



MATEKSYS

FLIGHT CONTROLLER F405-SE

QUICK START GUIDE

MCU: 168MHz STM32F405RGT6
IMU: MPU6000
Baro: DPS310
OSD: AT7456E
Blackbox: MicroSD slot
6x Uarts
1x Softserial supported
9x PWM outputs
2x I2C
3x ADC (voltage, current, RSSI)
4x RX6 pad(one per corner) for BLheli32 ESC telemetry
4x individual ESC power/signal pads
1x Group of G/S1/S2/S3/S4 pads for 4in1 ESC Signal/GND

Vbat filtered output power for VTX
PWM Camera control
Smartaudio & Tramp VTX protocol
DJI FPV OSD protocol

Input: 6~36V (3~8S LiPo)
PDB: 4x35A (Max.4x46A)
BEC: 5V 2A cont. (Max.3A)
LDO 3.3V: Max.200mA
Current Sensor range 184A
Battery Voltage Sensor: 1K:10K

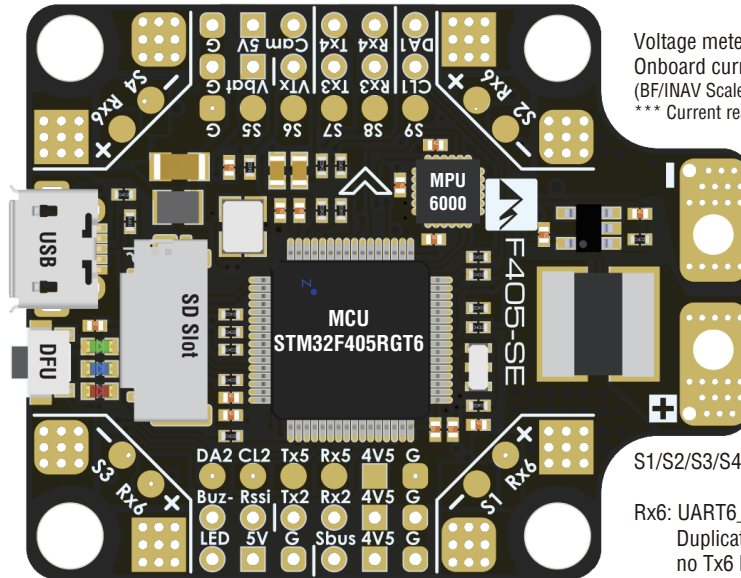
INAV Target: MATEKF405SE
BetaFlight Target: MATEKF405SE
ArduPilot hwdef: MATEKF405-WING

LAYOUT

Cam: Camera video IN
 VTX: Video OUT to Video Transmitter
 Vbat: Battery voltage filtered, Max.1A load on this pad.
 G: Ground
 *** S9 has 200ohm integrated in series, can be remapped as PWM camera control
 (CLI resource camera_control A08)

Rx3 & Tx3: UART3
 Rx4 & Tx4: UART4

CL1 & DA1: I2C1_SCL & SDA
 S5/S6/S7/S8/S9: PWM outputs (ESC, Servo)
 *** S7 & S8 don't support Dshot with Betaflight and INAV, Dshot compatible with ArduPilot.

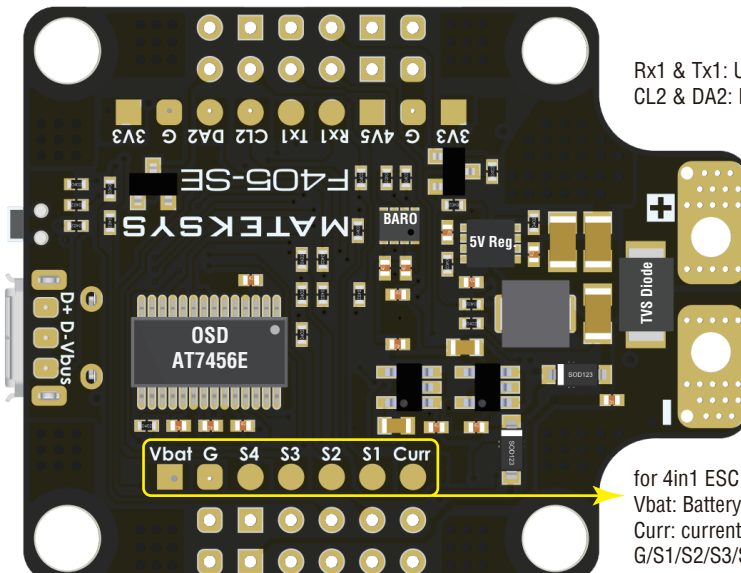


5V: onboard BEC 5V 2A cont. Max.3A
 4V5: 4.4~4.8V, Max.500mA, the voltage is also supplied when connecting via USB
 3V3: LDO3.3V Max.200mA
 G: Ground

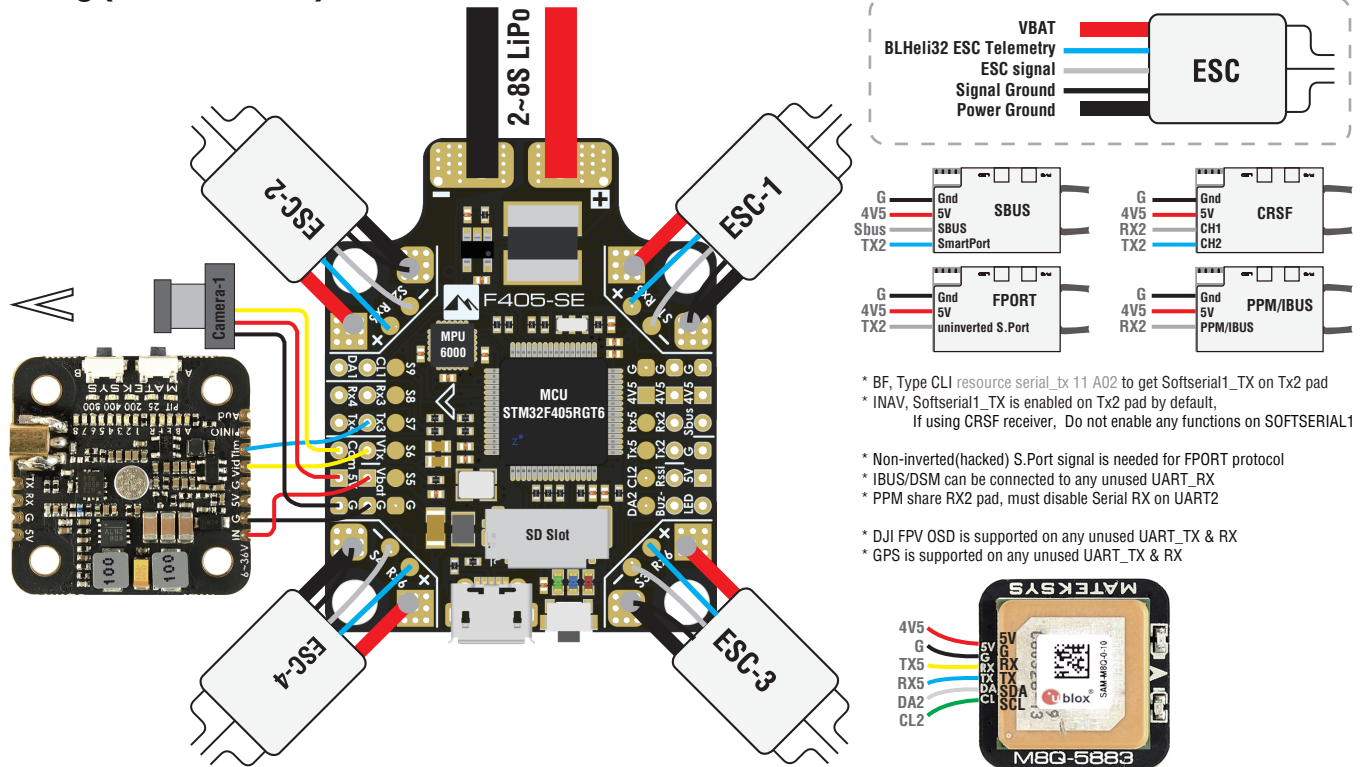
Rx5 & Tx5: UART5
 CL2 & DA2: I2C2_SCL & SDA

Rx2: UART2_RX, PPM share RX2 pad
 Tx2: UART2_TX
 Sbus: Uart2_RX with inversion for SBUS receiver protocol
 *** TX2 can be remapped as softserial_tx1 for Frsky SmartPort in BetaFlight
 (CLI resource SERIAL_TX 11 A02)
 *** Softserial1_TX is enabled on Tx2 pad by default in INAV

Rssi: Analog RSSI IN
 LED: 2812 LED signal
 Buz- & 5V: General active 5V buzzer
 Buz- /5V/G: for MATEKSYS DBUZ5V



Wiring (Individual ESC)



Identifier	Data	Telemetry	RX	Sensors	Peripherals
USB VCP	☒ MSP 115200	Disabled AUTO	☐ Serial RX	Disabled 115200	Disabled 115200
UART1	☐ MSP 57600	Disabled AUTO	☐ Serial RX	Disabled 115200	Disabled 115200
UART2	☐ MSP 115200	Disabled AUTO	☒ Serial RX	Disabled 115200	Disabled 115200
UART3	☐ MSP 115200	Disabled AUTO	☐ Serial RX	Disabled 115200	IRC Tramp 115200
UART4	☐ MSP 115200	Disabled AUTO	☐ Serial RX	Disabled 115200	Disabled 115200
UART5	☐ MSP 115200	Disabled AUTO	☐ Serial RX	GPS 115200	Disabled 115200
UART6	☐ MSP 115200	Disabled AUTO	☐ Serial RX	Disabled 115200	Disabled 115200
SOFTSERIAL1	☐ MSP 115200	SmartPort AUTO	☐ Serial RX	Disabled 115200	Disabled 115200

Wiring (4in1 ESC)

