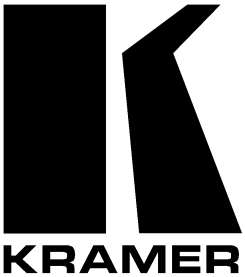
Kramer Electronics, Ltd.



USER MANUAL

Model:

FC-3ETH

Ethernet Controller

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1 Introduction

Welcome to Kramer Electronics (since 1981): a world of unique, creative and affordable solutions to the infinite range of problems that confront the video, audio and presentation professional on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better! Our 350-plus different models now appear in 8 Groups[1], which are clearly defined by function.

Congratulations on purchasing your Kramer Pico TOOLS **FC-3ETH** *Ethernet Controller*, which is ideal for use with Ethernet / RS-232 interface. The package includes the following items:

- **FC-3ETH** *Ethernet Controller*
- Power adapter (12V DC Input)
- Windows®-based Configuration Manager XPort software and Com Port Redirector
- Null-modem adapter
- This user manual[2]

2 Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment
- Review the contents of this user manual
- Use Kramer high performance high resolution cables[3]

3 Overview

The high performance **FC-3ETH** *Ethernet Controller* is an easy-to-use, matchbox size, bi-directional hardware and software interface system for controlling Kramer (and also non-Kramer) RS-232 controllable machines via Ethernet LAN, as well as via the Internet.

1 GROUP 1: Distribution Amplifiers; GROUP 2: Video and Audio Switchers, Matrix Switchers and Controllers; GROUP 3: Video, Audio, VGA/XGA Processors; GROUP 4: Interfaces and Sync Processors; GROUP 5: Twisted Pair Interfaces; GROUP 6: Accessories and Rack Adapters; GROUP 7: Scan Converters and Scalers; and GROUP 8: Cables and Connectors

2 Download up-to-date Kramer user manuals from our Web site at http://www.kramerelectronics.com

3 The complete list of Kramer cables is on our Web site at http://www.kramerelectronics.com

In particular, the **FC-3ETH**:

- Offers network connectivity that lets you connect a Kramer (or other) device via its RS-232 port to the Ethernet LAN network
- Lets you control an RS-232 device via Ethernet, from a PC (set to Passive routing mode) or other protocol compatible remote controller[1]
- Includes Windows®-based Configuration XPort software for network programming
- Supports easy dial-up and Internet system remote control (requiring only a dedicated IP address and a modem in the remote location) whether it is a stand-alone PC or a LAN system
- Supports wireless (802.11b) based LAN systems
- Has the capability to facilitate a built-in Web page server

The **FC-3ETH** includes the COM Port Redirector Driver for compatibility with applications based on COM-port communication. The COM Port Redirector:

- Makes the **FC-3ETH** compatible with all Windows®-based applications which work through an actual COM port. This includes all versions of K-Router and other Kramer control applications. It lets you operate all RS-232 controllable devices via Ethernet LAN using their existing PC software
- Operates like a hardware port, that is, a logical COM port that behaves like a standard (hardware) COM port but in reality transparently reroutes the data using the TCP/IP network to the **FC-3ETH** interface via a Virtual Null-modem connection, which you can emulate over the Ethernet or Internet
- Can be created in any quantity on your PC and does not occupy an actual serial port

3.1 Terminology Used in this User Manual

Table 1 defines some terms that are used in this user manual.

Table 1: Terminology Used in this User Manual

Term	Definition
802.3	The standard specification for ETHERNET that is maintained by the Institute of Electrical and Electronics Engineers (IEEE).
Dynamic Host Configuration Protocol (DHCP)	Allows the network administrator to distribute IP addresses from a central point and automatically send a new IP address when an Ethernet point is plugged into a different network location.

1 When setting two FC-3ETH units in the Active routing mode (Figure 17)

Term	Definition
Gateway	A network position serving as an entry to another network. On the Internet, a node or stopping point can be either a gateway node or a host (end-point) node.
IP Address	A 32-binary digit number that identifies each sender or receiver (within a network via a particular server or workstation) of data (HTML pages or e-mails) that is sent in packets across the Internet. Every device connected to an IP network must have a unique IP address. This address is used to reference the specific unit.
Local Area Network (LAN)	Computers sharing a common communications line or wireless link, which often share a server within a defined geographic area.
Media Access Control (MAC) Address	A computer's unique hardware number (or address) in a LAN or other network. On an Ethernet LAN, the (MAC) address is identical to the Ethernet address.
Transmission Control Protocol/Internet Protocol (TCP/IP)	The basic communication language or protocol of the Internet that breaks the message into appropriately sized packets for the network, and can be used as a communications protocol in an intranet or an extranet.

3.2 Achieving the Best Performance

Achieving the best performance means:

- Connecting only good quality connection cables, thus avoiding interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables)
- Avoiding interference from neighboring electrical appliances and positioning your **FC-3ETH** away from moisture, excessive sunlight and dust

4 Your FC-3ETH Ethernet Controller

Figure 1 illustrates the **FC-3ETH** *Ethernet Controller*. Table 2 defines the **FC-3ETH** *Ethernet Controller* functions.

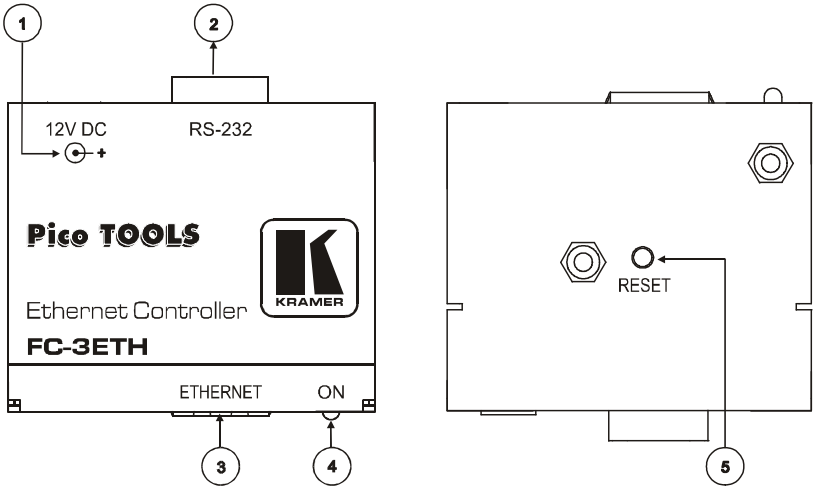

Figure 1: FC-3ETH Ethernet Controller

Table 2: FC-3ETH Ethernet Controller Functions

#	Feature	Function
1	12V DC	+12V DC connector for powering the unit
2	RS-232 port	Connects to the RS-232 DB 9 port on a Kramer (or other) device or PC
3	ETHERNET port	Connects to your LAN
4	ON LED	Illuminates when receiving power
5	RESET Button	General reset

5 FC-3ETH Configuration

The following sections describe how to install and run the XPort configuration software, and how to configure the **FC-3ETH**.

5.1 Installing and Running the XPort Configuration Software

It is important to consider the following points before logging into and configuring the **FC-3ETH**:

- The **FC-3ETH** IP address must be configured before a network connection is available
- Only one person at a time may be logged into the network port. This eliminates the possibility of several people simultaneously attempting to configure the Device Server
- Network port logins can be disabled. The system manager will not be able to access the unit. This port can also be password protected

5.2 Install XPort™ Installer

To install the XPort™ Installer, do the following:

1. Insert the product CD into your CD-ROM drive.
2. Run the XPort installer setup.
3. Respond to the installation wizard prompts.
4. Restart your system.

5.3 Run XPort™ Installer

Click the **Start** button on the Task Bar and select **Programs\XPort Installer\XPort Installer**. The XPort™ Installer main dialog box displays (Figure 2).

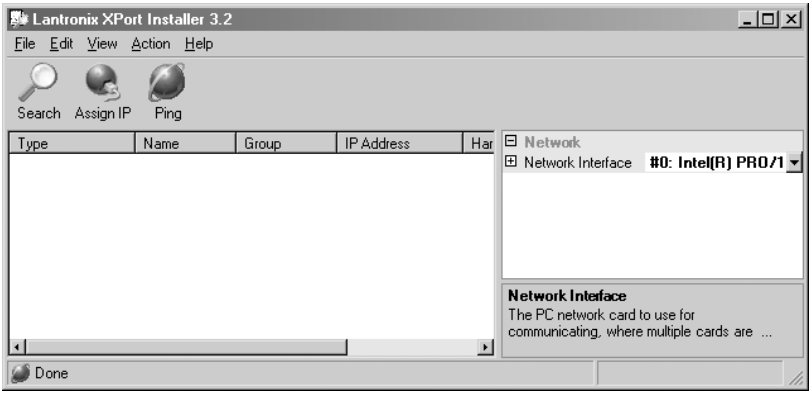

Figure 2: XPort™ Installer Main Dialog Box

To search for devices, click the **Search** icon or select **Search Network** from the Action menu.

5.3.1 Assign IP Address

Figure 3 shows a device found on the network, with the IP addresses assigned at the factory. The Hardware Address is an individual permanent address assigned to a particular device on the network. The Hardware Address can be found on the product label inside the unit.

Note: Click on a device to view its attributes.

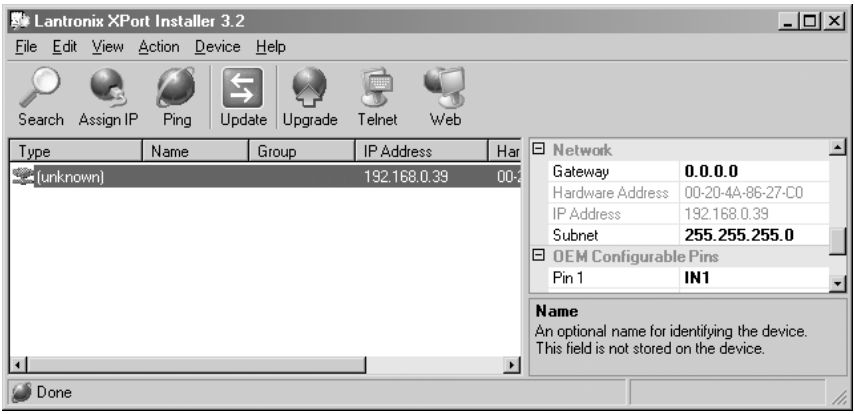

Figure 3: Device Found on the Network

To change the IP address, first select the device from the list, then click the **Assign IP** icon or select **Assign IP Address** from the Action menu. The hardware address and IP address are loaded into the Assign IP Address dialog box (Figure 4).

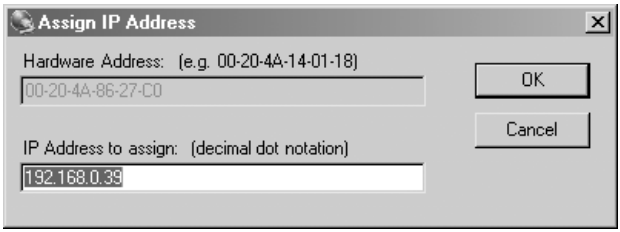

Figure 4: IP Address Assignment Dialog Box

Enter the new IP Address and click **OK**. The new IP Address will appear in the main window.

5.3.2 Test the IP Address

To test the IP Address, do as follows:

1. Select the device from the main window list.
2. Click the **Ping** icon or select **Ping** from the Action menu. The Ping Device dialog box shows the IP Address of the selected device.
3. Click the **Ping** button and the results will be displayed in the Status window. Use the **Clear Status** button to clear the window so you can Ping the device again.
4. Click the **Close** button to close the dialog box and return to the main window.

Note: If you do not receive "Reply" messages, make sure the unit is properly attached to the network and that the IP address assigned is valid for the particular network segment you are working with. If you are not sure, check with your Systems Administrator.

5.4 Configuring the FC-3ETH

You must configure the **FC-3ETH** so that it can communicate on a network with your serial device. For example, you must set the way the unit will respond to serial and network traffic, how it will handle serial packets, and when to start or close a connection. You can configure your unit locally or remotely using the following procedures:

- Use the XPort™ Installer to configure the unit. Some features are only available through the XPort™ Installer menus
- Use a standard Web browser to access the unit's internal Web pages and configure the unit over the network (see section 5.5)
  This is the easiest and preferred method
- Make sure that the Java™ 2 Runtime Environment (Standard Edition Version 1.4.1) software is installed on your PC. If not, download it from: http://java.sun.com

The unit's configuration is stored in non-volatile memory and is retained without power. You can change the configuration at any time. The unit performs a reset after the configuration has been changed and stored.

5.5 Web Manager Page

To configure the **FC-3ETH** via a Web browser, first click one of the devices listed in the window, and then click the **Web** icon. The Web-Manager window now displays in your browser.

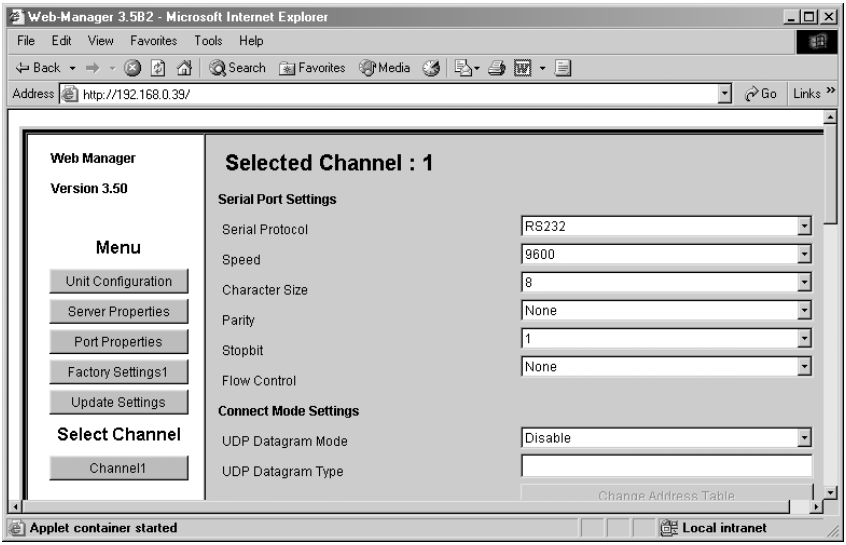

Figure 5: FC-3ETH Web-Manager

Table 3 describes the Web Manager window buttons.

Table 3: Web Manager Window Buttons

Button	Function
Unit Configuration	Press to enter the Server Configuration and the Port Configuration settings (section 5.5.1)
Server Properties	Press to enter the Server Properties and change the server properties by editing any of the fields (section 5.5.2)
Port Properties	Press to enter the Port Properties and modify them
Factory Settings1	Press to set to factory default settings
Update Settings	Press to update settings
Channel 1	Disabled

When in the Web Manager window:

1. Use the menu buttons to navigate to sub pages where you can configure server settings. See explanations of the configuration parameters in the following sections.
2. When you are finished, click the **Update Settings** button to save your settings.

5.5.1 Unit Configuration Button

Click the **Unit Configuration** button to display the following dialog box (Figure 6). This page contains the Server Configuration and the Port Configuration settings. These are static settings read from the device.

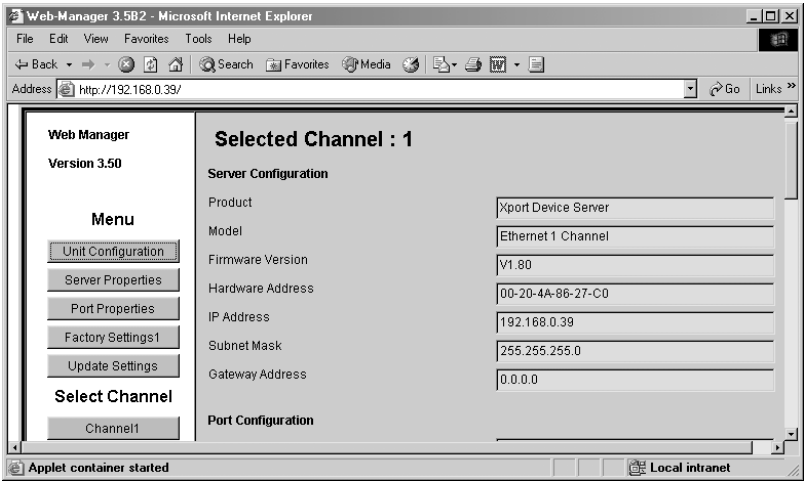

Figure 6: Server Configuration in Unit Configuration Window

Figure 6 and Figure 7 show the information available in the Unit Configuration window.

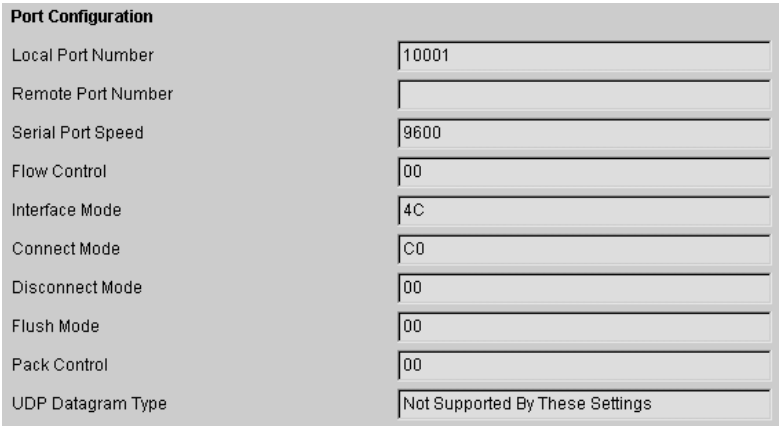

Figure 7: Port Configuration in Unit Configuration Window

5.5.2 Server Properties Button

Click the **Server Properties** button to display the following dialog box (Figure 8).

You can change the server properties by editing any of the fields. Hold the cursor over one of the fields to display Help messages.

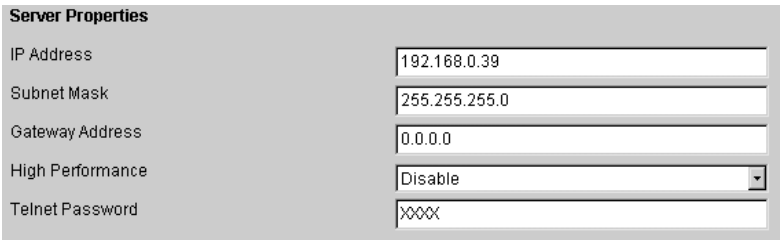

Figure 8: Server Properties in Unit Configuration Window

- Changing the IP address will require you to enter the new IP address in the browser to reload the page
- In the Telnet Password field, enter a password to prevent unauthorized access to the Setup Mode via a Telnet connection to port 9999. The password is limited to 4 characters. (An enhanced password setting of 16 characters is available under Security Settings on the Telnet Setup Mode window)

5.5.3 Port Properties Button

Click the **Port Properties** button to display the following dialog boxes. You can change the server properties by selecting the desired properties from the drop down list.

Figure 9 and Table 4 define the Serial Port Settings window.

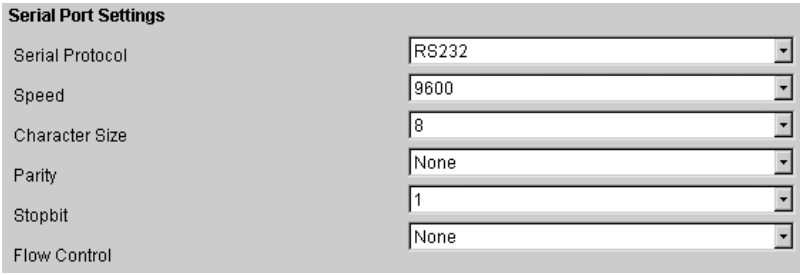

Figure 9: Serial Port Settings Window

Table 4: Serial Port Settings Window Available Options

Feature	Function
Serial Protocol	RS232
Speed	300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 230400
Character Size	8, 7
Parity	None, Even, Odd
Stop Bit	1, 2
Flow Control	None, XON/XOFF, XON/XOFF Pass Characters to Host, CTS/RTS (Hardware)

Figure 10 and Table 5 define the Connect Mode Settings window.

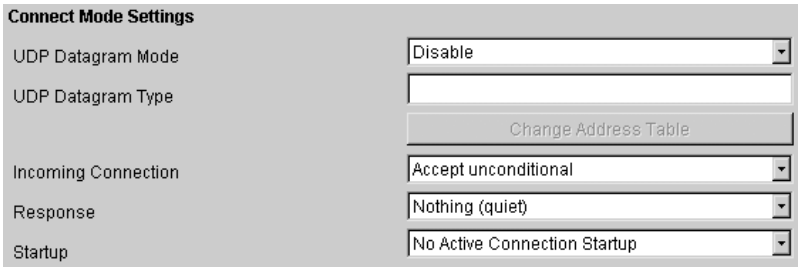

Figure 10: Connect Mode Settings Window

Table 5: Connect Mode Settings Available Options

Feature	Function
UDP Datagram Mode	Enable, Disable
UDP Datagram Type	(User selectable)
Incoming Connection	Accept unconditional, Accept Incoming/DTR, Never accept
Incoming Response	Nothing (quiet), Character Response
Startup	No Active Connection startup, With Any Character, With CR (0x0D) Only, Manual Connection, Autostart, Modem Mode, With Active DTR

Figure 11 and Table 6 define the Dedicated Connection window.

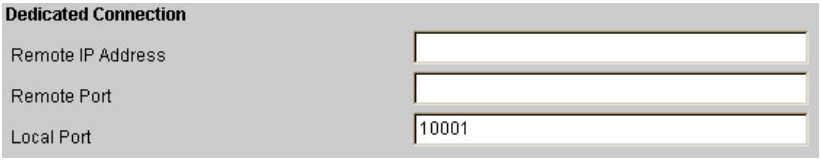

Figure 11: Dedicated Connection Window

Table 6: Dedicated Connection Window Functions

Feature	Function
Remote IP Address	(User selectable)
Remote Port	(User selectable)
Local Port	10001 (default 10001, user selectable)

Figure 12 and Table 7 define the Flush Mode Input Buffer window.

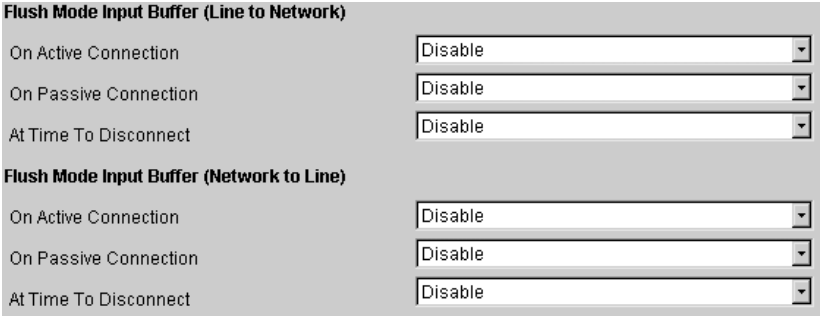

Figure 12: Flush Mode Input Buffer Window

Table 7: Flush Mode Input Buffer Window Available Options

Feature	Function
On Active Connection	Enable, Disable
On Passive Connection	Enable, Disable
At Time To Disconnect	Enable, Disable

Figure 13 and Table 8 define the Packing Algorithm window.

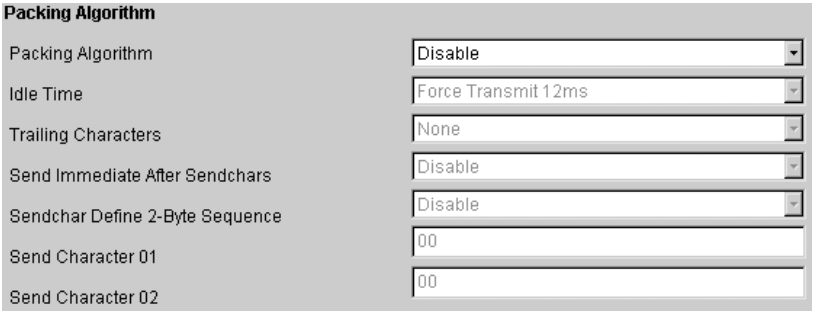

Figure 13: Packing Algorithm Window

Table 8: Packing Algorithm Window Available Options

Feature	Function
Packing Algorithm	Enable, Disable
Idle Time	Force transmit 12 ms, Force transmit 52 ms, Force Transmit 250 ms, Force Transmit 5000 ms
Trailing Characters	None, One, Two
Send Immediate After Sendchars	Enable, Disable
Sendchar Define2-Byte Sequence	Enable, Disable
Send Character 01	(User Selectable)
Send Character 02	(User Selectable)

Figure 14 and Table 9 define the Additional Settings window.

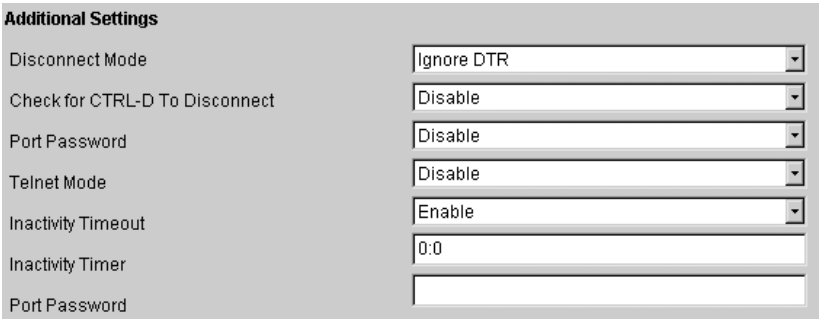

Figure 14: Additional Settings Window

Table 9: Additional Settings Window Available Options

Feature	Function
Disconnect Mode	Ignore DTR, With DTR Drop
Check for CTRL-D to Disconnect	Enable, Disable
Port Password	Enable, Disable
Telnet Mode	Enable, Disable
Inactivity Timeout	Enable, Disable
Inactivity Timer	(User Selectable)
Port Password	(User Selectable. Port Password must be enabled)

5.5.4 Factory Settings

Click the **Factory Settings** button to set Channel 1 to the factory default settings.

5.5.5 Update Settings

Click the **Update Settings** button to send all changed settings to the device.

5.6 Routing Data in the Passive and Active Routing Modes

The **FC-3ETH** routes data in either the Passive Routing Mode (see section 5.6.1) or the Active Routing Mode (see section 5.6.2).

5.6.1 Passive Routing Mode

In the Passive Routing Mode, the **FC-3ETH** never sends any data in the serial port-Ethernet direction before it first receives data from the remote station (that is, the data in the Ethernet-serial direction). Serial data that is received at the serial port of the **FC-3ETH** before the remote station contacts the **FC-3ETH** is discarded. In the Passive Mode, the **FC-3ETH** will work with one station only, as the example in Figure 15 illustrates:

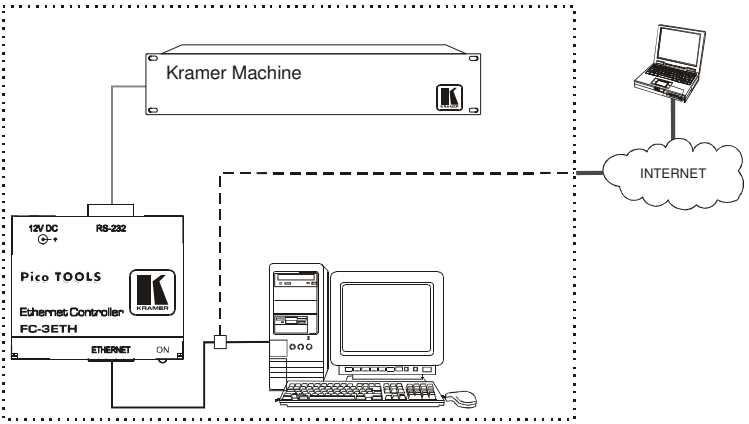

Figure 15: Connecting the FC-3ETH in the Passive Routing Mode

Passive Mode Configuration

To configure the **FC-3ETH** to the passive mode, set the Flush Mode Input Buffer (section 5.5.3) as in Figure 16.

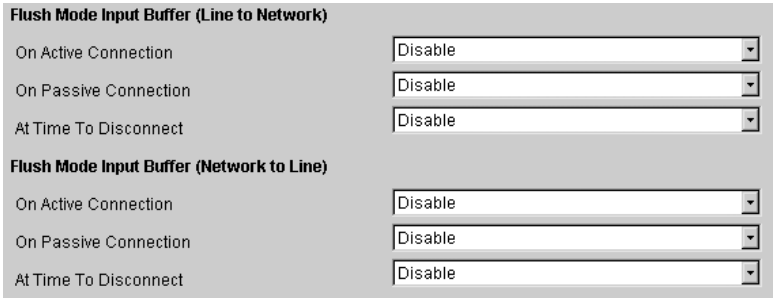

Figure 16: Setting the FC-3ETH to the Passive Routing Mode

5.6.2 Active Routing Mode

In the Active Routing Mode, the **FC-3ETH** does not wait for the remote station to send the data first, and routes the data in the destination device direction as soon as there is data to be sent. The data is always sent to a specific destination (as defined by the Destination IP address and the Destination Data Port Number Settings of the **FC-3ETH**). Also, the **FC-3ETH** only accepts the data sent from the remote station whose IP address matches the one set in the Destination IP address. The **FC-3ETH** will discard the data sent from any other IP. See the example illustrated in Figure 17:

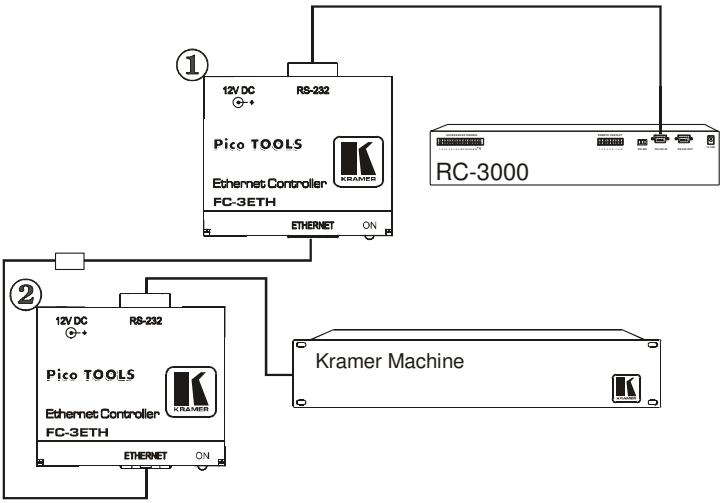

Figure 17: Connecting the FC-3ETH in the Active Routing Mode

Active Mode Configuration

To configure the **FC-3ETH** to the active mode, set the Flush Mode Input Buffer (section 5.5.3) on unit 1 as in Figure 18 and set unit 2 as in Figure 19.

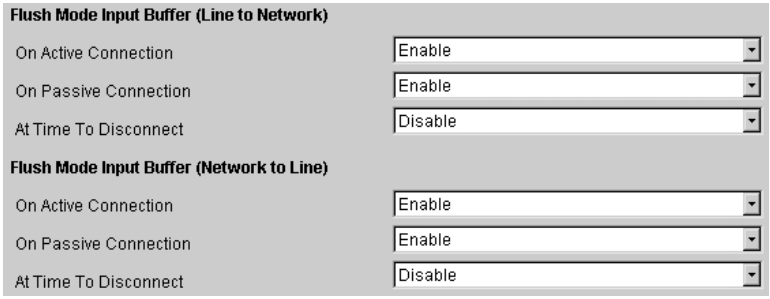

Figure 18: Setting the FC-3ETH (Unit 1) to the Active Routing Mode

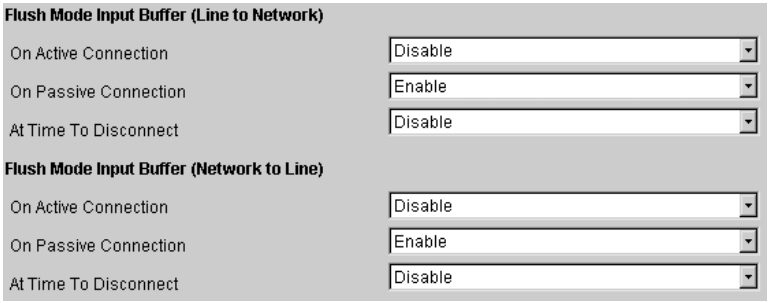

Figure 19: Setting the FC-3ETH (Unit 2) to the Active Routing Mode

Set the Remote IP Address and Remote Port for both units (Figure 11).

6 Controlling a Machine using the Com Port Redirector

The Com Port Redirector allows any PC running Windows to use ports on a network server as if they were connected directly to the PC. The Redirector creates a virtual COM port within Windows, which for most purposes acts just like the selected serial port on the server.

Whenever this virtual port is accessed, the redirector forms a network connection to the server, and routes all data between the physical serial port on the server and the virtual port within windows. This allows a modem on a server to be shared by many PC users, thus the name of "modem sharing" which is commonly used to describe this.

6.1 Installing the Com Port Redirector

To install the Com Port Redirector, do the following:

1. Perform the appropriate step to start the installation:
   - If the Com Port Redirector is on a CD-ROM, insert the CD-ROM into the computer's CD-ROM drive
   - If you downloaded the Com Port Redirector, double-click the downloaded file
   - Either step displays the Redirector - Welcome screen in Figure 20

Figure 20: Com Port Redirector Welcome Screen

2. Click the **Continue** button and follow the on-screen installation instructions.
3. After installation, the Setup Complete dialog box appears (Figure 21).

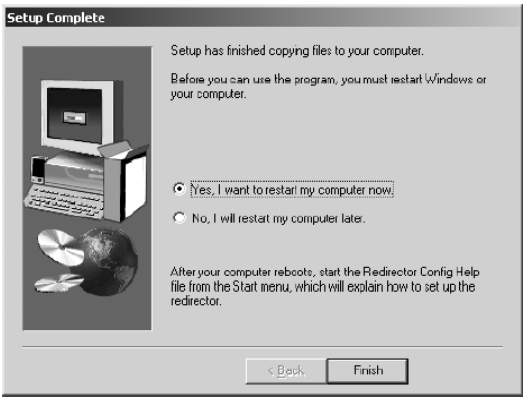

Figure 21: Setup Complete Dialog Box

4. Click **Finish** to complete the installation and restart your computer.

> **Note:** After you complete the installation, we recommend that you read the "Read Me" file to obtain the latest information about Com Port Redirector

5. Click the **Start** button in the Windows Taskbar, point to **Programs**, point to **Lantronix Redirector**, and click **Configuration**. The Com Port Redirector Configuration window appears (see Figure 22).

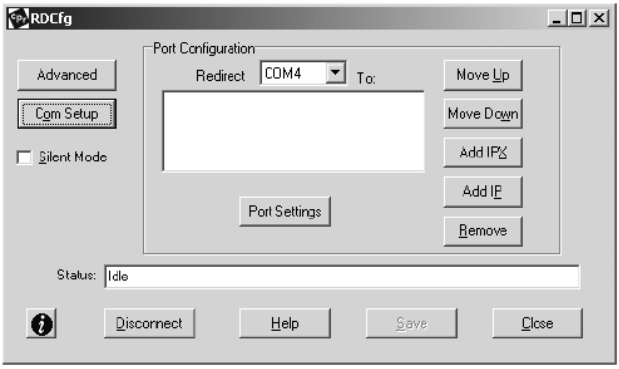

Figure 22: Com Port Redirector Configuration Window

6. Click the **Com Setup** button. A Port Setup dialog box appears (Figure 23), with the first logical communications port checked.
   - The physical communication ports on the computer where the Com Port Redirector is installed are grayed-out and unavailable. In Figure 23, these are Com1 through Com3. Your unavailable communication ports may vary

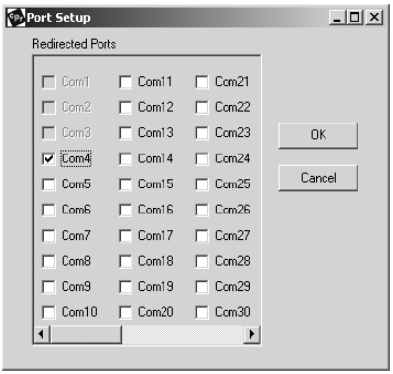

Figure 23: Port Setup Window

7. Click all the logical ports to which the PC will be redirected. A checkmark appears next to each logical port selected. Each port selected will be available from the **Redirect To** drop-down list in the Com Port Redirector Configuration window (section 6.2.2).
8. To deselect a port, click it again to remove the checkmark next to it. Removing the checkmark indicates the port will not be available from the **Redirect To** drop-down list.
9. When finished, click **OK**.

Note: After you use the Port Setup dialog box to add or remove Com ports, restart your computer.

6.2 Configuring the Com Port Redirector

Com Port Redirector is a software utility for network-enabling legacy software applications that do not have network support. Com Port Redirector installs virtual Windows® communication ports. These virtual communication ports are redirected over a network to the serial port of the **FC-3ETH**.

6.2.1 Configuration Guidelines

Observe the following general guidelines when preparing the **FC-3ETH** for use with the Com Port Redirector:

- The **FC-3ETH** to which the Com Port Redirector will connect must have an IP address
- The PC running the Com Port Redirector must have a good network connection to the **FC-3ETH**
- If redirecting over a Wide Area Network (WAN), both the PC and the **FC-3ETH** must have a correct gateway address configured in their TCP/IP settings
- All serial settings on the **FC-3ETH** must match the settings of the serial device. Serial settings include:
  - Baud rate
  - Parity
  - Stop bits
  - Flow control
  - Interface mode
- Serial cabling between the serial device being managed and the **FC-3ETH** must be correct. Consult the pinout documentation of your serial device.

6.2.2 Redirector Configuration

Before using the Com Port Redirector, you have to configure the **FC-3ETH**. To do so, do the following:

- Assign a compatible IP address to the device server
- Set the serial settings (baud rate, parity, flow control, data bits)
- Set the port number to **10001** (recommended)

For specific instructions, see section 5.

To configure the Com Port Director:

1. Click the **Start** button in the Windows Taskbar, point to **Programs**, point to **Lantronix Redirector**, and click **Configuration**. The Com Port Redirector Configuration window appears (see Figure 22).
2. Using the **Redirect To** drop-down list at the top of the Com Port Redirector Configuration window, click a redirected Com port.
3. Click the **Add IP** button. The IP Service Setup dialog box appears (see Figure 24).

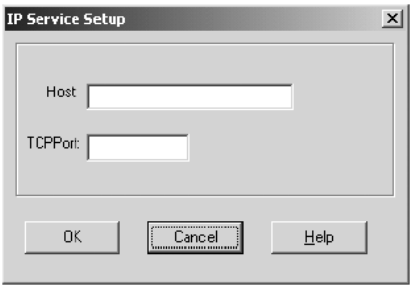

Figure 24: IP Service Setup Dialog Box

4. In the **Host** field, enter the IP address of the **FC-3ETH**.
5. In the **TCPPort** field, type **10001** for Channel 1 (according to the local port, configured in the **FC-3ETH** unit).
6. Click **OK**.
7. Click the **Port Settings** button. The Port Settings dialog box appears. Figure 25 shows the Port Settings dialog box and Table 10 describes its settings.
8. Check **Raw Mode**.

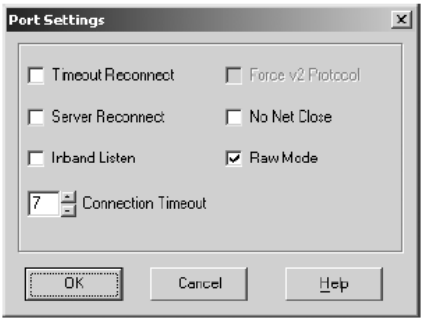

Figure 25: Port Settings Window

9. Click **OK**.
10. Click the **Save** button (see Figure 22).
11. Click the **Close** button (see Figure 22).

Table 10: Port Settings Description

Setting	Description
Timeout Reconnect	If checked, the Com Port Redirector re-establishes the connection if the connection times out[1].
Server Reconnect	If checked, the Com Port Redirector re-establishes the connection if the server closes it[1].
Inband Listen	If checked, the Com Port Redirector uses the inband redirector protocol on inbound connections from a **FC-3ETH**. This protocol allows settings like modem signals, baud rate and parity to be exchanged between Com Port Redirector and the server.
Connection Timeout	Specifies the maximum number of seconds that the Com Port Redirector waits for a connection to be made before giving up on this attempt. If Timeout Reconnect is enabled, each connection attempt lasts this long. If Timeout Reconnect is disabled, the connection attempt fails after this interval and no more attempts are made.
Force v2 Protocol	N/A
No Net Close	If checked, prevents the network connection from being dropped when the communications application is closed. To drop the connection, click the Disconnect button in the Com Port Redirector Configuration window. This allows applications to close and reopen ports, without waiting for the network connection to be reestablished and negotiated.
Raw Mode	If checked, Raw Mode forms a raw TCP connection to the server's serial port, accelerating the connection between the communications application and the server, without sending configuration or status information from the PC to the server. When using Raw Mode, configure the Com Port Redirector and your **FC-3ETH** to use the same port number.

1 When auto-reconnecting, the Com Port Redirector tries to reconnect until the connection succeeds or you click the Cancel button in the pop-up connection dialog box. If the port was closed by the communications application or by clicking Disconnect, the Com Port Redirector does not try to auto-reconnect

6.2.3 Verify Connectivity

After configuring the Com Port Redirector and the **FC-3ETH**, use a terminal emulation program such as HyperTerminal to verify connectivity from the Com Port Redirector to the **FC-3ETH**. To verify connectivity between the Com Port Redirector and the **FC-3ETH** using HyperTerminal:

1. Click the **Start** button in the Windows Taskbar, point to **Programs**, point to Accessories, point to Communications, and click HyperTerminal.
2. Open a new session to the virtual Com port configured to connect to the device server.
3. When the HyperTerminal window opens, a pop-up window displays, *Attempting to connect to service*.
   If this message is replaced by: *Successfully redirected to service*, the connection from the Com Port Redirector to the device server was successful.
   However, if the message is replaced by *Failed to connect to any service*, the connection failed. Ensure your settings are correct.
4. To hide the pop-up window, check **Silent Mode** on the Com Port Redirector Configuration window (Figure 26).

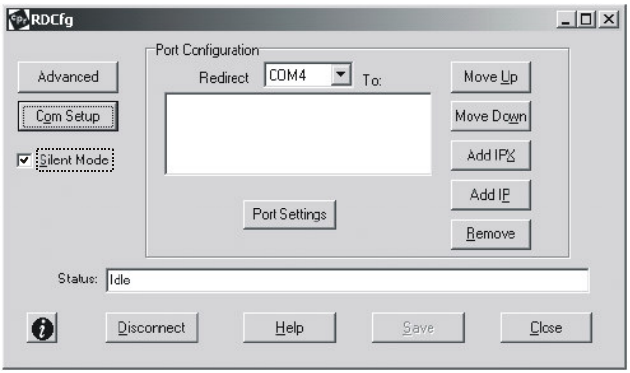

Figure 26: Silent Mode Checked in RDCfg Window

6.3 Using the Com Port Redirector

Observe the following general guidelines when using the Com Port Redirector:

- Do not run the Com Port Redirector with other software that installs a virtual com port
- Do not run the Com Port Redirector with other Com Port Redirection software on the same PC

7 Controlling Kramer Machines via Ethernet using the FC-3ETH

You can use your **FC-3ETH** to control a Kramer machine from a computer that connects to a LAN (see section 7.1) or via a controller (see section 7.2), as well as via an Internet connection.

7.1 Controlling a Kramer Machine via a Computer

To control a Kramer machine via one computer, as the example in Figure 15 illustrates, do the following:

1. Configure the **FC-3ETH** to the Passive Routing Mode (see section 5.6.1).
2. Connect the 12V DC power adapter to the power socket and connect the adapter to the mains electricity.
3. Connect the RS-232 port of your Kramer machine to the RS-232 port of the **FC-3ETH** via a Null modem.
4. Connect the ETHERNET port of your **FC-3ETH** to a LAN, using a straight-through cable with RJ-45 connectors.
   You can control the Kramer machine from your computer with the Kramer Windows®-control software.
5. Run the Kramer Windows®-control software to control the Kramer machine from your computer.
   When working with a non-Kramer device use its existing PC software or the Microsoft HyperTerminal.
6. In the K-Router Port window, choose the COM port according to the number of your redirected serial port.

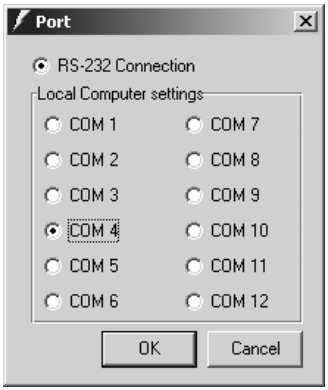

Figure 27: Choosing the COM Port

7.2 Controlling a Kramer Machine via a Controller

To control a Kramer machine using a **RC-3000**[1] controller, as the Master Mode example in Figure 17 illustrates, do the following:

1. Configure the **FC-3ETH** units to the Active Routing Mode (see section 5.6.2).
2. Connect the RS-232 port of your Kramer machine to the RS-232 port of a **FC-3ETH** via a Null modem and connect the ETHERNET port of that **FC-3ETH** to a LAN.
3. On the **FC-3ETH**, connect the 12V DC power adapter to the power socket and connect the adapter to the mains electricity.

8 Flash Memory Upgrade

You can obtain the most up-to-date firmware and release notes for the unit from the Kramer Web site (www.kramerelectronics.com).

8.1 Reloading Firmware

You can update the unit's internal operational code (*.ROM) and the unit's internal Web interface (*.COB) via XPort™ Installer (the preferred way).

Check the Kramer Web site for the latest versions and release notes.

8.1.1 Updating Via XPort™ Installer

After downloading the firmware to your computer, you can use XPort™ Installer to install it.

1. Download the updated firmware files from www.kramerelectronics.com.
2. Start the XPort™ Installer and search the network for the device you want to upgrade.
3. Select the desired unit and click the **Upgrade** icon or select **Files** from the Device menu. The Transfer Files dialog box displays (Figure 28).
4. To upgrade firmware, click the **Firmware** field to display the browse button. Click the browse button to open a search window and locate the firmware file (*.rom). Click **OK** and the file transfer starts.

1 Previously known as the VS-3000

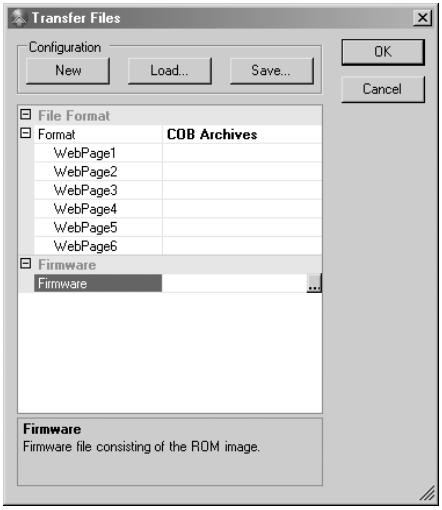

Figure 28: Transfer Files Dialog Box

5. To upgrade a Web Page, expand the Web Pages selection by clicking the plus sign next to Format. Select the Web Page to upgrade and a browse button will appear on the right side of the field. Use the browse button to locate the Web page file (*.cob). Click **OK**, and the file transfer begins. The Web Manager is loaded to WEB6 and the Configurable Pins Applet is loaded to WEB1.

The Configuration buttons let you create and select a group of files, comprised of several Web pages and firmware files that can be downloaded with one command.

- To create a file set, select all of the files to download, then click the **Save** button to open the Save As dialog. The defined set of files is saved to a *.ini file
- To Load a file set, click the **Load** button to display a search dialog box. Only the path of the files is stored in the *.ini file. If you change the location of the Web pages or firmware, you must edit the corresponding file set to match the new location
- Click the **New** button to clear all selections

8.1.2 Serial Port Recovery Procedure

If for some reason the firmware is damaged, you can recover the firmware file by using the serial port to download the *.rom file. Start XPort™ Installer, select the device, click **Action** and select Advanced/Recover Firmware. The Recover Firmware dialog box appears.

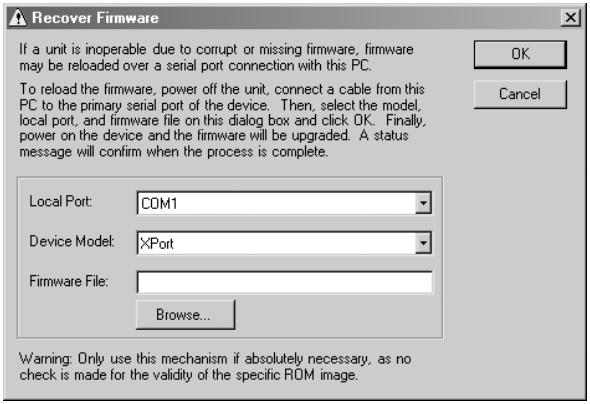

Figure 29: Recover Firmware Dialog Box

Enter the Local Port on your PC and the location of the Firmware File. The Device Model should indicate XPort™. Click **OK** to download the file.

The Status Bar will indicate the progress of the task. Within a few seconds, it will prompt to reset the device. To reset the device, either unplug the power and plug it back in or press the Reset button on the unit if available. On some devices the reset button is recessed and a small pin may be needed. Once the device resets, the firmware recovery will progress.

When the firmware transfer is complete, a message box will appear indicating the status. Click **OK** on the message box.

Finally, reset the device again, either by re-powering or pressing the Reset button. Once the device boots up again, it is ready with the new firmware.

9 Technical Specifications

Table 11 includes the technical specifications:

Table 11: Technical Specifications[1] of the FC-3ETH Ethernet Controller

ETHERNET INTERFACE:	10/100 BaseT Ethernet
SERIAL INTERFACES:	RS-232, DB9M, signals: RX, TX, RTS, CTS, Ground
NETWORK PROTOCOLS:	ICMP (ping), ARP, TCP, UDP
POWER SOURCE:	12 VDC, <80mA
DIMENSIONS:	6.22cm x 2.415cm x 5.23cm (2.45" x 2.41" x 5.23"), W, D, H
WEIGHT:	0.115 kg. (0.25 lbs.) approx.
ACCESSORIES:	Power supply, mounting bracket

1 Specifications are subject to change without notice

LIMITED WARRANTY

Kramer Electronics (hereafter *Kramer*) warrants this product free from defects in material and workmanship under the following terms.

HOW LONG IS THE WARRANTY

Labor and parts are warranted for three years from the date of the first customer purchase.

WHO IS PROTECTED?

Only the first purchase customer may enforce this warranty.

WHAT IS COVERED AND WHAT IS NOT COVERED

Except as below, this warranty covers all defects in material or workmanship in this product. The following are not covered by the warranty:

1. Any product which is not distributed by Kramer, or which is not purchased from an authorized Kramer dealer. If you are uncertain as to whether a dealer is authorized, please contact Kramer at one of the agents listed in the Web site www.kramerelectronics.com.
2. Any product, on which the serial number has been defaced, modified or removed.
3. Damage, deterioration or malfunction resulting from:
   - i) Accident, misuse, abuse, neglect, fire, water, lightning or other acts of nature
   - ii) Product modification, or failure to follow instructions supplied with the product
   - iii) Repair or attempted repair by anyone not authorized by Kramer
   - iv) Any shipment of the product (claims must be presented to the carrier)
   - v) Removal or installation of the product
   - vi) Any other cause, which does not relate to a product defect
   - vii) Cartons, equipment enclosures, cables or accessories used in conjunction with the product

WHAT WE WILL PAY FOR AND WHAT WE WILL NOT PAY FOR

We will pay labor and material expenses for covered items. We will not pay for the following:

1. Removal or installations charges.
2. Costs of initial technical adjustments (set-up), including adjustment of user controls or programming. These costs are the responsibility of the Kramer dealer from whom the product was purchased.
3. Shipping charges.

HOW YOU CAN GET WARRANTY SERVICE

1. To obtain service on you product, you must take or ship it prepaid to any authorized Kramer service center.
2. Whenever warranty service is required, the original dated invoice (or a copy) must be presented as proof of warranty coverage, and should be included in any shipment of the product. Please also include in any mailing a contact name, company, address, and a description of the problem(s).
3. For the name of the nearest Kramer authorized service center, consult your authorized dealer.

LIMITATION OF IMPLIED WARRANTIES

All implied warranties, including warranties of merchantability and fitness for a particular purpose, are limited in duration to the length of this warranty.

EXCLUSION OF DAMAGES

The liability of Kramer for any effective products is limited to the repair or replacement of the product at our option. Kramer shall not be liable for:

1. Damage to other property caused by defects in this product, damages based upon inconvenience, loss of use of the product, loss of time, commercial loss; or:
2. Any other damages, whether incidental, consequential or otherwise. Some countries may not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights, which vary from place to place.
NOTE: All products returned to Kramer for service must have prior approval. This may be obtained from your dealer.
This equipment has been tested to determine compliance with the requirements of:

EN-50081:	"Electromagnetic compatibility (EMC); generic emission standard. Part 1: Residential, commercial and light industry"
EN-50082:	"Electromagnetic compatibility (EMC) generic immunity standard. Part 1: Residential, commercial and light industry environment".
CFR-47:	FCC Rules and Regulations: Part 15: "Radio frequency devices Subpart B – Unintentional radiators"

CAUTION!

- ⌧ Servicing the machines can only be done by an authorized Kramer technician. Any user who makes changes or modifications to the unit without the expressed approval of the manufacturer will void user authority to operate the equipment.
- ⌧ Use the supplied DC power supply to feed power to the machine.
- ⌧ Please use recommended interconnection cables to connect the machine to other components.

For the latest information on our products and a list of Kramer distributors, visit our Web site: www.kramerelectronics.com, where updates to this user manual may be found.
We welcome your questions, comments and feedback.

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P/N: 2900-000032 REV 1