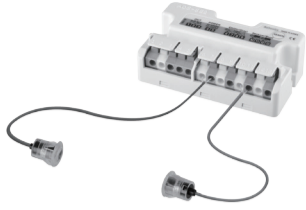# Autonics

Door side sensor
ADS-SE1/2

M A N U A L

CE

Thank you very much for selecting Autonics products.
For your safety, please read the following before using.

■ Caution for your safety

※Please keep these instructions and review them before using this unit.

※Please observe the cautions that follow;
⚠ **Warning** Serious injury may result if instructions are not followed.
⚠ **Caution** Product may be damaged, or injury may result if instructions are not followed.

※The following is an explanation of the symbols used in the operation manual.
⚠ Caution: Injury or danger may occur under special conditions.

⚠ Warning

1. In case of using this unit with machinery(ex: nuclear power control, medical equipment, ship, vehicle, train, airplane, combustion apparatus, safety device, crime/ disaster prevention equipment, etc) which may cause damages to human life or property, it is required to install fail-safe device.
It may cause a fire, human injury or damage to property.
2. Do not connect wires in power ON.
It may cause electric shock.
3. Do not disassemble or modify this unit. Please contact us if it is required.
It may cause electric shock and a fire.

⚠ Caution

1. This unit shall not be used outdoors.
It might shorten the life cycle of the product or cause electric shock.
Use this product inside only. Do not use the product outdoors or location subject to temperature or humidity outside.(ex: rain, dirty, frost, sunlight, condensation, etc.)
2. Use it with auto door sensor for safety.
It may cause damage of assets or human injury.
3. Do not use this unit in place where there is flammable or explosive gas.
It may cause a fire or explosion.
4. Please observe the rated specifications.
It may shorten the life cycle or damage to the product.
5. Do not do wrong wiring.
It may cause product damage.
6. Do not use this unit where severe shock or vibration exists.
It may cause product damage.
7. In cleaning the unit, do not use water or an oil-based detergent.
It might cause an electric shock or fire that will result in damage to the product.
8. Do not use the load beyond rated switching capacity of relay contact.
It may cause insulation failure, contact melt, contact failure, relay broken, fire etc.

■ Part descriptions

◎ Controller (ADS-SEC1/2)

1. OUT1 indicator (red)
2. OUT2 indicator (green)
3. Sensitivity setting key (TEACH)
4. Wiring connection button
5. Mounting hole
6. Power and output connection terminal (1 to 5)
7. Emitter/Receiver sensor connector terminals
-ADS-SEC1: 6 to 9
-ADS-SEC2: 6 to 13

◎ Sensor (ADS-SHP)

※To mount a sensor with a nut and a head holder, use the bracket for one push method.
※To mount a sensor without a nut and a head holder, use the bracket for screw method.
※ADS-SE2 is available to 2 sets of sensors at the same time.
Additional 1 set of sensors is sold separately.

■ Installation

◎ Controller
1. Follow as below when adjusting wiring length.
①Cut off the wiring length as much as user needs.
②Connect the wire to the terminal after taking off the wire covering.
It is easy to connect if soldering the end of the wires.

• Be sure of connecting wires in power off.
• Follow the figure when cutting off the wires of sensor head.
If the wire covering is taken off too much it may cause damage to this product as the end of both wires is shorted.

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

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

• Do not connect two wires or more to a terminal.

●Connection for sensor/power/output wirings

• Press wiring connection buttons and do wiring properly.
• It does not operate normally if the wiring is connected conversely.
• Make sure that connect the power wire to the power terminal (4, 5).
Otherwise, it may cause damage to this product.
• Allowable diameter of power and output wires
-Single and stranded wire: 0.2 to 1.5 mm²

⚠ **Caution for installing controller**
• Fix a controller with 2 fixing bolts.
Process the fixing holes of a controller by M4.
Refer to ◎ Dimension for the position of holes.
• Do not tighten bolts to fix a controller. The fixing holes of controller may be broken.

■ Specifications

Model	ADS-SE1(1-channel)	ADS-SE2(2-channel)
Sensor wire length	5m	
Sensing type	Through-beam type	
Sensing distance	0 to 10m	
Power supply	12-24VAC ±10% 50/60Hz, 12-24VDC±10% (ripple P-P: max. 10%)	
Power consumption/ Current	AC: Max. 2VA / DC: Max. 50mA	
Control output	●Contact capacity: 50VDC 0.3A (resistive load) ●Contact type: 1c ●Relay life cycle: Mechanical- Min. Min. 5,000,000 operations Electrical-100,000 operations	
Response time	Approx. 50ms(from interrupted light)	
Output holding time	Approx. 500ms(from received light)	
Available sensor sets	1-channel	2-channel
Indicator	OUT1 indicator: red, OUT2 indicator: green	
Light source	Infrared LED(850nm modulated)	
Vibration	1.5mm amplitude at frequency of 10 to 55Hz(for 1min.) in each of X, Y, Z directions for 2 hours	
Shock	500 m/s²(approx. 50G) in each of X, Y, Z directions for 3 times	
Environment — Ambient illumination	Sunlight: Max. 100,000lx (receiver illumination)	
Environment — Ambient temperature	-20 to 55℃, storage: -25 to 60℃	
Environment — Ambient humidity	35 to 85%RH, storage: 35 to 85%RH	
Protection	IP30(IEC standard)	
Material	Case: ABS, Lens: PMMA	
Sensor cable	Ø2.4mm, 1-wire, length: 5m (AWG26, core diameter: 0.16mm, number of cores: 7, insulator out diameter: Ø1.32mm)	
Accessory	Sensor 1set(ADS-SHP), Controller fixing bolt(M4×20) 2EA	
Approval	CE	
Weight※1	Approx. 450g(approx. 300g)	

※1: This weight is with packaging and the weight in parentheses is only unit weight.
※The temperature or humidity mentioned in Environment indicates a non freezing or condensation environment.

■ Dimensions

◎ Controller(ADS-SEC1/2)   (unit: mm)

※▨ part is only for ADS-SEC2.

◎ Sensor(ADS-SHP)

<One push method>   <Screw method>

※ Controller(ADS-SEC1/2), Sensor(ADS-SHP:5m) are sold separately.

◎ Bracket (sold separately)
●One push method(ADS-SB12)   ●Screw method(ADS-SB10)

◎ Sensor
1. Make holes on the side of auto door as followings.
1) When not using the bracket
①One push method
• Mounting hole for sensor head: Ø12.2⁺⁰·¹mm • Panel thickness for sensor head: 1.5⁺⁰·⁵ mm
②Screw method
• Mounting hole for sensor head: M10×0.75mm • Panel thickness for sensor head: 1.5⁺⁰·⁵ mm
2) When using the bracket
①One push method
• Through hole for sensor head: Ø13 to 14mm • Fixing screw hole for bracket: M4 Tap or Ø3.5mm
②Screw method
• Through hole for sensor head: Ø13 to 14mm • Fixing screw hole for bracket: M4 Tap or Ø3.5mm
※Check the mounting holes for the head of 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.

2. Mount sensor heads to the mounting holes.
1) When not using the bracket
①One push method
• Put the sensor head into the mounting hole as the figure.
※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).
②Screw method
• Put the sensor head to the mounting hole.
※Install the sensor with no gap between the panel and the sensor.
2) When using the bracket
①One push method
• Put the sensor head to the bracket.
• Fix the bracket to the desired place by screws.
※Check the nut is fixed to the sensor body tightly.
※Install the sensor with no gap between the nut and the side of the door (or bracket).
②Screw method
• Remove the nut and head holder from the sensor head.
• Install the sensor head to the bracket.
• Fix the bracket on the side post of the door by screws.

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

⚠ **Caution for sensor installation**
1. The rated sensing distance is 10m(A).
Install the sensors within the rated sensing distance.
2. Install the sensor with more than 50cm (B) gap from the bottom and ceiling.
It may cause malfunction by reflected beams from the surface of the bottom and ceiling.
3. Do not put obstacles between Emitter and Receiver, or it may cause malfunction.
4. This product is for indoor.
Avoid the place where exposed in direct sunlight or it is in over rated intensity of illumination.

■ Sensitivity setting
◎ **Sensitivity setting**

Sensitivity setting is required when a user installs this unit at first or there is malfunction due to lack of sensitivity.
Depending on the sensing distance, the controller automatically sets the optimum sensitivity for the best operation.

◎ **Order of Sensitivity setting**

Sensitivity setting key adjustment	Press sensitivity setting key	After 1 sec. during pressing sensitivity setting key		Completes sensitivity setting
Indicator	Flashes Red/ Green indicators in turn	Turn OFF Red/ Green indicators	Flashes Red/ Green indicators	Indicates operation status
Status	Ready sensitivity setting	Starts sensitivity setting	Completes 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.

◎ **Check the followings when sensitivity setting is failed.**
① Check there are obstacles between Emitter/Receiver heads.
② Check there is dirt on the head lens of Emitter/Receiver.
③ Check the wires are disconnected or connected properly as the label(connection diagram).
④ Check the heads of Emitter/Receiver are inclined.
⑤ Check the above items and resolve the problems and set the sensitivity again.

■ Indicators
☼: light ON, ◐: flash, ●: light OFF

Sensor	Indicator OUT1 (red)	OUT2 (green)	Status After setting sensitivity	In operation
1CH (ADS-SE1/2)	☼	●	Sensitivity setting success	Received light
	◐	●	Sensitivity setting failure	Emitter disconnection or sensor cable extention
	◐	●	—	Lack of sensitivity
	●	●	—	Interrupted light
2CH (ADS-SE2)	☼	☼	1, 2 CH sensitivity setting success	1, 2-channel received light
	☼	◐	1CH sensitivity setting success, 2CH sensitivity setting failure	2-channel lack of sensitivity
	☼	●	—	1-channel received light, 2-channel interrupted light
	◐	☼	1CH sensitivity setting failure, 2CH sensitivity setting success	1-channel lack of sensitivity
	●	☼	—	1-channel interrupted light, 2-channel received light
	◐	◐	1, 2CH sensitivity setting failure	1, 2-channel lack of sensitivity or emitter disconnection
	●	●	—	1, 2-channel interrupted light

※For ADS-SE2, OUT1 indicator(red) is for Receiver status set sensitivity by Emitter of 1-channel and OUT2 indicator(green) is for Receiver status set sensitivity by Emitter of 2-channel.
※If lack of sensitivity occurs by not-matched optical axes or pollution on the lens of emitter/ receiver during self diagnostic function, for ADS-SE1, the OUT1 indicator (red) turns ON. For ADS-SE2, the OUT indicator of the channel lack of received light turns ON.

■ Operation check
☼: light ON, ●: light OFF

Operation		Power OFF	Normal operation ·No human or any materials between sensors	·Human or materials are passing between sensors (interrupted light)	·After human or materials are passed
Status					
Indicator (OUT1 red/ OUT2 green)		●	☼	●	☼
Relay output	N.O.	OPEN	OPEN	CLOSE	OPEN
	N.C.	CLOSE	CLOSE	OPEN	CLOSE

■ Troubleshooting

Malfunction	Cause	Malfunction
It does not work.	Power voltage	Check the power cable and adjust power voltage.
	Cable cut, disconnection	Please 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.
It operates even if there is no access in 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, generator, high-tension wire).	Keep away from the equipment generating strong noise or ratio wave.

■ Caution for using

1. When using two sets of sensor closely it may cause mutual interference by the emitter of other sensor. Change the place of the emitter head and the receiver head or make the distance between the heads in more than 50cm to avoid the interference.
2. When installing the sensor head on the ceiling or floor closely it may cause malfunction by receiving the reflected beam. Install the sensor by keeping the suitable height(more than 50cm) from the ceiling or floor.
3. If the sensing target is translucent body or smaller than Ø5mm, it might not detect the target cause light passed.
4. When wiring the photoelectric sensor with high voltage line, power line in a same conduit, it may cause malfunction or mechanical problem.
Please wire it separately or use different conduit.
5. Avoid using the unit where there is severe dust and corrosion, or it may cause malfunction.
6. Please make power and output line shorten as possible, or it may cause malfunction by surge etc.
7. When the lens of sensor head is polluted by dust etc., clean it by dried cloth slightly. Do not use organic solvent.
8. When using switching mode power supply as the source of supplying power, please ground F.G. terminal and install a condenser for removing noise as the following figure.

9. Installation environment
①It shall be used indoor.
②Altitude max. 2,000m
③Pollution Degree3
④Installation Category II
※It may cause malfunction if above instructions are not followed.

■ Major products

■Photoelectric sensors	■Temperature controllers
■Fiber optic sensors	■Temperature/humidity transducers
■Door sensors	■SSR/Power controllers
■Door side sensors	■Counters
■Area sensors	■Timers
■Proximity sensors	■Panel meters
■Pressure sensors	■Tachometer/Pulse(Rate)meters
■Rotary encoders	■Display units
■Connector/Sockets	■Sensor controllers
■Switching mode power supplies	
■Control switches/Lamps/Buzzers	
■I/O Terminal Blocks & Cables	
■Stepper motors/drivers/motion controllers	
■Graphic/Logic panels	
■Field network devices	
■Laser marking system(Fiber, CO₂, Nd:YAG)	
■Laser welding/soldering system	

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※ **The above specifications are subject to change without notice.**