
PL485-EK Quick Start Guide

Overview

Thank you for your purchase of the PL485-EK evaluation kit. The PL485-EK is an evaluation kit and development system for the PL485 modem, a fully programmable Power Line Communication (PLC) System On Chip (SOC). It is able to run any narrowband-PLC (NB-PLC) protocol in the frequency bands up to 500 kHz. Depending on the running firmware, the PL485 is able to support applications not only for basic connectivity (point to point, star) but also for complex mesh network topologies.

The PL485-EK board has been conceived to communicate in the CENELEC B-Band (95 kHz to 125 kHz) and complies with the CENELEC EN 50065 standard. It is designed to be directly connected to low voltage DC power rails and optionally to AC mains by means of an external coupler accessory.

Getting Started

Requisites

- Two PL485-EK boards
- PC host(s) with serial terminal emulator (e.g. PuTTY)

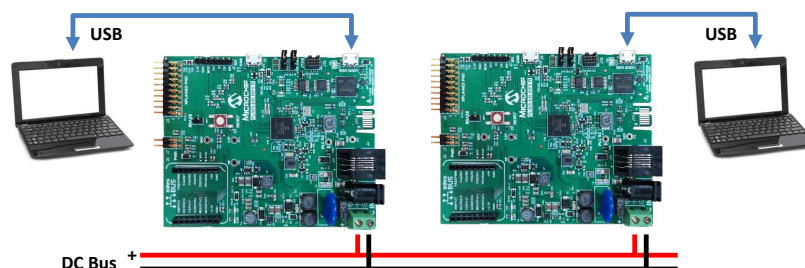
Power-Up

The board has to be powered by means of the included USB cable or from an external DC Power Supply ranging from 6V to 48V. Please check the *PL485-EK User Guide* to know more details about the power supply requirements. When the board is powered, the 3V3 and 5V LEDs turn on.

The kit comes already programmed with the PHY PLC & Go application which runs a chat application between two or more end points using Microchip PLC modem boards. Any end point can transmit a message, which is received by the other end points in the network. LED0 (green) blinks to indicate that the application is running. LED1 (red) flashes when a PLC message is received and LED D15 (yellow) flashes at each transmission.

Running PHY PLC & Go

Figure 1. PLC Test Setup



Attention: Make sure that the applied power respects the DC power connectors polarity.

1. Connect each PL485-EK board to the PC host using the included micro USB cable. If required, install the Atmel USB CDC Virtual COM driver
2. Run two terminal emulators, selecting the serial COM port assigned to each board at 921600bps.

```

COM29 - PuTTY
-- PLC & Go Application (G3-PLC) --
-- PL485-EK --
-- Compiled: Jan 23 2020 16:02:31 --

Enabling PL360 device: Loading PHY binary

PL360 initialization event: ATPL360_EXCEPTION_RESET

PL360 binary loaded correctly
PHY version: 36.04.04.07 (CENELEC-B band: 98 - 122 kHz)

Tx Modulation: BPSK Differential (Max data length = 233 bytes)

Press 'CTRL+S' to enter configuration menu. Enter text and press 'ENTER' to trigger
transmission
>>>

```

3. Send a message from one board by writing any text in the terminal emulator and pressing 'ENTER'. The message is received and shown in the terminal emulator of the other board.
4. Modify the transmission configuration by pressing 'CTRL+S' in the terminal emulator to test the different modulations.

```

COM29 - PuTTY
Press 'CTRL+S' to enter configuration menu. Enter text and press 'ENTER' to trigger
transmission
>>>
--- Tx Modulation Configuration Menu ---
Select Modulation:
  0: BPSK Robust Differential ... 2.1 kbit/s
  1: BPSK Differential ..... 9.2 kbit/s
  2: QPSK Differential ..... 16.4 kbit/s
  3: 8PSK Differential ..... 21.8 kbit/s
  4: BPSK Robust Coherent ..... 1.7 kbit/s
  5: BPSK Coherent ..... 7.9 kbit/s
  6: QPSK Coherent ..... 14.5 kbit/s
  7: 8PSK Coherent ..... 19.6 kbit/s
>>>

```

To know more about the PHY PLC & Go example, please check the application note *PLC & Go*.

Further information

Online Resources

PL485-EK is complemented with a set of online resources. These online resources include:

- Design documentation (Board schematics, PCB layout and Bill of Materials)
- Microchip protocol stacks for Power Line Communications (G3-PLC and PRIME)
- Set of PC tools to evaluate the performance of Microchip PLC solutions

Protocol stacks

PL485-EK currently supports G3-PLC and PRIME protocols. Each firmware stack includes several projects and examples of use. For more information about the firmware projects and how to build and debug the different examples, please read the corresponding documentation provided with the online contents of the stack:

- *G3-PLC Firmware Stack*
- *PRIME 1.3 FW Stack for Service Nodes* and *PRIME 1.3 FW Stack for Base Nodes*
- *PRIME 1.4 FW Stack for Service Nodes* and *PRIME 1.4 FW Stack for Base Nodes*

PC Tools

Some of the projects included in the firmware releases require an external PC application:

- PHY Tester Tool: provides complete access to PHY layer configuration and utilization.
- PHY Sniffer: captures, analyzes and displays PLC traffic. Excellent tool for network supervision and debugging
- PRIME Manager PC Tool: enables users to easily interface with the top layer of the provided PLC stack

Revision History

Revision	Date	Description
Document	01/2020	Initial Release

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