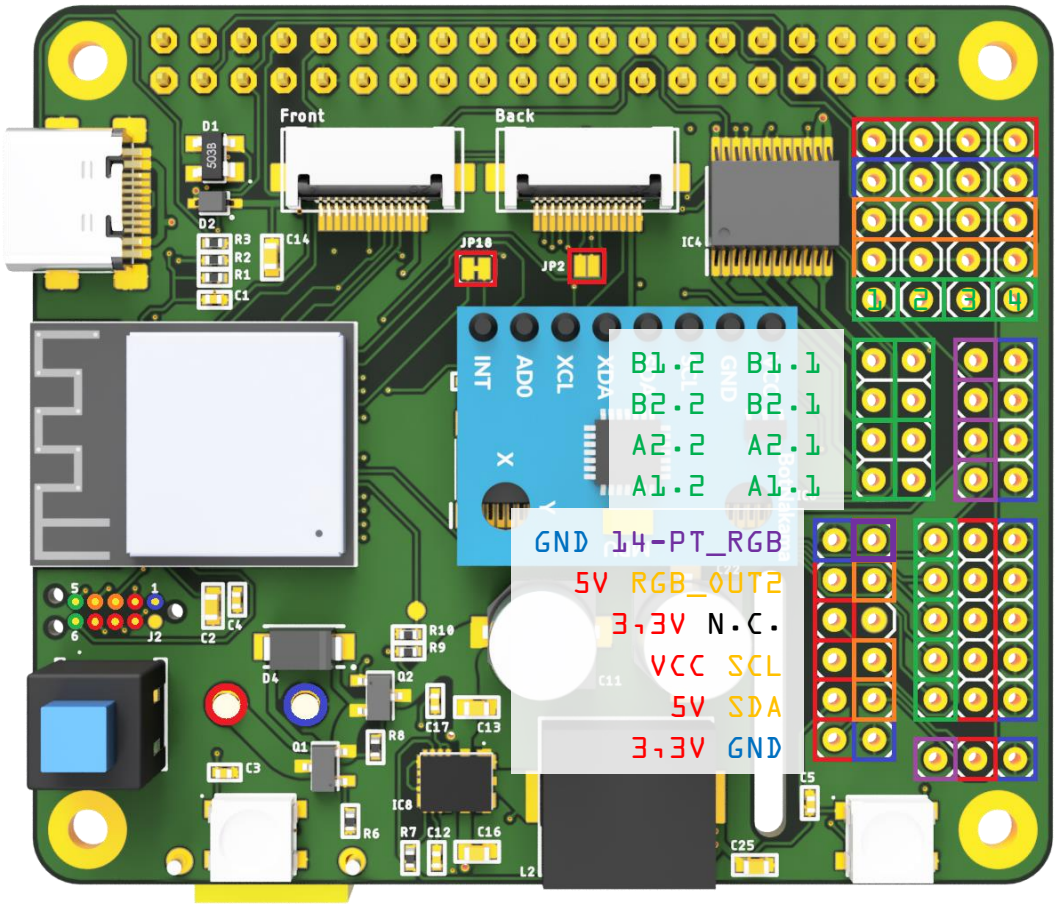
RoboCoreV3 Manual

Pinout



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

Warning before use!

- *Do not load a program onto the ESP32-S3 which continuously sends serial packets via USB.* Otherwise, it will be very difficult to upload a new program!
- *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!

Jumper configuration

Jumper name	Description
JP2	When connected, the RGB LEDs of the RoboLightV4 (Back) are bypassed if they are not used.
JP3	When connected, the battery voltage is connected directly to the motor drivers.
JP18	Can be cut if the MPU6050 INT pin negatively influences the PSRAM or if this pin is not supported by the ESP32-S3.

Pinout

ESP32 GPIO	Pin name	Description
46	46-RGB_LED	Communication pin for OneWire transmission to the RGB LEDs.
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-PT_RGB	90° RGB sensor.
15	15-FLEX	A Flex sensor can be read out here.

16	16-VBAT	The battery voltage can be measured with this pin.
17	17-T_E	An input pull-up must be defined in the software! Buttons can be connected to this pin. LOW = pressed
18	IOA18	External GPIOA pin.
21	21-PWMA1	This pin determines the motor speed.
26	26-MPU_INT	The INT pin on the MPU6050 outputs an interrupt signal to the when specific events, like motion detection or data availability, occur.
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-T_M	An input pull-up must be defined in the software! Buttons can be connected to this pin. LOW = pressed
40	40-T_R	An input pull-up must be defined in the software! Buttons can be connected to this pin. LOW = pressed
41	41-T_L	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.

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	46-RGB_LED	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-PT_RGB	ADC 12Bit (4096), RTC, TOUCH	
15	YES	YES	15-FLEX	ADC 12Bit (4096), RTC	
16	YES	YES	16-VBAT	ADC 12Bit (4096), RTC	
17	YES	YES	17-T_E	ADC 12Bit (4096), RTC	INPUT_PULLUP
18	YES	YES	IOA18	ADC 12Bit (4096), RTC	
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	26-MPU_INT		
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	
37	YES	YES	37-WHITE_R	SPI2_MISO	
38	YES	YES	38-WHITE		
39	YES	YES	39-T_M	SPI2_CS	INPUT_PULLUP
40	YES	YES	40-T_R		INPUT_PULLUP
41	YES	YES	41-T_L		INPUT_PULLUP
42	YES	YES	42-DS		
47	YES	YES	47-STCP		
48	YES	YES	48-SHCP		