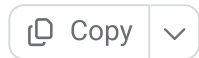




CUBENODE



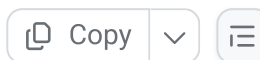
CubeNode ETH

The CubeNode ETH provides networking capabilities to Cube Flight Controllers without Ethernet support. By enabling the PPP protocol on one of the serial ports (preferably with flow control) of The Cube, you can achieve up to 12Mbit/s networking link and transport multiple protocols (CAN, MAVLink) over the network without chewing multiple serial ports. **CubeOrange+** and **CubeRed** running ArduPilot 4.5 or above release firmwares support the PPP protocol out of the box. **CubeOrange** and older Cubes built with networking enabled in the custom ardupilot build can support PPP protocol as well.

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Was this helpful?





Specifications

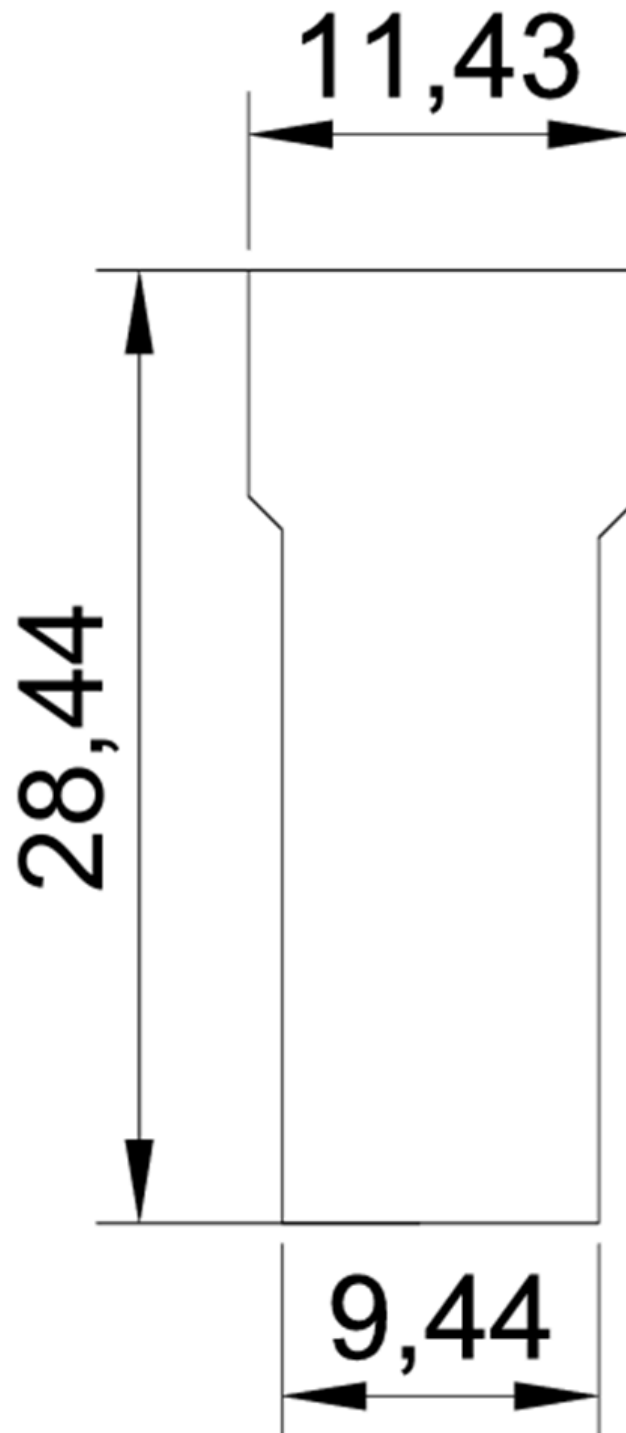
Recommended Operating Conditions

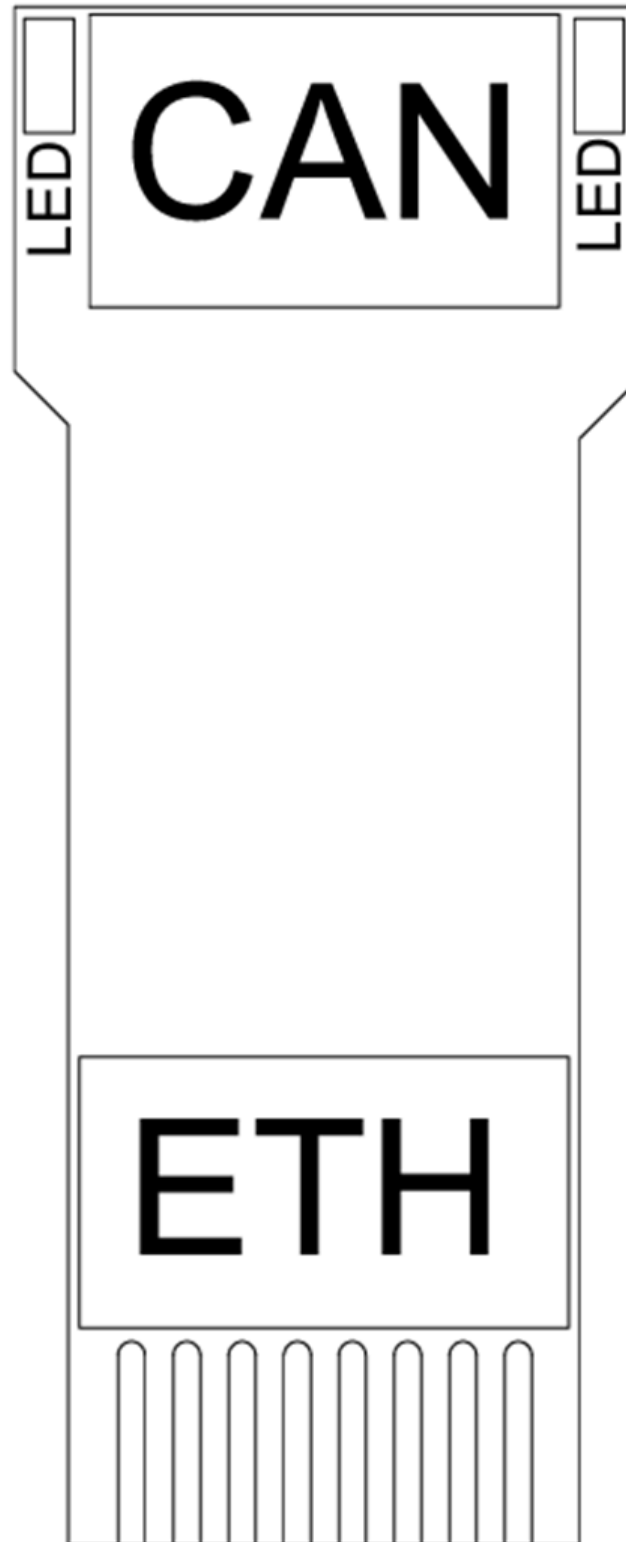
Parameter	Min	Max	Unit
Vin	5	5.5	V

Electrical Specifications

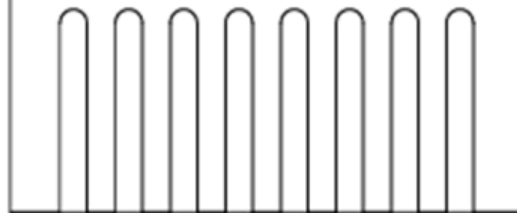
Dimensions	11.43 x 28.44mm
Speed	10/100M
Connector Type (CAN)	JST SM04B-GHS
Connector Type (Serial)	JST SM06B-GHS
Connector Type (Ethernet)	JST SM05B-GHS
Auto MDI-MDIX Function	Supported
LAN Transformer	Included

Mechanical Specifications

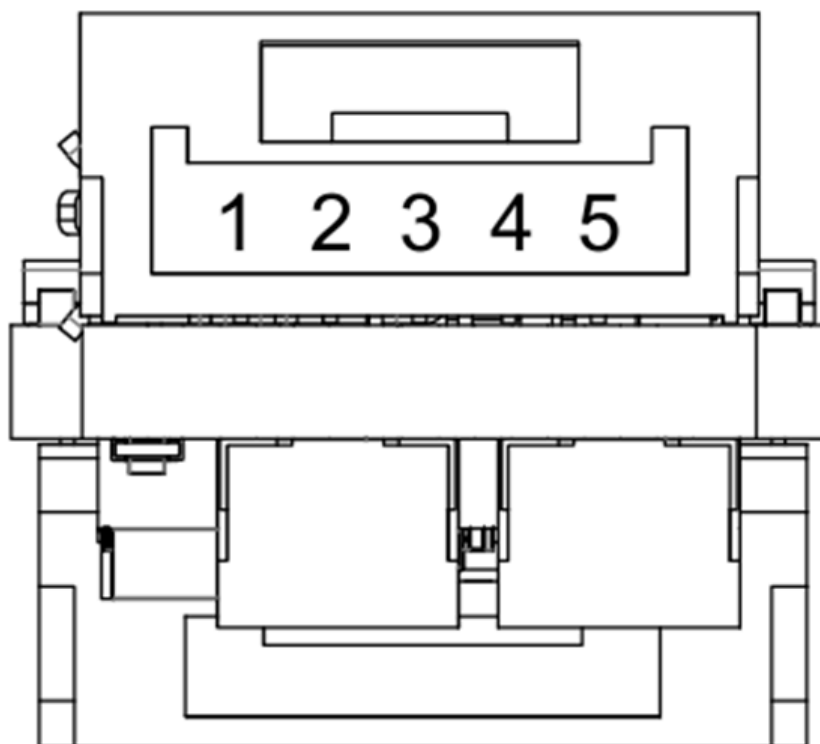




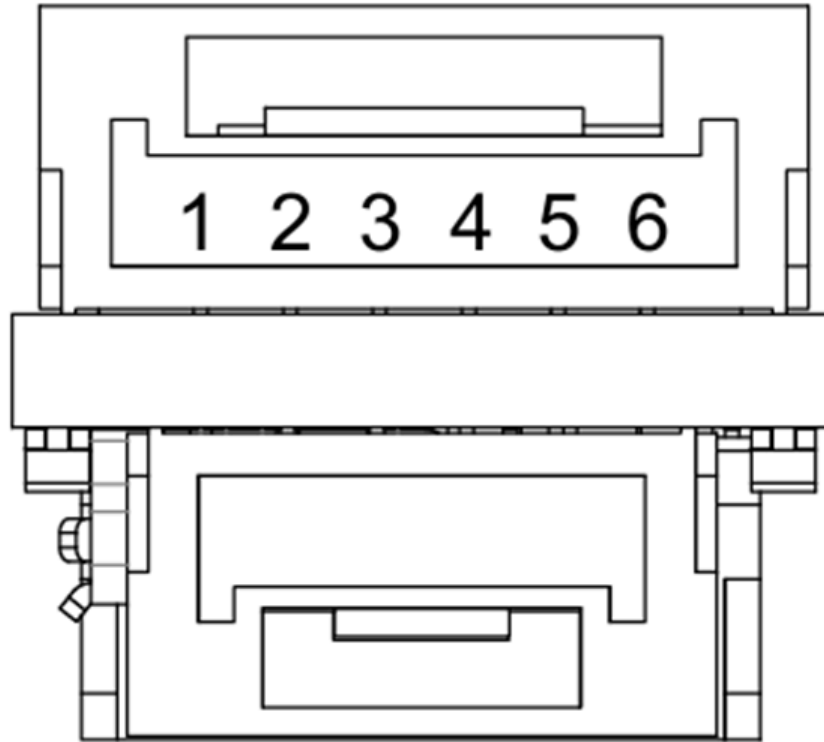
TELEM



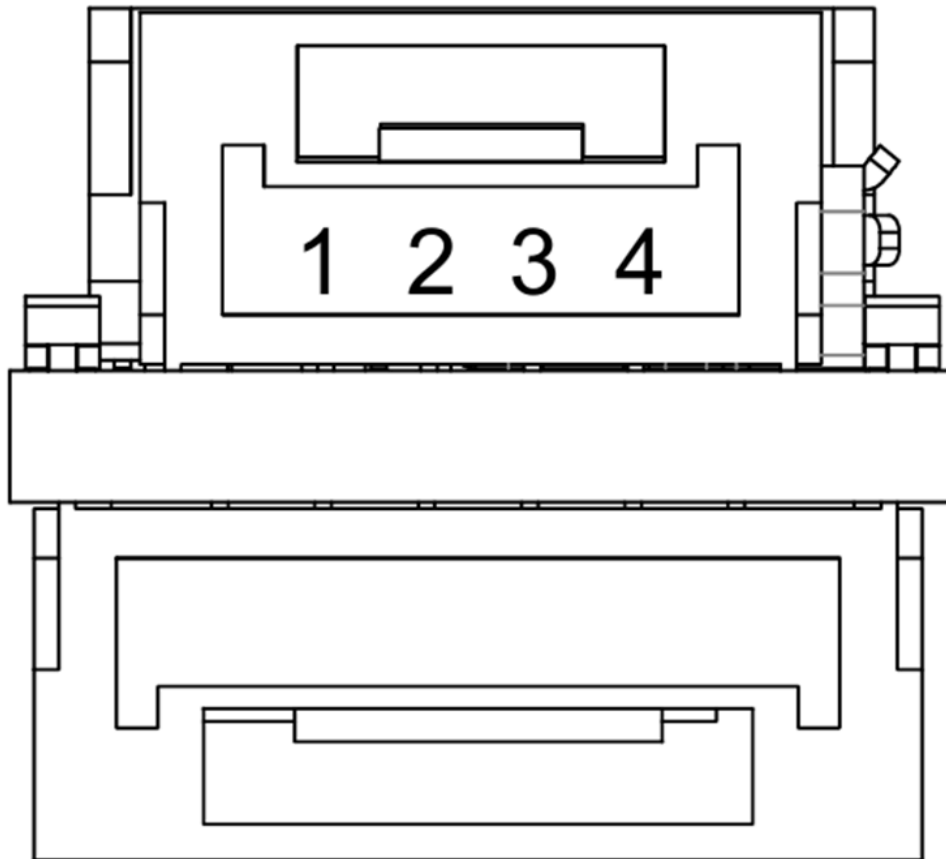
Pinout Definition



Pin Number	Definition
1	Ethernet RX+
2	Ethernet RX-
3	Ground
4	Ethernet TX+
5	Ethernet TX-



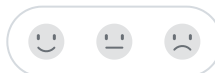
Pin Number	Definition
1	5V Input
2	SERIAL_TX
3	SERIAL_RX
4	SERIAL_CTS
5	SERIAL_RTS
6	Ground



Pin Number	Definition
1	5V Input
2	CAN_H
3	CAN_L
4	Ground

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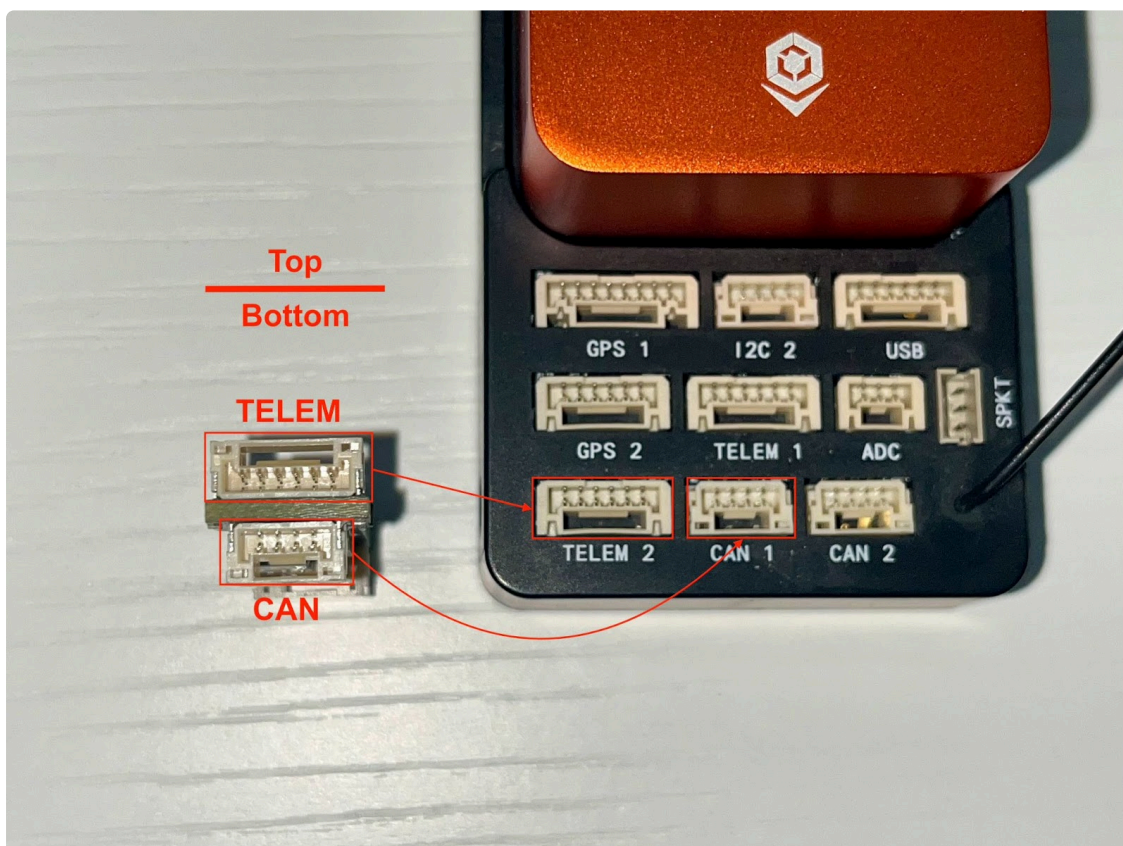
Was this helpful?



Setting Up the Physical Connection between the Cube, CubeNode, and laptop/PC

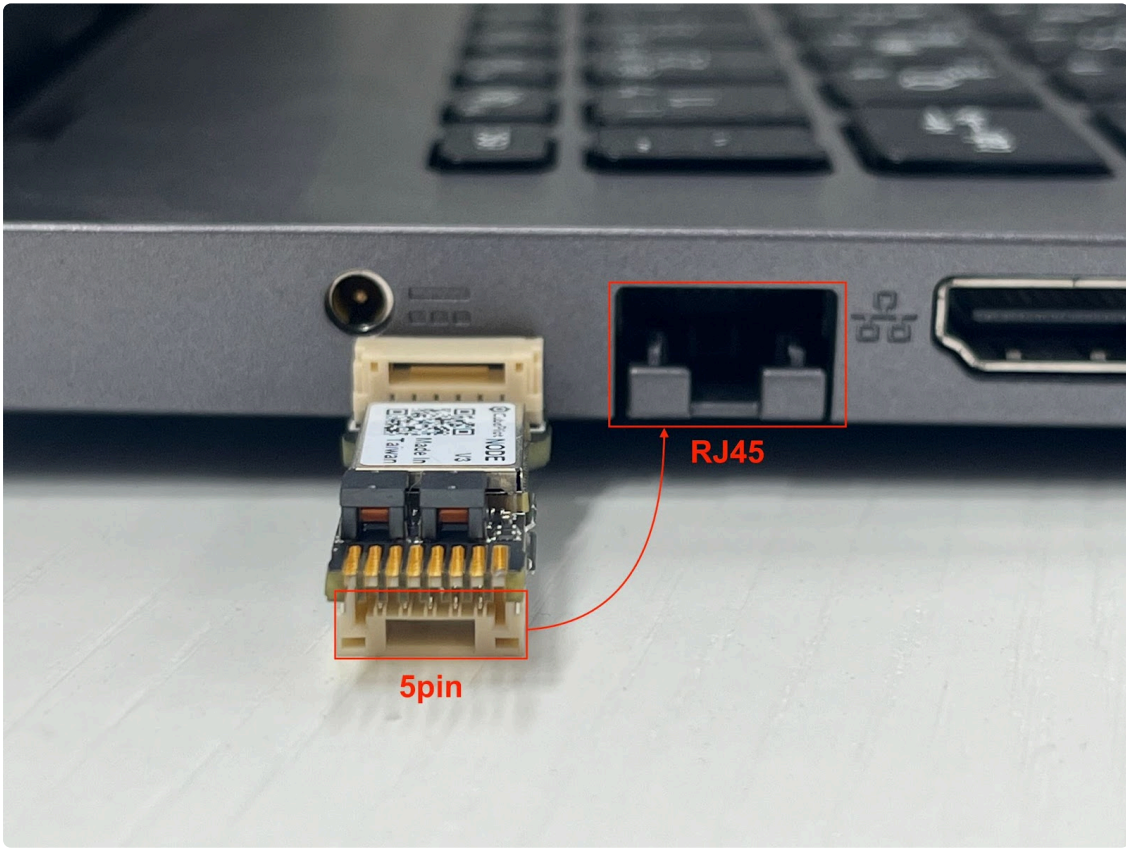
To set up the physical connection between The Cube, CubeNode, and laptop/PC, complete the following steps:

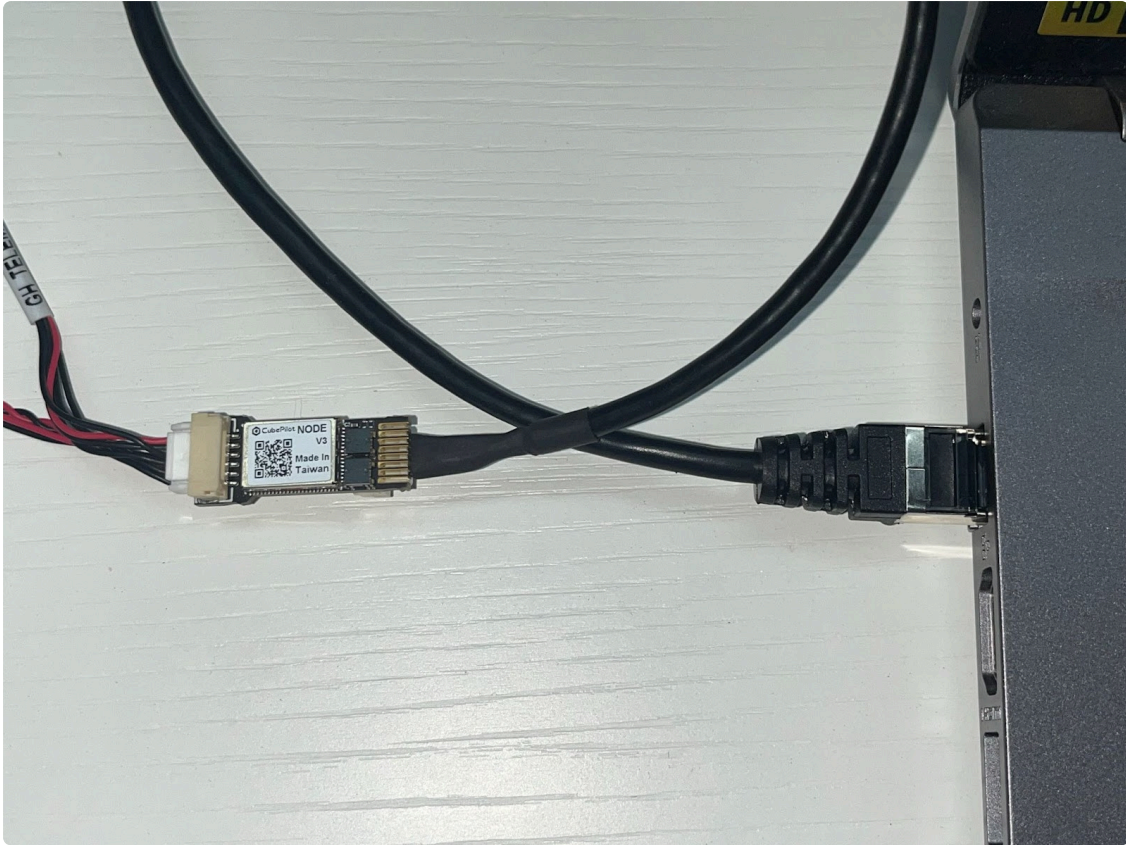
1. Connect The Cube to a laptop/desktop via USB.
2. Use a CAN and GH TELEM cable to connect the CubeNode to The Cube via the CAN1 and Telem2 ports.





3. Use a 5-pin to RJ45 cable to connect the CubeNode to the laptop or desktop.



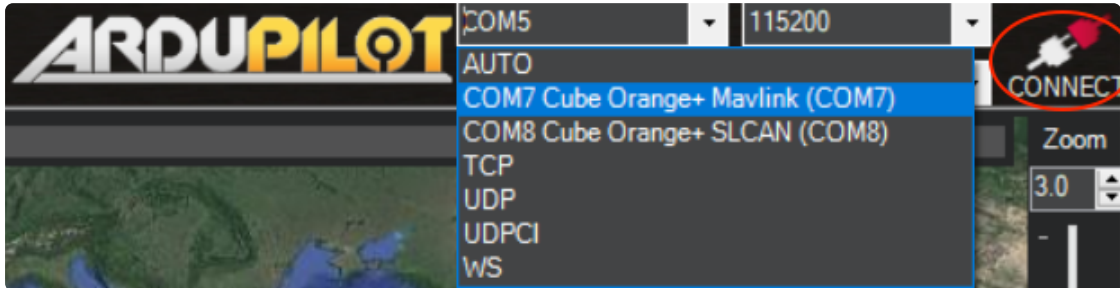


Setting up the **Cube Orange+ (Cube)**

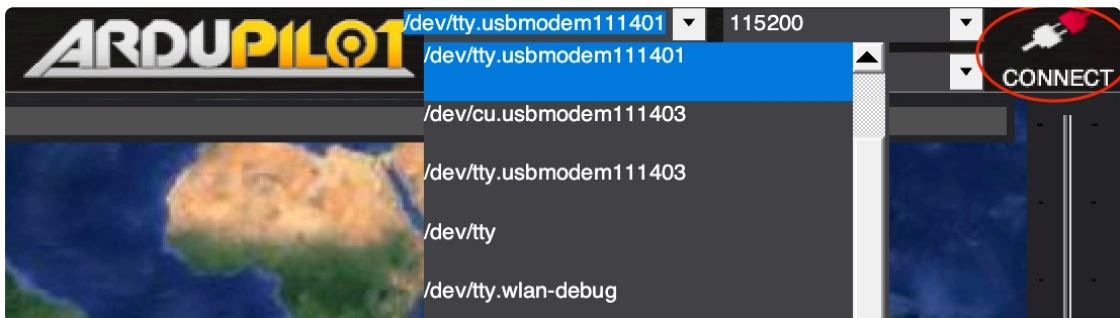
To set up the **Cube Orange+ (Cube)**, complete the following steps:

1. Connect the Cube to the Mission Planner:

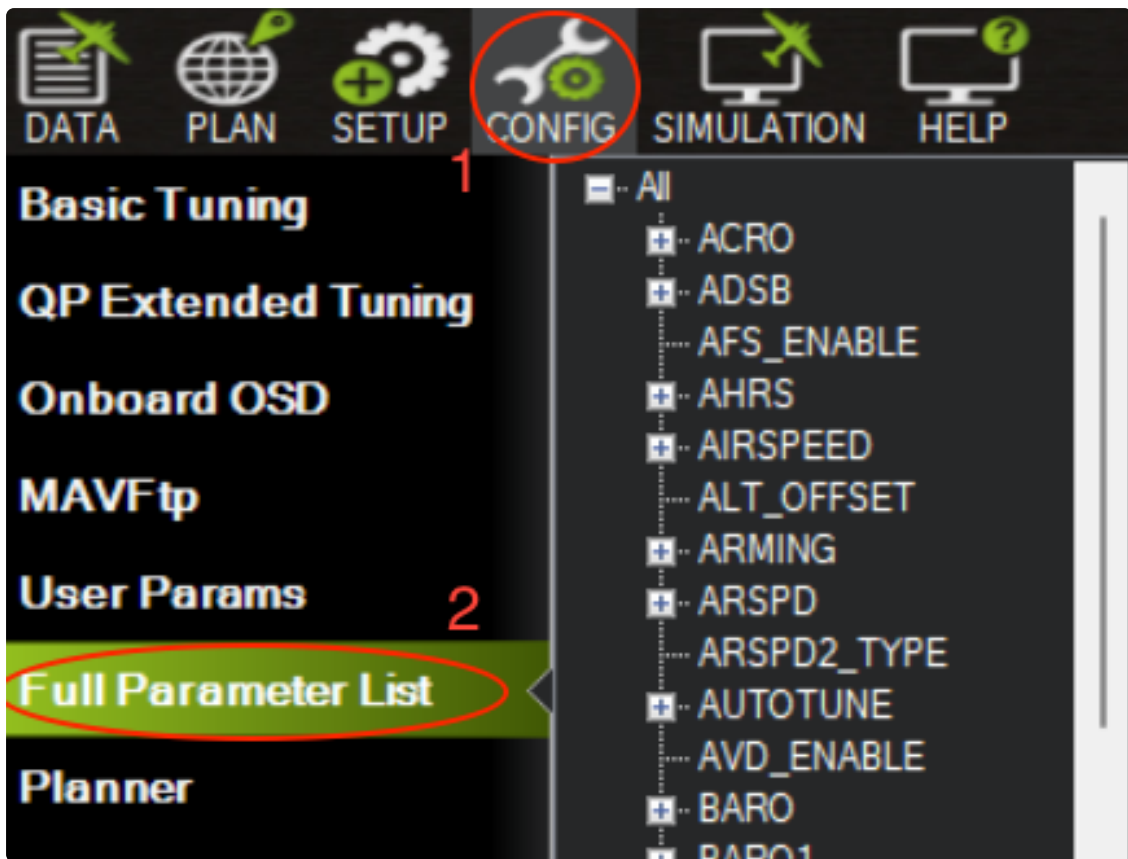
- **Windows:** On the ArduPilot user interface, select **COM7 Cube Orange+ Mavlink (COM7)** and click **Connect**.



- **MacOS:** On the ArduPilot user interface, select **/dev/tty.usbmodemXXX01** and click **Connect**.



2. Open Mission Planner.
3. Click **Config** -> **Full Parameter List**.



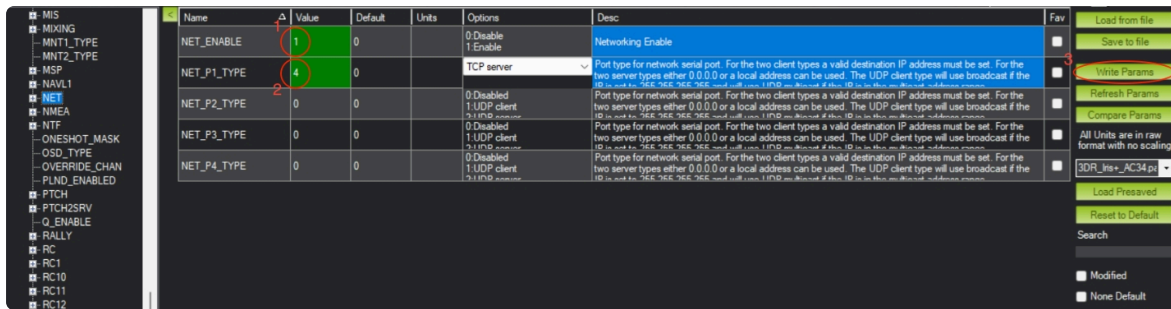
3. Enable CAN:

- Set **CAN_P1_DRIVER 1 (First Driver)**.
- Click **Write Params** and restart The Cube by unplugging the cable and plugging it back into The Cube.

Name	Value	Default	Units	Options	Desc	Fav
CAN_D1_PROTOCOL	1	1		0:Disabled 1:DroneCAN 4:Disabled (P.M.)	Enabling this option starts selected protocol that will use this virtual driver	
CAN_D1_PROTOCOL2	0	0		0:Disabled 7:USDT1 10:Companion	Secondary protocol with 11 bit CAN addressing	
CAN_D2_PROTOCOL	1	1		0:Disabled 1:DroneCAN 4:Disabled (P.M.)	Enabling this option starts selected protocol that will use this virtual driver	
CAN_D2_PROTOCOL2	0	0		0:Disabled 7:USDT1 10:Companion	Secondary protocol with 11 bit CAN addressing	
CAN_LOGLEVEL	0	0		0:Log None 4:Log Verbose	Loglevel for recording initialisation and debug information from CAN interface	
CAN_P1_DRIVER	1	0		First driver	Enabling this option enables use of CAN buses.	
CAN_P2_DRIVER	0	0		0:Disabled 1:First driver 2:Secondary driver	Enabling this option enables use of CAN buses.	
CAN_SLCAN_CPORT	0	0		0:Disabled 1:First interface 2:Secondary interface	CAN interface ID to be routed to SLCAN. 0 means no routing	
CAN_SLCAN_SDELAY	1	1	0 127		Duration after which slcan starts after setting SERNUM in seconds.	
CAN_SLCAN_SERNUM	-1	-1		-1:Disabled 0:Serial 1:Serial1	Serial Port ID to be used for temporary SLCAN iface. -1 means no temporary serial. This parameter is automatically reset on reboot or on timeout. See CAN_SLCAN_TIMEOUT for timeout details.	
CAN_SLCAN_TIMEOUT	0	0	0 127		Duration of inactivity after which SLCAN is switched back to original driver in seconds.	

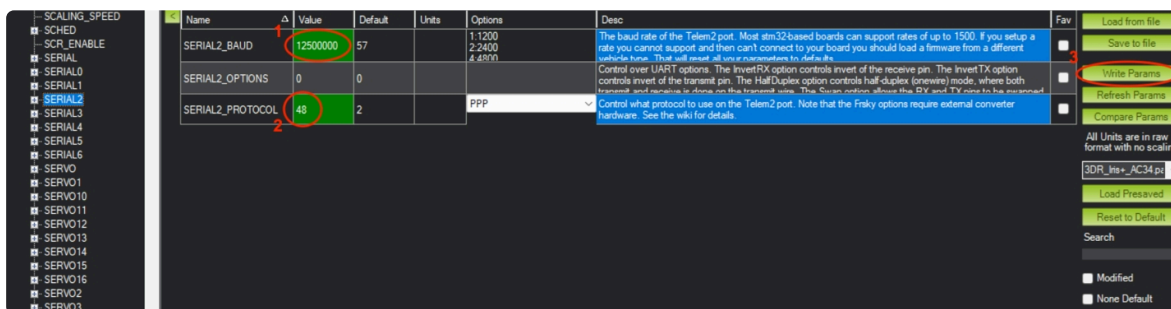
4. Enable NET:

- Set **NET_ENABLE 1 (Enable)**.
- Set **NET_P1_TYPE 4 (TCP Server) (Port 1)**.
- Click **Write Params**. If it doesn't refresh, click **Refresh Params**.



5. Modify the Serial port through the Telem port:

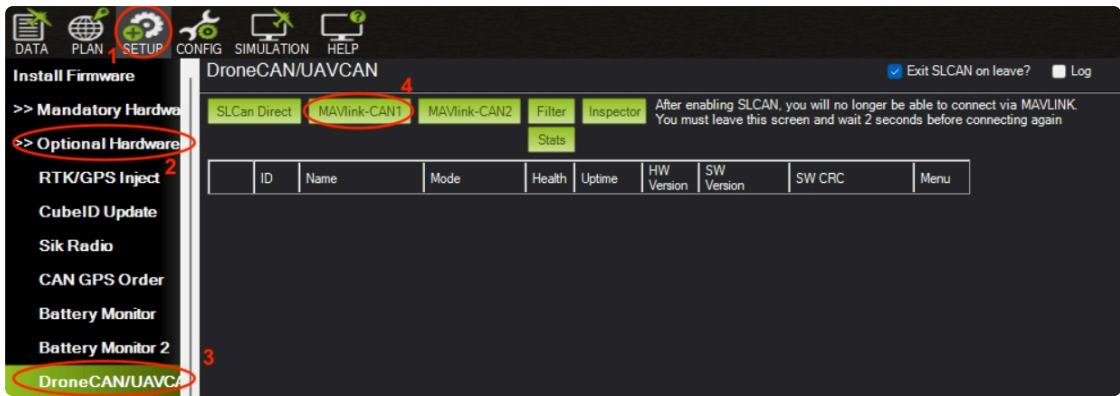
- Choose **SERIAL2** for the Telem2 port (or **SERIAL1** for Telem1).
- Set **SERIAL2_BAUD 12500000 (12.5M)**.
- Set **SERIAL2_PROTOCOL 48 (PPP)**.
- Click **Write Params** and restart The Cube by unplugging the cable and plugging it back into The Cube.



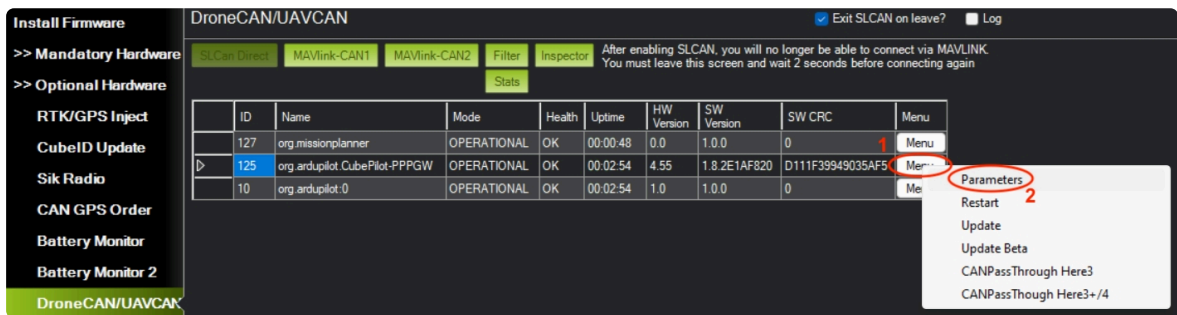
Setting Up the CubeNode

To set up the CubeNode, complete the following steps:

1. Open Mission Planner.
2. Obtain the required parameters:
 - Click **Setup -> Optional Hardware -> DroneCAN/UAVCAN -> MAVlink-CAN1**.

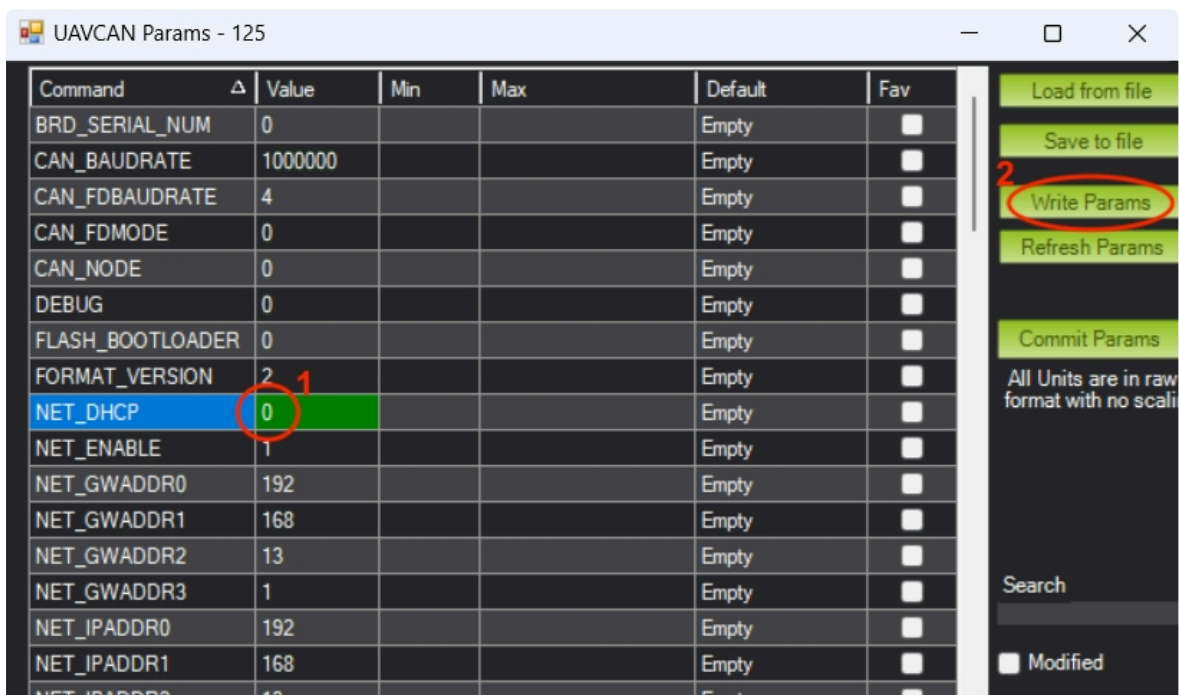


- Select **CubeNode (CubePilot-PPPGW)** and click **Menu -> Parameters**.



2. Configure the network:

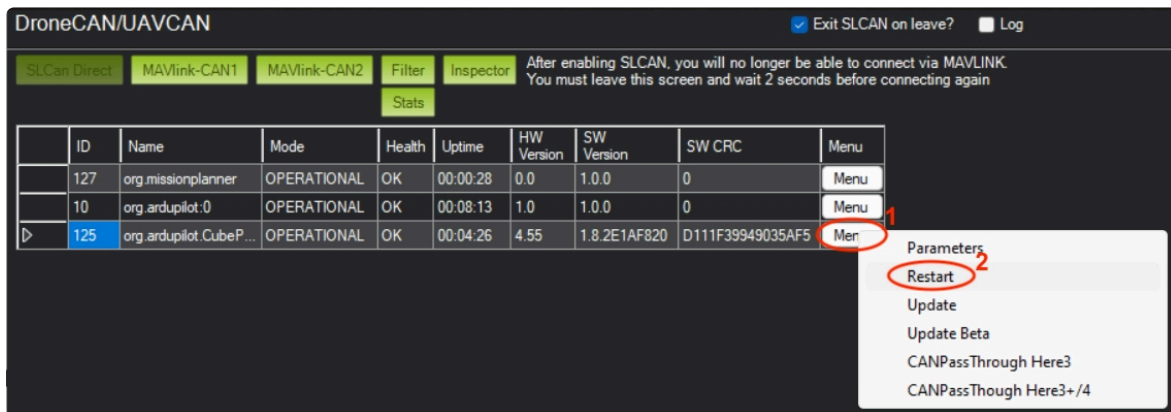
- Set **NET_DHCP** to 0 (Manual IP). The default IP should be 192.168.13.14/24 on port 1 (NET_PPP_PORT 1).
- Click **Write Params**.



- For Manual IP, modify the gateway address and the IP address. For example, set the parameters as shown below for 172.31.13.14/16.

NET_GWADDR0	172
NET_GWADDR1	31
NET_GWADDR2	0
NET_GWADDR3	1
NET_IPADDR0	172
NET_IPADDR1	31
NET_IPADDR2	13
NET_IPADDR3	14
NET_NETMASK	16

- Click **Menu** -> **Restart**. The IP address 192.168.13.15 will be assigned to The Cube.



- If using DHCP, set **NET_DHCP** to 1. The IP address will be shown in The Cube's message. The netmask will always be 255.255.255.255 because the connection between The Cube and the CubeNode is through TCP (1 to 1). The IP address for the Cube will be automatically set to the CubeNode's IP address+1, which is 192.168.13.14+1 = 192.168.13.15.

```
Quick | Actions | Messages | PreFlight | Gauges | Transponder | Status | Servo/Relay | Aux Function | Scripts | Payload
10/7/2024 3:28:00 PM : PreArm: Waiting for RC
10/7/2024 3:28:00 PM : PreArm: AHRS: waiting for home
10/7/2024 3:28:00 PM : PreArm: Compass not healthy
10/7/2024 3:28:00 PM : PreArm: 3D Accel calibration needed
10/7/2024 3:28:00 PM : PreArm: Hardware safety switch
10/7/2024 3:27:39 PM : IMU2: fast, high-resolution sampling enabled 3.2k
10/7/2024 3:27:39 PM : IMU1: fast, high-resolution sampling enabled 3.2k
10/7/2024 3:27:39 PM : IMU0: fast sampling enabled 3.2kHz
10/7/2024 3:27:39 PM : RCOut: PWM:1-14
10/7/2024 3:27:39 PM : IOMCU: 420 1001 411FC231
10/7/2024 3:27:39 PM : CubeOrangePlus 00310021 3032510D 33383839
10/7/2024 3:27:39 PM : ChibiOS: 8fc176ac
10/7/2024 3:27:39 PM : ArduPlane V4.6.0-dev (2e1af820)
10/7/2024 3:27:38 PM : IMU2: fast, high-resolution sampling enabled 3.2k
10/7/2024 3:27:38 PM : IMU1: fast, high-resolution sampling enabled 3.2k
10/7/2024 3:27:38 PM : IMU0: fast sampling enabled 3.2kHz
10/7/2024 3:27:38 PM : RCOut: PWM:1-14
10/7/2024 3:27:38 PM : IOMCU: 420 1001 411FC231
10/7/2024 3:27:38 PM : CubeOrangePlus 00310021 3032510D 33383839
10/7/2024 3:27:38 PM : ChibiOS: 8fc176ac
10/7/2024 3:27:38 PM : ArduPlane V4.6.0-dev (2e1af820)
10/7/2024 3:27:38 PM : NET: Gateway 192.168.13.14
10/7/2024 3:27:38 PM : NET: Mask 255.255.255.255
10/7/2024 3:27:38 PM : NET: IP 192.168.13.15
10/7/2024 3:27:38 PM : TCP[21]: bound to 0.0.0.0:0
10/7/2024 3:27:38 PM : PPP: connected
10/7/2024 3:27:38 PM : RCOut: PWM:1-14
10/7/2024 3:27:38 PM : AHRS: DCM active
10/7/2024 3:27:38 PM : ArduPilot Ready
10/7/2024 3:27:38 PM : Airspeed 1 not initialized, cannot cal
10/7/2024 3:27:38 PM : Airspeed 1 init failed
10/7/2024 3:27:38 PM : MS4525[0]: no sensor found
10/7/2024 3:27:38 PM : IMU2: fast, high-resolution sampling enabled 3.2k
10/7/2024 3:27:38 PM : IMU1: fast, high-resolution sampling enabled 3.2k
10/7/2024 3:27:38 PM : IMU0: fast sampling enabled 3.2kHz
10/7/2024 3:27:38 PM : RCOut: Initialising
10/7/2024 3:27:38 PM : IOMCU: 420 1001 411FC231
10/7/2024 3:27:38 PM : CubeOrangePlus 00310021 3032510D 33383839
10/7/2024 3:27:38 PM : ChibiOS: 8fc176ac
10/7/2024 3:27:38 PM : ArduPlane V4.6.0-dev (2e1af820)
10/7/2024 3:27:38 PM : Barometer 2 calibration complete
10/7/2024 3:27:38 PM : Barometer 1 calibration complete
```

Setting Up the Laptop/Desktop

To set up the laptop/desktop, complete the following steps:

1. Configure the Manual IP address:
 - Go to **Settings** -> **Network & Internet** -> **Ethernet**.
 - Set IP assignment to **Manual**.
 - Turn on **IPv4**.
 - Set **IP address** to 192.168.13.13 (must be different from The Cube and CubeNode).
 - Set **Subnet Mask** to 255.255.255.0.

Edit IP settings

1 **Manual** Automatic (DHCP) -> Manual

IPv4

2 **On** Turn On IPv4

IP address 3
192.168.13.13

Subnet mask 4
255.255.255.0

Gateway

Preferred DNS

DNS over HTTPS
Off

Alternate DNS

Save Cancel

2. Check the connection:

- Check if the IP address is 192.168.13.14/24 on port 1 (NET_PPP_PORT 1).
- Open a command prompt (cmd) or any terminal.
- Run the command `"ping 192.168.13.14"` for the CubeNode and `"ping 192.168.13.15"` for The Cube.

```
Command Prompt
Microsoft Windows [Version 10.0.22631.2861]
(c) Microsoft Corporation. All rights reserved.

C:\Users\testjig>ping 192.168.13.14

Pinging 192.168.13.14 with 32 bytes of data:
Reply from 192.168.13.14: bytes=32 time<1ms TTL=255
Reply from 192.168.13.14: bytes=32 time<1ms TTL=255
Reply from 192.168.13.14: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.13.14:
    Packets: Sent = 3, Received = 3, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
Control-C
^C
C:\Users\testjig>ping 192.168.13.15

Pinging 192.168.13.15 with 32 bytes of data:
Reply from 192.168.13.15: bytes=32 time<1ms TTL=254
Reply from 192.168.13.15: bytes=32 time<1ms TTL=254
Reply from 192.168.13.15: bytes=32 time<1ms TTL=254

Ping statistics for 192.168.13.15:
    Packets: Sent = 3, Received = 3, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
Control-C
^C
C:\Users\testjig>
```

Last updated 1 year ago

Was this helpful?

