

# Mounting Brackets

| Shape                                                                              | Model    | Quantity | Remarks                                | Appearance                                                                         | Model    | Quantity | Remarks                                                                                                      |
|------------------------------------------------------------------------------------|----------|----------|----------------------------------------|------------------------------------------------------------------------------------|----------|----------|--------------------------------------------------------------------------------------------------------------|
|   | E39-L153 | 1        | Mounting Brackets                      |   | E39-L98  | 1        | Metal Protective Cover Bracket *1                                                                            |
|   | E39-L104 | 1        |                                        |   | E39-L150 | One set  | (Sensor adjuster)                                                                                            |
|   | E39-L43  | 1        | Horizontal Mounting Bracket *1         |   | E39-L151 | One set  | Easily mounted to the aluminum frame rails of conveyors and easily adjusted.<br>For left to right adjustment |
|   | E39-L142 | 1        | Horizontal Protective Cover Bracket *1 |                                                                                    |          |          |                                                                                                              |
|  | E39-L44  | 1        | Rear Mounting Bracket                  |  | E39-L144 | 1        | Compact Protective Cover Bracket *1                                                                          |

\*1. Cannot be used for Standard Connector models.

Note: 1. When using Through-beam Models, order one bracket for the Receiver and one for the Emitter.

# Sensor I/O Connectors

## General Purpose

| Size                  | Cable    | Appearance                                                                                   | Cable type |             | Model           |
|-----------------------|----------|----------------------------------------------------------------------------------------------|------------|-------------|-----------------|
| M8 (4 pins)           | Standard | Straight  | 2 m        | 4-wire type | XS3F-M421-402-A |
|                       |          |                                                                                              | 5 m        |             | XS3F-M421-405-A |
|                       |          | L-shaped  | 2 m        |             | XS3F-M422-402-A |
|                       |          |                                                                                              | 5 m        |             | XS3F-M422-405-A |
| M12 (For -M1J models) |          | Straight  | 2 m        | 3-wire type | XS2F-D421-DC0-A |
|                       |          |                                                                                              | 5 m        |             | XS2F-D421-GC0-A |
|                       |          | L-shaped  | 2 m        |             | XS2F-D422-DC0-A |
|                       |          |                                                                                              | 5 m        |             | XS2F-D422-GC0-A |
|                       |          | Straight  | 2 m        | 4-wire type | XS2F-D421-D80-A |
|                       |          |                                                                                              | 5 m        |             | XS2F-D421-G80-A |
|                       |          | L-shaped  | 2 m        |             | XS2F-D422-D80-A |
|                       |          |                                                                                              | 5 m        |             | XS2F-D422-G80-A |

Note: Depending on the connector specification, the IP67 performance applies. When using high-pressure washing, use a suitable connector.

## Detergent resistant sensor I/O connectors

Please contact your OMRON representative for sensor connectors with stainless steel nuts.

## Rating and Specifications

|                                      |                                             | Sensor method                 | Through-beam                                                                                                                                                                                      |                        | Retroreflective model (with M.S.R. function)                                                                                                        | Diffuse-reflective Models            |
|--------------------------------------|---------------------------------------------|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| Item                                 | Model                                       | NPN output                    | E3ZM-T61<br>E3ZM-T66                                                                                                                                                                              | E3ZM-T63<br>E3ZM-T68   | E3ZM-R61<br>E3ZM-R66                                                                                                                                | E3ZM-D62<br>E3ZM-D67                 |
|                                      |                                             | PNP output                    | E3ZM-T81<br>E3ZM-T86                                                                                                                                                                              | E3ZM-T83<br>E3ZM-T88   | E3ZM-R81<br>E3ZM-R86                                                                                                                                | E3ZM-D82<br>E3ZM-D87                 |
| Sensing distance                     |                                             |                               | 15 m                                                                                                                                                                                              | 0.8 m                  | 4 m [100 mm]<br>(Using E39-R1S)<br>3 m [100 mm]<br>(Using E39-R1)                                                                                   | 1 m<br>(White paper<br>300 x 300 mm) |
| Spot Diameter (typical)              |                                             |                               | ---                                                                                                                                                                                               |                        |                                                                                                                                                     |                                      |
| Standard sensing object              |                                             |                               | Opaque: 12 mm dia. min.                                                                                                                                                                           | Opaque: 2 mm dia. min. | Opaque: 75 mm dia. min.                                                                                                                             | ---                                  |
| Differential travel                  |                                             |                               | ---                                                                                                                                                                                               |                        |                                                                                                                                                     | 20% max. of sensing distance max.    |
| Black/white error                    |                                             |                               | ---                                                                                                                                                                                               |                        |                                                                                                                                                     |                                      |
| Directional angle                    |                                             |                               | Emitter and Receiver: 3° to 15°                                                                                                                                                                   |                        | Sensor: 3° to 10°<br>Reflector: 30°                                                                                                                 | ---                                  |
| Light source (wave length)           |                                             |                               | Infrared LED (870 nm)                                                                                                                                                                             |                        | Red LED (660 nm)                                                                                                                                    | Infrared LED (860 nm)                |
| Power supply voltage                 |                                             |                               | 10 to 30 VDC, including 10% ripple (p-p)                                                                                                                                                          |                        |                                                                                                                                                     |                                      |
| Current consumption                  |                                             |                               | Emitter, Receiver: 20 mA max. each                                                                                                                                                                |                        | 25 mA max.                                                                                                                                          |                                      |
| Control output                       |                                             |                               | Load power supply voltage: 30 VDC max., Load current: 100 mA max. (Residual voltage: 2 V max.)<br>Open-collector output (NPN/PNP output depending on model)<br>Light-ON/Dark-ON switch selectable |                        |                                                                                                                                                     |                                      |
| Protection circuits                  |                                             |                               | Reversed power supply polarity protection, Output short-circuit protection, and Reversed output polarity protection                                                                               |                        | Reversed power supply polarity protection, Output short-circuit protection, Mutual interference prevention, and Reversed output polarity protection |                                      |
| Response time                        |                                             |                               | Operate or reset: 1 ms max.                                                                                                                                                                       |                        |                                                                                                                                                     |                                      |
| Sensitivity adjustment               |                                             |                               | One-turn adjuster                                                                                                                                                                                 |                        |                                                                                                                                                     |                                      |
| Ambient illumination (Receiver side) |                                             |                               | Incandescent lamp: 3,000 lx max. Sunlight 10,000 lx max.                                                                                                                                          |                        |                                                                                                                                                     |                                      |
| Ambient temperature range            |                                             |                               | Operating: -25°C to 55°C, Storage: -40°C to 70°C (with no icing or condensation)                                                                                                                  |                        |                                                                                                                                                     |                                      |
| Ambient humidity range               |                                             |                               | Operating: 35% to 85%, Storage: 35% to 95% (with no condensation)                                                                                                                                 |                        |                                                                                                                                                     |                                      |
| Insulation resistance                |                                             |                               | 20 MΩ min. at 500 VDC                                                                                                                                                                             |                        |                                                                                                                                                     |                                      |
| Dielectric strength                  |                                             |                               | 1,000 VAC at 50/60 Hz for 1 min                                                                                                                                                                   |                        |                                                                                                                                                     |                                      |
| Vibration resistance                 |                                             |                               | Destruction: 10 to 55 Hz, 1.5 mm double amplitude for 2 hours each in X, Y, and Z directions                                                                                                      |                        |                                                                                                                                                     |                                      |
| Shock resistance                     |                                             |                               | Destruction: 500 m/s <sup>2</sup> 3 times each in X, Y, and Z directions                                                                                                                          |                        |                                                                                                                                                     |                                      |
| Degree of protection *1              |                                             |                               | IEC: IP67, DIN 40050-9: IP69K                                                                                                                                                                     |                        |                                                                                                                                                     |                                      |
| Connection method                    |                                             |                               | Pre-wired cable (standard length: 2 m)<br>Standard M8 4-pin Connector                                                                                                                             |                        |                                                                                                                                                     |                                      |
| Indicator                            |                                             |                               | Operation indicator (yellow), Stability indicator (green) (Emitter has only power supply indicator (green).)                                                                                      |                        |                                                                                                                                                     |                                      |
| Weight (packed state)                | Pre-wired cable                             | Approx. 150 g                 |                                                                                                                                                                                                   |                        | Approx. 90 g                                                                                                                                        |                                      |
|                                      | Standard Connector                          | Approx. 60 g                  |                                                                                                                                                                                                   |                        | Approx. 40 g                                                                                                                                        |                                      |
| Materials                            | Case                                        | SUS316L                       |                                                                                                                                                                                                   |                        |                                                                                                                                                     |                                      |
|                                      | Lens                                        | Methacrylic resin             |                                                                                                                                                                                                   |                        |                                                                                                                                                     |                                      |
|                                      | Display                                     | PES (polyether sulfone)       |                                                                                                                                                                                                   |                        |                                                                                                                                                     |                                      |
|                                      | Sensitivity adjustment and operation switch | PEEK (polyether ether ketone) |                                                                                                                                                                                                   |                        |                                                                                                                                                     |                                      |
|                                      | Seals                                       | Fluoro rubber                 |                                                                                                                                                                                                   |                        |                                                                                                                                                     |                                      |
| Accessories                          |                                             |                               | Instruction sheet (Note: Reflectors and Mounting Brackets are sold separately.)                                                                                                                   |                        |                                                                                                                                                     |                                      |

\*1. IP69K Degree of Protection Specification IP69K is a protection standard against high temperature and high-pressure water defined in the German standard DIN 40050, Part 9. The test piece is sprayed with water at 80°C at a water pressure of 80 to 100 BAR using a specified nozzle shape. The distance between the test piece and nozzle is 10 to 15 cm, and water is sprayed horizontally for 30 seconds each at 0°, 30°, 60°, and 90° while rotating the test object on a horizontal plane.

