PMP CORPORATION

PMP Replacement for Veeder-Root® TCP/IP Module

Thank you for purchasing the enclosed PMP Serial Communications Module.

This module is designed and manufactured by PMP as a direct replacement for the Veeder-Root® TLS-350 TCP/IP Module 330020-425. This installation requires specific knowledge of the TLS-350 and you may need to refer to the following OEM manuals to complete the installation:

576013-623   TLS-XXX System Setup Manual
576013-610   TLS-XXX Operators Manual
576013-635   TLS-XXX Serial Interface Manual
n/a   Lantronix XPort User Guide

Tools required:
- T-15 Torx® driver
- Flat bladed screwdriver
- Ethernet "crossover" cable depending on configuration option you choose
- Lantronix Device Installer utility.

READ THIS GUIDE BEFORE YOU BEGIN
- **Service station equipment has both electricity and hazardous, flammable and potentially explosive liquid. Failure to follow the precautions below and instructions in this guide may result in serious injury and death. Follow all rules, codes and laws that apply in your area.**
- **Veeder-Root requires training certifications for contractors who install and setup equipment related to the TLS-350. The minimum certification level for installation of this board is Level 2/3. Be sure that you have familiarized yourself with these requirements and determined if you are qualified to perform this installation.**
- **PMP shall not be liable for errors contained herein or for incidental or consequential damages in connection with furnishing, performance or used of this publication.**
- **PMP reserves the right to change product features or the information contained in this publication.**

SAFETY PRECAUTIONS FOR INSTALLATION AND MAINTENANCE
- **Only a person with knowledge and experience with service station equipment should perform this work.**

- **Always make sure ALL power to the equipment you are working with is turned OFF before starting any maintenance.**

- **Note that more than one disconnect switch may be required to de-energize the equipment for maintenance and servicing. Use a voltmeter to make sure ALL circuits in the dispenser are de-energized. Failure to do so may result in serious injury.**

- **Observe precautions for handling electrostatic sensitive devices and avoid ESD.**

Contents

Installing the TCP/IP module

There are several steps required to install a TCP/IP card and confirm functionality. The flow chart below provides a high level look at the steps required. More detail is provided throughout this manual, but it is very important that you understand the process and follow the instructions closely.

```
Determine IP
address &
subnet required
        |
Archive
data in
the TLS
        |
Disconnect power
to the TLS
        |
Install the
module
        |
Connect
computer to
        |
Program the IP
address
        |
Confirm setup
configuration
        |
Confirm
connectivity
        |
Done
```

Does the TLS recognize the board?
- Verify the TLS recognizes the board using the Comm Setup menu
- Is the board installed in slots 1, 2 or 3? The setup procedure is different for slot 4
- Does the console have version 15 software or higher?

Is the board programmed correctly?
- Check the IP address
- Check the Subnet Mask
- Use the arp command to verify the IP address and MAC address
- Verify other programmable settings such as baud rate, parity, stop bit and data length

Is the board on the network?
- Use the PING command at the DOS prompt. For example: C:\ping xxx.xxx.xxx.xxx
- Check the cables

Archiving TLS Data

- If you are not sure when data was last archived in the TLS, we recommend using the Archive Utility in the TLS to back-up data and console settings prior to preforming any work on the system.
- Remove the top and bottom T-15 Torx screws on the left-hand side of the printer door to gain access to the printer compartment.
- Open the door and confirm the Battery Backup Switch (see Figure 1) is set to the "ON" position
  Note: the photos used are specifically for the TLS-350 with ECPU. Depending on the site configuration or console, the locations of switches may differ.
- Archive the data by using the following key strokes from the TLS front panel:
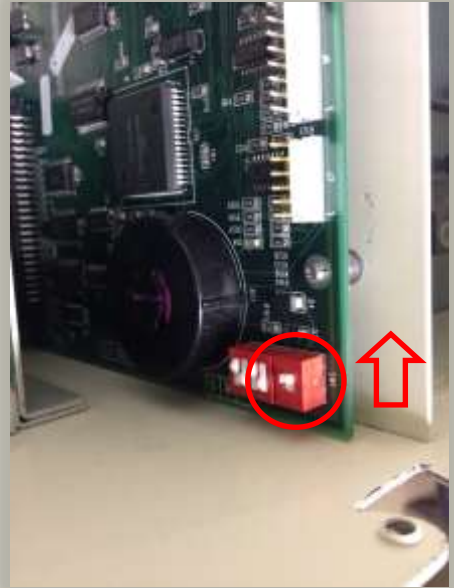
Figure 1 - Battery Switch shown in the "ON" position
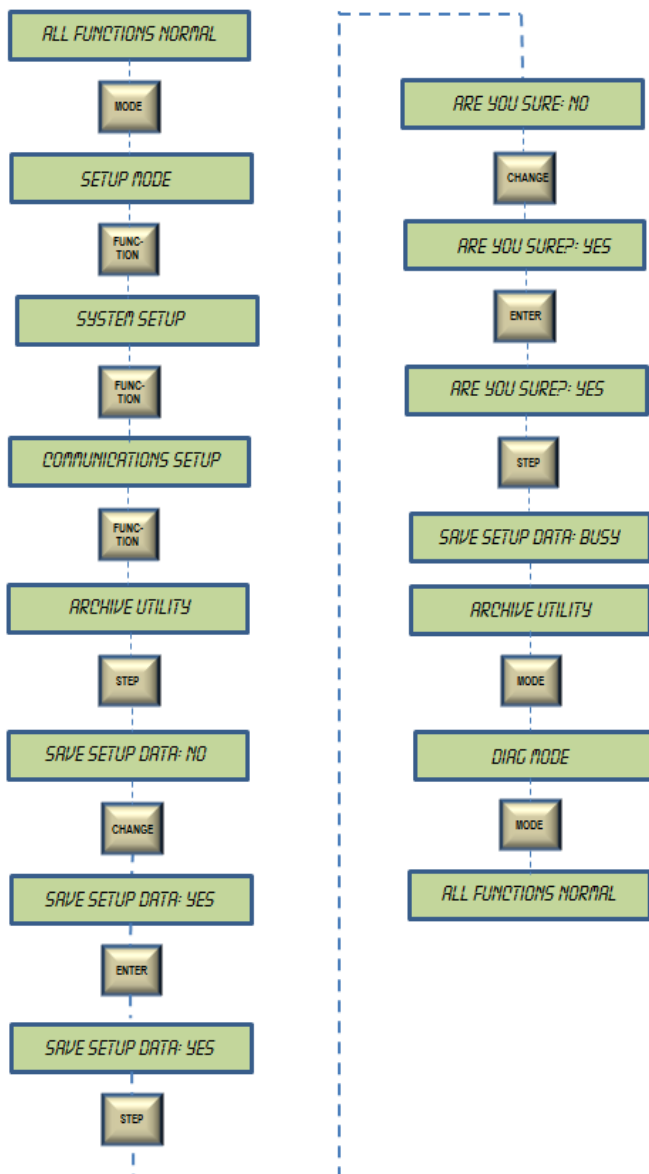
Note: Photos and programming steps shown are specifically for the TLS-350 with ECPU Ver. 128 software. Depending on the site configuration, switch locations and programming steps may differ.

ALL FUNCTIONS NORMAL
↓ MODE
SETUP MODE
↓ FUNCTION
SYSTEM SETUP
↓ FUNCTION
COMMUNICATIONS SETUP
↓ FUNCTION
ARCHIVE UTILITY
↓ STEP
SAVE SETUP DATA: NO
↓ CHANGE
SAVE SETUP DATA: YES
↓ ENTER
SAVE SETUP DATA: YES
↓ STEP

ARE YOU SURE: NO
↓ CHANGE
ARE YOU SURE?: YES
↓ ENTER
ARE YOU SURE?: YES
↓ STEP
SAVE SETUP DATA: BUSY
ARCHIVE UTILITY
↓ MODE
DIAG MODE
↓ MODE
ALL FUNCTIONS NORMAL

Power Down the console

- Remove the top and bottom T-15 Torx screws on the left-hand side of the printer door to gain access to the printer compartment.
- **Ensure the backup battery switch is in the 'On' position (see Figure 2).**
- Remove power from the console by un-plugging the two position connector (shown in Figure 2) in the printer compartment.
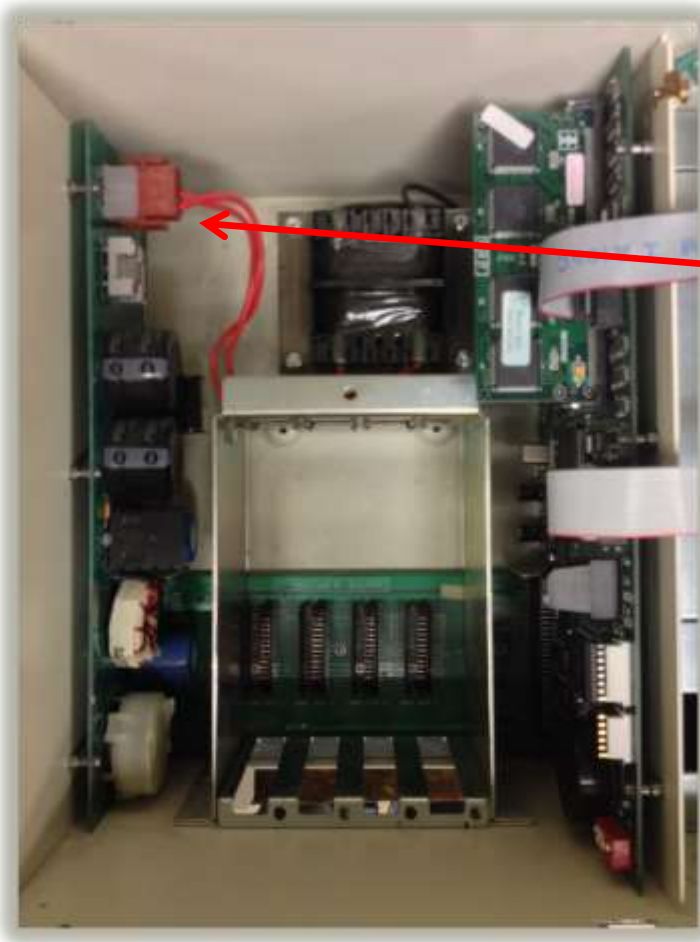

Figure 3 – Squeeze the two tabs to un-plug the power connector

Figure 1 - Inside the TLS-350 Printer compartment

Write down the MAC address:

- Write down the MAC address printed on the top of the Lantronix Device Server. You will need this to complete the installation. It can be found on the top of the Lantronix XPort on the TCP/IP board (see figure 2). The format of the MAC address is $xx-xx-xx-xx-xx-xx$

    MAC address: ___ - ___ - ___ - ___ - ___ - ___

Figure 2 - MAC address located on the Lantronix XPort

Installing a new module or a replacement in slots 1, 2, or 3 (preferred)

- Remove the cover plate from slots 1, 2 or 3 per Figure 4. If installing in slot 4, skip to the section installing a New Module in Slot 4.
- Depending on the age of the console, the blank cover plate may be designed as a knockout or held in place with a screw or plastic fastener. Remove the slot cover where the module will be installed.
- Slide the new TCP/IP Module into the open slot making sure the plastic fastener is lined-up with the mating hole in the card cage and the 24 position connector aligned with the mating connector on the backplane.
- Push down on the plastic plunger to snap the fastener in place
- Connect / re-connect the necessary cables
- Restore power to the console
- The red LED will blink, the display will show "System Warm Start" and return to "All Functions Normal"
  Note: If the console goes into a re-boot, it may require turning the battery switch off, clearing RAM and then turning the switch back on and restoring archived data per Step 4.
- Secure the printer door by replacing the two T-15 Torx screws
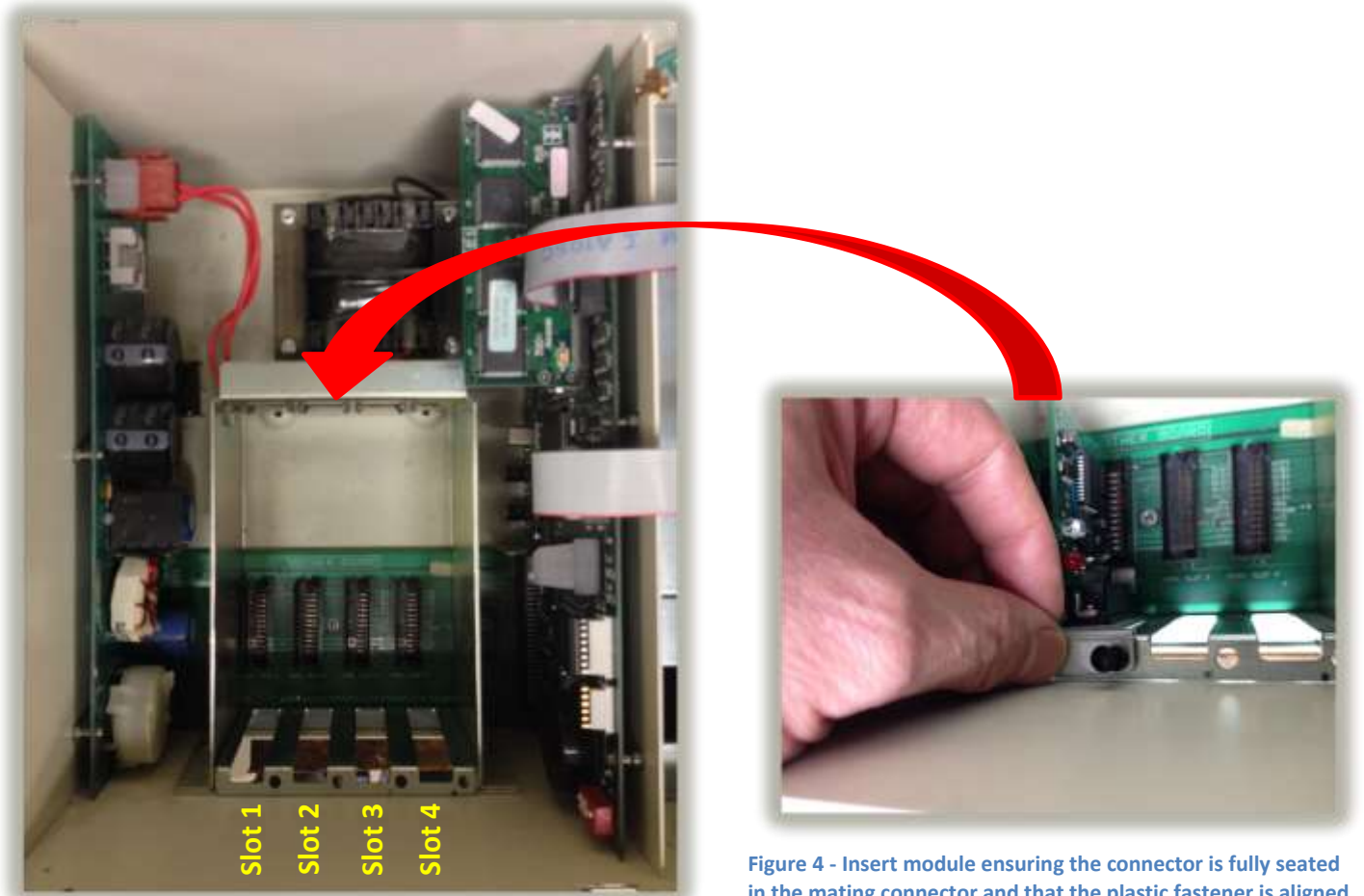

Slot 1 Slot 2 Slot 3 Slot 4

Figure 4 – Inside the TLS-350 Printer compartment

Figure 4 - Insert module ensuring the connector is fully seated in the mating connector and that the plastic fastener is aligned
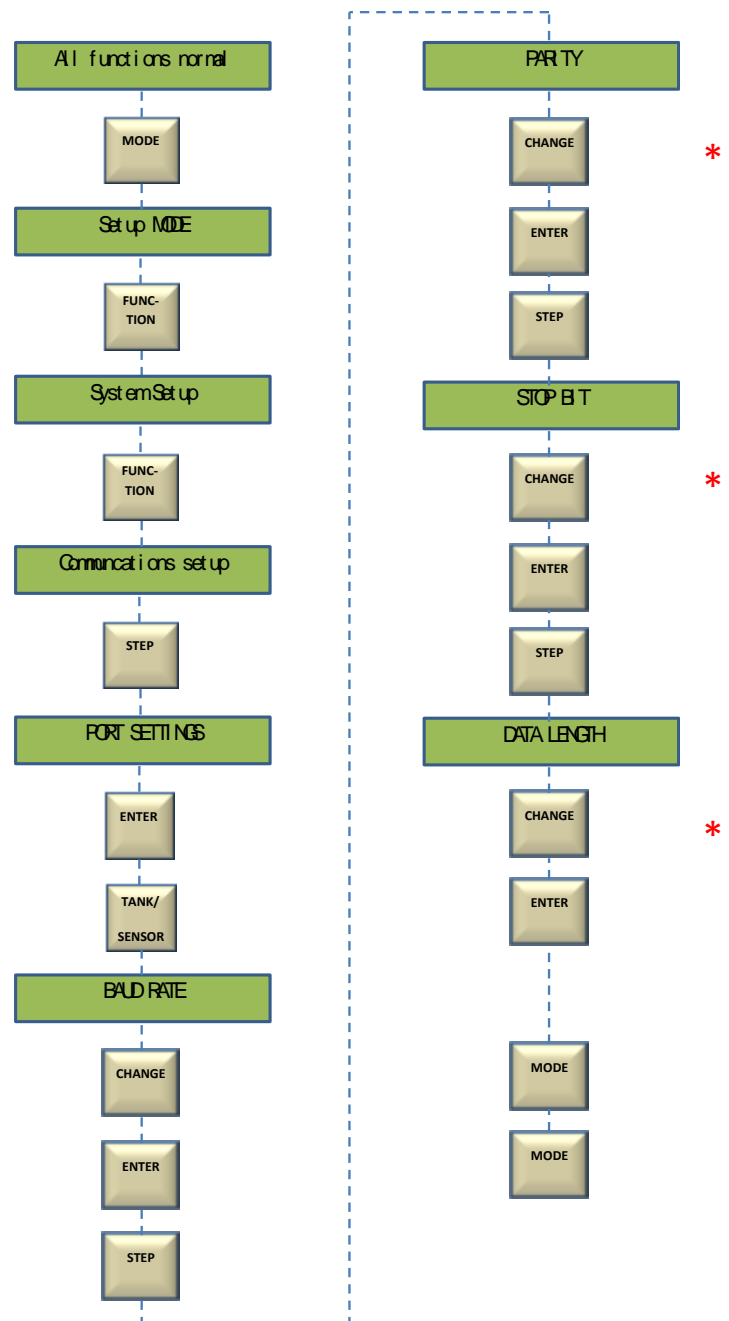
Installing a new module or a replacement module in slot 4

- Remove the cover plate from slot 4 per Figure 4
- Depending on the age of the console, the blank cover plate may be designed as a knockout or held in place with a screw or plastic fastener. Remove the slot cover where the module will be installed.
- Slide the new TCP/IP Module into slot 4 making sure the plastic fastener is lined-up with the mating hole in the card cage and the 24 position connector aligned with the mating connector on the backplane.
- Push down on the plastic plunger to snap the fastener in place
- Connect / re-connect the necessary cables. Note: if this is a new installation, use the supplied cable to connect between J1 on the TCP/IP board and the 8 position connector on the console CPU (J6)
- Restore power to the console
- The red LED will blink, the display will show "System Warm Start" and return to "All Functions Normal"
  Note: If the console goes into a re-boot, it may require turning the battery switch off, clearing RAM and then turning the switch back on and restoring archived data per Step 4.
- Secure the printer door by replacing the two T-15 Torx screws

Programming the appropriate Comm settings:

- The console will not automatically load the required settings for the new TCP/IP board when installed in slot 4.
- Use the flow chart (right) to program the proper Comm Settings:
  - Baud: 9600
  - Parity: None
  - Stop Bit: 1 Stop
  - Data Length: 8 Data

- The programming steps shown are for reference. Refer to the OEM manuals for more detailed instructions.

∗ Continue to press the CHANGE button until you see the desired parameter displayed

Flow chart (left column):

All functions normal → MODE → Setup MODE → FUNCTION → System Setup → FUNCTION → Comuncations setup → STEP → PORT SETTINGS → ENTER → TANK/SENSOR → BAUD RATE → CHANGE → ENTER → STEP

Flow chart (right column):

PARITY → CHANGE ∗ → ENTER → STEP → STOP BIT → CHANGE ∗ → ENTER → STEP → DATA LENGTH → CHANGE ∗ → ENTER → MODE → MODE

Replacing an existing module of a different type:

Note: This procedure will initiate a system "Cold Start". Be sure you have archived any necessary data per the OEM manuals prior to proceeding.

- Remove the two T-15 Torx screws on the left side of the printer door.
- Set the Battery Backup switch to the "OFF" position
- Turn the console power off
- Remove any cables that might be connected to the module being replaced
- Remove the existing module. Note: the TLS will only recognize the TCP/IP module in slots 1, 2 or 3).
- Slide the new TCP/IP Module into the open slot until the connector is fully seated with the mating connector on the "Mother Board" and the plastic retaining fastener is aligned with the mating hole in the card cage.
- Push down on the plastic plunger to snap the fastener is place
- Re-connect the necessary cables
- Restore power to the console
- The console will "cold start" and display, "Clearing All Ram", "System Self-Test" and "System Startup Complete"
- The alarm will sound. Press the ALARM/TEST key to silence the alarm
- You can now complete the setup by following the System Setup procedures in the OEM manuals.
- Confirm that the module communication parameters match:
   Baud: 9600
   Parity: None
   Stop Bit: 1 Stop
   Data Length: 8 Data
- Secure the printer door by replacing the two T-15 Torx screws

Confirming the TLS recognizes the TCP/IP board

You can confirm that the TLS recognizes the TCP/IP board and that the communications settings are correct by following the key sequence shown at the right to produce a printout like the one shown below.

```
PORT SETTINGS

COMM BOARD: 1
BAUD RATE: 9600
PARITY: NONE
STOP BIT: 1 STOP
DATA LENGTH: 8 DATA
```

Figure 5 - Print out confirming configuration

All functions normal

| MODE |

System Setup

| FUNC-TION |

Communications setup

| STEP |

PORT SETTINGS

| PRINT |
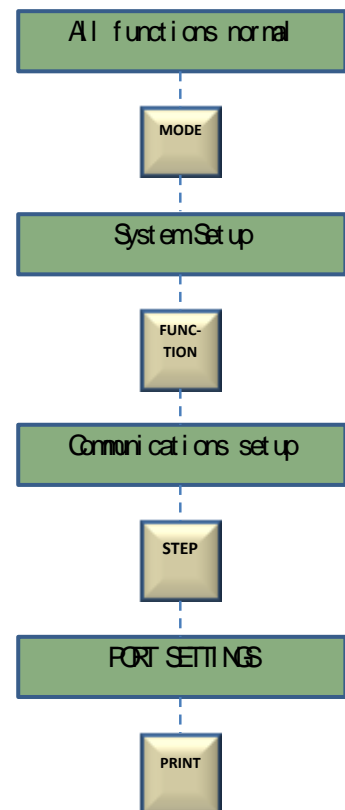
Connecting to the Console

You can configure the TCP/IP board over the network or via a direct connection using a cross over cable. To configure the board over the network, you can use a standard CAT 5 cable with a connection that looks like the illustration below.

Configuration over a network

Network Hub or Router

Computer

Standard CAT 5 cables

TLS
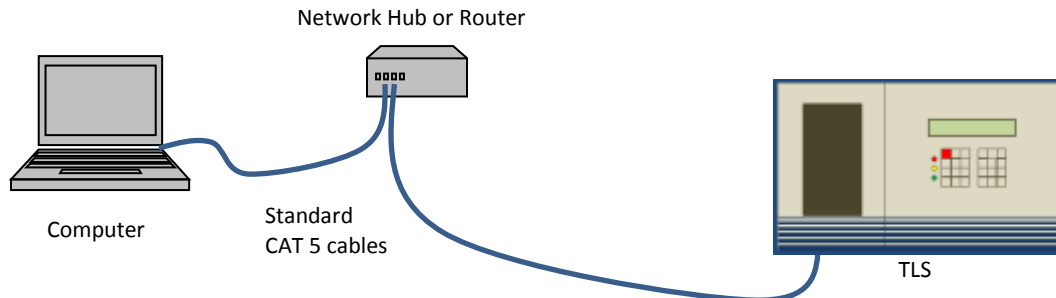
Configuration using a Direct Connection

Computer

Ethernet Cross-over cable

TLS
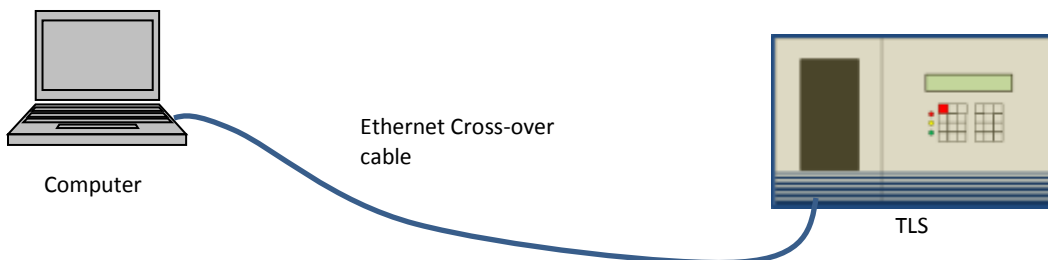
Note: a direct connection will require an Ethernet T568A Crossover Cable to directly connect between your computer and the TCP/IP board. **A standard "CAT 5" cable will not work.**

For your reference, we have provided illustrations showing the proper cable wiring (below).

RJ45		RJ45	
Pin Number	Color	Pin Number	Color
1	Green	1	Orange
2	Green	2	Orange
3	Orange	3	Green
4	Blue	4	Brown
5	Blue	5	Brown
6	Orange	6	Green
7	Brown	7	Blue
8	Brown	8	Blue

1 2 3 4 5 6 7 8
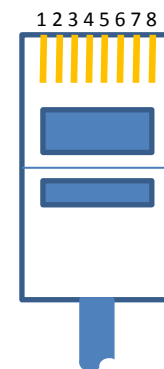
Cable pin assignments

Reminder: If you are using a cross-over cable to make a direct connection between a computer and the TLS, you must change the Internet Protocol Properties (TCP/IP) in Windows to define the IP address, subnet mask and the default gateway. The IP address used for the computer and the TLS should be one digit apart. The Subnet mask and Default gateway must be the same.

Configuration Methods

The TCP/IP board is a complicated device designed to accommodate a myriad of network configurations. Many of the device settings have been pre-configured for you by PMP. However, due to different network topologies, your site may require specific settings that we cannot anticipate.

At a minimum, **you must assign a unique IP address** for the TCP/IP board to operate across a network. To assign the IP address and change any other device settings, you will need to program the TCP/IP device server. There are two ways to do this:

The DeviceInstaller.exe (recommended):

Device Installer is a free utility provided by Lantronix, the manufacture of the Device Server used on the PMP TCP/IP. This utility will discover the TCP/IP board, allow you to configure the internet settings and manage the Lantronix Device Server. You can download the utility at: *www.lantronix.com/support/downloads.*

This program allows you to assign the IP address and change the configuration of the Lantronix Device Server using either a network connection or a direct connection. In addition, you can access the Web Manager and the Telnet Configuration without leaving the program.

The ARP & Telnet commands at the DOS prompt:

This method uses two DOS commands; ARP and Telnet to configure the device.

Regardless of the configuration method you chose to use, many of the functions are the same. Some of the terminology is different between the methods. To simplify the process, we have provided tables which summarize the settings you may need to change. Please keep in mind that this is only a summary. For complete details, please refer to the Lantronix documentation.

Using DeviceInstaller

Lantronix has provided an easy to use utility for configuring the XPort device. This section provides step-by-step instructions on using the DeviceInstaller utility and provides the information necessary to configure the TCP/IP board for the TLS. For more detailed information, we recommend downloading the Lantronix XPort User Guide at: *www.lantronix.com/support/downloads.*
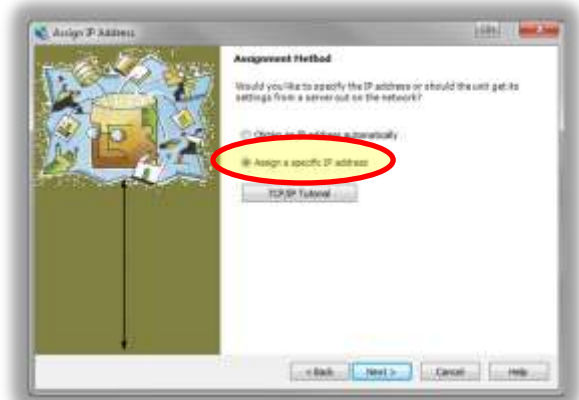
- Launch the DeviceInstaller
- Your screen should look similar to the one on the right
- Click the "Assign IP" icon
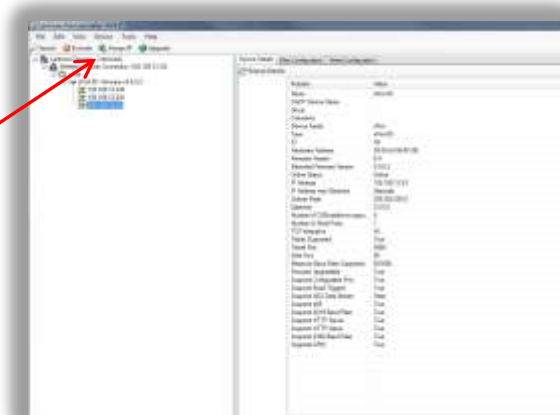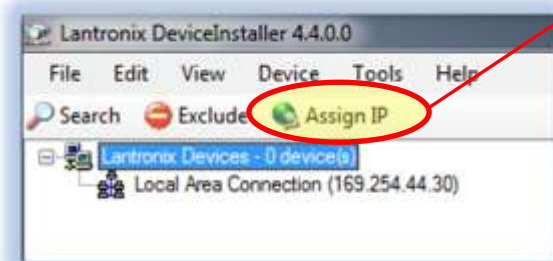
- Enter the MAC address on the product label and click **Next.**
- The MAC address is provided on the label affixed to the Lantronix device.
- The format of the MAC address is:
 `yy-yy-yy-yy-yy-yy`
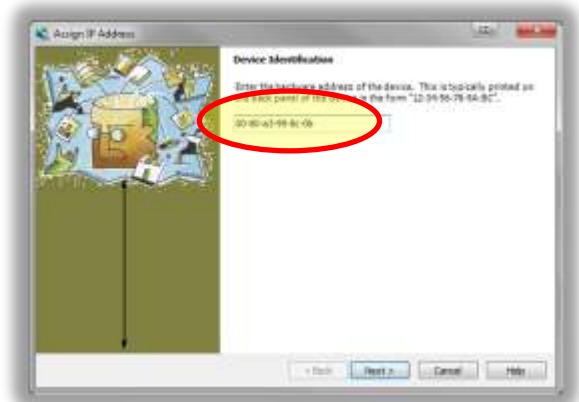
- Select Assign a specific IP address
- Click **Next**

- Enter the IP address
- Unless specifically instructed otherwise, use the following default settings.
  - Subnet mask: 255.255.255.0
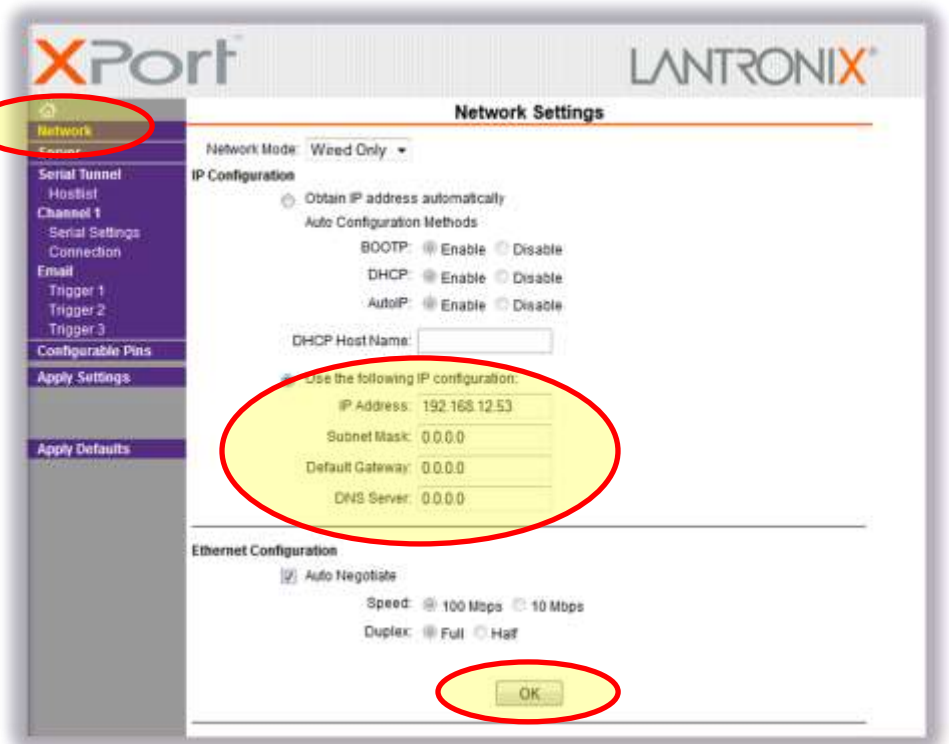 - Default gateway: 0.0.0.0
- Click **Next**
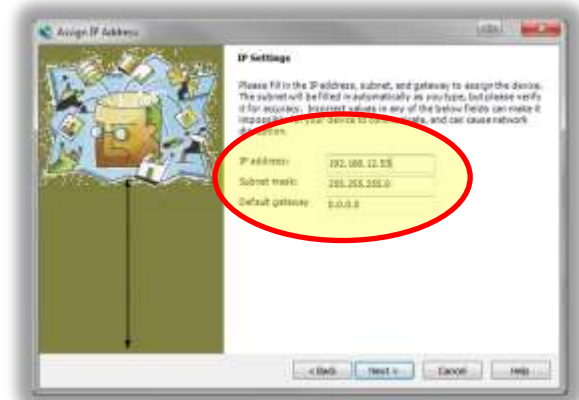
- The IP address just entered should appear in the browser.
- Select the IP address just assigned
- The screen should look similar to the screen at the right
- Select "Web Configuration" tab and **click the green (Go) arrow**.
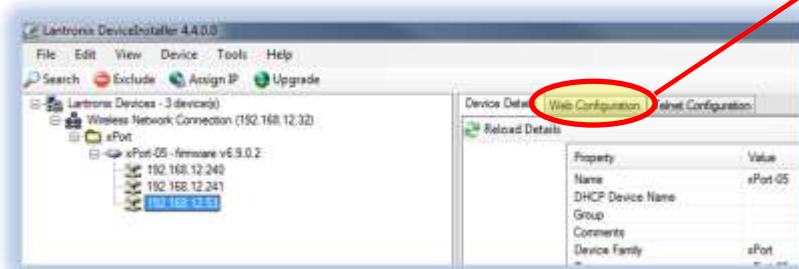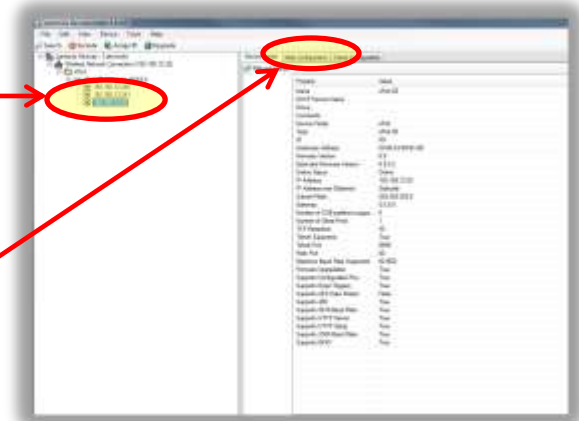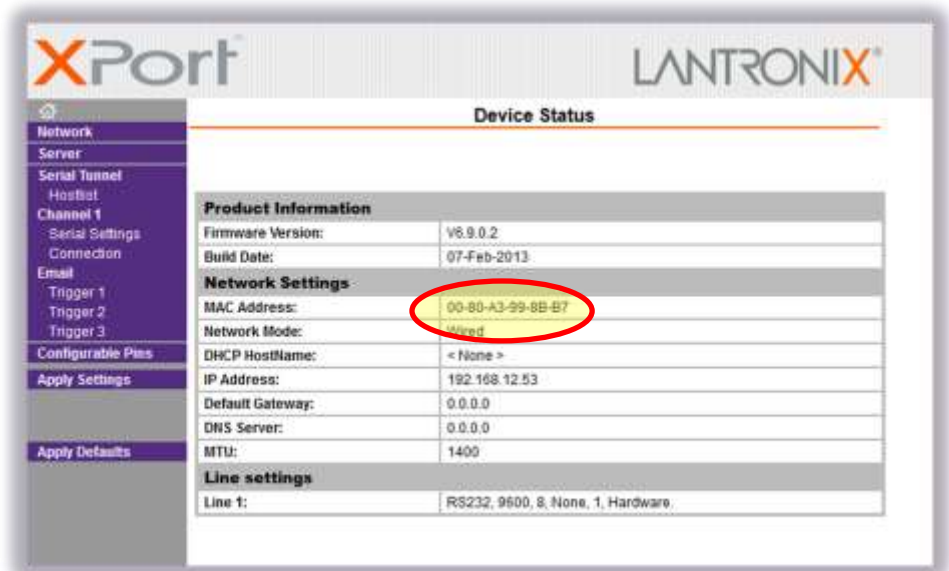
- At the Device Status screen, verify that you are working with the correct device (MAC address)

- Select the **Network** menu on the left side of the screen
- The screen should change to look like this
- Verify that the IP address you entered appears correct. Make any additional changes such as Subnet Mask, Default Gateway or DNS Server
- Click **OK** at the bottom of the screen

- Select the **Connection** menu on the left side of the screen
- The screen should change to look like this
- Change the Local Port to 10001
- Change the On Mdm_Ctrl_In Drop setting from No (default) to Yes
- Enter a time for Inactivity Timeout. We recommend starting with 1:30
- Click **OK** at the bottom of the screen
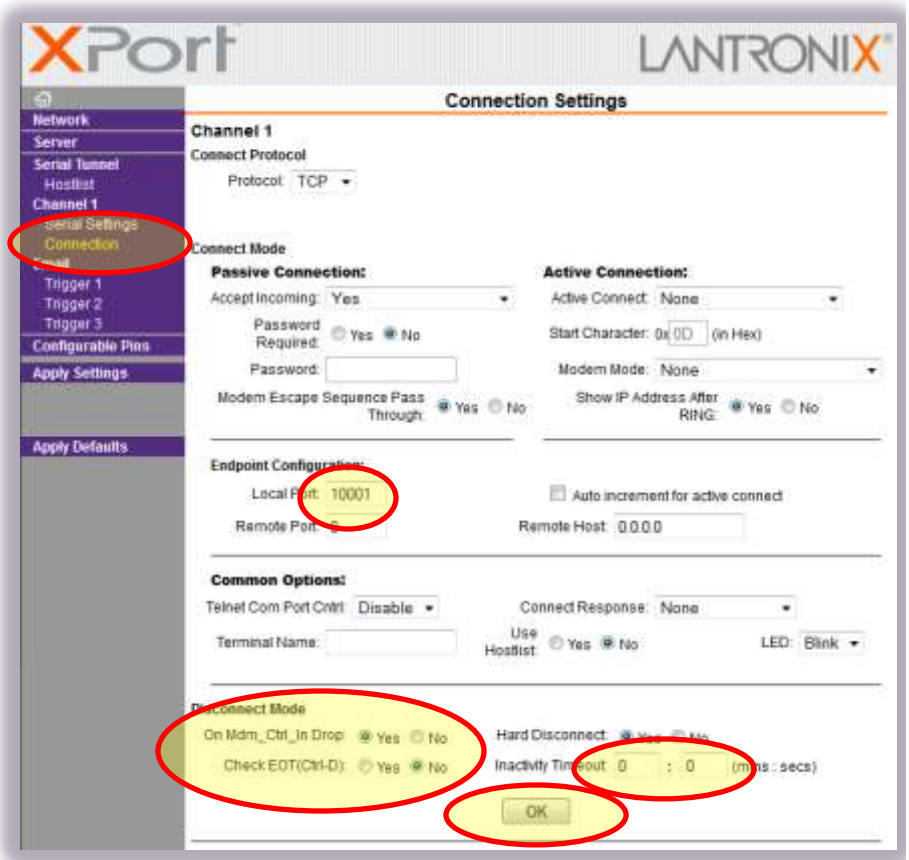
- Select the **Configurable Pins** menu on the left side of the screen
- The screen should change to look like this
- Change CP (Configurable Pins) as follows:
  1 HW Flow Control Out
  2 Modem Control Out
  3 Modem Control In
- Click **OK** at the bottom of the screen
- Click **Apply Settings** to save the configuration changes you have made.
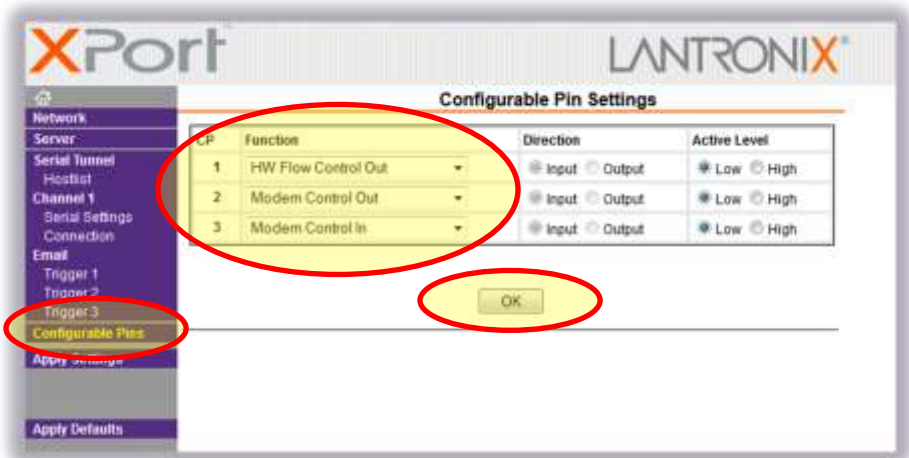
  NOTE: You must click Apply Settings for any changes to be saved

The table below provides a summary of the settings required. These are grouped as you would find them in the DeviceInstaller screens. Menu selections are in Bold and sub-categories are shown along the left side.

Channel 1 configuration			
	Serial Settings		
Port Settings	Protocol	RS-232	
	Flow Control	None for V15 – Ver 20 CTS/RTS for Ver 21 & up	
	Baud Rate	9600	
	Data Bits	8	
	Parity	None	
	Stop Bits	1	
	Pack Control	No Changes	
Flush Mode	**Flush Input Buffer**		
	With Active Connect	No	
	With Passive Connect	No	
	At Time of Disconnect	No	
	Flush Output Buffer		
	With Active Connect	No	
	With Passive Connect	No	
	At Time of Disconnect	No	
	Connection		
	Protocol	TCP	
Connect Mode	**Passive Connection**		
	Accept Incoming	Yes	
	Password Required	No	
	Password		
	Modem Escape Sequence Pass Through	Yes	
	Active Connection		
	Active Connect	None	
	Start Character	0D	
	Modem Mode	None	
	Show IP Address After RING	Yes	
	Endpoint Configuration		
	Local Port	10001	
	Remote Port	0	
	Remote Host	0.0.0.0 (see note on setting)	
Disconnect Mode	On Mdm_Ctrl_In Drop	Yes	
	Hard Disconnect	Yes	
	Check EOT (Ctrl-D)	No	
	Inactivity Timeout	1:30	
	LED	Blink	
	Remote Port	0	
	Disconnect Mode	80 *or* With DTR Drop	
	Flush Mode	00 *or respond* Disable or *No* to all choices	
Configurable Pins			
	Function	Direction	Active Level
	CP 1 = HW Flow Control Out	Input	Low
	CP 2 = Modem Control Out	Input	Low
	CP 3 = Modem Control In	Input	Low

Using the Arp & Telnet commands

Connect one end of the RJ-45 cable to the TCP/IP card and the other end to the RJ-45 network port on your computer.

ARP Command:

You will need the IP address before proceeding:

The arp command displays and modifies the Internet-to-adapter address for the host specified. The host can be specified by name or number, using Internet dotted decimal notation.

Use the ARP command to configure the desired IP address to the Lantronix Device. Type the following at the DOS prompt, then hit Enter:

```
C:\>arp –s xxx.xxx.xxx.xxx yy-yy-yy-yy-yy-yy
```

```
xxx.xxx.xxx.xxx            Represents the desired IP address to be assigned.
yy-yy-yy-yy-yy-yy          Represents the MAC address shown on the top of the Lantronix device
```

Here is an example of the complete statement:
```
C:\>arp –s 192.168.12.53 00-80-a3-99-8b-b7
```

Confirm that the IP address was correctly programmed into the Lantronix device by typing the following command:
```
C:\>arp –a
```

This should return the following:
```
C:\>arp –a
Interface: 0.0.0.0 --- 0x2
  Internet Address      Physical Address    Type
  192.168.12.53         00-80-a3-99-8b-b7   static
```

Telnet command:

The Telnet command allows you to communicate with a remote device, like the TCP/IP module, and change parameters in that device.

Use the ARP command to configure the desired IP address to the Lantronix Device. Type the following at the DOS prompt, then hit Enter:

```
C:\>telnet xxx.xxx.xxx.xxx 9999
```

```
xxx.xxx.xxx.xxx            Represents the desired IP address to be assigned.
```

Here is an example of the complete statement:
```
C:\>telnet 192.168.12.53 9999
```

The screen should return something like this:
```
MAC address 0080A39C2706
Software version V6.9.0.2 (130207 XPTEXE)

Press Enter for Setup Mode
```

You must hit **Enter** within a few seconds or the command will timeout and return "Connection to host lost". If it does timeout, simply re-type the Telnet command shown above.

- The screen will show a menu like the one at right.

- Choose the menu option by typing the number and hit **Enter**. At each of the DOS prompts, type the response indicated and hit Enter.

- Use the table below to help you choose the correct entry for each menu selection

```
Change Setup:
  0 Server
  1 Channel 1
  3 E-mail
  5 Expert
  6 Security
  7 Defaults
  8 Exit without save
  9 Save and exit    Your choice?
```

| Menu choice	DOS prompt	Response
0 Server		
	IP Address	xxx.xxx.xxx.xxx
	Set Gateway IP Address	N
	Netmask: Number of Bits for Host Part	8
	Set DNS Server IP addr	N
	Change Telnet/Web Manager password	N
1 Channel 1		
	Baud Rate	9600
	I/F Mode	4C
	Flow	00 for V15 – Ver 20 02 for Ver 21 & up
	Port No	10001
	ConnectMode	C4
	Send '+++' in Modem Mode	Y
	Show IP addr after 'RING'	Y
	Auto increment source port	N
	Remote IP Address	000.000.000.000 [1]
	Remote Port	0 [2]
	DisConnMode	80
	FlushMode	00
	DisConnTime	00:00 [3]
	SendChar 1	00
	SendChar 2	00
3 E-mail	No change	
5 Expert	No change	
6 Security		
	Disable SNMP	N
	SNMP Community Name	Public
	Disable Telnet Setup	N
	Disable TFTP Firmware Update	N
	Disable Port 77FEh	N
	Disable Web Server	N
	Disable Web Setup	N
	Disable ECHO ports	Y
	Enable Enhanced Password	N
	Disable Port 77F0h	N
7 Defaults		
8 Exit w/o save		
9 Save and exit		

[1] When setting up the console to dial out, enter Cxxx for the receiver phone number – where xxx is the last 3 of digits of the Remote IP Address entered in Channel 1 of the Telnet Setup menu. For example, if you have a remote IP address of 192.168.12.069, you would enter C069

[2] This is the port of the Remote Computer

[3] To enter time, enter minutes then press **Enter**, then enter seconds and press **Enter**

Modify settings using the Web Manager

The Web Manager is built into the Lantronix device allows you to use the browser on your computer to change the configuration of the XPort Device Server. Note: JAVA must be installed to use the Web Manager

- Open your internet browser. In this example, we are using Internet Explorer
- Type the IP address that has been assigned to the TCP/IP boar into the URL line of the browser.
- Hit **Enter**
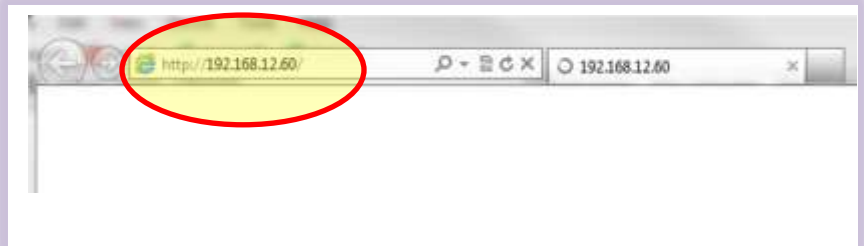
- You may be prompted to provide security information. You can ignore this
- Hit **Enter** or click **OK**
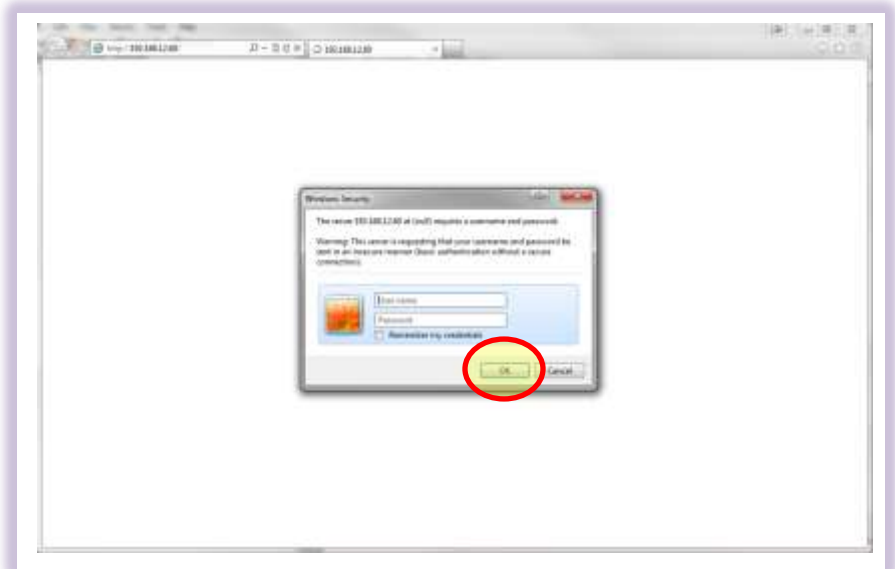
- The next screen you will see will be the Network Setting page for the Lantronix' Xport.
- Proceed to follow the settings provided under "Using the DeviceInstaller"
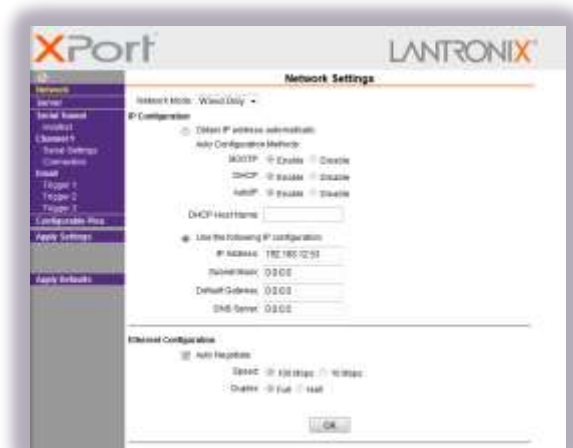
Confirming Operation with HyperTerminal

Microsoft stopped shipping HyperTerminal with newer versions of Windows. However, a variety of terminal emulation programs are available on the internet. The instructions below are specifically for HyperTerminal, but the parameters shown should apply to other programs used.

- Launch your terminal emulation software. In this example, we are using HyperTerminal.
- Enter the IP address you have assigned
- Enter Port 10001
- Select the connection type "TCP/IP (Winsock)"
- Click **Ok**

- You may be asked to enter security information
- Click **Ok**

- Enter the properties window
- Click the "Settings" tab
- Click the ASCII Setup button
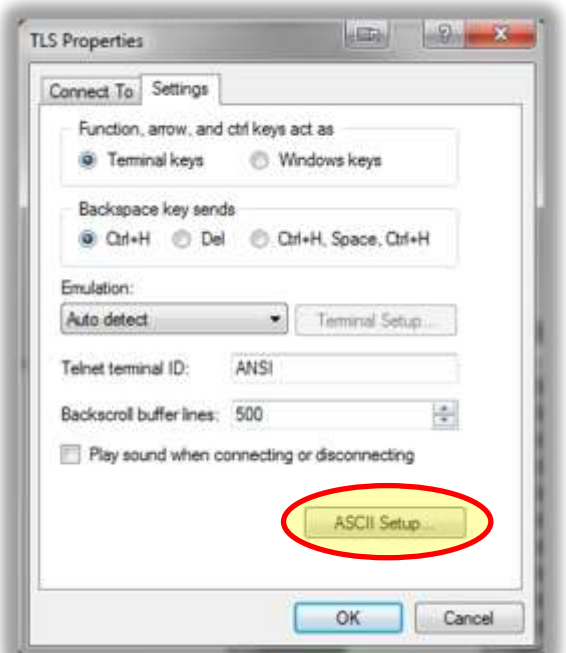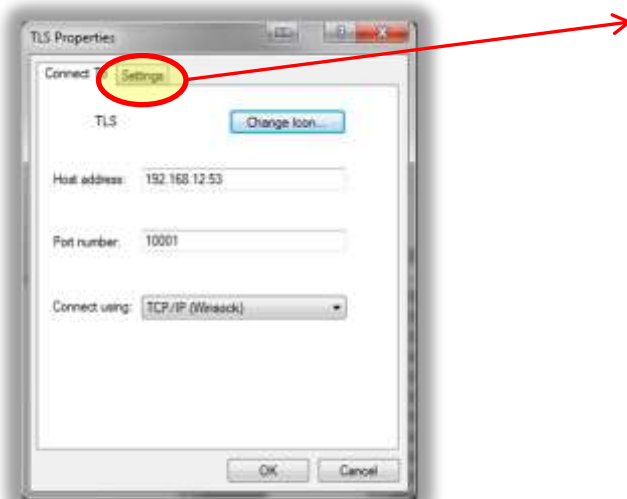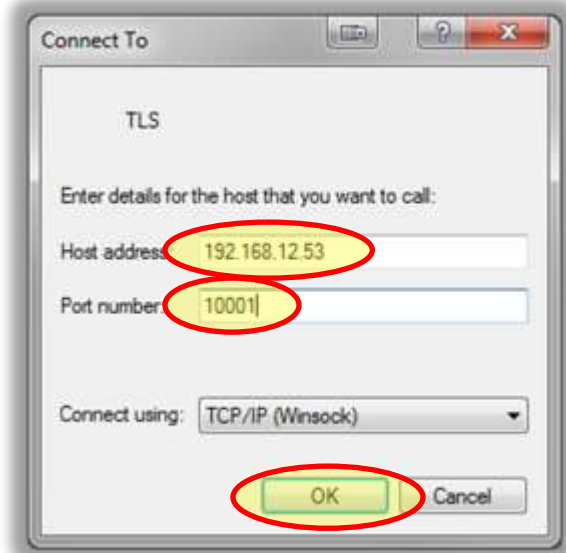
- Check the two boxes shown
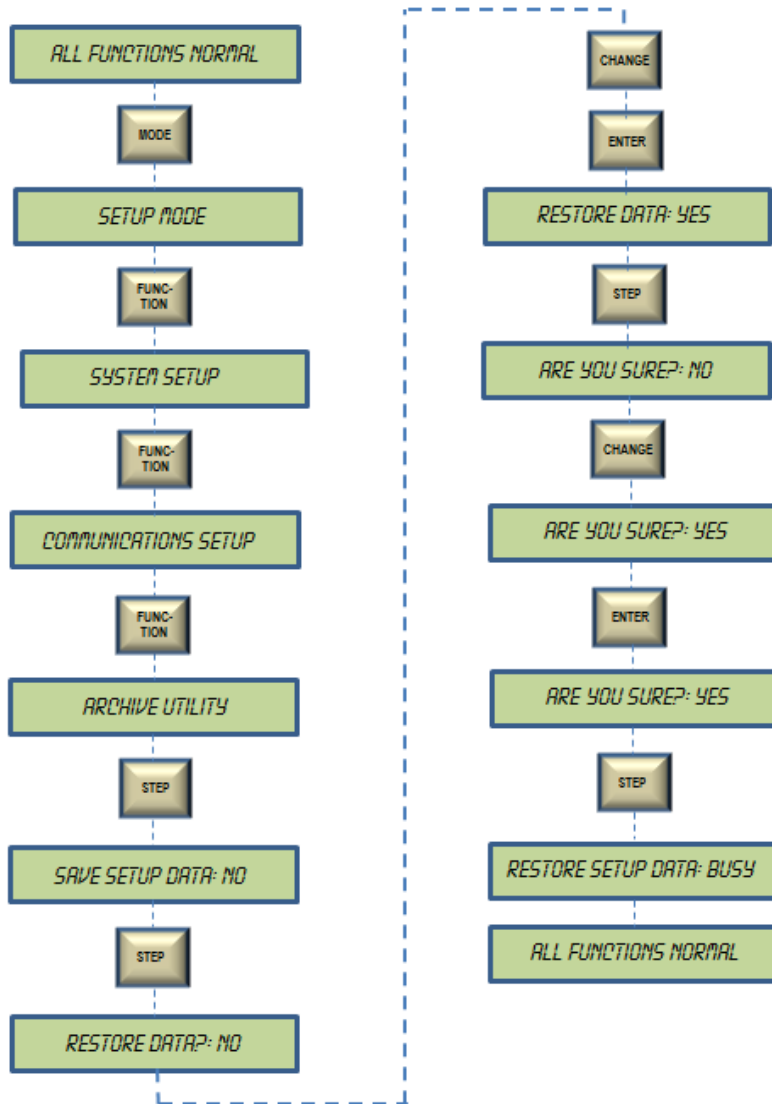- Hit **Enter** or click the **OK** button
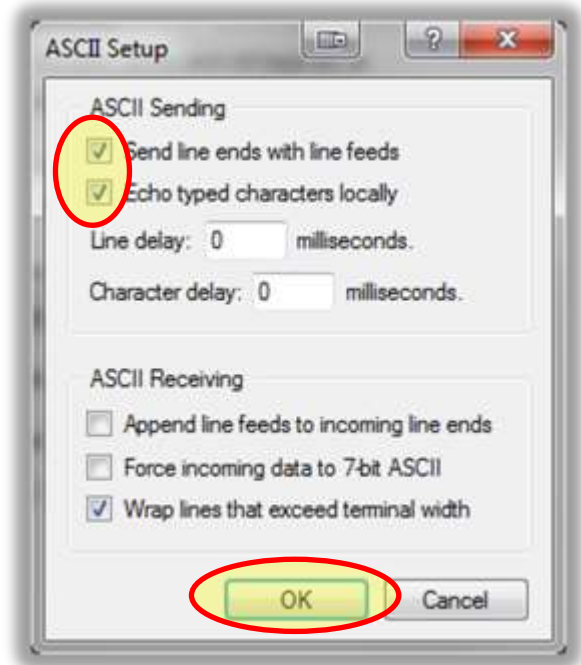
- When the HyperTerminal screen returns, enter a serial command from the TLS-XXX Serial Interface manual or use the example below:
- Hold down the CTRL and A keys. It should produce a smiley face like this ☺
- Type I10200
- The complete command should look like this: ☺ I10200
- This should return a report similar to the one on the right
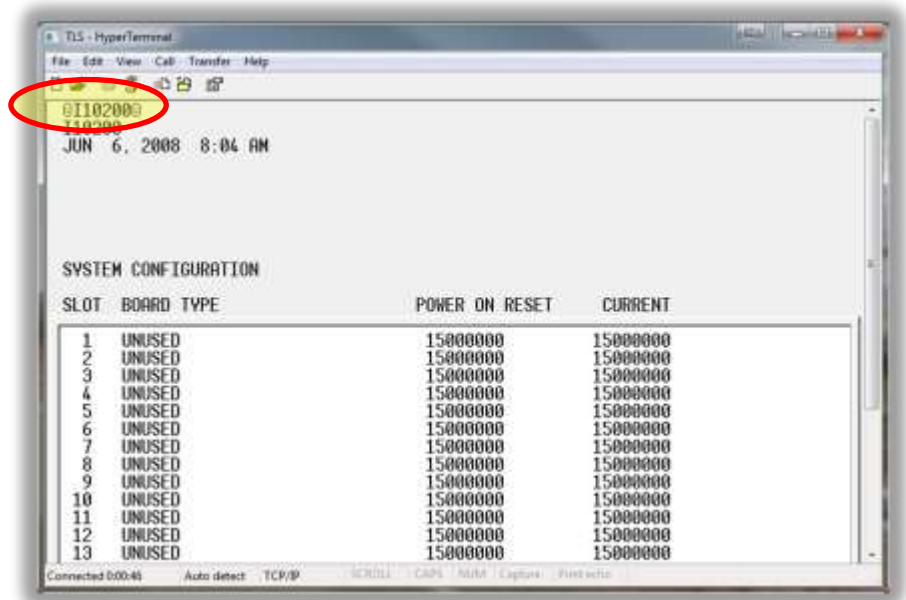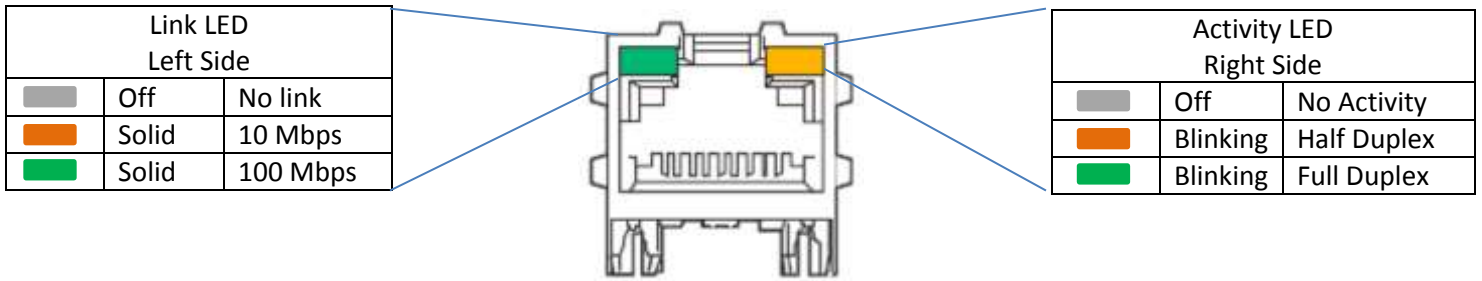
Restoring TLS Data (if required)

Note: This step should only be necessary if the backup battery voltage was not sufficient to hold the setup data in memory.

To restore the data saved in step 1, follow the steps outlined below and replace the backup battery.

ALL FUNCTIONS NORMAL	CHANGE
MODE	ENTER
SETUP MODE	RESTORE DATA: YES
FUNCTION	STEP
SYSTEM SETUP	ARE YOU SURE?: NO
FUNCTION	CHANGE
COMMUNICATIONS SETUP	ARE YOU SURE?: YES
FUNCTION	ENTER
ARCHIVE UTILITY	ARE YOU SURE?: YES
STEP	STEP
SAVE SETUP DATA: NO	RESTORE SETUP DATA: BUSY
STEP	ALL FUNCTIONS NORMAL
RESTORE DATA?: NO	

Reference

Ethernet Status LED's

Link LED Left Side		
(gray)	Off	No link
(orange)	Solid	10 Mbps
(green)	Solid	100 Mbps

Activity LED Right Side		
(gray)	Off	No Activity
(orange)	Blinking	Half Duplex
(green)	Blinking	Full Duplex

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