

PAC Type 4 Safe 4

Description

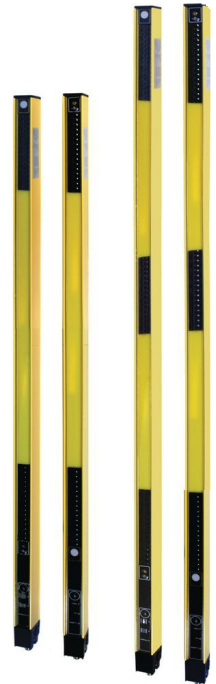
The Allen Bradley Guardmaster GuardShield Safe 4 PAC is an economical two box, Type 4 safety light curtain with ON/OFF functionality. This basic, guard-only operating mode, perimeter access safety light curtain has an integrated laser alignment system that simplifies the alignment of each pair of light curtains. Visible laser beams are activated by touching the finger symbol on front face of the light curtains. Positioning of the transmitter and receiver laser beams to their respective targets facilitates optimal alignment of each Safe 4 PAC pair. The integrated laser alignment system also helps with the re-alignment of pairs if units are knocked out of alignment during the course of the work process or when corner mirrors are used.

The GuardShield Safe 4 PAC is offered with:

- Two 120 mm long, 30 mm resolution optic modules spaced at 500 mm
- Three 120 mm long, 30 mm resolution optic modules spaced at 400 mm
- Four 120 mm long, 30 mm resolution optic modules spaced at 300 mm providing whole body detection

Designed for perimeter guarding applications, both configurations of the Safe 4 PAC have operating ranges from 5 to 30 meters which allows them to be used as opto-electronic fences. The use of corner mirrors with the Safe 4 PAC allows multiple-sided guarding in large perimeter applications. The GuardShield Safe 4 PAC is also a low cost solution for entry or exit guarding of a machine process when paired with the MSR42 muting module. The MSR42 can be configured for two-sensor muting with the Safe 4 PAC. The muting function allows material to pass through the sensing field of the Safe 4 PAC when the muting sensors are properly activated by the flow of material.

The GuardShield Safe 4 PAC, with an environmental rating of IP65, is designed to be used in a variety of applications across a broad range of industries in medium to heavy industrial environments. Offered with shock isolator kits for shock and vibration applications, the Safe 4 PAC is suited to medium- and heavy-duty applications.

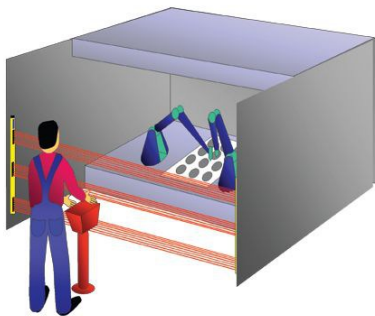


Features

- M12 connectors
- Optically synchronized
- Integrated laser alignment system
- IP65 enclosure rating
- Simple installation
- cULus Listed and CE Marked for all applicable directives

Applications

- Palletizers
- Material handling systems
- Packaging equipment
- Robot cells
- Automated processes



Specifications

Safety Ratings	
Standards	EN/IEC 61496 Parts 1 and 2, UL 61496 Parts 1 and 2, UL1998
Safety Classification	Type 4 per IEC/EN61496. Category 4 device per EN 954-1, SIL 3 per IEC 61508, PL _e EN/ISO 13849
Certifications	cULus Listed and CE Marked for all applicable directives
Power Supply	
Input Power, Max.	24V DC ± 20%
Maximum Residual Ripple	< 10% of U _{sp}
Power Consumption	<500 mA (no load)
Outputs	
Safety Outputs	2 PNP OSSD. 0.3 A, short-circuit protected
Output Voltage, Min.	U _{sp} -1V (at load = 0.1 A)
Switching Current @ Voltage, Min.	300 mA @ 24V DC
Operating Characteristics	
Indicator LEDs	ON -State, OFF-State, internal error
Protected Height [mm (in.)]	2 beam = 600 mm (23.6 in.) 3 beam = 840 mm (33.0 in.) 4 beam = 960 mm (37.8 in.)
Scanning Range	5...30 m (16.4...98.4 ft)
Synchronization	Optical, first beam adjacent to LEDs
Wavelength	940 nm
Environmental	
Enclosure Type Rating	IP65
Relative Humidity	15...95% (noncondensing)
Operating Temperature [C (F)]	0...55 ° (0...131 °)
Vibration	IEC 60068-2-6 frequency 10...55 Hz; amplitude 0.35 mm (0.01 in.)
Shock	IEC 60068-2-29; acceleration 10 g, pulse duration 16 ms 10...55 Hz; amplitude 0.35 mm (0.01 in.)
Physical Characteristics	
Mounting	Rear mounting, standard and adjustable (180°)
Weight	Varies by cat. no., see Installation Manual
Housing Cross Section	30 x 40 mm (1.18 x 1.57 in.)
Connection Type	Transmitter: 5-pin M12 micro QD Receiver: 5-pin M12 micro QD
Cable Length	30 m (98.4 ft) max.
ILAS Laser Class	Class 2, IEC 60825-1

Product Selection

Safety Light Curtain—Standard PAC System

The Allen-Bradley Guardmaster GuardShield Safe 4 PAC safety light curtains are offered with two, three, or four modules with various spacing for whole body detection. These are ordered as pairs (transmitter and receiver) and are shipped under one catalog number. Each GuardShield Safe 4 PAC pair is shipped with mounting brackets. After selecting the appropriate Safe 4 PAC, ensure that the appropriate cordsets, interfaces and accessories are ordered.

Protected Height [mm (in.)]	Number of Beams	Beam Spacing	Pair Weight [kg (lbs)]	Cat. No.
600 (23.6)	2	500 mm	4.0 (8.8)	445L-P4S2500YD
840 (33.0)	3	400 mm	4.5 (9.9)	445L-P4S3400YD
960 mm (37.8 in.)	4	300 mm	4.8 (10.6)	445L-P4S4120YD

Note: The cat. nos. listed above are pair cat. nos. designated by the "P" in the cat. no. To specify a transmitter or receiver, replace the "P" with a "T" for transmitter and "R" for a receiver. The GuardShield Safe 4 PAC requires a 5-pin M12 cordset for the transmitter and the receiver.



ATTENTION: The 30 mm long range PAC systems with 5...30 m (16.4...98.4 ft) operating range are designed as a long range system and cannot be used in applications with less than 5 m (16.4 ft) operating range.

Required Logic Interfaces

Description	Safety Outputs	Auxiliary Outputs	Terminals	Reset Type	Power Supply	Cat. Page No.	Cat. No.
Single-Function Safety Relays for 2 N.C. Contact Switch							
MSR127RP	3 N.O.	1 N.C.	Removable (Screw)	Monitored Manual	24V AC/DC	MSR127RP/TP	440R-N23135
MSR127TP	3 N.O.	1 N.C.	Removable (Screw)	Auto./Manual	24V AC/DC	MSR127RP/TP	440R-N23132
MSR126	2 N.O.	None	Fixed	Auto./Manual	24V AC/DC	MSR126R/T	440R-N23117
Modular Safety Relays							
MSR211P Base 2 N.C. only	2 N.O.	1 N.C.	Removable	Auto./Manual or Monitored Manual	24V DC from the base unit	MSR211P	440R-H23177
MSR221P Input Module	–	–	Removable	–	24V DC from the base unit	MSR221P	440R-H23179
MSR310P Base	MSR300 Series Output Modules	3 PNP Solid State	Removable	Auto./Manual Monitored Manual	24V DC	MSR310P	440R-W23219
MSR320 Input Module	–	2 PNP Solid State	Removable	–	24V DC from the base unit	MSR320P	440R-W23218
Muting Modules							
MSR22LM	2 N.O.	1 N.C.	Removable	Auto./Manual	24V DC	MSR22LM	440R-P23071
MSR42 (requires optical interface to configure 445L-AF6150)	2 PNP	2 PNP, configurable	Removable	Auto./manual or manual monitored	24V DC	MSR42 Micro 400 Controller/Muting Module	440R-P226AGS-NNR
Muting Box	2 PNP	2 PNP	M12/5-pin M12/8-pin	Manual (Auto. configurable)	24V DC	Muting Controller Box	445L-AMUTBOX1

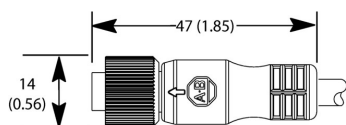
Cordsets—Transmitters and receivers both use 5-pin M12 cordsets

Note: Unshielded cordsets are most commonly used for safety light curtains, however, shielded cordsets are also offered to increase immunity to electrical interference.

Female Connector (Sensor End)		Cable			Cat. No.
Face View of Female	Connector Style	Pin/Wire Color	Wire Rating	Length [m (ft)]	
	Straight Female	1 Brown 2 White 3 Blue 4 Black 5 Grey	22 AWG 250V 4 A	2 (6.56)	889D-F5AC-2
				5 (16.4)	889D-F5AC-5
				10 (32.8)	889D-F5AC-10
				15 (49.2)	889D-F5AC-15
				20 (65.6)	889D-F5AC-20
				30 (98.4)	889D-F5AC-30
	Shielded Straight Female	1 Brown 2 White 3 Blue 4 Black 5 Grey	22 AWG 300V 4 A	2 (6.56)	889D-F5FC-J2
				5 (16.4)	889D-F5FC-J5
				10 (32.8)	889D-F5FC-J10
				15 (49.2)	889D-F5FC-J15
				20 (65.6)	889D-F5FC-J20
				30 (98.4)	889D-F5FC-J30

Cordsets Approximate Dimensions [mm (in.)]


Dimensions are not intended to be used for installation purposes.



Straight Female

Accessories

Muting Sensors

Sensor Type	Connection Location	Type	Cat. No.
Standard ON/OFF	Connected directly to muting module	Light switching	42GRU-9200-QD
Standard ON/OFF	Receiver (connected directly to the muting module)		42GRR-9000-QD*
Standard ON/OFF	Connected directly to muting module		42GRU-9000-QD*
Polarized Retroreflective	Three inch standard reflector		92-39
Standard ON/OFF	Connected directly to muting module		42GRU-9200-QD*
Polarized Retroreflective	Three inch standard reflector		92-39
Mechanical Limit Switch	Connected directly to muting module (operating lever must be selected separately)		802M-NX10*
Muting lamp		Two cat. nos. make this assembly.	855E-24TL7 855E-BVMC
* Use with 4-pin, DC micro cordset when connecting to muting modules MSR22LM or MSR42 (5 m length shown). 1 m, 2 m, 3 m, and 5 m lengths available.			889D-F4AC-5

Optional Accessories

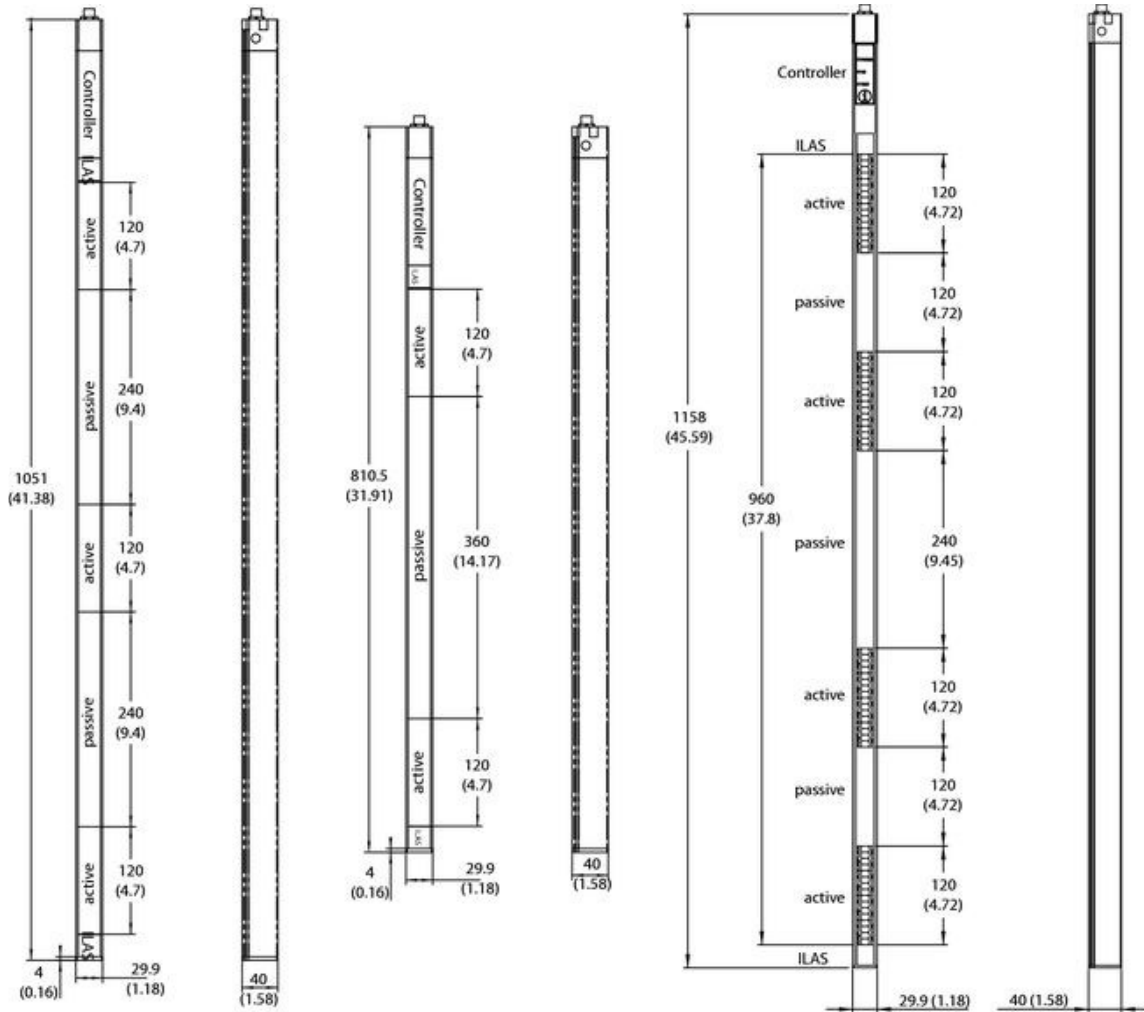
Description	Cat. No.
 Standard kit (4 pieces – supplied with each pair)	445L-AF6140
 180° Adjustable kit (two kits required per pair)	445L-AF6141
 Shock Mount Kit (2 kits required per pair of light curtains)	445L-AF6142
 Vertical mounting kit (two kits required per pair)	445L-AF6144
 MSR42 Multifunction Module (requires Cat. No. 440L-AF6150 to program)	440R-P226AGS-NNR
 MSR45E – Safety relay expansion module for MSR42	440R-P4NANS
 USB optical interface software configuration tool used to configure the MSR42 (Used to configure the MSR42 module or get diagnostic information from the Safe 4.)	445L-AF6150
 Ribbon cable – to connect one MSR45E to an MSR42	440R-ACABL1
 Ribbon cable – to connect two MSR45Es to an MSR42	440R-ACABL2
 Ribbon cable – to connect three MSR45Es to an MSR42	440R-ACABL3
 Mounting stand	440L-AMSTD 445L-AMSTD2M

Corner Mirror for Multi-Sided Guarding

GuardShield Safe 4	Narrow Mirror Short-Range 0...4 m	Cat. No.	Wide Mirror Long-Range 4...15 m	Cat. No.
445L-P4S2500YD		440L-AM0750900		440L-AM1250900
445L-P4S3400YD		440L-AM0751200		440L-AM1251200
445L-P4S4120YD		440L-AM0751200		440L-AM1251200

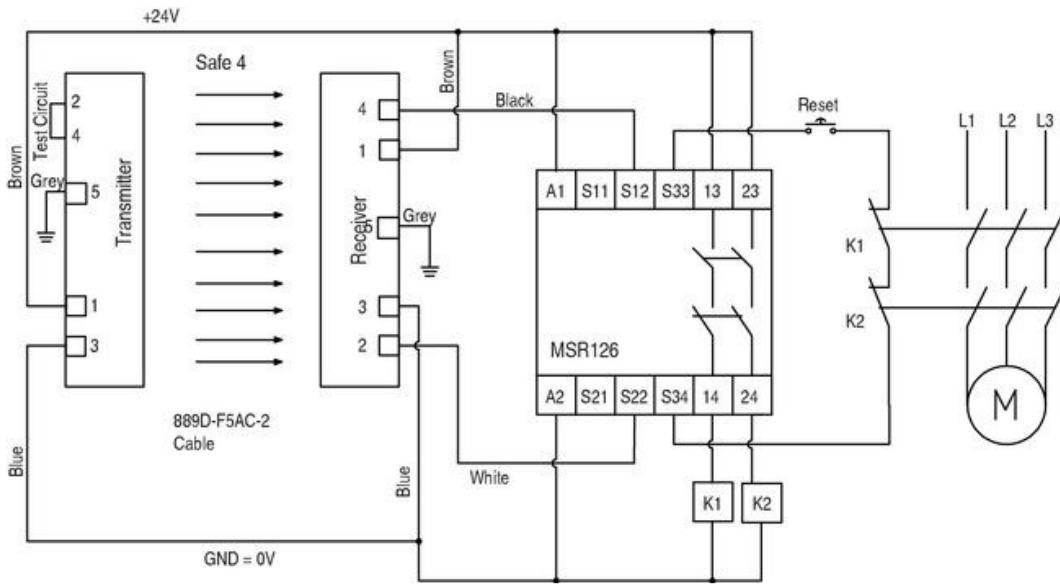
Approximate Dimensions

Dimensions are shown in mm (in.). Dimensions are not intended to be used for installation purposes.



Wiring Diagram for Connection to MSR126

Wiring diagram is not intended to be used for installation purposes.



Wiring Diagram for Connection to MSR127

