

# Compact Smart Laser Sensor E3NC-L

CSM\_E3NC-L\_DS\_E\_5\_1

## Long-distance Variable Spot to Match the Application. Stable Detection with Pinpoint 0.1-mm Spot



- Select from two Sensor Heads to match the application from short distance to long distance.
- Product variations with variable spot and pinpoint spot for stable detection of your workpieces.
- Robot cable for reliable application in adverse environments. Laser Class 1 for safe application.
- White on black display characters for high visibility.
- Smart Tuning to achieve stable detection with easy setup.





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





 Refer to the *Safety Precautions* on page 8.

## Ordering Information

### Sensor Heads *(Dimensions → page 10)*

Sensing method	Appearance	Focus	Model
Diffuse-reflective		Variable spot	<b>E3NC-LH02 2M</b>
Limited-reflective		Spot	<b>E3NC-LH01 2M</b>

### Amplifier Units *(Dimensions → page 11)*

Connecting method	Appearance	Inputs/outputs	Model	
			NPN output	PNP output
Pre-wired (2 m)		2 outputs + 1 input	<b>E3NC-LA21 2M</b>	<b>E3NC-LA51 2M</b>
Wire-saving Connector		1 output + 1 input	<b>E3NC-LA7</b>	<b>E3NC-LA9</b>
M8 Connector		1 output + 1 input	<b>E3NC-LA24</b>	<b>E3NC-LA54</b>
Connector for Sensor Communications Unit *		---	<b>E3NC-LA0</b>	



\*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 13)

Applicable Sensor Head	Appearance	Model	Quantity	Contents
E3NC-LH02		E39-L185	1	Mounting Bracket: 1 Nut plate: 1 Phillips screws (M3×18): 2
E3NC-LH01		E39-L186	1	

### Amplifier Unit Accessories



#### Wire-saving Connectors (Required for models for Wire-saving Connectors.) (Dimensions → page 15)

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

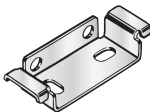
#### Sensor I/O Connectors (Required for models for M8 Connectors.) (Dimensions → page 15)

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	XS3F-M421-402-A
			5m	XS3F-M421-405-A
		L-shaped 	2m	XS3F-M422-402-A
			5m	XS3F-M422-405-A

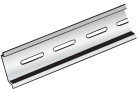
#### Amplifier Unit Mounting Bracket (Dimensions → page 16)

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

A DIN Track is not provided with the Amplifier Unit. It must be ordered separately as required. (Dimensions → page 16)

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 16)

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.

EtherCAT® is a registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany. CompoNet is a registered trademark of the ODVA. CC-Link is a registered trademark of Mitsubishi Electric Corporation. The trademark is managed by the CC-Link Partner Association.

## Ratings and Specifications

### Sensor Heads

Item	Sensing method	Diffuse-reflective	Limited-reflective
	Model	E3NC-LH02	E3NC-LH01
<b>Light source (wavelength)*1</b>		Visible semiconductor laser diode (660 nm), 1.35 mW (average output: 315 μW) (JIS Class 1, IEC/EN Class 1, and FDA Class 1)	
<b>Sensing distance*2</b>	<b>Giga-power mode (GIGA)</b>	1,200 mm	70±15 mm
	<b>Standard mode (Std)</b>	750 mm	
	<b>High-speed mode (HS)</b>	250 mm	
	<b>Super-high-speed mode (SHS)</b>	200 mm	
<b>Spot diameter*3</b>		Approx. 0.8 mm (at distances up to 300 mm)	Approx. 0.1 mm (at distances up to 70 mm)
<b>Differential distance*4</b>		10% of sensing distance	
<b>Indicators</b>		OUT indicator (orange) and STABILITY indicator (green)	
<b>Ambient illumination</b>		Illumination on received light surface: 10,000 lx max. of incandescent light, 20,000 lx max. of sunlight	
<b>Ambient temperature range</b>		Operating: -10 to 55°C; Storage: -25 to 70°C (with no icing or condensation)	
<b>Ambient humidity range</b>		Operating and storage: 35% to 85% (with no condensation)	
<b>Insulation resistance</b>		20 MΩ min. (at 500 VDC)	
<b>Dielectric strength</b>		1,000 VAC at 50/60 Hz for 1 min	
<b>Vibration resistance (destruction)</b>		10 to 55 Hz with a 1.5-mm double amplitude or 100 m/s <sup>2</sup> for 2 hours each in X, Y, and Z directions	
<b>Shock resistance (destruction)</b>		500 m/s <sup>2</sup> for 3 times each in X, Y, and Z directions	
<b>Degree of protection</b>		IEC IP65 (E3NC-LH02: Applies only when adjuster is locked.)	
<b>Connecting method</b>		Pre-wired connector (standard length: 2 m)	
<b>Materials</b>	<b>Case</b>	Polybutylene terephthalate (PBT)	
	<b>Lens</b>	Methacrylic resin	
	<b>Cable</b>	PVC	
<b>Weight (packed state/Sensor Head only)</b>		Approx. 115 g/approx. 65 g	
<b>Accessories</b>		Instruction Manual	

\*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: 1220690)

\*2. The values were measured using the OMRON standard sensing object (white paper).

\*3. Defined as 1/e<sup>2</sup> (13.5%) of the central light intensity at the measurement distance.

The spot diameter is sometimes influenced by the ambient conditions of the workpiece, such as light that leaks from the main beam, if the reflection factor of the area surrounding the workpiece is higher than that of the workpiece.

\*4. Measured at the rated sensing distance.

## Amplifier Units

Item	Type		Standard models			Model for Sensor Communications Unit
	NPN output	E3NC-LA21	E3NC-LA7	E3NC-LA24	E3NC-LA0	
	PNP output	E3NC-LA51	E3NC-LA9	E3NC-LA54		
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: 1,560mW max. (Current consumption: 65mA max.) Power saving eco mode: 1,200 mW max. (Current consumption: 50 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), DPC 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: 80 μs				
	High-speed mode (HS)	Operate or reset: 250 μs				
	Standard mode (Stnd)	Operate or reset: 1 ms				
	Giga-power mode (GIGA)	Operate or reset: 16 ms				
Sensitivity adjustment		Smart Tuning (2-point tuning, full auto tuning, position tuning, maximum sensitivity tuning, power tuning, or percentage tuning (-99% to +99%)), 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)	4				
Functions	Dynamic power control (DPC)	Provided				
	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.				
	Power tuning	Select from ON or OFF.				
	Output 1	Select from Normal Detection Mode or Area Detection Mode.				
	Output 2	Select from normal detection mode, alarm output mode, or error output mode.	---		Select from normal detection mode, alarm output mode, or error output mode.	
	External input	Select from input OFF, tuning, power tuning, laser OFF, zero reset, or bank switching.			---	
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: 1,650 mW max. (Current consumption: 55 mA max. at 30 VDC, 115 mA max. at 10 VDC)

Power saving eco mode: 1,350 mW max. (Current consumption: 45 mA max. at 30 VDC, 80 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.

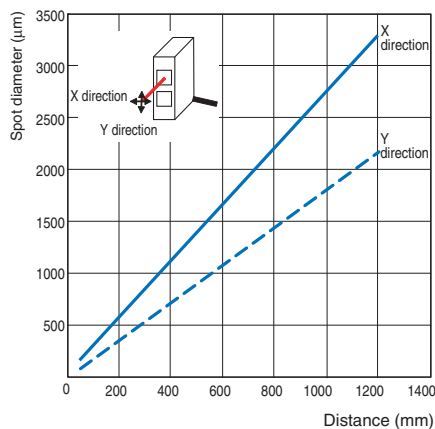
\*6. The bank is not reset by the user reset function or saved by the user save function.

Item	Type	Standard models			Model for Sensor Communications Unit
	NPN output	E3NC-LA21	E3NC-LA7	E3NC-LA24	E3NC-LA0
	PNP output	E3NC-LA51	E3NC-LA9	E3NC-LA54	
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 <sup>2</sup> for 3 times each in X, Y, and Z directions				150m/s <sup>2</sup> 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				

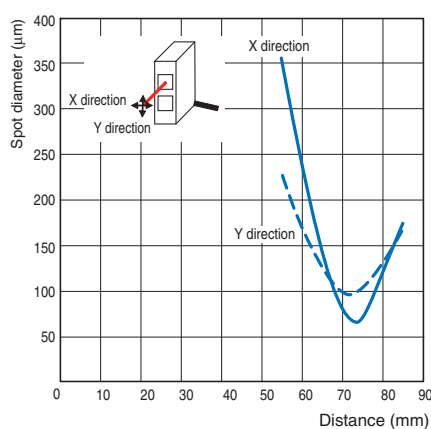
## Engineering Data (Reference Value)

### Spot Diameter Vs. Distance

#### E3NC-LH02



#### E3NC-LH01



# I/O Circuit Diagrams

## NPN Output

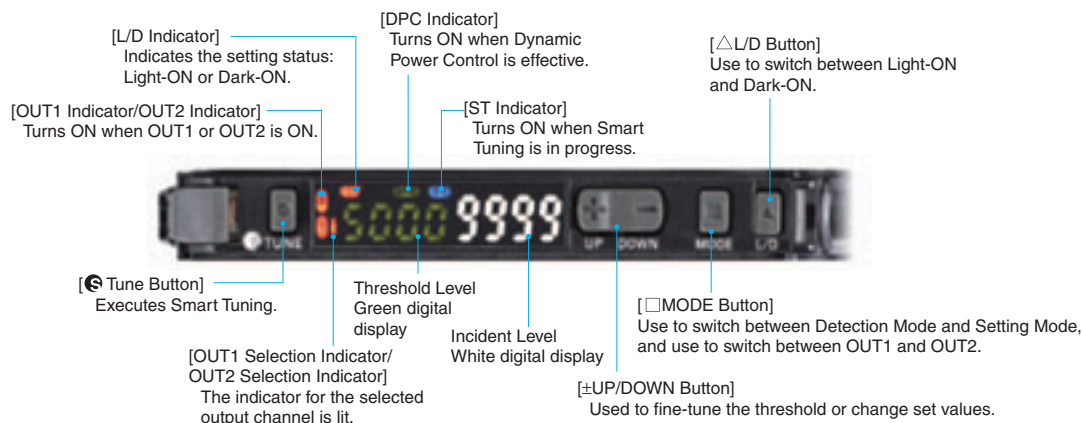
Model	Operation mode	Timing chart	L/D indicator	Output circuit
E3NC-LA21	Light-ON	ch1/ Incident light                      ch2 No incident light                      OUT indicator Lit                      (orange) Not lit                      Output transistor ON                      Load Operate (e.g., relay) Reset                      (Between brown and black (orange) leads)	lit.	
	Dark-ON	ch1/ Incident light                      ch2 No incident light                      OUT indicator Lit                      (orange) Not lit                      Output transistor ON                      Load Operate (e.g., relay) Reset                      (Between brown and black (orange) leads)	lit.	
E3NC-LA7 E3NC-LA24	Light-ON	Incident light                      No incident light                      OUT indicator Lit                      (orange) Not lit                      Output transistor ON                      Load Operate (e.g., relay) Reset                      (Between brown and black leads)	lit.	
	Dark-ON	Incident light                      No incident light                      OUT indicator Lit                      (orange) Not lit                      Output transistor ON                      Load Operate (e.g., relay) Reset                      (Between brown and black leads)	lit.	

## PNP Output

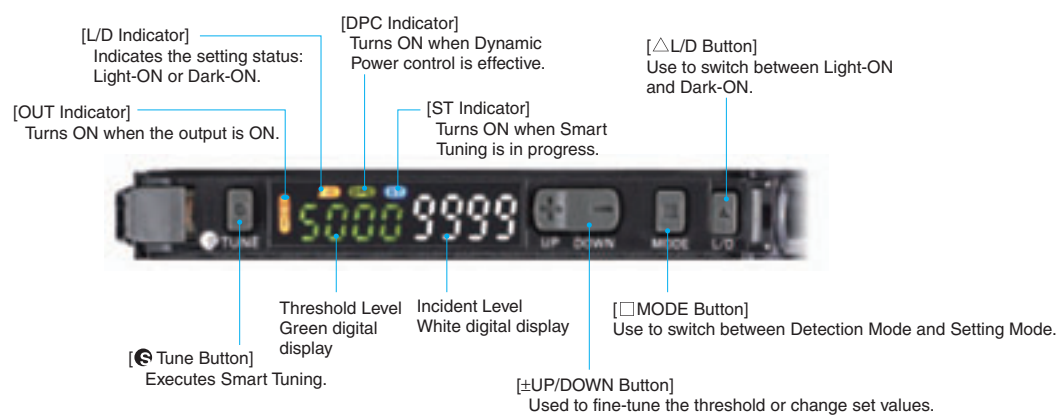
Model	Operation mode	Timing chart	L/D indicator	Output circuit
E3NC-LA51	Light-ON	ch1/ Incident light                      ch2 No incident light                      OUT indicator Lit                      (orange) Not lit                      Output transistor ON                      Load Operate (e.g., relay) Reset                      (Between blue and black (orange) leads)	lit.	
	Dark-ON	ch1/ Incident light                      ch2 No incident light                      OUT indicator Lit                      (orange) Not lit                      Output transistor ON                      Load Operate (e.g., relay) Reset                      (Between blue and black (orange) leads)	lit.	
E3NC-LA9 E3NC-LA54	Light-ON	Incident light                      No incident light                      OUT indicator Lit                      (orange) Not lit                      Output transistor ON                      Load Operate (e.g., relay) Reset                      (Between blue and black leads)	lit.	
	Dark-ON	Incident light                      No incident light                      OUT indicator Lit                      (orange) Not lit                      Output transistor ON                      Load Operate (e.g., relay) Reset                      (Between blue and black leads)	lit.	

## Nomenclature

### E3NC-LA21/LA51/LA0



### E3NC-LA7/LA9/LA24/LA54





## 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.

#### 1. 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-LH□□ Sensor Heads: Class 1

#### ⚠ 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.

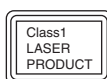


Do not disassemble the Sensor Head. Doing so may cause the laser beam to leak, resulting in a risk of visual impairment.



#### • Displaying the Laser Label

Attach the certification label that is shown at the right to the side of the Sensor Head.



#### 2. Using in the USA

When using devices in which the Sensor Head is installed to the USA, the devices are subject to FDA (Food and Drug Administration) laser regulations of the USA. These Sensors are classified as Class 1 laser devices under IEC/EN 60825-1 and the regulations of Laser Notice No. 50 for this certification. CDRH (Center for Devices and Radiological Health) registration has been completed. (Accession Number:1220690)

#### 3. Using in Europe

This Sensor Head is classified in Class 1 under EN 60825-1.

#### 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-LA□□ or E3NC-LA0 Amplifier Unit. If a different Amplifier Unit is used, 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. Do not turn the adjuster on the E3NC-LH02 with a force that is greater than 40 mN·m. Damage or fire may occur.
- 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

- 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.



## 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

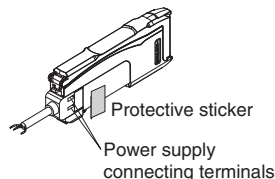
The following precautions must be observed to ensure safe operation of the Amplifier Unit. Doing so may cause damage or fire.

- 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
- Do not use the Amplifier Unit in environments subject to flammable or explosive gases.
- Do not use the Amplifier Unit in any atmosphere or environment that exceeds the ratings.
- To secure the safety of operation and maintenance, do not install the Amplifier Unit close to high-voltage devices or power devices.
- 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.
- Do not apply any load exceeding the ratings. Otherwise, damage or fire may result.
- Do not short the load. Otherwise, damage or fire may result.
- Do not use the Amplifier Unit if the case is damaged.
- 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.
- When setting the sensor, be sure to check safety such as by stopping the equipment.
- Be sure to turn off the power supply before connecting or disconnecting wires.
- Do not attempt to disassemble, repair, or modify the Amplifier Unit in any way.
- When disposing of the Amplifier Unit, treat it as industrial waste.

### Precautions for Correct Use

- Connect the load correctly.
- Do not miswire such as the polarity of the power supply.
- Be sure to mount the unit to the DIN track until it clicks.
- 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

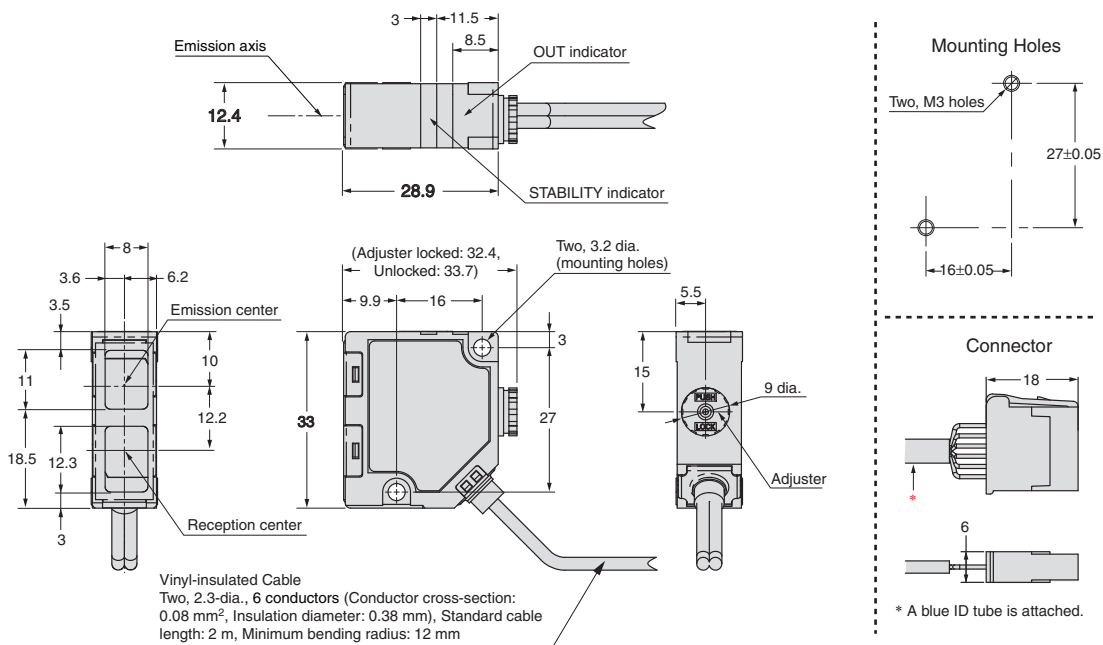


- Use an extension cable with a minimum thickness of 0.3 mm<sup>2</sup> and less than 100 m long.
- Do not apply the forces on the cord exceeding the following limits: Pull: 40N; torque: 0.1N·m; pressure: 20N; bending: 29.4N
- Do not apply excessive force (9.8 N max.) such as tension, compression or torsion to the connector of the Sensor Head that is fixed to the Amplifier Unit.
- Always keep the protective cover in place when using the Amplifier Unit. Not doing so may cause malfunction.
- 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.
- The product is ready to operate 200ms after the power supply is turned ON.
- The Mobile Console E3X-MC11, E3X-MC11-SV2 and E3X-MC11-S cannot be connected.
- The mutual interference prevention function does not work when in combination with E3C/E2C/E3X.
- 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.
- Standard models (E3NC-LA21/51/7/9)  
The Sensor Communication Unit E3X-DRT21-S, E3X-CRT, E3X-ECT and E3NW cannot be connected.  
Model for Sensor Communication Unit (E3NC-LA0)  
The Sensor Communication Unit E3NW can be connected.  
E3X-DRT21-S, E3X-CRT, E3X-ECT cannot be connected.
- 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.
- Do not use thinner, benzene, acetone, and lamp oil for cleaning.

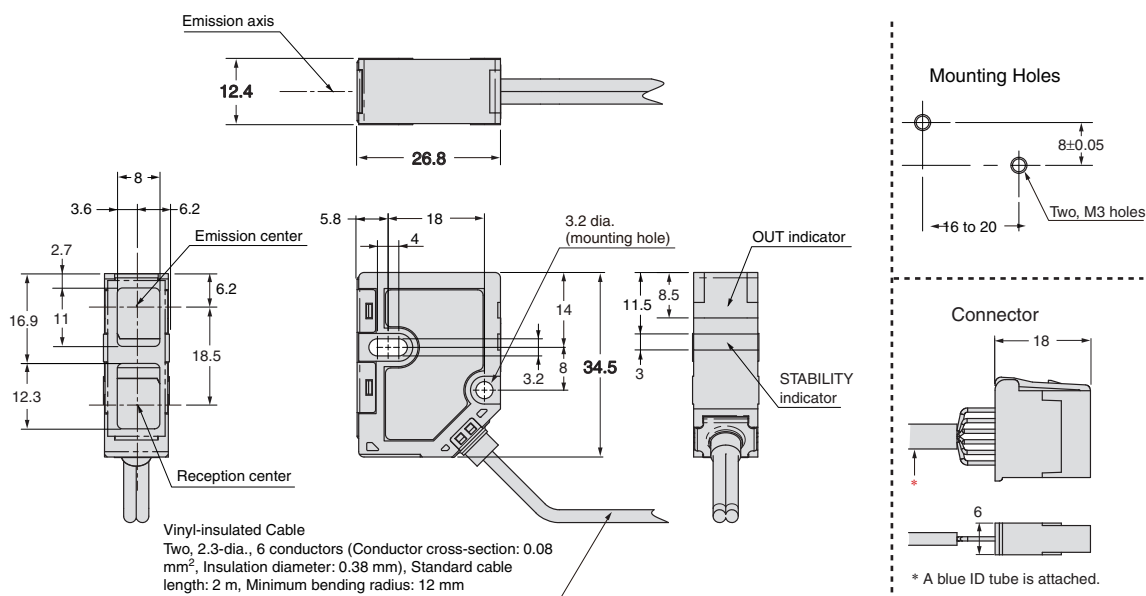
# Dimensions

## Sensor Heads

### E3C-LH02



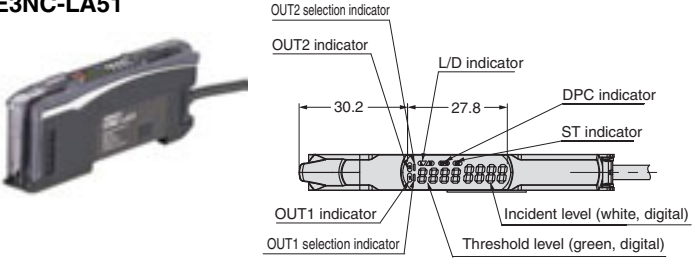
### E3NC-LH01



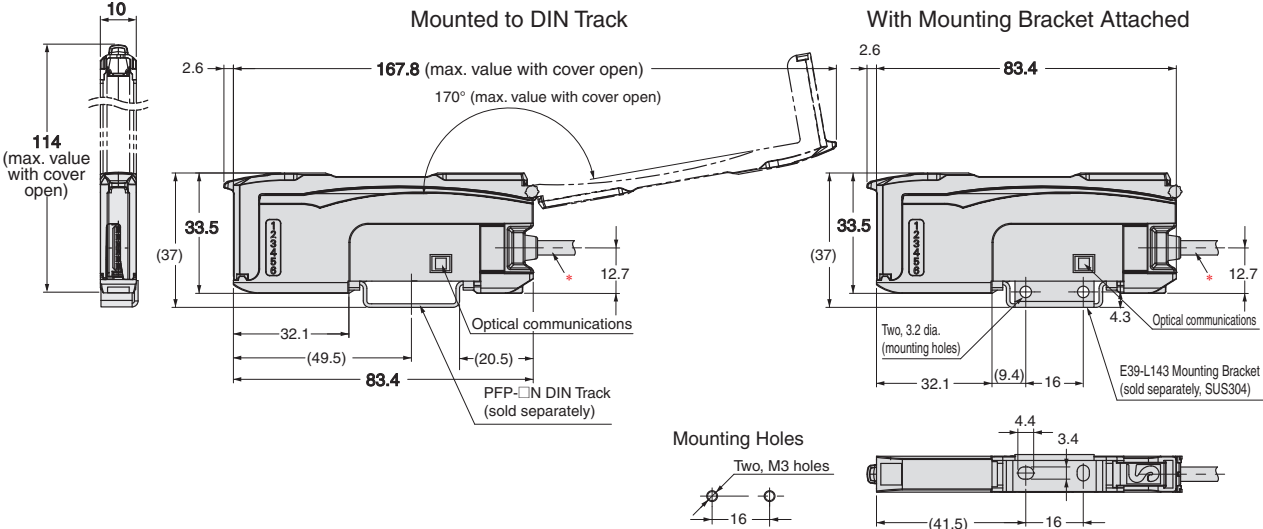
Amplifier Units

Pre-wired Amplifier Units

E3NC-LA21  
E3NC-LA51

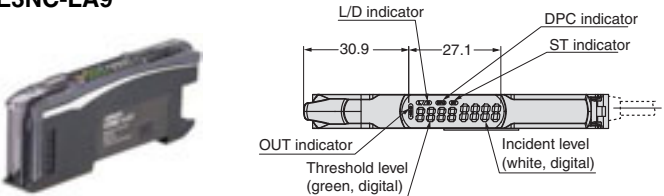


\*Cable Specifications  
Round vinyl-insulated cable, 4 dia., 5 conductors  
(Conductor cross-section: 0.2 mm<sup>2</sup>, Insulation diameter: 0.9 mm),  
Standard cable length: 2 m, Minimum bending radius: 12 mm



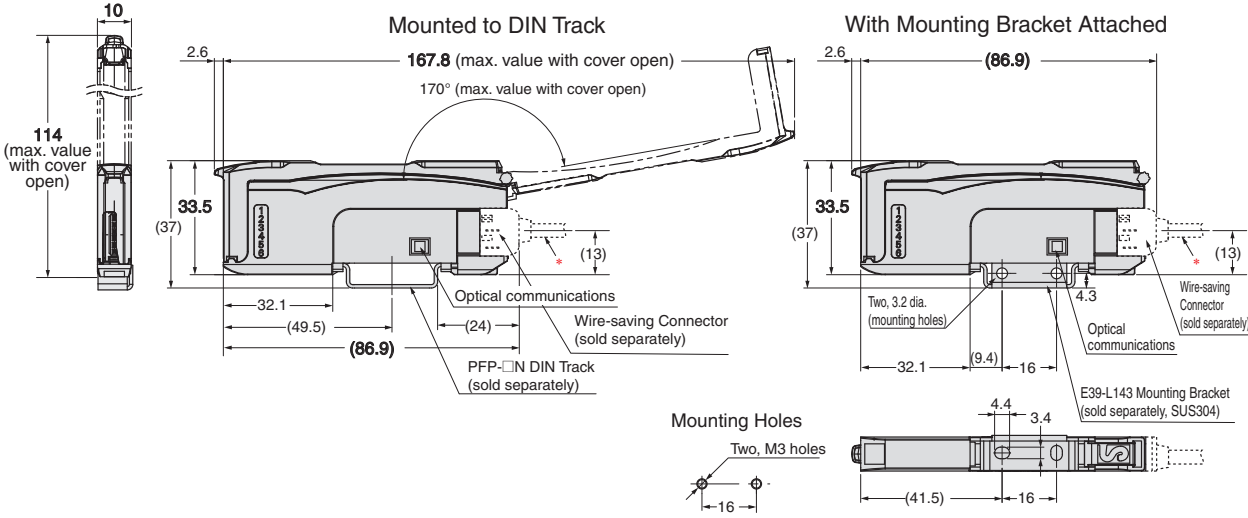
Amplifier Units with Wire-saving Connectors

E3NC-LA7  
E3NC-LA9



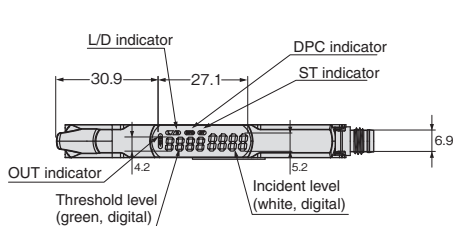
\*Cable Specifications

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

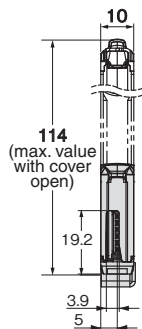
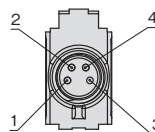


Amplifier Units with M8 Connectors

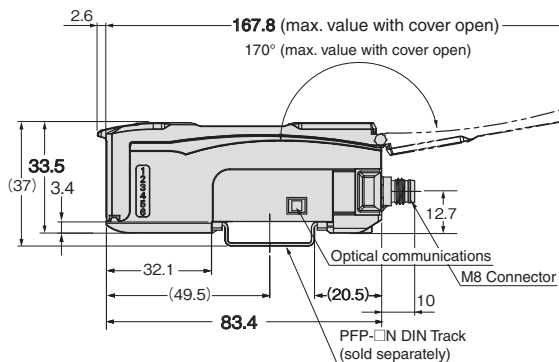
E3NC-LA24  
E3NC-LA54



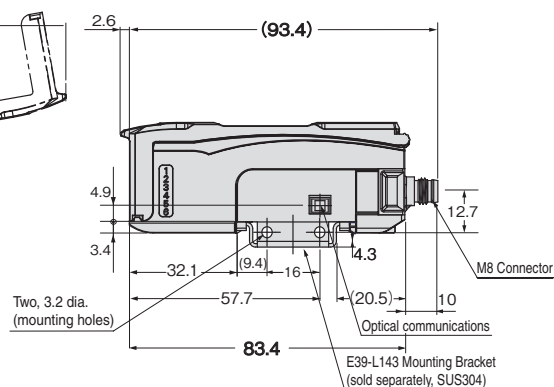
Connector pin arrangement



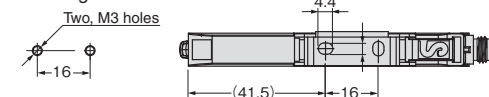
Mounted to DIN Track



With Mounting Bracket Attached

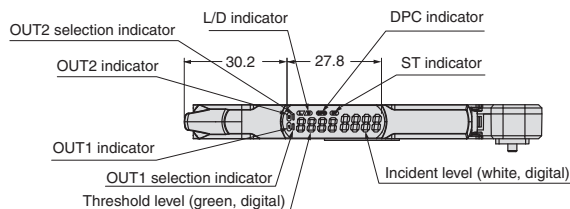


Mounting Holes

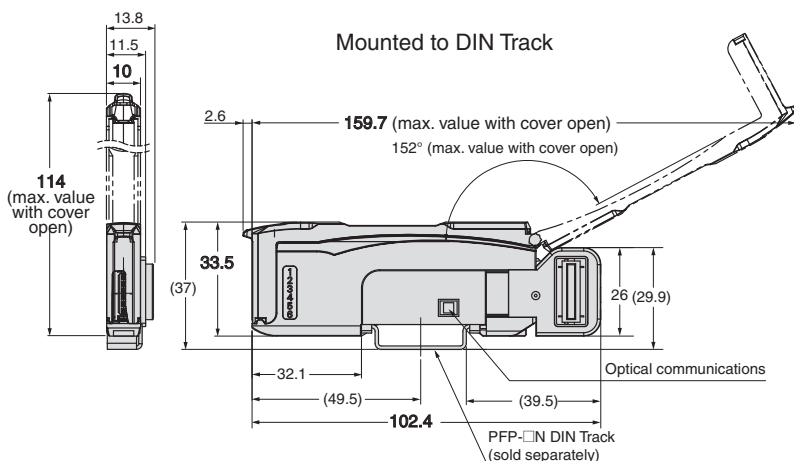


Amplifier Unit with Connector for Sensor Communications Unit

E3NC-LA0



Mounted to DIN Track

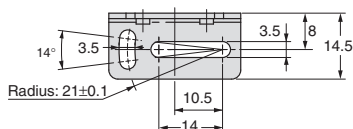


## Accessories (Sold Separately)

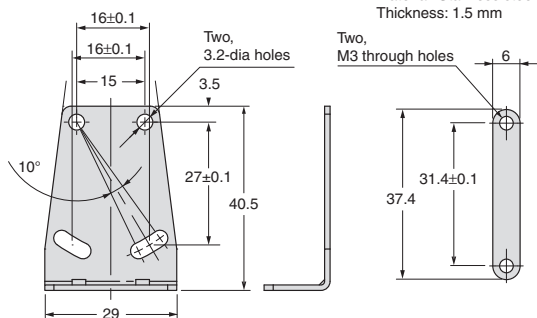
### Sensor Head Mounting Brackets E39-L185 (for E3NC-LH02)



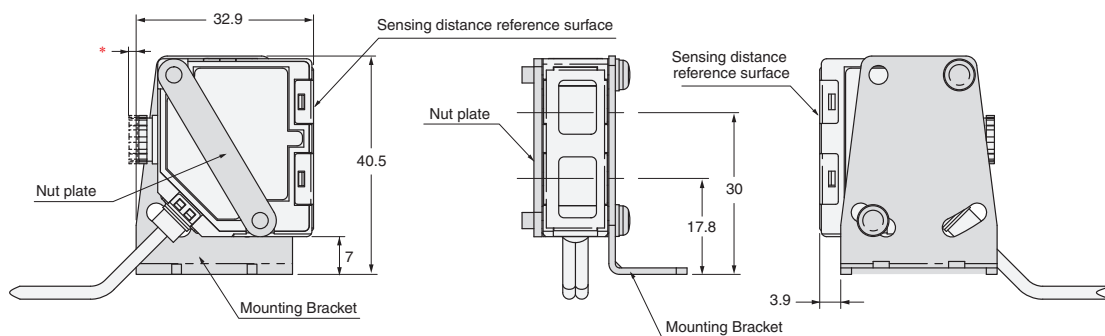
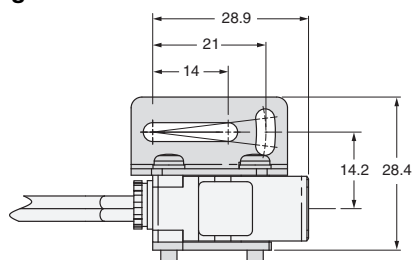
**Mounting Bracket**  
 Material: Stainless steel (SUS304)  
 Thickness: 1.2 mm  
 Accessories: Phillips screws (M3x18, P = 0.5, stainless steel): 2  
 Nut plate: 1



**Nut Plate**  
 Material: Stainless steel (SUS304)  
 Thickness: 1.5 mm



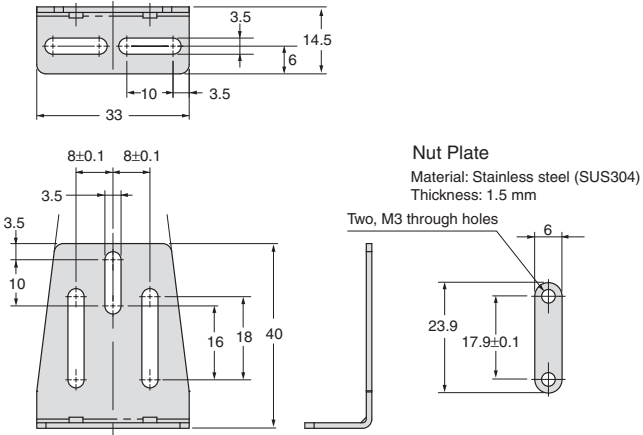
### With E39-L185 Mounting Bracket Attached



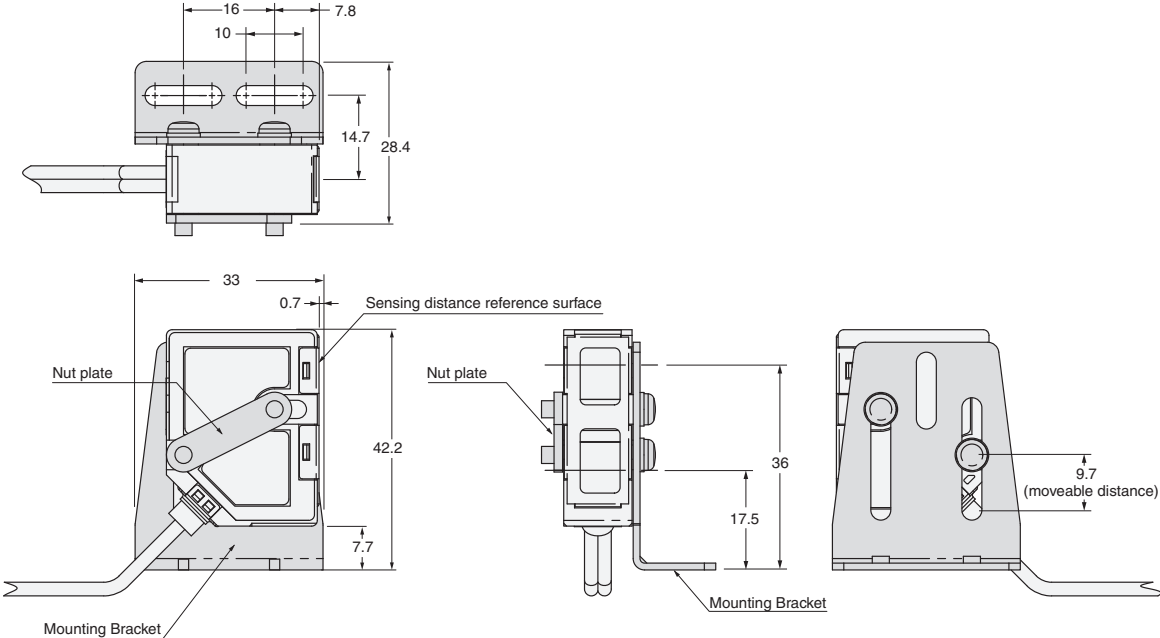
\* When adjusted, the adjuster extends 0.8 mm from the Mounting Bracket surface.

E39-L186 (for E3NC-LH01)

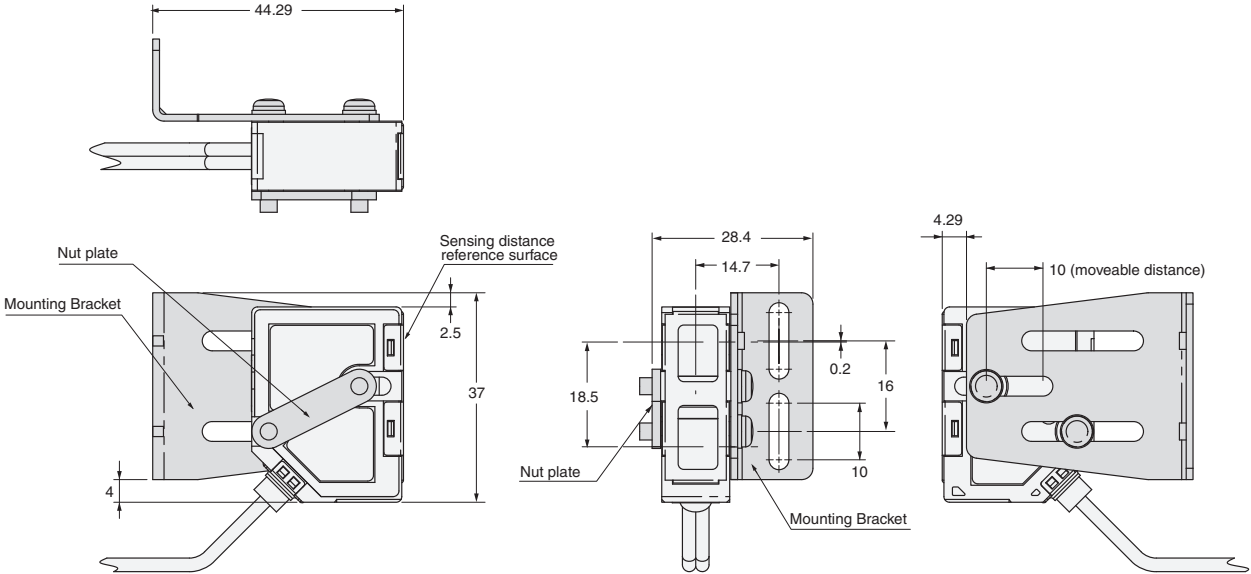
Mounting Bracket  
Material: Stainless steel (SUS304)  
Thickness: 1.2 mm  
Accessories: Phillips screws (M3×18, P = 0.5, stainless steel): 2  
Nut plate: 1



With E39-L186 Mounting Bracket Attached for Bottom Mounting

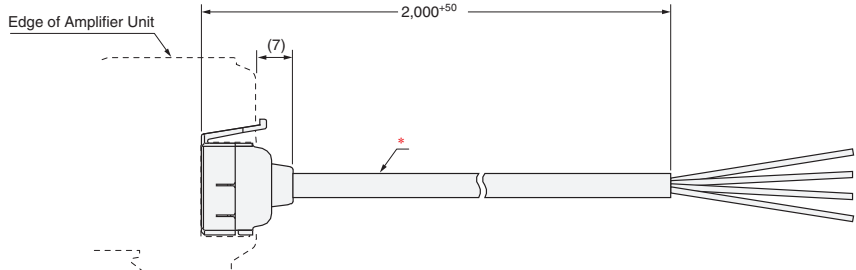
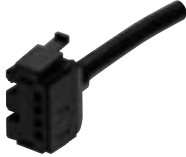


With E39-L186 Mounting Bracket Attached for Back Mounting



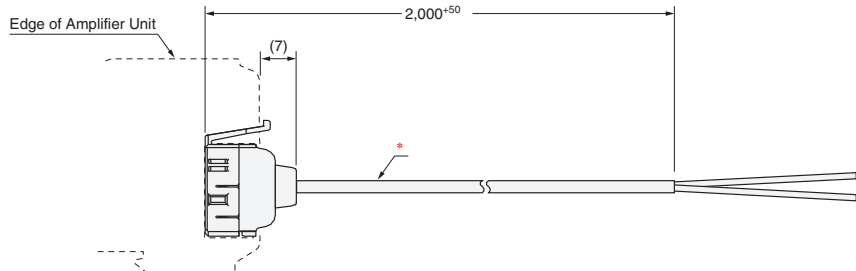
Wire-saving Connectors

Master Connector  
E3X-CN21



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

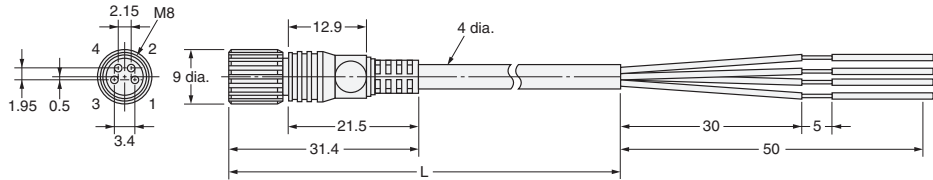
Slave Connector  
E3X-CN22



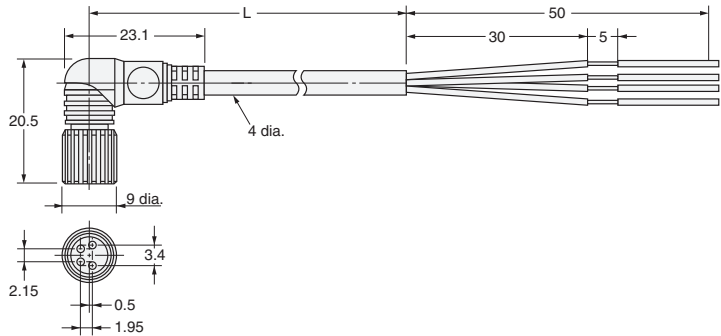
\*4-dia. cable with 2 conductors, Standard cable length: 2 m (Conductor cross-section: 0.2 mm<sup>2</sup> (AWG24), Insulation diameter: 1.1 mm)

Sensor I/O Connectors

Straight  
XS3F-M421-40□-A



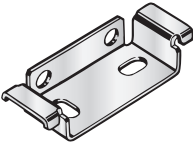
L-shaped  
XS3F-M422-40□-A



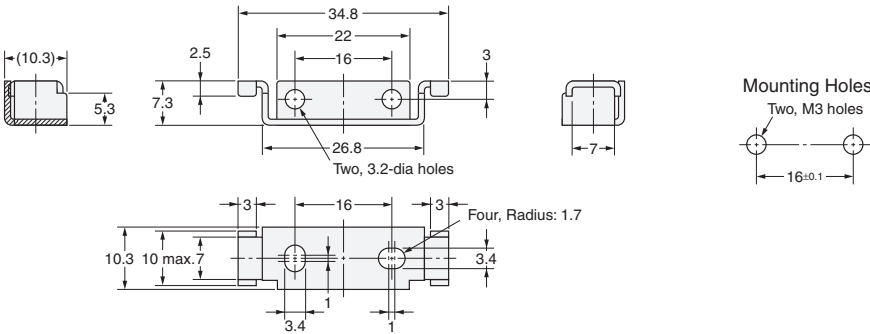


Amplifier Unit Mounting Bracket

E39-L143



Material: Stainless steel (SUS304)



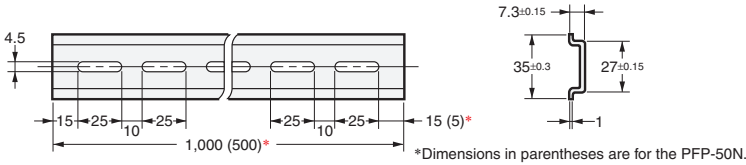
DIN Track

PFP-100N

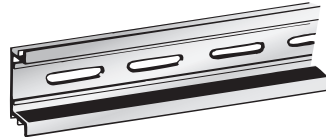
PFP-50N



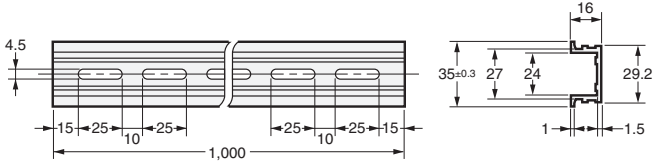
Material: Aluminum



PFP-100N2

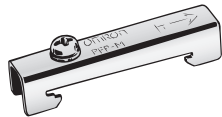


Material: Aluminum

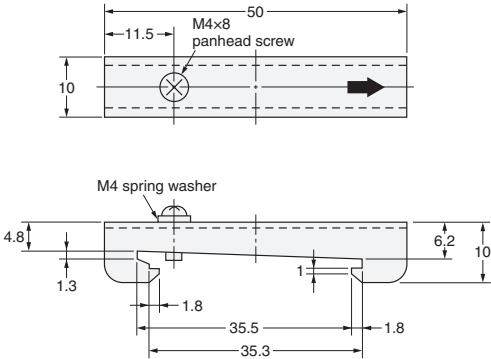


End Plate

PFP-M



Materials: Iron, zinc plating



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