

Ordering Information

Amplifier Units

Amplifier Units with Cables (2 m) [Refer to *Dimensions* on page 17.]

Item		Appearance	Functions	Model	
				NPN output	PNP output
Single-function models			---	E3X-DA11SE-S 2M	E3X-DA41SE-S 2M
Standard models			Timer, Response speed change	E3X-DA11-S 2M	E3X-DA41-S 2M
Mark-detecting models (multiple color light sources)	Green LED			E3X-DAG11-S 2M	E3X-DAG41-S 2M
	Blue LED			E3X-DAB11-S 2M	E3X-DAB41-S 2M
	Infrared LED			E3X-DAH11-S 2M	E3X-DAH41-S 2M
Advanced models	External-input models		Remote setting, counter, differential operation	E3X-DA11RM-S 2M	E3X-DA41RM-S 2M
	Twin-output models		Area output, self-diagnosis, differential operation	E3X-DA11TW-S 2M	E3X-DA41TW-S 2M
	ATC function models		ATC (Threshold value automatic correction)	E3X-DA11AT-S 2M	E3X-DA41AT-S 2M
	Analog output models		Analog output models	E3X-DA11AN-S 2M	E3X-DA41AN-S 2M
2-channel models			AND/OR output	E3X-MDA11 2M	E3X-MDA41 2M

Amplifier Units with Connectors

Item		Appearance	Functions	Model	
				NPN output	PNP output
Single-function models			---	E3X-DA6SE-S	E3X-DA8SE-S
Standard models				E3X-DA6-S	E3X-DA8-S
Mark-detecting models (multiple color light sources)	Green LED		Timer, Response speed change	E3X-DAG6-S	E3X-DAG8-S
	Blue LED			E3X-DAB6-S	E3X-DAB8-S
	Infrared LED			E3X-DAH6-S	E3X-DAH8-S
Advanced models	External-input models			Remote setting, counter, differential operation	E3X-DA6RM-S
	Twin-output models		Area output, self-diagnosis, differential operation	E3X-DA6TW-S	E3X-DA8TW-S
	ATC function models		ATC (Threshold value automatic correction)	E3X-DA6AT-S	E3X-DA8AT-S
2-channel models			AND/OR output	E3X-MDA6	E3X-MDA8

Ratings and Specifications

		Light source	Response time	Control output/input			Functions					
				ON/OFF output	Input	Analog output	Power tuning	Timer	Interference prevention	Differential detection	counter	ATC
Single-function models		Red LED	1 ms	Only main	---	---	---	---	○	---	---	---
Standard models			50 μs to 4 ms				○	○				
Mark-detecting models	E3X-DA□G-S	Green LED	50 μs to 4 ms	Only main	---	---	○	○	○	---	---	---
	3X-DA□B-S	Blue LED										
	E3X-DA□H-S	Infrared LED										
Ad- vanced models	Twin-output models	Red LED	50 μs to 4 ms	Only main	(1 line)	---	○	○	○	---	○	---
	External-input models		80 μs to 4 ms	Main + sub (2 lines)							---	---
	ATC function models		130 μs to 4 ms		---							
	Analog output		80 μs to 4 ms	Only main	(1 line)						---	
2-channel models		Red LED	130 μs to 4 ms	Main + main (2 independent lines)		---	---	○	○	○	---	---

Amplifier Unit Connectors (Order Separately)

Note: Protector seals are provided as accessories. [Refer to *Dimensions* on page 19.]

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
Single-function models	E3X-DA6SE-S	E3X-DA8SE-S	E3X-CN11	E3X-CN12
Standard models	E3X-DA6-S	E3X-DA8-S		
Mark-detecting models (multiple color light sources)	E3X-DAG6-S	E3X-DAG8-S		
	E3X-DAB6-S	E3X-DAB8-S		
	E3X-DAH6-S	E3X-DAH8-S	E3X-CN21	E3X-CN22
Advanced models	E3X-DA6TW-S	E3X-DA8TW-S		
	E3X-DA6RM-S	E3X-DA8RM-S		
	E3X-DA6AT-S	E3X-DA8AT-S		
2-channel models	E3X-MDA6	E3X-MDA8		

When Using 5 Amplifier Units

Amplifier Units (5 Units)	+	1 Master Connector + 4 Slave Connectors
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Mobile Console (Order Separately) [Refer to *Dimensions* on page 20.]

Appearance	Model	Remarks
	E3X-MC11-SV2 (model number of set)	Mobile Console with Head, Cable, and AC adapter provided as accessories
	E3X-MC11-C1-SV2	Mobile Console
	E3X-MC11-H1	Head
	E39-Z12-1	Cable (1.5 m)

Note: Use the E3X-MC11-SV2 Mobile Console for the E3X-DA-S/MDA-series Amplifier Units.

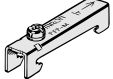
The E3X-MC11-SV2 is an upgraded version of the E3X-MC11-S that is fully interchangeable with the older model.

Accessories (Order Separately)

Mounting Bracket [Refer to *E39-L/F39-L/E39-S/E39-R*.]

Appearance	Model	Quantity
	E39-L143	1

End Plate [Refer to *PFP-□*.]

Appearance	Model	Quantity
	PFP-M	1

Ratings and Specifications

Refer to pages 17 to 20 for dimensions.

Amplifier Units

Type		Single-function models	Standard models	Mark-detecting models (multiple color light sources)		
				Green LED	Blue LED	Infrared LED
Item	Model	E3X-DA□SE-S	E3X-DA□-S	E3X-DAG□-S	E3X-DAB□-S	E3X-DAH□-S
Light source (wavelength)		Red LED (635 nm)		Green LED (525 nm)	Blue LED (470 nm)	Infrared LED (870nm)
Power 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)				
Control output		Load power supply voltage: 26.4 VDC; NPN/PNP open collector; load current: 50 mA max.; residual voltage: 1 V max.				
Remote control input		No-voltage input (contact/non-contact)	---			
Protection circuits		Reverse polarity for power supply connection, output short-circuit				
Re-sponse time	Super-high-speed mode	---	Operate: 48 μs, reset: 50 μs *1, *2			
	High-speed mode	---	Operate/reset: 250 μs			
	Standard mode	Operate or reset: 1 ms				
	High-resolution mode	---	Operate or reset: 4 ms			
Sensitivity setting		Teaching or manual method				
Functions	Power tuning	---	Light emission power and reception gain, digital control method			
	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	---	Negative values can be displayed. (Threshold value is shifted.)			
	Initial reset	Settings can be returned to defaults as required.				
	Mutual interference prevention	Possible for up to 10 Units *3				
Display		Operation indicator (orange)	Operation indicator (orange), Power Tuning indicator (orange)			
Digital display		incident level + threshold	Select from incident level + threshold or other 6 patterns			
Display orientation		---	Switching between normal/reversed display is possible.			
Ambient illumination (Receiver side)		Incandescent lamp: 10,000 lux max. Sunlight: 20,000 lux max.				
Ambient temperature range		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 Storage: -30°C to 70°C (with no icing or condensation)				
Ambient humidity range		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				
Degree of protection		IEC 60529 IP50 (with Protective Cover attached)				
Connection method		Pre-wired or amplifier unit connector				
Weight (packed state)		Pre-wired model: Approx. 100 g, Amplifier unit connector model: Approx. 55 g				
Materials	Case	Polybutylene terephthalate (PBT)				
	Cover	Polycarbonate (PC)				
Accessories		Instruction manual				

*1. 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.

*2. PNP output is as follows: Operate: 53 μs, reset: 55 μs.

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

Type		Advanced models				2-channel models
		External input mod-els	Twin output mod-els	ATC function mod-els	Analog output mod-els	
Item	Model	E3X-DA□RM-S	E3X-DA□TW-S	E3X-DA□AT-S	E3X-DA□AN-S	E3X-MDA□
Light source (wavelength)		Red LED (635 nm)				
Power supply voltage		12 to 24 VDC ±10%, ripple (p-p) 10% max.				
Power consumption		1,080 mW max. (current consumption: 45 mA max. at power supply voltage of 24 VDC)				
Control output	ON/OFF output	Load power supply voltage: 26.4 VDC; NPN/PNP open collector; load current: 50 mA max.; residual voltage: 1 V max.				
	Analog output	---			Control output Voltage output: 1 to 5 VDC (Connection load 10 kΩ min.) Temperature characteristics 0.3%F.S./°C Response speed/repeat accuracy Super-high-speed mode: 80 μs/1.5%F.S. High-speed mode: 250 μs/1.5%F.S. Standard mode: 1 ms/1%F.S. High-resolution mode: 4 ms/0.75%F.S.	---
Remote control input		No-voltage input (contact/non-contact) *1				
Protection circuits		Reverse polarity for power supply connection, output short-circuit				
Re-sponse time	Super-high-speed mode	Operate: 48 μs, reset: 50 μs *2, *3, *4	Operate or reset: 80 μs *2	Operate or reset: 130 μs *2	Operate or reset: 80 μs *2	Operate or reset: 130 μs *2, *5
	High-speed mode	Operate or reset: 250 μs				Operate or reset: 450 μs
	Standard mode	Operate or reset: 1ms				
	High-resolution mode	Operate or reset: 4ms				
Sensitivity setting		Teaching or manual method				
Functions	Power tuning	Light emission power and reception gain, digital control method				
	Differential de-tection	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	Negative values can be displayed. (Threshold value is shifted.)				
	Initial reset	Settings can be returned to defaults as required.				
	Mutual interference prevention	Possible for up to 10 Units *6				Possible for up to 9 Units (18 channels) *7
	Counter	Switchable between up counter and down counter. Set count: 0 to 9,999,999	---			

*1. Input Specifications

	Contact input (relay or switch)	Non-contact input (transistor)
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.)
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.)

*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. PNP output is as follows: Operate: 53 μs, reset: 55 μs.

*4. When counter is enabled: 80 μs for operate and reset respectively.

*5. When differential output is selected for the output setting, the second channel output is 200 μs for operation and reset respectively.

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

*7. Mutual interference prevention can be used for up to 5 Units (10 channels) if power tuning is enabled.

Type		Advanced models				2-channel models
		External input models	Twin-output models	ATC function models	Analog output models	
Item	Model	E3X-DA□RM-S	E3X-DA□TW-S	E3X-DA□AT-S	E3X-DA□AN-S	E3X-MDA□
Functions	I/O setting	External input setting (Select from teaching, power tuning, zero reset, light OFF, or counter reset.)	Output setting (Select from channel 2 output, area output, or self-diagnosis.)	Output setting (Select from channel 2 output, area output, self-diagnosis output, or ATC error output)	Analog output setting (offset voltage adjustable)	Output setting (Select from channel 2 output, AND, OR, leading edge sync, falling edge sync, or differential output)
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)	Operation indicator for channel 1 (orange), Operation indicator for channel 2 (orange)
Digital display		Select from incident level + threshold or other 7 patterns	Select from incident level + threshold or other 6 patterns			Select from incident level for channel 1 + incident level for channel 2 or other 7 patterns
Display orientation		Switching between normal/reversed display is possible.				
Ambient illumination (Receiver side)		Incandescent lamp: 10,000 lux max. Sunlight: 20,000 lux max.				
Ambient temperature range		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 Storage: -30°C to 70°C (with no icing or condensation)				
Ambient humidity range		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				
Degree of protection		IEC 60529 IP50 (with Protective Cover attached)				
Connection method		Pre-wired or amplifier unit connector				
Weight (packed state)		Pre-wired model: Approx. 100 g, Amplifier unit connector model: Approx. 55 g				
Materials	Case	Polybutylene terephthalate (PBT)				
	Cover	Polycarbonate (PC)				
Accessories		Instruction manual				

Amplifier Unit Connectors

Item	Model	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	Model	E3X-MC11-SV2
Applicable Sensors		E3X-DA-S E3X-MDA E3C-LDA E2C-EDA
Power supply voltage		Charged with AC adapter
Connection method		Connected via adapter
Weight (packed state)		Approx. 580 g (Console only: 120 g)
Refer to <i>Instruction Manual</i> provided with the Mobile Console for details.		