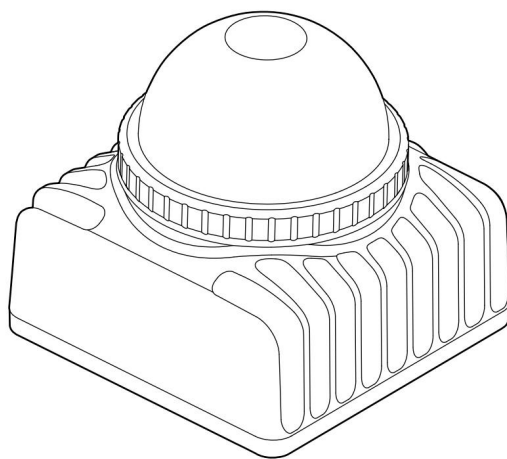


Livox Mid-360S

User Manual

用户手册

v1.0 2025.09





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 Click on the directory to jump

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 Print document

This document supports high-quality printing.

Reading Tips

Symbol Description

⚠ Important precautions ⚙ Operation and usage tips 📖 Vocabulary explanation and reference information

Download Livox Viewer 2 App

Download Livox Viewer 2 from the following address.

<https://www.livoxtech.com/downloads>

Open source code repository

You can obtain the open-source Livox SDK2 and Livox ROS Driver 2 through the following address.

<https://github.com/Livox-SDK>

Livox Wiki

More developer information can be obtained through Livox Wiki.

<https://livox-wiki-cn.readthedocs.io>

目录 Catalogue

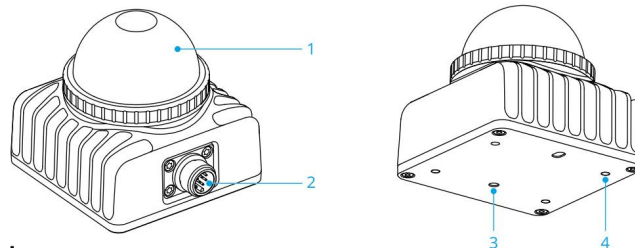
Reading Tips	
阅读提示	3
符号说明/Symbol Description	3
下载 Livox Viewer 2 App/Download Livox Viewer 2 App	3
开源代码仓库/Open source code repository	3
Livox Wiki	3
1 产品概述/Product Overview	7
1.1 部件介绍/Component Introduction	7
1.2 接口定义/Interface Definition	7
M12 航空插头/M12 aviation plug	7
Livox 航插一分三线/Livox Air Plug in 1/3 Line	8
2 产品特性/Product Features	11
2.1 有效视场角/Effective field of view angle	11
2.2 非重复扫描模式/Non repetitive scanning mode	11
3 使用/Use	15
3.1 安装/install	15
注意事项/Precautions	15
安装尺寸/Installation dimensions	15
3.2 设计外部电源/Design external power supply	16
3.3 连线/Connect	16
3.4 坐标系/Coordinate system	17
3.5 输出数据/Output data	18
信息推送/Information push	18
点云数据/Point cloud data	19
IMU 数据/IMU data	21
3.6 工作状态与工作模式/Working status in working mode	21
工作状态/Work status	21
工作模式/Working mode	21
3.7 Livox Viewer 2	21
3.8 软件开发工具包/Software development toolkit	22
4 存储、运输与保养/Storage, transportation, and maintenance	24
4.1 存储/Storage	24
4.2 运输/Transportation	24
4.3 保养/Maintenance	24
5 附录/Appendix	26
5.1 疑难解答/Troubleshooting	26

5.2	Specifications	26
5.3	Size structure	28
5.4	After sales warranty information	29

Product Overview

1 Product Overview

1.1 Component Introduction



1. Light output window

The laser beam diverges outward through the window, scanning objects within the FOV range.

2. M12 aviation plug

The M12 aviation plug paired with Livox aviation plug can quickly test the performance of laser detection rangefinder. Users can design other wires according to the wire sequence of the plug to improve the overall protection ability (such as dust and water resistance). Please refer to the interface definition chapter for the wire sequence of the M12 aviation plug.

3. Positioning hole

When designing a fixed bracket, the positioning accuracy of the entire machine can be improved through positioning holes. Please refer to the installation dimensions section for specific dimensions.

4. M3 installation hole

Secure the laser rangefinder in place using M3 screws through this mounting hole.

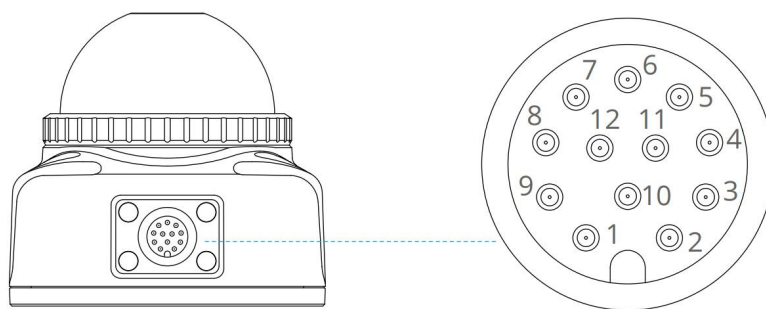
[1] Livox aviation plug with one and three wires is an additional accessory. If you need to purchase, please visit the DJI official website store. Livox aviation plug with three wires is only suitable for debugging and verification. For other application scenarios with high reliability requirements, it is recommended that users customize and use cables and connectors that are suitable for the scenario requirements.

1.2 Interface Definition

M12 aviation plug

This product uses a high reliability M12 aviation plug (male). This plug is an M1212PA-CODE male connector that complies with the IEC61076-2-101 standard, and the recommended female connector model is Finecables

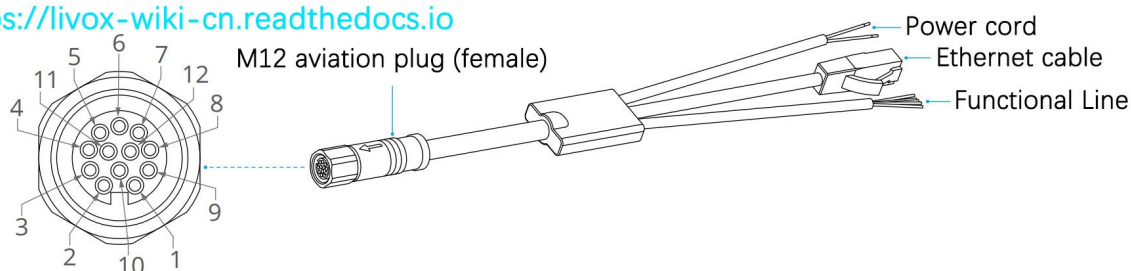
MA12FAHD12STXXXB14, All meet the IP67 protection requirements. Users can connect to this product through the Livox aviation plug with a one third cable to achieve power connection, control signal transmission, and data transmission. They can also use other cables to replace the Livox aviation plug with a one third cable according to their own needs, improving overall protection capabilities (such as dust and water resistance).



Livox Air Plug in 1/3 Line

Users can connect this product through Livox aviation plug with a one to three cable connection. Livox aviation plug has three wires, one end is an M12 aviation plug (female), and the other end is divided into power cord, Ethernet cable, and function cable. The length of the wire is 1.5 meters. Connect the M12 aviation plug (female) to the M12 aviation plug (male) of this product. Connect the power cord to an external DC stabilized power supply. The Ethernet cable comes with an R-45 Ethernet connector, which can be connected to the R-45 Ethernet interface for sending and receiving data, making it easy to debug. If there is a requirement for GPS time synchronization (not mandatory), the functional wires (pins 8 and 10) of the Livox aviation plug can be connected to the corresponding synchronization source. The GPS serial port should be configured with a baud rate of 9600, 8-bit data bits, and no checksum. The time synchronization function is detailed in LivoxWiki:

<https://livox-wiki-cn.readthedocs.io>



The wire sequence and definition of Livox Mid-360S M12 aviation plug (male) and Livox aviation plug one/three wire are as follows:

M12 aviation plug (male/female) pins	Signal	Attribute	Description	Wire harness color	Function
1	Power+	Power	DC 9V-27V	Red (positive electrode)	Power cord
9	Power+	Power	DC 9V-27V		
2	Ground	Power	Ground	Black (negative electrode)	
3	Ground	Power	Ground		
4	Ethernet-TX+	Output	Ethernet-TX+	Orange/White	Ethernet cable
5	Ethernet-TX-	Output	Ethernet-TX-	Orange	
6	Ethernet-RX+	Input	Ethernet-RX+	Green/White	
7	Ethernet-RX-	Input	Ethernet-RX-	Green	

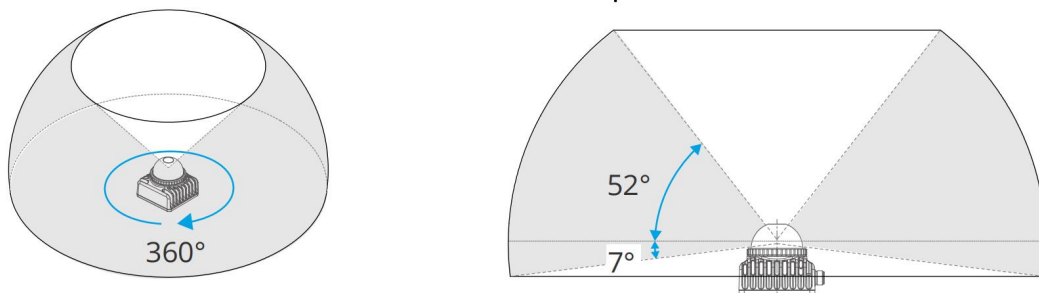
M12 aviation plug (male/female) pins	Signal	Attribute	Description	Wire harness color	Function
8	LVTTL_IN	Input 3.3V LVTTL	Pulse per second	Purple/White	Functional Line
10	LVTTL_IN	Input 3.3V LVTTL	GPS input	Grey/White	
11	LVTTL_OUT	Output 3.3V LVTTL	Reserved output I0	Gray	
12	LVTTL_OUT	Output 3.3V LVTTL	Reserved output I0	Purple	

Product Features

2 Product Features

2.1 Effective field of view angle

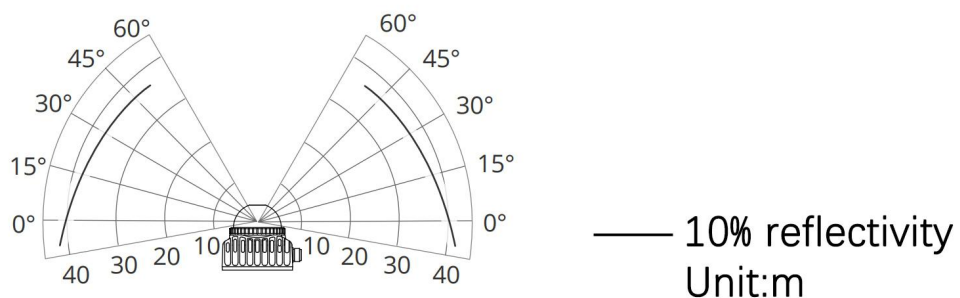
The FOV of this product can reach 360 horizontally and 59 vertically. Please pay attention to the effective range of FOV during installation and avoid obstructing the FOV area. accessible <https://www.livoxtech.com/mid-360s/downloads> Download the 3D model of this product and its FOV.



The effective range of this product varies in different FOV regions. Within the vertical FOV range, the closer it is to the upper part, the shorter the effective range, and the closer it is to the lower part, the longer the effective range. Please pay special attention to the effective range when using.

As shown in the figure below, when the reflectivity of the target object is 10%, the farthest detection distance at the bottom of the vertical FOV range is about 40m; The closer it is to the top, the farther the detection distance will be correspondingly shortened. Please be careful when using it.

-
- ⚠ • Avoid overlapping with the FOV of other LiDAR systems, as laser interference may cause irreversible damage to this product.
-

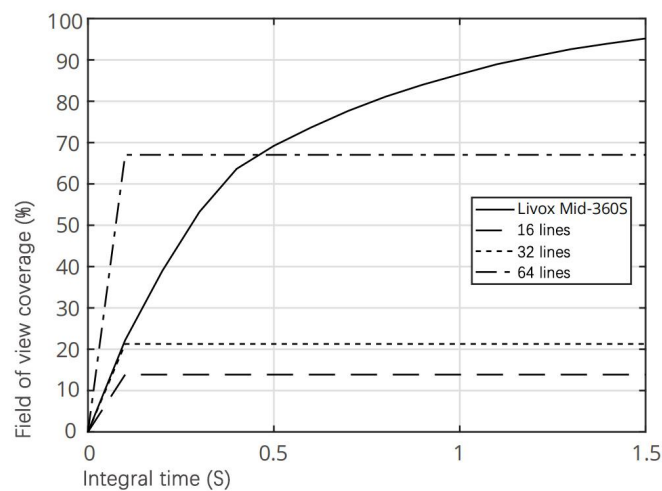


2.2 Non repetitive scanning mode

In non repetitive scanning mode, this product has a high field of view coverage. As the integration time increases, the field of view coverage will also significantly increase, detecting more details in the field of view. The following figure shows the point cloud maps of this product at different integration times (0.1s, 0.2s, 0.5s, and 1s) in non repetitive scanning mode.



The following figure compares the field of view coverage of this product with several commonly used multi line mechanical rotary laser rangefinders on the market under different integration times in non repetitive scanning mode. From the figure, it can be seen that when the integration time is 0.1 seconds, the field of view coverage of this product is comparable to that of a common 32 line mechanical rotary laser detection rangefinder; When the integration time continues to increase and reaches 0.5s, the field of view coverage will approach 70%, which means that most areas in the field of view will be covered, higher than the common 64 line mechanical rotary laser detection rangefinder.

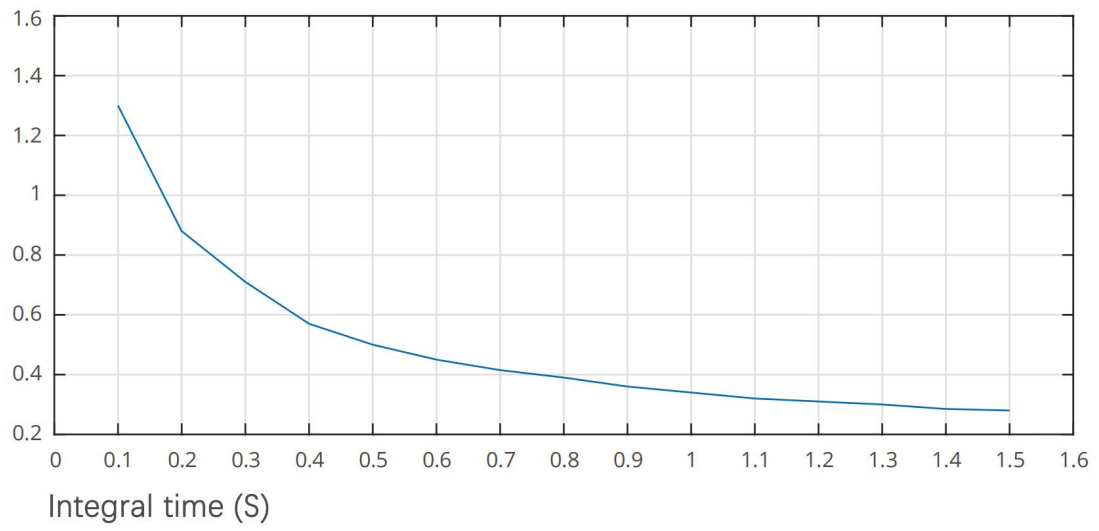


 The area of laser irradiation within the field of view is related to the measurement performance of the laser detection rangefinder. To characterize this indicator, the proportion of the area detected by the laser in the field of view of the laser rangefinder can be quantitatively described as the field of view coverage (C). The calculation formula is: $C = (\text{area illuminated by laser} / \text{area of all areas within the field of view}) \times 100\%$. Check the Livox website for more information about field of view coverage.

The following figure shows the average angle gap variation curve of point clouds at different integration times in non repetitive scanning mode. The integration time can be selected according to the size and distance of the object to be detected.

Average angle gap of point cloud (degrees)

Point cloud average angle gap



Use

3 Use

3.1 Installation

Precautions

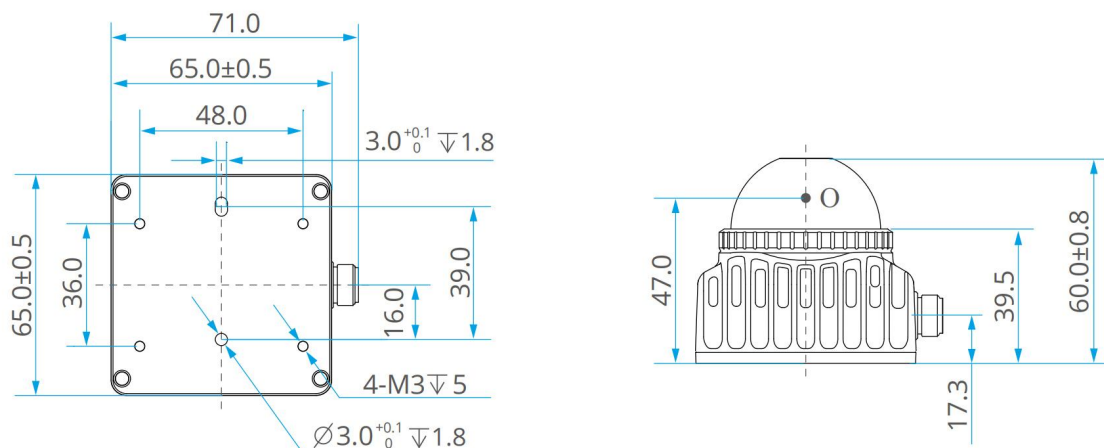
Before officially installing this product, please read the following precautions:

1. Dust or dirt on the window will affect the performance of the laser detection rangefinder. It is recommended to use air blowing, alcohol or optical wiping cloth for cleaning according to the instructions in the maintenance section of this document. After cleaning, proceed with installation.
2. When installing the laser detection rangefinder, its FOV should not be obstructed, even if transparent glass is installed in front of the window, it will affect the performance of the laser detection rangefinder.
3. There is no restriction on the installation direction of the laser detection rangefinder, and its lower surface can be used for installation. If the inverted method is used, the distance between the installation surface and the ground must not be less than 0.5m. If there are special installation requirements, please contact Livox.
4. The installation structure of the laser detection rangefinder can only ensure its own reliability, and the body of the laser detection rangefinder cannot bear additional loads.
5. The installation of laser detection rangefinder requires avoidance design around the perimeter to prevent poor air flow from affecting heat dissipation. It is recommended that the clearance size around the laser detection rangefinder should not be less than 10mm.
6. It is recommended to install the laser detection rangefinder on a flat metal surface, with a metal base plate thickness of not less than 3mm and a convective heat dissipation area of not less than 10000mm² between the metal base plate and the air.

installation dimensions

The bottom of this product has 4 M3 mounting holes with a depth of 5mm. Please install this product in the appropriate position according to the size information shown in the following figure.

Unit: mm



3.2 Design External Power Supply

The working voltage of this product is 9~27V, and it is recommended to use 12V. In low temperature conditions, the minimum working voltage needs to be appropriately increased. When directly connecting to an external DC power source through an M12 aviation plug, please ensure that the output voltage of the external power source is within the operating voltage range of this product. When extending the cable, it is necessary to increase the output voltage of the external power supply to compensate for the additional voltage drop caused by the cable extension, but the maximum voltage should still not exceed 27V.

This product has a power of approximately 6.5W under stable operating conditions. The power of this product varies depending on the ambient temperature. Please design the power supply according to the voltage range and peak power at startup of this product to ensure its normal operation.

- -20°C~0°C: This product will automatically operate in low-temperature self heating mode. When in low-temperature self heating mode, the power of this product can reach 14W, and the self heating time can last up to 10 minutes.
- 0°C~35°C: The starting power is 18W (with a duration of approximately 8s).
- >35°C: Starting power of 9W (duration of approximately 8s).



- Due to certain reasons (such as interference, sudden power outages of other devices connected in parallel to the same power source, etc.), voltage fluctuations above 27V generated on the cable may cause abnormal operation or even damage to the equipment.

- The values mentioned are for reference only. In actual use, there may be certain differences in the peak power of startup among individuals.

3.3 Connection

The M12 aviation plug of this product can provide external power and transmit data. For the specific wiring sequence of the plug, please refer to the interface definition section. If temporary testing or use of this product is required, it is recommended to use Livox aviation plug with one and three wires. Livox aviation plug with three wires integrates M12 aviation plug (female head), power cord (bare wire), function wire (with insulation layer harness), and Ethernet cable (with R-45 connector).

This product uses Ethernet for data communication (UDP) and supports static IP address mode. All factory default IP addresses are 192.168.1.1XX (XX is the last two digits of the product SN code), subnet mask is 255.255.255.0, and default gateway is 192.168.1.1. When used for the first time, it can be directly connected to the computer without the need for a router.

1. Before connecting, set the computer's IP to a static IP. The setting method is as follows:

Windows system

- a. In the control panel, enter the Network and Sharing Center.
- b. Click "Ethernet" to jump to the Ethernet status interface, and click the "Properties" button to enter the Ethernet property settings.
- c. Double click on "Internet Protocol Version 4 (TCP/IPv4)"
- d. Set the IP address to 192.168.1.50 and subnet mask to 255.255.255.0, click "Confirm" to complete the static IP setting for the computer.

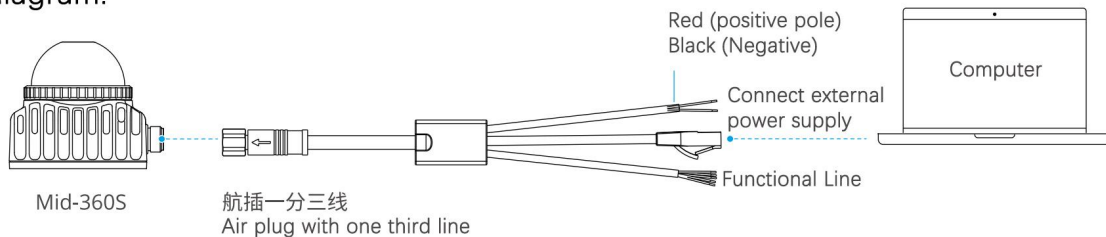
Ubuntu-18.04 system

The configuration of IP address can be done through the ifconfig command in the terminal. The example code for configuration is as follows:

```
~$ sudo ifconfig enp4s0 192.168.1.50
```

(Among them, enp4s0 needs to be replaced with the local network port name)

2. After setting the static IP address of the computer, please connect according to the diagram.



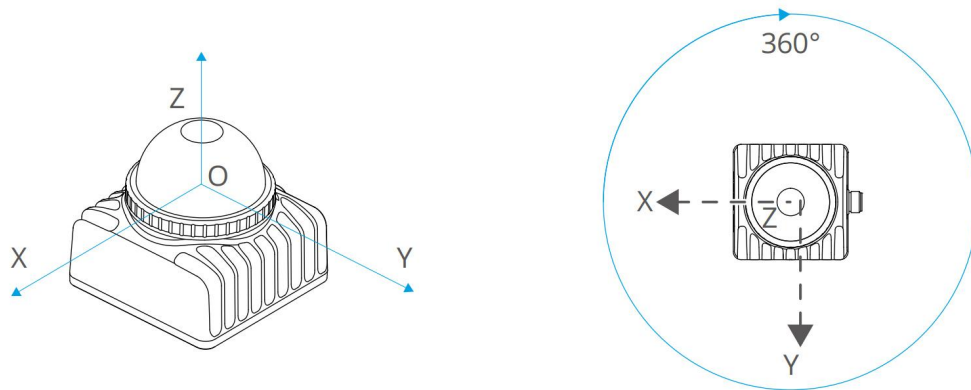
- a. Connect the M12 female connector of the Livox connector to the male connector of the M12 connector of this product. To ensure a stable connection, use a wrench to tighten the locking nut of the female head of the aviation plug to the end face of the locking nut of the male head of the aviation plug, and check and confirm that there are no gaps.
- b. Connect the R-45 Ethernet port connector of Livox aviation plug to the personal computer.
- c. If there is a requirement for GPS time synchronization (not mandatory), connect the functional cable of Livox aviation plug in one and three wires to the corresponding one. On the step source, detailed line sequence can refer to the line sequence table in the interface definition chapter.
- d. Connect the external power cord of the Livox aviation plug to the external power supply, paying attention to the input voltage range and polarity.



- When connecting power cords and function cords, be sure to wire them according to their respective voltage ranges and polarities. The R-45 Ethernet port connector cannot be connected to any PoE devices. Incorrect wiring may cause irreversible damage to the radar.
 - If necessary, connect the synchronization signal source using the Livox aviation plug-in three wire function cable
 - If multiple LivoxMid-360S with static IP mode need to be connected to a PC simultaneously, please set each LivoxMid-360S to a different IP address and connect it to the PC through a switch.
 - If you need to connect more than 3 Livox Mid-360S devices simultaneously, please use a gigabit router or gigabit switch.
 - The broadcast code of each laser rangefinder can be viewed through the QR code of the label on the back of the device or through the device manager of LivoxViewer 2.
- After connecting as shown in the diagram, run LivoxViewer 2 on the computer, select the device
- that needs to change the static IP address, click to enter the device parameter settings interface, and modify the static IP address of LivoxMid-360S.

3.4 Coordinate System

The definition of the Cartesian coordinates O-XYZ for this product is shown in the following figure. Point O is the origin, and O-XYZ is the Cartesian coordinate system of the point cloud.



3.5 Output Data

The output data of this product is divided into three types: information push, point cloud data, and IMU data. The detailed format of output data can be found in the communication protocol section of Livox Wiki:

<https://livox-wiki-cn.readthedocs.io>

information push

After power on, this product will periodically push laser detection rangefinder information to the set IP address (default broadcast address), including device information, user configuration, and current status of this product. Here are some of the information pushed:

Type	Content	Content description
Device Information	SN code	Unique factory identification code for equipment
	Firmware version number	Firmware version number
	Hardware Version Number	Hardware Version Number
	MAC address	MAC address of Ethernet card

Type	Content	Content description
User Configuration	IP address of laser detection rangefinder	Configurable laser detection rangefinder IP address, subnet mask, and gateway
	Destination address	Configurable information push and destination IP address for sending point cloud data
	Point cloud data format	Can configure different coordinate system formats, etc
	IMU data	Configurable IMU data push switch, default on
	External parameters of laser detection rangefinder	Configurable extrinsic calibration information for laser detection rangefinder (laser detection rangefinder only stores and does not use this information)
	Working mode	The target working state, which users can modify, defaults to sampling mode (sampling starts immediately after power on)
	FOV configuration	If the entire 360°FOV is not required, the laser detection rangefinder can be configured to operate within a specified range of angles.
	Detection mode	Can be configured as normal detection mode or sensitive detection mode, default is normal detection mode ^[1]
Current status	Current working status	Current working status
	internal temperature	The temperature of the core components inside the current laser detection rangefinder
	Error code	If the laser detection rangefinder malfunctions, the cause and classification of the fault can be confirmed through the exception code, as detailed in the communication protocol section of LivoxWiki

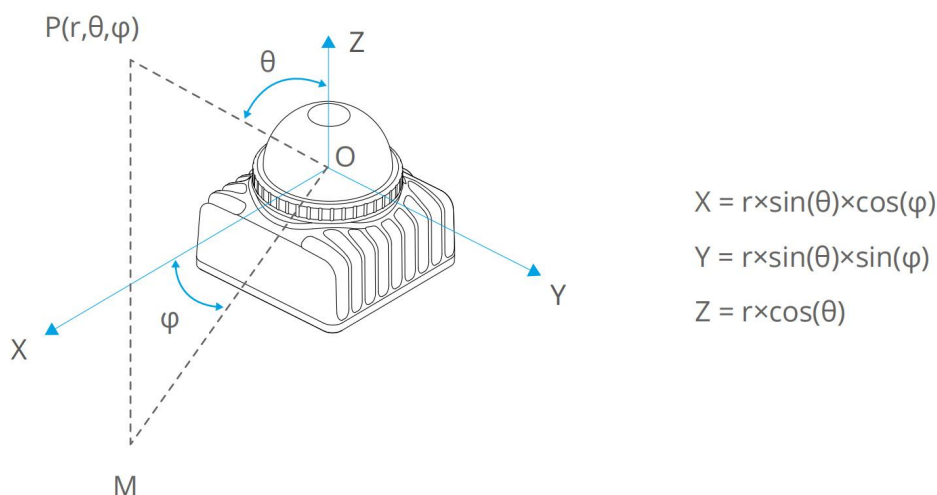
[1] If configured as sensitive detection mode, it can enhance the detection ability of low reflectivity objects and have better detection effect for extremely black or bright objects [1], but at the same time, it may slightly increase the noise rate.

Point cloud data

By default, this product starts outputting point cloud data upon power on, which includes target reflectance, coordinate information, marker information, and timestamp. Point cloud data is the sum of all point clouds detected by a laser rangefinder at the field of view angle on the surface of the object being measured. Each point cloud contains the following information.

Target reflectivity: represented from 0 to 255. Among them, 0 to 150 correspond to diffuse reflection objects with reflectivity ranging from 0 to 100%, and 151 to 255 correspond to total reflection objects. When the distance between the measured object and this product is less than 2 meters, the target reflectivity error may be too large, and it can only be used to distinguish whether the target is a total reflection object or a diffuse reflection object.

- **Coordinate information:**The coordinate information of this product can be represented as a Cartesian coordinate system (x,y,z) or a spherical coordinate system (r,θ,Φ).The correspondence between Cartesian coordinates and spherical coordinates is shown in the following figure.If there is no detected object ahead or the detected object exceeds the range (e.g.>100m),the point cloud output in the Cartesian coordinate system is (0,0,0);In the spherical coordinate system,the point cloud output is (0,θ,Φ)



- **Tag:**It mainly indicates additional information about the detection point.The point cloud is marked as an 8-bit unsigned integer and divided into several regions based on bits. Each region represents an attribute of the detection point, including rain, fog, dust, adhesive point clouds between similar objects, and so on. The confidence level indicates the reliability of this detection point, and the normal point is generally 0 (with good confidence). The confidence difference indicates that the detection point is greatly affected by the corresponding attributes, and the reliability of the detection results is poor. If necessary, the point cloud can be filtered based on this information. The format of tag information is as follows:

Bit[7-6]	Bit[5-4]	Bit[3-2]	Bit[1-0]
Reserved bit	Detection point attribute:Other 0:Excellent confidence (normal point) 1:Confidence level 2:Confidence difference 3:Reserved	Detection point attribute: tiny particles such as rain,fog,dust,etc 0: Excellent confidence (normal point) 1: Confidence level 2: Confidence difference 3: Reserved	Detection point attribute: sticky point cloud between similar objects 0: Excellent confidence (normal point) 1: Confidence level 2: Confidence difference 3: Reserved

- **Timestamp:**This product supports two synchronization methods:IEEE1588-2008 synchronization and GPS synchronization. The timestamp format is a 64 bit unsigned integer in ns.For detailed information on time synchronization, please refer to LivoxWiki:<https://livox-wiki-cn.readthedocs.io>
 - ♦ IEEE 1588-2008 Synchronization: IEEE 1588-2008 refers to the Precision Time Protocol(PTP), which achieves precise clock synchronization for measurement and system control through Ethernet. The Livox laser rangefinder,as a regular clock in PTP,only supports UDP/IPV4 protocol.The Livox laser rangefinder supports the following message formats:Sync,Followe_up,Delay_req,and Delay_resp.
 - ♦ GPS synchronization:Data synchronization is achieved through PPS signals and GPS messages.The PPS interface logic is consistent with the PPS synchronization method mentioned above,and GPS messages (GPRMC)are sent to the corresponding pins through the serial port(see the interface definition section of this user manual).The pulse period for PPS signal pulse synchronization is t0 (t0=1000ms),and the high-level time t1 (t1>1us). except

In addition to sending GPS messages through the serial port, users can also use the SDK communication protocol to send the time information of each pulse to this product through a network packet. For specific communication instructions, please refer to the relevant sections of the communication protocol.

IMU data

The laser detection rangefinder integrates IMU chips(3-axis accelerometer and 3-axis gyroscope) internally. By default, IMU data is pushed at a frequency of 200Hz upon power on(which can be turned on or off by the upper computer). The data includes 3-axis acceleration and 3-axis angular velocity, with the same direction as the point cloud coordinate system. The position of the IMU chip in the point cloud coordinate system is (x=11.0mm,y=23.29 mm,z=-44.12 mm).

Please refer to the relevant sections of the communication protocol for specific communication protocols and data formats.

3.6 Working Status and Working Mode

The working state of this product refers to the current working state of the laser detection rangefinder, and the working mode refers to the target working state set by the user.

Work status

Work status	Description
Sampling state	Started and working normally(emitting laser beam)
Standby mode	Except for maintaining normal communication function, other modules have stopped working, and this is the minimum power consumption
Error state	Error detected
Self-check status	Power on check in progress
Startup status	Starting up
Upgrade Status	Upgrading firmware
Ready state	Already started, laser beam can be emitted at any time

Working mode

The working mode refers to the target working state set by the user. This product has three working modes that can be set by the user: standby mode, ready mode, and sampling mode. Users can set different working modes through Livox Viewer 2 or Livox SDK2.

3.7 Livox Viewer 2

LivoxViewer 2 is an operating software that can display, record, replay, and parse 3D point clouds in real time, and supports advanced functions such as product settings and external parameter adjustment.

Go to <http://www.livoxtech.com> Download the latest version of Livox Viewer 2. Livox Viewer 2 currently supports Windows 10 (64 bit) and Ubuntu 18.04 (64 bit). Please follow the steps below to use Livox Viewer 2

 When using LivoxViewer 2 on Windows systems, the firewall of the operating system may intercept network data, which may prevent LivoxViewer 2 from scanning LiDAR. If this situation occurs, please turn off the firewall in the computer control panel and then restart LivoxViewer 2.

Windows users: Extract the file and open the program named LivoxViewer 2 in the extracted file.
Ubuntu users: need to start the terminal in the root directory of the decompressed file

(or directly start the terminal and enter the root directory of the decompressed folder),
run the command: `/livoxviewer2.sh` can be launched.

Visit the official website <http://www.livoxtech.com> Download the LivoxViewer 2 User Manual for more usage details.

3.8 Software Development Kit

Livox SDK 2

In addition to using LivoxViewer 2 to view real-time point cloud data, users can also use the software development toolkit (Livox SDK2) to apply the point cloud data obtained through Livox laser rangefinder to various custom scenes, achieving:

1. Configure and query the parameters and status information of the laser detection rangefinder
 2. Obtain point cloud data generated by laser detection rangefinder
 3. Firmware upgrade access for laser detection rangefinder
- <https://github.com/Livox-SDK/Livox-SDK2> View more detailed information about the Livox SDK 2 API documentation.

SDK Communication Protocol

Livox Viewer 2 and Livox SDK 2 both communicate with the device through the SDK communication protocol. Users can also design software to communicate with the laser detection rangefinder according to the SDK communication protocol to control or collect point cloud coordinate data.

visit <https://livox-wiki-cn.readthedocs.io> View more detailed information about the SDK communication protocol.

Storage, transportation, and maintenance

4 Storage, transportation, and maintenance

4.1 Storage

The storage temperature of this product is $-40^{\circ}\text{C}\sim 70^{\circ}\text{C}$. Please store it in a dry and dust-free environment

- ⚠ • It is strictly prohibited to expose the product to toxic, harmful, and corrosive environments.
- Handle with care during storage and do not drop the product.
- If saved for more than 3 months, please regularly check the appearance and interface to avoid any abnormalities during use

4.2 Transportation

- Before transportation, please carefully check whether the product has been securely installed in place, and after confirming that there are no errors, pack the product into the packaging box.
- Buffer foam must be placed in the packaging box and ensure that the box is dry, clean, and free of moisture.
- During transportation, please handle with care and do not bump, impact, or drop the product.

4.3 Maintenance

Impurities such as stains or dust can affect the performance of laser detection rangefinders. If stains or other impurities are found on the window, please clean it according to the following steps:

1. Use a compressed air cleaner: Before wiping the window with a lens cleaning cloth, first use the compressed air cleaner to aim at the part of the window that needs to be cleaned and spray.

- ⚠ • If there are granular dust and other impurities on the window, wiping it directly may cause the window to be scratched, affecting the detection performance of the laser detection rangefinder.

2. Wipe off stains: Prioritize using a clean dust-free cloth or lens cleaning cloth to gently wipe the window. If there are still visible stains on the window, use a cleaning cloth dipped in a small amount of alcohol to gently wipe the window.

Appendix

5 Appendix

5.1 Troubleshooting

If there are any problems during use, please refer to the table below for solutions. If the problem still persists, please contact Livox or an authorized Livox distributor.

1. Unable to detect this product

- Confirm if all wires are properly connected.
- Confirm that the voltage is correct. The working voltage of this product is 9-27V. If connected through a Livox aviation plug with one to three wires, it can support an external power supply of 9-27V.
- Confirm that this product is connected to the same local area network as the upper console.
- Confirm that this product is not connected to other software.
- Confirm that no antivirus software or other software that blocks Ethernet broadcasts is installed.
- After the above confirmation is completed, if the product cannot be detected, please close all firewalls and restart LivoxViewer2, and search for laser detection rangefinders in the local area network again.
- Please use network packet analysis software (such as Wireshark) to analyze UDP packets

2. Can detect this product, but cannot establish a connection or start sampling:

- Confirm if all wires are properly connected.
- Confirm that the voltage is correct. The working voltage of this product is 9-27V. If connected through a Livox aviation plug with three wires, it can support an external power supply of 9-27V.
- If the problem persists, please restart this product and Livox Viewer 2.

3. No data available:

- Please use network packet analysis software (such as Wireshark) to analyze the output data

5.2 Specification Parameters

Model	MID-360S
laser wavelength	905 nm
Human eye safety level	Class 1 (IEC60825-1:2014) Human eye safety
Range(@100klx)	40m@10 %Reflectivity (typical value) 100m (up to range)
Near blind spot	0.1 m
FOV	Horizontal 360°, vertical -7°~52°
Random ranging error	≤ 2 cm (@10 m) ^[4] ≤ 4 cm (@0.2 m) ^[5]

Random angle error	$\leq 0.15^\circ$
Point cloud output	200000 points per second
Point cloud frame rate	10Hz(typical value)
Data network port	100 BASE-TX Ethernet
Data synchronization method	IEEE 1588-2008 (PTP v2), GPS
Anti crosstalk function	Have
False alarm rate(@100klx)	< 0.01%
IMU	Built in IMU model:ICM40609
Working environment temperature	-20°C to 55°C
Storage environment temperature	-40°C to 70°C
Protection level	-40°C to 70°C
Power	IP67
Supply voltage range	6.5W(ambient temperature 25°C)
Size	9~27 V DC
Weight	65(width)x65(depth)x60(height)mm About 265g

[1] The typical divergence angle of the laser radiation inside the laser detection rangefinder is 25.2° (horizontal) x 8° (vertical) (full width at half maximum, FWHM), and the maximum laser power may exceed 70W. Do not disassemble this product to avoid danger.

[2] If the target object is at a distance of 0.1m to 0.2m, the laser detection rangefinder can detect and output point cloud data, but due to the inability to guarantee detection accuracy, this data is for reference only.

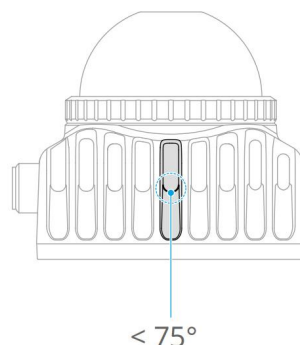
[3] To ensure effective detection of objects with different reflectivity within the range, there may be a slight decrease in point cloud accuracy at certain locations.

[4] The testing conditions are an ambient temperature of 25°C , a target object reflectivity of 80%, and a testing distance of 10m.

[5] The testing conditions are an ambient temperature of 25°C , a target object reflectivity of 80%, and a testing distance of 0.2m. For low reflectivity objects and small objects within the range of 0.1-1m (including but not limited to black foam, water surface, bright or extinction treated objects, fine lines, etc.), the detection effect may not be guaranteed.

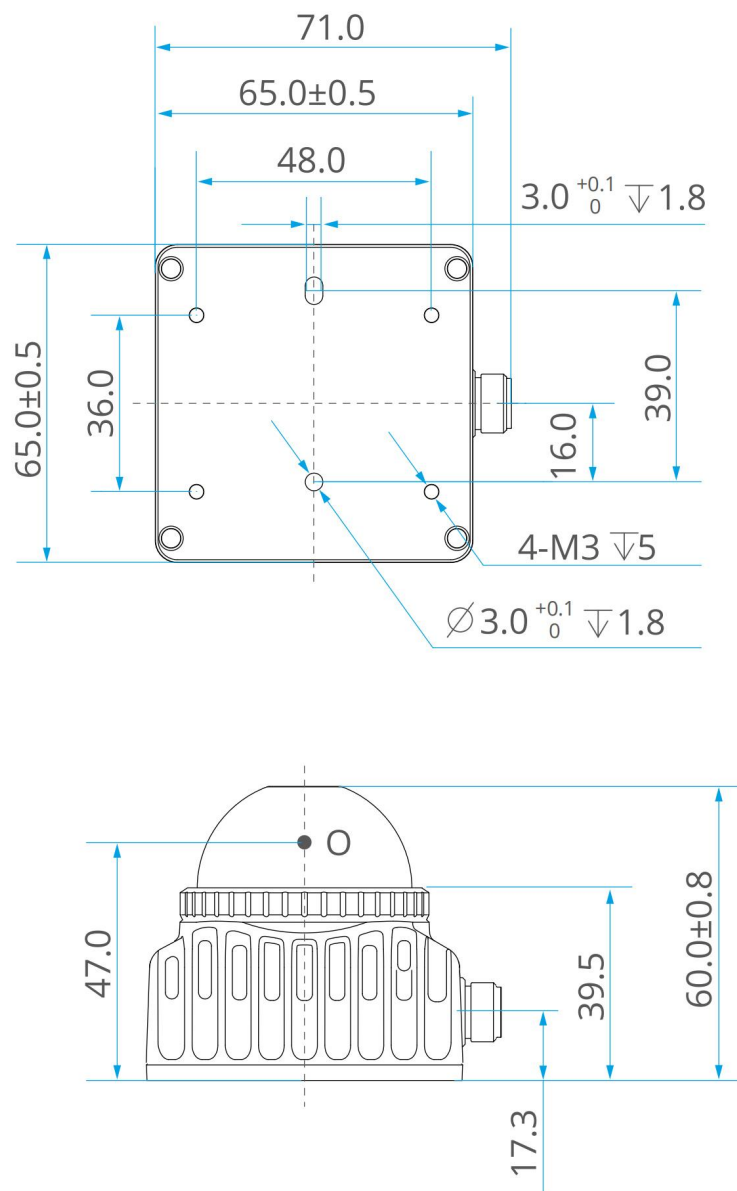
[6] The proportion of false alarm noise generated by ambient stray light at an ambient temperature of 25°C under 100klx daylight conditions.

[7] In environments such as high and low temperatures, strong vibrations, and heavy fog, the performance of this product will experience a slight decrease. In addition, long-term high-temperature work may affect product performance and even cause product damage. If the temperature is too high, the over temperature protection mechanism will be triggered, and this product will issue an over temperature warning. In case of severe over temperature, this product will stop running. It is recommended that users add heat dissipation measures to ensure that the temperature at the center of the bottom shell does not exceed 75°C . When facing the M12 aviation plug of this product, the temperature at the top of the middle groove slope of the right heat dissipation tooth (as shown in the figure) should not exceed 75°C .



[8] When the ambient temperature range is -20°C to 0°C , this product will automatically operate in self heating mode, with a peak power of up to 14W. Please design the power supply reasonably to ensure the normal operation of the equipment.

5.3 Size structure





Go to <https://www.livoxtech.com/support> Learn more about the warranty information of Livox laser detection rangefinder.