DIYmalls BN-220

DIYmalls BN-220 GPS Module Instruction Manual

Model: BN-220

1. Overview

The DIYmalls BN-220 is a compact GPS receiver module designed for various applications including Arduino projects, RC vehicles, FPV drones, and flight control systems. It features 4MB of flash memory for saving configurations and supports dual GPS and GLONASS satellite systems. This module operates with NMEA-0183 protocol at a default baud rate of 9600bps and a 1Hz update rate. It does not include a compass.



Image 1.1: The DIYmalls BN-220 GPS Module, a compact unit for navigation and positioning.

2. Specifications

Feature	Value
Item Weight	0.35 ounces
Product Dimensions	7.48 x 3.15 x 0.59 inches
Display Size	2 Inches
Voice Command	Buttons
Brand	DIYmalls

Feature	Value
Model Name	BN 220
Vehicle Service Type	Car, Truck
Screen Size	2 Inches
Special Feature	Multi-Satellite System Support
Connectivity Technology	4pin 1.0mm cable
Map Type	Street
Audio Output Mode	speaker
Mounting Type	Panel Mount

The BN-220 module is designed for easy integration into various electronic projects. It supports both GPS and GLONASS for enhanced positioning accuracy.



Image 2.1: Detailed pinout diagram and a comparison table showing different Beitian GPS module models, their interfaces, sizes, flash memory, compass presence, and antenna types.

3. Package Contents

The package includes the following items:

- 1 x BN-220 GPS Module
- 2 x 15cm Cables

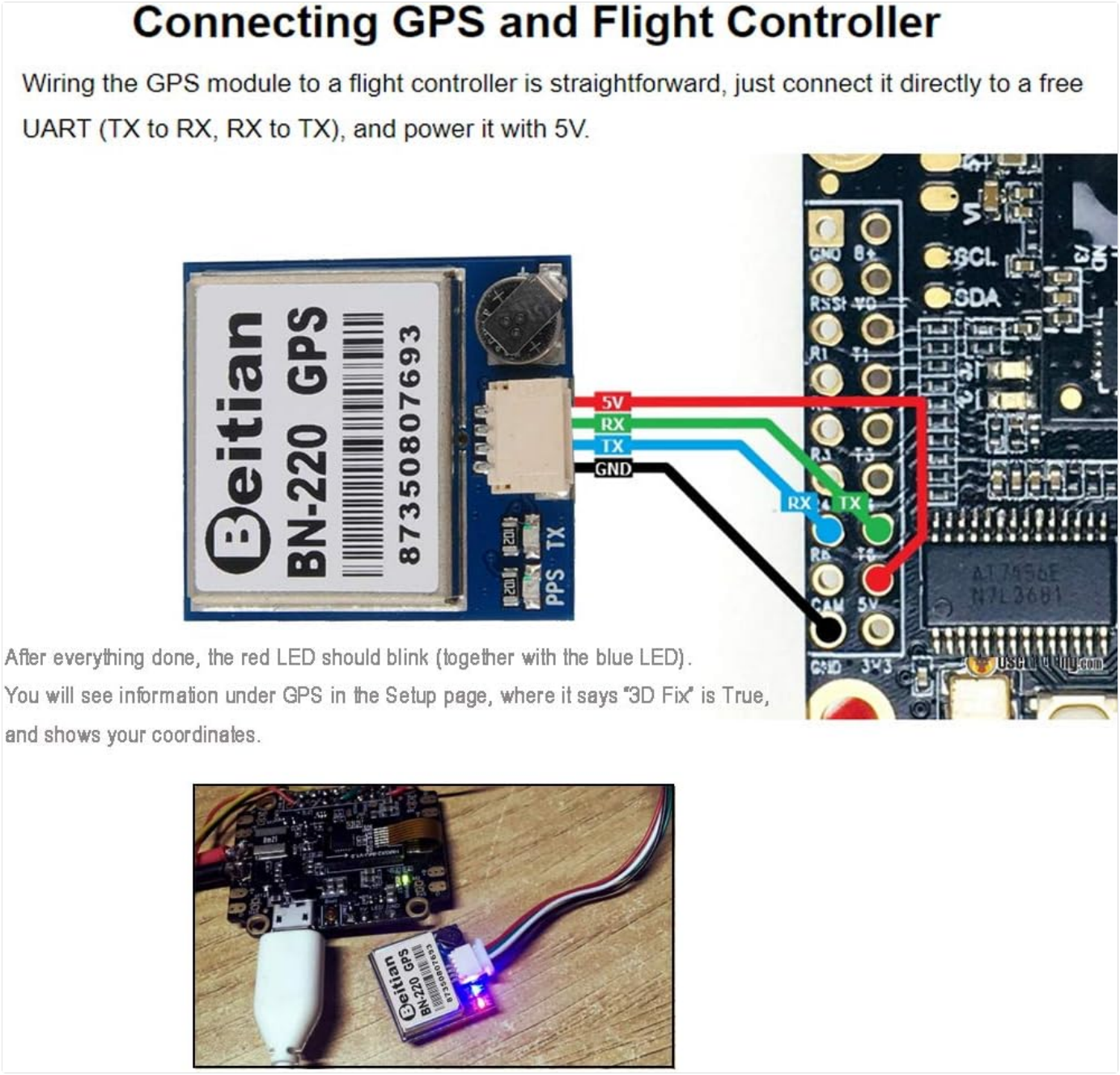


Image 3.1: The BN-220 GPS module shown with three different types of connection cables, illustrating the included accessories.

4. Setup and Installation

4.1. Connecting to a PC for Configuration

To configure the BN-220 GPS module using a computer, you will need a USB-to-TTL converter. Follow these steps:

1. Install the u-blox driver and u-center software on your computer.
2. Install the CP210X driver in your computer.
3. Connect the USB-to-TTL converter to the BN-220 GPS Module. Ensure the connections are correct: VCC to 5V, GND to GND, TX to RX, and RX to TX. Then, plug the USB-to-TTL converter into your computer.
4. Open the u-center software, select the correct COM port, and set the baud rate to 9600.

Image 4.1: The BN-220 GPS module connected to a USB-to-TTL converter, which is then plugged into a laptop for configuration. The blue LED on the GPS module indicates activity.

4.2. Connecting to an Arduino Board

To integrate the BN-220 GPS module with an Arduino board, connect the pins as follows:

- **VCC** to Arduino **5V**
- **RX** to Arduino Digital Pin **D4**
- **TX** to Arduino Digital Pin **D3**
- **GND** to Arduino **GND**

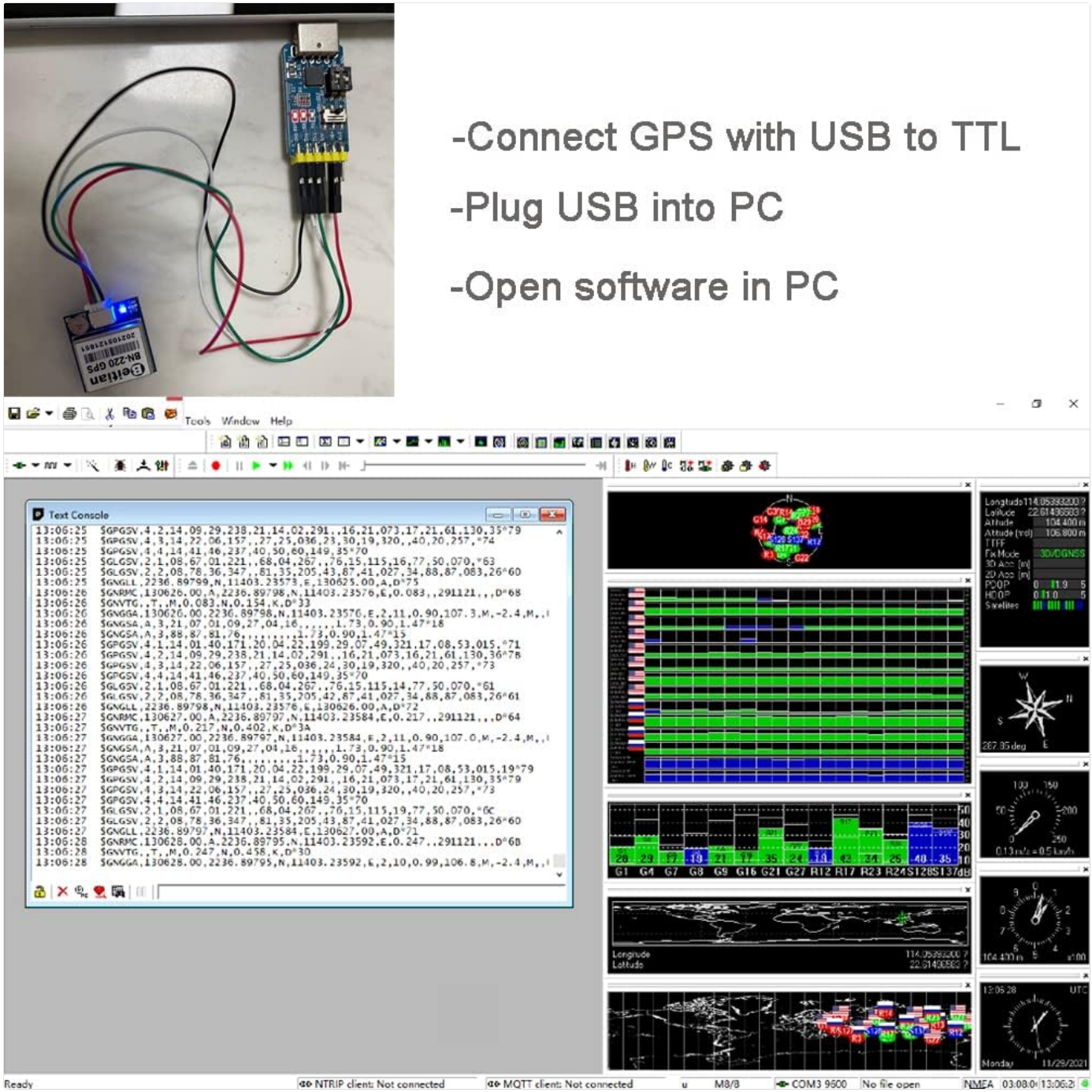


Image 4.2: The BN-220 GPS module connected to an Arduino board with color-coded wires indicating VCC, RX, TX, and GND connections.

4.3. Connecting to a Flight Controller

Wiring the GPS module to a flight controller is straightforward. Connect it directly to a free UART port (TX to RX, RX to TX) and provide 5V power.

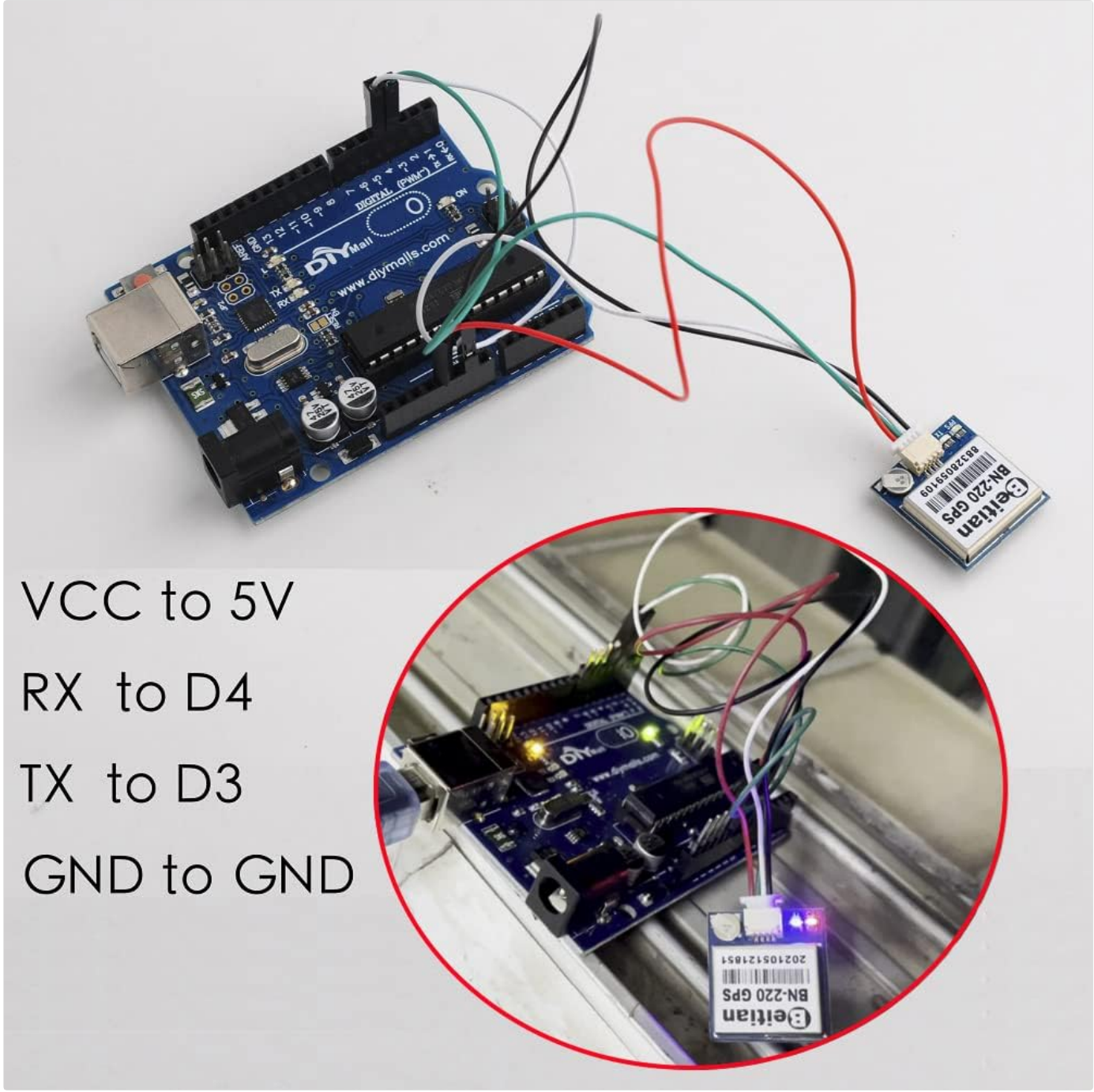


Image 4.3: A diagram illustrating the connection of the BN-220 GPS module to a flight controller, showing the wiring for 5V, RX, TX, and GND.

5. Operation

5.1. Cold Start and Satellite Acquisition

When powering up the BN-220 GPS module for the first time in a new location, it will take longer to acquire satellite lock. This process is known as a "cold start." Once the initial cold start is complete, subsequent restarts will achieve satellite lock much faster.

5.2. Data Output and LED Indicator

The module outputs NMEA-0183 data. A blue LED indicator on the module signifies data output. When the blue light flashes, it indicates data is being transmitted. If the amount of output data is large, the blue light will remain steadily on.

Video 5.1: Demonstration of the BN-220 GPS module's blue LED indicator, showing its behavior during data output.

6. Configuration

The BN-220 GPS module can be configured using the u-center software. The module has flash memory to save configurations, so you do not need to reset data each time you use it.

Video 6.1: A guide on configuring the DIYmalls GPS receiver using u-center software, demonstrating how to adjust various settings.

6.1. Changing Baud Rate

To change the baud rate of the GPS module:

1. Open the u-center software. From the menu bar, navigate to **View** > **Configuration View**, and open it.
2. Select **PRT (Ports)**. Enter the desired baud rate (e.g., 115200) and click **Send**.
3. After changing the baud rate, you must switch the u-center software to the new baud rate to continue receiving data.
4. To save this configuration permanently, go to **View** > **Configuration View** > **CFG (Configuration)**. Select the appropriate options (e.g., **Save current configuration** and **FLASH** under Devices) and click **Send**.

6.2. Changing Operating Mode (GNSS Configuration)

To adjust the GNSS configuration (e.g., enable/disable satellite systems):

1. Open the u-center software. From the menu bar, navigate to **View** > **Configuration View**, and open it.
2. Select **GNSS (GNSS Config)**. Adjust the 'Enable' checkboxes for the desired satellite systems (e.g., GPS, GLONASS, Galileo, BeiDou). Click **Send**.
3. To save this configuration permanently, go to **View** > **Configuration View** > **CFG (Configuration)**. Select **Save current configuration** and **FLASH** under Devices, then click **Send**.

6.3. Changing Update Rate

To modify the GPS update rate:

1. Open the u-center software. From the menu bar, navigate to **View** > **Configuration View**, and open it.
2. Select **RATE (Rates)**. Enter the desired measurement period (e.g., 100 ms for 10 Hz) and navigation frequency. Click **Send**.
3. To save this configuration permanently, go to **View** > **Configuration View** > **CFG (Configuration)**. Select **Save current configuration** and **FLASH** under Devices, then click **Send**.

7. Troubleshooting

If you encounter any issues with your BN-220 GPS module, consider the following:

- **No Driver Installation Needed for Raspberry Pi:** When using the module with a Raspberry Pi, no specific driver installation is required, but you will need to install appropriate software for communication.
- **Cold Start Time:** The first time the BN-220 GPS module is powered on in a new location, it will take longer to acquire satellite signals (cold start). Subsequent starts will be faster.
- **Configuration Persistence:** The BN-220 GPS module includes flash memory to save your configurations, so you do not need to reconfigure it every time you use it.
- **Data Level:** The module operates at TTL level by default. If RS-232 output is required, a TTL to RS-232 converter cable must be used.
- **No Compass:** The BN-220 GPS module does not include a compass. If a GPS module with both flash memory and a

compass is needed, consider models like the BN-880.

8. Support

For further assistance or inquiries, please contact DIYmalls support. You can typically find a "Sold by DIYmalls" link near the product purchase button. Clicking this link and then selecting "Ask a question" will allow you to reach out for support.

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Ask a question about this manual

Ask about setup, troubleshooting, compatibility, parts, safety, or missing instructions. Manuals+ will review the question and use this page's manual context to help answer it.

Name

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Question

Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

Submit question