



QUANTUM3D®
Delivering Affordable Reality

Thermite® TVC-2 Tactical Visual Computer Model 1200 and 1300 Series

User Manual



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EMI: FCC Class A, CE Class A, and NRTL

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at the user’s own expense.

Warnings

Save these instructions.

Changes or modifications to this device that are not approved by the party responsible for compliance could void the user’s authority to operate the equipment.

To reduce the risk of electrical shock, do not attempt to open the device unless instructed to do so. Do not use any tool for purposes other than instructed.

There are no user-serviceable parts in the unit. Refer all servicing of the unit to qualified service personnel.

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Chapter 1

Introduction

This introductory chapter provides an overview of the Thermite[®] TVC-2 unit, information for contacting Quantum3D[®] technical support, a description of the conventions used within this document.

1.1 System Overview

The Quantum3D Thermite TVC-2 is a rugged, small form-factor computer incorporating best-of-class commercial off-the-shelf (COTS) components for advanced visualization applications. It is specifically designed for embedded training, mission rehearsal, and deployed C4ISR applications.

The Thermite unit features advanced computational and 2D/3D graphics performance and display features—coupled with comprehensive (optional) wired and wireless input/output (I/O)—all integrated into a lightweight, sealed alloy enclosure that sets a new standard for mobility, long battery life, and real-time visualization capabilities in a man-wearable or appended-function computer.

Unique power-management techniques and enclosure design provide an efficient conductive cooling solution and ensure both the best possible performance for targeted applications and compliance to industry or military standards for rugged environment operation. With support for the Microsoft[®] Windows[®] and Linux[®] operating systems, Thermite units enable dismounted infantry, ground vehicle, maritime, airborne, and other deployed military and civilian personnel to run the same advanced applications that previously required the power of rack-mount or desktop PC-based workstations.

1.2 Models and Options

This manual is for use with the following Thermite models and options:

Model	Processor	Included I/O Options	Additional I/O Options Available
1200	1.0 GHz Intel [®] Celeron [®]	none	802.11a/b/g wireless network or second 802.3 wired 10/100 Ethernet
1210	1.0 GHz Intel [®] Celeron [®]	GPS 1.0	802.11a/b/g wireless network
1220	1.0 GHz Intel [®] Celeron [®]	MIL-STD-1553	802.11a/b/g wireless network
1300	1.4 GHz Intel [®] Pentium [®]	none	802.11a/b/g wireless network or second 802.3 wired 10/100 Ethernet
1310	1.4 GHz Intel [®] Pentium [®]	GPS 1.0	802.11a/b/g wireless network
1320	1.4 GHz Intel [®] Pentium [®]	MIL-STD-1553	802.11a/b/g wireless network

Table 1-1 Thermite models and options

1.3 Contacting Quantum3D Technical Support

Web Based Support

Quantum3D customer support provides a web-based online problem tracking and reporting system. Hardware and software products are only covered during their warranty or maintenance period. We recommend that you review the warranty documentation that accompanied your system and be prepared to provide proof of warranty coverage to Quantum3D upon request. Warranty information can also be found on the Quantum3D website.

Quantum3D customers and authorized representatives may visit our online support system at:
<http://www.quantum3d.com/support>

You should request an account in the online support system as soon as possible after receiving your Quantum3D product. To request your account, follow these instructions, and an account will be created for you:

1. Click this link to [Customer Support](#), or type <http://www.quantum3d.com/support> into your web browser, and then click the **Online Support Database** link to view our online problem reporting system.
2. Have the following information available, and then click the **Support Login Request** link to prepare an email to us:
 - First and last name
 - Company
 - Mailing address
 - Telephone number
 - Email address
 - Quantum3D products used
 - Quantum3D product serial number
3. You will receive an email within 48 hours providing your login credentials and instructions for using the system.

Note *Your User ID is case sensitive. Your Password is case-sensitive and stored in clear text. Support administrators will have access to your password.*

1.4 Obtaining the Most Current Version of this Manual

The current version of this manual is available from your Quantum3D sales representative.

1.5 Documentation Conventions

The following are general documentation conventions used in this manual.

Font Formatting

Font formatting indicates that the text serves a particular function.

- **Bold** font style highlights document titles, command-line and Graphical User Interface (GUI) captions, heightened emphasis, and program elements.
- *Italic* font style indicates emphasis, document title references, parameters, and placeholders.
- ***Bold Italic*** font style indicates critical information.
- **Menu** → **Command** indicates a menu command sequence or the path used to navigate through a hierarchical tree structure.
- **Note** *Indicates important background information with technical emphasis.*
- **TIP** Indicates information that might be useful, but is not critical for safe or trouble-free operation.
- Monospaced font styles indicate program listings, command line entries, and file folders.

Icon



The exclamation icon and accompanying bold italic text indicate critical information to avoid a major malfunction or prevent hazardous conditions.

Interface Terminology

The following terms describe actions you may perform with your mouse. If you use another pointing device or have interchanged the effect of the left and right buttons, adjust your usage accordingly.

- **Click** Point to the indicated item (or in the indicated area), and then press and release the *left* mouse button.
- **Right-click** Point to the indicated item (if any), and then press and release the *right* mouse button.
- **Double-click** Point to (or in) the indicated item, and then press and release the *left* mouse button twice in rapid succession.
- **Drag** Point to the indicated item, press and hold the *left* mouse button, move the mouse pointer to the destination, and then release the button.
- **Scroll** Point to a scroll bar, press and hold the *left* mouse button, move the mouse pointer within the scroll box until the desired content is displayed, and then release the button.
- **Rotate** Turn the mouse wheel button, if your mouse is so equipped, until the desired content or option is displayed.

This page concludes
Introduction.

Chapter 2

Setting Up the Hardware

The following instructions explain how to set up your Thermite unit hardware.

2.1 Inspecting the Shipment

Thermite units are packaged to withstand forceful treatment during shipping. Thoroughly inspect the shipping container upon arrival to determine if any damage has been sustained during shipment. If the box is damaged, notify the shipping company immediately, and then contact Quantum3D support at: <http://quantum3d.com/support>.

2.2 Unpacking the System

As you unpack the system, confirm that all items are included. In case of any discrepancies, such as missing or damaged items, notify Quantum3D as soon as possible.

Retain all shipping material, packaging, and documentation for future reference and for future transportation of the system. Such materials include the box, foam core padding, and anti-static bag.

1. Carefully cut the tape on top of the cardboard box, and then open the box to reveal the accessory bag.



Figure 2-1 Shipping box and accessory bag

2. Remove the accessory bag, and then confirm its contents:
 - A Windows XP Professional operating system license and CD-ROM.
 - Either:
 - A bootable USB flash drive, the Thermite® TVC-2 1200 and 1300 Series Recovery UFD.
 - or–
 - A bootable DVD labelled “Thermite® BOOTABLE RESTORE DVD”.This is used only for system disk image recovery action (not for normal system operation) and should be stored in a safe place.
 - External antenna (only if an integrated 802.11 wireless option is installed).
 - A user manual entitled “Thermite® TVC-2 Tactical Visual Computer Model 1200 and 1300 Series User Manual.”
3. Remove the Thermite unit:
 - a. Carefully lift the connector end of the Thermite unit free of the foam insert.
 - b. Remove the system from the box.
 - c. Retain the specially designed box and associated materials for future use.

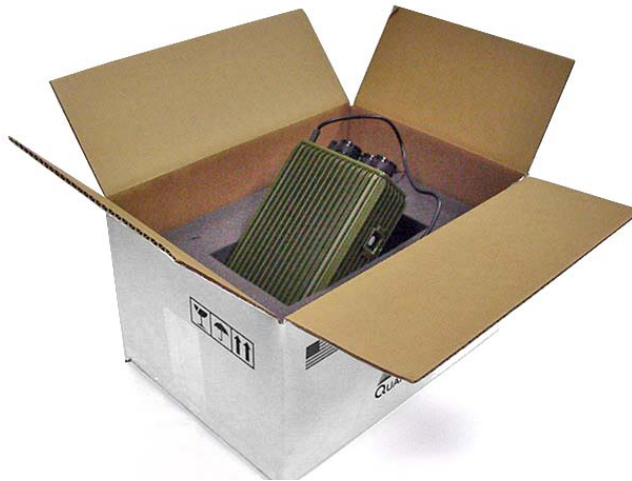


Figure 2-2 Removing the Thermite unit from the packaging

Development Kit

Optional accessories are available, and are part of the Thermite TVC-2 Development Kit. They are not provided as standard components because many Thermite units are deployed in ground, maritime, and air vehicles, and are integrated directly into those vehicles' infrastructures.

- Video and audio cable set
- A/C power adapter and cable
- Rechargeable battery
- Battery charger with separate A/C power adapter

2.3 Installing a Thermite Unit

Location and Operating Environment

Install and locate the Thermite unit so as not to exceed the operating environmental ratings for temperature, vibration, and shock. In those cases where a minimum or maximum range is not listed, the indicated rating is the maximum rating:

Environmental Parameter	With Rotating Disk Drive		With Solid State Drive	
	Operating	Non-operating	Operating	Non-operating
Ambient Temp. Max battery Life Power Setting	-10° to +55°C	-40° to +85°C	-32° to +62°C	-40° to +85°C
Ambient Temp. Balanced Computer/Graphics Performance Power Setting	-10° to +48°C	-40° to +85°C	-32° to +55°C	-40° to +85°C
Humidity Level Non-Condensing	5%–90%	5%–95%	5%–90%	5%–95%
Altitude Above Sea Level	10,000 ft 3 km	40,000 ft 12.2 km	50,000 ft 15.2 km	50,000 ft 15.2 km
Vibration Resistance	1 G, 22–500 Hz	5 G, 22–500 Hz	Up to 12 G RMS	
Shock Resistance	20 G with 9 ms duration	40 G with 9 ms duration	Up to 40 G	
Immersion Resistance	1 meter for 30 minutes	1 meter for 30 minutes	1 meter for 30 minutes	

Note Where a minimum-to-maximum range is not listed, the indicated rating is the maximum rating.

Table 2-1 Environmental ratings

Power Requirements

The DC power input requirement to a Thermite unit is 10–16 VDC, 14–33 W (excluding powered peripherals and depending on the power setting and application.) The battery charger and AC power adapters for a Thermite unit are auto-sensing 100–240 VAC, 50–60 Hz. Ensure that the supplied power is sufficient, stable, and without spikes or surges to support the operation of your Thermite unit and additional equipment.

Additional Equipment

Depending on your applications, you may require additional equipment. Quantum3D makes no claim that any specific customer-supplied equipment is compatible with a Thermite unit. It is your responsibility to determine the compatibility of any such equipment. Improper use of customer-supplied equipment may void the manufacturer's warranty.

In addition to your Thermite unit, you may need the following equipment:

- Primary display device (2D/3D graphics)
The Thermite TVC-2 graphics subsystem can drive resolutions up to 2,048×1,536 at 60 Hz. Ensure that your Thermite unit display settings are compatible with the display device you intend to use.

Note If you are using a fixed-frequency monitor or display device, it is necessary to configure your Thermite graphics subsystem prior to testing the display. Failure to configure display properties so that they match the display device can result in permanent damage to the

display device. Be careful, especially when using older projector systems that are not multi-sync compatible.

- TV display device
- 802.11 network access point
- Keyboard and/or mouse (PS/2 or USB)

2.4 Connecting the External I/O Cables to the Thermite TVC-2

The external cable connectors are located together on one end of the Thermite unit:

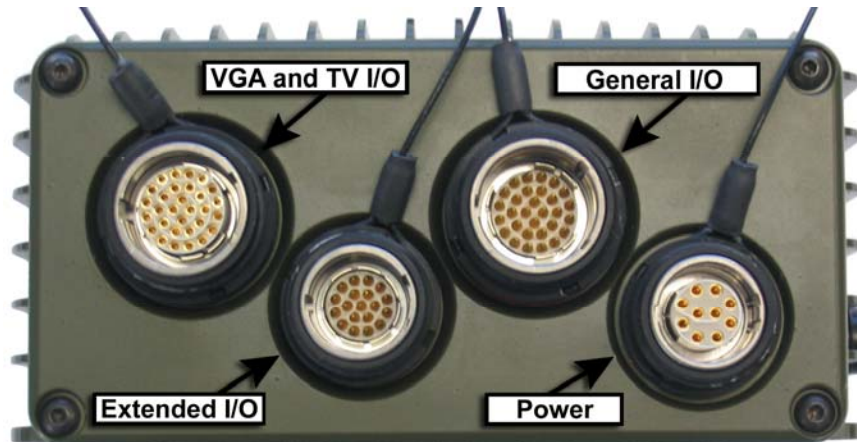


Figure 2-3 End view showing connectors

A waterproof cap protects each connector. Unscrew the appropriate cap before attaching the associated cable.



Figure 2-4 Unscrewing a waterproof cap

To connect a cable:

1. Line up the connector end of the cable with the connector on the Thermite unit.
2. While lightly pressing the cable against the connector, rotate the cable until the connector seat guides match up, and the cable moves slightly forward into the connector.
3. Press the cable forward firmly into the connector, and then screw down the cable ring to secure the connection.

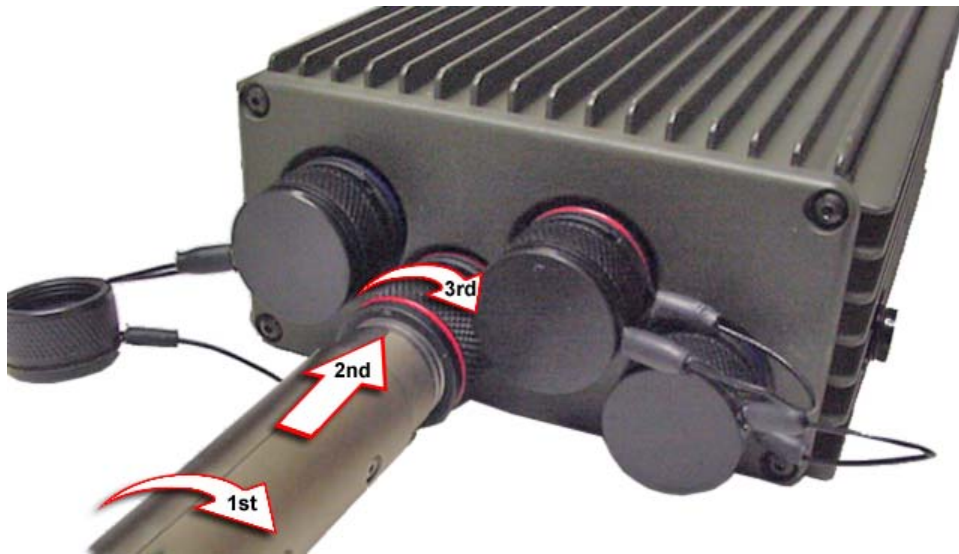


Figure 2-5 **Connecting an external I/O cable**

The Analog VGA and TV I/O Cable

Attach the cable for Analog VGA and TV I/O connections as shown in Figure 2-6.



Figure 2-6 Analog VGA and TV I/O cable

All connections are marked on the cables. The cable connectors are:

- **VGA** Connects an analog VGA monitor or projector.
- **Composite Video In** BNC connector for attaching a composite TV signal input.
- **Composite Video Out** BNC connector for attaching a composite TV signal display device.
- **SVideo In** SVideo connector for attaching a TV signal input.
- **SVideo Out** SVideo connector for attaching a TV signal display device.
- **Remote power button** BNC connector for controlling the Thermite unit system power.

The General I/O Cable

Attach the General I/O cable to the Thermite unit as shown in Figure 2-7.

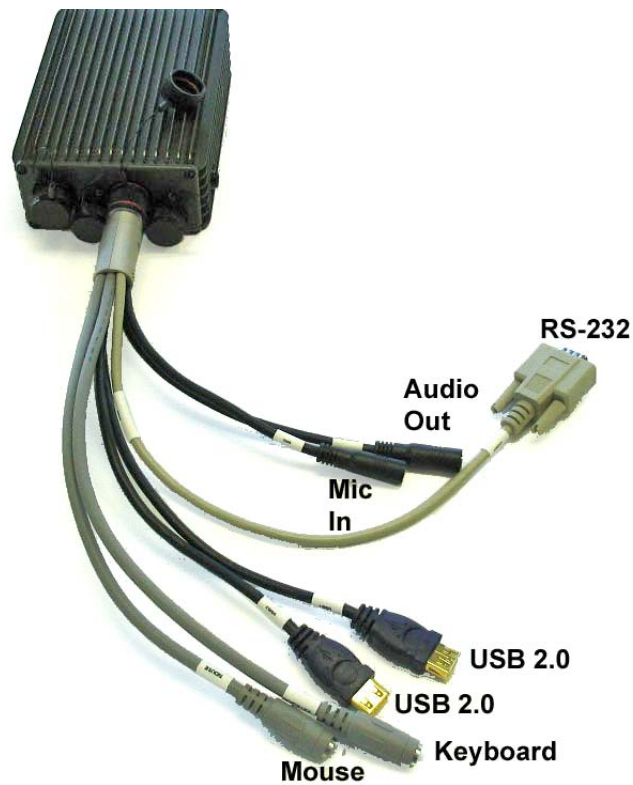


Figure 2-7 **General I/O cable**

The cable connectors are:

- **Keyboard** Connects a PS/2 keyboard.
- **Mouse** Connects a PS/2 mouse.
- **USB 2.0** Connects USB 2.0 (or USB 1.1) devices (two connectors).
- **Mic In** Connects a monophonic microphone using a 1/8" jack.
- **RS-232** Connects a legacy serial device.
- **Audio Out** Provides stereo line-level audio out for connection to external speakers or headphones via a 1/8" jack.

Model 1200/1300 Extended I/O Cable

Attach the Extended I/O cable to the Thermite unit as shown in Figure 2-8.



Figure 2-8 **Model 1200/1300 extended I/O cable**

The cable connectors are:

- **Ethernet** RJ45 jack for connecting to a 10/100 Ethernet network (two connectors).
- **IEEE1394** 6-pin IEEE1394 jack for connecting an IEEE1394 (FireWire) device.

Note *The IEEE1394 jack does not supply power to attached devices. You must power all IEEE1394 devices externally when used with the Thermite unit.*

Model 1210/1310 Extended I/O Cable

Attach the Extended I/O cable to the Thermite unit as shown in Figure 2-8.

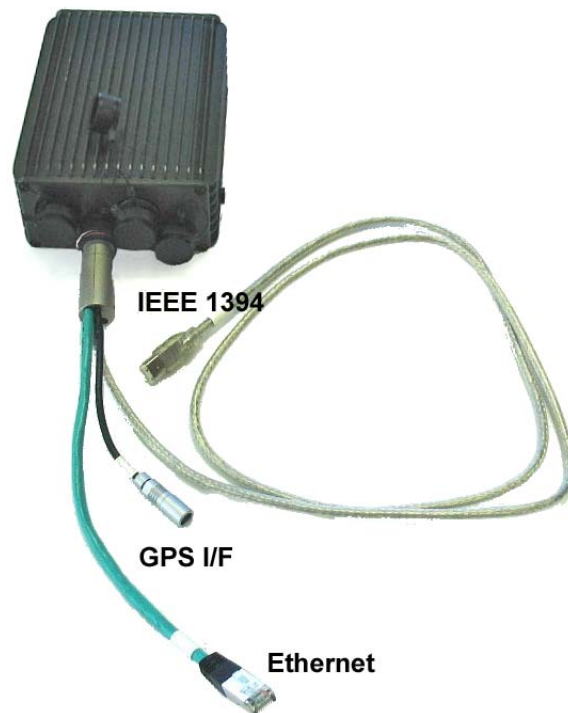


Figure 2-9 **Model 1210/1310 extended I/O cable**

The cable connectors are:

- **Ethernet** RJ45 jack for connecting to a 10/100 Ethernet network.
- **GPS I/F** Connector for use with a GPS device antenna interface.
- **IEEE1394** 6-pin IEEE1394 jack for connecting an IEEE1394 (FireWire) device.

Note *The IEEE1394 jack does not supply power to attached devices. You must power all IEEE1394 devices externally when used with the Thermite unit.*

Model 1220/1320 Extended I/O Cable

Attach the Extended I/O cable to the Thermite unit as shown in Figure 2-8.

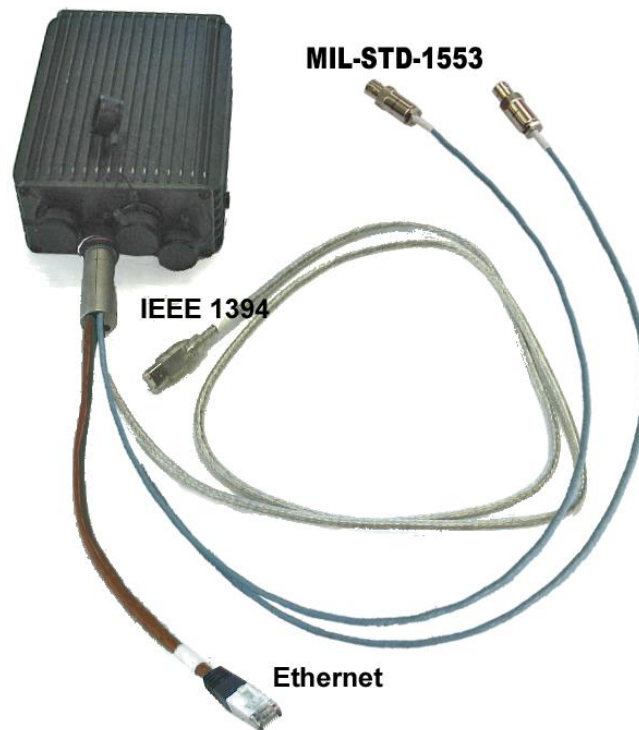


Figure 2-10 **Model 1220/1320 extended I/O cable**

The cable connectors are:

- **Ethernet** RJ45 jack for connecting to a 10/100 Ethernet network.
- **MIL-STD-1553** Connector for use with a MIL-STD-1553 interface (two connectors).
- **IEEE1394** 6-pin IEEE1394 jack for connecting an IEEE1394 (FireWire) device.

Note *The IEEE1394 jack does not supply power to attached devices. You must power all IEEE1394 devices externally when used with the Thermite unit.*

The Power Cable

The Thermite TVC-2 DC power input connections are designed to accommodate either batteries or other DC input devices, including the supplied AC adapter.



Do not connect the Thermite DC power input to the battery charger AC adapter. The battery charger is powered by an AC adapter that is similar to the AC adapter used for the Thermite DC power input. The battery charger's AC adapter is not compatible with the Thermite DC input and will damage the Thermite unit if used to power the unit directly.

You can connect one or two batteries to the Thermite TVC-2 as shown in Figure 2-11.

Note that batteries supplied with a Thermite TVC-2 incorporate a retention strap to secure the battery cap cable connection to the battery. Use this strap to ensure proper power delivery to the system.

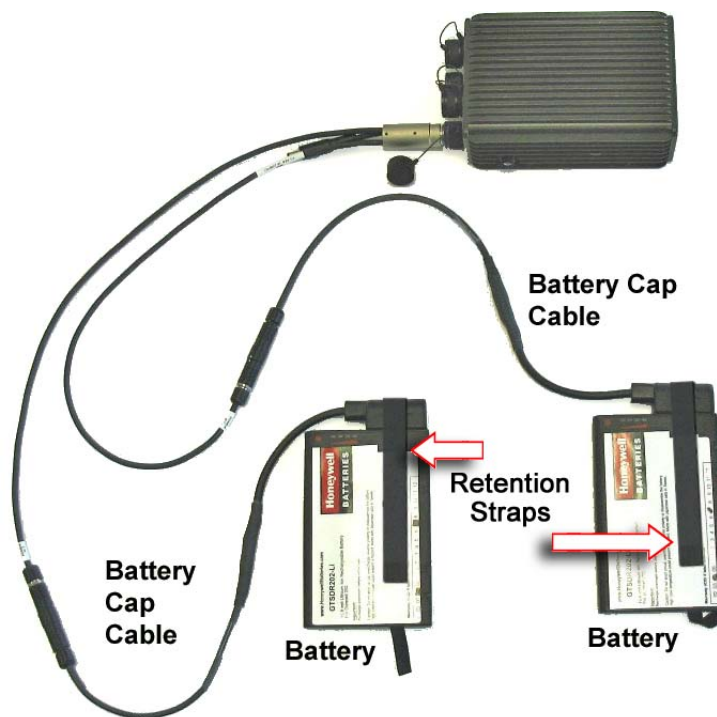


Figure 2-11 Thermite battery connection

You can connect the AC adapter to the Thermite TVC-2 as shown in Figure 2-12. You may connect the AC adapter interface cable to either of the smart battery power cable's input ports.



Figure 2-12 Thermite AC adapter connection

User Supplied Batteries and Other DC Power Sources

Depending on your application(s), you may require a different DC power source to power the battery and AC Adapter supplied with the Thermite unit. Some DC power sources may cause damage to a Thermite unit, and Quantum3D makes no claim that any specific customer-supplied equipment will be compatible with a Thermite unit. Determination of the fitness of any such equipment for use with a Thermite unit is entirely the responsibility of the user. Improper use of customer-supplied equipment with any Thermite unit may void the manufacturer's warranty. If you have questions regarding the use of a customer-supplied power supply, contact Quantum3D support.

2.5 Connecting an External Antenna for an 802.11 Wireless Network

To use an integrated 802.11 wireless network, you must connect an external antenna:

1. Attach the supplied external antenna to the antenna connector located on the side of the Thermite unit.
2. Tighten the screw cap to secure the antenna.



Figure 2-13 Connecting the external 802.11 antenna

This page concludes
Setting Up the Hardware.

Chapter 3

Powering Up and Logging On

This chapter shows the steps necessary to power up your Thermite TVC-2 and to log on to the Windows operating system for the first time.

3.1 Powering Up the System

To power up the unit:

1. Connect any required external cables including a suitable power source.
2. Press the **PWR** (power) button on the side of the unit.



Figure 3-1 Thermite TVC-2 power button

3.2 Logging On for the First Time

The first time you turn on your Thermite TVC-2, the Windows XP operating system performs background tasks, and then opens a Setup Wizard to guide you through the system configuration process.

Note *If you intend to configure your system for network operation, you may need to request appropriate network information from your system administrator.*

1. In the Windows XP Professional Setup dialog box, click Next.



Figure 3-2 Windows XP Professional Setup dialog box

2. Read the **License Agreement**, and if you agree with the terms, click **I accept this agreement**, and then click **Next**.
If you click **I don't accept this agreement**, you will not be able to configure or run the Thermite unit.

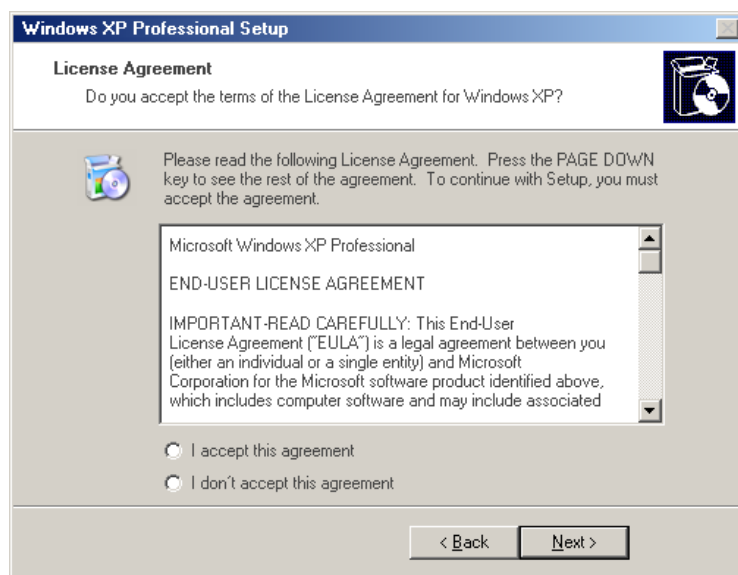


Figure 3-3 Windows XP License Agreement

3. Type your **Name** and **Organization** in the boxes, and then click **Next**.

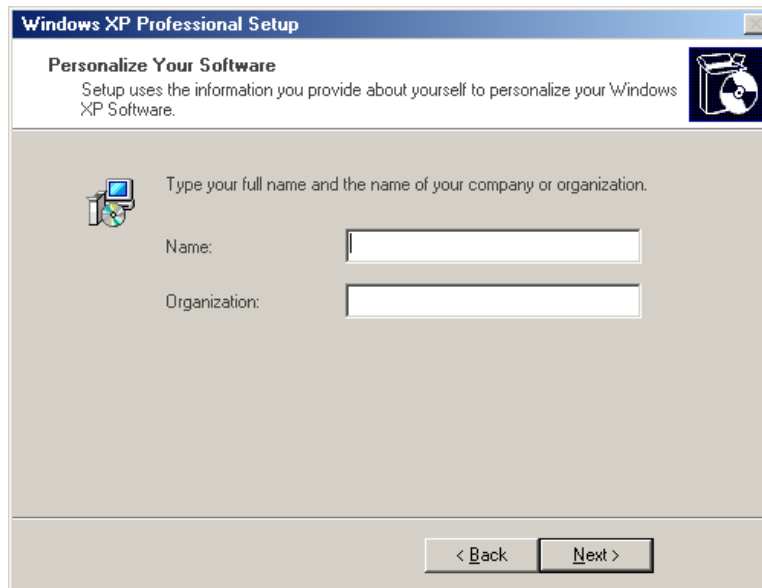


Figure 3-4 Personalize Your Software entry

4. In the **Computer name** box, accept the proposed name or type a different one. This name identifies the computer uniquely when it is attached to a network.



Figure 3-5 Computer Name and Administrator Password entry

5. In the **Administrator password** box, type a password, and retype it in the **Confirm password** box, and then click **Next**.

Note The password is case sensitive. Although the password is optional, we recommended using a password for improved system security.

6. Update the **Date & Time** and **Time Zone** information (if necessary), and then click **Next**.

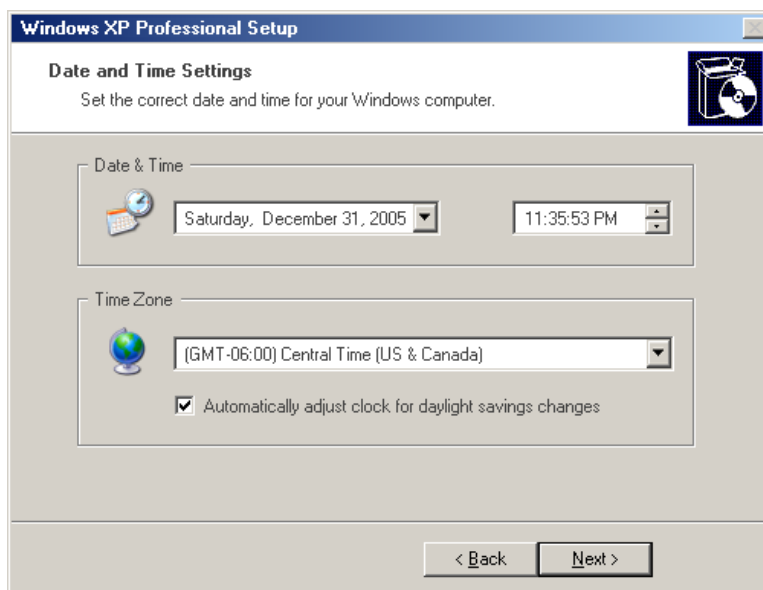


Figure 3-6 Date & Time and Time Zone entry

7. If you have a simple peer-to-peer network, click **Typical Settings**, otherwise click **Custom Settings**, and then click **Next**.

Note If you are unsure as to which option to choose, consult with your network administrator.

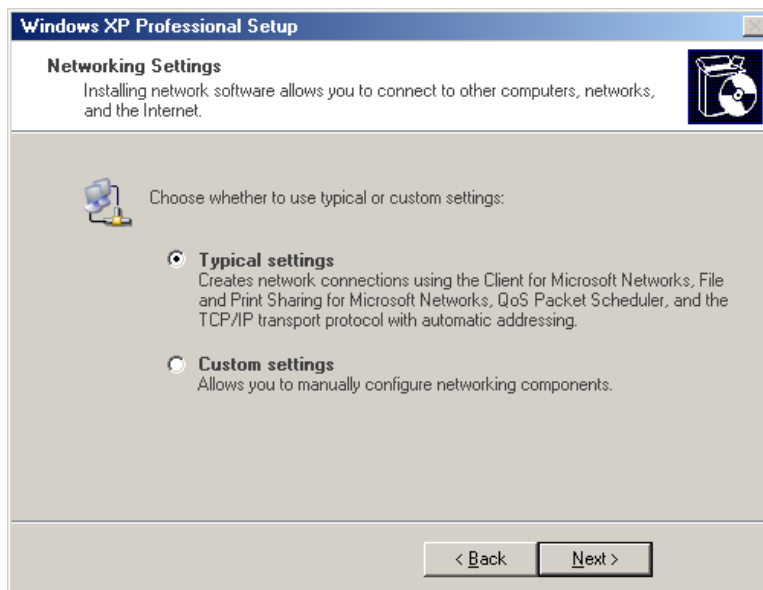


Figure 3-7 Networking Settings entry

8. Select one of the following, and then click **Next**:
 - If your system is not networked, click **No**, and then accept the default name, which is "WORKGROUP".

- To join a peer-to-peer network, select **No**, and then type the name of the workgroup you want to join.
- To join a client/server network, click **Yes**, and then type the name of the domain (server name) that you want to join.

Note If you are unsure as to which option to choose, consult with your network administrator.

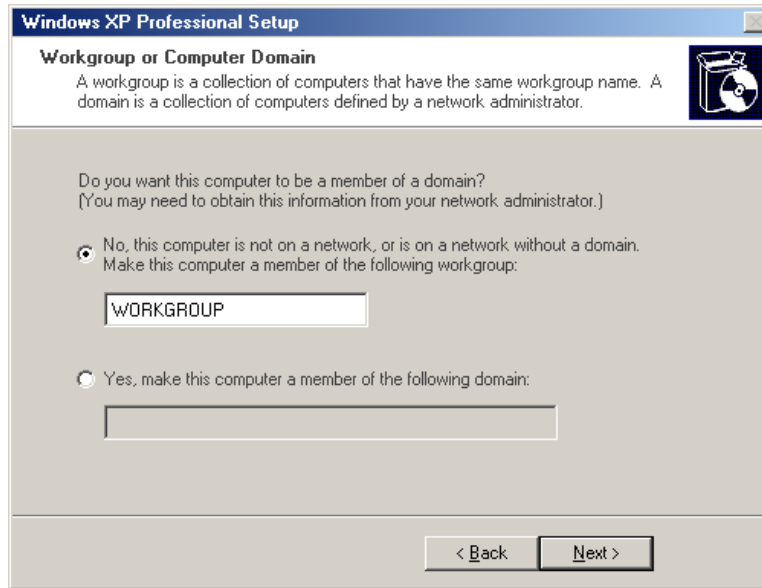


Figure 3-8 Workgroup or Computer Domain entry

The Setup Wizard completes its configuration, and the system restarts.

9. Log on using the username *Administrator*, and then enter the Administrator password you specified (if any) in step 5 on page 21.

3.3 Shutting Down or Restarting

You can use any of the standard Windows shutdown methods to shut down the Thermite unit. For example:

1. On the taskbar, click **Start**, and then click **Shut Down**.
2. In the **Shut Down Windows** dialog box, select the desired option:
 - **Restart** Shut down and restart the system.
 - **Shutdown** Shut down the system.
 - **Hibernate** Place the system into Hibernation mode.
 - **Log Off** Log off the current user session.



Figure 3-9 Shut Down Windows dialog box

3. Click the **OK** button.

Alternatively:

1. Press CTRL+ALT+DEL to open the **Windows Security** dialog box.
2. Click **Shut Down**, and then click **OK**.

Chapter 4

Configuring the System

This chapter shows the steps necessary to configure your system's display settings, GPS, networking, power settings, and boot device order.

4.1 Changing Display Settings

To change the color or resolution:

1. From the taskbar, select **Start** → **Settings** → **Control Panel** → **Display**.
—or—
Right-click within the desktop, and then select **Properties**.
2. In the **Display Properties** dialog box, click the **Settings** tab.

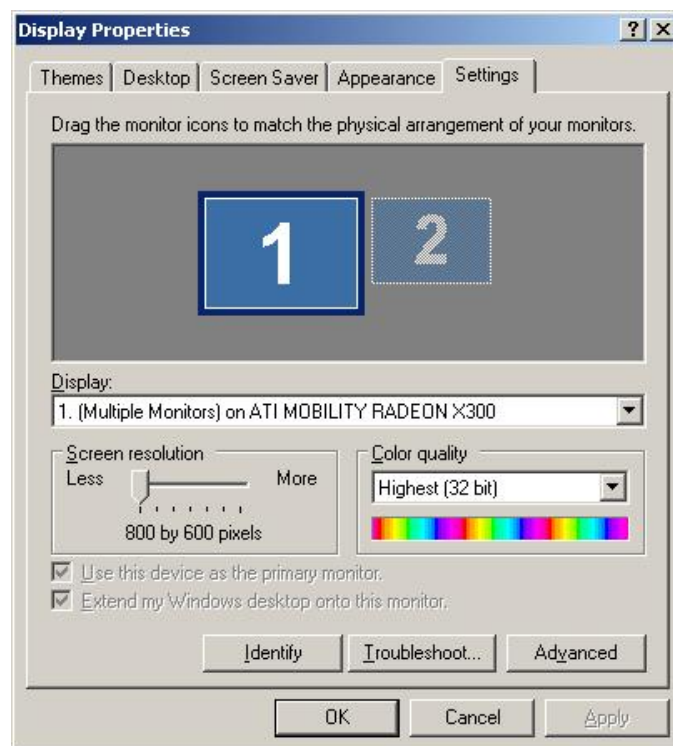


Figure 4-1 Display Properties dialog box

3. Under **Color quality**, select the required color depth.
4. Under **Screen resolution**, drag the slider to select the resolution.
5. Click the **Apply** button to apply these changes.
6. In the message box that prompts to keep the new settings, click **OK**.
The desktop refreshes with the changes applied.
7. In the message box that prompts for the new settings to be applied, click **Yes**.

4.2 Enabling or Configuring a TV Display

You can configure the Thermite TVC-2 system to display on an analog VGA monitor, a television display, or both.

Note *If you are using cables from the Thermite TVC-2 development kit, see the development kit documentation for details about these cables. If you are using internally developed cables, consult your internally generated documentation for details about the cables.*

To configure the display:

1. From the taskbar, select **Start** → **Settings** → **Control Panel** → **Display**.
—or—
Right-click within the desktop, and then select **Properties**.
2. In the **Display Properties** dialog box, click the **Settings** tab.

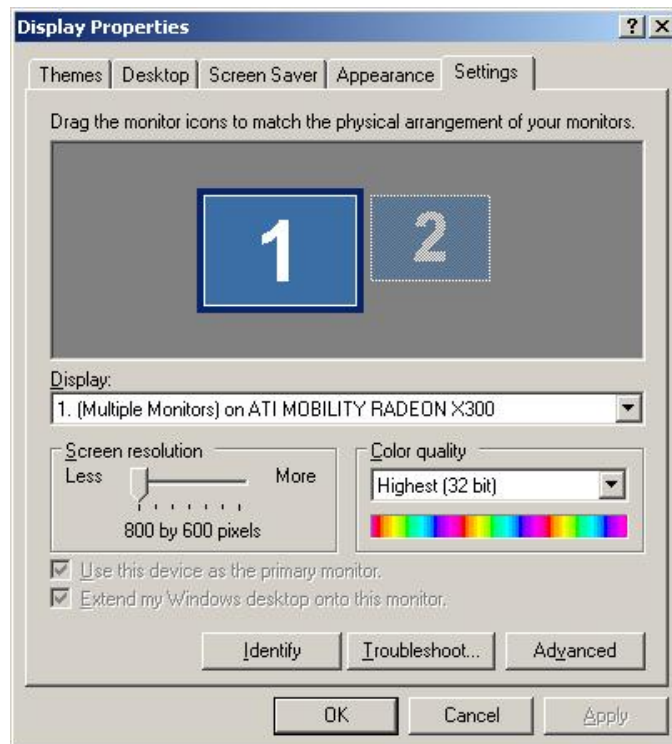


Figure 4-2 Display Properties dialog box

3. Click the **Advanced** button to open the **(Multiple Monitors) and ATI MOBILITY RADEON X300 Properties** dialog box.

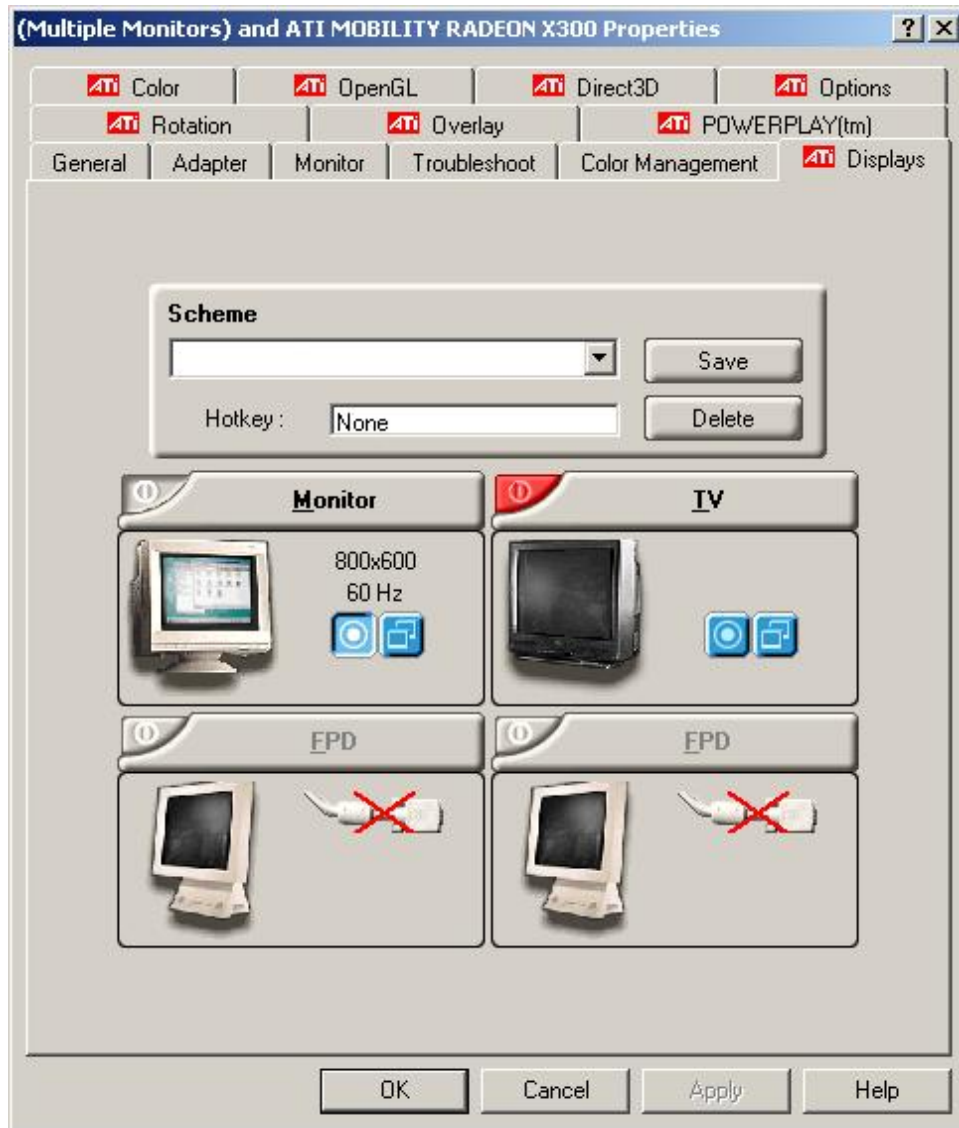


Figure 4-3 (Multiple Monitors) and ATI MOBILITY RADEON X300 Properties dialog box

4. Click the **Displays** tab, the red button at the leftmost edge of the **TV** button, and **OK**.
—or—
Click the **Displays** tab, and then click the **TV** button.



Figure 4-4 Monitor and TV selections

The **TV Properties** dialog box opens.



Figure 4-5 TV Properties dialog box

5. Variously click the four tabs to adjust the corresponding TV display properties.
 - **Attributes** Adjust the TV monitor contrast and color saturation.
 - **Adjustments** Adjust the TV monitor screen position and screen size/overscan.
 - **Advanced** Adjust the TV monitor flicker and sharpness.
 - **Format** Adjust the TV signal format, such as NTSC or PAL.
6. Click **OK** as necessary to close the dialog box.

4.3 Configuring the GPS

Thermite TVC-2 units equipped with a GPS device (Model 1210 or 1310) are shipped with the GPS already configured. To verify the GPS configuration, run the **Gpsinfo** application.

1. On the desktop, double-click the **Gpsinfo** icon to run the application and display the **GPS Information** dialog box.



Figure 4-6 Gpsinfo icon

2. Ensure that **COM Port** is set to **COM5:** and **Baud Rate** is set to **4800**.

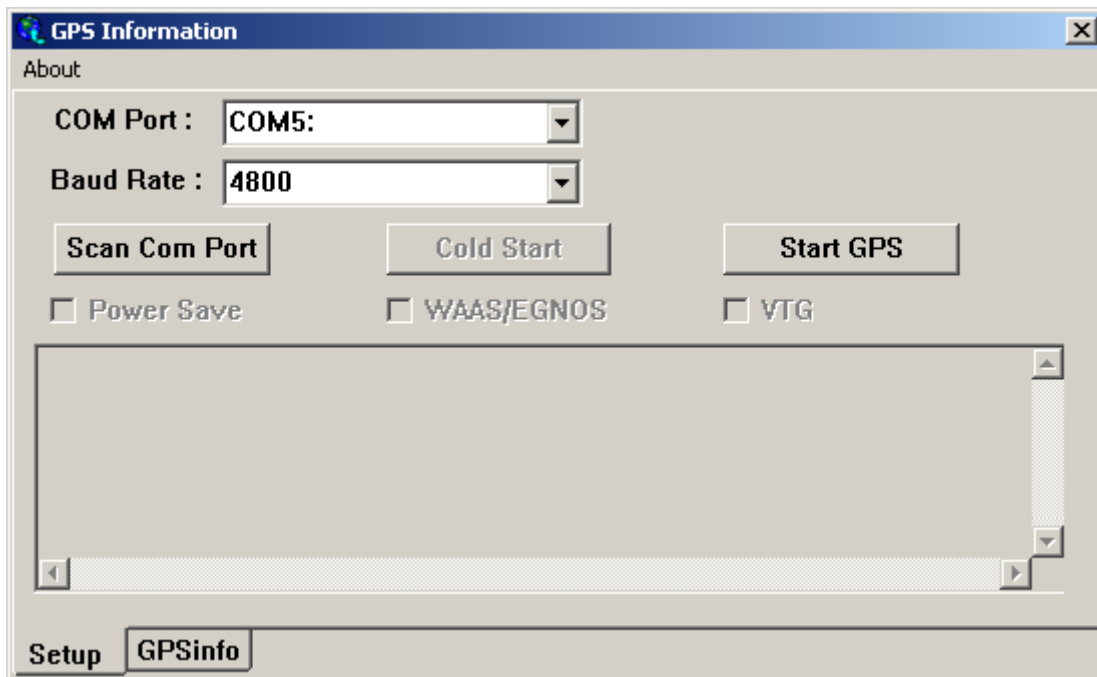


Figure 4-7 GPS Information dialog box

3. If the GPS is not being seen by your software application, click the **Scan Com Port** button to search all system COM ports for the GPS device.

4. View the results in the **Scan Ports** dialog box.

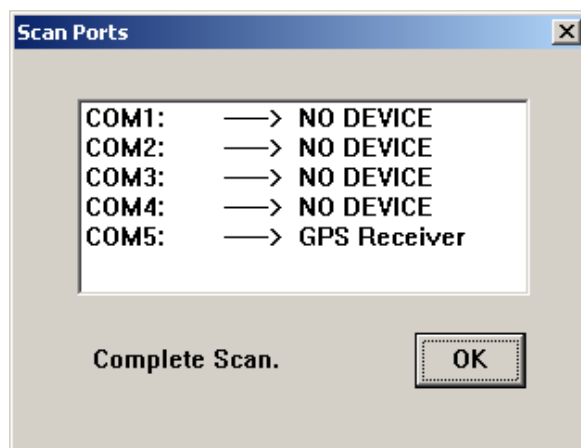


Figure 4-8 Scan Ports dialog box

5. Click **OK** to close the dialog box.
6. After the GPS device has been found on a COM port (and the baud rate for that port has been set to 4800), click the **Start GPS** button to test the communication path to the GPS device.
7. If the system communicates successfully with the GPS device, data appears in the dialog box pane.

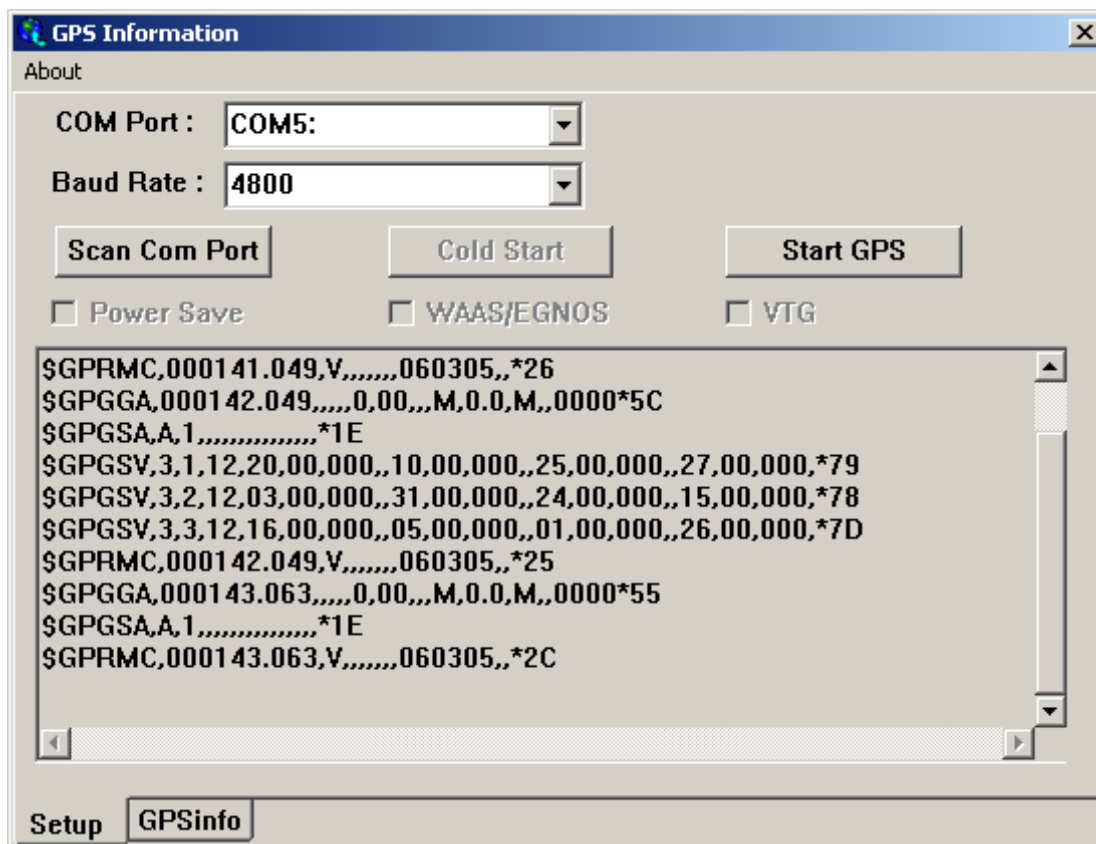


Figure 4-9 GPS device communication

4.4 Wireless Network Setup

The Thermite unit is shipped with network security disabled. Thus, the unit can communicate with a wide range of third-party wireless access points with a minimal amount of configuration.

You can enable Wi-Fi® Protected Access (WPA) security on the Thermite unit and on an associated access point.

Two areas of security are enabled:

- **Authentication** This prevents unwanted clients from attaching to your network, and keeps your clients from attaching to other rogue networks. Several authentication types are used:
 - **Non-beacon SSID** The access point is configured so as not to broadcast the network's service set identifier (SSID), preventing unwanted association attempts.
 - **MAC Address Authentication** The access point is configured to allow only clients whose MAC address is on an approved list to associate to the access point.
 - **WPA Key Management** The access point and clients are configured to use this IEEE 802.11i-compatible method for authenticated key management providing increased levels of data protection and access control.
- **Encryption** This prevents eavesdroppers from reading captured network traffic, and from broadcasting "spoofed" network packets. WPA uses the Temporal Key Integrity Protocol (TKIP) for encryption with 128-bit keys that the authentication server (access point) dynamically generates and distributes.

Disabling Remote Entry Points into Windows XP

To disable remote entry points:

1. On the desktop, right-click the **My Computer** icon
—or—
Click the **Start** button, and then right-click **My Computer**.
2. Click **Properties** to open the **System Properties** dialog box, and then click the **Remote** tab.

3. Clear both the **Allow Remote Assistance invitations to be sent from this computer** and the **Allow users to connect remotely to this computer** check boxes, and then click **OK**.

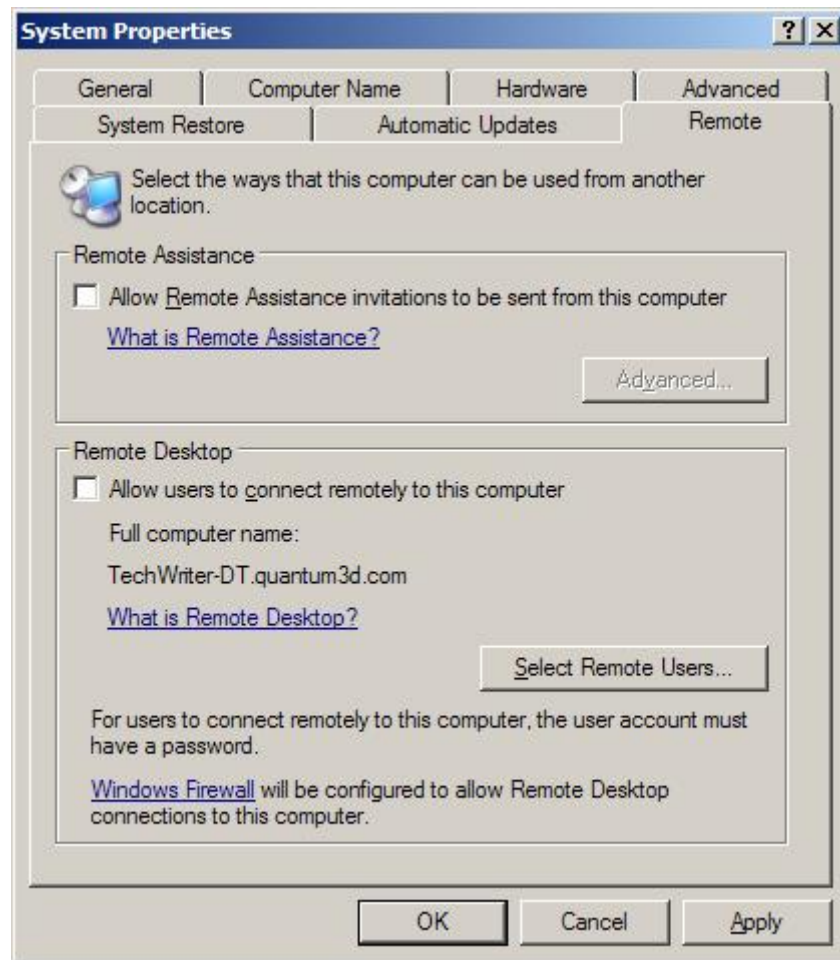


Figure 4-10 System Properties dialog box

Enabling the Firewall in Windows XP

By default, the firewall is enabled in Windows XP with Service Pack 2 or later. If the firewall has been disabled for any reason, perform these steps:

4. Click **Start** → **Control Panel** → **Network Connections** to open the **Network Connections** panel.

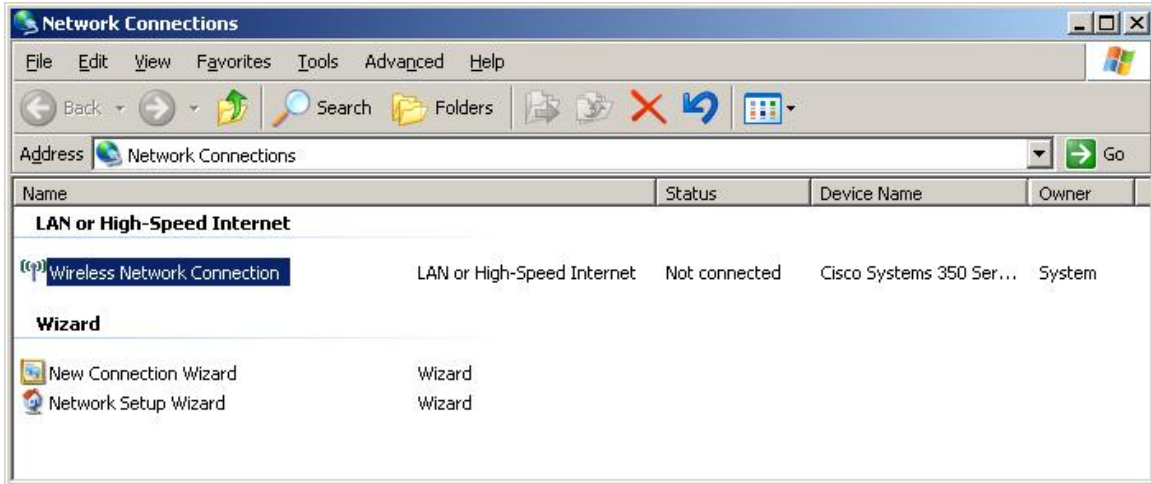


Figure 4-11 Network Connections panel

5. Click **Wireless Network Connection** to open the **Wireless Network Connection** dialog box.

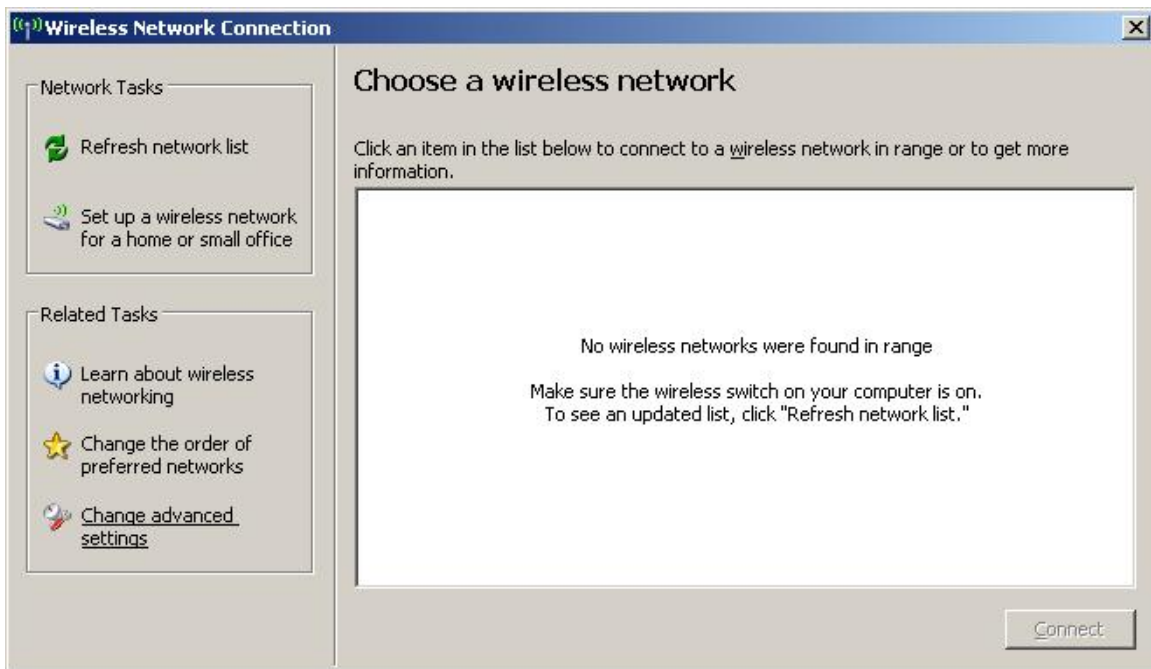


Figure 4-12 Wireless Network Connection dialog box

- Click **Change advanced settings** to open the **Wireless Network Connection Properties** dialog box, and then select the **Wireless Networks** tab.

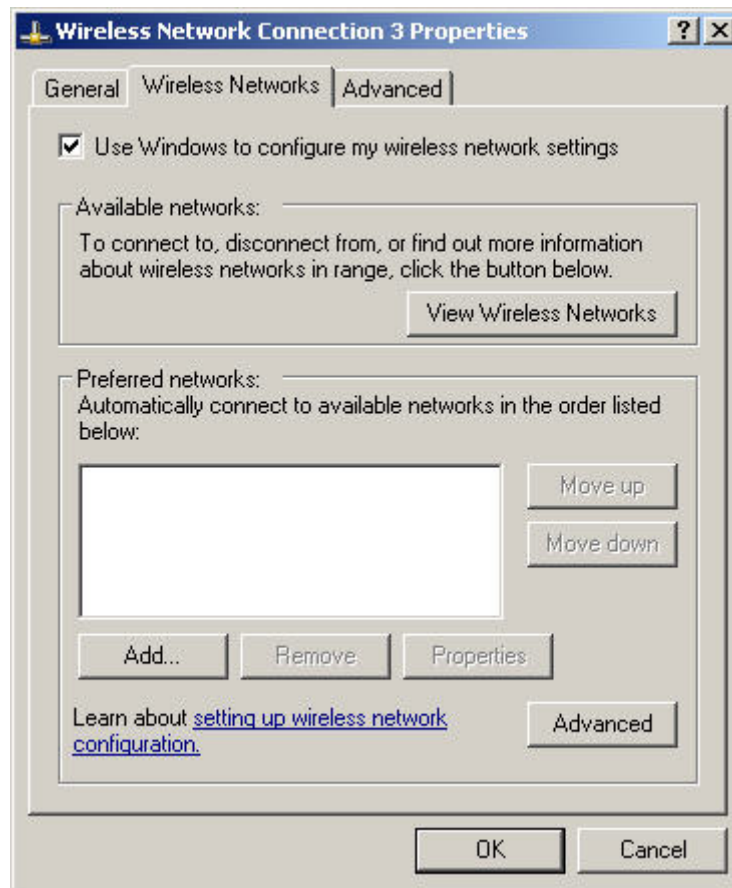


Figure 4-13 Wireless Network Connection Properties dialog box

- Select the **Use Windows to configure my wireless network settings** check box, and then click the **Advanced** tab.



Figure 4-14 Firewall settings access

8. Under **Windows Firewall**, click **Settings** to open the **Windows Firewall** dialog box.



Figure 4-15 Windows Firewall dialog box

9. Click **On (recommended)**, and then select the **Don't allow exceptions** check box.
10. Click **OK** to return to the **Wireless Network Connection** dialog box.

Setting Up the Wireless Network

To set up the wireless network:

1. Open the **Wireless Network Connection** dialog (if it is not already open). To open it, see “Enabling the Firewall in Windows XP” on page 35.

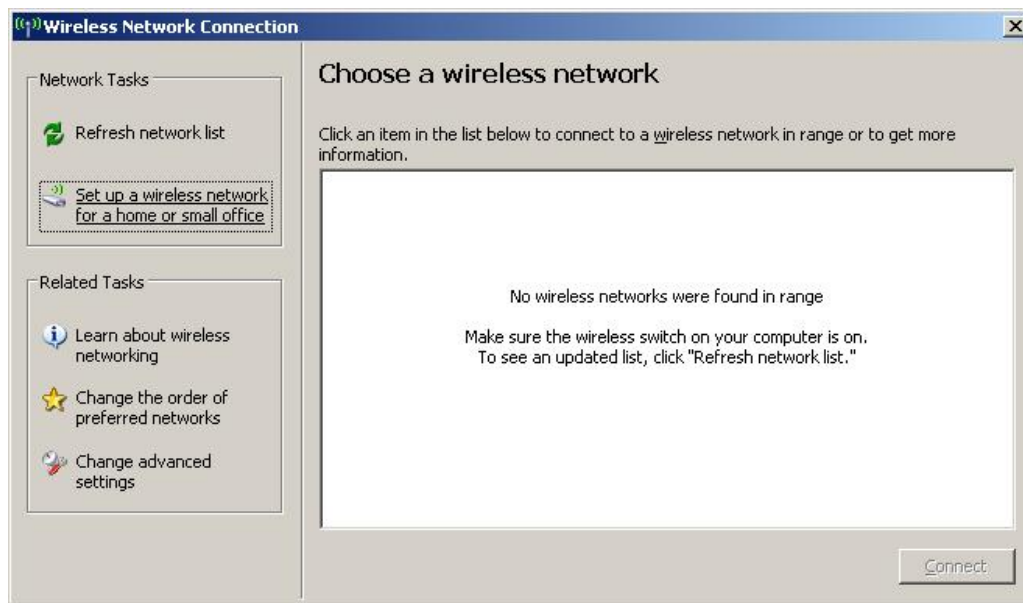


Figure 4-16 Wireless Network Connection dialog box

2. Under Network Tasks, click **Set up a wireless network for a home or small office** to open the **Wireless Network Setup Wizard** dialog box.

3. In the **Network Name (SSID)** box, enter a network name. This name string will be used in configuring other Thermite units and the access point.

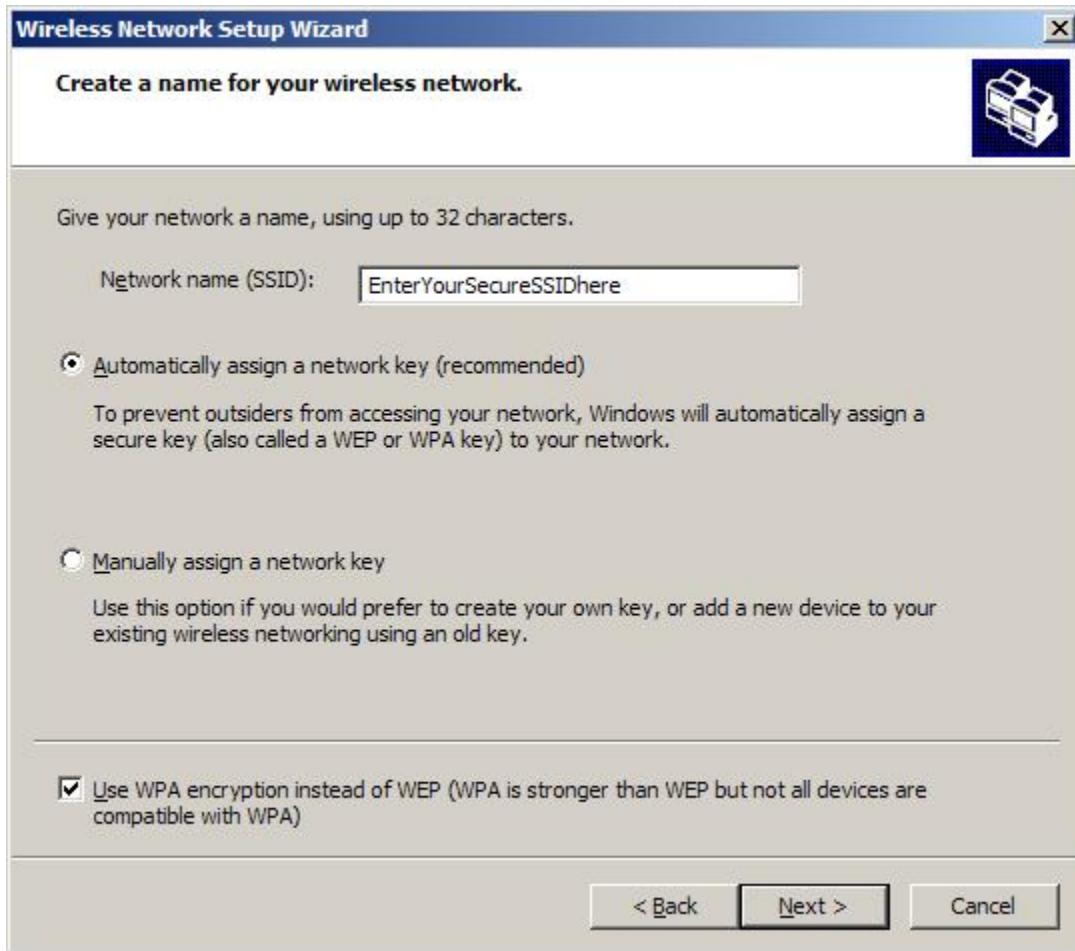


Figure 4-17 Wireless Network Setup Wizard dialog box

4. Select **Automatically assign a network key (recommended)**.
5. Select the **Use WPA encryption instead of WEP** check box, and then click **Next**.

6. Select **Use a USB flash drive (recommended)** if you have such a drive available and your other devices (including the access point) have USB bus connections available.
—or—
Select **Set up a network manually.** to display the network settings on the screen.

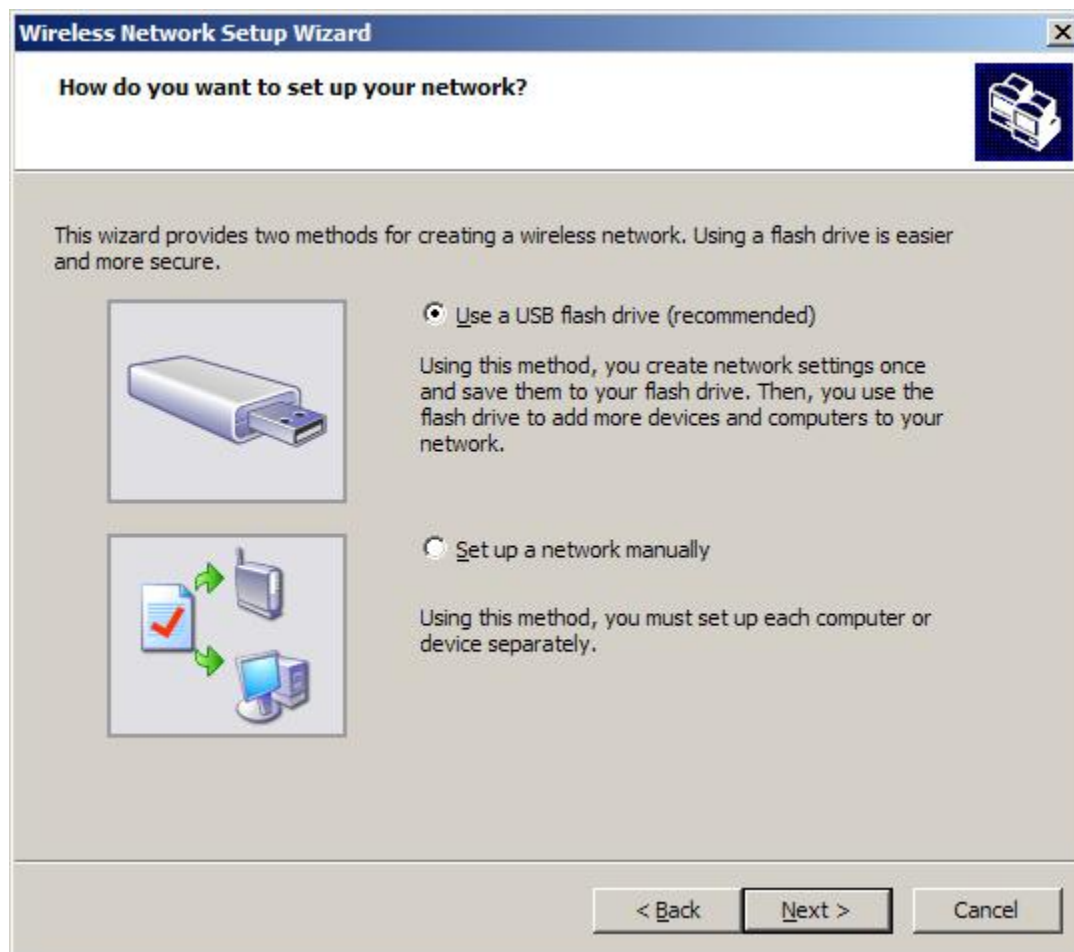


Figure 4-18 Network setup methods

The Using a USB Flash Drive Option

If you selected the USB Flash Drive option:

1. Attach your flash drive to one of the Thermite USB connectors. For **Flash drive** select a drive letter, and then click **Next** to save the settings to the drive.

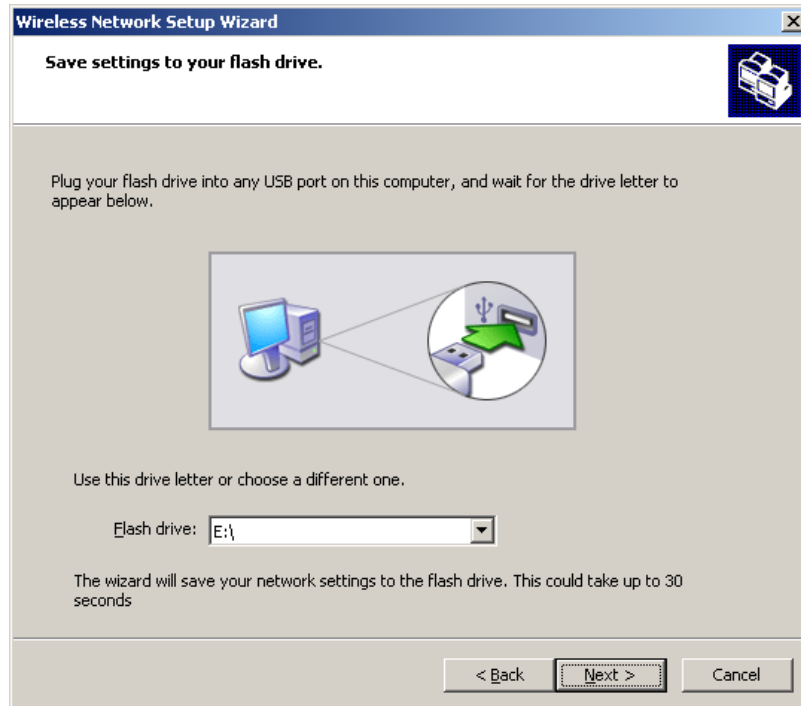


Figure 4-19 Saving settings to the flash drive

2. Follow the dialog box instructions to use the USB flash drive to automatically configure other Thermite units with the network settings. Some access points have USB ports and can be auto-configured.

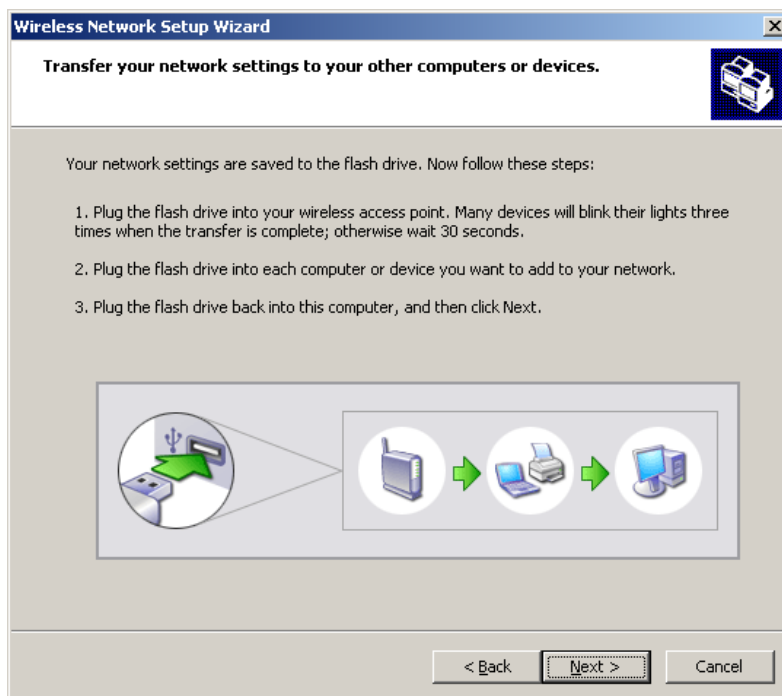


Figure 4-20 Flash drive network settings transfer

3. When you have finished configuring other Thermite units, plug the flash drive back into this unit and press the **Next** button to complete the process and exit the Wizard.

The Manual Configuration Option

If you selected the Manual Configuration option:

1. Click the **Print Network Settings** button to display the network key and other network settings.



Figure 4-21 Completing network setup

2. Save the network key information, which you will require to manually configure the access point.

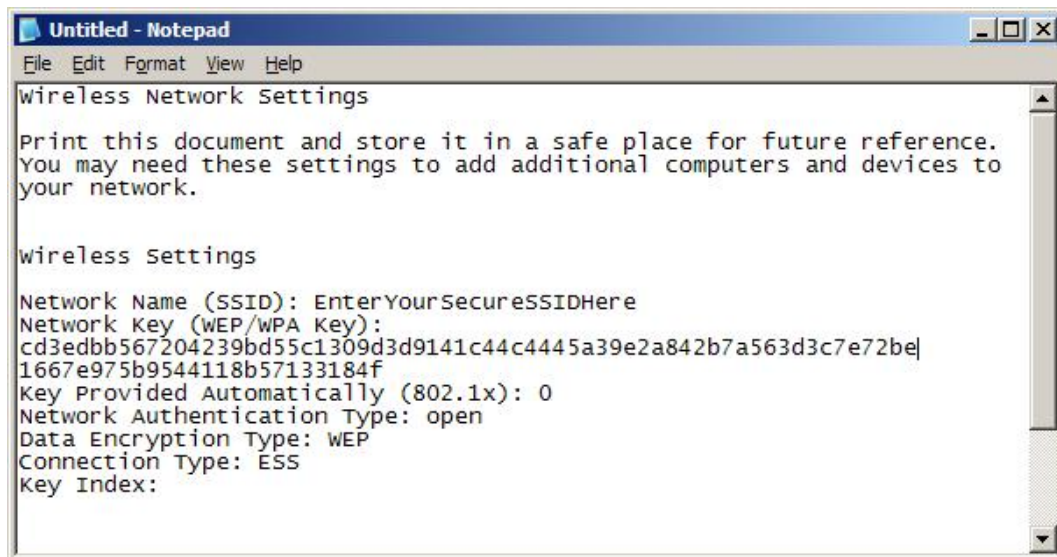


Figure 4-22 Network key

Restricting Access to Other Wireless Networks

To restrict access to other wireless networks:

1. Open the **Wireless Network Connection** dialog as described in “Enabling the Firewall in Windows XP” on page 35.
2. Click **Change advanced settings** to open the **Wireless Network Connection Properties** dialog box.

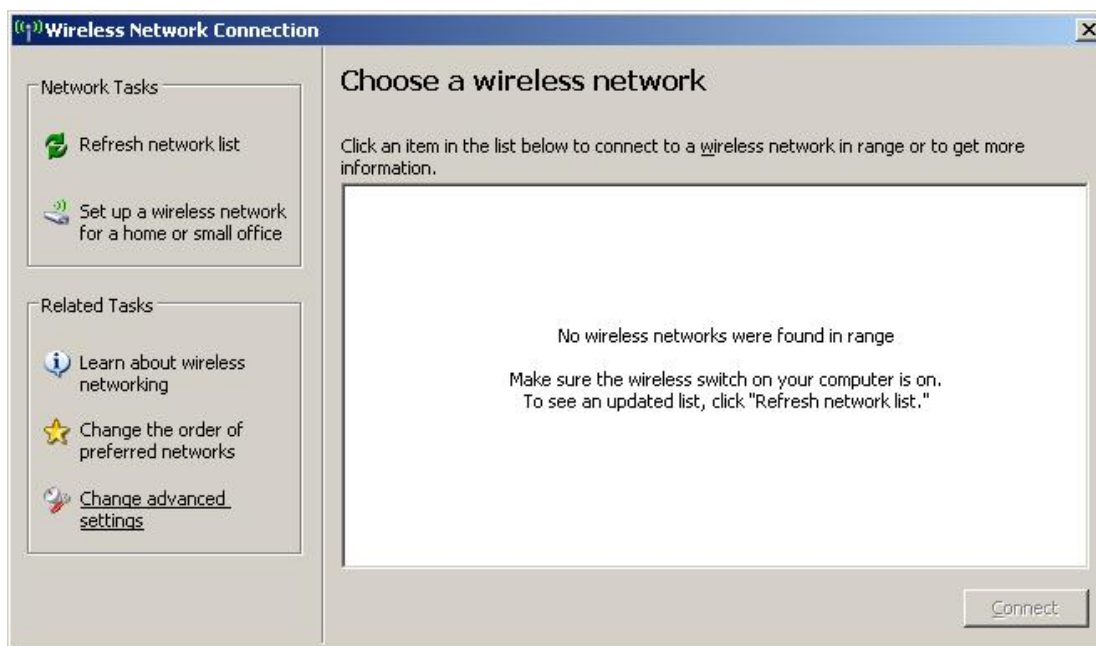


Figure 4-23 Wireless Network Connection advanced settings

3. Click the **Wireless Networks** tab, and then click the **Advanced** button.

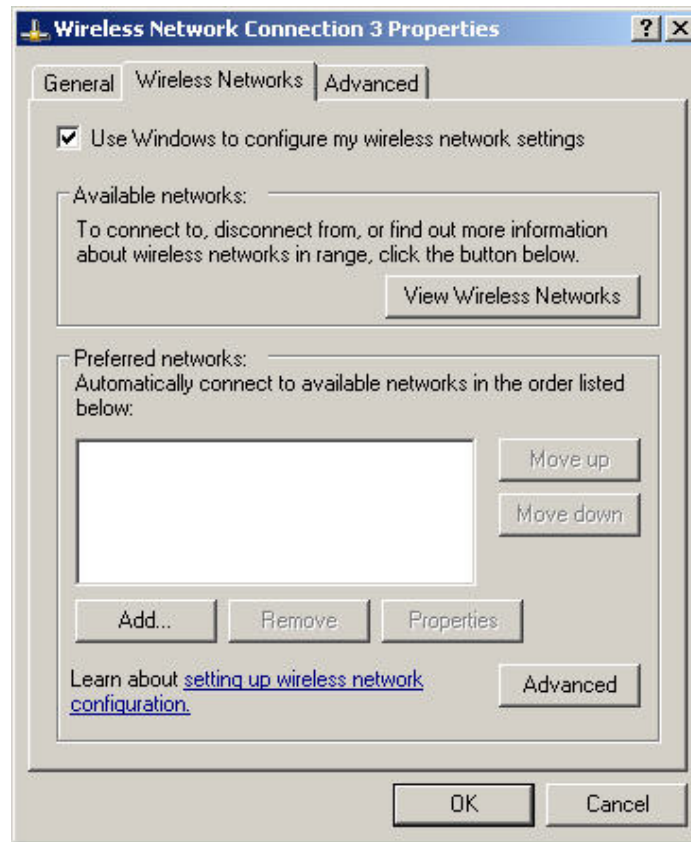


Figure 4-24 Advanced settings access

4. Select **Access Point (infrastructure) networks only**.
5. Clear the **Automatically connect to non-preferred networks** check box, and then click **Close**.

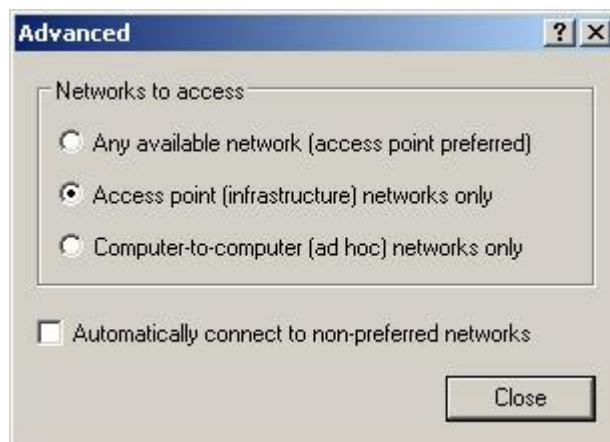


Figure 4-25 Advanced dialog box

6. If there are any networks listed other than the one you created, select each one in turn, and then click **Remove**.

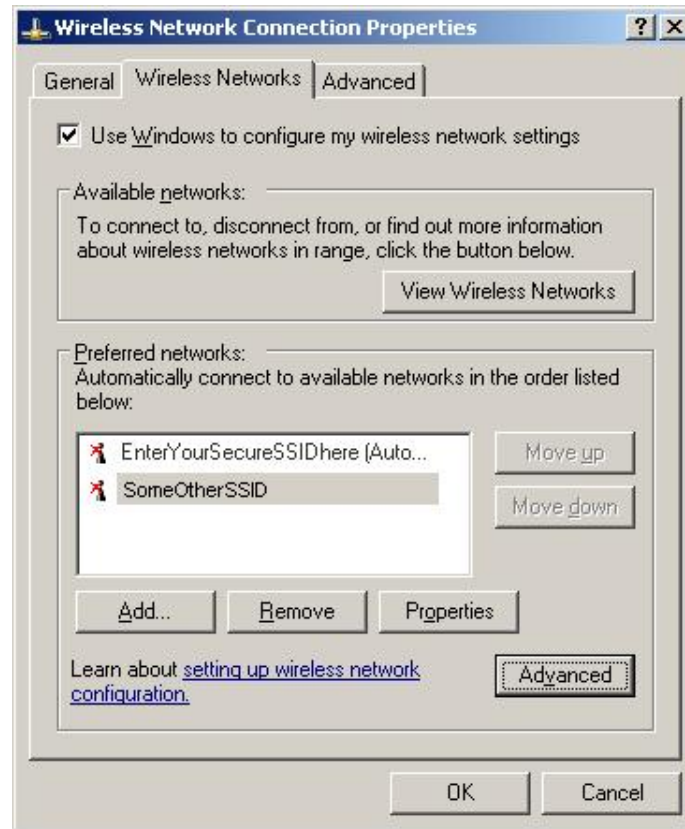


Figure 4-26 Removing other networks

Manually Configuring an Access Point

You must manually configure your access point to match the network settings applied to the Thermite TVC-2 unit. The following instructions use a Cisco 1200 access point as an example to illustrate the process, but you may use any access point compliant with the 802.11 standard. Follow the manufacturer's instructions that came with your particular access point to configure the following:

- SSID
- MAC address authentication
- WPA key management
- TKIP encryption

To configure the access point:

1. Run the configuration application.

Cisco Systems

Cisco 1200 Access Point

Hostname AccessPoint

Express Set-Up

System Name: AccessPoint

MAC Address: 000f.1768.58fe

Configuration Server Protocol: ☒ DHCP ☐ Static IP

IP Address: Negotiated by DHCP

IP Subnet Mask: Negotiated by DHCP

Default Gateway: Negotiated by DHCP

SNMP Community: defaultCommunity

☒ Read-Only ☐ Read-Write

Radio0-802.11G

SSID: EnterYourSecureSSIDhere

Broadcast SSID in Beacon: ☐ Yes ☒ No

Role in Radio Network: ☒ Access Point Root ☐ Repeater Non-Root

Optimize Radio Network for: ☐ Throughput ☐ Range ☒ Default ☐ Custom

Aironet Extensions: ☒ Enable ☐ Disable

Apply Cancel

Figure 4-27 Example Cisco 1200 Access Point dialog box

2. In the menu, select **Express Setup**.
3. For **SSID**, enter the same string you used with your Thermite TVC-2 unit.
For more information, see Figure 4-17, “Wireless Network Setup Wizard dialog box” on page 39.
4. For **Broadcast SSID in Beacon**, click **No**.

5. In the menu, select **Security** → **Advanced Security**, and then select the **MAC Address Authentication** tab.

The screenshot displays the Cisco 1200 Access Point configuration web interface. On the left is a navigation menu with the following items: HOME, EXPRESS SET-UP, NETWORK MAP (+), ASSOCIATION, NETWORK INTERFACES (+), SECURITY (highlighted), Admin Access, SSID Manager, Encryption Manager, Server Manager, Local RADIUS Server, Advanced Security (highlighted), SERVICES (+), WIRELESS SERVICES (+), SYSTEM SOFTWARE (+), and EVENT LOG (+). The main content area is titled 'Cisco 1200 Access Point' and has two tabs: 'MAC ADDRESS AUTHENTICATION' (active) and 'EAP AUTHENTICATION'. Below the tabs, the 'Hostname' is set to 'AccessPoint'. The 'Security: Advanced Security- MAC Address Authentication' section contains the 'MAC Address Authentication' settings. Under 'MAC Addresses Authenticated by:', there are three radio buttons: 'Local List Only' (selected), 'Authentication Server Only', and 'Authentication Server if not found in Local List'. 'Apply' and 'Cancel' buttons are present. Below this is the 'Local MAC Address List' section. It features a 'Local List:' label and an empty table with a 'Delete' button. At the bottom, the 'New MAC Address:' field contains '000F.906D.46C9' with a placeholder '(HHHH.HHHH.HHHH)' and an 'Apply' button.

Figure 4-28 MAC Address Authentication

6. For each Thermite TVC-2 unit you want to wirelessly connect, type its address in the **New MAC Address** box, and then click **Apply**. Each address adds to the **Local List** pane.

- In the menu, select **Security** → **SSID Manager**, and then in the **Current SSID List** pane, select the Thermite unit's SSID.

The screenshot shows the Cisco 1200 Access Point configuration web interface. On the left is a navigation menu with the following items: HOME, EXPRESS SET-UP, NETWORK MAP (+), ASSOCIATION, NETWORK INTERFACES (+), SECURITY (highlighted), Admin Access, SSID Manager (highlighted), Encryption Manager, Server Manager, Local RADIUS Server, Advanced Security, SERVICES (+), WIRELESS SERVICES (+), SYSTEM SOFTWARE (+), and EVENT LOG (+). The main content area is titled "Cisco 1200 Access Point" and "Hostname: AccessPoint". It contains the "Security: SSID Manager" section, which includes "SSID Properties" and "Current SSID List". The "Current SSID List" shows a table with one entry: "< NEW >" and "EnterYourSecureSSIDhere". To the right of this list are fields for "SSID:" (containing "EnterYourSecureSSIDhere") and "VLAN:" (set to "< NONE >"). Below the list is a "Delete" button. The "Authentication Settings" section includes "Methods Accepted:" with three options: "Open Authentication:" (checked, set to "with MAC Authentication"), "Shared Authentication:" (unchecked, set to "< NO ADDITION >"), and "Network EAP:" (unchecked, set to "< NO ADDITION >"). The "Authenticated Key Management" section includes "Key Management" (set to "Mandatory") and checkboxes for "CCKM" (unchecked) and "WPA" (checked). Below this is the "WPA Pre-shared Key:" field containing "cd3edbb567204239b" and radio buttons for "ASCII" (unchecked) and "Hexadecimal" (checked). At the bottom right are "Apply" and "Cancel" buttons.

Figure 4-29 SSID selection

- Under **Methods Accepted**, select the **Open Authentication** check box, and then select **with MAC Authentication** from the list.
- Select the **WPA** check box, and then in the **WPA Pre-shared Key** box, enter the 64-digit hexadecimal key that was displayed as part of the Thermite settings. For more information, see Figure 4-22, "Network key" on page 43.

10. In the menu, select **Security** → **Encryption Manager**.

The screenshot shows the Cisco 1200 Access Point configuration web interface. The left sidebar contains a menu with options: HOME, EXPRESS SET-UP, NETWORK MAP, ASSOCIATION, NETWORK INTERFACES, SECURITY (highlighted), Admin Access, SSID Manager, Encryption Manager (highlighted), Server Manager, Local RADIUS Server, Advanced Security, SERVICES, WIRELESS SERVICES, SYSTEM SOFTWARE, and EVENT LOG. The main content area is titled "Cisco 1200 Access Point" and "Hostname: AccessPoint". The "Security: Encryption Manager" section is active, showing "Encryption Modes" with radio buttons for "None", "WEP Encryption" (set to "Optional"), and "Cipher" (selected, set to "TKIP"). Below this are "Cisco Compliant TKIP Features" checkboxes for "Enable MIC" and "Enable Per Packet Keying". The "Encryption Keys" section has a table with four rows for "Encryption Key 1" through "Encryption Key 4", each with a "Transmit Key" radio button, an "Encryption Key (Hexadecimal)" input field, and a "Key Size" dropdown menu (all set to "128 bit"). The "Encryption Key 2" radio button is selected. The "Global Properties" section includes "Broadcast Key Rotation Interval" with radio buttons for "Disable Rotation" and "Enable Rotation with Interval" (selected, with a value of "600" and a range of "(10-10000000 sec)"), and "WPA Group Key Update" with two checked checkboxes: "Enable Group Key Update On Membership Termination" and "Enable Group Key Update On Member's Capability Change". At the bottom right are "Apply" and "Cancel" buttons.

Figure 4-30 Encryption Manager

11. Under **Encryption Modes**, select **Cipher**, and then from the Cipher list select **TKIP**.

Note No static encryption keys are required since TKIP generates dynamic keys. You can also configure the broadcast key rotation timings and enable group key updates for certain circumstances with the Cisco 1200 access point:

12. Configure optional settings, if desired:
- Under **Broadcast Key Rotation Interval**, select **Enable Rotation with Interval**, and then enter a desired interval.
 - Under **WPA Group Key Update**, select the desired option check boxes.
13. Click **Apply**, and then exit the configuration application to complete access point configuration.

4.5 Changing Power Settings

The Thermite TVC-2 Application

Thermite TVC-2 units support a wide range of customer application requirements, and thus include three power management and performance modes:

- **Max. Compute/Graphics Performance**
This mode represents full performance for both graphics and compute-intensive applications. The Thermite unit runs as fast as it can, but it also consumes the most power.
- **Balanced Compute/Graphics Performance**
In a highly managed state, the Thermite unit attempts to conserve power while running as fast as possible. System management software monitors the internal component temperatures and power usage, regulating speed and performance accordingly.
- **Max. Battery Life**
In this long battery life mode, system management software sets the unit to conserve energy and run as efficiently as possible while still providing adequate performance characteristics.

To set (or view) the power management and performance modes:

1. On the desktop, double-click the **Thermite TVC-2** application icon:



Figure 4-31 Thermite TVC-2 application icon

—or—

In the system tray, click the **TVC-2** icon.

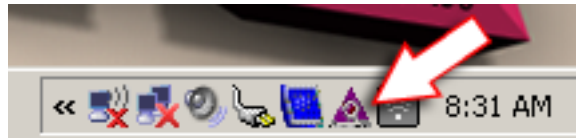


Figure 4-32 TVC-2 icon

2. In the **Thermite Settings** dialog box, select the **Thermite Performance Settings** option most appropriate to your requirements, and then click **OK**.

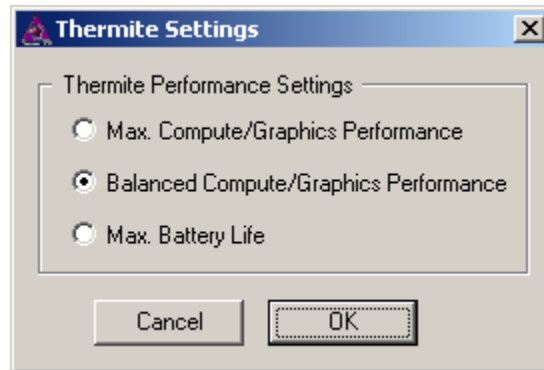


Figure 4-33 Thermite Settings dialog box

4.6 Windows XP Embedded Operating System and Write Filtering

The Thermite TVC-2.0 TL unit runs the Windows XP Embedded operating system, which can filter disk writes in order to protect disk volumes or individual files. The operating system (with Feature Pack 2007) provides two types of write filters: Enhanced Write Filter (EWF) and File-Based Write Filter (FBWF). The image includes both filters, which can operate at the same time, provided that they aren't protecting the same partition.

You can find an overview of the Enhanced Write Filter on the Microsoft web site at:
<http://msdn2.microsoft.com/en-us/library/ms912915.aspx>

You can find an overview of the File-Based Write Filter on the Microsoft web site at:
<http://msdn2.microsoft.com/en-us/library/aa940926.aspx>

4.7 Changing HORM and EWF Settings

HORM

By default, your Thermite unit is set with HORM (Hibernate Once Resume Many) enabled so that the Windows XPE operating system can hibernate and resume like Windows XP Pro. If HORM is disabled, you may enable it.

To enable HORM:

1. Open a Command Prompt window.
Click Start → All Programs → Accessories → Command Prompt.
2. Enter **ewfmgr c: -activatehorm**

EWF

By default, your Thermite unit is set with the EWF (Enhanced Write Filter) disabled so that the Windows XPE operating system can hibernate and resume like Windows XP Pro. (For more information about EWF, see Section 4.6, "Windows XP Embedded Operating System and Write Filtering" on page 52.)

With EWF enabled, your system can hibernate once, and then always resume from that same hibernation state every time you start it up. This minimizes writes to the volume and improves boot up and shutdown times.

To enable the EWF:

1. Open a Command Prompt window.
Click Start → All Programs → Accessories → Command Prompt.
2. Enter **ewfmgr c: -enable**
3. Restart the system.
4. After hibernating for the first time, the system will always start up or come out of hibernation from that saved state.

Updating Disk Contents

In order to update the contents of the disk, you must disable both HORM and the EWF.

To disable HORM and the EWF:

1. Open a Command Prompt window.
Click Start → All Programs → Accessories → Command Prompt.
2. Enter **ewfmgr c: -commitanddisable**
3. Enter **ewfmgr c: -deactivatehorm**
4. Restart the system.

To re-enable HORM and the EWF, follow the steps under HORM and EWF above.

4.8 Changing the Boot Order Using the BIOS Setup

By default, your Thermite unit attempts to start from bootable devices attached to the USB connectors before starting from the internal hard drive. Using the BIOS Setup, you can change the order in which the system searches for bootable devices. This enables you to add additional devices to the selection list or to remove items that you do not wish to be boot devices.

To change the boot order using the BIOS Setup:

1. While the BIOS power-on self test (POST) screen is being displayed, press the F2 key to open the **Phoenix BIOS Setup Utility** screen.

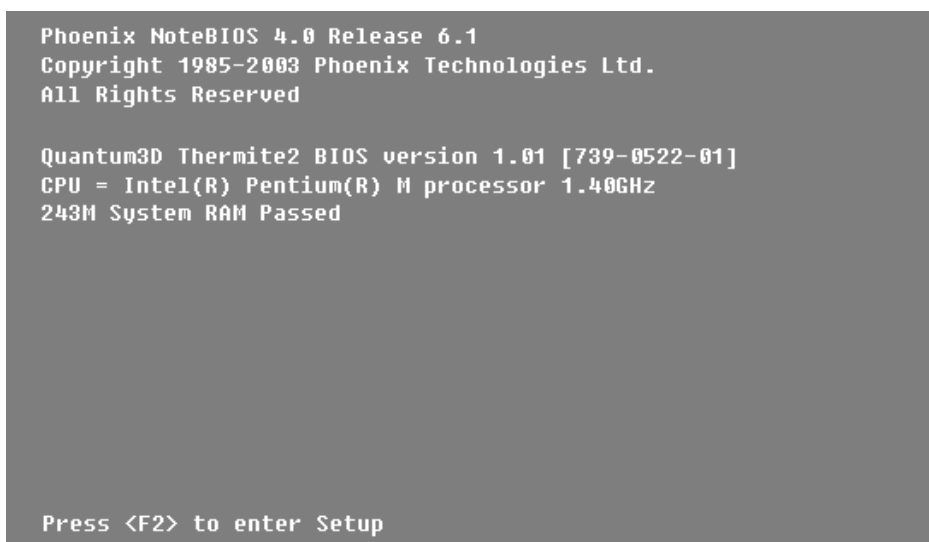


Figure 4-34 BIOS POST screen

The **Main** tab displays the BIOS version and other system information.

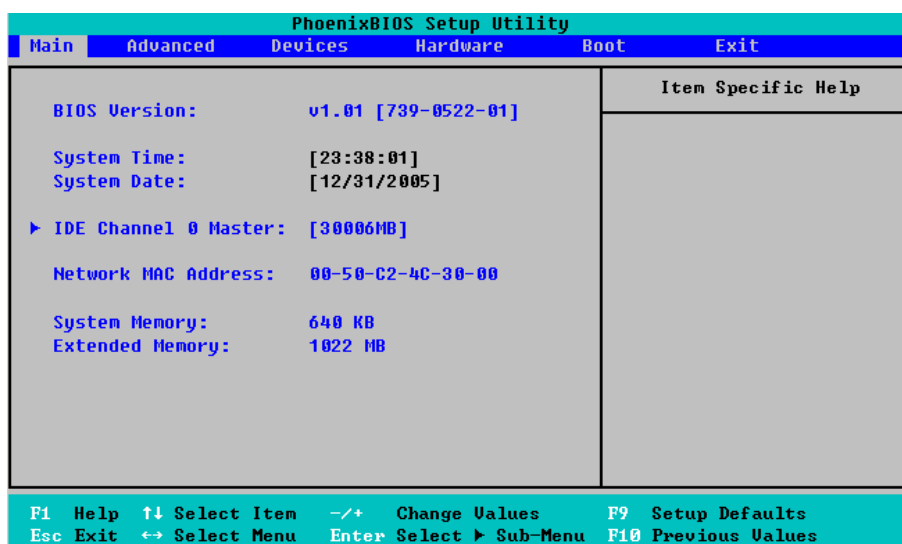


Figure 4-35 Phoenix BIOS Setup Utility Main tab

- Use the arrow keys to select the **Boot** tab.

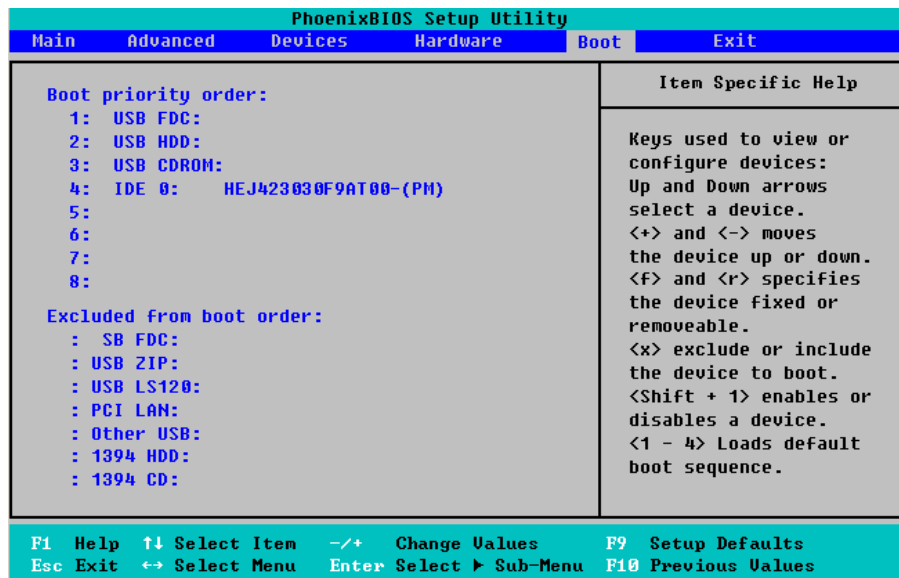


Figure 4-36 BIOS Setup Boot tab

- Review the current **Boot priority order** list, and then review the devices in the **Excluded from boot order** list.
- To transfer a device from one list to the other, press the up and down arrow keys to select the device, and then press the X key.
- To change the order in the **Boot priority order** list, use the up and down arrows to highlight the device, and then press the PLUS SIGN (+) key or the MINUS SIGN (-) key to move that device up or down in the list, respectively.
- After you have made the desired changes, press the right arrow key to select the **Exit** tab.

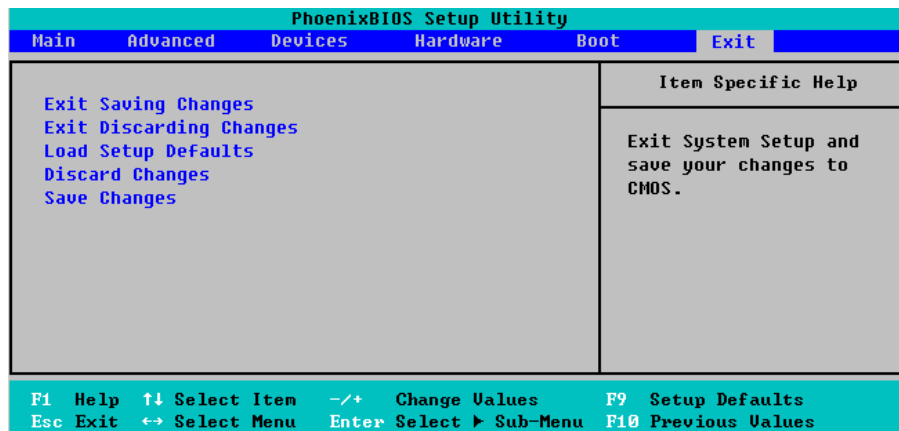


Figure 4-37 BIOS Setup Exit tab

- Press the up and down arrow keys to select **Exit Saving Changes**, and then press the ENTER key to save your changes and automatically restart the system.

This page concludes
Configuring the System.

Chapter 5

Maintaining the System

5.1 Regular System Maintenance

To help prevent damage to the Thermite TVC-2 system, install the waterproof cap on any I/O connector that is not being used.

Because the Thermite is cooled conductively, it is vital that the outer case fin areas be kept clear of debris, dirt, and so on, that might inhibit thermal convection. Periodically brush all sides of the case along the direction of the fins to keep them clear.



Figure 5-1 Brushing Thermite case fins

5.2 Restoring the System

Each Thermite unit ships with one of two methods for restoring the hard disk to its original contents as it was shipped from the factory. In certain situations, you may want (or be directed by Quantum3D support) to completely re-initialize and restore the hard disk to its original contents.



When you restore the hard disk you are reloading an image copy of the original drive C. Any files you have added to drive C after you received the system will be overwritten and no longer available. You must back up any files that you want to save from drive C prior to restoring the hard disk.

If your Thermite unit shipped with the bootable Thermite® TVC-2 1200 and 1300 Series Recovery UFD, you should follow the instructions in the section, “Restoring the Hard Disk with the Bootable UFD” below.

If your Thermite unit shipped with a bootable DVD labeled “Thermite® BOOTABLE RESTORE DVD”, you should follow the instructions in the section, “Restoring the Hard Disk with the Bootable DVD” below.

Restoring the Hard Disk with the Bootable UFD

1. Connect the recovery UFD to the Thermite TVC-2 unit.
2. Power on the system, which uses the UFD to start the system and run the hard disk restoration process.

Note *Before any changes are made, a series of messages prompts you to approve the restoration process.*

3. Approve the restoration message prompts.
When the hard disk restoration is complete, a message displays further on-screen instructions.
4. Follow the on-screen instructions to restart the system.
5. After the system restarts, you must repeat the system initialization procedures detailed in Section 3.2, “Logging On for the First Time” on page 20.

Restoring the Hard Disk with the Bootable DVD

1. Insert the DVD labeled “Thermite® BOOTABLE RESTORE DVD” into a USB-based DVD drive attached to the Thermite unit.
2. Power on the system, which uses the DVD to start both the system and the hard disk restoration process.

Note *Before any changes are made, a series of messages prompts you to approve the restoration process.*

3. Approve the restoration message prompts.
When the hard disk restoration is complete, a message displays further on-screen instructions.
4. Follow the on-screen instructions to restart the system.
5. After the system restarts, you must repeat the system initialization procedures detailed in Section 3.2, “Logging On for the First Time” on page 20.

Chapter 6

Troubleshooting Guide

6.1 Quantum3D Support

Web Based Support

Quantum3D technical support provides a web-based online problem tracking and reporting system. Hardware products—and some software products—are only covered during their warranty period or maintenance period. We recommend that you review the warranty documentation that accompanied your system and be prepared to provide proof of warranty coverage to Quantum3D upon request. Warranty information can also be found on the Quantum3D website.

Quantum3D customers and authorized representatives may visit our online support system at:
<http://quantum3d.com/support>

The Quantum3D online problem reporting and tracking system is your best interface to the Quantum3D support staff. This system enables you to create and manage your support-related incidents online.

6.2 Windows XP Help and Support

If you can access the Windows XP desktop from your Thermite unit, you can begin troubleshooting any problem by using the Windows XP **Help and Support Center** application.

Note *If you cannot access the Windows XP desktop on your system—or if you want to eliminate common problems from consideration before using other troubleshooting resources—review Section 6.3, “Quick Solutions Checklist” on page 62.*

To access the **Help and Support Center** application:

- Click the **Start** button, and then click **Help and Support** to open the **Help and Support Center** dialog box.

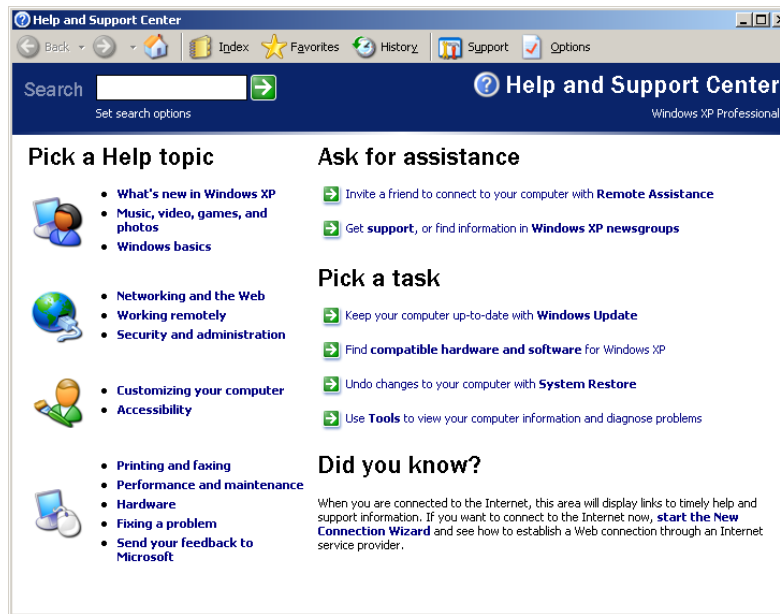


Figure 6-1 Help and Support Center dialog box

The Windows XP **Help and Support Center** is a comprehensive resource for troubleshooting, downloading software (or software updates), and managing your Thermite unit. In particular, the system management features can help you learn to use, customize, optimize, and troubleshoot your Thermite hardware, software, and operating system.

All topics provide on-screen instructions.

6.3 Quick Solutions Checklist

This section lists some common situations that may prevent you from using your Thermite unit. Review this section to resolve common issues or eliminate them from consideration before seeking additional support.

Is the System Receiving Adequate Power?

If the power indicator light on the power switch is not lit and you cannot turn on the Thermite unit, adequate power may not be available. To verify that adequate power is available:

- If the Thermite unit is running from battery power or is connected to an external power source other than an electrical outlet, connect the system to an electrical outlet using an AC adapter. If the Thermite unit turns on when connected to the AC adapter but not when running from a battery pack, recharge or replace the battery pack.
- Make sure that the power cable connections are secure to both the Thermite unit and the power source.

- If using the AC adapter, verify that the electrical outlet is providing adequate power by plugging another electrical device into that outlet. On some dual socket outlets, one socket might be controlled through a wall switch that does not control the other socket.

Is the System Turned On?

If the system does not respond, it may be in the **Standby** or **Hibernation** mode.

- To resume operation from the **Standby** or **Hibernation** mode, briefly press and release the **PWR** (power) button.

Is the System Unresponsive?

If the system has stopped responding, you may need to restart it.

- If you are unable to access the Start menu (to click **Start** → **Shut Down** → **Restart**), simultaneously press CTRL+ALT+DELETE on the keyboard. Select **Shut Down** to access the shutdown dialog box, and then select **Restart**.

If the system is so unresponsive that you cannot access a Windows XP shutdown command, press and hold the **PWR** button until the system turns off.



Turning off the power by holding down the PWR button for more than five seconds can cause file system damage and/or data loss.

Is an External Device Not Working?

An external device may not function as expected.

Note *You must turn on some optional devices, such as external monitors, printers, and special devices before you turn on the Thermite unit.*

- Turn on the device exactly as instructed in the device documentation, and then verify the following:
 - The device is connected to the correct external I/O jack, port, or connector.
 - All device connections are secure.
 - The device is receiving adequate electrical power.
 - The correct device drivers are installed.

Is a Software Application Functioning Abnormally?

If your software application is not functioning normally:

- Restart the Thermite unit.
- Run a virus scanner.
- Make sure there is sufficient space available on the hard drive.
- Use the Windows XP System Restore feature to return the system to the state in which it last worked normally.

6.4 Problems and Solutions

This section lists some common problems you might encounter using your Thermite unit, and corresponding solutions. If the suggested solutions do not enable you to fix the problem you are experiencing, contact Quantum3D support.

Audio Problems

No sound is heard.

- Verify that headphones or speakers are correctly connected to the audio-out connector.
- Double-click the **Volume** icon in the system tray (located in the Windows XP desktop lower-right corner) and clear any **Mute** check boxes that are selected. Drag the sliders to the top position to increase the audio to maximum volume.

Sound does not record from a microphone.

- Verify that a microphone is correctly connected to the audio-in connector.
- If the microphone has an **On/Off** switch, verify that it is in the **On** position.
- Double-click the **Volume** icon in the system tray (located in the Windows XP desktop lower-right corner), click **Options**, and then click **Properties**. Select **Adjust volume for Recording**, and then click **OK**. Verify that the **Microphone** option button is selected, and then drag its slider to the top position for maximum volume. Optionally, click the **Advanced** button in the **Microphone** column to enable the **Microphone Boost** function.

Battery and Power Problems

The system turns off unexpectedly.

- If the system turns off immediately after being turned on, the battery pack charge may be extremely low. Recharge and/or replace the battery.
- If the system turns off while unattended, the system may have initiated **Hibernation** Mode. To resume operation from the **Hibernation** mode, briefly press the **PWR** (power) button.
- If the system turns off (or enters **Standby** mode) and feels extremely warm, it may have exceeded the maximum operating temperature conditions. Allow the system to cool, and then verify that it is being operated in an environment that meets the required specifications.

Windows does not display battery information.

- Is the system also being powered through the AC adaptor? If attached, the Thermite unit draws its power from the AC adapter and does not interact with any attached batteries.
- Verify that the battery being used is compliant with the **Smart Battery Specification**. If a battery provides only power and does not provide battery data, no information can be displayed.
- Verify that the battery is properly connected to the Thermite unit and that all connections are secure.

The battery *Time Remaining* display seems inaccurate.

The **Time Remaining** display indicates the approximate running time remaining using the batteries, assuming they continue to provide power at the current level. However, the time remaining decreases if, for example, you connect a USB device that draws its power from the USB bus, or if you run a graphics-intensive application. Conversely, the time remaining increases if you disconnect the USB device or exit the graphics application.

If the **Time Remaining** display seems inaccurate even when the level of power use remains constant, perform the following actions:

- Fully charge a new battery before using it to run the system.
- Allow an in-use battery to discharge to less than 10 percent of a full charge through normal use before recharging it.
- When you charge any battery, charge it fully.
- Use the battery charger's **Calibrate** function to recalibrate the battery indicators, especially if the battery has been used for less than one month.
- Replace the battery. It may be defective or have reached the end of its useful life. Battery life varies with battery power usage and maintenance procedures.

The battery does not charge.

- The Thermite unit does not contain an internal battery charger. Use an external battery charger to recharge the battery.

Display Problems

The display is blank.

- Tap or move the mouse.
- Verify that the system is actually on. The **PWR** button LED should be lit.
- Momentarily press the power button to resume from **Standby** mode or exit **Hibernation** mode.

FireWire (IEEE1394) Problems

The following issues assume that your Thermite unit is equipped with the FireWire (IEEE 1394) option.

The FireWire connector does not power a FireWire device.

- The FireWire connector on a Thermite unit does not supply any power to the attached FireWire device. You must connect your attached device to an external power source for it to work with the system.
- Follow the device manufacturer's instructions for connecting the FireWire device to an external power source. Some FireWire devices must be powered on before being plugged into the FireWire connector.

A FireWire device is not seen or does not work properly.

- Ensure that the FireWire device is plugged securely into an electrical outlet as well as into the FireWire connector on the Thermite unit.
- Verify that the device is functioning properly by connecting it to a FireWire connector on another system.
- Verify with the device manufacturer that you are using the correct driver for the device.
- Use the Windows XP *Device Manager* tool to check for and resolve any resource conflicts.

GPS Problems (Model 1210 or 1310 only)

The following issues assume that your Thermite unit is equipped with one of the available GPS options.

The GPS device is not seen by the application.

- Run the **GpsInfo** application to verify that the GPS device is properly configured. See Section 4.3, “Configuring the GPS” on page 31.
- Exit your map application, and then unplug the GPS device from the Extended I/O cable. Reconnect the GPS device, wait for 10 seconds, and restart the map application.

The GPS device is not providing data.

- Run the **GpsInfo** application to verify that the GPS is properly configured. See Section 4.3, “Configuring the GPS” on page 31.
- If indoors, move near to a window for better GPS reception.

Networking Problems

The system cannot connect to the network.

- Verify that all network cables are Category 5 (CAT-5) twisted-pair cables.
- Verify that the CAT-5 cable is a “patch” cable and not a “cross-over” cable.
- If the Thermite unit is plugged into a network jack (usually an RJ-45 jack), verify that the network cable is securely plugged into the jack (and not into a digital telephone wall jack or other similar-looking wall jack).
- Use a different networked device to verify that the connection to your network is working properly.
- If the Thermite unit is plugged directly into a hub or switch, ensure that the hub or switch is turned on, and that the cable is not plugged into the *uplink* port.

Connection occurs, but the network seems inactive.

- Verify that you are using a valid address for your network. For network address information, contact your network administrator.
- If the TCP/IP protocol is configured to use DHCP for IP address assignment, from a command window enter **ipconfig** to view the assigned IP address. An address of 0.0.0.0 indicates that a cable is unplugged. An address of 169.254.x.x indicates that no DHCP server was found on the network.
- Verify that the network resource you are trying to reach is on and is connected to the network.
- If you are using a software or hardware firewall, ensure that it is properly configured.

The network connection is slow.

- Verify that your network adapter is configured for the speed and duplex setting required by your network. For information about the network requirements, contact your network administrator.

No computers are found in “Network Neighborhood” or “Network Places”.

- Verify that the network adapter is connected to the network.
- If your Thermite unit is part of a Windows workgroup, verify that the workgroup name is correct.
- If your Thermite unit is part of a Windows domain, verify that the domain name is correct and that you are logged into the correct domain.
- Contact your network administrator if you are unsure how to configure the network adapter.

Serial Port Problems

The serial port is not seen by an application.

- Use the Windows XP **Device Manager** tool to verify that the serial port is enabled. To access the **Device Manager** tool and the serial port:
 - a. On the desktop, right-click the **My Computer** icon, and then select **Properties**.
 - b. Click the **Hardware** tab, and then click the **Device Manager** button.
 - c. Click the **PLUS SIGN (+)** to the left of the **Ports (COM & LPT)** node to expand it.
 - d. Right-click the desired port to review or modify it.
- Use the Windows XP **Device Manager** tool to uninstall the serial port. From the **Device Manager** menu, click **Action**, and then click **Scan for hardware changes** to reinstall the serial port. This reallocates different system resources to the serial port.

The serial port is slow to respond to incoming data or has connection problems.

- Use the Windows XP **Device Manager** tool to select the serial port.
 - a. Right-click the port, and then click **Properties** to open the **Properties** dialog box.
 - b. Click the **Port Settings** tab, and then click the **Advanced** button.
 - c. Select the **Use FIFO buffers** check box.
 - d. Drag the slider to a lower setting to correct connection problems or drag it to a higher setting to increase performance, and then click **OK**.
 - e. From the **Bits per second** list, select a smaller value to correct connection problems or select a greater value to increase performance.
 - f. From the **Flow control** list, select either **Hardware** for hardware control or **XON/XOFF** for software control.

The system does not respond to a modem ring.

- Thermite units do not implement the *Ring* signal on the serial port.

USB Problems

An “Unrecognized USB Device” error message box appears.

- Disconnect and reconnect the USB device.

A USB device is not seen.

- Disconnect and reconnect the USB device.
- Remove other connected USB devices, and then try reconnecting the problematic device.
- Verify that you have the correct device drivers installed for the USB device.
- Verify that the USB device works correctly on a different system.
- Power the USB device externally (if possible).
- Follow the device manufacturer’s instructions for connecting the USB device.
Some USB devices must be powered on before being connected to the USB connector.

Wireless Problems

You cannot connect to a wireless network.

- Verify that the network access point is on and is connected to an active network connection.
- Verify that the antenna is securely attached to the connector on the side of the Thermite unit.
- Verify that the Thermite unit is within the range of an access point.

- Verify that the Thermite unit and the access point have been properly configured. See Section 4.4, “Wireless Network Setup” on page 33.
- Verify that you are using the correct SSID.
- Verify that the wireless encryption settings are correct.
- Consider that wireless performance may be affected by the following factors:
 - The type and thickness of building construction materials, such as brick, steel, concrete, and glass.
 - Nearby electronic and communications equipment or HVAC systems.
 - People or objects moving into the range of the antenna and access point.
 - The number of users connecting at one time in a single area to a single access point.
 - The concentration of access points within an area.
 - Channel utilization.

You cannot connect to or use network resources.

- Verify that an IP address has been assigned to your Thermite unit. If static IP addressing is not used, verify that a valid DHCP server is located on the wireless network.
- Verify that the wireless encryption settings are correct.

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Appendix B

Glossary

802.11 IEEE Specifications 802.11

The Institute of Electrical and Electronics Engineers' (IEEE) specifications for wireless networking. These specifications, which include 802.11, 802.11a, 802.11b, and 802.11g, allow computers, printers, and other devices to communicate over a wireless local area network (LAN).

BIOS Basic Input/Output System

The set of essential software routines that tests hardware at startup, starts the operating system, and supports the transfer of data among hardware devices.

COTS Commercial Off-The-Shelf

A term for software or hardware products that are ready-made and available for sale to the general public. They are often used as alternatives to in-house developments or one-off government-funded developments (GOTS). The use of COTS is being mandated across many government and business programs, as they may offer significant savings in procurement and maintenance.

EFW Enhanced Write Filter

EFW provides the ability to write-protect a run-time image. By redirecting all write requests to either a separate disk partition or RAM, the run-time image can maintain the appearance of being writeable. EFW also provides the ability to deploy a run-time image onto read-only media, such as a CD-ROM.

GPS Global Positioning System

A radio navigation system developed by the U.S. Department of Defense that uses a constellation of 24 earth satellites, which are monitored by ground-based control stations, to provide precise, continuous worldwide positioning and timing information.

HORM Hibernate Once Resume Many

Typically, a hibernating computer can only restore the image that was most recently hibernated, which does not persist across reboots. HORM rapidly reboots a Windows XP Embedded system, returning to the same hibernated image repeatedly.

MAC Media Access Control

In the IEEE 802.x specifications, the lower of two sublayers that make up the ISO/OSI data link layer. The MAC manages access to the physical network, delimits frames, and handles error control.

LEAP	Lightweight Extensible Authentication Protocol A proprietary wireless LAN authentication method developed by Cisco Systems. Important features of LEAP are dynamic WEP keys and mutual authentication (between a wireless client and a RADIUS server). LEAP allows for clients to reauthenticate frequently; upon each successful authentication, the clients acquire a new WEP key (with the hope that the WEP keys don't live long enough to be cracked).
POST	Power-On Self Test A set of routines stored in a computer's read-only memory (ROM) that tests various system components such as RAM, the disk drives, and the keyboard to see whether they are properly connected and operating. If problems are found, these routines alert the user by sounding a series of beeps or displaying a message.
SSID	Service Set Identifier A code attached to all packets on a wireless network to identify each packet as part of that network. The code is a case sensitive text string that consists of a maximum of 32 alphanumeric characters. All wireless devices attempting to communicate with each other must share the same SSID. Apart from identifying each packet, SSID also serves to uniquely identify a group of wireless network devices used in a given service set.
UFD	USB Flash Drive A flash drive that connects to the system via the Universal Serial Bus.
USB	Universal Serial Bus A serial bus with a data transfer rate of 12 megabits per second (Mbps) for connecting peripherals to a microcomputer. USB can connect up to 127 peripherals, such as external CD-ROM drives, printers, modems, mice, and keyboards, to the system through a single, general-purpose port. USB is designed to support the ability to automatically add and configure new devices and the ability to add such devices without having to shut down and restart the system (hot plugging).
TKIP	Temporal Key Integrity Protocol A security protocol used in Wi-Fi Protected Access (WPA). WPA is used for WiFi networks to correct deficiencies in the older Wired Equivalent Privacy (WEP) standard. TKIP (pronounced "tee-kip") was designed to replace WEP without replacing legacy hardware. This was necessary because the breaking of WEP had left WiFi networks without viable link-layer security, and the solution to this problem could not wait for the replacement of deployed hardware. For this reason, TKIP, like WEP, uses a key scheme based on RC4, but unlike WEP, TKIP provides per-packet key mixing, a message integrity check and a re-keying mechanism. TKIP ensures that every data packet is sent with its own unique encryption key.
WEP	Wired Equivalent Privacy An encryption algorithm system included as part of the 802.11 standard, developed by the Institute of Electrical and Electronics Engineers as a security measure to protect wireless LANs from casual eavesdropping. WEP uses a shared secret key to encrypt packets before transmission between wireless LAN devices and monitors packets in transit to detect attempts at modification. WEP offers both 40-bit and 128-bit hardware-based encryption options.
WPA	Wi-Fi Protected Access A class of systems to secure wireless (Wi-Fi) computer networks. It was created in response to several serious weaknesses researchers had found in the previous system, Wired Equivalent Privacy (WEP). WPA implements the majority of the IEEE 802.11i standard, and was intended as an intermediate measure to take the place of WEP while 802.11i was prepared. WPA is designed to work with all wireless network interface cards, but not necessarily with first generation wireless access points.