

TCP/IP Interface Module

Installation Guide

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This installation, operation and service instruction manual shall be left with the owner of the service station at which this equipment is installed. Retain these instructions for future use and provide them to persons servicing or removing this equipment.

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Introduction

General

This manual contains procedures to install a TCP/IP Interface Module into the following consoles:

- Veeder-Root TLS-3XX consoles
- Red Jacket ProPlus and ProMax consoles

If this is a new installation or if site preparation is necessary, refer to the console's Site Preparation and Installation manual, or contact your Veeder-Root representative for assistance.

TCP/IP Interface Requirements

Minimum system requirements for TCP/IP Interface Module operation are listed below:

- Console system software: Version 15 or higher - Version 21 or higher is recommended.
- Network connection to a PC requires a hub. Connecting to a hub requires a straight CAT 5 cable.
- **Direct connection to a laptop requires an ethernet crossover cable.**
- Connection to a LAN or WAN.
- Knowledge of networking.

TCP/IP Kits

- TLS-300/ProPlus console kit (P/N 330020-424):
 - Installation Guide (P/N 577013-776)
- TLS-350/ProMax console kit (P/N 330020-425):
 - Installation guide (P/N 577013-776)

NOTICE 3330020-424 includes the screws. 330020-425 includes the wiring harness.

Contractor Certification Requirements

Service Technician Certification (Previously known as Level 2/3): Contractors holding valid Technician Certifications are approved to perform installation checkout, startup, programming and operations training, system tests, troubleshooting and servicing for all Veeder-Root Series Tank Monitoring Systems, including Line Leak Detection.

TLS-3xx Technician Certification: Contractors holding valid TLS-350 Technician Certifications are approved to perform installation checkout, startup, programming and operations training, troubleshooting and servicing for all Veeder-Root TLS-300 or TLS-350 Series Tank Monitoring Systems, including Line Leak Detection and associated accessories.

All service personal on site must comply with all recommended safety practices identified by OSHA and your employer.

Review and comply with all the safety warnings in this and any related documents, and any other Federal, State or Local requirements.

Warranty Registrations may only be submitted by selected Distributors.

Related Manuals

- 576013-623 TLS-3XX/ProPlus/ProMax Series System Setup manual
- 576013-879 TLS-3XX/ProPlus/ProMax Series consoles Site Prep and Installation Guide

Safety Precautions

The following safety symbols are used throughout this manual to alert you to important safety hazards and precautions

 <p>EXPLOSIVE Fuels and their vapors are extremely explosive if ignited.</p>	 <p>ELECTRICITY High voltage exists in, and is supplied to, the device. A potential shock hazard exists.</p>
 <p>TURN POWER OFF Live power to a device creates a potential shock hazard. Turn Off power to the device and associated accessories when servicing the unit.</p>	 <p>READ ALL RELATED MANUALS Knowledge of all related procedures before you begin work is important. Read and understand all manuals thoroughly. If you do not understand a procedure, ask someone who does.</p>
 <p>WARNING Heed the adjacent instructions to avoid equipment damage or personal injury.</p>	

⚠ WARNING

  	<p>You are working with a device in which potentially lethal voltages may be present. Death or injury may result if safety precautions are not followed.</p> <p>1. Read all instructions and warnings.</p>
---	---

TCP/IP Interface Module Installation

Installation of the TCP/IP Interface module consists of:

1. Verifying the module's configuration (Complete the checklist in Appendix A at this time),
2. Installing the module in the TLS-300 console (page 4) or the TLS-350 console (page 6),
3. Performing setup of the module in the TLS (page 8), and
4. Setting up the module's IP Address/Configuration using either Telnet (page 15) or a browser (page 23).

Verifying TCP/IP Interface Module Configuration

Key components of the TCP/IP Interface module are shown in Figure 1.

NOTICE

IMPORTANT! Write down the ethernet address from the label on the back of the TCP/IP board. You will need to enter this number for the TCP/IP board's hardware address in the module's IP Address/Configuration procedure later in this manual (also record the rev of the board as it may also be needed).

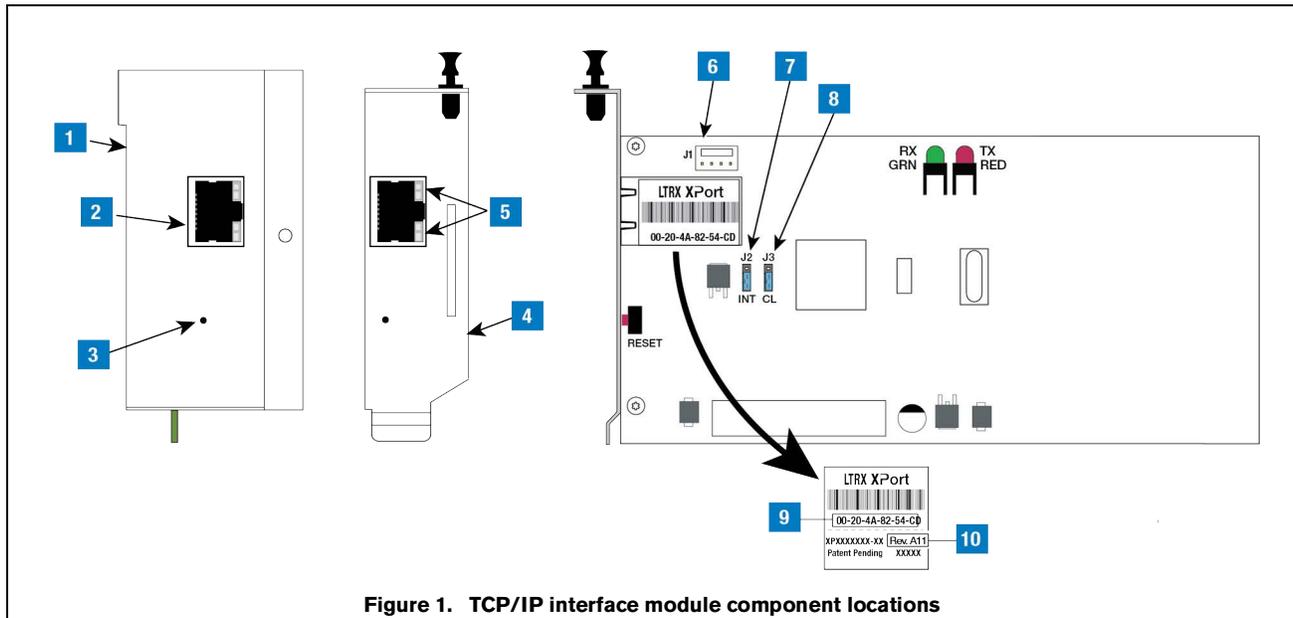


Figure 1. TCP/IP interface module component locations

Legend for numbered boxes in Figure 1

1. End plate for TLS-300/ProPlus console TCP/IP module.
2. RJ-45 Connector (typical both end plates)
3. Reset button access (typical both plates)
4. End plate for TLS-350/ProMax console TCP/IP module
5. Network connection/activity LEDs (typical both end plates)
6. J1 Connector
7. J2 Jumper - Interrupt
8. J3 Jumper - Chip Select
9. Write down the ethernet address from the label on the LTRX XPort module (in this example, 00-20-4A-82-54-CD). You will need this address for the TCP/IP module setup.
10. Also record the rev number (in this example A11). It may be needed for the TCP/IP module setup.

Installing the TCP/IP Interface Module in the Console

TLS-300/PROPLUS CONSOLES



1. Open the left door of the console (see Figure 2). Verify that the battery backup switch is in the On position, then turn Off power to the console.
2. Remove knockout blank from left bottom of console. Slide in the configured TCP/IP Interface Module until the motherboard connector is snugly seated and the left edge of the module's bracket is in the notch cutout in the left side of the console. Attach securing screw from kit (see Figure 3). Leave the console door open.

Legend for numbered boxes in Figure 2

- 1. Battery backup switch (S1) shown in 'On' position (to left)
- 2. Remove knockout blank to install TCP/IP module.
- 3. Connector for TCP/IP module

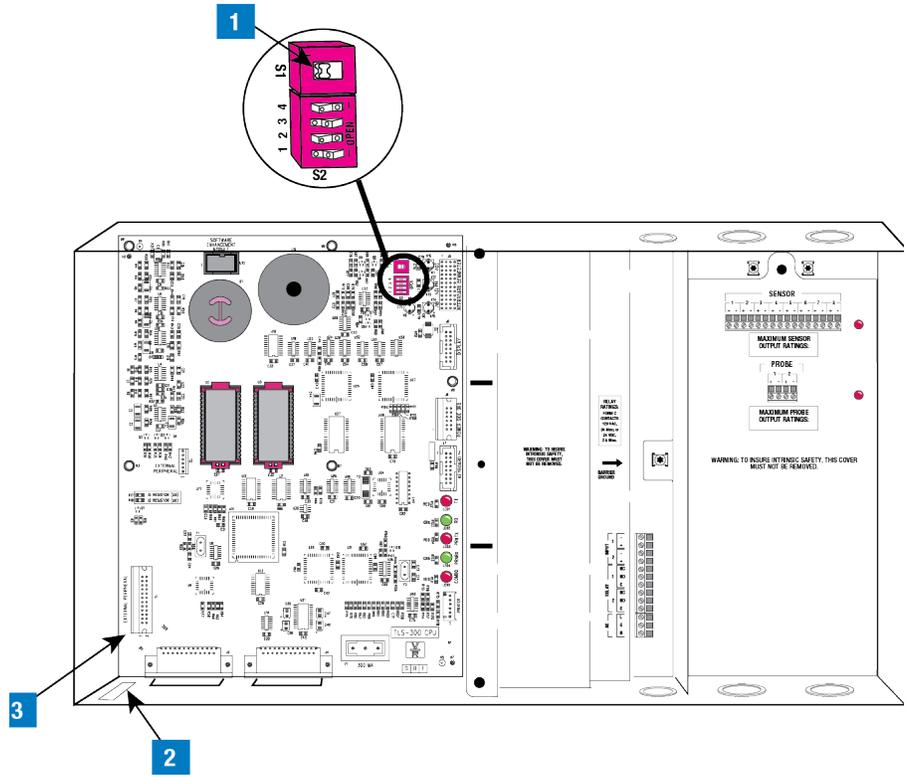
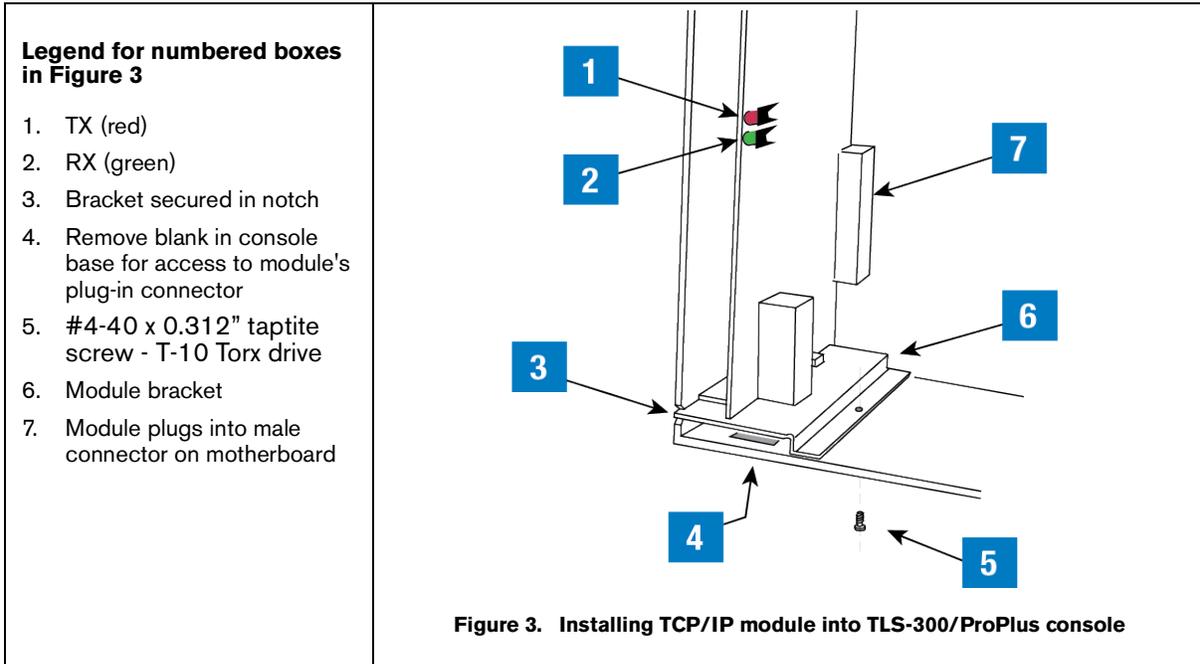


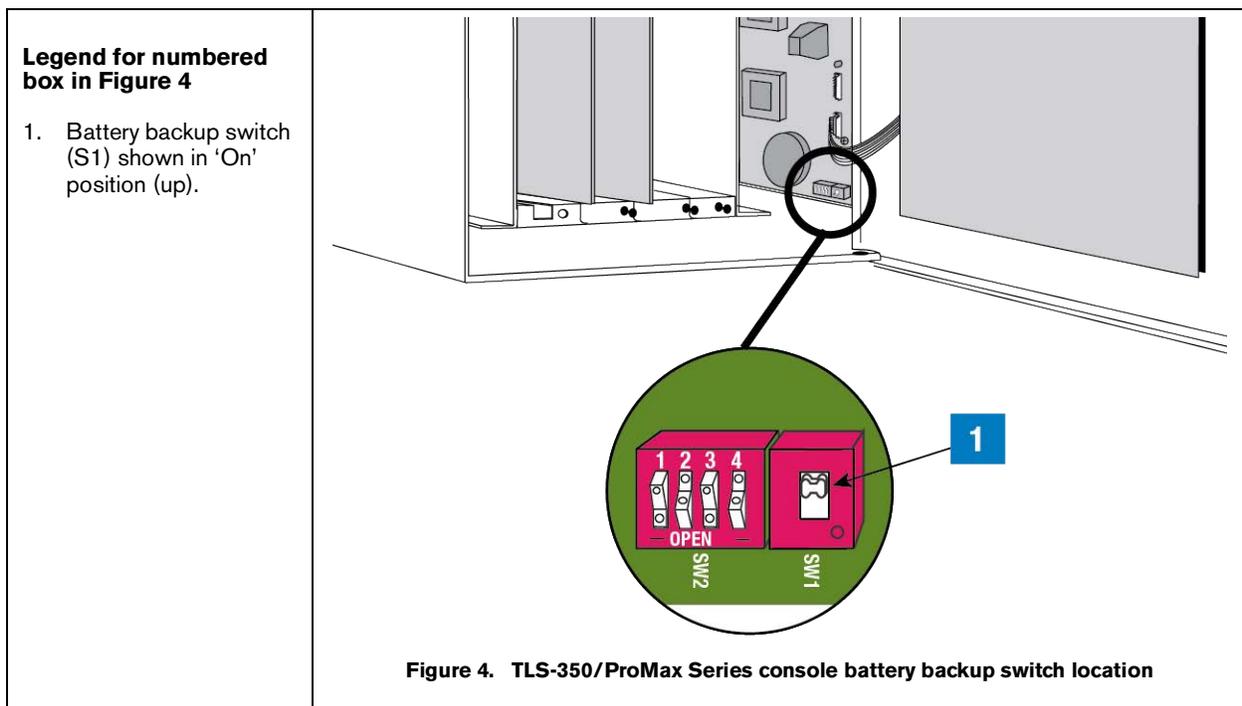
Figure 2. TLS-300/ProPlus console battery backup switch location



TLS-350/PROMAX SERIES CONSOLES



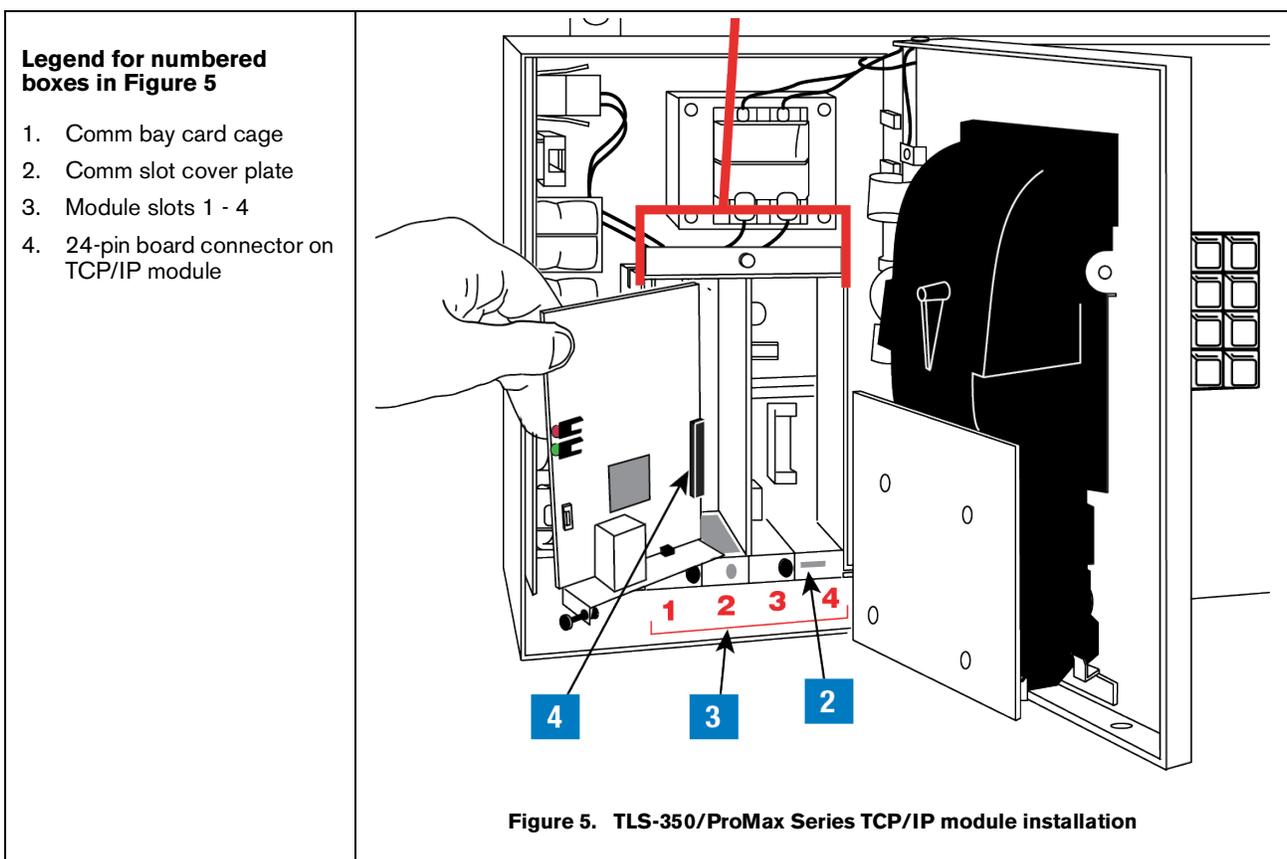
1. Open the left door of the console. Verify that the battery backup switch (SW1) is in the 'On' position (see Figure 4), then turn off power to the console.



2. Installing the TCP/IP module in slots 1 - 3 (Preferred Location)

The TCP/IP module can be installed in any empty slot of the Comm bay card cage, but the module's default settings require that it be installed in slots 1 - 3.

If your console has a snap connector which secures the cover plate in the card cage, pull it out and lift out the cover plate. If your console has "knockout" cover plates, open the printer door and insert a flat blade screw driver in the slot provided in the front of the cover plate you are removing and twist it to break the front set of metal securing tabs (ref item 2 in Figure 5). Once the front tabs are broken, carefully move the loosened end of the plate up and down until the rear set of securing tabs break. Remove and discard the cover plate. Slide the module into the open slot until the motherboard connector is snugly seated. Do not apply excessive force when installing the module. With your thumb, push in the black retaining fastener on the end plate until it snaps into the hole in the card cage.



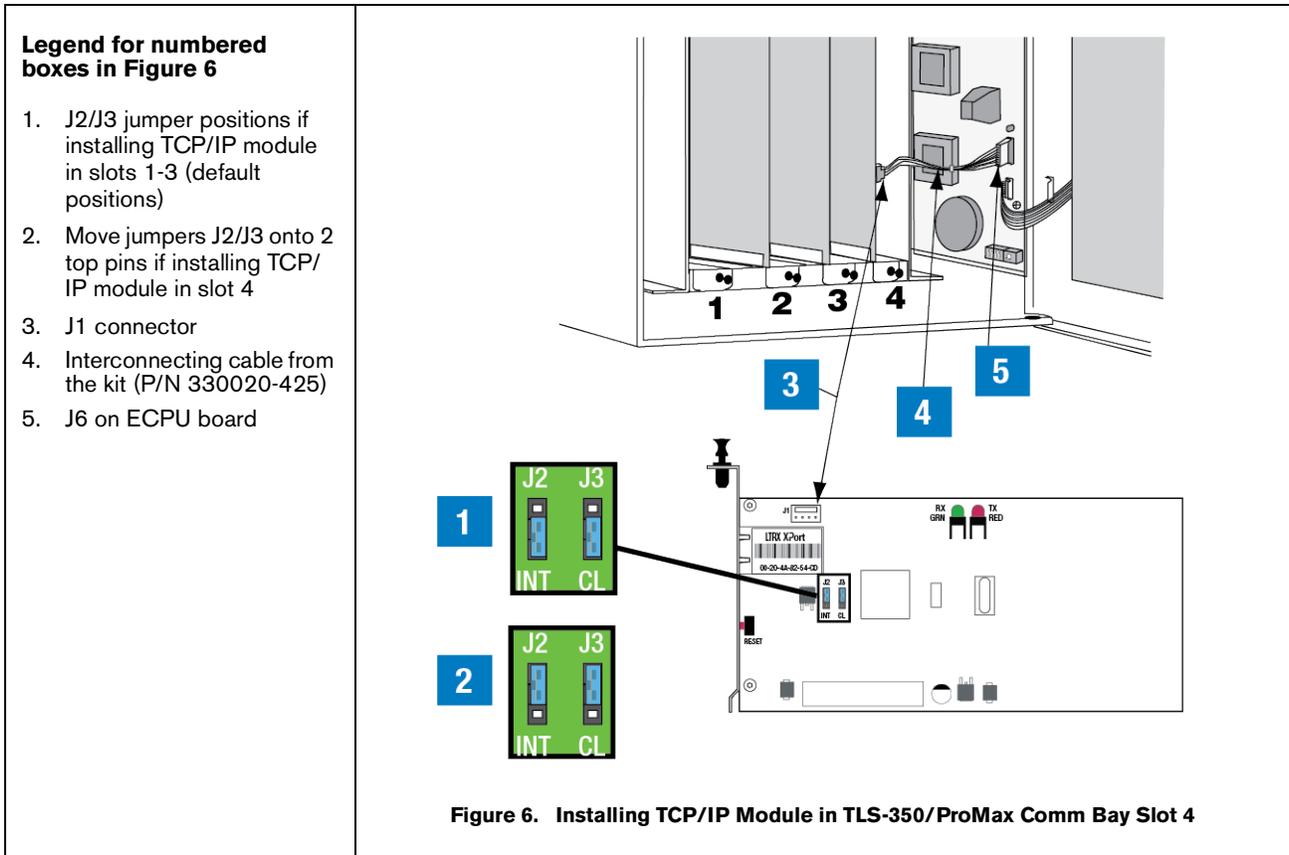
3. Installing the TCP/IP module in slot 4 (Alternate Location)

If slots 1 - 3 are in use, or if you want to free up slots 1 - 3 for other modules, the TCP/IP module can be installed in slot 4. To use slot 4, you must move jumpers J2 and J3 on the module onto the 2 top pins, and connect the cable from the kit (P/N 330020-425) to connector J1 on the TCP/IP module and to connector J6 on the console's ECPU board (see Figure 6).

NOTICE If the TCP/IP module is installed in slot 4, the displayed slot number (X) will be 5.

4. Verify that the RJ-45 plug in the module's bracket is accessible through the slot opening in the bottom of the console.

- When you are finished, make sure any unused slots in the Comm cage have a blank end plate installed. Leave the console door open.



TLS Console Setup of the TCP/IP Interface Module

- Close and secure the console front door. Restore power to the console.
- You will need to know what version software is installed in the console to properly setup the TCP/IP module. Press the front panel MODE key to access Diag Mode. Press FUNCTION key to access System Diagnostic:

**SYSTEM DIAGNOSTIC
PRESS <STEP> TO CONTINUE**

Press the STEP key to view the software revision level:

**SOFTWARE REVISION LEVEL
VERSION XYY.XX**

Where YY equals the console's installed software. For example, if the version is 123.02, the software version is 23.

3. Press the front panel MODE key to access the Setup Mode. Press the FUNCTION key to access Communications Setup.
4. In Communications Setup, press STEP until you see Port Settings, then press ENTER to display the message::

COMM BOARD: X (Type)
BAUD RATE: 1200

If necessary, press the TANK/SENSOR key until you see the message above, where X = the slot number in which you installed the TCP/IP Interface Module, and Type = S-SAT.

NOTICE For TLS-350/ProMax consoles only - if the TCP/IP module was installed in slot 4 of the Comm Bay card cage, the displayed slot number (X) will be 5.

5. Depending on displayed board type (S-SAT) and the console's installed software revision level, select the Comm board setup parameters shown in Table 1 or Table 2 as applicable.

Table 1. Comm Setup Selections - S-SAT board type & V15 - V20 console software

Comm Setup Parameter	Setting
Baud Rate	9600
Parity	NONE
Stop Bit	1 STOP
Data Length	8 DATA
RS-232 END OF MESSAGE	DISABLED

Table 2. Comm Setup Selections - S-SAT board type & V21 & later console software

Comm Setup Parameter	Setting
Baud Rate	9600
Parity	NONE
Stop Bit	1 STOP
Data Length	8 DATA
Code (security)	DISABLED
DTR NORMAL STATE	HIGH
RS-232 END OF MESSAGE	DISABLED

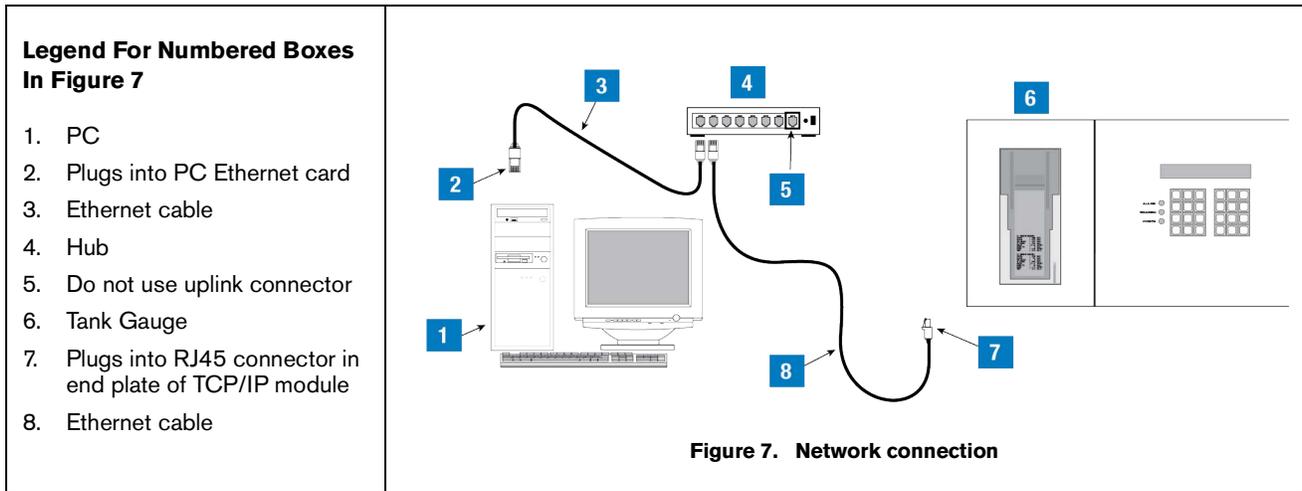
Connect a PC or Laptop to the TCP/IP Interface Module

There are two ways you can connect a PC to the module:

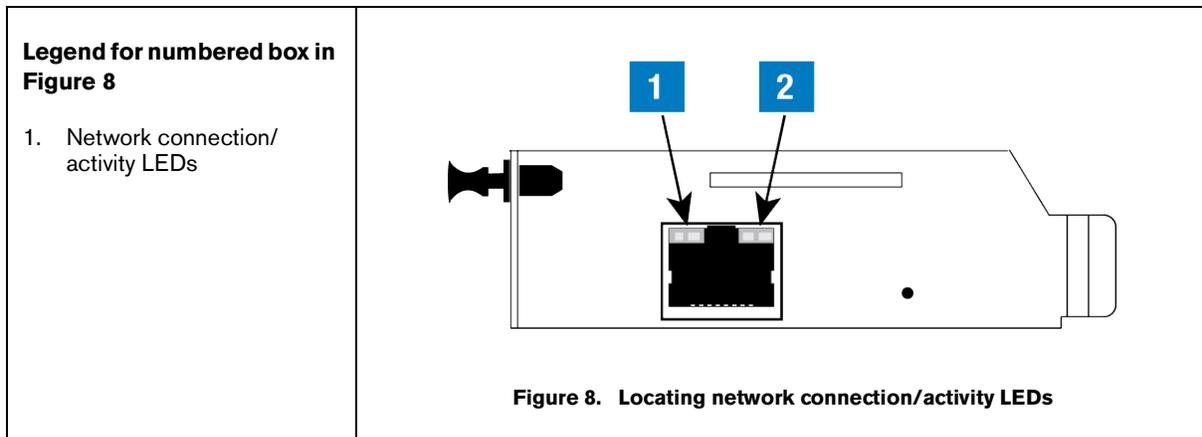
- Over a network (LAN, WAN), or
- Directly (requires a crossover cable)

CONNECTING TO THE TCP/IP INTERFACE MODULE OVER A NETWORK

1. Connect the desktop or laptop to the TCP/IP Interface Module as shown in Figure 7. Insert the RJ-45 plug of the network CAT 5 cable into the RJ-45 connector in the end plate of the TCP/IP module.



2. Locate the 2 LEDs on the top edge of the RJ-45 connector on the module's end plate (see Figure 8).



3. Depending on network connection speed, the left or right LED on the top edge of the RJ-45 connector should remain 'On' when a proper connection is made (ref. Table 3).

Table 3. Network Connection/Activity LED Codes (ref. view in Figure 8)

Left LED	Right LED	Meaning
Off	Off	No link
Off	Solid amber	100Base-T half-duplex link
Off	Blinking amber	100Base-T half-duplex; activity
Off	Solid green	100Base-T full-duplex link

Table 3. Network Connection/Activity LED Codes (ref. view in Figure 8)

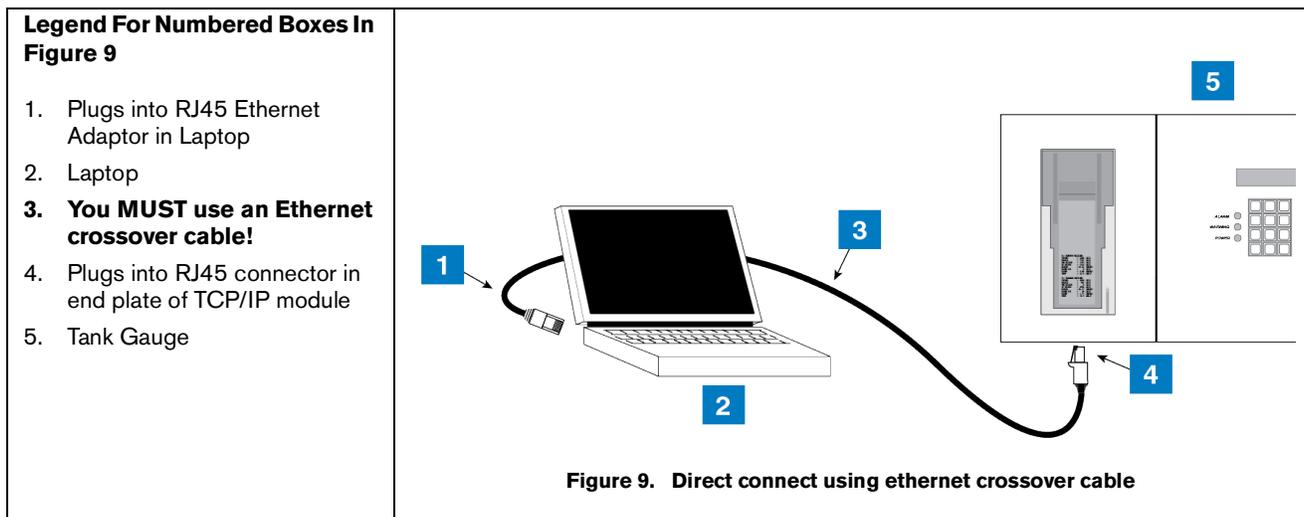
Left LED	Right LED	Meaning
Off	Blinking green	100Base-T full-duplex; activity
Solid amber	Off	10Base-T half-duplex link
Blinking amber	Off	10Base-T half-duplex; activity
Solid green	Off	10Base-T full-duplex; link
Blinking green	Off	10Base-T full-duplex; activity

- After confirming a successful link between the PC and the TCP/IP module, proceed to the either the IP Address/Configuration section using Telnet or using a browser as desired.

CONNECTING TO THE TCP/IP INTERFACE MODULE DIRECTLY

- Connect the laptop to the TCP/IP Interface Module as shown in Figure 9. Insert the RJ-45 plug of the ethernet crossover cable into the RJ-45 connector in the end plate of the TCP/IP Interface Module.

NOTICE Important! you must use an ethernet crossover cable.



- Locate the 2 LEDs on the top edge of the RJ-45 connector on the module's end plate (see Figure 8 on page 10).
- Depending on the network card installed in the laptop, the left or right LEDs on the top edge of the RJ-45 connector should remain 'On' when a proper connection is made as shown in Table 3.
- Before entering the TCP/IP Interface Module's IP Address enter a static IP Address in your connected laptop. IP Address setup procedures for both Windows 7 and 10 are discussed in this section.

Setting Your PC's IP Address for Direct Connect (Windows 7 and 10)

- Connect your laptop to the TCP/IP card as shown in Figure 9 above. Go to your laptop's Control Panel folder and select **Network and Internet** to display the Network screen (Figure 10):



Figure 10. Network Screen

2. Select **Network and Sharing Center** (Figure 11):

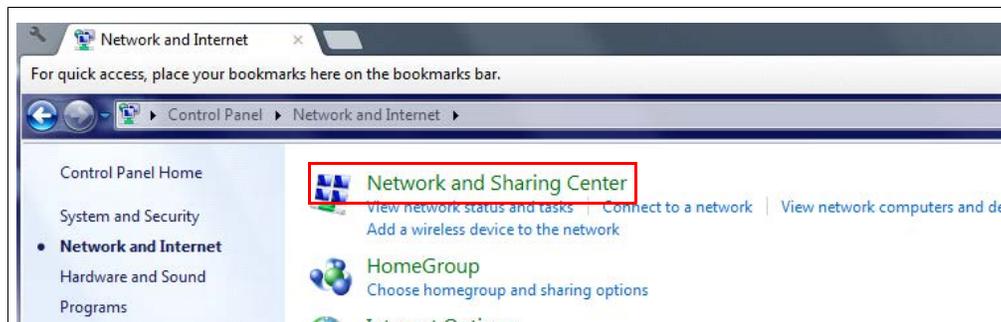


Figure 11. Select Network and Sharing Center

3. Select **Local Area Connection** (Figure 12):

NOTICE Windows 10 computers display Ethernet instead of Local Area Connection

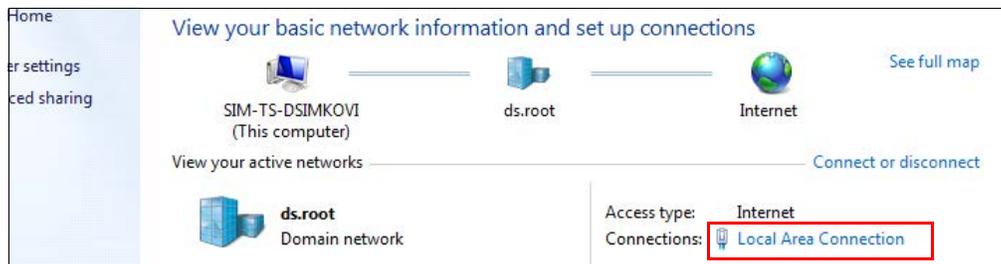


Figure 12. Select Local Area Connection

4. Select **Properties** (Figure 13):

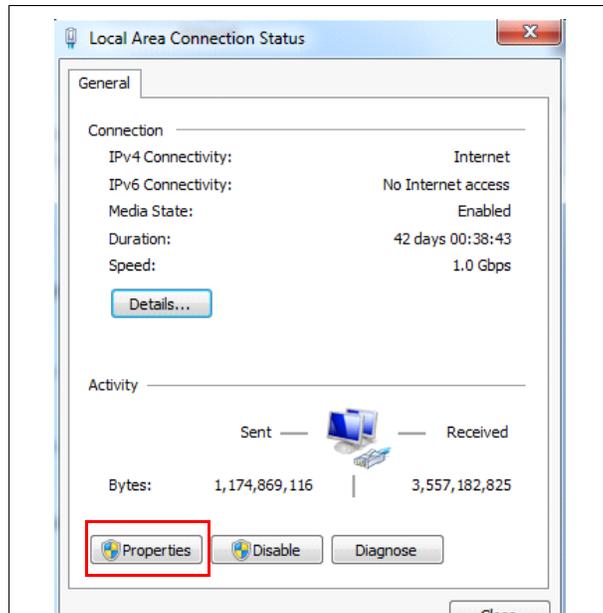


Figure 13. Select Properties

5. Select Internet Protocol Version 4 (TCP/IPv4): (Figure 14).

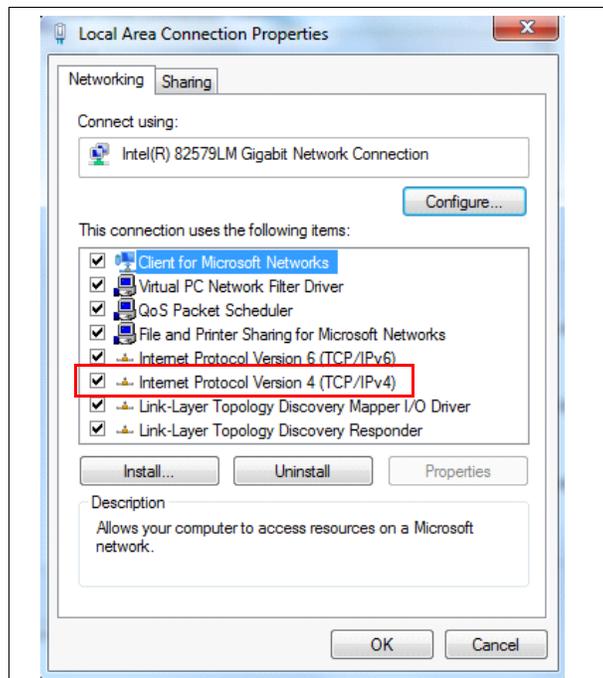


Figure 14. Select Internet Protocol Version 4 (TCP/IPv4)

- Click the Use the following IP Address radio button and enter an IP Address and Subnet. Use an IP address that is one digit off from the customer supplied IP Address that will be assigned to the console's TCP/IP Interface Module.

For example, if the IP Address for the TCP/IP module is 10.2.1.51, enter 10.2.1.50 for the laptop's IP Address. For the subnet mask, use 255.255.255.0, as shown in Figure 15. Leave the Default Gateway blank.

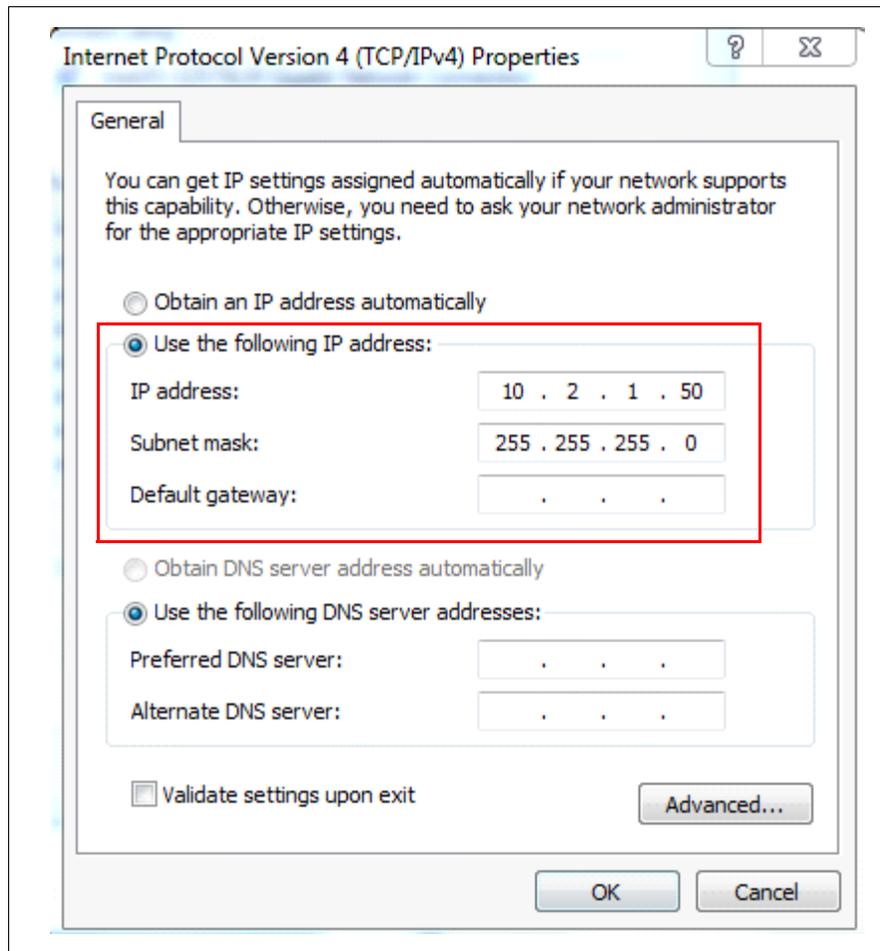


Figure 15. IP Address/Subnet Mask Entry Example

NOTICE Prior to reconnecting your laptop to a network, select the Obtain an IP address automatically radio button.

- You are now ready to enter the TCP/IP Interface Module's IP Address.
- Proceed to the Section entitled 'TCP/IP Module IP Address/Configuration Using Telnet' on page 15.

TCP/IP Module IP Address/Configuration Using Telnet

Overview

Telnet and ARP are utilities available in Windows operating systems and are used in the TCP/IP addressing procedure:

Telnet - Telnet is a terminal emulation program for TCP/IP networks such as the Internet. The Telnet program runs on your computer and connects your PC to a server on the network. You can then enter commands through the Telnet program and they will be executed as if you were entering them directly on the server console. This enables you to control the server and communicate with other servers on the network.

ARP - ARP is a TCP/IP protocol used to convert an IP address into a physical address (called a DLC address), such as an Ethernet address. A host wishing to obtain a physical address broadcasts an ARP request onto the TCP/IP network. The host on the network that has the IP address in the request then replies with its physical hardware address. ARP will only work when the console and PC share the same subnet.

Port Number - This setting represents the source port number in TCP connections. It is the number that identifies the channel for remotely initiating connections. The range of permissible port numbers is 1 - 65535, except for the following reserved port numbers:

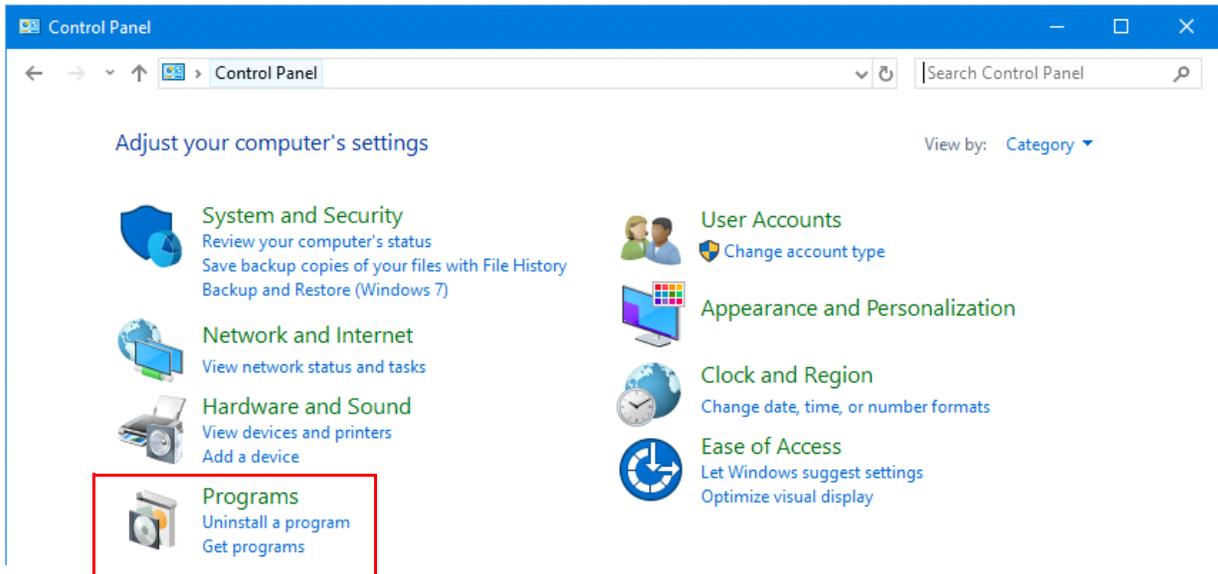
Reserved Port Numbers
1 - 1024
9999
14000-14009
30704
30718

NOTICE Do not use any of the reserved port numbers on any version of the TCP/IP board.

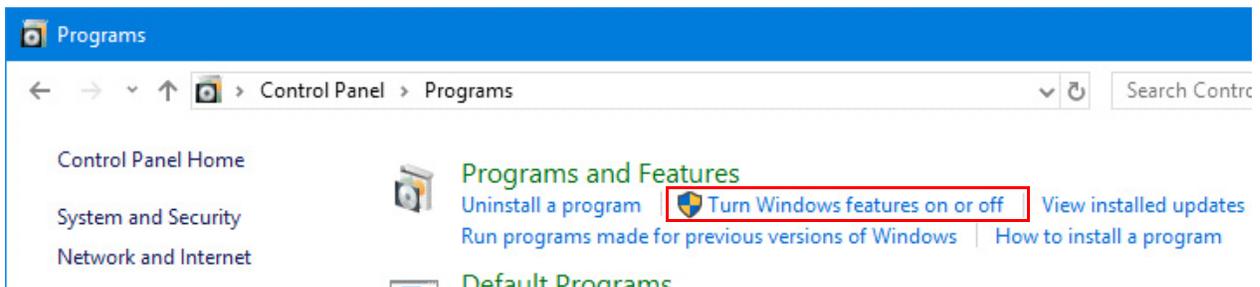
In addition to the IP address configuration instructions provided in this manual, it may also be possible to use the Lantronix device installer found in the Lantronix website (www.lantronix.com) to configure your TCP/IP module's IP address.

Entering the TCP/IP Interface Module's IP Address

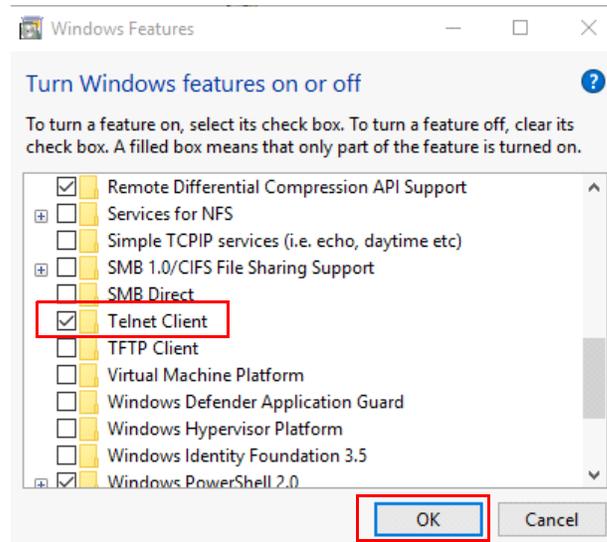
1. On new computers, Telnet must be manually turned before the TCP/IP Interface Module can be configured. If Telnet has already been activated, continued to step 2.
 - a. Go to your laptop's Control Panel folder and select **Programs**:



- b. Select Turn **Windows features on or off**:

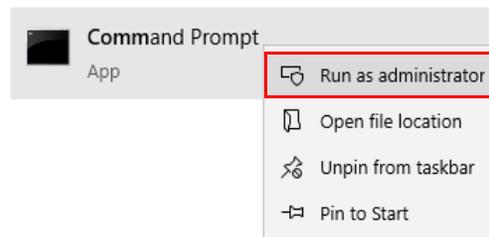


- c. The Windows Features screen will appear. Once it has completed loading, scroll down and check of the box for **Telnet Client**, then select OK:



With the PC connected to the TCP/IP Interface Module as discussed in the previous section, perform the steps below.

1. Command prompt must be opened as an Administrator. Right click the Command Prompt icon, then select **Run as administrator**:



1. At the DOS command prompt type (the spaces between words and letters in all entries must be entered as shown or the address will not be successfully assigned):

```
arp -s y.y.y.y 00-20-4a-xx-xx-xx
```

(where *y.y.y* is the IP address of the TCP/IP module (see your network administrator) and *00-20-4A-xx-xx-xx* is the number from the label on the back of your TCP/IP module [see Figure 1 on page 4]).

Press Enter.

The module's IP address is added to the ARP table and the screen will return to the DOS command prompt. Type `ARP -A` at the DOS command prompt and press Enter to view the contents of the ARP table and verify the presence of the TCP/IP Interface Module's IP Address.

2. At the DOS command prompt type:

```
telnet y.y.y.y 1
```

Press Enter.

The following message will appear:

Connecting to y.y.y.y...could not open a connection to host on port 1. Connect failed or could not open connection to Y.Y.Y.Y.

3. At the DOS command prompt type:

```
telnet y.y.y.y 9999
```

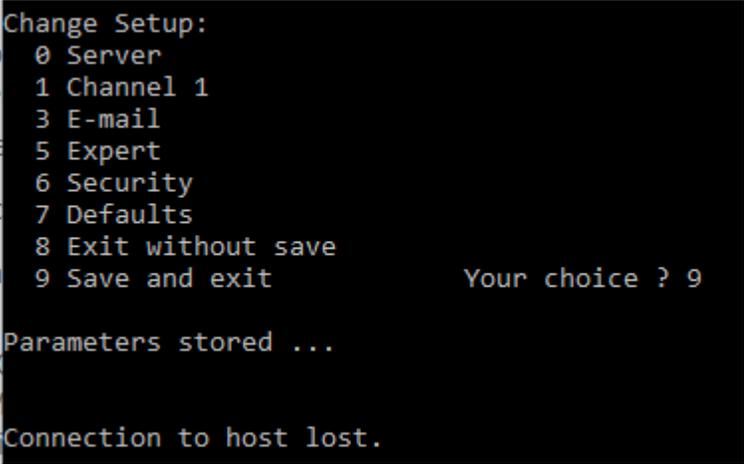
Press Enter as soon as the Telnet screen appears, press Enter again (NOTE: Telnet screen will timeout if you do not press Enter within approximately 4 seconds after the Telnet screen appears).

The Telnet Setup menu will appear on the screen (see Figure 16). Enter the required TCP/IP Interface Module's configuration settings shown in Table 4 if your console has software versions 15 - 20, or enter the settings in Table 6 if your console has software versions 21 and later.

NOTICE To accept a setting already in the Telnet Setup menu, press Enter to accept the value and skip to the next selection.

4. After completing the TCP/IP Interface Module's configuration, connect the module to the customer's network.

Press 9 and Enter to save settings and exit Telnet. A screen will display 'Parameters stored...Connection to host lost (see Figure 16).



```
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 ? 9

Parameters stored ...

Connection to host lost.
```

Figure 16. Telnet Menu Screen

NOTICE Depending on your Telnet configuration, it may be possible to scroll up on the above window and see additional settings.

Table 4. Telnet Setup Menu Settings (Consoles with V15 - 20 Software)

Menu Selection	Setting
----------------	---------

BASIC PARAMETERS - to access, select Change Setup option 0, press Enter

IP Address (of console)	(get from your network administrator)
Gateway	(get from your network administrator)
Netmask's number of bits for host part	(get from your network administrator, or get from Table 5)
Telnet config password	(N)

CHANNEL 1 - to access, select Change Setup option 1, press Enter

Baud rate	9600
I/F Mode	4C
Flow	00
Port	10001
Connect Mode	C4 (incoming net connection - accept unconditional; startup - manual connection)
Remote IP Adr	IP address of the computer the console will call on dialout. Example: 010.002.001.059 ¹
(Remote) port	port of the remote computer
Disconn Mode	80 (with DTR drop)
Flush Mode	00
Disconn Time (mm:ss)	01:30 (Note: to enter Disconn time, first enter minutes press Enter, then enter seconds and press Enter)
Sendchar1	00
Sendchar2	00

¹When setting up the console to dial out, enter CXXX for receiver phone number - where xxx is the last set of digits in the Remote IP Address set in Channel 1 of the Telnet Setup menu. For example, if you have a remote IP address of 010.002.001.059, you would enter C059.

SECURITY - to access, select Change Setup option 6, press Enter

Telnet setup is	enabled
TFTP download is	enabled
Port 77FEh is	enabled
Web Server is	enabled
Enhanced password is	disabled

SAVE AND EXIT - after making the above selections, select Change Setup option 9, press Enter

Table 5. Netmasks / # Bits for Host Part

Netmask	Host Bits
255.255.255.254	Do Not Use
255.255.255.252	Not Recommended
255.255.255.248	3
255.255.255.240	4
255.255.255.224	5
255.255.255.192	6
255.255.255.128	7
255.255.255.0	8
255.255.254.0	9
255.255.252.0	10
255.255.248.0	11
255.255.240.0	12
255.255.224.0	13
255.255.192.0	14
255.255.128.0	15
255.255.0.0	16
255.254.0.0	17
255.252.0.0	18
255.248.0.0	19
255.240.0.0	20
255.224.0.0	21
255.192.0.0	22
255.128.0.0	23
255.0.0.0	24

Table 6. Telnet Setup Menu Settings (Consoles with V21 and Later Software)

Menu Selection	Setting
BASIC PARAMETERS - to access, select Change Setup option 0, press Enter	
IP Address (of console)	(get from your network administrator)
Gateway	(get from your network administrator)
Netmask's number of bits for host part	(get from your network administrator, or get from Table 5)
Telnet config password	(N)

CHANNEL 1 - to access, select Change Setup option 1, press Enter

Baud rate	9600
I/F Mode	4C
Flow	02
Port	10001
Connect Mode	C4 (incoming net connection - accept unconditional; startup - manual connection)
Remote IP Adr	IP address of the computer the console will call on dialout. Example: 010.002.001.059 ¹
(Remote) port	port of the remote computer
Disconn Mode	80 (with DTR drop)
Flush Mode	00
Disconn Time (mm:ss)	01:30 (Note: to enter Disconn time, first enter minutes press Enter, then enter seconds and press Enter)
Sendchar1	00
Sendchar2	00

¹When setting up the console to dial out, enter CXXX for receiver phone number - where xxx is the last set of digits in the Remote IP Address set in Channel 1 of the Telnet Setup menu. For example, if you have a remote IP address of 010.002.001.059, you would enter C059.

SECURITY - to access, select Change Setup option 6, press Enter

Telnet setup is	enabled
TFTP download is	enabled
Port 77FEh is	enabled
Web Server is	enabled
Enhanced password is	disabled

SAVE AND EXIT - after making the above selections, select Change Setup option 9, press Enter

After saving your Telnet menu setup settings for the TCP/IP Interface Module, the module can be tested to confirm communication is working.

1. At the DOS command prompt type: **Telnet y.y.y 10001**
(where y.y.y is the IP address of the TCP/IP Interface Module and 10001 is the port number. Make sure you enter spaces as shown)
2. Press **Enter**. A blank screen will appear.
3. Type: **<ctrl+A>200**
4. Press **Enter**. The console's inventory will appear – this confirms good communication between the laptop and console.

AFTER NETWORK SETUP OF THE TCP/IP MODULE

When using an ethernet crossover cable to configure the TCP/IP Interface Module, and programming is completed, connect the console to the network.

Appendix A - TCP/IP Configuration Check List

These checklists are intended to be used in conjunction with the instructions in the TCP/IP Installation manual and with relevant setup instructions in the TLS-3XX System Setup manual.

TCP/IP Card IP Address/Configuration Check List

- 1. What version of TLS software currently installed? _____
Note: If Version 15 to 20 use Telnet Setup Channel 1, Flow setting = 00 (ref. Table 4 on page 19), If Version 21 or higher use Flow setting = 02 (ref. Table 6 on page 21).
- 2. What Communications slot is available? _____
Note: Slot 4 requires interconnect cable and jumper change (ref. Step 3. on Page 7).
- 3. What is the MAC Address that is on the TLC/IP card? _____ (example: 00-20-4a-4c-83-7d)
- 4. What is the IP Address that is to be assigned to the TCP/IP card? _____ (example: 10.2.12.17)
Note: Customer IT department or Internet provider must provide IP Address; (*STATIC ADDRESS ONLY*).
- 5. What is the Gateway Address that is to be assigned to the TCP/IP card? _____ (example: 10.2.12.1)
Note: Customer IT department or Internet provider must provide Gateway (Server, Router) Address.
- 6. Assign Netmask of 255.255.255.0 *unless* otherwise specified by Customer Network Administrator.
Note: Customer IT department or Internet provider must provide Netmask number of bits for Host part (see Table 5).
- 7. What is the Remote IP Address that is assigned to the TCP/IP card? _____ (example: 10.2.1.156)
Note: If TCP/IP card is required to call out TLS Alarms, you must program the REMOTE IP Address in Telnet Setup Channel 1 (ref. Table 4 on page 19, or Table 6 on page 21 as appropriate).
- 8. What is the Remote Port Number that is to be assigned to the TCP/IP card? _____ (example: 20001).
Note: For FMS locations always assign remote port 8100, otherwise contact Customer IT department or Internet provider for Remote Port Number.
- 9. Before proceeding please ensure that you have the correct TCP/IP settings and cables for your laptop as per the instructions in this manual.
- 10. After completing steps 1 - 9 above, install TCP/IP card.
Note: If TCP/IP card is to be installed in a previously used communications slot, a cold start to the TLS console will be required.
- 11. After installing and configuring the TCP/IP card, verify that you can retrieve TLS Inventory through a Telnet session. Example for TLS Inventory: c:\>TELNET 10.2.11.17 10001 <CTRL A>200

TCP/IP TLS Setup Check List

1. Verify that the TLS Communication settings agree with those of the TCP/IP card (e.g., 9600 bps, None parity, 8 data length, 1 stop bit).

Note: Reference TLS-3XX System Setup manual (Communication Setup) for details.

2. To ensure the TLS can call out alarms, verify that Receiver Setup is complete and alarms are assigned to the proper receiver. Reference TLS-3XX System Setup manual (Phone Directory Setup) for details.

Note: When programming the RCVR PHONE number, enter the letter C and then the last three digits of the assigned REMOTE IP address (refer to Step 7 in the Installation Check List above).

