# E3NC

CSM\_E3NC\_DS\_E\_9\_6

## Ideal for Applications That Cannot Be Handled with Fiber Sensors or Photoelectric Sensors

- The lineup includes E3NC-L Sensors, which are ideal for presence detection, and E3NC-S Sensors, which are ideal for discriminations.
  - E3NC-L Sensors are available in Coaxial Retro-reflective Models, Long-distance Variable-spot Diffuse-reflective Models, and Small-spot Limited-reflective Models.
  - The E3NC-S Sensors include CMOS and provide stable detection of workpieces with different colors and inclined installation
- Smart Tuning to achieve stable detection with easy setup.
- White on black display characters for high visibility.
- Flexible robot cables are used for the Sensor Heads.



Refer to the Safety Precautions on page 14.



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

#### **Features**

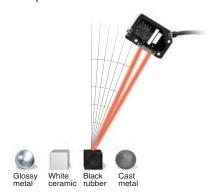
#### **Retro-reflective Models: E3NC-LH03**

- · Maximum sensing distance of 8 m.
- Stable detection of many types of workpieces.
- · Stable detection of highly transparent films.

# 8 m

# CMOS Laser, Reflective Models: E3NC-SH250H/SH250/SH100

- Stable detection even for different workpiece colors and materials.
- Stable detection for inclined Head installation and different workpiece shapes.



#### Diffuse-reflective Models: E3NC-LH02 PATE

- Long-distance detection at up to 1.2 m.
- Spot can be adjusted to the workpiece or application.



#### **Amplifier Units**

- · Same shape as Fiber Amplifier Units plus easy operation.
- · Smart Tuning with one button.



## **Ordering Information**

## Sensor Heads: E3NC-L Compact Laser Sensor Series (Dimensions → page 17)

Sensing method	Appearance	Beam shape	Sensir	ıg distan	се	Laser class	Cable length	Model			
Coaxial Retro- reflective with		Spot			8 m *		2 m	E3NC-LH03 2M			
MSR function		Эрог					5 m	E3NC-LH03 5M			
Diffuse-	n n	Mariable and		710		014	2 m	E3NC-LH02 2M			
reflective		Variable spot		1.2 m	1.2 m		1	1.2 m	Class 1	5 m	E3NC-LH02 5M
Limited-		Co. at	70.14	F			2 m	E3NC-LH01 2M			
reflective	以	Spot	/0±1	5 mm			5 m	E3NC-LH01 5M			

<sup>\*</sup> These values apply when an E39-R21, E39-R22, E39-RS10, or E39-RS11 Reflector is used. A Reflector is not included. Purchase a Reflector separately to match the intended use of the Sensor.

Note: Only an E3NC-LA Amplifier Unit can be connected.

#### Amplifier Units: E3NC-L Compact Laser Sensor Series (Dimensions → page 19)

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

<sup>\*</sup> A Sensor Communications Unit is required if you want to use the Amplifier Unit on a network. **Note:** Only an E3NC-LH□□ Sensor Head can be connected.

## Sensor Heads: E3NC-S Ultra-compact CMOS Laser Sensor Series (Dimensions → page 18)

Sensing method	Appearance	Beam shape	Measurement range	Laser class	Cable length	Model	
			35 to 250 mm		2 m	E3NC-SH250H 2M	
Distance- settable		Spot		35 to 250 min	Class 1	2 m	E3NC-SH250 2M
			35 to 100 mm		2 m	E3NC-SH100 2M	

**Note:** Only an E3NC-SA□□ Amplifier Unit can be connected.

## Amplifier Units: E3NC-S Ultra-compact CMOS Laser Sensor Series (Dimensions → page 19)

Connecting method	Annogrance	Appearance Inputs/outputs		odel
Connecting method	Connecting method Appearance inputs/outputs		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	100	1 output + 1 input	E3NC-SA24	E3NC-SA54
Connector for Sensor Communications Unit *			E3NC-SA0	

<sup>\*</sup> A Sensor Communications Unit is required if you want to use the Amplifier Unit on a network. **Note:** Only an E3NC-SH□□ or E3NC-SH□□H Sensor Head can be connected.

#### Accessories (Sold Separately) **Sensor Head Accessories**

Reflectors (Required for Retro-reflective Sensors) (Dimensions → page 21)

A Reflector is not provided with the Sensor Head. It must be ordered separately.

<b>Applicable Sensor Head</b>	Appearance	Model	Quantity
		E39-R21	
E3NC-LH03		E39-R22	1
		E39-RS10	
		E39-RS11	

**Lens Attachments for Sensor Heads (Dimensions → page 21)** 

A Lens Attachment is not provided with the Sensor Head. It must be ordered separately as required.

Applicable Sensor Head	Appearance	Model	Quantity
E3NC-LH03		E39-P51	1
E3NC-LH02		E39-P52	1

ou can combine the Lens Attachment with an applicable Sensor Head to create a line beam.

**Note:** Refer to the *Safety Precautions* on page 14 for how to attach the reflector.

Sensor Head Mounting Brackets (Dimensions → page 22)

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

Applicable Sensor Head	Appearance	Model	Quantity	Contents	
E3NC-LH03		E39-L190			
E3NC-LH02		E39-L185			
E3NC-LH01		E39-L186	1	Mounting Bracket: 1 Nut plate: 1 Phillips screws (M3×18): 2	
E3NC-SH250H E3NC-SH250		E39-L187			
E3NC-SH100		E39-L188			

#### **Amplifier Unit Accessories**

Wire-saving Connectors (Required for models for Wire-saving Connectors.) (Dimensions → page 26)
Connectors are not provided with the Amplifier Unit and must be ordered separately. \*Protective stickers are provided.

Туре	Appearance	Cable length	No. of conductors	Model
Master Connector	*	2 m	4	E3X-CN21
Slave Connector	*	2 111	2	E3X-CN22

#### Sensor I/O Connectors (Required for models for M8 Connectors.) (Dimensions → page 26)

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

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

Note: For details, refer to XS3 which can be accessed from your OMRON website.

#### Amplifier Unit Mounting Bracket (Dimensions → page 27)

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

Appearance	Model	Quantity
	E39-L143	1

Note: For details, refer to Mounting Brackets on E39-L/E39-S/E39-R which can be accessed from your OMRON website.

#### **DIN Track** (Dimensions → page 27)

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

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

#### End Plate (Dimensions → page 27)

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
5	PFP-M	1

#### Cover

Attach these Covers to Amplifier Units.

Order a Cover when required, e.g., if you lose the covers.

Appearance	Model	Quantity
	E39-G24 FOR E3NC-LA	1
	E39-G21 FOR E3NC-SA	, <b>,</b>

#### **Related Products**

#### **Sensor Communications Units**

Туре	Appearance	Model
Sensor Communications Unit for EtherCAT		E3NW-ECT
Sensor Communications Unit for CompoNet	To a second	E3NW-CRT
Sensor Communications Unit for CC-Link		E3NW-CCL
Distributed Sensor Unit *		E3NW-DS

Refer to your OMRON website for details.

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.

<sup>\*</sup> The Distributed Sensor Unit can be connected to any of the Sensor Communications Units.

## **Ratings and Specifications**

## Compact Laser Sensors: E3NC-L

#### **Sensor Heads**

	Sensir	ng method		ro-reflective R function	Diffuse-	reflective	Limited- reflective	
Item	tem Model		E3NC-LH03	E3NC-LH03+ E39-P51	E3NC-LH02	E3NC-LH02+ E39-P52	E3NC-LH01	
Light source	(wavelength)		Visible semiconduct (660 nm), 215 µW n		Visible semiconduc	tor laser diode (660 n	m), 315 μW max.	
Laser class			Class 1 (JIS, IEC/EI	N, FDA *1, GB/T)	!			
	Giga-power (GIGA)	mode	8 m		1,200 mm	1,000 mm		
Sensing	Standard mo	de (Stnd)	6 m	0.5	750 mm	600 mm	70.45	
distance*2	High-speed	mode (HS)	3.5 m	0.5 m	250 mm	200 mm	70±15 mm	
	Super-high-s mode (SHS)	speed	2 m		200 mm	150 mm		
Beam shape			Spot	Line	Spot	Line	Spot	
Beam size*3		Approx. 2 mm dia. at 1 m	Line length: Approx. 25 mm at 250 mm Line length: Approx. 50 mm at 500 mm	Approx. 0.8 mm dia. at 300 mm	Line length: Approx. 45 mm at 500 mm Line length: Approx. 100 mm at 1,000 mm	Approx. 0.1 mm dia. at 70 mm		
Differential d	distance*4 10% of sensing distance max.							
Indicators			OUT indicator (orange) and STABILITY indicator (green)					
Ambient illur	nination (Rec	eiver side)	Incandescent lamp: 10,000 lx max., Sunlight: 20,000 lx max.					
Ambient tem	perature rang	е	Operating: -10 to 55°C; Storage: -25 to 70°C (with no icing or condensation)					
Ambient hum	nidity range		Operating and storage: 35% to 85% (with no condensation)					
Altitude			2,000 m max.					
Installation e	nvironment		Pollution degree 3 (as per IEC 60947-1)					
Insulation res	sistance		20 MΩ min. (at 500 VDC)					
Dielectric str	ength		1,000 VAC at 50/60 Hz for 1 min					
Vibration res	istance (destr	uction)	10 to 55 Hz with a 1.5-mm double amplitude or 100 m/s² for 2 hours each in X, Y, and Z directions					
Shock resista	ance (destruc	tion)	500 m/s² for 3 times each in X, Y, and Z directions					
Degree of pro	otection		IEC IP67*5  IEC IP65 (E3NC-LH02: Applies only when adjuster is locked.)*5				n adjuster is	
Connecting r	nethod		Pre-wired connector (standard length: 2 m)					
	Samaar	Case	Polybutylene tereph	thalate (PBT)				
	Sensor Head	Lens	Methacrylic resin (P	MMA)				
Materials		Cable	Vinyl chloride (PVC)					
	Lens	Case		ABS		ABS		
	Attachment	Lens		Methacrylic resin (PMMA)		Methacrylic resin (PMMA)		
Malash (	Models with	2-m cable	Approx. 120 g/appro	ox. 70 g	Approx. 115 g/approx. 65 g			
Weight (packed state/Sensor	Models with	5-m cable	Approx. 180 g/appro	ox. 130 g	Approx. 175 g/appr	ox. 125 g		
Head only)	Lens Attachr	nent		Approx. 25 g/ approx. 2 g		Approx. 25 g/ approx. 2 g		
Accessories			Instruction Manual		•	•		

<sup>\*1.</sup> These Sensors are classified as Class 1 laser devices under IEC 60825-1: 2014 and the regulations of Laser Notice No. 56 for FDA certification. CDRH (Center for Devices and Radiological Health) registration has been completed. E3NC-LH01, E3NC-LH02 (Accession Number: 1220690-003)

E3NC-LH03 (Accession Number: 1320739-001)

\*2. The values were measured using the OMRON standard sensing object (white paper) for the E3NC-LH01, E3NC-LH02, and E3NC-LH02 + E39-P52. The values for the E3NC-LH03, and E3NC-LH03 + E39-P51 apply when an E39-R21, E39-R22, E39-RS10, or E39-RS11 Reflector is used. Other Reflectors are

not recommended. \*3. Defined at the 1/e<sup>2</sup> (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

Measured at the rated sensing distance.

The E39-P5□ contains a packing to prevent entry of foreign matter. The degree of protection between the E3NC-LH□□ and E39-P5□ is not specified.

#### **Amplifier Units**

	Туре			Standard models		Model for Sensor Communications Unit		
		NPN output	E3NC-LA21	E3NC-LA7	E3NC-LA24			
		PNP output	E3NC-LA51	E3NC-LA9	E3NC-LA54	E3NC-LA0		
Item		Connecting method	Pre-wired	Wire-saving Connector	M8 Connector	Connector for Sensor Communications Unit		
Inputs/	Outputs		2 outputs	1 output		<b>*</b> 1		
outputs	External input	S	1 input			<b> '</b>		
Power supply	/ voltage *2		10 to 30 VDC, including 1	0% ripple (p-p)		Supplied from the connector through the Sensor Communications Unit		
Power consu	mption *3		Eco ON: 1,320 mW max. Eco LO: 1,440 mW max.	max. (Current consumption: (Current consumption: 55 m (Current consumption: 60 m	nA max.) A max.)			
			Load power supply voltag Load current: Groups of 1 Amplifier Units: 20 mA ma	e: 30 VDC max., open-colle to 3 Amplifier Units: 100 m/ ax.	ctor output A max., Groups of 4 to 30			
Control outp	uts*4		Residual voltage: At load current of less At load current of 10 to	than 10 mA: 1 V max. o 100 mA: 2 V max.		_		
			OFF current: 0.1 mA max.					
External inpu	its		Refer to *5.					
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 ci	rcuits		Power supply reverse pol output reverse polarity pro	Power supply reverse polarity protection and output short-circuit protection				
	Super-high-sp	eed mode (SHS)*6	Operate or reset: 80 μs					
Response	High-speed me	ode (HS)	Operate or reset: 250 μs					
time	Standard mod	e (Stnd)	Operate or reset: 1 ms					
	Giga-power m	ode (GIGA)	Operate or reset: 16 ms					
Sensitivity ad	ljustment			ing, full auto tuning, positior to +99%)), or manual adjus		vity tuning, power tuning, or		
Maximum co	nnectable Units		30			With E3NW-ECT: 30 units *7 With E3NW-CRT: 16 units With E3NW-CCL: 16 units		
No. of Units	Super-high-sp	eed mode (SHS)*6	0					
for mutual	High-speed me	ode (HS)	2					
interference prevention	Standard mod	e (Stnd)	2					
p. orondon	Giga-power m	ode (GIGA)	4					
	Dynamic power	er control (DPC)	Provided					
	Timer		Select from timer disabled	d, OFF-delay, ON-delay, one	e-shot, or ON-delay + OFF	-delay timer: 1 to 9,999 ms		
	Zero reset		Negative values can be d	isplayed. (Threshold value i	s shifted.)			
	Resetting setti	ings*8	Select from initial reset (fa	actory defaults) or user rese	t (saved settings).			
	Eco mode*9		Select from OFF (digital display lit), ECO ON (digital display not lit), and ECO LO (digital display dimmed).					
Functions	Bank switchin	g	Select from banks 1 to 4.					
Functions	Power tuning		Select from ON or OFF.					
	Output 1		Select from Normal Detec	tion Mode or Area Detection	n 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, tunin	g, power tuning, laser OFF, ze	o reset, or bank switching.			
	Hysteresis wid	ith	Select from standard setti	ng or user setting.				

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.

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)

Eco ON: 1,410 mW max. (Current consumption: 47 mA max. at 30 VDC, 95 mA max. at 10 VDC)

Eco LO: 1,530 mW max. (Current consumption: 51 mA max. at 30 VDC, 105 mA max. at 10 VDC)

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.).

\*5. The following details apply to the input.

		Contact input (relay or switch)	Non-contact input (transistor)	Input time*5-1
ı			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.
ı	שעע	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.)	OFF: 20 ms min.

<sup>\*5-1.</sup>Input time is 25 ms (ON)/(OFF) only when (in tUnE) or (in PtUn) input is selected.

Applicable Sensor Head is the series of E3NC-LH $\square$ .

<sup>\*6.</sup> The mutual interference prevention function is disabled if the detection mode is set to super-high-speed mode.

\*7. When connected to an OMRON NJ-series Controller.

\*8. The bank is not reset by the user reset function or saved by the user save function.

\*9. Eco LO is supported for Amplifier Units manufactured in July 2014 or later.

	Туре		Standard models				
	NPN output	E3NC-LA21	E3NC-LA7	E3NC-LA24	E3NC-LA0		
	PNP output	E3NC-LA51	E3NC-LA9	E3NC-LA54	E3NC-LAU		
Item	Connecting method	Pre-wired	Wire-saving Connector	M8 Connector	Connector for Sensor Communications Unit		
Ambient temperature ra	ange*	Operating: Groups of 1 or 2 Amplifier I Groups of 3 to 10 Amplifier Groups of 11 to 16 Amplifie Groups of 17 to 30 Amplifie Storage: –30 to 70°C (with	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 rang	е	Operating and storage: 35% to 85% (with no condensation)					
Altitude		2,000 m max.					
Installation environmen	it	Pollution degree 3 (as per IEC 60947-1)					
Insulation resistance		20 MΩ (at 500 VDC)					
Dielectric strength		1,000 VAC at 50/60 Hz for 1 min					
Vibration resistance (de	estruction)	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/s² for 3 times each in X, Y, and Z directions			150m/s² 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			
	Case	Polycarbonate (PC)	•	<u>'</u>			
Materials	Cover	Polycarbonate (PC)					
	Cable	Vinyl chloride (PVC)					
Accessories	+	Instruction Manual					

<sup>\*</sup> When the number of connected units is 11 or more, the ambient temperature is less than 50°C.

#### **Accessories**

#### Reflectors

Item Model	E39-R21	E39-R22	E39-RS10	E39-RS11		
Ambient temperature	Operating: -10 to 55°C; S	Operating: -10 to 55°C; Storage: -25 to 70°C (with no icing or condensation)				
Ambient humidity		to 85% (with no condensat	,			
Vibration resistance (destruction)	10 to 55 Hz with a 1.5-mi	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				
Shock resistance (destruction)	500 m/s <sup>2</sup> 3 times each in X, Y, and Z directions					
Degree of protection	IEC IP67 (E39-R21 and I	E39-R22 only)				
Materials	Reflective surface: Metha Back surface: Polybutyle		Methacrylic resin (PMMA	۸)		
Weight (packed state/Reflector only)	Approx. 30 g/approx. 5 g	Approx. 35 g/approx. 10 g	Approx. 26 g/approx. 1 g	Approx. 30 g/approx. 5 g		
Accessories	Instruction manual					

#### **Ultra-compact CMOS Laser Sensor: E3NC-S**

#### **Sensor Heads**

	Sensing method	Distance-settable				
Item	Model	E3NC-SH250H	E3NC-SH250	E3NC-SH100		
Light source	ce (wavelength)	Visible semiconductor laser diode (660 nm), 1.2 mW max.	Visible semiconductor laser dio	de (660 nm), 0.54 mW max.		
Laser class	3	Class 1 (JIS, IEC/EN, FDA *1, GE	B/T)			
Measureme	ent range	35 to 250 mm (display value: 350	to 2,500)	35 to 100 mm (display value: 350 to 1,000)		
Standard d	etected level difference	35 to 180mm: 9 mm 180 to 250 mm: 25 mm		35 to 50 mm: 1.5 mm 50 to 100 mm: 3 mm		
Beam size*	3	Approx. 1 mm dia. at 250 mm		Approx. 0.5 mm dia. at 100 mm		
Indicators		OUT indicator (orange), STABILIT	ΓΥ indicator (green), and ST indic	cator (blue)		
Ambient ille (Receiver s		Incandescent lamp: 4,000 lx max., Sunlight: 8,000 lx max.	Incandescent lamp: 2,000 lx max., Sunlight: 4,000 lx max.	Incandescent lamp: 4,000 lx max., Sunlight: 8,000 lx max.		
Ambient te	mperature range	Operating: -10 to 50°C; Storage: -25 to 70°C (with no icing or condensation)				
Ambient hu	umidity range	Operating and storage: 35% to 85% (with no condensation)				
Altitude		2,000 m max.				
Installation	environment	Pollution degree 3 (as per IEC 60947-1)				
Insulation r	resistance	20 MΩ min. (at 500 VDC)				
Dielectric s	strength	1,000 VAC at 50/60 Hz for 1 min				
Vibration re	esistance (destruction)	10 to 55 Hz with a 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions				
Shock resis	stance (destruction)	500 m/s <sup>2</sup> 3 times each in X, Y, and Z directions				
Degree of p	protection	IEC IP67				
Connecting	method	Pre-wired connector (Standard cable length: 2 m)				
	Case	Polybutylene terephthalate (PBT)				
Materials	Lens	Methacrylic resin (PMMA)				
	Cable	Vinyl chloride (PVC)				
Weight (pagonly)	cked state/Sensor Head	Approx. 125 g/approx. 75 g				
Accessorie	S	Instruction Manual, laser warning	label (E3NC-SH250H only)			

to the target object.

Also, when detecting a workpiece that is smaller than the beam size, a correct value may not be obtained.

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: 2014 and the regulations of Laser Notice No. 56 for FDA certification. CDRH (Center

for Devices and Radiological Health) registration has been completed. (Accession Number: 1220691-002)

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

\*3. Beam size: Defined at the 1/e² (13.5 %) of the central intensity at the measurement center 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

#### **Amplifier Units**

	Туре			Model for Sensor Communications Unit				
		NPN output	E3NC-SA21	E3NC-SA7	E3NC-SA24			
		PNP output	E3NC-SA51	E3NC-SA9	E3NC-SA54	E3NC-SA0		
Item		Connecting method	Pre-wired	Wire-saving Connector	M8 Connector	Connector for Sensor Communications Unit		
Inputs/	Outputs		2 outputs	1 output		<b>*1</b>		
outputs	External input	s	1 input			(		
Power supply	y voltage *2		10 to 30 VDC, including 1	0% ripple (p-p)		Supplied from the connect through the Sensor Communications Unit		
Power consu	mption *3		Eco ON: 1,680 mW max	of 24 VDC V max. (Current consumptio c. (Current consumption: 70 . (Current consumption: 75	mA max.)			
				e: 30 VDC max., open-colle to 3 Amplifier Units: 100 mA x.				
Control outpo	uts *4		Residual voltage: At load current of less At load current of 10 to	than 10 mA: 1 V max. o 100 mA: 2 V max.		_		
			OFF current: 0.1 mA max.					
External inpu	its		Refer to *5.					
Indicators			Display direction: Switcha	digital display: green, Main of ble between normal and rev D indicator (orange), ST indi models with 2 outputs)	rersed.	or (green), and OUT selection		
Protection ci	rcuits		Power supply reverse polarity pro	Power supply reverse polarity protection and outp short-circuit protection				
	Super-high-sp	eed mode (SHS) *6	Operate or reset: 1.5 ms					
Response	High-speed m	ode (HS)	Operate or reset: 5 ms					
time	Standard mod	e (Stnd)	Operate or reset: 10 ms					
	Giga-power m	ode (GIGA)	Operate or reset: 50 ms					
Sensitivity ac	djustment		Smart Tuning (2-point tuning, full auto tu tuning, or area tuning with	ning, 1-point tuning, tuning out workpiece), or manual a	without workpiece, 2-point	t area tuning, 1-point area		
Maximum co	nnectable Units		30			With E3NW-ECT: 30 units With E3NW-CRT: 16 units With E3NW-CCL: 16 units		
No. of Units	Super-high-sp	eed mode (SHS) *6	0					
for mutual	High-speed m	ode (HS)	2					
interference prevention	Standard mod	e (Stnd)	2					
hi e se il li li li	Giga-power m	ode (GIGA)	2					
	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 di	splayed. (Threshold value is	s shifted.)			
	Resetting sett	ings *8	Select from initial reset (fa	ctory defaults) or user reset	t (saved settings).			
	Eco mode *9		Select from OFF (digital d	isplay lit), ECO ON (digital o	display not lit), and ECO L	O (digital display dimmed).		
	Bank switchin	g	Select from banks 1 to 4.					
	Output 1		Select from Normal detect	ion mode, Area detection m	node, or hold mode.			
			Select from Normal detection mode or Error	_	-	Select from Normal detection mode or Error output mode.		
Functions	Output 2		output mode.			output mouo.		
Functions	External input			ning, laser OFF, zero reset,	or bank switching.			
Functions				ning, laser OFF, zero reset,	or bank switching.			
Functions	External input		Select from input OFF, tur	ning, laser OFF, zero reset,	or bank switching.	· ·		

\*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. Applicable Sensor Head is the series of E3NC-SH□□.

Applicable sensor riead is the series of ESNC-SHILL.
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)
Eco ON: 2,010 mW max. (Current consumption: 67 mA max. at 30 VDC, 125 mA max. at 10 VDC)
Eco LO: 2,130 mW max. (Current consumption: 71 mA max. at 30 VDC, 135 mA max. at 10 VDC)
\*4. 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.).
\*5. The following details apply to the input

The following details apply to the input.

	Contact input (relay or switch)	Non-contact input (transistor)	Input time*5-1
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.
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.)	OFF: 20 ms min.

- \*5-1.Input time is 25 ms (ON)/(OFF) only when (in tUnE) input is selected.

  The mutual interference prevention function is disabled if the detection mode is set to super-high-speed mode. When connected to an OMRON NJ-series Controller.
- \*8. The bank is not reset by the user reset function or saved by the user save function.

<sup>\*9.</sup> Eco LO is supported for Amplifier Units manufactured in August 2014 or later.
\*10. 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.

<sup>\*11.</sup> Only the sensing object is detected when tuning.

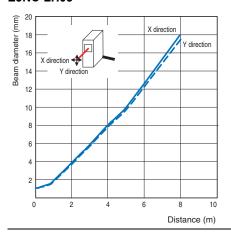
	Туре		Standard models		Model for Sensor Communications Unit		
	NPN output	E3NC-SA21	E3NC-SA7	E3NC-SA24	E3NC-SA0		
	PNP output	E3NC-SA51	E3NC-SA9	E3NC-SA54	ESNO-SAU		
Item	Connecting method	Pre-wired	Wire-saving Connector	M8 Connector	Connector for Sensor Communications Unit		
Ambient temperature r	ange*	Operating: Groups of 1 or 2 Amplifier U Groups of 3 to 10 Amplifier I Groups of 11 to 16 Amplifier Groups of 17 to 30 Amplifier Storage: -30 to 70°C (with	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 rang	je	Operating and storage: 35% to 85% (with no condensation)					
Insulation resistance		20 MΩ (at 500 VDC)					
Altitude		2,000 m max.					
Installation environme	nt	Pollution degree 3 (as per IEC 60947-1)					
Dielectric strength		1,000 VAC at 50/60 Hz for 1 min					
Vibration resistance (d	estruction)	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/s² for 3 times each in X, Y, and Z directions			150 m/s² for 3 times each in X, Y, and Z directions		
Weight (packed state/A	mplifier Unit only)	Approx. 115 g/approx. 75 g	Approx. 60 g/approx. 20 g	Approx. 65 g/approx. 25 g	<u> </u>		
	Case	Polycarbonate (PC)	•	•			
Materials	Cover	Polycarbonate (PC)					
	Cable	Vinyl chloride (PVC)					
Accessories		Instruction Manual					

<sup>\*</sup> When the number of connected units is 11 or more, the ambient temperature is less than 50°C.

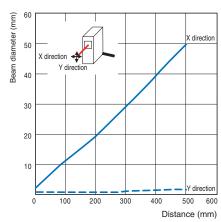
## **Engineering Data (Reference Value)**

#### **Beam Diameter Vs. Distance**

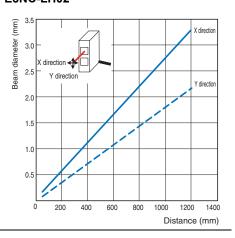
## Retro-reflective Model E3NC-LH03



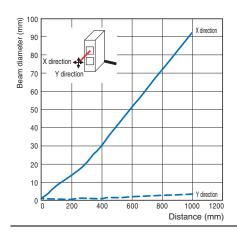
## Retro-reflective Model E3NC-LH03 + E39-P51



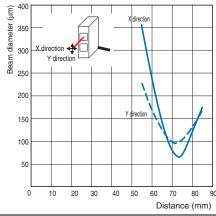
## Diffuse-reflective Model E3NC-LH02



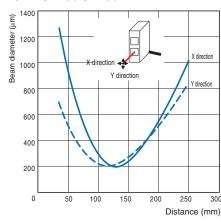
## Diffuse-reflective Model E3NC-LH02 + E39-P52



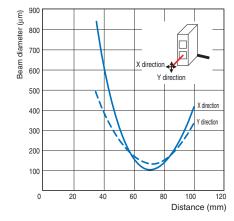
Limited-reflective Model E3NC-LH01



## Distance-settable Model E3NC-SH250/SH250H



## Distance-settable Model E3NC-SH100

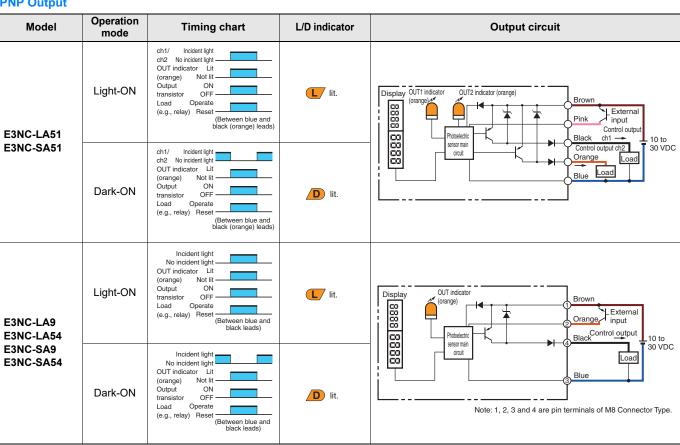


## I/O Circuit Diagrams

#### **NPN Output**

Model	Operation mode	Timing chart	L/D indicator	Output circuit
E3NC-LA21 E3NC-SA21	Light-ON	ch1/ Incident light ch2 No incident light OUT indicator Lit (orange) Not lit Output ON transistor OFF Load Operate (e.g., relay) Reset (Between brown and black (orange) leads)	L lit.	Display OUTI indicator OUT2 indicator (orange)  Brown  Corange  Photoeledric  Photoeledric  Proposed in the proposed of the proposed in the pr
	Dark-ON	ch1/ Incident light ch2 No incident light OUT indicator Lit (orange) Not lit Output ON transistor OFF Load Operate (e.g., relay) Reset (Between brown and black (orange) leads)	D lit.	Photoeledic sensor main clicult Pink ch2  External linput
E3NC-LA7 E3NC-LA24 E3NC-SA7 E3NC-SA24	Light-ON	Incident light No incident light OUT indicator Lit (orange) Not lit Output ON transistor OFF Load Operate (e.g., relay) Reset (Between brown and black leads)	L lit.	Display OUT indicator (orange) Brown  Black Load  Photoelectric sensor main  T 30 VDC
	Dark-ON	Incident light No incident light OUT indicator Lit (orange) Not lit Output ON transistor OFF Load Operate (e.g., relay) Reset (Between brown and black leads)	D lit.	Photoelectric sersor man dioutul 10 to 30 VDC Orange External input 10 to 30 VDC Note: 1, 2, 3 and 4 are pin terminals of M8 Connector Type.

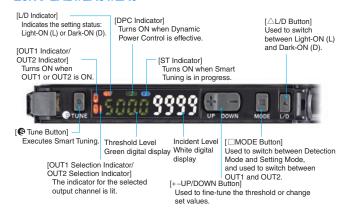
#### **PNP Output**



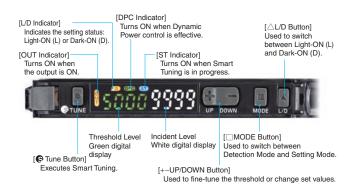
#### **Nomenclature**

#### **Compact Laser Sensors**

#### E3NC-LA21/LA51/LA0

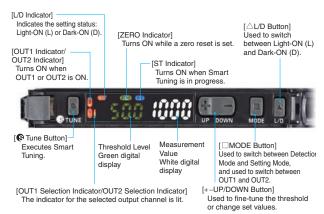


#### E3NC-LA7/LA9/LA24/LA54

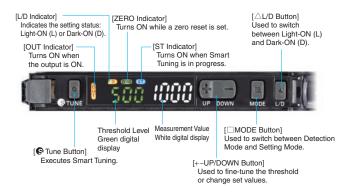


#### **Ultra-compact CMOS Laser Sensors**

#### 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. **Indication and Meaning for Safe Use** 

<b></b>	Indicates a potentially hazardous situation which, if not avoided, will result in minor or moderate injury, or may result in serious injury or death. Additionally there may be significant property damage.
Precautions for Safe Use	Supplementary comments on what to do or avoid doing, to use the product safely.
Precautions for Correct Use	Supplementary comments on what to do or avoid doing, to prevent failure to operate, malfunction or undesirable effect on product performance.

#### **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 four cases.

#### 1. Japan

JIS C6802: 2014 stipulates the safety measures that must be observed by the user for each type of laser equipment.

E3NC-LH/SH/SH□□H: 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.



#### Attention

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

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



· The following laser warning label and laser description labels are attached to the sides of the Sensor Heads.

E3NC-LH03





E3NC-LH01 /E3NC-LH02





E3NC-SH□□





F3NC-SH□□H





#### 2. USA

When using devices in which the Sensor Head is installed in the USA, the devices are subject to FDA (Food and Drug Administration) laser regulations of the USA.

#### F3NC-I H□□

These products are classified into Class 1 by the IEC 60825-1:2014 standard according to the regulations of Laser Notice No.56 of the FDA standard. This product is already reported to CDRH (Center for Devices and Radiological Health).

Accession Number E3NC-LH03: 1320739-001 E3NC-LH01/02: 1220690-003

#### E3NC-SH | | /E3NC-SH | | H

These products are classified into Class 1 by the IEC 60825-1:2014 standard according to the regulations of Laser Notice No.56 of the FDA standard. This product is already reported to CDRH (Center for Devices and Radiological Health).

Accession Number: 1220691-002

When Usage of E3NC-SH□□H in U.S. replace the warning label with corresponding English label.

#### 3. China

The E3NC-LH03 is classified into Class 1 by the GB/T 7247.1-2024 standard.

(1类激光产品)

#### 4. For countries other than Japan, U.S. and China

When Usage in countries other than Japan, U.S. and China, the E3NC-LH03 is classified into Class 1 by the IEC 60825-1:2014/ EN 60825-1:2014+A11:2021 standard.

When Usage of E3NC-SH H in countries other than Japan, U.S. and China, replace the warning label with corresponding English

#### **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 $\overset{\frown}{\square}$ , E3NC-LA0, E3NC-SA $\overset{\frown}{\square}$  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
- · Always turn OFF the power supply before connecting or disconnecting the connectors.
- 3. Installation
- Use screws for installation and tighten the screws securely, but do not exceed the specified tightening torque. Specified torque (M3): 0.5 N·m
- 4. Others
- Never disassemble (including removing labels), 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.
- 5. Conditions of UL (Applicable Models: E3NC-LH01/LH02 Only)
- The E3NC-LH series sensor head accessories shall be used with the E3NC-LA amplifiers.
- These amplifiers and sensor head accessories shall be installed within a suitable enclosure where all components, including cords and connectors, shall be entirely contained within the same
- (Applicable Models: E3NC-SH100/SH250 Only)
- The E3NC-SH series sensor head accessories shall be used with the E3NC-SA amplifiers.
  - These amplifiers and sensor head accessories shall be installed within a suitable enclosure where all components, including cords and connectors, shall be entirely contained within the same enclosure.
- 6. Shortening the connection cable for use Applicable Models: E3NC-LH01/LH02/SH100/SH250 Only) (• The shortened cable has not been evaluated by UL.)

#### **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.
- · For accurate measurements, allow the product to stand for at least 10 minutes after turning ON the power supply before use. (E3NC-S Series)
- 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 objects with the following materials and shapes: Transparent objects (with the E3NC-LH03, objects that are extremely transparent), objects with an extremely low reflection ratio, objects smaller than the spot diameter, objects with a large curvature, excessively inclined objects, etc. Also, for long-distance detection, the Sensor may falsely operate if a white object approaches near the Sensor Head (E3NC-LH03).
- 5. Do not use the Sensor in water, rainfall, or outdoors.
- A ferrite core is attached to the Sensor Head end of the cable connected to the E3NC-LH03 5M. Do not remove the ferrite core or change its position. Also, do not bend the cable within 12 mm of each end of the ferrite core. Doing so may damage the cable.

#### Attaching a Reflector

Mount the Reflector as shown in (Correct) below. Errors will be generated if you mount it at the angle shown in (Incorrect). Always install the Reflector at the same angle as the Sensor Head if the head is not mounted vertically or horizontally.

#### Common for all models

(Correct) (Correct)

(Incorrect)

(Incorrect)

Sheet products (E39-RS10/E39-RS11) are peel-off stickers. Peel off the release paper and apply the sheet to a flat surface for installation. If there are any dirt and dust on the installation surface, a reduction in adhesion and deflection of a sheet may occur, resulting in malfunction. Note: Beam is irradiated on the glossy surface.

#### Attaching a Lens Attachment (E39-P51 or E39-P52)

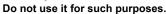
- 1. Check the widths of the slots in the Sensor and the widths of the tabs on the Lens Attachment and attach the Lens Attachment as shown below. (The Lens Attachment must be in the correct orientation, so the widths of the tabs on the Lens Attachment are different on the top and bottom.)
- 2. After you attach the Lens Attachment, make sure that the tabs are completely engaged in the slots in the Sensor.



#### **Amplifier Units**

#### ♠ WARNING

This Amplifier Unit is not designed or rated for ensuring safety of persons either directly or indirectly.



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
- · Locations subject to exposure to water, oil, chemicals
- · Locations subject to steam
- · 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.
- Do not short the load. Otherwise, damage or fire may result.
- 8. Connect the load correctly.
- 9. Do not miswire such as the polarity of the power supply.
- 10. To use this device as connecting with each other, be sure to connect with the same power supply and turn ON the power simultaneously. Using a separate power supply will influence the functions when connecting the devices to use them.
- 11.Do not use the Amplifier Unit if the case is damaged.
- 12. Burn injury may occur. The Amplifier Unit surface temperature rises depending on application conditions, such as the ambient temperature and the power supply voltage. Attention must be paid during operation or cleaning.
- 13. When setting the sensor, be sure to check safety such as by stopping the equipment.
- 14. Be sure to turn off the power supply before connecting or disconnecting wires.
- 15.Do not attempt to disassemble, repair, or modify the Amplifier Unit
- 16. When disposing of the Amplifier Unit, treat it as industrial waste.
- 17.Do not use the Sensor in water, rainfall, or outdoors.
- 18.UL Standard Certification (Applicable Models: E3NC-LA21/LA51/ SA21/SA51 Only)

Only the sensors with Enhanced UL Certification Mark are certified by UL. They are intended to be supplied by a "Class 2 circuit". When used in United States and Canada, Please use the same Class 2 source for input and output. The overcurrent protection current rating is 2A max. They were evaluated as Open type and shall be installed within a enclosure.

#### **Precautions for Correct Use**

- 1. 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.

When using the Amplifier Units with Connectors for Communications Units, attach the protective caps (provided with E3NW-series Sensor Communications Unit).

#### Amplifier Unit with Wiresaving Connector



Power supply

- connecting terminals

  3. Use an extension cable with a minimum thickness of 0.3 mm² and less than 10 m long.
- 4. Do not apply the forces on the cord exceeding the following limits: Pull: 40 N; torque: 0.1 N·m; pressure: 20 N; bending: 29.4 N
- 5. 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.
- 6. Always keep the protective cover in place when using the Amplifier Unit. Not doing so may cause malfunction.
- 7. 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 200 ms after the power supply is turned ON.
- The Mobile Console E3X-MC11, E3X-MC11-SV2 and E3X-MC11-S cannot be connected.
- 10. The mutual interference prevention function does not work when in combination with E3C/E2C/E3X.
- 11. 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. **12.**Standard models (E3NC-□A21/51/7/9)

The Sensor Communications Unit E3X-DRT21-S, E3X-CRT, E3X-ECT and E3NW cannot be connected.

Model for Sensor Communications Unit (E3NC-□A0)

The Sensor Communications Unit E3NW can be connected. E3X-DRT21-S, E3X-CRT, E3X-ECT cannot be connected.

- 13.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.
- 14. Do not use thinner, benzene, acetone, and lamp oil for cleaning.

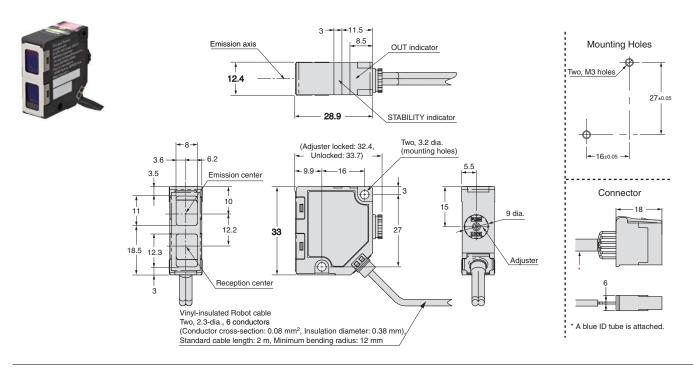
**Amplifier Unit with Connector for** 

#### **Sensor Heads**

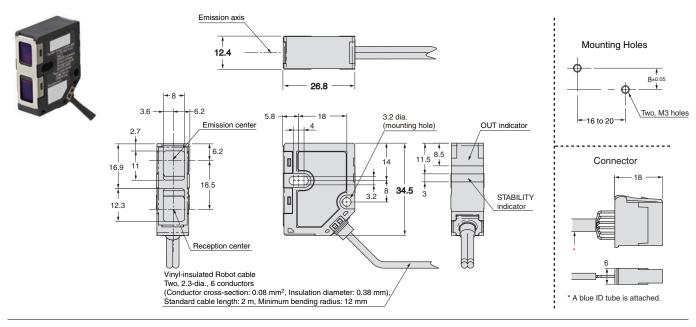
#### Retro-reflective Model E3NC-LH03 Mounting Holes OUT indicator 12.4 12 Two, M3 holes STABILITY indicator 9.5±0.1 Emission and -10-Two, 3.2 dia. reception axis (mounting holes) 6.2 Connector **-**9.5 <del>-</del>⊢ 1.2 Ferrite core\*1 reception center Vinyl-insulated Robot cable A ferrite core is attached to the Sensor Head end of the cable attached to the Two, 2.3-dia., 6 conductors (Conductor cross-section: 0.08 mm², Insulation diameter: 0.38 mm), Standard cable length: 2 m, Minimum bending radius: 12 mm \*2 A blue ID tube is attached. E3NC-LH03 5M.

#### **Diffuse-reflective Model**

#### E3NC-LH02



## Limited-reflective Model E3NC-LH01



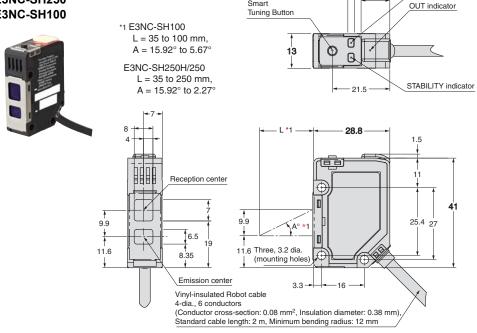
- 13.5 *-*

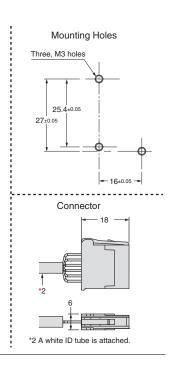
10.5

ST indicator

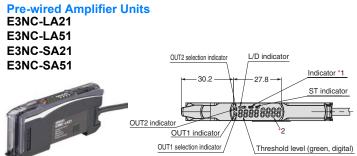
#### **Distance-settable Models**







## **Amplifier Units**

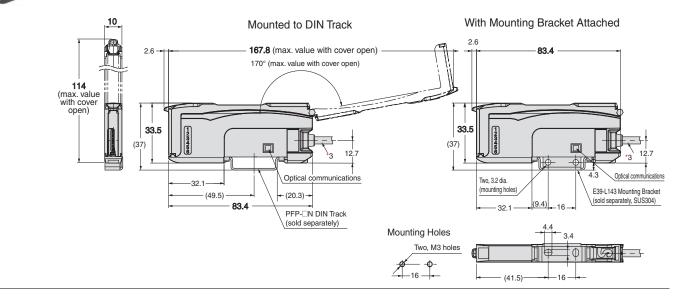


- \*1. The indicators are as follows:
- E3NC-LA21 E3NC-LA51 DPC indicator
- E3NC-SA21 ZERO indicator E3NC-SA51

\*2. The display is as follows:

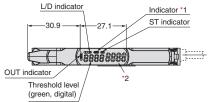
	Incident level (white, digital)
	Measurement value
E3NC-SA51	(white, digital)

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**





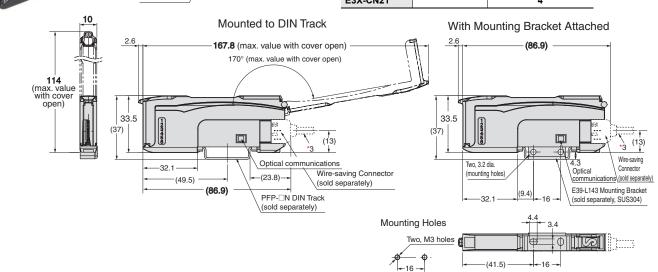
	•	E3NC-LA7 E3NC-LA9
E3NC-SA7 ZERO indicator		E3NC-SA7 E3NC-SA9

\*1. The indicators are as follows: \*2. The display is as follows:

E3NC-LA7 E3NC-LA9	Incident level (white, digital)
E3NC-SA7 E3NC-SA9	Measurement value (white, digital)

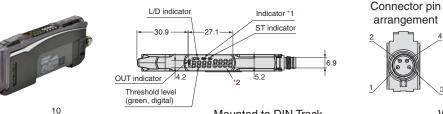
\*3. Cable Specifications

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



#### **Amplifier Units with M8 Connectors**

E3NC-LA24 E3NC-LA54 E3NC-SA24 E3NC-SA54



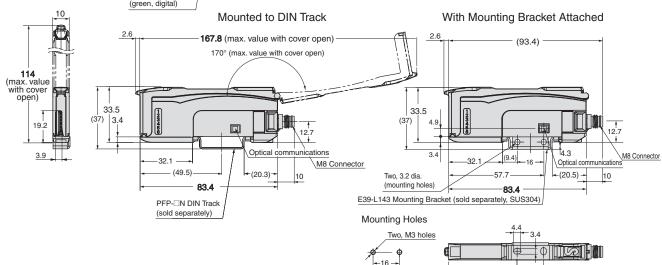
\*1. The indicators are as follows:

E3NC-LA24 DPC indicator

E3NC-SA24 ZERO indicator

\*2. The display is as follows:

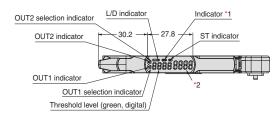
E3NC-LA24 E3NC-LA54	Incident level (white, digital)
E3NC-SA24 E3NC-SA54	Measurement value (white, digital)



## Amplifier Units with Connectors for Sensor Communications Unit E3NC-LA0

E3NC-LA0 E3NC-SA0



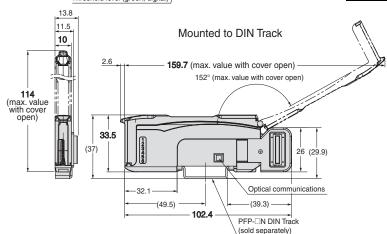


1. The indicators are as follows:	
E3NC-LA0	DPC
ESNC-LAU	indicator
E3NC-SA0	ZERO
	indicator

\*2. The display is as follows

-(41.5)

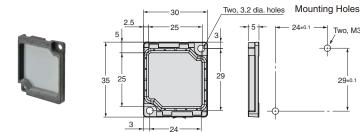
Z. The display is as follows.	
ESNC-LAU	Incident level (white, digital)
E3NC-SA0	Measurement value (white, digital)



## **Accessories (Sold Separately)**

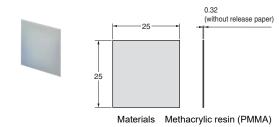
#### **Reflectors for Retro-reflective Sensors**

#### E39-R21

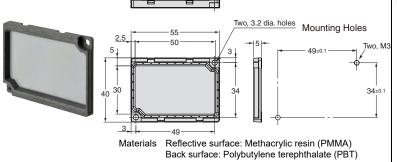


Materials Reflective surface: Methacrylic resin (PMMA) Back surface: Polybutylene terephthalate (PBT)

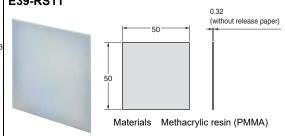
## E39-RS10



#### E39-R22

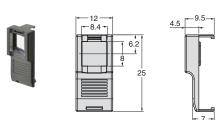


E39-RS11



#### **Lens Attachment**

#### E39-P51

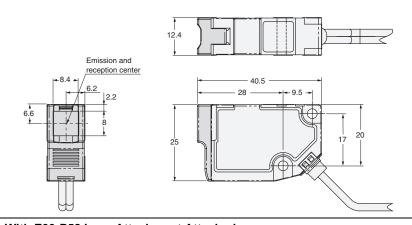


Main body: ABS Materials

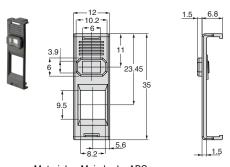
Lens: Methacrylic resin (PMMA)

#### With E39-P51 Lens Attachment Attached

29±0.1

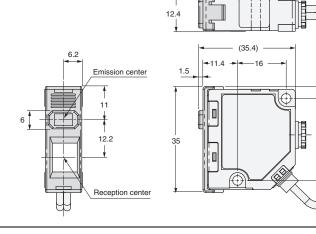


#### E39-P52



Main body: ABS Lens: Methacrylic resin (PMMA)

#### With E39-P52 Lens Attachment Attached



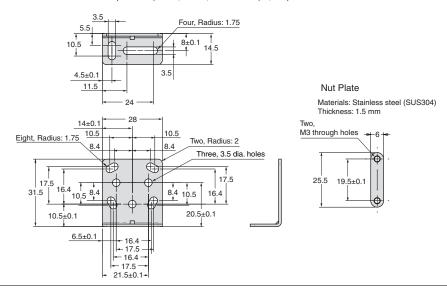
#### **Sensor Head Mounting Brackets** E39-L190

Mounting Bracket

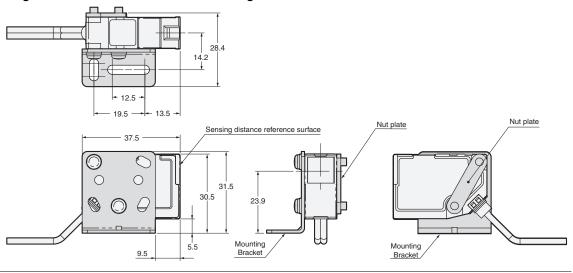
Materials: Stainless steel (SUS304) Thickness: 1.2 mm

Accessories: Phillips screws (M3×18, P = 0.5, stainless steel): 2, Nut plate: 1

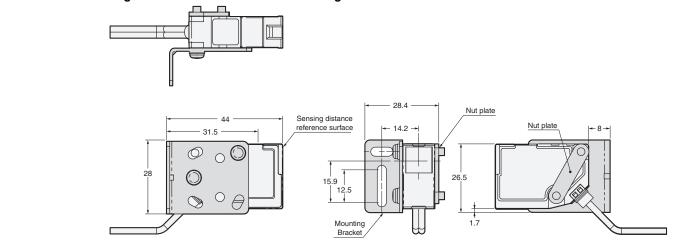




#### With E39-L190 Mounting Bracket Attached for Bottom Mounting



#### With E39-L190 Mounting Bracket Attached for Back Mounting

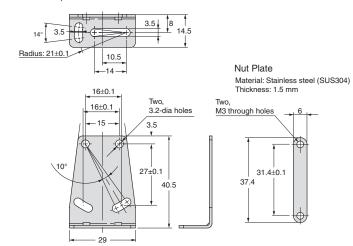


#### E39-L185

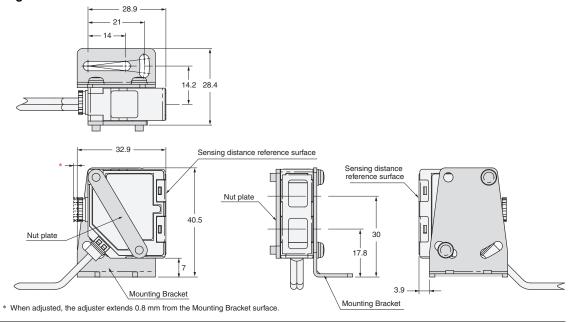


Mounting Bracket Material: Stainless steel (SUS304) Thickness: 1.2 mm

Accessories: Phillips screws (M3x18, P = 0.5, stainless steel): 2 Nut plate: 1



#### With E39-L185 Mounting Bracket Attached



#### E39-L186

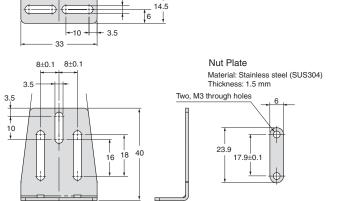


Mounting Bracket

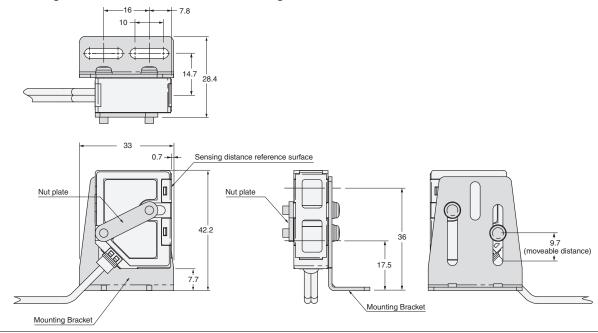
Material: Stainless steel (SUS304)

Thickness: 1.2 mm
Accessories: Phillips screws (M3x18, P = 0.5, stainless steel): 2

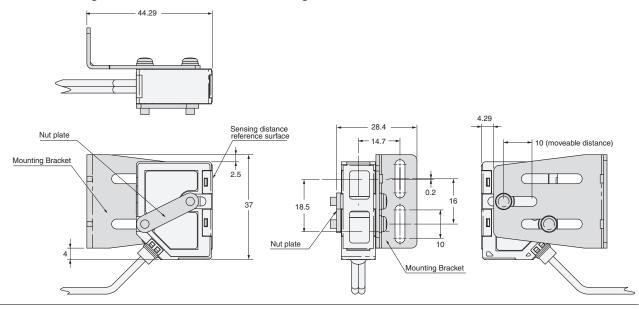
Nut plate: 1



#### With E39-L186 Mounting Bracket Attached for Bottom Mounting

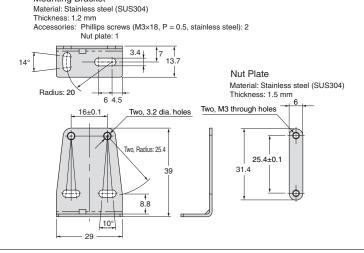


#### With E39-L186 Mounting Bracket Attached for Back Mounting

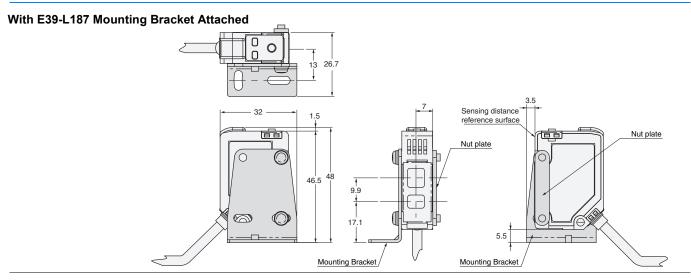




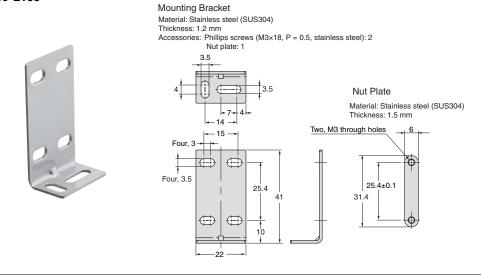




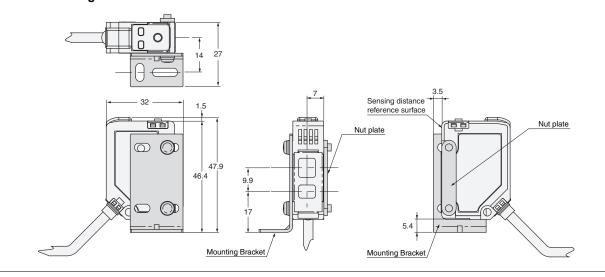
Mounting Bracket



#### E39-L188



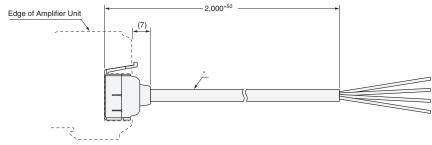
#### With E39-L188 Mounting Bracket Attached



#### **Wire-saving Connectors**

# Master Connector E3X-CN21

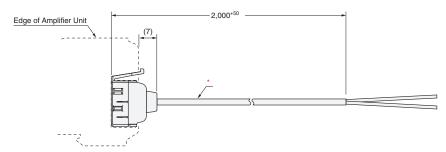




\*4-dia. cable with 4 conductors, Standard cable length: 2 m (Conductor cross-section: 0.2 mm² (AWG24), Insulation diameter: 1.1 mm)

# Slave Connector E3X-CN22





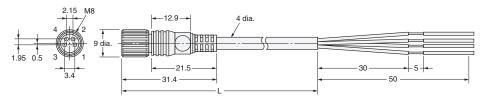
\*4-dia. cable with 2 conductors, Standard cable length: 2 m (Conductor cross-section: 0.2 mm² (AWG24), Insulation diameter: 1.1 mm)

#### **Sensor I/O Connectors**

#### Straight

XS3F-M421-40□-A

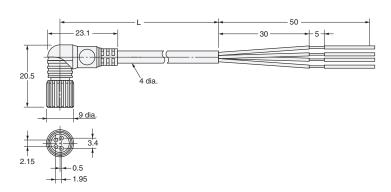




#### L-shaped

XS3F-M422-40□-A

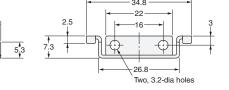




# Amplifier Unit Mounting Bracket E39-L143









Four, Radius: 1.7

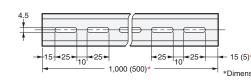


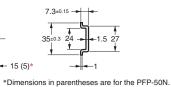
Material: Stainless steel (SUS304)

# DIN Track PFP-100N

## PFP-50N



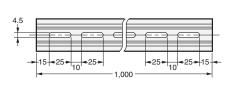


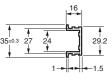


Material: Aluminum

#### PFP-100N2





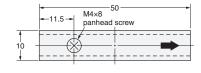


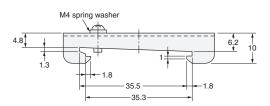
Material: Aluminum

#### **End Plate**

#### PFP-M







Materials: Iron, zinc plating

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