

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

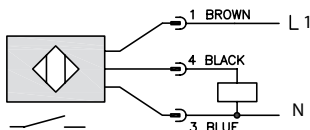
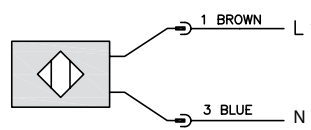
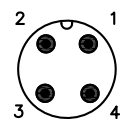


Diagram 2 Emitter



Connector
M12 Connector



Dimensions

(mm)

Figure 1

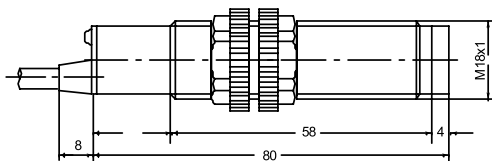
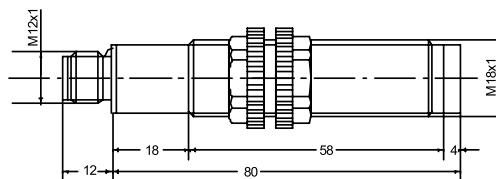


Figure 2



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 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 paper² With 200x200mm white matte paper³ With standard Ø84mm RL110 reflector⁴ Purchase reflectors separately.⁵ An emitter (SSE) and receiver (SSR) pair must be ordered for a complete sensor set.

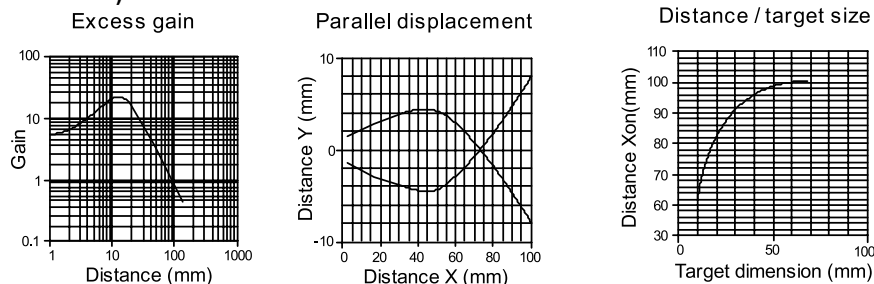
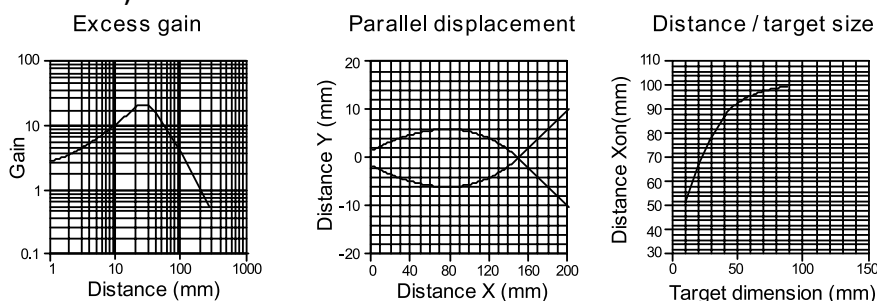
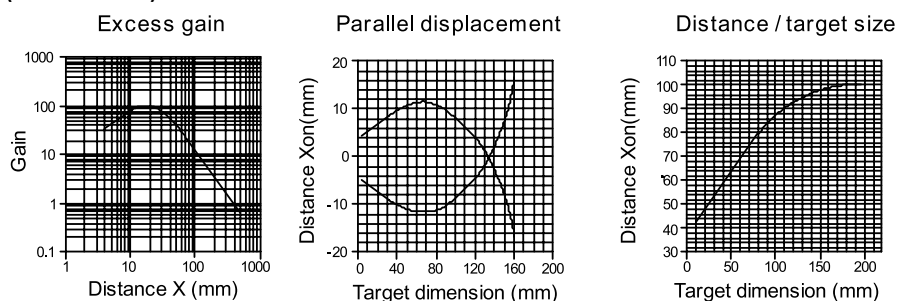
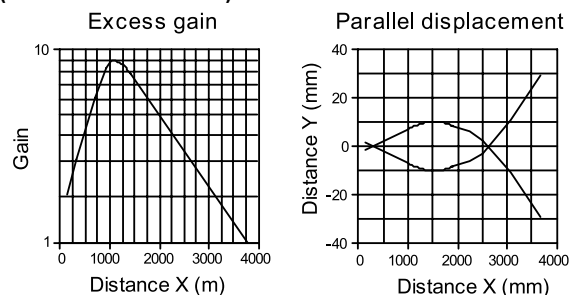
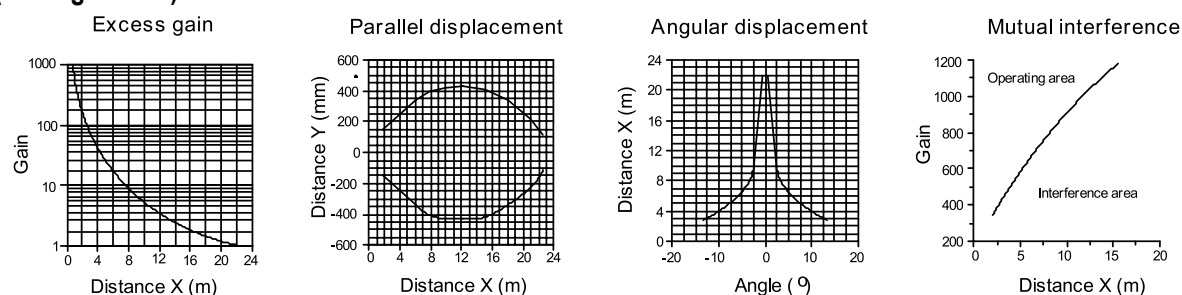
To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

| 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)

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.

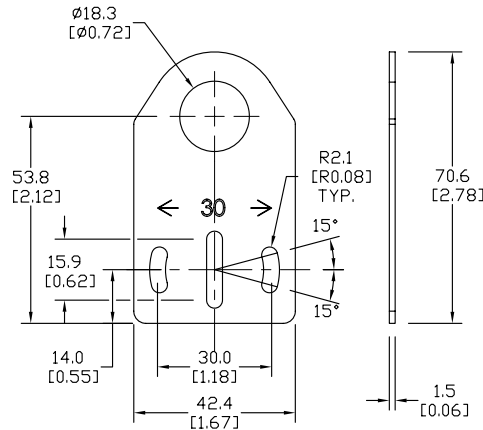
| Accessories for 18mm Sensors | | | |
|------------------------------|--------|---|------------------|
| Part Number | Price | Description | Weight lb [g] |
| <u>ST18A</u> | \$2.00 | Micro Detectors mounting bracket, axial, zinc plated steel. For use with 18mm sensors. | 0.06 [27.2] |
| <u>ST18A7W</u>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



ST18A

Dimensions

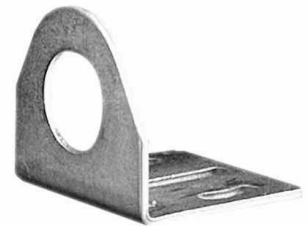
mm [inches]



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.

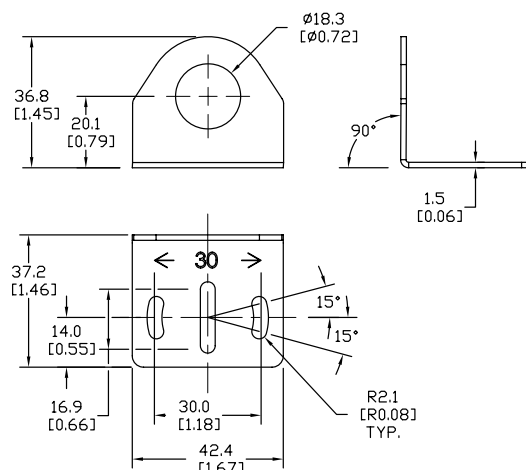
| Accessories for 18mm Sensors | | | |
|------------------------------|--------|---|------------------|
| Part Number | Price | Description | Weight lb [g] |
| <u>ST18C</u> | \$2.00 | Micro Detectors mounting bracket, right-angle, zinc plated steel. For use with 18mm sensors. | 0.06 [27.2] |
| <u>ST18C7W</u> | \$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] |
| OPT2036 | \$38.50 | 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).

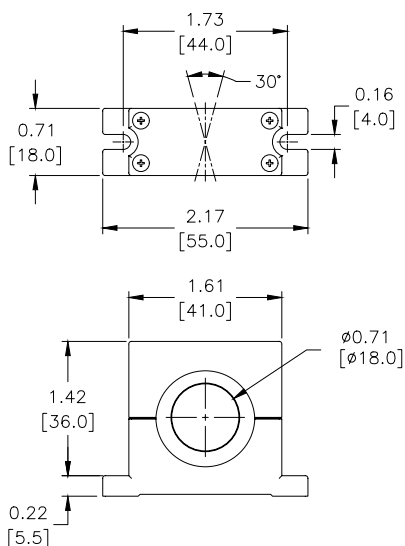
| Accessories for 18mm Sensors | | | |
|------------------------------|--------|--|-------------|
| Part Number | Price | Description | Weight [lb] |
| ST02 | \$9.50 | Micro Detectors mounting bracket, ball swivel, plastic. For use with 18mm sensors. | 0.06 |



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] |
| OPT2104 | \$10.50 | Wenglor mounting bracket, right-angle, fixed insertion stop adjustment, plastic. For use with 18mm sensors. | PDF | 0.06 [27.2] |
| OPT2105 | \$10.50 | 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 | \$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 | PDF | 0.15 [68.0] |
| OPT2117 | \$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 | PDF | 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) |
| OPT2109 | \$13.00 | Wenglor mounting rod, 12mm diameter, 200mm length, 304 stainless steel. | PDF | 0.41 [185.97] |
| OPT2110 | \$16.00 | Wenglor mounting rod, 12mm diameter, 300mm length, 304 stainless steel. | PDF | 0.60 [272.16] |
| OPT2111 | \$21.00 | 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 | \$16.00 | Wenglor mounting bracket, right-angle, nickel-plated brass. For use with 12mm mounting rods OPT2109, OPT2110 & OPT2111. | PDF | 0.07 [31.8] |



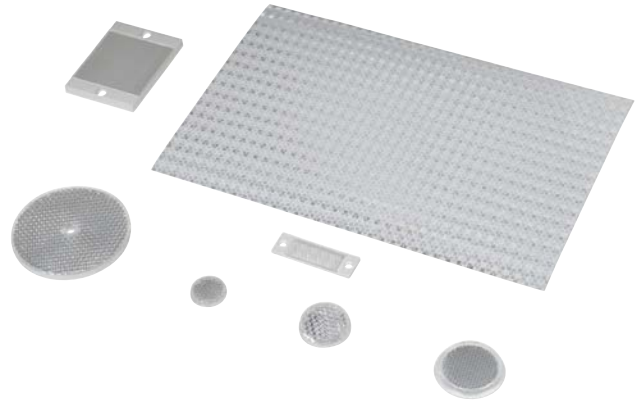
Reflectors

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 $\pm 15^\circ$.



| 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 | | | |
| RL104-1 | \$4.75 | | 1 | [1.81] | | | |
| RL105G | \$38.00 | PDF | 10 | 95 x 38 | | Two 4.3 mm holes | |
| RL105G-1 | \$4.25 | | 1 | [3.74 x 1.50] | | | |
| RL106G | \$42.50 | PDF | 10 | 182 x 42 | | Two 6mm holes | |
| RL106G-1 | \$4.75 | | 1 | [7.17 x 1.65] | | | |
| RL110 | \$19.00 | PDF | 10 | 84 | | One 5mm hole | |
| RL110-1 | \$2.00 | | 1 | [3.31] | | | |
| RL116 | \$19.00 | PDF | 10 | 41 x 60 | | Two 3mm holes | |
| RL116-1 | \$2.00 | | 1 | [3.54 x 2.36] | | | |
| RL100DA4 | \$38.50 | NA | 1 | 200 x 300 | | Self-adhesive | 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 | Reflective face: PMMA Polymethylmethacrylate (acrylic) Base material: ABS (Acrylonitrile-butadiene-styren) |
| RL111G-1 | \$7.25 | | 1 | [0.89 x 1.85] | | | |
| RL112G | \$44.00 | PDF | 10 | 19 x 73 | | | |
| RL112G-1 | \$4.75 | | 1 | [0.75 x 2.87] | | | |
| RL113G | \$53.00 | PDF | 10 | 51.4 x 60.3 | | Two 4mm slots | |
| 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 | <i>RL201</i> | <i>RL201-1</i> | <i>RL203</i> | <i>RL203-1</i> | <i>RL204</i> | <i>RL204-1</i> |
| Price | \$38.00 | \$8.25 | \$35.50 | \$7.75 | \$30.00 | \$6.75 |
| 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.