

Automatic Door Side Sensors

ADS-SE1/2 Series INSTRUCTION MANUAL

TCD210004AB

Autonics

Thank you for choosing our Autonics product.

Read and understand the instruction manual and manual thoroughly before using the product.

For your safety, read and follow the below safety considerations before using.

For your safety, read and follow the considerations written in the instruction manual, other manuals and Autonics website.

Keep this instruction manual in a place where you can find easily.

The specifications, dimensions, etc. are subject to change without notice for product improvement. Some models may be discontinued without notice.

Follow Autonics website for the latest information.

Safety Considerations

- Observe all 'Safety Considerations' for safe and proper operation to avoid hazards.
- ⚠ symbol indicates caution due to special circumstances in which hazards may occur.

⚠ Warning Failure to follow instructions may result in serious injury or death.

01. Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss. (e.g., nuclear power control, medical equipment, ships, vehicles, railways, aircraft, combustion apparatus, safety equipment, crime/disaster prevention devices, etc.) Failure to follow this instruction may result in personal injury, economic loss or fire.

02. Use this product as secondary safety aid for door sensor. Failure to follow this instruction may result in personal injury or economic loss.

03. Since the purpose of this product is secondary safety aid, please use it with another door sensor.

- Although install this product near the sensing area, object in the nearest area from the door can not be detected. It is hard to detect kids or elders consecutively, they can be caught by the auto door.

- Keep opened as much as the holding time you set. Since door closes after the holding time, the people can be caught by the auto door.

04. Do not connect, repair, or inspect the unit while connected to a power source.

Failure to follow this instruction may result in fire.

05. Do not use the unit in the place where flammable/explosive/corrosive gas, high humidity, direct sunlight, radiant heat, vibration, impact or salinity may be present.

Failure to follow this instruction may result in explosion or fire.

06. Check 'Connections' before wiring.

Failure to follow this instruction may result in fire.

07. Do not disassemble or modify the unit.

Failure to follow this instruction may result in fire.

⚠ Caution Failure to follow instructions may result in injury or product damage.

01. Use the unit within the rated specifications.

Failure to follow this instruction may result in fire or product damage.

02. Use a dry cloth to clean the unit, and do not use water or organic solvent.

Failure to follow this instruction may result in fire.

03. Do not use a load over the range of rated relay specification.

Failure to follow this instruction may result in fire, relay broken, contact melt, insulation failure or contact failure.

Cautions during Use

- Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
- 12 - 24 VDC \Rightarrow , 12 - 24 VAC \sim power supply should be insulated and limited voltage / current or Class 2, SELV power supply device.
- Use the product, 1 sec after supplying power. When using separate power supply for the sensor and load, supply power to sensor first.
- When using switching mode power supply (SMPS) to supply the power, ground F.G. terminal and connect a condenser between 0V and F.G. terminal to remove noise.
- When connecting a DC relay or other inductive load, remove surge by using diodes or varistors.
- Wire as short as possible and keep away from high voltage lines or power lines, to prevent surge and inductive noise.
- This unit may be used in the following environments.
 - Indoors (in the environment condition rated in 'Specifications')
 - Altitude max. 2,000 m
 - Pollution degree 3
 - Installation category II

Cautions during Installation

- Install the unit correctly with the usage environment, location, and the designated specifications.
- When installing over the two door sensors closely, it may result in malfunction due to mutual interference. Do not change the position of the head of emitter and receiver. Keep the installation distance between the two heads more than 50 cm.
- This product is for indoor only. Avoid the place where the receiver is exposed to direct sunlight, or the ambient illumination is in over the rated value.
- Do NOT impacts with a hard object or excessive bending of the wire lead-out. It may cause damage the water resistance

Recommended Installation for the Sensor

1. Refer to the below and drill the holes on the side pillars of the auto door for the installation.

Check the mounting holes of the head of the emitter and receiver are in parallel for the optical axes

Grind around the mounting holes drilled smoothly.

It may hurt by sharp parts and cause malfunction by the inclined sensor head.

	One push method	Screw method
Using the bracket	Through hole for sensor head Ø 13 to 14 mm	Through hole for sensor head Ø 13 to 14 mm
	Fixing screw hole for bracket M4 Tap or Ø 3 mm	Fixing screw hole for bracket M4 Tap or Ø 3 mm
Not using the bracket	Mounting hole for sensor head Ø 12.2 \pm 0.1 mm	Mounting hole for sensor head M10 × 0.75 mm
	Panel thickness for sensor head 1.5 \pm 0.5 mm	Panel thickness for sensor head 1.5 \pm 0.5 mm

2. Mount the sensor heads to the mounting holes.

It may cause malfunction because the sensitivity setting is not available as the optical axes are not matched if the sensor body is inclined.

Check the damage such as scratches or pollutant on the lens of the sensor head.

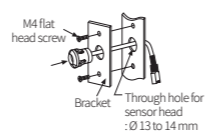
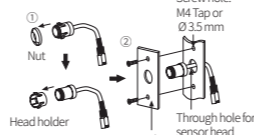

It may cause malfunction in the condition of interrupted light or lack of sensitivity by dust.

Be sure to use the mounting brackets of the one push method for the sensor with the head holder and nuts. In the one push method, check the nuts are fixed on the sensor body tightly.

Install the sensor with no gap between the nut and the side of the door or panel.

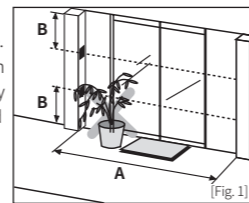
Be sure to use the mounting brackets of the screw method for the sensor without the head holder and nuts.

Install the sensor with no gap between the panel and the sensor.

	One push method	Screw method
Using the bracket	Install the sensor head to the bracket first and fix the bracket to the desired place by the screws. 	Remove the nut and head holder from the sensor head first. Install the sensor head to the bracket and fix the bracket on the side pillar of the door by the screws. 
Not using the bracket	Put the sensor head into the mounting hole. 	

Cautions during installation

- The rated sensing distance is max. 10 m (A).
- Install the sensors within the rated sensing distance.
- Install the sensor with more than 50 cm (B) gap from the bottom and ceiling. It may cause malfunction by reflected beams from the surface of the bottom and ceiling.
- Do not put obstacles between the emitter and receiver. Otherwise, it may result in malfunction



Product Components

- Sensor: ADS-SHP (1 set - emitter and receiver)
- Fixing bolt for the controller (M4×20) × 2

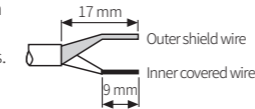
Sold Separately

- Mounting bracket: ADS-SB12 (one push method)
- Mounting bracket: ADS-SB10 (screw method)
- Sensor: ADS-SHP (1 set - emitter and receiver)
- Controller: ADS-SEC

Recommended Installation for the Controller

1. Refer to the figure at the right side and adjust the length of wires.

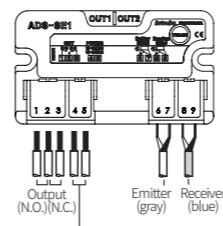
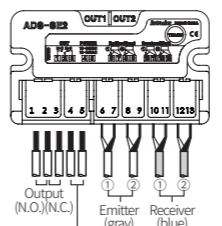
- Cut off the wires as much as your need and take off the cover of them. Twist the end of the wires shown in the figure, and connect to the controller. It is easy to connect if soldering the end of the wires.
- Be sure to connect the wires in power OFF.
- Follow the figure when cutting off the wires of the sensor head. If taking off the cover too much, it may cause damage to this product as the end of both wires are in contact with each other.



2. Match wires in the number of terminals and connect them.

Do not connect the extended wire to the sensor. It may cause malfunction by the noise.

Do not connect 2 wires or more to the 1 terminal.

ADS-SE1	ADS-SE2
	
Power (12-24 VAC \sim / VDC \Rightarrow)	Power (12-24 VAC \sim / VDC \Rightarrow)
Output (N.O./N.C.)	Output (N.O./N.C.)
Emitter (gray)	Emitter (gray)
Receiver (blue)	Receiver (blue)

Connection for sensor / power / output wirings

Press the wiring connection buttons and connect the wires.

It does not operate normally if the wires are connected conversely. Before the wiring, be sure to check the proper positions of the wires.

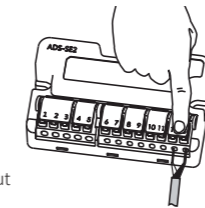
Make sure that the power wire connects to the power terminal (4, 5). Otherwise, it may cause damage to this product.

Allowable diameter: in case of the power and output line

- Single and stranded wire: 0.2 to 1.5 mm 2

Cautions during installation

- Fix a controller with offered 2 fixing bolts. Process the fixing holes of a controller by M4 and see the 'Dimensions' for the position of holes.
- Do not over tighten the bolts when fixing the controller. The fixing holes may be broken.



Specifications

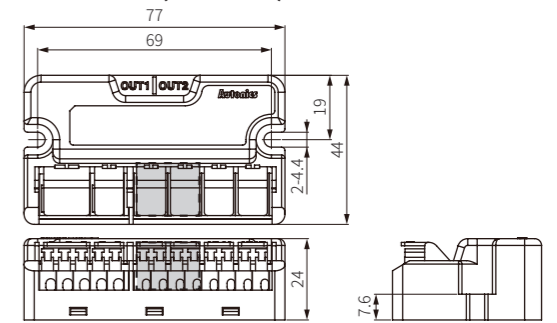
Model	ADS-SE1	ADS-SE2
Available sensor sets	1 channel	2 channels
Sensing distance	0 to 10 m	
Sensing target	Opaque materials	
Min. sensing target	≥ Ø 20 mm	
Sensing method	Through-beam type	
Response time	≈ 50 ms (from interrupted light)	
Output holding time	≈ 500 ms (from received light)	
Light source	Infrared LED (850 nm modulated)	
Indicator	OUT 1 indicator (red), OUT 2 indicator (green)	
Approval	CE UK ENEC	
Weight (packaged)	≈ 300 g (≈ 450 g)	
Power supply	12 - 24 VAC \sim ± 10 %, 50 / 60 Hz / 12 - 24 VDC \pm ± 10 % (ripple P-P: ≤ 10 %)	
Power consumption	AC: ≤ 2 VA / DC: ≤ 50 mA	
Control output	Relay contact output	
Relay contact capacity⁽¹⁾	50 VDC \Rightarrow 0.3 A (resistive load)	
Relay contact composition	1c	
Relay life cycle	Mechanical: ≥ 5,000,000 times, electrical: ≥ 100,000 times	
Insulation resistance	≥ 20 MΩ (500 VDC \Rightarrow megger)	
Vibration	1 mm double amplitude at frequency of 10 to 55 Hz in each X, Y, Z direction for 2 hours	
Shock	500 m/s 2 (≈ 50 G) in each X, Y, Z direction for 3 times	
Ambient illumination (receiver)	Sunlight: ≤ 100,000 lx	
Ambient temperature	-20 to 55 °C, storage: -25 to 60 °C (no freezing or condensation)	
Ambient humidity	35 to 85 %RH, storage: 35 to 85 %RH (no freezing or condensation)	
Protection structure	IP30 (IEC standard)	
Connection	Cable connector type	
Sensor cable	Ø 2.4 mm, 1-wire, 5 m	
Wire spec.	AWG26 (0.16 mm, 7-core), insulator outer diameter: Ø 1.32 mm	
Material of the controller	Housing: ABS, cover: ABS, bolt: SCM (brass, Ni-plate)	
Material of the sensor	Holder: ABS, lens: PMMA, lens guide: PC, nut: PC	

(1) Do not use the load which is beyond the rated capacity of contact point of relay. It may cause bad insulation, contact fusion, bad contact, relay breakdown, and fire etc.

Dimensions

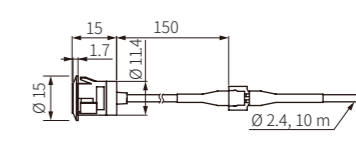
- Unit: mm, For the detailed drawings, follow the Autonics website.
- ⋮ part is only for ADS-SEC2.

Controller (ADS-SEC□)

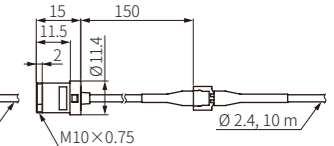


Sensor (ADS-SHP)

One push method



Screw method



Operation Indicator

Entry activation	Power OFF	Out of the sensing area ⁽¹⁾	Enter the sensing area	Out of the sensing area ⁽²⁾
Operation indicator (red, green)	OFF	ON	OFF	ON
Output contact	N.O.	OPEN	OPEN	CLOSE
	N.C.	CLOSE	CLOSE	OPEN

(1) It operates in the normal. None of the person or the object is in the between sensors.

(2) The state after the person or object has passed.

Sensitivity Adjustment

This function helps to set the sensitivity in the situation that if the malfunction occurs due to the lack of sensitivity, when installing this unit at first or during operation. Depending on the sensing distance, the controller automatically sets the optimum sensitivity for the best operation.

Steps of the sensitivity setting

- When pressing the sensitivity setting key below 1 sec, the sensitivity setting is canceled and it operates as the latest setting.
- If sensitivity is not enough or the setting is not correct, this unit may have malfunction.

Sensitivity setting key	Press sensitivity setting key (TEACH) → After 1 sec. during pressing sensitivity setting key → Completes the process of the key
Sensitivity setting indicator⁽¹⁾	Red/green indicator cross-flashing → Red/green indicator all OFF → Red/green indicator flashing at the same time → Indicates operation status
Stature	Ready for sensitivity setting → Starts sensitivity setting → Completes sensitivity setting

(1) The indicator may vary depending on the channels. See the 'Sensitivity Setting Indicators.'

Cautions during the sensitivity setting

- Check there are obstacles between Emitter / Receiver heads.
- Check there is dirt on the head lens of Emitter / Receiver.
- Check the wires are disconnected or connected properly as the label (nameplate).
- Check the heads of Emitter/Receiver are inclined.
- Check the above items and resolve the problems and set the sensitivity again.

Troubleshooting

Malfunction	Cause	Troubleshooting
It is not work.	Power voltage	Check the power cable and adjust power voltage.
	Cable cut, disconnection	Check wiring and terminals.
Sometimes it does not work.	Rated sensing distance	Use it in rated sensing distance.
	Pollution by pollutant on the lens of Emitter/Receiver.	Remove the pollutant.
The door is opened even if people do not enter in the sensing area.	Rated sensing distance	Use it in rated sensing distance.
	There are obstacles between Emitter and Receiver.	Remove obstacles.
	There are equipments generating strong noise or ratio wave (motor, neon lamp, generator and high-tension wire, etc).	Keep away from the equipment generating strong noise or ratio wave.