



# ELRS 2.4GHz RX MOMORX-1

ESP32 Pico D4, True Diversity, 8xPWM, vBAT  
Open Source, no commercial product

## Features

- ESP32-PICO-D4
- 5V (BEC) input
- True Diversity: dual SX1280 + RF filter + PA/LNA paths
- 8 PWM outputs
- Battery voltage monitoring input
- GRB led (WS2812)

## Specification

- MCU: ESP32-PICO-D4
- LoRA Transceiver: SEMTECH SX1280
- RF filter: JOHANSON 2450FM07A0035T
- RF Frontend (PA/LNA): AT2401C

## Power

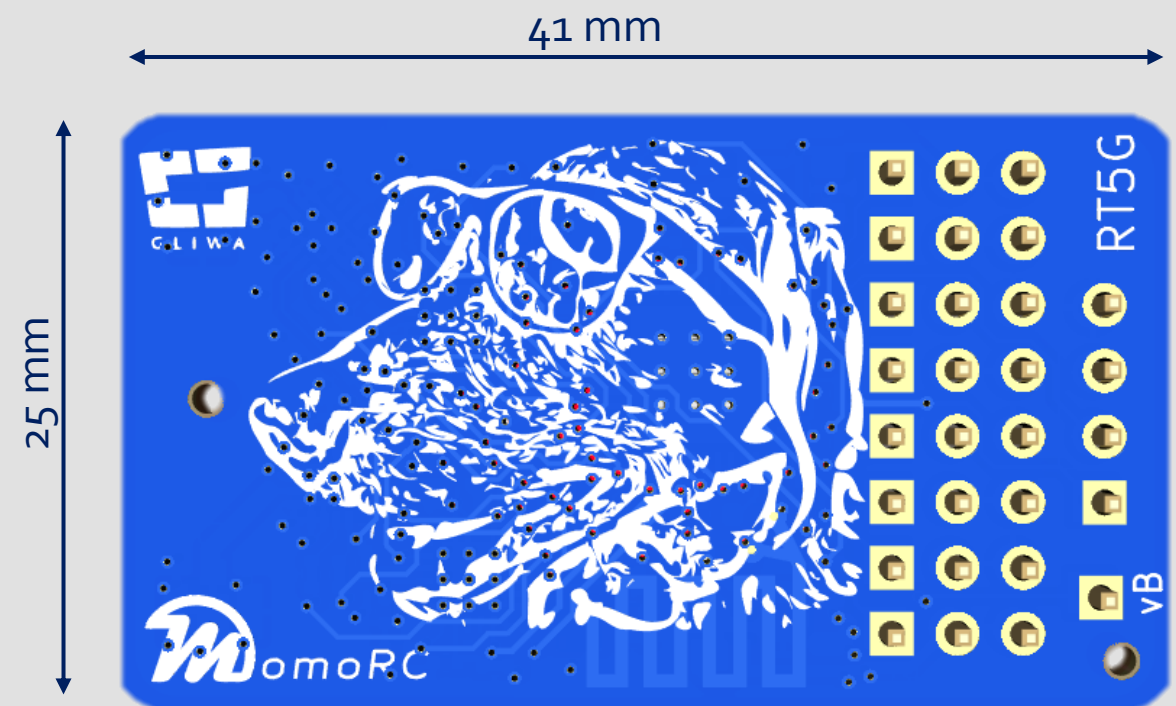
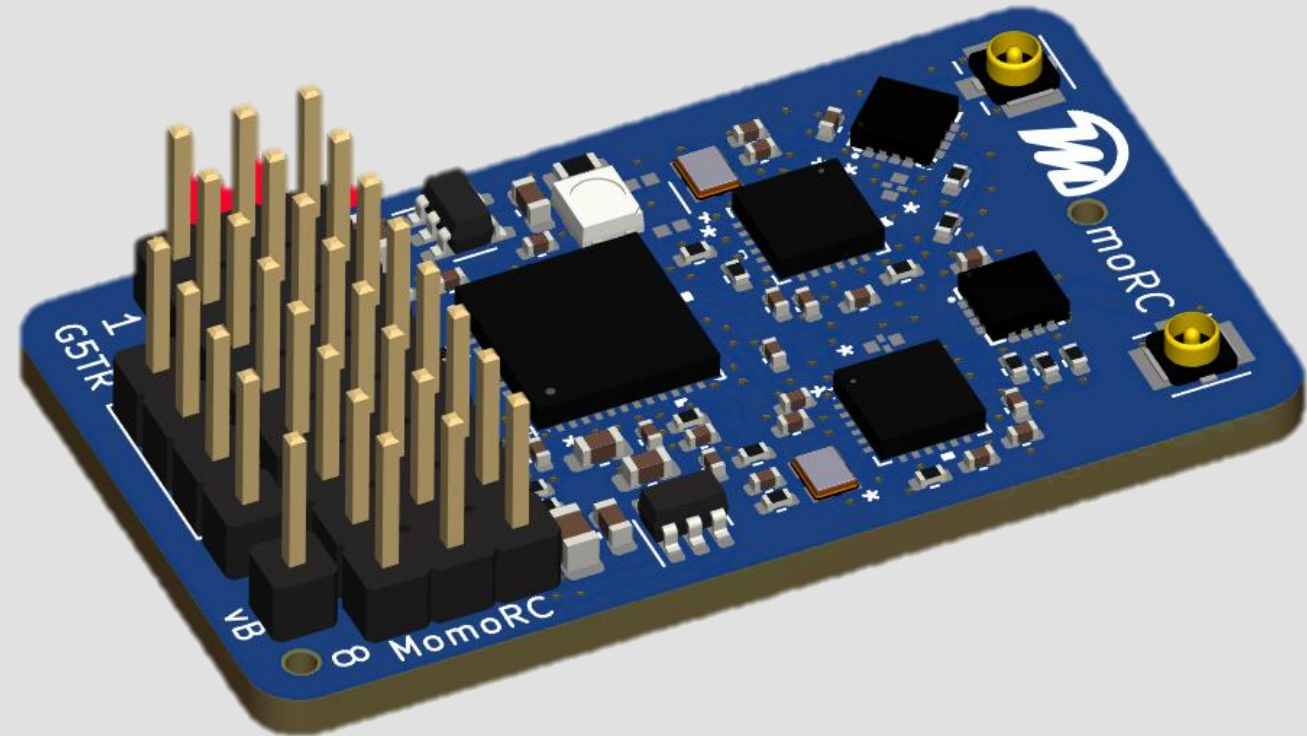
- Input voltage: 4-20V (from BEC or MomoRC Flight Controller)  
!!! Attention if servos are connected, due to input voltage sharing !!!
- 2x LDO: 3.3V 600mA
- Battery Voltage sensing: 2K:12K

## Firmware

- ELRS 3.x, Unified Target with dedicated pin assignment

## Physical

- Dimensions: 41 x 23 x 5 mm
- Weight: 3g (without PWM connectors and antennas)

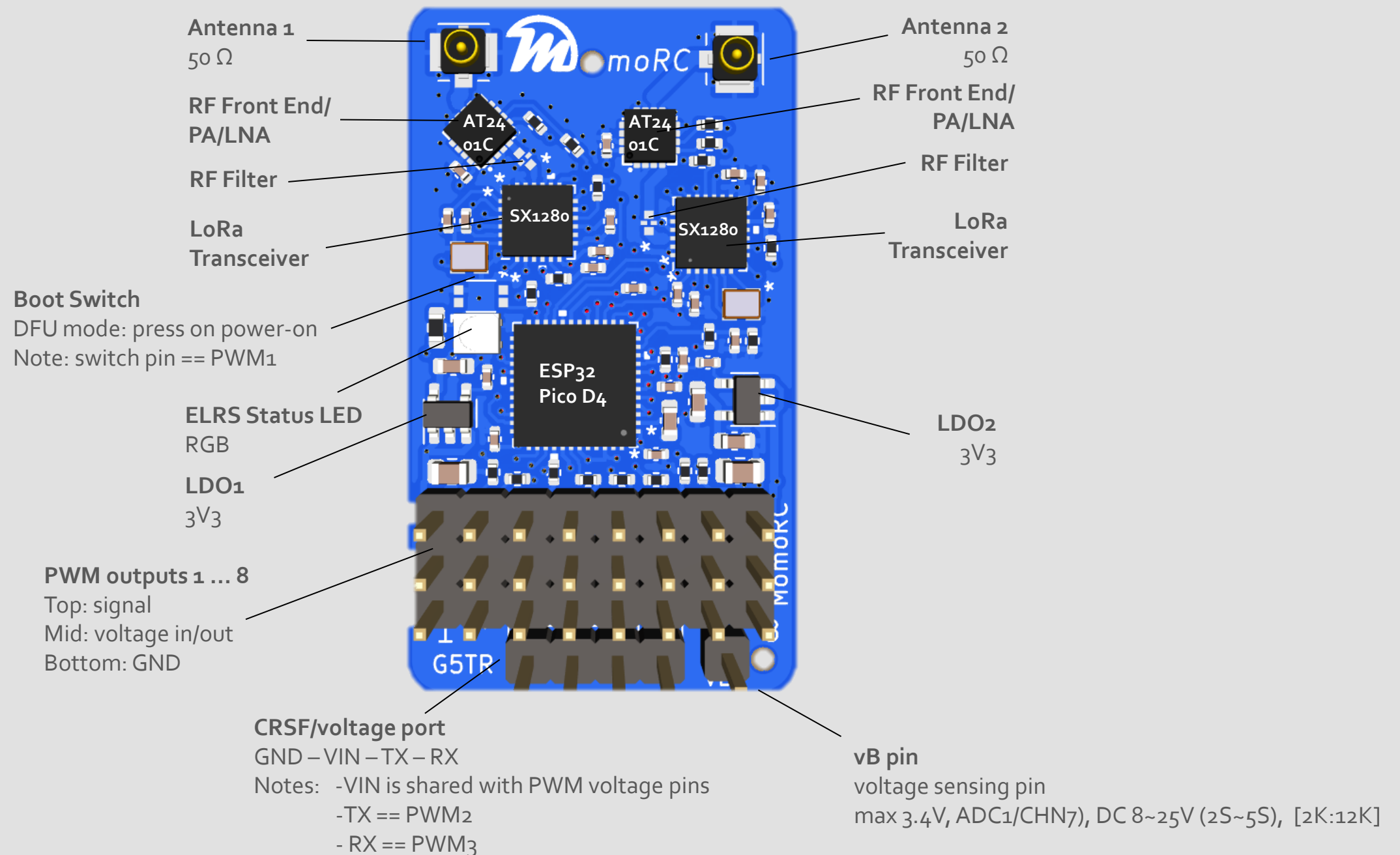




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## Layout



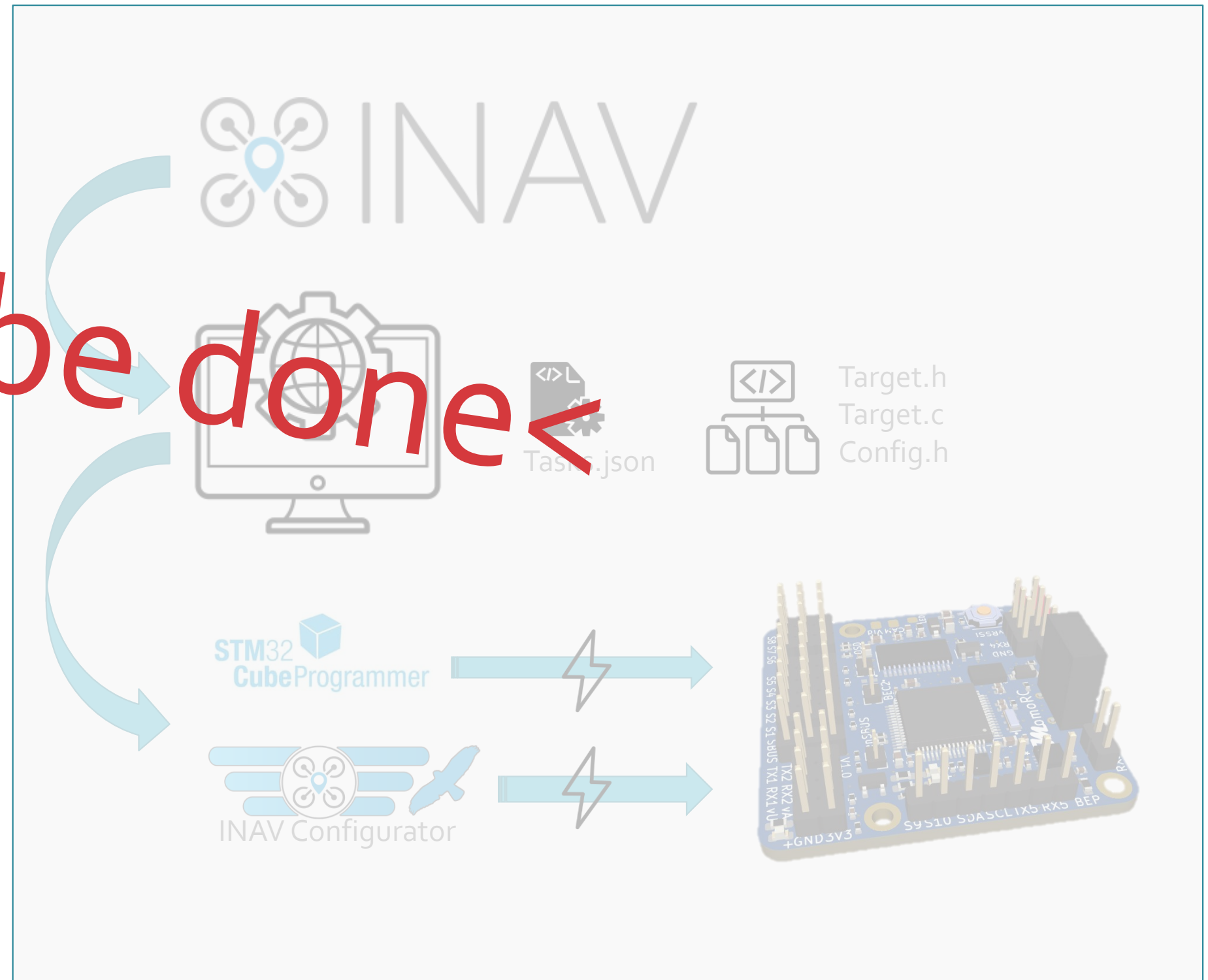


# FLIGHT CONTROLLER MOMOFC-1

STM32F405RGT6, BMI088, HMC5883L, DPS310, OSD, 5x UARTs, 1x I2C, 10x PWM,  
Dual BEC support, 2~5S LiPo

>to be done<

Software  
Documentation





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## ELRSConfig

### Unified Target

10.0.0.1/hardware.html:

```
"serial_rx":      3,  
"serial_tx":      1,  
  
"radio_miso":     33,  
"radio_mosi":     32,  
"radio_rst":      26,  
"radio_sck":      25,  
  
"radio_busy":     36,  
"radio_dio1":     37,  
"radio_nss":      27,  
  
"radio_busy_2":   39,  
"radio_dio1_2":   34,  
"radio_nss_2":    13,  
  
"power_rxen":     10,  
"power_txen":     14,  
"power_rxen_2":   9,  
"power_txen_2":   15,
```

```
"power_min":      0,  
"power_high":     0,  
"power_max":      0,  
"power_default":  0,  
"power_control":  0,  
"power_values":   [-10,-6,-3,1],  
  
"pwm_outputs":    [0,1,3,21,19,5,2,18],  
  
"vbat":           35,  
"vbat_offset":    <12>,  
"vbat_scale":     <410>,  
  
"led_rgb":        22,  
"led_rgb_isgrb":  true,  
"ledidx_rgb_status": [0],  
"ledidx_rgb_boot":  [0]
```

### Battery Voltage:

ELRS scale <tb> [2K:12K]

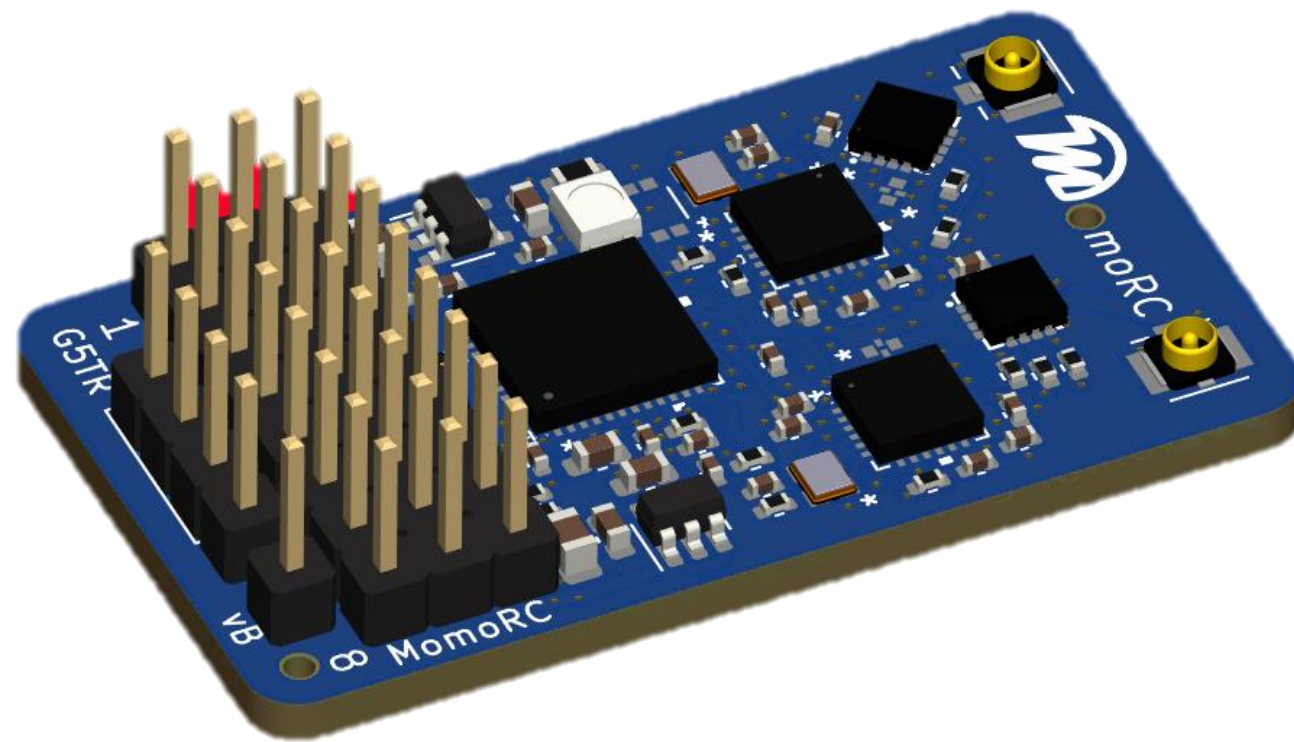
vB: max 3.4V, ADC1/CHN7), DC 8~25V (2S~5S), [2K:12K]



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## Hardware Documentation





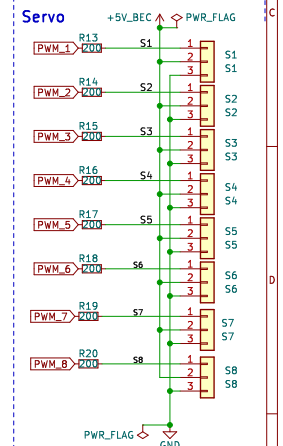
The schematic shows the U100 ESP32-PICO-D4 module with various pins connected to external components:

- Power Supply:** +3.3VP is connected to EN (pin 9) via R101 (10k). A 1uF capacitor C105 is connected between +3.3VP and GND. The module's VDDA, VDDSP, VDD3P3\_CP1, and VDD\_SIO1 pins are connected to +3.3VP through capacitors C101 (10uF), C102 (100nF), C104 (100nF), C110 (100nF), and C103 (6.2pF).
- Antenna Options:**
  - A PCB antenna AN91445 is connected to WIFLIN (pin 2) and GND.
  - An alternative JHANSON SMD antenna 2450AT18B100 can be substituted at REV2.
- Control and Status:**
  - BUSY\_1 (pin 5) is connected to DIO1\_1 (pin 6).
  - BUSY\_2 (pin 8) is connected to SENSOR\_VN (pin 7).
  - Sensor pins: SENSOR\_VP (pin 5), SENSOR\_CAPN (pin 6), and SENSOR\_CAPN (pin 7) are shown.
  - I/O pins: IO16 (pin 25), IO17 (pin 26), SDO (pin 27), SD1 (pin 28), CLK (pin 29), and CMD (pin 30) are shown.
- Other Connections:**
  - LNA\_EN\_2 (pin 28) and LNA\_EN\_1 (pin 29) are connected to GND.
  - NSS\_2 (pin 20), PA\_EN\_1 (pin 17), PA\_EN\_2 (pin 15), PWM\_8 (pin 35), PWM\_5 (pin 38), PWM\_4 (pin 42), led\_rqb (pin 39), SCK (pin 14), RADIO\_RST (pin 16), NSS\_1 (pin 18), MOSI (pin 12), MISO (pin 13), DIO1\_2 (pin 10), and ADC\_VBAT (pin 11) are connected to GND.
  - PWM\_1 (pin 1) is connected to SW1 (SKTAAE010) via R2 (10k).
  - PWM\_2 (pin 23), PWM\_3 (pin 24), PWM\_7 (pin 34), and PWM\_6 (pin 28) are connected to GND.
  - VDD\_SIO1 (pin 26) is connected to GND.

Notes from the diagram:

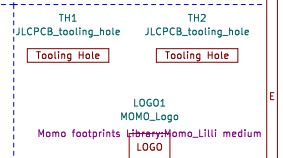
- C103: enough for PCB-Antenna without matching network.
- <REV2> substitute with JHANSON SMD antenna 2450AT18B100
- ADC1 for VBAT usable: GPIO 32-39, (25,26)

CRSF/Serial/Uin

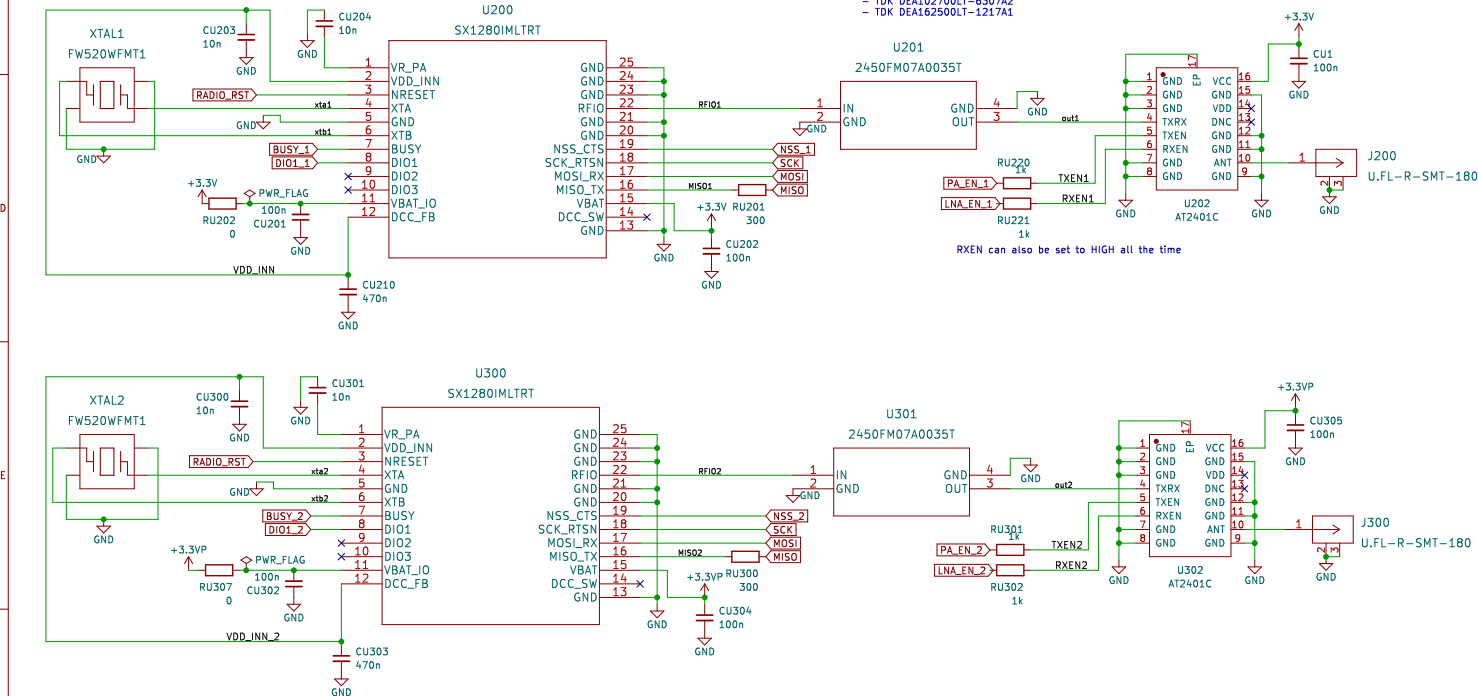


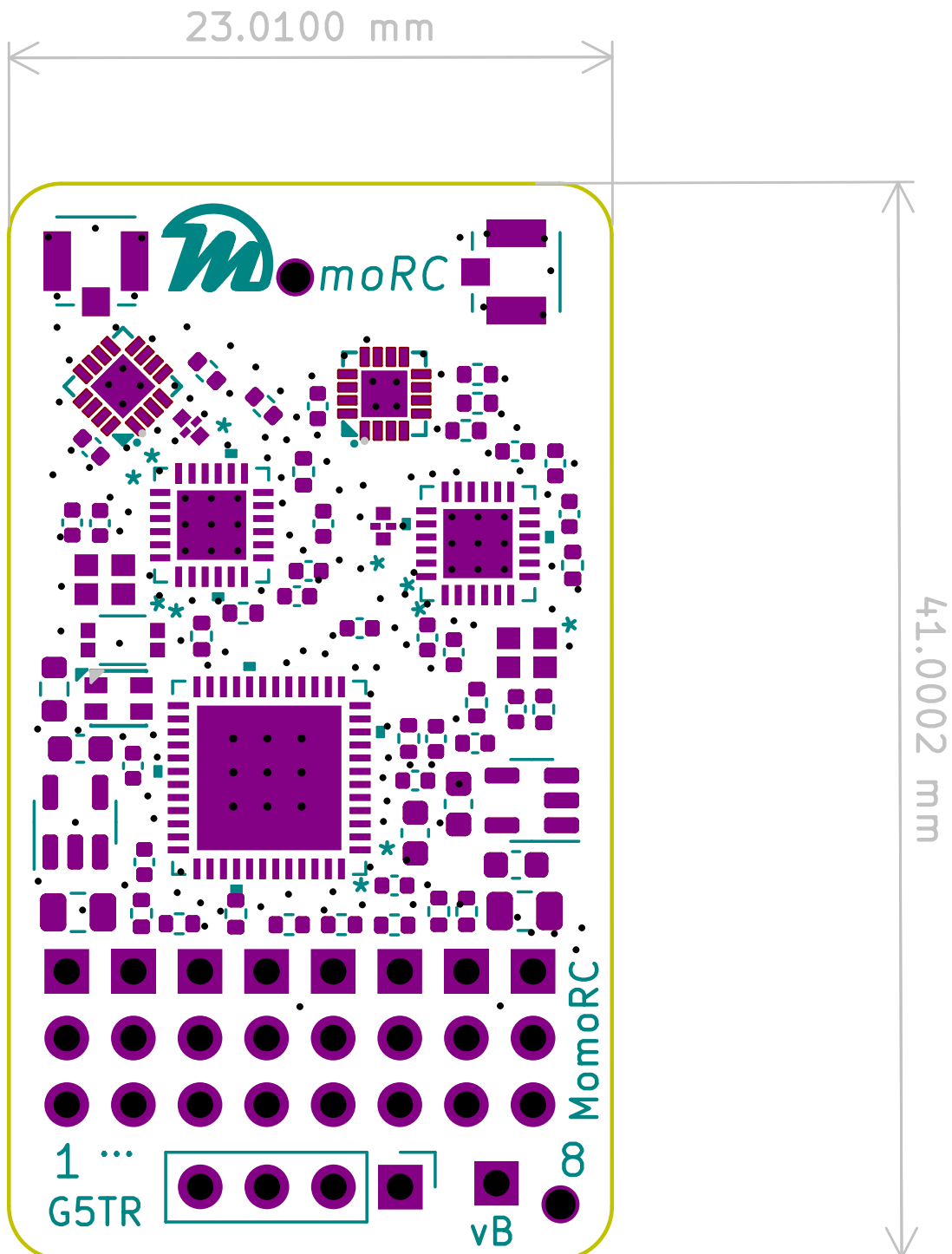
ADC Chn1: VBAT: Battery Voltage Sensor  
2k/12K (ELRS scale <tbtd>-->0-30V)

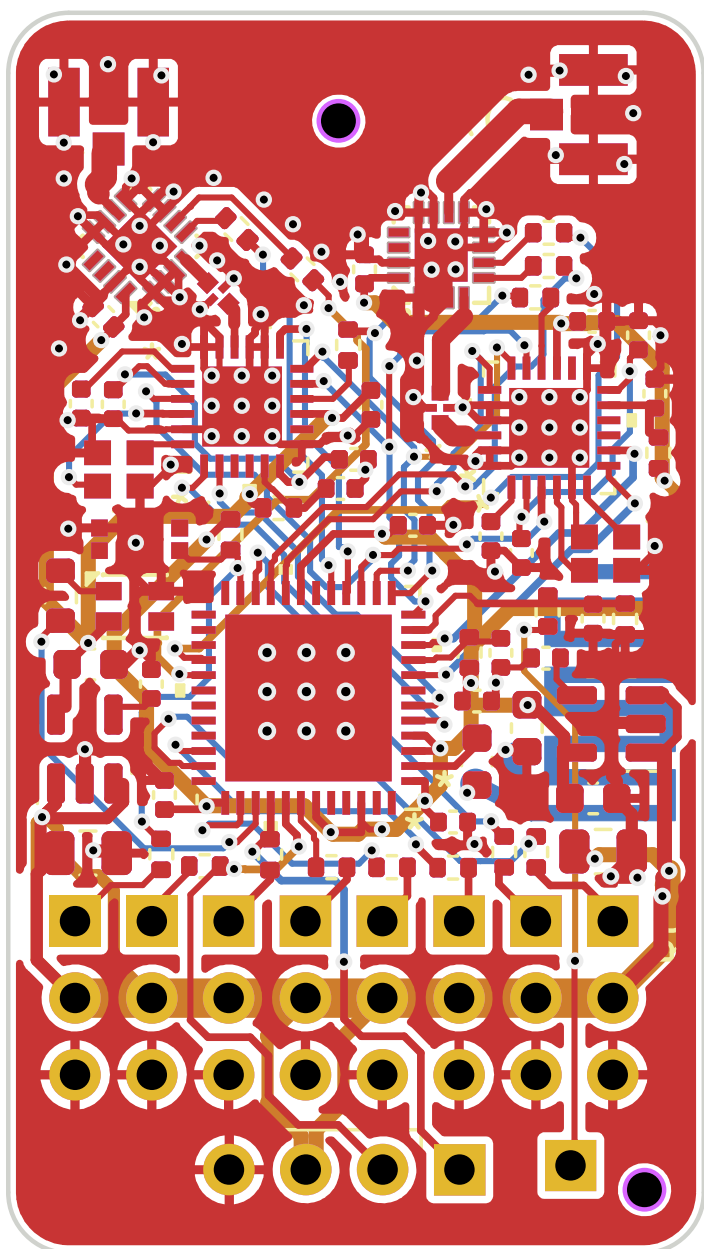
ADC1 for VBAT usable:  
GPIO 32-39, (25,26)



Rev: 0.1  
Id: 1/1











momorC



GLIWA



RT5G