

# LGA60 Series

## 320° Laser Scanner

LGA60 is a compact size laser scanner introduced by Shenzhen ESPE. It has the longest detection radius of 30m band and smallest resolution 0.025° angular, support safety protection and navigation. Dust filter and oil filter algorithm ensure low jitter and high accuracy. Extremely high navigation refresh rate, and good performance to resist interference of strong light, fog and low temperature. Work well indoor and outdoor.



### 320° scanning angle:

Up to 320° scanning range.



### Navigation & obstacle avoidance

Integrate function of navigation and obstacle avoidance to maximize the satisfaction of development needs.



### Surface coating technology

Greatly reduce dust adhesion and ensure accurate operation.



### 0.025° angular resolution

Option 0.025°, 0.05°, 0.1°, 0.25°, 0.5°.



### Multiple echo processing technology

Performs well in complex environments



### Response quickly

33ms quick scanning speed.



### High speed sampling capability

Max frequency 432KHz for high speed sampling and precise profile.



### Strong vibration resistance

Special internal design ensures its stable performance in vibrate environment.

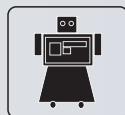
## Application Case



AMR



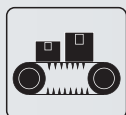
Forklift



Robot



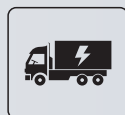
Robotic Arm



AGV



Area protection



Battery change for electric vehicle



## Technical Parameter

| Model                       | LGA60N4                                                                          | LGA60N5                                                                            |
|-----------------------------|----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Detection Distance          | 0.1m~6m (reflectivity 1.8%)                                                      |                                                                                    |
|                             | 0.1m~10m (reflectivity 10%)                                                      |                                                                                    |
|                             | 0.1m~30m (reflectivity 90%)                                                      |                                                                                    |
| Working Angular             | 320°                                                                             |                                                                                    |
| Working Principle           | PRT (pulse ranging technology)                                                   |                                                                                    |
| Laser Class                 | Class 1 (IEC60825-1:2014)                                                        |                                                                                    |
| Laser Wavelength            | 905nm                                                                            |                                                                                    |
| Pulse Time                  | 5ns                                                                              |                                                                                    |
| Sampling Rate               | 144 KHz                                                                          | 432KHz                                                                             |
| Scanning Frequency          | 10Hz, 20Hz can be set                                                            | 15Hz, 30Hz can be set                                                              |
| Ambient Light Immunity      | <100000 Lux (against sunshine)                                                   | <80000 Lux (against sunshine)                                                      |
| Measurement Accuracy        | ±20mm                                                                            |                                                                                    |
| Repeatability               | ±20mm                                                                            |                                                                                    |
| Angular Resolution          | 0.025°, 0.05°, 0.1°, 0.25°, 0.5° can be set                                      |                                                                                    |
| Measurement Resolution      | 1mm                                                                              |                                                                                    |
| Power Supply                | DC 10V~30V                                                                       | DC 10V~30V                                                                         |
| Working Current (DC24V)     | 90 mA                                                                            | 120 mA                                                                             |
| Rated Consumption           | <3W                                                                              | <3W                                                                                |
| Interface                   | 3 NPN input, output signal of red area, orange area or faulty signal.            | 4 NPN input, output signal of red area, orange area, yellow area or faulty signal. |
|                             | Ethernet TCP/ UDP output 320° original measuring value.                          |                                                                                    |
| Indicator LED               | Green                                                                            |                                                                                    |
| Output Indicator            | Red, yellow, orange                                                              |                                                                                    |
| Ambient Working Temperature | -10°C~55°C                                                                       | -25°C~50°C                                                                         |
| Ambient Working Humidity    | Less than 80%RH                                                                  |                                                                                    |
| Storage Temperature         | -25°C~70°C                                                                       |                                                                                    |
| Protection Rate             | IP65                                                                             |                                                                                    |
| Network Interface           | RJ45 ethernet                                                                    |                                                                                    |
| Material                    | Aluminum alloy (base)                                                            |                                                                                    |
|                             | PUMA (scanning window)                                                           |                                                                                    |
| Sine Vibration Testing      | 10Hz~1000Hz, 5g; 10 cycles for each axis (GBT 2423.10-2019)                      |                                                                                    |
| Vibration Resistance        | 50~250Hz, RMS-42.4m/s <sup>2</sup> , 5h testing for each axis (GBT 2423.56-2018) |                                                                                    |
| Shock Resistance            | 50g, 3ms, 5000 times impacts on each axis (GBT 2423.5-2019)                      |                                                                                    |
| Product Size                | 60*60*83.5mm                                                                     | 60*60*83.9mm                                                                       |
| Wire Length                 | 2m ethernet wire, 1.5m power & IO wire                                           | 1m ethernet wire, 1m power & IO wire                                               |

# LGA60 Laser Scanner

## Application



### Battery Change Station

Outdoor use for vehicle guidance, battery positioning.



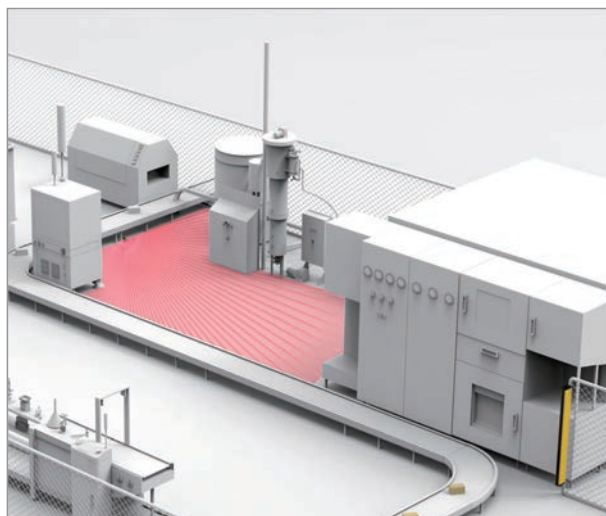
### AGV Navigation/ Obstacle Avoidance

AGV trolley, navigation and obstacle avoidance integrated.



### Industrial Automation Safety Protection

Area protection and warning in industrial automation application



### Area Safety Protection

Area protection and warning in large and complicated application

## Laser Scanner Model Description (e.g.: LGA60N4-UB)

Series

**LGA60**

Output



N: NPN

Communication

**4**

4: Ethernet & NPN output  
5: Ethernet & NPN output & NPN input

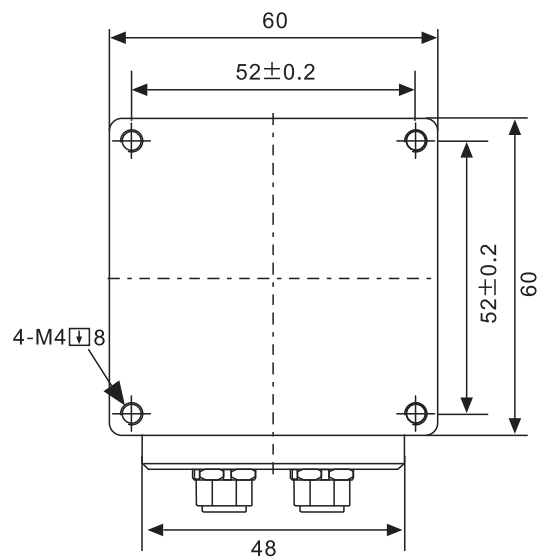
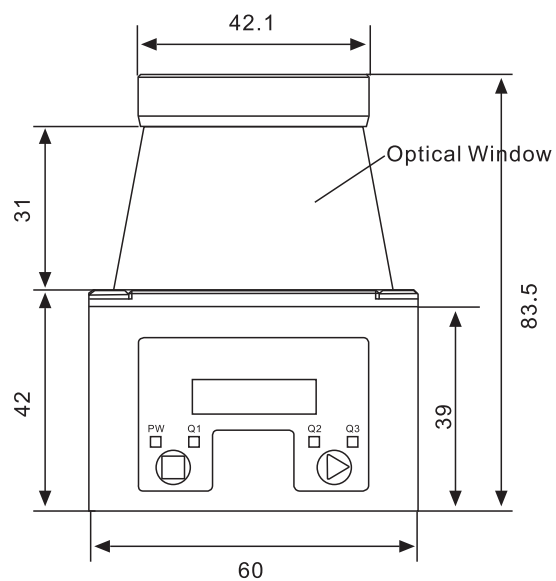
Bracket



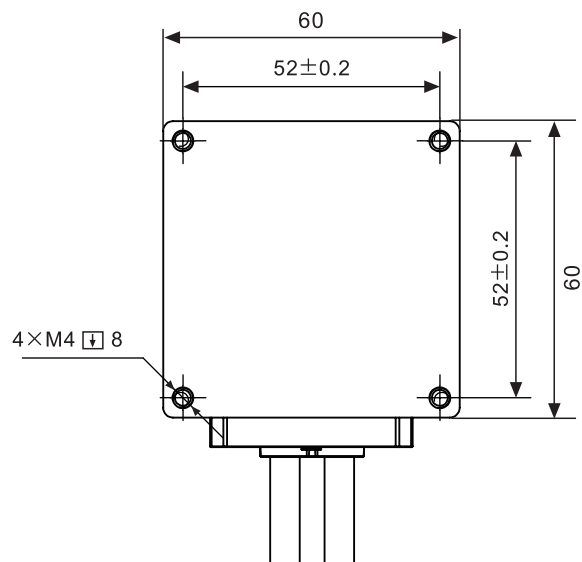
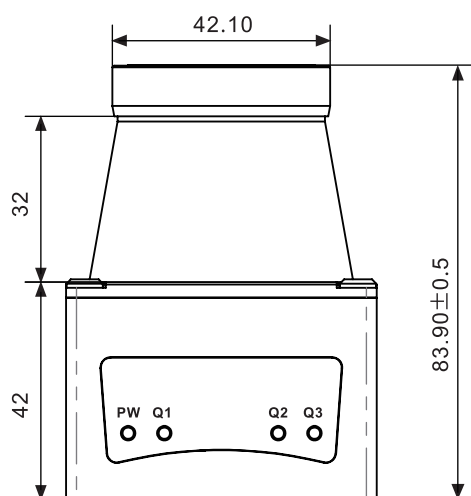
No mark: No bracket  
UB: UB bracket

## Product Size

LGA60N4

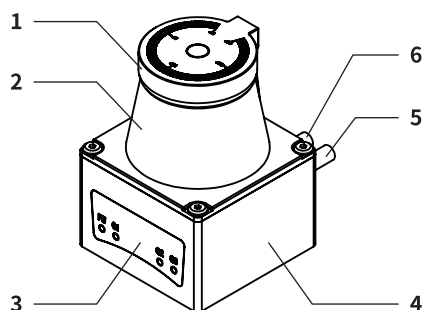


LGA60N5



# LGA60 Laser Scanner

## Assembly Unit Specification



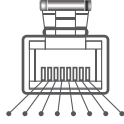
| NO. | Function                | Remark                                       |
|-----|-------------------------|----------------------------------------------|
| 1   | Upper cover             | Mark the scanning range and angular position |
| 2   | Sensor detection window | Sensor detection window                      |
| 3   | LED indicator           | Status of working                            |
| 4   | Base                    | installation position                        |
| 5   | Leading wire 1          | For ethernet                                 |
| 6   | Leading wire 2          | for power supply and IO                      |

## Bracket Option

| NO. | Bracket    | Picture                                                                               |
|-----|------------|---------------------------------------------------------------------------------------|
| 1   | UB Bracket |  |

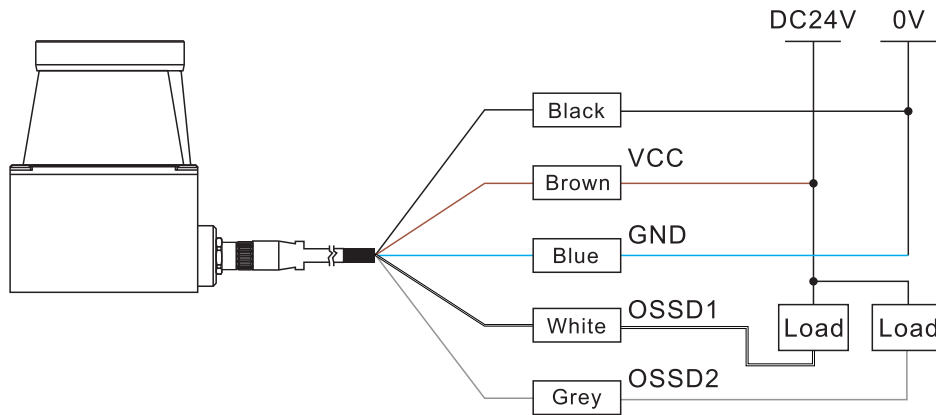
## Wire Definition

### Ethernet Port (LGA60N4/LGA60N5)

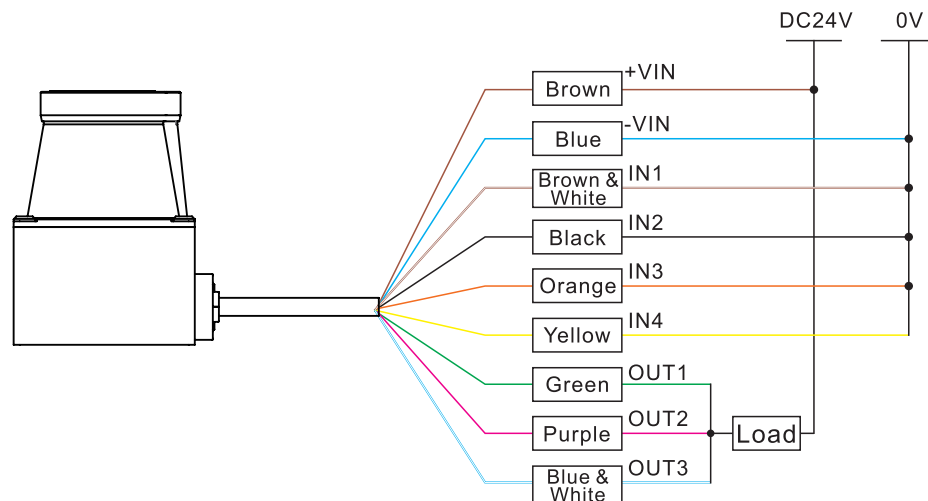
| Port          | RJ45 | Symbol  | Color         | Function         | <br>1 2 3 4 5 6 7 8<br>Pin Assignment<br>RJ45 Front View |
|---------------|------|---------|---------------|------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Ethernet Wire | Pin1 | ETH Tx+ | Red & White   | Ethernet Output+ |                                                                                                                                             |
|               | Pin2 | ETH Tx- | Red           | Ethernet Output- |                                                                                                                                             |
|               | Pin3 | ETH Rx+ | Green & White | Ethernet Output+ |                                                                                                                                             |
|               | Pin6 | ETH Rx- | Green         | Ethernet Output- |                                                                                                                                             |

## Connection Diagram

### LGA60N4



### LGA60N5

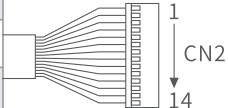


# LGA60 Laser Scanner

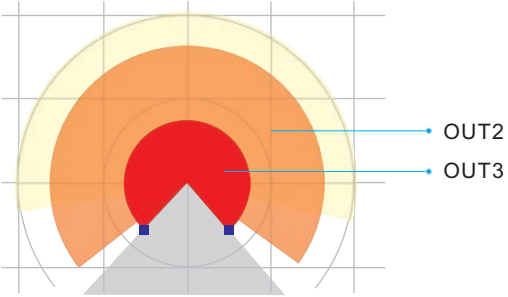
**Power&IO Signal Port(LGA60N4)**

| Port                   | Color  | Symbol  | Function                                   |
|------------------------|--------|---------|--------------------------------------------|
| Power & IO signal port | White  | OUT2    | Corresponding to the output 2 of software; |
|                        | Brown  | VCC+    | Positive of power                          |
|                        | Orange | C-H     | CAN-BUS                                    |
|                        | Yellow | C-L     | CAN-BUS                                    |
|                        | Grey   | OUT3    | Corresponding to the output 3 of software; |
|                        | Black  | OUT-COM | Output com port                            |
|                        | Blue   | VCC-    | Negative of power                          |
|                        | Red    | OUT4    | Output 4                                   |

**Power & IO Signal Port (LGA60N5)**

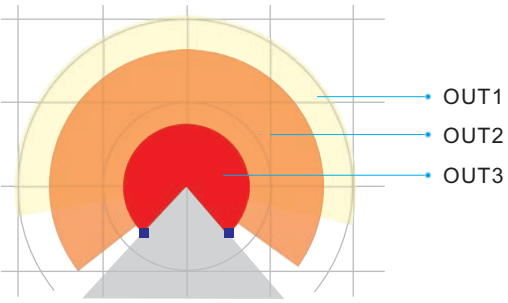
| Port                   | NO.   | Symbol | Color         | Function                       |                                                                                       |
|------------------------|-------|--------|---------------|--------------------------------|---------------------------------------------------------------------------------------|
| Power & IO signal port | Pin1  | +VIN   | Brown         | Positive of supply & com input |  |
|                        | Pin2  | -VIN   | Blue          | Negative of supply & com input |                                                                                       |
|                        | Pin3  | IN1    | Brown & White | Input 1                        |                                                                                       |
|                        | Pin4  | IN2    | Black         | Input 2                        |                                                                                       |
|                        | Pin5  | IN3    | Orange        | Input 3                        |                                                                                       |
|                        | Pin6  | IN4    | Yellow        | Input 4                        |                                                                                       |
|                        | Pin7  | OUT1   | Green         | Output 1                       |                                                                                       |
|                        | Pin8  | OUT2   | Purple        | Output 2                       |                                                                                       |
|                        | Pin9  | OUT3   | Blue & White  | Output 3                       |                                                                                       |
|                        | Pin10 | OUT4   | Grey          | Output 4                       |                                                                                       |

## Output Signal Connection (LGA60N4 NPN output)

| Port                                                                                                                                                   | Function                      | Output logic                                                               |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|----------------------------------------------------------------------------|
| OUT2                                                                                                                                                   | Used for slow speed area;     | Default: normally close, can be changed to normally open through software; |
| OUT3                                                                                                                                                   | Used for emergency stop area; |                                                                            |
| OUT4                                                                                                                                                   | Output fault state of sensor; |                                                                            |
| OUT-COM                                                                                                                                                | COM output                    |                                                                            |
| <p>The output port corresponds to the graph drawn of software</p>  |                               |                                                                            |



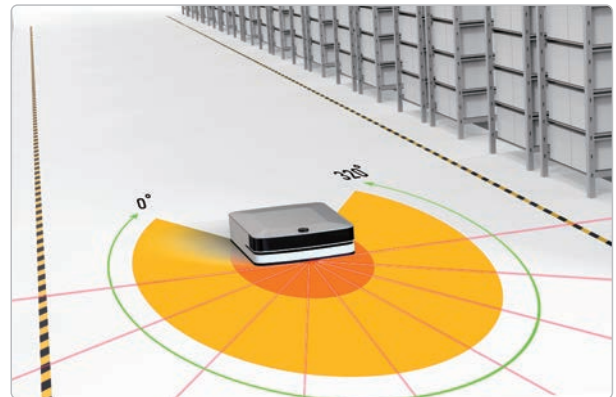
## Output Signal Connection (LGA60N5 NPN output)

| Port                                                       | Function                      | Output logic                                                                       |
|------------------------------------------------------------|-------------------------------|------------------------------------------------------------------------------------|
| OUT1                                                       | Used for warning area;        | Default: normally close, can be changed to normally open through software;         |
| OUT2                                                       | Used for slow speed area;     |                                                                                    |
| OUT3                                                       | Used for emergency stop area; |                                                                                    |
| OUT4                                                       | Output fault state of sensor; |                                                                                    |
| The output port corresponds to the graph drawn of software |                               |  |

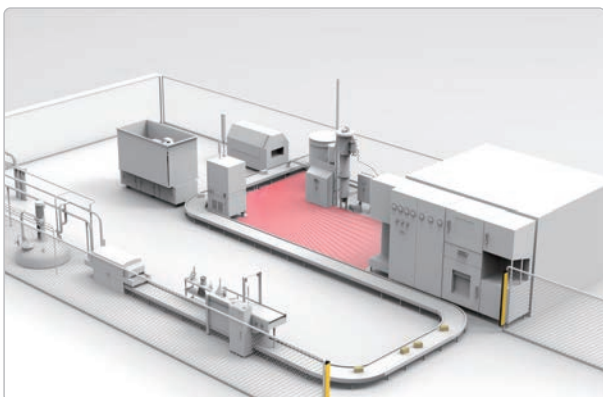
## Application



Small space and complex protection area



Movable protection area, AGV trolley, gantry crane



Large protection area, high accuracy requirement



Safety protection of welding application, even though various interference.