

Development board pin assignment

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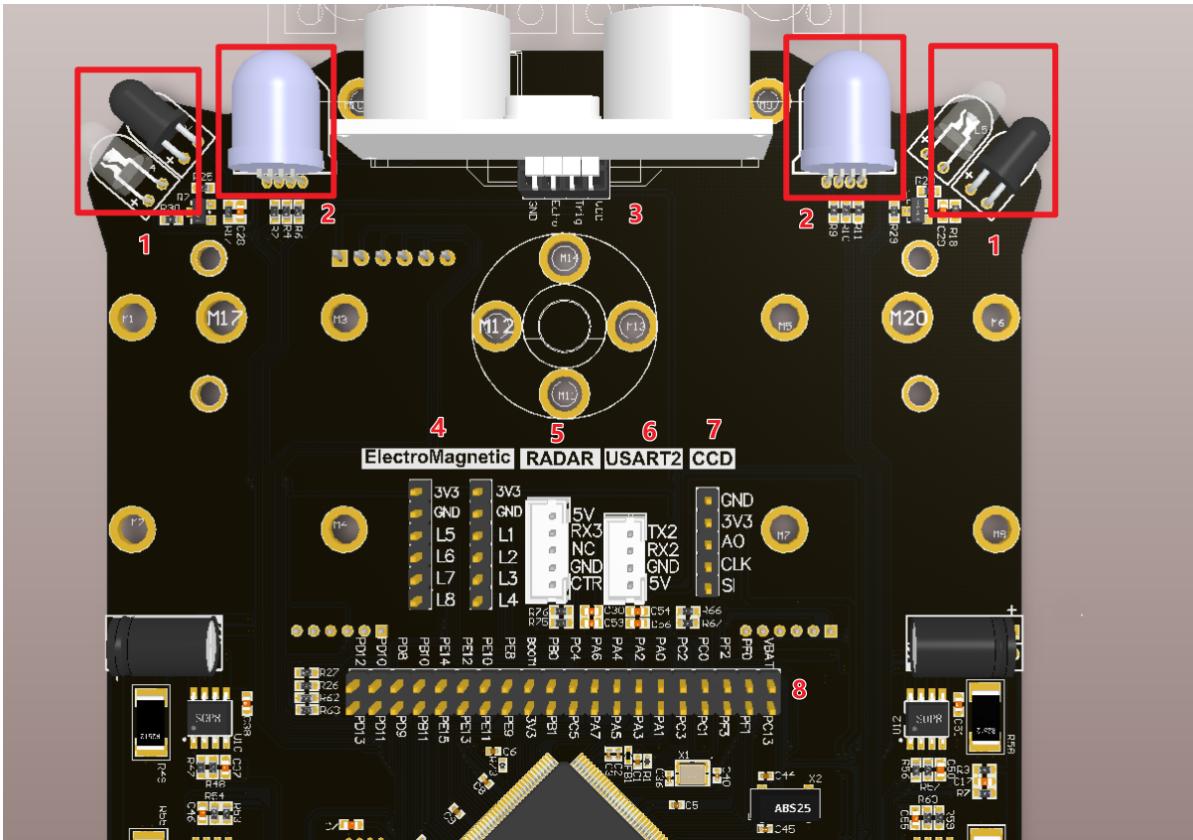
1. Interface introduction:

The following is the interface diagram of the STM32 expansion board

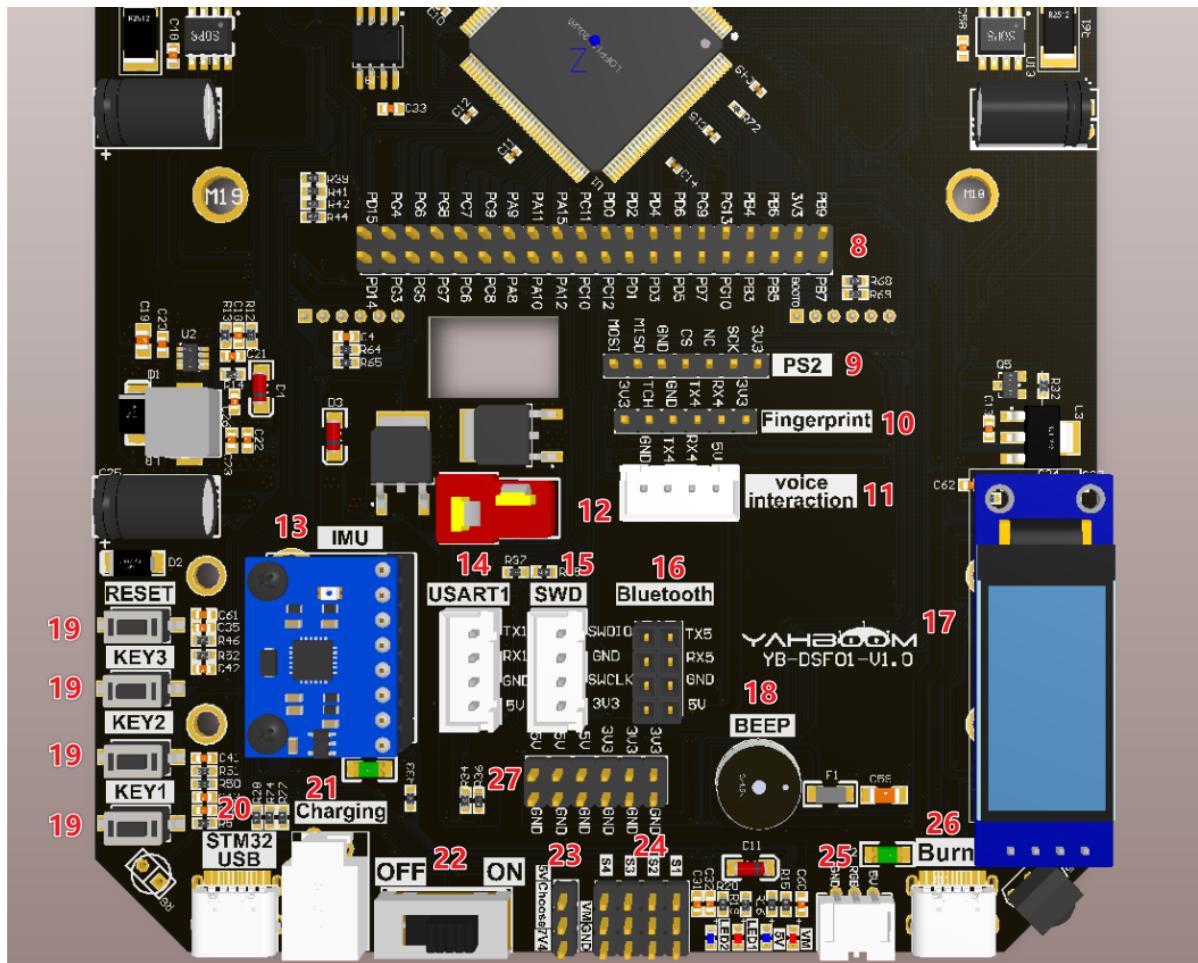
The external interfaces on the expansion board are:

Power input interface, SWD interface, serial port interface, OLED, type-C communication interface, PWM servo interface, function buttons, electromagnetic tracking interface, four-way line patrol interface, CCD camera interface, PS2 handle interface, pin header interface, ultrasonic module

2. Physical picture



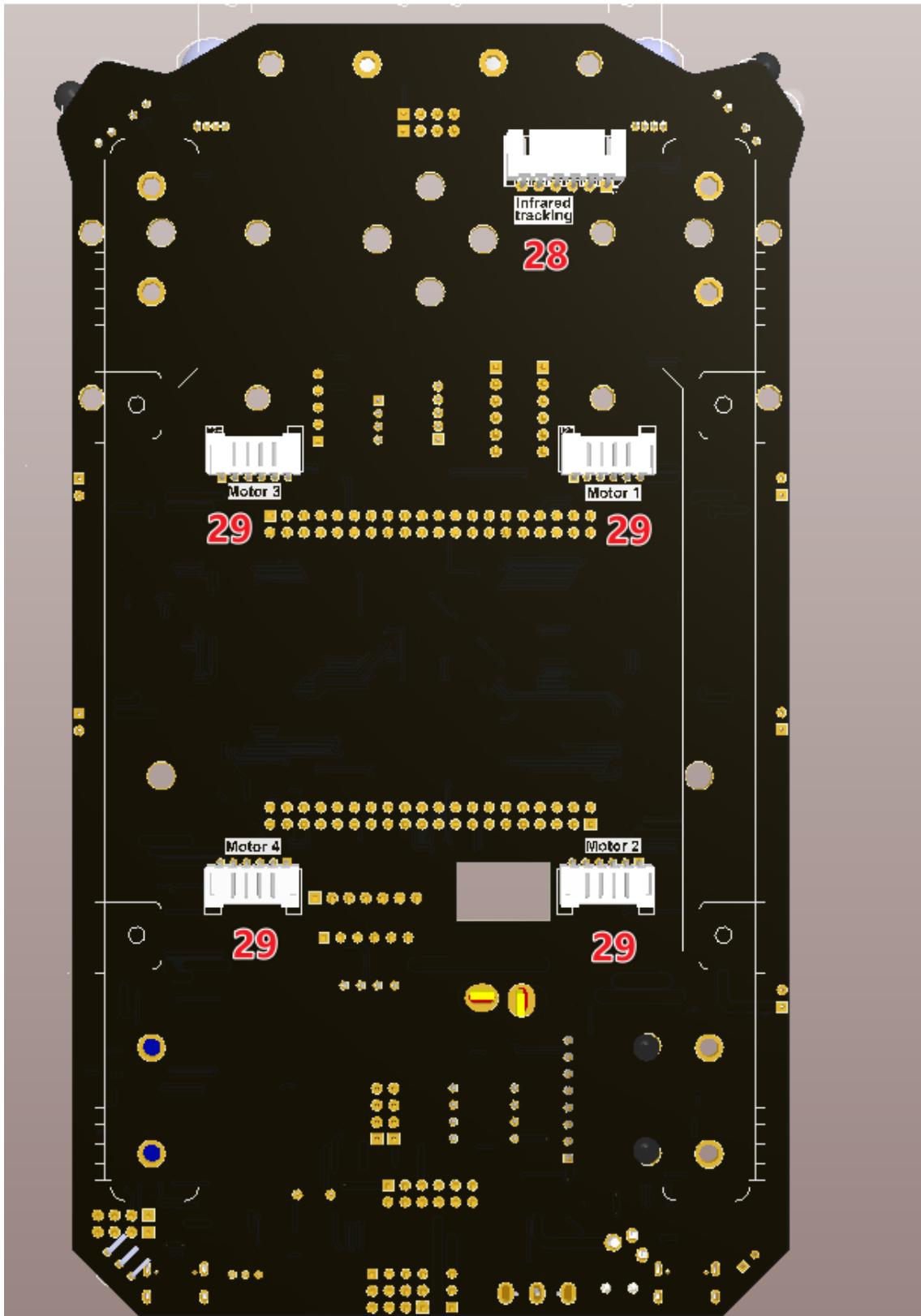
1. Infrared obstacle avoidance module
2. RGB searchlight
3. Ultrasonic module interface: used to connect external ultrasonic module
4. Electromagnetic tracking interface: used to connect external electromagnetic line tracking sensors
5. X3 radar interface: used to connect external YDLIDAR X3 radar
6. Serial port 2 interface: can be used to connect external k210 vision module
7. Linear CCD camera interface: used for external linear CCD camera
8. Pins derived from STM32f103ZET6.



9. PS2 controller receiver interface: used to connect external PS2 controller receiver
10. Fingerprint module interface: used for external fingerprint module
11. Voice interaction module interface: used to connect external voice interaction module
12. T-shaped DC 7.4V power input interface: used as the main power input of the expansion board, connected to the DC 7.4V power supply or 7.4V battery.
13. MPU6050 interface: used to connect external MPU6050 module
14. Serial port 1 interface: used to debug the serial port
15. SWD interface: used for microcontroller debugging
16. Bluetooth module interface: used for external Bluetooth module
17. OLED screen interface: external 0.91-inch OLED LCD screen
18. Buzzer: Onboard active buzzer.
19. Buttons KEY1, KEY2, KEY3: user function buttons, which can be programmed to achieve customized functions. Button RESET: Onboard microcontroller reset button.
20. STM32-USB device interface: can realize STM32 USB function
21. Charging interface: can charge external batteries
22. On/off button: The main on/off button of the expansion board
23. PWM servo voltage switching: Change the position of the jumper cap to select 7.4V or 5V voltage to power the PWM servo.
24. PWM servo interface: It can connect to 7.4V or 5V voltage PWM servo. You need to select the corresponding voltage in 23 according to the servo voltage.
25. RGB light strip interface: connect RGB light strip

26. Type-C data interface: Programming for microcontroller

27. (3.3/5V) output interface: output 3.3V/5V voltage to the outside

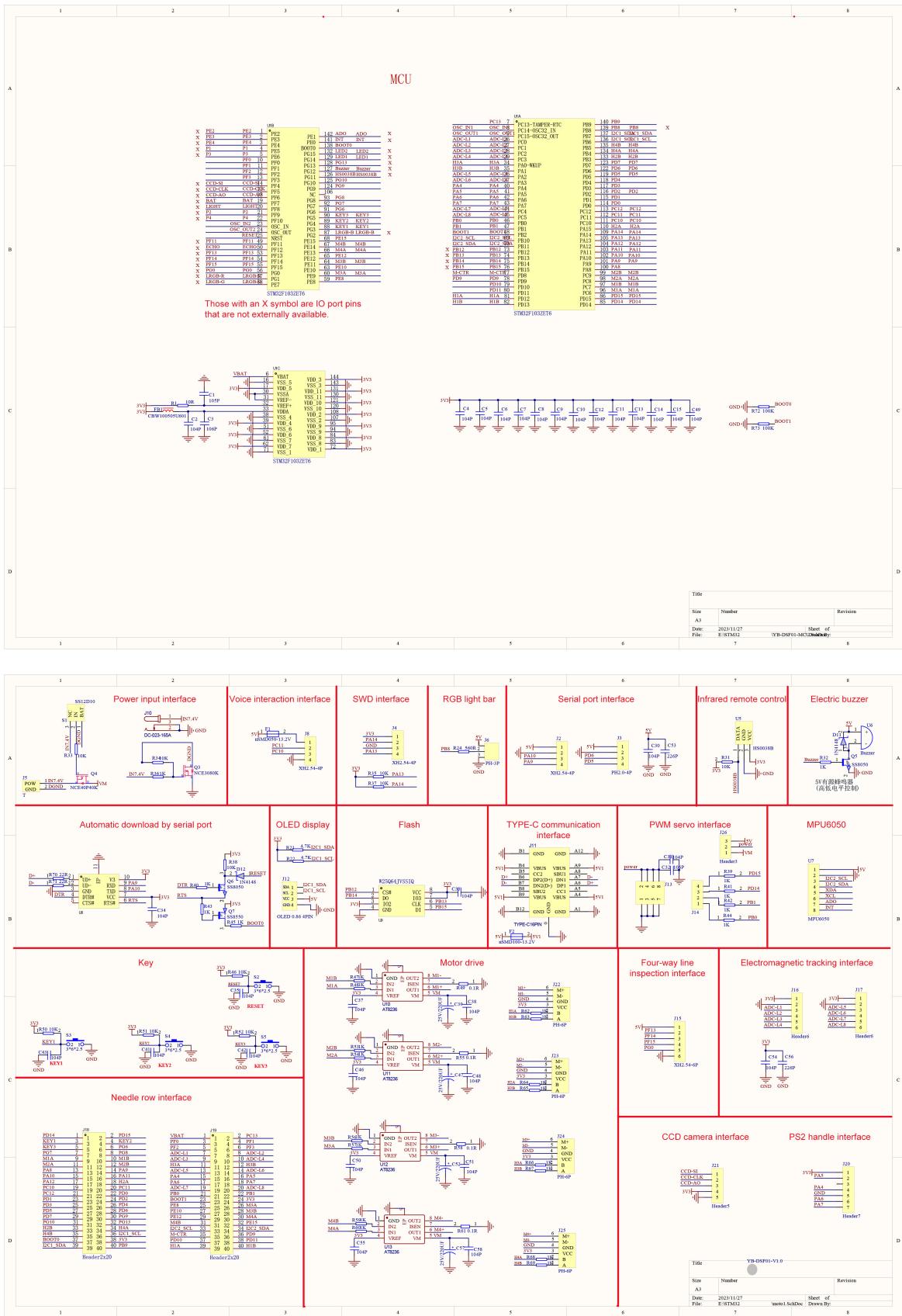


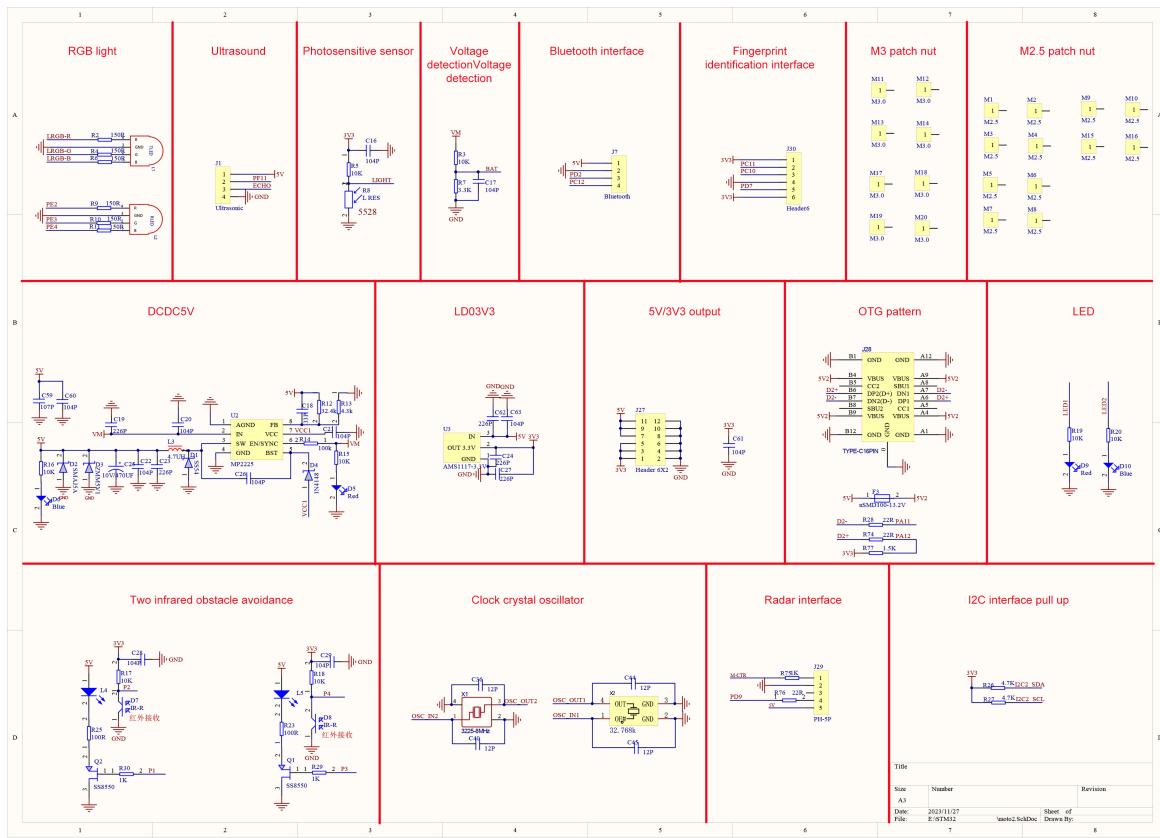
28. Four-way tracking module interface: used for external four-way tracking module

29. Motor interface: for external 310 motor

3. Schematic diagram

There are corresponding pin silkscreens on the expansion board, and you can directly connect them according to the silkscreens.





4. Pin index

1. RGB light

Schematic identifier	Control pin	Specific meaning
RRGB-R	PE2	Right RGB light, control red
RRGB-G	PE3	Right RGB light, control green
RRGB-B	PE4	Right RGB light, control blue
LRGB-R	PG1	Left RGB light, control red
LRGB-G	PE7	Left RGB light, control green
LRGB-B	PG2	Left RGB light, control blue

2. Buzzer

- Control principle

High and low level control active buzzer sound

Schematic identifier	Control pin	Specific meaning
Buzzer	PG12	Control active buzzer sound

3. Button

Schematic identifier	Control pin	Specific meaning
KEY1	PG3	Key 1
KEY2	PG4	Key 2
KEY3	PG5	Button 3

4. CCD camera

Schematic identifier	Control pin	Specific meaning
CCD-SI	PF4	CCD camera signal acquisition terminal
CCD-CLK	PF5	CCD camera control clock terminal
CCD-AO	PF6	CCD gray value output terminal

5. Motor

Schematic identifier	Control pin	Specific meaning
M1A	PC6	M1 motor phase A
M1B	PC7	M1 motor B phase
M2A	PC8	M2 motor phase A
M2B	PC9	M2 motor B phase
M3A	PE9	M3 motor phase A
M3B	PE11	M3 motor phase B
M4A	PE13	M4 motor phase A
M4B	PE14	M4 motor phase B

6. Serial port

Schematic identifier	Control pin	Specific meaning
USART1_TX	PA9	Serial port 1 output
USART1_RX	PA10	Serial port 1 receiving end
USART2_TX	PD5	Serial port 2 output
USART2_RX	PD6	Serial port 2 receiving end
USART3_TX	PD8	Serial port 3 output
USART3_RX	PD9	Serial port 3 receiving end

Schematic identifier	Control pin	Specific meaning
USART4_TX	PC10	Serial port 4 receiving end
USART1_RX	PC11	Serial port 4 output
USART5_TX	PC12	Serial port 5 receiving end
USART1_RX	PD2	Serial port 5 output

7. Ultrasonic module

Schematic identifier	Control pin	Specific meaning
TRIG	PF11	Ultrasonic module control terminal
ECHO	PF12	Ultrasonic module receiving end

8. Electromagnetic tracking module

Schematic identifier	Control pin	Specific meaning
ADC-L1	PC0	Electromagnetic tracking module output
ADC-L2	PC1	Electromagnetic tracking module output
ADC-L3	PC2	Electromagnetic tracking module output
ADC-L4	PC3	Electromagnetic tracking module output

9. Four-way tracking module

Schematic identifier	Control pin	Specific meaning
X1	PF13	Four-channel tracking signal output terminal
X2	PF14	Four tracking 21 signal output terminals
X3	PF15	Four-channel tracking 3-channel signal output terminal
X4	PG0	Four-channel tracking 4-channel signal output terminal

10. PS2 controller

Schematic identifier	Control pin	Specific meaning
PS2-CS	PA4	PS controller receiver
PS2-SCK	PA5	PS controller receiver
PS2-MISO	PA6	PS controller receiver

Schematic identifier	Control pin	Specific meaning
PS2-MOSI	PA7	PS controller receiver

11. OLED module

Schematic identifier	Control pin	Specific meaning
I2C1_SCL	PB6	Clock line
I2C1_SDA	PB7	Data line

12. PWM steering gear

Schematic identifier	Control pin	Specific meaning
S1	PB0	PWM servo interface
S2	PB1	PWM servo interface
S3	PD14	PWM servo interface
S4	PD15	PWM servo interface

13. Gyroscope

Schematic identifier	Control pin	Specific meaning
ADO	PE1	Empty pin
INT	PE0	Empty pin
I2C1_SCL	PB6	Clock line
I2C1_SDA	PB7	Data line

14. Infrared remote control

Schematic identifier	Control pin	Specific meaning
HS0038B	PG11	Signal output