

1. Lidar Basics (VANJEE Lidar)

1. Product Introduction

WLR-720 is a 16-line mechanical laser radar launched by VANJEE Technology, which is used for 3D environmental perception in scenarios such as unmanned driving, robots and industrial automation.

1.1 Main Features

- Highly modular design
- 360° panoramic scanning, 30° vertical field of view
- 16-line scanning section, high-precision ranging

1.2 Typical Applications

- Unmanned driving
- High-precision map drawing
- Obstacle detection

2. Electrical interface

2.1 Power supply description

WLR-720 integrates wide voltage function, working voltage 12-32V DC, rated working voltage 24V DC, rated working current 0.5A, rated power 12W.

When using, please connect the aviation plug interface to the machine, and then connect the power interface to the 24V DC power supply. Once the power is turned on, the laser radar starts working.

Caution! If the power supply voltage is too low or too high, it will affect the performance of WLR-720 or cause irreversible damage to the laser!

2.2 Electrical interface

The WLR-720 laser radar is powered and communicated through an aviation plug line. The network interface is a crystal head, which is connected to the network port of the device receiving data; the GPS interface is a loose wire, which is used to connect the RS232 and PPS signals of the GPS module; the remaining loose wires are power cords. The corresponding structure of the aviation plug line is shown in Figure 2.1.

Table 2.1 is the interface definition of P1, P2, and P3 in the figure below.

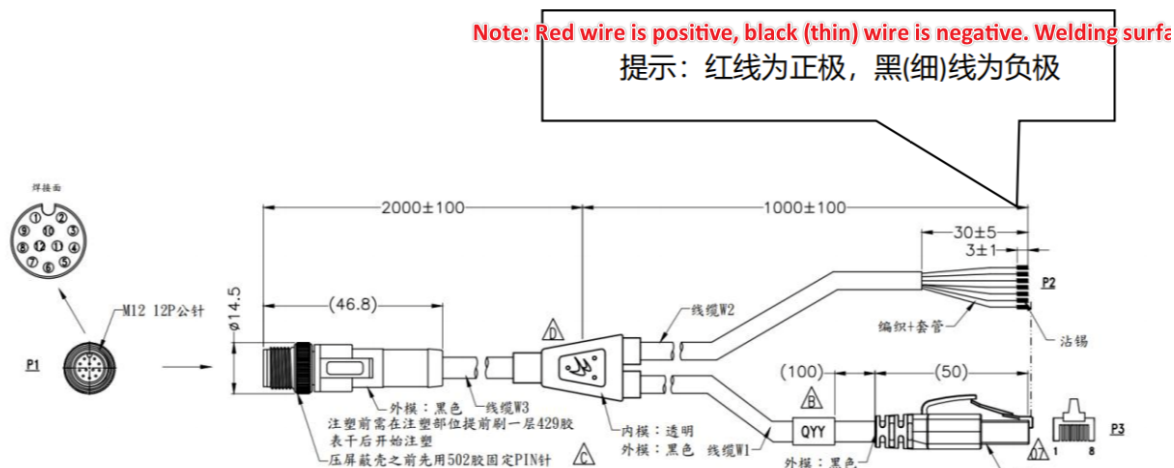


图 2.1 航插线结构图

Figure 2.1 Structure diagram of aviation connector cable.

P1 (航插口) P1 (navigation socket)	P2(电源) P2 (power supply)	P3 (网口) P3 (network port)	功能 Function
No. 编号	Color 颜色	No. 编号	
1		1 白 1 White	Ethernet_TX_P
2		2 绿 2 Green	Ethernet_TX_N
3		3 蓝 3 Blue	Ethernet_RX_P
4		6 黄 6 Yellow	Ethernet_RX_N
5	白 White		GPS_PPS
6	绿 Green		RS232_RX
7	黑 (细) Black (thin)		P24V-
8	红 Red		P24V+
9	蓝 Blue		IO_OUT
10	黄 Yellow		WGND
11、12			NC
Metal shell金属外壳	黑 (粗) Black (thick)		Shield 屏蔽

Table 2.1 P1, P2, P3 interface definition

表 2.1 P1、P2、P3 接口定义

2.3 Electrical connection

Connect the power supply and network wiring of WLR-720 correctly according to the interface instructions. Connect the crystal head of the network wiring to the network switching device such as a switch, or directly connect it to the data receiving device. The wiring diagram is shown in Figure 2.2. Please refer to Table 2.1 Interface Definition for the connection line sequence.

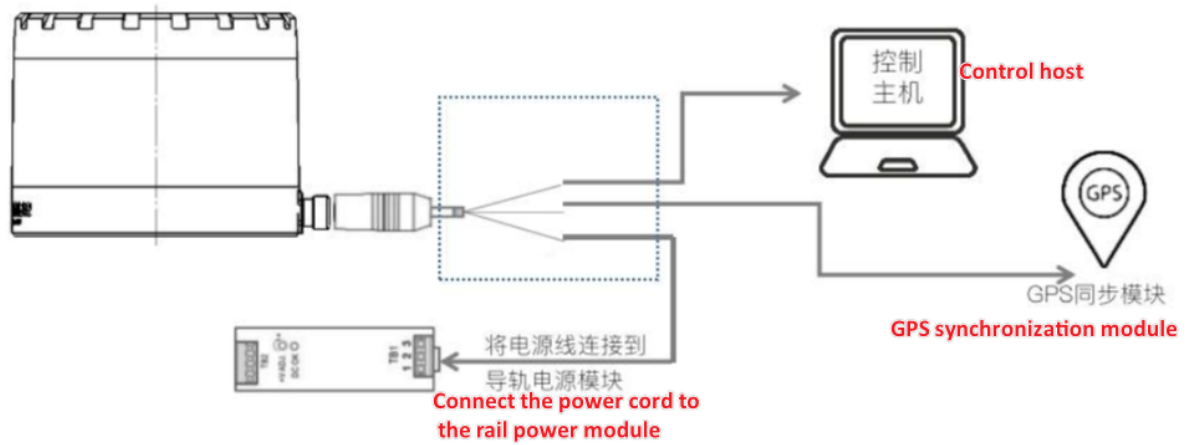


Figure 2.2 Wiring diagram

图 2.2 接线图

3. Use the radar

The IP of the radar has been configured when it leaves the factory. The default IP is: 10.168.1.86

Run in the terminal:

```
sudo supervisorctl stop all
roslaunch vanjee_lidar vanjee.launch
```

```
yahboom@ubuntu:~$ roslaunch vanjee_lidar vanjee.launch
... logging to /home/yahboom/.ros/log/86536c1e-32c8-11ef-80d9-21949471bea2/roslaunch-ubuntu-538114.log
Checking log directory for disk usage. This may take a while.
Press Ctrl-C to interrupt
Done checking log file disk usage. Usage is <1GB.

started roslaunch server http://ubuntu:35375/

SUMMARY
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PARAMETERS
* /rostdistro: noetic
* /rosversion: 1.16.0

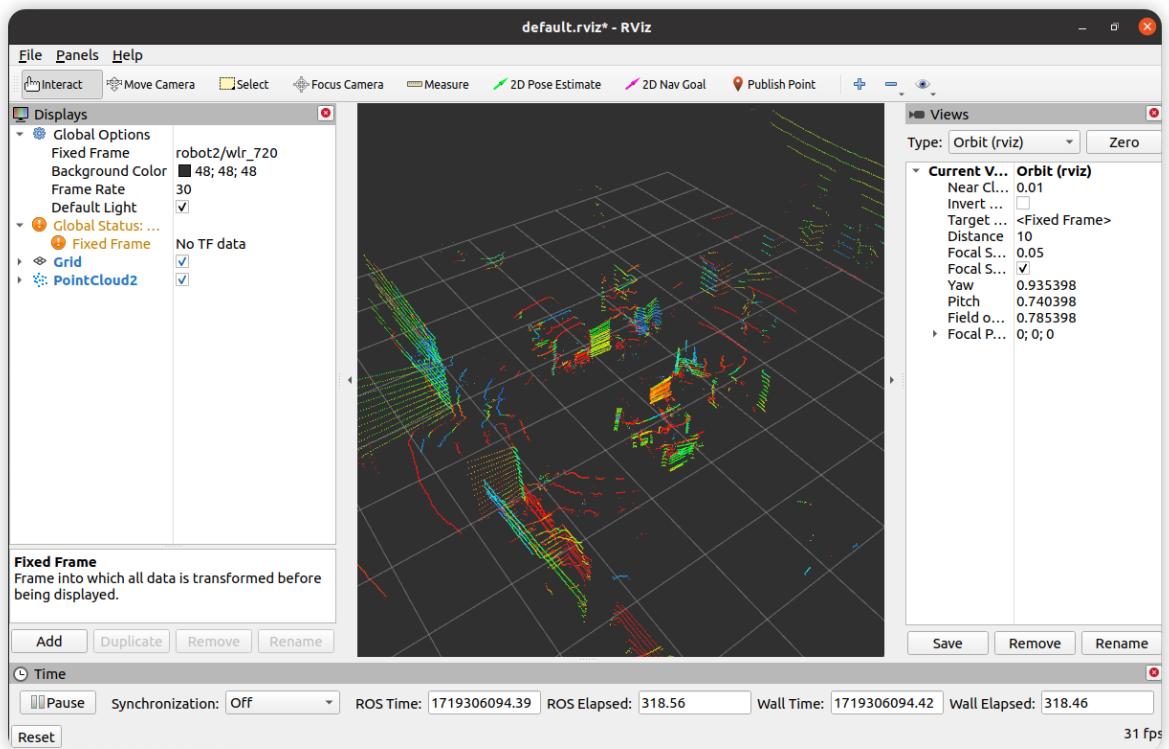
NODES
/
  vanjee_nodelet_manager (nodelet/nodelet)
  vanjee_nodelet_manager_cloud (nodelet/nodelet)
  vanjee_nodelet_manager_driver (nodelet/nodelet)

ROS_MASTER_URI=http://192.168.2.120:11311

process[vanee_nodelet_manager-1]: started with pid [538159]
process[vanee_nodelet_manager_driver-2]: started with pid [538160]
process[vanee_nodelet_manager_cloud-3]: started with pid [538161]
[ INFO] [1719303081.080696968]: Loading nodelet /vanjee_nodelet_manager_driver of type vanjee_driver/DriverNodelet to manager vanjee_nodelet_manager with the following remappings:
[ INFO] [1719303081.091685397]: Loading nodelet /vanjee_nodelet_manager_cloud of type vanjee_lidar/CloudNodelet to manager vanjee_nodelet_manager with the following remappings:
[ INFO] [1719303081.098324742]: waitForService: Service [/vanjee_nodelet_manager/load_nodelet] has not been advertised, waiting...
[ INFO] [1719303081.109413934]: waitForService: Service [/vanjee_nodelet_manager/load_nodelet] has not been advertised, waiting...
[ INFO] [1719303081.125054737]: Initializing nodelet with 8 worker threads.
[ INFO] [1719303081.146059089]: waitForService: Service [/vanjee_nodelet_manager/load_nodelet] is now available.
[ INFO] [1719303081.153458657]: ***** Welcome to use Vanjee Lidar *****
[ INFO] [1719303081.153517763]: lidar_size : 1
[ INFO] [1719303081.153597447]: lidarType : wlr720
[ INFO] [1719303081.153722668]: lidarIp : 10.168.1.86
[ INFO] [1719303081.153799695]: lidarport : 3001
[ INFO] [1719303081.153838257]: packettopic : vanjee_packets
bind: Address already in use
[ INFO] [1719303081.154425417]: endpoint: [10.168.1.86 : 3333]
[ INFO] [1719303081.154574095]: [config_yaml.devicurrent:1]
[ INFO] [1719303081.155106597]: Read devia... 1
[ INFO] [1719303081.155341262]: Get NO.0 Lidar,the type is wlr720.pointcloud from online lidar [10.168.1.86,3333]
[ INFO] [1719303081.156209202]: waitForService: Service [/vanjee_nodelet_manager/load_nodelet] is now available.
[ INFO] [1719303081.162454131]: into euqueueIMUpacket
[ INFO] [1719303081.162767904]: into euqueuepacket 120
[ INFO] [1719303082.244343027]: config_lidaryaml.Hvalconpath:/home/yahboom/YBAHR-COBOT-EDU-00001/install/share/vanee_lidar/data/Vanee_lidar_16/Vanee16-carside72000i4.csv
```

Then enter in the terminal, and you can see the point cloud shown below.

```
rviz
```



It should be noted that Fixed Frame needs to be based on the configuration file.

The configuration file is saved in the path:

```
/home/yahboom/YBAMR-COBOT-EDU-
00001/src/yahboom_navrobo_driver/lidar/vanjeer_lidar_v2.4/src/config/
```

Config.yaml

```
lidar:

- driver:
  lidartype: wlr720
  min_angle: 0
  max_angle: 360
  pcap: nothing
  read_fast: true
  read_once: false
  repeat_delay: 0.0
  time_mode: false
  multicast: false
  deviaCorrent : true
  axisoffset: 0
  pointsplitflag: 2
  calibration: Vanjee16-carside7200014.csv
  calibutfipath: SN720C223400030001.txt
  deviapapath: Vanjee16-devia.csv
  ros_topic:
  ros_recv_packet_topic: vanjee_packets
  ros_send_imu_topic: wlr_720/imu
  imu_frame_id: wlr_720
  ros_send_point_cloud_topic: wlr_720/cloud_points
  point_frame_id: robot2/wlr_720 #Note that modifying this will affect frame_id
  proto:
  lidar_ip: 10.168.1.86
```

```
dest_ip: 10.168.1.100  
dest_port: 3001  
local_ip: 10.168.1.100
```