Reflex IM Specification Sheet

Hardware

Weight: 100g

Connectivity

Unless otherwise specified, all I/O uses 3.3V output, and accepts both 3.3V and 5V input.

- Two independent I²C busses
- Two independent UART/serial ports
- One CAN bus with two connectors
- Two USB ports
- Four analog inputs (0–5V) (two per redundant power input)
- One SPI port (for extension modules) (3.3V only)
- Sixteen I/O pins for ESCs, with support for Bidirectional DShot
- Four I/O pins for serial protocols such as SBus, S.Port or F.Port
- Eight additional general purpose I/O pins
- Built-in 2.4GHz WiFi

Sensors

Triple redundant IMUs and barometer

- Bosch BMI088 accelerometer and gyroscope
- TDK ICM-42605 accelerometer and gyroscope
- ST LSM6DSR accelerometer and gyroscope
- BMP388 barometer
- Real time clock

Power input

- Two 5V redundant power inputs

Processors and memory

- 1.2 GHz 64-bit ARM Cortex A53 processor with four cores
- 1 GiB RAM
- 32 GiB flash storage
- Separate 100 MHz ARM Cortex-M4 processor for I/O signals and ESC rpm control

Control

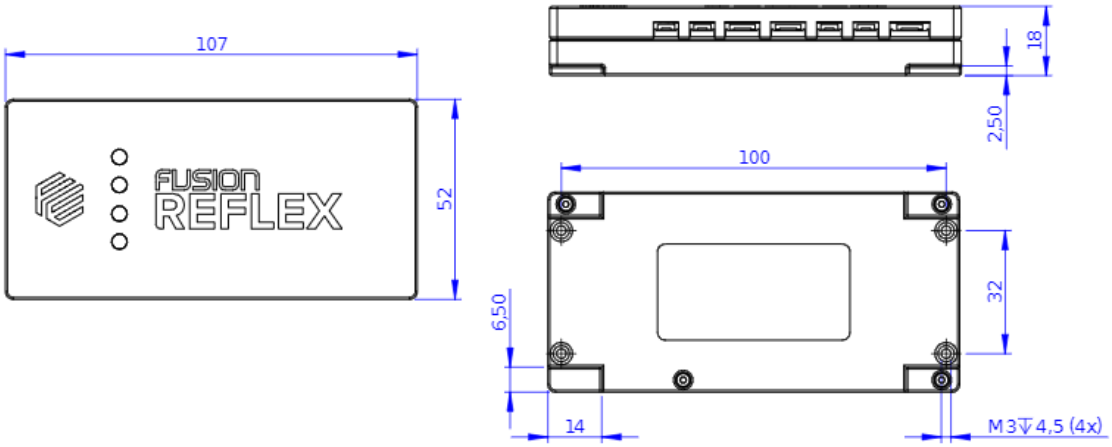
- Non-linear control based on INDI for superior performance in extreme situations. *
- Very flexible in drone layout. Configure any number of rotors in any position and orientation.
- Fault detection and fault-tolerant control. Fly even with missing or broken rotors.
- Advanced state estimation based on Unscented Kalman Filtering. Fuses data from any number of sensors (only limited by processing power) to determine the state of the drone, sensor biases, and the accuracy of this data.

  * This feature will be implemented in Q3 2021.

Software

- Modular and reliable software framework. Tasks run in isolated processes.
- Flexible sensor layer. The number and type of sensors is only limited by bus bandwidth.
- Efficient and extensive data logging framework.
- Communication over MAVLink.

Fusion Reflex IM Technical Drawing



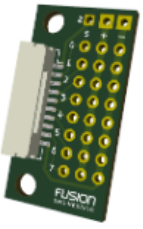
JST GH connectors

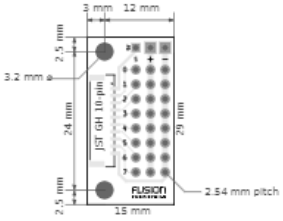
USB (2×)	IO-0*	IO-1*	CAN (2×)
1: 5V	1. 5V	1. 5V	1. 5V
2: D+	2. TX0	2. TX1	2. CAN-H
3: D−	3. RX0	3. RX1	3. CAN-L
4: GND	4. SCL0	4. SCL1	4. GND
	5. SDA0	5. SDA1	
	6. GND	6. GND	

JST GH connectors

ESC0-7*	GPIO*	ESC8-15*	RC*
1. 5V	1. 5V	1. 5V	1. 5V
2. ESC0	2. GPIO0	2. ESC8	2. In (SBus)
3. ESC1	3. GPIO1	3. ESC9	3. Out (SBus)
4. ESC2	4. GPIO2	4. ESC10	4. Smartport
5. ESC3	5. GPIO3	5. ESC11	5. F.port
6. ESC4	6. GPIO4	6. ESC12	6. GND
7. ESC5	7. GPIO5	7. ESC13	
8. ESC6	8. GPIO6	8. ESC14	
9. ESC7	9. GPIO7	9. ESC15	
10. GND	10. GND	10. GND	

ESC breakout board
(optional)





JST PA connectors

PWR0	PWR1
1. GND	1. GND
2. Analog input 0 (0-5V)	2. Analog input 2 (0-5V)
3. Analog input 1 (0-5V)	3. Analog input 3 (0-5V)
4. 5V redundant supply	4. 5V redundant supply

* Signals are 3.3V, but 5V tolerant

* Measurements are all in mm