Ultra-compact CMOS Smart Laser Sensor

E3NC-S

CSM_E3NC-S_DS_E_6_1

A Ultra-compact CMOS Laser Sensor for Stable Detection without the Influence of Workpiece Color, Material, or Surface Conditions

- Dynamic range of 500,000 times for stable detection without influence from changes in workpieces.
- The industry's smallest CMOS laser head* for installation into small spaces.
- Distance discrimination enables stable detection of level differences as small as 1.5 mm.
- Robot cable for reliable application in adverse environments and IP67 protection.
- White on black display characters for high visibility.
- Smart Tuning to achieve stable detection with easy setup.

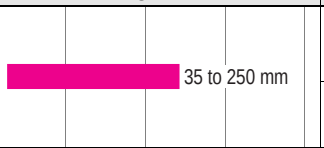
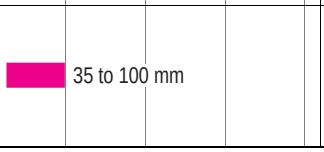
✻ Based on November 2012 OMRON investigation.

Refer to the *Safety Precautions* on page 8.

For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

Ordering Information

Sensor Heads (Dimensions ➜ page 10)

Appearance	Sensing distance	Model	Laser class
	 35 to 250 mm	E3NC-SH250H 2M	Class 2
		E3NC-SH250 2M	Class 1
	 35 to 100 mm	E3NC-SH100 2M	

Amplifier Units (Dimensions ➜ page 10)

Connecting method	Appearance	Inputs/outputs	Model	
			NPN output	PNP output
Pre-wired (2 m)		2 outputs + 1 input	E3NC-SA21 2M	E3NC-SA51 2M
Wire-saving Connector		1 output + 1 input	E3NC-SA7	E3NC-SA9
M8 Connector		1 output + 1 input	E3NC-SA24	E3NC-SA54
Connector for Sensor Communications Unit *		---	E3NC-SA0	

✻ A Sensor Communications Unit is required if you want to use the Amplifier Unit on a network.

Accessories (Sold Separately)

Sensor Head Accessories

Sensor Head Mounting Brackets

A Mounting Bracket is not provided with the Sensor Head. It must be ordered separately as required. **(Dimensions ➜ page 12)**

Applicable Sensor Head	Appearance	Model	Quantity	Contents
E3NC-SH250H E3NC-SH250 E3NC-SH100		**E39-L187**	1	Mounting Bracket: 1 Nut plate: 1 Phillips screws (M3×18): 2
		**E39-L188**	1	

Amplifier Unit Accessories

Wire-saving Connectors (Required for models for Wire-saving Connectors.) (Dimensions ➜ page 14)

Connectors are not provided with the Amplifier Unit and must be ordered separately. *Protective stickers are provided.

Type	Appearance	Cable length	No. of conductors	Model
Master Connector		2 m	4	**E3X-CN21**
Slave Connector			2	**E3X-CN22**

Sensor I/O Connectors (Required for models for M8 Connectors.) (Dimensions ➜ page 14)

Connectors are not provided with the Fiber Amplifier Unit and must be ordered separately.

Size	Cable	Appearance	Cable type		Model
M8	Standard cable	Straight 	2m	4-wire	XS3F-M421-402-A
			5m		XS3F-M421-405-A
		L-shaped 	2m		XS3F-M422-402-A
			5m		XS3F-M422-405-A

Amplifier Unit Mounting Bracket (Dimensions ➜ page 15)

A Mounting Bracket is not provided with the Amplifier Unit. It must be ordered separately as required.

Appearance	Model	Quantity
	**E39-L143**	1

DIN Track (Dimensions ➜ page 15)

A DIN Track is not provided with the Amplifier Unit. It must be ordered separately as required.

Appearance	Type	Model	Quantity
	Shallow type, total length: 1 m	**PFP-100N**	1
	Shallow type, total length: 0.5m	**PFP-50N**	
	Deep type, total length: 1 m	**PFP-100N2**	

End Plate (Dimensions ➜ page 15)

Two End Plates are provided with the Sensor Communications Unit. End Plates are not provided with the Amplifier Unit. They must be ordered separately as required.

Appearance	Model	Quantity
	**PFP-M**	1

Related Products

Sensor Communications Units

Type	Appearance	Model
Sensor Communications Unit for EtherCAT		**E3NW-ECT**
Sensor Communications Unit for CompoNet *1		**E3NW-CRT**
Sensor Communications Unit for CC-Link *1		**E3NW-CCL**
Distributed Sensor Unit *2		**E3NW-DS**

✻1. Refer to your OMRON website for details.
✻2. The Distributed Sensor Unit can be connected to any of the Sensor Communications Units.

Ratings and Specifications

Sensor Heads

Sensing method	Distance-settable		
Item / Model	E3NC-SH250H	E3NC-SH250	E3NC-SH100
Light source (wavelength)*1	Visible semiconductor laser diode (660 nm), 1 mW (average output: 220 μW) (JIS Class 2, IEC/EN Class 2, and FDA Class 2)	Visible semiconductor laser diode (660 nm), 0.5 mW (average output: 100 μW) (JIS Class 1, IEC/EN Class 1, and FDA Class 1)	
Measurement range	35 to 250 mm (display value: 350 to 2,500)		35 to 100 mm (display value: 350 to 1,000)
Standard detected level difference *2	35 to 180mm: 9 mm 180 to 250 mm: 25 mm		35 to 50 mm: 1.5 mm 50 to 100 mm: 3 mm
Spot diameter*3	Approx. 1 mm (at 250 mm)		Approx. 0.5 mm (at 100 mm)
Indicators	OUT indicator (orange), STABILITY indicator (green), and ST indicator (blue)		
Ambient illumination	Illumination on received light surface: 4,000 lx max. of incandescent light, 8,000 lx max. of sunlight	Illumination on received light surface: 2,000 lx max. of incandescent light, 4,000 lx max. of sunlight	Illumination on received light surface: 4,000 lx max. of incandescent light, 8,000 lx max. of sunlight
Ambient temperature range	Operating: –10 to 50°C; Storage: –25 to 70°C (with no icing or condensation)		
Ambient humidity range	Operating and storage: 35% to 85% (with no condensation)		
Insulation resistance	20 MΩ min. (at 500 VDC)		
Dielectric strength	1,000 VAC at 50/60 Hz for 1 min		
Vibration resistance (destruction)	10 to 55 Hz with a 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions		
Shock resistance (destruction)	500 m/s^2 3 times each in X, Y, and Z directions		
Degree of protection	IEC IP67		
Connecting method	Pre-wired connector (Standard cable length: 2 m)		
Materials – Case	Polybutylene terephthalate (PBT)		
Materials – Lens	Methacrylic resin		
Materials – Cable	PVC		
Weight (packed state/Sensor Head only)	Approx. 125 g/approx. 75 g		
Accessories	Instruction Manual, laser warning label (E3NC-SH250H only)		

Note: Incorrect detection may occur outside the measurement range if the object has a high reflection factor.

✻1. These Sensors are classified as Class 1 laser devices under IEC 60825-1 and the regulations of Laser Notice No. 50 for FDA certification. CDRH (Center for Devices and Radiological Health) registration has been completed. (Accession Number:1220691)

✻2. The values were measured at the center of the sensing distance using OMRON's standard sensing object (white ceramic).

✻3. Spot diameter: Defined at the $1/e^2$ (13.5 %) of the central intensity at the measurement distance.
Measurement may be influenced if there is light leakage outside the defined region and the surroundings of the target object have a high reflectance in comparison to the target object.
Also, when detecting a workpiece that is smaller than the spot diameter, a correct value may not be obtained.

Amplifier Units

Item		Type	Standard models			Model for Sensor Communications Unit
		NPN output	E3NC-SA21	E3NC-SA7	E3NC-SA24	E3NC-SA0
		PNP output	E3NC-SA51	E3NC-SA9	E3NC-SA54	
		Connecting method	Pre-wired	Wire-saving Connector	M8 Connector	Connector for Sensor Communications Unit
Inputs/ outputs	Outputs		2 outputs	1 output		--- ✻1
	External inputs		1 input			
Power supply voltage			10 to 30 VDC, including 10% ripple (p-p)			
Power consumption ✻2			At Power Supply Voltage of 24 VDC Normal mode: 1,920 mW max. (Current consumption: 80 mA max.) Power saving eco mode: 1,680 mW max. (Current consumption: 70 mA max.)			
Control outputs ✻3			Load power supply voltage: 30 VDC max., open-collector output Load current: Groups of 1 to 3 Amplifier Units: 100 mA max., Groups of 4 to 30 Amplifier Units: 20 mA max. (Residual voltage: At load current of less than 10 mA: 1 V max. At load current of 10 to 100 mA: 2 V max.) OFF current: 0.1 mA max.			---
External inputs			Refer to ✻4.			
Indicators			7-segment displays (Sub digital display: green, Main digital display: white) Display direction: Switchable between normal and reversed. OUT indicator (orange), L/D indicator (orange), ST indicator (blue), ZERO indicator (green), and OUT selection indicator (orange, only on models with 2 outputs)			
Protection circuits			Power supply reverse polarity protection, output short-circuit protection, and output reverse polarity protection			Power supply reverse polarity protection and output short-circuit protection
Response time	Super-high-speed mode (SHS) ✻5		Operate or reset: 1.5 ms			
	High-speed mode (HS)		Operate or reset: 5 ms			
	Standard mode (Stnd)		Operate or reset: 10 ms			
	Giga-power mode (GIGA)		Operate or reset: 50 ms			
Sensitivity adjustment			Smart Tuning (2-point tuning, full auto tuning, 1-point tuning, tuning without workpiece, 2-point area tuning, 1-point area tuning, or area tuning without workpiece), or manual adjustment			
No. of Units for mutual interference prevention	Super-high-speed mode (SHS) ✻5		0			
	High-speed mode (HS)		2			
	Standard mode (Stnd)		2			
	Giga-power mode (GIGA)		2			
Functions	Timer		Select from timer disabled, OFF-delay, ON-delay, one-shot, or ON-delay + OFF-delay timer: 1 to 9,999 ms			
	Zero reset		Negative values can be displayed. (Threshold value is shifted.)			
	Resetting settings ✻6		Select from initial reset (factory defaults) or user reset (saved settings).			
	Eco mode		Select from OFF (digital displays lit) or ECO (digital displays not lit).			
	Bank switching		Select from banks 1 to 4.			
	Output 1		Select from Normal detection mode, Area detection mode, or hold mode.			
	Output 2		Select from Normal detection mode or Error output mode.	---		Select from Normal detection mode or Error output mode.
	External input		Select from input OFF, tuning, laser OFF, zero reset, or bank switching.			---
	Keep function ✻7		Select from ON or OFF.			
	Background suppression ✻8		Select from ON or OFF.			
	Hysteresis width		Select from standard setting or user setting.			

✻1. Two sensor outputs are allocated in the programmable logic controller PLC I/O table.
PLC operation via Communications Unit enables reading detected values and changing settings.
✻2. At Power Supply Voltage of 10 to 30 VDC.
Normal mode: 2.250 mW max. (Current consumption: 75 mA max. at 30 VDC, 145 mA max. at 10 VDC)
Power saving eco mode: 1,950 mW max. (Current consumption: 65 mA max. at 30 VDC, 125 mA max. at 10 VDC)
✻3. The total for both outputs of a model with 2 outputs is 100 mA max. (Residual voltage: Load current of less than 10 mA: 1 V max., Load current of 10 to 100 mA: 2 V max.).
✻4. The following details apply to the input.

	Contact input (relay or switch)	Non-contact input (transistor)	Input time
NPN	ON: Shorted to 0 V (Sourcing current: 1 mA max.). OFF: Open or shorted to Vcc.	ON: 1.5 V max. (Sourcing current: 1 mA max.) OFF: Vcc – 1.5 V to Vcc (Leakage current: 0.1 mA max.)	ON: 9 ms min. OFF: 9 ms min.
PNP	ON: Shorted to Vcc (Sinking current: 3 mA max.). OFF: Open or shorted to 0 V.	ON: Vcc – 1.5 V to Vcc (Sinking current: 3 mA max.) OFF: 1.5 V max. (Leakage current: 0.1 mA max.)	

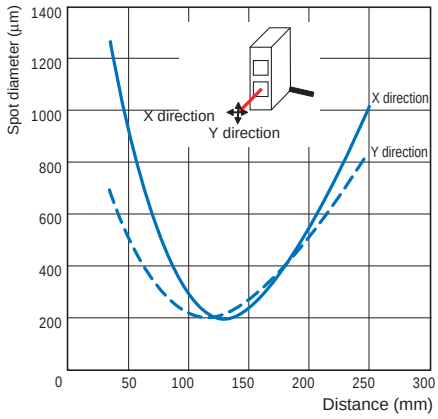
✻5. The mutual interference prevention function is disabled if the detection mode is set to super-high-speed mode.
✻6. The bank is not reset by the user reset function or saved by the user save function.
✻7. The output for a measurement error is set. ON: The value of the output from before the measurement error is retained. OFF: The output is turned OFF when a measurement error occurs.
✻8. Only the sensing object is detected when tuning.

Item	Type	Standard models			Model for Sensor Communications Unit
	NPN output	E3NC-SA21	E3NC-SA7	E3NC-SA24	E3NC-SA0
	PNP output	E3NC-SA51	E3NC-SA9	E3NC-SA54	
	Connecting method	Pre-wired	Wire-saving Connector	M8 Connector	Connector for Sensor Communications Unit
Maximum connectable Units		30			
Ambient temperature range		Operating: Groups of 1 or 2 Amplifier Units: –25 to 55°C, Groups of 3 to 10 Amplifier Units: –25 to 50°C, Groups of 11 to 16 Amplifier Units: –25 to 45°C, Groups of 17 to 30 Amplifier Units: –25 to 40°C Storage: –30 to 70°C (with no icing or condensation)			Operating: Groups of 1 or 2 Amplifier Units: 0 to 55°C, Groups of 3 to 10 Amplifier Units: 0 to 50°C, Groups of 11 to 16 Amplifier Units: 0 to 45°C, Groups of 17 to 30 Amplifier Units: 0 to 40°C Storage: –30 to 70°C (with no icing or condensation)
Ambient humidity range		Operating and storage: 35% to 85% (with no condensation)			
Insulation resistance		20 MΩ (at 500 VDC)			
Dielectric strength		1,000 VAC at 50/60 Hz for 1 min			
Vibration resistance (destruction)		10 to 55 Hz with a 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions			
Shock resistance (destruction)		500 m/s^2 for 3 times each in X, Y, and Z directions			150 m/s^2 for 3 times each in X, Y, and Z directions
Weight (packed state/Amplifier Unit only)		Approx. 115 g/approx. 75 g	Approx. 60 g/ approx. 20 g	Approx. 65 g/approx. 25 g	
Materials	**Case**	Polycarbonate (PC)			
	Cover	Polycarbonate (PC)			
	Cable	PVC			
Accessories		Instruction Manual			

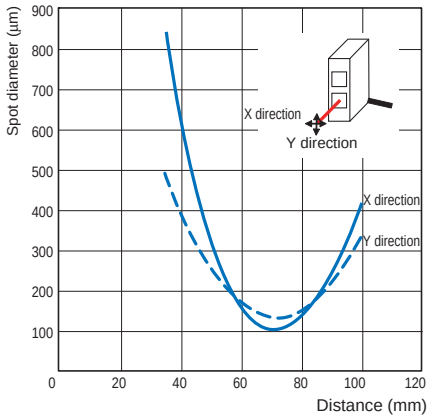
Engineering Data (Reference Value)

Spot Diameter Vs. Distance

E3NC-SH250/SH250H

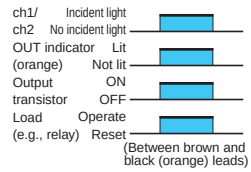
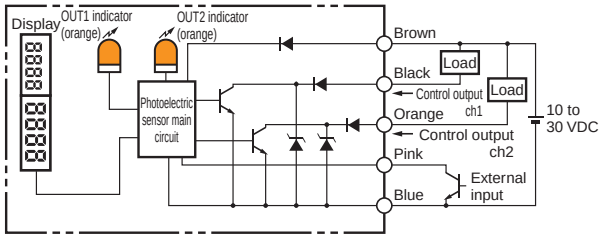
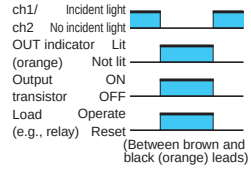
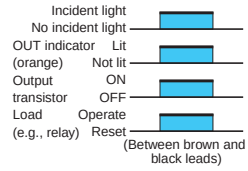
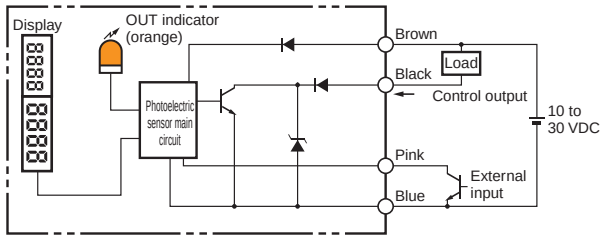
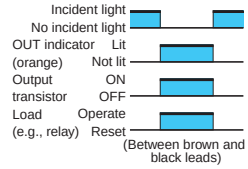


E3NC-SH100

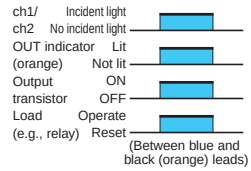
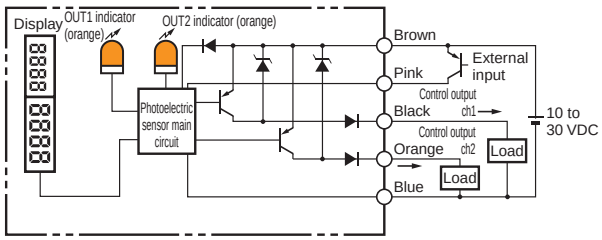
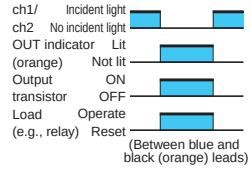
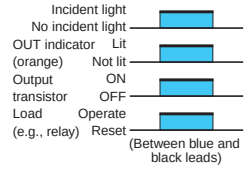
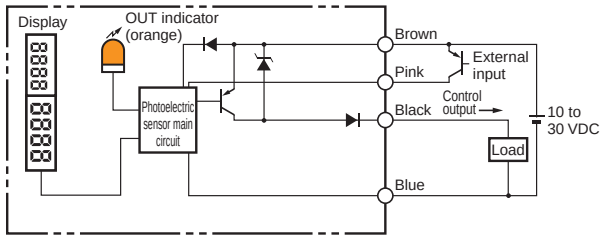
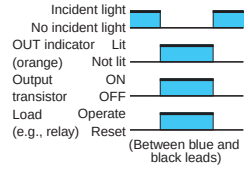


I/O Circuit Diagrams

NPN Output

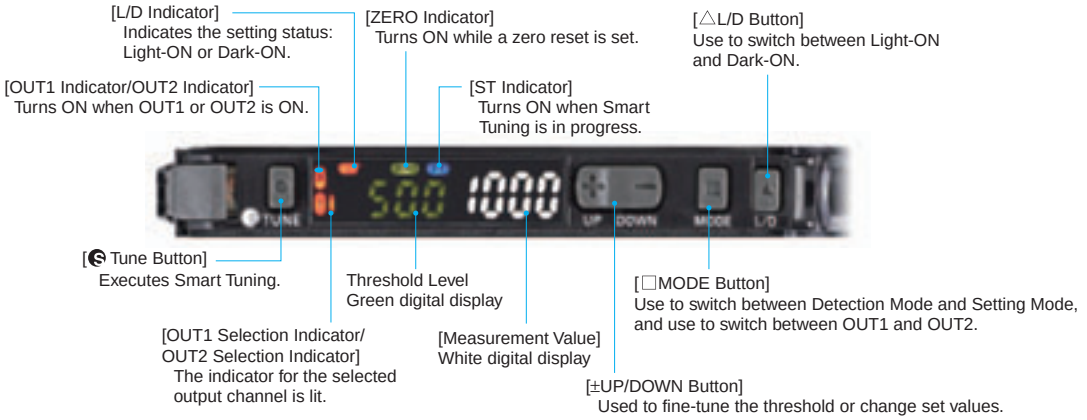
Model	Operation mode	Timing chart	L/D indicator	Output circuit
E3NC-SA21	Light-ON		L lit.	
	Dark-ON		D lit.	
E3NC-SA7 E3NC-SA24	Light-ON		L lit.	
	Dark-ON		D lit.	

PNP Output

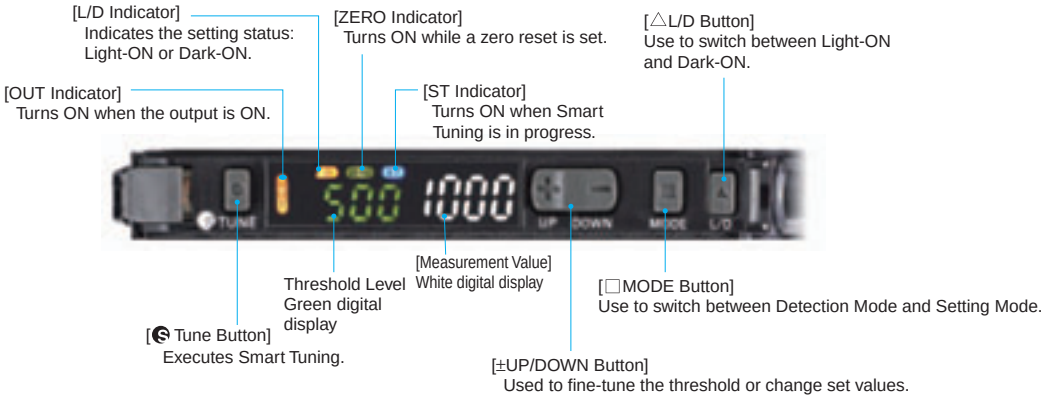
Model	Operation mode	Timing chart	L/D indicator	Output circuit
E3NC-SA51	Light-ON		L lit.	
	Dark-ON		D lit.	
E3NC-SA9 E3NC-SA54	Light-ON		L lit.	
	Dark-ON		D lit.	

Nomenclature

E3NC-SA21/SA51/SA0



E3NC-SA7/SA9/SA24/SA54



Safety Precautions

To ensure safe operation, be sure to read and follow the Instruction Manual provided with the Sensor.

Sensor Heads

Laser Safety

Various safety standards regarding laser devices are stipulated in Japan and abroad. When this Sensor Head is used in Japan and when it is assembled in Japan but exported to a foreign country, the safety standards are classified into three cases.

- When Using the Sensor Head in Japan
  JIS C6802 stipulates the safety measures that must be observed by the user for each type of laser equipment.

  E3NC-SH□□ Sensor Heads: Class 1
  E3NC-SH□□H Sensor Heads: Class 2

⚠ WARNING

Do not expose your eyes to the laser beam either directly or indirectly (i.e., after reflection from a mirror or shiny surface). The laser beam has a high power density and exposure may result in loss of sight.

Do not disassemble the Sensor Head. Doing so may cause the laser beam to leak, resulting in a risk of visual impairment.

- The E3NC-SH has the following WARNING label or explanatory label on the side of the sensors.

Authentication label

E3NC-SH□□
Explanatory Label

E3NC-SH□□H
Laser WARNING Label

- When using devices in which E3NC-SH is installed in the U.S.
  The devices are subjected to the U.S. FDA (Food and Drug Administration) laser regulations. E3NC-SH series is classified into Class 1 or Class 2 by the standard of IEC/EN60825-1 according to deviations of Laser Notice NO.50 of this standard, and is
  already reported to CDRH (Center for Devices and Radiological Health). Accession Number 1220691
- For countries other than Japan
  Replace the WARNING label with the corresponding English label. (supplied with SH□□H) Please make sure that the label is affixed at the correct locations as indicated.
- Using in Europe
  The E3NC-SH is categorized as a Class 1 or Class 2 device as stipulated in EN60825-1.

Precautions for Safe Use

The following precautions must be observed to ensure safe operation of the Sensor Head.

1. Installation Environment
- Do not use the Sensor Head in an environment where explosive or flammable gas is present.
- To secure the safety of operation and maintenance, do not install the Sensor Head close to high-voltage devices or power devices.

2. Power Supply and Wiring
- Always use an E3NC-SA□□, or E3NC-SA0 Amplifier Unit. If a different Amplifier Unit is used, damage or fire may occur.
- If you short the cable, reconnect it as specified. If the connections are not correct, damage or fire may occur.
- High-voltage lines and power lines must be wired separately from the Sensor Head. Wiring them together or placing them in the same duct may cause induction, resulting in malfunction or damage.
- Always turn OFF the power supply before connecting or disconnecting the connectors.

3. Installation
- During installation, tighten the screws securely, but do not exceed the specified tightening torque.
  Specified torque (M3): 0.5 N·m

4. Others
- Never disassemble, repair, modify, deform by pressure, or incinerate the Sensor Head.
- Dispose of the Sensor Head as industrial waste.
- If you notice any abnormalities, immediately stop using the Sensor Head, turn OFF the power supply, and contact your OMRON representative.

Precautions for Correct Use

Observe the following precautions to prevent failure to operate, malfunctions, or undesirable effects on Sensor Head performance.

1. Installation Environment
Do not install the Sensor Head in locations subject to the following conditions:
- Ambient temperatures outside of the rated range
- Condensation caused by rapid changes in temperature
- Relative humidity that is not between 35% and 85%
- Corrosive or flammable gas
- Dust, salt, or iron particles
- Direct vibration or shock
- Strong external light interference (such as other laser beams or electric arc-welding machines)
- Direct sunlight or near heaters
- Water, oil, or chemical fumes or spray
- Strong magnetic or electric fields

2. Warming Up
- For accurate measurements, allow the product to stand for at least 10 minutes after turning ON the power supply before use.
- The circuits will be unstable just after the power supply is turned ON, so measurement values may fluctuate gradually.

3. Maintenance and Inspection
- Always turn OFF the power supply before adjusting or connecting/disconnecting the Sensor Head.
- Do not use thinner, benzene, acetone, or kerosene to clean the Sensor Head.
- If large dust particles or dirt adheres to the filter on the front of the Sensor Head, use a blower brush (such as one used to clean camera lenses) to blow it off. Do not blow the dust particles or dirt with your mouth. To remove dust particles or dirt, wipe it off gently with a soft cloth (such as one for cleaning lenses) moistened with a small amount of alcohol. Do not wipe it off with excessive force. Scratches on the filter may cause errors.

4. Sensing Object
- The Sensor Head cannot accurately measure the following types of objects: Transparent objects, objects with an extremely low reflection ratio, objects smaller than the spot diameter, objects with a large curvature, excessively inclined objects, etc.

5. The degree of protection is IP67, but do not use the Sensor Head in water, rain, or outdoors.

Amplifier Units

⚠ WARNING

This Amplifier Unit is not designed or rated for ensuring safety of persons either directly or indirectly.
Do not use it for such purposes.

Do not use the Amplifier Unit with voltage in excess of the rated voltage.
Excess voltage may result in malfunction or fire.

Never use the Amplifier Unit with an AC power supply.
Otherwise, explosion may result.

Precautions for Safe Use

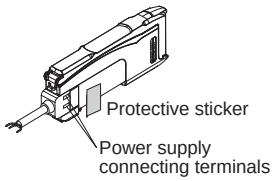
The following precautions must be observed to ensure safe operation of the Amplifier Unit. Doing so may cause damage or fire.

1. Do not install the Amplifier Unit in the following locations.
   - Locations subject to direct sunlight
   - Locations subject to condensation due to high humidity
   - Locations subject to corrosive gas
   - Locations subject to vibration or mechanical shocks exceeding the rated values
   - Locations subject to exposure to water, oil, chemicals
   - Locations subject to stream
   - Locations subjected to strong magnetic field or electric field
2. Do not use the Amplifier Unit in environments subject to flammable or explosive gases.
3. Do not use the Amplifier Unit in any atmosphere or environment that exceeds the ratings.
4. To secure the safety of operation and maintenance, do not install the Amplifier Unit close to high-voltage devices or power devices.
5. High-voltage lines and power lines must be wired separately from the Amplifier Unit. Wiring them together or placing them in the same duct may cause induction, resulting in malfunction or damage.
6. Do not apply any load exceeding the ratings. Otherwise, damage or fire may result.
7. Do not short the load. Otherwise, damage or fire may result.
8. Do not use the Amplifier Unit if the case is damaged.
9. Burn injury may occur. The Amplifier Unit surface temperature rises depending on application conditions, such as the ambient temperature and the power supply voltage. Use caution when operating or cleaning the Amplifier Unit.
10. When setting the sensor, be sure to check safety such as by stopping the equipment.
11. Be sure to turn off the power supply before connecting or disconnecting wires.
12. Do not attempt to disassemble, repair, or modify the Amplifier Unit in any way.
13. When disposing of the Amplifier Unit, treat it as industrial waste.

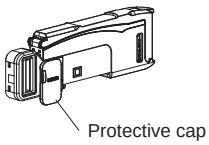
Precautions for Correct Use

1. Connect the load correctly.
2. Do not miswire such as the polarity of the power supply.
3. Be sure to mount the unit to the DIN track until it clicks.
4. When using the Amplifier Units with Wire-saving Connectors, attach the protective stickers (provided with E3X-CN-series Connectors) on the unused power pins to prevent electrical shock and short circuiting.
   Attach the protective cap when using a model with a connector for a Sensor Communications Unit.

Amplifier Unit with Wire-saving Connector



Amplifier Unit with Connector for Sensor Communications Unit



5. Use an extension cable with a minimum thickness of 0.3 mm^2 and less than 100 m long.
6. Do not apply the forces on the cord exceeding the following limits: Pull: 40N; torque: 0.1N·m; pressure: 20N; bending: 29.4N
7. Do not apply excessive force (9.8 N max.) such as tension, compression or torsion to the connector of the Sensor Head that is fixed to the Amplifier Unit.
8. Always keep the protective cover in place when using the Amplifier Unit. Not doing so may cause malfunction.
9. It may take time until the received light intensity and measured value become stable immediately after the power is turned on depending on use environment.
10. The Mobile Console E3X-MC11, E3X-MC11-SV2 and E3X-MC11-S cannot be connected.
11. The mutual interference prevention function does not work when in combination with E3C/E2C/E3X.
12. If the unit receives excessive sensor light, the mutual interference prevention function may not work properly, resulting in malfunction of the unit. In such case, increase the threshold.
13. Standard models (E3NC-SA21/51/7/9)
    The Sensor Communication Unit E3X-DRT21-S, E3X-CRT, E3X-ECT and E3NW cannot be connected.
    Model for Sensor Communication Unit (E3NC-SA0)
    The Sensor Communication Unit E3NW can be connected.
    E3X-DRT21-S, E3X-CRT, E3X-ECT cannot be connected.
14. If you notice an abnormal condition such as a strange odor, extreme heating of the unit, or smoke immediately stop using the product, turn off the power, and consult your dealer.
15. Do not use thinner, benzene, acetone, and lamp oil for cleaning.

Dimensions

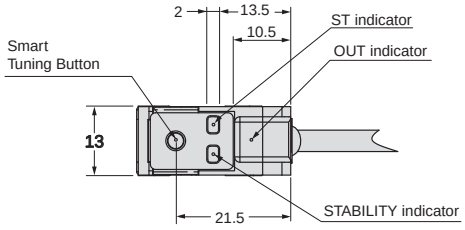
(Unit: mm)
Tolerance class IT16 applies to dimensions in this data sheet unless otherwise specified.

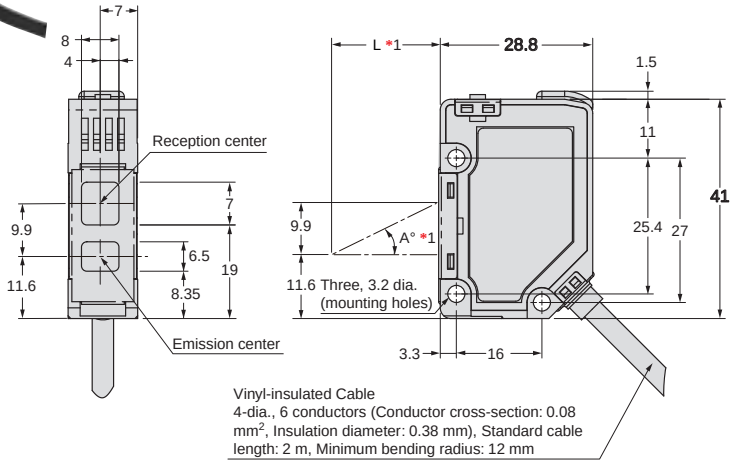
Sensor Heads

E3NC-SH250H
E3NC-SH250
E3NC-SH100

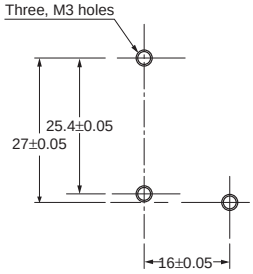
*1 E3NC-SH100
L = 35 to 100 mm,
A = 5.67° to 15.92°

E3NC-SH250H/250
L = 35 to 250 mm,
A = 2.27° to 15.92°

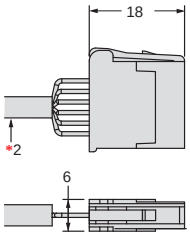




Mounting Holes



Connector

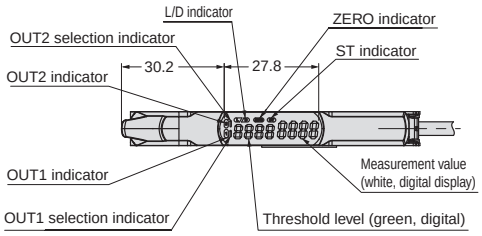


*2 A white ID tube is attached.

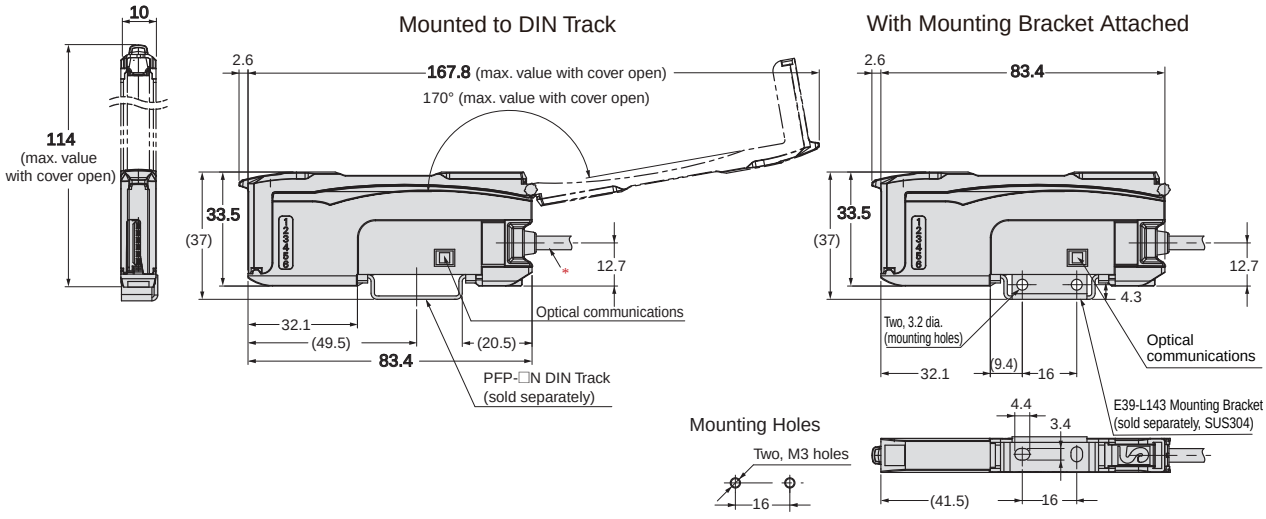
Amplifier Units

Pre-wired Amplifier Units

E3NC-SA21
E3NC-SA51

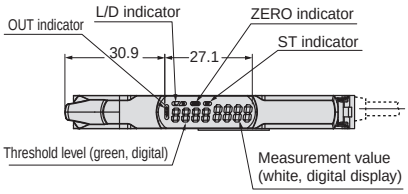


*Cable Specifications
Round vinyl-insulated cable, 4 dia., 5 conductors (Conductor cross-section: 0.2 mm², Insulation diameter: 0.9 mm), Standard cable length: 2 m, Minimum bending radius: 12 mm



Amplifier Units with Wire-saving Connectors

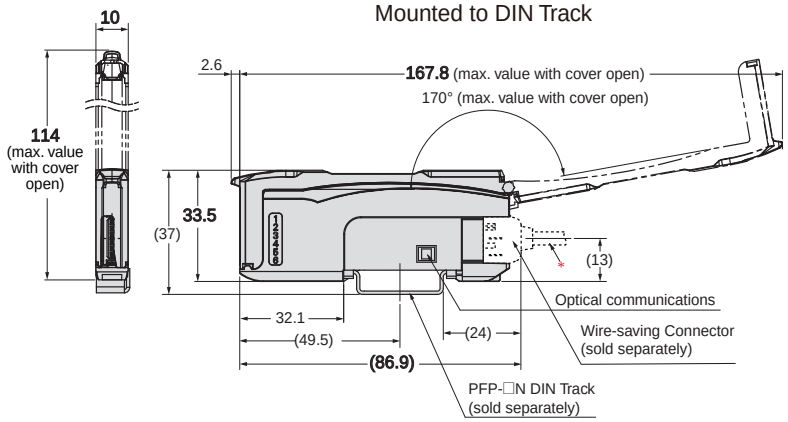
E3NC-SA7
E3NC-SA9



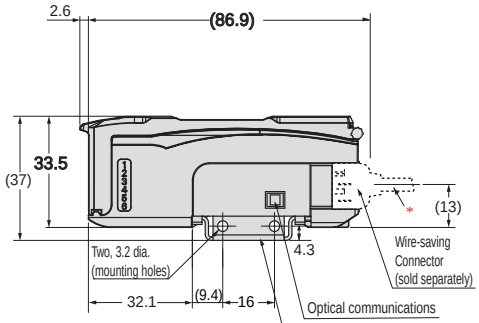
*Cable Specifications

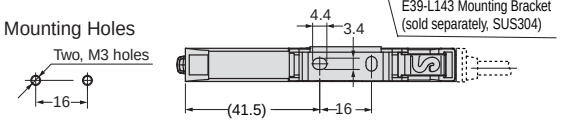
Model	Outer diameter	No. of conductors
E3X-CN22	4.0 dia.	2
E3X-CN21		4

Mounted to DIN Track



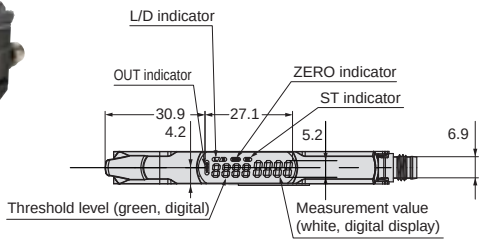
With Mounting Bracket Attached



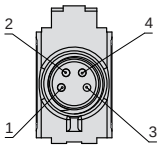


Amplifier Units with M8 Connectors

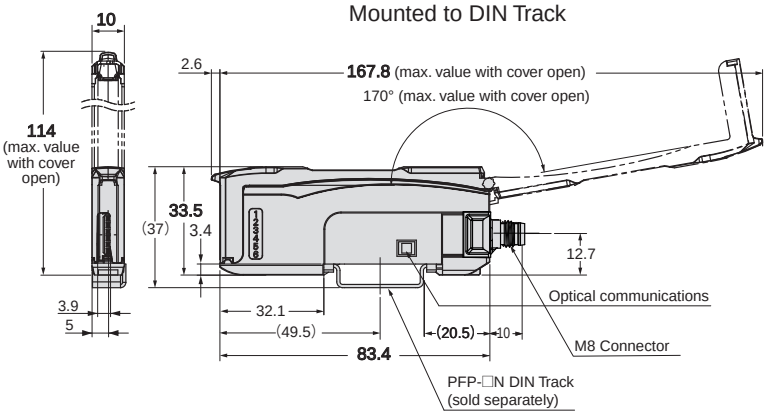
E3NC-SA24
E3NC-SA54



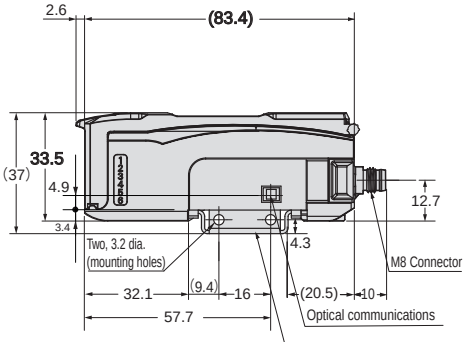
Connector pin arrangement

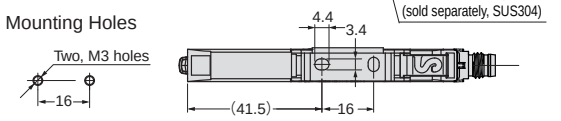


Mounted to DIN Track



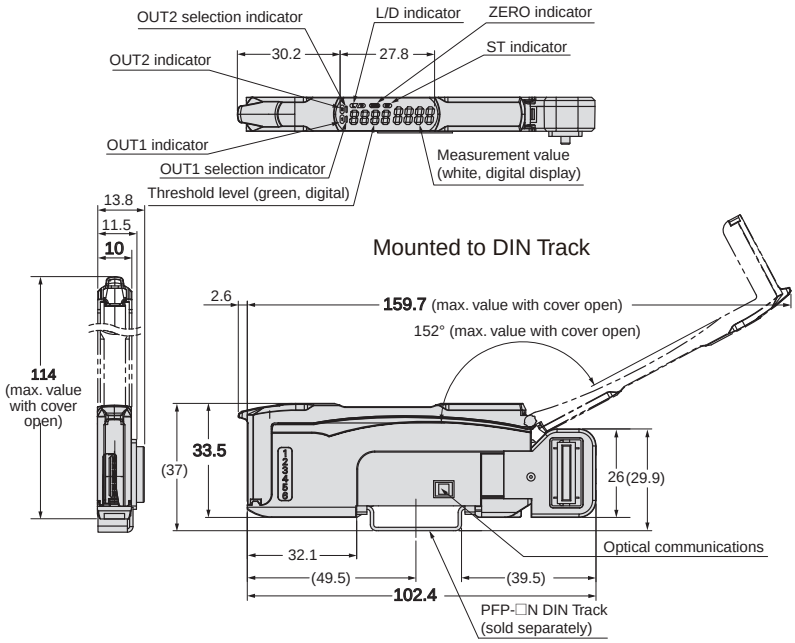
With Mounting Bracket Attached





Amplifier Unit with Connector for Sensor Communications Unit

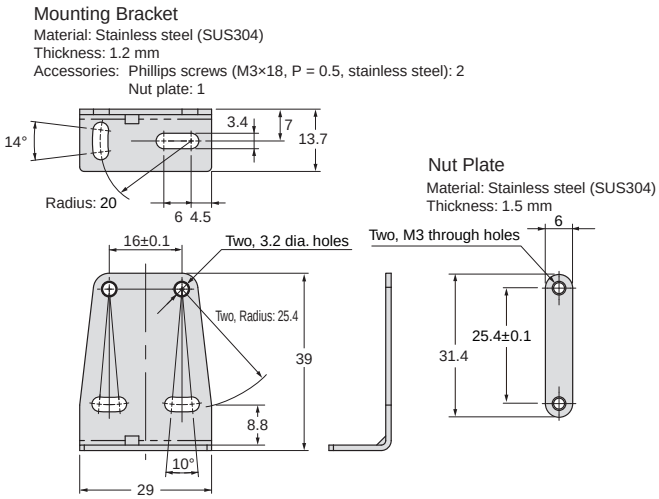
E3NC-SA0



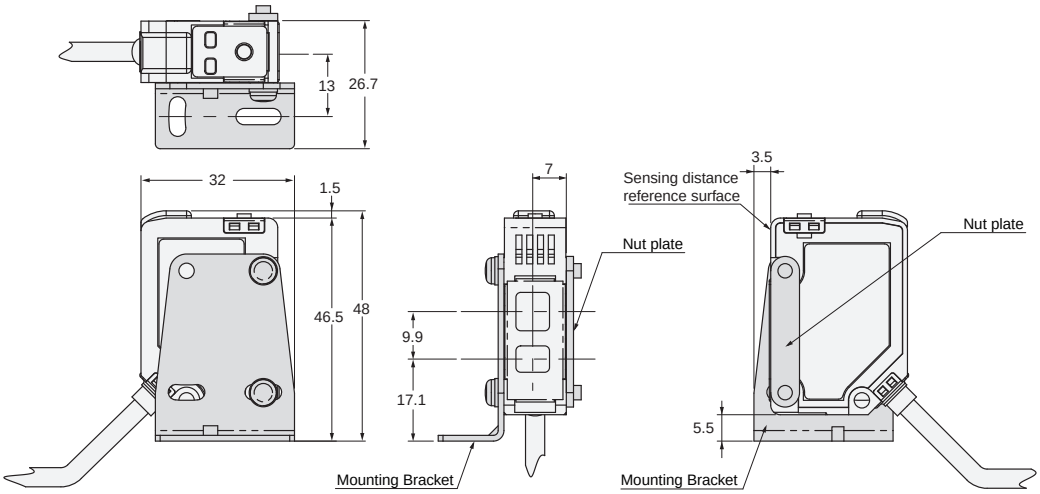
Accessories (Sold Separately)

Sensor Head Mounting Brackets

E39-L187



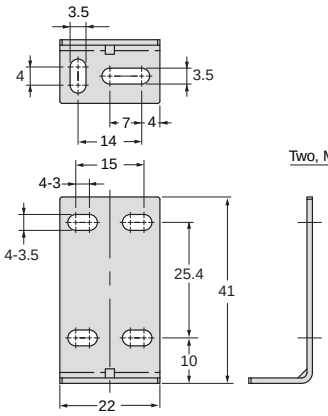
With E39-L187 Mounting Bracket Attached



E39-L188

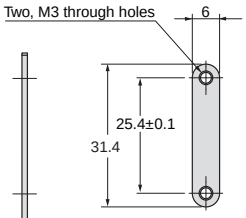
Mounting Bracket

Material: Stainless steel (SUS304)
Thickness: 1.2 mm
Accessories: Phillips screws (M3×18, P = 0.5, stainless steel): 2
Nut plate: 1

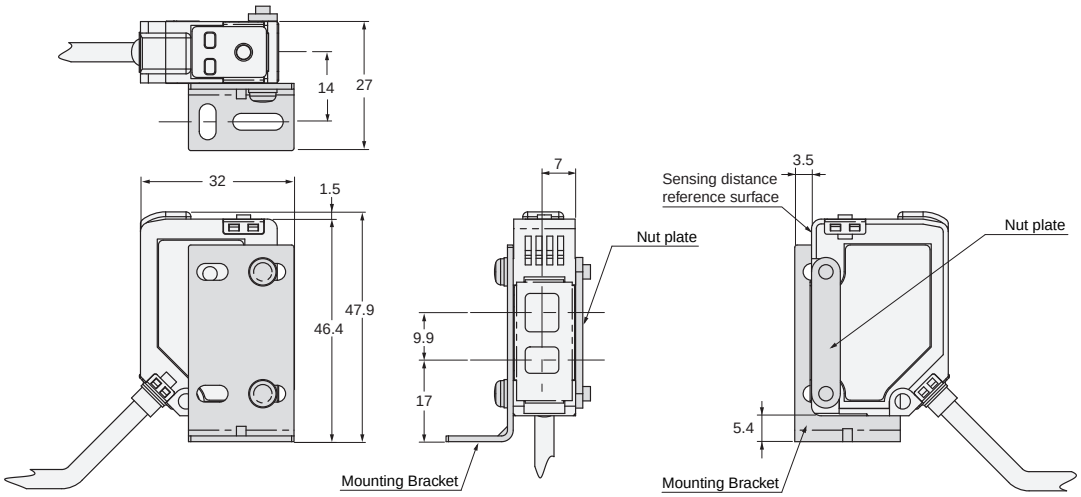


Nut Plate

Material: Stainless steel (SUS304)
Thickness: 1.5 mm



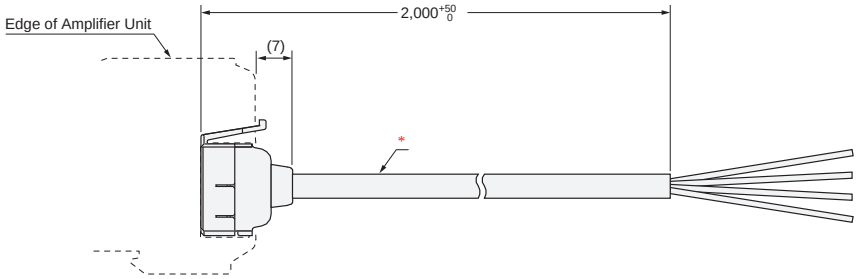
With E39-L188 Mounting Bracket Attached



Wire-saving Connector

Master Connector

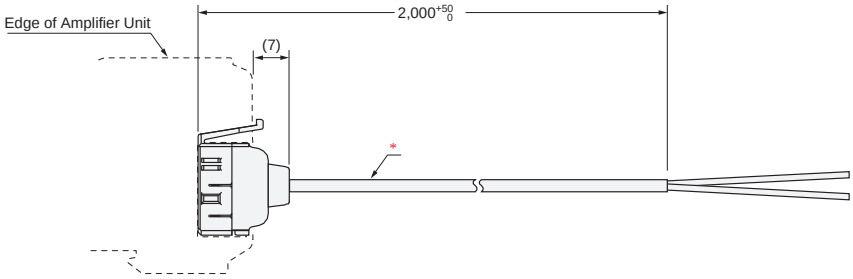
E3X-CN21



*4-dia. cable with 4 conductors, Standard cable length: 2 m (Conductor cross-section: 0.2 mm^2 (AWG24), Insulation diameter: 1.1 mm)

Slave Connector

E3X-CN22

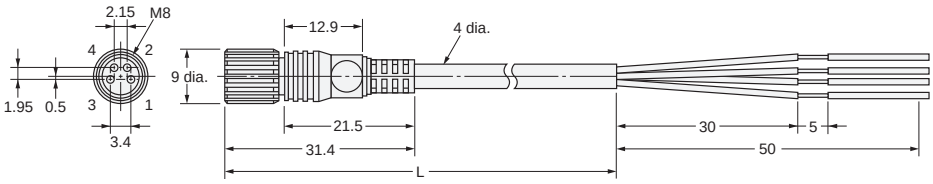


*4-dia. cable with 2 conductors, Standard cable length: 2 m (Conductor cross-section: 0.2 mm^2 (AWG24), Insulation diameter: 1.1 mm)

Sensor I/O Connectors

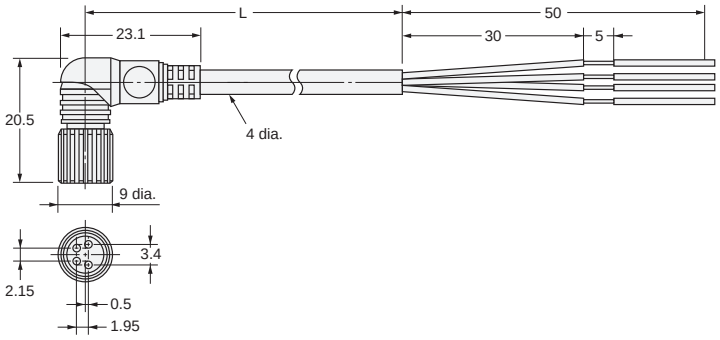
Straight

XS3F-M421-40□-A

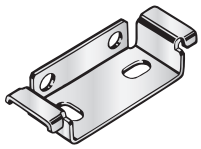


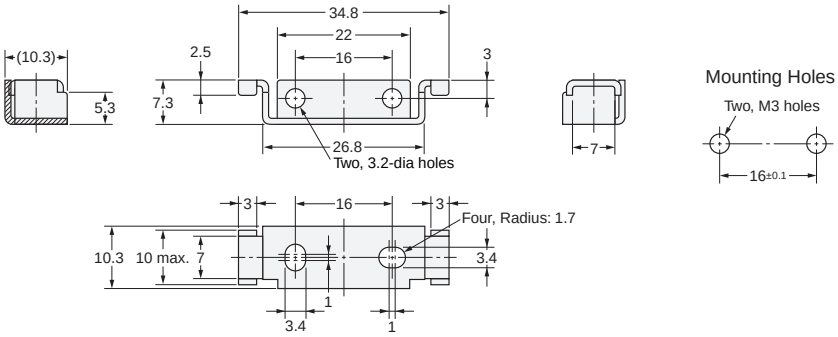
L-shaped

XS3F-M422-40□-A



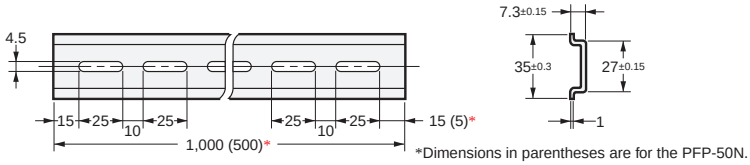
Amplifier Unit Mounting Bracket
E39-L143





Material: Stainless steel (SUS304)

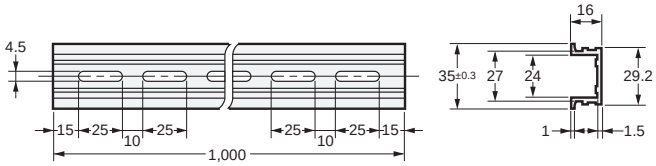
DIN Track
PFP-100N
PFP-50N



*Dimensions in parentheses are for the PFP-50N.

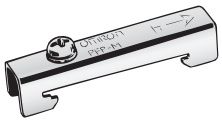
Material: Aluminum

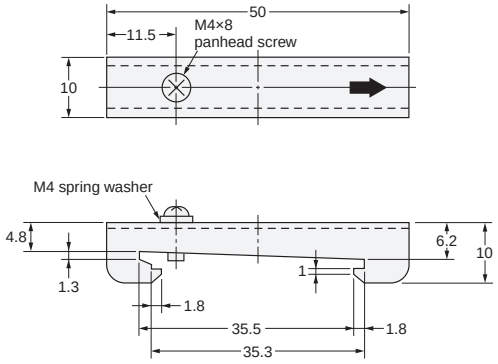
PFP-100N2



Material: Aluminum

End Plate
PFP-M





Materials: Iron, zinc plating

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2013.10

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