# OMRON

OPTICAL FIBER PHOTOELECTRIC

SENSOR E3X-SD

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### Instruction Sheet

Thank you for selecting OMRON product. Before operating the product, read the sheet thoroughly to acquire sufficient knowledge of the product. Please let the experts operate with electric knowledge. Please use the product correctly on the basic of reading.

and understanding the instruction sheet. Please keep this instruction sheet well for using.

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Precaution on Safety Meanings of Signal Words CAUTION which, if not avoided, may result in mixer moderate injury or in property damage. Alert statements in this Manual

Do not use it exceeding the rated voltage. There is a possibility of failure and fire. ∕∕ Do not connect sensor to AC power supply. Risk of explosion. 

Hot surface may cause heat injury. Precautions for Safe Use

1)Oo not use the Amplifier Unit in environments subject to flan able or explosive gases. 2)Do not use the Amplifier Unit in environments subject to exp. re to water, oil, chemicals, etc. 3)Do not attempt to disassemble, repair, or modify the Amplife

300 not state judy, containtents, etc.
 300 not state judy, containtents, etc.
 ant in any way.
 400 not use the Amplifer Unit in strongohests or environments
 at exceed product ratings.
 69Wire the Amplifier Unit correctly, e.g., do not reverse the pol
 of the power supply.
 7/Connect the bare do correctly.
 9/Do not use the Amplifier Unit of the case.
 9/Do not use the Amplifier Unit for atmospheres or environments
 at exceed product ratings.
 9/Do not not use the Amplifier Unit for the case.
 9/Do not use the Amplifier Unit (if the case is damaged
 9/Do not use the Amplifier Unit (if the case is damaged
 9/Do not use the sensor in the place exposed to the direct sum
 1/D/then disposing of the Amplifier Unit, the case is depending on the use
 onditions such as amblent temperature and power supply:
 age. Be careful when you operate or clean it. Hot surface :
 cause heat injury.
 Precautions for Correct Use

Precautions for Correct Use

1) Do not use the Amplifer Unit under the following conditions. (1) In the place exposed to the direct sunight. (2) In the place where humidity is high and condensation may or (3) In the place where vibration or shock is directly transmitte-the product

(c) we back where violation or shock is directly transmitte-the product. Since where violation or shock is directly transmitte-the product. Since where violation or shock is directly transmitte-the product. Since the same duct as high-power lines, inductive noise i cause operating errors or damage the Amplifier Unit. 3)Do not extend the cable to more than 100 m, and use a wire ze of 0.3 mm<sup>2</sup> or larger for the extension cable. 4)The Amplifier Units ready to operate 200 ms after the power poly is turned ON. If the Amplifier Unit and load are connecte power supplies esparately, turn ON the power supply to the A lifter Unit first. 5)Output pulses may occur when the power is interrupted turn OFF the power to the load or load line before turning ( the power to the Sensor GiWhen you use the Amplifier Units with Connectors to prever excite shock or short-circuits, attach the protocor seals (p vided with E3X-CN-series). Commectors to the sides of po supply connectors that are not being used.



Power supply come 7/Always turn OFF the power supply before connecting, separat or adding Amplifier Units. B)Do not pull or apply accessive pressure or force (exceeding 9.6 H on the Fiber Unit when it is mounted to the Amplifier Unit. 9/Always keep the protective cover in place when using the Am lier Unit.

10)Do

er Unit. )Do not use thinners, benzine, acetone, or kerosene for clear the Amplitier Unit.

Connection me	Nhod	Pre-Wired	Separate connector
	NPN	E3X-SD11	E3X-SD6
Model	PNP	E3X-SD41	E3X-SD8
Light source		Red LED (620nm)	
Power supply	voltage		(p-p) 10% max.
Power consu	mption	supply voltage of 24VDC)	imption:40mA max, at powe
Control outpu	nt	Open collector: max. 50mA; residual voltage: max. 1.5V;L-ON/D-ON switch alter	
Response lin	18	200µs max	
Sensitivity setting		Teaching, or manual activ	ustment
Tarter		Timer species: OFF-D/OF	D Delay time; 10ms/fixe
Protection circuits		Power reverse protect, outp protect	ul reverse protect, output-sh
Indicator		Operation Indicator(orange)	
Digital display		7 segment digital display.	0P~999P(percent)
Interference prevention			
Ambient Humination		Incandescent lemp: 10,000	tx max.Sunlight- 20,000br m
Ambient temperature		Openating:Groups of 1 to 3 Amplifient: -25°C to 55°C Groups of 4 to 11 Amplifient: -25°C to 50°C Groups of 12 to 16 Amplifient: -25°C to 50°C Storage: -30°C to 70°C (with no king or condensation)	
Ambient humidity		Operating and storage: 35%	to 85% (with no condempatis
Insulation resistance		20 MD min. (at 500 VDC)	
Dielectric strength		1,000 VAC at 50/60 Hz for 1 minute	
Vibration resistance		Destruction: 10 to 55 Hz with a 1.5mm double empitude 2 hours each in X, Y and Z directions	
Shock resistance		Destruction: 500 m/s <sup>a</sup> , for 3 times each in X, Y and Z directions	
Degree of pro	stection	EC 60529 IP50 (with Protective Cover attached)	
	Case	Polybutyiono terephthaiat	e (PBT)
Materials		Polycarbonate (PC)	

4.Nomenclature
set key set sensitivity Operation Indicator(orange) Operation Indicator(orange)
ock lever TEACH/RUN Mode selector Tether Mode selector Light level indicator Display the relative velue
5.Installing the Amplifier Unit
IMputing Units at the React of the Fiber Unit connector and of the att the NON Viters and then press stown on the Per end of the Unit until it locks into place.
the incorter and is attached first, the mounting Hook on the Fiber Unit connector and rength will be reduced.
IRemoving Units reas the Unit in the direction indicated by "1" of then fifty point in Fiber Unit connector and "the Unit in the direction indicated by "2."
Liping Amplifier Units (for Units with Connectors) Up to 15 Units can be joined. Mount the Amplifier Units we at a time anto the Dit Track. Side the Amplifier Units together and press the Amplifier Units together until they click into piace.
scure the Units with an End Plate (PEP-M) if ere is a possibility of the Amplifier Units moving.
Q., due to vibration.     P emove the Units in the reverse order.     C r
6.Connecting the Fiber Unit
Open the protective cover Press up the lock bullor. Insert the fibers all the way to the back of the connector insertion opening. Return the lock bullon to its original pos- ition to secure the fibers.
7 Basic Settings
1. Sci Omminen Meda

Select D-ON or L-ON. Jee the alter switch to set Operation Mode Mate

Contraction (original setting) turn to L-ON L-ON D-ON turn to D-ON

), Stal Amer Mode Restat Timer Mode: OFF, OFF-D, ON. Set by Timer Mode selector. 'he delay time is 10ms(fixed).

8.Sensitivity Setting Method

ise Manual and Teaching to set sensitivity

. Set sensitivity by Manual In measure state(RUN),edjust the sensitivity while affirm the activ 獚

STRUCT	REGEN	Neug-
¢	50 40 30	Press the UP key, the sensitivity level will increase 1%. Press the UP key and hold it for 2 sec or longer,the sensitivity level will increase 10%.
		Press the DOWN key, the sensitivity level will decrease 1%. Press the DOWN key and hold it for 2 sec or longer, the sensitivity level will decrease 10%.

Set sensitivity by Teaching There are three Teaching methods to set sensitivity. Please ch

There are three reacting interview in the best . In Teaching time, cutput control can not be down(Keep the output on OFF). When Teaching is over, Operation Mode selector must return to RUN.

2-1. The maximum sensitivity setting Use the maximum sensitivity as threshold.

<u>NØØ</u>	ിലല്ക്ക	Sugar,
Put TEACH/RUN alter switch on TEACH.	TEACH RUN	LECH ( 103P
Hold the UP key for 3 sec or longer.	്	<u>EFULL</u>
Put TEAGH/RUN alter switch on RUN (measure begin).	TEACH RUN	<u>-Un</u> 103P
-2. With/without workpies	ca Teaching	· · · · · · · · · · · · · · · · · · ·

Get two point about withwithout workplece, then set the action level in the middle

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<u>ن</u> ( <u>:</u> :
5 ( <u>5777</u>
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i. Automatic Teaching Nessuring the changes in the time ordered, set the middle of mex sensitivity and min sensitivity as threshold. This method mostly be selepted to the situation that the workpiece is moving continuously on product line.

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TEACH BLAN	103P
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്	(RUE o)
TEACH INH	<u>- 103</u>
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#### **ITEACH ERROR**

In the course of TEACH, errors have taken place when the situation was displayed below.

### Over Error Cover entropy The quartity of noniving light is too high. Make sum operation state before using, because the invested and so the minimum semantity alter teaching. According to the moster, please change the setting of the fiber unit, then TEACH again. jouEr Low Error LOW ETTOP The quantity of receiving light is too low. Make sure operation state before using, because the threshold set as the measurum asnability etter tread any. According to the require, please change the setting of the stoar unit, then TEACH again. Lo Near Error Inter twice te changing of moniking light is too low. Iskin sure operation state before using, because it is likely to peration out of the way.

## 9.Error Display

Image: Constraint of the stand of	flash twice	Data Error
There are over current in output control.	<u>d Er</u>	
	fash wice	There are over current in output control. Please make sure that whether the Load is fit or the circuit

# Suitability for Use

HE PRODUCTS CONTAINED IN THIS SHEET ARE NOT SAFETY RATED. THEY ARE NOT DESIGNED OR RATED FOR ENSUMING SMEETY OF ERSONS, MO SHOULD NOT BE RELED UPON AS A SAFETY COMPONENT ON PROTECTIVE DEVICE ON SUCH PURPOSES. Reas failt of symbile catalogs for OMRON's atality and produs.

MRON shall not be responsible for conformity with any standards, codes, or guilations that apply to the combination of the products in the customer's splication or use of the product. guiation nolicatio

ake all necessary steps to determine the suitability of the product for the stems, machines, and equipment with which it will be used. now and observe all prohibitions of use applicable to this product.

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I/O Circuit Diagram





Dimensions

