OMRON

Digital Fiber Sensors
E3X-DA-S

The next-generation platform for a wide range of sensing

- The industry's first Power Tuning function in a digital amplifier.
- Large, easy-to-read displays that are clear even from a distance. Seven convenient display formats.
- Stable long-term performance achieved with OMRON's APC function.
- A wide array of advanced functions for even more applications.
- The same ease-of-use as the E3X-DA-N Amplifiers.
- Environmentally friendly design.
- Improved Mobile Console.

Ordering Information

■ Amplifier Units

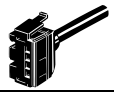
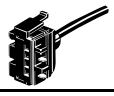
Amplifier Units with Cables

Item		Appearance	Functions	Model	
				NPN output	PNP output
Standard models			---	E3X-DA11-S	E3X-DA41-S
Mark-detecting models	Green LED		---	E3X-DAG11-S	E3X-DAG41-S
	Blue LED		---	E3X-DAB11-S	E3X-DAB41-S
Advanced models	Twin-output models		Area output, self-diagnosis, differential operation	E3X-DA11TW-S	E3X-DA41TW-S
	External-input models		Remote setting, counter, differential operation	E3X-DA11RM-S	E3X-DA41RM-S

Amplifier Units with Connectors

Item		Appearance	Functions	Model	
				NPN output	PNP output
Standard models			---	E3X-DA6-S	E3X-DA8-S
Mark-detecting models	Green LED		---	E3X-DAG6-S	E3X-DAG8-S
	Blue LED		---	E3X-DAB6-S	E3X-DAB8-S
Advanced models	Twin-output models		Area output, self-diagnosis, differential operation	E3X-DA6TW-S	E3X-DA8TW-S
	External-input models		Remote setting, counter, differential operation	E3X-DA6RM-S	E3X-DA8RM-S

■ Amplifier Unit Connectors (Order Separately)

Item	Appearance	Cable length	No. of conductors	Model
Master Connector		2 m	3	E3X-CN11
			4	E3X-CN21
Slave Connector			1	E3X-CN12
			2	E3X-CN22

Combining Amplifier Units and Connectors

Amplifier Units and Connectors are sold separately. Refer to the following tables when placing an order.

Amplifier Unit			+	Applicable Connector (Order Separately)	
Model	NPN output	PNP output		Master Connector	Slave Connector
Standard models	E3X-DA6-S	E3X-DA8-S		E3X-CN11 (3-wire)	E3X-CN12 (1-wire)
Mark-detecting models	E3X-DAG6-S	E3X-DAG8-S			
	E3X-DAB6-S	E3X-DAB8-S			
Advanced models	E3X-DA6TW-S	E3X-DA8TW-S		E3X-CN21 (4-wire)	E3X-CN22 (2-wire)
	E3X-DA6RM-S	E3X-DA8RM-S			

When Using 5 Amplifier Units

Amplifier Units (5 Units)	+	1 Master Connector + 4 Slave Connectors

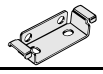
■ Mobile Console (Order Separately)

Appearance	Model	Remarks
	E3X-MC11-S (model number of set)	Mobile Console with Head, Cable, and AC adapter provided as accessories
	E3X-MC11-C1-S	Mobile Console
	E3X-MC11-H1	Head
	E39-Z12-1	Cable (1.5 m)

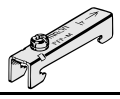
Note: Use the E3X-MC11-S Mobile Console for the E3X-DA-S-series Amplifier Units. Other Mobile Consoles cannot be used.

■ Accessories (Order Separately)

Mounting Bracket

Appearance	Model	Quantity
	E39-L143	1

End Plate

Appearance	Model	Quantity
	PFP-M	1

Specifications

■ Ratings/Characteristics

Amplifier Units

Amplifier Units with Cables

Item	Type		Standard models	Mark-detecting models		Advanced, twin-output models	Advanced, external-input models
	Model	NPN output	E3X-DA11-S	E3X-DAG11-S	E3X-DAB11-S	E3X-DA11TW-S	E3X-DA11RM-S
		PNP output	E3X-DA41-S	E3X-DAG41-S	E3X-DAB41-S	E3X-DA41TW-S	E3X-DA41RM-S
Light source (wavelength)			Red LED (650 nm)	Green LED (525 nm)	Blue LED (470 nm)	Red LED (650 nm)	
Supply voltage			12 to 24 VDC ±10%, ripple (p-p) 10% max.				
Power consumption			960 mW max. (current consumption: 40 mA max. at power supply voltage of 24 VDC)			1,080 mW max. (current consumption: 45 mA max. at power supply voltage of 24 VDC)	
Control output			Load power supply voltage: 26.4 VDC; NPN/PNP open collector; load current: 50 mA max.; residual voltage: 1 V max.				
Circuit protection			Reverse polarity for power supply connection, output short-circuit				
Response time	Super-high-speed mode	NPN	48 μs for operation and 50 μs for reset			80 μs for operation and reset respectively	48 μs for operation and 50 μs for reset[*1]
		PNP	53 μs for operation and 55 μs for reset				53 μs for operation and 55 μs for reset[*1]
	Standard mode		1 ms for operation and reset respectively				
	High-resolution mode		4 ms for operation and reset respectively				
Sensitivity setting			Teaching or manual method				
Functions	Power tuning		Light emission power and reception gain, digital control method				
	Differential detection		---			Switchable between single edge and double edge detection mode Single edge: Can be set to 250 μs, 500 μs, 1 ms, 10 ms, or 100 ms. Double edge: Can be set to 500 μs, 1 ms, 2 ms, 20 ms, or 200 ms.	
	Timer function		Select from OFF-delay, ON-delay, or one-shot timer. 1 ms to 5 s (1 to 20 ms set in 1-ms increments, 20 to 200 ms set in 10-ms increments, 200 ms to 1 s set in 100-ms increments, and 1 to 5 s set in 1 s-increments)				
	Automatic power control (APC)		High-speed control method for emission current				
	Zero-reset		Display can be reset to zero when required (negative values can be displayed).				
	Initial reset		Settings can be returned to defaults as required.				
	Mutual interference prevention		Possible for up to 10 Units[*2, *3]				
	Counter		---				Switchable between up counter and down counter. Set count: 0 to 9,999,999
	I/O settings		---			Output setting (Select from channel 2 output, area output, or self-diagnosis.)	External input setting (Select from teaching, power tuning, zero reset, light OFF, or counter reset.)
Display			Operation indicator (orange), Power Tuning indicator (orange)			Operation indicator for channel 1 (orange), Operation indicator for channel 2 (orange)	Operation indicator (orange), Power Tuning indicator (orange)
Digital display			Select from the following: Incident level + threshold, incident level percentage + threshold, incident light peak level + no incident light bottom level, minimum incident light peak level + maximum no incident light bottom level, long bar display, incident level + peak hold, incident level + channel				Select from same displays as given at the left or a counter display.
Display orientation			Switching between normal/reversed display is possible.				

Item	Type	Standard models	Mark-detecting models		Advanced, twin-output models	Advanced, external-input models
Model	NPN output	E3X-DA11-S	E3X-DAG11-S	E3X-DAB11-S	E3X-DA11TW-S	E3X-DA11RM-S
	PNP output	E3X-DA41-S	E3X-DAG41-S	E3X-DAB41-S	E3X-DA41TW-S	E3X-DA41RM-S
Ambient illumination (receiver side)		Incandescent lamp: 10,000 lux max. Sunlight: 20,000 lux max.				
Ambient temperature		Operating: Groups of 1 to 2 Amplifiers: –25°C to 55°C Groups of 3 to 10 Amplifiers: –25°C to 50°C Groups of 11 to 16 Amplifiers: –25°C to 45°C (with no icing or condensation) Storage: –30°C to 70°C (with no icing or condensation)				
Ambient humidity		Operating and storage: 35% to 85% (with no condensation)				
Insulation resistance		20 MΩ 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 1.5-mm double amplitude for 2 hrs each in X, Y and Z directions				
Shock resistance (destruction)		500 m/s^2, for 3 times each in X, Y and Z directions				
Enclosure rating		IEC 60529 IP50 (with Protective Cover attached)				
Connection method		Prewired cable				
Weight (packed state)		Approx. 100 g				
Materials	Case	Polybutylene terephthalate (PBT)				
	Cover	Polycarbonate (PC)				
Accessories		Instruction sheet				

***1:** When counter is enabled: 80 μs for operation and reset respectively.

***2:** Communications are disabled if the detection mode is selected during super-high-speed mode, and the communications functions for mutual interference prevention and the Mobile Console will not function.

***3:** Mutual interference prevention can be used for only up to 6 Units if power tuning is enabled.

Amplifier Units with Connectors

(Specifications different to those for Amplifier Units with cables)

Item	Type	Standard models	Mark-detecting models		Advanced, twin-output models	Advanced, external-input models
Model	NPN output	E3X-DA6-S	E3X-DAG6-S	E3X-DAB6-S	E3X-DA6TW-S	E3X-DA6RM-S
	PNP output	E3X-DA8-S	E3X-DAG8-S	E3X-DAB8-S	E3X-DA8TW-S	E3X-DA8RM-S
Connection method		Standard connector				
Weight (packed state)		Approx. 55 g				

Amplifier Unit Connectors

Item		E3X-CN11/21/22	E3X-CN12
Rated current		2.5 A	
Rated voltage		50 V	
Contact resistance		20 mΩ max. (20 mVDC max., 100 mA max.) (The figure is for connection to the Amplifier Unit and the adjacent Connector. It does not include the conductor resistance of the cable.)	
No. of insertions (destruction)		50 times (The figure for the number of insertions is for connection to the Amplifier Unit and the adjacent Connector.)	
Materials	Housing	Polybutylene terephthalate (PBT)	
	Contacts	Phosphor bronze/gold-plated nickel	
Weight (packed state)		Approx. 55 g	Approx. 25 g

Mobile Console

Item	E3X-MC11-S
Supply voltage	Charged with AC adapter
Connection method	Connected via adapter
Weight (packed state)	Approx. 580 g (Console only: 120 g)

Refer to *Operation Manual* provided with the Mobile Console for details.