Single beam safety sensor for long distance detection

F3SS

60-m long-distance detection. Single beam safety sensor for personnel detection (type 4) is ideal for perimeter protection or multi-sided detection of intrusion into large machines.

Features

- Mutual interference protection function for up to four sets.
- Complies with IEC standards and North American standards (received IEC61496-1, -2, and UL/CSA certification). Can be used as a safety guard for satisfaction of OSHA requirements for on-site labor safety in North America.
- Special controller not needed. Detection of human body intrusion is possible using just the sensor unit.
- Includes "Start/restart interlock function" to prevent automatic reset of output.
- The emitter lens and receiver lens are equipped with heaters for worry-free operation even in environments where condensation is an issue.
- Optional glass and stainless steel mirrors are available.

Ordering Information

Sensors

Infrared ray

Sensor type	Shape	Sensing distance	Minimum detectable object (mm)	Operating mode	Model
Through-beam		0.3 to 60m	31-mm dia.	Light ON	F3SS-AT60P

Note: Emitter: F3SS-AT60P-L, receiver F3SS-AT60P-D Can also be ordered as single units.

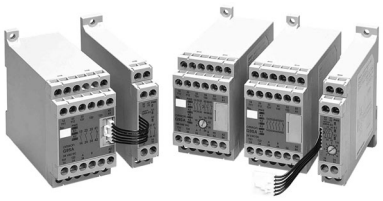
Accessories (Order Separately)

Item	Model
Laser alignment kit (for optical axis adjustment)	F39-LLK
Glass mirror	F39-MSG
Stainless steel mirror	F39-MSS
45Ω mirror clamp	F39-LM45
Mirror clamp for wall mounting	F39-LA
Sensor clamp for 42-mm dia. column stand	F39-LSP

Note: Wiring is based on a built-in terminal block. Please purchase a 4-mm to 7-mm (dia.) cable separately.

Safety Relay Unit

For controlling the outputs we recommend to use safety relay units G9SA or G9SB

Appearance	Output	Model
	Expandable relay unit series with up to 8 safety relay outputs. Time delay for stop category 1 can be realized. (Please refer to page G-119)	G9SA series
	Small size safety relay unit with 17.5 mm and 22.5 mm size. Up to 3 safety relay outputs are available. (Please refer to page G-133)	G9SB series
	Fletible and expandable safety unit with solid state outputs	G9ST series

Rating/performance

Item	Model	F3SS-AT60P
Sensing distance		0.3 to 60 m
Number of optical axes		1 (single beam)
Beam diameter		31 mm
Min. sensing object		Opaque object, 31-mm dia. or greater
Orientation angle		emitter/receiver: ±2.5° or less each (based on IEC61496-2 at detection distance of 3 m or greater)
Light source (wave length)		Infrared LED (880 nm)
Power supply voltage		24 V DC ±10%, ripple (p-p) 5% or less
After power is turned on Startup time		4 s or less
Current consumption		Emitter: 170 mA or less, receiver: 800 mA or less (including load output current)
Operating mode		Auto start mode, start interlock mode, and start/restart interlock mode can all be selected using a switch in the receiver.
Control output		PNP transistor outputs x 2 outputs, load current 250 mA or less (residual voltage 1 V or less) (excluding voltage drop due to cable extension), Light ON
Protective circuits		Output load short circuit and power supply reverse connection protection
Response time (ON→OFF)		35 ms max.
Ambient temperature		Operating/Storage: 0°C to 55°C (with no icing or condensation)
Ambient humidity		Operating/Storage: 35% to 95% RH (no condensation)
Vibration resistance		Malfunction/durability: 10 to 50 Hz, amplitude 0.7 mm, 20 sweeps each in X, Y, and Z directions
Shock resistance		Malfunction/durability: 100 m/s2, 1,000 times each in X, Y, and Z directions
Protective structure		IEC60529 Standard IP65
Connection method		Connect to terminal block on internal board
Weight (Packed state)		2.5 kg
Material	Case	Aluminum
	Cap	Aluminum
Accessories		Set of mounting brackets, operation manual, caps for unused conduits
Applicable standards		IEC (EN) 61496-1 TYPE4 ESPE *1 IEC61496-2 TYPE4 AOPD *2

*1) ESPE (Electro-Sensitive Protective Equipment)
*2) AOPD (Active Opto-electronic Protective Devices)

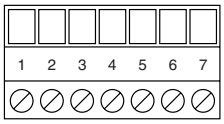
Wiring

Wire the F3SS only after all power has been turned off.

Emitter

Terminal block number	Terminal name	Functions	Terminal block assignments
J3	+24 VDC	+DC24V	
	RTN	0V (GND)	

Receiver

Terminal block number	Terminal name	Functions	Terminal block assignments
J5	1	Control output 1 (+)	
	2	For control output 1/2 COM (-)	
	3	Control output 2 (+)	
	4	START(-)	
	5	START(+)	
	6	+DC24V	
	7	0V (GND)	

Note: Ground the emitter and receiver to the ground terminal inside the case.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Cat. No. E17E-EN-01 In the interest of product improvement, specifications are subject to change without notice.