gridconnect™

NET485
Quick Start Guide
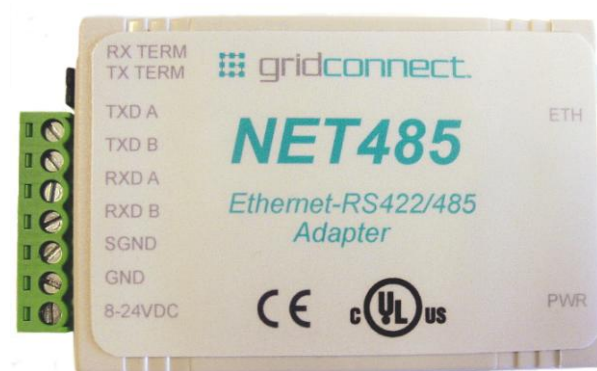
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Disclaimer and Revisions

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.

Date	Rev.	Author	Comments
03/21/05	A	GR	Preliminary Release
04/26/06	B	GR	Addition of 485/422 Option Jumper
05/23/06	C	GR	Release of Firmware 6.1.0.2 and Device Installer 4.1.0.3
07/06/10	D	GR	Add 422/485 wiring drawings
10/10/13	E	GR	xPort-05 (6.9.0.2) Release and Device Installer 4.4.0.0

1. Quick Start

Follow this Quick Start guide to get your unit up and running fast.
WARNING: DO NOT CHANGE THE FIRMWARE UNLESS DIRECTED BY TECHNICAL SUPPORT

The NET485 kit contains the following items:
- NET485 RS422/485 Serial to Ethernet Adapter
- CD with NET485, Device Installer, Comm Port Redirector, user guides and application notes.

1.1 Setup Steps

The setup procedure consists of the following steps:

1. Connect 5-24VDC to the power pins.

2. Install the **Device Installer** software. Run Device Installer and search for the NET485.

3. Change the configuration settings
   a. assign a fixed IP Address
   b. Set Configurable Pin 1 (CP1) to RS485_TXEN (**this is already factory set**)
   c. Set RS485_TXEN Active Level to High (**this is already factory set**)
   d. Set the Serial Protocol to RS485 – 2 Wire (**this is already factory set**)
      (or RS422/485 - 4 Wire if the option jumper is set to 422)
   e. Set the Serial Port parameters to match your device (baud rate, parity, etc.)
   f. Remove the RX Term and TX Term jumpers for short lines

The NET485 is factory set for RS485. You can change it to RS422 by changing the protocol for the port setting. You can select Full or Half Duplex by changing the internal jumper J2. The factory default setting is Half Duplex where pins 2 and 3 are connected.
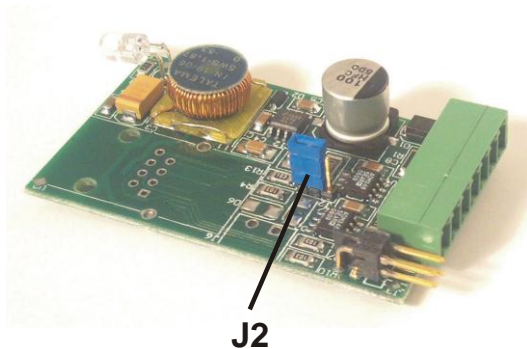

J2

Figure 1 - J2 Setting for Half Duplex

To change the jumper J2 to Full Duplex, open the case and locate the jumper J2. Move the jumper to pins 1 and 2 as shown in the drawing.
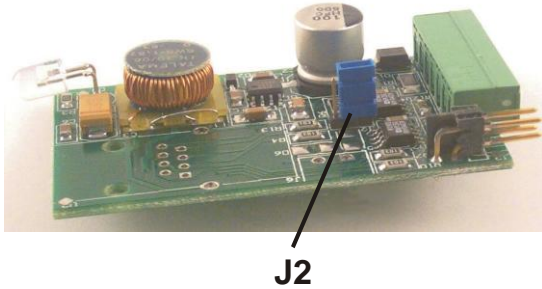

J2

Figure 2 - J2 Setting for Full Duplex

Connect the Hardware

Connect your network Ethernet cable to the NET485 RJ45 jack. Do not connect directly to your PC. The NET485 should be connected to a router or server.

Connect a 5-24VDC power supply to the NET485. The polarity for the terminals is shown on the label. Verify the Green power LED is ON.

Note: Do NOT use RX Term and TX Term jumpers on short transmission lines. Remove these jumpers to remove the 120 Ohm resistors from the transmit and receive lines.

Note: See the Application Notes on the product CD for more information about networks and termination procedures.

Connect your RS422/485 device to the NET485 terminals.

Connect the wires like this for RS422/485 4-wire, full duplex.
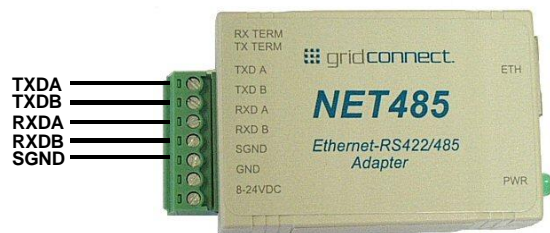
Connect the wires like this for RS485. Make sure there is a jumper between TXDA to RXDA, and TXDB to RXDB.

1.2 Install Device Installer
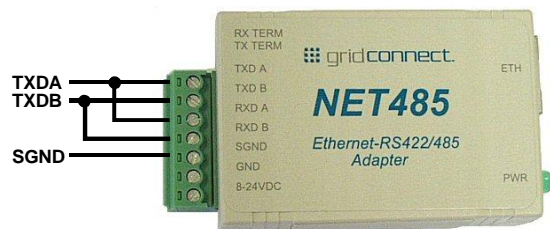
1. Insert the product CD into your CD-ROM drive. The CD will automatically start and display the main window.

   If the CD does not launch automatically:

   a) Click the Start button on the Task Bar and select Run.

   b) Enter your CD drive letter, colon, backslash, autorun.exe (e.g., D:\autorun.exe).

2. Click the **Go to Software Page** button.
3. Click the **Device Installer** button.
4. Respond to the installation wizard prompts.
5. Restart your system.

1.2.1 RUN Device Installer

1. Click Start/Programs/DeviceInstaller 4.4/DeviceInstaller.
2. Apply power to the NET485. Wait for a few seconds while the unit connects to the network.
3. Click the Search icon. The list of device servers displays.
   You can identify your device by matching the Hardware (MAC) Address printed on the bottom of the NET485 to those listed on the Device Installer window. If you cannot locate it, try Search again.
4. The Device Installer main dialog box appears.
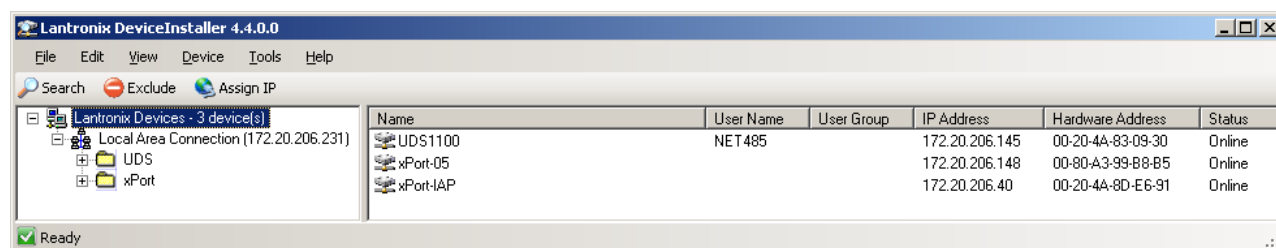
5. Double-click your device in the list. The window will expand to display three tabs.
6. Click the Web Configuration tab.
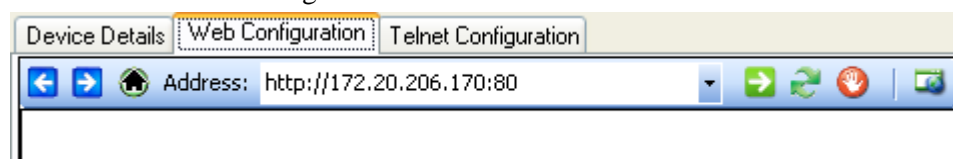
7. To view the Web-Manager in the current DeviceInstaller window, click the **Navigate** icon . To open the Web-Manager in a web browser, click the **External Browser** icon .
8. When a password window appears, press **Enter**.

9. The Device Status page will appear.

Device Status		
Product Information		
Firmware Version:	V6.9.0.2	
Build Date:	07-Feb-2013	
Network Settings		
MAC Address:	00-80-A3-99-B8-B5	
Network Mode:	Wired	
DHCP HostName:	< None >	
IP Address:	172.20.206.148	
Default Gateway:	172.20.206.252	
DNS Server:	172.20.206.1	
MTU:	1400	
Line settings		
Line 1:	RS232, 9600, 8, None, 1, None.	

Navigation menu (left sidebar):
- Network
- Server
- Serial Tunnel
  - Hostlist
- Channel 1
  - Serial Settings
  - Connection
- Email
  - Trigger 1
  - Trigger 2
  - Trigger 3
- Configurable Pins
- Apply Settings
- Apply Defaults

You can return to the home page at any time by clicking the home icon in the top, left corner.

1.3 Configure with Web Manager

Please see the Device Installer user manual for details on using the Web Manager. This section presents some basic setup parameters necessary to get the unit operational.

You must configure the unit so that it can communicate on a network with your serial device. For example, you must set the baud rate to match the baud rate of your device. You should also assign it a fixed IP address for your network.

The unit's configuration is stored in nonvolatile memory and is retained without power. You can change the configuration at any time. The unit performs a reset after you change and store the configuration.

1.3.1 Network Configuration

The unit's network values display when you select **Network** from the main menu.

Manually assign an IP address to the unit and enter related network settings.

To assign an IP address manually:

1. Select **Use the following IP configuration.**

2. Enter the following (as necessary):

IP Address	Assign IP address in decimal-dot notation. The IP address must be set to a unique value in the network. Example: 172.20.206.150
Subnet Mask	A subnet mask defines the number of bits taken from the IP address that are assigned for the host part. Example: 255.255.255.0
Default Gateway	The gateway address, or router, allows communication to other LAN segments. The gateway address should be the IP address of the router connected to the same LAN segment as the unit. The

	gateway address must be within the local network.
Auto Negotiate	Set to Auto Negotiate. With this option, the Ethernet port auto-negotiates the speed and duplex with the hardware endpoint to which it is connected. This is the default.

4. When you are finished, click the **OK** button.

5. On the main menu, click **Apply Settings.**

1.3.2 Channel 1 Configuration

The Channel 1 configuration defines how the serial port responds to network and serial communication.

To configure the channel's serial settings:

1. On the main menu, click **Serial Settings** (under **Channel 1**) to display the Serial Settings window.

2. In the available fields, enter the following information:

Port Settings

Protocol	Must be RS485 2-wire OR RS422/RS485 4-wire
Flow Control	Flow control manages data flow between devices in a network to ensure it is processed efficiently. Too much data arriving before a device is prepared to manage it causes lost or retransmitted data. **None** is the default.
Baud Rate	The unit and attached serial device, such as a modem, must agree on a speed or baud rate to use for the serial connection. Valid baud rates are 300, 600, 1200, 2400, 4800, 9600 (default), 19200, 38400, 57600, 115200, 230400, 460800, or 921600.
Data Bits	Indicates the number of bits in a transmitted data package. The default is **8.**
Parity	Checks for the parity bit. The default is **None.**
Stop Bits	The stop bit follows the data and parity bits in serial communication. It indicates the end of transmission. The default is **1.**

Pack Control

Enable Packing	The standard algorithm is optimized for applications in which the unit is used in a local environment, allowing for very small delays for single characters, while keeping the packet count low. Enable this option if you have problems sending small packets of data.
Idle Gap Time	Select the maximum time for inactivity. The default time is **12** milliseconds.

3. When you are finished, click the **OK** button.

4. On the main menu, click **Apply Settings**.

1.3.3 Connection Settings - TCP

To configure a channel's TCP settings:

1. On the main menu, click **Connection**. The Connection Settings window for the channel displays.

2. In the available fields, enter or modify the following information:

Connect Mode: Active Connection

Active Connect	- **With Any Character**: Attempts to connect when any character is received from the serial port. - **Auto Start**: Automatically connects to the remote IP address and port after booting up. (Use this ONLY for a serial tunnel application. That is when two NET485s are connected in tunnel mode.)

Endpoint Configuration

Local Port	Enter the local port number. The default setting is 10001. This works for most applications.
Remote Port	Enter the remote port number. If you are connecting two NET485 devices in Tunnel Mode, enter the remote port of the other device here. The other device can also use port **10001**.
Remote Host	Enter the IP address of the remote device. If you are connecting two NET485 devices in Tunnel Mode, enter the remote IP address of the other device here. Otherwise, leave it blank.

3. When you are finished, click the **OK** button.

4. On the main menu, click **Apply Settings**.

1.3.4 Configurable Pin Settings

There are three configurable hardware pins inside the NET485. Only CP1 is actually connected.

To configure the NET485:

1. On the main menu, click **Configurable Pins**. The Configurable Pins page opens.

2. Set CP1 to RS485 TxEnable and Active level HIGH.

3. When you are finished, click the **OK** button.

4. On the main menu, click **Apply Settings.**

1.4 Quick Test

In order to use the quick test, you must have an RS422 or RS485 port on your PC. You can also use an RS422/485 to RS232 adapter on your PC.

This quick test is designed to demonstrate the following:
- The ability of the unit to move data from the serial port to the ethernet port
- The ability of the unit to move data from the ethernet port to the serial port

Use Device Installer to locate the unit on your network. Note the IP address.
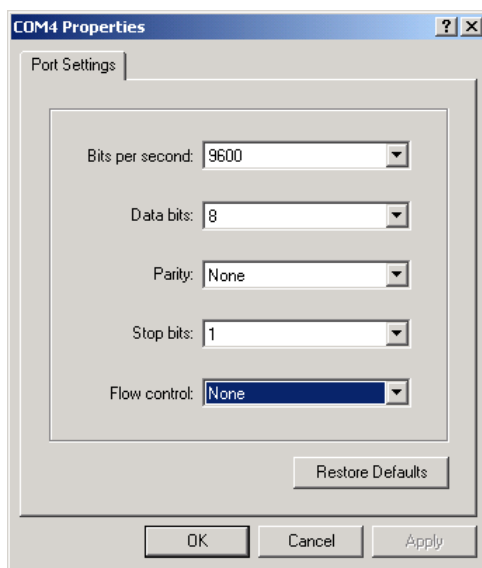
Serial Session

Start a session of HyperTerminal or other terminal emulation program. Enter a name for the new connection and click OK. Example: SERIAL

In the **Connect To** dialog box, go to the **Connect using** field and select the Com port (or adapter) that is connected to the NET485 and click OK.

In the **COMx Properties** dialog box, enter 9600, 8, None, 1, None and click OK. This is the RS422/485 serial port terminal.
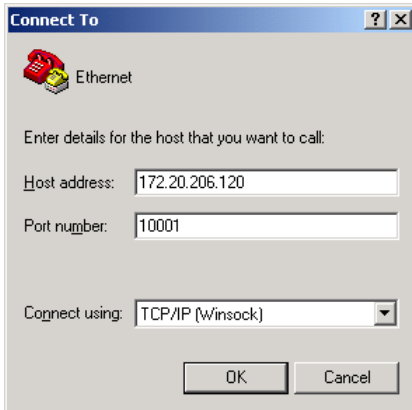

The status message for the serial connection should show it is connected.

TCP/IP Session

Start another session of HyperTerminal. Enter a name for the new connection and click OK. Example: ETHERNET

In the **Connect To** dialog box, go to the **Connect using** field and select **TCP/IP (Winsock)**. Enter the IP address of the NET485 and enter 10001 (default) for the Port number and click OK. This is the Ethernet terminal.

The status message for the TCP/IP connection should show it is connected.

Make sure the status line at the bottom of the Hyperterminal window does not show any AUTO functions. If there is one, go back and reconfigure the terminal settings and the communication settings.

Change the Emulation from Auto detect to VT100. The status line at the bottom of the Hyperterminal windows should show VT100 and 9600 8-N-1.

Resize the two HyperTerminal windows so you can see both on your screen. Now you can enter data in one terminal and see it appear in the other. You are sending characters between the serial port and the Ethernet port, exactly what the NET485 was designed to do.