

Presence Sensing Safety Devices  
**POC Type 4 Safety Light Curtains**  
 GuardShield

**GuardShield with Integrated Laser Alignment and ArmorBlock Guard I/O Connectivity**

Protected Height [mm (in.)]	Resolution [mm (in.)]	Number of Beams	Cat. No.	Protected Height [mm (in.)]	Resolution [mm (in.)]	Number of Beams	Cat. No.
320 (12.6)	14 (0.55)	32	440L-P4JL0320YA	320 (12.6)	30 (1.18)	16	440L-P4KL0320YA
480 (18.9)	14 (0.55)	48	440L-P4JL0480YA	480 (18.9)	30 (1.18)	24	440L-P4KL0480YA
640 (25.2)	14 (0.55)	64	440L-P4JL0640YA	640 (25.2)	30 (1.18)	32	440L-P4KL0640YA
800 (31.5)	14 (0.55)	80	440L-P4JL0800YA	800 (31.5)	30 (1.18)	40	440L-P4KL0800YA
960 (37.8)	14 (0.55)	96	440L-P4JL0960YA	960 (37.8)	30 (1.18)	48	440L-P4KL0960YA
1120 (44.1)	14 (0.55)	112	440L-P4JL1120YA	1120 (44.1)	30 (1.18)	56	440L-P4KL1120YA
1280 (50.4)	14 (0.55)	128	440L-P4JL1280YA	1280 (50.4)	30 (1.18)	64	440L-P4KL1280YA
1440 (56.7)	14 (0.55)	144	440L-P4JL1440YA	1440 (56.7)	30 (1.18)	72	440L-P4KL1440YA
1600 (63.0)	14 (0.55)	160	440L-P4JL1600YA	1600 (63.0)	30 (1.18)	80	440L-P4KL1600YA

**Note:** GuardShields are sold in pairs. To select a transmitter or receiver, replace the "P" in the cat. no. with an "R" for a receiver. The GuardShield standard transmitter is used in the pair. To order a transmitter, replace the "P" with a "T" and the "A" with a "D."

**Cascadable GuardShield with Integrated Laser Alignment and ArmorBlock Guard I/O Connectivity**

Protected Height [mm (in.)]	Resolution [mm (in.)]	Number of Beams	Cat. No.	Protected Height [mm (in.)]	Resolution [mm (in.)]	Number of Beams	Cat. No.
320 (12.6)	14 (0.55)	32	440L-C4JL0320YA	320 (12.6)	30 (1.18)	16	440L-C4KL0320YA
480 (18.9)	14 (0.55)	48	440L-C4JL0480YA	480 (18.9)	30 (1.18)	24	440L-C4KL0480YA
640 (25.2)	14 (0.55)	64	440L-C4JL0640YA	640 (25.2)	30 (1.18)	32	440L-C4KL0640YA
800 (31.5)	14 (0.55)	80	440L-C4JL0800YA	800 (31.5)	30 (1.18)	40	440L-C4KL0800YA
960 (37.8)	14 (0.55)	96	440L-C4JL0960YA	960 (37.8)	30 (1.18)	48	440L-C4KL0960YA
1120 (44.1)	14 (0.55)	112	440L-C4JL1120YA	1120 (44.1)	30 (1.18)	56	440L-C4KL1120YA
1280 (50.4)	14 (0.55)	128	440L-C4JL1280YA	1280 (50.4)	30 (1.18)	64	440L-C4KL1280YA
1440 (56.7)	14 (0.55)	144	440L-C4JL1440YA	1440 (56.7)	30 (1.18)	72	440L-C4KL1440YA
1600 (63.0)	14 (0.55)	160	440L-C4JL1600YA	1600 (63.0)	30 (1.18)	80	440L-C4KL1600YA

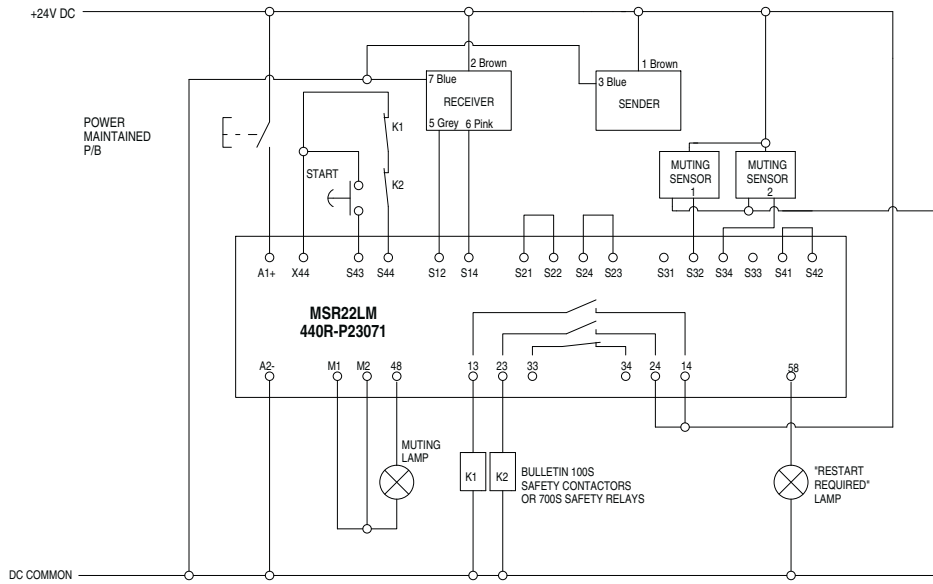
**Note:** Cascadable GuardShields are sold in pairs. To select a transmitter or receiver replace the "C" with an "F" for a cascadable receiver. The cascadable GuardShield standard transmitter is used in these pairs. To order a cascadable transmitter, replace the "C" with a "G" and the "A" with a "D" to specify the appropriate transmitter cat. no.

**Recommended Logic Interfaces**

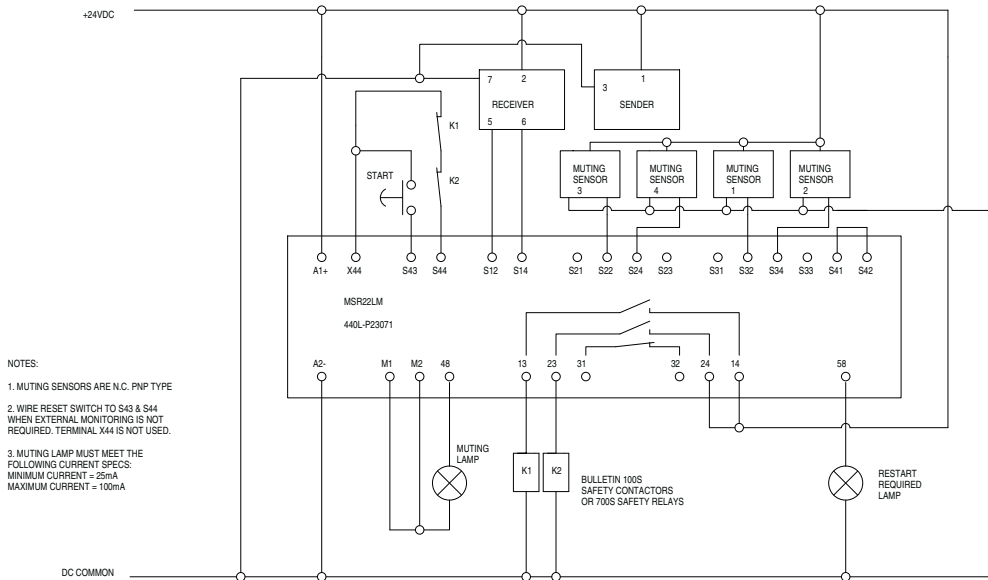
Description	Safety Outputs	Auxiliary Outputs	Terminals	Reset Type	Power Supply	Cat. Page No.	Cat. No.
<b>Single-Function Safety Relays for 2 N.C. Contact Switch</b>							
MSR127RP	3 N.O.	1 N.C.	Removable (Screw)	Monitored Manual	24V AC/DC	5-26	<b>440R-N23135</b>
MSR127TP	3 N.O.	1 N.C.	Removable (Screw)	Auto./Manual	24V AC/DC	5-26	<b>440R-N23132</b>
MSR126	2 N.O.	None	Fixed	Auto./Manual	24V AC/DC	5-24	<b>440R-N23117</b>
<b>Modular Safety Relays</b>							
MSR210P Base 2 N.C. only	2 N.O.	1 N.C. and 2 PNP Solid State	Removable	Auto./Manual or Monitored Manual	24V DC from the base unit	5-82	440R-H23176
MSR211	2 N.O.	1 N.C.	Removable	Auto./Manual or Monitored Manual	24V DC from the base unit	5-84	440R-H23177
MSR310P Base	MSR300 Series Output Modules	3 PNP Solid State	Removable	Auto./Manual Monitored Manual	24V DC	5-102	440R-W23219
MSR320P Input Module	—	2 PNP Solid State	Removable	—	24V DC from the base unit	5-106	440R-W23218
<b>Muting Modules</b>							
MSR22LM	2 N.O.	1 N.C.	Removable	Auto./Manual	24V DC	5-48	<b>440R-P23071</b>
MSR42 (requires optical interface to configure 445L-AF6150)	2 PNP	2 PNP, configurable	Removable	Auto./manual or manual monitored	24V DC	5-52	<b>440R-P226AGS-NNR</b>

Presence Sensing Safety Devices  
**POC Type 4 Safety Light Curtains**  
 GuardShield

GuardShield Light Curtain Connected to MSR22LM with Two Sensor Muting



GuardShield Light Curtain Connected to MSR22LM with Four Sensor Muting



2-Opto-electronics

Presence Sensing Safety Devices  
**POC Type 4 Safety Light Curtains**  
 GuardShield Safe 4

Product Selection

Standard System

The Allen-Bradley Guardmaster GuardShield Safe 4 safety light curtains are offered in 14 mm and 30 mm resolutions, are ordered as pairs—transmitter and receiver—and are shipped under one cat. no. Each GuardShield Safe 4 pair is shipped with standard mounting brackets. After selecting the appropriate Safe 4 protected height and resolution, ensure that the appropriate cordsets, interfaces, and accessories are ordered.

Protected Height [mm (in.)]	14 mm (0.55 in.) Number of Beams	30 mm (1.18 in.) Number of Beams	Pair Weight [kg (lbs)]	Cat. No.	
				14 mm (0.55 in.)	30 mm (1.18 in.)
120 (4.7)	16	8	1.0 (2.2)	445L-P4L0120YD	445L-P4S0120YD
240 (9.4)	32	16	1.4 (3.1)	<b>445L-P4L0240YD</b>	445L-P4S0240YD
360 (14.2)	48	94	1.8 (4.0)	445L-P4L0360YD	445L-P4S0360YD
480 (19.9)	64	94	2.2 (4.9)	445L-P4L0480YD	445L-P4S0480YD
600 (23.6)	80	94	2.6 (5.7)	445L-P4L0600YD	<b>445L-P4S0600YD</b>
720 (28.3)	96	94	3.0 (6.6)	445L-P4L0720YD	445L-P4S0720YD
840 (33.1)	112	94	3.5 (7.7)	445L-P4L0840YD	445L-P4S0840YD
960 (37.8)	128	94	4.0 (8.8)	445L-P4L0960YD	<b>445L-P4S0960YD</b>
1080 (42.5)	144	94	4.0 (8.8)	445L-P4L1080YD	445L-P4S1080YD
1200 (47.2)	160	94	4.5 (9.9)	445L-P4L1200YD	<b>445L-P4S1200YD</b>
1320 (52.0)	176	94	5.0 (11.0)	445L-P4L1320YD	445L-P4S1320YD
1440 (56.7)	172	94	5.5 (12.1)	445L-P4L1440YD	445L-P4S1440YD
1560 (61.4)	188	102	6.0 (13.2)	445L-P4L1560YD	445L-P4S1560YD
1680 (66.1)	204	102	6.5 (14.3)	445L-P4L1680YD	445L-P4S1680YD
1800(70.9)	220	110	7.0 (15.4)	445L-P4L1800YD	445L-P4S1800YD
1920 (75.6)	236	118	7.5 (16.5)	445L-P4L1920YD	445L-P4S1920YD

**Note:** The cat. nos. listed above are pair cat. nos., to specify a transmitter or receiver only, replace the "P" in the cat. no. with a "T" for transmitter or an "R" for receiver.

Required Logic Interfaces

Description	Safety Outputs	Auxiliary Outputs	Terminals	Reset Type	Power Supply	Cat. Page No.	Cat. No.
<b>Single-Function Safety Relays for 2 N.C. Contact Switch</b>							
MSR127RP	3 N.O.	1 N.C.	Removable (Screw)	Monitored Manual	24V AC/DC	5-26	<b>440R-N23135</b>
MSR127TP	3 N.O.	1 N.C.	Removable (Screw)	Auto./Manual	24V AC/DC	5-26	<b>440R-N23132</b>
MSR126	2 N.O.	None	Fixed	Auto./Manual	24V AC/DC	5-24	<b>440R-N23117</b>
<b>Modular Safety Relays</b>							
MSR210P Base 2 N.C. only	2 N.O.	1 N.C. and 2 PNP Solid State	Removable	Auto./Manual or Monitored Manual	24V DC from the base unit	5-82	440R-H23176
MSR220P Input Module	—	—	Removable	—	24V DC	5-86	440R-H23178
MSR310P Base	MSR300 Series Output Modules	3 PNP Solid State	Removable	Auto./Manual Monitored Manual	24V DC	5-102	440R-W23219
MSR320P Input Module	—	2 PNP Solid State	Removable	—	24V DC from the base unit	5-106	440R-W23218
<b>Muting Modules</b>							
MSR22LM	2 N.O.	1 N.C.	Removable	Auto./Manual	24V DC	5-48	<b>440R-P23071</b>
MSR42 (requires optical interface to configure 445L-AF6150	2 PNP	2 PNP, configurable	Removable	Auto./manual or manual monitored	24V DC	5-52	<b>440R-P226AGS-NNR</b>

Presence Sensing Safety Devices  
**POC Type 2 Safety Light Curtains**  
 GuardShield Type 2

Product Selection

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 Type 2 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.

Resolution [mm (in.)]	Number of Beams	Protective Height—mm (in)	Pair Weight [kg (lb)]	Cat. No.	
				Guard Only	Restart Interlock with EDM
30 (1.18)	8	160 (6.3)	0.9 (1.9)	440L-P2KA0160YD	440L-P2KD0160YD
30 (1.18)	16	320 (12.6)	1.1 (2.4)	440L-P2KA0320YD	440L-P2KD0320YD
30 (1.18)	24	480 (18.9)	1.6 (3.5)	<b>440L-P2KA0480YD</b>	440L-P2KD0480YD
30 (1.18)	32	640 (25.2)	2.0 (4.4)	<b>440L-P2KA0640YD</b>	440L-P2KD0640YD
30 (1.18)	40	800 (31.5)	2.5 (5.5)	440L-P2KA0800YD	440L-P2KD0800YD
30 (1.18)	48	960 (37.8)	2.9 (6.4)	440L-P2KA0960YD	440L-P2KD0960YD
30 (1.18)	56	1120 (44.1)	3.4 (7.5)	440L-P2KA1120YD	440L-P2KD1120YD
30 (1.18)	64	1280 (50.4)	3.8 (8.4)	440L-P2KA1280YD	440L-P2KD1280YD
30 (1.18)	72	1440 (56.7)	4.3 (9.5)	440L-P2KA1440YD	440L-P2KD1440YD
30 (1.18)	80	1600 (63.0)	4.7 (10.4)	440L-P2KA1600YD	440L-P2KD1600YD
30 (1.18)	88	1760 (69.1)	5.2 (11.5)	440L-P2KA1760YD	440L-P2KD1760YD

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

Recommended Logic Interfaces

Description	Safety Outputs	Auxiliary Outputs	Terminals	Reset Type	Power Supply	Cat. Page No.	Cat. No.
<b>Single-Function Safety Relays for 2 N.C. Contact Switch</b>							
MSR127RP	3 N.O.	1 N.C.	Removable (Screw)	Monitored Manual	24V AC/DC	5-26	<b>440R-N23135</b>
MSR127TP	3 N.O.	1 N.C.	Removable (Screw)	Auto./Manual	24V AC/DC	5-26	<b>440R-N23132</b>
MSR126	2 N.O.	None	Fixed	Auto./Manual	24V AC/DC	5-24	<b>440R-N23117</b>
<b>Modular Safety Relays</b>							
MSR210P Base 2 N.C. only	2 N.O.	1 N.C. and 2 PNP Solid State	Removable	Auto./Manual or Monitored Manual	24V DC from the base unit	5-82	440R-H23176
MSR220P Input Module	—	—	Removable	—	24V DC	5-86	440R-H23178
MSR310P Base	MSR300 Series Output Modules	3 PNP Solid State	Removable	Auto./Manual Monitored Manual	24V DC	5-102	440R-W23219
MSR320P Input Module	—	2 PNP Solid State	Removable	—	24V DC from the base unit	5-106	440R-W23218
<b>Muting Modules</b>							
MSR22LM	2 N.O.	1 N.C.	Removable	Auto./Manual	24V DC	5-48	<b>440R-P23071</b>
MSR42 (requires optical interface to configure 445L-AF6150)	2 PNP	2 PNP, configurable	Removable	Auto./manual or manual monitored	24V DC	5-52	<b>440R-P226AGS-NNR</b>

**Note:** The use of a category 4 safety relay module does not improve the category rating of the safety system beyond the category 2 rating of the Type 2 GuardShield light curtain.

**Product Selection**

**Standard System Safety Light Curtain**

The Allen-Bradley Guardmaster GuardShield Safe 2 safety light curtains are offered in 30 mm resolution, are ordered as pairs—transmitter and receiver—and are shipped under one cat. no. Each GuardShield Safe 2 pair are shipped with 180° mounting brackets. After selecting the appropriate light curtain pair, ensure that the appropriate cables, interfaces, and accessories are ordered.

Protected Height [mm (in.)]	Resolution [mm (in.)]	Number of Beams	Pair Weight [kg (lbs)]	Cat. No.
120 (4.7)	30 (1.18)	8	1.0 (2.2)	445L-P2S0120YD
240 (9.4)	30 (1.18)	16	1.4 (3.09)	445L-P2S0240YD
360 (14.2)	30 (1.18)	24	1.8 (3.97)	445L-P2S0360YD
480 (19.9)	30 (1.18)	32	2.2 (4.85)	445L-P2S0480YD
600 (23.6)	30 (1.18)	40	2.6 (5.73)	445L-P2S0600YD
720 (28.3)	30 (1.18)	48	3.0 (6.61)	445L-P2S0720YD
840 (33.1)	30 (1.18)	56	3.5 (7.72)	445L-P2S0840YD
960 (37.8)	30 (1.18)	64	4.0 (8.82)	445L-P2S0960YD
1080 (42.5)	30 (1.18)	72	4.0 (8.82)	445L-P2S1080YD
1200 (47.2)	30 (1.18)	80	4.5 (9.92)	445L-P2S1200YD
1320 (52.0)	30 (1.18)	88	5.0 (11.02)	445L-P2S1320YD
1440 (56.7)	30 (1.18)	86	5.5 (12.13)	445L-P2S1440YD
1560 (61.4)	30 (1.18)	94	6.0 (13.23)	445L-P2S1560YD
1680 (66.1)	30 (1.18)	102	6.5 (14.33)	445L-P2S1680YD
1800 (70.9)	30 (1.18)	110	7.0 (15.43)	445L-P2S1800YD
1920 (75.6)	30 (1.18)	118	7.5 (16.53)	445L-P2S1920YD

**Note:** The cat. nos. listed above are pair cat. nos., to specify a transmitter or receiver only, replace the "P" in the cat. no. with a "T" for transmitter or an "R" for receiver.

2-Opto-electronics

**Recommended Logic Interfaces**

Description	Safety Outputs	Auxiliary Outputs	Terminals	Reset Type	Power Supply	Cat. Page No.	Cat. No.
<b>Single-Function Safety Relays for 2 N.C. Contact Switch</b>							
MSR127RP	3 N.O.	1 N.C.	Removable (Screw)	Monitored Manual	24V AC/DC	5-26	<b>440R-N23135</b>
MSR127TP	3 N.O.	1 N.C.	Removable (Screw)	Auto./Manual	24V AC/DC	5-26	<b>440R-N23132</b>
MSR126	2 N.O.	None	Fixed	Auto./Manual	24V AC/DC	5-24	<b>440R-N23117</b>
<b>Modular Safety Relays</b>							
MSR210P Base 2 N.C. only	2 N.O.	1 N.C. and 2 PNP Solid State	Removable	Auto./Manual or Monitored Manual	24V DC from the base unit	5-82	440R-H23176
MSR220P Input Module	—	—	Removable	—	24V DC	5-86	440R-H23178
MSR310P Base	MSR300 Series Output Modules	3 PNP Solid State	Removable	Auto./Manual Monitored Manual	24V DC	5-102	440R-W23219
MSR320P Input Module	—	2 PNP Solid State	Removable	—	24V DC from the base unit	5-106	440R-W23218
<b>Muting Modules</b>							
MSR22LM	2 N.O.	1 N.C.	Removable	Auto./Manual	24V DC	5-48	<b>440R-P23071</b>
MSR42 (requires optical interface to configure 445L-AF6150)	2 PNP	2 PNP, configurable	Removable	Auto./manual or manual monitored	24V DC	5-52	<b>440R-P226AGS-NNR</b>

**Note:** The use of a category 4 safety relay module does not improve the category rating of the safety system beyond the Category 2 rating of the Type 2 light curtain in use.

# Presence Sensing Safety Devices

## PAC Type 4 Safety Light Curtains

### GuardShield PAC

#### Product Selection

#### PAC Safety Light Curtains—Standard

The Allen-Bradley Guardmaster GuardShield PAC safety light curtains are ordered as a pair—transmitter and receiver—and are shipped under one Cat. No. After selecting the appropriate Cat. No. ensure that the required interfaces and accessories are ordered as well.

Protected Height [mm (in.)]	Beam Spacing	Number of Beams	Cat. No.
520 (20.4)	500 mm (19.7 in.)	2	440L-P4A2500YD
820 (32.3)	400 mm (15.7 in.)	3	440L-P4A3400YD

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

**Note:** To select a transmitter or receiver substitute the "P" in the above cat. nos. with a "T" for a transmitter or an "R" for a receiver.

#### GuardShield PAC with Integrated Laser Alignment

Protected Height [mm (in.)]	Beam Spacing	Number of Beams	Cat. No.
520 (20.4)	500 mm (19.7 in.)	2	440L-P4AL2500YD
820 (32.3)	400 mm (15.7 in.)	3	440L-P4AL3400YD

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

**Note:** GuardShields are sold in pairs. To select a transmitter or receiver, replace the "P" in the cat. no. with a "T" for a transmitter or an "R" for a receiver.

#### GuardShield PAC with Integrated Laser Alignment and I/O Connectivity

Protected Height [mm (in.)]	Beam Spacing	Number of Beams	Cat. No.
520 (20.4)	500 mm (19.7 in.)	2	440L-P4AL2500YA
820 (32.3)	400 mm (15.7 in.)	3	440L-P4AL3400YA

**Note:** GuardShields are sold in pairs. To select a transmitter or receiver, replace the "P" in the cat. no. with an "R" for a receiver. PAC with integrated laser alignment and I/O connectivity uses a standard transmitter. To order a transmitter, replace the "P" with a "T" and the last "A" with a "D" (example: 440L-T2500YD).

#### Recommended Logic Interfaces

Description	Safety Outputs	Auxiliary Outputs	Terminals	Reset Type	Power Supply	Cat. Page No.	Cat. No.
<b>Single-Function Safety Relays for 2 N.C. Contact Switch</b>							
MSR127RP	3 N.O.	1 N.C.	Removable (Screw)	Monitored Manual	24V AC/DC	5-26	440R-N23135
MSR127TP	3 N.O.	1 N.C.	Removable (Screw)	Auto./Manual	24V AC/DC	5-26	440R-N23132
MSR126	2 N.O.	None	Fixed	Auto./Manual	24V AC/DC	5-24	440R-N23117
<b>Modular Safety Relays</b>							
MSR210P Base 2 N.C. only	2 N.O.	1 N.C. and 2 PNP Solid State	Removable	Auto./Manual or Monitored Manual	24V DC from the base unit	5-82	440R-H23176
MSR220P Input Module	—	—	Removable	—	24V DC	5-86	440R-H23178
MSR310P Base	MSR300 Series Output Modules	3 PNP Solid State	Removable	Auto./Manual Monitored Manual	24V DC	5-102	440R-W23219
MSR320P Input Module	—	2 PNP Solid State	Removable	—	24V DC from the base unit	5-106	440R-W23218
<b>Muting Modules</b>							
MSR22LM	2 N.O.	1 N.C.	Removable	Auto./Manual	24V DC	5-48	440R-P23071
MSR42 (requires optical interface to configure 445L-AF6150	2 PNP	2 PNP, configurable	Removable	Auto./manual or manual monitored	24V DC	5-52	440R-P226AGS-NNR

**Note:** The use of a category 4 safety relay module does not improve the category rating of the safety system beyond the Category 2 rating of the Type 2 light curtain in use.

## Product Selection

### Safety Light Curtain—Standard PAC System

The Allen-Bradley Guardmaster GuardShield Safe 4 PAC safety light curtains are offered with two or three 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

**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.

### Required Logic Interfaces

Description	Safety Outputs	Auxiliary Outputs	Terminals	Reset Type	Power Supply	Cat. Page No.	Cat. No.
<b>Single-Function Safety Relays for 2 N.C. Contact Switch</b>							
MSR127RP	3 N.O.	1 N.C.	Removable (Screw)	Monitored Manual	24V AC/DC	5-26	<b>440R-N23135</b>
MSR127TP	3 N.O.	1 N.C.	Removable (Screw)	Auto./Manual	24V AC/DC	5-26	<b>440R-N23132</b>
MSR126	2 N.O.	None	Fixed	Auto./Manual	24V AC/DC	5-24	<b>440R-N23117</b>
<b>Modular Safety Relays</b>							
MSR210P Base 2 N.C. only	2 N.O.	1 N.C. and 2 PNP Solid State	Removable	Auto./Manual or Monitored Manual	24V DC from the base unit	5-82	440R-H23176
MSR220P Input Module	—	—	Removable	—	24V DC	5-86	440R-H23178
MSR310P Base	MSR300 Series Output Modules	3 PNP Solid State	Removable	Auto./Manual Monitored Manual	24V DC	5-102	440R-W23219
MSR320P Input Module	—	2 PNP Solid State	Removable	—	24V DC from the base unit	5-106	440R-W23218
<b>Muting Modules</b>							
MSR22LM	2 N.O.	1 N.C.	Removable	Auto./Manual	24V DC	5-48	<b>440R-P23071</b>
MSR42 (requires optical interface to configure 445L-AF6150	2 PNP	2 PNP, configurable	Removable	Auto./manual or manual monitored	24V DC	5-52	<b>440R-P226AGS-NNR</b>

**Note:** The use of a category 4 safety relay module does not improve the category rating of the safety system beyond the Category 2 rating of the Type 2 light curtain in use.

## Product Selection

### Selection Guide for Receiver

Operating Range	Connection Type	Cat. No.
0.5...20 m (1.64...65.5)	Terminal chamber with cable gland (PG13.5 thread)	<b>440L-R4F0020Q</b>
15...70 m (49.2...300 ft)		<b>440L-R4F1570Q</b>

### Selection Guide for Transmitter





Operating Range	Connection Type	Cat. No.
0...70 m (0...300 ft)	Terminal chamber with cable gland (PG13.5 thread)	<b>440L-T4F2070Q</b>

## Recommended Logic Interfaces

Description	Safety Outputs	Auxiliary Outputs	Terminals	Reset Type	Power Supply	Cat. Page No.	Cat. No.
<b>Single-Function Safety Relays for 2 N.C. Contact Switch</b>							
MSR127RP	3 N.O.	1 N.C.	Removable (Screw)	Monitored Manual	24V AC/DC	5-26	<b>440R-N23135</b>
MSR127TP	3 N.O.	1 N.C.	Removable (Screw)	Auto./Manual	24V AC/DC	5-26	<b>440R-N23132</b>
MSR126	2 N.O.	None	Fixed	Auto./Manual	24V AC/DC	5-24	<b>440R-N23117</b>
<b>Modular Safety Relays</b>							
MSR210P Base 2 N.C. only	2 N.O.	1 N.C. and 2 PNP Solid State	Removable	Auto./Manual or Monitored Manual	24V DC from the base unit	5-82	440R-H23176
MSR220P Input Module	—	—	Removable	—	24V DC	5-86	440R-H23178
MSR310P Base	MSR300 Series Output Modules	3 PNP Solid State	Removable	Auto./Manual Monitored Manual	24V DC	5-102	440R-W23219
MSR320P Input Module	—	2 PNP Solid State	Removable	—	24V DC from the base unit	5-106	440R-W23218
<b>Muting Modules</b>							
MSR22LM	2 N.O.	1 N.C.	Removable	Auto./Manual	24V DC	5-48	<b>440R-P23071</b>
MSR42 (requires optical interface to configure 445L-AF6150	2 PNP	2 PNP, configurable	Removable	Auto./manual or manual monitored	24V DC	5-52	<b>440R-P226AGS-NNR</b>

**Note:** The use of a category 4 safety relay module does not improve the category rating of the safety system beyond the Category 2 rating of the Type 2 light curtain in use.



## Accessories

	Description	Cat. No.
	Laser alignment tool	<b>440L-ALAT</b>
	Adaptor for alignment aid on AAC	440L-ALBRK1
	Mounting bracket for AAC	<b>440L-AMBRK4</b>
	Corner mirror for scanning range 0...30 m	440L-AMIRR1
	Mounting kit for 440L-AMIRR1	440L-AMKIT
	Mounting bracket for mirror 440L-AMIRR1	440L-AMBRK1
	Glass corner mirror, 45° angle 0...30 m	<b>440L-AMIRR2</b>





**Product Selection**

**Singlezone Safety Laser Scanner System Components**

Item	Description	Cat. No.
1	 Scan head and I/O module assembly	442L-SFZNSZ
2	 Prewired 13 conductor cable with memory module (10 or 20 m (32.8 or 65.6 ft) required)	442L-CSFZNMZ-10 442L-CSFZNMZ-20
3	2 m (6.56 ft) RS232 program cable (required) or 10 m (32.8 ft) RS232 program cable	442L-ACRS232 442L-ACRS232-8

**Multizone Safety Laser Scanner System Components**

Item	Description	Cat. No.
1	 Scan head and I/O Module (required)	442L-SFZNMZ
2	 Prewired 13 conductor cable with memory module (10 or 20 m (32.8 or 65.6 ft) required)	442L-CSFZNMZ-10 442L-CSFZNMZ-20
3	2 m (6.56 ft) RS232 program cable (required) 10 m (32.8 ft) RS232 program cable	442L-ACRS232 442L-ACRS232-8

2-Opto-electronics

**Note:** A SafeZone safety laser scanner system requires the scan head and I/O module assembly (1) with either a 10 or 20 meter prewired memory module (2) and a programming cable (3).

**Recommended Logic Interfaces**

Description	Safety Outputs	Auxiliary Outputs	Terminals	Reset Type	Power Supply	Cat. Page No.	Cat. No.
<b>Single-Function Safety Relays for 2 N.C. Contact Switch</b>							
MSR127RP	3 N.O.	1 N.C.	Removable (Screw)	Monitored Manual	24V AC/DC	5-26	440R-N23135
MSR127TP	3 N.O.	1 N.C.	Removable (Screw)	Auto./Manual	24V AC/DC	5-26	440R-N23132
MSR126	2 N.O.	None	Fixed	Auto./Manual	24V AC/DC	5-24	440R-N23117
<b>Modular Safety Relays</b>							
MSR211P Base 2 N.C. only	2 N.O.	1 N.C.	Removable	Auto./Manual or Monitored Manual	24V DC from the base unit	5-84	440R-H23177
MSR221P Input Module	—	—	Removable	—	24V DC from the base unit	5-88	440R-H23179
MSR310P Base	MSR300 Series Output Modules	3 PNP Solid State	Removable	Auto./Manual Monitored Manual	24V DC	5-102	440R-W23219
MSR320P Input Module	—	2 PNP Solid State	Removable	—	24V DC from the base unit	5-106	440R-W23218
<b>Muting Modules</b>							
MSR22LM	2 N.O.	1 N.C.	Removable	Auto./Manual	24V DC	5-48	440R-P23071
MSR42 (requires optical interface to configure 445L-AF6150)	2 PNP	2 PNP, configurable	Removable	Auto./manual or manual monitored	24V DC	5-52	440R-P226AGS-NNR

**Product Selection**

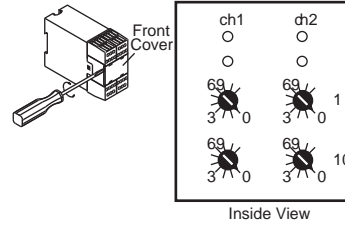
Inputs	Safety Outputs	Auxiliary Outputs	Terminals	Reset Type	Power Supply	Cat. No.
3 x 2 N.C.	2 N.O.	1 N.C.	Removable	Auto./Manual	24V DC	440R-P23071

**Accessories**

Description	Cat. No.
70 mm Tower Light Clear LED Module—Black Enclosure	855T-B24YL7
70 mm Tower Light Clear LED Module—Grey Enclosure	855T-G24YL7

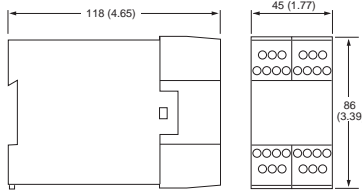
**Application Details**

Disconnect power. Use a screwdriver to pop open cover to reveal internal switches.

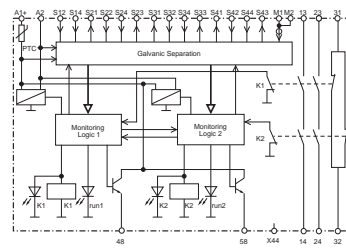


**Approximate Dimensions**

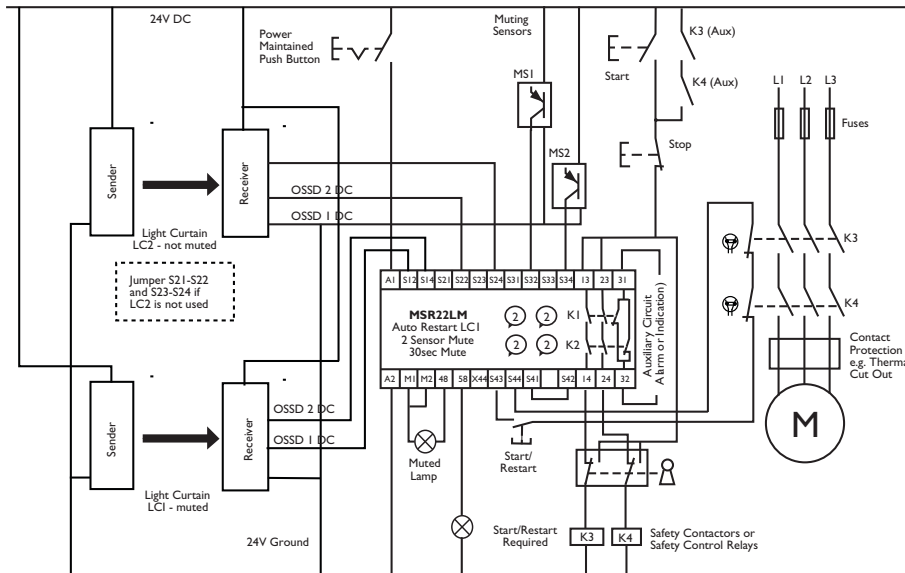
Dimensions are shown in mm (in.). Dimensions are not intended to be used for installation purposes.



**Block Diagram**

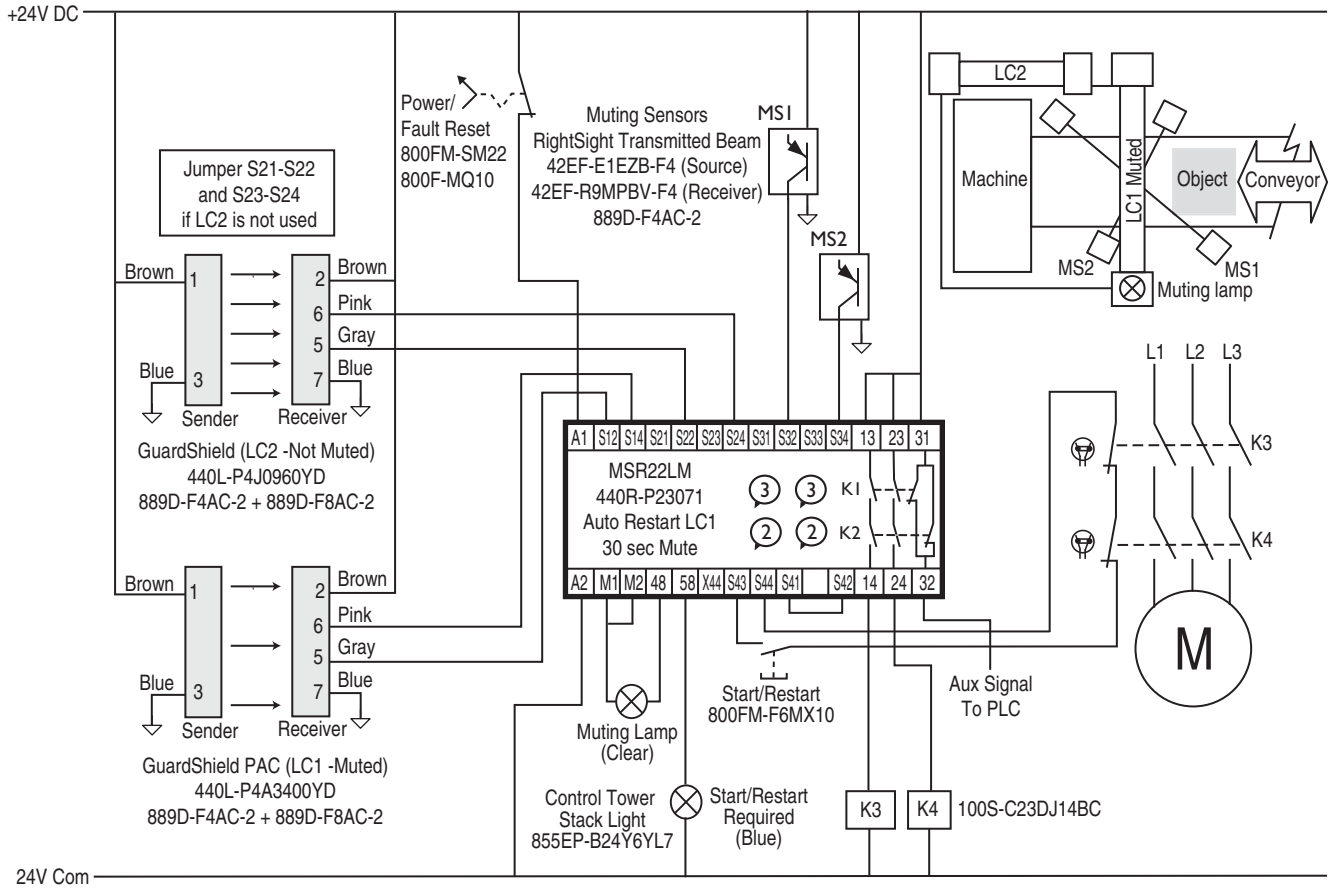


**Typical Wiring Diagrams**



**Note:** Two light curtains with two-sensor muting and Auto Restart LC1.

Safety Applications and Wiring Diagrams  
**Light Curtain—Muting with Two Sensors**  
 GuardShield, RightSight, 800F, Control Tower, MSR22LM, 100S



### Circuit Status

The light curtain is clear. The muting sensors are clear. The outputs of the safety relay are de-energized, and the motor is off.

### Operating Principle

The MSR22LM is designed for automated conveyor applications, where an object moves through a light curtain into or out of a hazardous area. With two sensor muting, the object can move in both directions.

**STARTING:** Upon initial power-up, the start/restart button must be pressed to energize the outputs of the MSR22LM and start the motor.

**MUTING:** The object must block the sensor MS1 and then MS2 prior to passing through the light curtain. After passing through the light curtain, the object must clear MS2 and then MS1 for the motor to continue running during the muting operation.

**STOPPING:** Obstructing the light curtain without blocking sensors MS1 and MS2 de-energizes the MSR22LM safety outputs. After clearing the light curtain, press the start/restart button to re-energize the safety outputs of the MSR22LM.

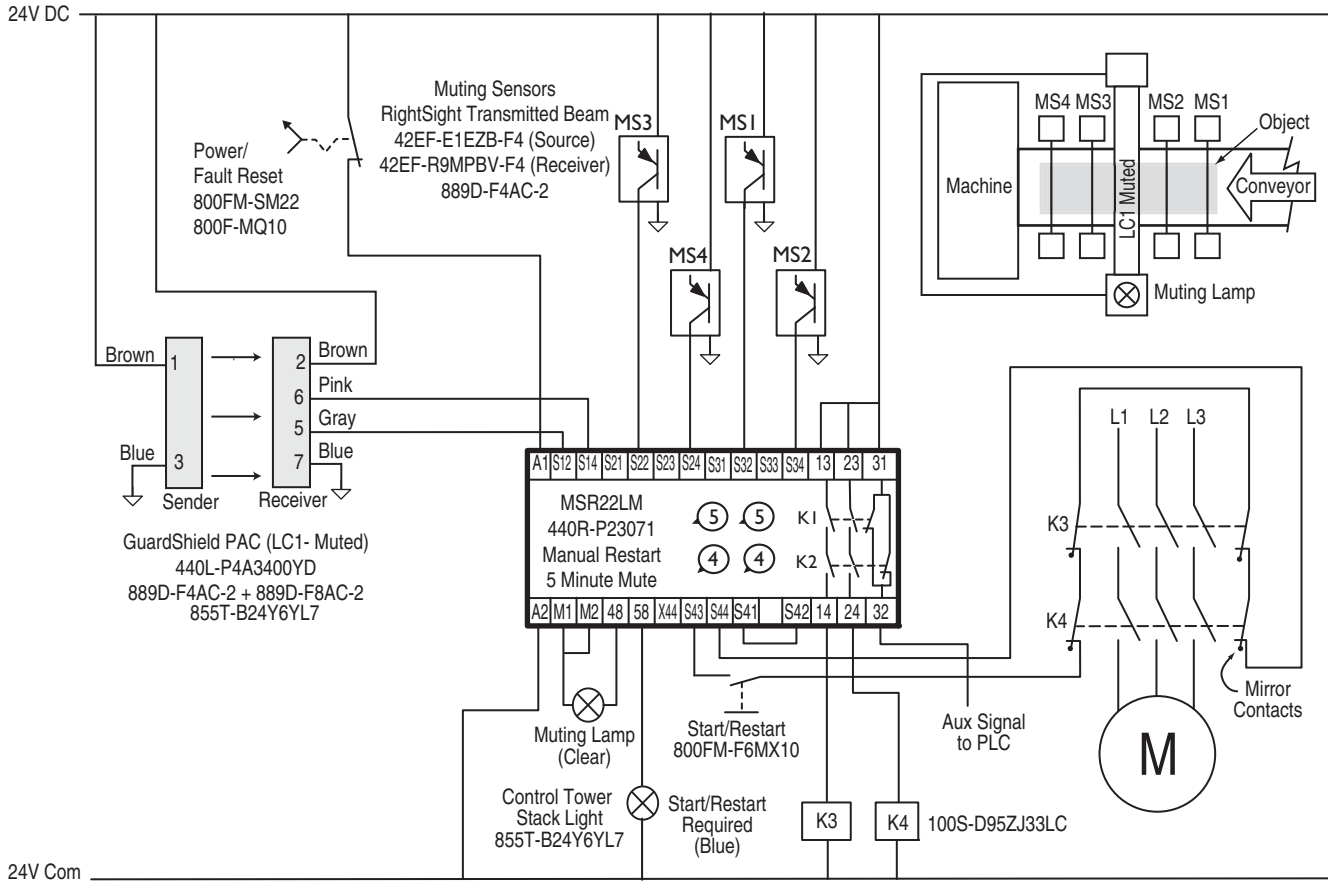
### Fault Detection

Upon power-up, the GuardShield and MSR22LM perform internal checks. If OK and clear, the GuardShield outputs turn on. The MSR22LM checks the muting inputs. If OK, the MSR22LM checks the light curtain for dual channel signals. If OK, the muting lamp blinks continuously and the start/restart required lamp turns on to indicate that the MSR22LM is ready to start. While running, an incorrect sequence of the muting sensors and light curtain operation or excessive time to move the object through the light curtain will de-energize the safety outputs of the MSR22LM. The run LEDs or the muting lamp blink at certain rates to indicate the type of fault that has occurred. The start/restart button can be held down for three seconds to manually move material through the conveyor. The motor will then run for 12 seconds. Some faults can be cleared by removing the object from the sensors. The start/restart required indicator will turn on when the MSR22LM is ready to go. Other faults may have to be cleared by cycling the power to the MSR22LM. The MSR22LM monitors the 100S contactors through mechanically linked contacts connected in series. If one contactor welds closed, the second contactor will stop the motor, and the MSR22LM will detect the fault at the next attempt to start the motor.

### Ratings

The safety functions initiated by the two GuardShield light curtains meet the safety performance requirements of SIL CL 3 per IEC 62061:2005 and has Category 4 structure that can be used in systems requiring Performance Levels up to PLe per ISO 13849-1: 2006. This example circuit performs a Stop Category 0 function (coast to stop).

Safety Applications and Wiring Diagrams  
**Light Curtain—Muting with Four Sensors**  
 GuardShield, RightSight, 800F, Control Tower, MSR22LM, 100S



### Circuit Status

The light curtain is cleared. The muting sensors are cleared. The outputs of the safety relay are de-energized, and the motor is off.

### Operating Principle

The MSR22LM is designed for automated conveyor applications, where an object moves through a light curtain into or out of a hazardous area. With four sensor muting, the object can only move in one direction.

**STARTING:** Upon initial power-up, the start/restart button must be pressed to energize the outputs of the MSR22LM and start the motor.

**MUTING:** The object must block the sensors MS1 and MS2 prior to passing through the light curtain. The object must be large enough to block all four sensors, for the motor to continue running during the muting operation.

**STOPPING:** Obstructing the light curtain without blocking sensors MS1 and MS2 de-energizes the MSR22LM safety outputs. After clearing the light curtain, press the start/restart button to re-energize the safety outputs of the MSR22LM.

### Fault Detection

Upon power-up, the GuardShield and MSR22LM perform internal checks. If OK and clear, the GuardShield outputs turn on. The MSR22LM checks the muting inputs. If OK, the MSR22LM checks the light curtain for dual channel signals. If OK, the muting lamp blinks continuously and the start/restart required lamp turns on to indicate that the MSR22LM is ready to start. While running, an incorrect sequence of the muting sensors and light curtain operation or excessive time to move the object through the light curtain will de-energize the safety outputs of the MSR22LM. The run LEDs or the muting lamp blink at certain rates to indicate the type of fault that has occurred. The start/restart button can be held down for three seconds to manually move material through the conveyor. The motor will then run for 12 seconds. Some faults can be cleared by removing the object from the sensors. The start/restart required button will turn on when the MSR22LM is ready to go. Other faults may have to be cleared by cycling the power to the MSR22LM. The MSR22LM monitors the 100S-D contactors through the mechanically linked "mirrored" contacts connected in series. If one contactor welds closed, the second contactor will stop the motor, and the MSR22LM will detect the fault at the next attempt to start the motor.

### Ratings

The safety function initiated by the GuardShield light curtain meets the safety performance requirements of SIL CL 3 per IEC 62061:2005 and has Category 4 structure that can be used in systems requiring Performance Levels up to PLe per ISO 13849-1: 2006. This example circuit performs a Stop Category 0 function (coast to stop).