Ratings and Specifications

Fiber Amplifier Units

Item \ Type	Digital display and direct key setting	Bar display and adjuster setting		
	Standard models	Standard models	High-speed detection models	Water-resistant models
Model	E3X-SD□	E3X-NA□	E3X-NA□F	E3X-NA□V
Light source (wavelength)	Red, 4-element LED (625 nm)			Red LED (680 nm)
Power supply voltage	12 to 24 VDC ±10%, ripple (p-p): 10% max.			
Power consumption/ Current consumption	At Power Supply Voltage of 24 VDC 960 mW max./40 mA max. At Power Supply Voltage of 12 VDC 960 mW max./80 mA max.	At Power Supply Voltage of 24 VDC 840 mW max./35 mA max. At Power Supply Voltage of 12 VDC 420 mW max./35 mA max.		
Control output	Open-collector output (NPN or PNP) Load power supply: 26.4 V max., Load current: 50 mA max. (Residual voltage: 1.5 V max.) Light-ON/Dark-ON mode selector	Open-collector output (NPN or PNP) Load power supply: 26.4 V max., Load current: 50 mA max. (Residual voltage: 1 V max.) Light-ON/Dark-ON mode selector.		
Response time	Operate or reset: 200 μs max. (*1)		Operate: 20 μs max. Reset: 30 μs max.	Operate or reset: 200 μs max. (*1)
Sensitivity adjustment	UP/DOWN direct key setting, teaching with/without a workpiece, automatic teaching	8-turn sensitivity adjuster (with indicator)		
Protection circuits	Power supply reverse polarity protection, output short-circuit protection, output reverse polarity protection	Power supply reverse polarity protection, output short-circuit protection		
Timer function	---	No timer, OFF-delay timer; or Timer selector (timer time: 40 ms (fixed))		
Mutual interference prevention	Up to 5 Amplifiers (optically synchronized) (*2)		None	Up to 5 Amplifiers (optically synchronized) (*2)
Ambient illumination	Receiver side Incandescent lamp: 10,000 lux max. Sunlight: 20,000 lux max.			
Number of gang-mounted Amplifiers	16 max. (The ambient temperature specification depends on the number of gang-mounted Amplifiers.)			
Ambient temperature range	Operating: Groups of 1 to 3 Amplifiers: −25°C to 55°C Groups of 4 to 11 Amplifiers: −25°C to 50°C Groups of 12 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)	Operating: 35% to 85% Storage: 35% to 95% (with no condensation)		
Insulation resistance	20 MΩ. min. (at 500 VDC)			
Dielectric strength	1,000 VAC at 50/60 Hz for 1 minute (*3)			
Vibration resistance	Destruction: 10 to 55 Hz with a 1.5-mm double amplitude for 2 hours 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)			IEC 60529 IP66 (with Protective Cover attached)
Connection method	Pre-wired (standard cable length: 2 m), or connector			
Weight (packed state) (*4)	Pre-wired model: Approx. 100 g, Model with connector: Approx. 55 g			
Material: Case	Polybutylene terephthalate (PBT)			
Material: Cover	Polycarbonate (PC)			Polyethersulfone (PES)
Accessories	Instruction manual			

*1. When there are 8 or more E3X-NA Amplifiers mounted side-by-side, the response time will be 350 μs max.
*2. Mutual interference prevention is effective when E3X-SD/-NA-series Fiber Amplifier Units are gang-mounted without other E3X-series Fiber Amplifier Units.
*3. Water-resistant models and models with connectors have a dielectric strength of 500 VAC.
*4. Add 10 g for water-resistant models.

Amplifier Unit Connectors (Wire-saving Connectors)

Item \ Model	E3X-CN11	E3X-CN12
Rated current	2.5 A	
Rated voltage	50 V	
Contact resistance	20 mΩ max. (20 mVDC max., 100 mA max.) (The above figure is for connection to the Fiber Amplifier Unit and the adjacent Connector. It does not include the conductor resistance of the cable.)	
Number of insertions	Destruction: 50 times (for connection to the Fiber Amplifier Unit and the adjacent Connector)	
Material: Housing	Polybutylene terephthalate (PBT)	
Material: Contact	Phosphor bronze/gold-plated nickel	
Weight (packed state)	Approx. 55 g	Approx. 25 g

Sensing distance

Threaded Models

Detection method	Sensing direction	Size	Model	Sensing distance (mm)		
				E3X-SD□ E3X-NA□	E3X-NA□F	E3X-NA□V
Through-beam	Right-angle	M4	E32-T11N 2M	530	160	280
			E32-LT11N 2M	1,800	600	900
	Straight		E32-T11R 2M	560	160	280
			E32-LT11 2M	2,100	700	1,050
			E32-LT11R 2M	1,800	600	900
Reflective	Right-angle	M3	E32-C31N 2M	25	7.5	13
			E32-C21N 2M	65	21	32
		M4	E32-D21N 2M	170	56	85
		M6	E32-C11N 2M	170	50	85
			E32-LD11N 2M	170	56	85
	Straight	M3	E32-D21R 2M	30	10	15
			E32-C31 2M	80	26	40
			E32-C31M 1M			
		M4	E32-D211R 2M	30	10	15
		M6	E32-D11R 2M	180	60	90
			E32-CC200 2M	300	100	150
			E32-LD11 2M	180	60	90
			E32-LD11R 2M	170	56	85

Cylindrical Models

Detection method	Size	Sensing direction	Model	Sensing distance (mm)		
				E3X-SD□ E3X-NA□	E3X-NA□F	E3X-NA□V
Through-beam	1 dia.	Top-view	E32-T223R 2M	120	36	60
	1.5 dia.		E32-T22B 2M	200	60	100
	3 dia.		E32-T12R 2M	560	160	280
		Side-view	E32-T14LR 2M	220	66	110
Reflective	1.5 dia.	Top-view	E32-D22B 2M	30	10	15
	1.5 dia. + 0.5 dia.		E32-D43M 1M	6	2	3
	3 dia.		E32-D22R 2M	30	10	15
			E32-D221B 2M	70	20	35
			E32-D32L 2M	160	50	80
	3 dia. + 0.8 dia.		E32-D33 2M	16	4	10

Flat Models

Detection method	Sensing direction	Model	Sensing distance (mm)		
			E3X-SD□ E3X-NA□	E3X-NA□F	E3X-NA□V
Through-beam	Top-view	E32-T15XR 2M	560	160	280
	Side-view	E32-T15YR 2M	220	66	110
	Flat-view	E32-T15ZR 2M			
Reflective	Top-view	E32-D15XR 2M	180	60	90
	Side-view	E32-D15YR 2M	40	10	20
	Flat-view	E32-D15ZR 2M			

Sleeve Models

Detection method	Sensing direction	Model	Sensing distance (mm)		
			E3X-SD□ E3X-NA□	E3X-NA□F	E3X-NA□V
Through-beam	Side-view	E32-T24R 2M	60	18	30
		E32-T24E 2M	180	36	60
	Top-view	E32-T21-S1 2M	130	43	65
		E32-T33 1M	40	13.5	20
		E32-TC200BR 2M	560	160	280
Reflective	Side-view	E32-D24R 2M	14	4.6	7
		E32-D24-S2 2M	26	8	13
	Top-view	E32-D43M 1M	6	2	3
		E32-D331 2M	3	1	1.5
		E32-D33 2M	16	4	10
		E32-D32-S1 0.5M	14	4	7
		E32-D31-S1 0.5M			
		E32-DC200F4R 2M	30	10	15
		E32-D22-S1 2M	57	19	28
		E32-D21-S3 2M			
		E32-DC200BR 2M	180	60	90
		E32-D25-S3 2M	57	19	28