USER'S MANUAL

PH485Ex4

#4 RS-485/RS422 OVER ETHERNET TERMINAL SERVER/CLIENT
& Modbus ASCII/RTU Gateway

IPEX

(IP Electronix)

22 October 2025

Doc No: PH485Ex4-UM-001

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1. INTRODUCTION

IPEX PH485Ex4 bidirectional communication terminal server/client is a simple solution for connecting serial devices to a network which results in having #4 RS-485 or RS-422 serial ports over Ethernet network. This converter uses transparent communication, so it is not required to understand complex Ethernet TCP/IP protocol, and no modification in serial programs is needed. It operates as a Real COM, TCP Server, TCP Client, UDP Server and UDP Client Full-Duplex converter and supports bidirectional connection.

Protection against Surge, ESD and EMI is implemented in its design and it has 3kV isolation between Ethernet and RS-485/RS-422 sides. Furthermore, all the RS-485/RS-422 ports are insulated from each other too.

PH485Ex4 is designed for industrial usage and is useful for connecting any device with a serial interface to a computer via Ethernet supported network like LAN, WAN … and can be used in Industrial Automation, Telecommunications, SCADA Systems, DCS Systems ….

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2. SPECIFICATIONS

- **Number of Ports:** #4 RS-485/RS-422 Serial Port, #2 Ethernet RJ45 (10/100 Mbps) Port;
- **Serial Standard:** Meets or Exceeds the Requirements of TIA/EIA-485/422;
- **Network Protocols:** ICMP, IP, TCP, UDP, DHCP, Telnet, DNS, ARP, HTTP;
- **RS-485 Signals:** Data+, Data-, GND, Asynchronous Half-Duplex, 2-Wire Differential;
- **RS-485 Data Direction Control:** ADDC (Automatic Data Direction Control);
- **RS-422 Signals:** Tx+, Tx-, Rx+, Rx-, GND, Asynchronous Full-Duplex, 4-Wire;
- **Baud-Rate Type:** Both Standard and Custom Baud Rates are Supported;
- **Baud-Rates:** 1200 to 230400 bps;
- **RS-485/422 Data Bits:** 5, 6, 7, 8; Selectable;
- **RS-485/422 Parity:** Even, Odd, None, Mark and Space; Selectable;
- **RS-485/422 Stop Bits:** 1, 1.5, 2; Selectable;
- **Data Buffer:** 2000 Bytes per Port (1k Bytes Transmit, 1k Bytes Receive);
- **Power (Green)** LED Indicator;
- **Transmit (Blue)** and **Receive (Yellow)** LED Indicator for All Ports;
- **TCP Server (Green), TCP Client (Green)** and **UDP (Green)** LED Indicator;
- **ESD Protection:** RS-485 Bus-Pin ESD Protection Exceeds ±15 kV Using Human-Body Model (HBM);
- **Dimensions:** 218mm x 122mm x 30mm (8.58in x 4.80in x 1.18 in);
- **Operating Temperature:** -10°C to +70°C (+14°F to +158°F);
- **1 Year Guarantee** and **5 Years Support.**

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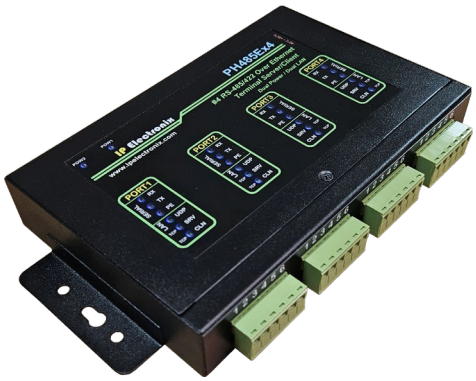
3. PACKAGE CHECKLIST

Before installing the PH485Ex4, verify that the package contains the following items:



1) #1 PH485Ex4 Multiport

2) #1 Quick Start Guide

3) #1 Document and Driver CD-ROM

4) #1 220V AC to 12V DC Adaptor

5) #2 Din Rail Brackets with the corresponding screws

NOTE: Notify your sales representative if any of the above items is missing or damaged.

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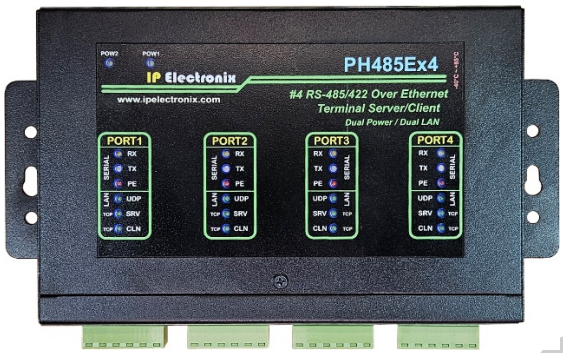
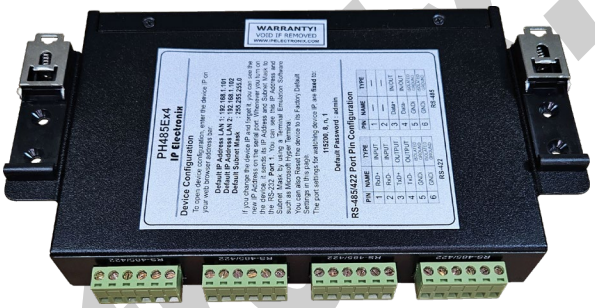
4. TOP VIEW



5. BOTTOM VIEW



6. FRONT VIEW

7. BACK VIEW

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8. GENERAL INDICATORS

POWER LED (Green): It is turned ON, when the power supply connects to +VDC and GND correctly.

9. PORT INDICATORS

TCP Server LED (Green): Blinking this LED shows that the TCP Server mode for this port is selected and device is trying to connect in this mode. If the device connects to a client, then this LED turns on continuously.

TCP Client LED (Green): Blinking this LED shows that the TCP Client mode for this port is selected and device is trying to connect in this mode. If the device connects to a server, then this LED turns on continuously.

UDP LED (Green): Blinking this LED shows that the UDP mode for this port is selected and device is trying to connect in this mode. If the network works properly, then this LED turns on continuously.

PE LED (Red): It is blinking if the device detecting a Parity Error in data.

RX LED (Yellow): It is blinking when the device receive data on serial port.

TX LED (Green): It is blinking when data is transmitting from the device serial port.

REDIRECT IN (YELLOW): It is turned on if data from other ports are redirected to this port.

REDIRECT OUT (GREEN): It is turned on if data from the port are redirected to any other port.

10. DEVICE POWER SUPPLY

To working properly, you should connect a DC Power Supply to PH485Ex4. The voltage of the Power Supply should be from +8V to +48V. For example, this device is working with a single +12V, +15V or +24V DC Adaptor as well.

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11. RS-485/RS-422 SERIAL PORTS, PIN CONFIGURATION

Port	Pin	Name	Task	Type
2-Wired RS-485	1	D +	Data + (A)	Bi-Directional
	2	D -	Data - (B)	Bi-Directional
	3	to 1	**MUST Be Connected to Pin 1**	Connect 3 to 1
	4	to 2	**MUST Be Connected to Pin 2**	Connect 4 to 2
	5	GNDi	Isolated Ground	GND
	6	GNDi	Isolated Ground	GND
4-Wired RS-485 and RS-422	1	RX +	Receive + (A)	Input
	2	RX -	Receive - (B)	Input
	3	TX +	Transmit + (Y)	Output
	4	TX -	Transmit - (Z)	Output
	5	GNDi	Isolated Ground	GND
	6	GNDi	Isolated Ground	GND

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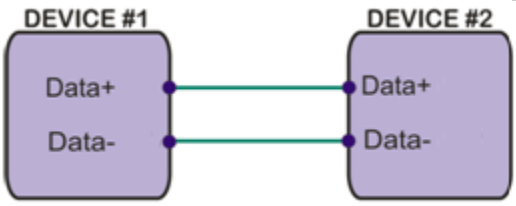
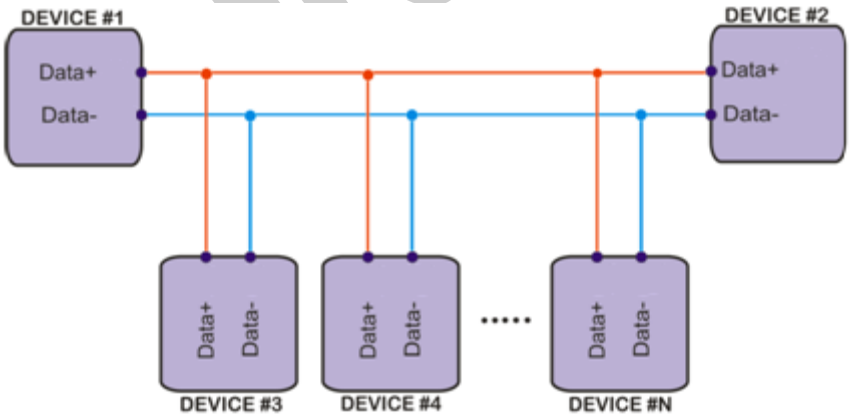
12. RS-485 CONNECTING METHODS

- **RS-485: Point to Point Connection**



- **RS-485: Multipoint Network**



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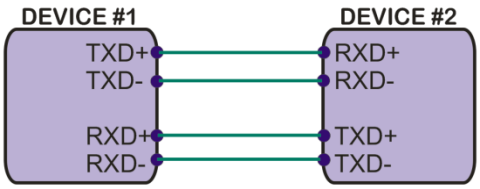
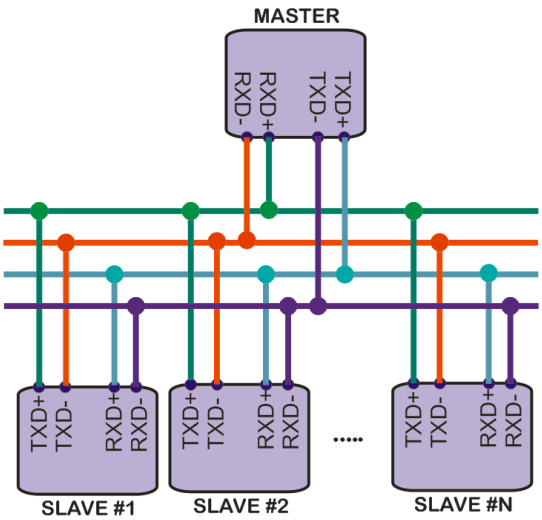
13. RS-422 CONNECTING METHODS

- **RS-422: Point to Point**



- **RS-422: Multi-Drop Network**



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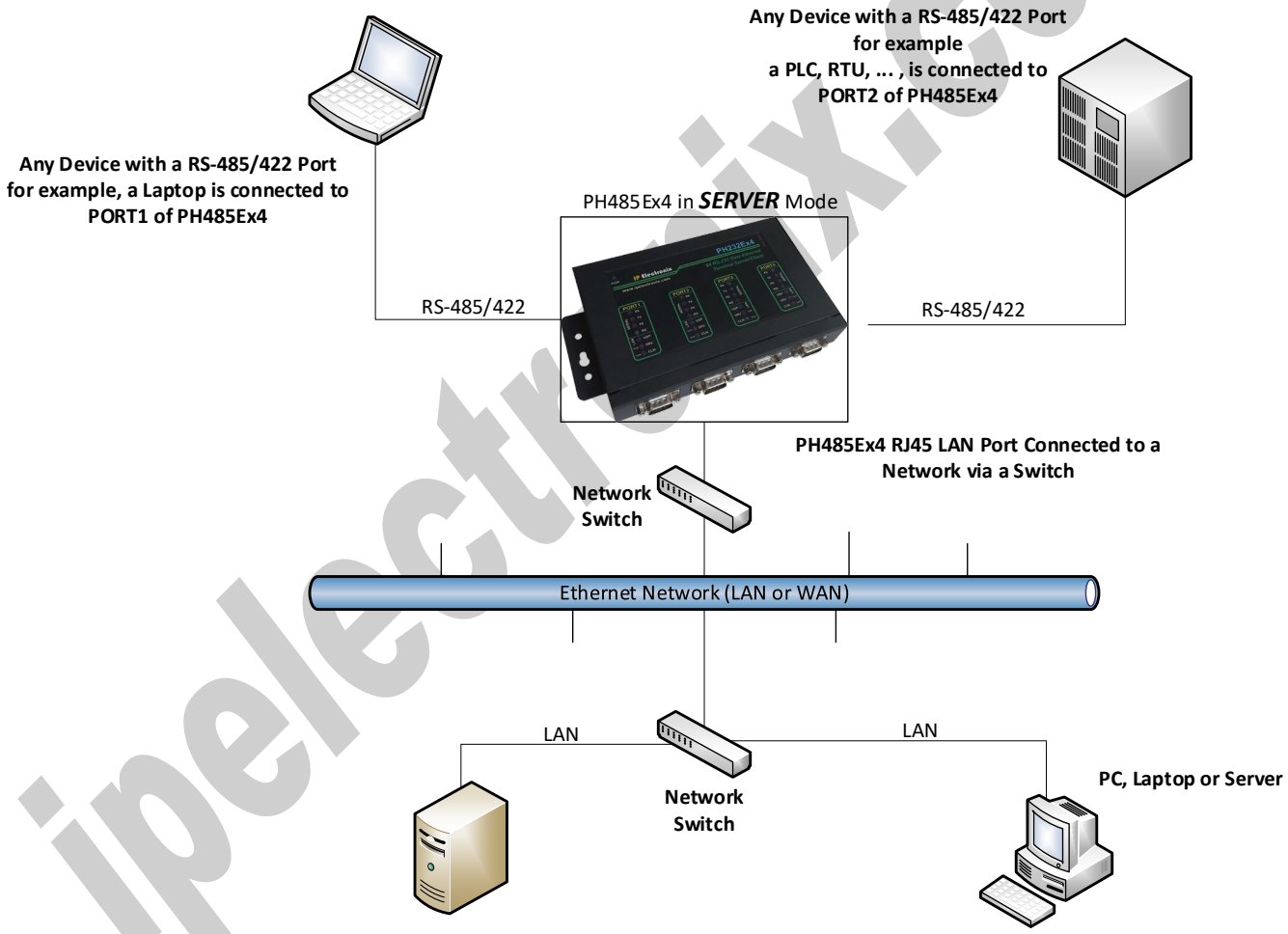
14. CONNECTION DIAGRAM

- PH485Ex4 as a Terminal Server

The below diagram is a typical connection configuration of PH485Ex4. You can connect a device with a RS-485/422 serial port to RS-485/422 serial port of the PH485Ex4, then you can connect to the device behind the network by any application software you want by opening a TCP or UDP Socket without need of any auxiliary driver.



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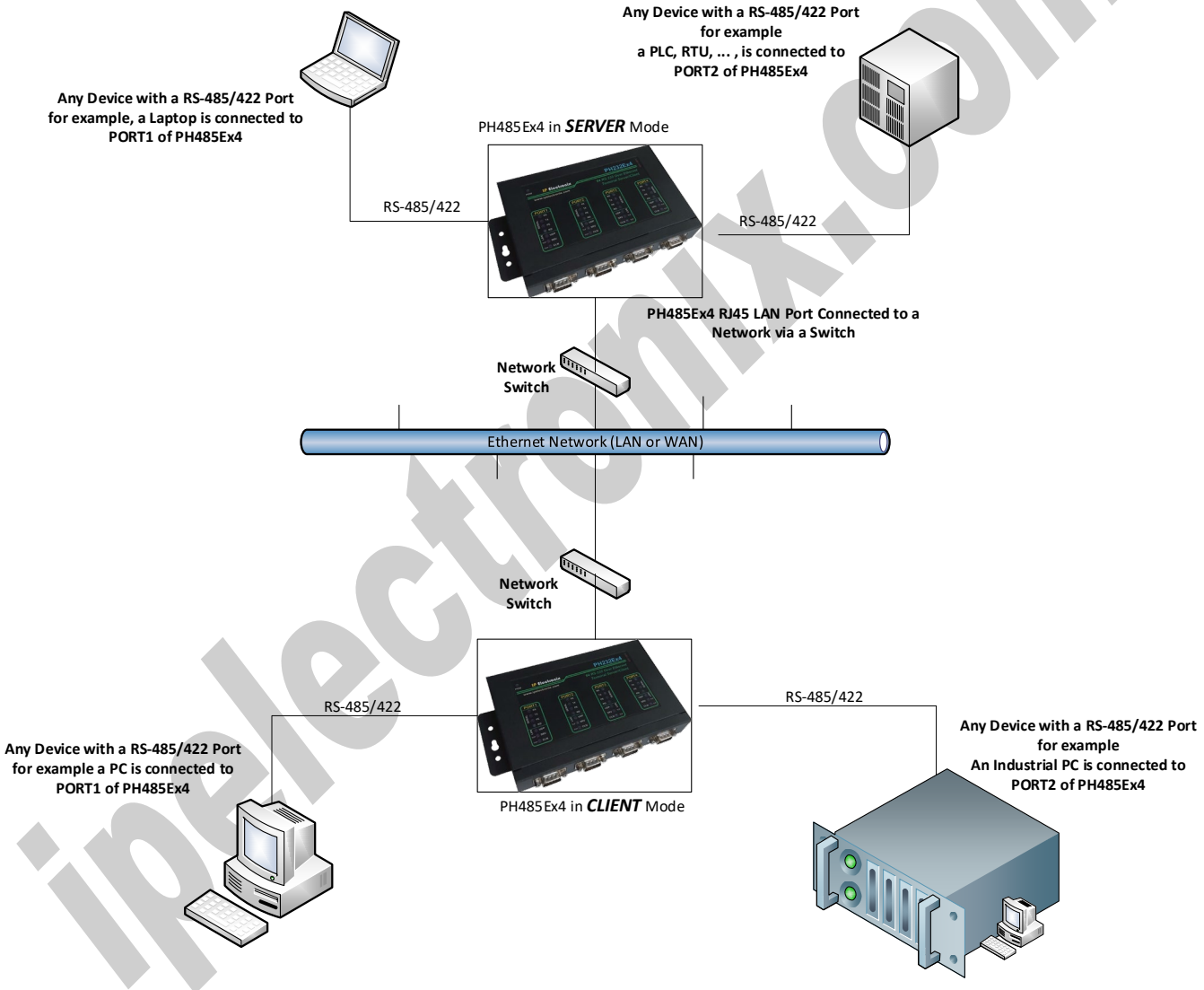
- Client/Server, Peer to Peer Connection

If you want to connect two devices which have only RS-485/422 Ports to each other via Ethernet network, you can use this connecting method. Take two PH485Ex4. Set one PH485Ex4 as Server and another one as Client with adding Remote Server IP and Port Number on it. These two converters are connecting automatically via network to each other, so RS-485/422 PORT of Server, connects to RS-485/422 PORT of Client via network. Now you can connect your RS-485/422 devices to COM Ports as shown in the following diagram.



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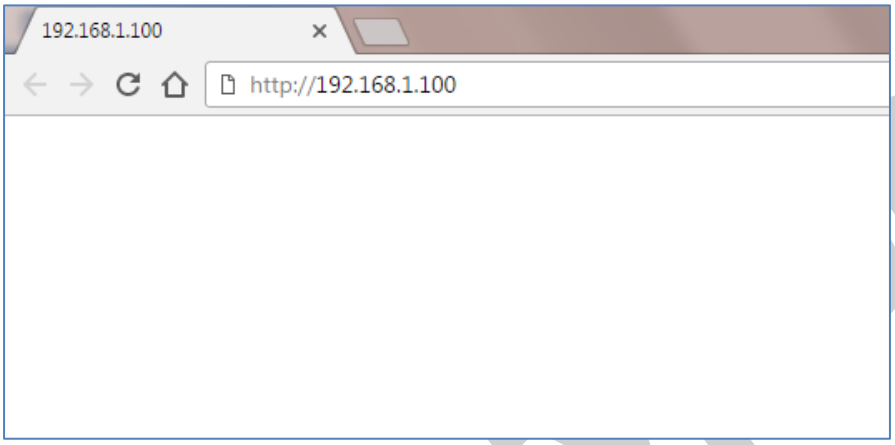
15. DEVICE CONFIGURATION WEBPAGE

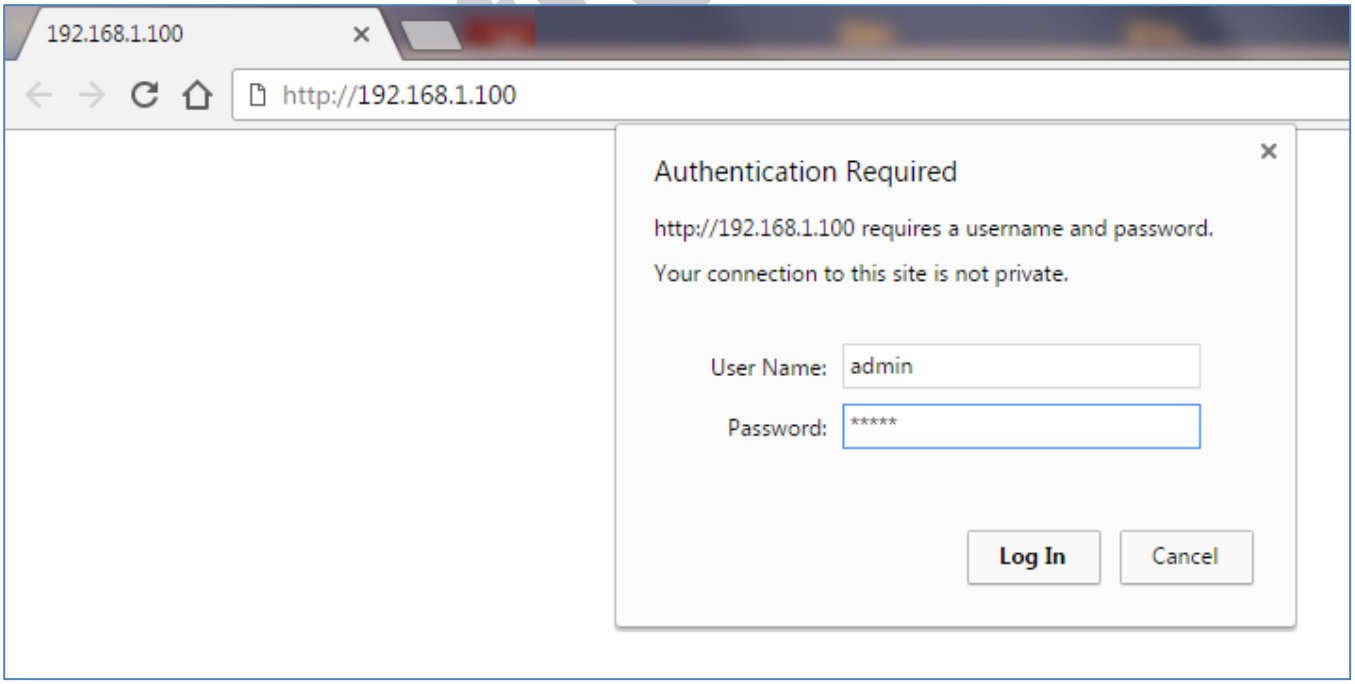
To open device configuration webpage, enter the device IP on your web browser address bar like this figure:



The Default device IP Address is **192.168.1.100** and the default Subnet Mask is: **255.255.255.0**

Now enter user name and password to pass the authentication procedure. Default User Name is **admin** and default password is **admin** too.

User Name: **admin** Password: **admin**



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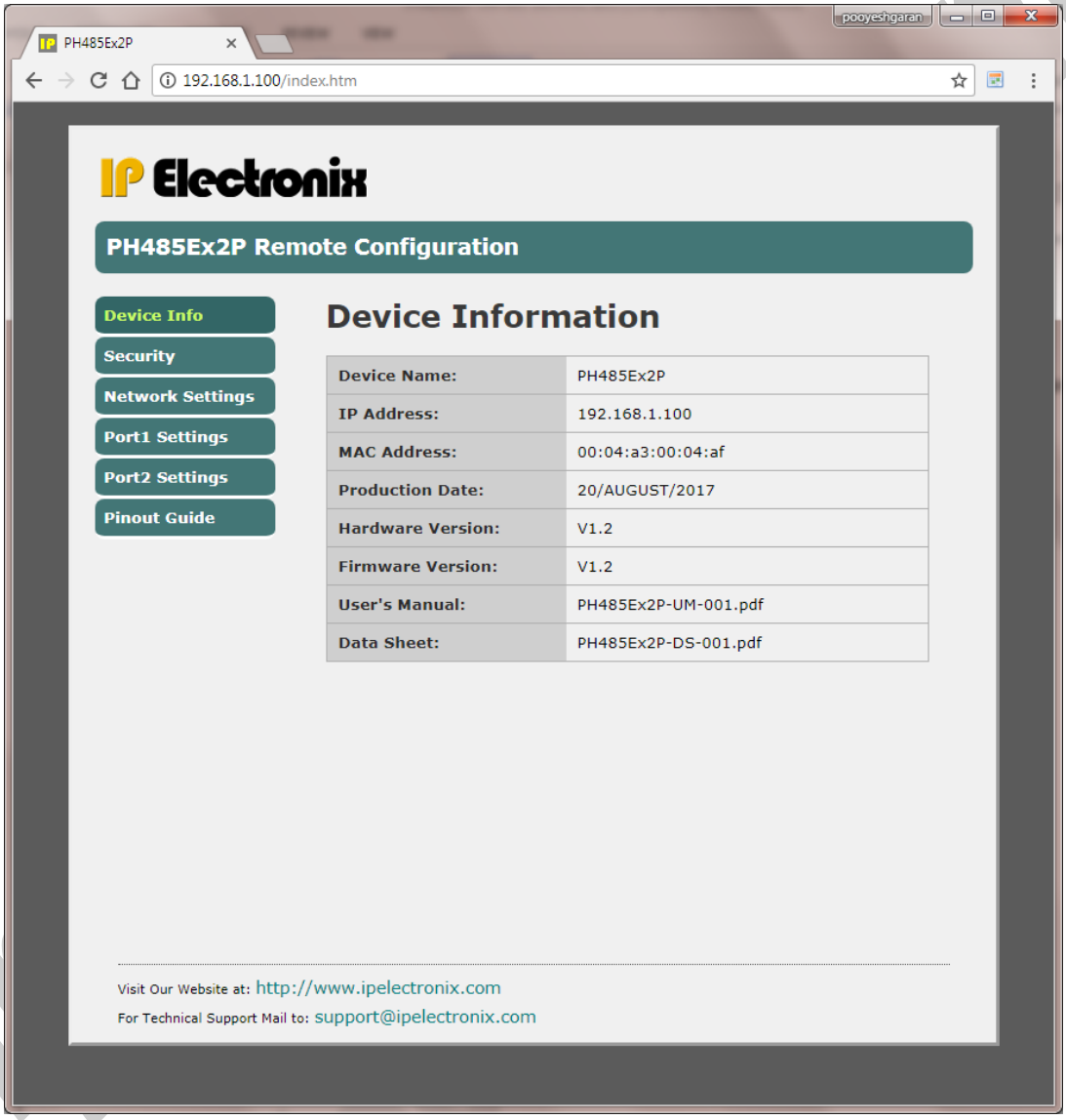
- Device Information Webpage

You can see some general information about the device such as MAC address, Firmware and Hardware version and … in this page.



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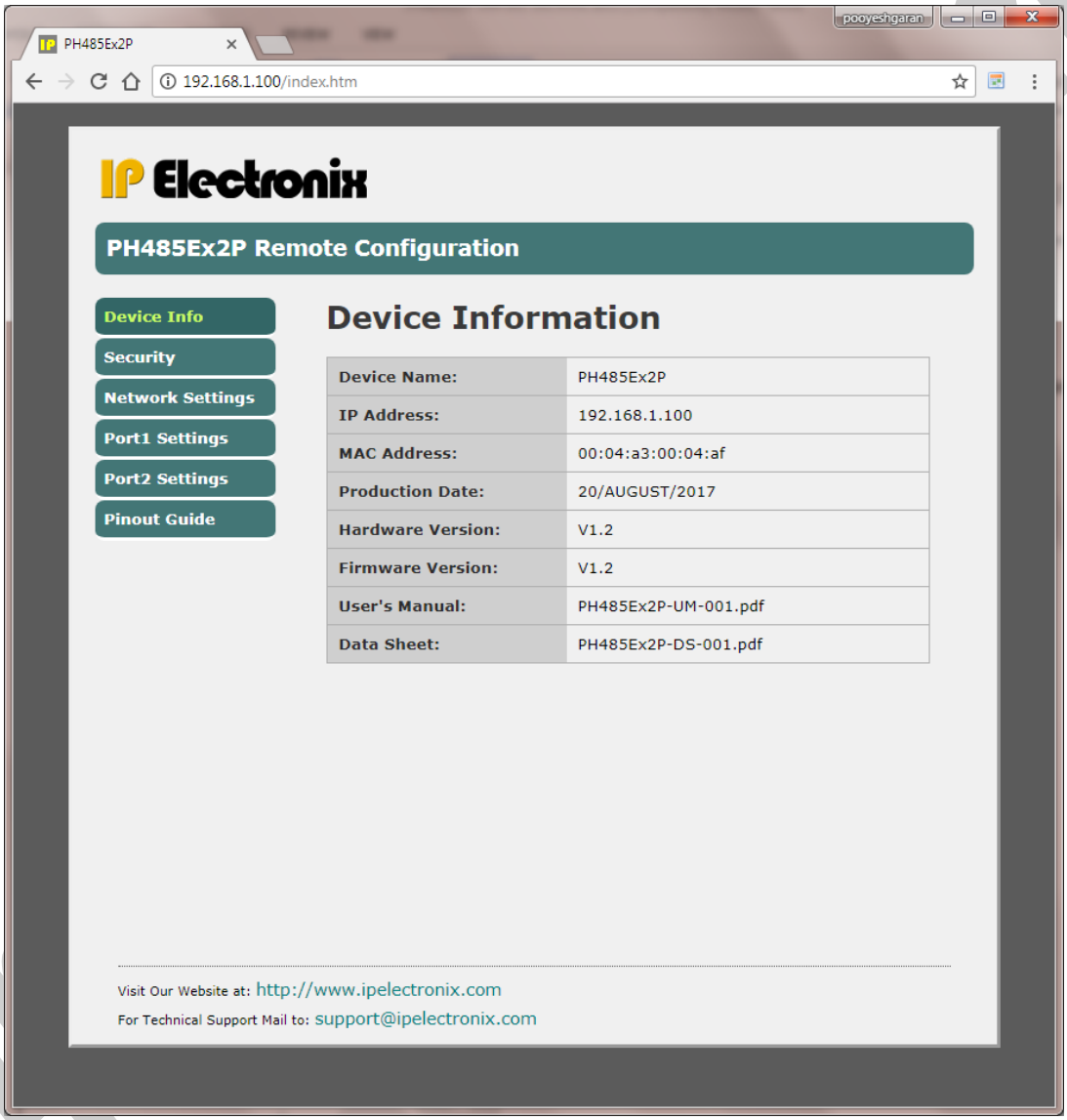
- Security

You can change device configuration webpage user name and password in this page.



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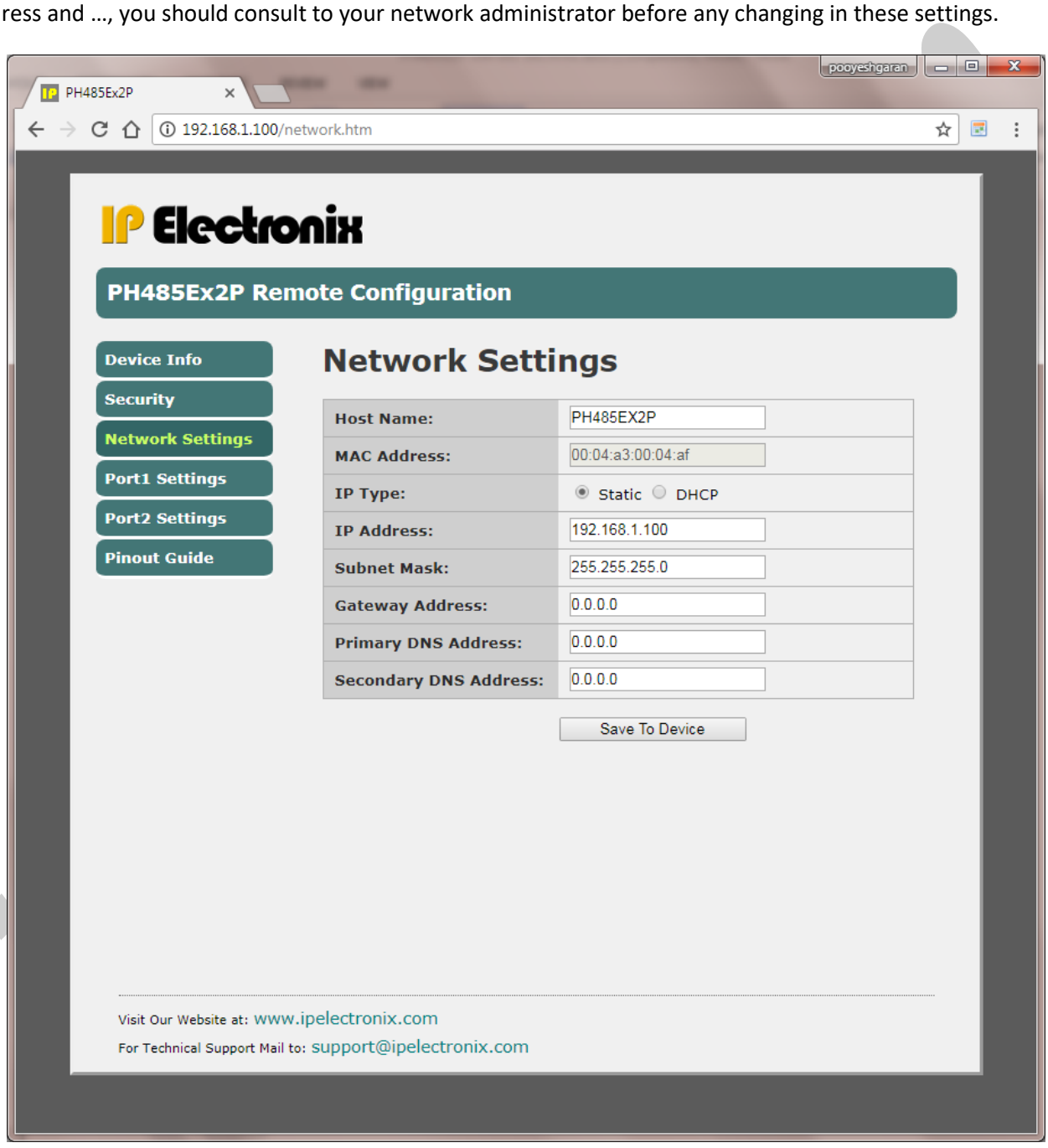
- Network Settings

You can change all the network settings, such as device IP Address in this page.

It is important to enter valid data in this section. If you are not sure about your network settings such as DNS address and …, you should consult to your network administrator before any changing in these settings.



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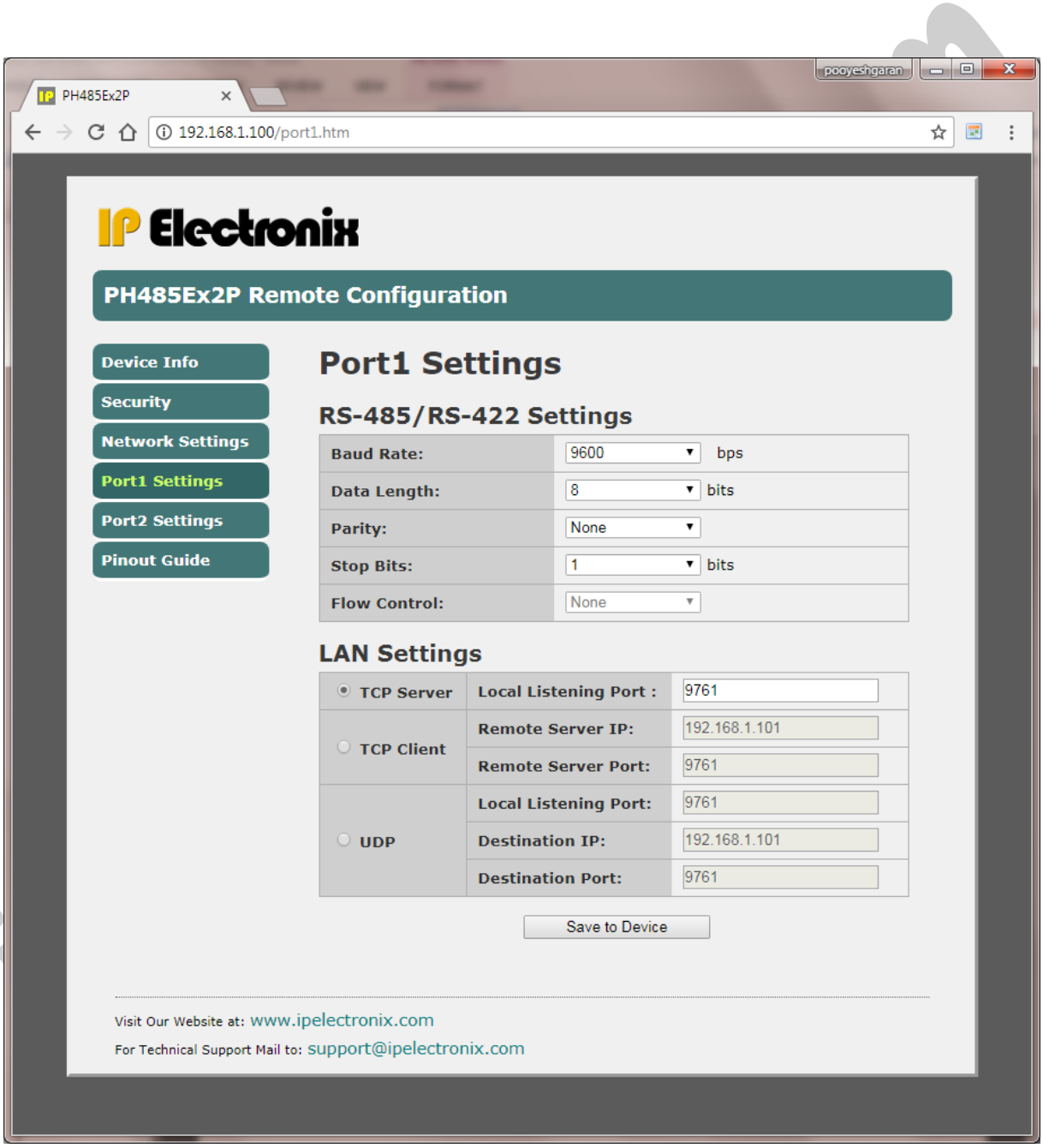
- PORT Settings

You can see and change all the port settings in this page.



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- Pinout Guide

RS-485/422 Port pinout is seen in this page.

Port	Pin	Name	Task	Type
2-Wired RS-485	1	D +	Data + (A)	Bi-Directional
	2	D -	Data - (B)	Bi-Directional
	3	to 1	**MUST Be Connected to Pin 1**	Connect 3 to 1
	4	to 2	**MUST Be Connected to Pin 2**	Connect 4 to 2
	5	GNDi	Isolated Ground	GND
	6	GNDi	Isolated Ground	GND
4-Wired RS-485 and RS-422	1	RX +	Receive + (A)	Input
	2	RX -	Receive - (B)	Input
	3	TX +	Transmit + (Y)	Output
	4	TX -	Transmit - (Z)	Output
	5	GNDi	Isolated Ground	GND
	6	GNDi	Isolated Ground	GND

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16. DEFAULT SETTINGS

LAN1 Default IP Address: 192.168.1.101

LAN2 Default IP Address: 192.168.1.102

Default Subnet Mask: 255.255.255.0

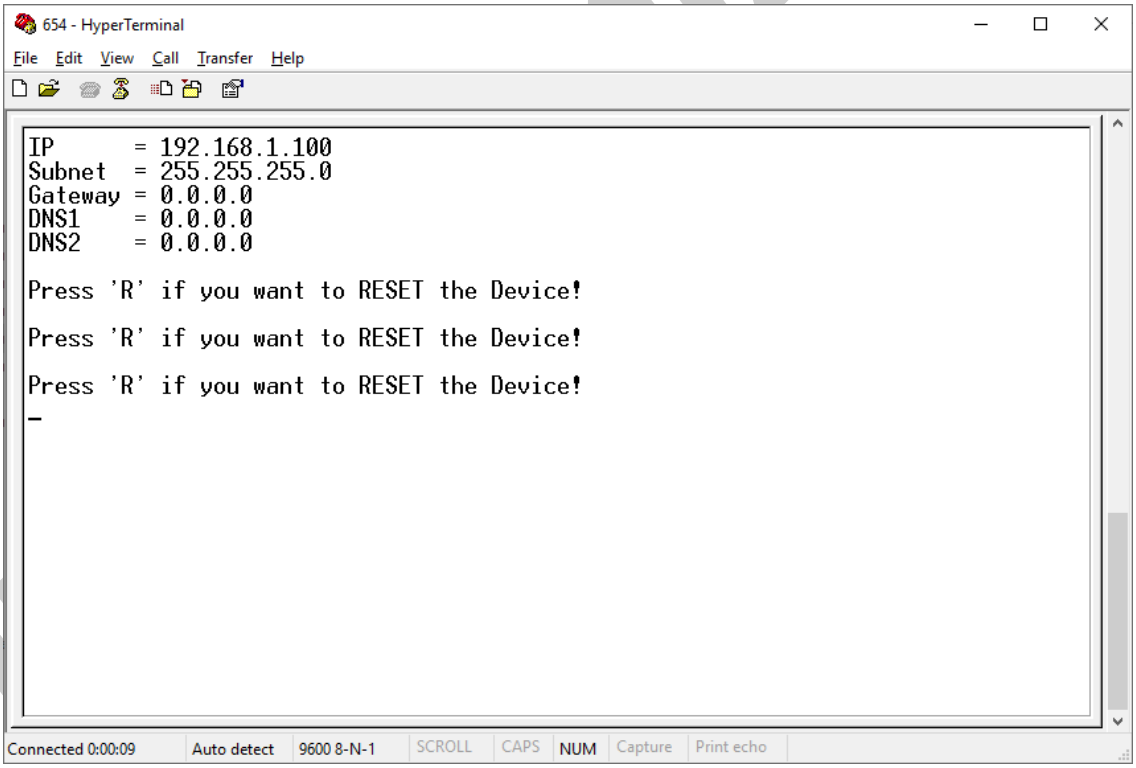
Default User Name: admin

Default Password: admin

IMPORTANT NOTICE:

If you change the device IP and forget it, you can see the new IP Address on the serial port. Whenever you turn on the device, it sends its IP Address and Subnet Mask to the RS-485/422 PORT1. The port settings for watching device IP are fixed to 115200, 8, n, 1. You can easily see this IP Address and Subnet Mask by using a Terminal Emulation Software such as Microsoft Hyper Terminal.

You can also Reset the device to its Factory Default Settings in this page if necessary.



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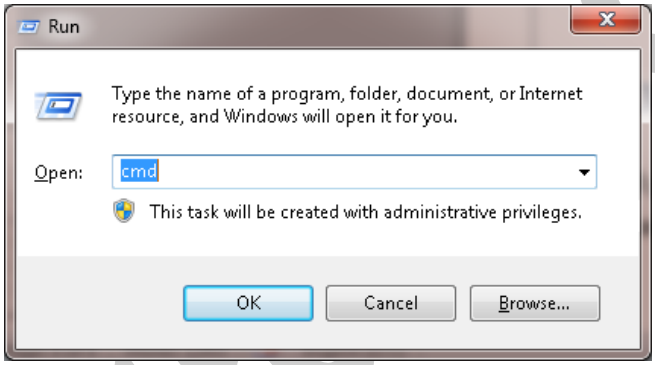
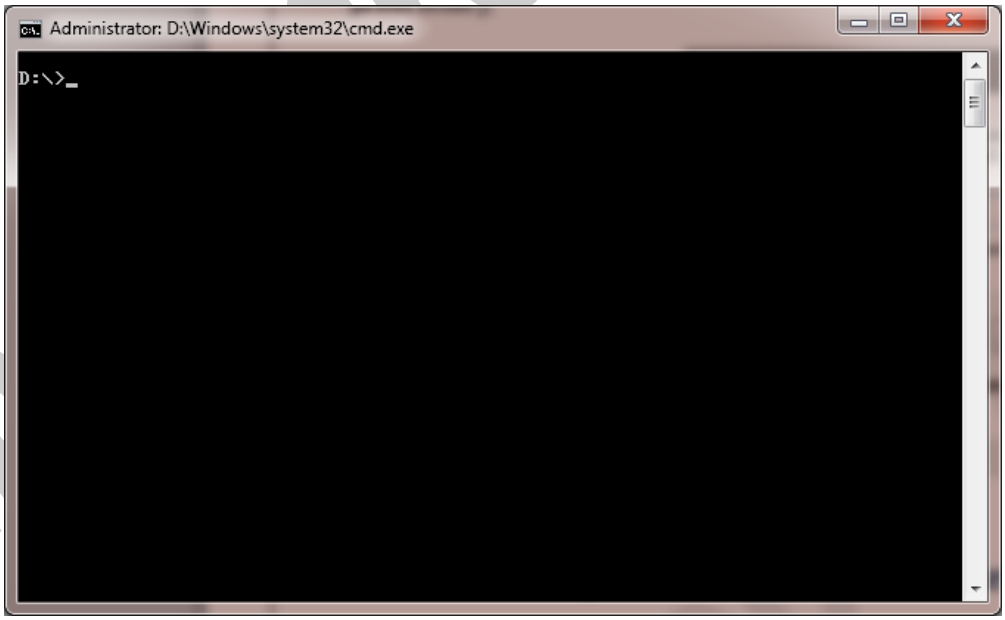
17. NETWORK CONNECTION TESTING

Connect PH485Ex4 to the Ethernet based network by connecting RJ45 LAN socket to network via a switch or Hub by an ordinary CAT5 or CAT6 cable. If everything is set properly, the green and yellow LEDs on the PH485Ex4's **RJ45 socket** will blink.

Now it is important to check the network wiring topology and testing all the cables, routers, switches … in the route from PH485Ex4 to the computer. This test is done simply by using PING command from computer.

Go to Windows command prompt, (press WINDOWS KEY + R to going to run dialog and then type CMD and press enter):





Type ping with the device IP address, for example "ping 192.168.1.101"and press Enter.

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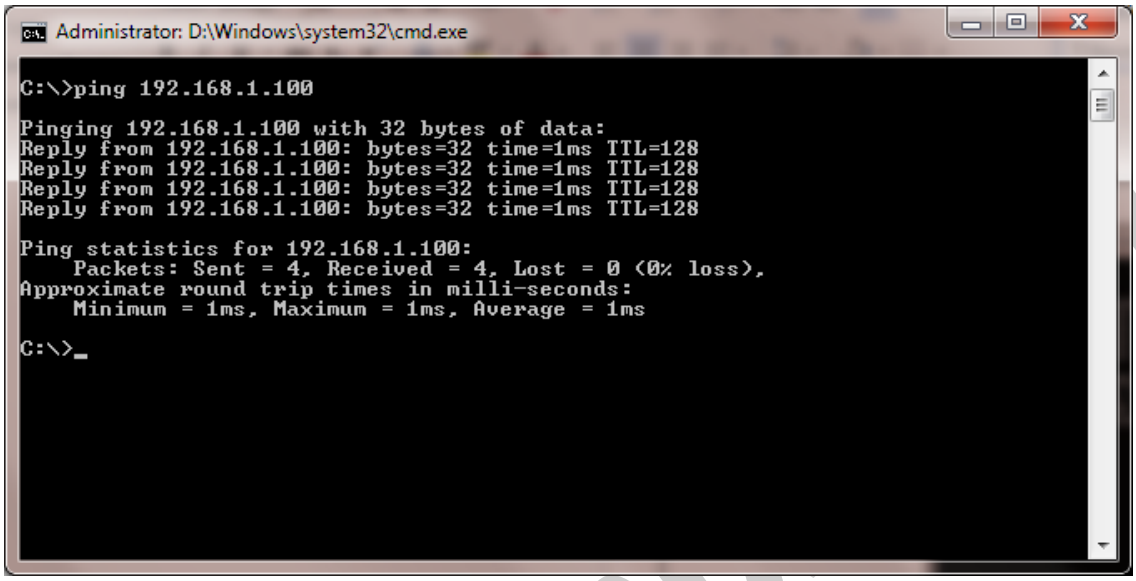
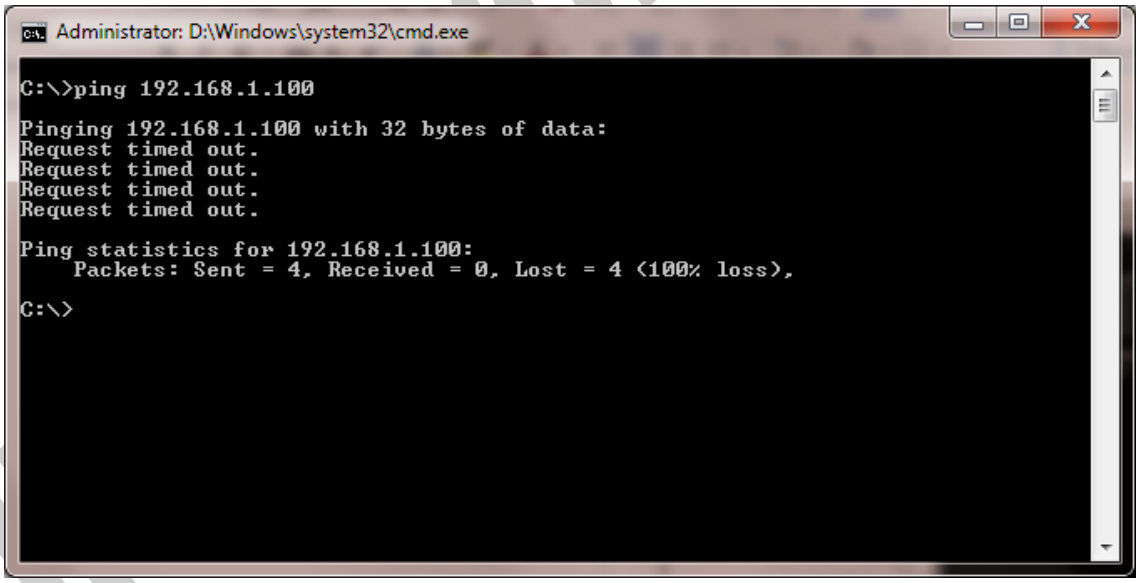
Now you should see the ping response from the device.



If there are any problems in the network, you could not see response from the device:



If you see this timeout window, you can't continue installation and first you should solve network problem by consulting your network administrator.

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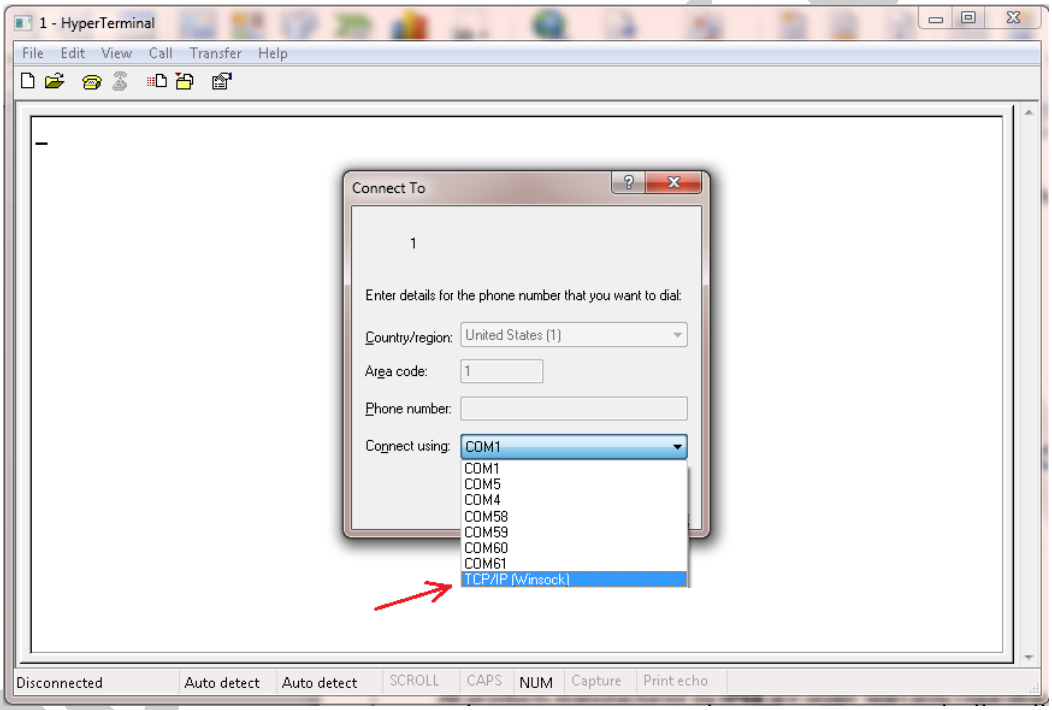
18. CONNECTING TO DEVICE VIA TCP SOCKET

It is possible to directly connect to PH485Ex4 RS-485/422 Serial Ports from any node of the network by using socket programming. This is simply done if you know only PH485Ex4 IP Address and socket port number for each Port. The default port numbers are as follow:

- Port 1: 9761
- Port 2: 9762
- Port 3: 9763
- Port 4: 9764

For example, we connect to Port 1 by means of Hyper Terminal. Run Hyperterm.exe and from properties dialog box, select "TCP/IP (Winsock)":



Enter device IP Address in the "Host address:" section, for example 192.168.1.100 and the port number in the "Port Number:" section (port number for Port 1 is 9761), then click on OK.

Now if you type some characters, you can see that port 1 TX Blue LED is blinking that means the data is sent to PH485Ex4 port 1.

NOTICE: Don't forget to set PH485Ex4 in ***SERVER Mode*** for this method of connection.

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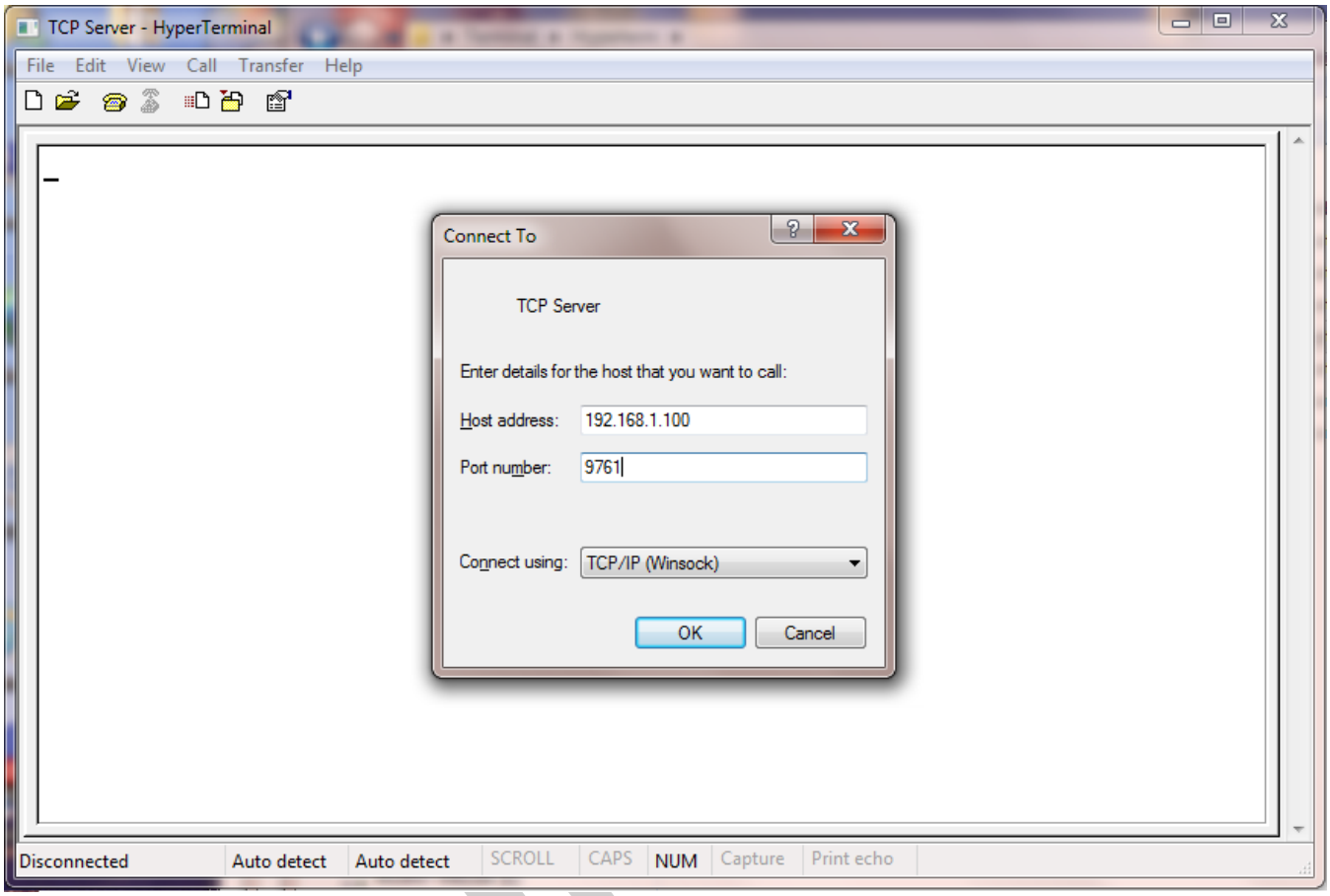

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19. GUARANTEE

All products manufactured by **IPEX** are under warranty regarding defective materials for a period of one year from the date of delivery to the original purchaser.

20. TECHNICAL SUPPORT

If you have any technical question or need any technical support, please contact us using this Email address: support@ipelectronix.com.

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