

CONNECTING TO PROLON



REV 7.5.0 PL-INSTL-CONNECTPROLON-EN



www.proloncontrols.com 1-877-977-6566 info@proloncontrols.com 17510 Rue Charles, Suite 100, Mirabel, QC, J7J 1X9

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1 - General

The Prolon system of controllers offer an array of communication methods. Some are specific to our Network controller and others that can be used right across the board. In this document we will explore them and provide the easy steps to utilize them.

It is recommended to always have the latest version of Focus software. For the purposes of this guide, Focus v.7.5.0 was used as a reference. If you have a previous version installed, some screenshots or methods may differ slightly.

Along with our FREE Prolon Focus software for PC/Mac or with the Mobile application for Android/IOS, the viewing/ configuration of the devices are made simple by using the following means of connections.

2 - Types of Connections

2.1 - Connecting directly to a PL-NC2000 Network Controller

2.1.1 - Ethernet/IP

Method of connection: Cat5e cable (standard ethernet).

• See Section 3 for IP connection details



2.1.2 - Serial Port

Method of connection: USB Cable (USB Type A to Type A) or PL-485-BT adaptor.

- See Section 5 for USB cable details
- See Section 4 for PL-485-BT details



2.1.2 - Bluetooth

Method of connection: Mobile device (smartphone or tablet) paired with the PL-485-BT.

• See Section 4 for PL-485-BT details





2.2 - Connecting directly to a PL-M2000 or PL-C1050 Controller

• Serial Port (PL-485-BT adaptor)





• Bluetooth (IOS/Android app paired with the PL-485-BT adaptor)





3 - Ethernet/IP Connection (PL-NC2000 only)

The PL-NC2000 allows a direct connection from it to the computer using a CAT5 cable. However, the internal IP settings of the PL-NC2000 (see table below) will likely be different than that of the computer. These IP settings will possibly have to be changed on the computer in order to interface with the PL-NC2000 to view and/or configure.

Default Static ID PL_NC2000

IP Address	192.168.1.99	
Subnet Mask	255.255.255.0	
Default Gateway	192.168.1.1	

NOTE: As of Focus 7.5, the PL-NC2000 default IP settings are set to DHCP. In order to facilitate direct communication between the PL-NC2000 and a computer using a CAT5 cable, we must change this to a Static IP address. Follow section 3.2 to change from DHCP to Static IP.

3.1 - Connect PL-NC2000 to computer with ethernet cable (CAT5e)

Plug one end of the Ethernet cable into the computer and the other into the silver/gray port labeled ETHERNET on the upper right-hand side of the Network Controller (*see section 2.1.1*).

3.2 - Change communication setting from DHCP to Static IP using Reset Button on the PL-NC2000

The PL-NC2000 has a button located on the left side of the controller that can be used to reset the IP address settings, as well as other important settings related to communication, in case they are forgotten or lost. After following the procedure described below, IP mode will be switched from DHCP to Static.



To reset the communication settings of the PL-NC2000, follow these steps:

- Power up the NC2000 and wait for the blue heartbeat LED (HBEAT) to start blinking.
- 2. Hold down the Communications Reset Button for approximately 8 seconds, at which point the heartbeat LED will stop blinking and the NC2000 will self-reset. Release the button.
- **3.** After approximately 5 seconds, the NC2000 will resume normal operation (HBEAT LED blinking) but will have the new communication settings as described above.



3.3 - Change IP Settings on Computer to match PL-NC2000 IP Settings

1. Perform a search in Windows for "Control Panel". (Figure 1)





2. The Control Panel may be set to View by: "Category" in the upper right. Change this to View by "Small "or "Large icons" and then select "Network and Sharing Center". (Figure 2)

🔝 All (Control Panel Items			- 🗆 ×
~ -		II Control Panel Items		・ ひ Search Control Panel
Adju	st your computer's settings			View by: Large icons 👻
	Administrative Tools	AutoPlay	Backup and Restore (Windows 7)	RitLocker Drive Encryption
1	Color Management	🗿 Credential Manager	🔐 Date and Time	Default Programs
4	Device Manager	Revices and Printers	Ease of Access Center	File Explorer Options
	File History	Flash Player (32-bit)	Fonts	Indexing Options
e	Internet Options	Java (32-bit)	Keyboard	Mouse
ų,	Network and Sharing Center	NVIDIA Control Panel	Phone and Modem	Power Options
Q	Programs and Features	Realtek HD Audio Manager	lecovery	Region
-	RemoteApp and Desktop Connections	Security and Maintenance	Sound	Speech Recognition
S.	Storage Spaces	📀 Sync Center	System	Taskbar and Navigation
	Troubleshooting	user Accounts	Windows Defender Firewall	🤛 Windows To Go
	Work Folders			

Figure 2

- - 3. Select "Change Adaptor Settings". (Figure 3)

→ * ↑ 整 → Control P	anel > All Control Panel Items > Network a	and Sharing Center	~ ē	Search Cont	trol Panel
Control Panel Home	View your basic network inform	nation and set up connections			
Change adapter settings	View your active networks				
Change advanced sharing settings	Network 2 Public network	Access type: Internet Connections: Ethernet			
Media streaming options					
	Change your networking settings				
	🚋 Set up a new connection or ne	twork			
	Set up a broadband, dial-up, o	r VPN connection; or set up a router or access point.			
	Troubleshoot problems				
	Diagnose and repair network p	problems, or get troubleshooting information.			
	5				
See also					

Figure 3

4. Right click on Ethernet Icon and select "Properties". (Figure 4)



Figure 4

5. Highlight "Internet Protocol Version 4 (TCP/IPV4)" and click on Properties. (Figure 5)

P Ethernet Properties	×
Networking	
Connect using:	
Realtek PCIe GBE Family Controller	
Configure	
This connection uses the following items:	
Client for Microsoft Networks	~
File and Printer Sharing for Microsoft Networks	
QoS Packet Scheduler	
Internet Protocol Version 4 (TCP/IPv4)	
Microsoft Network Adapter Multiplexor Protocol	
Microsoft LLDP Protocol Driver	
Internet Protocol Version 6 (TCP/IPv6)	×
< >	
Install Uninstall Properties	
Description	
Transmission Control Protocol/Internet Protocol. The default	
wide area network protocol that provides communication	
aciosa diverse interconnected networks.	
OK Crea	al
UK Cano	61

Figure 5

6. Select "Use the following IP address". (Figure 6)

Internet Protocol Version 4 (TCP/IPv4) Properties			
General			
You can get IP settings assigned auton this capability. Otherwise, you need to for the appropriate IP settings.	natically if your network supports ask your network administrator		
Obtain an IP address automatical	у		
• Use the following IP address:		1	
IP address:			
Subnet mask:			
Default gateway:			
Obtain DNS server address autom	atically		
Use the following DNS server add	resses:	- 1	
Preferred DNS server:			
Alternate DNS server:			
Validate settings upon exit	Advanced		
	OK Cancel		

Figure 6

- 7. For the IP tab, enter the same values as the default setting for the Network Controller 192.168.1.99 except for the last set "99". The number entered in its place must be anything else i.e.: 100,101...etc. (Figure 7)
- 8. Click ok.
- 9. Close "Ethernet Properties" page.

IP Address	192.168.1.100
Subnet Mask	255.255.255.0
Default Gateway	192.168.1.1

Figure	7
--------	---

3.4 Connecting with Focus over TCP/IP

- 1. Launch the Focus Software.
- 2. Upon first opening the Focus software, it will prompt the user to either. (Figure 8)
 - Create a new project
 - Open a project saved on this computer
 - Open last project

Guest Mode	Image: State Sta
?	What would you like to do? Create a new project Open a project saved on this computer Open last project: Office.prl
	OK Cancel

Figure 8

3. Select "Create a new project". Upon selecting to create a new project, Focus will ask the user how to connect to the system. (Figure 9)



Figure 9

- 4. Click the drop-down tab next to "Connection Type" and choose "TCP/IP".
- 5. Enter the IP address of the Network Controller 192.168.1.99 and click "Connect".
- 6. Upon a successful connection, a green checkmark will appear as seen in Figure 10.

9 Prolon Focus
File Project View Options
PROJECT
My Project My Access: Administrator - Advanced View
Global System
System 1
Rename Delete
Connection
Connect Disconnect
TCP/IP: 192.168.1.99 🗸

Figure 10

7. On the PL-NC2000 Network Controller itself, the "CONN" LED (RED) and "CABLE" LED (GREEN) will both be ON. (Figure 11)



Figure 11

4 - PL-485-BT Serial Port Connection (PL-NC2000, PL-M2000, PL-C1050, PL-VC2000, PL-T1100)

The Serial Port connection requires the PL-485-BT adaptor to interface between the controller and the computer.

Step 1: connect the PL-485-BT adaptor into the computer using the provided USB cable.

Step 2: Turn the adaptor ON (ON/OFF switch located on the adaptor).

4.1 - Identifying the Dedicated COM Port on Windows

This type of connection will utilize one of the COM ports of the computer. To verify exactly which one, a search on the computer is needed.

1. Search in Windows for "Device Manager" and open. (Figure 12)



Figure 12



2. Look for "Ports (Com & LPT)". (Figure 13)



3. Expand the Ports tab by clicking on the ">" or "+" located to the left. Look for "Silicon labs CP210X USB to UART Bridge (COM #)". (Figure 14)



Figure 14



The COM number that is in parentheses is the serial port that is associated to the connection of the PL-485-BT and that will need to be selected in the Focus software.

If this device is visible and a number has been associated to the COM port, then please proceed to Section 4.3 Focus Serial Com.

If this device is NOT visible, then it is likely the driver has not been properly installed. See Section 4.2 Updating Driver of the PL-485-BT for further instructions.

4.2 - Updating Driver of the PL-485-BT

There may be instances where the computer does not recognize the device. In this situation, the driver of the PL-485-BT must be updated.

NOTE: Ensure the latest version of the Focus software has been downloaded on the computer. As of Version 6.2.0 the required drivers have been included in the Prolon folder.

4.2.1 - Finding the "unknown" PL-485-BT in Device Manager

In the "Device Manager" menu

- 1. Look for "Other Devices" or "Universal Serial Bus Controllers" expand either tab by clicking "+" or ">".
- 2. If there is a YELLOW question or exclamation mark, usually next to "Unknown Device" or "CP2104 USB to UART Bridge Controller" (see images below), then it is likely that device is the PL-485-BT.
- 3. To confirm that this is indeed the PL-485-BT:
 - **3.1.** While the Device Manager window is open, disconnect and reconnect the USB cable of the adaptor from the computer.
 - **3.2.** The "Unknown Device" should disappear and reappear on the list, hence confirming that it is indeed the PL-485-BT adaptor. (Figure 15 and 16)



Figure 15







4.2.2 - Updating Driver Software

1. Right click on the "Unknown Device / CP2104 USB to..." and select "Update Driver" or "Update Driver Software". (Figure 17)



Figure 17

2. Two options will be presented, choose "Browse my computer for driver software". (Figure 18)



Figure 18



- 3. The location should point to the driver folder. (Figure 19)
 - **3.1.** Standard File location: C:\ProLon\Drivers\PL-485-BT_Windows_7_8_10\
 - 3.2. Ensure the "Include subfolders" option is checked
- 4. Click next.
- 5. The driver update process is complete.

		\times
~	Update Drivers -	
	Browse for drivers on your computer	
	Search for drivers in this location:	
	C:\ProLon\Drivers\PL-485-BT_Windows_7_8_10 Browse	
	Include subfolders	
	→ Let me pick from a list of available drivers on my computer This list will show available drivers compatible with the device, and all drivers in the same category as the device.	
	Next Cano	el

Figure 19



4.2.3 - Identifying the COM port Number

- 1. After the restart open, "Device Manager".
- 2. Look for "Ports (Com & LPT)".
- 3. Look for "Silicon labs CP210X USB to UART Bridge (COM #)". (Figure 20)
 - **3.1** The COM number that is in parentheses is the serial port that is associated to the connection of the PL-485-BT and that will need to be selected in Focus.



Figure 20

4.3 Focus Serial COM

 Launch the Focus Software. Upon first opening the Focus software in "Guest Mode", it will prompt the user to either (Figure 21):

- Create a new project
- Open a project saved on this computer
- Open last project

Select "Create a new project".



Figure 21

2. Upon selecting to create a new project, Focus will ask the user how to connect to the system. (Figure 22) Click the drop-down tab next to "type" and choose "Serial". (Figure 22)

Quick Connec	tion		Х
2	Connection Type:	Serial 🔽	
	Setup	Modem	
		Serial	
	Serial Port:	TCP/IP	
	Connect	t Cancel	

Figure 22

3. Select the correct Serial COM port that was associated to the PL-485-BT in Device Manager and click Connect. (Figure 23)



2

4. In the Gray left column of Focus under Connection "Serial: COM#" with a GREEN check mark will be visible. (Figure 24)

Connection	
Connect	Disconnect
Serial:	COM6 🗸

Figure 24

5 - USB Serial Port (PL-NC2000 only)

This is alternate Serial Port connection does not need an adaptor, the computer can be connected to the PL-NC2000 using a MALE type A to MALE type A USB cable.

The Serial Port connection requires the PL-485-BT adaptor to interface between the controller and the computer.

- Step 1: Plug one end into the USB connection of the PL-NC2000 and the other end into the computer.
- **Step 2**: Launch the Focus Software (if the Focus Software was already open upon connecting the cable, then relaunch the software).

5.1 - Focus Serial COM

- 1. Upon first opening the Focus software, it will prompt the user to either (Figure 25):
 - Create a new project
 - Open a project saved on this computer
 - Open last project

Select "Create a new project".



Figure 25

2. Upon selecting to create a new project, Focus will ask the user how to connect to the system. Click the drop-down tab next to "type" and choose "Serial". (Figure 26)



Figure 26

3. Choose "USB" as the serial port connection and click Connect. (Figure 27)



4. In the Gray left column of Focus under Connection "Serial: USB" with a GREEN check mark will be visible. (Figure 28)

Note: If the "USB" option DOES NOT APPEAR in the Serial Port dropdown list, then it is likely the driver did not install properly. See Sections 5.2 to 5.4 to update the driver.

Connection	
Connect	Disconnect
Serial	USB 🗸

Figure 28

5.2 - Identifying the "unknown" PL-NC2000 in Device manager

There may be instances where the computer does not recognize the device. In this situation, the driver of the PL-NC2000 must be updated.

NOTE: Ensure the latest version of the Focus software has been downloaded on the computer. As of Version 6.2.0 the required drivers are included in the Prolon folder.

To verify and update the driver for the PL-NC2000, follow these steps:

1. In the "Device Manager" menu.

- 1.1 Look for "Other Devices" or "Universal Serial Bus Controllers" expand either tab by clicking "+" or ">".
- **1.2** If there is a YELLOW question or exclamation mark, usually next to "Unknown Device" (see images below) or similar, then it is likely that device is the PL-NC2000.
- 2. To confirm that this "Unknown Device" is the PL-NC2000.
 - **2.1** While the Device Manager window is open, disconnect and reconnect the USB cable of the controller from the computer.
 - **2.2** The "Unknown Device" should disappear and reappear on the list, hence confirming that it is indeed the PL-NC2000 controller.



5.3 - Updating Driver of the PL-NC2000

1. Right click on the "Unknown Device "and select "Update Driver" or "Update Driver Software". (Figure 30)



Figure 30

2. Two options will be presented, choose "Browse my computer for driver software". (Figure 31)



Figure 31

- 3. The location should point to the driver folder. (Figure 32)
 - 3.1. Standard File location: C:\ProLon\Drivers
 - 3.2. Ensure the "Include subfolders" option is checked

		Х
~	Update Drivers -	
	Browse for drivers on your computer	
	Search for drivers in this location:	
	C:\ProLon\Drivers	
	✓ Include subfolders	
	→ Let me pick from a list of available drivers on my computer This list will show available drivers compatible with the device, and all drivers in the same category as the device.	
	Next Cance	

Figure 32

- 4. Click next.
- The driver update process is complete. Now relaunch the Focus Software to view "USB" in the Serial Port dropdown list.

5.4 - Confirming the Driver was successfully installed

- 1. Open "Device Manager".
- 2. Look for "Interface".
- 3. Look for "USB CH372/CH375". (Figure 33)



Figure 33

6 - Cloud Communication

BEFORE GETTING STARTED

1. Although not required, it is highly recommended to have a PL-485-BT converter handy in case a direct connection must be made.

- 2. To enable cloud communication, there must be an internet connection available to:
 - The computer via WiFi or network cable.
 - The PL-NC2000 Network Controller via network cable.

3. To setup and access the cloud communication, the user must have previously created a free Prolon account in Focus and must be logged into the account.

STEPS 1, 2 & 3 are required if the existing PL-NC2000 Network Controller is not running version 7.5 or higher. If the PL-NC2000 is already running this version, PROCEED TO STEP 4.

- 1. Install or update the Prolon Focus software to Focus 7.5 or higher. (www.proloncontrols.com)
- 2. Locate Network Controller firmware file (BIN file)
 - Ensure that the BIN file is located in the Prolon Controls folder.
 - File path on desktop: C:\ProLon\Focus v.7.5.0\NC2000_V710_ISP.bin
 - The BIN file can also be downloaded from Prolon's FTP site: Click here to download.
- 3. Update the PL-NC2000 Network Controller firmware to Version 7.5 or higher (Figure 34-35)
 - Connect to PL-NC2000 Network Controller via serial or TCP/IP
 - Double-click the Network Controller icon
 - Config \rightarrow Device
 - Press on "Reprogram" button
 - Select the BIN file from Step 2, and press on "Start" button to update the Network Controller.

	Configuration of Scheduler "ProKontrol"	×
Config		Home
	DEVICE PROPERTIES	
Device Type: Ne	twork Scheduler	
Software Version:	5.5.0	
Hardware Version	: 4.0	
Device Number:	99	
Device Name:	NC2000	
	Reset Reprogram	
	Refresh	y Exit

Figure 34





- 4. Set Network Controller IP Settings (Figure 36)
 - Connect to PL-NC2000 Network Controller via USB, serial or TCP/IP
 - Double-click the Network Controller icon
 - Config \rightarrow Communication
 - Ensure the "Allow Cloud Communication" box is checked
 - Set the IP mode to DHCP OR Static IP + enter valid Local Area Network settings (IP Address, Subnet Mask, Default Gateway)
 - Press Apply
 - Reset the PL-NC2000 Network Controller

E	Configuration of Network Controller "Network Ctrl"
	Config Home
,	COMMUNICATIONS SETUP
	00 00 00 00 00 00
1	CP/IP Setup
	IP Mode: Static DHCP
	IP Address: 192 . 168 . 1 . 99
	Subnet Mask: 255 . 255 . 255 . 0
	Default Gateway: 192 . 168 . 1 . 1
E	Baud Rate Setup
	Baud Rate: 57600
1	Alerts & Logs
	Language: English 🔻 Units: Fahrenheit 💌
0	Cloud Communicaton
•	Allow Cloud Communication
	NOTE: A software reset must occur before any changes to most of the settings above will take effect (use the 'Reset' button on the Device page).
	Refresh Apply Exit

Figure 36

- 5. Retrieve NCID (Figure 37-38)
 - Connect to PL-NC2000 Network Controller via USB, serial or TCP/IP
 - Right-click the Network Controller icon
 - Select "View NCID"
 - Select "Copy to Clipboard"





Figure 38



- 6. Disconnect communication with the PL-NC2000 Network Controller
 - Click on the "Disconnect" button in the Connection side panel
- 7. Claim the PL-NC2000 Network Controller (Figure 39-40)
 - Access Connection menu: Project \rightarrow Setup \rightarrow Connection tab
 - Select Type: "Cloud"
 - Below, click on "Claim NC"
 - Right click and "Paste" NCID. Press "Claim" button.
 - Click on Save
 - Click on the "Connect" button in the Connection side panel

Project Setup	
PROJECT SETUP	
Description Access Connection	
Type: Cloud T	
Status: Cloud communication is not available without a claimed Network Controller. You must claim a Network Controller for this project to enable it. Claim NC	
Communication Settings	
Data Refresh Rate: 3 sec	
Timeout: 1500 msec	Claim the network controller
Retries: 1	
Poll Delay: 50 msec	Paste
Save Cancel	Claim Cancel

Figure 39



- 8. Confirmation Cloud communication is active (Figure 41)
 - Upon clicking on the "Connect" button, a green checkmark will appear thus confirming the communication is now active.

Connection	
Connect	Disconnect
Clo	ud 🗸

Figure 41

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