Get started with your Botlink XRD2

1. Botlink Software Download and XRD2 Registration

First things first, to get your XRD2 up in the air, you're going to need to create an account with Botlink, download our Relay app (that's what allows for communication between your GCS and the XRD), and you'll need to register your device.

1.1 Create a Botlink Account

To create an account with Botlink, go to https://app.botlink.com/auth/signup to sign up for a free account.

Note - Make a record of your email address and password, as you'll need these credentials to log in to Botlink Relay (which is used to connect your XRD2 to your ground control software).

Note - Be sure to use an email address that you have access to, as there is an email sent where you'll need to confirm your email address.

Go to your email account, and click the "confirm email" button

1.2 Install the Botlink Relay software

The next step to using your Botlink XRD is installing the Botlink Relay software. The Botlink Relay software enables you to connect your ground control station to your Botlink XRD-equipped drone without any modifications.

Download link is listed below.

OS	Version	Link
Windows	64 Bit	https://xrdtray.s3.amazonaws.com/Windows/BotlinkRelay-win32-x64-1.4.1-beta.0.zip

1.3 Register your Botlink XRD2

Once the Botlink Relay software is installed, you're ready to register your Botlink XRD2 to your account. To register your XRD2, you'll need to know the Hardware ID of your unit. This should have been provided to you as part of your order documentation. If it wasn't, or you can't find the information, see the "Determining the XRD Hardware ID" section below.

To register your Botlink XRD2

1. Open the Botlink XRD2 Tray App
2. Enter your username and password
3. Click "Login"
4. Switch to the  tab
5. Click "Register XRD2" and input the Hardware ID for the XRD2.

Success! Your XRD2 is now registered!

2. Configuring the config.toml File on XRD2 Internal Memory

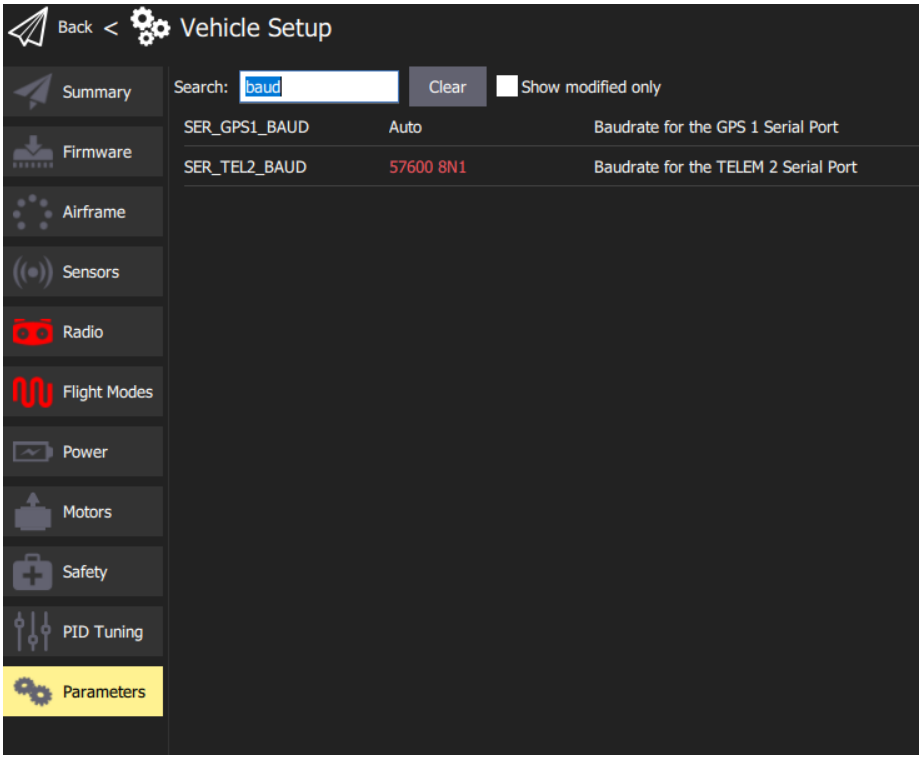
The config.toml file located on the included internal memory includes information needed for your specific configuration. Note, information must be typed exactly as laid out below, including punctuation, spacing, and capitalization.

To access config.toml file, connect XRD2 via included USB-C cable.
To open and edit the “config.toml” file, always use Notepad or a similar type of application.

2.1 Configuring MAVLink Settings:

Included Code:
[serial]
protocol = "mavlink"
baud = 57600
version = 2

Baud rate is set in the flight controller, and to verify matching baud rates, use QGroundControl. The easiest way to check is to open QGroundControl -> Vehicle Setup -> Parameters, then use the search bar and type “baud”. While the returned results may be different per flight controller, what we want to verify is that SER_TEL2_BAUD (or whatever Telem port you connected the XRD2 into the flight controller) is set to 57600.



2.2 Configuring WiFi Connection:

To connect to your local WiFi network for testing a complete connection, you'll need to follow these steps:

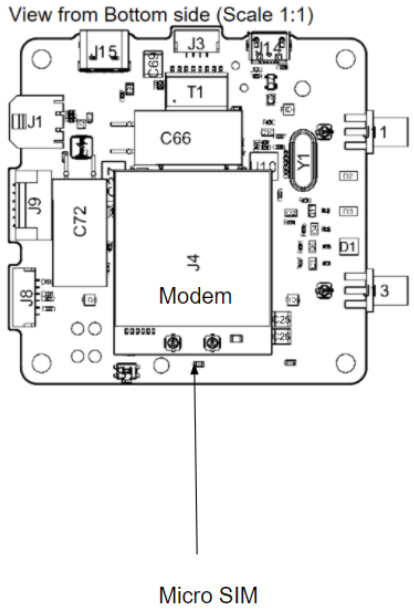
1. Power down the drone
2. Connect the USB-C cable from the XRD2 to the PC or Mac
3. Open or create the config.toml file using Notepad.
4. Add content to the file as shown, substituting your network name and password for the placeholder values

   ```
   [wifi]
   network = "your network name"
   password = "something super secure"
   ```

5. Save the file
6. Disconnect the USB-C from your computer
7. After the system is powered on, your device should be connected to the WiFi network

2.3 Installing a SIM card

Installing a SIM card is the only time it's necessary to open the XRD2 enclosure. To open the enclosure, remove all four screws, being careful not to strip them.



To easily access the SIM card slot, it's recommended that you gently lift the modem up from it's socketed-seat, being careful not to strain the two antenna cables. The modem is seated using pins on both sides, and it can be easily removed by gently lifting from side to side. Once the modem is removed from the socket, simply install the Micro SIM card, making sure that it's fully pushed in. Once the SIM is installed, line up the modem pins, and gently push the modem back into position. Finally, reassemble the XRD2 and enclosure, and tighten the four corner screws, being careful not to overtighten.

2.4 Configuring Cellular Connection:

Once you've verified a complete system connection over wifi, it's time to configure the cellular connection. To connect to your chosen cellular network you'll need to follow these steps:

1. Attached antennas to XRD2 module (necessary for cellular connection)
2. Power down the drone
3. Connect the USB-C cable to the XRD2
4. Open or create the config.toml file
5. Add the content shown, filling in the APN you'd like to use

```
[cell]
apn = "VZWINTERNET"
```

6. Save the file
7. Disconnect the USB-C cable from the PC
8. Power on the drone

Note - The APNs supported by the Botlink XRD2 depend on the installed modem, sim card, and your wireless plan. Contact your wireless provider for details on which APN to use with your Botlink XRD2.

2.4.1 Example config.toml file for cellular connection:

```
[cell]
apn = "myprovider.apn"
bands = ["!5"]

[serial]
protocol = "mavlink"
version = 2
baud = 57600
logging = false

[c2link]
nextgen = true
logging = false
```

3. Connecting Botlink XRD2 to Autopilot

Connecting the Botlink XRD2 system to your existing autopilot is quick and simple. The XRD2 will easily integrate with MAVLink based autopilots, such as Pixhawk, Pixhawk 2, and ArduPilot Mega, running PX4 or APM firmware.

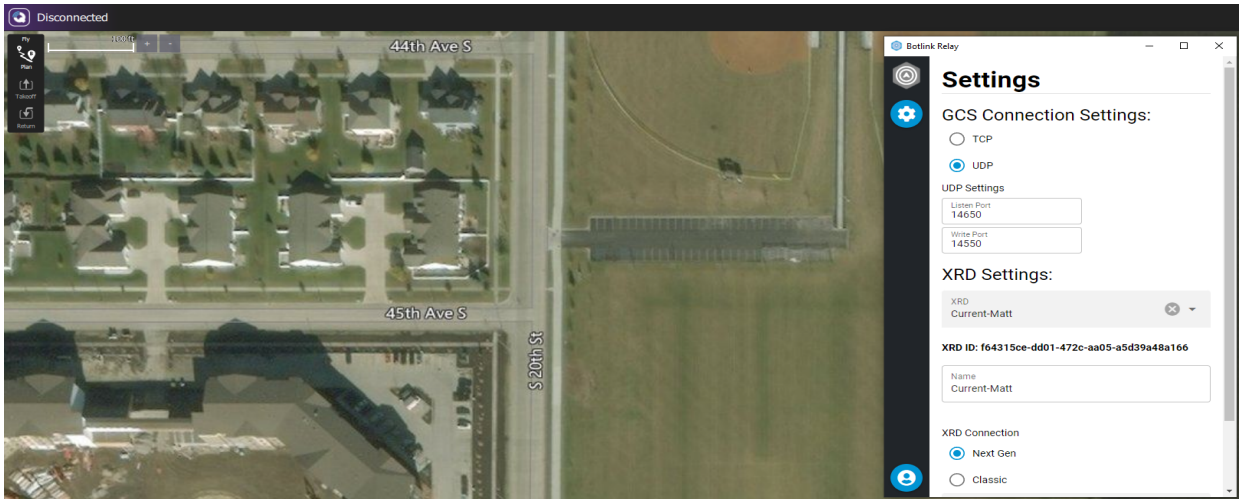
4. Connecting Botlink Relay to Ground Control Software

Botlink Relay can be connected to QGroundControl, Mission Planner, and other compatible flight control software. Additionally, Botlink Relay SDK is available for custom integrations

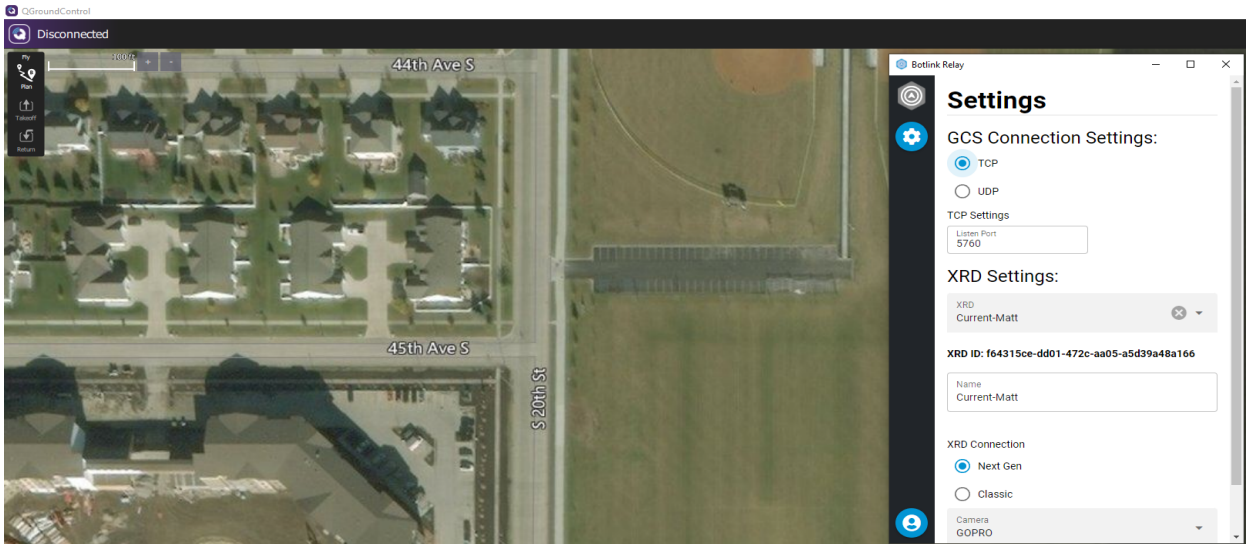
4.1 Connecting Botlink Relay to QGroundControl

4.1.1 UDP Connection

UDP set up is recommended, and a little bit simpler since you don't have to configure anything in QGroundControl. The default UDP port in QGroundControl can automatically connect to Botlink Relay, but you do have to set this up in a specific order. First, power on the drone (which includes XRD2 and flight controller). Second, configure Botlink Relay (shown below), and press the blue start button. QGroundControl should connect as soon as the Relay app shows the connection.



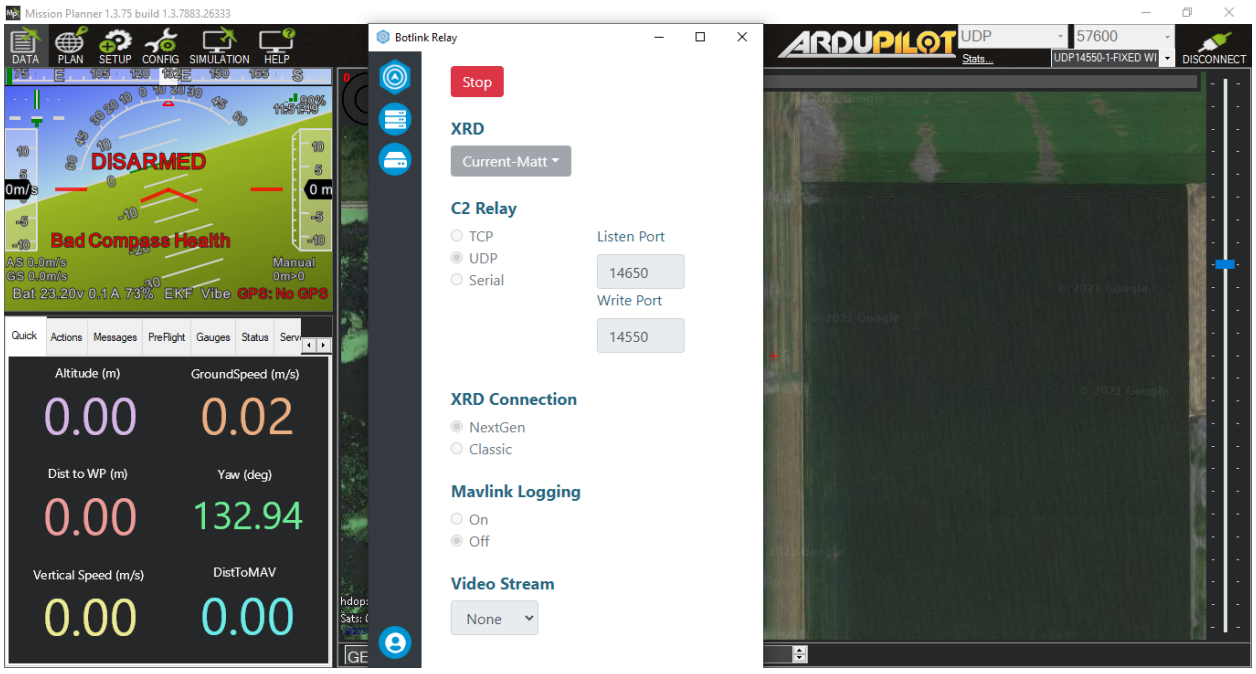
4.1.2 TCP Connection



4.2 Connecting Botlink Relay to Mission Planner

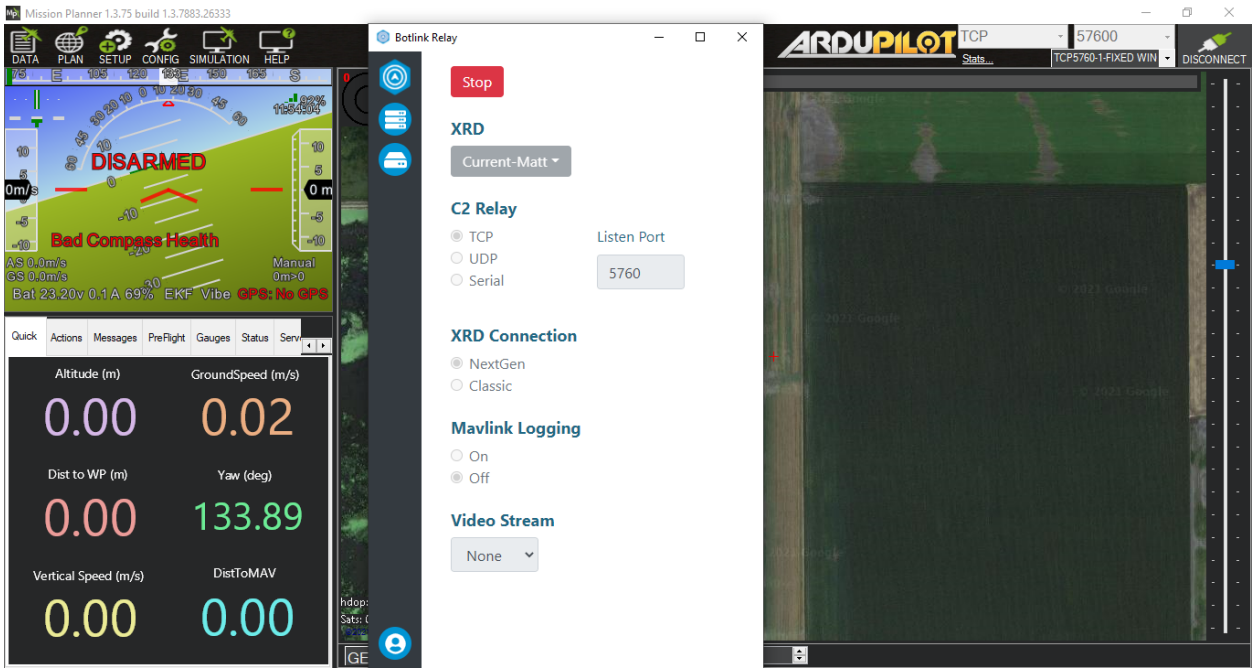
4.2.1 UDP Connection

UDP setup is recommended, and a little bit simpler since you don't have to configure anything in Mission Planner. The default UDP port in Mission Planner can automatically connect to Botlink Relay, but you do have to set this up in a specific order. First, power on the drone (which includes XRD2 and flight controller). Second, configure Botlink Relay (shown below), and press the blue start button. Once connected, Mission Planner should automatically connect to the drone and begin downloading the parameters.



4.2.2 TCP Connection

To connect using TCP, make sure Botlink Relay has been



5. Install the Botlink XRD2 on your drone

Once the application and Botlink Relay have been configured, it's time to install the Botlink XRD2 on your drone. This process varies depending on the drone, but generally speaking you'll need to identify a mounting location on the drone for the Botlink XRD2 (either with or without enclosure) and attach the unit, connect the serial cable, connect the power cable, and connect the antennas.

5.1 Mounting the XRD2

Mounting the Botlink XRD2 is a straightforward process. Customers have used everything from rubber bands to Velcro to physically attach the Botlink XRD2 to their drone. When mounting the Botlink XRD2, keep in mind that it requires a connection to the autopilot and power in order to function. The included power cable is approximately 12 inches long, and the included serial cable is about 9 inches long, these lengths can change depending on your drone and where you mount it. If you're planning on using your Botlink XRD2 without the enclosure, make sure that the unit is protected from dust and moisture. This is most easily accomplished by mounting the enclosureless unit inside the drone fuselage.

5.2 Connect the serial cable

The serial cable included with the Botlink XRD2 is a 6-pin JST (DFU for XRD) cable that is suitable to use when connecting to a Pixhawk autopilot. Either end of the cable can be connected to either the autopilot or the XRD2. When disconnecting this cable be careful and use something that can grip the plastic connectors as pulling on the cables will risk pulling them out of the connector.

5.3 Connect the power cable

The power cable included with the Botlink XRD2 is suitable to use when connecting directly to a 3S to 7S battery LiPo battery.

NOTE The XRD2 *cannot* be powered from the Micro USB or USB-C ports.

5.4 Connect the antennas

The TAOglas antennas included with the Botlink XRD2 have an adhesive backing that makes them easy to mount to most drone airframes. The only thing you have to be careful about is making sure the antennas are polarized, one facing “up/down” and the other “left/right” or on its side. Also be sure to not mount the antennas on top of one another.