



MATEKSYS

FLIGHT CONTROLLER F722-PX

QUICK START GUIDE

MCU: 216MHz STM32F722RET6
IMU: MPU6000 (SPI)
Baro: BMP280 (I2C)
OSD: Pixel OSD/FrskyOSD (Uart6)
Blackbox: 32M-byte Flash (SPI)

6x Uarts with built-in inversion
1x Softserial_Tx option
10x Dshot/PWM outputs
1x I2C
4x ADC (VBAT, Current, RSSI, AirSpeed)
1x SH1.0_8pin connector (Vbat/G/Curr/Rx3/S1/S2/S3/S4)

Switchable Dual Camera Inputs
Switchable 5V/8V for VTX
PWM Camera control

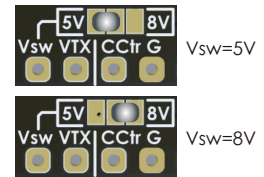
9~36V DC IN (3~8S LiPo)
BEC: 5V 2A cont. (Max.3A)
BEC: 8V 2A cont. (Max.3A)
LDO 3.3V: Max.200mA
Battery Voltage Sensor: 1:10 (Scale 110)
Current Sensor: No

INAV target MATEKF722PX
BetaFlight unified target MATEKF722HD

LAYOUT

C1: Camera-1 video IN (Default)
 C2: Camera-2 video IN
 *** C1/C2 can be switched via PINIO2 (Modes Tab/USER2)
 CCtr: PWM camera control
 Cam: Camera video IN, jump over video switch chip
 G: Ground

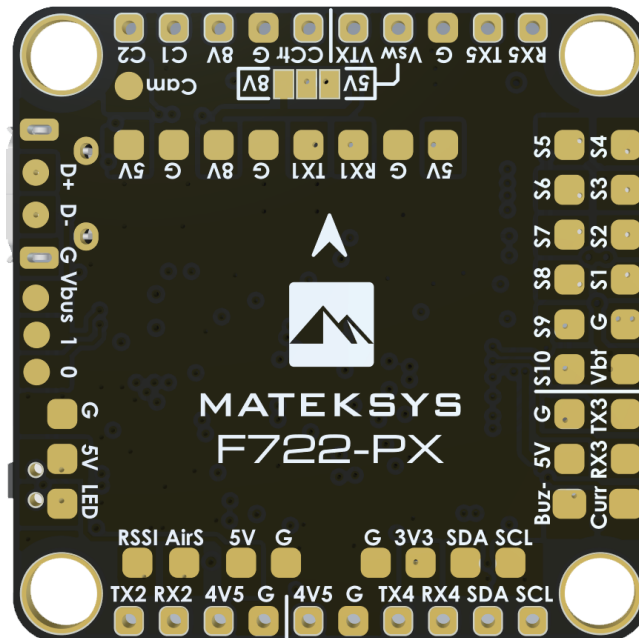
VTx: Video OUT for Video Transmitter
 Vsw: 5V/8V selection, Max.1A load on this pad
 *** ON/OFF can be switched via Modes/USER1 (Default ON)
 *** Vsw jumper 5V or 8V must be selected according to VTX voltage specification



D+ & D-: USB data
 Vbus: USB voltage

1: SWDIO
 0: SWCLK

LED: 2812 LED signal Out



5V: onboard BEC 5V 2A cont. 3A burst
 8V: onboard BEC 8V 2A cont. 3A burst

RX5 & TX5: UART5_RX & TX
 RX1 & TX1: UART1_RX & TX

S1~S10: ESC signal

Vbt: Battery voltage, 9~36V DC IN
 G: Ground

Rx3 & Tx3: UART3_RX & TX
 Curr: current sensor signal IN

Buz- & 5V: General active 5V buzzer

Buz- /5V/G: Matek DBUZ5V

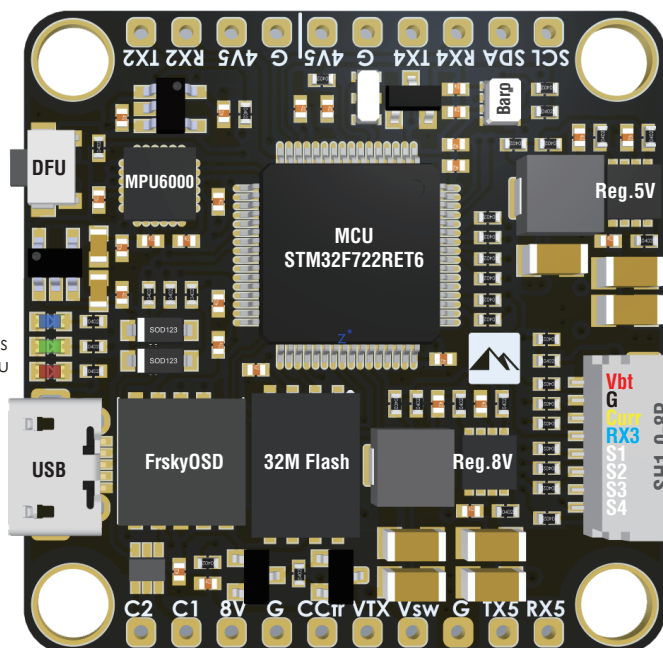
4V5: 4.4~4.8V, Max.500mA, the voltage is also supplied when connecting via USB
 3V3: LDO3.3V Max.200mA

RX2: UART2_RX for Serial RX by default, PPM share RX2 pad
 TX2: UART2_TX
 *** TX2 can be used for softserial_tx1
 *** F722 Uarts have built-in inversion, SBUS can be connected to any unused UART_RX.
 *** Frsky FPort, SmartPort, Tramp & SmartAudio can be connected to any unused UART_TX

Airs: Analog Airspeed sensor IN (0~3.3V)
 Rssi: Analog RSSI IN (0~3.3V)

SCL & SDA: I2C1 Bus for Magnetometer/Digital airspeed sensor/OLED
 TX4 & RX4: UART4_TX & RX
 *** GPS can be connected to any unused UART_TX & RX

LED 0: Blue, FC Status
 LED 1: Green, FC Status
 LED 3.3: Red, 3.3V Statu

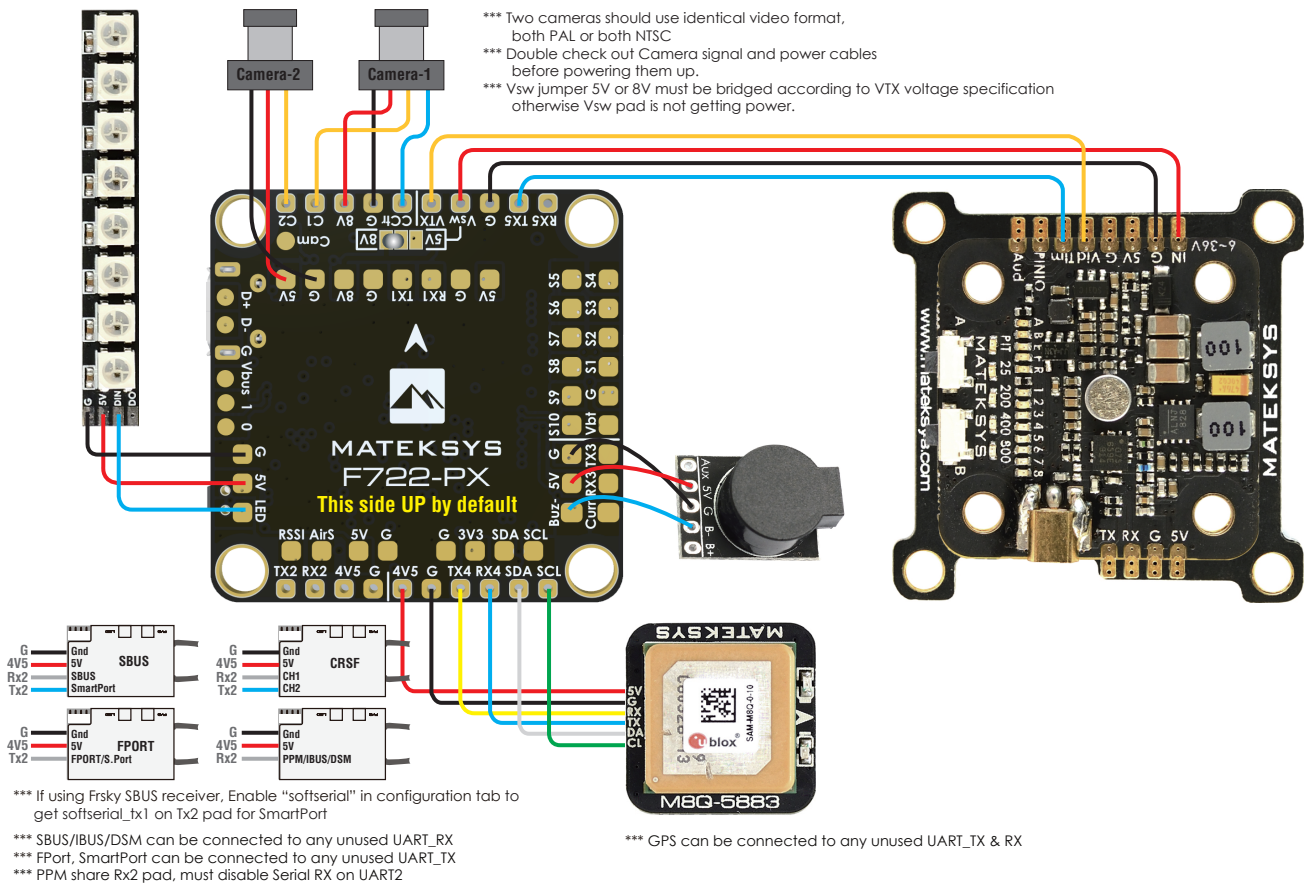
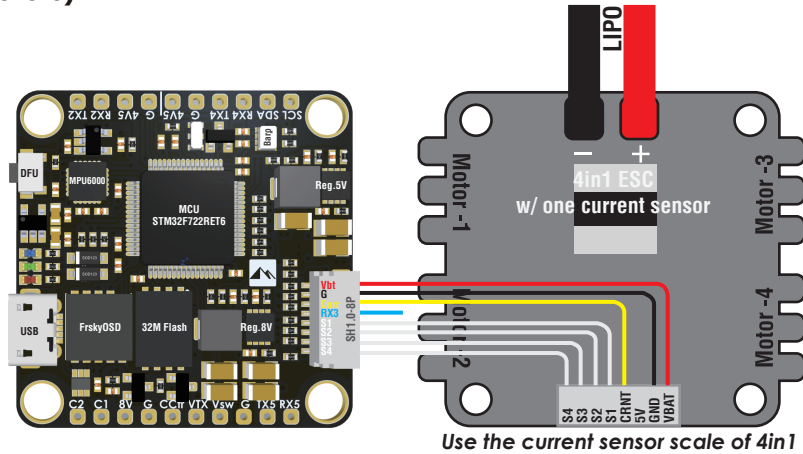


SH1.0-8P Sequence
 --Vbt: Battery voltage, 9~36V DC IN
 --G: Ground
 --Curr: current sensor signal IN
 --Rx3: UART3_RX, for BLHeli32 ESC Telemetry
 --S1/S2/S3/S4: ESC signal

Size & Weight: 36x36mm /6.5g
 Holes: Φ4mm, 30.5mm x 30.5mm

Packing
 1x F722-PX
 1x SH1.0_8pin cable 5cm
 2x SH1.0_8pin connector
 6x M3 Silicon Grommets

Wiring (Multirotors)



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

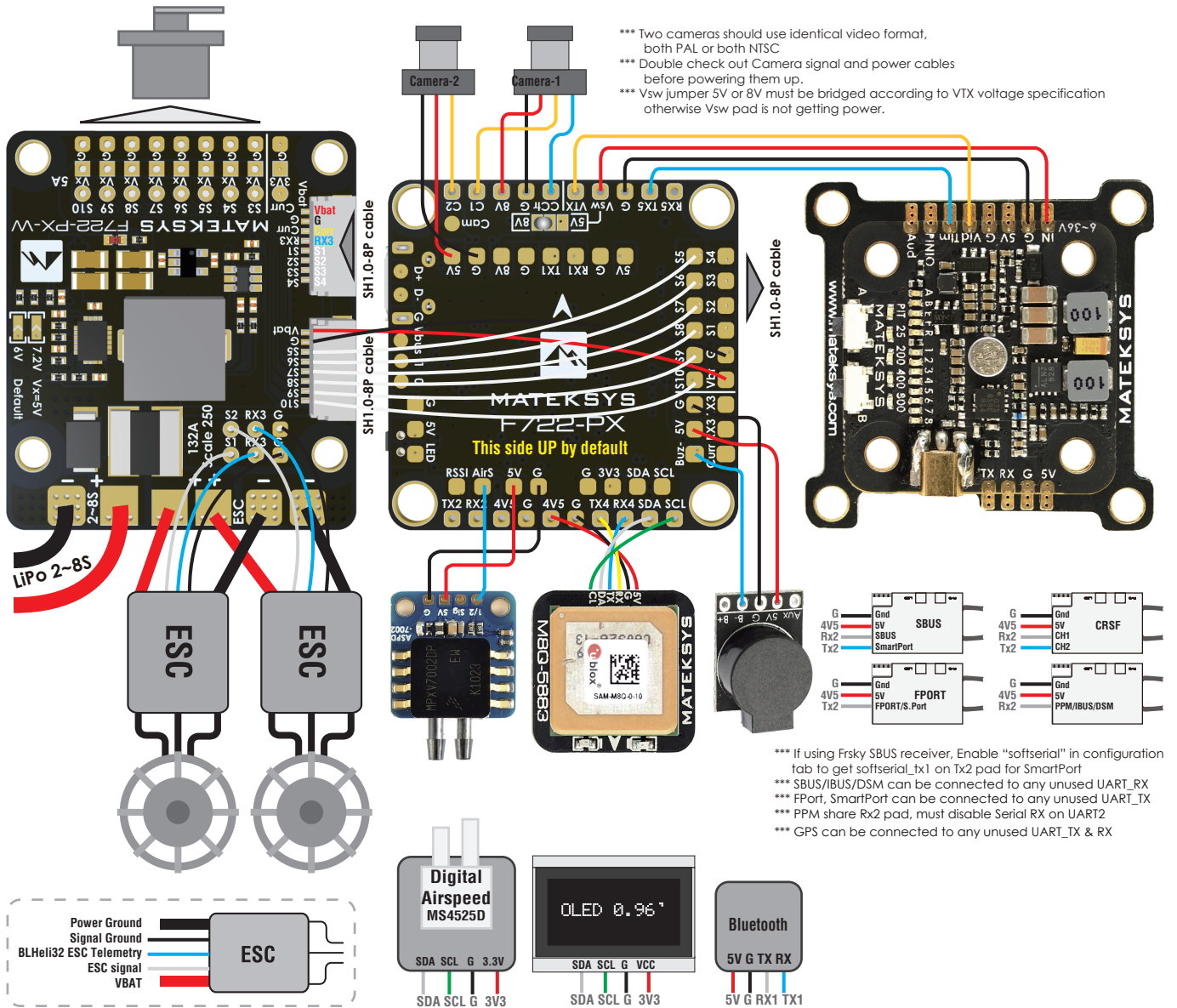
FrskyOSD is enabled on UART6 by default
Do not change it.

Vsw Power / Camera switch (BetaFlight/INAV)

USER1	No USER1 definition Vsw ON by default
USER2	No USER2 definition C1 (Camera-1) ON by default



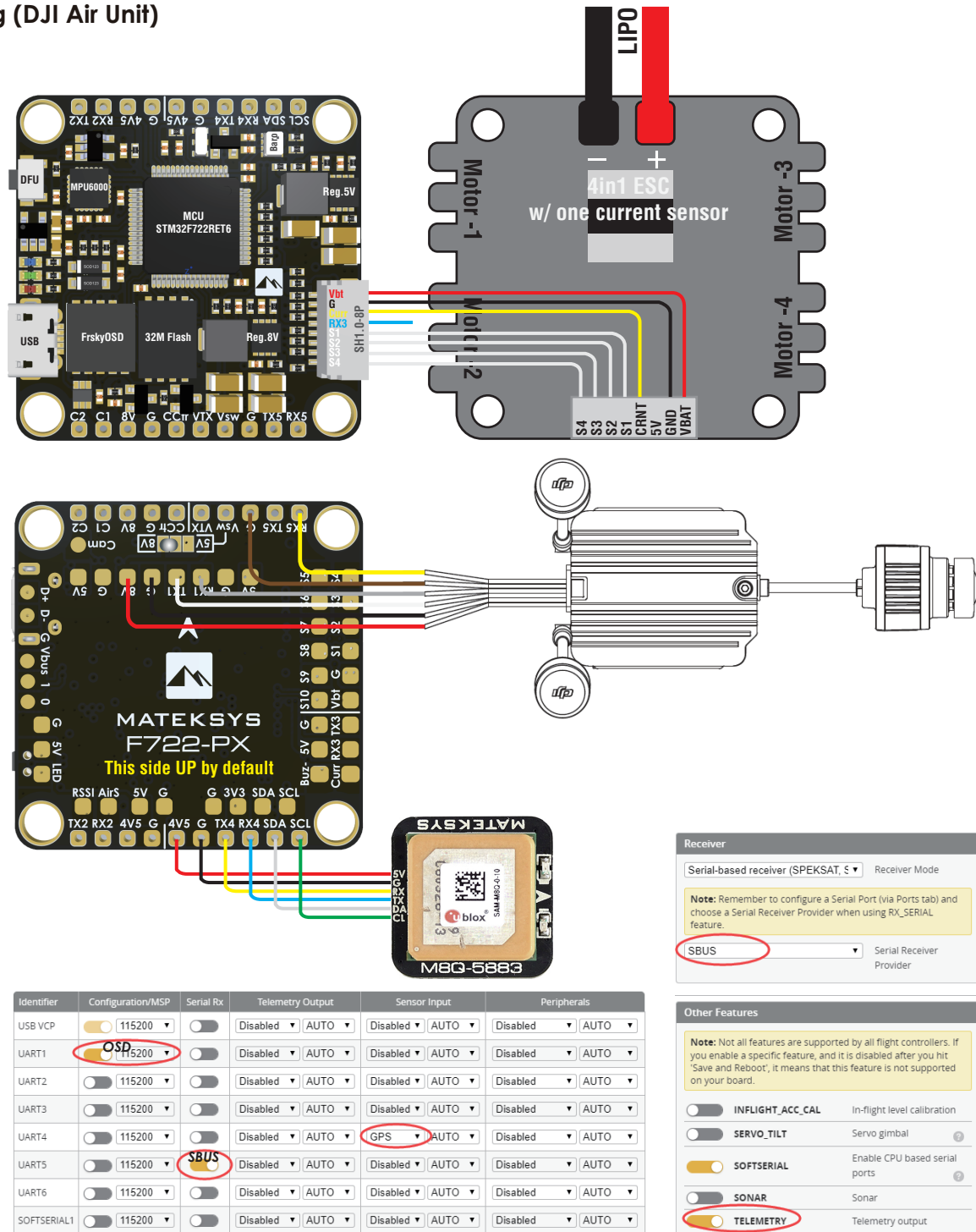
Wiring & Settings (Airplane)



Identifier	Data	Telemetry	RX	Sensors	Peripherals
USB VCP	☒ MSP 115200	Disabled AUTO	☐ Serial RX	Disabled 115200	Disabled 115200
UART1	☒ MSP 115200	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	ESC output/telemetry 115200
UART4	☐ MSP 115200	Disabled AUTO	☐ Serial RX	GPS 115200	Disabled 115200
UART5	☐ MSP 115200	Disabled AUTO	☐ Serial RX	Disabled 115200	IRC Tramp 115200
UART6	☐ MSP 115200	Disabled AUTO	☐ Serial RX	Disabled 115200	FrSky OSD 115200
SOFTSERIAL1	☐ MSP 115200	SmartPort AUTO	☐ Serial RX	Disabled 115200	Disabled 115200

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Do not change it.

Wiring (DJI Air Unit)



PWM outputs definitions

	INAV Airplane	INAV Multirotor	BF Multirotor	TIM
S1	Motor	Motor	Motor	TIM8
S2	Motor	Motor	Motor	
S3	Servo	Motor	Motor	
S4	Servo	Motor	Motor	TIM3
S5	Servo	Motor	Motor	
S6	Servo	Motor	Motor	
S7	Servo	Motor	Motor	
S8	Servo	Motor	Motor	TIM2
S9	Servo	Servo	Servo	
S10	Servo	Servo	Servo	TIM4