ESPE 意普

Safety Laser Scanner

Comprehensive Industrial Safety Solution Provider

COMPANY INTRODUCTION

ESPE Introduction

Shenzhen ESPE Technology Co.,Ltd.is a high-tech enterprise integrated with researching, production and sales of industrial safety product since 2008. As leading brand of safety industry, ESPE supply consult, risk evaluation, safety solution designing one-stop service.

“3+1+N” product strategy make sure ESPE have power to support 20000+ customers from wide industry:new energy (lithium battery & photovoltaic),aerospace,semiconductor,automotive, logistic,electronic production etc.Not only take 1/3 Chinese market,but also exported to 50+ countries.Product range:safety light curtain,measuring light curtain,safety interlock switch,laser scanner,safety relay,safety controller module,LED signal tower light.

Established In
2008

Annual Amount (Curtain)
250000+ set

Annual Amount (Switch)
150000+ set

Partner Over
11000+

Honor & Certificates

Company certificates

★ National High-tech Enterprise.

★ Title of “Shenzhen Specialized, Refined and Innovative” Enterprise.

★ Title of Guangdong Province Credit-worthy Enterprise.

★ National Casting & Forging Machinery Supervision Product Certificates.

★ ISO9001:2015 Quality Management System Certification.

★ Co-draft of industry standard “JB/T14121-2021 Cylinder-driven Rapid Forging Hydraulic Press”.

★ Co-revise of national Standard “GB/T4584-2022 Technical Conditions of Photoelectric Protection Devices for Presses”.

★ Co-draft of National standard GBT/T19436 Mechanical Electrical Safety Electro-sensitive protection Equipment”.

Product Certificates

★ EU CE Type 4.

★ TUV AUD/ TUV Austria.

★ CE-EMC, FCC safety certificates.

★ UKCA Type 4 certificates.

★ National CMA, CNAS.

★ EU RoHS certificates.

Patent

★ Technology patent 40+, software 30+.

Comprehensive Solution Provider in Field of Industrial Safety Protection

Vision

Act as industry benchmark, aiming to be century enterprises.

Value

Integrity and pragmatism, innovation, repay society.

Mission

Popularize industrial safety and lead the sensor technology;
Make machine more intelligent, production more convenient, and operators safer.

Cooperative Partners

HUAWEI
FOXCONN 富士康科技集團
HAN'S LASER 大族激光
JABIL
Hymson 海目星激光
KUKA
BOSCH
TCL
INOVANCE 汇川技术
LG化学
ATL 新能源科技 Amperex Technology Limited
LEAD 先导 | Titans New Power 泰坦新动力
LUXSHARE ICT 立讯精密
BOZHON 博众
SUNWODA 欣旺达
LONGi 隆基
阳光电源 SUNGROW
ATW 腾特维
exact S·C 捷佳伟创 SHENZHEN S.C
美的 Midea
国家电网 STATE GRID
威视 NUCTECH
Maxvision® 盛视
KATOP 嘉拓智能
BYD
ESTUN AUTOMATION
CIMC 中集
CRCC 中国铁建
东风汽车
SANY 三一集团
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Contents

LGA10 Series

270° Laser Scanner

High precision
Measurement accuracy can reach 30 mm.

Measurement range can reach 20m.

Compact structure and easy integration,
62* 62 *79mm.

Multi-view customization,
Meet different scene needs.

Degree resolution<0.18

The object with low reflectivity can be identified

Application Case

AMR

Forklift

Robot

Robotic Arm

AGV

Safety Protection

Smart Traffic

Smart Port

LGA10 Laser Scanner

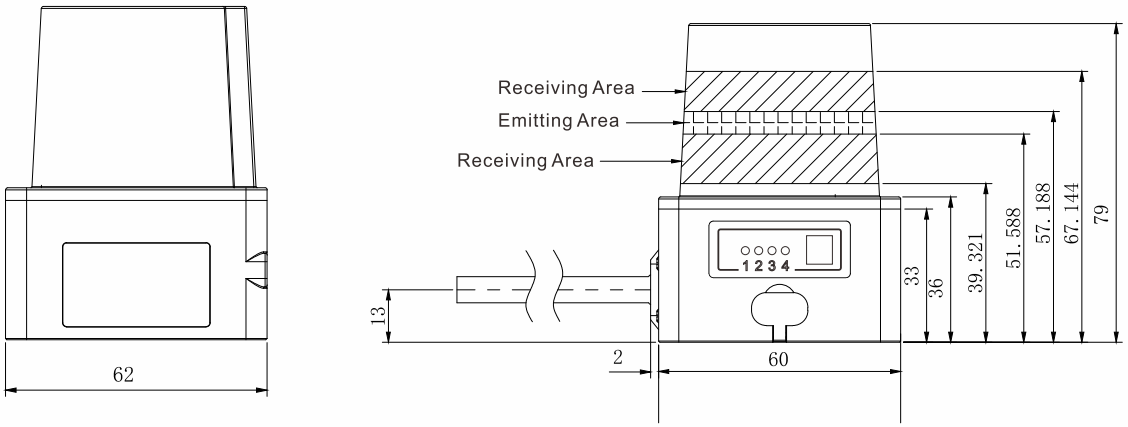
Product Parameter

Model	LGA10N1	LGA10P1
Detection Distance	0.1m~8m(reflectivity 10%)	
	0.1m~20m(reflectivity 90%)	
Detection Range	270°	
Working Principle	Pulse TOF	
Laser Class	Level I (IEC60825-1:2014, EN60825-1:2014)	
Laser Wavelength	905nm	
Sampling Rate	20KHz	
Scanning Frequency	10Hz, 20Hz (can be set)	
Angular Resolution	0.18°/0.36°(can be set)	
Response Time	100ms/50ms (can be set)	
Measurement Accuracy	±30mm	
Startup Time	8s	
Channel	15 channel (3 detection area in each channel)	
Working Current (DC24V)	⩽100mA (not IO output)	
Input	4	
Output	4 (2 NPN warning signal, 1 NPN OSSD safety output signal)	4 (2 PNP warning signal, 1 PNP OSSD safety output signal)
Interface	USB	
Protection Tate	IP65	
Ambient Light Immunity	100000Lux	
Weight	171g	
Size (max.)	62 mm *62 mm *83mm	
Sine Vibration Testing	10Hz-1000Hz, acceleration 5g, 10 time each at X,Y,Z	
Vibration Resistance	5Hz-250Hz, Gr.m.s=4.24g, 5 hours each at X, Y, Z	
Shock Resistance	196/(20G), 3000 times each at X, Y, Z directions.	
Electromagnetic Compatibility	EN IEC 61000-6-2:2019; EN IEC 61000-6-4:2019	
Indicator LED	4 (3 for area signals, 1 for faulty signal)	
Power Supply	DC9-28V	
Rated Capability	<2W (without load)	
Starting Power	<3W (without load)	
Ambient Working Temperature	-10℃~55℃	
Storage Temperature	-20℃~70℃	
Storage Temperature	Below 85% RH	
Cable Length	Power wire & IO signal wire in 1m, 1.2m USB wire.	

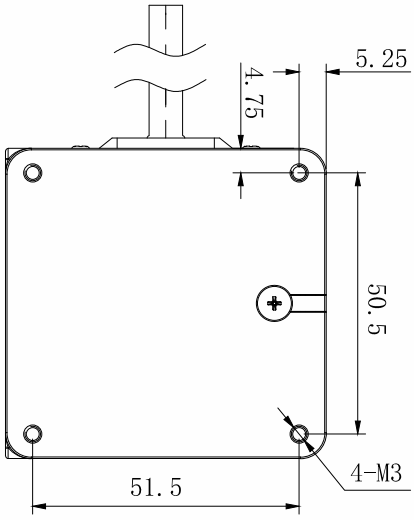
Laser Scanner Model Description (e.g.: LGA10P1-UB)

Series	Output	Communication		Bracket
LGA10	□	1	–	□
	N: NPN P: PNP	1: USB		No mark: No bracket UB: U type bracket HB: Horizontal bracket VB: Vertical bracket

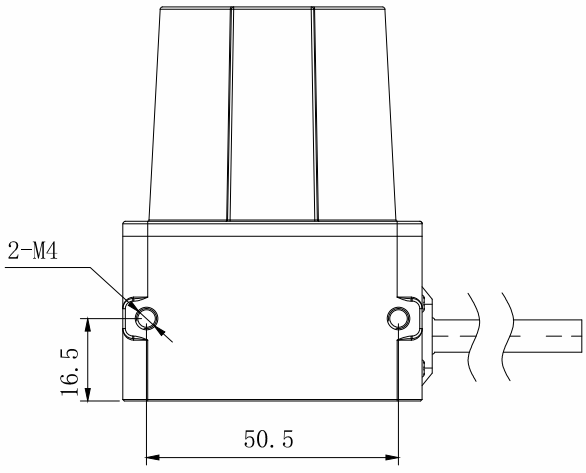
Product Size



Fixing Structure



Bottom Fixing Diagram

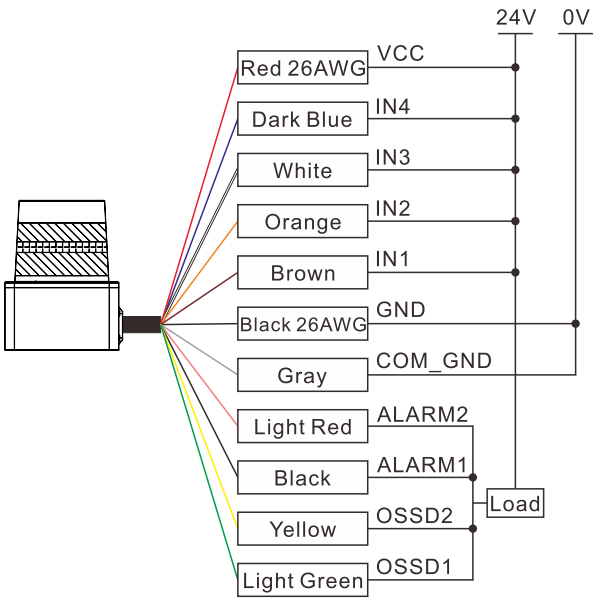


Side Fixing Diagram

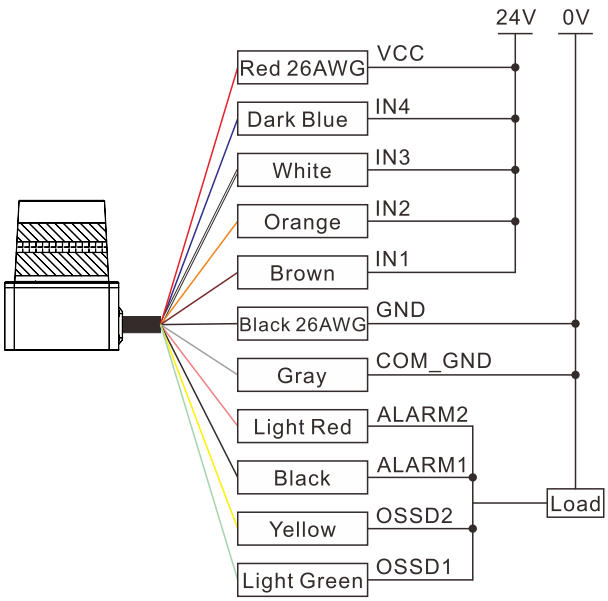
Wire Description

Wire Sequence & Related Function			
NO.	**Color**	**Signal Definition**	**Signal Description**
1	Red 26AWG	VCC	Power supply VCC
2	Black 26AWG	GND	Power supply GND
3	Light Red	ALARM2	2 independent NPN, ON state: maximum IOUT=200mA, VOUT≥COM_IN+-2V, OFF state: IOUT<1mA, VOUT<2V. ON state when nothing in warning area, OFF state when obstacles in warning area.
4	Black	ALARM1	
5	Yellow	OSSD2	2 independent NPN, ON state: maximum IOUT=200mA, VOUT≥COM_IN+-2V, OFF state: IOUT<1mA, VOUT<2V. ON state when nothing in warning area, OFF state when obstacles in warning area.
6	Dark Green	OSSD1	
7	Dark Blue	IN4	Selection signal in area group, to achieve switching between multiple protection areas through the changes of input signals IN1, IN2, IN3, and In4.
8	White	IN3	
9	Orange	IN2	
10	Brown	IN1	
11	Gray	COM_GND	Protection input/output GND
12	Purple	COM_IN+	Protection input/output power
13	Pink	OUT_RX+	Network interface input +
14	Transparent	OUT_RX-	Network interface input -
15	Light Green	OUT_TX+	Network interface output +
16	Light Blue	OUT_TX-	Network interface output –

NPN Wiring Diagram



PNP Wiring Diagram



LGA10 Laser Scanner

Bracket Option

NO.	Bracket	Picture
1	UB Bracket	
2	HB Bracket	
3	VB Bracket	

LGA60 Series

320° Laser Scanner

LGA60 is a volume performance safety laser scanner introduced by Shenzhen ESPE. It has the longest detection radius of 30 meter band the highest resolution of 0.025°, and it has two function options: safety protection and navigation.Support obstacle avoidance and navigation; Dust filter and oil filtering algorithm; Laser scanning has low jitter and accuracy; Extremely high navigation refresh rate; Excellent in strong light resistance, fog resistance and low temperature environment; Suitable for indoor and outdoor use.

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 | Robots | Robotic Arm

AGV | Area protection | Battery change for electric vehicle

Technical Parameter

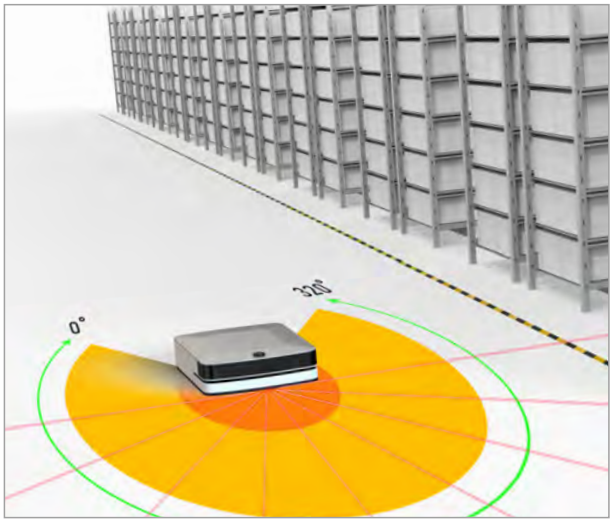
Model	LGA60N4	LGA60N5
Detection Distance	0.1m~6m (reflectivity 1.8%)	
	0.1m~10m (reflectivity 10%)	
	0.1m~30m (reflectivity 90%)	
Working Angular	320°	
Working Principle	PRT (pulse ranging technology)	
Laser Class	Class 1 (IEC60825-1:2014)	
Laser Wavelength	905nm	
Pulse Time	5ns	
Sampling Rate	144 Khz	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 15V~30V
Working Current (DC 24V)	90 mA	120 mA
Rated Consumption	< 3W	< 3W
Interface	3 NPN output: output signal of red area, orange area or faulty signal.	4 NPN output: output signal of red area. orange area, yellow area or faulty signal.
	Ethernet TCP/ UDP	
Indicator LED	Green	
Output Indicator	Red, yellow, orange	
Ambient Working Temperature	-10℃-55℃	-25℃-50℃
Ambient Working Humidity	Less than 80%RH	
Storage Temperature	-25℃-70℃	
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	
Vibration Resistance	50-250Hz, RMS-42.4m/s², 5h testing for each axis	
Shock Resistance	50g, 3ms, 5000 times impacts on each axis	
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.

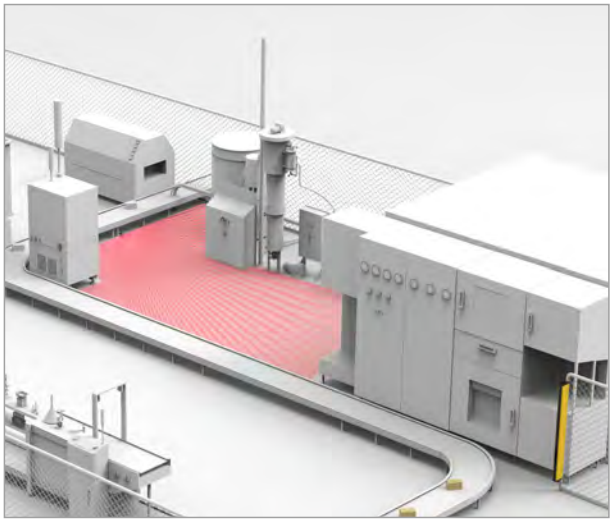


AGV Navigation/ Obstacle Avoidance

AGV trolley, navigation and obstacle avoidance integrated.

Industrial Automation Safety Protection

Area protection and warning in industrial automation application



Area Safety Protection

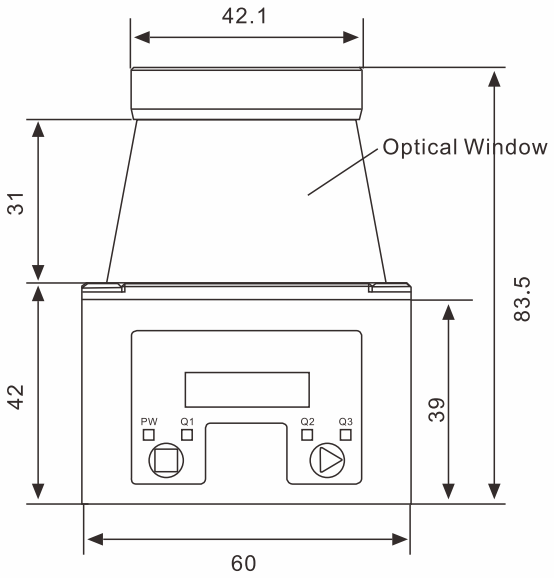
Area protection and warning in large and complicated application

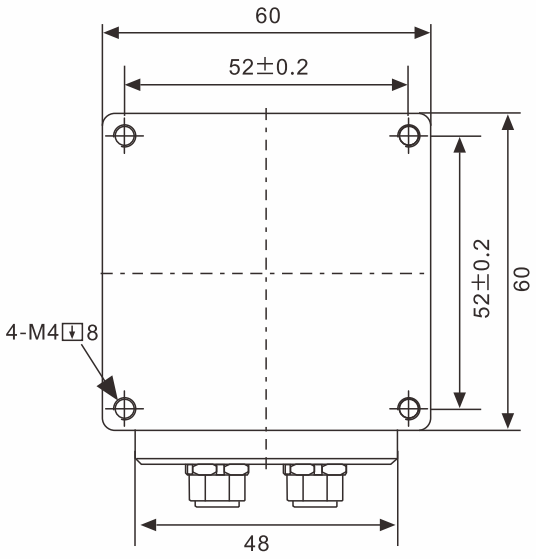
Laser Scanner Model Description (e.g.: LGA60N4-UB)

Series	Output	Communication		Bracket
LGA60	□	4	–	□
	N: NPN	4: Ethernet & NPN output 5: Ethernet & NPN output & NPN input		No mark: No bracket UB: UB bracket

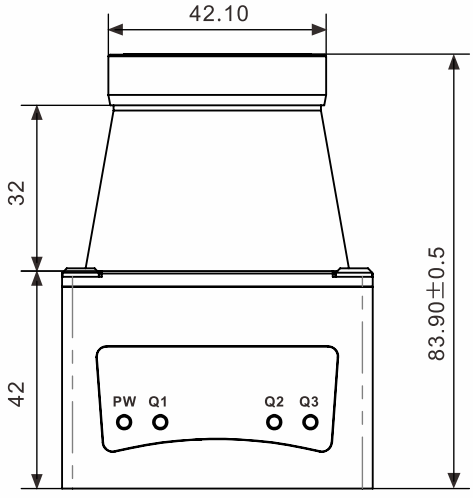
Product Size

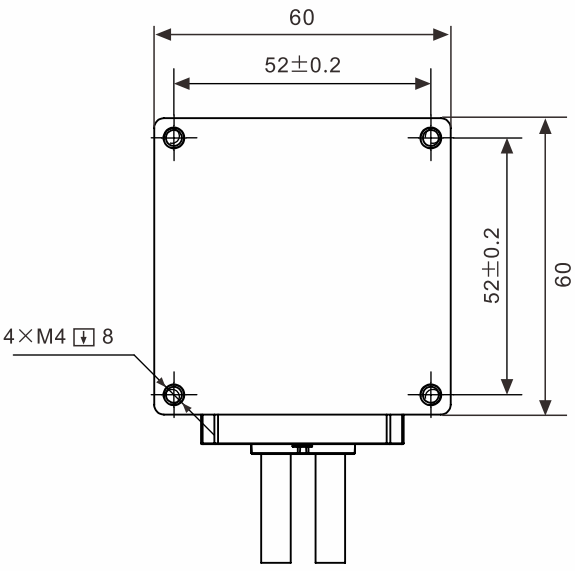
LGA60N4





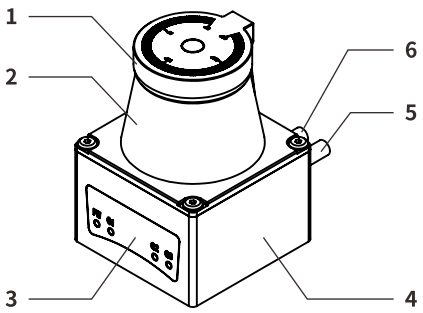
LGA60N5





LGA60 Laser Scanner

Assemnly 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.	Brackets	Picture
1	UB Bracket	

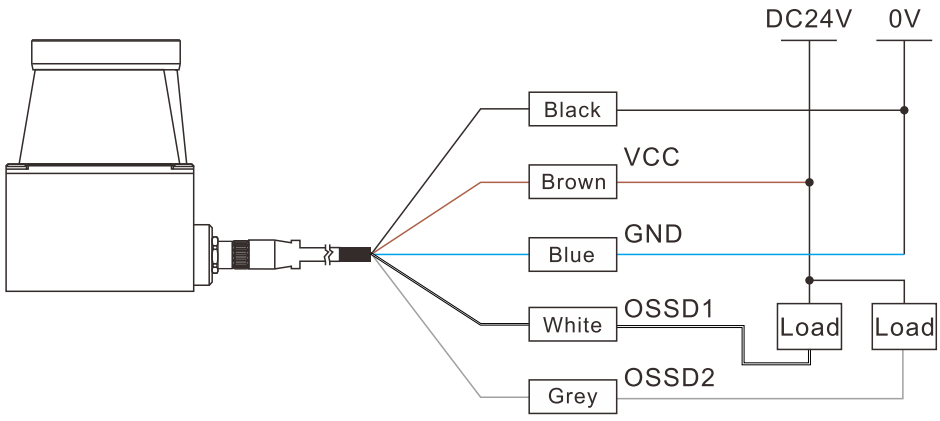
Wire Definition

Ethernet Port (LGA60N4/LGA60N5)

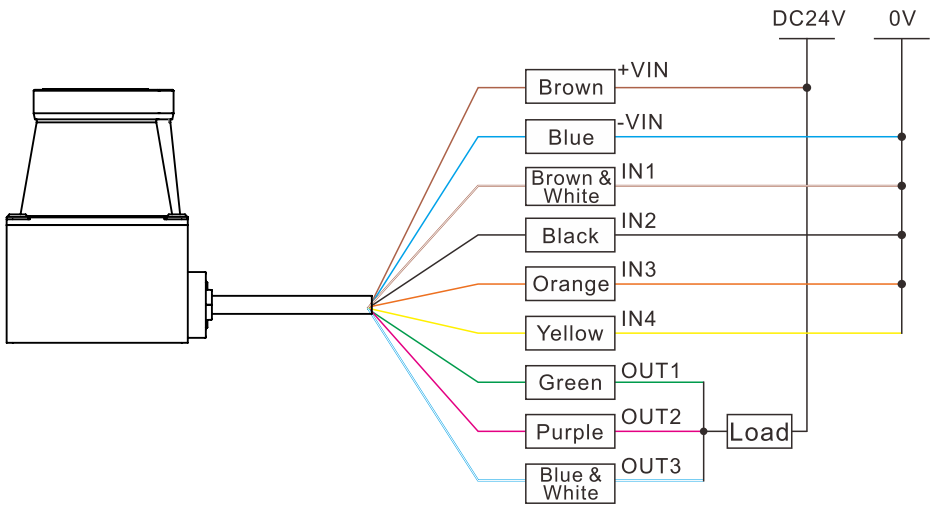
Port	RJ45	Symbol	Color	Function
Ethernet Wire	Pin1	ETH Tx+	Red & White	Ethernet Output +
	Pin2	ETH Tx-	Red	Ethernet Output -
	Pin3	ETH Rx+	Green & White	Ethernet Output +
	Pin6	ETH Rx-	Green	Ethernet Output -

Connection Diagram

LGA60N4



LGA60N5

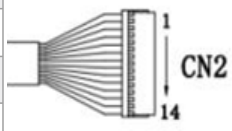


LGA60 Laser Scanner

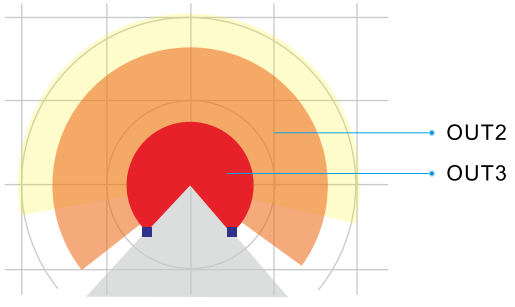
Power&IO Signal Port(LGA60N4)

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

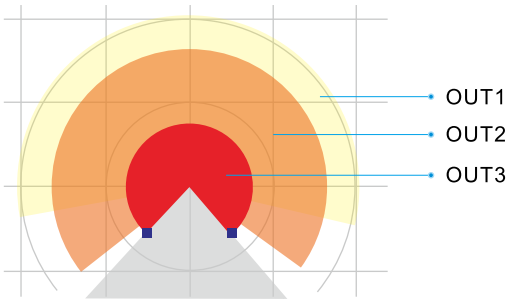
Power & IO Signal Port (LGA60N5)

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	Input 1	
	Pin8	OUT2	Purple	Input 2	
	Pin9	OUT3	Blue & White	Input 3	
	Pin10	OUT4	Grey	Input 4	

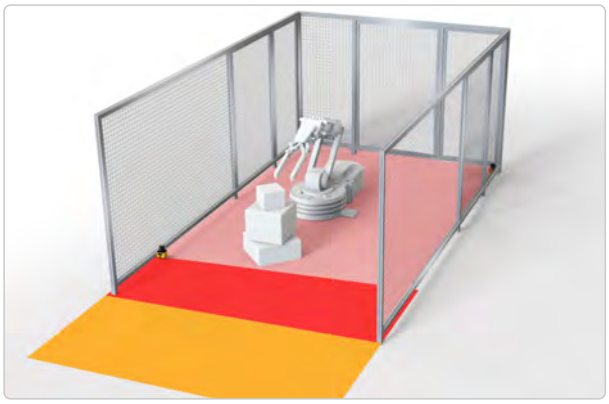
Output Signal Connection (LGA60N4 NPN output)

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;	Default: normally close, can be changed to normally open through software;
OUT4	Output fault state of sensor;	Default: normally close, can be changed to normally open through software;
OUT-COM	COM output	
The output port corresponds to the graph drawn of software		

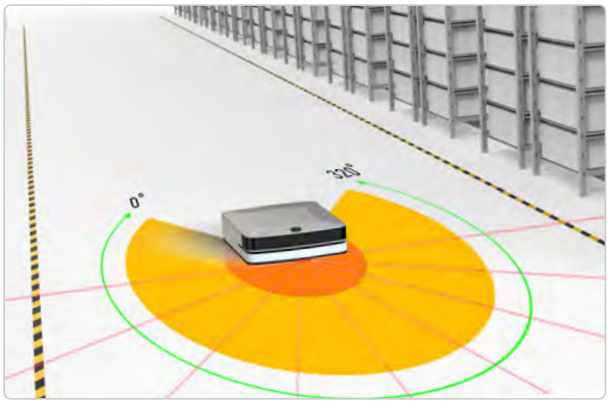
Output Signal Connection (LGA60N5 NPN output)

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

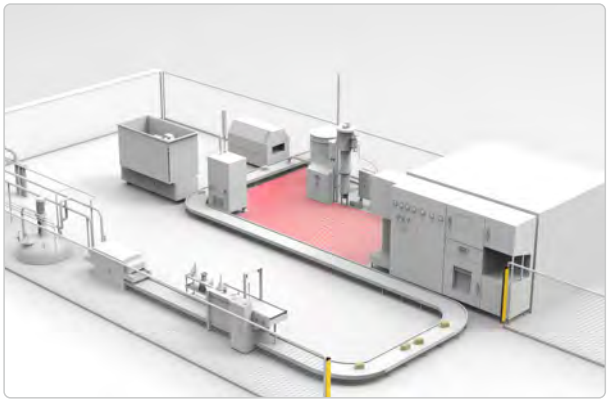
Application



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.

LRA7 Series

Millimeter Wave Lidar

Product Introduction

Safety millimeter wave radar is an electromagnetic wave radar that detects obstacles ahead even working in dusty, smoky and moist environment. It has good performance against interference and detection ability and is especially suitable for complex industrial sites. It can be applied in a specific area, movable equipment in medium or low speed and in port or wharf for safety protection.
For dust, smoke, or waste produced in the industrial process, optical sensors may have false alarms and failures, but milliwave (electromagnetic wave) lidar can easily cope with them. ESPE has developed a lidar and algorithm suitable for this harsh scene, so that our sensors can provide more accurate and safer protection.

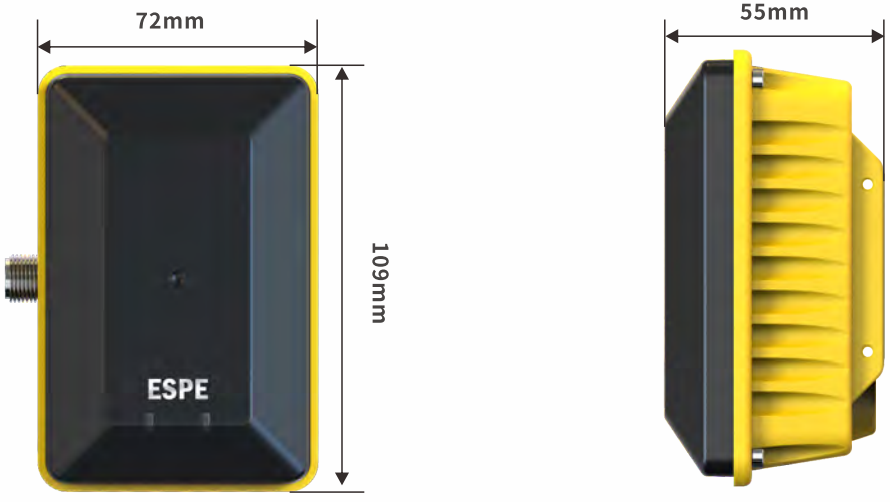
Product Features:

- **Intelligent software configuration**
  Stop area and warning area, beam width, shielding area, etc., can be easily set by software, which can distinct and track human and machine.
- **IP68 mechanical protection**
  High protection suitable for indoor or outdoor harsh environment.
- **Support setting by APP or Bluetooth**
  Android 6.12-13.0.0 or advanced.
- **Reduce the frequency of false signal**
  Strong penetrate ability through particles, dust, smoke, mist, oil, wood, paper, plastic and so on.
- **Wide range of ambient temperature**
  Normal temperature -40℃-80℃.
- **Adjustable detection distance**
  The detection distance is up to 20m.

Product Parameter

Model	LRA70	LRA76
Working Frequency	81 Ghz	
Detection Range	0.2-20m	0.2-6m
Cover Range	Azimuth 120°X Tilt 30°	
Power Supply	DC10V-24V (suggest 12v for normal, 24V if over 20m)	
Response Time	⩽100ms	
Lightning Protection Level	2 KV	
Average Power	⩽70 mA	
PC Communication	RS485 or CAN	
Protection Rate	IP68	
Relay Signal	2 Channel	
Working Temperature	-40℃—80℃	
Storage Temperature	-20℃—65℃	
Configuration Mode	PC/ APP	
Application	Suitable for harsh outdoor, can be installed on movable equipment, like cranes, port equipment, construction equipment for safety and collision avoidance.	Safety protection for hard industrial environment, fixed installation, to achieve 3D safety protection.
Cable Length	2m power & IO cable	

Product Size

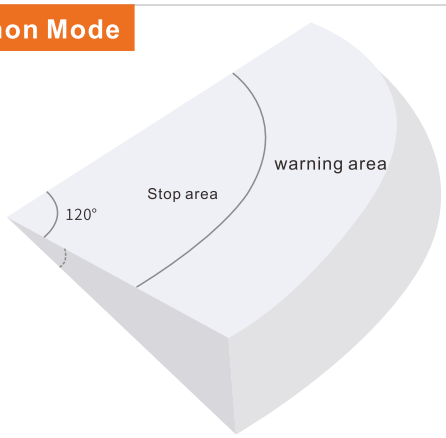


LRA7 Millimeter Wavelength Lidar

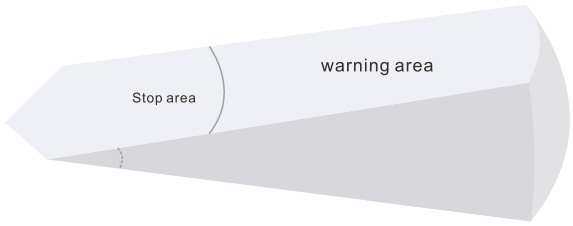
Software Setting

- Detection angle can be set;
- Edge of protection area can be set;
- It can monitor dynamic or static objects respectively.
- Stop area & warning area can be set;
- Shielding area can be set to block normal moving area in case of false alarm to protect people.
- 6 lidars can be cascaded and matched with control area for expanding the monitoring area.

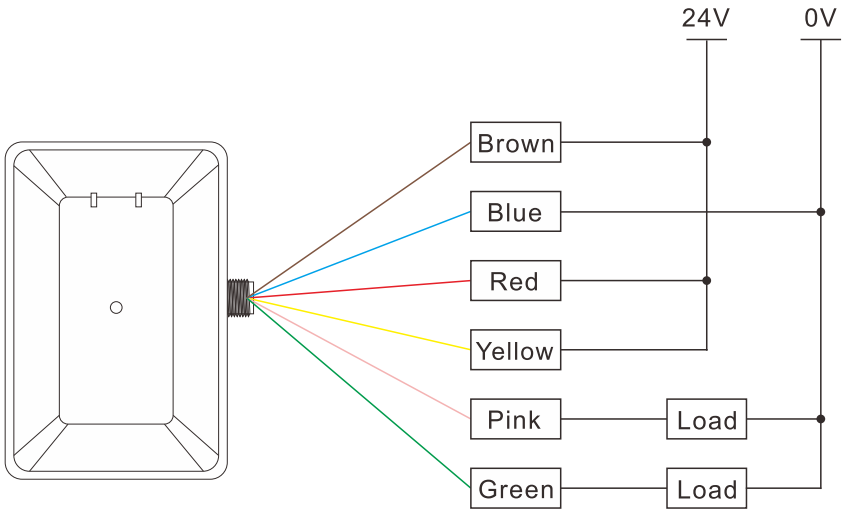
Common Mode



Focusing Mode



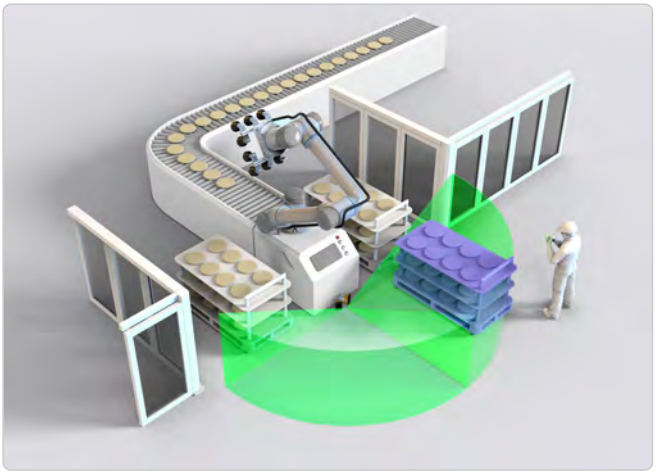
Wiring Diagram

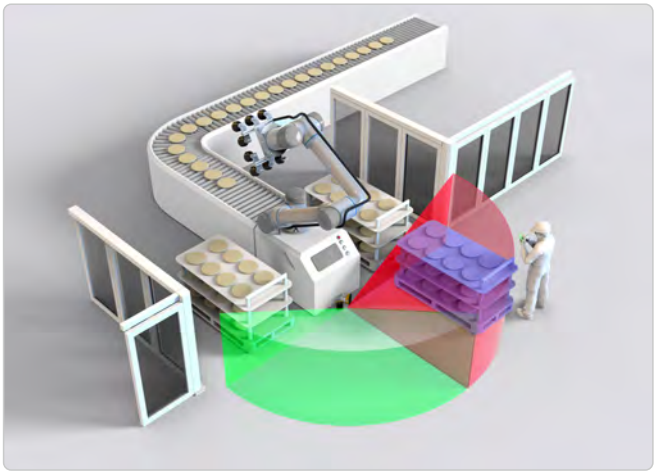


Wire Definition

NO.	Color	Description
1	Brown	Power supply negative
2	Blue	GND
3	Grey	485A+
4	White	485B-
5	Red/ Pink	Relay normally open (warning area signal)
6	Yellow/ Green	Relay normally open (pre-warning area signal)

Application In Complex Area



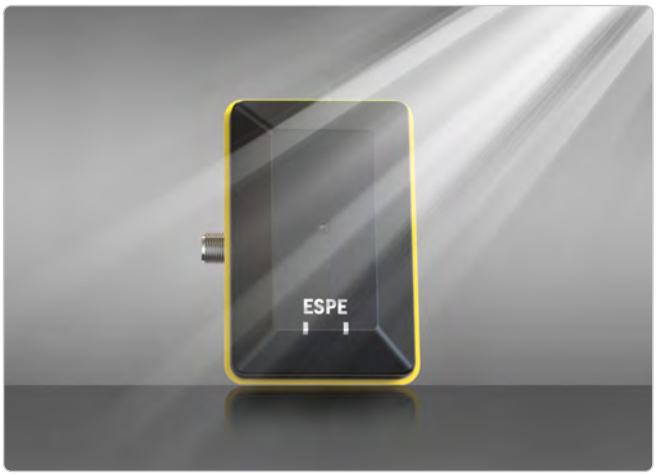


Application In Harsh Environments

Dirt & Dust

Rain

Smog



Sunshine & Strong Light

LRA7 Millimeter Wavelength Lidar

Application

Welding & Spray Coating Robots

Automobile Production

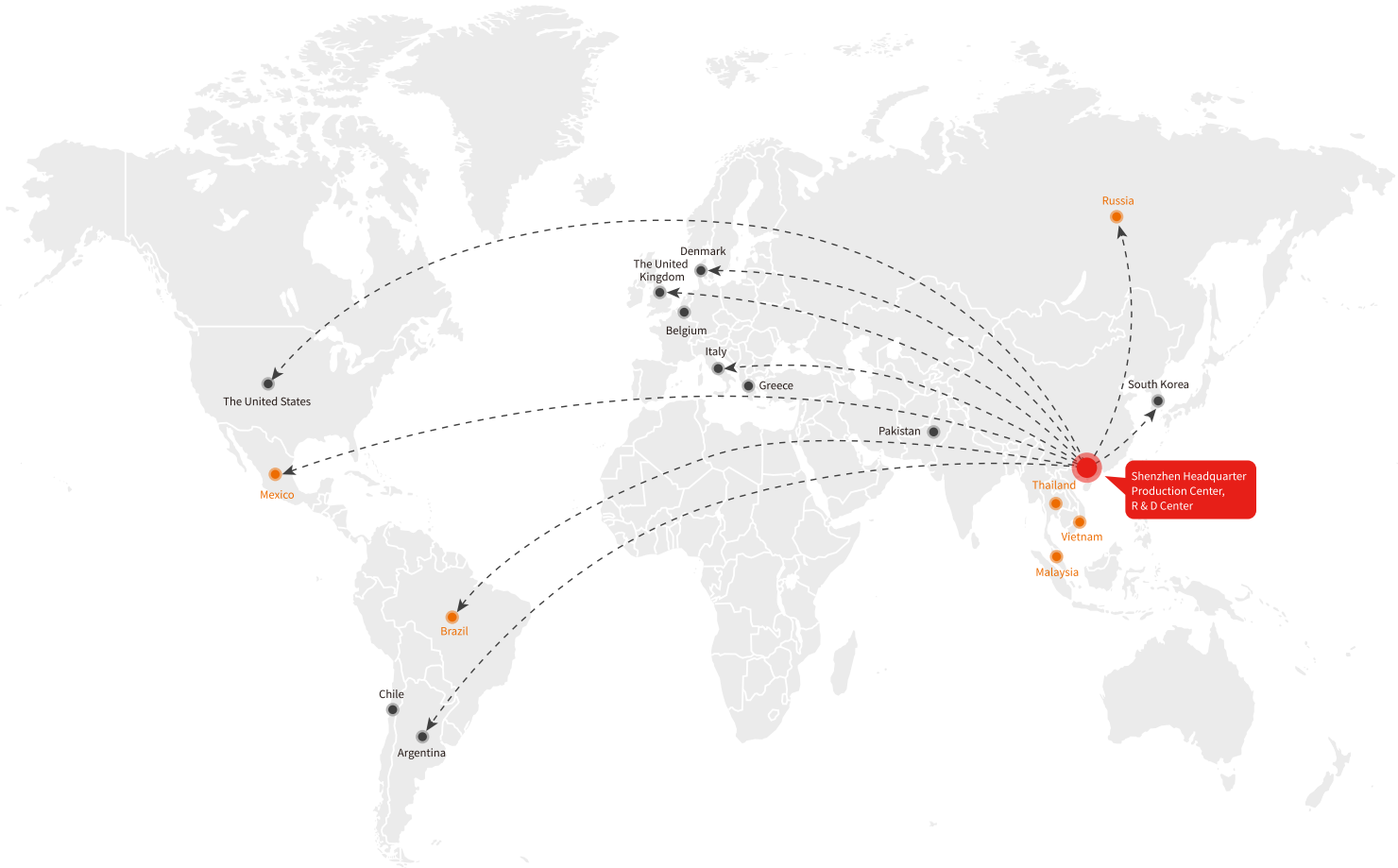
Wood & Stone Processing

Metallurgical Workshop

Dock/ Port/ Ship/ Crane

Grinding Equipment

Explore across ocean and continent



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