

IMS

E3FA-□□□□

M18 Photoelectric Sensor



INSTRUCTION MANUAL

! WARNING

Thank you for selecting IMS product.This sheet primarily describes precautions required in installing and operating the product. Before operating the product, read the sheet thoroughly to acquire sufficient knowledge of the product. For your convenience,keep the sheet at your disposal.

! CAUTION

Failure to follow these instructions may result in serious injury or death :
Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss. (e.g. nuclear power control, medical equipment, ships, vehicles, railways, aircraft, combustion apparatus, safety equipment, crime/disaster prevention devices,etc.)
Failure to follow these instructions may result in product damage :
Do not use this unit over rated voltage ;
Do not use this unit where there is flammable or explosive gas ;
Do not use this unit where there is vibration or impact ;
In cleaning the unit, do not use water or an oil-based detergent.

■ Features

- High performance ASIC based advance sensor
- Long product life time, 5us modulated pulse with 1/10 duty cycle reduced aging of LED
- Build in 100ms power on delay, self-recover short circuit protection, reverse polarity, over voltage protection
- Excellent noise immunity to DC light with modulated light source and CDS signal process technology
- Mode selection for light on and dark on
- Visible super bright red light for easy alignment
- Distance adjustable using potentiometer
- IP65 grade

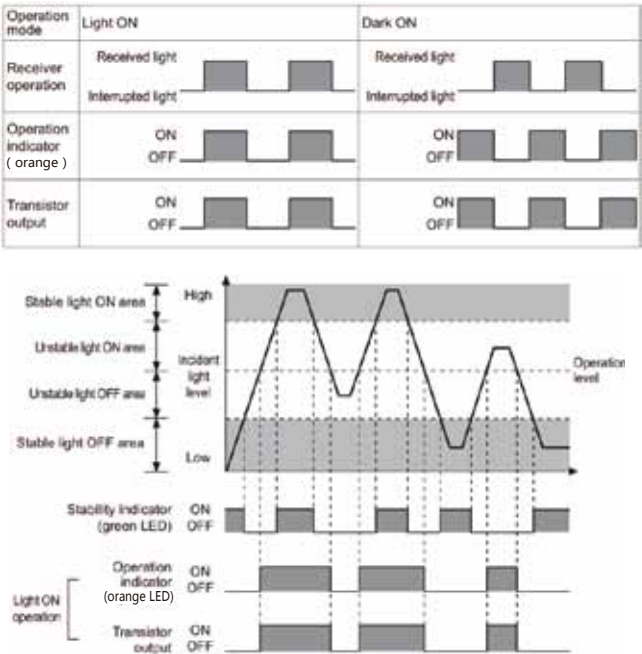
■ Ordering information

E3FA	D	1	M	-	N	L	T		-	C	(Light source code)	
										Connection type	L	Cable type
											C	Connector type
										Response time		1ms
											M	0.25ms
										Sensitivity	T	available
												Fixed
										Operation mode	L	Light on
											D	Dark on
											S	Selectable
										Output	N	NPN
											P	PNP
											O	NPN+PNP
											D	5V
											C	Relay
											A	Analog
										Sensing distance unit		Unit : mm
										Sensing distance (slot series use 30/50 to refer slot distance)	M	Unit : m
											Number	Sensing distance
											T	Through-beam
											D	Diffuse reflective
											R	Retro reflective
											V	Convergent reflective
											B	Polarization-opaquiring
										Sensing method (slot series is none)		
										Item	E3FA	Photoelectric sensor

■ Specifications

Sensing method		Diffuse reflective		Retro reflective
Model	NPN	E3FA-D100-N	E3FA-D500-N	E3FA-R□M-N
	PNP	E3FA-D100-P	E3FA-D500-P	E3FA-R□M-P
Sensing distance		100mm (Non-glossy white paper100*100)	500mm (Non-glossy white paper300*300mm)	0.1~2m
Spot diameter (reference value)		8×8mm (Sensing distance of 100mm)	35×35mm (Sensing distance of 500mm)	—
Standard sensing object				Opaque: 75 mm dia.min
Hysteresis		Max. 20% at rated sensing distance		—
Directional angle		—		2°min.
Light source		Red LED(624nm)		
Power supply		10~30VDC (including voltage ripple of 10%(p-p)max.)		
Current consumption		Max. 30mA		
Output		NPN/PNP(open collector)		
Load current		Max.100mA (Residual voltage: Max. 3V), Load voltage: Max.26.4VDC		
Operation mode		Selectable Light ON or Dark ON by control cable		
Indicators		Operation indicator : Orange , Stability indicator : Green		
Circuit protection		Power supply reverse polarity protection, Output short-circuit protection, and Output reverse polarity protection		
Response time		Max. 1ms		
Sensitivity adjustment		One-turn adjuster		
Ambient illumination		Incandescent lamp : Max. 3 , 000lx/Sunlight : Max. 10 , 000lx		
Ambient temperature		Operation : -25 ~ 55 °C/Storage : -40 ~ 70 °C (with no icing and condensation)		
Ambient humidity		Operation : 35 ~ 85 %/Storage : 35%~95%(with no condensation)		
Insulation resistance		Min. 20MΩ (500VDC)		
Dielectric strength		1,000 VAC at 50/60 Hz for 1 min. between current-carrying parts and case		
Vibration resistance		1.5mm amplitude at frequency of 10 to 55Hz in each of X,Y,Z direction for 2 hours		
Shock resistance		500m/s² in X,Y,Z directions for 3 times		
Degree of protection		IEC : IP65		
Weight		Approx. 60g		
Material	Case	ABS		
	Lens	PMMA		
	Key	POM		
	Nut	POM		
Accessory		Instruction, M18 nut (2pcs)		

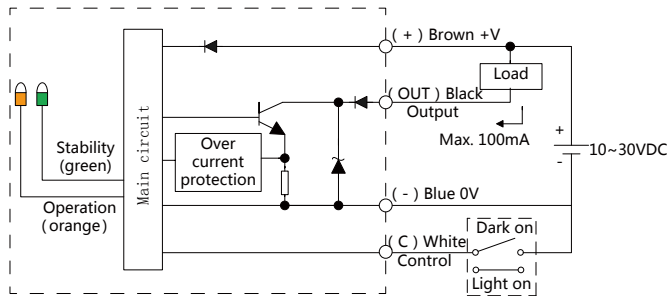
■ Operating timing diagram



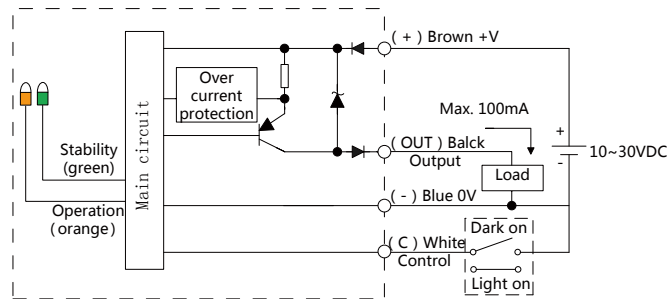
※ The waveforms of " Operation indicator " and " Transistor output " are for Light on mode.

Control output circuit diagram

- NPN open collector output

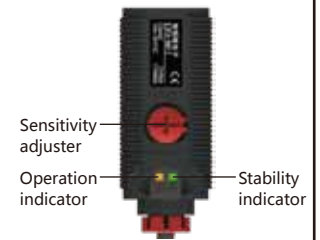


- PNP open collector output



Installation and sensitivity adjustment

1. Power on the sensor after it is fixed ;
2. Placing the detected object in front of the sensor ;
3. Adjust the knob until the operation indication is in trigger mode (it is a normal phenomenon that the trigger distance is farther than the distance placed by the sensor) ;
4. Repeat Step 3 if the trigger distance is different from the setting distance until the requirements are met.

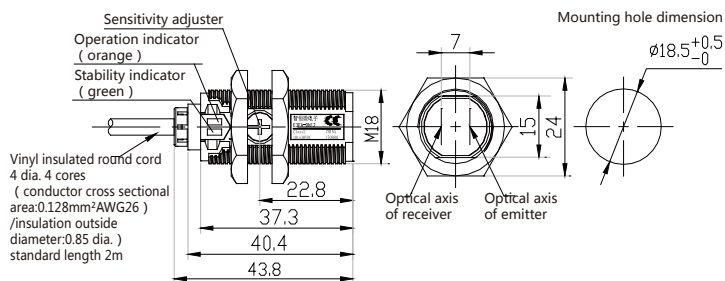


Caution for using

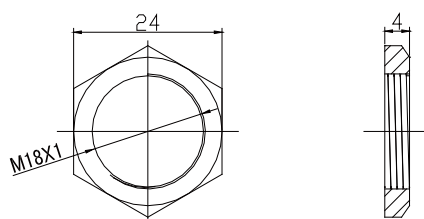
1. Please make sure the wiring is correct before power-on.
2. Use a visor or a hood so that excessive light (e.g. sunlight, spotlight) does not directly enter into the inclination angle of the sensor.
3. When more than 2 sets of Through-beam type sensor are used closely, it might cause interference each other. Be sure to put enough space between them in order to avoid malfunction.
4. Sensor can malfunction due to light entering from adjacent sensor, so sensors must be installed with enough separated distance.
5. If the sensor is installed directly on a flat surface, the reflection off the surface may cause malfunction. Make sure there is enough space between the sensor and the surface.
6. If the sensor is wired with a high voltage line or power line, it may cause product damage or malfunction. Use separate wiring or a dedicated conduit.
7. Please use short cables for wiring the sensors. Power surge from extended wiring may cause product malfunction ;
8. When the lens is stained by foreign substances, clean the lens lightly with dry cloth. Do not use chemical or organic solvents.

Dimensions

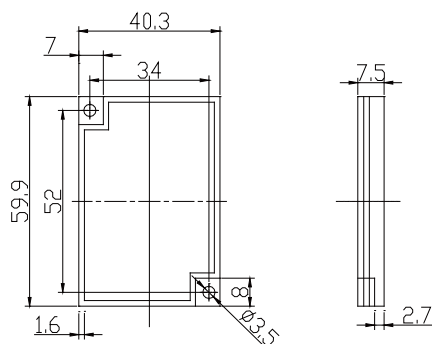
- Sensor



- Nut



- Reflector



Main product

- Photoelectric sensor
- Light curtain
- Proximity sensor
- Pressure sensor
- Counting sensor
- Distance sensor
- Liquid level sensor
- Label sensor
- Hall sensor
- Pressure meter
- Counting machine
- Dust sensor

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