Evaluation Kit
Quick Start Guide

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Disclaimer

Operation of this equipment in a residential area is likely to cause interference in which case the user, at his or her own expense, will be required to take whatever measures may be required to correct the interference.

Attention: This product has been designed to comply with the limits for a Class B digital device pursuant to Part 15 of 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 this guide, may cause harmful interference to radio communications.

Changes or modifications to this device not explicitly approved by Grid Connect will void the user's authority to operate this device.

The information in this guide may change without notice. The manufacturer assumes no responsibility for any errors that may appear in this guide.
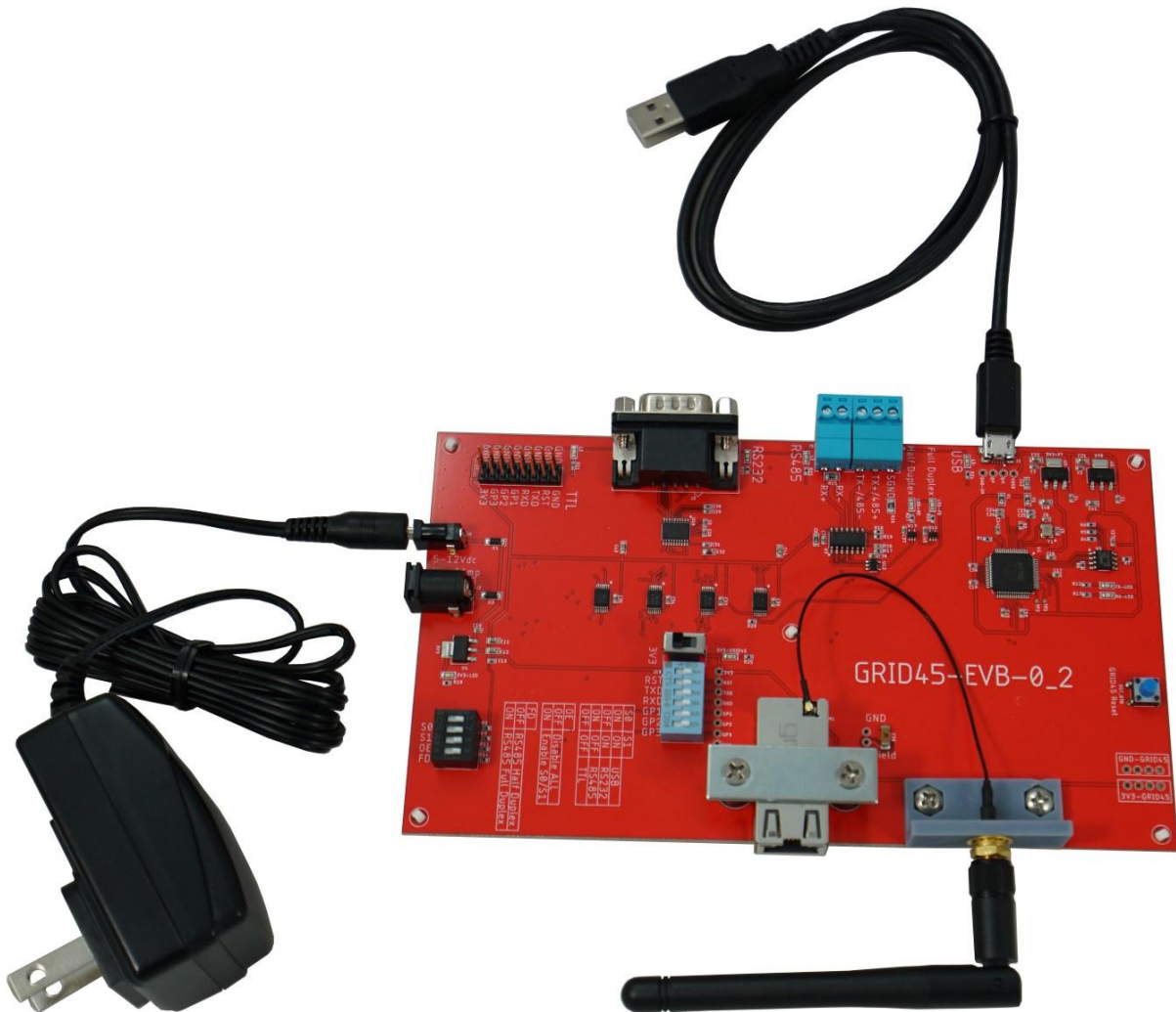
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OVERVIEW

Introduction

This Quick Start guide provides the information needed to quickly setup and use the GRID45 Evaluation Kit. The intended audience is any Test, Software or Design engineer that is responsible for qualifying, testing or integrating the GRID45 into their product.

The GRID45 OEM module is a powerful, Wi-Fi + Ethernet co-processor module that can be used in a wide variety of IIoT applications. It is designed to be a simple, easy to integrate add-on module to an OEMs host processor that provides many of the popular IIoT communication protocols. The GRID45 is a fully integrated network solution in a small form factor module.

The GRID45 Evaluation Board provides a flexible test and qualification platform for all variations of the GRID45 module. The evaluation board uses a multiplexor circuit to provide four optional, external serial connection options to the single serial interface on the GRID45 module. This allows OEMs to

test the GRID45 in any one of the following modes:

- RS232 serial connection
- RS485/RS422 serial connection
- USB serial for a connection to a PC
- Direct TTL connection (all eight signals) to the OEMs host controller UART interface through the Multiplexor circuit.

The Evaluation board is easily powered using the provided +5V wall adaptor and provides pin sockets for a GRID45 module to be easily plugged into the evaluation board. The pin sockets also allow the module to be swapped in or out.

Additional Documentation

The following additional user guides and documents are available for download on the internet.

Title	Description and Location
GRID45 Modbus User Guide	Document providing Quick Start instructions and describing the Modbus firmware configuration and operation. www.gridconnect.com
GRID45 Evaluation Board User Guide	User Guide for the GRID45 Evaluation kit www.gridconnect.com
GRID45 Module Data Sheet	Documentation for the GRID45 module hardware. www.gridconnect.com
GRID45 Modbus Product Brief	Overview of the GRID45 Modbus module www.gridconnect.com

Software User Guide Documentation

For the User Guide documentation on the GRID45 module and the evaluation kit, please see the applicable GRID45 software User Guide. For example, if you are interested in evaluating the GRID45 Modbus module, please refer the GRID45 Modbus User Guide.

Tools required (or suggested) to use the GRID45 Evaluation board.

The following tools will be helpful to complete the following examples

- USB to RS232 serial adapter
- USB cable Type A to Micro connector
- Grid Connect Devie Manager Program (Free Download)
  - https://gridconnect.box.com/s/9nh54cxizqlnad9zb92n4833wn0gxn9q
- Tera Term software (Free download)

o https://github.com/TeraTermProject/osdn-download/releases/tag/teraterm-4_106

Evaluation Kit

Contents of the GRID45 Evaluation kit

The GRID45 Evaluation Kit contains the following items:

- GRID45 Evaluation Board
- 5V wall adaptor
- USB Cable Type A to Micro connector
- Insulated w.fl antenna cable to reverse SMA connector
- Dipole antenna

Note: You must buy a GRID45 module separately for use with this Evaluation Kit. The GRID45 Evaluation board supports multiple versions of the GRID45 module. Each GRID45 module can run different Industrial Automation protocols.

Part Numbers for the GRID45 Evaluation Kit

Part Number	Description
GRID45-EVAL-KIT-110	GRID45 Evaluation Kit for 110 Vac US
GRID45-EVAL-KIT-U	GRID45 Evaluation Kit for 110/220 Vac International Plugs

Quick Start setup

Install the GRID45 Module

The evaluation board has pin sockets for the GRID45 module that makes it easy to plug in the GRID45 module on the board. The pin sockets allow the module to be interchanged or swapped out as the testing or qualification requires.

1. Make sure power is off to the Evaluation board
2. Remove the Hold down bar by un-screwing the 2 screws.
3. Carefully line up and install the GRID45 module
4. Re-install the hold down bar by screwing in the 2 screws.
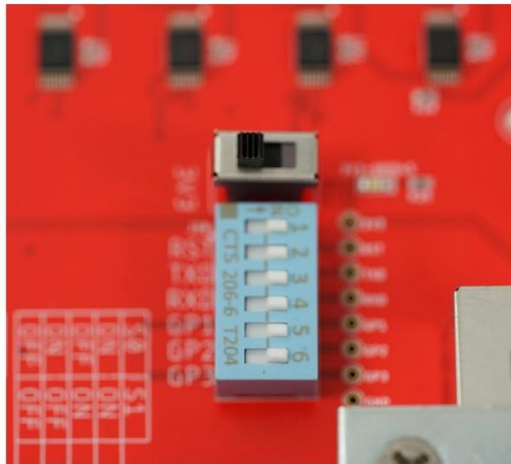
Powering the Evaluation board

The evaluation board includes a +5-volt power supply that plugs into a wall outlet. The power supply plugs into the J9 barrel connector on the board. The power jack at J2 is redundant and adds flexibility to accept other power supply adapters. The Evaluation board will accept power from +5 volts to +12 volts with a minimum power requirement of 5 Watts (must supply a min of 1 amp at +5 volts).

- **Plug the power supply into 110Vac wall outlet. Plug the +5 Volt connector into J9. If there is power, the 3V3-LED will light up.**

    *The Evaluation Board can **NOT** be solely powered through the USB connector. The power requirements of the board exceed what a typical USB interface can source. Only the USB interface circuits are powered through the USB connector.*

There is a power switch on the evaluation board labeled 3V3. This switch controls the +3.3 volt power line to the GRID45 module to powered On or Off.
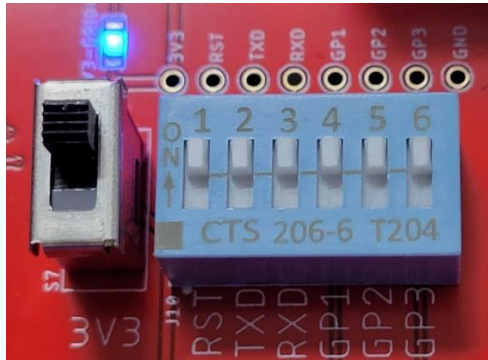
- **Toggle this switch to ON**

When installing or removing a GRID45 module from the board, set this switch to off.

GRID45 DIP Switch Settings
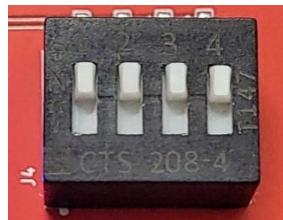
On the 6 position DIP labeled J10

- **Set all 6 positions to ON**

On the 4 position DIP labeled J4

- **Set all 4 positions to ON.**

  (DIP Switch positions 1 and 2 enable the USB interface. Position 3 enables the GPIO pins.
  Position 4 sets the RS485 interface to half-duplex or full-duplex)

Quick Start for connecting a serial interface to the GRID45 Evaluation board

For this example, we will connect to the GRID45 using a direct connection to the serial port with a USB cable. We will also use a terminal program called Tera Term.

- **Install Tera Term onto your PC**

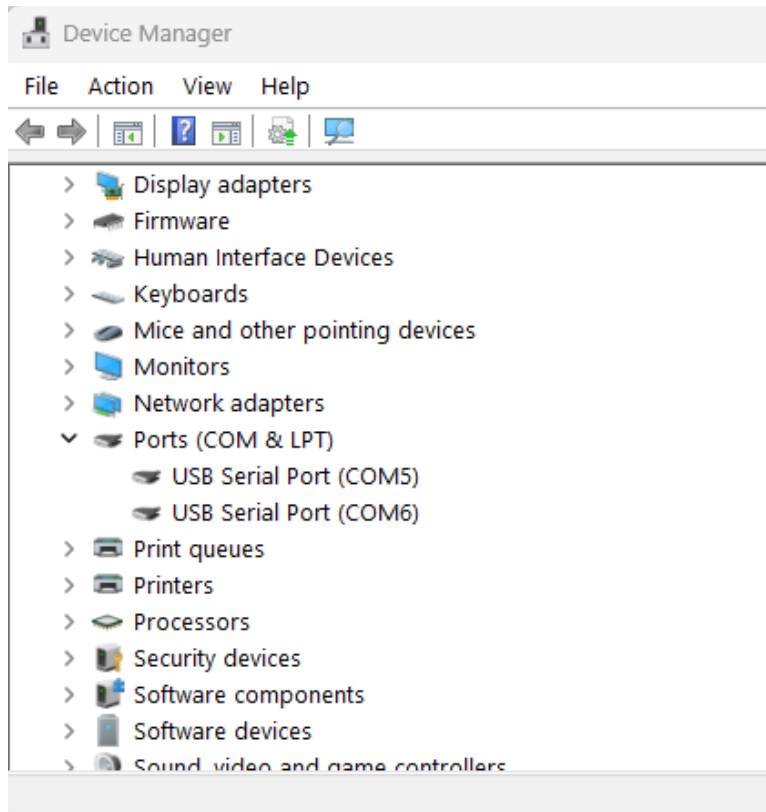Then, connect the USB port on the eval board to your PC

- **Plug the USB cable type A to Micro connector between the PC and the USB port on your eval board.**

When you connect the USB-to-serial interface to your PC, the FTDI drivers for the USB should load automatically and make 2 serial COM ports available.

- **Verify you have 2 COM ports configured on your PC by viewing your Device Manager and make note of the COM ports that were established.**
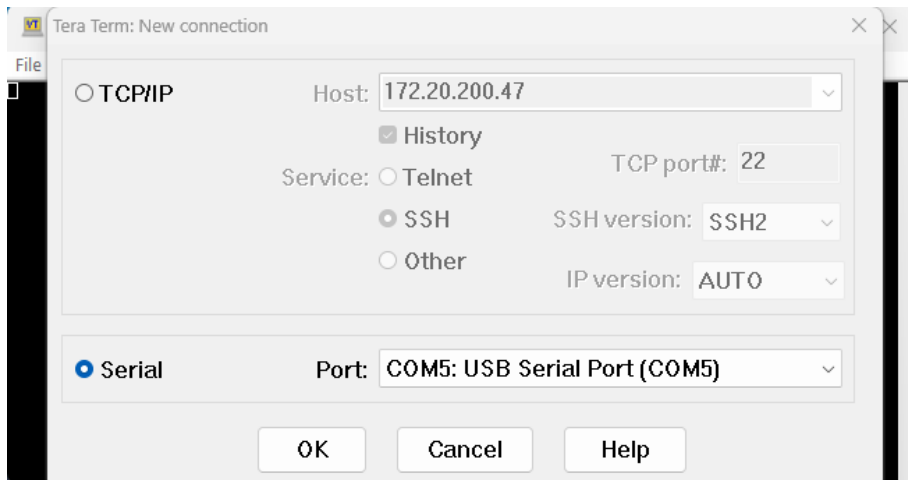
In Windows 11, you can do this by following these instructions

1. Click in the Windows Search box and begin typing "device manager"

2. Choose the Device Manager – Control panel selection that should appear
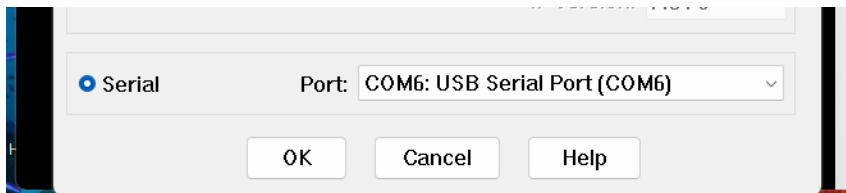
3. You should see the following window

4. Under Ports (COM & LPT) make sure you have (2) USB Serial Ports. The COM numbers on your PC may be different. Make note of the COM port numbers that the PC established.

5. After verifying the correct COM ports, you can close the Device Manager window.

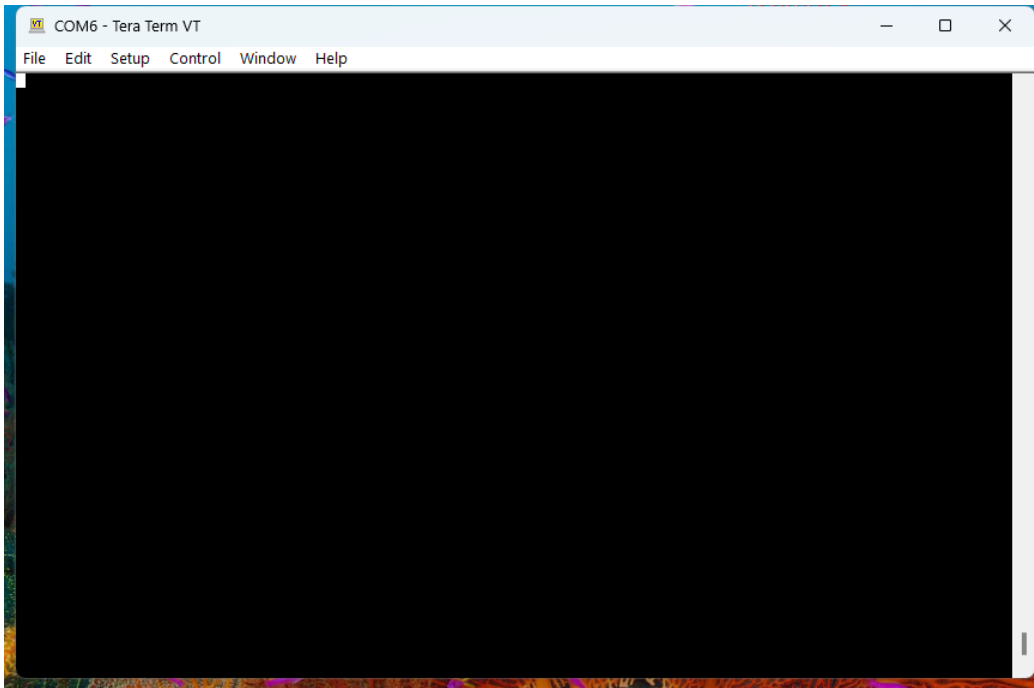- **Open the Tera Term Application**

- **Select the radio button for Serial**

- **Click on the drop-down box, select the higher of the 2 COM ports. In this case, select COM6.**
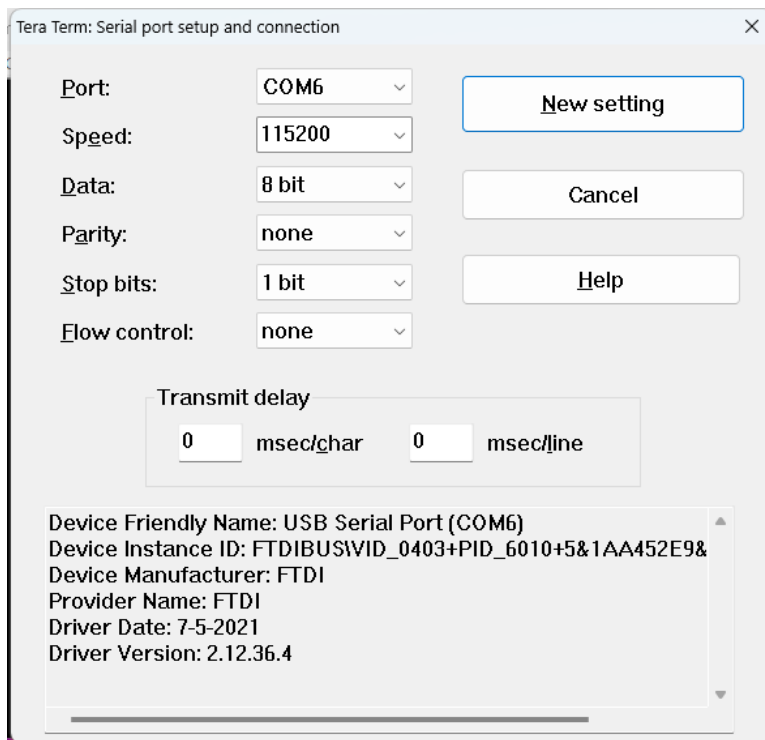
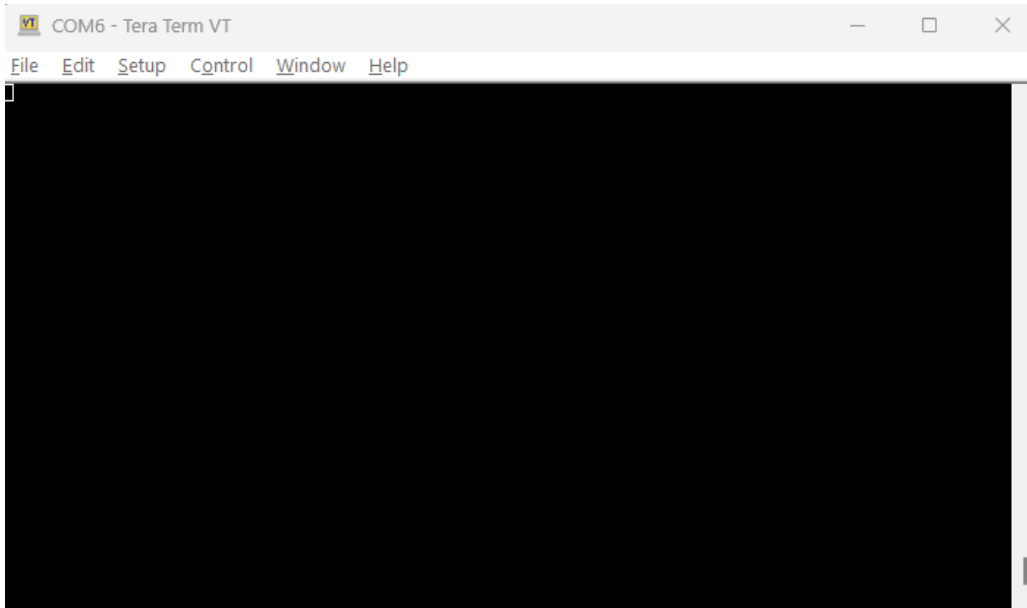

- **Click OK**

That brings up the following window.

There is now a terminal session on COM6. We need to make sure the serial port settings are right.

- **Click on the Setup menu. From the dropdown list of options -> click on Serial Port**

- **Verify that the serial parameters are: 9600. 8 bits, none for parity, 1 bit for stop bits. Adjust your settings to match this. When done, click on the NEW Setting button.**
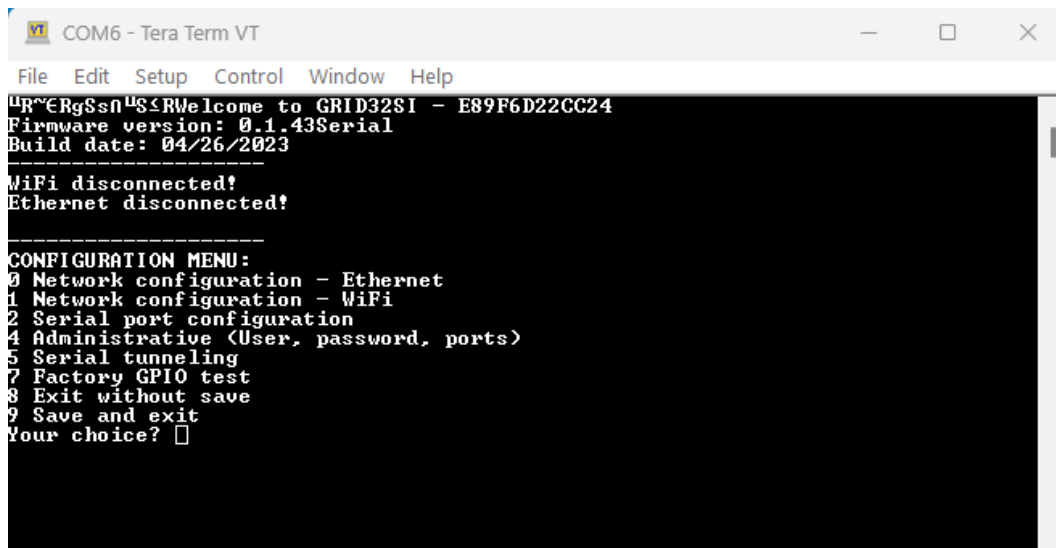
The following window will be shown.

There is a COM6 terminal connection now established with the correct serial port settings.

- **On the keyboard, press the *"shift and +"* keys and hold them down.**

- **Press the RESET button on the GRID45 Eval Bd**

- **You should see a menu pop up in the terminal window**

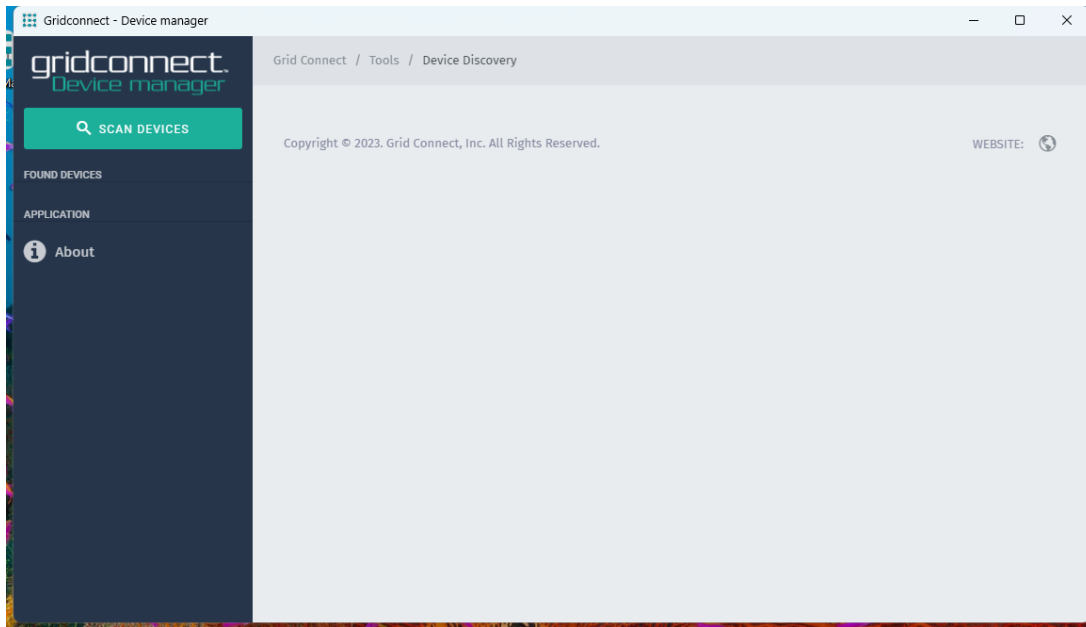Terminal window with configuration menu

From here you can enter the menu numbers and follow the prompts to set the configuration of the GRID45.

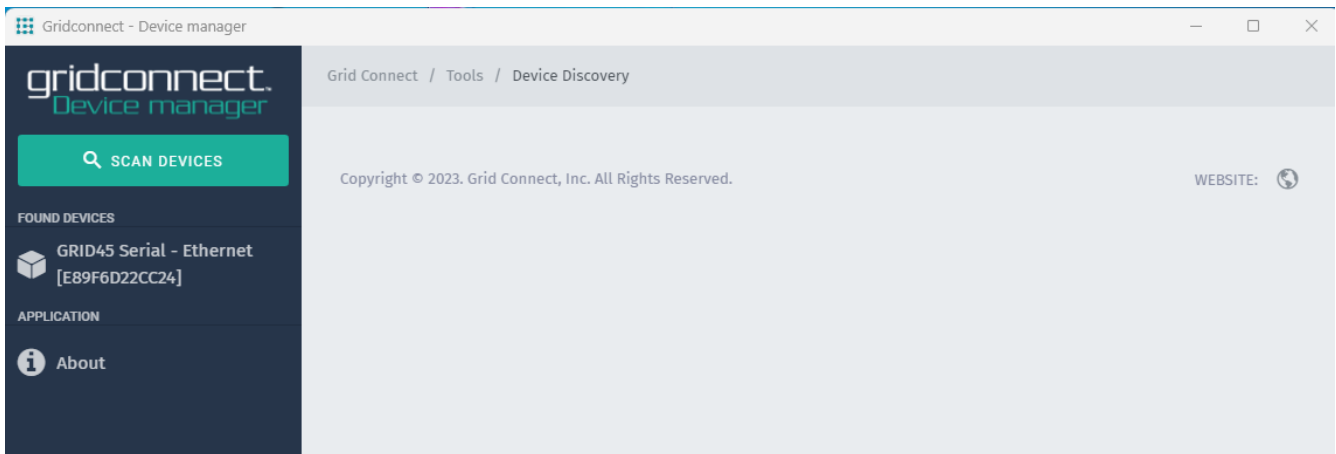# Quick Start for connecting to the Network interface of the GRID45 Evaluation board

- **Install the Grid Connect Device Manager Software**
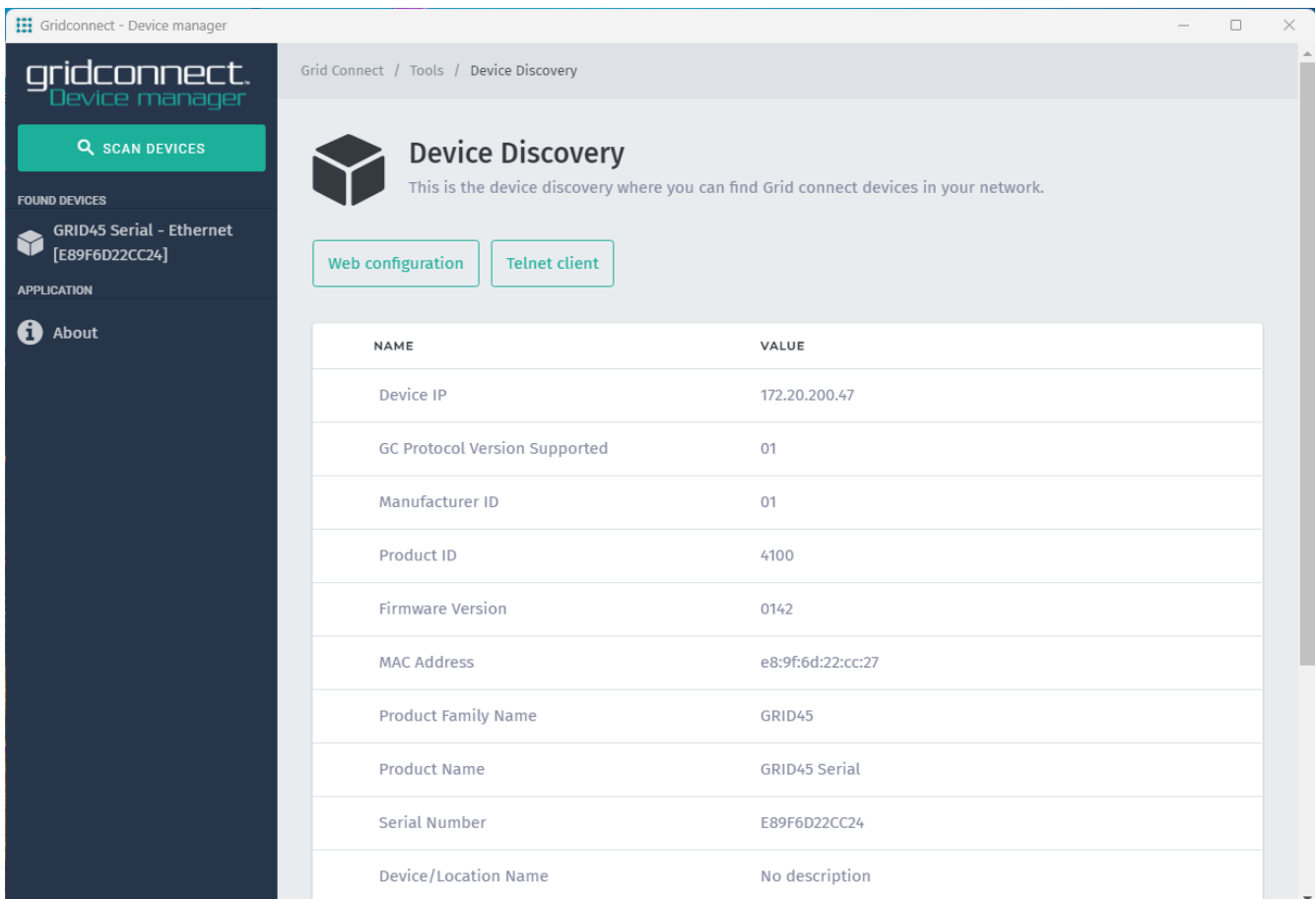
You should see the following Window

- **Plug a CAT5 cable into the GRID45 RJ45 connector. Plug the other end into an active Network Switch with a network connection to a DHCP server**

- **Verify the right LED on the GRID45 is flashing or solid on to indicate that you have an Ethernet link**

- **Click on the scan Device button in the Device Manager program**
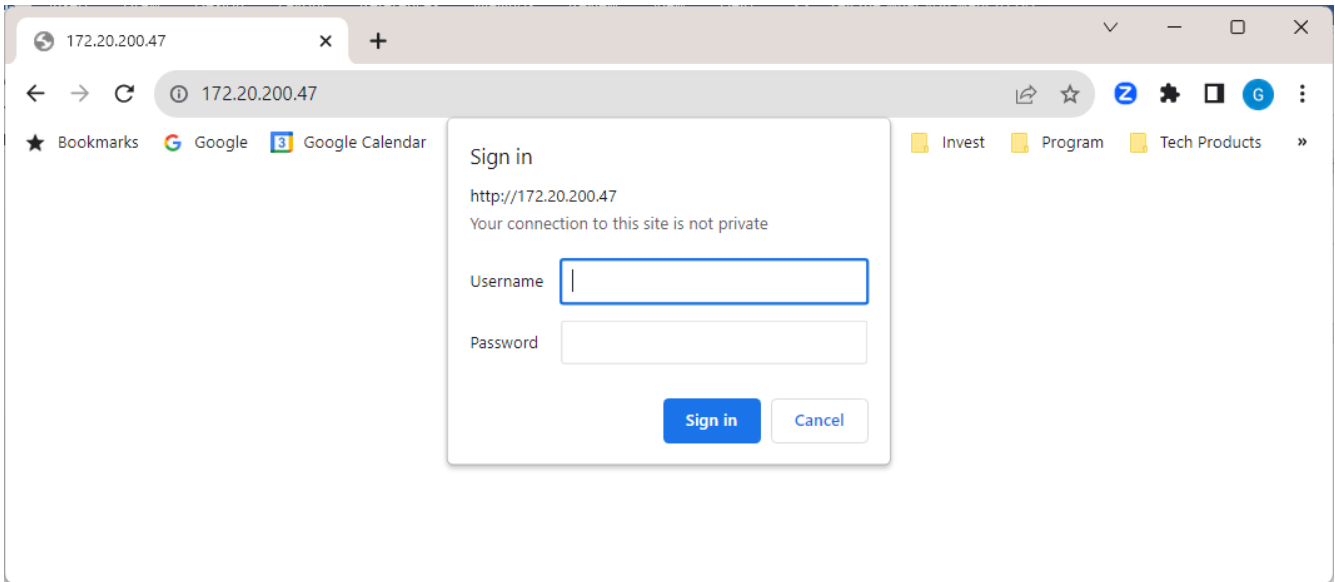
In this case it found my GRID45 unit

Click on the found GRID45 and it will open up the following window with details on the GRID45 configuration.
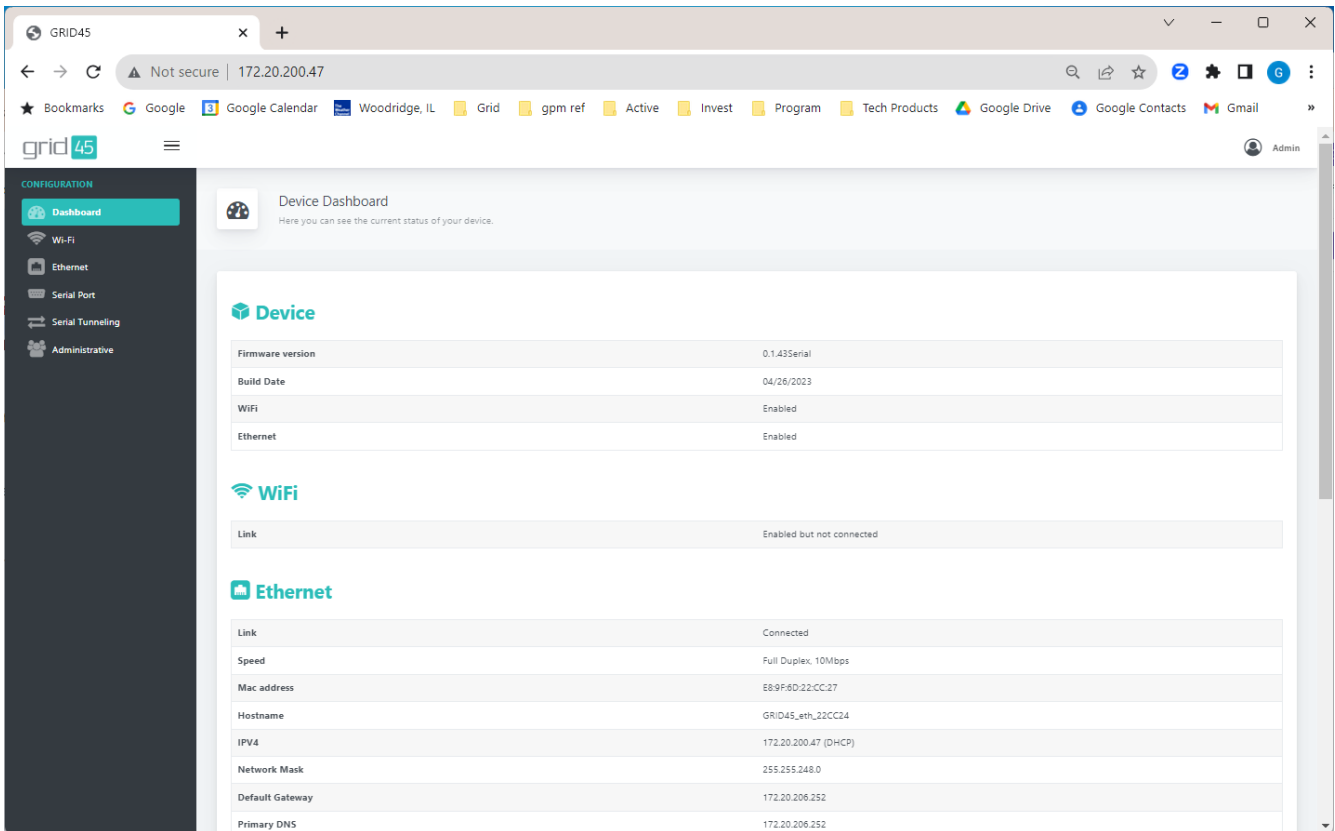

You can also go directly into the GRID45s WEB manager by using its IP address in a browser.

- **Open an Internet browser (in this case Google Chrome). Enter the discovered IP address in the URL input box.**

- **Click Sign In (no parameters required)**

From here you can configure all of the configuration parameters of the GRID45.