OMRON







Perfection Transcended! A Wealth of Advanced Functions for Easy and Reliable Application









OMRON INDUSTRIAL AUTOMATION



Evolution and Perfection

The next-generation platform for a wide range of sensing



2





SnartStule!

Patent Pending

Press

Press

Industry's First Power Tuning Function in a Digital Sensor.

No complicated mode settings.

Troublesome power adjustments have been eliminated, so it isn't necessary to select from power mode settings, such as long-distance mode, standard mode, and short-distance mode. When the MODE Key is pressed once, the power tuning function shifts the power level so that the present incident level is set to the ideal level (2000 on the digital display.)



Insufficient light or saturation at short distances can be corrected.

The power tuning range is extended to the allowable limits to eliminate problems such as insufficient light or detection failures due to saturation. If the installation distance is too short, the incident light may saturate (i.e., to a digital incident level of 4,000), preventing detection. The power can be tuned down to 1/25th of the default setting for stable detection even at close range.



Variations between different Sensors can be eliminated.

Threshold levels had to be set and maintained separately for individual Sensors due to variations in the digital light levels measured by each Sensor. With power tuning, the incident level can be fine-tuned so the same threshold level can be set for each Sensor in an application. Maintenance is also simplified because it is easier to recognize measurement levels that have shifted during operation.



Large, Easy-to-Read Displays: Clear Even from a Distance





Seven Convenient Display Formats

An incident level/threshold display, percentage/threshold display, and large bar graph display have been added, so you can select the best display method for the application.



Patent Pending



SmartStule

Stable, Long-term Performance with OMRON's APC Function

OMRON provides the industry's most stable long-term detection (Highest Level of Stability by using new 4-element LEDs and an APC (Auto Power Control) circuit.

In addition to our unique APC circuit used in the E3X-DA-N Amplifiers to compensate for the deterioration of the LED, the E3X-DA-S uses 4-element LEDs to counteract the deterioration of the light-emitting elements over time and achieve the industry's most stable long-term detection performance.

Furthermore, the circuit is designed with excess light capacity, so the Sensors can be used with high stability regardless of whether the APC circuit is ON or OFF.



Compensate for the effects of contaminants and temperature variation with differential operation mode. (Advanced Models)

This operation mode uses a special OMRON algorithm to compensate for slight light level changes due to dirt or temperature variations and detect only the light level changes due to the workpiece.





Many Advanced Functions for Even More Applications

In super-high-speed mode, it is the Fastest in the Industry fastest digital model at 48 μ s. (Standard Models)

Provides high-speed response for miniature workpieces, such as chip parts and devices with short tact times. -----Three kinds of timer functions are supported. The timers can be set between 1 ms and 5 s. A one-shot timer is supported in addition to the ON-delay and OFF-delay timers The Amplifier's ON time can be fixed, which is useful during high-speed workpiece detection. 1

Area output function can be used for range judgement. (Advanced Twin-output Models)

Operations that required multiple Sensors, such as height measurement, can be performed with just one Sensor. Two threshold levels can be set to easily output within-range and out-of-range outputs.



Remote input function can control the Sensor remotely. (Advanced External-input Models)

Input signals can make various remote settings, such as teaching operations, power tuning, and emitter OFF. This model is ideal for diverse needs, such as checking Sensor operation remotely before operation or making settings remotely because teaching has to be performed often for frequent workpiece model changes.

The counter function can output signal after counter Patent Pending counts up or down.

(Advanced External-input Models)

A counter function is built-in, so the number of workpieces can be counted without a separate counter or small PLC that used to be required.















Snart Stule!

The Same Ease-of-Use as the E3X-DA-N

The E3X-DA-S uses OMRON's own simplified wiring connectors that were introduced with the E3X-DA-N.

Patent Pending

In Amplifiers with Connectors, the power supply is distributed to slave connectors through a single master connector. This design has three major advantages. ,

- 1. Wiring time is significantly reduced.
- 2. Relay connectors are unnecessary, so wiring takes up less space. 3. Storage and maintenance are simpler because it isn't necessary to distin-
- guish between master connector and slave connectors on the Amplifier.
- <u>____</u>,

Optical communications prevents mutual interference.

Mutual interference is prevented with optical communications, so up to 10 Amplifiers can be mounted together.

(The number of Amplifiers depends on the operating conditions.)









Zero reset function immediately resets the digital display to 0.

Patent Pending

The zero reset function can immediately reset the digital display to 0 at any time. By setting the reference value to 0, the threshold value can be set while monitoring differences in incident light levels. The threshold value will also shift simultaneously when the zero reset button is pressed.





set to 350.



Without Workpiece

Environmentally Friendly Design

Environmentally friendly features are essential in truly high-performance products.

Materials containing lead have been completely eliminated.

The Fiber Sensor is the first in the industry to use environmentally friendly lead-free solder.





2 The digital display can be turned OFF or dimmed during operation. Eco-mode

When the digital display is viewed infrequently during operation, current consumption can be reduced by dimming the display or turning it OFF entirely. The display will light up again automatically when an operation key is touched. (Ecomode can be set from the Mobile Console only.)



3 Cable disposal is not required during maintenance.

In addition to saving space and reducing wiring time, the new connector design eliminates the need to dispose of cables together with the Amplifiers.

Reversible Digital Display (Reverse Mode)

The digital display can be reversed to match the Amplifier's mounting direction.



First in the industry

Cable disposal is not necessary



Further Improvements to the Mobile Console



Retains all of the Previous Advantages of the Mobile Console.

Settings, teaching, and fine-tuning can be performed at the fiber tip.

The Mobile Console can be used for settings and teaching at the tip of the fiber. Difficult adjustments can be made while checking the workpiece position.

Even if the Amplifier and Sensor head are separated during operation, it is still possible to flash the Sensor head and display the amplifier channels.

With Group Teaching, Teach Multiple Amplifiers Simultaneously.

The tedious teaching that had to be performed separately for each Amplifier can now be performed for several Amplifiers at once using the Mobile Console.

Copying Settings within the Same Group

Settings such as mode or threshold settings in an Amplifier or bank can be copied to all of the Amplifiers in the same group.

Improved Mode Lock Function

Settings can be customized for different applications by locking out unnecessary function blocks within function settings. The Age of Usercustomizable Sensors.

			Function Block	:
Application	Manual setting	Teaching	Function setting	
Manual	Set for manual operation.	Operation OK	Locked	Locked
Teaching	Set for teaching operation.	Locked	Operation OK	Locked
Teaching + C Manual	Set for teaching + manual operation.	Operation OK	Operation OK	Locked

Copying Settings to Other Groups

The settings for a group of Amplifiers on one machine can be copied to a group of Amplifiers on another machine. (The settings can also be copied to and from banks.)

New and Improved Fiber Sensor and Mobile Console.







OMRON Corporation Industrial Automation Company

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In the interest of product improvement, specifications are subject to change without notice.

Authorized Distributor:

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E3X-MDA Super Dual Fiber Sensor



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Having problems gang-mounting Fiber Sensor Amplifier Units in tight spaces?



Slimmest in the industry – 5 mm per channel. Patent pending



Equipped with AND/OR control output. Patent pending

Two types of control output possible with one Sensor (AND/OR). Compact PLCs and Sensor Controllers no longer required.



Flexible control with Mobile Console.

The Mobile Console, which can also be used with the E3X-DA-S, allows handheld operation of the Fiber Head even when it is separated from the Amplifier.













An impressive lineup of Digital Amplifiers to handle a wide variety of applications.

A host of remarkable functions inside a compact body. A complete lineup of Sensor Heads to handle an even wider range of applications. This is the platform for OMRON's sensing technology.



nductive Displacement Smart Sensors **ZX-E Series**



A lineup of Smart Sensors that use the eddy current method





Photoelectric Sensors with Separate Digital Amplifiers have joined the Smart Sensor family

OMRON

New Models That Counteract the Decline in Operating Rates Caused by Dust and Dirt

Advanced ATC Models

- Active Threshold Control (ATC) Automatically adjusts the threshold value.
- ATC Error Output (Selectable Function) Provides an error output when ATC does not adjust the threshold value.
- Alarm Output (Selectable Function) Provides an alarm when maintenance is required.





Chip component detection

Glass substrate detection though view ports



Technology

Intelligently Solve Problems Onsite with ATC Function

A unique OMRON algorithm has been used that can determine whether changes have been caused by dust and dirt or by differences in workpieces.

The threshold value is automatically adjusted by the Sensor according to changes to increase equipment operating rates by reducing sensing errors. This is particularly true in applications requiring high-precision detection.



The $D_{IN}C$ Engine for High-performance Sensing

OMRON's many years of accumulated sensing technology and highspeed digital processing techniques merge to meet onsite needs. Our goal is high-performance sensing that provides easy, reliable application.



Ordering Inform	nation			
Digital Fiber Ser				
Time	A	Functions	Мос	del
Туре	Appearance	Functions	NPN output	PNP output
Pre-wired Models		ATC ATC error output	E3X-DA11AT-S	E3X-DA41AT-S
Connector Models		Alarm output	E3X-DA6AT-S	E3X-DA8AT-S
Separate Digital	Amplifier Laser Senso	ors		
Ture	A		Model	
Туре	Appearance	Functions	NPN output	PNP output
Pre-wired Models		ATC ATC error output	E3C-LDA11AT	E3C-LDA41AT
Connector Models		Alarm output	E3C-LDA6AT	E3C-LDA8AT

Ratings and Specifications

Model		Model	Digital Fib	er Sensors	Separate Digital Amplifier Laser Sensors			
	NPN output		E3X-DA11AT-S E3X-DA6AT-S		E3C-LDA11AT	E3C-LDA6AT		
Item	ype	PNP output	E3X-DA41AT-S E3X-DA8AT-S		E3C-LDA41AT	E3C-LDA8AT		
	Supe	r-high-speed mode	Operate or Reset: 80 μs Operate or Reset: 250 μs		Operate or Reset: 100 μs			
Deserves	High	-speed mode			Operate or Reset: 250 µs			
Response time	Stan	dard mode	Operate or Reset: 1 ms					
	High	-resolution mode	Operate or Reset: 4 ms					
	ATC		Active threshold control (used for output 1)					
Functions	I/O s	ettings	The signal that is output	The signal that is output can be selected (used for output 2): ATC error output				
	Start	up operation	The operation when pov	ver is turned ON can be se	ected: No operation, PT, or	PT + ATC		

Note: Basic performance is the same as the Advanced Twin-output Sensors. Refer to E3C-LDA Datasheet (E338) and E3X-DA-S Datasheet (E336) for details. Only differences from the Advanced Twin-output Sensors have been given above.

> This document provides information mainly for selecting suitable models. Please read the *Instruction Sheet* carefully for information that the user must understand and accept before purchase, including information on warranty, limitations of liability, and precautions.

Note: Do not use this document to operate the Unit.

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New Models That Eliminate Worries about Digital Sensor Setting Mistakes

Limited-function Models: Simple and Easy

Easy and Reliable Digital Sensors with the Same Detection Performance as Previous Models

- One-key, one-operation concept for easy operation.
- Threshold value setting with direct operation performed while monitoring the detection status.
- Lock function to prevent operating errors through unintentional operation.

Technology

The Simplest Digital Fiber Sensor

Some people think that digital sensors with their advanced performance are difficult to use, so we went back to the drawing board to rethink performance and functions.

Without changing basic functions like APC and digital displays, OMRON created a Digital Fiber Sensor that can be used as easily as the familiar sensors with sensitivity adjustment knobs.

The $D_{IN}C$ Engine for High-performance Sensing

Digital Fiber Sensors

E3X-DA SE-S

OMRON's many years of accumulated sensing technology and highspeed digital processing techniques merge to meet onsite needs. Our goal is high-performance sensing that provides easy, reliable application.

Reliable Detection of Small Workpieces



C	Ordering Information							
	Туре	Appearance	Model					
	туре	Appearance	NPN output	PNP output				
	Pre-wired Models		E3X-DA11SE-S	E3X-DA41SE-S				
	Connector Models		E3X-DA6SE-S	E3X-DA8SE-S				

Ratings and Specifications

Model		Digital Fiber Sensor				
	NPN output	E3X-DA11SE-S	E3X-DA6SE-S			
Item	PNP output	E3X-DA41SE-S	E3X-DA8SE-S			
Light sourc	e (wavelength)	Red LED (650 nm)				
Power sup	oly voltage	12 to 24 VDC ±10%, ripple (p-p): 10% max.				
Power consumption 960 mW max. (Power supply: 24 V, Current consumption: 40 mA max.)			: 40 mA max.)			
Control output Load power supply: 26.4 VDC max., Open-collector output, Load current: 50 mA max. (Residual voltage			ad current: 50 mA max. (Residual voltage: 1 V max.)			
Protection circuits Power supply reverse polarity protection, Output short-circuit protection			rcuit protection			
Response	time	Operate or Reset: 1 ms	1 ms			
Sensitivity	setting	Teaching or manual adjustment				
Franklaure	Auto power control	High-speed control method for emission current				
Functions Mutual interference prevention Optical communic		Optical communications sync, possible for up to 10 Units	al communications sync, possible for up to 10 Units			
Indicators		Operation indicator (orange)				
Digital disp	lays	Twin digital displays (incident level + threshold)				

Note: Basic performance is the same as the E3X-DA-S Series. Refer to the E3X-DA-S Datasheet (E336) for details.

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Digital Fiber Sensors E3X-DA-S/MDA

CSM_E3X-DA-S_MDA_DS_E_3_1

OMRON's Next-generation Platform for a Wide Range of Detection

- Features a Power Tuning function that optimizes light reception at the press of a button.
- Combines newly developed 4-element LEDs with an APC circuit to ensure stable, long-term LED performance.
- Utilizes OMRON's innovative wire-saving connector.
- 2-channel models achieve the thinnest profile in the industry, at only 5 mm per channel.
- 2-channel models also offer AND/OR control output.

Be sure to read Safety Precautions on



Features

page 15.

Equipped with an Industry's First Power Tuning (Optimum Light Setting) Function

The E3X-DA-S/MDA features a Power Tuning function that optimizes power at the press of a button.

This function easily but securely resolves saturation due to short sensing distances or insufficient incident light due to long sensing distances.

In addition, the response speed does not change as mode selection has tuned the power.



Adoption of Newly Developed 4-Element LEDs and an APC (Auto Power Control) Circuit Achieves Long-term Reliable Detection at the Highest Level in the Industry

The long-term reliable detection at the highest level in the industry is achieved with the innovative APC circuit whose performance is proved by E3X-DA-N series and the newly developed high-power LEDs (4-element type) to ensure super stable, long-term LED performance.

Stable performance is always available without the ON/OFF setting of an APC circuit.



OMRON's Innovative Wire-saving Connector Inherited from the E3X-DA-N

The amplifier units with connectors supply the power to slave connectors via a master connector. This offers three following advantages.

 Greatly reduced wiring work
 Improved space usability due to the unnecessity of relay connectors
 Simple stock management due to the unnecessity of distinction between master and slave for amplifiers



OMRON

Models available for a wide variety of applications at manufacturing sites

Industry Leading Two Amplifiers Loaded in a Small Body ···· 2-channel models

Two amplifiers are loaded in a 10 mm-wide body. Space usability can be approximately doubled. In addition, approximately 40% of the energy can be saved.

(compared to the value per channel of the former model)





UP/DOWN kevs

Simpler Digital Fiber Sensors Simple & Easy Single-function Models

Required performance and functions have been reviewed from basic points to improve high-performance but hard-to-use digital models. Digital fiber sensors, used in the sense as if using volume type sensors, are added to the basic functions such as an APC function and digital display.



High-speed and High-resolution Analog Output Supports Wide Variety of Applications ····A

Analog Control Output

The voltage in the range of 1 to 5 V is output according to the incident level (digital display). Wide variety of applications is possible including positioning control or difference detection with multiple levels.



Area Output Function Area Judgment Is Possible ····Advanced, Twin-output Models

Only one sensor is enough for area judgment for height or others that has required multiple sensors.

Setting two threshold values allows easy output inside and outside range.

High-speed and High Resolution

Detection modes can be switched in accordance with applications. High-speed response of 80 μs (super-high-speed mode) supports the positioning controls that require high-speed control.









Remote Input Function Sensors Controlled from Outside ····Advanced, Externalinput Models

Remote settings for teaching/power tuning/light OFF are possible with input signals. The remote input function meets the diversifying demands such as remote settings made for frequent teaching due to level change corresponding to workpiece change or remote operation check of sensors before operation.

Equipped with an Industry's First ATC Function that Resolves Problems at Manufacturing Sites ····Advanced ATC Models

OMRON's unique algorithm is equipped to distinguish dust or dirt and the change of workpieces. Automatic correction of threshold values by sensors in accordance with changes prevents malfunctions and improves the operating rates of machines. The ATC function is especially effective for the applications that require high-resolution detection.



ns ····Advanced Analog Output Models

OMRON

Ordering Information

Amplifier Units

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

Item		Appoaranco	Appearance Functions		Model		
item		Appearance	Functions	NPN output	PNP output		
Single-function models				E3X-DA11SE-S 2M	E3X-DA41SE-S 2M		
Standard models		-		E3X-DA11-S 2M	E3X-DA41-S 2M		
	Green LED		Timer, Beanance aneed shange	E3X-DAG11-S 2M	E3X-DAG41-S 2M		
Mark-detecting models (multiple color light sources)	Blue LED		Timer, Response speed change	E3X-DAB11-S 2M	E3X-DAB41-S 2M		
	Infrared LED			E3X-DAH11-S 2M	E3X-DAH41-S 2M		
	External-input models		Remote setting, counter, differential oper- ation	E3X-DA11RM-S 2M	E3X-DA41RM-S 2M		
Advanced models	Twin-output models		Area output, self-diagnosis, differential operation	E3X-DA11TW-S 2M	E3X-DA41TW-S 2M		
Advanced models	ATC function models		ATC (Threshold value automatic correc- tion)	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		
nem		Appearance	Functions	NPN output	PNP output	
Single-function models				E3X-DA6SE-S	E3X-DA8SE-S	
Standard models				E3X-DA6-S	E3X-DA8-S	
	Green LED		Timor, Bosponso apood abongo	E3X-DAG6-S	E3X-DAG8-S	
Mark-detecting models (multiple color light sources)	Blue LED		Timer, Response speed change	E3X-DAB6-S	E3X-DAB8-S	
(multiple color light sources)	Infrared LED			E3X-DAH6-S	E3X-DAH8-S	
	External-input models		Remote setting, counter, differential op- eration	E3X-DA6RM-S	E3X-DA8RM-S	
Advanced models	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

				Contr	ol output/	/input	Functions										
		Light source	Response time	ON/OFF output	Input	Analog output	Power tuning	Timer	Interfer- ence pre- vention	Differen- tial detec- tion	counter	ATC					
Single-fun	ction models		1 ms	Only													
Standard r	nodels	Red LED	50 μs to 4 ms	main			0	0	0								
Mark-	E3X-DA G-S	Green LED	F0 /	0.1													
detecting	3X-DA□B-S	Blue LED		50 µs to	Only				main			0	0	0			
models	E3X-DA H-S	Infrared LED	4 113	5 main													
Twin-ou models	Twin-output models		50 μs to 4 ms	Only main	(1 line)						0						
Ad-	External-input models		80 µs to 4 ms	Main + sub (2 lines)						0							
vanced models	ATC function models	Red LED	130 μs to 4 ms				0	0	0			0					
	Analog output	-	80 μs to 4 ms	Only main		(1 line)											
2-channel	models	Red LED	130 μs to 4 ms	Main + main (2 inde- pendent lines)			0	0	0								

Amplifier Unit Connectors (Order Separately) Note: Protector seals are provided as accessories. [Refer to Dimensio

Note: Protector seals are provided as accessories. [Refer to Dimensions on page 19.]						
Item	Appearance	Cable length	No. of con- ductors	Model		
Master Connector			3	E3X-CN11		
Master Connector		2 m	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				
Standard models	E3X-DA6-S	E3X-DA8-S				
Mark-detecting models	E3X-DAG6-S	E3X-DAG8-S	+	E3X-CN11	E3X-CN12	
(multiple color light	E3X-DAB6-S	E3X-DAB8-S				
sources)	E3X-DAH6-S	E3X-DAH8-S	_			
	E3X-DA6TW-S	E3X-DA8TW-S		E3X-CN21	E3X-CN22	
Advanced models	E3X-DA6RM-S	E3X-DA8RM-S	_			
	E3X-DA6AT-S	E3X-DA8AT-S	_	E3X-CINZ I		
2-channel models	E3X-MDA6	E3X-MDA8	_			

Amplifier Units (5 Units)

+ 1 Master Connector + 4 Slave Connectors

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 pro- vided 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					
Contraction of the second	E39-L143	1					

End Plate [Refer to PFP-2]

Appearance	Model	Quantity
C S	PFP-M	1

Ratings and Specifications

Refer to pages 17 to 20 for dimensions.

Amplifier Units

Тур		Single-function	Standard	Mark-detecting models (multiple color light sources)								
	Туре	models	models	Green LED	Blue LED	Infrared LED						
tem	Model	E3X-DA SE-S	E3X-DA□-S	E3X-DAG -S	E3X-DAB -S	E3X-DAH□-S						
Light sou	rce (wavelength)	Red LED (635 nm)		Green LED (525 nm)	Blue LED (470 nm)	Infrared LED (870nm)						
Power sup	oply voltage	12 to 24 VDC ±10%, ripple (p-p) 10% max.										
Power con	nsumption	960 mW max. (currer	t consumption: 40 mA	max. at power supply	voltage of 24 VDC)							
Control ou	utput	Load power supply voltage: 26.4 VDC; NPN/PNP open collector; load current: 50 mA max.; residual voltage: 1 V max.										
Protection	i circuits	Reverse polarity for p	erse polarity for power supply connection, output short-circuit									
	Super-high- speed mode		Operate: 48 μs, reset: 50 μs *1, *2									
Re- sponse	High-speed mode		Operate/reset: 250 µs									
time	Standard mode	Operate or reset: 1 m	S									
	High-resolution mode		Operate or reset: 4 m	IS								
Sensitivity	/ setting	Teaching or manual r	nethod									
	Power tuning		Light emission power	and reception gain, dig	gital control method							
	Timer function		1 ms to 5 s (1 to 20 n	ay, ON-delay, or one-sh ns set in 1-ms incremen 100-ms increments, and	nts, 20 to 200 ms set in							
ions C	Automatic power control (APC)	High-speed control m	nethod for emission current									
	Zero-reset		Negative values can	be displayed. (Thresho	ld value is shifted.)							
	Initial reset	Settings can be return	be returned to defaults as required.									
	Mutual interfer- ence prevention	Possible for up to 10	0 Units *3									
Display		Operation indicator (orange)	Operation indicator (orange), Power Tuning indicator (orange)									
Digital dis	play	incident level + threshold	Select from incident I	evel + threshold or othe	er 6 patterns							
Display or	ientation		Switching between no	ormal/reversed display	is possible.							
Ambient il (Receiver	llumination side)	Incandescent lamp: 1 Sunlight: 20	0,000 lux max.),000 lux max.									
Ambient t	emperature range	Groups of Groups of	1 to 2 Amplifiers: –25° 3 to 10 Amplifiers: –25 11 to 16 Amplifiers: –2 0°C (with no icing or c	5°C to 50°C 25°C to 45°C								
Ambient h	umidity range	Operating and storag	e: 35% to 85% (with n	o condensation)								
nsulation	resistance	20 $M\Omega$ min. (at 500 V										
Dielectric	strength	1,000 VAC at 50/60 H										
	resistance			ble amplitude for 2 hrs	each in X, Y and Z dir	ections						
Shock res			, for 3 times each in X									
-	protection	IEC 60529 IP50 (with Protective Cover attached)										
	on method	Pre-wired or amplifier unit connector										
Weight (pa	acked state)	Pre-wired model: Approx. 100 g, Amplifier unit connector model: Approx. 55 g										
Materials	Case	Polybutylene terephthalate (PBT)										
	Cover	Polycarbonate (PC)										
Accessori	es	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.

			Advanc	ed models						
	Туре	External input mod- els	Twin output mod- els	ATC function mod- els	Analog output mod- els	2-channel models				
ltem	Model	E3X-DA RM-S	E3X-DA TW-S	E3X-DA□AT-S	E3X-DA AN-S	E3X-MDA				
Light so	ource (wavelength)	Red LED (635 nm)								
Power s	supply voltage	12 to 24 VDC ±10%, ri	ople (p-p) 10% max.							
Power c	onsumption	1,080 mW max. (currer	•		v voltage of 24 VDC)					
	ON/OFF output	Load power supply volt								
Con- trol output	Analog output	load current: 50 mA ma	ax.; residual voltage: ´	I V max.	Control output Voltage output: 1 to 5 VDC (Connection load 10 k Ω min.) Temperature charac- teristics 0.3%F.S./°C Response speed/re- peat 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:					
Remote	control input	No-voltage input (conta	act/non-contact) *1		4 ms/0.75%F.S.					
Protecti	on circuits	Reverse polarity for power supply connection, output short-circuit								
	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				
Re- sponse	High-speed mode	Operate or reset: 250 µ	IS			Operate or reset: 450 µs				
time	Standard mode	Operate or reset: 1ms								
	High-resolution mode	Operate or reset: 4ms								
Sensitiv	vity setting	Teaching or manual me	ethod							
	Power tuning	Light emission power a	nd reception gain, dig	gital control method						
	Differential de- tection	Switchable between sin Single edge: Can be se Double edge: Can be s	et to 250 μs, 500 μs, 1 et to 500 μs, 1 ms, 2	ms, 10 ms, or 100 ms. ms, 20 ms, or 200 ms.		-				
	Timer function		set in 1-ms incremen	ts, 20 to 200 ms set in 7	10-ms increments, 200 m	ns to 1 s set in 100-ms				
Func-	Automatic pow- er control (APC)	increments, and 1 to 5 High-speed control me								
tions	Zero-reset	Negative values can be	displayed (Thresho	ld value is shifted)						
	Initial reset	Settings can be returned		,						
	Mutual interfer- ence prevention	Possible for up to 10 U				Possible for up to 9 Units (18 channels)				
	Counter	Switchable between up counter and down counter. Set count: 0 to 9,999,999	vitchable between counter and down unter t count:							

	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 *2. Communications are disabled if the detection mode is selected during super-fight-speed mode, and the communications runcators on 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.

			Advance	d models						
	Туре	External input models	Twin-output mod- els	ATC function mod- els	Analog output models	2-channel models				
Item	Model	E3X-DA RM-S	E3X-DA TW-S	E3X-DA AT-S	E3X-DA AN-S	E3X-MDA				
Func- tions	I/O setting	External input set- ting (Select from teaching, power tun- ing, zero reset, light OFF, or counter re- set.)	Output setting (Select from channel 2 output, area out- put, or self-diagno- sis.)	Output setting (Se- lect from channel 2 output, area output, self-diagnosis out- put, or ATC error output)	Analog output set- ting (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 (or- ange)	Operation indicator fo Operation indicator fo		Operation indicator (orange), Power Tuning indi- cator (orange)	Operation indicator for channel 1 (or- ange), Operation in- dicator for channel 2 (orange)				
Digital dis	olay	Select from incident level + threshold or other 7 patterns	Select from incident le	Select from incident level for channel 1 + incident level for channel 2 or other 7 patterns						
Display or	entation	Switching between normal/reversed display is possible.								
Ambient ill (Receiver s		Incandescent lamp: 10,000 lux max. Sunlight: 20,000 lux max.								
Ambient te	emperature range	Groups of Groups of	1 to 2 Amplifiers: -25° 3 to 10 Amplifiers: -25 11 to 16 Amplifiers: -2	5°C to 50°C 25°C to 45°C						
		0	°C (with no icing or cor	,						
Insulation	umidity range	Operating and storage 20 M Ω min. (at 500 V	e: 35% to 85% (with no	o condensation)						
Dielectric		1.000 VAC at 50/60 F	,							
Vibration r		,		ble amplitude for 2 hrs	each in X Y and 7 dir	ections				
Shock resi			, for 3 times each in X,							
Degree of	protection		Protective Cover attac							
Connectio		Pre-wired or amplifier		,						
Weight (pa	cked state)	Pre-wired model: Approx. 100 g, Amplifier unit connector model: Approx. 55 g								
Materials	Case	Polybutylene terephthalate (PBT)								
waterials	Cover	Polycarbonate (PC)								
Accessorie	es	Instruction manual								

Amplifier Unit Connectors

ltem	Model	E3X-CN11/21/22	E3X-CN12					
Rated	current	2.5 A						
Rated	voltage	50 V						
Contac	ct resistance	$20 \text{ m}\Omega$ 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.)						
Mate-	Housing	Polybutylene terephthalate (PBT)						
rials	Contacts	Phosphor bronze/gold-plated nickel						
Weigh (packe	t d 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 *Instruction Manual* provided with the Mobile Console for details.

(Unit: mm)

Sensing Distance Through-beam Models

		Model		E3X-D	DA⊡-S			E3X-N	IDA 🗆	
Туре			High- reso- lution mode	Stan- dard mode	High- speed mode	Super- high- speed mode	High- reso- lution mode	Stan- dard mode	High- speed mode	Super- high- speed mode
		E32-T11R/E32-T12R/E32-T15XR/ E32-TC200BR(B4R)	700	530	350	140	450	350	230	140
	Flexible	E32-T14LR/E32-T15YR/E32-T15ZR	270	210	130	50	170	130	85	50
	(new standard)	E32-T21R/E32-T22R/E32-T222R/ E32-T25XR/E32-TC200FR(F4R)	160	130	75	30	100	75	50	30
		E32-T24R/E32-T25YR/E32-T25ZR	60	50	25	10	35	27	18	10
		E32-TC200/E32-T12/E32-T15X/ E32-TC200B(B4)	1,000	760	500	200	650	500	330	200
Standard		E32-T14L/E32-T15Y/E32-T15Z	600	460	300	120	390	300	200	120
models	Standard	E32-TC200A	900	680	450	180	580	450	300	180
		E32-TC200E/E32-T22/E32-T222/ E32-T25X/E32-TC200F(F4)	270	220	125	50	170	130	85	50
		E32-T24/E32-T25Y/E32-T25Z	160	130	75	30	100	70	45	30
	Break- resistant	E32-T11/E32-T12B/E32-T15XB	900	680	450	180	580	450	300	180
		E32-T21/E32-T221B/E32-T22B	240	200	110	45 35	150 125	110 95	70	45 35
	Fluorine	E32-T25XB E32-T11U	180 900	150 680	85 450	35 180	580	95 450	60 300	35 180
	coating		20.000*1	20.000*1	10.000	4 000	12.000	10.000	6 500	4 000
				,	-	'	,		6,500 2,400	4,000
			1	,	,		,	,	1,600	970
	Long- distance, high power		,						1,500	930
									1,450	900
		E32-T11L/E32-T12L			870	350	,	870	580	350
		E32-T11L + E39-F2	910	800	500	180	600	520	340	180
		E32-T11R + E39-F2	520	400	250	100	330	260	170	100
		E32-T11 + E39-F2	820	660	430	160	530	430	280	160
		E32-TC200 + E39-F1 4,000*2 4,000*2 2,600 1,500 4,000 3,700 2,4 E32-T11R + E39-F1 4,000*2 3,700 2,400 970 3,100 2,400 1,6 E32-T11 + E39-F1 4,000*2 3,600 2,300 930 3,000 2,300 1,6 E32-T11 + E39-F1 4,000*2 3,600 2,300 930 3,000 2,300 1,6 E32-T14 4,000*2 3,400 2,250 900 2,900 2,200 1,4 E32-T11L/E32-T12L 1,700 1,330 870 350 1,100 870 52 E32-T11L + E39-F2 910 800 500 180 600 520 33 E32-T11R + E39-F2 520 400 250 100 330 260 430	170	100						
		E32-T223R	160	130	75	30	110	85	55	30
Special-	Ultracom- pact,	E32-T33-S5		44	25		35	28	18	10
beam models	ultrafine sleeve	E32-T333-S5	12	10	6	4	8	6	5	4
modela	0.0010	E32-T334-S5	6	5	3	2	4	3	2	2
	Fine beam	E32-T22S	2,500	1,900	1,250	500	1,600	1,250	830	500
		E32-T24S	1,750		870	350			580	350
		E32-T16PR	1,100	840	560	220	730	560	370	220
		E32-T16P	1,500	1,100	750	300	970	750	500	300
		E32-T16JR	980	750	480	190	600	480	320	190
	Area sensing	E32-T16J E32-T16WR	1,300 1,700	1,000 1,300	650 850	260 340	800	650 860	430 570	260 340
		E32-T16WR E32-T16W	2,300	1,300	1,150	340 450	1,100	1,100	730	450
		E32-T16	3,700	2,800	1,150	450 740	2,400	1,100	1,200	450 740
		E32-M21	750	2,800	350	140	470	360	240	140
t The option	l fiber for the E22 Tr		750	010	550	140	470	500	240	140

*1. The optical fiber for the E32-T17L is 10 m long on each side, so the value is 20,000 mm *2. The optical fiber is 2 m long on each side, so the sensing distance is 4,000 mm.

		Model		E3X-D	DA⊡-S			E3X-N	IDA 🗆	
Туре			High- reso- lution mode	Stan- dard mode	High- speed mode	Super- high- speed mode	High- reso- lution mode	Stan- dard mode	High- speed mode	Super- high- speed mode
		E32-T51	1,000	760	500	200	650	500	330	200
		E32-T54	300	230	150	60	190	150	100	60
	11	E32-T81R-S	360	280	180	70	230	180	120	70
	Heat- resistant	E32-T61-S + E39-F2	600	450	300	120	390	300	200	120
	resistant	E32-T61-S + E39-F1	4,000	3,400	2,200	900	3,000	2,200	1,450	900
		E32-T84S-S	1,750	1,300	870	350	1,100	870	570	350
		E32-T61-S	600	450	300	120	390	300	200	120
Environ-		E32-T11F	2,500	2,000	1,300	520	1,600	1,300	850	520
ment resistant	Chamiaal	E32-T12F	4,000*	3,000	2,000	800	2,600	2,000	1,300	800
models	Chemical resistant	E32-T14F	500	400	250	100	320	250	160	100
	resistant	E32-T51F	1,800	1,400	900	350	1,190	920	600	350
		E32-T81F-S	920	700	460	190	600	460	300	190
		E32-T51V	260	200	130	50	170	130	85	50
		E32-T51V + E39-F1V	1,350	1,000	680	260	850	650	430	260
	Vacuum resistant	E32-T54V	210	130	100	35	110	85	55	35
	resistant	E32-T54V + E39-F1V	660	500	330	180	420	320	210	180
		E32-T84SV	630	480	320	130	410	310	200	130

* The optical fiber for the E32-T12F is 2 m long on each side, so the sensing distance is 4,000 mm.

Reflective Models

(Unit: mm)

		Model		E3X-D	DA⊡-S			E3X-N	/IDA 🗌	
Туре			High- reso- lution mode	Stan- dard mode	High- speed mode	Super- high- speed mode	High- reso- lution mode	Stan- dard mode	High- speed mode	Super- high- speed mode
		E32-D11R/E32-D12R/E32-D15XR/ E32-DC200BR(B4R)	300	170	120	50	170	120	80	50
		E32-D14LR	80	45	30	14	45	33	22	14
	Flexible (new stan-	E32-D15YR/E32-D15ZR	70	40	26	12	40	29	19	12
	dard)	E32-D211R/E32-D21R/E32-D22R/ E32-D25XR/E32-DC200FR(F4R)	50	30	20	8	30	22	14	8
		E32-D24R	26	15	10	4	15	10	6	4
		E32-D25YR/E32-D25ZR	14	8	5	2	8	5	3.3	2
		E32-DC200/E32-D15X/ E32-DC200B(B4)	500	300	200	90	300	210	130	90
		E32-D12	400	230	160	70	230	160	100	70
Standard models		E32-D14L	200	110	80	36	110	80	50	36
models	Standard	E32-D15Y/E32-D15Z	170	100	65	30	100	70	45	30
		E32-D211/E32-DC200E/E32-D22/ E32-D25X/E32-DC200F(F4)	130	80	50	22	80	55	35	22
		E32-D24	50	30	20	8	30	22	14	8
		E32-D25Y/E32-D25Z	35	20	12	6	20	14	9	6
		E32-D11/E32-D15XB	300	170	120	50	170	125	80	50
	Break-	E32-D21B/E32-D221B	110	70	45	20	70	50	30	20
	resistant	E32-D21/E32-D22B	50	30	20	8	30	22	14	8
		E32-D25XB	85	50	30	15	50	35	23	15
	Fluorine coating	E32-D11U	300	170	120	50	170	125	80	50

		Model		E3X-D	DA⊡-S			E3X-N	/IDA 🗆			
Туре			High- reso- lution mode	Stan- dard mode	High- speed mode	Super- high- speed mode	High- reso- lution mode	Stan- dard mode	High- speed mode	Super- high- speed mode		
		E32-D16	40 to 1,000	40 to 700	40 to 450	40 to 240	40 to 600	40 to 490	40 to 300	40 to 240		
	Long distance, high power	E32-D11L	650	400	260	110	400	270	180	110		
		E32-D21L/E32-D22L	210	130	80	35	130	85	55	35		
	Ultracom- pact, ultrafine	E32-D33	25	16	10	4	16	10	6	4		
	sleeve	E32-D331	5	3	2	0.8	3	2	1.3	0.8		
		E32-CC200R	250	150	100	45	150	105	65	45		
		E32-CC200	500	300	200	90	300	210	140	90		
		E32-D32L	250	150	100	45	150	100	65	45		
Special- beam models	Coaxial/small - spot	E32-C31/E32-D32 E32-C42 + E39-F3A	12075502275503022Spot diameter variable in the range 0.1 to 0.6 mm at distances in the range 6 to 15 mm.									
models		E32-D32 + E39-F3A	Spot diameter variable in the range 0.5 to 1mm at distances in the range 6 to 15 mm.									
		E32-C41 + E39-F3A-5	0.1-mm dia. spot at a distance of 7 mm.									
		E32-C31 + E39-F3A-5 0.5-mm dia. spot at a distance of 7 mm. E32-C41 + E39-F3B 0.2-mm dia. spot at a distance of 17 mm.										
		E32-C41 + E39-F3B E32-C31 + E39-F3B										
		E32-C31 + E39-F3B E32-C31 + E39-F3C	Spot		5-mm dia					0 mm		
	Area sensing	E32-D36P1	Spot diameter of 4 mm max. at distances in the 250 150 100 45 150					100	ge 0 10 2 65	45		
	Retroireflec-	E32-R21 + E39-R3 (provided)	200	100	100	-	250	100	00	10		
	tive	E32-R16 + E39-R1 (provided)				150 to						
		E32-L25/E32-L25A				3. 0 te						
	Convergent-	E32-L24S E32-L24L				2 to 6 (c	-					
	reflective	E32-L25L			F	5.4 to 9 (c	,	')				
		E32-L86				4 to		7				
		E32-D51	400	230	160	72	230	165	110	72		
Environ-	Heat- resistant	E32-D81R-S E32-D61-S	150	90	60	27	90	63	40	27		
ment-		E32-D73-S	100	60	40	18	60	40	25	18		
resistant models	Chemical-	E32-D12F	160	95	65	30	95	70	45	30		
	resistant	E32-D14F	70	40	30	10	40	28	18	10		

Applicatio	n-specific Mod	dels							(Ur	nit: mm)
		Model		E3X-D	DA⊡-S			E3X-N	/IDA 🗆	
Туре			High- reso- lution mode	Stan- dard mode	High- speed mode	Super- high- speed mode	High- reso- lution mode	Stan- dard mode	High- speed mode	Super- high- speed mode
	Label	E32-G14	10							
	detection	E32-T14	4,000*	3,400	2,250	900	2,900	2,200	1,450	900
		E32-L25T	Applicat mm and	le tube: a recom	Transpar mended	ent tube v wall thicki	vith a diai ness of 1	meter in t mm	the range	8 to 10
		E32-D36T	Applicable tube: Transparent tube (no restriction on diameter)							
	Liquid-level detection	E32-A01	Applicable tube: Transparent tube with a diameter of 3.2, 6.4, or 9.5 m and a recommended wall thickness of 1 mm							9.5 mm
		E32-A02	Applicable tube: Transparent tube with a diameter in the range 6 to 1 mm and a recommended wall thickness of 1 mm							
		E32-D82F1(F2)	Liquid-contact model							
Applica- tion-		E32-L16-N	0 to 15 0 to 12		0 to 12	0 to 15			0 to 12	
specific models	Glass- substrate	E32-A08		10 to 20				10 to 20		
	alignment	E32-A07E1(E2)		15 to 25				15 to 25		
		E32-L66	5 to	18	5 to 16		5 to	18	5 to 14	
	Glass- substrate	E32-A09/E32-A09H		15 to 38	•			15 to 38		
	Mapping	E32-A09H2		20 to 30				20 to 30		
		E32-A03/E32-A03-1	1,150	890	600	250	750	580	380	250
	Wafer mapping	E32-T24S	1,750	1,300	870	350	1,100	870	580	350
		E32-A04/E32-A04-1	460	340	225	100	300	220	145	100

* The optical fiber for the E32-T14 is 2 m long on each side, so the sensing distance is 4,000 mm.

Green, Blue, and Infrared Light Sources (Unit: mm)										
		Model	E3X-DAG -S/DAB -S			- S	E3X-DAH□-S			
Туре		High- reso- lution mode	Stan- dard mode	High- speed mode	Super- high- speed mode	High- reso- lution mode	Stan- dard mode	High- speed mode	Super- high- speed mode	
Through- beam models	Standard	E32-T11R/E32-T12R/E32-T15XR/ E32-TC200BR(B4R)	65	50	35	30	280	190	130	55
		E32-T14LR/E32-T15YR/E32-T15ZR	25	20	22	12	100	75	80	21
		E32-TC200/E32-T12/E32-T15X/ E32-TC200B(B4)	100	75	50	45	400	280	180	80
		E32-T14L/E32-T15Y/E32-T15Z	50	40	30	25	240	160	110	45
	Special beam	E32-T11L/E32-T12L	150	120	85	75	700	490	320	140
Reflective models	Standard	E32-D11R/E32-D12R/E32-D15XR/ E32-DC200BR(B4R)	17	14	10	8	120	90	60	21
		E32-D14LR	4.4	3.5	2.5	2.2	32	24	16	5.5
		E32-D15YR/E32-D15ZR	4.2	3.3	2.2	2.1	28	20	13	5
		E32-DC200/E32-D15X/ E32-DC200B(B4)	32	25	16	16	200	150	100	35
		E32-D14L	11	9	6	5.5	80	60	40	14
		E32-D15Y/E32-D15Z	10	8	5.5	5	65	50	33	11
	Special beam	E32-D11L	44	35	22	22	260	190	130	45
		E32-CC200R	15	12	8	7.5	100	75	50	17
		E32-CC200	32	25	16	16	200	150	100	35
		E32-D32L	15	12	8	7.5	100	75	50	17
		E32-C31/E32-D32	7.5	6	4	3.5	50	37	25	8.5
Applica- tion- specific models	Label detection	E32-T14	320	260	220	160	1,800	1,200	820	360
		E32-G14	10				10			
		Refer to E32 Series for	details o	n Fiber l	Jnits.					

Output Circuit Diagrams

NPN Output

Model	Operation mode	Timing charts	Operation selector	Output circuit			
E3X-DA11-S E3X-DA6-S E3X-DAG11-S E3X-DAG6-S	Light-ON	Incident light No incident light Operation (orange) OFF Output transistor OFF Load Operate (relay) Operate (Between brown and black leads)	LIGHT ON (L-ON)	Display Operation indicator Display (orange) Brown Uning Indicator Black Load Indicator Control output 12 to			
E3X-DAB11-S E3X-DAB6-S E3X-DA11SE-S E3X-DA6SE-S	Dark-ON	Incident light No incident light Operation (orange) Output transistor Operate Load (relay) (Between brown and black leads)	DARK ON (D-ON)	Blue			
E3X-DA11TW-S E3X-DA6TW-S E3X-MDA11	Light-ON	CH1/ Incident light CH2 No incident light Operation ON (orange) ON Output OFF transistor OFF Load (relay) Reset (Between brown and black leads)	LIGHT ON (L-ON)	Display Operation indicator Operation indicator ch 1 Control			
E3X-MDA6 E3X-DA11AT-S E3X-DA6AT-S	Dark-ON	CH1/ Incident light CH2 No incident light Operation OFF (orange) Output ON transistor OFF Load Operate (relay) Reset (Between brown and black leads)	DARK ON (D-ON)	Sensor main circuit Blue			
E3X-DA11RM-S E3X-DA6RM-S	Light-ON	No incident light Operation ON (orange) OFF Output ON transistor OFF Load Operate (relay) Reset (Between brown and black leads)	LIGHT ON (L-ON)	Operation indicator Display tuning Indicator Photo- Indicator Indicator Photo- Indicator Photo- Indicator Photo- Indicator Photo- Indicator Photo- Indicator Indicator Photo- Indicator Indicator Photo- Indicator Indicator Indicator Photo- Indicator			
	Dark-ON	Operation ON indicator OFF OF ON Output OFF transistor Operate Load (relay) (Between brown and black leads)	DARK ON (D-ON)	Blue			
E3X-DA11AN-S	Light-ON	Incident light No incident light Indicator OFF (orange) ON Output transistor OFF Load Operate (relay) Reset (Between brown and black leads)	LIGHT ON (L-ON)	Display Power tuning indicator indicator Photo- (orange) (orange)			
	Dark-ON	Incident light No incident light Operation (orange) Otput transistor (relay) Reset (Between brown and black leads)	DARK ON (D-ON)	Sensor main circuit Blue Blue			
DA⊟TW-S are LIGHT ON: ON channels 1 and DARK ON: OFI channels 1 and	as follows: I when the inciden I 2. F when the inciden I 2.	s settings are used with the E3) t level is between the threshold nt level is between the threshold Settings (T: Set Time)	ls for Cł ds for Cł	OFF			
ON delay OFF delay One-shot ON delay ON delay							
Incident light No incident light L-ON D-ON OFF	L-ON ON D-ON OFF	-+T+ D-ON OFF D-ON OFF	(C O	UT ON OFF delay ON OFF delay ON (AND) OFF (AND			



Note: The ON/OFF regions when areas settings are used with the E3X-DA□TW-S are as follows: LIGHT ON: ON when the incident level is between the thresholds for channels 1 and 2. DARK ON: OFF when the incident level is between the thresholds for channels 1 and 2.

Nomenclature



Safety Precautions

Refer to Warranty and Limitations of Liability.

This product is not designed or rated for ensuring safety of persons either directly or indirectly. Do not use it for such purposes.

Precautions for Correct Use

Do not use the product in atmospheres or environments that exceed product ratings.

Amplifier Unit • Designing

Operation after Turning Power ON

The Sensor is ready to detect within 200 ms after the power supply is turned ON. If the Sensor and load are connected to separate power supplies, be sure to turn ON the Sensor first.

Mounting

Connecting and Disconnecting Connectors

Mounting Connectors

1. Insert the Master or Slave Connector into the Amplifier Unit until it clicks into place.



2. Attach the protector seals (provided as accessories) to the sides of master and slave connectors that are not connected.



Note: Attach the seals to the sides with grooves.

E3X-DA TW-S E3X-DA AT-S E3X-MDA



Removing Connectors

- 1. Slide the slave Amplifier Unit(s) for which the Connector is to be removed away from the rest of the group.
- After the Amplifier Unit(s) has been separated, press down on the lever on the Connector and remove it. (Do not attempt to remove Connectors without separating them from other Amplifier Units first.)



Adding and Removing Amplifier Units

Adding Amplifier Units

1. Mount the Amplifier Units one at a time onto the DIN track.



2. Slide the Amplifier Units together, line up the clips, and press the Amplifier Units together until they click into place.



Removing Amplifier Units

Slide Amplifier Units away from each other, and remove from the DIN track one at a time. (Do not attempt to remove Amplifier Units from the DIN track without separating them first.)

- Note: 1. The specifications for ambient temperature will vary according to the number of Amplifier Units used together. For details, refer to *Ratings and Specifications*.
 - 2. Always turn OFF the power supply before joining or separating Amplifier Units.

Mounting the End Plate (PFP-M)

An End Plate should be used if there is a possibility of the Amplifier Unit moving, e.g., due to vibration. If a Mobile Console is going to be mounted, connect the End Plate in the direction shown in the following diagram.



Mounting the Mobile Console Head

Leave a gap of at least 20 mm between the nearest Amplifier Unit and the Mobile Console head.



Fiber Connection

The E3X Amplifier Unit has a lock button for easy connection of the Fiber Unit. Connect or disconnect the fibers using the following procedures:

1. Connection

Open the protective cover, insert the fibers according to the fiber insertion marks on the side of the Amplifier Unit, and lower the lock lever.



Fibers with E39-F9 Attachment



Fibers That Cannot Be Free-Cut (with Sleeves)



2. Disconnecting Fibers

Remove the protective cover and raise the lock lever to pull out the fibers.



Note: 1. To maintain the fiber properties, confirm that the lock is released before removing the fibers.

 Be sure to lock or unlock the lock button within an ambient temperature range between -10°C and 40°C.

Adjusting

Mutual Interference Protection Function

There may be some instability in the digital display values due to light from other sensors. If this occurs, decrease the sensitivity (i.e., decrease the power or increase the threshold) to perform stable detection.

EEPROM Writing Error

If the data is not written to the EEPROM correctly due to a power failure or static-electric noise, initialize the settings with the keys on the Amplifier Unit. ERR/EEP will flash on the display when a writing error has occurred.

Optical Communications

Several Amplifier Units can be slid together and used in groups. Do not, however, slide the Amplifier Units or attempt to remove any of the Amplifier Units during operation.

Others

Protective Cover

Always keep the protective cover in place when using the Amplifier Unit.

Mobile Console

Use the E3X-MC11-SV2 Mobile Console for the E3X-DA-S-series Amplifier Units.

Dimensions

(Unit: mm) Tolerance class IT16 applies to dimensions in this data sheet unless otherwise specified.







Amplifier Unit Connectors



E3X-MC11-SV2 **Mobile Console Mobile Console Head** AC adapter jack Communications jack đ Optical communications connection indicator Menu indicators 52.8 -Communications jack (0 10] 6 000 000 20 Channel indicator (38.2) 13.1 + 16.3 -31.8 1.2 5.1 Sensor operation indicator + 13.2 -- 12.3 -28.8 -Ð Þ Main display 17.3 24.3 Channel buttons 27.7 30.3 -Sub-display 00 9.9 D + Optical communic tions position 31.2 — 136 UP key RIGHT key M5 ball plunge (+) - 36.7 -5.6 LEFT key 51.3 7 ESC/PWR key ╈ DOWN key ENT key 0000 Operation keys Battery / - 50 -Refer to E32 Series for details on Fiber Units.

Mobile Console

Read and Understand This Catalog

Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments.

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- · Systems, machines, and equipment that could present a risk to life or property.

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