PROLON

HARDWARE GUIDE

PL-485-BT

Specifications and Operational Guide

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[IMPORTANT INFORMATION - READ BEFORE YOU BEGIN]

For simplicity and consistency, temperature values shown in this document are displayed in Fahrenheit (°F). Prolon Focus can be configured by the user to display either Fahrenheit (°F) or Celsius (°C) based on preference or regional requirements.

Prolon products also support metric and imperial measurement options, where applicable.

Product availability, features, and specifications may vary by region.

Images and information are provided for reference only and may change without notice.

Product Overview

The PL-485-BT is a Bluetooth 4.0 to RS485 converter. Its main purpose is to wirelessly transmit the messages generated by the Prolon Focus software via Bluetooth to a standard RS485 network. This allows any smartphone or tablet to view and configure a Prolon Control System directly, without requiring Wi-Fi or Ethernet access to the system. (A Prolon NC2000 Network Controller is NOT REQUIRED for access).

The PL-485-BT uses Bluetooth 4.0, otherwise known as Bluetooth Low Energy (LE) or SMART. It is an extremely optimized version of Bluetooth, allowing for considerably reduced battery power consumption while maintaining a similar communication range (up to 330 ft / 100m). Most operating systems (iOS, Android, macOS, Windows 10) natively support Bluetooth 4.0. However it is NOT COMPATIBLE with Classic Bluetooth. Please note that this converter does NOT create a Bluetooth virtual serial port and cannot be used as such.

The PL-485-BT also acts as a general purpose USB to RS485 converter. Computers equipped with a USB port will recognize it as an additional serial port and can use it for any serial protocol or purpose. When plugged in via USB, the converter is powered by the port and the internal battery will charge up. Please note that smartphones and tablets are limited to Bluetooth 4.0 LE connections only and cannot connect over USB.

The PL-485-BT is the ideal tool for contractors and end users due to its simplicity and ease of use. The PL-485-BT can be used as a portable, battery-powered communication tool, or it can be fixed in place and powered via USB for permanent installation.

System Requirements

The PL-485-BT can be used from various platforms, but in all cases, the following is required:

- Prolon Focus Application (free - see below for details)
- Bluetooth 4.0 LE capable device (integrated or via dongle)

Minimum operating system:

- Available for Windows, macOS, Android and iOS. Please refer to the Focus User Guide (section 1).

Package Contents

- PL-485-BT Converter
- USB Cable
- CAT5 Cable

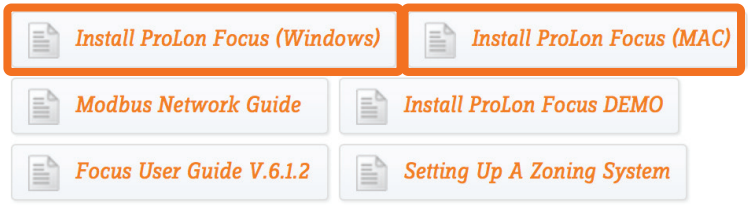
Installing Prolon Focus Software

First obtain the Prolon Focus App (free) from the appropriate source:

Windows & macOS

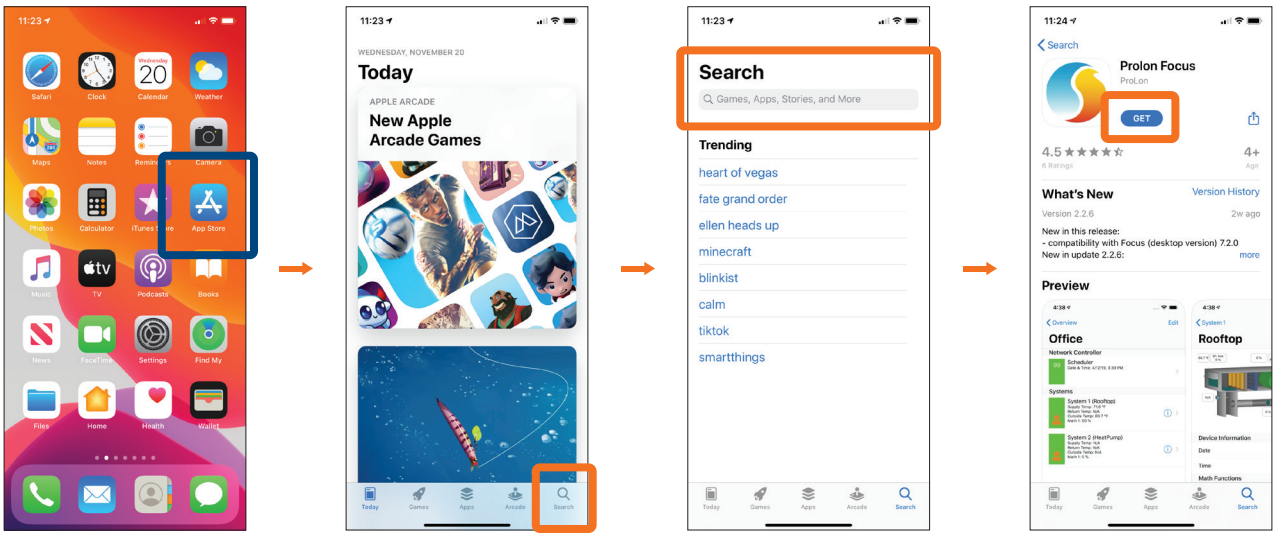
1. From Prolon's website: click here.

2. Find the appropriate link at the bottom of the web page:



iOS

Apple App Store:



A) Tap on the "App Store" icon.

B) Tap on the "Search" option.

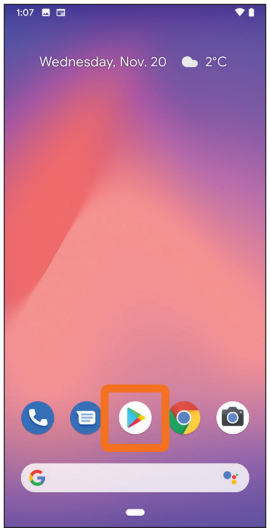
C) Type "Prolon Focus" in the search bar.

D) Tap the "Get" button to install the app.

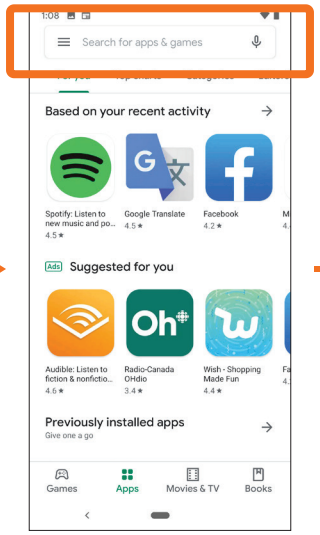
For more information, please refer to the Focus User Guide: click here.

Android

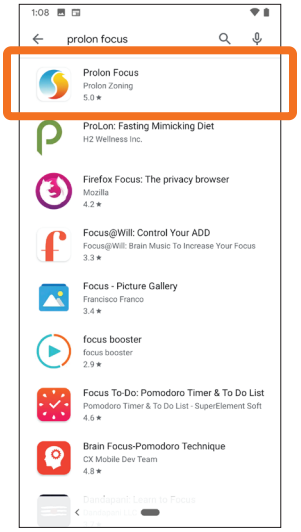
Google Play Store:



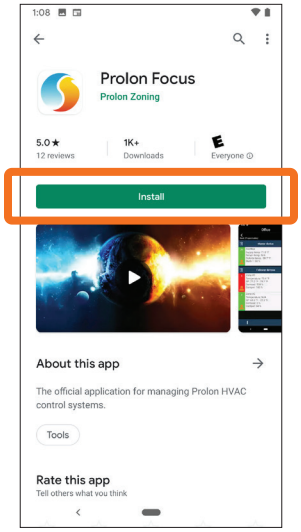
A) Tap on the "Play Store" app.



B) Enter "Prolon Focus" in the search bar.



C) Tap on "Prolon Focus".



D) Tap on "Install" (if a dialogue box pops up, tap "Accept").

For more information, please refer to the Focus User Guide: click here.

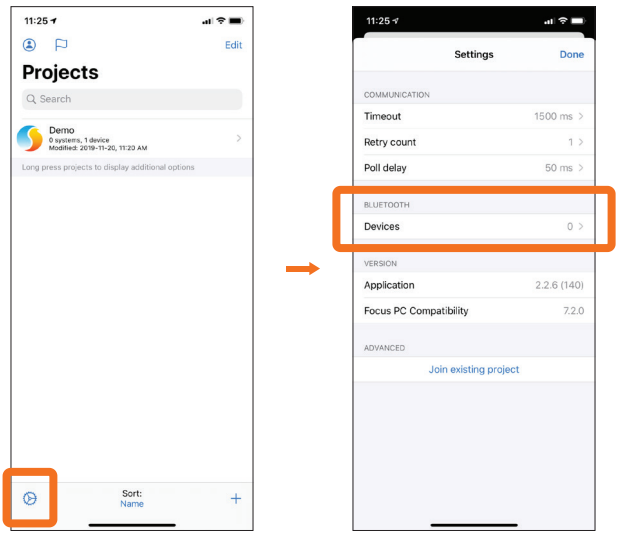
Connecting Using Bluetooth 4.0 LE

To communicate to the PL-485-BT over Bluetooth, you must first pair it with your device. The pairing process varies with the device you are using. The general process for each of the main platforms is outlined below.

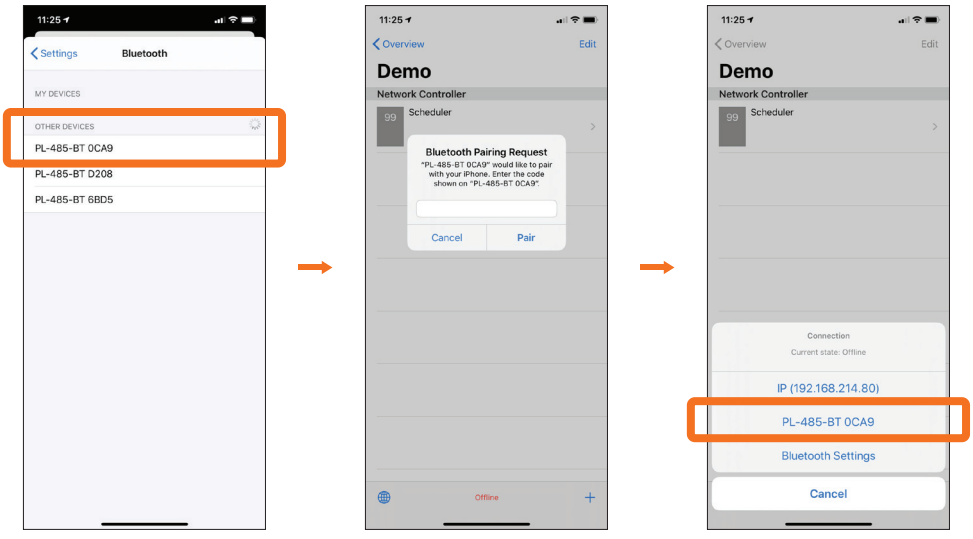
You will then be prompted for the pairing code (if SERIAL CODE is printed on the back, the code is the last 6 digits; if no SERIAL CODE is printed on the back, the code is '000000'). This can be modified at a later time by software. Please refer to the Focus Guide for your respective platform for more information.

iOS

In the Prolon Focus iOS App, pairing begins at the Projects screen directly upon opening the app. Click the Settings icon at the bottom left and select the Bluetooth Devices option.



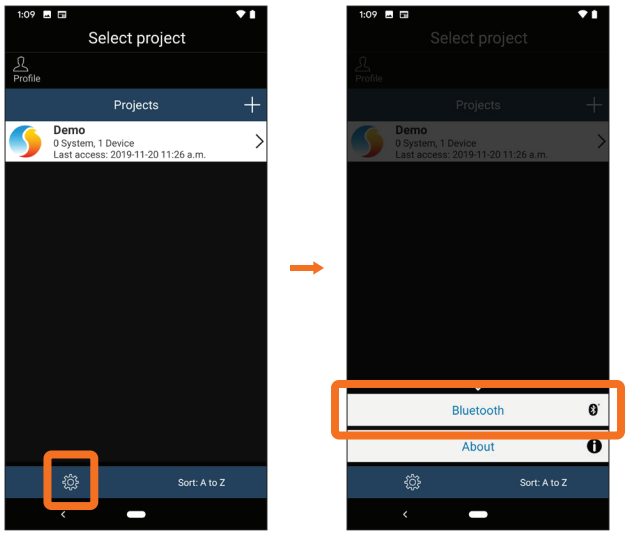
The list of all PL-485-BT converters will appear (each PL-485-BT has an ID number printed on the back for identification). Select your converter from the list. You will then be prompted for the pairing code ('000000' by default).



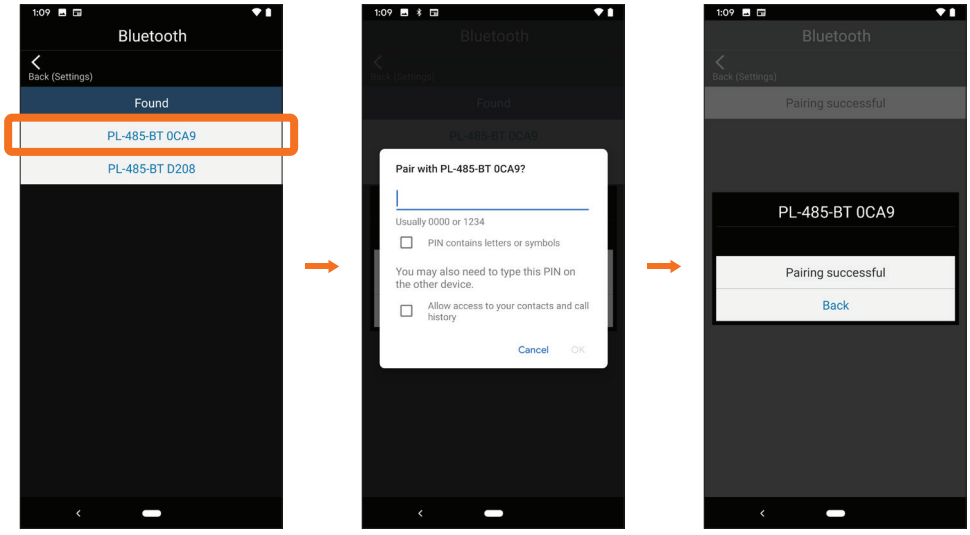
You have now paired with the converter. To use it inside your project, click the Connections icon in the bottom left and select it.

Android

In the Prolon Focus Android App, pairing is iniated via the Bluetooth Settings Menu. Click the Settings icon at the bottom left and select the Bluetooth Settings.



Only the last used Bluetooth converter will appear in the list. If you want to pair with a new converter, you must first forget the old one. Click the old converter and select “Forget”. Click “Add” to find a new one. The list of all PL-485-BT converters in range will appear (each PL-485-BT has an ID number printed on the back for identification). Select your converter from the list. You will then be prompted for the pairing code (if SERIAL CODE is printed on the back, the code is the last 6 digits; if no SERIAL CODE is printed on the back, the code is '000000').



You have now paired with the converter. To use it, open your project, click the Connection icon at the top right and select your converter.

Forgotten Pairing Code

If you have forgotten your pairing code, there is a procedure to re-establish a connection to your converter. Begin the pairing as outlined above. Before taking the step that will display the pairing code entry screen, plug in the provided USB charging cable. You now how 10 seconds to complete the pairing process using the ‘999999’ as a temporary passkey.

Connecting Over USB

Windows

The PL-485-BT requires certain drivers to be installed on the computer for it to function. The drivers are installed on the computer at the same time that the Focus Software is installed. If your computer still cannot locate the drivers, please direct it to manually search in the Prolon installation folder, in the 'Drivers' subfolder.

macOS

The PL-485-BT requires certain drivers to be installed on the computer for it to function. The drivers are present in the installation package.

iOS & Android

The iOS and Android versions cannot connect to the converter over USB and are restricted to the Bluetooth 4.0 LE mode only.

Connecting the RS485 Side

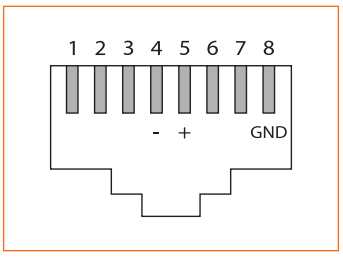
Connect the + and - screw terminals to the wires of appropriate polarity on the RS485 bus, using appropriate RS485 cabling. Connect the GND screw terminal to RS485 GND reference as needed.

Alternatively, the PL-485-BT is equipped with an RJ45 jack that carries the same RS485 +, - and GND signals among the eight pins within the jack. This port is very practical since it can be used to quickly connect to Prolon controllers that are equipped with a similar RJ45 jack using a standard CAT5 cable (included). This approach saves time since there is no need to cut and strip wires.

Note: The RJ45 jack is NOT an ETHERNET port. The PL-485-BT does NOT SUPPORT ETHERNET.

The RS485 TXD and RXD LEDs blink briefly as bytes are being transmitted or received respectively over the RS485 line, but do not indicate the validity or comprehension of these bytes by the equipment.

The RS485 circuitry in the PL-485-BT is electrically isolated from the USB circuitry, thereby avoiding any potentially hazardous GND loops with your PC.



RJ45 Pinout

Power & Charging

The PL-485-BT is equipped with a rechargeable Lithium-Ion battery. It charges via the USB port. It is also equipped with an ON/OFF button. The switch must be in the ON position for the converter to operate as a communications device (Bluetooth or USB). When the converter is not being used, switch to the OFF position to conserve battery life. The converter's battery can still be charged even when the switch is in the OFF position.

Upon Power-Up, the POWER LED will be ORANGE for a brief period of time (approx. 45 sec) while the battery level is being calculated internally. After this period, the POWER LED will be:

- Blinking RED when USB unplugged
- Solid RED when USB plugged and charging
- Solid GREEN when USB plugged and the battery has been fully charged

The current battery level can be displayed anytime in the Prolon Focus Application. The POWER LED remains OFF when the switch is set to the OFF position.

Note: While a Bluetooth connection is open, USB to RS485 communication is disabled. (The converter battery will still continue to be charged when USB is plugged even if Bluetooth is active).

ONCE FULLY CHARGED, THE BATTERY CAN LAST APPROXIMATELY 15 HOURS WHILE ACTIVELY COMMUNICATING TO A PROLON SYSTEM, AND UP TO 22 HOURS WHEN IDLE (POWER SWITCH LEFT ON). IF THE POWER SWITCH IS OFF, THE CONVERTER CAN LAST FOR SEVERAL WEEKS.

THE BATTERY TAKES APPROXIMATELY 2-3 HOURS TO COMPLETELY CHARGE UP AGAIN.

Specifications

- **Environment**: -40 to 85 °C (-40 to 185 °F) non-condensing
- **Wireless**: Bluetooth Low Energy v.4.0, GFSK Protocol, 2.4 GHz, 1 Mbps, range up to 330 ft. (100 m)
- **RS485**: 2-Wire with removable terminal block and RJ45 jack
- **Baud rates**: 9600, 19200, 38400, 57600, 115200 (bps)
- **USB**: USB 2.0, Connector Type B, Isolated from RS485
- **Battery**: Lithium-Ion 3.7V
- **Antenna**: Internal (PCB Trace)
- **Dimensions**: 4" x 3" x 1.25" (102 mm x 76 mm x 32 mm)
- **Weight**: 0.45 lbs (0.20 kg)
- **Certification**: RoHS, FCC part 15: 2012 class B

Regulatory & Safety Notices

Model Name: PL-485-BT

USA: Federal communications commission (FCC) statement

This device complies with part 15 of the FCC Rules.

Operation is subject to the following two conditions:

1. This device may not cause harmful interference and
2. This device must accept any interference, including interference that may cause undesired operation of the device.

FCC Warning:

Changes or modifications not expressly approved by Prolon Inc. could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

To comply with FCC/IC RF exposure limits for general population / uncontrolled exposure, the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

FCC ID: 2AK9O-485BT20

CANADA: Industry Canada (IC) statement

IC Notice to Users English/French in accordance with RSS GEN Issue 3:

English

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions:

1. this device may not cause interference, and
2. this device must accept any interference, including interference that may cause undesired operation of the device.

IC Radiation Exposure Statement:

This equipment complies with IC RSS-102 radiation exposure limit set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

Français

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

1. l'appareil ne doit pas produire de brouillage, et
2. l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Déclaration d'exposition à la radiation:

Cet équipement respecte les limites d'exposition aux rayonnements IC définies pour un environnement non contrôlé. Cet équipement doit être installé et mis en marche à une distance minimale de 20 cm qui sépare l'élément rayonnant de votre corps.

L'émetteur ne doit ni être utilisé avec une autre antenne ou un autre émetteur ni se trouver à leur proximité.

CAN ICES-3 (B)/NMB-3(B)

IC : 22455-485BT20

Built-in Battery Precautions

- Do not attempt to replace the battery. It is built-in and not changeable.
- Charge your converter using a certified computer, powered hub or power supply.
- Charge the battery in accordance with the instructions supplied with this guide.
- Use only the charger cable that shipped with your product to charge the battery.

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