



编码器
传感器

安装操作说明

Installation operation instructions



激光雷达传感器 Laser Rida sensor P55D系列 series

本安装说明全面涵盖以上系列:

请注意,图示可能与实际产品的型号、材料、颜色和接头类型上发生差异。

This installation guide covers all of the above series:

Please note that the illustration may differ from the actual product model, material, color, and connector type.

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本安装说明仅适用于P55D系列激光雷达传感器产品,如果违反原设计用途使用产品,用户需自行承担风险。如有更改,恕不另行通知。
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1、受伤风险 Risk of bodily injury

安装前注意事项 Important before mounting begins:



人身伤害危险
Risk of bodily injury



关闭电源
Switch off the power.



**激光安全，符合Class 1标准（人眼安全），
但仍避免直视发射器（波长905nm红外光）。**

Make sure the machine is at a standstill. The product is to be mounted on a rotating part that can cause bodily injury when in motion.



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2、损坏产品的风险 Risk of damage to the product

本产品为精密测量仪器，应由有经验的人员小心操作。
以下警告适用于，产品在超出技术规范极限值情况下使用。

The product is a precision measuring instrument. It should be handled with care, by experienced person-nel.
The warnings below apply in the event of effects outside the limit values stated in the product's data sheet.



产品损坏风险 Risk of damage to the product



极限温度下

If it is exposed to extreme temperatures



遭受敲打，撞击或其他物理损坏。

By impacts or knocks or other physical damage.



短路或供电电压过高

By short-circuits or an excessively high supply voltage



剧烈振动或冲击

If it is exposed to powerful vibrations or shock



电子产品被接触时的静电放电

By ESD discharges if the electronics are touched



潮湿或化学液体腐蚀 (不要竖直安装电缆)

By moisture or chemical fluids
(do not install cable pointing upwards)



请勿将产品安装在处于直接的紫外线（阳光）照射下或受其它气候影响的位置。

Do not install the product in places exposed to direct UV radiation (sun-light) or other weather conditions.



4针D编码插头（通讯接口）不用时必须盖上防尘帽以免灰层或水汽进入

4-pin D-coded plug (communication interface). When not in use, the dust cap must be placed on to prevent dust or moisture from entering.



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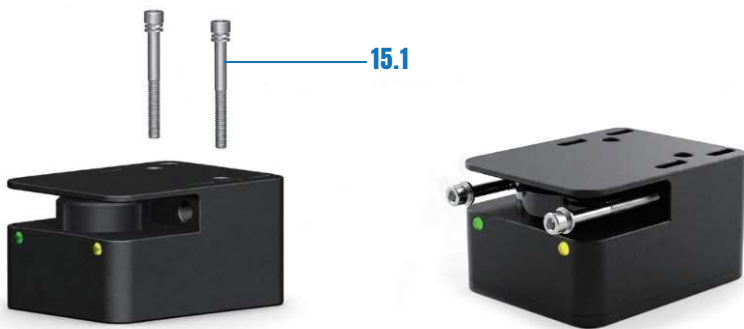
3、功能与特性 Functions and features

该设备是一个光电式激光雷达传感器，其借助激光束在设定的防区内，以非接触方式扫描周围的物体，并通过开关信号指示其是否存在。

The Laser through-beam sensor detects objects and materials without contact and indicates their presence by a switching signal.

4、产品部件 Parts of the product

P55D



15.1 安装螺丝M5 Install M5 screws

15.2 光学镜头 Optical lens

15.3 LED灯 绿色 LED green

15.4 LED灯 黄色 LED yellow

15.5 插头, M12, 8针, A编码 Plug, M12, 8-pin, A code

15.6 插座, M12, 4针, D编码-调试接口 Socket, M12, 4-pin, D code - debugging interface



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P55DK



- 15.1 安装螺丝M5 Install M5 screws
- 15.2 光学镜头 Optical lens
- 15.3 LED灯 绿色 LED green
- 15.4 LED灯 黄色 LED yellow
- 15.5 插头, M12, 8针, A编码 Plug, M12, 8-pin, A code
- 15.6 自学习按键 Self-learning button



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5、机械安装 Mechanical installation

选择合适位置并进行开孔定位，开孔间距为45mm（前后安装）或60mm（上下安装）；

Select an appropriate location and perform hole positioning with a spacing of 45mm (for front-rear installation) or 60mm (for top-bottom installation)

将激光雷达放置于开孔位置，然后用配套螺丝安装进行固定。

Place the Lidar at the drilled position and secure it using the accompanying screws.



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6、电气安装 Electrical mounting



断开电源 Disconnect power.
按照以下方式连接设备 Connect the unit as follows.

	电 缆 Cable	连接器 Connector	引脚连接 Pin Connection
V+	BN (棕)	Pin2	
V-	WH (白)	Pin1	
TEACH-IN	GN (红)	Pin3	
OUT-NO	YE (绿)	Pin4	
OUT-COM	GY (粉)	Pin5	
OUT-NC	PK (黄)	Pin6	
NC	BL (蓝)	Pin7	
NC	RD (红)	Pin8	
Core colours(核心颜色): BN-Brown(棕)、WH-White(白)、PK-Pink(粉)、YE-Yellow(黄) GY-Gray(灰)、GN-Green(绿)、BL-Blue(蓝)、RD-Red(红)			



电气安装注意事项 Electrical installation precautions

错误的工作电压会导致设备损坏!
An incorrect supply voltage may result in damage to the equipment

通电情况下作业会导致设备损坏或意外运行!
Equipment damage or unpredictable operation due to working with live parts.

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7、设置防区 Setting Detection Zone

监 控 状 态 Monitoring Status	产品安装于合适的位置，接通电源。 Install the product in an appropriate location and connect the power supply.
	产品进入正常监控状态，产品根据出厂设置的防区进行输出控制： The product enters the normal monitoring state and performs output control based on the factory-set detection zone: 1、当防区内有物体时，产品内继电器动作且黄灯亮； When there is an object within the detection zone, the relay inside the product operates and the yellow light illuminates; 2、当防区内无物体时，产品内继电器不动作且黄灯灭。 When there is no object within the detection zone, the relay inside the product does not operate and the yellow light turns off.
防 区 标 定 Detection Zone Calibration	标定触发：当Teach-In线接高电平24VDC约5秒后松开，黄灯、绿灯将交替慢闪五次，此时产品进入标定状态。 Calibration Trigger: When the Teach-In wire is connected to a high level of 24VDC for approximately 5 seconds and then released, the yellow and green lights will flash slowly alternately five times, and the product will enter the calibration state.
	标定等待：标定过程中，绿灯会一直闪烁，整个标定过程约持续1分钟。 Calibration Waiting: During the calibration process, the green light will keep flashing, and the entire calibration process will last about 1 minute.
	标定成功：如黄、绿灯同步慢闪5次后停止，表示标定成功。此时绿灯会常亮，黄灯灭，雷达将根据新的学习防区进行输出控制，新防区范围为根据检测到的区域左侧、右侧及底部各缩减40mm。 Calibration Success: If the yellow and green lights flash slowly synchronously five times and then stop, it indicates successful calibration. At this time, the green light will stay on, the yellow light will turn off, and the radar will perform output control based on the newly learned detection zone. The range of the new detection zone is reduced by 40mm each on the left, right, and bottom of the detected area.
	标定失败：如果出现黄，绿灯同步快闪5次后停止，表示标定失败。 Calibration Failure: If the yellow and green lights flash quickly synchronously five times and then stop, it indicates calibration failure.
备 注 Notes	1、在整个防区标定过程中，避免断电或有物体进入监控防区，以免标定失败。 During the entire detection zone calibration process, avoid power failure or objects entering the monitoring zone to prevent calibration failure. 2、在标定过程中如果误触发Teach-In至高电平，不会中断当前标定流程； If the Teach-In wire is mistakenly triggered to a high level during calibration, the current calibration process will not be interrupted; 3、标定完成后，将Teach-In线单独用绝缘胶带包裹住或与电源负极相连，以免误触发。 After calibration is completed, wrap the Teach-In wire separately with insulating tape or connect it to the power supply negative electrode to avoid false triggering.



8、故障排除 Troubleshooting

LED/故障界面 Fault Interface	原因 Cause / Reason	措施 Measure / Action
传感器绿灯亮起，黄灯未能亮起（当传感器前方有遮挡物体时） The sensor's green light is on, but the yellow light fails to turn on;when there is an obstacle infront of the sensor.	传感器损坏 The sensor damaged	更换传感器 Replace the sensor.
传感器绿灯亮起，但黄灯常亮，当传感器前方无遮挡物体时 The sensor's green light is on, but the yellow light fails to turn on; when there is an obstacle in front of the sensor	传感器防区异常 Abnormal detection zone of the sensor	重新设计防区 Redesign the detection zone
绿灯亮起，黄灯有闪烁现象 The green light is on, and the yellow light flickers	连接电缆接触不良 Poor contact of the connecting cable	检查并重新进行电气连接 Inspect and re-perform the electrical connection
	传感器镜头有异物或灰层遮挡 Foreign matter or dust blocking the sensor lens	清洁传感器镜头 Clean the sensor lens
	环境光强度太高 Excessively high ambient light intensity	移除强光干扰源 Remove the strong light interference source
	防区临界处有障碍物 Obstacle at the boundary of the detection zone	移开障碍物 Remove the obstacle
	传感器防区异常 Abnormal detection zone of the sensor	重新设计防区 Redesign the detection zone
绿色和黄灯交替慢闪5次 The green and yellow lights flash slowly alternately 5 times	传感器激活自学习功能，进入标定状态 The sensor activates the self-learning function and enters calibration mode	等待大约1分钟后，直到标定结束 Wait for about 1 minute until the calibration is completed
绿灯一直闪烁 The green light keeps flashing	标定过程中，绿灯一直闪烁直到标定完成 During calibration, the green light keeps flashing until calibration is finished	等待大约1分钟后，直到标定结束 Wait for about 1 minute until the calibration is completed
黄、绿灯同步快闪5次 The yellow and green lights flash quickly synchronously 5 times	表示标定失败 Indicates calibration failure	需要重新标定 Re-calibration is required
绿灯亮起，黄灯亮灭正常，但产品输出无反应 The green light is on, the yellow light turns on/off normally, but the product has no output response	输出接线异常 Abnormal output wiring	检查电气连接（输出导线连接） Inspect the electrical connection (output wire connection)
	传感器损坏 The sensor is damaged	如确认传感器输出连接正常，更换传感器 If the sensor output connection is confirmed normal,replace the sensor
绿灯LED不亮，黄灯亮灭正常 The green LED does not light up, and the yellow light turns on/off normally	传感器绿灯坏 The sensor's green light is faulty	更换传感器 Replace the sensor



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9、操作 Operation

将传感器安装于合适位置，并确保产品接线正常

Install the sensor in an appropriate location and ensure the product's wiring is correct.

确认防区设置正常

Verify that the detection zone settings are normal.

确保产品防区内无异常物体；

Ensure there are no abnormal objects within the product's detection zone.

当有物体进入防区时，输出正常正常切换，传感器黄灯被点亮。

When an object enters the detection zone, the output switches normally and the sensor's yellow LED lights up.

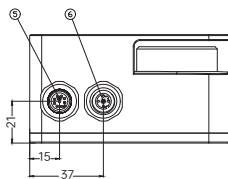
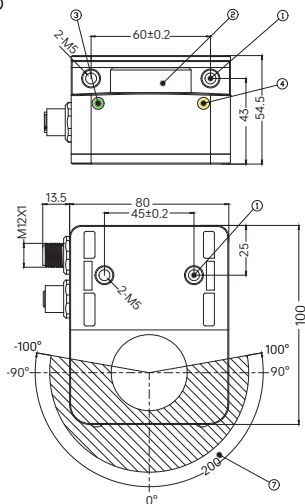


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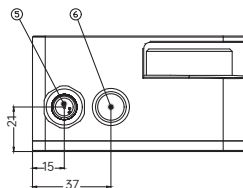
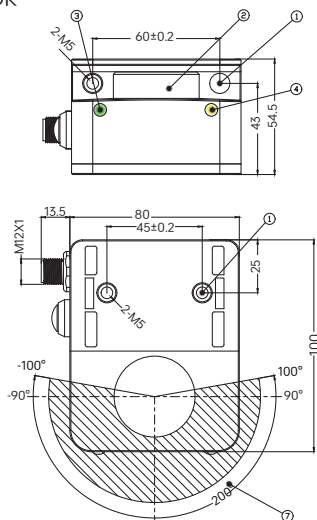
10、机械图 Dimensions

P55D



- ① 2×紧固螺钉通孔M5 (2个安装方向)
2×M5 threaded holes for fastening screws (2 installation directions)
- ② 发射区域 (光发射)
Launch area (light emission)
- ③ 绿色LED Green LED
- ④ 黄色LED Yellow LED
- ⑤ 插头, M12, 8针, A编码 (电源/同步输出接口)
Plug, M12, 8-pin, A code (Power/Synchronization Output Interface)
- ⑥ 插座, M12, 4针, D编码 (串口232接口)
Socket, M12, 4-pin, D code (Serial 232 Interface)
- ⑦ 张角200° (可见范围)
Angle 200° (Visibility Range)

P55DK



- ① 2×紧固螺钉通孔M5 (2个安装方向)
2×M5 threaded holes for fastening screws (2 installation directions)
- ② 发射区域 (光发射)
Launch area (light emission)
- ③ 绿色LED Green LED
- ④ 黄色LED Yellow LED
- ⑤ 插头, M12, 8针, A编码 (电源/同步输出接口)
Plug, M12, 8-pin, A code (Power/Synchronization Output Interface)
- ⑥ 自学习按键
Self-learning button
- ⑦ 张角200° (可见范围)
200° (visible range)



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更多产品信息

了解更多产品信息,请访问 www.tofi-tech.com, 根据产品的不同,提供以下信息:
For more product information, Visit www.tofi-tech.com

- 选型资料 (数据表) Datasheets
- 安装操作手册 Installation and operating manuals
- 通讯手册(软件手册) Software manuals
- CAD(2D) / STEP(3D)
- 证书 Certificates



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维护 Maintenance

保持传感器镜片清洁无污。清洁时请勿使用任何可能损坏塑料镜片的溶剂或清洁剂，可用无水酒精棉片擦拭。如损坏，则无维修选项。

Keep the lenses of the sensors free from soiling. For cleaning do not use any solvents or cleaning agents which could damage the plastic lenses. With no repair options if damaged.



废弃处理 Disposal

必须根据当地有效的现行废弃物废弃处理规定，安全环保地废弃处理无法再使用的设备。

Equipment that is no longer usable must be disposed of safely and environmentally in accordance with local waste disposal regulations currently in force.



编码器
传感器

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