

QM Series Photoelectric Sensors



2m Output



M8 Quick-Disconnect

Mini-rectangular plastic - DC

- 56 models available
- Rectangular photoelectric sensor (photo eye)
- Plastic housing
- Selectable Light-on/Dark-on output
- Diffuse, diffuse with background suppression, polarized retroreflective, retroreflective for clear objects, through-beam, and retroreflective models
- 3-wire NPN or PNP
- Easy-to-use potentiometer for setting switchpoint distance on select models
- Through-beam models include emitter and receiver pair
- 2m output cable or M8 quick-disconnect. Purchase cable separately
- IP67 rated
- Mounting brackets and shutter accessories available



QM Series Photoelectric Sensors (Diffuse)							
Part Number	Price	Sensing Distance	Emission Type	Logic	Connection	Wiring	Characteristic Curves
QMRB-0N-0A	\$41.00	5 – 100 mm [0.2 – 3.94 in]	Visible Red 630nm	NPN	2m [6.5 ft] cable	Diagram 1	QMRBx
QMRB-0N-0F	\$41.00			NPN	4-pin M8 quick-disconnect	Diagram 1	
QMRB-0P-0A	\$41.00			PNP	2m [6.5 ft] cable	Diagram 2	
QMRB-0P-0F	\$41.00			PNP	4-pin M8 quick-disconnect	Diagram 2	
QMR7-0N-0A	\$41.00	0 – 400 mm [0 – 15.75 in]	Visible Red 630nm	NPN	2m [6.5 ft] cable	Diagram 1	QMR7x
QMR7-0N-0F	\$41.00			NPN	4-pin M8 quick-disconnect	Diagram 1	
QMR7-0P-0A	\$41.00			PNP	2m [6.5 ft] cable	Diagram 2	
QMR7-0P-0F	\$41.00			PNP	4-pin M8 quick-disconnect	Diagram 2	
QMI7-0N-0A	\$41.00	0 – 400 mm [0 – 15.75 in]	Infrared 850nm	NPN	2m [6.5 ft] cable	Diagram 1	QMI7x
QMI7-0N-0F	\$41.00			NPN	4-pin M8 quick-disconnect	Diagram 1	
QMI7-0P-0A	\$41.00			PNP	2m [6.5 ft] cable	Diagram 2	
QMI7-0P-0F	\$41.00			PNP	4-pin M8 quick-disconnect	Diagram 2	
QMR8-0N-0A	\$44.50	0 – 1 m [0 – 3.28 ft]	Visible Red 630nm	NPN	2m [6.5 ft] cable	Diagram 1	QMR8x
QMR8-0N-0F	\$44.50			NPN	4-pin M8 quick-disconnect	Diagram 1	
QMR8-0P-0A	\$44.50			PNP	2m [6.5 ft] cable	Diagram 2	
QMR8-0P-0F	\$44.50			PNP	4-pin M8 quick-disconnect	Diagram 2	
QMI9-0N-0A	\$46.00	0 – 1.5 m [0 – 4.9 ft]	Infrared 850nm	NPN	2m [6.5 ft] cable	Diagram 1	QMI9x
QMI9-0N-0F	\$46.00			NPN	4-pin M8 quick-disconnect	Diagram 1	
QMI9-0P-0A	\$46.00			PNP	2m [6.5 ft] cable	Diagram 2	
QMI9-0P-0F	\$46.00			PNP	4-pin M8 quick-disconnect	Diagram 2	

QM Series Photoelectric Sensors

QM Series Photoelectric Sensors (Diffuse with Background Suppression)							
Part Number	Price	Sensing Distance	Emission Type	Logic	Connection	Wiring	Characteristic Curves
QMRS-0N-0A	\$57.00	30 – 200 mm [1.2 – 7.87 in]	Visible Red 630nm	NPN	2m [6.5 ft] cable	Diagram 1	QMRSx
QMRS-0N-0F	\$57.00			NPN	4-pin M8 quick-disconnect	Diagram 1	
QMRS-0P-0A	\$57.00			PNP	2m [6.5 ft] cable	Diagram 2	
QMRS-0P-0F	\$57.00			PNP	4-pin M8 quick-disconnect	Diagram 2	
QMIS-0N-0A	\$58.00	30 – 400 mm [1.2 – 15.75 in]	Infrared 850nm	NPN	2m [6.5 ft] cable	Diagram 1	QMISx
QMIS-0N-0F	\$58.00			NPN	4-pin M8 quick-disconnect	Diagram 1	
QMIS-0P-0A	\$58.00			PNP	2m [6.5 ft] cable	Diagram 2	
QMIS-0P-0F	\$58.00			PNP	4-pin M8 quick-disconnect	Diagram 2	

QM Series Photoelectric Sensors (Retroreflective)							
Part Number	Price	Sensing Distance	Emission Type	Logic	Connection	Wiring	Characteristic Curves
QMIC-0N-0A	\$50.00	0.1 – 7 m [0.32 – 22.96 ft]	Infrared 850nm	NPN	2m [6.5 ft] cable	Diagram 1	QMICx
QMIC-0N-0F	\$50.00			NPN	4-pin M8 quick-disconnect	Diagram 1	
QMIC-0P-0A	\$50.00			PNP	2m [6.5 ft] cable	Diagram 2	
QMIC-0P-0F	\$50.00			PNP	4-pin M8 quick-disconnect	Diagram 2	

Note: Purchase reflectors separately.

QM Series Photoelectric Sensors (Polarized Retroreflective)							
Part Number	Price	Sensing Distance	Emission Type	Logic	Connection	Wiring	Characteristic Curves
QMRN-0N-0A	\$50.00	0.1 – 5 m [0.32 – 16.4 ft]	Visible Red 630nm	NPN	2m [6.5 ft] cable	Diagram 1	QMRNx
QMRN-0N-0F	\$50.00			NPN	4-pin M8 quick-disconnect	Diagram 1	
QMRN-0P-0A	\$50.00			PNP	2m [6.5 ft] cable	Diagram 2	
QMRN-0P-0F	\$50.00			PNP	4-pin M8 quick-disconnect	Diagram 2	

Note: Purchase reflectors separately.

QM Series Photoelectric Sensors (Retroreflective for Transparent Objects)								
Part Number	Price	Sensing Distance	Emission Type	Logic	Connection	Wiring	Characteristic Curves	
QMRL-0N-0A	\$57.00	0.4 – 4 m [1.31 – 13.12 ft]	Visible Red 630nm	NPN	2m [6.5 ft] cable	Diagram 1	QMRLx	
QMRL-0N-0F	\$57.00			NPN	4-pin M8 quick-disconnect	Diagram 1		
QMRL-0P-0A	\$57.00			PNP	2m [6.5 ft] cable	Diagram 2		
QMRL-0P-0F	\$57.00			PNP	4-pin M8 quick-disconnect	Diagram 2		
QMRG-0N-0A	\$57.00	0.05 – 1.5 m [0.16 – 4.9 ft]		Infrared 850nm	NPN	2m [6.5 ft] cable	Diagram 1	QMRGx
QMRG-0N-0F	\$57.00				NPN	4-pin M8 quick-disconnect	Diagram 1	
QMRG-0P-0A	\$57.00				PNP	2m [6.5 ft] cable	Diagram 2	
QMRG-0P-0F	\$57.00				PNP	4-pin M8 quick-disconnect	Diagram 2	
QMIG-0N-0A	\$57.00	0.05 – 1 m [0.16 – 3.28 ft]	Infrared 850nm		NPN	2m [6.5 ft] cable	Diagram 1	QMIGx
QMIG-0N-0F	\$57.00				NPN	4-pin M8 quick-disconnect	Diagram 1	
QMIG-0P-0A	\$57.00				PNP	2m [6.5 ft] cable	Diagram 2	
QMIG-0P-0F	\$57.00				PNP	4-pin M8 quick-disconnect	Diagram 2	

Note: Purchase reflectors separately.

QM Series Photoelectric Sensors

QM Series Photoelectric Sensors (Through-beam)							
Part Number	Price	Sensing Distance	Emission Type	Logic	Connection	Wiring	Characteristic Curves
QMRHD-0N-0A	\$66.00	0.0 – 20 m [0 – 65.62 ft]	Visible Red 630nm	NPN	2m [6.5 ft] cable	Diagram 1/3	QMRHDx
QMRHD-0N-0F	\$66.00			NPN	4-pin M8 quick-disconnect	Diagram 1/3	
QMRHD-0P-0A	\$66.00			PNP	2m [6.5 ft] cable	Diagram 2/3	
QMRHD-0P-0F	\$66.00			PNP	4-pin M8 quick-disconnect	Diagram 2/3	
QMIHD-0N-0A	\$69.00	0.0 – 30 m [0 – 98.43 ft]	Infrared 850nm	NPN	2m [6.5 ft] cable	Diagram 1/3	QMIHDx
QMIHD-0N-0F	\$69.00			NPN	4-pin M8 quick-disconnect	Diagram 1/3	
QMIHD-0P-0A	\$69.00			PNP	2m [6.5 ft] cable	Diagram 2/3	
QMIHD-0P-0F	\$69.00			PNP	4-pin M8 quick-disconnect	Diagram 2/3	

Note: Through-beam models include emitter and receiver pair.

Switching Element Function		
	Through-Beam and Reflective Models	Diffuse Models
Light-on	N.C.	N.O.
Dark-on	N.O.	N.C.

Wiring Diagrams

Diagram 1
NPN Output

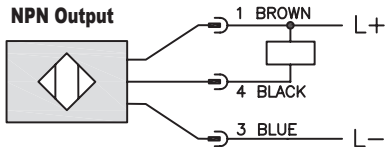


Diagram 2
PNP Output

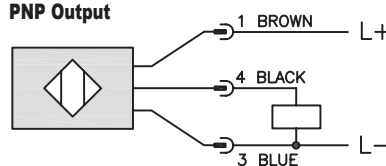
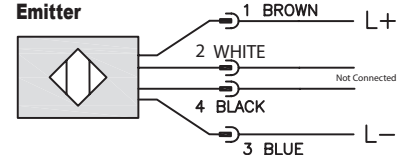
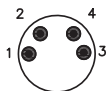


Diagram 3
Emitter

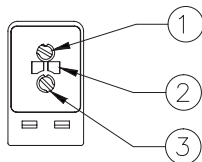


Connector

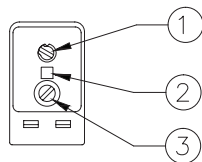
M8 Connector



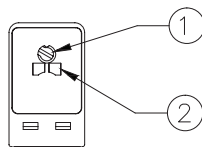
LED Indicators and Adjustments



Diffuse, Retro-Reflective, Polarized Retroreflective, Retroreflective for Transparent Objects



Diffuse with Background Suppression



Through-Beam

- 1: Output Adjustment (Light On/Dark On)
- 2: Status LED(s)
- 3: Sensing Adjustment

QM Series Photoelectric Sensors

QM Series Photoelectric Sensors Specifications					
Type	Diffuse	Background suppression	Retroreflective for transparent objects	Polarized Retroreflective	Retroreflective Through-beam
Sensing Distance	Refer to QM Series in the Photoelectric Sensors Selection Guide				
Light Spot Diameter	Refer to Characteristic Curves				
Emission	Refer to QM Series in the Photoelectric Sensors Selection Guide				
Sensitivity	Adjustable (270°)	Adjustable (4 turns)	Adjustable (270°)		
Output Type	Light-on or Dark-on				
Operating Voltage	10 – 30 VDC				
No Load Supply Current	Visible Red: 30mA, Infrared: 45mA				
Operating (Load) Current	≤ 100mA				
Off-state (Leakage) Current	≤ 10uA				
Voltage Drop	2V max @ 100mA				
Switching Frequency	QMRBx, QMR8, QMI9 (1kHz) QMRx7 (2kHz)	1kHz	2kHz		
Ripple	≤ 10%				
Time Delay Before Availability (tv)	≤ 100ms				
Repeatability	5%				
Short-Circuit Protection	Short circuit (auto reset), over voltage pulses				
Operating Temperature	-25 to 70°C [-13 to 158°F]				
Thermal Drift	-30 to 80°C [-22 to 176°F]				
Protection Degree (DIN 40050)	IP67 (EN60529)				
LED Indicators - Light-on/Dark-on	Yellow				
LED Indicators - Excess Gain	Green	-	Green		
Housing Material	PA66				
Lens Material	Polymethyl methacrylate (PMMA)				
Shock/Vibration	See terminology section				
Tightening Torque	1 N•m				
Weight	M8: 10g [0.35 oz]; Cable: 52g [1.83 oz]				
Connectors	Refer to QM Series in the Photoelectric Sensors Selection Guide				
Accessories	-	-	-		
Agency Approvals	CE, cULus E187310				

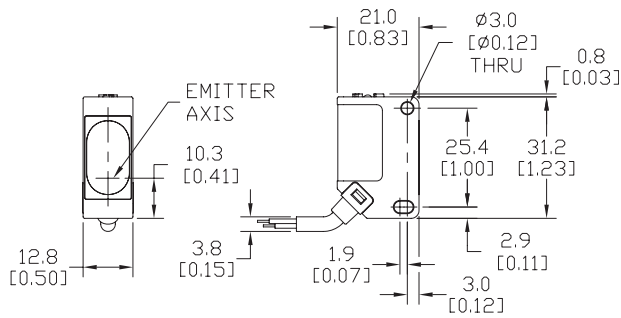
To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

QM Series Photoelectric Sensors

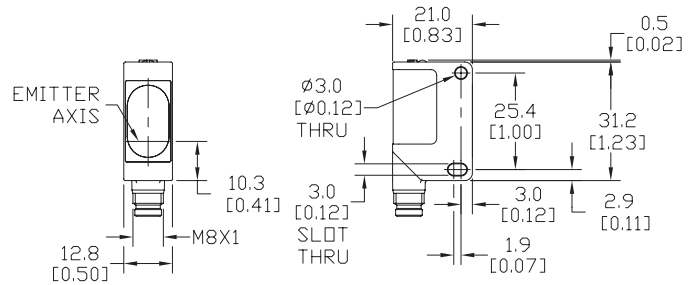
Dimensions

mm [inches]

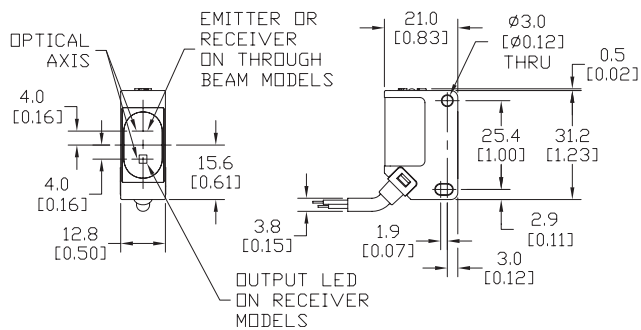
QM*S Background Suppression Model - 2m Output



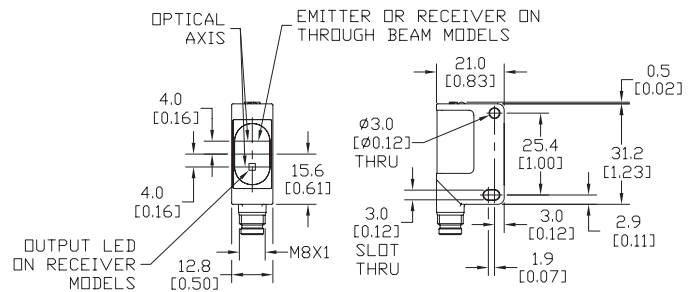
QM*S Background Suppression Model - M8 Quick Disconnect



All Other QM Series - 2m Output



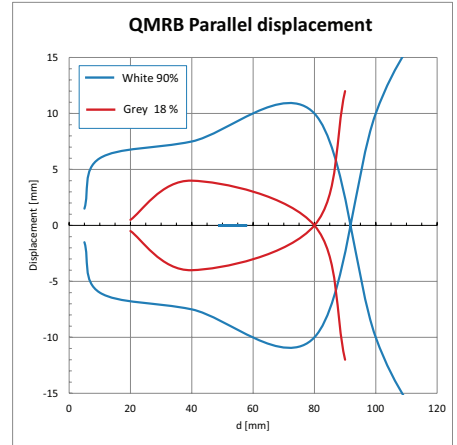
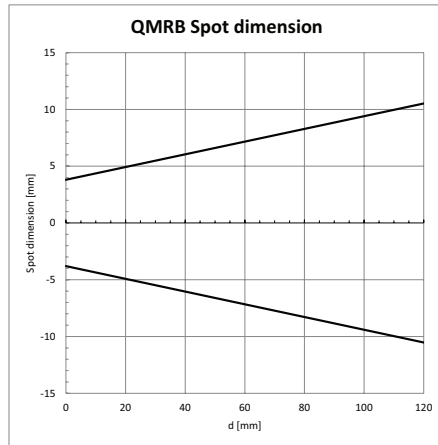
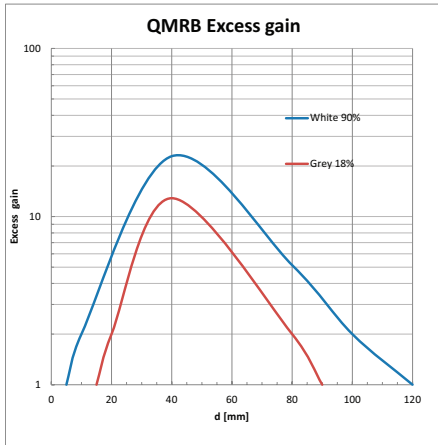
All Other QM Series - M8 Quick-Disconnect



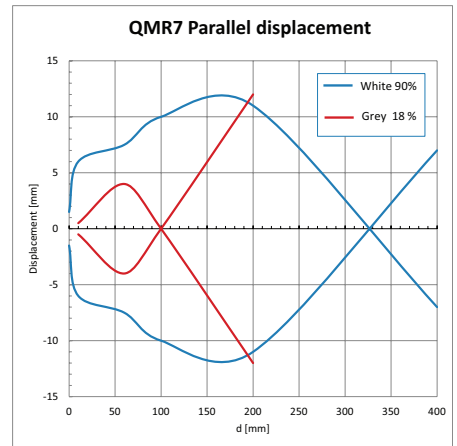
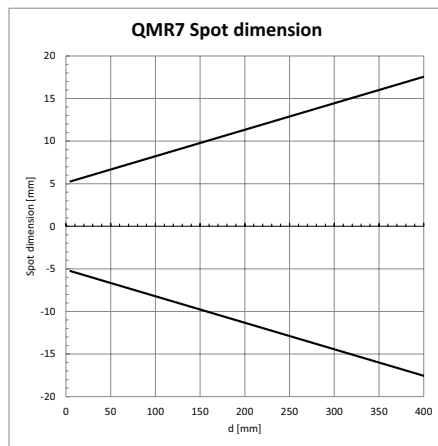
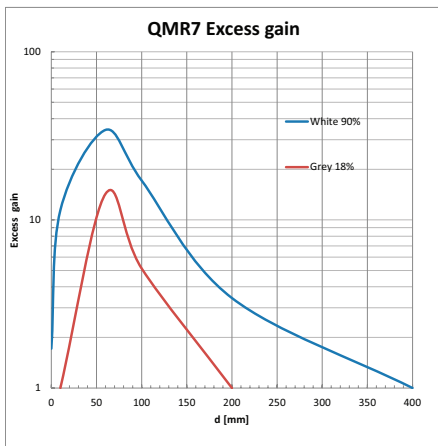
QM Series Photoelectric Sensors

Characteristic Curves

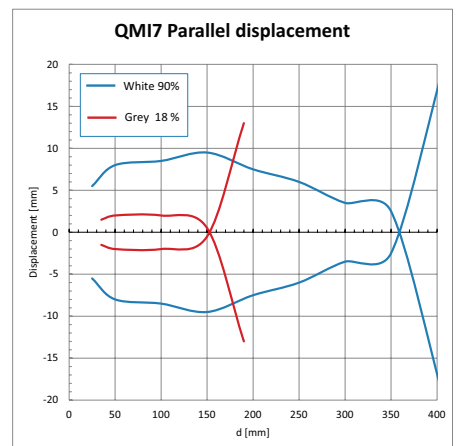
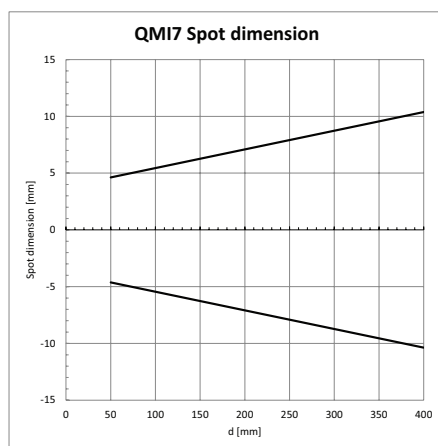
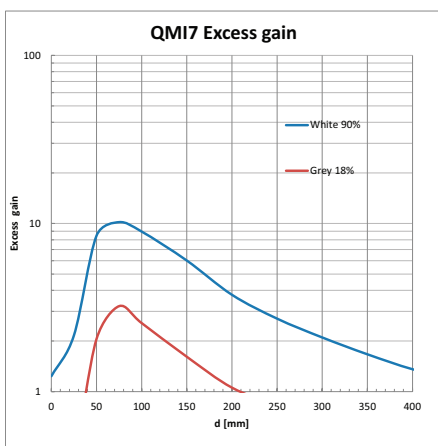
QMRBx



QMR7x



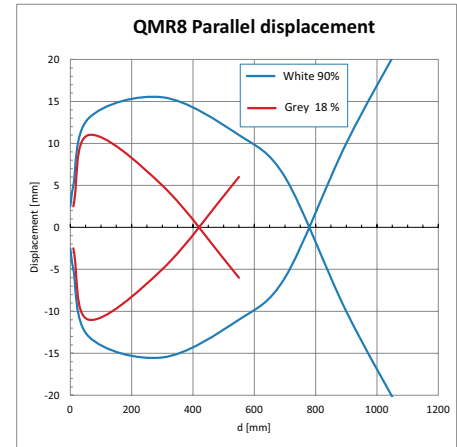
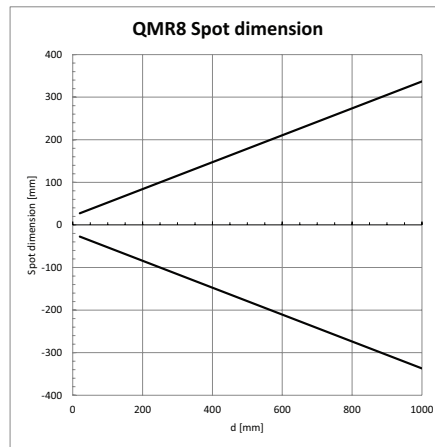
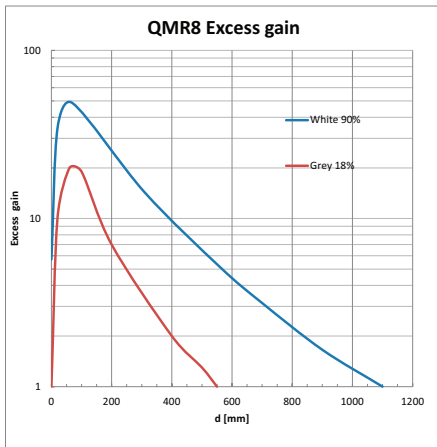
QMI7x



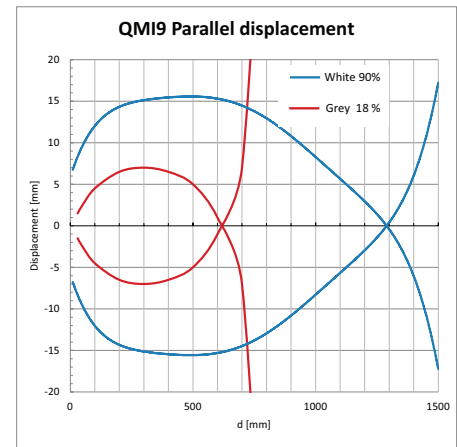
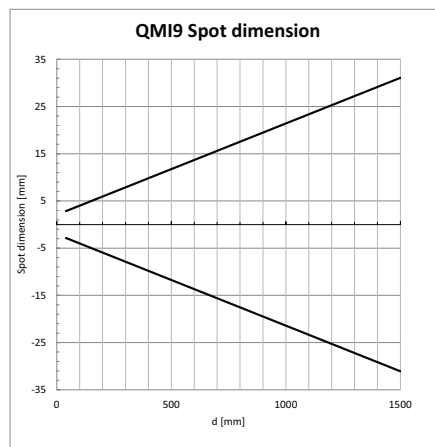
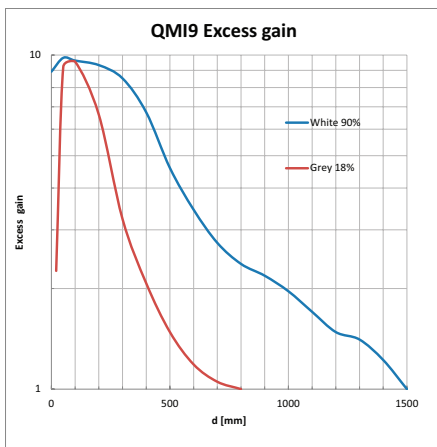
QM Series Photoelectric Sensors

Characteristic Curves

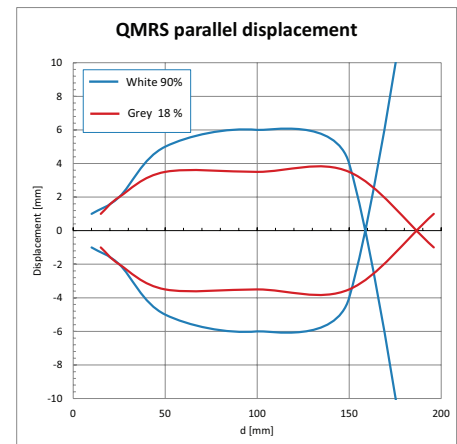
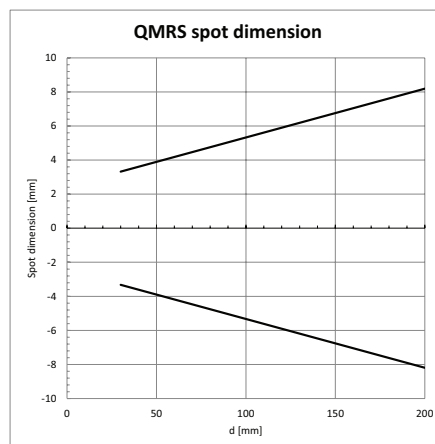
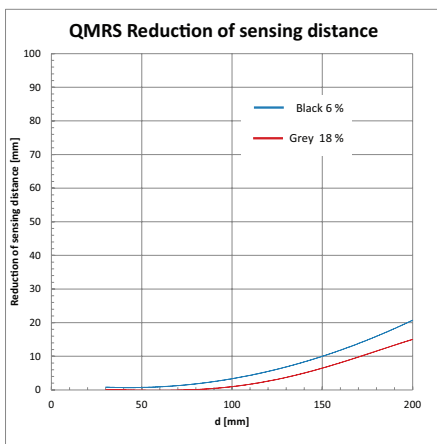
QMR8x



QMI9x



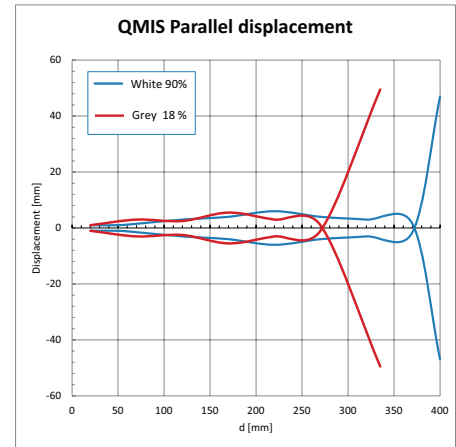
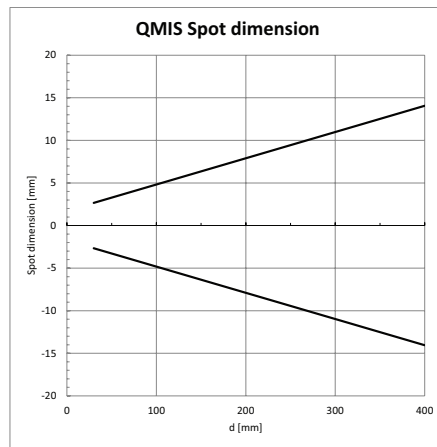
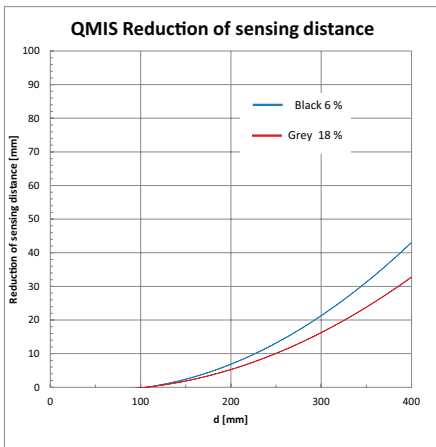
QMRSx



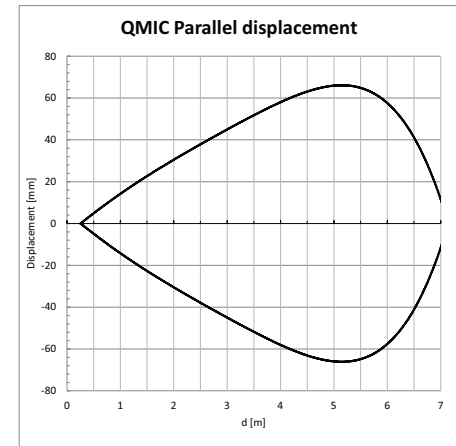
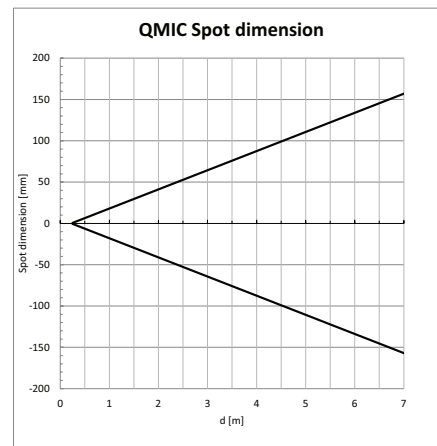
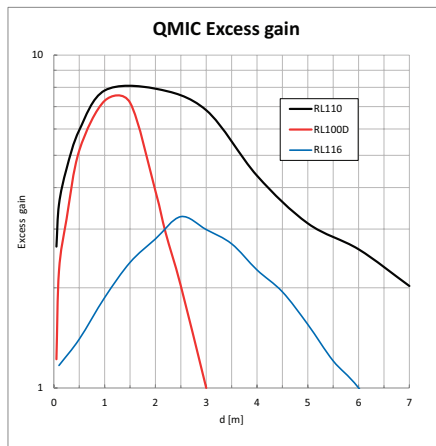
QM Series Photoelectric Sensors

Characteristic Curves

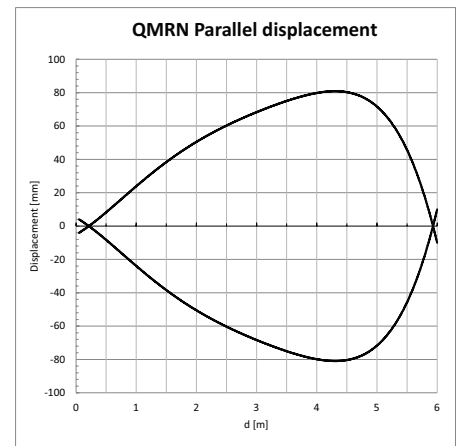
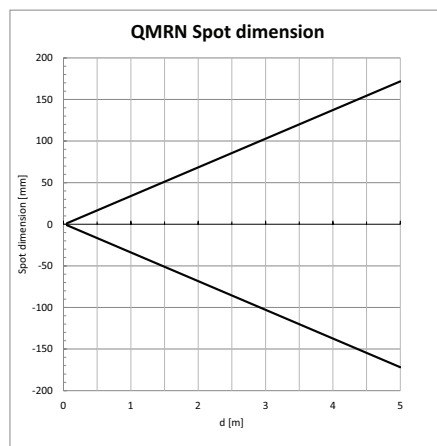
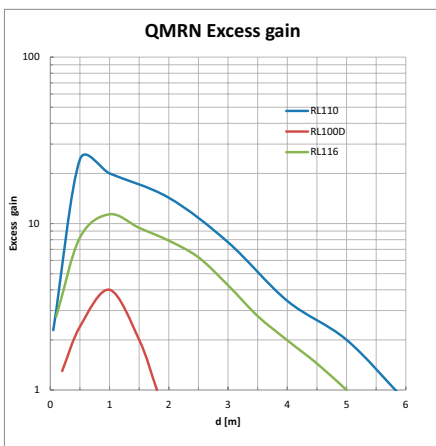
QMISx



QMICx



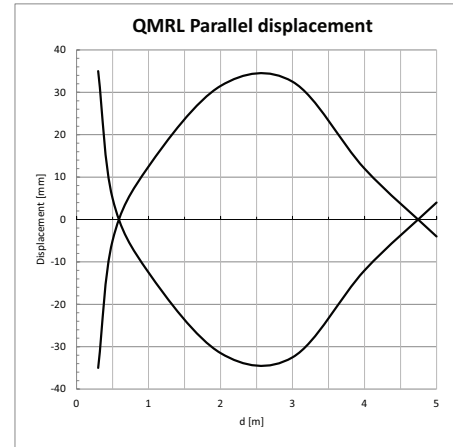
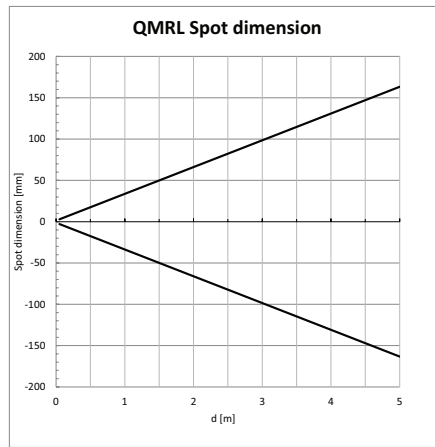
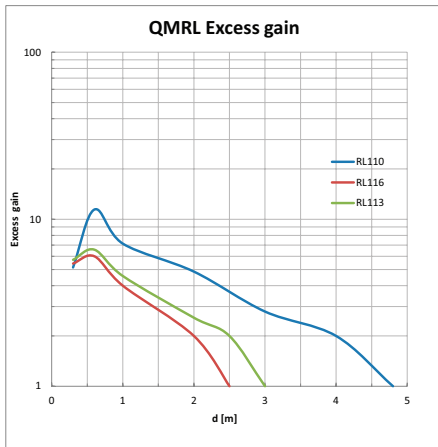
QMRNx



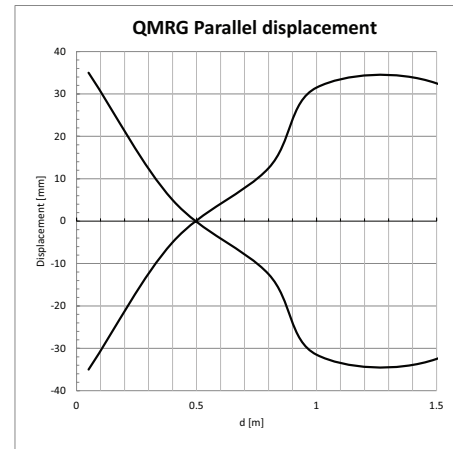
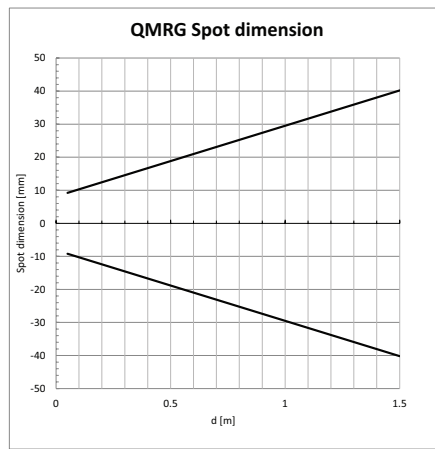
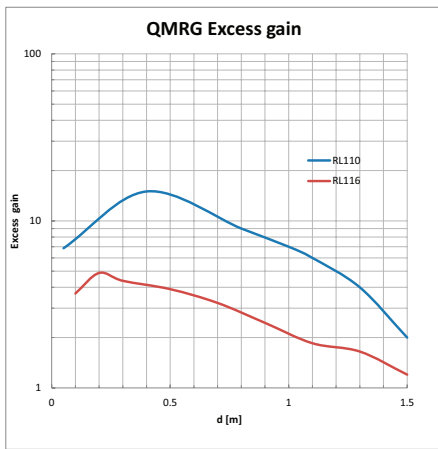
QM Series Photoelectric Sensors

Characteristic Curves

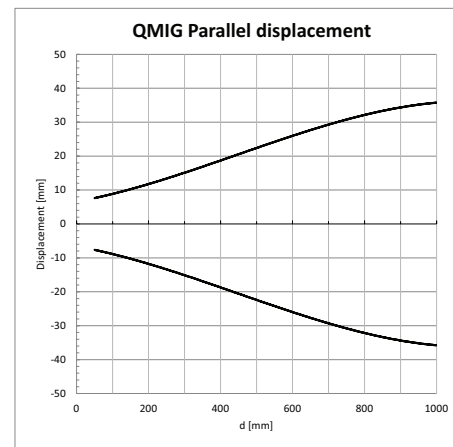
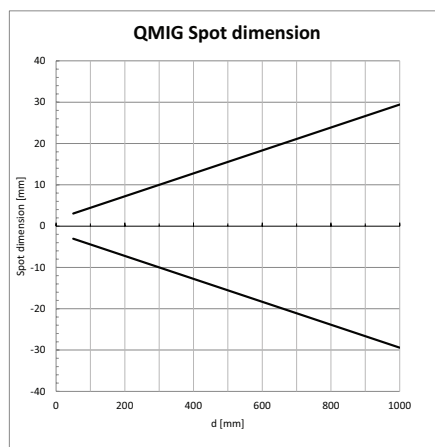
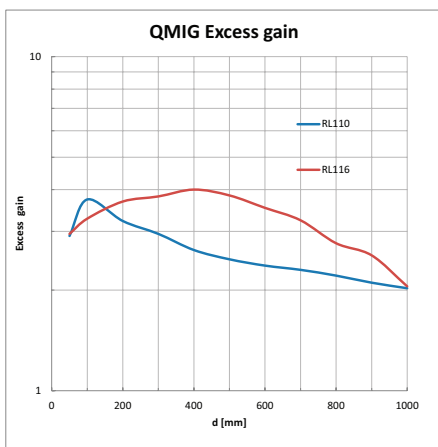
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QMRGx



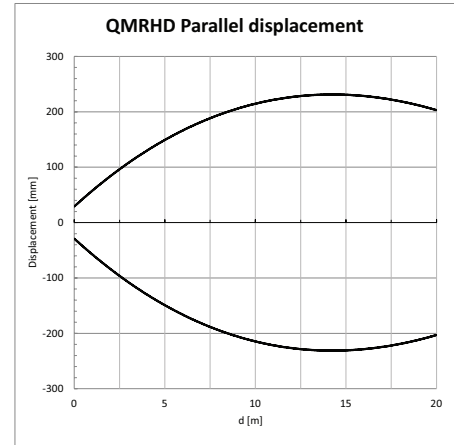
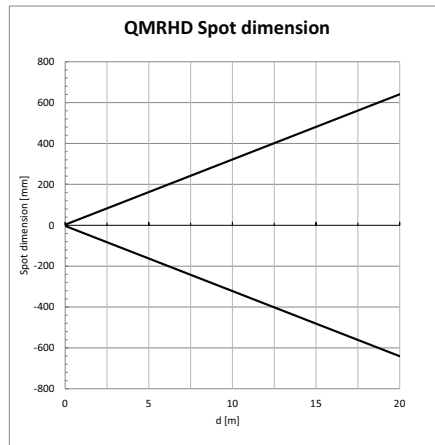
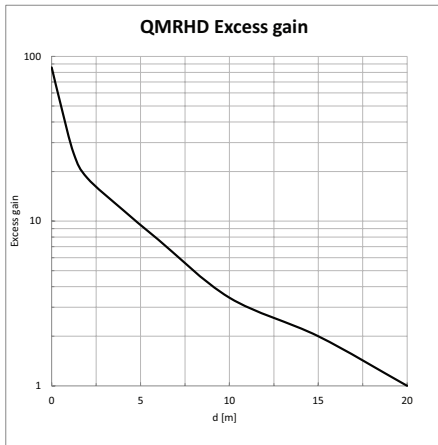
QMIGx



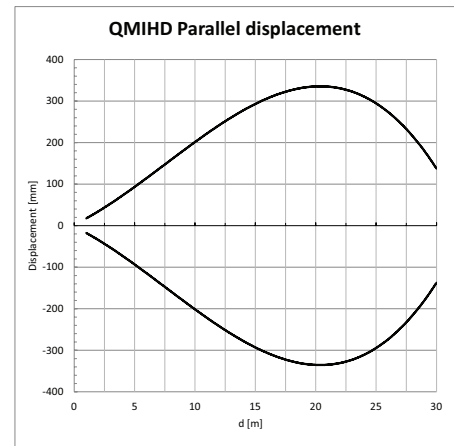
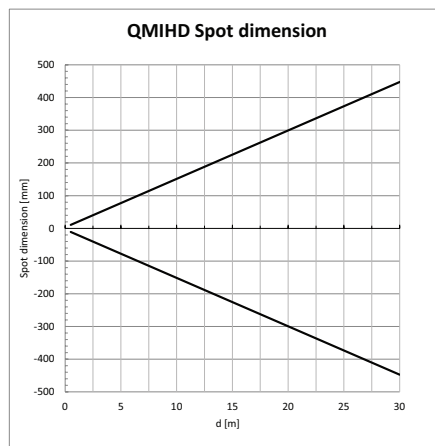
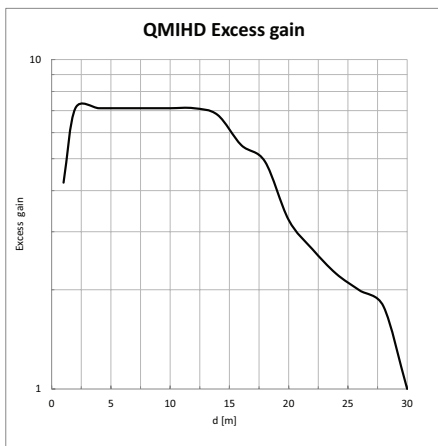
QM Series Photoelectric Sensors

Characteristic Curves

QMRHDx



QMIHDx

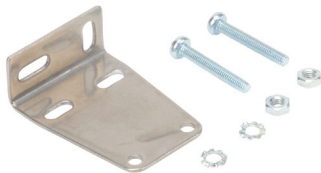


Accessories for QM and FM Series Photoelectric Sensors

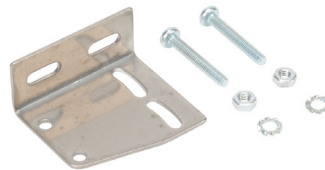
Right-angle Mounting Brackets

Mounting bracket, right-angle vertical, 304 stainless steel. For use with QM & FM series photoelectric sensors. Mounting hardware included.

Accessories for QM and FM Series Photoelectric Sensors				
Part Number	Price	Description	Drawing Link	Weight [lb]
<u>ST101</u>	\$3.00	Micro Detectors mounting bracket, right-angle vertical, 304 stainless steel. For use with QM & FM series photoelectric sensors. Mounting hardware included.	<u>PDF</u>	0.04
<u>ST102</u>	\$3.00	Micro Detectors mounting bracket, right-angle horizontal, 304 stainless steel. For use with QM & FM series photoelectric sensors. Mounting hardware included.	<u>PDF</u>	0.05
<u>ST104</u>	\$4.50	Micro Detectors mounting bracket, protective horizontal, 304 stainless steel. For use with prewired QM & FM series photoelectric sensors only. Mounting hardware included.	<u>PDF</u>	0.05



[ST101](#)



[ST102](#)



[ST104](#)

Accessories for QM Series Photoelectric Sensors

Mounting Bracket

Mounting bracket, protective vertical, 304 stainless steel. For use with prewired QM series photoelectric sensors only. Mounting hardware included.

Accessories for QM Series Photoelectric Sensor				
Part Number	Price	Description	Drawing Link	Weight [lb]
ST103	\$4.50	Micro Detectors mounting bracket, protective vertical, 304 stainless steel. For use with prewired QM series photoelectric sensors only. Mounting hardware included.	PDF	0.06



ST103

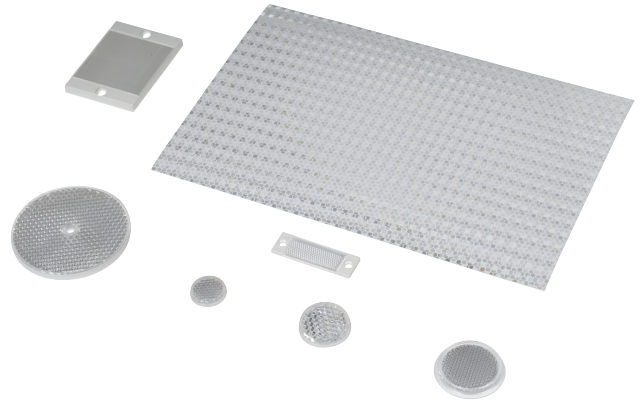
Reflectors

RL Series Reflectors for Polarized Reflective Photoelectric Sensors (All Models)

- Suitable for use with polarized light photoelectric sensors
- Shapes and sizes for most applications
- Miniature types for close mounting in multiple sensor installations
- Single hole, dual hole and self-adhesive mounting types available
- Single and 10-packs available

Installation Notes

- Keep the reflector surface clean to ensure peak detection performance. This is especially true when the maximum sensing range is being used. Clean using a damp cloth.
- When selecting a reflector, it is important to consider the ambient conditions it will be exposed to. Dusty or high humidity conditions may reduce the sensing range as much as 90%.
- Reflectors should be positioned at a 90° angle to the optical axis with a tolerance of ±15°.



Reflector Specifications								
Part number	Price	Drawing Link	Quantity	Dimensions mm [in]	Degree of Protection	Mounting	Materials	
RL102	\$38.00	PDF	10	25	IEC IP67	Customer-supplied adhesive or other mounting method required	Reflective face: PMMA Polymethylmethacrylate (acrylic) Base material: ABS (Acrylonitrile-butadiene-styren)	
RL102-1	\$4.25		1	[0.98]				
RL103	\$42.50	PDF	10	34.5				
RL103-1	\$4.75		1	[1.36]				
RL104	\$42.50	PDF	10	46				Two 4.3 mm holes
RL104-1	\$4.75		1	[1.81]				
RL105G	\$38.00	PDF	10	95 x 38		Two 6mm holes		
RL105G-1	\$4.25		1	[3.74 x 1.50]				
RL106G	\$42.50	PDF	10	182 x 42		One 5mm hole		
RL106G-1	\$4.75		1	[7.17 x 1.65]				
RL110	\$19.00	PDF	10	84		Two 3mm holes		
RL110-1	\$2.00		1	[3.31]				
RL116	\$19.00	PDF	10	41 x 60		Self-adhesive		
RL116-1	\$2.00		1	[3.54 x 2.36]				
RL100DA4	\$38.50	NA	1	200 x 300				Paper (Acrylic tape with micro prism)
RL100DC4	\$12.00	NA	1	50 x 300				
RL100DQ1	\$8.75	NA	1	100 x 100				
RL111G	\$60.00	PDF	10	22.5 x 47	Two 3mm slots			
RL111G-1	\$7.25		1	[0.89 x 1.85]				
RL112G	\$44.00	PDF	10	19 x 73		Two 4mm slots		
RL112G-1	\$4.75		1	[0.75 x 2.87]				
RL113G	\$53.00	PDF	10	51.4 x 60.3				
RL113G-1	\$6.00		1	[2.02 x 2.37]				

Not recommended for applications involving moist air environments or water immersion.

Reflectors

RL Series Reflectors for Polarized Reflective Laser Photoelectric Sensors (FALN series)

- Suitable for use with polarized light laser photoelectric sensors
- Sizes for most applications
- Miniature types for close mounting in multiple sensor installations
- Single and 5-packs available

Specifications						
Part Number	<u>RL201</u>	<u>RL201-1</u>	<u>RL203</u>	<u>RL203-1</u>	<u>RL204</u>	<u>RL204-1</u>
Price	\$38.00	\$8.25	\$35.50	\$7.75	\$30.00	\$6.75
Quantity	5	1	5	1	5	1
Drawing Link	<u>PDF</u>		<u>PDF</u>		<u>PDF</u>	
Dimensions	60 x 82 mm 2.36 x 3.23 in		19 x 6mm 0.75 x 2.36 in		20mm x 32mm 0.80 in x 1.26 in	
Degree of Protection ¹	IEC IP67					
Mounting	Two 0.4 mm holes		Two 0.4 mm holes		Two 0.3 mm holes	
Materials	Acrylic/polycarbonate					

¹ Not recommended for applications involving moist air environments or water immersion.

Shutters and Adapters

Shutters for M18 (18mm) Through-beam Sensors (SSE / SSR)

- Reduces the emitted beam, allowing the detection of small targets
- Shutter consists of an aluminum cap and aperture with an O-ring and glass lens, which can screw onto the optical head of either the emitter or receiver



Sensing Distance (When Used with SSE / SSR Model Photoelectric Switches)						
Model	STOS1	STOS2	STOS3	STOS4	STOS6	STOS8
Price	Retired	Retired	Retired	Retired	Retired	Retired
Ø x shutter (mm)	1	2	3	4	6	8
Distance (m) Object (mm)	N/A	N/A	N/A	1.5 2	3.5 3	6.5 4

Table shows sensing distance and minimal detectable object.

Shutter Accessory for QM Series Sensors				
Part Number	Price	Drawing Link	Description	Weight [lb]
STQMO	\$6.00	PDF	Micro Detectors shutter, plastic. Package of 2. For use with through beam QM series photoelectric sensors. Vertical and horizontal diaphragms (0.5, 1, 2mm) included.	0.1

Shutter STQMO Sensing Distances			
Shutter Size	0.5 mm	1mm	2mm
Maximum Sensing Distance	1.5 m	2 m	4.5 m
Minimum Detectable Object Diameter	0.8 mm	1.5 mm	2.5 mm

Note: With shutters on emitter and receiver in same vertical or horizontal orientation.

Right-angle M18 (18 mm) Beam Adapter

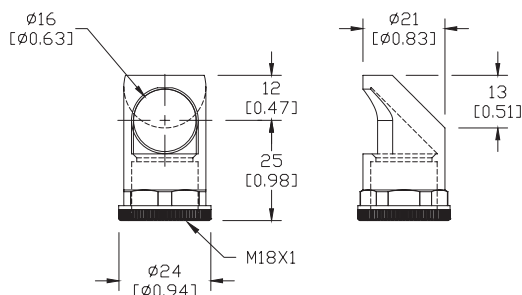
For use with M18 retroreflective and through-beam photoelectric switches (not for use with diffuse reflection sensors). Allows 90° light detection using an internal mirror set at 45° to the optical axis. Sensitivity loss is about 20-30%.



ST03

Beam Adapters			
Part Number	Price	Description	Weight [lb]
ST03	\$16.00	Micro Detectors right-angle beam adapter, for use with 18mm sensors (except diffuse reflection models), mirror allows 90 degree light detection.	0.06

Dimensions
mm [inches]



Dimensions
mm [inches]

