



5900 SERIES Mobile Mount Radio Data Terminal

USER'S GUIDE

PN: 961-047-121
Revision A
August 1998

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Send your comments to:
Publications Department
Intermec Technologies Corporation
550 Second Street SE
Cedar Rapids, IA 52401
Telephone (319) 369-3100
Facsimile (319) 369-3453

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FCC Computer Compliance

" NOTICE

This equipment meets Class A digital device limits per Part 15 of FCC Rules. These limits protect against interference in a commercial area. It emits, uses, and can radiate radio frequency energy. If you do not install and use the equipment according to its instructions, it may interfere with radio signals. Using it in a residential area is likely to cause interference. If this occurs, you must correct the interference at your expense.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning our equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- " Reorient or relocate the radio or television receiving antenna.
- " Increase the separation between the computer equipment and receiver.
- " Connect the equipment into an outlet on a circuit different from that to which the radio or television receiver is connected.
- " Consult the dealer or an experienced radio or television technician for help.

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Section 1

User Information

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About this Manual

This User's Guide contains a product introduction and General Information (Section One), Installation Instructions (Section Two), and User Interface information (Section Three).

Section One

The General Information section is most useful to the end user. It describes the ON/OFF switch, cable connections, the display, and the keyboard.

Detailed operating instructions are *not included* in this manual because these will vary with your company's application program and host computer system.

Section Two

The Installation Instructions are intended for the installation technician. Section Two contains a parts list and illustrated instructions for installing the power cable and for mounting the radio data terminal.

Section Three

The User Interface section is intended primarily for the system programmer, but also contains information useful to the end user. The user interface consists of the keyboard, the display, and the menus to customize terminal functions.

General Information

The Mobile Mount Radio Data Terminal is a powerful real-time data collection computer for warehouse and automated material handling environments. The computer electronics, radio module, power converter, keyboard, and the large display are all housed within a single metal container that is designed to meet NEMA-3 standards.

Installation

Installs easily on motorized load handling equipment such as a forklift truck. Then, adding a few command codes to your existing software is all that is needed to get the system up and running in your operation.

Keyboard

The alphanumeric keyboard has extra large keys for use when wearing gloves, while the large, back-lighted display is visible from a distance under varied lighting conditions.

How it Works

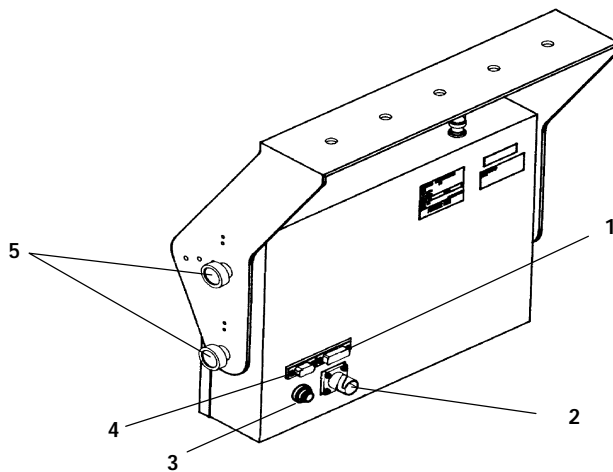
Radio Data Terminals are often referred to as real-time devices. When you enter data into the unit, the radio module transmits that information (or your request for information) immediately to a base unit. From there, the information goes directly to a host computer. If the entry was a request for information, the host computer transmits it back to the Radio Data Terminal that made the request.

Real time processing assures that the most current and accurate information is available to the host computer and to all mobile units.

The Terminal

The illustrations in Figure 1-1 and Figure 1-2 will familiarize you with the external features of the Mobile Mount Radio Data Terminal. Each work day you should check to make sure that:

- " The antenna connector is secure.
- " All mounting knobs are tight.
- " The power cable is secure.
- " The scanner cable is secure.
- " The RS-232 communication cable (if so equipped) is secure.



1. RS-232 connector
2. Power connector
3. On/Off switch
4. Scanner connector
5. Mounting knobs

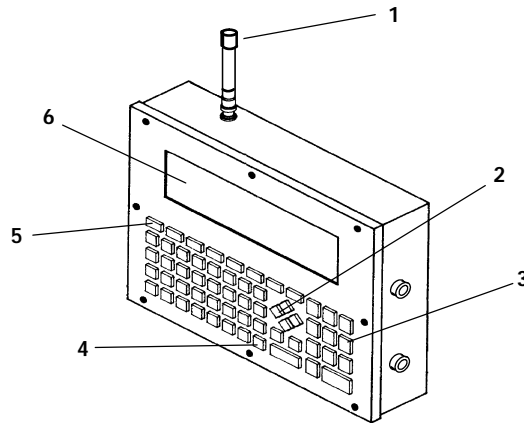
Figure 1-1
Terminal Rear View

On/Off Switch

This is a push-push type switch located on the rear of the unit next to the power connector. Press the switch once to turn the unit ON. Press the switch a second time to turn the unit OFF. When the unit is turned ON, the backlight comes on and a message appears on the display.

The Display

The display shows current information such as your most recent scan or manual entry and certain information received from the host computer. User Interface menus and selections are also shown on the display whenever the operating system must be customized. A keyboard adjustable (see User Interface, Section 3 of this manual) backlight improves visibility of the display.



- 1. Antenna
- 2. Cursor (arrow) keys
- 3. Numeric keys
- 4. Miscellaneous keys
- 5. Function keys
- 6. Display

Figure 1-2
Terminal Front View

Status Indicators

The display also shows a group of status indicators (icons). Their location on the display can be changed through the User Interface menus. These status indicators tell you:

- cursor location by row and column number:
01,02 = row 1, column 2
- whether transmitting or receiving:
transmit = arrow pointing away from radio
receiving = arrow pointing toward radio
- keyboard lockout:
a large X = keyboard lockout ENABLED
*(host computer is preventing
the keyboard from working)*

The Keyboard

The keyboard has 58 keys that can produce up to 32 different functions. This is not as complicated as it sounds. For instance, there are 26 alphabet keys that combine with the **SHIFT** key to produce upper and lower case letters.

Number Keys

There are ten number (or “numeric”) keys arranged in a familiar ten-key format. Four cursor movement keys (right, left, up, down) are arranged in a diamond pattern next to the number keys.

Function Keys

Across the top of the keyboard are eight function keys (F-1 thru F-8). The function keys can be expanded by the use of the left shift and the right shift keys which are the two keys located below the cursor keys. These shift keys are color-coded to correspond with the functions that are printed to the left or right above each of the F-keys. Thus the left shift key expands the function keys to F-9 thru F-16, while the right shift key expands the functions to F-17 thru F-24.

Miscellaneous Keys

The key with the left-pointing arrow serves as a **DELETE** key, which eliminates one character to the left each time you press it.

Use the **SHIFT** key to produce uppercase letters.

The two keys above the **SHIFT** key have their functions printed above each key, and to the right of each key. The function to the right of each key is its *unshifted* value while the designation above each key is its *shifted* (use a **SHIFT** key) value.

Maintenance

Your terminal requires very little maintenance. Clean the terminal and the display periodically, and perform the daily checks listed below. If a failure message appears on the display, the Radio Data Terminal may need to be sent to an authorized service facility for repair or adjustment. Contact your authorized service representative for further instructions.

Cleaning

A recommended cleaner for the exterior of the Mobile Mount Radio Data Terminal is MICRO-CLEAN II cleaner, made by Foresight International, Inc., 4887 F Street, Omaha, Nebraska 68127-0205 (phone: 1-800-637-1344).

Use a soft, lint-free cloth dampened with a quality glass cleaner to clean the display area.

Daily Checks

Each work day you should check to make sure that:

- The antenna connector is secure.
- All mounting knobs are tight.
- The power cable is secure.
- The scanner cable is secure.
- The RS-232 communication cable (if so equipped) is secure.

Factory Service

When products must be shipped for repair:

- " Package in original shipping carton if possible.
- " Fill out a Product Service Information Card and include this card with the product.

If the original shipping container is not available, appropriate packaging materials can be substituted. If in doubt, contact your authorized service representative for instructions.

Table 1-1
Specifications

Physical

Size:	2.4 inches X 8.9 inches active area (display) (6.0 cm. X 22.5 c. h x w) 12.5 inches X 10.0 inches X 3.0 inches (enclosure)* (31.75 cm X 25.4 cm X 7.62 cm 1,w,d) *add 3.25 inches (8.25 cm) for antenna
Weight:	13.75 pounds (6.24 kilograms) with bracket
Keyboard:	58-key elastomer, tactile feel

Environmental

Operating Temperature:	Standard: -4 to +122 °F (-20 to +50 °C) Low Temp: -22 to +122 °F (-30 to +50 °C)
Storage Temperature:	-22 to +158 °F (-30 to +70 °C)
Humidity:	0-90 percent, non-condensing

Radio

Spread method:	direct sequence with multiple codes
Frequency range:	902-928 MHz
Power output:	1.0 watt
Process gain:	17dBm
Synchronization time:	250 μsec, maximum
RF communication speed:	192 Kbps.

Electrical

Communication ports:	15-pin RS-232C 9-pin, 5-volt scanner interface
Input voltage:	supports 12-56 VDC systems

Standards

FCC:	Meets FCC Class A limits
EMI:	MIL-STD-810D (designated to meet but not tested to NEMA-3)

Specifications (continued)

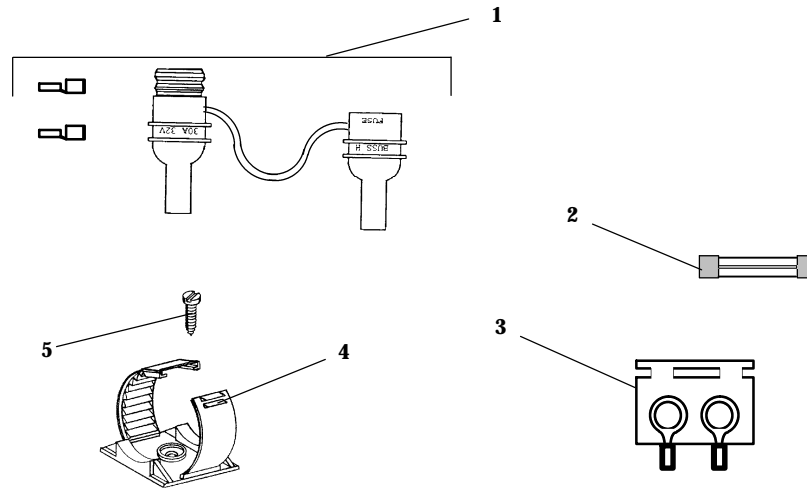
Power output: 2.0 watts, frequency modulated (FM)
Frequency range: UHF Private Land Mobile Radio Service (crystal-controlled on assigned frequency)
Receiver sensitivity: -90 dBm
RF communication speed: 4800/9600 bps.

Section 2

Installation Instructions

*Table 2-1
Parts List
kit NPN: 203-300-005*

Quantity	Description	Part #
1	Fuse holder	315-062-001
1	Fuse (15 amp, 250 volt)	315-064-001
2 each	Terminal ring (3/8")	809-083-027
1	External power cable	216-858-001
2 each	Bolt, 3/8" X 1-1/2"	800-099-001
4 each	Washer, 3/8"	803-099-001
4 each	Nut, 3/8"	802-099-001
1	Mounting bracket	699-781-001
4 each	Knob	805-460-002
4 each	Lock washer	803-027-000
8 each	Adjustable cable clamp	808-011-001
8 each	Sheet Metal Screw (#6 X 5/8")	800-008-001



1. Fuse holder
2. Fuse (15 amp, 250 volt)
3. Terminal ring (3/8-inch)
4. Cable clamp
5. #6 sheet metal screw

Figure 2-1
Parts Identification

Tools Required for Installation

1. Wire crimping and stripping tool.
2. An electric drill, #26 drill bit.
3. Common hand tools.

Introduction

The Mobile Mount Radio Data Terminal can be mounted on motorized load-handling equipment such as a forklift. During this installation the power cable is wired directly to the vehicle battery or bank of batteries. This direct connection takes advantage of the filtering and regulation capabilities of storage batteries.

The case and the power input of the terminal are electrically isolated from each other. This means it does not make any difference if the vehicle has a positive or negative ground electrical system. It is important to make sure that you connect all wiring exactly as instructed in this manual.

A power supply-converter built into the Mobile Mount Radio Data Terminal accepts a wide range (12-56 volts d.c.) of input voltages (see *Specifications*). **If the overall vehicle voltage exceeds 56 volts**, you should tap into the bank of batteries at a point that is 56 volts or less.

Since each situation or equipment type may pose unique requirements, mounting hardware selection and mechanical installation of the Mobile Mount Radio Data Terminal shall be the responsibility of the installer. We recommend using 3/8-inch nuts and bolts, with flat and lock washers to install the mounting bracket.

This kit contains nuts, bolts, washers, and two (3/8- inch) terminal rings for connecting the electrical cable *directly* to the vehicle battery. A waterproof in-line fuse holder must be installed between the positive battery terminal and the red wire in the power cable.

Power Cable Routing

Decide where you will mount the bracket for the Mobile Mount Radio Data Terminal, then proceed with the instructions below.

1. Completely install the power cable *before* connecting the unit.
2. Begin installation by routing the cable *from* the general area where the terminal will be mounted. Work *toward* the battery.

Take extra care to make sure:

- " Cable routing will not endanger the operator.
- " Cable routing will not harm other equipment.
- " Cable routing does not invite damage to the cable.

B CAUTION: *Avoid having the cable pinched, stepped on, overheated, or snagged on passing equipment.*

3. Cut the power cable near the battery to eliminate the need for coiling excess cable.

B CAUTION: *Do not cut the cable too short to reach the battery terminals.*

4. Strip the gray power cable jacket back 12-14 inches.

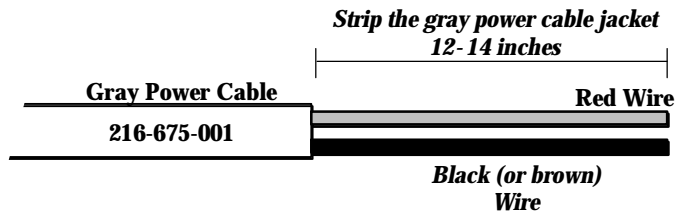


Figure 2-2
Stripping the Power Cable Jacket

Power Cable Assembly

The power cable *must* have an in-line fuse installed *before* making final connections to the vehicle battery. You must also crimp the 3/8 inch terminal rings to the wire ends.

Assembling the In-line Fuse Holder

The in-line fuse holder consists of a rubber boot, two crimp-type fuse clips, and a 15 amp fuse. Carefully follow these instructions to assemble the in-line fuse holder.

1. Locate the in-line fuse holder components.
2. Cut the red wire in the gray power cable, midway between its end and the gray cable jacket. Save the 6-7 inch length of red wire.
3. Strip approximately 1/4-inch of insulation from the red wire that extends from the power cable; also strip 1/4-inch of insulation from *both ends* of the 6 inch length of red wire saved in step #2.
4. Slide the longer portion of the in-line fuse holder boot (yellow rubber) over the red wire that extends from the power cable.
5. Slip a fuse clip onto this wire and crimp the clip onto the wire.
6. Slip the remaining fuse clip onto one end of the 6 inch wire saved from step #2 and crimp securely.
7. Slide this wire into the other half of the fuse holder boot. Insert the fuse into the fuse clips and snap the halves of the fuse holder boot together.

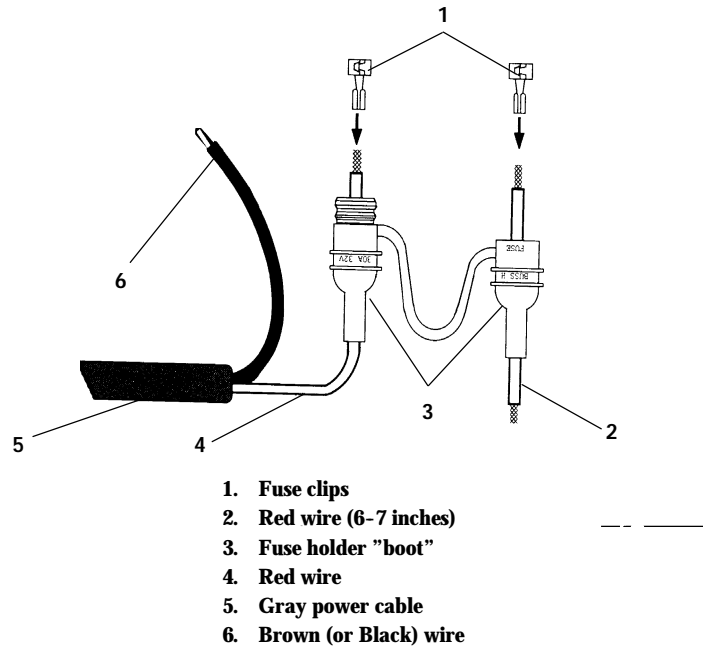


Figure 2-3
Assembling the In-Line Fuse Holder

Terminating Wire Ends

Crimp 3/8-inch terminal rings to the stripped end of the brown wire and to the red wire from the fuse holder. See the battery drawing and instructions for recommended assembly to connect the cable to the vehicle battery.

1. Strip approximately 1/4" of insulation from the brown (or black) wire from the power cable.
2. Crimp the 3/8" terminal ring onto this wire.
3. Fasten the brown (or black) wire to the negative battery terminal.
4. Crimp a 3/8" terminal ring onto the red wire from the end of the in-line fuse holder.
5. Fasten this wire to the positive battery terminal.

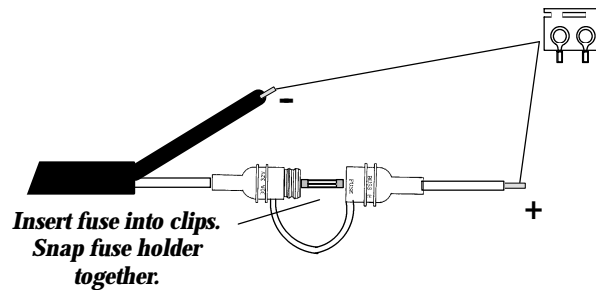
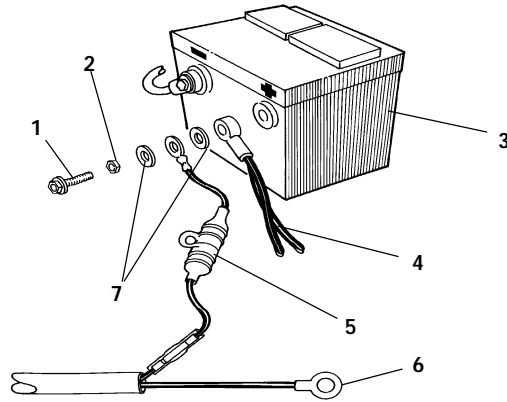


Figure 2-4
Terminating Wire Ends



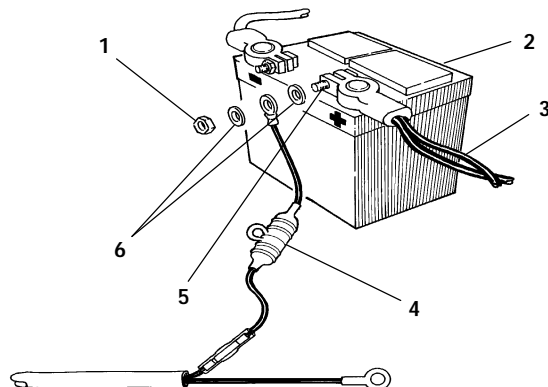
- 1. Bolt
- 2. Nut
- 3. Vehicle battery
- 4. Vehicle battery cable
- 5. In-line fuse holder
- 6. Terminal ring
- 7. Washers

Figure 2-5
Side Mount Battery

Side Mount Battery Connection

1. Remove both battery cable retaining screws from the vehicle battery.
2. Screw a 3/8" nut as far as it will go onto a 3/8" x 1-1/2" bolt.
3. Slip a 3/8" flat washer onto the bolt.
4. Slide the *positive (red wire)* terminal ring of the 7524Norand power cable onto the bolt.
5. Slip a second 3/8" flat washer onto the bolt.
6. Slide the vehicle *positive* battery cable onto the bolt.
7. Thread the bolt assembly into the *positive* battery terminal; tighten securely.
8. Tighten the nut installed in step #2 against the washers and battery terminals.

Repeat steps #2 thru #8 for the negative wire (**black or brown**) from the power cable, hooking up the wires to the negative battery terminal.

Power Cable Connection

1. 3/8" nut
2. Vehicle battery
3. Vehicle battery cable
4. Fuse link
5. 3/8" X 1-1/2" bolt
6. 3/8" washers

Figure 2-6
Top Mount Battery

Top Mount Battery Connection

Connect the *positive* (**red** wire) terminal ring from the power cable to the positive battery terminal, as shown, using a 3/8" x 1-1/2" bolt, a flat washer on each side of the terminal ring, and two 3/8" nuts. Connect the *negative* (**black** or **brown** wire) terminal ring from the power cable to the *negative* battery terminal, using a 3/8" x 1-1/2" bolt, a flat washer on each side of the terminal ring, and two 3/8" nuts.

Secure the Power Cable

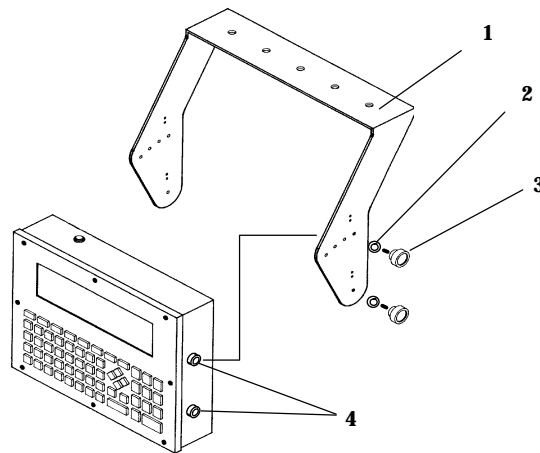
Secure the power cable every 18 inches with adjustable cable clamps. Work *from* the battery, toward the mounting area for the mobile mount radio data terminal. Remove the paper backing from a clamp and stick the clamp in place while drilling a pilot hole with a #26 drill bit. Use #6 sheet metal screws to permanently hold clamps in place.

Mounting the Terminal

The mounting kit consists of a pre-drilled mounting bracket, four mounting knobs, and four lock washers. Use *at least two sets* of 3/8" bolts, nuts, flat washers and lock washers to install the mounting bracket. Since installations can vary and may require different bolt lengths, that hardware *is not furnished* in this kit and must be purchased locally. Mounting bolts should be evenly spaced.

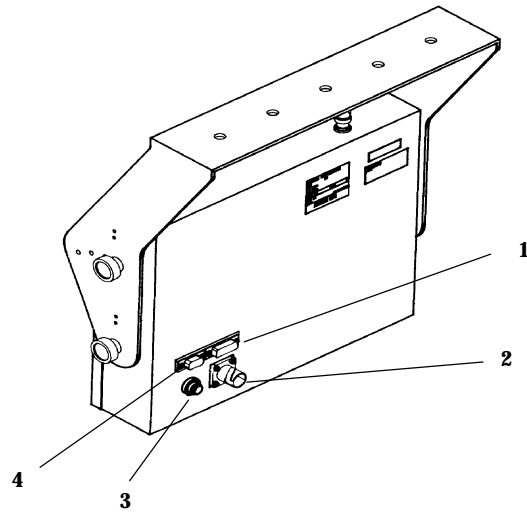
Install the mounting bracket and tighten all hardware securely. Support the Mobile Mount Radio Data Terminal so the standoffs line up with the desired holes in the mounting bracket. Note that the upper holes are arranged in an arc to adjust the viewing angle of the unit.

Place a lock washer (provided in kit) onto each mounting knob, then screw knobs through the holes and into the standoffs. Tighten knobs securely to hold the terminal in place.



- 1. Bracket
- 2. Lock washer
- 3. Knob
- 4. Standoffs

Figure 2-7
Mounting the Terminal



1. 15-pin connector
(communication)
2. Power connector
3. On/Off switch
4. 9-pin connector
(scanner)

Figure 2-8
Cable Connections

Connections to the Terminal

Connect cables as shown in Figure 2-8. Simply align each cable connector to the appropriate connector on the terminal and push them together. In addition, you must turn the power cable connector clockwise to lock it in place.

The 15-pin connector may be used for peripheral devices such as a printer or a scale. Not all installations use this connector.

ON/OFF Button

Push this button once to turn the Mobile Mount Radio Data Terminal **on**. Push the button a second time to shut the unit **off**.

Desktop Installation Kit Instructions

Table 2-2
Parts List
kit NPN: 203-300-006

Quantity	Description	Part #
1	Mounting bracket	699-781-001
4	Knobs	805-460-002
4	Lockwashers	803-027-000
8	Adjustable clamps	808-011-001
8	Self-tapping screws (pan head, #6 x 5/8")	800-008-001
1	External power cable	216-860-001
1	AC power cord	321-054-001
1	NC4000 power supply	851-013-002

Kit Description

This kit contains a power supply, power cables, and mechanical hardware to permit desktop (nonvehicular) operation of the Mobile Mount Radio Data Terminal.

The power cable furnished in this kit has the correct connector on one end to fit the terminal; the other end of the cable has a push-in/screw-collar connector to fit the NC4000 Power Supply.

Instructions

Mounting Bracket

Experiment with the terminal and the mounting bracket to determine the bracket arrangement that will provide you with the best viewing angle. Use two knobs and two lock washers on each side to attach the bracket to the terminal. Use 3/8-inch hardware if you will be attaching the mounting bracket to a desk, counter top, or shelving.

NC4000 Power Supply

Locate and identify the 10-foot external DC power cable (NPN: 216-860-001) in this kit along with the AC power cord. One end of the DC power cable has a metal collar and plugs into the three-pin connector (shown) on the NC4000 Power Supply.

Connect the DC Power Cable

1. Align the pins and push the round connector into the power supply.
2. Screw the collar into place. Do not overtighten.
3. Route the cable toward the terminal.
4. Align the cable connector to the power jack and push the connector firmly into the jack.
5. Turn the collar on this connector clockwise to lock it in place.
6. Use the cable clamps and screws in this kit to secure the cable, making a neat installation.

Connect the AC Power Cable

1. Plug the female end of this cable into the NC4000.
2. Plug the male end of this cable into a standard, grounded, three-prong wall outlet.

Do not use an adapter to defeat the electrical ground.

The installation is complete.

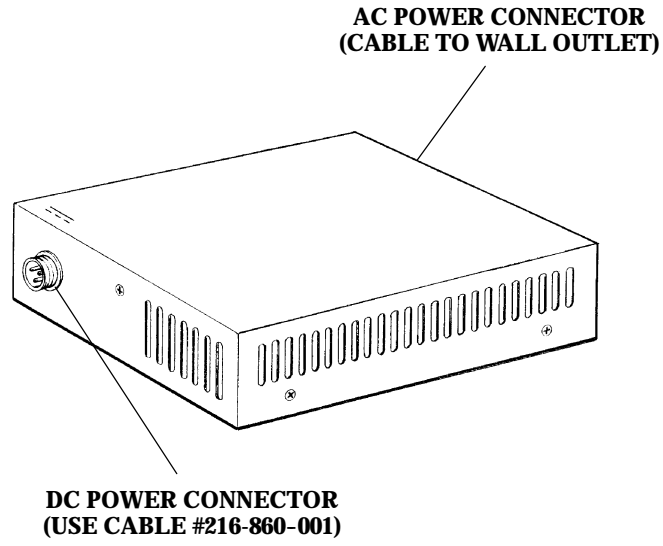


Figure 2-9
The NC4000 Power Supply

Section 3

User Interface Instructions

Introduction

The user interface for the Mobile Mount Radio Data Terminal consists of the keyboard, the display, and the operating system (program) that allows you to customize the unit operation.

The first section of this manual has already described the keyboard and the display; *this* section of the manual tells you how to use the operating system itself.

NOTE:

The application program (unique to your specific business or industry) is entirely separate from the operating system and the keystrokes may have slightly different meanings between the two types of programs.

Since the operating system is presented to you as a series of menus on the display, the following pages are arranged in a similar fashion.

Conventions

Conventions are the rules to follow when going through the menus and making (or not making) various choices. These rules are important to understand and remember because they apply to *most* of the menus within the operating system. If a particular menu requires a unique response, this is noted in the text that goes with that menu.

The darkened (e.g., **darkened**) word or phrase below represents the key(s) you must press, followed by an explanation of what that action accomplishes.

The Keyboard

Accessing the Menu

Press the **LEFT SHIFT** and then the **MENU** (SPACE) key to access the Main Menu.

ENTER Key

Press this key to go to the next whole (parent) menu. Multiple presses of this key cause the program to act as a loop, taking you back, eventually, to the starting point.

1 (or 2, 3, 4, 5, etc.)

Many menus have numbered choices. You must press the corresponding number to make a selection. If that menu remains on the display, the choice will be high-lighted (meaning that particular function or choice is turned ON) and you can then make additional selections from the same menu. You must press the **ENTER** key to confirm the settings and exit this type of menu.

In some cases, when you press a number to make a selection, a different menu (submenu) displays. These allow you to modify the choice made in the parent menu. After the modification(s), you may (depending on the menu and function) be permitted to return to the parent menu to make additional selections.

Other menus require a numerical input but do not necessarily have simple choices such as 1, 2, 3, 4, etc. Instead, you may have to enter a number from 0-32, or 1-255, or some other figure. These instances will be detailed in the text that applies to those menus or in the menu drawings.

UP Arrow and DOWN Arrow

Use these keys to adjust the length and volume of the audible (buzzer) functions, Keyclick and Error Tone. The arrow keys adjust other functions such as the contrast on the display and the screen size.

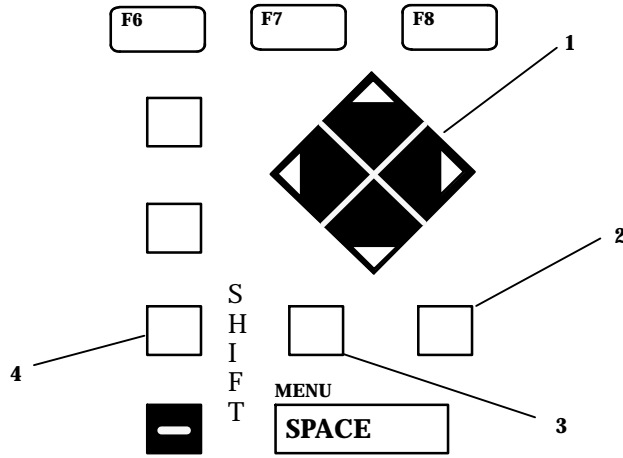
Arrow keys can be made to function more efficiently, in many cases, by pressing the **FUNC** or **ALT** key, then pressing the desired arrow key.

Entry Errors

The message "Range is" displays and the numerical value of the range is shown. You must enter a value within that range.

Right Shift/Space

Press the **RIGHT SHIFT** key and then the **SPACE** key to change the size of displayed text from large to small, or vice-versa.



1. Arrow Keys
2. Right Shift
3. Left Shift
4. Alpha Shift

SHIFT key
Use this key to shift the alpha keys between upper and lower case.

MENUS
To access user menus, press the LEFT shift key, then the SPACE (menu) key.

Main Menu

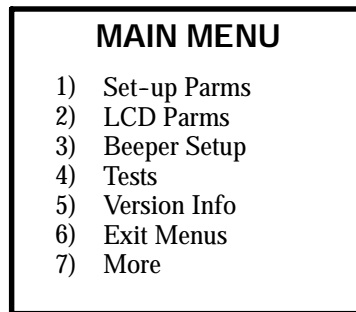
Press the **LEFT SHIFT** and *then* the **MENU (SPACE)** key to call up the main menu. The main menu appears on the display. You can then enter a number (1 thru 7) to make a selection. Making a selection of 2, 3, 4, 5, or 7 will cause that menu to display. If you select number 1, you must enter the password (**CR52401**) for that menu to become available to you.

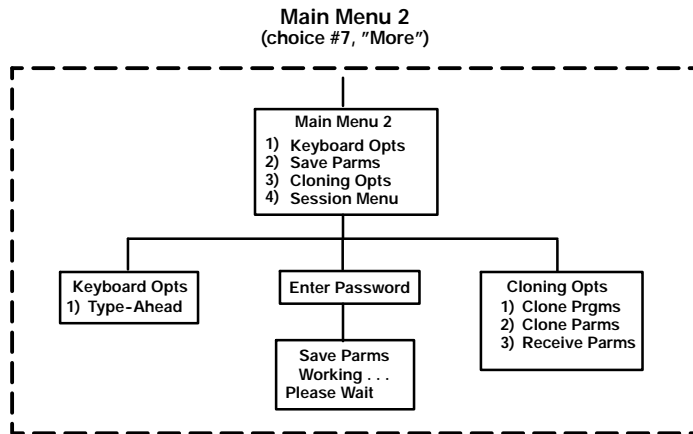
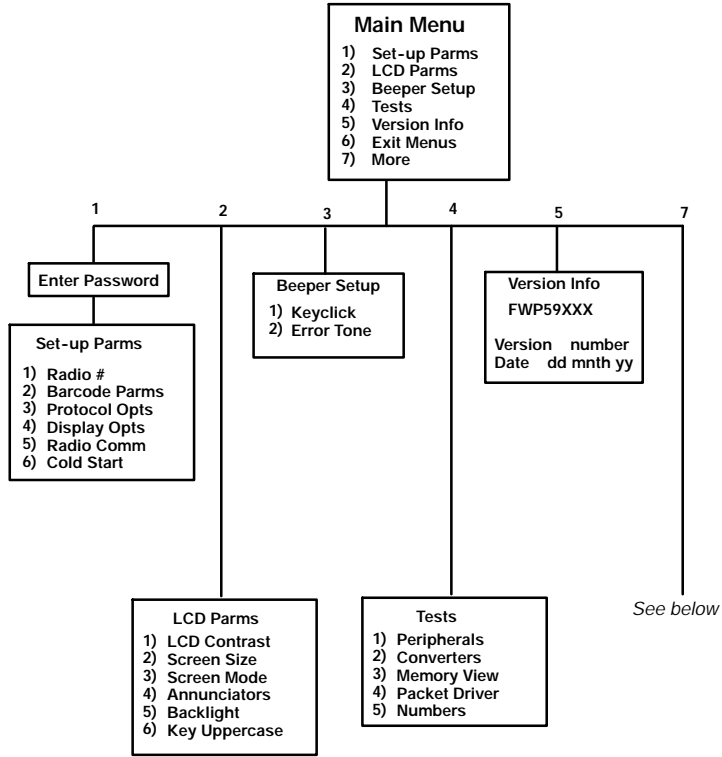
Selection 1, Set-Up ParmS, and Radio Tests (first part of selection 4, Tests), are password-protected to guard against unwanted changes or loss of data. If the display asks for a password, you must enter a combination of seven (7) alpha (letters) or numeric (number) characters to access the protected menu.

Exit Menus

When you are done making changes or adjustments to your terminal, press number 6 (Exit Menus) to return to normal operation.

If the main menu is not displayed, press the **ENTER** key several times until it does, then press number 6 when the main menu displays to return to normal operation.





Main Menu

Set Parameters

This menu is password protected to prevent unauthorized changes to the way the terminal operates, or to prevent loss of data. You can change the following parameters for the current (foreground) session only:

- " the number that designates this radio
- " barcode parameters
- " protocol options
- " display options

See Session Menu to determine or change the current session.

Radio

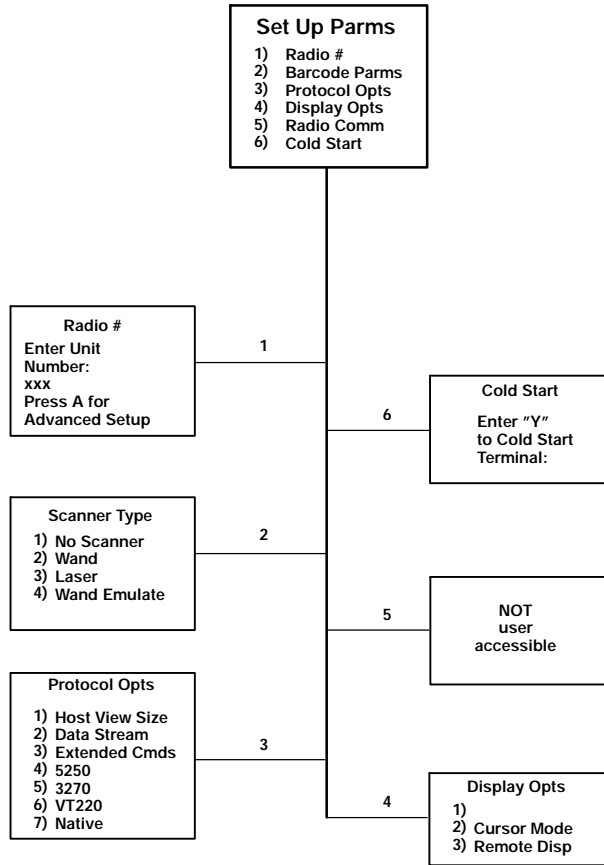
This submenu (selection #1 in the Set-Up Params menu) displays the *current* terminal identification number. Changing the number restarts the terminal, which then reports the new number to the host computer.

All previously made terminal setup choices remain intact when a restart is forced as a result of changing the terminal identification number.

Advanced Setup options under the Radio # menu are used to define parameters for communicating to multiple host systems or to systems that support multiple data streams.

Barcode Params (goes directly to Scanner Type menu)

This selection (choice #2 in the Set Parameters menu) allows you to designate if the terminal is connected to a scanner, and if so, to specify the type of scanner. You are then guided through additional menus to customize the way your terminal responds to various bar code types.



" **NOTE:** *Parameter settings you make only apply to the current session. If more than one session is available to you, use the Session Menu (#4 in Main Menu 2) to verify or change the current session before making parameter settings.*

Advanced Setup (Radio #)

This sub menu can be used to define parameters for communicating in a multiple host environment. In the "Advanced Setup" menu (SST and OWL *only*), you designate the session to be modified in the following menus.

Note that all of the menu functions shown may not actually be available to you: this depends upon whether or not multiple hosts exist, and whether or not different data streams are supported.

The LAN ID range is 0-254 with the RM60/70 radios, and is 0-15 with RM80/90 radios. The Radio Configuration option allows you to configure RM60/70-equipped terminals for specific modes and frequencies.

Host A

The designator ("Host A") will display "B or "C", etc., depending upon the selection made in the previous menu.

With the first of these menus, you can designate the data stream *for this session only*. You must specify the data stream for each different session.

The second of these menus allows you to specify the radio ("unit") number to be used *for this session only*. This number is specific to this host and session type. If you create a second or third session, a different radio number can be entered for each session.

The third menu displays the data stream previously selected for this particular session and the radio number designation. This menu allows you to designate the target host for this particular session.

" **NOTE:** Selections in these menus apply only to the current session. Use the Session Menu to verify or change the current session.

```

Radio #
-----
Enter Unit
Number: xx
Press A for
Advanced Setup
    
```

(A)

```

Advanced Setup
-----
LAN
X
    
```

```

Advanced Setup
-----
Radio Config#
XXX
ENTER
    
```

```

Advanced Setup
-----
1) Host A
2) Host B
3) Host C
ENTER
    
```

```

Host A
-----
1) Native
2) 3270
3) 5250
4) VT220
ENTER
    
```

ENTER

```

Host A
-----
Enter Unit
Number: xxx
    
```

This number is specific to the host and session type for this designated session.

ENTER

Enter the name of the target host.

```

Host A
(host emulation)
Unit XXX
Enter Host Name:
xxxx
    
```

'ADVANCED SETUP' APPLIES TO SST & OWL ONLY

Enter a number, 0 thru 7

RM60/70 Radio Terminal Configuration

Value	Resulting Settings
0	Mode 1, 225Kbps
1	Mode 1, 225 Kbps
2	Mode 2, Channel 10, 90 Kbps
3	Mode 2, Channel 15, 90 Kbps
4	Mode 2, Channel 20, 90 Kbps
5	Mode 2, Channel 25, 90 Kbps
6	Mode 2, Channel 30, 90 Kbps
7	Mode 2, Channel 35, 90 Kbps
8	Mode 2, Channel 40, 90 Kbps
9	Mode 3, 450 Kbps

Barcode Parm *(continued)*

The Barcode Parm flowchart shows four screens (e.g., Scanner Type, Scan Options, Scan Options [1], Scan Options [2], plus their option menus). You must press the **ENTER** key to pass from Scanner Type to Scan options, and again to pass from one scan options menu to the next. After you have made all choices and options, press the **ENTER** key while in the Scan Options menu to return to the Set Parameters parent menu.

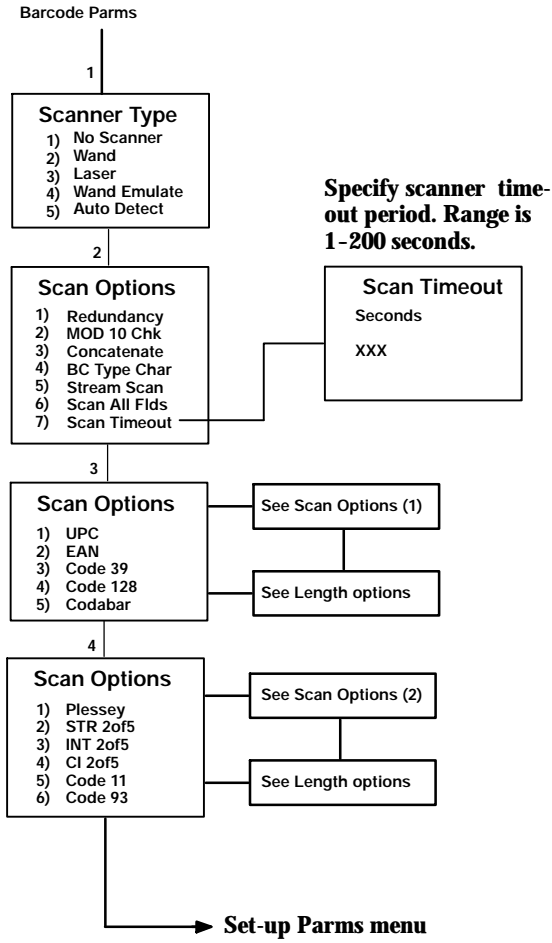
Scanner Type

Lets you designate the type of scanner that is connected to the terminal. With selection 1, "No Scanner," you can verify or pre-set the various scanner and barcode options, with the intent of connecting a scanner at a later time. At that time, you must designate the scanner type so that the terminal recognizes and responds to the scanner. Enter a number, 1 thru 5, then press the **ENTER** key to go to the next menu.

Scan Options

Allows bar code industry standard options (Redundancy, Mod 10 Chk, Concatenate, etc.) to be enabled or disabled, and designates how the terminal handles scanner-derived data (BC Type Char, Auto Tab Scan, and Auto Enter Scan). Settings for the data handling options will be specified by the host programmer.

Within this menu, Scan Timeout (choice #7), allows you to specify the scanner timeout period. You can select from 1-200 seconds. For instance, shorten the timeout period when using a proximity scanner to reduce error scans; when using a long-range scanner it may be helpful to extend the timeout period to allow for more accurate scanner aiming.



Scan Options [1]

Designates the bar codes to be recognized by the terminal. When you select a bar code type, an option menu (see Scan Options [1]) displays to further define your choice. If you will not be selecting a bar code type within the Scan Options [1] menu, press the **ENTER** key to go directly to the Scan Options [2] menu.

When all of the options for a particular bar code have been selected, you must press the **ENTER** key. The next menu allows you to set the minimum and maximum lengths (of the selected bar code) that will be recognized by the terminal. After designating those lengths, press the **ENTER** key to return to the Scan Options [1] menu, where you can make another selection.

When all desired bar codes, their options, and their lengths have been set in the scanner options menus, press the **ENTER** key to move to the Scan Options [2] menu.

Scan Options [2]

Designates additional bar codes to be recognized by the terminal. When a bar code type is selected, an options menu displays to further define your choice. If you will not be selecting a bar code type within the Scan Options [2] menu, press the **ENTER** key to return to the Set Parameters menu.

When you have selected all of the options for a particular bar code, you must press the **ENTER** key. The next menu allows you to set the minimum and maximum lengths of the selected bar code that will be recognized. Press the **ENTER** key to return to the Scan Options [2] menu, where you can make a second (or third, fourth, etc.) selection. When all desired bar codes, their options, and their lengths have been set in this menu, press the **ENTER** key to return to the Set Parameters menu.

You can now make another selection from the Set Parameters menu (press a number, 1 thru 7), or press the **ENTER** key to return to the Main Menu.

UPC
 1) Enabled
 2) Add-on 2
 3) Add-on 5
 4) Sys 1 UPCE
 5) Sys 2 UPCE
 6) Expand E to A

Code 128
 1) Enabled
 2) UCC/EAN

Codabar
 1) Codabar
 2) ABC codabar

EAN
 1) Enabled
 2) Add-on 2
 3) Add-on 5
 4) Expand 8to13

Code 39
 1) Enabled
 2) Chk Digit
 3) Extended
 4) Encoded
 5) Auto-Encoded
 6) Relax Std
 7) Full ASCII

Relax Code 39
 1) Quiet Zone
 2) Data Decode
 3) Element Decode
 4) START Decode

**Scan
Options
[1]**

Plessey
 1) Enabled
 2) Mod 10 Chk
 3) Mod 1 Chk

**Scan
Options
[2]**

Str 2of5
 1) Enabled
 2) Disabled

Int 2of5
 1) Enabled
 2) Chk Digit

Code 11
 1) Enabled
 2) Chk Digit1
 3) Chk Digit 2

CI 2of5
 1) Enabled
 2) Disabled

Code 93
 1) Enabled
 2) Disabled

Other Scan Options [1] & [2]

After making your selection from the scan options menus, an options menu for the chosen bar code type displays. Press the corresponding number(s) to highlight your choice(s) and make the selection(s).

Then, press the **ENTER** key to display the Lengths menu, where you can select minimum and maximum bar code lengths. The display returns to the Scan Options when you press the **ENTER** key.

You can then make another selection within the Scan Options menu, repeating the selection processes described above for each additional menu choice.

Lengths Options

After making your selection from the Scan Options menus, the display progresses to the XXXXXXXX Opts menu ("XXXXXXX" will be the name of the parent menu such as "UPC Opts") where you can select bar code length options.

The first length menu shows only one parameter (Enter Max Len: XX); the second length menu displays the original parameter plus the current (second) one. The Length menu expands, as shown, as you press the **ENTER** key.

Numerical entries, if any, must be between 1 and 99. Illogical entries, such as setting the minimum greater than the maximum, are not allowed.

BARCODE LENGTH MENUS

XXXXXX
Max Length: XX

XXXXXX
Max Length: XX
Min Length: XX

XXXXXX
Max Length: XX
Min Length: XX
Fix Length 1: XX

XXXXXX
Max Length: XX
Min Length: XX
Fix Length 1: XX
Fix Length 2: XX

XXXXXX
Max Length: XX
Min Length: XX
Fix Length 1: XX
Fix Length 2: XX
Fix Length 3: XX

XXXXXX
Max Length: XX
Min Length: XX
Fix Length 1: XX
Fix Length 2: XX
Fix Length 3: XX
Fix Length 4: XX

Screens below allow you to drop up to 15 leading or trailing characters from the bar code. Typically used to remove check digits or non-significant zeros.

XXXXXX
Drop Leading: XX

XXXXXX
Drop Leading: XX
Drop Trailing: XX

Protocol Options

Host View Size

The default value for display width is shown. This option tells the terminal that the host computer sends information in a different size or format.

When the *width* line is highlighted, you can enter a number, 1 thru 80, to change the width of the display.

Data Stream

Specifies the terminal emulation used by the host computer to communicate *to the terminal*. Choices are: (1) Native, (2) 3270, (3) 5250, or (4) VT220.

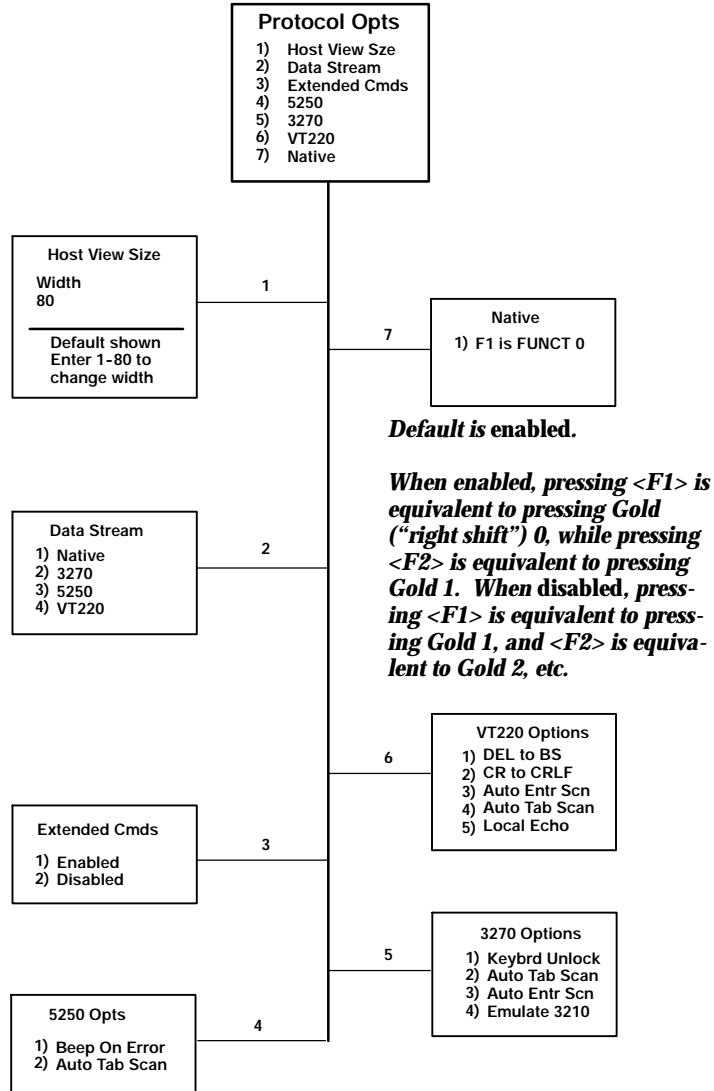
Extended (5250) CMDS

These commands are used by the terminal for functions that are not normally available to the host computer. With this option enabled, the host computer can change these parameters on the terminal:

- " RS-232 communications (e.g., printer)
- " bar code options
- " display screen and font size

VT220/3270/5250 Options

- " **Keyboard Lock** locks the keyboard when the PA-1, PA-2, or the CLEAR key is pressed.
- " **Auto Tab Scan** causes the display to automatically move to the next field after a good scan.
- " **Beep On Error** provides warning of an error while allowing work to progress (keyboard is normally locked when an error occurs).
- " **Local Echo**, when enabled, reduces data transaction time and speeds up transmissions.

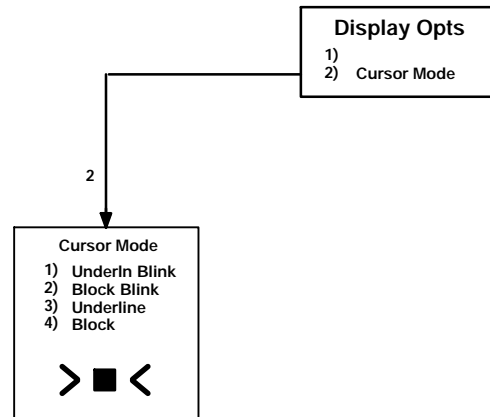


Display Options

Cursor Mode

Specify the cursor style (on the display) that you prefer. The display shows an icon of the selected cursor style. Select one of the following:

1. Underline Blink
2. Block Blink
3. Underline
4. Block Cursor



Cold Start *(not shown)*

You can perform a cold start from this menu. Press the "Y" key to tell the computer that you understand the consequences and that it should perform the cold start. Press any other key, instead of the "Y," to abort the cold start and exit the menu.

Radio Comm

This allows you to specify different communication parameters. Making one of the following selections causes the program to go to a sub-menu so that you can further define that communication function:

- " (Host) Protocol
- " Baud Rate

Protocol

This allows you to choose the communication protocol that the terminal must use to communicate *to the host computer*:

Choices are:

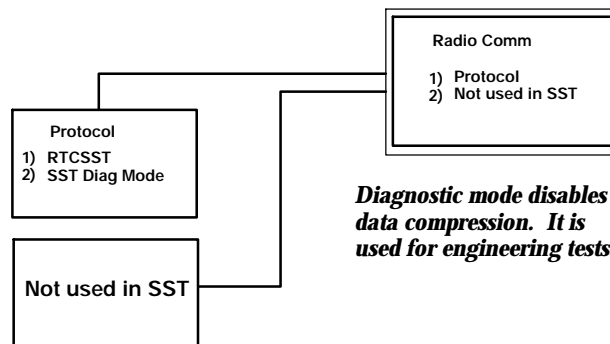
- " SST
- " SST Diag Mode

Baud Rate

In this submenu you will specify the communication speed (rate) at which the terminal talks to the host computer:

Choices are:

1. 4800
2. 4800/9600
3. 9600



Diagnostic mode disables data compression. It is used for engineering tests.

Main Menu

LCD Parm

You can adjust the liquid crystal display (LCD) by:

- " changing the contrast
- " changing the screen size
- " relocating the cursor (Screen Mode)

Contrast

Use the Up and Down arrow keys to adjust the contrast on the display.

Select Size

Use the Up and Down arrow keys to adjust the screen size.

Screen Mode

The purpose of the screen mode selection is to keep the cursor visible on your display. If text is hard to read or modify, select a different Screen Mode.

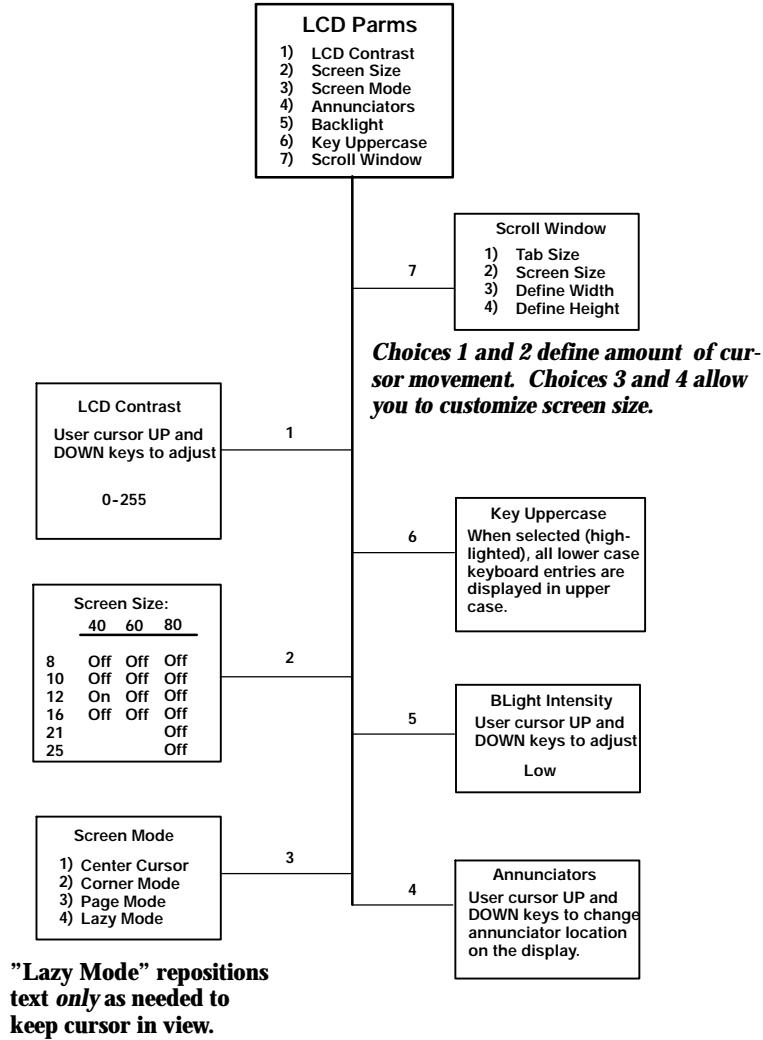
"Center Cursor" (default choice) works best with programs that use the entire 80-column screen. In this mode, the cursor tends toward the center of the display. If the cursor travels very far beyond the center of the display, text is repositioned.

"Corner Mode" and "Page Mode" options also work to keep the cursor on the display. They focus on different areas of the text (corner, or entire page), in an attempt to keep the cursor visible. Corner Mode works best for application programs that use the upper left corner of the display.

"Page Mode" causes the screen to change to the next whole screen whenever the cursor reaches the sides or the upper or lower limits of the current display

Key Uppercase

Letters entered in lowercase show up on the display as uppercase when this option is selected.



" **NOTE:** In the Screen Size (#2) menu above, ON indicates 40 columns by 12 lines is selected. Blank areas indicate "not available."

Display Annunciators

Annunciators show the radio terminal's current status or operation in progress. The following lists some of the annunciators common to all emulations.



Low Battery Annunciator: When the low battery annunciator appears, you may want to connect the battery pack to a charger as soon as possible. (This only applies to hand-held terminals.)

Y

Alpha Character Shift Mode: The terminal keyboard is in the alpha character shift mode—any alpha character keystrokes are entered as uppercase characters.

A

(Colored) Shift Mode: The terminal keyboard is in a colored shift mode—keystrokes enter the symbol or perform the function shown on the **overlay** just to the upper *left* of the key. The color of the key varies depending on the emulation and the terminal type.

"

(Colored) Shift Mode: The terminal keyboard is in a colored shift mode—keystrokes enter the symbol or perform the function shown on the **overlay** just to the upper *right* of the key. The color of the key varies depending on the emulation and the terminal type.

X

Input Inhibited: The keyboard has accepted enough information for the current input field. If the "key ahead" feature is on, the terminal stores the keystrokes made after "input inhibited" appears. The host may also inhibit (lockout) the keyboard upon certain errors or when sending additional information to the terminal.

^

Insert Mode: Characters are inserted, not overwritten.

Again, these are just a few of the display annunciators that are common to all emulations. There are others, specific to individual emulations, that are not shown here.

Annunciator bibliography (emulation/reference source/Norand Part Number)

- " VT220 emulation: *VT220/ANSI Terminal Emulation Programmer's Reference Guide*. (NPN 977-047-037)
- " 5250 emulation: *5250 SNA and Asynchronous Terminal Emulation Programmer's Reference Guide*. (NPN 977-047-039)
- " 3270 emulation: *3270 Terminal Emulation Programmer's Reference Guide*. (NPN 977-047-040)
- " NATIVE emulation: *Native Async Terminal Emulation Programmer's Reference Guide*. (NPN 977-047-038)

Main Menu

Beeper Setup

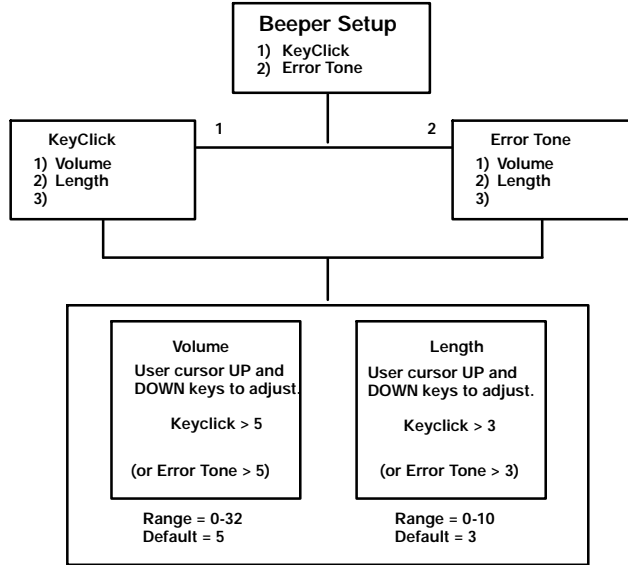
This menu allows you to adjust the volume and the length (duration) of the tone for the audible key click indicator or for the error tone. Volume is adjustable in steps, from 0-32, while Length is adjustable in steps from 0-10. You can select either (1) Key Click or (2) Error Tone from this menu.

Key Click

You can adjust (1) Volume or (2) Length by pressing the corresponding number. Then, use the Up or Down arrow key to make the desired adjustment.

Error Tone

You can adjust (1) Volume or (2) Length by pressing the corresponding number. Then, use the Up or Down arrow key to make adjustments.



Main Menu

Tests

Tests menu has five choices that you select by entering the appropriate number: (1) *Peripherals*, (2) *Converters*, (3) *Memory View* (4) *Packet Driver*, or (5) *Numbers*.

Peripherals (see *Peripherals menu*)

You can test the following from within this menu:

- " Radio
- " RS-232 loop
- " LCD display
- " Keyboard
- " Scanner

Converters

Tests the analog-to-digital (A to D) and the digital-to-analog (D to A) converters. The RSSI (*not available* on all radios) Test offers a choice of graphic displays of the received radio signals.

Memory View

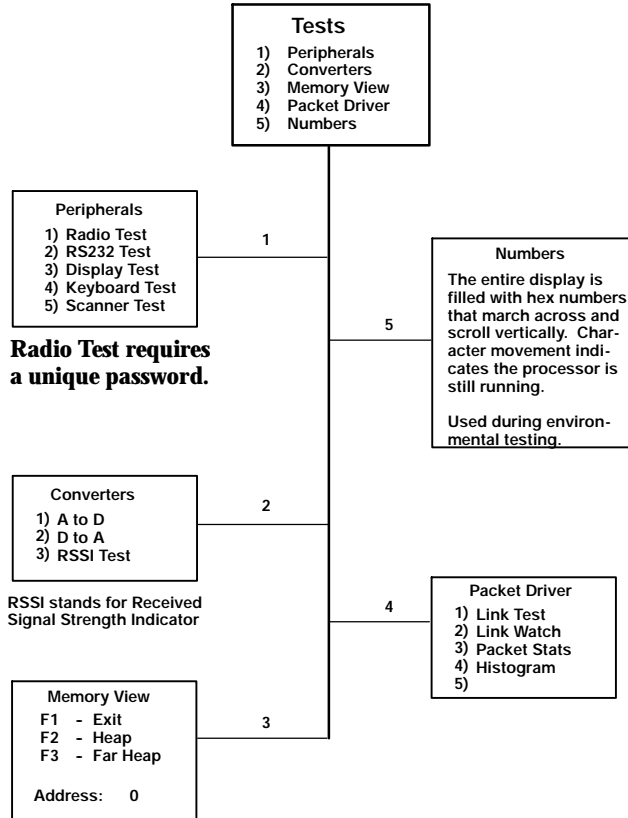
Software engineers use this option to see how much memory is free and how much is used. Press the F2 key to view the heap, or press the F3 key to view the far heap. Press the F1 key to exit Memory View.

Packet Driver

Packet Statistics ("Stats") displays the number of packets and errors sent and received, and shows the number of packets that were dropped.

Numbers

The display fills with moving hex numbers to indicate that the processor is still running. Used to detect lockups during severe operating conditions.



Peripherals Menu

Radio Tests

The Radio test is used for calibration purposes and is password-protected by a unique seven-digit password *before* the menu will display. Technicians and engineers may use these tests to determine the performance of the radio transceiver at different communication speeds and modes of operation.

RS Loop

The RS-232 serial port test requires a special loopback connector which loops back TX to RX, DTR to DSR, and CTS to RTS. An alternating pattern is sent on each output line and checked for validity at the input line. The condition of each line pair is reported on the display as passing or failing the test.

LCD Display

When you select this test, you will be prompted to use the **UP** and **DOWN** arrow keys to vary the contrast. Relative contrast is indicated by a number. You must press the **ENTER** key a total of four times to exit the LCD Display test; pressing the **ENTER** key results in a predetermined test sequence. The fourth press of the **ENTER** key causes the display to return to the Peripherals menu.

Keyboard

This test produces a mockup of the keyboard on the display. Each key is represented by one or more lower case letter x's; press the highlighted key to test it. A good test results in the x's becoming upper case. The cursor then moves to the next key.

Scanner

Attach a scanner and scan bar codes. Codes are displayed and their length is identified.

Enter unique
7-digit password.

Radio Tests
 1) Random Send
 2) Alt Send
 3) Receive
 4) Center Freq.

Random Send
 BAUD RATE:
 4800

**This will be the name of which-
ever Radio Test is in progress.**

**You must enter the baud rate
(4800 or 9600) for each test.**

Random Send
 RADIO TEST
 4800
 Any key
 to stop test
 ON

**Use the F-1 key to set the ON
and OFF duty cycle of the test.**

**Tells if the test is ON or if it
is OFF at this time.**

RS-232 Test
 Attach RS232
 Loopback
 Connector.
 Press ENTER.

RS-232 Test
 RTS-CTS: PASS
 DTR-DSR: PASS
 TX-RX: PASS
 Any Key to Stop

Main Menu

Version Info

This choice from the main menu tells you the version (expressed in an alpha-numeric code) of the firmware stored within your radio data terminal. The date that firmware was released, and the identification number of the terminal are also displayed.

<p>Version Info FWP59xxx Version: N.nn Date: nn/nn/nn</p>

Table 3-1
Firmware Table

Version	Data Stream
FWP59xC0	Native (only)
FWP59xL0	5250 (only)
FWP59xS0	3270 (only)
FWP59xT0	VT220

Main Menu

Exit Menus

This choice is provided in the Main Menu as a separate selection (#6) to ensure against accidental departure from the operating system. You *must* return to the Main Menu and select #6 to exit the operating system.

More

Keyboard Opts

Select (1) Type-Ahead if you want to make keystrokes faster than they can be displayed.

Save ParmS

Select (2) Save ParmS, then enter the seven-digit password (CR52401) if you want to preserve parameter settings. *Make sure the parameters are set correctly before choosing Save ParmS.* Settings that have been saved in this manner are retained when you perform a Cold Start, and also remain effective even when the terminal is turned off and is later turned on.

Use this option sparingly. Each time it is used, it occupies additional memory space because previously saved changes are not erased.

" NOTE:

The Cloning Option described below is NOT ENABLED on 5900 SERIES terminals.

Cloning Opts

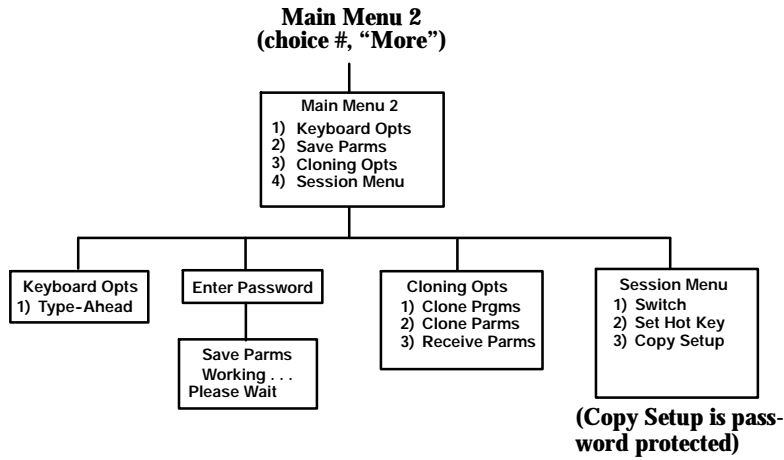
This function allows you to "clone" (copy) either an application program or parameter settings from one terminal (the "source" terminal) to another (the "target" terminal). This requires a cloning cable and *both* terminals must be correctly set up for cloning.

To clone an application program from one terminal to another:

1. Connect the terminals using the cloning cable.
2. Turn the *source* terminal ON, open the Cloning Opts menu, and select #1, "Clone Prgms."
3. Hold down any key and turn the *target* (receiving) terminal ON; the program from the source terminal will be downloaded into the target terminal.

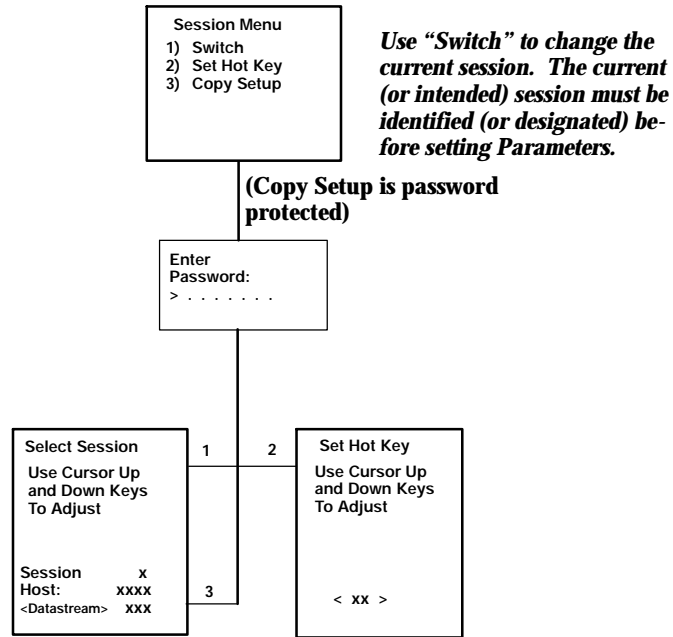
To clone parameters from one terminal to another:

1. Make sure the desired parameters are already set and saved in the source terminal.
2. Connect terminals together via the cloning cable.
3. With both terminals ON, access the Cloning Opts menu.
4. On the source terminal, select menu item #2, "Clone Parm.s."
5. On the target terminal, select menu item #3, "Receive Parm.s."



Session Menu

The Session Menu allows you to define different host communication sessions and to designate a "hot key" that allows switching quickly between different sessions. When you select Set Hot Key, the current hot key is displayed. Use the cursor up and down keys to view the available choices. When the desired key name is highlighted, press **ENTER** to make your selection.



Use "Switch" to change the current session. The current (or intended) session must be identified (or designated) before setting Parameters.

(Copy Setup is password protected)

"Copy Setup" (#3) copies parameters of the background session to the current session.

"Set Hot Key" is only used for terminals that support session switching.

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