Pixhawk Jetson Baseboard Bundle

SKU:20280

FLIGHT CONTROLLER

Pixhawk 6X | **Pixhawk 6X Pro** | Pixhawk Jetson Baseboard Only

COMPANION COMPUTER

Jetson Orin NX 16GB (with Wi-Fi & SSD & Camera) | Jetson Orin Nano 4GB (with Wi-Fi & SSD & Camera) | ~~None~~

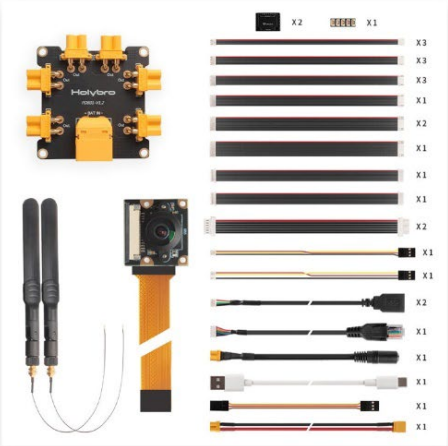
POWER MODULE + UBEC

PM02D + UBEC | ~~None~~





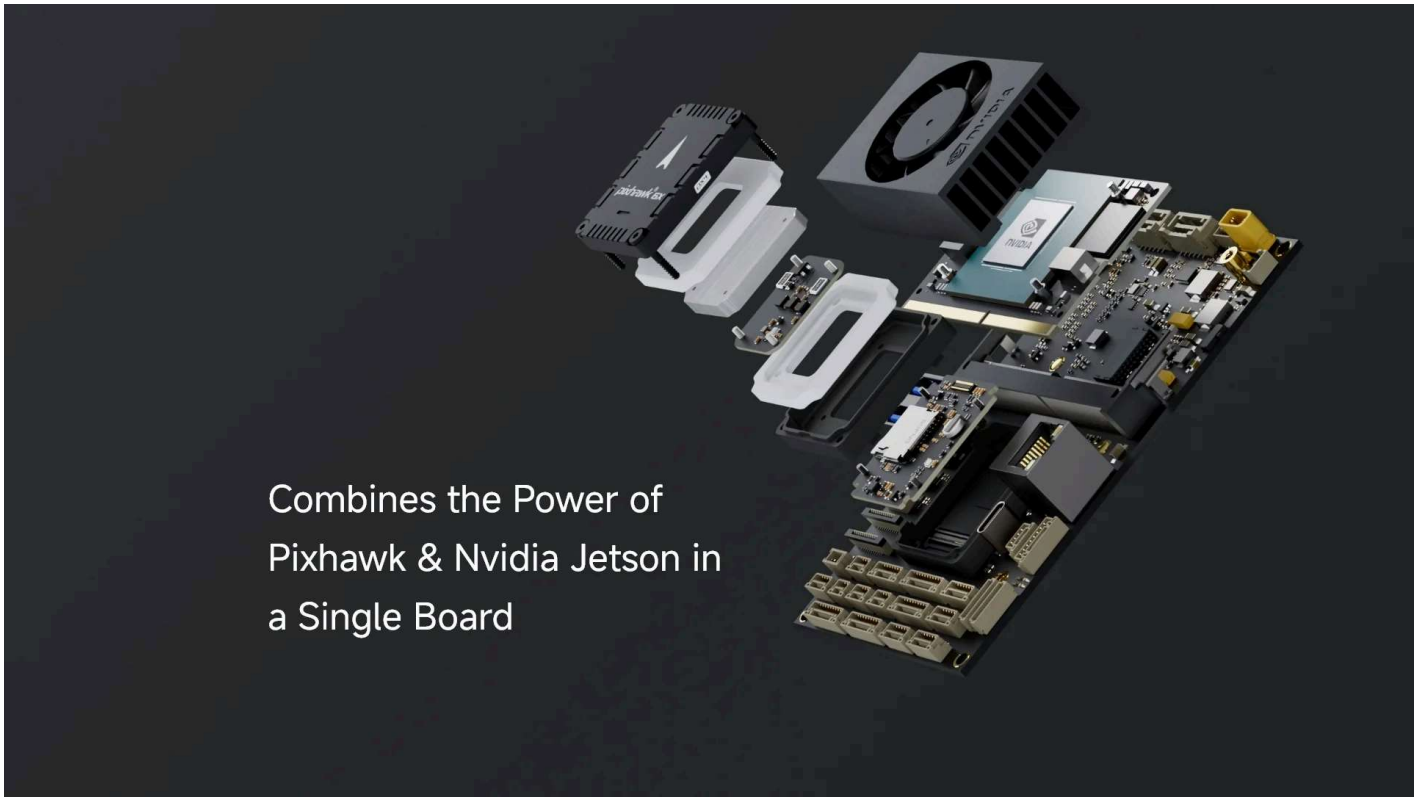


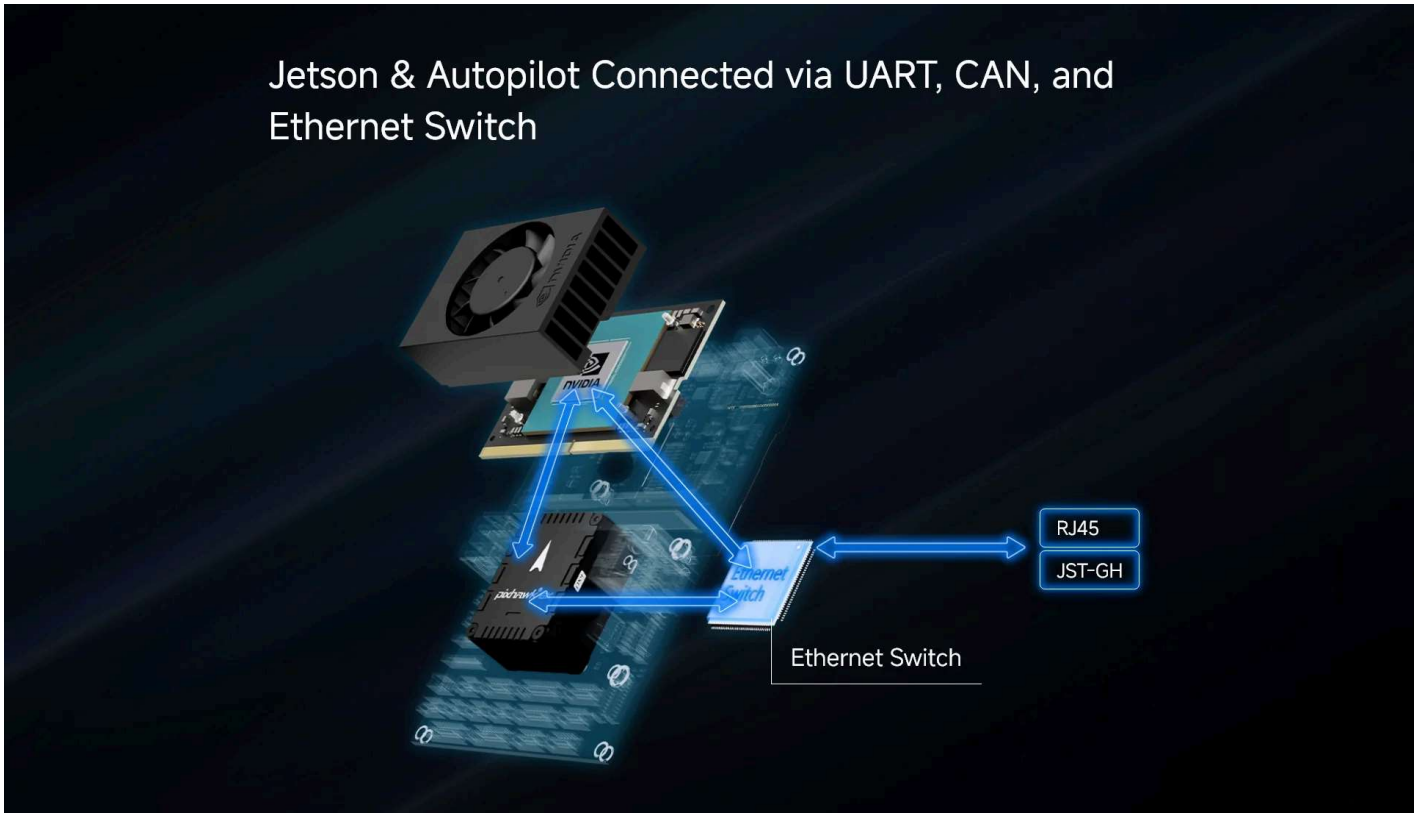




Description

The Holybro Pixhawk Jetson Baseboard is based on the Pixhawk Autopilot Bus open source specification and the NVIDIA Jetson Orin NX/Nano Carrier Board. The Pixhawk Autopilot Bus (PAB) Form Factor enables this to be used with any PAB flight controller such as the Pixhawk 6X





Pixhawk Autopilot Bus (PAB) Open Source Specification

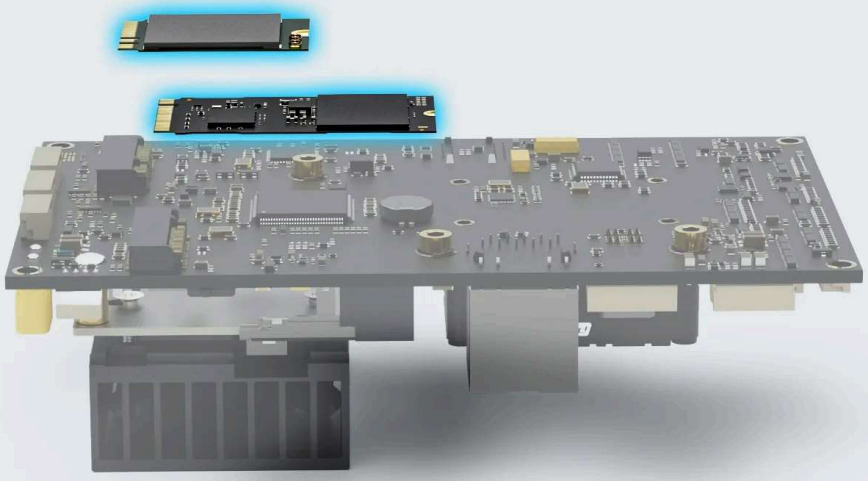


Jetson SoDIMM Connector System

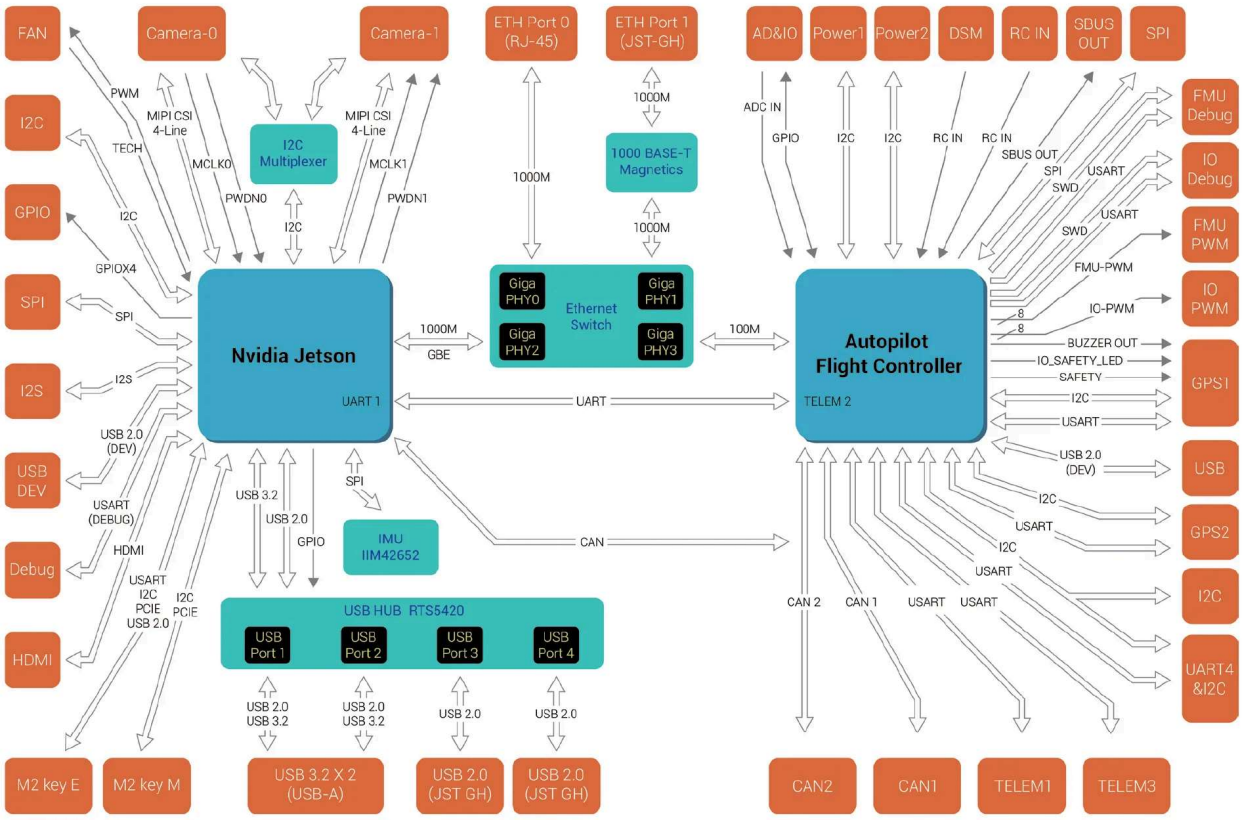
Fully Compatible: Jetson Orin NX/Nano



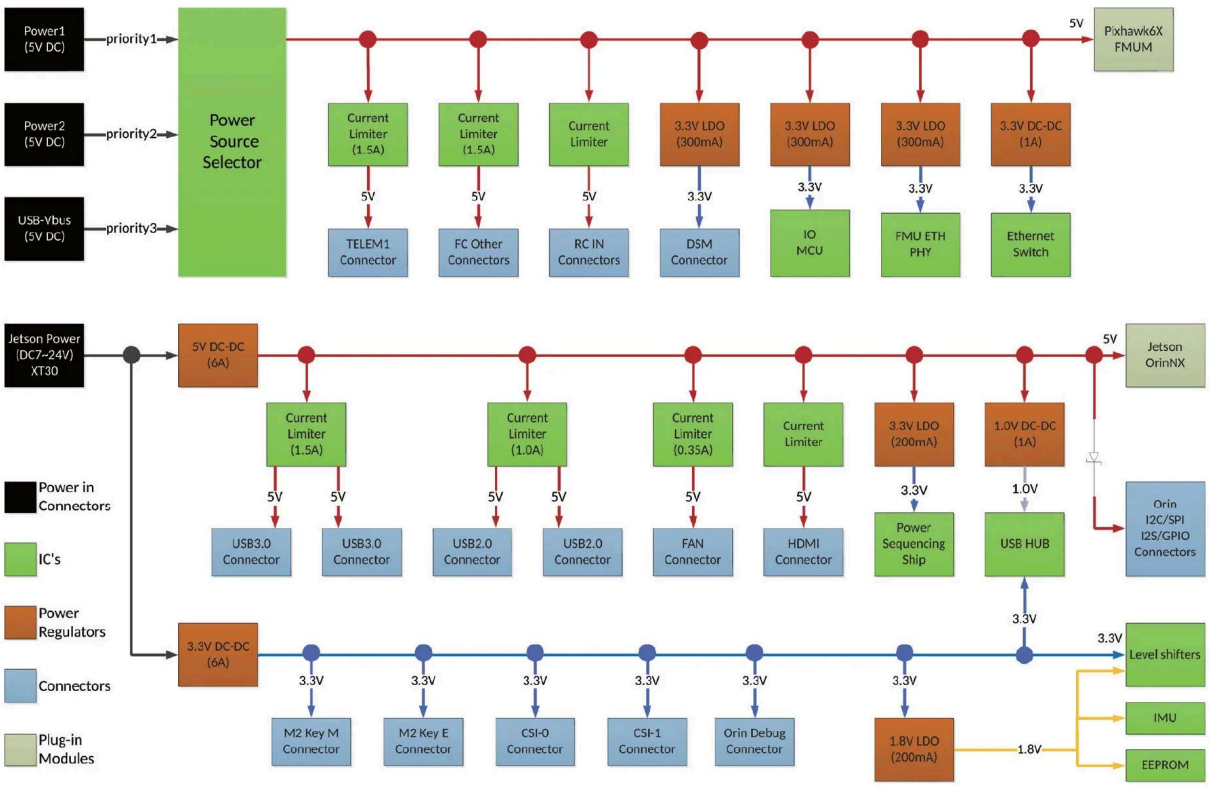
2x M.2 Key For WiFI/BT & NVMe SSD



Peripherals Block Diagram



Peripherals Block Diagram



Pixhawk 6X (ICM-45686)

Processors & Sensors

- FMU Processor: STM32H753
  - 32 Bit Arm® Cortex®-M7, 480MHz, 2MB flash memory, 1MB RAM
- IO Processor: STM32F103
  - 32 Bit Arm® Cortex®-M3, 72MHz, 64KB SRAM
- On-board sensors (Shipping Currently, Rev8)
  - Accel/Gyro: 3x ICM-45686 (with BalancedGyro™ Technology)
  - Barometer: ICP20100 & BMP388
  - Mag: BMM150

Baseboard Port & Connection

Jetson Connectors

- 2x Gigabit Ethernet port
  - Connected to both Jetson & Autopilot via Ethernet switch (RTL8367S)
    - Ethernet Switch powered by circuit as the Pixhawk
  - 8-pin JST-GH
  - RJ45
- 2x MIPI CSI Camera Inputs
  - 4 Lanes each
  - 22-Pin Raspberry Pi Cam FFC
- 2x USB 3.0 Host Port
  - USB A
  - 5A Current Limit
- 2x USB 2.0 Host Port
  - 5-Pin JST-GH
  - 0A Current Limit
- USB 2.0 for Programming/debugging
  - USB-C
- 2 Key M 2242 for NVMe SSD
  - PCIEx4
- 2 Key E 2230 for WiFi/BT
  - PCIEx2
  - USB
  - UART
  - I2S
- Mini HDMI Out
- 4x GPIO
  - 6-pin JST-GH
- CAN Port
  - Connected to Autopilot's CAN2 (4 Pin JST-GH)
- SPI Port
  - 7-Pin JST-GH
- I2C Port
  - 4-Pin JST-GH

- I2S Port
  - 7-Pin JST-GH
- 2x UART Port
  - 1 for debug
  - 1 connected to Autopilot's telem2
- Fan Power Port
- IIM42652 IMU
- Input Power
  - XT30 Connector
  - Voltage Rating: 7-21V (3S-4S)
  - Separate input power circuits than the Autopilot to ensure flight safety
  - Holybro UBEC 12A (3-14S) can be used for application above 4S
  - **Note:** The Pixhawk Jetson Baseboard onboard BEC is only rated for 7-21V (3S-4S). Using the external "UBEC 12A (3-14S)" can provides redundancy and easier replacement in case of BEC failure.
- Power Requirements
  - 8V/3A Minimum
  - Depends on Usage and Peripherals

Autopilot Connectors

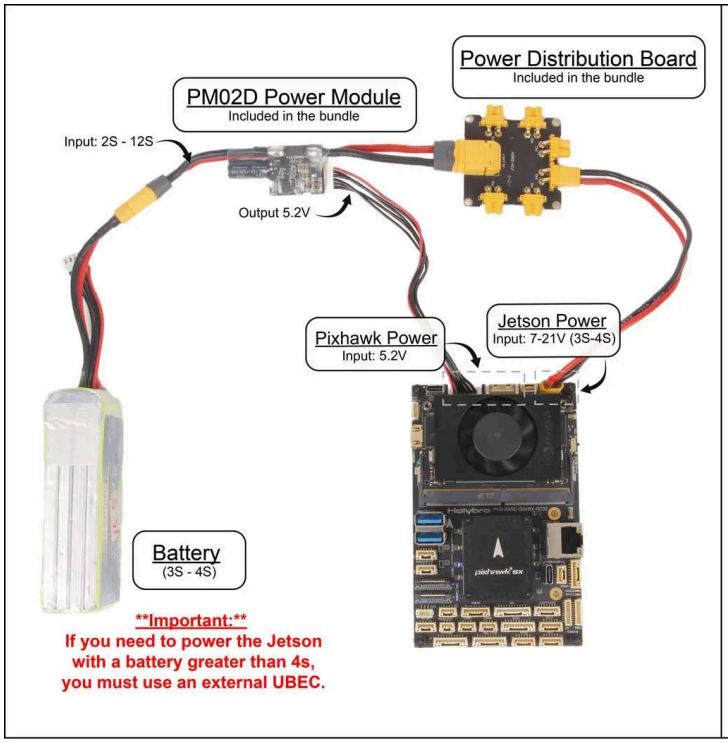
- Pixhawk Autopilot Bus Interface
  - 100 Pin Hirose DF40
  - 50 Pin Hirose DF40
- Redundant Digital Power Module Inputs
  - I2C Power Monitor Support
  - 2x – 6 Pin Molex CLIK-Mate
  - Power Path Selector w/ Overvoltage Protection
- Voltage Ratings:
  - Max input voltage: 6V
  - USB Power Input: 4.75~5.25V
- Full GPS Plus Safety Switch Port
  - 10-Pin JST-GH
- Secondary (GPS2) Port
  - 6-pin JST-GH
- 2x CAN Ports
  - 4 Pin JST-GH
- 3x Telemetry Ports with Flow Control
  - 2x 6-Pin JST-GH
  - 1 is connected to Jetson's UART1 Port
- 16 PWM Outputs
  - 2x 10-Pin JST-GH
- UART4 & I2C Port
  - 6-Pin JST-GH
- 2x Gigabit Ethernet port
  - Connected to both Jetson & Autopilot via Ethernet switch (RTL8367S)
  - 8-pin JST-GH
  - RJ45
- AD & IO
  - 8-Pin JST-GH
- USB 2.0
  - USB-C

    - 4-pin JST-GH
- DSM Input
    - 3-pin JST-ZH 1.5mm Pitch
- RC in
    - PPM/SBUS
    - 5-pin JST-GH
- SPI Port
    - External Sensor Bus (SPI5
    - 11-Pin JST-GH
- 2x Debug Port
    - 1 for FMU
    - 1 for IO
    - 10-Pin JST-SH
- Dimensions (Without Jetson and Flight Controller Module)
    - 126x80x38mm
- Weight
    - With Jetson, Heatsink, Flight Controller, M.2 SSD, M.2 Wi-Fi Module 203.2g

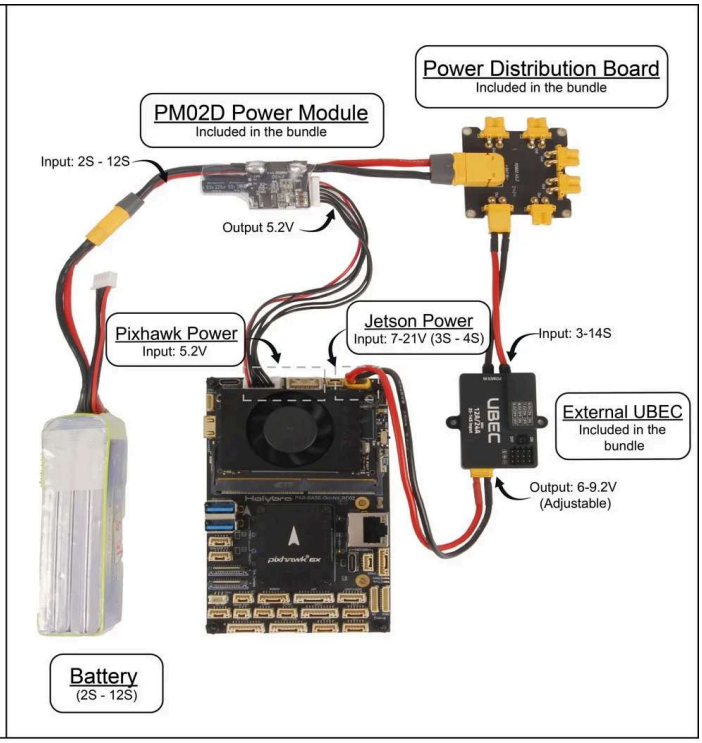
UBEC-12A **Specifications**

- Input voltage: 3~14S (XT30)
- Output voltage: 6.0V/7.2V/8.0V/9.2V (recommend 7.2V if supplying power to Jetson Board)
- Output Current
    - Continuous: 12A
    - Burst: 24A
- Size: 48x33.6x16.3 mm
- Weight: 47.8g

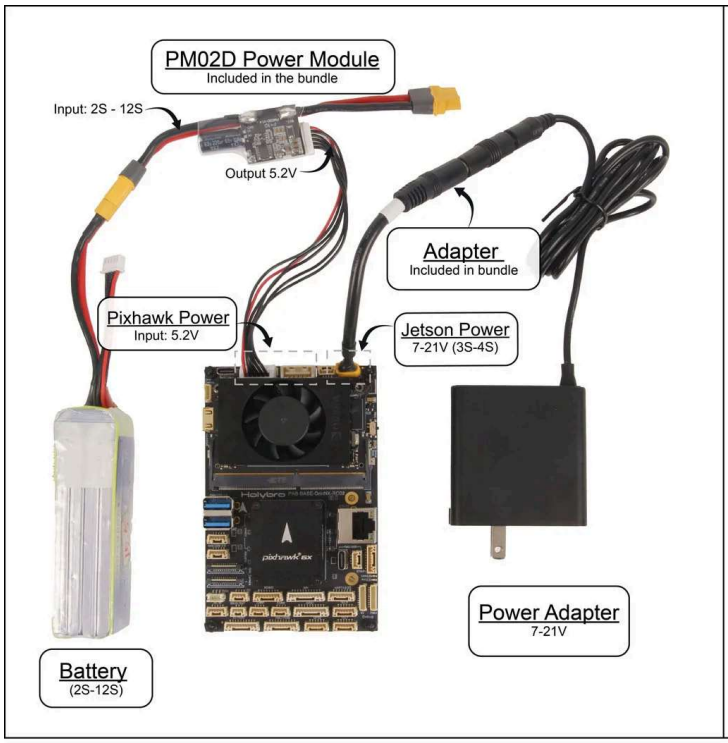
Reference Wiring Diagram



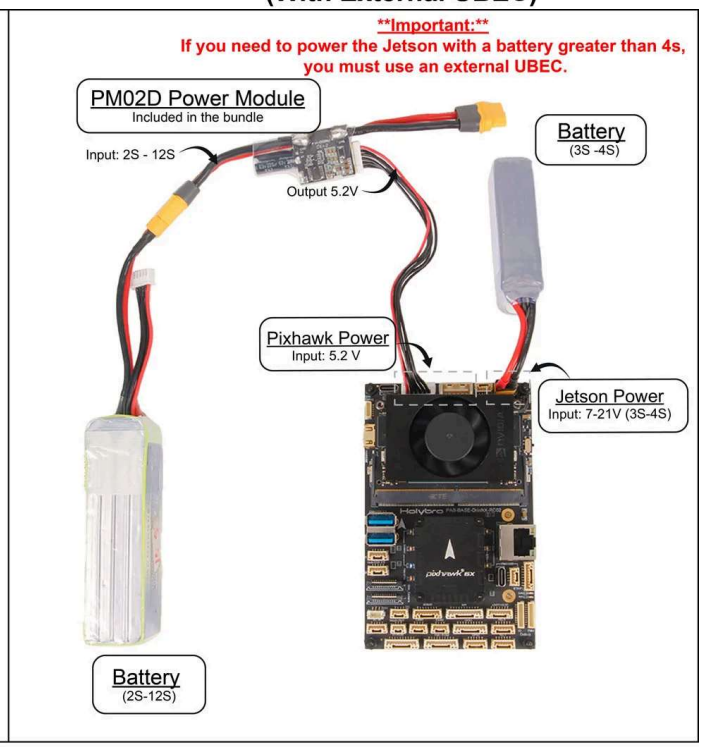
Using One Battery



Using One Battery (With External UBEC)



Using One Battery (With a Power Adapter)



Using Two Battery (Without External UBEC)

Reference Links

- Full Pinout
- Dimension & Weight
- Flashing Guide
- CAN Setup
- CSI Camera Setup

- MAVLINK Bridge
- Other Reference Link
- CAD File Download

Package Includes

SKU20281/SKU20283

  - Pixhawk 6X (ICM-45686) Flight Controller Module
  - Pixhawk Jetson Orin Baseboard
  - Nvidia Orin NX (16GB RAM)/Nvidia Orin Nano (4GB RAM)

- w/ Heat Sink & Fan
- Includes the following:
  - SSD: Samsung PM9B1 PCIe 4.0 NVMe 512GB
  - Wi-Fi & Bluetooth Module: Intel 8265NGW AC Dual Band or Realtek RTL8B22CE
  - Camera: IMX219-200
- PM02D Power Module
- UBEC 12A (3-14S)
- PDB Board
- Cable Set

SKU20280/SKU20282

- Pixhawk 6X Pro Flight Controller Module
- Pixhawk Jetson Orin Baseboard
- Nvidia Orin NX (16GB RAM)/Nvidia Orin Nano (4GB RAM) w/ Heat Sink & Fan
- Includes the following:
  - SSD: Samsung PM9B1 PCIe 4.0 NVMe 512GB
  - Wi-Fi & Bluetooth Module: Intel 8265NGW AC Dual Band or Realtek RTL8B22CE
  - Camera: IMX219-200
- PM02D Power Module
- UBEC 12A (3-14S)
- PDB Board
- Cable Set

SKU11072:

- Pixhawk Jetson Orin Baseboard
- Cable Set

Jetson Orin Default Login

- ID：holybro
- PW：123

Detailed information

The Jetson Orin NX module is extremely compact, but can provide AI performance of up to 100 TOPS, with power configurable between 10 to 25 watts. The performance of this module can reach up to three times that of the Jetson AGX Xavier and five times that of the Jetson Xavier NX.

	SKU31231&SKU31242	SKU31244&SKU31245
		
	Jetson Orin NX 16GB	Jetson Orin Nano 4GB
AI performance	100 TOPS	20 Sparse TOPs | 10 Dense T
GPU	1024 core NVIDIA Ampere architecture GPU with 32 Tensor Cores	512-core NVIDIA Ampere Arc with 16 Tensor Cores
GPU Maximum frequency	918 MHz	625 MHz
CPU	8 core Arm® Cortex® A78AE v8.2 64 bit CPU 2MB L2 + 4MB L3	6-core Arm Cortex-A78AE v8 1.5 MB L2 + 4 MB L3
CPU Maximum frequency	2 GHz	1.5 GHz
DL Accelerator	2x NVDLA v2	-
DLA Maximum frequency	614 MHz	-
Visual Accelerator	1x PVA v2	-
RAM	16GB 128 bit LPDDR5 102.4 GB/s	4GB 64 bit LPDDR5 34 GB/s
Storage	（Support external NVMe）	（Support external NVMe）
Video Coding	1x 4K60 (H.265) 3x 4K30 (H.265) 6x 1080p60 (H.265) 12x 1080p30 (H.265)	1080p30，Supported by 1-2
Video Decode	1x 8K30 (H.265) 2x 4K60 (H.265) 4x 4K30 (H.265) 9x 1080p60 (H.265) 18x 1080p30 (H.265)	1x 4K60 (H.265) 2x 4K30 (H.265) 5x 1080p60 (H.265) 11x 1080p30 (H.265)
Camera	Up to 4 cameras (up to 8 can be supported through virtual channels) 8-channel MIPI CSI-2	Up to 4 cameras (up to 8 can through virtual channels) 8 Channel MIPI CSI-2

	D-PHY 2.1 (up to 20 Gbps)	D-PHY 2.1（up to 20 Gbps）
PCIe	1 x4 + 3 x1 PCIe 4.0，Root Port and Endpoint)	1 x4 + 3 x1（PCIe 3.0、Root Endpoint)
USB	3x USB 3.2 2.0 (10 Gbps)	3x USB 3.2 2.0 (10 Gbps)
	3x USB 2.0	3x USB 2.0
Network	1x GbE	1x GbE
Display	1x 8K30 multimode DP 1.4a (+MST)/eDP 1.4a/HDMI 2.1	1x 4K30 Mutimode DP 1.2 (+ 1.4/HDMI 1.4
Other I/O	3x UART、2x SPI、2x I2S、4x I2C、1x CAN、DMIC 和 DSPK、PWM、GPIO	3x UART、2x SPI、2x I2S、 CAN、DMIC 和 DSPK、PWM
Consumption	10 watt - 25 watt	7 watt - 10 watt
Specifications and dimensions	69.6 mm x 45 mm	69.6 mm x 45 mm
	260 pin SO-DIMM connector	260 pin SO-DIMM connector

SKU31242 /SKU31245 Includes

- 1x NVIDIA Jetson Orin NX 16G/Jetson Orin Nano 4GB
- 1x Heat Sink & Fan

SKU31231 /SKU31244 Includes

- 1x NVIDIA Jetson Orin NX 16G/Jetson Orin Nano 4GB

Overview

UBEC 12A (3-14S) is a synchronous step-down regulator from a high voltage or widely varying input supply. It draws the DC voltage from a 3-14S LiPo battery and drops the voltage to a level suitable for receivers and other electronic devices and keeps providing the stable current output of up to 12Amp. The output voltage can be adjusted by the onboard DIP switches.

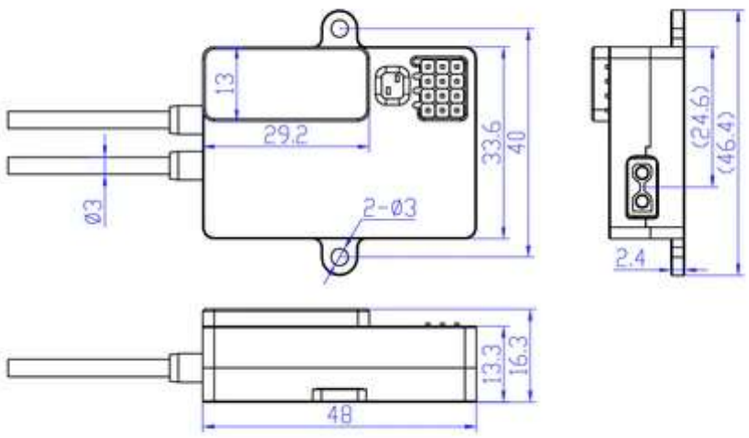
Features

- High efficiency DC-DC regulator chip for transfer efficiency of over 90%
- Adjustable output voltage (6.0V/7.2V/8.0V/9.2V) applicable for devices with different voltages
- 4-channel parallel header pin outputs for servos
- XT30 output for high current devices
- Multiple protections including over-current, (output end) short circuit, overheat, and low-voltage cutoff
- Metal housing for quick heat dissipation and less electromagnetic interference.

Specifications

- Input voltage: 3~14S (XT30)
- Output voltage: 6.0V/7.2V/8.0V/9.2V (Adjustable by using onboard DIP Switches)
- Output Current
  - Continuous: 12A
  - Burst: 24A
- Size: 48x33.6x16.3 mm
- Weight: 47.8g

Dimension:



Unit in milimeter

Package Includes:

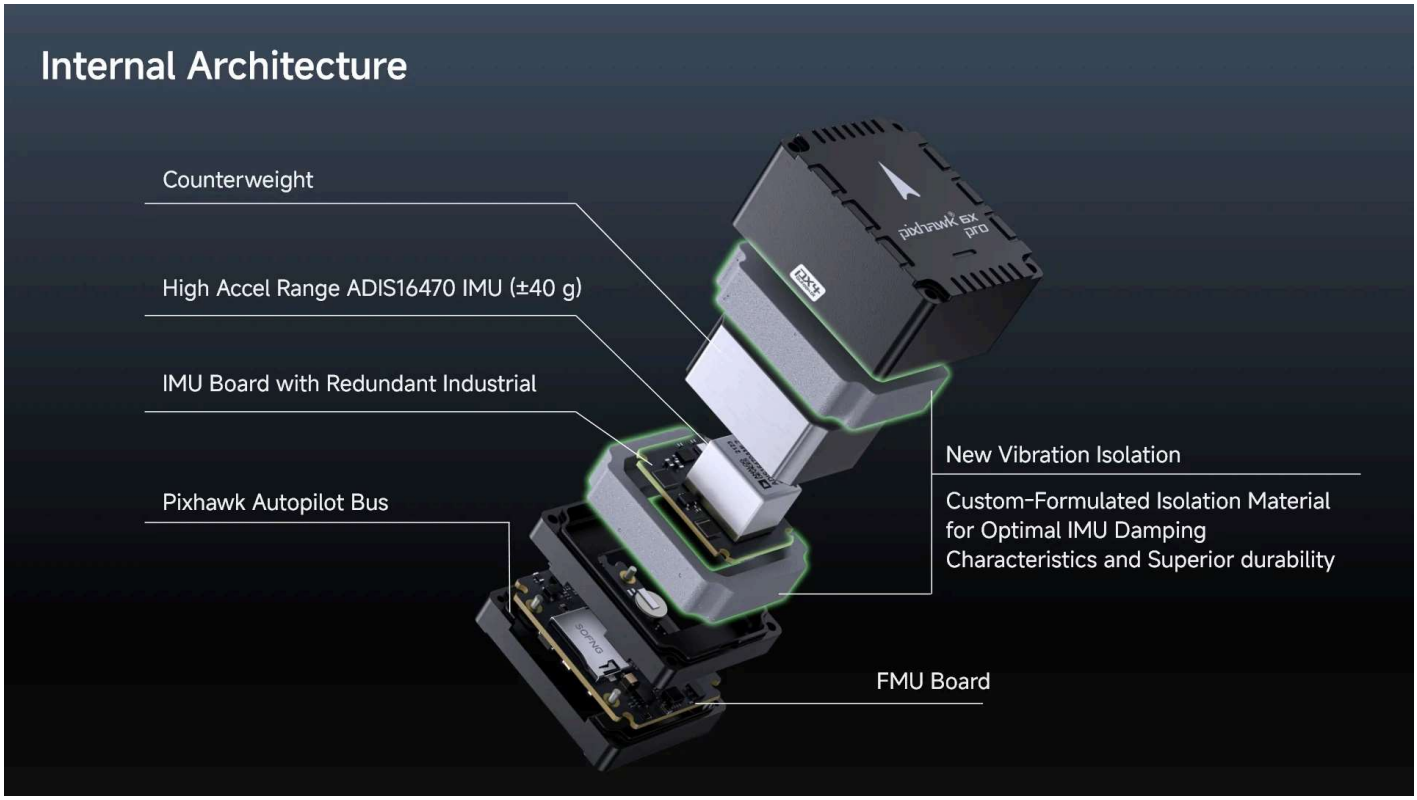
- 1x UBEC Power Module
- 1x XT30 18AWG Cable
- 1x DuPont 3P Cable

Key Design Point

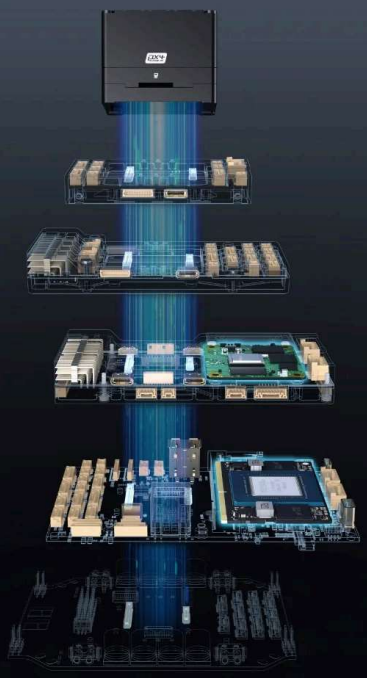
- High-performance ADIS16470 Industrial IMU with high accelerometer dynamic range (±40 g), perfect for accurate motion sensing in demanding UAV applications
- All New advanced durable vibration isolation material with resonance frequency in the higher spectrum, ideal for industrial and commercial drone applications
- Triple redundant IMU & double redundant barometer on separate buses
- High performance STM32H753 Processor
- Modular flight controller: separated IMU, FMU, and Base system
- Safety-driven design incorporates sensors from different manufacturers and model lineups
- Independent LDO powers every sensor with independent power control.
- Ethernet interface for high-speed mission computer integration
- Temperature-controlled IMU board, allowing optimum working temperature of IMUs

All new Vibration Isolation Design

This new vibration isolation design uses a custom-formulated durabile silicone-based isolation material in place of the traditional foam design. Backed by extensive R&D and testing, it offers optimal IMU damping characteristics with resonance frequency in the higher spectrum, perfect for industrial and commercial drone



Pixhawk Autopilot Bus



pixhawk® 6x pro

Mini Baseboard

Standard Baseboard

Rasberry Pi CM4 Baseboard

RaspberryPi

Pixhawk Jetson Baseboard

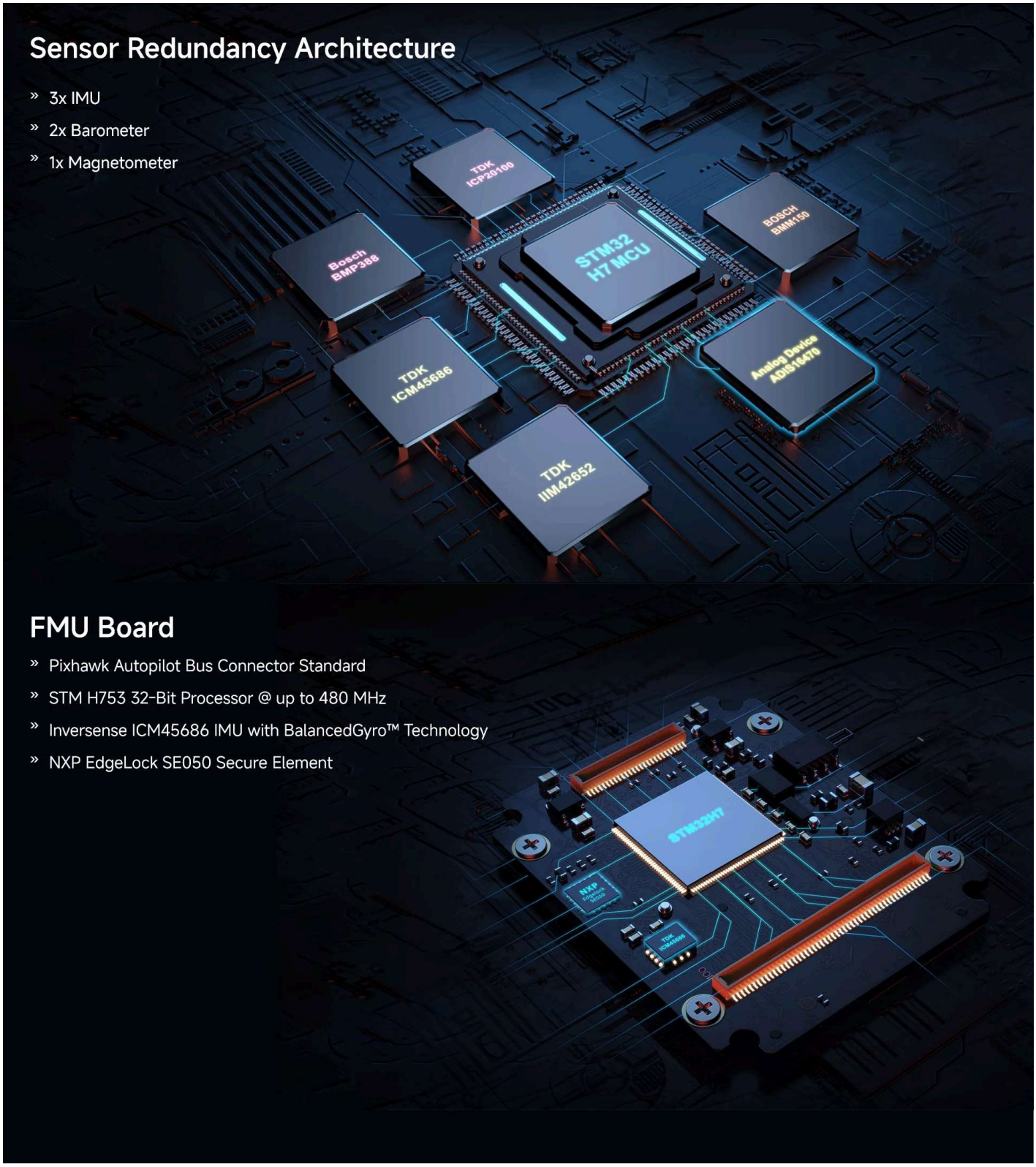
NVIDIA

Your Own Customized Baseboard

IMU Board

- Temperature Compensation Resistors to Ensure IMU accuracy
- Redundant Industrial Grade IMU
- Sensor Technologies from Various Sensor Manufacturers
- IMU Board Enclosed in Specially Formulated Isolation Material





Note:

- FC Module + a baseboard is required for this product to function. A FC Module or a Baseboard by itself will not function.

Specification

Processors & Sensors

- FMU Processor: STM32H753
  - 32 Bit Arm® Cortex®-M7, 480MHz, 2MB flash memory, 1MB RAM
- IO Processor: STM32F103
  - 32 Bit Arm® Cortex®-M3, 72MHz, 64KB SRAM
- On-board sensors
  - Accel/Gyro: ADIS16470
    - ±40g, Vibration Isolated, Industrial IMU
  - Accel/Gyro: IIM-42652
    - ±16g, Vibration Isolated, Industrial IMU
  - Accel/Gyro: ICM-45686 with BalancedGyro™ Technology
    - ±32g, Hard Mounted
  - Barometer: ICP20100
  - Barometer: BMP388
  - Mag: BMM150
- NXP EdgeLock SE050 Plug & Trust hardware secure element

Electrical data

- Voltage Ratings:
  - Max input voltage: 6V
  - USB Power Input: 4.75~5.25V
  - Servo Rail Input: 0~36V
- Current Ratings:
  - Telem1 output current limiter: 1.5A
  - All other port combined output current limiter: 1.5A

Mechanical data

- Dimensions
  - Flight Controller Module: 38.8 x 31.8 x 30.1mm
  - Standard Baseboard: 52.4 x 102 x 16.7mm (Aluminum)
  - Mini Baseboard: 43.4 x 72.8 x 14.2 mm
- Weight
  - Flight Controller Module: 50g
  - Standard Baseboard: 72.5g (Aluminum)
  - Mini Baseboard: 26.5g

Reference Links:

- Isolation Material Testing Data
- Power module comparison chart
- Dimensions
- PX4 & Ardupilot Guide
- Sample Wiring Diagram
- Firmware Support
- Pixhawk Baseboards Ports
- Power Module Setup Guide

Package Includes

SKU 11070 includes:

- Pixhawk 6X Pro Flight Controller Module

SKU 20262/20316/20261 includes:

- Pixhawk 6X Pro Flight Controller Module
- Pixhawk Standard Baseboard v2A/ Pixhawk Standard Baseboard v2B/ Mini Baseboard
- PM02D HV Power Module
- Cable Set

Accessories:



Pixhawk PWM Cable for Tekko32 4in1 ESC



Standard Baseboard Mounting Plate





Description

The Holybro DroneCAN GPS has an UBLOX M8N or M9N module, BMM150 compass, tri-colored LED indicator. It has the STM32G4 Processor and adopted the DroneCAN protocol for communication, making it more reliable and better in dealing with electromagnetic interference compare to serial connection. It does not occupy any serial port of the flight controller, and different CAN devices can be connected to the same CAN bus via a CAN splitter board.

Specification:

	DroneCAN M9N
GNSS Receiver	Ublox NEO M9N
Number of Concurrent GNSS	Up to 4 GNSS (GPS, Galileo, GLONASS, BeiDou)
Processor	STM32G4 (170MHz, 512K FLASH)
Compass	BMM150 or IST8310
Frequency Band	GPS: L1C/A GLONASS: L10F Beidou: B1I Galileo: E1B/C
GNSS Augmentation System	SBAS: WAAS, EGNOS, MSAS, QZSS
Navigation Update	5Hz Default(10Hz MAX)

Accuracy	2.5m
Speed Accuracy	0.05 m/s
Max # of Satellites	22+
Communication Protocol	DroneCAN @ 1 Mbit/s
Supports Autopilot FW	PX4, Ardupilot
Port Type	GHR-04V-S
Antenna	25 x 25 x 4 mm ceramic patch antenna
Power consumption	Less than 200mA @ 5V
Voltage	4.7-5.2V
Operating Temperature	-40~80℃
Size	Diameter: 54mm Thickness: 14.5mm
Weight	36g
Cable Length	26cm
Other Notes	- LNA MAX2659ELT+ RF Amplifier - Rechargeable Farah capacitance - Low noise 3.3V regulator

For other technical information, please go to https://docs.holybro.com/

DroneCAN
DroneCAN is the primary CAN protocol used by the ArduPilot and PX4 projects for communication with CAN peripherals. It is an open protocol with open communication, specification and multiple open implementations.

DroneCAN Development
The DroneCAN project has an active development community.

- discussions on discord at https://dronecan.org/discord
- development on github at https://github.com/DroneCAN

Additional DroneCAN Information: https://dronecan.github.io/



Overview

This Holybro SiK Telemetry Radio is a small, light and inexpensive open source radio platform that typically allows ranges of better than 300m “out of the box” (the range can be extended to several kilometres with the use of a patch antenna on the ground). This radio is plug-n-play all Pixhawk Standard and other Flight Controller, providing the easiest ways to setup a telemetry connection between your Autopilot and a ground station. It uses open source firmware which has been specially designed to work well with MAVLink packets and to be integrated with the Mission Planner, Ardupilot, QGroundControl, PX4 Autopilot. The radios can be either 915Mhz or 433Mhz and you should purchase the model which is appropriate for your country/region.

Features

- *Open-source SIK firmware*
- Plug-n-play for Pixhawk Standard Flight Controllers
- Easiest way to connect your Autopilot and Ground Station
- Interchangeable air and ground radio
- Micro-USB port (Type-C Adapter Cable Included)
- 6-position JST-GH connector

Specification

- 100 mW maximum output power (adjustable) -117 dBm receive sensitivity
- RP-SMA connector
- 2-way full-duplex communication through adaptive TDM UART interface
- Transparent serial link
- MAVLink protocol framing
- Frequency Hopping Spread Spectrum (FHSS) Configurable duty cycle
- Error correction corrects up to 25% of bit errors Open-source SIK firmware
- Configurable through Mission Planner & APM Planner
- FT230X/FT231 is a USB to BASIC UART IC

Dimensions

- 28 x 53 x 10.7mm (without antenna)

Electrical Data

- Supply voltage: 5V DC (from USB or JST-GH)
- Transmit current: 100 mA at 20dBm
- Receive current: 25 mA
- Serial interface: 3.3 V UART

Weight

- 13.6g without antenna
- 7.4g for 433MHz antenna
- 9.5g for 915MHz antenna

FCC IDENTIFIER

- 2AP22-HT03-V3

Package Included

- Radio modules with antennas *2

- Micro-USB to USB-A cable *1
- Micro-USB to Micro-USB OTG adapter cable *1
- Micro USB to Type C Adapter
- JST-GH-6P to JST-GH-6P cable *1 (for Pixhawk Standard FC)
- JST-GH-6P to Molex DF13 6P (for Pix32, Pixhawk 2.4.6, etc.)

Manual:

Telemetry-Radio-V3-Quick-Start-Guide

Some Tips:

https://ardupilot.org/copter/docs/common-configuring-a-telemetry-radio-using-mission-planner.html

2x PWM Board



1x CAN / I2C Splitter



3x GHR 1.25mm 4 to 4 pin cable (CAN&I2C)



3x GHR 1.25mm 6 to 6 pin cable (TELEM)



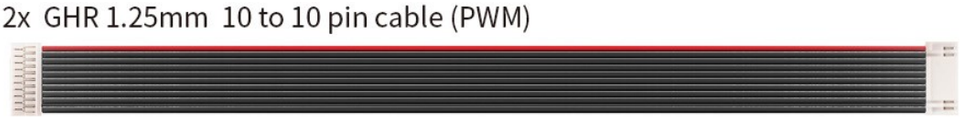
3x GHR 1.25mm 7 to 7 pin cable (UART4)



1x GHR 1.25mm 8 to 8 pin cable (AD&IO)



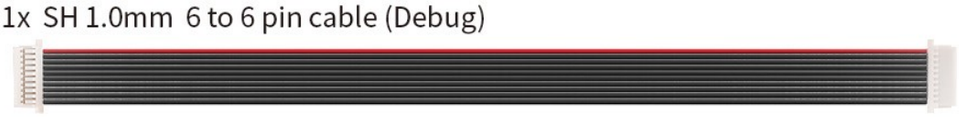
2x GHR 1.25mm 10 to 10 pin cable (PWM)



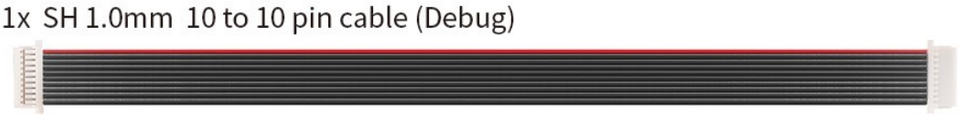
1x GHR 1.25mm 11 to 11 pin cable (SPI)



1x SH 1.0mm 6 to 6 pin cable (Debug)



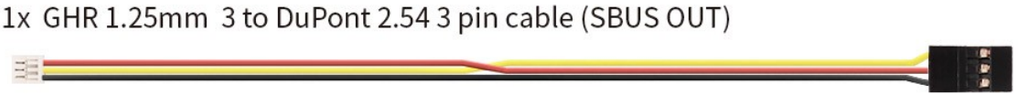
1x SH 1.0mm 10 to 10 pin cable (Debug)



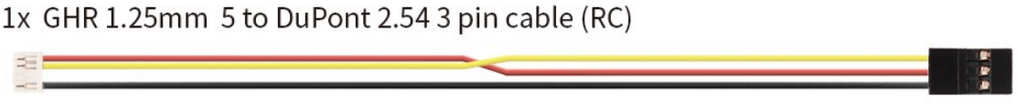
2x Molex 2.0mm 6 to 6 pin cable (Power)



1x GHR 1.25mm 3 to DuPont 2.54 3 pin cable (SBUS OUT)



1x GHR 1.25mm 5 to DuPont 2.54 3 pin cable (RC)



2x GHR 1.25mm 5 to USB



1x GHR 1.25mm 8 to LAN(ETH)



1x XT30 to 5525 cable



1x Type-c USB cable

