

TOF Laser Sensor with Built-in Amplifier

E3AS-HF Series

High-sensitivity TOF Laser Sensor to increase equipment design flexibility

- A sensing range of 0.05 to 6 m and angle characteristics of $\pm 85^\circ$ max.
- TOF method to stably detect various workpieces
- Laser class 1 for safety
- Automatic Mutual Interference Prevention to reduce equipment disruptions
- OLED Display with 5 languages supported
- Antifouling coating to prevent contamination of the sensing surface
- IP67, IP69K rated, and ECOLAB approved
- All models with IO-Link connectivity (NPN type excluded)



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



Refer to *Safety Precautions* on page 27.

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E3AS-HF Series

Ordering Information

Spot beam type [Refer to *Dimensions* on page 30]

 Red light

Connection method	Sensing distance	Output	Model	
		IO-Link baud rate	NPN output	PNP output
Pre-wired (2 m) *1			E3AS-HF6000SMN 2M	E3AS-HF6000SMT 2M
M12 Connector (horizontal)			E3AS-HF6000SMN M1H	E3AS-HF6000SMT M1H
M12 Connector (vertical)			E3AS-HF6000SMN M1V	E3AS-HF6000SMT M1V
M12 Pre-wired Smartclick Connector			E3AS-HF6000SMN-M1TJ 0.3M	E3AS-HF6000SMT-M1TJ 0.3M

Wide beam type

Connection method	Sensing distance	Output	Model	
		IO-Link baud rate	NPN output	PNP output
Pre-wired (2 m) *1			E3AS-HF6000DMN 2M	E3AS-HF6000DMT 2M
M12 Connector (horizontal)			E3AS-HF6000DMN M1H	E3AS-HF6000DMT M1H
M12 Connector (vertical)			E3AS-HF6000DMN M1V	E3AS-HF6000DMT M1V
M12 Pre-wired Smartclick Connector (0.3m)			E3AS-HF6000DMN-M1TJ 0.3M	E3AS-HF6000DMT-M1TJ 0.3M

*1. Models with 5-m cable length are also available with "5M" suffix. (Example: E3AS-HF6000SMN 5M)

Accessories (Sold Separately)

Sensor I/O Connectors (Sockets on One Cable End)

(Models for Connectors / Pre-wired Connectors)

A Sensor I/O Connector is not provided with the Sensor. It must be ordered separately as required.

Round Water-resistant Connectors XS5 serie

Appearance	Cable specification	Cable diameter (mm)	Cable connection direction	Cable length (m)	Sensor I/O Connector model number
M12 Smartclick Connector Straight type  Right-angle type 	PVC robot cable	6 dia.	Straight	2	XS5F-D421-D80-F
				5	XS5F-D421-G80-F
			Right-angle	2	XS5F-D422-D80-F
				5	XS5F-D422-G80-F

Round Water-resistant Connectors XS2 serie

Appearance	Cable specification	Cable diameter (mm)	Cable connection direction	Cable length (m)	Sensor I/O Connector model number
M12 Screw Connector Straight type  Right-angle type 	PVC robot cable	6 dia.	Straight	2	XS2F-D421-D80-F
				5	XS2F-D421-G80-F
			Right-angle	2	XS2F-D422-D80-F
				5	XS2F-D422-G80-F

Note: 1. The XS5W/XS2W (Socket and Plug on Cable Ends) are also available. Refer to XS5/XS2 on your OMRON website for details.
 2. The connectors will not rotate after they are connected.
 3. The cable is fixed at an angle of 180° from the sensor emitter/receiver surface.

E3AS-HF Series

Mounting Brackets

For E3AS-HF series [Refer to *Dimensions* on page 33]

A Mounting Bracket is not enclosed with the Sensor. Order a Mounting Bracket separately if required.

Appearance	Model	Pre-wired	M12 Pre-wired Smartclick Connector	M12 Connector (horizontal)	M12 Connector (vertical)
L-shaped Mounting Bracket (180°) 	E39-L245	Yes	Yes	Yes	---
L-shaped Mounting Bracket (360°) 	E39-L255	Yes	Yes	Yes	---
Flexible Mounting Bracket *1 	E39-L264	Yes	Yes	Yes	Yes
Post 50 mm 	E39-L262	Yes	Yes	Yes	---
Post 100 mm 	E39-L263	Yes	Yes	Yes	Yes
Air Blow Unit *2, *3 	E39-E17	Yes	Yes	Yes	Yes
Front Protection Cover 	E39-E20	Yes	Yes	Yes	Yes

*1. The Flexible Mounting Bracket is not provided with a Post (E39-L262/E39-L263). It must be ordered separately.

*2. When using the Air Blow Unit (E39-E17), use the L-shaped Mounting Bracket (E39-L245).

*3. The tube for air is not included.

Ratings and Specifications

Item	Sensing method		TOF (Time of flight)	
	Model	Type	Spot beam type	Diffused beam type
		NPN Output	E3AS-HF6000SMN□	E3AS-HF6000DMN□
	PNP Output	E3AS-HF6000SMT□	E3AS-HF6000DMT□	
Sensing distance		50 to 6,000 mm		
Beam size		Variable (Refer to diagram on page 20)	Variable (Refer to diagram on page 20)	
Light source (wavelength)		Red laser (660 nm)		
Power supply voltage		10 to 30 VDC, (including ripple (p-p) 10%), Class2		
Consumption current *1		65 mA max. (when power voltage is 24 V), 155 mA max. (when power voltage is 10 V). Note: 125 max. at environment below the freezing point (when power voltage is 24 V)		
Control output		Load power supply voltage 10 to 30 VDC (Class2), Load current 100 mA max. each output (total of 2 outputs is 200 mA max.) Residual voltage (Load current 10 mA max.: 1 VDC max., Load current 10 to 100 mA: 2 VDC max.) Open collector output type (Depends on the NPN/PNP output type) NO/ NC selectable		
Current output		4 to 20 mA, maximum load resistance 500 Ω		
External input		Laser OFF / Teaching / Zero reset selectable NPN ON time: 0 V short-circuit or 1.5 V or less (Outflow current: 1 mA or less) OFF time: Power supply voltage short-circuit or open PNP ON time: Power supply voltage short-circuit or within power supply voltage - 1.5 V (Sink current: 1 mA or less) OFF time: 0 V short-circuit or open		
Protection circuits		Reversed power polarity protection, Output short-circuit protection and Output reverse polarity protection		
Indicator		OLED Display (White), Power/Communication indicator (Green), Operation indicator (Orange), and Bottom indicator (Green, Orange)		
Response time		2 ms / 10 ms / 50 ms / 200 ms selectable		
Mutual interference prevention		Auto setting (Manual setting is also possible: up to 4 units)		
Ambient illumination		Incandescent lamp / Sunlight: 100,000 lx max.		
Ambient temperature		Operating: -30 to 55°C (with no icing or condensation) *2, Storage: -30 to 70°C (with no icing or condensation) Note: The UL temperature rating for M12 Pre-wired Smartclick Connector Models is -25 to 55°C.		
Ambient humidity		Operating: 35 to 85%, Storage: 35 to 95%RH (with no condensation)		
Insulation resistance		20 MΩ min. at 500 VDC		
Dielectric strength		1,000 VAC at 50 / 60 Hz for 1 min		
Vibration resistance		10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions		
Shock resistance		500 m/s² for 3 times each in X, Y, and Z directions		
Enclosure ratings		IP67 (IEC60529), IP69K (ISO20653), IP67G (JIS C 0920 Annex 1) *3		
Weight (packed state/Sensor only)	Pre-wired (2 m)	Approx. 280 g/approx. 167 g		
	M12 Connector (horizontal/vertical)	Approx. 223 g/approx. 114 g		
	M12 Pre-wired Smartclick Connector (0.3 m)	Approx. 237 g/approx. 128 g		
Material	Case	Aluminum die cast (Chrome plating)		
	Cover	SUS304		
	Indicator	Polyethersulfone (PES)		
	Lens cover and Display	Methacrylic resin (PMMA), Antifouling coating (Lens cover)		
IO-Link Communication specifications	IO-Link specification	Ver. 1.1		
	Baud rate	COM3: 230.4 kbps		
	Data length	PD size: 4 bytes, OD size: 2 byte (M-sequence type: TYPE_2_V)		
	Minimum cycle time	COM3: 1.2 ms		
	Device profile	Smart Sensor Profile (SSP4.1.1) Identification and Diagnosis (I&D)		
Conformity standards		UL/CSA Certification, CE Marking, RCM, UKCA, Various laser standards *4, Ecolab, RoHs2, WEEE2		
MTTFd		340 year		
Accessories		Instruction manual, compliance sheet, index list (attached for IO-Link type only), FDA certification label Note: Mounting Brackets must be ordered separately.		

Note: 1. Altitude: Up to 2000 m, Pollution degree: 3, Enclosure type: Type1.

*1. Excluding load current.

*2. When the product is used in an environment with a temperature of -10°C or less, a warm-up time (10 min maximum) is required.

*3. JIS C 0920 Annex 1 describes the IP67G rating oil and the oil resistance of the product has been assessed by the document.

Please visit the website of the Japanese Industrial Standards for more information. (<https://www.jisc.go.jp/index.html>)

*4. For details, refer to the *To safely use laser products* on page 28.