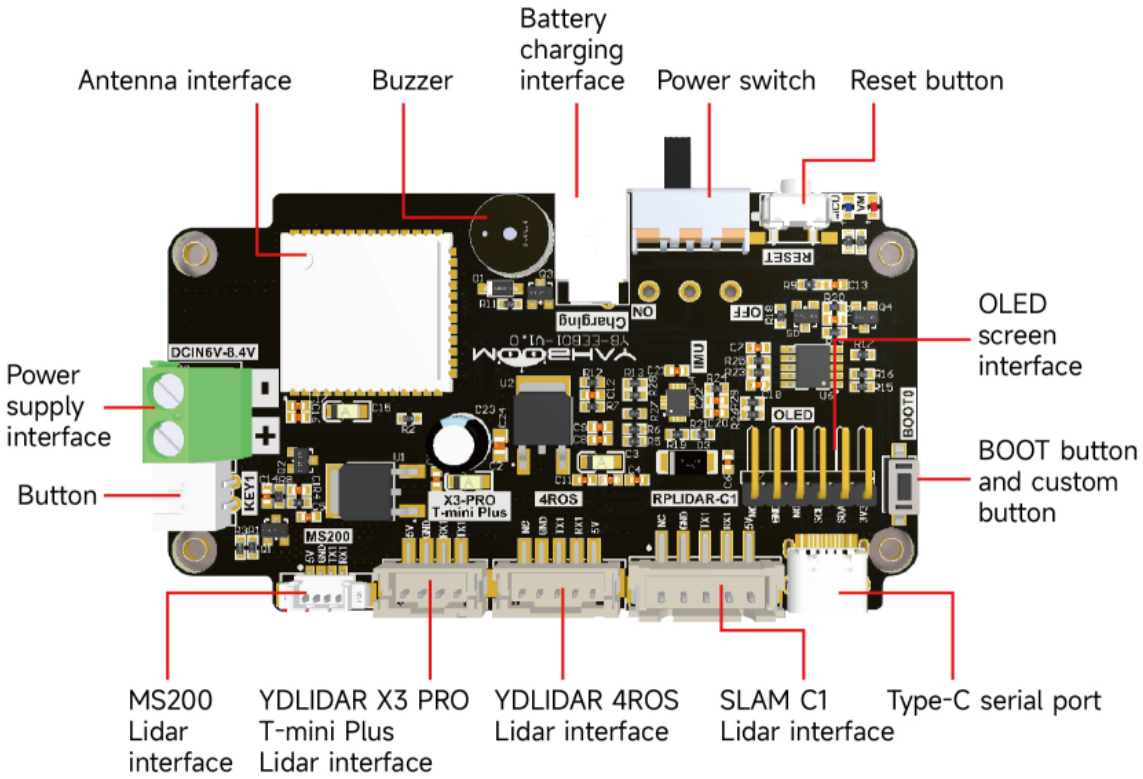
Introduction to the control board

The control board is a lightweight ROS2 driver controller and an ESP32S3 dual-core development board. The board integrates important peripherals such as the ESP32S3 core module control unit and the six-axis IMU attitude sensor, supports serial communication, and comes with a peripheral driver firmware program. Users can directly access the ROS2 environment for use, which is convenient to operate, simple and efficient to use.

Description of onboard resources



Power supply interface: Connect a 7.4V battery (T-type interface) to power the robot.

Battery charging interface: Connect a DC8.4V charger to charge the robot.

Power switch: The main power switch of the robot.

Reset button: The reset button of the ESP32S3 control chip.

MS200 radar interface: Connect the MS200 laser radar.

X3/Tminiplus radar interface: Connect the X3/Tminiplus radar.

4ROS radar interface: Connect the 4ROS laser radar.

Silan C1 radar interface: connect to C1 laser radar.

Type-C serial port: used for burning firmware, configuring parameters, serial communication and other functions.

Power indicator and MCU indicator: indicate the current status of the product.

BOOT button: BOOT button of ESP32S3 control chip, custom button can also be used.

Custom button: GPIO of ESP32S3 control chip, programmable custom function.

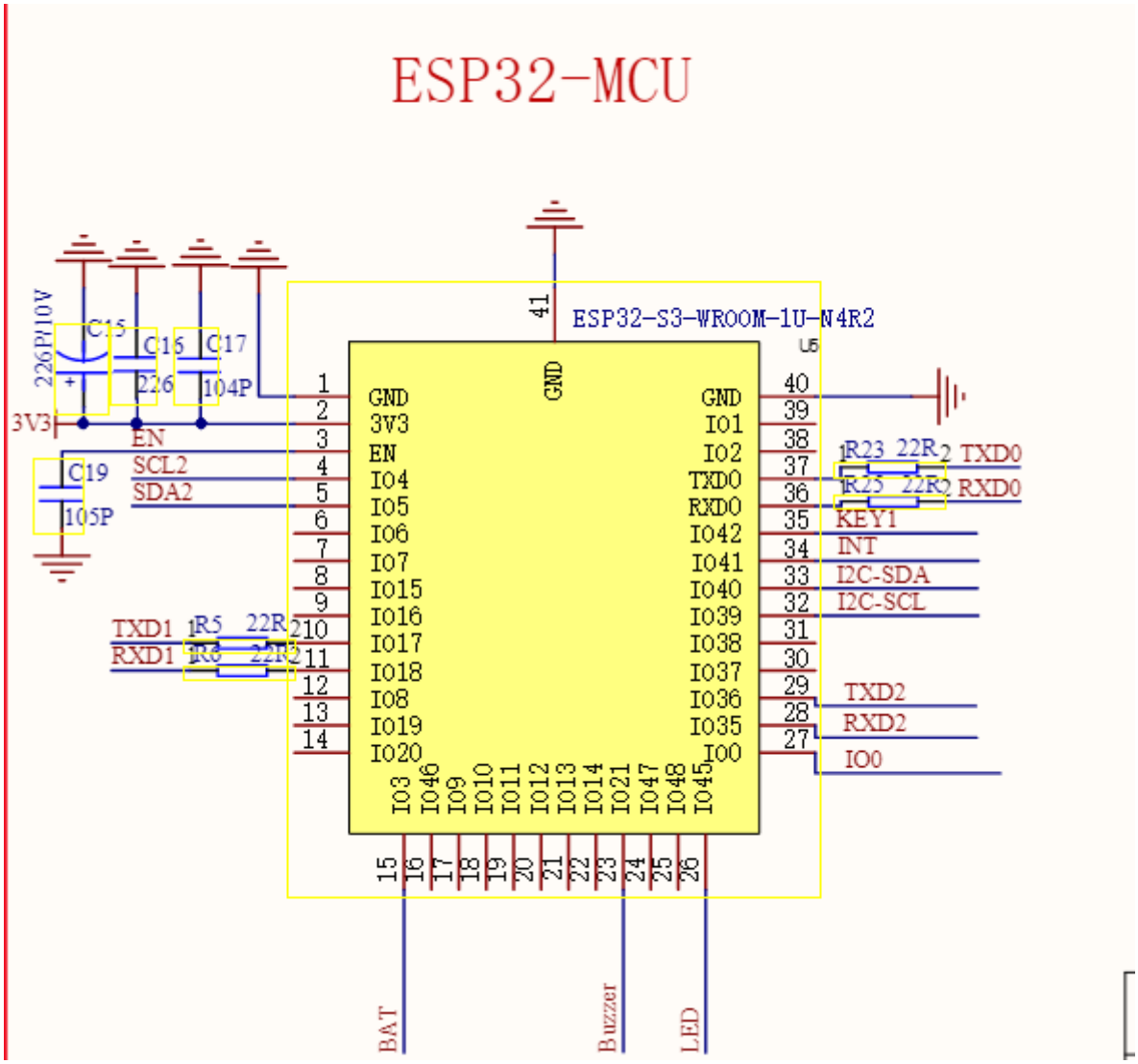
OLED screen interface: OLED driver interface

Antenna interface: connect external antenna.

Buzzer: active buzzer, used for low voltage alarm prompt.

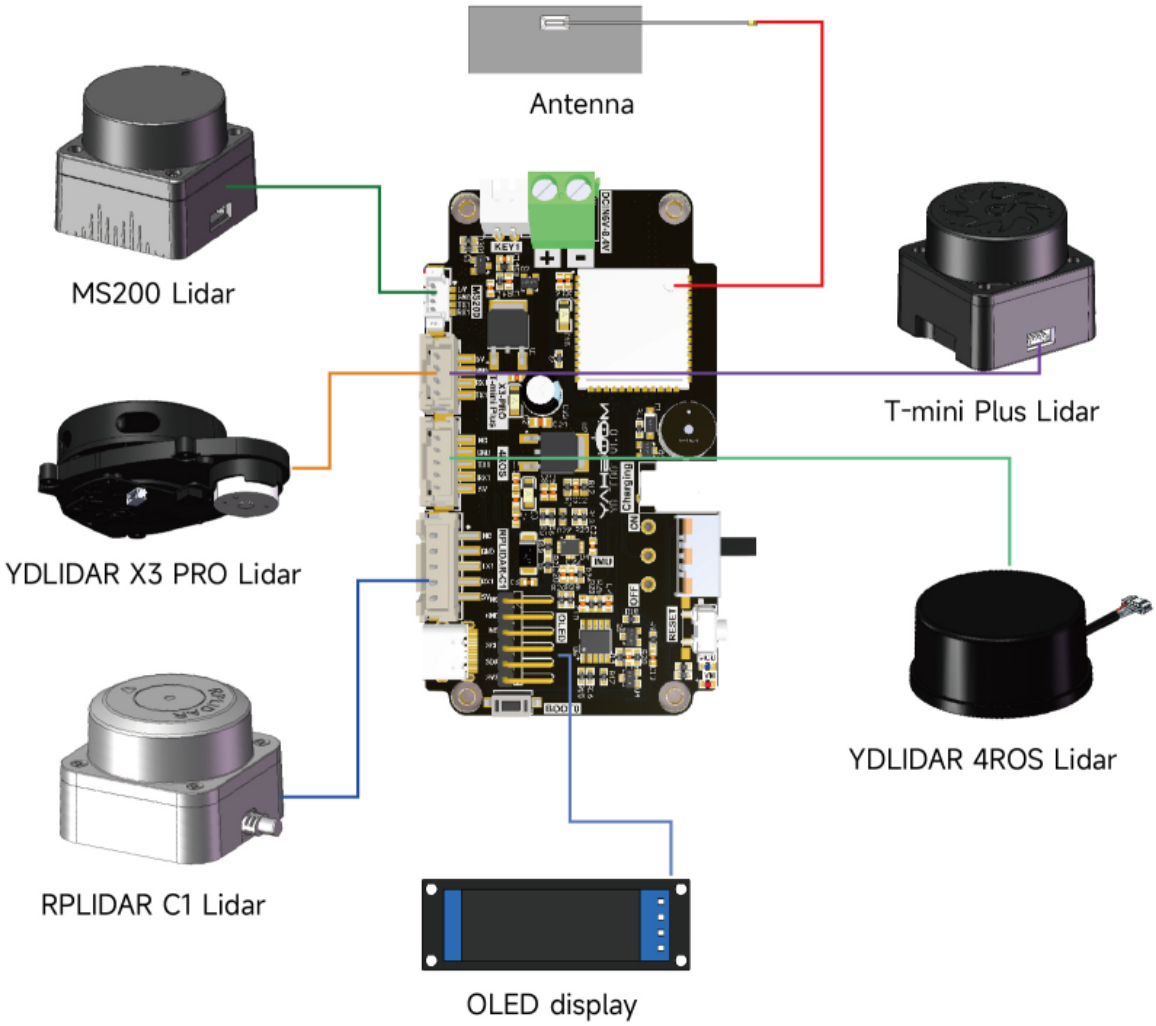
KEY1 button interface: select radar model, warning level and other functions

GPIO pin assignment



Peripheral name	ESP32-S3-GPIO
OELD-SCL	GPIO4
OELD-SDA	GPIO5
BOOT button-IO0	GPIO0
Custom button-KEY1	GPIO42
Battery voltage detection-BAT	GPIO3
MCU indicator-LED	GPIO45
Buzzer-Buzzer	GPIO46
IMU interrupt-INT	GPIO41
IMU-I2C-SCL	GPIO39
IMU-I2C-SDA	GPIO40
Radar RX-Serial Port 1-TXD1	GPIO17
Radar TX-Serial Port 1-RXD1	GPIO18
TypeC Burning Serial Port RX-TXD0	GPIO43
TypeC Burning Serial Port TX-RXD0	GPIO44

Expansion Board Wiring Diagram


Antenna
MS200 Lidar
T-mini Plus Lidar
YDLIDAR X3 PRO Lidar
YDLIDAR 4ROS Lidar
RPLIDAR C1 Lidar
OLED display