

Autonics Laser Scanner LSE-4A5R2 INSTRUCTION MANUAL



Thank you for choosing our Autonics product. Please read the following safety considerations before use.

Safety Considerations

Please observe all safety considerations for safe and proper product operation to avoid hazards. Symbol represents caution due to special circumstances in which hazards may occur.

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

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

Warning

- 1. Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss.
2. This product is not safety sensor and does not observe any domestic nor international safety standard.
3. Do not connect, repair, or inspect the unit while connected to a power source.
4. Check 'Connections' before wiring.
5. Do not disassemble or modify the unit.

Caution

- 1. Do not stare at the laser emitter.
2. Use the unit within the rated specifications.
3. Use dry cloth to clean the unit, and do not use water or organic solvent.
4. Do not use the unit in the place where flammable/explosive/corrosive gas, humidity, direct sunlight, radiant heat, vibration, impact, or salinity may be present.
5. Do not apply high pressure to the laser scanner to clean it.

Laser Scanner Program [atLidar]

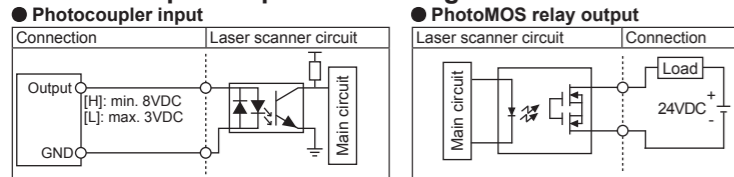
atLidar is the laser scanner program that allows installation of the laser scanner, setting of parameters, and management of monitoring data such as status information.

Item	Minimum specifications
System	32bit (x86) or 64bit (x64) processor over 1GHz
Operations	Microsoft Windows 7/8/10
Memory	4GB+
Hard disk	1GB+ of available hard disk space
VGA	Resolution: 1024x768 or higher

For initial IP address of the laser scanner, refer to the following table.

Item	Laser scanner	atLidar
Socket	Server	Client
IP address	192.168.0.1	IP address of the user PC
Subnet mask	255.255.255.0	255.255.255.0
Port	8000	-
Gateway	192.168.0.2	192.168.0.2

Control Input/Output Circuit Diagram



Cautions during Use

- 1. Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
2. 24VDC power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.
3. After supplying power, the sensor performs self-check for about 10 sec.
4. Mutual optical interference between laser scanners and photoelectric sensors may result in malfunction.
5. Mutual optical interference between laser scanners may result in malfunction.
6. Objects can not be scanned when covering the front cover of the laser scanner.
7. When the laser scanner is moved to another position, use it after re-teaching (Teach-in).
8. Do not drop the unit. It may cause malfunction.
9. Installing the laser scanner in the place where smoke, fog, dust, or corrosion is heavy may result in malfunction.
10. When installing the laser scanner outdoors, take protective measures. Otherwise, it may result in product damage.
11. Keep away from high voltage lines or power lines to prevent inductive noise.
12. Do not use the laser scanner near the equipment which generates strong magnetic force or high frequency noise.
13. Cover with shields, hoods, or etc. to prevent direct incidence of strong light (direct rays of sunlight, incandescent) into the laser scanner beam spread angle.
14. When mounting the bracket onto an external object, remove the wire fixture so that the wire of the laser scanner is not pressed.
15. Fix the laser scanner in position with the fixing screw. Vibration may result in malfunction.
16. When IP address of the laser scanner and wireless router is same, the communication does not connected.
17. This unit may be used in the following environments.

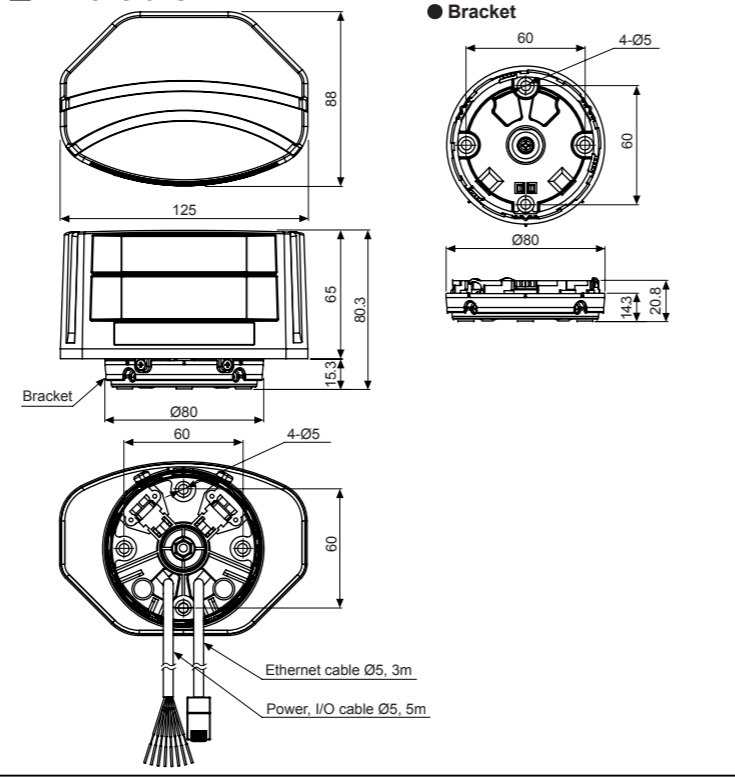
The above specifications are subject to change and some models may be discontinued without notice. Be sure to follow cautions written in the instruction manual, user manual and the technical descriptions (catalog, homepage).

Specifications

Model	LSE-4A5R2
Power supply	24VDC=
Allowable voltage range	80 to 120% of rated voltage
Emitting property	Infrared laser
Laser class	CLASS 1
Wavelength band	905nm
Max. pulse output power	75W
Angular resolution	0.4°
Aperture angle	90°
Object reflectivity	Min. 2%
Scanning mode	Motion and presence
Monitoring zone	0.3x0.3m to 5.6x5.6m (object reflectivity: at approx. 10%)
Min. size of the scanning target	At detection distance of 3m: approx. W2.1xH2.1xL2.1cm At detection distance of 5m: approx. W3.5xH3.5xL3.5cm Object reflectivity: 90% (at Kodak Gray card R-27, white)
Power consumption	Max. 8W
Response time	Typ. 20 to 80ms+monitoring time
Input	Photocoupler input: 1 (output test mode) [H]: min. 8VDC= (max. 30VDC=), [L]: max. 3VDC [H] operates as output test mode and outputs obstacle detection output and error status output
Output	PhotoMOS relay output: 2 (obstacle detection output, error status output) Galvanic isolation, non-polarity 30VDC / 24VAC, max. DC80mA (resistive load) Output resistance: 30Ω Switching time: t_on=5ms, t_off=5ms
Installation angle	Laser scanner angle: -45°, 0°, 45° Bracket rotation angle: -5 to 5° Bracket tilt angle: -3 to 3°
Front contamination	Normal operation with max. 30% contamination of one material
Communication interface	Ethernet
Life expectancy	Max. 6.8 years (60,000 hours)
Insulation resistance	Over 5MΩ (at 500VDC megger)
Dielectric strength	500VAC 50/60Hz for 1 minute
Vibration	Max. 2G (18.7m/s²)
Shock	30G/18ms
Environment	Ambient illumination: Sunlight: max. 100,000lx Ambient temperature: -30 to 60°C Ambient humidity: 0 to 95%RH, storage: 0 to 95%RH
Material	Polycarbonate
Protection structure	IP67 (IEC standard)
Cable	Power, I/O: Ø5mm, 8-wire, 5m (AWG 26, core diameter: 0.16mm, number of cores: 7, insulator out diameter: Ø1mm) Ethernet: Ø5mm, 4-wire, 3m, shielded cable (AWG 26, core diameter: 0.16mm, number of cores: 7, insulator out diameter: Ø1mm)
Component	Accessory: Bracket, M2.6xL6 Tapping screw (for fixing bracket rotation angle): 2, 3mm allen wrench PC program: atLidar (laser scanner program) Korean Railway Standards: KRS SG 0068
Approval	CE, RoHS
Weight	Approx. 0.96kg (approx 0.58kg)

- 1: The monitoring zone may be changed by the sensitivity level setting.
2: 'Monitoring time' is able to be set with the remote control or atLidar.
3: Please refer to 'Installation'.
4: It represents alignment range of laser scanner and is able to be set within the range from -5 to 5° based on the mark line.
5: It is used for setting sensor positions, parameters, and monitoring status information.
6: Ambient temperature in power supplied status is -30 to 60°C and in power cut status is -10 to 60°C.
7: The weight includes packaging. The weight in parenthesis is for unit only.
8: The temperature or humidity mentioned in Environment indicates a non freezing or condensation.

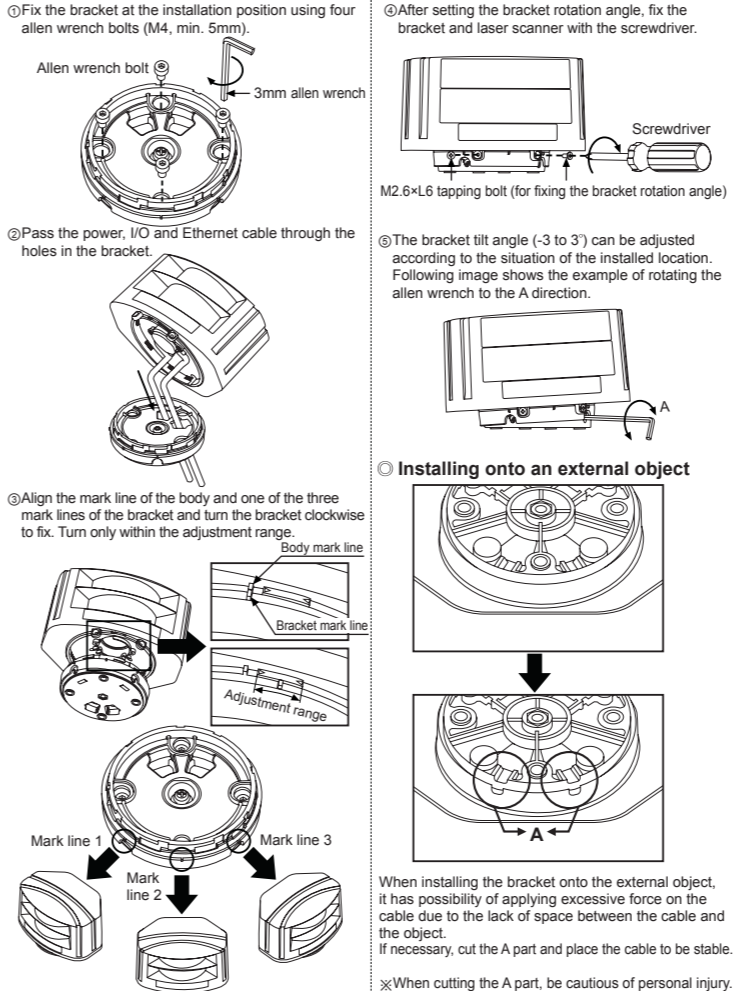
Dimensions



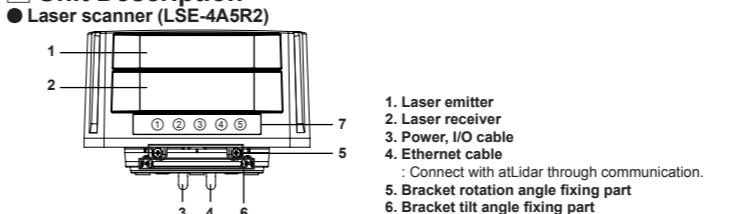
Manual

For the detail information and instructions, please refer to user manual and user manual for communication, and be sure to follow cautions written in the technical descriptions (catalog, homepage). Visit our homepage (www.autonics.com) to download manuals.

Installation



Unit Description



Indicator	Color	Function
1. Ethernet connection indicator	Green	Flashes when connected with the PC (Ethernet communication status)
2. Power indicator	Green	Flashes when power is supplied
3. Remote control operation indicator	Green	Flashes when [M] key is pressed
4. Operation indicator	Red	Turns on when obstacle is scanned
5. Error indicator	Orange	Flashes according to the type of error

Remote control (RMC-LS, sold separately)

Key	Function	Description
[M]	Lock/UN-LOCK	Unlock to press menu key
[M]	Lock	Lock remote control
[M]	Menu key	Monitoring time
[M]	Menu key	Scanning target size
[M]	Menu key	Initialization to factory default
[M]	Menu key	Sensor position
[M]	Menu key	Activated channel
[M]	Menu key	Sensitivity
[M]	Menu key	Width of the monitoring zone or concentrated monitoring zone
[M]	Menu key	Height of the monitoring zone or concentrated monitoring zone
[M]	Menu key	Teaching

3. Number key: Setting values can be input to each menu, using 0 to 9 number keys.

Function

- Sensor position: Set the actual installed laser scanner position (view top or bottom) and installation (left, right, or center).
Activated channel(s): The laser scanner has 4 channels (Ch1, Ch2, Ch3, Ch4).
Monitoring zone width (W) and height (H): Monitoring zone width and height can be set in increments of 0.1mm.
Concentrated monitoring zone: As shown in the right image, it is possible to set the area where obstacles are scanned intensively.
Sensitivity level: It is able to set the object scanning sensitivity of the laser scanner.
Minimum size of the scanning target: The minimum size of the scanning target can be set from OFF, approx. 5, 10, 15, 20cm.
Monitoring time: When an obstacle is scanned, obstacle detection output occurs after monitoring time.
Output: The type of obstacle detection output is settable to normally open or normally closed.
Teaching: This function is to familiarize the space which is set by the monitoring zone width (W) and height (H) in advance.
Password: When entering the [M] key of the remote control, only the user who entered the right password changes the parameter settings.
Initialization: Except for the password, all setting values (including IP setting) are initialized to their factory default setting values.
IP Initialization: The laser scanner's IP address initializes as factory default.

LED Indicator

Status	Ethernet connection indicator (green)	Power indicator (green)	Remote control operation indicator (green)	Operation indicator (red)	Error indicator (orange)
Comm. cable connection	1	2	3	4	5
Scanning waiting sequence	1	2	3	4	5
Scanning	1	2	3	4	5
Detection	1	2	3	4	5
Remote control key input waiting	1	2	3	4	5
Teaching	1	2	3	4	5
Output test mode	1	2	3	4	5

Error indicator: Voltage error, Temperature error, Internal error. When error occurs, the power indicator (green) and the remote control operation indicator (green) turn OFF and the operation indicator (red) turns ON.

Connection Cable

Color	Signal	Function
Brown	+V	24VDC
Blue	GND	0VDC
Yellow	OUT1_A	Obstacle detection output
Green	OUT1_B	output
Red	OUT2_A	Error status output
Gray	OUT2_B	output
Black	IN_A	Input terminal
White	IN_B	Input terminal

Major Product

Autonics Corporation logo and contact information including address, phone, and email.