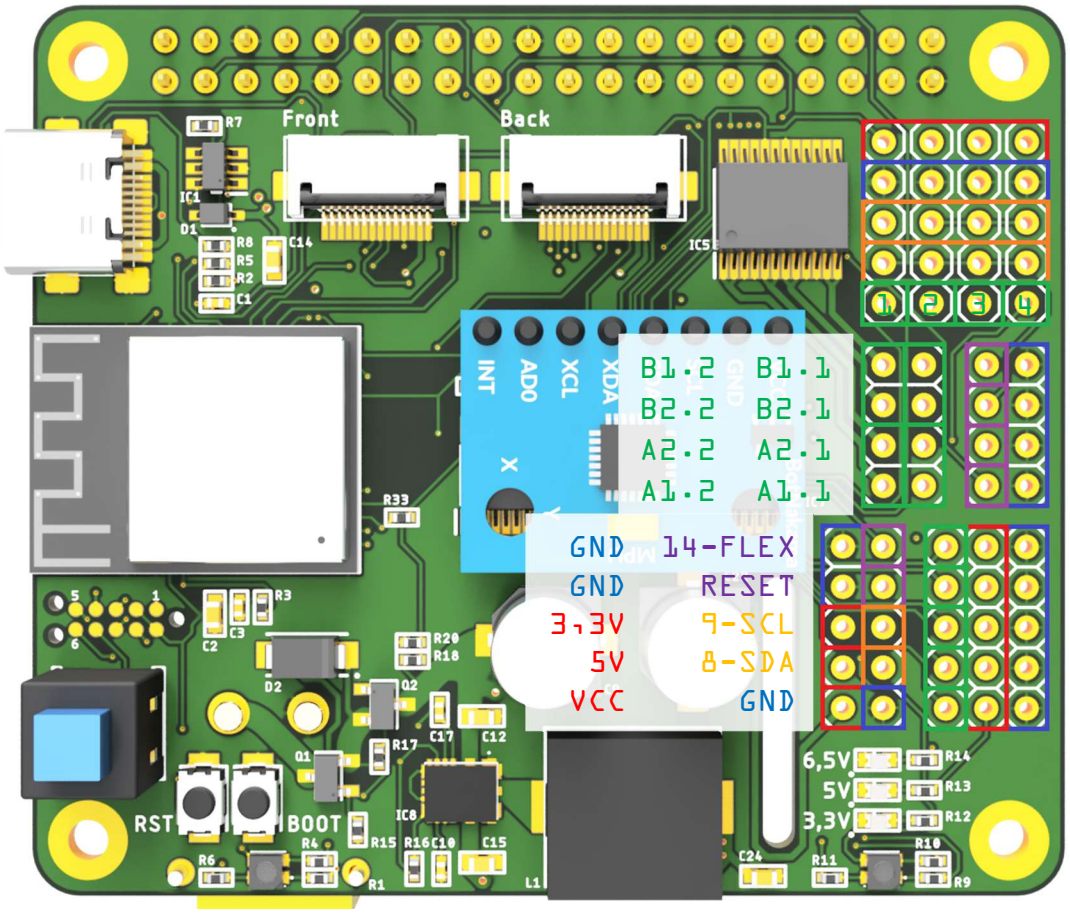
RoboCoreV3.2 Manual

Pinout



Voltage
GND/Zero potential
Communication protocol
Digital output
Analog/Digital input

Warning before use!

- If high power batteries are used, a large capacitor must be installed at the input!
- *After powering up the RoboCore, always make sure that nothing is connected to the wrong pins.* Always use the pinout diagram each time you change pins!
- *Whenever the system is re-plugged or modified, ensure that the battery is always disconnected.* Otherwise short circuits may occur on the PCB!

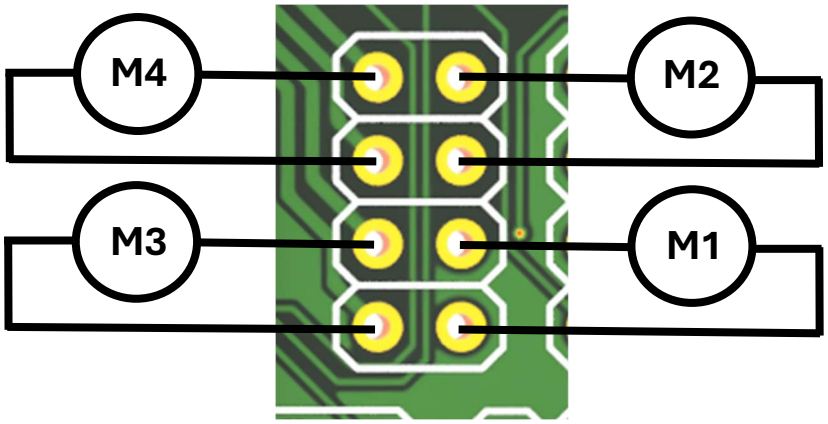
Download Mode

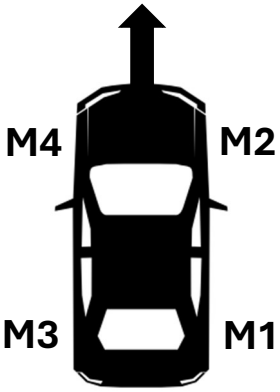
If no program can be uploaded to the ESP32-S3, it must be set to download mode. The following steps are necessary to do this:

1. Press and hold the BOOT and RESET button
2. Connect the RoboCore to the computer via USB
3. Release the RESET button while still holding the BOOT button
4. Release the BOOT button after a few seconds

Motor Connection

Use the following wiring diagram to connect the motors:





Pinout

ESP32 GPIO	Pin name	Description
1	1-PT_REF_L	Reflection sensor left.
2	2-PT_L_1	Light sensor left outside.
4	4-PT_L_0	Light sensor left inside.
5	5-PT_R_0	Light sensor right inside.
6	6-PT_R_1	Light sensor right outside.

7	7-PT_REF_R	Reflection sensor right.
8	8-SDA	Data lines for I2C.
9	9-SCL	Data lines for I2C.
10	10-PT_L_3	Light sensor left outside.
11	11-PT_L_2	Light sensor left inside.
12	12-PT_R_2	Light sensor right inside.
13	13-PT_R_3	Light sensor right outside.
14	14-FLEX	A Flex sensor can be read out here.
15	15-VBAT	The battery voltage can be measured with this pin.
16	16-T_E	An input pull-up must be defined in the software! Buttons can be connected to this pin. LOW = pressed
17	17-T_R	An input pull-up must be defined in the software! Buttons can be connected to this pin. LOW = pressed
18	18-T_L	An input pull-up must be defined in the software! Buttons can be connected to this pin. LOW = pressed
21	21-PWMA1	This pin determines the motor speed.
33	33-PWMA2	This pin determines the motor speed.
34	34-PWMB1	This pin determines the motor speed.
35	35-PWMB2	This pin determines the motor speed.
36	36-WHITE_L	Light sensor strip LED white left. HIGH = ON
37	37-WHITE_R	Light sensor strip LED white right. HIGH = ON
38	38-WHITE	Light sensor strip LED white. HIGH = ON
39	39-RED	Light sensor strip LED red. HIGH = ON
40	40-GREEN	Light sensor strip LED green. HIGH = ON
41	41-T_M	An input pull-up must be defined in the software! Buttons can be connected to this pin. LOW = pressed
42	42-DS	New data enters the register.
47	47-STCP	Latches shifted data into output registers.
48	48-SHCP	Controls data shifting within the register.

Shiftregister GPIO	Pin Name	Description
Q0,0	AIN1.1	Determines the motor direction.
Q1,0	AIN2.1	Determines the motor direction.
Q2,0	BIN1.1	Determines the motor direction.
Q3,0	BIN2.1	Determines the motor direction.
Q4,0	AIN1.2	Determines the motor direction.
Q5,0	AIN2.2	Determines the motor direction.
Q6,0	BIN1.2	Determines the motor direction.
Q7,0	BIN2.2	Determines the motor direction.
Q0,1	STBY1	If the pin is set LOW, the motor driver is off and at HIGH it is on.
Q1.1	STBY2	If the pin is set LOW, the motor driver is off and at HIGH it is on.
Q2,1	XSHT1	A HIGH activates the TOF sensor.
Q3,1	XSHT2	A HIGH activates the TOF sensor.
Q4,1	XSHT3	A HIGH activates the TOF sensor.
Q5,1	XSHT4	A HIGH activates the TOF sensor.
Q6,1	Q6	External digital pin.
Q7,1	Q7	External digital pin.

PWM Bus	Pin Name	Description
CH0	SV01	A servo can be connected to this pin.
CH1	SV02	A servo can be connected to this pin.
CH2	SV03	A servo can be connected to this pin.
CH3	SV04	A servo can be connected to this pin.
CH4	SV05	A servo can be connected to this pin.
CH5	CH5	External PWM pin.
CH6	CH6	External PWM pin.
CH7	CH7	External PWM pin.

CH8	RED_L	RoboCore RGB red left, PWM inverted! 255 = OFF, 0 = ON
CH9	GREEN_L	RoboCore RGB green left, PWM inverted! 255 = OFF, 0 = ON
CH10	BLUE_L	RoboCore RGB blue left, PWM inverted! 255 = OFF, 0 = ON
CH11	RED_R	RoboCore RGB red right, PWM inverted! 255 = OFF, 0 = ON
CH12	GREEN_R	RoboCore RGB green right, PWM inverted! 255 = OFF, 0 = ON
CH13	BLUE_R	RoboCore RGB blue right, PWM inverted! 255 = OFF, 0 = ON

GPIO	Input	Output	Pin assignment	Note	Arduino pinMode()
0	NO	NO	0-STAT	Strapping Pin, Responsible for boot configuration, BOOT	
3	YES	YES	/	Strapping Pin, JTAG, ADC 12Bit (4096), RTC, TOUCH3	
45	YES	YES	/	Strapping Pin, VSPI	
46	YES	YES	/	Strapping Pin, use no pullup or pulldown resistor, LOG	
43	YES	YES	TXD0	TXD0	
44	YES	YES	RXD0	RXD0	
1	YES	YES	1-PT_REF_L	ADC 12Bit (4096), RTC, TOUCH	
2	YES	YES	2-PT_L_1	ADC 12Bit (4096), RTC, TOUCH	
4	YES	YES	4-PT_L_0	ADC 12Bit (4096), RTC, TOUCH	
5	YES	YES	5-PT_R_0	ADC 12Bit (4096), RTC, TOUCH	
6	YES	YES	6-PT_R_1	ADC 12Bit (4096), RTC, TOUCH	
7	YES	YES	7-PT_REF_R	ADC 12Bit (4096), RTC, TOUCH	
8	YES	YES	8-SDA	SDA, ADC 12Bit (4096), RTC, TOUCH	
9	YES	YES	9-SCL	SCL, ADC 12Bit (4096), RTC, TOUCH	
10	YES	YES	10-PT_L_3	SPI3_CS, ADC 12Bit (4096), RTC, TOUCH	
11	YES	YES	11-PT_L_2	SPI3_MOSI, ADC 12Bit (4096), RTC, TOUCH	
12	YES	YES	12-PT_R_2	SPI3_CLK, ADC 12Bit (4096), RTC, TOUCH	
13	YES	YES	13-PT_R_3	SPI3_MISO, ADC 12Bit (4096), RTC, TOUCH	
14	YES	YES	14-FLEX	ADC 12Bit (4096), RTC, TOUCH	
15	YES	YES	15-VBAT	ADC 12Bit (4096), RTC	
16	YES	YES	16-T_E	ADC 12Bit (4096), RTC	INPUT_PULLUP
17	YES	YES	17-T_R	ADC 12Bit (4096), RTC	INPUT_PULLUP
18	YES	YES	18-T_L	ADC 12Bit (4096), RTC	INPUT_PULLUP
19	YES	YES	D-	D-, ADC 12Bit (4096), RTC	
20	YES	YES	D+	D+, ADC 12Bit (4096), RTC	
21	YES	YES	21-PWMA1	RTC	
26	YES	YES	/		
33	YES	YES	33-PWMA2		
34	YES	YES	34-PWMB1		
35	YES	YES	35-PWMB2	SPI2_MOSI	
36	YES	YES	36-WHITE_L	SPI2_CLK	HIGH = ON
37	YES	YES	37-WHITE_R	SPI2_MISO	HIGH = ON
38	YES	YES	38-WHITE		HIGH = ON
39	YES	YES	39-RED	SPI2_CS	HIGH = ON
40	YES	YES	40-GREEN		HIGH = ON
41	YES	YES	41-T_M		INPUT_PULLUP
42	YES	YES	42-DS		
47	YES	YES	47-STCP		
48	YES	YES	48-SHCP		