

SGTMM01-□, SGTMM03-□

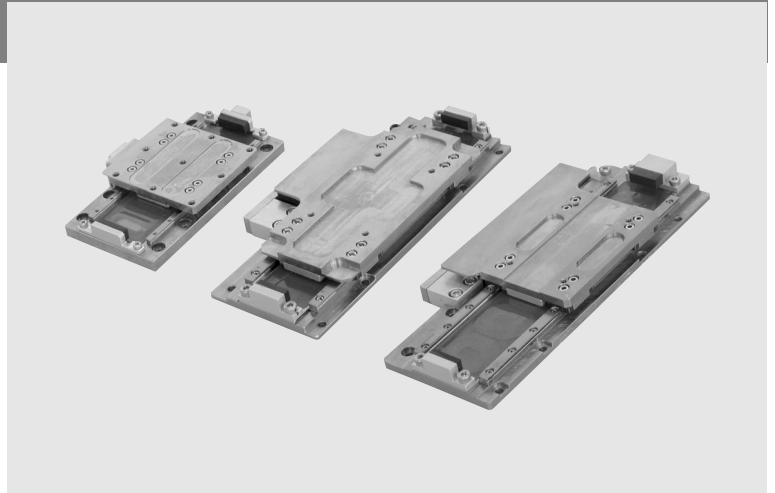
# Linear sigma trac-micro

## Direct drive linear servomotor axis for mounting at narrow spaces

- Compact, high-thrust and high-speed movement
- Flat construction for mounting at narrow spaces
- Plug and drive, shorten start-up time
- Easy operation and high reliability
- Moving magnet construction avoids moving cables
- Resolution of 78 nm
- Direct control of the axis using XtraDrive and Sigma-II drives

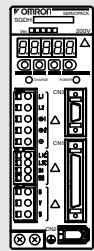
### Ratings

- 230 VAC single-phase 3.5 N and 7 N (25 N peak)



## System configuration

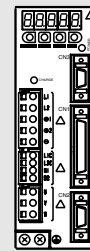
(Refer to servo drive chapter)



**Servo drive with option boards for flexible system configuration**

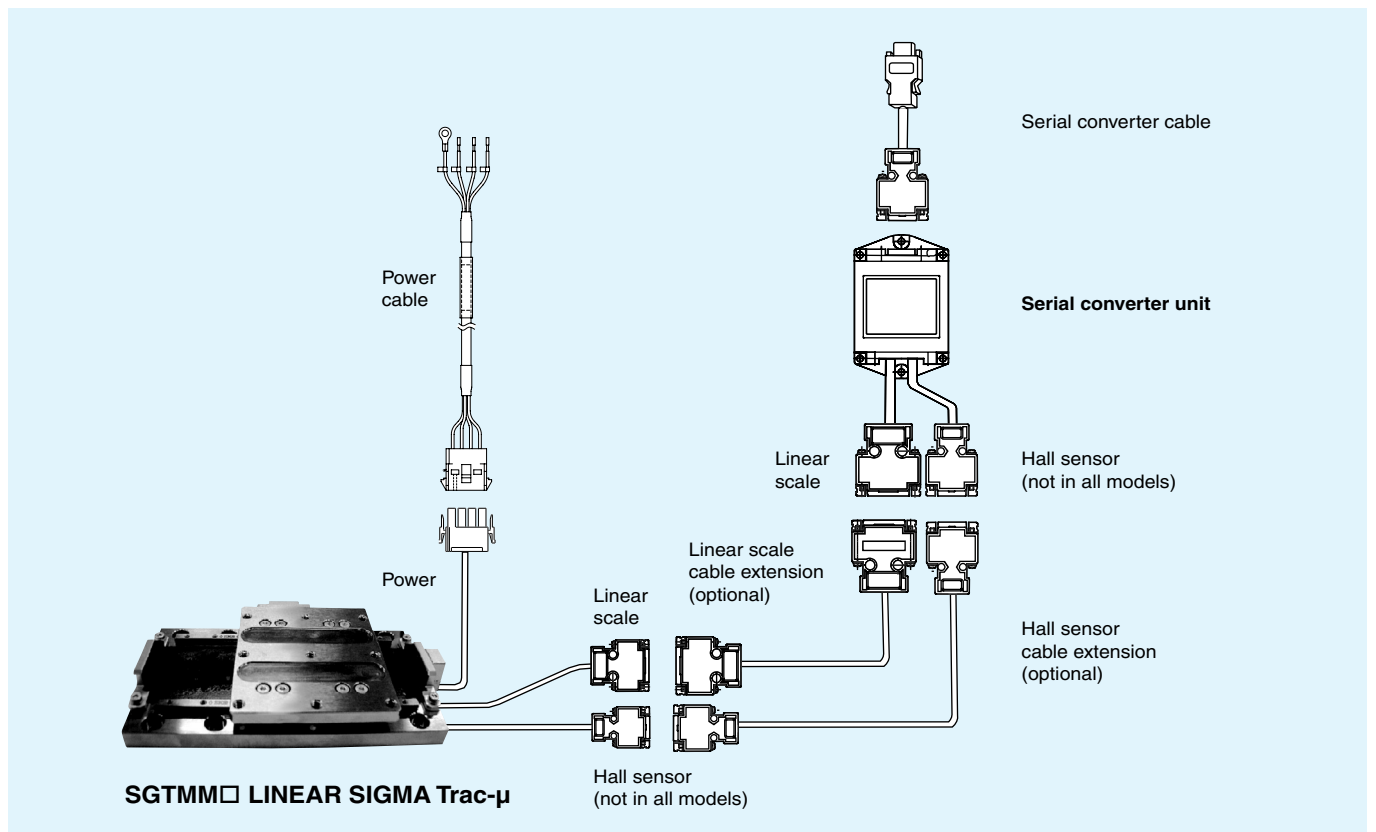
Sigma-II servo drive

Drive options



**Intelligent servo drive**

XtraDrive



Servo motor / servo drive combination

Sigma trac-μ

SGTMM 03 - 065 A H 20 A P

Σ Trac linear axis

Maximum thrust	
Code	Specifications
01	10 N
03	25 N

Effective stroke length	
Code	Specifications
010	10 mm
025	25 mm
030	30 mm
065	65 mm

Hall sensor	
Code	Specifications
-	None
P	Provided

Design revision

Linear scale pitch	
Code	Specifications
20	20 μm

Linear scale manufacturer	
Code	Specifications
H	Heidenhain
M	MicronE

Output from linear scale	
Code	Specifications
A	Analogue (1 Vp-p)

Servomotor specifications

Sigma trac-μ

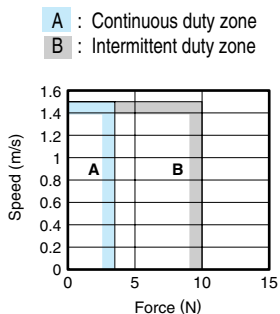
Voltage		230V			
Linear axis model		SGTMM01-010AM20A	SGTMM01-030AM20A	SGTMM03-025AH20AP	SGTMM03-065AH20AP
Rated force	N	3.5	3.5	7.5	7.5
Instantaneous peak force	N	10	10	25	25
Force constant	N / A <sub>rms</sub>	9	9	13.2	12.3
Motor constant	N / √w	1.2	1.2	2.29	1.58
Maximum load *1	kg	1	1	3	3
Effective stroke length	mm	10	30	25	65
Linear scale resolution	μm	0.078μm = 20μm / 256 (8bit)			
Linear scale model number		M1020 (MicroE)		LIDA487/LIF181 (Heidenhain)	
Hall sensor		None	None	Yes	Yes
Weight of moving part	kg	0.1	0.1	0.215	0.24
Total weight of micro trac	kg	0.31	0.35	0.62	0.71
Position accuracy repeatability *2	μm	+/- 0.5	+/- 0.5	+/- 0.5	+/- 0.5
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 maximum load is calculated for an acceleration of 4.9 m/s<sup>2</sup>.

\*2 With stable environmental conditions and motor temperature unchanged.

Characteristics

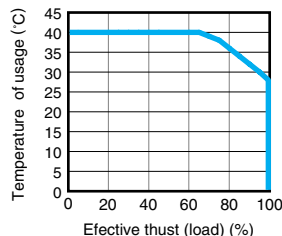
Force-speed



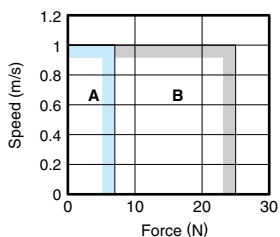
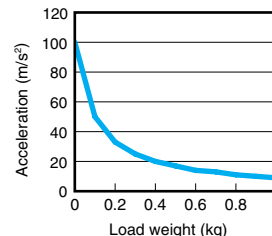
SGTMM01-□

Effective thrust-ambient temperature

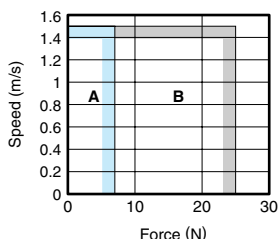
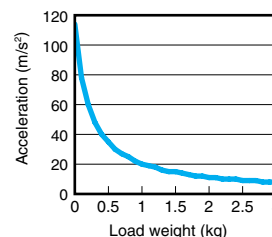
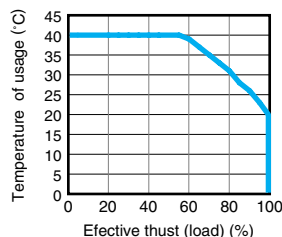
Sensor head temperature is below 50 °C  
— Ambient temperature



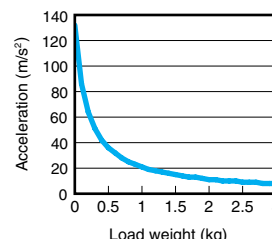
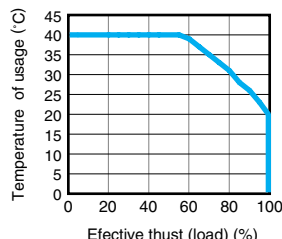
Load-acceleration



SGTMM03-025□



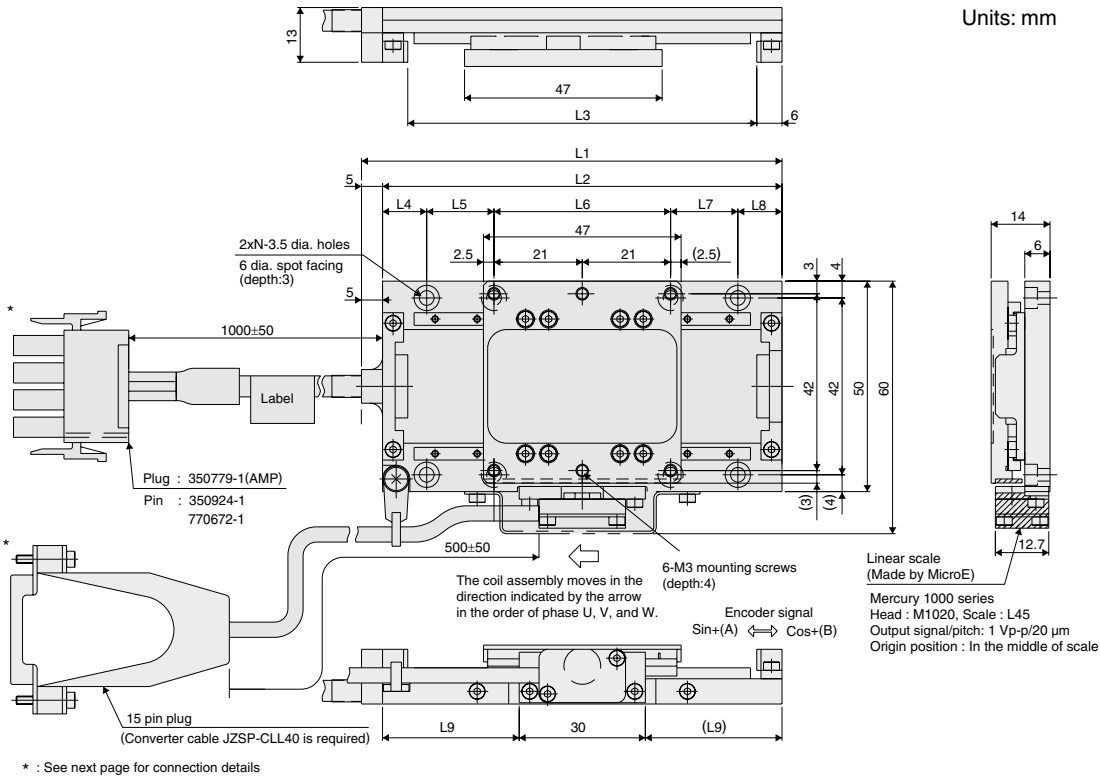
SGTMM03-065□



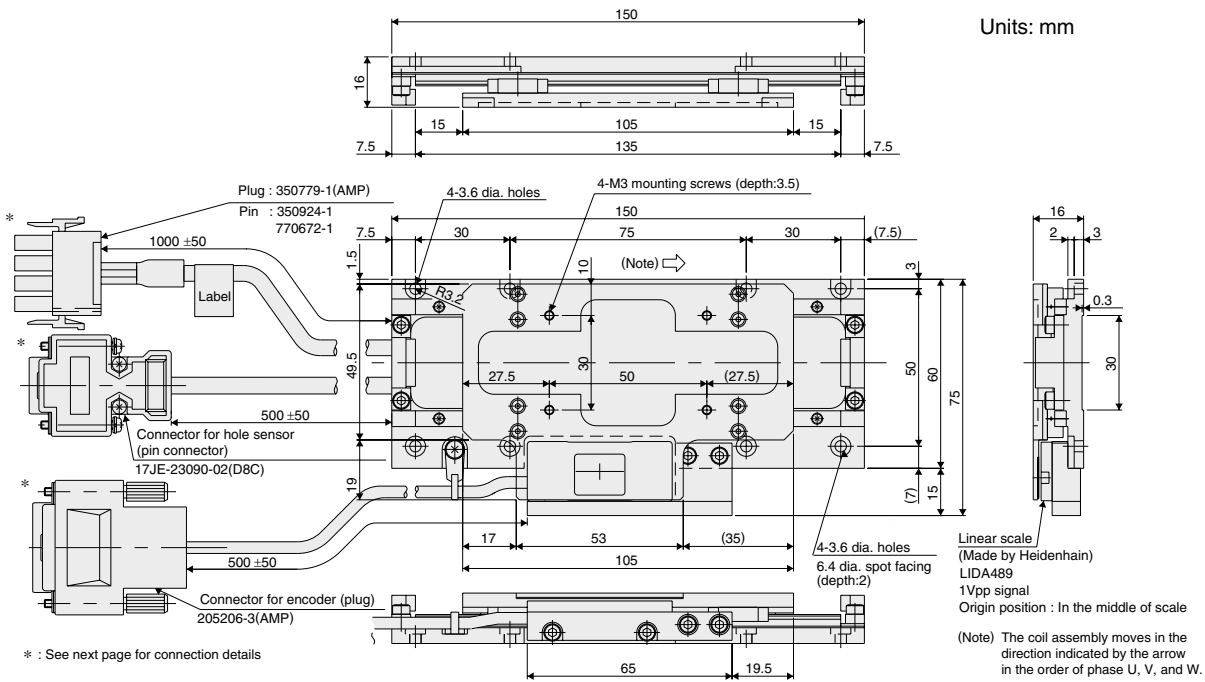
Dimensions

SGTMM01-□

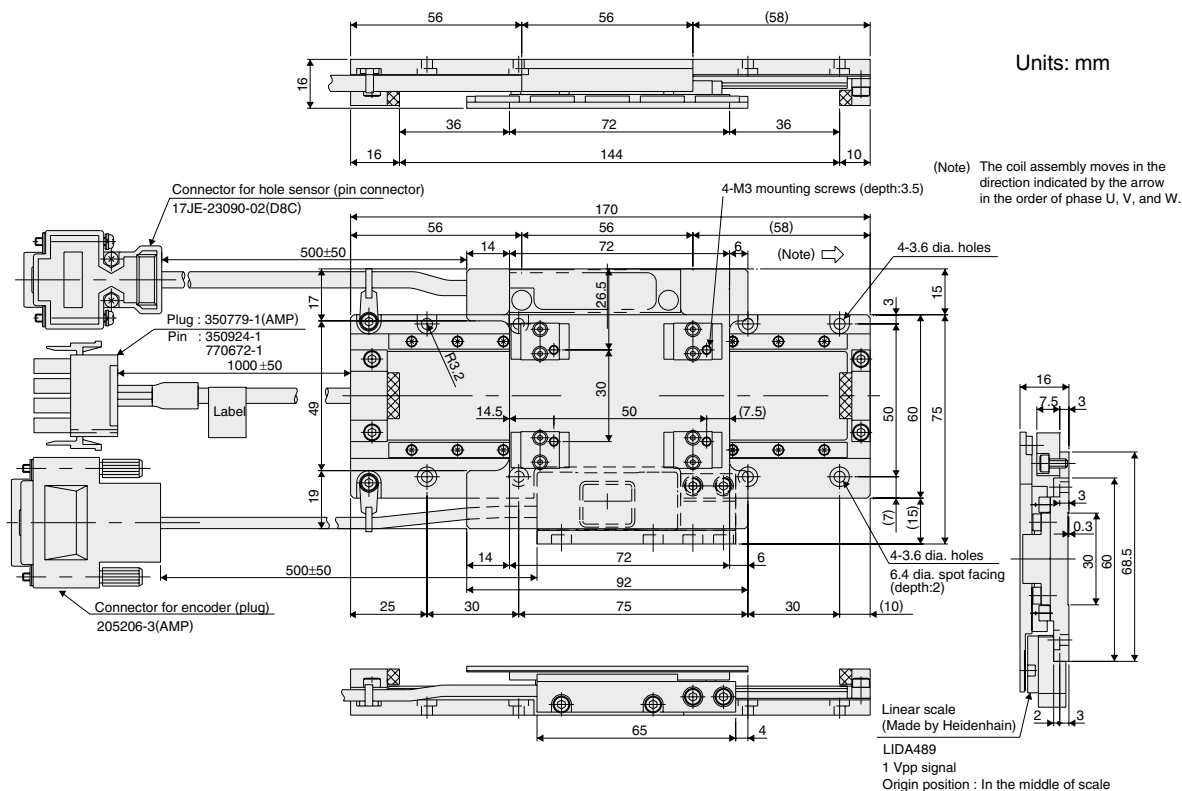
Micro trac model	L1 mm	L2 mm	L3 mm	L4 mm	L5 mm	L6 mm	L7 mm	L8 mm	L9 mm	N
SGTMM01-010AM20A	80	75	63	14	42	8	-	11	22.5	3
SGTMM01-030AM20A	100	95	83	10.5	16	42	16	10.5	32.5	4



SGTMM03-025AH20AP



SGTMM03-065AH20AP



Sigma trac-μ connections

SGTMM01-□

Linear servo motor Power connector

Pin No.	Name
1	Phase U
2	Phase V
3	Phase W
4	FG

Linear scale connector (Signal converter cable JZSP-CLL40 is required)

Pin No.	Signal
1	IW-
2	IW+
3	RESERVED
4	RESERVED
5	RESERVED
6	RESERVED
7	COS+
8	SIN+
9	N/C
10	N/C
11	N/C
12	+5 V
13	GND
14	COS-
15	SIN-
Case	Shield

SGTMM03-□

Linear servo motor Power connector

Pin No.	Name
1	Phase U
2	Phase V
3	Phase W
4	FG

Linear scale connector

Pin No.	Signal
1	cos (A+)
2	0 V
3	sin (B+)
4	+5V
5	Empty
6	Empty
7	/Ref (R-)
8	Empty
9	/cos (A-)
10	0V sensor
11	/sin (B-)
12	5 V sensor
13	Empty
14	Ref (R+)
15	Empty
Case	Shield

Hall sensor connector

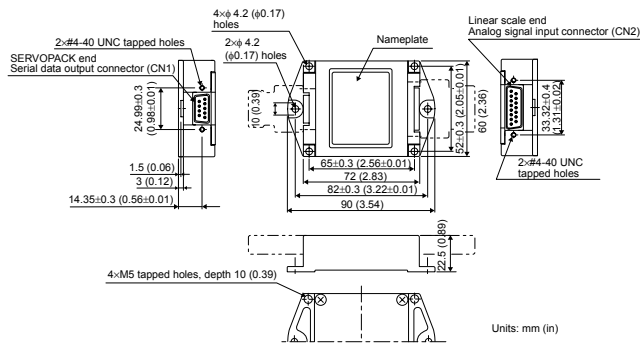
Pin No.	Name
1	+5 V (Power supply)
2	Phase U
3	Phase V
4	Phase W
5	0 V (Power supply)
6	Not used
7	Not used
8	Not used
9	Not used

## Serial converter unit

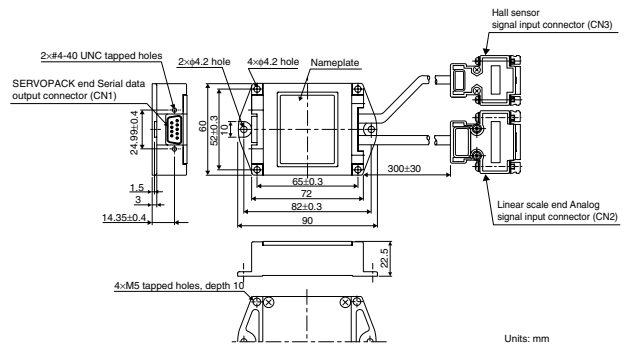
### JZDP-D00□-□□□□

Items	Specifications	
Electrical characteristics	Power supply voltage	+5.0 V ±5%, ripple content 5% max.
	Current consumption	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 1.2 V Input signal level: 1.5 V to 3.5 V
	Pole sensor input signal	CMOS level
	Output signals	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 μs
	Output circuit	Balanced transceiver (SN75LBC176 or the equivalent) Internal terminal resistance: 120 Ω
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
	Operating temperature	0 °C to 55 °C (32 to 131 °F)
Environmental conditions	Storage temperature	-20 °C to +80 °C (-4 to +176 °F)
	Humidity	20% to 90% RH (without condensation)

### JZDP-D003-□□□□

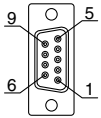


### JZDP-D006-□□□□



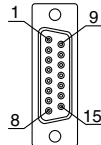
### JZDP-D003-□□□□ JZDP-D006-□□□□

**[CN1]**  
SERVOPACK end  
serial data output



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

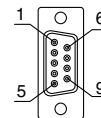
**[CN2]**  
Linear scale end  
Analog signal input



Pin No.	Signal
1	cos input (A+)
2	0 V
3	sin input (B+)
4	+5 V
5	Empty
6	Empty
7	/Ref input (R-)
8	Empty
9	/cos input (A-)
10	0 V sensor
11	/sin input (B-)
12	5 V sensor
13	Empty
14	Ref input (R+)
15	Empty
Case	Shield

### JZDP-D006-□□□□

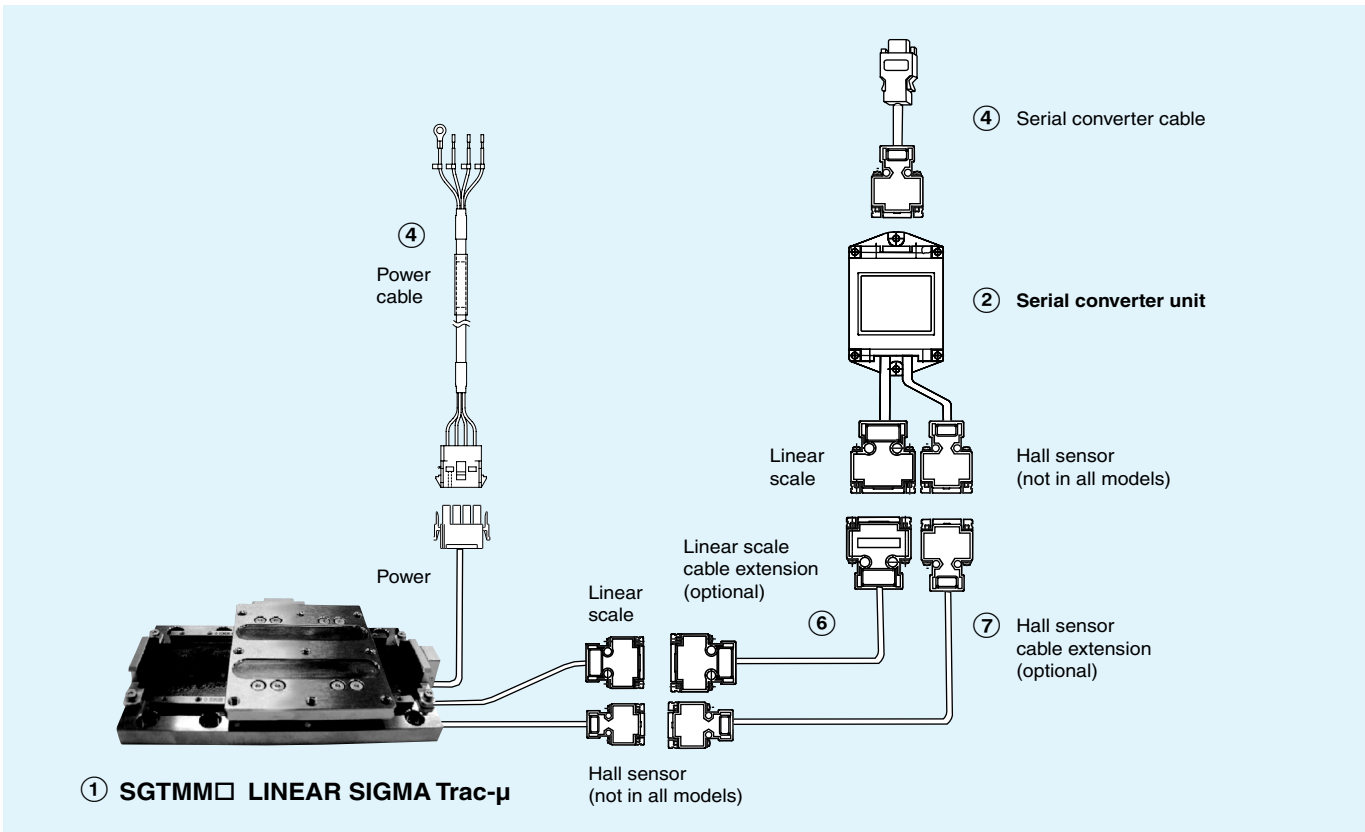
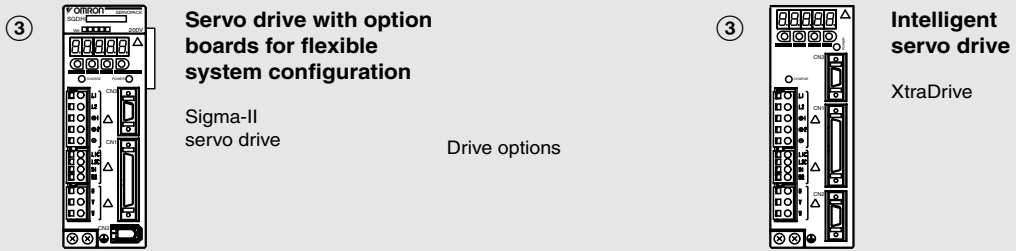
**[CN3]**  
Hall sensor signal input



Pin No.	Signal
1	+5 V
2	U-phase input
3	V-phase input
4	W-phase input
5	0 V
6	Empty
7	Empty
8	Empty
9	Empty
Case	Shield

Ordering Information

(Refer to servo drive chapter)



**Note:** The symbols ①②③... show the recommended sequence to select the servo motor, cables and serial converter for a linear motors system

**Sigma trac-μ**

Symbol	Specifications		Model			
	Rated force	Peak force	① Linear axis model	② Serial converter	③ Servo drive	
①②③	3.5 N	10 N	SGTMM01-010AM20A	JZDP-D003-242 <sup>*1</sup>	SGDH-A5AE-OY	XD-P5MN01
	3.5 N	10 N	SGTMM01-030AM20A	JZDP-D003-242 <sup>*1</sup>	SGDH-A5AE-OY	XD-P5MN01
	7 N	25 N	SGTMM03-025AH20AP	JZDP-D006-221	SGDH-01AE-OY	XD-01MN01
	7 N	25 N	SGTMM03-065AH20AP	JZDP-D006-220	SGDH-01AE-OY	XD-01MN01

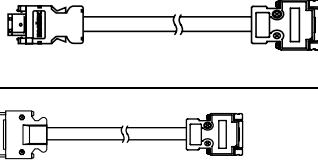
**Note:** \*1. For the SGTMM01-□ motor the signal converter cable **JZSP-CLL40** (0.2 m length) is required.

**Servo drive**

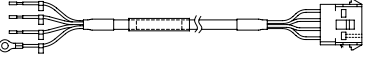
**Note:** Choosing Sigma-II drive or XtraDrive affects to the serial converter cable needed

③ Refer to Sigma-II or XtraDrive servo drive chapter for detailed drive specifications and selection of drive accessories

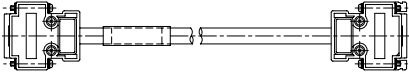
**Serial converter cable to servo drive**

Symbol	Specifications		Model	Appearance
④	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 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	

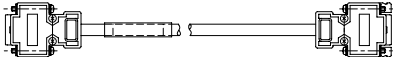
**Power cables**

Symbol	Specifications		Model	Appearance
⑤	Power cable for sigma trac micro	3 m	R7A-CAA003S-FE	
		5 m	R7A-CAA005S-FE	
		10 m	R7A-CAA010S-FE	
		15 m	R7A-CAA015S-FE	
		20 m	R7A-CAA020S-FE	

**Linear scale cable to serial converter**

Symbol	Specifications		Model	Appearance
⑥	Extension cable linear scale to serial converter (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	

**Hall sensor cable to serial converter**

Symbol	Specifications		Model	Appearance
⑦	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	



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