SA1N Subminiature Photoelectric Sensors

An alternative to fiber optic sensors, for use in tight spaces

- Small sensor head can be mounted where space is limited.
- No amplifier installation space required (built-in amplifier).
- Sensitivity adjustment control simplifies post-installation adjustments.
- Cable bends easily and is simple to install. Can be mounted without concerns about bend limits and damage associated with fiber optic cables.

CE

- See website for details on approvals and standards.

SA1N

Quantity: 1

Shape	Sensing method	Light source	Sensitivity control	Sensing range	Connector	Cable length	Operation mode	Output	Part No.
	Diffuse-reflective	Infrared LED	Sensitivity adjustment control	3 to 50mm	Cable	2m	Light ON	NPN output	SA1N-DN1VF50-2M
								PNP output	SA1N-DP1VF50-2M
	Convergent-reflective	Red LED	Sensitivity adjustment control with output converter circuit	5 to 30mm	Cable	2m	Light ON	NPN output	SA1N-GN1V30-2M
								PNP output	SA1N-GP1V30-2M

Specifications

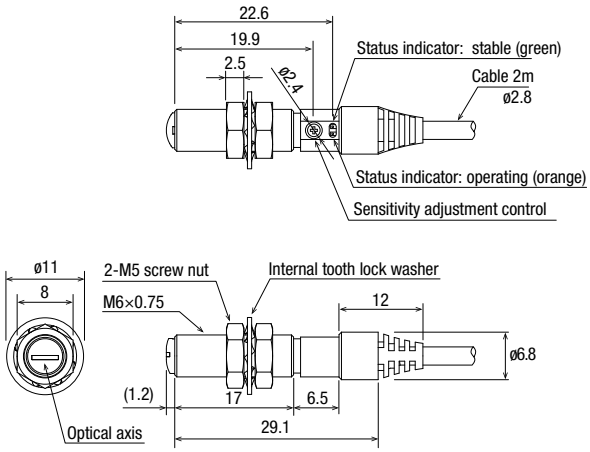
Part No.	SA1N-DN1VF50-2M	SA1N-DP1VF50-2M	SA1N-GN1V30-2M	SA1N-GP1V30-2M
Sensing method	Diffuse-reflective		Convergent-reflective	
Operation mode	Light on			
Output style	NPN output	PNP output	NPN output	PNP output
Sensing range	3 to 50mm		5 to 30mm	
Standard sensing object	White drawing paper: 100 x 100mm		White drawing paper: 50 x 50mm	
Light source (emitter)	Infrared LED		Red LED	
Rated operating voltage	12 to 24V±10% DC, ripple (p-p): 10% maximum			
Current draw	20mA maximum		27mA maximum	35mA maximum
Control output	NPN/PNP open collector output, load power voltage: 30V DC maximum (load current: 80mA maximum)			
Protection circuit	Power supply reverse polarity protection, output short-circuit protection			
Response time	0.5ms maximum			
Hysteresis	Less than 10% of sensing range		Less than 10% of sensing range	
Indicator	Operating status: orange LED Stable status: green LED		Operating status: red LED Stable status: green LED	
Adjustment	Sensitivity adjustment control available (*1)		Sensitivity adjustment relay volume control available (*2)	
Materials	Enclosure/screw nut/internal tooth lock washer: SUS303 Lens: PSU		Enclosure: LCP (filler: PP) Lens: PC	
Cable	Cable cord (pull out type) , outer diameter ø2.8mm, length 2m, 0.15mm^2 x 3-core			
Weight (approx.)	30g		40g	
Accessories	Screw nut, internal tooth lock washer, screwdriver (for adjusting)		Screw nut, internal tooth lock washer, screwdriver (for adjusting), mounting screw	
Operating temperature	-25 to +55% (no freezing, no condensation)		-25 to +55% (no freezing, no condensation)	
Storage temperature	-40 to +70% (no freezing, no condensation)		-40 to +70% (no freezing, no condensation)	
Operating humidity	35 to 85%RH (no condensation)			
Ambient illuminance	2,000m maximum			
Insulation resistance	500V DC megger 20MΩ minimum			
Dielectric strength	500V AC, 1 minute			
Vibration resistance	10 to 55 Hz, amplitude 1.5 mm, 2 hours each in X, Y, and Z directions			
Shock resistance	500m/s^2, 3 times each in X, Y, and Z directions			
Degree of protection	IP67 (IEC 60529)		IP64 (IEC 60529)	

*1) When operating the sensitivity adjustment control or output conversion unit, use the supplied screwdriver and apply a torque of 0.8N·cm maximum.
*2) When operating the sensitivity adjustment relay volume control or the output conversion unit, use the supplied screwdriver and apply a torque of 0.1N·m maximum.

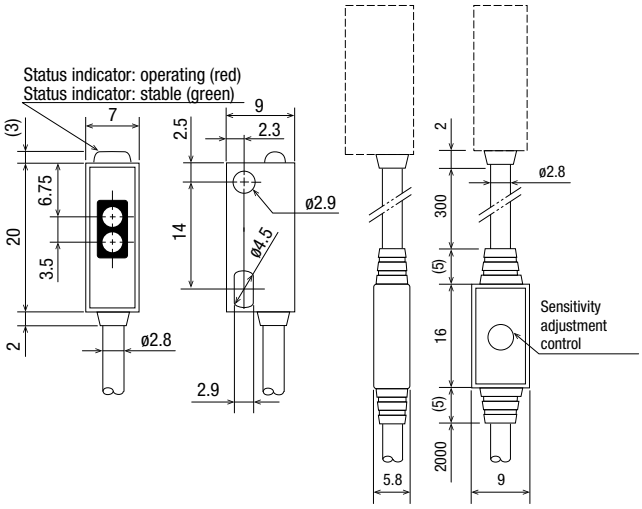
Dimensions

All dimensions in mm

SA1N-DN1VF50-2M / SA1N-DP1VF50-2M

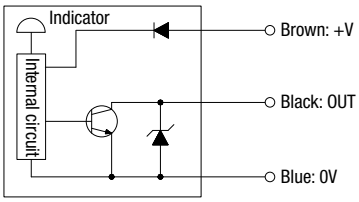


SA1N-GN1V30-2M / SA1N-GP1V30-2M

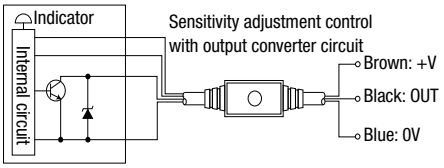


Wiring

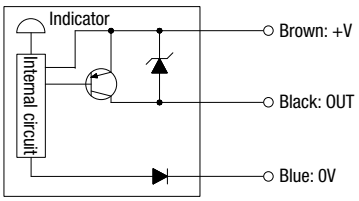
SA1N-DN1VF50-2M



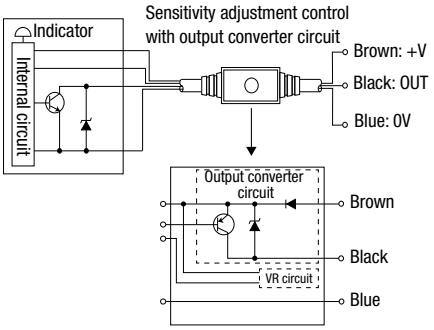
SA1N-GN1V30-2M



SA1N-DP1VF50-2M

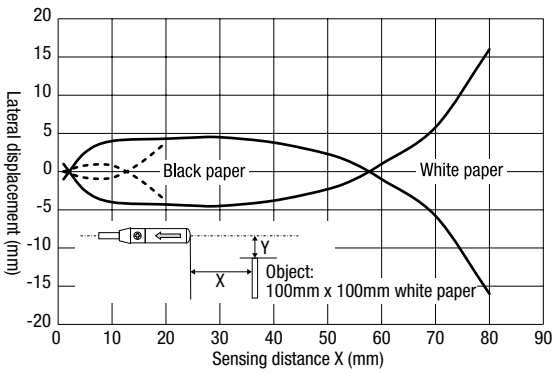


SA1N-GP1V30-2M

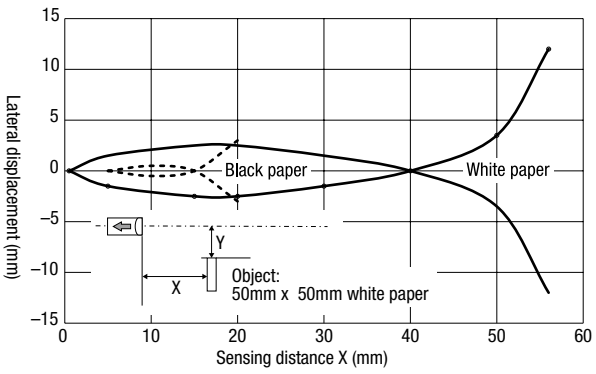


Characteristics

SA1N-DN1VF50-2M / SA1N-DP1VF50-2M



SA1N-GN1V30-2M / SA1N-GP1V30-2M



Safety Precautions ⚠

Turn off the power to the product before starting installation, removal, wiring, maintenance, and inspection. Failure to turn power off may cause electrical shock or fire.

Instructions

SA1N-D

- Lenses and cases should be cleaned with a soft cloth. Since PMMA is used as the material for the optical part, do not use organic solvents such as ammonia, sodium hydroxide, alcohol, or thinner.
- Wiring should be separated from power lines and high-voltage lines, or shielded wires should be used. If wiring is placed in the same pipe or duct, induction may cause malfunction or damage.
- This product operates 100ms after power-on. Turn on the power supply before the load.
- This product may generate output pulses when the power is turned off. Ensure that the power supply on the load side is turned off first.
- Avoid continuously turning the power on and off.
- This product has an IP67 protection rating but should not be used in areas constantly sprayed with water or underwater.
- Be sure to use the supplied screw nuts and internal tooth lock washers for installation.
- If the screw nut on the main unit is tightened with excessive force, the threads may be crushed, and the screw nut may loosen (the tightening torque is a maximum of 1N·m).
- High-frequency lighting, fluorescent lamps, inverters, and other high-frequency devices may emit light or noise that is similar to the modulation frequency of this sensor. Install the sensor in a way that prevents direct entry of light from sunlight or fluorescent lamps onto the detection surface.
- Note that connecting a capacitor or coil to the load may cause overcurrent to flow.
- When using a high-capacity switching power supply, make sure to insert a fuse or breaker that matches the number of sensors used.
- Do not use a power supply outside the rated operating voltage range or apply AC power. Otherwise, explosion or burning may occur.
- In the event of a load short circuit or overload, the output transistor will turn off. Check the condition of the load and then turn the power back on.
- When using a DC power supply with an isolated transformer or when using a switching power supply, ensure to ground the FG terminal.
- When extending the wiring, use cables with a cross-sectional area of 0.3mm² minimum and a length of 10m maximum. Also, take note of the voltage drop.
- The current limit of the power source should be 1A, which is appropriate for the sensor cable size.

SA1N-G

- Lenses and cases should be cleaned with a soft cloth. Since PMMA is used as the material for the optical part, do not use organic solvents such as ammonia, sodium hydroxide, alcohol, or thinner.
- Wiring should be separated from power lines and high-voltage lines, or shielded wires should be used. If wiring is placed in the same pipe or duct, induction may cause malfunction or damage.
- This product operates 20ms after power-on. Turn on the power supply before the load.
- This product may generate output pulses when the power is turned off. Ensure that the power supply on the load side is turned off first.
- Avoid continuously turning the power on and off.
- This product has a IP64 protection rating but should not be used in areas constantly sprayed with water or underwater.
- Be sure to use the supplied M2.6 x 12 mm screws, internal tooth lock washers, and screw nuts for installation.
- Excessive tightening may cause damage.
  * Recommended tightening torque: 0.1N-m
- High-frequency lighting, fluorescent lamps, inverters, and other high-frequency devices may emit light or noise that is similar to the modulation frequency of this sensor. Install the sensor in a way that prevents direct entry of light from sunlight or fluorescent lamps onto the detection surface.
- Note that connecting a capacitor or coil to the load may cause overcurrent to flow.
- When using a high-capacity switching power supply, make sure to insert a fuse or breaker that matches the number of sensors used.
- Do not use a power supply outside the rated operating voltage range or apply AC power. Otherwise explosion or burning may occur.
- In the event of a load short circuit or overload, the output transistor will turn off. Check the condition of the load and then turn the power back on.
- When using a DC power supply with an isolated transformer or when using a switching power supply, ensure to ground the FG terminal.
- When extending the wiring, use cables with a cross-sectional area of 0.3mm² minimum and a length of 10m maximum. Also, take note of the voltage drop.
- The current limit of the power source should be 1A, which is appropriate for the sensor cable size.

Be sure to read the instruction manual carefully before performing installation, wiring, or maintenance.

For details on mounting, wiring, and maintenance, see the instruction manual from the below URL.

- SA1N-D https://product.idec.com/?product=SA1N-D
- SA1N-G https://product.idec.com/?product=SA1N-G

SA1N-D SA1N-G