

# 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
<a href="#">QMRB-0N-0A</a>	\$41.00	5 – 100 mm [0.2 – 3.94 in]	Visible Red 630nm	NPN	2m [6.5 ft] cable	Diagram 1	QMRBx
<a href="#">QMRB-0N-0F</a>	\$41.00			NPN	4-pin M8 quick-disconnect	Diagram 1	
<a href="#">QMRB-0P-0A</a>	\$41.00			PNP	2m [6.5 ft] cable	Diagram 2	
<a href="#">QMRB-0P-0F</a>	\$41.00			PNP	4-pin M8 quick-disconnect	Diagram 2	
<a href="#">QMR7-0N-0A</a>	\$41.00	0 – 400 mm [0 – 15.75 in]	Visible Red 630nm	NPN	2m [6.5 ft] cable	Diagram 1	QMR7x
<a href="#">QMR7-0N-0F</a>	\$41.00			NPN	4-pin M8 quick-disconnect	Diagram 1	
<a href="#">QMR7-0P-0A</a>	\$41.00			PNP	2m [6.5 ft] cable	Diagram 2	
<a href="#">QMR7-0P-0F</a>	\$41.00			PNP	4-pin M8 quick-disconnect	Diagram 2	
<a href="#">QMI7-0N-0A</a>	\$41.00	0 – 400 mm [0 – 15.75 in]	Infrared 850nm	NPN	2m [6.5 ft] cable	Diagram 1	QMI7x
<a href="#">QMI7-0N-0F</a>	\$41.00			NPN	4-pin M8 quick-disconnect	Diagram 1	
<a href="#">QMI7-0P-0A</a>	\$41.00			PNP	2m [6.5 ft] cable	Diagram 2	
<a href="#">QMI7-0P-0F</a>	\$41.00			PNP	4-pin M8 quick-disconnect	Diagram 2	
<a href="#">QMR8-0N-0A</a>	\$44.50	0 – 1 m [0 – 3.28 ft]	Visible Red 630nm	NPN	2m [6.5 ft] cable	Diagram 1	QMR8x
<a href="#">QMR8-0N-0F</a>	\$44.50			NPN	4-pin M8 quick-disconnect	Diagram 1	
<a href="#">QMR8-0P-0A</a>	\$44.50			PNP	2m [6.5 ft] cable	Diagram 2	
<a href="#">QMR8-0P-0F</a>	\$44.50			PNP	4-pin M8 quick-disconnect	Diagram 2	
<a href="#">QMI9-0N-0A</a>	\$46.00	0 – 1.5 m [0 – 4.9 ft]	Infrared 850nm	NPN	2m [6.5 ft] cable	Diagram 1	QMI9x
<a href="#">QMI9-0N-0F</a>	\$46.00			NPN	4-pin M8 quick-disconnect	Diagram 1	
<a href="#">QMI9-0P-0A</a>	\$46.00			PNP	2m [6.5 ft] cable	Diagram 2	
<a href="#">QMI9-0P-0F</a>	\$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
<a href="#">QMRS-0N-0A</a>	\$57.00	30 – 200 mm [1.2 – 7.87 in]	Visible Red 630nm	NPN	2m [6.5 ft] cable	Diagram 1	QMRSx
<a href="#">QMRS-0N-0F</a>	\$57.00			NPN	4-pin M8 quick-disconnect	Diagram 1	
<a href="#">QMRS-0P-0A</a>	\$57.00			PNP	2m [6.5 ft] cable	Diagram 2	
<a href="#">QMRS-0P-0F</a>	\$57.00			PNP	4-pin M8 quick-disconnect	Diagram 2	
<a href="#">QMIS-0N-0A</a>	\$58.00	30 – 400 mm [1.2 – 15.75 in]	Infrared 850nm	NPN	2m [6.5 ft] cable	Diagram 1	QMISx
<a href="#">QMIS-0N-0F</a>	\$58.00			NPN	4-pin M8 quick-disconnect	Diagram 1	
<a href="#">QMIS-0P-0A</a>	\$58.00			PNP	2m [6.5 ft] cable	Diagram 2	
<a href="#">QMIS-0P-0F</a>	\$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
<a href="#">QMIC-0N-0A</a>	\$50.00	0.1 – 7 m [0.32 – 22.96 ft]	Infrared 850nm	NPN	2m [6.5 ft] cable	Diagram 1	QMICx
<a href="#">QMIC-0N-0F</a>	\$50.00			NPN	4-pin M8 quick-disconnect	Diagram 1	
<a href="#">QMIC-0P-0A</a>	\$50.00			PNP	2m [6.5 ft] cable	Diagram 2	
<a href="#">QMIC-0P-0F</a>	\$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
<a href="#">QMRN-0N-0A</a>	\$50.00	0.1 – 5 m [0.32 – 16.4 ft]	Visible Red 630nm	NPN	2m [6.5 ft] cable	Diagram 1	QMRNx
<a href="#">QMRN-0N-0F</a>	\$50.00			NPN	4-pin M8 quick-disconnect	Diagram 1	
<a href="#">QMRN-0P-0A</a>	\$50.00			PNP	2m [6.5 ft] cable	Diagram 2	
<a href="#">QMRN-0P-0F</a>	\$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	
<a href="#">QMRL-0N-0A</a>	\$57.00	0.4 – 4 m [1.31 – 13.12 ft]	Visible Red 630nm	NPN	2m [6.5 ft] cable	Diagram 1	QMRLx	
<a href="#">QMRL-0N-0F</a>	\$57.00			NPN	4-pin M8 quick-disconnect	Diagram 1		
<a href="#">QMRL-0P-0A</a>	\$57.00			PNP	2m [6.5 ft] cable	Diagram 2		
<a href="#">QMRL-0P-0F</a>	\$57.00			PNP	4-pin M8 quick-disconnect	Diagram 2		
<a href="#">QMRG-0N-0A</a>	\$57.00	0.05 – 1.5 m [0.16 – 4.9 ft]		Infrared 850nm	NPN	2m [6.5 ft] cable	Diagram 1	QMRGx
<a href="#">QMRG-0N-0F</a>	\$57.00				NPN	4-pin M8 quick-disconnect	Diagram 1	
<a href="#">QMRG-0P-0A</a>	\$57.00				PNP	2m [6.5 ft] cable	Diagram 2	
<a href="#">QMRG-0P-0F</a>	\$57.00				PNP	4-pin M8 quick-disconnect	Diagram 2	
<a href="#">QMIG-0N-0A</a>	\$57.00	0.05 – 1 m [0.16 – 3.28 ft]	Infrared 850nm		NPN	2m [6.5 ft] cable	Diagram 1	QMIGx
<a href="#">QMIG-0N-0F</a>	\$57.00				NPN	4-pin M8 quick-disconnect	Diagram 1	
<a href="#">QMIG-0P-0A</a>	\$57.00				PNP	2m [6.5 ft] cable	Diagram 2	
<a href="#">QMIG-0P-0F</a>	\$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
<a href="#">QMRHD-0N-0A</a>	\$66.00	0.0 – 20 m [0 – 65.62 ft]	Visible Red 630nm	NPN	2m [6.5 ft] cable	Diagram 1/3	QMRHDx
<a href="#">QMRHD-0N-0F</a>	\$66.00			NPN	4-pin M8 quick-disconnect	Diagram 1/3	
<a href="#">QMRHD-0P-0A</a>	\$66.00			PNP	2m [6.5 ft] cable	Diagram 2/3	
<a href="#">QMRHD-0P-0F</a>	\$66.00			PNP	4-pin M8 quick-disconnect	Diagram 2/3	
<a href="#">QMIHD-0N-0A</a>	\$69.00	0.0 – 30 m [0 – 98.43 ft]	Infrared 850nm	NPN	2m [6.5 ft] cable	Diagram 1/3	QMIHDx
<a href="#">QMIHD-0N-0F</a>	\$69.00			NPN	4-pin M8 quick-disconnect	Diagram 1/3	
<a href="#">QMIHD-0P-0A</a>	\$69.00			PNP	2m [6.5 ft] cable	Diagram 2/3	
<a href="#">QMIHD-0P-0F</a>	\$69.00			PNP	4-pin M8 quick-disconnect	Diagram 2/3	

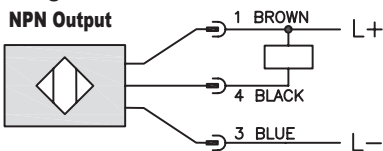
Note: Through-beam models include emitter and receiver pair.

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



Connector

M8 Connector

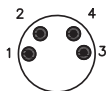


Diagram 2

PNP Output

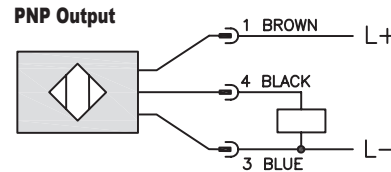
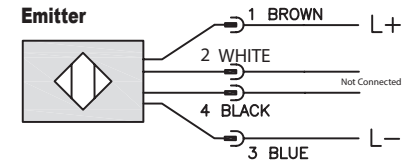
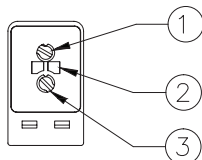


Diagram 3

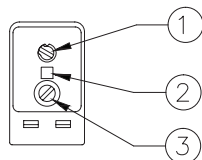
Emitter



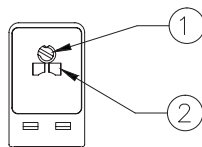
## LED Indicators and Adjustments



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

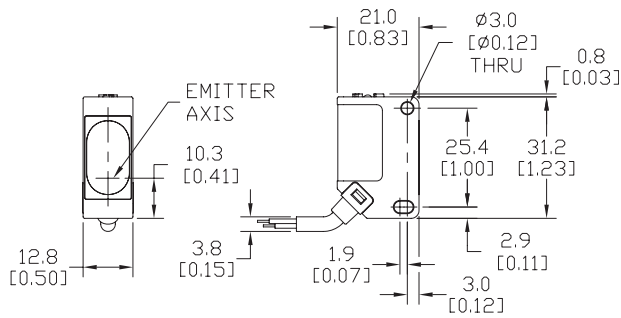
To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

# QM Series Photoelectric Sensors

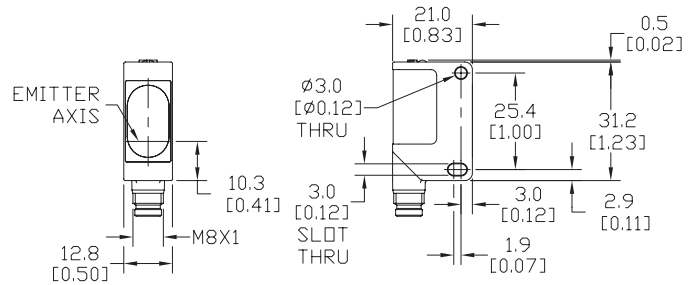
## Dimensions

mm [inches]

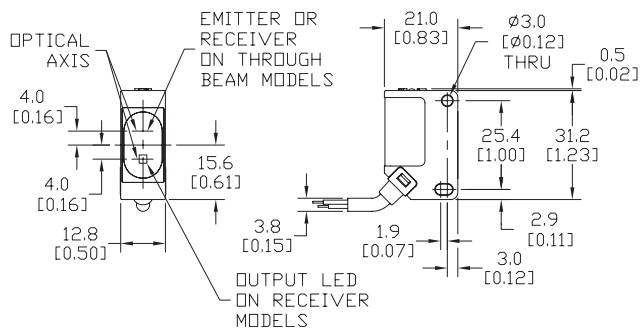
**QM\*S Background Suppression Model - 2m Output**



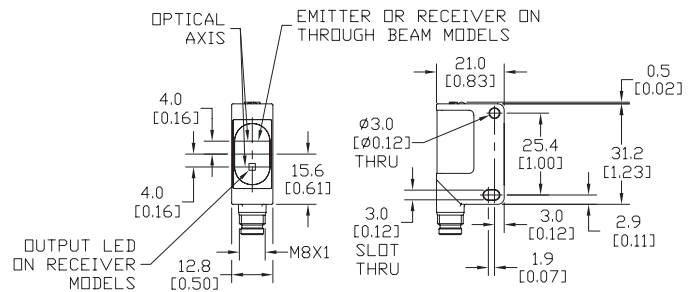
**QM\*S Background Suppression Model - M8 Quick Disconnect**



**All Other QM Series - 2m Output**



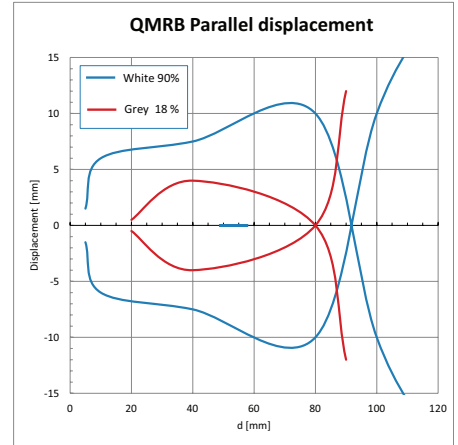
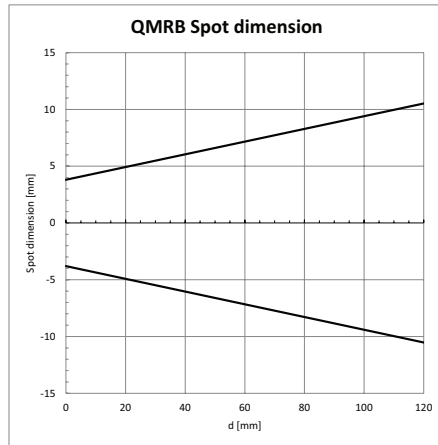
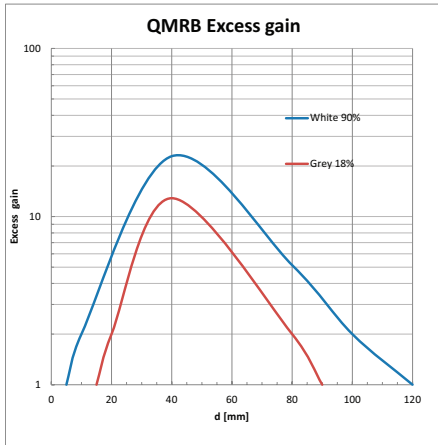
**All Other QM Series - M8 Quick-Disconnect**



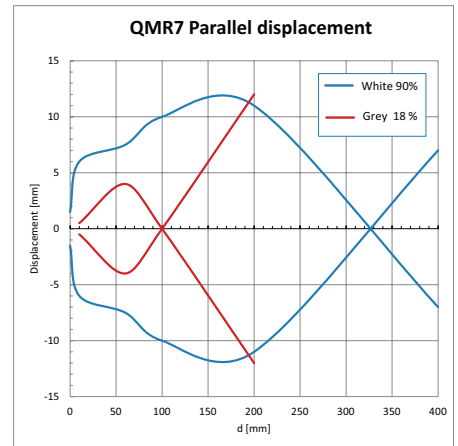
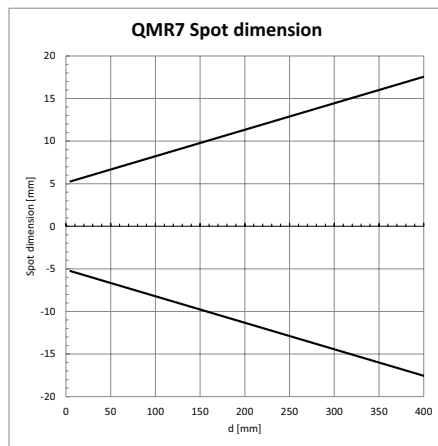
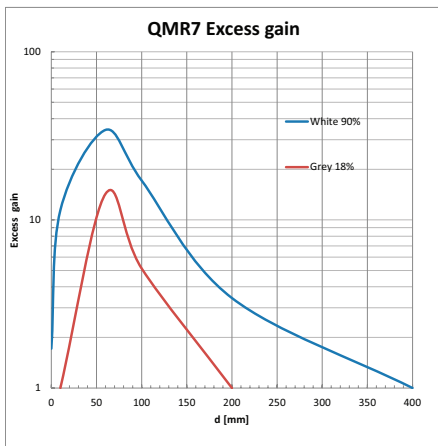
# QM Series Photoelectric Sensors

## Characteristic Curves

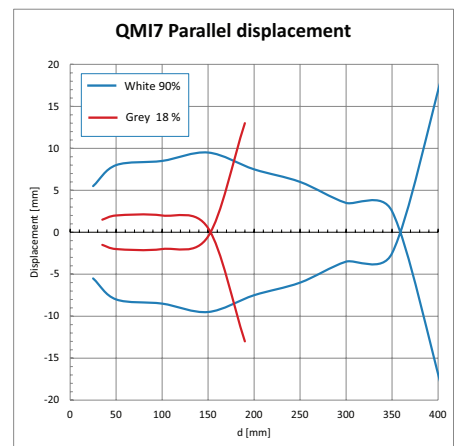
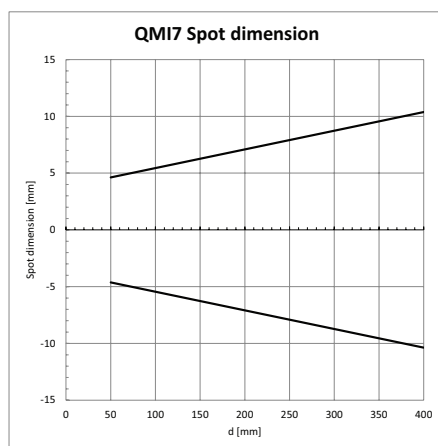
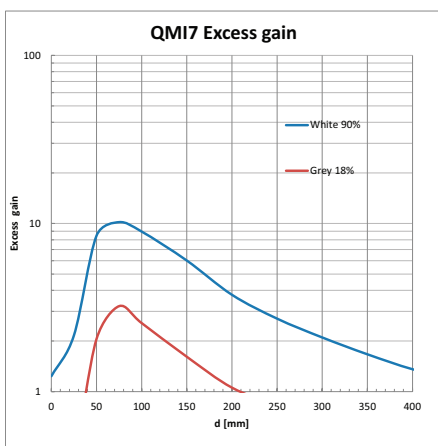
### QMRBx



### QMR7x



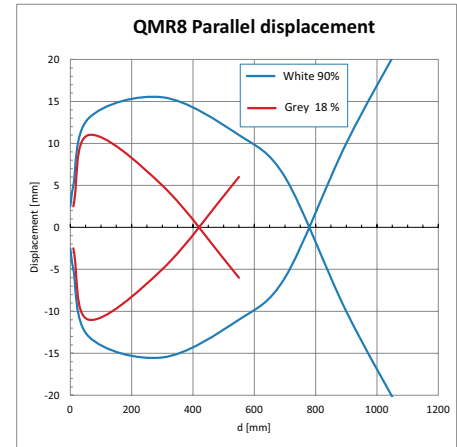
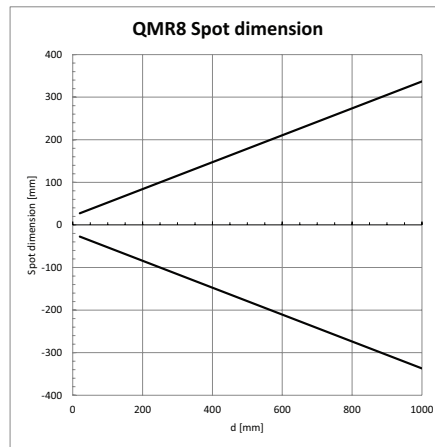
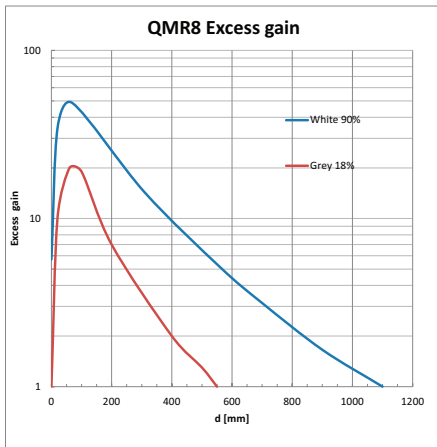
### QMI7x



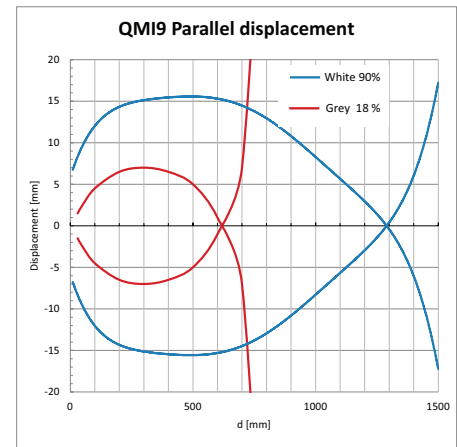
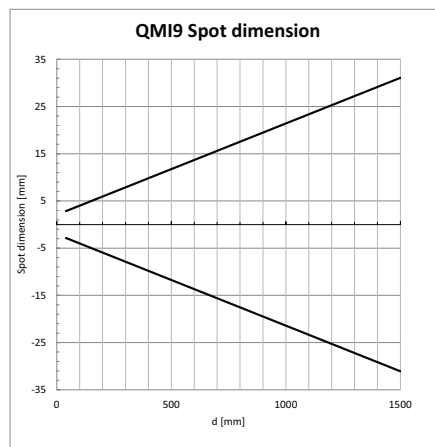
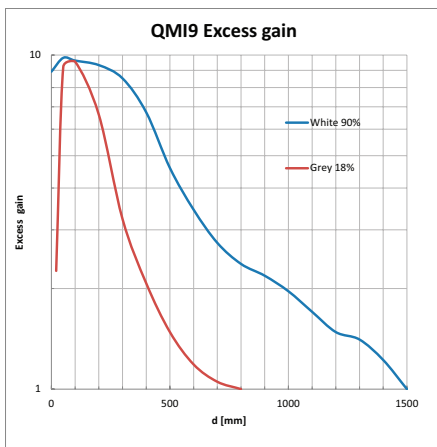
# QM Series Photoelectric Sensors

## Characteristic Curves

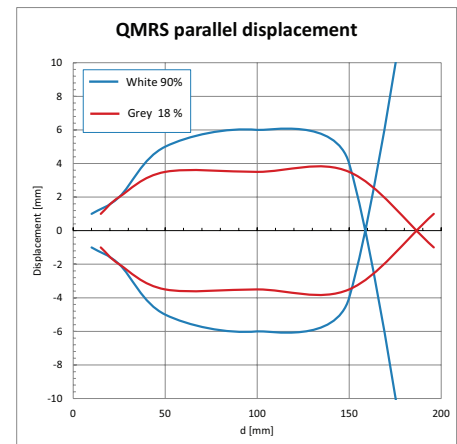
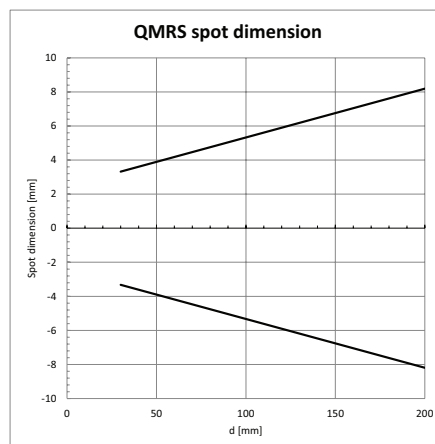
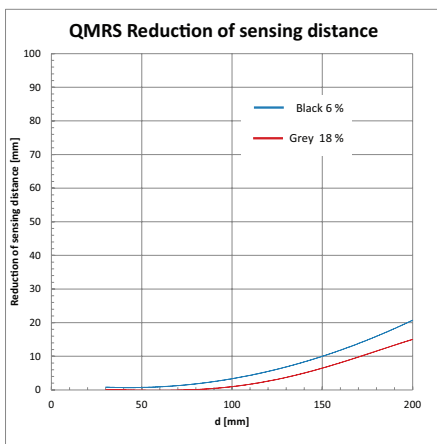
### QMR8x



### QMI9x



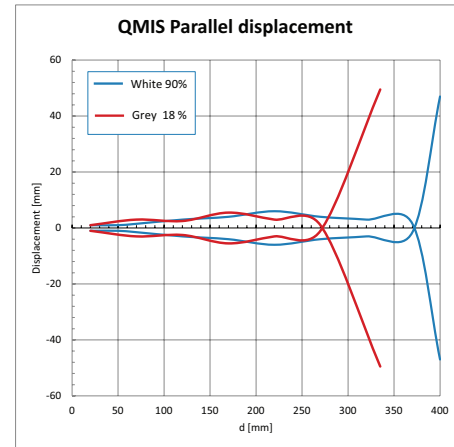
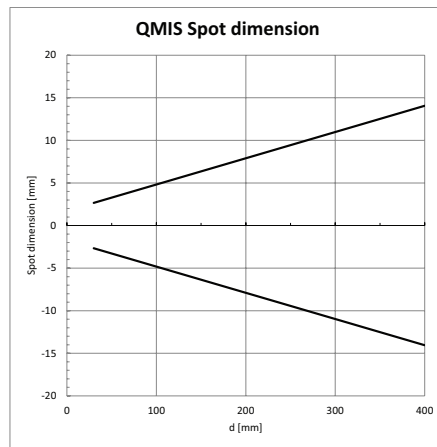
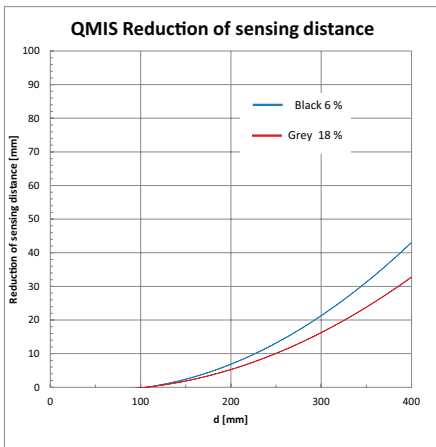
### QMRSx



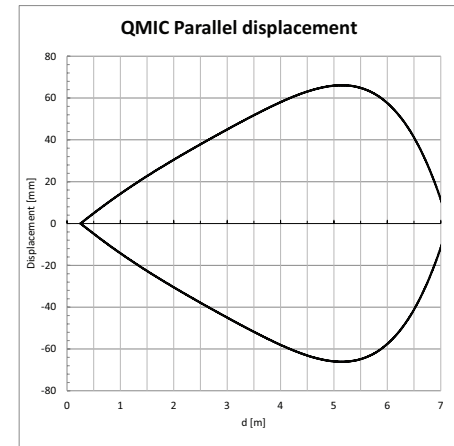
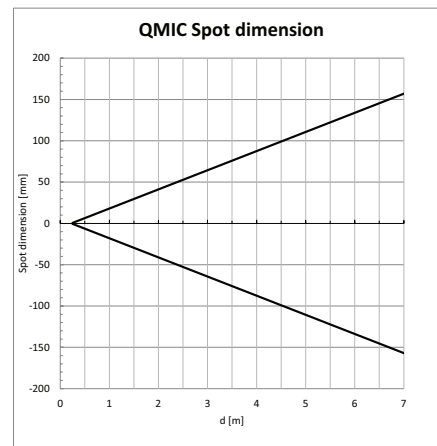
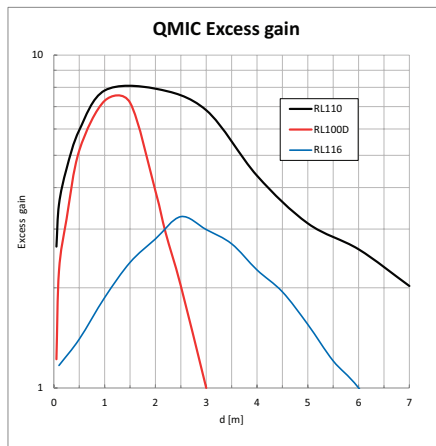
# QM Series Photoelectric Sensors

## Characteristic Curves

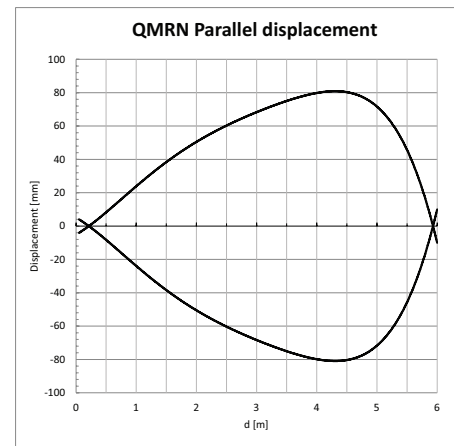
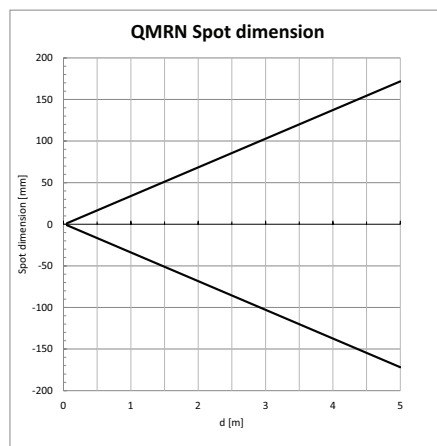
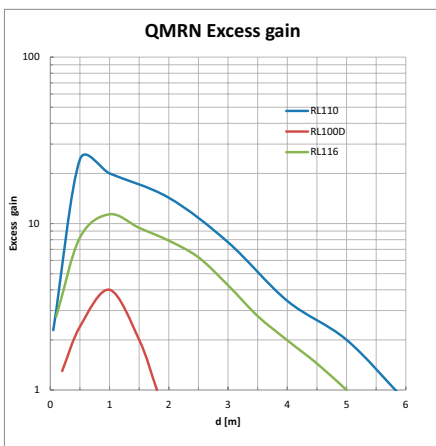
### QMISx



### QMICx



### QMRNx

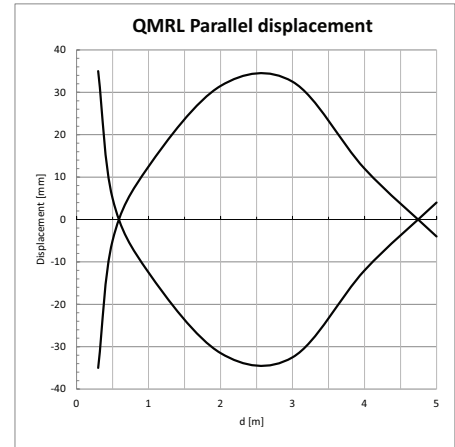
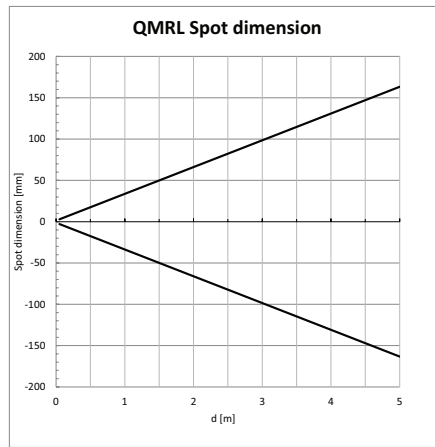
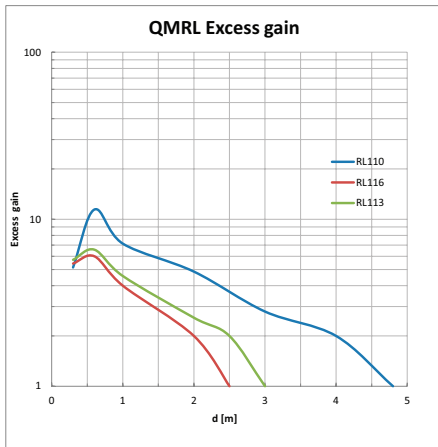




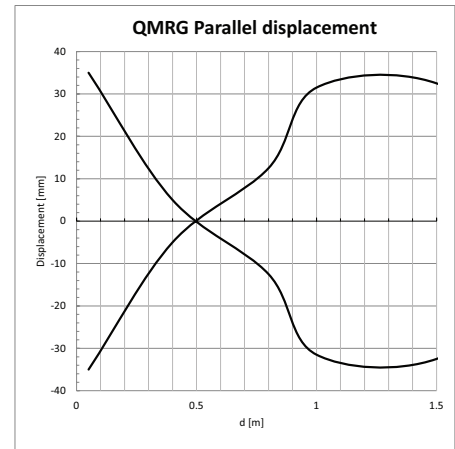
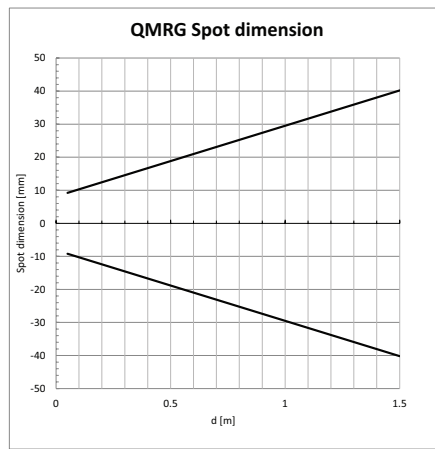
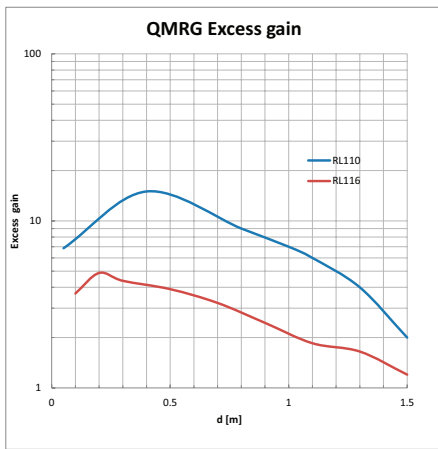
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## Characteristic Curves

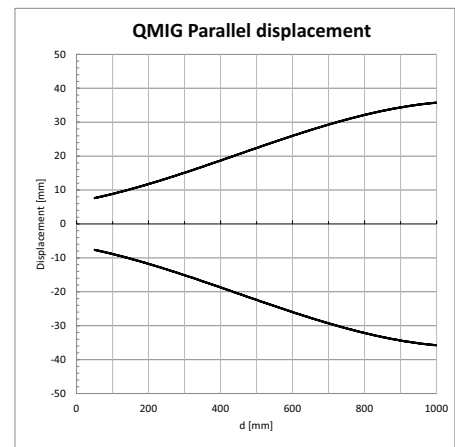
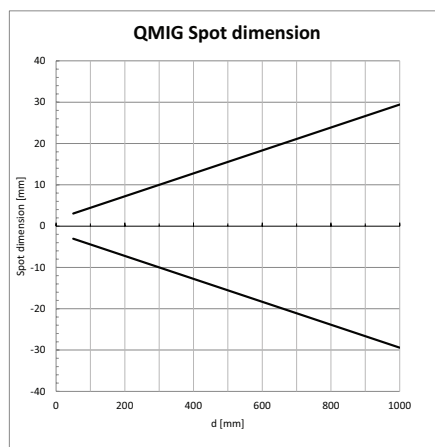
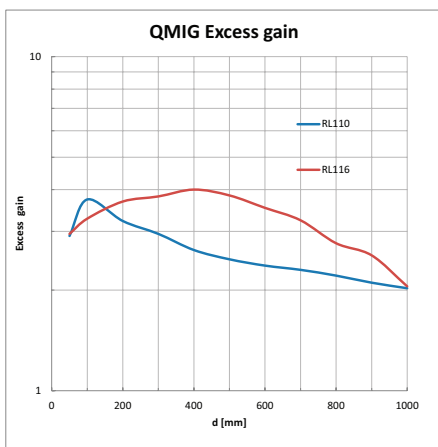
### QMRLx



### QMRGx



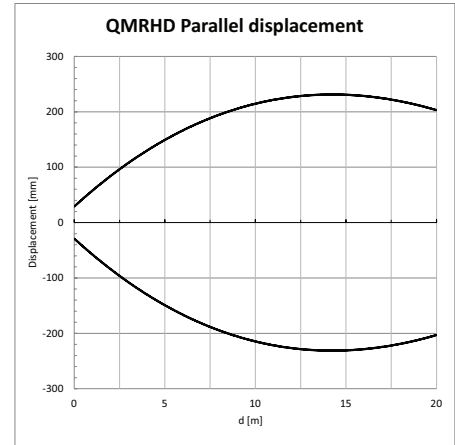
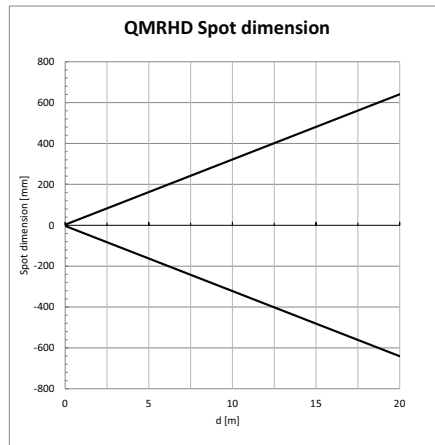
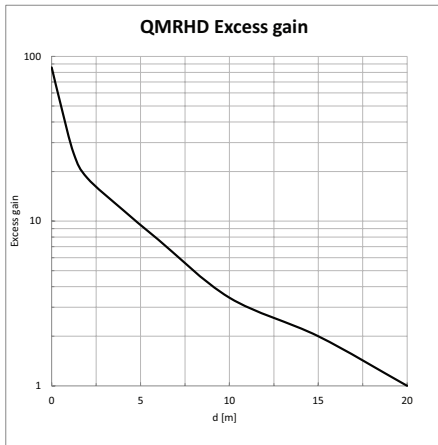
### QMIGx



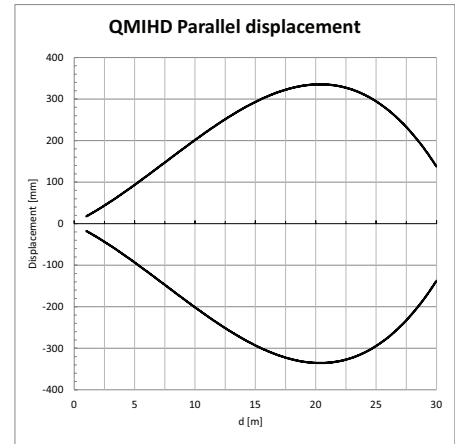
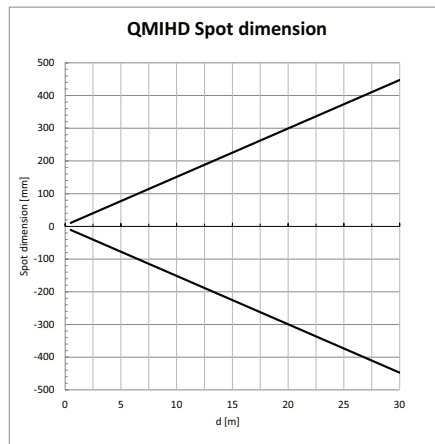
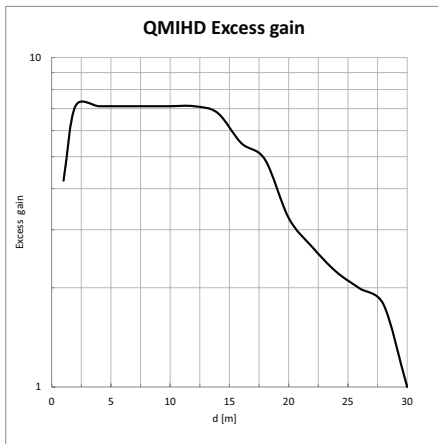
# QM Series Photoelectric Sensors

## Characteristic Curves

### QMRHDx



### QMIHDx

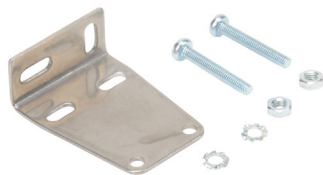


# Accessories for QM and FM Series Photoelectric Sensors

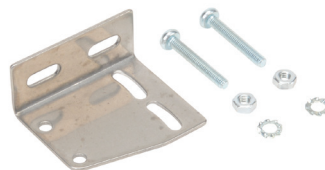
## Right-angle Mounting Brackets

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]
<a href="#"><u>ST101</u></a>	\$3.00	Micro Detectors mounting bracket, right-angle vertical, 304 stainless steel. For use with QM & FM series photoelectric sensors. Mounting hardware included.	<a href="#">PDF</a>	0.04
<a href="#"><u>ST102</u></a>	\$3.00	Micro Detectors mounting bracket, right-angle horizontal, 304 stainless steel. For use with QM & FM series photoelectric sensors. Mounting hardware included.	<a href="#">PDF</a>	0.05
<a href="#"><u>ST104</u></a>	\$4.50	Micro Detectors mounting bracket, protective horizontal, 304 stainless steel. For use with prewired QM & FM series photoelectric sensors only. Mounting hardware included.	<a href="#">PDF</a>	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]
<a href="#"><u>ST103</u></a>	\$4.50	Micro Detectors mounting bracket, protective vertical, 304 stainless steel. For use with prewired QM series photoelectric sensors only. Mounting hardware included.	<a href="#"><u>PDF</u></a>	0.06



**ST103**

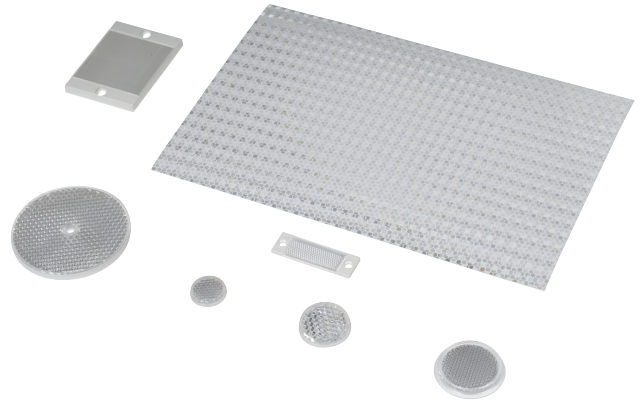
# Reflectors

## 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	
<a href="#">RL102</a>	\$38.00	<a href="#">PDF</a>	10	25	IEC IP67	Customer-supplied adhesive or other mounting method required	Reflective face: PMMA Polymethylmethacrylate (acrylic)  Base material: ABS (Acrylonitrile-butadiene-styren)	
<a href="#">RL102-1</a>	\$4.25		1	[0.98]				
<a href="#">RL103</a>	\$42.50	<a href="#">PDF</a>	10	34.5				
<a href="#">RL103-1</a>	\$4.75		1	[1.36]				
<a href="#">RL104</a>	\$42.50	<a href="#">PDF</a>	10	46				Two 4.3 mm holes
<a href="#">RL104-1</a>	\$4.75		1	[1.81]				
<a href="#">RL105G</a>	\$38.00	<a href="#">PDF</a>	10	95 x 38		Two 6mm holes		
<a href="#">RL105G-1</a>	\$4.25		1	[3.74 x 1.50]				
<a href="#">RL106G</a>	\$42.50	<a href="#">PDF</a>	10	182 x 42		One 5mm hole		
<a href="#">RL106G-1</a>	\$4.75		1	[7.17 x 1.65]				
<a href="#">RL110</a>	\$19.00	<a href="#">PDF</a>	10	84		Two 3mm holes		
<a href="#">RL110-1</a>	\$2.00		1	[3.31]				
<a href="#">RL116</a>	\$19.00	<a href="#">PDF</a>	10	41 x 60		Self-adhesive		Paper (Acrylic tape with micro prism)
<a href="#">RL116-1</a>	\$2.00		1	[3.54 x 2.36]				
<a href="#">RL100DA4</a>	\$38.50	NA	1	200 x 300				
<a href="#">RL100DC4</a>	\$12.00	NA	1	50 x 300				
<a href="#">RL100DQ1</a>	\$8.75	NA	1	100 x 100				
<a href="#">RL111G</a>	\$60.00	<a href="#">PDF</a>	10	22.5 x 47	Two 3mm slots			
<a href="#">RL111G-1</a>	\$7.25		1	[0.89 x 1.85]				
<a href="#">RL112G</a>	\$44.00	<a href="#">PDF</a>	10	19 x 73			Two 4mm slots	
<a href="#">RL112G-1</a>	\$4.75		1	[0.75 x 2.87]				
<a href="#">RL113G</a>	\$53.00	<a href="#">PDF</a>	10	51.4 x 60.3				
<a href="#">RL113G-1</a>	\$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	<a href="#">RL201</a>	<a href="#">RL201-1</a>	<a href="#">RL203</a>	<a href="#">RL203-1</a>	<a href="#">RL204</a>	<a href="#">RL204-1</a>
<b>Price</b>	\$38.00	\$8.25	\$35.50	\$7.75	\$30.00	\$6.75
<b>Quantity</b>	5	1	5	1	5	1
<b>Drawing Link</b>	<a href="#">PDF</a>		<a href="#">PDF</a>		<a href="#">PDF</a>	
<b>Dimensions</b>	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	
<b>Degree of Protection <sup>1</sup></b>	IEC IP67					
<b>Mounting</b>	Two 0.4 mm holes		Two 0.4 mm holes		Two 0.3 mm holes	
<b>Materials</b>	Acrylic/polycarbonate					

<sup>1</sup> Not recommended for applications involving moist air environments or water immersion.

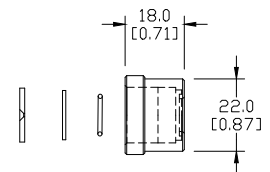
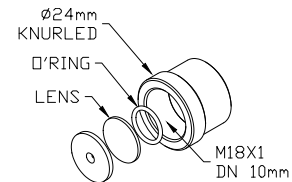
# Shutters and Adapters

## 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



### Dimensions mm [inches]



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	<a href="#">PDF</a>	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]

