

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		5–100mm [0.2–3.94in]	Visible Red 630 nm	NPN	2m [6.5ft] cable	Diagram 1	QMRBx
QMRB-0N-0F				NPN	4-pin M8 quick-disconnect	Diagram 1	
QMRB-0P-0A				PNP	2m [6.5ft] cable	Diagram 2	
QMRB-0P-0F				PNP	4-pin M8 quick-disconnect	Diagram 2	
QMR7-0N-0A		0–400mm [0–15.75in]	Visible Red 630 nm	NPN	2m [6.5ft] cable	Diagram 1	QMR7x
QMR7-0N-0F				NPN	4-pin M8 quick-disconnect	Diagram 1	
QMR7-0P-0A				PNP	2m [6.5ft] cable	Diagram 2	
QMR7-0P-0F				PNP	4-pin M8 quick-disconnect	Diagram 2	
QMI7-0N-0A			Infrared 850 nm	NPN	2m [6.5ft] cable	Diagram 1	QMI7x
QMI7-0N-0F				NPN	4-pin M8 quick-disconnect	Diagram 1	
QMI7-0P-0A				PNP	2m [6.5ft] cable	Diagram 2	
QMI7-0P-0F				PNP	4-pin M8 quick-disconnect	Diagram 2	
QMR8-0N-0A		0–1m [0–3.28ft]	Visible Red 630 nm	NPN	2m [6.5ft] cable	Diagram 1	QMR8x
QMR8-0N-0F				NPN	4-pin M8 quick-disconnect	Diagram 1	
QMR8-0P-0A				PNP	2m [6.5ft] cable	Diagram 2	
QMR8-0P-0F				PNP	4-pin M8 quick-disconnect	Diagram 2	
QMI9-0N-0A		0–1.5m [0–4.9ft]	Infrared 850 nm	NPN	2m [6.5ft] cable	Diagram 1	QMI9x
QMI9-0N-0F				NPN	4-pin M8 quick-disconnect	Diagram 1	
QMI9-0P-0A				PNP	2m [6.5ft] cable	Diagram 2	
QMI9-0P-0F				PNP	4-pin M8 quick-disconnect	Diagram 2	

Wiring Diagrams

Diagram 1
4-Wire NPN Output

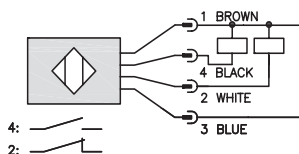
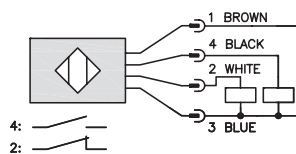
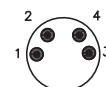


Diagram 2
4-Wire PNP Output



M8 connector



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		30–200mm [1.2–7.87in]	Visible Red 630 nm	NPN	2m [6.5ft] cable	Diagram 1	QMRSx
QMRS-0N-0F				NPN	4-pin M8 quick-disconnect	Diagram 1	
QMRS-0P-0A				PNP	2m [6.5ft] cable	Diagram 2	
QMRS-0P-0F				PNP	4-pin M8 quick-disconnect	Diagram 2	
QMIS-0N-0A		30–400mm [1.2–15.75in]	Infrared 850 nm	NPN	2m [6.5ft] cable	Diagram 1	QMISx
QMIS-0N-0F				NPN	4-pin M8 quick-disconnect	Diagram 1	
QMIS-0P-0A				PNP	2m [6.5ft] cable	Diagram 2	
QMIS-0P-0F				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		0.1–7m [0.32–22.96ft]	Infrared 850 nm	NPN	2m [6.5ft] cable	Diagram 1	QMICx
QMIC-0N-0F				NPN	4-pin M8 quick-disconnect	Diagram 1	
QMIC-0P-0A				PNP	2m [6.5ft] cable	Diagram 2	
QMIC-0P-0F				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		0.1–5m [0.32–16.4ft]	Visible Red 630 nm	NPN	2m [6.5ft] cable	Diagram 1	QMRNx
QMRN-0N-0F				NPN	4-pin M8 quick-disconnect	Diagram 1	
QMRN-0P-0A				PNP	2m [6.5ft] cable	Diagram 2	
QMRN-0P-0F				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		0.4–4m [1.31–13.12ft]	Visible Red 630 nm	NPN	2m [6.5ft] cable	Diagram 1	QMRLx
QMRL-0N-0F				NPN	4-pin M8 quick-disconnect	Diagram 1	
QMRL-0P-0A				PNP	2m [6.5ft] cable	Diagram 2	
QMRL-0P-0F				PNP	4-pin M8 quick-disconnect	Diagram 2	
QMRG-0N-0A		0.05–1.5m [0.16–4.9ft]		NPN	2m [6.5ft] cable	Diagram 1	QMRGx
QMRG-0N-0F				NPN	4-pin M8 quick-disconnect	Diagram 1	
QMRG-0P-0A				PNP	2m [6.5ft] cable	Diagram 2	
QMRG-0P-0F				PNP	4-pin M8 quick-disconnect	Diagram 2	
QMIG-0N-0A		0.05–1m [0.16–3.28ft]	Infrared 850 nm	NPN	2m [6.5ft] cable	Diagram 1	QMIGx
QMIG-0N-0F				NPN	4-pin M8 quick-disconnect	Diagram 1	
QMIG-0P-0A				PNP	2m [6.5ft] cable	Diagram 2	
QMIG-0P-0F				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		0.0–20m [0–65.62ft]	Visible Red 630 nm	NPN	2m [6.5ft] cable	Diagram 1/3	QMRHDx
QMRHD-0N-0F				NPN	4-pin M8 quick-disconnect	Diagram 1/3	
QMRHD-0P-0A				PNP	2m [6.5ft] cable	Diagram 2/3	
QMRHD-0P-0F				PNP	4-pin M8 quick-disconnect	Diagram 2/3	
QMIHD-0N-0A		0.0–30m [0–98.43ft]	Infrared 850 nm	NPN	2m [6.5ft] cable	Diagram 1/3	QMIHDx
QMIHD-0N-0F				NPN	4-pin M8 quick-disconnect	Diagram 1/3	
QMIHD-0P-0A				PNP	2m [6.5ft] cable	Diagram 2/3	
QMIHD-0P-0F				PNP	4-pin M8 quick-disconnect	Diagram 2/3	

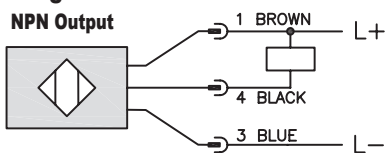
Note: Through-beam models include emitter and receiver pair.

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

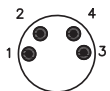


Diagram 2

PNP Output

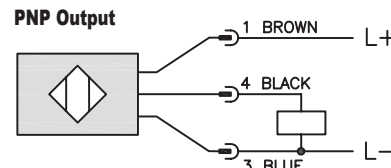
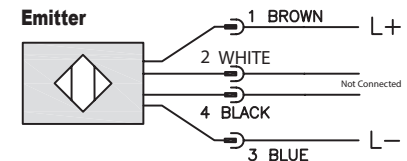
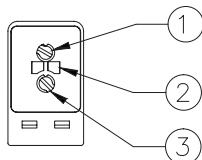


Diagram 3

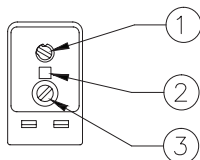
Emitter



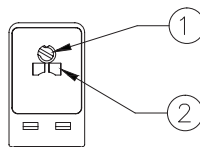
LED Indicators and Adjustments



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
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: 30 mA, Infrared: 45 mA				
Operating (Load) Current	≤100 mA				
Off-state (Leakage) Current	≤10 uA				
Voltage Drop	2V max @ 100 mA				
Switching Frequency	QMRBx, QMR8, QMI9 (1 kHz) QMRx7 (2 kHz)	1 kHz	2 kHz		
Ripple	≤10%				
Time Delay Before Availability (tv)	≤100 ms				
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 [0.35oz]; Cable: 52g [1.83oz]				
Connectors	Refer to QM Series in the Photoelectric Sensors Selection Guide				
Accessories	–	–	–		
Agency Approvals	CE, cULus E187310				

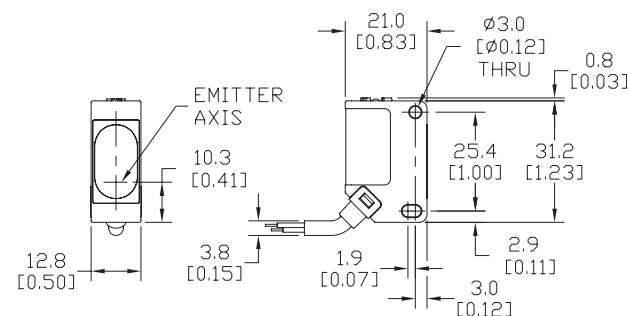
To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

QM Series Photoelectric Sensors

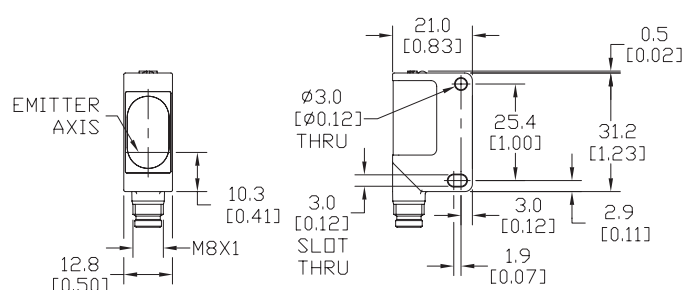
Dimensions

mm [inches]

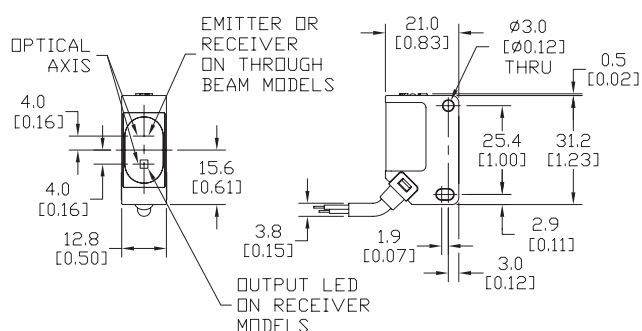
QM*S Background Suppression Model - 2m Output



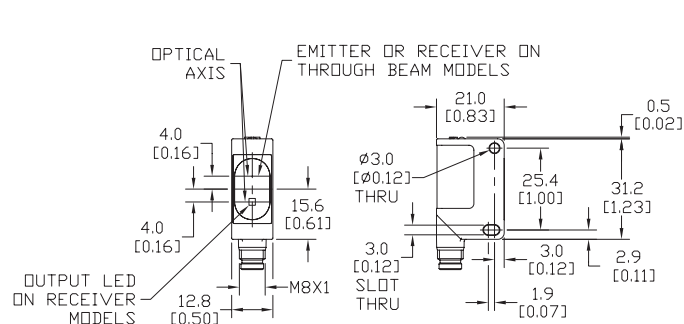
QM*S Background Suppression Model - M8 Quick Disconnect



All Other QM Series - 2m Output



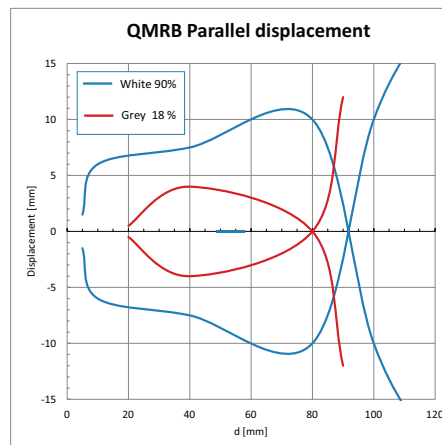
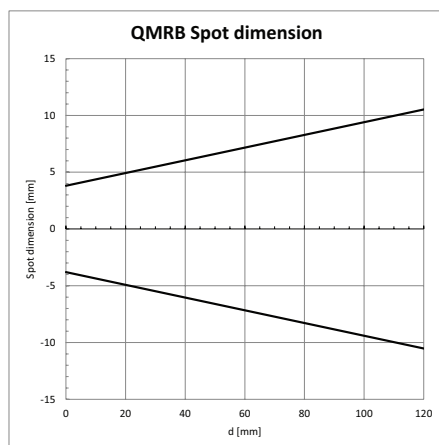
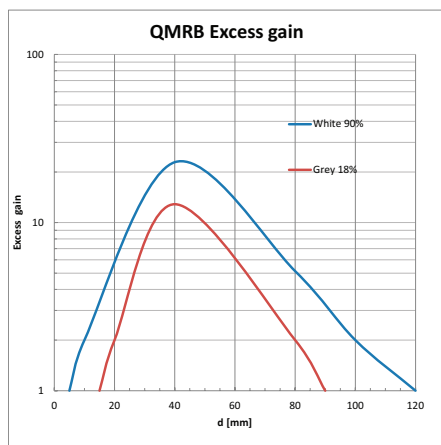
All Other QM Series - M8 Quick-Disconnect



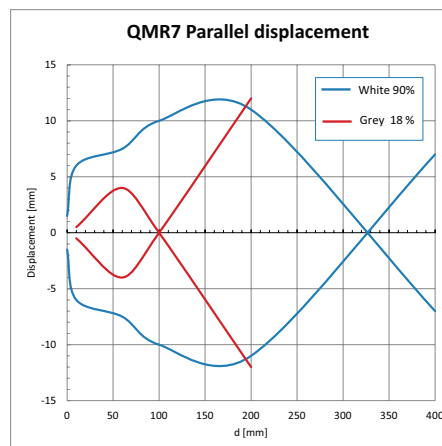
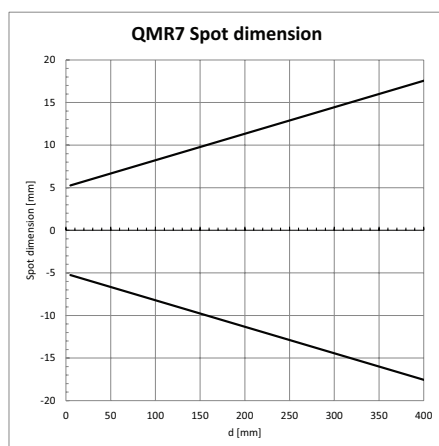
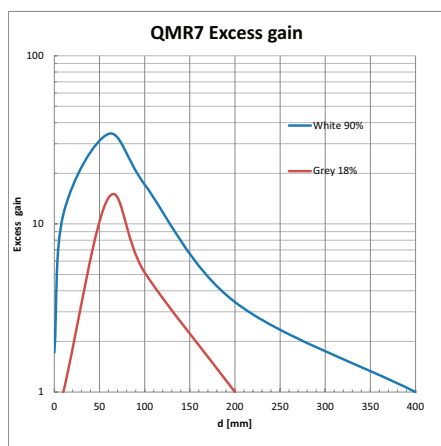
QM Series Photoelectric Sensors

Characteristic Curves

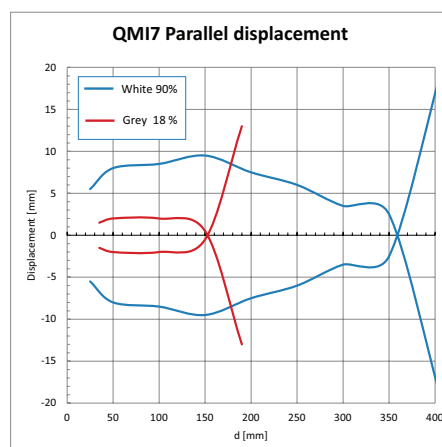
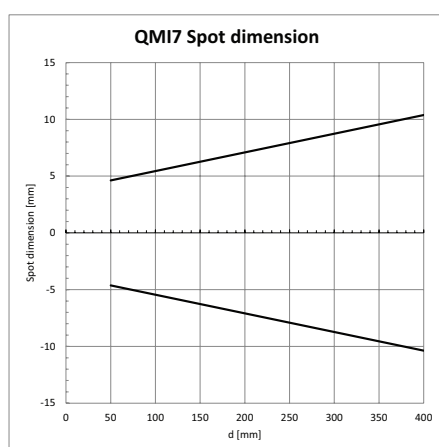
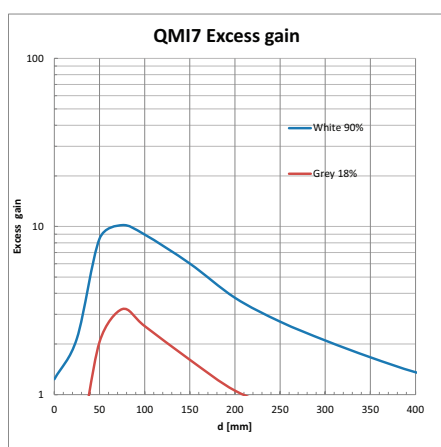
QMRBx



QMR7x



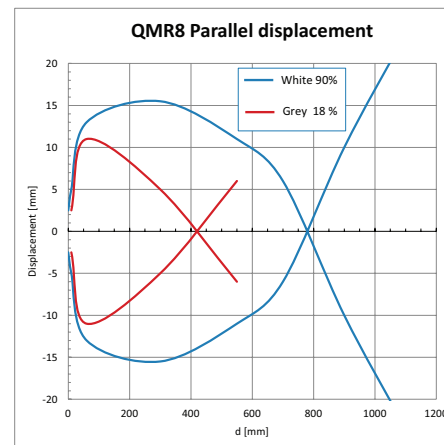
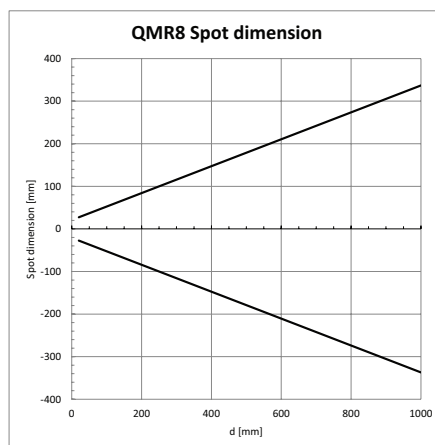
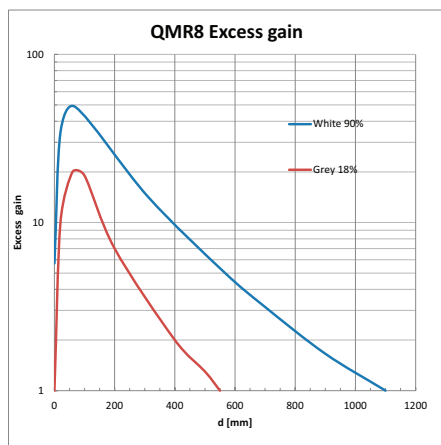
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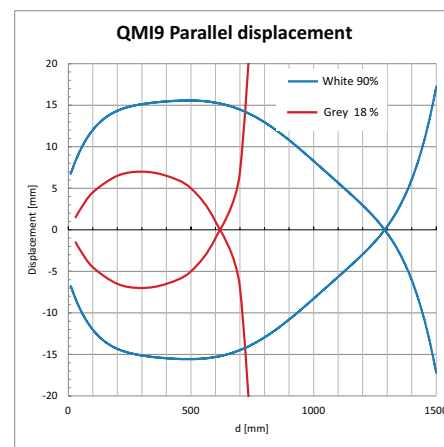
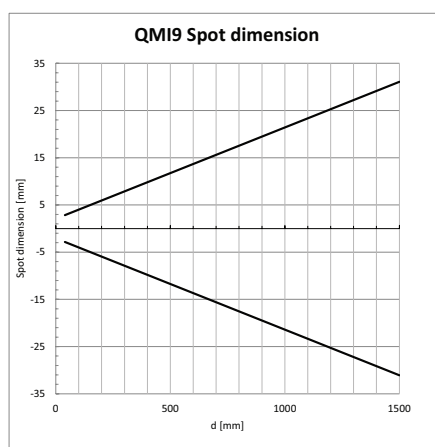
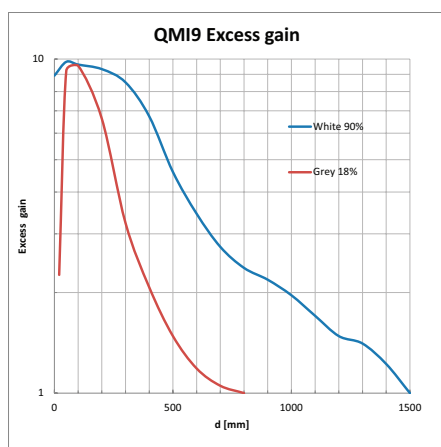
QM Series Photoelectric Sensors

Characteristic Curves

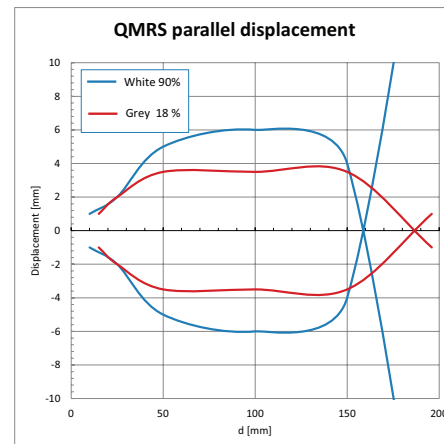
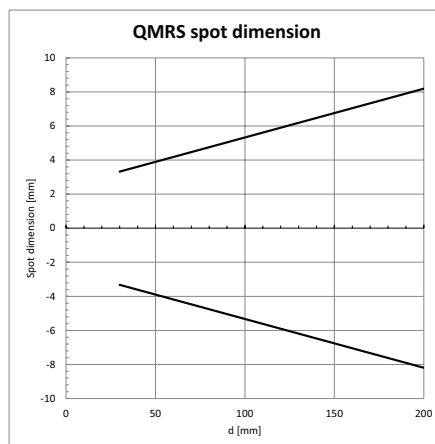
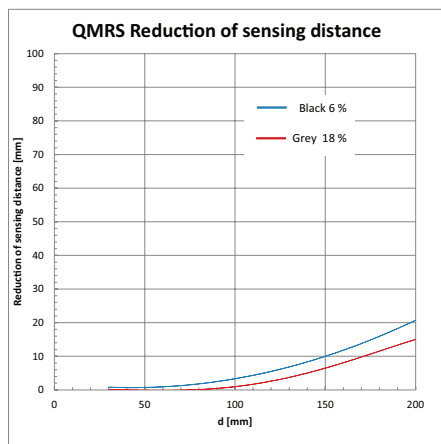
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QMI9x



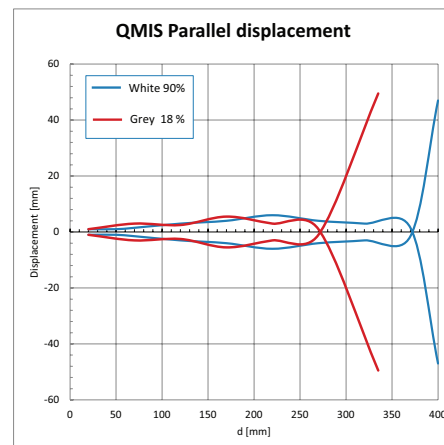
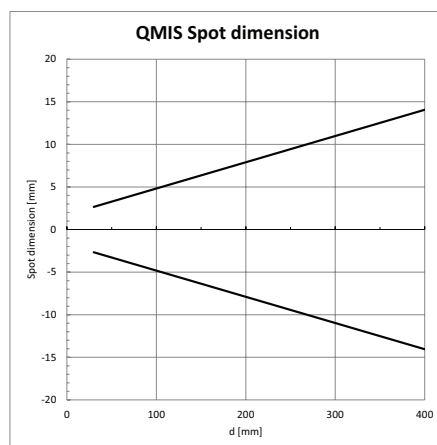
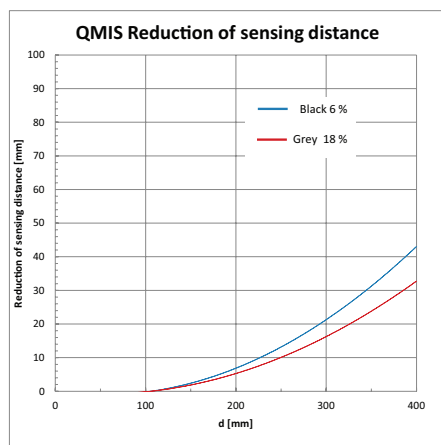
QMR5x



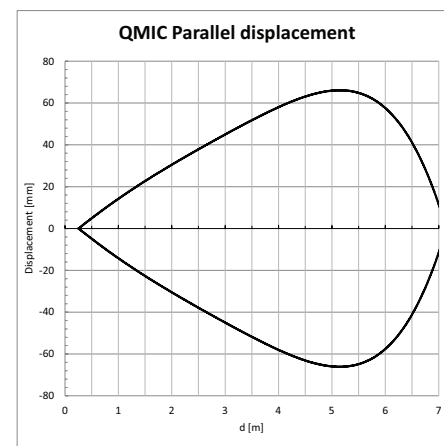
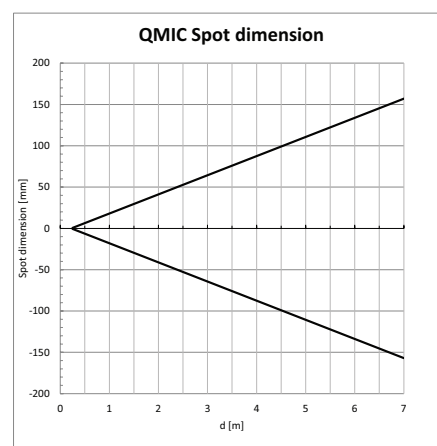
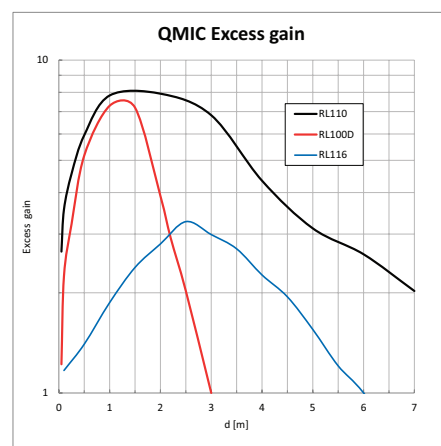
QM Series Photoelectric Sensors

Characteristic Curves

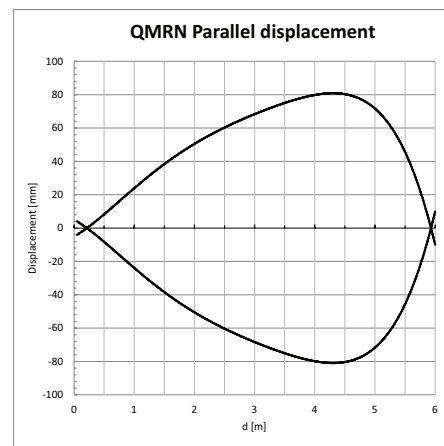
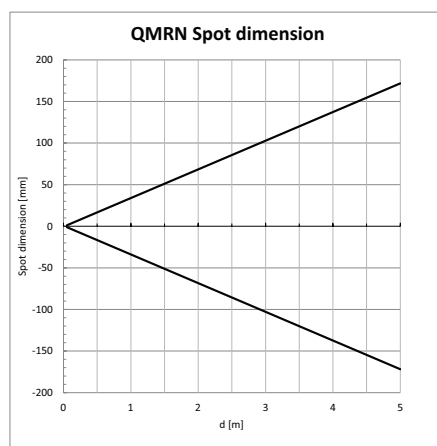
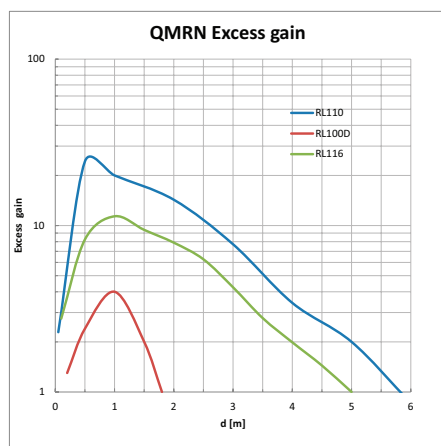
QMISx



QMICx



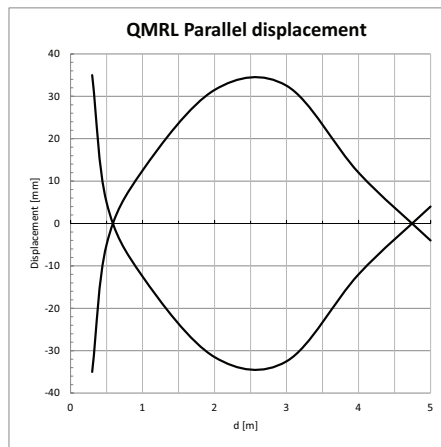
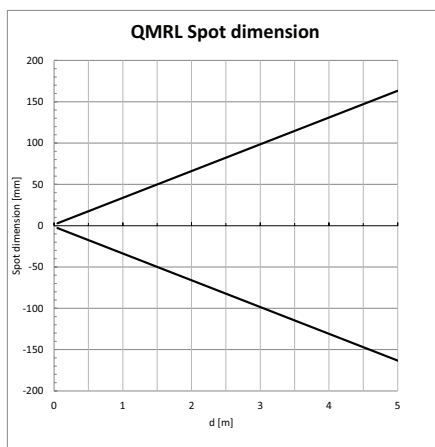
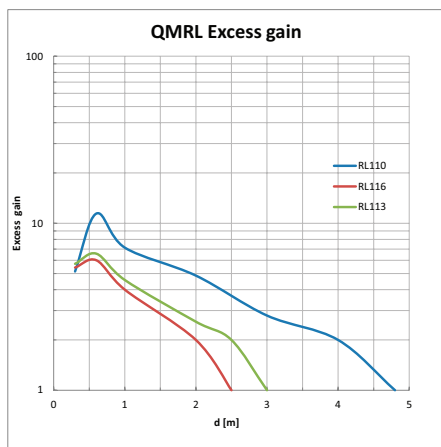
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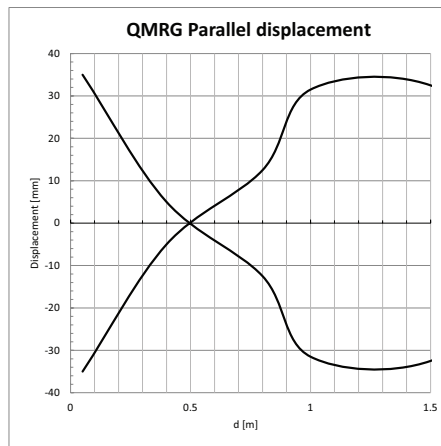
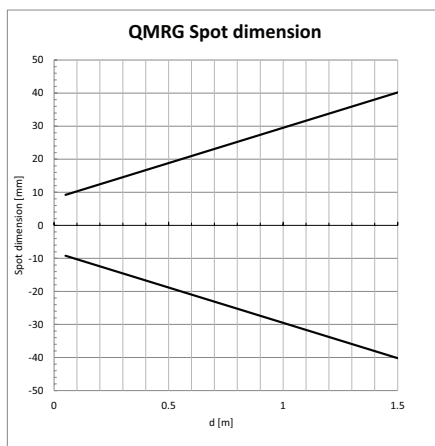
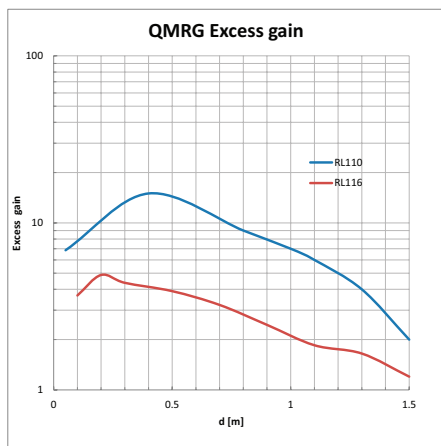
QM Series Photoelectric Sensors

Characteristic Curves

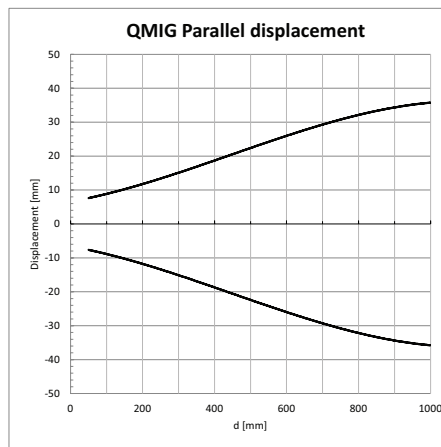
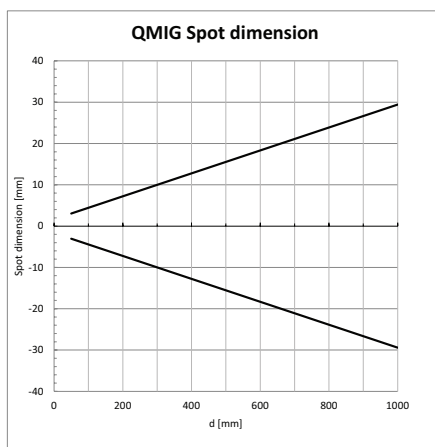
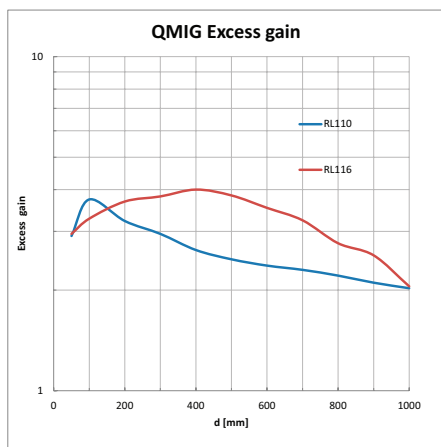
QMRLx



QMRGx



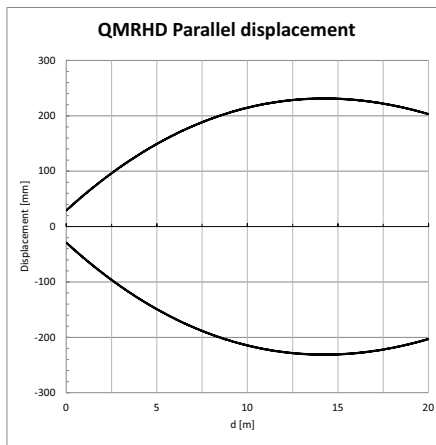
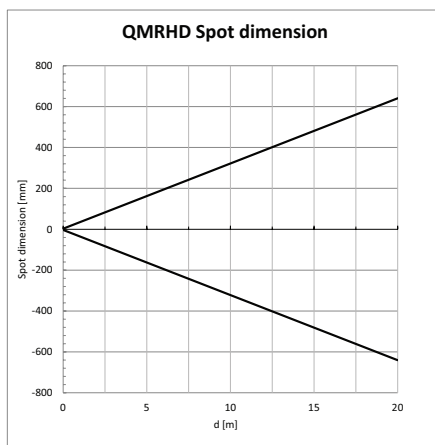
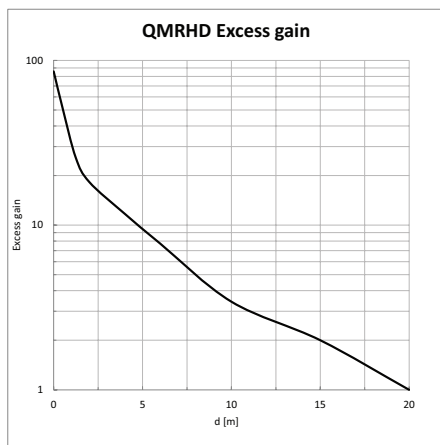
QMIGx



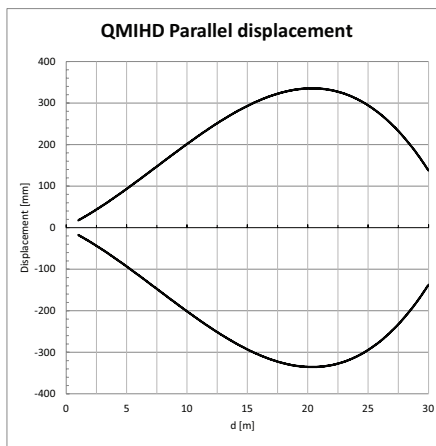
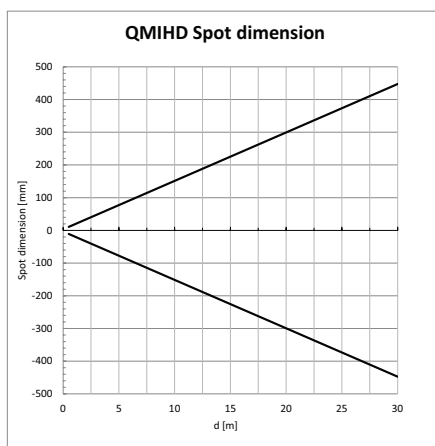
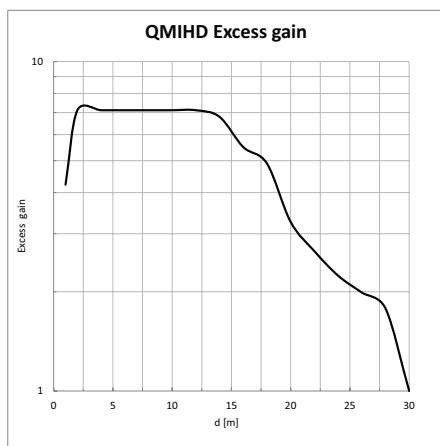
QM Series Photoelectric Sensors

Characteristic Curves

QMRHDx



QMIHDx

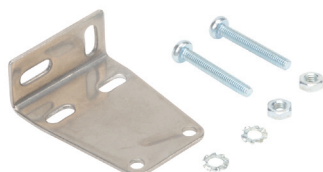


Accessories for QM and FM Series Photoelectric Sensors

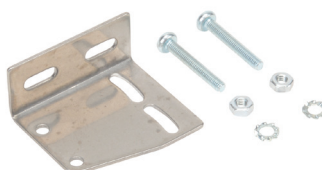
Right-angle Mounting Brackets

Mounting bracket, right-angle vertical, 304 stainless steel. For use with QM and 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>		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>		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>		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
<u>ST103</u>		Micro Detectors mounting bracket, protective vertical, 304 stainless steel. For use with prewired QM series photoelectric sensors only. Mounting hardware included.	<u>PDF</u>	0.06



ST103

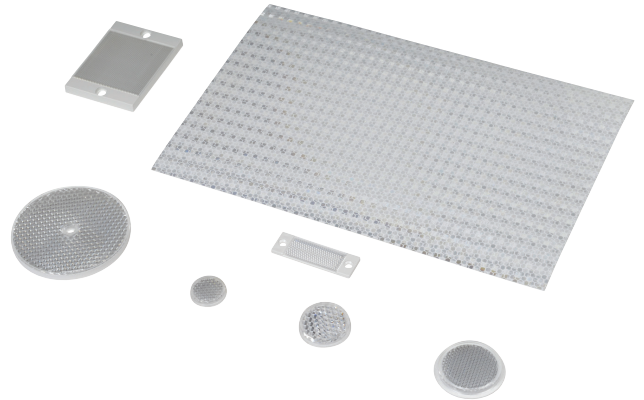
Reflectors

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 $\pm 15^\circ$.



Reflector Specifications							
Part number	Price	Drawing Link	Quantity	Dimensions mm [in]	Degree of Protection	Mounting	Materials
RL102		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			1	[0.98]			
RL103		PDF	10	34.5			
RL103-1			1	[1.36]			
RL104		PDF	10	46			
RL104-1			1	[1.81]			
RL105G		PDF	10	95 x 38		Two 4.3mm holes	
RL105G-1			1	[3.74 x 1.50]			
RL106G		PDF	10	182 x 42		Two 6mm holes	
RL106G-1			1	[7.17 x 1.65]			
RL110		PDF	10	84		One 5mm hole	
RL110-1			1	[3.31]			
RL116		PDF	10	41 x 60		Two 3mm holes	
RL116-1			1	[3.54 x 2.36]			
RL100DA4		NA	1	200 x 300 [7.87 x 11.81]		Self-adhesive	Paper (Acrylic tape with micro prism)
RL100DC4		NA	1	50 x 300 [1.97 x 11.81]			
RL100DQ1		NA	1	100 x 100 [3.94 x 3.94]			
RL111G		PDF	10	22.5 x 47		Two 3mm slots	Reflective face: PMMA Polymethylmethacrylate (acrylic) Base material: ABS (Acrylonitrile-butadiene-styren)
RL111G-1			1	[0.89 x 1.85]			
RL112G		PDF	10	19 x 73			
RL112G-1			1	[0.75 x 2.87]			
RL113G		PDF	10	51.4 x 60.3		Two 4mm slots	
RL113G-1			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

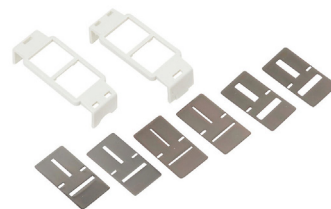
Specifications						
Part Number	<i>RL201</i>	<i>RL201-1</i>	<i>RL203</i>	<i>RL203-1</i>	<i>RL204</i>	<i>RL204-1</i>
Price						
Quantity	5	1	5	1	5	1
Drawing Link	PDF		PDF		PDF	
Dimensions	60 x 82mm 2.36 x 3.23in		19 x 6mm 0.75 x 2.36in		20mm x 32mm 0.80 in x 1.26in	
Degree of Protection ¹	IEC IP67	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

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

Shutters and Adapters

Shutter Accessory for QM Series Sensors

Part Number	Price	Drawing Link	Description	Weight [lb]
STQM0		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 STQM0 Sensing Distances

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

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

Right-angle M18 (18mm) 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%.



Beam Adapters

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

Dimensions mm [inches]

