

**MCN Series
Remote Comparator Display System**

**PC Interface Card
PCLTA-10, PCLTA-20 & PCLTA-21
Installation Reference Manual**

**For use with MCNRCD for DOS
Under Windows 95, 98, NT, 2000, or XP**

S2-60648-135

***The software for this system must be installed
before the PCLTA Interface Board.***

***The Software Installation section of this manual
replaces the Software Installation section of the
MCNRCD Software Manual.***

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1. Introduction

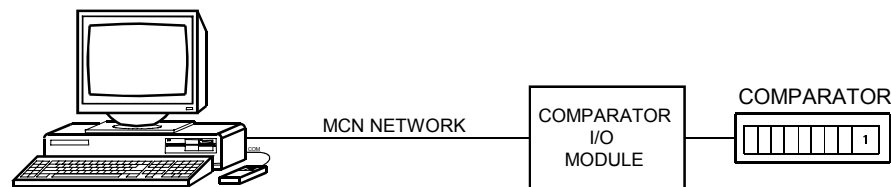
The **PC LonTalk® Adapter (PCLTA) cards** are members of the Monitoring and Control Network (MCN™) family of **User Interface Modules**. Hardware specifications and configuration information are described in this manual.

MCN Remote Comparator Display systems can achieve higher performance for their monitoring and control system by using a PC LonTalk Adapter (PCLTA) card and appropriate drivers. The PCLTA-10 is a 16-bit card that plugs into an ISA bus expansion slot of the PC. The PCLTA-20 and PCLTA-21 are 32-bit cards that plug into a PCI bus expansion slot of the PC. Either card connects a PC, running the MCN Remote Comparator Display software (MCNRCD) to the MCN network. Only the PCLTA-21 is available as a current product. The PCLTA cards are used with the MCNRCD software and Comparator I/O Modules (such as CIB or AIB) to create a Comparator display system. The MCN Comparator display provides monitoring and control functions for your Comparator system.

Note: The PCLTA cards can only be used in applications with local MCN networks and remote networks using MCN-EXB modules.

They cannot be used over standard modems for dial-up connections !

Figure 1 is a diagram showing a basic monitoring and control network (MCN) using a PCLTA card as the User Interface Module.



CA-80237-100

Figure 1 - Basic MCN System with PCLTA

Reference Documents

- Monitoring and Control Network Comparator Display System Manual.
Part Number S2-60425
- Remote Comparator Display Software for DOS.
Part Number S2-60426

1.1 PCLTA Card Overview.

Several types of PCLTA cards are supported by the MCN system. Figure 2 depicts a 16-bit ISA card.

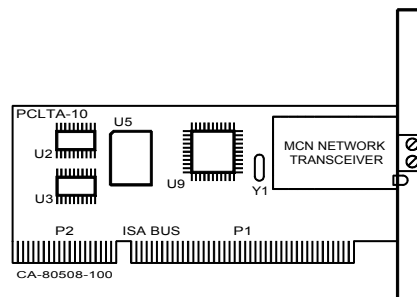


Figure 2 - PCLTA-10 ISA Card

Figure 3 depicts the 32-bit PCI cards.

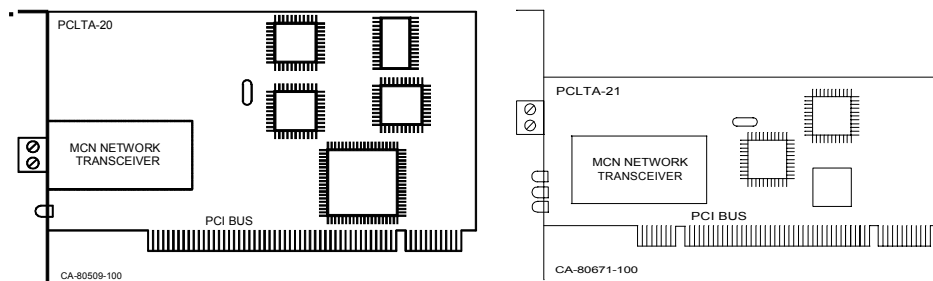


Figure 3 - PCLTA-20 & PCLTA-21 PCI Cards

Only the PCLTA-21 is available as a current product. The following table lists model numbers for the different versions of PCLTA cards.

Model	Type	PC Bus		Network Speed	
		ISA	PCI	78Kb	1.25Mb
90-11508	PCLTA-10	●		●	
90-11509	PCLTA-10	●			●
90-11510	PCLTA-20		●	●	
90-11511	PCLTA-20		●		●
90-11722	PCLTA-21		●	●	
90-11723	PCLTA-21		●		●

**Do not install the PCLTA card at this time.
 Install the software first!**

2. Installation Overview

The installation of the MCNRCD for DOS software and PCLTA board is done in the following order:

1. Installation of the MCNRCD software from the CD-ROM.
2. Installation of the PCLTA Device Drivers on the PC.
3. Physical Installation of the PCLTA card.
Windows 95/98 or NT/2000/XP will automatically sense the Plug-n-Play adapter, and associate it with the drivers installed in the previous step .
4. Initializing & testing the PCLTA using the “LonWorks Plug ‘n Play” and TESTSNGL.BAT utility (for Windows 95/98) or PCLTA DIAGNOSTIC (for Windows NT/2000/XP).
5. Testing the PCLTA card and MCNRCD software using Sample Screen Files. (See the MCNRCD Software manual.)
6. Customization of MCN Group and Screen files for your system using MCNCFG Configuration program. (See the MCNRCD Software manual.)
7. Operation of the system using MCNRCD program and your customized screens. (See the MCNRCD Software manual.)

3. Software Installation

This MCNRCD for DOS software package includes an Installshield installation (setup) program that will install the MCNRCD for DOS software and the drivers for a PCLTA-10 or PCLTA-20 card. This manual section replaces the Software Installation section in the MCNRCD Operator Manual. If a PCLTA-21 is being installed, use the drivers from the PCLTA-21 Driver CD.

The MCNRCD for DOS software can operate on Windows 95, 98, NT, or 2000 when used with a PCLTA-10 or PCLTA-20 interface. It can operate on Windows 98, 2000, or XP when used with a PCLTA-21.

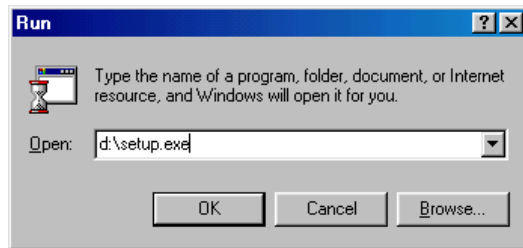
The Installshield software will:

- Let you select the desired destination folder for the program files and program shortcuts.
- Let you select the most appropriate installation type for your operation.
- Ask you if your system has Transmitter Steering
- Copy the files from the CD-ROM to the hard drive.
- Set up program folders and entries in the Start menu with shortcuts to the various programs.

3.1 Starting the Installation

Insert the CTI Products MCNRCD CD-ROM. Start the installation program, Setup.exe, on the CD-ROM.

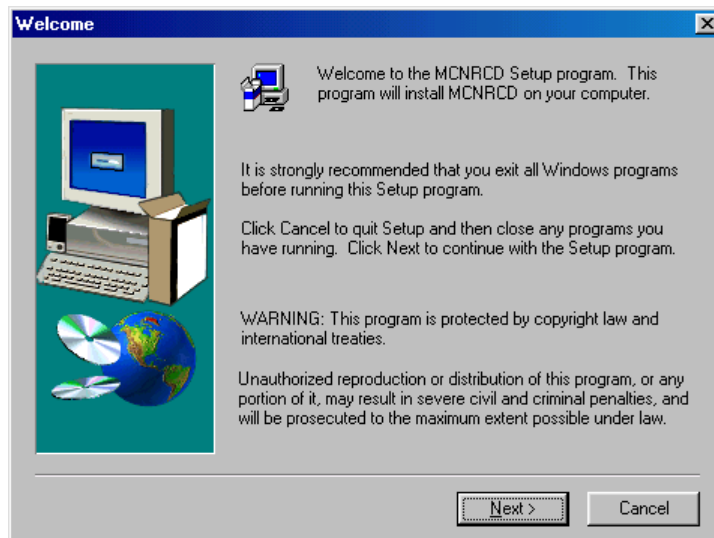
This can be started by double clicking on **Setup.exe** from Windows Explorer, or it can be started from the **Start / Run** menu on the Task Bar as shown below:



Substitute your CD-ROM drive for d:.

3.2 Welcome Screen

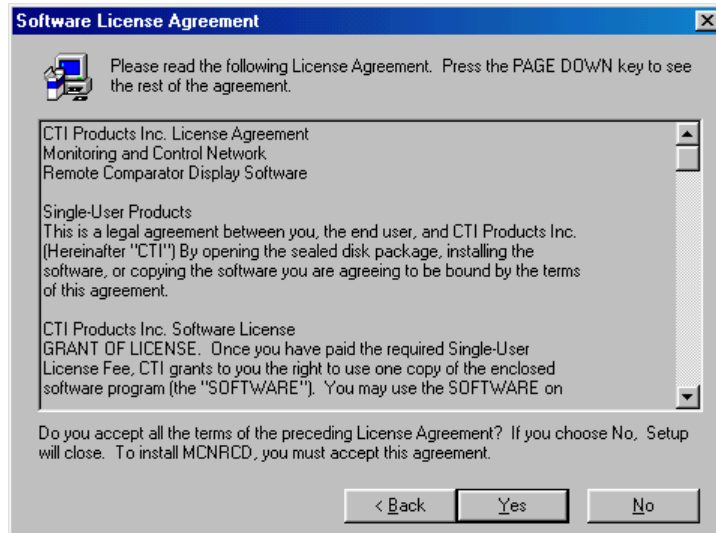
When Setup starts, it will display a splash screen and then a Welcome screen.



Click "Next" to continue.

3.3 License Screen

The License screen displays the software license for the software manufactured by CTI Products, Inc. It supercedes any of the printed licenses. Please read the license.

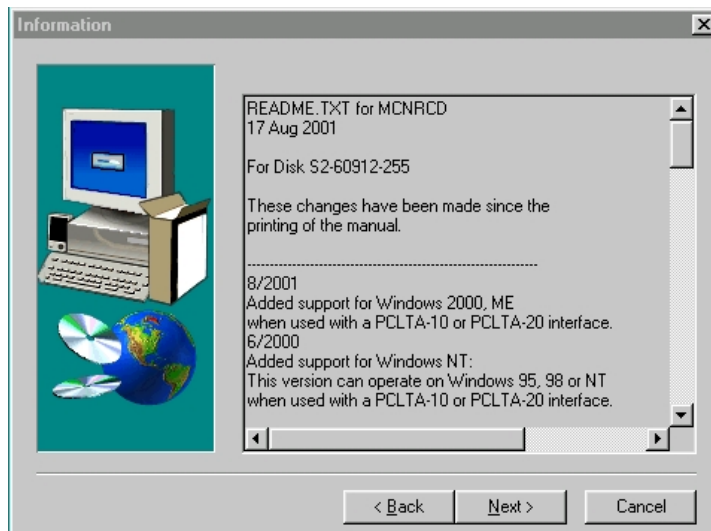


If you accept the terms of the license, click "Next" to continue.

At any time during the installation, you may click the "Back" button to return to the previous screen.

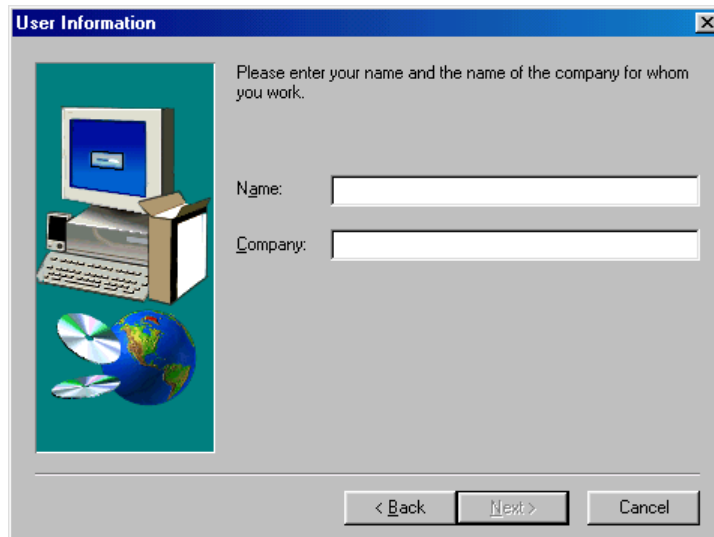
3.4 Information Screen

The Information Screen gives you the latest information for your installation. Most of the information is in this manual, but the Information Screen may contain newer information. After reading the information, click on "Next".



3.5 Registration Screen

Enter your user name and Company (or organization) name in the User Information Screen, and then click “Next” to continue.



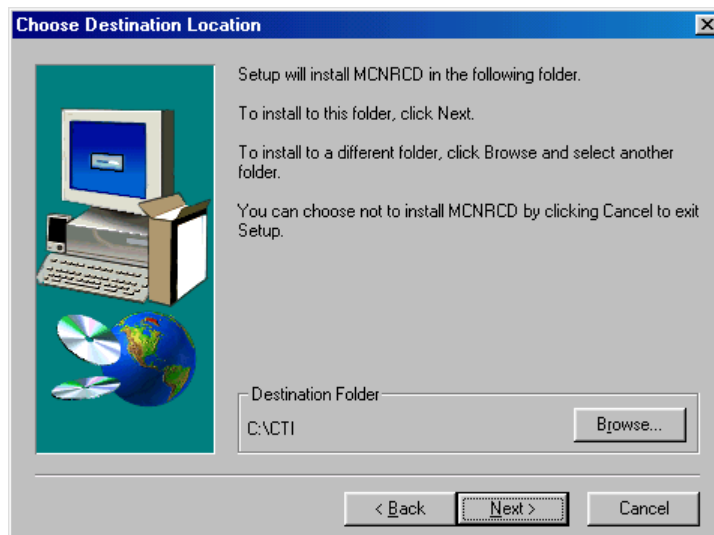
3.6 Selecting Destination Folder

This screen allows you to select which folder to install the software into.

The default program folder of "CTI". This differs from the standard 32-bit Windows standard, which would typically be:

“C:\Program Files\CTI Products\MCNRCD”.

The default is “CTI” to make the directory consistent with the software manual and the legacy versions.

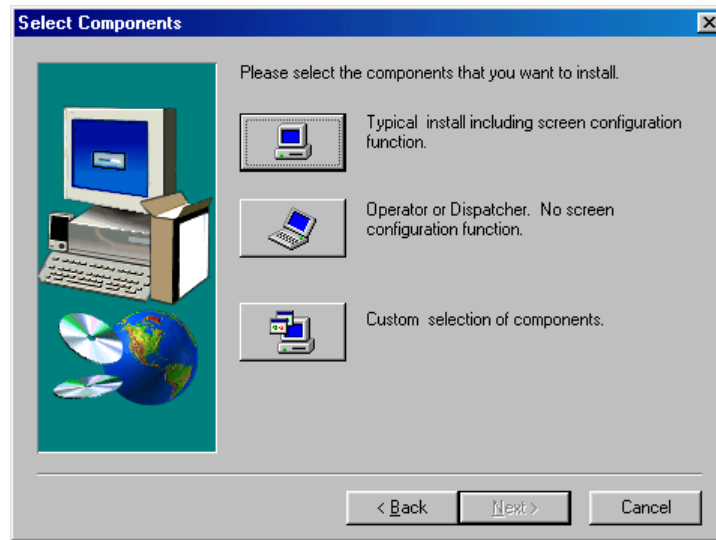


If you wish, select a different folder by using the “Browse” button. Click on “Next” when you are satisfied with your selection.

The shortcuts generated for the Start menu and the desktop program shortcut folder will automatically point to your selected folder.

3.7 Selecting Components to Install Screen

This screen lets you select the setup option you want.



The Setup Options are:

- **Typical** Used by most customers, especially for technicians. If using a PCLTA-21, see Custom option below.
- **Operator or Dispatcher** Used to limit user from configuring screens.
- **Custom** Allows you to select the software components individually. Use this if the network interface is a PCLTA-21, then de-select “Drivers for PCLTA-10 & PCLTA-20”, and choose other appropriate options on the screen that follows.

Software components available for these installation types are:

Component	Setup Type		
	Typical	Operator	Custom
MCNRCD Program Files	●	●	●
Sample Screen Files	●	●	●
MCNCFG Program Files	●		●
Support Files	●		●
PCLTA Drivers	●	●	●
Modem Files *			●
HIB Support Files *			●

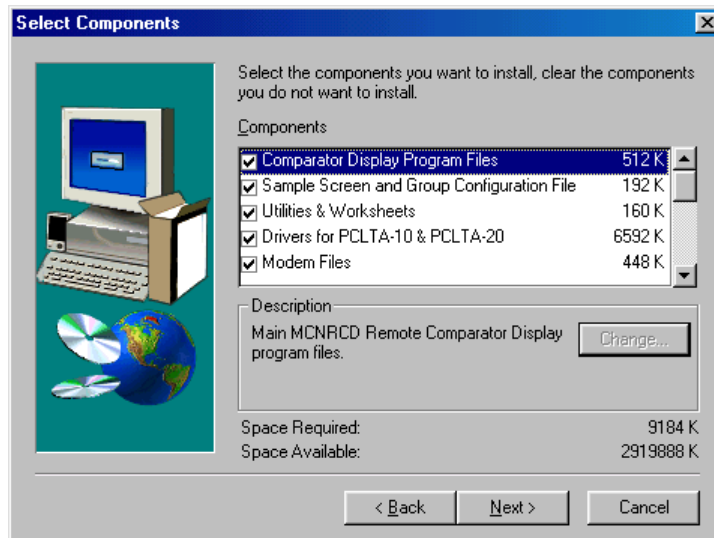
* The Modem and HIB support files are not used with PCLTAs, Windows NT, or Windows 2000. They are the latest version of the files and are included on this release for those customers who have systems with HIB modules and files.

The Operator/Dispatcher option omits the MCNCFG configuration program. This restricts the operator from making changes in the screen files.

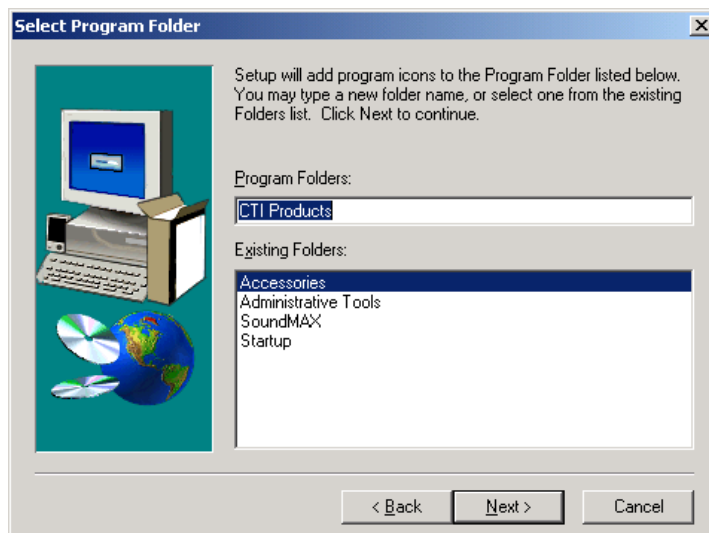
Select the appropriate option and click “Next” to continue.

3.7.1 Custom Setup Type – Selecting individual software components

If you chose “Custom in the previous step, you are then asked to select the individual software items you wish to install:



Check the appropriate boxes. (If the network interface is a PCLTA-21, do not select “Drivers for PCLTA-10 & PCLTA-20. These will be loaded from a separate CD.) Then click “Next” to continue. The “Select Program Folder” window will be displayed:

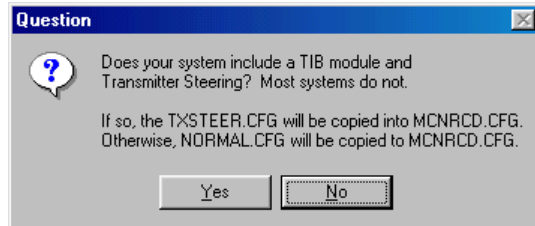


Accept the default “CTI Products” and click “Next” to continue.

3.8 Transmitter Steering Selection

Most radio systems will be used strictly with comparators or voters for enhancement of talk-in from mobiles and portables. A few systems, however, include Transmitter Steering to enhance the talk-out coverage back to the portables and mobiles. These systems would also typically have TIB modules to monitor and control the transmitter steering unit.

When Transmitter Steering is used, a special configuration file is required to add a “TX” indication to the standard “Vote”, “Rx”, “Dis”, and “Fail” indications.

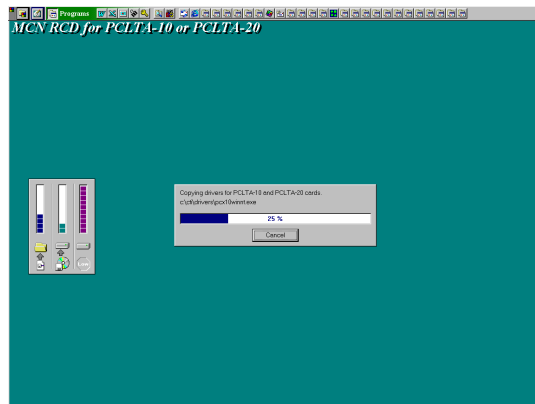


If your system does not have Transmitter Steering, answer “No” to this question.

If you do have Transmitter Steering, answer “Yes”.

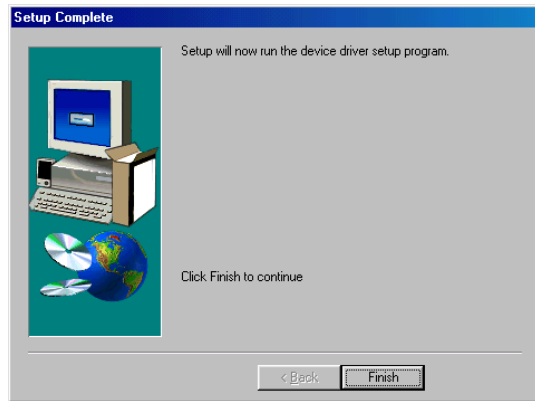
3.9 Copying Files

After you make the Transmitter Steering selection, the Setup program will start copying files from the CD-ROM to the disk and folder you have selected. A progress screen is shown during the File Copy operation.



3.10 Setup Complete Screen -- Finishing up the File Installations

After the files are copied, a “Setup Complete” screen appears.



All of the required files have been transferred to your system, and all shortcuts have been made.

As the screen indicates, the next step is to install the appropriate Device Driver for your PCLTA board and operating system.

4. PCLTA Driver Software Installation

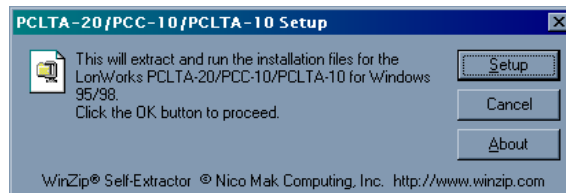
4.1 For PCLTA-10 & PCLTA-20

Next, the Setup program will start the PCLTA Setup program. It runs either of the following programs, depending upon which operating system you have:

Windows 95/98	pcx10_20Win95_98_Me_Ver1.28_C.exe
Windows NT	pcx10_20WinNT_Ver1.08_B.exe
Windows 2000	pcx10_20Win2k_Ver2.01_B.exe

If you have to re-install the drivers at a later date, they can be run from the CTI\Drivers folder (or the Drivers folder under the folder you installed the software in). They can also be found in the Drivers folder on the CD-ROM.

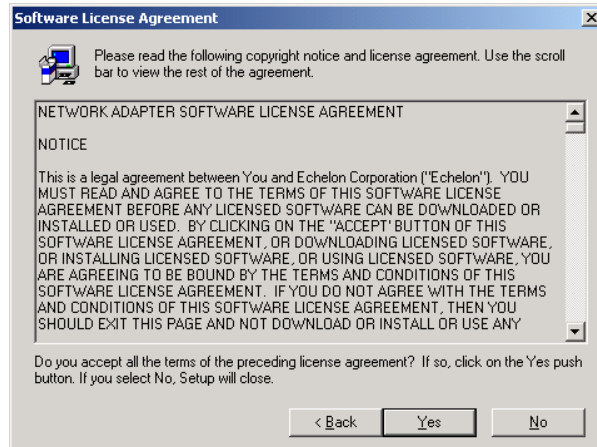
- a. The following WinZip Self-Extractor screen will appear. Click “Setup” to continue.



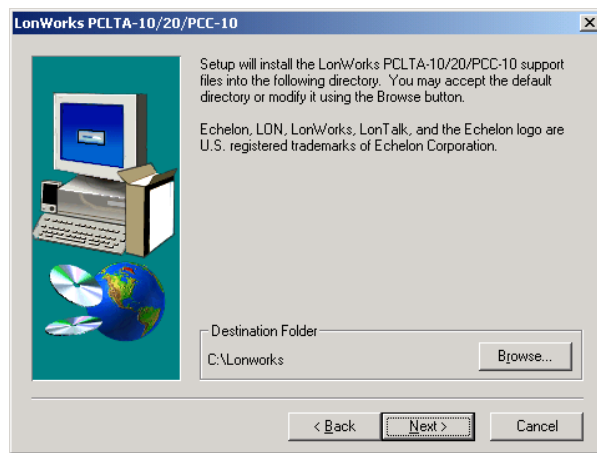
- b. When files have finished extracting, the LonWorks initial PCLTA installation screen will appear. Click “Next” to continue.



- c. After reviewing the Software License Agreement information, click “Yes” to continue.



- d. When prompted for the destination folder, select “Next” if the default directory of c:\lonworks is suitable for the PC. Otherwise, select “Browse” to specify a different directory.



- e. **(This step applies to Windows 95/98 only.)** When the 16-bit Application Support prompt appears, select “Yes” to enable the use of the 16-bit MCNRCD software with the PCLTA. This causes the installation program to add references to the DOS config.sys file for the “stub” device drivers named PCLON1 and PCLON2 as follows:

```
device=c:\lonworks\bin\ldvstub.sys /d:pcclon1  
device=c:\lonworks\bin\ldvstub.sys /d:pcclon2
```

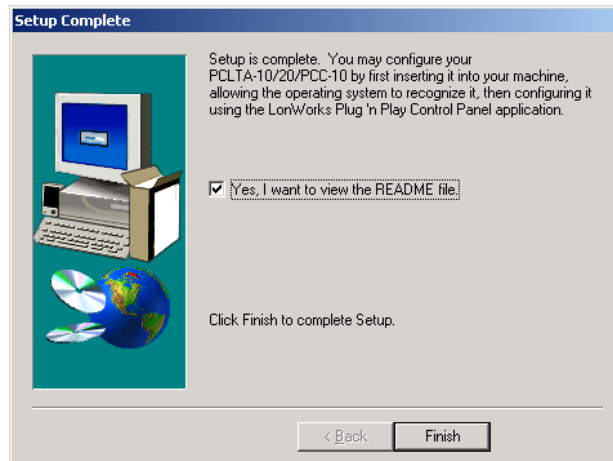
- f. When the DOS Virtual-Mode Device Driver prompt appears, select “Yes” to allow DOS applications to be used in a Windows DOS shell/window. For Windows 95/98, this causes the installation program to add the following reference to the DOS config.sys file:

```
DEVICE=C:\lonworks\bin\LDVVDD.SYS /D1
```

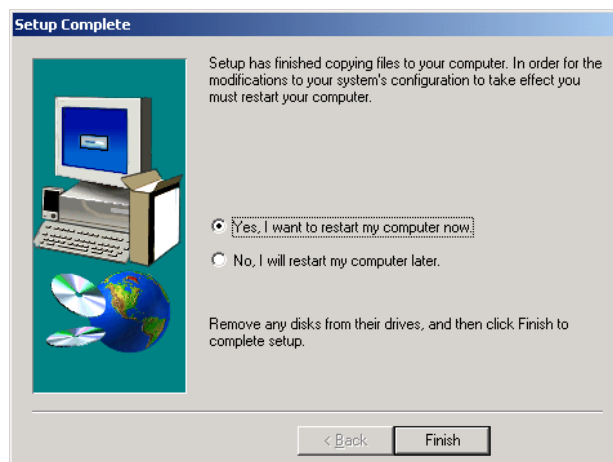

For Windows NT/2000, this causes the installation program to add the following reference to the config.nt file:

```
DEVICE= %SystemRoot% \system32\PCLTDOS.SYS /D1
```

- g. The Setup Complete window will be displayed. Click “Finish” to continue.



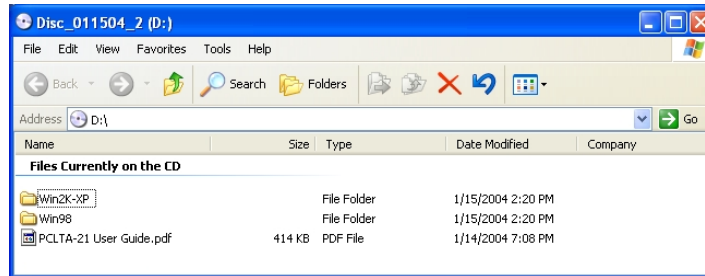
- h. The following window will provide a selection for restarting the computer. Select “NO, I will restart my computer later”, then click the “Finish” button.



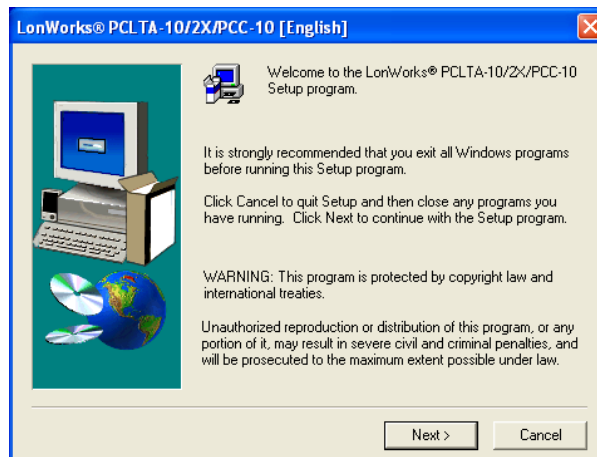
- i. Finally, power down the computer so that the PCLTA network interface card can be installed.

4.2 For PCLTA-21

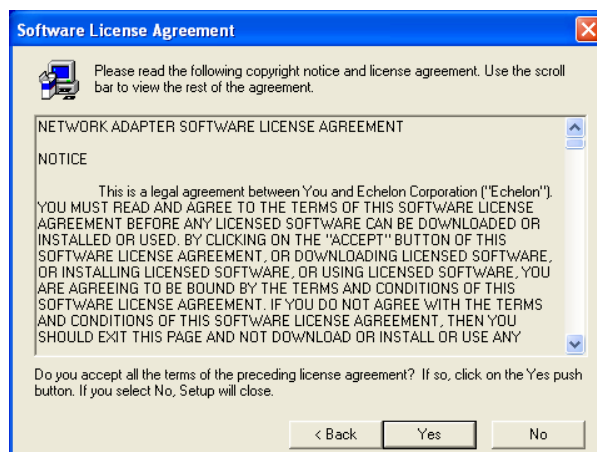
- a. Insert the PCLTA driver CD into the CDROM drive. When the CD contents folder is displayed as shown below, double-click on the appropriate operating system folder for your computer, either “Win2K-XP” or “Win98”. Then double-click on the *setup.exe* file to start the installation for PCLTA device drivers.



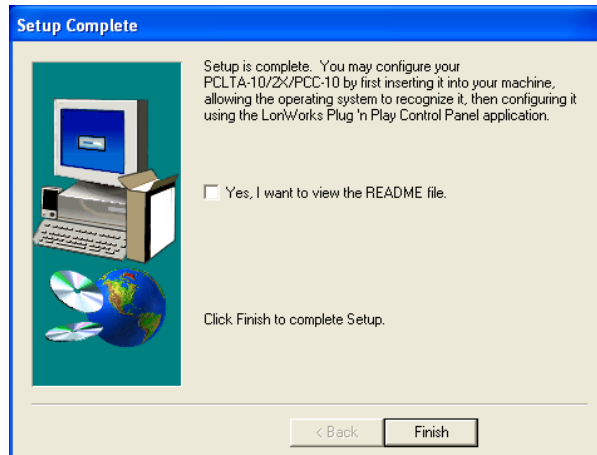
- b. The PCLTA Install welcome screen will be displayed as shown below. Before continuing, it is recommended that you exit all Windows programs. Click on the “Next” button to continue.



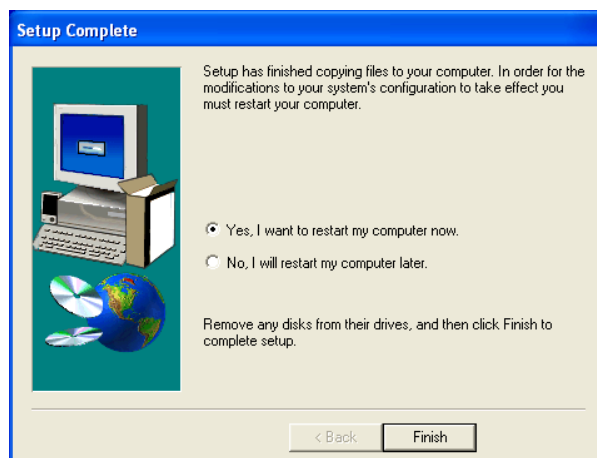
- c. The following “Software License Agreement” window will be displayed. Click the “Yes” button to accept the terms of the license agreement.



- d. The following “Setup Complete” window will be displayed. Click the “Finish” button to continue.



- e. The following window will provide a selection for restarting the computer. Select “NO, I will restart my computer later”, then click the “Finish” button.



During the PCLTA device driver installation, the following line is added to the *config.nt* file to provide a driver for DOS applications:

```
device=%SystemRoot%\system32\pcltdos.sys /D1
```

- f. Finally, power down the computer so that the PCLTA network interface card can be installed.

5. PCLTA Card Installation

The PCLTA device drivers must be installed prior to installing the card. If the drivers have not been installed, complete the previous step.

To install a PCLTA card into your PC, follow these steps:

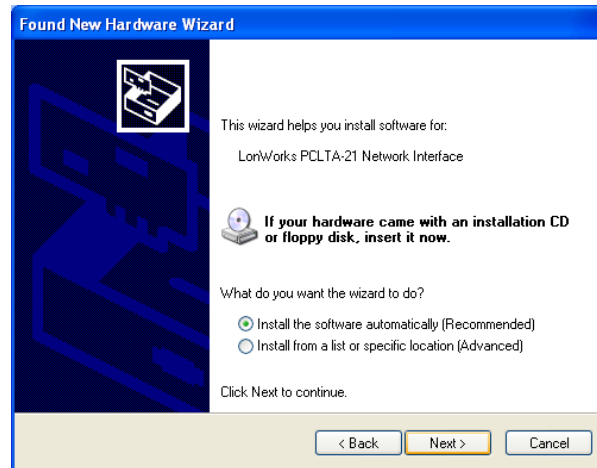
- a. Turn off the PC and remove the power cord.
- b. Open the PC case and locate an empty slot.
- c. Remove the corresponding blank panel from the rear of the PC.
- d. Insert the PCLTA card into the slot, ensuring that the edge connectors are fully mated, and the slot in the rear panel-mounting lug of the PCLTA is aligned with the threaded hole in the PC chassis.
- e. Replace the screw to hold the PCLTA firmly in place.
- f. Reinsert the power cord and then restart the PC.

On power-up, Windows will automatically sense the Plug-n-Play adapter, and associate it with the drivers installed in the previous step. In this case, skip to Section 6, “PCLTA Initialization and Testing”.

If the Plug ‘n Play features of the card *failed*, the following “Found New Hardware Wizard” window may be displayed on startup.



Select “No, not this time”, then click the “Next” button to display the following window.

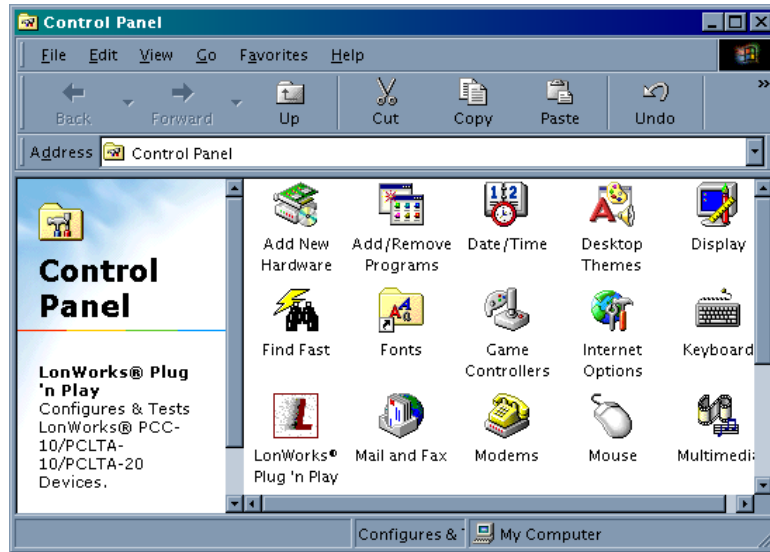


On the above window, select “Install the software automatically”, then click the “Next” button. Click on the “Next” or “Finish” buttons in the remaining windows to complete the installation.

6. PCLTA Initialization and Testing

PCLTA initialization and testing is accomplished by using “LonWorks Plug ‘n Play” utility. Open this utility using the following steps:

- a. From the Windows “Start” Menu, select “Settings”, then “Control Panel”. The control panel will be displayed similar to the following.

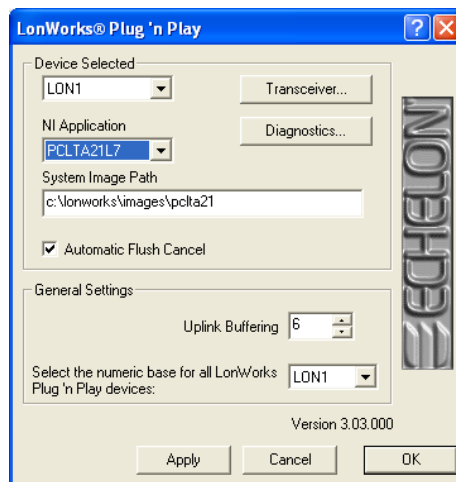


Double-click on the “LonWorks Plug ‘n Play” icon to open this utility.

Note:

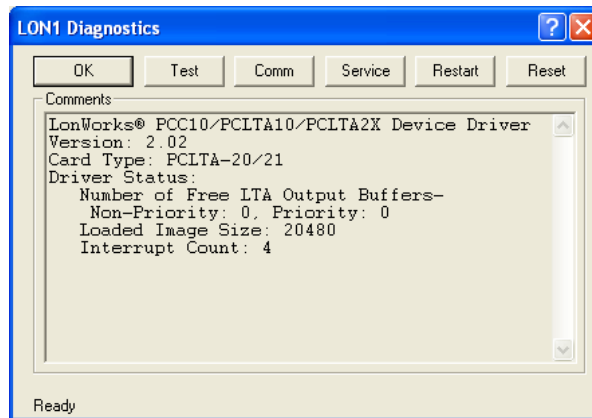
The LonWorks Plug & Play programs vary slightly depending upon what operating system you are using. The screens you see may vary slightly from what are shown in this manual. As a rule, follow the instructions on the screen and use the defaults unless otherwise directed in this manual.

The following “LonWorks Plug ‘n Play” window will be displayed.

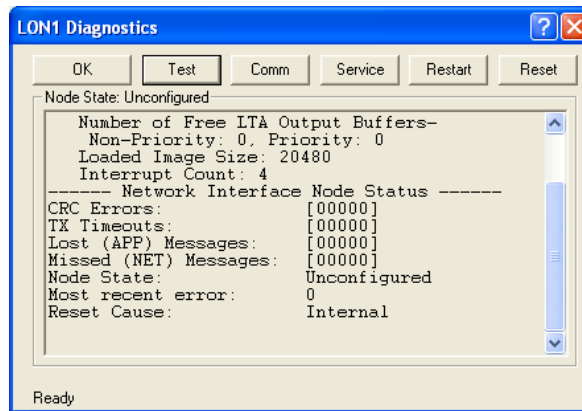


In the NI Application drop-down list, choose an image that is compatible with MCNRCD. (For all operating systems, the Image name should end with “L7”.) Then initialize the PCLTA by clicking the “Apply” button.

- b. An error will be reported if an attempt is made to view the transceiver type before the PCLTA is initialized. Testing the card with the Diagnostics button, as suggested by the error message, produces the diagnosis: “Image file not found”. In this case, return to the control panel’s main dialog box and initialize the PCLTA by clicking on the “Apply” button.
- c. Click the “Diagnostics” button, and the following diagnostics window will appear.



- d. Click the “Test” button, and the diagnostics will be updated with message statistics, indicating the PCLTA is functioning correctly.



- e. Close the Diagnostics window and also the “LonWorks Plug ‘n Play” utility window.

The preceding gives verification that the PCLTA is operating correctly as a Windows application.

Next, verify that the PCLTA is operating correctly from a DOS window/shell.

For Windows 95/98:

- a. From Windows Explorer, double-click on testsngl.bat, found on the MCN/RCD distribution CD (or on the CTI subdirectory of the hard drive). This file will execute tests on the PCLTA card and device driver to verify proper operation.
- b. The following message will be displayed at the end if everything is configured and operating properly:

```
### Device driver is properly installed and configured ###
```

If anything other than this message appears when the file completes, there is a problem with the configuration.

For Windows NT/2000/XP:

- a. Open the "CTI Products" folder from the desktop.
- b. Double-click the "PCLTA Diagnostic" icon to begin the test.

7. System Considerations

7.1 Network Cabling

The PCLTA card is different from all other MCN modules in that it does not have an RJ-45 connector for the network cable to plug into. Instead, the card has a two-pin connector. An adapter cable, shown in Figure 4, must be installed to connect the PCLTA's two-pin connector with the MCN network cable.



Figure 4 - PCLTA Network Adapter Cable

The RJ-45 connector for the MCN network connection is located on the side of the adapter block. There are two types of adapter blocks available for the MCN system. These adapters are the 'TP/XF 1250' and the 'T' Adapter Blocks.

7.1.1 TP/XF 1250 Terminator Adapter Block

The first type of adapter block, part number S2-60605, has one RJ-45 connector, as shown in Figure 5. The adapter block has an internal termination network for the TP/XF 1250 network.

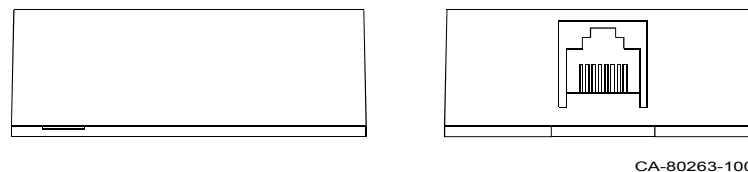


Figure 5 - TP/XF 1250 Terminator Adapter Side Views

Note: The TP/XF 1250 adapter is only be used in MCN systems that are custom designed by CTI Products, Inc. If your system is a standard system that was not custom designed (a custom designed system includes network router modules), then you will not use this adapter.

7.1.2 'T' Adapter Block

The second type of adapter block, part number S2-60617, has two RJ-45 connectors, as shown in Figure 6. This adapter block provides a network 'T' connection so that the PCLTA card can be installed in the middle of an MCN network; the MCN network can be passed on to other modules. This 'T' adapter can be used in either TP/XF 1250 or TP/FT 10 networks.

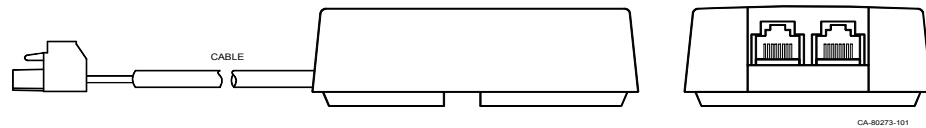


Figure 6 - 'T' Adapter Side Views

7.2 Setting the MCN Module Address

The PCLTA card does not have the standard MCN module rotary switches for setting the module's unit address (*remember that all MCN modules must have a unique unit address*). To set the unit address of the PCLTA card, you must use the **Edit PCLTA / HIB Address** command in MCNCFG.EXE to program the unit address of the PCLTA card into your screen file. See the *Monitoring and Control Network Remote Comparator Display Software* manual, reference 2, for more information about the MCNCFG.EXE program.

7.3 Using Multiple CONFIG.SYS And AUTOEXEC.BAT Files

The default program interface files (PIF) used by Windows 95/98 to run MS DOS applications are CONFIG.SYS and AUTOEXEC.BAT. You can make modified versions of CONFIG.SYS & AUTOEXEC.BAT under different names to run with different DOS applications. For example, save the modified version of CONFIG.SYS as MCNRCD.SYS or PCLTA.SYS.

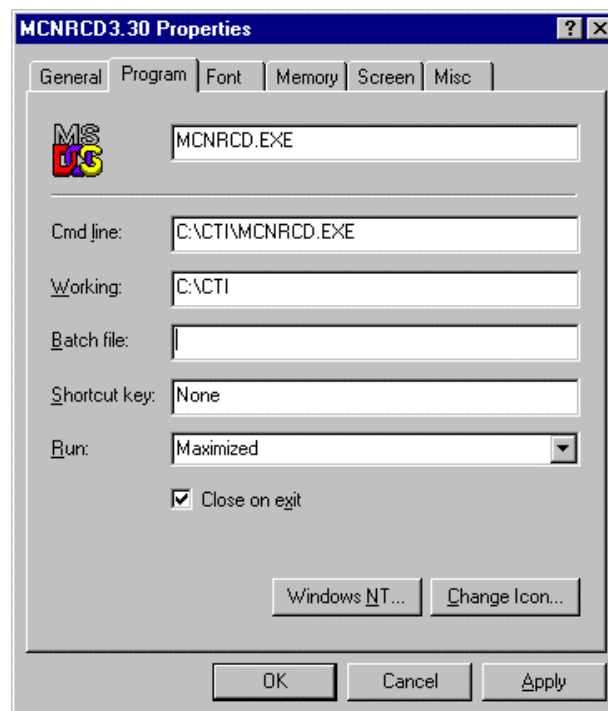
The default program interface files (PIF) used by Windows NT/2000/XP to run MS DOS applications are CONFIG.NT and AUTOEXEC.NT. You can make modified versions of CONFIG.NT & AUTOEXEC.NT under different names to run with different DOS applications. For example, save the modified version of CONFIG.NT as MCNRCD.NT or PCLTA.NT.

7.4 Program Shortcut Icons

The Setup program will make program shortcuts. They are made in the CTI Products folder and on the Start Programs menu under CTI Products.

If you need to make additional shortcuts for different MS-DOS programs, you can do the following:

Create (or copy and modify) a **program 'shortcut' icon** for **MCNRCD.EXE** by using Windows Explorer. This is done in order to assign the CONFIG.SYS and AUTOEXEC.BAT files (CONFIG.NT and AUTOEXEC.NT for Windows NT) to the MCNRCD.EXE program. Set the correct path and command line for your MCNRCD system. You may also enter a batch file to run MCNRCD. An *example* MCNRCD program interface file is shown below.

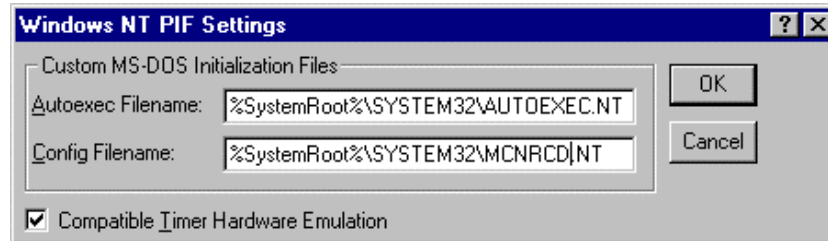


After entering the correct path and command lines, click on the **Windows NT** button to assign the CONFIG.NT (or MCNRCD.NT) and AUTOEXEC.NT files to this program.

Enter the **name of configuration** file that contains the line:

```
DEVICE= %SystemRoot% \system32\PCLTDOS.SYS /D1.
```

Enter this on the second line denoted by *Config Filename*: as shown below. Click the **OK** button when you are finished.



Note: for this example, a configuration file named: MCNRCD.NT was created by copying the original CONFIG.NT file and adding the extra line for the PCLTA device driver. The installing technician may use any filename as long as that file contains the PCLTA device driver entry.

You can make a **MCNCFG.EXE program 'shortcut' Icon** similar to the MCNRCD.EXE Icon previously mentioned. The MCNCFG.EXE program properties does not require any changes to the standard Windows NT settings, since it does not use the PCLTA drivers..

Installation and Setup of the MCNRCD.EXE program and the PCLTA card are for Windows NT/2000/XP Workstation are now completed.

Please refer to your MCN RCD and PCLTA manuals to run the MCN RCD system software.

If you have difficulties with the PCLTA device driver not loading, see Section 9, Troubleshooting.

7.5 MCNRCD Relay Outputs

Relay outputs are not supported on Windows 95, 98, NT, 2000, or XP.

8. PCLTA Device Driver Removal Procedure

8.1 Windows 95/98

To remove the PCLTA Device Driver, use the Uninstall control panel as follows:

- a. Choose the Add/Remove Programs icon from the Control Panel folder.
- b. Select “LonWorks PCLTA” from the list under the Install/Uninstall tab.
- c. Click the “Add/Remove” button.
- d. Confirm file deletion at the prompt. Most of the PCLTA software will be removed automatically.
- e. If necessary, edit the CONFIG.SYS file to remove any reference to the stub driver.

8.2 Windows XP/NT/2000

To remove the PCLTA Device Driver, use the Uninstall control panel as follows:

- a. Choose the Add/Remove Programs icon from the Control Panel folder.
- b. Select “LonWorks PCLTA” from the list under the Install/Uninstall tab.
- c. Click the “Add/Remove” button.
- d. Confirm file deletion at the prompt. Most of the PCLTA software will be removed automatically.
- e. If necessary, edit the CONFIG.NT file to remove any reference to the PCLTASDOS.SYS driver.

9. Troubleshooting

As a “plug and play” type device, the PCLTA adapters should operate as desired following completion of the installation process. If the adapter does not function correctly, the most likely causes are system resource constraints or software incompatibilities. These problems are described in detail in the following sections.

9.1 Installing the PCLTA Adapter Before the Device Driver

If the PCLTA adapter was inserted into the PC prior to the PCLTA device driver installation, the Windows operating system will be unable to associate a device driver with the adapter. When Windows starts up, a “New Hardware Found” window will appear. Click the Cancel button, then install the PCLTA device driver as described above in Section 4, PCLTA Driver Software Installation.

If the option “Do not install a driver (Windows will not prompt you again)” was inadvertently selected, the operating system will mark the PCLTA adapter as an unknown device. As a result, the adapter will not function even if the PCLTA device driver is installed. To correct this problem, “remove” the device using the following steps:

- a. Open the System control panel and select the tab labeled “Device Manager”.
- b. Double-click the “Other devices” icon.
- c. Select “PCLTA” device and click the **Remove** button.
- d. Install the PCLTA device driver as described in Section 4, PCLTA Driver Software Installation.

9.2 System Resources

A PCLTA-10 adapter requires four contiguous bytes of I/O address space starting on a modulo-4 based address (i.e., an address evenly divisible by 4). A PCLTA-20 and 21 adapters require sixteen contiguous bytes of I/O address space. A dedicated interrupt request is also required for each.

9.2.1 Solving IRQ and I/O Conflicts under Windows 95/98

I/O resource problems are rare under Windows for the PCLTA-10 and PCLTA-20 adapters since they can handle a wide range of I/O settings. However, IRQ resource problems may occur more often in “multimedia” computers, which may have very few spare IRQs. The Windows operating system handles most allocations of IRQs, but there are some instances where the operating system cannot properly allocate interrupt requests.

When the Windows Device Manager does not locate a free IRQ for a newly inserted PCLTA adapter, it will not assign an IRQ to the adapter. As a result, there may be not indication to the user that a problem has occurred, since no true

resource “conflict” has occurred. This is a consequence of the PCLTA adapter’s ability to be assigned any of the system’s 16 IRQs.

IRQ usage in the system can be determined by opening the System icon in the Control Panel window. The tab labeled “Device Manager” allows viewing of devices by type or connection.

The PCLTA LonWorks Network Interface device icon is found under the “LonWorks Interface” device *type*. If there is a problem with the adapter, there will be a red circle with an exclamation point next to its icon.

IRQ resource problems may generally be resolved by disabling another device in the system. More information can be found in the Hardware Conflict troubleshooting portion of the Windows operating system on-line Help file.

Access the hardware conflict troubleshooter through the procedure outlined below:

- a. Open the Windows operating system on-line help by clicking the Windows Start button and selecting “Help”.
- b. In the Help Topics window, choose the Contents tab, or from another Help window, choose the Contents button.
- c. Double click the Troubleshooting topic, and then select the help topic, “If You Have A Hardware Conflict.”

Extensive troubleshooting documentation can be found in the Microsoft Windows 95/98 Resource Kit Help File. This help file is part of the Windows 95/98 Resource Kit, which is available from Microsoft.

If a DOS real-mode driver is in use for a specific device that is installed in the PC, Windows 95/98 may not know about that device’s resource requirements. Unlike Windows driver conflicts, this problem is difficult to diagnose.

There are rare I/O conflict situations of which the Device Manager may be unaware. Such a conflict may occur when an I/O resource is not properly specified for a device, and a new driver overlays onto the true I/O space of that device. In the event of such a conflict, it may become necessary to manually reserve I/O or IRQ resources using the Device Manager. This process is described in the Window 95/98 on-line Help.

Once these resources have been reserved, the Device Manager will recognize and attempt to resolve any resource conflicts between the DOS driver and any Windows drivers. If a conflict still occurs, it will be “visible”, and may be resolved as described earlier in this section.

9.2.2 Common Resource Problems under Windows 95/98

The following situations produce an additional drain on system resources that may be hard to manage. Conflicts arising from these situations can generally be resolved by selectively disabling devices to free up the required resources.

- COM ports that may not have a connector, but are consuming resources and cannot be disabled through the BIOS
- Unused IDE controllers that can not be disabled through the BIOS
- Unused/nonexistent PS/2 mouse ports
- Sound cards that support both 8-bit and 16-bit compatibility modes, consuming two IRQs

An additional problem often associated with sound cards in the improper reporting of I/O resource usage. This problem may be recognized by examining a device's I/O address allocation for unusual one-byte assignments (since devices typically use more). For example, if a device's stated I/O range is 0x201-0x201 but its actual range is 0x201-0x204, a conflict will occur if the PCLTA adapter is assigned an I/O range of 0x204-0x207. If this problem is suspected, manually move the PCLTA adapter's I/O range to a safer location to prevent I/O overlap.

9.2.3 Solving Conflicts under Windows XP/NT/2000

The device driver PNPLON.SYS implements the Plug n' Play card isolation algorithm in order to locate PCLTA cards. Since the PCLTA adapters are completely Plug n' Play compatible, the system BIOS will determine a useable I/O port and IRQ setting. There is no user-configurable resources setting from the Windows NT operating system.

Usually system I/O port resources are managed correctly. Often the IRQ resources are not. The most typical IRQ problems arise from the systems that use a SCSI controller to interface to all drive media. In these machines the IDE controllers are not used, but are still controlling IRQs 14 and 15. The NT OS does not know this and considers these valid, usable IRQs. Usually this problem can be solved by entering the BIOS setup and assuring that both the IDE controllers are disabled and that all IRQs not used by motherboard hardware are available to the ISA bus. From within the NT OS you can check to see what the operating system believes to be used IRQ resources by starting the "Windows NT Diagnostics" application under "Administrative Tools". IRQ resources that are considered "in use" are listed here.

10. Model Numbers and Specifications

Part Number	Description
S1-60857	MCN RCD Software w/PCLTA Module 78Kb PCI Internal Card for PC
S1-60858	MCN RCD Software w/PCLTA Module 1.25Mb PCI Internal Card for PC

- 78Kb units are for standard systems. 1.25 Mb are for custom-engineered systems.
- Since the PCLTA card has a direct network connection, it does not support dial-up control of a remote system.
- Dial-up monitoring and control can be done with the MCN Remote Comparator Display software, a HIB module, and a modem.
- HIB modules and PCLTA modules can be mixed in one system.

General Specifications

	ISA Version	PCI Version
PC Interface:	16 Bit ISA	32 Bit PCI
Size (HxL) in	2.45x 6.10	3.87 x 5.20
cm	6.22 x 15.5	9.8 x 13.2
PC Bracket	Full Height	
Address Bytes Required	4	16
Starting Address	Modulo 4	Modulo 4
IRQs Required	1. Can use IRQ1-16.	
Configuration	Software, PnP	
Power Required	5V @250 mA, typical	
Temperature	0-70 °C	
Humidity	25 - 90% @ 50 °C non-condensing	
MCN Network Data Rates	78K or 1.25Mb (1250K), depending upon model	
Network Connector	(1) screw terminal block (2 conductor)	
Max. network segment length	4000 ft. (1200 m) (78Kb); 1500 ft. (450 m) (1.25Mb)	
Max PCLTA modules per network segment:	64 (Larger, multi-segment systems can be configured.)	
PC Operating System Support (Software runs in a DOS window)	Windows 95 / 98, Windows NT (version 4.0 or higher), XP, 2000	
Network Cabling	Category 5 UTP	
Safety Approvals to:	UL 1950, CSA 1950, EN60950-1992 (CE)	
Emissions Compliance:	FCC part 15, Class A, (complies with Class B) EN55022, Class B	
Software Media	CD-ROM	