

INSTALLATION INSTRUCTIONS PHOTOSWITCH® ON-OFF BACKGROUND SUPPRESSION CONTROL, BULLETIN 42MBS-5000

IMPORTANT: SAVE THESE INSTRUCTIONS FOR FUTURE USE. FOR ADDITIONAL INFORMATION REFER TO PUBLICATION PG-9000

BULLETIN NUMBER			OPERATING MODE	VOLTAGE SUPPLY	POWER CONSUMPTION	OUTPUT CHARACTERISTIC			RESPONSE TIME (ADD FOR TOTAL)		SUPPRESSION POINT ADJUSTMENT RANGE	TYPICAL SUPPRESSION QUALITY		
PHOTOHEAD	POWERBASES	OUTPUT MODULE				TYPE	RATING	LEAKAGE (OFF STATE)	CONTROL	OUTPUT		WHITE BACK-GROUND CONTROL OFF	BLACK TARGET CONTROL ON	
42MBS-5000	—		ON-OFF	—	—	—	—	—	5ms	—	2.5" - 1.2" (6.35cm - 30.5cm)	2.5" (6.35cm)	2.3" (5.89cm)	
	42MTB-5000			102-132 VAC	2VA							4" (10.1cm)	3.9" (9.9cm)	
	42MTB-5001			204-254 VAC	4VA							6" (15.2cm)	5.8" (14.7cm)	
	42MTB-5002			40-54 VAC/DC	1VA							8" (20.3cm)	7.7" (19.5cm)	
	42MTB-5003			20-30 VAC	1VA							10" (25.4cm)	9.5" (24.1cm)	
	42MTB-5004			20-30 VDC	1VA							12" (30.5cm)	10.5" (26.6cm)	
		8-590 & 8-594*				SPDT EM RELAY	2A-120 VAC 1A-240 VAC	—	—	10ms ON 15ms OFF				
		8-591				SP-NO AC/DC FET	30mA 0-120V AC/DC	10µA	—	1ms				
		8-592				SP-NO AC TRIAC	.75A 240 VAC	1mA	—	8ms				
		8-593*				NPN & PNP	100mA 30 VDC	1µA		1ms				

*Use with 42MTB-5004 base ONLY. Other output modules will not function with 5004 base.

SPECIFICATIONS:

Range Adjustment Fine and Coarse
Ambient Temperature Range

For E-M Relays -40°F to 150°F (-40°C to 65°C)

For S.S. Relays -40°F to 125°F (-40°C to 52°C)

Relative Humidity 90%

Turn on Pulse Suppression Yes

Field of View 3°

Light and Dark Operation .. Selectable by switch on photohead

Operating Environment: NEMA 3, 4, 12, 13, and IP66 (IEC529)

Approvals UL Listed and CSA Certified

Lens Material Acrylic

Transmitting LED Infrared 880nm

Housing Material High impact chemically resistant Valox®

Margin and Alignment Indicator

- Red Output Energized

- Green 2 X Margin

Termination Supplied with #6/32 nickel plated brass pressure type materials

ACCESSORIES

Optional Mounting Assemblies

PART NUMBER	DESCRIPTION
60-1785	Universal Mounting Assembly
60-1748	Heavy Duty Mounting Assembly
60-1840	Right Angle Mirror
60-2014	Flexi-mount Mounting Assembly
60-2072	PHOTOcountSWITCH Totalizer
60-2083	Photoguard Heavy Duty Protection
60-2213	Conduit Mounting Adapter
60-2230	Limit Switch Type Mounting Assembly
61-5540	Nema 7 and 9 Enclosure

ALIGNMENT

1. Set “Light Energized” (LT)/“Dark Energized” (DK) switch to desired operating mode. It may be necessary to increase (counter-clockwise) the range “coarse” adjustment to obtain access to the LT/DK switch.
2. Loosen the lockscrew and adjust “coarse” sensing range adjustment to the minimum position (full clockwise position).
3. Increase (counter clockwise) the “coarse” adjustment until the control senses the background. In the “light” energized (LT) mode, the red LED will turn *On*. In the “dark” energized (DK) mode, the red LED will turn *Off*. In both cases the green LED margin indicator will turn *On* if the operating margin is at least 2X.
4. Using the “fine” adjustment, decrease (counter clockwise) the sensing range until the control stops sensing the background. In the LT mode the red LED will turn *Off*. In the DK mode the red LED will turn *On*.
5. Place the object to be detected in front of the control at the expected sensing distance. Both red and green LED’s should turn *On* in the LT mode. The green LED should turn *On* and the red LED should turn *Off* in the DK mode. The output should operate. The green LED indicates that an operating margin of 2X or greater exists.
6. If the green LED does not turn *On*, increase the sensing range until it does. Recheck to see if the control is sensing the background by removing the object to be sensed from in front of the control. If the background is sensed, it may not be a practical application for the background suppression control.

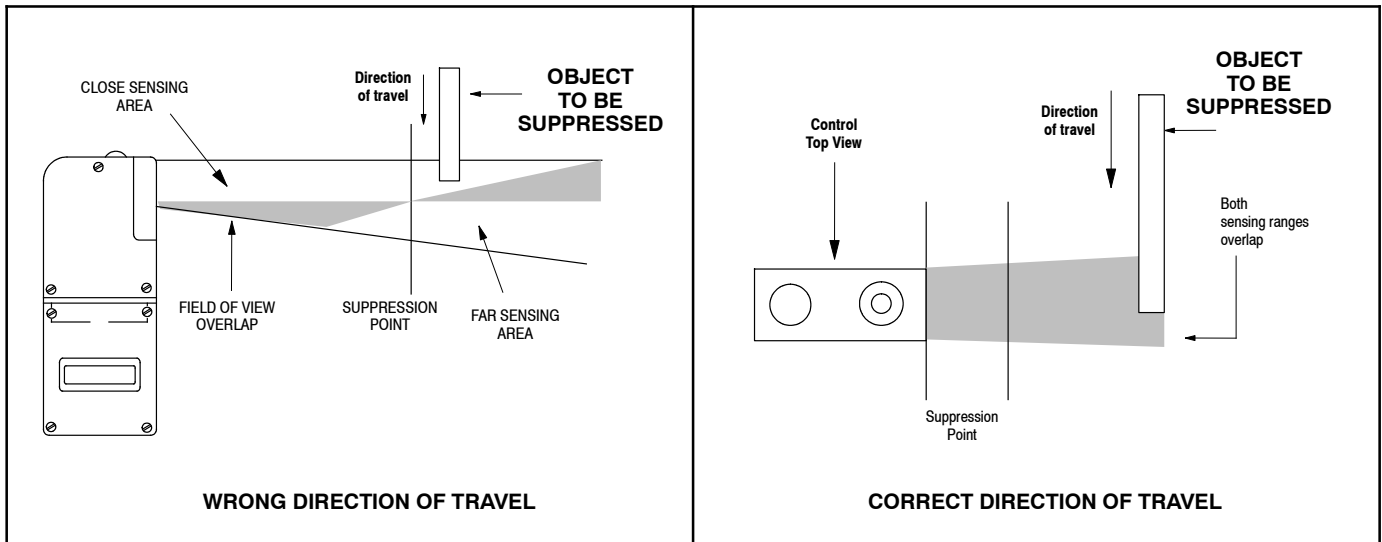
7. Tighten the lockscrew after adjusting the sensing range. A slight increase in sensing distance may occur. Typically .25” (.63cm) at 12” (30.5cm), .12” (30.5cm) at a 6” (15.2cm) and .062” (.157cm) at 3” (7.62cm), for both background and target. If necessary sensing range variation can be compensated for by adjusting to 11.75” (29.8cm) for a 12” (30.5cm) suppression point, 5.875” (14.9cm) for a 6” (15.2cm) suppression point, and 2.95” (7.46cm) for a 3” (7.62cm) suppression point. Repeat steps 5 and 6 to verify the range after the lockscrew is tightened.

APPLICATION PRECAUTIONS

To obtain the high sensitivity and sharp cut-off required in a background suppression control, two photodetectors are used. One detector senses objects in close, the other detector will sense further out.

If the further out signal (background) is greater than or equal to the close in signal, the control remains *Off*, if the close signal is greater than the background signal, the control output will turn *On*.

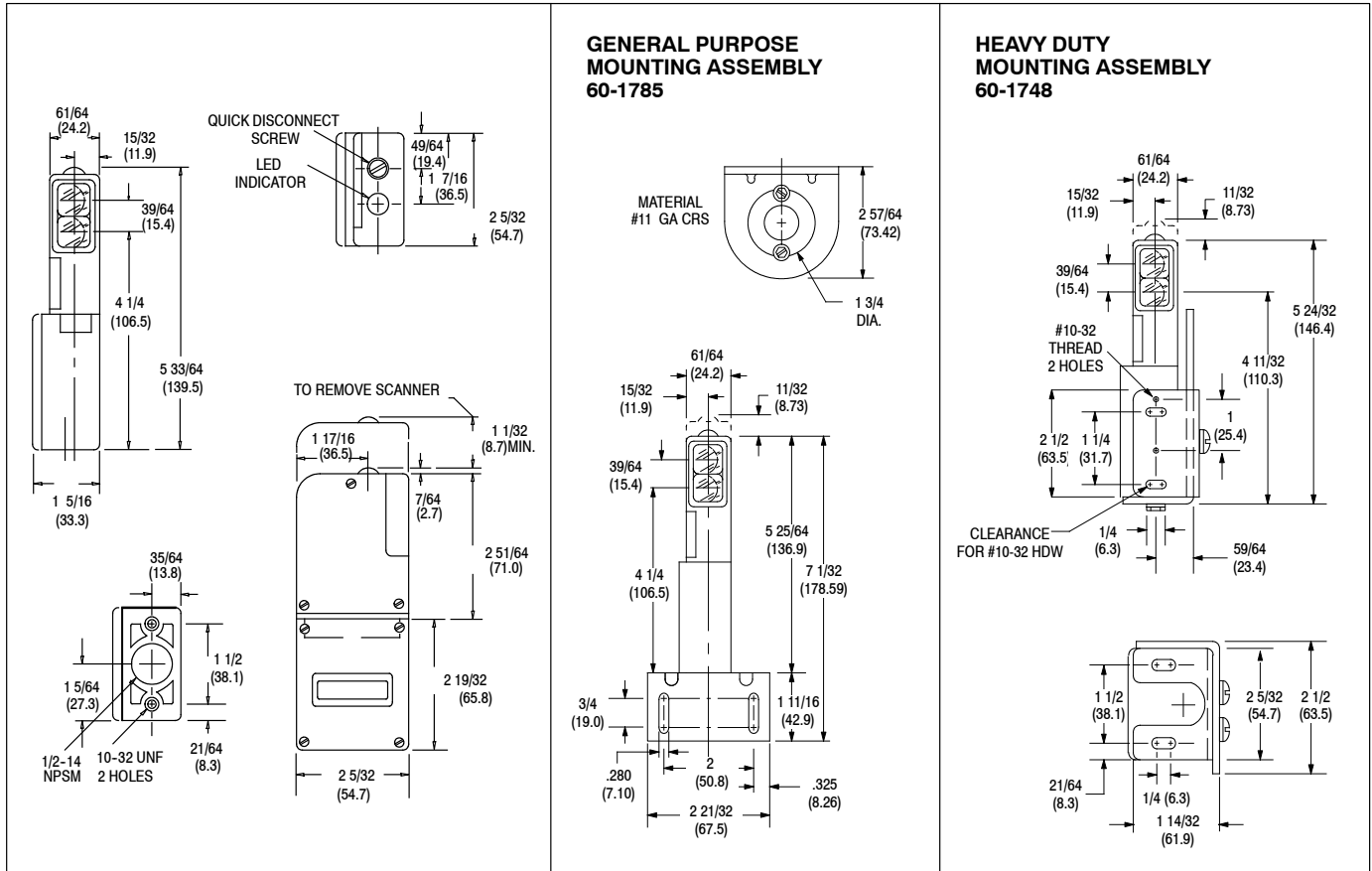
This interdependence of the two photodetectors and overlapping sensing areas require that the object being sensed passes by the sensor in certain directions or false operation could occur. Therefore, an object always should travel on an x-axis perpendicular with the control. See figures below.



INSTALLATION

The control must be securely mounted on a firm, stable surface or support. A mounting which is subject to excessive vibration or shifting may cause intermittent operation.

OUTLINE DIMENSIONS



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