MV Series AC Powered Photoelectric Sensors

M18 (18mm) Plastic- AC

- Diffuse, polarized reflective, and through-beam models
- Plastic housing
- Axial cable or M12 quick-disconnect models
- Operates on 20 to 253 VAC
- IP67 rated

MV Series Photoelectric Sensors Selection Chart

Part Number		Price	Sensing Range	Output State	Connection	Wiring	Dimensions	Characteristic Curves
Diffuse								
MV2-A0-0A		$09pu:	100mm [3.9 in]	N.O.	2m [6.5 ft] axial cable	Diagram 1	Figure 1	Chart 1
MV2-A0-0E		$09pv:			M12 [12mm] connector	Diagram 1	Figure 2	
MV4-A0-0A		$09px:	200mm [7.9 in]		2m [6.5 ft] axial cable	Diagram 1	Figure 1	Chart 2
MV4-A0-0E		$09py:			M12 [12mm] connector	Diagram 1	Figure 2	
MV6-A0-0A		$09pz:	400mm [15.7 in]		2m [6.5 ft] axial cable	Diagram 1	Figure 1	Chart 3
MV6-A0-0E		$;09p]:			M12 [12mm] connector	Diagram 1	Figure 2	
Polarized reflective*								
MVP-A0-0A		$09uu:	3m [9.8 ft]	N.O.	2m [6.5 ft] axial cable	Diagram 1	Figure 1	Chart 4
MVP-A0-0E		$09uv:			M12 [12mm] connector	Diagram 1	Figure 2	
Through-beam								
MVE-00-0A	Emitter	$09us:	16m [52.5 ft]	Receiver dependent	2m [6.5 ft] axial cable	Diagram 2	Figure 1	Chart 5
MVE-00-0E	Emitter	$;09ut:			M12 [12mm] connector	Diagram 2	Figure 2	
MVR-A0-0A	Receiver	$09ux:		N.O.	2m [6.5 ft] axial cable	Diagram 1	Figure 1	Chart 5
MVR-A0-0E	Receiver	$09uy:		N.O.	M12 [12mm] connector	Diagram 1	Figure 2	

***Purchase reflectors separately. **Purchase one receiver and one emitter for a complete set.**

Wiring Diagrams

Diagram 1 Receiver

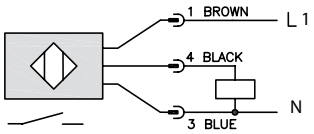
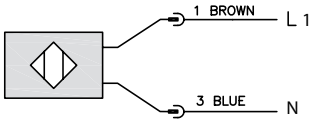
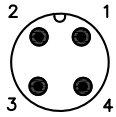


Diagram 2 Emitter



Connector

M12 Connector



Dimensions

(mm)

Figure 1

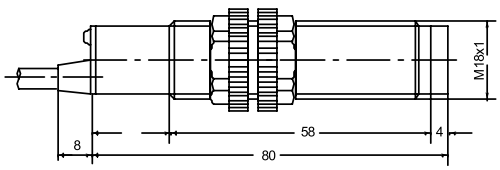
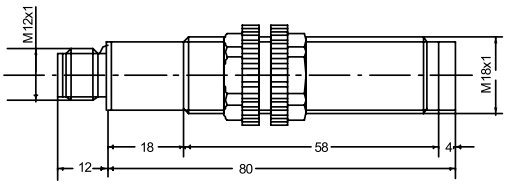


Figure 2



MV Series AC Powered Photoelectric Sensors

MV Series AC Photoelectric Sensors Specifications			
Specifications	***Diffuse Models***	***Reflective Models***	***Through-Beam Models***
Type	Diffuse reflection	Polarized reflective[4]	Through-beam[5]
Sensing Distance	MV2 models: 100mm[1] MV4 models: 200mm[1] MV6 models: 400mm[2]	3m[3]	16m
Light Spot Diameter	MV2 models: 50mm @ 100mm MV4 models 90mm @ 200mm MV6 models: 240mm @ 400mm	80mm @ 3m	1200mm @ 20m
Emission	Infrared [880nm]	Red [660nm]	Infrared [880nm]
Tolerance	+15/ -5% Sn		N/A
Sensitivity	Fixed		
Output Type	TRIAC		
Operating Voltage	20-253VAC, 50/60Hz		
No-load Supply Current	30mA (rms)		Emitter: 30mA (rms) Receiver: 15mA (rms)
Operating (Load) Current	5-300mA (rms) (Ta=50°C)		
Off-state (Leakage) Current	1.5mA (rms) max. at 250VAC		
Voltage Drop	3V max. I L=300mA		
Switching Frequency	25Hz		
Ripple	≤ 10%		
Time Delay Before Availability (tv)	200ms		
Short-Circuit Protection	Yes		
Operating Temperature	-25 to 70°C [-13 to 158°F]		
Protection Degree (DIN 40050)	IEC IP67		
LED Indicators - Switching Status	red (output energized)		
Housing Material	Polybutylene Terephthalate (PBT) plastic housing, polycarbonate (PC) cable exit		
Lens Material	Plexiglas 7N		
Shock/Vibration	See terminology section		
Tightening Torque	1 N•m [0.737 lb-ft]		
Weight	35-100 g		70-200 g
Connectors	2m [6.5 ft] axial cable; M12 [12mm] connector		
Agency Approvals	UL Recognized E130644, CE		

[1] With 100x100mm white matte paper
[2] With 200x200mm white matte paper
[3] With standard Ø84mm RL110 reflector
[4] Purchase reflectors separately.
[5] An emitter (SSE) and receiver (SSR) pair must be ordered for a complete sensor set.
To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

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

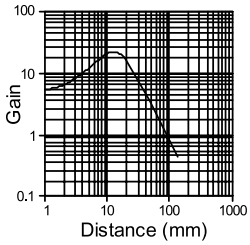
Warning: These products are not safety sensors and are not suitable for use in personal safety applications.

MV Series AC Powered Photoelectric Sensors

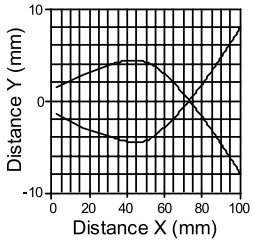
Characteristic curves

Chart 1 (Diffuse MV2)

Excess gain



Parallel displacement



Distance / target size

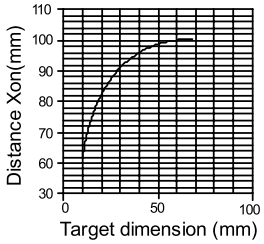
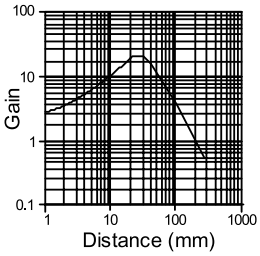
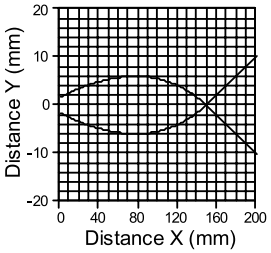


Chart 2 (Diffuse MV4)

Excess gain



Parallel displacement



Distance / target size

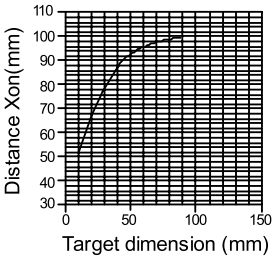
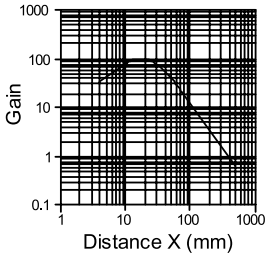
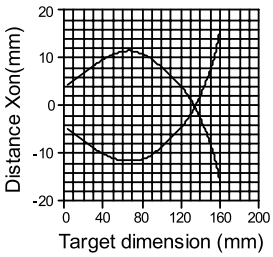


Chart 3 (Diffuse MV6)

Excess gain



Parallel displacement



Distance / target size

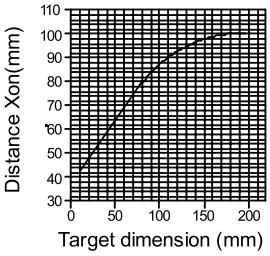
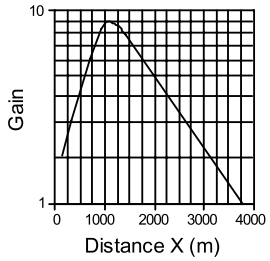


Chart 4 (Polarized reflective)

Excess gain



Parallel displacement

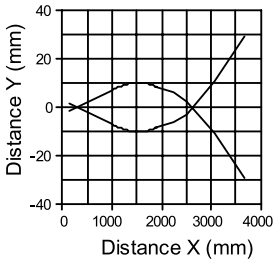
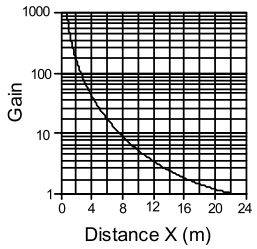
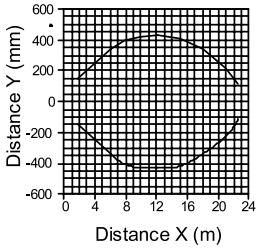


Chart 5 (Through-beam)

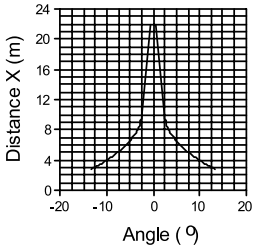
Excess gain



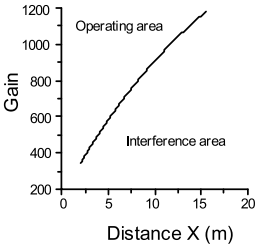
Parallel displacement



Angular displacement



Mutual interference



Accessories for 18mm Sensors

Axial Mounting Bracket

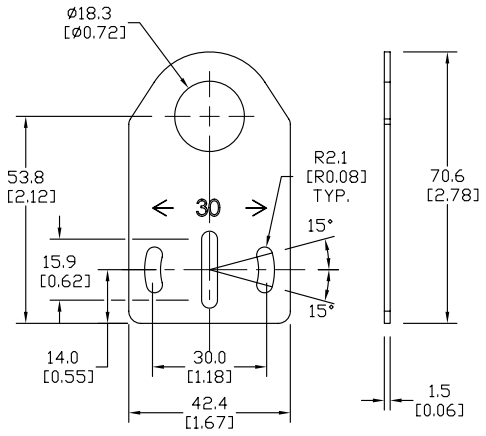
Axial mounting bracket available in zinc plated steel or 316L stainless steel. Has two mounting holes (use 4mm screws) and allows for rotation of an optical axis for right-beam-angle-adapter sensors. Hexagonal nuts not included. For use with 18mm sensors.

Accessories for 18mm Sensors			
Part Number	***Price***	***Description***	***Weight lb [g]***
ST18A	$;97,:	Micro Detectors mounting bracket, axial, zinc plated steel. For use with 18mm sensors.	0.06 [27.2]
ST18A7W	$980:	Micro Detectors mounting bracket, axial, 316L stainless steel. For use with 18mm sensors.	0.06 [27.2]

ST18A

Dimensions

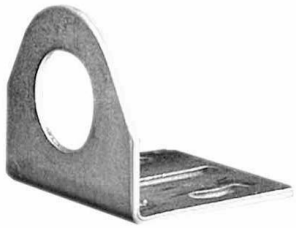
mm [inches]



Right-angle Mounting Bracket

Right-angle mounting bracket for use with 18mm sensors. Has two mounting holes (use 4mm screws) and allows the rotation of an optical axis for axial sensors. Hexagonal nuts not included.

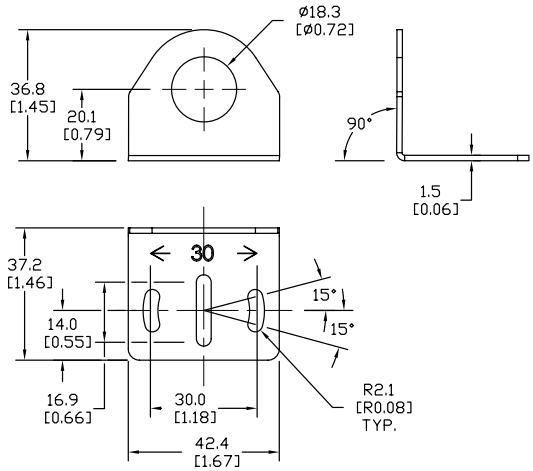
Accessories for 18mm Sensors			
Part Number	***Price***	***Description***	***Weight lb [g]***
ST18C	$981:	Micro Detectors mounting bracket, right-angle, zinc plated steel. For use with 18mm sensors.	0.06 [27.2]
ST18C7W	$982:	Micro Detectors mounting bracket, right-angle, 316L stainless steel. For use with 18mm sensors.	0.06 [27.2]



ST18C

Dimensions

mm [inches]



Accessories for 18mm Sensors

Right-angle Fine Tune Mounting Bracket

Mounting bracket, right-angle, fine tune vertical and horizontal adjustment, nickel-plated steel. For use with 18mm sensors. Allows for fine tuning vertical and horizontal placement.

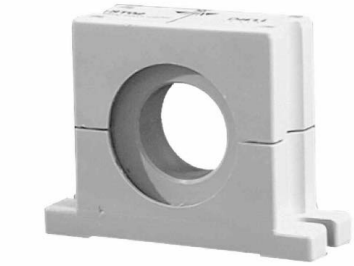
Accessories for 18mm Sensors				
Part Number	***Price***	***Description***	***Drawing Link***	***Weight [lb]***
OPT2036	$-1nlk:	Wenglor mounting bracket, right-angle, fine tune vertical and horizontal adjustment, nickel plated steel. For use with 18mm sensors.	PDF	0.02

OPT2036

Swivel Mounting Bracket

Mounting bracket, ball swivel, plastic. For use with 18mm sensors. Has a ball-joint and set screws to adjust sensor orientation. Allows angular orientation up to 15 degrees (from center) in all directions for photoelectric sensors (Will not work with C18 series).

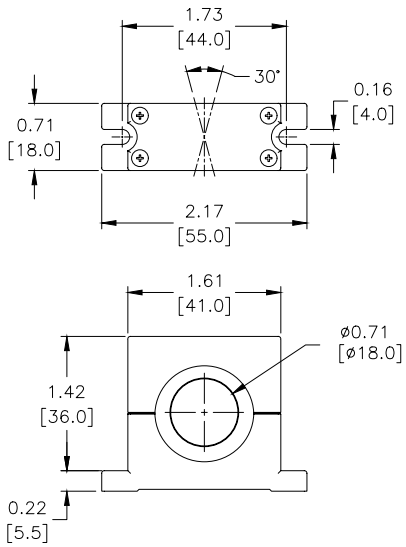
Accessories for 18mm Sensors			
Part Number	***Price***	***Description***	***Weight [lb]***
ST02	$05h#:	Micro Detectors mounting bracket, ball swivel, plastic. For use with 18mm sensors.	0.06



ST02

Dimensions

mm [inches]



Accessories for 18mm Sensors

Right-angle Mounting Brackets

Mounting bracket, right-angle, fixed insertion stop adjustment, plastic. For use with 18mm sensors. Available with or without fixed insertion stop.

Accessories for 18mm Sensors				
Part Number	***Price***	***Description***	***Drawing Link***	***Weight lb [g]***
OPT2104	$;-1nlt:	Wenglor mounting bracket, right-angle, fixed insertion stop adjustment, plastic. For use with 18mm sensors.	PDF	0.06 [27.2]
OPT2105	$-1nlu:	Wenglor mounting bracket, right-angle, plastic. For use with 18mm sensors.	PDF	0.06 [27.2]

OPT2104, OPT2105

Right-angle Swivel Mounting Systems

Mounting bracket, right-angle swivel, 360 degree vertical and horizontal adjustment, 12mm rod mount. For use with 18mm sensors. Available in all 304 stainless steel or with an aluminum head and a stainless steel mounting plate.

Accessories for 18mm Sensors						
Part Number	***Price***	***Description***	***Mounting Head***	***Mounting Plate***	***Drawing Link***	***Weight lb [g]***
OPT2116	$-1nl#:	Wenglor mounting bracket, right-angle swivel, 360 degree vertical and horizontal adjustment, aluminum, 12mm rod mount. For use with 18mm sensors.	Aluminum	304 Stainless steel	PDF	0.15 [68.0]
OPT2117	$;-1nl!:	Wenglor mounting bracket, right-angle swivel, 360 degree vertical and horizontal adjustment, 304 stainless steel, 12mm rod mount. For use with 18mm sensors.	304 Stainless steel	304 Stainless steel	PDF	0.28 [127.0]

Note: 304 Stainless steel mounting rods sold separately: OPT2109 (200mm [7.87 in] length), OPT2110 (300mm [11.81 in] length), and OPT2111 (500mm [19.69 in] length).

OPT2116, OPT2117

Mounting Rods and Brackets

Mounting Rods

304 Stainless steel rods for mounting swivel brackets OPT2112 - OPT2127
Available in three lengths: 200mm, 300mm, and 500mm. 12mm diameter.

Mounting Rods for OPT2112-2127 Swivel Mounting Brackets				
Part Number	*Price*	*Description*	*Drawing Link*	*Weight lb (g)*
OPT2109	$1nn9:	Wenglor mounting rod, 12mm diameter, 200mm length, 304 stainless steel.	PDF	0.41 [185.97]
OPT2110	$1nna:	Wenglor mounting rod, 12mm diameter, 300mm length, 304 stainless steel.	PDF	0.60 [272.16]
OPT2111	$1nnb:	Wenglor mounting rod, 12mm diameter, 500mm length, 304 stainless steel.	PDF	0.98 [444.52]

Right-angle Mounting Bracket

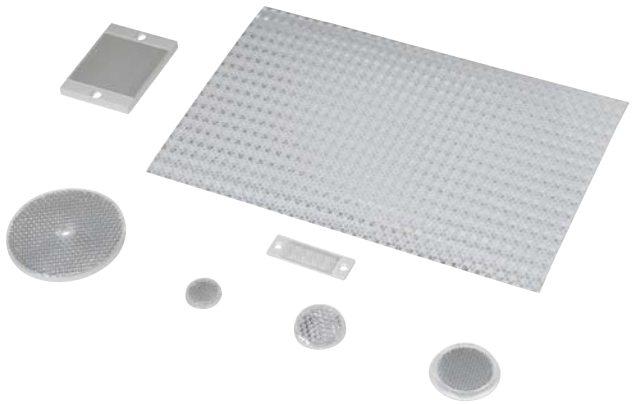
Mounting bracket, right-angle, nickel-plated brass. For use with 12mm mounting rods OPT2109, OPT2110 & OPT2111.

Right-angle Mounting Brackets for 12mm Sensors				
Part Number	*Price*	*Description*	*Drawing Link*	*Weight lb [g]*
OPT2108	$-1nly:	Wenglor mounting bracket, right-angle, nickel-plated brass. For use with 12mm mounting rods OPT2109, OPT2110 & OPT2111.	PDF	0.07 [31.8]

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	$;09[h:	PDF	10	25 [0.98]	IEC IP67	Customer-supplied adhesive or other mounting method required	Reflective face: PMMA Polymethylmethacrylate (acrylic) Base material: ABS (Acrylonitrile-butadiene-styren)
RL102-1	$?6y:		1				
RL103	$;-09[i:	PDF	10	34.5 [1.36]			
RL103-1	$?6z:		1				
RL104	$;-09[j:	PDF	10	46 [1.81]			
RL104-1	$;?6]:		1				
RL105G	$-2e_j:	PDF	10	95 x 38 [3.74 x 1.50]		Two 4.3 mm holes	
RL105G-1	$2e_k:		1				
RL106G	$;-09[l:	PDF	10	182 x 42 [7.17 x 1.65]		Two 6mm holes	
RL106G-1	$?6_:		1				
RL110	$;09[n:	PDF	10	84 [3.31]		One 5mm hole	
RL110-1	$?6#:		1				
RL116	$05yv:	PDF	10	41 x 60 [3.54 x 2.36]		Two 3mm holes	
RL116-1	$;?6!:		1				
RL100DA4	$0?77:	NA	1	200 x 300 [7.87 x 11.81]		Self-adhesive	Paper (Acrylic tape with micro prism)
RL100DC4	$0?78:	NA	1	50 x 300 [1.97 x 11.81]			
RL100DQ1	$?79:	NA	1	100 x 100 [3.94 x 3.94]			
RL111G	$;0?6,:	PDF	10	22.5 x 47 [0.89 x 1.85]		Two 3mm slots	Reflective face: PMMA Polymethylmethacrylate (acrylic) Base material: ABS (Acrylonitrile-butadiene-styren)
RL111G-1	$?6?:		1				
RL112G	$0?71:	PDF	10	19 x 73 [0.75 x 2.87]			
RL112G-1	$?70:		1				
RL113G	$0?73:	PDF	10	51.4 x 60.3 [2.02 x 2.37]		Two 4mm slots	
RL113G-1	$?72:		1				

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	***RL201***	***RL201-1***	***RL203***	***RL203-1***	***RL204***	***RL204-1***
Price	$;09[o:	$?74:	$;09[p:	$?75:	$;09[q:	$?76:
Quantity	5	1	5	1	5	1
Drawing Link	PDF		PDF		PDF	
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.**