

MRD8550 Merlin Kit & Pixhawk-Base Differences



Revision History

Revision	Date	Description
0.1	July 27, 2025	Preliminary version
1.0	Aug 13, 2025	Baselined version

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Mistral Solutions Private Limited,
#60 Adarsh Regent, 100 Ft. Ring Road,
Domlur Extension, Bengaluru 560071
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Abbreviations & Acronyms

Many acronyms and abbreviations are used throughout this manual. Use the table below to navigate unfamiliar terms used in this document.

Table 1-1: Abbreviations & Acronyms

Acronym	Definition
ADSB	Automatic Dependent Surveillance Broadcast
FCU	Flight Control Unit
FMU	Flight Management Unit
GND	Ground (Electrical ground)
NC	No Connection
PPM	Pulse Position Modulation
P-Sense	Power Sense
RCIN	Radio control Input
SBUS	Serial Bus
SBUSo	Serial Bus Output

1. Introduction

This document illustrates the differences between the various connectors / signals on Merlin-Kit and the PX4 Base with respect the Flight Controller usage. The primary intent of this document is to highlight the differences enabling those familiar with Pixhawk - Base in a manner to ease the migration to Merlin-Kit.

2. Power Source and Battery Monitoring

The FCU in the Merlin Kit is exclusively powered through the BATT-IN port (XT-30 connector), drawing power from a singular source. Avoid attempting to power the Merlin Kit through any other means. Connect BATT-IN to a 12-36V power supply or a 3-8s battery.

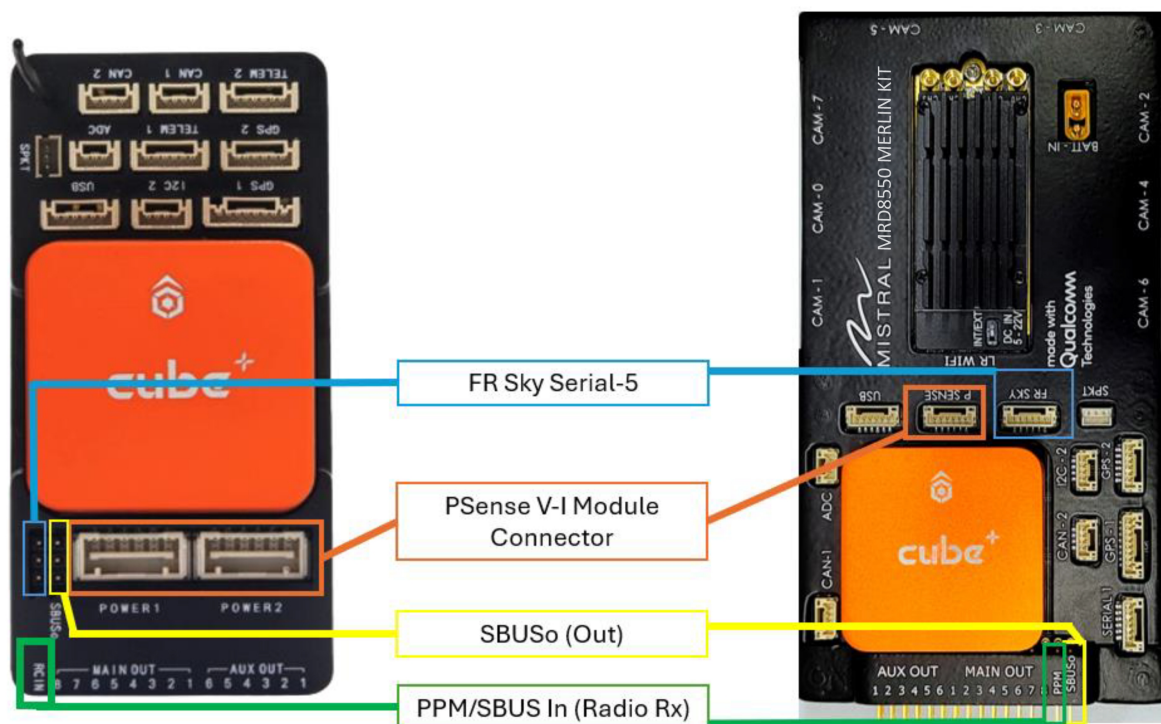


Figure 1:Pixhawk-Base & Merlin Kit power / telemetry interfaces

For battery monitoring and power sensing, the Merlin Kit provides a P-Sense Port. This port facilitates the measurement of voltage and current for two different batteries simultaneously. Refer to the connections and schematic provided below.

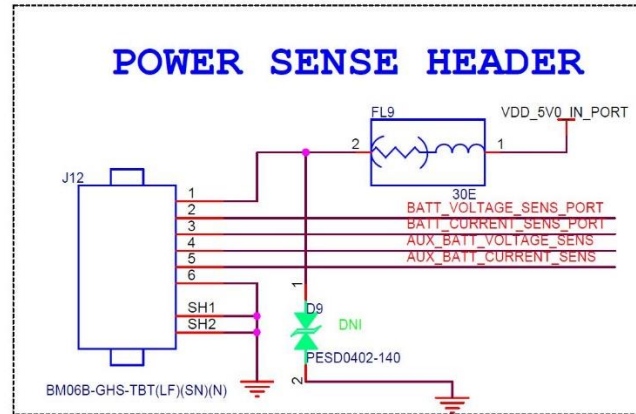


Figure 2: Reference connections for Battery monitoring

Sample Connections with Power Brick Module are as shown in the picture below

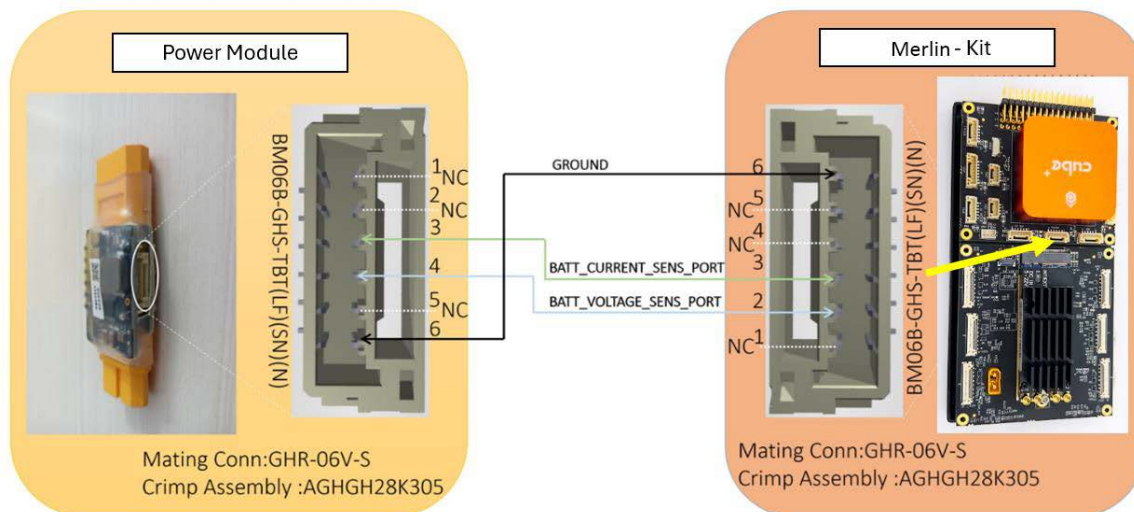


Figure 3: Example of connection with Power Brick Module

3. Servo Rail

While the functionality of the Servo Rail in the Merlin Kit mirrors that of the Cube Orange FCU, there are slight differences in pin placement. Follow the below guidelines.

In the Merlin Kit from left to right, AUX Out 1-6 Pins are followed by MAIN Out 1-8 Pins, PPM, and SBUSo Ports.

The PPM port in the Merlin Kit corresponds to the RCIN Port of the Cube Orange Flight Controller and is located at the second position from the right on the Servo Rail. It is used to connect any PPM or SBUS-supported radio receivers.

SBUSo (SBUS Output) is the rightmost pin in the Servo Rail of the Merlin Kit, like the SBUSo Port on the Cube Orange Flight Controller.

Note: Unlike the Cube Orange FCU, AUX Out and MAIN out Pins in the Servo Rail of the Merlin Kit do not have any power input or output. However, the PPM and SBUSo ports provide a 5V power output for connecting external devices.

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PX 4 Servo Rails

GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	
+5V	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
RCIN/ PPM/ SBUS IN	MAIN OUT 8	MAIN OUT 7	MAIN OUT 6	MAIN OUT 5	MAIN OUT 4	MAIN OUT 3	MAIN OUT 2	MAIN OUT 1	AUX OUT 6	AUX OUT 5	AUX OUT 4	AUX OUT 3	AUX OUT 2	AUX OUT 1	



Merlin-Kit
Servo Rails

GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND
NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	+5V	+5V
AUX OUT 1	AUX OUT 2	AUX OUT 3	AUX OUT 4	AUX OUT 5	AUX OUT 6	MAIN OUT 1	MAIN OUT 2	MAIN OUT 3	MAIN OUT 4	MAIN OUT 5	MAIN OUT 6	MAIN OUT 7	MAIN OUT 8	RCIN/ PPM/ SBUS IN	SBUS OUT

Figure 4: Servo pins comparison between Merlin Kit & Pixhawk

4. Other Interfaces

- Telemetry Ports

The Telem2 port is not externally available in the Merlin-Kit as it is used for interfacing with the onboard companion computer.

- FRSKY Port

FRSKY is combination of Serial 5 (Tx/Rx) and FMU Debug lines and its schematic is shown in the diagram below.

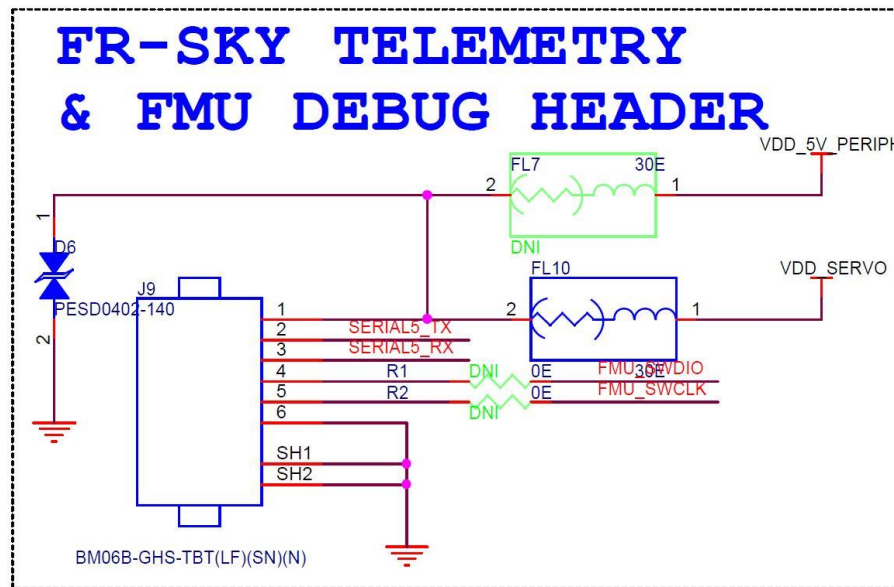


Figure 5:FRSKY & FMU Debug lines reference connections

- ADSB

ADSB Support is not provided on Merlin-Kit

5. Additional Assistance

Please contact our support team or urthter assistance:

Phone India: +91-80-4562 1100

Email: info@mistralsolutions.com

Web: <https://mistralsolutions.com/MRD8550-Merlin-Drone-Controller>

Note: Information contained in this document is subject to change