



Supported Equipment Manual

*for the 3000 Series Devices Manufactured by Symbol Technologies
(includes the 104x, 314x, 354x, 384x, 394x, 614x, 684x, and 694x terminals)*

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Chapter 1 • Introduction

104x 27-key

Description

The WSS 1040 is a portable computer worn on the forearm. The WWC 1040 terminal uses Spectrum24 1 Mbps wireless LAN communications, enabling you to transmit and receive data wirelessly. Featuring a CPU, a programmable keyboard, and a backlit display, it weighs 11.3 oz/316 gm and is powered by a long-lasting Lithium Ion battery. Its MFG Part Number is WWC1040-S08651US.

Picture

The WSS 1040/WSS 1060 Wearable Scanning Systems



Requirements

Setup Requirements

Installation of PowerNet Twin Client requires, at a minimum, the following:

- A Pentium-class processor
- 32 MB of RAM
- 10 MB of free hard disk space available

Required Accessories

The required accessories for the 104x 27-key terminal include:

- Lithium ion battery (p/n 20-16228-09)
- Cradle (model CS1000-1010)

Contact Symbol for optional accessories.

Software BIOS

Version of BIOS

The version of BIOS on a Symbol 104x 27-key terminal is 1.02-G.

Finding the Version of BIOS

The version of BIOS will appear on the terminal screen when the terminal is rebooted. For rebooting instructions, see *Warm Boot the Terminal* in the *Serial Download of Setup Files* section.

314x 46-key

Description

The 3100 Series terminals are lightweight, battery powered, hand-held computer systems. Data can be entered using the terminal keyboard, the integrated laser scanner, or the tethered bar code scanners. The Series 3100 includes both batch and radio terminals. All Series 3100 terminals can be used as remote terminals for collecting and storing data that is later uploaded to a host computer.

The PDT 314X integrates 16-bit DOS processing capabilities with advanced Spectrum 24 data communications in a lightweight terminal. The PDT 314X includes a side-mounted alpha shift key, plug-in batteries, and an optional laser scanner that adjusts for right and left-handed orientation. The base PDT 314X features a ten-pin RJ-type limited RS-232 port and a DE-9 scanner port. The PDT 314X has a high-resolution SuperTwist display, a DOS-compatible operating system, 22-, 35-, or 46-key keyboards, a Spectrum 24 radio module with an internal antenna, and an optional integrated scan module. The PDT 3140 performs Spectrum24 radio communications. Its MFG Part Number is L08641US.

Picture

PDT 3100 Series Portable Data Terminals



Requirements

Setup Requirements

Installation of PowerNet Twin Client requires, at a minimum, the following:

- A Pentium-class processor
- 32 MB of RAM
- 10 MB of free hard disk space available

Required Accessories

The required accessories for the 314x 46-key terminal include:

- single-slot cradle or four-slot cradle
and
- nickel metal hydride (NiMH) battery (p/n 50-14000-051)

The Symbol 314x 46-key terminal was tested using a four-slot cradle (s/n E007533).

Contact Symbol for optional accessories.

Software BIOS

Version of BIOS

The version of BIOS on a Symbol 314x 46-key terminal is 1.14-00.

Finding the Version of BIOS

The version of BIOS will appear on the terminal screen when the terminal is rebooted. For rebooting instructions, see *Warm Boot the Terminal* in the *Serial Download of Setup Files* section.

354x 35-key/47-key

Description

The Series 3500 terminals are lightweight, battery powered, hand-held computer systems. Data can be entered using the terminal keyboard, the integrated laser scanner, or the tethered bar code scanners. The base PDT 354X features a ten-pin RJ-type limited RS-232 port and a DE-9 scanner port. The SE 1200 laser scanner module and the SE 2000 PDF laser scanner module are optional and, if specified, take the place of the DE-9 scanner port.

The Series 3500 consists of two terminals: the PDT 3500 and 3510. Both can be used as remote terminals for collecting and storing data that is later uploaded to a host computer. The primary difference between the terminals is that the PDT 3510 has an internal radio transmitter and receiver. The PDT 3510 offers a 16-line by 21-character display, a large 35-key or 47-key alphanumeric keypad, improved battery management, advanced Spectrum One data communications, and an ergonomic design which allows for ease of use, equally, for right and left-handed orientation. Its MFG Part Number is PDT-3510-S05A010.

Picture

**PDT 3000/3100/3500
Terminal**



Requirements

Setup Requirements

Installation of PowerNet Twin Client requires, at a minimum, the following:

- A Pentium-class processor
- 32 MB of RAM
- 10 MB of free hard disk space available

Required Accessories

Required accessories for the 354x terminal include:

- single-slot cradle, or
- four-slot cradle, or
- adapter with 15V power supply (model W48D-J1000-C12)

The Symbol 354x terminal was tested using a Symbol (model 3165-100) cradle.

Contact Symbol for optional accessories.

Software BIOS

Version of BIOS

The version of BIOS on a Symbol 354x terminal is 1.12-00.

Finding the Version of BIOS

The version of BIOS will appear on the terminal screen when the terminal is rebooted. For rebooting instructions, see *Warm Boot the Terminal* in the *Serial Download of Setup Files* section.

384x 46-key

Description

The 3800 Series terminals combine laser scanner and keyboard in a hand-held package. The 3800 terminal performs Spectrum One radio communications. Its MFG Part Number is 61615-01-40 D. The 3840 terminal performs Spectrum24 radio communications. Its MFG Part Number is LRT3840-S08641US. All terminals are available with a long-range laser or high visibility laser operated by two-level trigger.

Picture

PDT 3800 Mobile Computer



Requirements

Setup Requirements

Installation of PowerNet Twin Client requires, at a minimum, the following:

- A Pentium-class processor
- 32 MB of RAM
- 10 MB of free hard disk space available

Required Accessories

The required accessories for the 384x 46-key terminal include:

- Nickel Cadmium (NiCd) battery or 9V battery pack
- cradle (p/n 59942-01-00)
- printer interface module, (p/n 3850-N5R1-R1)

The 38x0 46-key terminal was tested with a NiCd battery (model 60083-00-00-G).

Contact Symbol for optional accessories.

Software BIOS

Version of BIOS

The version of BIOS on a Symbol 384x 46-key terminal is 3.12-00.

Finding the Version of BIOS

The version of BIOS will appear on the terminal screen when the terminal is rebooted. For rebooting instructions, see *Warm Boot the Terminal* in the *Serial Download of Setup Files* section.

394x 54-key

Description

The VRC 3910 is a weather-resistant, vehicle-mount or fixed-sit data collection device. Data can be scanned in using a scanner connected to the terminal or entered through the keyboard. The VRC 3910 uses radio signals to transfer information to base station. On receiving data, the base station transmits the information to a host computer. The host computer can also send information through the base station to the terminal. Its MFG Part Number is 60943-02-00 B.

The VRC 3940 is a vehicle-mount data collection device with an integrated radio used to communicate in a Spectrum24 radio network environment. The terminal downloads the application and operational software from the Spectrum24 network. Its MFG Part Number is VRC3940-00U651US.

Picture

VRC 3900 Vehicular Radio Computers



Requirements

Setup Requirements

Installation of PowerNet Twin Client requires, at a minimum, the following:

- A Pentium-class processor
- 32 MB of RAM
- 10 MB of free hard disk space available

Required Accessories

Required accessories for the 394x 54-key terminal include:

- mounting bracket (s/n N008337)
and
- cable (s/n 994126372)

Contact Symbol for optional accessories.

Software BIOS

Version of BIOS

The version of BIOS on a Symbol 394x 54-key terminal is 1.01-09.

Finding the Version of BIOS

The version of BIOS will appear on the terminal screen when the terminal is rebooted. For rebooting instructions, see *Warm Boot the Terminal* in the *Serial Download of Setup Files* section.

614x 35-key/46-key

Description

The PDT 6100 series terminals are ruggedized, ergonomically designed hand-held portable computers which offer the following features: standard 16-bit microprocessor, 8088-compatible architecture, DR-DOS compatibility, key input from a 35-key or 46-key keyboard, integrated laser scanning capability, 8-line by 20-character or 16-line by 21-character display, and batch communications with memory options from 640K to 7.6MB of RAM memory or RF network communications with internally mounted antenna:

- Spectrum One RF network (6110)
- Spectrum24 RF network (6140 Series)

The PDT 6100 has two scan engine configurations, the SE 900 and the DB9 connector with external scanner. All configurations have the same operating instructions. The MFG Part Number of the 6140 terminal is PDT6140-Z086-30US.

Picture

PDT 6100 Series Portable Data Terminals



Requirements

Setup Requirements

Installation of PowerNet Twin Client requires, at a minimum, the following:

- A Pentium-class processor
- 32 MB of RAM
- 10 MB of free hard disk space available

Required Accessories

Required accessories for the 614x terminal include:

- 1500 mAh Nickel Metal Hydride (NiMH) battery (p/n 50-14000-051)
- Single-slot CRD 6100 cradle with spare battery charging slot, or
- Communications and charging cable

The Symbol 614x terminal was tested using a Symbol cradle (CRD6100-1030-000) and cable (p/n 25-33665-01). Contact Symbol for optional accessories.

Software BIOS

Version of BIOS

The version of BIOS on a Symbol 614x terminal is 1.12-02.

Finding the Version of BIOS

The version of BIOS will appear on the terminal screen when the terminal is rebooted. For rebooting instructions, see *Warm Boot the Terminal* in the *Serial Download of Setup Files* section.

684x 35-key/46-key

Description

The 6800 Series terminal is a ruggedized, hand-held portable computer, sealed from environmental conditions such as dust and rain. Standard features include a 16-bit microprocessor, 16 x 21 FSTN display, and a SE-1200HP integrated scan engine. Other features include a PC-standard architecture (8088 16-bit architecture), DR-DOS compatibility, 16-line by 21-character display, key input from a 35-key or 46-key alphanumeric keyboard, integrated scanning capability, Lithium Ion and NiCd rechargeable battery packs, batch communications or RF network communications (with internally mounted antenna), and Spectrum24 RF network (684X). Other benefits include backwards compatibility with all LRT/LDT cradles and peripherals. The MFG Part Number of the 6840 terminal is PDT6840-S05641US.

Picture

PDT 6800 Series Portable Data Terminals



Requirements

Setup Requirements

Installation of PowerNet Twin Client requires, at a minimum, the following:

- A Pentium-class processor
- 32 MB of RAM
- 10 MB of free hard disk space available

Required Accessories

Required accessories for the 684x terminal include:

- Lithium Ion or NiCd rechargeable battery pack or intrinsically safe NiCd rechargeable battery pack
- CCM 38/6860 4-slot charging and communications module with spare battery charging slot, or
- CRD 38/6865 1-slot cradle charging and communications cradle, or
- CRD 38/6866 4-slot charging and communications cradle
- RS-232 serial cable (p/n 25-33665-01)
- 1 power supply (model 2VC30-12-M18) per cradle
- For Lithium Ion only, UBC adapter (p/n 21-32665-24)

The Symbol 684x terminal was tested using a Symbol (p/n 21-32665-24) battery pack and a (p/n 59942-01-00) cradle.

Contact Symbol for optional accessories.

Software BIOS

Version of BIOS

The version of BIOS on a Symbol 684x terminal is 3.10-00.

Finding the Version of BIOS

The version of BIOS will appear on the terminal screen when the terminal is rebooted. For rebooting instructions, see *Warm Boot the Terminal* in the *Serial Download of Setup Files* section.

694x 54-key

Description

The VRC 6940 is a rugged computer terminal that can be installed in a vehicle or mounted on a wall or workbench. With both a NEMA 4 and IP 65 rating, the VRC6940 is well suited for vehicular applications. The VRC6940 allows you to gather information using the 54-key keypad or an attached scanner. It has a bright 8-line by 40-character display.

The VRC6940 accepts input from a variety of peripherals (including printers and scales) via an RS232 port. The VRC6940 also accepts input from a Symbol Laser Scanner (undecoded output or wand emulator) via a dedicated scanner port. VRC 6940 terminals can run a variety of software applications. The Serial Number of the VRC 6940 is PR0008.

Picture

VRC 6900 Vehicle Radio Computers



Requirements

Setup Requirements

Installation of PowerNet Twin Client requires, at a minimum, the following:

- A Pentium-class processor
- 32 MB of RAM
- 10 MB of free hard disk space available

Required Accessories

Required Accessories for the 694x 54-key terminal include:

- vehicle-mount bracket (s/n PR0008)
- two bracket knobs (p/n 12-38234-01 B)
- external DC power cable (model ADP-7202-24V)

Contact Symbol for optional accessories.

Software BIOS

Version of BIOS

The version of BIOS on a Symbol 694x 54-key terminal is 1.10-00.

Finding the Version of BIOS

The version of BIOS will appear on the terminal screen when the terminal is rebooted. For rebooting instructions, see *Warm Boot the Terminal* in the *Serial Download of Setup Files* section.

Chapter 2 • 3000 Series Terminal Setup

Downloading From the Web

1. Go to the Connect web site at <http://www.connectrf.com> on the **Partner Services** page.
2. Click on the **Software Download** icon.
3. Select the applicable Twin Client Manager software.
4. Click on the **Version** number to download software.
5. Click on **Setup.exe** and follow Installation Shield wizard.
6. Follow the steps in the *Authorizing PowerNet* section later in this chapter.

Running Setup from a Download File

The downloaded file is a compressed archive. After extraction using a utility such as WinZip or PKWARE, folders are created on the hard disk as shown in the following figure.

| Name | Size | Type |
|-------|------|-------------|
| Disk1 | | File Folder |
| disk2 | | File Folder |
| disk3 | | File Folder |
| disk4 | | File Folder |

Click on the **Disk1** folder to view the files as shown in the following figure.

| Name | Size | Type |
|--------------|-------|-----------------------|
| _inst32i.ex_ | 292KB | EX_ File |
| _ISDel | 27KB | Application |
| _Setup.dll | 34KB | Application Extension |
| _sys1 | 172KB | WinZip File |
| _sys1.hdr | 4KB | HDR File |
| _user1 | 1KB | WinZip File |
| _user1.hdr | 5KB | HDR File |
| Data.tag | 1KB | TAG File |
| data1 | 543KB | WinZip File |
| data1.hdr | 13KB | HDR File |
| lang | 5KB | DAT File |
| layout.bin | 1KB | BIN File |
| os | 1KB | DAT File |
| setup | 185KB | Bitmap Image |
| Setup | 70KB | Application |

Click on the **Setup** application and proceed to the following section entitled *Installation* for further instructions.

Installation

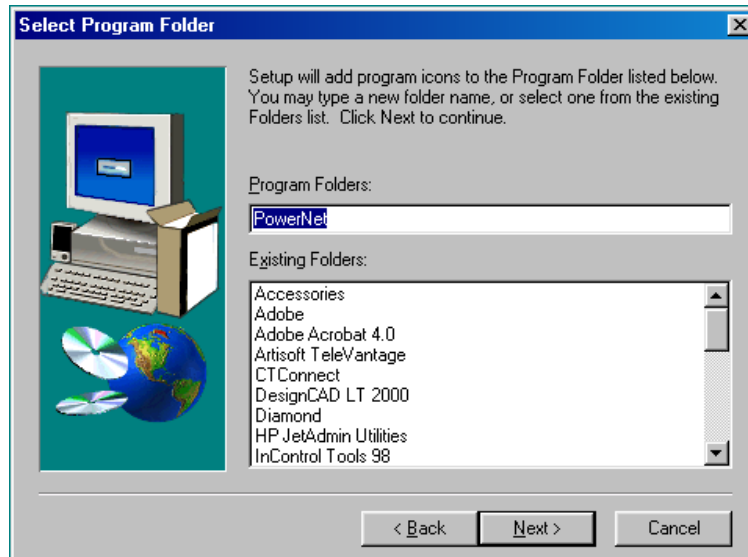
The InstallShield wizard runs and presents the following screen.



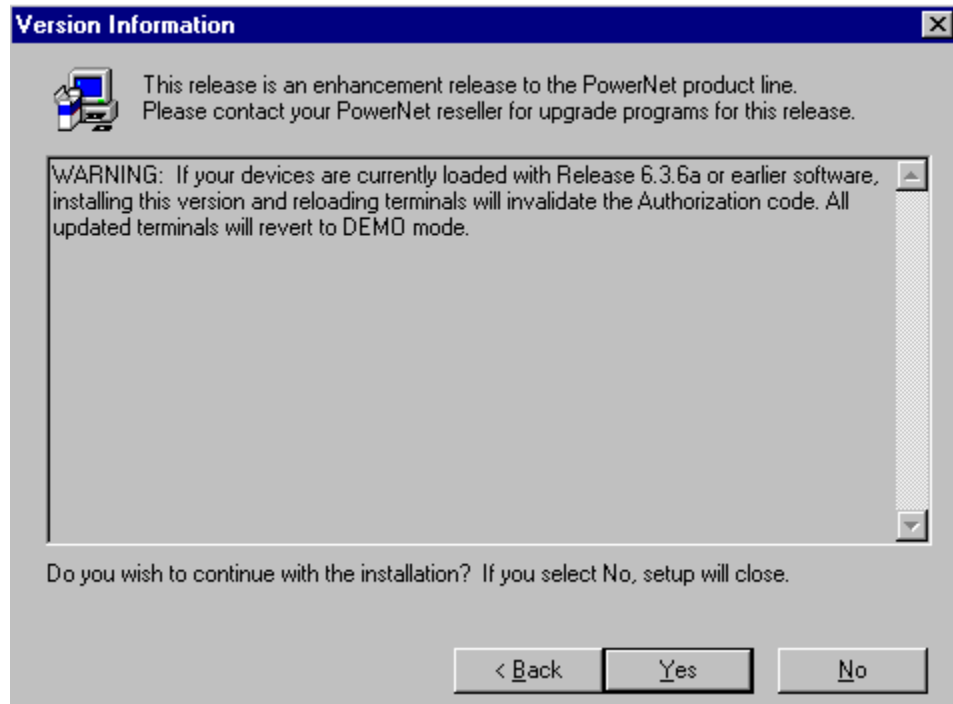
Click on **N**ext to begin the installation process.



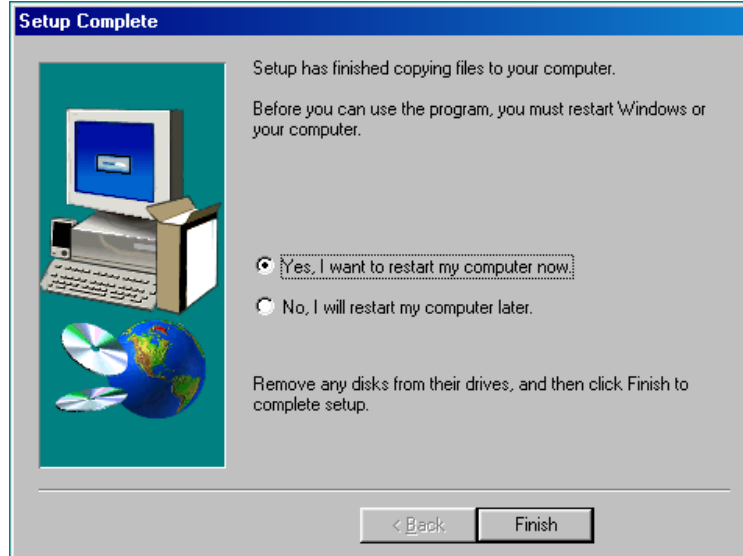
To change the default Destination Location, click on **B**rowse and select a location. Then click on **N**ext.



The default folder is **PowerNet**. This default may be changed either by selecting an existing program group or by typing in a new name at the prompt. Then click on **Next**.



Read the warning. Select **Yes** to continue with the installation, or **No** to close the setup.



When the installation is complete, reboot the system to initialize the Twin Client software.

- a. To reboot the system immediately, click on **Finish**.
- b. To reboot later, click on the option to restart the computer later, and click on **Finish**.

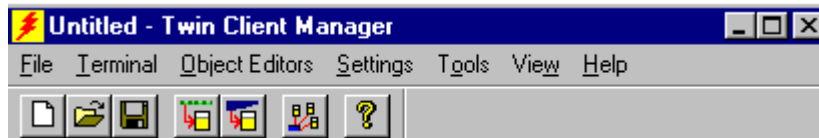
Running the Manager

The PowerNet Twin Client Manager is the utility that manages the terminal software and configurations.

Select **Start, Programs, PowerNet, and Twin Client Manager**. The PowerNet Twin Client Manager screen appears as shown in the following figure. This is the administrator's main screen, and all functions are accessed from its menu bar, tool bar, and tabs.








Menu Bar

The menu bar provides access to the functions used to configure the terminals and manage their software.



Toolbar

Under the menu bar, the tool bar provides shortcuts to major features. The toolbar can be turned on or off by changing the Toolbar parameter found on the **View** menu. The shortcuts available from the toolbar are as follows.

-  Create a new terminal configuration.
-  Open an existing terminal configuration.
-  Save the current terminal configuration.
-  Download the configuration to terminal.
-  Download software to terminal.
-  Configure terminals automatically over the wireless network.
-  View PowerNet Twin Client Manager version.

The PowerNet Twin Client Manager is now successfully installed and ready for use. The next section provides detailed instructions for quickly configuring the terminal and starting a Telnet session.

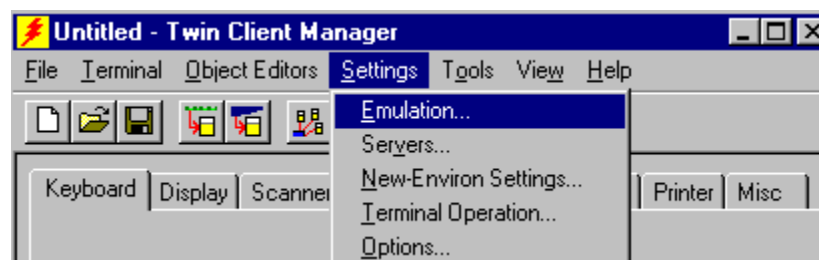
Quick Start

Configuring the Manager

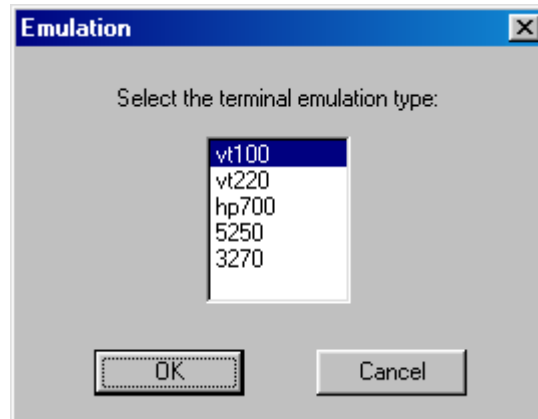
The first step is to configure the Twin Client Manager to meet site-specific requirements, and then prepare it for the automatic management of the terminal software and IP addresses. This simple procedure will require only a few minutes to complete.

Setting the Emulation

Click on **Start**, **Programs**, **PowerNet**, and **Twin Client Manager**. Select the **Settings** menu, as shown below.

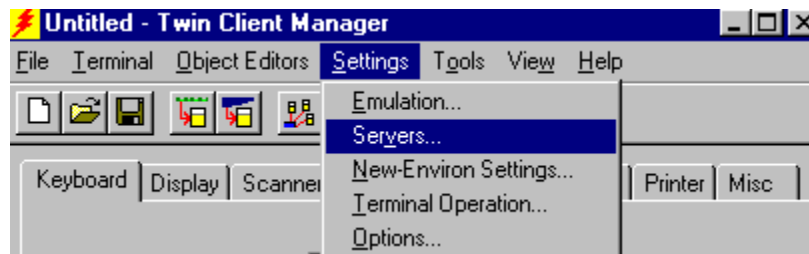


Click on **Emulation**, select the desired emulation, and click on **OK**.

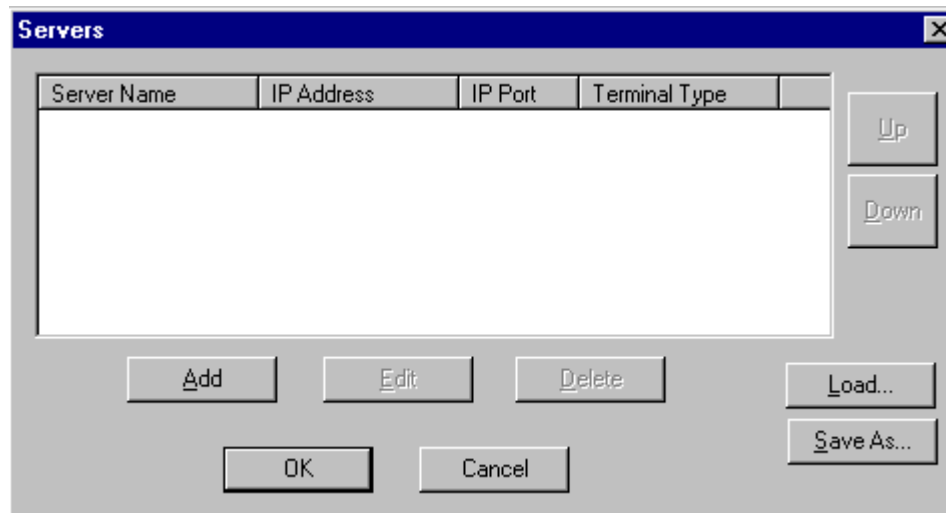


Setting the Servers

The Servers are the Telnet host systems the terminals will access.



To set these addresses from the **Settings** menu, click on **Servers** and then click on **Add**. Enter the name of each server, its IP Address and IP port (normally 23 for Telnet servers), and emulation type. Then click on **OK**.



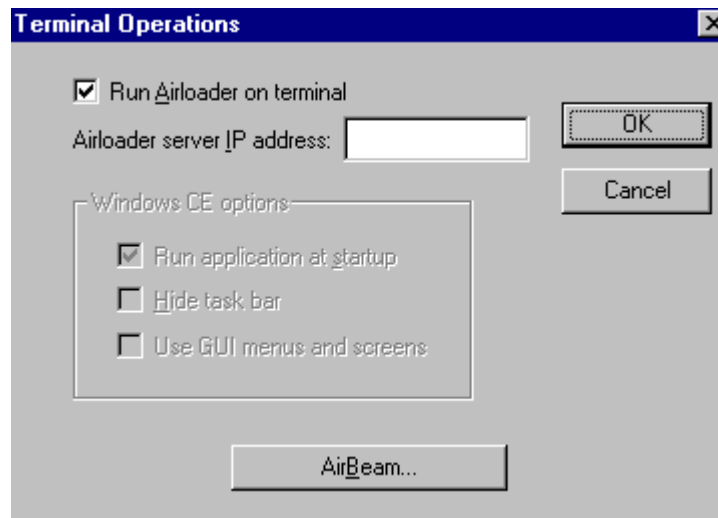
Repeat this step for each Telnet server the terminals are required to access. If an error is made in the name, IP Address, IP Port number, or Terminal emulation type, click on the line that is in error and then click on the **Edit** button to make the corrections. Use the **Load** button if you want to load an .svr file. Use the **Save As** button if you want to save your file as an .svr file.

Terminal AirLoader and AirBEAM Operations

In the Twin Client menu under Settings, choose Terminal Operation.



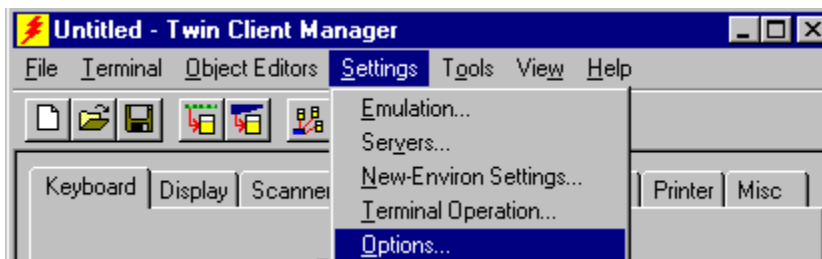
Run AirLoader on terminal can be selected, and the Airloader server IP address can be entered as shown below. Click on OK.



Instructions on the AirBEAM option in this screen can be found at the end of the Symbol Twin Client manual.

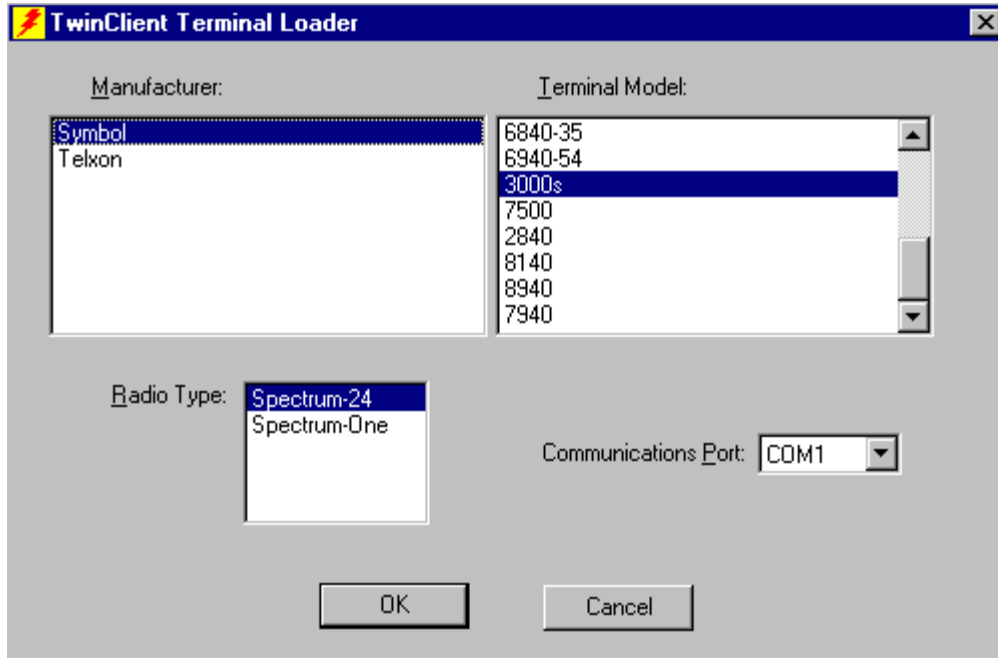
Setting Terminal Model and COM Port

The default terminal model is 3000s, and the default serial connection to the Symbol cradle is through COM1. To select a specific Symbol terminal model and keypad, or to change the COM port assignment, click on the **Options** menu as shown.



The default terminal model, 3000s, represents the default setup for all Symbol terminals under Twin Client. To maintain compatibility with existing Symbol Telnet client

keyboard layouts, a specific terminal model and keypad must be selected from the Terminal Model window.



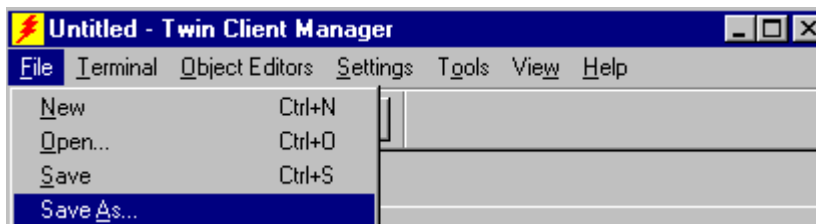
The following illustrates the terminal model option to select based on your terminal model, under **Settings**, **Options**, and **Terminal Model**.

| Terminal Model | Terminal Model Option |
|----------------|-----------------------|
| 104x 27-key | 3000s |
| 314x 46-key | |
| 354x 47-key | |
| 384x 46-key | |
| 394x 54-key | |
| 614x 35-key | |
| 684x 46-key | |
| 694x 54-key | |

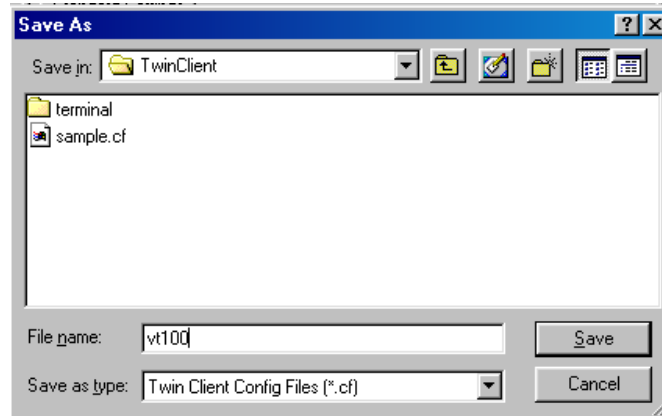
Note: Click on **New** the first time around to ensure that all defaults are set, especially when changing emulations.

Saving the Configuration

Click **File** and **Save As**. Enter a name for this configuration.



For the purposes of this example, the name is vt100.



In order to allow terminals to join a network, and perform airloading (synchronize the terminal files with the Twin Client Manager) you must configure the terminal to do so. After the terminal has been configured and BEFORE rebooting the terminal, you MUST SAVE the changes to the terminal's FLASH Memory so that it will be enabled upon reboot by choosing "Run Client Emulator".

To configure a terminal, after loading the correct Symbol's drivers, obtained from Symbol, and the appropriate Client from Twin Client Manager, you should boot the terminal. Once the terminal has reached the "Twin Client" screen press uppercase "C" for configure. You are now presented with three options:

1. Network configuration. Symbol's utility to set IP address and SSID for the access points. Configure the correct ones for the customer's environment. The terminal now saves these values to FLASH.
2. PowerNet settings: This is where to set the target host IP address and port number, and authorize individual terminals. After making any changes here, press <F3> and exit to main options menu. Select Run Client Emulator to save your values to the terminal's flash. DO NOT REBOOT from the Edit Host List or Edit Authorization menu - the changes will not be saved. Rebooting from the "Twin Client" Screen ensures that the changes have been saved to FLASH.
3. Configure the address of the Airload Setup. Enter the IP address as required - Flash disk is automatically write enabled to write IP address and disabled again after IP address is entered.

Note: If the user sets the IP address to 0, when Airloader is invoked, a message appears: "IP address of Airload manager is 0.0.0.0" and airloading will not be done.

To enable Airloading again on the terminal, boot the terminal and follow Step 3 to set IP using Airload Setup menu. Alternatively, exit to DOS and run the following:

```
e:
flshctl /w
del CRFMGR
flshctl /r
Run airloader
```

Setting Airloader Auto-Configuration

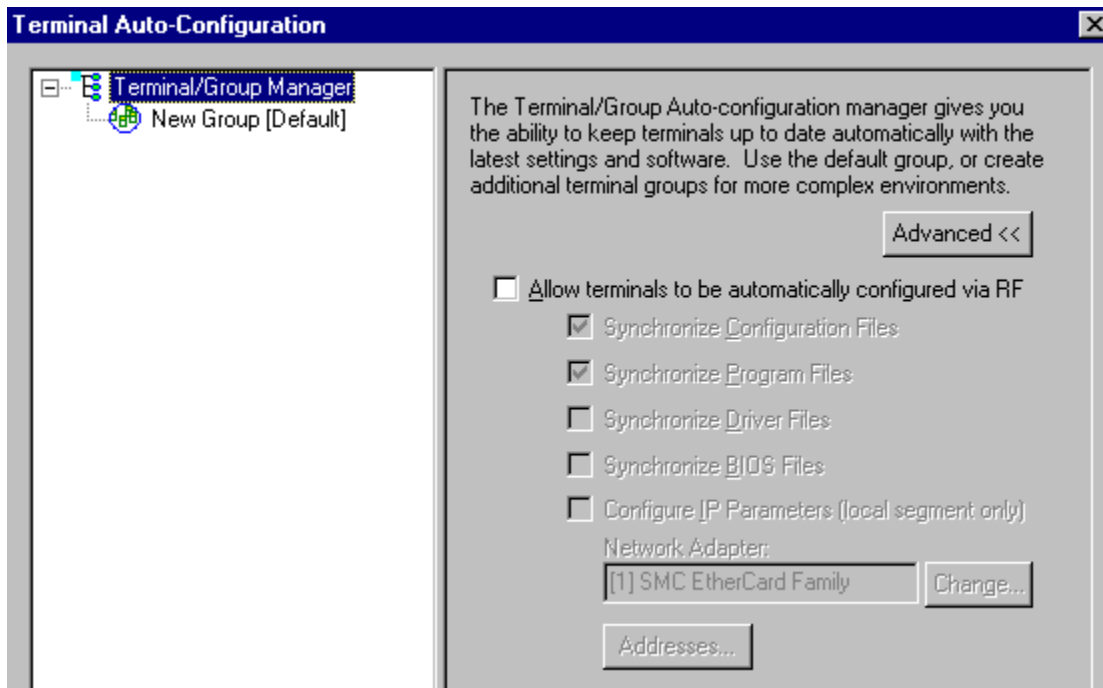
The configuration download and IP address assignment for each terminal will take place automatically by setting the Airloader Auto-Configuration options.



Click on the **Airloader** option in the **Tools** menu.

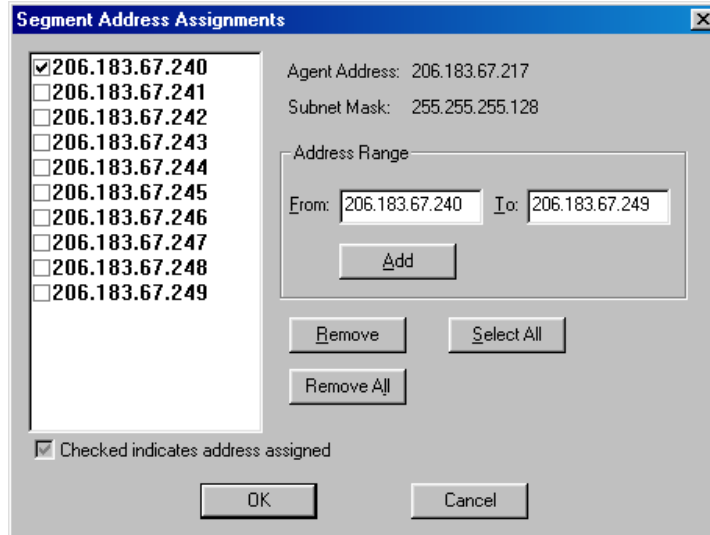
Note: If the Airloader Auto-Configuration window does not display the options, click on the **Advanced<<** button.

If multiple network adapters are installed on the PC, ensure that the desired network adapter is selected. The adapter selection can be changed by clicking on the **Change** button.



This powerful software management tool is described in detail in the section entitled *Software Management*. For now, it is sufficient simply to use it for assignment of the initial terminal configuration and IP address, both of which can be easily changed later. Ensure that all of the check boxes are checked as shown above.

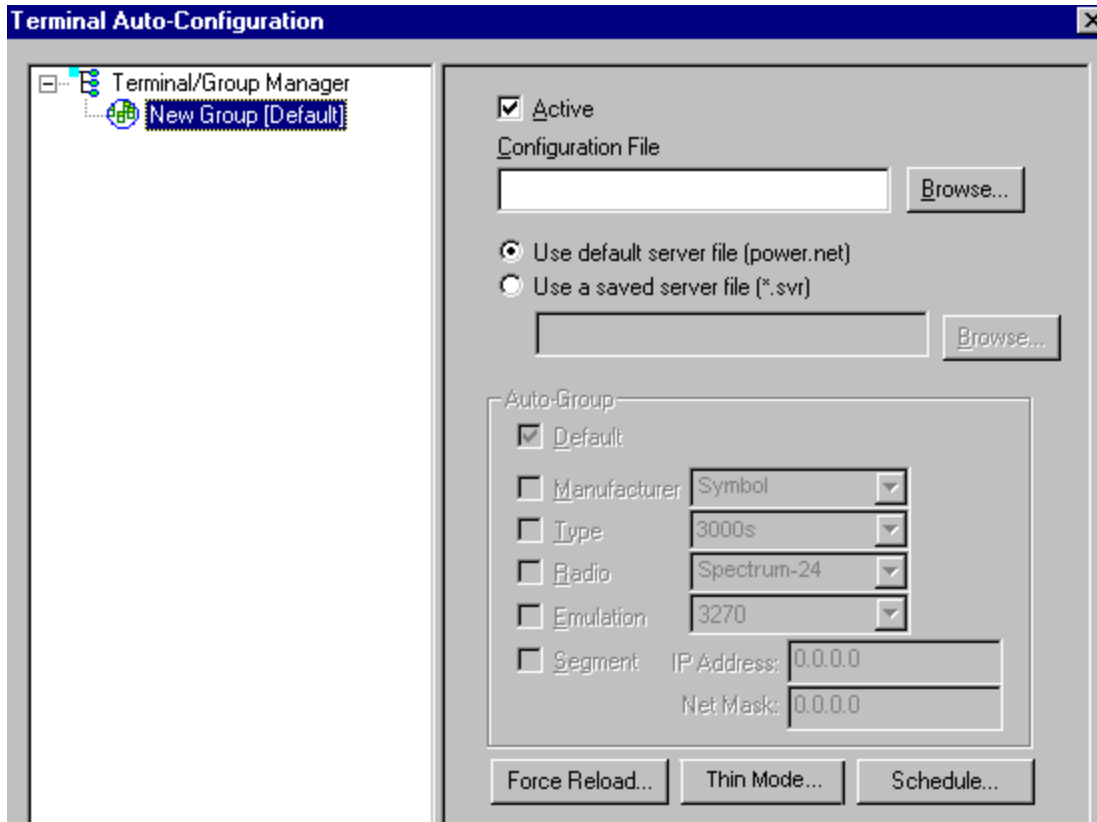
To assign terminal IP addresses automatically over the wireless network, check all of the boxes as shown above. Then click on the **Addresses** button and enter the desired range in the **From** and **To** boxes as shown in the following figure.




After setting the address range, click on **OK** to return to the Airloader Auto-Configuration screen and then click on the box next to Terminal/Group Manager.



The display expands to include the default terminal Group. Next, click on the **New Group** icon and use the **Browse** button to select the configuration file saved earlier.

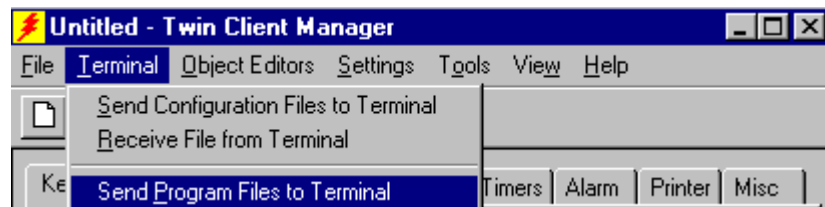


Check the **Active** box, and the system is now configured to automatically download IP addresses, software, and configuration files to the terminals. Click on the  box at upper right corner to return to the main menu.

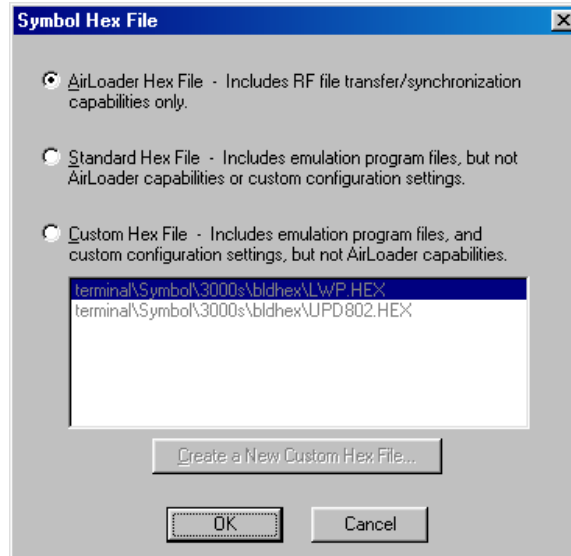
Note: The software does not need to be authorized now. It can be authorized later, after a Telnet session has been established. The procedure is described in the section entitled *Authorizing PowerNet*.

Selecting the AirLoad File

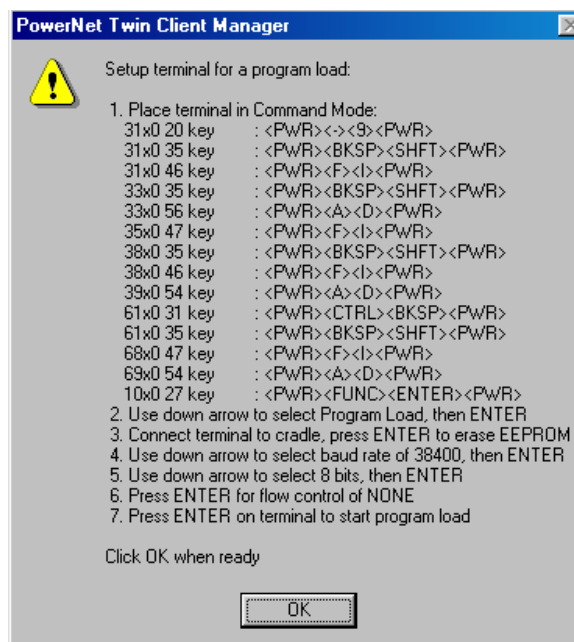
The PowerNet Twin Client Manager provides downloading to the terminal through the cradle, and subsequently over the wireless network. Click on **T**erminal and **S**end **P**rogram Files to Terminal.



Selecting the **AirLoader Hex File** allows the emulation program to be downloaded automatically after the terminal is cold-booted (as described in the next section). This also allows for automatic assignment of the terminal IP address. The AirLoader hex file itself is downloaded through the serial connection as described in the next section.



Click on **OK** and proceed to the next section to prepare the terminal for downloading through the cradle.



Configuring the Terminal for Download

Symbol terminals are delivered with system software and the radio driver pre-installed. If they have not been installed refer to *Downloading Files on Symbol 3000s Series Terminals* before proceeding.

The terminal is prepared for the addition of Twin Client by booting to *command mode*, selecting the program loader on the terminal, erasing the EEPROM, and setting the serial port parameters as described in this section. This simple procedure is described in the following sections, and requires only a few minutes to complete.

Connecting the Cradle

The terminal download requires a serial connection between the terminal and the PC through a cradle. In preparation for this download perform the following:

- Connect the selected serial port on the PC to the cradle with a null modem cable.
- Verify that the cradle is powered on.

Command Mode Boot

On the portable terminal, power the terminal Off, then boot the terminal using the key sequence specific to the terminal model as shown in the following table.

| Command Mode Boot Sequences | |
|--|--|
| Following Power Off | |
| Terminal Model & Keypad | Key Sequence |
| 61x0 35-key | Hold Bksp and Shift keys. Press and release On/Off . Release Bksp and Shift keys. |
| 31x0 46-key 35x0 47-key 38x0 46-key 68x0 46-key | Hold F and I keys. Press and release Power . Release F and I keys. |
| 10x0 27-key | Hold Enter and Func keys. Press and release Power . Release Enter and Func keys. |
| 39x0 54-key 69x0 54-key | Hold A and D keys. Press and release Power . Release A and D keys. |

Selecting Program Loader

Use the **Up-Arrow** and **Down-Arrow** keys to select the Program Loader function. To correct an input error, press **Clear** to return to the command mode menu.

| |
|-----------------|
| COMMAND MODE |
| Select function |
| Program loader |

Place the terminal in the cradle and press **Enter** to erase the EEPROM.

Setting Serial Communications Parameters

After the EEPROM has been erased, the following menu appears.

```

Comm Parameters

Baud
4 9600

```

Use the **Up-Arrow** and **Down-Arrow** keys to select the communications parameters as follows.

| | |
|--------------|-------|
| Baud | 38400 |
| Data Bits | 8 |
| Parity | None |
| Flow Control | None |

The terminal then displays the following screen.

```

Comm Parameters

Start? <ENT>

```

Note: If there are more terminals to download and a cradle that supports multiple terminals is present, repeat the steps in this section for each terminal.

The terminal is now configured to accept a download from the PC.

Downloading the Hex File

Turn on the power to the terminals in the cradle, which should display the following screen.

```

Comm Parameters

Start? <ENT>

```

If not, repeat the procedure starting with the beginning of this section. Then press **Enter** on the terminal and return to the Twin Client Manager to click on the **OK** button. The following should be displayed on the terminal while the download is in progress.

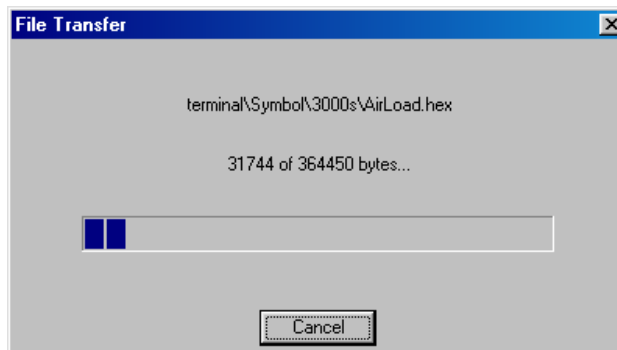
```

Program loader

Receiving:

```

The download requires approximately 2 minutes to complete, during which the following is displayed on the Twin Client Manager PC. Note that the file size may vary.



Following a successful download a status code of 0000 is displayed on the terminal. Use the following table of status codes to troubleshoot a download failure.

| Status Code | Error |
|-------------|----------------------------------|
| 0002 | Receive overrun |
| 0004 | Receive parity |
| 0008 | Receive framing |
| 0010 | Programming voltage absent |
| 0020 | DSR or CD detected on open |
| 0080 | ABORT key pressed |
| 0100 | CD lost during session |
| 0200 | Illegal Intel hex record |
| 0400 | Unsupported Intel hex record |
| 0600 | NVM EEPROM failed to erase |
| 0800 | Receive time-out error |
| 1000 | Control start character time-out |
| 2000 | CTS inactive time-out |
| 4000 | Receive buffer full |

In the event of a failure, verify the following:

- The null modem cable connection between terminal and PC and condition of all connectors.
- The specification of correct COM port.
- The correct cradle power supply.
- The blinking of the charging light on the cradle, indicating proper seating of terminal in cradle.

Note: To change emulations with Airload:

1. Go to the DOS prompt at the e:/ drive.
2. Type "clearnt" and press the Enter key.
3. Set up Airload for the new emulation (example:
C:\PowerNet\TwinClient\3270.cf) in the configuration file box of the airloader auto-configuration screen.
4. Reboot the terminal (see instructions in Cold Booting the Terminal).

Cold Booting the Terminal

Following a successful AirLoad hex file download, and at any time it is necessary to update the terminal software and/or configuration, the terminal must be cold-booted. Use the following table to identify the required key sequence for specific terminal models.

| Cold Boot Sequences Following Power Off | |
|--|--|
| Terminal Model & Keypad | Key Sequence |
| 614x 35-key | Hold Space, Func and Up-Arrow keys. Press and release On/Off . Release Space, Func and Up-Arrow keys. |
| 314x 46-key 354x 47-key 384x 46-key 684x 46-key | Hold down A, B and D keys. Press and release Power . Release A, B and D keys. |
| 104x 27-key | Hold Right-Arrow and Enter keys. Press and release Power . Release Right-Arrow and Enter keys. |
| 394x 54-key 694x 54-key | Hold F1, F4 and Enter keys. Press and release Power . Release F1, F4 and Enter keys. |

The completion of the cold boot is indicated by the following terminal display.

```
LOAD EMULATOR USING
1 - AirLoad
2 - Serial Download
```

Note: To minimize download time, remove the terminal from the cradle.

Enter **1** to continue. Option 2 is used for custom download options.

The terminal then associates with an access point, contacts the Twin Client Manager, and then downloads the program, configuration, and IP address of the terminal.

During the download, progress messages are displayed on the terminal. Pauses in activity of up to 10 seconds will be observed as the terminal writes to EEPROM. The download requires approximately 2 minutes to complete.

The following table describes the error messages that will be displayed on the terminal in the event of a download failure, and can be used as a guide to correcting the problem.

| Error Indication | Possible Cause | Corrective Action |
|--------------------------|---|--|
| NOT Associated | Invalid NETID or ESSID | Run CFG24 or CFG11 (or current Symbol radio setup program) and set NETID or ESSID to match the access point. See section entitled <i>Standard Setup</i> . |
| No AirLoad Manager Found | AirLoad Manager not active, or not installed on the LAN segment | Ensure that the PC with Twin Client Manager is on the same segment and that the PC is operating. If the PC is not on the same segment, enter the address of the PC in response to the terminal prompt. |
| Manager not Active | Previously identified AirLoad Manager is no | Same as above. |

| | | |
|---------------------------|--------------------------------------|---|
| | longer found. | |
| Unable to open connection | IP stack on terminal failed to load. | Reload Symbol driver files. |
| Timeout waiting for data | Transient communications failure | Reboot terminal. If problem persists, check the RFSYNC.log in the PowerNetTN directory. |
| Download aborted | Socket closed during download | Ensure that PC is operating. Reboot terminal and retry. |
| Manager inactive | PC not operating | Restart the PC. |

After taking the corrective action, the terminal must be cold booted again. A successful wireless connection and download is indicated by the display of the Twin Client main menu shown below.

```
Twin Client
© 1991-2006, Connect, Inc.

Keypress to Continue
```

Note: The date of 2006 is updated on the terminal at the time of a new release.

The terminal is now ready to establish a Telnet session with the host system.

Starting a Telnet Session

At the Twin Client main menu on the terminal, press any key to establish the connection. Until the terminal has been authorized, the following screen is displayed.

```
RECOVERABLE ERROR
Terminal not
Authorized for
Twin Client
Keypress to Continue
```

It is not necessary to authorize the terminal at this time, so press any key to continue. The terminal will establish a connection with the host system and start emulation. If the terminal fails to connect to the host, refer to the following table for the possible causes and the related corrective actions.

| Failure Cause | Corrective Action |
|---------------------------|--|
| Incorrect Host IP address | Correct the Host List address on the terminal. Refer to the <i>Standard Setup</i> section entitled <i>Terminal Setup Using Twin Client Menus</i> for instructions. |
| Incorrect netmask value | Access Radio Setup menu and correct the netmask value. Refer to the <i>Standard Setup</i> section entitled <i>Terminal Setup Using Twin Client Menus</i> for instructions. |

After a Telnet session has been successfully established, the terminal will remain in session for a maximum of 30 minutes at a time until it has been authorized. Once authorized, there is no software restriction on the session time. The instructions for authorizing the terminal are presented in the next section, in a section entitled *Authorizing PowerNet*.

Standard Setup

The default terminal setup is sufficient for most installations. However, to meet site-specific requirements it may be necessary to customize terminal operation. The standard setup options simplify this process and can be modified using any of the methods below:

- Using the Twin Client Manager.
- Using the Twin Client terminal menu system.
- Using the Symbol-style terminal menu system.
- Using Symbol-style configuration barcodes.

To simplify the task for experienced Symbol installers, the standard setup options of both the Twin Client Manager and the terminal menu system match those of other Symbol products. As an additional conversion aid, customized Symbol configuration files can be imported and automatically converted to Twin Client.

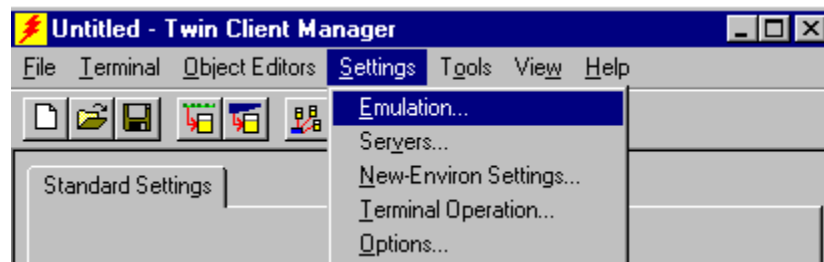
This section describes how to use the Twin Client Manager, the terminal menu systems, and barcodes to set up the terminal. Also described are the methods for authorizing the terminal software.

Setup Using Twin Client Manager

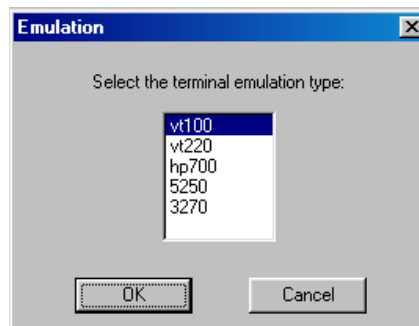
The Twin Client Manager provides a **Standard Settings** tab for automatic setup of the terminals. The options within this tab vary according to the emulation selected, each of which is described below. Click on **Standard** under the **View** option in the main menu.

VT and HP Settings

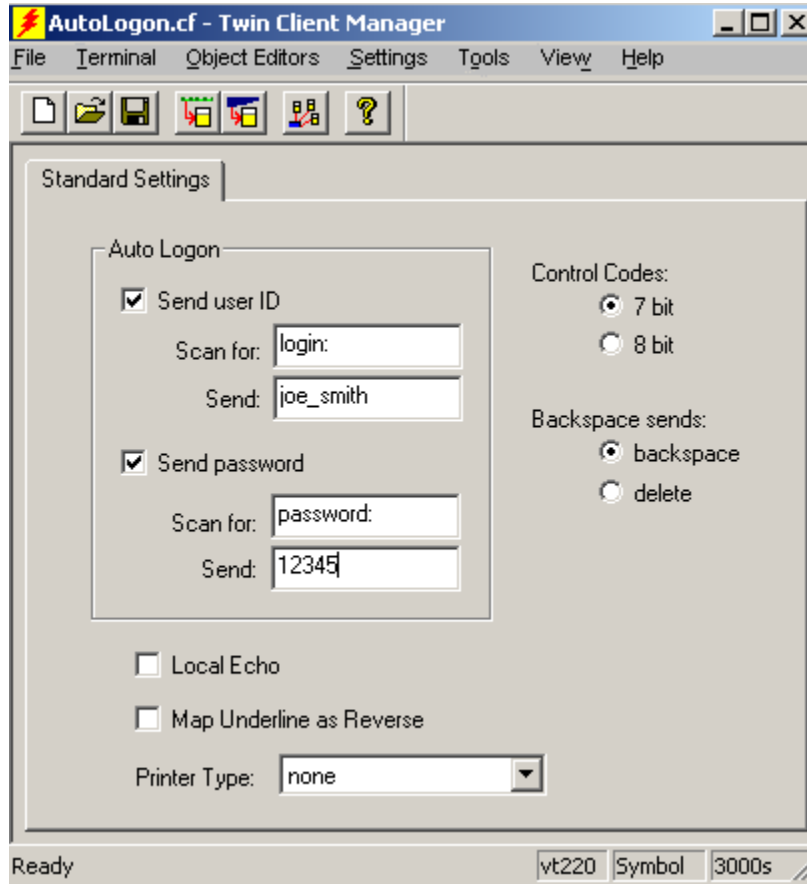
Select the VT and HP emulation setup by clicking on the **Settings** menu and then the **Emulation** menu, as shown below.



Then click on the **VT100**, **VT220**, or **HP700** selection, as shown below.



Click on **OK** after the selection is made, and return to the main Twin Client Manager menu. The standard settings tab will now reflect the settings for VT/HP emulation.



Auto Logon

This check box enables (checked) or disables (unchecked) the scanning of text entered in to the “Scan for” box and the scanning of text entered in the “Send” box for the user ID.

Send Password

This check box enables (checked) or disables (unchecked) the scanning of text entered in to the “Scan for” box and the scanning of text entered in the “Send” box for passwords.

Local Echo

This check box enables (checked) or disables (unchecked) the local echoing of keyboard and scanner input on the terminal. This option can be enabled for host systems that do not echo terminal input. The default setting is disabled.

Map Underline as Reverse

This check box enables (checked) or disables (unchecked) the mapping of the underline display attribute to the reverse video display attribute. The default setting is disabled.

Printer Type

This scrolling list selects the attached printer type. The default value is **none**, indicating no printer is attached.

Control Codes

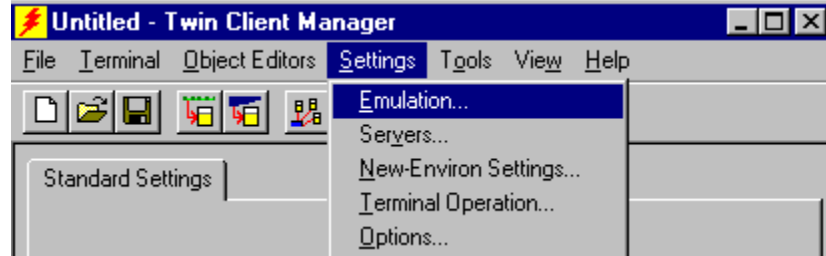
This button menu selects 7-bit (default) or 8-bit emulation control codes.

Backspace Sends

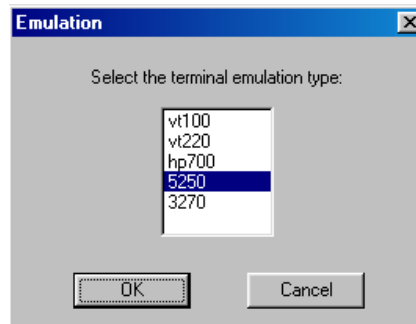
This button menu selects the control code sent by the **Backspace** key. The default setting is **Backspace**.

5250 Settings

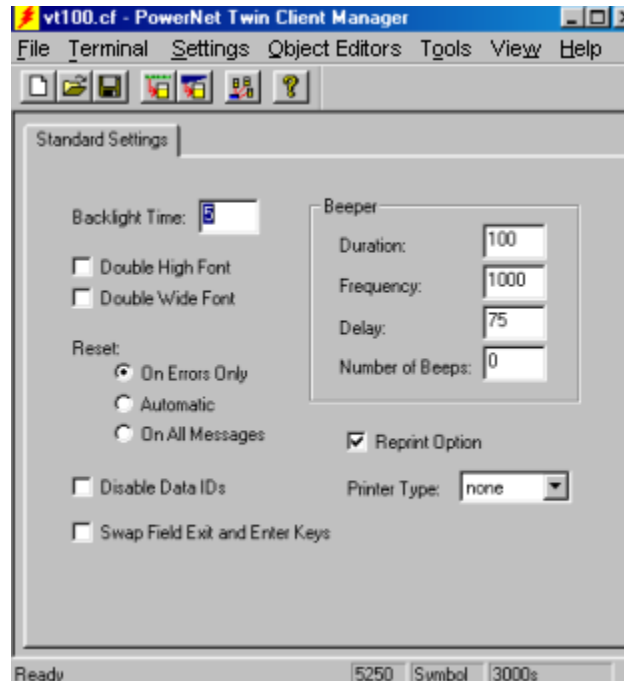
Select the 5250 emulation setup by clicking on the **S**ettings menu and then the **E**mulation menu, as shown below.



Then click on the **5250** selection, as shown below.



Click on **OK** after the selection is made, and return to the main Twin Client Manager menu. The standard settings tab will now reflect the settings for 5250 emulation.



Backlight Time

This numeric input field determines the time, in seconds, that the backlight remains on after keyboard activity. The default value is 5 seconds. Setting the value to zero (0) disables the backlight.

Double High and Double Wide Font

These check boxes enable (checked) or disable (unchecked) the display of characters in double high and double wide font.

Reset

This button menu defines the behavior of the **Reset** key. Selecting **On Errors Only** prompts the user to press the key whenever a 5250 error condition is present. Selecting **Automatic** forces the automatic generation of a reset key in response to all 5250 error conditions, and selecting **On All Messages** prompts the user to press the key whenever a message is present on the 5250 error line. The default is **On Errors Only**.

Disable Data Ids

This check box enables (checked) or disables (unchecked) the processing of *data identifiers* embedded in barcodes. Data identifiers are used to associate scanned data automatically with specific 5250 input fields, and can be implemented by either of the following two methods:

By one method, the host application display must have the matching identifier, enclosed in parentheses, in the protected area immediately preceding the input field, and the barcode must begin with the same identification characters but without the parentheses.

By the alternate method, the protected area of the host screen must contain a backslash followed by a single character (see table below) immediately preceding the input field. In this case, the barcode is identified by symbology and no special characters are added to the barcode.

| Identifier | Symbology | Identifier | Symbology |
|------------|---------------|------------|-------------|
| \A | Any symbology | \H | Codabar |
| \B | UPCE 0 | \I | Code 3 of 9 |
| \C | UPC 1 | \J | D2 of 5 |
| \D | UPC A | \K | I2 of 5 |
| \E | MSI | \L | Code 11 |
| \F | EAN 8 | \M | Code 93 |
| \G | EAN 13 | \N | Code 128 |

Beeper Option Group

These numeric input options define the behavior of the terminal's audible alarm. Setting the number of beeps to zero (0), which is the default, disables the alarm.

Reprint Option

This check box enables (checked) or disables (unchecked) the display of a reprint option on the terminal after each print operation. The default is enabled.

Printer Type

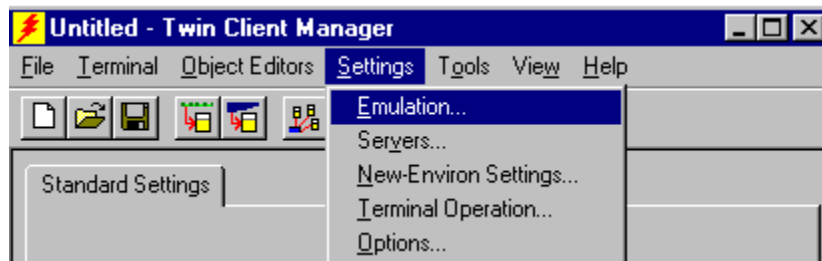
This scrolling list selects the attached printer type. The default value is **none**, indicating no printer is attached.

Swap Field Exit and Enter Keys

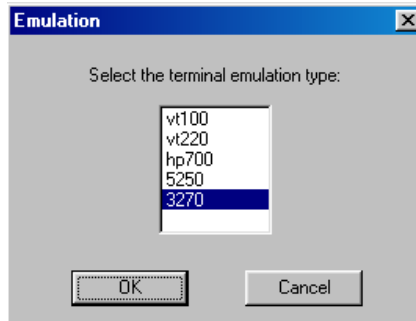
This check box swaps the meaning of the **Fexit** and **Enter** keys on the terminal keyboard. The default value is unchecked (not swapped).

3270 Settings

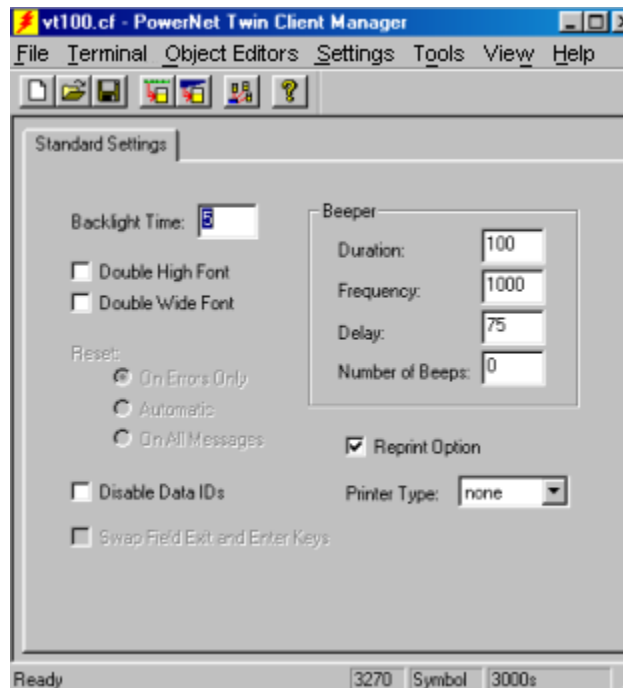
Select the 3270 emulation setup by clicking on the **S**ettings menu and then the **E**mulation menu, as shown below.



Then click on the **3270** selection, as shown below.



Click on **OK** after the selection is made, and return to the main Twin Client Manager menu. The standard settings tab will now reflect the settings for 3270 emulation.



Backlight Time

This numeric input field determines the time, in seconds, that the backlight remains on after keyboard activity. The default value is 5 seconds. Setting the value to zero (0) disables the backlight.

Double High and Double Wide Font

These check boxes enable (checked) or disable (unchecked) the display of characters in the double-high and double-wide fonts.

Disable Data Ids

This check box enables (checked) or disables (unchecked) the processing of *data identifiers* embedded in barcodes. Data identifiers are used to associate scanned data

automatically with specific input fields, and can be implemented by either of the following two methods:

By one method, the host application display must have the matching identifier, enclosed in parentheses, in the protected area immediately preceding the input field, and the barcode must begin with the same identification characters but without the parentheses.

By the alternate method, the protected area of the host screen must contain a backslash followed by a single character (see table below) immediately preceding the input field. In this case, the barcode is identified by symbology and no special characters are added to the barcode.

| Identifier | Symbology | Identifier | Symbology |
|------------|---------------|------------|-------------|
| \A | Any symbology | \H | Codabar |
| \B | UPCE 0 | \I | Code 3 of 9 |
| \C | UPC 1 | \J | D2 of 5 |
| \D | UPC A | \K | I2 of 5 |
| \E | MSI | \L | Code 11 |
| \F | EAN 8 | \M | Code 93 |
| \G | EAN 13 | \N | Code 128 |

Beeper Option Group

These numeric input options define the behavior of the terminals audible alarm. Setting the number of beeps to zero (0), which is the default, disables the audible alarm.

Reprint Option

This check box enables (checked) or disables (unchecked) the display of a reprint option on the terminal after each print operation. The default is enabled.

Printer Type

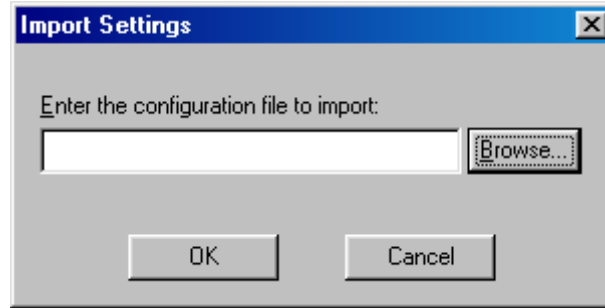
This scrolling list selects the attached printer type. The default value is **none**, indicating no printer is attached.

Importing Custom Configurations

Existing installations that use a custom Symbol configuration file are easily converted to Twin Client with the **Import** option found under the **File** tab of Twin Client Manager.



Click on **Import**, and if necessary then click on the **Browse** button to locate the file.



To further simplify conversion, the import utility displays all conversion errors and warnings so that potential compatibility problems can be easily identified and corrected.

Importing ROI configuration files works with Wavelink in release 7 or earlier, provided that the Wavelink client is using the term.cfg file.

Terminal Setup Using Symbol-Style Barcodes

The PowerNet Twin Client terminal software for Symbol recognizes the same configuration barcodes used by the Symbol Telnet Client product. Refer to the associated Symbol documentation for instructions.

Terminal Setup Using Symbol-Style Menus

To simplify the upgrade from Symbol Telnet Client products to PowerNet, the PowerNet Twin Client supports the same menu system. The Symbol-style configuration sub-menus are accessed from the Twin Client main terminal screen shown below.

```
Twin Client
© 1991-2006, Connect, Inc.

Keypress to Continue
```

The following are used to access each of the Symbol-style configuration menus:

| | |
|-----------------|------------------------|
| VTX/HP Setup | FNC, CTL, and T |
| Terminal Config | FNC, CTL, and C |
| Config Host | FNC, CTL, and R |

The keystrokes, menus, and options are identical to those found in the Symbol product. Refer to the Symbol Telnet Client product documentation for instructions.

Terminal Setup Using Twin Client Menus

For compatibility with other PowerNet products, the PowerNet Twin Client for Symbol also supports the standard Twin Client configuration menu system on the terminal. This menu system is accessed by pressing uppercase **C** at the Twin Client main menu shown below.

```
Twin Client
© 1991-2006, Connect, Inc.

Keypress to Continue
```

The following menu, which is specific to the PowerNet Twin Client for Symbol, is displayed.

```
SETUP
1 - Radio Setup
2 - Terminal Setup
```

The **Radio Setup** option invokes the following menu.

```
CONFIGURATOR 2.35
View Config
ESS ID
Subnet Mask
Default Router
MU IP Address
Diversity
MU Sleep Mode
Boot Mode
Pwr Management
Buffers
ReXmit Delay
Rate Control
Scan/RF Up
Int Roaming
Exit
```

The **Terminal Setup** option invokes the following menu.

```
Edit Functions
Edit Host List
Edit Authorization
Switch Modes
Run Emulator
Exit
```

Use the **Up-Arrow** and **Down-Arrow** keys to navigate the menus, and press **Enter** to select the highlighted option. Each menu option is described below.

Editing the Host List

If the host IP address(es) were not pre-configured as described in the Setting the Servers section of *Configuring the Manager*, or if you wish to change those settings using the terminal menus, select **Edit Host List** and enter up to four Host IP addresses as required.

```
Host 0
IP 206.183.67.155
Port 23__

<F3> Save <F7> Quit
```

Press **F3** to save the configurations.

Editing the Authorization

The client software can be authorized automatically, as described in the next section, *Authorizing PowerNet*. This menu option permits authorization of each terminal manually. Select **Edit Authorization** to obtain the terminal's Identification Code, used to obtain the Authorization code from the Connect web site, as described in the next section.

The 12-digits displayed at the terminal screen top is the terminal's Identification Code.

```
00A0F826E614
Authorization
-----
not authorized
<F3> Save <F7> Quit
```

Type the Authorization code into the field as it appears on the web site. Punctuation characters, such as the hyphen (-), are required. Press **F3** to save your Authorization code.

Switching Modes

The PowerNet Twin Client normally operates in "Telnet" mode, which provides direct connection to Telnet hosts. It can also operate in "Server mode, through a PowerNet OpenAir server. Select the **Switch Modes** menu option to switch between Server and Telnet modes of operation. Note that the host socket address for the PowerNet OpenAir servers is 1800, which must also be changed in the **Edit Host List** menu described at the beginning of this section.

Running the Emulator

After all desired changes have been made, select the **Run Emulator** option to return to the Twin Client main menu. Then press any key to establish the Telnet session and begin emulation. Refer to the section, *Starting a Telnet Session*, for further instructions.

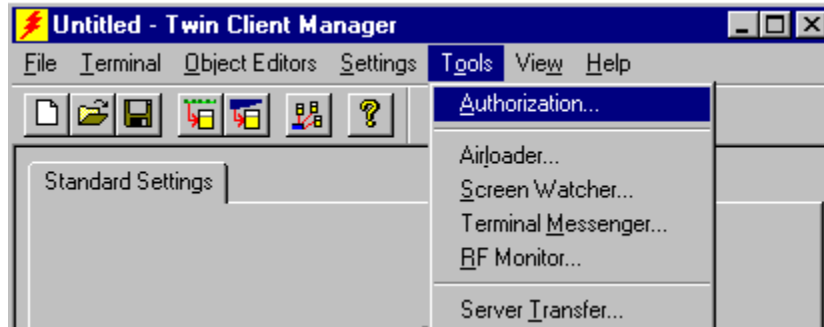
Authorizing PowerNet

Each PowerNet Twin Client will run for 30 minutes at a time without authorization. Uninterrupted operation for a production environment is the result of authorizing the software.

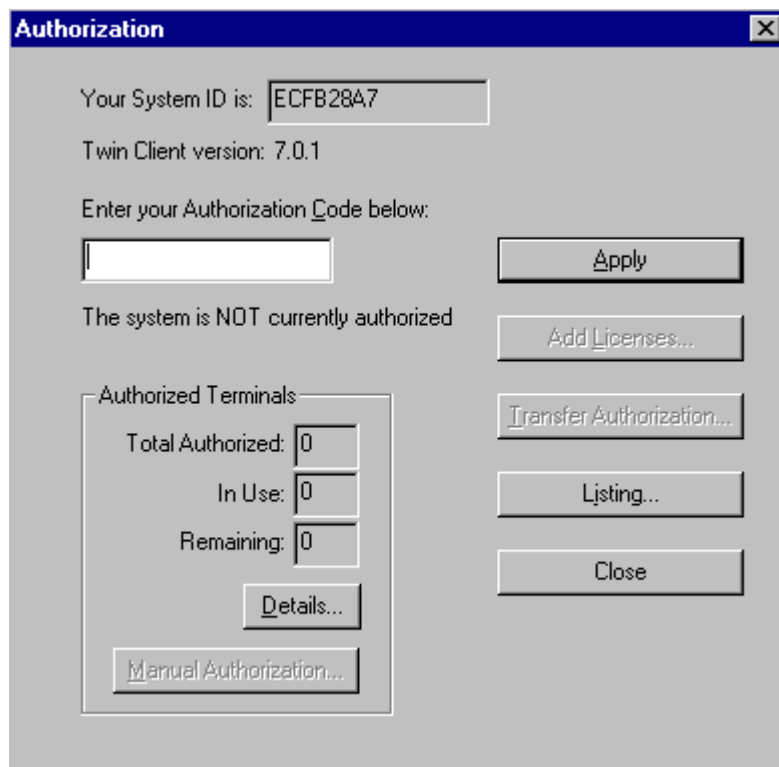
The Twin Client Manager can automatically authorize the terminal over the wireless network if the following requirements are met:

- A PC running Twin Client Manager is connected to the wire LAN segment with at least one access point within range of the terminal.
- The Airload Hex file is installed on the terminal.
- The System ID of the PC on which Twin Client Manager is installed has been used to obtain a site license Authorization code from the Connect web site.

To obtain the System ID of the Twin Client Manager, click on the **A**uthorization option in the **T**ools menu, as shown below.



The Authorization window is displayed as shown below.



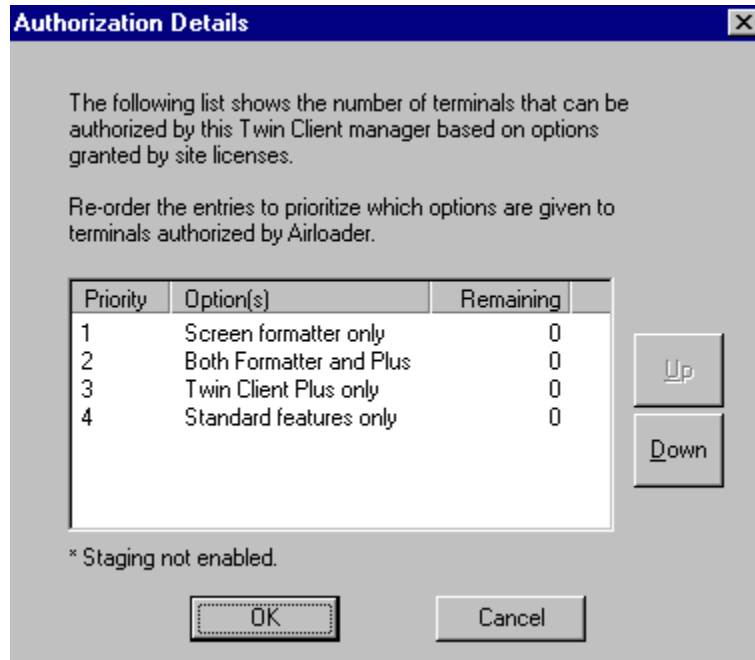
Go to <http://www.connectrf.com>. Click on **Partner Services**. Click on the **Generate Authorization** icon at the top of the page. Follow the directions on the web site.

Authorized Terminals

The number of terminals authorized, the number of terminals in use, and the number of terminals remaining is provided in the Authorized Terminals box on the lower left side of the screen.

Click on the **D**etails button to number the options in the screen below in the order of your priority.

Note: The terminal may or may not be able to utilize the Formatter feature depending on its Authorization codes.



Click on an option and move it using the **Up** and **Down** buttons.

Click on **OK** when finished.

The **Manual Authorization** button is an alternate method of obtaining an Authorization code for a terminal. This method does not utilize Airloader, as does the other method.

Click on this button, manually enter your mac address in the screen that appears, and click on **OK**. This enables you to generate individual Authorization codes.

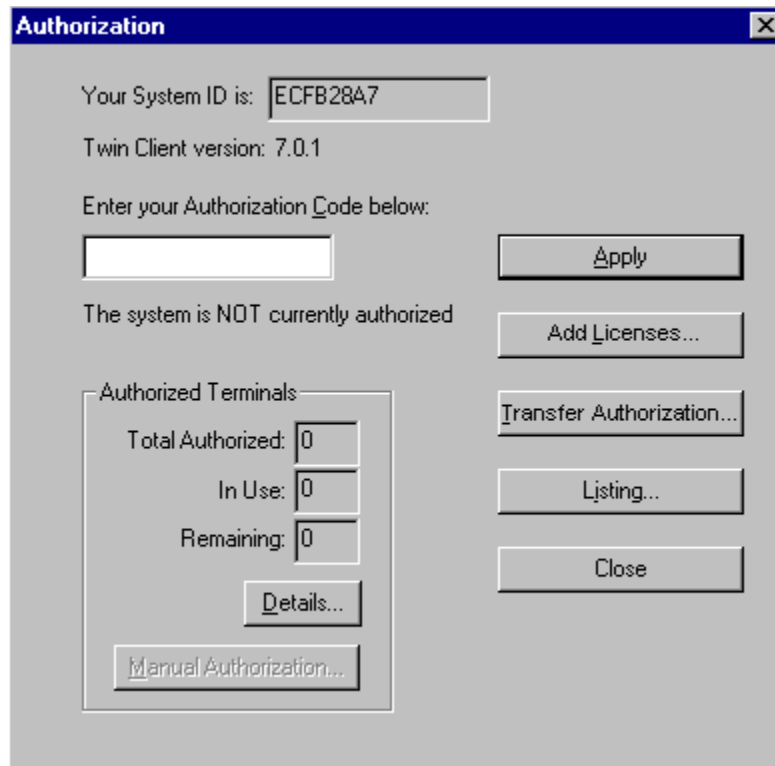
Add Licenses

The Add Licenses feature is used when adding additional licenses to an already site licensed Twin Client Manager.

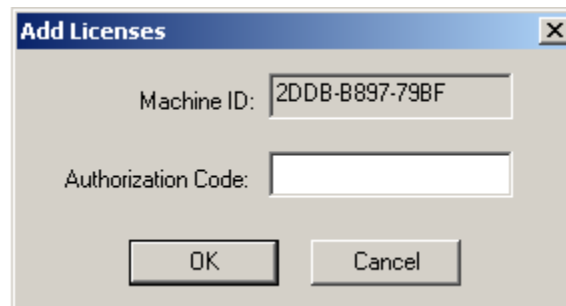
An example of this is the instance in which Twin Client Manager is licensed for 10 licenses, and the customer purchases another 10 licenses to make a total of 20 licenses.

From Twin Client Manager, choose **Authorization** from under the **Tools** menu.

Click on the **Add Licenses** button.



A pop-up box appears with the Machine ID and a space for the additional licenses Authorization code.



Enter the additional license's Authorization code and click on OK.

Use the Machine ID in the pop-up box instead of the original Machine ID to get your Authorization code.

If adding users, click on the Add Licenses button before generating the Authorization code to get the most current Machine ID.

Transfer Authorization

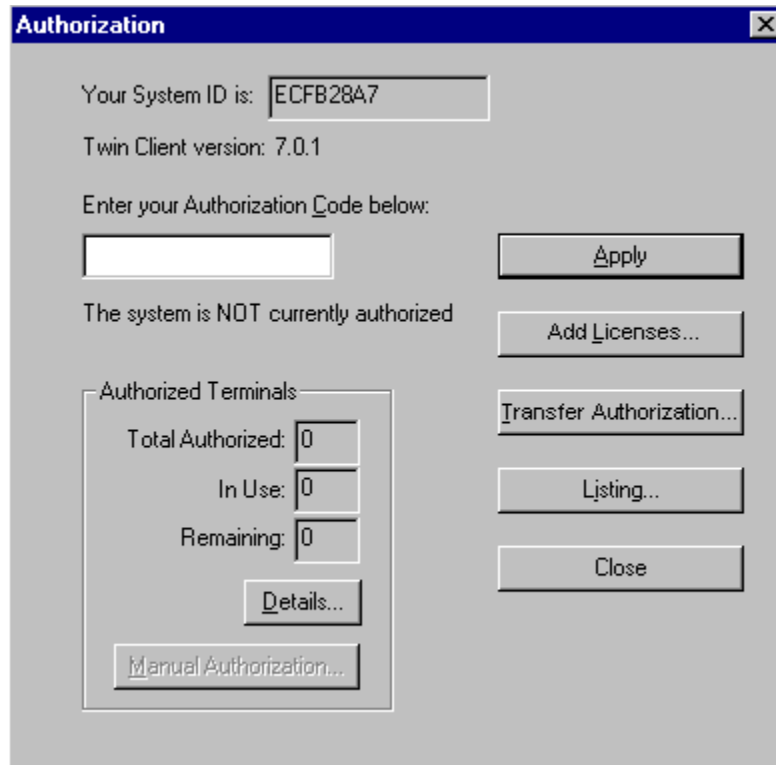
The Transfer Authorization feature is used when moving a site license from one PC to another.

After Twin Client Manager is installed on a new PC, you will need the System/Machine ID for it. This ID appears in the first box of the Authorization screen.

From Twin Client Manager, select **A**uthorization from under the **T**ools menu.

Click on the **T**ransfer **A**uthorization button on the old PC.

You will be asked for the new System ID. Enter this new System ID. It will generate an Authorization code for the new PC's Twin Client Manager.



Note: This feature only works if there are licenses remaining on the old PC.

Listing

Click on the **L**isting button to view Authorization codes issued.

The Authorization codes used along with their corresponding serial numbers will appear.



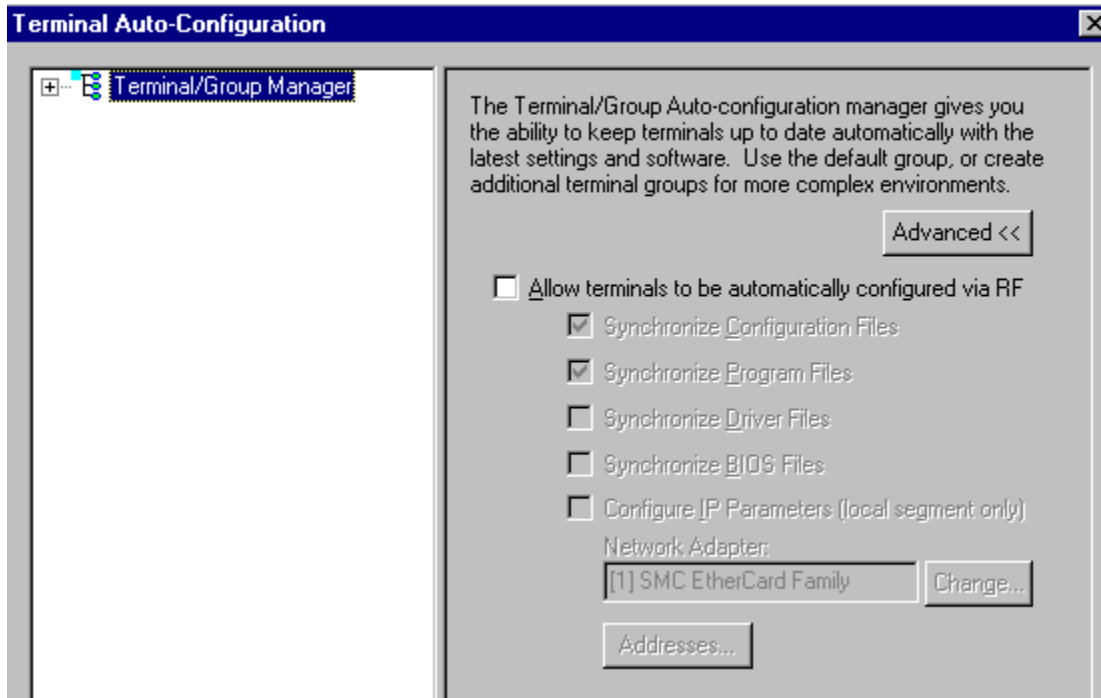
Click on **OK** when finished.

Click on the **Close** button when finished.

Software Management

Airloader Auto-Configuration

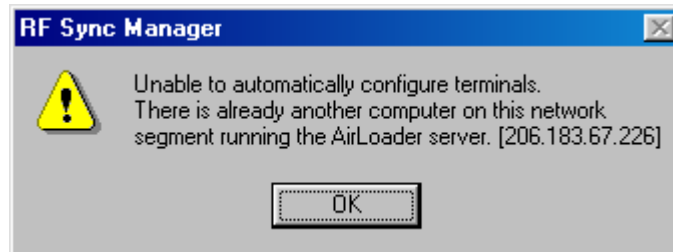
The software and supporting configuration files for all Twin Client terminals can be configured for automated management after installing the Twin Client AirLoad Hex file in the terminals, as described in the *Quick Start* section. The Airloader Auto-Configuration form is accessed from the Twin Client Manager **T**ools menu. Select **Airloader**.



Note: If no options are displayed, click the Advanced<< button.

Enabling Automatic Downloads

Click to put a check in the box that allows terminals to be automatically configured via RF to enable automatic downloading. In the event another PC on the network is already configured and active, the following warning message is displayed.



Synchronizing Configuration Files

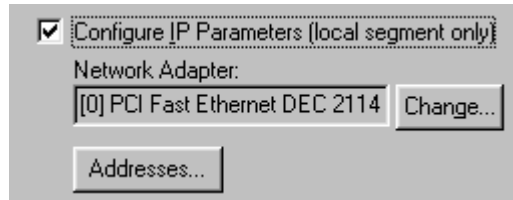
Click to put a check in the Synchronize Configuration Files box to enable automatic synchronization of configuration files on the terminal. When the terminal is cold booted, its configuration files will be compared with the most recent on the PC. The terminal is updated automatically if it does not have the latest revision.

Synchronizing Program Files

Click to put a check in the Synchronize Program Files box to enable automatic synchronization of program files on the terminal. When the terminal is cold booted, its program files will be compared with the most recent on the PC. The terminal is updated automatically if it does not have the latest revision.

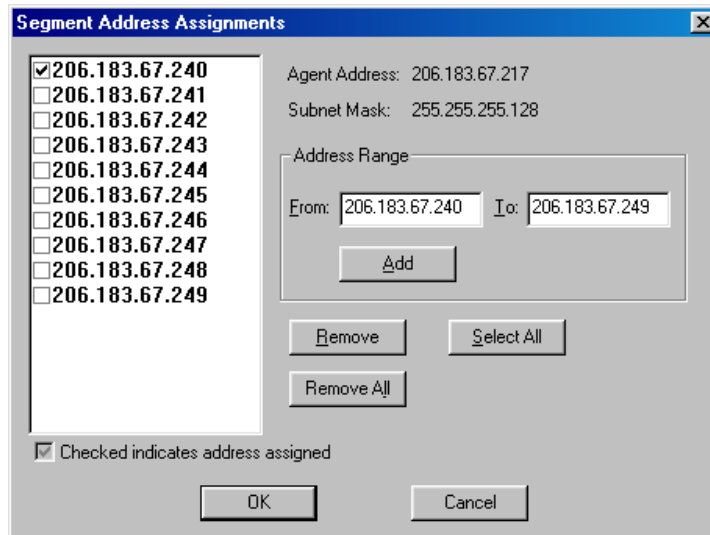
Automatic IP Address Assignment

New terminals will be assigned IP addresses automatically if the following box is checked.



Note: Do not check this option if a DHCP server is configured to manage address assignments.

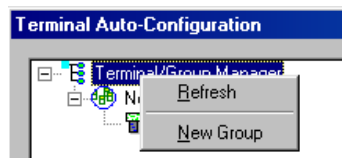
To set the addresses, click on the **Addresses** button to access the Segment Address Assignments dialog box, as shown in the following figure.



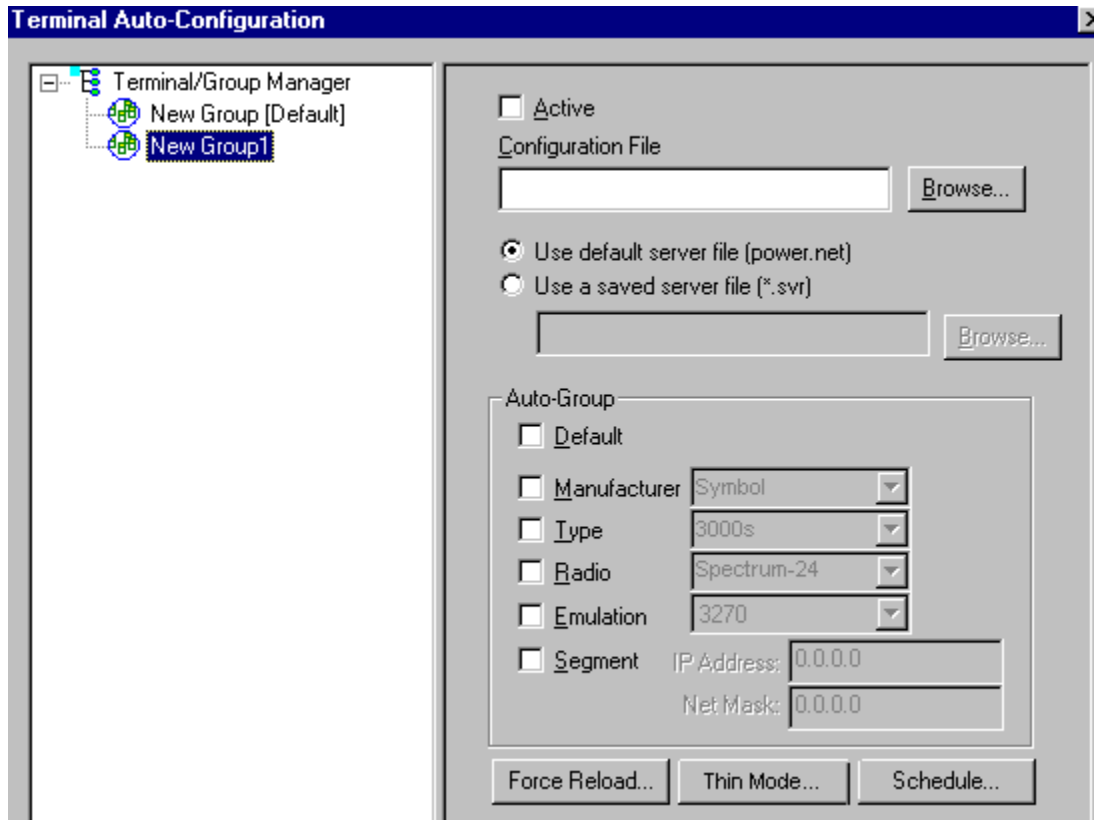
Enter the desired range in the **From** and **To** boxes as shown above, and then click on **Add**.

Creating New Groups

New groups, with different configurations, can be created by clicking on the **Terminal Group Manager**, and then clicking the right mouse button as shown below.

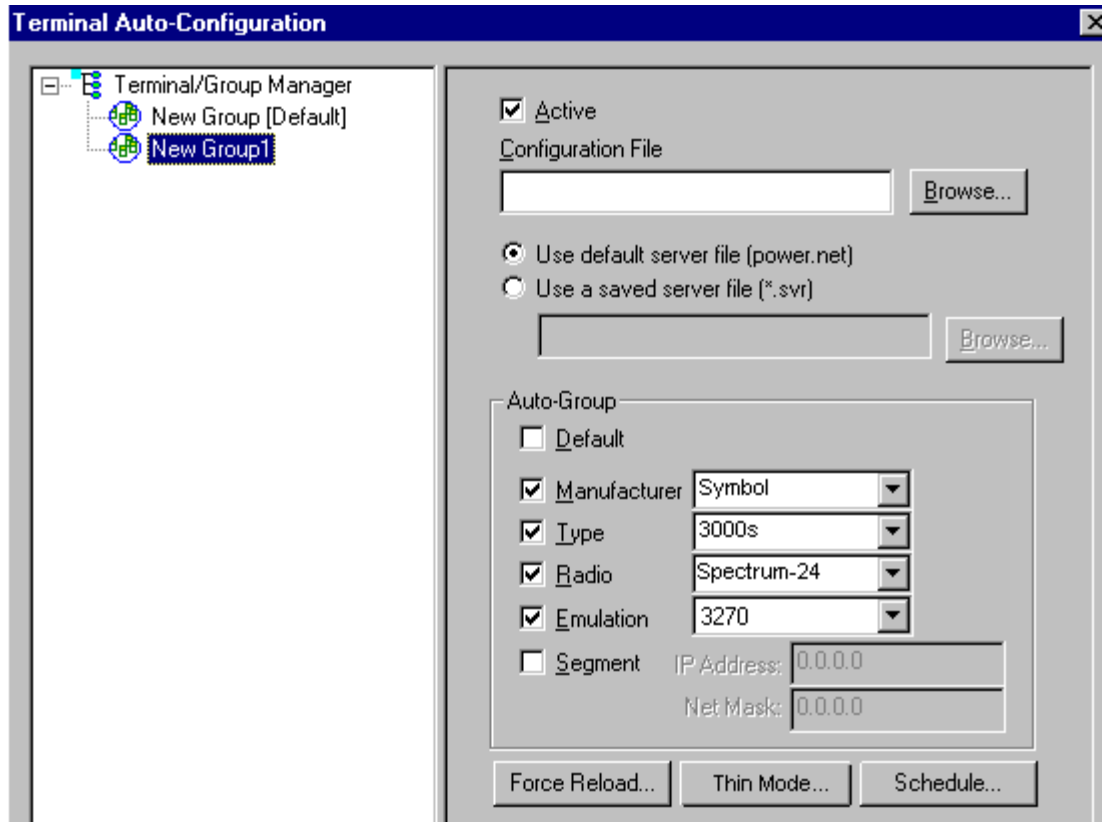


After the new group has been created, the group settings option becomes available for change, as shown below.



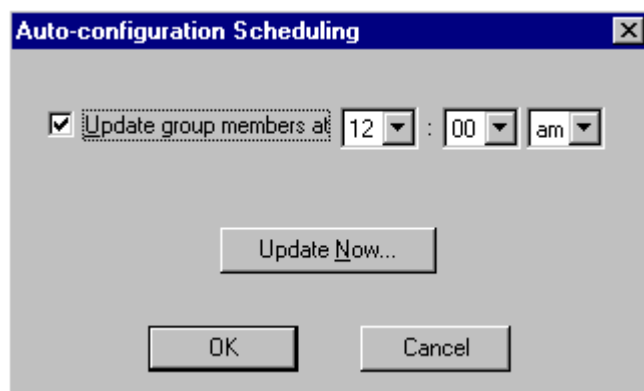
After the Configuration File and all of the other parameters have been set, the group is made active by clicking on the **Active** check box.

Note: A setting under the Group allows you to associate a saved server file (.svr file) with a particular group. This means that the .svr file will get sent to the terminal in place of the default power.net file. The .svr files are created in Twin Client Manager under Tools/Servers.



Clicking on the **Thin Mode** button will cause all terminals in this group that are currently running in thick mode to be switched to thin mode the next time Airloader is run on the terminal.

Click on the **Schedule** button to view a dialog box for scheduling an automatic Airloader update.



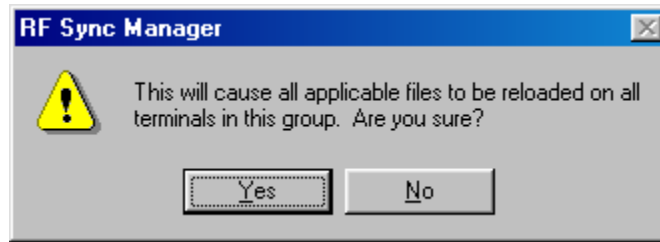
Select the desired time and click on **OK**. Click on **Update Now** to check all group members for updates.

Setting the Segment

Checking the **Segment** button restricts a terminal group to a range of IP addresses. The IP Address can be any valid address on the segment as it is used only to identify the segment. The setting of the Net Mask can be used to restrict the range. This feature is useful for segregating terminal groups by location.

Setting Force Reload

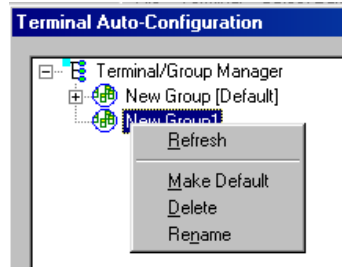
Clicking on the **Force Reload** button forces all terminals within a group to be automatically updated. The following warning message appears.



Click on the **Yes** button to force the reload.

Setting the Default Terminal Group

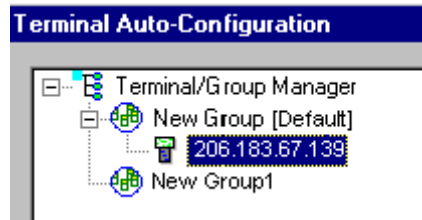
New terminals that have not yet been assigned to any group are initially assigned to the default group in effect when they are cold-booted.



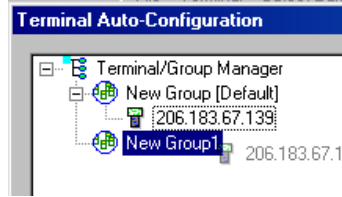
Any group can be made the default group by clicking on the group, and then clicking on the right mouse button. Then click on the **Make Default** option.

Reassigning Terminals

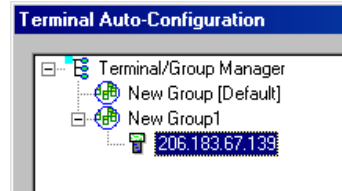
After a terminal has been configured and assigned to the default group, it can be reassigned to a new group by clicking on the terminal icon as shown below.



Then, holding the mouse button down, drag the terminal icon to the desired group.



Release the mouse button, which reassigns the terminal.

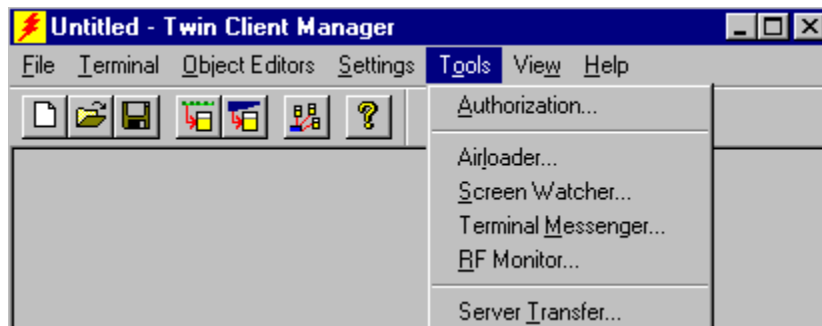


The next time the terminal is rebooted, it will be reconfigured as defined in the group specification.

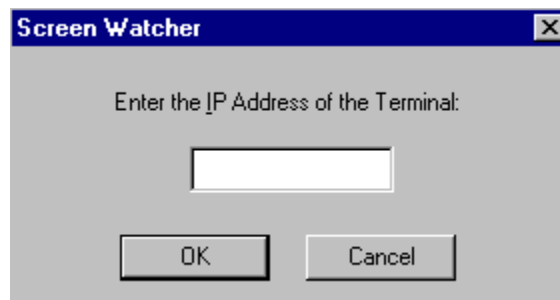
Mobile Device Manager (MDM) Features

Under **Tools** in Twin Client Manager are the Screen Watcher, Terminal Messenger, and RF Monitor features.

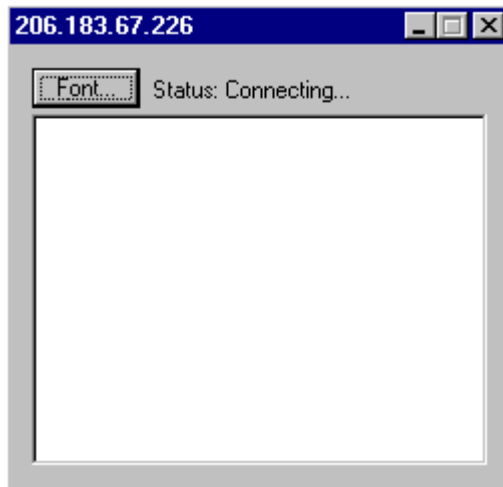
Note: The terminal may or may not be able to utilize the Screen Watcher or Terminal Messenger features depending on its Authorization codes.



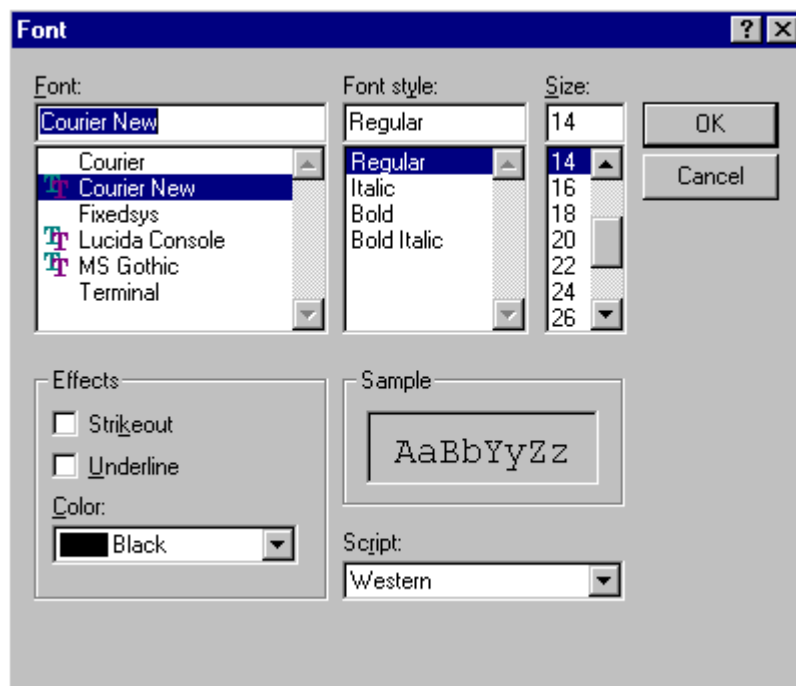
Select **Screen Watcher**, enter the terminal's IP address, and click on **OK**.



A screen will appear with a display resembling the terminal screen.



Clicking on the **Font** button on the upper left brings up a screen in which you can modify the font settings, as shown below.



Select **Terminal Messenger** from the **Tools** menu.

You may enter an Address Range in the **From** and **To** boxes on this screen. Click on **Add** when finished.

Enter a message to send in the space provided, select the terminal to receive this message by clicking on it in the **Select Terminal(s)** column, and click on the **Send** button to send the message of your choice to the terminal of your choice.

See the example of the Terminal Messenger screen below.

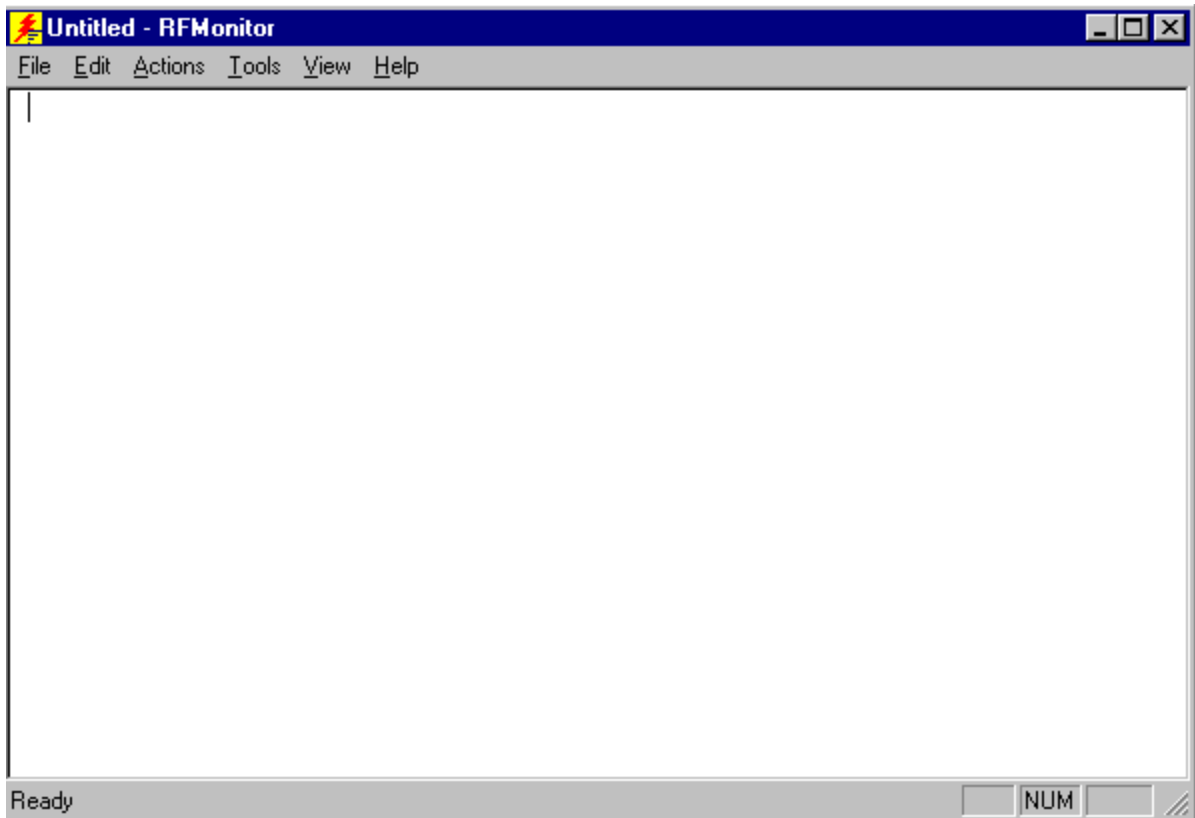


To remove a terminal from the list of terminals receiving your message, click on the terminal number in the **Select Terminal(s)** column, and click on the **Remove** button. Click on the appropriate button, **Remove All**, **Select All**, or **Unselect All**, to remove all terminals, select all terminals, or unselect all terminals from the **Select Terminal(s)** list.

Note: Use the **Ctrl** and **Shift** keys to select multiple terminals.

Click on the **Close** button when finished.

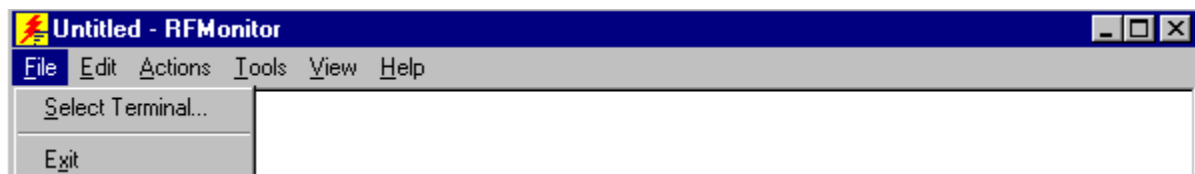
Select **RF Monitor** from the **Tools** menu.



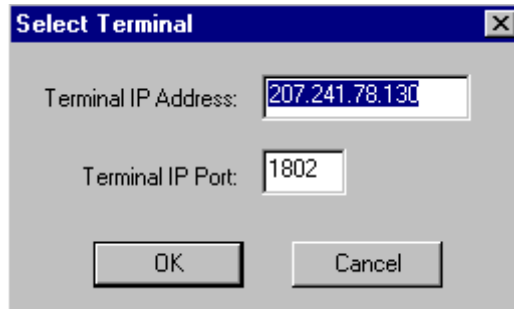
RF Monitor is an "Over The Air" diagnostic tool. It's used to collect diagnostic trace information from RF terminals running PowerNet Twin Client software.

It runs on a Windows PC and will send a command to the RF terminal to start tracing. The terminal, when it receives this command, will start sending the trace information over the RF link to the PC that issued the command. This will be written to a file on this PC that can be sent to us for analysis.

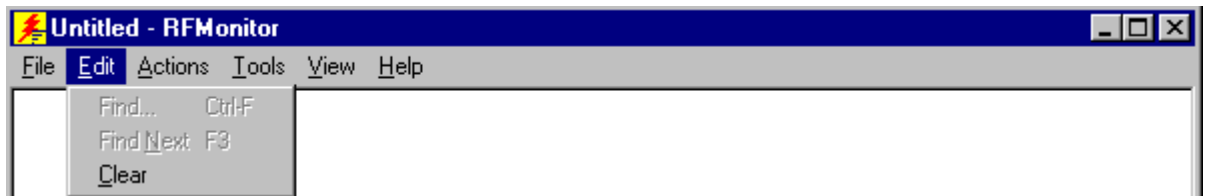
Click on **F**ile to **S**elect Terminal or to **E**xit.



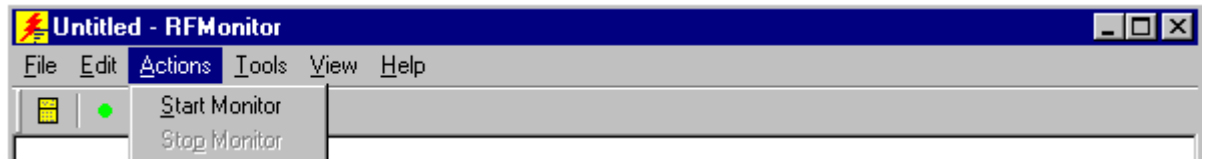
Choosing **S**elect Terminal allows you to view a log of the terminal's activity. Enter the Terminal IP address and Terminal IP Port, and click on **O**K.



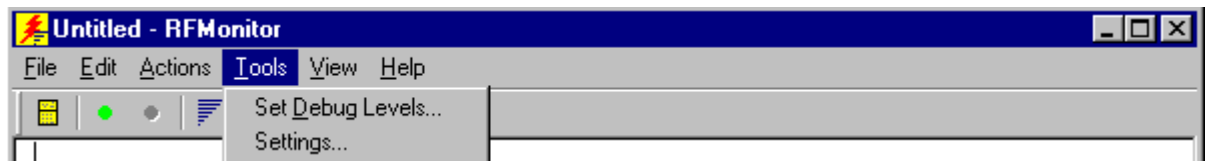
Click on **E**dit. Select Find, and/or Find Next to search for pieces of information in your log, or select Clear to clear the search.



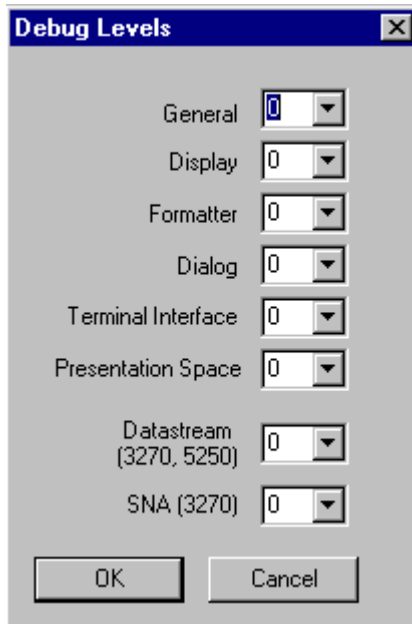
Click on **A**ctions to Start the Monitor or Stop the Monitor.



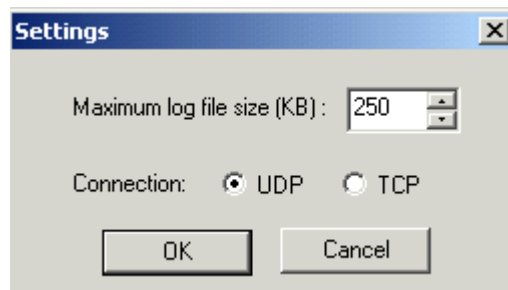
Click on **T**ools to set Debug Levels or Settings.



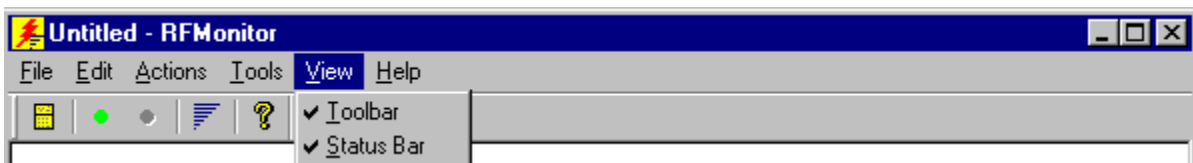
The options in Debug Levels are shown below.



The maximum log file size can be set under Settings. Select a UDP or TCP connection here.



Click on **V**iew to show or hide the Toolbar and the Status Bar.



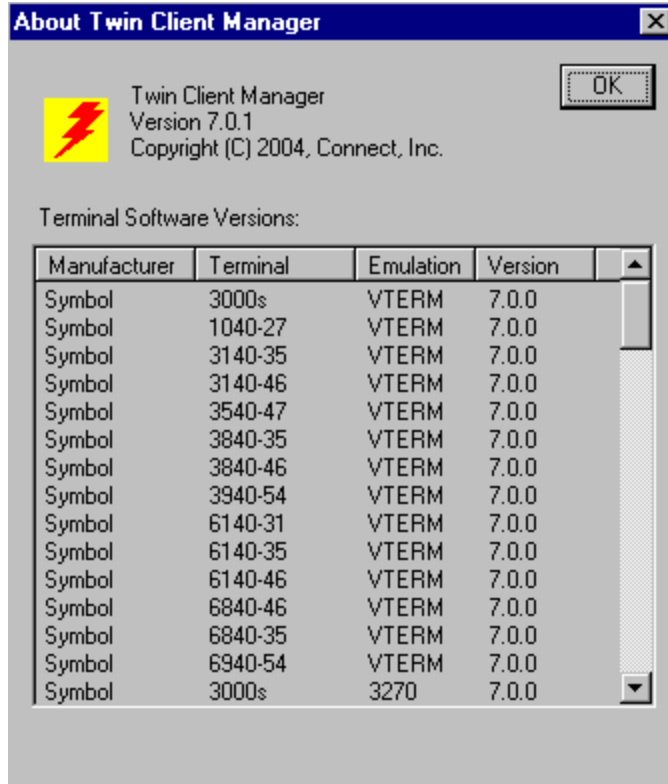
This is the Toolbar. It is found near the top of the screen.



This is the Status Bar. It is found at the bottom of the screen.

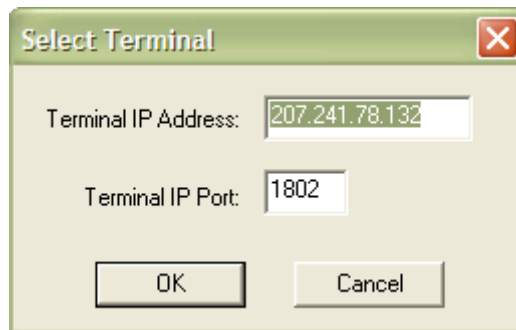


Click on **A**bout Twin Client Manager under **H**elp to bring up the following screen.

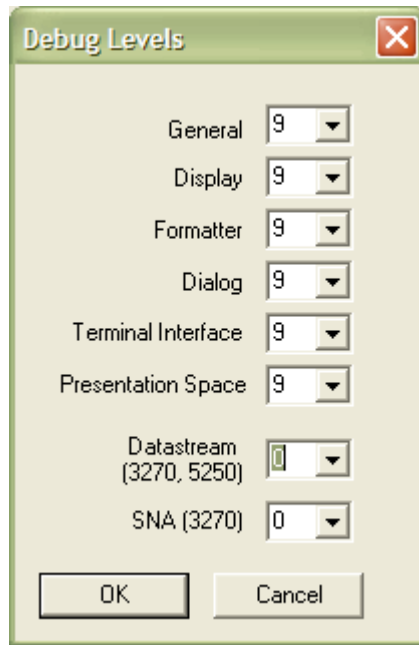


RF Monitor is a very small program and does not even require installation. Just place it in a directory on your PC and create a shortcut to run it. It will run on all versions of Windows except V3.1 and Win 95.

1. Move RF MONITOR to a Win PC with Network access to the RF terminal.
2. Run RF MONITOR (create a shortcut or do a start/run).
3. From the pull down menu, select **File/Select Terminal**.
4. Key in the RF terminal IP address and leave the port at 1802.



5. From the pull down menu, select **Tools/Select Debug levels**. Set all levels to 9 except Data stream and SNA.



6. With the RF terminal sitting at the **Press Any Key** prompt, select **Actions/Start Monitor**.
7. Press a key on the RF terminal to open a session, and you should see trace data in the RF Monitor window. When done, end the trace and the file will be named **tnxxx.yyy.log** (where **xxx.yyy** is the last 2 octets of the RF terminal's IP address) in the directory in which RF Monitor was running.

```

08/11 11:57:55.000      0ms Log Started.
08/11 11:57:55.000      50ms BEGIN 5250 6.5.0 IBM-5291-1 TN E:\tnvt.cf
08/11 11:57:55.000     280ms TN_key=078.132< 0 vars (0)
08/11 11:57:55.000      50ms Dialog File: ''
08/11 11:57:55.000      0ms Dialog ''
08/11 11:57:57.000     1760ms Connected To: 207.241.78.5
08/11 11:57:57.000      60ms tip_snd: 2 bytes
51 00
08/11 11:57:57.000      50ms tip_rcv: 14 bytes
51 36 38 30 30 34 36 36 2E 33 2E 36 10 15      Q6800466.3.6..
08/11 11:57:57.000      60ms tip_setup: model 6800 key 46 rev 630
08/11 11:57:57.000     160ms tip_snd: 137 bytes
5A 02 35 31 5A 02 41 31 5A 05 42 31 30 38 30 5A      Z.51Z.A1Z.B100Z
02 44 30 5A 05 46 33 32 34 30 5A 02 47 30 5A 02      .D0Z.F3240Z.G0Z.
49 04 5A 02 4D 31 5A 02 4E 30 5A 09 50 34 2C 33      I.Z.M1Z.N0Z.P4,3
32 2C 31 38 30 5A 02 51 31 5A 02 52 30 59 02 42      2,180Z.Q1Z.R0Y.B
01 59 02 43 00 59 02 45 01 59 02 46 00 59 02 4A      .Y.C.Y.E.Y.F.Y.J
00 59 02 49 01 58 03 42 00 00 58 02 46 0A 58 02      .Y.I.X.B..X.F.X.
47 00 58 08 48 65 6E 67 6C 69 73 68 5A 02 56 0A      G.X.HenglishZ.U.
5A 11 48 31 2C 31 35 30 2C 32 30 34 38 2C 33 30      Z.H1,150,2048,30

```

Common Problems with RF Monitor

- **The trace won't start.**

RF Monitor uses UDP to send commands to the RF Device. On busy networks UDP packets are not always delivered. The terminal can miss the command to start the trace. Below are some things that can be useful:

- a. Ping the RF terminal from the same PC before starting RF Monitor (seems to "open" a path to the terminal).
- b. Start the monitor with the terminal at the **Press Any Key** prompt. (While the terminal is at this prompt, it's not doing much and has a better chance of hearing the start trace command.)

- **I don't understand what this trace means.**

The trace that this tool collects is engineering level information. It allows an end user to collect information that can be analyzed by Connect engineering.

It will generally be requested by Connect support to help diagnose a reported problem.

To be able to read and understand these completely, you need to have an understanding of:

- a. Emulation protocols (IBM 5250, IBM 3270, DEC VT200, etc.)
- b. PowerNet Twin Client products
- c. RF Network concepts
- d. Wired network concepts
- e. Telnet sessions
- f. TCP/IP

They are text files that can be read with any editor or viewer and can be useful to end users and integrators even if they may not have all the requirements above.

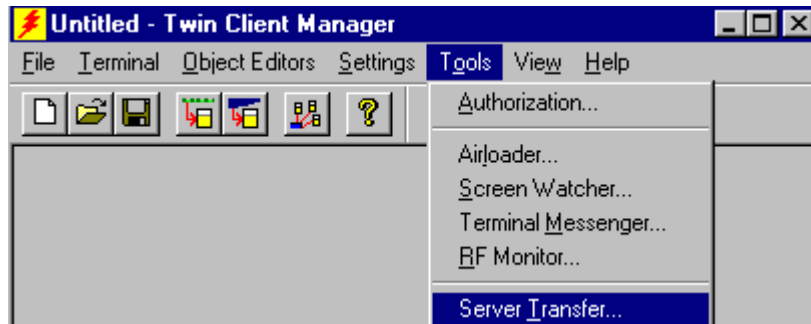
- **I have an intermittent problem and it could happen on any one of my 100 terminals. RF Monitor only does one terminal at a time. What can I do?**

RF Monitor is not the right diagnostic tool for this type of problem. PowerNet products have another diagnostic tool that can be used called the "Diagnostic Server".

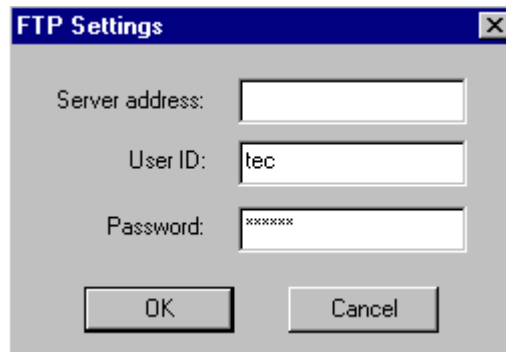
This tool can be set up to run trace diagnostics on up to 300 terminals at the same time. This tool will be provided as needed for systems under PowerNet support agreement OR by T&M when they are not covered.

It also includes the service of a PowerNet support engineer.

Server Transfer is another feature. From the **Tools** menu, select **Server Transfer**.



The FTP Settings screen appears.



To send object editor and configuration files from Windows to your Linux box, enter your server address, and click on **OK**.

Downloading Files on Symbol 3000s Series Terminals

Symbol terminals are normally delivered with Symbol software pre-installed. At the time of this writing, that software includes the OS and its utility programs, LWP, and the radio driver. Consult Symbol Technical documentation for the current files and version numbers.

If the Symbol software is not installed or is out of date, the Twin Client Manager provides for their installation. The following sections describe the required procedures.

Verifying the Symbol Files

Verify the presence of LWP by cold-booting the terminal (refer to the section *Cold Booting the Terminal*). Monitor the terminal display for a message similar to the one shown in the following figure.

```
FLASH TERMINAL

LWP HEX v3.05-11
RF v1.04
```

If the message appears, then LWP, and the radio driver is already installed and the LWP version number should be noted for reference later in this procedure. If this message does not appear, then LWP.EXE is not installed; proceed to the section entitled *Preparing Symbol Files for Download*.

If LWP and the radio driver are installed, the terminal will attempt to associate with an access point and then start an application. With nothing more than LWP and the radio driver installed, the terminal will display a message similar to that shown in the following figure.

```
No applications!

D:\>
```

The terminal is now at a DOS prompt and OS programs can be executed. In the event that the terminal failed to associate, the Symbol radio configuration program, CFG24 or CFG11, can be run to set the radio parameters correctly so that the terminal successfully associates. Refer to Symbol documentation for detailed instructions on the use of CFG24 or CFG11.

Formatting the Flash Drive

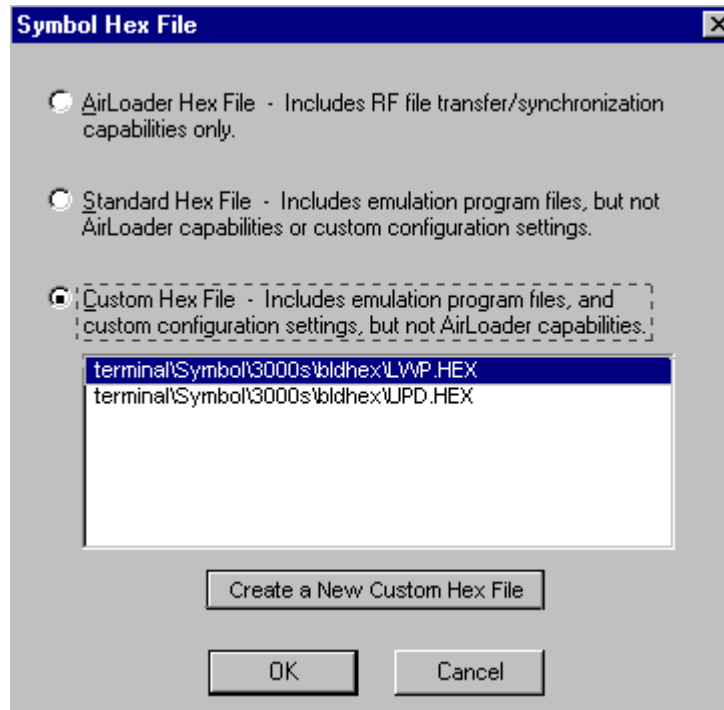
If the Symbol LWP requires replacement, format the flash drive and then download the desired LWP release. To format the drive, type FLSHFMT at the DOS prompt. After the format operation completes, proceed to the next section for download instructions.

Preparing Symbol Files for Download

Click on the **Send Program Files to Terminal** menu option.



Symbol files to be downloaded must be placed in the Twin Client subdirectory as shown in the following figure.



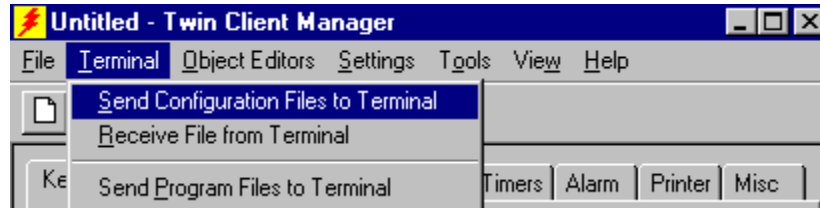
Then, click on the **Custom Hex File** button and then on the desired file from the window at the bottom, and then click on **OK**. Refer to the section entitled *Configuring the Terminal for Download* for instructions on preparing the terminal for download.

After the download of the Symbol software, the Twin Client AirLoad Hex file can be installed as described in this chapter. The Twin Client Manager will then automatically manage the terminal software and configuration.

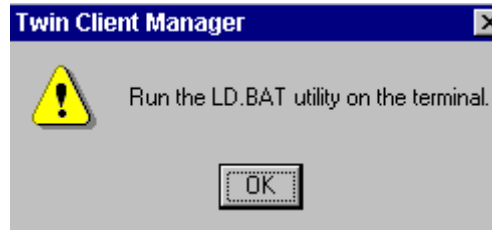
Serial Download of Configuration Files

The automated configuration management provided by the Twin Client Manager eliminates the need for a serial download of the terminal configuration. However, this function can be accomplished manually by clicking on **Send Configuration Files to Terminal**.

Note: This procedure assumes that the Symbol LWP and PowerNet Twin Client were previously installed.



The following figure is displayed.



The procedure for running the LD.BAT utility on the terminal is described in following sub-sections of this chapter.

Warm Boot the Terminal

On the portable terminal, power the terminal Off, then boot the terminal using the key sequence specific to the terminal model as shown in the following table.

| Terminal Model & Keypad | Key Sequence |
|--|---|
| 614x 35-key | Hold / and + keys. Press and release On/Off . Release / and + keys. |
| 314x 46-key 354x 47-key 384x 46-key 684x 46-key | Hold 4 and 5 keys. Press and release Power . Release 4 and 5 keys. |
| 104x 27-key | Hold P1 and Enter keys. Press and release Power . Release P1 and Enter keys. |
| 394x 54-key 694x 54-key | Hold Shift and L keys. Press and release Power . Release Shift and L keys. |

If a configuration has already been downloaded to the terminal, or this is not the first time the terminal has been rebooted, skip the next section and proceed to the section entitled *Reloading the Configuration Files*.

First-time Download of Configuration Files

After the first cold boot of the terminal following the download of a Twin Client application, the following screen is displayed.

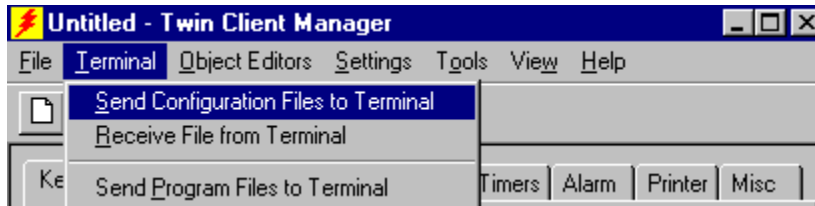
```

SELECT MODE
1 - Telnet
2 - Server

```

Press **1** to select Telnet and place the terminal in the cradle.

On the PC, under **T**erminal, select **S**end Configuration Files to Terminal.



The message "**Recv. Response.BAT**" appears on the terminal.

Then click **OK** on the PC to begin the download. After the download, warm boot the terminal, after which the following is displayed on the terminal.

```

Twin Client
© 1991-2006, Connect, Inc.

Keypress to Continue

```

The terminal is now ready to begin a Telnet session using the configuration files just downloaded.

Reloading the Configuration Files

Reloading the configuration files through the serial port requires that LD.BAT be executed manually, before the radio driver is installed. This is accomplished by interrupting the normal Twin Client startup process using the following technique. Warm-boot the terminal and monitor the display for the message shown in the next figure.

```

Loading ....

```

While the message is displayed, press the **Ctrl**, **Func**, and **1** keys. In the case of the 394x and 694x series of terminals, press **Ctrl** and **F1** instead. A DOS prompt is then displayed. Type LD.BAT at this DOS prompt. Then place the terminal in the cradle and click **OK** on the PC. After the download, warm boot the terminal, after which the following is displayed on the terminal.

```

Twin Client
© 1991-2006, Connect, Inc.

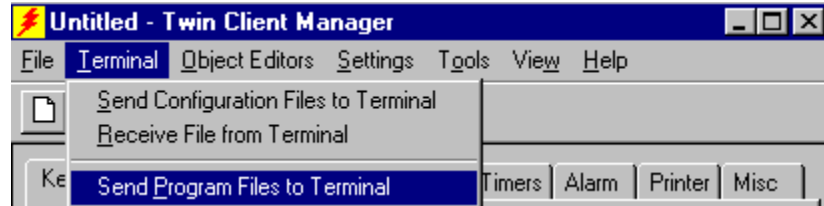
Keypress to Continue

```

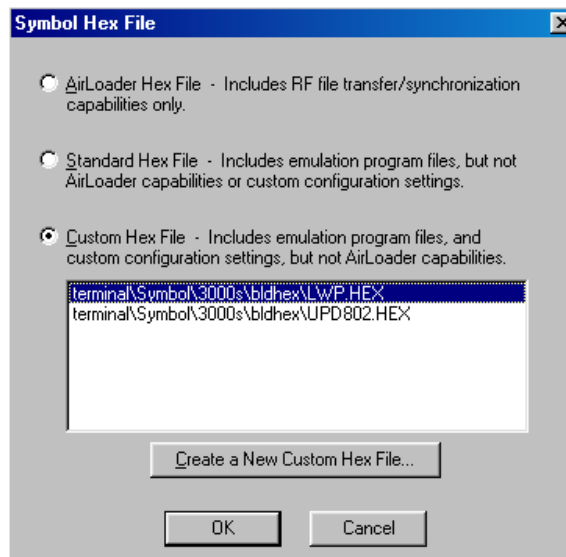
The terminal is now ready to begin a Telnet session with the new configuration files.

Creating Custom Hex Files

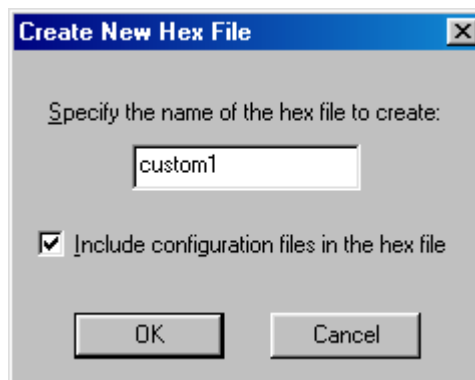
A custom hex file can be created for serial download to the terminal. The custom hex file can be built with the currently opened Twin Client configuration information, and is useful if the automatic configuration management capabilities are not used.



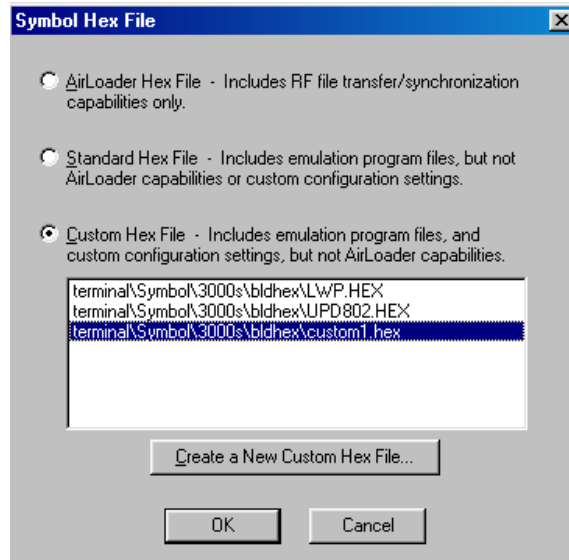
Click on the **Send Program Files to Terminal** menu option. Then click on the **Create a New Custom Hex File** button.



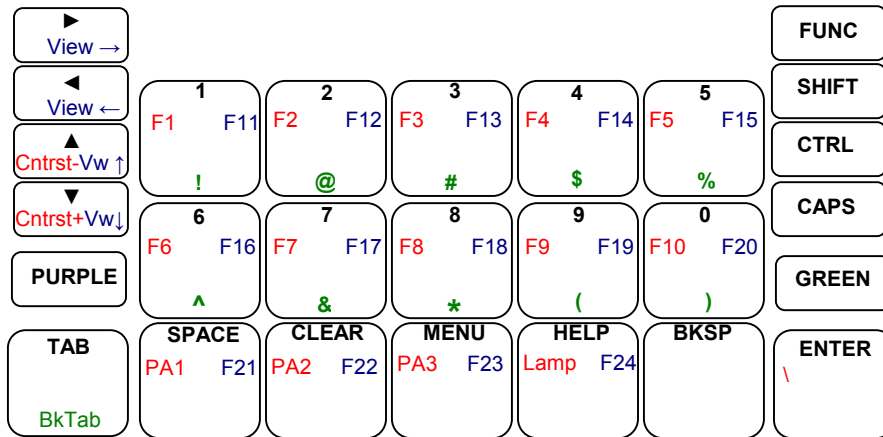
Enter the filename, and click on the **Include configuration files in the hex file** check box to include the current configuration file setup (if desired).



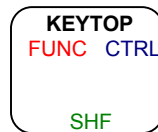
The new hex file is then created, and displayed in the bottom window.

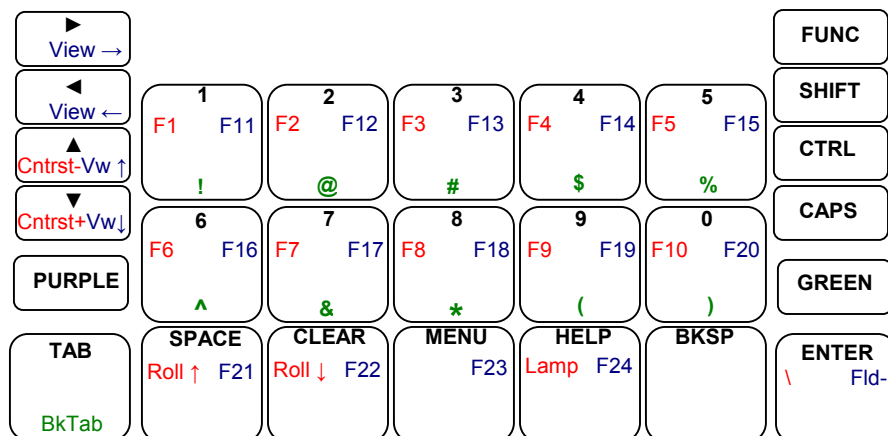


Refer to the section entitled *Configuring the Terminal for Download* for the detailed instructions to complete the download.

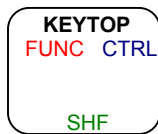


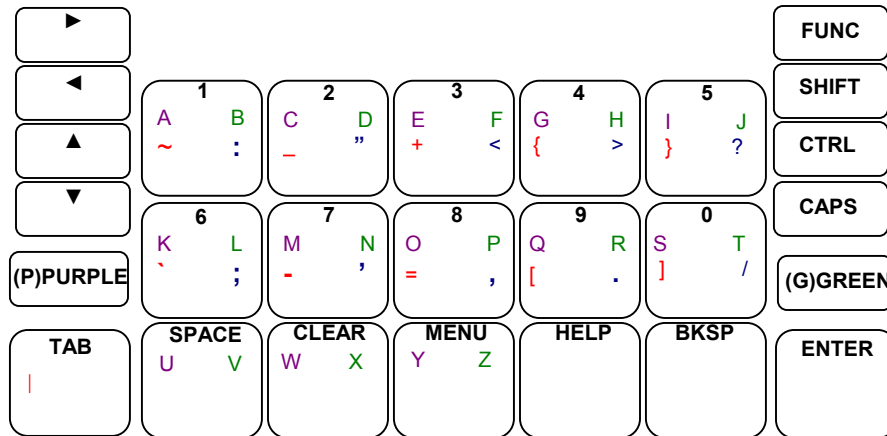
104x 27-Key 3270 Keyboard



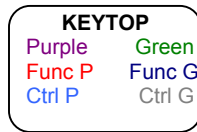


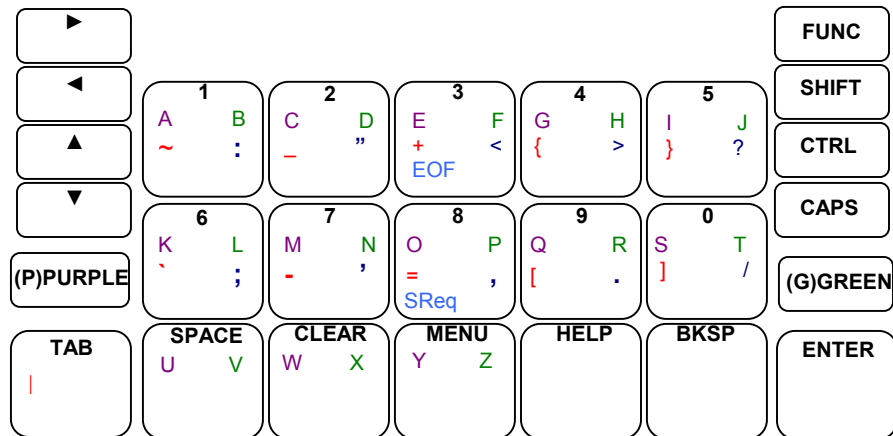
104x 27-Key 5250 Keyboard



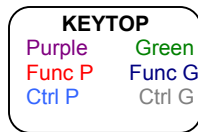


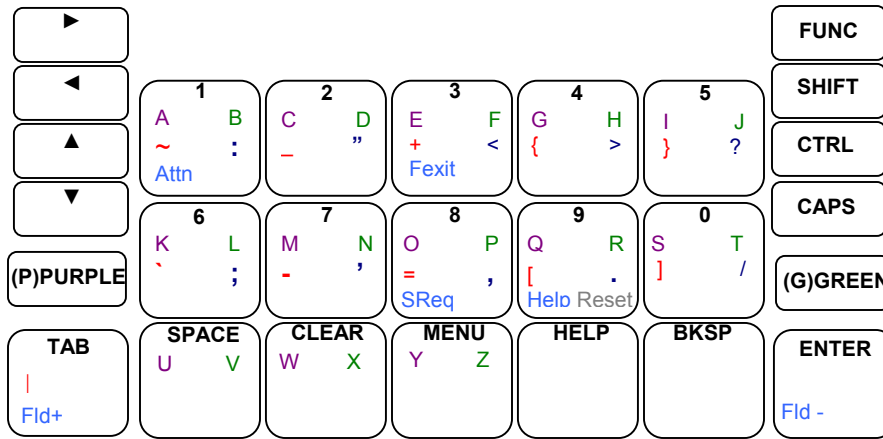
104x 27-Key VT Keyboard



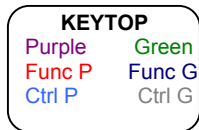


104x 27-Key 3270 Keyboard





104x 27-Key 5250 Keyboard



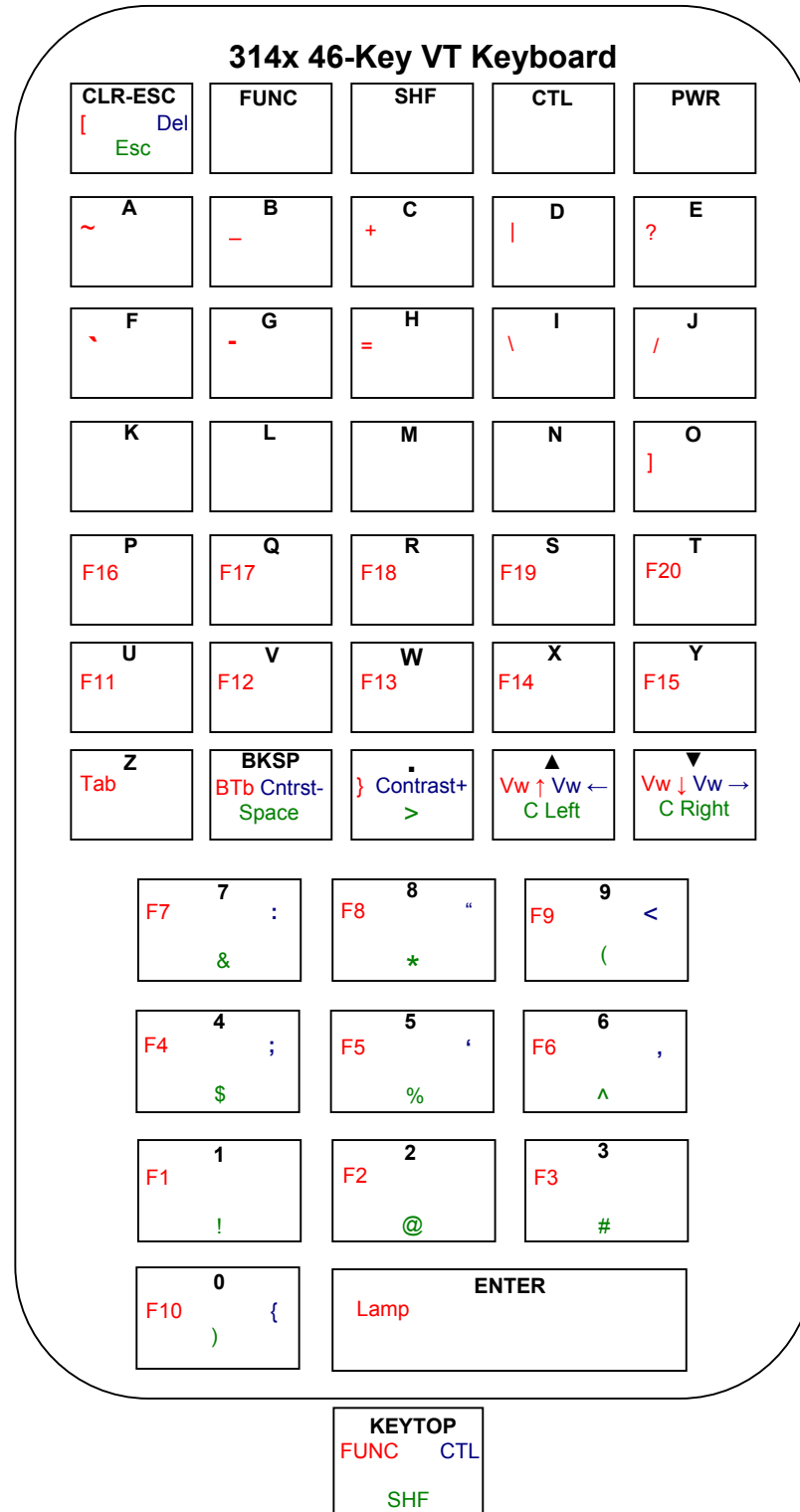
Keypad Table

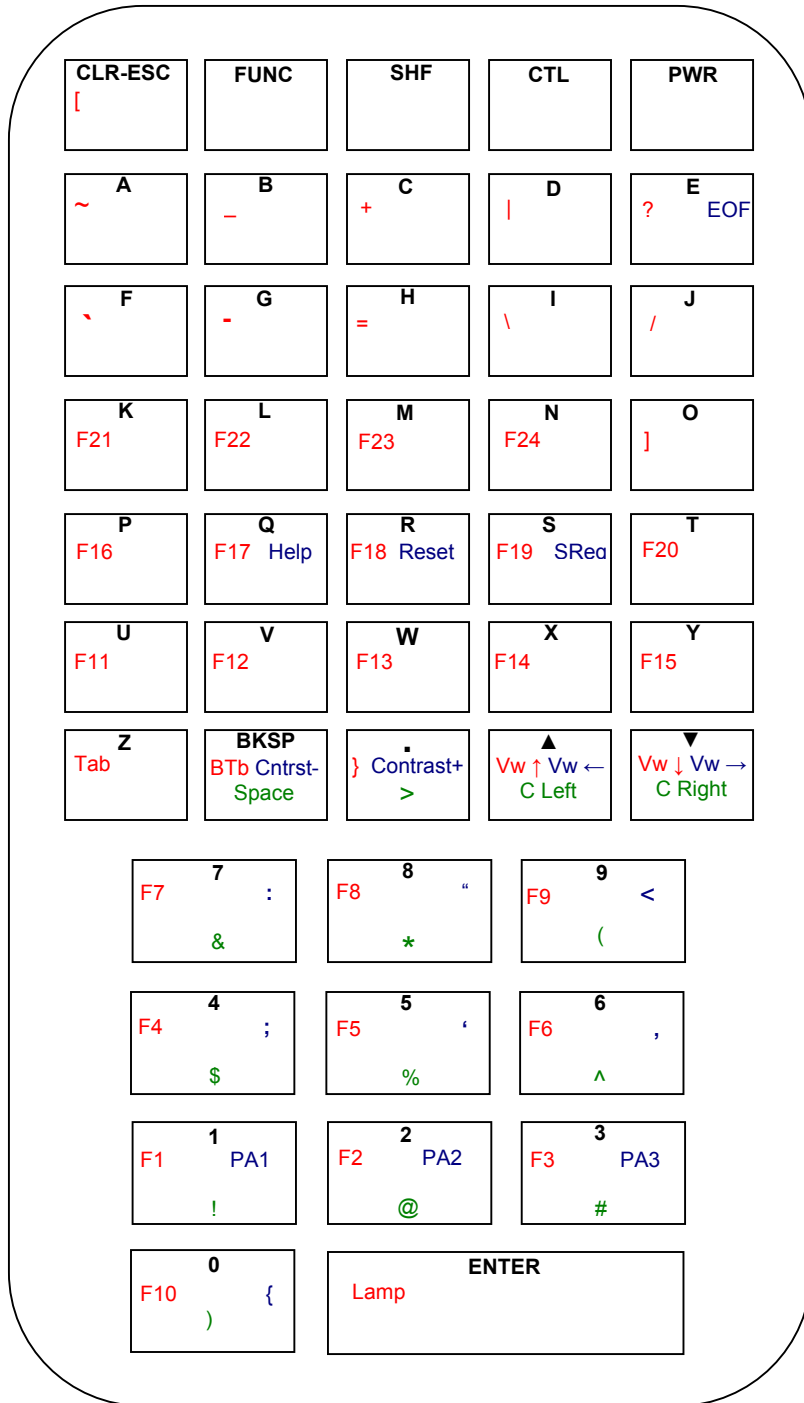
| KEY | 5250 | 3270 | VT/HP |
|---------------|--------------------|------------------|--------------|
| ATTENTION | <CTL><Purple><1> | --- | --- |
| BACK TAB | <SHF><P1> | <SHF><P1> | <SHF><P1> |
| BACKSPACE | <BKSP> | <BKSP> | <BKSP> |
| CONTRAST - | <FUNC><UP> | <FUNC><UP> | <FUNC><UP> |
| CONTRAST + | <FUNC><DOWN> | <FUNC><DOWN> | <FUNC><DOWN> |
| CURSOR DOWN | <DOWN> | <DOWN> | <DOWN> |
| CURSOR LEFT | <LEFT> | <LEFT> | <LEFT> |
| CURSOR RIGHT | <RIGHT> | <RIGHT> | <RIGHT> |
| CURSOR UP | <UP> | <UP> | <UP> |
| ENTER | <ENTER> | <ENTER> | <ENTER> |
| ERASE EOF | --- | <CTL><Purple><3> | --- |
| ERROR RESET | <CTL><Green><9> | --- | --- |
| FIELD ADVANCE | <CTL><Purple><P1> | --- | --- |
| FIELD EXIT | <CTL><Purple><3> | --- | --- |
| FIELD MINUS | <CTL><Purple><ENT> | --- | --- |
| HELP | <CTL><Purple><9> | --- | --- |
| LAMP | <FUNC><HELP> | <FUNC><HELP> | <FUNC><HELP> |
| RETURN | <ENTER> | <ENTER> | <ENTER> |
| ROLL DOWN | <FUNC><SPACE> | --- | --- |
| ROLL UP | <FUNC><CLEAR> | --- | --- |
| SPACE | <SPACE> | <SPACE> | <SPACE> |
| SYS REQUEST | <CTL><Purple><O> | <CTL><Purple><O> | --- |
| TAB | <P1> | <P1> | <P1> |
| VIEW DOWN | <CTL><DN> | <CTL><DN> | <CTL><DN> |
| VIEW LEFT | <CTL><LEFT> | <CTL><LEFT> | <CTL><LEFT> |
| VIEW RIGHT | <CTL><RIGHT> | <CTL><RIGHT> | <CTL><RIGHT> |
| VIEW UP | <CTL><UP> | <CTL><UP> | <CTL><UP> |
| PA1 | --- | <FUNC><SPACE> | --- |
| PA2 | --- | <FUNC><CLEAR> | --- |
| PA3 | --- | <FUNC><MENU> | --- |
| F1 | <FUNC><1> | <FUNC><1> | <FUNC><1> |
| F2 | <FUNC><2> | <FUNC><2> | <FUNC><2> |
| F3 | <FUNC><3> | <FUNC><3> | <FUNC><3> |
| F4 | <FUNC><4> | <FUNC><4> | <FUNC><4> |
| F5 | <FUNC><5> | <FUNC><5> | <FUNC><5> |
| F6 | <FUNC><6> | <FUNC><6> | <FUNC><6> |
| F7 | <FUNC><7> | <FUNC><7> | <FUNC><7> |
| F8 | <FUNC><8> | <FUNC><8> | <FUNC><8> |
| F9 | <FUNC><9> | <FUNC><9> | <FUNC><9> |
| F10 | <FUNC><0> | <FUNC><0> | <FUNC><0> |
| F11 | <CTL><1> | <CTL><1> | <CTL><1> |
| F12 | <CTL><2> | <CTL><2> | <CTL><2> |
| F13 | <CTL><3> | <CTL><3> | <CTL><3> |
| F14 | <CTL><4> | <CTL><4> | <CTL><4> |
| F15 | <CTL><5> | <CTL><5> | <CTL><5> |
| F16 | <CTL><6> | <CTL><6> | <CTL><6> |
| F17 | <CTL><7> | <CTL><7> | <CTL><7> |
| F18 | <CTL><8> | <CTL><8> | <CTL><8> |
| F19 | <CTL><9> | <CTL><9> | <CTL><9> |
| F20 | <CTL><0> | <CTL><0> | <CTL><0> |
| F21 | <CTL><SPACE> | <CTL><SPACE> | --- |
| F22 | <CTL><CLEAR> | <CTL><CLEAR> | --- |
| F23 | <CTL><MENU> | <CTL><MENU> | --- |
| F24 | <CTL><HELP> | <CTL><HELP> | --- |
| ! exclamation | <SHF><1> | <SHF><1> | <SHF><1> |
| @ at sign | <SHF><2> | <SHF><2> | <SHF><2> |
| # pound | <SHF><3> | <SHF><3> | <SHF><3> |

| | | | | |
|----|-------------------|--------------------|--------------------|--------------------|
| \$ | dollar | <SHF><4> | <SHF><4> | <SHF><4> |
| % | percent | <SHF><5> | <SHF><5> | <SHF><5> |
| ^ | carat | <SHF><6> | <SHF><6> | <SHF><6> |
| & | ampersand | <SHF><7> | <SHF><7> | <SHF><7> |
| (| left parenthesis | <SHF><9> | <SHF><9> | <SHF><9> |
|) | right parenthesis | <SHF><0> | <SHF><0> | <SHF><0> |
| - | dash | <FUNC><Purple><7> | <FUNC><Purple><7> | <FUNC><Purple><7> |
| + | plus | <FUNC><Purple><3> | <FUNC><Purple><3> | <FUNC><Purple><3> |
| ' | apostrophe | <FUNC><Green><7> | <FUNC><Green><7> | <FUNC><Green><7> |
| * | asterisk | <SHF><8> | <SHF><8> | <SHF><8> |
| , | comma | <FUNC><Green><8> | <FUNC><Green><8> | <FUNC><Green><8> |
| . | period | <FUNC><Green><9> | <FUNC><Green><9> | <FUNC><Green><9> |
| / | forward slash | <FUNC><Green><0> | <FUNC><Green><0> | <FUNC><Green><0> |
| [| left bracket | <FUNC><Purple><9> | <FUNC><Purple><9> | <FUNC><Purple><9> |
| \ | back slash | <FUNC><ENTER> | <FUNC><ENTER> | <FUNC><ENTER> |
|] | right bracket | <FUNC><Purple><0> | <FUNC><Purple><0> | <FUNC><Purple><0> |
| _ | underline | <FUNC><Purple><2> | <FUNC><Purple><2> | <FUNC><Purple><2> |
| ` | grave accent | <FUNC><Purple><6> | <FUNC><Purple><6> | <FUNC><Purple><6> |
| : | colon | <FUNC><Green><1> | <FUNC><Green><1> | <FUNC><Green><1> |
| ; | semi-colon | <FUNC><Green><6> | <FUNC><Green><6> | <FUNC><Green><6> |
| < | less than | <FUNC><Green><3> | <FUNC><Green><3> | <FUNC><Green><3> |
| = | equal | <FUNC><Purple><8> | <FUNC><Purple><8> | <FUNC><Purple><8> |
| > | greater than | <FUNC><Green><4> | <FUNC><Green><4> | <FUNC><Green><4> |
| ? | question | <FUNC><Green><5> | <FUNC><Green><5> | <FUNC><Green><5> |
| { | left brace | <FUNC><Purple><4> | <FUNC><Purple><4> | <FUNC><Purple><4> |
| | vertical bar | <FUNC><Purple><P1> | <FUNC><Purple><P1> | <FUNC><Purple><P1> |
| } | right brace | <FUNC><Purple><5> | <FUNC><Purple><5> | <FUNC><Purple><5> |
| ~ | tilde | <FUNC><Purple><1> | <FUNC><Purple><1> | <FUNC><Purple><1> |

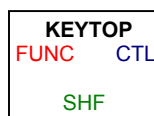
314x 46-key

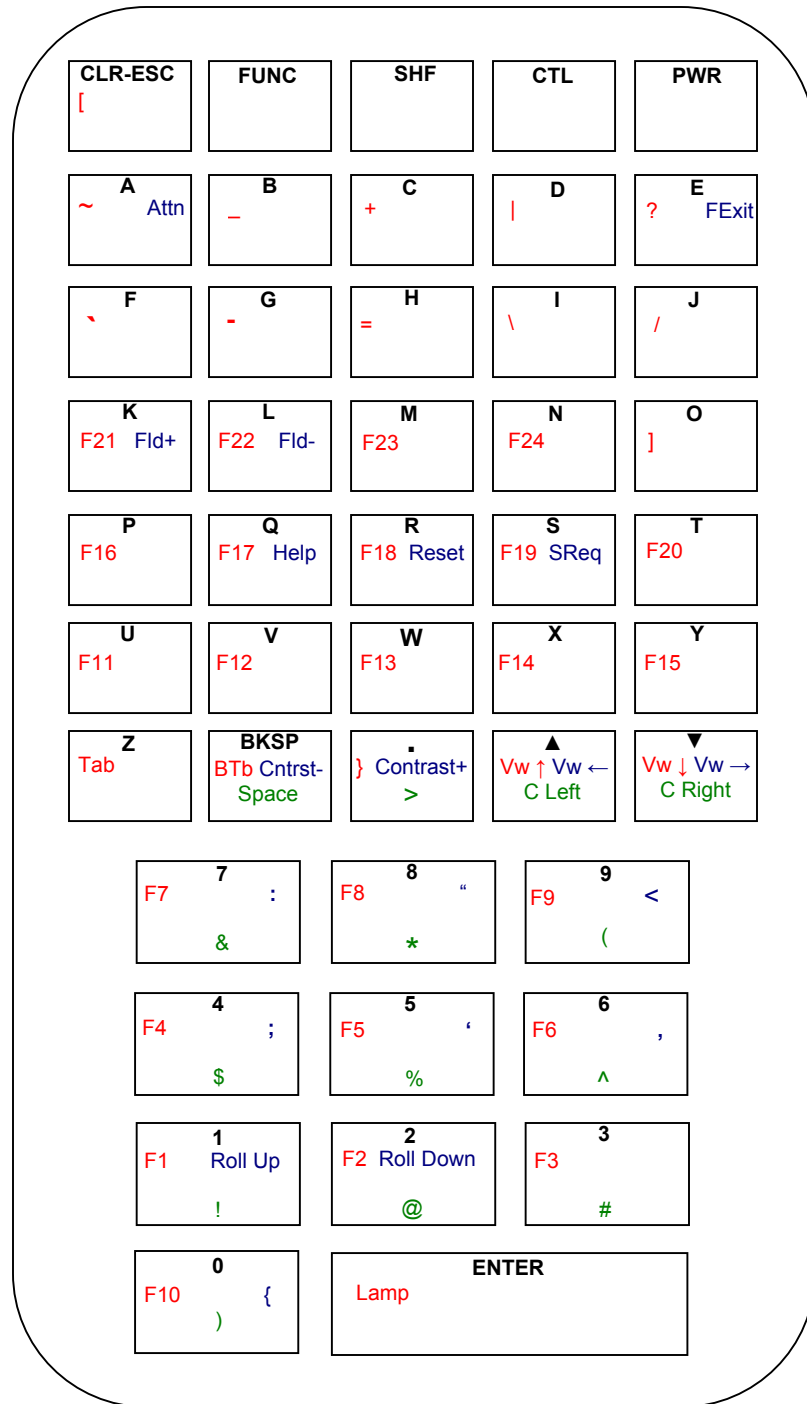
Keypad Figures



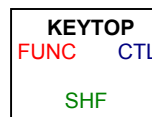


314x 46-Key 3270 Keyboard





314x 46-Key 5250 Keyboard



Keypad Table

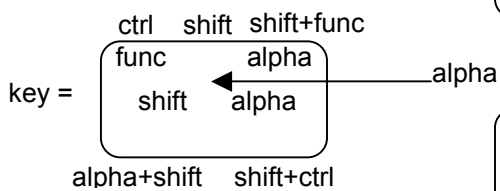
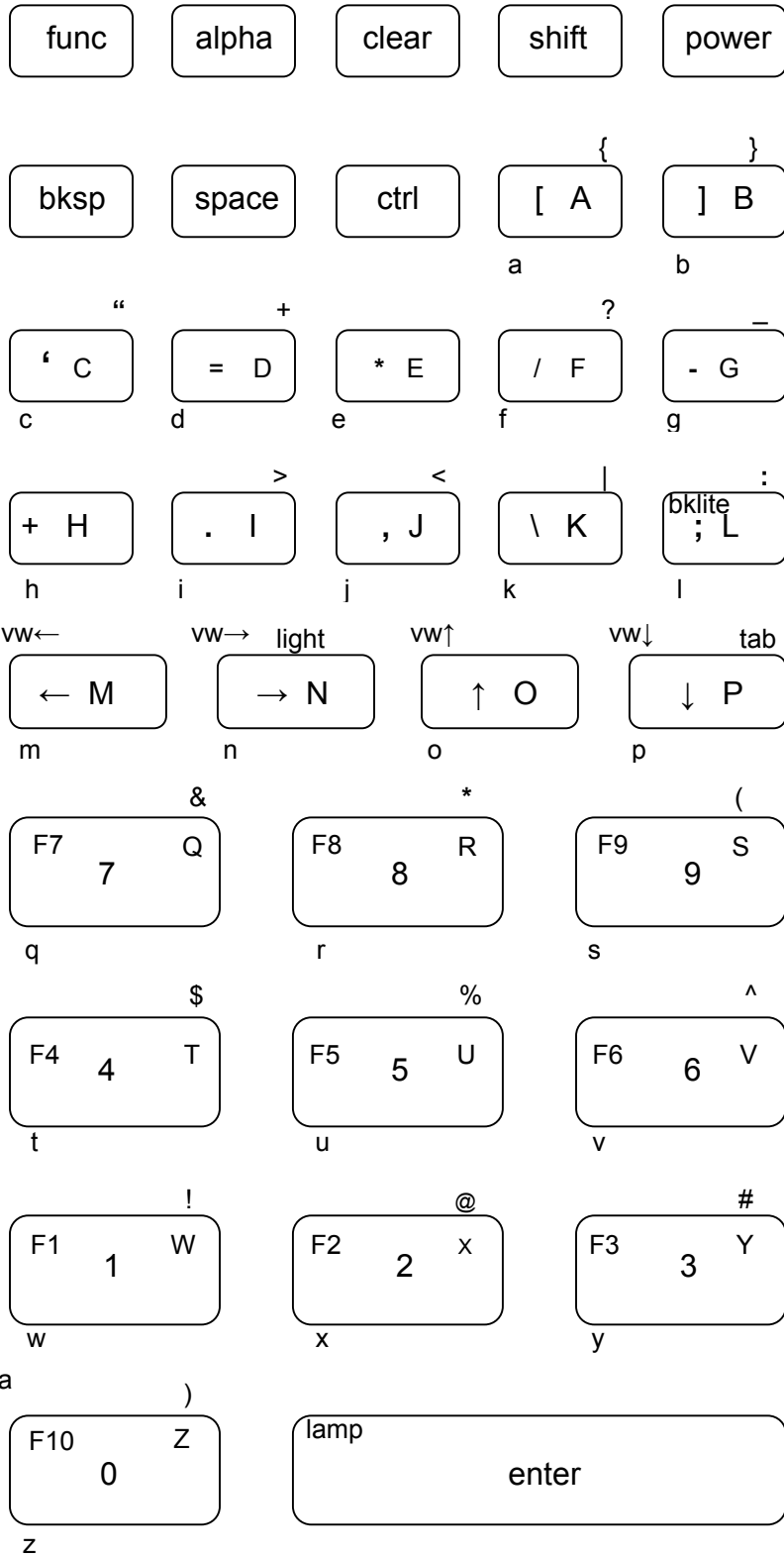
| KEY | 5250 | 3270 | VT/HP |
|---------------|---------------|---------------|---------------|
| ATTENTION | <CTRL><A> | --- | --- |
| BACK TAB | <FUNC><BKSP> | <FUNC><BKSP> | <FUNC><BKSP> |
| BACKSPACE | <BKSP> | <BKSP> | <BKSP> |
| CONTRAST - | <CTL><BKSP> | <CTL><BKSP> | <CTL><BKSP> |
| CONTRAST + | <CTL><> | <CTL><> | <CTL><> |
| CURSOR DOWN | <DN-ARROW> | <DN-ARROW> | <DN-ARROW> |
| CURSOR LEFT | <SHF><UP> | <SHF><UP> | <SHF><UP> |
| CURSOR RIGHT | <SHF><DN> | <SHF><DN> | <SHF><DN> |
| CURSOR UP | <UP-ARROW> | <UP-ARROW> | <UP-ARROW> |
| DELETE | --- | --- | <CTL><CLR> |
| ENTER | <ENTER> | <ENTER> | <ENTER> |
| ERASE EOF | | <CTL><E> | --- |
| ERROR RESET | <CTRL><R> | <CTL><R> | --- |
| ESCAPE | --- | --- | <SHF><CLR> |
| FIELD ADVANCE | <CTL><K> | --- | --- |
| FIELD EXIT | <CTL><E> | --- | --- |
| FIELD MINUS | <CTL><L> | --- | --- |
| HELP | <CTL><Q> | --- | --- |
| LAMP | <FUNC><ENTER> | <FUNC><ENTER> | <FUNC><ENTER> |
| RETURN | <ENTER> | <ENTER> | <ENTER> |
| ROLL DOWN | <CTL><2> | --- | --- |
| ROLL UP | <CTL><1> | --- | --- |
| SPACE | <SHF><BKSP> | <SHF><BKSP> | <SHF><BKSP> |
| SYS REQUEST | <CTL><S> | <CTL><S> | --- |
| TAB | <FUNC><Z> | <FUNC><Z> | <FUNC><Z> |
| VIEW DOWN | <FUNC><DN> | <FUNC><DN> | <FUNC><DN> |
| VIEW LEFT | <CTL><UP> | <CTL><UP> | <CTL><UP> |
| VIEW RIGHT | <CTL><DOWN> | <CTL><DOWN> | <CTL><DOWN> |
| VIEW UP | <FUNC><UP> | <FUNC><UP> | <FUNC><UP> |
| PA1 | --- | <CTL><1> | --- |
| PA2 | --- | <CTL><2> | --- |
| PA3 | --- | <CTL><3> | --- |
| F1 | <FUNC><1> | <FUNC><1> | <FUNC><1> |
| F2 | <FUNC><2> | <FUNC><2> | <FUNC><2> |
| F3 | <FUNC><3> | <FUNC><3> | <FUNC><3> |
| F4 | <FUNC><4> | <FUNC><4> | <FUNC><4> |
| F5 | <FUNC><5> | <FUNC><5> | <FUNC><5> |
| F6 | <FUNC><6> | <FUNC><6> | <FUNC><6> |
| F7 | <FUNC><7> | <FUNC><7> | <FUNC><7> |
| F8 | <FUNC><8> | <FUNC><8> | <FUNC><8> |
| F9 | <FUNC><9> | <FUNC><9> | <FUNC><9> |
| F10 | <FUNC><0> | <FUNC><0> | <FUNC><0> |
| F11 | <FUNC><U> | <FUNC><U> | <FUNC><U> |
| F12 | <FUNC><V> | <FUNC><V> | <FUNC><V> |
| F13 | <FUNC><W> | <FUNC><W> | <FUNC><W> |
| F14 | <FUNC><X> | <FUNC><X> | <FUNC><X> |
| F15 | <FUNC><Y> | <FUNC><Y> | <FUNC><Y> |
| F16 | <FUNC><P> | <FUNC><P> | <FUNC><P> |
| F17 | <FUNC><Q> | <FUNC><Q> | <FUNC><Q> |
| F18 | <FUNC><R> | <FUNC><R> | <FUNC><R> |
| F19 | <FUNC><S> | <FUNC><S> | <FUNC><S> |
| F20 | <FUNC><T> | <FUNC><T> | <FUNC><T> |
| F21 | <FUNC><K> | <FUNC><K> | --- |
| F22 | <FUNC><L> | <FUNC><L> | --- |
| F23 | <FUNC><M> | <FUNC><M> | --- |
| F24 | <FUNC><N> | <FUNC><N> | --- |
| ! exclamation | <SHF><1> | <SHF><1> | <SHF><1> |

| | | | | |
|----|-------------------|-------------|-------------|-------------|
| @ | at sign | <SHF><2> | <SHF><2> | <SHF><2> |
| # | pound | <SHF><3> | <SHF><3> | <SHF><3> |
| \$ | dollar | <SHF><4> | <SHF><4> | <SHF><4> |
| % | percent | <SHF><5> | <SHF><5> | <SHF><5> |
| ^ | carat | <SHF><6> | <SHF><6> | <SHF><6> |
| & | ampersand | <SHF><7> | <SHF><7> | <SHF><7> |
| (| left parenthesis | <SHF><9> | <SHF><9> | <SHF><9> |
|) | right parenthesis | <SHF><0> | <SHF><0> | <SHF><0> |
| - | dash | <FUNC><G> | <FUNC><G> | <FUNC><G> |
| + | plus | <FUNC><C> | <FUNC><C> | <FUNC><C> |
| ' | apostrophe | <CTL><5> | <CTL><5> | <CTL><5> |
| * | asterisk | <SHF><8> | <SHF><8> | <SHF><8> |
| , | comma | <CTL><6> | <CTL><6> | <CTL><6> |
| . | period | <.> | <.> | <.> |
| / | forward slash | <FUNC><J> | <FUNC><J> | <FUNC><J> |
| [| left bracket | <FUNC><CLR> | <FUNC><CLR> | <FUNC><CLR> |
| \ | back slash | <FUNC><I> | <FUNC><I> | <FUNC><I> |
|] | right bracket | <FUNC><O> | <FUNC><O> | <FUNC><O> |
| _ | underline | <FUNC> | <FUNC> | <FUNC> |
| ` | grave accent | <FUNC><F> | <FUNC><F> | <FUNC><F> |
| : | colon | <CTL><7> | <CTL><7> | <CTL><7> |
| ; | semi-colon | <CTL><4> | <CTL><4> | <CTL><4> |
| < | less than | <CTL><9> | <CTL><9> | <CTL><9> |
| = | equal | <FUNC><H> | <FUNC><H> | <FUNC><H> |
| > | greater than | <SHF><.> | <SHF><.> | <SHF><.> |
| ? | question | <FUNC><E> | <FUNC><E> | <FUNC><E> |
| { | left brace | <CTL><0> | <CTL><0> | <CTL><0> |
| | vertical bar | <FUNC><D> | <FUNC><D> | <FUNC><D> |
| } | right brace | <FUNC><.> | <FUNC><.> | <FUNC><.> |
| ~ | tilde | <FUNC><A> | <FUNC><A> | <FUNC><A> |
| " | quotation | <SHF><8> | <SHF><8> | <SHF><8> |

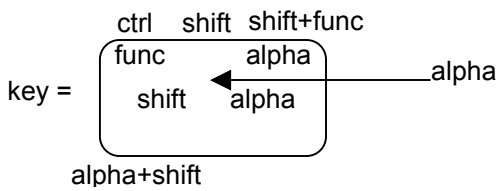
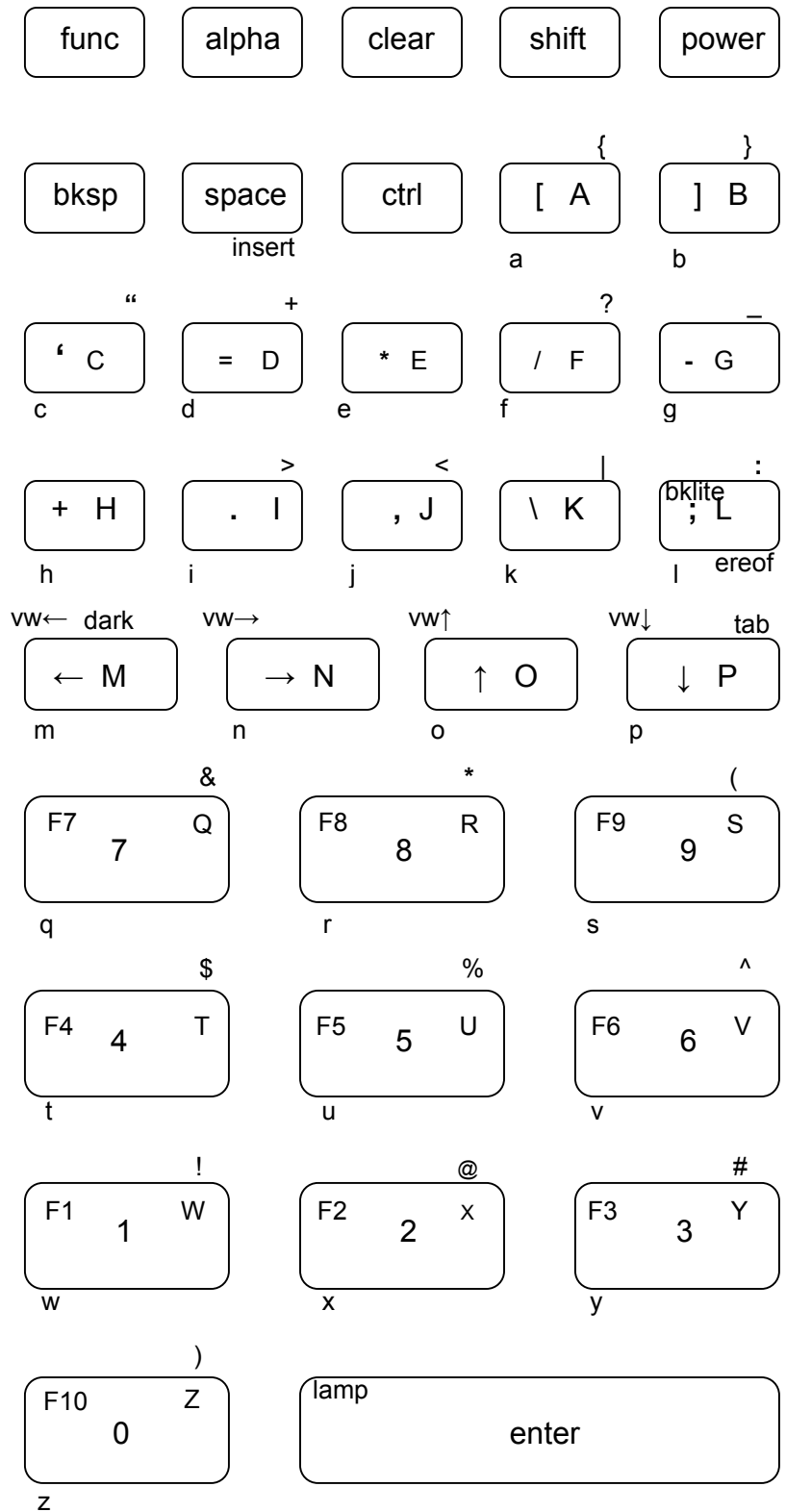
354x/684x 35key

354x/684x VT

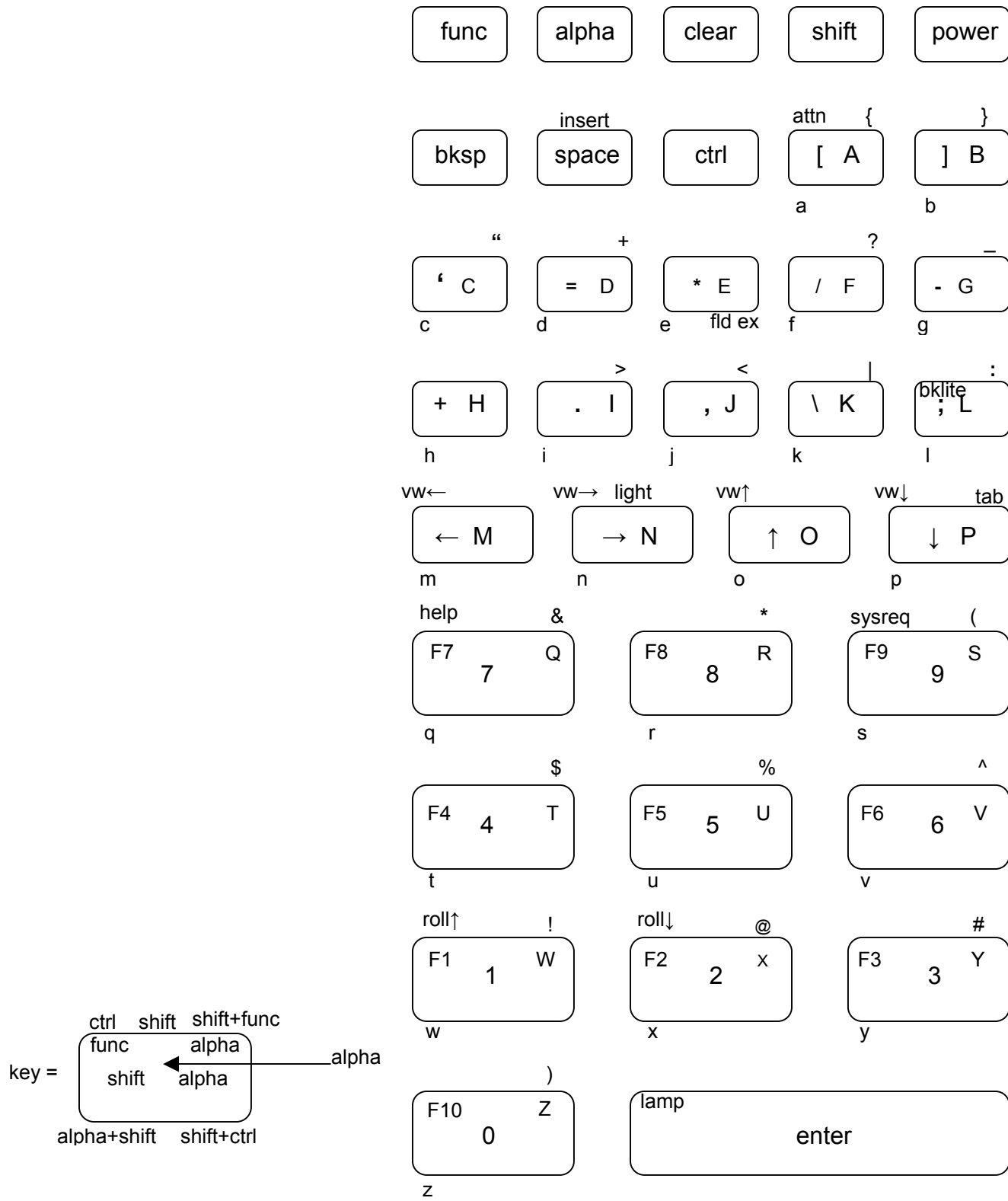
Keypad Figures



354x/684x 3270



354x/684x 5250

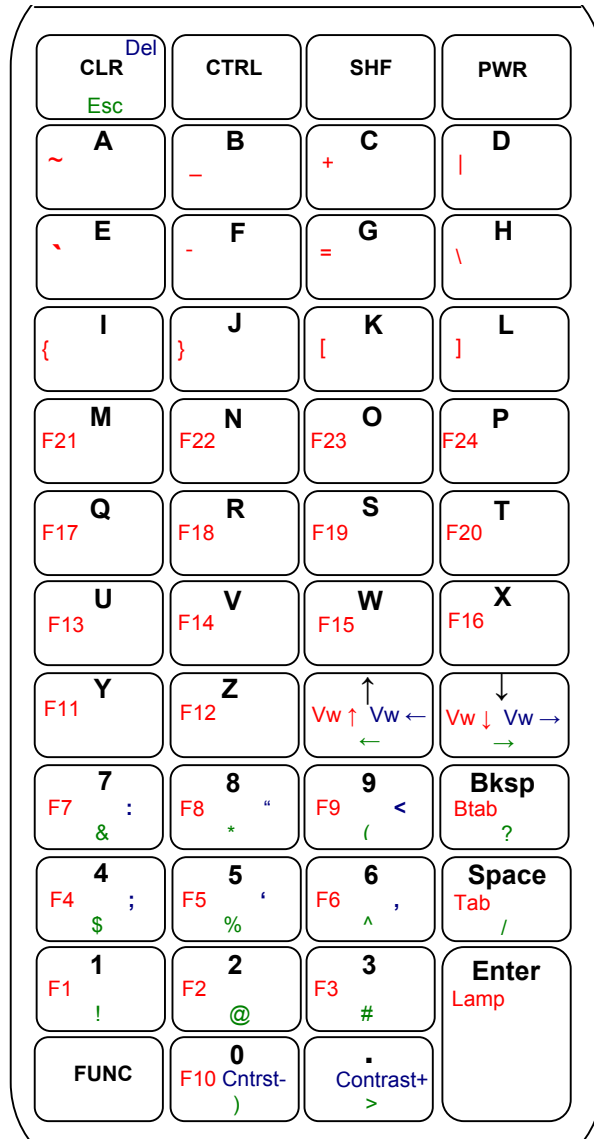


| | | | | |
|--------------------|----------------------------|------------------|------------------|------------------|
| 2 | | <alpha> <2> | <alpha> <2> | <alpha> <2> |
| 3 | | <alpha> <3> | <alpha> <3> | <alpha> <3> |
| 4 | | <alpha> <4> | <alpha> <4> | <alpha> <4> |
| 5 | | <alpha> <5> | <alpha> <5> | <alpha> <5> |
| 6 | | <alpha> <6> | <alpha> <6> | <alpha> <6> |
| 7 | | <alpha> <7> | <alpha> <7> | <alpha> <7> |
| 8 | | <alpha> <8> | <alpha> <8> | <alpha> <8> |
| 9 | | <alpha> <9> | <alpha> <9> | <alpha> <9> |
| 0 | | <alpha> <0> | <alpha> <0> | <alpha> <0> |
| F1 | | <func><1> | <func><1> | <func><1> |
| F2 | | <func><2> | <func><2> | <func><2> |
| F3 | | <func><3> | <func><3> | <func><3> |
| F4 | | <func><4> | <func><4> | <func><4> |
| F5 | | <func><5> | <func><5> | <func><5> |
| F6 | | <func><6> | <func><6> | <func><6> |
| F7 | | <func><7> | <func><7> | <func><7> |
| F8 | | <func><8> | <func><8> | <func><8> |
| F9 | | <func><9> | <func><9> | <func><9> |
| F10 | | <func><0> | <func><0> | <func><0> |
| ↑ | | <↑> | <↑> | <↑> |
| ← | | <←> | <←> | <←> |
| ↓ | | <↓> | <↓> | <↓> |
| → | | <→> | <→> | <→> |
| Backlight | | <func><;> | <func><;> | <func><;> |
| Lighten | | <shift><N> | <shift><N> | <shift><N> |
| Darken | | <shift><M> | <shift><M> | <shift><M> |
| ? | question mark | <shift><func><F> | <shift><func><F> | <shift><func><F> |
| / | forward slash | <shift><F> | <shift><F> | <shift><F> |
| - | hyphen | <shift><G> | <shift><G> | <shift><G> |
| = | equal sign | <shift><D> | <shift><D> | <shift><D> |
| [| left bracket | <shift><A> | <shift><A> | <shift><A> |
|] | right bracket | <shift> | <shift> | <shift> |
| \ | backward slash | <shift><K> | <shift><K> | <shift><K> |
| ; | semicolon | <shift><L> | <shift><L> | <shift><L> |
| ' | apostrophe | <shift><C> | <shift><C> | <shift><C> |
| , | comma | <shift><J> | <shift><J> | <shift><J> |
| . | period | <shift><I> | <shift><I> | <shift><I> |
| _ | underscore | <shift><func><G> | <shift><func><G> | <shift><func><G> |
| + | addition sign | <shift><H> | <shift><H> | <shift><H> |
| { | left brace | <shift><func><A> | <shift><func><A> | <shift><func><A> |
| } | right brace | <shift><func> | <shift><func> | <shift><func> |
| | broken vertical bar | <shift><func><K> | <shift><func><K> | <shift><func><K> |
| : | colon | <shift><func><L> | <shift><func><L> | <shift><func><L> |
| “ | quotation mark | <shift><func><C> | <shift><func><C> | <shift><func><C> |
| < | less-than sign | <shift><func><J> | <shift><func><J> | <shift><func><J> |
| > | greater-than sign | <shift><func><I> | <shift><func><I> | <shift><func><I> |
| ! | exclamation | <shift><func><W> | <shift><func><W> | <shift><func><W> |
| @ | at sign | <shift><func><X> | <shift><func><X> | <shift><func><X> |
| # | pound | <shift><func><Y> | <shift><func><Y> | <shift><func><Y> |
| \$ | dollar | <shift><func><T> | <shift><func><T> | <shift><func><T> |
| % | percent | <shift><func><U> | <shift><func><U> | <shift><func><U> |
| ^ | carat | <shift><func><V> | <shift><func><V> | <shift><func><V> |
| & | ampersand | <shift><func><Q> | <shift><func><Q> | <shift><func><Q> |
| * | asterisk | <shift><E> | <shift><E> | <shift><E> |
| (| left parenthesis | <shift><func><S> | <shift><func><S> | <shift><func><S> |
|) | right parenthesis | <shift><func><Z> | <shift><func><Z> | <shift><func><Z> |
| Tab | | <shift><func><P> | <shift><func><P> | <shift><func><P> |
| Roll Down | | --- | --- | <ctrl><x> |
| Roll Up | | --- | --- | <ctrl><w> |
| PA1 | | --- | Not supported | --- |
| PA2 | | --- | Not supported | --- |
| PA3 | | --- | Not supported | --- |
| Attention | | --- | --- | <ctrl><A> |
| Erase Field | | --- | --- | --- |
| Sys Request | | --- | --- | <ctrl><s> |

| | | | |
|-------------------|---------------|----------------------|------------------|
| Insert | --- | <shift><ctrl><space> | <shift><space> |
| Field Exit | --- | --- | <shift><ctrl><E> |
| Erase EOF | --- | <shift><ctrl><L> | --- |
| View Up | <ctrl><o> | <ctrl><o> | <ctrl><o> |
| View Down | <ctrl><p> | <ctrl><p> | <ctrl><p> |
| View Left | <ctrl><m> | <ctrl><m> | <ctrl><m> |
| View Right | <ctrl><n> | <ctrl><n> | <ctrl><n> |
| Lamp | <func><Enter> | <func><Enter> | <func><Enter> |
| Home | --- | Not supported | Not supported |
| Help | --- | --- | <ctrl><7> |

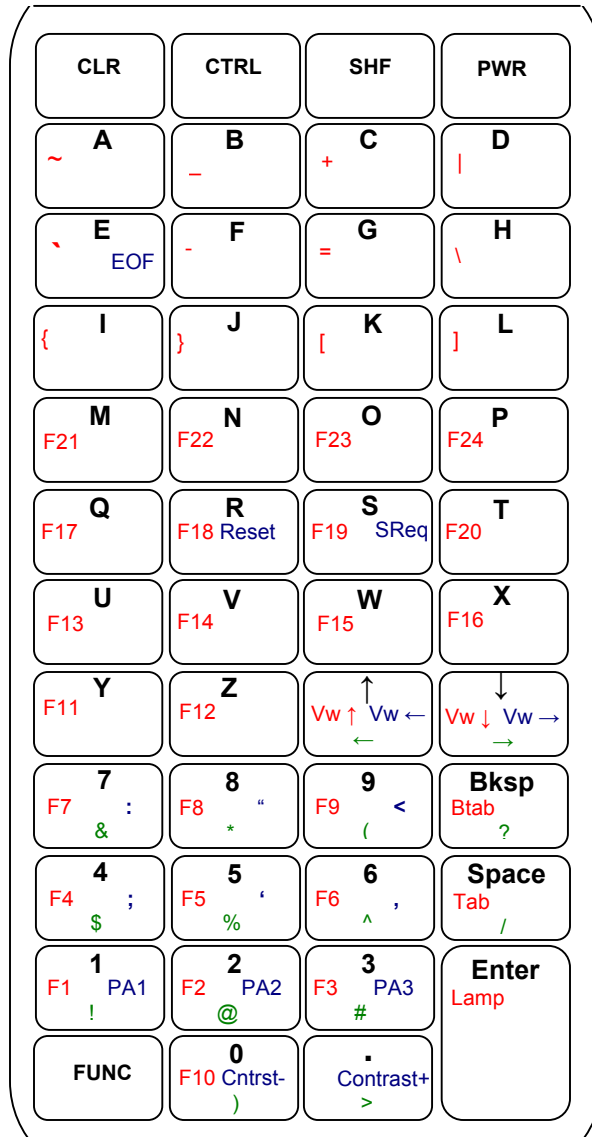
354x 47-key

Keypad Figures

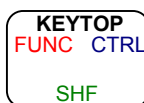


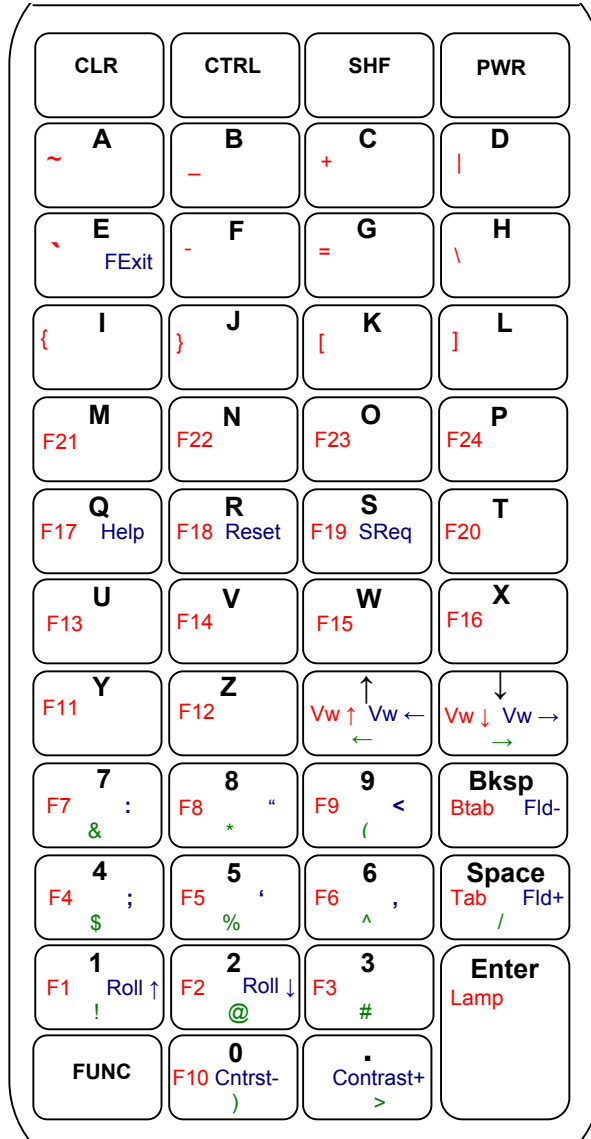
354x 47-Key VT Keyboard





354x 47-Key 3270 Keyboard





354x 47-Key 5250 Keyboard



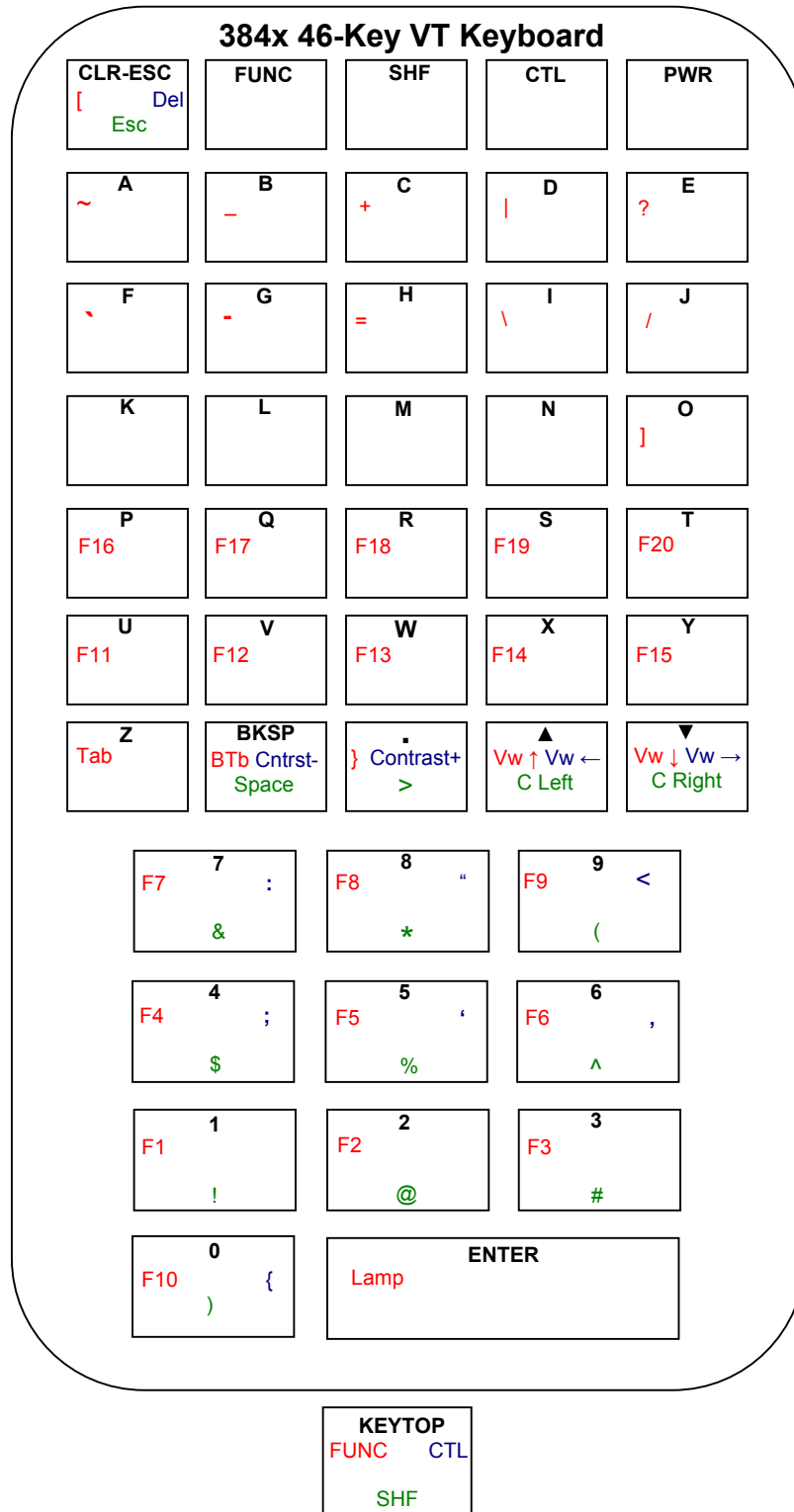
Keypad Table

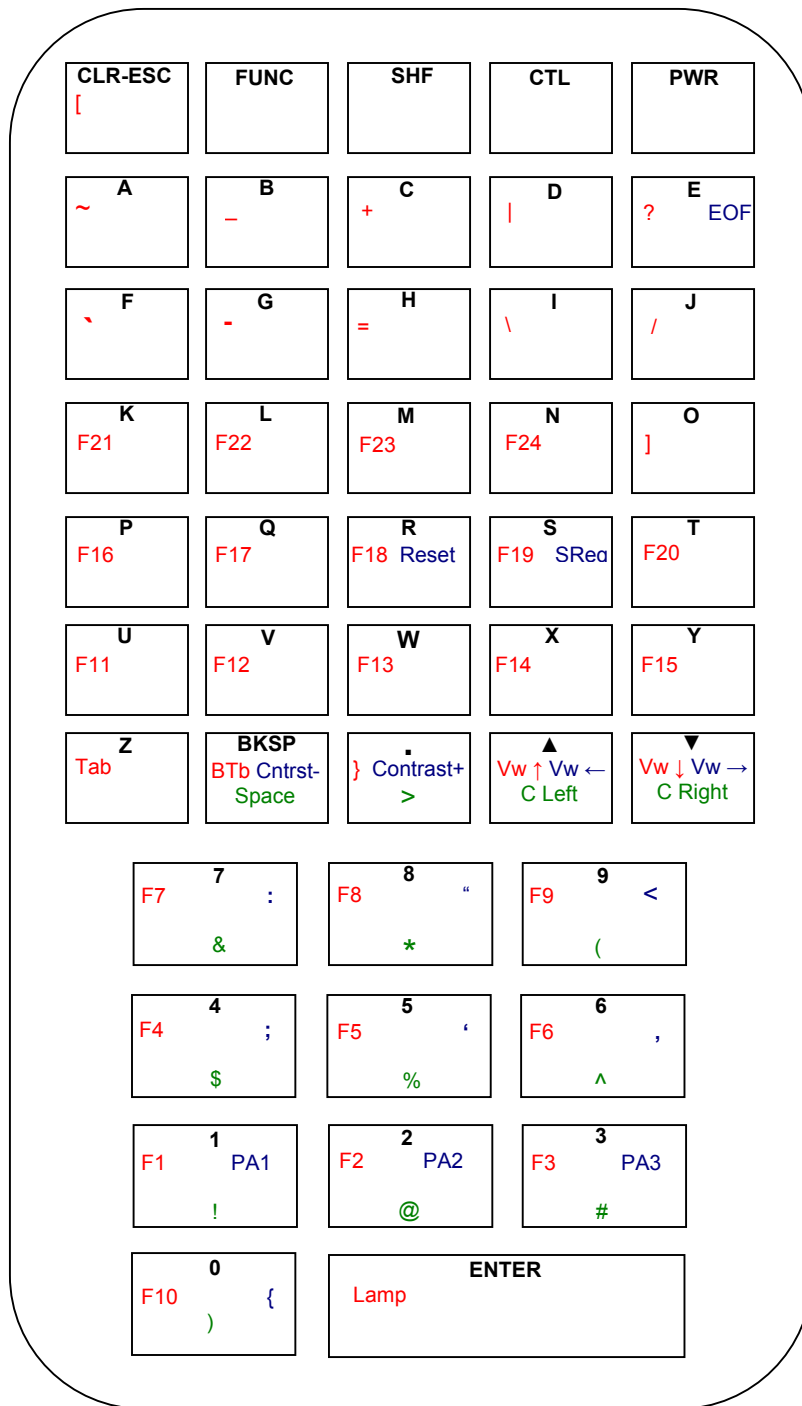
| KEY | 5250 | 3270 | VT/HP |
|---------------|---------------|---------------|---------------|
| BACK TAB | <FUNC><BKSP> | <FUNC><BKSP> | <FUNC><BKSP> |
| BACKSPACE | <BKSP> | <BKSP> | <BKSP> |
| CONTRAST - | <CTRL><0> | <CTRL><0> | <CTRL><0> |
| CONTRAST + | <CTRL><.> | <CTRL><.> | <CTRL><.> |
| CURSOR DOWN | <DN-ARROW> | <DN-ARROW> | <DN-ARROW> |
| CURSOR LEFT | <SHF><UP> | <SHF><UP> | <SHF><UP> |
| CURSOR RIGHT | <SHF><DN> | <SHF><DN> | <SHF><DN> |
| CURSOR UP | <UP> | <UP> | <UP> |
| DELETE | --- | --- | <CTRL><CLR> |
| ENTER | <ENTER> | <ENTER> | <ENTER> |
| ERASE EOF | --- | <CTRL><E> | --- |
| ERROR RESET | <CTRL><R> | <CTRL><R> | --- |
| ESCAPE | --- | --- | <SHF><CLR> |
| FIELD ADVANCE | <CTRL><SPACE> | --- | --- |
| FIELD EXIT | <CTRL><E> | --- | --- |
| FIELD MINUS | <CTRL><BKSP> | --- | --- |
| HELP | <CTRL><Q> | --- | --- |
| LAMP | <FUNC><ENTER> | <FUNC><ENTER> | <FUNC><ENTER> |
| RETURN | <ENTER> | <ENTER> | <ENTER> |
| ROLL DOWN | <CTRL><2> | --- | --- |
| ROLL UP | <CTRL><1> | --- | --- |
| SPACE | <SPACE> | <SPACE> | <SPACE> |
| SYS REQUEST | <CTRL><S> | <CTRL><S> | --- |
| TAB | <FUNC><SPACE> | <FUNC><SPACE> | <FUNC><SPACE> |
| VIEW DOWN | <FUNC><DN> | <FUNC><DN> | <FUNC><DN> |
| VIEW LEFT | <CTRL><UP> | <CTRL><UP> | <CTRL><UP> |
| VIEW RIGHT | <CTRL><DOWN> | <CTRL><DOWN> | <CTRL><DOWN> |
| VIEW UP | <FUNC><UP> | <FUNC><UP> | <FUNC><UP> |
| PA1 | --- | <CTRL><1> | --- |
| PA2 | --- | <CTRL><2> | --- |
| PA3 | --- | <CTRL><3> | --- |
| F1 | <FUNC><1> | <FUNC><1> | <FUNC><1> |
| F2 | <FUNC><2> | <FUNC><2> | <FUNC><2> |
| F3 | <FUNC><3> | <FUNC><3> | <FUNC><3> |
| F4 | <FUNC><4> | <FUNC><4> | <FUNC><4> |
| F5 | <FUNC><5> | <FUNC><5> | <FUNC><5> |
| F6 | <FUNC><6> | <FUNC><6> | <FUNC><6> |
| F7 | <FUNC><7> | <FUNC><7> | <FUNC><7> |
| F8 | <FUNC><8> | <FUNC><8> | <FUNC><8> |
| F9 | <FUNC><9> | <FUNC><9> | <FUNC><9> |
| F10 | <FUNC><0> | <FUNC><0> | <FUNC><0> |
| F11 | <FUNC><Y> | <FUNC><Y> | <FUNC><Y> |
| F12 | <FUNC><Z> | <FUNC><Z> | <FUNC><Z> |
| F13 | <FUNC><U> | <FUNC><U> | <FUNC><U> |
| F14 | <FUNC><V> | <FUNC><V> | <FUNC><V> |
| F15 | <FUNC><W> | <FUNC><W> | <FUNC><W> |
| F16 | <FUNC><X> | <FUNC><X> | <FUNC><X> |
| F17 | <FUNC><Q> | <FUNC><Q> | <FUNC><Q> |
| F18 | <FUNC><R> | <FUNC><R> | <FUNC><R> |
| F19 | <FUNC><S> | <FUNC><S> | <FUNC><S> |
| F20 | <FUNC><T> | <FUNC><T> | <FUNC><T> |
| F21 | <FUNC><M> | <FUNC><M> | <FUNC><M> |
| F22 | <FUNC><N> | <FUNC><N> | <FUNC><N> |
| F23 | <FUNC><O> | <FUNC><O> | <FUNC><O> |
| F24 | <FUNC><P> | <FUNC><P> | <FUNC><P> |
| ! exclamation | <SHF><1> | <SHF><1> | <SHF><1> |
| @ at sign | <SHF><2> | <SHF><2> | <SHF><2> |

| | | | | |
|----|--------------------------|--------------|--------------|--------------|
| # | pound | <SHF><3> | <SHF><3> | <SHF><3> |
| \$ | dollar | <SHF><4> | <SHF><4> | <SHF><4> |
| % | percent | <SHF><5> | <SHF><5> | <SHF><5> |
| ^ | carat | <SHF><6> | <SHF><6> | <SHF><6> |
| & | ampersand | <SHF><7> | <SHF><7> | <SHF><7> |
| (| left parenthesis | <SHF><9> | <SHF><9> | <SHF><9> |
|) | right parenthesis | <SHF><0> | <SHF><0> | <SHF><0> |
| - | dash | <FUNC><F> | <FUNC><F> | <FUNC><F> |
| + | plus | <FUNC><C> | <FUNC><C> | <FUNC><C> |
| ' | apostrophe | <CTRL><5> | <CTRL><5> | <CTRL><5> |
| * | asterisk | <SHF><8> | <SHF><8> | <SHF><8> |
| , | comma | <CTL><6> | <CTL><6> | <CTL><6> |
| . | period | <.> | <.> | <.> |
| / | forward slash | <SHF><SPACE> | <SHF><SPACE> | <SHF><SPACE> |
| [| left bracket | <FUNC><K> | <FUNC><K> | <FUNC><K> |
| \ | back slash | <FUNC><H> | <FUNC><H> | <FUNC><H> |
|] | right bracket | <FUNC><L> | <FUNC><L> | <FUNC><L> |
| _ | underline | <FUNC> | <FUNC> | <FUNC> |
| ` | grave accent | <FUNC><E> | <FUNC><E> | <FUNC><E> |
| : | colon | <CTRL><7> | <CTRL><7> | <CTRL><7> |
| ; | semi-colon | <CTRL><4> | <CTRL><4> | <CTRL><4> |
| < | less than | <CTRL><9> | <CTRL><9> | <CTRL><9> |
| = | equal | <FUNC><G> | <FUNC><G> | <FUNC><G> |
| > | greater than | <SHF><.> | <SHF><.> | <SHF><.> |
| ? | question | <SHF><BKSP> | <SHF><BKSP> | <SHF><BKSP> |
| { | left brace | <FUNC><I> | <FUNC><I> | <CTL><I> |
| | vertical bar | <FUNC><D> | <FUNC><D> | <FUNC><D> |
| } | right brace | <FUNC><J> | <FUNC><J> | <FUNC><J> |
| ~ | tilde | <FUNC><A> | <FUNC><A> | <FUNC><A> |
| " | quotation | <CTRL><8> | <CTRL><8> | <CTRL><8> |

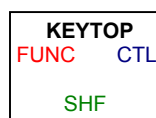
384x 46-key

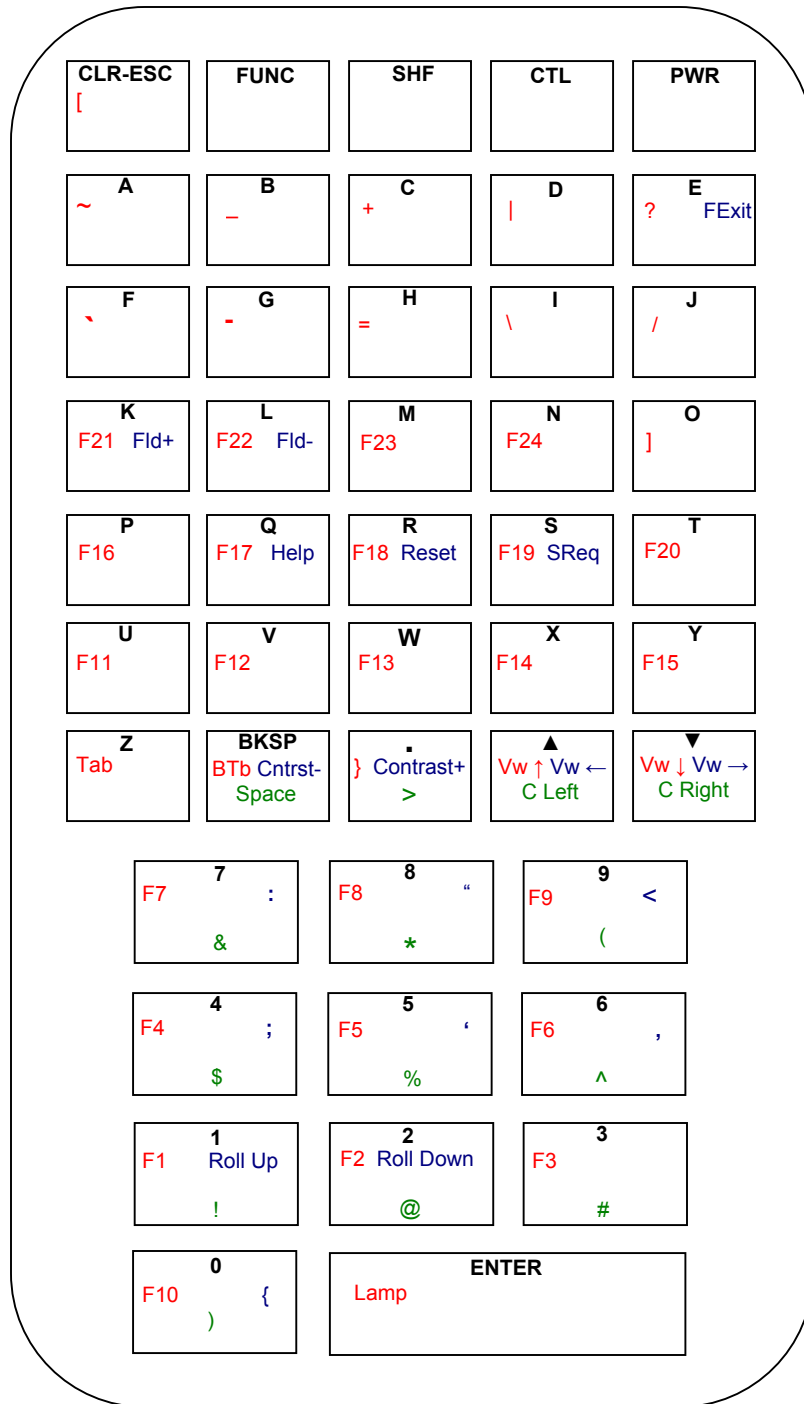
Keypad Figures



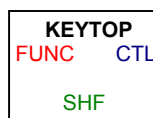


384x 46-Key 3270 Keyboard





384x 46-Key 5250 Keyboard



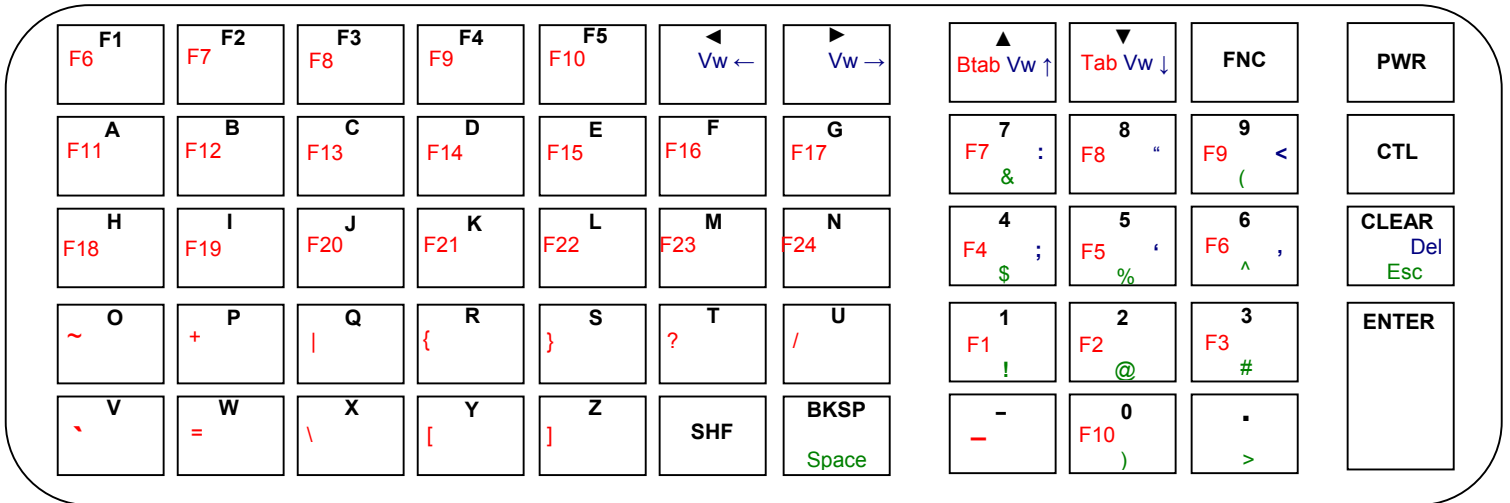
Keypad Table

| KEY | 5250 | 3270 | VT/HP |
|---------------------|---------------|---------------|---------------|
| BACK TAB | <FUNC><BKSP> | <FUNC><BKSP> | <FUNC><BKSP> |
| BACKSPACE | <BKSP> | <BKSP> | <BKSP> |
| CONTRAST - | <CTL><BKSP> | <CTL><BKSP> | <CTL><BKSP> |
| CONTRAST + | <CTL><.,> | <CTL><.,> | <CTL><.,> |
| CURSOR DOWN | <DN-ARROW> | <DN-ARROW> | <DN-ARROW> |
| CURSOR LEFT | <SHF><UP> | <SHF><UP> | <SHF><UP> |
| CURSOR RIGHT | <SHF><DN> | <SHF><DN> | <SHF><DN> |
| CURSOR UP | <UP-ARROW> | <UP-ARROW> | <UP-ARROW> |
| DELETE | --- | --- | <CTL><CLR> |
| ENTER | <ENTER> | <ENTER> | <ENTER> |
| ERASE EOF | --- | <CTL><E> | --- |
| ERROR RESET | <CTRL><R> | <CTL><R> | --- |
| ESCAPE | --- | --- | <SHF><CLR> |
| FIELD ADVANCE | <CTL><K> | --- | --- |
| FIELD EXIT | <CTL><E> | --- | --- |
| FIELD MINUS | <CTL><L> | --- | --- |
| HELP | <CTL><Q> | --- | --- |
| LAMP | <FUNC><ENTER> | <FUNC><ENTER> | <FUNC><ENTER> |
| RETURN | <ENTER> | <ENTER> | <ENTER> |
| ROLL DOWN | <CTL><2> | --- | --- |
| ROLL UP | <CTL><1> | --- | --- |
| SPACE | <SHF><BKSP> | <SHF><BKSP> | <SHF><BKSP> |
| SYS REQUEST | <CTL><S> | <CTL><S> | --- |
| TAB | <FUNC><Z> | <FUNC><Z> | <FUNC><Z> |
| VIEW DOWN | <FUNC><DN> | <FUNC><DN> | <FUNC><DN> |
| VIEW LEFT | <CTL><UP> | <CTL><UP> | <CTL><UP> |
| VIEW RIGHT | <CTL><DOWN> | <CTL><DOWN> | <CTL><DOWN> |
| VIEW UP | <FUNC><UP> | <FUNC><UP> | <FUNC><UP> |
| PA1 | --- | <CTL><1> | --- |
| PA2 | --- | <CTL><2> | --- |
| PA3 | --- | <CTL><3> | --- |
| F1 | <FUNC><1> | <FUNC><1> | <FUNC><1> |
| F2 | <FUNC><2> | <FUNC><2> | <FUNC><2> |
| F3 | <FUNC><3> | <FUNC><3> | <FUNC><3> |
| F4 | <FUNC><4> | <FUNC><4> | <FUNC><4> |
| F5 | <FUNC><5> | <FUNC><5> | <FUNC><5> |
| F6 | <FUNC><6> | <FUNC><6> | <FUNC><6> |
| F7 | <FUNC><7> | <FUNC><7> | <FUNC><7> |
| F8 | <FUNC><8> | <FUNC><8> | <FUNC><8> |
| F9 | <FUNC><9> | <FUNC><9> | <FUNC><9> |
| F10 | <FUNC><0> | <FUNC><0> | <FUNC><0> |
| F11 | <FUNC><U> | <FUNC><U> | <FUNC><U> |
| F12 | <FUNC><V> | <FUNC><V> | <FUNC><V> |
| F13 | <FUNC><W> | <FUNC><W> | <FUNC><W> |
| F14 | <FUNC><X> | <FUNC><X> | <FUNC><X> |
| F15 | <FUNC><Y> | <FUNC><Y> | <FUNC><Y> |
| F16 | <FUNC><P> | <FUNC><P> | <FUNC><P> |
| F17 | <FUNC><Q> | <FUNC><Q> | <FUNC><Q> |
| F18 | <FUNC><R> | <FUNC><R> | <FUNC><R> |
| F19 | <FUNC><S> | <FUNC><S> | <FUNC><S> |
| F20 | <FUNC><T> | <FUNC><T> | <FUNC><T> |
| F21 | <FUNC><K> | <FUNC><K> | --- |
| F22 | <FUNC><L> | <FUNC><L> | --- |
| F23 | <FUNC><M> | <FUNC><M> | --- |
| F24 | <FUNC><N> | <FUNC><N> | --- |
| ! exclamation | <SHF><1> | <SHF><1> | <SHF><1> |
| @ at sign | <SHF><2> | <SHF><2> | <SHF><2> |

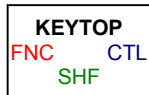
| | | | | |
|----|--------------------------|-------------|-------------|-------------|
| # | pound | <SHF><3> | <SHF><3> | <SHF><3> |
| \$ | dollar | <SHF><4> | <SHF><4> | <SHF><4> |
| % | percent | <SHF><5> | <SHF><5> | <SHF><5> |
| ^ | carat | <SHF><6> | <SHF><6> | <SHF><6> |
| & | ampersand | <SHF><7> | <SHF><7> | <SHF><7> |
| (| left parenthesis | <SHF><9> | <SHF><9> | <SHF><9> |
|) | right parenthesis | <SHF><0> | <SHF><0> | <SHF><0> |
| - | dash | <FUNC><G> | <FUNC><G> | <FUNC><G> |
| + | plus | <FUNC><C> | <FUNC><C> | <FUNC><C> |
| ' | apostrophe | <CTL><5> | <CTL><5> | <CTL><5> |
| * | asterisk | <SHF><8> | <SHF><8> | <SHF><8> |
| , | comma | <CTL><6> | <CTL><6> | <CTL><6> |
| . | period | <.> | <.> | <.> |
| / | forward slash | <FUNC><J> | <FUNC><J> | <FUNC><J> |
| [| left bracket | <FUNC><CLR> | <FUNC><CLR> | <FUNC><CLR> |
| \ | back slash | <FUNC><I> | <FUNC><I> | <FUNC><I> |
|] | right bracket | <FUNC><O> | <FUNC><O> | <FUNC><O> |
| _ | underline | <FUNC> | <FUNC> | <FUNC> |
| ` | grave accent | <FUNC><F> | <FUNC><F> | <FUNC><F> |
| : | colon | <CTL><7> | <CTL><7> | <CTL><7> |
| ; | semi-colon | <CTL><4> | <CTL><4> | <CTL><4> |
| < | less than | <CTL><9> | <CTL><9> | <CTL><9> |
| = | equal | <FUNC><H> | <FUNC><H> | <FUNC><H> |
| > | greater than | <SHF><.> | <SHF><.> | <SHF><.> |
| ? | question | <FUNC><E> | <FUNC><E> | <FUNC><E> |
| { | left brace | <CTL><0> | <CTL><0> | <CTL><0> |
| | vertical bar | <FUNC><D> | <FUNC><D> | <FUNC><D> |
| } | right brace | <FUNC><.> | <FUNC><.> | <FUNC><.> |
| ~ | tilde | <FUNC><A> | <FUNC><A> | <FUNC><A> |
| “ | quotation | <CTL><8> | <CTL><8> | <CTL><8> |

394x 54-key

Keypad Figures



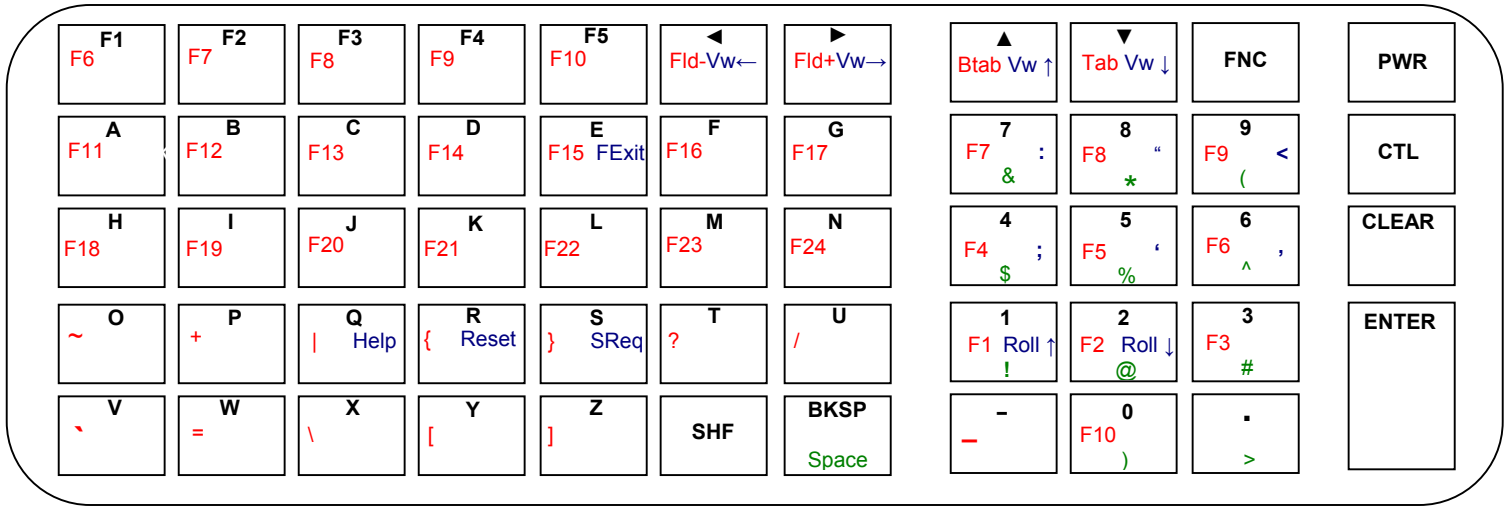
394x 54-Key VT Keyboard



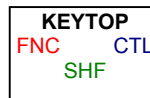
| | | | | | | | | | | |
|----------|----------|----------|-----------------|----------------|-----------|---------------|------------------|------------------|------------------|-------|
| F1 F6 | F2 F7 | F3 F8 | F4 F9 | F5 F10 | ◀ Vw ← | ▶ Vw → | ▲ Btab Vw ↑ | ▼ Tab Vw ↓ | FNC | PWR |
| A F11 | B F12 | C F13 | D F14 | E F15 EOF | F F16 | G F17 | 7 F7 : & | 8 F8 " * | 9 F9 < (| CTL |
| H F18 | I F19 | J F20 | K F21 | L F22 | M F23 | N F24 | 4 F4 ; \$ | 5 F5 ' % | 6 F6 ^ , | CLEAR |
| ~ O | + P | Q | { Reset R | } Sreq S | ? T | / U | 1 F1 PA1 ! | 2 F2 PA2 @ | 3 F3 PA3 # | ENTER |
| · V | = W | \ X | [Y |] Z | SHF | BKSP Space | - - | 0 F10) | . > | |

394x 54-Key 3270 Keyboard

| |
|---------|
| KEYTOP |
| FNC CTL |
| SHF |



394x 54-Key 5250 Keyboard



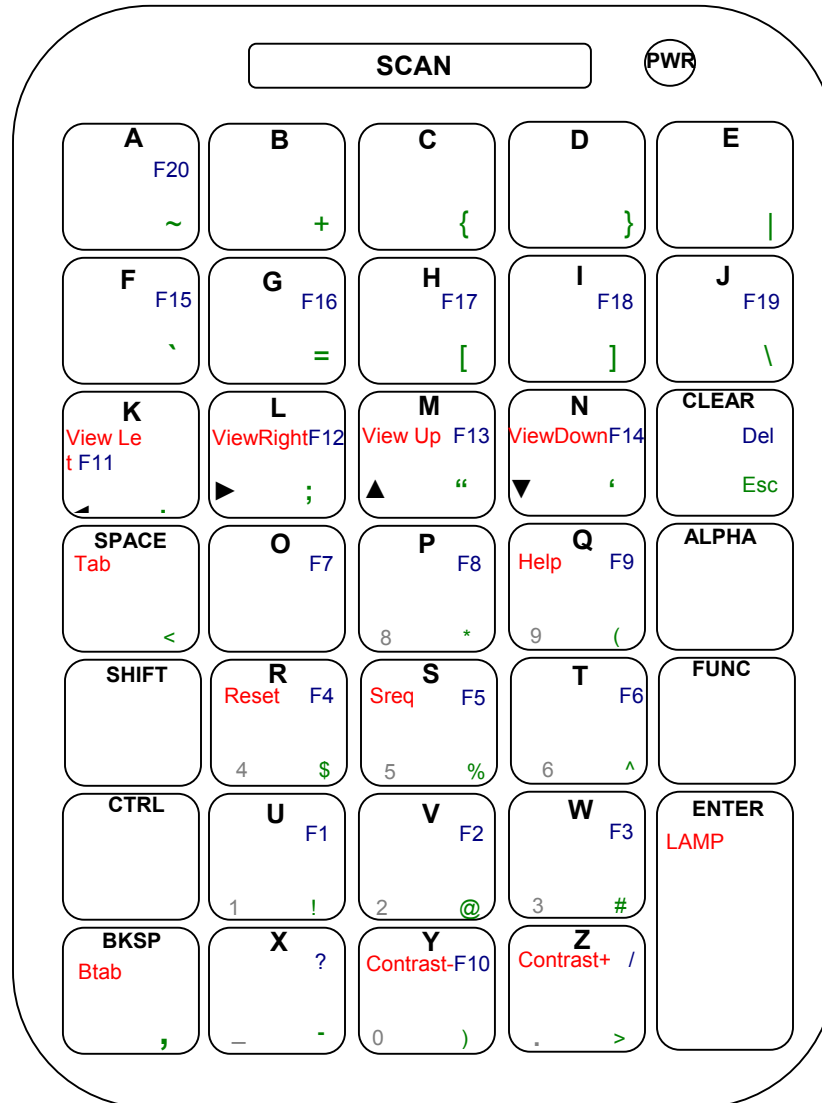
Keypad Table

| KEY | 5250 | 3270 | VT/HP |
|---------------------|--------------|--------------|--------------|
| ATTENTION | <CTL><A> | --- | --- |
| BACK TAB | <FNC><UP> | <FNC><UP> | <FNC><UP> |
| BACKSPACE | <BKSP> | <BKSP> | <BKSP> |
| CURSOR DOWN | <DOWN> | <DOWN> | <DOWN> |
| CURSOR LEFT | <LEFT> | <LEFT> | <LEFT> |
| CURSOR RIGHT | <RIGHT> | <RIGHT> | <RIGHT> |
| CURSOR UP | <UP> | <UP> | <UP> |
| DELETE | --- | --- | <CTL><CLR> |
| ENTER | <ENTER> | <ENTER> | <ENTER> |
| ERASE EOF | --- | <CTL><E> | --- |
| ERROR RESET | <CTL><R> | <CTL><R> | --- |
| ESCAPE | --- | --- | <SHF><CLR> |
| FIELD ADVANCE | <FNC><▶> | --- | --- |
| FIELD EXIT | <CTL><E> | --- | --- |
| FIELD MINUS | <FNC><◀> | --- | --- |
| HELP | <CTL><Q> | --- | --- |
| HOME | <CTL><H> | --- | --- |
| RETURN | <ENTER> | <ENTER> | <ENTER> |
| ROLL DOWN | <CTL><2> | --- | --- |
| ROLL UP | <CTL><1> | --- | --- |
| SPACE | <SHF><BKSP> | <SHF><BKSP> | <SHF><BKSP> |
| SYS REQUEST | <CTL><S> | <CTL><S> | --- |
| TAB | <FNC><DOWN> | <FNC><DOWN> | <FNC><DOWN> |
| VIEW DOWN | <CTL><DOWN> | <CTL><DOWN> | <CTL><DOWN> |
| VIEW LEFT | <CTL><LEFT> | <CTL><LEFT> | <CTL><LEFT> |
| VIEW RIGHT | <CTL><RIGHT> | <CTL><RIGHT> | <CTL><RIGHT> |
| VIEW UP | <CTL><UP> | <CTL><UP> | <CTL><UP> |
| PA1 | --- | <CTL><1> | --- |
| PA2 | --- | <CTL><2> | --- |
| PA3 | --- | <CTL><3> | --- |
| F1 | <FNC><1> | <FNC><1> | <FNC><1> |
| F2 | <FNC><2> | <FNC><2> | <FNC><2> |
| F3 | <FNC><3> | <FNC><3> | <FNC><3> |
| F4 | <FNC><4> | <FNC><4> | <FNC><4> |
| F5 | <FNC><5> | <FNC><5> | <FNC><5> |
| F6 | <FNC><6> | <FNC><6> | <FNC><6> |
| F7 | <FNC><7> | <FNC><7> | <FNC><7> |
| F8 | <FNC><8> | <FNC><8> | <FNC><8> |
| F9 | <FNC><9> | <FNC><9> | <FNC><9> |
| F10 | <FNC><0> | <FNC><0> | <FNC><0> |
| F11 | <FNC><A> | <FNC><A> | <FNC><A> |
| F12 | <FNC> | <FNC> | <FNC> |
| F13 | <FNC><C> | <FNC><C> | <FNC><C> |
| F14 | <FNC><D> | <FNC><D> | <FNC><D> |
| F15 | <FNC><E> | <FNC><E> | <FNC><E> |
| F16 | <FNC><F> | <FNC><F> | <FNC><F> |
| F17 | <FNC><G> | <FNC><G> | <FNC><G> |
| F18 | <FNC><H> | <FNC><H> | <FNC><H> |
| F19 | <FNC><I> | <FNC><I> | <FNC><I> |
| F20 | <FNC><J> | <FNC><J> | <FNC><J> |
| F21 | <FNC><K> | <FNC><K> | <FNC><K> |
| F22 | <FNC><L> | <FNC><L> | <FNC><L> |
| F23 | <FNC><M> | <FNC><M> | <FNC><M> |
| F24 | <FNC><N> | <FNC><N> | <FNC><N> |
| ! exclamation | <SHF><1> | <SHF><1> | <SHF><1> |
| @ at sign | <SHF><2> | <SHF><2> | <SHF><2> |
| # pound | <SHF><3> | <SHF><3> | <SHF><3> |

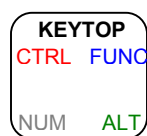
| | | | | |
|----|-------------------|----------|----------|----------|
| \$ | dollar | <SHF><4> | <SHF><4> | <SHF><4> |
| % | percent | <SHF><5> | <SHF><5> | <SHF><5> |
| ^ | carat | <SHF><6> | <SHF><6> | <SHF><6> |
| & | ampersand | <SHF><7> | <SHF><7> | <SHF><7> |
| (| left parenthesis | <SHF><9> | <SHF><9> | <SHF><9> |
|) | right parenthesis | <SHF><0> | <SHF><0> | <SHF><0> |
| - | dash | <-> | <-> | <-> |
| + | plus | <FNC><P> | <FNC><P> | <FNC><P> |
| ' | apostrophe | <CTL><5> | <CTL><5> | <CTL><5> |
| * | asterisk | <SHF><8> | <SHF><8> | <SHF><8> |
| , | comma | <CTL><6> | <CTL><6> | <CTL><6> |
| . | period | <.> | <.> | <.> |
| / | forward slash | <FNC><U> | <FNC><U> | <FNC><U> |
| [| left bracket | <FNC><Y> | <FNC><Y> | <FNC><Y> |
| \ | back slash | <FNC><X> | <FNC><X> | <FNC><X> |
|] | right bracket | <FNC><Z> | <FNC><Z> | <FNC><Z> |
| _ | underline | <FNC><-> | <FNC><-> | <FNC><-> |
| ` | grave accent | <FNC><V> | <FC><V> | <FNC><V> |
| : | colon | <CTL><7> | <CTL><7> | <CTL><7> |
| ; | semi-colon | <CTL><4> | <CTL><4> | <CTL><4> |
| < | less than | <CTL><9> | <CTL><9> | <CTL><9> |
| = | equal | <FNC><W> | <FNC><W> | <FNC><W> |
| > | greater than | <SHF><.> | <SHF><.> | <SHF><.> |
| ? | question | <FNC><T> | <FNC><T> | <FNC><T> |
| { | left brace | <FNC><R> | <FNC><R> | <FNC><R> |
| | vertical bar | <FNC><Q> | <FNC><Q> | <FNC><Q> |
| } | right brace | <FNC><S> | <FNC><S> | <FNC><S> |
| ~ | tilde | <FNC><O> | <FNC><O> | <FNC><O> |
| " | apostrophe | <CTL><8> | <CTL><8> | <CTL><8> |

614x 35-key

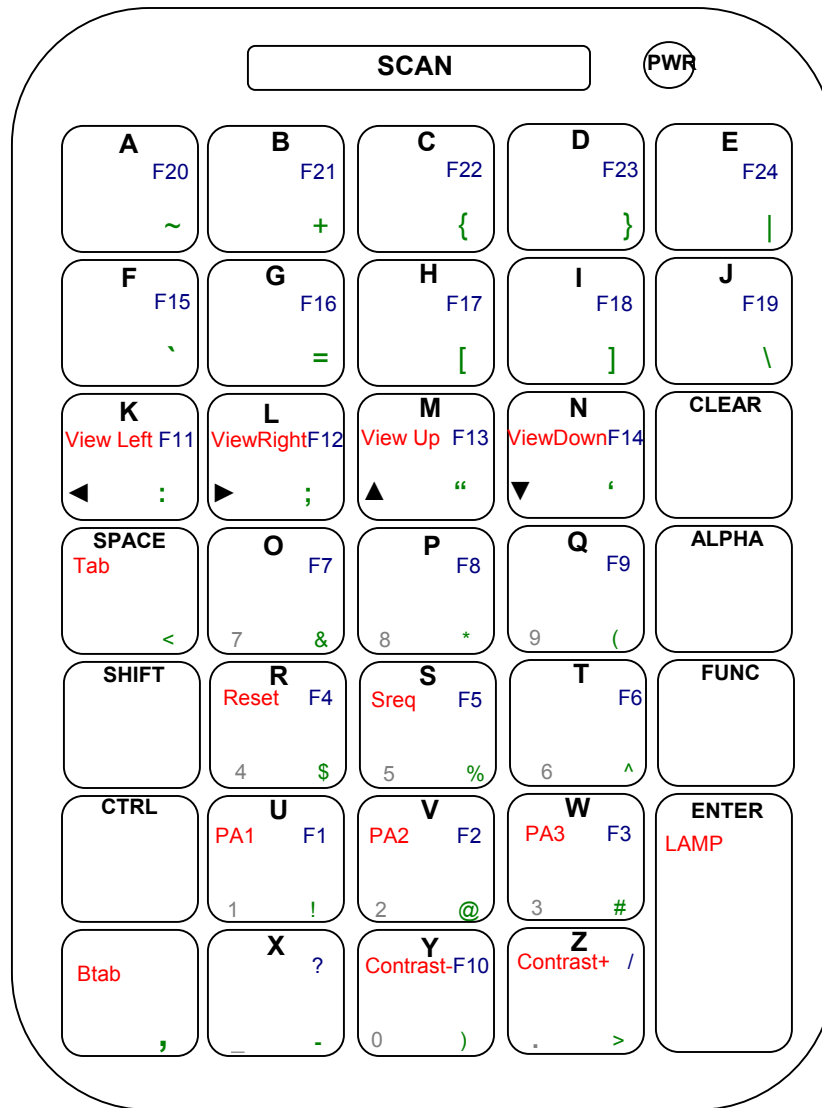
Keypad Figures



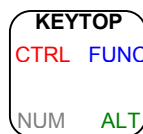
614x 35-Key VT Keyboard



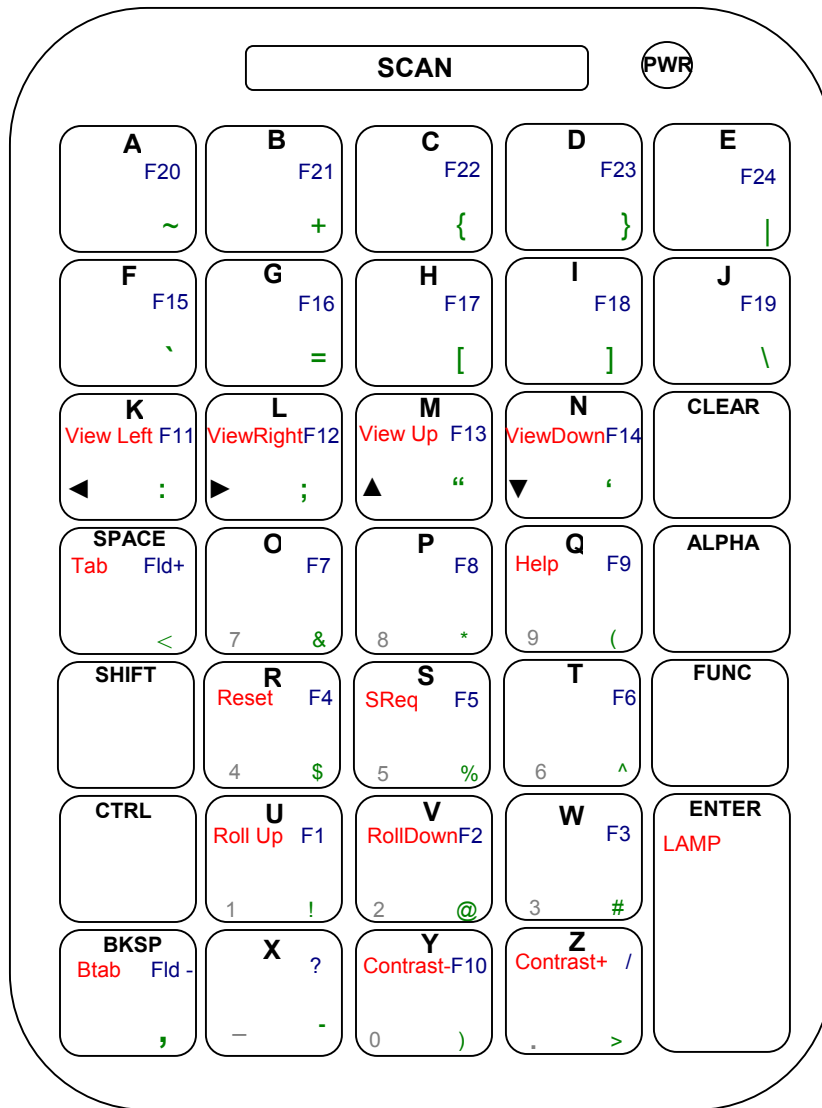
NUM = ALPHA OFF
ALT = FUNC + CTRL



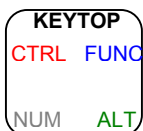
614x 35-Key 3270 Keyboard



NUM = ALPHA OFF
ALT = FUNC + CTRL



614x 35-Key 5250 Keyboard



NUM = ALPHA OFF
ALT = FUNC + CTRL

Keypad Table

<ALT> = <FUNC><CTRL> <NUM>= <ALPHA> OFF

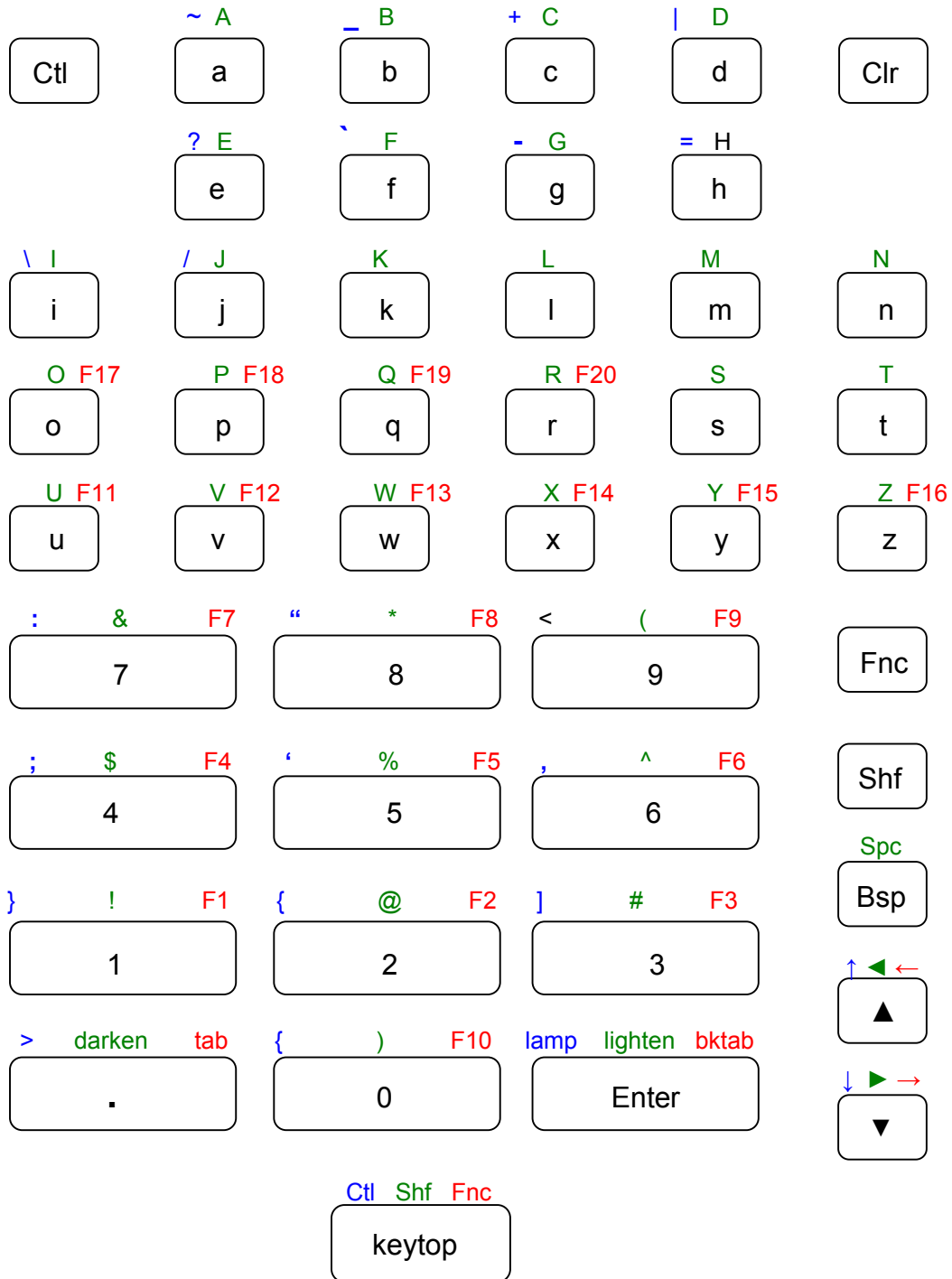
| KEY | 5250 | 3270 | VT/HP |
|--------------------------|---------------|---------------|---------------|
| BACK TAB | <CTRL><BKSP> | <CTRL><BKSP> | <CTRL><BKSP> |
| BACKSPACE | <BKSP> | <BKSP> | <BKSP> |
| CONTRAST - | <CTRL><Y> | <CTRL><Y> | <CTRL><Y> |
| CONTRAST + | <CTRL><Z> | <CTRL><Z> | <CTRL><Z> |
| CURSOR DOWN | <DN> | <DN> | <DN> |
| CURSOR LEFT | <LEFT> | <LEFT> | <LEFT> |
| CURSOR RIGHT | <RIGHT> | <RIGHT> | <RIGHT> |
| CURSOR UP | <UP> | <UP> | <UP> |
| DELETE | --- | --- | <FUNC><CLEAR> |
| ENTER | <ENTER> | <ENTER> | <ENTER> |
| ERROR RESET | <CTRL><R> | <CTRL><R> | --- |
| ESCAPE | --- | --- | <ALT><CLR> |
| FIELD PLUS | <FUNC><SPACE> | --- | --- |
| FIELD EXIT | <CTRL><E> | --- | --- |
| FIELD MINUS | <ALT><BKSP> | --- | --- |
| HELP | <CTRL><Q> | --- | <CTRL><Q> |
| LAMP | <CTRL><ENTER> | <CTRL><ENTER> | <CTRL><ENTER> |
| RETURN | <ENTER> | <ENTER> | <ENTER> |
| ROLL DOWN | <CTRL><V> | --- | --- |
| ROLL UP | <CTRL><U> | --- | --- |
| SPACE | <SPACE> | <SPACE> | <SPACE> |
| SYS REQUEST | <CTRL><S> | <CTRL><S> | --- |
| TAB | <CTRL><SPACE> | <CTRL><SPACE> | <CTRL><SPACE> |
| VIEW DOWN | <CTRL><N> | <CTRL><N> | <CTRL><N> |
| VIEW LEFT | <CTRL><K> | <CTRL><K> | <CTRL><K> |
| VIEW RIGHT | <CTRL><L> | <CTRL><L> | <CTRL><L> |
| VIEW UP | <CTRL><M> | <CTRL><M> | <CTRL><M> |
| PA1 | --- | <CTRL><U> | --- |
| PA2 | --- | <CTRL><V> | --- |
| PA3 | --- | <CTRL><W> | --- |
| F1 | <FUNC><U> | <FUNC><U> | <FUNC><U> |
| F2 | <FUNC><V> | <FUNC><V> | <FUNC><V> |
| F3 | <FUNC><W> | <FUNC><W> | <FUNC><W> |
| F4 | <FUNC><R> | <FUNC><R> | <FUNC><R> |
| F5 | <FUNC><S> | <FUNC><S> | <FUNC><S> |
| F6 | <FUNC><T> | <FUNC><T> | <FUNC><T> |
| F7 | <FUNC><O> | <FUNC><O> | <FUNC><O> |
| F8 | <FUNC><P> | <FUNC><P> | <FUNC><P> |
| F9 | <FUNC><Q> | <FUNC><Q> | <FUNC><Q> |
| F10 | <FUNC><Y> | <FUNC><Y> | <FUNC><Y> |
| F11 | <FUNC><K> | <FUNC><K> | <FUNC><K> |
| F12 | <FUNC><L> | <FUNC><L> | <FUNC><L> |
| F13 | <FUNC><M> | <FUNC><M> | <FUNC><M> |
| F14 | <FUNC><N> | <FUNC><N> | <FUNC><N> |
| F15 | <FUNC><F> | <FUNC><F> | <FUNC><F> |
| F16 | <FUNC><G> | <FUNC><G> | <FUNC><G> |
| F17 | <FUNC><H> | <FUNC><H> | <FUNC><H> |
| F18 | <FUNC><I> | <FUNC><I> | <FUNC><I> |
| F19 | <FUNC><J> | <FUNC><J> | <FUNC><J> |
| F20 | <FUNC><A> | <FUNC><A> | <FUNC><A> |
| F21 | <FUNC> | <FUNC> | --- |
| F22 | <FUNC><C> | <FUNC><C> | --- |
| F23 | <FUNC><D> | <FUNC><D> | --- |
| F24 | <FUNC><E> | <FUNC><E> | --- |
| ! exclamation | <ALT><U> | <ALT><U> | <ALT><U> |
| @ at sign | <ALT><V> | <ALT><V> | <ALT><V> |
| # pound | <ALT><W> | <ALT><W> | <ALT><W> |

| | | | | |
|----|-------------------|--------------|--------------|--------------|
| \$ | dollar | <ALT><R> | <ALT><R> | <ALT><R> |
| % | percent | <ALT><S> | <ALT><S> | <ALT><S> |
| ^ | carat | <ALT><T> | <ALT><T> | <ALT><T> |
| & | ampersand | <ALT><O> | <ALT><O> | <ALT><O> |
| (| left parenthesis | <ALT><Q> | <ALT><Q> | <ALT><Q> |
|) | right parenthesis | <ALT><Y> | <ALT><Y> | <ALT><Y> |
| - | dash | <ALT><X> | <ALT><X> | <ALT><X> |
| + | plus | <ALT> | <ALT> | <ALT> |
| ' | apostrophe | <ALT><N> | <ALT><N> | <ALT><N> |
| * | asterisk | <ALT><P> | <ALT><P> | <ALT><P> |
| , | comma | <ALT><BKSP> | <ALT><BKSP> | <ALT><BKSP> |
| . | period | <NUM><Z> | <NUM><Z> | <NUM><Z> |
| / | forward slash | <FUNC><Z> | <FUNC><Z> | <FUNC><Z> |
| [| left bracket | <ALT><H> | <ALT><H> | <ALT><H> |
| \ | back slash | <ALT><J> | <ALT><J> | <ALT><J> |
|] | right bracket | <ALT><I> | <ALT><I> | <ALT><I> |
| _ | underline | <NUM><X> | <NUM><X> | <NUM><X> |
| ` | grave accent | <ALT><F> | <ALT><F> | <ALT><F> |
| : | colon | <ALT><K> | <ALT><K> | <ALT><K> |
| ; | semi-colon | <ALT><L> | <ALT><L> | <ALT><L> |
| < | less than | <ALT><SPACE> | <ALT><SPACE> | <ALT><SPACE> |
| = | equal | <ALT><G> | <ALT><G> | <ALT><G> |
| > | greater than | <ALT><Z> | <ALT><Z> | <ALT><Z> |
| ? | question | <FUNC><X> | <FUNC><X> | <FUNC><X> |
| { | left brace | <ALT><C> | <ALT><C> | <ALT><C> |
| | vertical bar | <ALT><E> | <ALT><E> | <ALT><E> |
| } | right brace | <ALT><D> | <ALT><D> | <ALT><D> |
| ~ | tilde | <ALT><A> | <ALT><A> | <ALT><A> |

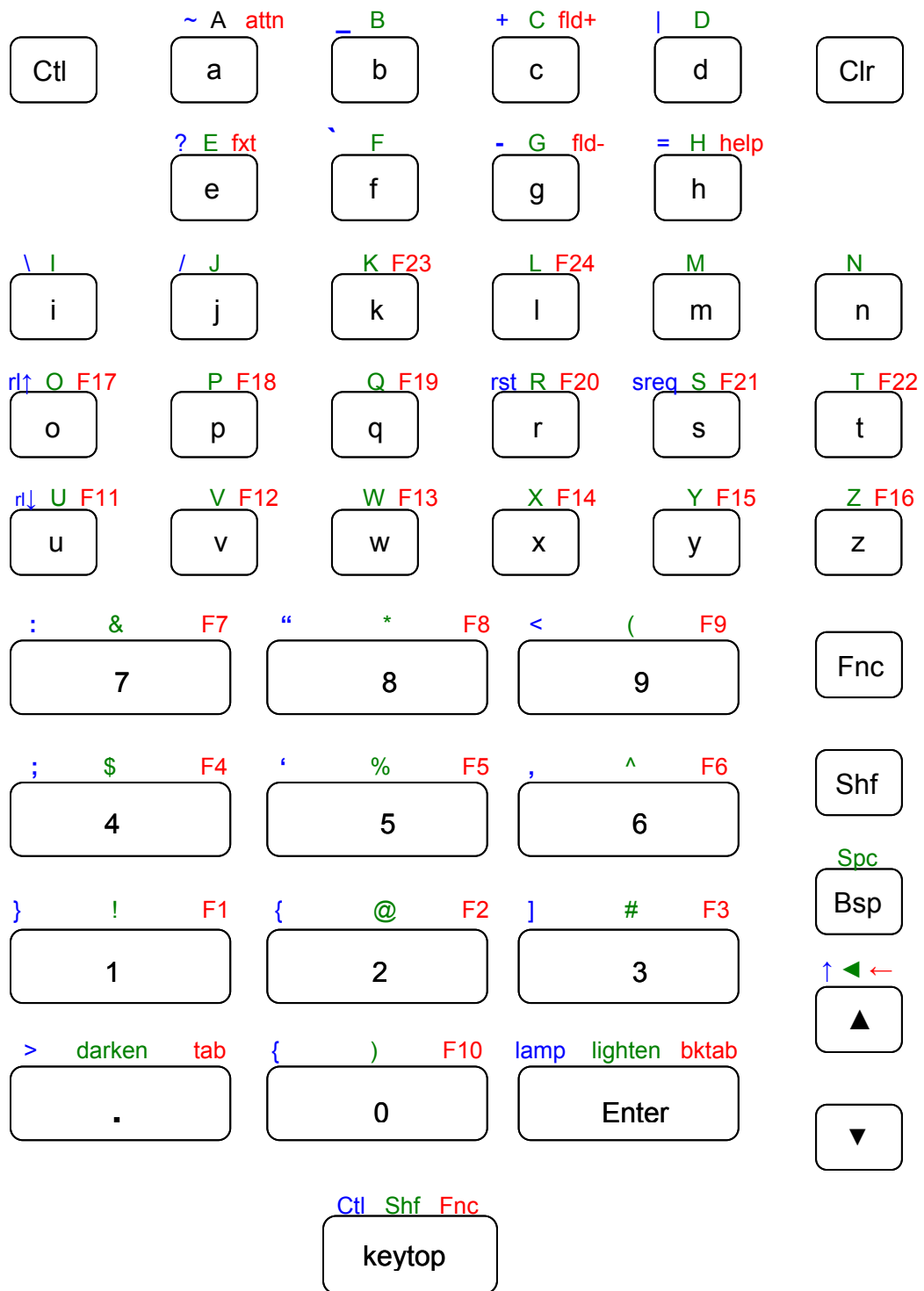
614x 46-key

Keypad Figures

Vterm emulation



5250 emulation



Keypad Table

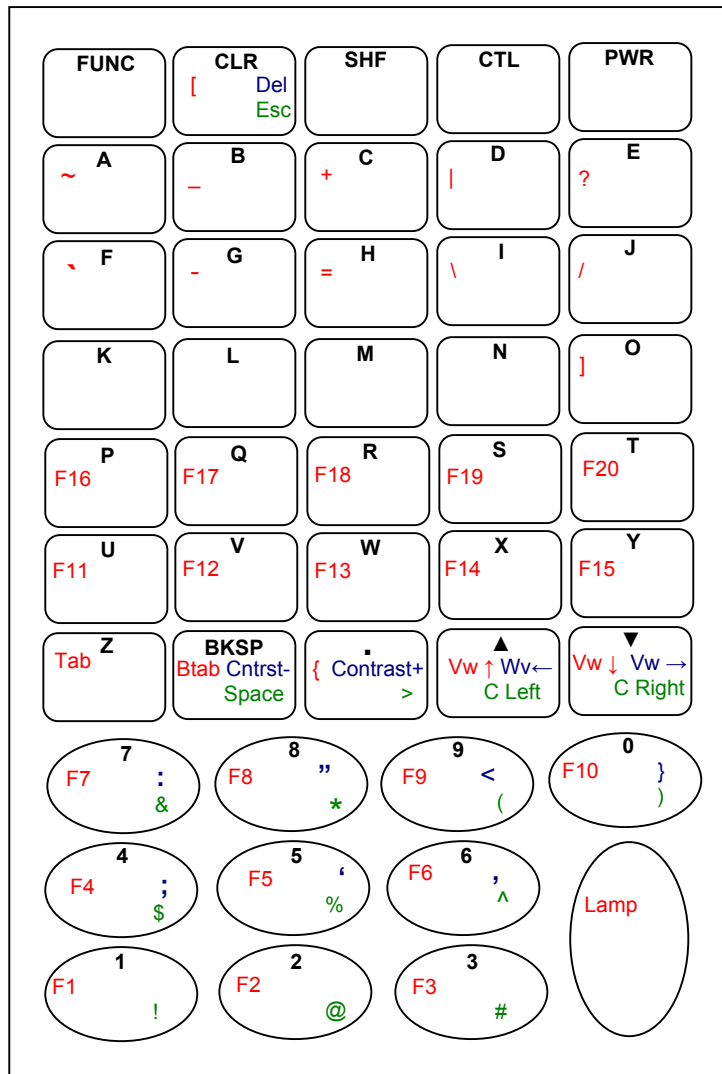
| Key | VTERM | 3270 | 5250 |
|---------|--------------|--------------|--------------|
| a | <a> | <a> | <a> |
| b | | | |
| c | <c> | <c> | <c> |
| d | <d> | <d> | <d> |
| e | <e> | <e> | <e> |
| f | <f> | <f> | <f> |
| g | <g> | <g> | <g> |
| h | <h> | <h> | <h> |
| i | <i> | <i> | <i> |
| j | <j> | <j> | <j> |
| k | <k> | <k> | <k> |
| l | <l> | <l> | <l> |
| m | <m> | <m> | <m> |
| n | <n> | <n> | <n> |
| o | <o> | <o> | <o> |
| p | <p> | <p> | <p> |
| q | <q> | <q> | <q> |
| r | <r> | <r> | <r> |
| s | <s> | <s> | <s> |
| t | <t> | <t> | <t> |
| u | <u> | <u> | <u> |
| v | <v> | <v> | <v> |
| w | <w> | <w> | <w> |
| x | <x> | <x> | <x> |
| y | <y> | <y> | <y> |
| z | <z> | <z> | <z> |
| A | <Shift><a> | <Shift><a> | <Shift><a> |
| B | <Shift> | <Shift> | <Shift> |
| C | <Shift><c> | <Shift><c> | <Shift><c> |
| D | <Shift><d> | <Shift><d> | <Shift><d> |
| E | <Shift><e> | <Shift><e> | <Shift><e> |
| F | <Shift><f> | <Shift><f> | <Shift><f> |
| G | <Shift><g> | <Shift><g> | <Shift><g> |
| H | <Shift><h> | <Shift><h> | <Shift><h> |
| I | <Shift><i> | <Shift><i> | <Shift><i> |
| J | <Shift><j> | <Shift><j> | <Shift><j> |
| K | <Shift><k> | <Shift><k> | <Shift><k> |
| L | <Shift><l> | <Shift><l> | <Shift><l> |
| M | <Shift><m> | <Shift><m> | <Shift><m> |
| N | <Shift><n> | <Shift><n> | <Shift><n> |
| O | <Shift><o> | <Shift><o> | <Shift><o> |
| P | <Shift><p> | <Shift><p> | <Shift><p> |
| Q | <Shift><q> | <Shift><q> | <Shift><q> |
| R | <Shift><r> | <Shift><r> | <Shift><r> |
| S | <Shift><s> | <Shift><s> | <Shift><s> |
| T | <Shift><t> | <Shift><t> | <Shift><t> |
| U | <Shift><u> | <Shift><u> | <Shift><u> |
| V | <Shift><v> | <Shift><v> | <Shift><v> |
| W | <Shift><w> | <Shift><w> | <Shift><w> |
| X | <Shift><x> | <Shift><x> | <Shift><x> |
| Y | <Shift><y> | <Shift><y> | <Shift><y> |
| Z | <Shift><z> | <Shift><z> | <Shift><z> |
| Clear | <Clr> | <Clr> | <Clr> |
| Backtab | <Fnc><Enter> | <Fnc><Enter> | <Fnc><Enter> |
| Tab | <Fnc><. > | <Fnc><. > | <Fnc><. > |
| Esc | <Shf><Clr> | --- | --- |
| Space | <Shf><Bsp> | <Shf><Bsp> | <Shf><Bsp> |
| Shift | <Shf> | <Shf> | <Shf> |

| | | | | |
|-----------|-------------------|--------------|--------------|--------------|
| Func | | <Fnc> | <Fnc> | <Fnc> |
| Ctrl | | <Ctl> | <Ctl> | <Ctl> |
| Backspace | | <Bsp> | <Bsp> | <Bsp> |
| Enter | | <Enter> | <Enter> | <Enter> |
| Del | | <Fnc><Clr> | --- | --- |
| Lamp | | <Ctl><Enter> | <Ctl><Enter> | <Ctl><Enter> |
| 1 | | <1> | <1> | <1> |
| 2 | | <2> | <2> | <2> |
| 3 | | <3> | <3> | <3> |
| 4 | | <4> | <4> | <4> |
| 5 | | <5> | <5> | <5> |
| 6 | | <6> | <6> | <6> |
| 7 | | <7> | <7> | <7> |
| 8 | | <8> | <8> | <8> |
| 9 | | <9> | <9> | <9> |
| 0 | | <0> | <0> | <0> |
| ! | exclamation | <Shift><1> | <Shift><1> | <Shift><1> |
| @ | at sign | <Shift><2> | <Shift><2> | <Shift><2> |
| # | pound | <Shift><3> | <Shift><3> | <Shift><3> |
| \$ | dollar | <Shift><4> | <Shift><4> | <Shift><4> |
| % | percent | <Shift><5> | <Shift><5> | <Shift><5> |
| ^ | carat | <Shift><6> | <Shift><6> | <Shift><6> |
| & | ampersand | <Shift><7> | <Shift><7> | <Shift><7> |
| * | asterisk | <Shift><8> | <Shift><8> | <Shift><8> |
| (| left parenthesis | <Shift><9> | <Shift><9> | <Shift><9> |
|) | right parenthesis | <Shift><0> | <Shift><0> | <Shift><0> |
| F1 | | <Fnc><1> | <Fnc><1> | <Fnc><1> |
| F2 | | <Fnc><2> | <Fnc><2> | <Fnc><2> |
| F3 | | <Fnc><3> | <Fnc><3> | <Fnc><3> |
| F4 | | <Fnc><4> | <Fnc><4> | <Fnc><4> |
| F5 | | <Fnc><5> | <Fnc><5> | <Fnc><5> |
| F6 | | <Fnc><6> | <Fnc><6> | <Fnc><6> |
| F7 | | <Fnc><7> | <Fnc><7> | <Fnc><7> |
| F8 | | <Fnc><8> | <Fnc><8> | <Fnc><8> |
| F9 | | <Fnc><9> | <Fnc><9> | <Fnc><9> |
| F10 | | <Fnc><0> | <Fnc><0> | <Fnc><0> |
| F11 | | <Fnc><u> | <Fnc><u> | <Fnc><u> |
| F12 | | <Fnc><v> | <Fnc><v> | <Fnc><v> |
| F13 | | <Fnc><w> | <Fnc><w> | <Fnc><w> |
| F14 | | <Fnc><x> | <Fnc><x> | <Fnc><x> |
| F15 | | <Fnc><y> | <Fnc><y> | <Fnc><y> |
| F16 | | <Fnc><z> | <Fnc><z> | <Fnc><z> |
| F17 | | <Fnc><o> | <Fnc><o> | <Fnc><o> |
| F18 | | <Fnc><p> | <Fnc><p> | <Fnc><p> |
| F19 | | <Fnc><q> | <Fnc><q> | <Fnc><q> |
| F20 | | <Fnc><r> | <Fnc><r> | <Fnc><r> |
| F21 | | --- | <Fnc><s> | <Fnc><s> |
| F22 | | --- | <Fnc><t> | <Fnc><t> |
| F23 | | --- | <Fnc><k> | <Fnc><k> |
| F24 | | --- | <Fnc><l> | <Fnc><l> |
| / | forward slash | <Ctl><j> | <Ctl><j> | <Ctl><j> |
| ` | accent | <Ctl><f> | <Ctl><f> | <Ctl><f> |
| - | hyphen | <Ctl><g> | <Ctl><g> | <Ctl><g> |
| = | equal sign | <Ctl><h> | <Ctl><h> | <Ctl><h> |
| [| left bracket | <Ctl><2> | <Ctl><2> | <Ctl><2> |
|] | right bracket | <Ctl><3> | <Ctl><3> | <Ctl><3> |
| \ | backward slash | <Ctl><i> | <Ctl><i> | <Ctl><i> |
| ; | semicolon | <Ctl><4> | <Ctl><4> | <Ctl><4> |
| ' | apostrophe | <Ctl><5> | <Ctl><5> | <Ctl><5> |
| , | comma | <Ctl><6> | <Ctl><6> | <Ctl><6> |
| . | period | <.> | <.> | <.> |
| ~ | tilde | <Ctl><a> | <Ctl><a> | <Ctl><a> |
| _ | underscore | <Ctl> | <Ctl> | <Ctl> |
| + | addition sign | <Ctl><c> | <Ctl><c> | <Ctl><c> |
| { | left brace | <Ctl><0> | <Ctl><0> | <Ctl><0> |

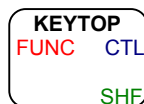
| | | | | |
|------------------|----------------------------|--------------|--------------|--------------|
| } | right brace | <Ctl><1> | <Ctl><1> | <Ctl><1> |
| | broken vertical bar | <Ctl><d> | <Ctl><d> | <Ctl><d> |
| : | colon | <Ctl><7> | <Ctl><7> | <Ctl><7> |
| " | quotation mark | <Ctl><8> | <Ctl><8> | <Ctl><8> |
| < | less-than sign | <Ctl><9> | <Ctl><9> | <Ctl><9> |
| > | greater-than sign | <Ctl><. > | <Ctl><. > | <Ctl><. > |
| ? | question mark | <Ctl><e> | <Ctl><e> | <Ctl><e> |
| EOF | | --- | <Fnc><e> | --- |
| Pa1 | | --- | <Fnc> | --- |
| Pa2 | | --- | <Fnc><c> | --- |
| Pa3 | | --- | <Fnc><d> | --- |
| Roll up | | --- | --- | <Ctl><o> |
| Roll down | | --- | --- | <Ctl><u> |
| ▲ (Cursor up) | | <▲> | <▲> | <▲> |
| ▼ (Cursor down) | | <▼> | <▼> | <▼> |
| ► (Cursor right) | | <Shf><▼> | <Shf><▼> | <Shf><▼> |
| ◄ (Cursor left) | | <Shf><▲> | <Shf><▲> | <Shf><▲> |
| ↑ (View up) | | <Ctl><▲> | <Ctl><▲> | <Ctl><▲> |
| ↓ (View down) | | <Ctl><▼> | <Ctl><▼> | <Ctl><▼> |
| → (View right) | | <Fnc><▼> | <Fnc><▼> | <Fnc><▼> |
| ← (View left) | | <Fnc><▲> | <Fnc><▲> | <Fnc><▲> |
| Lighten | | <Shf><Enter> | <Shf><Enter> | <Shf><Enter> |
| Darken | | <Shf><. > | <Shf><. > | <Shf><. > |
| Attention | | --- | <Fnc><a> | <Fnc><a> |
| Field exit | | --- | --- | <Fnc><e> |
| Help | | --- | --- | <Fnc><h> |
| Field - | | --- | --- | <Fnc><g> |
| Field + | | --- | --- | <Fnc><c> |
| Reset | | --- | <Ctl><r> | <Ctl><r> |
| Sys req | | --- | <Ctl><s> | <Ctl><s> |

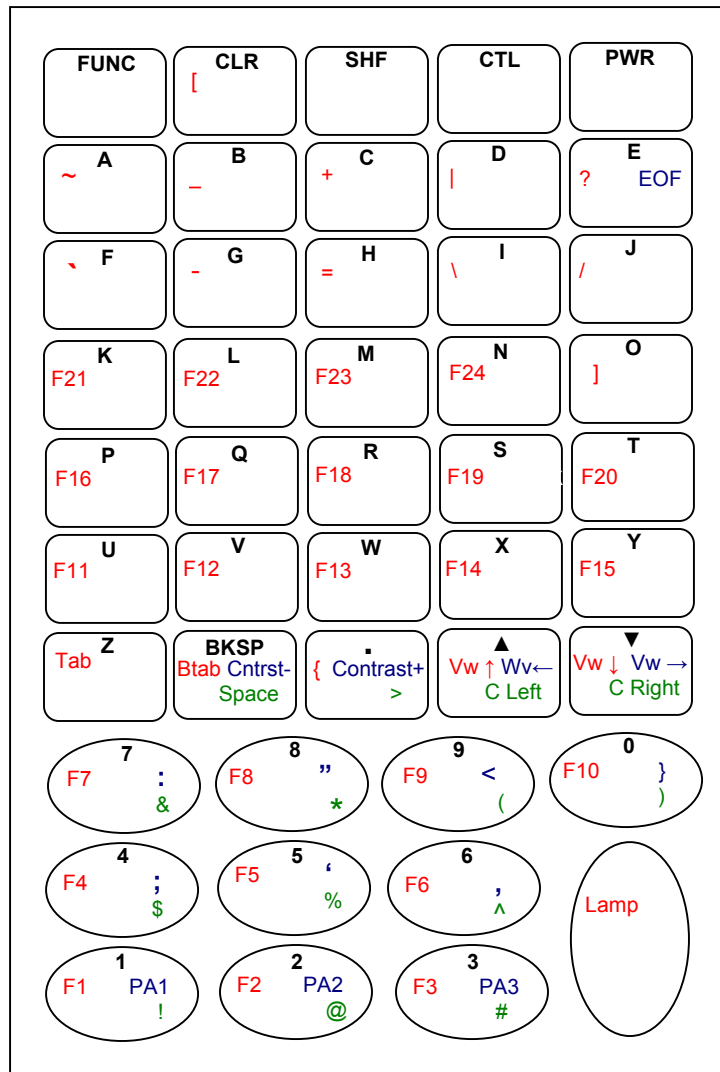
684x 46-key

Keypad Figures

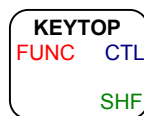


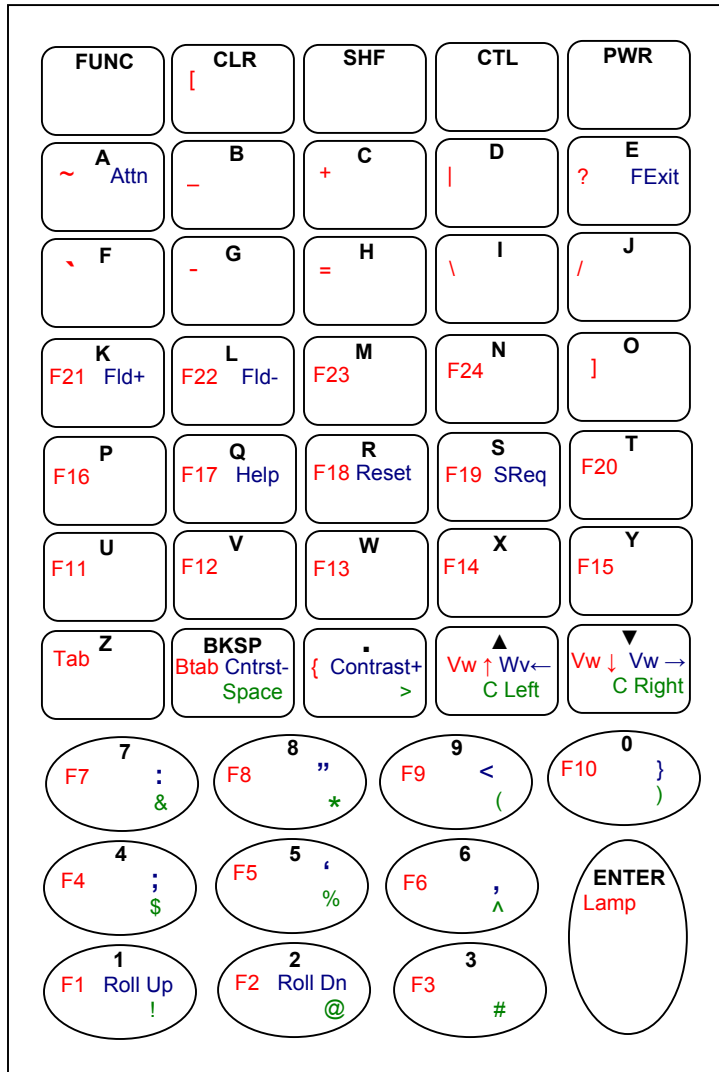
684x 46-Key VT Keyboard





684x 46-Key 3270 Keyboard





684x 46-Key 5250 Keyboard



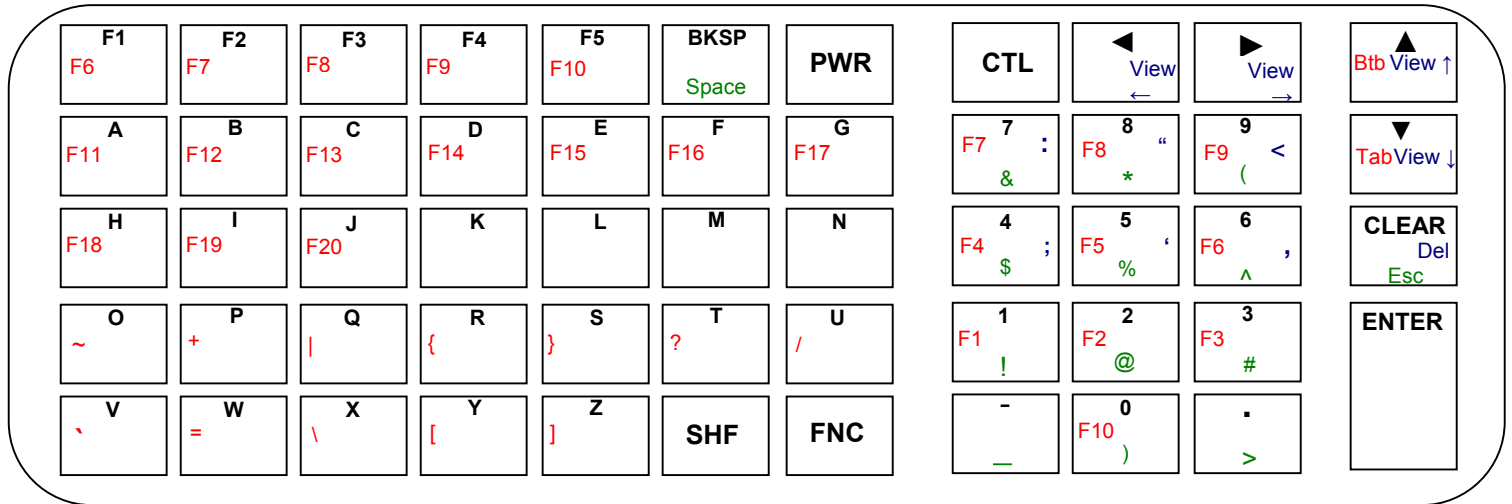
Keypad Table

| KEY | 5250 | 3270 | VT/HP |
|---------------|---------------|---------------|---------------|
| ATTENTION | <CTL><A> | --- | --- |
| BACK TAB | <FUNC><BKSP> | <FUNC><BKSP> | <FUNC><BKSP> |
| BACKSPACE | <BKSP> | <BKSP> | <BKSP> |
| CONTRAST - | <CTL><BKSP> | <CTL><BKSP> | <CTL><BKSP> |
| CONTRAST + | <CTL><.> | <CTL><.> | <CTL><.> |
| CURSOR DOWN | <DN-ARROW> | <DN-ARROW> | <DN-ARROW> |
| CURSOR LEFT | <SHF><UP> | <SHF><UP> | <SHF><UP> |
| CURSOR RIGHT | <SHF><DN> | <SHF><DN> | <SHF><DN> |
| CURSOR UP | <UP-ARROW> | <UP-ARROW> | <UP-ARROW> |
| DELETE | --- | --- | <CTL><CLR> |
| ENTER | <ENTER> | <ENTER> | <ENTER> |
| ERASE EOF | --- | <CTL><E> | --- |
| ERROR RESET | <CTL><R> | --- | --- |
| ESCAPE | --- | --- | <SHF><CLR> |
| FIELD ADVANCE | <CTL><K> | --- | --- |
| FIELD EXIT | <CTL><E> | --- | --- |
| FIELD MINUS | <CTL><L> | --- | --- |
| HELP | <CTL><Q> | --- | --- |
| LAMP | <FUNC><ENTER> | <FUNC><ENTER> | <FUNC><ENTER> |
| RETURN | <ENTER> | <ENTER> | <ENTER> |
| ROLL DOWN | <CTL><2> | --- | --- |
| ROLL UP | <CTL><1> | --- | --- |
| SPACE | <SHF><BKSP> | <SHF><BKSP> | <SHF><BKSP> |
| SYS REQUEST | <CTL><S> | <CTL><S> | --- |
| TAB | <FUNC><Z> | <FUNC><Z> | <FUNC><Z> |
| VIEW DOWN | <FUNC><DN> | <FUNC><DN> | <FUNC><DN> |
| VIEW LEFT | <CTL><UP> | <CTL><UP> | <CTL><UP> |
| VIEW RIGHT | <CTL><DOWN> | <CTL><DOWN> | <CTL><DOWN> |
| VIEW UP | <FUNC><UP> | <FUNC><UP> | <FUNC><UP> |
| PA1 | --- | <CTL><1> | --- |
| PA2 | --- | <CTL><2> | --- |
| PA3 | --- | <CTL><3> | --- |
| F1 | <FUNC><1> | <FUNC><1> | <FUNC><1> |
| F2 | <FUNC><2> | <FUNC><2> | <FUNC><2> |
| F3 | <FUNC><3> | <FUNC><3> | <FUNC><3> |
| F4 | <FUNC><4> | <FUNC><4> | <FUNC><4> |
| F5 | <FUNC><5> | <FUNC><5> | <FUNC><5> |
| F6 | <FUNC><6> | <FUNC><6> | <FUNC><6> |
| F7 | <FUNC><7> | <FUNC><7> | <FUNC><7> |
| F8 | <FUNC><8> | <FUNC><8> | <FUNC><8> |
| F9 | <FUNC><9> | <FUNC><9> | <FUNC><9> |
| F10 | <FUNC><0> | <FUNC><0> | <FUNC><0> |
| F11 | <FUNC><U> | <FUNC><U> | <FUNC><U> |
| F12 | <FUNC><V> | <FUNC><V> | <FUNC><V> |
| F13 | <FUNC><W> | <FUNC><W> | <FUNC><W> |
| F14 | <FUNC><X> | <FUNC><X> | <FUNC><X> |
| F15 | <FUNC><Y> | <FUNC><Y> | <FUNC><Y> |
| F16 | <FUNC><P> | <FUNC><P> | <FUNC><P> |
| F17 | <FUNC><Q> | <FUNC><Q> | <FUNC><Q> |
| F18 | <FUNC><R> | <FUNC><R> | <FUNC><R> |
| F19 | <FUNC><S> | <FUNC><S> | <FUNC><S> |
| F20 | <FUNC><T> | <FUNC><T> | <FUNC><T> |
| F21 | <FUNC><K> | <FUNC><K> | --- |
| F22 | <FUNC><L> | <FUNC><L> | --- |
| F23 | <FUNC><M> | <FUNC><M> | --- |
| F24 | <FUNC><N> | <FUNC><N> | --- |
| ! exclamation | <SHF><1> | <SHF><1> | <SHF><1> |

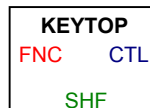
| | | | | |
|----|-------------------|-------------|-------------|-------------|
| @ | at sign | <SHF><2> | <SHF><2> | <SHF><2> |
| # | pound | <SHF><3> | <SHF><3> | <SHF><3> |
| \$ | dollar | <SHF><4> | <SHF><4> | <SHF><4> |
| % | percent | <SHF><5> | <SHF><5> | <SHF><5> |
| ^ | carat | <SHF><6> | <SHF><6> | <SHF><6> |
| & | ampersand | <SHF><7> | <SHF><7> | <SHF><7> |
| (| left parenthesis | <SHF><9> | <SHF><9> | <SHF><9> |
|) | right parenthesis | <SHF><0> | <SHF><0> | <SHF><0> |
| - | dash | <FUNC><G> | <FUNC><G> | <FUNC><G> |
| + | plus | <FUNC><C> | <FUNC><C> | <FUNC><C> |
| ' | apostrophe | <CTL><5> | <CTL><5> | <CTL><5> |
| * | asterisk | <SHF><8> | <SHF><8> | <SHF><8> |
| , | comma | <CTL><6> | <CTL><6> | <CTL><6> |
| . | period | <.> | <.> | <.> |
| / | forward slash | <FUNC><J> | <FUNC><J> | <FUNC><J> |
| [| left bracket | <FUNC><CLR> | <FUNC><CLR> | <FUNC><CLR> |
| \ | back slash | <FUNC><I> | <FUNC><I> | <FUNC><I> |
|] | right bracket | <FUNC><O> | <FUNC><O> | <FUNC><O> |
| _ | underline | <FUNC> | <FUNC> | <FUNC> |
| ` | grave accent | <FUNC><F> | <FUNC><F> | <FUNC><F> |
| : | colon | <CTL><7> | <CTL><7> | <CTL><7> |
| ; | semi-colon | <CTL><4> | <CTL><4> | <CTL><4> |
| < | less than | <CTL><9> | <CTL><9> | <CTL><9> |
| = | equal | <FUNC><H> | <FUNC><H> | <FUNC><H> |
| > | greater than | <SHF><.> | <SHF><.> | <SHF><.> |
| ? | question | <FUNC><E> | <FUNC><E> | <FUNC><E> |
| { | left brace | <CTL><0> | <CTL><0> | <CTL><0> |
| | vertical bar | <FUNC><D> | <FUNC><D> | <FUNC><D> |
| } | right brace | <FUNC><.> | <FUNC><.> | <FUNC><.> |
| ~ | tilde | <FUNC><A> | <FUNC><A> | <FUNC><A> |

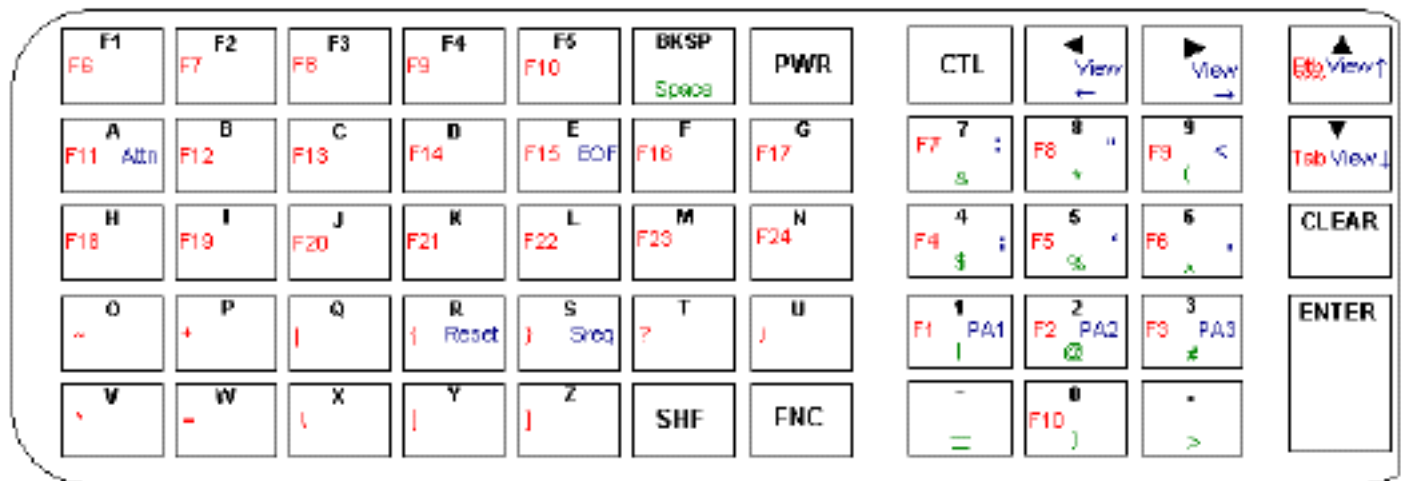
694x 54-key

Keypad Figures



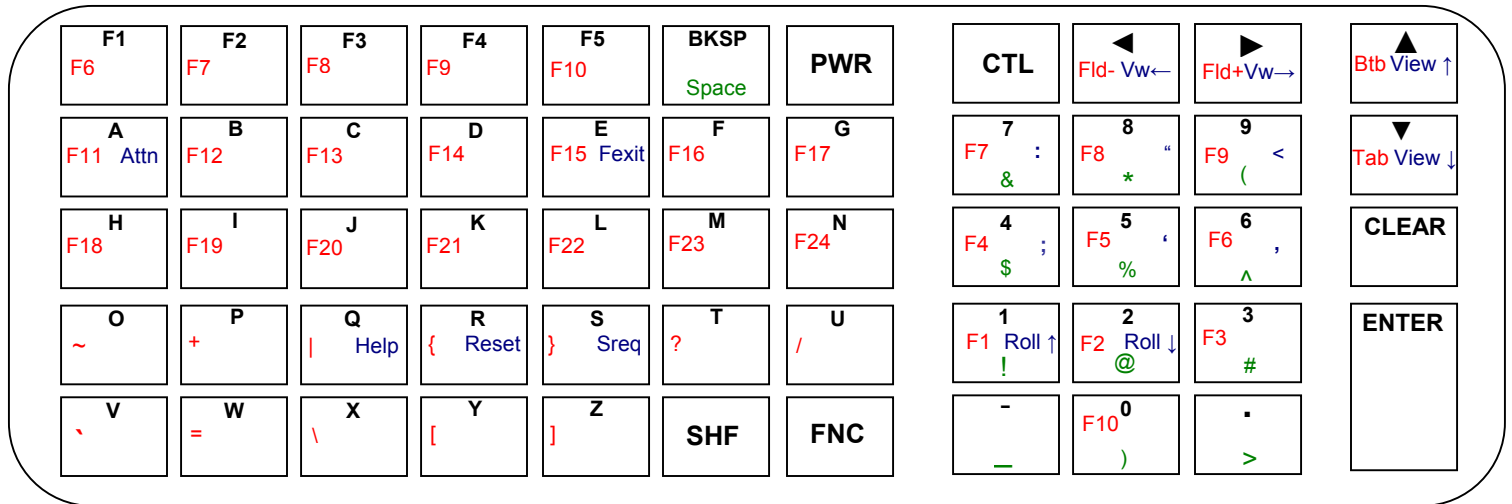
694x 54-key VT Keyboard



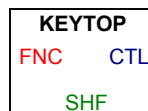


694x 54-key 3270 Keyboard





694x 54-key 5250 Keyboard



Keypad Table

| KEY | 5250 | 3270 | VT/HP |
|----------------------|--------------|--------------|--------------|
| ATTENTION | <CTL><A> | <CTL><A> | --- |
| BACK TAB | <FNC><UP> | <FNC><UP> | <FNC><UP> |
| BACKSPACE | <BKSP> | <BKSP> | <BKSP> |
| CURSOR DOWN | <DOWN> | <DOWN> | <DOWN> |
| CURSOR LEFT | <LEFT> | <LEFT> | <LEFT> |
| CURSOR RIGHT | <RIGHT> | <RIGHT> | <RIGHT> |
| CURSOR UP | <UP> | <UP> | <UP> |
| DELETE | --- | --- | <CTL><CLR> |
| ENTER | <ENTER> | <ENTER> | <ENTER> |
| ERASE EOF | --- | <CTL><E> | --- |
| ERROR RESET | <CTL><R> | <CTL><R> | --- |
| ESCAPE | --- | --- | <SHF><CLR> |
| FIELD ADVANCE | <FNC><RIGHT> | --- | --- |
| FIELD EXIT | <CTL><E> | --- | --- |
| FIELD MINUS | <FNC><LEFT> | --- | --- |
| HELP | <CTL><Q> | --- | --- |
| RETURN | <ENTER> | <ENTER> | <ENTER> |
| ROLL DOWN | <CTL><2> | --- | --- |
| ROLL UP | <CTL><1> | --- | --- |
| SPACE | <SHF><BKSP> | <SHF><BKSP> | <SHF><BKSP> |
| SYS REQUEST | <CTL><S> | <CTL><S> | --- |
| TAB | <FNC><DOWN> | <FNC><DOWN> | <FNC><DOWN> |
| VIEW DOWN | <CTL><DOWN> | <CTL><DOWN> | <CTL><DOWN> |
| VIEW LEFT | <CTL><LEFT> | <CTL><LEFT> | <CTL><LEFT> |
| VIEW RIGHT | <CTL><RIGHT> | <CTL><RIGHT> | <CTL><RIGHT> |
| VIEW UP | <CTL><UP> | <CTL><UP> | <CTL><UP> |
| PA1 | --- | <CTL><1> | --- |
| PA2 | --- | <CTL><2> | --- |
| PA3 | --- | <CTL><3> | --- |
| F1 | <FNC><1> | <FNC><1> | <FNC><1> |
| F2 | <FNC><2> | <FNC><2> | <FNC><2> |
| F3 | <FNC><3> | <FNC><3> | <FNC><3> |
| F4 | <FNC><4> | <FNC><4> | <FNC><4> |
| F5 | <FNC><5> | <FNC><5> | <FNC><5> |
| F6 | <FNC><6> | <FNC><6> | <FNC><6> |
| F7 | <FNC><7> | <FNC><7> | <FNC><7> |
| F8 | <FNC><8> | <FNC><8> | <FNC><8> |
| F9 | <FNC><9> | <FNC><9> | <FNC><9> |
| F10 | <FNC><0> | <FNC><0> | <FNC><0> |
| F11 | <FNC><A> | <FNC><A> | <FNC><A> |
| F12 | <FNC> | <FNC> | <FNC> |
| F13 | <FNC><C> | <FNC><C> | <FNC><C> |
| F14 | <FNC><D> | <FNC><D> | <FNC><D> |
| F15 | <FNC><E> | <FNC><E> | <FNC><E> |
| F16 | <FNC><F> | <FNC><F> | <FNC><F> |
| F17 | <FNC><G> | <FNC><G> | <FNC><G> |
| F18 | <FNC><H> | <FNC><H> | <FNC><H> |
| F19 | <FNC><I> | <FNC><I> | <FNC><I> |
| F20 | <FNC><J> | <FNC><J> | <FNC><J> |
| F21 | <FNC><K> | <FNC><K> | --- |
| F22 | <FNC><L> | <FNC><L> | --- |
| F23 | <FNC><M> | <FNC><M> | --- |
| F24 | <FNC><N> | <FNC><N> | --- |
| ! exclamation | <SHF><1> | <SHF><1> | <SHF><1> |
| @ at sign | <SHF><2> | <SHF><2> | <SHF><2> |
| # pound | <SHF><3> | <SHF><3> | <SHF><3> |
| \$ dollar | <SHF><4> | <SHF><4> | <SHF><4> |

| | | | | |
|---|-------------------|----------|----------|----------|
| % | percent | <SHF><5> | <SHF><5> | <SHF><5> |
| ^ | carat | <SHF><6> | <SHF><6> | <SHF><6> |
| & | ampersand | <SHF><7> | <SHF><7> | <SHF><7> |
| (| left parenthesis | <SHF><9> | <SHF><9> | <SHF><9> |
|) | right parenthesis | <SHF><0> | <SHF><0> | <SHF><0> |
| - | dash | <-> | <-> | <-> |
| + | plus | <FNC><P> | <FNC><P> | <FNC><P> |
| ' | apostrophe | <CTL><5> | <CTL><5> | <CTL><5> |
| * | asterisk | <SHF><8> | <SHF><8> | <SHF><8> |
| , | comma | <CTL><6> | <CTL><6> | <CTL><6> |
| . | period | <.> | <.> | <.> |
| / | forward slash | <FNC><U> | <FNC><U> | <FNC><U> |
| [| left bracket | <FNC><Y> | <FNC><Y> | <FNC><Y> |
| \ | back slash | <FNC><X> | <FNC><X> | <FNC><X> |
|] | right bracket | <FNC><Z> | <FNC><Z> | <FNC><Z> |
| _ | underline | <SHF><-> | <SHF><-> | <SHF><-> |
| ` | grave accent | <FNC><V> | <FNC><V> | <FNC><V> |
| : | colon | <CTL><7> | <CTL><7> | <CTL><7> |
| ; | semi-colon | <CTL><4> | <CTL><4> | <CTL><4> |
| < | less than | <CTL><9> | <CTL><9> | <CTL><9> |
| = | equal | <FNC><W> | <FNC><W> | <FNC><W> |
| > | greater than | <SHF><.> | <SHF><.> | <SHF><.> |
| ? | question | <FNC><T> | <FNC><T> | <FNC><T> |
| { | left brace | <FNC><R> | <FNC><R> | <FNC><R> |
| | vertical bar | <FNC><Q> | <FNC><Q> | <FNC><Q> |
| } | right brace | <FNC><S> | <FNC><S> | <FNC><S> |
| ~ | tilde | <FNC><O> | <FNC><O> | <FNC><O> |
| “ | apostrophe | <CTL><8> | <CTL><8> | <CTL><8> |

Note: If the key mapping does not appear to work, press Func + Shift after a cold boot. This takes the terminal out of its default Caps Lock state. (The terminal will remain in this state until another cold boot is performed OR until another Func + Shift sequence is pressed.)

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Chapter 4 • Hebrew Support

The following details how to add Hebrew font and keyboard support for Symbol 3000 series terminals.

This change will not enable right to left entry, the extended VT command to switch keyboards, or Code page support.

It will, however, allow you to display any of the Hebrew characters built into the included Hebrew font.

Instructions

You will need to build a "Custom HEX" image using Twin Client Manager. Below are the step-by-step instructions.

1. Save off the original font program by renaming the file.

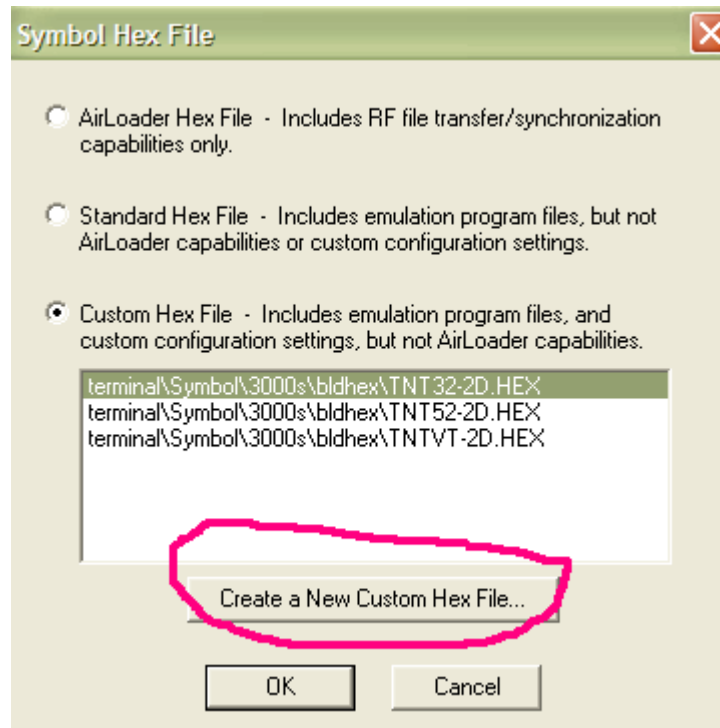
The file name is **init.exe**.

Located: C:\PowerNet\TwinClient\terminal\Symbol\3000s\bdhex\kit

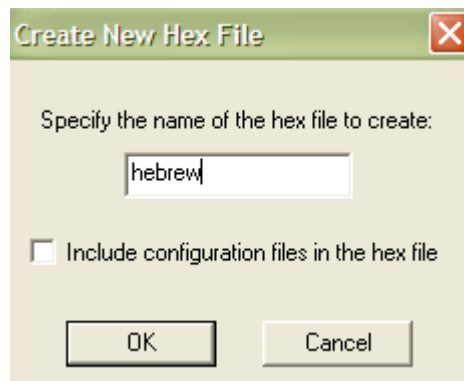
Just rename it to **init.org**.

2. Download the init.exe attached below and place this into the same directory.
3. Create a "Custom HEX" with Twin Client Manager by selecting: "Terminal/Send Program Files To the Terminal".

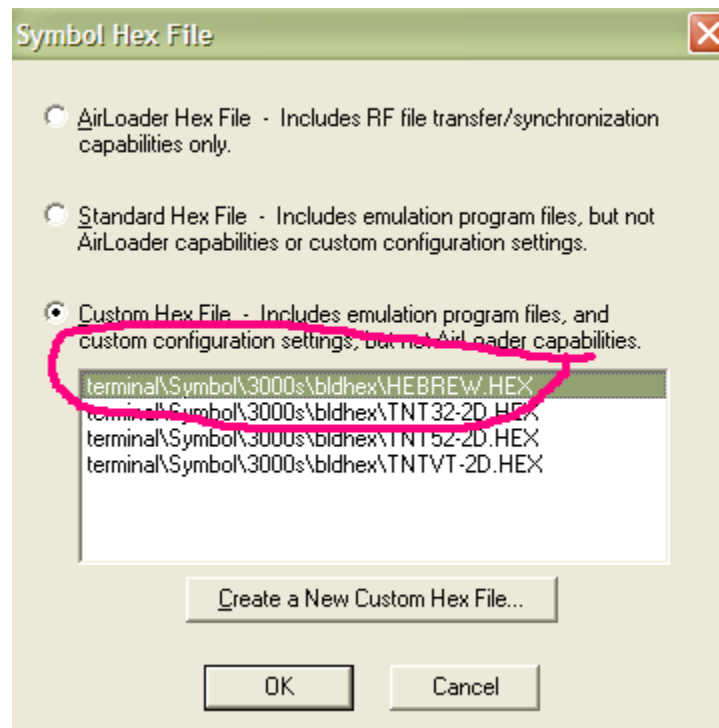
Make the selections below and name the file.



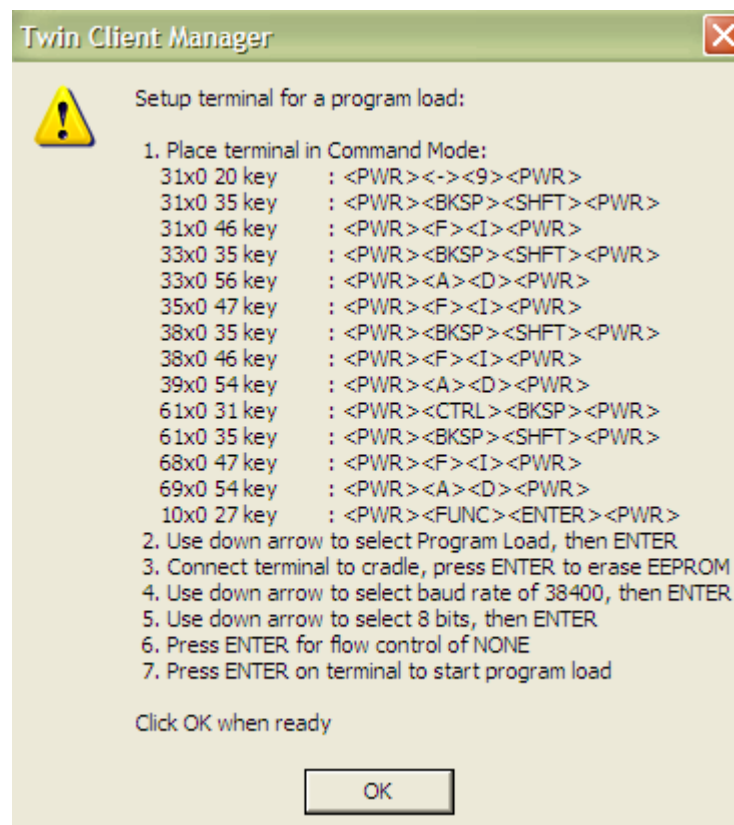
Name the file whatever you like.



It will create the Hex file for you.



Then download to the terminal by selecting **OK** and following the on-screen instructions.



Additional Information

1. VT Extended Keyboard Commands (not supported in this release; for reference only)

Hebrew supported emulation's use two additional ESC sequences:

- <ESC>[?35h - hebrew keyboard
- <ESC>[?35l - english keyboard

These ESC sequences act as a toggle.

If the Hebrew keyboard is active, some of characters must be translated according to following table:

| Entered character | Entered character ASCII | Translated character | Translated character ASCII |
|-------------------|-------------------------|----------------------|----------------------------|
| q | 113 | / | 47 |
| w | 119 | ' | 39 |
| e | 101 | ÷ | 247 |
| r | 114 | ø | 248 |
| t | 116 | à | 224 |
| y | 121 | è | 232 |
| u | 117 | â | 229 |
| i | 105 | ï | 239 |
| o | 111 | í | 237 |
| p | 112 | ô | 244 |
| a | 97 | ù | 249 |
| s | 115 | ã | 227 |
| d | 100 | â | 226 |
| f | 102 | ë | 235 |
| g | 103 | ò | 242 |
| h | 104 | é | 233 |
| j | 106 | ç | 231 |
| k | 107 | ì | 236 |
| l | 108 | ê | 234 |
| ; | 59 | ó | 243 |
| ' | 39 | , | 44 |
| z | 122 | æ | 230 |
| x | 120 | ñ | 241 |
| c | 99 | á | 225 |
| v | 118 | ä | 228 |
| b | 98 | ö | 240 |
| n | 110 | î | 238 |
| m | 109 | ö | 246 |
| , | 44 | ú | 250 |
| . | 46 | õ | 245 |

Note: Uppercase character must not be translated.

2. Hebrew Font

The Hebrew font that is embedded into the init.exe is included for reference. If you would like to see the font, load it using the Symbol Fontbld.exe utility (attached for your convenience).

3. Hebrew Keyboard Files

The attached cfk files are example PowerNet remap files for English and Hebrew keyboards. Please use the standard Twin Client key remapper to build this file to match your terminal and key mapping requirements.

4. Hebrew.zip File

This file contains all the required files in one zip.

Attachments

<http://www.connectrf.com/Documents/Hebrew.fnt>

<http://www.connectrf.com/Documents/FONTBLD.EXE>

<http://www.connectrf.com/Documents/INIT.exe>

<http://www.connectrf.com/Documents/HEBREW.CFK>

<http://www.connectrf.com/Documents/DEFAULT.CFK>

<http://www.connectrf.com/Documents/hebrew.ZIP>

<http://www.connectrf.com/Documents/T1226.doc>

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Chapter 5 • Error Message Resolution Guide

Twin Client Error Message Resolution Guide

| Message | Reason | Solution | Reference Tech Note |
|--------------------|---|--|---------------------|
| ENTRY TOO LONG; | Trying to key beyond the field size. | Ensure that you are entering input into the correct field. | --- |
| ALPHABETIC ONLY; | Trying to key a character that is not alphabetic. | Ensure that you are entering input into the correct field. | --- |
| MINUS NOT VALID; | Trying to key a Minus sign. | Ensure that you are entering input into the correct field. | --- |
| DECIMAL NOT VALID; | Trying to key a Decimal (period). | Ensure that you are entering input into the correct field. | --- |
| ALPHANUMERIC ONLY; | Trying to key characters other than Alphabetic and numeric. | Ensure that you are entering input into the correct field. | --- |
| NUMERIC ONLY; | Trying to key characters other than numeric. | Ensure that you are entering input into the correct field. | --- |
| ENTRY TOO SHORT; | Trying to exit the field before it is filled. | Ensure that you are entering input into the correct field. | --- |

| Message | Reason | Solution | Reference Tech Note |
|--|---|---|---|
| INVALID KEY; | The key pressed is not valid. | Ensure that you are entering input into the correct field. | --- |
| MUST CLEAR FIELD; | Trying to enter data in a field that must be cleared first. | Ensure that you are entering input into the correct field. | --- |
| SCAN NOT ALLOWED; | Trying to scan into a key only field. | Ensure that you are entering input into the correct field. | --- |
| KEY NOT ALLOWED; | Trying to key into a scan only field. | Ensure that you are entering input into the correct field. | --- |
| ENTRY TOO SHORT; | Trying to exit the field before it is filled. | Ensure that you are entering input into the correct field. | --- |
| RECOVERABLE ERROR; | Encountered an error from which you can continue. | Verify that your configuration settings for the hardware being used, usually a printer and cable issue. | --- |
| UNRECOVERABLE ERROR; | Encountered an error from which you can NOT continue. | Verify that your Network settings are correct and you are in the correct mode using the correct Port. | T1113, T1114, T1161, T1171, T1187 and T1194 |
| FUNCTION: \n\nFILE: \nLINE: \nCODE; | Encountered an error from which you can NOT continue. | Notify Connect over the web incident reporting system. | --- |
| Press any key\nFor More Details...; | Press Enter for more information. | Advisory message. | --- |
| Press any key; | Press a key to continue. | Advisory message. | --- |
| Connection ERROR.\nREBOOT MOBILE UNIT; | Could not Connect. | Verify that your Network settings are correct and you are in the correct mode using the correct Port. | T1113, T1114, T1161, T1171, T1187 and T1194 |

| Message | Reason | Solution | Reference Tech Note |
|--|--|---|---|
| Disconnect ERROR.\nREBOOT MOBILE UNIT; | Could not Disconnect. | Verify that your Network settings are correct and you are in the correct mode using the correct Port. | T1113, T1114, T1161, T1171, T1187 and T1194 |
| RF Send ERROR.\nREBOOT MOBILE UNIT; | Could not Send. | Most likely a range, access point, radio, host or network issue. Troubleshoot the customer's environment. | T1113, T1114, T1161, T1171, T1187 and T1194 |
| RF Receive ERROR.\nREBOOT MOBILE UNIT; | Could not Receive. | Most likely a range, access point, radio, host or network issue. Troubleshoot the customer's environment. | T1113, T1114, T1161, T1171, T1187 and T1194 |
| RF Check ERROR.\nREBOOT MOBILE UNIT; | Could not run the RF Survey. | Most likely a range, access point, radio, host or network issue. Troubleshoot the customer's environment. | T1113, T1114, T1161, T1171, T1187 and T1194 |
| RF Timeout ERROR.\nREBOOT MOBILE UNIT; | Have been trying to contact the host for the radio timeout period (2 minutes default). | Most likely a range, access point, radio, host or network issue. Troubleshoot the customer's environment. | T1113, T1114, T1161, T1171, T1187 and T1194 |
| REBOOT MOBILE UNIT; | Reboot the Mobile Unit do to loss of connection. | Most likely a range, access point, radio, host or network issue. Troubleshoot the customer's environment. | T1113, T1114, T1161, T1171, T1187 and T1194 |
| Retry (Y/N)?; | Try again. | Try to send or receive again, or perhaps ensure that the printer is cabled to the Mobile Unit and is on. | --- |
| TIMEOUT\n\nSending Data; | Mobile Unit out of the coverage area. | Most likely a range, access point, radio, host or network issue. Troubleshoot the customer's environment. | T1113, T1114, T1161, T1171, T1187 and T1194 |

| Message | Reason | Solution | Reference Tech Note |
|--|---|--|---|
| TIMEOUT\n\nReceiving Data; | Mobile Unit out of the coverage area. | Most likely a range, access point, radio, host or network issue. Troubleshoot the customer's environment. | T1113, T1114, T1161, T1171, T1187 and T1194 |
| Host Received Data\nAwaiting App Reply!; | Mobile Unit has sent and received an acknowledgement from the IP stack and is waiting for the application to return data. | Most likely a host or network issue. Troubleshoot the customer's environment. Probable causes are Database record locking, application program failure, Host failure or network failure. | T1113, T1114, T1161, T1171, T1187 and T1194 |
| * WAITING TO SEND *; | Mobile Unit out of the coverage area. | Most likely a range, access point, radio, host or network issue. Troubleshoot the customer's environment. | T1113, T1114, T1161, T1171, T1187 and T1194 |
| TCP Error Reading\nMAC Address.\nREBOOT MOBILE UNIT; | Could not obtain the Mac Address from the Mobile Unit. | Possible hardware, driver or stack problem Contact the Mobile Unit manufacturer. | --- |
| Invalid TIP Command; | Bad internal protocol. | Notify Connect over the web incident reporting system. | --- |
| Session Ended\nBy User or Host; | User, Host, application or network has ended the session. | If the user did not end the session, most likely host or network issues. Troubleshoot the customer's environment. | T1113, T1114, T1161, T1171, T1187 and T1194 |
| Server Packet Error; | Bad Protocol detected. | Usually a result of bad cabling, power or faulty transceiver. Also, will receive this if the Mobile Unit is in the wrong mode for Server operation. | --- |
| Error receiving host\nlist from Server; | Bad Protocol detected. | Usually a result of bad cabling, power or faulty transceiver. Also, will receive this if the Mobile Unit is in the wrong mode for Server operation. | --- |

| Message | Reason | Solution | Reference Tech Note |
|--|--|---|---------------------|
| Unexpected Server\data received; | Bad Protocol detected. | Usually a result of bad cabling, power or faulty transceiver. Also, will receive this if the Mobile Unit is in the wrong mode for Server operation. | --- |
| Error starting/host application; | Connected to the server but can not connect to the distant end. | Configure the server handler to access the host application. | --- |
| Select Host or App; | Need to choose your Host/application destination. | User selection required. | --- |
| Connecting...; | Attempting to connect to the Host/application. | Advisory message. | --- |
| TCP Error/Reading IP Address/REBOOT MOBILE UNIT; | Mobile Unit missing Network IP information. | Configure the Mobile Unit with the correct network IP information. | --- |
| Printer start error; | Could not initialize the printer. | Cable or power issue with the printer. | --- |
| Battery too low/nto print; | Not enough power to print. | Replace the battery with a fully recharged battery. | --- |
| Paper Feed Error/Fix Then Hit Enter; | Paper in the printer is not ready. | Replace the paper or rethread the paper in the printer. | --- |
| Printer Error/Print Ended; | Can not print. | Check cable, battery, communication settings and paper in the printer. | --- |
| User Count Exceeded./n Session Ended; | Possible authorization issue. | Verify that you have the correct number of licenses for the number of Mobile Units you are using. | --- |
| Primary Unavailable/Trying Alternate; | First Host IP address not available trying the remaining addresses in the Host list. | Verify the host address. | --- |

| Message | Reason | Solution | Reference Tech Note |
|---|--|---|---|
| APMAC.DAT Error\nSession Ended; | Access point Media Access Control error. | Most likely a range, access point, radio, host or network issue. Troubleshoot the customer's environment. | T1113, T1114, T1161, T1171, T1187 and T1194 |
| MUIP.DAT Error\nSession Ended; | Mobile Unit IP Error. | Most likely a Mobile Unit network setting issue. Troubleshoot the customer's environment. | T1113, T1114, T1161, T1171, T1187 and T1194 |
| Missing Subnet IP\nSession Ended; | Mobile Unit IP Netmask Error. | Most likely a Mobile Unit network setting issue. Troubleshoot the customer's environment. | T1113, T1114, T1161, T1171, T1187 and T1194 |
| Error Opening File; | File is missing. | Verify that the configuration files are on the Mobile Unit. Or perhaps there is a hardware failure. | --- |
| Telnet API\nnot found; | Program files are missing. | Reload program files. | --- |
| Battery Low Warning\n\nReplace Battery Soon; | Not enough power to operate the Mobile Unit. | Replace the battery with a fully recharged battery. | --- |
| No Host List.\nPress any key\nTo Edit Host IP's; | Have not configured your target hosts. | Configure the target host IP addresses. | --- |
| Unable to Allocate\nFont Memory; | Mobile unit does not have enough memory to load the fonts. | Reduce the fonts in use or expand the memory in the mobile unit. | --- |
| Font Loading Error; | Could not load the font. | Ensure that the font is available to load. | --- |
| Printer Not Ready\nPress R to Retry\nC to Cancel Print; | Can not print. | Check cable, battery, communication settings and paper in the printer. | --- |
| Mobile Unit in\nDemonstration Mode\nfor TwinClient; | Running in demo mode. | Purchase a license from Connect. | --- |

| Message | Reason | Solution | Reference Tech Note |
|---|--|---|---------------------|
| Connected to Host; | Successful connection to the target Host. | Advisory message. | --- |
| Telnet Mode not supported on this Mobile Unit; | This Mobile Unit must be used with a Connect Server. | Order a Connect Server. | --- |
| Telnet Setup files not found. Reload files then switch; | Customer specific configuration files are missing. | Load the configuration files into the Mobile Unit from Twin Client Manager. | --- |
| Switched Client to Telnet Direct Mode; | Mobile Unit running in Telnet mode direct to the target Host. | Advisory message. | --- |
| Switched Client to Server Based Mode; | Mobile Unit running through a Connect server in Server mode usually at port 1800. | Advisory message. | --- |
| Port 23 is only allowed in Telnet Mode; | Can not set the port to 23 in Server mode. Port 23 is the standard Telnet port. | Advisory message. | --- |
| Not Enough Memory To Run; | Mobile Unit does not have the capacity to run the program do to memory restrictions. | Expand the Mobile Unit memory. | --- |
| Press any key; | Press a key to continue. | Advisory message. | --- |
| TwinClient Telnet; | Prompt. | Advisory message. | --- |
| TwinClient Server; | Prompt. | Advisory message. | --- |
| TwinClient TN3270; | Prompt. | Advisory message. | --- |

| Message | Reason | Solution | Reference Tech Note |
|------------------------|---------------|-------------------|----------------------------|
| TwinClient TN5250; | Prompt. | Advisory message. | --- |
| TwinClient TNVT/HP; | Prompt. | Advisory message. | --- |
| (c) 1991-2006 Connect; | Prompt. | Advisory message. | --- |
| Edit Menu Options; | Menu Title. | Advisory message. | --- |
| Edit Mobile Unit IP; | Menu Option. | Advisory message. | --- |
| Edit Server/Host IPs; | Menu Option. | Advisory message. | --- |
| Edit Radio Option; | Menu Option. | Advisory message. | --- |
| Edit License Key; | Menu Option. | Advisory message. | --- |
| Run Site Survey; | Menu Option. | Advisory message. | --- |
| Switch Client Modes; | Menu Option. | Advisory message. | --- |

| Message | Reason | Solution | Reference Tech Note |
|---|--|---|---|
| Run TwinClient; | Menu Option. | Advisory message. | --- |
| Exit to OS; | Menu Option. | Advisory message. | --- |
| Printer may not be plugged in or turned on! | Can not print. | Check cable, battery, communication settings and paper in the printer. | --- |
| OUT OF RANGE OF BASE; | Mobile Unit out of the coverage area. | Most likely a range, access point, radio, host or network issue. Troubleshoot the customer's environment. | T1113, T1114, T1161, T1171, T1187 and T1194 |
| CONNECT SERIAL CABLE; | Serial cable not connected to the Mobile Unit. | Check cable, battery and communication settings for the Mobile Unit. | --- |
| REMOVE SERIAL CABLE; | Remove serial cable from to the Mobile Unit. | Check cable, battery and communication settings for the Mobile Unit. | --- |
| PLACE IN CRADLE; | Place the Mobile Unit in the cradle. | Advisory message. | --- |
| REMOVE FROM CRADLE; | Remove Mobile Unit from the cradle. | Advisory message. | --- |
| ACQUIRING CRADLE BUS; | Attempting to access the cradle through the serial port you have configured. | Advisory message. | --- |

| Message | Reason | Solution | Reference Tech Note |
|---|---|---|---|
| Printer Out\nOf Range; | Printer out of the coverage area. | Most likely a range, access point or radio issue. Troubleshoot the customer's environment. | T1113, T1114, T1161, T1171, T1187 and T1194 |
| Connection Refused\nBy Host; | You connected to the target host but the host disconnected you. | Verify that the configuration file has the correct Mobile Unit type and New environment variable set. Fallback to the Connect Default to verify the connection. | --- |
| Connection Timed Out; | You connected to the host but did not logon in the appropriate time so the host disconnected you. | Modify the Host parameters for login. | --- |
| Connection Failed\nHost Not Responding; | Could not connect to the Host. | Most likely a range, access point, radio, host or network issue. Troubleshoot the customer's environment. | T1113, T1114, T1161, T1171, T1187 and T1194 |
| Connection Failed\nHost Unreachable; | Could not connect to the Host. | Most likely a range, access point, radio, host or network issue. Troubleshoot the customer's environment. | T1113, T1114, T1161, T1171, T1187 and T1194 |
| Mobile Unit Out\nOf Range, Unable\nTo Transmit; | Mobile Unit out of the coverage area. | Most likely a range, access point, radio, host or network issue. Troubleshoot the customer's environment. | T1113, T1114, T1161, T1171, T1187 and T1194 |
| Mobile Unit Out\nOf Range, Unable\nTo Receive; | Mobile Unit out of the coverage area. | Most likely a range, access point, radio, host or network issue. Troubleshoot the customer's environment. | --- |
| Printer Not\nResponding; | Can not print. | Check cable, battery, communication settings and paper in the printer. | --- |
| Printer Out\nOf Range; | Printer out of the coverage area. | Most likely a range, access point or radio issue. Troubleshoot the customer's environment. | T1113, T1114, T1161, T1171, T1187 and T1194 |

| Message | Reason | Solution | Reference Tech Note |
|--|--|---|---|
| Print Complete; | Prompt. | Advisory message. | --- |
| Reprint (Y/N)?; | Yes or No prompt for a reprint. | Advisory message. | --- |
| WARNING; | Prompt. | Advisory message. | --- |
| Turning power off\nduring a session\nwill cause the\nprogram to restart; | This Mobile Unit will disconnect the session if powered off. | Mobile Unit manufacturer limitation. Advisory message. | --- |
| Are you sure (y/n)?; | Yes or No prompt for a confirmation. | Advisory message. | --- |
| You Sure? (YyNn); | Yes or No prompt for a confirmation. | Advisory message. | --- |
| Domain Name Server\n\nNot Set; | DOMAIN NAME SERVER not configured. | Configure the Mobile Unit with the correct network IP information. | --- |
| Domain Name Server\n\nQuery Memory Error; | Memory error on the Mobile Unit | Expand the Mobile Unit memory or return the Mobile Unit for repair. | --- |
| Domain Name Server\n\nQuery Sending Error; | Mobile Unit out of the coverage area. | Most likely a range, access point, radio, host or network issue. Troubleshoot the customer's environment. | T1113, T1114, T1161, T1171, T1187 and T1194 |
| Domain Name Server\n\nQuery Receive Error; | Mobile Unit out of the coverage area. | Most likely a range, access point, radio, host or network issue. Troubleshoot the customer's environment. | T1113, T1114, T1161, T1171, T1187 and T1194 |
| Domain Name Server\n\nUnavailable; | Could not connect to the DOMAIN NAME SERVER. | Most likely a range, access point, radio, host or network issue. Troubleshoot the customer's environment. | T1113, T1114, T1161, T1171, T1187 and T1194 |

| Message | Reason | Solution | Reference Tech Note |
|--|--|--|---|
| Error loading\nparameter file; | Could not load the parameter file. | Reload the correct configuration files. | --- |
| Could not open\ntelnet interface; | Could not Telnet. | Reload the program files. | --- |
| Could not set\ntelnet options; | Could not use the Telnet configuration. | Reload the correct configuration files. | --- |
| Setup file\nsetting mismatch\nReload Setup; | Emulation program selected is not compatible with the configuration file on the Mobile Unit. | Remove the emulation and configuration files. Run clear Telnet on the Mobile Unit then reload the Mobile Unit with the proper emulation and configuration files. | --- |
| Display formatting\ntoo large for\ncurrent screen; | Mobile Unit does not have enough memory to run your configured reformatted screens. | Expand the Mobile Unit memory or order a server from Connect. | --- |
| Mobile Unit\ninitialization error; | Mobile Unit problem. | Return the Mobile Unit to the manufacturer for repair. | --- |
| Host/App/Network\nclosed the session; | Customer's environment disconnected the Mobile Unit session. | Most likely a range, access point, radio, host or network issue. Troubleshoot the customer's environment. | T1113, T1114, T1161, T1171, T1187 and T1194 |
| Disconnecting...; | Prompt. | Advisory message. | --- |
| Scan Barcode; | Bar code scanning test. | Advisory message. | --- |

| Message | Reason | Solution | Reference Tech Note |
|---|-------------------------|---|---|
| Enter Setup\nPassword; | Prompt. | Advisory message. | --- |
| Enter Profile \nPassword; | Prompt. | Advisory message. | --- |
| Host IP; | Host IP address prompt. | Enter target host IP address. | --- |
| Host Name; | Host name prompt. | Enter target host Name. | --- |
| Port; | Host IP port required. | Enter 23 for Telnet or 1800 for a Connect server. Could also be a different number depending on the customer's environment. | T1113, T1114, T1161, T1171, T1187 and T1194 |
| Mobile Unit Type; | Prompt. | Advisory message. | --- |
| WARNING: This will \nend any\nccurrent session; | Prompt. | Advisory message. | --- |
| Continue (Y/N)?; | Prompt. | Advisory message. | --- |
| HOST ENTRY; | Prompt. | Advisory message. | --- |
| VT(100/220)HP Setup; | Prompt. | Advisory message. | --- |

| Message | Reason | Solution | Reference Tech Note |
|----------------------|---------------|-------------------|----------------------------|
| Mobile Unit Info; | Prompt. | Advisory message. | --- |
| Emulation Setup; | Prompt. | Advisory message. | --- |
| ANSI Setup; | Prompt. | Advisory message. | --- |
| Miscellaneous Setup; | Prompt. | Advisory message. | --- |
| Mobile Unit Type; | Prompt. | Advisory message. | --- |
| Control Codes; | Prompt. | Advisory message. | --- |
| Local Echo; | Prompt. | Advisory message. | --- |
| <BK SP> Sends; | Prompt. | Advisory message. | --- |
| New Line Mode; | Prompt. | Advisory message. | --- |
| Insert Mode; | Prompt. | Advisory message. | --- |

| Message | Reason | Solution | Reference Tech Note |
|-------------------|---------------|-------------------|----------------------------|
| Autowrap Mode; | Prompt. | Advisory message. | --- |
| Cursor; | Prompt. | Advisory message. | --- |
| EMULATION SETUP; | Prompt. | Advisory message. | --- |
| Mobile Unit Type; | Prompt. | Advisory message. | --- |
| Local Echo; | Prompt. | Advisory message. | --- |
| Map Underline; | Prompt. | Advisory message. | --- |
| Break Key; | Prompt. | Advisory message. | --- |
| ANSI Setup; | Prompt. | Advisory message. | --- |
| Control Codes; | Prompt. | Advisory message. | --- |
| Backspace Key; | Prompt. | Advisory message. | --- |

| Message | Reason | Solution | Reference Tech Note |
|----------------------|---------------|-------------------|----------------------------|
| MISCELLANEOUS SETUP; | Prompt. | Advisory message. | --- |
| Test Options; | Prompt. | Advisory message. | --- |
| Login Options; | Prompt. | Advisory message. | --- |
| TEST OPTIONS; | Prompt. | Advisory message. | --- |
| Printer Test; | Prompt. | Advisory message. | --- |
| Scan Code Test; | Prompt. | Advisory message. | --- |
| LOGIN OPTIONS; | Prompt. | Advisory message. | --- |
| User Name; | Prompt. | Advisory message. | --- |
| User Password; | Prompt. | Advisory message. | --- |
| ON; | Prompt. | Advisory message. | --- |

| Message | Reason | Solution | Reference Tech Note |
|--------------------|---------------|-------------------|----------------------------|
| OFF; | Prompt. | Advisory message. | --- |
| Map; | Prompt. | Advisory message. | --- |
| Don't Map; | Prompt. | Advisory message. | --- |
| Enable Break; | Prompt. | Advisory message. | --- |
| Disable Break; | Prompt. | Advisory message. | --- |
| 7 bit; | Prompt. | Advisory message. | --- |
| 8 bit; | Prompt. | Advisory message. | --- |
| Send Delete; | Prompt. | Advisory message. | --- |
| Send Backspace; | Prompt. | Advisory message. | --- |
| Mobile Unit Setup; | Prompt. | Advisory message. | --- |

| Message | Reason | Solution | Reference Tech Note |
|-------------------|---------------|-------------------|----------------------------|
| Scanner Options; | Prompt. | Advisory message. | --- |
| Program Options; | Prompt. | Advisory message. | --- |
| Special Options; | Prompt. | Advisory message. | --- |
| Beeper Options; | Prompt. | Advisory message. | --- |
| Exit to DOS; | Prompt. | Advisory message. | --- |
| Backlight Time; | Prompt. | Advisory message. | --- |
| Enter Key Action; | Prompt. | Advisory message. | --- |
| Reset Options; | Prompt. | Advisory message. | --- |
| Font Size; | Prompt. | Advisory message. | --- |
| Portable Printer; | Prompt. | Advisory message. | --- |

| Message | Reason | Solution | Reference Tech Note |
|--------------------|---------------|-------------------|----------------------------|
| Reprint Option; | Prompt. | Advisory message. | --- |
| Data IDs; | Prompt. | Advisory message. | --- |
| Internal/External; | Prompt. | Advisory message. | --- |
| Modify Beeps; | Prompt. | Advisory message. | --- |
| Message Beeps; | Prompt. | Advisory message. | --- |
| Scan Identifier; | Prompt. | Advisory message. | --- |
| AID Scan Setup; | Prompt. | Advisory message. | --- |
| Long Scans; | Prompt. | Advisory message. | --- |
| Scan Send; | Prompt. | Advisory message. | --- |
| Yes; | Prompt. | Advisory message. | --- |

| Message | Reason | Solution | Reference Tech Note |
|-----------------------|---------------|-------------------|----------------------------|
| No; | Prompt. | Advisory message. | --- |
| Normal; | Prompt. | Advisory message. | --- |
| Double Wide; | Prompt. | Advisory message. | --- |
| Double High; | Prompt. | Advisory message. | --- |
| Double High and Wide; | Prompt. | Advisory message. | --- |
| Errors Only; | Prompt. | Advisory message. | --- |
| Automatic; | Prompt. | Advisory message. | --- |
| All Messages; | Prompt. | Advisory message. | --- |
| Reject; | Prompt. | Advisory message. | --- |
| Truncate; | Prompt. | Advisory message. | --- |

| Message | Reason | Solution | Reference Tech Note |
|------------------|---------------|-------------------|----------------------------|
| Split; | Prompt. | Advisory message. | --- |
| Do Not Send; | Prompt. | Advisory message. | --- |
| Always Send; | Prompt. | Advisory message. | --- |
| Last Field Only; | Prompt. | Advisory message. | --- |
| Internal; | Prompt. | Advisory message. | --- |
| External; | Prompt. | Advisory message. | --- |
| none; | Prompt. | Advisory message. | --- |
| monarch; | Prompt. | Advisory message. | --- |
| pddumb; | Prompt. | Advisory message. | --- |
| comtec; | Prompt. | Advisory message. | --- |

| Message | Reason | Solution | Reference Tech Note |
|-----------------|---------------|-------------------|----------------------------|
| rascal; | Prompt. | Advisory message. | --- |
| codewriter; | Prompt. | Advisory message. | --- |
| comtec(S); | Prompt. | Advisory message. | --- |
| User Name; | Prompt. | Advisory message. | --- |
| Password; | Prompt. | Advisory message. | --- |
| Frequency: Hz; | Prompt. | Advisory message. | --- |
| Duration: ms; | Prompt. | Advisory message. | --- |
| Delay: ms; | Prompt. | Advisory message. | --- |
| Select Scanner; | Prompt. | Advisory message. | --- |
| Setup Scanner; | Prompt. | Advisory message. | --- |

| Message | Reason | Solution | Reference Tech Note |
|-------------------|---------------|-------------------|----------------------------|
| Scan Test; | Prompt. | Advisory message. | --- |
| Scan Operation; | Prompt. | Advisory message. | --- |
| Laser; | Prompt. | Advisory message. | --- |
| Contact/Pulse; | Prompt. | Advisory message. | --- |
| Contact/No Pulse; | Prompt. | Advisory message. | --- |
| Auto/Pulse; | Prompt. | Advisory message. | --- |
| Auto/No Pulse; | Prompt. | Advisory message. | --- |
| Wand Simulation; | Prompt. | Advisory message. | --- |
| VT100; | Prompt. | Advisory message. | --- |
| VT220; | Prompt. | Advisory message. | --- |

| Message | Reason | Solution | Reference Tech Note |
|-----------------------|---------------|-------------------|----------------------------|
| HP700; | Prompt. | Advisory message. | --- |
| SETUP; | Prompt. | Advisory message. | --- |
| Mobile Unit IP/Radio; | Prompt. | Advisory message. | --- |
| Host List; | Prompt. | Advisory message. | --- |
| NULL; | Prompt. | Advisory message. | --- |