

# 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								
<a href="#">MV2-A0-0A</a>	\$44.50	100mm [3.9 in]	N.O.	2m [6.5 ft] axial cable	Diagram 1	Figure 1	Chart 1	
<a href="#">MV2-A0-0E</a>	\$44.50			M12 [12mm] connector	Diagram 1	Figure 2		
<a href="#">MV4-A0-0A</a>	\$44.50	200mm [7.9 in]		2m [6.5 ft] axial cable	Diagram 1	Figure 1	Chart 2	
<a href="#">MV4-A0-0E</a>	\$44.50			M12 [12mm] connector	Diagram 1	Figure 2		
<a href="#">MV6-A0-0A</a>	\$44.50	400mm [15.7 in]		2m [6.5 ft] axial cable	Diagram 1	Figure 1	Chart 3	
<a href="#">MV6-A0-0E</a>	\$44.50			M12 [12mm] connector	Diagram 1	Figure 2		
Polarized reflective*								
<a href="#">MVP-A0-0A</a>	\$47.00	3m [9.8 ft]	N.O.	2m [6.5 ft] axial cable	Diagram 1	Figure 1	Chart 4	
<a href="#">MVP-A0-0E</a>	\$47.00			M12 [12mm] connector	Diagram 1	Figure 2		
Through-beam**								
<a href="#">MVE-00-0A</a>	Emitter	16m [52.5 ft]	Receiver dependent	2m [6.5 ft] axial cable	Diagram 2	Figure 1	Chart 5	
<a href="#">MVE-00-0E</a>	Emitter			\$38.00	M12 [12mm] connector	Diagram 2		Figure 2
<a href="#">MVR-A0-0A</a>	Receiver		\$38.00	N.O.	2m [6.5 ft] axial cable	Diagram 1	Figure 1	Chart 5
<a href="#">MVR-A0-0E</a>	Receiver		\$38.00	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

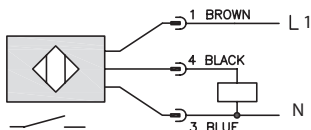
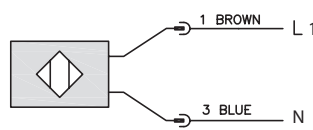
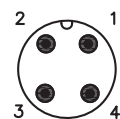


Diagram 2 Emitter



Connector  
M12 Connector



## Dimensions

(mm)

Figure 1

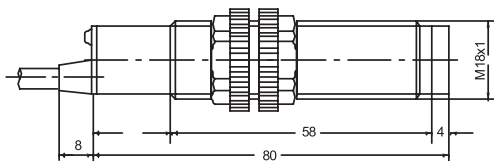
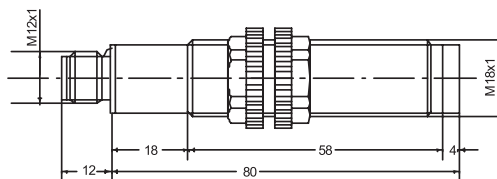


Figure 2



# 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 <sup>4</sup>	Through-beam <sup>5</sup>
Sensing Distance	MV2 models: 100mm <sup>1</sup> MV4 models: 200mm <sup>1</sup> MV6 models: 400mm <sup>2</sup>	3m <sup>3</sup>	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	<a href="#">See terminology section</a>		
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		

<sup>1</sup> With 100x100mm white matte paper<sup>2</sup> With 200x200mm white matte paper<sup>3</sup> With standard Ø84mm RL110 reflector<sup>4</sup> Purchase reflectors separately.<sup>5</sup> 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.

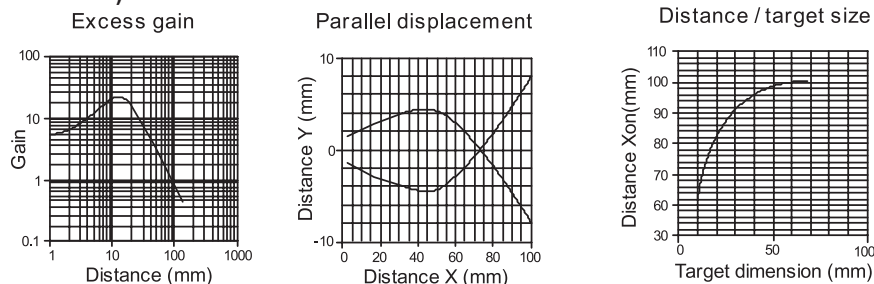
Switching Element Function		
	Through-beam and Reflective Models	Diffuse Reflective Models
Light-on	N.C.	N.O.
Dark-on	N.O.	N.C.

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

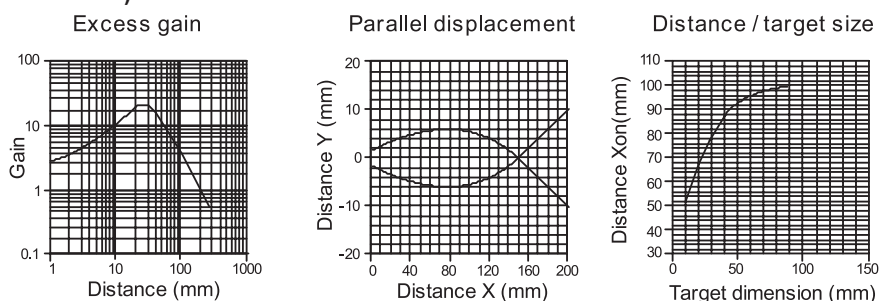
# MV Series AC Powered Photoelectric Sensors

## Characteristic curves

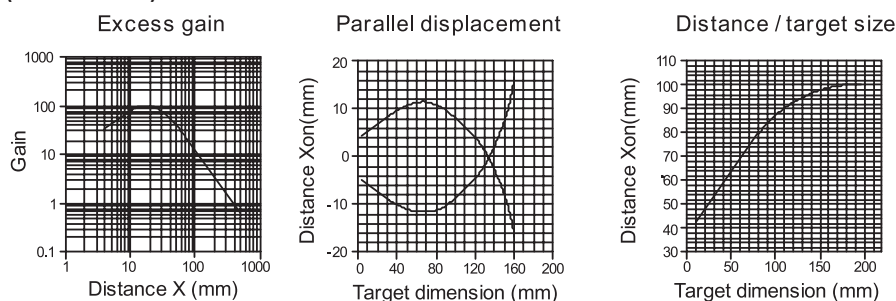
**Chart 1 (Diffuse MV2)**



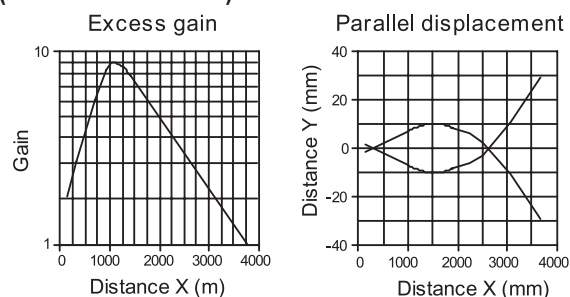
**Chart 2 (Diffuse MV4)**



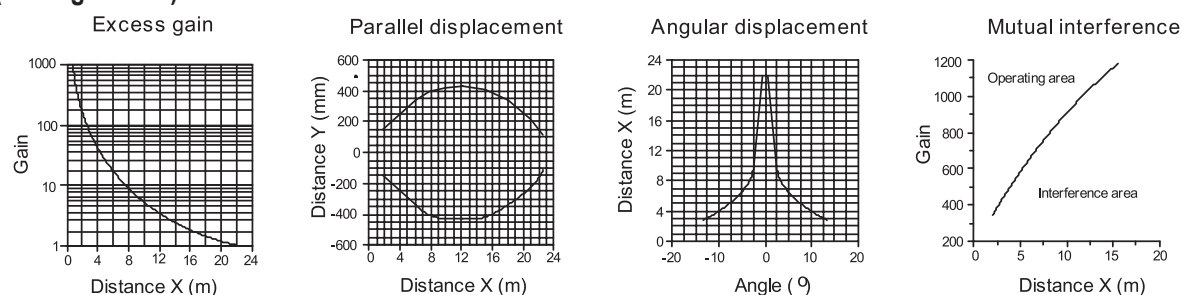
**Chart 3 (Diffuse MV6)**



**Chart 4 (Polarized reflective)**



**Chart 5 (Through-beam)**



# 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-adaptor sensors. Hexagonal nuts not included. For use with 18mm sensors.

Accessories for 18mm Sensors			
Part Number	Price	Description	Weight lb [g]
<a href="#"><u>ST18A</u></a>	\$2.00	Micro Detectors mounting bracket, axial, zinc plated steel. For use with 18mm sensors.	0.06 [27.2]
<a href="#"><u>ST18A7W</u></a>	\$7.25	Micro Detectors mounting bracket, axial, 316L stainless steel. For use with 18mm sensors.	0.06 [27.2]



**ST18A**

## Dimensions

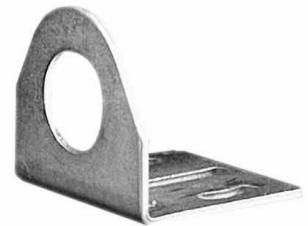
mm [inches]



## 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.

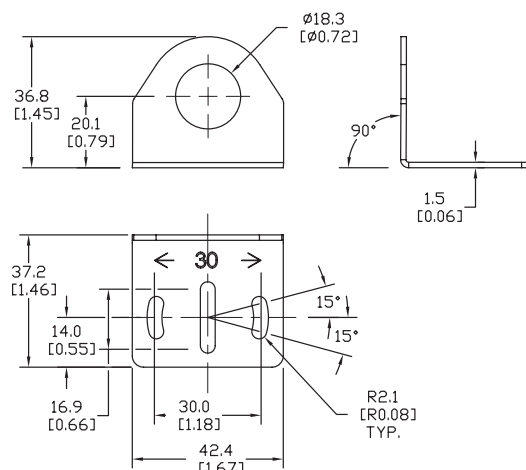
Accessories for 18mm Sensors			
Part Number	Price	Description	Weight lb [g]
<a href="#"><u>ST18C</u></a>	\$2.00	Micro Detectors mounting bracket, right-angle, zinc plated steel. For use with 18mm sensors.	0.06 [27.2]
<a href="#"><u>ST18C7W</u></a>	\$7.25	Micro Detectors mounting bracket, right-angle, 316L stainless steel. For use with 18mm sensors.	0.06 [27.2]



**ST18C**

## Dimensions

mm [inches]

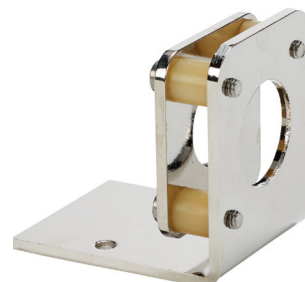


# Accessories for 18mm Sensors

## 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]
<a href="#"><u>OPT2036</u></a>	\$38.50	Wenglor mounting bracket, right-angle, fine tune vertical and horizontal adjustment, nickel plated steel. For use with 18mm sensors.	<a href="#"><u>PDF</u></a>	0.02

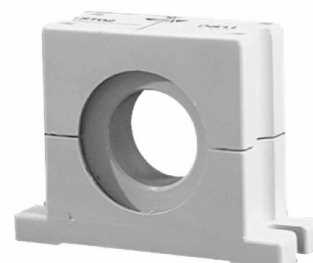


[OPT2036](#)

## 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).

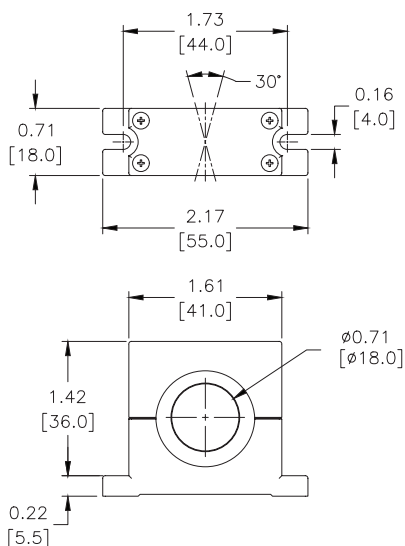
Accessories for 18mm Sensors			
Part Number	Price	Description	Weight [lb]
ST02	\$9.50	Micro Detectors mounting bracket, ball swivel, plastic. For use with 18mm sensors.	0.06



[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]
<a href="#">OPT2104</a>	\$10.50	Wenglor mounting bracket, right-angle, fixed insertion stop adjustment, plastic. For use with 18mm sensors.	<a href="#">PDF</a>	0.06 [27.2]
<a href="#">OPT2105</a>	\$10.50	Wenglor mounting bracket, right-angle, plastic. For use with 18mm sensors.	<a href="#">PDF</a>	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]
<a href="#">OPT2116</a>	\$11.50	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	<a href="#">PDF</a>	0.15 [68.0]
<a href="#">OPT2117</a>	\$21.00	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	<a href="#">PDF</a>	0.28 [127.0]



[OPT2116](#), [OPT2117](#)

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).

# 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)
<a href="#">OPT2109</a>	\$13.00	Wenglor mounting rod, 12mm diameter, 200mm length, 304 stainless steel.	<a href="#">PDF</a>	0.41 [185.97]
<a href="#">OPT2110</a>	\$16.00	Wenglor mounting rod, 12mm diameter, 300mm length, 304 stainless steel.	<a href="#">PDF</a>	0.60 [272.16]
<a href="#">OPT2111</a>	\$21.00	Wenglor mounting rod, 12mm diameter, 500mm length, 304 stainless steel.	<a href="#">PDF</a>	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]
<a href="#">OPT2108</a>	\$16.00	Wenglor mounting bracket, right-angle, nickel-plated brass. For use with 12mm mounting rods OPT2109, OPT2110 & OPT2111.	<a href="#">PDF</a>	0.07 [31.8]





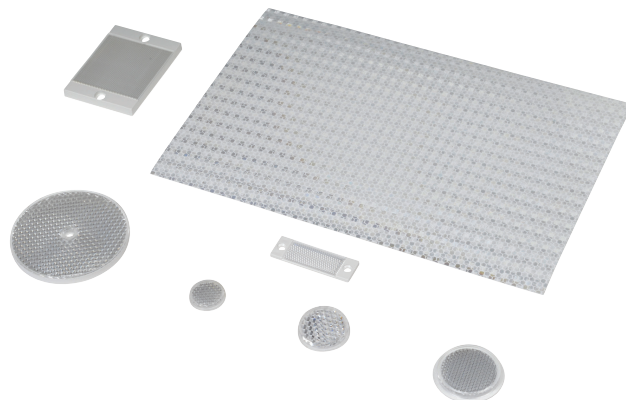
# Reflectors

## 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  $\pm 15^\circ$ .



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			
<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 4.3 mm 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		Two 6mm holes	
<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		One 5mm hole	
<a href="#">RL110-1</a>	\$2.00		1	[3.31]			
<a href="#">RL116</a>	\$19.00	<a href="#">PDF</a>	10	41 x 60		Two 3mm holes	
<a href="#">RL116-1</a>	\$2.00		1	[3.54 x 2.36]			
<a href="#">RL100DA4</a>	\$38.50	NA	1	200 x 300		Self-adhesive	Paper (Acrylic tape with micro prism)
<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	Reflective face: PMMA Polymethylmethacrylate (acrylic)  Base material: ABS (Acrylonitrile-butadiene-styren)
<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			
<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		Two 4mm slots	
<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="#"><i>RL201</i></a>	<a href="#"><i>RL201-1</i></a>	<a href="#"><i>RL203</i></a>	<a href="#"><i>RL203-1</i></a>	<a href="#"><i>RL204</i></a>	<a href="#"><i>RL204-1</i></a>
Price	\$38.00	\$8.25	\$35.50	\$7.75	\$30.00	\$6.75
Quantity	5	1	5	1	5	1
Drawing Link	<a href="#">PDF</a>		<a href="#">PDF</a>		<a href="#">PDF</a>	
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 <sup>1</sup>	IEC IP67					
Mounting	Two 0.4 mm holes		Two 0.4 mm holes		Two 0.3 mm holes	
Materials	Acrylic/polycarbonate					

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