

Digital Fiber Sensors

E3X-DA-S Series

Single functional type(E3X-DA□□SE-S)

Instruction Sheet

Thank you for selecting an OMRON product. This sheet primarily describes precautions required in installing and operating the product.

- The specialist who has the knowledge of electricity must treat.
- Please often read this manual, and use it correctly after it understands enough.
- Please keep this manual importantly to refer at any time.

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Precautions for Safe Use

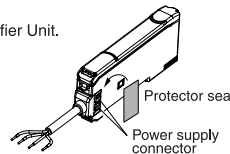
Please observe the following precautions for safe use of the product.

- 1) Do not use the Amplifier Unit in environments subject to flammable or explosive gases.
- 2) Do not use the Amplifier Unit in environments subject to exposure to water, oil, chemicals, etc.
- 3) Do not attempt to disassemble, repair, or modify the Amplifier Unit in any way.
- 4) Do not apply voltages or currents that exceed the rated ranges.
- 5) Wire the Amplifier Unit correctly, e.g., do not reverse the polarity of the power supply.
- 6) Connect the load correctly.
- 7) Do not short both ends of the load.
- 8) Do not use the Amplifier Unit if the case is damaged.
- 9) When disposing of the Amplifier Unit, treat it as industrial waste.

Precautions for Correct Use

Please observe the following precautions to prevent failure to operate, malfunction, or undesirable effects on product performance.

- 1) The optical fibers are made out of methacrylic resin. Do not use them in atmospheres where organic solvents are present.
- 2) Wire the Amplifier Unit separately from power supply or high-voltage lines. If the Amplifier Unit wiring is wired together with or placed in the same duct as high-power lines, inductive noise may cause operating errors or damage the Amplifier Unit.
- 3) Do not extend the cable to more than 100 m, and use a wire size of 0.3 mm² or larger for the extension cable.
- 4) The Amplifier Unit is ready to operate 200 ms after the power supply is turned ON. If the Amplifier Unit and load are connected to power supplies separately, turn ON the power supply to the Amplifier Unit first.
- 5) Always keep the protective cover in place when using the Amplifier Unit.
- 6) Connector Short-circuit Protection (for Amplifier Units with Connectors) To prevent electric shock or short-circuits, attach the protector seal provided with E3X-CN-series Connectors to the sides of power supply connectors that are not being used.
- 7) Always turn OFF the power supply before connecting, separating, or adding Amplifier Units.
- 8) Using a Mobile Console
Use the E3X-MC11-S Mobile Console for the E3X-DA-S-series Amplifier Units. Other Mobile Consoles, such as the E3X-MC11, cannot be used.
- 9) Optical communications are not possible with an E3X-DA-N Amplifier Unit.
- 10) Depending on the application environment, time may be required for the incident light level to stabilize after the power supply is turned ON.
- 11) Please do not use thinner, benzene, acetone, and lamp oil for cleaning.
- 12) The optical fibers are made out of methacrylic resin. Do not use them in atmospheres where organic solvents are present.
- 13) Do not pull or apply excessive pressure or force (exceeding 9.8 N·m) on the Fiber Unit when it is mounted to the Amplifier Unit.
- 14) It cannot be used, when you have With and Without a Workpiece, it becomes 4000 or more digital values by each. In this case, please examine the type which re-sets up fiber unit or can perform power adjustment so that light level may become small. (This model is a single functional type and power adjustment cannot be performed.)
- 15) If the data is not written to the EEPROM correctly due to a power failure or static electric noise, as



Confirming the Package Contents

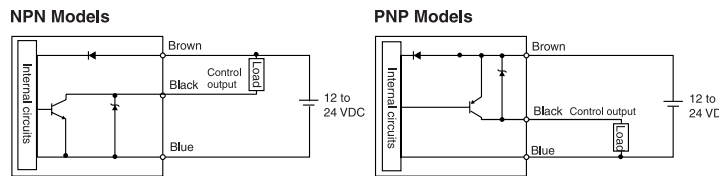
Amplifier Unit : 1 Instruction Sheet (this sheet) : 1

Ratings and Specifications

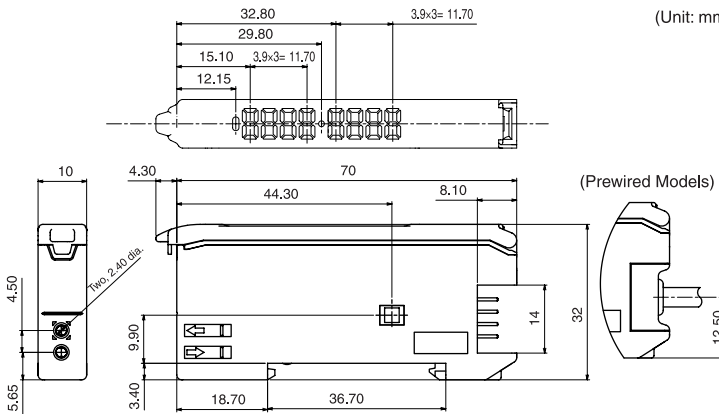
Connection method		Prewired	Separate connector *
Model	NPN	E3X-DA11SE-S	E3X-DA6SE-S
	PNP	E3X-DA41SE-S	E3X-DA8SE-S
Supply voltage		DC12~24V±10% ripple(p-p)10% max.	
Power consumption		960 mW max. (40 mA max. at 24 V)	
Control output		Open collector (26.4 VDC max.); load current: 50 mA max.; residual voltage: 1 V max.	
Response time		1ms	
Mutual interference prevention		Possible for up to 10 Units (optical communications sync method)	

*: Either the E3X-CN11 Master Connector (3-conductor) or the E3X-CN12 Slave Connector (1-conductor) can be used.

I/O Circuits



Dimensions

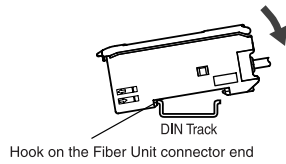


The installation method

Mounting Units

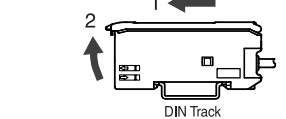
Catch the hook on the Fiber Unit connector end of the Unit on the DIN Track and then press down on the other end of the Unit until it locks into place.

Always attach the Fiber Unit connector end first. If the incorrect end is attached first, the mounting strength will be reduced.



Removing Units

Press the Unit in the direction indicated by "1" and then lift up on the Fiber Unit connector end of the Unit in the direction indicated by "2."



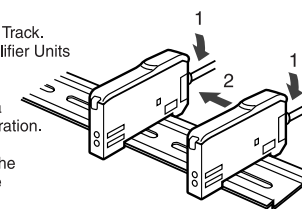
Joining Amplifier Units (for Units with Connectors)

Up to 16 Units can be joined.

1. Mount the Amplifier Units one at a time onto the DIN Track.
2. Slide the Amplifier Units together and press the Amplifier Units together until they click into place.

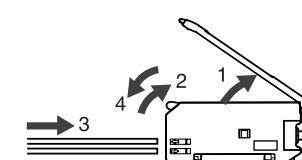
Secure the Units with an End Plate (PFP-M) if there is a possibility of the Amplifier Units moving, e.g., due to vibration.

Reverse the above procedure to separate and remove the Units. Do not attempt to remove Amplifier Units from the DIN Track without separating them first.



Connecting the Fiber Unit

1. Open the protective cover
2. Press up the lock button.
3. Insert the fibers all the way to the back of the connector insertion openings.
4. Return the lock button to its original position to secure the fibers.



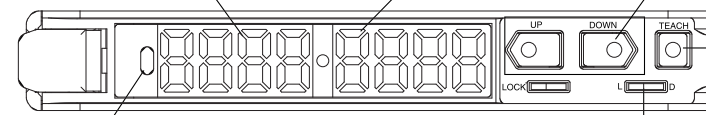
Reverse the above procedure to disconnect the Fiber Unit.

Display/Operation

Main digital display(Red)
Incident Light level is displayed with digital value(0~max4000).

Sub digital display(Green)
Threshold value is displayed.

Threshold adjustment key
Used to adjust threshold value.



Display light of operation
Lit when the output ON.

Keylock switch
Used to lock the key or not.

Operation mode selector
Used to select LON or DON operation.

Teaching key
Used to teach threshold value.

1. Basic Settings

LON(light-ON)	DON(dark-ON)
The output will turn ON when the incident light level is above the threshold.	The output will turn ON when the incident light level is below the threshold.

2. Threshold values Manually setting

Key	UP key	DOWN key
Setting	Increases the threshold value.	Decreases the threshold value.

3. Threshold values Setting by Teaching

① Teaching With and Without a Workpiece(It sets up at workpiece that doesn't move.)

Teaching can be performed twice, once with and once without a workpiece, and the value between the two measured values is set as the threshold.

Setting		
Display	TECH The sub-display will flash.	2PNT 1300 The threshold value that was set will flash twice.

② Automatic-teaching(It sets up at move work.)

While continuing pushing a key, the middle of the detected maximum and the minimum value can be set up as a threshold.

Setting	
Display	1300 AUTO Light level AUTO It is displayed on a sub digital value as AUTO, and the sampling of right level is effective.
	AUTO 1000 AUTO Threshold value Threshold value will flash twice.

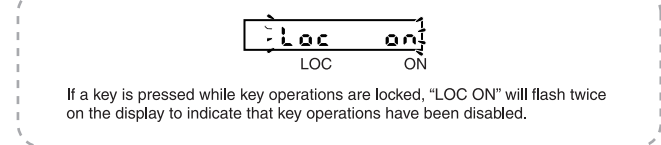
Teaching error

After performing teaching, when the following is displayed on a sub digital display, the error has occurred.

	OVER Error Light level is too large. Detection may be correctly impossible, although threshold value is set as a maximum value. Adjust the Head to decrease the incident light level.
	LOW Error Light level is too small. Detection may be correctly impossible, although threshold value is set as a maximum value. Adjust the Head to increase the incident light level.
	NEAR Error Change of light level is small. Detection may be correctly impossible, although a threshold is set as a maximum value. Adjust the Head to increase the difference between the two incident light level.

4. Keylock Setting

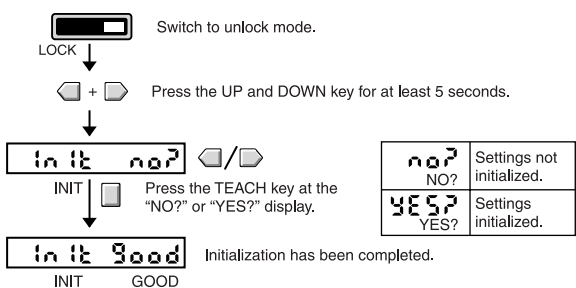
LOCK	UNLOCK
LOC ON The main-display and sub-display will flash twice and key input will be disabled.	LOC OFF The main-display and sub-display will flash twice and key input will be enabled.



Memory error

Err EEP
Err EEP
It is displayed as Err with main digital display and sub digital display, it is displayed as EEP.

Setting initialization



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