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 D-92)	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 D-106)	G9SB series

Rating/performance

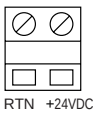
Item	Model	F3SS-AT60P
Sensing distance		0.3 to 60 m
Number of optical axes		1 (single beam)
Beam diameter		31 mm
Min. sensing object		Opaque object, 31-mm dia. or greater
Orientation angle		emitter/receiver: ±2.5° or less each (based on IEC61496-2 at detection distance of 3 m or greater)
Light source (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
Materi-al	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)

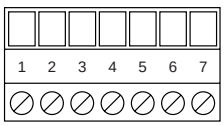
Wiring

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 +24VDC
	RTN	0V (GND)	

Receiver

Terminal block number	Terminal name	Functions	Terminal block assignments
J5	1	Control out-put 1 (+)	 1 2 3 4 5 6 7
	2	For control out-put 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.