

Safety Light Curtains

GuardShield Type 4



Description

The Allen-Bradley Guardmaster GuardShield safety light curtain is an economical, fully featured, Type 4 safety light curtain in a uniquely styled housing. GuardShield safety light curtains are general purpose presence sensing devices designed for use on hazardous machinery providing point of operation, as well as perimeter and access guarding. This self-contained, two box, safety light curtain has DIP switch selectable operating modes and are available in both 14mm and 30mm resolutions.

Modes of operation such as fixed and floating blanking, beam coding, start/restart interlock, external device monitoring (EDM), machine test signal, are selected by dip-switches settings. These dip-switches are located beneath a security door, which are conveniently located on both the transmitter and receiver end caps.

The GuardShield's torsionally rigid, extruded aluminium, polyurethane powder coated housing, combined with an Environmental rating of IP65, allows the GuardShield to be used in guarding applications across a broad range of industries.

Features

- Fixed blanking—teachable
- Floating blanking—one or two beam
- Beam coding
- External Device Monitoring (EDM)
- Start/restart interlock

Specifications

Standards	EN 61496 Parts 1 & 2
Approvals	TUV and CE marked for all applicable directives; UL 61496, UL 1998
Protected Height	160mm...1760mm (6.3in...69.3in) in 160mm (6.3in) increments
Scanning Range/Resolution	0.3-7m/14mm (0.98-22.9ft/0.55in) 0.3m-18m/30mm (0.98-59ft/1.18in)
Resolution	14mm/30mm (0.55in/1.18in)
Enclosure Rating	IP 65
Connection Type	Transmitter: 4-pin micro QD Receiver: 8-pin micro QD
Supply Voltage U_v Maximum Residual Ripple	24V DC \pm 20% 5 Vss
Power Consumption	0.9...2 Amps (no-load) 0.4A max (no load)
Synchronization	Optical, without separate synchronization channel
Outputs—Safety	2 x PNP, 0.5 A, short circuit protected
Output—Non safety	1 x PNP 0.5A max.
Minimum Output Voltage	$U_v - 2V$
Response Time	Depending on number of beams
Protection	Short circuit and overload
Cable Length	30m (100ft) max.
Mode of Operation	Manual or automatic restart
Safety Category	Type 4 (self-checking) per EN 61496
Operating Ambient Temp.	-10°C to 55°C (14°F to 131°F)
Air Humidity	15%...95% (not condensing)
Storage Temperature	-25°C to 75°C (-13°F to 167°F)
Approximate Dimensions Height Housing Cross Section	Length dependent upon protected height; (see dimensional drawings) 40 mm x 50 mm (1.57in x 1.96in)
Transmitter Wavelength	870nm
Vibration Resistance	IEC60068-2-6, frequency 10Hz to 55Hz Amplitude: 0.35mm (0.01in)
Shock	IEC60068-2-29 acceleration 10g, pulse duration 16ms

Note: The external power supply must be capable of buffering brief power failures of 20ms as specified in IEC 60204.

Product Selection

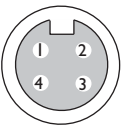
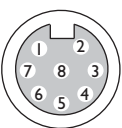
1. Safety Light Curtains—Standard System

The Allen-Bradley Guardmaster GuardShield safety light curtains are ordered as pairs—transmitter and receiver—and are shipped under one part number. Each GuardShield transmitter and receiver is packaged with two right angle mounting brackets. After selecting the appropriate light curtain pair, ensure that required interfaces and accessories are ordered as well.

Protected Height mm (inch)	Resolution mm (inch)	No. Beams	Catalogue Number	Protected Height mm (inch)	Resolution mm (inch)	No. Beams	Catalogue Number
160 (6.3)	14 (0.55)	16	440L-P4J0160YD	160 (6.3)	30 (1.18)	8	440L-P4K0160YD
320 (12.6)	14 (0.55)	32	440L-P4J0320YD	320 (12.6)	30 (1.18)	16	440L-P4K0320YD
480 (18.9)	14 (0.55)	48	440L-P4J0480YD	480 (18.9)	30 (1.18)	24	440L-P4K0480YD
640 (25.2)	14 (0.55)	64	440L-P4J0640YD	640 (25.2)	30 (1.18)	32	440L-P4K0640YD
800 (31.5)	14 (0.55)	80	440L-P4J0800YD	800 (31.5)	30 (1.18)	40	440L-P4K0800YD
960 (37.8)	14 (0.55)	96	440L-P4J0960YD	960 (37.8)	30 (1.18)	48	440L-P4K0960YD
1120 (44.1)	14 (0.55)	112	440L-P4J1120YD	1120 (44.1)	30 (1.18)	56	440L-P4K1120YD
1280 (50.4)	14 (0.55)	128	440L-P4J1280YD	1280 (50.4)	30 (1.18)	64	440L-P4K1280YD
1440 (56.7)	14 (0.55)	144	440L-P4J1440YD	1440 (56.7)	30 (1.18)	72	440L-P4K1440YD
1600 (63.0)	14 (0.55)	160	440L-P4J1600YD	1600 (63.0)	30 (1.18)	80	440L-P4K1600YD
1760 (69.1)	14 (0.55)	176	440L-P4J1760YD	1760 (69.1)	30 (1.18)	88	440L-P4K1760YD

Note: The GuardShield transmitter requires a 4-pin cable and the receiver requires an 8-pin cable.

2. Cordsets—2 Required (one for transmitter and one for receiver)

Female Connector (Sensor End)		Cable			Catalogue Number
Face View of Female	Connector Style	Pin/Wire Colour	Wire Rating	Length—m (ft)	
Transmitter					
	Straight	1 Brown 2 White 3 Blue 4 Black	22AWG 300V 3A	2 (6.5)	889D-F4AC-2
				5 (16.4)	889D-F4AC-5
				10 (32.8)	889D-F4AC-10
				15 (49.2)	889D-F4AC-15
				20 (65.6)	889D-F4AC-20
				30 (98.4)	889D-F4AC-30
Receiver					
	Straight	1 White 2 Brown 3 Green 4 Yellow 5 Grey 6 Pink 7 Blue 8 Red	24AWG 36V DC/30V AC 1.5A	2 (6.5)	889D-F8AB-2
				5 (16.4)	889D-F8AB-5
				10 (32.8)	889D-F8AB-10
				15 (49.2)	889D-F8AB-15
				20 (65.6)	889D-F8AB-20
				30 (98.4)	889D-F8AB-30

Presence Sensing Safety Devices

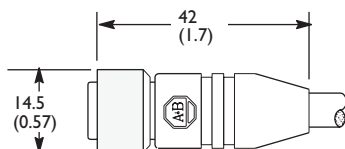
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Product Selection (continued)

Cordsets Approximate Dimensions—mm (inches)




Dimensions are not intended to be used for installation purposes.




Straight female

Illustrations are not drawn to scale.

3. Safety Relay Interfaces—Optional







Relay	Input	Safety Outputs	Auxiliary Outputs	Terminals	Power Supply	Reset	Catalogue Number
 MSR127RP	1NC, 2NC, or Light Curtain	3 N.O.	1 N.C.	Removable	24V AC/DC	Automatic/Manual	440R-N23132
						Monitored Manual	440R-N23135
					115V AC	Automatic/Manual	440R-N23131
						Monitored Manual	440R-N23134
					230V AC	Automatic/Manual	440R-N23130
						Monitored Manual	440R-N23133
 MSR126	Light Curtain or Single Channel (MSR126T)	2 N.O.	None	Fixed	24V AC/DC	Automatic/Manual	440R-N23117
	Dual Channel (MSR126.1T)				115V AC		440R-N23116
					230V AC		440R-N23115
					24V AC/DC		440R-N23114
	Light Curtain or Single Channel (MSR126R)				115V AC		440R-N23113
					230V AC		440R-N23112
					24V AC/DC	440R-N23123	
	Dual Channel (MSR126.1R)				Monitored Manual	115V AC	440R-N23122
						230V AC	440R-N23121
						24V AC/DC	440R-N23120
						115V AC	440R-N23119
						230V AC	440R-N23118
 MSR131RTP	Light Curtain or Safety Mat	3 N.O.	2 N.C. 2 PNP Solid State	Removable	24V AC/DC	Automatic/Manual or Monitored Manual	440R-C23139
					115V AC		440R-C23137
					230V AC		440R-C23136

4. Safety Relay Interfaces—Optional (Used for muting applications)

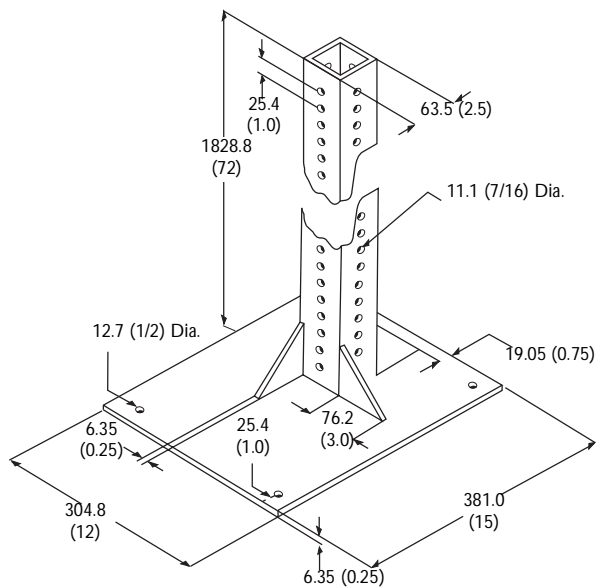
Relay	Input Voltage	Reset	Floating Blanking	Fixed Blanking	PSDI	Muting	Outputs	More Details	Catalogue Number
 MSR22LM	24V DC	Manual	no	no	yes	yes	2 N.O. Safety 1 N.C. Aux.	4-21	440R-P23071

Product Selection (continued)

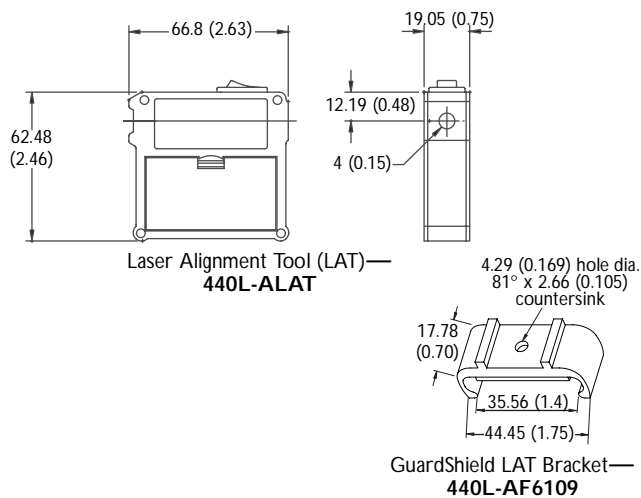
5. Accessories—Optional

	Description	Catalogue Number
	Steel L-shaped end cap mounting bracket (4 per package) Note: Four brackets supplied with each GuardShield pair.	440L-AF6101
	Aluminium middle mounting bracket for vibratory applications	440L-AF6108
	Power supply: Output 24V DC, 3 Amps, 72W	1606-XLP72E
	Laser Alignment Tool	440L-ALAT
	Mounting Stand	440L-AMSTD
	GuardShield Laser Alignment Tool Bracket	440L-AF6109

Mounting Stand—440L-AMSTD



Laser Alignment Tool



Presence Sensing Safety Devices

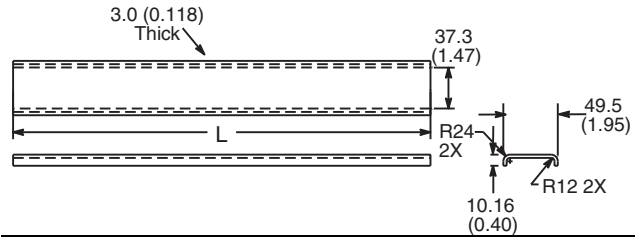
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Weld Shields

The GuardShield weld shields are sold as pairs in the same lengths as the protective heights of the GuardShield safety light curtain.

These polycarbonate weld shields are designed as disposable devices whose purpose is to protect the front window of the GuardShield from damage.



GS Weld Shield Catalog Numbers	Dimension "L" mm (in)
440L-AGWS0160	175.3 (6.9)
440L-AGWS0320	335.3 (13.20)
440L-AGWS0480	495.3 (19.50)
440L-AGWS0640	655.3 (25.80)
440L-AGWS0800	815.3 (32.10)
440L-AGWS0960	975.4 (38.40)
440L-AGWS1120	1135.4 (44.70)
440L-AGWS1280	1295.4 (51.00)
440L-AGWS1440	1455.4 (57.30)
440L-AGWS1600	1615.4 (63.60)
440L-AGWS1760	1778 (70.00)

6. Corner Mirror for Multi-Sided Guarding

Specially constructed glass mirrors for 2 and 3 sided safeguarding applications.

Note: Each mirror reduces maximum scan range by 10% per mirror.



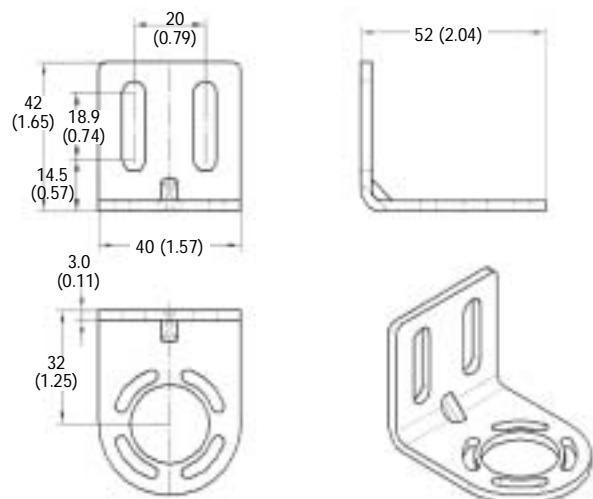
For GuardShield Models	Catalogue Number
160	440L-AM1200300
320	440L-AM1200450
480	440L-AM1200600
640	440L-AM1200750
800	440L-AM1200900
960	440L-AM1201050
1120	440L-AM1201200
1280	440L-AM1201350
1440	440L-AM1201500
1600	440L-AM1201650
1760	440L-AM1201800

Mounting kit for mirrors. Each kit contains 1 bracket with fasteners. Order 2 kits per mirror.	440L-AM120BRK
Mounting stand for mirror and light curtains (see page 2-21)	440L-AMSTD

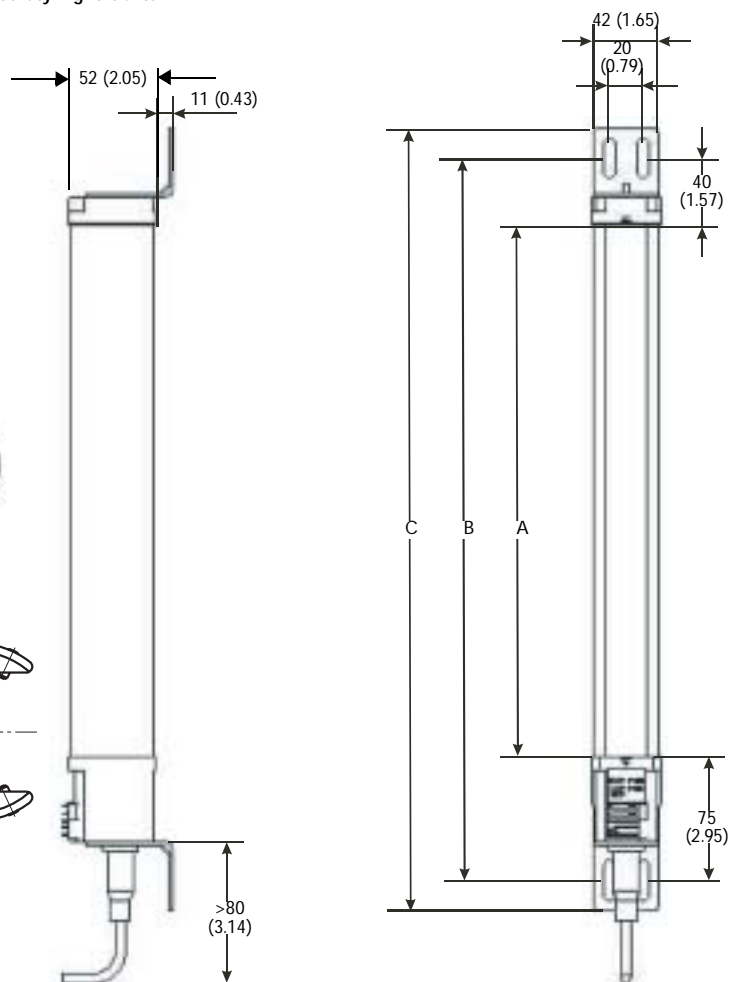
Approximate Dimensions—mm (inches)

Dimensions are not intended to be used for installation purposes.

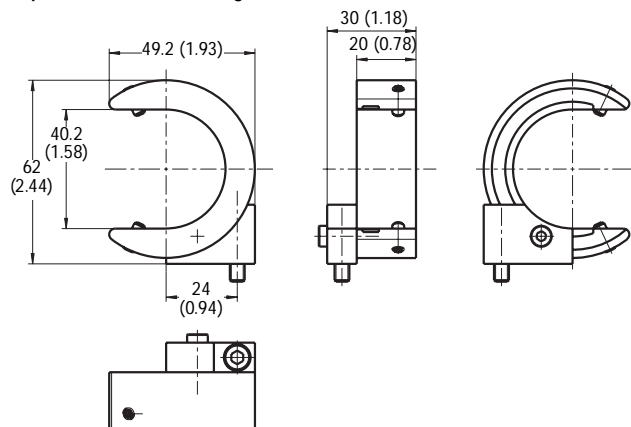
Required Mounting Bracket (included with Light Curtain)



Safety Light Curtain



Optional Middle Mounting Bracket



Note: Should be used in vibration applications.

Type	A Protective Height	B Mounting Value	C Total Length
440L-P4J0160YD	160 ±0.5	276	312 ±1.5
440L-P4J0320YD	320 ±0.5	436	472 ±1.5
440L-P4J0480YD	480 ±0.5	596	632 ±1.5
440L-P4J0640YD	640 ±0.5	756	792 ±1.5
440L-P4J0800YD	800 ±0.6	916	952 ±1.5
440L-P4J0960YD	960 ±0.6	1076	1112 ±1.5
440L-P4J1120YD	1120 ±0.6	1236	1272 ±1.8
440L-P4J1280YD	1280 ±0.7	1396	1432 ±1.8
440L-P4J1440YD	1440 ±0.7	1556	1592 ±1.8
440L-P4J1600YD	1600 ±0.8	1716	1752 ±2.0
440L-P4J1760YD	1760 ±0.8	1876	1912 ±2.0

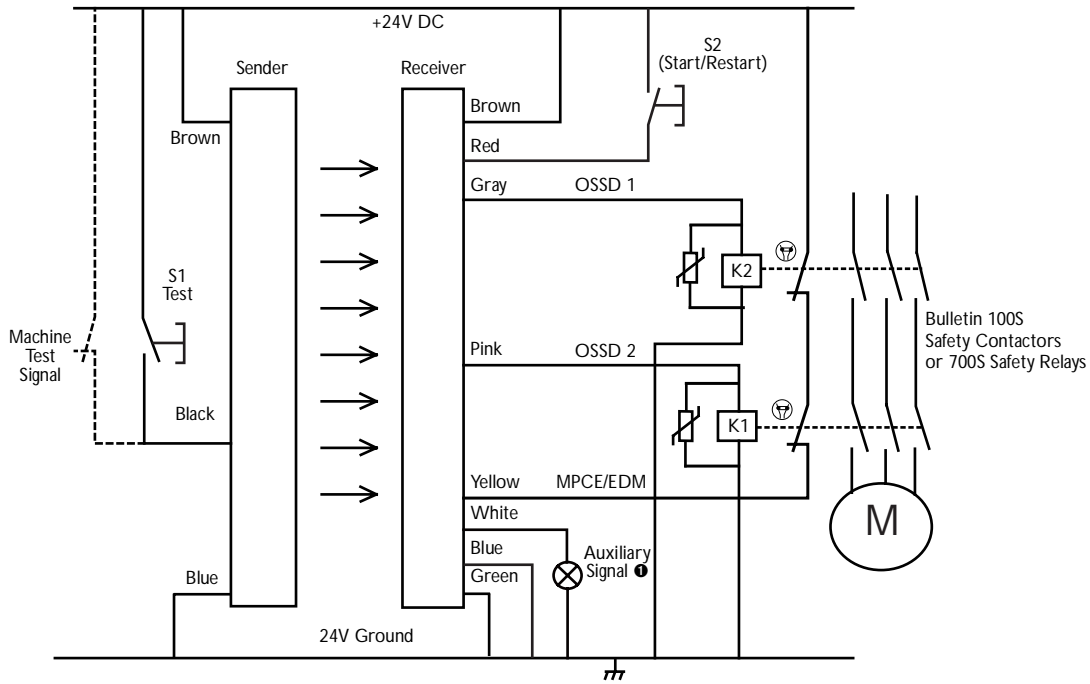
Presence Sensing Safety Devices

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Wiring Diagram

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



● Auxiliary output is non safety. Can be connected to a lamp, motor or status to a PLC.

- K1, K2 Safety relay or safety contactor for OSSD 1 and OSSD 2 connection
- S1 Switch for external system test (optional)
- S2 Switch for reset of light curtain from start/restart interlock

To MSR127 Safety Relay Module

