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You can read the recommendations in the user guide, the technical guide or the installation guide for OMRON E3G. You'll find the answers to all your questions on the OMRON E3G in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

User manual OMRON E3G
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Photoelectric switch with built-in amplifier (long distance) in plastic housing

E3G

Retroreflective Models


- Sensing Distance of 10 m, with polarized light to detect shiny objects.
- Operation stability monitored by the stability indicator.

Distance-setting Models

- Distance setting models with a long 2 m sensing distance incorporate a teaching function.
- Set sensing area (zone setting) function allows detection of shiny objects with uneven surfaces.

Common Features

- Meets IEC IP67 requirements.
- M12 rotary connector, pre-wired or terminal block connection.



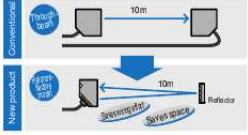
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Features


Retroreflective Models

Though the Size Is Compact, the Sensing Distance Is as Long as 10m.

Replace the conventional through-beam model with the retroreflective model for saving wiring and installation space.



Easy monitoring of Operation stability by means of stability indicator.



The stability indicator becomes shaded due to dust on the lens or improper optical axis adjustment.

E3G

A-119



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Manual abstract:

· Operation stability monitored by the stability indicator. Distance-setting Models · Distance setting models with a long 2 m sensing distance incorporate a teaching function. · Set sensing area (zone setting) function allows detection of shiny objects with uneven surface. Common Features · Meets IEC IP67 requirements. · M12 rotary connector, pre-wired or terminal block connection Features Retroreflective Models Though the Size Is Compact, the Sensing Distance Is as Long as 10m. Replace the conventional through-beam model with the retroreflective model for saving wiring and installation space. Conventional Easy monitoring of Operation stability by means of stability indicator. Throughbeam 10m New product Retroreflective model iring e Saves w ffort 10m Reflector The stability indicator becomes darker due to dust on the lens or improper optical axis adjustment. Sav ce es spa E3G A-119 Distance-setting General Distance-setting Models with a Long 2-m Sensing Distance Incorporate a Teaching Function Sensitivity adjustment without being influenced by background objects is possible by simply pressing a button. Useful for teaching without a sensing object. Select either transistor (NPN/PNP selectable) or relay output. Three connection methods (plus a model with a timer function). Select either a DC power supply or a variable power supply: 24 V to 240 VAC or 12 to 240 VDC. IEC Standard IP67 Water Proofing Easy Optimum Sensing Distance Adjustments Teaching with and without a sensing object ensures highly accurate detection without influence from the background. Without sensing object With sensing object ONE PUSH ONE PUSH M12 Rotary Connector Available on Models with DC Power Supplies Zone Setting Function Effective for detecting glossy objects, which were difficult to detect with conventional sensors. (D-ON) OFF (Incident) ON (Interrupted) Sensing zone Approx. $\pm 10\%$ Teach with only the background (conveyer). Since the Sensor can have a threshold value not only in front of the background but also beyond the background, it is possible to detect objects such as mirror-surface objects that do not return light from the object surface. Application Detection of large works Retroreflective model can make longdistance detection, saving wiring. Detection of large corrugated cardboard Just by installing the sensor on one side, only the boxes to be detected shall be sensed. Detection of cars in multi-story parking lot 10m E3G-L73 E3G-R13 E3G-R13 E3G-L73 A-120 Standard Photoelectric Sensors Ordering Information Sensors Sensor type Shape Connection method Pre-wired Connector type Sensing distance Timer function Red light Infrared light Retroreflective Models (with M.S.R. @@@@min. @@@@max. (At detection distance of 1m) 12 to 240 VDC $\pm 10\%$ ripple 12 to 240 VDC $\pm 10\%$ ripple 10 to 30 VDC 10 to 30 VDC (p-p) : 10% max. 24 to 240 (p-p) : 10% max. 24 to 240 (Ripple (p-p) 10% included) [Ripple (p-p) 10% included] VAC $\pm 10\%$ 50/60 Hz VAC $\pm 10\%$ 50/60 Hz 50 mA max. Load supply voltage 30 VDC max., load current 100 mA max. (residual voltage NPN output: 1.2 V max., PNP output: 2 V max.) Open collector output type (NPN/PNP output switch selectable) L-ON/ D-ON switch selectable --2 W max. 60 mA max. Load supply voltage 30 VDC max., load current 100 mA max. (residual voltage NPN output: 1.2 V max., PNP output: 2 V max.) Open collector output type (NPN/PNP output switch selectable) L-ON/ D-ON switch selectable --2 W max. Control output Relay output: Switch-over contact 250 VAC 3A (cos =1) max. 30 VDC 3A max. L-ON/D-ON switch selectable Relay output: Switch-over contact 250 VAC 3A (cos =1) max. 30 VDC 3A max. L-ON/D-ON switch selectable MeLife ex- chanipectan- cal cy (relay Electrioutput) cal --- 50,000,000 operations min. (switching frequency: 18,000 operations/h) 100,000 operations min. (switching frequency: 1,800 operations/h) --- 50,000,000 operations min. (switching frequency: 18,000 operations/h) 100,000 operations min. (switching frequency: 1,800 operations/h) Reverse polarity protection, Reverse polarity protection, Mutual interference prevenMutual interference preven- output short-circuit prooutput short-circuit proProtective circuits tecton, mutual interference tion function tecton, mutual interference tion function prevention prevention Operation/reset: 30 ms Operation/reset: 30 ms Response time Operation/reset: 1 ms each Operation/reset: 5 ms each each each Sensitivity One-turn adjuster Teaching method (NORMAL mode/ZONE mode) adjustment ON delay/ ON delay/ OFF delay OFF delay 0 to 5 s 0 to 5 s --Timer function --(Adjuster (Adjuster variable variable system) system) Ambient Incandescent lamp: 3,000 lux max. Sunlight 10,000 lux max. illuminance Ambient Operating: -25°C to 55°C, Storage: -30°C to 70°C (with no icing or condensation) temperature Ambient humidity Operating: 35% to 85%RH, Storage: 35% to 95%RH (with no condensation) Insulation 20 M min. at 500 VDC resistance Dielectric 1,000 VAC at 50/60 Hz for 2,000 VAC at 50/60 Hz for 1,000 VAC at 50/60 Hz for 2,000 VAC at 50/60 Hz for strength 1 minute 1 minute 1 minute 1 minute Vibration Destruction: 10 to 55 Hz, 1.5 mm double amplitude for 2 hours each in X, Y, and Z directions resistance * Values in parentheses indicate the minimum required distance between the sensor and reflector. A-122 Standard Photoelectric Sensors Sensor type Retroreflective Models (M.S.R. function) Item Model E3G-R13-G E3G-R17-G E3G-MR19-G E3G-MR19T-G Shock resistance 500 m/s² 3 times in each of X, Y and Z directions Protective IEC 60529 IP67 (with Protective Cover attached) structure Pre-wired M12 Connection Terminal block (standard Connector method length: 2 m) Weight Approx. Approx. 50 g Approx. 150 g (Packed state) 150 g Case PBT (polybutylene terephthalate) Mate- Lens Acrylics (PMMA) rial Mounting Stainless steel (SUS304) Brackets Accessories Instruction sheet, and screwdriver for adjustment E3G-L73 Distance-setting E3G-L77 E3G-ML79-G E3G-ML79T-G E3G Pre-wired (standard length: 2 m) M12 Connector Terminal block Approx. 50 g Approx. 150 g Instruction sheet Output Circuit Diagram NPN output Model Operating status of output transistor Timing chart Incident Interrupted Operation ON indicator OFF (orange) Output transistor ON OFF Load Operate (Relay) Reset Mode selection switch Operation indicator Stability indicator Output circuit Brown 10 to 30 VDC PNP output transistor NPN or PNP output selector NPN output transistor ZD Blue ZD Black * Load Load current Control output 0V Light ON E3G-R13-G E3G-R17-G E3G-L73 E3G-L77 L ON (LIGHT ON) (Orange) (Green) Main circuit Dark ON Incident Interrupted Operation ON indicator OFF (orange) ON Output transistor OFF Operate Load (Relay) Reset * Set the NPN or PNP selector to NPN D ON (DARK ON) Connector Pin Arrangement 1 2 3 4 Note: Terminal 2 is not used.



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PNP output Model Operating status of output transistor Timing chart Incident Interrupted Operation ON indicator OFF (orange) ON Output transistor OFF Load Operate (Relay) Reset Incident Interrupted Operation ON indicator OFF (orange) ON Output transistor OFF Operate Load (Relay) Reset Mode selection switch Operation indicator Stability indicator (Green) Output circuit Brown 10 to 30 VDC PNP output transistor NPN or PNP output selector NPN output transistor ZD Blue ZD * Black Control output Load Load current 0V Light ON E3G-R13-G E3G-R17-G E3G-L73 E3G-L77 L ON (LIGHT ON) (Orange) Main circuit * Set the NPN or PNP selector to PNP Dark ON D ON (DARK ON) Connector Pin Arrangement 1 2 3 4 Note: Terminal 2 is not used. E3G A-123 Relay contact output Timer function Model Timing chart Incident Interrupted Operation ON indicator OFF (orange) ON Ta OFF Incident Interrupted Operation ON indicator OFF (orange) Ta ON OFF Mode selection switch L ON (LIGHT ON) Output circuit None E3G-MR19-G E3G-ML79-G D ON (DARK ON) 1 2 Tc Ta Tb 24 to 240 VAC 12 to 240 VDC (no polarity order restricted) Contact output (G6C Relay built in) T1 Incident Interrupted ON delay * ON OFF ON OFF T1 Incident Interrupted ON ON delay * OFF ON OFF delay * OFF T1 Td1 T1 T2 T1 T2 T1 Td1 T2 T2 T1 3 L ON (LIGHT ON) Td2 Main circuit 4 Power supply Td2 Td2 5 ON or OFF delay 0 to 5 s (adjustable) E3G-MR19T-G E3G-ML79T-G OFF delay * T1 T1 Td1 T2 T1 Td1 T2 T1 T2 T1 Td1 D ON (DARK ON) Td2 Td2 * For ON and OFF, delay timers vary independently. Note: Td1, Td2: Delay time (0 to 5 s), T1: Any period longer than delay time, T2: Any period shorter than delay time Connectors (Sensor I/O connectors) Terminal No. 2 1 4 3 1 2 3 4 Wire colors Brown Blue Black XS2F-D421-DC0-A XS2F-D421-GC0-A XS2F-D422-DC0-A XS2F-D422-GC0-A Class Wire, outer jacket color Brown Connector pin No. @@@@Setting Distance Sensing Object Angle Characteristics (Up and Down) Sensing distance (m) 3 Sensing Object Angle (Left and Right) Sensing distance variation (%) 20 15 10 5 0 Sensing object: White paper Sensing distance: 1 m Distance setting: 0.5, 1 and 2 m White paper Black paper Sensing distance variation (%) 20 15 10 5 0 Sensing object: White paper Sensing distance: 1 m 2.5 2 2m 1. 5 -5 -10 1 1m (Upwards and Downwards) Inclination angle -5 (Leld a Background (La) Object ON ON L-ON D-ON OFF ON ON OFF OFF ON Normal one-point teaching Procedure 1 2 3 4 Operation Set the mode selector to . Set the NORMAL/ZONE mode selector to NORMAL . Press the TEACH button with the background. The teaching indicator (red) will turn ON. Set the mode selector to RUN . @@@@When the teaching is successful, the setting is complete. Set the mode selector to RUN . @@Set the NORMAL/ZONE mode selector to NORMAL . Press the TEACH button with a sensing object. @@Set the NORMAL/ZONE mode selector to ZONE . Press the TEACH button with the background. @@Set the mode selector to RUN . @@Set the NORMAL/ZONE mode selector to NORMAL . Press the TEACH button 3 s or more. The teaching indicator (red) will turn ON. In 3 s, the teaching indicator (green) will turn ON. @@Set the mode selector to RUN . @@@@Refer to OMRON's "Switch/Relay/Connector (PCB Product) Catalog" for typical examples of surge suppressors. Wiring Considerations Connection/Wiring The E3G has load short-circuit protection. If load short-circuit or like has occurred, the output turns OFF.

Therefore, recheck the wiring and switch power on again. This resets the shortcircuit protection circuit. Load short-circuit protection is activated when a current of 2 times or more of the rated load current flows. When using an L load, use the one the inrush current of which is less than 1.2 times of the rated load current. Mounting (3) Terminal protection cover Rubber bushing 63mm (1) Tc (2) Ta Output (3) Tb (4) Power supply (5) 33mm Washer Clamping nut . Changing to Side-pullout Cable from Vertical-pullout Cable (1) (2) E39-L129-G Terminal Protection Cover Rubber bushing Washer (2) Clamping nut (4) Rubber bushing * Cap * Note: * Provided with the E39-L129-G ProceOperation dure A Remove the present cover. Attach the E39-L129-G Terminal Protection Cover for B side-pullout cable. Remove the clamping nut, washer, and rubber bushing C of the E3G. These are used for the side-pullout cable. Attach the rubber bushing and cap provided with the D E39-L129-G to the E3G as replacements. . If Sensors are mounted face-to-face, ensure that no optical axes cross each other. Otherwise, mutual interference may result. . Be sure to install the Sensor carefully so that the directional angle range of the Sensor will not be directly exposed to intensive light, such as sunlight, fluorescent light, or incandescent light. . Do not strike the Photoelectric Sensor with a hammer or any other tool during the installation of the Sensor, or the Sensor will loose its water-resistive properties. . Use M4 screws for Sensor installation. . For case installation, tighten it to the torque of 1.2 Nm max. Water Resistance Tighten the operation cover screws and terminal block cover screws to a torque of 0.3 to 0.5 Nm in order to ensure water resistivity.

E3G A-129 E3G Dimensions (Unit: mm) Sensors Retroreflective Models Pre-wired E3G-R13-G Connector type E3G-R17-G Operation indicator (Orange) Operation mode selector Stability indicator (Green) 12 1.1 Receiver R11 Sensitivity adjuster 47.8 45 M2.6 Note: All dimensions other than the ones specified below are the same as the corresponding dimensions of E3G-R13-G. Mounting Holes 2-M4 Two, 4.5 dia. mounting holes R7 22 18.8 14 24.4 29 8 7 Emitter 12 21 43 Vinyl-insulated round cable with three conductors, 6 dia. (17 x 0.

16 dia.); standard length: 2 m 37 43 8 10 M12 10.5 dia. connector 68.5 67.8 25 25 Terminal block E3G-MR19-G E3G-MR19T-G Operation indicator (Orange) Stability indicator (Green) Operation mode selector M2.6 Sensitivity adjuster 12 OFF-delay adjuster * ON-delay adjuster * Two, 4.5 dia. @@@@25 25 Terminal block E3G-ML79-G E3G-ML79T-G Operation indicator Operation mode Indicators M2.6 (Orange) selector Stability indicator (Green) Teaching indicator (Red and green) TEACH button OFF-delay adjuster * ON-delay adjuster * M2. 6 nut Two, 4.5 dia. mounting holes E3G-ML79-G does not equipped ON-delay adjuster and OFF-delay adjuster. Mounting Holes 2-M4 14 Receiver 14 dia. lens 18 30 84. 95 84.45 74 74 24.4 6 37 Emitter 13.7 29 16 37 68 Hexagonal nut (Diagonal: 22) 44 Conduit PG 13.5 E3G A-131 E3G Distance-setting Pre-wired E3G-L73 Connector type E3G-L77 Accessories (Order Separately) Terminal Protection Cover for Side-pullout Cable E39-L129-G Terminal Protection Cover for Side-pullout Cable (Example of E3G-MR19-G) M2.



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6 19 M2.6 29 61.8 81.5 22 Hexagonal nut (Diagonal: 22) Applicable cord: 6 to 8 dia. 90.3 81 Note: 1 . The cover is provided with a rubber bushing and cap to prevent the cable from being pulled out in vertical direction. 44 Cap (Attach to E39-L129-G) (Conduit) Reflectors and Mounting Brackets H-3 ALL DIMENSIONS SHOWN ARE IN MILLIMETERS. To convert millimeters into inches, multiply by 0.03937.

To convert grams into ounces, multiply by 0.03527. Cat. No. E278-E2-04-X In the interest of product improvement, specifications are subject to change without notice. A-132 Standard Photoelectric Sensors .



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