

# PX4IO – Input / Output and Servo Module

## QUICK START – HARDWARE VERSION 1.3

### Description

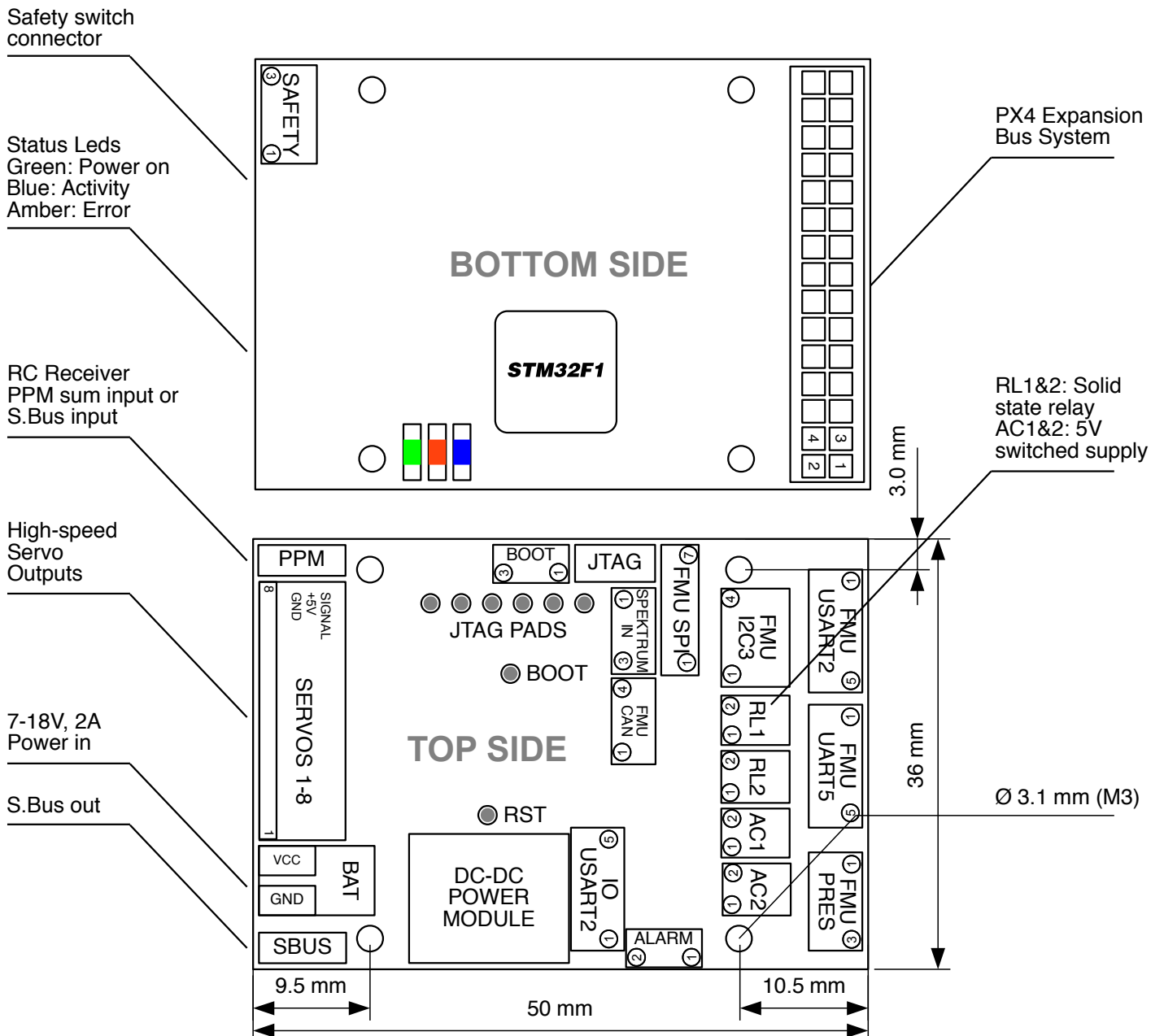
PX4IO is a power supply and expansion module for the PX4FMU flight management unit. It provides servo outputs, receiver inputs, two solid state relays, two switched and current-limited 5V power outputs and a wide range of additional I/O connectors.

<http://github.com/PX4/Hardware>

### Features

- 24 Mhz Cortex-M3 I/O multiplexer
- 6.3-18V wide supply in, 5V / 2 A output
- Reverse polarity protection on all power inputs
- 8 high-speed servo outputs (up to 400 Hz)
- PPM, Spektrum and Futaba S.Bus compatible receiver inputs
- 2x 0-40 V, 1 A solid-state relays (MOSFET)
- 2x 5 V, 500mA current-limited, switched 5V power outputs
- Analog port with dividers (differential pressure sensors)
- PX4 Expansion bus
- 50x36x14 mm (1.38x1.97x0.55“), 20g, 30x30 mm M3 mounting

### Connectors, Jumpers and Dimensions



## Pinout and Absolute Maximum Ratings

- Input: 6.3-18 V (BAT connector), max current: 2.5 A
- Accessory outputs: 5 V, each 500mA current limited
- Peripherals output: 5 V, 0.5 A current limited
- Servo Output: 5V, 1.0 A current limited
- NOT compatible per default with high-voltage servo systems providing more than 5V on the servo rail (remove L1 for high voltage systems and supply 6.5V on J16)

VDD_5V	1
GND	2
CAN2_RX	3
USART1_RX	4
I2C3_SDA	5
-I	6
UART6_RX	7
UART5_RX	8
I2C2_SDA	9
USART2_RTS	10
USART2_RX	11
GPIO_EXT1	12
BUZZER	13
ADC123_IN11	14
ADC123_IN13	15
VDD_5V	16
GND	17
CAN2_TX	18
USART1_TX	19
I2C3_SCL	20
ADC_123_IN10	21
UART6_TX	22
UART5_TX	23
I2C2_SCL	24
USART2_CTS	25
USART2_TX	26
PPM_INPUT	27
GPIO_EXT2	28
GND	29
ADC123_IN12	30

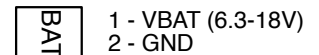
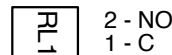
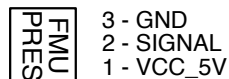
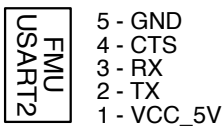
Mates 2 mm header: 3M "9532230-2000-AR-PR"

SERVO 8	8
SERVO 7	7
SERVO 6	6
SERVO 5	5
SERVO 4	4
SERVO 3	3
SERVO 2	2
SERVO 1	1

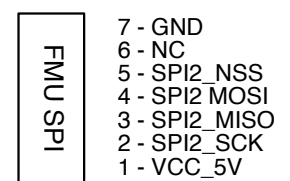
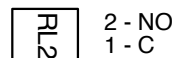
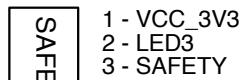


Back side of PCB  
Mates standard servo plugs

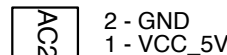
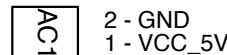
All connectors below are oriented the same way as shown in the overview picture. Check the pin 1 markings in the overview if unsure. Note: Gray printed connectors are internally connected to other peripherals and can only be used in certain configurations



Mates 2 pos JST PA housings  
Part # PAP-02V-S(P)  
Crimp terminals  
Part # SPHD-001T-P0.5 (for AWG 22-26 wire)



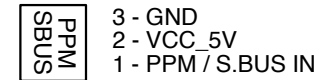
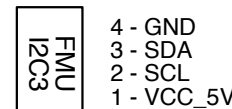
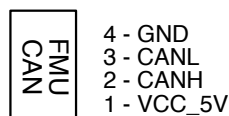
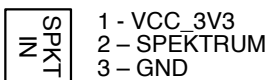
Mates 7 pos Hirose DF13 housings  
Part # DF13-7S-1.25C  
Crimp terminals  
Part # DF13-2630SCF (for AWG 26-30 wire)



Mates 2 pos Hirose DF13 housings  
Part # DF13-2S-1.25C  
Crimp terminals  
Part # DF13-2630SCF (for AWG 26-30 wire)

Mates 5 pos Hirose DF13 housings  
Part # DF13-5S-1.25C  
Crimp terminals  
Part # DF13-2630SCF (for AWG 26-30 wire)

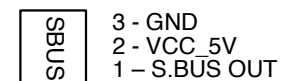
Mates 3 pos Hirose DF13 housings  
Part # DF13-3S-1.25C  
Crimp terminals  
Part # DF13-2630SCF (for AWG 26-30 wire)



Mates Spektrum RC receiver cables:  
JST  
Part # ZHR-3(P)  
Crimp terminals  
Part # SZH-003T-P0.5 (for AWG 28-32 wire)

Mates 4 pos Hirose DF13 housings  
Part # DF13-4S-1.25C  
Crimp terminals  
Part # DF13-2630SCF (for AWG 26-30 wire)

3.3V pullups on SCL / SDA  
Mates 4 pos Hirose DF13 housings  
Part # DF13-4S-1.25C  
Crimp terminals  
Part # DF13-2630SCF (for AWG 26-30 wire)



Mates 3-pos servo cable. Solder cables into the holes and connect RC receiver with it. Fits 0.1" header (both straight and right-angle)

## Upgrading Firmware / Developing Custom Code

PX4IO is designed as a failsafe board with a stable codebase. Building custom firmware is only recommended for very advanced users.

To develop custom code, follow the PX4FMU/PX4IO toolchain guide at: <https://pixhawk.ethz.ch/px4/dev/start>

## Open Hardware License

PX4IO is an open hardware design, following the OSHW 1.1 definition licensed under the Creative Commons Attribution-ShareAlike 3.0 Unported (CC BY-SA 3.0) license. PX4IO uses the NuttX RTOS as software stack (<http://nuttx.sourceforge.net>).

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