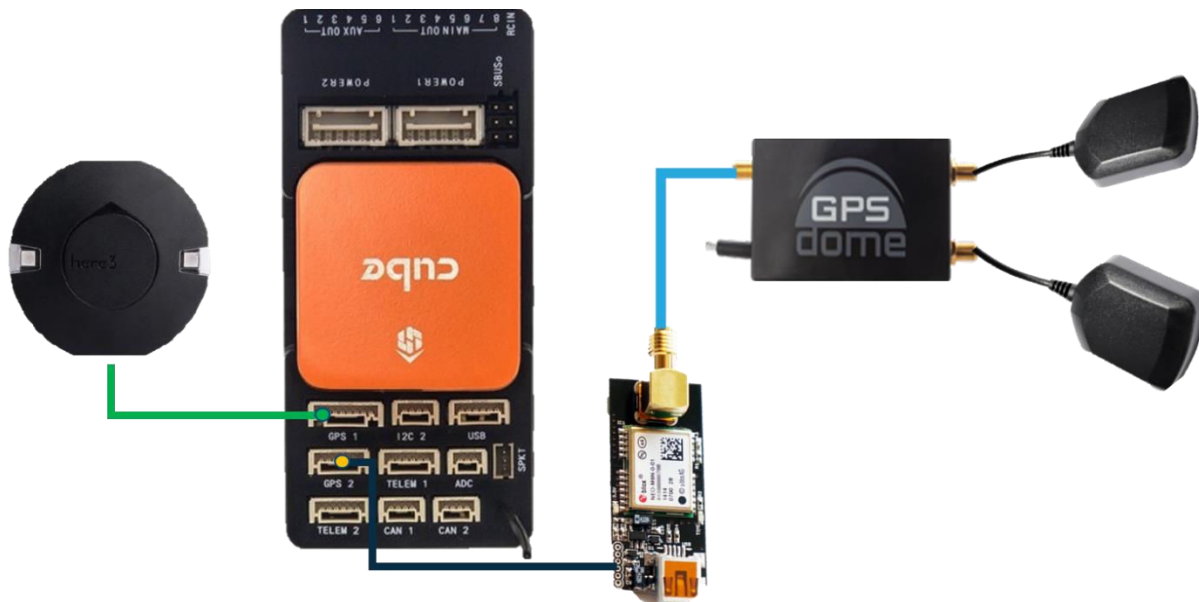


Integration of GPSdome unit with PIXHAWK

This document will describe step by step the integration of the GPSdome unit into PIXHAWK. The goal is to provide GNSS resiliency to systems controlled by PIXHAWK.

****Performing the maintenance operation is the responsibility of the customer**

General schematics:



Required equipment:

- PIXHAWK cube
- GPSdome
- two active antennas with 26 to 30dB gain
- SMA male to SMA male cable ([Digikey](#))
- GNSS receiver (In this document, we will present an explanation of UBLOX receivers
 - Ability to interface to a UART connection
 - has an SMA port
 - recommended M8N/F9 ublox receiver

Tool:

- soldering iron

Step by Step:

1. Soldering a connection between the receiver and GPS 2 connection in PIXHAWK:

1.1. Solder the 6-pin UART connection to the connection pins on the receiver

1.2. The soldering of the pins will be done according to the following description:

1.2.1.



GPS 2

Pin #	Name	Dir	Wire Color	Description
1	VCC_5V	out	red / gray	Supply to GPS from AP
2	MCU_TX	out	yellow / black	3.3V-5.0V TTL level, TX of AP
3	MCU_RX	in	green / black	3.3V-5.0V TTL level, RX of AP
4	SCL	out	gray / black	3.3V-5.0V I2C2
5	SDA	in	gray / black	3.3V-5.0V I2C2
6	GND	-	black	GND connection

1.2.2. Ublox receiver pinout:

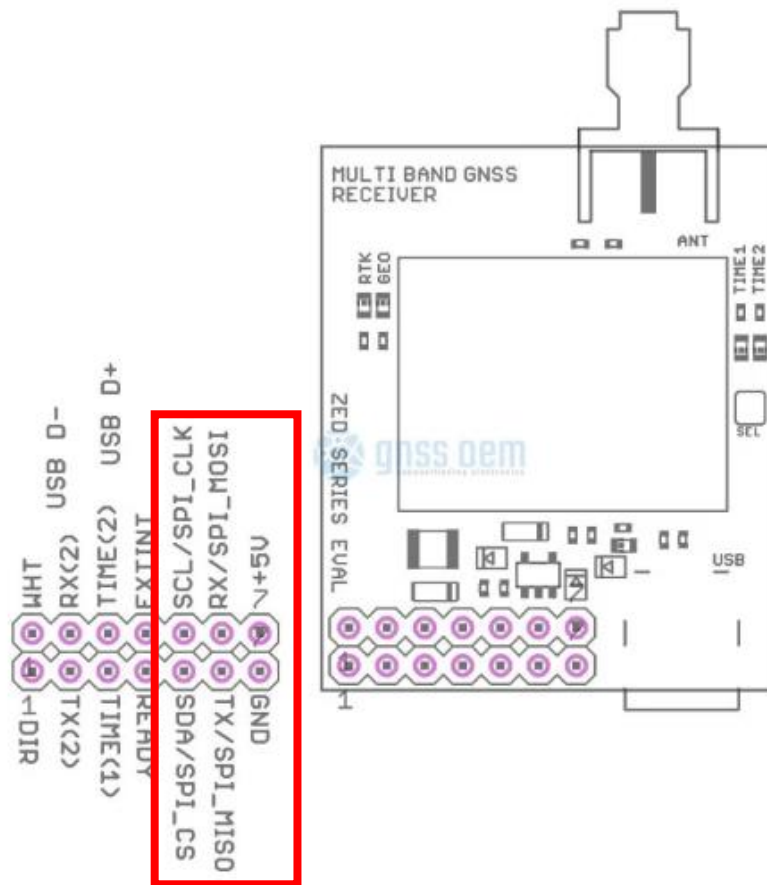
1.2.2.1. M8N Pinout chart

Pins #	Name	Direction	Wire color
1	5v	out	Red
2	Rx	In	Green
3	Tx	Out	Yellow
4	SCL	out	Black
5	SDA	in	black
6	GND	-	Black



1.1.1.1. F9 Pinout chart

Pins #	Name	Direction	Wire color
1	5v	out	Red
2	Rx	In	Green
3	Tx	Out	Yellow
4	SCL	out	Black
5	SDA	in	black
6	GND	-	Black



2. Connecting the receiver to the GPSDOME:

2.1. Connect sma to GPSdome sma connection num 1 and 2 ("A" and "P") to #2 antenna

- 2.2. Connect sma male to GPSdome sma connection num 3 ("R") to sma connection on the receiver
- 2.3. Create a power cable adapted to the system's connections on which the GPSDOME will be mounted .Voltage is obtained between 3.3DCV and 36DCV

3. Connect the shielded receiver to the GPS 2 PIXHAWK connection.

4. Change parameters according to the following table:

parameter	value
GPS_DELAY_MS2	50
GPS_TYPE2	2
SERIAL4_BAUD	115
SERIAL4_PROTOCOL	5
ARMING_CHECK	3582

HERE 3:

Unlike other receivers, the HERE3 does not connect via UART but through CAN. Therefore, when using the HERE3 antenna, the GPS receiver GPSdome should be connected to TELEM2 port (serial2).

1. use the following ArduPilot parameters:

Parameter	Value
GPS_TYPE	9
GPS_TYPE2	2
SERIAL2_BAUD	115
SERIAL2_PROTOCOL	5
GPS_DELAY_MS2	50
ARMING_CHECK	Make sure GPS LOCK enabled

3. Attached is a relevant diagram:

