 meter 1 meter 3 meters 5 meters 10 meters 20 meters 30 meters	JEPMC-W6003-A5 JEPMC-W6003-01 JEPMC-W6003-03 JEPMC-W6003-05 JEPMC-W6003-10 JEPMC-W6003-20 JEPMC-W6003-30
24V DC I/O Module	64 Inputs, 64 Outputs	JEPMC-IO2310
Counter Module	Reversible counters, 2 channels	JEPMC-PL2900
Pulse Output Module	Pulse train positioning, 2 channels	JEPMC-PL2910
Mechatrolink-II Repeater	When 17 or more axes are connected to the Mechatrolink-II the repeater is required	JEPMC-REP2000

### Computer Software

Specifications	Model
MC-Miel for MCH	MOTION TOOLS CD

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

JUSP-NS300

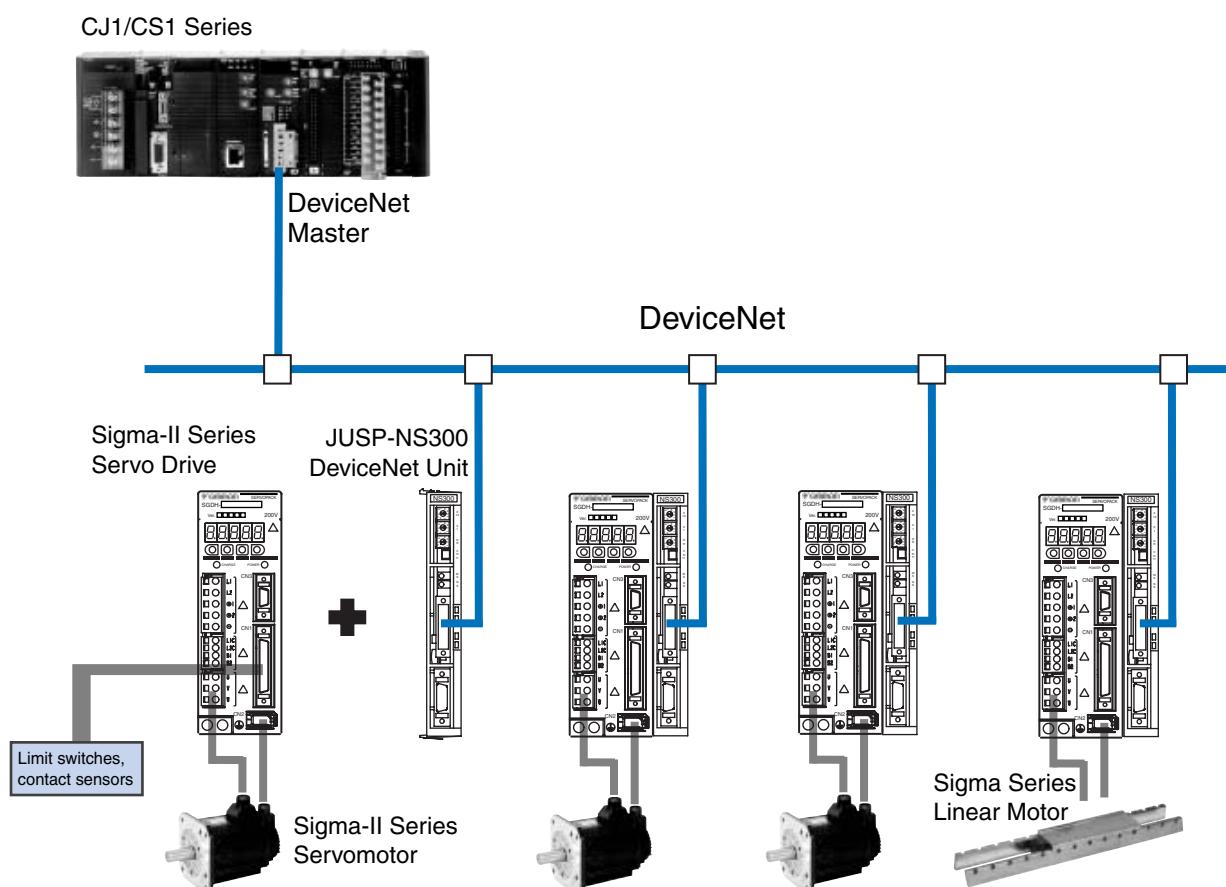
# DeviceNet Unit

## DeviceNet connectivity with positioning functionality.

- Connects directly to the Sigma-II Series Drive
- Simplifies distributed control and information management
- No programming languages are required.
- Various positioning functions including Point-to-point mode (with multi-step speed positioning available) and Station number mode (indexing function)
- All parameters are set and maintained by a PLC or PC.
- Up to 63 Servos can be connected to the DeviceNet Network
- Supports Polling I/O and Explicit Messages



## System Configuration



## Specifications

### JUSP-NS300 - DeviceNet Interface Unit

Item	Details	
Type	JUSP-NS300	
Applicable Servo Drive	All SGDH-□□□E models	
Installation Method	Mounted on the SGDH Servo Drive side: CN10.	
Basic Specifications	Power Supply Method	Supplied from the Servo Drive control power supply.
	Power Consumption	1.3 W
DeviceNet Communications	Baud Rate Setting	Select from 125 kbps, 250 kbps, or 500 kbps using a rotary switch.
	Node Address Setting	Select the address from 0 to 63 using the rotary switches.
Command Format	Operation Specifications	Positioning using DeviceNet communications.
	Reference Input	DeviceNet communications Commands: Motion commands (position, speed), and Parameter read/write
Position Control Functions	Acceleration/ Deceleration Method	Linear first/second-step, asymmetric, exponential, S-curve
	Fully-closed Control	Possible
Input Signals	Fixed Allocation to Servo Drive CN1 Connector	Forward/reverse run prohibited, Zero point return deceleration LS, Zero point signal, External positioning signal
	NS300 Unit	Emergency stop signal
Output Signals	Servo Drive CN1 Connector*	Servo alarm, Brake interlock, Servo ready, Positioning completion
	NS300 Unit	P1, P2 (area signals)
Internal Functions	Position Data Latch Function	Position data latching is possible using phase C, zero point signals, and external signals.
	Protection	Parameters damage, Parameter setting errors, Communications errors, etc.
	LED Indicators	MS: Module Status NS: Network Status

Note: \*The allocation of the output signals for brake interlock, servo ready, or positioning completion can be changed using parameter settings.

### Transmission Specifications

Item	Specifications				
Communication Format	Multi-drop, T-branch (1:N)				
Transmission Speed (kbps)	500, 250, 125kbps				
Transmission Media	5-wire cables				
Transmission Distance	Speed	Max. network length	Branch length	Total branch length	
	500 kbps	100m or less	6m or less	39m or less	
	250 kbps	250m or less		78m or less	
	125 kbps	500m or less		156m or less	
Number of Nodes	Up to 64 units				
Error Control	SRS error, node address double checking				

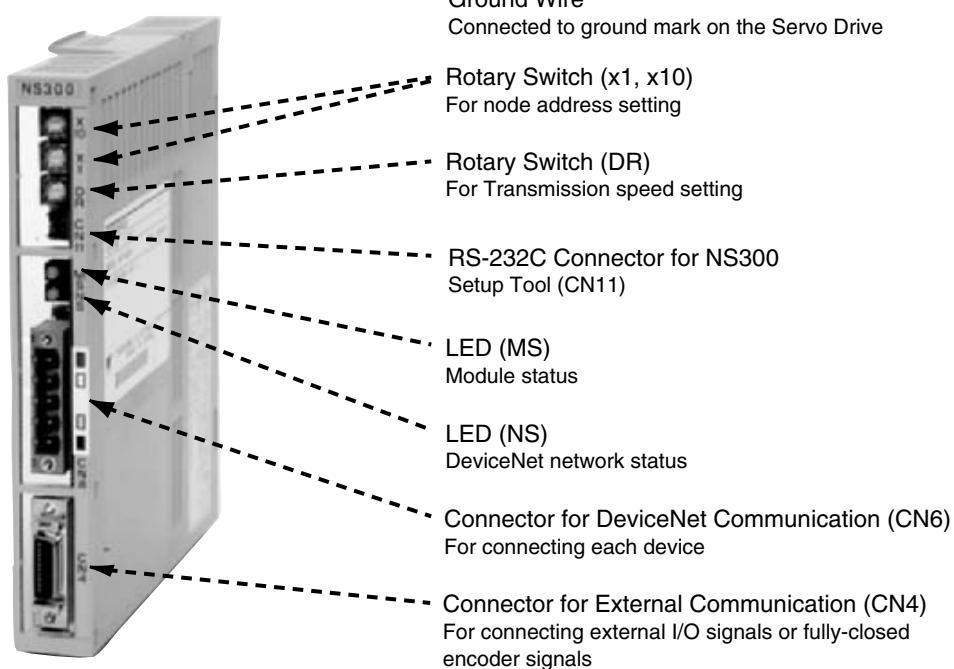
### Cable

Item	Cable	
	Thick	Thin
Loss of Signal	Little	Much
Transmission Distance	Long	Short
Advantage/Disadvantage	Hard (not easy to bend)	oft (easy to bend)

The maximum network lengths differ in accordance with the cable type as shown below.

Transmission Speed ikbpsj	Max. Network Length (m)	
	Thick Cable	Thin Cable
500	100	100
250	250	100
125	500	100

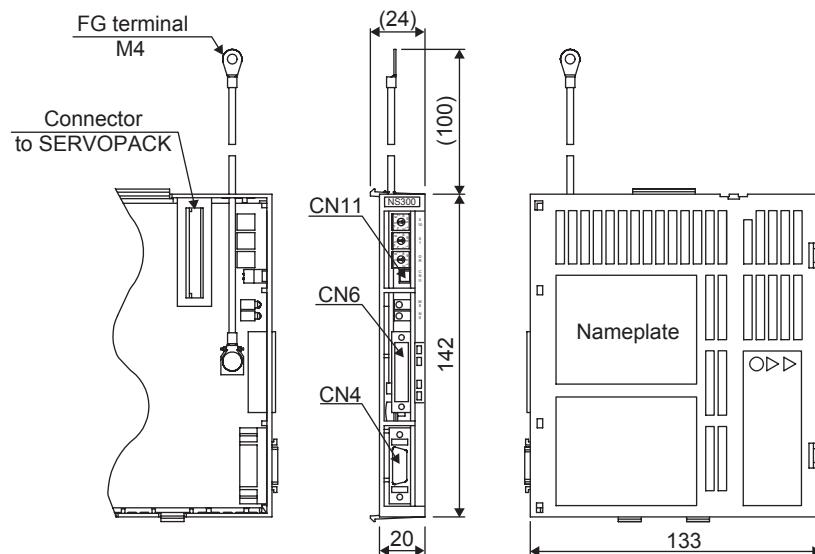
## Nomenclature



## Dimensions

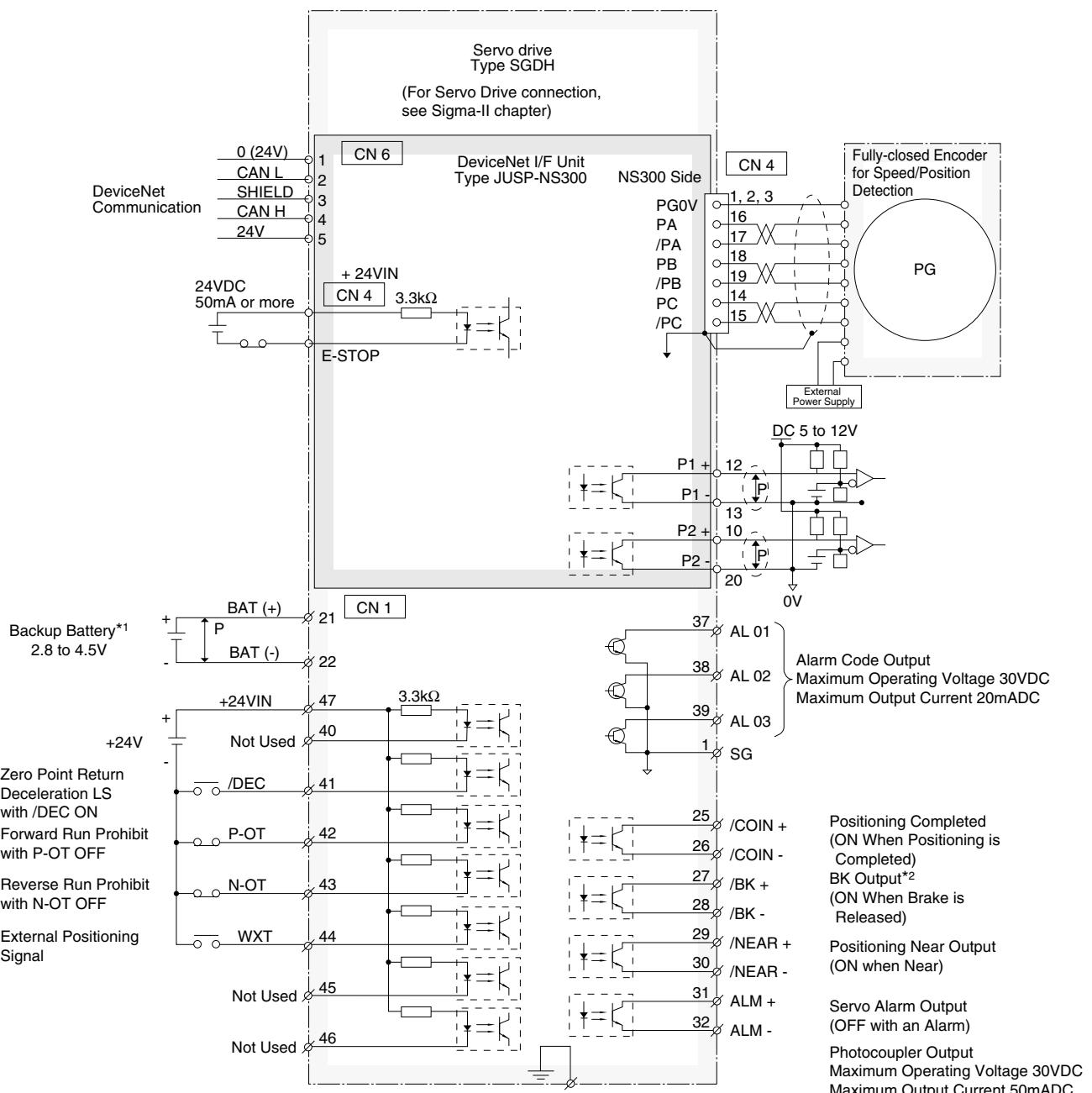
### JUSP-NS300 - DeviceNet Interface Unit

Units: mm      Approx. mass: 0.2 kg



## Installation

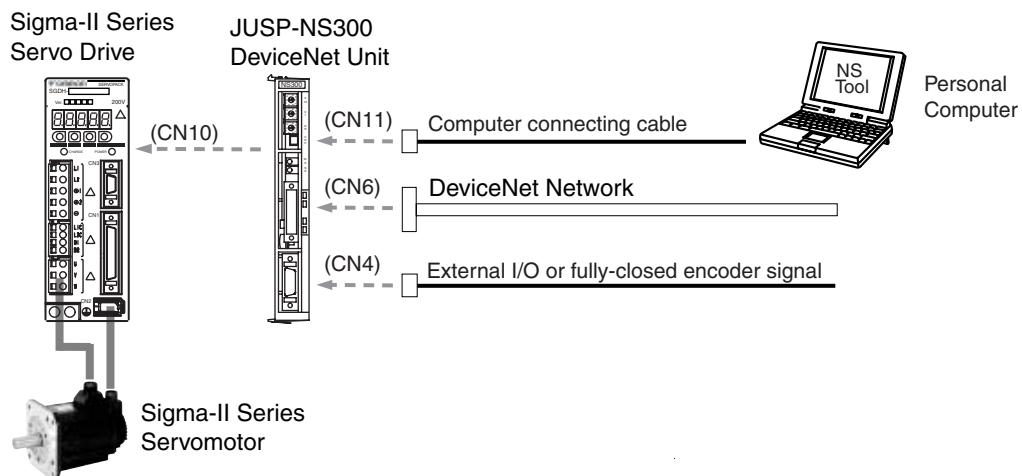
## Standard Connections



**Note:** Connect the ground cable of the field bus I/F unit to the ground connector of the Servo Drive.

## Ordering Information

### System Configuration



### DeviceNet Interface Unit

Name	Model
DeviceNet Interface unit with point to point positioning functionality	JUSP-NS300

### Serial Cable (for CN11)

Name	Model
Computer Connecting Cable	2m R88A-CCW002P4

### Connectors

Name	Model
Conector for CN4. For connecting external I/O signals or fully-closed encoder signals	R88A-CNU01R or DE9406973
Conector for CN6. DeviceNet Connector with retaining screws	XW4B-05C1-H1-D
Conector for CN6. DeviceNet Multi-Branching Connector with retaining screws	XW4B-05C4-TF-D
Conector for CN6. DeviceNet Multi-Branching Connector (without retaining screws)	XW4B-05C4-T-D

**Note:** For a complete view of DeviceNet network accessories, refer to Automation Systems catalogue or contact your Omron representative.

### Computer Software

Name	Model
NS Tool	MOTION TOOLS CD
ESD file	

### Servo System

**Note:** Refer to the Servo Systems section for more information

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.  
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

JUSP-NS500

# PROFIBUS-DP Unit

## PROFIBUS-DP connectivity with positioning functionality.

- Connects directly to the Sigma-II Series Drive
- Simplifies distributed control and information management
- No programming languages are required.
- Various positioning functions including Point-to-point mode (with multi-step speed positioning available) and Station number mode (indexing function)
- All parameters are set and maintained by a PLC or PC.
- Up to 126 Servos can be connected to the PROFIBUS-DP Network

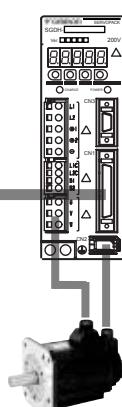


## System Configuration

PROFIBUS-DP Master



PROFIBUS-DP

Sigma-II Series  
Servo DriveJUSP-NS500  
PROFIBUS-DP UnitLimit switches,  
contact sensorsSigma-II Series  
ServomotorSigma Series  
Linear Motor

## Specifications

### JUSP-NS500 - PROFIBUS-DP Interface Unit

Item	Details	
Type	JUSP-NS500	
Applicable Servo Drive	All SGDH-□□□E models	
Installation Method	Mounted on the SGDH Servo Drive side: CN10.	
Basic Specifications	Power Supply Method	Supplied from the Servo Drive control power supply.
	Power Consumption	1.3 W
PROFIBUS-DP Communications	Baud Rate Setting	The baud rate is automatically set by the Master between 9.6 kbps and 12 Mbps.
	Station Address Setting	Select the address from 0 to 7D (0 to 125) using the rotary switches.
Command Format	Operation Specifications	Positioning using PROFIBUS-DP communications
	Reference Input	PROFIBUS-DP communications Commands: Motion commands (position, speed), Parameter read/write
Position Control Functions	Acceleration/ Deceleration Method	Linear first/second-step, asymmetric, exponential, S-curve
	Fully-closed Control	Possible
Input Signals	Fixed Allocation to SERVOPACK CN1 Connector	Forward/reverse run prohibited, Zero point return deceleration LS, Zero point signal, External positioning signal
	NS500 Unit	Emergency stop signal
Output Signals	Servo Drive CN1 Connector*	Servo alarm, Brake interlock, Servo ready, Positioning completion
	NS500 Unit	P1, P2 (area signals)
Internal Functions	Position Data Latch Function	Position data latching is possible using phase C, zero point signals, and external signals.
	Protection	Parameters damage, Parameter setting errors, Communications errors, etc.
	LED Indicators	ERR: Module Error COMM: Communications Status

**Note:** \*The allocation of the output signals for brake interlock, servo ready, or positioning completion can be changed using parameter settings.

### Transmission Specifications

Item	Specifications								
Communication Format	Conforms to PROFIBUS-DP								
Transmission Speed (kbps)	9.6	19.2	93.75	187.5	500	1500	12000		
Transmission Distance (m)	1200		1000	400	200	100			
Transmission Media	STP Cable								
Number of Stations	32 stations (Can be extended to 126 stations using repeater.)								

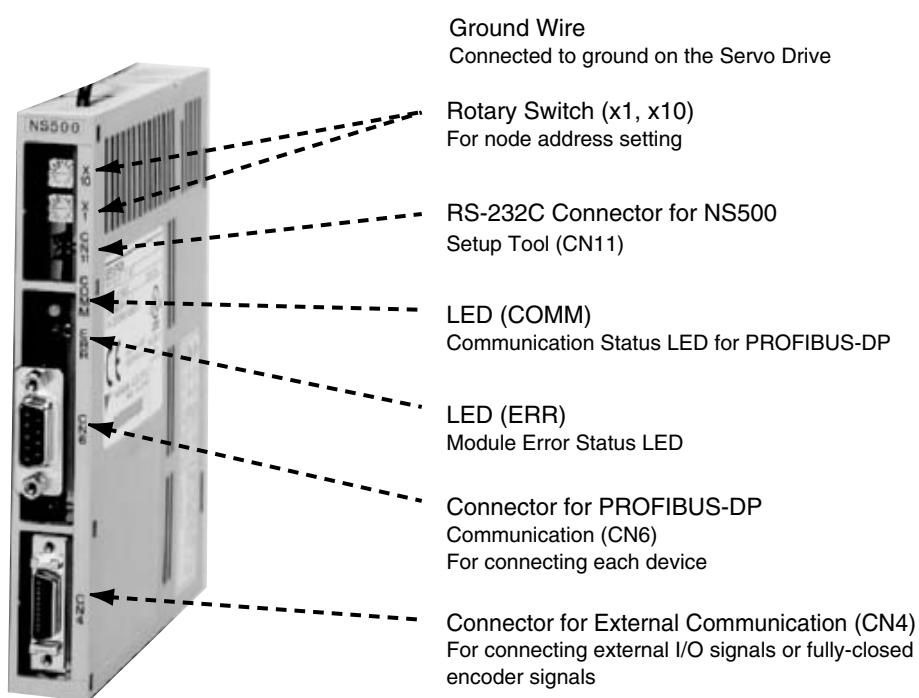
### Cable

Item	Specifications
Cable Type Impedance	Shielded twisted-pair wire Type A 135 to 165 Ω
Capacity	< 30 pf/m
Loop Resistance	110Ω/km
Wire Gage	0.64 mm
Conductor Area	> 0.34 mm <sup>2</sup>

### Connector

9-pin D-sub connectors are used.

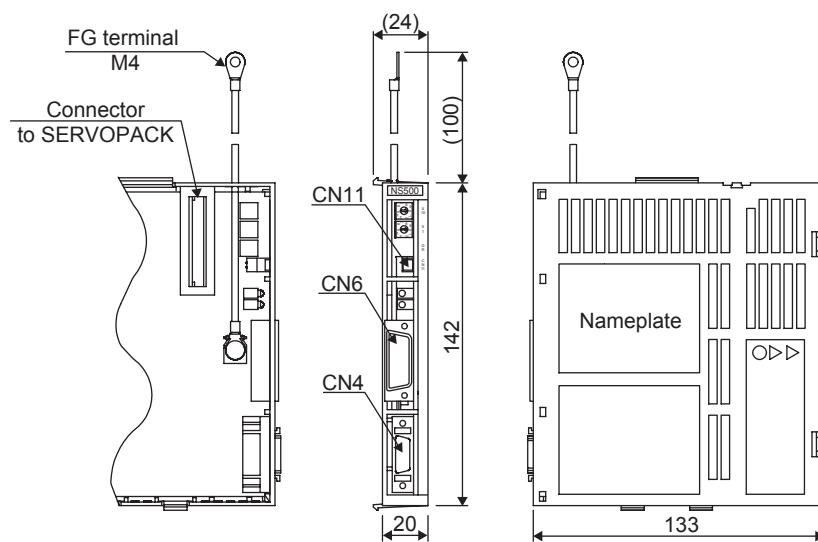
## Nomenclature



## Dimensions

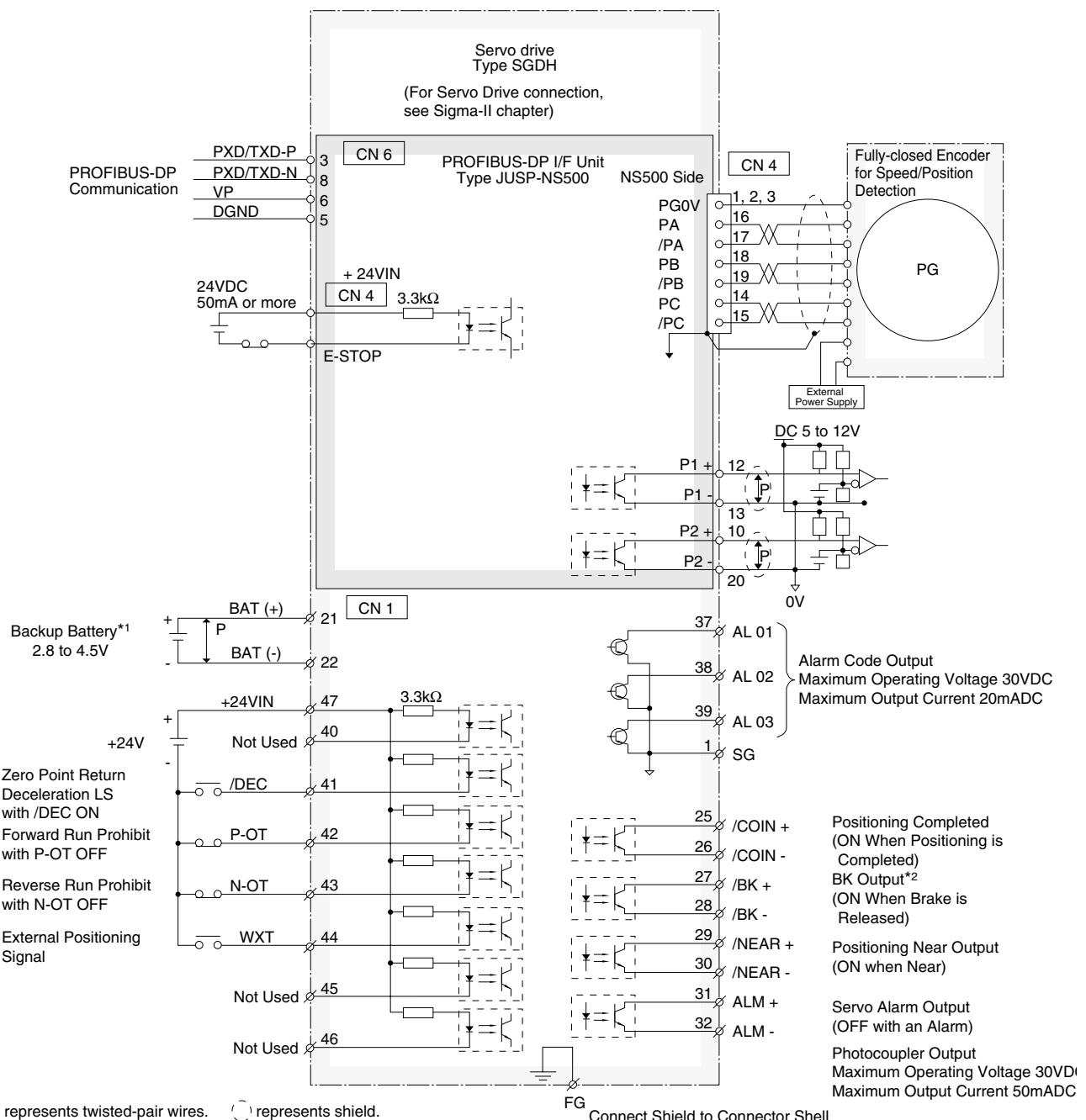
### JUSP-NS500 - PROFIBUS-DP Interface Unit

Units: mm      Approx. mass: 0.2 kg



## Installation

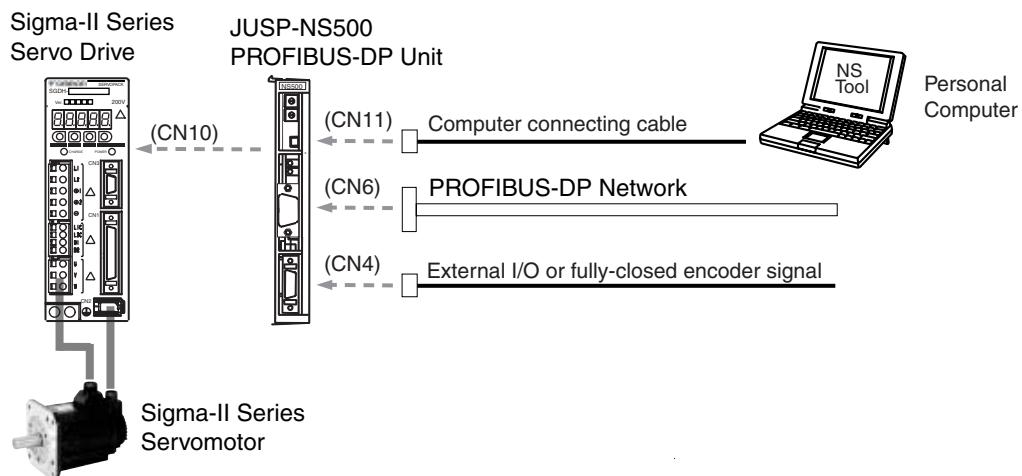
## Standard Connections



**Note:** Connect the ground cable of the field bus I/F unit to the ground connector of the Servo Drive.

## Ordering Information

### System Configuration



### Profibus-DP Interface Unit

Name	Model
PROFIBUS_DP Interface unit with point to point positioning functionality	JUSP-NS500

### Serial Cable (for CN11)

Name	Model
Computer Connecting Cable	2m R88A-CCW002P4

### Connectors

Name	Model
Connector for CN4. For connecting external I/O signals or fully-closed encoder signals	R88A-CNU01R or DE9406973

### Computer Software

Name	Model
NS Tool	MOTION TOOLS CD
GSD file	

### Servo System

**Note:** Refer to the Servo Systems section for more information

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.  
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

JUSP-NS600

# Indexer Unit

## Smart and Simple positioning solution.

- No programming languages are required. Connects directly to the Sigma-II Series Drive
- Allows serial network control and Discrete I/O control
- Servo Axis set-up, actuation and monitoring
- 128 indexing programmed moves
- Refined methods and functions for smart control like, Program tables or Position and speed tables
- Up to 16 Servos can be connected via serial Network
- With SigmaWin+ the system can be easily configured



## System Configuration

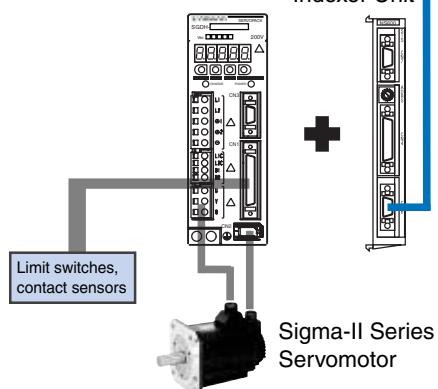
### Using Serial Communications

Host Controller



Controls 16 axes through RS-485/RS-422

Sigma-II Series Servo Drive + JUSP-NS600 Indexer Unit



### Using Digital I/Os

PLC

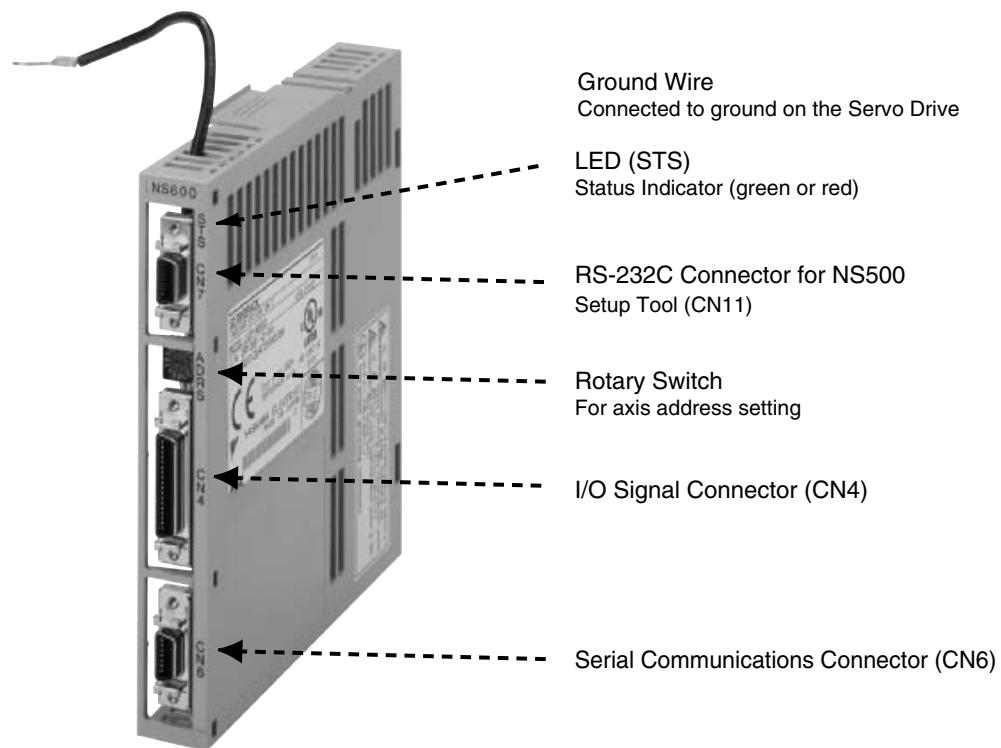


## Specifications

### JUSP-NS600 - Indexer Unit

Item			Details
Type			JUSP-NS600
Applicable Servo Drive			All SGDH-□□□E SERVOPACKs
Installation Method			Mounted on the SGDH Servo Drive side: CN10.
Basic Specifications	Power Supply Method		Supplied from the Servo Drive control power supply
	Power Consumption		2.6 W
Control Specifications	Program Table		Program table positioning by designating the starting step by the contact input (Maximum 128 steps)
	Serial Communications		Serial commands in ASCII codes Communications specifications: RS422 / RS485 (Maximum 50 m (164.0 ft)) RS232C (Maximum 3 m (9.84 ft)) Connection: Multi-drop method (Maximum 16 axes) Baud rate: 9600, 19200, 38400bps
	Command Table		Positioning by designating the command table by the contact input (Maximum 128 points)
	Zero-Point Return		3 types
Other Functions			External positioning, JOG speed table operation (Maximum 16 speeds)
I/O Signals	Input	Servo Drive	S-ON (Servo ON) P-OT (Forward Run Prohibited), N-OT (Reverse Run Prohibited) DEC (Zero-Point Return Deceleration LS) RTRG (External Positioning Signal)
		INDEXER Module	MODE0/1 (Mode signal) START/HOME (Start Signal / Zero-point Return Execution) PGMRES/JOGP (Program Reset / Motor Forward Rotation) SEL0/JOGN (Program Starting Step Designation / Motor Reverse Rotation) SEL1 to SEL4 / JOG0 to JOG3 Program Starting Step Designation / JOG Speed Table Selection)
	Output	Servo Drive	ALM (Servo Alarm) WARN (Warning) BK (Brake Interlock) S-RDY (Servo Ready) ALO1, ALO2, ALO3 (Alarm Codes)
		INDEXER Module	INPOSITION (Positioning Completed) POUT0 to POUT4 (Programable Outputs)

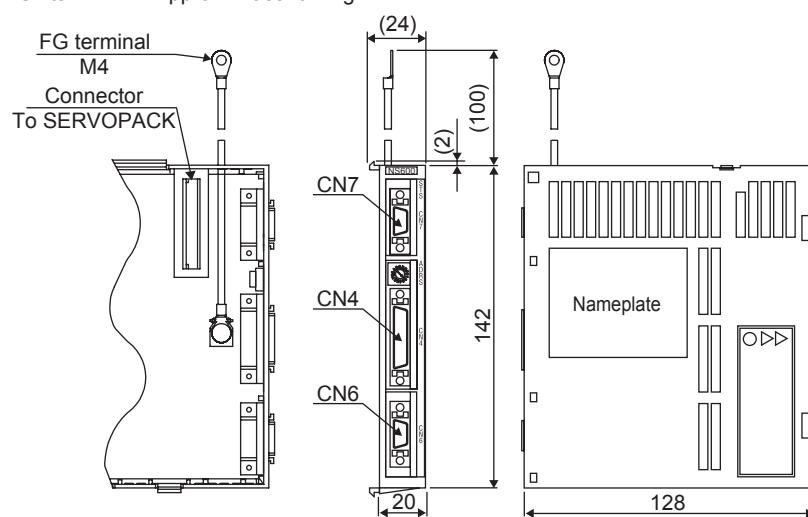
## Nomenclature



## Dimensions

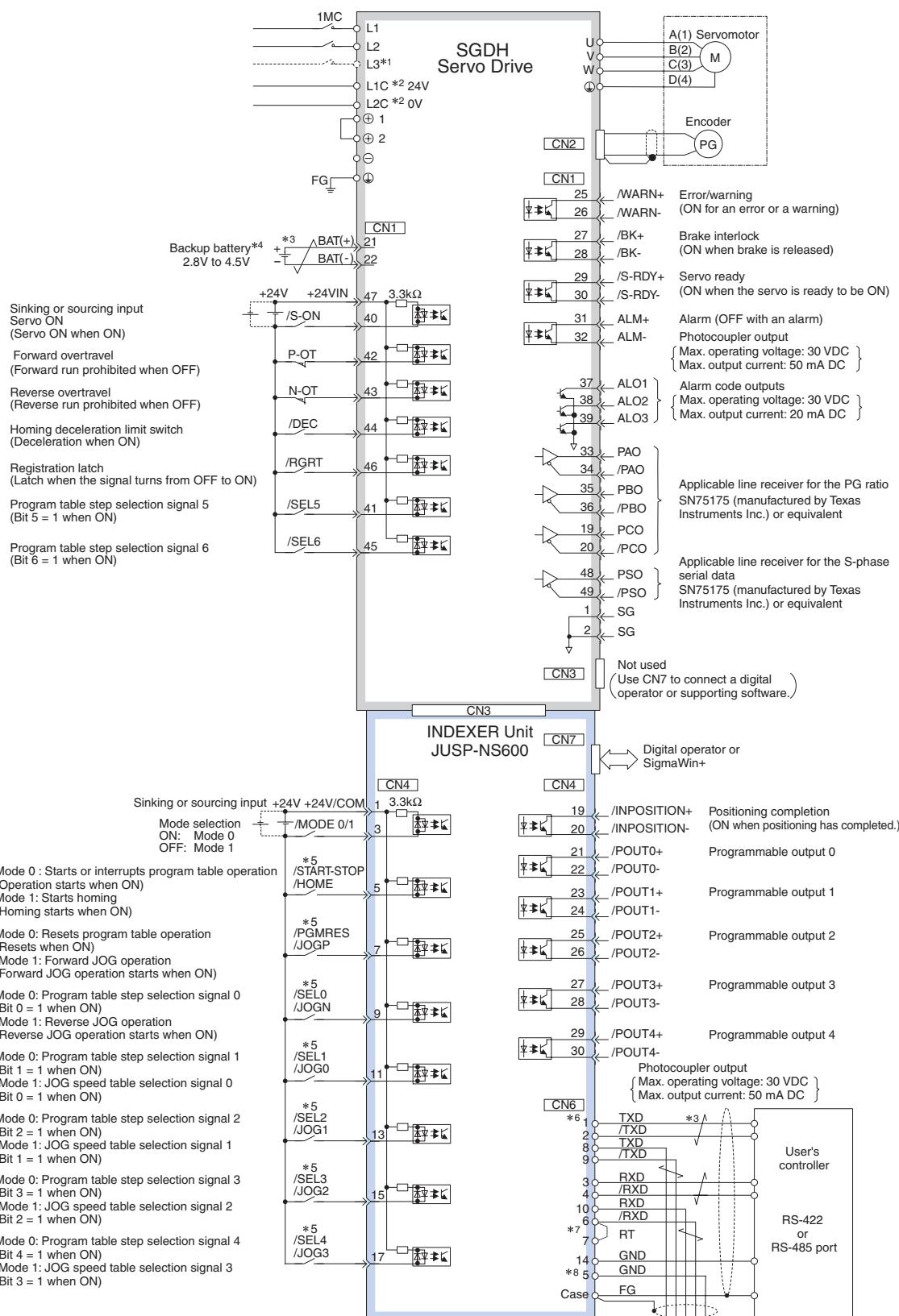
### JUSP-NS600 - Indexer Unit

Units: mm      Approx. mass: 0.2 kg



## Installation

## Standard Connections



\*1: The L3 terminal is for specifications requiring a three-phase power supply.

\*2: The control power supply for 400V-class Servo Drive is 24 VDC.

\*3: represents a twisted-pair cable.

\*4: Connect a backup battery when an absolute encoder is used and no battery is connected to CN8.

\*5: The signal on the first line is in Mode 0, and the signal on the second line is in Mode 1.

\*6: The wiring for CN6 shown here is full-duplex wiring for RS-422 or RS-485 communications.

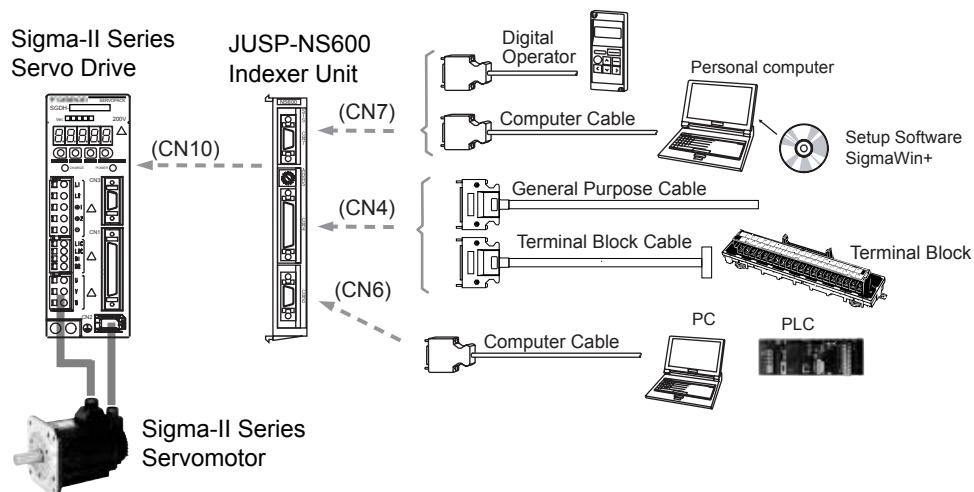
\*7: Short-circuit RT and /RXD at the last axis.

\*8: Grounding for pin No.5 is available for hardware version 04 or later. The grounding for pin No.14 is shared with the other pins for hardware version 03 or earlier. The hardware version is shown in the VER. column of the nameplate located on the side of the device (VER. ).

**Note:** Connect the ground cable of Indexer unit to the ground connector of the Servo Drive.

## Ordering Information

### System Configuration



### Indexer Option Unit

Name	Model
Indexer unit. Versatile Point to point Positioning	JUSP-NS600

### Serial Options (for CN7)

Name	Model
Computer Connecting Cable	2m R88A-CCW002P2 or JZSP-CMS02
Parameter Unit with 1m Cable	2m JUSP-OP02A-2 or R88A-PR02W

### Control Cables (for CN4)

Name	Model
Relay Terminal Block	XW2B-40F5-P
Relay Terminal Block Cables	1 m R88A-CTU001N 2 m R88A-CTU002N
General purpose I/O cable (with open end)	1 m FND-CCX001S 2 m FND-CCX002S

### Serial Cables (for CN6)

Name	Model
Computer Connecting Cable	2m R88A-CCW002P2 or JZSP-CMS02

### Connectors

Specification	Model
Connector for CN4	R88A-CNU01C
Connector for CN6 and CN7	R7A-CNA01R

### Computer Software

Specifications	Model
SigmaWin+	MOTION TOOLS CD

### Servo System

Note: Refer to the Servo Systems section for more information

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.  
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

R88A-MCW151-□

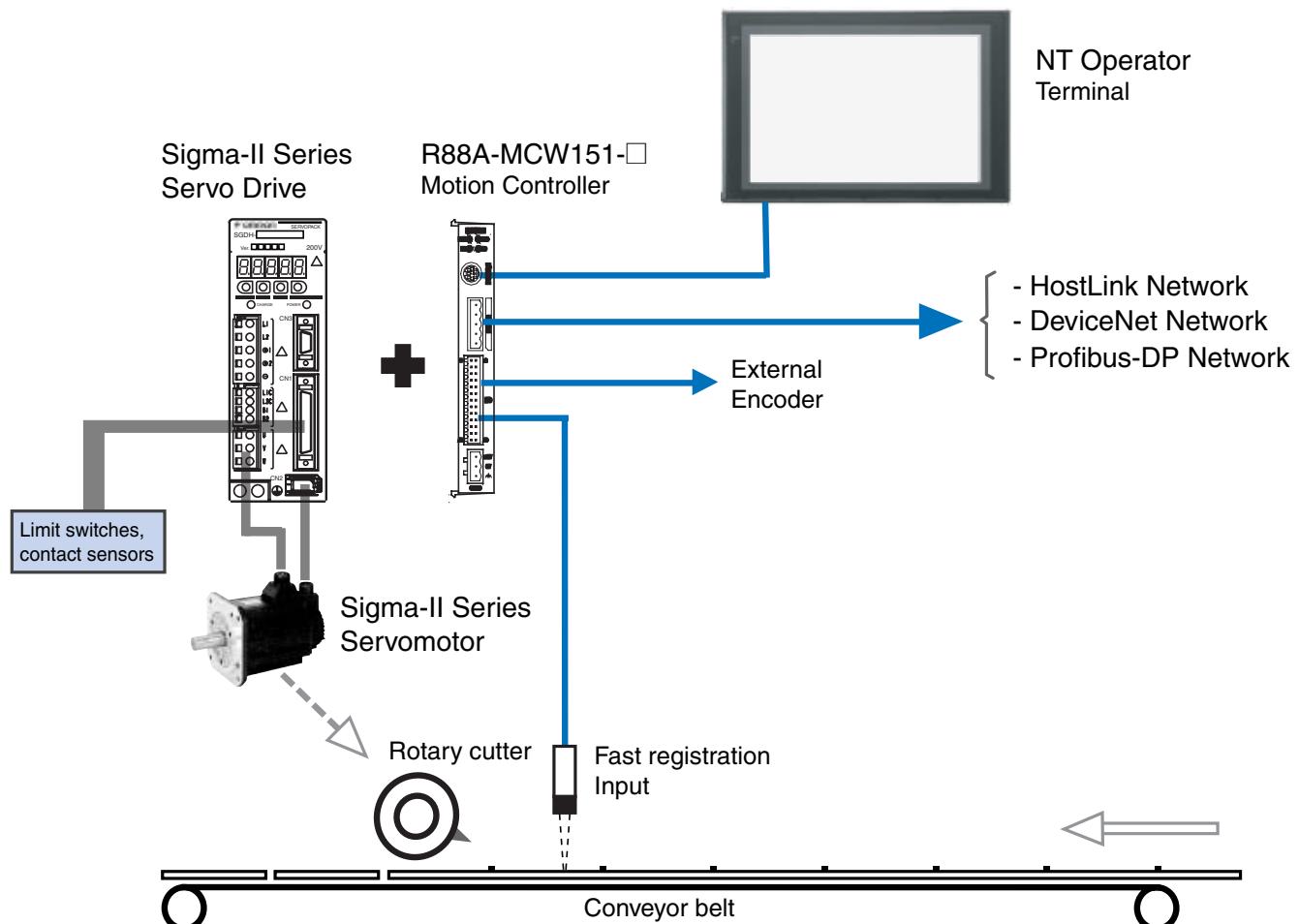
# 1.5 Axis Motion Controller

## Advanced Motion made perfectly intuitive.

- Connects directly to the Sigma-II Series Drive
- Controls 1 real axis, 1 virtual axis and a configurable third axis
- Provides an additional encoder input/output to the servo drive
- Simple to develop and modify using BASIC
- Built-in local I/O for easy operation
- Provides two additional hardware registration inputs to the Drive
- Electronic CAM profiles and axes synchronization
- Multi-tasking functionality
- Friendly and Powerful Windows-based Software
- Network connectivity via HostLink or DeviceNet
- Supports HMI connection without the need of a PLC



## System Configuration



## Specifications

### General Specifications

Item	Details	
Type	R88A-MCW151-E, R88A-MCW151-DRT-E	
Applicable Servo Drive	SGDH-□□□E models (software version 14 or later)	
Installation Method	Mounted on the SGDH Servo Drive side: CN10.	
Basic Specifications	Power Supply Method	24 VDC (Supplied from external power supply). 5 VDC (Supplied from the Servo Drive control power supply)
	Power Consumption	4.0 W
	External Dimensions	20 x 142 x 128 mm (H x W x D)
	Approx. Mass	200 g
	Current Consumption	170 mA for 24 VDC
	Output Power Supply	5 VDC, maximum 160 mA (to external encoder)
Environment	Operating Temperature	0 ... +55°C
	Storage Temperature	-20 ... +75°C
	Operating and Storage Humidity	90% RH max. (No condensation)
	Vibration Resistance	0.5G (4.9 m/s <sup>2</sup> )
	Shock Resistance	2G (19.6 m/s <sup>2</sup> )
Functional Specifications	Number of axes	- 1 Controlled Servo Drive axis - 1 Master axis, encoder output axis or virtual axis - 1 Virtual axis
	Servo Loop Cycle	Selectable to 0.5 ms or 1.0 ms.
	Registration inputs	2x MCW151 Unit for Encoder input Axis 1x Sigma-II Servo Drive Axis
	Measurement Units	User definable
Programming	Programming Language	BASIC
	Number of tasks	Up to 3 tasks running simultaneously plus the Command Line task
	Max. number of programs	14
	Available memory for user programs	128KB
	Data storage capacity	251 (VR) + 8000 (Table)
	Saving Program Data, Motion Controller	Random Access Memory (RAM) and Flash memory backup.
Motion Control	Saving Program Data, Personal Computer	Motion Perfect software manages a backup on the hard disk of the personal computer.
	Speed Control	Inferred closed loop with PID, output speed and speed feed forward gains Speed reference (open loop) Possible torque limit operation
	Torque Control	Torque reference (open loop) Possible speed limit operation
	Control Switch	Speed / Torque control switching during operation
	Positioning Operations	Linear interpolation Circular interpolation CAM profile movement Electronic gearbox link Linked CAM profile movement Linked move for any two axes Adding axes
	Acceleration/deceleration curves	Trapezoidal or S-curve
Servo Drive Access	Motion Control	Speed Control Torque Control Position feedback Driver Enable Driver Print Registration
	Monitoring	Driver Alarm and Warning Status General Driver Status Driver Digital Input Driver Analogue Input Driver Limit Switches
	General Control	Driver Alarm Reset Driver Reset
	Parameter Access	Read and Write Pn parameters Read Un parameters
External I/O	Encoder Input	Line receiver input; maximum response frequency: 1500 kHz pulses (before multiplication) Pulse multiplication: x4
	Encoder Output	Line receive output; maximum frequency: 500 kHz pulses Internal counts to output pulse ratio: 64 : 1
	Digital Inputs	Total of 8 digital inputs can be wired and used for instance for limit switches, emergency stop and proximity inputs. Two inputs can be used for registration of the encoder input/output axis.
	Digital Outputs	Total of 6 digital outputs can be wired and used for position dependent switching or other general purposes.
	Registration inputs	Two registration inputs can be used (simultaneously) to capture the position in hardware.
Serial Communications	RS-232C	Port 0: Connection to PC (Motion Perfect Software) Port 1: Host Link Master protocol Host Link Slave protocol General-purpose

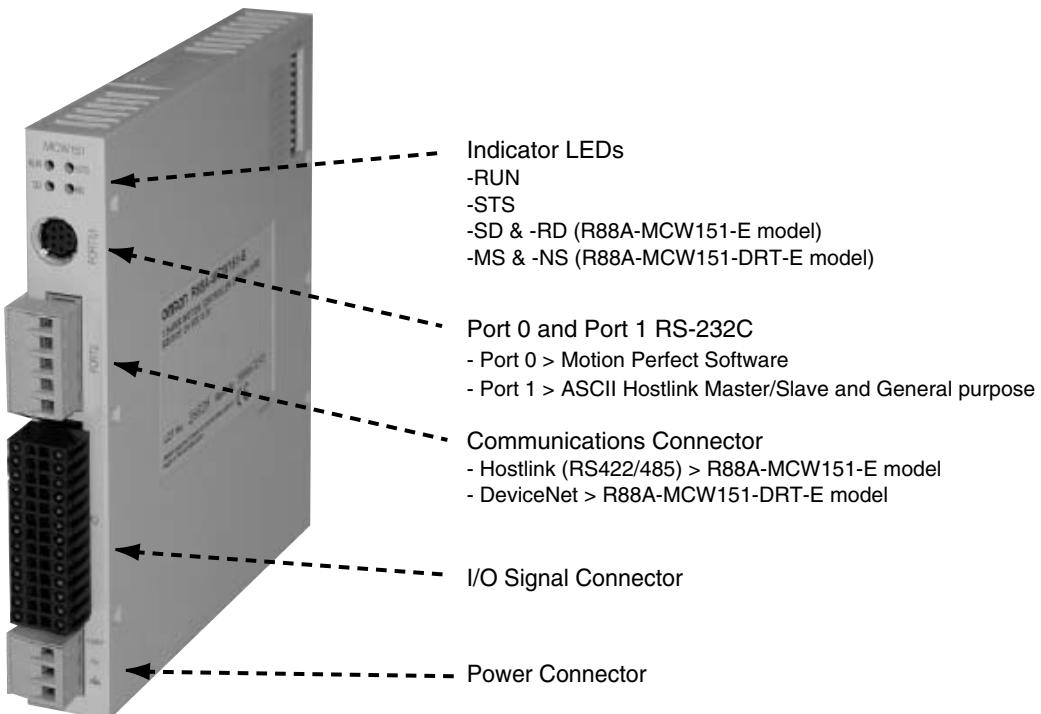
## RS-422A/485 Interface Specifications (R88A-MCW151-E only)

Item	Details	
Electrical characteristics	Conform to EIA RS-422A/485	
Synchronization	Start-stop synchronization (asynchronous)	
Baud rate	1200 / 2400 / 4800 / 9600 / 19200 / 38400 bps	
Transmission Format	Databit Length	7 or 8 bit
	Stop Bit	1 or 2 bit
	Parity Bit	Even/Odd/None
Transmission Mode	Point-to-multipoint (1:N)	
Transmission Protocol	RS-422A	Host Link Master Protocol, Host Link Slave Protocol, ASCII General-purpose
	RS-485	ASCII General-purpose
Galvanic Isolation	Yes	
Connector type	Phoenix MSTB 2.5/5-ST-5.08 (included in package).	
Communication buffers	254 bytes	
Flow control	None	
Terminator	Yes, internal 220 Ω selectable by DIP-switch SW2	
Cable length	500 m max.	

## DeviceNet Specifications ( R88A-MCW151-DRT-E only)

Item	Details
Communications Protocol	DeviceNet
Supported connections (communications)	Remote I/O Polling Messages Explicit Messages Both conform to DeviceNet specifications
Baud rate	500 kbps, 250 kbps, 125 kbps (switchable)
Communications media	Special 5-wire cables (2 signal lines, 2 power lines, 1 shield line)
Communications Distances	
500 kbps	Network length: 100 m max. (Thin Cable:100 m max.) Drop line length: 6 m max. Total drop line length: 39 m max.
250 kbps	Network length: 250 m max. (Thin Cable:100 m max.) Drop line length: 6 m max. Total drop line length: 78 m max.
125 kbps	Network length: 500 m max. (Thin Cable:100 m max.) Drop line length: 6 m max. Total drop line length: 156 m max.

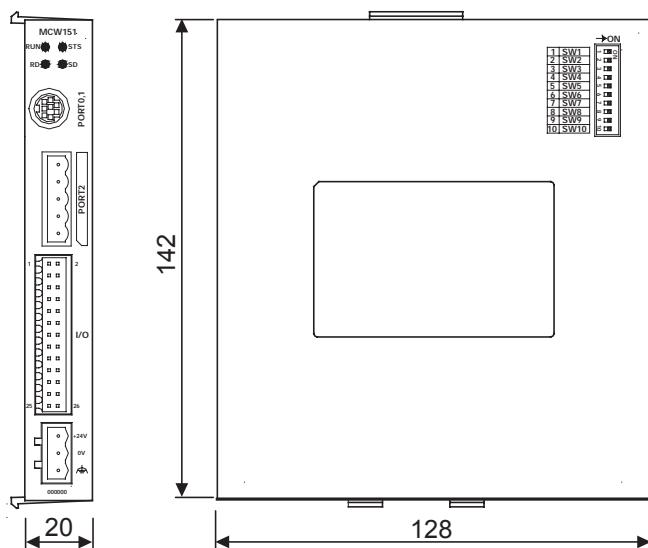
## Nomenclature



## Dimensions

### R88A-MCW151-(DRT)-E - 1.5 Axes Motion Controller Unit

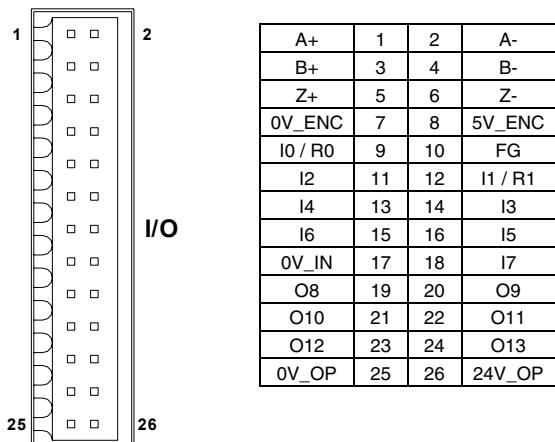
Units: mm      Approx. mass: 0.2 kg



## Installation

### I/O Connector

#### Connector pin arrangement

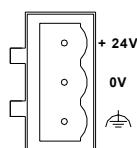


#### I/O Connector Pin Functions

Pin	Signal	
	Name	Function
1	A+	Encoder phase A+ (Input / Output)
2	A-	Encoder phase A- (Input / Output)
3	B+	Encoder phase B+ (Input / Output)
4	B-	Encoder phase B- (Input / Output)
5	Z+	Encoder phase Z+ (Input / Output)
6	Z-	Encoder phase Z- (Input / Output)
7	0V_ENC	Encoder 0V common
8	5V_ENC	Encoder 5V power supply output
9	I0 / R0	(Registration) Input 0
10	FG	Frame Ground
11	I2	Input 2
12	I1 / R1	(Registration) Input 1
13	I4	Input 4
14	I3	Input 3
15	I6	Input 6
16	I5	Input 5
17	0V_IN	Inputs 0V common
18	I7	Input 7
19	O8	Output 8
20	O9	Output 9
21	O10	Output 10
22	O11	Output 11
23	O12	Output 12
24	O13	Output 13
25	0V_OP	Outputs 0V common
26	24V_OP	Outputs 24V power supply input

## Power Connector

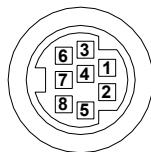
The Power Connector is used to connect the 24V power supply to the Controller Unit



Pin	Name	Function
1	+24 V	Power Supply 24V
2	0 V	Power Supply 0V
3	FG	Frame Ground

## RS-232C Connections (port 0 and port 1)

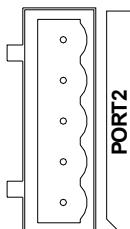
The Controller Unit has two serial RS-232C ports for communication with external devices.



PORT0,1

Pin	Symbol	Name	Port	Direction
1	-	Not used	-	
2	RS-1	Request to send	1	Output
3	SD-0	Send data	0	Output
4	SG-0	Signal ground	0	-
5	RD-0	Receive data	0	Input
6	SD-1	Send data	1	Output
7	SG-1	Signal ground	1	-
8	RD-1	Receive data	1	Input

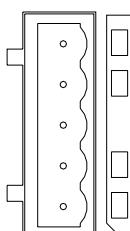
## RS-422A/485 Connections (R88A-MCW151-E only)



PORT2

Pin	Symbol	Name	Port	Direction
1	RD-	Receive data (-)	2	Input
2	RD+	Receive data (+)	2	Input
3	FG	Frame Ground	2	-
4	SD-	Send data (-)	2	Output
5	SD+	Send data (+)	2	Output

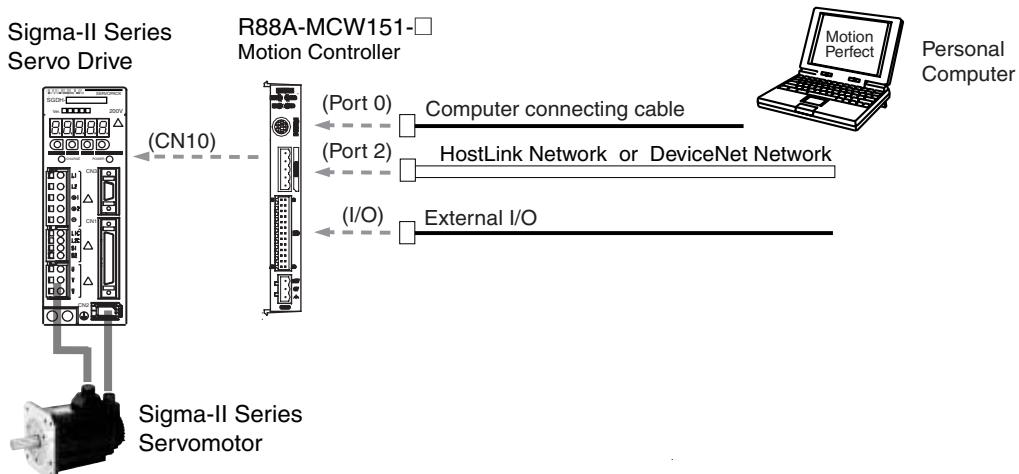
## DeviceNet Connections (R88A-MCW151-DRT-E only)



Pin	Symbol	Signal	Color of Cable
1	V+	Power line, positive voltage	Red
2	CAN-H	Communications line, high	White
3	Shield	Shield	-
4	CAN-L	Communications line, low	Blue
5	V-	Power line, negative voltage	Black

## Ordering Information

### System Configuration



### Motion Controller Unit

Name	Model
1.5 axis Advanced Motion Controller with Host Link Interface	R88A-MCW151-E
1.5 axis Advanced Motion Controller with DeviceNet Interface	R88A-MCW151-DRT-E

### Profibus Connectivity

Name	Model
Profibus-DP Module interface for R88A-MCW151-E motion controllers	PRT1-SCU11

### Serial cables (for Port 0, 1)

Name	Model
Programing cable, 2 m. (Port 0)	R88A-CCM002P4-E
Spliter cable, 1 m (Port 0 & 1). Combined with R88A-CCM002P4-E cable allows using Motion Perfect and a general purpose application.(e.g. terminal)	R88A-CCM001P5-E

### Connectors

Specification	Model
I/O Connector (Included in Package)	B2L 3.5/26 SN SW (Weidmüller)
Power Connector (Included in Package)	MSTB 2.5/3-ST-5.08 (Phoenix)
Port 2 Connector (Included in Package)	MSTB 2.5/5-ST-5.08 (Phoenix)

**Note:** For a complete view of DeviceNet network accessories, refer to Automation Systems catalogue or contact your Omron representative.

### Computer Software

Specifications	Model
Motion Perfect	MOTION TOOLS CD
EDS File	

### Servo System

**Note:** Refer to the Servo Systems section for more information

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

# AC Servo Systems

SmartStep Series	77
Sigma-II Series	95
Sigma-II Large Capacity	129
Sigma Linear Motors	143
XtraDrive	169



R7D-AP□, R7M-A□

# SmartStep Series

## A new concept in Servo Systems

### The Smart alternative to Stepper motors

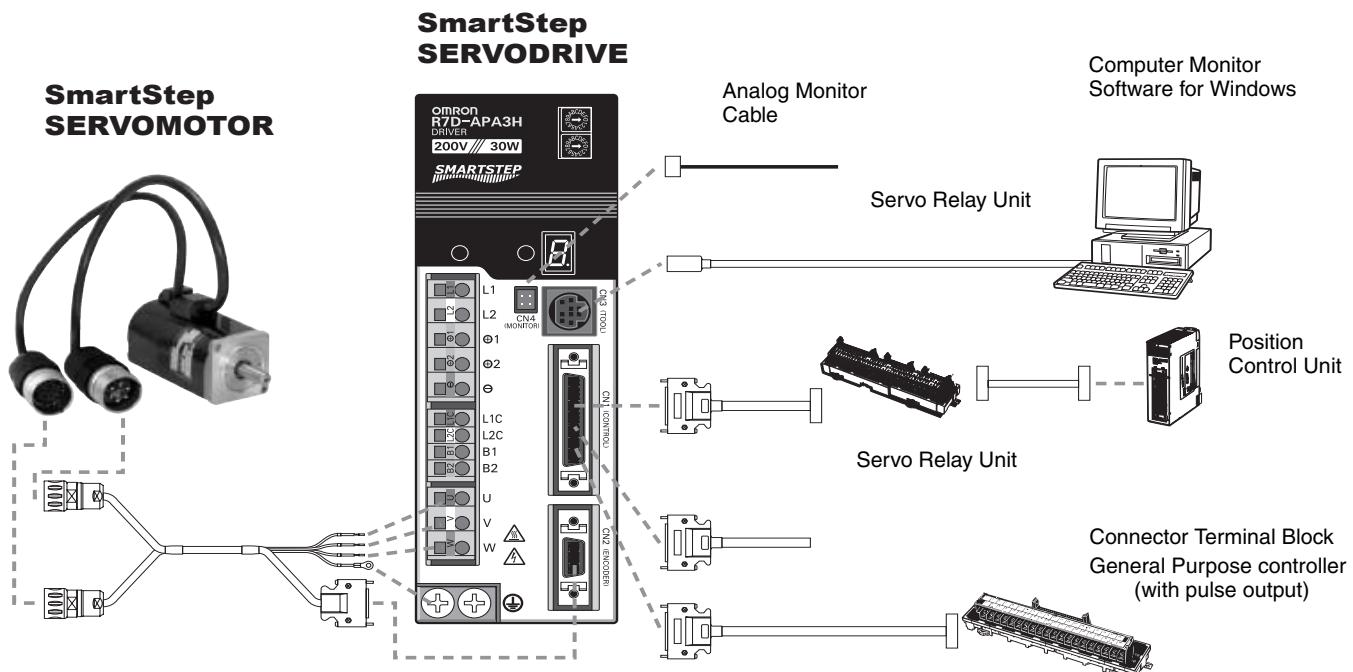
- Easy to setup, easy to operate. SmartStep is as easy to use as a stepper motor
- Front-panel switches make settings easy and eliminate the need for time-consuming parameter settings
- Auto-tuning On-line mode, dynamic brake setting, alarm display, high torque performance
- Easy to wire with prebuilt cables
- Oscilloscope available via SigmaWin tool
- Windows based Configuration and commissioning software

### Ratings

- 230VAC Single-phase 30 W to 750W (2.39 Nm)



## System Configuration



## Servomotor Specifications

### General Specifications

Item	Specification
Ambient operating temperature	0 to 40°C
Ambient operating humidity	20% to 80% (with no condensation)
Ambient storage temperature	-20 to 60°C
Ambient storage humidity	20% to 80% (with no condensation)
Storage/operating atmosphere	No corrosive gases.
Vibration resistance	10 to 2,500 Hz in X, Y, and Z directions with 0.2-mm double amplitude or acceleration of 24.5 m/s <sup>2</sup> max., whichever is smaller
Impact resistance	Acceleration 98 m/s <sup>2</sup> max., in a vertical direction, two times
Insulation resistance	Between power line terminals and FG: 10 MΩ min. (at 500 V DC)
Dielectric strength	Between power line terminals and FG: 1,500 V AC for 1 min at 50/60 Hz
Run position	Any direction
Insulation grade	Type B
Structure	Totally-enclosed self-cooling
Protective structure	IP55 for both the Cylindrical and Flat Servomotors
Vibration grade	V-15
Mounting method	Flange-mounting
International standards	Approval obtained for UL, cUL, and EN (EMC directive and low-voltage directive)

### Performance Specifications

#### Flat Servomotors

Item	R7M-AP10030	R7M-AP20030	R7M-AP40030	R7M-AP75030	
Rated output	100 W	200 W	400 W	750 W	
Rated torque	0.318 N·m	0.637 N·m	1.27 N·m	2.39 N·m	
Rated rotation speed	3,000 r/min	3,000 r/min	3,000 r/min	3,000 r/min	
Momentary maximum rotation speed	4,500 r/min	4,500 r/min	4,500 r/min	4,500 r/min	
Momentary maximum torque	0.96 N·m	1.91 N·m	3.82 N·m	7.1 N·m	
Rated current	0.89 A (rms)	2.0 A (rms)	2.6 A (rms)	4.1 A (rms)	
Momentary maximum current	2.8 A (rms)	6.0 A (rms)	8.0 A (rms)	13.9 A (rms)	
Rotor inertia	$6.5 \times 10^{-6}$ kg·m <sup>2</sup>	$2.09 \times 10^{-5}$ kg·m <sup>2</sup>	$3.47 \times 10^{-5}$ kg·m <sup>2</sup>	$2.11 \times 10^{-4}$ kg·m <sup>2</sup>	
Power rate	15.7 kW/s	19.4 kW/s	46.8 kW/s	26.9 kW/s	
Allowable radial load	78 N	245 N	245 N	392 N	
Allowable thrust load	49 N	68 N	68 N	147 N	
Weight	Without brake With brake	0.7 kg 0.9 kg	1.4 kg 1.9 kg	2.1 kg 2.6 kg	4.2 kg 5.7 kg
Encoder resolution	2,000 pulses/revolution for phase-A and phase-B, 1 pulse/revolution for phase-Z				
Radiation shield dimensions	t6 × 250 mm square			t12 × 300 mm square	
Brake Specifications	Brake inertia Excitation voltage	$3.1 \times 10^{-6}$ kg·m <sup>2</sup> 24 V DC ±10%	$1.52 \times 10^{-5}$ kg·m <sup>2</sup> 24 V DC ±10%	$1.52 \times 10^{-5}$ kg·m <sup>2</sup> $8.75 \times 10^{-5}$ kg·m <sup>2</sup>	
	Power consumption (at 20°C) Current consumption (at 20°C) Static friction torque Attraction time Release time Backlash Rating Insulation grade	7.5 W 0.31 A 0.4 N·m min. 60 ms max. 20 ms max. 1° Continuous Type F	7.6 W 0.32 A 0.9 N·m min. 40 ms max. 20 ms max. 1° Continuous Type F	8.2 W 0.34 A 1.9 N·m min. 60 ms max. 20 ms max. 1° Continuous Type F	
	Applicable Servo Driver (R7D-)	AP01H	AP02H	AP04H	AP08H

## Cylindrical Servomotors

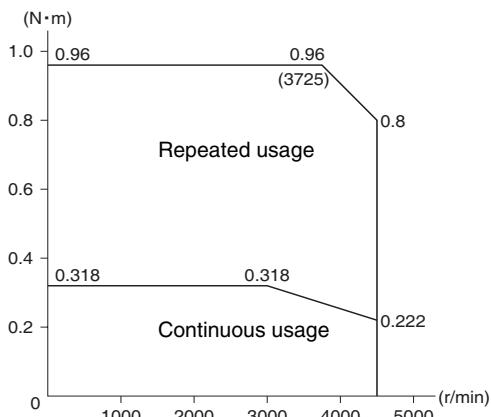
Item	R7M-A03030	R7M-A05030	R7M-A10030	R7M-A20030	R7M-A40030	R7M-A75030
Rated output	30 W	50 W	100 W	200 W	400 W	750 W
Rated torque	0.095 N·m	0.159 N·m	0.318 N·m	0.637 N·m	1.27 N·m	2.39 N·m
Rated rotation speed	3,000 r/min	3,000 r/min	3,000 r/min	3,000 r/min	3,000 r/min	3,000 r/min
Momentary maximum rotation speed	4,500 r/min	4,500 r/min	4,500 r/min	4,500 r/min	4,500 r/min	4,500 r/min
Momentary maximum torque	0.29 N·m	0.48 N·m	0.96 N·m	1.91 N·m	3.82 N·m	7.1 N·m
Rated current	0.42 A (rms)	0.6 A (rms)	0.87 A (rms)	2.0 A (rms)	2.6 A (rms)	4.4 A (rms)
Momentary maximum current	1.3 A (rms)	1.9 A (rms)	2.8 A (rms)	6.0 A (rms)	8.0 A (rms)	13.9 A (rms)
Rotor inertia	$1.7 \times 10^{-6}$ kg·m <sup>2</sup>	$2.2 \times 10^{-6}$ kg·m <sup>2</sup>	$3.6 \times 10^{-6}$ kg·m <sup>2</sup>	$1.19 \times 10^{-5}$ kg·m <sup>2</sup>	$1.87 \times 10^{-5}$ kg·m <sup>2</sup>	$6.67 \times 10^{-5}$ kg·m <sup>2</sup>
Power rate	5.31 kW/s	11.5 kW/s	28.1 kW/s	34.1 kW/s	86.3 kW/s	85.6 kW/s
Allowable radial load	68 N	68 N	78 N	245 N	245 N	392 N
Allowable thrust load	54 N	54 N	54 N	74 N	74 N	147 N
Weight	Without brake 0.3 kg With brake 0.6 kg	0.4 kg	0.5 kg	1.1 kg	1.7 kg	3.4 kg
Encoder resolution	2,000 pulses/revolution for phase-A and phase-B, 1 pulse/revolution for phase-Z					
Radiation shield dimensions	t6 × 250 mm square					
Brake Specifications	Brake inertia $0.85 \times 10^{-6}$ kg·m <sup>2</sup> Excitation voltage 24 V DC ±10% V	$0.85 \times 10^{-6}$ kg·m <sup>2</sup>	$0.85 \times 10^{-6}$ kg·m <sup>2</sup>	$0.85 \times 10^{-6}$ kg·m <sup>2</sup>	$6.4 \times 10^{-6}$ kg·m <sup>2</sup>	$6.4 \times 10^{-6}$ kg·m <sup>2</sup>
	Power consumption (at 20°C) 0.25 A	6 W	6 W	7 W	7 W	7.7 W
	Current consumption (at 20°C) 0.25 A	0.25 A	0.25 A	0.29 A	0.29 A	0.32 A
	Static friction torque 0.2 N·m min.	0.2 N·m min.	0.34 N·m min.	1.47 N·m min.	1.47 N·m min.	2.45 N·m min.
	Attraction time 30 ms max.	30 ms max.	30 ms max.	60 ms max.	60 ms max.	60 ms max.
	Release time 60 ms max.	60 ms max.	60 ms max.	20 ms max.	20 ms max.	20 ms max.
	Backlash 1°	1°	1°	1°	1°	1°
	Rating Continuous	Continuous	Continuous	Continuous	Continuous	Continuous
	Insulation grade Type F	Type F	Type F	Type F	Type F	Type F
Applicable Servo Driver (R7D-)	APA3H	APA5H	AP01H	AP02H	AP04H	AP08H

## Torque and Rotation Speed Characteristics

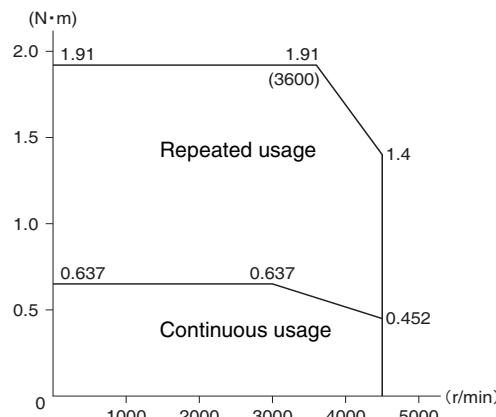
### Flat Servomotors

The following graphs show the characteristics with a 3-m standard cable and R7D-AP@H Servo Driver (200-V AC input)

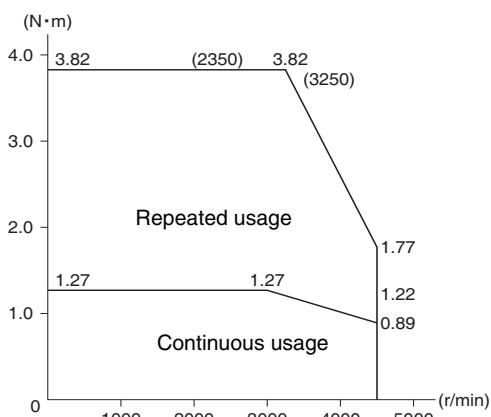
**R7M-AP10030 (100 W)**



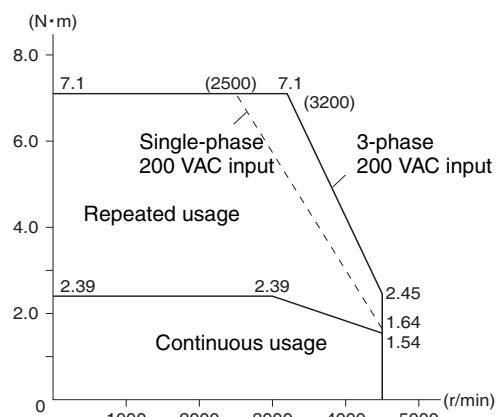
**R7M-AP20030 (200 W)**



**R7M-AP40030 (400 W)**



**R7M-AP75030 (750 W)**

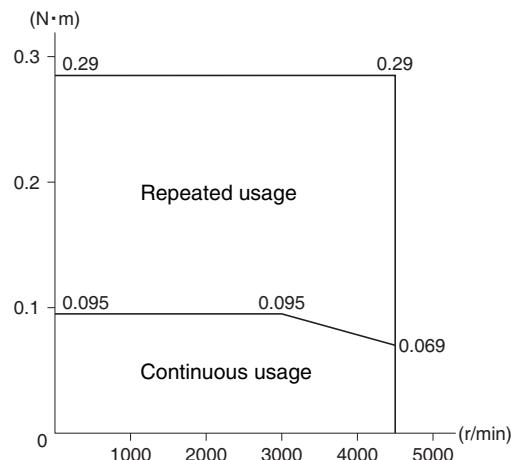


## Torque and Rotation Speed Characteristics

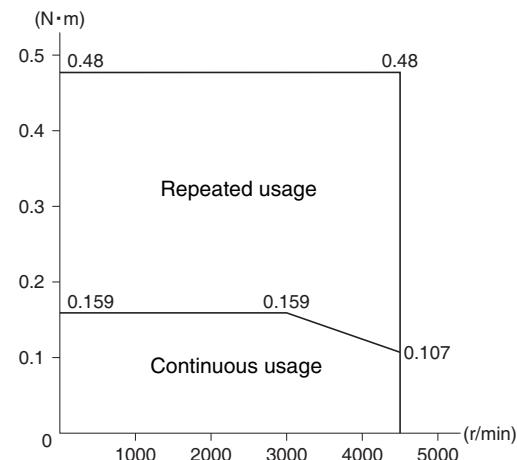
### Cylindrical Servomotors

The following graphs show the characteristics with a 3-m standard cable and an R7D-AP□H Servo Driver (200-V AC input.)

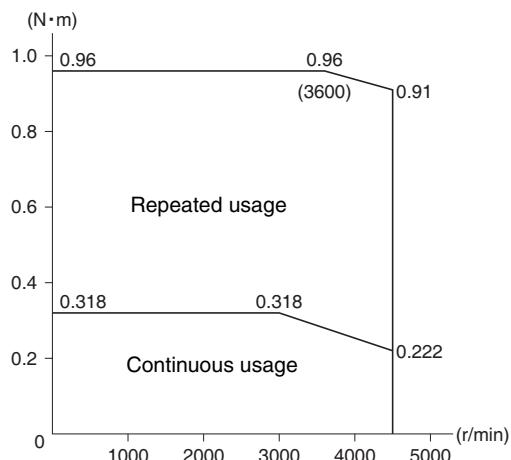
**R7M-A03030 (30 W)**



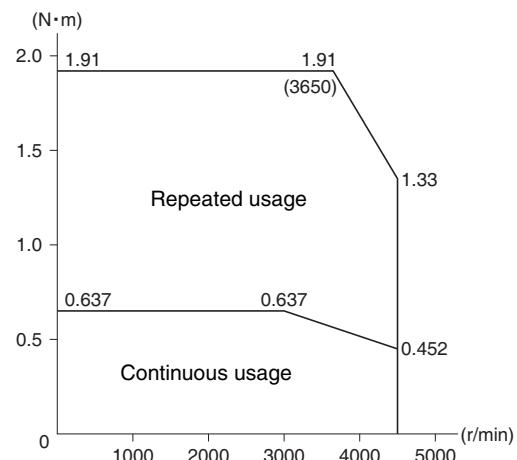
**R7M-A05030 (50 W)**



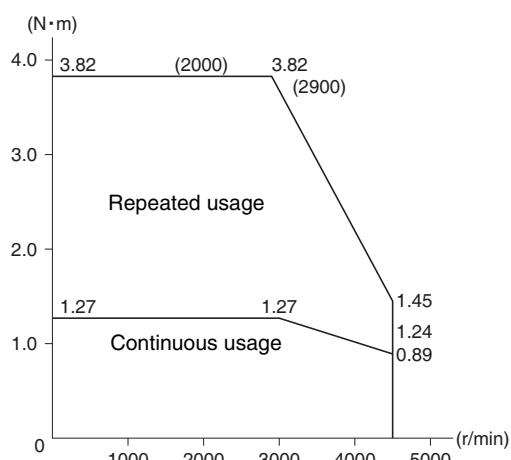
**R7M-A10030 (100 W)**



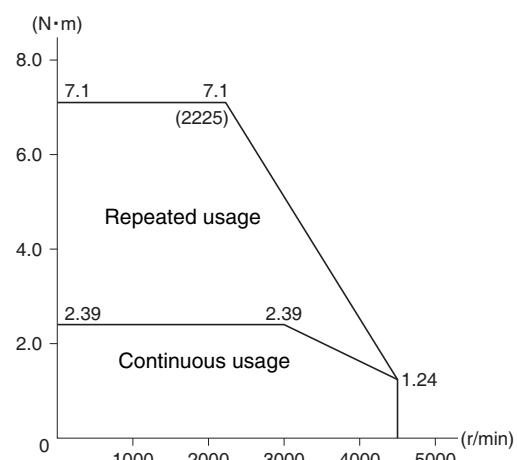
**R7M-A20030 (200 W)**



**R7M-A40030 (400 W)**



**R7M-A75030 (750 W)**



## Servo Drive Specifications

### General Specifications

Item	Specification
Ambient operating temperature	0 to 55°C
Ambient operating humidity	90% max. (with no condensation)
Ambient storage temperature	-20 to 85°C
Ambient storage humidity	90% max. (with no condensation)
Storage/operating atmosphere	No corrosive gases.
Vibration resistance	10 to 55 Hz in X, Y, and Z directions with 0.1-mm double amplitude or acceleration of 4.9 m/s <sup>2</sup> max., whichever is smaller
Impact resistance	Acceleration 19.6 m/s <sup>2</sup> max., in X, Y, and Z directions, three times
Insulation resistance	Between power line terminals and case: 0.5 MΩ min. (at 500 V DC)
Dielectric strength	Between power line terminals and case: 1,500 V AC for 1 min at 50/60 Hz Between each control signal and case: 500 V AC for 1 min
Protective structure	Built into panel (IP10).
International standards	Approval obtained for UL, cUL, and EN (EMC directive and low-voltage directive)

### Performance Specifications

Item	200 VAC Input Type					
	30 W	50 W	100 W	200 W	400 W	750 W
R7D-APA3H	R7D-APA5H	R7D-AP01H	R7D-AP02H	R7D-AP04H	R7D-AP08H	
Continuous output current (rms)	0.42	0.6	0.89	2.0	2.6	4.4
Momentary maximum output current (rms)	1.3	1.9	2.8	6.0	8.0	13.9
Control power supply	Single-phase 200/230 V AC (170 to 253 V) 50/60 Hz					
Main-circuit power supply	Single-phase 200/230 V AC (170 to 253 V) 50/60 Hz (Three-phase 200/230 V AC can be used with the 750-W model.)					
Control method	All-digital servo					
Speed feedback	2,000 pulses/revolution Incremental Encoder					
Inverter method	PWM method based on IGBT					
PWM frequency	11.7 kHz					
Weight	0.8	0.8	0.8	0.8	1.1	1.7
Compatible motor voltage	200 V					
Compatible motor capacity	30 W	50 W	100 W	200 W	400 W	750 W
Command pulse response	250 kHz					
Applicable Servomotor (R7M-)	A03030	A05030	A10030 AP10030	A20030 AP20030	A40030 AP40030	A75030 AP75030

### I/O Specifications

#### Terminal Specifications

Symbol	Name	Function	
L1 and L2 or L1, L2, and L3	Main-circuit Power Supply Terminals	These are the input terminals for the main-circuit power supply.	
⊕1	DC Reactor Terminals	Normally short-circuit between +1 and +2. If harmonic control measures are required, connect a DC Reactor between +1 and +2.	
⊕2			
⊖	Main-circuit DC Output	Do not connect anything to this terminal.	
L1C L2C	Control Circuit Power Sup- ply Terminals	These are the input terminals for the control power supply.	
B1 and B2 or B1, B2, and B3	External Regeneration Re- sistance Terminals	Connect an External Regeneration Resistor to these terminals if the regenerative capacity of the internal capacitor is exceeded. (An External Regeneration Resistor cannot be connected to the 30 to 200-W models.)	
U V W	Servomotor Terminals	Red White Blue	These are the terminals for outputs to the Servomotor.
⏚	Frame ground	This is the ground terminal.	

### Control I/O (CN1) Specifications

Pin	Symbol	Name	Function
1	+PULS/CW/A	Feed pulses, reverse pulses, or 90° phase difference pulses (A phase)	Line-driver input: 7 mA at 3 V Open-collector input Input impedance: 200 Ω Maximum response frequency: 250 kpps Position control is performed based on the pulses that have been input.
2	-PULS/CW/A		
3	+SIGN/CCW/B	Direction signal, forward pulses, or 90° phase difference pulses (B phase)	
4	-SIGN/CCW/B		
5	+ECRST	Deviation counter reset	Line-driver input: 7 mA at 3 V Open-collector input: 16 mA at 5 V Input impedance: 200 Ω ON: Resets deviation counter.
6	-ECRST		
7	BKIR	Brake interlock output	Outputs holding brake timing signals.
8	INP	Positioning completed output	ON when the position error is within the positioning completed range.
10	OGND	Output ground common	Ground common for output signals (pins 7 and 8).
13	+24V	+24V DC power input for control	Power supply input (+24 V DC) for pins 14 and 18.
14	RUN	RUN command input	ON: Servo ON (Starts power to Servomotor.)
18	RESET	Alarm reset input	ON: Servo alarm status is reset.
19	GND	RS-422A ground	Ground for RS-422A
20	RXD+	RS-422A reception data	Interface for RS-422A data transfers
21	RXD-		
22	TXD+	RS-422A transmission data	
23	TXD-		
24	RT	Termination resistance terminal	Connect to RXD- (pin 21) in the Unit at the end of the line.
32	Z	Encoder phase-Z open-collector output	Output goes ON when the encoder's phase-Z signal (1 pulse/revolution) is detected. Open-collector output: 20 mA max. at 30 V DC
33	ZCOM		
34	ALM	Alarm output	Output goes OFF when alarm is detected. Open-collector output: 50 mA max. at 30 V DC
35	ALMCOM		
Shell	FG	Cable shield ground	Ground for cable's shield wire.

### Encoder Connector (CN2) Specifications

Pin	Symbol	Name	Function
1, 2, 3	E0V	Encoder power supply GND	Power supply outlet for encoder
4, 5, 6	E5V	Encoder power supply +5 V	
8	S+	Encoder + phase-S input	Line driver input (conforms to EIA-RS422A) (Input impedance: 220 Ω ± 5%)
9	S-	Encoder - phase-S input	
10	A+	Encoder + phase-A input	Line driver input (conforms to EIA-RS422A) (Input impedance: 220 Ω ± 5%)
11	A-	Encoder - phase-A input	
12	B+	Encoder + phase-B input	Line driver input (conforms to EIA-RS422A) (Input impedance: 220 Ω ± 5%)
13	B-	Encoder - phase-B input	
Shell	FG	Cable shield ground	Ground for cable's shield wire.

### Communications Connector (CN3) Specifications

Pin	Symbol	Name	Function
1	/TXD	Transmission data	Transmission data: RS-232C output
2	/RXD	Reception data	Reception data: RS-232C input
3	PRMU	Unit switching	Switching terminal for a Parameter Unit
7	+5V	+5 V output	This is the +5 V power supply output to the Parameter Unit.
8	GND	Ground	
Shell	FG	Cable shield ground	Ground for cable's shield wire.

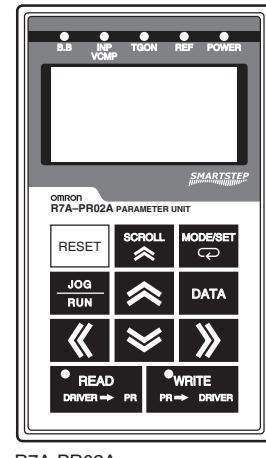
### Monitor Output (CN4) Specifications

Pin	Symbol	Name	Function
1	NM	Speed monitor	Speed monitor output: 1 V per 1,000 r/min
2	AM	Current monitor	Current monitor: 1 V / rated torque
3	GND	Ground	Grounds for monitor output
4	GND	Ground	

## Digital Operator Specifications

### General Specifications

Item	Specification
Ambient operating temperature	0 to 55°C
Ambient operating humidity	90% max. (with no condensation)
Ambient storage temperature	-20 to 85°C
Ambient storage humidity	90% max. (with no condensation)
Storage/operating atmosphere	No corrosive gases.
Vibration resistance	10 to 55 Hz in X, Y, and Z directions with 0.1-mm double amplitude or acceleration of 9.8 m/s <sup>2</sup> max., whichever is smaller
Impact resistance	Acceleration 19.6 m/s <sup>2</sup> max., in X, Y, and Z directions, three times



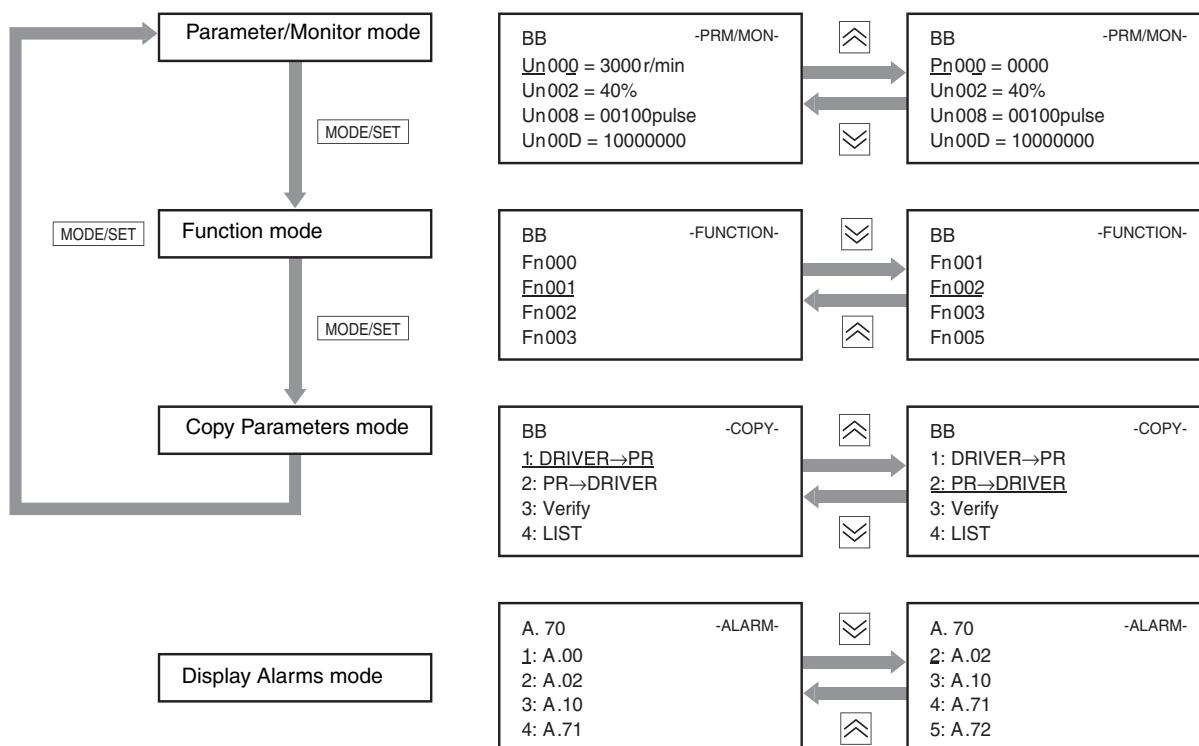
R7A-PR02A

### Function Specifications

Item	Function
Setting mode	Display or change parameter settings.
Monitor mode	Display monitor values.
Execute Function mode	Execute each function mode.
Display Alarms	Display alarms that have occurred.
Copy Parameters	Read or save parameters from the Servo Driver. Write parameters to the Servo Driver. Compare parameters in the Servo Driver with parameters in the Parameter Unit.

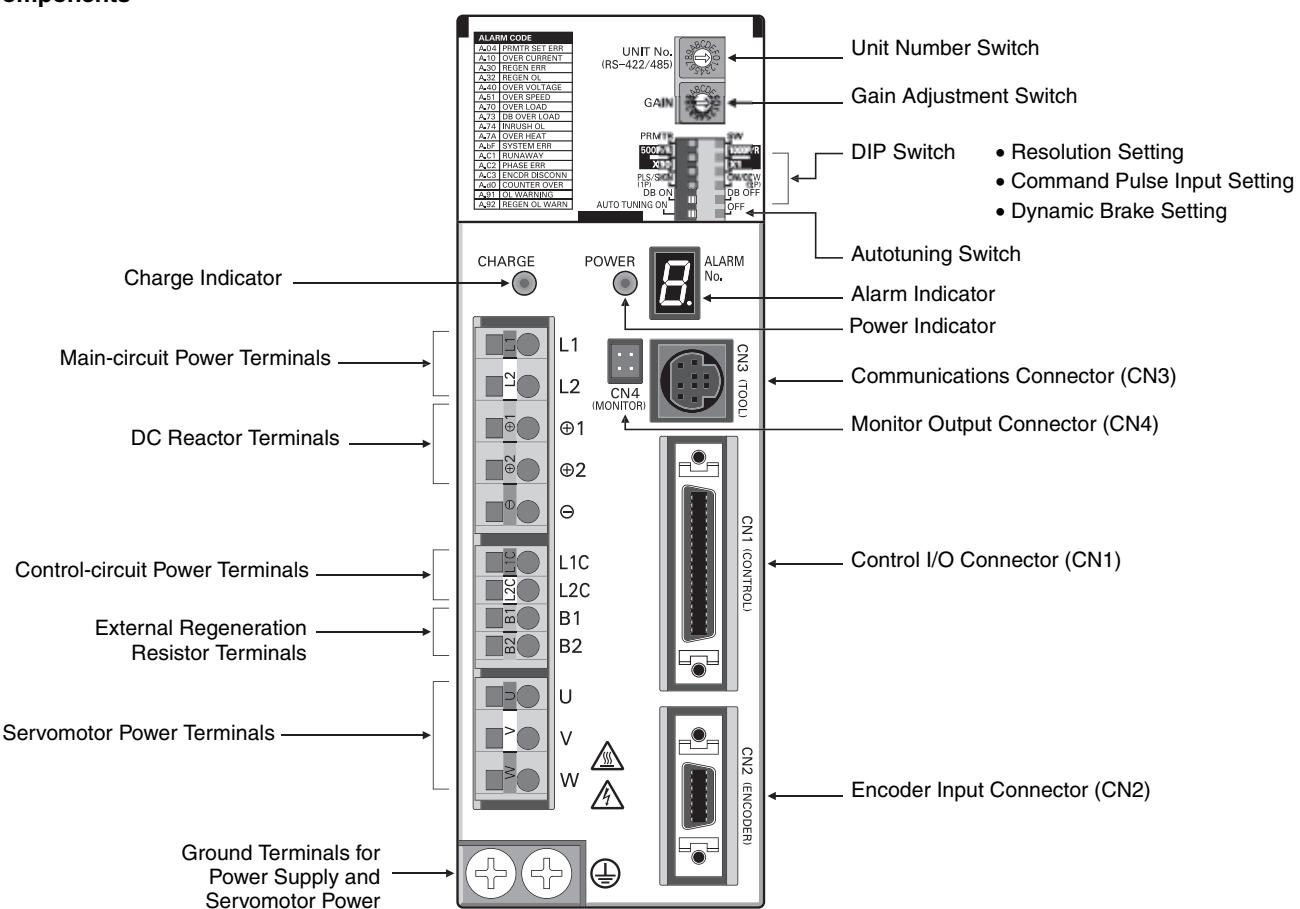
### Mode Change Specifications

Power ON



## Operation

### Components



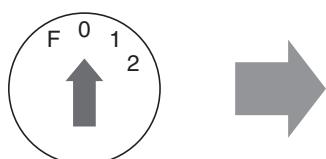
### Switch Operations

#### Gain Adjustment Switch

Adjusts the motor's responsiveness.

When this switch is set to 0, the Unit will operate according to the settings in the internal parameters (Pn100, Pn101, Pn102, and Pn401).

When this switch is set to 1 through F, the Unit will operate according to the rotary switch's setting.



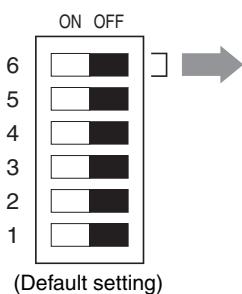
Decrease the switch setting to lower the motor's responsiveness (i.e., so that it moves more smoothly).

Increase the switch setting to raise the motor's responsiveness (i.e., so that it moves faster).

Setting	Position Loop Gain	Speed Loop Gain	Speed Loop Integral Constant	Torque Command Filter Time Constant
0	Enables parameter settings (including settings other than gain settings).			
1	15	15	4,000	250
2	20	20	3,500	200
3	30	30	3,000	150
4	40	40	2,000	100
5	60	60	1,500	70
6	85	85	1,000	50
7	120	120	800	30
8	160	160	600	20
9	200	200	500	15
A	250	250	400	10
B	250	250	400	10
C	250	250	400	10
D	250	250	400	10
E	250	250	400	10
F	250	250	400	10

### Enable Switch/Parameter Setting

Pin 6 of the DIP switch selects whether the Servo Driver operates according to the DIP switch settings or parameter settings.

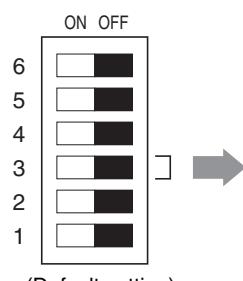


Pin 6	Function
OFF	Enables the DIP switch settings.
ON	Enables the parameter settings.

(Default setting)

### Command Pulse Input Setting

Pin 3 selects the command pulse mode. Select "Forward pulse/Reverse pulse: positive logic" or "Feed pulses/Direction signal: positive logic."

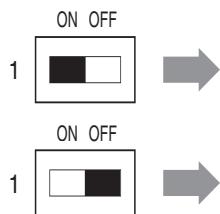


Pin 3	Command Pulse Mode
OFF	Forward pulse/Reverse pulse: positive logic
ON	Feed pulses/Direction signal: positive logic

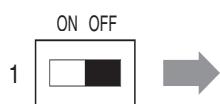
(Default setting)

### Online Autotuning Setting

The Autotuning Switch selects whether the gain will be adjusted automatically during operation.



Perform online autotuning.

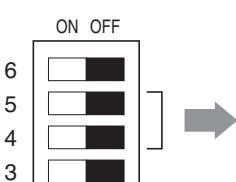


Complete online autotuning.  
The result is stored in the Inertia Ratio parameter (Pn103) and the Servo Driver runs.

### Resolution Setting

Pins 4 and 5 select the positioning resolution.

If the resolution is set to 1,000 (the default setting), the motor makes one revolution for every 1,000 pulses input.

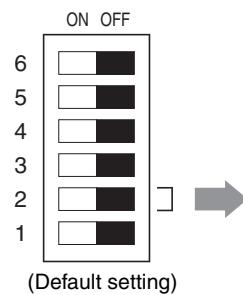


Pins		Resolution
5	4	
OFF	OFF	1,000 pulses/revolution (0.36°/step)
OFF	ON	10,000 pulses/revolution (0.036°/step)
ON	OFF	500 pulses/revolution (0.72°/step)
ON	ON	5,000 pulses/revolution (0.072°/step)

(Default setting)

### Dynamic Brake Setting

Pin 2 enables or disables dynamic brake operation. If the dynamic brake is enabled, the motor can be brought to an emergency stop when the RUN command goes OFF or an alarm occurs.



Pin 2	Dynamic Brake Mode
OFF	Dynamic brake disabled.
ON	Dynamic brake enabled.

(Default setting)

### Alarm Table

Display	ALM output	Error detection function
A.04*	OFF	Parameter setting error
A.10*	OFF	Overcurrent
A.30	OFF	Regeneration error
A.32	OFF	Regeneration overload
A.40	OFF	Ovvoltage/Undervoltage
A.51	OFF	Overspeed
A.70	OFF	Overload
A.73	OFF	Dynamic brake overload
A.74	OFF	Inrush resistance overload

Display	ALM output	Error detection function
A.7A	OFF	Overheat
A.bF*	OFF	System error
A.C1	OFF	Runaway detected
A.C2*	OFF	Phase not detected
A.C3*	OFF	Encoder disconnect detected
A.d0	OFF	Deviation counter overflow
CPF00	---	Parameter Unit transmission error 1
CPF01	---	Parameter Unit transmission error 2
A.91	---	Overload warning
A.92	---	Regeneration overload warning

## Parameters

### Parameter Details

Parameter number	Parameter name	Digit	Name	Setting	Explanation	Default setting	Unit	Setting range	
Pn000	Function selection basic switch 1 (See note 1.)	0	Reverse rotation	0	CCW direction is taken for positive command	0010	---	---	
				1	CW direction is taken for positive command				
		1	Control mode	1	Position control by pulse train command				
		2 to 3	Not used.	---	---				
Pn001	Function selection basic switch 2 (See note 1.)	0	Select stop method if an alarm occurs when Servomotor is OFF	0	Servomotor stopped by dynamic brake.	1002	---	---	
				1	Stop by dynamic brake and release brake after Servomotor stops.				
				2	Servomotor stopped with free run				
		1 to 3	Not used.	---	---				
Pn100	Speed loop gain	Adjusts speed loop's responsiveness.				80	Hz	1 to 2,000	
Pn101	Speed loop integral constant	Speed loop integral time constant				2,000	0.01 ms	15 to 51,200	
Pn102	Position loop gain	Adjusts position loop's responsiveness.				40	1/s	1 to 2,000	
Pn103	Inertia ratio	Set using the ratio between the machine system inertia and the Servomotor rotor inertia.				300	%	0 to 10,000	
Pn109	Feed-forward amount	Position control feed-forward compensation value				0	%	0 to 100	
Pn10A	Feed-forward command filter	Sets position control feed-forward command filter.				0	0.01 ms	0 to 6,400	
Pn110	Online autotuning setting (See note 1.)	0	Selects online auto-tuning	0	Auto-tunes initial operations only after power is turned ON.	0012	---	---	
				1	Always auto-tunes.				
				2	No auto-tuning				
		1	Not used.	---	---				
		2	Selects adhesive friction compensation function	0	Friction compensation: OFF				
				1	Friction compensation: rated torque ratio small				
				2	Friction compensation: rated torque ratio large				
		3	Not used.	---	---				
Pn200	Position control setting 1 (See note 1.)	0	Command pulse mode	0	Feed pulses/Direction signal: Positive logic	1011	---	---	
				1	Forward pulse/Reverse pulse: Positive logic				
				2	90° phase difference (A/B phase) signal (x1): Positive logic				
				3	90° phase difference (A/B phase) signal (x2): Positive logic				
				4	90° phase difference (A/B phase) signal (x4): Positive logic				
				5	Feed pulses/Direction signal: Negative logic				
				6	Forward pulse/Reverse pulse: Negative logic				
				7	90° phase difference (A/B phase) signal (x1): Negative logic				
				8	90° phase difference (A/B phase) signal (x2): Negative logic				
				9	90° phase difference (A/B phase) signal (x4): Negative logic				
		1	Deviation counter reset	0	High level signal				
				1	Rising signal (low to high)				
				2	Low level signal				
				3	Falling signal (high to low)				
		2	Deviation counter reset if an alarm occurs when the Servomotor is OFF	0	Deviation counter reset if an alarm occurs when Servomotor is OFF.				
				1	Deviation counter not reset if an alarm occurs when Servomotor is OFF.				
				2	Deviation counter reset only if alarm occurs.				
		3	Not used.	---	---				
Pn202	Electronic gear ratio G1 (numerator) (See note 1.)	Sets the pulse rate for the command pulses and Servo Servomotor travel distance. Setting range: 0.01 £ G1/G2 £ 100				4	---	1 to 65,535	
Pn203	Electronic gear ratio G2 (denominator) (See note 1.)					1	---	1 to 65,535	
Pn204	Position command filter time constant 1 (primary filter)	Sets soft start for command pulse. (Soft start characteristics are for the primary filter.)				0	0.01 ms	0 to 6,400	
Pn207	Position control setting 2 (See note 1.)	0	Selects position command filter.	0	Primary filter (Pn204)	0000	---	---	
				1	Linear acceleration and deceleration (Pn208)				
				1 to 3	Not used.				
Pn208	Position command filter time constant 2 (linear acceleration and deceleration) (See note 1.)	Sets soft start for command pulse. (soft start characteristics are for the linear acceleration and deceleration.)				0	0.01 ms	0 to 6,400	
Pn304	Jog speed	Sets rotation speed during jog operation.				500	r/min	0 to 10,000	

Parameter number	Parameter name	Digit	Name	Setting	Explanation	Default setting	Unit	Setting range
Pn401	Torque command filter time constant				Sets the constant when filtering the internal torque command.	40	0.01 ms	0 to 65,535
Pn402	Forward torque limit				Forward rotation output torque limit (percentage of rated torque ratio).	350	%	0 to 800
Pn403	Reverse torque limit				Reverse rotation output torque limit (percentage of rated torque ratio).	350	%	0 to 800
Pn500	Positioning completion range				Sets the range of positioning completed output signal	3	Command units	0 to 250
Pn505	Deviation counter overflow level				Sets the detection level for the deviation counter over alarm.	1,024	$\times 256$ command units	1 to 32767
Pn600	Regeneration resistor capacity (See note 2).				Setting for regeneration resistance load ratio monitoring calculations.	0	10 W	See model specs.

**Note:** 1. These parameters are read when the power is turned ON. Parameter Pn110.2 is valid when online.  
2. When using a Regeneration Resistor, set the resistor's capacity when the temperature has risen to 120°C. Set this parameter to 0 if a Regeneration Resistor is not being used.

## Function Mode Details

Number	Name	Explanation
Fn000	Alarm history display	Displays up to 10 alarm entries.
Fn001	Rigidity setting during online auto-tuning	Sets the control target during online auto-tuning.
Fn002	Jog operation	Makes the Servomotor rotate using key operations from the Parameter Unit.
Fn003	Servomotor origin search	Makes the Servomotor rotate using key operations from the Parameter Unit and fixes the position of phase Z after phase Z is detected.
Fn005	User parameter initialization	Restores user parameters to their default settings.
Fn006	Alarm history data clear	Clears the data stored in the alarm history.
Fn007	Store online auto-tuning results	Writes the load data calculated using online auto-tuning to Pn103 (inertia ratio).
Fn00C	Analog monitor output offset manual adjustment	Manually adjusts the analog output monitor offset.
Fn00D	Analog monitor output scaling	Changes the analog monitor output scaling (output voltage adjustment).
Fn00E	Servomotor current detection offset automatic adjustment	Automatically adjusts the offset for Servomotor current detection.
Fn00F	Servomotor current detection offset manual adjustment	Manually adjusts the offset for Servomotor current detection.
Fn010	Password setting	You can permit or prohibit writing to user parameters.
Fn012	Version check	Check the Servo Driver's version information.

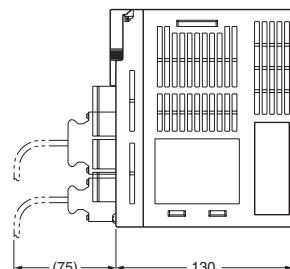
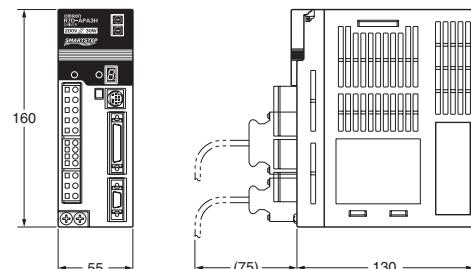
## Monitor Mode Details

Number	Contents	Units	Explanation
Un000	Speed feedback	r/min	Displays actual rotation speed of Servomotor.
Un002	Torque command	%	Displays command values to current loop (rated torque = 100%).
Un003	Number of pulses from phase-Z edge	Pulses	Displays rotation position from phase-Z edge (4X calculation).
Un004	Electrical angle	x	Displays the electrical angle of the Servomotor.
Un005	Input signal monitor	---	Displays the control input signal (CN1) status using ON/OFF bits.
Un006	Output signal monitor	---	Displays the control output signal (CN1) status using ON/OFF bits.
Un007	Command pulse speed display	r/min	Calculates and displays command pulse frequency in r/min.
Un008	Position deviation (deviation counter)	Command units	Displays number of residual pulses in deviation counter (input pulse standard).
Un009	Cumulative load ratio	%	Displays effective torque (rated torque = 100%, 10-s cycle)
Un00A	Regeneration load ratio	%	Displays regeneration absorption power due to regeneration resistance (calculates internal resistance capacity or Pn600 setting as 100% in 10-s cycles).
Un00B	Dynamic brake resistance load ratio	%	Displays power consumption during dynamic brake operation (calculates tolerance power consumption as 100% in 10-s cycles).
Un00C	Input pulse counter	Command units	Counts and displays input pulses (displayed in hexadecimal).
Un00D	Feedback pulse counter	Pulses	Counts and displays feedback pulses (4X calculation, displayed in hexadecimal).

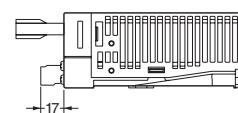
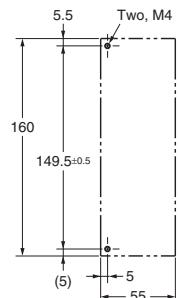
## Dimensions

## Servo Drivers

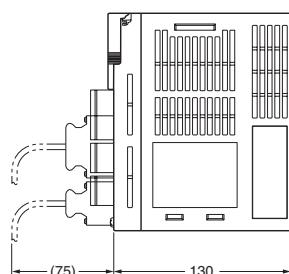
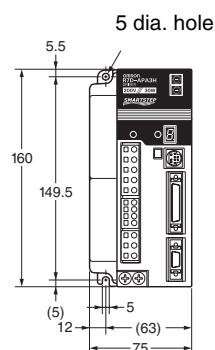
**200 V AC: 30 W/50 W/100 W/200 W  
(R7D-APA3H/APA5H/AP01H/AP02H)**



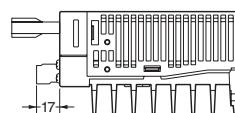
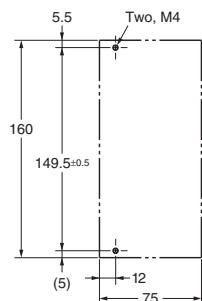
Mounting dimensions



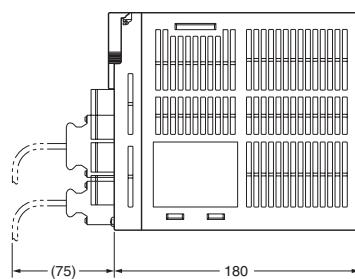
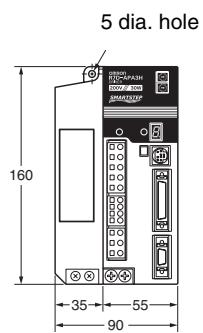
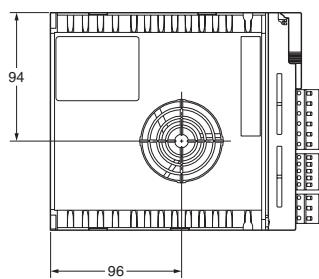
**200 V AC: 400 W  
(R7D-AP04H)**



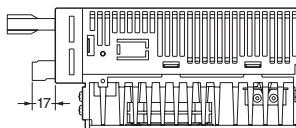
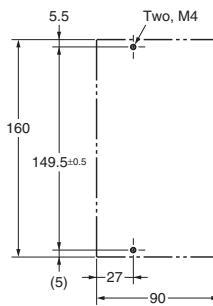
Mounting dimensions



**200 V AC: 750 W  
(R7D-AP08H)**



Mounting dimensions



**Servomotors****Cylindrical Servomotors (3,000 r/min)**

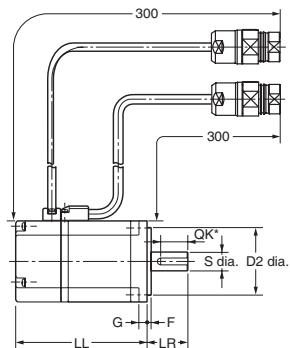
200 V AC: 30 W/50 W/100 W/200 W/400 W/750 W

Without Brake: R7M-A03030-S1-D/A05030-S1-D/A10030-S1-D/A20030-S1-D/A40030-S1-D/A75030-S1-D

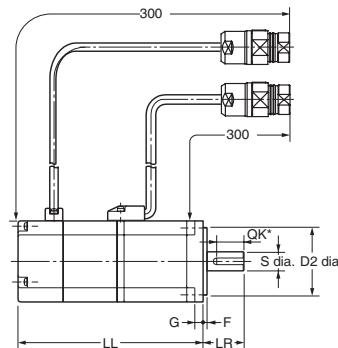
With Brake: R7M-A03030-BS1-D/A05030-BS1-D/A10030-BS1-D/A20030-BS1-D/A40030-BS1-D/A75030-BS1-D

Model	Dimensions (mm)													
	LL		LR	Flange surface						Axis end				
	Without Brake	With Brake		C	D1	D2	F	G	Z	S	QK	b	h	t1
R7M-A03030□	69.5	101	25	40	46	30h7	2.5	5	Two, 4.3 dia.	6h6	14	2	2	1.2
R7M-A05030□	77	108.5								8h6		3	3	1.8
R7M-A10030□	94.5	135												
R7M-A20030□	96.5	136	30	60	70	50h7	3	6	Four, 5.5 dia.	14h6	20	5	5	3
R7M-A40030□	124.5	164												
R7M-A75030□	145	189.5	40	80	90	70h7	3	8	Four, 7 dia.	16h6	30			

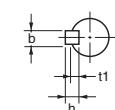
R7M-A□□□30-S1-D (Without Brake)



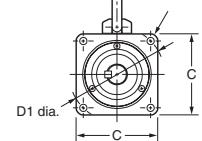
R7M-A□□□30-BS1-D (With Brake)



Axis end dimensions



Hole with "Z" mark

**Flat Servomotors (3,000 r/min)**

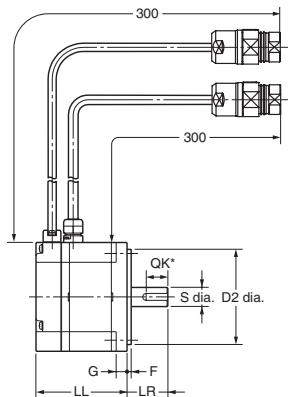
200 V AC: 100 W/200 W/400 W/750 W

Without Brake: R7M-AP10030-S1-D/AP20030-S1-D/AP40030-S1-D/AP75030-S1-D

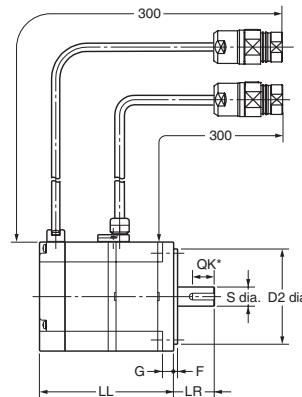
With Brake: R7M-AP10030-BS1-D/AP20030-BS1-D/AP40030-BS1-D/AP75030-BS1-D

Model	Dimensions (mm)													
	LL		LR	Flange surface						Axis end				
	Without Brake	With Brake		C	D1	D2	F	G	Z	S	QK	b	h	t1
R7M-AP10030□	62	91	25	60	70	50h7	3	6	5.5	8h6	14	3	3	1.8
R7M-AP20030□	67	98.5	30	80	90	70h7	3	8	7	14h6	16	5	5	3
R7M-AP40030□	87	118.5												
R7M-AP75030□	86.5	120	40	120	145	110h7	3.5	10	10	16h6	22			

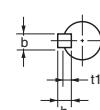
R7M-AP□□□30-S1-D (Without Brake)



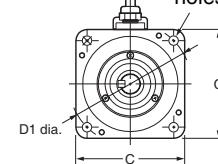
R7M-AP□□□30-BS1-D (With Brake)



Axis end dimensions

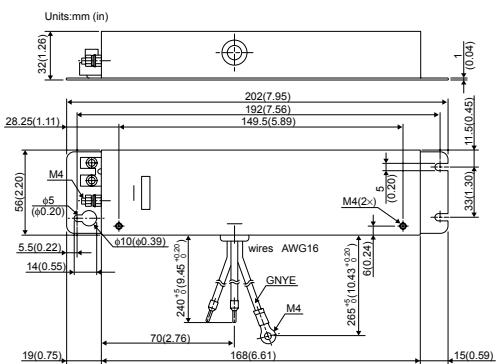


Four, Z-dia. mounting holes



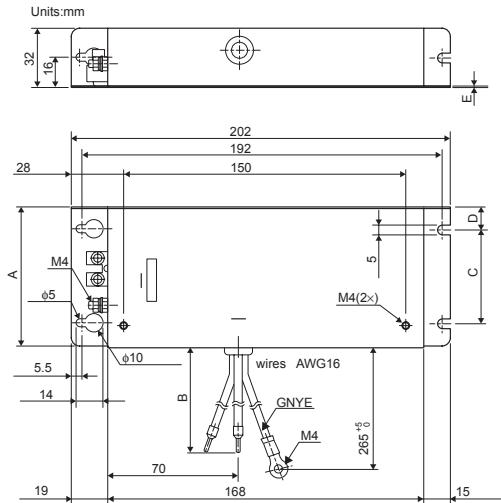
## Filters

## R88A-FIW104-SE



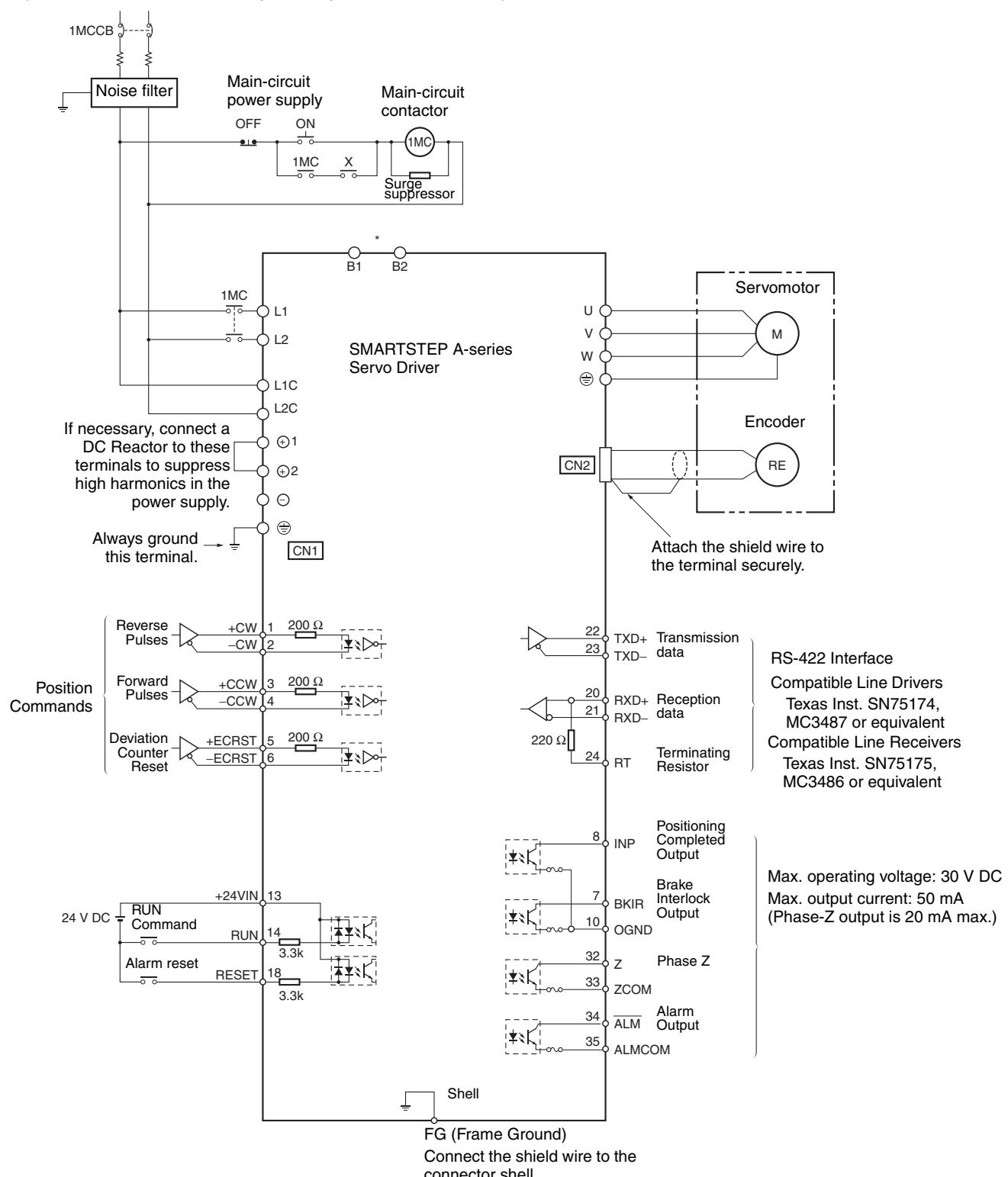
## R88A-FIW107-SE, R88A-FIW115-SE

Model	R88A-FIW107-SE	R88A-FIW115-SE
Dimensions in mm	A 75 B 240 <sup>+5</sup> C 50 D 12 E 1	90 300 <sup>+5</sup> 60 15 1.2



## Installation

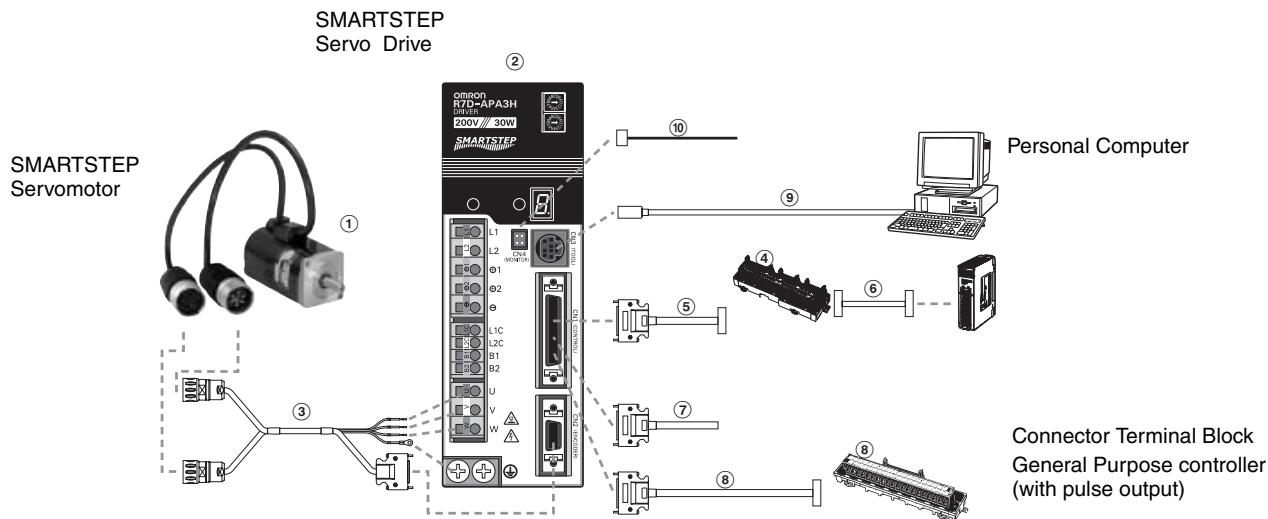
Single-phase 200 to 230 V AC +10%/-15% (50/60 Hz)  
(The 750-W Servo Drivers can input three-phase 200 to 230 V AC.)



**Note:** \* A Regeneration Resistor can be connected across the B1 and B2 terminals with 400-W and 750-W Servo Drivers.  
When using an external Regeneration Resistor with a 400-W Servo Driver, just connect it across the B1 and B2 terminals.  
When using an external Regeneration Resistor with a 750-W Servo Driver, remove the jumper bar from the B2 and B3 terminals and then connect the Regeneration Resistor across the B1 and B2 terminals.

## Ordering Information

## System Configuration



## Servomotors

Symbol	Specifications			Model
①	Cylindrical Servomotors (3,000-r/min)	Without brake	0.095 Nm	30 W R7M-A03030-S1-D
			0.159 Nm	50 W R7M-A05030-S1-D
			0.318 Nm	100 W R7M-A10030-S1-D
		Straight shaft with key	0.637 Nm	200 W R7M-A20030-S1-D
			1.27 Nm	400 W R7M-A40030-S1-D
			2.39 Nm	750 W R7M-A75030-S1-D
	Straight shaft with key	With brake	0.095 Nm	30 W R7M-A03030-BS1-D
			0.159 Nm	50 W R7M-A05030-BS1-D
			0.318 Nm	100 W R7M-A10030-BS1-D
			0.637 Nm	200 W R7M-A20030-BS1-D
②	Flat Servomotors (3,000-r/min)	Without brake	1.27 Nm	400 W R7M-AP40030-S1-D
			2.39 Nm	750 W R7M-AP75030-S1-D
		Straight shaft with key	0.318 Nm	100 W R7M-AP10030-S1-D
			0.637 Nm	200 W R7M-AP20030-S1-D
		With brake	1.27 Nm	400 W R7M-AP40030-S1-D
			2.39 Nm	750 W R7M-AP75030-S1-D
	Straight shaft with key	With brake	0.318 Nm	100 W R7M-AP10030-BS1-D
			0.637 Nm	200 W R7M-AP20030-BS1-D
			1.27 Nm	400 W R7M-AP40030-BS1-D
			2.39 Nm	750 W R7M-AP75030-BS1-D

## Servo Drives

Symbol	Specifications	Model
②	200 V AC	30 W R7D-APA3H
		50 W R7D-APA5H
		100 W R7D-AP01H
		200 W R7D-AP02H
		400 W R7D-AP04H
		750 W R7D-AP08H

## Servomotor Cables (For CN2)

Symbol	Standard Cables	Specifications	Power Cable Model	Encoder Cable Model	Appearance
③	For Servomotors without brake R7M-A(P)□□□30-S1-D	3 m	R7A-CEA003S-DE		
		5 m	R7A-CEA005S-DE		
		10 m	R7A-CEA010S-DE		
		15 m	R7A-CEA015S-DE		
		20 m	R7A-CEA020S-DE		
	For Servomotors with brake R7M-A(P)□□□30-BS1-D	3 m	R7A-CEA003B-DE		
		5 m	R7A-CEA005B-DE		
		10 m	R7A-CEA010B-DE		
		15 m	R7A-CEA015B-DE		
		20 m	R7A-CEA020B-DE		
④	Flexible cables for applications where cable is frequently in motion R7M-A(P)□□□30-S1-D	3 m	R88A-CAWA003S-DE	R7A-CRA003-FDE	
		5 m	R88A-CAWA005S-DE	R7A-CRA005-FDE	
		10 m	R88A-CAWA010S-DE	R7A-CRA010-FDE	
		15 m	R88A-CAWA015S-DE	R7A-CRA015-FDE	
		20 m	R88A-CAWA020S-DE	R7A-CRA020-FDE	
	For Servomotors with brake R7M-A(P)□□□30-BS1-D	3 m	R88A-CAWA003B-DE	R7A-CRA003-FDE	
		5 m	R88A-CAWA005B-DE	R7A-CRA005-FDE	
		10 m	R88A-CAWA010B-DE	R7A-CRA010-FDE	
		15 m	R88A-CAWA015B-DE	R7A-CRA015-FDE	
		20 m	R88A-CAWA020B-DE	R7A-CRA020-FDE	

## Control Cables (For CN1)

Symbol	Name	Compatible Units	Model	Available lengths
(4)	Servo Relay Unit	Use with Position Control Units (Doesn't support communications functions.) Units: CS1W-NC113/133, CJ1W-NC113/133, C200HW-NC113, and C200H-NC112	XW2B-20J6-1B (1 axis)	---
		Use with Position Control Units (Doesn't support communications functions.) Units: CS1W-NC213/233/413/433, CJ1W-NC213/233/413/433, C200HW-NC213/413, C500-NC113/211, and C200H-NC211	XW2B-40J6-2B (2 axes)	
		Use with Position Control Units (Doesn't support communications functions.) Units: CQM1H-PLB21, and CQM1-CPU43-V1	XW2B-20J6-3B (1 axis)	
		Use with Position Control Units (Supports communications functions.) Units: CS1W-NC213/233/413/433, CJ1W-NC213/233/413/433	XW2B-40J6-4B (2 axes)	
		Use with CJ1M-CPU22/23 (Doesn't support communications functions.)	XW2B-20J6-8A (1 axis) XW2B-40J6-9A (2 axes)	
(5)	Cable to Servo Drive	Doesn't support communications functions. (For the XW2B-□□J6-□B)	XW2Z-□□□J-B5	1 m or 2 m (The cable length goes in the empty boxes.)
		Supports communications functions. (For the XW2B-□□J6-4B)	XW2Z-□□□J-B7	
(6)	Cable to Position Control Unit	CQM1H-PLB21 and CQM1-CPU43-V1	XW2Z-□□□J-A3	0.5 m or 1 m (The cable length goes in the empty boxes.)
		C200H-NC112	XW2Z-□□□J-A4	
		C200H-NC211 and C500-NC113/211	XW2Z-□□□J-A5	
		CS1W-NC113 and C200HW-NC113	XW2Z-□□□J-A8	
		CS1W-NC213/413 and C200HW-NC213/413	XW2Z-□□□J-A9	
		CS1W-NC133	XW2Z-□□□J-A12	
		CS1W-NC233/433	XW2Z-□□□J-A13	
		CJ1W-NC113	XW2Z-□□□J-A16	
		CJ1W-NC213/413	XW2Z-□□□J-A17	
		CJ1W-NC133	XW2Z-□□□J-A20	
		CS1W-NC233/433	XW2Z-□□□J-A21	
		CJ1M-CPU22/23	XW2Z-□□□J-A26	
(7)	Control Cable	For general-purpose Controllers	R88A-CPU□□□S	1 m or 2 m (The cable length goes in the empty boxes.)
(8)	Connector Terminal Block Cable	For general-purpose Controllers	R88A-CTU□□□N	
			XW2B-40F5-P	---

## Cable for CN3

Symbol	Name	Model
(9)	Computer Monitor Cable	R7A-CCA002P2

## Cable for CN4

Symbol	Name	Model
(10)	Analog Monitor Cable	R88A-CMW001S

## Connectors

Specifications	Model
Control I/O Connector (For CN1)	R88A-CNU01C
SmartStep Connectors Kit.	Models Included in kit
SmartStep Encoder Connector (For CN2)	
Hypertac Power Connector female	
Hypertac Encoder Connector female	SPOC-06K-FSDN169
Hypertac Power Connector male (Used in the motor)	SPOC-17H-FRON169
Hypertac Encoder Connector male (Used in the motor)	SRUC-06J-MSCN236

## External Regeneration Resistor

Specification	Model
220 W, 47 Ω	R88A-RR22047S

## Filters

Specifications (applicable Servo Drive)	Model	Rated Current	Rated Voltage
R7D-APA3H, R7D-APA5H	R88A-FIW104-E	4A	250 VAC
R7D-AP01H, R7D-AP02H			Single Phase
R7D-AP04H	R88A-FIW107-E	7A	
R7D-AP08H	R88A-FIW115-E	15A	

## Parameter Unit & Computer Software

Specifications	Model
Parameter Copy Unit (with cable)	R7A-PR02A
Sigma Win	MOTION TOOLS CD
WMON Win Version 2.0	

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.  
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

SGDH-□, SGM□H-□

# Sigma-II Series

**The Ideal servo family for motion control.  
Fast Response, High Speed, and High Accuracy.**

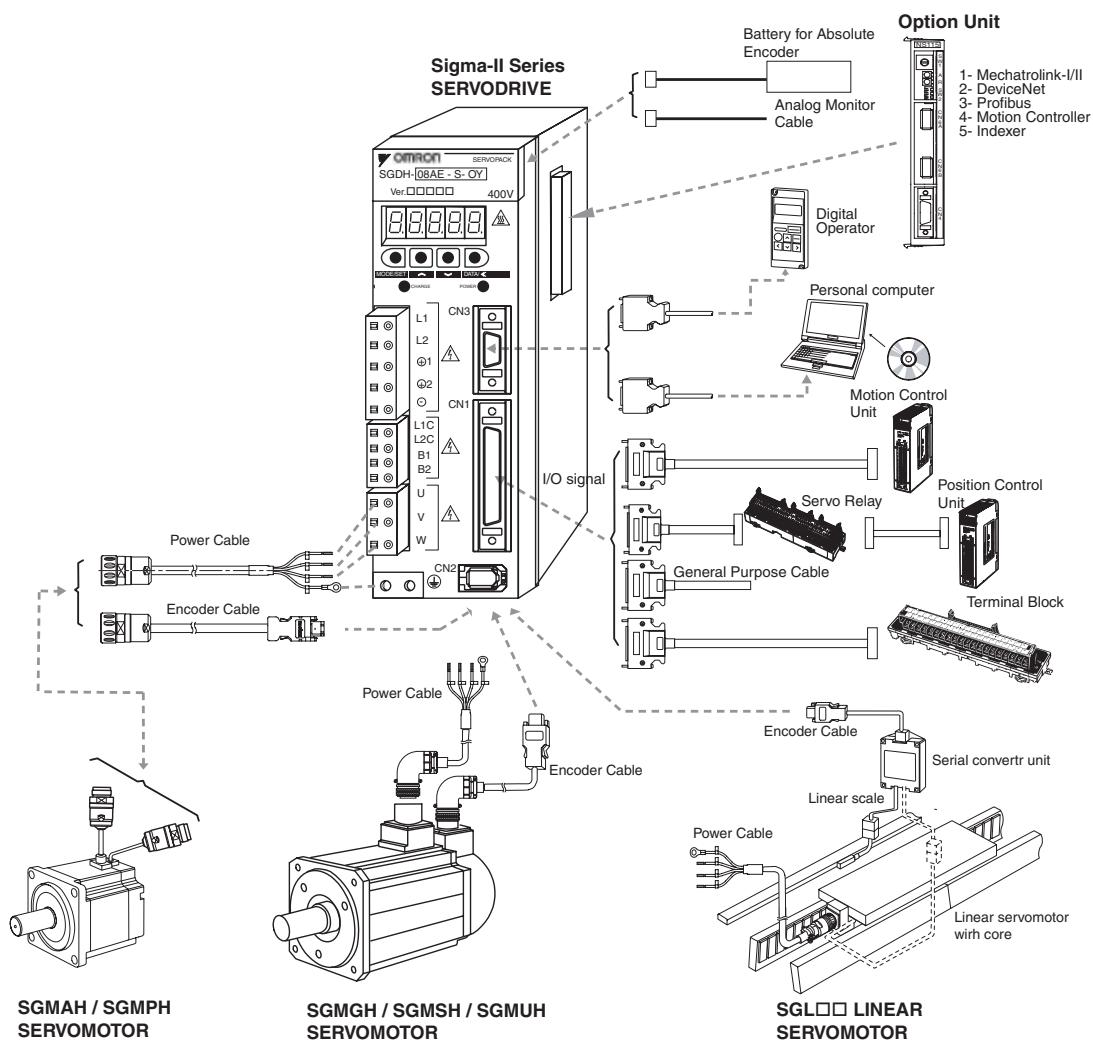
- Online autotuning with 10 levels of rigidity
- Peak torque 300% of nominal
- Automatic motor recognition
- Analogue control for speed and torque
- Pulse train control for positioning
- Optional Units for system flexibility and network connectivity
- Smooth operation
- Oscilloscope available via SigmaWin tool
- Windows based Configuration and commissioning software

## Ratings

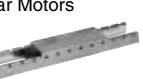
- 230VAC Single-phase 30 W to 1.5kW (4.77 Nm)
- 400VAC Three-phase 450 W to 15 kW (95.4 Nm)



## System Configuration



## Servomotor / Servo Drive Combination

$\Sigma - \Pi$					
Servomotor				Servo Drive	
	Voltage	Rated Torque	Capacity	230 V (1-phase)	400 V (3-phase)
	230 V	0.0955 N.m	30 W	SGDH-A3AE-OY	-
		0.159 N.m	50 W	SGDH-A5AE-OY	-
		0.318 N.m	100 W	SGDH-01AE-OY	-
		0.637 N.m	200 W	SGDH-02AE-OY	-
		1.27 N.m	400 W	SGDH-04AE-OY	-
		2.39 N.m	750 W	SGDH-08AE-S-OY	-
	400 V	0.955 N.m	300 W	-	SGDH-05DE-OY
	230 V	2.07 N.m	650 W	-	SGDH-10DE-OY
		0.318 N.m	100 W	SGDH-01AE-OY	-
		0.637 N.m	200 W	SGDH-02AE-OY	-
		1.27 N.m	400 W	SGDH-04AE-OY	-
		2.39 N.m	750 W	SGDH-08AE-S-OY	-
	400 V	4.77 N.m	1500 W	SGDH-15AE-S-OY	-
		0.637 N.m	200 W	-	SGDH-05DE-OY
		1.27 N.m	400 W	-	SGDH-05DE-OY
		2.39 N.m	750 W	-	SGDH-10DE-OY
		4.77 N.m	1500 W	-	SGDH-15DE-OY
	400 V	2.84 N.m	0.45 kW	-	SGDH-05DE-OY
		5.39 N.m	0.85 kW	-	SGDH-1ODE-OY
		8.34 N.m	1.3 kW	-	SGDH-15DE-OY
		11.5 N.m	1.8 kW	-	SGDH-20DE-OY
		18.6 N.m	2.9 kW	-	SGDH-30DE-OY
		28.4 N.m	4.4 kW	-	SGDH-50DE-OY
		35.0 N.m	5.5 kW	-	SGDH-60DE-OY
		48.0 N.m	7.5 kW	-	SGDH-75DE-OY
		70.0 N.m	11 kW	-	SGDH-1ADE-OY
		95.4 N.m	15 kW	-	SGDH-1EDE-OY
	400 V	3.18 N.m	1.0 kW	-	SGDH-10DE-OY
		4.90 N.m	1.5 kW	-	SGDH-15DE-OY
		6.36 N.m	2.0 kW	-	SGDH-20DE-OY
		9.80 N.m	3.0 kW	-	SGDH-30DE-OY
		12.6 N.m	4.0 kW	-	SGDH-50DE-OY
		15.8 N.m	5.0 kW	-	SGDH-50DE-OY
	400 V	1.59 N.m	1.0 kW	-	SGDH-10DE-OY
		2.45 N.m	1.5 kW	-	SGDH-15DE-OY
		4.9 N.m	3.0 kW	-	SGDH-30DE-OY
		6.3 N.m	4.0 kW	-	SGDH-50DE-OY
	230 V	Refer to the Linear Motors chapter for details			
	230 V, 400 V	Refer to the Linear Motors chapter for details			
	400 V	Refer to the Linear Motors chapter for details			

## Type Designation

### Servomotor

**SGMAH - 01 A 1 A 6 S D - OY**

Sigma-II Servomotor Type

SGMAH: Super High Power Rate Type

SGMPH: Cube Type

SGMGH: High-speed Feed Type

SGMSH: Super High Power Rate Type

SGMUH: High Speed Type

Capacity (kW)

Code	SGMAH	SGMPH	SGMGH	SGMSH	SGMUH
3000 min <sup>-1</sup>	3000 min <sup>-1</sup>	3000 min <sup>-1</sup>	1500 min <sup>-1</sup>	3000 min <sup>-1</sup>	6000 min <sup>-1</sup>
A3	0.03				
A5	0.05				
01	0.1	0.1			
02	0.2	0.2			
03	0.3				
04	0.4	0.4			
05			0.45		
06					
07	0.65				
08	0.75	0.75			
09			0.85		
10				1.0	1.0
12					
13			1.3		
15		1.5		1.5	1.5
20			1.8	2.0	
22					
30			2.9	3.0	3.0
32					
40			4.0	4.0	
44			4.4		
50				5.0	
55			5.5		
60					
75			7.5		
1A			11		
1E			15		

Voltage

A: 230 V

D: 400 V

### Servo Drive

**SGDH - 04 A E - S - OY**

Sigma-II Servo Drive

Capacity

A3	30 W	15	1.5 kW
A5	50 W	20	2.0 kW
01	100 W	30	3.0 kW
02	200 W	50	5.0 kW
04	400 W	60	6.0 kW
05	500 W	75	7.5 kW
08	750 W	1A	11 kW
10	1.0 kW	1E	15 kW

Connector Specifications

Blank	No option
D	Hypertac Connector (SGMAH,SGMPH)

Brake, Oil Seal Specifications

1	No Brake, No Oil/Dust Seal
S	Oil Seal
B	90V Brake
C	24V Brake
D	Oil Seal + 90VDC Brake
E	Oil Seal + 24VDC Brake
F	Dust Seal
G	Dust Seal + 90VDC Brake
H	Dust Seal + 24VDC Brake

Shaft End Specifications

Code	Shaft End	Type				
		SGMAH	SGMPH	SGMGH	SGMSH	SGMUH
2	Straight, No key	○	○	○	○	
4	Straight, Key	○	○			
6	Straight, Key, Tapped	●	●	○	○	●
8	Straight, Tapped	○	○			

●: Standard ○: Option

Design Procedure:

A: Standard

E: SGMPH (IP67)

F: SGMAH (prepared for oil seal mounting)

Serial Encoder Specifications

Code	Encoder	Type				
		SGMAH	SGMPH	SGMGH	SGMSH	SGMUH
1	16-bit Absolute	○	○			
2	17-bit Absolute			○	○	
A	13-bit Incremental	●	●			
B	16-bit Incremental	○	○			
C	17-bit Incremental			○	○	○

●: Standard ○: Option

## Servomotor Specifications

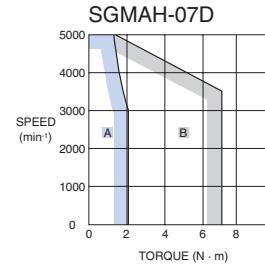
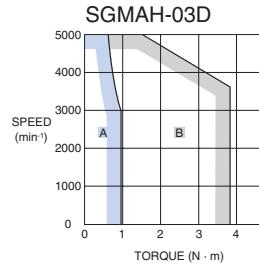
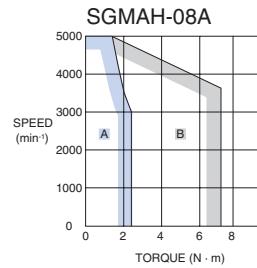
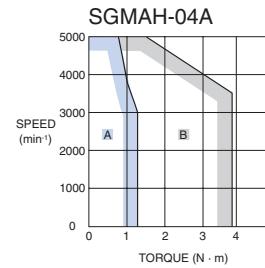
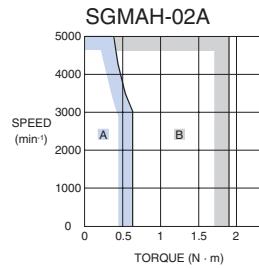
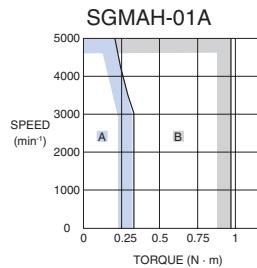
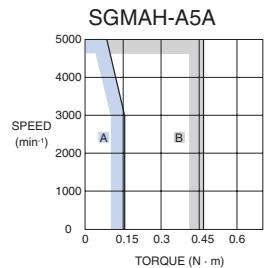
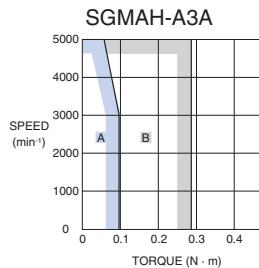
Type SGMAH, 230V/400V

### Ratings and Specifications

Applied Voltage		230 V						400 V	
Servomotor Model SGMAH- □		A3A□	A5A□	01A□	02A□	04A□	08A□	03D□	07D□
Rated Output	W	30	50	100	200	400	750	300	650
Rated Torque	N·m	0.096	0.159	0.318	0.637	1.27	2.39	0.955	2.07
Instantaneous Peak Torque	N·m	0.286	0.477	0.955	1.91	3.82	7.16	3.82	7.16
Rated Current	A (rms)	0.44	0.64	0.91	2.1	2.8	4.4	1.3	2.2
Instantaneous Max. Current	A (rms)	1.3	2.0	2.8	6.5	8.5	13.4	5.1	7.7
Rated Speed	min <sup>-1</sup>				3000				
Max. Speed	min <sup>-1</sup>				5000				
Torque Constant	N·m/A (rms)	0.238	0.268	0.378	0.327	0.498	0.590	0.837	1.02
Rotor Moment of Inertia (JM)	kg·m <sup>2</sup> ×10 <sup>-4</sup>	0.017	0.022	0.036	0.106	0.173	0.672	0.173	0.672
Allowable Load Moment of Inertia (JL)	Multiple of (JM)			30			20		
Rated Power Rate	kW/s	5.49	11.5	27.8	38.2	93.7	84.8	52.9	63.8
Rated Angular Acceleration	rad/s <sup>2</sup>	57500	72300	87400	60100	73600	35500	55300	30800
Applicable Encoder	Standard	Incremental Encoder (13 bits: 2048P/R)							
	Option	Incremental/Absolute Encoder (16 bits: 16384P/R)							
Holding Brake Moment of Inertia J	kg·m <sup>2</sup> ×10 <sup>-4</sup>		0.0085		0.058		0.14	0.058	0.14
Basic Specifications	Time Rating	Continuous							
	Insulation Class	Class B							
	Ambient Temperature	0 to +40°C							
	Ambient Humidity	20 to 80% (non-condensing)							
	Vibration Class	15μm or below							
	Enclosure	Totally-enclosed, self-cooled, IP55 (excluding shaft opening)							
	Vibration Resistance	Vibration acceleration 49m/s <sup>2</sup>							
	Mounting	Flange-mounted							

### Torque-Speed Characteristics

( A : Continuous Duty Zone   B : Intermittent Duty Zone )

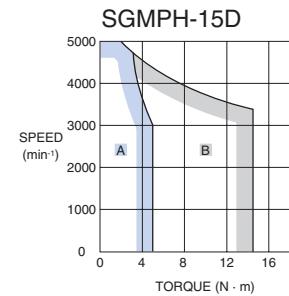
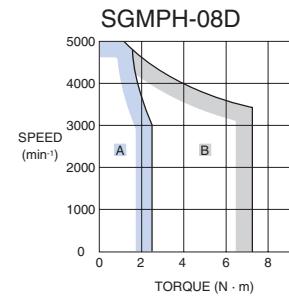
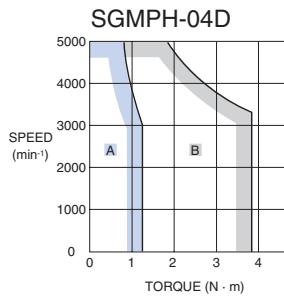
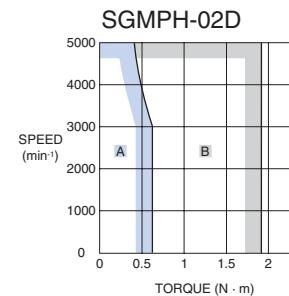
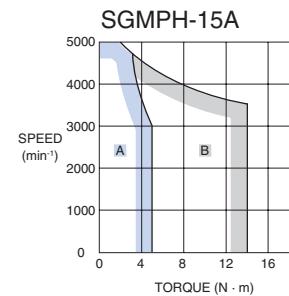
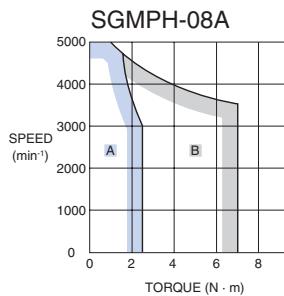
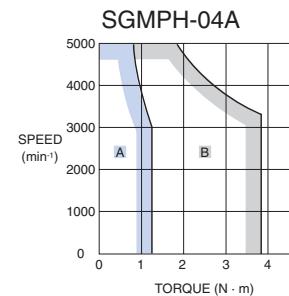
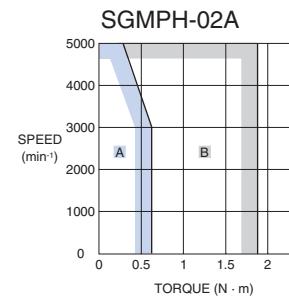
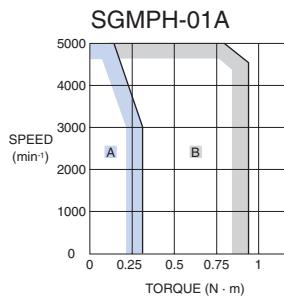


**Type SGMPH, 230V/400V****Ratings and Specifications**

Applied Voltage		230 V					400 V			
Servomotor Model SGMPH-	□	01A	02A	04A	08A	15A	02D	04D	08D	15D
Rated Output	W	100	200	400	750	1500	200	400	750	1500
Rated Torque	N·m	0.318	0.637	1.27	2.39	4.77	0.637	1.27	2.39	4.77
Instantaneous Peak Torque	N·m	0.955	1.91	3.82	7.16	14.3	1.91	3.82	7.16	14.3
Rated Current	A (rms)	0.89	2.0	2.6	4.1	7.5	1.4	1.4	2.6	4.5
Instantaneous Max. Current	A (rms)	2.8	6.0	8.0	13.9	23.0	4.6	4.4	7.8	13.7
Rated Speed	min <sup>-1</sup>					3000				
Max. Speed	min <sup>-1</sup>					5000				
Torque Constant	N·m/A (rms)	0.392	0.349	0.535	0.641	0.687	0.481	0.963	0.994	1.14
Rotor Moment of Inertia (JM)	kg·m <sup>2</sup> ×10 <sup>-4</sup>	0.0491	0.193	0.331	2.10	4.02	0.193	0.331	2.10	4.02
Allowable Load Moment of Inertia (JL)	Multiple of (JM)	25	15	7	5	15	7	5		
Rated Power Rate	kW/s	20.6	21.0	49.0	27.1	56.7	21.0	49.0	27.1	56.7
Rated Angular Acceleration	rad/s <sup>2</sup>	64800	33000	38500	11400	11900	33000	38500	11400	11900
Aplicable Encoder	Standard	Incremental Encoder (13 bits: 2048P/R)								
	Option	Incremental/Absolute Encoder (16 bits: 16384P/R)								
Holding Brake Moment of Inertia J	kg·m <sup>2</sup> ×10 <sup>-4</sup>	0.029	0.109		0.875		0.109		0.875	
Basic Specifications	Time Rating	Continuous								
	Insulation Class	Class B								
	Ambient Temperature	0 to +40° C								
	Ambient Humidity	20 to 80% (non-condensing)								
	Vibration Class	15μm or below								
	Enclosure	Totally-enclosed, self-cooled, IP55 (excluding shaft opening)								
	Vibration Resistance	Vibration acceleration 49m/s <sup>2</sup>								
	Mounting	Flange-mounted								

**Torque-Speed Characteristics**

( A : Continuous Duty Zone B : Intermittent Duty Zone)



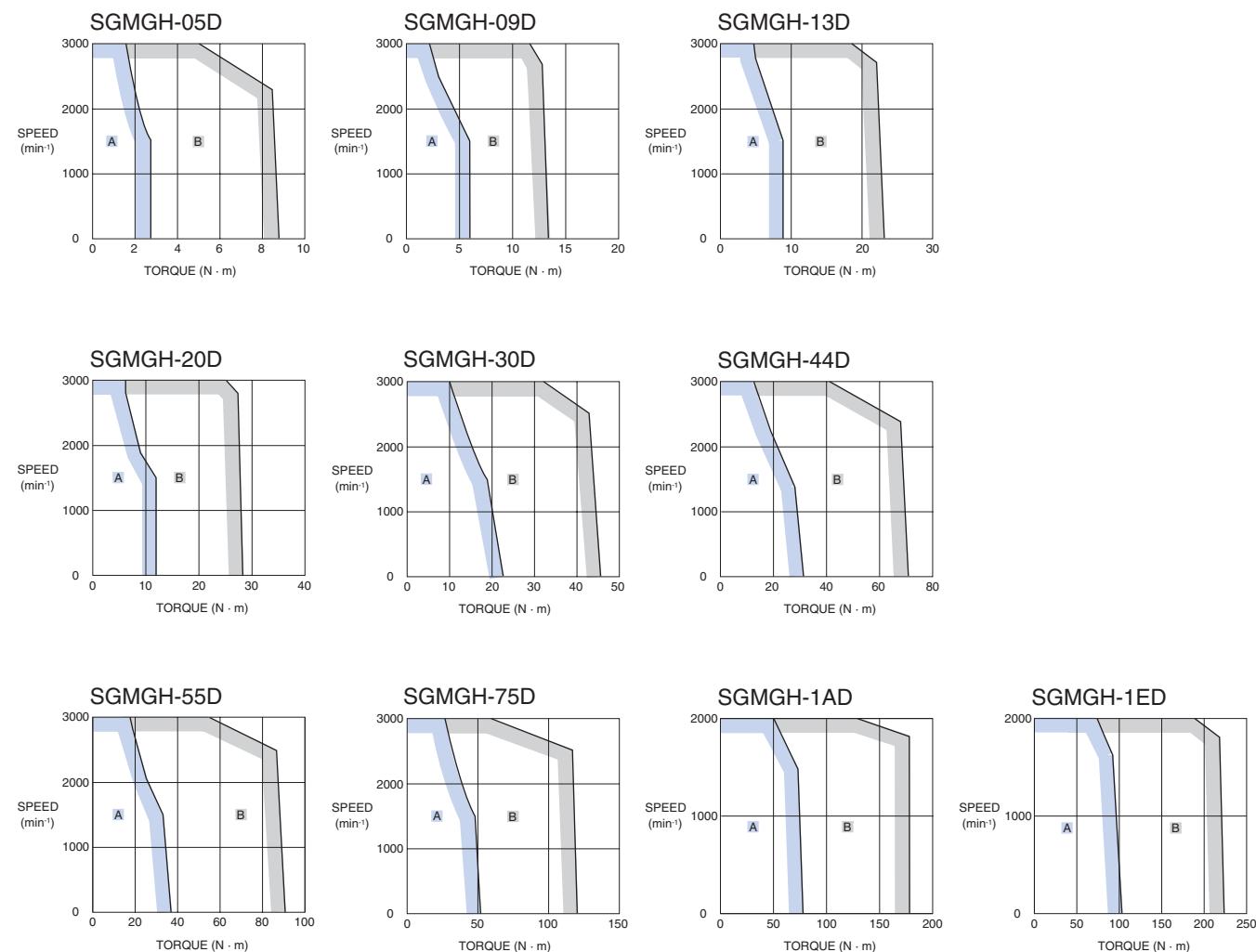
## Type SGMGH, 400V

## Ratings and Specifications

Applied Voltage		400 V									
Servomotor Model SGMGH-□		05D□	09D□	13D□	20D□	30D□	44D□	55D□	75D□	1AD□	1ED□
Rated Output	kW	0.45	0.85	1.3	1.8	2.9	4.4	5.5	7.5	11	15
Rated Torque	N·m	2.84	5.39	8.34	11.5	18.6	28.4	35.0	48.0	70.0	95.4
Instantaneous Peak Torque	N·m	8.92	13.8	23.3	28.7	45.1	71.1	90.7	123	175	221
Rated Current	A (rms)	1.9	3.5	5.4	8.4	11.9	16.5	20.8	25.4	28.1	37.2
Instantaneous Max. Current	A (rms)	5.5	8.5	14	20	28	40.5	55	65	70	85
Rated Speed	min <sup>-1</sup>					1500					
Max. Speed	min <sup>-1</sup>				3000					2000	
Torque Constant	N·m/A (rms)	1.64	1.65	1.68	1.46	1.66	1.82	1.74	2.0	2.56	2.64
Rotor Moment of Inertia (JM)	kg·m <sup>2</sup> ×10 <sup>-4</sup>	7.24	13.9	20.5	31.7	46.0	67.5	89.0	125	281	315
Allowable Load Moment of Inertia (JL)	Multiple of (JM)					5					
Rated Power Rate	kW/s	11.2	20.9	33.8	41.5	75.3	120	137	184	174	289
Rated Angular Acceleration	rad/s <sup>2</sup>	3930	3880	4060	3620	4050	4210	3930	3850	2490	3030
Applicable Encoder	Standard	Incremental Encoder (17 bits: 16384P/R)									
	Option	Absolute Encoder (17 bits: 16384P/R)									
Holding Brake Moment of Inertia J	kg·m <sup>2</sup> ×10 <sup>-4</sup>		2.10			8.50			18.8	37.5	
Basic Specifications	Time Rating	Continuous									
	Insulation Class	Class F									
	Ambient Temperature	0 to +40°C									
	Ambient Humidity	20 to 80% (non-condensing)									
	Vibration Class	15μm or below									
	Enclosure	Totally-enclosed, self-cooled, IP67 (excluding shaft opening)									
	Vibration Resistance	Vibration acceleration 24.5m/s <sup>2</sup>									
Mounting		Flange-mounted									

## Torque-Speed Characteristics

( A : Continuous Duty Zone | B : Intermittent Duty Zone )



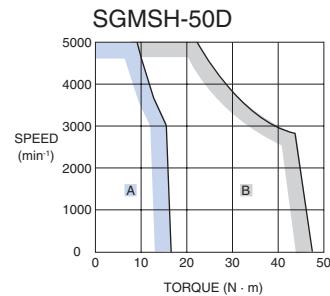
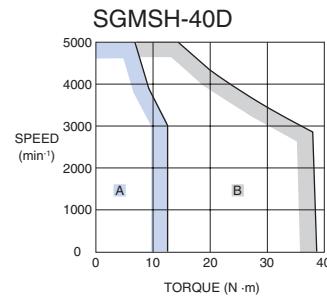
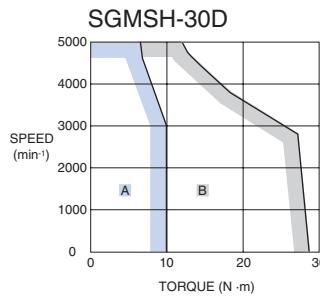
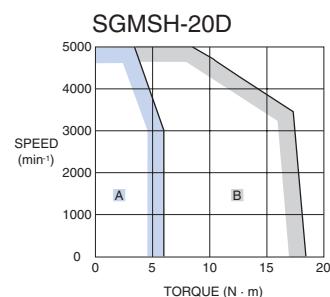
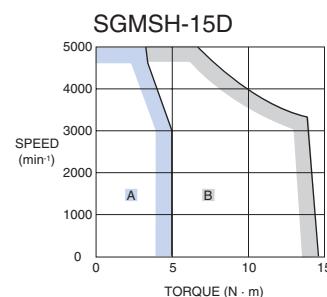
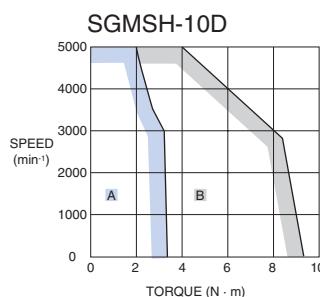
## Type SGMSH, 400V

### Ratings and Specifications

Applied Voltage		400 V					
Servomotor Model SGMSH- □		10D□	15D□	20D□	30D□	40D□	50D□
Rated Output	kW	1.0	1.5	2.0	3.0	4.0	5.0
Rated Torque	N·m	3.18	4.9	6.36	9.8	12.6	15.8
Instantaneous Peak Torque	N·m	9.54	14.7	19.1	29.4	37.8	47.6
Rated Current	A (rms)	2.8	4.7	6.2	8.9	12.5	13.8
Instantaneous Max. Current	A (rms)	8.5	14	19.5	28	38	42
Rated Speed	min <sup>-1</sup>			3000			
Max. Speed	min <sup>-1</sup>			5000			
Torque Constant	N·m/A (rms)	1.27	1.15	1.12	1.19	1.07	1.24
Rotor Moment of Inertia (JM)	kg·m <sup>2</sup> ×10 <sup>-4</sup>	1.74	2.47	3.19	7.0	9.60	12.3
Allowable Load Moment of Inertia (JL)	Multiple of (JM)			5			
Rated Power Rate	kW/s	57.9	97.2	127	137	166	202
Rated Angular Acceleration	rad/s <sup>2</sup>	18250	19840	19970	14000	13160	12780
Aplicable Encoder	Standard	Incremental Encoder (17 bits: 16384P/R)					
	Option	Absolute Encoder (17 bits: 16384P/R)					
Holding Brake Moment of Inertia J	kg·m <sup>2</sup> ×10 <sup>-4</sup>		0.325			2.10	
Basic Specifications	Time Rating	Continuous					
	Insulation Class	Class F					
	Ambient Temperature	0 to +40° C					
	Ambient Humidity	20 to 80% (non-condensing)					
	Vibration Class	15μm or below					
	Enclosure	Totally-enclosed, self-cooled, IP67 (excluding shaft opening)					
	Vibration Resistance	Vibration acceleration 24.5m/s <sup>2</sup>					
	Mounting	Flange-mounted					

### Torque-Speed Characteristics

( A : Continuous Duty Zone B : Intermittent Duty Zone)



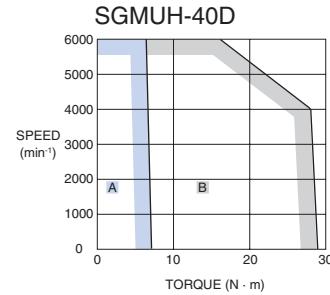
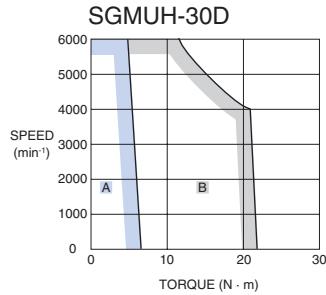
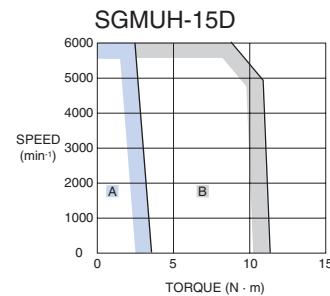
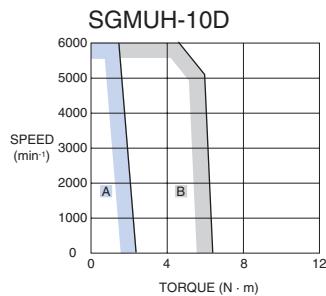
## Type SGMUH, 400V

## Ratings and Specifications

Applied Voltage		400 V					
Servomotor Model SGMUH-	□	10D□	15D□	30D□	40D□		
Rated Output	kW	1.0	1.5	3.0	4.0		
Rated Torque	N·m	1.59	2.45	4.9	6.3		
Instantaneous Peak Torque	N·m	6.5	11	21.5	29		
Rated Current	A (rms)	2.7	4.1	8.1	9.6		
Instantaneous Max. Current	A (rms)	8.5	14	28	38.5		
Rated Speed	min <sup>-1</sup>	6000					
Max. Speed	min <sup>-1</sup>	6000					
Torque Constant	N·m/A (rms)	0.81	0.83	0.81	0.80		
Rotor Moment of Inertia (JM)	kg·m <sup>2</sup> ×10 <sup>-4</sup>	1.74	2.47	7.0	9.6		
Allowable Load Moment of Inertia (JL)	Multiple of (JM)	5					
Rated Power Rate	kW/s	14.5	24.3	34.3	41.3		
Rated Angular Acceleration	rad/s <sup>2</sup>	9130	9910	7000	6550		
Applicable Encoder	Standard	Incremental Encoder (17 bits: 16384P/R)					
	Option	-					
Holding Brake Moment of Inertia J	kg·m <sup>2</sup> ×10 <sup>-4</sup>	0.25		2.10			
Basic Specifications	Time Rating	Continuous					
	Insulation Class	Class F					
	Ambient Temperature	0 to +40°C					
	Ambient Humidity	20 to 80% (non-condensing)					
	Vibration Class	15µm or below					
	Enclosure	Totally-enclosed, self-cooled, IP67 (excluding shaft opening)					
	Vibration Resistance	Vibration acceleration 24.5m/s <sup>2</sup>					
	Mounting	Flange-mounted					

## Torque-Speed Characteristics

(A : Continuous Duty Zone B : Intermittent Duty Zone)



## Servo Drive Specifications

### Single-Phase, 230 V

Servo Drive Type		SGDH- □	A3AE-OY	A5AE-OY	01AE-OY	02AE-OY	04AE-OY	08AE-S-OY	15AE-S-OY							
Applicable Servomotor	SGMAH-□		A3A□	A5A□	01A□	02A□	04A□	08A□	-							
	SGMPH-□	-	-	01A□	02A□	04A□	08A□	15A□								
Basic Specifications	Max. Applicable Motor capacity W	30	50	100	200	400	750	1500								
	Continuous Output Current Arms	0.44	0.64	0.91	2.1	2.8	5.7	11.6								
	Max. Output Current Arms	1.3	2.0	2.8	6.5	8.5	13.9	28								
	Input Power Supply	Main Circuit Control Circuit	For single-phase, 200 to 230 VAC + 10 to -15%					220 to 230 VAC +10 to -15% (50/60Hz)								
	Control Method	Single phase full-wave rectification / IGBT / PWM / sine-wave current drive method														
	Feedback	Serial encoder ( incremental/absolute value )														
	Conditions Usage /storage Temperature	0 to +55° C / -20 to 85° C														
	Usage /storage Humidit	90%RH or less (non-condensing)														
	Altitude	1000m or less above sea level														
	Vibration/Shock Resistance	4.9m/s <sup>2</sup> / 19.6m/s <sup>2</sup>														
	Configuration	Base mounted														
	Approx. Mass	Kg	0.8			1.1	1.7	3.8								

### Three-Phase, 400 V

Servo Drive Type		SGDH- □	05DE-OY	10DE-OY	15DE-OY	20DE-OY	30DE-OY	50DE-OY	60DE-OY	75DE-OY	1ADE-OY	1EDE-OY										
Applicable Servomotor	SGMGH-□	05D□	09D□	13D□	20D□	30D□	44D□	55D□	75D□	1AD□	1ED□											
	SGMSH-□	-	10D□	15D□	20D□	30D□	40D□/50D□	-	-	-	-											
	SGMUH-□	-	10D□	15D□	-	30D□	40D□	-	-	-	-											
Basic Specifications	Max. Applicable Motor capacity kW	0.45	1.0	1.5	2.0	3.0	5.0	6.0	7.5	11	15											
	Continuous Output Current Arms	1.9	3.5	5.4	8.4	11.9	16.5	20.8	25.4	28.1	37.2											
	Max. Output Current Arms	5.5	8.5	14	20	28	40.5	55	65	70	85											
	Input Power Supply	Main Circuit Control Circuit	For three-phase, 380 to 480 VAC + 10 to -15% (50/60Hz) 24VDC+ 15%																			
	Control Method	Single phase full-wave rectification / IGBT / PWM / sine-wave current drive method																				
	Feedback	Serial encoder ( incremental/absolute value )																				
	Conditions Usage /storage Temperature	0 to +55° C / -20 to +85 C																				
	Usage /storage Humidit	90%RH or less (non-condensing)																				
	Altitude	1000m or less above sea level																				
	Vibration/Shock Resistance	4.9m/s <sup>2</sup> / 19.6m/s <sup>2</sup>																				
	Configuration	Base mounted																				
	Approx. Mass	Kg	2.8			3.8	5.5	15	22													

### General Specifications

Speed/Torque Control Mode	Performance	Speed Control Range		1:5000																	
		Speed Variance	Load Variance	During 0 to 100% load ±0.01% max. (at rated speed)																	
		Voltage Variance	Rated voltage ±10%:0% (at rated speed)																		
		Temperature Variance	25 ±25° C: ±0.1 % max (at rated speed)																		
	Input Signal	Frequency characteristics		400Hz (at J <sub>L</sub> = J <sub>M</sub> )																	
		Torque Controll Accuracy (Reproducibility)		±2%																	
		Soft Start Time Setting		0 to 10s (Acceleration, deceleration can each be set.)																	
		Speed Reference Input	Reference Voltage	±6VDC (forward motor rotation if positive reference) at rated speed: Set at delivery Variable setting range: ±2 to ±10 VDC at rated speed/ max. input voltage: ±12V																	
	Position Control Mode	Performance	Input Impedance	Approx. 14 kΩ																	
			Circuit Time Constant	-																	
			Reference Voltage	±3 VDC (forward rotation if positive reference) at rated speed: Set at delivery Variable setting range ±1 to ±10 VDC at rated torque reference																	
		Input Impedance	Approx. 14 KΩ																		
	I/O Signal	Circuit Time Constant		Approx. 47μ s																	
		Bias Setting		0 to 450 min <sup>-1</sup> (setting resolution: 1 min <sup>-1</sup> )																	
		Feed Forward Compensation		0 to 100 % (setting resolution: 1%)																	
		Position Completed Width Setting		0 to 250 command units (Setting resolution: 1 command unit)																	
	Input Signal	Command Pulse	Input pulse Type	Sign + pulse train, 90° phase displacement 2-phase pulse (A-phase+ B-phase) or CCW/CW pulse train																	
			Input Pulse Form	Line driver (+5V level), open collector (+5V or +12 level)																	
			Input Pulse Frequency	0 to 500 Kpps (200Kpps max. at open collector)																	
		Control Signal		Clear Signal (input pulse is same as reference pulse)																	
	Position Signal Output		A-phase, B.phase, C-phase, (S-phase): Line driver output S-phase is for absolute encoder only.																		
	Sequence Input Signal		Servo ON, P control (or control mode switching, zero clamp, command pulse inhibit), forward/reverse run prohibit, alarm reset, forward/ reverse current limit (or internal speed switching)																		
	Sequence Output Signal		Servo alarm, alarm codes (3-bit output): CN1 output terminal is fixed																		
			It is possible to output three types of signals form among: positioning complete (speed agree), motor rotation, servo ready, current limit, speed limit, brake release, warning, NEAR, and zero point pulse signal																		

Communications	Interface	Digital operator (hand-held type), RS-422 port for PCs, etc. (RS-232C ports under some conditions)
	1:N Communications	N may equal up to 14 when an RS-422A port is used
	Axis Address Setting	Set by user setting
	Functions	Status display, user constant setting monitor display, alarm traceback display, JOG run /autotuning operations, and graphing functions for speed/torque command signal, etc
Integrated Functions	Auto Tuning Function	Position speed loop gain and integral time constant can be automatically set.
	Dynamic Brake (DB)	Operates during main power OFF, servo alarm, servo OFF or overtravel
	Regenerative Processing	Regenerative resistor externally mounted (option)
	Overtravel (OT) Prevention Function	DB stop, deceleration stop or coast to stop during P-OT, N-OT operation
	Encoder Divider Function	Optional division possible
	Electronic Gearing	0,01 < A/B < 100
	Internal Speed Setting Function	3 speeds may be set internally
	Protective Functions	Overcurrent, overvoltage, insufficient voltage, overload, main circuit sensor error, heatsink overheat, power phase loss, overflow, overspeed, encoder error, runaway, CPU error, parameter error, etc.
	Analog Monitor Functions for Supervision	Integrates analog monitor connectors for supervision of the speed and torque reference signals, etc.
	Display Functions	CHARGE, POWER, 7-segments LEDx5 (Integrated digital operator function)
	Others	Reverse connection, zero search, automatic motor discrimination function, and DC reactor connection terminal for high frequency power suppression function (except: 6 to 15kW)

## I/O Specifications

### I/O Signals (CN1) - Input signals

Pin No.	Signal Name	Function	
40	Common	/S-ON	Servo ON: Turns ON the servomotor when the gate block in the inverter is released.
41		/P-CON	Function selected by parameter.
		Proportional control reference	Switches the speed control loop from PI (proportional/integral) to P (proportional) control when ON.
		Direction reference	With the internal set speed selected: Switch the rotation direction.
		Control mode switching	Position ↔ speed Position ↔ torque Torque ↔ speed } Enables control mode switching
		Zero-clamp reference	Speed control with zero-clamp function: Reference speed is zero when ON.
		Reference pulse block	Position control with reference pulse stop: Stops reference pulse input when ON.
42		P-OT	Overtravel prohibited: Stops servomotor when movable part travels beyond the allowable range of motion.
43		N-OT	Forward run prohibited Reverse run prohibited
45		/P-CL	Function selected by parameter.
46		/N-CL	Forward external torque limit ON Reverse external torque limit ON
		Internal speed switching	Current limit function enabled when ON. With the internal set speed selected: Switches the internal speed settings.
44	/ALM-RST		Alarm reset: Releases the servo alarm state.
47		+24VIN	Control power supply input for sequence signals: Users must provide the +24 V power supply. Allowable voltage fluctuation range: 11 to 25 V
4 (2)		SEN	Initial data request signal when using an absolute encoder.
21		BAT (+)	Connecting pin for the absolute encoder backup battery.
22		BAT (-)	Do not connect when a battery is connected to the host controller.
5 (6)	Speed	V-REF	Speed reference speed input: ±2 to ±10 V/rated motor speed (Input gain can be modified using a parameter.)
9 (10)	Torque	T-REF	Torque reference input: ±1 to ±10 V/rated motor torque (Input gain can be modified using a parameter.)
7	Position	PULS	Reference pulse input for only line driver
8		/PULS	Input mode is set from the following pulses: Sign + pulse string
11		SIGN	CCW/CW pulse
12		/SIGN	Two-phase pulse (90° phase differential)
15	CLR		Positional error pulse clear input: Clears the positional error pulse during position control.
14		/CLR	
3		PL1	+12 V pull-up power is supplied when PULS, SIGN, and CLR reference signals are open-collector outputs (+12 V power supply is built into the SERVOPACK).
13		PL2	
18		PL3	

**Note:** 1. Pin numbers in parentheses () indicate signal grounds.

2. The functions allocated to /S-ON, /P-CON, P-OT, N-OT, /ALM-RST, /P-CL, and /N-CL input signals can be changed by using the parameters.

3. The voltage input range for speed and torque references is a maximum of ±12 V.

## I/O Signals (CN1) - Output signals

Pin No.	Signal Name	Function	
31 32	Common	ALM+ ALM-	Servo alarm: Turns OFF when an error is detected.
27 28		/TGON+ /TGON-	Detection during servomotor rotation: Detects when the servomotor is rotating at a speed higher than the motor speed setting. Detection speed can be set by using the parameters.
29 30		/S-RDY+ /S-RDY-	Servo ready: ON if there is no servo alarm when the control/main circuit power supply is turned ON.
33 (1) 34		PAO /PAO	Phase-A signal Converted two-phase pulse (phases A and B) encoder output signal and zero-point pulse (phase C) signal: RS-422 or the equivalent
35 36		PBO /PBO	Phase-B signal (Proper line receiver is SN75175 manufactured by Texas Instruments or the equivalent corresponding to MC3486.)
19 20		PCO /PCO	Phase-C signal
48 49		PSO /PSO	Phase-S signal With an absolute encoder: Outputs serial data corresponding to the number of revolutions (RS-422 or the equivalent)
37 38 39 (1)		ALO1 ALO2 ALO3	Alarm code output: Outputs 3-bit alarm codes. Open-collector: 30 V and 20 mA rating maximum
Shell		FG	Connected to frame ground if the shield wire of the I/O signal cable is connected to the connector shell.
25 26	Speed	/V-CMP+ /V-CMP-	Speed coincidence (output in Speed Control Mode): Detects whether the motor speed is within the setting range and if it matches the reference speed value.
25 26	Position	/COIN+ /COIN-	Positioning completed (output in Position Control Mode): Turns ON when the number of positional error pulses reaches the value set. The setting is the number of positional error pulses set in reference units (input pulse units defined by the electronic gear).
-	Reserved	/CLT /VLT /BK /WARN /NEAR	Reserved terminals The functions allocated to /TGON, /S-RDY, and /V-CMP (/COIN) can be changed by using the parameters. /CLT, /VLT, /BK, /WARN, and /NEAR signals can also be changed.
16 17 23 24 50		-	Terminals not used Do not connect relays to these terminals.

**Note:** 1. Pin numbers in parentheses () indicate signal grounds.

2. The functions allocated to /TGON, /S-RDY, and /V-CMP (/COIN) can be changed by using the parameters. /CLT, /VLT, /BK, /WARN, and /NEAR signals can also be changed.

## Terminal Specifications

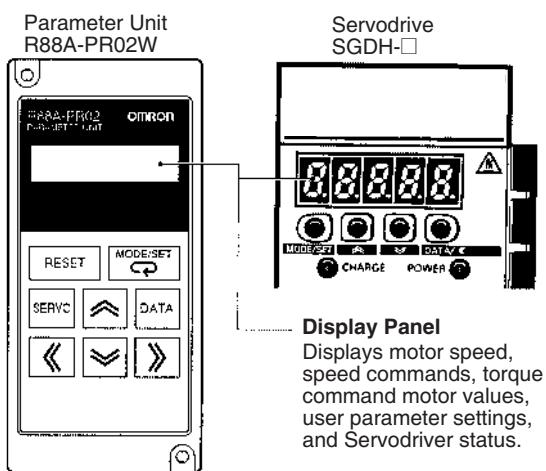
Symbol	Name	Function	
L1, L2 or L1, L2, L3	Main circuit AC input terminal	AC power input terminals for the main circuit	
U	Servomotor connection terminal	Red	Terminals for outputs to the Servomotor.
		White	
		Blue	
L1C, L2C	Control power input terminal	AC power input terminals for the control circuit.	
⏚	Frame ground	Ground terminal. Ground to a maximum of 100Ω. (class 3)	
B1, B2 or B1, B2, B3	Main circuit DC output terminal	5 kW or less: Connect an external regenerative resistor if regenerative energy is high. 5.5 kW: There is no internal regenerative resistor. Be sure to connect an external Regenerative Resistor Unit.	
⊕1, ⊕2	DC reactor connection terminal for suppressing power supply harmonic waves	Normally, short ⊕1 and ⊕2. If a countermeasure against power supply harmonic waves is needed, connect a DC reactor between ⊕1 and ⊕2.	
⊕	Main circuit DC output terminal (positive)	Normally, not connected. This terminal exists on the Servo Drives with a capacity of 6.0 kW or higher only.	
⊖	Main circuit DC output terminal (negative)	Normally, not connected.	

## Encoder Connector (CN2)

Pin No.	Signal Name	Function
1	E5V	Encoder power supply + 5V
2	E0V	Encoder power supply ground
3	BAT+	Battery + (used only with absolute encoder)
4	BAT-	Battery - (used only with absolute encoder)
5	S+	Encoder serial signal input
6	S-	Encoder serial signal input

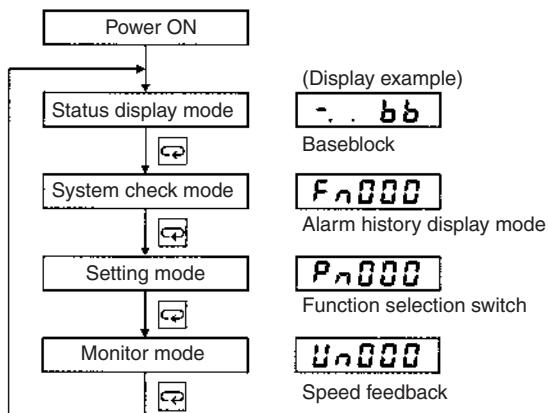
## Operation

### Operating Functions

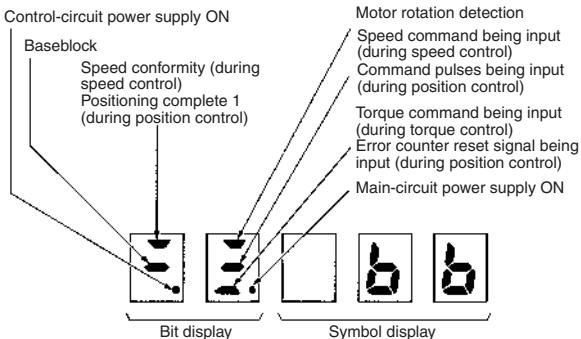


### Changing Modes

To change modes, press the MODE/SET Key.



### Status Display Mode

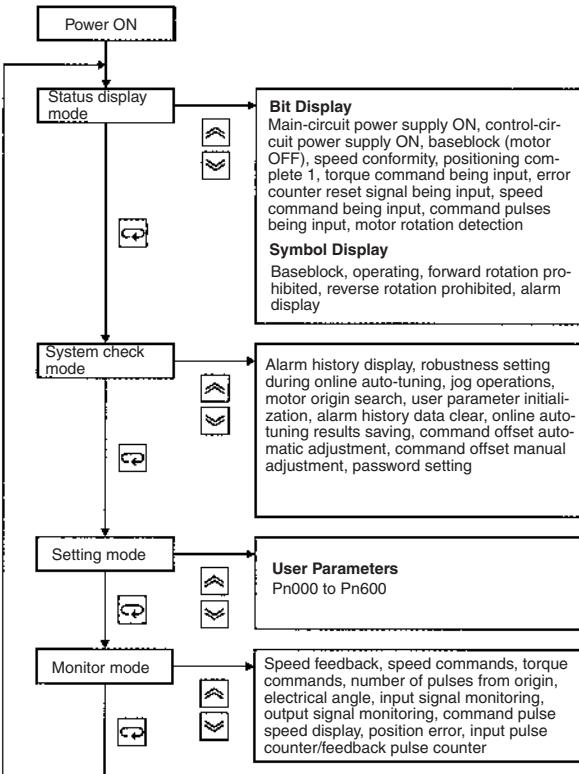


Symbol	Status
<i>bb</i>	Baseblock (motor OFF)
<i>run</i>	Operating
<i>Pot</i>	Forward rotation prohibited (forward overtravel)
<i>not</i>	Reverse rotation prohibited (reverse overtravel)
<i>R.D2</i>	Alarm display

### Unit Keys

R88A-PR02W	SGDH-□	Function
RESET		Resets an alarm.
MODE/SET		Switches between status display mode, system check mode, setting mode, and monitor mode. Used as a data setting key while in setting mode.
SERVO		Turns ON or OFF the Servo while jog operations are being performed.
DATA		Switches between parameter display and data display, and records data.
		Increments parameter settings. Used as a forward rotation start key during jog operation.
		Decrements parameter settings. Used as a reverse rotation start key during jog operation.
		Selects the digit whose setting is to be changed. When selected, the digit flashes.

### Mode Details



## Parameters

Parameter No.	Name		Setting Range	Units	Factory Setting	Setting Validation
Pn000	Function Selection Basic Switches		-	-	0000	After restart
	Digit	Function name	Setting	Explanation		
	0	Direction Selection	0 1 2 and 3	Sets CCW as forward direction Sets CW as forward direction (Reserve Rotation Mode) Reserved (Do not change.)		
	1	Control Method Selection	0 1 2 3 4 5 6 7 8 9 A B	Speed control (analog reference) Position control (pulse train reference) Torque control (analog reference) Internal set speed control (contact reference) Internal set speed control (contact reference)>>Speed control (analog reference) Internal set speed control reference->>Position control (pulse train reference) Internal set speed control (contact reference)>>Torque control (analog reference) Position control (pulse train reference)>>Speed control (analog reference) Position control (pulse train reference)>>Torque control (analog reference) Torque control (analog reference)>>Speed control (analog reference) Speed control (analog reference)>>Zero clamp Position control (pulse train reference)>>Position control (Inhibit)		
	2	Axis Address	0 to F	Sets ServoDrive axis address (Function supported by PC software SigmaWin 100/200).		
	3	Rotation Type/Linear Type Startup Selection	0 1	Starts up as rotation type. Starts up as linear type.		
Pn001	Function Selection Application Switches 1			-	-	0000
	Digit	Function name	Setting	Explanation		
	0	Servo OFF or Alarm Stop Mode	0 1 2	Stops the motor by applying dynamic brake (DB) Stops the motor by applying dynamic brake (DB) and then releases DB Makes the motor coast to a stop state without using the dynamic brake (DB)		
	1	Overtravel (OT) Stop Mode	0 1 2	Same setting as Pn001.0 (Stops the motor by applying DB or by coasting) Sets the torque of Pn406 to the maximum value, decelerate the motor to a stop, and then set it to servolock state Sets the torque of Pn406 to the maximum value. decelerates the motor to a stop, and then sets it to coasting state		
	2	AC/DC Power Input Selection	0 1	Not applicable to DC power input: Input AC power supply through L1, L2 (,and L3) terminals Applicable to DC power input: Input DC power supply between (+1) and (-)		
	3	Warning Code Output Selection	0 1	ALO1, ALO2, and ALO3 output only alarm codes. ALO1, ALO2, and ALO3 output both alarms codes and warning codes. While warning codes are output, ALM signal output remains ON (normal state).		
Pn002	Function Selection Application Switches 2			-	-	0000
	Digit	Function name	Setting	Explanation		
	0	Speed Control Option	0 1 2	N/A Uses T-REF as an extended Uses T-REF as an external torque limit input when P-CL and N-CL are ON.		
	1	Torque Control Option	0 1	N/A Uses V-REF as an external speed limit input.		
	2	Absolute Encoder Usage	0 1	Uses absolute encoder as an absolute encoder Uses absolute encoder as an incremental encoder		
	3	Reserved (Do not change)				
Pn003	Function Selection Application Switches 3			-	-	0002
	Digit	Function name	Setting	Explanation		
	0	Analog Monitor 1 Torque Reference Monitor	0 1 2 3 4 5 6 7 8 to F	Motor speed: 1V/1000 min <sup>-1</sup> Speed reference: 1V/1000 min <sup>-1</sup> Torque reference: 1 V/100% Position error: 0.05 V/1 reference unit Position error: 0.05 V/100 reference units Reference pulse frequency (converted to min <sup>-1</sup> : 1V/1000 min <sup>-1</sup> ) Motor Speed x 4: 1V/250 min <sup>-1</sup> Motor Speed x 8: 1V/250 min <sup>-1</sup> Reserved (Do not change)		
	1	Analog Monitor 2 Speed Reference Monitor	0 to F	Same as Analog Monitor 1 Torque Reference Monitor		
	2	Reserved (Do not change)				
	3	Reserved (Do not change)				
Pn004	Reserved (Do not change)			-	-	0000
Pn005	Reserved (Do not change)			-	-	0000
Pn100	Speed Loop Gain			1 to 2000 Hz	1 Hz	40 Hz
Pn101	Speed Loop Integral Time Constant			0.15 to 512.00 ms	0.01 ms	20.00 ms
Pn102	Position Loop Gain			1 to 2000/s	1/s	40/s
Pn103	Moment of Inertia Ratio			0 to 20000%	1%	0%
Pn104	2nd Speed Loop Gain			1 to 2000 Hz	1 Hz	40 Hz
Pn105	2nd Speed Loop Integral Time Constant			0.15 to 512.00 ms	0.01 ms	20.00 ms
Pn106	2nd Position Loop Gain			1 to 2000/s	1/s	40/s
Pn107	Bias			0 to 450 min <sup>-1</sup>	1 min <sup>-1</sup>	0 min <sup>-1</sup>

Parameter No.	Name	Setting Range	Units	Factory Setting	Setting Validation	
Pn108	Bias Width Addition	0 to 250 reference units	Reference unit	7 reference units	Immediately	
Pn109	Feed-forward	0 to 100%	1%	0%	Immediately	
Pn10A	Feed-forward Filter Time Constant	0.00 to 64.00 ms	0.01 ms	0.00 ms	Immediately	
Pn10B	Gain-related Application Switches		-	-	0000	-
	0 Mode Switch Selection	0	Uses internal torque reference as the condition (Level setting: Pn10C)		Immediately	
			1 Uses speed reference as the condition (Level setting: Pn10D)			
			2 Uses acceleration as the condition (Level setting: Pn10E)			
			3 Uses position error pulse as the condition (Level setting: Pn10F)			
Pn10C	1 Speed Loop Control Method	0	4 No mode switch function available		After restart	
			0 PI control			
			1 IP control			
			2 and 3 Reserved (Do not change)			
			2 Automatic Gain Switching Selection			
Pn10D	2 Automatic Gain Switching Selection	0	0 Automatic Gain Switching Disabled		After restart	
			1 Position Reference			
			2 Position error			
			3 Position Reference and Position Error			
			3 Reserved (Do not change)			
Pn10E	Mode Switch Torque Reference	0 to 800%	1%	200%	Immediately	
Pn10F	Mode Switch Speed Reference	0 to 10000 min <sup>-1</sup>	1 min <sup>-1</sup>	0 min <sup>-1</sup>	Immediately	
Pn10G	Mode Switch Acceleration	0 to 3000 min <sup>-1</sup> /s	1 min <sup>-1</sup> /s	0 min <sup>-1</sup> /s	Immediately	
Pn10H	Mode Switch Error Pulse	0 to 10000 reference units	1 reference unit	0 reference unit	Immediately	
Pn110	Online Autotuning Switches *1		-	-	0010	-
	0 Online Autotuning Method	0	Tunes only at the beginning operation		After restart	
			1 Always tunes.			
			2 Does not perform autotuning.			
			1 Speed feedback Compensation Selection			
Pn111	2 Friction Compensation Selection	0	0 Applicable		Immediately	
			1 N/A			
			2 Friction compensation: Small			
			3 Friction compensation: Large			
			3 Reserved (Do not change)			
Pn112	Speed Feedback Compensation *2	1 to 500%	1%	100%	Immediately	
Pn113	Reserved (Do not change)	-	-	100%	-	
Pn114				1000		
Pn115				200		
Pn116				32		
Pn117				16		
Pn118				100%		
Pn119				100%		
Pn11A				50 /s		
Pn11B				1000%		
Pn11C				50 Hz		
Pn11D				70 Hz		
Pn11E				100%		
Pn11F				100%		
Pn120				0 ms		
Pn121				0 ms		
Pn122				50 Hz		
Pn123				0 Hz		
Pn124	Automatic Gain Switching Timer	1 to 10000 ms	1 ms	100 ms	Immediately	
Pn125	Automatic Gain Switching Width	1 to 250 reference units	1 reference	7 reference units	Immediately	

Parameter No.	Name		Setting Range	Units	Factory Setting	Setting Validation	
Pn200	Position Control References Selection Switches		-	-	0000	After restart	
	Digit	Function Name	Setting	Explanation			
	0	Reference Pulse Form	0	Sign + Pulse, positive logic			
			1	CW + CCW, positive logic			
			2	Phase A + Phase B (x 1), positive logic			
			3	Phase A + Phase B (x 2), positive logic			
			4	Phase A + Phase B (x 4), positive logic			
			5	Sign + Pulse, negative logic			
			6	CW + CWW, negative logic			
			7	Phase A + Phase B (x 1), negative logic			
			8	Phase A + Phase B (x 2), negative logic			
			9	Phase A + Phase B (x 4), negative logic			
	1	Error Counter Clear	0	Clears error counter when the signal is at H level			
			1	Clears error counter at the rising edge of the signal			
			2	Clears error counter when the signal is at L level.			
			3	Clears error counter at the falling edge of the signal			
	2	Clear Operation	0	Clear error counter at the baseblock			
			1	Does not clear error counter (Only possible to clear error counter with CLR signal)			
			2	Clears error counter when an alarm occurs.			
	3	Filter Selection	0	Reference input filter for line driver signals			
			1	Reference input filter for open collector signals			
Pn201	PG Dividing Pulse (16bit or less)		16 to 16384 P/rev	1 P/rev	16384 P/rev	After restart	
Pn202	Electronic Gear Ratio (Numerator)		1 to 65535	-	4	After restart	
Pn203	Electronic Gear Ratio (Denominator)		1 to 65535	-	1	After restart	
Pn204	Position Reference Accel/Decel Time Constant		0.00 to 64.00 ms	0.01 ms	0.00 ms	Immediately	
Pn205	Multiturn Limit Setting *		0 to 65535 rev	rev	65535 rev	After restart	
Pn206	Reserved (Do not change)		-	-	16384 P/rev	-	
Pn207	Position Control Function Switches				0000	After restart	
	Digit	Function Name	Setting	Explanation			
	0	Position Reference Filter selection	0	Acceleration/deceleration filter			
			1	Average movement filter			
	1	Position Control Option	0	N/A			
			1	Uses V-REF as a speed feed-forward input			
	2	Dividing Pulse Parameter Selection	0	Use Pn201 (16-bit or less)			
			1	Use Pn212 (17-bit or more)			
	3	Reserved (Do not change)					
Pn208	Position Reference Movement Averaging Time		0.00 to 64.00 ms	0.01 ms	0.00 ms	After restart	
Pn212	PG Dividing Pulse (17 bit or more)*		16 to 1073741824 P/rev	1 P/rev	2048P/rev	After restart	
Pn217	Reference Pulse Input Multiplication		$\times 1$ to $\times 99$	$\times 1$	$\times 1$	Immediately	
Pn218	Reference Pulse Multiplication Function Selection		-	-	0000	After restart	
	Digit	Function Name	Setting	Explanation			
	0	Reference Pulse Multiplication Function Selection	0	Disabled			
			1	Enabled			
	1	Reserved (Do not change)					
	2	Reserved (Do not change)					
	3	Reserved (Do not change)					
Pn300	Speed Reference Input Gain		1.50 to 30.00 V/ rated speed	0.01V/ rated speed	6.00 V/ rated speed	Immediately	
Pn301	Speed 1		0 to 10000 min <sup>-1</sup>	1 min <sup>-1</sup>	100 min <sup>-1</sup>	Immediately	
Pn302	Speed 2		0 to 10000 min <sup>-1</sup>	1 min <sup>-1</sup>	200 min <sup>-1</sup>	Immediately	
Pn303	Speed 3		0 to 10000 min <sup>-1</sup>	1 min <sup>-1</sup>	300 min <sup>-1</sup>	Immediately	
Pn304	JOG Speed		0 to 10000 min <sup>-1</sup>	1 min <sup>-1</sup>	500 min <sup>-1</sup>	Immediately	
Pn305	Soft Start Acceleration Time		0 to 10000 ms	1 ms	0 ms	Immediately	
Pn306	Soft Start Deceleration Time		0 to 10000 ms	1 ms	0 ms	Immediately	
Pn307	Speed Reference Filter Time Constant		0.00 to 655.35 ms	0.01 ms	0.40 ms	Immediately	
Pn308	Speed Feedback Filter Time Constant		0.00 to 655.35 ms	0.01 ms	0.00 ms	Immediately	
Pn309	Reserved (Do not change)		0 - 500 min <sup>-1</sup>	1 min <sup>-1</sup>	60 min <sup>-1</sup>	Immediately	
Pn400	Torque Reference Input Gain		1.0 to 10.0 V/rated torque	0.1 V/rated torque	3.0 V/ rated torque	Immediately	
Pn401	Torque Reference Filter Time Constant		0.00 to 655.35 ms	0.01 ms	1.00 ms	Immediately	
Pn402	Forward Torque Limit		0 to 800%	1%	800%	Immediately	
Pn403	Reverse Torque Limit		0 to 800%	1%	800%	Immediately	
Pn404	Forward External Torque Limit		0 to 800%	1%	100%	Immediately	
Pn405	Reverse External Torque Limit		0 to 800%	1%	100%	Immediately	
Pn406	Emergency Stop Torque		0 to 800%	1%	800%	Immediately	
Pn407	Speed Limit during Torque Control		0 to 10000 min <sup>-1</sup>	1 min <sup>-1</sup>	10000 min <sup>-1</sup>	Immediately	
Pn408	Torque Function Switches		-	-	0000	Immediately	
	Digit	Function Name	Setting	Explanation			
	0	Notch Filter Selection	0	N/A			
			1	Uses a notch filter for torque reference			
	1	Reserved (Do not Change)					
	2	2nd Notch Filter Selection	0	Disabled			
			1	Enabled			
	3	Reserved (Do not Change)					

Parameter No.	Name	Setting Range	Units	Factory Setting	Setting Validation
Pn409	Notch Filter Frequency	50 to 2000 Hz	1 Hz	2000 Hz	Immediately
Pn40A	Notch Filter Q Value	50 to 400(0.50 to 4.00)	0.01	70(0.70)	Immediately
Pn40B	2nd Notch Filter Frequency	50 to 2000 Hz	1 Hz	2000 Hz	Immediately
Pn40C	2nd Notch Filter Q Value	50 to 400 (0.50 to 4.00)	0.01	70(0.70)	Immediately
Pn500	Positioning Completed Width	0 to 250 reference units	1 reference unit	7 reference units	Immediately
Pn501	Zero Clamp Level	0 to 10000 min <sup>-1</sup>	1 min <sup>-1</sup>	10 min <sup>-1</sup>	Immediately
Pn502	Rotation Detection Level	1 to 10000 min <sup>-1</sup>	1 min <sup>-1</sup>	20 min <sup>-1</sup>	Immediately
Pn503	Speed Coincidence Signal Output Width	0 to 100 min <sup>-1</sup>	1 min <sup>-1</sup>	10 min <sup>-1</sup>	Immediately
Pn504	NEAR Signal Width	1 to 250 reference units	1 reference unit	7 reference units	Immediately
Pn505	Overflow Level	1 to 32767reference units	256 reference unit	1024 reference units	Immediately
Pn506	Brake Reference - Servo OFF Delay Time	1 to 50 (10 to 500 ms)	10 ms	10 ms	Immediately
Pn507	Brake Reference Output Speed Level	0 to 10000 min <sup>-1</sup>	1 min <sup>-1</sup>	100 min <sup>-1</sup>	Immediately
Pn508	Timing for Brake Reference Output during Motor Operation	10 to 100 (100 to 1000 ms)	10 ms	500 ms	Immediately
Pn509	Momentary Hold time	20 to 1000 ms	1 ms	20 ms	Immediately
Pn50A	Input Signal Selections 1	-	-	2100	After restart
Digit	Function Name	Setting	Explanation		
0	Input Signal Allocation Mode	0 1	Uses the sequence input signal terminals with standard allocation Changes the sequence input signal allocation for each signal		
1	/S-ON Signal Mapping Signal Polarity:Normal:Servo ON when ON Signal Polarity:Reverse: Servo ON when OFF	0 1 2 3 4 5 6 7 8 9 A B C D E F	ON when CN1-40 input signals is ON (L-level). ON when CN1-41 input signals is ON (L-level) ON when CN1-42 input signals is ON (L-level) ON when CN1-43 input signals is ON (L-level) ON when CN1-44 input signals is ON (L-level) ON when CN1-45 input signals is ON (L-level) ON when CN1-46 input signals is ON (L-level) Sets signal ON Sets signal OFF OFF when CN1-40 input signals is OFF (H-level) OFF when CN1-41 input signals is OFF (H-level) OFF when CN1-42 input signals is OFF (H-level) OFF when CN1-43 input signals is OFF (H-level) OFF when CN1-44 input signals is OFF (H-level) OFF when CN1-45 input signals is OFF (H-level) OFF when CN1-46 input signals is OFF (H-level)		
2	/P-CON Signal Mapping (P control when ON(L-level))	0 to F	Same as /S-ON		
3	/P-OT Signal Mapping(Overtravel when OFF(H-level))	0 1 2 3 4 5 6 7 8 9 A B C D E F	Forward run allowed when CN1-40 input signal is ON (L-level) Forward run allowed when CN1-41 input signal is ON (L-level) Forward run allowed when CN1-42 input signal is ON (L-level) Forward run allowed when CN1-43 input signal is ON (L-level) Forward run allowed when CN1-44 input signal is ON (L-level) Forward run allowed when CN1-45 input signal is ON (L-level) Forward run allowed when CN1-46 input signal is ON (L-level) Forward run prohibited. Forward run allowed. Forward run allowed when CN1-40 input signals is OFF (H-level) Forward run allowed when CN1-41 input signals is OFF (H-level) Forward run allowed when CN1-42 input signals is OFF (H-level) Forward run allowed when CN1-43 input signals is OFF (H-level) Forward run allowed when CN1-44 input signals is OFF (H-level) Forward run allowed when CN1-45 input signals is OFF (H-level) Forward run allowed when CN1-46 input signals is OFF (H-level)		

Parameter No.	Name		Setting Range	Units	Factory Setting	Setting Validation	
Pn50B	Input Signal Selections 2		-	-	6543	After restart	
	Digit	Function Name	Setting	Explanation			
	0	N-OT Signal Mapping (Overtravel when OFF (H-level))	0	Reserve run allowed when CN1-40 input signals is ON (L-level).			
			1	Reserve run allowed when CN1-41 input signals is ON (L-level).			
			2	Reserve run allowed when CN1-42 input signals is ON (L-level)			
			3	Reserve run allowed when CN1-43 input signals is ON (L-level)			
			4	Reserve run allowed when CN1-44 input signals is ON (L-level)			
			5	Reserve run allowed when CN1-45 input signals is ON (L-level)			
			6	Reserve run allowed when CN1-46 input signals is ON (L-level)			
			7	Reserve run prohibited.			
			8	Reserve run allowed			
			9	Reserve run allowed when CN1-40 input signals is OFF (H-level)			
			A	Reserve run allowed when CN1-41 input signals is OFF (H-level)			
			B	Reserve run allowed when CN1-42 input signals is OFF (H-level)			
			C	Reserve run allowed when CN1-43 input signals is OFF (H-level)			
			D	Reserve run allowed when CN1-44 input signals is OFF (H-level)			
			E	Reserve run allowed when CN1-45 input signals is OFF (H-level)			
			F	Reserve run allowed when CN1-46 input signals is OFF (H-level)			
	1	/ALM-RST Signal Mapping (Alarm Reset when ON(L-level))	0 to F	Same as N-OT			
	2	/P-CL Signal Mapping(Torque Limit when ON(L-level))	0 to F	Same as S-ON, the setting of Pn50A.1			
	3	/N-CL Signal Mapping(Torque Limit when ON(L-level))	0 to F	Same as S-ON, the setting of Pn50A.1			
Pn50C	Input Signal Selections 3		-	-	8888	After restart	
	Digit	Function Name	Setting	Explanation			
	0	/SPD-D Signal Mapping	0	ON when CN1-40 input signal is ON (L-level).			
			1	ON when CN1-41 input signal is ON (L-level).			
			2	ON when CN1-42 input signal is ON (L-level).			
			3	ON when CN1-43 input signal is ON (L-level).			
			4	ON when CN1-44 input signal is ON (L-level).			
			5	ON when CN1-45 input signal is ON (L-level).			
			6	ON when CN1-46 input signal is ON (L-level).			
			7	Set signal ON.			
			8	Set signal OFF.			
			9	ON when CN1-40 input signal is OFF (H-level).			
			A	ON when CN1-41 input signal is OFF (H-level).			
			B	ON when CN1-42 input signal is OFF (H-level).			
			C	ON when CN1-43 input signal is OFF (H-level).			
			D	ON when CN1-44 input signal is OFF (H-level).			
			E	ON when CN1-45 input signal is OFF (H-level).			
			F	ON when CN1-46 input signal is OFF (H-level).			
	1	/SPD-A Signal Mapping	0 to F	Same as SPD-D			
	2	/SPD-B Signal Mapping	0 to F	Same as SPD-D			
	3	/C-SEL Signal Mapping (Control mode change when ON (L-level))	0 to F	Same as SPD-D			
Pn50D	Input Signal Selections 4		-	-	8888	After restart	
	Digit	Function Name	Setting	Explanation			
	0	/ZCLAMP Signal Mapping (Zero clamp when ON (L-level))	0	ON when CN1-40 input signal is ON (L-level).			
			1	ON when CN1-41 input signal is ON (L-level).			
			2	ON when CN1-42 input signal is ON (L-level).			
			3	ON when CN1-43 input signal is ON (L-level).			
			4	ON when CN1-44 input signal is ON (L-level).			
			5	ON when CN1-45 input signal is ON (L-level).			
			6	ON when CN1-46 input signal is ON (L-level).			
			7	Set signal ON.			
			8	Set signal OFF.			
			9	ON when CN1-40 input signal is OFF (H-level).			
			A	ON when CN1-41 input signal is OFF (H-level).			
			B	ON when CN1-42 input signal is OFF (H-level).			
			C	ON when CN1-43 input signal is OFF (H-level).			
			D	ON when CN1-44 input signal is OFF (H-level).			
			E	ON when CN1-45 input signal is OFF (H-level).			
			F	ON when CN1-46 input signal is OFF (H-level).			
	1	/INHIBIT Signal Mapping (Reference pulse inhibit when ON (L-level))	0 to F	Same as /Z CLAMP			
	2	/G-SEL Signal Mapping (Gain change when ON (L-level))	0 to F	Same as /Z CLAMP			
	3	Reserved (Do not Change)					

Parameter No.	Name			Setting Range	Units	Factory Setting	Setting Validation
Pn50E	Output Signal Selections 1			-	-	3211	After restart
	Digit	Function Name	Setting	Explanation			
	0	Positioning Completion Signal Mapping (/COIN)	0 1 2 3	Disabled (the above signal is not used) Outputs the signal from CN1-25, 26 output terminal Outputs the signal from CN1-27, 28 output terminal Outputs the signal from CN1-29, 30 output terminal			
	1	Speed Coincidence Detection Signal Mapping (/V-CMP)	0 to 3	Same as /COIN			
	2	Speed Coincidence Detection Signal Mapping (/V-CMP)	0 to 3	Same as /COIN			
	3	Speed Coincidence Detection Signal Mapping (/V-CMP)	0 to 3	Same as /COIN			
Pn50F	Output Signal Selections 2			-	-	0000	After restart
	Digit	Function Name	Setting	Explanation			
	0	Torque Limit Detection Signal Mapping (/CLT)	0 1 2 3	Disabled (the above signal is not used) Outputs the signal from CN1-25, 26 output terminal Outputs the signal from CN1-27, 28 output terminal Outputs the signal from CN1-29, 30 output terminal			
	1	Speed Limit Detection Signal Mapping (/VLT)	0 to 3	Same as /CLT			
	2	Brake Interlock Signal Mapping (/BK)	0 to 3	Same as /CLT			
	3	Warning Signal Mapping (/WARN)	0 to 3	Same as /CLT			
Pn510	Output Signal Selections 3			-	-	0000	After restart
	Digit	Function Name	Setting	Explanation			
	0	Near Signal Mapping (/NEAR)	0 1 2 3	Disabled (the above signal is not used) Outputs the signal from CN1-25 or -26 output terminal Outputs the signal from CN1-27 or -28 output terminal Outputs the signal from CN1-29 or -30 output terminal			
	1	Reserved (Do not Change)					
	2	Reference Pulse Input Multiplication Selection Signal Mapping (/PSELA)	0 1 2 3	Disabled (the above signal is not used) Outputs the signal from CN1-25 or -26 output terminal Outputs the signal from CN1-27 or -28 output terminal Outputs the signal from CN1-29 or -30 output terminal			
	3	Reserved (Do not Change)					
Pn511	Reserved (Do not change)			-	-	8888	Immediately
Pn512	Output Signal Reversal Settings			-	-	0000	After restart
	Digit	Function Name	Setting	Explanation			
	0	Output Signal Reversal for CN1-25 or -26 Terminals	0 1	Output signal is not reversed Output signal is reversed			
	1	Output Signal Reversal for CN1-27 or -28	0 1	Output signal is not reversed Output signal is reversed			
	2	Output Signal Reversal for CN1-29 or -30	0 1	Output signal is not reversed Output signal is reversed			
	3	Reserved (Do not Change)					
Pn513	Input Signal Selections 5			-	-	0088	After restart
	Digit	Function Name	Setting	Explanation			
	0	/PSEL Signal Mapping (Reference pulse input multiplication when ON (L-level))	0 1 2 3 4 5 6 7 8 9 A B C D E F	ON when CN1-40 input signal is ON (L-level). ON when CN1-41 input signal is ON (L-level). ON when CN1-42 input signal is ON (L-level). ON when CN1-43 input signal is ON (L-level). ON when CN1-44 input signal is ON (L-level). ON when CN1-45 input signal is ON (L-level). ON when CN1-46 input signal is ON (L-level). Set signal ON. Set signal OFF. ON when CN1-40 input signal is OFF (H-level). ON when CN1-41 input signal is OFF (H-level). ON when CN1-42 input signal is OFF (H-level). ON when CN1-43 input signal is OFF (H-level). ON when CN1-44 input signal is OFF (H-level). ON when CN1-45 input signal is OFF (H-level). ON when CN1-46 input signal is OFF (H-level).			
	1	Reserved (Do not change)	-				
	2	Reserved (Do not change)	-				
	3	Reserved (Do not change)	-				
Pn51A	Positionb Error Level Between Motor and Load			0 - 32767	Reference Unit	1 Reference Unit	0
Pn51B	Reserved (Do not Change)			1 - 32767	256	100	Immediately
Pn51C	Reserved (Do not Change)			0 - 10000	min <sup>-1</sup>	1 min <sup>-1</sup>	450 min <sup>-1</sup>
Pn51E	Excessive Position Error Warning Level			0 to 100%	1%	0%	Immediately
Pn600	Regenerative Resistor Capacity			Depends on ServoDrive Capacity	10 W	0 W	Immediately
Pn601	Reserved (Do not change)			Depends on Servo Drive-Capacity	-	0 W	Immediately

## Monitor Mode Details

Monitor No.	Monitor item	Unit	Explanation
Un000	Speed Feedback	min <sup>-1</sup>	Displays the actual motor speed.
Un001	Speed Command	min <sup>-1</sup>	Displays the speed command value or internally set speed value during speed control. 0 is displayed during pulse-train input control.
Un002	Torque Command	%	Displays the command value for a current loop that is expressed by treating the rated torque as 100%.
Un003	Number of Pulses from Z-Phase	Pulses	Displays the number of pulses from Z-Phase in encoder resolution units (times 4).
Un004	Electrical Angle	degrees	Displays the motor electrical angle.
Un005	Input Signal Monitor	---	Displays driver I/O signal status by turning ON or OFF each signal bit.
Un006	Output Signal Monitor	---	
Un007	Command Pulse Speed Display	min <sup>-1</sup>	Displays command pulse frequency converted in r/min.
Un008	Position Deviation (Error Counter)	Reference units	Displays the number of pulses accumulated in the error counter (Position Deviation) that are converted in reference units (input pulse references).
Un009	Motor Load Rate	%	Displays effective torque at intervals of 10 s that is expressed by treating the rated torque as 100%.
Un00A	Regeneration Load Rate	%	Displays the amount of regeneration energy absorbed at intervals of 10 s that is expressed by treating the Pn600 setting (Regenerative Resistor Capacity) as 100%.
Un00B	Dynamic Brake Resistance Load Rate	%	Displays the resistance load factor at intervals of 10 s that is expressed by treating the rated load factor as 100%.
Un00C	Input Pulse Counter	Reference units	Displays the number of counted input pulses in hexadecimal notation.
Un00D	Feedback Pulse Counter	Pulses	Displays the number of counted encoder feedback pulses in hexadecimal notation (multiplied by 4).

## List of Function Modes

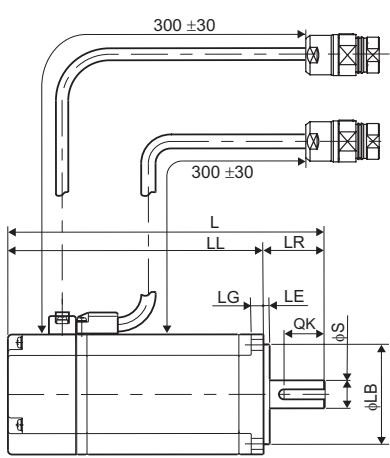
Parameter No.	Function
Fn000	Alarm traceback data display
Fn001	Rigidity setting during online autotuning
Fn002	JOG mode operation
Fn003	Zero-point search mode
Fn004	Fixed parameter
Fn005	Parameter setting initialization
Fn006	Alarm traceback data clear
Fn007	Writing to EEPROM moment of inertia ratio data obtained from online autotuning
Fn008	Absolute encoder multiturn reset and encoder alarm reset
Fn009	Automatic tuning of analog (speed, torque) reference offset
Fn00A	Manual adjustment of speed reference offset
Fn00B	Manual adjustment of torque reference offset
Fn00C	Manual zero-adjustment of analog monitor output
Fn00D	Manual gain-adjustment of analog monitor output
Fn00E	Automatic offset-adjustment of motor current detection signal
Fn00F	Manual offset-adjustment of motor current detection signal
Fn010	Password setting (protects parameters from being changed)
Fn011	Motor models display
Fn012	Software version display
Fn013	Multiturn limit setting change when a Multiturn Limit Disagreement Alarm (A.CC) occurs
Fn014	Application module detection results clear

## Dimensions

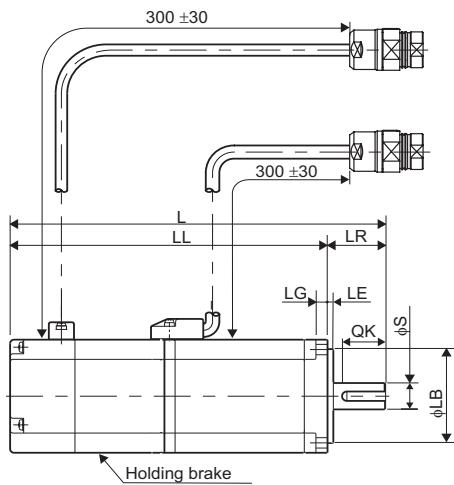
### Servomotors

#### Type SGMAH (230/400V)

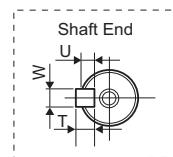
Dimensions (mm)	Without Brake		With Brake		LR	Flange surface						Shaft end					
	L	LL	L	LL		LA	LB	LC	LE	LG	LZ	S	QK	W	T	U	Tap × Depth
SGMAH-A3A□A6□D-OY	94.5	69.5	126	101	25	46	30 <sup>h7</sup>	40	2.5	5	4.3	6 <sup>h6</sup>	14	2	2	1.2	M2.5 x 5L
SGMAH-A5A□A6□D-OY	102.0	77	133.5	108.5								8 <sup>h6</sup>		3	3	1.8	M3 x 6L
SGMAH-01A□A6□D-OY	119.5	94.5	160	135	30	70	50 <sup>h7</sup>	60	3	6	5.5	14 <sup>h6</sup>	20	5	5	3	M5 x 8L
SGMAH-02A□A6□D-OY	126.5	96.5	166	136								16 <sup>h6</sup>	30				
SGMAH-03D□A6□D-OY	154.5	124.5	194	164													
SGMAH-04A□A6□D-OY																	
SGMAH-07D□A6□D-OY	185	145	229.5	189.5	40	90	70 <sup>h7</sup>	80	3	8	7	16 <sup>h6</sup>	30				
SGMAH-08A□A6□D-OY																	



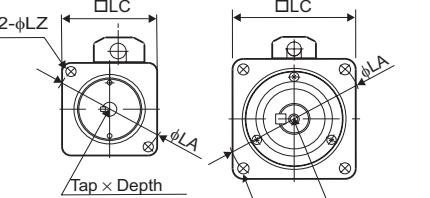
Models without Brake



Models with Brake



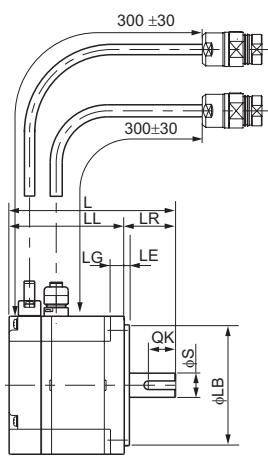
SGMAH-A3, -A5, -01



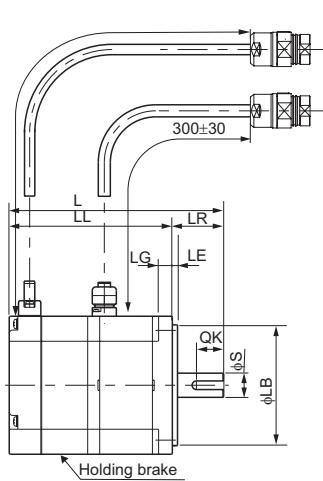
SGMAH-02 to -08

#### Type SGMPH (230/400V)

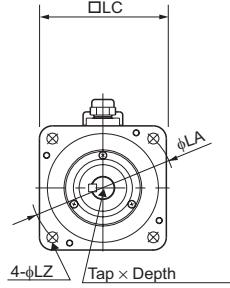
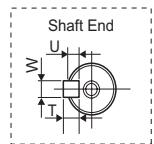
Dimensions (mm)	Without Brake		With Brake		LR	Flange surface						Shaft end					
	L	LL	L	LL		LA	LB	LC	LE	LG	LZ	S	QK	W	T	U	Tap × Depth
SGMPH-01□□□6□D-OY	87	62	116	91	25	70	50 <sup>h7</sup>	60	3	6	5.5	8 <sup>h6</sup>	14	3	3	1.8	M3x6L
SGMPH-02□□□6□D-OY	97	67	128.5	98.5		90	70 <sup>h7</sup>	80	3	8	7	14 <sup>h6</sup>	16	5	5	3	M5x8L
SGMPH-04□□□6□D-OY	117	87	148.5	118.5	30												
SGMPH-08□□□6□D-OY	126.5	86.5	160	120		145	110 <sup>h7</sup>	120	3.5	10	10	16 <sup>h6</sup>	22				
SGMPH-15□□□6□D-OY	154.5	114.5	188	148	40							19 <sup>h6</sup>		6	6	3.5	M6x10L



Models without Brake

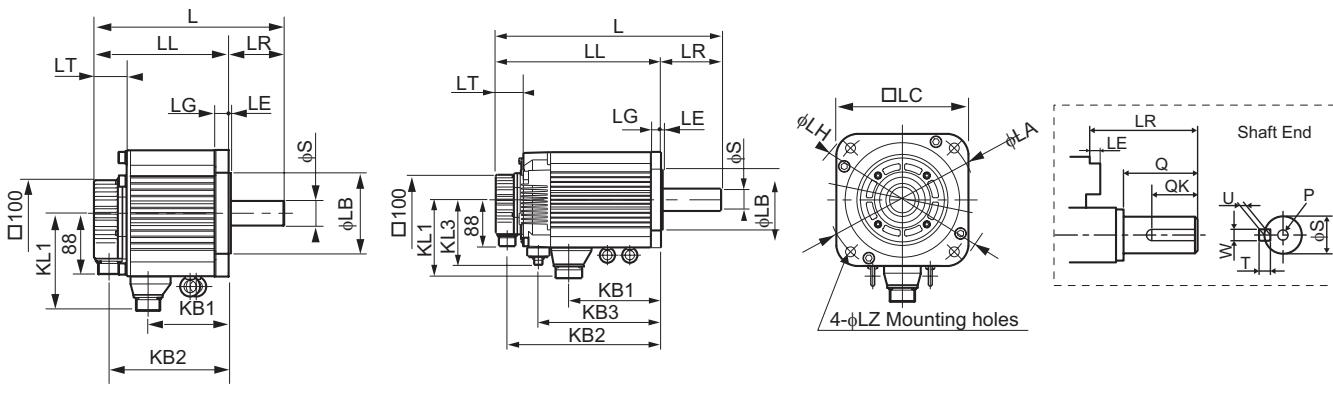


Models with Brake



**Type SGMGH (400V)**

Dimensions (mm)	Without Brake			With Brake			LR	LT	KB1	KL1	Flange surface							Shaft end								
	L	LL	KB2	L	LL	KB2	KB3	KL3			LA	LB	LC	LE	LG	LH	LZ	S	Q	QK	W	T	U	P		
SGMGH-05D□A6□-OY	196	138	117	234	176	154	109	98	58	46	65	145	110	130	6	12	165	9	19	40	25	5	5	3	M5x12L	
SGMGH-09D□A6□-OY	219	161	140	257	199	177	132			88																
SGMGH-13D□A6□-OY	243	185	164	281	223	201	156			112									22			6	6	3.5		
SGMGH-20D□A6□-OY	245	166	144	296	217	195	137	123	79	47	89	140	200	114.3	180	3.2	18	230	13.5	35	76	60	10	8	5	M12x25L
SGMGH-30D□A6□-OY	271	192	170	322	243	221	163			115																
SGMGH-44D□A6□-OY	305	226	204	356	277	255	197			149																
SGMGH-55D□A6□-OY	373	260	238	424	311	289	231			174	150									42	110	90	12	12	12	M16x32L
SGMGH-75D□A6□-OY	447	334	312	498	385	363	305			248																
SGMGH-1AD□A6□-OY	454	338	316	499	383	362	315	142	116	47	251	168	235	200	220	4	18	270	13.5	42	110	90	12	8	5	M16x32L
SGMGH-1ED□A6□-OY	573	457	435	635	519	497	415			48	343									55			16	10	6	M20x40L

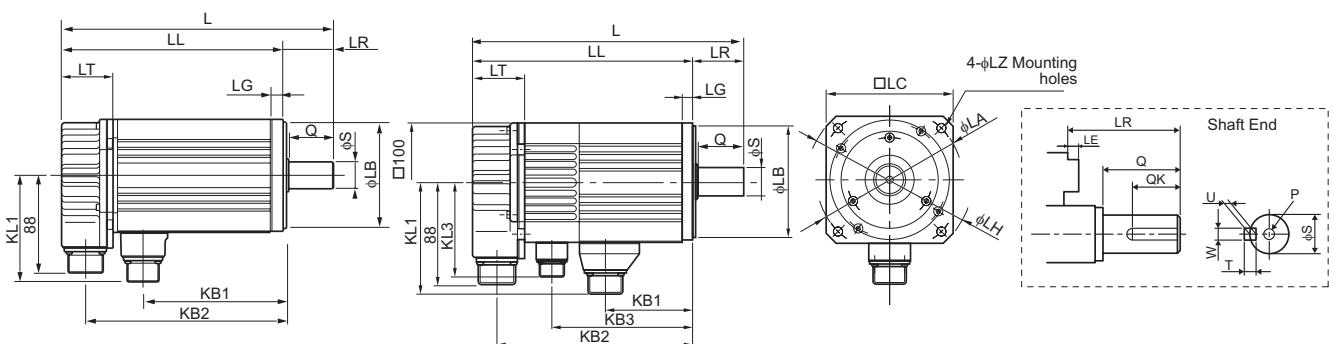


Models without Brake

Models with Brake

**Type SGMSH (400V)**

Dimensions (mm)	Without Brake			With Brake			LR	LT	KB1	KL1	Flange surface							Shaft end								
	L	LL	KB2	L	LL	KB2	KB3	KL3			LA	LB	LC	LE	LG	LH	LZ	S	Q	QK	W	T	U	P		
SGMSH-10D□A6□-OY	194	149	128	238	193	171	120	85	45	46	76	96	115	95 <sup>h7</sup>	100	3	10	130	7	24 <sup>h6</sup>	40	32	8	7	4	M8x16L
SGMSH-15D□A6□-OY	220	175	154	264	219	197	146			102																
SGMSH-20D□A6□-OY	243	198	177	287	242	220	169			125																
SGMSH-30D□A6□-OY	262	199	178	300	237	216	170	98	63	124	114	145	110 <sup>h7</sup>	130	6	12	165	9	28 <sup>h6</sup>	55	50					
SGMSH-40D□A6□-OY	299	236	215	337	274	253	207			161																
SGMSH-50D□A6□-OY	339	276	255	377	314	293	247			201																

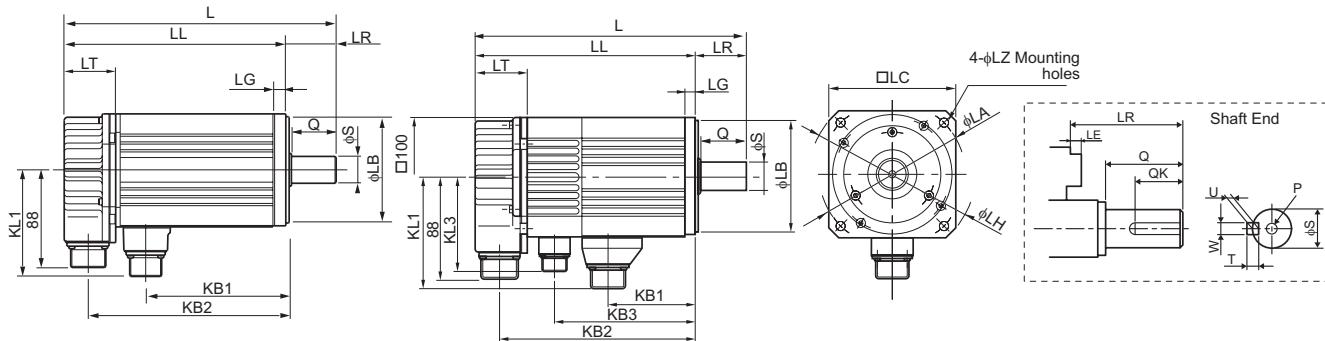


Models without Brake

Models with Brake

## Type SGMUH (400V)

Dimensions (mm)	Without Brake			With Brake					LR	LT	KB1	KL1	Flange surface							Shaft end							
	L	LL	KB2	L	LL	KB2	KB3	KL3					LA	LB	LC	LE	LG	LH	LZ	S	Q	QK	W	T	U	P	
SGMUH-10D□A6□-OY	194	149	128	238	193	171	120	85	45	46	76	96	130	110	116	3.5	10	150	9	24 <sup>h6</sup>	40	32	8	7	4	M8x16L	
SGMUH-15D□A6□-OY	220	175	154	264	219	197	146				102																
SGMUH-30D□A6□-OY	262	202	181	300	237	219	173	98	60		127	114	165	130	155					12	190	11	28 <sup>h6</sup>	55	50		
SGMUH-40D□A6□-OY	327	269	245	362	302	281	210				71	164															

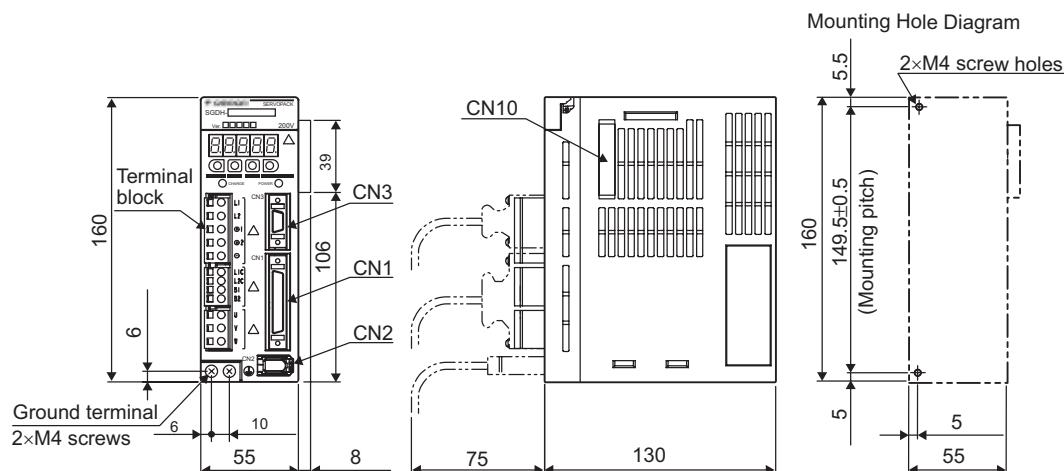


Models without Brake

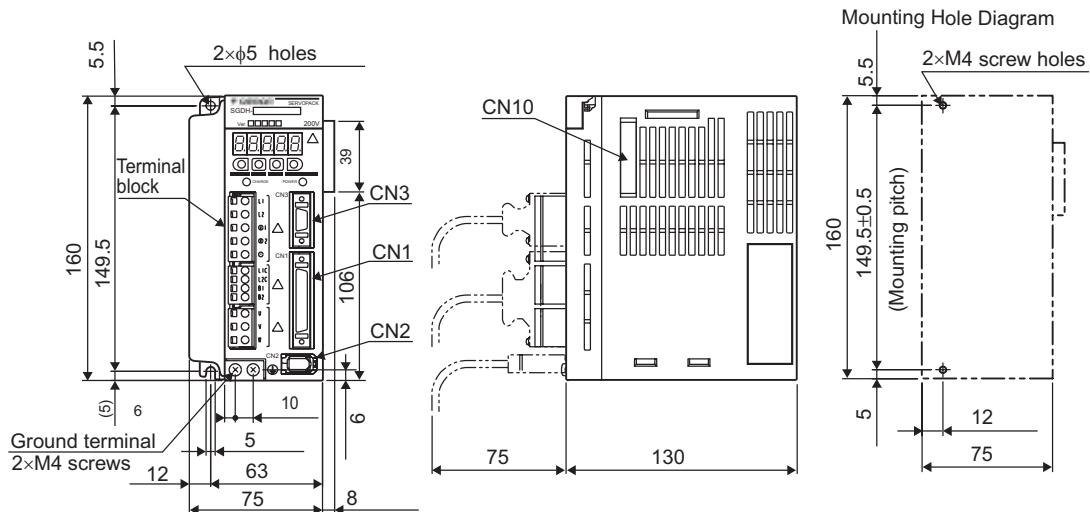
Models with Brake

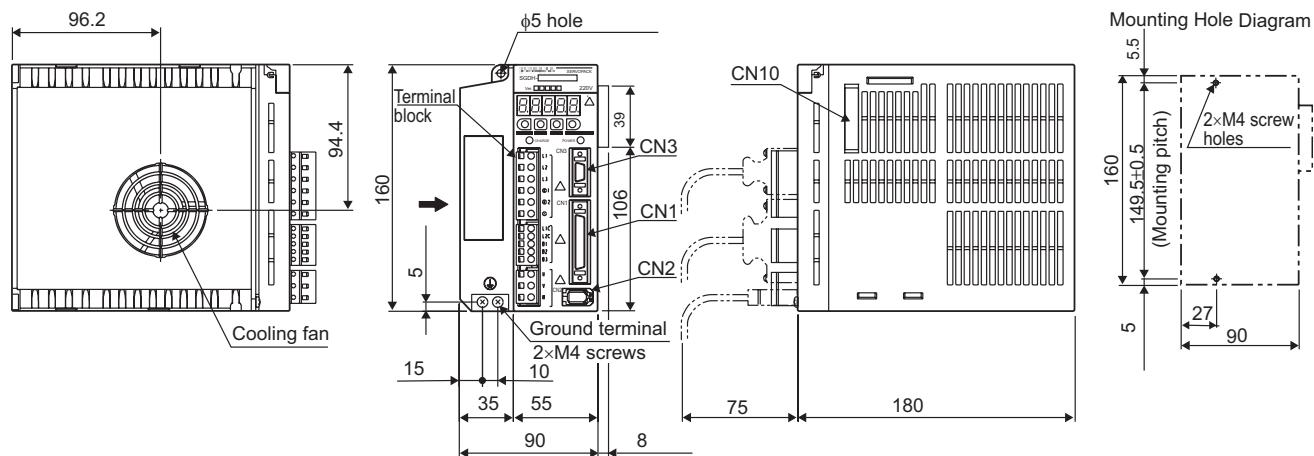
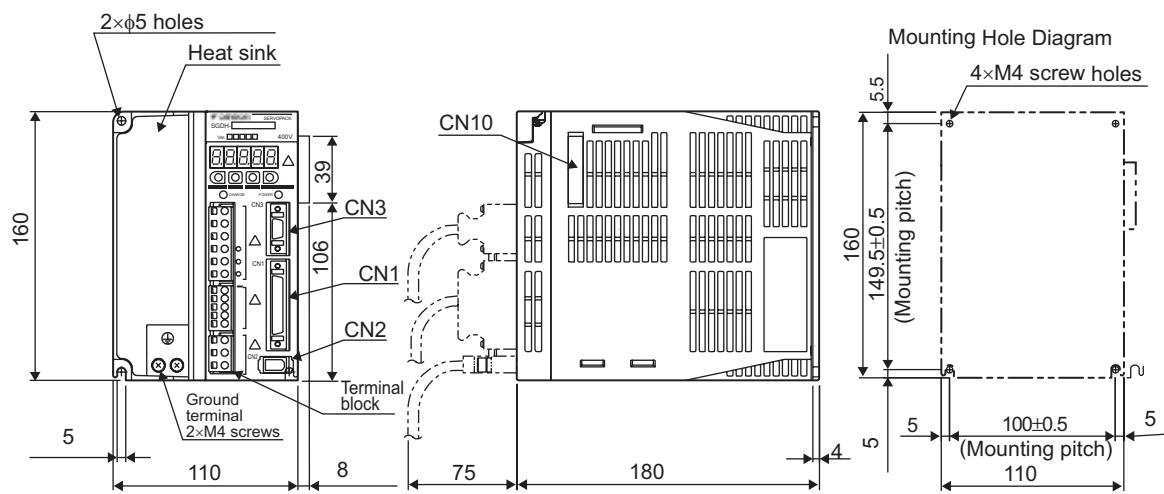
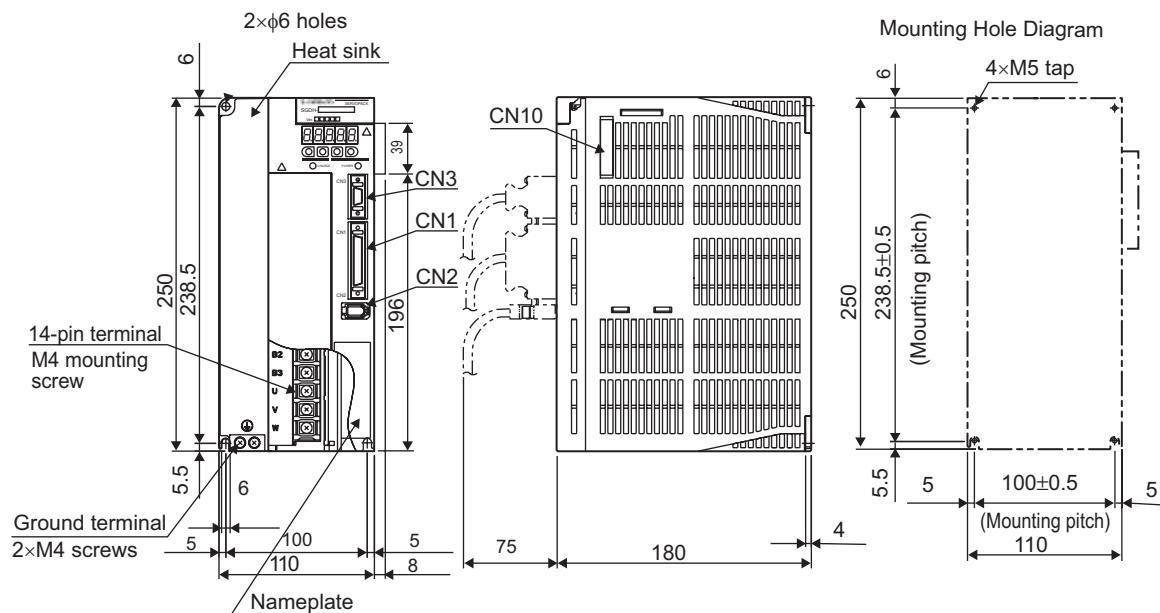
## Servodrives

## SGDH-A3AE-OY to -02AE-OY (230V, 30 to 200W)

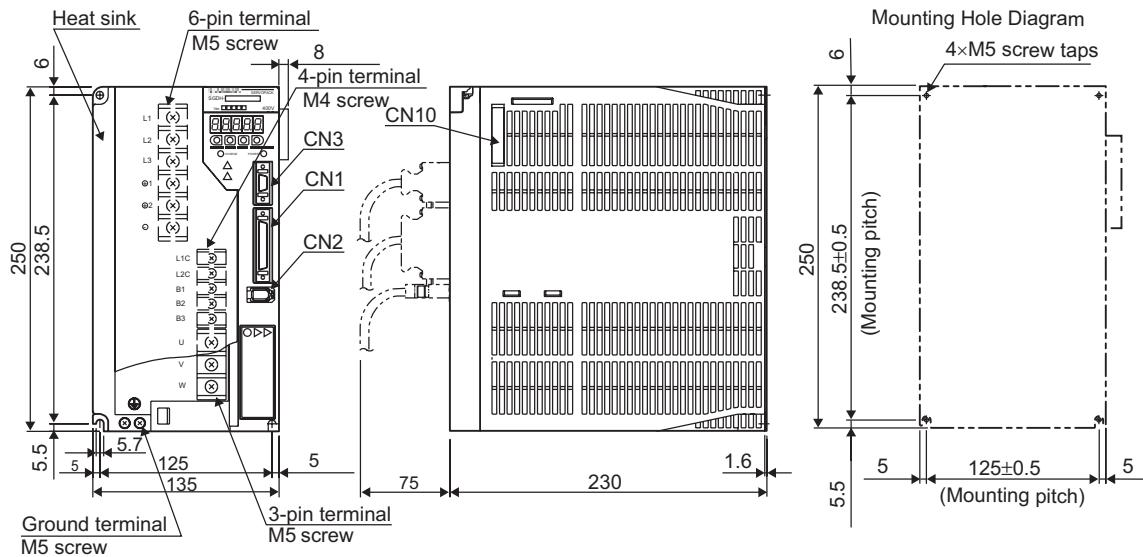


## SGDH-04AE-OY (230V, 400W)

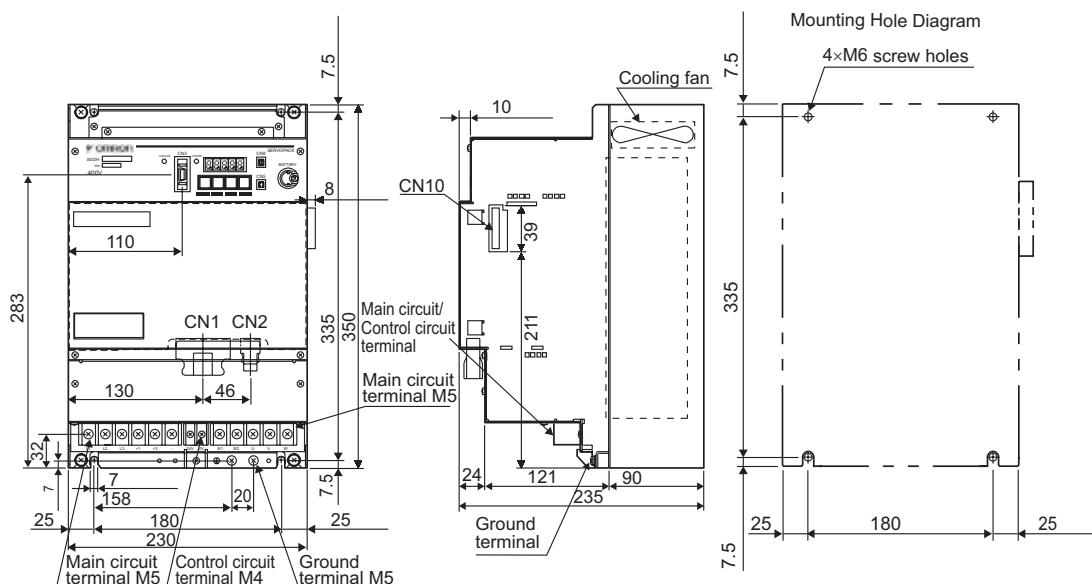


**SGDH-08AE-S-OY (230V, 750W)****SGDH-05DE-OY to -15DE-OY (400V, 0.5 to 1.5kW)****SGDH-15AE-S (230V, 1.5 kW)****SGDH-20/30DE-OY (400V, 2/3kW)**

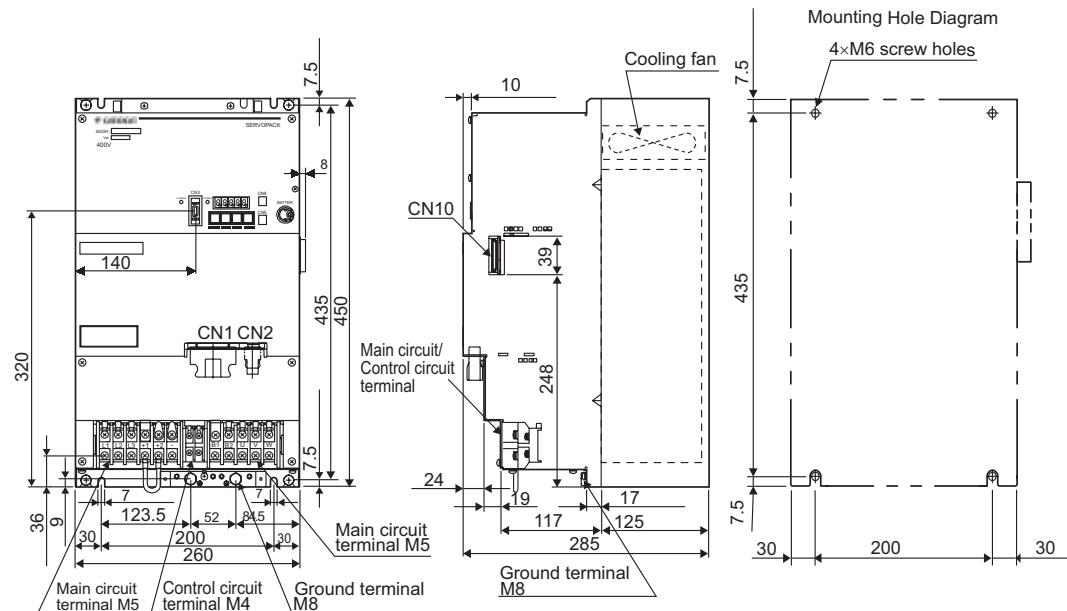
## **SGDH-50DE-OY (400V, 5kW)**



## **SGDH-60/75DE-OY (400V, 6/7.5kW)**

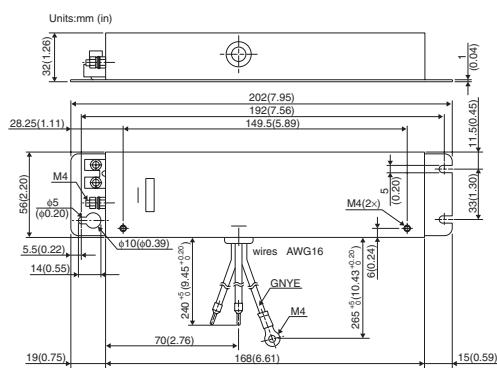


## **SGDH-1A/1EDE-OY (400V, 11/15kW)**



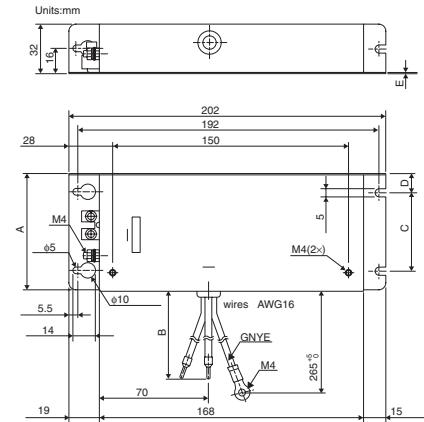
## Filters

### R88A-FIW104-SE

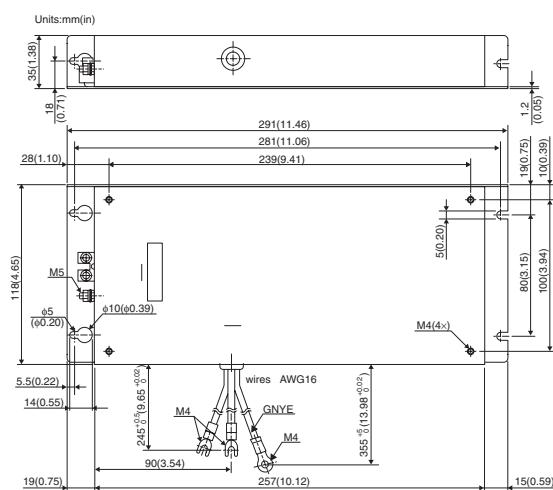


### R88A-FIW107-SE, R88A-FIW115-SE

Model	R88A-FIW107-SE	R88A-FIW115-SE
Dimensions in mm	A 75	90
	B 240 <sup>+5</sup>	300 <sup>+5</sup>
	C 50	60
	D 12	15
	E 1	1.2

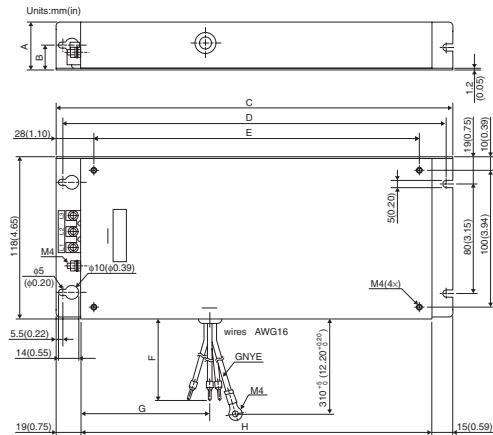


### R88A-FIW125-SE

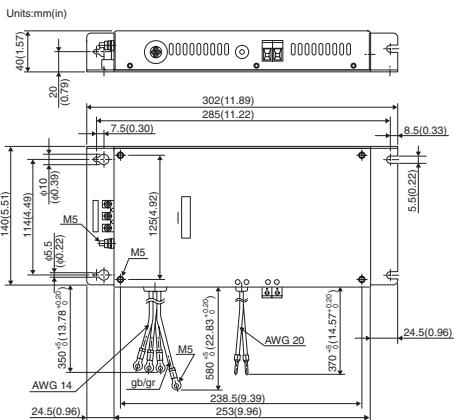


### R88A-FIW4006-SE, R88A-FIW4010-SE

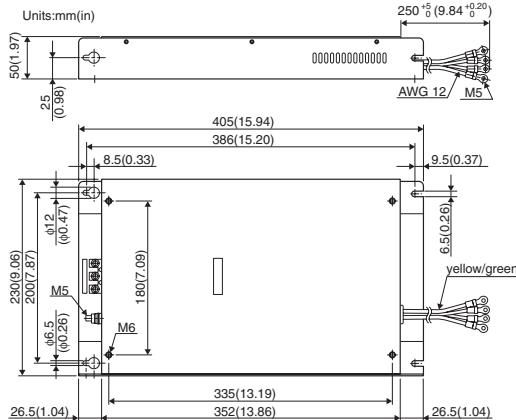
Model	R88A-FIW4006-SE	R88A-FIW4010-SE
Dimensions in mm (in)	A 32 (1.26)	35 (1.38)
	B 16 (0.63)	18 (0.71)
	C 202 (7.95)	291 (11.46)
	D 192 (7.56)	281 (11.06)
	E 150 (5.91)	239 (9.41)
	F 300 (11.81)	270 (10.63)
	G 70 (2.76)	90 (3.54)
	H 168 (6.61)	257 (10.12)



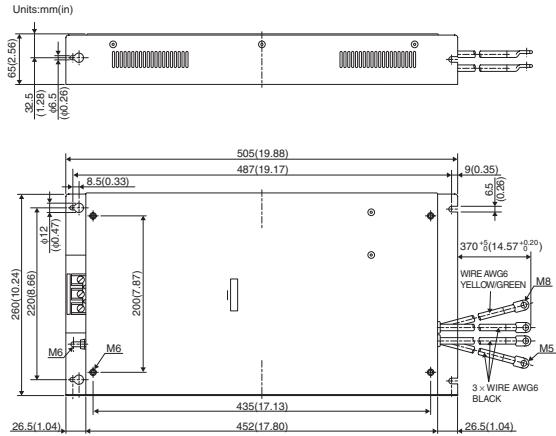
R88A-FIW4020-SE



R88A-FIW4030-SE

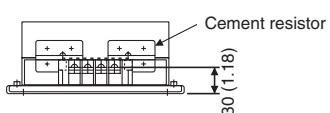
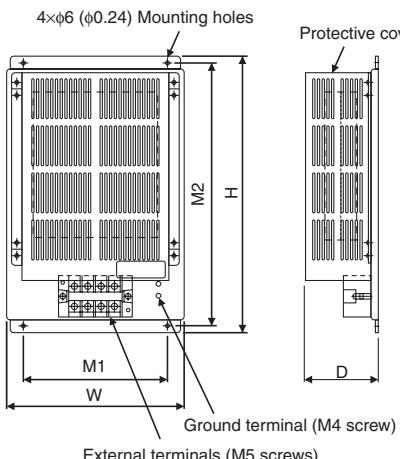


R88A-FIW4055-SE



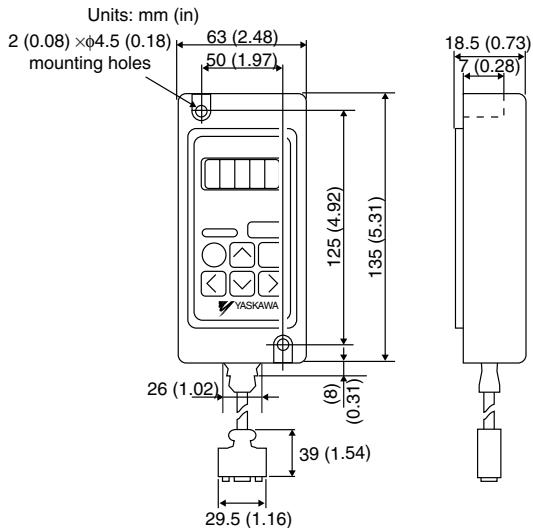
## **Regenerative Resistor Units**

Model	W	H	D	M1	M2	Approx. Mass kg
JUSP-RA18	220	350	92	180	335	4
JUSP-RA19	300	350	95	250	335	7



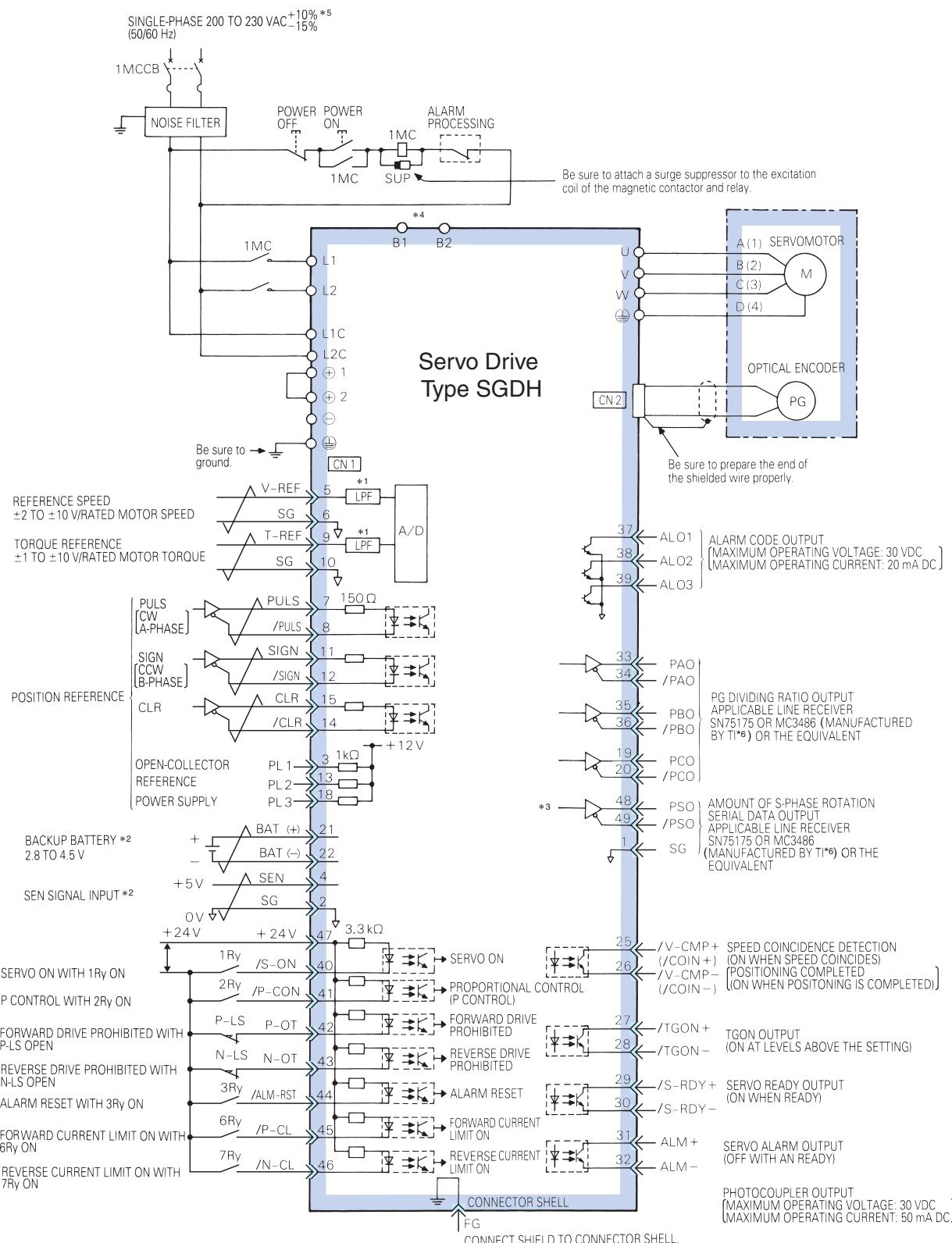
# Digital Operator

JUSP-OP02A-2



## Installation

### Single-phase, 230VAC



\*1 The time constant for the primary filter is 47 µs.

\*2 Connect when using an absolute encoder.

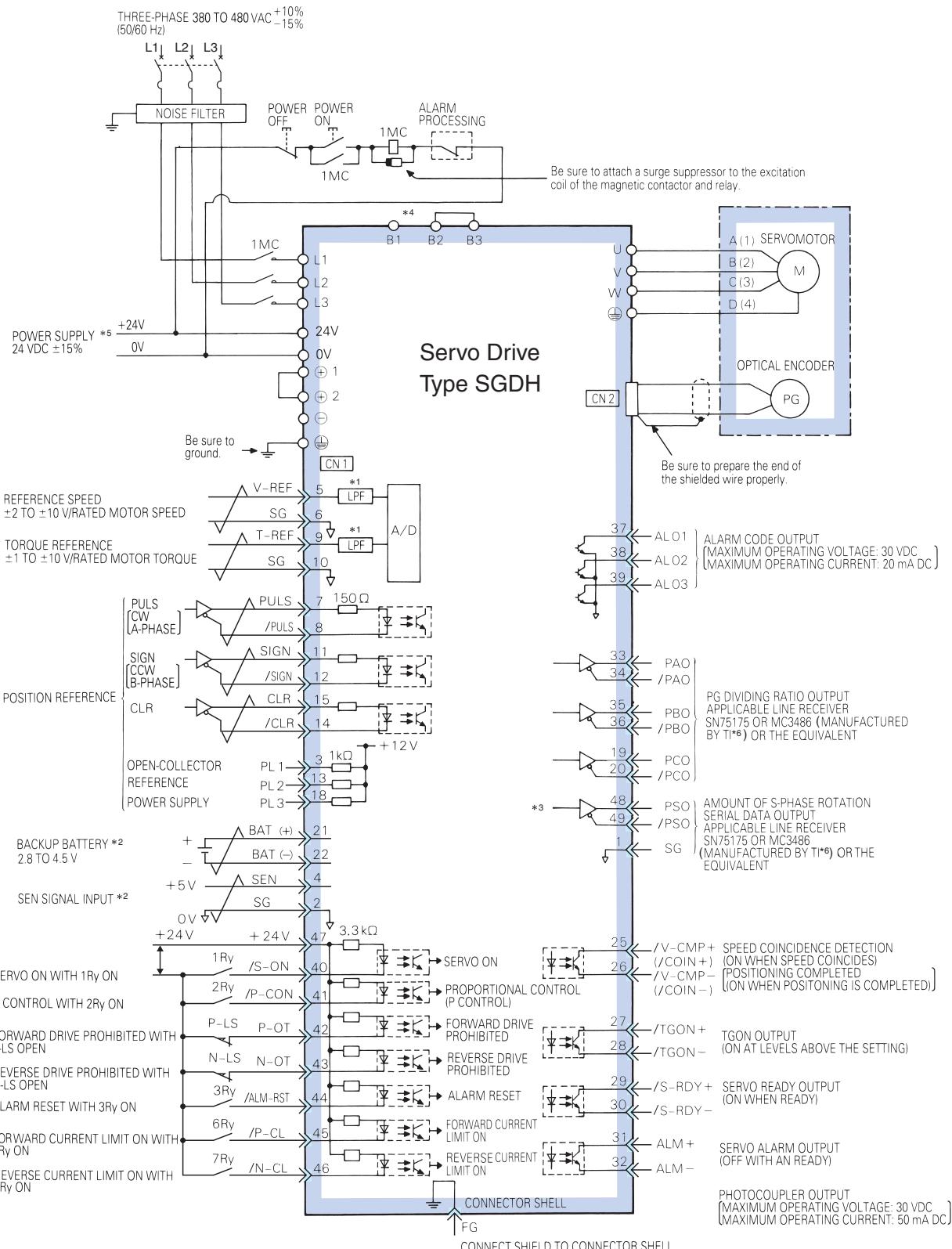
\*3 Used only with an absolute encoder.

\*4 Regenerative resistor can be connected between B1 and B2.

\*5 For types SGDH-08AE-S-OY and SGDH-15AE-S-OY, voltage is 220 to 230 VAC (+10% -15%).

\*6 TI stands for Texas Instruments Inc.

## Three-phase, 400VAC



\*1 The time constant for the primary filter is 47  $\mu$ s.

\*2 Connect when using an absolute encoder.

\*3 Used only with an absolute encoder.

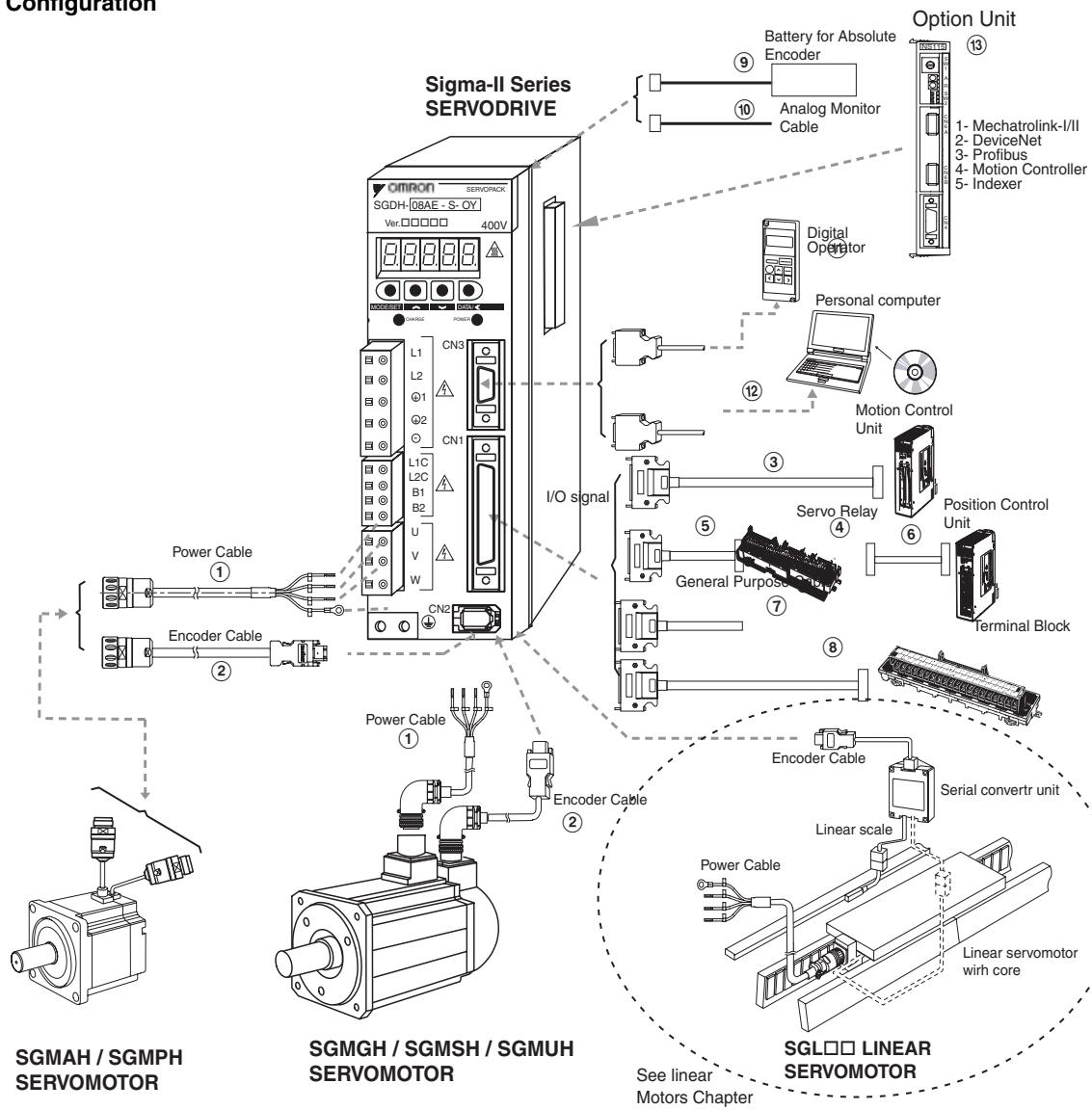
\*4 For using an external regenerative resistor, connect it between B1 and B2.  
(Be sure to connect a regenerative resistor unit to ServoDrive of 6/7.5/11/15kW)

\*5 It is the user's responsibility to obtain 24VDC power supply.

\*6 TI stands for Texas Instruments Inc.

## Ordering Information

### System Configuration



### Servo Drives

Specifications	Model	Compatible Servomotors	Linear Motors
1 Phase 200 V AC	30 W SGDH-A3AE-OY	SGMAH-A3A□	-
	50 W SGDH-A5AE-OY	SGMAH-A5D□	SGLGW-30A050□
	100 W SGDH-01AE-OY	SGMAH-01A□, SGMPH-01A□	SGLGW-30A080□, SGLGW-40A140□
	200 W SGDH-02AE-OY	SGMAH-02A□, SGMPH-02A□	SGLFW-20A□, SGLFW-35A120□, SGLGW-40A253A□, SGLGW-60A140□
	400 W SGDH-04AE-OY	SGMAH-04A□, SGMPH-04A□	SGLGW-40A365A□, SGLGW-60A253A□
	750 W SGDH-08AE-S-OY	SGMAH-08A□, SGMPH-08A□	SGLFW-35A230□, SGLFW-50A200□, SGLGW-60A365A□
	1500 W SGDH-15AE-S-OY	SGMPH-15A□	SGLFW-50A380□, SGLFW-1ZA200□, SGLGW-90A200A□
3 Phase 400 V AC	0.5 kW SGDH-05DE-OY	SGMGH-05D□, SGMAH-03D□, SGMPH-02D□/04D□	SGLFW-35D□
	1.0 kW SGDH-10DE-OY	SGMGH-09D□, SGMSH/UH-10D□, SGMAH-07D□, SGMPH-08D□	SGLFW-50D200□, SGLTW-35D170□, SGLTW-50D170□
	1.5 kW SGDH-15DE-OY	SGMGH-13D□, SGMSH/UH-15D□, SGMPH-15D□	SGLFW-50D380□, SGLFW-1ZD200□
	2.0 kW SGDH-20DE-OY	SGMGH-20D□, SGMSH-20D□	SGLTW-35D320□, SGLTW-50D320□
	3.0 kW SGDH-30DE-OY	SGMGH-30D□, SGMSH/UH-30D□	SGLFW-1ZD380□, SGLTW-40D400□
	5.0 kW SGDH-50DE-OY	SGMGH-44D□, SGMSH/UH-40D□, SGMSH-50D□	SGLTW-40D60□, SGLTW-80D400□
	6.0 kW SGDH-60DE-OY	SGMGH-55D□	
	7.5 kW SGDH-75DE-OY	SGMGH-75D□	SGLTW-80D600□
	11.0 kW SGDH-1ADE-OY	SGMGH-1AD□	
	15.0 kW SGDH-1EDE-OY	SGMGH-1ED□	

**Note:** SGLGW-□ Linear motor combination is made considering the use of Standard Magnets. Refer to the Linear motors chapter for details.

## 200 V Servomotors

## SGMAH - Cylindrical Servomotors 3000 r/min (30 - 750 W)



## SGMPH - Flat Type Servomotors 3000 r/min (100 - 1500 W)



Specifications		Model	
<b>Incremental Encoder (13 bit)</b>	Without brake	0.096 Nm	30 W SGMAH-A3AAA61D-OY
		0.159 Nm	50 W SGMAH-A5AAA61D-OY
		0.318 Nm	100 W SGMAH-01AAA61D-OY
		0.637 Nm	200 W SGMAH-02AAA61D-OY
		1.27 Nm	400 W SGMAH-04AAA61D-OY
	With brake	2.39 Nm	750 W SGMAH-08AAA61D-OY
		0.096 Nm	30 W SGMAH-A3AAA6CD-OY
		0.159 Nm	50 W SGMAH-A5AAA6CD-OY
		0.318 Nm	100 W SGMAH-01AAA6CD-OY
		0.637 Nm	200 W SGMAH-02AAA6CD-OY
<b>Absolute Encoder (16 bit)</b>	Without brake	1.27 Nm	400 W SGMAH-04AAA6CD-OY
		2.39 Nm	750 W SGMAH-08AAA6CD-OY
		0.096 Nm	30 W SGMAH-A3A1A61D-OY
		0.159 Nm	50 W SGMAH-A5A1A61D-OY
		0.318 Nm	100 W SGMAH-01A1A61D-OY
	With brake	0.637 Nm	200 W SGMAH-02A1A61D-OY
		1.27 Nm	400 W SGMAH-04A1A61D-OY
		2.39 Nm	750 W SGMAH-08A1A61D-OY
		0.096 Nm	30 W SGMAH-A3A1A6CD-OY
		0.159 Nm	50 W SGMAH-A5A1A6CD-OY

Specifications		Model	
<b>Incremental Encoder (13 bit)</b>	Without brake	0.318 Nm	100 W SGMPH-01AAA61D-OY
		0.637 Nm	200 W SGMPH-02AAA61D-OY
		1.27 Nm	400 W SGMPH-04AAA61D-OY
		2.39 Nm	750 W SGMPH-08AAA61D-OY
		4.77 Nm	1500 W SGMPH-15AAA61D-OY
	With brake	0.318 Nm	100 W SGMPH-01AAA6CD-OY
		0.637 Nm	200 W SGMPH-02AAA6CD-OY
		1.27 Nm	400 W SGMPH-04AAA6CD-OY
		2.39 Nm	750 W SGMPH-08AAA6CD-OY
		4.77 Nm	1500 W SGMPH-15AAA6CD-OY
<b>Absolute Encoder (16 bit)</b>	Without brake	0.318 Nm	100 W SGMPH-01A1A61D-OY
		0.637 Nm	200 W SGMPH-02A1A61D-OY
		1.27 Nm	400 W SGMPH-04A1A61D-OY
		2.39 Nm	750 W SGMPH-08A1A61D-OY
		4.77 Nm	1500 W SGMPH-15A1A61D-OY
	With brake	0.318 Nm	100 W SGMPH-01A1A6CD-OY
		0.637 Nm	200 W SGMPH-02A1A6CD-OY
		1.27 Nm	400 W SGMPH-04A1A6CD-OY
		2.39 Nm	750 W SGMPH-08A1A6CD-OY
		4.77 Nm	1500 W SGMPH-15A1A6CD-OY

## 400 V Servomotors

## SGMAH - Cylin. Servomotors 3000 r/min (300 - 650 W)



## SGMPH - Flat Type Servomotors 3000 r/min (0.2 - 1.5 kW)

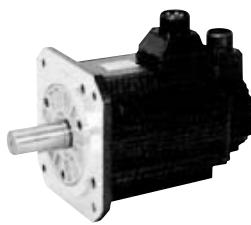


Specifications		Model	
<b>Incremental Encoder (13 bit)</b>	Without brake	0.955 Nm	300 W SGMAH-03DAA61D-OY
		2.07 Nm	650 W SGMAH-07DAA61D-OY
		0.955 Nm	300 W SGMAH-03DAA6CD-OY
		2.07 Nm	650 W SGMAH-07DAA6CD-OY
	With brake	0.955 Nm	300 W SGMAH-03D1A61D-OY
		2.07 Nm	650 W SGMAH-07D1A61D-OY
		0.955 Nm	300 W SGMAH-03D1A6CD-OY
		2.07 Nm	650 W SGMAH-07D1A6CD-OY
		0.955 Nm	300 W SGMAH-03D1A6CD-OY

Specifications		Model	
<b>Incremental Encoder (13 bit)</b>	Without brake	0.637 Nm	200 W SGMPH-02DAA61D-OY
		1.27 Nm	400 W SGMPH-04DAA61D-OY
		2.39 Nm	750 W SGMPH-08DAA61D-OY
		4.77 Nm	1500 W SGMPH-15DAA61D-OY
	With brake	0.637 Nm	200 W SGMPH-02DAA6CD-OY
		1.27 Nm	400 W SGMPH-04DAA6CD-OY
		2.39 Nm	750 W SGMPH-08DAA6CD-OY
		4.77 Nm	1500 W SGMPH-15DAA6CD-OY
		0.637 Nm	200 W SGMPH-02D1A61D-OY
<b>Absolute Encoder (16 bit)</b>	Without brake	1.27 Nm	400 W SGMPH-04D1A61D-OY
		2.39 Nm	750 W SGMPH-08D1A61D-OY
		4.77 Nm	1500 W SGMPH-15D1A61D-OY
		0.637 Nm	200 W SGMPH-02D1A6CD-OY
		1.27 Nm	400 W SGMPH-04D1A6CD-OY
	With brake	0.637 Nm	200 W SGMPH-02D1A6CD-OY
		1.27 Nm	400 W SGMPH-04D1A6CD-OY
		2.39 Nm	750 W SGMPH-08D1A6CD-OY
		4.77 Nm	1500 W SGMPH-15D1A6CD-OY

## 400V Servomotors

SGMGH - Servomotors 1500 r/min (0.45 - 15 kW)



SGMSH - Servomotors 3000 r/min (1 - 5 kW)



Specifications				Model
<b>Incremental Encoder (17 bit)</b>	Without brake	2.84 Nm	0.45 kW	SGMGH-05DCA6F-OY
Straight shaft with key & Tap		5.39 Nm	0.85 kW	SGMGH-09DCA6F-OY
		8.34 Nm	1.3 kW	SGMGH-13DCA6F-OY
		11.5 Nm	1.8 kW	SGMGH-20DCA6F-OY
		18.6 Nm	2.9 kW	SGMGH-30DCA6F-OY
		28.4 Nm	4.4 kW	SGMGH-44DCA6F-OY
		35.0 Nm	5.5 kW	SGMGH-55DCA6F-OY
		48.0 Nm	7.5 kW	SGMGH-75DCA6F-OY
		70.0 Nm	11.5 kW	SGMGH-1ADCA6F-OY
		95.4 Nm	15.0 kW	SGMGH-1EDCA6F-OY
	With brake	2.84 Nm	0.45 kW	SGMGH-05DCA6H-OY
		5.39 Nm	0.85 kW	SGMGH-09DCA6H-OY
		8.34 Nm	1.3 kW	SGMGH-13DCA6H-OY
		11.5 Nm	1.8 kW	SGMGH-20DCA6H-OY
		18.6 Nm	2.9 kW	SGMGH-30DCA6H-OY
		28.4 Nm	4.4 kW	SGMGH-44DCA6H-OY
		35.0 Nm	5.5 kW	SGMGH-55DCA6H-OY
		48.0 Nm	7.5 kW	SGMGH-75DCA6H-OY
		70.0 Nm	11.5 kW	SGMGH-1ADCA6H-OY
		95.4 Nm	15.0 kW	SGMGH-1EDCA6H-OY
<b>Absolute Encoder (17 bit)</b>	Without brake	2.84 Nm	0.45 kW	SGMGH-05D2A6F-OY
Straight shaft with key & Tap		5.39 Nm	0.85 kW	SGMGH-09D2A6F-OY
		8.34 Nm	1.3 kW	SGMGH-13D2A6F-OY
		11.5 Nm	1.8 kW	SGMGH-20D2A6F-OY
		18.6 Nm	2.9 kW	SGMGH-30D2A6F-OY
		28.4 Nm	4.4 kW	SGMGH-44D2A6F-OY
		35.0 Nm	5.5 kW	SGMGH-55D2A6F-OY
		48.0 Nm	7.5 kW	SGMGH-75D2A6F-OY
		70.0 Nm	11.5 kW	SGMGH-1AD2A6F-OY
		95.4 Nm	15.0 kW	SGMGH-1ED2A6F-OY
	With brake	2.84 Nm	0.45 kW	SGMGH-05D2A6H-OY
		5.39 Nm	0.85 kW	SGMGH-09D2A6H-OY
		8.34 Nm	1.3 kW	SGMGH-13D2A6H-OY
		11.5 Nm	1.8 kW	SGMGH-20D2A6H-OY
		18.6 Nm	2.9 kW	SGMGH-30D2A6H-OY
		28.4 Nm	4.4 kW	SGMGH-44D2A6H-OY
		35.0 Nm	5.5 kW	SGMGH-55D2A6H-OY
		48.0 Nm	7.5 kW	SGMGH-75D2A6H-OY
		70.0 Nm	11.5 kW	SGMGH-1AD2A6H-OY
		95.4 Nm	15.0 kW	SGMGH-1ED2A6H-OY

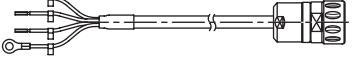
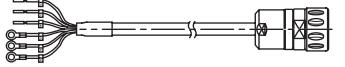
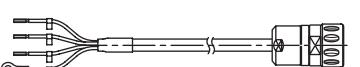
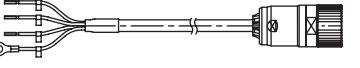
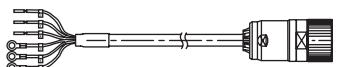
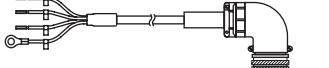
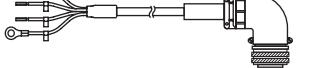
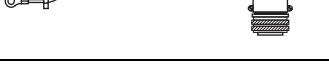
Specifications				Model
<b>Incremental Encoder (17 bit)</b>	Without brake	3.18 Nm	1.0 kW	SGMSH-10DCA6F-OY
Straight shaft with key & Tap		4.9 Nm	1.5 kW	SGMSH-15DCA6F-OY
		6.36 Nm	2.0 kW	SGMSH-20DCA6F-OY
		9.8 Nm	3.0 kW	SGMSH-30DCA6F-OY
		12.6 Nm	4.0 kW	SGMSH-40DCA6F-OY
		15.8 Nm	5.0 kW	SGMSH-50DCA6F-OY
	With brake	3.18 Nm	1.0 kW	SGMSH-10DCA6H-OY
		4.9 Nm	1.5 kW	SGMSH-15DCA6H-OY
		6.36 Nm	2.0 kW	SGMSH-20DCA6H-OY
		9.8 Nm	3.0 kW	SGMSH-30DCA6H-OY
		12.6 Nm	4.0 kW	SGMSH-40DCA6H-OY
		15.8 Nm	5.0 kW	SGMSH-50DCA6H-OY
<b>Absolute Encoder (17 bit)</b>	Without brake	3.18 Nm	1.0 kW	SGMSH-10D2A6F-OY
Straight shaft with key & Tap		4.9 Nm	1.5 kW	SGMSH-15D2A6F-OY
		6.36 Nm	2.0 kW	SGMSH-20D2A6F-OY
		9.8 Nm	3.0 kW	SGMSH-30D2A6F-OY
		12.6 Nm	4.0 kW	SGMSH-40D2A6F-OY
		15.8 Nm	5.0 kW	SGMSH-50D2A6F-OY
	With brake	3.18 Nm	1.0 kW	SGMSH-10D2A6H-OY
		4.9 Nm	1.5 kW	SGMSH-15D2A6H-OY
		6.36 Nm	2.0 kW	SGMSH-20D2A6H-OY
		9.8 Nm	3.0 kW	SGMSH-30D2A6H-OY
		12.6 Nm	4.0 kW	SGMSH-40D2A6H-OY
		15.8 Nm	5.0 kW	SGMSH-50D2A6H-OY

SGMUH - Servomotors 6000 r/min (1 - 4 kW)

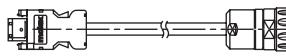
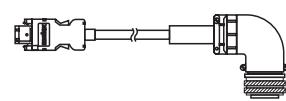


Specifications				Model
<b>Incremental Encoder (17 bit)</b>	Without brake	1.59 Nm	1.0 kW	SGMUH-10DCA61-OY
Straight shaft with key		2.45 Nm	1.5 kW	SGMUH-15DCA61-OY
		4.9 Nm	3.0 kW	SGMUH-30DCA61OY
		6.3 Nm	4.0 kW	SGMUH-40DCA61-OY
	With brake	1.59 Nm	1.0 kW	SGMUH-10DCA6C-OY
		2.45 Nm	1.5 kW	SGMUH-15DCA6C-OY
		4.9 Nm	3.0 kW	SGMUH-30DCA6C-OY
		6.3 Nm	4.0 kW	SGMUH-40DCA6C-OY

## Power Cables

Symbol	Specifications	Model	Appearance
A	For 200V Servomotors without brake SGMAH-□□A□□□1D-OY SGMPH-(01/02/04/08)A□□41D-OY	3 m R88A-CAWA003S-DE 5 m R88A-CAWA005S-DE 10 m R88A-CAWA010S-DE 15 m R88A-CAWA015S-DE 20 m R88A-CAWA020S-DE	
	For 200V Servomotors with brake SGMAH-□□A□□□CD-OY SGMPH-(01/02/04/08)A□□4CD-OY	3 m R88A-CAWA003B-DE 5 m R88A-CAWA005B-DE 10 m R88A-CAWA010B-DE 15 m R88A-CAWA015B-DE 20 m R88A-CAWA020B-DE	
	For 200V Servomotors without brake SGMPH-15A□□□1D-OY	3 m R88A-CAWB003S-DE 5 m R88A-CAWB005S-DE 10 m R88A-CAWB010S-DE 15 m R88A-CAWB015S-DE 20 m R88A-CAWB020S-DE	
	For 200V Servomotors with brake SGMPH-15A□□□CD-OY	3 m R88A-CAWB003B-DE 5 m R88A-CAWB005B-DE 10 m R88A-CAWB010B-DE 15 m R88A-CAWB015B-DE 20 m R88A-CAWB020B-DE	
	For 400V Servomotors without brake SGMAH-□□D□□□1D-OY SGMPH-□□D□□□1D-OY	3 m R88A-CAWK003S-DE 5 m R88A-CAWK005S-DE 10 m R88A-CAWK010S-DE 15 m R88A-CAWK015S-DE 20 m R88A-CAWK020S-DE	
	For 400V Servomotors with brake SGMAH-□□D□□□CD-OY SGMPH-□□D□□□CD-OY	3 m R88A-CAWK003B-DE 5 m R88A-CAWK005B-DE 10 m R88A-CAWK010B-DE 15 m R88A-CAWK015B-DE 20 m R88A-CAWK020B-DE	
	For 400V Servomotors SGMGH-(05/09/13)D□ SGMSH-(10/15/20)D□ SGMUH-(10/15)D□ For servomotors with Brake a separate cable (R88A-CAWC0□□B-E) is needed	3 m R88A-CAWC003S-E 5 m R88A-CAWC005S-E 10 m R88A-CAWC010S-E 15 m R88A-CAWC015S-E 20 m R88A-CAWC020S-E	
	For 400V Servomotors SGMGH-(20/30)D□ SGMSH-(30/40/50)D□ SGMUH-(30/40)D□ For servomotors with Brake a separate cable (R88A-CAWC0□□B-E) is needed	3 m R88A-CAWD003S-E 5 m R88A-CAWD005S-E 10 m R88A-CAWD010S-E 15 m R88A-CAWD015S-E 20 m R88A-CAWD020S-E	
	For 400V Servomotors SGMGH-44D□ For servomotors with Brake a separate cable (R88A-CAWC0□□B-E) is needed	3 m R88A-CAWG003S-E 5 m R88A-CAWG005S-E 10 m R88A-CAWG010S-E 15 m R88A-CAWG015S-E 20 m R88A-CAWG020S-E	
	For 400V Servomotors SGMGH-55D□ For servomotors with Brake a separate cable (R88A-CAWC0□□B-E) is needed	3 m R88A-CAWF003S-E 5 m R88A-CAWF005S-E 10 m R88A-CAWF010S-E 15 m R88A-CAWF015S-E 20 m R88A-CAWF020S-E	
	For 400V Servomotors SGMGH-(75/1A)D□ For servomotors with Brake a separate cable (R88A-CAWC0□□B-E) is needed	3 m R88A-CAWH003S-E 5 m R88A-CAWH005S-E 10 m R88A-CAWH010S-E 15 m R88A-CAWH015S-E 20 m R88A-CAWH020S-E	
	For 400V Servomotors SGMGH-1ED□ For servomotors with Brake a separate cable (R88A-CAWC0□□B-E) is needed	3 m R88A-CAWJ003S-E 5 m R88A-CAWJ005S-E 10 m R88A-CAWJ010S-E 15 m R88A-CAWJ015S-E 20 m R88A-CAWJ020S-E	
	Brake Cable only. For 400V Servomotors with Brake SGMGH-□□D□ SGMSH-□□D□ SGMUH-□□D□	3 m R88A-CAWC003B-E 5 m R88A-CAWC005B-E 10 m R88A-CAWC010B-E 15 m R88A-CAWC015B-E 20 m R88A-CAWC020B-E	

**Encoder Cables (for CN2)**

Symbol	Specifications	Model	Appearance
B	Encoder cable for SGMAH/PH Servomotors SGMAH-□□□□□□□D-OY SGMPH-□□□□□□□D-OY	3 m R88A-CRWA003C-DE	
		5 m R88A-CRWA005C-DE	
		10 m R88A-CRWA010C-DE	
		15 m R88A-CRWA015C-DE	
		20 m R88A-CRWA020C-DE	
	Encoder cable for SGMGH/SH/UH Servomotors SGMGH-□ SGMSH-□ SGMUH-□	3 m R88A-CRWB003N-E	
		5 m R88A-CRWB005N-E	
		10 m R88A-CRWB010N-E	
		15 m R88A-CRWB015N-E	
		20 m R88A-CRWB020N-E	

**Control Cables (for CN1)**

Symbol	Description	Connect to		Model
(3)	Control Cable (1 Axis)	Motion Control Units CS1W-MC221 CS1W-MC421 C200H-MC221	1 m	R88A-CPW001M1
			2 m	R88A-CPW002M1
			3 m	R88A-CPW003M1
			5 m	R88A-CPW005M1
	Control Cable (2 Axis)	Motion Control Units CS1W-MC221 CS1W-MC421 C200H-MC221	1 m	R88A-CPW001M2
(4)	Terminal Block (4 Axes)	Motion Control Unit C200HW-MC402-E	2 m	R88A-CPW002M2
			3 m	R88A-CPW003M2
			5 m	R88A-CPW005M2
			-	R88A-TC04-E
	Servodrive connecting Cable (1 Axis)		1 M	R88A-CMUK001J3-E2
(5)	PLC Unit Control Cables (4 Axes)		1 m	R88A-CMX001S-E
			1 m	R88A-CMX001J1-E
				XW2B-20J6-1B (1 axis)
				XW2B-40J6-2B (2 axes)
	Servo Relay Unit	CJ1W-NC1□3, CJ1W-NC1□3, or C200HW-NC113 Position Control Unit		XW2B-20J6-3B (1 axis)
(6)	Position Control Unit Connecting Cable	CQM1H-PLB21		XW2B-20J6-8A (1 axis) XW2B-40J6-9A (2 axes)
		CQM1-CPU43		
		CJ1M-CPU22/23		
		CS1W-NC1□3, CJ1W-NC1□3, or C200HW-NC113 Position Control Unit	1 m	XW2Z-100J-B4
		CS1W-NC2□3/4□3, CJ1W-NC2□3/4□3, or C200HW-NC213/413 Position Control Unit	2 m	XW2Z-200J-B4
		CQM1H-PLB21	0.5 m	XW2Z-050J-A1
		CQM1-CPU43-V1 and CQM1H-PLB21	1 m	XW2Z-100J-A1
		CS1W-NC113 and C200HW-NC113	0.5 m	XW2Z-050J-A2
		CS1W-NC113 and C200HW-NC113	1 m	XW2Z-100J-A2
		CQM1-CPU43-V1 and CQM1H-PLB21	0.5 m	XW2Z-050J-A3
		CS1W-NC113 and C200HW-NC113	1 m	XW2Z-100J-A3
		CS1W-NC213/413 and C200HW-NC213/413	0.5 m	XW2Z-050J-A6
		CS1W-NC213/413 and C200HW-NC213/413	1 m	XW2Z-100J-A6
		CS1W-NC133	0.5 m	XW2Z-050J-A7
(7)	Control Cable	CS1W-NC133	1 m	XW2Z-100J-A7
		CS1W-NC233/433	0.5 m	XW2Z-050J-A10
		CS1W-NC233/433	1 m	XW2Z-050J-A10
		CJ1W-NC113	0.5 m	XW2Z-050J-A11
		CJ1W-NC113	1 m	XW2Z-100J-A11
(8)	Relay Terminal Block Cable	CJ1W-NC213/413	0.5 m	XW2Z-050J-A14
		CJ1W-NC213/413	1 m	XW2Z-100J-A14
		CJ1W-NC133	0.5 m	XW2Z-050J-A15
		CJ1W-NC133	1 m	XW2Z-100J-A15
		CJ1W-NC233/433	0.5 m	XW2Z-050J-A18
(8)	Relay Terminal Block	CJ1W-NC233/433	1 m	XW2Z-100J-A18
		CJ1M-CPU22/23	0.5 m	XW2Z-050J-A19
		CJ1M-CPU22/23	1 m	XW2Z-100J-A19
		For General purpose Controllers	0.5 m	XW2Z-050J-A27
		For General purpose Controllers	1 m	XW2Z-100J-A27
(8)	Relay Terminal Block	General-purpose Controller	1 m	R88A-CTW001N
		General-purpose Controller	2 m	R88A-CTW002N
		General-purpose Controller	-	XW2B-50G5

**Battery Backup for absolute encoder (for CN8)**

Symbol	Name	Model
I	Battery for 30W to 5 kW Drives	JZSP-BA01
	Battery for 6kW to 15 kW Drives	JZSP-BA01-1

**Cable (for CN5)**

Symbol	Name	Model
J	Analog Monitor Cable	R88A-CMW001S or DE9404559

**Options (for CN3)**

Symbol	Name	Model
(11)	Parameter Unit with Cable	JUSP-OP02A-2 or R88A-PR02W
(12)	Computer Connecting Cable	R88A-CCW002P2 or JZSP-CMS02

**Connectors**

Specification	Model
Control I/O connector (For CN1)	R88A-CNU11C or JZSP-CK19
Sigma-II Drive Encoder connector (For CN2)	JZSP-CMP9-1
Hypertac Power Connector IP67 (For 200V Motors SGMAH/PH-□□A□□□□D-OY)	SPOC-06K-FSDN169
Hypertac Power Connector IP67 (For 400V Motors SGMAH/PH-□□D□□□□D-OY)	LPRA-06B-FRBN170
Hypertac Encoder Connector IP67 (For Motors SGMAH/PH-□□□□□□□D-OY)	SPOC-17H-FRON169
Military Power connector IP67 (For 400V Motors SGMGH-(05/10/13)D□, SGMSH-(10/15/20)D□, SGMUH-(10/15)D□)	MS3108E18-10S
Military Power connector IP67 (For 400V Motors SGMGH-(20/30/44)D□, SGMSH-(30/40/50)D□, SGMUH-(30/40)D□)	MS3108E22-22S
Military Power connector IP67 (For 400V Motors SGMGH-(55/75/1A/1E)D□)	MS3108E32-17S
Military Brake connector IP67 (For 400V ServoMotors SGMGH-□, SGMSH-□, SGMUH-□)	MS3108E10SL-3S
Military Encoder connector IP67 (For Motors SGMGH-□, SGMSH-□, SGMUH-□)	MS3108E20-29S

**Filters**

Specifications (applicable Servo Drive)	Model	Rated Current	Rated Voltage
SGDH-A3AE-OY, SGDH-A5AE-OY, SGDH-01AE-OY, SGDH-02AE-OY	R88A-FIW104-SE	4 A	250 VAC Single-Phase
SGDH-04AE-OY	R88A-FIW107-SE	7A	
SGDH-08AE-S-OY	R88A-FIW115-SE	15 A	
SGDH-15AE-S-OY	R88A-FIW125-SE	25 A	
SGDH-05DE-OY, SGDH-10DE-OY, SGDH-15DE-OY	R88A-FIW4006-SE	6 A	400 VAC Three-Phase
SGDH-20DE-OY, SGDH-30DE-OY	R88A-FIW4010-SE	10 A	
SGDH-50DE-OY	R88A-FIW4020-SE	20 A	
SGDH-60DE-OY, SGDH-75DE-OY	R88A-FIW4030-SE	30 A	
SGDH-1ADE-OY, SGDH-1EDE-OY	R88A-FIW4055-SE	55 A	

**External Regenerative Resistor**

Servo Drive Model	Regenerative Resistor Unit Model	Specifications	Allowable Power Loss
SGDH-60DE-OY to -75DE-OY	JUSP-RA18	18 Ω, 880 W	180 W
SGDH-1ADE-OY to -1EDE-OY	JUSP-RA19	14.25 Ω, 1760 W	350 W

**Computer Software**

Specifications	Model
SigmaWin	MOTION TOOLS
WMON Win Version 2.0	

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

SGDH-□, SGMBH-□

# Sigma-II Large Capacity

**Large Capacity Sigma-II series. Great power as well as High Speed, and High Accuracy.**

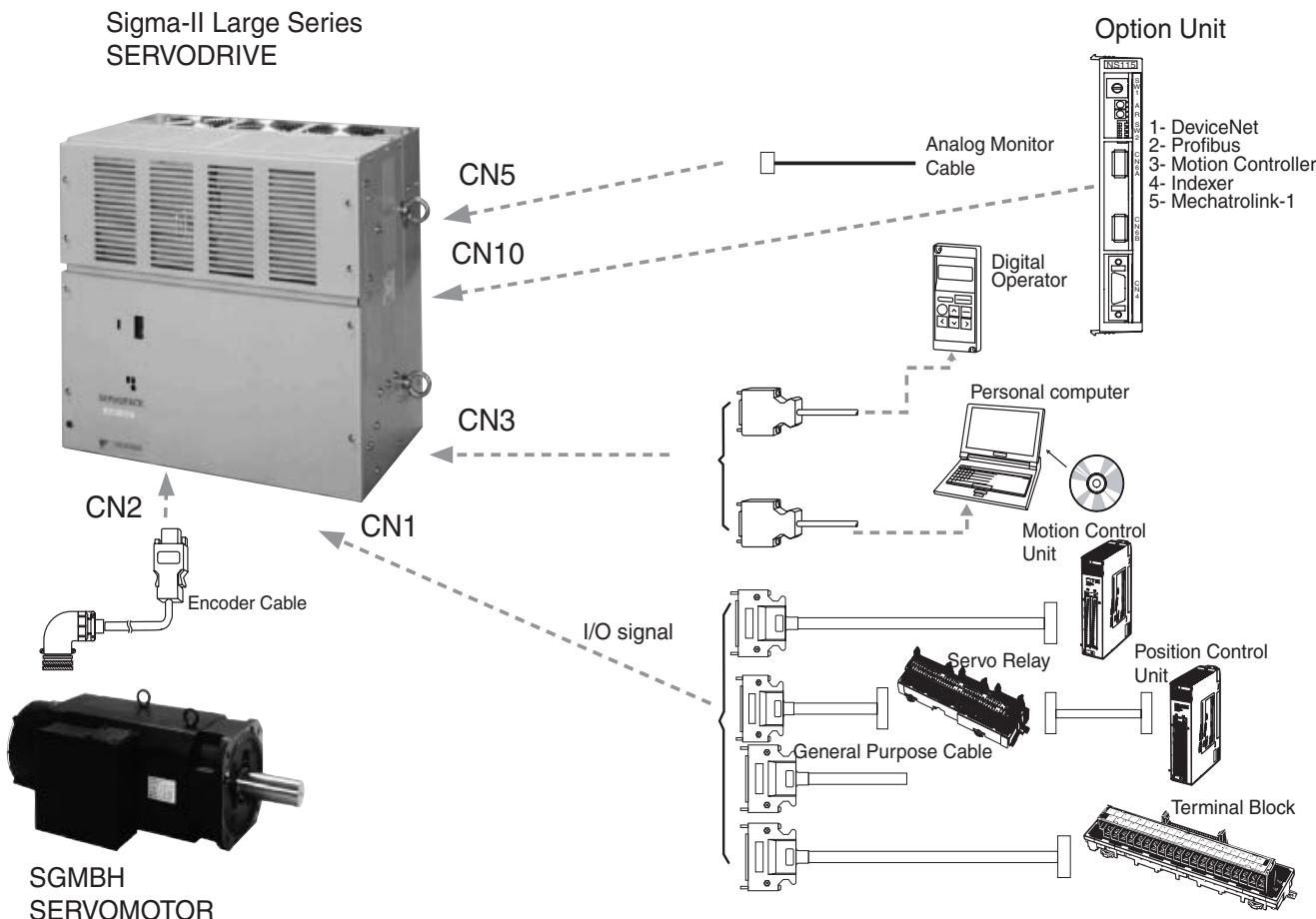
- Easy setup and maintenance
- Optional Units for system flexibility and connectivity
- Automatic motor recognition
- Analogue control for speed and torque
- Pulse train control for positioning
- Oscilloscope available via SigmaWin tool
- Windows based Configuration and commissioning software

## Ratings

- 400 VAC, 22 kW (140 Nm) to 55 kW (350 Nm)

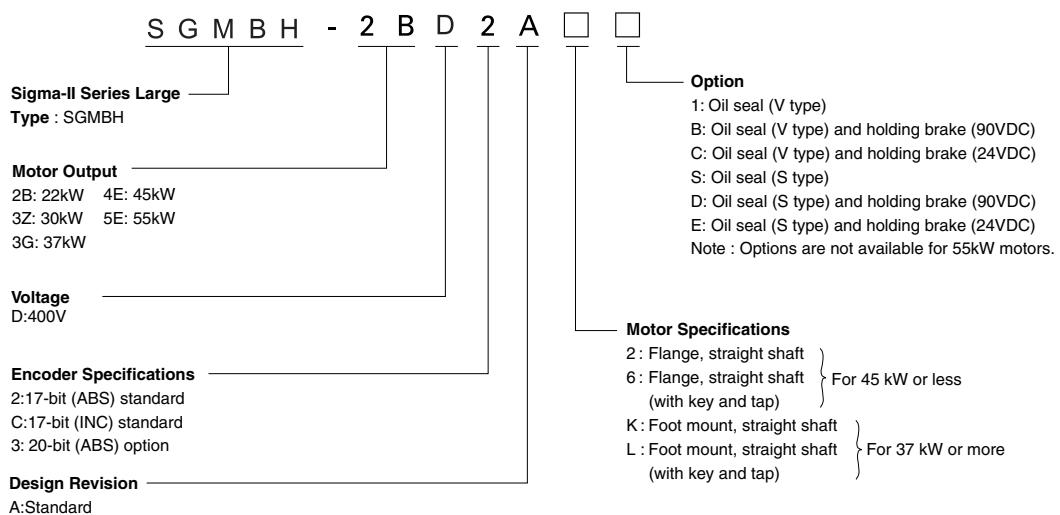


## System Configuration



## Servomotor Specifications

### Type Designation

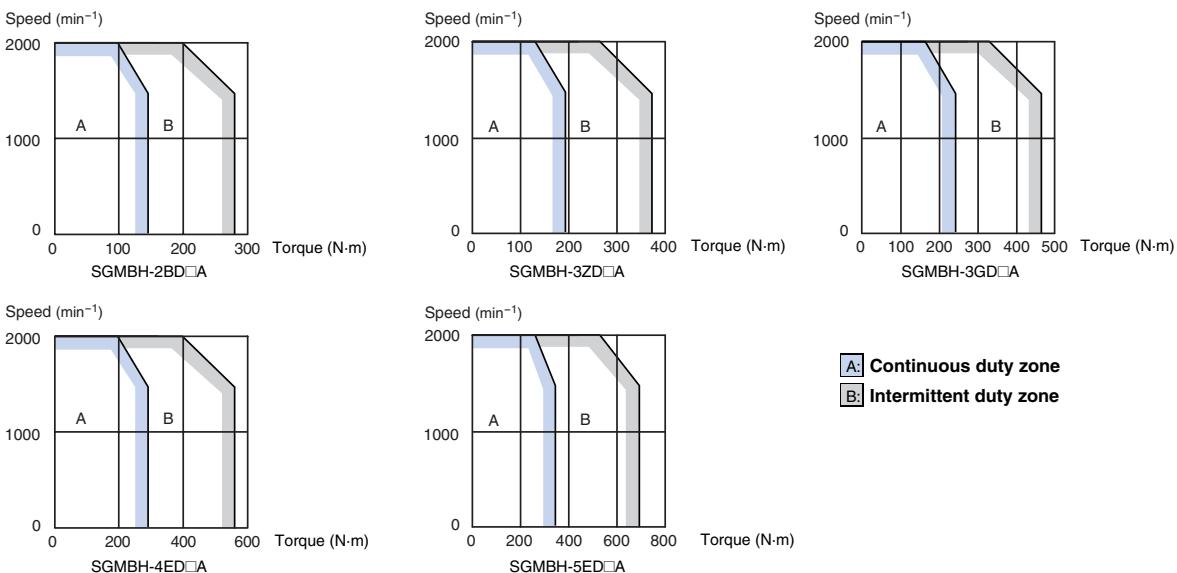


Type	SGMBH-□	2BD□A	3ZD□A	3GS□A	4ED□A	5ED□A		
Performance	<b>Rated Output</b> kW	22	30	37	45	55		
	<b>Rated Torque</b> N·m	140	191	236	286	350		
	<b>Stalling Torque</b> N·m	140	191	236	286	350		
	<b>Instantaneous Peak Torque</b> N·m	280	382	471	572	700		
	<b>Rated Current</b> A(rms)	58	80	100	127	150		
	<b>Instantaneous Max. Current</b> A(rms)	120	170	210	260	310		
	<b>Rated/Max. Speed</b> min <sup>-1</sup>			1500/2000				
	<b>Rotor Inertia</b> kg·m <sup>2</sup>	0.0592	0.0773	0.139	0.151	0.197		
Structure	<b>Protective Enclosure</b>							
	<b>Mounting Method</b>		Flange	Flange Foot mount <sup>1</sup>	Foot mount			
Encoder	Standard	Incremental, absolute: 17 bits 16384P/R or equivalent <sup>2</sup>						
	Option	Absolute: 20 bits 16384P/R or equivalent						
<b>Usage Temperature</b>		0 to 40°C						
<b>Usage Humidity</b>		20 to 80% (non-condensing)						

**Note:** 1. 37 kW and 45 kW motors with brakes are foot mount type

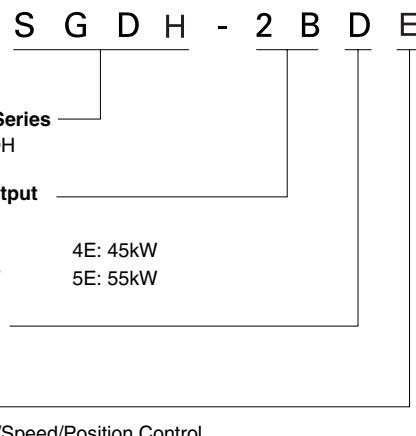
2. .The number of output pulses of SERVOPACK is 16384P/R for both 17-bit and 20-bit encoders (no dividing).

### Torque/Speed Characteristics



## Servo Drive Specifications

### Type Designation



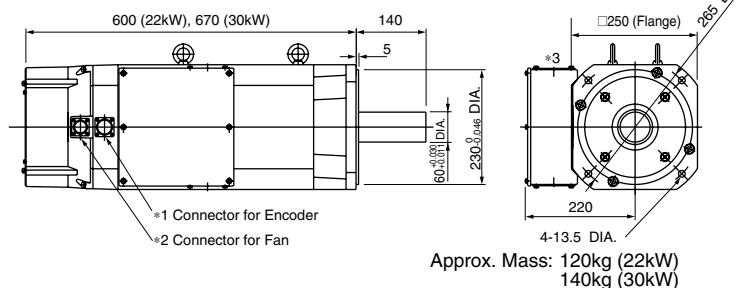
Type	SGDH-□	2BDE	3ZDE	3GDE	4EDE	5EDE					
Applicable SERVOMOTOR Type	SGMBH-□	2BD□A	3ZD□A	3GD□A	4ED□A	5ED□A					
Continuous Output	kW	22	30	37	45	55					
Allowable Load Inertia	kg · m <sup>2</sup> x 10	0.296	0.3865	0.695	0.840	0.985					
Basic Specifications	Power Supply	Main Circuit	Three-phase 380 to 480VAC/+10 to -15%, 50/60Hz								
		Main Circuit Power Capacity kVA	36.7	50.1	61.8	75.2	91.9				
		Control Circuit	24VDC±10%								
		Control Circuit Power Capacity	150VA								
		Control method	Three-phase, full-wave rectification IGBT-PWM								
		Feedback	17-bit serial encoder (incremental/absolute)								
		Usage/Storage Temperature	SERVOPACK: 0 to 55°C / -20 to 85°C Digital operator: 0 to 55°C / -20 to 70°C								
		Usage/Storage Humidity	90%RH or less (non-condensing)								
	Control Method	Speed Control	±2 to ±10VDC at 155r/min								
		Torquer Control	±1 to ±10VDC at rated output								
I/O Signals	Position Control	Position Control	Input form: Sign + pulse train, CD + CCW pulse train, 90° phase difference 2-phase pulse Input frequency: 500/200kpps (line driver/open collector output)								
		Output Form	Phase A, phase B, phase C: (line driver output)								
	Sequence Input Signal	Frequency Dividing Ratio	(16 to N) N: encoder pulse number								
			Servo ON, forward rotation prohibited (P-OT), reverse rotation prohibited (N-OT), forward rotation current limit, reverse rotation current limit, alarm reset, P control								
			Servo alarm, 3-bit alarm code								
Functions/Performance	Sequence Output Signal		Select three signals from servo ready, current limit detection, TGON, positioning complete (speed agreement), brake release, overload, warning, overload detected								
	Frequency Response		100Hz (motor inertia = load inertia)								
	DB		Built-in (External resistor is required)	External DB contactor and DB resistor are required.							
	Regeneration		Built-in (External resistor is required.)								
	Protection		Overcurrent, overload, regenerative error, main circuit voltage error, heatsink overheat, power open phase, overspeed, encoder error, encoder disconnected, overrun, CPU error, overflow, parameter error								
	Display		POWER, ALARM, CHARGE display LED 5-figure, 7-segment LED on digital operator								
	Others		Zero-clamp, soft start/stop. Reverse rotation connection, brake interlock signal output, JOG run								
Digital Operator Type		JUSP-OP02A-2									
Mounting Method		Base mounted									

**Note:** DB means an automatic dynamic brake, which operates at main power OFF, servo alarm, servo OFF, and overtravel.

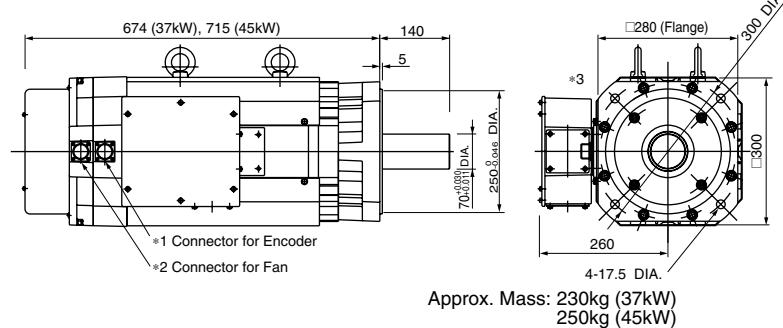
## Dimensions

### Servomotors

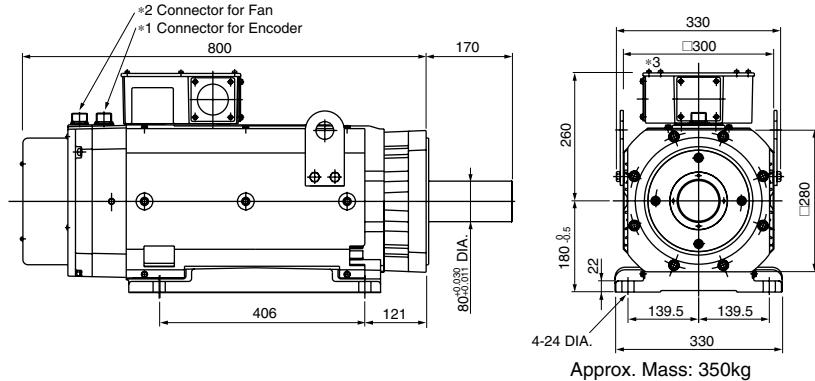
Type: SGMBH-2BD □A-3ZD□A (22/30kW)



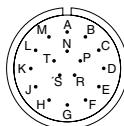
Type: SGMBH-3GD □A-4E□A37/45kW



Type: SGMBH-5ED □A (55kW)

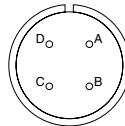


\*1 Connector for Encoder



Receptacle: 97F-3102E20-29P  
Plug IP67 (L-shape): MS3108E20-29S

\*2 Connector for Fan



Receptacle: CE05-2A18-10PD-B  
Plug IP67 (L-shape): MS3108E18-10S

#### ● Absolute Encoder

A	—	K	—
B	—	L	—
C	DATA+	M	—
D	DATA-	N	—
E	—	P	—
F	—	R	—
G	0V	S	BATT-
H	+5VDC	T	BATT +
J	FG(Frame Ground)		

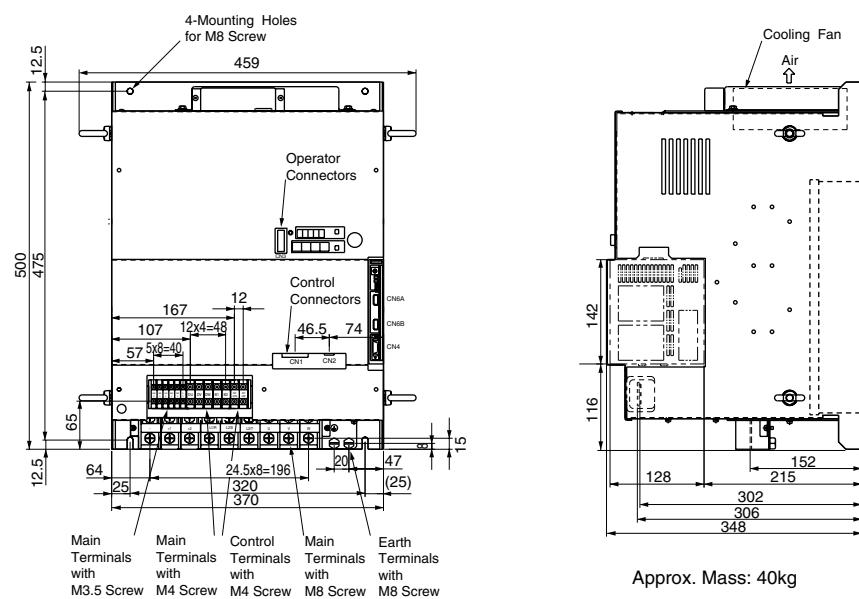
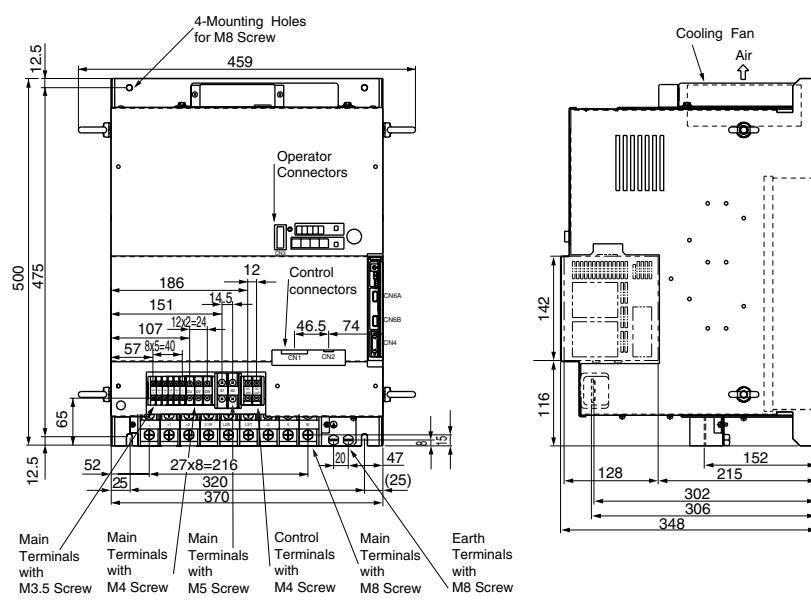
#### ● Incremental Encoder

A	—	K	—
B	—	L	—
C	DATA+	M	—
D	DATA-	N	—
E	—	P	—
F	—	R	—
G	0V	S	—
H	+5VDC	T	—
J	FG(Frame Ground)		

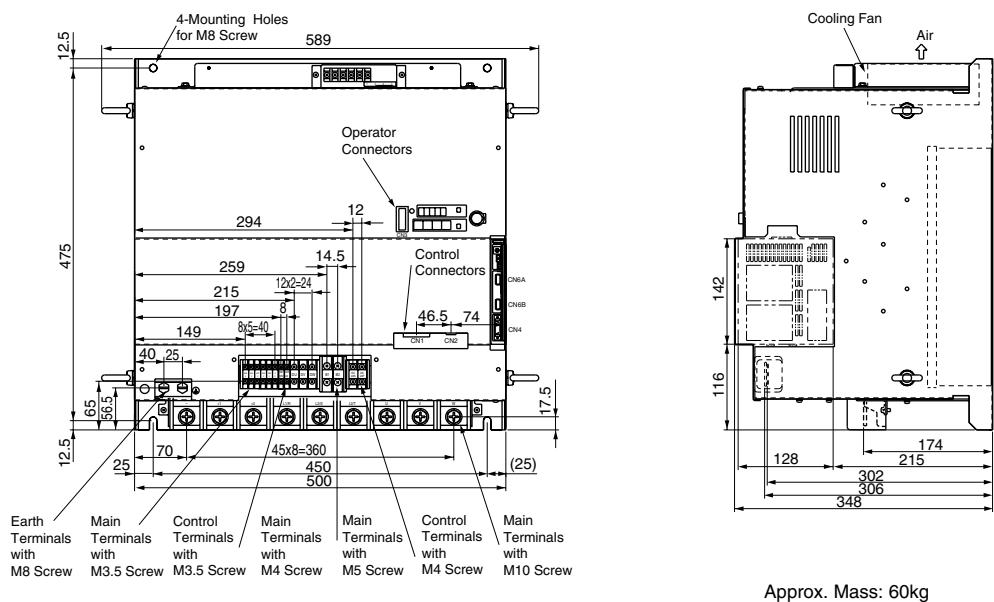
A	Fan Terminal (U)
B	Fan Terminal (V)
C	Fan Terminal (W)
D	—

#### \*3 Terminal Box

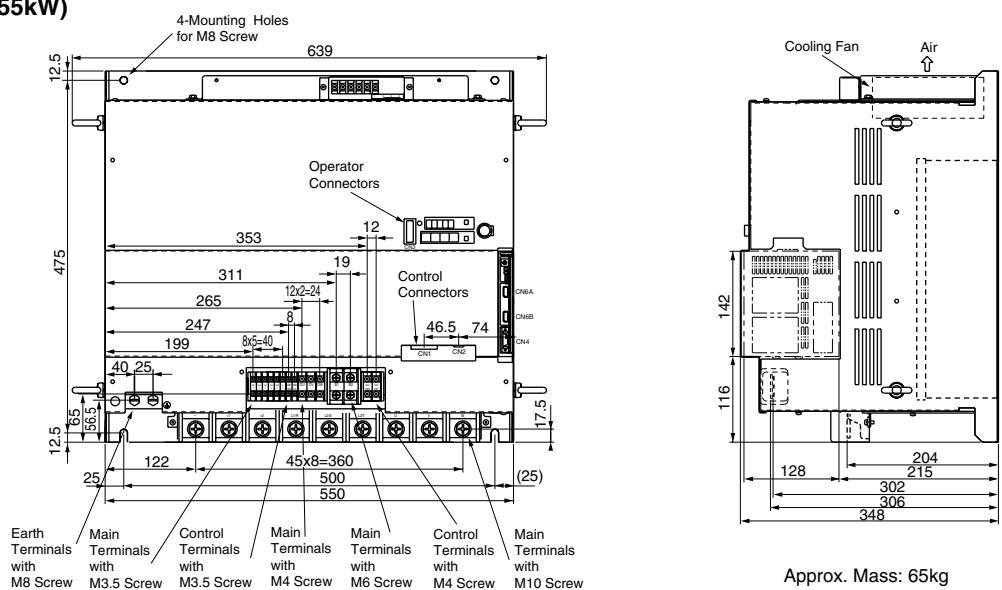
U, V, W	Motor terminal	M10
	Earth terminal	M10
1, 1b	Thermostat	M4

**Servo Drives****Type: SGDH-2BDE (22kW)****Type: SGDH-3ZDE (30kW)**

Type: SGDH-3GDE (37kW)

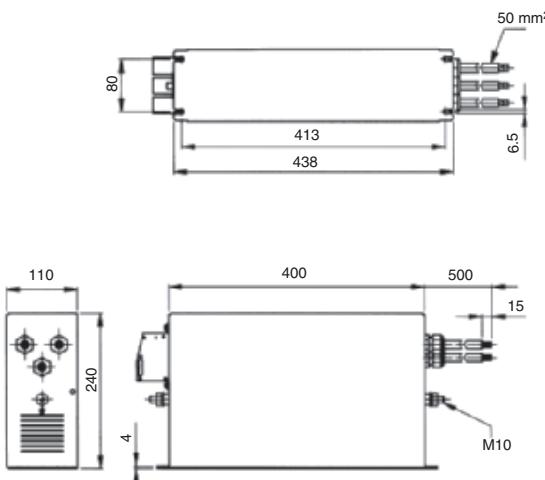


Type: SGDH-4EDE/-5EDE (45/55kW)

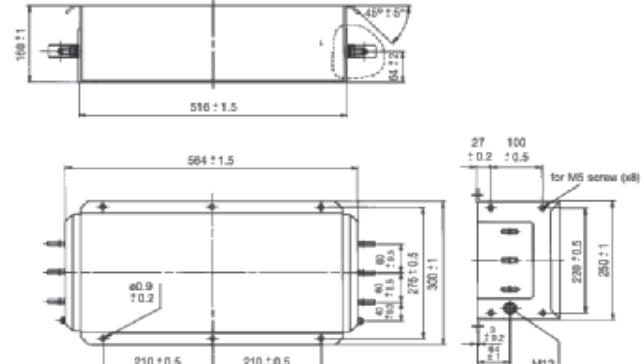


**Filters**

[FN258-180-07](#)

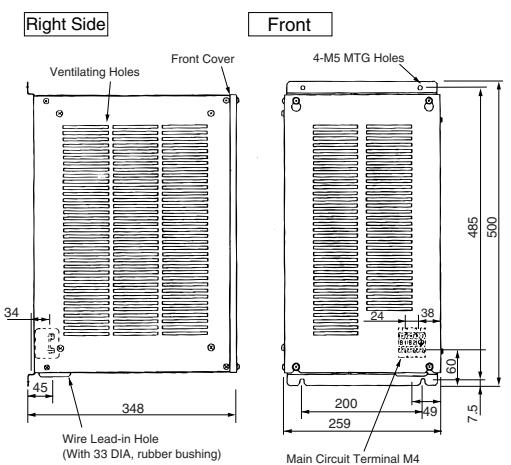


[FN359-250-99](#)



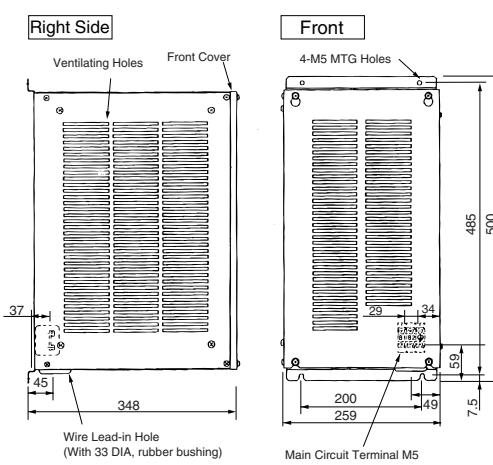
## Regenerative Resistor Unit

Type: JUSP-RA12 (for 22kW)



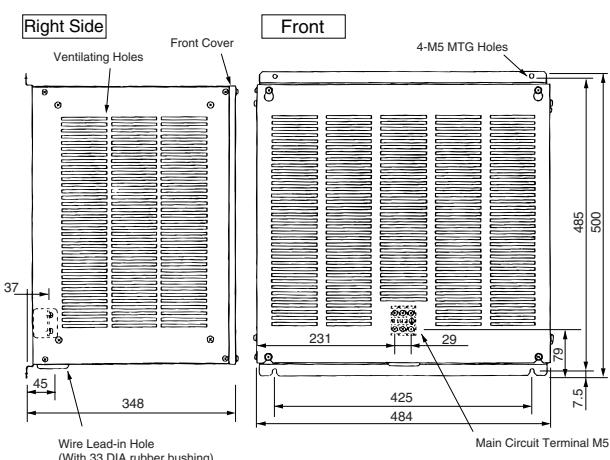
Approx. Mass: 14.0kg

Type: JUSP-RA13 (for 30kW)



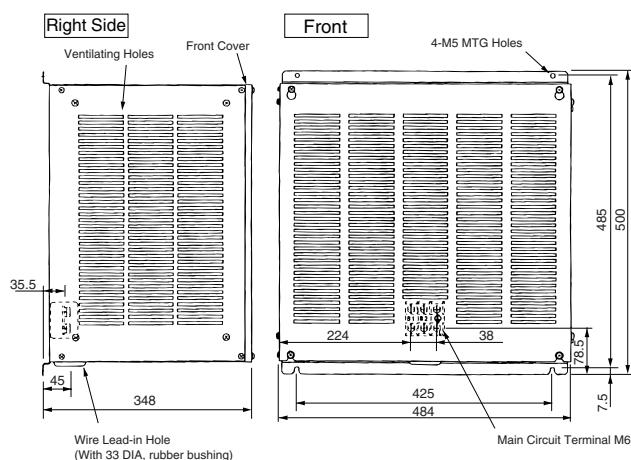
Approx. Mass: 14.0kg

Type: JUSP-RA14 (for 37kW)



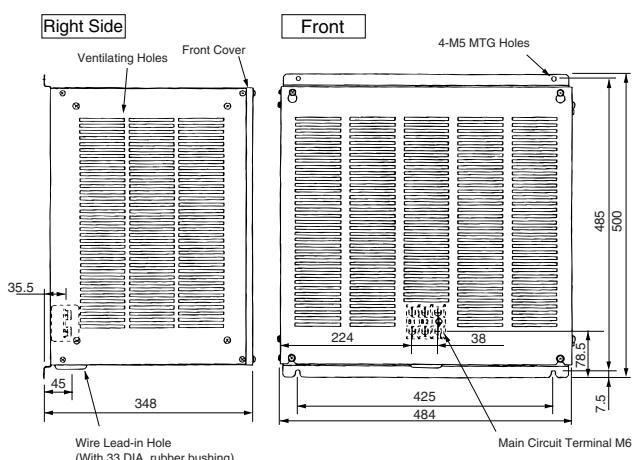
Approx. Mass: 20.0kg

Type: JUSP-RA15 for 45kW

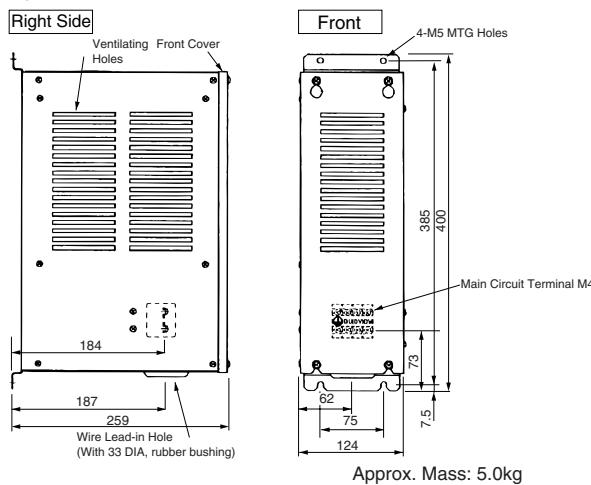
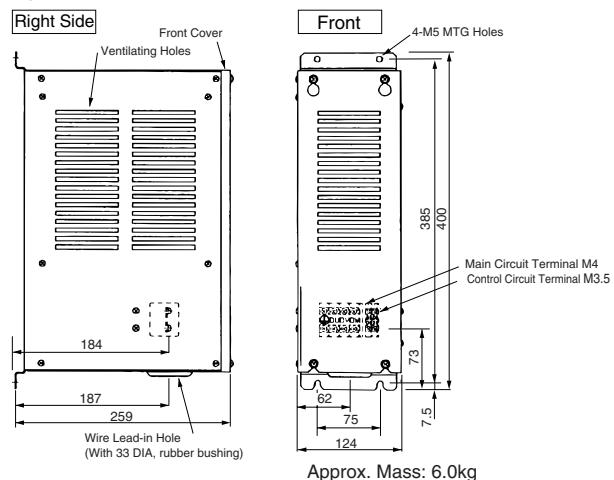
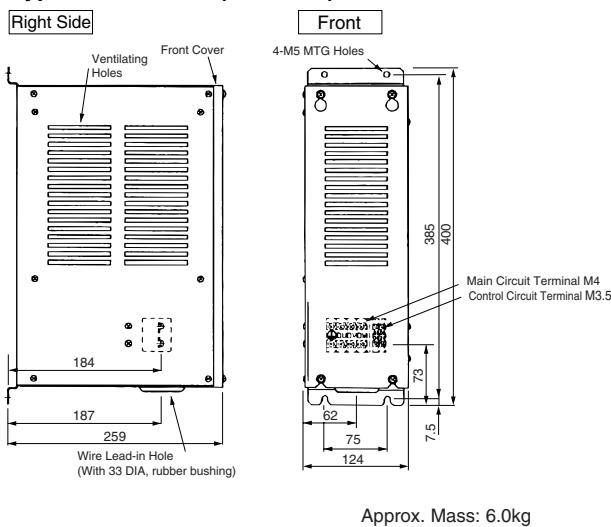
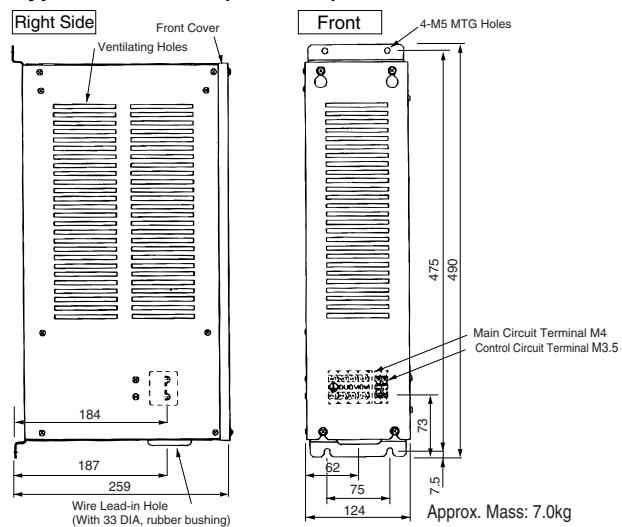


Approx. Mass: 21.5kg

Type: JUSP-RA16 (for 55kW)

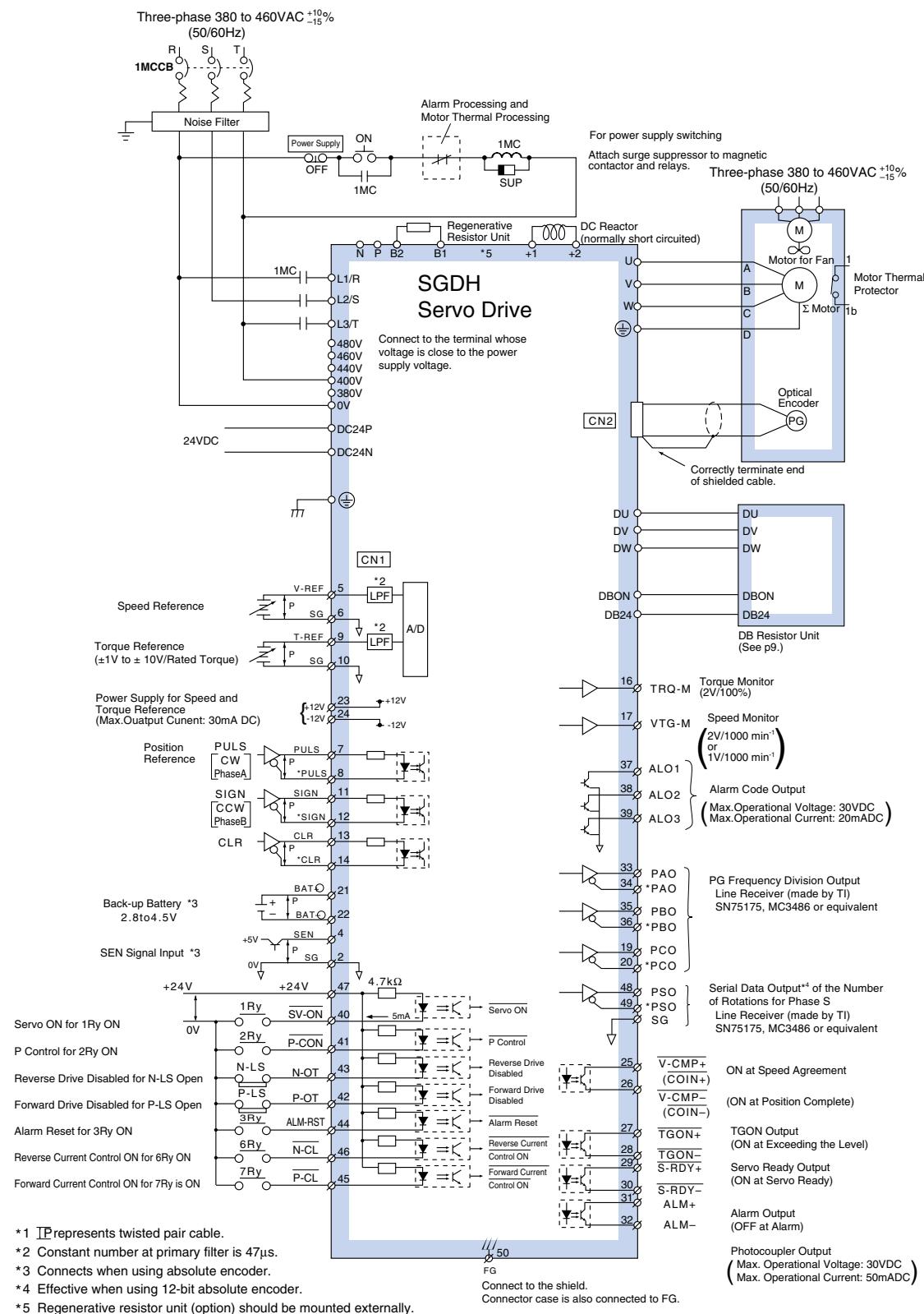


Approx. Mass: 23.5kg

**DB Resistor Unit****Type: JUSP-DB03 (for 22/30kW)****Type: JUSP-DB04 (for 37kW)****Type: JUSP-DB05 (for 45kW)****Type: JUSP-DB06 (for 55kW)**

## Installation

### Standard Connections



\*1 TP represents twisted pair cable.

\*2 Constant number at primary filter is 47μs.

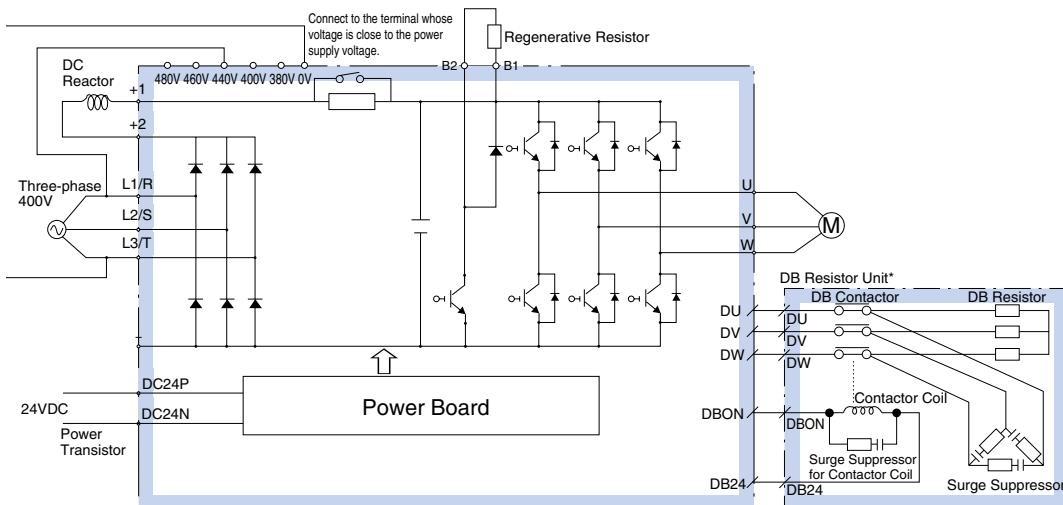
\*3 Connects when using absolute encoder.

\*4 Effective when using 12-bit absolute encoder.

\*5 Regenerative resistor unit (option) should be mounted externally.

\*6 TI stands for Texas Instruments Inc.

## Main Circuit Connection



\* This diagram is an example of a DB resistor unit with a built-in DB contactor and a surge suppressor for 37 to 55kW. A unit for 22/30kW consists of the resistor only.

## Main Circuit Terminal Description

Terminal Symbol	Name	Description	Terminal Symbol	Name	Description
L1/R, L2/S, L3/T	Main Circuit Power Supply Input Terminal	Three-phase 380 to 460 VAC, +10 to -15%, 50/60 Hz	B1, B2	Regenerative Resistor	Connects regenerative resistor
DC24P	Control Power Supply Input Terminal	24VDC	-	Main Circuit Negative Side Terminal	(Normally external connection is not necessary).
DC24N			DU, DV, DW	DB Resistor Unit, DB Contactor Connection Terminal	Connects DB resistor unit or DB contactor.
U, V, W	Motor Connection Terminal	Connect with motor	DBON, DB24	DB Resistor Unit Connection Terminal	For 37 to 55kW, connects to DBON and DB24 terminals or DB resistor unit.
$\equiv$ (X2)	Earth Terminal	Grounded (for power supply earth and motor earth).	480V, 460V, 440 V, 400 V, 380 V, 0V	Control Power Supply Input Terminal	Connect to the terminal whose voltage is close to the power supply voltage.
+1, +2	DC Reactor Connection Terminal	Connect DC reactor for suppressing high-harmonic wave. If not necessary, shorten the terminals.			

## Control Circuit Terminal Description

### CN1 (Connector I/O) Terminal Layout

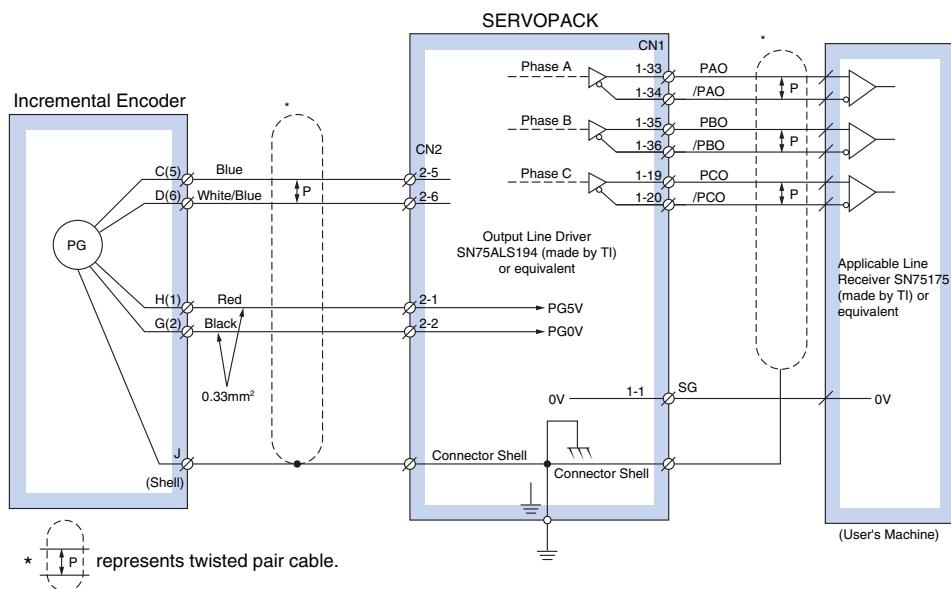
2	SG	GND	1	SG	GND	26	/V-CMP (/COIN+)	Speed agreement signal output
3	PL1	Power supply for open collector ref.	27	/TGON+	TGON output signal	28	/TGON-	TGON output signal
4	SEN	SEN signal input	29	/S-RDY+	Servo ready output	30	/S-RDY-	Servo ready output
5	V-REF	Speed ref. input	31	ALM+	Servo alarm output	32	ALM-	Servo alarm output
6	SG	GND	33	PAO	PG dividing output phase A	34	/PAO	PG dividing output phase A
7	PULS	Ref. pulse input	35	PBO	PG dividing output phase B	36	/PBO	PG dividing output phase B
8	/PULS	Ref. pulse input	37	ALO1	Alarm code output	38	ALO2	Alarm code output
9	T-REF	Torque ref. input	39	ALO3	(Open collector)	40	/S-ON	Servo ON input
10	SG	GND	41	/P-CON	P control input	42	P-OT	Fwd. overtravel input
11	/SIGN	Ref. code input	43	N-OT	Rev. side overtravel input	44	/ALM-RST	Alarm reset input
12	/CLR	Clear input	45	/P-CL	Fwd. current limit ON input	46	/N-CL	Rev. current limit ON input
13	PL2	Power Supply for open collector ref.	47	+24V IN	External input power supply	48	PSO	Phase S signal output
14	-	-	49	/PSO	Speed agreement signal output	50	-	-
15	CLR	Clear input						
16	-	-						
17	-	-						
18	PL3	Power supply for open collector ref.						
19	/PCO	PG dividing output phase C						
20	BAT (+)	Battery (+)						
21	BAT (-)	Battery (-)						
22	-	-						
23	-	-						
24	-	-						
25	/V-CMP (/COIN+)	Speed agreement signal output						

### CN2 (Encoder Connection) Terminal Layout

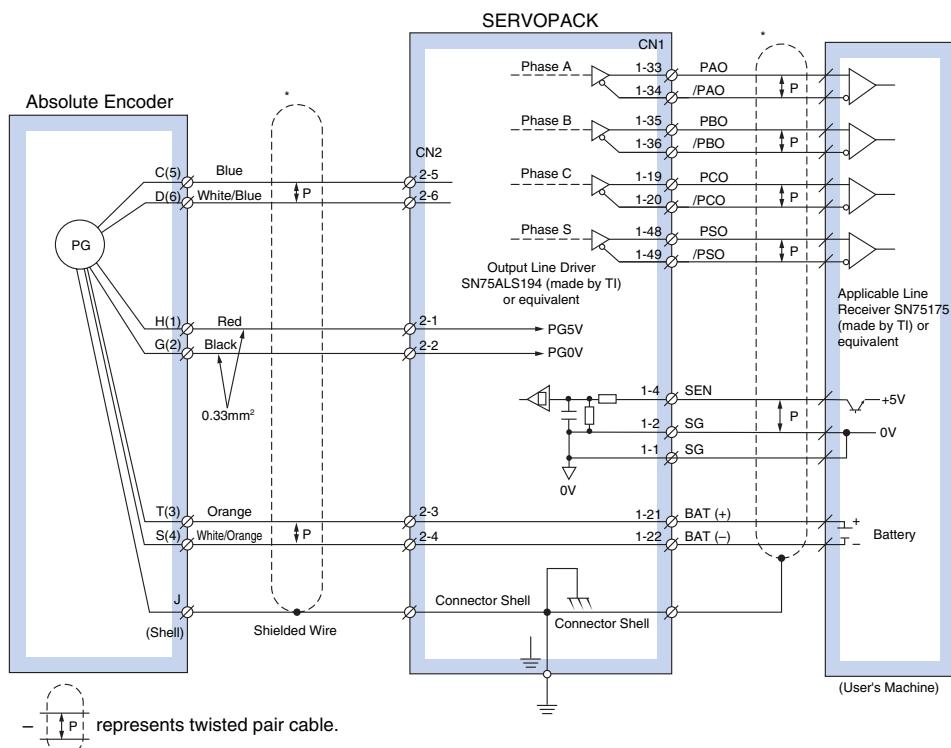
1	PG5V	PG power supply+5V	2	PG 0V	PG power supply 0V
3	BAT(+)	Battery(+) (absolute encoder only)	4	BAT(-)	Battery(-) (absolute encoder only)
5	PS	PG serial signal input	6	/PS	PG serial signal input

## Encoder Connections

### Incremental Encoder



### Absolute Encoder



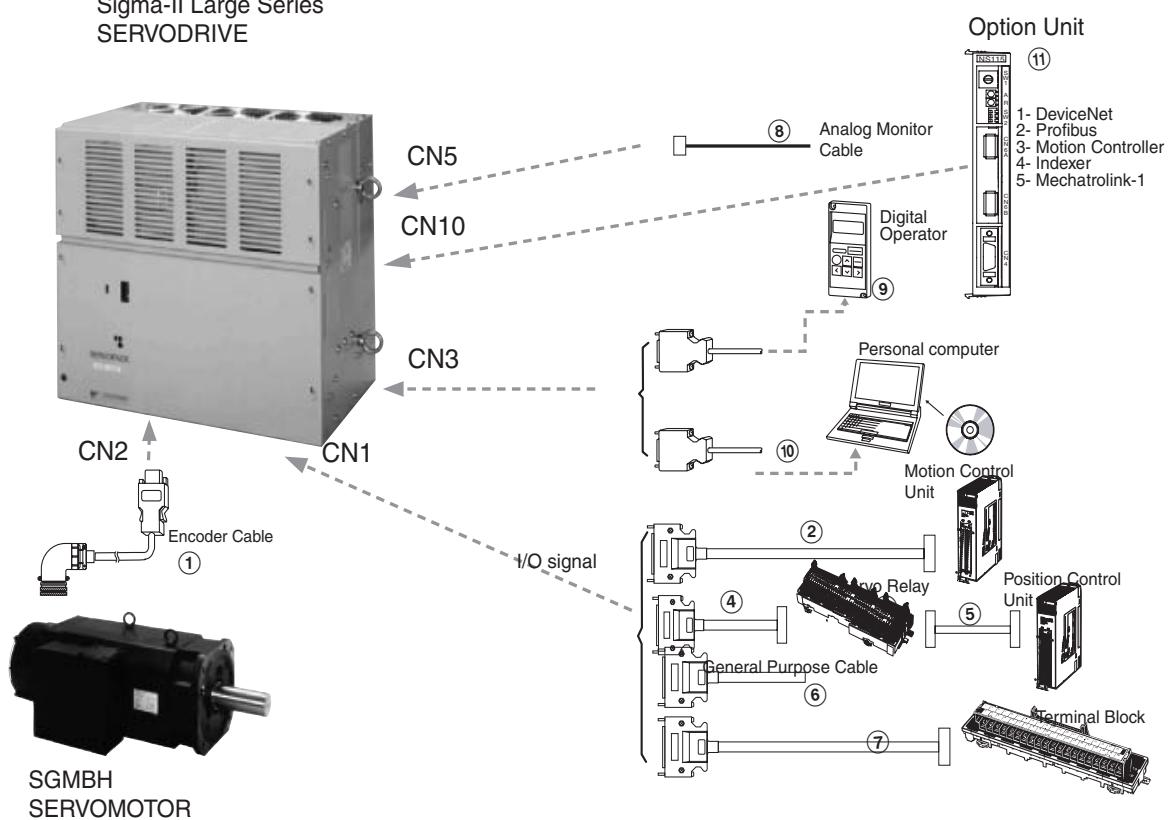
### System Configuration Example

Large-capacity AC servo drive configurations are illustrated below.  
Connectors and operators are not provided with servomotors and Servo Drives.  
Order what you need separately.

## Ordering Information

### System Configuration

Sigma-II Large Series  
SERVODRIVE



### Servomotors

[SGMBH - Servomotors 1500 r/min \(22 - 55 kW\)](#)



Specifications		Model		
<b>Incremental Encoder (17 bit)</b> Straight shaft with key & Tap	Without brake Flange Mount	140 Nm	22 kW	SGMBH-2BDC6A61
		191 Nm	30 kW	SGMBH-3ZDCA61
		236 Nm	37 kW	SGMBH-3GDC6A61
		286 Nm	45 kW	SGMBH-4EDCA61
	Without brake Foot mount	236 Nm	37 kW	SGMBH-3GDCAL1
		286 Nm	45 kW	SGMBH-4EDCAL1
		350 Nm	55 kW	SGMBH-5EDCAL1
	With brake Flange Mount	140 Nm	22 kW	SGMBH-2BDC6C
		191 Nm	30 kW	SGMBH-3ZDC6C
		236 Nm	37 kW	SGMBH-3GDC6C
		286 Nm	45 kW	SGMBH-4EDCA6C
<b>Absolute Encoder (17 bit)</b> Straight shaft with key & Tap	With brake Foot mount	236 Nm	37 kW	SGMBH-3GDCALC
		286 Nm	45 kW	SGMBH-4EDCALC
	Without brake Flange Mount	140 Nm	22 kW	SGMBH-2BD2A61
		191 Nm	30 kW	SGMBH-3ZD2A61
		236 Nm	37 kW	SGMBH-3GD2A61
		286 Nm	45 kW	SGMBH-4ED2A61
<b>Without brake Foot mount</b>	Without brake Foot mount	236 Nm	37 kW	SGMBH-3GD2AL1
		286 Nm	45 kW	SGMBH-4ED2AL1
		350 Nm	55 kW	SGMBH-5ED2AL1
	With brake Flange Mount	140 Nm	22 kW	SGMBH-2BD2A6C
		191 Nm	30 kW	SGMBH-3ZD2A6C
		236 Nm	37 kW	SGMBH-3GD2A6C
		286 Nm	45 kW	SGMBH-4ED2A6C
	With brake Foot mount	236 Nm	37 kW	SGMBH-3GD2ALC
		286 Nm	45 kW	SGMBH-4ED2ALC

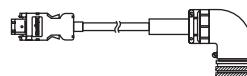
### Servo Drives

[SGDH - Servo Drives \(22 - 55 kW\)](#)



Specifications	Model	Compatible Servomotors
3 Phase 400 V AC	22.0 kW	SGDH-2BDE
	30.0 kW	SGDH-3ZDE
	37.0 kW	SGDH-3GDE
	45.0 kW	SGDH-4EDE
	55.0 kW	SGDH-5EDE

### Encoder Cables (for CN2)



Symbol	Specifications	Model
①	Encoder cable (for motors SGMBH-□)	3 m R88A-CRWB003N-E
		5 m R88A-CRWB005N-E
		10 m R88A-CRWB010N-E
		15 m R88A-CRWB015N-E
		20 m R88A-CRWB020N-E

**Control Cables (for CN1)**

Symbol	Description	Connect to		Model	
(2)	Control Cable (1 Axis)	Motion Control Units CS1W-MC221 CS1W-MC421 C200H-MC221	1 m	R88A-CPW001M1	
			2 m	R88A-CPW002M1	
			3 m	R88A-CPW003M1	
			5 m	R88A-CPW005M1	
			1 m	R88A-CPW001M2	
	Control Cable (2 Axis)	Motion Control Units CS1W-MC221 CS1W-MC421 C200H-MC221	2 m	R88A-CPW002M2	
			3 m	R88A-CPW003M2	
			5 m	R88A-CPW005M2	
			-	R88A-TC04-E	
			1 M	R88A-CMU001J3-E2	
(3)	Servodrive connecting Cable (1 Axis)	Motion Control Unit C200HW-MC402-E	1 m	R88A-CMX001S-E	
			1 m	R88A-CMX001J1-E	
			1 m	R88A-CMX001S-E	
			1 m	R88A-CMX001J1-E	
(4)	Cable to Servo drive	Servo Relay Unit XW2B-□0J6-□B		XW2B-20J6-1B (1 axis)	
				XW2B-40J6-2B (2 axes)	
				XW2B-20J6-3B (1 axis)	
				XW2B-20J6-8A (1 axis) XW2B-40J6-9A (2 axes)	
(5)	Position Control Unit Connecting Cable	C200H-NC112	0.5 m	XW2Z-050J-A1	
			1 m	XW2Z-100J-A1	
		C200H-NC211	0.5 m	XW2Z-050J-A2	
			1 m	XW2Z-100J-A2	
		CQM1-CPU43-V1 and CQM1-PLB21	0.5 m	XW2Z-050J-A3	
			1 m	XW2Z-100J-A3	
		CS1W-NC113 and C200HW-NC113	0.5 m	XW2Z-050J-A6	
			1 m	XW2Z-100J-A6	
		CS1W-NC213/413 and C200HW-NC213/413	0.5 m	XW2Z-050J-A7	
			1 m	XW2Z-100J-A7	
		CS1W-NC133	0.5 m	XW2Z-050J-A10	
			1 m	XW2Z-100J-A10	
		CS1W-NC233/433	0.5 m	XW2Z-050J-A11	
			1 m	XW2Z-100J-A11	
		CJ1W-NC113	0.5 m	XW2Z-050J-A14	
			1 m	XW2Z-100J-A14	
(6)	Control Cable	For General purpose Controllers	0.5 m	XW2Z-050J-A15	
			1 m	XW2Z-100J-A15	
			0.5 m	XW2Z-050J-A18	
			1 m	XW2Z-100J-A18	
(7)	Relay Terminal Block Cable	General-purpose Controller	0.5 m	XW2Z-050J-A19	
			1 m	XW2Z-100J-A19	
			0.5 m	XW2Z-050J-A27	
			1 m	XW2Z-100J-A27	
(7)	Relay Terminal Block		1 m	R88A-CTW001N	
			2 m	R88A-CTW002N	
			-	XW2B-50G5	

**Battery Backup for absolute encoder**

Name	Model
Battery (Required for servomotors with absolute encoder)	JZSP-BA01 or ER6VC3 (3.6V)

**Cable (for CN5)**

Symbol	Name	Model
(8)	Analog Monitor Cable	R88A-CMW001S or DE9404559

**Options (for CN3)**

Symbol	Name	Model
(9)	Parameter Unit with Cable	JUSP-OP02A-2 or R88A-PR02W
(10)	Computer Connecting Cable	R88A-CCW002P2 or JZSP-CMS02

**Option Units (for CN10)**

Symbol	Name	Model
(11)	1.5 axis Advanced Motion Controller with Host Link Interface	R88A-MCW151-E
	1.5 axis Advanced Motion Controller with DeviceNet Interface	R88A-MCW151-DRT-E
	Mechatrolink-I Interface unit	JUSP-NS100
	DeviceNet Interface unit with Positioning Functionality	JUSP-NS300
	PROFIBUS-DP Interface unit with Positioning Functionality	JUSP-NS500
	Indexer Unit, Versatile Point to Point Positioning	JUSP-NS600

**Connectors**

Specification	Model
Control I/O connector (For CN1)	R88A-CNU11C or JZSP-CKI9
Sigma-II Drive Encoder connector (For CN2)	JZSP-CMP9-1
Military Connector for Encoder, IP67 (For Motors SGMBH-□)	MS3108E20-29S
Military Connector for Fan, IP67 (For Motors SGMBH-□)	MS3108E18-10S

**Filters**

Specifications (applicable Servo Drive)	Model	Rated Current
SGDH-2BDE, SGDH-3ZDE, SGDH-3GDE	FN258-180-07	180 A
SGDH-4EDE, SGDH-5EDE	FN359-250-99	250 A

**Regenerative Resistor Units**

Servo Drive Model	Regenerative Resistor Unit Model	Specifications
SGDH-2BDE	JUSP-RA12	9Ω, 3600 W
SGDH-3ZDE	JUSP-RA13	6.7Ω, 3600 W
SGDH-3GDE	JUSP-RA14	5Ω, 4800 W
SGDH-4EDE	JUSP-RA15	4Ω, 6000 W
SGDH-5EDE	JUSP-RA16	3.8Ω, 7200 W

**DB Resistor units**

Servo Drive Model	Regenerative Resistor Unit Model	Specifications
SGDH-2BDE, SGDH-3ZDE	JUSP-DB03	180 W, 0.8Ω
SGDH-3GDE	JUSP-DB04	180 W, 0.8Ω
SGDH-4EDE	JUSP-DB05	180 W, 0.8Ω
SGDH-5EDE	JUSP-DB06	300 W, 0.8Ω

**Computer Software**

Specifications	Model
SigmaWin	MOTION TOOLS CD

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

SGLG□, SGLF□, SGLT□

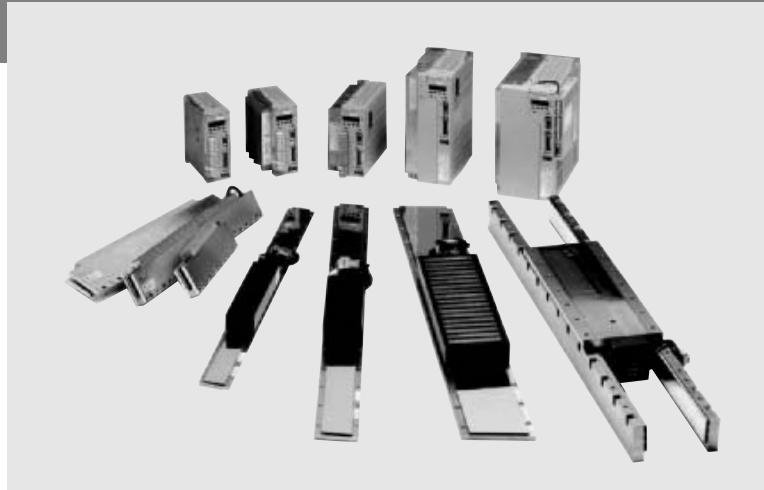
# Sigma Linear Motors

## Direct drive linear servomotors for faster machine cycles.

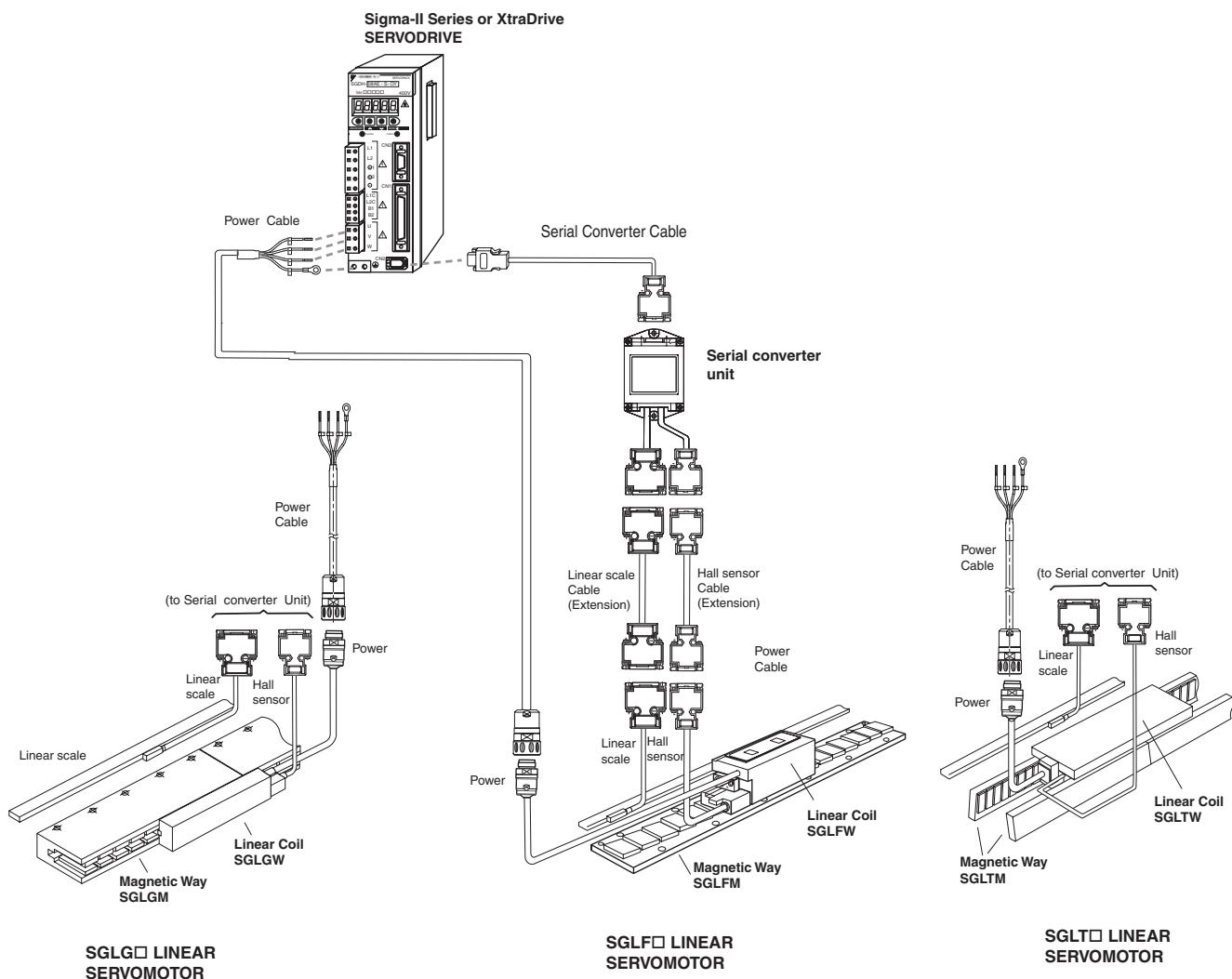
- Direct control of the motors using XtraDrive and Sigma-II drives
- Improved machine performance
- Easy of operation & high reliability
- Designed for high force density in compact packages
- Exhibit exceptional Force Linearity even at near the peak force regions
- Extremely energy efficient. Due to its optimised magnetic circuitry design and high-density windings
- Can reach speeds as high as 5 meters per second.
- Coreless and Iron core types available

## Ratings

- 230VAC Single-phase 13,5 to 560 N (1200 N Peak)
- 400VAC Three-phase 80 to 2000 N (7500 N Peak)



## System Configuration



## Servomotor / Servo Drive Combination

Sigma Series Linear Servomotor					Serial Converter	Servo Drive			
Type	Voltage	Rated Force	Peak Force	Model		JZDP-A008-□	230 V (1-phase)	400V(3-phase)	230 V (1-phase)
	230 V	13.5 N	40 N	30A050B	158	SGDH-A5AE-OY	-	XD-P5-MN01	-
		27 N	80 N	30A080B	156	SGDH-01AE-OY	-	XD-01-MN01	-
		47 N	140 N	40A140B	001	SGDH-01AE-OY	-	XD-01-MN01	-
		73 N	220 N	60A140B	004	SGDH-02AE-OY	-	XD-02-MN01	-
		93 N	280 N	40A253B	002	SGDH-02AE-OY	-	XD-02-MN01	-
		140 N	420 N	40A365B	003	SGDH-04AE-OY	-	XD-04-MN01	-
		147 N	440 N	60A253B	005	SGDH-04AE-OY	-	XD-04-MN01	-
		220 N	660 N	60A365B	006	SGDH-08AE-S-OY	-	XD-08-MN	-
		325 N	1300 N	90A200A	101	SGDH-15AE-S-OY	-	-	-
	230 V	57 N	230 N	40A140B	063	SGDH-02AE-OY	-	XD-02-MN01	-
		114 N	460 N	40A253B	059	SGDH-04AE-OY	-	XD-04-MN01	-
		171 N	690 N	40A365B	060	SGDH-08AE-S-OY	-	XD-08-MN	-
		89 N	360 N	60A140B	061	SGDH-02AE-OY	-	XD-02-MN01	-
		178 N	720 N	60A253B	062	SGDH-08AE-S-OY	-	XD-08-MN	-
		267 N	1080 N	60A365B	047	SGDH-15AE-S-OY	-	-	-
	230 V	25 N	86 N	20A090A	017	SGDH-02AE-OY	-	XD-02-MN01	
		40 N	125 N	20A120A	018	SGDH-02AE-OY	-	XD-02-MN01	
		80 N	220 N	35A120A	019	SGDH-02AE-OY	-	XD-02-MN01	
		160 N	440 N	35A230A	020	SGDH-08AE-S-OY	-	XD-08-MN01	
		280 N	600 N	50A200B	181	SGDH-08AE-S-OY	-	XD-08-MN	
		560 N	1200 N	50A380B	182	SGDH-15AE-S-OY	-	-	
	400 V	560 N	1200 N	1ZA200B	183	SGDH-15AE-S-OY	-	-	
		80 N	220 N	35D120A	211	-	SGDH-05DE-OY	-	XD-05-TN
		160 N	440 N	35D230A	212	-	SGDH-05DE-OY	-	XD-05-TN
		280 N	600 N	50D200B	189	-	SGDH-10DE-OY	-	XD-10-TN
		560 N	1200 N	50D380B	190	-	SGDH-15DE-OY	-	XD-15-TN
		560 N	1200 N	1ZD200B	191	-	SGDH-15DE-OY	-	XD-15-TN
	400 V	1120 N	2400 N	1ZD380B	192	-	SGDH-30DE-OY	-	XD-30-TN
		300 N	600 N	35D170H	193	-	SGDH-10DE-OY	-	XD-10-TN
		600 N	1200 N	35D320H	194	-	SGDH-20DE-OY	-	XD-20-TN
		450 N	900 N	50D170H	195	-	SGDH-10DE-OY	-	XD-10-TN
		900 N	1800 N	50D320H	196	-	SGDH-20DE-OY	-	XD-20-TN
		670 N	2600 N	40D400B	197	-	SGDH-30DE-OY	-	XD-30-TN
		1000 N	4000 N	40D600B	198	-	SGDH-50DE-OY	-	-
		1300 N	5000 N	80D400B	199	-	SGDH-50DE-OY	-	-
		2000 N	7500 N	80D600B	200	-	SGDH-75DE-OY	-	-

## Motor Coil

SGL F W-35 D 120 A P D

Linear Σ Series  
Linear servomotor

Servomotor Model	
Code	Specifications
G	Coreless
F	F-type iron core
T	T-type iron core

W : Coil assembly

Magnet height

Voltage

A : 200 VAC  
D : 400 VAC

Cable Connector for Main Circuit Cable	
Code	Specifications
-	MS connector or connector made by Tyco Electronics AMP K.K.
D	Connector made by Interconnectron

## Options

Options	
Code	Specifications
P	With hall sensor (Standard)
C	Forced cooling
H	With hall sensor and forced cooling

Design revision order

A,B,C ...

Length of coil assembly

**Magnetic Way****SGL F M—35 324 A C**

Linear Σ Series  
Linear servomotor

Model	
Code	Specifications
G	Coreless
F	F-type iron core
T	T-type iron core

M : Magnetic way

Magnet width

Length of magnetic way

Options		
Code	Specifications	Remarks
C	With magnet cover	Only for iron-core types - SGLFM - SGLTM
- M	High thrust force	Only for coreless types
- Y	With base and magnet cover	Only for T-type iron-core types

Design revision order

A,B,C ...

**Serial Converter Unit****JZDP - A008 - 001**

Serial Converter Unit Model			
Symbol	Appearance	Applicable Linear Scale	Hall Sensor
A008		Made by Renishaw or (Heidenhain *)	Yes

Note: \* When using a Linear Scale made by Heidenhain an extension cable is required

Applicable Linear Servomotor				
Servomotor Model	Symbol	Servomotor Model	Symbol	
SGLGW-(Coreless)	30A050B	158	20A170A	011
	30A080B	156	20A320A	012
	40A140B	001	20A460A	013
	40A253B	002	35A170A	014
	40A365B	003	35A320A	015
	60A140B	004	35A460A	016
	60A253B	005	35A170H	105
	60A365B	006	35A320H	106
	90A200A	101	50A170H	108
	90A370A	102	50A320H	109
When a standard-force magnetic way is used.	90A535A	103	40A400B	185
	40A140B	063	40A600B	186
	40A253B	059	80A400B	187
	40A365B	060	80A600B	188
	60A140B	061	35D170H	193
	60A253B	062	35D320H	194
SGLFW-(Iron core, F-type)	60A365B	047	50D170H	195
	20A090A	017	50D320H	196
	20A120A	018	40D400B	197
	35A120A	019	40D600B	198
	35A230A	020	80D400B	199
	50A200B	181	80D600B	200
	50A380B	182		
	1ZA200B	183		
	1ZA380B	184		
	35D120A	211		
SGLTM-(T-type)	35D230A	212		
	50D200B	189		
	50D380B	190		
	1ZD200B	191		
	1ZD380B	192		

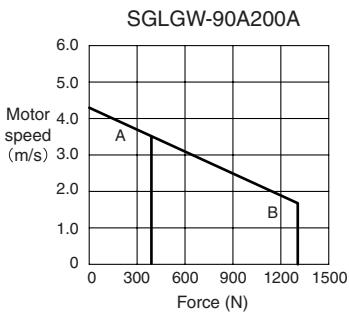
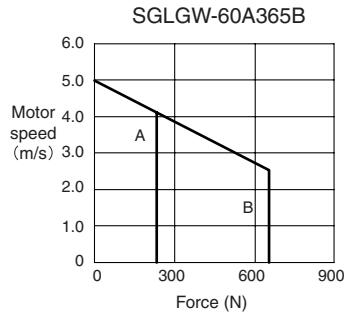
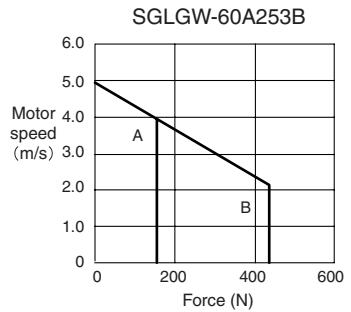
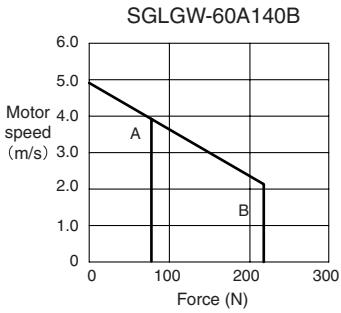
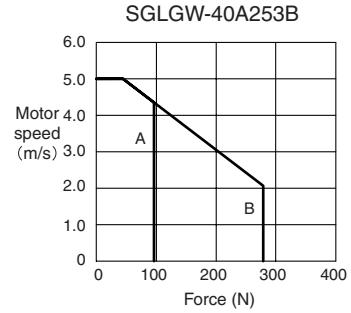
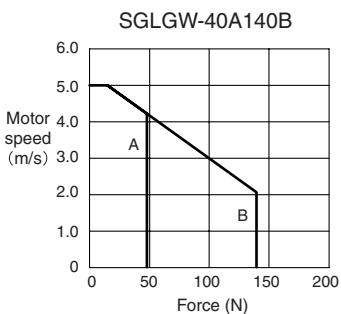
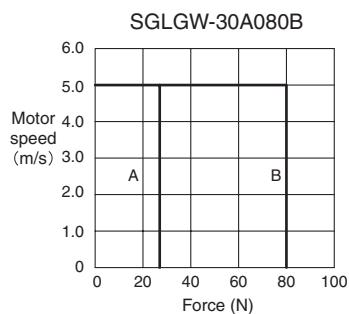
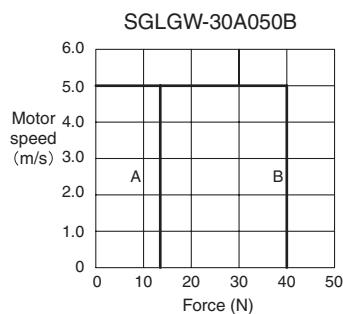
## Servomotor Specifications

### Coreless SGLGW/SGLGM - (With Standard-force Magnetic Ways)

Voltage		230V								
		30A		40A			60A		90A	
		050B	080B	140B	253B	365B	140B	253B	365B	
Rated Force*	N	13.5	27	47	93	140	73	147	220	325
Rated Current*	Arms	0.55	0.85	0.8	1.6	2.4	1.2	2.3	3.5	4.4
Instantaneous Peak Force*	N	40	80	140	280	420	220	440	660	1300
Instantaneous Peak Current*	Arms	1.62	2.53	2.4	4.9	7.3	3.5	7.0	10.5	17.6
Coil Assembly Mass	kg	0.10	0.15	0.34	0.60	0.87	0.42	0.76	1.10	2.15
Force Constant	N / Arms	26.4	33.9	61.5	61.5	61.5	66.6	66.6	66.6	78
BEMF Constant	V / I(m / s)	8.8	11.3	20.5	20.5	20.5	22.2	22.2	22.2	26.0
Motor Constant	N / √W	3.7	5.6	7.8	11.0	13.5	11.1	15.7	19.2	26.0
Electrical Time Constant	ms	0.2	0.4	0.4	0.4	0.4	0.5	0.5	0.5	1.4
Mechanical Time Constant	ms	7.30	4.78	5.59	4.96	4.77	3.41	3.08	2.98	3.18
Thermal Resistance (With Heat Sink)	K / W	4.89	2.93	1.87	0.98	0.65	1.62	0.80	0.53	0.44
Thermal Resistance (Without Heat Sink)	K / W	-	-	3.39	2.02	1.38	2.69	1.54	1.20	-
Magnetic Attraction	N	0	0	0	0	0	0	0	0	0
Head Sink Size	mm			200 x 300 x 12	300 x 400 x 12	400 x 500 x 12	200 x 300 x 12	300 x 400 x 12	400 x 500 x 12	800 x 900 x 12
Basic Specifications	Time Rating	Continuous								
	Insulation Class	Class B								
	Ambient Temperature	0 to +40 °C								
	Ambient Humidity	20 to 80% (non-condensing)								
	Insulation Resistance	500 VDC, 10 MΩ min.								
	Excitation	Permanent magnet								
	Dielectric Strength	1500 VAC for 1 minute								
	Protection Methods	Self-cooled, air-cooling								
	Allowable Winding Temperature	130 °C								

### Force-Speed Characteristics - (With Standard-force Magnetic Ways)

A: Continuous duty zone  
B: Intermittent duty zone



## Coreless SGLGW/SGLGM - (With High-force Magnetic Ways)

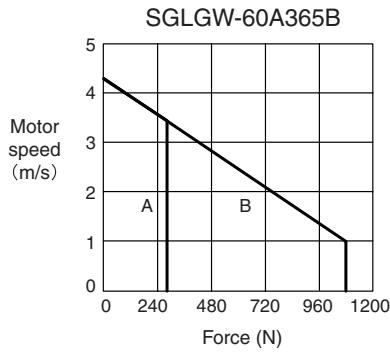
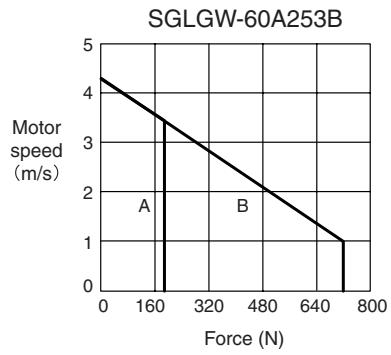
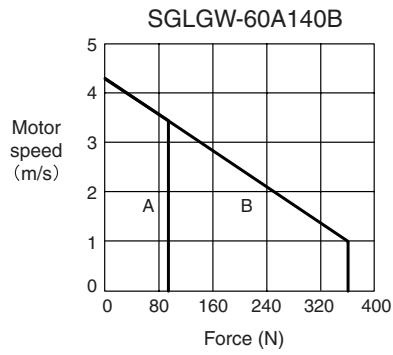
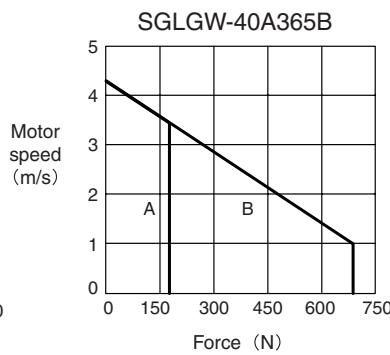
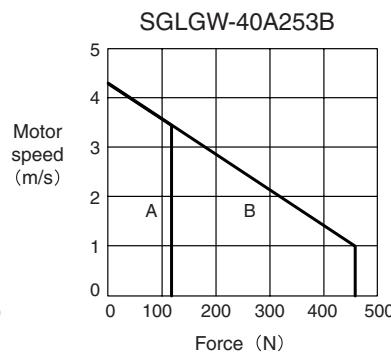
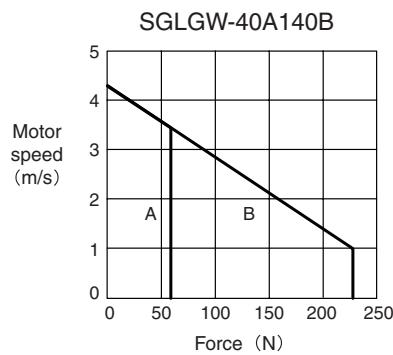
Linear Servomotor Model SGLGW-		230V					
		40A			60A		
		140B	253B	365B	140B	253B	365B
Rated Force*	N	57	114	171	89	178	267
Rated Current*	Arms	0.8	1.6	2.4	1.2	2.3	3.5
Instantaneous Peak Force*	N	230	460	690	360	720	1080
Instantaneous Peak Current*	Arms	3.2	6.5	9.7	5.0	10.0	14.9
Coil Assembly Mass	kg	0.34	0.60	0.87	0.42	0.76	1.10
Force Constant	N / Arms	76.0	76.0	76.0	77.4	77.4	77.4
BEMF Constant	V / (m / s)	25.3	25.3	25.3	25.8	25.8	25.8
Motor Constant	N / √W	9.6	13.6	16.7	12.9	18.2	22.3
Electrical Time Constant	ms	0.4	0.4	0.4	0.5	0.5	0.5
Mechanical Time Constant	ms	3.69	3.24	3.12	2.52	2.29	2.21
Thermal Resistance (With Heat Sink)	K / W	1.87	0.98	0.65	1.62	0.80	0.53
Thermal Resistance (Without Heat Sink)	K / W	3.39	2.02	1.38	2.69	1.54	1.20
Magnetic Attraction	N	0	0	0	0	0	0
Head Sink Size	mm	200 x 300 x 12	300 x 400 x 12	400 x 500 x 12	200 x 300 x 12	300 x 400 x 12	400 x 500 x 12
Basic Specifications	Time Rating	Continuous					
	Insulation Class	Class B					
	Ambient Temperature	0 to +40 °C					
	Ambient Humidity	20 to 80% (non-condensing)					
	Insulation Resistance	500 VDC, 10 MΩ min.					
	Excitation	Permanent magnet					
	Dielectric Strength	1500 VAC for 1 minute					
	Protection Methods	Self-cooled, air-cooling					
	Allowable Winding Temperature	130 °C					

**Note:** 1. The items marked with an \* and "Force and Speed Characteristics" are the values at a motor winding temperature of 100 °C during operation in combination with a SERVODRIVE. The others are at 20 °C (68°F).

2. The above specifications show the values under the cooling condition when a heat sink (aluminium board) listed in the following table is mounted on the coil assembly.

### Force-Speed Characteristics - (With High-force Magnetic Ways)

A : Continuous duty zone  
B : Intermittent duty zone



## Iron-core SGLFW/SGLFM (200V)

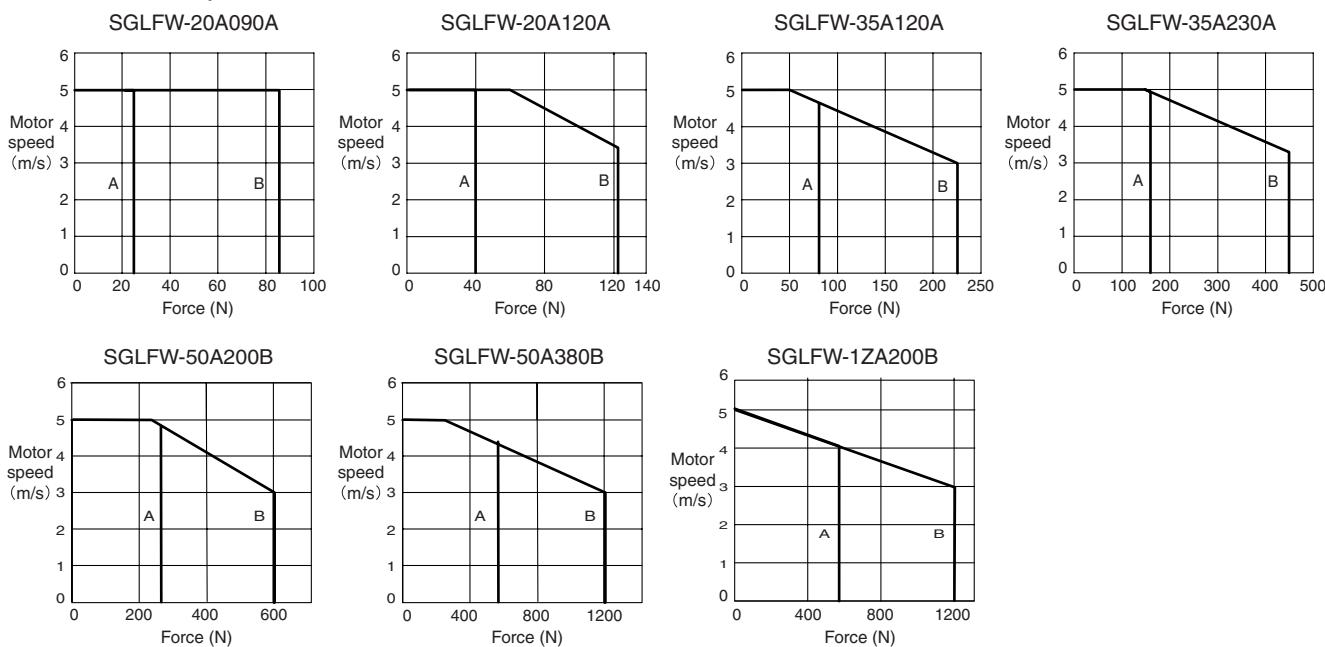
Voltage	Linear Servomotor Model SGLFW-	230V									
		20A		35A		50A		1ZA			
		090A	120A	120A	230A	200B	380B	200B			
Rated Force*	N	25	40	80	160	280	560	560			
Rated Current*	Arms	0.7	0.8	1.4	2.8	5.0	10.0	8.7			
Instantaneous Peak Force*	N	86	125	220	440	600	1200	1200			
Instantaneous Peak Current*	Arms	3.0	2.9	4.4	8.8	12.4	25.0	21.6			
Coil Assembly Mass	kg	0.7	0.9	1.3	2.3	3.5	6.9	6.4			
Force Constant	N / Arms	36.0	54.0	62.4	62.4	60.2	60.2	69.0			
BEMF Constant	V / (m / s)	12.0	18.0	20.8	20.8	20.1	20.1	23.0			
Motor Constant	N / √W	7.9	9.8	14.4	20.4	34.3	48.5	52.4			
Electrical Time Constant	ms	3.2	3.3	3.6	3.6	15.9	15.8	18.3			
Mechanical Time Constant	ms	11.0	9.3	6.2	5.5	3.0	2.9	2.3			
Thermal Resistance (With Heat Sink)	K / W	4.35	3.19	1.57	0.96	0.82	0.32	0.6			
Thermal Resistance (Without Heat Sink)	K / W	7.69	5.02	4.10	1.94	1.48	0.74	0.92			
Magnetic Attraction	N	314	462	809	1586	1650	3260	3300			
Head Sink Size	mm	125 x 125 x 13		254 x 254 x 25			400 x 500 x 40	254 x 254 x 25			
Basic Specifications	Time Rating	Continuous									
	Insulation Class	Class B									
	Ambient Temperature	0 to +40 °C									
	Ambient Humidity	20 to 80% (non-condensing)									
	Insulation Resistance	500 VDC, 10 MΩ min.									
	Excitation	Permanent magnet									
	Dielectric Strength	1500 VAC for 1 minute									
	Protection Methods	Self-cooled									
	Allowable Winding Temperature	130 °C									

- Note:** 1. The items marked with an \* and "Force and Speed Characteristics" are the values at a motor winding temperature of 100 °C during operation in combination with a SERVODRIVE. The others are at 20 °C (68°F).
2. The above specifications show the values under the cooling condition when a heat sink (aluminium board) listed in the following table is mounted on the coil assembly.

## Force-Speed Characteristics (200 V)

A: Continuous duty zone

B: Intermittent duty zone



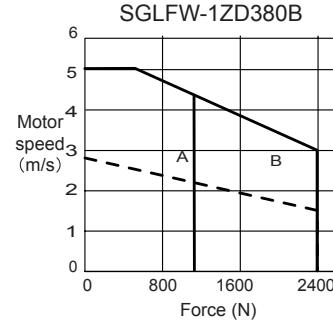
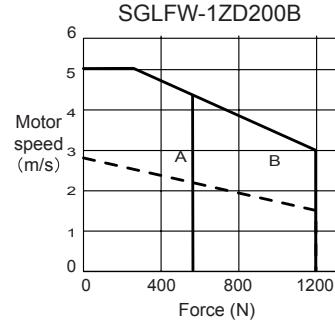
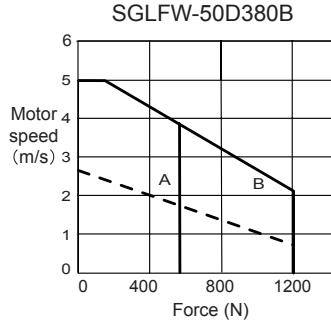
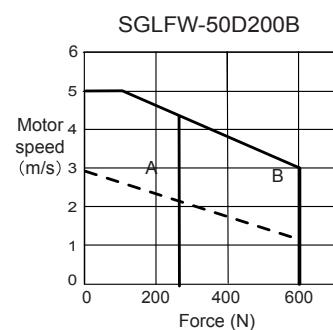
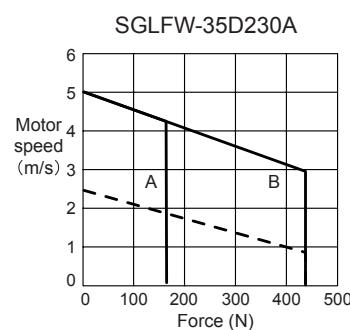
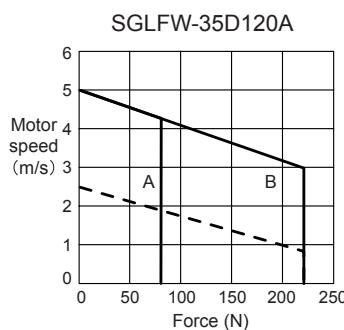
**Iron-core SGLFW/SGLFM (400V)**

Voltage Linear Servomotor Model SGLFW-		400V					
		35D		50D		1ZD	
		120A	230A	200B	380B	200B	380B
Rated Force*	N	80	160	280	560	560	1120
Rated Current*	Arms	0.7	1.4	2.3	4.5	4.9	9.8
Instantaneous Peak Force*	N	220	440	600	1200	1200	2400
Instantaneous Peak Current*	Arms	2.3	4.6	5.6	11.0	12.3	24.6
Coil Assembly Mass	kg	1.3	2.3	3.5	6.9	6.4	11.5
Force Constant	N / Arms	120.2	120.2	134.7	134.7	122.6	122.6
BEMF Constant	V / (m / s)	40.1	40.1	44.9	44.9	40.9	40.9
Motor Constant	N / √W	13.8	19.5	33.4	47.2	51.0	72.1
Electrical Time Constant	ms	3.5	3.5	15.0	15.0	17.4	17.2
Mechanical Time Constant	ms	5.5	5.5	3.2	3.2	2.5	2.2
Thermal Resistance (With Heat Sink)	K / W	1.57	0.96	0.82	0.32	0.6	0.28
Thermal Resistance (Without Heat Sink)	K / W	4.1	1.94	1.48	0.74	0.92	0.55
Magnetic Attraction	N	810	1590	1650	3260	3300	6520
Head Sink Size	mm	254 x 254 x 25			400 x 500 x 40	254 x 254 x 25	400 x 500 x 40
Basic Specifications	Time Rating	Continuous					
	Insulation Class	Class B					
	Ambient Temperature	0 to +40°C					
	Ambient Humidity	20 to 80% (non-condensing)					
	Insulation Resistance	500 VDC, 10 MΩ min.					
	Excitation	Permanent magnet					
	Dielectric Strength	1500 VAC for 1 minute					
	Protection Methods	Self-cooled					
	Allowable Winding Temperature	130°C					

- Note:** 1. The items marked with an \* and "Force and Speed Characteristics" are the values at a motor winding temperature of 100 °C during operation in combination with a SERVODRIVE. The others are at 20 °C (68°F).  
 2. The above specifications show the values under the cooling condition when a heat sink (aluminium board) listed in the following table is mounted on the coil assembly.

**Force-Speed Characteristics (400 V)**

A: Continuous duty zone  
 B: Intermittent duty zone



**Note:** The dotted line indicates characteristics when the linear servomotor for 400 VAC is used with an input power supply for 200 VAC. In this case, the serial converter should be changed. Contact your Omron-Yaskawa representatives.

## Iron-core SGLTW/SGLTM (400 V)

Voltage		400V												
Linear Servomotor Model SGLFW-		35D		50D		40D		80D						
		170H	320H	170H	320H	400B	600B	400B	600B					
Rated Force*	N	300	600	450	900	670	1000	1300	2000					
Rated Current*	Arms	3.2	6.5	3.2	6.3	3.7	5.5	7.2	11.1					
Instantaneous Peak Force*	N	600	1200	900	1800	2600	4000	5000	7500					
Instantaneous Peak Current*	Arms	7.5	15.1	7.3	14.6	20.7	30.6	37.6	56.4					
Coil Assembly Mass	kg	4.7	8.8	6	11	15	23	25	36					
Force Constant	N / Arms	99.6	99.6	153.3	153.3	196.1	196.1	194.4	194.4					
BEMF Constant	V / (m / s)	33.2	33.2	51.1	51.1	65.4	65.4	64.8	64.8					
Motor Constant	N · √W	36.3	51.4	48.9	69.1	59.6	73	85.9	105.2					
Electrical Time Constant	ms	14.3	14.3	15.6	15.6	14.4	14.4	15.4	15.4					
Mechanical Time Constant	ms	3.5	3.5	2.5	2.5	4.2	4.2	3.2	3.2					
Thermal Resistance (With Heat Sink)	K / W	0.76	0.4	0.61	0.3	0.24	0.2	0.22	0.18					
Thermal Resistance (Without Heat Sink)	K / W	1.26	0.83	0.97	0.8	0.57	0.4	0.47	0.33					
Magnetic Attraction* <sup>1</sup>	N	0	0	0	0	0	0	0	0					
Magnetic Attraction* <sup>2</sup>	N	1400	2780	2000	3980	3950	5890	7650	11400					
Head Sink Size	mm	400 × 500 × 40			609 × 762 × 50									
Basic Specifications	Time Rating	Continuous												
	Insulation Class	Class B												
	Ambient Temperature	0 to +40 °C												
	Ambient Humidity	20 to 80% (non-condensing)												
	Insulation Resistance	500 VDC, 10 MW min.												
	Excitation	Permanent magnet												
	Dielectric Strength	1500 VAC for 1 minute												
	Protection Methods	Self-cooled												
	Allowable Winding Temperature	130 °C												

\*1. The unbalanced magnetic gap resulted from the coil assembly installation condition causes a magnetic attraction on the coil assembly.

\*2. The value indicates the magnetic attraction generated on one side of the magnetic way.

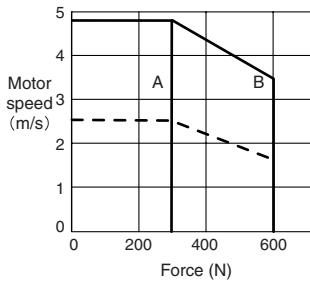
**Note:** 1. The items marked with an \* and "Force and Speed Characteristics" are the values at a motor winding temperature of 100 °C during operation in combination with a SERVODRIVE. The others are at 20 °C (68 °F).

2. The above specifications show the values under the cooling condition when a heat sink (aluminium board) listed in the following table is mounted on the coil assembly.

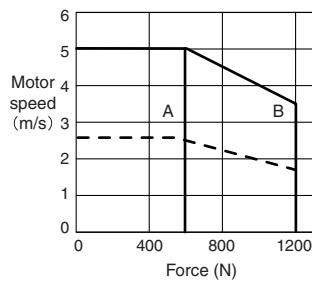
## Force-Speed Characteristics (400 V)

A: Continuous duty zone  
B: Intermittent duty zone

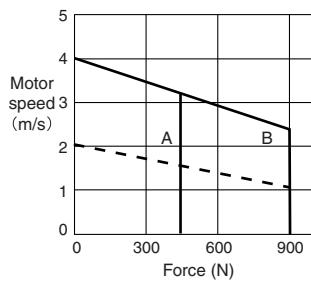
SGLTW-35D170H



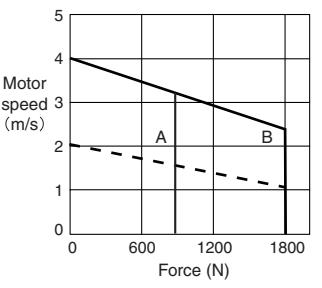
SGLTW-35D320H



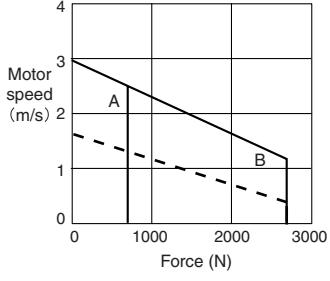
SGLTW-50D170H



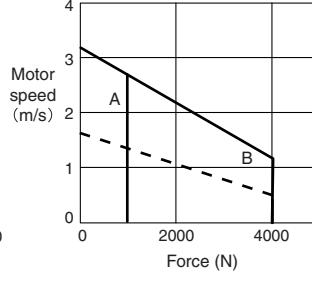
SGLTW-50D320H



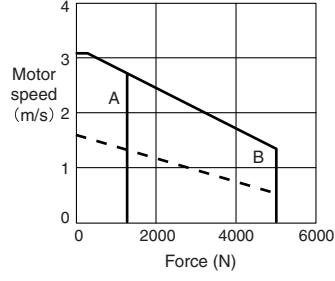
SGLTW-40D400B



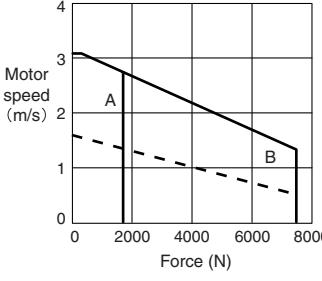
SGLTW-40D600B



SGLTW-80D400B



SGLTW-80D600B

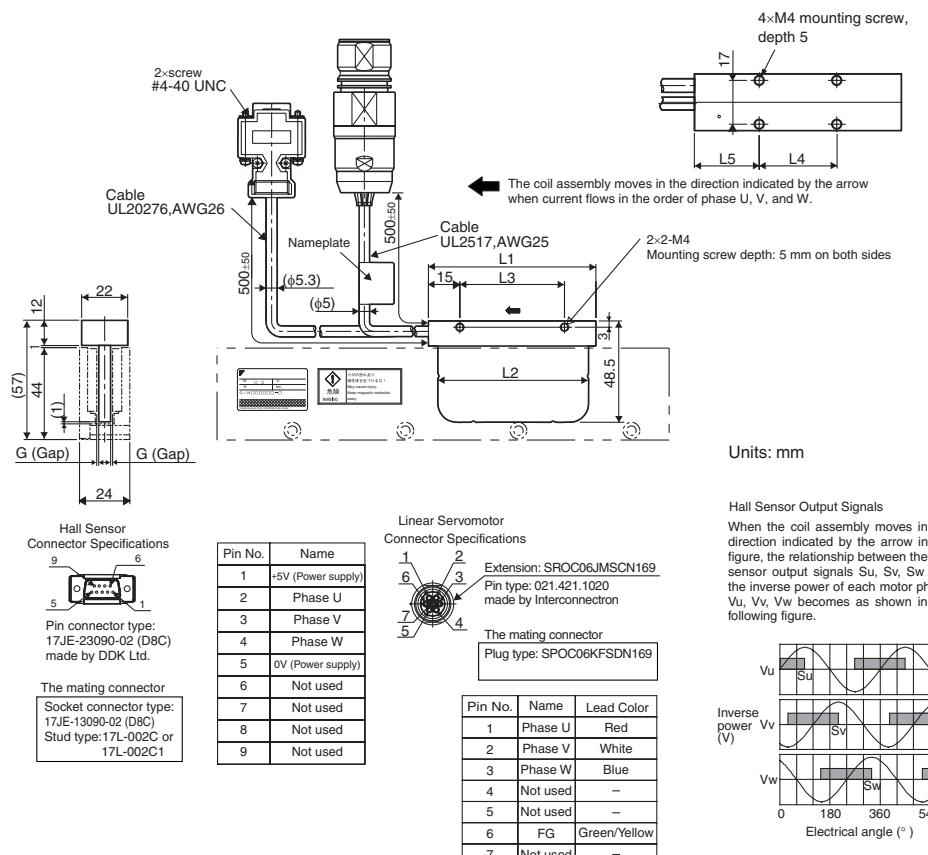


## Dimensions

### Coreless SGLG□-30

#### Coil Assembly: SGLGW-30A□□□B□D

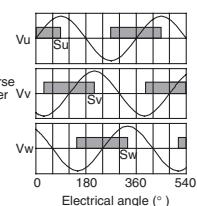
Coil Assembly Model SGLGW-	L1	L2	L3	L4	L5	G(Gap)	Approx. Mass* kg	
30A050B□D	50	48	30	20	20	0.85	0.14	
30A080B□D	80	72	50	30	25	0.95	0.19	*The value indicates the mass of coil assembly with a hall sensor unit.



Units: mm

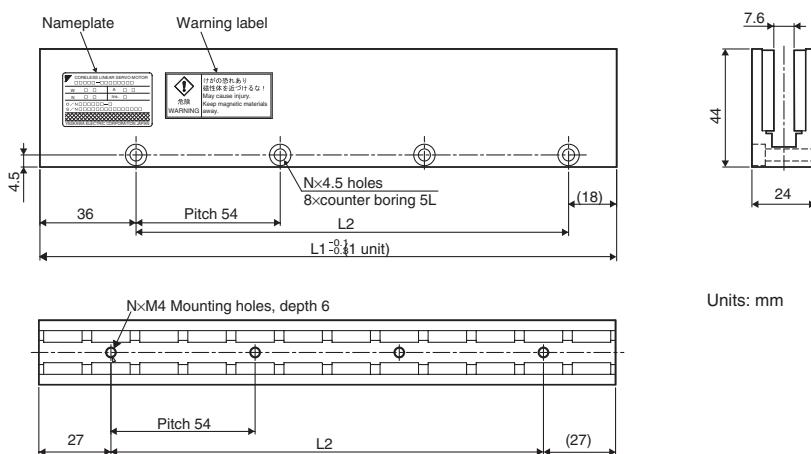
#### Hall Sensor Output Signals

When the coil assembly moves in the direction indicated by the arrow in the figure, the relationship between the hall sensor output signals Su, Sv, Sw and the inverse power of each motor phase Vu, Vv, Vw becomes as shown in the following figure.



### Magnetic Way: SGLGM-30□□□A

Magnetic Way Model SGLGM-	L1 mm	L2 mm	N	Approx. Mass kg
30108A	108	54	2	0.6
30216A	216	162	4	1.1
30432A	432	378	8	2.3

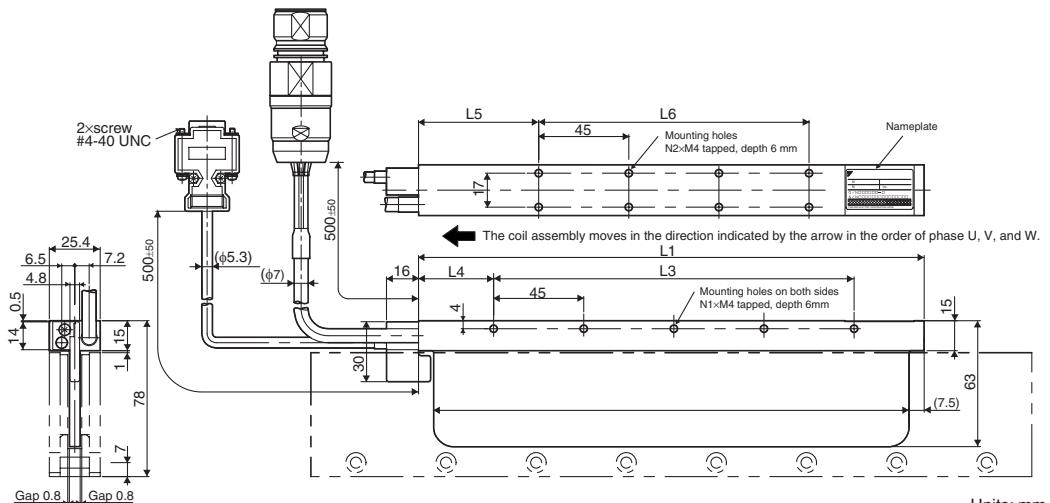


Units: mm

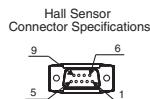
## Coreless SGLG□-40

## Coil Assembly: SGLGW-40A□□□B□D

Coil Assembly Model SGLGW-	L1	L2	L3	L4	L5	L6	N1	N2	Approx. Mass* kg	
40A140B□D	140	125	90	30	52.5	45	3	4	0.40	*The value indicates the mass of coil assembly with a hall sensor unit.
40A253B□D	252.5	237.5	180	37.5	60	135	5	8	0.66	
40A365B□D	365	350	315	30	52.5	270	8	14	0.93	

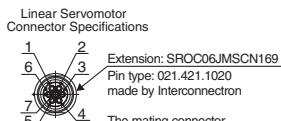


Units: mm



Pin connector type: 17JE-13090-02 (D8C) made by DDK Ltd.  
The mating connector  
Socli connector type: 17JE-13090-02 (D8C)  
Stud type: 17L-002C or 17L-002C1

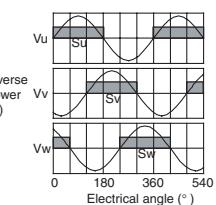
Pin No.	Name
1	+5V (Power supply)
2	Phase U
3	Phase V
4	Phase W
5	0V (Power supply)
6	Not used
7	Not used
8	Not used
9	Not used



Pin No.	Name	Lead Color
1	Phase U	Red
2	Phase V	White
3	Phase W	Blue
4	Not used	—
5	Not used	—
6	FG	Green/Yellow
7	Not used	—

## Hall Sensor Output Signals

When the coil assembly moves in the direction indicated by the arrow in the figure, the relationship between the hall sensor output signals Su, Sv, Sw and the inverse power of each motor phase Vu, Vv, Vw becomes as shown in the figure below.

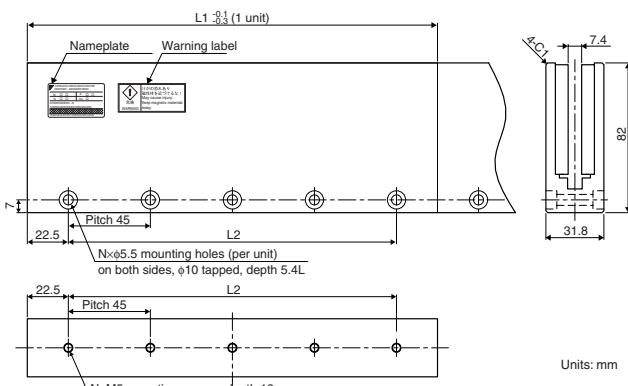
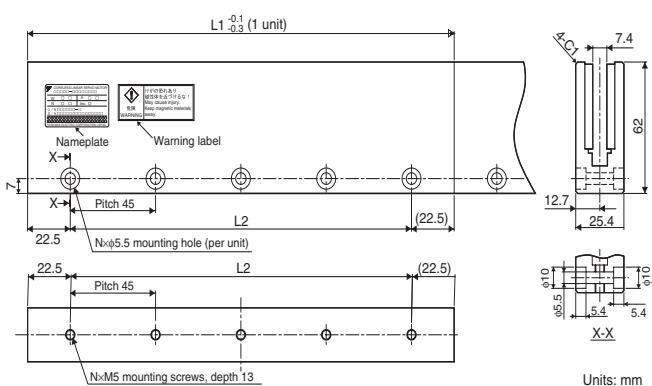


## Standard-Force Magnetic Way: SGLGM-40□□□B

Standard-force Magnetic Way Model SGLGM-	L1 mm	L2 mm	N	Approx. Mass kg
40090B	90	45	2	0.8
40225B	225	180	5	2.0
40360B	360	315	8	3.1
40405B	405	360	9	3.5
40450B	450	405	10	3.9

## High-Force Magnetic Way: SGLGM-40□□□B-M

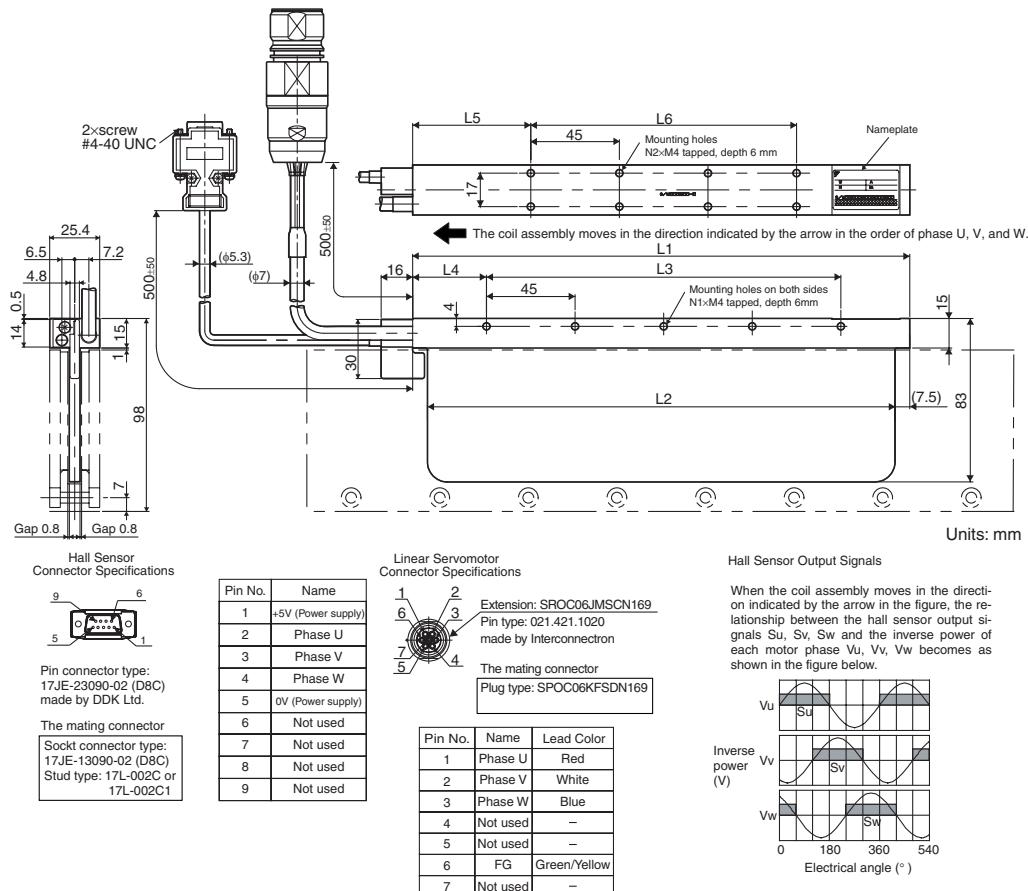
Standard-force Magnetic Way Model SGLGM-	L1 mm	L2 mm	N	Approx. Mass kg
40090B-M	90	45	2	1.0
40225B-M	225	180	5	2.6
40360B-M	360	315	8	4.1
40405B-M	405	360	9	4.6
40450B-M	450	405	10	5.1



**Coreless SGLG□-60****Coil Assembly: SGLGW-60A□□□B□D**

Coil Assembly Model SGLGW-	L1	L2	L3	L4	L5	L6	N1	N2	Approx. Mass* kg	
60A140B□D	140	125	90	30	52.5	45	3	4	0.48	
60A253B□D	252.5	237.5	180	37.5	60	135	5	8	0.82	
60A365B□D	365	350	315	30	52.5	270	8	14	1.16	

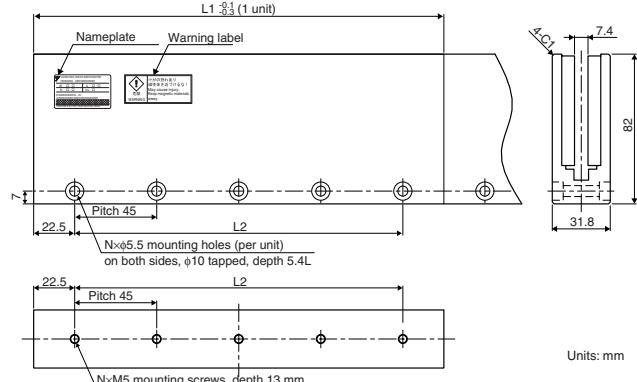
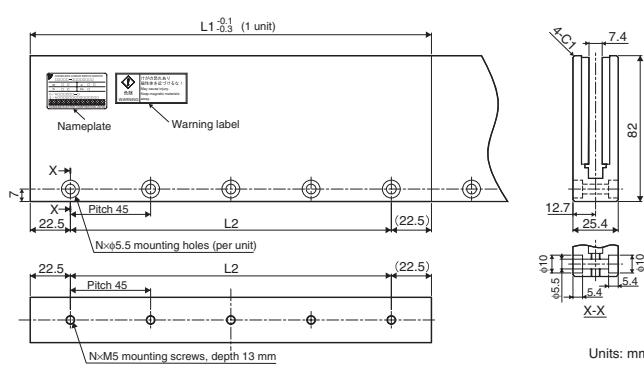
\*The value indicates the mass of coil assembly with a hall sensor unit.

**Standard-Force Magnetic Way: SGLGM-60□□□B**

Standard-force Magnetic Way Model SGLGM-	L1 mm	L2 mm	N	Approx. Mass kg
60090B	90	45	2	1.1
60225B	225	180	5	2.6
60360B	360	315	8	4.1
60405B	405	360	9	4.6
60450B	450	405	10	5.1

**High-Force Magnetic Way: SGLGM-60□□□B-M**

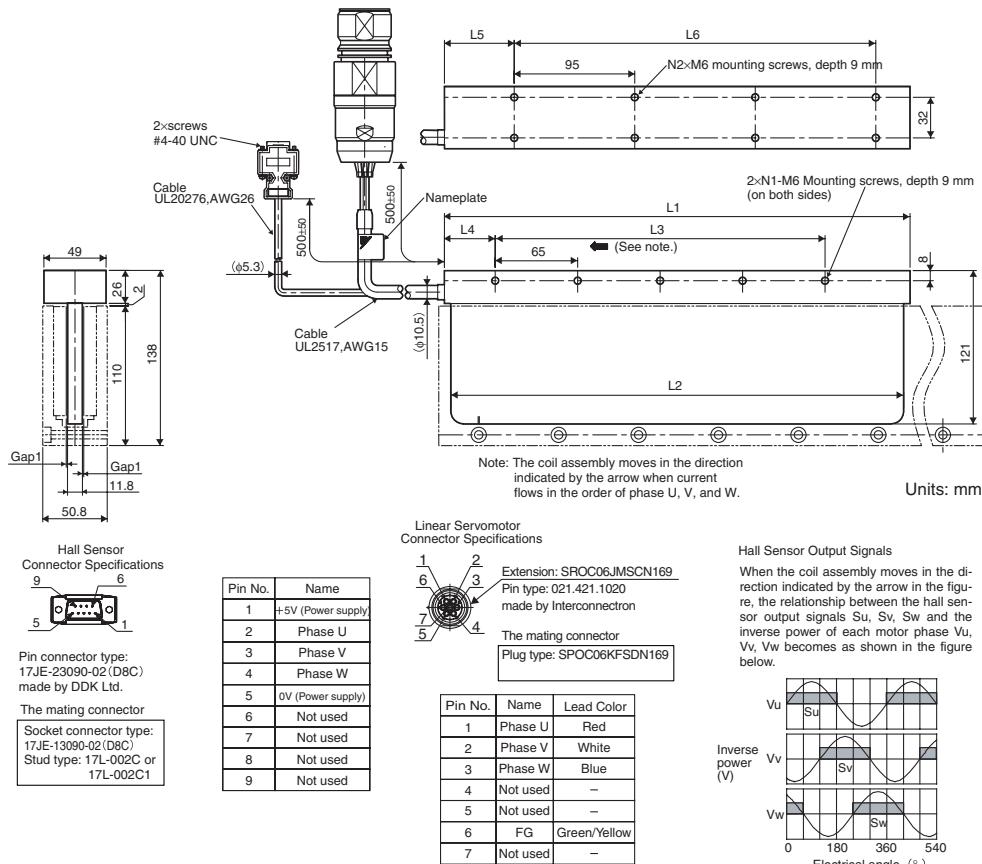
Standard-force Magnetic Way Model SGLGM-	L1 mm	L2 mm	N	Approx. Mass kg
60090B-M	90	45	2	1.3
60225B-M	225	180	5	3.3
60360B-M	360	315	8	5.2
60405B-M	405	360	9	5.9
60450B-M	450	405	10	6.6



## Coreless SGLG□-90

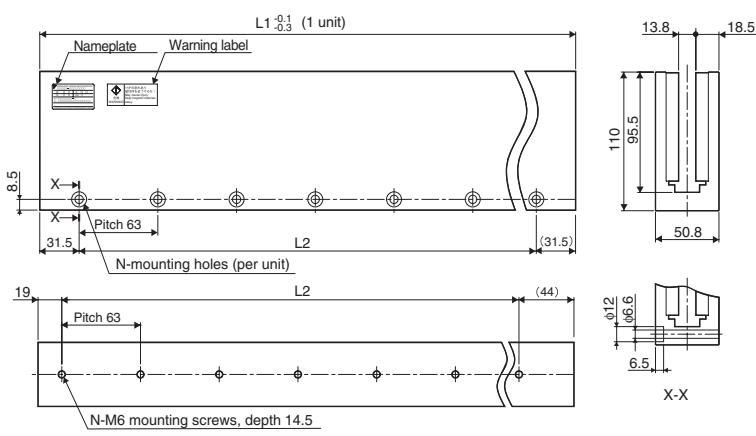
## Coil Assembly: SGLGW-90A200A□D

Coil Assembly Model SGLGW-	L1	L2	L3	L4	L5	L6	N1	N2	Approx. Mass* kg	
90A200A□	199	189	130	40	60	95	3	4	2.2	*The value indicates the mass of coil assembly with a hall sensor unit.



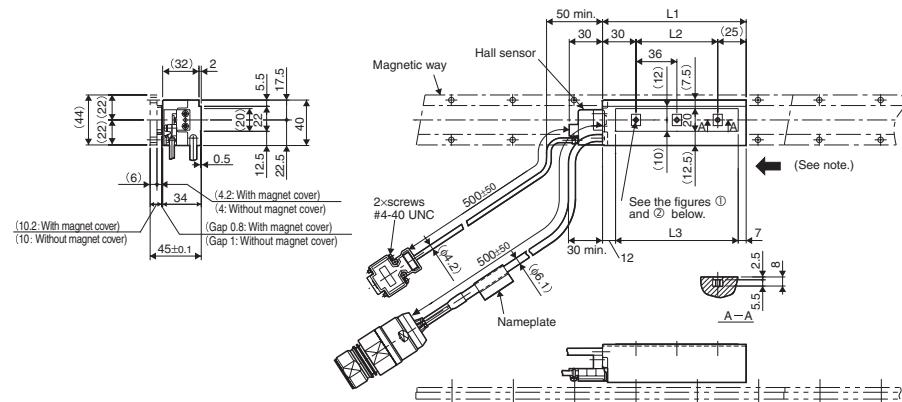
## Magnetic Way: SGLGM-90□□□A

Magnetic Way Model SGLGM-	L1 mm	L2 mm	N	Approx. Mass kg
90252A	252	189	4	7.3
90504A	504	441	8	14.7



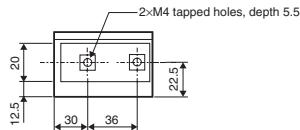
**Iron-core SGLF□-20****Coil Assembly: SGLFW-20A□□□A□D**

Coil Assembly Model SGLFW-	L1	L2	L3	N	Approx. Mass kg
20A090A□	91	36	72	2	0.7
20A120A□	127	72	108	3	0.9

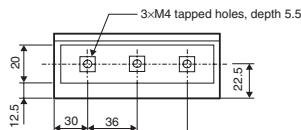


Note: The coil assembly moves in the direction indicated by the arrow, when current flows in the order of phase U, V, and W.

① SGLFW-20A090A□D

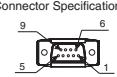


② SGLFW-20A120A□D



Units: mm

## Hall Sensor Connector Specifications



Pin connector type:  
17JE-23090-02 (D8C)  
made by DDK Ltd.

The mating connector

Socket connector type:  
17JE-13090-02 (D8C)  
Stud type: 17L-002C or  
17L-002C1

Pin No.	Name
1	+5V (Power supply)
2	Phase U
3	Phase V
4	Phase W
5	0V (Power supply)
6	Not used
7	Not used
8	Not used
9	Not used

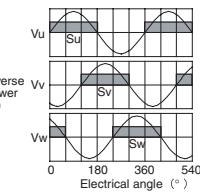
## Linear Servomotor Connector Specifications



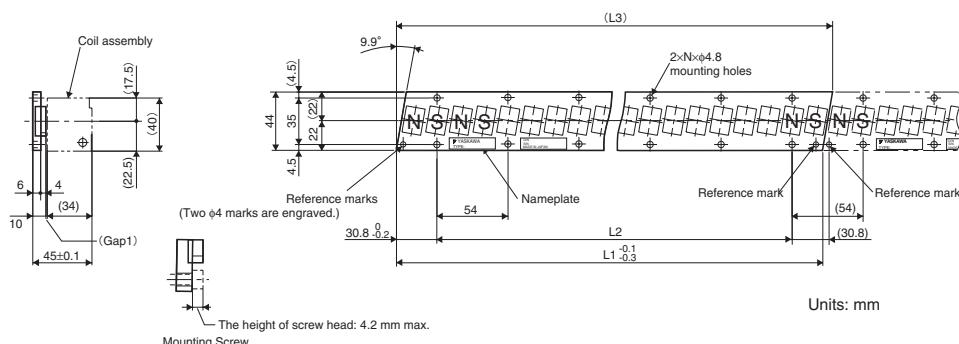
Pin No.	Name	Lead Color
1	Phase U	Red
2	Phase V	White
3	Phase W	Blue
4	Not used	—
5	Not used	—
6	FG	Green/Yellow
7	Not used	—

## Hall Sensor Output Signals

When the coil assembly moves in the direction indicated by the arrow in the figure, the relationship between the hall sensor output signals Su, Sv, Sw and the inverse power of each motor phase Vu, Vv, Vw becomes as shown in the figure below.

**Magnetic Way: SGLFM-20□□□A**

Magnetic Way Model SGLFM-	L1 <sup>-0.1</sup> -0.3	L2	(L3)	N	Approx. Mass kg
20324A	324	270 (54 × 5)	(331.6)	6	0.9
20540A	540	486 (54 × 9)	(547.6)	10	1.4
20756A	756	702 (54 × 13)	(763.6)	14	2



Units: mm

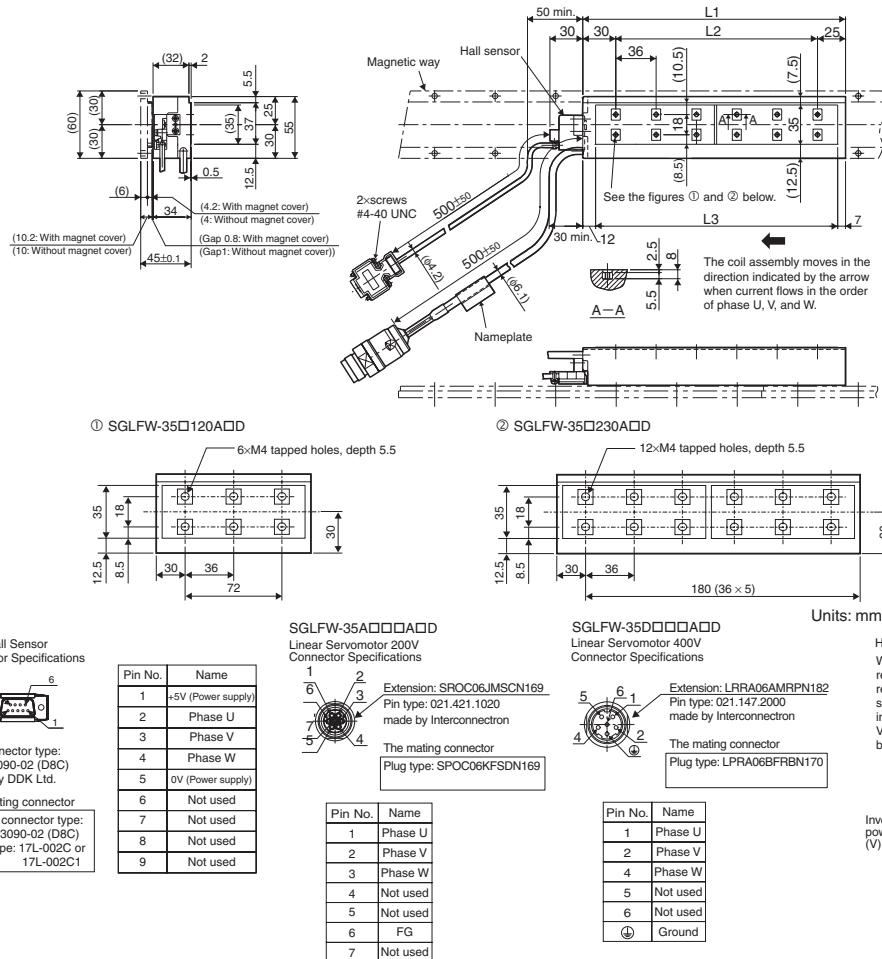
**Note:** 1. Multiple SGLFM-20□□□A magnetic ways can be connected. Connect magnetic ways so that the reference marks match one on the other in the same direction as shown in the figure.

2. The magnetic way may affect pacemakers. Keep a minimum distance of 200 mm from the magnetic way

## Iron-core SGLF□-35

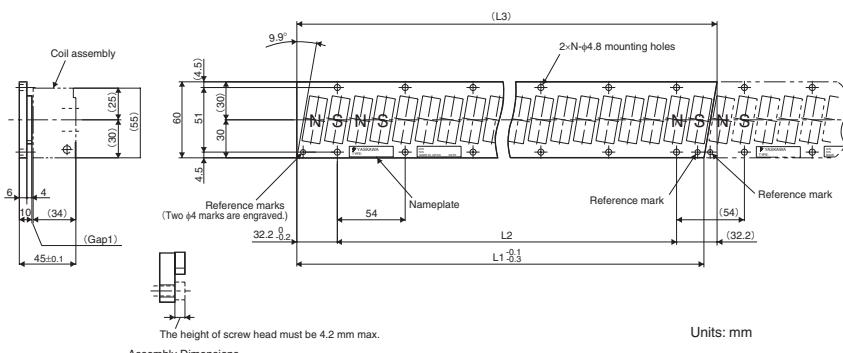
## Coil Assembly: SGLFW-35□□□A□D

Coil Assembly Model SGLFW-	L1	L2	L3	N	Approx. Mass kg
35□120A□D	127	72	108	6	1.3
35□230A□D	235	180	216	12	2.3



## Magnetic Way: SGLFM-35□□□A

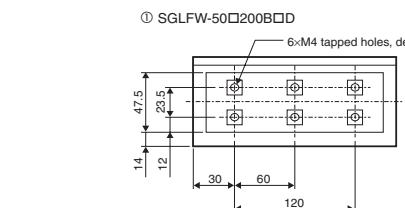
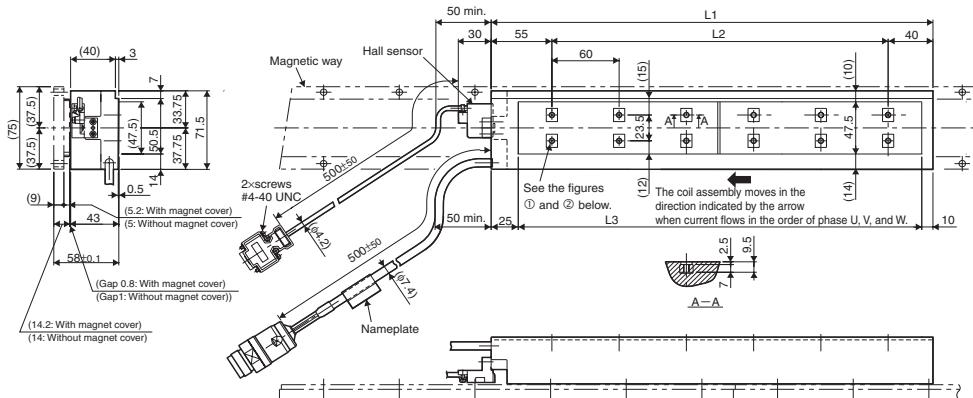
Magnetic Way Model SGLFM-	L1 □ 0.1 -0.3	L2	(L3)	N	Approx. Mass kg
35324A	324	270 (54 × 5)	(334.4)	6	1.2
35540A	540	486 (54 × 9)	(550.4)	10	2
35756A	756	702 (54 × 13)	(766.4)	14	2.9



- Note:**
- Multiple SGLFM-35□□□A magnetic ways can be connected. Connect magnetic ways so that the reference marks match one on the other in the same direction as shown in the figure.
  - The magnetic way may affect pacemakers. Keep a minimum distance of 200 mm from the magnetic way.

**Iron-core SGLF□-50****Coil Assembly: SGLFW-50□□□□B□D**

Coil Assembly Model SGLFW-	L1	L2	L3	N	Approx. Mass kg
50□200B□D	215	120	180	6	3.5
50□380B□D	395	300	360	12	6.9



Hall Sensor  
Connector Specifications

Pin connector type:  
7JE-23090-02 (D8C)  
made by DDK Ltd.

The mating connector  
Socket connector type:  
17JE-13090-02 (D8C)  
Stud type: 17L-002C or  
17L-002C1

Pin No.	Name
1	+5V (Power supply)
2	Phase U
3	Phase V
4	Phase W
5	0V (Power supply)
6	Not used
7	Not used
8	Not used
9	Not used

SGLFW-50A□□□A□D  
Linear Servomotor 200V  
Connector Specifications

Extension: SROCO6JMSCN169  
Pin type: 021.421.1020  
made by Interconnectron

The mating connector  
Plug type: SPOCO6KFSDN169

Pin No.	Name
1	Phase U
2	Phase V
3	Phase W
4	Not used
5	Not used
6	FG
7	Not used

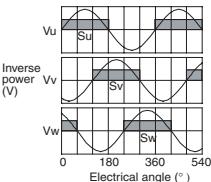
SGLFW-50D□□□A□D  
Linear Servomotor 400V  
Connector Specifications

Extension: LRRA06AMRPN182  
Pin type: 021.147.2000  
made by Interconnectron

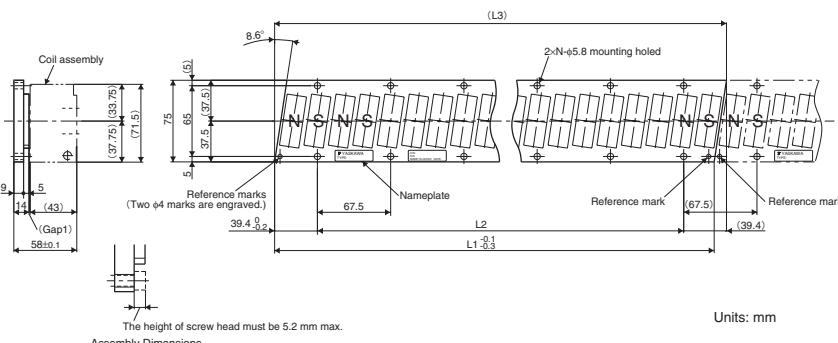
The mating connector  
Plug type: LPRA06BFBRBN170

Pin No.	Name
1	Phase U
2	Phase V
3	Phase W
4	Not used
5	Not used
6	Not used
7	Ground

Hall Sensor Output Signals  
When the coil assembly moves in the direction indicated by the arrow in the figure, the relationship between the hall sensor output signals Su, Sv, Sw and the inverse power of each motor phase Vu, Vv, Vw becomes as shown in the figure below.

**Magnetic Way: SGLFM-50□□□A**

Magnetic Way Model SGLFM-	L1 □ 0.1 -0.3	L2	(L3)	N	Approx. Mass kg
50405A	405	337.5 (67.5 × 5)	(416.3)	6	2.8
50675A	675	607.5 (67.5 × 9)	(686.3)	10	4.6
50945A	945	877.5 (67.5 × 13)	(956.3)	14	6.5



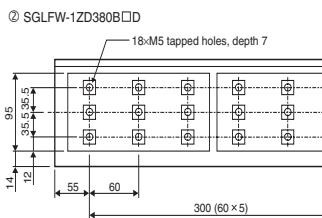
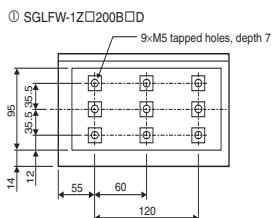
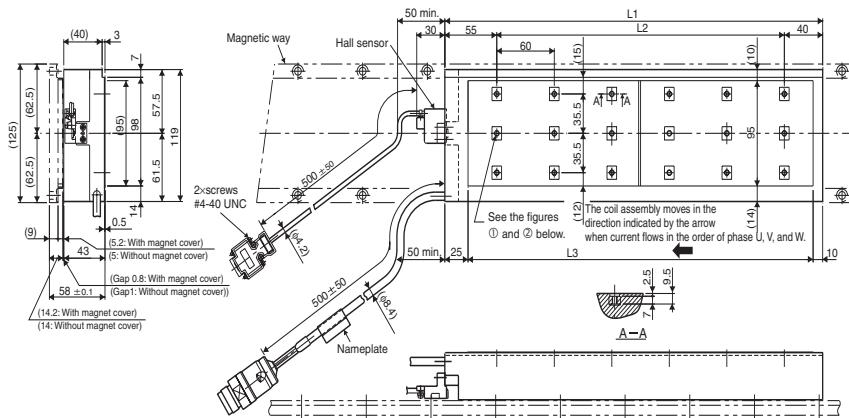
**Note:** 1. Multiple SGLFM-50□□□A magnetic ways can be connected. Connect magnetic ways so that the reference marks match one on the other in the same direction as shown in the figure.

2. The magnetic way may affect pacemakers. Keep a minimum distance of 200 mm from the magnetic way

## Iron-core SGLF□-1Z

## Coil Assembly: SGLFW-1Z□□□□B□D

Coil Assembly Model SGLFW-	L1	L2	L3	N	Approx. Mass kg
1Z□200B□D	215	120	180	8	6.4
1ZD380B□D	395	300	360	18	11.5



Units: mm

## Hall Sensor Connector Specifications



Pin connector type:  
17JE-23090-02 (D8C)  
made by DDK Ltd.

The mating connector  
Socket connector type:  
17JE-13090-02 (D8C)  
Stud type: 17L-002C or  
17L-002C1

Pin No.	Name
1	+5V (Power supply)
2	Phase U
3	Phase V
4	Phase W
5	0V (Power supply)
6	Not used
7	Not used
8	Not used
9	Not used

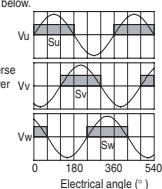
SGLFW-1ZA200A□D  
Linear Servomotor 200V  
Connector Specifications

Pin No.	Name
1	Phase U
2	Phase V
3	Phase W
4	Not used
5	Not used
6	FG
7	Not used

Pin No.	Name
1	Phase U
2	Phase V
3	Phase W
4	Not used
5	Not used
6	Not used
7	Ground

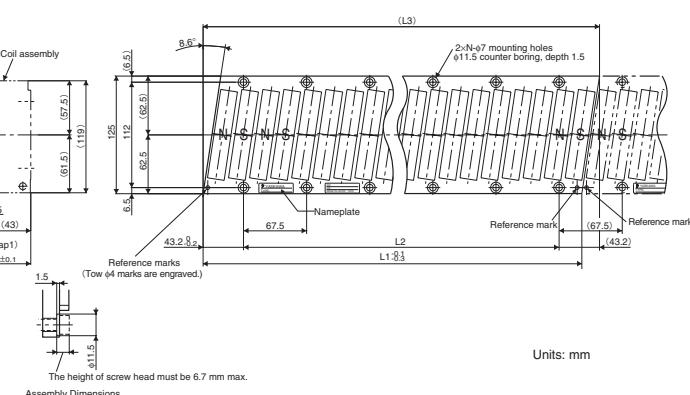
## Hall Sensor Output Signals

When the coil assembly moves in the direction indicated by the arrow in the figure, the relationship between the hall sensor output signals Su, Sv, Sw and the inverse power of each motor phase Vu, Vv, Vw becomes as shown in the figure below.



## Magnetic Way: SGLFM-1Z□□□A

Magnetic Way Model SGLFM-	L1 -0.1 -0.3	L2	(L3)	N	Approx. Mass kg
1Z405A	405	337.5 (67.5 × 5)	(423.9)	6	7.3
1Z675A	675	607.5 (67.5 × 9)	(693.9)	10	12
1Z945A	945	877.5 (67.5 × 13)	(963.9)	14	17



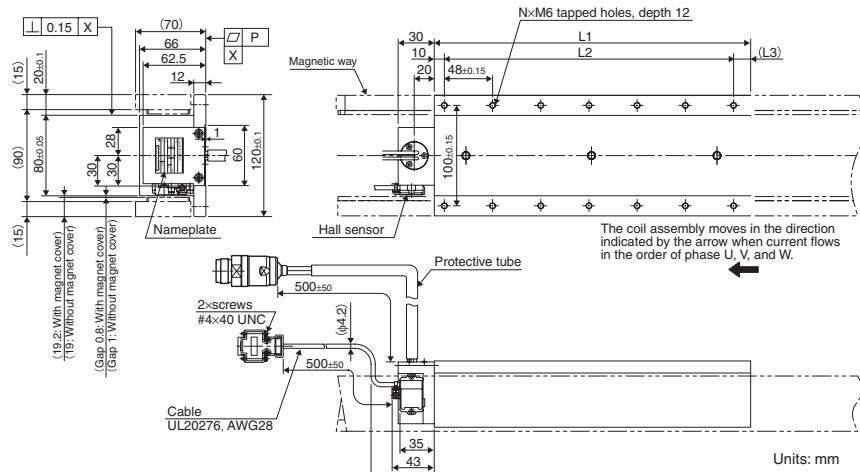
Units: mm

**Note:** 1. Multiple SGLFM-1Z□□□A magnetic ways can be connected. Connect magnetic ways so that the reference marks match one on the other in the same direction as shown in the figure.

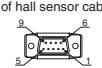
2. The magnetic way may affect pacemakers. Keep a minimum distance of 200 mm from the magnetic way

**Iron-core SGLT□-35****Coil Assembly: SGLTW-35D□□□H□D**

Coil Assembly Model SGLTW-	L1	L2	(L3)	N	Approx. Mass kg
35D320H□D	315	288 (48 × 6)	(17)	14	8.8



Wiring specification of hall sensor cable



Pin connector type: 17JE-23090-02 (D8C) made by DDK Ltd.

The mating connector

Socket connector type: 17JE-13090-02 (D8C) Stud type: 17L-002C or 17L-002C1

Pin No.	Name
1	+5VDC
2	Phase U
3	Phase V
4	Phase W
5	0V
6	Not used
7	Not used
8	Not used
9	Not used

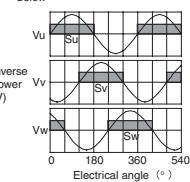
Linear Servomotor Connector Specifications

Extension: LRRA06AMRPN182  
Pin type: 021.147.2000  
made by Interconnectron

The mating connector  
Plug type: LPRA06BFBRBN170

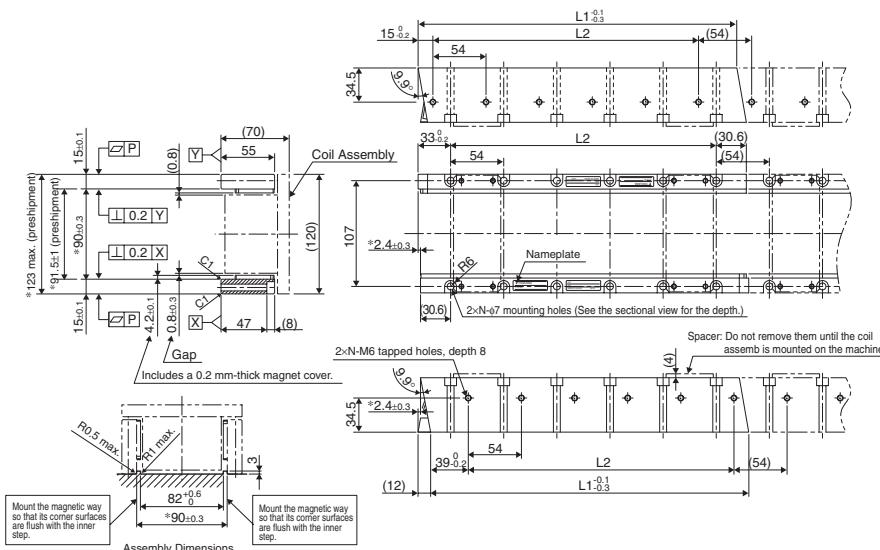
Hall Sensor Output Signals

When the coil assembly moves in the direction indicated by the arrow in the figure, the relationship between the hall sensor output signals Su, Sv, Sw and the inverse power of each motor phase Vu, Vv, Vw becomes as shown in the figure below

**Magnetic Way: SGLTM-35□□□H**

Magnetic Way Model SGLTM-	L1 -0.1 -0.3	L2	N	Approx. Mass kg
35324H	324	270 (54 × 5)	6	4.8
35540H	540	486 (54 × 9)	10	8
35756H	756	702 (54 × 13)	14	11

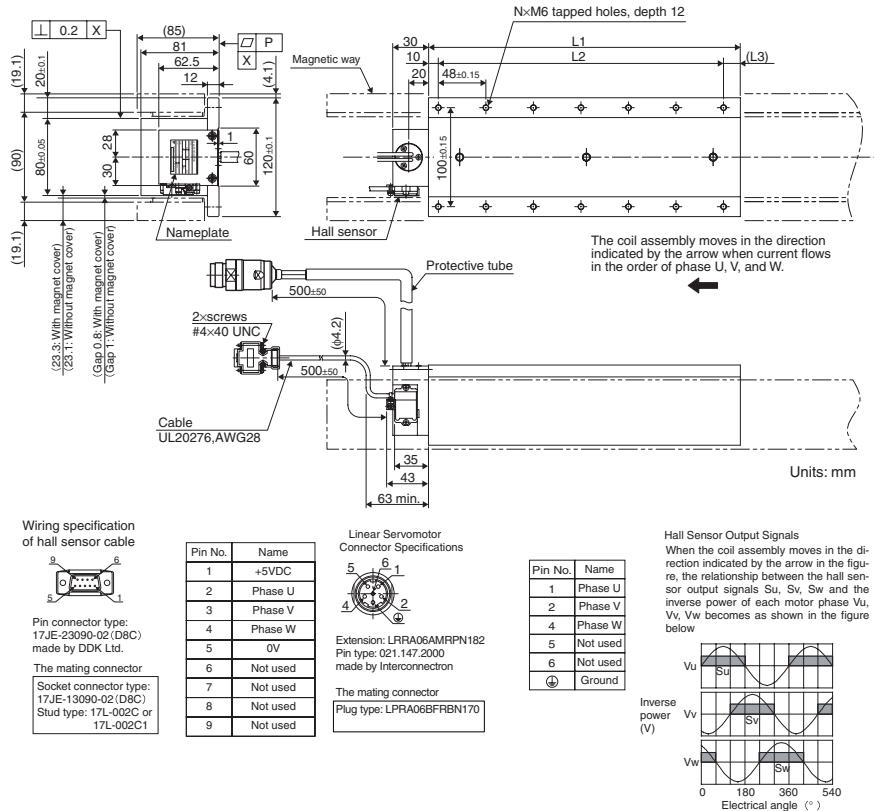
- Note:**
- Two magnetic ways for both ends of coil assembly make one set. Spacers are mounted on magnetic ways for safety during transportation. Do not remove the spacers until the coil assembly is mounted on a machine.
  - The magnetic way may affect pacemakers. Keep a minimum distance of 200 mm from the magnetic way.
  - Two magnetic ways in a set can be connected to each other.
  - The dimensions marked with an \* are the dimensions between the magnetic ways. Be sure to follow exactly the dimensions specified in the figure above. Mount magnetic ways as shown in Assembly Dimensions. The values with an \* are the dimensions at preshipment.
  - Use socket headed screws of strength class 10.9 minimum for magnetic way mounting screws. Do not use stainless steel screws.



## Iron-core SGLT□-50

## Coil Assembly: SGLTW-50D□□□H□D

Coil Assembly Model SGLTW-	L1	L2	(L3)	N	Approx. Mass kg
50D170H□D	170	144 (48 × 3)	(16)	8	6
50D320H□D	315	288 (48 × 6)	(17)	14	11

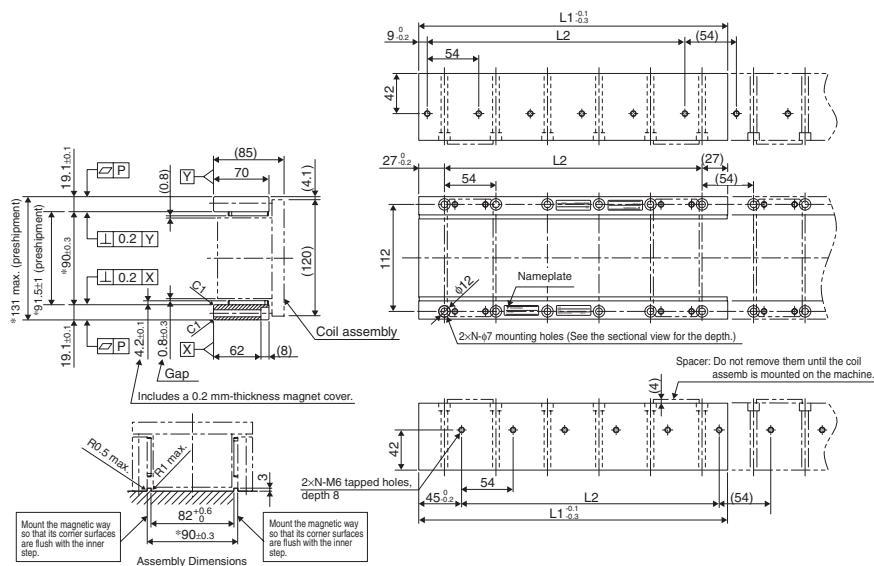


**Magnetic Way: SGLTM-50□□□H**

Magnetic Way Model SGLTM-	L1 -0.1 -0.3	L2	N	Approx. Mass kg
50324H	324	270 (54 x 5)	6	8
50540H	540	486 (54 x 9)	10	13
50756H	756	702 (54 x 13)	14	18

- Note:**

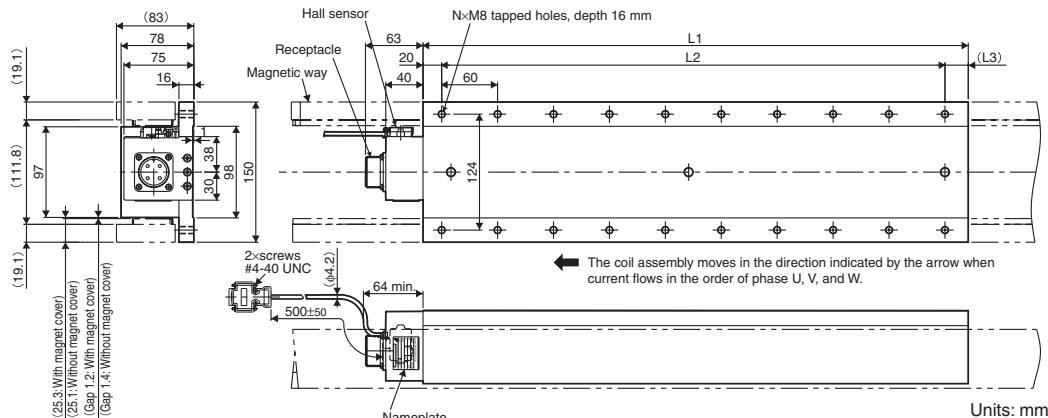
  - Two magnetic ways for both ends of coil assembly make one set. Spacers are mounted on magnetic ways for safety during transportation. Do not remove the spacers until the coil assembly is mounted on a machine.
  - The magnetic way may affect pacemakers. Keep a minimum distance of 200 mm from the magnetic way.
  - Two magnetic ways in a set can be connected to each other.
  - The dimensions marked with an \* are the dimensions between the magnetic ways. Be sure to follow exactly the dimensions specified in the figure above. Mount magnetic ways as shown in Assembly Dimensions. The values with an \* are the dimensions at preshipment.
  - Use socket headed screws of strength class 10.9 minimum for magnetic way mounting screws. Do not use stainless steel screws.



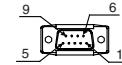
## **Iron-core SGLT□-40**

## Coil Assembly: SGLTW-40D□□□B

Coil Assembly Model SGLTW-	L1	L2	(L3)	N	Approx. Mass kg
40D400B□	395	360 (60 × 6)	(15)	14	20
40D600B□	585	540 (60 × 9)	(25)	20	30



Hall Sensor  
Connector Specifications



Pin connector type:  
17JE-23090-02 (D8C)  
made by DDK Ltd.

## The mating connector

Socket connector type  
17JE-13090-02 (D8C)  
Stud type: 17L-002C or  
17L-002C1

Linear Servomotor  
Connector Specifications



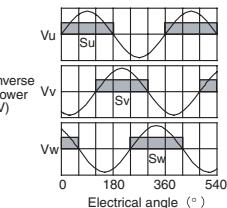
Receptacle type: MS3102A-22-22P  
made by DDK Ltd.

### The mating connector

L-shaped plug type: MS3108E22-22S

## Hall Sensor Output Signals

When the coil assembly moves in the direction indicated by the arrow in the figure, the relationship between the hall sensor output signals  $S_u$ ,  $S_v$ ,  $S_w$ , and the inverse power of each motor phase  $V_u$ ,  $V_v$ ,  $V_w$  becomes as shown in the figure below.



## Magnetic Way: SGLTM-40□□□A

Magnetic Way Model SGLTM-	L1 -0.1 -0.3	L2	N	Approx. Mass kg
40405A	405	337.5 (67.5 × 5)	6	9
40675A	675	607.5 (67.5 × 9)	10	15
40945A	945	877.5 (67.5 × 13)	14	21

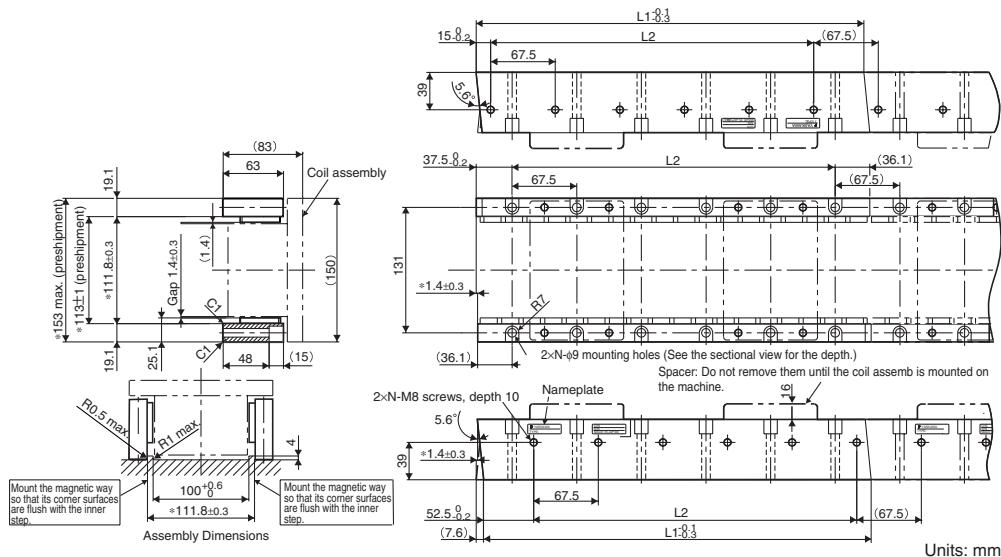
- Note:** 1. Two magnetic ways for both ends of coil assembly make one set. Spacers are mounted on magnetic ways for safety during transportation. Do not remove the spacers until the coil assembly is mounted on a machine.

2. The magnetic way may affect pacemakers. Keep a minimum distance of 200 mm from the magnetic way.

3. Two magnetic ways in a set can be connected to each other.

4. The dimensions marked with an \* are the dimensions between the magnetic ways. Be sure to follow exactly the dimensions specified in the figure above. Mount magnetic ways as shown in Assembly Dimensions. The values with an \* are the dimensions at preshipment.

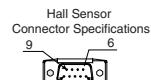
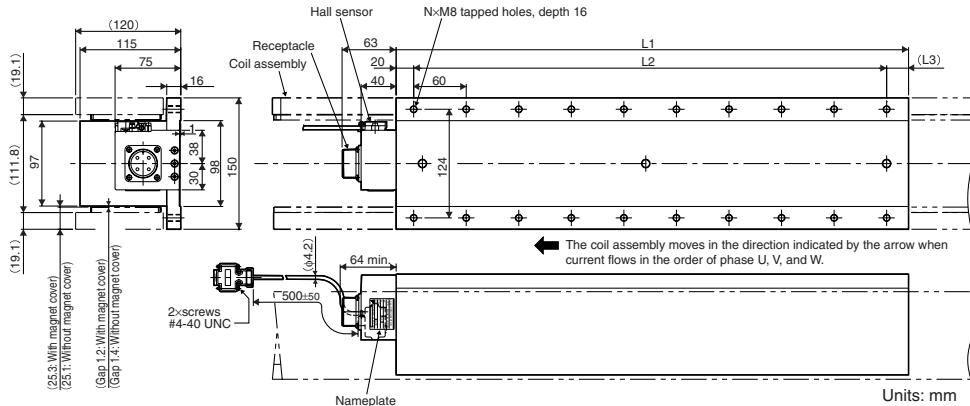
5. Use socket headed screws of strength class 10.9 minimum for magnetic way mounting screws. Do not use stainless steel screws.



## Iron-core SGLT□-80

## Coil Assembly: SGLTW-80D□□□B□

Coil Assembly Model SGLTW-	L1	L2	(L3)	N	Approx. Mass kg
80D400B□	395	360 (60 × 6)	(15)	14	30
80D600B□	585	540 (60 × 9)	(25)	20	43



The mating connector  
Socket connector type: 17JE-13090-02 (D8C)  
Stud type: 17L-002C or 17L-002C1

Pin No.	Name
1	+5VDC
2	Phase U
3	Phase V
4	Phase W
5	0V
6	Not used
7	Not used
8	Not used
9	Not used

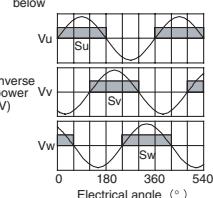
Linear Servomotor Connector Specifications

Receptacle type: MS3102A-22-22P made by DDK Ltd.

The mating connector  
L-shaped plug type: MS3108E22-22S

Pin No.	Name
A	Phase U
B	Phase V
C	Phase W
D	Ground

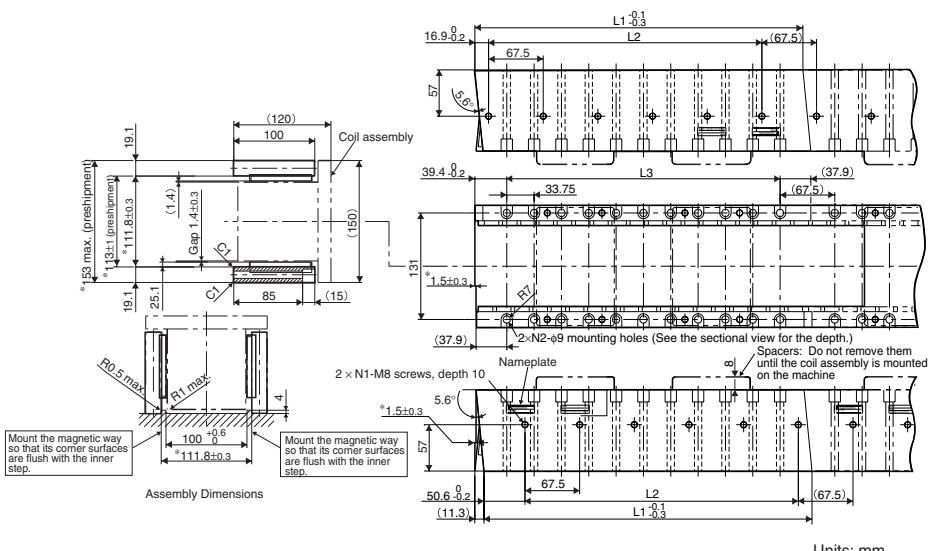
Hall Sensor Output Signals  
When the coil assembly moves in the direction indicated by the arrow in the figure, the relationship between the hall sensor output signals Su, Sv, Sw and the inverse power of each motor phase Vu, Vv, Vw becomes as shown in the figure below



## Magnetic Way: SGLTM-80□□□A

Magnetic Way Model SGLTM-	L1 <sup>-0.1</sup> -0.3	L2	L3	N1	N2	Approx. Mass kg
80405A	405	337.5 (67.5 × 5)	337.5 (33.75 × 10)	6	11	14
80675A	675	607.5 (67.5 × 9)	607.5 (33.75 × 18)	10	19	24
80945A	945	877.5 (67.5 × 13)	887.5 (33.75 × 26)	14	27	34

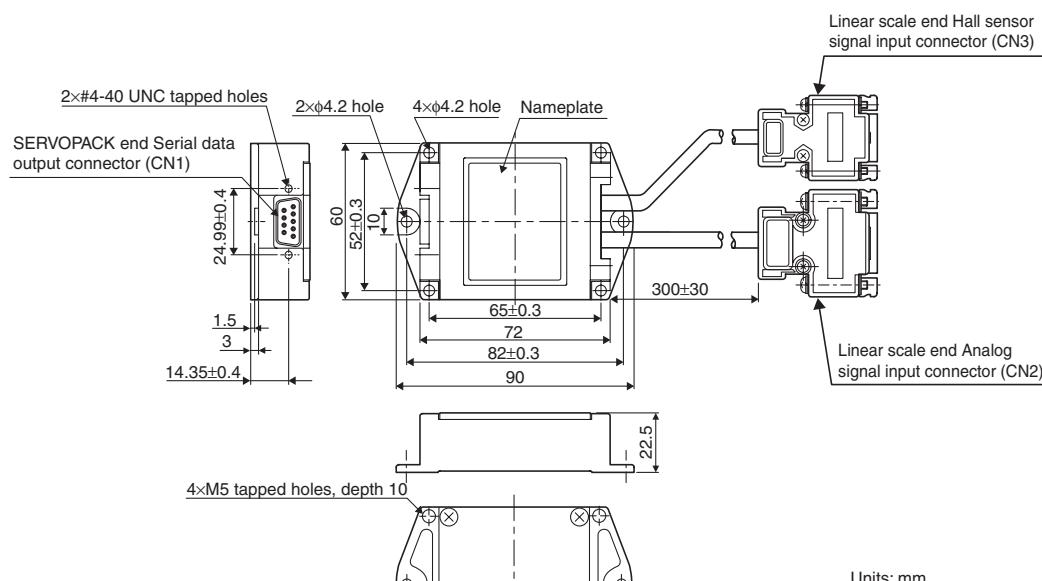
- Note:**
- Two magnetic ways for both ends of coil assembly make one set. Spacers are mounted on magnetic ways for safety during transportation. Do not remove the spacers until the coil assembly is mounted on a machine.
  - The magnetic way may affect pacemakers. Keep a minimum distance of 200 mm from the magnetic way.
  - Two magnetic ways in a set can be connected to each other.
  - The dimensions marked with an \* are the dimensions between the magnetic ways. Be sure to follow exactly the dimensions specified in the figure above. Mount magnetic ways as shown in Assembly Dimensions. The values with an \* are the dimensions at preshipment.
  - Use socket headed screws of strength class 10.9 minimum for magnetic way mounting screws. Do not use stainless steel screws.



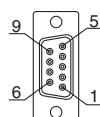
## Serial Converter Unit

JZDP-A008-□□□

Items	Specifications
Electrical Characteristics	Power Supply Voltage $+5.0V \pm 5\%$ , ripple content 5% max.
	Current Consumption* <sup>1</sup> 120 mA Typ. 350 mA Max.
	Signal Resolution Input 2-phase sine wave: 1/256 pitch
	Max. Response Frequency 250 kHz
	Analog Input Signals (cos, sin, Ref) Differential input amplitude: 0.4 V to 1.2V Input signal level: 1.5 V to 3.5V
	Pole Sensor Input Signal CMOS level
	Output Signals* <sup>3</sup> Position data, hall sensor information, and alarms
	Output Method Serial data transmission (HDLC (High-level Data Link Control) protocol format with Manchester codes)
	Transmission Cycle 62.5 $\mu$ s
	Output Circuit Balanced transceiver (SN75LBC176 or the equivalent) Internal terminal resistance: 120 $\Omega$
Mechanical Characteristics	Approx. mass 150 g
	Vibration Resistance 98 m/s <sup>2</sup> max. (1 to 2500 Hz) in three directions
	Shock Resistance 980 m/s <sup>2</sup> , (11 ms) two times in three directions
Environmental Conditions	Operating temperature 0 °C to 55 °C (32 to 131 °F)
	Storage temperature -20 °C to +80 °C (-4 to +176 °F)
	Humidity 20 % to 90 %RH (without condensation)

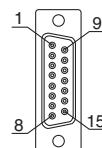


**CN1**  
SERVOPACK end  
serial data output



Pin No.	Signal
1	+5V
2	S-phase output
3	Empty
4	Empty
5	0V
6	/S-phase output
7	Empty
8	Empty
9	Empty
Case	Shield

**CN2**  
Linear scale end  
Analog signal input



**CN3**  
Linear scale end  
Hall sensor signal input

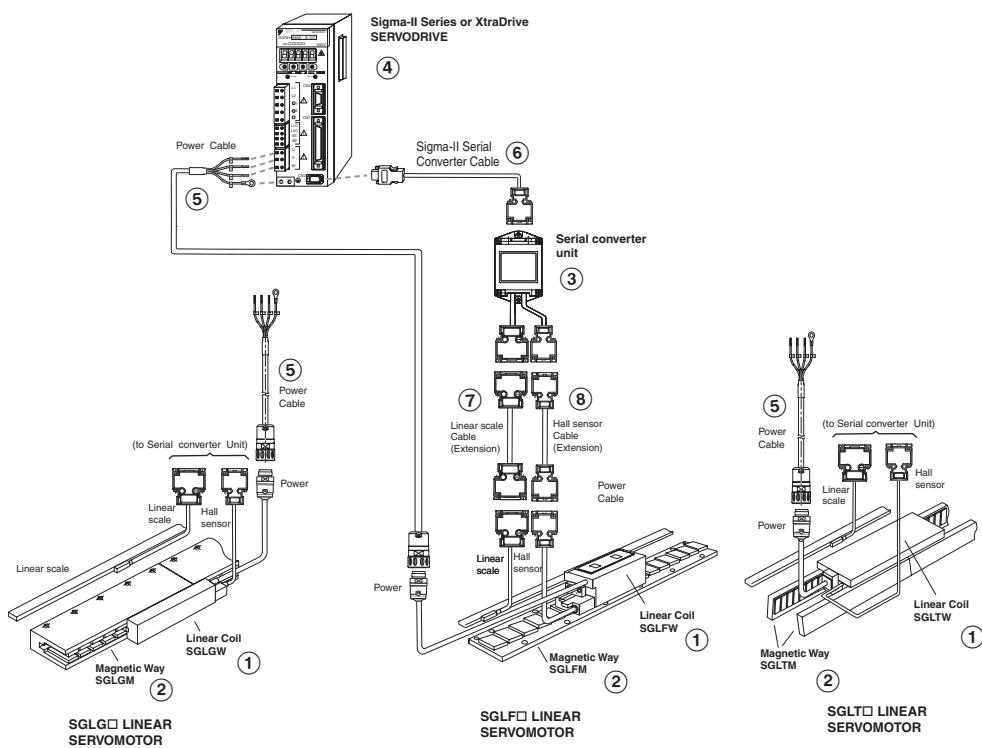
Pin No.	Signal
1	/cos input (V1-)
2	/sin input (V2-)
3	Ref input (V0+)
4	+5V
5	5Vs
6	Empty
7	Empty
8	Empty
9	cos input (V1+)
10	sin input (V2+)
11	/Ref input (V0-)
12	0V
13	0Vs
14	Empty
15	Inner
Case	Shield

**Note:** 1. Do not use empty pins.

2. The linear scale (analog 1Vp-p output, D-sub 15-pin, male) by Renishaw Inc. can be directly connected. However, the BID and DIR signals are not connected.
3. Use the linear scale end connector to change the zero point specifications of the linear scale.

## Ordering Information

## System Configuration



SGLGW / SGLGM Coreless Type (200 V)



With Standard-force Magnetic Ways - 230V AC Single Phase

Symbol	Specifications		Model				
	Rated Force	Peak Force	① Linear Coil	② Magnetic Way	③ Serial Converter	④ Servo Drive	
①②③④	13.5 N	40 N	SGLGW-30A050BPD	SGLGM-30108A SGLGM-30216A SGLGM-30432A	JZDP-A008-158	SGDH-A5AE-OY	XD-P5-MN01
	27 N	80 N	SGLGW-30A080BPD		JZDP-A008-156	SGDH-01AE-OY	XD-01-MN01
	47 N	140 N	SGLGW-40A140BPD		JZDP-A008-001	SGDH-01AE-OY	XD-01-MN01
	93 N	280 N	SGLGW-40A253BPD	SGLGM-40090B SGLGM-40225B SGLGM-40360B	JZDP-A008-002	SGDH-02AE-OY	XD-02-MN01
	140 N	420 N	SGLGW-40A365BPD		JZDP-A008-003	SGDH-04AE-OY	XD-04-MN01
	73 N	220 N	SGLGW-60A140BPD		JZDP-A008-004	SGDH-02AE-OY	XD-02-MN01
	147 N	440 N	SGLGW-60A253BPD		JZDP-A008-005	SGDH-04AE-OY	XD-04-MN01
	220 N	660 N	SGLGW-60A365BPD		JZDP-A008-006	SGDH-08AE-S-OY	XD-08-MN
	325 N	1300 N	SGLGW-90A200APD	SGLGM-90252A SGLGM-90504A	JZDP-A008-101	SGDH-15AE-S-OY	-

With High-force Magnetic Ways - 230V AC Single Phase

Symbol	Specifications		Model				
	Rated Force	Peak Force	① Linear Coil	② Magnetic Way	③ Serial Converter	④ Servo Drive	
①②③④	57 N	230 N	SGLGW-40A140BPD	SGLGM-40090B-M SGLGM-40225B-M SGLGM-40360B-M	JZDP-A008-063	SGDH-02AE-OY	XD-02-MN01
	114 N	460 N	SGLGW-40A253BPD		JZDP-A008-059	SGDH-04AE-OY	XD-04-MN01
	171 N	690 N	SGLGW-40A365BPD		JZDP-A008-060	SGDH-08AE-S-OY	XD-08-MN
	89 N	360 N	SGLGW-60A140BPD	SGLGM-60090B-M SGLGM-60225B-M SGLGM-60360B-M	JZDP-A008-061	SGDH-02AE-OY	XD-02-MN01
	178 N	720 N	SGLGW-60A253BPD		JZDP-A008-062	SGDH-08AE-S-OY	XD-08-MN
	267 N	1080 N	SGLGW-60A365BPD		JZDP-A008-047	SGDH-15AE-S-OY	-

**SGLFW / SGLFM Iron-Core Type****230V AC Single Phase**

Symbol	Specifications			Model			
	Rated Force	Peak Force	① Linear Coil	② Magnetic Way	③ Serial Converter	④ Servo Drive	
①②③④	25 N	86 N	SGLFW-20A090APD	SGLFM-20324AC	JZDP-A008-017	Sigma-II Series	XtraDrive
	40 N	125 N	SGLFW-20A120APD	SGLFM-20540AC SGLFM-20756AC	JZDP-A008-018	SGDH-02AE-OY	XD-02-MN01
	80 N	220 N	SGLFW-35A120APD	SGLFM-35324AC	JZDP-A008-019	SGDH-02AE-OY	XD-02-MN01
	160 N	440 N	SGLFW-35A230APD	SGLFM-35540AC SGLFM-35756AC	JZDP-A008-020	SGDH-08AE-S-OY	XD-08-MN01
	280 N	600 N	SGLFW-50A200BPD	SGLFM-50405AC	JZDP-A008-181	SGDH-08AE-S-OY	XD-08-MN
	560 N	1200 N	SGLFW-50A380BPD	SGLFM-50675AC SGLFM-50945AC	JZDP-A008-182	SGDH-15AE-S-OY	-
	560 N	1200 N	SGLFW-1ZA200BPD	SGLFM-1Z405AC SGLFM-1Z675AC SGLFM-1Z945AC	JZDP-A008-183	SGDH-15AE-S-OY	-

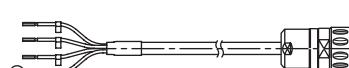
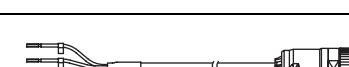
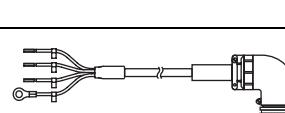
**400V AC Three Phase**

Symbol	Specifications			Model			
	Rated Force	Peak Force	① Linear Coil	② Magnetic Way	③ Serial Converter	④ Servo Drive	
①②③④	80 N	220 N	SGLFW-35D120APD	SGLFM-35324AC	JZDP-A008-211	Sigma-II Series	XtraDrive
	160 N	440 N	SGLFW-35D230APD	SGLFM-35540AC SGLFM-35756AC	JZDP-A008-212	SGDH-05DE-OY	XD-05-TN
	280 N	600 N	SGLFW-50D200BPD	SGLFM-50405AC	JZDP-A008-189	SGDH-10DE-OY	XD-10-TN
	560 N	1200 N	SGLFW-50D380BPD	SGLFM-50675AC SGLFM-50945AC	JZDP-A008-190	SGDH-15DE-OY	XD-15-TN
	560 N	1200 N	SGLFW-1ZD200BPD	SGLFM-1Z405AC	JZDP-A008-191	SGDH-15DE-OY	XD-15-TN
	1120 N	2400 N	SGLFW-1ZD380BPD	SGLFM-1Z675AC SGLFM-1Z945AC	JZDP-A008-192	SGDH-30DE-OY	XD-30-TN

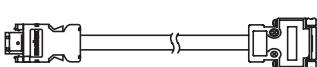
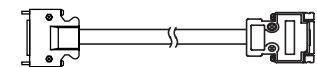
**SGLTW / SGLTM Iron-Core Type****400V AC Three Phase**

Symbol	Specifications			Model			
	Rated Force	Peak Force	① Linear Coil	② Magnetic Way	③ Serial Converter	④ Servo Drive	
①②③④	300 N	600 N	SGLTW-35D170HPD	SGLTM-35324HC	JZDP-A008-193	Sigma-II Series	XtraDrive
	600 N	1200 N	SGLTW-35D320HPD	SGLTM-35540HC SGLTM-35756HC	JZDP-A008-194	SGDH-10DE-OY	XD-10-TN
	450 N	900 N	SGLTW-50D170HPD	SGLTM-50324HC	JZDP-A008-195	SGDH-20DE-OY	XD-20-TN
	900 N	1800 N	SGLTW-50D320HPD	SGLTM-50540HC SGLTM-50756HC	JZDP-A008-196	SGDH-10DE-OY	XD-10-TN
	670 N	2600 N	SGLTW-40D400BP	SGLTM-40405AC	JZDP-A008-197	SGDH-20DE-OY	XD-20-TN
	1000 N	4000 N	SGLTW-40D600BP	SGLTM-40675AC SGLTM-40945AC	JZDP-A008-198	SGDH-30DE-OY	XD-30-TN
	1300 N	5000 N	SGLTW-80D400BP	SGLTM-80405AC	JZDP-A008-199	SGDH-50DE-OY	-
	2000 N	7500 N	SGLTW-80D600BP	SGLTM-80675AC SGLTM-80945AC	JZDP-A008-200	SGDH-75DE-OY	-

**Power Cables**

Symbol	Specifications	Model	Appearance
(5)	For 200V Servomotors SGLGW-30A□□□B□D SGLGW-40A□□□B□D SGLGW-60A□□□B□D SGLFW-20A□□□A□D SGLFW-35A□□□A□D	3 m R88A-CAWA003S-DE 5 m R88A-CAWA005S-DE 10 m R88A-CAWA010S-DE 15 m R88A-CAWA015S-DE 20 m R88A-CAWA020S-DE	
	For 200V Servomotors SGLGW-90A200B□D SGLFW-50A□□□B□D SGLFW-1ZA200B□D	3 m R88A-CAWB003S-DE 5 m R88A-CAWB005S-DE 10 m R88A-CAWB010S-DE 15 m R88A-CAWB015S-DE 20 m R88A-CAWB020S-DE	
	For 400V Servomotors SGLFW-35D□□□A□D SGLFW-50D200□D SGLTW-35D170H□D SGLTW-50D170H□D	3 m R88A-CAWK003S-DE 5 m R88A-CAWK005S-DE 10 m R88A-CAWK010S-DE 15 m R88A-CAWK015S-DE 20 m R88A-CAWK020S-DE	
	For 400V Servomotors SGLFW-50D380□D SGLFW-1ZD□□□B□D SGLTW-35D320H□D SGLTW-50D320H□D	3 m R88A-CAWL003S-DE 5 m R88A-CAWL005S-DE 10 m R88A-CAWL010S-DE 15 m R88A-CAWL015S-DE 20 m R88A-CAWL020S-DE	
	For 400V Servomotors SGLTW-40D□□□B□ SGLTW-80D□□□B□	3 m R88A-CAWD003S-E 5 m R88A-CAWD005S-E 10 m R88A-CAWD010S-E 15 m R88A-CAWD015S-E 20 m R88A-CAWD020S-E	

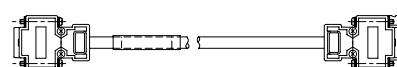
**Serial converter Cable to Servo Drive**

Symbol	Specifications	Model	Appearance
(6)	Sigma-II Drive to Serial Converter Cable	3 m JZSP-CLP70-03-E 5 m JZSP-CLP70-05-E 10 m JZSP-CLP70-10-E 15 m JZSP-CLP70-15-E 20 m JZSP-CLP70-20-E	
	XtraDrive Drive to Serial Converter Cable	3 m XD-CLP70-03-E 5 m XD-CLP70-05-E 10 m XD-CLP70-10-E 15 m XD-CLP70-15-E 20 m XD-CLP70-20-E	

**Linear Scale Cable to Serial Converter**

Symbol	Specifications	Model	Appearance
(7)	Extension cable for Renishaw Linear Scale to Serial converter. (Connector DB-15) (The extension cable is optional)	1 m JZSP-CLL00-01-E 3 m JZSP-CLL00-03-E 5 m JZSP-CLL00-05-E 10 m JZSP-CLL00-10-E 15 m JZSP-CLL00-15-E	
	Extension cable for Heidenhain Linear Scale to Serial converter (Connector DB-15 ) (When a Heidenhain scale is used the ex- tension cable is required)	1 m JZSP-CLL20-01-E 3 m JZSP-CLL20-03-E 5 m JZSP-CLL20-05-E 10 m JZSP-CLL20-10-E 15 m JZSP-CLL20-15-E	

**Hall Sensor Cable to Serial Converter**

Symbol	Specifications	Model	Appearance
(8)	Extension cable for Linear Scale to serial converter (The extension cable is optional)	1 m JZSP-CLL10-01-E 3 m JZSP-CLL10-03-E 5 m JZSP-CLL10-05-E 10 m JZSP-CLL10-10-E 15 m JZSP-CLL10-15-E	

**Connectors**

Specification	Model
Control I/O connector (For CN1)	R88A-CNU11C or JZSP-CK9
Sigma-II Drive Encoder connector (For CN2)	JZSP-CMP9-1
XtraDrive Encoder connector (For CN2)	DE9406973
Hypertac Power Connector IP67 (For 200V Motor Coils SGL□W-□□A□□□□□D)	SPOC-06K-FSDN169
Hypertac Power Connector IP67 (For 400V Motor coils SGL□W-□□D□□□□□D)	LPRA-06B-FRBN170
Military Power connector IP67 (For Motor coils SGLTW-40□/80□ )	MS3108E22-22S

**Dimensioning Software**

Specifications	Model
SigmaSize	MOTION TOOLS CD

**ServoDrive Accessories**

**Note:** Refer to the Sigma-II ServoSystem or XtraDrive chapter for details.



ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

XD-

# XtraDrive

## Intelligent Servo Drive. Integrated controller and network connectivity.

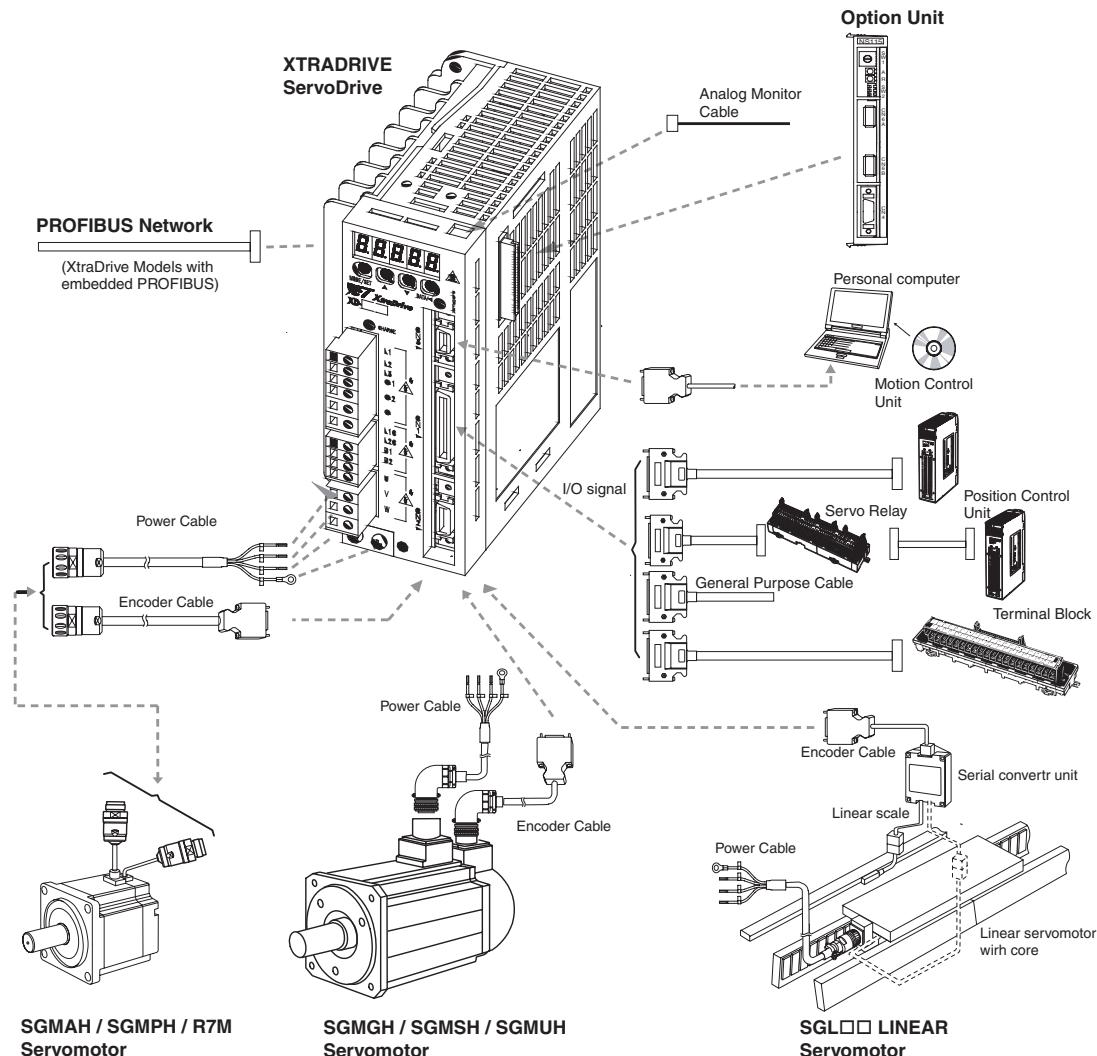
- NCT. Patented non-linear technique for tight control
- Very low tracking error with no overshoot and zero settling time
- Automatic tuning of servo parameters for optimal settling time
- OCA. Oscillation Cancelling Algorithm
- Profibus Embedded in the drive available
- Ideal drive for linear motors control
- Automatic motor recognition of Sigma-II motors
- Analogue control for speed and torque
- Pulse train control for positioning
- Oscilloscope available via XtraWare software tool

## Ratings

- 230VAC Single-phase 30 W to 800W
- 400VAC Three-phase 0.5 KW to 3.0 kW



## System Configuration

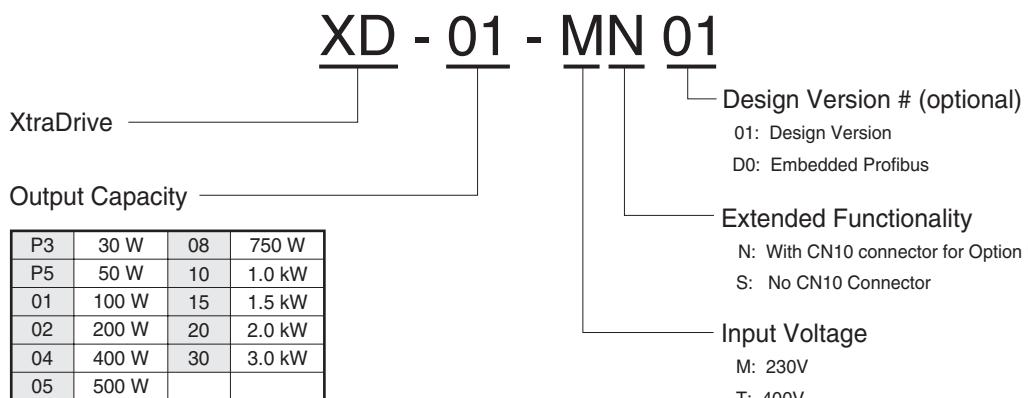


## Servomotor / Servo Drive Combination

	Servomotor			Servo Drive			
	Voltage	Rated Torque	Capacity	230 V (1-phase)	230 V (1-phase) w PROFIBUS	400 V (3-phase)	400V (3-phase) w PROFIBUS
<b>Sigma-II Series Motors (Refer to the Sigma-II chapter for Motor details)</b>							
SGMAH (3000 min <sup>-1</sup> )	230 V	0.0955 N.m	30 W	XD-P3-MN01	XD-P3-MSD0	-	-
		0.159 N.m	50 W	XD-P5-MN01	XD-P5-MSD0	-	-
		0.318 N.m	100 W	XD-01-MN01	XD-01-MSD0	-	-
		0.637 N.m	200 W	XD-02-MN01	XD-02-MSD0	-	-
		1.27 N.m	400 W	XD-04-MN01	XD-04-MSD0	-	-
		2.39 N.m	750 W	XD-08-MN	XD-08-MSD0	-	-
	400 V	0.955 N.m	300 W	-	-	XD-05-TN	XD-05-TSD0
		2.07 N.m	650 W	-	-	XD-10-TN	XD-10-TSD0
SGMPH (3000 min <sup>-1</sup> )	230 V	0.318 N.m	100 W	XD-01-MN01	XD-01-MSD0	-	-
		0.637 N.m	200 W	XD-02-MN01	XD-02-MSD0	-	-
		1.27 N.m	400 W	XD-04-MN01	XD-04-MSD0	-	-
		2.39 N.m	750 W	XD-08-MN	XD-08-MSD0	-	-
		0.637 N.m	200 W	-	-	XD-05-TN	XD-05-TSD0
		1.27 N.m	400 W	-	-	XD-10-TN	XD-10-TSD0
	400 V	2.39 N.m	750 W	-	-	XD-10-TN	XD-10-TSD0
		4.77 N.m	1500 W	-	-	XD-15-TN	XD-15-TSD0
SGMGH (1500 min <sup>-1</sup> )	400 V	2.84 N.m	0.45 kW	-	-	XD-05-TN	XD-05-TSD0
		5.39 N.m	0.85 kW	-	-	XD-10-TN	XD-10-TSD0
		8.34 N.m	1.3 kW	-	-	XD-15-TN	XD-15-TSD0
		11.5 N.m	1.8 kW	-	-	XD-20-TN	XD-20-TSD0
		18.6 N.m	2.9 kW	-	-	XD-30-TN	XD-30-TSD0
SGMSH (3000 min <sup>-1</sup> )	400 V	3.18 N.m	1.0 kW	-	-	XD-10-TN	XD-10-TSD0
		4.90 N.m	1.5 kW	-	-	XD-15-TN	XD-15-TSD0
		6.36 N.m	2.0 kW	-	-	XD-20-TN	XD-20-TSD0
		9.80 N.m	3.0 kW	-	-	XD-30-TN	XD-30-TSD0
SGMUH (6000 min <sup>-1</sup> )	400 V	1.59 N.m	1.0 kW	-	-	XD-10-TN	XD-10-TSD0
		2.45 N.m	1.5 kW	-	-	XD-15-TN	XD-15-TSD0
		4.9 N.m	3.0 kW	-	-	XD-30-TN	XD-30-TSD0
<b>SmartStep Series Motors (Refer to the SmartStep chapter for Motor details)</b>							
R7M-A (3000 min <sup>-1</sup> )	230 V	0.0955 N.m	30 W	XD-P3-MN01	-	-	-
		0.159 N.m	50 W	XD-P5-MN01	-	-	-
		0.318 N.m	100 W	XD-01-MN01	XD-01-MSD0	-	-
		0.637 N.m	200 W	XD-02-MN01	XD-02-MSD0	-	-
		1.27 N.m	400 W	XD-04-MN01	XD-04-MSD0	-	-
		2.39 N.m	750 W	XD-08-MN	XD-08-MSD0	-	-
R7M-AP (3000 min <sup>-1</sup> )	230 V	0.318 N.m	100 W	XD-01-MN01	XD-01-MSD0	-	-
		0.637 N.m	200 W	XD-02-MN01	XD-02-MSD0	-	-
		1.27 N.m	400 W	XD-04-MN01	XD-04-MSD0	-	-
		2.39 N.m	750 W	XD-08-MN	XD-08-MSD0	-	-
<b>Sigma Linear Motors (Refer to the Sigma Linear Motors chapter for Motor details)</b>							
SGLGW Linear Motors	230 V	Refer to the Linear Motors chapter for details					
SGLFW Linear Motors	230 V, 400 V	Refer to the Linear Motors chapter for details					
SGLTW Linear Motors	400 V	Refer to the Linear Motors chapter for details					

## Type Designation

### Drive



## Servo Drive Specifications

### Single-Phase, 230 V

Servo Drive Type		XD-P3-M□	XD-P3-M□	XD-01-M□	XD-02-M□	XD-04-M□	XD-08-M□
Applicable Servomotor	SGMAH-□	A3A□	A5A□	01A□	02A□	04A□	08A□
	SGMPH-□	-	-	01A□	02A□	04A□	08A□
	R7M-□	A03030-□	A05030-□	A10030-□	A20030-□	A40030-□	A75030-□
	R7M-□	-	-	AP10030-□	AP20030-□	AP40030-□	AP75030-□
Basic Specifications	Max. Applicable Motor capacity W	30	50	100	200	400	750
	Continuous Output Current Arms	0.44	0.64	0.91	2.1	2.8	5.7
	Max. Output Current Arms	1.3	2.0	2.8	6.5	8.5	13.9
	Input Power Main Circuit	For single-phase, 200 to 230 VAC + 10 to -15%					
	Supply Control Circuit	For single-phase, 200 to 230 VAC + 10 to -15%					
	Control Method	Single phase full-wave rectification / IGBT / PWM / sine-wave current drive method					
	Feedback	Serial encoder ( incremental/absolute value )					
	Conditions Usage /storage Temperature	0 to +55° C / -20 to 85° C					
	Usage /storage Humidit	90%RH or less (non-condensing)					
	Altitude	1000m or less above sea level					
	Vibration/Shock Resistance	4.9m/s <sup>2</sup> / 19.6m/s <sup>2</sup>					
	Configuration	Base mounted					
	Approx. Mass Kg	0.8					
		1.1					
		1.7					

### Three-Phase, 400 V

Servo Drive Type		XD-05-T□	XD-10-T□	XD-15-T□	XD-20-T□	XD-30-T□	
Applicable Servomotor	SGMAH-□	03D□	07D□	-	-	-	
	SGMAH-□	02D□, 04D□	08D□	15D□	-	-	
	SGMGH-□	05D□	09D□	13D□	20D□	30D□	
	SGMSH-□	-	10D□	15D□	20D□	30D□	
	SGMUH-□	-	10D□	15D□	-	30D□	
Basic Specifications	Max. Applicable Motor capacity kW	0.45	1.0	1.5	2.0	3.0	
	Continuous Output Current Arms	1.9	3.5	5.4	8.4	11.9	
	Max. Output Current Arms	5.5	8.5	14	20	28	
	Input Power Main Circuit	For three-phase, 380 to 480 VAC + 10 to -15% (50/60Hz)					
	Supply Control Circuit	24VDC+ 15%					
	Control Method	Single phase full-wave rectification / IGBT / PWM / sine-wave current drive method					
	Feedback	Serial encoder ( incremental/absolute value )					
	Conditions Usage /storage Temperature	0 to +55° C / -20 to +85 C					
	Usage /storage Humidit	90%RH or less (non-condensing)					
	Altitude	1000m or less above sea level					
	Vibration/Shock Resistance	4.9m/s <sup>2</sup> / 19.6m/s <sup>2</sup>					
	Configuration	Base mounted					
	Approx. Mass Kg	2.8					
		3.8					

## General Specifications

Performance	Speed Control Range	1:5000
	Speed Variance	Load Variance During 0 to 100% load $\pm 0.01\%$ max. (at rated speed)
	Voltage Variance	Rated voltage $\pm 10\%$ : $0\%$ (at rated speed)
	Temperature Variance	25 $\pm 25^\circ\text{C}$ : $\pm 0.1\%$ max (at rated speed)
	Frequency characteristics	400Hz (at $J_L = J_M$ )
	Torque Control Accuracy (Reproducibility)	$\pm 2\%$
	Soft Start Time Setting	0 to 10s (Acceleration, deceleration can each be set.)
	Speed Reference Input	Reference Voltage $\pm 6\text{VDC}$ (forward motor rotation if positive reference) at rated speed: Set at delivery Variable setting range: $\pm 2$ to $\pm 10\text{ VDC}$ at rated speed/ max. input voltage: $\pm 12\text{V}$
	Input Impedance	Approx. 14 k $\Omega$
	Circuit Time Constant	-
Speed/Torque Control Mode	Torque Reference Input	Reference Voltage $\pm 3\text{ VDC}$ (forward rotation if positive reference) at rated speed: Set at delivery Variable setting range $\pm 1$ to $\pm 10\text{ VDC}$ at rated torque reference
	Input Impedance	Approx. 14 k $\Omega$
	Circuit Time Constant	Approx. 47 $\mu\text{s}$
	Contact Speed Reference	Rotation Direction Selection With P control signal
	Speed selection	With forward/reverse current limit signal (speed 1 to 3 selection), servomotor stops or another control method is used when both are OFF.
Position Control Mode	Bias Setting	0 to $450\text{ min}^{-1}$ (setting resolution: $1\text{ min}^{-1}$ )
	Feed Forward Compensation	0 to 100 % (setting resolution: 1%)
	Position Completed Width Setting	0 to 250 command units (Setting resolution: 1 command unit)
	Input Pulse Frequency	0 to 500 Kpps (200Kpps max. at open collector)
I/O Signal	Command Pulse	Input pulse Type Sign + pulse train, 90° phase displacement 2-phase pulse (A-phase+ B-phase) or CCW/CW pulse train
	Input Pulse Form	Line driver (+5V level), open collector (+5V or +12 level)
	Control Signal	Clear Signal (input pulse is same as reference pulse)
	Position Signal Output	A-phase, B.phase, C-phase, (S-phase): Line driver output S-phase is for absolute encoder only.
Integrated Functions	Sequence Input Signal	Servo ON, P control (or control mode switching, zero clamp, command pulse inhibit), forward/reverse run prohibit, alarm reset, forward/ reverse current limit (or internal speed switching)
	Sequence Output Signal	Servo alarm, alarm codes (3-bit output): CN1 output terminal is fixed
	Communications	It is possible to output three types of signals from among: positioning complete (speed agree), motor rotation, servo ready, current limit, speed limit, brake release, warning, NEAR, and zero point pulse signal
Integrated Functions	Interface	Digital operator (hand- held type), RS-422 port for PCs, etc. (RS-232C ports under some conditions)
	1:N Communications	N may equal up to 14 when an RS-422A port is used
	Axis Address Setting	Set by user setting
	Functions	Status display, user constant setting monitor display, alarm traceback display, JOG run /autotuning operations, and graphing functions for speed/torque command signal, etc
	Profibus	(Only models with Profibus) Profibus DP Slave, Node address 0-125 set by rotary switches, Baud rate from 9.6kbps to 12 Mbps. LED Indicators: Bus Failure and System Failure
	Auto Tuning Function	Position speed loop gain and integral time constant can be automatically set.
	Dynamic Brake (DB)	Operates during main power OFF, servo alarm, servo OFF or overtravel
	Regenerative Processing	Regenerative resistor externally mounted (option)
	Overtravel (OT) Prevention Function	DB stop, deceleration stop or coast to stop during P-OT, N-OT operation
	Encoder Divider Function	Optional division possible
	Electronic Gearing	$0.01 < A/B < 100$
	Internal Speed Setting Function	3 speeds may be set internally
	Protective Functions	Overcurrent, overvoltage, insufficient voltage, overload, main circuit sensor error, heatsink overheat, power phase loss, overflow, overspeed, encoder error, runaway, CPU error, parameter error, etc.
	Analog Monitor Functions for Supervision	Integrates analog monitor connectors for supervision of the speed and torque reference signals, etc.
	Display Functions	CHARGE, POWER, 7-segments LEDx5 (Integrated digital operator function, not available in models with profibus)
	Others	Reverse connection, zero search, automatic motor discrimination function, and DC reactor connection terminal for high frequency power suppression function (except: 6 to 15kW)

## I/O Specifications

### Terminal Specifications

Symbol	Name	Function
L1, L2 or L1, L2, L3	Main circuit AC input terminal	AC power input terminals for the main circuit
U	Servomotor connection terminal	Red
V		White
W		Blue
L1C, L2C	Control power input terminal	AC power input terminals for the control circuit.
	Frame ground	Ground terminal. Ground to a maximum of $100\Omega$ . (class 3)
B1, B2 or B1, B2, B3	Main circuit DC output terminal	5 kW or less: Connect an external regenerative resistor if regenerative energy is high. 5.5 kW: There is no internal regenerative resistor. Be sure to connect an external Regenerative Resistor Unit.
$\oplus 1$ , $\oplus 2$	DC reactor connection terminal for suppressing power supply harmonic waves	Normally, short $\oplus 1$ and $\oplus 2$ . If a countermeasure against power supply harmonic waves is needed, connect a DC reactor between $\oplus 1$ and $\oplus 2$ .
$\oplus$	Main circuit DC output terminal (+)	Normally, not connected. This terminal exists on the Servo Drives with a capacity of 6.0 kW or higher only.
$\ominus$	Main circuit DC output terminal (n-)	Normally, not connected.

## Encoder Connector (CN2)

Pin	Symbol	Function
1, 2, 3	PPG0V	Encoder power supply GND
4, 5, 6	PPG5V	Encoder power supply +5 V
7	-	-
8	PS+	Encoder serial signal input
9	PS-	Encoder serial signal input
10	SePG5V	Serial Encoder power supply +5 V (Sigma-II)
11	SePG0V	Serial Encoder power supply GND (Sigma-II)
12	BAT+	Battery + (used only with absolute encoder)
13	BAT-	Battery - (used only with absolute encoder)
14	PC+	Encoder + C-phase input
15	PC-	Encoder - C-phase input
16	A+	Encoder + A-phase input
17	A-	Encoder - A-phase input
18	B+	Encoder + B-phase input
19	B-	Encoder - B-phase input
20	-	-
Shell	FG	Cable shield ground

## I/O Signals (CN1) - Input signals

Pin No.	Signal Name	Function
40	Common	/S-ON
41		/P-CON
		Function selected by parameter.
		Proportional control reference
		Switches the speed control loop from PI (proportional/ integral) to P (proportional) control when ON.
		Direction reference
		With the internal set speed selected: Switch the rotation direction.
		Control mode switching
		Position ↔ speed Position ↔ torque Torque ↔ speed
		Enables control mode switching.
		Zero-clamp reference
		Speed control with zero-clamp function: Reference speed is zero when ON.
		Reference pulse block
		Position control with reference pulse stop: Stops reference pulse input when ON.
42	P-OT	Forward run prohibited
43	N-OT	Reverse run prohibited
45	/P-CL	Function selected by parameter.
46	/N-CL	Forward external torque limit ON Reverse external torque limit ON
		Current limit function enabled when ON.
		Internal speed switching
		With the internal set speed selected: Switches the internal speed settings.
44	/ALM-RST	Alarm reset: Releases the servo alarm state.
47	+24VIN	Control power supply input for sequence signals: Users must provide the +24 V power supply. Allowable voltage fluctuation range: 11 to 25 V
4 (2)	SEN	Initial data request signal when using an absolute encoder.
21	BAT (+)	Connecting pin for the absolute encoder backup battery.
22	BAT (-)	Do not connect when a battery is connected to the host controller.
5 (6)	Speed	V-REF
		Speed reference speed input: ±2 to ±10 V/rated motor speed (Input gain can be modified using a parameter.)
9 (10)	Torque	T-REF
		Torque reference input: ±1 to ±10 V/rated motor torque (Input gain can be modified using a parameter.)
7	Position	PULS
8		/PULS
11		SIGN
12		/SIGN
		Reference pulse input for only line driver
		Input mode is set from the following pulses. Sign + pulse string CCW/CW pulse Two-phase pulse (90° phase differential)
15	CLR	Positional error pulse clear input: Clears the positional error pulse during position control.
14		/CLR
3	PL1	PL1
13		PL2
18		PL3
		+12 V pull-up power is supplied when PULS, SIGN, and CLR reference signals are open-collector outputs (+12 V power supply is built into the SERVOPACK).

**Note:** 1. Pin numbers in parentheses () indicate signal grounds.

2. The functions allocated to /S-ON, /P-CON, P-OT, N-OT, /ALM-RST, /P-CL, and /N-CL input signals can be changed by using the parameters.
3. The voltage input range for speed and torque references is a maximum of ±12 V.

## I/O Signals (CN1) - Output signals

Pin No.	Signal Name	Function	
31 32	Common	ALM+ ALM-	Servo alarm: Turns OFF when an error is detected.
27 28		/TGON+ /TGON-	Detection during servomotor rotation: Detects when the servomotor is rotating at a speed higher than the motor speed setting. Detection speed can be set by using the parameters.
29 30		/S-RDY+ /S-RDY-	Servo ready: ON if there is no servo alarm when the control/main circuit power supply is turned ON.
33 (1) 34		PAO /PAO	Phase-A signal Converted two-phase pulse (phases A and B) encoder output signal and zero-point pulse (phase C) signal: RS-422 or the equivalent
35 36		PBO /PBO	Phase-B signal (Proper line receiver is SN75175 manufactured by Texas Instruments or the equivalent corresponding to MC3486.)
19 20		PCO /PCO	Phase-C signal
48 49		PSO /PSO	Phase-S signal With an absolute encoder: Outputs serial data corresponding to the number of revolutions (RS-422 or the equivalent)
37 38 39 (1)		ALO1 ALO2 ALO3	Alarm code output: Outputs 3-bit alarm codes. Open-collector: 30 V and 20 mA rating maximum
16		TMON	Analog monitor signal
17		VTG	Analog monitor signal
Shell		FG	Connected to frame ground if the shield wire of the I/O signal cable is connected to the connector shell.
25 26	Speed	/V-CMP+ /V-CMP-	Speed coincidence (output in Speed Control Mode): Detects whether the motor speed is within the setting range and if it matches the reference speed value.
25 26	Position	/COIN+ /COIN-	Positioning completed (output in Position Control Mode): Turns ON when the number of positional error pulses reaches the value set. The setting is the number of positional error pulses set in reference units (input pulse units defined by the electronic gear).
-	Reserved	/CLT /VLT /BK /WARN /NEAR	Reserved terminals The functions allocated to /TGON, /S-RDY, and /V-CMP (/COIN) can be changed by using the parameters. /CLT, /VLT, /BK, /WARN, and /NEAR signals can also be changed.
23 24 50		-	Terminals not used Do not connect relays to these terminals.

**Note:** 1. Pin numbers in parentheses () indicate signal grounds.

2. The functions allocated to /TGON, /S-RDY, and /V-CMP (/COIN) can be changed by using the parameters. /CLT, /VLT, /BK, /WARN, and /NEAR signals can also be changed.

## Parameters

Parameter No.	Name	Setting Range	Units	Factory Setting	Setting Validation
Pn000	Function Selection Basic Switches	-	-	00D0	After restart
	Digit	Function name	Setting	Description	
	0	Direction Selection	0 1 2 and 3	Sets CCW as forward direction Sets CW as forward direction (Reserve Rotation Mode) Reserved (Do not change.)	
	1	Control Method Selection	0 1 2 3 4 5 6 7 8 9 A B C D	Speed control (analog reference) Yaskawa OB Torque control (analog reference) Internal set speed control (contact reference) Internal set speed control (contact reference) <> Speed control (analog reference) Internal set speed control reference <> Position control (pulse train reference) Internal set speed control (contact reference) <> Torque control (analog reference) Position control (pulse train reference) <> Speed control (analog reference) Position control (pulse train reference) <> Torque control (analog reference) Torque control (analog reference) <> Speed control (analog reference) Speed control (analog reference) <> Zero clamp Position control (pulse train reference) <> Position control (Inhibit) Position control (pulse train) Serial communication command	
	2	Axis Address	0 to F	Sets servo amplifier axis address.	
	3	Reserved	-	-	
Pn001	Function Selection Application Switches 1	-	-	0000	After restart
	Digit	Function name	Setting	Explanation	
	0	Servo OFF or Alarm Stop Mode	0 1 2	Stops the motor by applying dynamic brake (DB) Stops the motor by applying dynamic brake (DB) and then releases DB Makes the motor coast to a stop state without using the dynamic brake (DB)	
	1	Overtravel (OT) Stop Mode	0 1 2	Same setting as Pn001.0 (Stops the motor by applying DB or by coasting) Sets the torque of Pn406 to the maximum value, decelerate the motor to a stop, and then set it to servolock state Sets the torque of Pn406 to the maximum value. decelerates the motor to a stop, and then sets it to coasting state	
	2	AC/DC Power Input Selection	0 1	Not applicable to DC power input: Input AC power supply through L1, L2 (,and L3) terminals Applicable to DC power input: Input DC power supply through (+)1 and (-) terminals.	
	3	Warning Code Output Selection	0 1 2	ALO1, ALO2, and ALO3 output only alarm codes. ALO1, ALO2, and ALO3 output both alarms codes and warning codes. While warning codes are output, ALM signal output remains ON (normal state). Uses absolute encoder as an absolute encoder. Uses multi-turn limit.	
Pn002	Function Selection Application Switches 2	-	-	0000	After restart
	Digit	Function name	Setting	Explanation	
	0	Speed Control Option	0 1 2 3	None Uses T-REF as an external torque limit input Uses T-REF as a torque feed-forward input Uses T-REF when P-CL and N-CL are ON	
	1	Torque Control Option	0 1	None Uses V-REF as an external speed limit input.	
	2	Absolute Encoder Usage	0 1 2	Uses absolute encoder as an absolute encoder Uses absolute encoder as an incremental encoder Uses absolute encoder aa an absolute encoder. Uses multi-turn limit.	
	3	Not used.	-	-	
Pn003	Function Selection Application Switches 3	-	-	0002	Immediately
	Digit	Function name	Setting	Explanation	
	0	Analog Monitor 1 Torque Reference Monitor	0 1 2 3 4 5 6 7	Motor speed: 1V/1000 min <sup>-1</sup> Speed reference: 1V/1000 min <sup>-1</sup> Torque reference: 1 V/100% Position error: 0,05 V/1 reference unit Position error:0,05 V/100 reference units Reference pulse frequency (converted to min <sup>-1</sup> : 1V/1000 min <sup>-1</sup> ) Motor Speed x 4: 1V/250 min <sup>-1</sup> Motor Speed x 8: 1V/250 min <sup>-1</sup>	
	1	Analog Monitor 2 Speed Reference Monitor	0 to 7	Same as Pn003.0 (see above)	
	2	Not used	-	-	
	3	Not used	-	-	
Pn004	Reserved (Do not change)	-	-	0000	-
Pn005		-	-	0000	-

Parameter No.	Name		Setting Range	Units	Factory Setting	Setting Validation	
Pn006	Gain Application Switches		-	-	0000	Immediately	
	<b>Digit</b>	<b>Function name</b>	<b>Setting</b>	<b>Explanation</b>			
	0	Analog Monitor 1.	0	Servo position error: 1V/10 encoder counts			
			1	Servo position error: 1V/5 user units			
			2	Target speed 1V/500 rpm.			
			3	Target speed after applying command smoothing 1V/500 rpm			
			4	Torque reference: 10V/Max Torque			
			5	Motor speed:1V/500 rpm			
			6	Target acceleration after applying command smoothing: 10V/ max acceleration allowed.			
	1	Analog monitor 1-selection of source parameter	0	Pn003.0 used for analog monitor 1.			
			1	Pn006.0 used for analog monitor 1.			
	2	Analog monitor 1-selection of source	0-4	0:x1, 1:x10, 2:x100, 3:x1/10, 4:x1/100			
	3	Not used	0	-			
Pn007	Gain Application Switches		-	-	0000	Immediately	
	<b>Digit</b>	<b>Function name</b>	<b>Setting</b>	<b>Explanation</b>			
	0	Analog Monitor 2	0	Servo position error: 1V/10 encoder counts			
			1	Servo position error: 1V/5 user units			
			2	Target speed 1V/500 rpm.			
			3	Target speed after applying command smoothing 1V/500 rpm			
			4	Torque reference: 10V/Max Torque			
			5	Motor speed:1V/500 rpm			
			6	Target acceleration after applying command smoothing: 10V/ max acceleration allowed.			
	1	Analog monitor 2-selection of source parameter	0	Pn003.0 used for analog monitor 2.			
			1	Pn007.0 used for analog monitor 2.			
	2	Analog monitor 2	0-4	0:x1, 1:x10, 2:x100, 3:x1/10, 4:x1/100			
	3	Not used	0	-			
Pn080 (Linear Motors Only)	Lineal Motor Commutation Switch		-	-	0011	After restart	
	<b>Digit</b>	<b>Function name</b>	<b>Setting</b>	<b>Explanation</b>			
	0	Communication sensor switch	0	With commutation sensors			
			1	Without commutation sensors			
	1	Communication sensor order	0	UVW			
			1	UWV			
	2	Reserved	-	-			
	3	Reserved	-	-			
Pn100	Speed Loop Gain		1 to 2000 Hz	1 Hz	40 Hz	Immediately	
Pn101	Speed Loop Integral Time Constant		0.15 to 512.00 ms	0.01 ms	20.00 ms	Immediately	
Pn102	Position Loop Gain		1 to 2000/s	1/s	40/s	Immediately	
Pn103	Moment of Inertia Ratio		0 to 10000%	1%	0%	Immediately	
Pn104	2nd Speed Loop Gain		1 to 2000 Hz	1 Hz	40	Immediately	
Pn105	2nd Speed Loop Integral Time Constant		0.15 to 512.00 ms	0.01 ms	20.00 ms	Immediately	
Pn106	2nd Position Loop Gain		1 to 2000/s	1/s	40/s	Immediately	
Pn107	Bias		0 to 450 min <sup>-1</sup>	1 min <sup>-1</sup>	0 min <sup>-1</sup>	Immediately	
Pn108	Bias Width Addition		0 to 250 reference unit	Reference unit	7 reference unit	Immediately	
Pn109	Feed-forward		0 to 100%	1%	0%	Immediately	
Pn110	Online Autotuning Switches		-	-	0010	After restart	
	<b>Digit</b>	<b>Function name</b>	<b>Setting</b>	<b>Explanation</b>			
	0	Online Autotuning Method	0	Tunes only at the beginning of operation			
			1	Always tunes.			
			2	Does not perform autotuning.			
	1	Speed feedback Compensation Selection	0	Enabled			
			1	Disabled			
	2	Friction Compensation Selection	0	Friction compensation: Disabled			
			1	Friction compensation: Small			
			2	Friction compensation: Large			
	3	Reserved	0 - 3	Reserved parameter (Do not change)			
Pn10A	Feed-forward Filter Time Constant		0.00 to 64.00 ms	0.01 ms	0.00 ms	Immediately	
Pn10B	Pending!!!!		-	-	0000	-	
Pn10C	Mode Switch Torque Reference		0 to 800%	1%	200%	Immediately	
Pn10D	Mode Switch Speed Reference		0 to 10000 min <sup>-1</sup>	1 min <sup>-1</sup>	0 min <sup>-1</sup>	Immediately	
Pn10E	Mode Switch Acceleration		0 to 3000 min <sup>-1</sup> /s	1 min <sup>-1</sup> /s	0 min <sup>-1</sup> /s	Immediately	
Pn10F	Mode Switch Error Pulse		0 to 10000 reference units	1 reference unit	0 reference unit	Immediately	
Pn111	Speed Feedback Compensation		1 to 500%	1%	100%	Immediately	

Parameter No.	Name	Setting Range	Units	Factory Setting	Setting Validation
Pn112	Reserved (Do not set)	-	-	100	-
Pn113				1000	
Pn114				200	
Pn115				32	
Pn116				16	
Pn117				100	
Pn118				100	
Pn119				50	
Pn11A				1000	
Pn11B				50	
Pn11C				70	
Pn11D	Reserved (Do not change)	-	-	100	-
Pn11E				100	
Pn11F				0	
Pn120				0	
Pn121				50	
Pn122				0	
Pn123				0	
Pn124				0	
Pn125				100	
Pn131				0	
Pn132				0	
Pn133				0	
Pn134				0	
Pn135				0	
Pn136				0	
Pn137				0	
Pn138				0	
Pn139				0	
Pn13A				0	
Pn140				200	
Pn141				800	
Pn142				0	
Pn143				0	
Pn144				1000	
Pn145				0	
Pn190	Motor selection Switches	-	-	0000	After restart
	Digit	Function Name	Setting	Explanation	
	0	Motor model	0	Yaskawa A quad B model SGM	
			1	Yaskawa A quad B model SGMP	
			2	Non Yaskawa rotary motor	
			3	Non Yaskawa lineal motor	
	1	Encoder type	0	Incremental A quad B encoder	
			1	Yaskawa absolute A quad B encoder	
	2	Encoder selection	0	Yaskawa serial encoder	
			1	A quad B encoder	
			2	A quad B encoder with commutation sensors (U,V,W)	
			3	A quad B encoder with commutation sensors (/U,/V,/W)	
	3	C-phase mask	0	C phase signal used	
			1	C phase signal mask	
Pn191	Motor selection Switches	-	-	1000	After restart
	Digit	Function Name	Setting	Explanation	
	0	Motor phase order	0	Not defined	
			1	UVW	
			2	UWV	
	1-3	Not used	0	-	
Pn192	Pulses number of A quad B encoder (Low)	0-999 Pulses/rev	Pulses/rev	2048	After restart
Pn193	Pulses number of A quad B encoder (High)	0-419 Pulse*10000/Rev	Pulse*10000/Rev	0	After restart
Pn194	Reserved (Do not change)	-	-	2	-
Pn195				20	
Pn196				20	
Pn197				88	
Pn198				0	
Pn199	Encoder counts per Scale Pitch of linear motor	1-256 Counts/Scale pitch	Counts/Scale pitch	1	After restart
Pn1A0	Reserved (Do not change)	-	-	60	-
Pn1A1				60	
Pn1A2				40	
Pn1A3				40	
Pn1A4				20	
Pn1A5				0	
Pn1A6				40	

Parameter No.	Name		Setting Range	Units	Factory Setting	Setting Validation
Pn1A7	Motor selection Switches		-	-	0001	Immediately
	Digit	Function Name	Setting	Explanation		
	0	Integral Mode	0	Disable clear integral function		
			1	Enable clear integral function		
	1-3	Not used	0	Not used		
Pn1A8	Reserved (Do not change)		-	-	0	
Pn1A9					40	
Pn1AA					40	
Pn1AB					30	
Pn1AC					80	
Pn1AD					0	
Pn1AE					300	
Pn1AF					0	
Pn1B0	Reserved (Do not change)		-	-	40	
Pn1B1					40	
Pn1B2					40	
Pn1B3					2000	
Pn1B4					0	
Pn1B5					160	
Pn1B6					150	
Pn1B7					20	
Pn1B8					100	
Pn1B9					600	
Pn1BA					0	
Pn1BB					2000	
Pn1BC					300	
Pn1BD					2000	
Pn1BE					0	
Pn1BF					3	
Pn1C0					0	
Pn1C1					3	
Pn1C2					0	
Pn200	Position Control References Selection Switches		-	-	0000	After restart
	Digit	Function Name	Setting	Explanation		
	0	Reference Pulse Form	0	Sign + Pulse, positive logic		
			1	CW + CCW, positive logic		
			2	Phase A + Phase B (x 1), positive logic		
			3	Phase A + Phase B (x 2), positive logic		
			4	Phase A + Phase B (x 4), positive logic		
			5	Sign + Pulse, negative logic		
			6	CW + CWW, negative logic		
			7	Phase A + Phase B (x 1), negative logic		
			8	Phase A + Phase B (x 2), negative logic		
			9	Phase A + Phase B (x 4), negative logic		
	1	Error Counter Clear Signal Form	0	Clears error counter when the signal is at H level		
			1	Clears error counter at the rising edge of the signal		
			2	Clears error counter when the signal is at L level.		
			3	Clears error counter at the falling edge of the signal		
	2	Clear Operation	0	Clear error counter at the baseblock		
			1	Does not clear error counter (Possible to clear error counter only with CLR signal)		
			2	Clears error counter when an alarm occurs.		
			3	Clear signal ignore		
	3	Filter Selection	0	Reference input filter for line driver signals		
			1	Reference input filter for open collector signals		
Pn201	PG Dividing Pulse (16bit or less)		0,17 to 65535 P/rev	1 P/rev	2048 P/rev	After restart
Pn202	Electronic Gear Ratio (Numerator)		1 to 65535	-	4	After restart
Pn203	Electronic Gear Ratio (Denominator)		1 to 65535	-	1	After restart
Pn204	Position Reference Accel/Decel Time Constant		0.00 to 64.00 ms	0.01 ms	0.00 ms	Immediately
Pn205	Multiturn Limit Setting		0 to 65535 rev	rev	65535 rev	After restart
Pn206	Reserved (Do not change)		-	-	16384	-
Pn207	Pending!!!!!!!!!!!!!!		-		0	-
Pn208	Position Reference Movement Averaging Time		0.00 to 64.00 ms	0.01 ms	0.00 ms	After restart
Pn209	Reserved (Do not change)		-	-	0	-
Pn216	Command smoothing		1 to 65535 ms	0.1 ms	0	Immediately
Pn281	Reserved (Linear Motors)		-	-	-	-

Parameter No.	Name	Setting Range	Units	Factory Setting	Setting Validation
Pn2A0	Reserved (Do not change)	-	-	16	-
Pn2A1				0	
Pn2A2				0	
Pn2A3				0	
Pn2A4				0	
Pn2A5				0	
Pn2A6				0	
Pn2A7				0	
Pn2A8				65535	
Pn2A9				256	
Pn2B0				1	
Pn2B1				0	
Pn2B2				1	
Pn2B3				0	
Pn2B4				1	
Pn2B5				0	
Pn2B6				1	
Pn2B7				0	
Pn2B8				1	
Pn2B9				0	
Pn2BA				1	
Pn2BB				0	
Pn2C0	Reserved (Do not change)	-	-	7	-
Pn2C1				24000	
Pn2C2				0	
Pn2C3				0	
Pn2C4				0	
Pn2C5				2	
Pn2C6	Communication Switch	-	-	0200	Immediately
	Digit	Function Name	Setting	Explanation	
	0	Check Sum	0	Doesn't use check sum	
			1	Use check sum	
	1	Not used.	-		
	2		-		
	3		-		
Pn2C7	Home Switches	-	-	0008	After restart
	Digit	Function Name	Setting	Explanation	
	0	Home switch input	0	Inputs from the SI0 (CN1-40). Input terminal	
			1	Inputs from the SI1 (CN1-41). Input terminal	
			2	Inputs from the SI2 (CN1-42). Input terminal	
			3	Inputs from the SI3 (CN1-43). Input terminal	
			4	Inputs from the SI4 (CN1-44). Input terminal	
			5	Inputs from the SI5 (CN1-45). Input terminal	
			6	Inputs from the SI6 (CN1-46). Input terminal	
			7	Sets signal ON	
			8	Sets signal OFF	
			9	Inputs the reverse signal from SI0 (CN1-40) input terminal	
			A	Inputs the reverse signal from SI1 (CN1-41) input terminal	
			B	Inputs the reverse signal from SI2 (CN1-42) input terminal	
			C	Inputs the reverse signal from SI3 (CN1-43) input terminal	
			D	Inputs the reverse signal from SI4 (CN1-44) input terminal	
			E	Inputs the reverse signal from SI5 (CN1-45) input terminal	
			F	Inputs the reverse signal from SI6 (CN1-46) input terminal	
	1	Reserved	-		
	2	Reserved	-		
	3	Reserved	-		
Pn2C8	Reserved (Do not change)	-	-	400	-
Pn2C9				50	
Pn2CA				50	
Pn2CB				50	
Pn2CC				0	
Pn2CC				0	
Pn2CD				0	
Pn2CE				60	
Pn2CF				0	
Pn2D0				8888	
Pn2D1	Extended input signal selection	-	-	0078	After restart
	Digit	Function Name	Setting	Explanation	
	0	Emergency input	0-F	Same as Pn2C7.0	
	1	New Mode Enable	0-F	Same as Pn2C7.0	
	2	Reserved	--		
	3	Reserved	--		

Parameter No.	Name		Setting Range	Units	Factory Setting	Setting Validation
Pn2D2	Extended Output Signal Selection		-	-	0000	After restart
	Digit	Function Name	Setting	Explanation		
	0	/COIN Signal Mapping	0	Disabled		
			1	Outputs from the SO1 (CN1-25, 26) output terminal		
			2	Outputs from the SO2 (CN1-27, 28) output terminal		
			3	Outputs from the SO3 (CN1-29, 30) output terminal		
	1	Not used	-			
	2					
	3					
Pn2D3	Reserved (Do not change)		-	-	2000	-
Pn2D4	Oscillation Cancelling Mode Switch		-	-	0001	Immediately
	Digit	Function Name	Setting	Explanation		
	0	Oscillation Cancelling Mode	0	OCA is not active		
			1	OCA is active		
	1	Not used	-			
	2					
	3					
Pn300	Speed Reference Input Gain		1.50 to 30.00 V/ rated speed	0.01V/ rated speed	6.00 V/ rated speed	Immediately
Pn301	Speed 1 (rotary motor)		0 to 10000 min <sup>-1</sup>	1 min <sup>-1</sup>	100 min <sup>-1</sup>	Immediately
Pn302	Speed 2		0 to 10000 min <sup>-1</sup>	1 min <sup>-1</sup>	200 min <sup>-1</sup>	Immediately
Pn303	Speed 3		0 to 10000 min <sup>-1</sup>	1 min <sup>-1</sup>	300 min <sup>-1</sup>	Immediately
Pn304	JOG Speed		0 to 10000 min <sup>-1</sup>	1 min <sup>-1</sup>	500 min <sup>-1</sup>	Immediately
Pn305	Soft Start Acceleration Time		0 to 10000 ms	1 ms	0 ms	Immediately
Pn306	Soft Start Deceleration Time		0 to 10000 ms	1 ms	0 ms	Immediately
Pn307	Speed Reference Filter Time Constant		0.00 to 655.35 ms	0.01 ms	0.40 ms	Immediately
Pn308	Speed Feedback Filter Time Constant		0.00 to 655.35 ms	0.01 ms	0.00 ms	Immediately
Pn380	Linear Motor Speed 1 (Only for linear motors)		0-5000 mm/s	mm/s	10	Immediately
Pn381	Linear Motor Speed 2 (Only for linear motors)		0-5000 mm/s	mm/s	20	Immediately
Pn382	Linear Motor Speed 3 (Only for linear motors)		0-5000 mm/s	mm/s	30	Immediately
Pn383	Linear Motor JOG Speed (Only for linear motors)		0-5000 mm/s	mm/s	40	Immediately
Pn400	Torque Reference Input Gain		1.0 to 10.0 V/rated torque	0.1 V/rated torque	3.0 V/ rated torque	Immediately
Pn401	Torque Reference Filter Time Constant		0.00 to 655.35 ms	0.01 ms	1.00 ms	Immediately
Pn402	Forward Torque Limit		0 to 800%	1%	800%	Immediately
Pn403	Reverse Torque Limit		0 to 800%	1%	800%	Immediately
Pn404	Forward External Torque Limit		0 to 800%	1%	100%	Immediately
Pn405	Reverse External Torque Limit		0 to 800%	1%	100%	Immediately
Pn406	Emergency Stop Torque		0 to 800%	1%	800%	Immediately
Pn407	Speed Limit during Torque Control		0 to 10000 min <sup>-1</sup>	1 min <sup>-1</sup>	10000 min <sup>-1</sup>	Immediately
Pn408	Torque Control Function Switches		-	-	0000	Immediately
	Digit	Function Name	Setting	Explanation		
	0	Notch Filter Selection	0	Disabled		
			1	Uses a notch filter for torque reference		
	1	Not used	-			
	2					
	3					
Pn409	Notch Filter Frequency		50 to 2000 Hz	1 Hz	2000 Hz	Immediately
Pn40A	Notch Filter width		70 to 1000 Hz	1 Hz	70(0.70)	Immediately
Pn40B	Reserved (Do not change)		-	-	1000	-
Pn40C					2000	
Pn40D					70	
Pn40E					1000	
Pn480	Reserved (Do not change) only available for linear motors		-	-	-	-
Pn483						
Pn484						
Pn500	Positioning Completed Width		0 to 250 reference units	1 reference unit	7 reference units	Immediately
Pn501	Zero Clamp Level		0 to 10000 min <sup>-1</sup>	1 min <sup>-1</sup>	10 min <sup>-1</sup>	Immediately
Pn502	Rotation Detection Level		1 to 10000 min <sup>-1</sup>	1 min <sup>-1</sup>	20 min <sup>-1</sup>	Immediately
Pn503	Speed Coincidence Signal Output Width		0 to 100 min <sup>-1</sup>	1 min <sup>-1</sup>	10 min <sup>-1</sup>	Immediately
Pn504	NEAR Signal Width		1 to 250 reference units	1 reference unit	7 reference units	Immediately
Pn505	Overflow Level		1 to 32767reference units	256 reference units	1024 reference u	Immediately
Pn506	Brake Reference - Servo OFF Delay Time		0 to 50 (0 to 500 ms)	10 ms	0 ms	Immediately
Pn507	Brake Reference Output Speed Level		0 to 10000 min <sup>-1</sup>	1 min <sup>-1</sup>	100 min <sup>-1</sup>	Immediately
Pn508	Timing for Brake Reference Output during Motor Operation		10 to 100 (100 to 1000 ms)	10 ms	500 ms	Immediately
Pn509	Momentary Hold time		20 to 1000 ms	1 ms	20 ms	Immediately

Parameter No.	Name		Setting Range	Units	Factory Setting	Setting Validation	
Pn50A	Input Signal Selections 1		-	-	2100	After restart	
	<b>Digit</b>	<b>Function Name</b>	<b>Setting</b>	<b>Explanation</b>			
	0	Input Signal Allocation Mode	0	Sets the input signal allocation for the sequence to the same one as for the Yaskawa special servo amplifier			
			1	Possible to freely allocate the input signals			
	1	/S-ON Signal Mapping (Servo ON when low)	0	Inputs from the SI0 (CN1-40). Input terminal			
			1	Inputs from the SI1 (CN1-41). Input terminal			
			2	Inputs from the SI2 (CN1-42). Input terminal			
			3	Inputs from the SI3 (CN1-43). Input terminal			
			4	Inputs from the SI4 (CN1-44). Input terminal			
			5	Inputs from the SI5 (CN1-45). Input terminal			
			6	Inputs from the SI6 (CN1-46). Input terminal			
			7	Sets signal ON			
			8	Sets signal OFF			
			9	Inputs the reverse signal from SI0 (CN1-40) input terminal			
			A	Inputs the reverse signal from SI1 (CN1-41) input terminal			
			B	Inputs the reverse signal from SI2 (CN1-42) input terminal			
			C	Inputs the reverse signal from SI3 (CN1-43) input terminal			
			D	Inputs the reverse signal from SI4 (CN1-44) input terminal			
			E	Inputs the reverse signal from SI5 (CN1-45) input terminal			
			F	Inputs the reverse signal from SI6 (CN1-46) input terminal			
	2	/P-CON Signal Mapping (P control when low)	0 to F	Same as above			
	3	/P-OT Signal Mapping (Overtravel when high)	0 to F	Same as above			
Pn50B	Input Signal Selections 2		-	-	6543	After restart	
	<b>Digit</b>	<b>Function Name</b>	<b>Setting</b>	<b>Explanation</b>			
	0	N-OT Signal Mapping (Overtravel when high)	0 to F	Same as Pn50A.1			
	1	/ALM-RST Signal Mapping (Alarm Reset when low.)	0 to F	Same as Pn50A.1			
	2	/P-CL Signal Mapping(Torque control when low.)	0 to F	Same as Pn50A.1			
	3	/N-CL Signal Mapping(Torque control when low.)	0 to 8	Same as Pn50A.1			
Pn50C	Input Signal Selections 3		-	-	8888	After restart	
	<b>Digit</b>	<b>Function Name</b>	<b>Setting</b>	<b>Explanation</b>			
	0	/SPD-D Signal Mapping (Internal Set Speed Selection)	0 to F	Same as Pn50A.1			
	1	/SPD-A Signal Mapping (Internal Set Speed Selection)	0 to F	Same as Pn50A.1			
	2	/SPD-D Signal Mapping (Internal Set Speed Selection)	0 to F	Same as Pn50A.1			
	3	/C-SEL Signal Mapping (Control Mode Switching)	0 to F	Same as Pn50A.1			
Pn50D	Input Signal Selections 4		--	8888	After restart		
	<b>Digit</b>	<b>Function Name</b>	<b>Setting</b>	<b>Explanation</b>			
	0	/ZCLAMP Signal Mapping (Zero clamping)	0 to F	Same as Pn50A.1			
	1	/INHIBIT Signal Mapping (Disabling Reference Pulse)	0 to F	Same as Pn50A.1			
	2	/G-SEL Signal Mapping (Gain Switching)	0 to F	Same as Pn50A.1			
	3	(Reserved)	0 to F	Same as Pn50A.1			
Pn50E	Output Signal Selections 1		-	-	3211	After restart	
	<b>Digit</b>	<b>Function Name</b>	<b>Setting</b>	<b>Explanation</b>			
	0	/COIN Signal Mapping	0	Disabled			
			1	Outputs from the SO1 (CN1-25, 26) output terminal			
			2	Outputs from the SO2 (CN1-27, 28) output terminal			
			3	Outputs from the SO3 (CN1-29, 30) output terminal			
	1	/V-CMP Signal Mapping	0 to 3	Same as above			
	2	/TGON Signal Mapping	0 to 3	Same as above			
	3	/S-RDY Signal Mapping	0 to 3	Same as above			
Pn50F	Output Signal Selections 2		--	0000	After restart		
	<b>Digit</b>	<b>Function Name</b>	<b>Setting</b>	<b>Explanation</b>			
	0	/CLT Signal Mapping	0 to 3	Same as Pn50E.0			
	1	Speed Limit Detection Signal Mapping (/VLT)	0 to 3	Same as Pn50E.0			
	2	Brake Interlock Signal Mapping (/BK)	0 to 3	Same as Pn50E.0			
	3	Warning Signal Mapping (/WARN)	0 to 3	Same as Pn50E.0			
Pn510	Output Signal Selections 3		-	-	0000	After restart	
	<b>Digit</b>	<b>Function Name</b>	<b>Setting</b>	<b>Explanation</b>			
	0	Near Signal Mapping (/NEAR)	0 to 3	Same as Pn50E.0			
	1	Reserved (Do not Change)	0 to 3	Same as Pn50E.0			
	2	Not Used	0				
	3	Not Used	0				

Parameter No.	Name	Setting Range	Units	Factory Setting	Setting Validation
Pn511	Reserved (Do not change)	-	-	8888	
Pn512				0000	
Pn51A				10	
Pn550				100	
Pn551				100	
Pn580	Reserved (Do not change) only available for linear motors	-	-	10	
Pn581				20	
Pn582				10	
Pn583				100	
Pn600	Regenerative Resistor Capacity	Depends on SERVOPACK Capacity *2	10 W	0 W	Immediately
Pn601	Reserved (Do not change)	Depends on SERVOPACK Capacity *2	-	0 W	Immediately

### Monitor Mode Details

Monitor No.	Monitor item	Unit	Explanation
Un000	Speed Feedback	min <sup>-1</sup>	Displays the actual motor speed.
Un001	Speed Command	min <sup>-1</sup>	Displays the speed command value or internally set speed value during speed control. 0 is displayed during pulse-train input control.
Un002	Torque Command	%	Displays the command value for a current loop that is expressed by treating the rated torque as 100%.
Un003	Number of Pulses from Z-Phase	Pulses	Displays the number of pulses from Z-Phase in encoder resolution units (times 4).
Un004	Electrical Angle	degrees	Displays the motor electrical angle.
Un005	Input Signal Monitor	---	Displays driver I/O signal status by turning ON or OFF each signal bit.
Un006	Output Signal Monitor	---	
Un007	Command Pulse Speed Display	r/min	Displays command pulse frequency converted in r/min.
Un008	Position Deviation (Error Counter)	Reference units	Displays the number of pulses accumulated in the error counter (Position Deviation) that are converted in reference units (input pulse references).
Un009	Motor Load Rate	%	Displays effective torque at intervals of 10 s that is expressed by treating the rated torque as 100%.
Un00A	Regeneration Load Rate	%	Displays the amount of regeneration energy absorbed at intervals of 10 s that is expressed by treating the Pn600 setting (Regenerative Resistor Capacity) as 100%.
Un00B	Dynamic Brake Resistance Load Rate	%	Displays the resistance load factor at intervals of 10 s that is expressed by treating the rated load factor as 100%.
Un00C	Input Pulse Counter	Reference units	Displays the number of counted input pulses in hexadecimal notation.
Un00D	Feedback Pulse Counter	Pulses	Displays the number of counted encoder feedback pulses in hexadecimal notation (multiplied by 4).

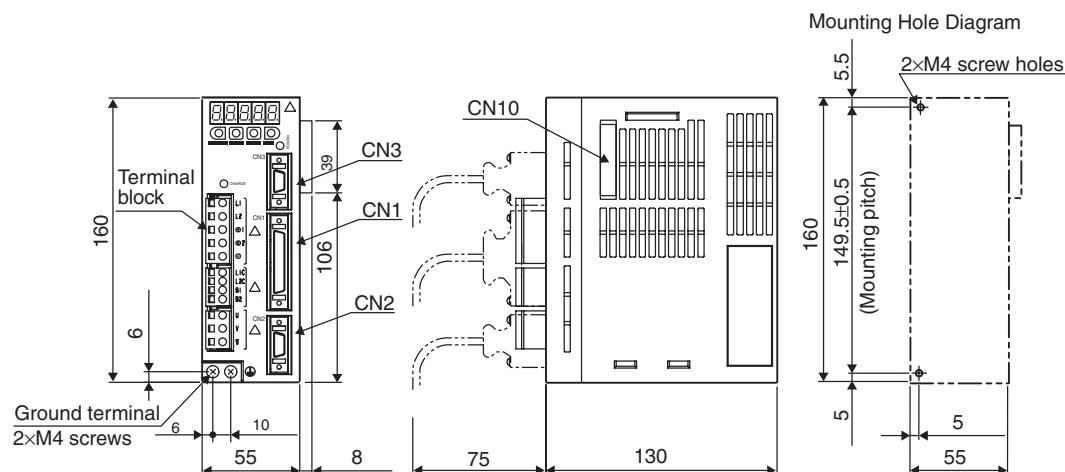
### List of Function Modes

Parameter No.	Function
Fn000	Alarm traceback data display
Fn001	Rigidity setting during online autotuning
Fn002	JOG mode operation
Fn003	Zero-point search mode
Fn004	Fixed parameter
Fn005	Parameter setting initialization
Fn006	Alarm traceback data clear
Fn007	Writing to EEPROM moment of inertia ratio data obtained from online autotuning
Fn008	Absolute encoder multiturn reset and encoder alarm reset
Fn009	Automatic tuning of analog (speed, torque) reference offset
Fn00A	Manual adjustment of speed reference offset
Fn00B	Manual adjustment of torque reference offset
Fn00C	Manual zero-adjustment of analog monitor output
Fn00D	Manual gain-adjustment of analog monitor output
Fn00E	Automatic offset-adjustment of motor current detection signal
Fn00F	Manual offset-adjustment of motor current detection signal
Fn010	Password setting (protects parameters from being changed)
Fn011	Motor models display
Fn012	Software version display
Fn013	Multiturn limit setting change when a Multiturn Limit Disagreement Alarm (A.CC) occurs
Fn014	Application module detection results clear

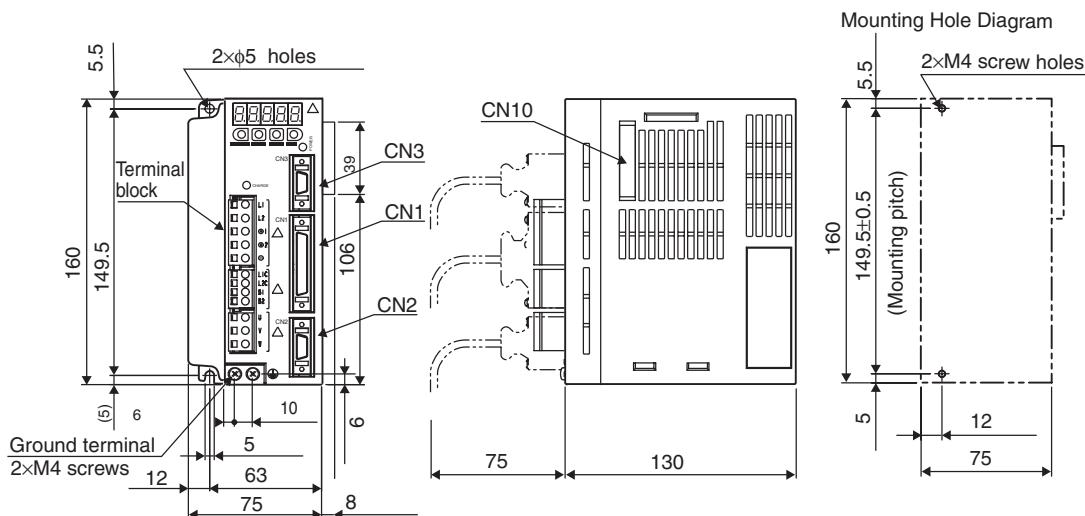
## Dimensions

## Servodrives

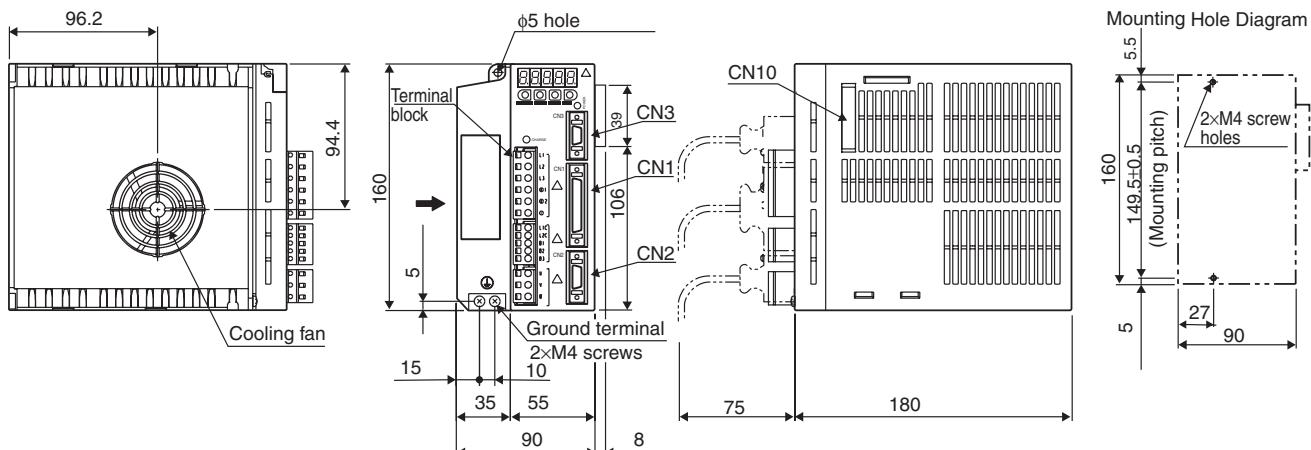
**XD-P3-M□ to XD-02-M□ (230V, 30 to 200W)**



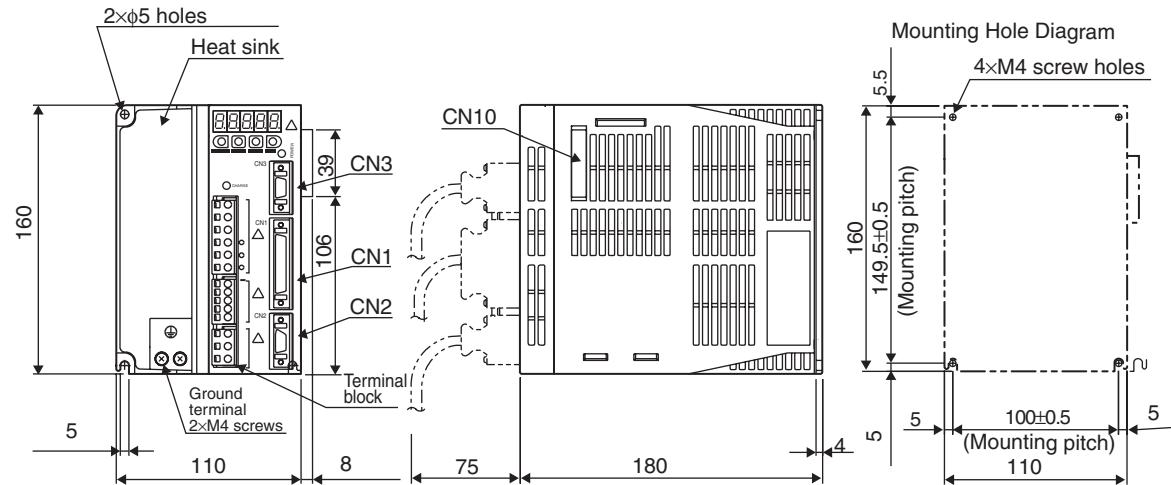
XD-04-M□ (230V, 400W)



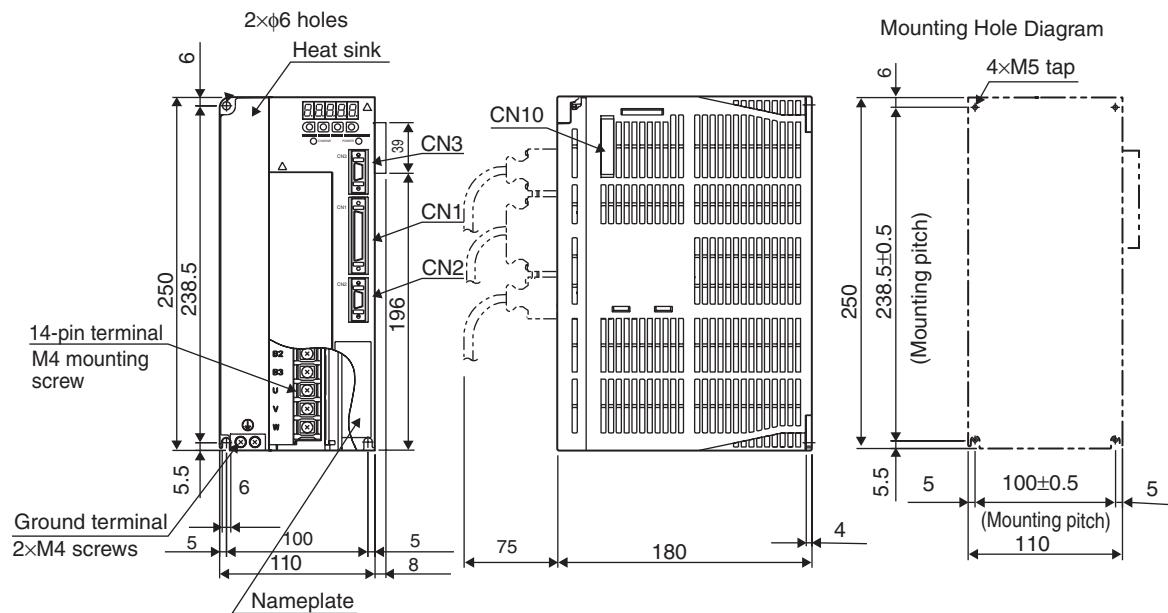
XD-08-M□ (230V, 750W)



## XD-05-T□ to -15-T□ (400V, 0.5 to 1.5kW)

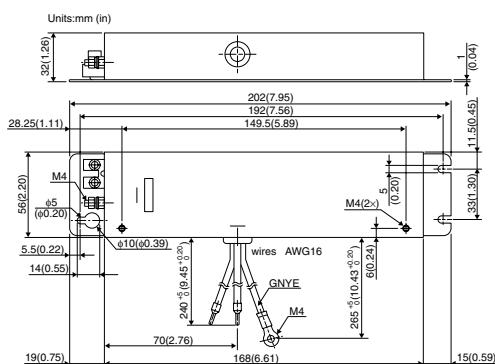


## XD-20-T□, XD-30-T□ (400V, 2/3kW)



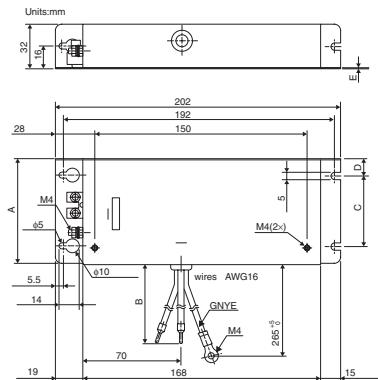
## Filters

### R88A-FIW104-SE



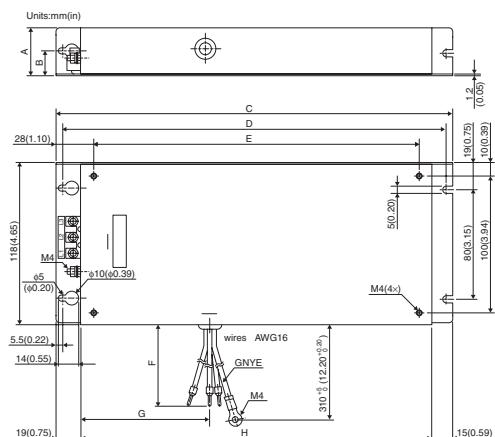
### R88A-FIW107-SE, R88A-FIW115-SE

Model	R88A-FIW107-SE	R88A-FIW115-SE
Dimensions in mm	A 75 B 240 <sup>±5</sup> C 50 D 12 E 1	90 300 <sup>±5</sup> 60 15 1.2



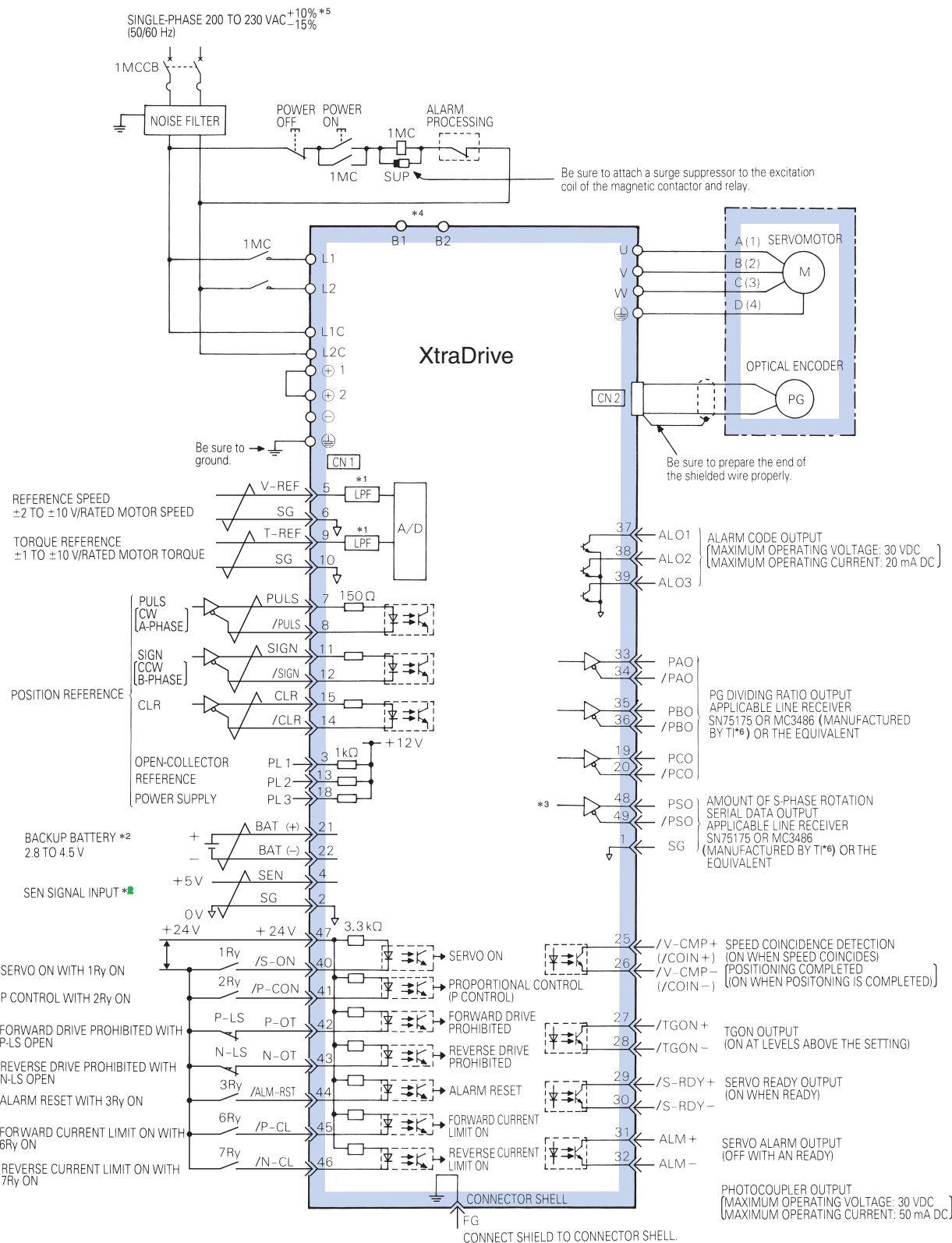
### R88A-FIW4006-SE, R88A-FIW4010-SE

Model	R88A-FIW4006-SE	R88A-FIW4010-SE
Dimensions in mm (in)	A 32 (1.26) B 16 (0.63) C 202 (7.95) D 192 (7.56) E 150 (5.91) F 300 (11.81) G 70 (2.76) H 168 (6.61)	35 (1.38) 18 (0.71) 291 (11.46) 281 (11.06) 239 (9.41) 270 (10.63) 90 (3.54) 257 (10.12)



## Installation

## Single-phase, 230VAC



\*1 The time constant for the primary filter is 47 µs.

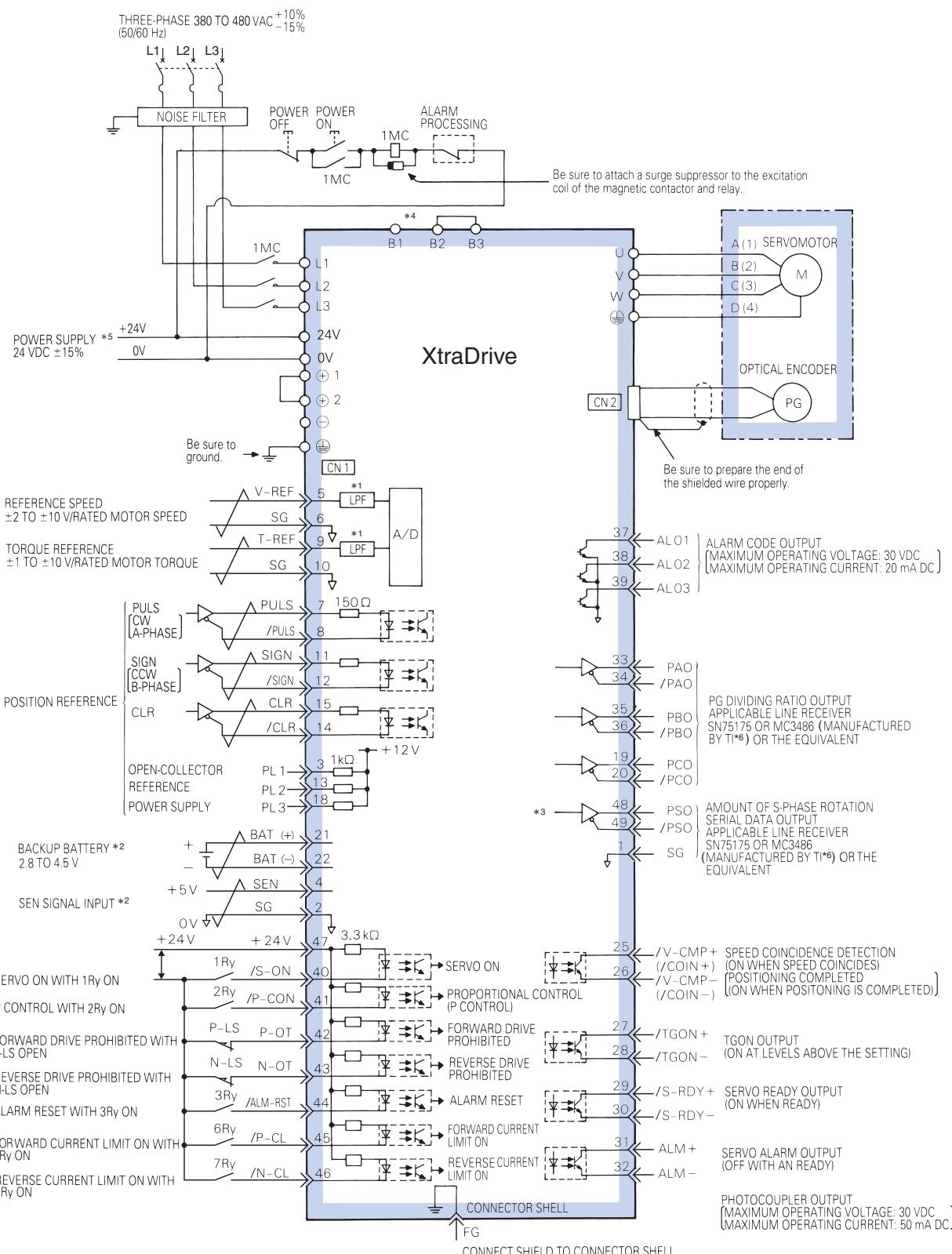
\*2 Connect when using an absolute encoder.

\*3 Used only with an absolute encoder.

\*4 Regenerative resistor can be connected between B1 and B2.

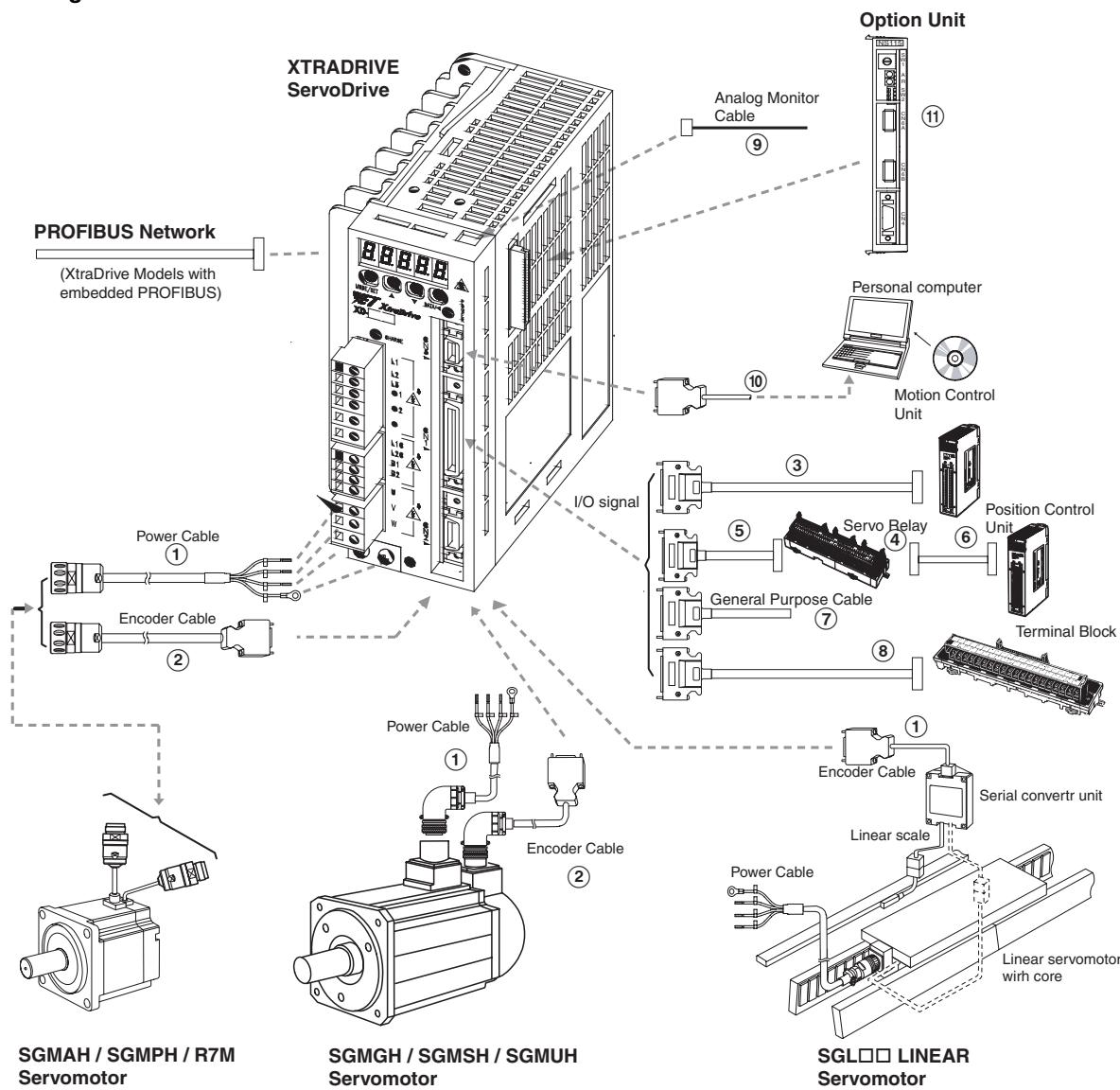
\*5 For types XD-08-M□, voltage is 220 to 230 VAC (+10% -15%).

\*6 TI stands for Texas Instruments Inc.

**Three-phase, 400VAC**

## Ordering Information

## System Configuration



## Servo Drives

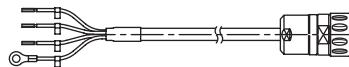
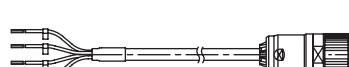
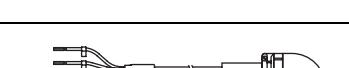
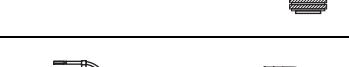
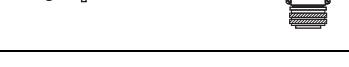
Specifications		XtraDrive	XtraDrive-DP With PROFIBUS	Compatible Servomotors		
				Sigma-II	SmartStep	Sigma Linear Motors
1 Phase 200 V AC	30 W	XD-P3-MN01	XD-P3-MSD0	SGMAH-A3A□	R7M-A03030-□	-
	50 W	XD-P5-MN01	XD-P5-MSD0	SGMAH-A5D□	R7M-A05030-□	SGLGW-30A050□
	100 W	XD-01-MN01	XD-01-MSD0	SGMAH-01A□, SGMPH-01A□	R7M-A10030-□, R7M-AP10030-□	SGLGW-30A080□, SGLGW-40A140□
	200 W	XD-02-MN01	XD-02-MSD0	SGMAH-02A□, SGMPH-02A□	R7M-A20030-□, R7M-AP20030-□	SGLFW-20A□, SGLFW-35A120□, SGLGW-40A253A□, SGLGW-60A140□
	400 W	XD-04-MN01	XD-04-MSD0	SGMAH-04A□, SGMPH-04A□	R7M-A40030-□, R7M-AP40030-□	SGLGW-40A365A□, SGLGW-60A253A□
	750 W	XD-08-MN	XD-08-MSD0	SGMAH-08A□, SGMPH-08A□	R7M-A75030-□, R7M-AP75030-□	SGLFW-35A230□, SGLFW-50A200□, SGLGW-60A365A□
3 Phase 400 V AC	0.5 kW	XD-05-TN	XD-05-TSD0	SGMGH-05D□, SGMAH-03D□, SGMPH-02D□/04D□	-	SGLFW-35D□
	1.0 kW	XD-10-TN	XD-10-TSD0	SGMGH-09D□, SGMSH/UH-10D□, SGMAH-07D□, SGMPH-08D□	-	SGLFW-50D200□, SGLTW-35D170□, SGLTW-50D170□
	1.5 kW	XD-15-TN	XD-15-TSD0	SGMGH-13D□, SGMSH/UH-15D□, SGMPH-15D□	-	SGLFW-50D380□, SGLFW-1ZD200□
	2.0 kW	XD-20-TN	XD-20-TSD0	SGMGH-20D□, SGMSH-20D□	-	SGLTW-35D320□, SGLTW-50D320□
	3.0 kW	XD-30-TN	XD-30-TSD0	SGMGH-30D□, SGMSH/UH-30D□	-	SGLFW-1ZD380□, SGLTW-40D400□

**Note:** SGLGW-□ Linear motor combination is made considering the use of Standard Magnets. Refer to the Linear motors chapter for details

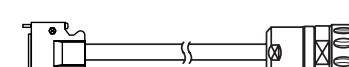
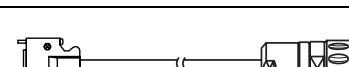
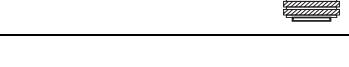
## Servomotors

**Note:** Refer to the Servo System chapter for motor details.

## Power Cables

Symbol	Specifications	Model	Appearance
A	For 200V Servomotors without brake SGMAH-□□A□□□1D-OY SGMPH-(01/02/04/08)A□□□1D-OY R7M-A(P)□□□30-S1-D	3 m R88A-CAWA003S-DE 5 m R88A-CAWA005S-DE 10 m R88A-CAWA010S-DE 15 m R88A-CAWA015S-DE 20 m R88A-CAWA020S-DE	
	For 200V Servomotors with brake SGMAH-□□A□□□CD-OY SGMPH-(01/02/04/08)A□□□CD-OY R7M-A(P)□□□30-BS1-D	3 m R88A-CAWA003B-DE 5 m R88A-CAWA005B-DE 10 m R88A-CAWA010B-DE 15 m R88A-CAWA015B-DE 20 m R88A-CAWA020B-DE	
	For 400V Servomotors without brake SGMAH-□□D□□□1D-OY SGMPH-□□D□□□1D-OY	3 m R88A-CAWK003S-DE 5 m R88A-CAWK005S-DE 10 m R88A-CAWK010S-DE 15 m R88A-CAWK015S-DE 20 m R88A-CAWK020S-DE	
	For 400V Servomotors with brake SGMAH-□□D□□□CD-OY SGMPH-□□D□□□CD-OY	3 m R88A-CAWK003B-DE 5 m R88A-CAWK005B-DE 10 m R88A-CAWK010B-DE 15 m R88A-CAWK015B-DE 20 m R88A-CAWK020B-DE	
	For 400V Servomotors SGMGH-(05/09/13)D□ SGMSH-(10/15/20)D□ SGMUH-(10/15)D□ For servomotors with Brake a separate cable (R88A-CAWC0□B-E) is needed	3 m R88A-CAWC003S-E 5 m R88A-CAWC005S-E 10 m R88A-CAWC010S-E 15 m R88A-CAWC015S-E 20 m R88A-CAWC020S-E	
	For 400V Servomotors SGMGH-(20/30)D□ SGMSH-30D□ SGMUH-30D□ For servomotors with Brake a separate cable (R88A-CAWC0□B-E) is needed	3 m R88A-CAWD003S-E 5 m R88A-CAWD005S-E 10 m R88A-CAWD010S-E 15 m R88A-CAWD015S-E 20 m R88A-CAWD020S-E	
	Brake Cable only. For 400V Servomotors with Brake SGMGH-□□D□ SGMSH-□□D□ SGMUH-□□D□	3 m R88A-CAWC003B-E 5 m R88A-CAWC005B-E 10 m R88A-CAWC010B-E 15 m R88A-CAWC015B-E 20 m R88A-CAWC020B-E	

## Encoder Cables (for CN2)

Symbol	Specifications	Model	Appearance
B	Encoder cable for Sigma-II (SGMAH/PH) Servomotors SGMAH-□□□□□□□D-OY SGMPH-□□□□□□□D-OY	3 m XD-CRWA003-DE 5 m XD-CRWA005-DE 10 m XD-CRWA010-DE 15 m XD-CRWA015-DE 20 m XD-CRWA020-DE	
	Encoder cable for SmartStep Servomotors R7M-A(P)□□□30-S1-D	3 m XD-CRA003-DE 5 m XD-CRA005-DE 10 m XD-CRA010-DE 15 m XD-CRA015-DE 20 m XD-CRA020-DE	
	Encoder cable for Sigma-II (SGMGH/SH/UH/BH) Servomotors SGMGH-□ SGMSH-□ SGMUH-□	3 m XD-CRWB003N-E 5 m XD-CRWB005N-E 10 m XD-CRWB010N-E 15 m XD-CRWB015N-E 20 m XD-CRWB020N-E	
	Encoder cable to the serial converter of Sigma Linear Motors (Refer to the Linear motors chapter for more details)	3 m XD-CLP70-03-E 5 m XD-CLP70-05-E 10 m XD-CLP70-10-E 15 m XD-CLP70-15-E 20 m XD-CLP70-20-E	

## Control Cables (for CN1)

Symbol	Description	Connect to		Model
(3)	Control Cable (1 Axis)	Motion Control Units CS1W-MC221 CS1W-MC421 C200H-MC221	1 m 2 m 3 m 5 m	R88A-CPW001M1 R88A-CPW002M1 R88A-CPW003M1 R88A-CPW005M1
	Control Cable (2 Axis)	Motion Control Units CS1W-MC221 CS1W-MC421 C200H-MC221	1 m 2 m 3 m 5 m	R88A-CPW001M2 R88A-CPW002M2 R88A-CPW003M2 R88A-CPW005M2
	Terminal Block (4 Axes)	Motion Control Unit C200HW-MC402-E	-	R88A-TC04-E
	Servodrive connecting Cable (1 Axis)		1 M	R88A-CMUK001J3-E2
	PLC Unit Control Cables (4 Axes)		1 m 1 m	R88A-CMX001S-E R88A-CMX001J1-E
(4)	Servo Relay Unit	CS1W-NC1□3, CJ1W-NC1□3, or C200HW-NC113 Position Control Unit		XW2B-20J6-1B (1 axis)
		CS1W-NC2□3/4□3, CJ1W-NC2□3/4□3, or C200HW-NC213/413 Position Control Unit		XW2B-40J6-2B (2 axes)
		CQM1H-PLB21 CQM1-CPU43		XW2B-20J6-3B (1 axis)
		CJ1M-CPU22/23		XW2B-20J6-8A (1 axis) XW2B-40J6-9A (2 axes)
(5)	Cable to Servo drive	Servo Relay Units	1 m	XW2Z-100J-B4
		XW2B-□0J6-□B	2 m	XW2Z-200J-B4
(6)	Position Control Unit Connecting Cable	C200H-NC112	0.5 m 1 m	XW2Z-050J-A1 XW2Z-100J-A1
		C200H-NC211	0.5 m 1 m	XW2Z-050J-A2 XW2Z-100J-A2
		CQM1-CPU43-V1 and CQM1H-PLB21	0.5 m 1 m	XW2Z-050J-A3 XW2Z-100J-A3
		CS1W-NC113 and C200HW-NC113	0.5 m 1 m	XW2Z-050J-A6 XW2Z-100J-A6
		CS1W-NC213/413 and C200HW-NC213/413	0.5 m 1 m	XW2Z-050J-A7 XW2Z-100J-A7
		CS1W-NC133	0.5 m 1 m	XW2Z-050J-A10 XW2Z-100J-A10
		CS1W-NC233/433	0.5 m 1 m	XW2Z-050J-A11 XW2Z-100J-A11
		CJ1W-NC113	0.5 m 1 m	XW2Z-050J-A14 XW2Z-100J-A14
		CJ1W-NC213/413	0.5 m 1 m	XW2Z-050J-A15 XW2Z-100J-A15
		CJ1W-NC133	0.5 m 1 m	XW2Z-050J-A18 XW2Z-100J-A18
		CJ1W-NC233/433	0.5 m 1 m	XW2Z-050J-A19 XW2Z-100J-A19
		CJ1M-CPU22/23	0.5 m 1 m	XW2Z-050J-A27 XW2Z-100J-A27
(7)	Control Cable	For General purpose Controllers	1 m 2 m	R88A-CPW001S or JZSP-CKI01-1 R88A-CPW002S or JZSP-CKI01-1
(8)	Relay Terminal Block Cable	General-purpose Controller	1 m 2 m	R88A-CTW001N R88A-CTW002N
	Relay Terminal Block		-	XW2B-50G5

## **Cable (for CN5)**

Symbol	Name	Model
(9)	Analog Monitor Cable	R88A-CMW001S or DE9404559

## Options (for CN3)

Symbol	Name	Model
(10)	Computer Connecting Cable	R88A-CCW002P2 or JZSP-CMS02

## **Option Units (for CN10)**

Symbol	Name	Model
(11)	DeviceNet Interface unit with Positioning Functionality	JUSP-NS300

## Battery Backup for absolute encoder

Name	Model
Battery (Required for servomotors with absolute encoder)	JZSP-BA01 ER6VC3 (3.6V)

## Connectors

Specification	Model
Control I/O connector (For CN1)	R88A-CNU11C or JZSP-CKI9
XtraDrive 200V Connector Kit. (For 200V Motors SGMAH/PH-□□A□□□D-OY and R7M-A□-D)	Connectors included DE9406973 SPOC-17H-FRON169 SPOC-06K-FSDN169
XtraDrive 400V Connector Kit. (For 400V Motors SGMAH/PH-□□D□□□D-OY)	Connectors included DE9406973 SPOC-17H-FRON169 LPRA-06B-FRBN170
Sigma-II Drive Encoder connector (For CN2)	DE9406973 or R88A-CNU01R
Hypertac Encoder Connector IP67 (For Motors SGMAH/PH-□□□□□□□D-OY and R7M-A□-D)	SPOC-17H-FRON169
Hypertac Power Connector IP67, 200V. (For 200V Motors SGMAH/PH-□□A□□□□D-OY and R7M-A□-D)	SPOC-06K-FSDN169
Hypertac Power Connector IP67, 400V. (For 400V Motors SGMAH/PH-□□D□□□□D-OY)	LPRA-06B-FRBN170
Military Encoder connector IP67 (For Motors SGMGH-□, SGMSH-□, SGMUH-□)	MS3108E20-29S
Military Power connector IP67 (For 400V Motors SGMGH-(05/10/13)D□, SGMSH-(10/15/20)D□, SGMUH-(10/15)D□)	MS3108E18-10S
Military Power connector IP67 (For 400V Motors SGMGH-(20/30)D□, SGMSH-30D□, SGMUH-30D□)	MS3108E22-22S
Military Brake connector IP67 (For 400V ServoMotors SGMGH-□, SGMSH-□, SGMUH-□)	MS3108E10SL-3S

## Filters

Specifications (applicable Servo Drive)	Model	Rated Current	Rated Voltage
XD-P3-M□, XD-P5-M□, XD-01-M□, XD-02-M□	R88A-FIW104-SE	4 A	250 VAC Single-Phase
XD-04-M□	R88A-FIW107-SE	7 A	
XD-08-M□	R88A-FIW115-SE	15 A	
XD-05-T□, XD-10-T□, XD-15-T□	R88A-FIW4006-SE	6 A	400 VAC
XD-20-T□, XD-30-T□	R88A-FIW4010-SE	10 A	Three-Phase

## Computer Software

Specifications	Model
XtraWare	MOTION TOOLS

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

# Frequency Inverters

Varispeed J7	193	
SYS DRIVE 3G3MV	205	
Varispeed E7	219	
Varispeed L7	237	
Varispeed F7	253	
Inverter PLCs	3G3MV Inverter PLC F7/L7/E7 Inverter PLC	271 279



CIMR-J7AZ

# Varispeed J7

## Small, Simple and smart

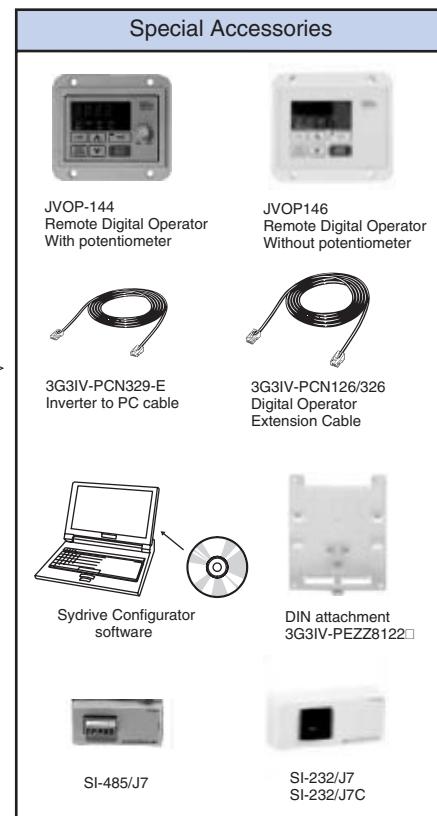
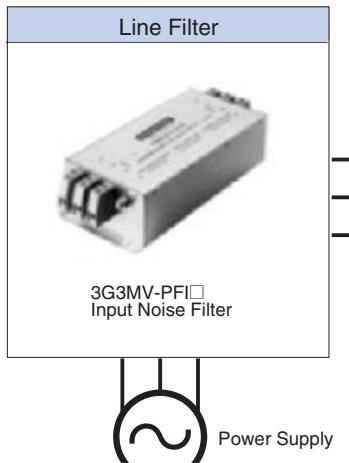
- V/f controlled inverter
- Compact size
- 150% overload / 60sec
- Overload detection
- Motor thermal function
- Freely configurable V/f curve
- 4 programmable digital input
- 1 programmable digital output
- 1 programmable analog output
- Optional RS-232C/485 communication - Modbus
- CE, UL, and cUL marking

## Ratings

- 200V Class single-phase 0.1 to 1.5 KW
- 200V Class three-phase 0.1 to 4.0 KW
- 400V Class three-phase 0.2 to 4.0 KW

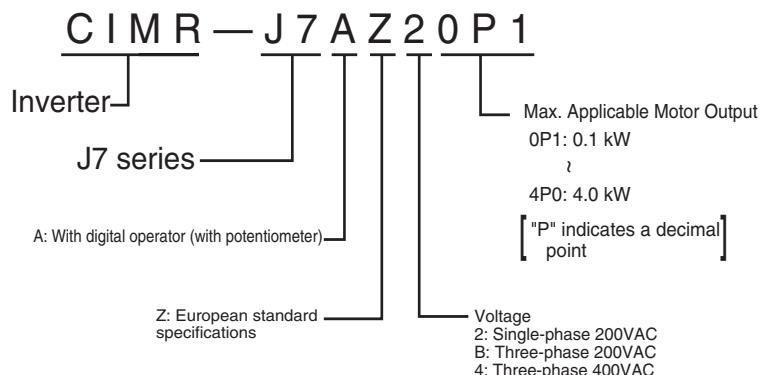


## System Configuration



## Specifications

## Type Designation



Voltage Class		200V Single/three-phase								400V three-phase															
Model CIMR-J7AZ□	Three-phase	20P1	20P2	20P4	20P7	21P5	22P2	24P0	40P2	40P4	40P7	41P5	42P2	43P0	44P0										
	Single-phase <sup>1</sup>	B0P1	B0P2	B0P4	B0P7	B1P5	—	—	—	—	—	—	—	—	—	—	—								
Max. Applicable Motor Output kW (HP) <sup>2</sup>		0.12	0.25	0.55	1.1	1.5	2.2	4.0	0.37	0.55	1.1	1.5	2.2	3.0	4.0										
Output Characteristics	Inverter Capacity kVA	0.3	0.6	1.1	1.9	3.0	4.2	6.7	0.9	1.4	2.6	3.7	4.2	5.5	7.0										
	Rated Output Current A	0.8	1.6	3	5	8	11	17.5	1.2	1.8	3.4	4.8	5.5	7.2	9.2										
	Max. Output Voltage V	3-phase, 200 to 230 V (proportional to input voltage) Single-phase, 200 to 240 V (proportional to input voltage)						3-phase, 380 to 460 V (proportional to input voltage)																	
	Max. Output Frequency	400 Hz (Programmable)																							
Power Supply	Rated Input Voltage and Frequency	3-phase, 200 to 230 V, 50/60Hz Single-phase, 200 to 240 V, 50/60Hz								3-phase, 380 to 460 V, 50/60Hz															
	Allowable Voltage Function	-15 to +10%																							
	Allowable Frequency Function	±5%																							

1. Single-phase series inverter output is three-phase (for three-phase motors)
2. Based on a standard 4-pole motor for max. applicable motor output. Select the inverter model whose rated current is larger than motor rated current

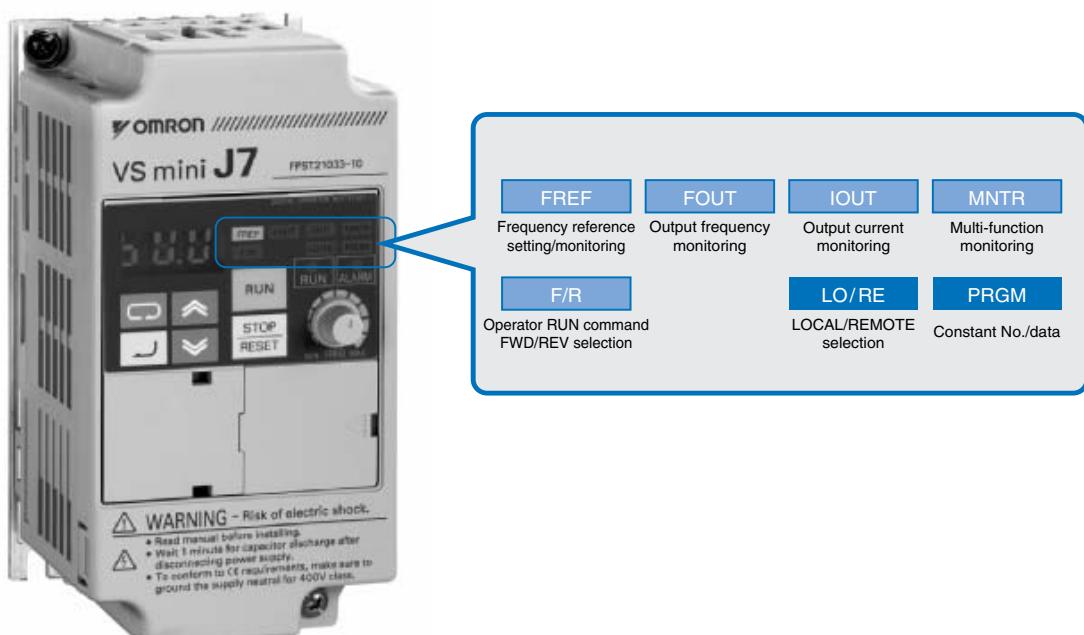
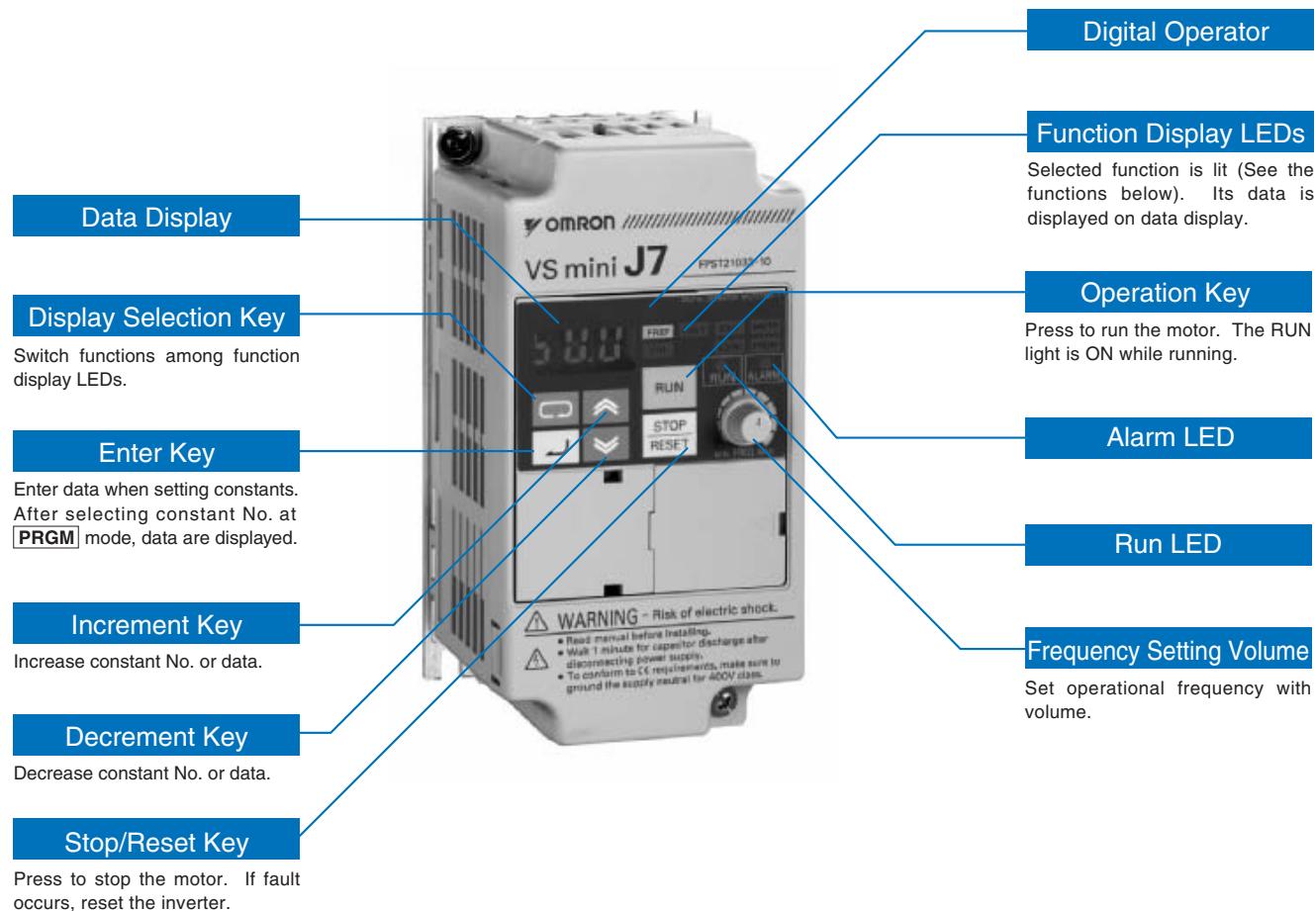
## Specifications

### Common Specifications

Model CIMR-J7AZ□	Specifications
Control functions	Sine wave PWM (V/f control)
	0.1 to 400Hz
	Digital reference: $\pm 0.01\%$ (-10 to +50°C), Analog reference: $\pm 0.5\%$ (25±10°C)
	Digital reference: 0.01Hz (less than 100Hz), 0.1Hz (100Hz or more) Analog reference: 1/1000 of max. output frequency
	0.01Hz
	150% rated output current for one minute
	0 to 10VDC (20kΩ), 4 to 20mA (250Ω), 0 to 20mA (250Ω), frequency setting volume (selectable)
	0.1 to 999 sec. (accel/decel time are independently programmed)
	Short-term average deceleration torque <sup>1</sup> : 0.1, 0.2kW (0.13HP, 0.25HP): 150% or more; 0.4/0.75kW (0.5HP, 1HP): 100% or more; 1.5 kW (2HP): 50% or more; 2.2kW (3HP) or more: 20% or more Continuous regenerative torque: Approx 20%
	Possible to program any V/f pattern
Functionality	Four of the following input signals are selectable: Forward/reverse run (3-wire sequence), fault reset, external fault (NO/NC contact input), multi-step speed operation, Jog command, accel/decel time select, external baseblock (NO/NC contact input), speed search command, UP/DOWN command, accel/decel hold command, LOCAL/REMOTE selection, communication/control circuit terminal selection, emergency stop fault, emergency stop alarm, self test
	Following output signals are selectable (NO/NC contact output): Fault, running, zero speed, speed agreed, frequency detection (output frequency $\leq$ or $\geq$ set value), during overtorque detection, minor error, during baseblock, operation mode, inverter run ready, during fault retry, during undervoltage detection, reverse running, during speed search, data output through communication
	Full-range automatic torque boost, slip compensation, 9-step speed operation (max.), restart after momentary power loss, DC injection braking current at stop/start (50% of inverter rated current, 0.5 sec, or less), frequency reference bias/gain, fault retry, speed search, frequency upper/lower limit setting, overtorque detection, frequency jump, accel/decel time switch, accel/decel prohibited, S-curve accel/decel, frequency reference with built-in volume, constants copy (option) MEMOBUS communications (Option)
	Status indicator LED: RUN and ALARM provided as standard LED's Digital operator: Available to monitor frequency reference, output frequency, output current
Protection	Motor Overload Protection Electronic thermal overload relay
	Instantaneous Overcurrent Motor coasts to a stop at approx. 250% of inverter rated current
	Overload Motor coasts to a stop after 1 minute at 150% of inverter rated output current
	Overvoltage Motor coasts to a stop if DC bus voltage exceed 410V (double for 400V class)
	Undervoltage Stops when DC bus voltage is approx. 200V or less (double for 400V class) (approx. 160V or less for single-phase series)
	Momentary Power Loss Following items are selectable: Not provided (stop if power loss is 15ms or longer), continuous operation if power loss is approx. 0.5s or shorter, continuous operation
	Cooling Fin Overheat Protected by thermister
	Stall Prevention Level Individual level stall prevention can be set during acceleration or constant running, provided/not provided setting available during deceleration.
	Cooling Fan Fault Detected by electronic circuit (fan lock detection)
	Ground Fault Protected by electronic circuit (operation level is approx. 250% of rated output current)
Ambient conditions	Power Charge Indication ON until the DC bus voltage becomes 50V or less, RUN lamp stays ON or digital operator LED stays ON. (Charge LED is provided for 400V)
	Degree of protection IP20
	Cooling Self cooling for 200V 0.1..0.75kW (single-phase) 0.1..0.4 kW (Three-phase) and for 400V 0.2..0.75kW Cooling fan for 200V (single-phase), 0.75kW..4.0kW (3-phase) and for 400V 1.5..4.0kW
	Ambient temperature -10°C to 50°C (non-freezing)
	Ambient humidity 90% RH or less (non-condensing)
	Storage temperature -20 °C..+60 °C (short-term temperature during transportation)
	Installation Indoor (no corrosive gas, dust, etc.)
Vibrations	Installation height Max. 1000 m
	Vibrations 10 to 20 Hz, 9.8 m/s <sup>2</sup> max; 20 to 50 Hz, 2m/s <sup>2</sup> max

1. Shows deceleration torque for uncoupled motor decelerating from 60Hz with the shortest possible deceleration time

## Digital operator



## Dimensions

IP 20 type 0.1 to 4 KW

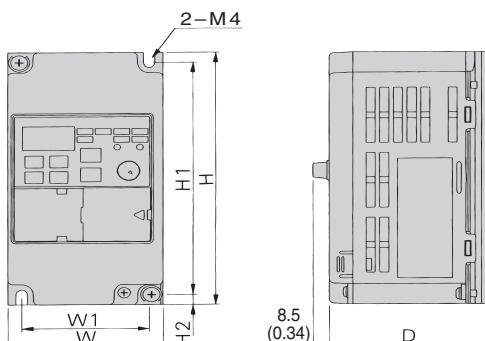


Figure 1

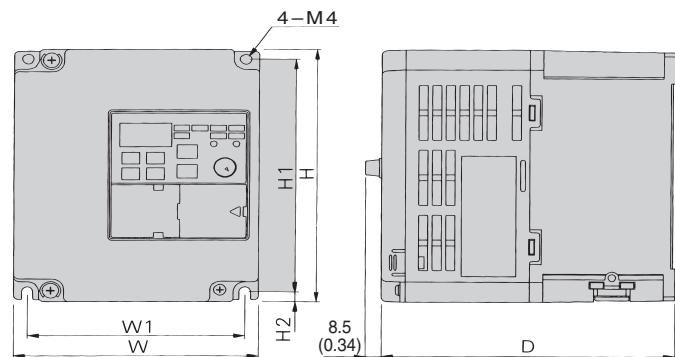
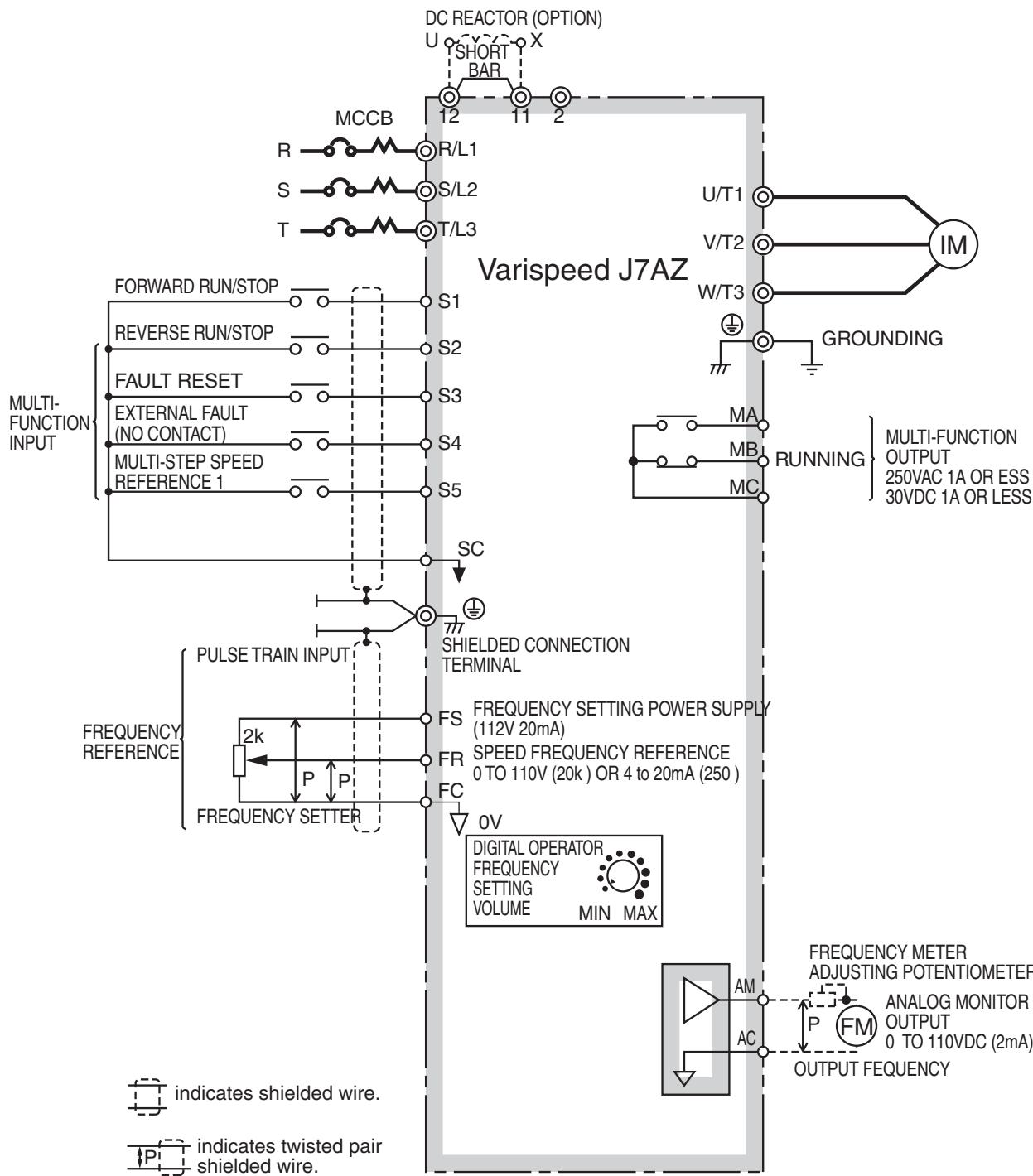


Figure 2

Voltage Class	Max. Applicable Motor Output kW	Inverter Model CIMR-J7AZ□	Figure	Dimensions in mm						Mass kg	Cooling Method	
				W	H	D	W1	H1	H2			
200V Three-phase	0.12	20P1	1	68	128	70	56	118	5	0.5	Self cooled	
	0.25	20P2				102				7.7		
	0.55	20P4				122				0.8		
	1.1	20P7				129	96	118		0.9	Fan cooled	
	1.5	21P5	2	108	128	154				1.3		
	2.2	22P2				161				1.5		
	4.0	24P0		140		128				2.1		
200V Single-phase	0.1	B0P1	1	68	128	70	56	118	5	0.5	Self cooled	
	0.2	B0P2				112				0.9		
	0.4	B0P4				129	96			1.5	Fan cooled	
	0.75	B0P7	2	108	128	154						
	1.5	B1P5				161						
400V Three-phase	0.37	40P2	2	108	128	81	96	118	5	1.0	Self cooled	
	0.55	40P4				99				1.1		
	1.1	40P7				129						
	1.5	41P5				154 (6.06)				1.5	Fan cooled	
	2.2	42P2	2	140	128	161	128			2.1		
	3.0	43P0										
	4.0	44P0										

## Installation

## Standard Connections

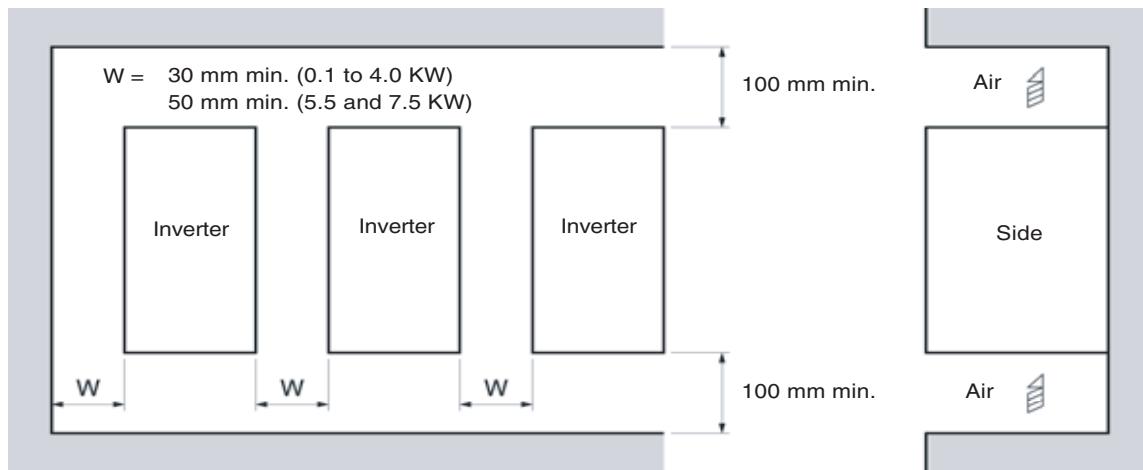


## Main Circuit

Terminal	Name	Function (Signal Level)
R/L1, S/L2, T/L3	AC Power Supply Input	Main circuit power supply input (Use R/L1 and S/L2 for single-phase power supply inverter. Do not use T/L3 of the models less than 0.75kW for other usage, such as a junction terminal.)
U/T1, V/T2, W/T3	Inverter Output	For inverter output
+2, +1	DC Reactor Connection	Remove the short bar between +2 and +1 when connecting DC reactor (option)
+1, -	DC Power Supply Input	For power supply input (+1: positive electrode; - : negative electrode)*
⊕	Grounding	For grounding (Grounding should be conforming to the local grounding code.)

## Control Circuit

Type	No.	Signal Name	Function	Signal Level
Digital input signals	S1	Multi-function Input Selection 1	Factory setting: Runs when CLOSED, stops when OPEN.	24VDC, 8mA photocoupler insulation
	S2	Multi-function Input Selection 2	Factory setting: Runs when CLOSED, stops when OPEN.	
	S3	Multi-function Input Selection 3	Factory setting: "Fault reset"	
	S4	Multi-function Input Selection 4	Factory setting: "External fault (NO contact)"	
	S5	Multi-function Input Selection 5	Factory setting: "Multi-step speed reference 1"	
	SC	Multi-function Input Selection Common	Common for control signal	
Analog input signals	FS	Power Supply Terminal for Frequency Setting	+12V (allowable current: 20mA max.)	
	FR	Speed Frequency Reference	0 to +10V DC (20kΩ) or 4 to 20mA (250Ω), 0 to 20 mA (250Ω) (resolution 1/1000)	
	FC	Frequency Reference Common	0V	
Digital output signals	MA	NO Contact Output	Factory setting: "Running"	Contact capacity 250VAC, 1A or less 30VDC, 1A or less
	MB	NO Contact Output		
	MC	Contact Output Common		
Analog output signals	AM	Analog Monitor Output	Factory setting: "Output frequency" 0 to +10V output	0 to 10V 2mA or less Resolution: 8bits
	AC	Analog Monitor Common	0V	

**Inverter Heat Loss****Three-phase 200 V Class**

CIMR-J7AZ□	20P1	20P2	20P4	20P7	21P5	22P2	24P0
Inverter Capacity kVA	0.3	0.6	1.1	1.9	3.0	4.2	6.7
Rated Current A	0.8	1.6	3.0	5.0	8.0	11.0	17.5
Heat Loss W	Fin	3.7	10.3	15.8	28.4	53.7	60.4
	Inside Unit	9.3	18.0	12.3	16.7	19.1	34.4
	Total Heat Loss	13.0	18.0	28.1	45.1	72.8	94.8
							149.1

**Single phase 200 V Class**

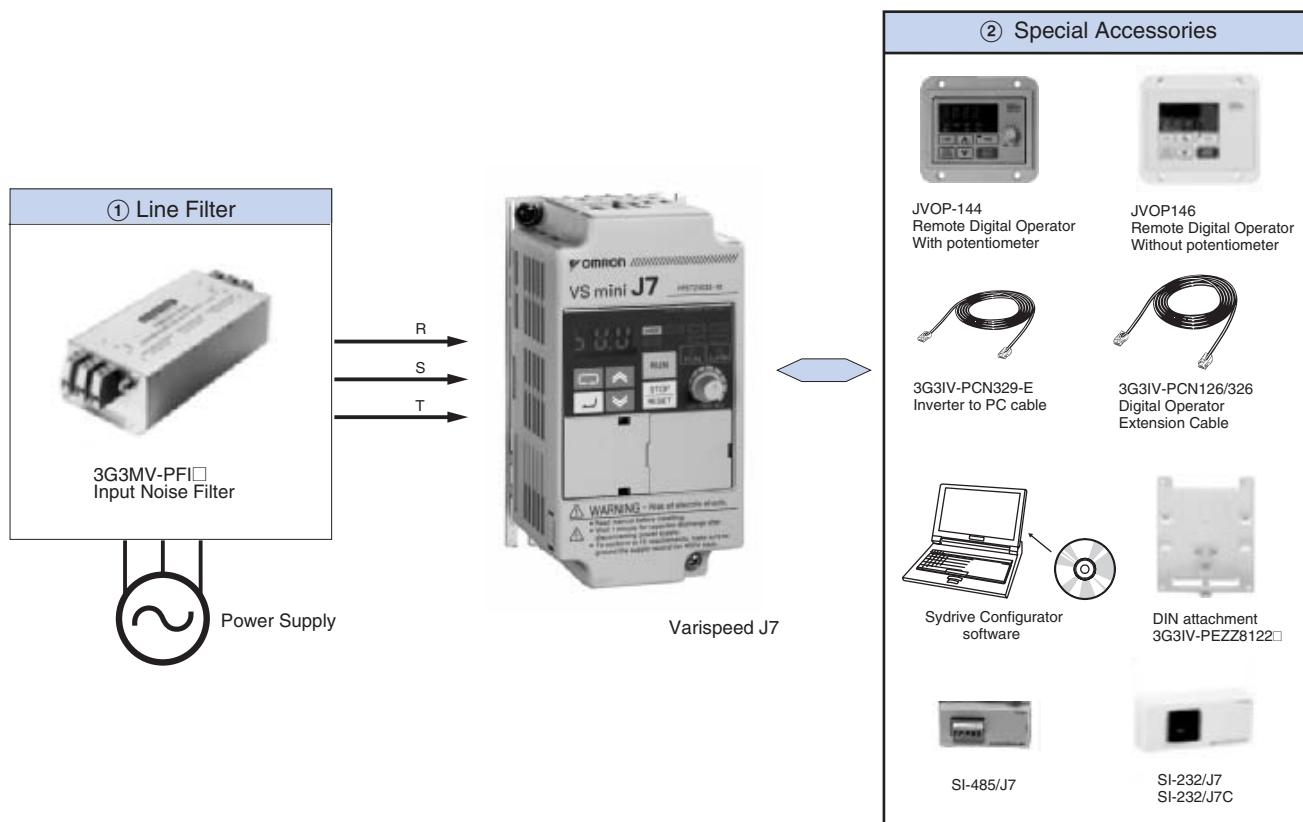
CIMR-J7AZ□	B0P1	B0P2	B0P4	B0P7	B1P5
Inverter Capacity kVA	0.3	0.6	1.1	1.9	3.0
Rated Current A	0.8	1.6	3.0	5.0	8.0
Heat Loss W	Fin	3.7	7.7	15.8	28.4
	Inside Unit	10.4	12.3	16.1	23.0
	Total Heat Loss	14.1	20.1	31.9	51.4
					82.8

**Three-phase 400 V Class**

CIMR-J7AZ□	40P2	40P4	40P7	41P5	42P2	43P0	44P0
Inverter Capacity kVA	0.9	1.4	2.6	3.7	4.2	5.5	7.0
Rated Current A	1.2	1.8	3.4	4.8	5.5	7.2	9.2
Heat Loss W	Fin	9.4	15.1	30.3	45.8	50.5	58.2
	Inside Unit	13.7	15.0	24.6	29.9	32.5	37.6
	Total Heat Loss	23.7	30.1	54.9	75.7	83.0	117.9

## Ordering Information

### System Configuration

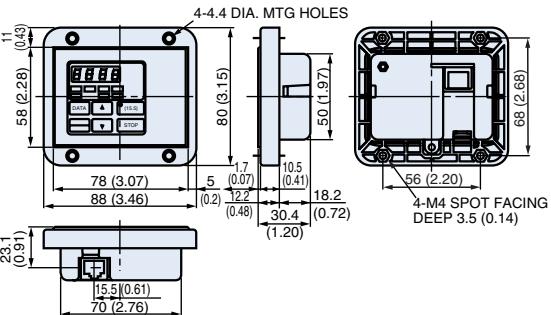
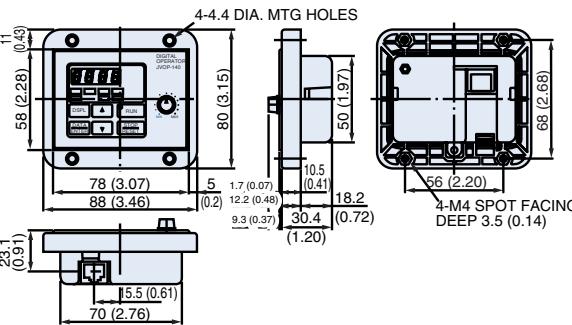
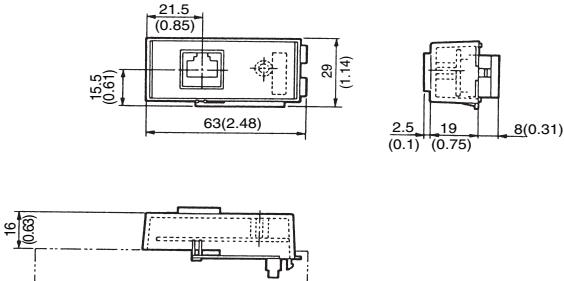
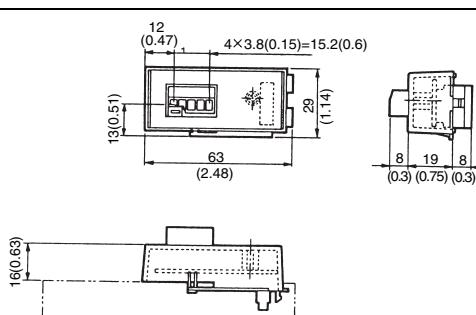


### ① Line Filters



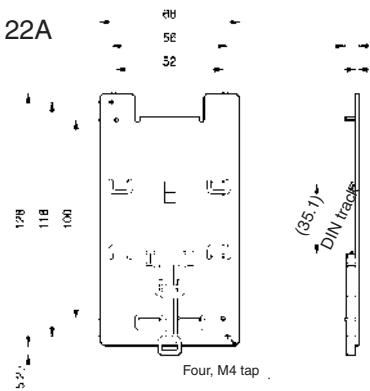
Inverter		Line filter			
Voltage	Model 3G3MV-A	Type 3G3JV-	Rated current (A)	Weight (kg)	Dimensions
3-Phase 200 V AC	20P1 / 20P2 / 20P4 / 20P7	PFI2010-SE	10	0.7	82x50x194
	21P5 / 22P2	PFI2020-SE	20	0.9	111x50x169
	24P0	PFI2030-SE	30	1.0	144x50x174
Single-Phase 200 V AC	B0P1 / B0P2 / B0P4	PFI1010-SE	10	0.5	71x45x169
	B0P7 / B1P5	PFI1020-SE	20	0.7	111x50x169
3-Phase 400 V AC	40P2 / 40P4	PFI3005-SE	5	0.6	111x50x169
	40P7 / 41P5 / 42P2	PFI3010-SE	10	0.7	111x50x169
	4P4P0	PFI3020-SE	15	1.0	144x50x174

## ② Accessories

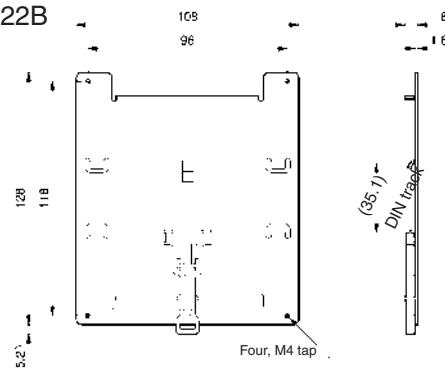
	Name	Description	Installation
Digital operator	JVOP-146	Remote digital operator without potentiometer	 <p>Front panel dimensions:</p> <ul style="list-style-type: none"> <li>Width: 88 (3.46)</li> <li>Height: 58 (2.28)</li> <li>Depth: 23.1 (0.91)</li> <li>Bottom panel thickness: 15.5 (0.61)</li> <li>Bottom panel width: 70 (2.76)</li> </ul> <p>Mounting holes:</p> <ul style="list-style-type: none"> <li>Top: 4-4.4 DIA. MTG HOLES</li> <li>Bottom: 4-M4 SPOT FACING DEEP 3.5 (0.14)</li> </ul>
	JVOP-144	Remote digital operator with potentiometer	 <p>Front panel dimensions:</p> <ul style="list-style-type: none"> <li>Width: 88 (3.46)</li> <li>Height: 58 (2.28)</li> <li>Depth: 23.1 (0.91)</li> <li>Bottom panel thickness: 15.5 (0.61)</li> <li>Bottom panel width: 70 (2.76)</li> </ul> <p>Mounting holes:</p> <ul style="list-style-type: none"> <li>Top: 4-4.4 DIA. MTG HOLES</li> <li>Bottom: 4-M4 SPOT FACING DEEP 3.5 (0.14)</li> </ul>
Interface units	SI-232/J7 (3G3JV-PSI232J)	RS232 adapter	<p>Another option SI-232/J7C (3G3JV-PSI232JC) is available, the only difference is that this one is removable.</p>  <p>Front view dimensions:</p> <ul style="list-style-type: none"> <li>Width: 63 (2.48)</li> <li>Height: 21.5 (0.85)</li> <li>Depth: 15.5 (0.61)</li> <li>Bottom panel thickness: 16 (0.63)</li> </ul> <p>Side view dimensions:</p> <ul style="list-style-type: none"> <li>Width: 2.5 (0.1)</li> <li>Height: 19 (0.75)</li> <li>Depth: 8 (0.31)</li> </ul>
Accessories	SI-485/J7 (3G3JV-PSI485J)	RS485 adapter	 <p>Front view dimensions:</p> <ul style="list-style-type: none"> <li>Width: 63 (2.48)</li> <li>Height: 12 (0.47)</li> <li>Depth: 13 (0.51)</li> <li>Bottom panel thickness: 16 (0.63)</li> </ul> <p>Side view dimensions:</p> <ul style="list-style-type: none"> <li>Width: 8 (0.3)</li> <li>Height: 19 (0.75)</li> <li>Depth: 8 (0.3)</li> </ul>
Accessories	3G3IV-PCN126 3G3IV-PCN326	Digital operator extension cable 1 meters 3 meters	SI232/J7 is necessary to connect
	3G3IV-PCN329-E	PC configuration cable	SI232/J7 is necessary to connect
	Sysdrive Configurator	Computer software	Configuration and monitoring software tool
	User's Manual	TOE-S606-12F-OY	-----

**DIN Track Mounting Bracket**

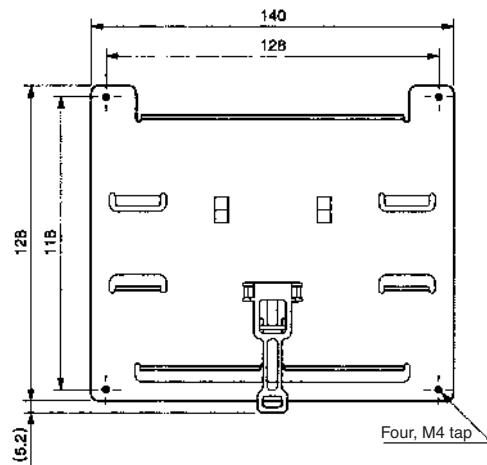
3G3IV-PEZZ08122A



3G3IV-PEZZ08122B

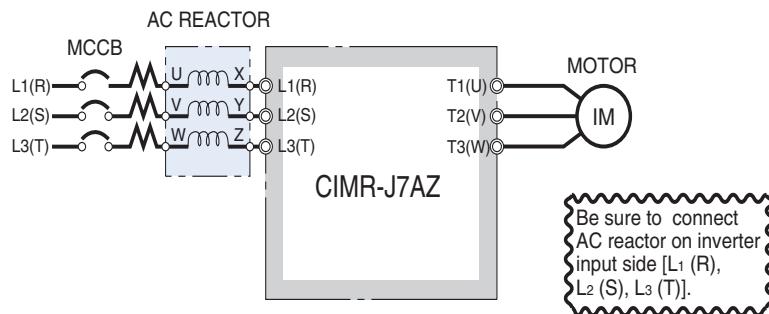


3G3IV-PEZZ08122C



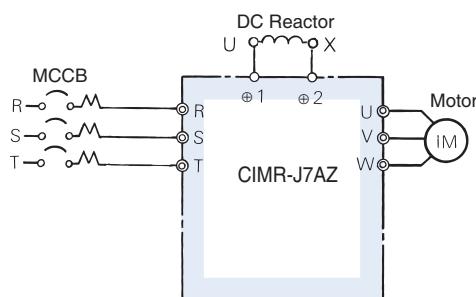
Inverter	DIN Track Mounting Bracket
3-phase 200 V AC	3G3IV-PEZZ08122A CIMR-J7AZ20P1/20P2/20P4/20P7 CIMR-J7AZ21P5/22P2 CIMR-J7AZ24P0
Single-phase 200 V AC	3G3IV-PEZZ08122A CIMR-J7AZB0P1/B0P2/B0P4 CIMR-J7AZB0P7/B1P5
3-phase 400 V AC	3G3IV-PEZZ08122B CIMR-J7AZ40P2/40P4/40P7/41P5/42P2 CIMR-J7AZ44P0

## AC Reactor



200 V Class				400 V Class			
Max. Applicable Motor Output kW	Current Value A	Inductance mH	Code No.	Max. Applicable Motor Output kW	Current Value A	Inductance mH	Code No.
0.1	2.0	2.0	X 002764				-----
0.2	2.0	2.0	X 002764	0.2	1.3	18.0	X 002561
0.4	2.5	4.2	X 002553	0.4			
0.75	5	2.1	X 002554	0.75	2.5	8.4	X 002562
1.5	10	1.1	X 002489	1.5	5	4.2	X 002563
2.2	15	0.71	X 002490	2.2	7.5	3.6	X 002564
4.0	20	0.53	X 002491	4.0	10	2.2	X 002500

## DC Reactor



200 V Class				400 V Class			
Max. Applicable Motor Output kW	Current Value A	Inductance mH	Code No.	Max. Applicable Motor Output kW	Current Value A	Inductance mH	Code No.
0.12							-----
0.25				0.37			
0.55				0.55			
1.1				1.1			
1.5				1.5			
2.2				2.2			
4.0				4.0	12	6.3	X010054

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

3G3MV

# SYSDRIVE 3G3MV

## Sensorless vector in pocket size

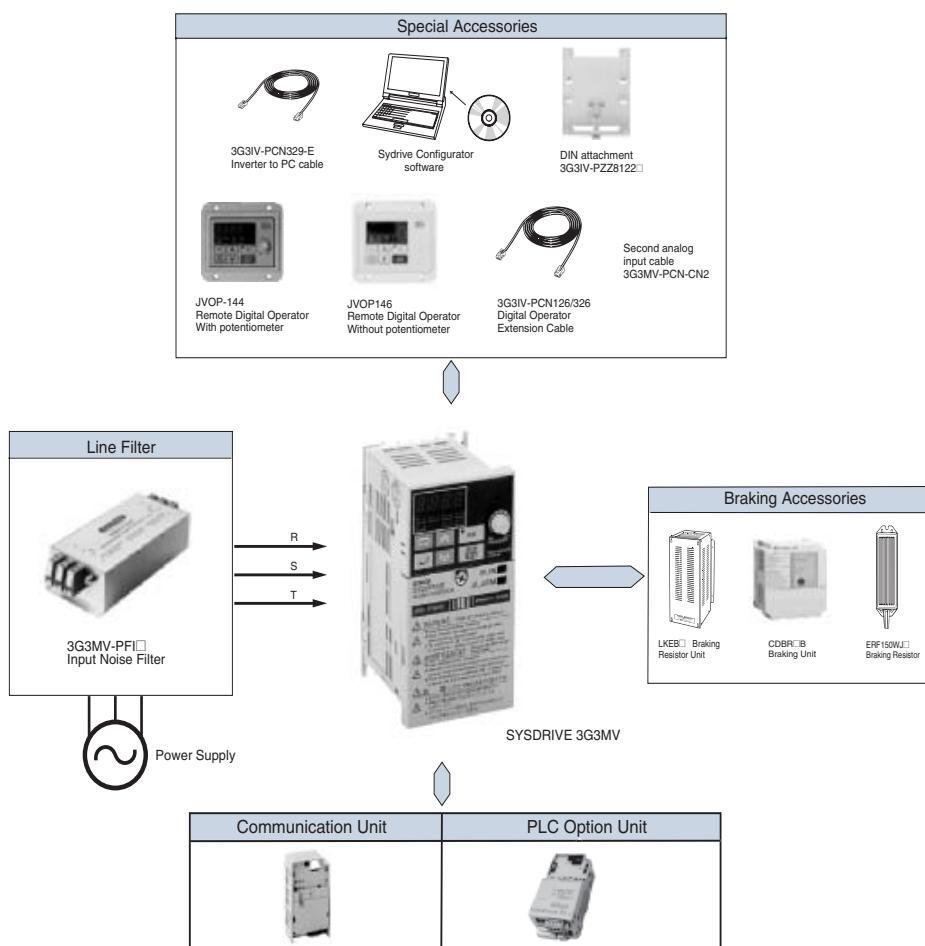
- Sensorless vector controlled inverter
- Compact size
- Frequency setting signal 0..10 V / 4..20 mA
- 150% overload / 60 sec
- 100% torque at 0.5 Hz
- Pulse input
- Integrated PID controller
- Standard digital operator with copy function
- Fieldbus options: DeviceNet, PROFIBUS, CANopen
- Plug-in PLC option unit
- Easy Maintenance
- Energy saving function
- Standard RS485 communications - Modbus
- CE, UL, and cUL marking
- Customised application software

### Ratings

- 200V Class single-phase 0.1 to 4 KW
- 200V Class three-phase 0.1 to 7.5 KW
- 400V Class three-phase 0.2 to 7.5 KW



## System Configuration



## Specifications

### Type Designation

**3G3MV – A4007 N Z**

3G3MV Series	Heatsink option
Installation type	Z: No heatsink - : With heatsink
A: Close wall mounting (IP 20)	Front Cover options
Voltage	B: Blank cover
2: Three-phase 200 V class	N: No potentiometer
B: Single-phase 200 V class	- : With potentiometer
4: 400 V class	Max. Applicable Motor Output
	001: 0.1 kW
	075: 7.5 kW

### 200 V class

Single-phase: 3G3MV-□ <sup>1</sup>		<b>AB001</b>	<b>AB002</b>	<b>AB004</b>	<b>AB007</b>	<b>AB015</b>	<b>AB022</b>	<b>AB040</b>
Three-phase: 3G3MV-□		<b>A2001</b>	<b>A2002</b>	<b>A2004</b>	<b>A2007</b>	<b>A2015</b>	<b>A2022</b>	<b>A2040</b>
Output characteristics	Maximum permissible motor output kW <sup>2</sup>	0.12	0.25	0.55	1.1	1.5	2.2	4.0
Inverter capacity kVA	0.3	0.6	1.1	1.9	3.0	4.2	6.7	
Rated output current A	0.8	1.6	3.0	5.0	8.0	11.0	17.5	
Max. output voltage		Proportional to input voltage: 0..240 V						
Max. Output frequency		400 Hz						
Power Supply	Rated input voltage and frequency	Single-phase 200..240V 50/60 Hz 3-phase 200..230V 50/60 Hz						
Allowable Voltage Fluctuation		-15%..+10%						
Allowable Frequency Fluctuation		+5%						

1. Single-phase series inverter output is three-phase. Single-phase motor cannot be applied.
2. Based on a standard 4-pole motor for maximum applicable motor output. Select the inverter model within the allowable motor rated current

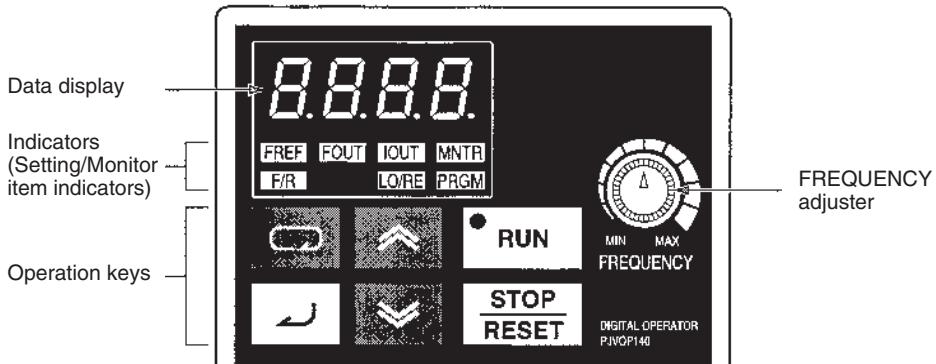
### 400 V class

Three-phase: 3G3MV-□		<b>A4002</b>	<b>A4004</b>	<b>A4007</b>	<b>A4015</b>	<b>A4022</b>	<b>A4030</b>	<b>A4040</b>	<b>A4055</b>	<b>A4075</b>
Maximum permissible motor output kW <sup>1</sup>		0.37	0.55	1.1	1.5	2.2	3.0	4.0	5.5	7.5
Output characteristics	Inverter capacity kVA	0.9	1.4	2.6	3.7	4.2	5.5	7.0	11.0	14.0
Rated output current A	1.2	1.8	3.4	4.8	5.5	7.2	9.2	14.8	18.0	
Max. output voltage		Proportional to input voltage: 0..400 V								
Max. Output frequency		400 Hz								
Power Supply	Rated input voltage and frequency	3-phase 380..460 VAC, 50/60 Hz								
Allowable Voltage Fluctuation		-15%..+10%								
Allowable Frequency Fluctuation		+5%								

1. Based on a standard 4-pole motor for maximum applicable motor output. Select the inverter model within the allowable motor rated current

## Common Specifications

Model Number 3G3MV-□		Specifications
Control	Control methods	Sine wave PWM (V/f control, sensorless vector control)
	Output frequency range	0..400 Hz
	Frequency tolerance	Digital set value: $\pm 0.01\%$ (-10..+50 °C) Analogue set value: $\pm 0.5\%$ (25 ± 10 °C)
	Resolution of frequency set value	Digital set value: 0.01 Hz (<100 Hz), 0.1 Hz (>100 Hz) Analogue set value: 1/1000 of maximum frequency
	Resolution of output frequency	0.01 Hz
	Overload capability	150%/60 s
	Frequency set value	0..10 V (20 kΩ), 4..20 mA (250 Ω), 0..20 mA (250 Ω) Pulse train input, frequency setting value (selectable)
	Braking torque (short term peak torque)	Up to 200 W 150% or more 550 W to 1.1 kW 100% or more 1.5 kW 50% or more >1.5 kW 20% or more Continuous braking torque approx. 20% without, 150% with external braking resistor
Functionality	Binary inputs	7 freely programmable inputs
	Binary outputs	1 relay output, 2 freely programmable open collector outputs
	Analogue output	1 programmable analogue output (0..10 V)/pulse output
	Analogue inputs	2 analogue inputs, 0..10 V, 4..20 mA, 0..20 mA
	Braking/acceleration times	0.01..6000 s
	Display	Optionally frequency, current or set value Error and status LED
Protection	Motor Overload Protection	Electronic thermal overload relay
	Instantaneous Overcurrent	Motor coasts to a stop at approx. 250% of inverter rated current
	Overload	Motor coasts to a stop after 1 minute at 150% of inverter rated output current
	Oversupply	Motor coasts to a stop if DC bus voltage exceed 410V (double for 400V class)
	Undervoltage	Stops when DC bus voltage is approx. 200V or less (double for 400V class) (approx. 160V or less for single-phase series)
	Momentary Power Loss	Following items are selectable: Not provided (stop if power loss is 15ms or longer), continuous operation if power loss is approx. 0.5s or shorter, continuous operation
	Cooling Fin Overheat	Protected by electronic circuit
	Stall Prevention Level	Individual levels during accel/constant speed. Decel ON/OFF available. During decel enable/disable selectable.
	Cooling Fan Fault	Detected by electronic circuit (fan lock detection)
	Ground Fault	Protected by electronic circuit (operation level is approx. 250% of rated output current)
Ambient conditions	Power Charge Indication	RUN lamp stays ON or digital operator LED stays ON until the DC bus voltage becomes 50V or less. (Charge LED is provided for 400V)
	Degree of protection	IP20 and NEMA1
	Cooling	Self cooling for 200V 0.1..0.4 KW (3 or single phase) and for 400V 0.2..0.75 KW Cooling fan for 200V 0.75 to 7.5 KW and for 400V 1.5 to 7.5 KW
	Ambient temperature	Open air mounting: -10 °C..50 °C Wall mounting: -10 °C..40 °C
	Ambient humidity	95% (without condensation)
	Storage temperature	-20 °C..+60 °C (short-term temperature during transportation)
	Installation	Indoor (no corrosive gas, dust, etc.)
	Installation height	Max. 1000 m
Vibrations		10 to 20 Hz, 9.8 m/s <sup>2</sup> max; 20 to 50 Hz, 2m/s <sup>2</sup> max

**Digital operator**

Appearance	Name	Function
	Data display	Displays relevant data items, such as frequency reference, output frequency, and parameter set values.
	Frequency adjuster	Sets the frequency reference within a range between 0 Hz and the maximum frequency.
	Frequency reference indicator	The frequency reference can be monitored or set while this indicator is lit.
	Output frequency indicator	The output frequency of the Inverter can be monitored while this indicator is lit.
	Output current indicator	The output current of the Inverter can be monitored while this indicator is lit.
	Multi-function monitor indicator	The values set in U01 through U10 are monitored while this indicator is lit.
	Forward/Reverse selection indicator	The direction of rotation can be selected while this indicator is lit when operating the Inverter with the RUN Key.
	Local/Remote selection indicator	The operation of the Inverter through the Digital Operator or according to the set parameters is selectable while this indicator is lit. (See note 1.)
	Parameter setting indicator	The parameters in n001 through n179 can be set or monitored while this indicator is lit. (See note 2.)
	Mode Key	Switches the simplified-LED (setting and monitor) item indicators in sequence. Parameter being set will be canceled if this key is pressed before entering the setting.
	Increment Key	Increases multi-function monitor numbers, parameter numbers, and parameter set values.
	Decrement Key	Decreases multi-function monitor numbers, parameter numbers, and parameter set values.
	Enter Key	Enters multi-function monitor numbers, parameter numbers, and internal data values after they are set or changed.
	RUN Key	Starts the Inverter running when the 3G3MV is in operation with the Digital Operator.
	STOP/RESET Key	Stops the Inverter unless parameter n007 is set to disable the STOP Key. Used to reset the Inverter when an error occurs. (See note 3.)

- Note:**
1. The status of the local/remote selection indicator can be only monitored while the Inverter is in operation. Any RUN command input is ignored while this indicator is lit.
  2. While inverter is in operation, the parameters can be only monitored and only some parameters can be changed. Any RUN command is ignored while the parameter setting indicator is lit.
  3. For safety reasons, the reset function cannot be used while an operation instruction (forward/reverse) is being input. Turn the operation instruction OFF before using this function.

## Dimensions

IP 20 type 0.1 to 4 KW

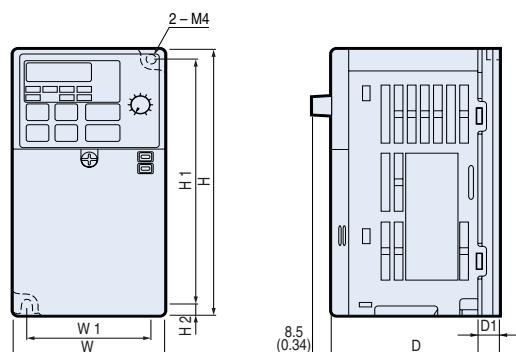


Figure 1

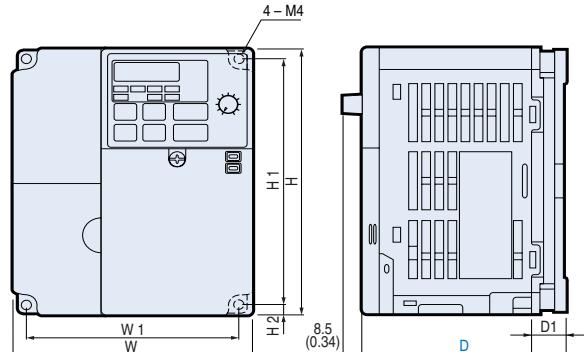


Figure 2

Voltage Class	Max. Applicable Motor Output kW	Inverter Model 3G3MV-A□	Figure	Dimensions in mm							Mass kg	Cooling Method
				W	H	D	W1	H1	H2	D1		
Three-phase 200V	0.12	2001	1	68	128	76	56	118	5	10	0.6	Self cooled
	0.25	2002				108				42	0.6	
	0.55	2004				128				62	0.9	
	1.1	2007				131				64	1.1	Fan cooled
	1.5	2015	2	108	140	140	96	128	5	71	1.4	
	2.2	2022				143				71	1.5	
	4.0	2040				143				71	2.1	
Single-phase 200V	0.12	B001	1	68	128	76	56	118	5	10	0.6	Self cooled
	0.25	B002				76				42	0.7	
	0.55	B004				131				64	1.0	
	1.1	B007				140				71	1.5	Fan cooled
	1.5	B015	2	108	140	140	96	118	5	64	1.5	
	2.2	B022				156				71	2.2	
	4.0	B040				163				71	2.9	
	0.37	4002	2	108	128	92	96	118	5	16	1.0	Self cooled
	0.55	4004				110				34	1.1	
	1.1	4007				140				64	1.5	
	1.5	4015				156				71	1.5	Fan cooled
	2.2	4022				180				71	2.1	
	3.0	4030				143				71	2.1	
	4.0	4040				143				71	2.1	

IP20 / NEMA1 type 5.5/7.5 KW

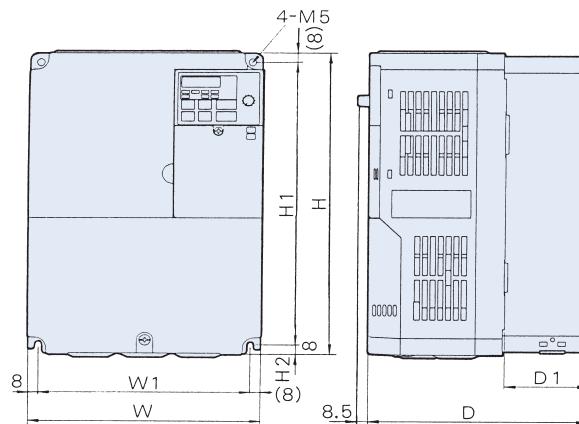
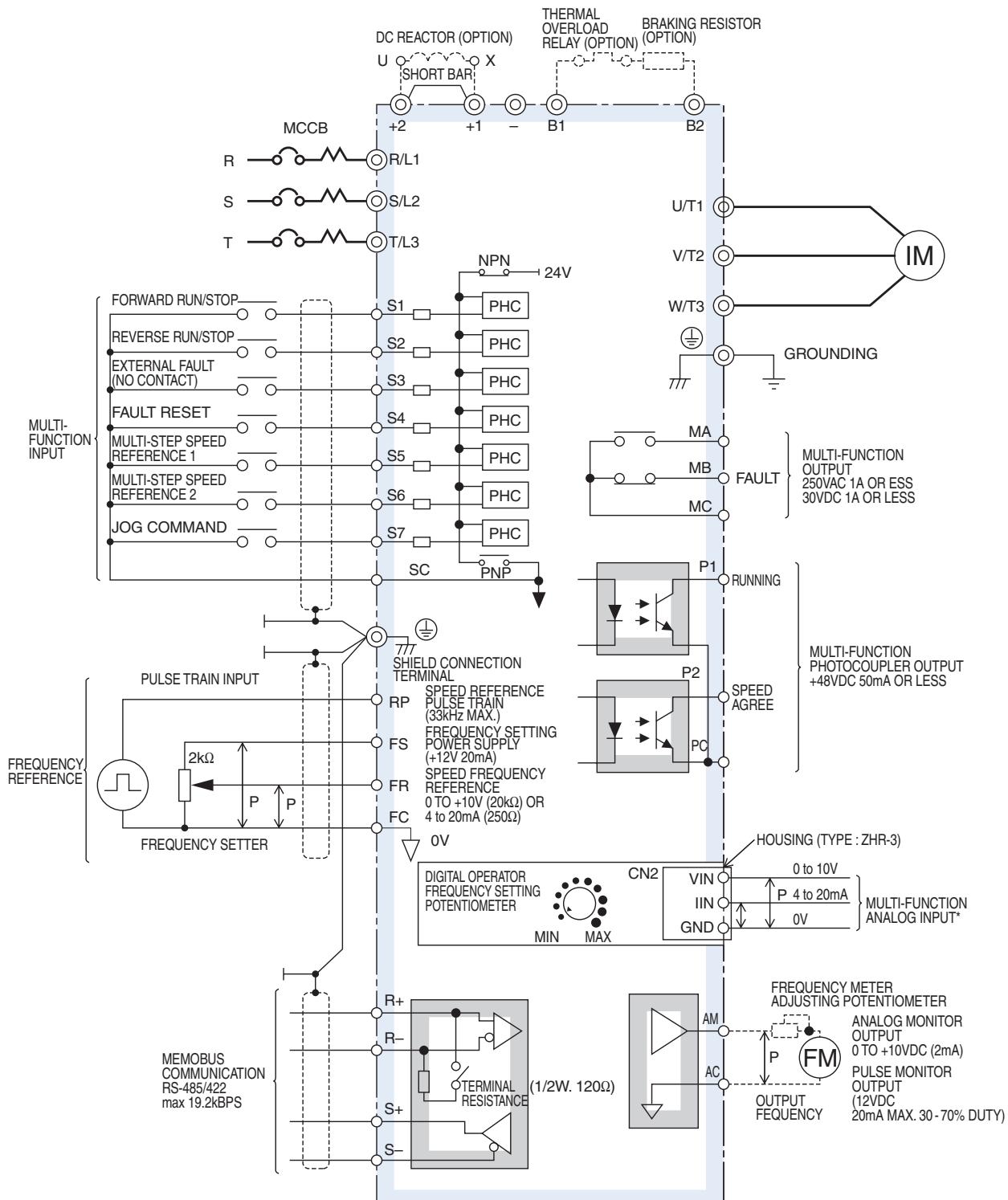


Figure 3

Voltage Class	Max. Applicable Motor Output kW	Inverter Model 3G3MV-A□	Figure	Dimensions in mm (inches)							Mass kg	Cooling Method
				W	H	D	W1	H1	H2	D1		
Three-phase 200V	5.5	2055	3	180	260	170	164	244	8	65	4.6	Fan cooled
	7.5	2075									4.8	
Three-phase 400V	5.5	4055									4.8	
	7.5	4075									4.8	

## Installation

## Standard Connections



: shielded wire    : twisted pair shielded wire

Shows the following two kinds of connections (factory setting):  
 - Input signals (S1 to S7) are non-voltage contacts  
 - Sequence connection by NPN transistor (0V common)

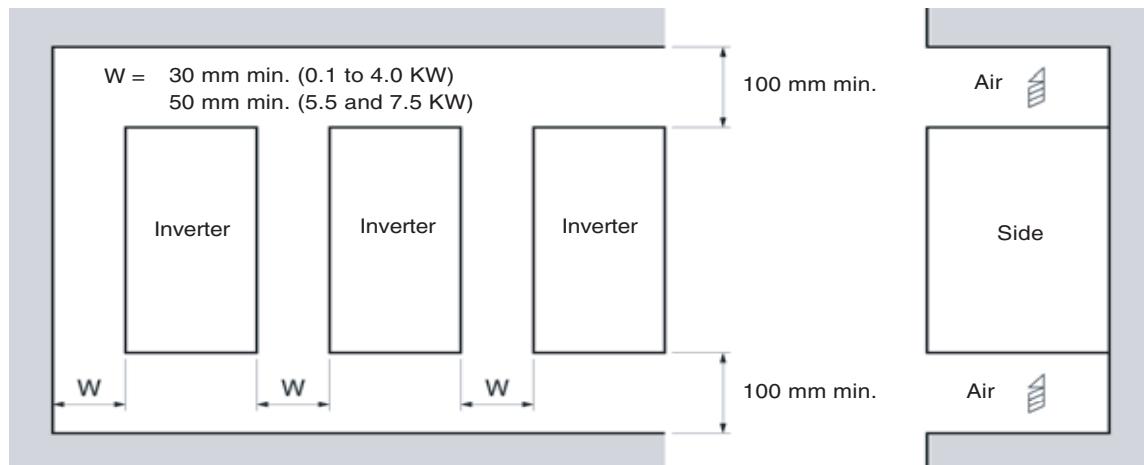
A +24V power supply is required for sequence connection by PNP transistor (+24V common).

## Main Circuit

Terminal	Name	Function (Signal Level)
R/L1, S/L2, T/L3	AC Power Supply Input	Main circuit power supply input (Use R/L1 and S/L2 for single-phase power supply inverter. Do not use T/L3 of the models less than 0.75kW for other usage, such as a junction terminal.)
U/T1, V/T2, W/T3	Inverter Output	For inverter output
B1, B2	Braking Resistor Connection	For braking resistor connection
+2, +1	DC Reactor Connection	Remove the short bar between +2 and +1 when connecting DC reactor (option)
+1, -	DC Power Supply Input	For power supply input (+1: positive electrode; - : negative electrode)*
⊕	Grounding	For grounding (Grounding should be conforming to the local grounding code.)

## Control Circuit

Type	No.	Signal Name	Function	Signal Level
Digital input signals	S1	Multi-function Input Selection 1	Factory setting: Runs when CLOSED, stops when OPEN.	24VDC, 8mA photocoupler insulation
	S2	Multi-function Input Selection 2	Factory setting: Runs when CLOSED, stops when OPEN.	
	S3	Multi-function Input Selection 3	Factory setting: "Fault reset"	
	S4	Multi-function Input Selection 4	Factory setting: "External fault (NO contact)"	
	S5	Multi-function Input Selection 5	Factory setting: "Multi-step speed reference 1"	
	S6	Multi-function Input Selection 6	Factory setting: "Multi-step speed reference 2"	
	S7	Multi-function Input Selection 7	Factory setting: "JOG command"	
	SC	Multi-function Input Selection Common	Common for control signal	
Analog input signals	RP	Speed Reference Pulse Train Input	33kHz max.	
	FS	Power Supply Terminal for Frequency Setting	+12V (allowable current: 20mA max.)	
	FR	Speed Frequency Reference	0 to +10V DC (20kΩ) or 4 to 20mA (250Ω), 0 to 20 mA (250Ω) (resolution 1/1000)	
	FC	Frequency Reference Common	0V	
	1 (CN2)	Multi-function analog voltage input	Voltage input (between terminals 1 and 3): 0 to 10 V DC (Input impedance: 20 kΩ)	Current input (between terminals 2 and 3): 4 to 20 mA (Input impedance: 250 Ω)
	2 (CN2)	Multi-function analog current input		
	3 (CN2)	Multi-function analog input common		
Digital output signals	MA	NO Contact Output	Factory setting: "Fault"	Contact capacity 250V AC, 1A or less 30VDC, 1A or less
	MB	NO Contact Output		
	MC	Contact Output Common		
	P1	Photocoupler Output 1	Factory setting: "Running"	Photocoupler output: +48VDC, 50mA or less
	P2	Photocoupler Output 2	Factory setting: "At frequency"	
	PC	Photocoupler Output Common	0V	
Analog output signals	AM	Analog Monitor Output	Factory setting: "Output frequency" 0 to +10V output (Pulse monitor output available by setting constants. Duty: 30 to 70%)	0 to 10V 2mA or less Resolution: 8bits
	AC	Analog Monitor Common	0V	
RS-485/422	R+	Communication Input (+)	For MEMOBUS communication Operation by RS-485 or RS-422 communication is available.	RS-485/422 MEMOBUS protocol 19.2kBPS max.
	R-	Communication Input (-)		
	S+	Communication Output (+)		
	S-	Communication Output (-)		

**Inverter Heat Loss****Three-phase 200 V Class**

Model 3G3MV-A□		2001	2002	2004	2007	2015	2022	2040	2055	2075
Inverter Capacity kVA	0.3	0.6	1.1	1.9	3.0	4.2	6.7	9.5	13	
Rated Current A	0.8	1.6	3	5	8	11	17.5	25	33	
Heat Loss W	Fin	3.7	7.7	15.8	28.4	53.7	60.4	96.7	170.4	219.2
	Inside Unit	9.3	10.3	12.3	16.7	19.1	34.4	52.4	79.4	98.9
	Total Heat Loss	13.0	18.0	28.1	45.1	72.8	94.8	149.1	249.8	318.1

**Single phase 200 V Class**

Model 3G3MV-A□		B001	B002	B004	B007	B015	B022	B040
Inverter Capacity kVA	0.3	0.6	1.1	1.9	3.0	4.2	6.7	
Rated Current A	0.8	1.6	3	5	8	11	17.5	
Heat Loss W	Fin	3.7	7.7	15.8	28.4	53.7	64.5	98.2
	Inside Unit	10.4	12.3	16.1	23.0	29.1	49.1	78.2
	Total Heat Loss	14.1	20.0	31.9	51.4	82.8	113.6	176.4

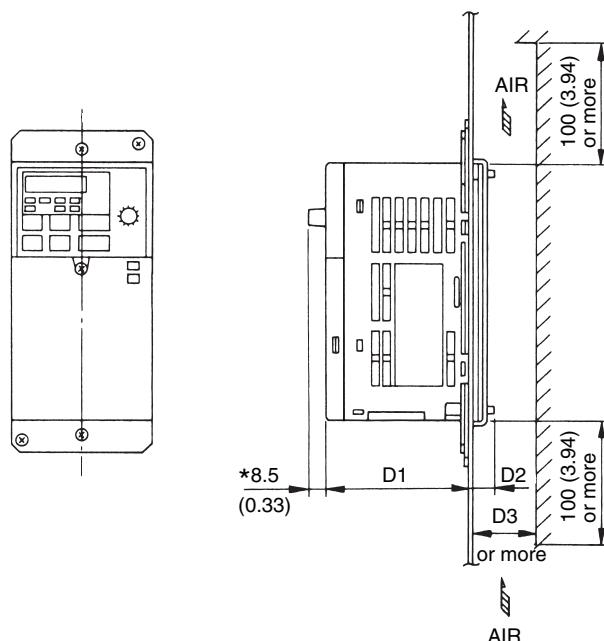
**Three-phase 400 V Class**

Model 3G3MV-A□		40P2	4004	4007	4015	4022	4040	4055	4075
Inverter Capacity kVA	1.4	2.6	3.7	4.2	5.5	7.0	11	14	
Rated Current A	1.8	3.4	4.8	5.5	7.2	8.6	14.8	18	
Heat Loss W	Fin	15.1	30.3	45.8	50.5	58.2	73.4	168.8	209.6
	Inside Unit	15.0	24.6	29.9	32.5	37.6	44.5	87.7	99.3
	Total Heat Loss	30.1	54.9	75.7	83.0	95.8	117.9	256.5	308.9

## Attachments

### Heatsink External Mounting Attachment

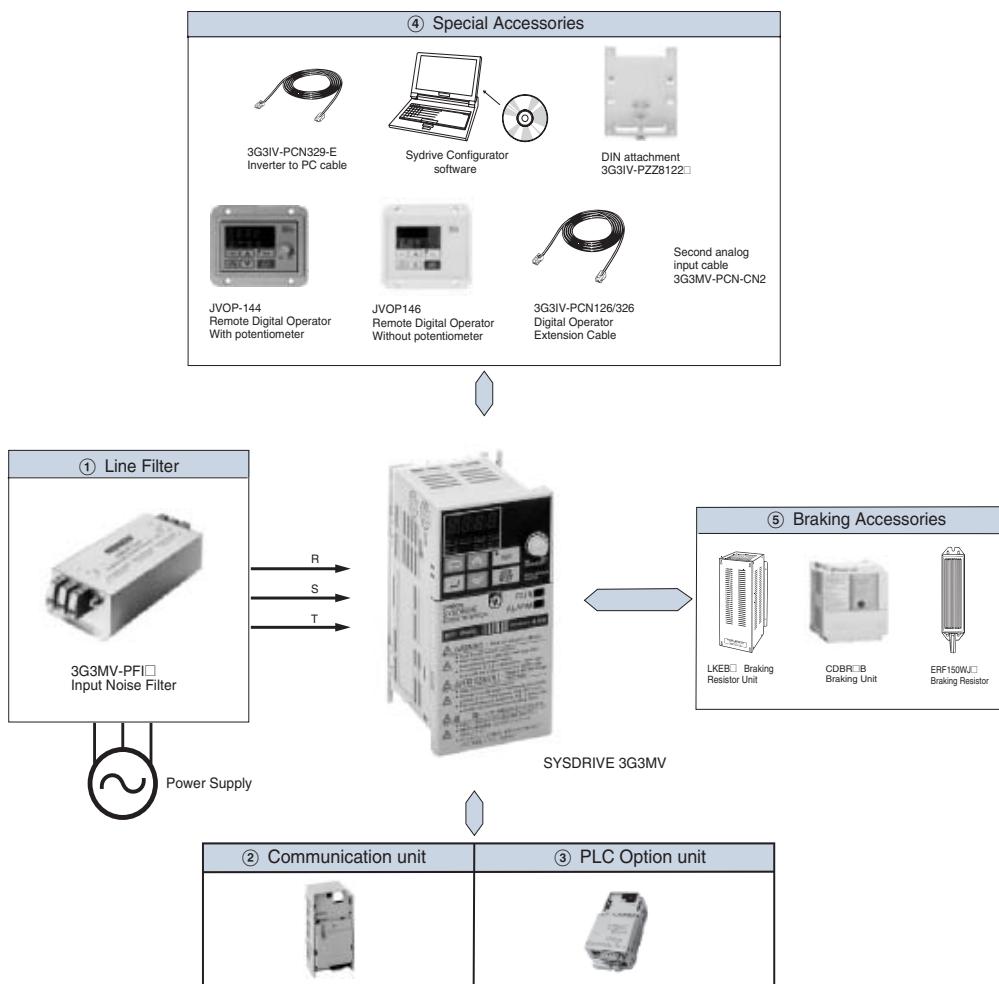
When mounting an external cooling-fan to the 3G3MV, this attachment is required.



3G3MV	Attachment Order Code	Dimensions in mm		
		D1	D2	D3
3G3MV-A2001 3G3MV-A2002	72606-EZZ08136A	69.2	12	30
3G3MV-A2004	72606-EZZ08136B	69.2	42	50
3G3MV-A2007	72606-EZZ08136C	69.2	62	70
3G3MV-A2015	72606-EZZ08136D	73	58	70
3G3MV-A2022		98	58	70
3G3MV-A2040	72606-EZZ08136F	78.6	64.4	70
3G3MV-A2055 3G3MV-A2075	72606-EZZ08136H	113.8	56.2	60
3G3MV-AB001 3G3MV-AB002	72606-EZZ08136A	69.2	12	30
3G3MV-AB004	72606-EZZ08136B	92.2	42	50
3G3MV-AB007	72606-EZZ08136D	82	58	70
3G3MV-AB015		98	58	70
3G3MV-AB022	72606-EZZ08136F	98.6	64.4	70
3G3MV-AB040	72606-EZZ08136G	115.6	64.4	70
3G3MV-A4002	72606-EZZ08136E	82	13.2	30
3G3MV-A4004	72606-EZZ08136D	82	28	40
3G3MV-A4007		82	58	70
3G3MV-A4015 3G3MV-A4022		98	58	70
3G3MV-A4030 3G3MV-A4040	72606-EZZ08136F	78.6	64.4	70
3G3MV-A4055 3G3MV-A4075	72606-EZZ08136H	113.8	56.2	60

## Ordering Information

### System Configuration



### ① Line Filters



Inverter		Line filter			
Voltage	Model 3G3MV-A	Model 3G3MV-	Rated current (A)	Weight (kg)	Dimensions
3-Phase 200 V AC	2001 / 2002 / 2004 / 2007	PFI2010-SE	10	0.8	82x50x194
	2015 / 2022	PFI2020-SE	20	1.0	111x50x169
	2040	PFI2030-SE	30	1.1	144x50x174
	2055 / 2075	PFI2050-SE	50	2.3	184x56x304
Single-Phase 200 V AC	B001 / B002 / B004	PFI1010-SE	10	0.6	71x45x169
	B007 / B015	PFI1020-SE	20	1.0	110x50x169
	B022	PFI1030-SE	30	1.1	144x50x174
	B040	PFI1040-SE	40	1.2	174x50x74
3-Phase 400 V AC	4002 / 4004	PFI3005-SE	5	1.0	111x45x164
	4007 / 4015 / 4022	PFI3010-SE	10	1.0	111x45x169
	4040	PFI3020-SE	15	1.1	144x50x174
	4055 / 4075	PFI3030-SE	30	2.3	184x56x304

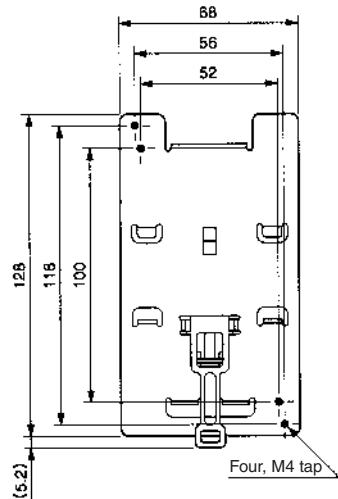
Type	Name	Description	Function
(2) Communication option board	3G3MV-PDRT2	DeviceNet option card	<ul style="list-style-type: none"> <li>Used for running or stopping the inverter, setting or referencing parameters, and monitoring output frequency, output current, or similar items through DeviceNet communication with the host controller.</li> </ul>
	SI-P1/V7	Profibus-DP option card	<ul style="list-style-type: none"> <li>Used for running or stopping the inverter, setting or referencing parameters, and monitoring output frequency, output current, or similar items through Profibus-DP communication with the host controller.</li> </ul>
	SI-S1/V7	CANopen option card	<ul style="list-style-type: none"> <li>Used for running or stopping the inverter, setting or referencing parameters, and monitoring output frequency, output current, or similar items through CANopen communication with the host controller.</li> </ul>
(3) PLC option	3G3MV-P10CDT-E	PLC option	<ul style="list-style-type: none"> <li>Full PLC features, wireless installation and seamless access to the inverter parameters and analogue/digital inputs and outputs.</li> <li>Standard Omron tools can be used for programming</li> <li>RS422/485</li> </ul>
	3G3MV-P10CDT-E-DRT	PLC option with DeviceNet	<ul style="list-style-type: none"> <li>Same features than standard model</li> <li>Calendar / Clock</li> <li>Battery</li> </ul>

#### ④ Accessories

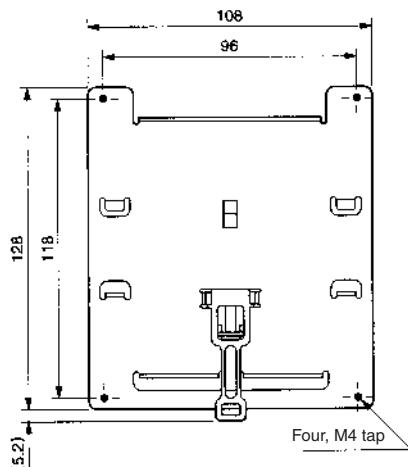
	Name	Description	Installation
Digital operator	JVOP-146	Remote digital operator without potentiometer	
	JVOP-144	Remote digital operator with potentiometer	
	72606-CVS31060	Blank cover	-----
	3G3IV-PEZZ0838BA	Digital operator case	same as JVOP-144 without operator
Accessories	3G3IV-PCN126 3G3IV-PCN326	Digital operator extension cable 1 meters 3 meters	-----
	3G3IV-PCN329-E	PC configuration cable	-----
	Sysdrive Configurator	Computer software	Configuration and monitoring software tool

**DIN Track Mounting Bracket**

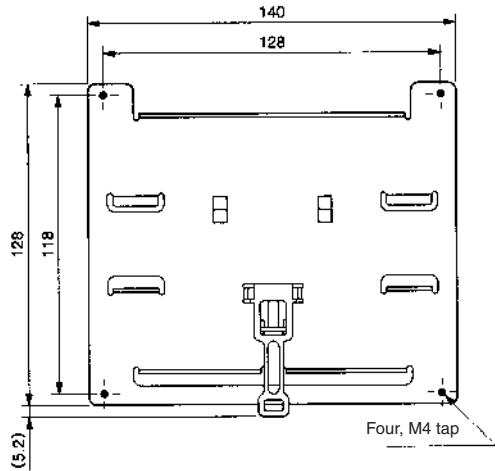
3G3IV-PZZ08122A



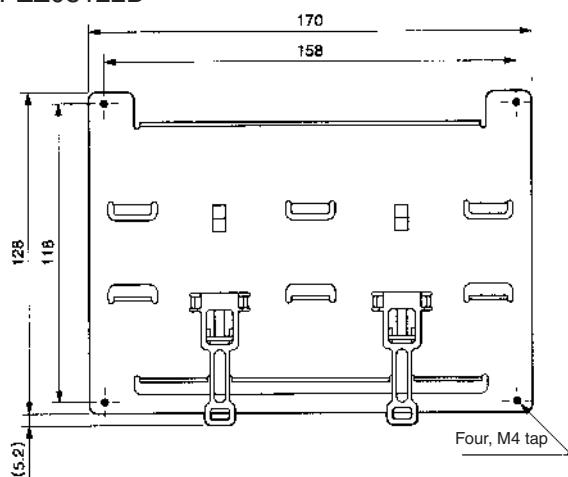
3G3IV-PZZ08122B



3G3IV-PZZ08122C



3G3IV-PZZ08122D

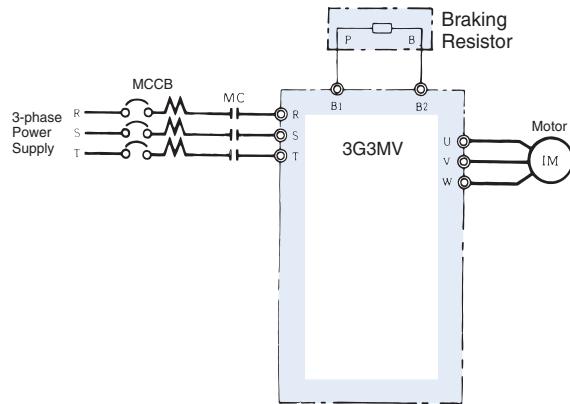


Inverter	DIN Track Mounting Bracket
3-phase 200 V AC 3G3MV-A2001/-A2004/-A2007 3G3MV-A2015/-A2022 3G3MV-A2040	3G3IV-PEZZ08122A 3G3IV-PEZZ08122B 3G3IV-PEZZ08122C
Single-phase 200 V AC 3G3MV-AB001/-AB002/-AB004 3G3MV-AB007/-AB015 3G3MV-AB022 3G3MV-AB040	3G3IV-PEZZ08122A 3G3IV-PEZZ08122B 3G3IV-PEZZ08122C 3G3IV-PEZZ08122D
3-phase 400 V AC 3G3MV-A4002/-A4004/-A4007/-A4015/-A4022 3G3MV-A4040	3G3IV-PEZZ08122B 3G3IV-PEZZ08122C

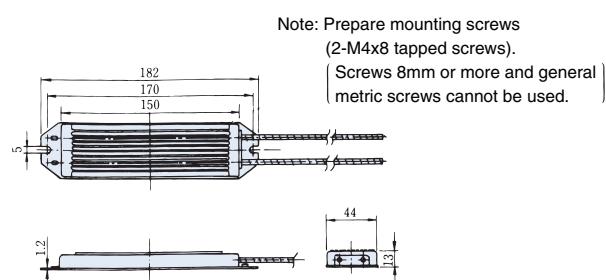
## ⑤ Braking Unit, Braking Resistor Unit

Voltage	Inverter		Braking Resistor Unit									
	Max. Applicable Motor Output kW	Inverter Model 3G3MV-A□	Inverter-mounted Type (3 %ED, 10 sec max)				Separately-installed Type (10 %ED, 10 sec. max.)					
	Three-phase	Single-phase	Model ERF-150WJ	Resistance Ω	No. of Used	Braking Torque %	Model LKEB-□	Resistor Spec. (Per One Unit) W	Ω	No. of Used	Braking Torque %	Connectable Min. Resistance Ω
200V (Single-/Three-Phase)	0.12	2001	B001	401	400	1	220	—	—	—	—	300
	0.25	2002	B002	401	400	1	220	—	—	—	—	300
	0.55	2004	B004	201	200	1	220	20P7	70 200	1	220	200
	1.1	2007	B007	201	200	1	125	20P7	70 200	1	125	120
	1.5	2015	B015	101	100	1	125	21P5	260 100	1	125	60
	2.2	2022	B022	700	70	1	120	22P2	260 70	1	120	60
	4.0	2040	B040	620	62	1	100	23P7	390 40	1	125	32
	5.5	2055	—	—	—	—	25P5	520 30	1	115	9.6	
400 V (Three-Phase)	7.5	2075	—	—	—	—	27P5	780 20	1	125	9.6	
	0.37	4002	—	751	750	1	230	—	—	—	—	750
	0.55	4004	—	751	750	1	230	40P7	70 750	1	230	750
	1.1	4007	—	751	750	1	130	40P7	70 750	1	130	510
	1.5	4015	—	401	400	1	125	41P5	260 400	1	125	240
	2.2	4022	—	301	300	1	115	42P2	260 250	1	135	200
	3.0	4030	—	401	400	2	105	43P7	390 150	1	135	100
	4.0	4040	—	—	—	—	45P5	520 100	1	135	32	
	5.5	4055	—	—	—	—	47P5	780 75	1	130	32	

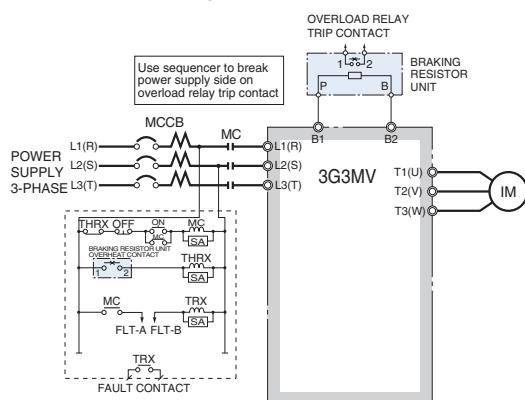
Connections for braking resistor



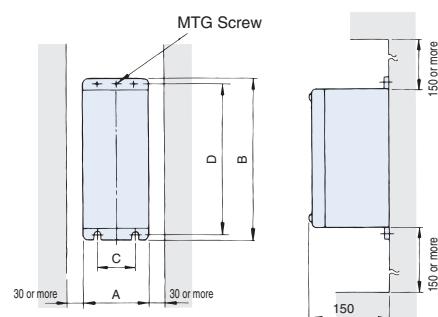
Braking Resistor Unit ERF-150WJ



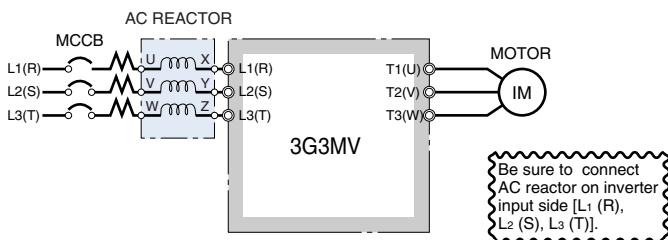
Connections for braking resistors unit



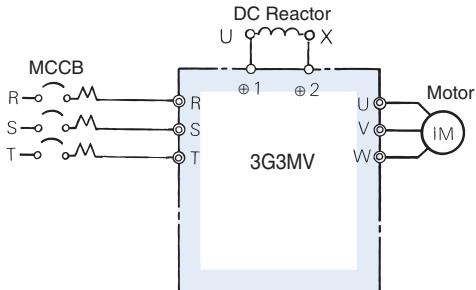
Braking Resistor Unit



Voltage	Model LKEB-□	Dimensions in mm					Approx. Mass kg
		A	B	C	D	MTG.Screw	
200V Class	20P7	105	275	50	260	M5x3	3.0
	21P5	130	350	75	335	M5x4	4.5
	22P2	130	350	75	335	M5x4	4.5
	40P7	130	350	75	350	M5x4	5.0
	25P5	250	350	200	335	M6x4	7.5
	27P5	350	350	200	335	M6x4	8.5
400V Class	40P7	105	275	50	260	M5x3	3.0
	41P5	130	350	75	335	M5x4	4.5
	42P2	130	350	75	335	M5x4	4.5
	43P0	130	350	75	335	M5x4	5.0
	43P7						
	45P5	250	350	200	335	M6x4	7.5
	47P5	350	350	200	335	M6x4	8.5

**AC Reactor**

200 V Class				400 V Class			
Max. Applicable Motor Output kW	Current Value A	Inductance mH	Code No.	Max. Applicable Motor Output kW	Current Value A	Inductance mH	Code No.
0.12	2.0	2.0	X 002764	-----			
0.25	2.0	2.0	X 002764	0.2	1.3	18.0	X 002561
0.55	2.5	4.2	X 002553	0.4			
1.1	5	2.1	X 002554	0.75	2.5	8.4	X 002562
1.5	10	1.1	X 002489	1.5	5	4.2	X 002563
2.2	15	0.71	X 002490	2.2	7.5	3.6	X 002564
4.0	20	0.53	X 002491	4.0	10	2.2	X 002500
5.5	30	0.35	X 002492	5.5	15	1.42	X 002501
7.5	40	0.265	X 002493	7.5	20	1.06	X 002502

**DC Reactor**

200 V Class				400 V Class			
Max. Applicable Motor Output kW	Current Value A	Inductance mH	Code No.	Max. Applicable Motor Output kW	Current Value A	Inductance mH	Code No.
0.12	5.4	8	X010048	-----			
0.25				0.2			
0.55				0.4	3.2	28	X010052
1.1				0.75			
1.5	18	3	X010049	1.5	5.7	11	X010053
2.2				2.2			
4.0				4.0	12	6.3	X010054
5.5				5.5	23	3.6	X010055
7.5				7.5			

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

CIMR-E7Z

# Varispeed E7

## Frequency inverter for pumps and fans

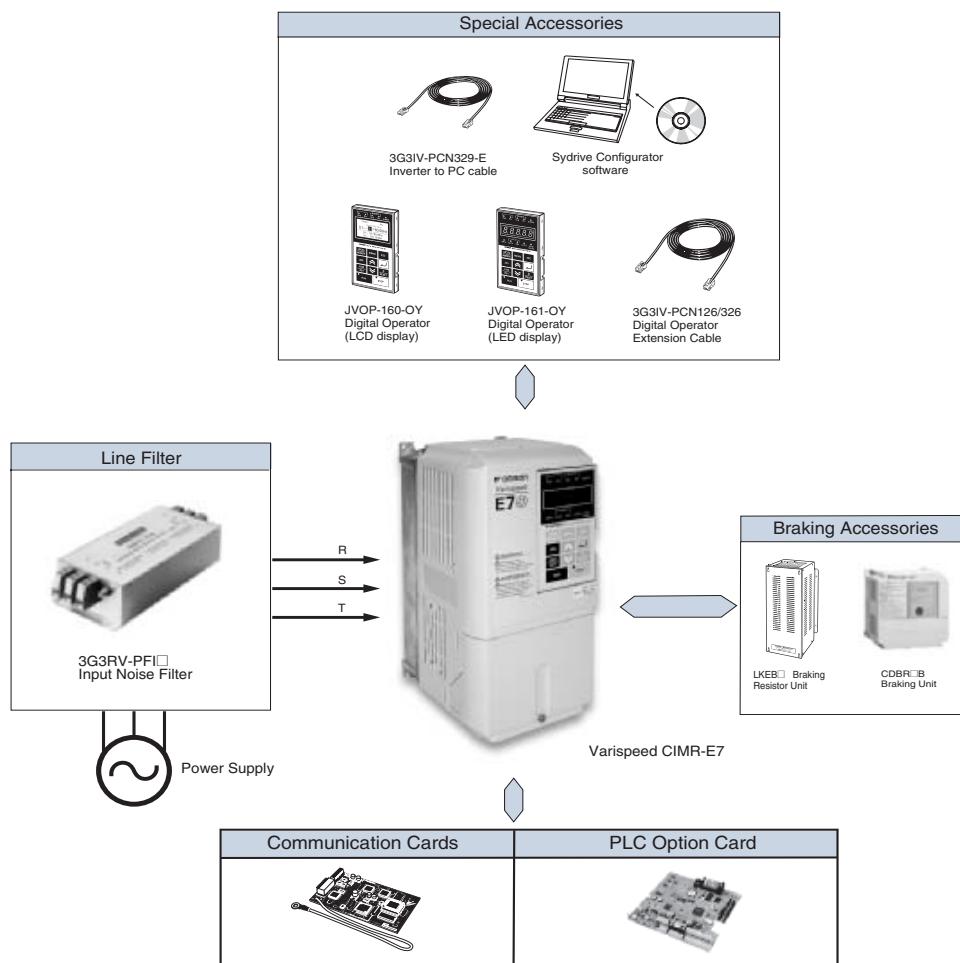
- V/F controlled frequency inverter
- Silent operation
- Energy saving function
- Advanced PID controller
- 12 pulse operation
- Built-in DC reactor
- DC injection
- Rotating motor pick up
- Application firmwares (eg. pump control).
- Optional network cards (DeviceNet, Profibus, CAN-Open, LONWORKS)
- PC configuration tool SYSDRIVE Configurator
- PLC Option card
- Easy Maintenance
- Standard RS-485 communication - MODBUS
- CE, UL, and cUL marking

## Ratings

- 200 V Class 0.4 to 110 KW
- 400 V Class 0.4 to 300 KW

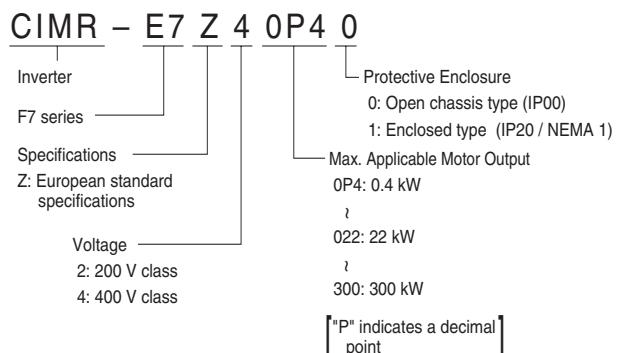


## System Configuration



## Specifications

### Type Designation



### 200 V Class

Model CIMR-E7Z□		20P4	20P7	21P5	22P2	23P7	25P5	27P5	2011	2015	2018	2022	2030	2037	2045	2055	2075	2090	2110
Max. applicable motor output <sup>1</sup>	kW	0.55	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90	110
Output characteristics	Inverter Capacity kVA	1.2	1.6	2.7	3.7	5.7	8.8	12	17	22	27	32	44	55	69	82	110	130	160
	Rated Current A	3.2	4.1	7.0	9.6	15	23	31	45	58	71	85	115	145	180	215	283	346	415
	Max. Voltage	3-phase; 200, 220, 230, or 240 VAC (Proportional to input voltage.)																	
	Max. output Frequency	200.0																	
Power Supply	Rated Input Voltage and Frequency	3-phase, 200/208/220/230/240 VAC, 50/60 Hz																	
	Allowable Voltage Fluctuation	+ 10%, - 15%																	
	Allowable Frequency Fluctuation	±5%																	
Harmonic Wave Prevention	DC Reactor	Optional										Built in							
	12-Pulse Input	Not possible										Possible <sup>2</sup>							

- Our standard 4-pole motors are used for max. applicable motor output. Choose the inverter model whose rated current is allowable within the motor rated current range.
- A 3-wire transformer is required on the power supply for 12-phase rectification

### 400 V Class

Model CIMR-E7ZZ□		40P4	40P7	41P5	42P2	43P7	44P0	45P5	47P5	4011	4015	4018	4022	4030	4037	4045	4055	4075	4090	4110	4132	4160	4185	4220	4300
Max. applicable motor output <sup>1</sup>	kW	0.55	0.75	1.5	2.2	3.7	4.0	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90	110	132	160	185	220	300
Output characteristics	Inverter Capacity kVA	1.4	1.6	2.8	4.0	5.8	6.6	9.5	13	18	24	30	34	46	57	69	85	110	140	160	200	230	280	390	510
	Rated Current A	1.8	2.1	3.7	5.3	7.6	8.7	12.5	17	24	31	39	45	60	75	91	112	150	180	216	260	304	370	506	675
	Max. Voltage	3-phase; 380, 400, 415, 440, 460, or 480 VAC (Proportional to input voltage.)																							
	Max. output Frequency	200.0																							
Power Supply	Rated Input Voltage and Frequency	3-phase, 380, 400, 415, 440, 460 or 480 VAC, 50/60 Hz																							
	Allowable Voltage Fluctuation	+ 10%, - 15%																							
	Allowable Frequency Fluctuation	±5%																							
Harmonic Wave Prevention	DC Reactor	Optional										Built in													
	12-Pulse Input	Not possible										Possible <sup>2</sup>													

- Our standard 4-pole motors are used for max. applicable motor output. Choose the inverter model whose rated current is allowable within the motor rated current range.
- A 3-wire transformer is required on the power supply for 12-phase rectification

**Enclosures**

200V Class	Model CIMR-E7Z□	20P4 20P7 21P5 22P2 23P7 25P5 27P5 2011 2015 2018 2022 2030 2037 2045 2055 2075 2090 2110		
	Enclosed Type (IEC IP20)	Available as standard	Available for option	Not available
400V Class	Open Chassis Type (IEC IP00)	Available by removing the upper and lower cover of enclosed type	Available as standard	
	Model CIMR-E7Z□	40P4 40P7 41P5 42P2 43P7 45P5 47P5 4011 4015 4018 4022 4030 4037 4045 4055 4075 4090 4110 4132 4160 4185 4220 4300	Available as standard	Available for option
	Enclosed Type (IEC IP20)	Available as standard	Available for option	
Open Chassis Type (IEC IP00)	Available by removing the upper and lower cover of enclosed type	Available as standard		Not available

**Common Specifications**

Model Number CIMR-E7Z□		Specification
Control characteristics	Control method	Sine wave PWM V/f control
	Speed control range	1:40
	Speed control accuracy	±3 (25°C ± 10°C)
	Frequency control range	0.0to 200.0 Hz
	Frequency accuracy (temperature characteristics)	Digital references: ± 0.01% (-10°C to +40°C) Analog references: ±0.1% (25°C ±10°C)
	Frequency setting resolution	Digital references: 0.01 Hz Analog references: 0.025/50 Hz (11 bits plus sign)
	Output frequency resolution	0.01 Hz
	Frequency setting signal	0 to +10V, 4 to 20 mA
	Accel/Decel time	0.01 to 6000.0 s (2 selectable combinations of independent acceleration and deceleration settings)
	Braking torque	Approximately 20%
Protective functions	Main control functions	Restarting for momentary power loss, speed searches, overtorque detection, 5-speed control (maximum), acceleration/deceleration time changes, S-curve acceleration, 3-wire control, autotuning, cooling fan ON/OFF control, torque compensation, jump frequencies, upper and lower limits for frequency references, DC braking for starting and stopping, high-slip braking, PI control (with sleep function), energy-saving control, MEMOBUS communications (RS-485/422, 19.2 kbps maximum), fault reset, and copy function.
	Motor protection	Protection by electronic thermal overload relay.
	Instantaneous overcurrent protection	Stops at approx. 200% of rated output current.
	Fuse blown protection	Stops for fuse blown.
	Overload protection	120% of rated output current for 1 minute
	Oversupply protection	200 Class Inverter: Stops when main-circuit DC voltage is above 410 V. 400 Class Inverter: Stops when main-circuit DC voltage is above 820 V.
	Undervoltage protection	200 Class Inverter: Stops when main-circuit DC voltage is below 190 V. 400 Class Inverter: Stops when main-circuit DC voltage is below 380 V.
	Momentary power loss ride through	By selecting the momentary power loss method, operation can be continued if power is restored within 2 s.
	Cooling fin overheating	Protection by thermistor.
	Stall prevention	Stall prevention during acceleration, deceleration, or running.
Environment	Grounding protection	Protection by electronic circuits.
	Charge indicator	Lights up when the main circuit DC voltage is approx. 50 V or more.
	Protective structure	Enclosed wall-mounted type (NEMA 1): 18.5 kW or less (same for 200 V and 400 V class Inverters) Open chassis type (IP00): 22 kW or more (same for 200 V and 400 V class Inverters)
	Ambient operating temperature	-10°C to 40°C (Enclosed wall-mounted type) -10°C to 45°C (Open chassis type)
	Ambient operating humidity	95% max. (with no condensation)
	Storage temperature	- 20°C to + 60°C (short-term temperature during transportation)
	Application site	Indoor (no corrosive gas, dust, etc.)
	Altitude	1000 m max.
	Vibration	10 to 20 Hz, 9.8 m/s <sup>2</sup> max.; 20 to 50 Hz, 2 m/s <sup>2</sup> max

## Dimensions

## Open Chassis Type (IEC IP00)

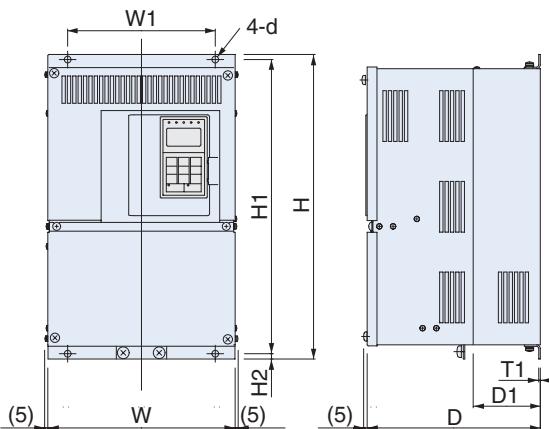


Fig 1

Voltage	Max. Applicable Motor Output kW	Inverter CIMR-E7Z□	Fig	Dimensions in mm									Approx. Mass kg	Cooling Method
				W	H	D	W1	H1	H2	D1	T1	d		
Not available please use the IP20 type removing the upper and lower cover														
200 V Class (3-phase)	0.4	----	3	250	400	258	195	385	7.5	100	2.3	M6	21	Fan cooled
	0.75	----		275	450	220	435	100	12.5	130	3.2	M10	24	
	1.5	----		375	600	298	250	575	100	130	4.5	M12	57	
	2.2	----		328					12.5				63	
	3.7	----		450	725	348	325	700	15	140			86	
	5.5	----		500	850	358	370	820					87	
	7.5	----		575	885	378	445	855					108	
	11	----											150	
	15	----												
	18.5	----												
400 V Class (3-phase)	22	2022 0		275	450	258	220	435	7.5	100	2.3	M6	21	Fan Cooled
	30	2030 0		325	550	283	260	535	105	130	3.2	M10	36	
	37	2037 0		450	725	348	325	700	12.5	140	4.5	M12	88	
	45	2045 0		500	850	358	370	820	15	125.5			89	
	55	2055 0		575	916	378	445	855					102	
	75	2075 0											120	
	90	2090 0											160	
	110	2110 0											260	
	0.4	----											280	
	0.75	----											405	
	1.5	----												
	2.2	----												
	4.0	----												
	5.5	----												
	7.5	----												
	11	----												
	15	----												
	18.5	----												

**Enclosed Type (IEC IP20)**

E7Z 20P41 to E7Z25P51  
E7Z40P41 to E7Z45P51

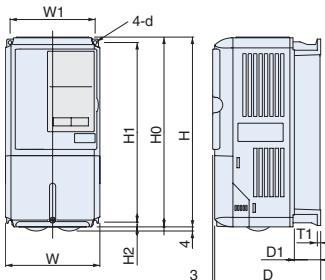


Fig 1

E7Z 27P51 to E7Z20181  
E7Z47P51 to E7Z40181

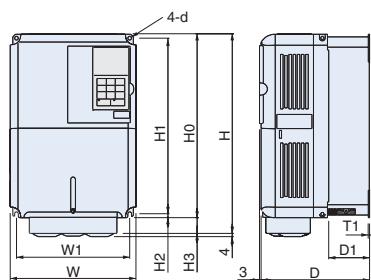


Fig 2

E7Z 20221 to E7Z20751  
E7Z40221 to E7Z41601

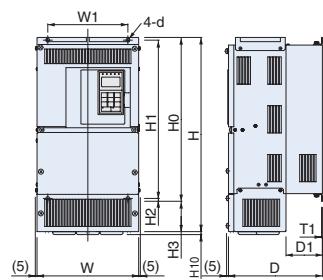
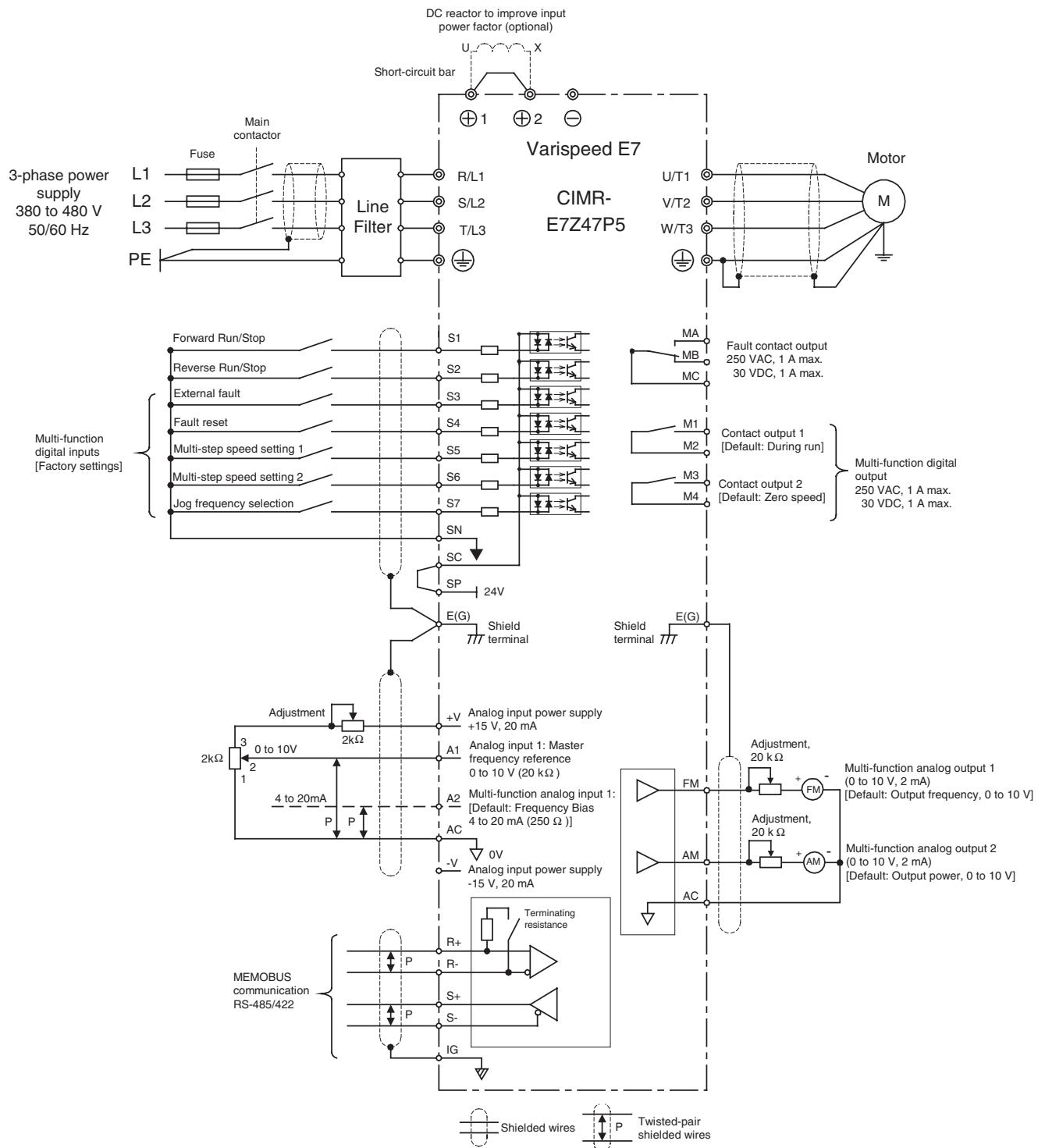


Fig 3

Voltage	Max. Applicable Motor Output kW	Inverter CIMR-E7Z□	Fig	Dimensions in mm											Approx. Mass kg	Cooling Method								
				W	H	D	W1	H0	H1	H2	H3	D1	T1	d										
200 V Class (3-phase)	0.4	20P4 1	1	140	280	157	126	280	266	7	---	39	5	M5	3	Self cooled								
	0.75	20P7 1																						
	1.5	21P5 1																						
	2.2	22P2 1																						
	3.7	23P7 1																						
	5.5	25P5 1																						
	7.5	27P5 1	2	200	300	197	186	300	285	8	0	65.5	2.3	M6	6	Fan cooled								
	11	2011 1																						
	15	2015 1		240	350	207	216	350	335	7.5	0	78												
	18.5	2018 1																						
	22	2022 1	3	254	535	258	195	400	385	7.5	135	100	100	M10	11									
	30	2030 1																						
	37	2037 1		380	809	298	250	600	575	12.5	209	130												
	45	2045 1																						
	55	2055 1		453	1027	348	325	725	700	12.5	302	130												
	75	2075 1																						
400 V Class (3-phase)	0.4	40P4 1	1	140	280	157	126	280	266	7	---	39	5	M5	3	Self Cooled								
	0.75	40P7 1																						
	1.5	41P5 1		240	350	207	216	350	335	7.5	0	78												
	2.2	42P2 1																						
	3.7	43P7 1	3	380	809	298	250	600	575	12.5	209	100												
	4.0	44P0 1																						
	5.5	45P5 1		453	1027	348	325	725	700	12.5	302	130												
	7.5	47P5 1																						
	11	4011 1	2	200	300	197	186	300	285	8	---	65.5	2.3	M6	6	Fan cooled								
	15	4015 1																						
	18.5	4018 1		240	350	207	216	350	335	7.5	---	78												
	22	4022 1																						
	30	4030 1	3	275	535	258	220	450	435	7.5	85	100												
	37	4037 1																						
	45	4045 1		325	715	283	260	550	535	105	105	105												
	55	4055 1																						
	75	4075 1	4	453	1027	348	325	725	700	12.5	302	130												
	90	4090 1																						
	110	4110 1		504	1243	358	370	850	820	15	393	140												
	132	4132 1																						
	160	4160 1																						

## Installation

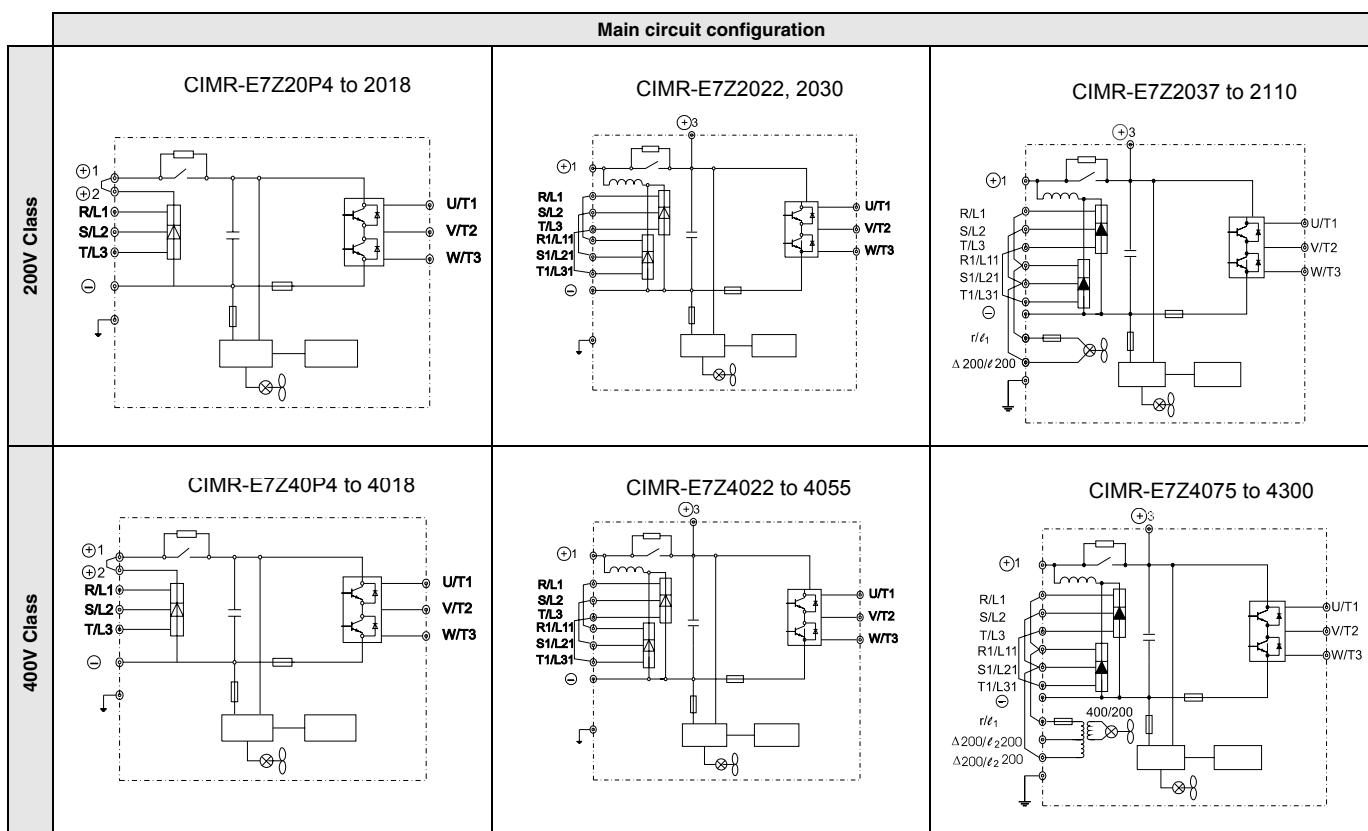
## Standard Connections



**Main Circuit**

Voltage	200 V			400 V						
Model CIMR-E7Z□	20P4 to 2018	2022, 2030	2037 to 2110	40P4 to 4018	4022 to 4055	4075 to 4300				
Max. Applicable Motor Output	0.4 to 18.5 kW	22 to 30 kW	37 to 110 kW	0.4 to 18.5 kW	22 to 55 kW	75 to 300 kW				
R/L1	Main circuit input power supply	Main circuit input power supply	Main circuit input power supply	Main circuit input power supply	Main circuit input power supply	Main circuit input power supply				
S/L2										
T/L3										
R1/L11	---	R-R1, S-S1 and T-T1 have been wired before shipment (See P59).	---	---	R-R1, S-S1 and T-T1 have been wired before shipment	---				
S1/L21										
T1/L31										
U/T1	Inverter output			Inverter output						
V/T2				Inverter output						
W/T3				Inverter output						
⊖	•DC reactor (⊕1- ⊕2) •DC power supply <sup>1</sup> (⊕1 - ⊖)	•DC power supply (⊕1- ⊕2) •Braking unit (⊕3 - ⊖)	•DC reactor (⊕1- ⊕2) •DC power supply <sup>1</sup> (⊕1 - ⊖)	---	•DC power supply (⊕1- ⊕2) •Braking unit (⊕3 - ⊖)	---				
⊕1										
⊕2	---	Cooling fan power supply <sup>2</sup>	---	---	---	Cooling fan power supply <sup>3</sup>				
⊕3										
↙I <sub>2</sub>	---			---						
r/I <sub>1</sub>	---			---						
↙200 / I <sub>2</sub> 200	---			---						
↙400 / I <sub>2</sub> 400	---			---						
⏚	Ground terminal (100 Ω or less)			Ground terminal (10 Ω or less)						

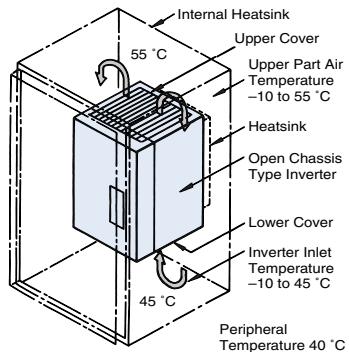
- ⊕1 - ⊖ DC power input does not conform to UL/c-UL listed standard.
- Cooling fan power supply r/I<sub>1</sub> - ↙I<sub>2</sub>: 200 to 220 VAC 50 Hz, 200 to 230 VAC 60 Hz  
(A transformer is required for 230 V 50 Hz or 240 V 50/60 Hz power supply.)
- Cooling fan power supply r/I<sub>1</sub> - ↙200 / I<sub>2</sub> 200: 200 to 220 VAC 50 Hz, 200 to 230 VAC 60 Hz, r/I<sub>1</sub> - ↙400 / I<sub>2</sub> 400: 380 to 480 VAC 50/60 Hz



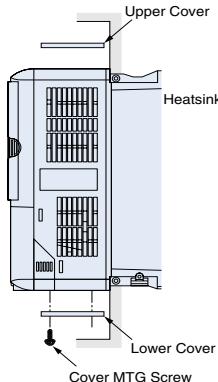
## Control Circuit

Type	No.	Signal Name	Function	Signal Level	
Digital input signals	S1	Forward run/stop command	Forward run when ON; stopped when OFF.	24 VDC, 8 mA Photocoupler isolation	
	S2	Reverse run/stop command	Reverse run when ON; stopped when OFF.		
	S3	External fault input <sup>1</sup>	Fault when ON.		
	S4	Fault reset <sup>1</sup>	Reset when ON		
	S5	Multi-step speed reference 1 <sup>1</sup> (Master/auxiliary switch)	Auxiliary frequency reference when ON.		
	S6	Multi-step speed reference 2 <sup>1</sup>	Multi-step setting 2 when ON.		
	S7	Jog frequency reference <sup>1</sup>	Jog frequency when ON.		
	SC	Digital input common	—		
	SN	Digital Input Neutral	—		
Analog input signals	SP	Digital Input Power Supply	+24VDC power supply for digital inputs	24 VDC, 250 mA max. <sup>2</sup>	
	+V	15 V power output	15 V power supply for analog references	15 V (Max. current: 20 mA)	
	A1	Frequency reference	0 to +10 V/100%	0 to +10 V (20 kΩ)	
	A2	Multi-function analog input	4 to 20 mA/100% 0 V to +10 V/100% 0 to 20 mA/100%	Function is selected by setting H3-09. 4 to 20 mA (250Ω) 0 V to +10 V (20kΩ) 0 to 20 mA (250Ω)	
	AC	Analog reference common	—	—	
Digital output signals	E(G)	Shield wire, optional ground line connection point	—	—	
	M1	Running signal (1NO contact)	Operating when ON.	Relay contacts Contact capacity: 1 A max. at 250 VAC 1 A max. at 30 VDC <sup>3</sup>	
	M2				
	M3	Zero speed	Zero level (b2-01) or below when ON		
	M4				
	MA	Fault output signal	Fault when CLOSED across MA and MC		
	MB		Fault when OPEN across MB and MC		
Analog output signals	MC				
	FM	Multi-function analog output (frequency output)	0 to 10 V, 10V=100% output frequency	0 to +10 V max. ±5% 2 mA max.	
	AC	Analog common	—		
RS-485/422	AM	Multi-function analog output (current monitor)	0 to 10 V, 10V = 200% of the Inverter rated current	Multi-function analog output 2	
	R+	MEMOBUS communications input	For 2-wire RS-485, short R+ and S+ as well as R- and S-.	Differential input, Photocoupler isolation	
	R-			Differential input, Photocoupler isolation	
	S+	MEMOBUS communications output		—	
	S-			—	
	IG	Signal common	—	—	

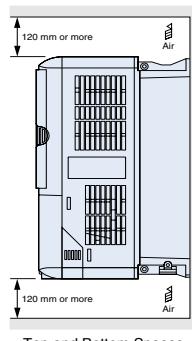
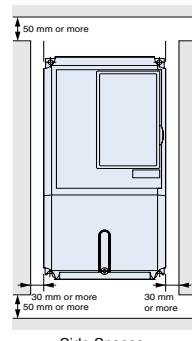
- Note:**
- The default settings are given for terminals S3 to S7. For a 3-wire sequence, the default settings are a 3-wire sequence for S5, multi-step speed setting 1 for S6 and multi-step speed setting 2 for S7.
  - Do not use this power supply for supplying any external equipment.
  - When driving a reactive load, such as a relay coil with DC power supply, always insert a flywheel diode



Remove the upper and lower covers for the models of 15 kW or less in 200 V and 400 V classes.



When using open chassis type inverters of 200 V/400 V 22 kW or more, secure spaces for eyebolts and wiring of the main circuit.



## Inverter Heat Loss

### 200 V Class

Model CIMR-E7Z□		20P4	20P7	21P5	22P2	23P7	25P5	27P5	2011	2015	2018	2022	2030	2037	2045	2055	2075	2090	2110	
Inverter Capacity		kVA	1.2	1.6	2.7	3.7	5.7	8.8	12	17	22	27	32	44	55	69	82	110	130	160
Rated Current		A	3.2	4.1	7.0	9.6	15	23	31	45	58	71	85	115	145	180	215	283	346	415
Heat Loss W	Fin	W	20	27	50	70	112	164	219	374	429	501	586	865	1015	1266	1588	2019	2437	2733
Inside Unit	W	39	42	50	59	74	84	113	170	183	211	274	352	411	505	619	838	997	1242	
Total Heat Loss	W	59	69	100	129	186	248	332	544	612	712	860	1217	1426	1771	2207	2857	3434	3975	
Fin Coding	Self cooled				Fan cooled															

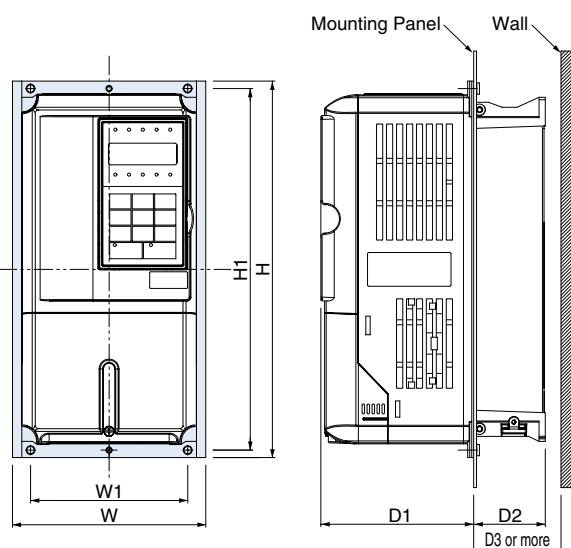
### 400 V Class

Model CIMR-E7Z□		40P4	40P7	41P5	42P2	43P7	44P0	45P5	47P5	4011	4015	4018	4022	4030	4037	4045	4055	4075	4090	4110	4132	4160	4185	4220	
Inverter Capacity		kVA	1.4	1.6	2.8	4.0	5.8	6.0	9.5	13	18	24	30	34	46	57	69	85	110	140	160	200	230	280	390
Rated Current		A	1.8	2.1	3.7	5.3	7.6	8.0	12.5	17	24	31	39	45	60	75	91	112	150	180	216	260	304	370	506
Heat Loss W	Fin	W	14	17	36	59	80	91	127	193	252	326	426	466	678	784	901	1203	1399	1614	2097	2388	2791	3237	3740
Inside Unit	W	39	41	48	56	68	70	82	114	158	172	208	259	317	360	415	495	575	671	853	1002	1147	1372	1537	
Total Heat Loss	W	53	58	84	115	148	161	209	307	410	498	634	725	995	1144	1316	1698	1974	2285	2950	3390	3938	4609	5277	
Fin Coding	Self cooled				Fan cooled																				

## Attachments

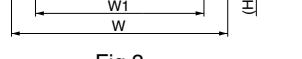
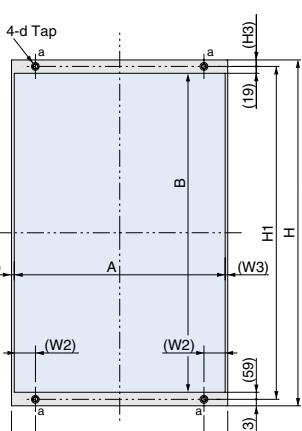
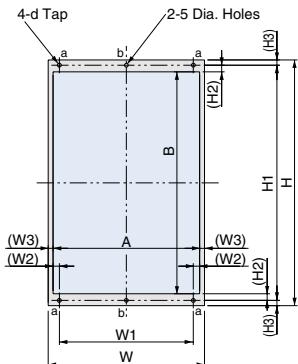
### Heatsink External Mounting Attachment

The Varispeed E7 inverters under the 200/400 V class 18.5 kW or less need this attachment for mounting the heatsink externally. This attachment expands the outer dimensions of the width and height of the inverter. (Attachment is not required for inverters of 22 kW or more.)



Model CIMR-E7Z□	Attachment Order Code	Dimensions in mm						
		W	H	W1	H1	D1	D2	D3
20P4								
20P7	72616-EZZ08676A	155	302	126	290	122.6	37.4	40
21P5								
22P2							57.4	60
23P7								
25P5	72616-EZZ08676B	210	330	180	316	136.1	63.4	70
27P5								
2011	72616-EZZ08676C	250	392	216	372	133.6	76.4	85
2015								
2018								
40P4								
40P7	72616-EZZ08676A	155	302	126	290	122.6	37.4	40
41P5								
42P2							57.4	60
43P7								
45P5	72616-EZZ08676B	210	330	180	316	136.1	63.4	70
47P5								
4011	72616-EZZ08676C	250	392	216	372	133.6	76.4	85
4015								
4018								

## Panel Cut for External Mounting of Cooling Fin (Heatsink)

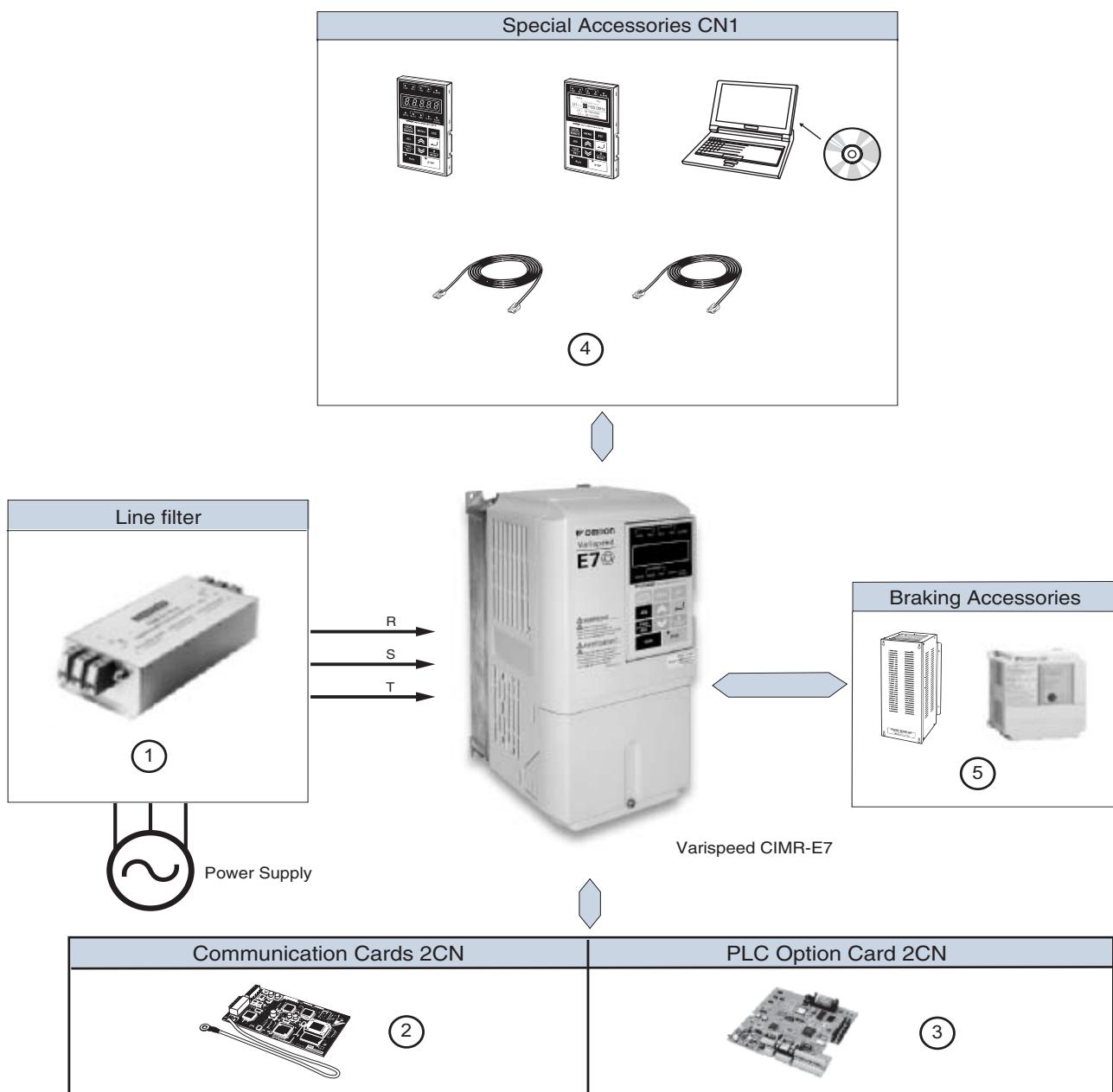


Model CIMR- E7Z□	Drawing	Dimensions in mm											
		W	H	W1	(W2)	(W3)	H1	(H2)	(H3)	A	B	d	
20P4	1	155	302	126	6	8.5	290	9.5	6	138	271	M5	
20P7		210	330	180	8.5	6.5	316	9	7	197	298	M6	
21P5		250	392	216		8.5	372	9.5	10	233	353		
22P2	2	250	400	195	24.5	3	385	8	7.5	244	369	M10	
23P7		275	450	220	54.5	435	575	15	12.5	359	545		
25P5		375	600	250		8	700	13.5		434	673		
27P5	1	450	725	325	24.5	316	9	7	197	298	M12		
2011		500	850	370		8	820	19	15	484	782		
2015		575	885	445	55	10	855	1	15	555	817		
2018	2	40P4	155	302	126	6	8.5	290	9.5	6	138	271	M5
2022		40P7	210	330	180	8.5	6.5	316	9	7	197	298	M6
2030		41P5	250	392	216		8.5	372	9.5	10	233	353	
2037	1	42P2	275	450	220	54.5	435	575	15	12.5	359	545	M10
2045		43P7	325	550	260		8	535	700		434	673	
2055		45P5	450	725	325	54.5	8	700	13.5	12.5	484	782	
2075	2	47P5	4011	500	850	370	57	8	820	19	15	555	817
2090		4015	4018	575	885	445	55	10	855	1	15	555	817
2110		4022	4030	275	450	220	24.5	3	435	8	7.5	269	419
40P7	1	4037	325	550	260	8.5	535	700	13.5	12.5	309	519	
41P5		4045	450	725	325	54.5	8	700	13.5	12.5	434	673	M10
42P2		4055	4075	500	850	370	57	8	820	19	15	484	782
43P7	2	4090	4110	575	925	445	55	10	895	1	15	555	817
45P5		4132	4160	575	925	445	55	10	895	1	15	555	817
47P5		4160	4160	575	925	445	55	10	895	1	15	555	817

1.The sizes are different between the top and the bottom. Refer Fig 3

## Ordering Information

### System Configuration



**① Input Filters**



200 V

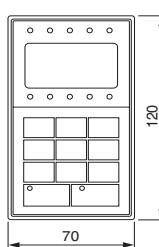
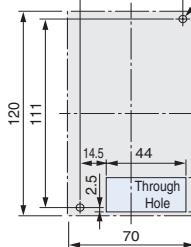
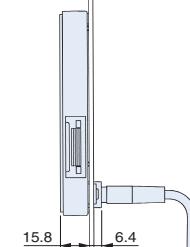
Inverter Model	Line Filters				
	Type	EN55011 Class	Current (A)	Weight (kg)	Dimensions W x D x H
CIMR-E7Z20P4		B, 25 m A, 100 m	10	1.1	141x45x330
CIMR-E7Z20P7	3G3RV-PFI3010-SE	B, 25 m A, 100 m	10	1.1	141x45x330
CIMR-E7Z21P5		B, 25 m A, 100 m	18	1.3	141x46x330
CIMR-E7Z22P2	3G3RV-PFI3018-SE	B, 25 m A, 100 m	18	1.3	141x46x330
CIMR-E7Z23P7		B, 25 m A, 100 m	35	1.4	141x46x330
CIMR-E7Z25P5	3G3RV-PFI2035-SE	B, 25 m A, 100 m	35	1.4	141x46x330
CIMR-E7Z27P5		B, 25 m A, 100 m	60	3	206x60x355
CIMR-E7Z2011	3G3RV-PFI2060-SE	B, 25 m A, 100 m	60	3	206x60x355
CIMR-E7Z2015		B, 25 m A, 100 m	100	4.9	236x80x408
CIMR-E7Z2018	3G3RV-PFI2100-SE	B, 25 m A, 100 m	100	4.9	236x80x408
CIMR-E7Z2022		A, 100 m	130	4.3	90x180x366
CIMR-E7Z2030	3G3RV-PFI2130-SE	A, 100 m	130	4.3	90x180x366
CIMR-E7Z2037		A, 100 m	160	6.0	120x170x451
CIMR-E7Z2045	3G3RV-PFI2200-SE	A, 100 m	200	11.0	130x240x610
CIMR-E7Z2055		A, 100 m	400	18.5	300x160x564
CIMR-E7Z2075	3G3RV-PFI3400-SE	A, 100 m	400	18.5	300x160x564
CIMR-E7Z2090		A, 100 m	600	11.0	260x135x386
CIMR-E7Z2110	3G3RV-PFI3600-SE	A, 100 m	600	11.0	260x135x386

400 V

Inverter Model	Line Filter				
	Model	EN 55011 Class*	Current (A)	Weight (kg)	Dimensions W x D x H
Varispeed E7					
CIMR-E7Z40P4					
CIMR-E7Z40P7					
CIMR-E7Z41P5					
CIMR-E7Z42P2					
CIMR-E7Z43P7					
CIMR-E7Z44P0					
CIMR-E7Z45P5					
CIMR-E7Z47P5					
CIMR-E7Z4011					
CIMR-E7Z4015					
CIMR-E7Z4018					
CIMR-E7Z4022					
CIMR-E7Z4030					
CIMR-E7Z4037					
CIMR-E7Z4045					
CIMR-E7Z4055					
CIMR-E7Z4075					
CIMR-E7Z4090					
CIMR-E7Z4110					
CIMR-E7Z4132					
CIMR-E7Z4160					
CIMR-E7Z4185					
CIMR-E7Z4220					
CIMR-E7Z4300					
3G3RV-PFI3010-SE					
3G3RV-PFI3018-SE					
3G3RV-PFI3035-SE					
3G3RV-PFI3060-SE					
3G3RV-PFI3070-SE					
3G3RV-PFI3130-SE					
3G3RV-PFI3170-SE					
3G3RV-PFI3200-SE					
3G3RV-PFI3400-SE					
3G3RV-PFI3600-SE					
3G3RV-PFI3800-SE					

Type	Name	Description	Function
(2) Communication option card	3G3RV-PDRT2	DeviceNet option card	<ul style="list-style-type: none"> <li>Used for running or stopping the inverter, setting or referencing parameters, and monitoring output frequency, output current, or similar items through DeviceNet communication with the host controller.</li> </ul>
	SI-P1	Profibus-DP option card	<ul style="list-style-type: none"> <li>Used for running or stopping the inverter, setting or referencing parameters, and monitoring output frequency, output current, or similar items through Profibus-DP communication with the host controller.</li> </ul>
	SI-S1	CANopen option card	<ul style="list-style-type: none"> <li>Used for running or stopping the inverter, setting or referencing parameters, and monitoring output frequency, output current, or similar items through CANopen communication with the host controller.</li> </ul>
	SI-J1	LONWORKS option card	<ul style="list-style-type: none"> <li>Used for HVAC control, running or stopping the inverter, setting or referencing parameters, and monitoring output current, watt-hours, or similar items through LONWORKS communications with peripheral devices.</li> </ul>
(3) PLC option	3G3RV-P10ST8-E	PLC option	<ul style="list-style-type: none"> <li>Full features, wireless installation and seamless access to the inverter parameters and analogue/digital inputs and outputs</li> <li>Embedded Compobus/S fieldbus</li> <li>Standard Omron tools can be used for programming</li> </ul>
	3G3RV-P10ST8-E-DRT-E	PLC option with DeviceNet	<ul style="list-style-type: none"> <li>Same features than standard models with DeviceNet support</li> </ul>

#### ④ Accessories

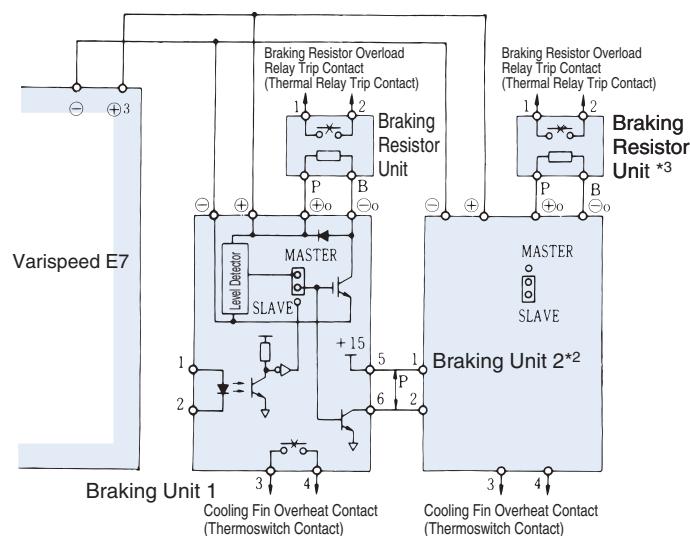
	Name	Description	Installation
Digital operator	JVOP-160-OY	5 lines LCD digital operator	 <p>Panel Cutout</p> <p>Panel</p> <p>2-M3 MTG Holes</p> <p>Through Hole</p>
	JVOP-161-OY	7 segment LED digital operator	 <p>Panel Cutout</p> <p>Panel</p> <p>2-M3 MTG Holes</p> <p>Through Hole</p>
	JVOP-162	Hand-Off auto operator	 <p>Panel Cutout</p> <p>Panel</p> <p>2-M3 MTG Holes</p> <p>Through Hole</p>
Accessories	3G3IV-PCN126 3G3IV-PCN326	Digital operator extension cable 1 meter 3 meters	-----
	3G3IV-PCN329-E	PC configuration cable	-----
	Sysdrive Configurator	Computer software	Configuration and monitoring software tool
	Users Manual	YEG-TOE-S616-56.1-OY	-----

**(5) Braking Unit, Braking Resistor Unit**

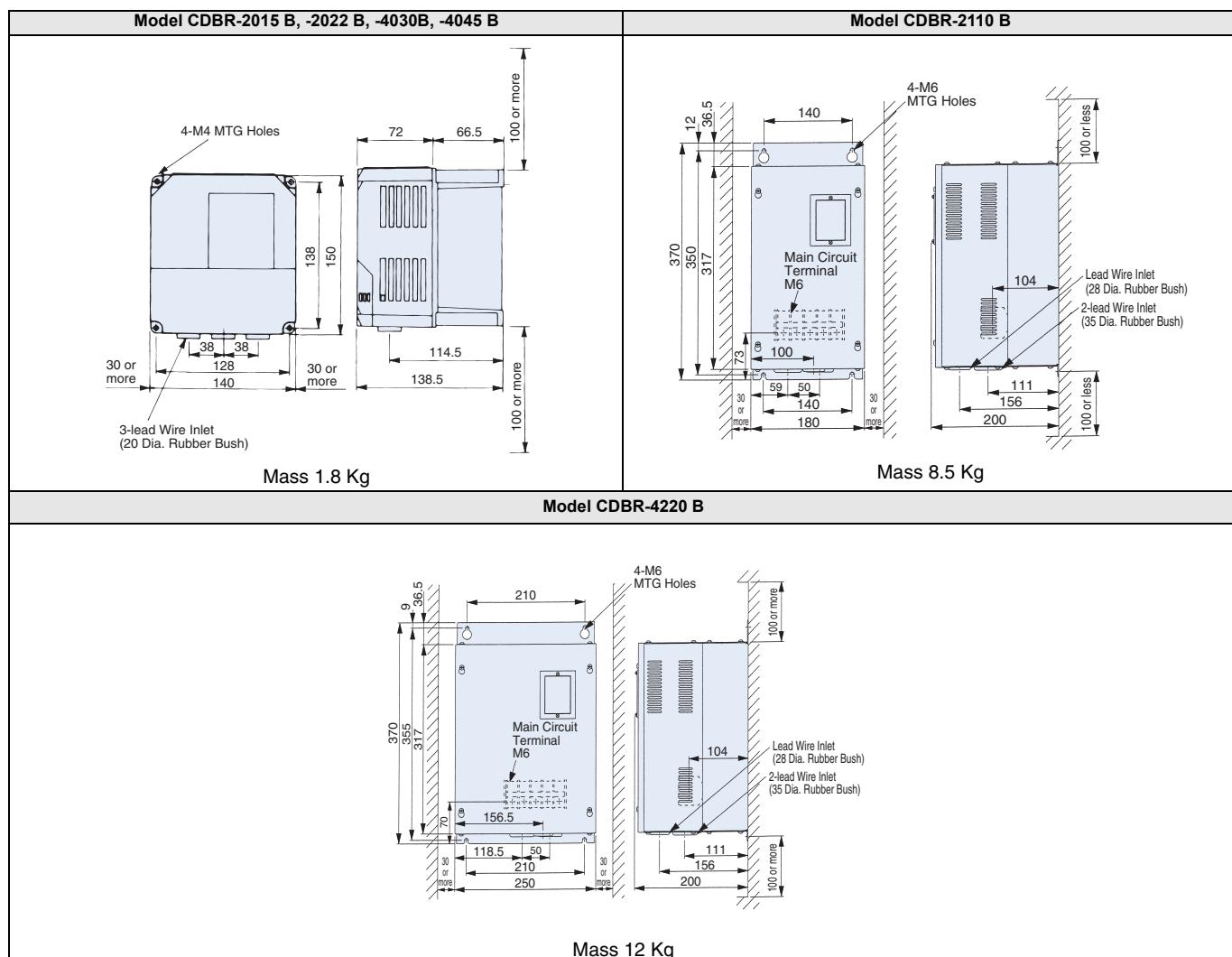
Inverter				Braking Resistor Unit						
				Separately-installed Type (10 %ED, 10 sec. max.) <sup>1</sup>						
Voltage	Max. Applicable Motor output kW	Model CIMR-E7Z□	Model CDBR□	No. of used	Model LKEB□	Specifications of Resistor		No. of used	Braking torque %	Connectable Min Resistance Value Ω
200 V Class	0.4	20P4	2022B	1	20P7	70 W	200 Ω	1	220	48
	0.75	20P7			20P7	70 W	200 Ω	1	125	48
	1.5	21P5			21P5	260 W	100 Ω	1	125	48
	2.2	22P2			22P2	260 W	70 Ω	1	120	16
	3.7	23P7			23P7	390 W	40 Ω	1	125	16
	5.5	25P5			25P5	520 W	30 Ω	1	115	16
	7.5	27P5			27P5	780 W	20 Ω	1	125	9.6
	11	2011			2011	2400 W	13.6 Ω	1	125	9.6
	15	2015			2015	3000 W	10 Ω	1	125	9.6
	18.5	2018			2015	3000 W	10 Ω	1	125	9.6
	22	2022			2022	4800 W	6.8 Ω	1	125	6.4
	30	2030	2015B	2	2015	3000 W	10 Ω	2	125	9.6
	37	2037	2015B	2	2015	3000 W	10 Ω	2	100	9.6
	45	2045	2022B	2	2022	4800 W	6.8 Ω	2	120	6.4
	55	2055	2022B	2	2022	4800 W	6.8 Ω	2	100	6.4
	75	2075	2110B	1	2022	4800 W	6.8 Ω	3	110	1.6
	90	2090	2110B	1	2022	4800 W	6.8 Ω	4	120	1.6
	110	2110	2110B	1	2018	4800 W	8 Ω	5	100	1.6
400 V Class	0.4	40P4	4030B	1	40P7	70 W	750 Ω	1	230	96
	0.75	40P7			40P7	70 W	750 Ω	1	130	96
	1.5	41P5			41P5	260 W	400 Ω	1	125	64
	2.2	42P2			42P2	260 W	250 Ω	1	135	64
	3.7	43P7			43P7	390 W	150 Ω	1	135	32
	5.5	45P5			45P5	520 W	100 Ω	1	135	32
	7.5	47P5			47P5	780 W	75 Ω	1	130	32
	11	4011			4011	1040 W	50 Ω	1	135	20
	15	4015			4015	1560 W	40 Ω	1	125	20
	18.5	4018			4018	4800 W	32 Ω	1	125	19.2
	22	4022			4022	4800 W	27.2 Ω	1	125	19.2
	30	4030	4030B	1	4030	6000 W	20 Ω	1	125	19.2
	37	4037	4045B	1	4037	9600 W	16 Ω	1	125	12.8
	45	4045	4045B	1	4045	9600 W	13.6 Ω	1	125	12.8
	55	4055	4030B	2	4030	6000 W	20 Ω	2	135	19.2
	75	4075	4045B	2	4045	9600 W	13.6 Ω	2	145	12.8
	90	4090	4220B	1	4030	6000 W	20 Ω	3	100	3.2
	110	4110	4220B	1	4030	6000 W	20 Ω	3	100	3.2
	132	4132	4220B	1	4045	9600 W	13.6 Ω	4	140	3.2
	160	4160	4220B	1	4045	9600 W	13.6 Ω	4	140	3.2
	185	4185	4220B	1	4045	9600 W	13.6 Ω	4	120	3.2
	220	4220	4220B	1	4037	9600 W	16 Ω	5	110	3.2
	300	4300	4220B	2	4045	9600 W	13.6 Ω	6	110	3.2

- Load factor during deceleration to stop a load with constant torque. With constant output or continuous regenerative braking, the load factor is smaller than the specified value.
- Resistance value per one braking unit. Select a resistance value that is larger than connectable minimum resistance value to obtain enough braking torque.
- For an application with large regenerative power such as hoisting, the braking torque or other items may exceed the capacity of a braking unit with a braking resistor in a standard combination (an result in capacity overload). Contact your Omron representatives when the braking torque or any other item exceeds the values in the table.

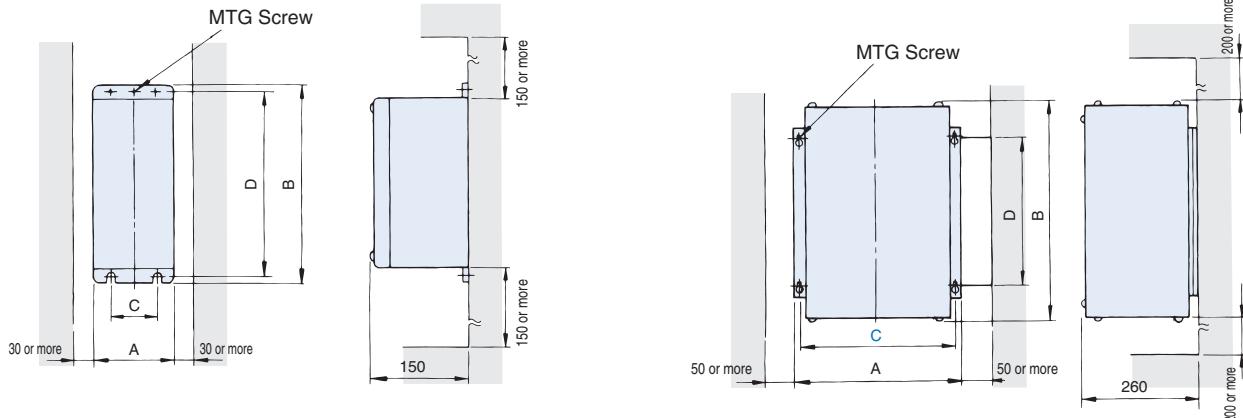
## Connections for braking units



## Braking Unit



## Braking Resistor Unit (Separately-installed Type)

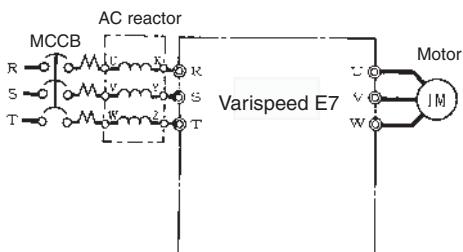


Voltage	Model LKEB-	Dimensions in mm					Mass kg
		A	B	C	D	MTG Screw	
220 V Class	20P7	105	275	50	260	M5 x 3	3.0
	21P5	130	350	75	335	M5 x 4	4.5
	22P2	130	350	75	335	M5 x 4	4.5
	23P7	130	350	75	335	M5 x 4	5.0
	25P5	250	350	200	335	M6 x 4	7.5
	25P5	250	350	200	335	M6 x 4	8.5
400 V Class	40P7	105	275	50	260	M5 x 3	3.0
	41P5	130	350	75	335	M5 x 4	4.5
	42P2	130	350	75	335	M5 x 4	4.5
	43P7	130	350	75	335	M5 x 4	5.0
	45P5	250	350	200	332	M6 x 4	7.5
	47P5	250	350	200	332	M6 x 4	8.5

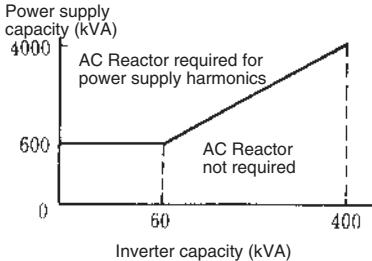
Voltage	Model LKEB□	Dimensions in mm					Mass kg
		A	B	C	D	MTG Screw	
220 V Class	2011	266	543	246	340	M8 x 4	10
	2015	356	543	336	340	M8 x 4	15
	2018	446	543	426	340	M8 x 4	19
	2022	446	543	426	340	M8 x 4	19
400 V Class	4011	350	412	330	325	M6 x 4	16
	4015	350	412	330	325	M6 x 4	18
	4018	446	543	426	340	M8 x 4	19
	4022	446	543	426	340	M8 x 4	19
	4030	356	956	336	740	M8 x 4	25
	4037	446	956	426	740	M8 x 4	33
	4045	446	956	426	740	M8 x 4	33

## AC Reactor

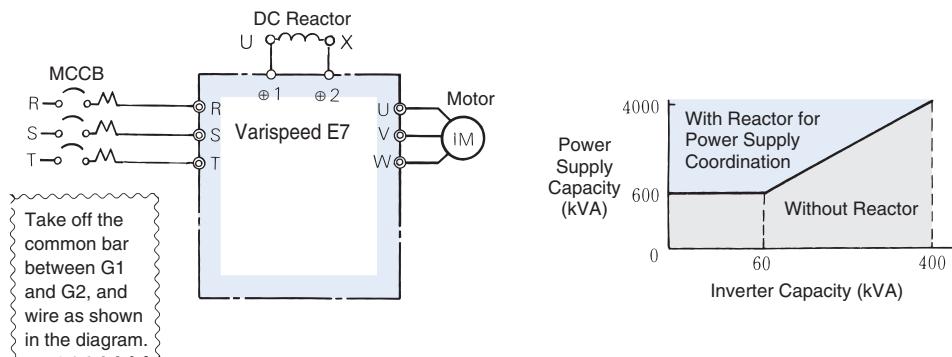
Connection Example



Application Example



200 V Class				400 V Class			
Max. Applicable Motor Output kW	Current Value A	Inductance mH	Code No.	Max. Applicable Motor Output kW	Current Value A	Inductance mH	Code No.
0.4	2.5	4.2	X 002553	0.4	1.3	18.0	X 002561
0.75	5	2.1	X 002554	0.75	2.5	8.4	X 002562
1.5	10	1.1	X 002489	1.5	5	4.2	X 002563
2.2	15	0.71	X 002490	2.2	7.5	3.6	X 002564
3.7	20	0.53	X 002491	3.7	10	2.2	X 002500
5.5	30	0.35	X 002492	5.5	15	1.42	X 002501
7.5	40	0.265	X 002493	7.5	20	1.06	X 002502
11	60	0.18	X 002495	11	30	0.7	X 002503
15	80	0.13	X 002497	15	40	0.53	X 002504
18.5	90	0.12	X 002498	18.5	50	0.42	X 002505
22	120	0.09	X 002555	22	60	0.36	X 002506
30	160	0.07	X 002556	30	80	0.26	X 002508
37	200	0.05	X 002557	37	90	0.24	X 002509
45	240	0.044	X 002558	45	120	0.18	X 002566
55	280	0.038	X 002559	55	150	0.15	X 002567
75	360	0.026	X 002560	75	200	0.11	X 002568
90	500	0.02	X 010145	90/110	250	0.09	X 002569
110	500	0.02	X 010145	132/160	330	0.06	X 002570
				185			
				220	490	0.04	X 002690
				300	660	0.03	X 002691

**DC Reactor**

200 V Class				400 V Class			
Max. Applicable Motor Output kW	Current Value A	Inductance mH	Code No.	Max. Applicable Motor Output kW	Current Value A	Inductance mH	Code No.
0.4	5.4	8	X010048	0.4	3.2	28	X010052
0.75				0.75			
1.5	18	3	X010049	1.5	5.7	11	X010053
2.2				2.2			
3.7				3.7			
5.5	36	1	X010050	5.5	23	3.6	X010055
7.5				7.5			
11	72	0.5	X010051	11	33	1.9	X010056
15				15			
18.5	90	0.4	X010176	18.5	47	1.3	X010177
22 to 110	Built-in			22 to 300	Built-in		

**Fuse installation**

To protect the inverter, it is recommended to use semiconductor fuses like they are shown in the table below

Inverter Type	FUSE		
	Voltage (V)	Current (A)	I <sup>2</sup> t (A <sup>2</sup> s)
20P4	240	10	12-25
20P7	240	10	12-25
21P5	240	15	23-55
22P2	240	20	34-98
23P7	240	30	82-220
25P5	240	40	220-610
27P5	240	60	290-1300
2011	240	80	450-5000
2015	240	100	1200-7200
2018	240	130	1800-7200
2022	240	150	870-16200
2030	240	180	1500-23000
2037	240	240	2100-19000
2045	240	300	2700-55000
2055	240	350	4000-55000
2075	240	450	7100-64000
2090	240	550	11000-64000
2110	240	600	13000-83000

40P4	480	5	6-55
40P7	480	5	6-55
41P5	480	10	10-55
42P2	480	10	18-55
43P7	480	15	34-72
44P0	480	20	50-570
45P5	480	25	100-570
47P5	480	30	100-640
4011	480	50	150-1300
4015	480	60	400-1800
4018	480	70	700-4100
4022	480	80	240-5800
4030	480	100	500-5800
4037	480	125	750-5800
4045	480	150	920-13000
4055	480	150	1500-13000
4075	480	250	3000-55000
4090	480	300	3800-55000
4110	480	350	5400-23000
4132	480	400	7900-64000
4160	480	450	14000-250000
4185	480	600	20000-250000
4220	480	700	34000-400000
4300	480	900	52000-920000

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

CIMR-L7Z

# Varispeed L7

## The Frequency Inverter for Lifts

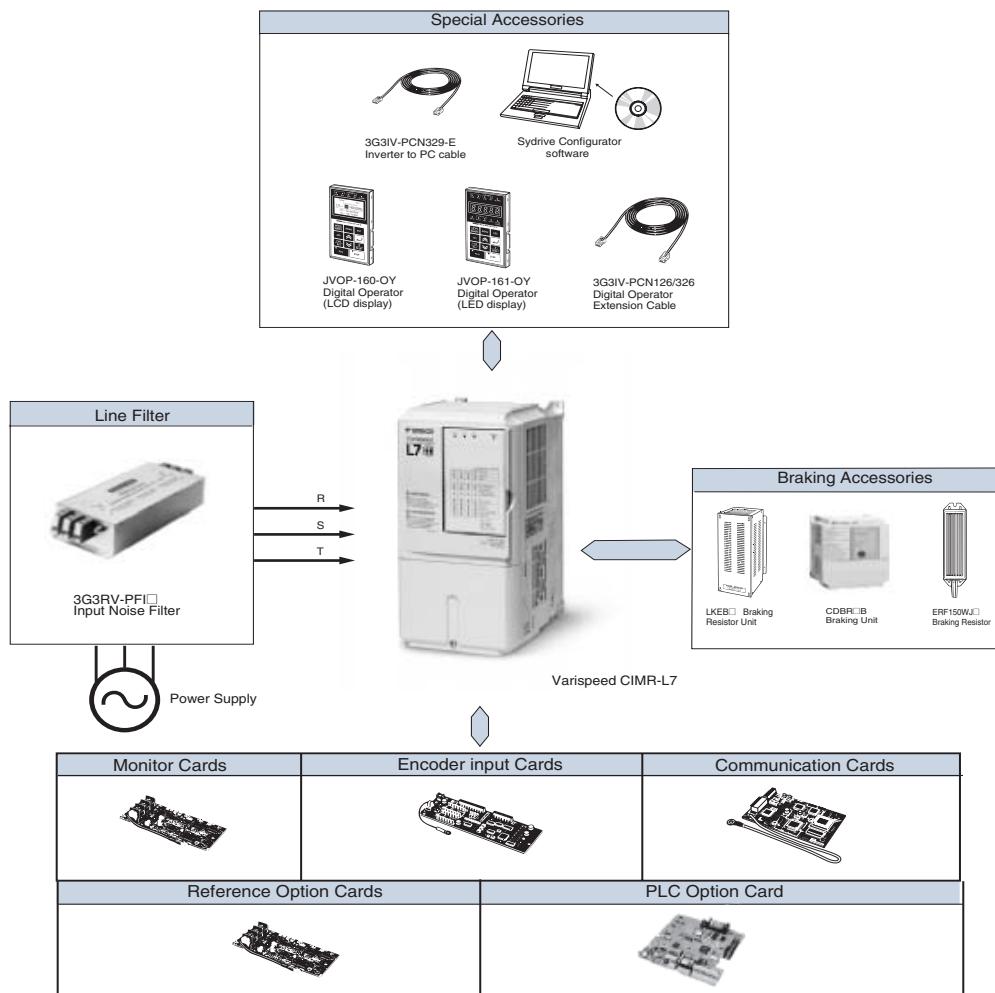
- Three control methods: Close loop current vector control, Sensorless current vector control, V/F control.
- High rated output current at high carrier frequency
- Direct control of motor brake and contactors
- Dedicated lift sequence built-in
- Emergency evacuation (battery operation)
- Short floor operation
- Door opening signal
- Stand still auto-tuning
- PLC Option
- Fieldbus options: DeviceNet, CANOpen, ProfiBus
- CE, UL, and cUL marking

## Ratings

- 200 V Class three-phase 3.7 to 55 KW
- 400 V Class three-phase 4.0 to 55 KW

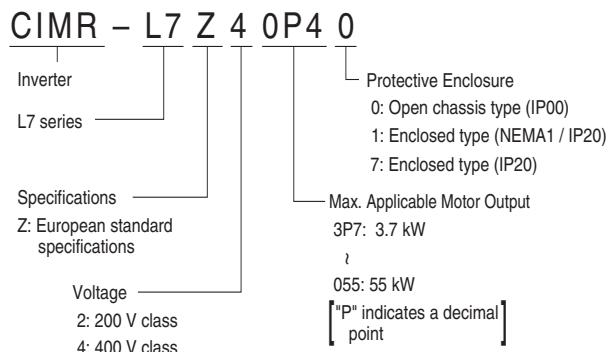


## System Configuration



## Specifications

### Type Designation



### 200 V Class

Model CIMR-L7ZZ□		23P7	25P5	27P5	2011	2015	2018	2022	2030	2037	2045	2055
Max. applicable motor output <sup>1</sup>		3.7	5.5	7.5	11	15	18.5	22	30	37	45	55
Output characteristics	Inverter Capacity kVA	7	10	14	20	27	33	40	54	67	76	93
	Rated Current A	17.5	25	33	49	64	80	96	130	160	183	224
	Max. Voltage	3-phase; 200, 208, 220, 230, or 240 VAC (Proportional to input voltage.)										
	Max. output Frequency	Up to 120Hz available by programing.										
Power Supply	Rated Input Voltage and Frequency	3-phase, 200/208/220/230/240 VAC, 50/60 Hz										
	Rated input current A	21	25	40	52	68	96	115	156	176	220	269
	Allowable Voltage Fluctuation	+ 10%, - 15%										
	Allowable Frequency Fluctuation	±5%										
Harmonic Wave Prevention	DC Reactor	Optional						Built In				
	12-Pulse Input	Not possible						Possible				

- The maximum applicable motor output is given for a standard 4-pole Yaskawa motor. When selecting the actual motor and Inverter, be sure that the Inverter's rated current is applicable for the motor's rated current.
- A transformer with dual star-delta secondary is required on the power supply for 12-pulse rectification.

### 400 V Class

Model CIMR-L7ZZ□		44P0	45P5	47P5	4011	4015	4018	4022	4030	4037	4045	4055
Max. applicable motor output <sup>1</sup>		4.0	5.5	7.5	11	15	18.5	22	30	37	45	55
Output characteristics	Inverter Capacity kVA	9	12	15	22	28	34	40	54	67	80	106
	Rated Current A	11	14	18	27	34	41	48	65	80	96	128
	Max. Voltage	3-phase; 380, 400, 415, 440, 460, or 480 VAC (Proportional to input voltage.)										
	Max. output Frequency	120 Hz max.										
Power Supply	Rated Input Voltage and Frequency	3-phase, 380, 400, 415, 440, 460 or 480 VAC, 50/60 Hz										
	Rated input current A	13.2	17	22	32	41	49	58	78	96	115	154
	Allowable Voltage Fluctuation	+ 10%, - 15%										
	Allowable Frequency Fluctuation	±5%										
Harmonic Wave Prevention	DC Reactor	Optional						Built In				
	12-Pulse Input	Not possible						Possible				

- The maximum applicable motor output is given for a standard 4-pole Yaskawa motor. When selecting the actual motor and Inverter, be sure that the Inverter's rated current is applicable for the motor's rated current.
- A transformer with dual star-delta secondary is required on the power supply for 12-pulse rectification.

**Enclosures**

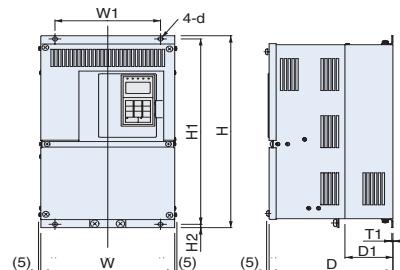
200V Class	Model CIMR-L7Z□	20P4	20P7	21P5	22P2	23P7	25P5	27P5	2011	2015	2018	2022	2030	2037	2045	2055
	Enclosed Type (IEC IP20)	Available as standard														
	Open Chassis Type (IEC IP00)	Available by removing the upper and lower cover of enclosed type														
400V Class	Model CIMR-F7Z□	40P4	40P7	41P5	42P2	43P7	45P5	47P5	4011	4015	4018	4022	4030	4037	4045	4055
	Enclosed Type (IEC IP20)	Available as standard														
	Open Chassis Type (IEC IP00)	Available by removing the upper and lower cover of enclosed type														

**Common Specifications**

Model Number CIMR-L7Z□	Specification
Control characteristics	Control method Sine wave PWM Closed Loop Vector control, Open Loop Vector control, V/f control
	Carrier frequency 8 kHz higher carrier frequency possible with current derating.
	Speed control range 1:40 (V/f control) 1:100 (Open Loop Vector control) 1:1000 (Closed Loop Vector control)
	Speed control accuracy ± 3% (V/f control) ± 0.2% (Open Loop Vector control) ± 0.02% (Closed Loop Vector control) (25°C ± 10°C)
	Speed control response 5 Hz (control without PG) 30 Hz (control with PG)
	Torque limits Provided (4 quadrant steps can be changed by constant settings.) (Vector control)
	Torque accuracy ± 5%
	Frequency range 0.01 to 120 Hz
	Frequency accuracy (temperature characteristics) Digital references: ± 0.01% (-10°C to +40°C) Analog references: ± 0.1% (25°C ± 10°C)
	Frequency setting resolution Digital references: 0.01 Hz Analog references: 0.025/50 Hz (11 bits plus sign)
	Output frequency resolution 0.01 Hz
	Overload capacity and maximum current 150% of rated output current for 30 sec.
	Frequency setting signal 0 to +10V
	Accel/Decel time 0.01 to 600.00 s (4 selectable combinations of independent acceleration and deceleration time settings)
	Main control functions Overtorque/undertorque detection, torque limits, 8-speed control (maximum), 4 acceleration and deceleration times, S-curve acceleration/deceleration, auto-tuning (rotational or stationary), dwell function, cooling fan ON/OFF control, slip compensation, torque compensation, auto-restart after fault, DC braking for starting and stopping, A fault reset and parameter copy function, special Lift functions and sequences, short floor, hardware baseblock
	Protective functions
Protective functions	Motor protection Protection by electronic thermal overload relay.
	Instantaneous overcurrent protection Stops at approx. 200% of rated output current.
	Fuse blown protection Stops for fuse blown.
	Overload protection OL2 fault at 150% of rated output current for 30 sec
	Oversupply protection 200 Class Inverter: Stops when main-circuit DC voltage is above 410 V. 400 Class Inverter: Stops when main-circuit DC voltage is above 820 V.
	Undervoltage protection 200 Class Inverter: Stops when main-circuit DC voltage is below 190 V. 400 Class Inverter: Stops when main-circuit DC voltage is below 380 V.
	Cooling fin overheating Protection by thermistor.
	Stall prevention Stall prevention during acceleration, deceleration and running independently.
	Grounding protection Protection by electronic circuits.
	Charge indicator Glow when the main circuit DC voltage is approx. 10 VDC or more.
Protective structure	Enclosed wall-mounted type (IP20) : All models
	Enclosed wall-mounted type (NEMA 1): 18.5 kW or less (same for 200 V and 400 V class Inverters) Open chassis type (IP00): 22 kW or more (same for 200 V and 400 V class Inverters)
Environment	Ambient operating temperature -10°C to 45°C
	Ambient operating humidity 95% max. (with no condensation)
	Storage temperature -20°C to + 60°C (short-term temperature during transportation)
	Application site Indoor (no corrosive gas, dust, etc.)
	Altitude 1000 m max.
	Vibration 10 to 20 Hz, 9.8 m/s <sup>2</sup> max.; 20 to 50 Hz, 2 m/s <sup>2</sup> max

## Dimensions

### Open Chassis Type (IEC IP00)



Voltage	Max. Applicable Motor Output kW	Inverter CIMR-L7Z□	Dimensions in mm										Approx. Mass kg	Cooling Method
			W	H	D	W1	H1	H2	D1	T1	d			
Use the enclosed type (IP20) removing the upper and bottom cover														
200 V Class (3-phase)	3.7	---												Fan cooled
	5.5	---												
	7.5	---												
	11	---												
	15	---												
	18.5	---												
	22	---												
	30	2030 0	275	450	258	220	435	7.5	100	2.3	M6	24		
	37	2037 0	375	600	298	250	575	12.5	100	3.2	M10	57		
	45	2045 0			328				130			63		
400 V Class (3-phase)	55	2055 0	450	725	348	325	700					86		
	4.0	---												
	5.5	---												
	7.5	---												
	11	---												
	15	---												
	18.5	---												
	22	4022 0	275	450	258	220	435	7.5	100	2.3	M6	21		
	30	4030 0	325	550	283	260	535		105			36		
	37	4037 0												
	45	4045 0												
	55	4055 0												

### Enclosed Type (IEC IP20)

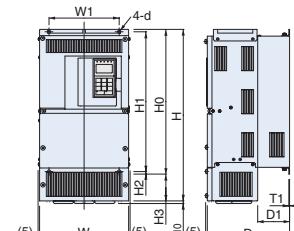
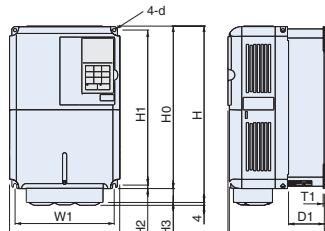
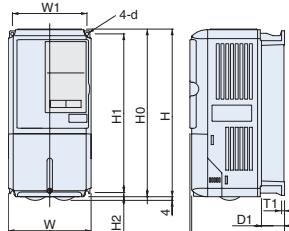


Fig 1

Fig 2

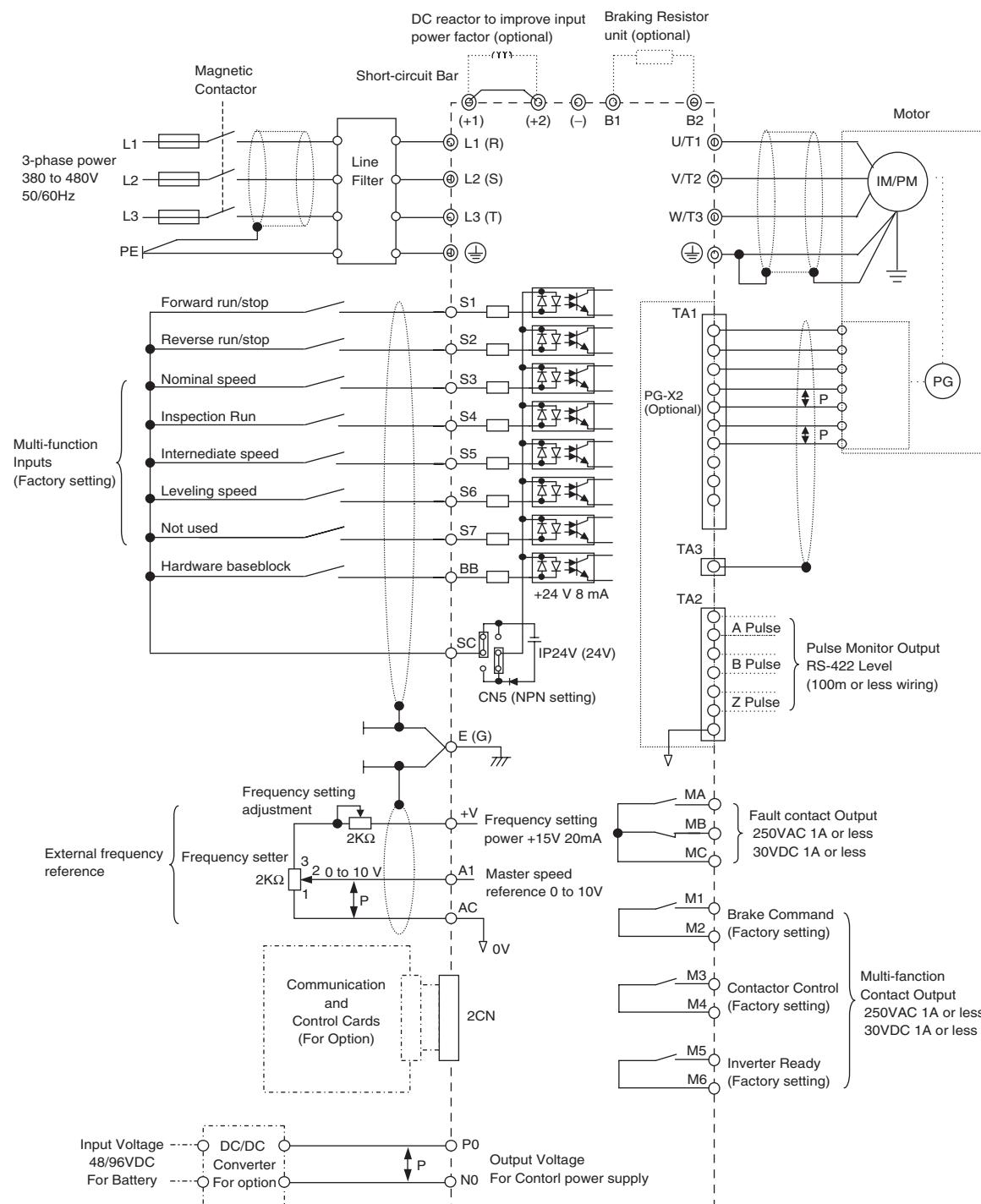
Fig 3

Voltage	Max. Applicable Motor Output kW	Inverter CIMR-L7Z□	Fig	Dimensions in mm												Approx. Mass kg	Cooling Method
				W	H	D	W1	H0	H1	H2	H3	D1	T1	d			
Use the enclosed type (IP20) removing the upper and bottom cover																	
200 V Class (3-phase)	3.7	23P7 7	1	140	280	177	126	280	266	7	---	59	5	M5	4	Fan cooled	
	5.5	25P5 7		200	300	197	186	300	285	8	0	65.5			6		
	7.5	27P5 7			310						10				7		
	11	2011 7	2	240	350	207	216	350	335	7.5	0	78			11		
	15	2015 7			380						30				24		
	18.5	2018 7		254	464	258	195	400	385		64				27		
	22	2022 7		279	615	258	220	450	435	12.5	165	100			62		
	30	2030 1 <sup>1</sup>													68		
	37	2037 1 <sup>1</sup>	3	380	809	298	250	600	575		209	130			94		
	45	2045 1 <sup>1</sup>															
	55	2055 1 <sup>1</sup>		453	1027	348	325	725	700								
400 V Class (3-phase)	4.0	44P0 7	1	140	280	177	126	280	266	7	---	59	5	M5	4	Fan cooled	
	5.5	45P5 7		200	300	197	186	300	285	8	---	65.5			6		
	7.5	47P5 7			350										10		
	11	4011 7	2	240	350	207	216	350	335			78			24		
	15	4015 7								7.5	64	100			40		
	18.5	4018 7		275	535	258	220	450	435								
	22	4022 7															
	30	4030 7	3	325	715	283	260	550	535			79	105				
	37	4037 7															
	45	4045 7															
	55	4055 7															

1. F7Z2030 to 2055 meets IP20 / NEMA 1

## Installation

### Standard Connections



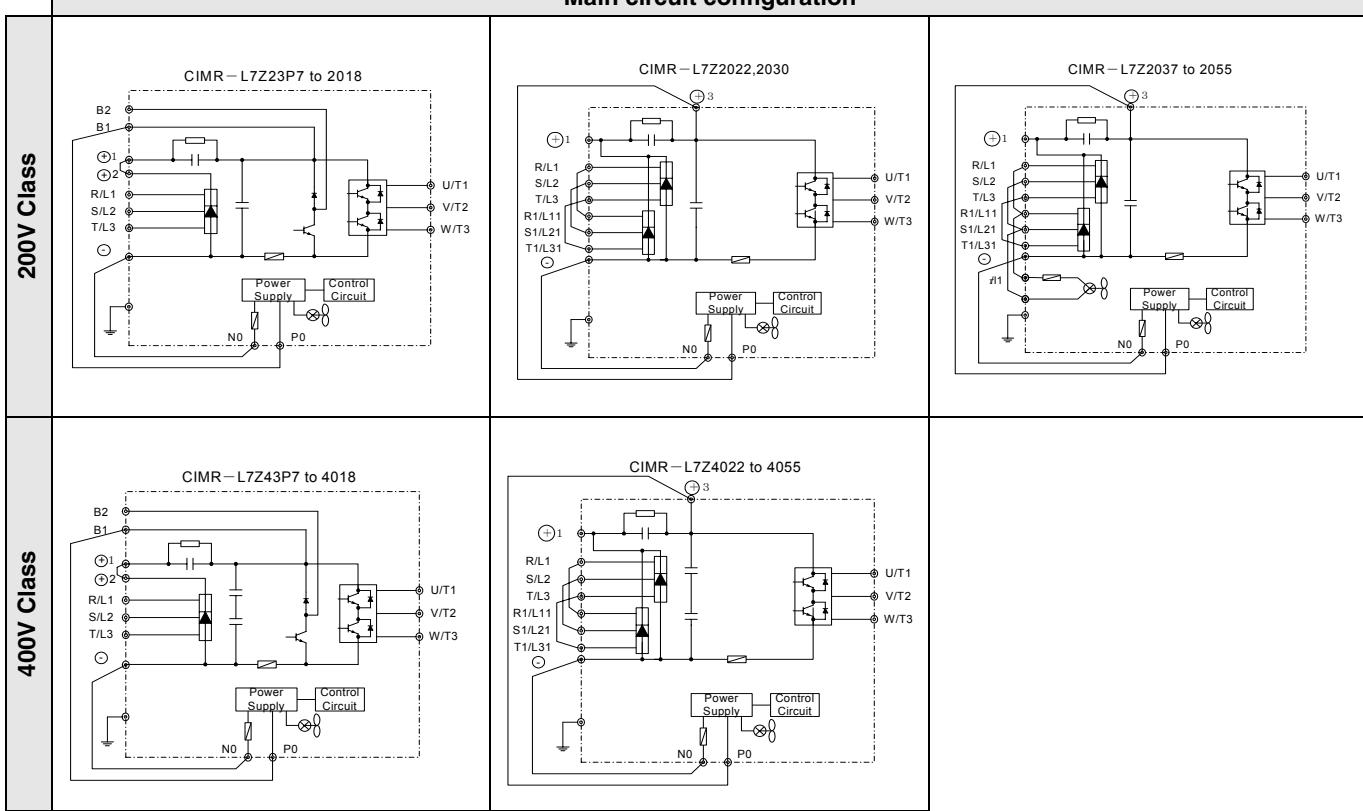
Note:

- Main circuit terminals are indicated with double circles and control circuit terminals are indicated with single circles
- The output current capacity of the +V terminal is 20mA
- Sequence input signal S1 to S7 and BB are labelled for sequence connections for no-voltage contacts or NPN transistors as the default setting.

Shielded wires      Twisted-pair wires

**Main Circuit**

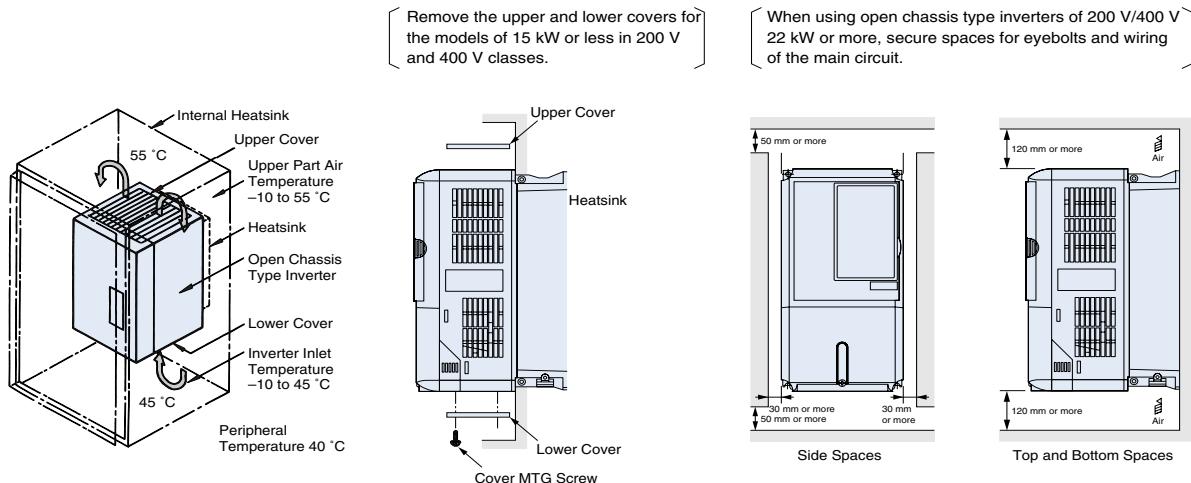
Voltage	200 V		400 V		
Model CIMR-L7Z□	20P4 to 2018	2022 and 2030	2037 to 2055	40P4 to 4018	4022 to 4055
<b>Max. Applicable Motor Output</b>	<b>0.4 to 18.5 kW</b>	<b>22 and 30 kW</b>	<b>37 to 55 kW</b>	<b>0.4 to 18.5 kW</b>	<b>22 to 55 kW</b>
R/L1	Main circuit input power supply				
S/L2					
T/L3					R-R1, S-S1 and T-T1 have been wired before shipment.
R1/L11					
S1/L21	---			---	
T1/L31					
U/T1					Inverter output
V/T2					
W/T3					
B1	Braking resistor unit	-----	Braking resistor unit	-----	
B2					
⊖	•DC reactor (⊖1- ⊕2)	•Braking unit (⊕3 - ⊖)	•DC reactor (⊕1- ⊕2)	•Braking unit (⊕3 - ⊖)	
⊕1					
⊕2					
⊕3	---		---		
r / I <sub>1</sub>	---	---	Cooling fan power supply	---	
s / I <sub>2</sub>					
PO					Battery power input
NO					Ground terminal (10 Ω or less)
⊕					

**Main circuit configuration**

**Control Circuit**

Type	No.	Signal Name	Function	Signal Level
Digital input signals	S1	Forward run/stop command	Forward run when ON; stopped when OFF.	24 VDC, 8 mA Photo-coupler
	S2	Reverse run/stop command	Reverse run when ON; stopped when OFF.	
	S3	Nominal speed	Nominal speed when ON.	
	S4	Inspection run	Inspection RUN when ON.	
	S5	Intermediate speed	Intermediate speed when ON.	
	S6	Leveling speed	Leveling speed when ON.	
	S7	Not used	—	
	BB	Hardware baseblock	—	
Analog input signals	SC	Digital input common	—	—
	+V	15 V power output	15 V power supply for analog references	15 V (Max. current: 20 mA)
	A1	Frequency reference	0 to +10 V/100%	0 to +10 V(20 kΩ)
	AC	Analog reference neutral	—	—
Sequence output signals	E(G)	Shield wire, optional ground line connection point	—	—
	M1	Brake command (1NO contact)	Brake command when ON.	Multi-function contact outputs  Relay contacts Contact capacity: 1 A max. at 250 VAC 1 A max. at 30 VDC
	M2			
	M3	Contactor Control (1NO contact)	Contactor Control when ON	
	M4			
	M5	Inverter Ready (1NO contact)	Inverter Ready when ON.	
	M6			
	MA	Fault output signal (SPDT) (1 Change over contact)	Fault when CLOSED across MA and MC Fault when OPEN across MB and MC	
Frequency Inverters	MB			
	MC			

When driving a reactive load, such as relay coil with DC power supply, always insert a flywheel diode

**Inverter Heat Loss****200 V Class**

Model CIMR-L7Z□		23P7	25P5	27P5	2011	2015	2018	2022	2030	2037	2045	2055
Inverter Capacity		5.7	8.8	12	17	22	27	32	44	55	69	82
Rated Current		A	15	23	31	45	58	71	85	115	145	180
Heat Loss W	Fin	W	112	164	219	374	429	501	586	865	1015	1266
	Inside Unit	W	74	84	113	170	183	211	274	352	411	505
	Total Heat Loss	W	186	248	332	544	612	712	860	1217	1426	1771
	Fin Coding											
Fan cooled												

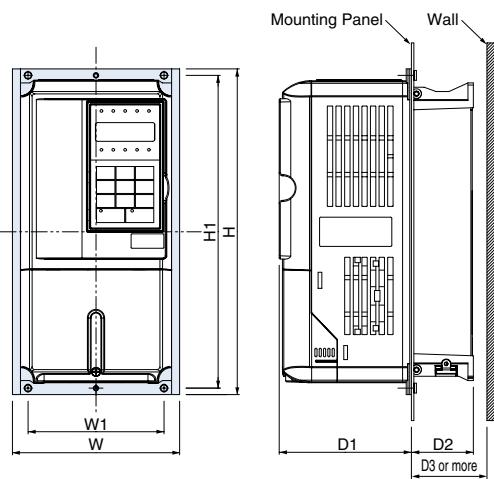
**400 V Class**

Model CIMR-L7Z□		44P0	45P5	47P5	4011	4015	4018	4022	4030	4037	4045	4055
Inverter Capacity		5.8	9.5	13	18	24	30	34	46	57	69	85
Rated Current		A	7.6	12.5	17	24	31	39	45	60	75	91
Heat Loss W	Fin	W	91	127	193	252	326	426	466	678	784	901
	Inside Unit	W	70	82	114	158	172	208	259	317	360	415
	Total Heat Loss	W	161	209	307	410	498	634	725	995	1144	1316
	Fin Coding											
Fan cooled												

## Attachments

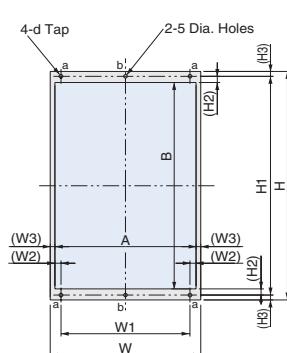
### Heatsink External Mounting Attachment

The Varispeed L7 inverters under the 200/400 V class 18.5 kW or less need this attachment for mounting the heatsink externally. This attachment expands the outer dimensions of the width and height of the inverter. (Attachment is not required for inverters of 22 kW or more.)

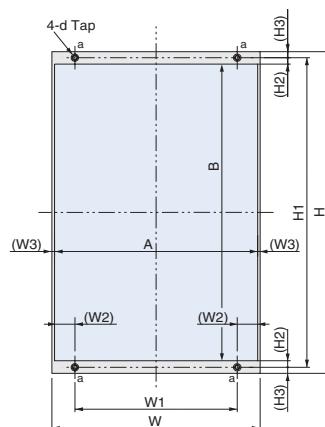


Model CIMR-L7Z_	Attachment Order Code	Dimensions in mm					
		W	H	W1	H1	D1	D2
23P7	72616-EZZ08676A	155	302	126	290	122.6	57.4
25P5		210	330	180	316	136.1	63.4
27P5	72616-EZZ08676B	250	392	216	372	133.6	76.4
2011							
2015	72616-EZZ08676C	155	302	126	290	122.6	57.4
2018		210	330	180	316	136.1	63.4
40P4	72616-EZZ08676A	250	392	216	372	133.6	76.4
45P5							
47P5	72616-EZZ08676B	250	392	216	372	133.6	76.4
4011							
4015	72616-EZZ08676C	250	392	216	372	133.6	76.4
4018							

### Panel Cut for External Mounting of Cooling Fin (Heatsink)



Drawing 1

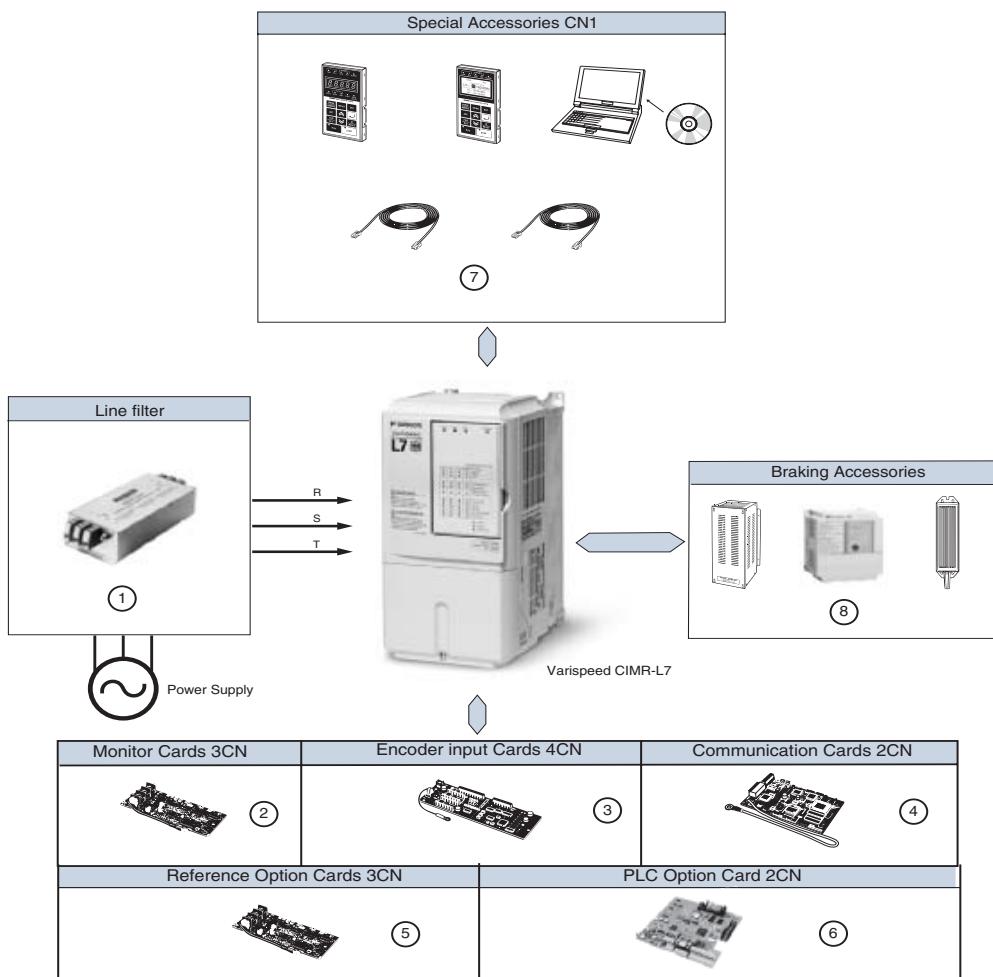


Drawing 2

Model CIMR-L7Z_	Drawing	Dimensions in mm									
		W	H	W1	(W2)	(W3)	H1	(H2)	(H3)	A	B
23P7	1	155	302	126	6	8.5	290	9.5	6	138	271
25P5		210	330	180		8.5	316	9	7	197	298
27P5											
2011		250	392	216		8.5	372	9.5	10	233	353
2015											
2018	2	250	400	195	24.5	3	385	8	7.5	244	369
2022		275	450	220		435				269	419
2030											
2037		375	600	250	54.5	8	575	15		359	545
2045							700	13.5		434	673
2055	1	450	725	325							
44P0		155	302	126	6	8.5	290	9.5	6	138	271
45P5		210	330	180		8.5	316	9	7	197	298
47P5											
4011		250	392	216			372	9.5	10	233	353
4015	2										
4018		275	450	220	24.5	3	435			269	419
4022											
4030		325	550	260		8	535	8	7.5	309	519
4037											
4045	1										
4055											

## Ordering Information

### System Configuration



### ① Input Filters



**200 V**

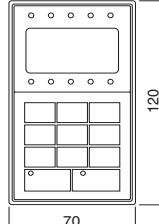
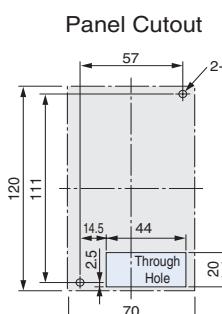
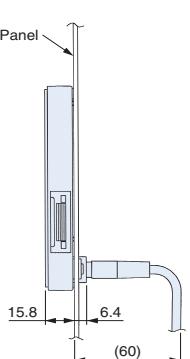
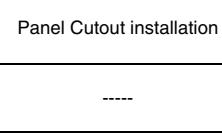
Line Filters					
Inverter Model	Type	EN55011 Class	Current (A)	Weight (kg)	Dimensions W x D x H
Varispeed L7					
CIMR-L7Z23P7	3G3RV-PFI2035-SE	B, 25 m A 100 m	35	1.4	141x46x330
CIMR-L7Z25P5					
CIMR-L7Z27P5	3G3RV-PFI2060-SE	B, 25 m A 100 m	60	3	206x60x355
CIMR-L7Z2011					
CIMR-L7Z2015	3G3RV-PFI2100-SE	B, 25 m A 100 m	100	4.9	236x80x408
CIMR-L7Z2018					
CIMR-L7Z2022	3G3RV-PFI2130-SE	A, 100 m	130	4.3	90x180x366
CIMR-L7Z2030					
CIMR-L7Z2037	3G3RV-PFI2160-SE	A, 100 m	160	6.0	120x170x451
CIMR-L7Z2045					
CIMR-L7Z2055	3G3RV-PFI2200-SE	A, 100 m	200	11.0	130x240x610

**400 V**

Line Filters					
Inverter Model	Type	EN55011 Class	Current (A)	Weight (kg)	Dimensions W x D x H
Varispeed L7					
CIMR-L7Z44P0	3G3RV-PFI3018-SE	B, 25 m A 100 m	18	1.3	141x46x330
CIMR-L7Z45P5					
CIMR-L7Z47P5	3G3RV-PFI3035-SE	B, 25 m A 100 m	35	2.1	206x50x355
CIMR-L7Z4011					
CIMR-L7Z4015	3G3RV-PFI3060-SE	B, 25 m A 100 m	60	4.0	236x65x408
CIMR-L7Z4018					
CIMR-L7Z4022	3G3RV-PFI3070-SE	A, 100 m	70	3.4	80x185x329
CIMR-L7Z4030					
CIMR-L7Z4037					
CIMR-L7Z4045	3G3RV-PFI3130-SE	A, 100 m	130	4.7	90x180x366
CIMR-L7Z4055					

Type	Name	Description	Function
(2) Monitor option card	DO-08 / 3G3IV-PDO08	Digital output card	<p>Outputs isolated type digital signal for monitoring inverter run state (alarm signal, zero speed detection etc.).</p> <p>Output channel: Photo coupler 6 channels (48 V, 50 mA or less) Relay contact output 2 channels (250 VAC, 1 A or less 30 VDC, 1 A or less)</p>
	DO-02C / 3G3IV-PDO02C	2C-relay output card	<ul style="list-style-type: none"> <li>Two multi-function contact outputs (2C-relay) can be used other than those of the inverter proper unit.</li> </ul>
(3) Feedback Speed Control Card	PG-A2 / 3G3FV-PPGA2	PG Speed Controller Card (Used for V/f control with PG or Flux Vector)	<ul style="list-style-type: none"> <li>Phase A pulse (single pulse) inputs (voltage, complementary, open collector input)</li> <li>PG frequency range: Approx. 30 kHz max. [ Power supply output for PG: +12 V, max. current 200 mA ]</li> <li>Pulse monitor output: +12 V, 20 mA</li> </ul>
	PG-B2 / 3G3FV-PPGB2		<ul style="list-style-type: none"> <li>Phase A and B pulse inputs (exclusively for complementary input)</li> <li>PG frequency range: Approx. 30 kHz max. [ Power supply output for PG: +12 V, Max. current 200 mA]</li> <li>Pulse monitor output: Open collector, +24 V, Max. current 30 mA</li> </ul>
	PG-D2 / 3G3FV-PPGD2		<ul style="list-style-type: none"> <li>Phase A pulse (differential pulse) input for V/f control (RS-422 input)</li> <li>PG frequency range: Approx. 300 kHz max. [ Power supply output for PG: +5 V or +12 V, Max. current 200 mA]</li> <li>Pulse monitor output: RS-422</li> </ul>
	PG-X2 / 3G3FV-PPGX2		<ul style="list-style-type: none"> <li>Phase A, B and Z pulse (differential pulse) inputs (RS-422 input)</li> <li>PG frequency range: Approx. 300 kHz max. [ Power supply output for PG: +5 V or +12 V, Max. current 200 mA]</li> <li>Pulse monitor output: RS-422</li> </ul>
	PG-F2		<ul style="list-style-type: none"> <li>Hiperface encoder option</li> </ul>
(4) Communication option card	3G3RV-PDRT2	DeviceNet option card	<ul style="list-style-type: none"> <li>Used for running or stopping the inverter, setting or referencing parameters, and monitoring output frequency, output current, or similar items through DeviceNet communication with the host controller.</li> </ul>
	SI-P1	Profibus-DP option card	<ul style="list-style-type: none"> <li>Used for running or stopping the inverter, setting or referencing parameters, and monitoring output frequency, output current, or similar items through Profibus-DP communication with the host controller.</li> </ul>
	SI-S1	CANopen option card	<ul style="list-style-type: none"> <li>Used for running or stopping the inverter, setting or referencing parameters, and monitoring output frequency, output current, or similar items through CANopen communication with the host controller.</li> </ul>
	SI-J	LONWORKS option card	<ul style="list-style-type: none"> <li>Used for HVAC control, running or stopping the inverter, setting or referencing parameters, and monitoring output current, watt-hours, or similar items through LONWORKS communications with peripheral devices.</li> </ul>
(5) Reference option card	AI-14U / 3G3IV-PAI14U	Analog input card	<ul style="list-style-type: none"> <li>2 channel high resolution analog input card</li> <li>Channel 1: 0 to 10 V (20KΩ)</li> <li>Channel 2: 4 to 20 mA (250Ω)</li> <li>Resolution 14 bit</li> </ul>
	AI-14B / 3G3IV-PAI14B		<ul style="list-style-type: none"> <li>3 Channel high resolution analog input card</li> <li>Signal level: -10 to +10V (20 KΩ)</li> <li>4 to 20 mA (250 Ω)</li> <li>Resolution: 13 bit + sign</li> </ul>
	DI-08 / 3G3IV-PDI08	Digital reference card	<ul style="list-style-type: none"> <li>8 bit digital speed reference input card</li> </ul>
	DI-16H2 / 3G3IV-PDI16H2		<ul style="list-style-type: none"> <li>16 bit digital speed reference input card</li> </ul>
(6) PLC option	3G3RV-P10ST8-E	PLC option	<ul style="list-style-type: none"> <li>Full PLC features, wireless installation and seamless access to the inverter parameters and analogue/digital inputs and outputs.</li> <li>Embedded Compubus/S fieldbus</li> <li>Standard Omron tools can be used for programming</li> </ul>
	3G3RV-P10ST8-DRT-E	PLC option with DeviceNet	<ul style="list-style-type: none"> <li>Same features than standard models with DeviceNet support.</li> </ul>

## ⑦ Accessories

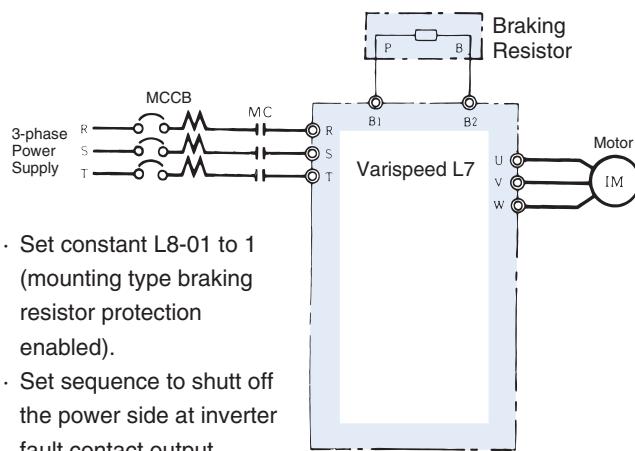
	Name	Description	Installation
Digital operator	JVOP-160-OY 	5 lines LCD digital operator 7 Language support	  
	JVOP-161-OY 	7 segment LED digital operator	
Accessories	3G3IV-PCN126 3G3IV-PCN326	Digital operator extension cable 1 meter 3 meters	-----
	3G3IV-PCN329-E	PC configuration cable	-----
	Sysdrive Configurator	Computer software	Configuration and monitoring software tool
	Users Manual	TOMCC71067600A-OY	-----

## ⑧ Braking Unit, Braking Resistor Unit

Inverter			Braking unit		Braking Resistor Unit <sup>1</sup>									
					Inverter-mounted Type (3 %ED, 10 sec max) <sup>2</sup>				Separately-installed Type (10 %ED, 10 sec. max.) <sup>3</sup>					
Voltage	Max. Applicable Motor output kW	Model CIMR-L7Z	Model CDBR	No. of used	Model ERF-150WJ	Resistance	No. of used	Braking torque %	Model LKEB	Specifications of Resistor	No. of used	Braking torque %	Connectable Min Resistance Value Ω	
200 V Class	3.7	23P7	Built-in	---	620	62 Ω	1	100	23P7	390 W 40 Ω	1	125	16	
	5.5	25P5							25P5	520 W 30 Ω	1	115	16	
	7.5	27P5							27P5	780 W 20 Ω	1	125	9.6	
	11	2011							2011	2400 W 13.6 Ω	1	125	9.6	
	15	2015							2015	3000 W 10 Ω	1	125	9.6	
	18.5	2018							2015	3000 W 10 Ω	1	125	9.6	
	22	2022	2022B	1					2022	4800 W 6.8 Ω	1	125	6.4	
	30	2030	2015B	2					2015	3000 W 10 Ω	2	125	9.6	
	37	2037	2015B	2					2015	3000 W 10 Ω	2	100	9.6	
	45	2045	2022B	2					2022	4800 W 6.8 Ω	2	120	6.4	
	55	2055	2022B	2					2022	4800 W 6.8 Ω	2	100	6.4	
400 V Class	4.0	44P0	Built in	---	201	200 Ω	1	110	44P0	390 W 150 Ω	1	135	32	
	5.5	45P5							45P5	520 W 100 Ω	1	135	32	
	7.5	47P5							47P5	780 W 75 Ω	1	130	32	
	11	4011							4011	1040 W 50 Ω	1	135	20	
	15	4015							4015	1560 W 40 Ω	1	125	20	
	18.5	4018							4018	4800 W 32 Ω	1	125	19.2	
	22	4022	4030B	1					4022	4800 W 27.2 Ω	1	125	19.2	
	30	4030	4030B	1					4030	6000 W 20 Ω	1	125	19.2	
	37	4037	4045B	1					4037	9600 W 16 Ω	1	125	12.8	
	45	4045	4045B	1					4045	9600 W 13.6 Ω	1	125	12.8	
	55	4055	4030B	2					4030	6000 W 20 Ω	2	135	19.2	

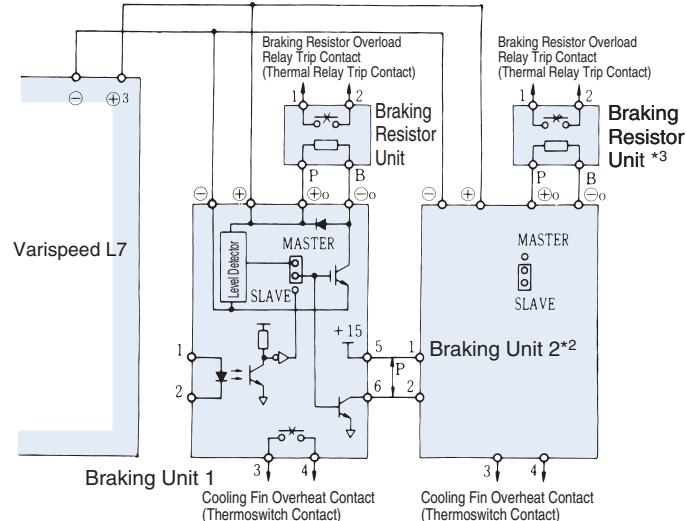
- When connecting a mounting type resistor or braking resistor unit, set system constant L3-04 to 0 (stall prevention disabled during deceleration). If operating without changing the constant, motor does not stop at set deceleration time.
- When connecting mounting type braking resistor, set system constant L8-01 to 1 (braking resistor protection enabled).
- Load factor during deceleration to stop a load with constant torque. With constant output or continuous regenerative braking, the load factor is smaller than the specified value.
- Resistance value per one braking unit. Select a resistance value that is larger than connectable minimum resistance value to obtain enough braking torque.
- For an application with large regenerative power such as hoisting, the braking torque or other items may exceed the capacity of a braking unit with a braking resistor in a standard combination (an result in capacity overload). Contact your Omron representatives when the braking torque or any other item exceeds the values in the table.

### Connections for braking resistors

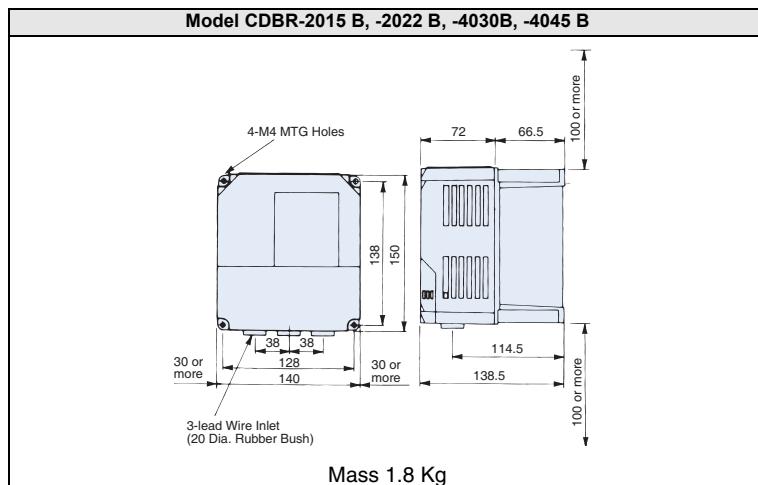


- Set constant L8-01 to 1 (mounting type braking resistor protection enabled).
- Set sequence to shut off the power side at inverter fault contact output.

### Connections for braking units



## Braking unit

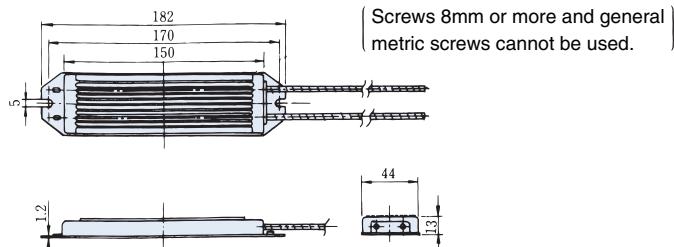


## Braking Resistor Unit (Inverter-mounted Type)

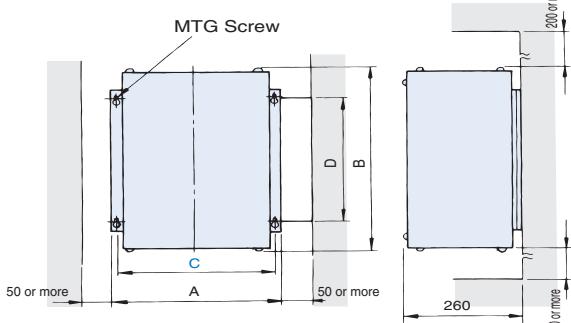
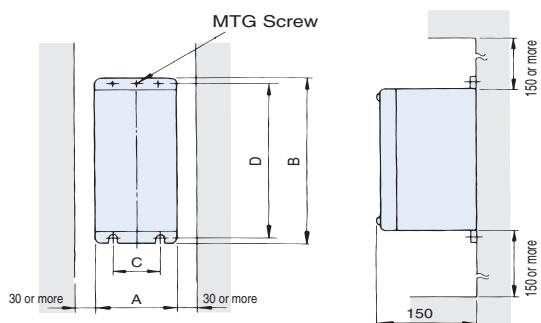


Mass: 0.2 kg  
Model ERF-150WJ

Note: Prepare mounting screws  
(2-M4x8 tapped screws).  
(Screws 8mm or more and general metric screws cannot be used.)



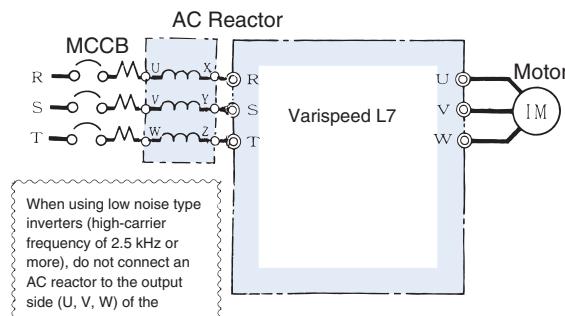
## Braking Resistor Unit (Separately-installed Type)



Voltage	Model LKEB-	Dimensions in mm					Mass kg
		A	B	C	D	MTG Screw	
220 V Class	23P7	130	350	75	335	M5 x 4	5.0
	25P5	250	350	200	335	M6 x 4	7.5
	27P5	250	350	200	335	M6 x 4	8.5
400 V Class	44P0	130	350	75	335	M5 x 4	5.0
	45P5	250	350	200	332	M6 x 4	7.5
	47P5	250	350	200	332	M6 x 4	8.5

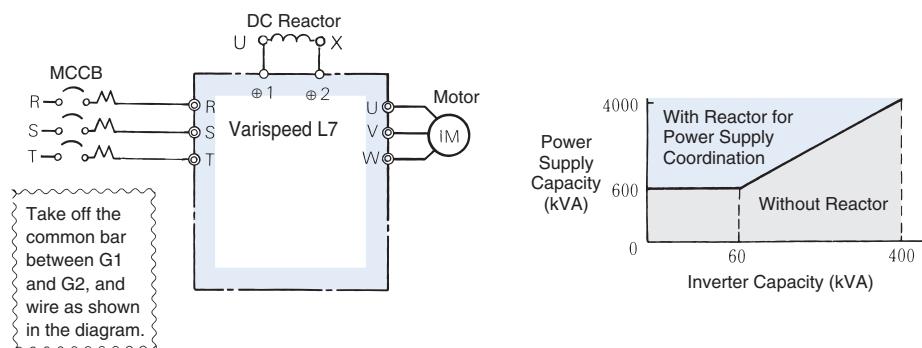
Voltage	Model LKEB-	Dimensions in mm					Mass kg
		A	B	C	D	MTG Screw	
220 V Class	2011	266	543	246	340	M8 x 4	10
	2015	356	543	336	340	M8 x 4	15
	2018	446	543	426	340	M8 x 4	19
	2022	446	543	426	340	M8 x 4	19
400 V Class	4011	350	412	330	325	M6 x 4	16
	4015	350	412	330	325	M6 x 4	18
	4018	446	543	426	340	M8 x 4	19
	4022	446	543	426	340	M8 x 4	19
	4030	356	956	336	740	M8 x 4	25
	4037	446	956	426	740	M8 x 4	33
	4045	446	956	426	740	M8 x 4	33

## AC Reactor



200 V Class				400 V Class			
Max. Applicable Motor Output kW	Current Value A	Inductance mH	Code No.	Max. Applicable Motor Output kW	Current Value A	Inductance mH	Code No.
4.0	20	0.53	X 002491	4.0	10	2.2	X 002500
5.5	30	0.35	X 002492	5.5	15	1.42	X 002501
7.5	40	0.265	X 002493	7.5	20	1.06	X 002502
11	60	0.18	X 002495	11	30	0.7	X 002503
15	80	0.13	X 002497	15	40	0.53	X 002504
18.5	90	0.12	X 002498	18.5	50	0.42	X 002505
22	120	0.09	X 002555	22	60	0.36	X 002506
30	160	0.07	X 002556	30	80	0.26	X 002508
37	200	0.05	X 002557	37	90	0.24	X 002509
45	240	0.044	X 002558	45	120	0.18	X 002566
55	280	0.038	X 002559	55	150	0.15	X 002567

## DC Reactor



200 V Class				400 V Class			
Max. Applicable Motor Output kW	Current Value A	Inductance mH	Code No.	Max. Applicable Motor Output kW	Current Value A	Inductance mH	Code No.
4.0	18	3	X010049	4.0	12	6.3	X010054
5.5	36	1	X010050	5.5	23	3.6	X010055
7.5				7.5			
11				11			
15	72	0.5	X010051	15	33	1.9	X010056
18.5				18.5			
22 to 55	Built-in			22 to 55	Built-in		

**Fuse installation**

To protect the inverter, it is recommended to use semiconductor fuses like they are shown in the table below

Inverter Type	FUSE		
	Voltage (V)	Current (A)	I <sup>2</sup> t (A <sup>2</sup> s)
23P7	240	30	82~220
25P5	240	40	220~610
27P5	240	60	290~1300
2011	240	80	450~5000
2015	240	100	1200~7200
2018	240	130	1800~7200
2022	240	150	870~16200
2030	240	180	1500~23000
2037	240	240	2100~19000
2045	240	300	2700~55000
2055	240	350	4000~55000

43P7	480	15	34~72
44P0	480	20	50~570
45P5	480	25	100~570
47P5	480	30	100~640
4011	480	50	150~1300
4015	480	60	400~1800
4018	480	70	700~4100
4022	480	80	240~5800
4030	480	100	500~5800
4037	480	125	750~5800
4045	480	150	920~13000
4055	480	150	1500~13000

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

CIMR-F7Z

# Varispeed F7

## Frequency inverter for full flux vector control

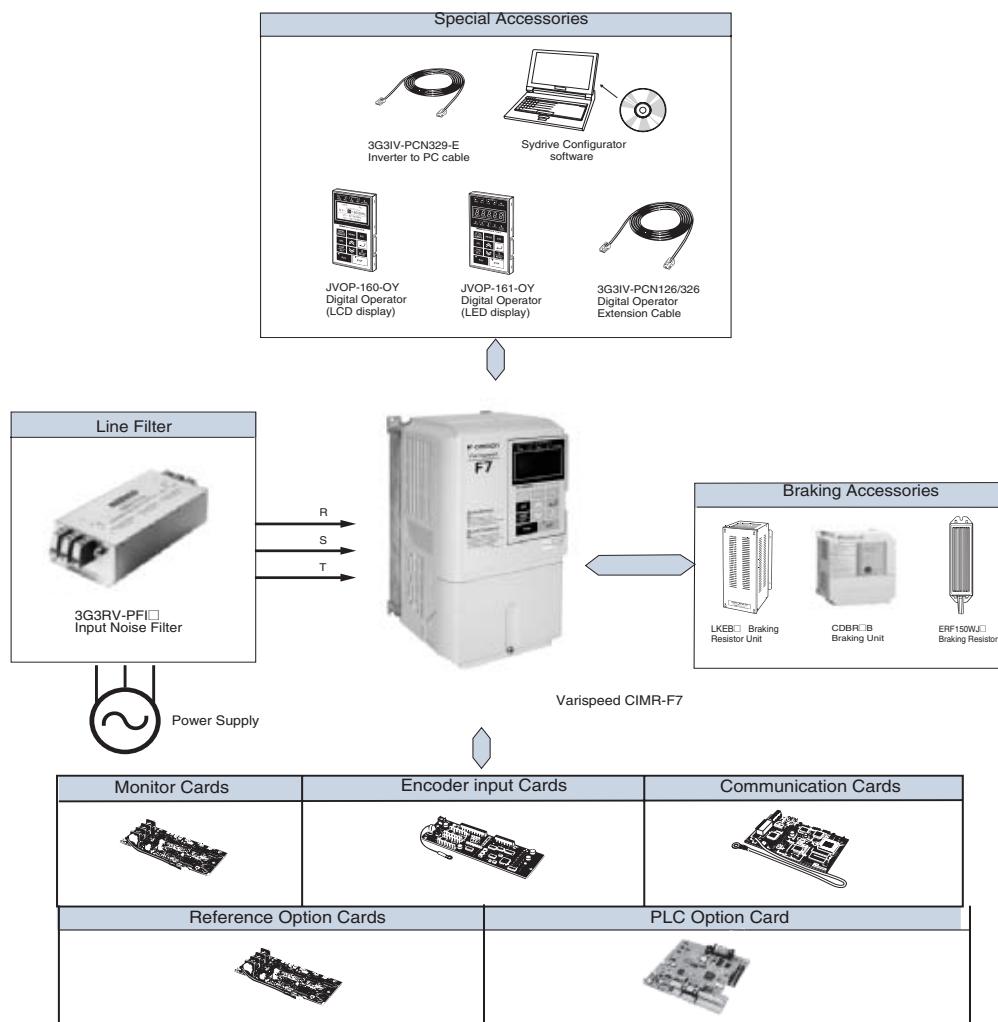
- Current Vector Control with or without PG
- Torque Control
- PID Control
- Standard LCD operator
- Fieldbus options: DeviceNet, Profibus, CANOpen
- Stand still Autotuning
- Powerful application oriented functionality
- High slip braking
- PLC Option card
- Easy maintenance
- Energy saving function
- Standard RS485 communications - Modbus
- CE, UL, and cUL marking
- Customized application firmware

### Ratings

- 200V Class three-phase 0.4 to 110KW
- 400V Class three-phase 0.4 to 300 KW

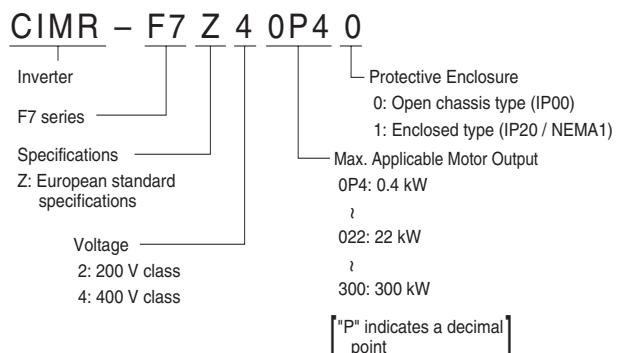


## System Configuration



## Specifications

### Type Designation



### 200 V Class

Model CIMR-F7Zo		20P4	20P7	21P5	22P2	23P7	25P5	27P5	2011	2015	2018	2022	2030	2037	2045	2055	2075	2090	2110
Output characteristics	Max. applicable motor output <sup>1</sup>	0.55	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90	110
	Inverter Capacity kVA	1.2	1.6	2.7	3.7	5.7	8.8	12	17	22	27	32	44	55	69	82	110	130	160
	Rated Current A	3.2	4.1	7.0	9.6	15	23	31	45	58	71	85	115	145	180	215	283	346	415 <sup>2</sup>
	Max. Voltage	3-phase, 200/208/220/230/240 V (Proportional to input voltage)																	
	Max. output Frequency	Heavy Duty (low carrier, constant torque applications): 150 Hz max Normal Duty 1 or 2 (High/reduced carrier, variable torque applications): 400 Hz max																	
Power Supply	Rated Input Voltage and Frequency	3-phase 200/208/220/230/240 V, 50/60 Hz <sup>3</sup>																	
	Allowable Voltage Fluctuation	+10%, -15%																	
	Allowable Frequency Fluctuation	±5%																	
Harmonic Wave Prevention	DC Reactor	Option										Provided							
	12-Pulse Input	Not available										Available <sup>4</sup>							

- Our standard 4-pole motors are used for max. applicable motor output. Choose the inverter model whose rated current is allowable within the motor rated current range.
- 322 A in case of Heavy duty mode
- When using the inverter of 200 V class 37 kW or more with a cooling fan of three-phase 230 V 50 Hz or 240 V 50/60 Hz power supply, a transformer for the cooling fan is required.
- A 3-wired transformer is required at 12-pulse input.

### 400 V Class

Model CIMR-F7Zo		40P4	40P7	41P5	42P2	43P7	44P0	45P5	47P5	4011	4015	4018	4022	4030	4037	4045	4055	4075	4090	4110	4132	4160	4185	4220	4300
Output characteristics	Max. applicable motor output <sup>1</sup>	0.55	0.75	1.5	2.2	3.7	4.0	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90	110	132	160	185	220	300
	Inverter Capacity kVA	1.4	1.6	2.8	4.0	5.8	6.6	9.5	13	18	24	30	34	46	57	69	85	110	140	160	200	230	280	390	510
	Rated Current A	1.8	2.1	3.7	5.3	7.6	8.7	12.5	17	24	31	39	45	60	75	91	112	150	180	216	260	304	370	506 <sup>2</sup>	675 <sup>3</sup>
	Max. Voltage	3-phase, 380/400/415/440/460/480 V (Proportional to input voltage)																							
	Max. output Frequency	Heavy Duty (low carrier, constant torque applications): 150 Hz max Normal Duty 1 or 2 (High/reduced carrier, variable torque applications): 400 Hz max																							
Power Supply	Rated Input Voltage and Frequency	3-phase 380/400/415/440/460/480 V, 50/60 Hz																							
	Allowable Voltage Fluctuation	+10%, -15%																							
	Allowable Frequency Fluctuation	±5%																							
Harmonic Wave Prevention	DC Reactor	Option										Provided													
	12-Pulse Input	Not available										Available <sup>4</sup>													

- Our standard 4-pole motors are used for max. applicable motor output. Choose the inverter model whose rated current is allowable within the motor rated current range.
- 405 A in case of Heavy duty mode
- 540 A in case of Heavy duty mode
- A 3-wired transformer is required at 12-pulse input.

**Enclosures**

		Model CIMR-F7Z□	20P4	20P7	21P5	22P2	23P7	25P5	27P5	2011	2015	2018	2022	2030	2037	2045	2055	2075	2090	2110
200V Class		Enclosed Type (IEC IP20)	Available as standard									Available for option				Not available				
400V Class		Open Chassis Type (IEC IP00)	Available by removing the upper and lower cover of enclosed type									Available as standard								
		Model CIMR-F7Z□	40P4	40P7	41P5	42P2	43P7	45P5	47P5	4011	4015	4018	4022	4030	4037	4045	4055	4075	4090	4110
		Enclosed Type (IEC IP20)	Available as standard									Available for option				Not available				
		Open Chassis Type (IEC IP00)	Available by removing the upper and lower cover of enclosed type									Available as standard								

## Common Specifications

Model Number CIMR-F7Z□	Specification
Control characteristics	Control method Sine wave PWM    Closed Loop Vector control, Open Loop Vector control, V/f control, V/f with PG control
	Torque characteristics Heavy Duty (low carrier, constant torque applications): 2 kHz carrier frequency, 150% overload for 1 minute, higher carrier frequency possible with current derating. Normal Duty 1 (high carrier, variable torque applications): maximum carrier frequency, depending on inverter capacity, 120% overload for 1 minute. Normal Duty 2 (variable torque applications): carrier frequency reduced, continuous overload capability increased
	Speed control range 1:40 (V/f control) 1:100 (Open Loop Vector control) 1:1000 (Closed Loop Vector control)
	Speed control accuracy $\pm 3\%$ (V/f control) $\pm 0.03\%$ (V/f control with PG) $\pm 0.2\%$ (Open Loop Vector control) $\pm 0.02\%$ (Closed Loop Vector control) ( $25^\circ\text{C} \pm 10^\circ\text{C}$ )
	Speed control response 5 Hz (control without PG) 30 Hz (control with PG)
	Torque limits Provided (4 quadrant steps can be changed by constant settings.) (Vector control)
	Torque accuracy $\pm 5\%$
	Frequency range 0.01 to 150 Hz (Heavy Duty), 0.01 to 400 Hz (Normal Duty 1 or 2)
	Frequency accuracy (temperature characteristics) Digital references: $\pm 0.01\%$ (-10°C to +40°C) Analog references: $\pm 0.1\%$ ( $25^\circ\text{C} \pm 10^\circ\text{C}$ )
	Frequency setting resolution Digital references: 0.01 Hz Analog references: 0.025/50 Hz (11 bits plus sign)
	Output frequency resolution 0.01 Hz
	Overload capacity and maximum current Heavy Duty (low carrier, constant torque applications): 150% of rated output current for 1 minute Normal Duty 1 or 2 (high/reduced carrier, variable torque applications): 120% of rated output current for 1 minute
	Frequency setting signal 0 to +10V, -10 to +10 V, 4 to 20 mA, pulse train
	Accel/Decel time 0.01 to 6000.0 s (4 selectable combinations of independent acceleration and deceleration time settings)
	Braking torque Approximately 20% (Approximately 125% with Braking Resistor option, braking transistor built into Inverters of 18.5 kW or less)
	Main control functions Restarting after momentary power loss, speed search, overtorque/undertorque detection, torque limits, 17-speed control (maximum), 4 acceleration and deceleration times, S-curve acceleration/deceleration, 3-wire control, auto-tuning (rotational or stationary), dwell function, cooling fan ON/OFF control, slip compensation, torque compensation, auto-restart after fault, jump frequencies, upper and lower limits for frequency references, DC braking for starting and stopping, high-slip braking, advanced PID control, energy-saving control, MEMOBUS communications (RS-485/422, 19.2 kbps maximum), 2 motor parameter sets, fault reset and parameter copy function.
Protective functions	Motor protection Protection by electronic thermal overload relay.
	Instantaneous overcurrent protection Stops at approx. 200% of rated output current.
	Fuse blown protection Stops for fuse blown.
	Overload protection Heavy Duty (low carrier, constant torque applications): 150% of rated output current for 1 minute Normal Duty 1 (high carrier, variable torque applications): 120% of rated output current for 1 minute Normal Duty 2 (high carrier, variable torque applications): 120% of rated output current for 1 minute, increased continuous output current.
	Oversupply protection 200 Class Inverter: Stops when main-circuit DC voltage is above 410 V. 400 Class Inverter: Stops when main-circuit DC voltage is above 820 V.
	Undervoltage protection 200 Class Inverter: Stops when main-circuit DC voltage is below 190 V. 400 Class Inverter: Stops when main-circuit DC voltage is below 380 V.
	Momentary power loss ride through By selecting the momentary power loss method, operation can be continued if power is restored within 2 s.
	Cooling fin overheating Protection by thermistor.
	Stall prevention Stall prevention during acceleration, deceleration and running independently.
Environment	Grounding protection Protection by electronic circuits.
	Charge indicator Glows when the main circuit DC voltage is approx. 10 VDC or more.
	Ambient operating temperature $-10^\circ\text{C}$ to $40^\circ\text{C}$ (Enclosed wall-mounted type) $-10^\circ\text{C}$ to $45^\circ\text{C}$ (Open chassis type)
	Ambient operating humidity 95% max. (with no condensation)
	Storage temperature $-20^\circ\text{C}$ to $+60^\circ\text{C}$ (short-term temperature during transportation)
	Application site Indoor (no corrosive gas, dust, etc.)
Altitude 1000 m max.	
Vibration 10 to 20 Hz, $9.8 \text{ m/s}^2$ max.; 20 to 50 Hz, $2 \text{ m/s}^2$ max	

## Dimensions

### Open Chassis Type (IEC IP00)

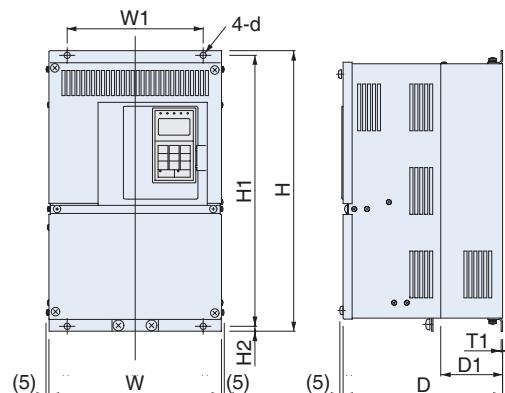


Fig 1

Voltage	Max. Applicable Motor Output kW	Inverter CIMR-F7Z□	Fig	Dimensions in mm									Approx. Mass kg	Cooling Method
				W	H	D	W1	H1	H2	D1	T1	d		
200 V Class (3-phase)	0.4	-----	1	250	400	258	195	385	7.5	100	2.3	M6	21	Fan cooled
	0.75	-----		275	450	220	435	100	12.5	130	3.2	M10	24	
	1.5	-----		375	600	298	250	575	100	130	4.5	M12	57	
	2.2	-----		328									63	
	3.7	-----		450	725	348	325	700	12.5	130			86	
	5.5	-----		500	850	358	370	820	15	140			87	
	7.5	-----		575	885	378	445	855					108	
	11	-----											150	
	15	-----												
	18.5	-----												
	22	2022 0		250	400	258	195	385	7.5	100	2.3	M6	21	Fan cooled
	30	2030 0		275	450	220	435	100	12.5	130	3.2	M10	24	
	37	2037 0		375	600	298	250	575	100	130	4.5	M12	57	
	45	2045 0		328									63	
	55	2055 0		450	725	348	325	700	12.5	130			86	
	75	2075 0		500	850	358	370	820	15	140			87	
	90	2090 0		575	885	378	445	855					108	
	110	2110 0											150	
400 V Class (3-phase)	0.4	-----	1	275	450	258	220	435	7.5	100	2.3	M6	21	Fan Cooled
	0.75	-----		325	550	283	260	535	10.5	105	3.2	M10	36	
	1.5	-----		450	725	348	325	700	12.5	130	4.5	M12	88	
	2.2	-----		500	850	358	370	820	15	140			89	
	4.0	-----		575	916	378	445	855	15	125.5			102	
	5.5	-----											120	
	7.5	-----											160	
	11	-----											260	
	15	-----											280	
	18.5	-----											405	
	22	4022 0		275	450	258	220	435	7.5	100	2.3	M6	21	Fan Cooled
	30	4030 0		325	550	283	260	535	10.5	105	3.2	M10	36	
	37	4037 0		450	725	348	325	700	12.5	130	4.5	M12	88	
	45	4045 0		500	850	358	370	820	15	140			89	
	55	4055 0		575	916	378	445	855	15	125.5			102	
	75	4075 0											120	
	90	4090 0											160	
	110	4110 0											260	
	132	4132 0											280	
	160	4160 0											405	
	185	4185 0												
	220	4220 0												
	300	4300 0												

## Enclosed Type (IEC IP20)

F7Z 20P41 to F7Z25P51  
F7Z40P41 to F7Z45P51

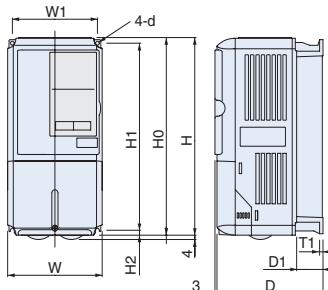


Fig 1

F7Z 27P51 to F7Z20181  
F7Z47P51 to F7Z40181

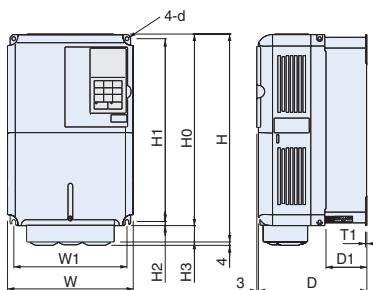


Fig 2

F7Z 20221 to F7Z20751  
F7Z40221 to F7Z41601

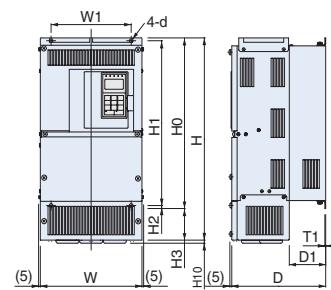
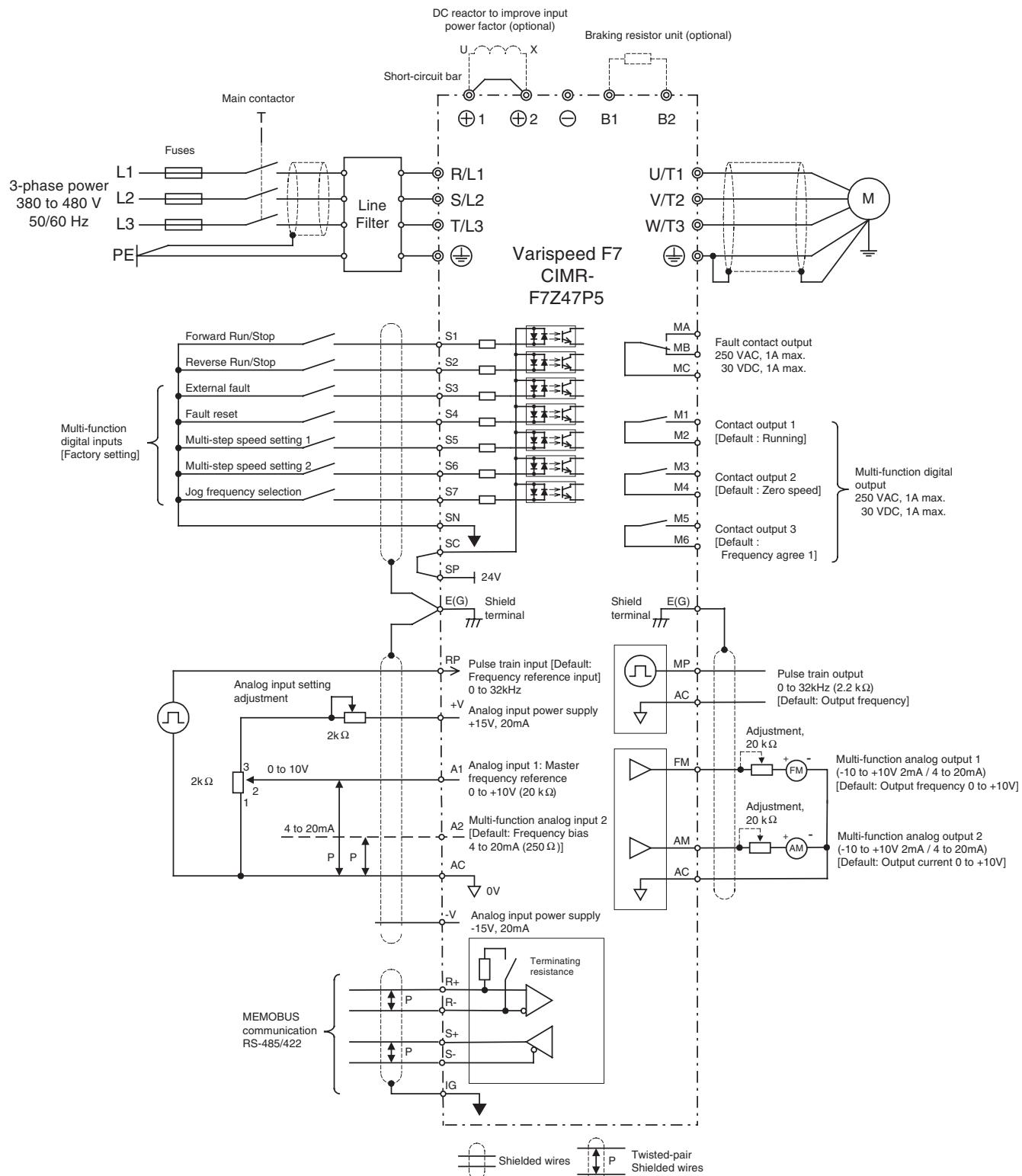


Fig 3

Voltage	Max. Applicable Motor Output kW	Inverter CIMR-F7Z□	Fig	Dimensions in mm											Approx. Mass kg	Cooling Method							
				W	H	D	W1	H0	H1	H2	H3	D1	T1	d									
200 V Class (3-phase)	0.4	20P4 1	1	140	280	157	126	280	266	7	---	39	5	M5	3	Self cooled							
	0.75	20P7 1																					
	1.5	21P5 1		177								59	6	M6	4								
	2.2	22P2 1																					
	3.7	23P7 1	2	200	300	197	186	300	285	8	0	65.5	2.3	M6	Fan cooled								
	5.5	25P5 1																					
	7.5	27P5 1		310		310	207	216	350	335	7.5	10	78	11									
	11	2011 1																					
	15	2015 1		240	350	350	207	216	350	335	135	0	165	100									
	18.5	2018 1																					
	22	2022 1	3	254	535	258	195	400	385	7.5	30	135	100	2.3	M10								
	30	2030 1																					
	37	2037 1		279	615	279	220	450	435	12.5	209	165	209	3.2									
	45	2045 1																					
	55	2055 1		380	809	328	250	600	575	302	302	130	130	130									
	75	2075 1																					
400 V Class (3-phase)	0.4	40P4 1	1	140	280	157	126	280	266	7	---	39	5	M5	Self Cooled								
	0.75	40P7 1																					
	1.5	41P5 1		177								59	6	M6	4								
	2.2	42P2 1																					
	3.7	43P7 1		200	350	207	186	300	285	8	---	65.5	2.3	M6									
	4.0	44P0 1																					
	5.5	45P5 1	2	240	350	207	216	350	335	7.5	8	---	78	100	M10								
	7.5	47P5 1																					
	11	4011 1		275	535	258	220	450	435	12.5	85	105	105	105									
	15	4015 1																					
	18.5	4018 1		325	715	283	260	550	535	302	302	130	130	130	130								
	22	4022 1																					
	30	4030 1	3	453	1027	348	325	725	700	12.5	15	393	140	140	140	140							
	37	4037 1																					
	45	4045 1		504	1243	358	370	850	820	15	393	408	408	408	408	408							
	55	4055 1																					
	75	4075 1		579	1324	378	445	918	855	45.8	45.8	45.8	45.8	45.8	45.8	45.8	45.8						
	90	4090 1																					
	110	4110 1		504	1243	358	370	850	820	15	393	408	408	408	408	408	408	408					
	132	4132 1																					
	160	4160 1																					

## Installation

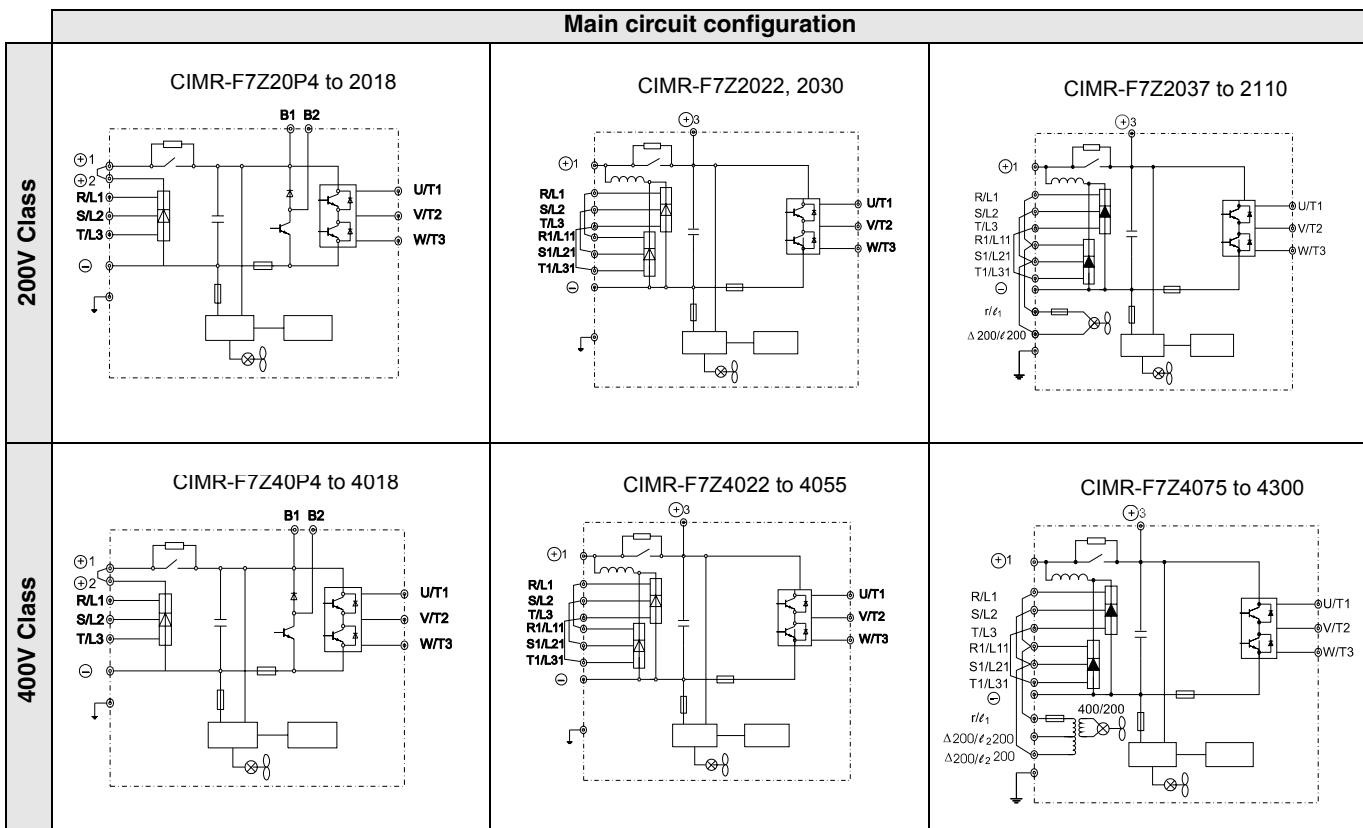
### Standard Connections



**Main Circuit**

Voltage	200 V			400 V						
Model CIMR-F7Z□	20P4 to 2018	2022, 2030	2037 to 2110	40P4 to 4018	4022 to 4055	4075 to 4300				
Max. Applicable Motor Output	0.4 to 18.5 kW	22 to 30 kW	37 to 110 kW	0.4 to 18.5 kW	22 to 55 kW	75 to 300 kW				
R/L1	Main circuit input power supply	Main circuit input power supply			Main circuit input power supply	Main circuit input power supply				
S/L2										
T/L3	---	R-R1, S-S1 and T-T1 have been wired before shipment (See P59).			---	R-R1, S-S1 and T-T1 have been wired before shipment				
R1/L11										
S1/L21										
T1/L31										
U/T1	Inverter output			Inverter output						
V/T2										
W/T3										
B1	Braking resistor unit	----		Braking resistor unit	----					
B2										
⊖	•DC reactor (+1- ⊖2) •DC power supply <sup>1</sup> (+1 - ⊖)	•DC power supply (+1- ⊖2) •Braking unit (+3 - ⊖)		•DC reactor (+1- ⊖2) •DC power supply <sup>1</sup> (+1 - ⊖)	•DC power supply (+1- ⊖2) •Braking unit (+3 - ⊖)					
⊕1										
⊕2										
⊕3	---		---		---					
↙I <sub>2</sub>			Cooling fan power supply <sup>2</sup>		---					
r/I <sub>1</sub>			---		---					
↙200 / I <sub>2</sub> 200			---		---					
↙400 / I <sub>2</sub> 400			---		---					
⊖	Ground terminal (100 Ω or less)			Ground terminal (100 Ω or less)						

- ⊕1 - ⊖ DC power input does not conform to UL/c-UL listed standard.
- Cooling fan power supply r/I<sub>1</sub>- ↙I<sub>2</sub>: 200 to 220 VAC 50 Hz, 200 to 230 VAC 60 Hz  
(A transformer is required for 230 V 50 Hz or 240 V 50/60 Hz power supply.)
- Cooling fan power supply r/I<sub>1</sub> - ↙ 200 / I<sub>2</sub> 200: 200 to 220 VAC 50 Hz, 200 to 230 VAC 60 Hz, r/I<sub>1</sub> - ↙ 400 / I<sub>2</sub> 400: 380 to 480 VAC 50/60 Hz

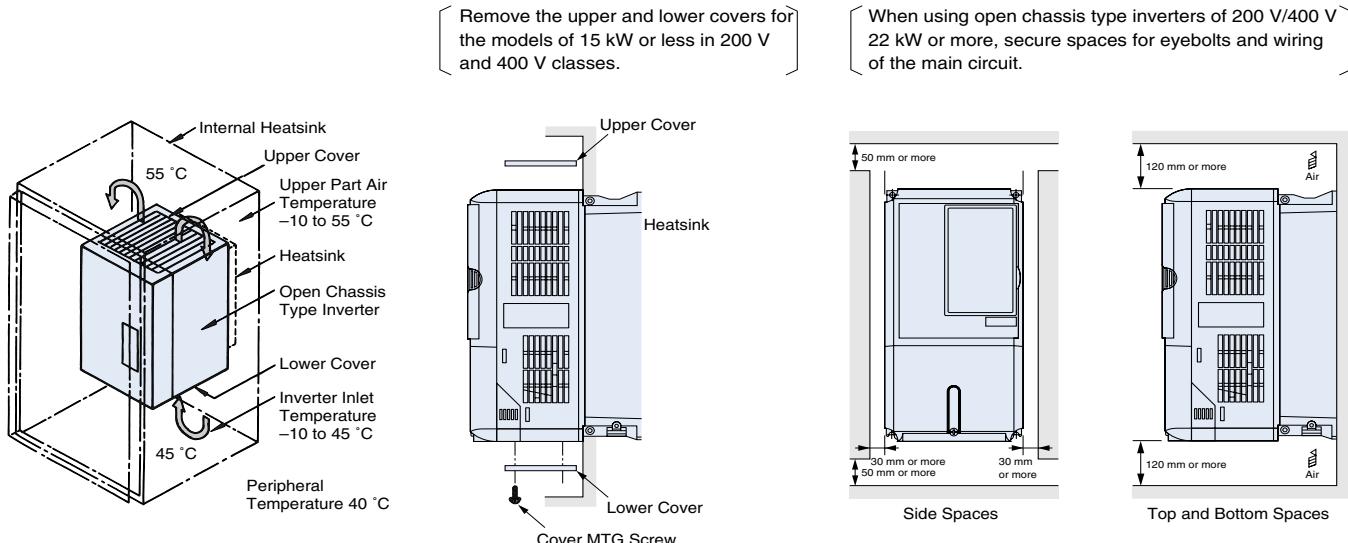
**Main circuit configuration**

## Control Circuit

Type	No.	Signal Name	Function	Signal Level
Digital input signals	S1	Forward run/stop command	Forward run when ON; stopped when OFF.	24 VDC, 8 mA Photocoupler
	S2	Reverse run/stop command	Reverse run when ON; stopped when OFF.	
	S3	External fault input <sup>1)</sup>	Fault when ON.	
	S4	Fault reset <sup>1)</sup>	Reset when ON	
	S5	Multi-step speed reference 1 <sup>1)</sup> (Master/auxiliary switch)	Auxiliary frequency reference when ON.	
	S6	Multi-step speed reference 2 <sup>1)</sup>	Multi-step setting 2 when ON.	
	S7	Jog frequency reference*1	Jog frequency when ON.	
	SC	Digital input common	—	
Analog input signals	SN	Digital Input Neutral	—	—
	SP	Digital Input Power Supply	+24VDC power supply for digital inputs	24 VDC, 250 mA max. <sup>2)</sup>
	+V	15 V power output	15 V power supply for analog references	15 V (Max. current: 20 mA)
	-V	-15 V power output	-15 V power supply for analog references	-15 V (Max. current: 20 mA)
	A1	Frequency reference	-10 to +10 V/100%	-10 to +10 V(20 kΩ)
	A2	Multi-function analog input	4 to 20 mA/100% -10 V to +10 V/100%	Function is selected by setting H3-09. 4 to 20 mA(250Ω) -10 V to +10 V(20kΩ)
	AC	Analog reference common	—	—
Sequence output signals	E(G)	Shield wire, optional ground line connection point	—	—
	M1	Running signal (1NO contact)	Operating when ON.	Multi-function contact outputs Relay contacts Contact capacity: 1 A max. at 250 VAC 1 A max. at 30 VDC <sup>3)</sup>
	M2			
	M3	Zero speed	Zero level (b2-01) or below when ON	
	M4			
	M5	Speed agreement detection	Within ±2 Hz of set frequency when ON.	
	M6			
	MA	Fault output signal	Fault when CLOSED across MA and MC Fault when OPEN across MB and MC	Relay contacts Contact capacity: 1 A max. at 250 VAC 1 A max. at 30 VDC <sup>3)</sup>
	MB			
Analog output signals	MC			
	FM	Multi-function analog output (frequency output)	0 to 10 V, 10V=100% output frequency	Multi-function analog output 1 -10 to +10 V max. ±5% 2 mA max.
	AC	Analog common	—	
	AM	Multi-function analog output (current monitor)	0 to 10 V, 10V=200% Inverter's rated current	Multi-function analog output 2 4 to 20 mA current output
Pulse I/O	RP	Pulse input <sup>4)</sup>	H6-01 (Frequency reference input)	0 to 32 kHz (3 kΩ) High level voltage 3.5 to 13.2V
	MP	Pulse monitor	H6-06 (Output frequency)	0 to 32 kHz +15 V output (2.2 kΩ)
RS-485/422	R+	MEMOBUS communications input	For 2-wire RS-485, short R+ and S+ as well as R- and S-.	Differential input, Photocoupler isolation
	R-			Differential input, Photocoupler isolation
	S+	MEMOBUS communications output		
	S-			
	IG	Signal common	—	—

- \* 1. The default settings are given for terminals S3 to S7. For a 3-wire sequence, the default settings are a 3-wire sequence for S5, multi-step speed setting 1 for S6 and multi-step speed setting 2 for S7.
- \* 2. Do not use this power supply for supplying any external equipment.
- \* 3. When driving a reactive load, such as a relay coil with DC power supply, always insert a flywheel diode
- \* 4. Pulse input specifications are given in the following table

Low level voltage	0.0 to 0.8 V
High level voltage	3.5 to 13.2 V
H duty	30% to 70%
Pulse frequency	0 to 32 kHz

**Inverter Heat Loss****200 V Class**

Model CIMR-F7Z□		20P4	20P7	21P5	22P2	23P7	25P5	27P5	2011	2015	2018	2022	2030	2037	2045	2055	2075	2090	2110	
Inverter Capacity		kVA	1.2	1.6	2.7	3.7	5.7	8.8	12	17	22	27	32	44	55	69	82	110	130	160
Rated Current		A	3.2	4.1	7.0	9.6	15	23	31	45	58	71	85	115	145	180	215	283	346	415
Heat Loss W	Fin	W	20	27	50	70	112	164	219	374	429	501	586	865	1015	1266	1588	2019	2437	2733
Heat Loss W	Inside Unit	W	39	42	50	59	74	84	113	170	183	211	274	352	411	505	619	838	997	1242
Heat Loss W	Total Heat Loss	W	59	69	100	129	186	248	332	544	612	712	860	1217	1426	1771	2207	2857	3434	3975
Fin Coding		Self cooled				Fan cooled														

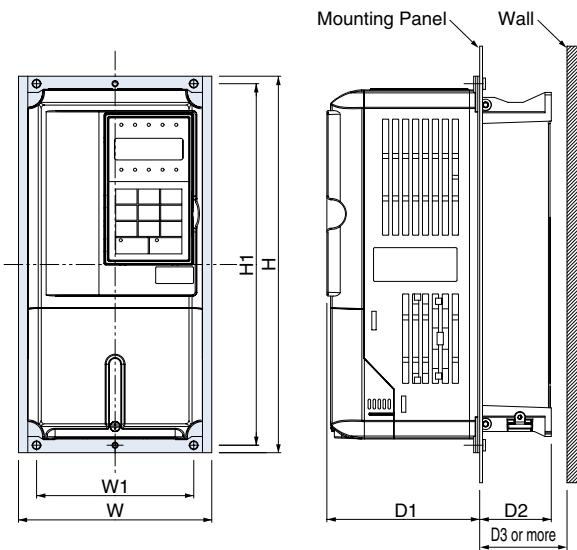
**400 V Class**

Model CIMR-F7Z□		40P4	40P7	41P5	42P2	43P7	44P0	45P5	47P5	4011	4015	4018	4022	4030	4037	4045	4055	4075	4090	4110	4132	4160	4185	4220	4300	
Inverter Capacity		kVA	1.4	1.6	2.8	4.0	5.8	6.0	9.5	13	18	24	30	34	46	57	69	85	110	140	160	200	230	280	390	510
Rated Current		A	1.8	2.1	3.7	5.3	7.6	8.0	12.5	17	24	31	39	45	60	75	91	112	150	180	216	260	304	370	506	675
Heat Loss W	Fin	W	14	17	36	59	80	91	127	193	252	326	426	466	678	784	901	1203	1399	1614	2097	2388	2791	3237	3740	5838
Heat Loss W	Inside Unit	W	39	41	48	56	68	70	82	114	158	172	208	259	317	360	415	495	575	671	853	1002	1147	1372	1537	2320
Heat Loss W	Total Heat Loss	W	53	58	84	115	148	161	209	307	410	498	634	725	995	1144	1316	1698	1974	2285	2950	3390	3938	4609	5277	8158
Heat Loss W	Fin Coding	Self cooled				Fan cooled																				

## Attachments

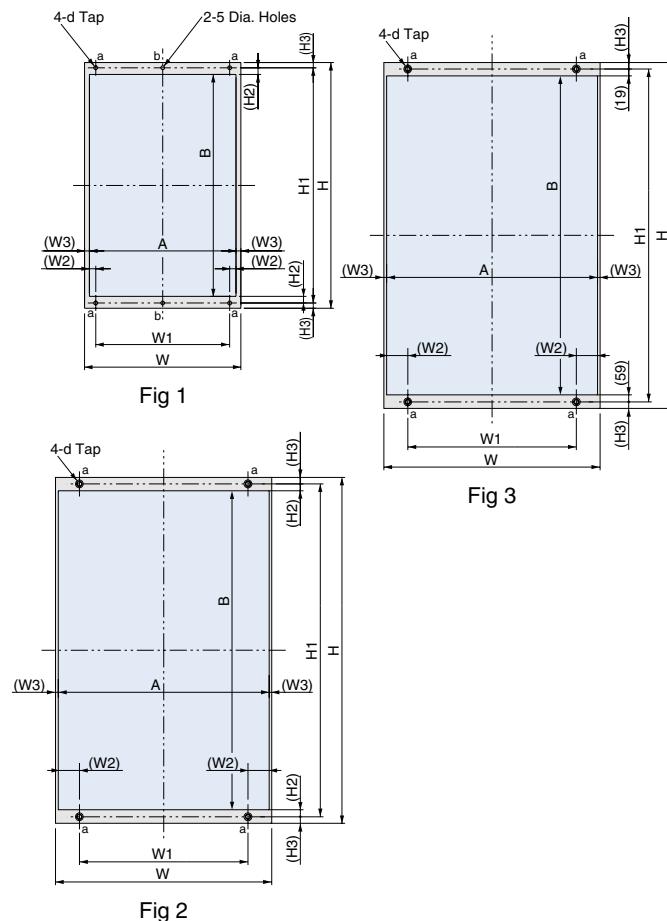
### Heatsink External Mounting Attachment

The Varispeed F7 inverters under the 200/400 V class 18.5 kW or less need this attachment for mounting the heatsink externally. This attachment expands the outer dimensions of the width and height of the inverter. (Attachment is not required for inverters of 22 kW or more.)



CIMR-F7Z□	Attachment Order Code	Dimensions in mm						
		W	H	W1	H1	D1	D2	D3
20P4	72616-EZZ08676A						37.4	40
20P7							57.4	60
21P5		155	302	126	290	122.6		
22P2								
23P7								
25P5								
27P5	72616-EZZ08676B	210	330	180	316	136.1	63.4	70
2011								
2015	72616-EZZ08676C	250	392	216	372	133.6	76.4	85
2018								
40P4	72616-EZZ08676A						37.4	40
40P7							57.4	60
41P5		155	302	126	290	122.6		
42P2								
43P7								
44P0								
45P5								
47P5	72616-EZZ08676B	210	330	180	316	136.1	63.4	70
4011								
4015	72616-EZZ08676C	250	392	216	372	133.6	76.4	85
4018								

### Panel Cut for External Mounting of Cooling Fin (Heatsink)

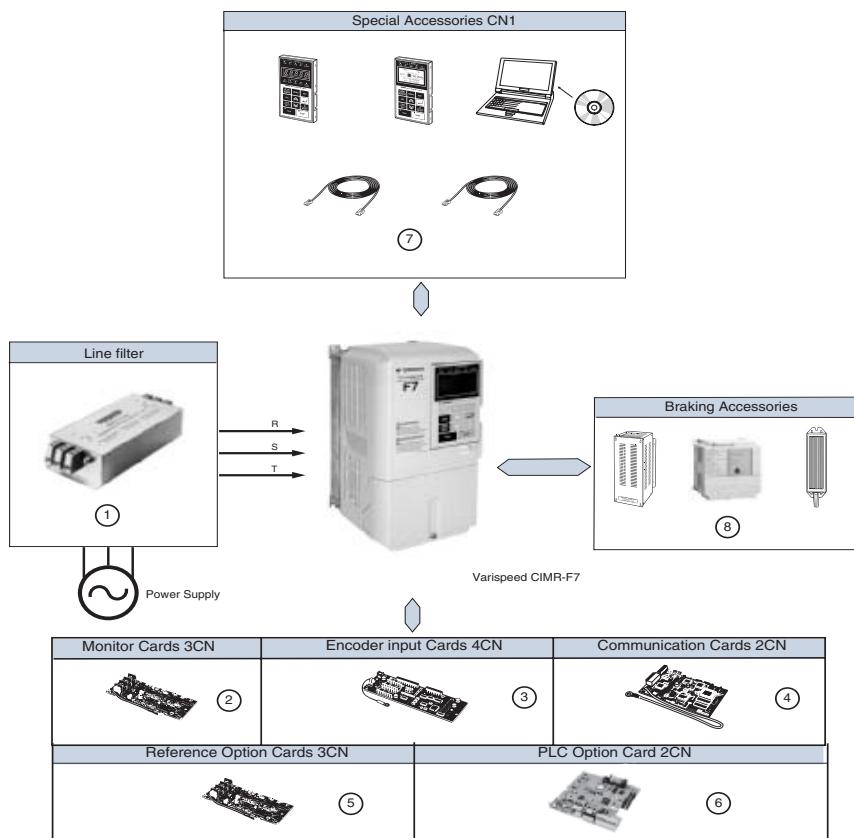


CIMR-F7Z□	Fig	Dimensions in mm										
		W	H	W1	(W2)	(W3)	H1	(H2)	(H3)	A	B	d
20P4	1	155	302	126	6	8.5	290	9.5	6	138	271	M5
20P7		210	330	180		6.5	316	9	7	197	298	
21P5					8.5							
22P2		250	392	216		8.5	372	9.5	10	233	353	M6
23P7												
25P5												
27P5	2	250	400	195	24.5	3	385	8	7.5	244	369	
2011		275	450	220		435				269	419	
2015		375	600	250			575	15		359	545	
2018		450	725	325	54.5	8	700	13.5		434	673	M10
2022		500	850	370	57	8	820	19	15	484	782	
2030		575	885	445	55	10	855			555	817	M12
2037	1	155	302	126	6	8.5	290	9.5	6	138	271	M5
2045		210	330	180		6.5	316	9	7	197	298	
2055					8.5							
2075		250	392	216		8.5	372	9.5	10	233	353	
2090												
2110												
40P4	2	275	450	220		3	435			269	419	
40P7		325	550	260	24.5	8	535		7.5	309	519	
41P5		450	725	325	54.5	8	700	13.5	12.5	434	673	M10
42P2		500	850	370	57	8	820	19	15	484	782	
43P7		575	925	445	55	10	895	1	15	555	817	M12
44P0												
45P5												
47P5												
4011												
4015												
4018												
4022	2	325	550	260		3	435			269	419	
4030		450	725	325	24.5	8	535		7.5	309	519	
4037												
4045												
4055												
4075												
4090												
4110												
4132												
4160	3	575	925	445	55	10	895	1	15	555	817	

1. The sizes are different between the top and the bottom. Refer Fig 3.

## Ordering Information

### System Configuration



### ① Line Filters



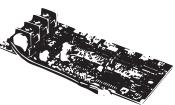
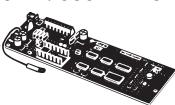
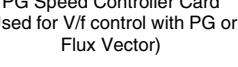
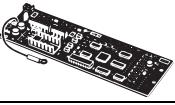
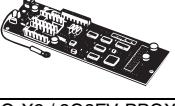
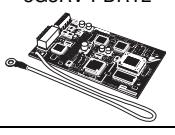
### 200 V

Line Filters					
Inverter Model	Type	EN55011 Class	Current (A)	Weight (kg)	Dimensions W x D x H
Varispeed F7					
CIMR-F7Z20P4					
CIMR-F7Z20P7	3G3RV-PFI3010-SE	B, 25 m A, 100 m	10	1.1	141x45x330
CIMR-F7Z21P5					
CIMR-F7Z22P2	3G3RV-PFI3018-SE	B, 25 m A, 100 m	18	1.3	141x46x330
CIMR-F7Z23P7					
CIMR-F7Z25P5	3G3RV-PFI2035-SE	B, 25 m A, 100 m	35	1.4	141x46x330
CIMR-F7Z27P5					
CIMR-F7Z2011	3G3RV-PFI2060-SE	B, 25 m A, 100 m	60	3	206x60x355
CIMR-F7Z2015					
CIMR-F7Z2018	3G3RV-PFI2100-SE	B, 25 m A, 100 m	100	4.9	236x80x408
CIMR-F7Z2022					
CIMR-F7Z2030	3G3RV-PFI2130-SE	A, 100 m	130	4.3	90x180x366
CIMR-F7Z2037					
CIMR-F7Z2045	3G3RV-PFI2200-SE	A, 100 m	200	11.0	130x240x610
CIMR-F7Z2055					
CIMR-F7Z2075	3G3RV-PFI3400-SE	A, 100 m	400	18.5	300x160x564
CIMR-F7Z2090					
CIMR-F7Z2110	3G3RV-PFI3600-SE	A, 100 m	600	11.0	260x135x386

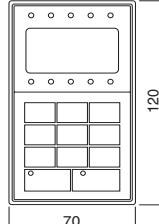
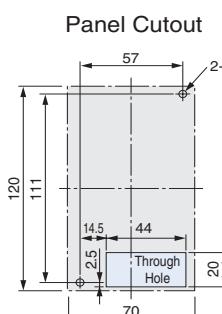
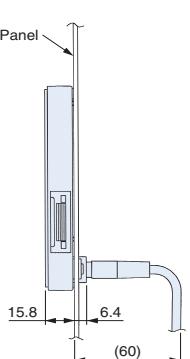
### 400 V

Line Filter					
Inverter Model	Model	EN 55011 Class*	Current (A)	Weight (kg)	Dimensions W x D x H
Varispeed F7					
CIMR-F7Z40P4					
CIMR-F7Z40P7	3G3RV-PFI3010-SE	B, 25 m A, 100 m	10	1.1	141x46x330
CIMR-F7Z41P5					
CIMR-F7Z42P2					
CIMR-F7Z43P7					
CIMR-F7Z44P0	3G3RV-PFI3018-SE	B, 25 m A, 100 m	18	1.3	141x46x330
CIMR-F7Z45P5					
CIMR-F7Z47P5	3G3RV-PFI3035-SE	B, 25 m A, 100 m	35	2.1	206x50x355
CIMR-F7Z4011					
CIMR-F7Z4015	3G3RV-PFI3060-SE	B, 25 m A, 100 m	60	4.0	236x65x408
CIMR-F7Z4022					
CIMR-F7Z4030	3G3RV-PFI3070-SE	A, 100 m	70	3.4	80x185x329
CIMR-F7Z4037					
CIMR-F7Z4045	3G3RV-PFI3130-SE	A, 100 m	130	4.7	90x180x366
CIMR-F7Z4055					
CIMR-F7Z4075	3G3RV-PFI3170-SE	A, 100 m	170	6.0	120x170x451
CIMR-F7Z4090					
CIMR-F7Z4110	3G3RV-PFI3200-SE	A, 100 m	250	11	130x240x610
CIMR-F7Z4132					
CIMR-F7Z4160	3G3RV-PFI3400-SE	A, 100 m	400	18.5	300x160x610
CIMR-F7Z4185					
CIMR-F7Z4220	3G3RV-PFI3600-SE	A, 100 m	600	11,0	260x135x386
CIMR-F7Z4300	3G3RV-PFI3800-SE	A, 100 m	800	31.0	300x160x716

## Ordering Information

Type	Name	Description	Function
② Monitor option card	AO-08 / 3G3IV-PAO08 	Analog monitor card	Outputs analog signal for monitoring inverter output state (output freq., output current etc.) after absolute value conversion. <ul style="list-style-type: none"><li>• Output resolution: 8 bits (1/256)</li><li>• Output voltage: 0 to {10 V (non isolated)}</li><li>• EOutput channel: 2 channels</li></ul>
	AO-12 / 3G3IV-PAO12 		Outputs analog signal for monitoring inverter output state (output freq., output current etc.) <ul style="list-style-type: none"><li>• Output resolution: 11 bits (1/2048) + code</li><li>• Output voltage: 10 to {10 V (non isolated)}</li><li>• EOutput channel: 2 channels</li></ul>
	DO-08 / 3G3IV-PDO08	Digital output card	Outputs isolated type digital signal for monitoring inverter run state (alarm signal, zero speed detection etc.). <ul style="list-style-type: none"><li>• Output channel: Photo coupler 6 channels (48 V, 50 mA or less)</li><li>• Relay contact output 2 channels (250 VAC, 1 A or less)</li><li>• 30 VDC, 1 A or less</li></ul>
	DO-02C / 3G3IV-PDO02C	2C-relay output card	<ul style="list-style-type: none"><li>• Two multi-function contact outputs (2C-relay) can be used other than those of the inverter proper unit.</li></ul>
③ Feedback Speed Control Card	PG-A2 / 3G3FV-PPGA2 	PG Speed Controller Card (Used for V/f control with PG or Flux Vector) 	<ul style="list-style-type: none"><li>• Phase A pulse (single pulse) inputs (voltage, complementary, open collector input)</li><li>• PG frequency range: Approx. 30 kHz max. [ Power supply output for PG: +12 V, max. current 200 mA ]</li><li>• Pulse monitor output: +12 V, 20 mA</li></ul>
	PG-B2 / 3G3FV-PPGB2 		<ul style="list-style-type: none"><li>• Phase A and B pulse inputs (exclusively for complementary input)</li><li>• PG frequency range: Approx. 30 kHz max. [ Power supply output for PG: +12 V, Max. current 200 mA ]</li><li>• Pulse monitor output: Open collector, +24 V, Max. current 30 mA</li></ul>
	PG-D2 / 3G3FV-PPGD2 		<ul style="list-style-type: none"><li>• Phase A pulse (differential pulse) input for V/f control (RS-422 input)</li><li>• PG frequency range: Approx. 300 kHz max. [ Power supply output for PG: +5 V or +12 V, Max. current 200 mA ]</li><li>• Pulse monitor output: RS-422</li></ul>
	PG-X2 / 3G3FV-PPGX2 		<ul style="list-style-type: none"><li>• Phase A, B and Z pulse (differential pulse) inputs (RS-422 input)</li><li>• PG frequency range: Approx. 300 kHz max. [ Power supply output for PG: +5 V or +12 V, Max. current 200 mA ]</li><li>• Pulse monitor output: RS-422</li></ul>
④ Communication option card	3G3RV-PDRT2 	DeviceNet option card	<ul style="list-style-type: none"><li>• Used for running or stopping the inverter, setting or referencing parameters, and monitoring output frequency, output current, or similar items through DeviceNet communication with the host controller.</li></ul>
	SI-P1	Profibus-DP option card	<ul style="list-style-type: none"><li>• Used for running or stopping the inverter, setting or referencing parameters, and monitoring output frequency, output current, or similar items through Profibus-DP communication with the host controller.</li></ul>
	SI-S1	CANopen option card	<ul style="list-style-type: none"><li>• Used for running or stopping the inverter, setting or referencing parameters, and monitoring output frequency, output current, or similar items through CANopen communication with the host controller.</li></ul>
	SI-J	LONWORKS option card	<ul style="list-style-type: none"><li>• Used for HVAC control, running or stopping the inverter, setting or referencing parameters, and monitoring output current, watt-hours, or similar items through LONWORKS communications with peripheral devices.</li></ul>
⑤ Reference option card	AI-14U / 3G3IV-PAI14U	Analog input card	<ul style="list-style-type: none"><li>• 2 channel high resolution analog input card</li><li>• Channel 1: 0 to 10 V (20KΩ)</li><li>• Channel 2: 4 to 20 mA (250Ω)</li><li>• Resolution 14 bit</li></ul>
	AI-14B / 3G3IV-PAI14B		<ul style="list-style-type: none"><li>• 3 Channel high resolution analog input card</li><li>• Signal level: -10 to +10V (20 KΩ)</li><li>• 4 to 20 mA (250 Ω)</li><li>• Resolution: 13 bit + sign</li></ul>
	DI-08 / 3G3IV-PDI08	Digital reference card	<ul style="list-style-type: none"><li>• 8 bit digital speed reference input card</li></ul>
	DI-16H2 / 3G3IV-PDI16H2		<ul style="list-style-type: none"><li>• 16 bit digital speed reference input card</li></ul>
⑥ PLC option	3G3RV-P10ST8-E 	PLC option	<ul style="list-style-type: none"><li>• Full PLC features, wireless installation and seamless access to the inverter parameters and analogue/digital inputs and outputs.</li><li>• Embedded Compubus/S fieldbus</li><li>• Standard Omron tools can be used for programming</li></ul>
	3G3RV-P10ST8-DRT-E	PLC option with DeviceNet	<ul style="list-style-type: none"><li>• Same features than standard model with DeviceNet support.</li></ul>

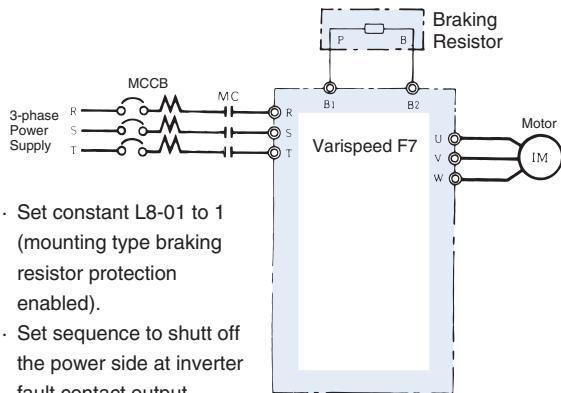
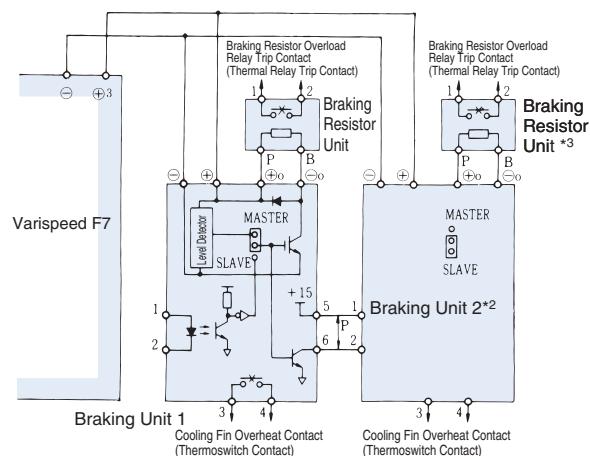
## ⑦ Accessories

	Name	Description	Installation
Digital operator	JVOP-160-OY 	5 lines LCD digital operator 7 Language support	  
	JVOP-161-OY 	7 segment LED digital operator	Panel Cutout installation
Accessories	3G3IV-PCN126 3G3IV-PCN326	Digital operator extension cable 1 meters 3 meters	-----
	3G3IV-PCN329-E	PC configuration cable	-----
	Sysdrive Configurator	Computer software	Configuration and monitoring software tool
	User's manuyl	YEG-TOE-S616-55.1-OY	-----

## ⑧ Braking Unit, Braking Resistor Unit

Inverter			Braking unit		Braking Resistor Unit <sup>1</sup>									
					Inverter-mounted Type (3 %ED, 10 sec max) <sup>2</sup>				Separately-installed Type (10 %ED, 10 sec. max.) <sup>3</sup>					
Voltage	Max. Applicable Motor output kW	Model CIMR-F7Z	Model CDBR	No. of used	Model ERF-150WJ	Resistance	No. of used	Braking torque %	Model LKEB	Specifications of Resistor	No. of used	Braking torque %	Connectable Min Resistance Value Ω	
200 V Class	0.4	20P4	Built-in	201	200 Ω	1	220	20P7	70 W 200 Ω	1	220	48		
	0.75	20P7		201	200 Ω	1	125	20P7	70 W 200 Ω	1	125	48		
	1.5	21P5		101	100 Ω	1	125	21P5	260 W 100 Ω	1	125	48		
	2.2	22P2		700	70 Ω	1	120	22P2	260 W 70 Ω	1	120	16		
	3.7	23P7		620	62 Ω	1	100	23P7	390 W 40 Ω	1	125	16		
	5.5	25P5			25P5									
	7.5	27P5			27P5									
	11	2011			2011									
	15	2015			2015									
	18.5	2018			2015									
400 V Class	22	2022	2022B	1	2022	---	---	2022	4800 W 6.8 Ω	1	125	6.4		
	30	2030	2015B	2	2015	---	---	2015	3000 W 10 Ω	2	125	9.6		
	37	2037	2015B	2	2015	---	---	2015	3000 W 10 Ω	2	100	9.6		
	45	2045	2022B	2	2022	---	---	2022	4800 W 6.8 Ω	2	120	6.4		
	55	2055	2022B	2	2022	---	---	2022	4800 W 6.8 Ω	2	100	6.4		
	75	2075	2110B	1	2022	---	---	2022	4800 W 6.8 Ω	3	110	1.6		
	90	2090	2110B	1	2022	---	---	2022	4800 W 6.8 Ω	4	120	1.6		
	110	2110	2110B	1	2018	---	---	2018	4800 W 8 Ω	5	100	1.6		
	0.4	40P4	Built in	751	750 Ω	1	230	40P7	70 W 750 Ω	1	230	96		
	0.75	40P7		751	750 Ω	1	130	40P7	70 W 750 Ω	1	130	96		
	1.5	41P5		401	400 Ω	1	125	41P5	260 W 400 Ω	1	125	64		
	2.2	42P2		301	300 Ω	1	115	42P2	260 W 250 Ω	1	135	64		
	3.7	43P7		201	200 Ω	1	110	43P7	390 W 150 Ω	1	135	32		
	4.0	44P0			45P5									
	5.5	45P5			47P5									
	7.5	47P5			4011									
	11	4011			4015									
	15	4015			4018									
	18.5	4018			4022									
400 V Class	22	4022	4030B	1	4022	---	---	4022	4800 W 27.2 Ω	1	125	19.2		
	30	4030	4030B	1	4030	---	---	4030	6000 W 20 Ω	1	125	19.2		
	37	4037	4045B	1	4037	---	---	4037	9600 W 16 Ω	1	125	12.8		
	45	4045	4045B	1	4045	---	---	4045	9600 W 13.6 Ω	1	125	12.8		
	55	4055	4030B	2	4030	---	---	4030	6000 W 20 Ω	2	135	19.2		
	75	4075	4045B	2	4045	---	---	4045	9600 W 13.6 Ω	2	145	12.8		
	90	4090	4220B	1	4030	---	---	4030	6000 W 20 Ω	3	100	3.2		
	110	4110	4220B	1	4030	---	---	4030	6000 W 20 Ω	3	100	3.2		
	132	4132	4220B	1	4045	---	---	4045	9600 W 13.6 Ω	4	140	3.2		
	160	4160	4220B	1	4045	---	---	4045	9600 W 13.6 Ω	4	140	3.2		
	185	4185	4220B	1	4045	---	---	4045	9600 W 13.6 Ω	4	120	3.2		
	220	4220	4220B	1	4037	---	---	4037	9600 W 16 Ω	5	110	3.2		
	300	4300	4220B	2	4045	---	---	4045	9600 W 13.6 Ω	6	110	3.2		

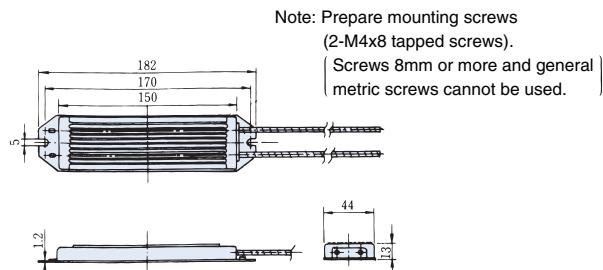
- When connecting a mounting type resistor or braking resistor unit, set system constant L3-04 to 0 (stall prevention disabled during deceleration). If operating without changing the constant, motor does not stop at set deceleration time.
- When connecting mounting type braking resistor, set system constant L8-01 to 1 (braking resistor protection enabled).
- Load factor during deceleration to stop a load with constant torque. With constant output or continuous regenerative braking, the load factor is smaller than the specified value.
- Resistance value per one braking unit. Select a resistance value that is larger than connectable minimum resistance value to obtain enough braking torque.
- For an application with large regenerative power such as hoisting, the braking torque or other items may exceed the capacity of a braking unit with a braking resistor in a standard combination (an result in capacity overload). Contact your Omron representatives when the braking torque or any other item exceeds the values in the table.

**Connections for braking units****Connections for braking resistors****Braking Unit**

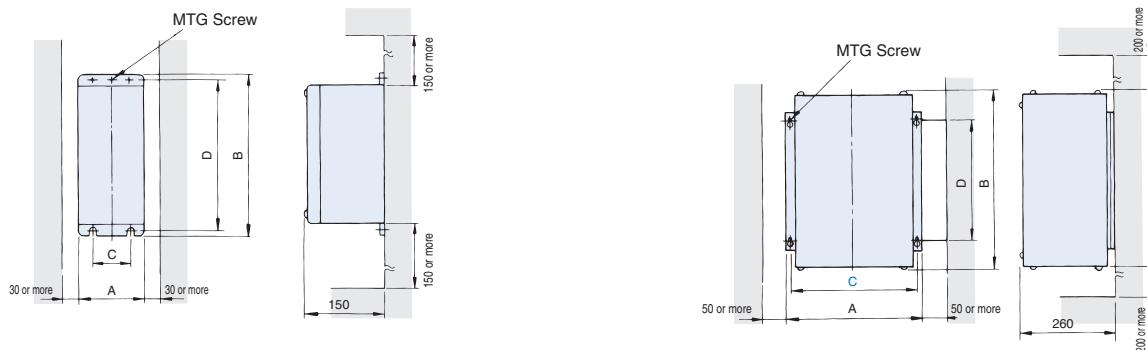
Model CDBR-2015 B, -2022 B, -4030B, -4045 B	Model CDBR-2110 B
Mass 1.8 Kg	
Mass 8.5 Kg	
Mass 12 Kg	

**Braking Resistor Unit (Inverter-mounted Type)**

Mass: 0.2 kg  
Model ERF-150WJ\_



### Braking Resistor Unit (Separately-installed Type)

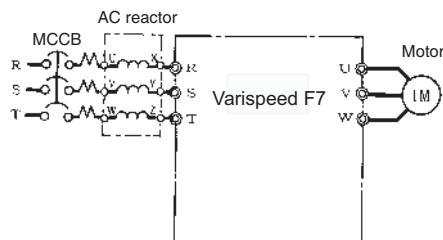


Voltage	Model LKEB-	Dimensions in mm					Mass kg
		A	B	C	D	MTG Screw	
220 V Class	20P7	105	275	50	260	M5 x 3	3.0
	21P5	130	350	75	335	M5 x 4	4.5
	22P2	130	350	75	335	M5 x 4	4.5
	23P7	130	350	75	335	M5 x 4	5.0
	25P5	250	350	200	335	M6 x 4	7.5
	25P5	250	350	200	335	M6 x 4	8.5
400 V Class	40P7	105	275	50	260	M5 x 3	3.0
	41P5	130	350	75	335	M5 x 4	4.5
	42P2	130	350	75	335	M5 x 4	4.5
	43P7	130	350	75	335	M5 x 4	5.0
	45P5	250	350	200	332	M6 x 4	7.5
	47P5	250	350	200	332	M6 x 4	8.5

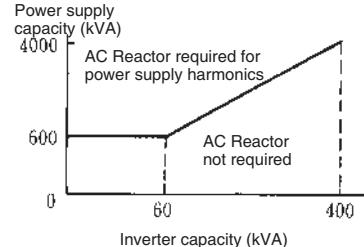
Voltage	Model LKEB-	Dimensions in mm					Mass kg
		A	B	C	D	MTG Screw	
220 V Class	2011	266	543	246	340	M8 x 4	10
	2015	356	543	336	340	M8 x 4	15
	2018	446	543	426	340	M8 x 4	19
	2022	446	543	426	340	M8 x 4	19
400 V Class	4011	350	412	330	325	M6 x 4	16
	4015	350	412	330	325	M6 x 4	18
	4018	446	543	426	340	M8 x 4	19
	4022	446	543	426	340	M8 x 4	19
	4030	356	956	336	740	M8 x 4	25
	4037	446	956	426	740	M8 x 4	33
	4045	446	956	426	740	M8 x 4	33

### AC Reactor

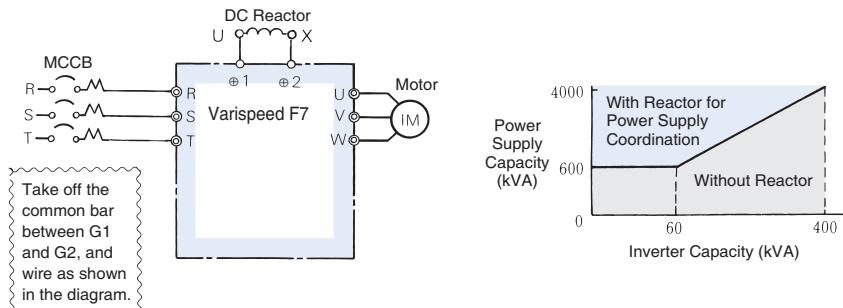
Connection Example



Application Example



200 V Class				400 V Class			
Max. Applicable Motor Output kW	Current Value A	Inductance mH	Code No.	Max. Applicable Motor Output kW	Current Value A	Inductance mH	Code No.
0.4	2.5	4.2	X 002553	0.4	1.3	18.0	X 002561
0.75	5	2.1	X 002554	0.75	2.5	8.4	X 002562
1.5	10	1.1	X 002489	1.5	5	4.2	X 002563
2.2	15	0.71	X 002490	2.2	7.5	3.6	X 002564
3.7	20	0.53	X 002491	3.7	10	2.2	X 002500
5.5	30	0.35	X 002492	5.5	15	1.42	X 002501
7.5	40	0.265	X 002493	7.5	20	1.06	X 002502
11	60	0.18	X 002495	11	30	0.7	X 002503
15	80	0.13	X 002497	15	40	0.53	X 002504
18.5	90	0.12	X 002498	18.5	50	0.42	X 002505
22	120	0.09	X 002555	22	60	0.36	X 002506
30	160	0.07	X 002556	30	80	0.26	X 002508
37	200	0.05	X 002557	37	90	0.24	X 002509
45	240	0.044	X 002558	45	120	0.18	X 002566
55	280	0.038	X 002559	55	150	0.15	X 002567
75	360	0.026	X 002560	75	200	0.11	X 002568
90	500	0.02	X 010145	90/110	250	0.09	X 002569
110	500	0.02	X 010145	132/160	330	0.06	X 002570
				185	490	0.04	X 002690
				220			
				300	660	0.03	X 002691

**DC Reactor**

200 V Class				400 V Class			
Max. Applicable Motor Output kW	Current Value A	Inductance mH	Code No.	Max. Applicable Motor Output kW	Current Value A	Inductance mH	Code No.
0.4	5.4	8	X010048	0.4	3.2	28	X010052
0.75				0.75			
1.5	18	3	X010049	1.5	5.7	11	X010053
2.2				2.2			
3.7	36	1	X010050	3.7	12	6.3	X010054
5.5				5.5			
7.5	72	0.5	X010051	7.5	23	3.6	X010055
11				11			
15	72	0.5	X010051	15	33	1.9	X010056
18.5				18.5			
22 to 110	Built-in			22 to 300	Built-in		

**Fuse installation**

To protect the inverter, it is recommended to use semiconductor fuses like they are shown in the table below

Inverter Type	FUSE		
	Voltage (V)	Current (A)	I <sup>2</sup> t (A <sup>2</sup> s)
20P4	240	10	12~25
20P7	240	10	12~25
21P5	240	15	23~55
22P2	240	20	34~98
23P7	240	30	82~220
25P5	240	40	220~610
27P5	240	60	290~1300
2011	240	80	450~5000
2015	240	100	1200~7200
2018	240	130	1800~7200
2022	240	150	870~16200
2030	240	180	1500~23000
2037	240	240	2100~19000
2045	240	300	2700~55000
2055	240	350	4000~55000
2075	240	450	7100~64000
2090	240	550	11000~64000
2110	240	600	13000~83000

Inverter Type	FUSE		
	Voltage (V)	Current (A)	I <sup>2</sup> t (A <sup>2</sup> s)
40P4	480	5	6~55
40P7	480	5	6~55
41P5	480	10	10~55
42P2	480	10	18~55
43P7	480	15	34~72
44P0	480	20	50~570
45P5	480	25	100~570
47P5	480	30	100~640
4011	480	50	150~1300
4015	480	60	400~1800
4018	480	70	700~4100
4022	480	80	240~5800
4030	480	100	500~5800
4037	480	125	750~5800
4045	480	150	920~13000
4055	480	150	1500~13000
4075	480	250	3000~55000
4090	480	300	3800~55000
4110	480	350	5400~23000
4132	480	400	7900~64000
4160	480	450	14000~250000
4185	480	600	20000~250000
4220	480	700	34000~400000
4300	480	900	52000~920000

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

3G3MV-P10CDT□-E

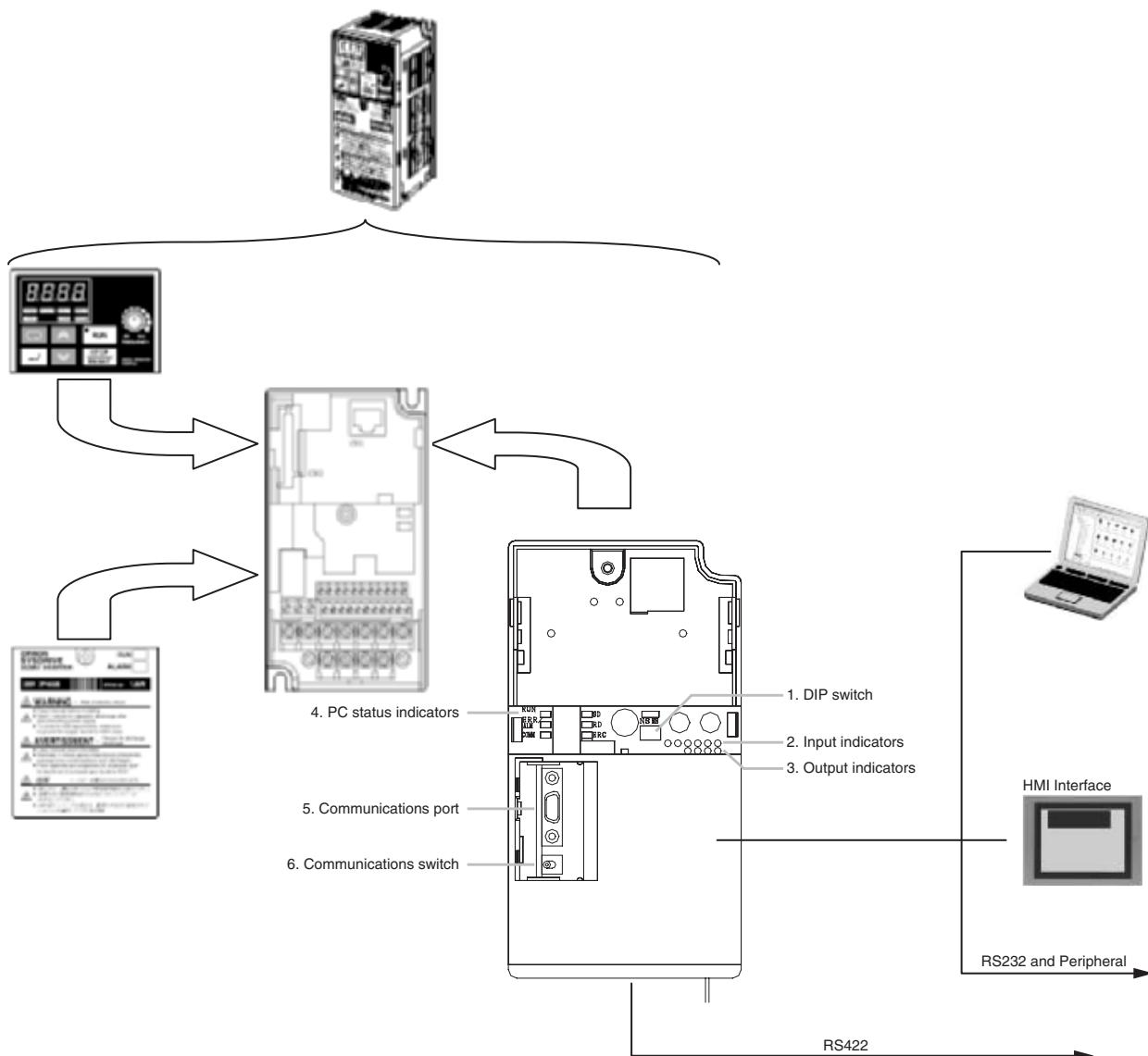
# 3G3MV Inverter PLC

The Omron PLC technology embedded in the most popular Inverter: the 3G3MV

- Omron PLC programmability for the 3G3MV Inverter
- Stand-alone applications.
- Flexibility and intelligence into the 3G3MV.
- Wireless installation and seamless access to the inverter parameters and analogue/digital inputs and outputs.
- Standard Omron tools can be used for programming and commissioning.
- Ideal for applications like: Door control, Pump sequencing, Intelligent conveyor, Vertical axis control, Industrial washing machines and general positioning.



## System Configuration



## Type Designation

3G3MV-P10CDT3-E				
Inverter Series		Options		
Number of I/O's		- NPN	RTC NO	RS422 NO
		1 NPN	NO	YES
		2 NPN	YES	NO
		3 NPN	YES	YES
		5 PNP	NO	NO
		6 PNP	NO	YES
		7 PNP	YES	NO
		8 PNP	YES	YES

## Specifications

### Specifications by product

Item	3G3MV-P10CDT-E	3G3MV-P10CDT3-E
PLC core	CPM2C-S	CPM2C-S
Inputs	6 24 VDC inputs	6 24 VDC inputs
Outputs	3 sinking/NPN transistor outputs	3 sinking/NPN transistor outputs
	1 relay output	1 relay output
Peripheral port	Yes	Yes
RS-232C port	Yes	Yes
RS-422/485 port	No	Yes
Calendar/Clock	No	Yes
Memory backup	Flash memory and capacitor	Flash memory and battery

### General specifications

Item	Specifications
Rated power supply voltage	24 VDC $^{+10\%/-15\%}$ (External power supply for I/O)
Vibration resistance	0.15 mm (10-57 Hz) 9.8 m/s <sup>2</sup> (57-150 Hz) 9.8 m/s <sup>2</sup> (57-150 Hz) In all directions (X, Y, Z)
Ambient operating temperature	-10 to 45 °C
Ambient operating relative humidity	10% to 90% (no condensation)
Ambient storage temperature	-20 to 70 °C
Atmosphere	Must be free from corrosive gas
Power Consumption	2W (Supplied internally)
Control method	Store program method
I/O control method	Cyclic scan method
Programming language	Ladder chart method
Instruction length	1 step/1 instruction; 1 to 5 words/1 instruction
Instruction types	Basic Special
	14 types (Same as for Programmable Slaves.) 105 types, 185 instructions (Same as for Programmable Slaves.)
Processing speed	Basic instructions Special instructions
	0.64 µs (LD) 7.8 µs (MOV)
Program capacity	4,096 words
Maximum number of I/O points	10
Input bits	00000 to 00015 (6 physical inputs)
Output bits	01000 to 01003 (4 physical outputs)
Area allocated to Inverter	320 bits: 20000 to 21915
Inverter interface	Direct interface with 3G3MV Inverter through • IR-memory • DM-memory • Transfer command
IR Area	880 bits: IR 00100 to IR 00915 (words IR 001 to IR 009), IR 01100 to IR 02815 (words IR 011 to IR 028), IR 03000 to IR 04915 (words IR 030 to IR 049), IR 22000 to IR 22715 (words IR 220 to IR 227)
SR Area	448 bits: SR 22800 to SR 25507 (words SR 228 to SR 255)
TR Area	8 bits (TR 0 to TR 7)
HR Area	320 bits: HR 0000 to HR 1915 (words HR 00 to 19)
AR Area	384 bits: AR 0000 AR 2315 (words AR 00 to AR 23)
LR Area	256 bits: LR 0000 to LR 1515 (words LR 00 to LR 15)
Timer/Counter Area	256 bits: TC 000 to TC 255
DM Area	Read/Write Read only Allocated to Inverter PLC Setup
	2029 words (DM 0000 to DM 0999, DM 1019 to DM 2047) DM 2000 to DM 2021: Error Log Storage Area 456 words (DM6144 to 6599) 19 words (DM 2022 to DM 2040) 56 words (DM 6599 to DM 6655)
Quick-response input	2 inputs (Minimum input signal width: 50 µs)

Item	Specifications	
Interrupt processing	External interrupts	2 bits (Used in common for input interrupt counter mode and high-speed inputs.)
	Scheduled interrupts	1 bit (Scheduled interrupts or one-shot interrupts)
Interrupts	Interrupt inputs 2 inputs Response time: 50 µs	
	Interval timer interrupts 1 input Set value: 0.5 to 319,968 ms Precision: 0.1 ms	Scheduled interrupts One-shot interrupt
High-speed counters	High-speed counter 1 input, see note 5 • Differential phase mode (5 kHz) • Pulse plus direction input mode (20 kHz) • Up/down input mode (20 kHz) • Increment mode (20 kHz)	No interrupt Count-check interrupt (An interrupt can be generated when the count equals the set value or the count lies within a preset range.)
	Interrupt inputs (counter mode) 2 inputs • Incrementing counter (2 kHz) • Decrementing counter (2 kHz)	No interrupt Count-up interrupt
Pulse outputs	• 2 outputs: Single-phase pulse output without acceleration/deceleration (See note 6.) 10 Hz to 10 kHz • 2 outputs: Variable duty ratio pulse output (See note 6.) 0.1 to 999.9 Hz, duty ratio 0 to 100% • 1 output: Pulse output with trapezoidal acceleration/deceleration (See note 6.) Pulse plus direction output, up/down pulse output, 10 Hz to 10 kHz	
Synchronized pulse control	1 point, see notes 5 and 6 Input frequency range: 10 to 500 Hz, 20 Hz to 1 kHz, or 300 Hz to 20 kHz Output frequency range: 10 Hz to 10 kHz	
Analog volume	None	
Input time constant (ON response time = OFF response time)	Determines the input time constant for all inputs. (Settings: 1, 2, 3, 5, 10, 20, 40, or 80 ms)	
Clock/Calendar function	Yes. Shows the current year, month, day of the week, day of the month, hour, minute, and second.	
Communication function	Port 1 = Peripheral and RS-422 Host Link, Peripheral bus, No-protocol, Programming Console Port 2 = RS-232C port: Host Link, no-protocol, 1:1 PLC Link, 1:1 NT Link	
Power-interruption hold function	Holds the contents of HR, AR, CNT, and DM Areas.	
Memory backup	Non-volatile memory, User program, DM (Read only), PLC Setup Fixed internal lithium battery (5 years, not replaceable by the user) or capacitor DM (Read/Write), HR, SR and CNT Areas	
Self-diagnostic function	CPU errors, memory errors, communications errors, setting errors, battery errors	
Program check	No END instruction, program errors (regularly checked during operation)	
Connected tools	CX-Programmer Programming Console SSS Sysdrive Configurator	After Version 2.1 C200H-PRO27, CQM1-PRO01 PC98 & PC/AT (SYSMAC Support Software, All version) After version 2

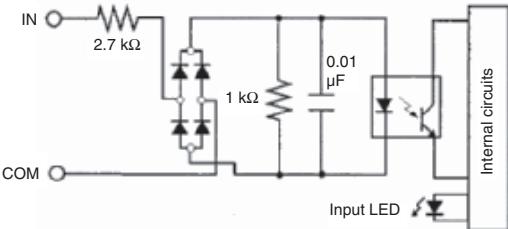
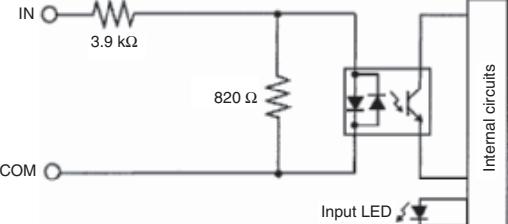
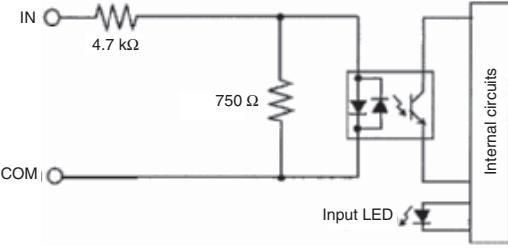
**Note:** 1. The DM area, HR area, AR area, and counter values are backed up. If the backup battery or capacitor is discharged, the contents of these areas will be lost and the data values will revert to the defaults.  
 2. The contents of the program area, read-only DM area (DM6144 to DM6599), and PLC Setup (DM 6600 to DM 6655) are stored in flash memory. The contents of these areas will be read from flash memory the next time the power is turned ON, even if the backup battery or capacitor is discharged. When data has been changed in any of these areas, write the new values to flash memory by switching the 3G3MV-P10CDT to MONITOR or RUN mode, or by turning the power OFF and then ON again.

3. Changes made while in MONITOR mode using, for example, online editing, are written to flash memory in real-time.
4. The above figure for power consumption includes the power consumption of the Programming Console.
5. This input is shared by the high-speed counter and synchronized pulse control functions.
6. This output is shared by the pulse output and synchronized pulse control functions

## I/O Specifications

### Input Specifications

Item	Inputs	Specification
Input voltage	All	24 VDC +10%/-15%
Input impedance	IN00000 to IN00001	2.7 kΩ
	IN00002 to IN00004	3.9 kΩ
	IN00005	4.7 kΩ
Input current	IN00000 to IN00001	8 mA typical
	IN00002 to IN00004	6 mA typical
	IN00005	5 mA typical
ON voltage/current	IN00000 to IN00001	17 VDC min., 5 mA
	IN00002 to IN00005	14.4 VDC min., 3.5 mA
OFF voltage/current	All	5.0 VDC max., 1.1 mA
ON delay	All	1 to 80 ms max. Default: 10 ms (See note.)

Item	Inputs	Specification
OFF delay	All	1 to 80 ms max. Default: 10 ms (See note.)
Circuit configuration	IN00000 to IN00001	
	IN00002 to IN00004	
	IN00005	

**Note:** The input time constant can be set to 1, 2, 3, 5, 10, 20, 40, or 80 ms in the PLC Setup.

### High Speed Counter Inputs

The following Unit input bits can be used as high-speed counter inputs. The maximum count frequency is 5 kHz in differential phase mode and 20 kHz in the other modes.

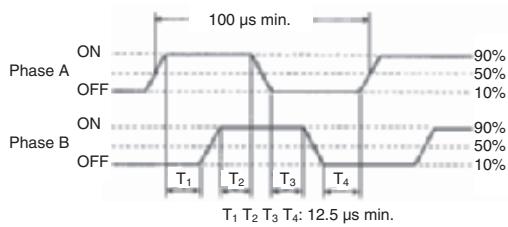
Input	Function			
	Differential phase mode	Pulse plus direction input mode	Up/down input mode	Increment mode
IN00000	A-phase pulse input	Pulse input	Increment pulse input	Increment pulse input
IN00001	B-phase pulse input	Direction input	Decrement pulse input	Normal input
IN00002	Z-phase pulse input or hardware reset input (IN00002 can be used as a normal input when it is not used as a high-speed counter input.)			

The minimum pulse widths for inputs IN00000 (A-phase input) and IN00001 (B-phase input) are as follows:

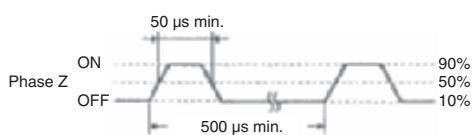
Pulse plus direction input mode,  
Up/down input mode, Increment mode



Differential phase mode



The minimum pulse width for input IN00002 (Z-phase input) is as follows:



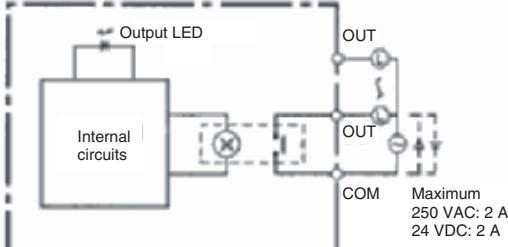
### Interrupt Inputs

The 3G3MV-P10CDT is equipped with inputs that can be used as interrupt inputs (interrupt input mode or counter mode) and quick-response inputs. The minimum pulse width for these inputs is 50 μs.

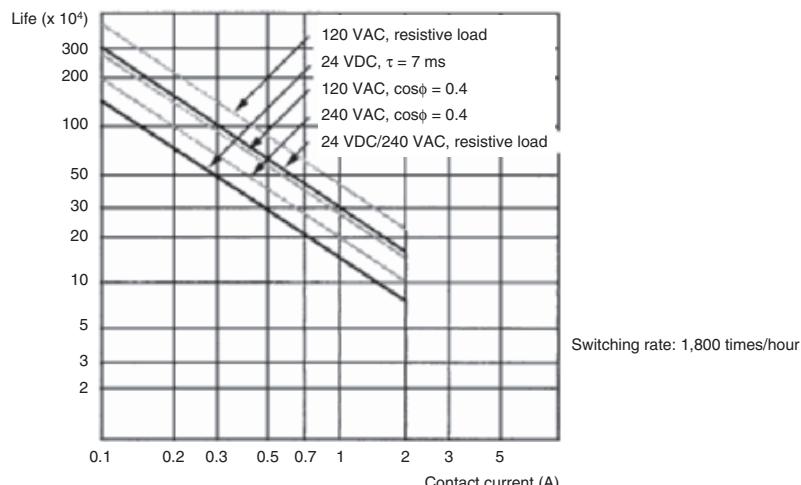
Inputs IN00003 and IN00004 can be used as interrupt inputs.

## Output Specification

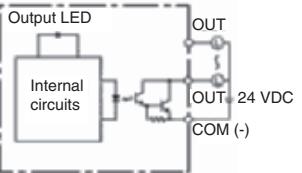
### Relay Output

Item	Specification
Maximum switching capacity	2 A, 250 VAC ( $\cos\phi=1$ ) 2A, 24VDC
Minimum switching load	10 mA, 5 VDC
Service life of relay	Electrical: 150,000 operations (24 VDC resistive load) 100,000 operations (240 VAC inductive load $\cos\phi=0.4$ ) Mechanical: 20,000,000 operations
ON delay	15 ms max.
OFF delay	15 ms max.
Circuit configuration	 <p>Internal circuits</p> <p>Output LED</p> <p>OUT</p> <p>OUT</p> <p>COM</p> <p>Maximum 250 VAC: 2 A 24 VDC: 2 A</p>

**Note:** The service life of relay output contacts shown in the table assumes the worst conditions. The following graph shows the results of Omron's service life tests at a switching rate of 1,800 times/hour.



### Transistor Outputs (Sinking/NPN)

Item	Specification
Maximum switching capacity	4.5 to 30VDC, 0.2 A/output
Minimum switching capacity	0.5 mA
Maximum inrush current	0.9 A for 10 ms
Leakage current	0.1 mA
Residual voltage	1.5 V max.
ON response time	20 $\mu$ s max.
OFF response time	40 $\mu$ s max. for 4.5 to 26.4 VDC, 10 to 100 mA 0.1 ms max for 4.5 to 30 VDC, 10 to 200 mA
Fuse	One fuse per output (cannot be replaced by user)
Circuit configuration	 <p>Internal circuits</p> <p>Output LED</p> <p>OUT</p> <p>OUT</p> <p>COM (-)</p> <p>24 VDC</p>

**Note:** When using OUT01000 or OUT01001 as a pulse output, connect a dummy resistor as required to bring the load current between 0.01 and 0.1 A. If the load current is below 0.1 A, the ON-to-OFF response time will be longer and high-speed pulses (source-type transistor outputs) will not be output. If the load current is above 0.1 A, the transistor will generate more heat and components may be damaged.

### Caution

Do not apply voltage in excess of the maximum switching capacity to an output terminal. It may result in damage to the product or fire

## Operation

### CPU Unit Component Descriptions

#### 1. DIP switch

- RS-232C and Peripheral Port Settings

	Pin 1	Effective Port Settings
	OFF (default)	The ports operate according to the settings in the PLC Setup. RS-232C port settings: DM 6645 to DM 6649 Peripheral port settings: DM 6650 to DM 6654
	ON	The ports operate with the standard communications settings.

- Operating Mode at Startup

Pin 2 determines the operating mode at startup only if there isn't a Programming Device connected to the peripheral port.

Programming Device connected	Startup mode with pin 2 OFF (default)	Startup mode with pin 2 ON
None	PROGRAM mode	RUN mode
Programming Console	Operating mode set on the Programming Console's mode switch	
Other device	PROGRAM mode	

#### 2. Input indicators (yellow)

The input indicators are lit when the corresponding input terminal is ON. The status of an input indicator will reflect the status of the input even when that input is being used for a high-speed counter.

- Note:**
1. When interrupt inputs are used in interrupt input mode, the indicator may not light even when the interrupt condition is met if the input is not ON long enough.
  2. Input indicators will reflect the status of the corresponding inputs even when the PLC is stopped, but the corresponding input bits will not be refreshed.

#### 3. Output indicators (yellow)

The output indicators are lit when the corresponding output terminal is ON. The indicators are lit during I/O refreshing. The status of an output indicator will also reflect the status of the corresponding output when the output is being used as a pulse output.

#### 4. PLC status indicators

The following indicators show the operating status of the PLC.

Indicator	Status	Meaning
PWR (green)	ON	Power is being supplied to the unit
	OFF	Power isn't being supplied to the unit
RUN (green)	ON	The PLC is operating in RUN or MONITOR mode
	OFF	The PLC is in PROGRAM mode or a fatal error has occurred.
ERR/ALM (red)	ON	A fatal error has occurred. (PLC operation stops.)
	Flashing	A non-fatal error has occurred. (PLC operation continues.)
	OFF	Indicates normal operation.
COMM1 (yellow)	Flashing	Data is being transferred via the peripheral or RS-422/485 port.
	OFF	Data isn't being transferred via communications port.
COMM2 (yellow)	Flashing	Data is being transferred via the RS-232C port
	OFF	Data isn't being transferred via communications port.

#### 5. Communications port

Connects the PLC to a Programming Device (including Programming Consoles), host computer, or standard external device. Use a proper Connecting Cable (CPM2C-CN111, CS1W-CN114, CS1W-CN118, or CS1W-CN226).

- Note:**
1. A CQM1H-PRO01-E Programming Console can be connected directly to the PLC.
  2. A C200H-PRO27-E Programming Console can be connected directly to the PLC with a CS1W-CN224/CN624 Connecting Cable.
  3. Use a CPM2C-CN111 or CS1W-CN114 Connecting Cable to connect to the communications port as a peripheral port. The communications port can be used simultaneously as both a peripheral port and RS-232C port by using the CPM2C-CN111 Connecting Cable.

4. Use a CPM2C-CN111, CS1W-CN118 or CS1W-CN226 Connecting Cable to connect to the communications port as a RS-232C port. The communications port can be used simultaneously as both a peripheral port and RS-232C port by using the CPM2C-CN111 Connecting Cable

**Note:** The peripheral port and RS-422/485 port cannot be used simultaneously. When using the peripheral port disconnect any devices connected to the RS-422/485 port.

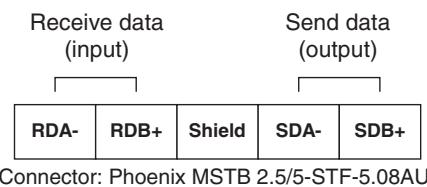
#### 6. Communications switch

Switch to select port 1 type of connected device

Position	Communication port 1
OFF (default)	Programming Console
ON	RS-422/485 communication

#### 7. RS-422/485 port (3G3MV-P10CDT3-E only)

Used to connect to host computers, or standard external devices.  
Terminal Arrangement



**Note:** The maximum line length is 500 m.

**Note:** The peripheral port and RS-422/485 port cannot be used simultaneously. When using the peripheral port disconnect any devices connected to the RS-422/485 port.

#### 8. RS-422/485 switch (3G3MV-P10CDT3-E only)

Switch to select 4-wire (RS-422) or 2-wire (RS-485) communication

Position	Status
OFF (down) (default)	4-wire communications
ON (up)	2-wire communications

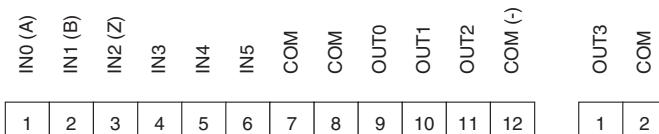
#### 9. Terminating Resistance switch (3G3MV-P10CDT3-E only)

Position	Termination
OFF (down) (default)	Disabled
ON (up)	Enabled

Set this switch to ON only for double-ended connection to a Host Link network.

#### 10. I/O connector

Connects the CPU Unit to external input and output devices.  
Sinking/NPN outputs



Connector: WAGO 733-112 (wire cross section 0.08 to 0.50 mm<sup>2</sup>)

#### 11. Relay connector

Connects the CPU Unit to an external output devices.

Connector: WAGO 734-102 (wire cross section 0.08 to 1.50 mm<sup>2</sup>)

#### 12. FE-connection

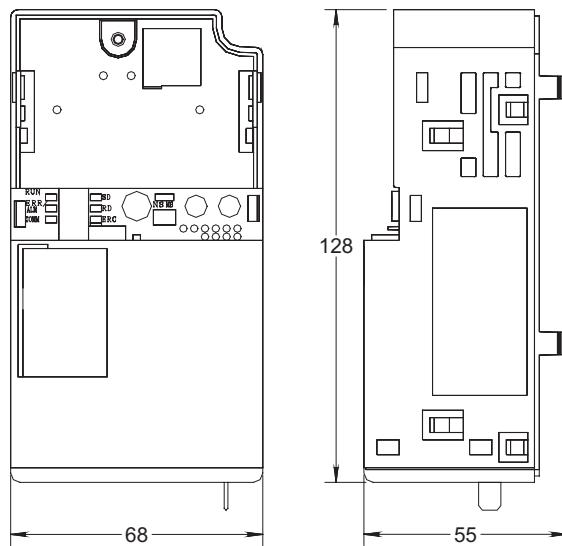
AMP tab to connect functional earth. Internally connected to pin 3 of the RS-422/485 connector and to the shell of the peripheral connector.

### 13. Low battery detection switch (3G3MV-P10CDT3-E only)

This switch enables or disables the detection of a low-battery error.

	<b>Position</b>	<b>Low-battery detection</b>
Enabled ↑ Disabled	ON (up) (default) OFF (down)	Error detection enabled Error detection disabled

## Dimensions



## Ordering information

### Inverter PLC

<b>Specifications</b>				<b>Model</b>
<b>Inputs</b>	<b>Outputs</b>	<b>RS422 port</b>	<b>RTC</b>	
6	4	No	No	3G3MV-P10CDT-E
6	4	Yes	Yes	3G3MV-P10CDT3-E

### Cables

<b>Specifications</b>	<b>Model</b>
Computer connecting cable	CS1W-CN226
Programmable Console cable	CS1W-CN224

### Software

<b>Specifications</b>	<b>Model</b>
PLC Programming Software-CX-Programmer	WS02-CXPC1-EV4
Inverter Configurator Software-Sysdrive Configurator	Sysdrive Configurator v2.1

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

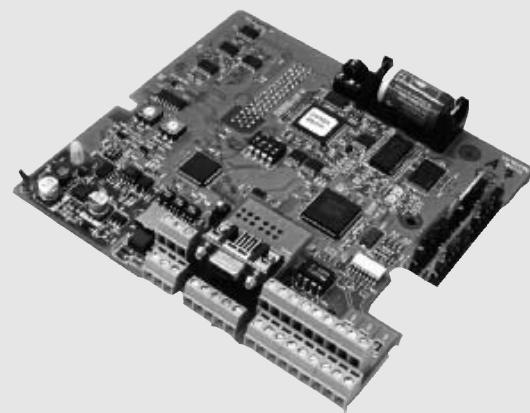
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

3G3RV-P10ST□-E

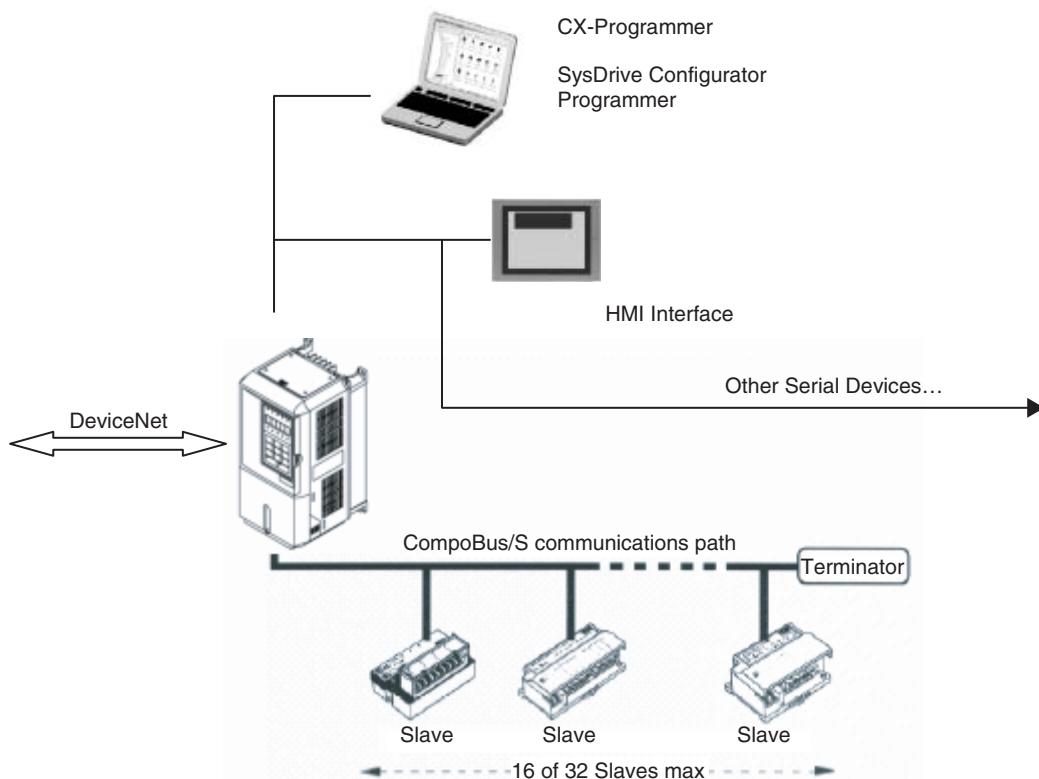
# F7/L7/E7 Inverter PLC

**The Omron PLC technology embedded in the Omron-Yaskawa Inverter family.**

- Omron PLC programmability IN the OmronYaskawa Inverters.
- Flexibility and intelligence into the OmronYaskawa Inverter family.
- Wireless installation and seamless access to the inverter parameters and analogue/digital inputs and outputs.
- Omron CompoBus/S fieldbus inside. So, able to control up to 256I/O's.
- Easy to integrate in the Automation world: DeviceNet type available.
- Standard Omron tools can be used for programming and commissioning.
- Ideal for applications like:
  - Pump Sequencing, Remote Control, Water treatment,etc together with the HVAC Inverter: E7&E7 IP54.
  - Lift as control sequence inside, using the Lift Inverter: L7.
  - Cranes, Winding/Rewinding, Position control, others combined with the Powerful Flux Vector Control Inverter: F7Z.



## System Configuration



## Type Designation

### PLC Inverter

Inverter Series	3G3RV-P10ST8-DRT-E
Number of I/O's	
Options	
	<b>DeviceNet Slave</b>
-	No
DRT	Yes

	Output	RTC	RS422	Remarks
-	NPN	NO	NO	
1	NPN	NO	YES	
2	NPN	YES	NO	
3	NPN	YES	YES	
5	PNP	NO	NO	
6	PNP	NO	YES	
7	PNP	YES	NO	
8	PNP	YES	YES	Standard

## Specifications

### Specifications by product

Item	3G3RV-P10ST8-E	3G3RV-P10ST8-DRT-E
PLC core	CPM2C-S	CPM2C-S
Inputs	6 24 VDC inputs	6 24 VDC inputs
Outputs	4 sourcing/PNP transistor outputs	4 sourcing/PNP transistor outputs
Peripheral port	Yes	Yes
RS-232C port	Yes	Yes
RS-422 port	No	Yes
Calendar/Clock	Yes	Yes
Memory backup	Flash memory and battery	Flash memory and battery
CompoBus/S master interface	Yes	Yes
Encoder interface	Yes	Yes
DeviceNet Slave interface	No	Yes

### General specifications

Item	Specifications	
	3G3RV-P10ST8-E	3G3RV-P10ST8-DRT-E
Rated power supply voltage	24 VDC $\pm 10\% / \pm 15\%$ (External power supply for I/O)	
Communications power supply voltage	---	11 to 25 VDC (supplied by communications connector)
Power Consumption	Internal power	3W (Supplied internally) (see note.)
Supply	Communications power supply	30 mA max.
Vibration resistance	10 to 20 Hz, 9.8 m/s <sup>2</sup> max. 20 to 50 Hz, 2 m/s <sup>2</sup> max.	
Ambient operating temperature	-10 to 45 °C	
Ambient operating relative humidity	10% to 90% (no condensation)	
Ambient storage temperature	-20 to 70 °C	
Atmosphere	Must be free from corrosive gas	
Control method	Store program method	
I/O control method	Cyclic scan method	
Programming language	Ladder chart method	
Instruction length	1 step/1 instruction; 1 to 5 words/1 instruction	
Instruction types	Basic	14 types (Same as for Programmable Slaves.)
	Special	105 types, 185 instructions (Same as for Programmable Slaves.)
Processing speed	Basic instructions	0.64 µs (LD)
	Special instructions	7.8 µs (MOV)
Program capacity	4,096 words	
Maximum number of I/O points	10	
Input bits	00000 to 00015 (6 physical inputs)	
Output bits	01000 to 01003 (4 physical outputs)	
CompoBus/S input bits	128 bits: IR 02000 to IR 02715 (Bits not used for CompoBus/S input bits can be used for work bits.)	
CompoBus/S output bits	128 bits: IR 03000 to IR 03715 (Bits not used for CompoBus/S output bits can be used for work bits.)	
Inverter interface	Direct interface with 3G3RV Inverter through • IR-memory • DM-memory • Transfer command	
Inverter interface bits	176 bits: IR 20000 to IR 21015	
Encoder interface bits	48 bits: IR 02900 to IR 02915 and IR 04800 to IR 04915	
Work bits	448 bits: IR 02800 to IR 02815, IR 03800 to IR 04715, and IR 21100 to IR 22715	
Special bits (SR area)	448 bits: SR 22800 to SR 25507 (words SR 228 to SR 255)	
Temporary bits (TR area)	8 bits (TR 0 to TR 7)	
Holding bits (HR area)	320 bits: HR 0000 to HR 1915 (words HR 00 to 19)	
Auxiliary bits (AR area)	384 bits: AR 0000 AR 2315 (words AR 00 to AR 23)	

Item	Specifications	
	3G3RV-P10ST8-E	3G3RV-P10ST8-DRT-E
Link bits (LR area)	256 bits: LR 0000 to LR 1515 (words LR 00 to LR 15)	
Timers/Counters	256 timers/counters (TIM/CNT 000 to TIM/CNT) 1-ms timers: TMHH(--) 10-ms timers: TIMH(15) 100-ms timers: TIM 1-s/10-s timers: TIML(--) Decrementing counters: CNT Reversible counters: CNTR(12)	
CompoBus/S Master functions	Remote I/O devices can be allocated up to 256 I/O points (128 inputs and 128 outputs) in input area IR 020 to IR 027 and output area IR 030 to IR 037. <ul style="list-style-type: none"> <li>The node numbers can be set to 0 to 7 (128-point mode) or 0 to 15 (256-point mode).</li> <li>The communications mode can be set to high-speed mode (max. length 100 m) or long-distance mode (max. length 500 m).</li> </ul>	
DeviceNet Slave functions	Up to 64 words (32 input words and 32 output words) can be allocated to the DeviceNet Master's I/O. The Master's I/O can be allocated to the following data areas: IR 000 to IR 049 IR 200 to IR 227 DM 0000 to DM 2047 LR 00 to LR 15 HR 00 to HR 19 AR 00 to AR 23 (3G3RV-P10ST 'Master; read-only) TC 000 to TC 255 <ul style="list-style-type: none"> <li>Explicit message communications are supported. Any 3G3RV-P10ST data area can be accessed from the DeviceNet Master.</li> <li>The communications speed can be set to 500 kbps (total network length 100 m max.), 250 kbps (total network length 250 m max.), or 125 kbps (total network length 500 m max.).</li> </ul>	
DM Area	Read/Write	2,029 words (DM 0000 to DM 0999, DM 1019 to DM 2047) DM 2000 to DM 2021: Error Log Storage Area
	Read only	456 words (DM6144 to 6599)
	Inverter interface	19 words (DM 2022 to DM 2040)
	Encoder interface	14 words (DM 1986 to DM 1999)
	PLC Setup	56 words (DM 6599 to DM 6655)
Interrupts	Interrupt inputs 2 inputs Response time: 50 µs	
	Interval timer interrupts 1 input Set value: 0.5 to 319,968 ms Precision: 0.1 ms	
	Scheduled interrupts One-shot interrupt	
High-speed counters	High-speed counter 1 input, see note 5	No interrupt
	Differential phase mode (5 kHz) Pulse plus direction input mode (20 kHz) Up/down input mode (20 kHz) Increment mode (20 kHz)	Count-check interrupt (An interrupt can be generated when the count equals the set value or the count lies within a preset range.)
	Interrupt inputs (counter mode) 2 inputs Incrementing counter (2 kHz) Decrementing counter (2 kHz)	No interrupt Count-up interrupt
Encoder interface	3 input modes: Differential-phase (up/down) Pulse plus direction Up/down pulse Maximum input frequency 50 kHz Maximum counter range 4,294,967,295 (232-1) Two capture registers, 3 selectable registration inputs One comparison value Counter reset through software or Z-phase Interrupt function	
Pulse outputs	<ul style="list-style-type: none"> <li>2 outputs: Single-phase pulse output without acceleration/deceleration (See note 6.) 10 Hz to 10 kHz</li> <li>2 outputs: Variable duty ratio pulse output (See note 6.) 0.1 to 999.9 Hz, duty ratio 0 to 100%</li> <li>1 output: Pulse output with trapezoidal acceleration/deceleration (See note 6.) Pulse plus direction output, up/down pulse output, 10 Hz to 10 kHz</li> </ul>	
Synchronized pulse control	1 point, see notes 5 and 6 Input frequency range: 10 to 500 Hz, 20 Hz to 1 kHz, or 300 Hz to 20 kHz Output frequency range: 10 Hz to 10 kHz	
Pulse catch inputs	2 bits Minimum pulse input: 50 µs max. Used in common by input interrupts and input interrupt counter mode.	
Analog volume	None	
Input time constant (ON response time = OFF response time)	Determines the input time constant for all inputs. (Settings: 1, 2, 3, 5, 10, 20, 40, or 80 ms)	
Clock/Calendar function	Shows the current year, month, day of the week, day of the month, hour, minute, and second.	
Communication function	Port 1 = Peripheral and RS-422: Host Link, Peripheral bus, No-protocol, Programming Console Port 2 = RS-232C port: Host Link, no-protocol, 1:1 PLC Link, 1:1 NT Link	

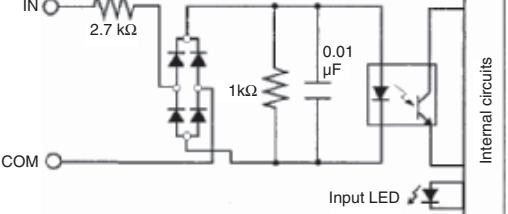
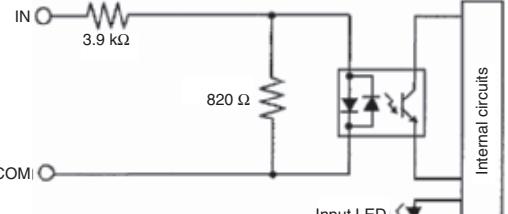
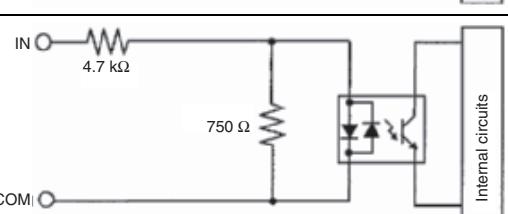
Item	Specifications	
	3G3RV-P10ST8-E	3G3RV-P10ST8-DRT-E
Power-interruption hold function	Holds the contents of HR, AR, CNT, and DM Areas.	
Memory backup (see notes 1 and 2.)	Flash memory: Program, read-only DM area, and PC Setup Memory backup: The read/write DM area, HR area, AR area, and counter values are backed up. (The battery has a 5-year lifetime at 25 °C and it is replaceable.)	
Self-diagnostic function	CPU errors, memory errors, communications errors, setting errors, battery errors	
Program check	No END instruction, program errors (regularly checked during operation)	
Connected tools	CX-Programmer Programming Console SSS Sysdrive Configurator	
	CX-Programmer Programming Console SSS Sysdrive Configurator	After Version 2.1 C200H-PRO27, CQM1-PRO01 PC98 & PC/AT (SYSMAC Support Software, All version) Version 2 or higher

**Note:** 1. The DM area, HR area, AR area, and counter values are backed up. If the backup battery or capacitor is discharged, the contents of these areas will be lost and the data values will revert to the defaults.  
 2. The contents of the program area, read-only DM area (DM6144 to DM6599), and PLC Setup (DM 6600 to DM 6655) are stored in Flash memory. The contents of these areas will be read from Flash memory the next time the power is turned ON, even if the backup battery or capacitor is discharged. When data has been changed in any of these areas, write the new values to Flash memory by switching the 3G3RV-P10ST to MONITOR or RUN mode, or by turning the power OFF and then ON again.

3. Changes made while in MONITOR mode using, for example, online editing, are written to Flash memory in real-time.
4. The above figure for power consumption includes the power consumption of the Programming Console.
5. This input is shared by the high-speed counter and synchronized pulse control functions.
6. This output is shared by the pulse output and synchronized pulse control functions.

## I/O Specifications

### Input Specifications

Item	Inputs	Specification
Input voltage	All	24 VDC +10%/-15%
Input impedance	IN 00000 to IN 00001	2.7 kΩ
	IN 00002 to IN 00004	3.9 kΩ
	IN 00005	4.7 kΩ
Input current	IN 00000 to IN 00001	8 mA typical
	IN 00002 to IN 00004	6 mA typical
	IN 00005	5 mA typical
ON voltage/current	IN 00000 to IN 00001	17 VDC min., 5 mA
	IN 00002 to IN 00005	14.4 VDC min., 3.5 mA
OFF voltage/current	All	5.0 VDC max., 1.1 mA
ON delay	All	1 to 80 ms max. Default: 10 ms (See note.)
OFF delay	All	1 to 80 ms max. Default: 10 ms (See note.)
Circuit configuration	IN 00000 to IN 00001	
	IN 00002 to IN 00004	
	IN 00005	

**Note:** The input time constant can be set to 1, 2, 3, 5, 10, 20, 40, or 80 ms in the PLC Setup.

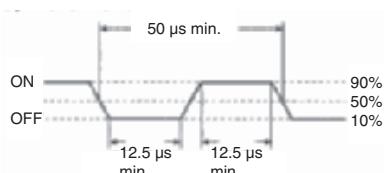
## High-speed Counter Inputs

The following Unit input bits can be used as high-speed counter inputs. The maximum count frequency is 5 kHz in differential phase mode and 20 kHz in the other modes.

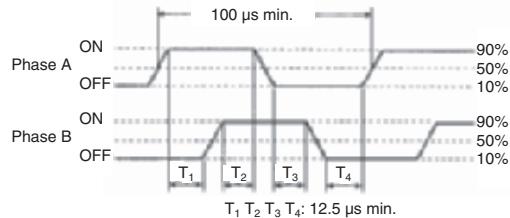
Input	Function	Differential phase mode	Pulse plus direction input mode	Up/down input mode	Increment mode
IN 00000	A-phase pulse input	Pulse input		Increment pulse input	Increment pulse input
IN 00001	B-phase pulse input	Direction input		Decrement pulse input	Normal input
IN 00002	Z-phase pulse input or hardware reset input (IN00002 can be used as a normal input when it is not used as a high-speed counter input.)				

The minimum pulse widths for inputs IN00000 (A-phase input) and IN00001 (B-phase input) are as follows:

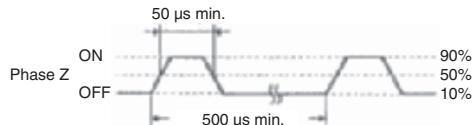
Pulse plus direction input mode,  
Up/down input mode, Increment mode



Differential phase mode



The minimum pulse width for input IN00002 (Z-phase input) is as follows:



## Interrupt Inputs

3G3RV-P10ST is equipped with inputs that can be used as interrupt inputs (interrupt input mode or counter mode) and quick-response inputs. The minimum pulse width for these inputs is 50 s.

Inputs IN 00003 and IN 00004 can be used as interrupt inputs.

## Output Specifications

### Transistor Outputs (Sourcing/PNP)

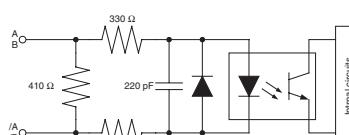
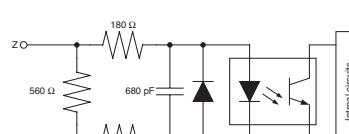
Item	Specification
Maximum switching capacity	4.5 to 30VDC, 0.2 A/output
Minimum switching capacity	0.5 mA
Maximum inrush current	0.9 A for 10 ms
Leakage current	0.1 mA
Residual voltage	1.5 V max.
ON response time	20 μs max.
OFF response time	40 μs max. for 4.5 to 26.4 VDC, 10 to 100 mA 0.1 ms max for 4.5 to 30 VDC, 10 to 200 mA
Fuse	One fuse per output (cannot be replaced by user)
Circuit configuration	

**Note:** When using OUT 01000 or OUT 01001 as a pulse output, connect a dummy resistor as required to bring the load current between 0.01 and 0.1 A. If the load current is below 0.1 A, the ON-to-OFF response time will be longer and high-speed pulses (source-type transistor outputs) will not be output. If the load current is above 0.1 A, the transistor will generate more heat and components may be damaged.

### Caution

Do not apply voltage in excess of the maximum switching capacity to an output terminal. It may result in damage to the product or fire.

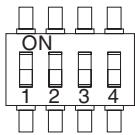
## Encoder Input Specifications

Signal level	All	EIA RS-422-A Standards
Input impedance	A- and B-phase	280 Ω
	Z-phase	260 Ω
Response frequency	A- and B-phase	50 kHz max.
	Z-phase	1 kHz max.
Circuit configuration	A- and B-phase	
	Z-phase	

## Operation

### 1. DIP switch

- RS-232C and Peripheral Port Settings

	Pin 1	Effective Port Settings
	OFF (default)	The ports operate according to the settings in the PLC Setup. RS-232C port settings: DM 6645 to DM 6649 Peripheral port settings: DM 6650 to DM 6654
	ON	The ports operate with the standard communications settings.

### • Operating Mode at Startup

Pin 2 determines the operating mode at startup only if there isn't a Programming Device connected to the peripheral port.

Programming Device connected	Startup mode with pin 2 OFF (default)	Startup mode with pin 2 ON
None	RUN mode	PROGRAM mode
Programming Console	Operating mode set on the Programming Console's mode switch	
Other device	PROGRAM mode	

### 2. Input indicators (yellow)

IN0    OUT0    The input indicators are lit when the corresponding input terminal is ON. The status of an input indicator will reflect the status of the input even when that input is being used for a high-speed counter.  
 IN1    OUT1  
 IN2    OUT2  
 IN3    OUT3  
 IN4  
 IN5

**Note:** 1. When interrupt inputs are used in interrupt input mode, the indicator may not light even when the interrupt condition is met if the input is not ON long enough.

2. Input indicators will reflect the status of the corresponding inputs even when the PLC is stopped, but the corresponding input bits will not be refreshed.

### 3. Output indicators (yellow)

The output indicators are lit when the corresponding output terminal is ON. The indicators are lit during I/O refreshing. The status of an output indicator will also reflect the status of the corresponding output when the output is being used as a pulse output.

### 4. High-speed counter indicators (yellow)

A  
 B  
 Z

The indicators are lit when the corresponding input terminal is ON.

### 5. PLC status indicators

The following indicators show the operating status of the PLC.

	Indicator	Status	Meaning
	PWR (green)	ON	Power is being supplied to the unit
		OFF	Power isn't being supplied to the unit
	RUN (green)	ON	The PLC is operating in RUN or MONITOR mode
		OFF	The PLC is in PROGRAM mode or a fatal error has occurred.
	ERR/ALM (red)	ON	A fatal error has occurred. (PLC operation stops.)
		Flashing	A non-fatal error has occurred. (PLC operation continues.)
		OFF	Indicates normal operation.
	COMM1 (yellow)	Flashing	Data is being transferred via the peripheral or RS-422/485 port.
		OFF	Data isn't being transferred via communications port.
	COMM2 (yellow)	Flashing	Data is being transferred via the RS-232C port
		OFF	Data isn't being transferred via communications port.

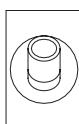
### 6. Communications port

Connects the PLC to a Programming Device (including Programming Consoles), host computer, or standard external device. Use a proper Connecting Cable (CPM2C-CN111, CS1W-CN114, CS1W-CN118, or CS1W-CN226).

- Note:**
1. A CQM1H-PRO01-E Programming Console can be connected directly to the PLC.
  2. A C200H-PRO27-E Programming Console can be connected directly to the PLC with a CS1W-CN224/CN624 Connecting Cable.
  3. Use a CPM2C-CN111 or CS1W-CN114 Connecting Cable to connect to the communications port as a peripheral port. The communications port can be used simultaneously as both a peripheral port and RS-232C port by using the CPM2C-CN111 Connecting Cable.
  4. Use a CPM2C-CN111, CS1W-CN118 or CS1W-CN226 Connecting Cable to connect to the communications port as a RS-232C port. The communications port can be used simultaneously as both a peripheral port and RS-232C port by using the CPM2C-CN111 Connecting Cable.

**Note:** The peripheral port and RS-422/485 port cannot be used simultaneously. When using the peripheral port disconnect any devices connected to the RS-422/485 port.

## 7. Communications switch



Switch to select port 1 type of connected device

Position	Communication port 1
OFF (up) (default)	Programming Console
ON (down)	RS-422/485 communication

## 8. DeviceNet port (-DRT versions only)

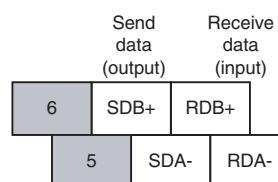
Terminal Arrangement

V-	CAN-L	Shield	CAN-H	V+
----	-------	--------	-------	----

## 9. RS-422/485 port

Used to connect to host computers, or standard external devices.

Terminal Arrangement



**Note:** The maximum line length is 500 m.

The peripheral port and RS-422/485 port cannot be used simultaneously. When using the peripheral port disconnect any devices connected to the RS-422/485 port.

When using RS-485 communication, connect RDA- to SDA- and RDB+ to SDB+.

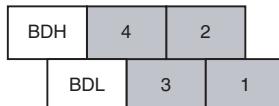
## 10. Terminating Resistance switch

	Position	Termination
	OFF (right) (default)	Disabled
	ON (left)	Enabled

Set this switch to ON only for double-ended connection to a Host Link network.

## 11. CompoBus/S port

Terminal Arrangement



Use special flat cable or VCTF cable for the transmission lines that connect the nodes in the CompoBus/S I/O Link. (Special flat cables and VCTF cables cannot be combined in the same system.)

Name	Model number	Specifications
Flat cable	XB1T-W10	4-core flat cable, 0.75 mm <sup>2</sup>
VCTF cable	---	2-core VCTF, 0.75 x 20

## 12. Digital inputs and outputs and Encoder interface

Connects the CPU Unit to external input and output devices.

Sourcing outputs

Z-	B-	A-	OUT3	OUT1	COM(+)	IN5	IN3	IN1(B)
Z+	B+	A+	OUT2	OUT0	COM	IN4	IN2(Z)	IN0(A)

## 13. Functional Earth-wire

To be connected the earth connection inside the Inverter.

## 14. Battery

### 15. Low battery detection switch

This switch enables or disables the detection of a low-battery error.

	Position	Low-battery detection
	OFF (right) (default)	Error detection enabled
	ON (left)	Error detection disabled

## 16. DeviceNet node-number (-DRT versions only)

Please refer to the DeviceNet section

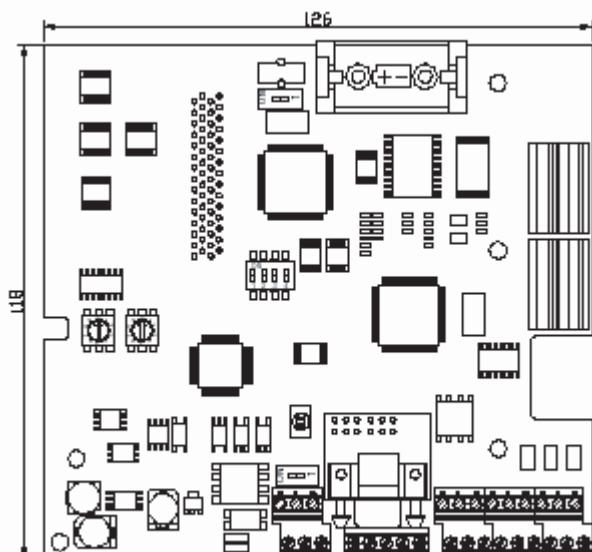
## 17. DeviceNet indicators (-DRT versions only)

Please refer to the DeviceNet section

## 18. CompoBus/S indicators

	Indicator	Status	Meaning
	SD (yellow)	Flashing	Data is being transmitted via CompoBus/S
		OFF	Data isn't being transmitted via CompoBus/S
	RD (yellow)	Flashing	Data is being received via CompoBus/S
		OFF	Data isn't being received via CompoBus/S
	ERC (red)	Flashing	A CompoBus/S communications error occurred.
		OFF	A CompoBus/S communications error hasn't occurred.

## Dimensions



## Ordering information

### Inverter PLC

Specifications						Model
Inputs	Ouptuts	RTC	CompoBus/S Master	RS422 port	DeviceNet Slave	
6	4	Yes	Yes	Yes	No	3G3RV-P10ST8-E
6	4	Yes	Yes	NO	Yes	3G3RV-P10ST8-DRT-E

### Cables

Specifications		Model
Computer connecting cable		CS1W-CN226
Programmable Console cable		CS1W-CN224

### Software

Specifications		Model
PLC Programming Software-CX-Programmer		WS02-CXPC1-EV4
Inverter Configurator Software-Sysdrive Configurator		Sysdrive Configurator v2.1

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

# Software

CX-Position	289
CX-Motion	291
MCH-Tool	293
Motion Perfect	295
SigmaWin+	297
XtraWare	299
SYSDRIVE Configurator	301



WS02-NCTC1-E

# CX-Position

**Set, transfer, store, and print position control unit data and monitor operation online**

**Increase productivity in all position control tasks, from design and startup to system maintenance.**

## Key Features

The CX-Position software simplifies every aspect of position control, from creating/editing the data used in Position Control Units (NC Units) to communicating online and monitoring operation. The software is equipped with functions that can improve productivity, such as automatically generating project data and reusing existing data.

### Creating and managing data

#### Data can be created for various applications

The CX-Position enables data for multiple NC Units on up to 1,000 PLCs to be handled as 1 project. Data is displayed in tree format and the data for an NC Unit can be moved or copied (overwritten) between PLCs in the project tree. This feature allows data to be edited and re-used in other PLCs or NC Units.

- The CX-Position can read information from NC Units connected online and automatically generate project data.
- Data created for a C200HW-NC□□□ using the SYSMAC-NCT can be imported and used as data for the CS1W-NC□□□ or CJS1W-NC□□□.



### NC Monitor

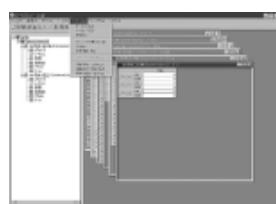
Display the NC units' present positions, error codes, sequence numbers, and I/O status.

The sequence numbers and present positions can be displayed for up to 4 Units. In addition, the contents of the operating memory area and operating data area can be monitored and the error log can be displayed.

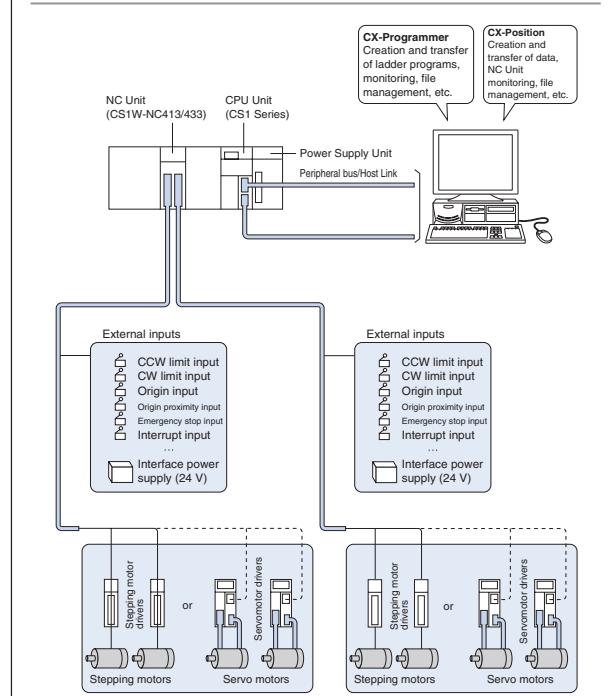
### Communications

Communicate with NC units through the network.

It is possible to communicate with NC Units through the Fins-Gateway. Depending on the FinsGateway driver version, HostLink or Ethernet can be used to perform online operations (monitoring operation or transferring/verifying parameters, sequences, etc.) with the NC Unit.



### System Configuration with CS1W-NC413/433



### Specifications

Compatible Position Control Units:  
CS Series: CS1W-NC113/NC133/NC213/NC413/NC433  
CJ Series: CJ1W-NC113/NC133/NC213/NC413/NC433

Basic Functions: Create, edit, and print the Position Control Unit's parameter data, sequence data, speed data, acceleration/deceleration data, dwell times, and zone data. Monitor the Position Control Unit's operating status.

Created files: CX-Position project files (\*.nci)  
Contents: Parameter data, sequence data, speed data, acceleration/deceleration data, dwell times, and zone data

#### Operating Environment

CPU: Pentium 100 MHz or faster CPU

OS: Windows 95, 98, NT4.0, W2000 or XP

#### Compatible PLCs:

CS Series and CJ Series

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.  
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

WS02-MCTC1-EV

# CX-Motion

**Creates programs to control the motion controller and monitors controller status**

**Provides the ideal environment for motion control support, from motion controller program development to full system operation.**

## Key Features

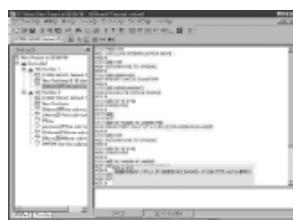
The CX-Motion software can be used to create, edit, and print the various parameters, position data, and motion control programs (G code) required to operate Motion Controllers, transfer the data to the Motion Control Units, and monitor operation of the Motion Control Units. Increase productivity in every step of the motion control process, from development of the motion control program to system operation.

### Motion Control Programs

#### Easily create motion control G Code programs and parameters.

CX-Motion can create all of the data needed in the Motion Control Unit, such as parameters, position data, and the program. The program can be input in either G code or mnemonics.

- When the Unit is connected online, data can be transferred, verified, and saved.
- Data for different Units can be registered and managed as separate projects.



### Operation Monitor

#### Powerful support during startup and operation

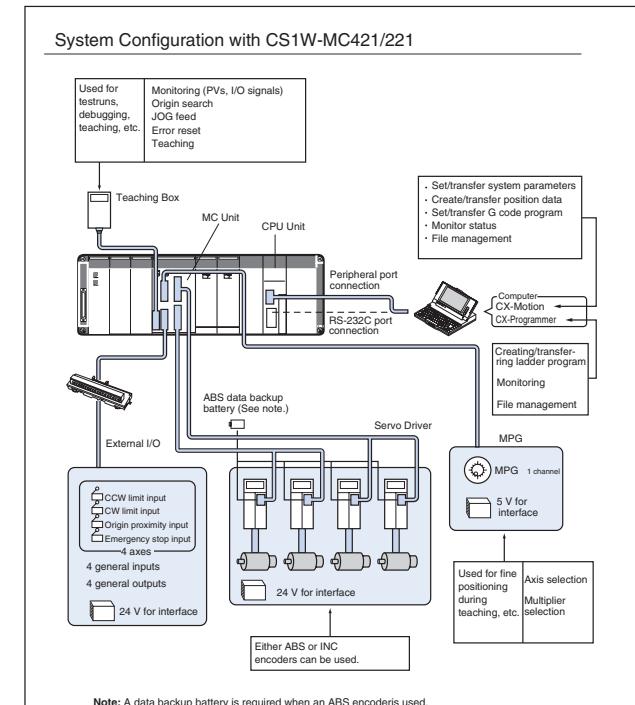
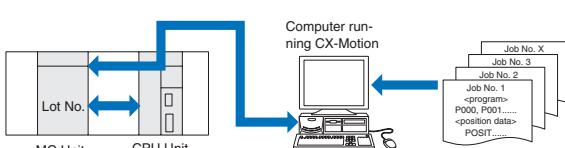
The MC Unit Monitoring function can display vital information at the computer, such as the present position, task being executed, I/O status, error displays, and servo system trace data.

- Up to 20 errors that have occurred in the Motion Control Unit can be stored and displayed (CS1W-MC421/221 and CV500-MC421/221 Motion Control Units only).

### Automatic Loading Function

#### Ideal for flexible, small-lot production lines

Various programs and position data can be stored on disks for the computer running the CX-motion software and the required program/position data can be substituted into the Motion Control Unit when necessary. More than 100 different application programs can be used in this way. A wide variety of programs can be available for execution if the computer is used to store data for the MC Unit.



### Specifications

**Basic Functions** Create/transfer/print various parameters, position data, and the MC program, transfer data to the MC Unit, and monitor MC Unit's operating status.

**Other Functions** Automatic loading, Servo data tracing

**Created files** CX-Motion project files (\*.mci) Contents: System parameters, position data, program, scripts, etc.

### Operating Environment

**CPU:** Pentium 100 MHz or faster CPU

**OS:** Windows 95, 98, NT4.0, W2000 or XP.

### Compatible PLCs:

CS Series, C200HX/HG/HE Series, and CVM1/CV Series

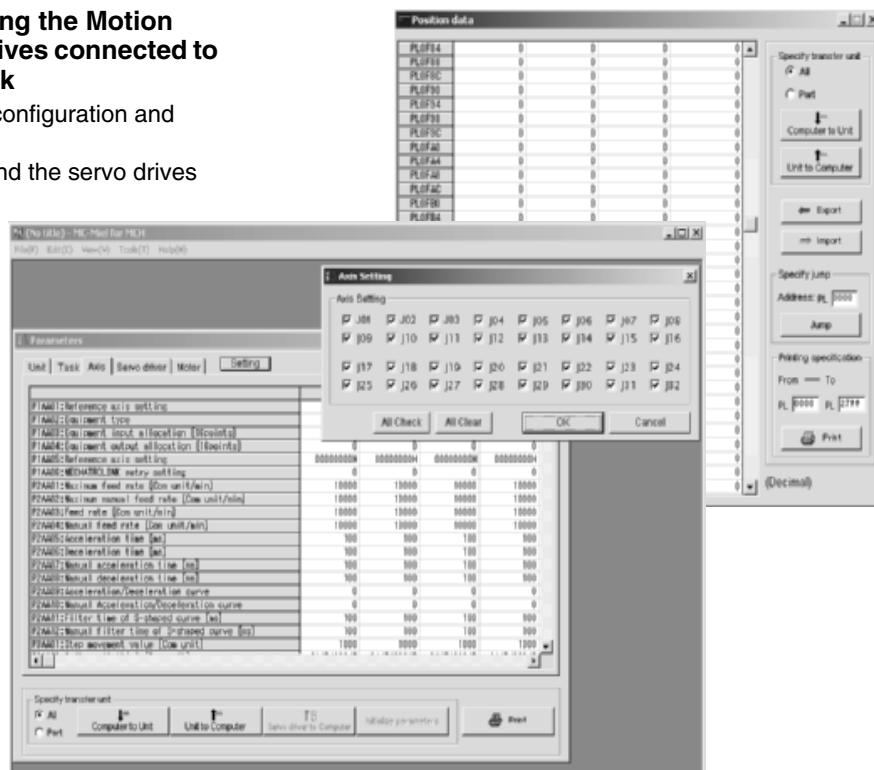
ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.  
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

## Programming Software for Mechatrolink-II Motion Controllers

# MCH-Tool

### Programming tool for Programming the Motion Control Unit, and configuring all Drives connected to the MECHATROLINK-II motion link

- Access to all system programming, configuration and monitoring from one connecting point.
- Complete configuration of the MCH and the servo drives
- Programming in Basic type Motion Control language
- On-line Monitoring
- Imports CAM tables



## Specifications

### Functions

System setting	Setting communication parameters
Data input	<ul style="list-style-type: none"> <li>Editing of system parameters</li> <li>Programming in BASIC type Motion Control language</li> <li>Load, save, delete parameter files, etc.</li> <li>Imports CAM tables</li> </ul>
Test options/Online operation	<ul style="list-style-type: none"> <li>Transfer Motion Controller unit data</li> <li>On-line monitor</li> <li>Transfer of Servo Drives parameter data</li> </ul>

### Operating Environment

Operating systems	Windows 2000/NT				
Processor	Pentium class at 300 Mhz or higher				
Memory requirements	<table border="1"> <tr> <td>Hard disk</td><td>100 MB free memory space</td></tr> <tr> <td>RAM</td><td>64 MB min.</td></tr> </table>	Hard disk	100 MB free memory space	RAM	64 MB min.
Hard disk	100 MB free memory space				
RAM	64 MB min.				
Screen	800x600 resolution or higher				
Peripheral connections	CD-ROM drive, serial port				

### Compatible Units

	Specification
Motion Controllers	CS1W-MCH71

## Ordering Information

### Software

Description	Model
MCH-MleI	MOTION TOOLS CD

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

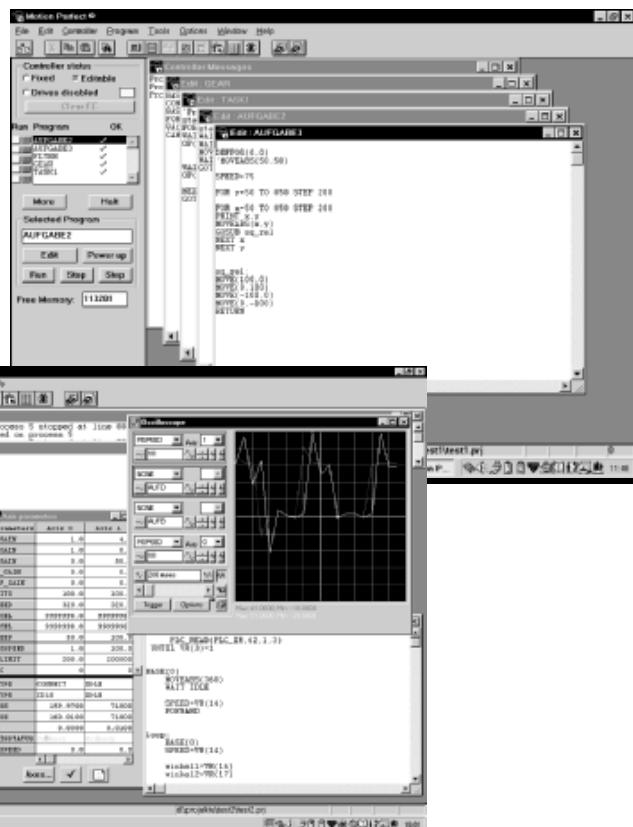
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

## Programming Software for Advanced Motion Controllers

# Motion Perfect

### Software Tool for Programming, Configuring and Commissioning the Motion Controller units C200HW-MC402-E and R88A-MCW151-E.

- Programming is done in BASIC which has been supplemented with a powerful set of commands especially adapted for Motion Control requirements.
- A debugging function facilitates testing of created programs.
- The 4-channel software oscilloscope can be used to display signals such as rpm, position values, contour errors etc. With an additional software module the user can load traversing curves created with CAD programs in DXF format and convert them directly into a BASIC program code.
- All program steps can also be entered in a terminal window and tested online.
- Versatile test and monitor functions.



## Specifications

### Functions

System setting	Setting communication parameters
Data input	<ul style="list-style-type: none"> <li>- Editing of general parameters, position data, ramp up/ramp down, speeds etc.</li> <li>- Programming of position algorithms in BASIC</li> <li>- Load, save, delete parameter files, position data etc.</li> </ul>
Test options/Online operation	<ul style="list-style-type: none"> <li>- Transfer and comparison of parameter data</li> <li>- Monitor mode to display the actual position of status information (e.g. input/output signals, errors)</li> <li>- Online recording of different axis parameters (e.g. speeds, ramps, positions etc.)</li> </ul>
Tools	<ul style="list-style-type: none"> <li>- Windows for axis parameters</li> <li>- Oscilloscope function</li> <li>- Program debugger</li> <li>- I/O status display</li> <li>- Jog mode facility for every axis</li> </ul>

### Operating Environment

Operating systems	WINDOWS 95/98/ME/2000/NT4.0 (Service Pack 5)				
Processor	Min. Pentium 150 MHz (200 MHz or higher recommended)				
Memory requirements	<table border="1"> <tr> <td>Hard disk</td><td>10 MB free memory space</td></tr> <tr> <td>RAM</td><td>16 MB min.</td></tr> </table>	Hard disk	10 MB free memory space	RAM	16 MB min.
Hard disk	10 MB free memory space				
RAM	16 MB min.				
Screen	SVGA graphic or higher				
Peripheral connections	CD-ROM drive, serial port				

### Compatible Units

	Specification
Supported Motion Controllers	C200HW-MC402 Unit, R88A-MCW151-E, R88A-MCW151-DRT-E

## Ordering Information

### Software

Description	Model
Motion Perfect. Programming Monitoring and Debugging Software	MOTION TOOLS CD

### Cables

Description	Model
Serial cable to the Motion Controller	R88A-CCM002P4-E

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

## Setup Software for Servo Systems

# SigmaWin+

### Programming tool for configuring and parameter setting of the Sigma and SmartStep Servo Systems

- The WINDOWS interface makes for simple handling and convenient working.
- Description of all the parameters with setting ranges and factory settings
- Fast Commissioning
- Parameters Setting
- Variables Monitoring
- Digital oscilloscope



## Specifications

### Functions

System setting	Setting communication parameters
Data input	<ul style="list-style-type: none"> <li>Editing of all parameters</li> <li>Load, save, delete parameter files, etc.</li> </ul>
Test options/Online operation	<ul style="list-style-type: none"> <li>Transfer and comparison of parameter data</li> <li>Variables Monitoring</li> <li>On-line recording for axis speed(torque)</li> </ul>
Tools	Digital Oscilloscope, jog mode monitor

### Operating Environment

Operating systems	Windows 95/98/NT/ME/2000				
Processor	Pentium class at 200 Mhz or higher				
Memory requirements	<table border="1"> <tr> <td>Hard disk</td> <td>100 MB free memory space</td> </tr> <tr> <td>RAM</td> <td>64 MB min.</td> </tr> </table>	Hard disk	100 MB free memory space	RAM	64 MB min.
Hard disk	100 MB free memory space				
RAM	64 MB min.				
Screen	800x600 resolution, 256 colors recommended				
Peripheral connections	CD-ROM Drive RS232 or RS-422 serial port				

### Compatible Units

	Specification
Motion Controllers	Sigma-II Series, SmartStep, Sigma-I Series, JUSP-NS600

## Software

### Software

Description	Model
SigmaWin+	MOTION TOOLS CD

### Cables

Description	Model
Computer Connecting cable	R88A-CCW002P2 or JZSP-CMS02

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

## Programming Software for XtraDrive

# XtraWare

### Advanced software tool for the setup, optimal tuning and user programming of the Xtradrive Servo Drive

- User-friendly software tool that allows complete control of the system
- Setup Wizard for an easy Drive setup
- Immediate execution of control commands
- Servo AutoTuning
- Alarm Display
- Parameters Setting
- Program Editor and Debugger
- Variables Monitoring
- Chart utility (Digital scope)
- Mechanical Analysis (FFT)



## Specifications

### Functions

System setting	Setting communication parameters
Data input	<ul style="list-style-type: none"> <li>- Editing of general parameters, position data, ramp up/ramp down, speeds etc.</li> <li>- Program Editor</li> <li>- Load, save, delete parameter files, etc.</li> </ul>
Test options/Online operation	<ul style="list-style-type: none"> <li>- Transfer and comparison of parameter data</li> <li>- Variables Monitoring</li> <li>- Immediate execution of control commands</li> <li>Servo AutoTuning</li> </ul>
Tools	<ul style="list-style-type: none"> <li>- Setup Wizard</li> <li>- Chart utility (Digital scope)</li> <li>- Program Editor and Debugger</li> <li>Mechanical Analysis (FFT)</li> </ul>

### Operating Environment

Operating systems	Windows 95/98/NT/ME/2000/XP				
Processor	Pentium class at 300 Mhz recommended				
Memory requirements	<table border="1"> <tr> <td>Hard disk</td> <td>100 MB free memory space</td> </tr> <tr> <td>RAM</td> <td>64 MB min.</td> </tr> </table>	Hard disk	100 MB free memory space	RAM	64 MB min.
Hard disk	100 MB free memory space				
RAM	64 MB min.				
Screen	800x600 resolution or higher, minimum 256 colors				
Peripheral connections	CD-ROM Drive RS232 or RS-422 serial port				

### Compatible Units

	Specification
Motion Controllers	All XtraDrive Servo Drives

## Ordering Information

### Software

Description	Model
XtraWare	MOTION TOOLS CD

### Cables

Description	Model
Computer Connecting cable	R88A-CCW002P2 or JZSP-CMS02

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

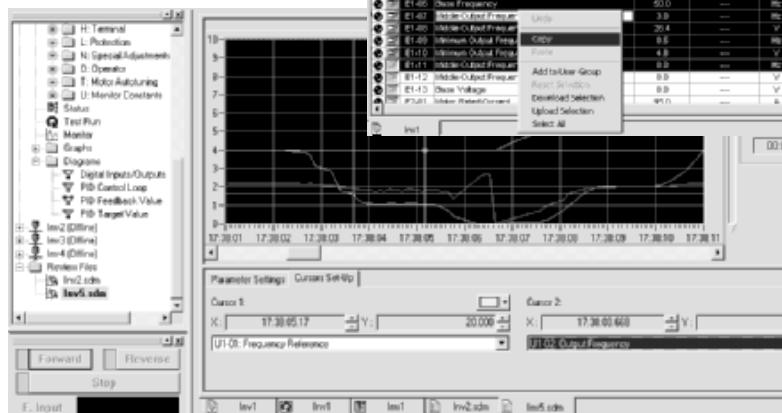
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

## Programming Software for Frequency Inverters

# SYS DRIVE Configurator

### Programming tool for configuring and parameter setting of the Varispeed Frequency Inverters

- The WINDOWS interface makes for simple handling and convenient working.
- The individual parameters are displayed in a clear and easy-to-read matrix structure. For each parameter the user is given a detailed description .
- Parameters can be transferred to another inverter quickly and easily.
- The integrated test function makes motor commissioning easy.
- A comprehensive monitor window shows information about the operating status and the status of the digital inputs and outputs.



## Specifications

### Functions

System setting	Setting communication parameters
Data Input	<ul style="list-style-type: none"> <li>- Transfer and comparison of parameter data</li> <li>- Online Parameter Editing of all parameters:ramp, ramp/up, down,speeds,etc...</li> <li>- Graphical parameter configuration: analog inputs, jump frequencies, etc...</li> <li>- Load,save Parameter Files and Workspaces</li> <li>- Export and Import parameter data from text files, excel, etc...</li> </ul>
Monitor Mode	<ul style="list-style-type: none"> <li>- Monitor mode for displaying actual frequency, output current, etc., status information and input/output signals</li> <li>- Multiple parameters monitorization, cursors, trigger and monitor data logger</li> </ul>
Diagrams	- Graphical configuration and monitorization of diagrams (PID, ASR, Torque)
Status	- Status window showing all inverter status data
DI/DO	- Digital input/outputs monitorization and simulation
Test Run	- Run motor wizard
Autotunnig	- Inverter autotunne wizard
Database Upgrade	- Database can be upgraded to support new inverter firmwares
Documentation	<ul style="list-style-type: none"> <li>- Straightforward printout of parameters settings</li> <li>- Extended parameter help</li> </ul>

### Operating Environment

Operating systems	Windows 95/98/NT/ME/2000/XP				
Processor	Pentium class at 300 Mhz or higher				
Memory requirements	<table border="1"> <tr> <td>Hard disk</td> <td>100 MB free memory space</td> </tr> <tr> <td>RAM</td> <td>64 MB min.</td> </tr> </table>	Hard disk	100 MB free memory space	RAM	64 MB min.
Hard disk	100 MB free memory space				
RAM	64 MB min.				
Screen	800x600 resolution or higher				
Peripheral connections	<ul style="list-style-type: none"> <li>- CD-ROM drive</li> <li>- COMx serial port</li> <li>- Mouse</li> <li>- Parallel printer port (any Windows supported port)</li> </ul>				

### Compatible Inverters

	Specification
Supported frequency inverters	Varispeed J7,E7,F7,L7 and 3G3MV

## Ordering Information

### Software

Description	Model
Sysdrive Configurator Software	SYSDRIVE CONFIGURATOR V2.1

### Cables

Description	Model
Connecting cable and RS-232C adapter for Varispeed J7	3G3IV-PCN329-E 3G3JV-PSI232 (SI-232J7)
Connecting cable for Varispeed E7, F7, L7 and 3G3MV	3G3IV-PCN329-E

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

# Technical Information

## Mechatronics formulae

### Linear movement

Symbol	Description	Units
s	Space	m
v	Velocity	m/s
a	Acceleration	m/s <sup>2</sup>
F	Force	N
P	Power	W
W	Energy	J
t	Time	s
$\mu$	Friction coefficient	--
g	Gravity acceleration	m/s <sup>2</sup>
m	Mass	Kg

Speed (m/s)

$$v = \frac{\partial s}{\partial t}$$

Acceleration (m/s<sup>2</sup>)

$$a = \frac{\partial v}{\partial t}$$

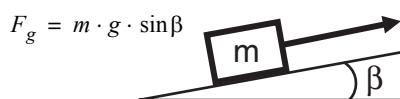
Acceleration force (N)

$$F_a = m \cdot a$$

Force friction (N)

$$F_\mu = \mu \cdot m \cdot g \cdot \cos\beta$$

Force gravity (N)



Force root means square (N)

$$F_{rms} = \sqrt{\frac{\sum_i t_i \cdot F_i^2}{\sum_i t_i}}$$

Power (W)

$$P = F \cdot v$$

Cynetic energy

$$W = \frac{1}{2} \cdot m \cdot v^2$$

### Rotary movement

Symbol	Description	Units
$\Phi$	Angle	rad
$\omega$	Angular velocity	rad/s
$\alpha$	Angular acceleration	rad/s <sup>2</sup>
T	Torque	Nm
P	Power	W
W	Energy	J
t	Time	s
i	Gear reduction	--
r	Radius	m
J	Inertia	Kgm <sup>2</sup>

Speed (rad/s)

$$\omega = \frac{\partial \phi}{\partial t}$$

Acceleration (rad/s<sup>2</sup>)

$$\alpha = \frac{\partial \omega}{\partial t}$$

Acceleration torque (Nm)

$$T_\alpha = J \cdot \alpha$$

Torque root means square (Nm)

$$T_{rms} = \sqrt{\frac{\sum_i t_i \cdot T_i^2}{\sum_i t_i}}$$

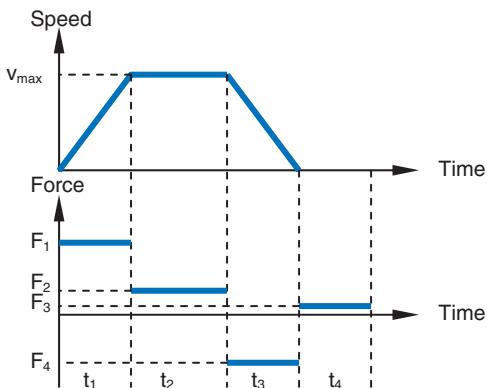
Power (W)

$$P = T \cdot \omega$$

Cynetic energy

$$W = \frac{1}{2} \cdot J \cdot \omega^2$$

**Example in case of trapezoidal profile (linear):**



1. Acceleration

$$a = \frac{v_{max}}{t_1}$$

$$s_1 = \frac{1}{2} \cdot v_{max} \cdot t_1$$

$$F_a = m \cdot a$$

$$F_{1\_Total} = F_a + F_\mu + F_{ext}$$

2. Constant speed

$$a = 0$$

$$s_2 = v_{max} \cdot t_2$$

$$F_{2\_Total} = F_\mu + F_{ext}$$

3. Deceleration

$$d = \frac{v_{max}}{t_3}$$

$$s_3 = \frac{1}{2} \cdot v_{max} \cdot t_3$$

$$F_d = m \cdot d$$

$$F_{3\_Total} = F_\mu + F_{ext} - F_d$$

4. Dwell

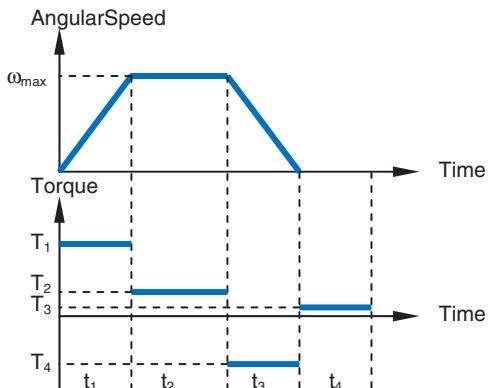
$$s_4 = 0$$

$$F_{4\_Total} = F_{ext}$$

Force rms:

$$F_{rms} = \sqrt{\frac{t_1 \cdot F_1^2 + t_2 \cdot F_2^2 + t_3 \cdot F_3^2 + t_4 \cdot F_4^2}{t_1 + t_2 + t_3 + t_4}}$$

**Example in case of trapezoidal profile (rotary):**



1. Angular acceleration

$$\alpha = \frac{\omega_{max}}{t_1}$$

$$\phi_1 = \frac{1}{2} \cdot \omega_{max} \cdot t_1$$

$$T_\alpha = J \cdot \alpha$$

$$T_{1\_Total} = T_\alpha + T_\mu + T_{ext}$$

2. Constant speed

$$\alpha = 0$$

$$\phi_2 = \omega_{max} \cdot t_2$$

$$T_{2\_Total} = T_\mu + T_{3\_ext}$$

3. Deceleration

$$\gamma = \frac{\omega_{max}}{t_3}$$

$$\phi_3 = \frac{1}{2} \cdot \omega_{max} \cdot t_3$$

$$T_\gamma = J \cdot \gamma$$

$$T_{3\_Total} = T_\mu + T_{ext} - T_d$$

4. Dwell

$$\phi_4 = 0$$

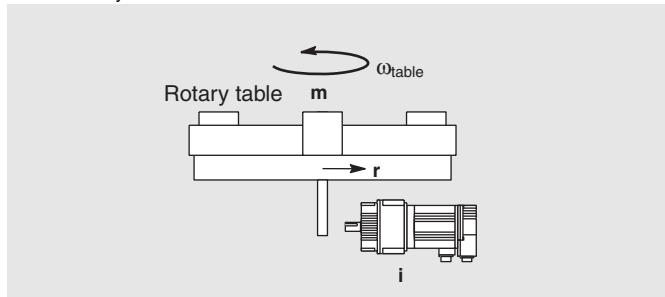
$$T_{4\_Total} = T_{ext}$$

Torque rms:

$$T_{rms} = \sqrt{\frac{t_1 \cdot T_1^2 + t_2 \cdot T_2^2 + t_3 \cdot T_3^2 + t_4 \cdot T_4^2}{t_1 + t_2 + t_3 + t_4}}$$

For linear motors you have just to apply the formulae for linear motors considering the mass of the load plus the mass of the motor. For rotary motors it is necessary to apply some cinematic transformations to have the magnitudes **from the motor side**.

Case of rotary table:

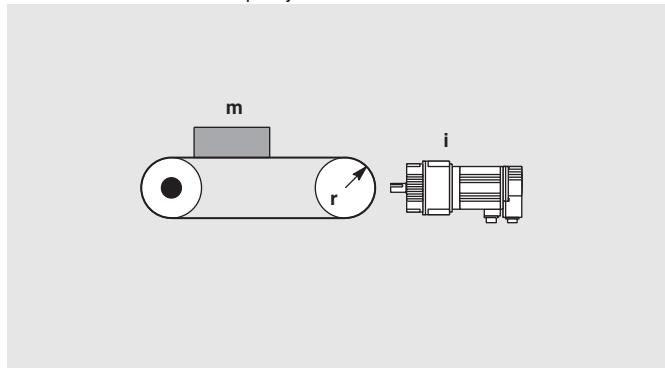


$$J_{\text{total}} = J_{\text{motor}} + \frac{\frac{1}{2} \cdot m \cdot r^2}{i^2}$$

$$\omega_{\text{motor}} = \omega_{\text{table}} \cdot i$$

$$T_{\text{motor\_side}} = J_{\text{total}} \cdot \alpha_{\text{motor\_side}}$$

Case of a belt drive with two pulleys:



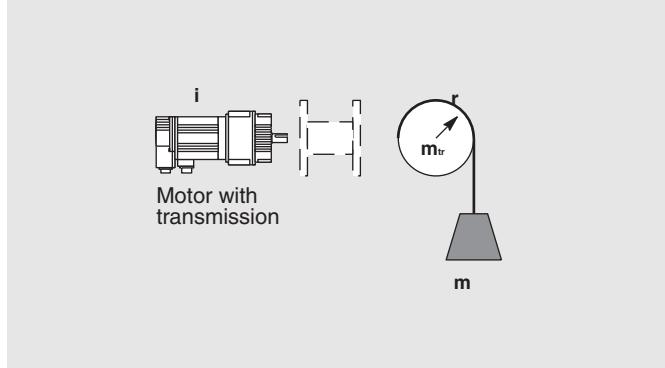
$$J_{\text{total}} = J_{\text{motor}} + \frac{2 \cdot J_{\text{pulley}} + J_{\text{load}}}{i^2}$$

$$J_{\text{total}} = J_{\text{motor}} + \frac{2 \cdot \frac{1}{2} \cdot m_{\text{pulley}} \cdot r^2 + m_{\text{load}} \cdot r^2}{i^2}$$

$$\alpha_{\text{motor\_side}} = a \cdot \frac{2\pi}{r} \cdot i$$

$$T_{\text{motor\_side}} = J_{\text{total}} \cdot \alpha_{\text{motor\_side}} + \frac{m \cdot \mu \cdot g \cdot r}{i}$$

Case of an hanging load:



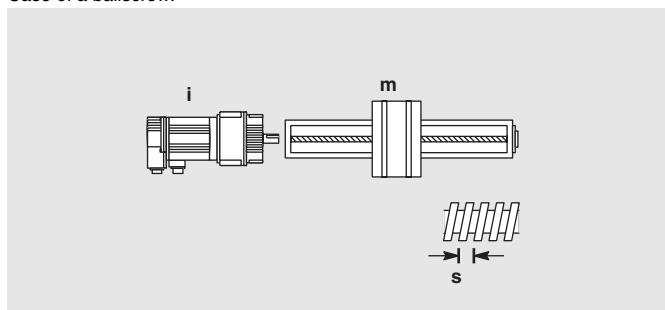
$$J_{\text{total}} = J_{\text{motor}} + \frac{2 \cdot J_{\text{reel}} + J_{\text{load}}}{i^2}$$

$$J_{\text{total}} = J_{\text{motor}} + \frac{\frac{1}{2} \cdot m_{\text{reel}} \cdot r^2 + m_{\text{load}} \cdot r^2}{i^2}$$

$$\alpha_{\text{motor\_side}} = a \cdot \frac{2\pi}{r} \cdot i$$

Note: The sign ( $\pm$ ) depends on the direction of the movement  
 $T_{\text{motor\_side}} = J_{\text{total}} \cdot \alpha_{\text{motor\_side}} \pm \frac{m \cdot g \cdot r}{i}$

Case of a ballscrew:



$$J_{\text{total}} = J_{\text{motor}} + \frac{\left(\frac{s}{2\pi}\right)^2 \cdot m + \frac{1}{2} \cdot m_{\text{screw}} \cdot r_{\text{screw}}^2}{i^2}$$

$$\alpha_{\text{motor\_side}} = a \cdot \frac{2\pi}{s} \cdot i$$

$$T_{\text{motor\_side}} = J_{\text{total}} \cdot \alpha_{\text{motor\_side}} + \frac{m \cdot \mu \cdot g \cdot \frac{s}{2\pi}}{i}$$

## Motor selection

### Linear motor

The selected linear motor must match the next conditions.

$$v_{\max\_motor} > v_{\max\_application}$$

$$F_{\max\_motor} > \frac{F_{\text{peak\_application}}}{\eta}$$

$$F_{\text{rated\_motor}} > \frac{F_{rms}}{\eta}$$

Where:  $\eta$ =Mechanical efficiency

**Note 1:** To calculate  $F_{\text{peak\_application}}$  and  $F_{rms}$  it is necessary to consider the motor mass. This may deal to do some iteration to get the right motor.

**2:** At high speed the motor reduces its rated and maximum force. This may be taken into consideration for high speed application.

**3:** For linear motors it is important to calculate the surface temperature of the motor in addition to the above calculation.

### Rotary motor

The selected linear motor must match the next conditions:

$$\omega_{\max\_motor} > \omega_{\max\_application}$$

$$T_{\max\_motor} > \frac{T_{\text{peak\_application}}}{\eta}$$

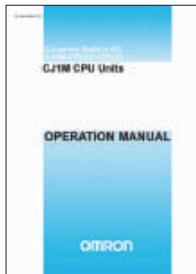
$$T_{\text{rated\_motor}} > \frac{T_{rms}}{\eta}$$

Where:  $\eta$ =Mechanical efficiency

**Note 1:** To calculate  $T_{\text{peak\_application}}$  and  $T_{rms}$  it is necessary to consider the motor inertia. This may deal to do some iteration to get the right motor.

**2:** Above rated speed the motor reduces its rated and maximum torque. This may be taken into consideration for high speed application. Refer to the Speed-Torque curves of the motor for details.

# Technical Documentation



	<b>Product</b>	<b>Title</b>	<b>Model code</b>
<b>PLC-based Motion Control</b>	CJ1W-NCs Position Control Units	Datasheet	I04E-EN
	CJ1W-NCs Position Control Units	Operation manual	W397-E1
	CS1W-NCs Position Control Units	Datasheet	I05E-EN
	CS1W-NCs Position Control Units	Operation manual	W376-E1
	CS1W-MC421/221 Motion Control Units	Datasheet	I06E-EN
	CS1W-MC421/221 Motion Control Units	Operation manual	W359-E1
	C200HW-MC402-E Motion Control Unit	Datasheet	I07E-EN
	C200HW-MC402-E Motion Control Unit	Operation manual	W903-E2
	CS1W-MCH71 Motion Control Unit	Datasheet	I08E-EN
	CS1W-MCH71 Motion Control Unit	Operation manual	W419-E1
<b>Servo-based Motion Control</b>	JUSP-NS300 DeviceNet Unit	Datasheet	I11E-EN
	JUSP-NS300 DeviceNet Unit	User's manual	SIE-C718-6
	JUSP-NS500 PROFIBUS-DP Unit	Datasheet	I12E-EN
	JUSP-NS500 PROFIBUS-DP Unit	User's manual	SIE-C718-8
	JUSP-NS600 Indexer Unit	Datasheet	I13E-EN
	JUSP-NS600 Indexer Unit	User's manual	SIE-C718-9
	R88A-MCW151-(DRT)-E Motion Control Unit	Datasheet	I14E-EN
	R88A-MCW151-(DRT)-E Motion Control Unit	Operation manual	I209-E2
<b>Servo Systems</b>	SmartStep	Datasheet	I02E-EN
	SmartStep	User's Manual	I533-E1
	SmartStep	Operation manual	I534-E1
	SIGMA-II Series	Datasheet	I15E-EN
	SIGMA-II Series	User's Manual	SIEPS80000005-OY
	SIGMA-II large Capacity	Datasheet	I16E-EN
	SIGMA-II large Capacity	User's Manual	SIE-S800-32.4
	Sigma Linear Motors	Datasheet	I17E-EN
	Sigma Linear Motors	User's Manual	SIEPS80000019
	XtraDrive	Datasheet	I18E-EN
	XtraDrive	User's Manual	8U0108
	XtraDrive Built-in Profibus	User's Manual	8U0112
<b>Inverter</b>	Varispeed J7	Datasheet	I19E-EN
	Varispeed J7	User's Manual	TOE-S606-12F-OY
	SYSDRIVE 3G3MV	Datasheet	I20E-EN
	SYSDRIVE 3G3MV	User's Manual	I527-E2
	Varispeed E7	Datasheet	I21E-EN
	Varispeed E7	User's Manual	YEG-TOE-S616-56.1-OY
	Varispeed L7	Datasheet	I22E-EN
	Varispeed L7	User's Manual	TOMCC71067600AA-OY
	Varispeed F7	Datasheet	I23E-EN
	Varispeed F7	User's Manual	YEG-TOE-S616-55.1-OY
	3G3MV Inverter PLC	Datasheet	I24E-EN
	3G3MV Inverter PLC	User's Manual	I01E-EN
<b>Software</b>	F7/L7/E7 Inverter PLC	Datasheet	I25E-EN
	F7/L7/E7 Inverter PLC	User's Manual	I03E-EN
	CX-Position	Datasheet	I26E-EN
	CX-Position	Operation manual	W398-E1
	CX-Motion	Datasheet	I27E-EN
	Motion Perfect	Datasheet	I28E-EN
	MCH Tool	Datasheet	I29E-EN
	SigmaWin+	Datasheet	I30E-EN
	Sysdrive Configurator	Datasheet	I31E-EN
	XtraWare	Datasheet	I32E-EN
	XtraWare	User's Manual	8U0109



# Contact Information

## Europe

### Austria

#### Sales office Vienna:

OMRON ELECTRONICS GmbH  
Brunner Strasse 81  
1230 Vienna  
phone: + 43 - 1 80 19 00  
fax: + 43 - 1 80 44 48  
www.omron.at

#### Distributors in Austria:

WETEKO  
Lacknergasse 6/23  
A-1170 Wien  
phone.:+43 - 1 495 16 83  
fax:+43 - 1 495 16 84  
e-mail:manfred.kuehtreiber@weteko.at  
www.weteko.at

Buxbaum Automation  
Marktstraße 3  
A-7000 Eisenstadt  
phone.:+43 - 26 82 704 56-0  
fax:+43 - 26 82 704 56-10  
e-mail:office@buxbaum.at  
http://myautomation.at

TIBEG Franz Putz  
Höck 29-35, Postfach 64  
A-4690 Schwanenstadt  
phone.:+43 - 76 73 39 75  
fax:+43 - 76 73 39 75-11  
e-mail:tibeg@utanet.at  
www.tibeg.at

INDU - ELECTRIC  
Inh. Paul Siess  
Wiener Bundesstraße 21  
A-5300 Hallwang bei Salzburg  
phone.:+43 - 662 66 13 69  
fax:+43 - 662 66 47 69  
Mobil:+43 - 650 86 12 85 0  
e-mail:induelectric@aon.at  
induelectric@telering.at

Peter Klymiuk Elektroanlagen  
Dandlerau 3  
A-6391 Fieberbrunn  
phone.:+43 - 5354 / 57022  
(ISDN) +43 - 5354 / 56921  
fax:+43 - 5354 / 57022-20  
(ISDN) +43 - 5354 / 56921-20  
e-mail:info@klymiuk.at  
www.klymiuk.at

Stengg Gerhard Werksvertretungen  
Reut-Nicolussi-Straße 10  
A-6020 Innsbruck  
phone.:+43 - 512 39 60 50-9  
fax:+43 - 512 39 60 50-40  
e-mail:top.stengg@aon.at.  
www.stengg-gerhard.at

Egon Böhler Industriebedarf  
Kesselstraße 56, Postfach 56  
A-6961 Wulfurt  
phone:+43 - 55 74 760 60  
fax:+43 - 55 74 711 21  
e-mail:egon.boehler@egonboehler.at  
www.egonboehler.at

### Belgium

#### Sales office Groot-Bijgaarden:

Omron Electronics s.a.  
Stationsstraat 24  
B- 1702 Groot-Bijgaarden  
phone: +32 - 2 466 24 80  
fax: +32 - 2 466 06 87  
info.be@eu.omron.com  
www.omron.be

#### Distributors in Belgium and Luxembourg:

ATS DISTRIBUTION n.v.  
Karel de Rroosestraat 15A  
B- 9820 MERELBEKE  
phone: +32 - 9 210 04 11  
fax: +32 - 9 231 48 67  
info@atsgroep.be  
www.atsgroep.be

BREVA n.v.  
Noorderlaan 31  
B- 2030 ANTWERPEN 3  
phone: +32 - 3 540 02 90  
fax: +32 - 3 542 09 64  
breva4@breva.be  
www.breva.be

BREVA n.v.  
Industrielaan 29  
B- 2250 OLEN  
phone: +32 - 14 28 55 40  
fax: +32 - 14 23 57 62  
olen@breva.be  
www.breva.be

BREVA n.v.  
Kouterstraat 4  
B- 8560 WEVELGEM  
phone: +32 - 56 43 94 10  
fax: +32 - 56 40 43 29  
wevelgem@breva.be  
www.breva.be

BREVA n.v.  
Vogelsancvlaan 260  
B- 3520 ZONHOVEN  
phone: +32 - 11 81 09 81  
fax: +32 - 11 81 73 16  
breva@breva.be  
www.breva.be

Cardy n.v.  
Bergensesteenweg 190  
B- 1500 HALLE  
phone: +32 - 2 361 08 00  
fax: +32 - 2 360 31 31  
info.halle@cl-group.be  
www.cl-group.be

Cardy n.v.  
Assesteenweg 99  
B- 1740 TERNAT  
phone: +32 - 2 531 12 90  
fax: +32 - 2 531 12 80  
info.ternat@cl-group.be  
www.cl-group.be

Cebeo BURCHT  
Oude Gentweg 100  
B- 2070 BURCHT  
phone: +32 - 3 250 50 00  
fax: +32 - 3 252 95 25  
antwerpen@cebeo.be  
www.cebeo.be

Cebeo BRUGGE  
Lieven Bauwensstraat 10  
B- 8200 BRUGGE  
phone: +32 - 50 45 78 78  
fax: +32 - 50 32 34 26  
nwvlaanderen@cebeo.be  
www.cebeo.be

Cebeo JETTE  
Avenue Carton de Wiart 74  
B- 1090 BRUXELLES  
phone: +32 - 2 421 39 00  
fax: +32 - 2 424 18 82  
brabant@cebeo.be  
www.cebeo.be

Cebeo HAREN  
5, Rue du Bassin Collecteur  
B- 1130 BRUXELLES-HAREN  
phone: +32 - 2 247 95 95  
fax: +32 - 2 247 95 50  
brabant@cebeo.be  
www.cebeo.be

Cebeo DEINZE  
Georges Martensstraat 6  
B- 9800 DEINZE  
phone: +32 - 9 381 59 00  
fax: +32 - 9 381 59 01  
ovl@cebeo.be  
www.cebeo.be

Cebeo DEURNE  
Merksemsteenweg 87  
B- 2100 DEURNE  
phone: +32 - 3 325 72 00  
fax: +32 - 3 326 11 24  
antwerpen@cebeo.be  
www.cebeo.be

Cebeo DROGENBOS  
W.A. Mozartlaan 10  
B- 1620 DROGENBOS  
phone: +32 - 2 334 12 10  
fax: +32 - 2 331 20 10  
brabant@cebeo.be  
www.cebeo.be

Cebeo EUPEN  
26, Rue de l'industrie  
B- 4700 EUPEN  
phone: +32 - 87 56 03 74  
fax: +32 - 87 56 03 76  
liege@cebeo.be  
www.cebeo.be

Cebeo GENT  
New Orleansstraat 10  
B- 9000 GENT  
phone: +32 - 9 255 76 76  
fax: +32 - 9 255 76 26  
ovl@cebeo.be  
www.cebeo.be

Cebeo LIEGE  
Rue de Wallonie  
B- 4460 GRACE-HOLLOGNE  
phone: +32 - 4 239 73 00  
fax: +32 - 4 239 73 03  
liege@cebeo.be  
www.cebeo.be

Cebeo HASSELT  
Het Dorlik 3  
B- 3500 HASSELT  
phone: +32 - 11 26 04 00  
fax: +32 - 11 23 66 50  
limburg@cebeo.be  
www.cebeo.be

Cebeo KUURNE  
Industrielaan 3  
B- 8520 KUURNE  
phone: +32 - 56 36 48 00  
fax: +32 - 56 36 48 10  
zwvl@cebeo.be  
www.cebeo.be

Cebeo n.v.  
Noordlaan 15  
B- 8520 KUURNE  
phone: +32 - 56 36 48 00  
fax: +32 - 56 36 48 10  
zwvl@cebeo.be  
www.cebeo.be

Cebeo LEUVEN  
Ambachtenlaan 56  
B- 3001 LEUVEN  
phone: +32 - 16 40 08 48  
fax: +32 - 16 40 00 56  
brabant@cebeo.be  
www.cebeo.be

Cebeo MECHELEN  
Maanstraat 9 Unit 14  
B- 2800 MECHELEN  
phone: +32 - 15 27 06 53  
fax: +32 - 15 21 74 11  
antwerpen@cebeo.be  
www.cebeo.be

Cebeo CHARLEROI  
Rue Cité Forte Taille 9  
B- 6110 MONTIGNY-LE-TILLEUL  
phone: +32 - 71 29 73 73  
fax: +32 - 71 29 73 74  
hainaut@cebeo.be  
www.cebeo.be

Cebeo NAMUR  
Avenue Sergent Vrithoff 123-125  
B- 5000 NAMUR  
phone: +32 - 81 73 64 22  
fax: +32 - 81 73 27 57  
hainaut@cebeo.be  
www.cebeo.be

Cebeo OOSTENDE  
Plantijnstraat 4  
B- 8400 OOSTENDE  
phone: +32 - 59 56 05 60  
fax: +32 - 59 70 02 32  
nwvl@cebeo.be  
www.cebeo.be

Cebeo OUDENAARDE  
Grachtscheldestraat 6  
B- 9700 OUDENAARDE  
phone: +32 - 55 30 49 56  
fax: +32 - 55 30 11 55  
ovl@cebeo.be  
www.cebeo.be

Cebeo PERUWELZ  
Rue de l'Europe 14  
B- 7600 PERUWELZ  
phone: +32 - 69 77 96 66  
fax: +32 - 69 77 65 42  
hainaut@cebeo.be  
www.cebeo.be

Cebeo TURNHOUT  
Parklaan 20  
B- 2300 TURNHOUT  
phone: +32 - 14 42 20 44  
fax: +32 - 14 42 20 54  
antwerpen@cebeo.be  
www.cebeo.be

Cebeo VEURNE  
Koksijdestraat 18  
B- 8630 VEURNE  
phone: +32 - 58 31 51 44  
fax: +32 - 58 31 52 90  
nwvl@cebeo.be  
www.cebeo.be

Cebeo WILRIJK  
Kleine Doornstraat 299  
B- 2610 WILRIJK  
phone: +32 - 3 450 86 00  
fax: +32 - 3 458 02 65  
antwerpen@cebeo.be  
www.cebeo.be

Cheyns n.v.  
Zwingelaarsstraat 7  
B- 8500 KORTRIJK  
phone: +32 - 56 36 57 11  
fax: +32 - 56 36 57 12  
kortrijk@groupcheyns.be  
www.cheyns.be

Cheyns Diksmuide  
Polderstraat 14  
B- 8600 DIKSMUIDE  
phone: +32 - 51 51 06 00  
fax: +32 - 51 51 08 35  
diksmuide@groupcheyns.be  
www.cheyns.be

Cheyns Oudenaarde  
Paalstraat 3  
B- 9700 OUDENAARDE  
phone: +32 - 55 31 27 07  
fax: +32 - 55 31 27 09  
oudenaarde@groupcheyns.be  
www.cheyns.be

Claessen n.v.  
Atealaan 4M  
B- 2200 HERENTALS  
phone: +32 - 14 85 98 80  
fax: +32 - 14 85 98 81  
info@claessen.be  
www.claessen.be

Claessen Aartselaar NV  
Kontichsesteenweg 45  
B- 2630 AARTSELAAR  
phone: +32 - 3 877 27 27  
fax: +32 - 3 887 01 54  
aartselaar@claessen.be  
www.claessen.be

Claessen - ELGB Genk NV  
Witmeerstraat 1  
B- 3600 GENK  
phone: +32 - 89 35 35 13  
fax: +32 - 89 35 35 17  
genk@claessen.be  
www.claessen.be

Claessen - ELGB Ham NV  
Bergstraat 40  
B- 3945 HAM  
phone: +32 - 13 66 25 41  
fax: +32 - 13 66 41 11  
ham@claessen.be  
www.claessen.be

Claessen - ELGB St Truiden NV  
Schurhovenveld 4308  
B- 3800 SINT-TRUIDEN  
phone: +32 - 11 68 89 02  
fax: +32 - 11 69 17 62  
sinttruiden@claessen.be  
www.claessen.be

CL - Dorhex n.v.  
Steenweg op Leuze 176  
B- 9600 RONSE  
phone: +32 - 55 23 70 71  
fax: +32 - 55 23 70 70  
info.ronse@cl-group.be  
www.cl-group.be

CL - Dorhex s.a.  
Rue de la Verrerie 1  
B- 7330 SAINT-GHISLAIN  
phone: +32 - 65 76 71 11  
fax: +32 - 65 76 71 10  
info.saintghislain@cl-group.be  
www.cl-group.be

Control & Protection nv  
Neerlandweg 25  
B- 2610 WILRIJK  
phone: +32 - 3 829 03 35  
fax: +32 - 3 830 20 56  
info@conpro.be  
www.conpro.be

Detilleux s.a.  
Zoning Industriel 10  
B- 4020 WANDRE  
phone: +32 - 4 345 96 96  
fax: +32 - 4 362 62 08  
info@detilleux.be  
www.detilleux.be

E.I.A. n.v.  
Vluchtenburgstraat 3  
B- 2630 AARTSELAAR  
phone: +32 - 3 870 82 70  
fax: +32 - 3 887 10 14  
info@eia.be  
www.eia.be

E.I.A. Noord n.v.  
Haifastraat 13  
B- 2030 ANTWERPEN  
phone: +32 - 3 541 40 15  
fax: +32 - 3 541 74 11  
info@eia.be  
www.eia.be

Electro Nivelles s.a.  
Chemin de la Vieille Cour 50  
B- 1400 NIVELLES  
phone: +32 - 67 89 41 11  
fax: +32 - 67 89 41 10  
info.nivelles@cl-group.be  
www.cl-group.be

Hendrelec n.v.  
Norbert Gillelaan 16  
B- 1070 BRUXELLES  
phone: +32 - 2 521 36 28  
fax: +32 - 2 520 68 56  
info@hendrelec.be  
www.hendrelec.be

La Grange n.v.  
Pantserchipstraat 163  
B- 9000 GENT  
phone: +32 - 9 254 17 11  
fax: +32 - 9 253 69 33  
info@lagrangenv.com  
www.lagrangenv.be

La Grange Mons n.v.  
Rue du Grand Courant 4  
B- 7033 CUESMES  
phone: +32 - 65 40 10 10  
fax: +32 - 65 34 95 05  
infom@lagrangenv.com  
www.lagrangenv.be

La Grange Vilvoorde n.v.  
Groenstraat 246  
B- 1800 VILVOORDE  
phone: +32 - 2 253 07 00  
fax: +32 - 2 253 03 04  
infov@lagrangenv.com  
www.lagrangenv.be

Lampencentrale - Centrale des Lampes  
n.v./s.a.  
Rue Gallaitstraat 138-158  
B- 1030 BRUXELLES  
phone: +32 - 2 240 04 11  
fax: +32 - 2 240 04 00  
info.bru@cl-group.be  
www.cl-group.be

Lampencentrale n.v.  
Eriestraat 12  
B- 8000 BRUGGE  
phone: +32 - 50 45 49 49  
fax: +32 - 50 45 49 40  
brugge@cl-group.be  
www.cl-group.be

Lampencentrale n.v.  
Schijnpoortweg 151  
B- 2170 MERKSEM  
phone: +32 - 3 360 90 41  
fax: +32 - 3 360 90 40  
info.antwerpen@cl-group.be  
www.cl-group.be

Melerva Braine  
Parc industriel de la vallée du Hain 3E  
B- 1440 WAUTHIER-BRAINE  
phone: +32 - 2 387 18 15  
fax: +32 - 2 387 17 96  
braine@groupcheyns.be  
www.cheyns.be

Melerva Charleroi  
Rue du Pays Bas 20  
B- 6061 MONTIGNIES-SUR-SAMBRE  
phone: +32 - 71 30 77 27  
fax: +32 - 71 30 72 65  
charleroi@groupcheyns.be  
www.cheyns.be

Melerva Dinant  
Rue Saint Jacques 325  
B- 5500 DINANT  
phone: +32 - 82 22 27 45  
fax: +32 - 82 22 50 49  
info.dinant@groupcheyns.be  
www.cheyns.be

Melerva Tournai  
Rue de Maire 26  
B- 7503 FROYENNES  
phone: +32 - 69 21 60 58  
fax: +32 - 69 21 60 59  
tournai@groupcheyns.be  
www.cheyns.be

Mexel s.a.  
BP2406 - Rue de la Déportation 9  
L- 1415 LUXEMBOURG  
phone: +352 40 04 44 - 1  
fax: +352 49 29 82  
mail@mexel.lu  
www.mexel.lu

Mexel Esch S/Alzette  
Rue Sidney Thomas 27  
L- 4332 ESCH SUR ALZETTE  
phone: +352 26 55 06 20  
fax: +352 26 55 06 21  
mail@mexel.lu  
www.mexel.lu

Niederau Eupen s.a.  
Route de Herbesthal 134  
B- 4700 EUPEN  
phone: +32 - 87 59 57 57  
fax: +32 - 87 59 57 59  
info@niederau.be  
www.niederau.be

Piessens Electro Industrie n.v.  
Begijnestraat 43-47  
B- 9100 SINT-NIKLAAS  
+32 - 3 777 88 80  
+32 - 3 777 69 18  
info@piessenselectro.com  
www.piessenselectro.com

Proelec Herstal  
P.l. des Hauts-sarts 3<sup>e</sup>avenue 17  
B- 4040 HERSTAL  
phone: +32 - 4 240 77 77  
fax: +32 - 4 240 77 78  
proelec@groupcheyns.be  
www.cheyns.be

Proelec Waregem  
Rue de Sélys 36  
B- 4300 WAREMME  
phone: +32 - 19 32 95 95  
fax: +32 - 19 32 86 51  
waremme@groupcheyns.be  
www.cheyns.be

Relex n.v.  
Rue de la Technologiestraat 11  
B- 1082 SINT-AGATHA BERCHEM  
phone: +32 - 2 482 48 48  
fax: +32 - 2 482 48 47  
www.relex.be

Relex Aartselaar  
Helstraat 150  
B- 2630 AARTSELAAR  
phone: +32 - 3 870 71 00  
fax: +32 - 3 870 71 09  
www.relex.be

Rexel Alleur  
Avenue de l'Expansion 9bis  
B- 4432 ALLEUR  
phone: +32 - 4 364 02 30  
fax: +32 - 4 263 99 15  
[www.rexel.be](http://www.rexel.be)

Rexel Arlon  
Z.I. Weyler  
B- 6700 ARLONG  
phone: +32 - 63 23 44 41  
fax: +32 - 63 23 44 82  
[www.rexel.be](http://www.rexel.be)

Rexel Bastogne  
Zoning Ind. de Bastogne  
B- 6600 BASTOGNE  
phone: +32 - 61 21 12 02  
fax: +32 - 61 21 58 68  
[www.rexel.be](http://www.rexel.be)

Rexel Brugge  
Kleine Monnikenwerve 32  
B- 8000 BRUGGE  
phone: +32 - 50 31 11 13  
fax: +32 - 50 32 17 38  
[www.rexel.be](http://www.rexel.be)

Rexel Famenne  
Rue du Parc Industriel 20  
B- 6900 MARCHE-EN-FAMENNE  
phone: +32 - 84 31 18 93  
fax: +32 - 84 31 54 64  
[www.rexel.be](http://www.rexel.be)

Rexel Hasselt  
Trichterheideweg 2C  
B- 3500 HASSELT  
phone: +32 - 11 85 93 60  
fax: +32 - 11 85 93 61  
[www.rexel.be](http://www.rexel.be)

Rexel Ixelles  
Rue Tenbosch 120  
B- 1050 BRUXELLES  
phone: +32 - 2 347 30 55  
fax: +32 - 2 347 33 37  
[www.rexel.be](http://www.rexel.be)

Rexel Jumet  
Z.I. Allée Centrale  
B- 6040 JUMET  
phone: +32 - 71 34 31 31  
fax: +32 - 71 34 44 03  
[www.rexel.be](http://www.rexel.be)

Rexel Kessel-lo  
Diestsesteenweg 714  
B- 3010 KESSEL-LO  
phone: +32 - 16 26 20 20  
fax: +32 - 16 26 20 23  
[www.rexel.be](http://www.rexel.be)

Rexel Libramont  
Rue du Printemps 19  
B- 6800 LIBRAMONT  
phone: +32 - 61 22 58 44  
fax: +32 - 61 22 58 44  
[www.rexel.be](http://www.rexel.be)

Rexel Lier  
Industriestraat 4  
B- 2500 LIER  
phone: +32 - 3 489 26 16  
fax: +32 - 3 489 26 50  
[www.rexel.be](http://www.rexel.be)

Rexel Marcinelle  
Route de Phillippeville 161  
B- 6001 MARCINELLE  
phone: +32 - 71 42 31 31  
fax: +32 - 71 42 25 70  
[www.rexel.be](http://www.rexel.be)

Rexel Namur  
Rue Delvaux 12  
B- 5000 NAMUR  
phone: +32 - 81 22 90 41  
fax: +32 - 81 23 04 81  
[www.rexel.be](http://www.rexel.be)

Rexel Naninne  
Parc Industriel - Rue des Phlox 28  
B- 5100 NANINNE  
phone: +32 - 81 40 99 10  
fax: +32 - 81 40 11 73  
[www.rexel.be](http://www.rexel.be)

Rexel Roeselare  
Brugsesteenweg 383  
B- 8800 ROESELARE  
phone: +32 - 51 23 88 95  
fax: +32 - 51 24 37 42  
[www.rexel.be](http://www.rexel.be)

Rexel Schaerbeek  
Grote Bosstraat 99  
B- 1030 BRUXELLES  
phone: +32 - 2 743 03 40  
fax: +32 - 2 734 55 12  
[www.rexel.be](http://www.rexel.be)

Rexel Sint-Martens-Latem  
Kortrijksesteenweg 227  
B- 9830 SINT-MARTENS-LATEM  
phone: +32 - 9 282 90 00  
fax: +32 - 9 282 92 20  
[www.rexel.be](http://www.rexel.be)

Rexel Sint-Niklaas  
Driegaienstraat 121  
B- 9100 SINT-NIKLAAS  
phone: +32 - 3 780 76 20  
fax: +32 - 3 778 18 05  
[www.rexel.be](http://www.rexel.be)

Rexel Tournai  
Chaussée de Tournai 63  
B- 7520 RAMEGNIES-CHIN  
phone: +32 - 69 22 01 21  
fax: +32 - 69 21 26 86  
[www.rexel.be](http://www.rexel.be)

Rexel Turnhout  
Brugstraat 45  
B- 2300 TURNHOUT  
phone: +32 - 14 41 65 31  
fax: +32 - 14 41 62 09  
[www.rexel.be](http://www.rexel.be)

Rexel Verviers  
Rue Pont Léopold 1-3  
B- 4800 VERVIERS  
phone: +32 - 87 30 72 11  
fax: +32 - 87 31 06 79  
[www.rexel.be](http://www.rexel.be)

Rexel Waregem  
Stijn Streuvelsstraat 77  
B- 8790 WAREGEM  
phone: +32 - 56 60 77 81  
fax: +32 - 56 60 93 62  
[www.rexel.be](http://www.rexel.be)

Rexel Wavre  
Zoning Wavre Nord - Av. Vésale 13  
B- 1300 WAVRE  
phone: +32 - 10 81 61 71  
fax: +32 - 10 88 15 01  
[www.rexel.be](http://www.rexel.be)

Rexel Wijnegem  
Vosveld 11E  
B- 2110 WIJNEGEM  
phone: +32 - 3 360 36 00  
fax: +32 - 3 326 33 64  
[www.rexel.be](http://www.rexel.be)

SANELCO NV  
Weg naar Zwartberg 216  
B- 3660 OPGLABBEEK  
phone: +32 - 89 85 53 01  
fax: +32 - 89 85 65 18  
[web@sanelco.be](mailto:web@sanelco.be)  
[www.sanelco.be](http://www.sanelco.be)

Selfco n.v.  
Hoogveld 92  
B- 9200 DENDERMONDE  
phone: +32 - 52 25 80 13  
fax: +32 - 52 22 27 67  
[info.dendermonde@cl-group.be](mailto:info.dendermonde@cl-group.be)  
[www.cl-group.be](http://www.cl-group.be)

Sielek NV  
Veedijk 31  
B- 2300 TURNHOUT  
phone: +32 - 14 44 84 84  
fax: +32 - 14 44 84 80  
[sielek@siegers.be](mailto:sielek@siegers.be)

TELEHOME  
Burg 24  
B- 8820 TORHOUT  
phone: +32 - 50 21 21 72  
fax: +32 - 50 21 21 72  
[telehome.torhout@compaqnet.be](mailto:telehome.torhout@compaqnet.be)

Van De Water bvba  
Hannekenhoeckstraat 1-3  
B- 2200 HERENTALS  
phone: +32 - 14 28 56 00  
fax: +32 - 14 21 05 73  
[info@vandewater.be](mailto:info@vandewater.be)

Vanrenterghem n.v.  
Jagershoek 1  
B- 8570 VICTHE  
phone: +32 - 56 77 23 23  
fax: +32 - 56 77 24 24  
[info.vichte@cl-group.be](mailto:info.vichte@cl-group.be)  
[www.cl-group.be](http://www.cl-group.be)

## Czech Republic

### Sales office Prague:

OMRON Electronics spol. s r.o.  
HALL OFFICE PARK building A  
Jankovcova 53  
170 00 PRAGUE 7  
phone: +42 - 234 602 602  
fax: +42 - 234 602 607  
[www.omron.cz](http://www.omron.cz)

## Denmark

### Sales office Køge

OMRON ELECTRONICS A/S  
Lykkebækvej 2  
4600 Køge  
phone: +45 - 43 44 00 11  
fax: +45 - 43 44 02 11  
[www.omron.dk](http://www.omron.dk)  
[omron\\_dk@eu.omron.com](mailto:omron_dk@eu.omron.com)

## Sales office Aarhus

OMRON ELECTRONICS A/S  
Bredskiftevej 9  
8210 Aarhus V  
phone: +45 - 43 44 00 11  
fax: +45 - 86 24 32 99

## Distributors in Denmark:

Jens A. Jacobsen A/S  
Hjulmagervej 12  
9100 Aalborg  
phone: +45 - 98 12 50 66

Grene Industri-service - Center Herning  
Gudhjemvej 3  
7400 Herning  
phone: +45 - 97 12 22 55

Grene Industri-service - Center Aarhus  
Edwin Rahrs Vej 52  
8220 Brabrand  
phone: +45 - 70 15 35 00

FH Gruppen A/S  
Bjerrevej 9  
8700 Horsens  
phone: +45 - 76 25 44 44

Ølgod Elektro A/S  
Vangsgade 8  
6870 Ølgod  
phone: +45 - 75 24 48 99

CS Electric ApS  
Storegade 88  
6700 Esbjerg  
phone: +45 - 75 13 45 09

Grene Industri-service - Center Ringe  
Bygmestervej 20  
5750 Ringe  
phone: +45 - 63 62 15 27

FJH Automatic A/S  
Industriskellet 12  
3300 Frederiksværk  
phone: +45 - 47 77 03 03

PN elektro ApS  
Østre Allé 30  
4200 Slagelse  
phone: +45 - 58 53 30 60

## Finland

### Sales office Espoo:

OMRON ELECTRONICS OY  
Metsänpojankuja 5  
02130 ESPOO  
phone: +358 - 9 549 58 00  
fax: +358 - 9 54 95 81 50  
[www.omron.fi](http://www.omron.fi)

### Sales office Kuopio:

OMRON ELECTRONICS OY  
P.O. Box 72  
FIN-70101 KUOPIO  
phone: +358 - 172 82 21 40  
fax: +358 - 172 82 21 42

### Sales office Lahti:

OMRON ELECTRONICS OY  
P.O. Box 16  
FIN-15241 LAHTI  
phone: +358 9 549 58 00/ Espoo  
fax: +358 9 54 95 81 50/ Espoo

**Sales office Oulu:**

OMRON ELECTRONICS OY  
Vihkari 10  
FIN-90440 Kempele  
phone: +358 - 85 54 42 61  
fax: +358 - 85 54 42 91

**Sales office Tampere:**

OMRON ELECTRONICS OY  
Pispalanvaltatie 133  
FIN-33270 Tampere  
phone: +358 - 33 45 07 66  
fax: +358 - 33 45 00 07

**Sales office Vaasa:**

OMRON ELECTRONICS OY  
P.O. Box 206  
FIN-65101 Vaasa  
phone: +358 - 63 18 26 10  
fax: +358 - 63 17 46 14

**Distributors in Finland:**

Auser Oy  
Takojantie  
FIN-48230 KOTKA  
phone: +358 - 53 41 04 00  
fax: +358 - 53 41 04 90

Hormel Oy  
Pajatie 8  
FIN-40630 JYVÄSKYLÄ  
phone: +358 - 143 38 89 00  
fax: +358 - 143 38 89 45

Instele Oy  
Kullervonkatu 2 C  
FIN-70500 KUOPIO  
phone: +358 - 172 66 22 00  
fax: +358 - 172 66 22 44

Kokkolan Sähkötarvike Oy  
PL 158  
FIN-67101 KOKKOLA  
phone: +35 - 868 32 41 00  
fax: +358 - 68 30 15 90

Oy Krikoma Ab  
Myrkyntie 42  
FIN-64140 TIUKKA  
phone: +358 - 62 26 37 00  
fax: +358 - 62 22 37 30

LSK Electrics Oy  
P.O. Box 176  
FIN-15101 LAHTI  
phone: +358 - 381 78 17  
fax: +358 - 38 17 83 02

LSK Heinola office:  
Vilkenkatu 36  
FIN-18200 HEINOLA  
phone: +358 - 37 15 44 66  
fax: +358 - 37 14 16 39

LSK Hämeenlinna office:  
Saaristenkatu 19  
FIN-13100 HÄMEENLINNA  
phone: +358 - 36 44 57 00  
fax: +358 - 36 44 57 01

OuKoTa Oy  
Haaransuontie 12  
FIN-90240 OULU  
phone: +358 - 85 57 40 98  
fax: +358 - 85 57 40 89

PJ Control Oy  
Ristipellontie 17  
FIN-00390 HELSINKI  
phone: +358 - 95 91 53 30  
fax: +358 - 959 15 33 33

## Radiki Oy

P.O. Box 20  
FIN-35701 VILPPULA  
phone: +358 - 34 72 86 00  
fax: +358 - 34 72 86 30

## Sata-Automaatio Oy

Sammontie 3  
FIN-28400 ULVILA  
phone: +358 - 25 31 82 00  
fax: +358 - 25 31 82 01

## Sähkösuunnittelut

TOP Automation Oy  
Käenkoskentie 9  
FIN-80130 JOENSUU  
phone: +358 13 610 05 80  
fax: +358 13 610 05 80

## Tekno-Tikka Oy

P.O. Box 22  
Sarankulmank. 12  
FIN-33901 TAMPERE  
phone: +358 - 32 36 01 00  
fax: +358 - 32 36 01 69

## Turun Sähkötukku Oy

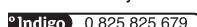
Pitkämäenkatu 4  
FIN-20250 TURKU  
phone: +358 - 233 76 61  
fax: +358 - 23 37 67 80

**Distributor in Estonia:**

Standel AS  
Kiisa 8  
EE11131 Tallinn  
Estonia  
phone: +372 - 655 81 80  
fax: +372 - 655 81 79

**France****Headquarter:**

OMRON ELECTRONICS S.a.r.l  
19 rue du Bois Galon, B.P. 33  
94121 Fontenay-sous-Bois cedex

 Indigo 0 825 825 679  
0.15€ TTC / MN

phone : +33 - 1 49 74 70 00  
fax: +33 - 148 76 09 30  
www.omron.fr

**Sales office Ile de France:**

OMRON ELECTRONICS  
Im. Le Cézanne  
35, allée des Impressionnistes  
ZAC Paris Nord II - Les Pléiades  
93420 VILLEPINTE  
phone: + 33 - 149 38 97 70  
fax: + 33 - 148 63 24 38

**Sales office West:**

OMRON ELECTRONICS  
Bât. C - Rue G. MARCONI  
44812 ST HERBLAIN  
phone: + 33 - 251 80 53 70  
fax: + 33 - 251 80 70 39

**Sales office North-East:**

OMRON ELECTRONICS  
BP 164  
11, rue C. ADER  
51685 REIMS cedex  
phone: + 33 - 326 82 00 16  
fax: + 33 - 326 82 00 62

**Sales office South-East:**

OMRON ELECTRONICS  
L'Atrium, Parc St Exupéry  
1, rue du Colonel CHAMONNET  
69500 BRON  
phone: + 33 - 472 14 90 30  
fax: + 33 - 478 41 08 93

**Sales office South-West:**

OMRON ELECTRONICS  
BP 221  
High Tech Buro  
Bât. C, rue Garance  
31677 LABEGE cedex  
phone: + 33 - 561 39 89 00  
fax: + 33 - 561 39 99 09

## ADELEC 31

Rue Amelin  
93440 DUGNY  
phone : +33 - 149 92 63 63  
fax : +33 - 149 34 08 30

**Distributors in France:**

A.2.I.F. Distribution  
2, rue Jules Védrines, ZI de Montaudran  
31400 TOULOUSE  
phone: + 33 - 562 47 54 75  
fax: + 33 - 5 62 47 54 74  
www.a2if.fr

## A.D.T

ZI, 1, rue Gay Lussac, BP 1724  
27017 EVREUX cedex  
phone: + 33 - 232 33 00 00  
fax: + 33 - 232 33 68 24  
www.adt.fr

## APN AUTOMATION

2, avenue François Bottau  
06100 NICE  
phone: + 33 - 492 07 17 27  
fax: + 33 - 492 07 01 99  
www.apn.automation.com

## AULAGNON

47, boulevard Jules Janin  
42026 ST ETIENNE  
phone: + 33 - 477 47 88 88  
fax: + 33 - 477 32 36 22

## AUTOMATISMES INDUSTRIE

BP 9 - rue Jean-Baptiste Charlet  
02230 FRESNOY-LE-GRAND  
phone: + 33 - 323 66 02 69  
fax: + 33 - 323 09 15 29

## BELLION TAMPLEU CAPPE

BP 206, rue Henri Becquerel  
ZI Kergaraadec  
29808 BREST cedex  
phone: + 33 - 298 41 44 00  
fax: + 33 - 298 41 44 11

## CAD

15, rue de l'Industrie  
68260 KINGERSHEIM  
phone: + 33 - 389 50 22 36  
fax: + 33 - 389 53 81 83

## CAPPE SOREDIS

BP 49 - 6, rue de la Garenne  
44701 ORVALULT cedex  
phone: + 33 - 240 16 35 35  
fax: + 33 - 240 63 37 85

**CGE DISTRIBUTION**

Immeuble le Miroir - 15/17  
bd du Général de Gaulle  
92542 MONTROUGE cedex  
phone: + 33 - 140 92 58 58  
fax: + 33 - 140 92 59 48  
www.cge-distribution.com

## CHAVERIAT

ZI Sud - Route de Saint-Claude  
39260 MOIRANS-EN-MONTAGNE  
phone: + 33 - 384 48 11 60  
fax: + 33 - 384 42 85 65

## COPEL

11, rue du Tanin - BP 26  
67831 LINGOLSHEIM  
phone: + 33 - 3 88 76 54 32  
fax: + 33 - 3 88 76 96 59  
www.d3e.fr

## ELECTRO MIDI DPI

36, Bd de Thibaud  
B.P. 1818

31104 TOULOUSE

phone : +33 - 561 31 79 79  
fax : +33 - 561 31 79 80

## EPAC INDUSTRIE

ZI de la Voivre  
88000 EPINAL  
phone: + 33 - 3 29 38 29 20  
fax: + 33 - 3 29 38 29 21

## FAURE AUTOMATISME

36, allée Marconi  
26000 VALENCE  
phone: + 33 - 4 75 75 99 00  
fax: + 33 - 4 75 41 30 00  
www.faure-automatisme.com

## FGET INTERNATIONAL

ZI Mi-Plaine, BP 354  
17, rue de Genève  
69746 GENAS cedex  
phone: + 33 - 4 72 79 64 15  
fax: + 33 - 4 72 79 64 10  
www.fget.com

## GAB SYSTEM DIFFUSION

3, rue Louis Ganne  
75020 PARIS  
phone: + 33 - 1 40 31 22 22  
fax: + 33 - 1 40 31 22 44

## GNE SERVICELEC

99, rue Louis Porerat  
76000 ROUEN  
phone : +33 - 235 58 46 46  
fax : +33 - 235 58 46 60

## GOTELEC

61, rue du ressort  
63100 CLERMONT-FERRAND  
phone: + 33 - 4 73 16 26 26  
fax: + 33 - 4 73 25 94 05

## LENOIR ELEC

Z.I. La Castine  
Rue des Sapins  
54730 GORCY  
phone : + 33 - 382 23 79 89  
fax : + 33 - 382 23 84 30

**MEDIA MESURES**

Immeuble Les Bouleaux  
Z.I. de Couperigne  
13127 VITROLLES  
phone: + 33 - 442 46 81 10  
fax: + 33 - 442 89 11 07

**MESNIER**

rue Louis Marin, BP 40137  
44201 NANTES cedex 02  
phone: + 33 - 240 35 02 22  
fax: + 33 - 240 08 28 82

**MYDIS**

15, boulevard Pochet Lagaye  
63000 CLERMONT-FERRAND  
phone: + 33 - 473 28 03 88  
fax: + 33 - 473 28 00 65

**NOYER SAFIA**

Z.A. du Bois Rigaule Nord  
Rue Calmette  
62880 VENDIN LE VIEL  
phone : +33 - 321 08 71 00  
fax : +33 - 321 43 87 78

**RADIO RELAIS**

18, rue Crozatier  
75012 PARIS  
phone: + 33 - 143 44 44 50  
fax: + 33 - 146 28 66 93  
[www.radiorelais.fr](http://www.radiorelais.fr)

**RADIOSPARES 60**

ZA la Vatine, rue Norman King, BP 453  
60031 BEAUVAIS cedex  
phone: + 33 - 344 10 15 15  
fax: + 33 - 344 10 16 00  
[www.radiospares.fr](http://www.radiospares.fr)

**REBOUL SA**

25, rue Clément Marot  
B.P. 72020  
25050 BESANCON  
phone and fax stay the same  
phone: + 33 - 381 50 14 85  
fax: + 33 - 381 53 28 00  
[www.reboul.fr](http://www.reboul.fr)

**REBOUL BOURGOGNE**

Zone Actisud  
9, rue Louis Lumière  
21160 MARSANNAY LA COTE  
phone : +33 - 380 52 06 10  
fax : +33 - 380 52 82 15

**SAFIM GDL**

Zone Alfred Daney,  
2, rue Surcouf, BP 217  
33700 BORDEAUX  
phone: + 33 - 557 10 62 62  
fax: + 33 - 557 10 62 70

**SAVOIE AUTOMATISMES**

8, rue Berthod  
74960 MEYTHET  
phone: + 33 - 450 22 23 20  
fax: + 33 - 450 22 59 25  
[www.savoie-automatisme.com](http://www.savoie-automatisme.com)

**SEIREL**

23, rue Scheurer Kestner  
42000 ST ETIENNE  
phone: + 33 - 477 79 31 21  
fax: + 33 - 477 74 66 44

**SOCOLEC**

Z.I. Sud  
13, rue Pierre Martin  
72024 LE MANS cedex  
phone : +33 - 243 39 17 39  
fax : +33 - 243 28 75 21

**SODEMAT**

61, chemin de la fabrique  
34800 CANET  
phone: + 33 - 467 96 74 03  
fax: + 33 - 467 88 71 60

**SOUPLET AUTOMATISMES**

ZI, rue le Verrier, BP 44  
41353 VINEUL cedex  
phone: + 33 - 254 42 84 83  
fax: + 33 - 254 42 10 52  
[www.souplet-automatismes.fr](http://www.souplet-automatismes.fr)

**TAMPLEU SPIRIET SA**

BP 44, ZA - rue Henri Spiret  
14125 MONDEVILLE cedex  
phone: + 33 - 231 35 35 35  
fax: + 33 - 231 34 40 20

**Germany**

Postal code to find the right sales offices

near you:  
01.... 18...Berlin  
19.... 31...Hamburg  
32.... 34...Düsseldorf  
35....Stuttgart  
36...Düsseldorf  
37.... 38...Hamburg  
39...Berlin  
40.... 59...Düsseldorf  
60.... 61...Stuttgart  
63000 - 63699...Düsseldorf  
63700 - 63999...München  
64.... 65...Stuttgart  
66.... 68...Düsseldorf  
69.... 79...Stuttgart  
80.... 87...München  
88.... 89...Stuttgart  
90.... 97...München  
98.... 99...Berlin

**Sales office Berlin:**

OMRON ELECTRONICS GmbH  
Wittestraße 31  
13509 BERLIN  
phone: + 49 - 30 43 55 77-0  
fax: + 49 - 30 43 55 77-77

**Sales office Hamburg:**

OMRON ELECTRONICS GmbH  
Tempowerkring 6  
21079 HAMBURG  
phone: + 49 - 40 7 67 59-0  
fax: + 49 - 40 7 67 59-99

**Sales office Düsseldorf:**

OMRON ELECTRONICS GmbH  
Elisabeth-Selbert-Straße 17  
40764 Langenfeld  
phone: + 49 - 217 36 80 00  
fax: + 49 - 217 36 80 04 00  
info.de@eu.omron.com  
[www.omron.de](http://www.omron.de)

**Sales office Stuttgart:**

OMRON ELECTRONICS GmbH  
Carl-Benz-Straße 4  
71154 NUFRINGEN  
phone: + 49 - 703 28 11-310  
fax: + 49 - 703 28 11-399

**Sales office München:**

OMRON ELECTRONICS GmbH  
Weihenstephaner Straße 1  
85716 Unterschleißheim  
phone: + 49 - 893 79 07 96  
fax: + 49 - 89 37 90 79 99

**Distributors in Germany:**

A + H Vertriebsgesellschaft mbH  
Borner Straße 31  
42897 Remscheid  
phone: +49 - 21 91 93 76-0  
Fax: +49 - 21 91 93 76-76  
vertrieb@auh-rs.de  
[www.auh.de](http://www.auh.de)

Boie GmbH  
Ohmstraße 5  
74076 Heilbronn  
phone: +49 - 71 31 15 50 41-0  
fax: +49 - 71 31 15 50 41-5  
info@boie.de  
[www.boie.de](http://www.boie.de)

E.O.C. M. Büchner GmbH & Co. KG  
Heegwaldring 2  
63694 Limeshain  
phone: +49 - 60 47 96-280  
fax: +49 - 60 47 96-322  
eoc.buechner@t-online.de  
[www.m-buechner.de](http://www.m-buechner.de)

Henskes Electronic Components GmbH  
Bremer Straße 7  
30880 Laatzen  
phone: +49 - 51 02 93 81-0  
fax: +49 - 51 02 93 81-99  
henskes@henskes.com  
[www.henskes.de](http://www.henskes.de)

HIB Gesellschaft für Industrieautomation  
mbH  
Chausseehausstraße 8  
01159 Dresden  
phone: +49 - 351 417 02 10  
fax: +49 - 351 411 60 28  
hib-dresden@t-online.de  
[www.hib-dresden.de](http://www.hib-dresden.de)

HILLMANN & PLOOG  
Ivo-Hauptmann-Ring 9  
22159 Hamburg  
phone: +49 - 40 -645 88-0  
fax: +49 - 40 645 88-440  
info@hiplo.de  
[www.hiplo.de](http://www.hiplo.de)

Horst Hoopmann GmbH  
Im Gewerbegebiet 3  
26842 Ostrhauderfehn  
phone: +49 - 4952 546 70  
fax: +49 - 49 52 63 30  
hoopmannph@t-online.de

KBI Vertriebs GmbH  
Karl-Benz-Straße 1  
40764 Langenfeld  
phone: +49 - 2173 901-255  
fax: +49 - 21 73 901-258  
kbi.vertriebs.gmbh@t-online.de  
[www.kbi-vertrieb.de](http://www.kbi-vertrieb.de)

Kommin  
Frankenstrasse 12  
74549 Wolpertshausen  
phone: +49 - 79 04 921 21 60  
fax: +49 - 79 04 921 21 66  
info@kommin.net  
[www.kommin.net](http://www.kommin.net)

PA Professional Automation GmbH  
Prielwirtstraße 8  
85305 Jetzendorf  
phone: +49 - 81 37 80 90 03  
fax: +49 - 81 37 80 90 04  
vesely@pa-gmbh.net  
[www.pa-gmbh.net](http://www.pa-gmbh.net)

**POHL Electronic GmbH**

Neuendorfstraße 18b  
16761 Henningsdorf  
phone: +49 - 33 02 559 29-0  
fax: +49 - 33 02 559 29-9  
info@pohl-electronic.de  
[www.pohl-electronic.de](http://www.pohl-electronic.de)

Prokot GmbH & Co. KG  
Osterwalder Str. 8  
30827 Garbsen  
phone: +49 - 51 31 926 98  
fax: +49 - 51 31 76 28  
info@prokot-gmbh.de

RFD Electronic GmbH  
An der Kanzel 2  
97253 Gaukönigshofen  
phone: +49 - 93 37 971 23-0  
fax: +49 - 93 37 971 23-16 88  
info@rfd.electronic.de  
[www.rfd-electronic.de](http://www.rfd-electronic.de)

RMS Kleine GmbH  
Salzstraße 18  
82266 Inning  
phone: +49 - 81 43 93 11 10  
fax: +49 - 81 43 93 11 33  
rmskleine@t-online.de  
[www.rmskleine.de](http://www.rmskleine.de)

Robers & Co. GmbH  
Am Parir 3  
52379 Langerwehe  
phone: +49 - 24 23 94 44-0  
fax: +49 - 24 23 94 44 23  
info@robbers-co.de  
[www.robbers-co.de](http://www.robbers-co.de)

SKATec GmbH & Co. KG  
Alemannenstraße 53  
77767 Appenweier  
phone: +49 - 78 05 998 50  
fax: +49 - 78 05 91 02 55  
info@skatec.com  
[www.skatec.com](http://www.skatec.com)

TH electronic GmbH  
Sondershäuser Landstraße 29  
99974 Mühlhausen  
phone: +49 - 36 01 44 35 10  
Fax: +49 - 36 01 44 35 14  
info@th-electronic-mhl.de  
[www.th-electronic-mhl.de](http://www.th-electronic-mhl.de)

uwe electronic GmbH  
Inselkammerstraße 10  
82008 Unterhaching  
phone: +49 - 89 44 11 90-0  
fax: +49 - 89 44 11 90-29  
info@uweelectronic.de  
[www.uweelectronic.de](http://www.uweelectronic.de)

**System Integrators in Germany:****Automation**

AEM August Elektrotechnik GmbH  
Seerasen 4  
36284 Hohenroda  
Deutschland  
phone: +49 - 66 76 921 60  
fax: +49 - 66 76 92 16 11  
info@aem-et.de  
[www.aem-et.de](http://www.aem-et.de)

Dieter Heick  
Moorkampshöhe 46  
25462 Rellingen  
Deutschland  
phone: +49 - 41 01 40 42 67  
fax: +49 - 41 01 40 42 69  
dieterheick@dieterheick.de

**Vision**

Avicom GmbH  
Döbelner Str. 4A  
12627 Berlin  
phone: +49 - 30 99 29 98 40  
fax: +49 - 30 99 29 98 41  
info@avicom-vision.de  
www.avicom-vision.de

DMC Engineering f. BV und Mechatronik  
Dr.-Schreyer-Str. 15  
83233 Bernau  
phone: +49 - 80 51 88 75  
fax: +49 - 80 51 88 76  
hgm\_dmc@gmx.de

ETW GmbH  
Frankenstr. 12  
74549 Wolpertshausen  
phone: +49 - 79 04 92 12 10  
fax: +49 - 79 04 921 21 21  
info@etw-gmbh.com  
www.etw-gmbh.com

ICW Ing.-Büro Christian Wölz  
Engelschalkstr. 32  
86316 Friedberg  
phone: +49 - 821 609 95 26  
fax: +49 - 821 609 95 31  
info@icw-news.de  
www.icw-news.de

Loetec GmbH  
Dresdener Straße 28  
06886 Lutherstadt  
phone: +49 - 34 91 40 42 61  
fax: +49 - 34 91 40 42 65  
kontakt@loetec.de  
www.loetec.de

Schönherr Elektronik  
Augustusburger Str. 21A  
09557 Flöha  
phone: +49 - 37 26 790 50  
fax: +49 - 37 26 79 05 20  
info@schoenherr-elektronik.com  
www.schoenherr-elektronik.com

VDM-Tec  
Fasanenweg 13  
84166 Adlkofen  
phone: +49 - 87 07 93 96 79  
fax: +49 - 87 07 93 96 94  
mail@vdm-tec.de  
www.vdm-tec.de

Vistron GmbH  
Robert-Bosch-Breite 10  
37079 Göttingen  
phone: +49 - 551 789 59 98  
fax: +49 - 551 789 96 61  
info@vistron.de  
www.vistron.de

**Mechatronics**

ATS Antriebstechnik  
Unterer Steinbecker Weg 5  
32108 Bad Salzuflen  
phone: +49 - 52 22 608 22  
fax: +49 - 52 221 24 85  
info@schuermann-mechtronics.de

Bretzel GmbH  
Industriestraße 26  
65760 Eschborn  
phone: +49 - 61 96 403 19 0  
fax: +49 - 61 96 430 47  
info@bretzel-gmbh.de  
www.bretzel-gmbh.de

Bütow Industrie-Elektronik GmbH  
Wasserstraße 5 A  
23966 Wissmar  
phone: +49 - 38 41 26 52 12  
fax: +49 - 38 41 26 52 26  
info@buetow.com  
www.buetow.com

E+S Mechatronics Anlagen-Automation  
GmbH + Co.  
Gutenbergstraße 7  
61169 Friedberg  
phone: +49 - 60 31 155 21  
fax: +49 - 60 31 920 97  
info@eus-mechtronics.de  
www.eus-mechtronics.de

Fischer Elektromotoren GmbH  
Schützenstrasse 19  
74842 Billigheim-Alfeld  
phone: +49 - 62 65 922 20  
fax: +49 - 62 65 922 22  
info@fischer-elektromotoren.de  
www.fischer-elektromotoren.de

Ing.-Büro P. Hindrichs  
Voltastraße 23  
50129 Bergheim  
phone: +49 - 22 71 75 04 12  
fax: +49 - 22 71 75 043  
p.hindrichs@hindrichs-gmbh.de  
www.hindrichs-gmbh.de

InTec Reck Scheuble GmbH  
Abrikosstraße 15 A  
79108 Freiburg  
phone: +49 - 761 13 58 13  
fax: +49 - 761 167 89  
info@intec-freiburg.de  
www.intec-freiburg.de

Männich Industrievertretungen GmbH  
Ludwigstrasse 33  
86551 Aichach  
phone: +49 - 82 51 828 77  
fax: +49 - 82 51 828 78  
info@maennich.de  
www.maennich.de

Multitron Elektronik GmbH + Co. KG  
Linsenthalde 11  
71364 Winnenden  
phone: +49 - 71 95 923 30  
fax: +49 - 71 95 637 08  
info@multitron.de  
www.multitron.de

Power Electronics Deutschland GmbH  
Conradstraße 41  
90441 Nürnberg  
phone: +49 - 911 994 39 90  
fax: +49 - 911 994 39 98  
info@ped-gmbh.de  
www.ped-gmbh.de

WELACO Elektrotechnik GmbH  
Gernsheimer Str. 9  
64560 Riedstadt-Wolfskehlen  
phone: +49 - 61 58 74 82 12  
fax: +49 - 61 58 74 82 18  
info@welaco.de

**Greece**

**Distributor in the Greece:**  
Kalamarakis & Sapounas  
Factory Automation Integrated Applications  
Ionias & Neromilou  
13671 Chamomilos Acharnes - Athens  
Greece  
phone: +30 - 21 02 40 60 00 6  
fax +30 - 21 02 40 60 07  
kalamarakis.Sapounas@ksa.gr

**Hungary**

**Sales office Budapest:**  
OMRON ELECTRONICS Kft.  
Kiss Erno u. 1-3.  
1046 Budapest  
phone: +36 - 13 99 30 50  
fax: +36 - 13 99 30 60  
www.omron.hu

**Italy**

**Italian Headquarters:**  
OMRON ELECTRONICS SpA  
Viale Certosa 49  
20149 Milano  
phone: +39 - 23 26 81  
fax: +39 - 23 26 82 82  
www.omron.it

**Regional Sales Office:**

OMRON ELECTRONICS SpA  
Via Arnaboldi, 1  
20149 Milano  
phone: +39 - 23 26 81  
fax: +39 - 23 26 82 11  
www.omron.it

OMRON ELECTRONICS SpA  
Via Arnaboldi, 1  
20149 Milano  
phone: +39 - 02 326 88 00  
fax: +39 - 23 26 88 01

OMRON ELECTRONICS SpA  
Galleria Ronzani, 5/3  
40033 Casalecchio di Reno BO  
phone: +39 - 516 13 66 11  
fax: +39 - 516 13 05 65

OMRON ELECTRONICS SpA  
Via Panà, 56/ter  
35027 Noventa Padovana PD  
phone: +39 - 498 69 27 11  
fax: +39 - 498 70 58 73

OMRON ELECTRONICS SpA  
Via dello Stadio, 77  
05100 Terni  
phone: +39 - 74 45 45 11  
fax: +39 - 744 40 18 65

Distributors in Italy:  
For Distributors local branches, please  
contact directly their main office

\* Note: Favourites Distributors

**Valle d'Aosta**

ELETTOGRUPPO ZEROUNO SpA\*  
VIA MOMBARONE,1  
10010 BUROLO D'IVREA TO  
phone: + 39 - 125 67 60 01  
fax: + 39 - 125 67 68 94  
zerouno@egzerouno.com

**Piemonte**

ELETTOGRUPPO ZEROUNO SpA\*  
VIA REMMERT, 77  
10073 CIRIE' TO  
phone: + 39 - 119 21 17 20  
fax: + 39 - 119 20 83 63  
zerouno@egzerouno.com

ELETTOGRUPPO ZEROUNO SpA\*  
VIA MOMBARONE,1  
10010 BUROLO D'IVREA TO  
phone: + 39 - 125 57 72 03 45  
fax: + 39 - 12 55 73 49  
zerouno@egzerouno.com

ELETTOGRUPPO ZEROUNO SpA\*  
STRADA DRUENTO 254  
10078 VENARIA TO  
phone: + 39 - 114 24 66 36  
fax: + 39 - 114 24 01 55  
zerouno@egzerouno.com

ELETTOGRUPPO ZEROUNO SpA\*  
REGIONE DOTA, 54  
14053 CANELLI AT  
phone: + 39 - 141 82 40 85  
fax: + 39 - 141 82 48 32  
zerouno@egzerouno.com

ELETTOGRUPPO ZEROUNO SpA\*  
VIA AOSTA 15 - 10092 BEINASCO TO  
phone: + 39 - 113 98 75 55  
fax: + 39 - 113 49 97 64  
zerouno@egzerouno.com

G.T.M. Srl\*  
VIA DELLA PACE 22  
13894 GAGLIANICO-BIELLA BI  
phone: + 39 - 15 54 18 21  
fax: + 39 - 15 54 32 04  
info@gtmbiella.it  
www.gtmbiella.it

TECHNOLOGY BSA Srl\*  
REG. DOTA 16/A - 14053 CANELLI AT  
phone: + 39 - 141 82 21 22  
fax: + 39 - 141 82 99 21  
info@techbsa.com  
www.techbsa.com

BI ESSE SpA  
VIA MARCONI 64  
12040 GENOLA CN  
phone: + 39 - 172 69 33 47  
fax: + 39 - 172 69 32 28

COMOLI FERRARI & C. SpA  
VIA MATTEI 4 - 28100 NOVARA NO  
phone: + 39 - 321 46 57 91  
fax: + 39 - 321 46 57 84  
www.comoliferrari.it

E. D. ELETTROS' DEMO SpA  
VIA ACHILLE GRANDI 1  
15033 CASALE MON. TO AL  
phone: + 39 - 142 43 31 11  
fax: + 39 - 142 43 31 20

DEMA Srl  
VIA NOVARA 183  
28021 BORGOMANERO NO  
phone: + 39 - 322 83 30 00  
fax: + 39 - 32 28 17 44  
[www.gruppodema.it](http://www.gruppodema.it)

DUTTO GIAN LUIGI & C. Sas  
VIA MILAZZO 28-30  
15057 TORTONA AL  
phone: + 39 - 131 86 18 79  
fax: + 39 - 131 82 02 34  
[www.dutto-eletroforniture.com](http://www.dutto-eletroforniture.com)

E.D. ELETTROSI' Spa  
VIA VALLE PO 92  
12020 CUNEO CN  
phone: + 39 - 171 41 19 44  
fax: + 39 - 171 41 10 80  
[www.elettrosi.com](http://www.elettrosi.com)

F.E.I.B. Srl  
VIA A.SANSOVINO 149/A  
10151 TORINO TO  
phone: + 39 - 117 38 00 04  
fax: + 39 - 117 39 82 86

IDG Spa  
C.SO ASTI 18  
12051 ALBA CN  
phone: + 39 - 17 33 36 46  
fax: + 39 - 173 36 10 05

#### Liguria

CISA Spa  
CAS.POST. 292  
16100 GENOVA GE  
phone: + 39 - 108 46 76 11  
fax: + 39 - 108 48 76 03  
[www.cisaspaspa.it](http://www.cisaspaspa.it)

#### Lombardia

BARCELLA ELETROFORNITURE Sp<sup>a</sup>\*  
VIA S. MARTINO 1  
24052 AZZANO S. PAOLO BG  
phone: + 39 - 35 53 90 11  
fax: + 39 - 35 53 32 73  
[info@barcella.it](mailto:info@barcella.it)  
[www.barcella.it](http://www.barcella.it)

CAI ELECTRIC Srl\*  
VIALE ITALIA 43  
20020 LAINATE MI  
phone: + 39 - 29 37 43 10  
fax: + 39 - 293 57 07 86  
[info@caielectric.it](mailto:info@caielectric.it)  
[www.caielectric.it](http://www.caielectric.it)

F.E.E.I.2 Srl\*  
VIA GIRELLI 11/C  
25125 BRESCIA BS  
phone: + 39 - 303 58 26 50  
fax: + 39 - 303 58 26 77  
[info.cr@feei.it](mailto:info.cr@feei.it)  
[www.feei.it](http://www.feei.it)

FAST Sas\*  
VIA MOROSINI 17  
27029 VIGEVANO PV  
phone: + 39 - 381 34 50 92  
fax: + 39 - 381 34 50 93  
[info@fast-automazione.it](mailto:info@fast-automazione.it)  
[www.fast.it](http://www.fast.it)

FEELI Srl\*  
VIA BERGAMO 28/30  
26100 CREMONA CR  
phone: + 39 - 37 23 15 32  
fax: + 39 - 372 45 63 24  
[info.cr@feeli.it](mailto:info.cr@feeli.it)  
[www.feeli.it](http://www.feeli.it)

FOGLIANI Spa\*  
VIA PER CASSANO 157  
21052 BUSTO ARSIZIO VA  
phone: + 39 - 331 69 69 11  
fax: + 39 - 331 68 65 61  
[info@fogliani.it](mailto:info@fogliani.it)  
[www.fogliani.it](http://www.fogliani.it)

L'ELETTROTECNICA Snc\*  
VIA LONDRA 17  
46047 PORTO MANTOV. MN  
phone: + 39 - 376 39 23 72  
fax: + 39 - 376 39 82 68  
[info@elettrotecnica.it](mailto:info@elettrotecnica.it)  
[www.elettrotecnica.it](http://www.elettrotecnica.it)

SACCHI GIUSEPPE Sp<sup>a</sup>\*  
VIA PRIVATA G. SACCHI 2  
23891 BARZANO' LC  
phone: + 39 - 39 24 41 5  
fax: + 39 - 39 95 89 84  
[sacchi@sacchi.it](mailto:sacchi@sacchi.it)  
[www.sacchi.it](http://www.sacchi.it)

A.I. AUTOMAZIONE INDUSTRIALE Srl  
VIA MONTESANTO, 112  
20092 CINISELLO BALSAMO MI  
phone: + 39 - 266 01 30 14  
fax: + 39 - 266 01 43 88

BIT Srl  
VIA G. VITTORIO Z.I. 3/D-3/E  
25100 BRESCIA BS  
phone: + 39 - 302 68 75 11  
fax: + 39 - 302 68 76 11

C.E.A. Spa  
VIA BUZZI 8  
20017 RHO MI  
phone: + 39 - 29 39 70 91  
fax: + 39 - 293 90 14 75

C.E.M.E. Spa  
VIA CAPRERA 2  
21052 BUSTO ARSIZIO VA  
phone: + 39 - 331 32 40 00  
fax: + 39 - 331 63 94 36

DIC.S.EL. Srl  
VIA DELLA PACE  
20098 SAN GIULIANO MIL. MI  
phone: + 39 - 29 82 22 81  
fax: + 39 - 298 49 17 88  
[www.dicsel.it](http://www.dicsel.it)

DOGMA Srl  
VIA DEI VALTORTA 39  
20127 MILANO MI  
phone: + 39 - 226 14 21 21  
fax: + 39 - 22 87 02 50  
[dogma@dogmaonline.it](mailto:dogma@dogmaonline.it)  
[www.dogmaonline.it](http://www.dogmaonline.it)

ELETTRONICA BRIANZA Srl  
VIA ERCOLANO 19  
20052 MONZA MI  
phone: + 39 - 392 02 28 51  
fax: + 39 - 392 02 28 62

REXEL ITALIA Spa  
VIA VERGNANO 2  
25125 BRESCIA BS  
phone: + 39 - 30 35 12 00  
fax: + 39 - 303 51 21 00

F.E.E.I.3 Srl  
VIA LIBERO COMUNE 13/A  
26013 CREMONA CR  
phone: + 39 - 37 38 70 12  
fax: + 39 - 37 38 71 06  
[info.cr@feei.it](mailto:info.cr@feei.it)  
[www.feei.it](http://www.feei.it)

G.D.T. ELETTROFORNITURE Sp<sup>a</sup>  
VIA ASCANIO SFORZA 69  
20141 MILANO MI  
phone: + 39 - 290 72 52 83  
fax: + 39 - 29 072 07 59

IMAT FELCO Spa  
VIA SCALABRINI 100  
22100 COMO CO  
phone: + 39 - 31 52 58 01  
fax: + 39 - 31 52 58 02

IMES Srl  
VIA RIMEMBRANZE 41  
21047 SARONNO VA  
phone: + 39 - 29 60 23 10  
fax: + 39 - 296 70 01 30

MATEL Srl  
VIA CA' BASSA 40  
21100 VARESE VA  
phone: + 39 - 332 27 00 11  
fax: + 39 - 332 62 40 64  
[www.matel.it](http://www.matel.it)

MAURI ELETTROFORNITURE Sp<sup>a</sup>  
VIALE LOMBARDIA, 66  
20056 TREZZO D'ADDA MI  
phone: + 39 - 290 99 11  
fax: + 39 - 290 96 19 51  
[www.maurispa.com](http://www.maurispa.com)

MICRO SWITCHES Srl  
VIA HERMADA 15  
20162 MILANO MI  
phone: + 39 - 26 47 07 34  
fax: + 39 - 26 47 04 73

TECNOLOGIC Srl  
VIA MILANO 109/B  
25126 BRESCIA BS  
phone: + 39 - 30 31 47 85  
fax: + 39 - 30 31 51 35

ZETA 3 Srl  
VIA MONCALVO 80  
20146 MILANO MI  
phone: + 39 - 240 09 20 77  
fax: + 39 - 24 07 14 60  
[www.paginegialle.it/zeta3](http://www.paginegialle.it/zeta3)

#### Trentino Alto Adige

CORA ELETTRONICA AUTOMAZIONI Sp<sup>a</sup>\*  
VIALE DEL LAVORO 3  
38068 ROVERETO TN  
phone: + 39 - 464 42 04 56  
fax: + 39 - 464 43 66 73

cora@elcora.it  
[www.elcora.it](http://www.elcora.it)

CEA Srl  
VIA Giotto 1  
39100 BOLZANO BZ  
phone: + 39 - 471 91 49 00  
fax: + 39 - 471 91 52 77

GIOVANNINI MATERIALI ELETTRICI Srl  
LOC. CAMPO TREVINO 50  
38100 TRENTO TN  
phone: + 39 - 461 82 00 00  
fax: + 39 - 461 82 36 07

SELECTRA Sp<sup>a</sup>  
VIA PACINETTI 11  
39100 BOLZANO BZ  
phone: + 39 - 471 55 88 00  
fax: + 39 - 471 55 83 99

#### Veneto

CUSINATI Srl\*  
VIA TORRICELLI 39  
37136 VERONA VR  
phone: + 39 - 459 21 23 33  
fax: + 39 - 459 21 23 00  
[cusinati@cusinati.com](mailto:cusinati@cusinati.com)  
[www.cusinati.com](http://www.cusinati.com)

ELETTRONETTA Sp<sup>a</sup>\*  
VIALE NAVIGAZIONE INT. 48  
35129 PADOVA PD  
phone: + 39 - 498 28 08 11  
fax: + 39 - 498 07 59 02  
[info@elettroneta.it](mailto:info@elettroneta.it)  
[www.elettroneta.it](http://www.elettroneta.it)

MARCHIOLI Srl\*  
VIALE DELLA REPUBBLICA 41  
31050 VILLORBA TV  
phone: + 39 - 422 42 71  
fax: + 39 - 422 42 17 59  
[marchiol@marchiol.com](mailto:marchiol@marchiol.com)  
[www.marchiol.com](http://www.marchiol.com)

MARCHIOLI AUTOMAZIONI Srl\*  
VIA ANTONIO DAL LEGNAME 14  
31100 TREVISO TV  
phone: + 39 - 422 31 36 11  
fax: + 39 - 422 31 36 31  
[marchiol@marchiol.com](mailto:marchiol@marchiol.com)  
[www.marchiol.com](http://www.marchiol.com)

CIME ELECTRO SERVICE Sp<sup>a</sup>  
VIA L. MASSIGNAN 10  
36100 VICENZA VI  
phone: + 39 - 444 22 01 00  
fax: + 39 - 444 56 43 97

ELETTRICA VICENTINA Sp<sup>a</sup>  
VIA ROVERETO 1  
36030 MOTTA DI COSTABISSARA VI  
phone: + 39 - 445 57 56 16  
fax: + 39 - 445 57 54 27

ELETTROFORNITURE Srl  
VIA SALISBURGO 4/C  
37100 VERONA VR  
phone: + 39 - 458 62 03 22  
fax: + 39 - 458 62 01 16

ELETTRONICROSS Srl  
RIVIERA MAESTRI DEL LAVORO 24  
35100 PADOVA PD  
phone: + 39 - 498 29 21 11  
fax: + 39 - 498 70 19 07

ELETTROPADOVA Srl  
VIA C. BATTISTI 20  
35010 LIMENA PD  
phone: + 39 - 498 84 08 80  
fax: + 39 - 498 84 08 82

EMPORIO ELETTRICO Srl  
VIA COMBATTENTI ALLEATI D'EUROPA 8  
45030 BORSEA RO  
phone: + 39 - 425 39 61 11  
fax: + 39 - 425 36 08 46

G.ELETTRICA Srl  
VIA COLOMBARA 113  
30175 P.TO MARGHERA VE  
phone: + 39 - 41 92 10 66  
fax: + 39 - 41 93 25 62

M.E.B. Spa  
VIALE DE GASPERI 19  
36061 BASSANO DEL GRAPPA VI  
phone: + 39 - 424 88 71 11  
fax: + 39 - 42 48 87 22  
www.mebspa.it

M.E.I.S. Srl  
VIA LAGO DI COSTANZA 1  
36015 SCHIO VI  
phone: + 39 - 445 57 52 72  
fax: + 39 - 445 57 55 58

META COMMERCIALE MAT. ELETTRICI  
Srl

VIA E. FERMI 13  
37100 VERONA VR  
phone: + 39 - 458 20 15 20  
fax: + 39 - 458 20 15 25

PEDRON Spa  
VIA BASSO ACQUAR 40/42  
37135 VERONA VR  
phone: + 39 - 458 05 15 00  
fax: + 39 - 458 05 15 55  
www.pedron.it

SIME Spa  
VIA TORRICELLI, 9  
37135 VERONA VR  
phone: + 39 - 458 27 08 27  
fax: + 39 - 458 27 08 70

V.I.M.E. Srl  
VIA L. DA VINCI 13/A  
30036 S. MARIA DI SALA VE  
phone: + 39 - 41 48 69 22  
fax: + 39 - 41 48 67 31

#### Friuli Venezia Giulia

ELETTROLUCE Sas  
VIA STIRIA - PARTIGROSS  
33100 UDINE UD  
phone: + 39 - 432 52 22 22  
fax: + 39 - 432 52 18 82

EMPORIO ELETTRICO TOFFOLI Srl  
VIALE TRENTO 45  
33077 SACILE PN  
phone: + 39 - 43 47 25 74  
fax: + 39 - 434 78 04 33

PORDELETTRICA Spa  
VIA CHIAVORNICCO 86 ZONA IND.  
ART  
33084 CORDENONS PN  
phone: + 39 - 434 53 22 53  
fax: + 39 - 43 44 41 48

VIGNUDA Spa  
VIA VENEZIA 2  
33038 S. DANIELE DEL FRIULI UD  
phone: + 39 - 432 94 64 60  
fax: + 39 - 432 94 64 90

#### Emilia Romagna

B.C.R. Srl\*  
VIA PRAGA 7/17  
41049 SASSUOLO MO  
phone: + 39 - 536 99 96 11  
fax: + 39 - 536 80 71 44  
info@bcr-srl.it web: www.bcr-srl.it

BELLENTANI FRATELLI Srl \*  
VIA OBERDAN 7  
42100 REGGIO EMILIA RE  
phone: + 39 - 522 38 16 66  
fax: + 39 - 522 79 16 22  
bellenta@tin.it  
www.bellentani.it

ELFI Spa\*  
VIA RIO BECCA 2/B  
47100 FORLÌ FO  
phone: + 39 - 543 75 42 01  
fax: + 39 - 543 75 63 94  
commerciale.fo@elfispait  
www.elfispait

FABBI IMOLA Srl \*  
VIA ALLENDE 10  
40026 IMOLA BO  
phone: + 39 - 542 64 19 99  
fax: + 39 - 542 64 08 20  
info@fabbiiimola.com  
www.fabbiiimola.com

FEP RIMONDI Spa \*  
VIA BADINI 7/4  
40050 QUARTO INFERIORE BO  
phone: + 39 - 516 06 09 11  
fax: + 516 06 09 99  
claudia.maini@fepremondi.it

FINPOLO Spa\*  
VIA G.BALLA 11 - 42040 CELLA RE  
phone: + 39 - 52 29 40 41  
fax: + 39 - 522 94 41 00  
commerciale@finpolo.it  
www.finpolo.it

FRANCHINI LAMBERTO Spa\*  
VIA DEL COMMERCIO 72  
41058 VIGNOLA MO  
phone: + 39 - 59 77 87 11  
fax: + 39 - 59 76 26 69  
franchini@franchini.it  
www.franchini.it

FUTURTEC Srl\*  
VIA DEL COMMERCIO 35  
41058 VIGNOLA MO  
phone: + 39 - 59 77 87 03  
fax: + 39 - 59 77 87 29  
info@futurtec.it  
www.futurtec.it

INDUSTRIALE ELETTRICA Srl\*  
VIA PIRANDELLO 2  
43100 PARMA PR  
phone: + 39 - 521 29 38 24  
fax: + 39 - 521 29 16 55  
info@industrialelettrica.com  
www.industrialelettrica.com

SELFOR Srl \*  
STRADA NUOVA NAVIGLIO 4/C  
43100 PARMA PR  
phone: + 39 - 521 82 42  
fax: + 39 - 521 79 82 27  
info@elgros.net

#### SELFOR PIACENZA Srl \*

VIA TOSCANA 15  
29100 PIACENZA PC  
phone: + 39 - 523 60 96 22  
fax: + 39 - 523 60 96 25  
selforpc@virgilio.it

ACERO Srl  
VIA CALZI 30  
48018 FAENZA RA  
phone: + 39 - 546 62 07 31  
fax: + 39 - 546 62 14 50

CO.M.EL Srl  
VIA OBERDAN 2/D  
41034 FINALE EMILIA MO  
phone: + 39 - 535 76 00 77  
fax: + 39 - 535 76 06 12

CO.MET. Spa  
VIA MICHELINO 105  
40127 BOLOGNA BO  
phone: + 39 - 516 07 92 01  
fax: + 39 - 516 33 02 55

ELETTRIFORNITURE FORNACIARI  
Snc  
STRADA STATALE 467 140 LOC. S.  
ANTONINO  
42010 CASALGRANDE RE  
phone: + 39 - 536 82 33 63  
fax: + 39 - 536 82 43 04

ELETTROSERVICE Srl  
VIA J.F.KENNEDY 37  
42100 REGGIO EMILIA RE  
phone: + 39 - 522 30 43 47  
fax: + 39 - 522 30 87 53

CA.M.EL. S.R.L.  
VIA S.ANNI 580/B  
41100 MODENA  
tel 059 - 311677  
fax 059 - 312858  
info@materialeelettric.com.it

G.F.Z. Srl  
VIALE XXVIII SETTEMBRE 59  
41049 SASSUOLO MO  
phone: + 39 - 536 80 71 61  
fax: + 39 - 536 80 26 38

P.B.E. COMMERCIALE Srl  
VIA ALDO MORO 35  
41043 FORMIGINE MO  
phone: + 39 - 59 57 04 60  
fax: + 39 - 59 55 61 73

PAN ELETTRA Srl  
VIA V.CAGNI 10  
41037 MIRANDOLA MO  
phone: + 39 - 5 352 63 60  
fax: + 39 - 53 52 45 08

REXEL ITALIA Spa  
VIA BUCCARI 4  
48100 RAVENNA RA  
phone: + 39 - 544 45 10 81  
fax: + 39 - 544 45 61 68

REXEL ITALIA Spa  
VIA B.FRANKLIN 31  
43100 PARMA PR  
phone: + 39 - 05 21 60 65 11  
fax: + 39 - 05 21 60 65 15

S.A.I. ELECTRIC Srl  
VIA DINO FERRARI 46  
41053 MARANELLO MO  
phone: + 39 - 536 94 14 15  
fax: + 39 - 536 94 35 81

#### Toscana

ELFI Srl\*  
VIA PESCIATINA 354  
55010 LUNATA CAPANNORI LU  
phone: + 39 - 583 42 94 29  
fax: + 39 - 583 42 93 52  
elfi@itechsite.com  
www.itechsite.com

M.E.F. Srl\*  
VIA PANCIATICHI 68  
50127 FIRENZE FI  
phone: + 39 - 554 36 21 10  
fax: + 39 - 554 36 21 73  
mefsr@mefsr.it  
www.mefsr.it

A.POLVERINI E FIGLI Spa  
VIA CALAMANDREI 65/67  
52100 AREZZO AR  
phone: + 39 - 575 37 04 52  
fax: + 39 - 575 35 03 56  
www.web.tin.it/polverinispa

ELECTRA COMMERCIALE Srl  
VIA S. GIMIGNANO 85  
53036 POGGIBONSI SI  
phone: + 39 - 577 98 46 11  
fax: + 39 - 577 93 59 58  
info@electracommerciale.it  
www.electracommerciale.it

ELETTOFORNITURE MARINI Spa  
VIALE IPPOLITO NIEVO 29/33  
57100 LIVORNO LI  
phone: + 39 - 586 40 21 50  
fax: + 39 - 586 40 20 68

IMEP Srl  
VIA DEL LAZZERETTO 53/55  
59100 PRATO PO  
phone: + 39 - 57 45 33 41  
fax: + 39 - 574 59 68 24

L'ELETTRICA Srl  
VIA CACIAGLI 1/3  
50053 EMPOLI FI  
phone: + 39 - 571 95 11  
fax: + 39 - 571 95 12 06

PANDOLFI Srl  
VIA ARETINA 161  
50136 FIRENZE FI  
phone: + 39 - 55 66 09 34  
fax: + 39 - 55 67 83 02

TOTI LUCIANO Srl  
VIA OBERDAN 13/47  
59100 PRATO PO  
phone: + 39 - 574 60 54 19  
fax: + 39 - 574 60 54 14

#### Marche

ELETTROMATIC Srl\*  
VIA G.DIVITTORIO 28/A  
60044 FABRIANO AN  
phone: + 39 - 732 62 74 87  
fax: + 39 - 732 62 67 27  
elettromatic@fastnet.it

S.E.I. Sas\*  
VIA DIVISIONE ACQUI, 111  
61100 PESARO PS  
phone: + 39 - 721 28 91 03  
fax: + 39 - 721 28 99 37  
seipesaro@inwind.it

<b>TECNOFORNITURE Srl*</b> VIA PASUBIO 106 FRAZ. P.TO D'ASCOLI 63039 S.BENEDETTO DEL TRONTO AP phone: + 39 - 73 57 61 71 fax: + 39 - 735 65 52 66 tecnofor@insinet.it www.tecnoforniture.it	<b>ONORATI ELETTOFORNITURE Srl</b> VIA NASCOSA 107 04100 LATINA LT phone: + 39 - 773 60 10 56 fax: + 39 - 773 60 10 39	<b>SONEPAR PUGLIA Spa</b> VIA BITRITTO KM. 7+800 Cda La Marchesa 4 70026 MODUGNO BA phone: + 39 - 805 06 10 99 fax: + 39 - 805 06 14 30	<b>SONEPAR PUGLIA Spa</b> ZONA P.I.P.LOTTO 9 73042 CASARANO LE phone: + 39 - 833 33 27 54 fax: + 39 - 833 51 29 15
<b>FRATONI FORNITURE DI A.FRATONI</b> S.S. REGINA KM 3+100 62018 POTENZA PICENA MC phone: + 39 - 733 88 41 31 fax: + 39 - 733 67 71 34	<b>R.E.R. RADIO ELETTRICA ROMANA Srl</b> VIA IDROVORE DELLA MAGLIANA 75/A 00148 ROMA RM phone: + 39 - 66 53 37 41 fax: + 39 - 66 53 51 28 reinfo@gruppoper.com	<b>SONEPAR PUGLIA Spa</b> VIA ACCOLTI GIL, 22 Z.I. 70100 BARI BA phone: + 39 - 805 31 30 30 fax: + 39 - 805 31 30 22	<b>SONEPAR PUGLIA Spa</b> STR ROV. ANDRIA/TRANI KM 1,500 70031 ANDRIA BA phone: + 39 - 883 59 29 34 fax: + 39 - 883 55 31
<b>IME Srl</b> VIA BRODOLINI ZONA IND. ZIPA 60035 JESI AN phone: + 39 - 731 20 57 22 fax: + 39 - 73 15 60 50	<b>Abruzzi</b> <b>C.E.I.T. Srl*</b> VIA CUSTOZA 26C-ZONA INDUSTRIALE 66013 CHIETI SCALO CH phone: + 39 - 0871564947 fax: + 39 - 0871565034 ceitsrl@tin.it www.ceit.it	<b>Campania</b> <b>MAJORANO Spa*</b> VIA ARGINE 508 80147 NAPOLI NA phone: + 39 - 815 91 41 11 fax: + 39 - 815 91 42 29 info@majorano.it www.majorano.it	<b>SONEPAR PUGLIA Spa</b> VIA BITRITTO KM. 7+800 Cda La Marchesa 4 70026 MODUGNO BA phone: + 39 - 805 06 10 99 fax: + 39 - 805 06 14 30
<b>TARLAZZI Spa</b> VIA F.LLI KENNEDY 7/9 62010 SFORZACOSTA MC phone: + 39 - 733 20 32 05 fax: + 39 - 733 20 33 04	<b>ELETTRIMPIANTI SYSTEMS Srl</b> ZONA IND.LE VIA MAMMARELLA 66013 CHIETI SCALO CH phone: + 39 - 87 15 87 71 fax: + 39 - 87 16 18 57	<b>CO.M.EL. Srl</b> VIA S. LEONARDO 143 84131 SALERNO SA phone: + 39 - 89 33 25 73 fax: + 39 - 89 71 00 00	<b>SONEPAR PUGLIA Spa</b> VIA ACCOLTI GIL, 22 Z.I. 70100 BARI BA phone: + 39 - 805 31 30 30 fax: + 39 - 805 31 30 22
<b>Umbria</b>	<b>Molise</b> <b>ACMEI SUD Spa*</b> VIA PISA 16 74100 TARANTO TA phone: + 39 - 997 79 74 90 fax: + 39 - 997 79 74 95 acmei@acmei.it www.acmei.it	<b>MEGAWATT Srl</b> VIA PADULA 63/69 80026 CASORIA NA phone: + 39 - 817 58 30 42 fax: + 39 - 817 57 27 79	<b>Calabria</b>
<b>DIS.M.E.P. Srl*</b> VIA P. SORIANO 51/53 06100 S.ANDREA DELLE FRATTE PG phone: + 39 - 755 28 90 47 fax: + 39 - 755 27 06 55 dismep@dismep.it www.dismep.it	<b>ACMEI SUD Spa*</b> VIA BARI KM 1,00 71100 FOGGIA FG phone: + 39 - 881 33 16 11 fax: + 39 - 881 33 16 29 acmei@acmei.it www.acmei.it	<b>VINCENZO CANGIANO Spa</b> VIA NAZ. DELLE PUGLIE 178/B 80026 CASORIA NA phone: + 39 - 815 50 31 11 fax: + 39 - 815 50 31 95	<b>ACMEI SUD Spa*</b> VIA ACHILLE SALVUCCI 9/E 70056 MOLFETTA BA phone: + 39 - 803 38 78 60 fax: + 39 - 803 38 78 61 acmei@acmei.it www.acmei.it
<b>BARBACCIA MARIO Srl</b> VIA DEL MAGLIO 38 05100 TERNI TR phone: + 39 - 744 30 02 91 fax: + 39 - 744 30 09 43	<b>ACMEI SUD Spa*</b> VIA ACHILLE SALVUCCI 9/E 70056 MOLFETTA BA phone: + 39 - 803 38 78 60 fax: + 39 - 803 38 78 61 acmei@acmei.it www.acmei.it	<b>Puglia</b> <b>ACMEI SUD Spa*</b> VIA BARI KM 1,00 71100 FOGGIA FG phone: + 39 - 881 33 16 11 fax: + 39 - 881 33 16 29 acmei@acmei.it www.acmei.it	<b>ACMEI SUD Spa*</b> S.S. 16 KM 810,200 70019 TRIGGIANO BA phone: + 39 - 805 49 53 00 fax: + 39 - 805 49 53 24 acmei@acmei.it www.acmei.it
<b>Lazio</b>	<b>ACMEI SUD Spa*</b> VIA ACHILLE SALVUCCI 9/E 70056 MOLFETTA BA phone: + 39 - 803 38 78 60 fax: + 39 - 803 38 78 61 acmei@acmei.it www.acmei.it	<b>ACMEI SUD Spa*</b> VIA BARI KM 1,00 71100 FOGGIA FG phone: + 39 - 881 33 16 11 fax: + 39 - 881 33 16 29 acmei@acmei.it www.acmei.it	<b>ACMEI SUD Spa</b> VIA PISA 16 74100 TARANTO TA phone: + 39 - 997 79 74 90 fax: + 39 - 997 79 74 95 acmei@acmei.it www.acmei.it
<b>FELMEC DI ANGELO TESTANI*</b> LOCALITA' PONTE DEL TREMIO 03012 ANAGNI FR phone: + 39 - 775 76 79 95 fax: + 39 - 755 76 94 63 felmec@felmec.it www.felmec.it	<b>ACMEI SUD Spa*</b> VIA ACHILLE SALVUCCI 9/E 70056 MOLFETTA BA phone: + 39 - 803 38 78 60 fax: + 39 - 803 38 78 61 acmei@acmei.it www.acmei.it	<b>PUGLIELETTRICA Srl</b> VIA DELLE VIOLETTE C.DA LOCHIANO Z.I.LE 70026 MODUGNO BA phone: + 39 - 805 36 19 11 fax: + 39 - 805 36 19 45	<b>PUGLIELETTRICA Srl</b> VIA DELLE VIOLETTE C.DA LOCHIANO Z.I.LE 70026 MODUGNO BA phone: + 39 - 805 36 19 11 fax: + 39 - 805 36 19 45
<b>GISSÈS ELETTRONICA Srl*</b> VIA DEI GRECI 04100 LATINA LT phone: + 39 - 773 26 80 60 fax: + 39 - 773 26 80 10 giessersrl@tin.it www.giesseler@componenti-elettronici.com	<b>ACMEI SUD Spa*</b> VIA ACHILLE SALVUCCI 9/E 70056 MOLFETTA BA phone: + 39 - 803 38 78 60 fax: + 39 - 803 38 78 61 acmei@acmei.it www.acmei.it	<b>SONEPAR PUGLIA Spa</b> VIA ACHILLE SALVUCCI 9/E 70056 MOLFETTA BA phone: + 39 - 803 38 78 60 fax: + 39 - 803 38 78 61 acmei@acmei.it www.acmei.it	<b>SONEPAR PUGLIA Spa</b> ZONA P.I.P.LOTTO 9 73042 CASARANO LE phone: + 39 - 833 33 27 54 fax: + 39 - 833 51 29 15
<b>MAJORANO LAZIO Srl*</b> SS CASILINA Km 76,800 03013 FERENTINO FR phone: + 39 - 775 24 10 70 fax: + 39 - 775 24 10 60 piero.villani@frosinone.majorano.it www.majorano.it	<b>ACMEI SUD Spa*</b> S.S. 16 KM 810,200 70019 TRIGGIANO BA phone: + 39 - 805 49 53 00 fax: + 39 - 805 49 53 24 acmei@acmei.it www.acmei.it	<b>PUGLIELETTRICA Srl</b> VIA DELLE VIOLETTE C.DA LOCHIANO Z.I.LE 70026 MODUGNO BA phone: + 39 - 805 36 19 11 fax: + 39 - 805 36 19 45	<b>SONEPAR PUGLIA Spa</b> STR ROV. ANDRIA/TRANI KM 1,500 70031 ANDRIA BA phone: + 39 - 883 59 29 34 fax: + 39 - 883 55 31
<b>C.T.A Srl</b> VIA DELLA GENETICA 12 02010 VAZIA RIETI RI phone: + 39 - 746 22 10 06 fax: + 39 - 746 49 51 04	<b>SONEPAR PUGLIA Spa</b> VIA P.I.P.LOTTO 9 73042 CASARANO LE phone: + 39 - 833 33 27 54 fax: + 39 - 833 51 29 15	<b>SONEPAR PUGLIA Spa</b> VIA P.I.P.LOTTO 9 73042 CASARANO LE phone: + 39 - 833 33 27 54 fax: + 39 - 833 51 29 15	<b>SONEPAR PUGLIA Spa</b> VIA ACCOLTI GIL, 22 Z.I. 70100 BARI BA phone: + 39 - 805 31 30 30 fax: + 39 - 805 31 30 22
<b>GARGANO &amp; MILIONI E C. Srl</b> VIA CHIUSA NOVA 03049 S.ELIA FIUMERAPIDO FR phone: + 39 - 776 35 02 65 fax: + 39 - 776 42 58 84	<b>SONEPAR PUGLIA Spa</b> STR ROV. ANDRIA/TRANI KM 1,500 70031 ANDRIA BA phone: + 39 - 883 59 29 34 fax: + 39 - 883 55 31	<b>PUGLIELETTRICA Srl</b> VIA DELLE VIOLETTE C.DA LOCHIANO Z.I.LE 70026 MODUGNO BA phone: + 39 - 805 36 19 11 fax: + 39 - 805 36 19 45	<b>SONEPAR PUGLIA Spa</b> VIA ACCOLTI GIL, 22 Z.I. 70100 BARI BA phone: + 39 - 805 31 30 30 fax: + 39 - 805 31 30 22

SONEPAR PUGLIA Spa  
VIA BITRITTO KM. 7+800 Cda La Marchesa 4  
7022 MODUGNO BA  
phone: + 39 - 805 06 10 99  
fax: + 39 - 805 06 14 30

SONEPAR PUGLIA Spa  
VIA ACCOLTI GIL, 22 Z.I.  
70100 BARI BA  
phone: + 39 - 805 31 30 30  
fax: + 39 - 805 31 30 22

### Sicilia

WELLER ITALIA Srl  
VIA SILVIO PELLICO 5  
95123 CATANIA CT  
phone: + 39 - 95 35 18 55  
fax: + 39 - 95 35 66 02

### Sardegna

CAREDDU RAIMONDO  
VIA MONASTIR, 110  
09100 CAGLIARI CA  
phone: + 39 - 70 28 81 08  
fax: + 39 - 70 27 12 54

SONEPAR SARDEGNA Spa  
VIALE MARCONI 165  
09100 CAGLIARI CA  
phone: + 39 - 70 48 51 51  
fax: + 39 - 70 40 00 59

\* Note: Favourites Distributors

## Netherlands

### Sales office Hoofddorp:

OMRON ELECTRONICS B.V.  
Wegalaan 61  
2132 JD Hoofddorp  
P.O. Box 582  
2130 AN Hoofddorp  
phone: + 31 - 23 568 11 00  
fax: + 31 - 23 568 11 88  
omron.nl@eu.omron.com  
www.omron.nl

### Distributors in the Netherlands:

#### GRONINGEN

Rexel Nederland  
Osloweg 57  
9723 BH GRONINGEN  
phone: + 31 - 50 318 43 60  
fax: + 31 - 50 313 83 78  
www.rexel.nl

Solar Elektro B.V.  
Osloweg 95  
9723 BK GRONINGEN  
phone: + 31 - 50 317 12 90  
fax: + 31 - 50 312 03 31  
www.solarelektra.nl

Elektrotechnische Groothandel Bernard BV  
Koldingweg 9  
9723 HL GRONINGEN  
phone: + 31 - 50 544 51 51  
fax: + 31 - 50 541 46 96  
www.bernard.nl

Technische Unie  
Jeverweg 75  
9723 JE GRONINGEN  
phone: + 31 - 50 590 01 00  
fax: + 31 - 50 312 76 12  
www.technischeunie.com

Ehrbecker Schiebelbusch B.V.  
Gotenburgweg 38  
9723 TM GRONINGEN  
phone: + 31 - 50 544 41 41  
fax: + 31 - 50 541 11 43  
www.ehrbecker-schiebelbusch.nl

#### FRIESLAND

Elektrotechnische Groothandel Bernard B.V.  
Venus 31  
8448 CE HEERENVEEN  
phone: + 31 - 513 46 80 00  
fax: + 31 - 513 46 80 01  
www.bernard.nl

Solar Elektro B.V.  
Jupiterweg 20  
8938 AE LEEUWARDEN  
phone: + 31 - 58 284 69 69  
fax: + 31 - 58 288 65 74  
www.solarelektra.nl

Technische Unie  
Zuiderkruisweg 1  
8938 AP LEEUWARDEN  
phone: + 31 - 58 284 79 99  
fax: + 31 - 58 288 23 92  
www.technischeunie.com

Koopmans en Zwart Elektrotechniek B.V.  
Zuiderkruisweg 3  
8938 AP LEEUWARDEN  
phone: + 31 - 58 288 70 75  
fax: + 31 - 58 288 49 60  
www.koopmansenzwart.nl

Solar Elektro B.V.  
Eurolaan 5  
8466 SM NIJEHASKE (HEERENVEEN)  
phone: + 31 - 513 65 60 20  
fax: + 31 - 513 65 32 98  
www.solarelektra.nl

Conelgro B.V.  
Lorentzstraat 21  
8606 JP SNEEK  
phone: + 31 - 515 41 13 11  
fax: + 31 - 515 42 36 95  
www.conelgro.nl

#### DRENTHÉ

Solar Elektro B.V.  
Wiltonstraat 11  
9403 AV ASSEN  
phone: + 31 - 592 34 38 41  
fax: + 31 - 592 34 19 55  
www.solarelektra.nl

Technische Unie  
2e Bokslootweg 10-12  
7821 AS EMMEN  
phone: + 31 - 591 65 76 57  
fax: + 31 - 591 64 29 42  
www.technischeunie.com

Koopmans en Zwart Elektrotechniek B.V.  
Hesselerlandweg 75  
7942 HZ MEPPEL  
phone: + 31 - 522 27 01 21  
fax: + 31 - 522 27 01 22  
www.koopmansenzwart.nl

Rexel Nederland  
Industrieweg 11  
7944 HT MEPPEL  
phone: + 31 - 522 26 50 00  
fax: + 31 - 522 25 97 44  
www.rexel.nl

#### OVERIJSSSEL

Technische Unie  
Twentepoort Oost 44  
7609 RG ALMELO  
phone: + 31 - 546 53 41 41  
fax: + 31 - 546 53 41 82  
www.technischeunie.com

Elektrotechnische Groothandel Bernard BV  
Twentepoort Oost 53  
7609 RG ALMELO  
phone: + 31 - 546 86 26 61  
fax: + 31 - 546 87 23 05  
www.bernard.nl

Technische Unie  
Hanzeweg 34  
7418 AT DEVENTER  
phone: + 31 - 570 66 16 16  
fax: + 31 - 570 62 56 02  
www.technischeunie.com

Elektrotechnische Groothandel Bernard BV  
Hamburgweg 8  
7418 ES DEVENTER  
phone: + 31 - 570 62 24 32  
fax: + 31 - 570 62 50 68  
www.bernard.nl

Solar Elektro B.V.  
Twekkeler-Es 7  
7547 ST ENSCHEDE  
phone: + 31 - 53 484 66 66  
fax: + 31 - 53 484 66 99  
www.solarelektra.nl

Technische Unie  
De Giem 35  
7547 SW ENSCHEDE  
phone: + 31 - 53 480 41 41  
fax: + 31 - 53 432 55 88  
www.technischeunie.com

Technische Unie  
Loggerweg 5  
8042 PG ZWOLLE  
phone: + 31 - 38 425 84 25  
fax: + 31 - 38 422 15 99  
www.technischeunie.com

#### GELDERLAND

Ehrbecker Schiebelbusch B.V.  
Blekersweg 15  
7312 GK APELDOORN  
phone: + 31 - 55 357 83 83  
fax: + 31 - 55 355 35 30  
www.ehrbecker-schiebelbusch.nl

Solar Elektro B.V.  
Vissenstraat 32  
7324 AL APELDOORN  
phone: + 31 - 55 368 06 50  
fax: + 31 - 55 366 57 62  
www.solarelektra.nl

Technische Unie  
Vlamoven 33  
6826 TM ARNHEM  
phone: + 31 - 26 365 04 65  
fax: + 31 - 26 365 04 82  
www.technischeunie.com

Ehrbecker Schiebelbusch B.V.  
Leemansweg 26  
6827 BX ARNHEM  
phone: + 31 - 26 384 46 10  
fax: + 31 - 364 12 18  
www.ehrbecker-schiebelbusch.nl

#### Rexel Nederland

Johannes Huddeweg 7  
6827 CA ARNHEM  
phone: + 31 - 26 362 92 04  
fax: + 31 - 26 363 62 26  
www.rexel.nl

Rexel Bolderheij  
Johannes Huddeweg 7  
6827 CA ARNHEM  
phone: + 31 - 26 363 85 03  
fax: + 31 - 26 362 32 98  
www.rexel.nl

Elektrotechnische Groothandel Bernard BV  
Doetinchemseweg 63  
7007 CB DOETINCHEM  
phone: + 31 - 314 36 56 00  
fax: + 31 - 314 37 80 28  
www.bernard.nl

Van Egmond Elektrogroothandel B.V.  
Logistiekweg 34  
7007 CJ DOETINCHEM  
phone: + 31 - 314 37 53 00  
fax: + 31 - 314 37 53 33  
www.vanegmond.nl

Solar Elektro B.V.  
Effect 5  
6921 RG DUVEN  
phone: + 31 - 26 319 42 00  
fax: + 31 - 26 365 23 95  
www.solarelektra.nl

Technische Unie  
Maxwellstraat 39  
6716 BX EDE GLD  
phone: + 31 - 318 66 47 64  
fax: + 31 - 318 66 47 82  
www.technischeunie.com

Rexel Nederland  
Fahrenheitstraat 45-1  
3846 CC HARDERWIJK  
phone: + 31 - 341 48 02 46  
fax: + 31 - 341 46 07 52  
www.rexel.nl

Technische Unie  
Mercuriusstraat 1  
6541 BM NIJMEGEN  
phone: + 31 - 24 372 55 66  
fax: + 31 - 24 378 98 55  
www.technischeunie.com

Elektrotechnische Groothandel Bernard BV  
Dr. de Blecourtstraat 49  
6541 DG NIJMEGEN  
phone: + 31 - 24 373 47 67  
fax: + 31 - 24 373 47 64  
www.bernard.nl

UTRECHT  
Solar Elektro B.V.  
Vanadiumweg 25  
3812 PX AMERSFOORT  
phone: + 31 - 33 463 13 66  
fax: + 31 - 33 463 80 00  
www.solarelektra.nl

Technische Unie  
Cobolweg 5  
3821 BJ AMERSFOORT  
phone: + 31 - 33 453 52 51  
fax: + 31 - 33 455 07 32  
www.technischeunie.com

Technische Unie  
Liesbosch 88  
3439 LC NIEUWEGEIN  
phone: + 31 - 30 266 92 66  
fax: +31 - 30 266 92 82  
[www.technischeunie.com](http://www.technischeunie.com)

Rexel Nederland  
Ravenswade 5  
3439 LD NIEUWEGEIN  
phone: + 31 - 30 288 02 80  
fax: +31 - 30 288 82 40  
[www.rexel.nl](http://www.rexel.nl)

Solar Elektro B.V.  
Ravenswade 90  
3439 LD NIEUWEGEIN  
phone: + 31 - 30 288 87 94  
fax: +31 - 30 288 40 54  
[www.solarelektrou.nl](http://www.solarelektrou.nl)

Elektrotechnische Groothandel Bernard BV  
Amsterdamsstraatweg 640  
3555 HX UTRECHT  
phone: + 31 - 30 243 93 44  
fax: +31 - 30 243 80 68  
[www.bernard.nl](http://www.bernard.nl)

Technische Unie  
Hudsondreef 32  
3565 AV UTRECHT  
phone: + 31 - 30 263 16 31  
fax: +31 - 30 262 54 54  
[www.technischeunie.com](http://www.technischeunie.com)

Solar Elektro B.V.  
Kruisboog 15  
3905 TE VEENENDAAL  
phone: + 31 - 318 58 18 55  
fax: +31 - 318 69 24 14  
[www.solarelektrou.nl](http://www.solarelektrou.nl)

#### NOORD-HOLLAND

Technische Unie  
Ivoorstraat 2  
1812 RE ALKMAAR  
phone: + 31 - 72 567 67 67  
fax: +31 - 72 540 23 63  
[www.technischeunie.com](http://www.technischeunie.com)

Rexel Nederland  
Edisonweg 1  
1821 BN ALKMAAR  
phone: + 31 - 72 518 13 00  
fax: +31 - 72 515 76 00  
[www.rexel.nl](http://www.rexel.nl)

Technische Unie  
Dynamostraat 5  
1014 BN AMSTERDAM  
phone: + 31 - 20 581 21 21  
fax: +31 - 20 686 27 91  
[www.technischeunie.com](http://www.technischeunie.com)

Rexel Electrometaal  
Gyroscoopweg 100  
1042 AX AMSTERDAM  
phone: + 31 - 20 506 06 66  
fax: +31 - 20 506 06 99  
[www.rexel.nl](http://www.rexel.nl)

Ehrbecker Schiefelbusch B.V.  
Kapoeasweg 12  
1043 AD AMSTERDAM  
phone: + 31 - 20 448 96 80  
fax: +31 - 20 448 96 89  
[www.ehrbecker-schiefelbusch.nl](http://www.ehrbecker-schiefelbusch.nl)

Technische Unie  
H.J.E. Wenckebachweg 171  
1096 AM AMSTERDAM  
phone: + 31 - 20 560 85 00  
fax: +31 - 20 692 24 01  
[www.technischeunie.com](http://www.technischeunie.com)

Solar Elektro B.V.  
Lemelerbergweg 25  
1101 AJ AMSTERDAM ZUIDOOST  
phone: + 31 - 20 693 68 21  
fax: +31 - 20 668 16 62  
[www.solarelektrou.nl](http://www.solarelektrou.nl)

Solar Elektro B.V.  
Gooiland 55  
1948 RD BEVERWIJK  
phone: + 31 - 251 28 48 00  
fax: +31 - 251 22 20 06  
[www.solarelektrou.nl](http://www.solarelektrou.nl)

Elektrotechnische Groothandel Bernard BV  
Verrijn Stuartweg 28  
1112 AX DIEMEN  
phone: + 31 - 20 461 00 99  
fax: +31 - 20 398 72 00  
[www.bernard.nl](http://www.bernard.nl)

Rexel Nederland  
Waarderweg 35  
2031 BN HAARLEM  
phone: + 31 - 23 531 94 92  
fax: +31 - 23 532 89 53  
[www.rexel.nl](http://www.rexel.nl)

Technische Unie  
Conradweg 30  
2031 CM HAARLEM  
phone: + 31 - 23 512 31 23  
fax: +31 - 23 532 73 96  
[www.technischeunie.com](http://www.technischeunie.com)

Elektrotechnische Groothandel Bernard BV  
Newtonstraat 24-26  
1704 SB HEERHUGOWAARD  
phone: + 31 - 72 576 02 33  
fax: +31 - 72 576 02 34  
[www.bernard.nl](http://www.bernard.nl)

Technische Unie  
Nieuwe Havenweg 43  
1216 BK HILVERSUM  
phone: + 31 - 35 655 77 55  
fax: +31 - 35 655 77 82  
[www.technischeunie.com](http://www.technischeunie.com)

Rexel Bolderheij  
Huizermaatweg 50  
1276 LB HUIZEN  
phone: + 31 - 35 526 14 12  
fax: +31 - 35 526 70 40  
[www.rexel.nl](http://www.rexel.nl)

Technische Unie  
Gerrit Kiststraat 23  
1506 SZ ZAANDAM  
phone: + 31 - 75 659 05 90  
fax: +31 - 75 659 05 82  
[www.technischeunie.com](http://www.technischeunie.com)

Waagmeester Elektro B.V.  
Kleine Tocht 6  
1507 CB ZAANDAM  
phone: + 31 - 75 655 51 00  
fax: +31 - 75 655 51 55  
[www.waagmeester.nl](http://www.waagmeester.nl)

#### ZUID-HOLLAND

Solar Elektro B.V.  
Curieweg 4a  
2408 BZ ALPHEN AAN DEN RIJN  
phone: + 31 - 172 42 76 86  
fax: +31 - 172 23 36 86  
[www.solarelektrou.nl](http://www.solarelektrou.nl)

Rexel Nederland  
Zuideinde 10  
2991 LK BARENDRECHT  
phone: + 31 - 180 61 14 44  
fax: +31 - 180 61 98 89  
[www.rexel.nl](http://www.rexel.nl)

Solar Elektro B.V.  
Verbreepark 19  
2731 BR BENTHUIZEN  
phone: + 31 - 79 342 88 80  
fax: +31 - 79 342 58 06  
[www.solarelektrou.nl](http://www.solarelektrou.nl)

Elektrotechnische Groothandel Bernard BV  
Lijlantse Baan 6  
2908 LG CAPELLE AAN DEN IJSSEL  
phone: + 31 - 10 459 75 55  
fax: +31 - 10 450 66 86  
[www.bernard.nl](http://www.bernard.nl)

Technische Unie  
Rivium Oostlaan 51-59  
2909 LL CAPELLE AAN DEN IJSSEL  
phone: + 31 - 10 266 71 66  
fax: +31 - 10 266 71 82  
[www.technischeunie.com](http://www.technischeunie.com)

Technische Unie  
Jupiterkade 7  
2516 BS DEN HAAG  
phone: + 31 - 70 315 16 16  
fax: +31 - 70 315 16 82  
[www.technischeunie.com](http://www.technischeunie.com)

Technische Unie  
Zilverstraat 100  
2544 EL DEN HAAG  
phone: + 31 - 70 359 43 59  
fax: +31 - 70 366 77 34  
[www.technischeunie.com](http://www.technischeunie.com)

Technische Unie  
Röntgenstraat 19  
3316 GT DORDRECHT  
phone: + 31 - 78 654 66 66  
fax: +31 - 78 618 36 43  
[www.technischeunie.com](http://www.technischeunie.com)

Rexel Nederland  
James Wattstraat 8-8a  
2809 PA GOUDA  
phone: + 31 - 182 53 31 77  
fax: +31 - 182 57 02 51  
[www.rexel.nl](http://www.rexel.nl)

Technische Unie  
Marconistraat 36  
2809 PE GOUDA  
phone: + 31 - 182 54 12 41  
fax: +31 - 182 54 12 82  
[www.technischeunie.com](http://www.technischeunie.com)

Technische Unie  
Flevoweg 16  
2318 BZ LEIDEN  
phone: + 31 - 71 568 15 68  
fax: +31 - 71 522 68 75  
[www.technischeunie.com](http://www.technischeunie.com)

Elektrotechnische Groothandel Bernard BV  
Hoogwerf 19  
2681 RT MONSTER  
phone: + 31 - 174 28 30 20  
fax: +31 - 174 28 39 59  
[www.bernard.nl](http://www.bernard.nl)

E.T.G. Van de Meerakker B.V.  
Glasblazerstraat 1  
2984 BL RIDDERKERK  
phone: + 31 - 180 41 06 35  
fax: +31 - 180 41 08 27  
[www.meerakker.nl](http://www.meerakker.nl)

Technische Unie  
Schuttevaerweg 76  
3044 BB ROTTERDAM  
phone: + 31 - 10 208 06 08  
fax: +31 - 10 208 06 82  
[www.technischeunie.com](http://www.technischeunie.com)

Solar Elektro B.V.  
Bristolstraat 1  
3047 AB ROTTERDAM  
phone: + 31 - 10 298 45 00  
fax: +31 - 10 415 09 28  
[www.solarelektrou.nl](http://www.solarelektrou.nl)

Rexel Electrometaal  
Reitdiep 1  
3077 AZ ROTTERDAM  
phone: + 31 - 10 482 06 77  
fax: +31 - 10 479 39 15  
[www.rexel.nl](http://www.rexel.nl)

Technische Unie  
Driemanssteeweg 106  
3084 CB ROTTERDAM  
phone: + 31 - 10 203 03 03  
fax: +31 - 10 203 03 82  
[www.technischeunie.com](http://www.technischeunie.com)

Rexel Electrometaal  
Treubstraat 5  
2288 EG RIJSWIJK ZH  
phone: + 31 - 70 319 91 00  
fax: +31 - 70 399 84 64  
[www.rexel.nl](http://www.rexel.nl)

Elektrotechnische Groothandel Bernard BV  
Cort van der Lindenstraat 15-17  
2288 EV RIJSWIJK ZH  
phone: + 31 - 70 390 90 91  
fax: +31 - 70 399 50 56  
[www.bernard.nl](http://www.bernard.nl)

Elektrotechnische Groothandel Bernard BV  
Sandvikstraat 49  
3125 BW SCHIEDAM  
phone: + 31 - 10 437 65 56  
fax: +31 - 10 415 06 21  
[www.bernard.nl](http://www.bernard.nl)

Ehrbecker Schiefelbusch B.V.  
Beyerinckstraat 10  
3364 AX SLIEDRECHT  
phone: + 31 - 115 61 14 00  
fax: +31 - 115 61 14 10  
[www.ehrbecker-schiefelbusch.nl](http://www.ehrbecker-schiefelbusch.nl)

Solar Elektro B.V.  
Einsteinweg 7  
3208 KK SPIJKENISSE  
phone: + 31 - 181 61 21 11  
fax: +31 - 181 61 50 44  
[www.solarelektrou.nl](http://www.solarelektrou.nl)

Ehrbecker Schiebelbusch B.V.  
James Wattweg 20  
3133 KK VLAARDINGEN  
phone: + 31 - 10 248 57 57  
fax: +31 - 10 434 85 13  
[www.ehrbecker-schiefelbusch.nl](http://www.ehrbecker-schiefelbusch.nl)

Relax Eltéra  
Industrieweg 23  
2712 LA ZOETERMEER  
phone: + 31 - 79 341 66 41  
fax: +31 - 79 342 30 31  
[www.relex.nl](http://www.relex.nl)

Relax Nederland  
Industrieweg 14  
2388 NV ZOETERWOUDE  
phone: + 31 - 71 581 45 45  
fax: +31 - 71 589 65 03  
[www.relex.nl](http://www.relex.nl)

## ZEELAND

Technische Unie  
Amstelsteinweg 65  
4338 PD MIDDELBURG  
phone: + 31 - 118 65 72 57  
fax: +31 - 118 65 72 80  
[www.technischeunie.com](http://www.technischeunie.com)

Ehrbecker Schiebelbusch B.V.  
Industrieweg 13A  
4538 AG TERNEUZEN  
phone: + 31 - 118 44 23 23  
fax: +31 - 118 41 06 67  
[www.ehrbecker-schiefelbusch.nl](http://www.ehrbecker-schiefelbusch.nl)

Ehrbecker Schiebelbusch B.V.  
Gildeweg 9  
4383 NH VLASSINGEN  
phone: + 31 - 118 44 23 23  
fax: +31 - 118 41 06 67  
[www.ehrbecker-schiefelbusch.nl](http://www.ehrbecker-schiefelbusch.nl)

## NOORD-BRABANT

Ehrbecker Schiebelbusch B.V.  
Takkebijsters 8  
4817 BL BREDA  
phone: + 31 - 578 28 28  
fax: +31 - 587 27 16  
[www.ehrbecker-schiefelbusch.nl](http://www.ehrbecker-schiefelbusch.nl)

Technische Unie  
Takkebijsters 19  
4817 BL BREDA  
phone: + 31 - 76 572 22 57  
fax: +31 - 76 571 17 60  
[www.technischeunie.com](http://www.technischeunie.com)

Elektrotechnische Grootshandel Bernard BV  
Minervum 7148  
4817 ZN BREDA  
phone: + 31 - 76 571 26 30  
fax: +31 - 76 571 56 40  
[www.bernard.nl](http://www.bernard.nl)

Relax Nederland  
Franse Akker 15  
4824 AL BREDA  
phone: + 31 - 76 541 15 60  
fax: +31 - 76 541 19 28  
[www.relex.nl](http://www.relex.nl)

Elektrotechnische Grootshandel Bernard B.V.  
Hoppenkuil 3  
5626 DD EINDHOVEN  
phone: + 31 - 40 262 39 00  
fax: +31 - 40 262 43 82  
[www.bernard.nl](http://www.bernard.nl)

Technische Unie  
Ambachtsweg 12  
5627 BZ EINDHOVEN  
phone: + 31 - 40 264 06 40  
fax: +31 - 40 264 06 82  
[www.technischeunie.com](http://www.technischeunie.com)

Ehrbecker Schiebelbusch B.V.  
De Witbogt 22  
5652 AG EINDHOVEN  
phone: + 31 - 40 259 21 21  
fax: +31 - 40 255 50 11  
[www.ehrbecker-schiefelbusch.nl](http://www.ehrbecker-schiefelbusch.nl)

Relax Electrometaal  
Hagemuntweg 5  
4879 NM ETTEL LEUR  
phone: + 31 - 76 504 02 71  
fax: +31 - 76 504 02 73  
[www.relex.nl](http://www.relex.nl)

Technische Unie  
Schootense Loop 8  
5708 HX HELMOND  
phone: + 31 - 492 50 65 06  
fax: +31 - 492 50 65 82  
[www.technischeunie.com](http://www.technischeunie.com)

Technische Unie  
Het Sterrenbeeld 20  
5215 ML 'S-HERTOGENBOSCH  
phone: + 31 - 73 687 36 87  
fax: +31 - 73 687 36 82  
[www.technischeunie.com](http://www.technischeunie.com)

Ehrbecker Schiebelbusch B.V.  
De Meerheuvel 9  
5221 EA 'S-HERTOGENBOSCH  
phone: + 31 - 73 633 81 81  
fax: +31 - 73 631 25 72  
[www.ehrbecker-schiefelbusch.nl](http://www.ehrbecker-schiefelbusch.nl)

Elektrotechnische Grootshandel Bernard B.V.  
De Bloemendaal 3  
5221 EB 'S-HERTOGENBOSCH  
phone: + 31 - 73 633 96 33  
fax: +31 - 73 633 96 10  
[www.bernard.nl](http://www.bernard.nl)

Solar Elektro B.V.  
Hogerwerf 20  
4704 RV ROOSendaal  
phone: + 31 - 165 54 25 54  
fax: +31 - 165 56 02 27  
[www.solarelektrou.nl](http://www.solarelektrou.nl)

Relax Nederland  
Ekkersrijt 4404  
5692 DK SON  
phone: + 31 - 499 47 49 55  
fax: +31 - 499 47 78 10  
[www.relex.nl](http://www.relex.nl)

Solar Elektro B.V.  
Ekkersrijt 4508  
5692 DM SON  
phone: + 31 - 499 47 06 30  
fax: +31 - 499 46 09 84  
[www.solarelektrou.nl](http://www.solarelektrou.nl)

Dijkman Elektrotechniek B.V.  
Havendijk 28  
5017 AM TILBURG  
phone: + 31 - 13 536 01 44  
fax: +31 - 13 542 75 32  
[www.dijkman.com](http://www.dijkman.com)

Ehrbecker Schiebelbusch B.V.  
J.F. Vlekkeweg 10-01  
5026 RJ TILBURG  
phone: + 31 - 13 537 82 82  
fax: +31 - 13 542 76 03  
[www.ehrbecker-schiefelbusch.nl](http://www.ehrbecker-schiefelbusch.nl)

Technische Unie  
Dr. Anton Philipsweg 3  
5026 RK TILBURG  
phone: + 31 - 13 594 66 66  
fax: +31 - 13 594 66 60  
[www.technischeunie.com](http://www.technischeunie.com)

E.T.G. Van de Meerakker B.V.  
Eisenhowerweg 11  
5466 AB VEGHEL  
phone: + 31 - 413 34 21 98  
fax: +31 - 413 36 69 90  
[www.meerakker.nl](http://www.meerakker.nl)

## LIMBURG

Elektrotechnische Grootshandel Bernard BV  
In de Cramer 14  
6411 RS HEERLEN  
phone: + 31 - 45 571 71 06  
fax: +31 - 45 574 02 82  
[www.bernard.nl](http://www.bernard.nl)

Relax Nederland  
Beersdalweg 95A  
6412 PE HEERLEN  
phone: + 31 - 45 572 80 00  
fax: +31 - 45 572 41 00  
[www.relex.nl](http://www.relex.nl)

Solar Elektro B.V.  
Karveelweg 30  
6222 NH MAASTRICHT  
phone: + 31 - 43 363 01 55  
fax: +31 - 43 363 58 99  
[www.solarelektrou.nl](http://www.solarelektrou.nl)

Technische Unie  
Sleperweg 39  
6222 NK MAASTRICHT  
phone: + 31 - 43 352 65 65  
fax: +31 - 43 363 67 50  
[www.technischeunie.com](http://www.technischeunie.com)

Ehrbecker Schiebelbusch B.V.  
Watermolen 15  
6229 PM MAASTRICHT  
phone: + 31 - 43 356 84 84  
fax: +31 - 43 361 63 23  
[www.ehrbecker-schiefelbusch.nl](http://www.ehrbecker-schiefelbusch.nl)

Solar Elektro B.V.  
Middenhoven 6  
6042 NX ROERMOND  
phone: + 31 - 475 34 51 50  
fax: +31 - 475 34 04 06  
[www.solarelektrou.nl](http://www.solarelektrou.nl)

Ehrbecker Schiebelbusch B.V.  
Buys Ballotstraat 9  
5916 PC VENLO  
phone: + 31 - 77 321 27 27  
fax: +31 - 77 354 72 00  
[www.ehrbecker-schiefelbusch.nl](http://www.ehrbecker-schiefelbusch.nl)

Relax Nederland  
Groot Bollerweg 6  
5928 NS VENLO  
phone: + 31 - 77 465 89 66  
fax: +31 - 77 465 89 67  
[www.relex.nl](http://www.relex.nl)

Elektrotechnische Grootshandel Bernard BV  
Groot-Bollerweg 12a  
5928 NS VENLO  
phone: + 31 - 77 382 83 41  
fax: +31 - 77 382 97 41  
[www.bernard.nl](http://www.bernard.nl)

Technische Unie  
Alerbeemdweg 25  
5928 PV VENLO  
phone: +31 - 77 324 82 48  
fax: +31 - 77 387 27 66  
[www.technischeunie.com](http://www.technischeunie.com)

E.T.G. Van de Meerakker B.V.  
Copernicusstraat 9  
6003 DE WEERT  
phone: +31 - 495 58 44 44  
fax: +31 - 495 53 97 55  
[www.meerakker.nl](http://www.meerakker.nl)

## Norway

### Sales office Oslo:

OMRON ELECTRONICS NORWAY AS  
Brynsalléen 4, 0667 Oslo  
Postboks 109 Bryn, 0611 Oslo  
phone: + 47 - 22 65 75 00  
fax: + 47 - 22 65 83 00  
[www.omron.no](http://www.omron.no)

### Sales office Ålesund:

Langelandsveien 17, 6010 Ålesund  
Postboks 8030, Spjelkavik  
6022 Ålesund

### Sales office Stavanger:

Omron div. Stavanger  
Fabrikveien 14  
4033 Stavanger

## Poland

### Sales office Warsaw:

OMRON ELECTRONICS Sp.z.o.o.  
ul. Mariana Sengera "Cichego" 1  
02-790 Warsaw  
phone: + 48 - 22 645 78 60  
fax: + 48 - 22 645 78 63  
[www.omron.com.pl](http://www.omron.com.pl)

### Sales office Krakow:

OMRON ELECTRONICS Sp.z.o.o.  
Wybickiego 7  
31-261 Cracow  
phone/fax: +48 - 12 634 51 83

## Portugal

### Sales office Lisboa:

OMRON ELECTRONICS LDA.  
Edifício OMRON  
Rua de São Tomé Lote 131  
2689-510 Prior-Velho  
phone: + 351 - 2 19 42 94 00  
fax: + 351 - 2 19 41 78 99  
[info.pt@eu.omron.com](mailto:info.pt@eu.omron.com)  
[www.omron.pt](http://www.omron.pt)

### Sales office Porto:

OMRON ELECTRONICS LDA.  
Rua do Jardim, 170 - 2º  
4405-823 VILA NOVA DE GAIA  
phone: +351 - 22 715 59 00  
fax: +351 - 22 713 51 52

**Distributors in Portugal**

CABOTROX, LDA.  
Rua Portas do Sol, 4  
6000-261 Castelo BRANCO  
phone: +351 - 272 34 09 80  
fax: +351 - 272 34 09 89  
cabotrox@mail.telepac.pt

CARLOS SILVA & DIAS, LDA.  
R. Loteamento, 73 Largo Albergaria  
4520-603 S. JOÃO DE VER

STA. MARIA DA FEIRA  
phone: +351 - 256 91 02 90  
fax: +351 - 256 91 02 99  
csd.geral@mail.telepac.pt

COSTA, LEAL & VICTOR, LDA.  
R. Prof. Augusto Lessa, 269  
4202-801 PORTO  
phone: +351 - 22 550 85 20  
fax: +351 - 225 02 40 05  
clv@clv.pt

DIFERENCIAL, LDA.  
Est. da Murta - Ap. 46  
3770-909 OLIVEIRA DO BAIRRO  
phone: +351 - 234 73 03 60  
fax: +351 - 234 74 77 01  
diferencial@netvisao.pt

ELECTRAÇOR, LDA.  
Av<sup>a</sup> Antero de Quental, 51-A  
9500-160 PONTA DELGADA  
phone: +351 - 296 20 50 10  
fax: +351 - 296 20 50 19  
electracor.dpt@electracor.pt

ELECTRO-AR, LDA.  
Est. dos Ciprestes, 88-B, Ap. 398  
2901-896 SETÚBAL  
phone: +351 - 265 54 12 00  
fax: +351 - 265 54 12 21  
electroar@mail.netvisao.pt

FLEXBOR, LDA.  
E.N. 8, Sítio Matadouro, Ap. 190  
2564-911 TORRES VEDRAS CODEX  
phone: +351 - 261 32 30 64  
fax: +351 - 261 31 20 12  
flexbor@mail.telepac.pt

FX AUTOMATION  
Pcta. Agostinho da Silva, 2-A  
2685-396 PRIOR VELHO  
phone: +351 21 942 78 10  
fax: +351 21 940 32 46  
info@fxautomation.com

GESTEL, LDA.  
Av<sup>a</sup> Tomás Ribeiro, 30 C - Ap. 35  
2795-183 LINDA-A-VELHA  
phone: +351 - 21 419 05 73  
fax: +351 - 21 419 34 65  
gestel@mail.telepac.pt

J. M. M. GONÇALVES, LDA.  
Rua da Boavista, Nº 40 - Lordelo  
4815-801 LORDEL - GMR  
phone: +351 - 252 84 05 00  
fax: +351 - 252 84 05 01  
electricidade@jmm.pt

LAURENTINO OLIVEIRA & C<sup>a</sup> LDA.  
Av<sup>a</sup> Conde Margaride, 403  
4810-535 GUIMARÃES  
phone: +351 - 253 51 57 86  
fax: +351 - 253 51 39 82  
laurentino.oliveira@mail.telepac.pt

N. BELCHIOR, LDA.  
Est. da Marinha Grande, Lt. 3 R/c D  
2400-187 LEIRIA  
phone: +351 - 244 82 45 51  
fax: +351 - 244 81 46 64  
nbelchior@mail.telepac.pt

NEUMAX LUSITANA, LDA.  
Urb. Ind. da Carambancha, 9  
2580-461 CARREGADO  
phone: +351 - 263 85 07 00  
fax: +351 - 263 85 07 19  
geral@neumax.pt

PIRES & PINA, LDA.  
Rua 21 de Agosto, 57 - Ap. 184  
3501-997 VISEU  
phone: +351 - 232 42 34 97  
fax: +351 - 232 42 14 12  
pirespina@netc.pt

TROFILÉCTRICA, LDA.  
R. Infante D. Henrique, nº 527  
4785-185 TROFA  
phone: +351 - 252 41 68 66  
fax: +351 - 252 42 82 89  
trofilectrica@mail.telepac.pt

**Russia****Representative Office Moscow:**

OMRON ELECTRONICS Oy  
Sredniy Tishinsky per.28/1, office 523  
Moscow, 123557  
phone: + 7 - 95 745 26 64-65  
fax: + 7 - 95 745 26 80  
www.russia.omron.com

**Distributors in Russia:**

NPF Rakurs Ltd, bild.2  
Khimichesky per.1  
RUS-198095 St. Petersburg  
phone: +7 812 252 48 83  
fax: +7 812 252 32 44  
www.rakurs.spb.ru

NTC Privodnaya Technika  
ul. Manakova, 35-1,2  
454091 Chelyabinsk  
phone: +7 35 12 61 43 95  
fax: +7 35 12 61 43 96  
momentum@chel.surnet.ru

AO Uraltechmarket  
Nachdiva Vasiljeva str. 1 bild 4,  
office 707  
620028 Ekaterinburg  
phone: +7 34 32 69 75 61  
fax: +7 34 32 69 75 612  
ava@omron.ru

Prosoft  
108 Profsoyuznaya str.  
117437 Moscow  
phone: +7 095 234 06 36  
fax: +7 095 234 06 40  
prosoft@prosoft.ru

JSC TRASCON Technology  
Nagatinskaya str. 4a  
115230 Moscow  
phone: +7 095 234 34 17  
fax: +7 095 32 33 92  
trascon@trascon.ru

OMRUS Corporation  
Miusskaya Pl. 9, Block 1-12  
125047 Moscow  
phone: +7 095 20 28 69  
fax: +7 095 305 1139  
SMoroz@omrus.com

OOO NTC-ECO  
P.O. Box 17  
121359 Moscow  
phone: +7 095 105 07 39  
fax: +7 095 267 7531  
vkwin168@mtu-net.ru

OOO "Angstrem Avtomatika"  
"Angstrem Avtomatika":  
P.O. Box 83  
129515 Moscow  
phone: +7 0952 16 41 49  
fax: +7 091 61 56 41 09  
aa\_tau@yahoo.com

Promenergo  
1-th Institutsky pr.,5, office 5  
109428 Moscow  
phone: +7 095 2345916  
fax: +7 095 2345916  
mail@proenergo.ru

ITC Electronics  
Domodedovskaya str., 24, bild.3,  
115582 Moscow  
phone: +7 095 3639575  
fax: +7 095 3912038

**Spain****Sales office Madrid:**

OMRON ELECTRONICS S.A.  
c/Arturo Soria 95  
28027 Madrid  
phone: + 34 - 913 77 79 00  
fax: + 34 - 913 77 79 56  
www.omron.es

**Sales office CATALONIA:**

OMRON ELECTRONICS S.A  
C/ D'Olesa, 14-16  
08027 BARCELONA  
phone: +34 - 932 14 06 00  
fax: +34 - 932 14 06 01

**Sales office CENTRE:**

OMRON ELECTRONICS S.A  
C/ Hernández de Tejada, 9  
28027 MADRID  
phone: +34 - 913 77 79 13  
fax: +34 - 913 77 79 01

**Sales office LEVANT:**

OMRON ELECTRONICS S.A  
C/ Guillem de Castro, 8  
46001 VALENCIA  
phone: +34 - 963 53 00 00  
fax: +34 - 963 53 64 01

**Sales office NORTH:**

OMRON ELECTRONICS S.A  
Parque Tecnológico de Alava  
C/ Albert Einstein, 38  
01510 Miñano Mayor (ALAVA)  
phone: +34 - 945 29 60 00  
fax: +34 - 945 29 60 01

**Sales office SOUTH:**

OMRON ELECTRONICS S.A  
C/ Carlos de Cepeda, 2  
41005 SEVILLA  
phone: +34 - 954 93 32 50  
fax: +34 - 954 93 32 51

**Distributors in Spain:**

DS AUTOMACIÓN  
Arriurdina, 2. P.I. Jundiz  
01015 ÁLAVA  
phone: + 34 - 945 12 11 60  
fax +34 - 945 12 11 61  
comercial@ds-automacion.com

MESSA LA MANCHA  
Avda. Cronista Mateos y Sotos, 32-34  
02006 ALBACETE  
phone: + 34 - 967 21 66 11  
fax: + 34 - 967 21 08 07

INDA LEVANTE  
José Sanchez Saez 19 bajo  
03202 Elche - ALICANTE  
phone: + 34 - 966 61 50 88  
fax: + 34 - 966 61 33 80  
indalevante@indalevante.com  
www.indalevante.com

LEVANTINA DE CUADROS  
Sagitario, 13  
03006 ALICANTE  
phone: + 34 - 965 11 13 75  
fax: + 34 - 965 28 86 87  
leculs1@infonegocio.com

ELECTROMAIN ELEC. IND.  
Mojana, Nave 5  
P.I. El Real  
04628 Antas - ALMERIA  
phone: +34 - 950 393 188  
fax: +34 - 950 390 264  
electromain@electromain.com  
www.electromain.com

SUTEINSA  
Plaza Compostela, 4 - bajo  
33208 Gijón - ASTURIAS  
phone: + 34 - 985 38 74 08  
fax: + 34 - 985 39 11 68  
suteinsa@netcom.es  
www.airastur.es/suteinsa

BOBIMEX  
Vicente Aleixandre s/n  
06800 Mérida - BADAJOZ  
phone: + 34 - 924 31 40 76  
fax: + 34 - 924 30 28 02  
bobimex@infonegocio.com

DIELECTRO BALEAR  
Gremio Carpinteros, 43  
Polígono Asima  
07009 Palma de Mallorca - BALEARES  
phone: + 34 - 971 43 04 86  
fax: + 34 - 971 432 020  
dielectro@dielectrobaleares.com

CAROL AUTOMATISMOS  
P.I. Les Comes Cl. Italia, 11 Nv. 8  
08038 BARCELONA  
phone: + 34 - 933 31 72 50  
fax: + 34 - 934 22 63 72

AAG-ALMACÉN AUTOMAT.  
GRANOLLERS  
Carretera de Ribes, 155-159  
08520- les Franqueses Valles - BARCELONA  
phone: + 34 - 938 46 30 66  
fax: + 34 - 938 40 36 75  
info@aag-net.com

CAROL AUTOMATISMOS IGUALADA  
P.I. Les Comes Cl. Italia, 11 Nv. 8  
08700 Igualada -BARCELONA  
phone: + 34 - 938 01 73 70  
fax: + 34 - 938 04 54 12

## TECNICAL

Doctor Zamenhof, 27  
08243 Manresa - BARCELONA  
phone: + 34 - 938 73 71 00  
fax: + 34 - 938 74 76 07  
manresa@technical.org  
www.technical.org

CAROL AUTOMATISMOS MARTORELL  
Can Albareda, 78 - El Congost  
08760- Martorell - BARCELONA  
phone: + 34 - 937 73 56 80  
fax: + 34 - 937 73 56 82  
cam@grupcarol.com

DICELMA'C AUTOMATISMES  
Alcalde J. Abril, 29-31  
08302 Mataró - BARCELONA  
phone: + 34 - 937 41 27 51  
fax: + 34 - 937 57 23 68  
automatismes@dicelmac.com  
www.dicelmac.com

REGULACIO, TECNICA I CONTROL  
P. C. Magarola  
Avd. C. Magarola 2-10 N13  
08100 Mollet del Vallés - BARCELONA  
phone: + 34 - 935 70 26 44  
fax: + 34 - 935 70 25 15  
rtc@grupcarol.com

CAROL INDUSTRIAL  
Borrás, 31-35  
08208 Sabadell - BARCELONA  
phone: + 34 - 937 26 97 00  
fax: + 34 - 937 25 52 96

EGARA AUTOMATISMES  
Prat de la Riba, 175  
08226 Terrassa - BARCELONA  
phone: + 34 - 937 36 28 00  
fax: + 34 - 937 84 26 01  
caroltegara@grupcarol.com

COEVA VIC  
Pg. Prc. Act. Econ. Osona, Lleida, 3  
08500 Vic - BARCELONA  
phone: + 34 - 938 86 22 22  
fax: + 34 - 938 86 68 90  
info@coevavic.com

NEXPERT  
P.I. Can Ferrer II  
C/ Portugal 1  
08770 St. Sadurní D'Anoia - BARCELONA  
phone: + 34 - 938 91 29 03  
fax: + 34 - 938 91 17 11  
nexpert@mx3.redest.es

VIELCO ELECTRICITAT INDUSTRIAL  
Ronda de Europa, 13-15  
08800 Vilanova i la Geltrú - BARCELONA  
phone: + 34 - 938 14 35 00  
fax: + 34 - 938 14 33 75  
compra@vielco\_electric.com  
www.vielco\_electric.com

ELECTRONICA OLPE  
Merindad de Montija, Nave 1  
Pol. Villalonquejar  
09001 BURGOS  
phone: + 34 - 947 29 87 18  
fax: + 34 - 947 29 87 24  
olpe@nexo.es

SUMINISTROS ELECTRONICOS  
HERRERA  
Pintor Varela, 11  
39300 Torrelavega - CANTABRIA  
phone: + 34 - 942 89 46 50  
fax: + 34 - 942 88 31 01  
sumherrera@mundivia.es

SUELVI  
Camino Viejo Castellón-Onda, s/n.  
Apdo. de Correos 326  
12540 Vila-Real - CASTELLON  
phone: + 34 - 964 50 01 00  
fax: + 34 - 964 53 32 56  
suelvi@suelvi.es  
www.suelvi.es

AC INGENIERIA  
P.I. Larache, Socuéllamos, 23-25  
13005 CIUDAD REAL  
phone: + 34 - 926 21 09 15  
fax: + 34 - 926 21 12 27  
ac@acingenieria.com

DTISA  
Conde de Valdellano, 8  
14004 CORDOBA  
phone: + 34 - 957 45 10 63  
fax: + 34 - 957 45 27 23  
cordoba@dtisa.com

M. LAGO  
Gambrinus, 85 - B Pol. La Grela  
15008 A CORUÑA  
phone: + 34 - 981 27 55 00  
fax: + 34 - 981 27 48 78  
mlago@mlago.com

TAGISA  
P.I. Montfullá Cl. de Vilabreix, nau 10  
17162 Bescano - GIRONA  
phone: + 34 - 972 41 17 00  
fax: + 34 - 972 41 16 64  
tagisa@tagisa.com  
www.tagisa.com

MANXA  
Cr. de les Tries, 85  
17800 Olot - GIRONA  
phone: + 34 - 972 27 45 28  
fax: + 34 - 972 26 19 04  
automatismes@manxa.com

DTISA  
Avda. Andalucía, 34 (Adoratrices)  
18014 GRANADA  
phone: + 34 - 958 29 35 51  
fax: + 34 - 958 29 38 17  
granada@dtisa.com

GARAPEN  
Po. Anduaga 15-17  
20709 Ezkio-Itsaso - GUIPUZCOA  
phone: + 34 - 943 72 90 06  
fax: + 34 - 943 72 91 47  
garapen@adegi.es  
www.garapen.com

RECOIN  
Diego de Almagro, 14  
21002 HUELVA  
phone: + 34 - 959 25 17 12  
fax: + 34 - 959 25 73 09  
recoin@interbook.net

NAVASOLA  
Pol. Lucas Mellada  
C. Agricultura Nave 5  
22006 HUESCA  
phone: + 34 - 974 22 26 90  
fax: + 34 - 974 24 36 81  
navasola@navasola.com  
www.navasola.com

SUMI-3  
Calvario, 35  
22400 Monzón - HUESCA  
phone: +34 974 417 017  
fax: +34 973 211 018  
monzon@sumi-3.com  
www.sumi-3.com

MAYPE  
Pol. "El Segre"  
Enginyer Pau Agustí, 303-B, nv. 5-6  
25002 LLEIDA  
phone: + 34 - 973 21 07 00  
fax: + 34 - 973 21 10 84  
technico@mayne.com  
www.mayne.com

ELECTROMANTENIMIENTO  
Polígono Tejería, Nave 1  
26500 Calahorra - LA RIOJA  
phone: + 34 - 941 13 44 29  
fax: + 34 - 941 14 51 70  
em@nexo.es

ELECTROMATIC PALACIOS  
Rey Pastor, 60 - bajo  
26005 Logroño - LA RIOJA  
phone: + 34 - 941 22 05 54  
fax: + 34 - 941 22 06 27  
info@palacios.es

BCR AUTOMATISMOS  
Agustín de Iturbide, 24  
28043 MADRID  
phone: + 34 - 913 82 48 90  
fax: + 34 - 913 82 48 91  
bcr@bcrautomatismos.es  
T2S  
Av. de Cantueña, 4 Nave 5  
28946 Fuenlabrada - MADRID  
phone: +34 - 916 21 44 30  
fax: +34 - 916 42 22 23  
t2s@t2s.es  
www.t2s.es

DTISA  
P. I. Guadalhorce,  
Nave 60 Salazar Chapela, 16  
29004 MÁLAGA  
phone: + 34 - 952 24 24 92  
fax: + 34 - 952 24 25 51  
malaga@dtisa.com

ELECTROMAIN ELEC. IND.  
Ctra. Madrid-Cartagena, Km 377  
30500 Molina de Segura - MURCIA  
phone: + 34 - 968 38 90 05  
fax: + 34 - 968 61 11 00  
electromain@electromain.com  
www.electromain.com

IRUÑA  
TECNOLOGÍAS DE AUTOMATIZACIÓN  
Cañada Real, 12  
Polígono Berrioplano  
31195 Berrioplano - NAVARRA  
phone: + 34 - 948 30 23 21  
fax: + 34 - 948 30 35 02  
iruna.@arrakis.es

REITEC  
Los Avellanos, 20  
35018 LAS PALMAS DE GRAN  
CANARIA  
phone: + 34 - 928 436 908  
fax: + 34 - 928 43 67 06  
reitec@arrakis.es

M. LAGO  
Avda. Ricardo Mella, 115-B  
36331 Vigo - PONTEVEDRA  
phone: + 34 - 986 23 06 68  
fax: + 34 - 986 20 60 21  
mlago@mlago.com

MONTAJES ELECTRICOS LUMAR  
Camino de Tres Casas, s/n  
40196 La Lastrilla - SEGOVIA  
phone: + 34 - 921 43 65 21  
fax: + 34 - 921 44 23 34  
lumarsa@lumar.c.telefonica.net

SGA  
Ctra. N-IV, Km 536, Edificio Eurosevilla  
41020 SEVILLA  
phone: + 34 - 954 25 33 18  
fax: + 34 - 954 67 37 42  
sga@sga-de.com

TRIMATIK  
P. Riu Clar. Parcela 5.1.5. Nv.64  
C/ Mercuri  
43006 TARRAGONA  
phone: + 34 - 977 55 09 09  
fax: + 34 - 977 55 14 60  
trimatic@sefes.es

SUR-APELSA  
Subida Sobradillo 39 A. Edificio Cristian  
38108 Taco - TENERIFE  
phone: + 34 - 922 61 42 58  
fax: + 34 - 922 61 20 35  
surapel@arrakis.es

SIAPA  
Pol. Ind. Yuncos - Calle A - Nave 95  
45210 Yuncos - TOLEDO  
phone: + 34 - 925 53 79 44  
fax: + 34 - 925 53 79 54  
siapa1@teleline.es

DME - AUTOMATIZACION INDUSTRIAL  
Enrique Taulet, 8 Bajo Dcha.  
46014 VALENCIA  
phone: + 34 - 963 58 72 26  
fax: + 34 - 963 17 03 55  
dme@dme.es  
www.dme.es

AUTOMATISMOS LASER  
Gonzalo Viñes, 4  
46800 Xátiva - VALENCIA  
phone: + 34 - 962 27 51 32  
fax: + 34 - 962 27 45 63  
laser@grupoperis.com  
www.servidex.com/laser

DISMЕVA  
Plomo,8 nave 7 P. San Cristobal  
47012 VALLADOLID  
phone: + 34 - 983 21 31 31  
fax: + 34 - 983 21 31 32  
automatismos@dismева.es

BILAK  
P.I. Ugaldeguren, 1 - Parc. 5-4 - Local 6B  
48160 Derio - VIZCAYA  
phone: + 34 - 944 54 50 18  
fax: + 34 - 944 54 41 49  
bilak@mundivia.es

SUMI-3  
Leopoldo Romeo 26  
50002 ZARAGOZA  
phone: + 34 - 976 41 54 55  
fax: + 34 - 976 59 45 21  
sumi\_3@sumi-3.com  
www.sumi-3.com

SUINSA  
Casa Rufo - Camp Bastida 6 bajos  
Andorra PRINCIPAT D'ANDORRA  
phone: + 34 - 7-376 86 68 38  
fax: + 34 - 7-376 86 69 39

## Sweden

### Sales office Kista:

OMRON ELECTRONICS AB  
Norgegatan 1, P.O. Box 1275  
SE-16429 Kista  
phone: + 46 - 8 632 35 00  
fax: + 46 - 8 632 35 10  
www.omron.se

### Salesoffice Göteborg:

Olof Askulds gata 6  
SE-42130 GÖTEBORG  
phone: + 46 - 8 632 35 00  
fax: + 46 - 31 709 28 53

### Salesoffice Borås:

Åsboholmsgatan 21  
SE-50451 BORÅS  
phone: + 46 - 8 632 35 00  
fax: + 46 - 33 44 28 53

### Salesoffice Malmö:

Derbyvägen 6 B  
SE-21235 MALMÖ  
phone: + 46 - 8-632 35 00  
fax: + 46 - 40-49 57 10

### Salesoffice Norsjö:

Storgatan 6, P.O. Box 4  
SE-93521 NORSJÖ  
phone: + 46 - 8-632 35 00  
fax: + 46 - 918-102 94

### Salesoffice Umeå:

Manusgränd 3  
SE-90364 UMEÅ  
phone: + 46 - 8-632 35 00  
fax: + 46 - 90 - 14 89 39

## Distributors in Sweden for Industrial Components:

Ahlsell AB, Div El  
Liljeholmsvägen 30  
SE-11798 STOCKHOLM  
phone: + 46 - 8 685 70 00  
fax: + 46 - 8 685 70 93  
www.ahlsell.se

Elektroskandia AB  
N Malmvägen 141  
SE-19183 SOLLENTUNA  
phone: + 46 - 8 92 35 00  
fax: + 46 - 8 92 39 80  
www.elektroskandia.se

Elfa AB  
Elektronikgränd 14  
SE-175 80 JÄRFÄLLA  
phone: + 46 - 8 580 942 00  
fax: + 46 - 8 580 943 00  
www.elfa.se

Öberg Innovation AB  
Kvällsvindsgatan 8  
SE-65221 KARLSTAD  
phone: + 46 - 54 85 13 00  
fax: + 46 - 54 85 13 01  
www.oberginnovation.se

Selga AB  
P.O. Box 103  
SE-12523 ÅLVSJÖ  
phone: + 46 - 8 749 38 00  
fax: + 46 - 8 749 52 27  
www.selga.se

Västerås Maskinbyggars Center, VMB  
Tallmätargatan 1 C  
SE-72134 VÄSTERÅS  
phone: + 46 - 21 12 08 99  
fax: + 46 - 21 12 78 05  
www.vmb.se

### Distributors in Sweden for Industrial Systems:

All-Ström Elektriska AB  
Sporregatan 3  
SE-21377 MÄLÖ  
phone: + 46 - 40 22 35 75  
fax: + 46 - 40 21 92 82  
www.home.swipnet.se//all-strom

Automatiksystem i Jämtland AB  
P.O. Box 3127  
SE-83103 ÖSTERSUND  
phone: + 46 - 63 51 03 65  
fax: + 46 - 63 10 66 31  
www.automatiksystem.se

J&M Automation AB  
Sorterargatan 35  
SE-162 50 VÄLLINGBY  
phone: +46 - 8 38 60 50  
fax: +48 - 8 89 40 37

NE Konstruktioner AB  
Algotsvägen 2  
SE-93500 NORSJÖ  
phone: + 46 - 918 253 90  
fax: + 46 - 918 253 94

Texo Application AB  
P.O. Box 602  
SE-34324 ÅLMHULT  
phone: + 46 - 476 122 50  
fax: + 46 - 476 103 21  
www.texoapplication.se

### Distributor in Lithuania

KEMEK elektronika UAB  
P.O. Box 1362  
LT-2056 VILNIUS  
phone: +370 - 2 47 03 01  
fax: +370 - 2 79 39 09

### Distributor in Latvia

Miltronic SIA  
Brivibas 155  
LV-1012 RIGA  
phone: +371 - 750 19 00  
fax: +371 - 750 19 09

## Switzerland

### Sales office Steinhausen:

OMRON ELECTRONICS AG  
Sennweidstrasse 44  
6312 Steinhausen  
phone: + 41 - 41 748 13 13  
fax: + 41 - 41 748 13 45  
www.omron.ch

### Sales office Romanel:

Omron Electronics AG  
ch. des Fayards 2  
1032 Romanel-sur-Lausanne VD  
phone: +41 - 21 643 75 75  
fax: +41 - 21 643 75 70  
www.omron.ch

### Distributor:

Novitronic AG  
Thurgauerstrasse 74  
8050 Zürich  
phone: +41 - 1 306 91 91  
fax: +41 - 1 306 91 81  
info@novitronic.ch  
www.novitronic.ch

Relettra SA  
Via Ginnasio  
6982 Serocco d'Agno  
phone: +41 - 91 604 62 06  
fax: +41 - 91 604 62 08

## Turkey

### Sales office İstanbul:

OMRON ELECTRONICS LTD.  
ALTUNIZADE, KISIKLI CAD. NO: 2  
A- BLOK K.2  
34662 Üsküdar - İSTANBUL  
phone :+90 216 474 00 40 Pbx  
fax: +90 216 474 00 47  
www.omron.com.tr

### Distributors in Turkey:

Arda Mak. Ltd. Sti.  
Sanayi Cad. Dogan Sk. No: 1/C  
Ulus-ANKARA  
phone: + 90 - 312 312 66 04 - 309 12 33  
fax: + 90 - 312 310 13 53  
Branch office: 100.Yil Bulvari 42.Sok. No:  
1  
Ostim - ANKARA  
phone: + 90 - 312 385 80 37 - 38  
fax: + 90 - 312 385 80 58

Bozkaya A.S  
Fuzul Cad. No: 67/41 Seyhan ADANA  
phone: + 90 - 322 458 78 12  
fax: + 90 - 322 458 78 97

Ceran Otomasyon Ltd. Sti.  
Perpa Tic. Merkezi A Blok Kat: 283  
Okmeydani - İSTANBUL  
phone: + 90 - 212 210 81 81  
fax: + 90 - 212 220 18 03

ElektroSAN San ve Tic. Ltd. Sti.  
Istasyon Cad. No: 34/B KAYSERİ  
phone: + 90 - 352 231 01 59  
fax: + 90 - 352 231 79 13

Erel Elektroteknik Muh. Mak. Taah.  
Tic. San. ve Yat. A.S.  
Vezirciftligi Mah. Yeni Golcuk Road No:64  
Kular-İZMIT  
phone: +90 - 262 349 64 45  
fax: +90 - 262 349 64 54

Hatel Elektronik Ltd. Sti.  
1201 Sok. No: 13 / D Yenisehir - IZMIR  
phone: + 90 - 232 449 21 00  
fax: + 90 - 232 449 04 07

Mavi Elektronik  
Incilli Pinar Mah. 1 no'l'u sokak No:52  
Yimpas arkasi Sehitkamil-GAZIANTEP  
phone: +90 - 342 215 33 47  
fax: +90 - 342 215 33 48

### Muhendisler Elk. Ltd. Sti.

Okcumusa Cad. Meneve Is Hani  
No: 54-90  
Karakoy - İSTANBUL  
phone: + 90 - 212 256 57 50  
fax: + 90 - 212 237 67 26

### Oneri Elk. San. ve Tic. Ltd.

Okcumusa Cad. No: 21  
Karakoy - İSTANBUL  
phone: + 90 - 212 292 51 72-73  
fax: + 90 - 212 292 51 75

### Saltitomasyon Elk. Elek. San. ve Tic.

Ltd. Sti.  
Ferhuniye Mah. Sultansah Cad. No: 24 /  
KONYA  
phone: + 90 - 332 353 06 23  
fax: + 90 - 332 353 59 51

### Tiryaki Otomasyon

Okcumusa Cad. Serhattar Han No: 34  
Kat: 1/3  
Karakoy - İSTANBUL  
phone: + 90 - 212 297 62 37  
fax: + 90 - 212 297 62 43

### Yıldız Teknik Mak. Elk. Endüstri Otomasyon

Ltd. Sti.  
Mustafa Pasa Mah. Ibrahimaga Cad.  
No: 29 GEBZE  
phone: + 90 - 262 641 33 38  
fax: + 90 - 262 641 42 46

## United Kingdom and Ireland

### Sales office:

OMRON ELECTRONICS LTD  
Opal Drive, Fox Milne  
Milton Keynes  
MK15 0DG  
phone: +44 - 87 07 52 08 61  
fax: +44 - 87 07 52 08 62  
www.omron.co.uk

### Omron Distribution Centres

Omron Distribution Centres have a broad appreciation of the Omron product family and can provide support and advice in selecting control components, together with technical literature to support these products. The focus of Omron Distribution Centres is the supply of products, these centres offer stock as well as other logistic support services, examples may be kitting, one stop shop and credit card purchases. To become an Omron Distribution Centre both internal and external personnel will have been trained by Omron to ensure that support can be provided both at base and on site.

### AN Supplies

Bridgend, Mid Glamorgan  
01656 767 060  
Cardiff, South Glamorgan  
02920 483 131  
Newport, Gwent  
01633 280 494  
Swansea, West Glamorgan  
01792 774 777

Tredegar, Gwent  
01495 711 333  
www.ansupplies.co.uk

Applied Automation  
Plymouth, Devon  
01752 343 300  
Bristol, Avon  
01179 827 769  
[www.appliedautomation.co.uk](http://www.appliedautomation.co.uk)

Automation Technology Ltd  
Daventry, Northamptonshire  
0870 787 3237  
[www.automatech.co.uk](http://www.automatech.co.uk)

BPX  
Leicester, Leicestershire  
01162 999 100  
Northampton, Northamptonshire  
01604 759 906  
Nottingham, Nottinghamshire  
01159 704 531  
[www.bpx.co.uk](http://www.bpx.co.uk)

Control Components Anglia  
Norwich, Norfolk  
01603 424140  
Peterborough, Cambridgeshire  
01733 554 863  
[www.controlcomponents.co.uk](http://www.controlcomponents.co.uk)

EPH  
Spalding, Lincolnshire  
01775 723 546  
[www.ehp-supplies.co.uk](http://www.ehp-supplies.co.uk)

Kempston Controls Ltd  
Rushden, Northamptonshire  
01933 411 411  
[www.kempstoncontrols.co.uk](http://www.kempstoncontrols.co.uk)

More Control  
Milton Keynes, Buckinghamshire  
01908 364 555  
[www.more-control.com](http://www.more-control.com)

Nyquist  
Hull, East Yorkshire  
01482 589 050  
[www.wf-online.com](http://www.wf-online.com)

Premier Electrical  
Stoke On Trent, Staffordshire  
01782 202 554

Scattergood & Johnson  
Gateshead, Tyne & Wear  
0191 460 2233  
Hillington, Glasgow  
0141 892 0166  
Leeds West, Yorkshire  
0113 243 0203  
Trafford Park, Manchester  
0161 876 4337  
Sheffield South, Yorkshire  
0114 243 1841  
[www.scatts.co.uk](http://www.scatts.co.uk)

Sentridge Control  
Coventry, West Midlands  
02476 553303  
[www.sentridge.com](http://www.sentridge.com)

Underwoods  
High Wycombe, Buckinghamshire  
01494 464 464  
Orpington, Kent  
01689 897 670

Southampton, Hampshire  
023 8022 5456  
[www.ued.co.uk](http://www.ued.co.uk)

Wales Fluid Power  
Cardiff, Cardiff  
02920 494 551  
[www.appliedautomation.co.uk](http://www.appliedautomation.co.uk)

Worcester Electrical Distributors  
Worcester, Worcestershire  
01905 755 110  
[www.worcesterelectrical.co.uk](http://www.worcesterelectrical.co.uk)

Williams Industrial Services  
Mallusk, County Antrim  
02890 838 999  
[www.wis-ni.com](http://www.wis-ni.com)

#### Omron Technical Centres

Omron Technical Centres deliver a high degree of technical knowledge, with the ability to configure and maximise the performance of Omron products in a wide range of complex control applications. This knowledge is backed up by the ability to provide the products from stock on a next day delivery. Both internal and external engineers will have taken part and passed in-depth product training over the full range of Omron products. Support and advice can be given in consultation both on site and from the technical support desk.

Applied Automation  
Plymouth, Devon  
01752 343 300  
Bristol, Avon  
01179 827 769  
[www.appliedautomation.co.uk](http://www.appliedautomation.co.uk)

More Control  
Milton Keynes, Buckinghamshire  
01908 364 555  
[www.more-control.com](http://www.more-control.com)

Scattergood & Johnson  
Gateshead, Tyne & Wear  
0191 460 2233  
Leeds West, Yorkshire  
0113 243 0203  
Trafford Park, Manchester  
0161 876 4337  
Sheffield South, Yorkshire  
0114 243 1841  
[www.scatts.co.uk](http://www.scatts.co.uk)

Underwoods  
High Wycombe, Buckinghamshire  
01494 464 464  
Southampton, Hampshire  
023 8022 5456  
[www.ued.co.uk](http://www.ued.co.uk)

Williams Industrial Services  
Mallusk, County Antrim  
02890 838 999  
[www.wis-ni.com](http://www.wis-ni.com)

#### Omron Engineering Partners

Omron Engineering Partners are focused on providing control solutions, typically for machines or control systems. Omron Engineering Partners have the ability to configure and maximise the performance of Omron products and can build and design complex control systems employing them. OEP engineers consult with the customer on their control issues and offer advice during the consultancy leading to complete solutions. This is underpinned with ongoing support from internal and external engineers with the added benefit of out of hours support.

ADM Automation Ltd  
Boldon, Tyne & Wear  
0191 519 5500  
[www.adm-automation.co.uk](http://www.adm-automation.co.uk)

AIC Solutions Ltd  
Slough, Berkshire  
01753 215 222  
[www.aicsolutions.com](http://www.aicsolutions.com)

Ampac Systems Integrators Ltd  
Burton upon Trent, Derbyshire  
01283 567 888  
[www.ampac.co.uk](http://www.ampac.co.uk)  
Applied Automation  
Plymouth, Devon  
01752 343 300  
[www.appliedautomation.co.uk](http://www.appliedautomation.co.uk)

Briggs Automation  
Holmes Chapel, Cheshire  
01477 544 588  
[www.briggsplc.co.uk](http://www.briggsplc.co.uk)

Control Application  
Kieghley North, Yorkshire  
01535 634 811  
[www.controlapplications.co.uk](http://www.controlapplications.co.uk)

D&G Electrical  
Accrington, Lancashire  
01254 398 725

Doel Engineering  
Witham, Essex  
01376 515 515  
[www.doeleengineering.com](http://www.doeleengineering.com)

E2 Solutions  
Eastwood, Nottinghamshire  
01773 715 741

E E S Projects Ltd  
Rotherham South, Yorkshire  
01709 533 333  
[www.e-es.co.uk](http://www.e-es.co.uk)

Harford Control  
Trowbridge, Wiltshire  
01225 764 461  
[www.harfordcontrol.com](http://www.harfordcontrol.com)

More Control  
Milton Keynes, Buckinghamshire  
01908 364 555  
[www.more-control.com](http://www.more-control.com)

Pelican Control Systems Ltd  
Grantham, Lincolnshire  
01476 577 708  
[www.pelicansystems.co.uk](http://www.pelicansystems.co.uk)

Spectra Displays Ltd  
Willingham, Cambridgeshire  
01954 261 402  
[www.spectra-displays.co.uk](http://www.spectra-displays.co.uk)

Westmont Systems Ltd  
Inverkeithing, Fife  
01383 435 820  
[www.westmont.co.uk](http://www.westmont.co.uk)

Williams Industrial Services  
Mallusk, County Antrim  
02890 838 999  
[www.wis-ni.com](http://www.wis-ni.com)

WMT Logic Control Tech. Ltd  
Poole, Dorset  
07000 456442  
[www.wmtlogic.net](http://www.wmtlogic.net)

#### Omron Specialist Partners

Omron Specialist Partners provide a high degree of specialist knowledge of Omron products and can use this knowledge to provide unique solutions to control problems. Omron Specialist Partners are experts in a specific field of application, for example; Machine Vision, Motion Control, Machine Safety, Control Software. Typically they offer the skills below.

#### Safety Specialist

On site safety audits  
Risk assessment  
Machine compliance  
Legislation consultations

Intergated Safety Solutions Ltd  
Wembley, Middlesex  
0208 904 0889  
[www.integrated-safety-solutions.com](http://www.integrated-safety-solutions.com)

Safety Innovations Ltd  
Upper Stondon, Bedfordshire  
01462 851 995  
[www.safetyinnovations.co.uk](http://www.safetyinnovations.co.uk)

#### Vision Specialist

Customer training  
Inspection problem solving  
Integration  
Solution provision  
Lighting engineering

ACT Controls Ltd  
Rotherham, South Yorkshire  
01709 511 150  
[www.actcontrols.co.uk](http://www.actcontrols.co.uk)

More Control  
Milton Keynes, Buckinghamshire  
01908 364 555  
[www.more-control.com](http://www.more-control.com)

PCS Industries Ltd  
Hadleigh, Essex  
01702 389 352  
[www.pcs-industries.co.uk](http://www.pcs-industries.co.uk)

Pelican Control Systems Ltd  
Grantham, Lincolnshire  
01476 577 708  
[www.pelicansystems.co.uk](http://www.pelicansystems.co.uk)

Phasor Ltd  
Sunderland, Tyne & Wear  
0191 516 6529  
[www.phasor.co.uk](http://www.phasor.co.uk)

Westmont Systems Ltd  
Inverkeithing, Fife  
01383 435 820  
[www.westmont.co.uk](http://www.westmont.co.uk)

#### Motion Control Specialist

Bespoke solutions  
Integration  
Solution provision

Micromech Systems Ltd  
Braintree, Essex  
01376 333 333  
[www.micromech.co.uk](http://www.micromech.co.uk)

Pelican Control Systems Ltd  
Grantham, Lincolnshire  
01476 577 708  
[www.pelicansystems.co.uk](http://www.pelicansystems.co.uk)

Riverford Control Systems  
Plymouth, Devon  
01752 696 800  
[www.riverfordcontrols.co.uk](http://www.riverfordcontrols.co.uk)

#### **Control Software Specialist**

SCADA programming  
Database configuration  
Management information systems  
Internet solutions  
  
AIC Solutions Ltd  
Slough, Berkshire  
01753 215 222  
[www.aicsolutions.com](http://www.aicsolutions.com)  
  
Contron  
Horsham, West Sussex  
01403 261 029  
[www.contron.co.uk](http://www.contron.co.uk)  
  
IAG Technology  
Aylesbury, Buckinghamshire  
01296 483 838  
[www.iags.co.uk](http://www.iags.co.uk)

#### **Sensor Specialist**

Camis  
Stourbridge, West Midlands  
01384 441 402  
[www.camis.demon.co.uk](http://www.camis.demon.co.uk)

#### **Vehicle Specialist**

Commercial Body Fittings  
Hatfield, Hertfordshire  
01707 271 161  
[www.cbf.uk.com](http://www.cbf.uk.com)

#### **Drives Specialist**

Varicon  
Worcester, Worcestershire  
01905 769 126  
[www.varicon.co.uk](http://www.varicon.co.uk)

WMT Logic Control Tech. Ltd  
Poole, Dorset  
07000 456 442  
[www.wmtlogic.co.uk](http://www.wmtlogic.co.uk)

Omron Wholesalers  
WF  
Portsmouth, Portsmouth  
023 9266 6656  
Eastleigh, Hampshire  
023 8026 7411  
Dagenham, London  
020 8596 7200  
Ipswich, Suffolk  
01473 748 431  
Hendon, London  
020 8203 0055  
Colchester, Essex  
01206 577 755  
Basildon, Essex  
01268 532 558  
[www.wf-online.com](http://www.wf-online.com)

Newey & Eyre  
Newcastle, Tyne & Wear  
0191 495 1000  
Nottingham, Nottinghamshire  
0115 986 6531  
  
Peterborough, Cambridgeshire  
01733 563 261  
[www.neweyandeyre.co.uk](http://www.neweyandeyre.co.uk)

#### **Ireland**

Amon Electronics Ltd  
Newbridge  
phone +353 45 438 187  
fax +353 45 486 868  
[www.amonelectronics.com](http://www.amonelectronics.com)  
  
Automated Technical Controls Ltd  
Dublin  
phone +353 1 462 5111  
fax +353 1 452 0887  
[www.atc.ie](http://www.atc.ie)  
  
DTL Systems Ltd  
Dublin  
phone: +353 1 492 4560  
fax: +353 1492 4322  
[www.dtlsystems](http://www.dtlsystems)

#### **CIS**

**Representative Office:**  
OMRON ELECTRONICS B.V.  
Independent Distributor Sales  
Wegalaan 61  
2132 JD Hoofddorp  
P.O. Box 582  
2130 AN Hoofddorp  
The Netherlands  
phone: +31- 23 568 11 00  
fax: +31 23 568 13 97  
[www.europe.omron.com](http://www.europe.omron.com)

#### **Belarus**

System Analysis S.  
Mogilevskaya st., 14,  
BYR-220007 Minsk  
phone: +375 - 17 2054244/45/46/47  
fax: +375 - 17 2054249  
[root@sasautomation.com](mailto:root@sasautomation.com)  
[www.sasautomation.com](http://www.sasautomation.com)

#### **Ukraine**

Technoimpex  
Volkova Street 36  
180005 Cherkassy  
phone: +380 - 472 54 41 91  
fax: +380 - 472 54 05 00  
[office@technoimpex.com](mailto:office@technoimpex.com)

#### **Russia**

Tatchka  
47 rue H. Denis  
1050 Brussels, Belgium  
phone: +32 - 23 56 97 15  
fax: +32 - 23 46 97 16  
[tatchka@nirvanet.net](mailto:tatchka@nirvanet.net)

#### **South East Europe**

**Representative Office:**  
OMRON ELECTRONICS B.V.  
Independent Distributor Sales  
Wegalaan 61  
2132 JD Hoofddorp  
P.O. Box 582  
2130 AN Hoofddorp  
The Netherlands  
phone: +31 - 23 568 11 00  
fax: +31 - 23 568 13 97  
[www.europe.omron.com](http://www.europe.omron.com)

#### **Bulgaria**

Gemamex Private Co.  
Lozenez,4  
BG-1421, Sofia  
phone: +359 - 2 963 1728  
fax: +359 - 2 950 30 61  
[gemamex@dir.bg](mailto:gemamex@dir.bg)

Simel Ltd  
Bul. Rouse 37A  
BG-5800, Pleven  
phone: +359 - 64 802186  
fax: +359 - 64 800318  
[simel@infophone.bg](mailto:simel@infophone.bg)

#### **Croatia**

Zomel d.o.o.  
M. Matoseca 10  
HR-10000 Zagreb  
phone: +385 1 3756622  
fax: +385 - 1 3733120  
[zomel@zg.tel.hr](mailto:zomel@zg.tel.hr)  
[www.zomel.open.hr](http://www.zomel.open.hr)

#### **Macedonia**

Nik Sistemi  
Bul. J. Sandanski No.12 La.5, lo.3  
MAC-1000 Skopje  
phone: +389 - 22 46 13 09  
fax: +389 - 2 40 08 58  
[nik@nik.com.mk](mailto:nik@nik.com.mk)  
[www.nik.com.mk](http://www.nik.com.mk)

#### **Romania**

MegaTech  
Str. Buzesti 61, Bl. A6, Ap39  
RO-011013 Bucharest, 1  
phone: +40 - 21 222 31 81  
fax: +40 - 21 223 49 89  
[sales@megatech.ro](mailto:sales@megatech.ro)  
[www.megatech.ro](http://www.megatech.ro)

#### **Slovakia**

ELSYS, s.r.o.  
Komenskeho 89  
921 01 Piestany  
phone: +421- 33 774 19 67  
fax: +421 - 33 772 17 48  
[elsys@elsys.sk](mailto:elsys@elsys.sk)  
[www.elsys.sk](http://www.elsys.sk)

#### **Slovenia**

Miel Electronics d.o.o.  
Efenkova 61 str. (tower B, 4th flr.)  
SI-3320, Velenje  
phone: +386 - 3 898 57 50  
fax: +386 - 3 898 57 60  
[info@miel.si](mailto:info@miel.si)  
[www.miel.si](http://www.miel.si)

#### **Serbia and Montenegro**

ICM Electronics  
Vase Miskina crnog 4  
21000 Novi Sad  
phone: +381 - 21 51 82 53  
fax: +381 - 21 51 81 35  
[dmicic@sezampro.yu](mailto:dmicic@sezampro.yu)  
[www.icm.co.yu](http://www.icm.co.yu)

Mikro Kontrol  
Dositejeva 7a  
11000 Belgrade  
phone: +381 - 11 328 37 32  
fax: +381 - 11 328 38 40  
[mkontrol@eunet.yu](mailto:mkontrol@eunet.yu)  
[www.mikrokontrol.co.yu](http://www.mikrokontrol.co.yu)

## Middle East & Africa

### Representative Office:

OMRON ELECTRONICS B.V.  
Independent Distributor Sales (IDS)  
Wegalaan 61  
2132 JD Hoofddorp  
P.O. Box 582  
2130 AN Hoofddorp  
The Netherlands  
phone: +31 - 23 568 11 00  
fax: +31 - 23 568 13 97  
www.europe.omron.com  
email: ids@eu.omron.com

### Algeria

DORGHAM-EURL OMRON  
105, rue de Tripoli - Hussein Dey  
16040 Alger  
phone : +213 - 21 77 68 56  
fax : +213 - 21 23 48 29

### Bahrain

Ebrahim Al-Shakar & Sons  
P.O. Box 5344  
Manama  
phone: +973 - 22 52 55  
fax: +973 - 22 77 89  
fsls@batelco.com.bh

### Côte d'Ivoire

SHELEC  
Biétry - Boulevard de Marseille - Ilot 66,  
lot 9, zone 4B - ABIDJAN 16  
phone : +225 - 21 34 89 21  
shelec@africaonline.co.ci

### Cyprus

Hadjioannou Ltd  
8C/D Aegeos Str.  
P.O. Box 29121  
Pallouriotissa Nicosia 1621  
phone: +357 - 22 34 82 62/3  
fax: +357 - 22 43 01 07  
milton@spidernet.com.cy

### Egypt

Union  
20 Dr. Ibrahim Salama St.  
12411 Giza , Cairo  
phone: + 202 - 304 21 65/6  
fax: + 202 - 304 69 46  
omron@union.com.eg

### French Polynesia

C.I.P.  
BP 9048 - PAPEETE  
98715 Tahiti  
phone/fax :+689 - 45 09 16

### Iran

Paykar Bonyan Co.  
NO, 114, Vozara Avenue  
Tehran 15167  
phone: + 98 - 21 878 15 91 / 4  
fax: + 98 - 21 877 06 39  
info@paykarbonyan.com  
www.paykarbonyan.com

### Israel

Ateka Ltd  
23, Hayetzira str.  
P.O.Box 3120  
Kiryat Aryeh, Petah Tikva 49512  
phone: +972 - 3 939 23 33  
fax: +972 - 3 924 32 73  
OferL@ateka.co.il

### Jordan

Alfidaa Engineering Est.  
Amman Alsakhrah Almusharafa st  
P.O. Box 285  
11512 Amman  
phone: + 962 - 6 473 29 69  
fax: + 962 - 6 473 29 68  
alfidaa@go.com.jo

### Kenya

Factory Automation Systems Ltd  
P.O. Box 63372  
Nairobi  
phone: +254 - 2 24 12 49  
fax: +254 - 2 55 65 63  
fas@iconnect.co.ke

### Kuwait

Ammar & Partners Electrical Co.  
P.O. Box 1871  
13019 Safat  
phone: +965 - 483 012 22  
fax: + 965 - 484 18 18  
alammar@qualitynet.net

### Lebanon

Metacs S.A.R.L.  
227, Selim Butros street/ Tabaris  
P.O. Box 166817  
Beirut  
phone: +961 - 1 33 59 29  
fax: +961 - 1 20 01 59  
eazar@metacs.com

### Martinique

E.M.P.H.  
ZI La lézarde, Imm. Monplaisir  
BP 420 - 97289 Le Lamentin  
phone : +596 - 51 31 54  
fax : +596 - 57 08 45  
e.m.p.h@wanadoo.fr

### Morocco

MEST COMPOSANTS  
4 rue de Provins  
21300 Casablanca  
phone : +212 - 22 30 60 52  
fax : +212 - 22 30 14 90  
mest@mest.co.ma  
www.mest.co.ma

### Nigeria

Ibron Limited  
6 Louis Solomon Close  
Victoria Island, Lagos  
phone: + 234 - 1 5870615  
fax: + 234 - 1 5872476  
ibron@infoweb.abs.net

### Qatar

Qatar Instrumentation & Eng.  
P.O. Box 17424  
Doha  
phone: +974 - 432 83 31  
fax: +974 - 432 83 11  
qinst@qatar.net.qa

### Saudia Arabia

AWS Distribution  
P.O. Box 73409  
Al Khobar – 31952  
phone: +966 - 3 858 90 00  
fax: +966 - 3 858 84 04  
awsd03@yahoo.com

### P.O. Box 250437

Riyadh – 11391  
phone: +966 - 1 201 26 66  
fax: +966 - 1 462 85 34  
awsd01@yahoo.com

### P.O. Box 136399

Jeddah -21313  
phone: +966 - 2 652 70 00  
fax: +966 - 2 650 20 85  
awsd02@yahoo.com

### Senegal

NARMER  
32, rue Mass Diokhané  
BP23408 - Dakar-Ponty  
phone : +221 - 8 23 30 92  
fax : +221 - 8 21 17 40  
narmer@sento.sen

### Sultanate of Oman

AI Khadrawain electronics &  
Instrumentation  
P.O. Box 34  
Ruwi  
phone: +968 - 773 38 72  
fax: +968 773 39 06  
alkhadra@omantel.net.om

### Syria

OhaAra Data Eng.  
Surian Djadideh, Zuhour Str.  
P.O. Box 4410  
Aleppo  
phone: +963 - 21 22 73 2 27  
fax: +963 - 21 227 32 81  
ohaara@net.sy

### South Africa

Yelland Control  
3 Sunrock Close, Sunnyrock  
Germiston, 1401  
P.O.Box 3939  
1610 Edenvale  
phone: +27 - 11 455 - 27 82  
fax: +27 - 11 455 - 27 76  
johannesburg@yelland.co.za

### Tunisia

E.G.A.S.  
10, avenue Habib Bourguiba  
1001 TUNIS  
phone : +216 - 71 33 65 44  
fax : 216 - 71 34 35 27  
mest@mest.co.ma  
egas@gnet.tn

### United Arab Emirates

Deira General Marketing  
P.O.Box 11370  
Dubai  
phone: +971 - 4 338 91 11  
fax: +971- 4 338 26 25  
dgmsales@emirates.net.ae

# Index

## #

3G3MV .....	205
3G3MV-P10CDT□-E .....	271
3G3RV-P10ST□-E .....	279

## C

C200HW-MC402-E .....	43
C200HW-NC□□□ .....	39
CIMR-E7Z .....	219
CIMR-F7Z .....	253
CIMR-J7AZ .....	193
CIMR-L7Z .....	237
CJ1W-NC□□ .....	37
CS1W-MC221 .....	41
CS1W-MC421 .....	41
CS1W-MCH71 .....	45
CS1W-NC□□□ .....	39

## J

JUSP-NS300 .....	51
JUSP-NS500 .....	57
JUSP-NS600 .....	63

## M

MCH-Tool .....	293
Motion Perfect .....	295

## R

R7D-AP□ .....	77
R7M-A□ .....	77
R88A-MCW151-□ .....	69

## S

SGDH-□ .....	95, 129
SGLF□ .....	143
SGLG□ .....	143
SGLT□ .....	143
SGM□H-□ .....	95
SGMBH-□ .....	129
SigmaWin+ .....	297
SYSDRIVE Configurator .....	301

## W

WS02-MCTC1-EV .....	291
WS02-NCTC1-E .....	289

## X

XD-□ .....	169
XtraWare .....	299

**Note:** Although we do strive for perfection, Omron Europe BV and/or its subsidiary and affiliated companies do not warrant or make any representations regarding the correctness or completeness of information described in this catalogue. Product information in this catalogue is provided 'as is' without warranty of any kind, either express or implied, including, but not limited to, the implied warranties of merchantability, fitness for a particular purpose, or non-infringement. In a jurisdiction where the exclusion of implied warranties is not valid, the exclusion shall be deemed to be replaced by such valid exclusion, which most closely matches the intent and purpose of the original exclusion. Omron Europe BV and/or its subsidiary and affiliated companies reserve the right to make any changes to the products, their specifications, data at its sole discretion at any time without prior notice. The material contained in this catalogue may be out of date and Omron Europe BV and/or its subsidiary and affiliated companies make no commitment to update such material.

Cat. No. Y203-EN2-01 DRIVES

**OMRON**