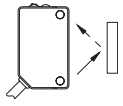
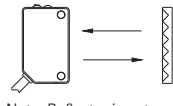


## Photoelectric Switches

| Sensing Method                     |  | Sensing Range  | Connection | Cable Length | Operation Mode | Part No.    |             |
|------------------------------------|--|--|------------|--------------|----------------|-------------|-------------|
|                                    |  |  |            |              |                | NPN Output  | PNP Output  |
| Convergent Reflective              | Infrared LED<br>w/Sensitivity Adjustment | <br>5 to 35 mm  | Cable      | 2m           | Light ON       | SA1E-GN1-2M | SA1E-GP1-2M |
|                                    |  |  |            |              | Dark ON        | SA1E-GN2-2M | SA1E-GP2-2M |
|                                    |  |  | Connector  | -            | Light ON       | SA1E-GN1C   | SA1E-GP1C   |
|                                    |  |  |            |              | Dark ON        | SA1E-GN2C   | SA1E-GP2C   |
| Coaxial Polarized Retro-reflective | Red LED<br>w/Sensitivity Adjustment      | <br>Note: Reflector is not supplied and must be ordered separately. See characteristics diagrams on page 219.<br>2.0m (when using IAC-R9)<br>1.0m [100 mm] (when using IAC-R10)<br>1.0m [100 mm] (when using IAC-R11) | Cable      | 2m           | Light ON       | SA1E-XN1-2M | SA1E-XP1-2M |
|                                    |  |  |            |              | Dark ON        | SA1E-XN2-2M | SA1E-XP2-2M |
|                                    |  |  | Connector  | -            | Light ON       | SA1E-XN1C   | SA1E-XP1C   |
|                                    |  |  |            |              | Dark ON        | SA1E-XN2C   | SA1E-XP2C   |

For more information, visit [www.IDEC.com/sensors](http://www.IDEC.com/sensors)

## Specifications

| Sensing Method            | Through-beam  | Polarized Retroreflective   | Diffuse-reflective                             | Small-beam Reflective                                | Background Suppression (BGS)  | Convergent Reflective                              | Transparent                                     |  |
|---------------------------|---|---|--|--|---|--|---|--|
| Part No.                  | SA1E-□T   | SA1E-□P   | SA1E-D   | SA1E-N   | SA1E-□B   | SA1E-G   | SA1E-X  |  |
| Power Voltage             | 12 to 24V DC (Operating range: 10 to 30V DC)<br>Equipped with reverse-polarity protection   |   |  |  |   |  |   |  |
| Current Draw              | Projector: 15 mA<br>Receiver: 20 mA<br>Laser Receiver: 30 mA  | 30 mA<br>with laser: 35 mA  |  |  |   |  | 20 mA maximum                                   |  |
| Sensing Range             | With sensitivity adjustment: 10m<br>Laser models: 30m   | With sensitivity adjustment:<br>2.5m (IAC-R5/R8)<br>1.5m (IAC-R6)<br>1.3m (IAC-RS2)<br>1.0m (IAC-RS1)<br>0.8m (IAC-R7□) <sup>1</sup><br>Laser models<br>0.3-10m | 700 mm<br>(using 200 × 200 mm white mat paper) | 50 to 150 mm<br>(using 100 × 100 mm white mat paper) | 20 mm to preset<br>(using 200 × 200 mm white mat paper)<br>with laser: 20 - 300mm | 5 to 35 mm<br>(using 100 × 100 mm white mat paper) | 2m<br>(when using IAC-R9)                       |  |
|                           | Without sensitivity adjustment: 15m   | Without sensitivity adjustment:<br>3.0m (IAC-R5/R8)<br>2.0m (IAC-R6)<br>1.4m (IAC-RS2)<br>1.1m (IAC-RS1)<br>1.0m (IAC-R7□) <sup>1</sup>                         |  |  |   |  |   |  |
| Adjustable Sensing Range  | —   |   |  |  | 40 to 200 mm<br>with laser: 40-300mm  | —  | —   |  |
| Detectable Object         | Opaque  |   | Opaque/Transparent                             |  | Opaque  | Opaque/<br>Transparent                             | Opaque, transparent and mirror-like objects     |  |
| Hysteresis                | —   |   |  | 20% maximum  | 10% maximum   | 20% maximum  | —   |  |
| Response Time             | 1 ms maximum<br>with laser: 250us   |   |  |  |   |  | 500 μs maximum                                  |  |
| Sensitivity Adjustment    | Adjustable using a potentiometer (approx. 260°)<br>Through-beam type and polarized retroreflective type are also available without sensitivity adjustment.<br>Laser models: 2 turn adjustment |   |  |  | —   | Adjustable using a potentiometer (approx. 260°)    | Adjustable using a potentiometer (approx. 240°) |  |
| Sensing Range Adjustment  | —   |   |  |  | 6-turn control knob   | —  | —   |  |
| Light Source Element      | Infrared LED<br>Red LED<br>Red laser diode  | Red LED<br>Red laser diode  | Infrared LED                                   | Red LED  | Red LED<br>Red laser diode  | Infrared LED                                       | Red LED   |  |
| Operation Mode            | Light ON/Dark ON  |   |  |  |   |  |   |  |
| Control Output            | NPN open collector or PNP open collector<br>30V DC, 100 mA maximum<br>Voltage drop: 1.2V maximum (BGS type: 2V maximum)<br>Short-circuit protection   |   |  |  |   |  |   |  |
| LED Indicators            | Operation LED: Yellow<br>Stable LED: Green<br>Power LED: Green (Through-beam type projector)  |   |  |  | Operation LED: Yellow<br>Stable LED: None   | Operation LED: Yellow<br>Stable LED: Green         | Operation LED: Yellow<br>Stable LED: None       |  |
| Interference Prevention   | — Two units can be mounted in close proximity.  |   |  |  |   |  |   |  |
| Degree of Protection      | IP67 (IEC 60529)  |   |  |  |   |  |   |  |
| Extraneous Light Immunity | Sunlight: 10,000 lux maximum, Incandescent lamp: 5,000 lux maximum (at receiver)  |   |  |  |   |  |   |  |
| Operating Temperature     | -25 to +55°C (no freezing)  |   |  |  |   |  |   |  |
| Operating Humidity        | 35 to 85% RH (no condensation)  |   |  |  |   |  |   |  |
| Storage Temperature       | -40 to +70°C (no freezing)  |   |  |  |   |  |   |  |
| Insulation Resistance     | Between live part and mounting bracket: 20 MΩ maximum (500V DC megger)  |   |  |  |   |  |   |  |