Intermec

Technologies Corporation

6110 Hand-Held Computer

USER'S GUIDE

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About This User's Guide

Section 1

Contains general information about the components of your Intermec 6110 Hand-Held Computer. This includes telling you how the user guide is organized, a summary of the sections, and the specifications for your hand-held computer.

Section 2

Tells you how to prepare for using your computer.

Section 3

Contains routine maintenance information for your computer. Routine maintenance includes recharging the main battery pack, and cleaning the computer.

Section 4

Steps you through some procedures to use when troubleshooting your computer. This section does not contain all troubleshooting that can be done by an authorized Customer Support Specialist, but does contain information to aid you in determining the level of assistance you may need.

Appendix A

Contains the pin-outs for the external connectors of your hand-held computer. This section is not usually needed for day-to-day tasks but more to provide technical assistance for interfacing with other manufacturer's products.

Appendix B

Contains the Utilities Program screens. This is system level information for your system administration people when defining and setting parameters to support your application.

Hand-Held Computer Description

Hand-held computers are used in the mobile systems marketplace to perform a wide variety of tasks. This hand-held computer provides features and benefits that include:

- " Fast data processing
- " Large data and program storage
- " Touch screen display
- " Signature capture

Additionally, your computer has the ability to use:

- " PC (Personal Computer) cards
- " Internal modem with PC card size and format

The following descriptions will familiarize you with the name, function, and locations of the main computer components. Figure 1-1, and Figure 1-2, on pages 1-3, show you the location for your hand-held computer key components.
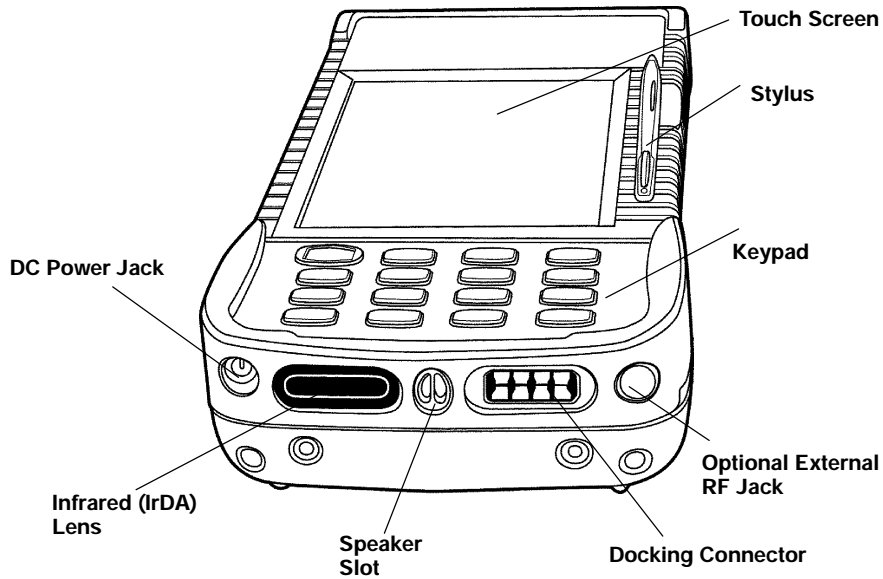
Figure 1-1
Front View
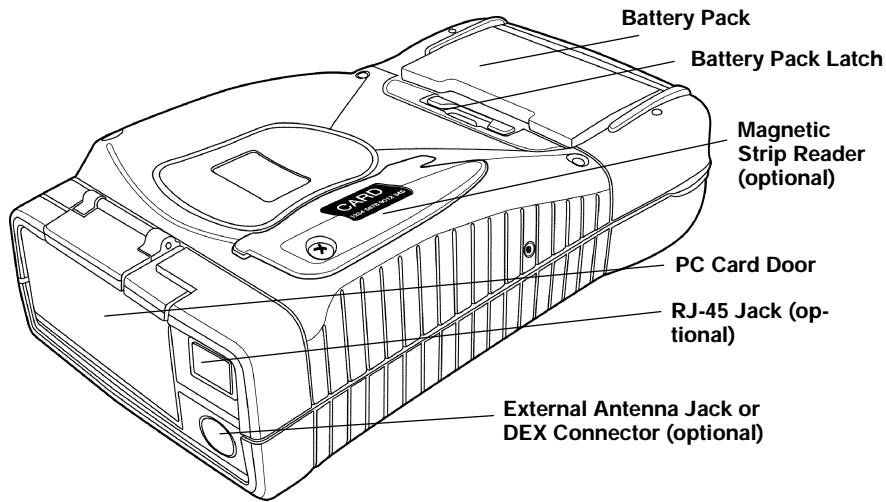
Figure 1-2
Back View

Hand-Held Computer Keyboard

The hand-held computer provides a 16 key keyboard. All keys with the exception of the **I/O** key are programmable for individual functions. Figure 1-3 details the basic keyboard layout.
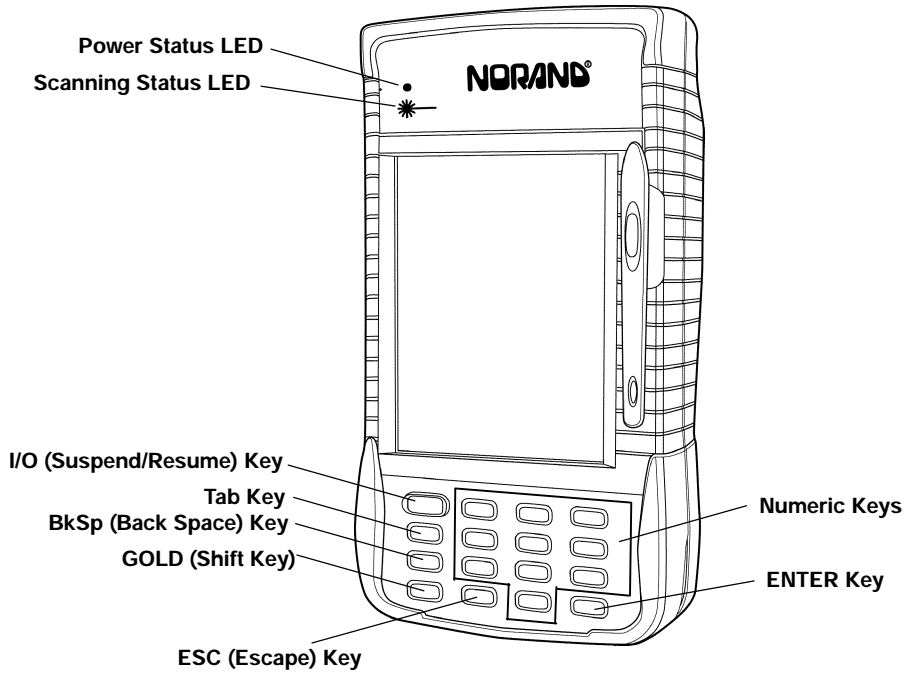
Figure 1-3
16-Key Keyboard

Display

This hand-held computer offers an easy to read Liquid Crystal Display (LCD) with touch screen. The display shows status messages, keyed-in entries, customer or product lists, calculations, and prompts for responses. The touch screen can be used with a stylus, or your finger to choose functions, record signatures, or enter data.

Adjusting the contrast setting for the display is done by pressing the gold Shift key and tap either the 1 (increase) or 2 (decrease) key until you achieve the desired level. Of course, this will depend on if these keys have not been programmed for other functions.

Backlight

Your hand-held computer display and keyboard comes equipped with a backlight. Backlighting provides a great benefit in dark conditions.

Backlighting does, however, reduce battery life, therefore, turn off the backlight when done using.

To turn the backlight on, press the gold Shift key and the 3 key. To turn the backlight off, press gold Shift and the 3 key again. The amount of time the backlight stays on before shutting itself off is set and controlled through the Configuration Program.

Battery

NOTE: *It is important to charge your hand-held computer for at least 14 hours before you use it the first time. This ensures that both the backup battery and the main battery pack are fully charged.*

This hand-held computer uses a 1500 mA hour lithium ion rechargeable main battery pack. Your hand-held computer can check battery capacity by various methods. One, the battery pack has four LEDs that will display remaining ca-

pacity when two of the contacts are touched at the same time. More on this in Section 2 on page 2-9. A second method is to use a software fuel gauge based on the APM 1.1 specification.

If your hand-held computer goes into a shutdown mode because of low battery condition, data is protected by the backup battery. Your computer contains two 100 mA hour vanadium lithium backup batteries. The backup battery charges itself from the main pack or a charging source so it is constantly ready to take over data protection.

This user's guide will occasionally use the term "cycles" when presenting rechargeable battery instructions. Cycles, are the number of times the rechargeable battery pack can be charged and discharged during the life of battery. The Lithium Ion rechargeable battery design, used in the main pack, should give you approximately 500 cycles of use. There are no guarantees on this number because it depends greatly on how the battery pack is used and cared for.

Memory

Three types of memory are available with this computer:

- " Main Memory DRAM
- " Flash ROM
- " PC Cards

Main Memory

Standard main memory DRAM configuration is 8 megabytes (MB), this can be extended to 16, or 32 MBs. Main memory was ordered at the time your unit was purchased. You are able to upgrade to a larger memory size by having a new memory board installed at your Customer Support Center.

The main memory is protected by the backup battery during low main battery conditions or when the main battery pack is removed.

Flash ROM

Flash ROM stores the BIOS and BIOS extensions for your hand-held computer.

PC Cards

Different brands of PC cards can be used in your hand-held computer. Memory cards are available in a variety of sizes and types. Check with your Sales Representative or System Engineer for specific options.

Your computer is equipped with three PC card slots. These slots can be used with memory cards for storage of data, much like a floppy disk drive on a PC. These slots can also be used for modems, radios, hard drives, and other options as they become available.

Two of the PC card slots are version 2.0 Type II and the other slot is an ATA card slot. Type III cards can be installed but you sacrifice slot space. The ATA and two PC slots have card guides, but the empty bay on top does not. There is no blockage between any of the slots, so any pair of Type II bays can accommodate a Type III card.

EXAMPLE: A Type III ATA hard drive card can be installed in the ATA slot, but it takes up the PC slot B bay space. A Type III PC card installed in slot B takes up slot B and A; and a Type III PC card installed in slot A takes up slot A and the empty bay.

Empty Bay

Slot A (typically used for a radio card)

Slot B (typically used for a modem card

Slot C (typically used for a hard drive card or a SanDisk flash ATA card)

Figure 1-4
PC Card Slots

Slot A
Slot B
Slot C

Flashdisk or hard drive card
Slot C

Radio card
Slot A

Modem card
Slot B
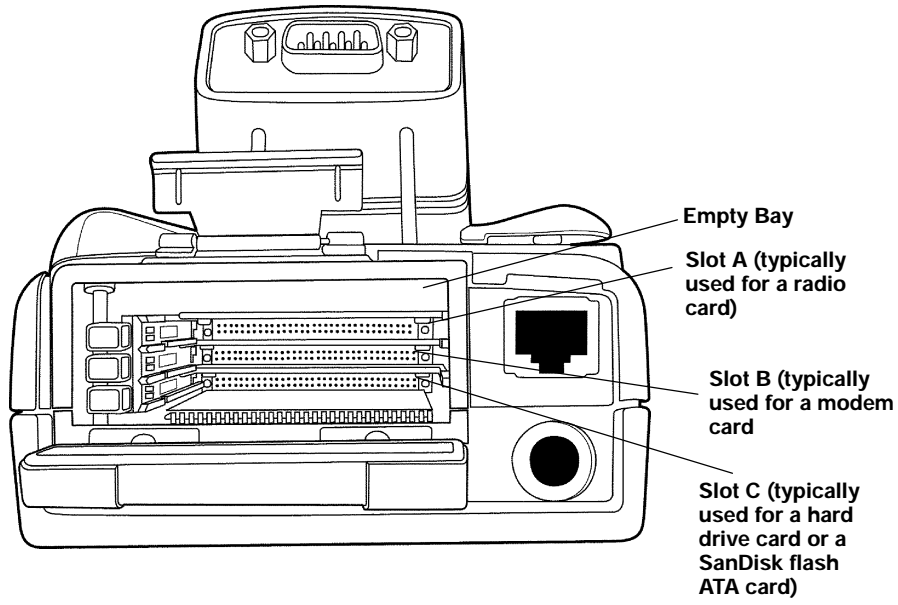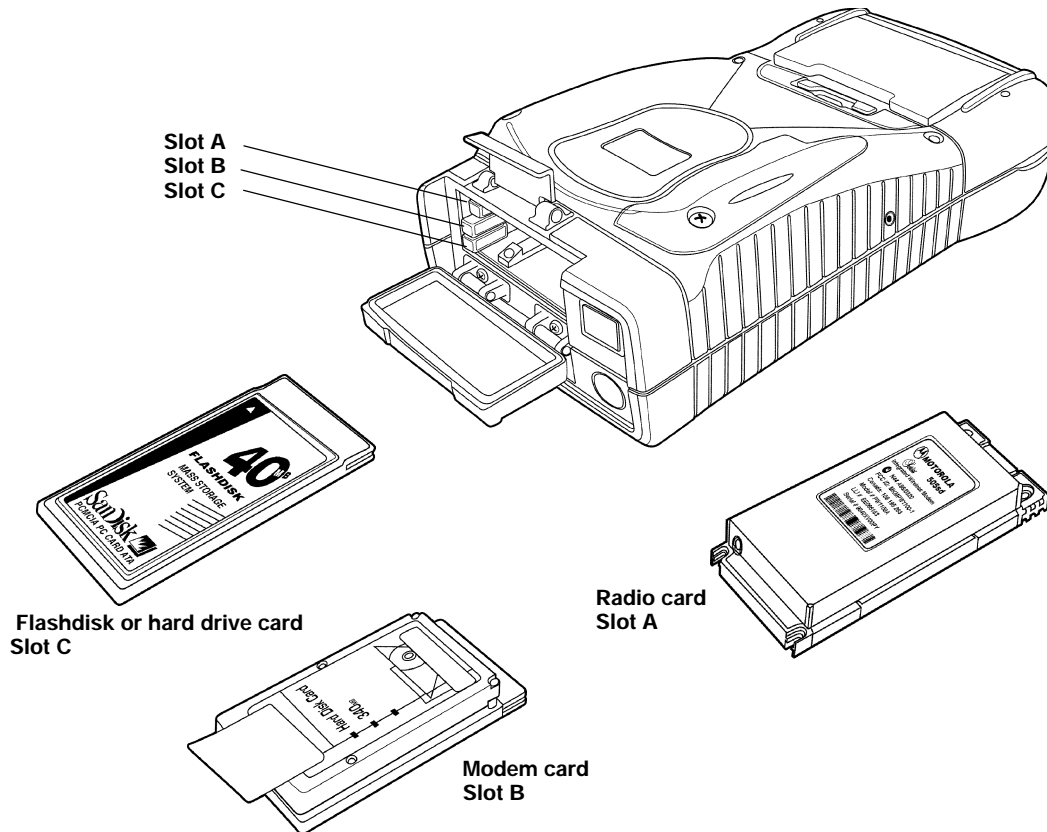
Figure 1-5
PC Card Slots

When a card is installed, the top label of the card faces up-
ward (per the orientation shown in Figure 1-5). Slot C (ATA
slot) must always have a mass storage device to serve as
the system disk (C:). This can be a SanDisk flash memory
card or a rotating hard disk drive. The system will not oper-
ate without this disk present.

Slots A and B are true PC card slots, and can accommodate a variety of pc cards such as modems, radios, or additional mass storage.

A special factory installed option involves a serial interface radio card (example: Motorola Series 500 Radio) for use in slot A. This type of card does not have PC interface, therefore, it cannot be inserted all the way into the connector at the back of the bay. A special bracket holds the card in place, and the serial interface is attached via a flex cable.

" **NOTE:** *Section 2 page 2-11 shows you how to install the PC cards.*

[Gold] (Shift) Key

Hold down and press desired gold (shifted) key functions. Continue to hold down the **[GOLD]** key for each shifted key stroke you wish to make.

[I/O] Suspend and Resume Key

In order to conserve power your hand-held computer may automatically suspend when there has been no activity for a set period of time. This time is determined by the configuration program.

To force a suspend, press the key defined as the suspend key and hold the key down for three seconds. To resume operation, press the **[I/O]** key. Additionally, pressing the release button on the battery pack door forces a suspend. This protects against losing data when removing the battery pack.

Serial Ports

- " **Optional DB9 pod**
- " **Optional RS-232 subset through the DEX connector.**
- " **Optional RS-232 through RJ-45 jack in top of computer.**
- " **IrDA partial serial port through IR lens.**

Resetting

In the rare event that your hand-held computer fails to respond to your input, it may be necessary to "reset." To reset press the Gold (shift), Ctrl, Alt keys at the same time, hold the keys down for three seconds, and your computer will reboot.

Options and Accessories

Radio Card

Your hand-held computer can be ordered with a radio card. Using a radio card allows you to operate in a mobile environment and have real-time interaction with a host computer. The radio card slides into either PC card slot A or B (see page 2-11 for installation and location detail).

Integrated Scanner Pod

⚠️ ***WARNING:***   ***Do not point the scanner at someone's eyes or look directly into it when scanning.***

⚠️ **AVERTISSEMENT:**   **Ne regardez pas la fenêtre du scanner lorsque vous effectuez une scannérisation. Ne pointez jamais le rayon laser vers les yeux de quelqu'un.**
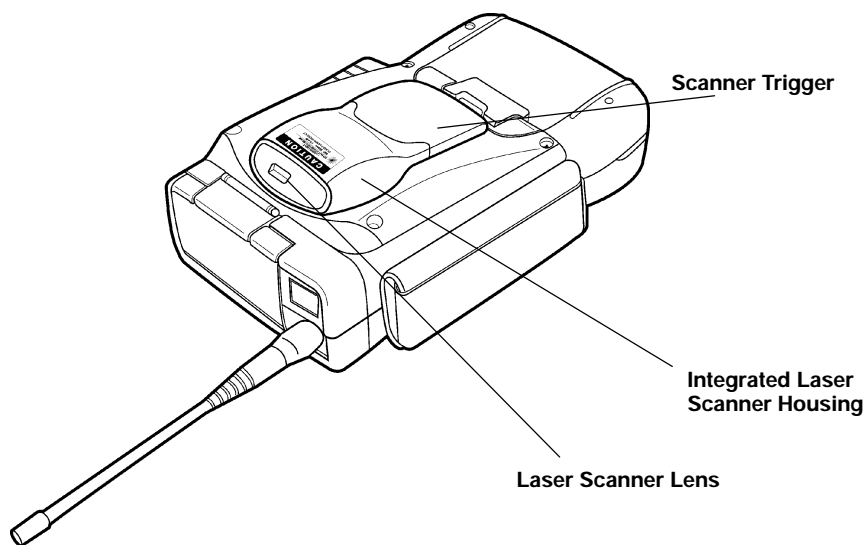
Figure 1-6
Integrated Scanner Pod

Port Replicator

Slide the Port Replicator onto the computer as shown in Figure 1-7.

Power Jack (for connecting to the wall charger or cigar lighter adapter)

IrDA Port

Keyboard Connector   **Serial Port**   **RF Antenna Connector**
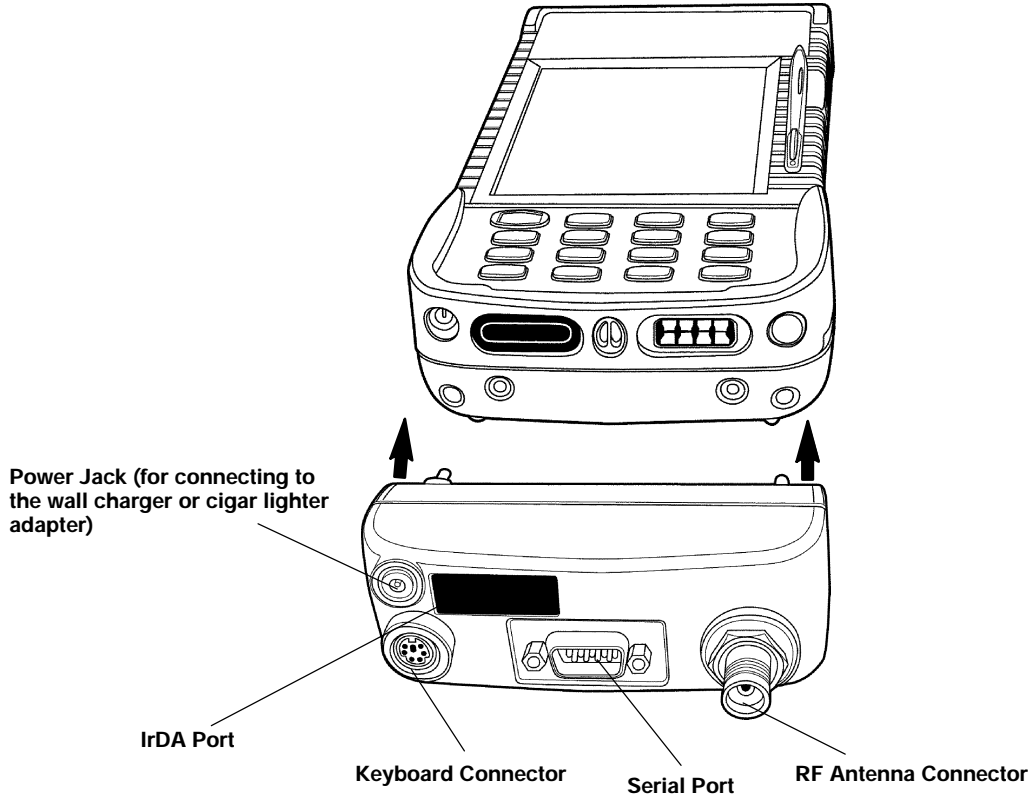
Figure 1-7
Port Replicator

Magnetic Stripe Reader

**The Magnetic Stripe Reader (MSR) is an optional attach-
ment for your hand-held computer. Your MSR reads credit,
charge, and debit (for example, ATM) cards.**

Magnetic Stripe Reader
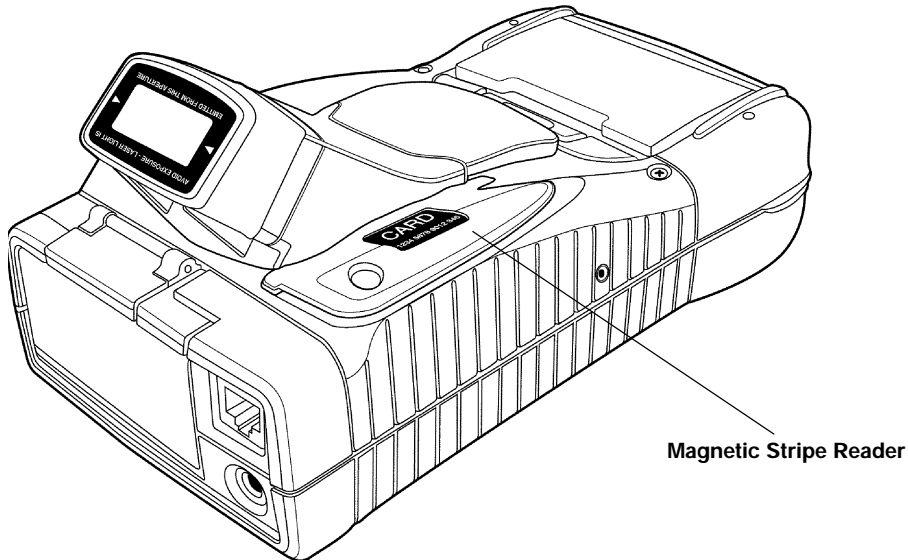
Figure 1-8
Magnetic Stripe Reader

Serial Pod

The serial pod provides a standard 9-pin serial port on a standard D-sub connector. As a software configuration option, +5 volts of power can be provided on pin 9 (the Ring pin). This option powers external devices such as tethered scanners.

9-pin D-sub Serial Port Connector

RJ-45 Jack

External Antenna Jack or DEX Connector
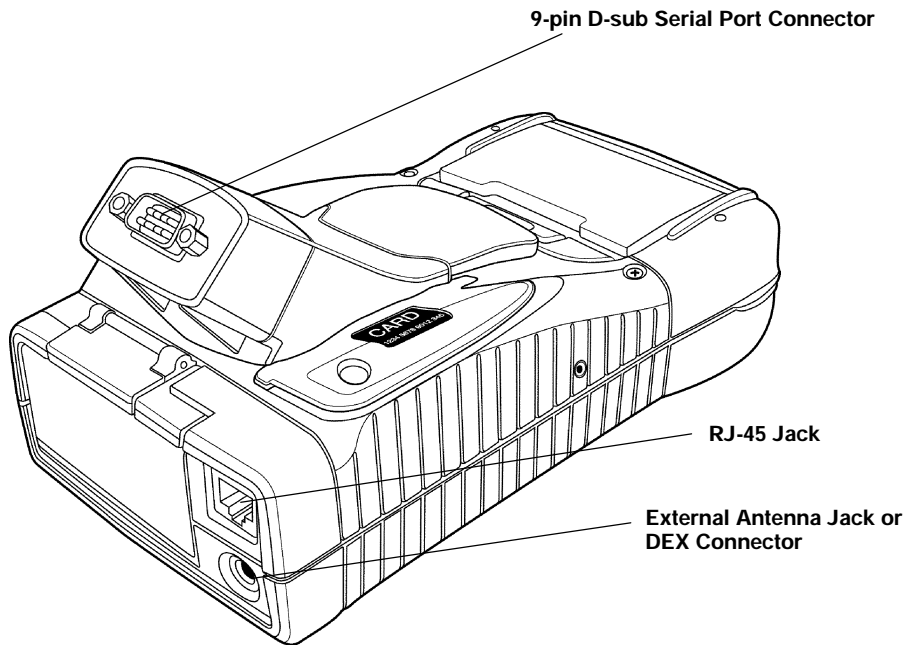
Figure 1-9
Serial Pod

Global Systems for Mobile Communication (GSM) with Subscriber Identity Module (SIM)

Allowing access to the SIM allows you to change service providers and not have to send your unit in for reprogramming.
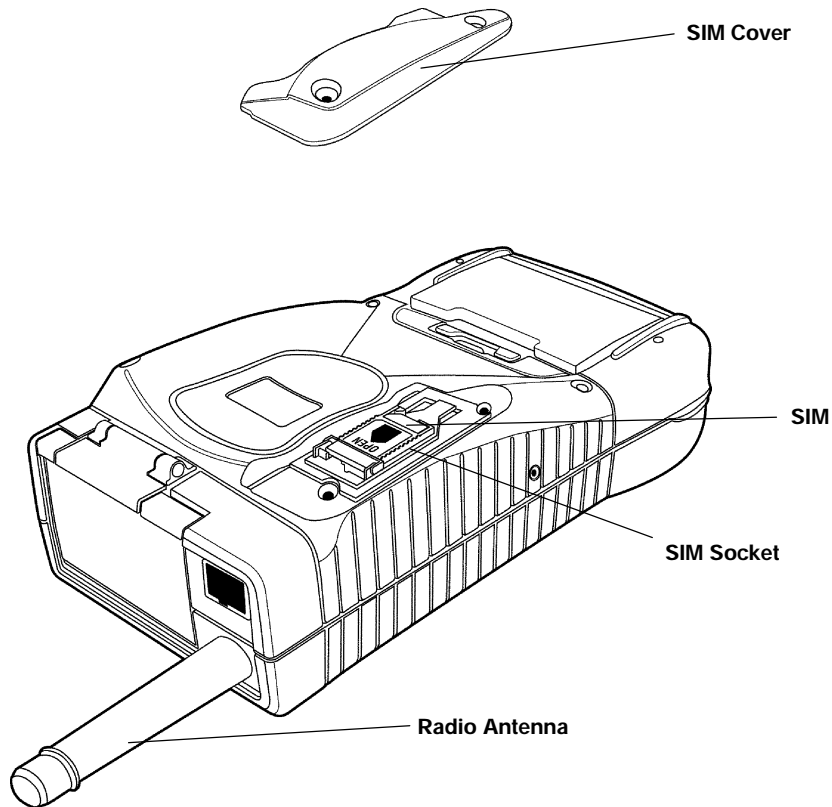
Figure 1-10
GSM with SIM card

Hand-Held Computer Specifications

Size:	8.1 inches (20.57 cm) long
	4.3 inches (10.92 cm) wide
	2.2 inches (5.59 cm) tall
Temperature:	
Operating:	14 to +122_F (–10 to +50_C)
Storage:	–22 to +158_F (–30 to +70_C)
Weight:	1 lb. 12 oz. (793.79 g) with battery
Humidity:	5 to 95% noncondensing
Static Protection:	15 kV (noncontact) 8 kV (contact)
Power source:	
Main battery:	7.2 V, 1500 mA hour lithium ion battery pack (standard)
Backup battery:	Two 3V, 100 mA hour vanadium lithium battery (standard)
Charging rate:	
32 to 140 °F: (0 to +60 _C)	Fast charge (fully charge ¶ 2.5 hours; 95% fully charged ¶ 1.5 hours)
Communication:	
Interface:	RS-232, RS-485, and Infrared
Protocol:	Norand Proprietary Communications Protocol (NPCP), Xmodem, Ymodem, IrDA

System Components:

FLASH:	**512K FLASH array (standard)**
RAM:	**8 Megabytes (standard)** **16, and 32 Megabytes** *(optional)*
Operating System:	**Win 95**
Card Options:	**One ATA PC card slot for system disk (Type II or Type III card); plus two PC card slots (two Type II cards, or one Type II and one Type III card)**
Processor:	**99 MHz AMD Élan SC400**

Display:

Type:	**Quarter size VGA LCD, CGA Controller, with Backlight**
Size:	**240 (wide) by 320 (long) pixel, portrait orientation, panning enables viewing of a full 640 x 480 window.**

Section 2
Operation

Introduction

This section tells you how to:
" Install the main battery pack
" "Power-up" your hand-held computer
" Install PC cards
" Connect to peripheral devices

Getting Started

Unpack your Intermec 6110 Hand-Held Computer and in-
spect it for signs of physical damage from shipment or stor-
age.

When you start using your hand-held computer or any time
that all power has been completely removed, you are "cold
booting" your hand-held computer. The method you use de-
pends on your application.

For example you may download (transfer from the host
computer to your hand-held computer) the application and
data into your computer. Or, you may use PC cards to load
the application and data.

Depending on the method you are using, the result will be
the same but the steps you go through may vary from the
way this user's guide presents the material.

Rechargeable Battery Label

Lithium ION rechargeable batteries must be recycled. This is the label that appears on the battery pack.

```
┌─────────────────────────────────────────────────────┐
│                    6110 TERMINAL                       │
│                    BATTERY PACK                        │
│                 THIS SIDE FACES IN                     │
│  317-206-001                                          │
│  9742                                      Touch       │
│  7.2 V                                     contacts    │
│                                            to view     │
│  Made in Japan                 LI-ION      capacity    │
│  CAUTION: Burn hazard,                                │
│  Do Not Disassemble,    LITHIUM ION RECHARGEABLE       │
│  Heat Above 212°F,      BATTERY. MUST BE RECYCLED      │
│  Or Incinerate.         OR DISPOSED OF PROPERLY.       │
└─────────────────────────────────────────────────────┘
```
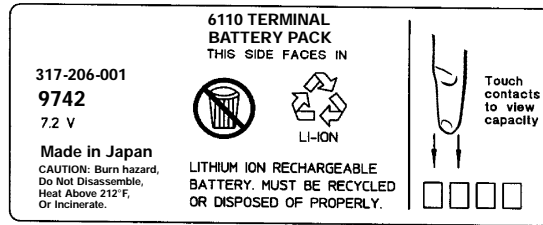
⚠ ***WARNING:*** *The lithium ion battery can explode if replaced incorrectly. Replace the battery with a similar kind.*

⚠ **AVERTISSEMENT:** La batterie au lithium peut exploser si elle est replacée de manière incorrecte. Elle ne doit être remplacée que par une batterie identique ou similaire.

⚠ ***WARNING:*** *The lithium battery can explode if placed incorrectly in the charger.*

⚠ **AVERTISSEMENT:** Les batteries au lithium peuvent exploser ou prendre feu si elles sont trop chargées à cause d'une mauvaise installation de la station d'accueil.

Installing the Main Battery

" **NOTE:**   *Your computer is shipped with uncharged batteries for safety rea-*
                    sons. Refer to Figure 2-1 to show how to install the battery pack in
                    your computer. Charge your computer for 14 hours before using it
                    the first time. This will ensure that both the main and backup batter-
                    ies are fully charged.

    1.   **With the gold battery pack contacts facing into the
                    battery compartment place the curved portion of the
                    pack in the bottom of the compartment.**

    2.   **Press down on the battery pack until it snaps into
                    place. As you press down on the battery pack you
                    should hear three clicks before the pack is completely
                    seated into place.**

" **NOTE:**   *After the initial charging of 14 hours, the normal charge time for the*
                    main battery pack is 2-1/2 hours.
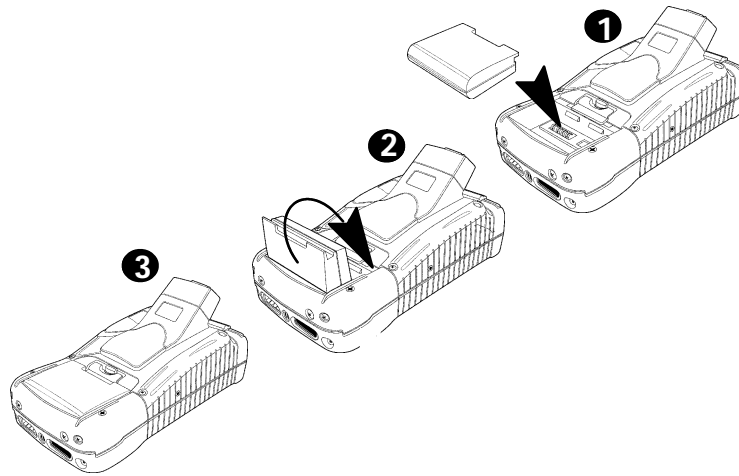
Figure 2-1
Installing Main Battery Pack

Charging The Batteries

Charging your battery pack can be done either in your
hand-held computer or in a charger. The following devices
provide charge to the batteries while they are connected to
your computer:

In Your Hand-Held Computer

- " AC adapter
- " Auto adapter
- " Single dock
- " Multidock
- " Vehicle dock

The multidock, single dock, and vehicle dock installation
and instructions are contained in a separate publication
6100 Series Dock Installation Instructions PN:962-020-003.

Power Status LED
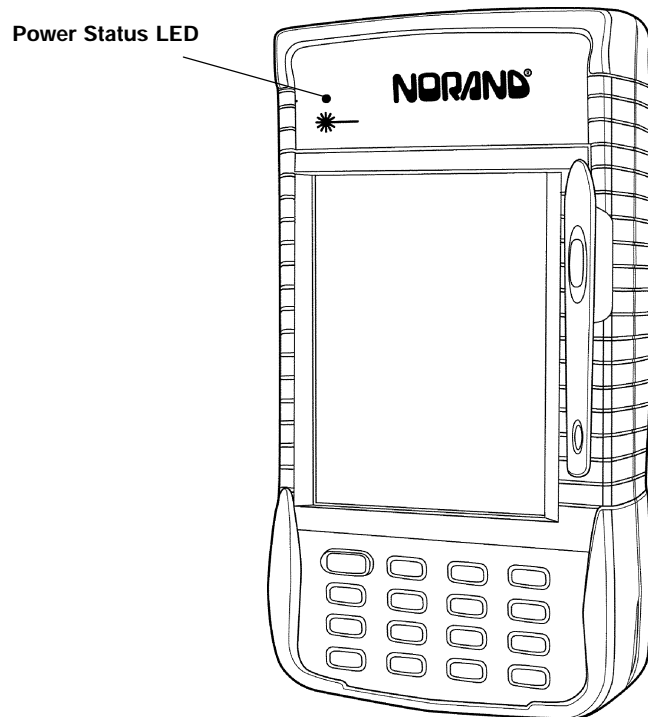
Charging Status:
Blinking Red indicates low battery status
Continuous Red indicates charging in process
Continuous Green indicates charging complete
Blinking Green indicates computer is in standby mode
Off indicates normal operation

Figure 2-2
Power Status LED

In External Source

When your battery pack is placed in a multipack or single
pack charger, the dock will indicate the charge state (red =
charging; green = fully charged; blinking red = bad battery
or bad connection). Figure 2-3 shows a multipack charger
and Figure 2-4 shows a single pack charger.

Battery Pack Compartments (8)

Fuse

Charge Indicator LED (one per compartment)

Power Cord Connector
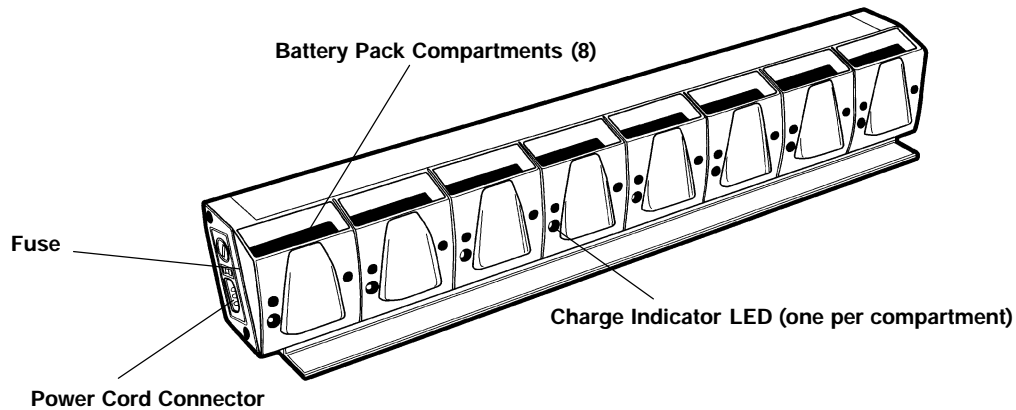
Figure 2-3
Multipack Charger

Power Cord

Battery Pack Compartment

Battery Pack
Contacts

Charge Indicator LED
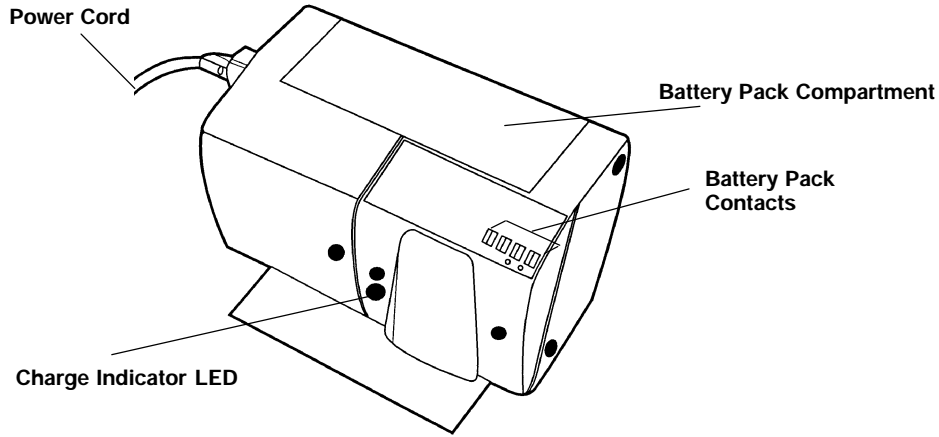
Figure 2-4
Single Pack Charger

Battery Pack
Contacts

Battery Pack Compartment

Charge Indicator LED
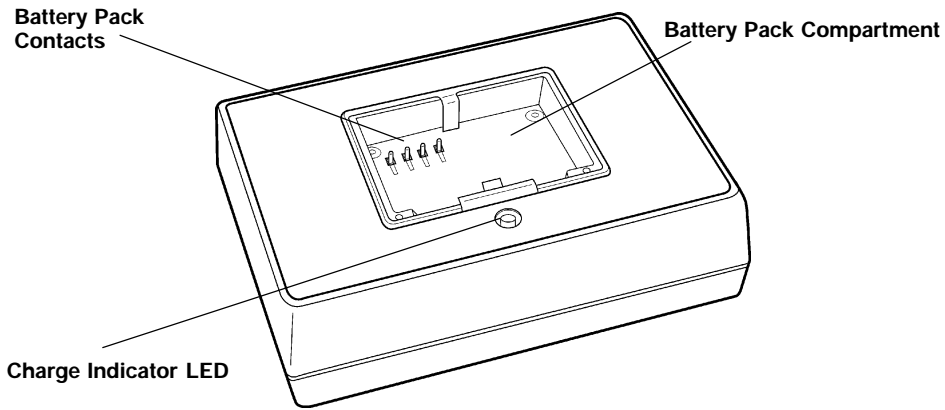
Figure 2-5
SPAN Charger

Removing the Main Battery

The following steps on pages 2-8 and 2-9, detail how to remove the main battery, check how much power the battery contains, and replace the battery pack.

" **NOTE:** *If you are using Windows 95, ensure that you shut down that operation before removing the battery pack. Otherwise, your computer will treat this as a crash.*

1. **Press and hold down on the Release Button (see Figure 2-6, Figure 2-7 and pages 2-8, and 2-9, for battery compartment details). This causes your computer to go into a suspend mode and makes sure you do not lose your data.**

2. **Slide the Battery Latch towards the release button and remove the battery.**

Battery Latch
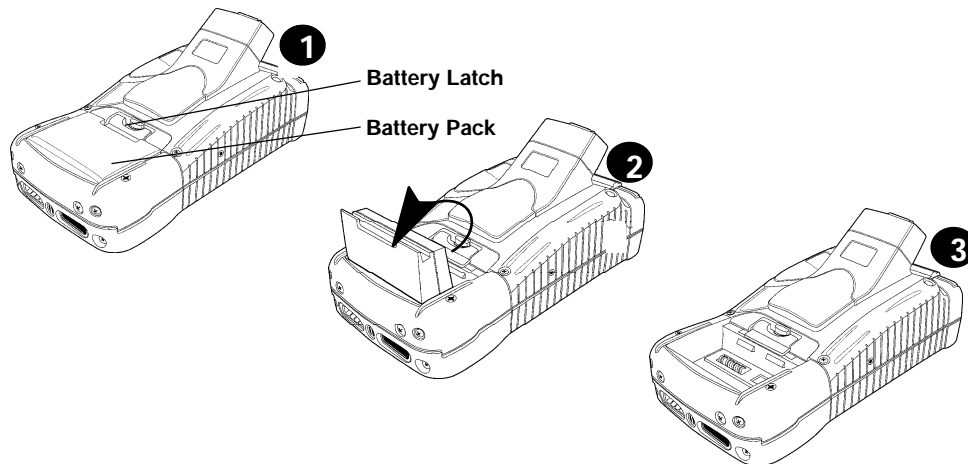
Battery Pack

Figure 2-6
Removing the Main Battery Pack

Measuring Battery Pack Capacity
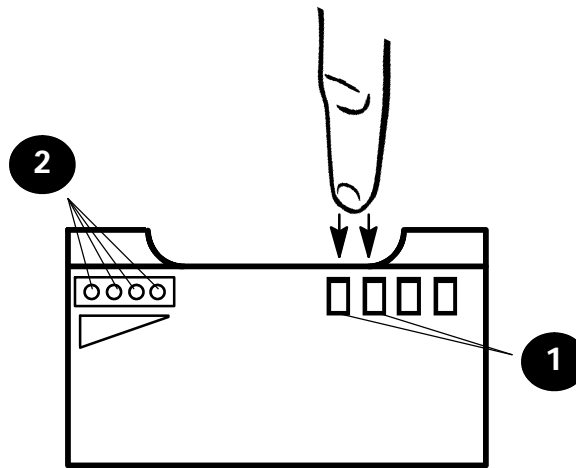
1. Touch finger across first two contacts
2. Capacity is displayed from right to left.
The higher the capacity the more LEDs light.

● = LED on
○ = LED off

| ○○○● | one LED = less than 25% capacity;

| ○○●● | two LEDs = 25–50% capacity;

| ○●●● | three LEDs = 50–75% capacity;

| ●●●● | four LEDs = more than 75%

Figure 2-7
Main Battery Pack Underside View Showing Contacts

Backup Battery

This hand-held computer comes with two 100 mA hour vanadium lithium backup batteries. These batteries provide protection of your data when the main battery is removed from the hand-held computer or when the main battery goes into a low battery condition. The backup battery will not, nor is it intended to, run your application with the main battery pack run down or removed from your computer.

A fully charged backup battery will provide protection for maintaining data approximately 2 days with the main battery removed or completely run down.

The backup battery is not user replaceable. To have your backup battery replaced, send it in to the Customer Service Center nearest you. Whenever you send in your hand-held computer for service, include a description of what you would like to have done.

Backup Battery Life

The backup battery is rechargeable and will recharge every time it needs it from either an external charging source or the main battery pack. If completely run down it will take at least 14 hours to completely recharge the backup battery. A frequently run down main battery will not keep the backup battery fully charged.

The backup battery should last approximately 2000 discharge and recharge cycles if deep discharged, maintains data for 16 hours if your unit has 32 MBs of RAM, and provides service for about 5 years before it needs to be replaced. If your hand-held computer alerts you that the backup battery needs to be replaced, send it in to the Customer Service Center for replacement.

Using PC Cards to Load Your Programs

Drives

" Drive C:, ATA drive in slot closest to the display

Booting

In order to boot your hand-held computer format on an ATA PC card with the system files and put it into the slot closest to the display (Drive C:)

For complete details on creating a "boot" card, refer to the instructions in the *PEN*KEY^{R}Model 6110 Series Hand-Held Computer Programmer's Reference Guide* PN: 977-054-001.

BIOS Update

To update the BIOS stored in the flash (6.EXE), obtain the latest from the Intermec web site and execute the BIOS Re-flash Program.

Installing PC Cards

1. Lift the PC card door tab and flip open.
2. Slide the cards in one of the slots.

1

PC Card Slot Door

2

Slot Door Open

Individual Card Slots
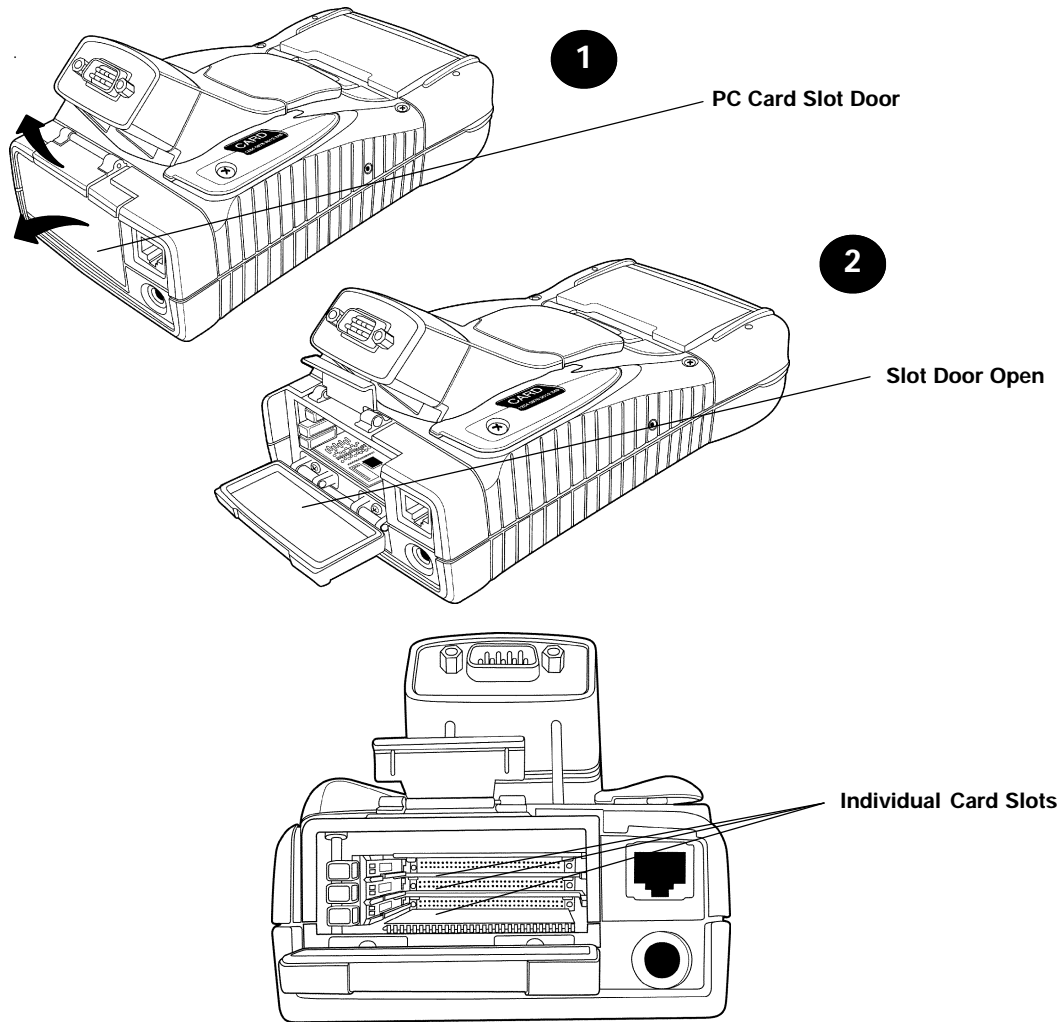
Figure 2-8
Accessing the PC Card Slots

Removing PC Cards

The PC card compartment contains ejector buttons for re-
moving the cards from the slots (see Figure 2-9 for location).
The bottom slot also has a plastic latch called an ATA latch,
which retains the card in the slot. This latch must be
pressed before you can remove the card from the slot. The
latch is to prevent the card which contains the Operating
System from being removed accidentally.

ATA Latch

**Individual Slot
Ejector Buttons**
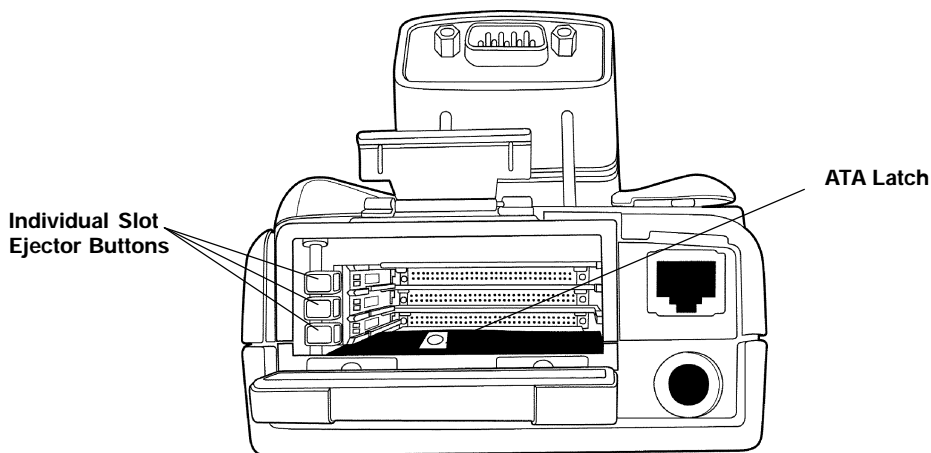
Figure 2-9
Individual PC Card Slot Ejector Buttons

Press in on the ejector button to release and eject the card.
The button will eject the card far enough so you can pull it
the rest of the way with your fingers.

Installing a Modem Card

The modem card can go into either the top or middle slot (with your computer in the position shown in Figure 2-10. However, it you are also going to use a radio card, install the modem card in the middle slot (B).

To install:

1. Lift the PC card door tab and flip open (see Figure 2-8).

2. Slide the modem card into slot B (see Figure 2-10).

Modem card shown partially installed in Slot B
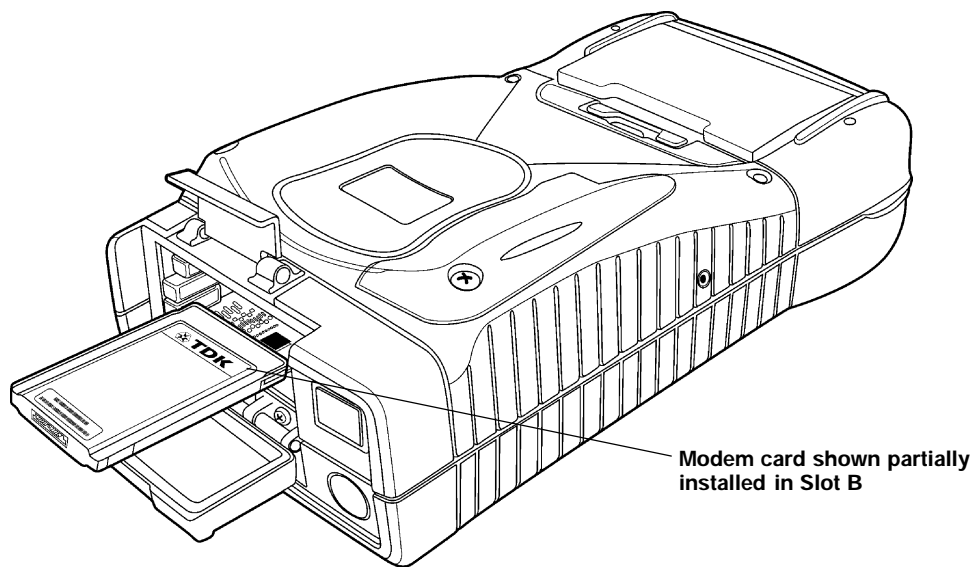
Figure 2-10
Installing Modem Card

3. Push the modem card all the way into the slot.

4. Line up the modem cable to the connector on the mo-
    dem card and push into place (see Figure 2-11).

Modem Card Connector
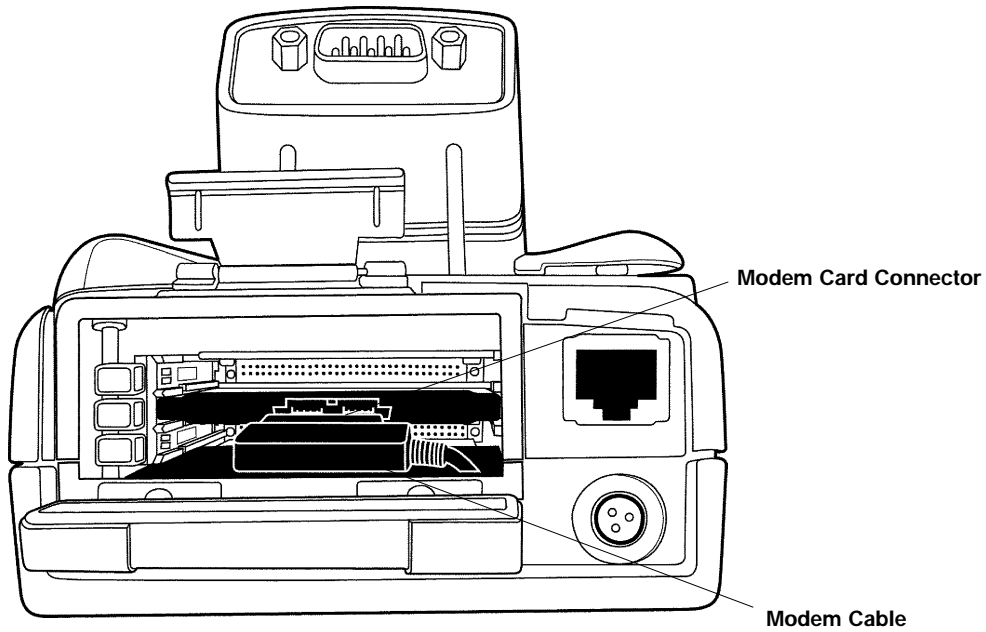
Modem Cable

Figure 2-11
Installing Modem Cable

Using the Magnetic Stripe Reader (MSR)

"   **To use the card reader simply sweep the card through the reader, in either direction (with the magnetic strip on the bottom of the card).**
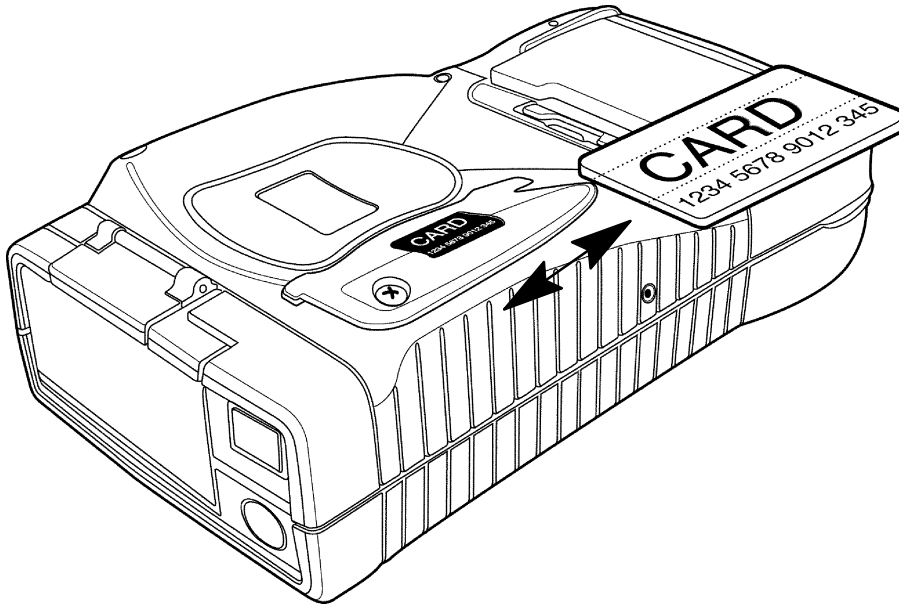
Figure 2-12
Using the Magnetic Stripe Reader

Installing the Subscriber Identity Module (SIM)

1.   Remove the SIM cover from the hand-held computer.

**Tamper Proof Driver
(p/n 901-136-001)**

Tamper Proof Screw

**Phillips Screw
(use #0 bit)**
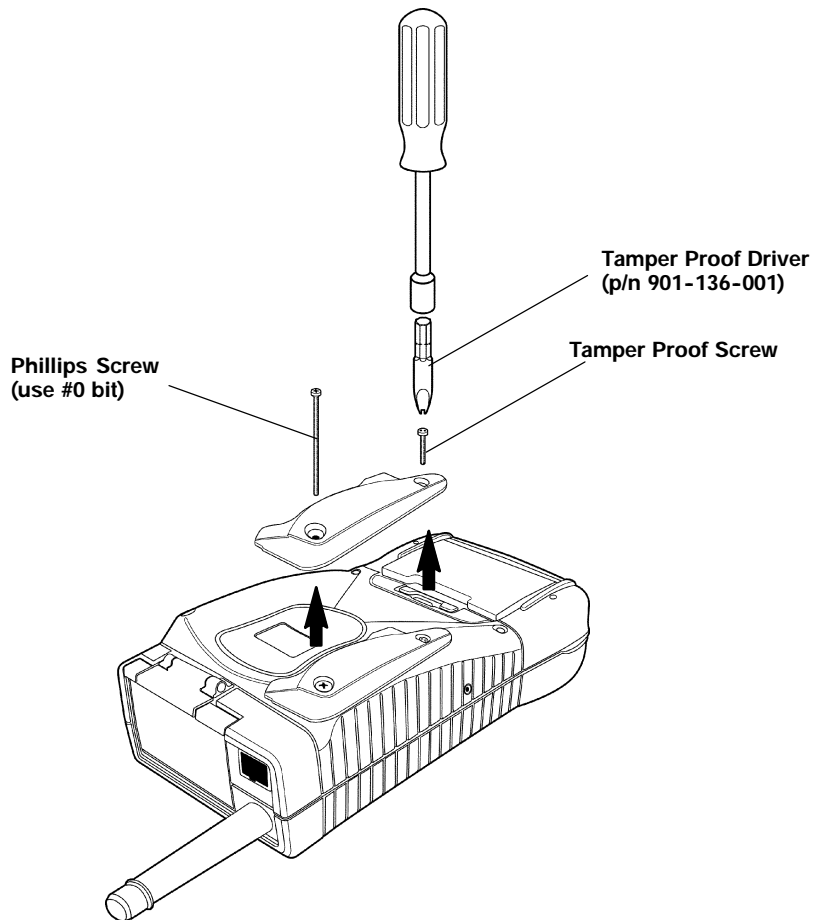
Figure 2-13
Removing SIM Socket Cover

2. Cut away the SIM from the plastic card.
3. Open the SIM socket by sliding the sleeve forward and swinging upward.
4. Insert the SIM into the sleeve. Close and secure by swinging it down and sliding the sleeve back to lock into place.
5. Reattach the cover.
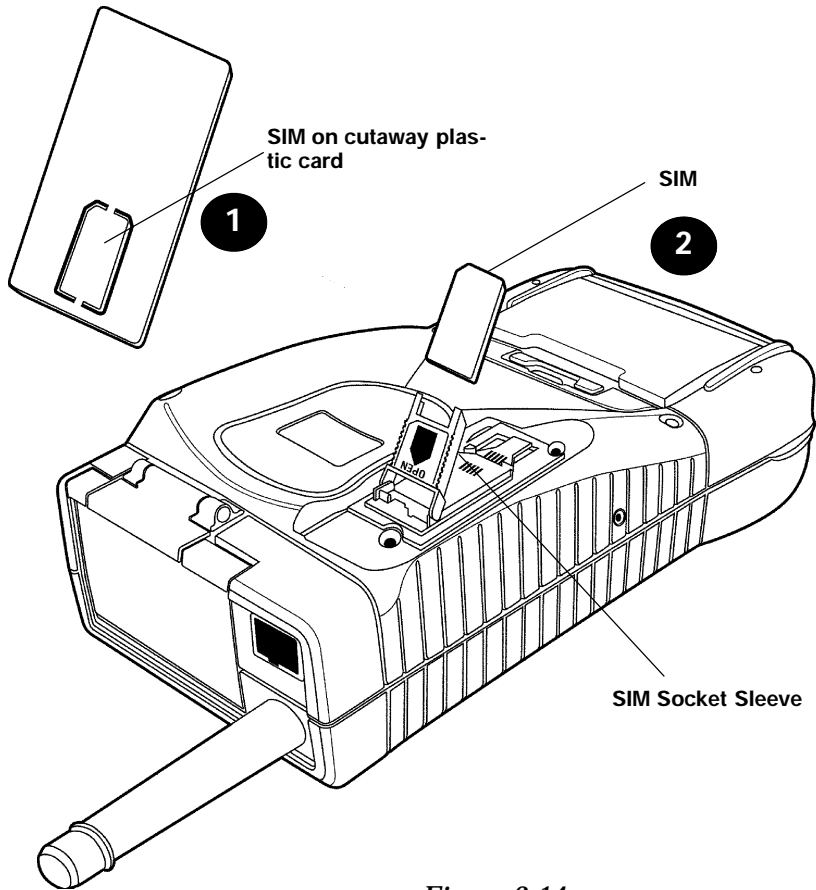
Figure 2-14
Installing SIM

Section 3

Routine Care and Maintenance

Introduction

Your Intermec 6110 Hand-Held Computer is designed to withstand normal use in harsh environments. Occasional maintenance is required to ensure trouble-free operation. The procedures in this section should help keep your hand-held computer in good working condition.

Maintenance procedures included in this section provides instructions on identifying low battery conditions, and cleaning your computer.

Low Battery Indication

If you attempt to turn your hand-held computer on and it does not respond, this usually means the battery is run down. Just to be sure, insert your computer in a dock or other charging device, turn it ON, and see if it responds. If it does, follow the instructions for **Charging Your Battery Pack** beginning on page 2-4. If it does not respond when inserted in the charging source, another problem could exist. Refer to the **Troubleshooting** section for solutions.

Cleaning Your Hand-Held Computer

Periodic cleaning helps maintain the appearance and reliability of your hand-held computer. When cleaning your computer, inspect the keyboard, covers, display, connectors, and peripheral products for obvious signs of damage or wear.

B **CAUTION:** **Do not use any abrasive cleaning compounds, ketonic solvents (acetone or ketone) or aromatic solvents (toluene or xylene) to clean any part of your computer. These solutions will cause permanent damage.**

Never pour cleaners directly on the display or the case. Instead put the cleanser on a soft cloth and gently wipe the case.

Case and Display

We recommend cleaning the exterior of your hand-held computer using a soft cloth dampened with MICRO-CLEAN II cleanser, made by Foresight International, Inc. 4887 F Street, Omaha, NE 68127-0205.

Docking Connectors

If docking connector contacts become dirty or tarnished, clean them with a cotton swab dipped in alcohol. It may also be necessary to lightly burnish them with a pencil eraser.

Section 4

Troubleshooting

Introduction

Should you encounter difficulties in routine operation, printing, or communications, there are a few things you may be able to do to correct the problem.

" Refer to your applications (software user) manual for printing and telecommunication procedures.

" Ensure that electrical and mechanical connections are secure and undamaged.

Troubleshooting Chart

This Troubleshooting table lists conditions you might see and offers some basic remedies:

Table 4-1
Basic Troubleshooting

Condition	Solution
Low Battery	Recharge the main battery pack.
Bad TCOM	1. Review and retry communications procedures. 2. Check cable connections.
Does Not Respond To Power	Check to ensure that the dock is plugged in and hand-held computer is making good contact.
Hand-Held Computer Will Not Turn ON When The [I/O] Key Is Pressed	1. Ensure that there is a main battery in the computer. 2. The battery door may not be closed completely. 3. The main battery may be low and need recharging.
As The Battery Pack Ages It Is Losing Capacity and Fewer LEDs are lighting.	Lithium Ion batteries will lose half of their available capacity after about 500 cycles (use and recharge = 1 cycle). Therefore, a fully charged battery pack will show fewer than four lit LEDs, this is normal. Either replace the battery pack or plan your charging needs accordingly, and note that the capacity will continue to decrease with each cycle.
Battery Does Not Light Any Of The LEDs	1. Charge battery pack then recheck. 2. Replace battery pack if needed.

Table 4-1 (continued)
Basic Troubleshooting

Condition	Solution
Hand-Held Computer Will Not Turn ON When Inserted In A Printer	The printer may be running off battery power. The printer does not charge the battery in your computer when it is running off battery power itself.
The Power Status LED Starts Blinking	The Power Status LED on the front panel of your hand-held computer informs you of the status of your battery pack when it is connected to a charging device. The Power Status LED reads: Off when in a normal operating mode; Blinking red when the battery is low; Continuous red when charging; Continuous green when done charging; Blinking green when in a standby mode;
The Charger Status LED Starts Blinking	The Charger Status LED on the external charging device, used for charging the battery packs, informs you of the status of the battery pack. The Charging Status LED reads: Continuous red for charging; Continuous green when done charging; Blinking red when there is a bad connection. Lift the pack out and reseat. If it still blinks call Customer Service.

Table 4-1 (continued)
Basic Troubleshooting

Condition	Solution
Hand-Held Computer Will Not Power Up, Screen is Blank, RS-485 Network Does Not Work	1. Main and Backup Battery are *Critically Low*. 2. Ensure that your computer has been on a charger for at least five minutes, then remove from the dock and preform the reset procedure. The display will then be active. 3. Continue to charge your computer for at least 14 hours to ensure both the main and backup batteries are fully charged. After this initial charge, the normal time for the main battery pack to charge is about 2 1/2 hours.
Hand-Held Computer Will Not Turn ON When Placed In A Dock	1. Ensure the dock is plugged in. 2. Ensure that there is a main battery in your hand-held computer. 3. Ensure the battery door is completely closed.
Hand-Held Computer Shuts Down During Operation	1. You may have hit the battery door latch, this will cause your computer to suspend. Check the latch. 2. You may have a very low battery, try recharging the battery.
Hand-Held Computer Turns OFF When You Open the Battery Door	This is the correct operation, the unit shuts down to conserve energy and save data.

Table 4-1 (continued)
Basic Troubleshooting

Condition	Solution
Hand-Held Computer Does Not Turn OFF	1. May not turn OFF when it is connected to a charging device.
	2. May not turn OFF when it is processing data.
	If either of these conditions continues for a long period of time, contact our support personnel as this will run down the batteries.
Hand-Held Computer Displays A Bad TCOM Message	1. Ensure that full contact is made in the dock, try reseating computer in dock.
	2. Ensure there is a good connection between the dock and the host.
Hand-Held Computer Takes A Long Time To Boot Up After A Reset	Normal time is between 30–45 seconds. If longer than this, may need to contact our support personnel.

If these basic solutions do not solve your problem, there could be a number of reasons. Additional things to do are:

" Refer to the software documentation written for your application. This documentation contains trouble-shooting information.

" Contact the Customer Support Specialist at your Customer Service Center. Your regional Customer Service Center is fully staffed and equipped to repair your hand-held computer. Customer Support Center addresses and telephone numbers are printed on a Product Service Information card. This document is packed with all our products.

Repair Service

Be sure to carefully pack the unit and include a description of the problem and the measures you took to correct it.

If possible, include any printout (if applicable) or write down displayed error messages to illustrate the problem.

Appendix A

Connector Pin-Outs

" "

8-Pin Docking Connector
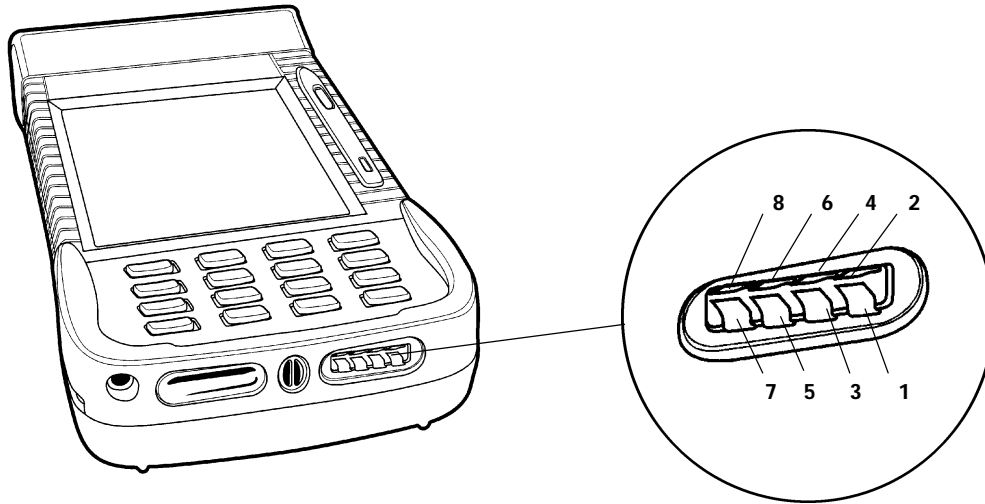
Pin	Signal	Function
1	BCLK	Battery Clock
2	12.0 Volts	Power
3	GND	Ground
4	BDAT	Battery Data
5	TXD	Transmit for Serial Port
6	RXD	Receive for Serial Port
7	RTS	Ready To Send for serial port
8	CTS	Clear To Send for serial port

Figure A-1
Docking Connector Pin-Outs

RJ-45 Phone Jack Pin-Outs

J1
Receptacle

		J2
1	GND	Phone Jack
2	DCD	1
3	RXD	2
4	TXD	3
5	DTR	4
6	PWR	5
7	DSR	6
8	RTS	7
9	CTS	8
10	RI	9
		10
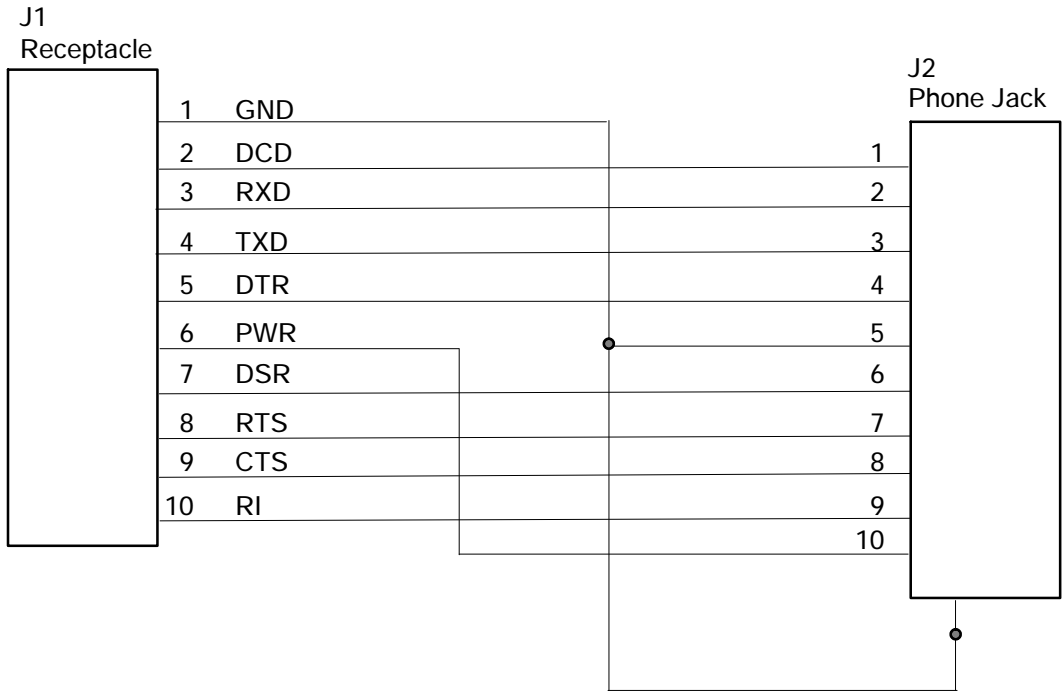
Figure A-2
Phone Jack Pin-Outs

PEN*KEY^R Utilities Program

The PEN*KEY^R Utilities Program provides basic functions required to prepare your Hand-Held Computers for use.

Entry Point

Screen Title

```
PEN*KEY UTILITIES
PSROMOC Vx.xx

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TECHNOLOGIES
CORPORATION.
ALL RIGHTS RESERVED
[ENT]CONTINUE
```
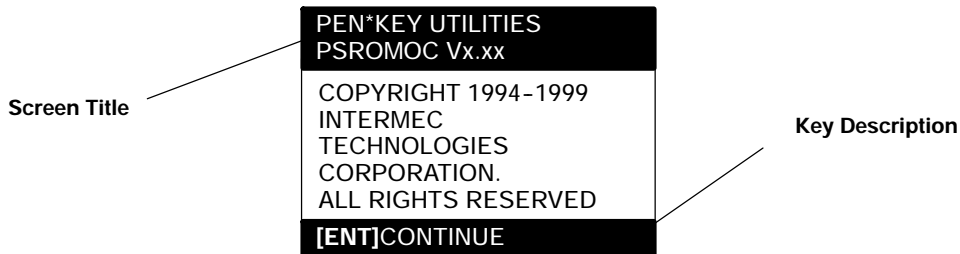
Key Description

This screen appears after cold-booting the computer.

" **Screen Title:** (dark bar at the top) contains the application name, such as "PEN*KEY UTILITIES", and the specific screen name, such as "MODEM PARAMETERS."

" **Key Description:** (dark bar at the bottom) contains "action" keys. Movement keys, such as arrows, are not shown.

Pop-Up Menus

Pop-Up menus appear after a menu option. Press the number of an option you want to select; or press the Y or B

```
┌──────────────────────────┐
│    CHANGE UNIT ID         │
├──────────────────────────┤
│ UNIT ID          2233233  │
│ WORKGROUP                 │
│ 6200IPL                   │
│ ████████████████████████  │
│ [F4]RESET FACTORY         │
│ [ESC]QUIT                 │
└──────────────────────────┘
```
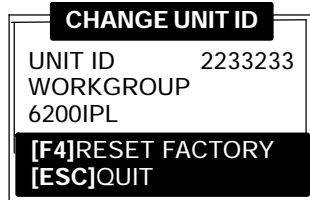
keys to scroll through the list and press the **[ENT]** key to enter. Select one option each time.

Press the **[ESC]** key to exit a pop-up menu.

Drop-Down Lists

```
┌──────────────────────────┐
│ 1. NETWORK. . .           │
│ 2. MODEM/DIRECT           │
│ 3. ACCESSORY CARD         │
│ 4. HANDHELD               │
│ 5. REMOTE OPS             │
│ 6. INTERSERVER            │
└──────────────────────────┘
```

Drop-down lists provide suboptions for a pop-up menu. Press the number of a suboption, or press the Y or B keys to scroll through the list and press the **[ENT]** key to enter. Select one suboption each time.

Press the **[ESC]** key to exit a drop-down list.

Alphanumeric Fields

```
┌─────────────────────────────────┐
│ ▐ NETWORK PARAMETERS ▌          │
│ SERVER NAME                     │
│ I.U.N. INCORPORATED             │
│ SERVER IP ADDRESS               │
│         123.123.123.123         │
│ CLIENT IP ADDRESS               │
│         123.123.123.123         │
│ ROUTER                          │
│         0.   0.   0.   0        │
│ SUBNET MASK                     │
│         0.   0.   0.   0        │
│ [ESC]QUIT                       │
└─────────────────────────────────┘
```

If your computer has a numeric keyboard, enter alphanu-
meric data by pressing the **A** and **"** keys to scroll back and
forth through the set of alphanumeric characters. After a
character is selected, press the **[ENT]** key to enter that
character. Press **[ENT]** again to move to the next field.

If your computer has an alphanumeric keyboard, press the
characters, then press the **[ENT]** key to move to the next
field.

Press **[ENT]** to save the entries and exit the menu. Press
the **[ESC]** key to exit without saving the entries.

Title Screen

When you reboot or reset your computer, the Title Screen appears:

```
PEN*KEY UTILITIES
PSROMOC Vx.xx

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TECHNOLOGIES
CORPORATION.
ALL RIGHTS RESERVED

[ENT]CONTINUE
```

Press the **[ENT]** key to continue.

Language Selection

" **NOTE:**   *The PEN*KEY Utilities Program checks files for available language options. If no language resource files exist, you do **not** see this menu.*

If your application requires non-English languages, the Language Selection menu appears. English is the first option, followed by up to nine additional options:

```
┌─────────────────────────┐
│ PEN*KEY UTILITIES       │
│ LANGUAGE SELECTION      │
├─────────────────────────┤
│ 1. ENGLISH              │
│ 2.                      │
│ 3.                      │
│ 4.                      │
│ 5.                      │
│ 6.                      │
│ 7.                      │
│ 8.                      │
│ 9.                      │
│ 0.                      │
│              [ESC]QUIT  │
└─────────────────────────┘
```

Press the number of a language, or press the Y or B keys to scroll through the list, then press the **[ENT]** key to enter.

Press the **[ESC]** key to exit this menu.

Communications Menu

" **NOTE:**   *The default is the NPCP RS-485 communication.*

" **NOTE:**   *If your computer does not support any of the features listed, the fol-
                    lowing pop-up menu appears. Press the **[ENT]** key to continue:*

```
COMMUNICATIONS
FEATURE
NOT SUPPORTED
[ENT]CONTINUE
```

**The "Communications Menu" appears after the "Title
Screen:"**

```
PEN*KEY UTILITIES
COMMUNICATIONS

1.  BEGIN COMM SESSION
2.  COMM SETTING
                NRINET
3.  UNIT ID
4.  NETWORK PARAMETERS
    SERVER NAME

    CLIENT IP ADDRESS
                0.0.0.0
    ROUTER
                0.0.0.0
    SUBNET MASK
                0.0.0.0




9. ADVANCED UTILITIES
                [ESC]QUIT
```
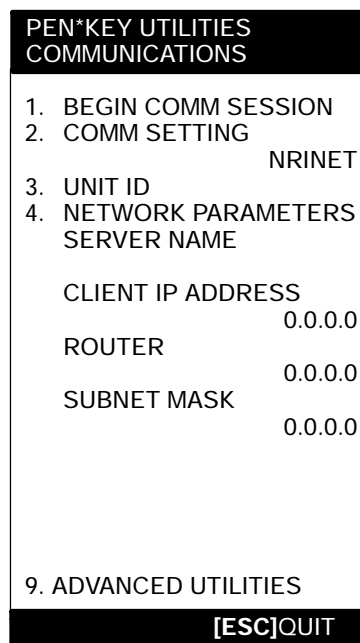
Option 1 BEGIN COMM SESSION

If you select Option 1, the computer repeats communications until successful or you press the [ESC] key.

" **NOTE:**   *If you press the [ESC] key, this verification window appears:*

```
ARE YOU SURE YOU
WANT TO STOP
COMMUNICATIONS
NOW?
[ENT]STOP
[ESC]RESUME
```

" **NOTE:**   *This window may not appear immediately. For most communication settings, a session cannot be interrupted once it has started, so the [ESC] key is not processed until the next session is attempted.*

BEGIN COMM SESSION with NETWORK

If you select the communications option and Option **2. COMM SETTINGS** is set to NETWORK, this "Communication Status" menu appears:

```
┌─────────────────────────────┐
│ PEN*KEY UTILITIES           │
│ COMMUNICATIONS              │
│                             │
│  COMM SETTINGS:             │
│      NRINET                 │
│      SERVER NAME            │
│                             │
│      CLIENT IP ADDRESS      │
│                  0.0.0.0    │
│      ROUTER                 │
│                  0.0.0.0    │
│  SIGNING ON                 │
│  STATUS:              20    │
│                             │
│                             │
│                             │
│                             │
│                             │
│                             │
│                             │
│  [ESC]STOP COMM             │
└─────────────────────────────┘
```

While SIGNING ON is onscreen, STATUS: may appear with the status of the attempted connection. Refer to **Session Status** on page B-12 for meaning.

Following a successful session, PEN*KEY Utilities executes the downloaded application. If the necessary program files are not found, this message window appears:

```
┌─────────────────────────┐
│ MISSING SYSTEM          │
│ FILES                   │
│ [ENT]CONTINUE           │
└─────────────────────────┘
```

If the session is unsuccessful, LAST SESSION appears with
the failure status, such as "T803."

```
┌─────────────────────────────────┐
│ PEN*KEY UTILITIES               │
│ COMMUNICATIONS                  │
├─────────────────────────────────┤
│ COMM SETTINGS:                  │
│     NRINET                      │
│     SERVER NAME                 │
│                                 │
│     CLIENT IP ADDRESS           │
│                     0.0.0.0     │
│     ROUTER                      │
│                     0.0.0.0     │
│ SIGNING ON                      │
│ STATUS:              20         │
│                                 │
│                                 │
│                                 │
│ LAST SESSION      T803          │
│ INVALID HOST NAME               │
│ OR IP ADDRESS                   │
│                                 │
│                                 │
│                                 │
├─────────────────────────────────┤
│ [ESC]STOP COMM                  │
└─────────────────────────────────┘
```

BEGIN COMM SESSION with MODEM/DIRECT

If you select the communications option and Option 2. COMM SETTINGS is set to MODEM/DIRECT, this "Communication Status" menu appears:

```
PEN*KEY UTILITIES
COMMUNICATIONS

COMM SETTINGS:
    MODEM/DIRECT
    MODEM TYPE
        NM2400/NM2400A
    PROTOCOL   BPS FMT
    TTY            2400  8N1
    AUTO ANSWER
                         ESC
CONFIGURING




LAST SESSION:      T289
NO RESPONSE FROM
MODEM




[ESC]STOP COMM
```

" **NOTE:**   *The computer may stay at the "CONFIGURING" screen for about 20 seconds if a modem is not detected.*

If the session is unsuccessful, LAST SESSION appears with the failure status, such as "T289."

BEGIN COMM SESSION with ACCESSORY CARD

If you select the communications option and Option **2. COMM SETTINGS** is set to ACCESSORY CARD, the system attempts to execute the application from a PC card. If the "MISSING SYSTEM FILES" message appears, press the **[ENT]** key to continue.

BEGIN COMM SESSION with INTERSERVER

If you select the communications option and Option **2. COMM SETTINGS** is set to INTERSERVER, this "Communication Status" menu appears:

```
┌─────────────────┐
│                 │
│                 │
│                 │
│                 │
│                 │
│                 │
│                 │
│                 │
│                 │
│                 │
│                 │
│                 │
│                 │
│                 │
│ Transfer:       │
└─────────────────┘
```

Press the **[ESC]** key to exit this screen.

Session Status

The first single character code ("T") is the session status, which applies to all COMM SETTINGS. There are five statuses possible:

- " **"G"**   Good session
- " **"T"**   Unexpected end of transmission
- " **"H"**   Incorrect file header encountered
- " **"F"**   File error encountered
- " **"L"**   Telecommunications aborted before first file header received

The three digit number ("289") indicates the specific protocol error. These error codes apply when COMM SETTINGS is set to NPCP RS-485 or NPCP RS-232:

"0"   No error
"1"   MININET.EXE not installed
"6"   User aborted communications by pressing **[ESC]**
"11"   Invalid parameter specified in control file

" **NOTE:**   *The following values indicate an error returned by MININET.EXE. 100 is added to the error returned by MININET.EXE to avoid conflict with other defined errors.*

"101"   Illegal buffer length
"103"   Invalid command
"105"   Command timed out
"106"   Message incomplete
"108"   Illegal local session number
"109"   No resource available
"110"   Session closed
"111"   Command canceled
"113"   Duplicate name in local name table
"114"   Name table is full
"115"   Name is deregistered, command complete
"117"   Local session table full
"118"   Session open rejected

"119"	Invalid name number
"120"	No answer
"121"	Name not found
"122"	Name in use on remote adapter
"123"	Name deleted
"124"	Session ended abnormally
"125"	Name conflict
"126"	Incompatible remote device
"133"	Network interface is busy
"134"	Too many commands outstanding
"135"	Invalid LAN adapter number
"136"	Command completed while cancel occurring
"138"	Command not valid to cancel
"164"-**"179"**	Unusual network condition
"180"-**"354"**	Adapter malfunction

These error codes apply when COMM SETTINGS is set to MODEM/DIRECT and PROTOCOL is set to TTY:

"0"	No error
"6"	**[ESC]** key pressed, aborting communications
"11"	Invalid parameter specified in control file
"23"	End of transmission
"101"	Line lost
"102"	Parity error
"103"	Character gap too long
"104"	Data loss
"105"	Excessive NAKs (negative acknowledgements)
"106"	Block count error
"107"	Block check error
"108"	Block framing error
"109"	Control character error
"2xx"	Modem error

    "xx"   Hayes response code, or code defined by program:

"03"	No carrier
"04"	Command not recognized
"06"	No dial tone
"07"	Dialed number is busy

"08"	**No answer**
"86"	**Error sending command to modem**
"87"	**Expected numeric response not numeric**
"88"	**Invalid response format**
"89"	**No significant response from modem**
"97"	**COM port disabled by system due to low battery or removal of PC card modem.**
"98"	**Unrecognized English response**
"99"	**Memory allocation error**

" NOTE: *For response codes not listed above, if you purchased this modem from the Norand Mobile Systems Division of Intermec Technologies Corporation, contact Customer Response Center at 800-755-5505 (U.S.A. or Canada) or 425-356-1799.*

*If this modem is **not** from the Norand Mobile Systems Division, contact your modem supplier.*

These error codes apply when COMM SETTINGS is set to NOVELL NETWARE:

"0"	**No error**
"6"	**User aborted communications by pressing [ESC] key.**
"100"	**Connection to host failed. Verify network connection, verify that PENKEY login name exists on host.**
"101"	**Could not access include file. Verify existence of include file on host.**
"102"	**Could not allocate needed memory.**

These error codes apply when COMM SETTINGS is set to NRINET:

"0"   No error

"6"   User aborted communications by pressing **[ESC]** key.

"800"   PC TCP/IP kernel is missing.

"801"   Invalid client IP address. Make sure the entry for CLIENT IP ADDRESS is correct, or make sure the DHCP server is running.

"802"   Invalid Service or Service Type, or invalid port number.

"803"   Invalid host name or IP Address. Make sure the entry for SERVER NAME is correct, and that the server is running.

"804"   Could not create socket. Check all cables and network connections.

"806"   Block sent was incomplete or block received was incomplete.

"807"   Client and server negotiation failed.

"808"   Server specified an unsupported block size.

"809"   Invalid buffer pointer.

"810"   All server connections are already in use. Try again later.

"811"   Timeout while sending data. Connection to remote machine dropped. Make sure the host is still running, and check all cables and network connections.

"812"   Timeout while receiving data. Connection to remote machine dropped. Make sure the host is still running, and check all cables and network connections.

"813"   An attempt to send data to the server failed due to a closed connection. Ensure the server is still running, check all cables and network connections.

"814"   An attempt to receive data from the server failed due to a closed connection. Ensure the

server is still running, check all cables and network connections.

"815" Could not access the network attach information.

"816" An error occurred reading the network attach information.

"817" Server did not respond to the connect request. Ensure the server is still running, check all cables and network connections.

"818" An error occurred reading the TCP/IP kernel information.

"935" Operation would block.

"939" Destination address required.

"940" Message too long.

"948" Address already in use.

"950" Network is down.

"951" Network is unreachable.

"952" Network dropped connection or reset.

"954" Connection reset by peer.

"955" No buffer space available.

"960" Connection timed out.

"961" Connection refused.

"962" Too many levels of symbolic links.

"963" File name is too long.

"964" Host is down.

"965" Host is unreachable.

"966" Directory not empty.

These error codes apply when COMM SETTINGS is set to TFTP:

"0"   No error.
"1"   PSROB0C.EXE could not be loaded.
"6"   User aborted communications by pressing **[ESC]** key.
"100"   TCP/IP kernel is missing.
"101"   Invalid client IP address. Ensure the entry for CLIENT IP ADDRESS is correct or ensure the DHCP server is running.
"201"   TFTP.EXE failed.
"202"   TFTP.EXE not found.
"203"   Unknown server.
"204"   Remote file name is invalid.
"205"   Local file name is invalid.
"206"   File not found on server.
"207"   Timeout.

Option 2 COMM SETTING

If you select this option, the "Communications Settings" drop-down list appears:

```
1. NETWORK. . .
2. MODEM/DIRECT
3. ACCESSORY CARD
4. HANDHELD
5. REMOTE OPS
6. INTERSERVER
```

Press the number of a communications settings, or press the Y or B keys to scroll through the list, then press the **[ENT]** key to enter.

Suboption 1 NETWORK

If you select this suboption, a drop-down list appears with various networks:

```
1. NPCP RS485
2. NPCP RS232
3. NRINET
4. TFTP
5. NOVELL NETWARE
```

Press the number of a network or press the Y or B keys to scroll through the list, then press the **[ENT]** key to enter. The computer returns to the "Communications Menu" with the selected network assigned to Option **2. COMM SETTING.** See a sample menu on page B-6.

Press the **[ESC]** key to exit this drop-down list. The computer takes you to the "Communications Menu."

Suboption 2 MODEM/DIRECT

**If you select this suboption, the computer returns to the
Communications Menu with the MODEM/DIRECT option
assigned to Option 2. COMM SETTING:**

```
┌─────────────────────────────┐
│ PEN*KEY UTILITIES           │
│ COMMUNICATIONS              │
├─────────────────────────────┤
│                             │
│  1.  BEGIN COMM SESSION     │
│  2.  COMM SETTING           │
│           MODEM/DIRECT      │
│  3.  UNIT ID                │
│  4.  MODEM PARAMETERS       │
│      MODEM TYPE             │
│         NM2400/NM2400A      │
│      PROTOCOL  BPS  FMT      │
│      TTY       2400  8N1     │
│      AUTO ANSWER            │
│                      ESC    │
│  5.  PHONE NUMBER           │
│          9...131369282      │
│                             │
│                             │
│                             │
│  9. ADVANCED UTILITIES      │
│                             │
└─────────────────────────────┘
```

Suboption 3 ACCESSORY CARD
Suboption 6 INTERSERVER

If you select either of these suboptions, the computer returns to the Communications Menu with ACCESSORY CARD or INTERSERVER assigned to Option **2. COMM SETTING.**

```
PEN*KEY UTILITIES
COMMUNICATIONS

 1.  BEGIN COMM SESSION
 2.  COMM SETTING
         ACCESSORY CARD
 3.  UNIT ID













 9. ADVANCED UTILITIES
```

Suboption 4 HANDHELD
Suboption 5 REMOTE OPS

These suboptions are not supported at this time.

Option 3 UNIT ID

If you select this option, the "Change Unit ID" pop-up menu appears:

```
┌──── CHANGE UNIT ID ────┐
│                        │
│ UNIT ID      2233233   │
│ WORKGROUP              │
│ 6200IPL                │
├────────────────────────┤
│ [F4]RESET FACTORY      │
│ [ESC]QUIT              │
└────────────────────────┘
```

Enter up to eight characters to change the Unit ID. Use the [←SP] key to backspace and use the [CLR] to restore the previous ID. Press the [ENT] key to save the new ID and return to the "Communications Settings" menu. Press the [F4] key to reset the ID to factory default. Press [ESC] to exit this pop-up menu.

Option 4 NETWORK PARAMETERS

Network Parameters appears as Option 4 when Option **2. COMM SETTINGS** is set to one of these three NETWORK options: NRINET, TFTP, or NOVELL NETWARE.

NETWORK PARAMETERS with NRINET or TFTP

If you select this option and Option **2. COMM SETTINGS** is set to NRINET or TFTP, this "Network Parameters" pop-up menu appears:

```
┌─────────────────────────────┐
│   NETWORK PARAMETERS        │
│                             │
│ SERVER NAME                 │
│                             │
│ SERVER IP ADDRESS           │
│         0.  0.  0.  0       │
│ CLIENT IP ADDRESS           │
│         0.  0.  0.  0       │
│ ROUTER                      │
│         0.  0.  0.  0       │
│ SUBNET MASK                 │
│         0.  0.  0.  0       │
│ [ESC]QUIT                   │
│                             │
└─────────────────────────────┘
```

If you have an alphanumeric keyboard, press the characters to the host name, then press the **[ENT]** key to save the entry and move to the next field.

If you have a numeric keyboard, use the **A** and **"** keys to scroll back and forth through the given set of alphanumeric characters. After a character is selected, press the **[ENT]** key to enter that character. Press **[ENT]** again to move to the next field. Press the **Y** or **B** keys to move between fields.

Press **[ENT]** to save the entries and exit the "Network Parameters" menu. Press the **[ESC]** key to exit without saving the entries.

NETWORK PARAMETERS with NOVELL NETWARE

If you select this option and Option **2. COMM SETTINGS**
is set to NOVELL NETWARE, this frame type drop-down
list appears:

```
1. 802.2
2. ETHERNET II
3. 802.3 RAW
4. 802.2 W/ SNAP
```

Press the number of a frame type, or press the **Y** or **B** keys
to scroll through the list and press the **[ENT]** key to enter.
Press the **[ESC]** key to exit this drop-down list without
changing the frame type.

Option 4 MODEM PARAMETERS

Modem Parameters appears as Option 4 when Option **2.
COMM SETTINGS** is set to MODEM/DIRECT.

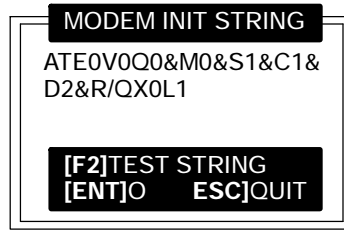If you select this option, the "Modem Parameters" pop-up
menu appears.

```
MODEM PARAMETERS

1. MODEM TYPE
      NM2400/NM2400A
2. PROTOCOL       TTY
3. BPS RATE       2400
4. DATA FORMAT    8N1
5. AUTO ANSWER  ESC

        [ESC]DONE
```

Press the number of a modem parameters option, or press
the **Y** or **B** keys to scroll through the list, then press the
[ENT] button to enter.

Suboption 1 MODEM TYPE

If you select this suboption, a drop-down list appears with
supported modem types. Press the **Y** or **B** keys to scroll
through the list, then press the **[ENT]** button to enter.

" **If you select drop-option OTHER EXTERNAL or
OTHER INTERNAL, the "Modem Init String" pop-up
menu appears:**

```
┌─────────────────────────┐
│  MODEM INIT STRING      │
│                         │
│  ATE0V0Q0&M0&S1&C1&     │
│  D2&R/QX0L1             │
│                         │
│  [F2]TEST STRING        │
│  [ENT]O     ESC]QUIT    │
└─────────────────────────┘
```

   a. **Enter the initialization string of the modem you are
using. Refer to your modem's reference manual for
information.**

" **NOTE:**   *Use* **A** *and* " *keys on numeric keyboards to scroll the alphanumeric
character set.*

" **NOTE:**   *If you leave this menu blank, a string is not saved.*

   b. **Press the [ENT] key to enter the string or press
[ESC] to exit this pop-up menu.**

  NOTE: *Testing the modem initialization string is optional.*

               To test the modem string, do the following:

a. Press the [F2] key. The computer replies with "PLEASE WAIT" and tests the string:

```
╔══════════════════════╗
║  MODEM INIT STRING   ║
║ ATE0V0Q0&M0&S1&C1&   ║
║ D2&R/QX0L1           ║
║ PLEASE WAIT . . .    ║
║ ┌──────────────────┐ ║
║ │ [F2]TEST STRING  │ ║
║ │ [ENT]OK  [ESC]QUIT│║
║ └──────────────────┘ ║
╚══════════════════════╝
```

Momentarily, the computer displays the modem's response:

```
╔══════════════════════╗
║  MODEM INIT STRING   ║
║ ATE0V0Q0&M0&S1&C1&   ║
║ D2&R/QX0L1           ║
║ RESULT:   97         ║
║ [F2]TEST STRING      ║
║ [ENT]OK  [ESC]QUIT   ║
╚══════════════════════╝
```

  NOTE: *Zero indicates the modem was successfully configured. Any other value indicates an error. See page B-13 for a list of modem errors. If you purchased this modem from the Norand Mobile Systems Division, contact Customer Response Center at 800-755-5505 (U.S.A. or Canada) or 425-356-1799.*

                        *If this modem is **not** from the Norand Mobile Systems Division, contact your modem supplier.*

b. Press the [ENT] key to update the modem initialization string. The computer returns to the "Modem Parameters" pop-up menu with OTHER EXTERNAL or OTHER INTERNAL assigned.

Suboption 2 PROTOCOL

If you select this suboption, a drop-down list of available protocols appears:

```
┌─────────────┐
│ 1. TTY      │
│             │
│             │
└─────────────┘
```

" **NOTE:**   *TTY is the only protocol currently supported.*

Press the number of a protocol, or press the Y or B keys to scroll through the list, then press the [ENT] key to enter. The computer returns to the "Modem Parameters" pop-up menu with the selected protocol assigned.

Press the [ESC] key to exit this drop-down list.

Suboption 3 BPS RATE

If you select this suboption, the BPS Rate drop-down list appears with various bits per second (BPS) rates:

```
┌─────────────┐
│ 1.    1200  │
│ 2.    2400  │
│ 3.    4800  │
│ 4.    9600  │
│ 5.   19200  │
│ 6.   38400  │
│ 7.   57600  │
│ 8.  115200  │
└─────────────┘
```

Press the number of a BPS rate, or press the Y or B keys to scroll through the list, then press the [ENT] key to enter. The computer returns to the "Modem Parameters" pop-up menu with the selected BPS rate assigned.

Press the [ESC] key to exit this drop-down list.

Suboption 4 DATA FORMAT

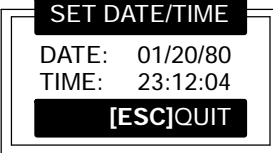If you select this suboption, the "Data Format" drop-down list appears:

```
1. 8N1
2. 7E1
```

Press the number of a data format, or press the Y or B keys to scroll through the list, then press the **[ENT]** key to enter. The computer returns to the "Modem Parameters" pop-up menu with the selected data format assigned.

Press the **[ESC]** key to exit this drop-down list.

Suboption 5 AUTO ANSWER

This suboption is not supported at this time.

Option 5 NETWORK INTERFACE

"Network Interface" appears as Option 5 when Option **2. COMM SETTINGS** is set to NRINET, TFTP, or NOVELL NETWARE.

If you select this option, the "Network Interface" drop-down list appears:

```
1. ETHERNET
2. RS485
```

Press the number of a network interface, or press the Y or B keys to scroll through the list, then press the **[ENT]** key to enter. The computer returns to the "Communications" menu with the selected network interface assigned.

Option 5 PHONE NUMBER

Phone Number appears as Option 5 when Option **2. COMM SETTINGS** is set to MODEM/DIRECT.

If you select this option, the "Phone Number" pop-up menu appears:

```
┌─────────────────────────┐
│    PHONE NUMBER         │
│  9...13193693282        │
│   [ . ]DIALING PAUSE    │
│  [ENT]OK   [ESC]QUIT    │
└─────────────────────────┘
```

Enter up to 16 characters. Use the **[←SP]** key to back-space; use the **[CLR]** to reset to the previous phone number, and press **[.]** to insert a dialing pause command (",").

Press the **[ENT]** key to save the new phone number and return to the "Communications Settings" menu.

Press the **[ESC]** key to exit this pop-up menu.

Option 9 ADVANCED UTILITIES

If you select this option, the "Advanced Utilities" menu appears:

```
PEN*KEY UTILITIES
ADVANCED UTILITIES

 1.  SET DATE/TIME
 2.  BATTERY STATUS
```
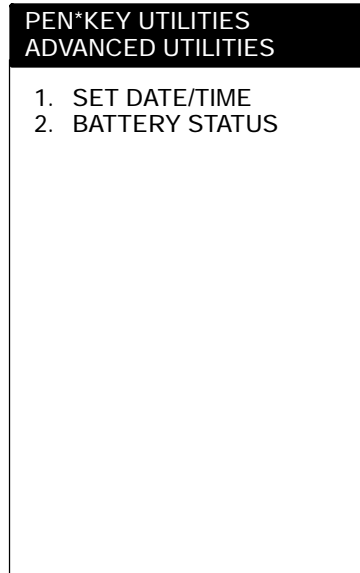
Press the number of an advanced utility option, or press the Y or B keys to scroll through the list, then press the **[ENT]** key to enter.

" **NOTE:**   *Suboption 4 FORMAT RAM CARD appears only if the FORMAT.COM program is in the PATH.*

Suboption 1 SET DATE/TIME

If you select this suboption, the "Set Date/Time" pop-up menu appears:

```
╔══════════════════════╗
║   SET DATE/TIME       ║
║                       ║
║  DATE:   01/20/80     ║
║  TIME:   23:12:04     ║
║      [ESC]QUIT        ║
╚══════════════════════╝
```

Enter numbers for the month, day, year (1980–2079), hour, minute, and second (up to 23:59:59). Press the **[ENT]** key after each entry. An incorrect entry causes the computer to default to the initial number. Press the **[ESC]** key to exit this pop-up menu.

Glossary

.. ..

6100

A generic term for the 61XX members of the PEN*KEY® Hand-Held Computer products.

API

Application Program Interface.

Application *(ADK)*

Computer program used for a particular kind of work. This term is used interchangeably with "program."

ASYNC

Asynchronous communications. A method of transmitting data using an external clocking source (the transmitted characters are preceded by a start bit and followed by a stop bit).

ATA Card

A credit-card-sized device, which has been specially designed to meet the needs of small computers, and can be inserted and removed from a PC Card slot. In the PEN*KEY products, it is generally a flash storage card, modem, radio, etc. (See also: Flash Card, SanDisk, Spinning Media, or Hardcard)

Auto Panning

The Auto Panning mode causes the display driver to automatically pan, so the active window remains displayed inside the viewport. (See also: Pan Border)

Baud Rate

The speed at which information can be transferred.

BISYNC (BInary SYNChronous communications)

A method of transmitting data in which the transmission of a character is marked by a drop or rise in the signal. An IBM defined, byte-controlled communications protocol, using control characters and synchronized transmission of binary coded data.

Boot Default Drive

The drive from which the computer will boot. By default, it is the flash drive D: but another drive (RAM drive or card slot) may be selected.

Bootable ATA

The ability to run the CONFIG.SYS and AUTOEXEC.BAT from an ATA card. In some older versions of flash, the CONFIG.SYS from the flash drive had to be run to load the drivers for the ATA card. With *Bootable ATA* the CONFIG.SYS and AUTOEXEC.BAT are run from the ATA card without loading any drivers.

Bus *(network)*

The main (multiple access) network cable or line that connects network stations. Also refers to a network topology of multiple stations communicating directly with the same cable with terminators at both ends, like an Ethernet or token bus.

Button

An object that can be clicked, selected, or unselected in your windows. Usually an event tree is attached to a button so that when it is clicked, an action is performed.

CD

Carrier detect.

CD

Compact disk, a removable read-only storage medium.

Channel

Refers to a logical data channel. A port may contain one or more channels. Data for any given wireless station is

contiguous on a channel. Each of the remote ports on a controller may contain up to three channels apiece.

Click

Press the primary mouse button to select an object on the screen with the pointer. Unless reversed for left-handed operation, the left mouse button is the primary button and the right mouse button is the secondary button. (See also: Right Click)

CMOS (Complementary Metal Oxide Semiconductor)

1. Usually refers to the system configuration and real-time clock information, which is often stored in CMOS memory. 2. The construction method for a type of low-power computer chip.

Controller

The communication control element of the NORAND® radio data network. Controls the timing and flow of data messages between the host computer and the radio terminals.

CPU

Central Processing Unit.

CRC (Customer Response Center)

The Norand Mobile Systems Division of Intermec Technologies Corporation CRC (technical support), telephone # 1-800-755-7705.

Email: **crc@norand. com** *If you want to Email a problem or question to the CRC be sure to include the following information in your message:*

Your name
The company name
The company address

Phone # and Email address where you or the customer can be contacted

Problem description / Question (be specific)

Also if the equipment was purchased through a VAR please include the VAR information

Default Drive

See Boot Default Drive.

Dock

A device in which one or more hand-held computers may be placed for charging and communication.

DOS (Disk Operating System)

A program or set of programs that tells a disk-based computer system to schedule and supervise work, manage computer resources, and operate and control its peripheral devices.

Double-Click

Press the primary mouse button twice quickly to select an object with the pointer. Primary is usually the left button.

Download

The transmission of data from a host computer to a mobile computer.

DSD (Direct Store Delivery)

That section of the grocery industry dealing with products delivered from a supplier directly to a store, rather than to some intermediate warehouse or distributor. DSD offers retailers reduced overhead expenses, but carries as a cost a loss of inventory control.

DSR (Data Set Ready)

An RS-232 modem interface control signal (sent from the modem to the DTE on pin 6) that indicates the modem is connected to the telephone circuit.

DTE (Data Terminal Equipment)

The devices in a category that includes terminals and computers. Also refers to the interface to users' equipment as opposed to the DCE interface to the network.

DTR (Data Terminal Ready)

An RS-232 modem interface control signal (sent from the DTE to the modem on pin 20) that indicates the DTE is ready for data transmission and requests the modem be connected to the circuit.

EAN (European Article Numbering) *(Bar Code Symbology)*

European Article Numbering Code. A bar code symbology similar to the UPC symbology except that EAN contains 13 characters and uses the first two to identify a country.

EBCDIC (Extended Binary Coded Decimal Interchange Code)

An 8-bit character code scheme used in IBM environments.

EDI (Electronic Data Interchange)

Specifically EDI Standards. The EDI Standards are a collective group of standards of different industries used for exchanging data between computers. All EDI Standards share certain basic concepts for formatting data. There are EDI standards covering transportation, warehousing, grocery retail, general merchandise retail, general business, and other industries.

EEPROM

Electrically Erasable Programmable Read Only Memory.

EIA (Electronics Industries Association)

A United States trade organization that issues its own standards and contributes to ASNI. Best known for its development RS-232 and the building wiring standard, 568. Membership includes US manufacturers.

EOF (End Of File)

A constant following the last data in a file that signals its end.

EOT

End Of Transmission or End Of Tape.

Ethernet

A general term indicating both 802.3 and DIX Ethernet (also called Ethernet 2.0). See also: 802.3

ETX (End Of Text)

A control character used to indicate the conclusion of a message.

Flash

A technology for nonvolatile memory storage. A special type of EEPROM that can be erased and reprogrammed.

Flash Card

A memory storage PC Card that meets the ATA standard. (See also: ATA Card, SanDisk, Spinning Media, or Hardcard)

FSK (Frequency Shift Keying)

A method of frequency modulation in which a binary "1" is sent as one frequency and a "0" as another frequency. Used in modems operating at 1200 bps or slower.

FTP (File Transfer Protocol)

One of the protocols typically included as part of the TCP/IP suite of protocols supported in most implementations of TCP/IP. FTP is a TCP/IP-based protocol for transferring files between different systems.

Function

A collection of declarations and statements returning a value that can be called by name.

Function Prototype

A function declaration that includes a list of names and types of formal parameters in the parentheses following the function name.

Gateway (GW) (SNMP)

In current usage, "gateway" and "application gateway" refer to translating systems that convert data traveling from one environment to another.

GPS (Global Positioning System)

The Global Positioning System (GPS) is a satellite based positioning and navigation system that provides precise position, velocity, and time information.

GUI (Graphical User Interface)

Provides a graphical representation of the environment which results in a simpler way to detect problem areas. Also promotes uniformity in operating management applications, which means greater management productivity. An example is Network Manager from SUN Microsystems.

GUI/PM

Graphical User Interface / Presentation Manager.

Hardcard

A spinning media, or PC Card hard drive that plugs into a PC Card slot. (See also: ATA Card, Flash Card, SanDisk, or Spinning Media)

Heap *(ADK)*

An area of memory set aside for dynamic allocation by a program.

HHC (Hand-Held Computer)

A generic acronym for a NORAND Hand-Held Computer, including the 4000 Series (43XX, 44XX, 4500) and the PEN*KEY or 6000 Series (61XX, 62XX, 63XX, 6400, 65XX, 66XX).

Also the trademark of another company.

HHC Remote Port

An ADCCP, TTY, or NPCP port which can connect to HHC or remote controllers. Data channels on HHC ports are multiplexed onto the host port.

Hop

Used in vector distance routing. A hop equals one data link. A path to the final destination on a net is a series of hops away from the origin.

Host

A customer's host computer.

A computer that provides services directly to users, such as the user's computer. In TCP/IP, an IP addressed device.

A large computer that serves many users, such as a minicomputer or mainframe.

Host Address

The part of an internet address that designates which node on the (sub)network is being addressed. Also called host number.

Host Computer

A large computer that serves many users, such as a PC, minicomputer, or mainframe.

Host Controller

A 4980 Controller that is functioning as a host to a secondary controller.

Host Port *(com4980)*

A port that can connect to a host or a 4980 Network Controller.

Host System *(com4980)*

The Unix system that the COM4980 Package runs on.

Hot Swap

Remove and insert a PC Card without rebooting the unit.

I/0 Key

The power suspend or resume switch on the 6100 Computer — *not the same as the reset button.* Suspends or resumes operation depending on the current state of the computer.

Icon

A symbol on the computer desktop that graphically represents the purpose or function of an application or file.

IFL Card (Initial Flash Load)

An SRAM card that installs the flash contents on most PEN*KEY systems.

InfraRed

A method for short-range wireless data communication.

internet

While a network, "internet" usually refers to a collection of networks interconnected with routers. See also: network.

Internet

(Note the capital "I".) The world's largest internet, including large national backbone nets (such as MILNET, NSFNET, and CREN) and many regional and local networks world-wide. The Internet uses the TCP/IP suite. Networks with only Email connectivity are not considered on the Internet.

IR

InfraRed. (see also: IrDA)

IrDA

A standard for InfraRed communications. An IrDA device creates a connection between two devices or a device and a network, without a physical connection, using signals transmitted in the infrared spectrum.

KB *(Kilobyte)*

One thousand bytes.

LAN (Local Area Network)

A group of network devices in which each device can communicate through a wired or wireless link. The wired link may have several segments joined by repeaters and bridges. The LAN is characterized by the relatively short distance it is designed to cover, a high speed of operation, and relatively low error rates. The geographic scope of LANs is limited to thousands of feet or closely-spaced building complexes.

Laser *(Light Amplification by Stimulated Emission of Radiation)*

A method of scanning that uses a coherent light consisting of one frequency with high density of energy.

Layer

A modular portion of a stacked protocol that consists of one or more semi-independent protocols. Each layer builds on

the layer beneath it and feeds information to the protocols in the layers above it. TCP/IP has five layers of protocols, and OSI has seven.

LCD

Liquid Crystal Display.

LLC (Logical Link Control)

The upper portion of the data link layer, defined in the IEEE 802.2 standard. The LLC layer represents a uniform interface to the user of the data link service, usually a network layer.

Local Controller

A controller which is directly connected to a host computer. A local controller uses either secondary ADCCP or ASYNC on its host port.

Master Boot Card

See IFL Card

MB (Megabyte)

One million bytes.

Memory Cards

See PC Card

Modem

A communication device that enables a computer to transmit information over a telephone line.

Modem Baud Rate

The speed of the modem connection. The higher the number the faster the rate.

Modem Device Name

The name of the communications port, for example: COM1, AUX2, HOST3, or DIGI4.

Modem Settings

The command strings required by your modem.

MQL (Multi-Quad Lockbox)

Multi-quad lockboxes are used for ADCCP communications with 121/141 HHCs.

MS-DOS (Microsoft Disk Operating System)

A master control program for 16-bit, Intel-based system. One of the more common operating systems on PC systems.

NAK (Negative Acknowledgement)

Response to receipt of a corrupted packet of information.

Native Mode *(ADK)*

A command set for asynchronous communication. NORAND command set compatible among previous generations of NORAND RF equipment.

Network

A computer data communications system which interconnects computer systems at various sites. A network may include any combination of LANs, MANs, or WANs. See also: LAN, WAN, internet.

(ADK) A computer network or terminals connected by means of (wires or radio transmissions) using software that enables them to exchange information.

Network Address *(SNMP)*

In TCP/IP, the network portion of an IP address. For a class A network, the network address is the first byte of the IP address. For a class B network, the network address is the first two bytes of the IP address. For a class C network, the network address is the first three bytes of the IP address. In each case, the remainder is the host address. In the Internet, assigned network addresses are globally unique. See also: Internet, IP address, subnet address, host address.

In NetWare, the unique number assigned to each logical node of the network.

NMSD

NORAND Mobile Systems Division of Intermec
Technologies Corporation.

Norlib Tool Kit

A NORAND application tool kit for C/C++ programmers.
DOS based. Includes a large C++ class library. Supports
4000 Series Hand-Held Computers and 61XX, 62XX, 63XX,
and 66XX PEN*KEY Computers

NOS (Network Operating System)

Provides many of the services that are distributed
throughout the network to the various servers. Typically
provides the following services: print, file and database,
messaging, communication, and network management.

NPCP (NORAND® Portable Communications Protocol)

NPCP, a NORAND proprietary protocol, provides session,
network, and datalink services for NORAND HHCs in the
NORAND LAN environment used with printers and data
communications.

NRINET

A NORAND protocol that transfers data over TCP/IP.

NULL

A constant, valued at zero.

Null Modem Baud Rate

The speed of the modem connection.

Null Modem Device Name

The name of the communication port, for example, COM1,
AUX2, HOST3, or DIGI4.

OEM (Original Equipment Manufacturer)

A term that identifies certain hardware vendors who
produce PC hardware for a system built by another
company.

On Key

This key is found on some units. It will not turn the unit
"On" or "Off" but it will suspend/resume operation.

Open Systems

Comprises protocols and components that meet standards set by industry-accepted governing bodies. The standards ensure that when new protocols and components are introduced into an existing system, they will meet the standards and be able to communicate with the existing system. The OSI model is the basis for a system to communicate with any other system. The model is a framework of standards that create protocol stacks and applications for networking applications.

Open Wireless LAN Node

Any access point or wireless station that connects to the network using the 900 MHz or synthesized UHF radio option.

OS

Operating system.

Pan Border

An invisible border that extends inward from the edges of the physical display, providing an easy means of panning. (See also: Auto Panning)

PC (Personal Computer)

1. A desktop computer developed by IBM or a clone based on the same architecture developed by a third party vendor. 2. Sometimes used more generically to refer to other desktop systems, such as the Apple Macintosh. 3. The original IBM computer using an Intel 8088 CPU and an 8-bit internal bus.

PC Card

A device that fits in the card slots of an Intermec or other computer. In some PEN*KEY computers, the smaller type II card occupies one slot, while a type III card blocks the second slot. The card may be used for data storage, modem, printer, wireless, or other purposes.

Generally, PC Card is used in reference to devices, whereas PCMCIA is a reference to the standard.

PC Card Icon

An icon located in the System Tray, which indicates a PC Card is plugged into the PC Card slot. (See also: System Tray)

PCMCIA (Personal Computer Memory Card International Association)

An industry group responsible for creation of the standard for devices (slightly larger than a credit card) for small computers, such as laptop and hand-held computers.

Formerly, devices were referred to as PCMCIA cards, but are now generally referred to as PC Cards, while PCMCIA is a reference to the standard.

PDU (Protocol Data Unit) *(SNMP)*

An OSI term for "packet." A data object exchanged by protocol machines (entities) within a given layer. In TCP/IP, it defines the type of SNMP message being sent.

Pen

An input device similar in usage to a mouse, but similar in appearance to a writing instrument.

Pend

Wait for a particular response or event to occur. Used interchangeably with "wait."

PEN*KEY

A family of NORAND Hand-Held Computers, also known as the 6000 Series with touch screen capability. Examples include: 6100, 6110, 6210, 6300, 6350, 6400, 6500, and 6600 Computers.

PEN*KEY Tool Kits

System-oriented programmer's tool kits. The current tool kits support: 6100, 6200/6300 6400, 6600 Computers.

PEN*KEY Utilities

A program that provides the basic functions needed to prepare the PEN*KEY for use, including program load and data communications.

PenRight

A third party development environment that allows users to create DOS or Windows applications by dragging and dropping. You can visit their web site at: www.penright.com

Physical Port

Equates to port connector. The 4980 Controller has four internal physical ports ("A", "B", "C", and "D"). It also has six connectors ("A", "B", "C", "D", "LAN1", and "LAN2"). Ports "B", "C", and "D" are permanently attached to the 15-pin connectors labeled "B", "C", and "D" respectively on the back of the controller. Port "A" is attached to either the 15-pin RS-232 connector labeled "A" or to both of the two 9-pin RS-485 connectors labeled "LAN1" and "LAN2". Port "A" is attached to the RS-485 connectors when it is configured as a LAN port, otherwise it is attached to the RS-232 connector labeled "A."

PING *(Packet Internet Groper)*

A utility program that determines if a TCP/IP connection exists between a workstation and a server.

Pixel

The smallest graphic unit to be displayed on screen.

Plug and Play

The combination of BIOS, operating system, and peripheral device components that provides an environment that configures itself, thereby avoiding potential hardware conflicts for the operating system by polling the peripheral devices, assessing their requirements, and determining and implementing optimal settings for each device.

Polled Protocol

A system for multiplexing with more than one radio terminal by systematically querying each unit for traffic.

Port

The physical hardware communication port.

(SNMP) Physically, an access point to a computer, multiplexer device, or network. Logically, a pointer to a TCP/IP application.

Port Replicator

A device that provides connections for a number of devices, such as: keyboard, serial peripheral, radio antenna, power, and IrDA printer.

Portrait Mode

In terms of the display, it has an orientation such that the information displayed on the screen is viewed in a normal manner, without rotating the image, resulting in a narrow display.

POST *(Power-On Self-Test)*

A set of routines for system diagnostics and configuration that is run by the BIOS during system initialization.

Programmer's Reference Guide

The comprehensive repository of information about PEN*KEY programming. It is usually included with a PEN*KEY Tool Kit.

Proprietary Systems

Systems where all the component devices, protocols, and standards are from a single vendor, usually with patent, trade mark, or copyright protection.

Protocol

A formal description of message formats and the rules computers must follow to exchange those messages.

Protocol Stack *(SNMP)*

A modular set of functions, one at each layer of the stack, that form a network service. Each layer of the stack uses the services of the module beneath it.

Radio Network

Radio-enabled network devices and communication paths. A group of fixed-end devices and wireless stations in which

each can communicate with at least one other device through either a radio or wired link. Secondary LANs are part of the radio network; the primary distribution LAN is not part of the radio network.

RAM (Random Access Memory)

Dynamic memory, sometimes known as main memory or core.

RAM Drive

An area of random access memory configured to work like a disk drive.

RAS

Remote Access Server.

Redundancy

The ability of a duplicate access point to immediately take over the function of another access point that goes offline.

Repeater (SNMP)

An electronic device used to regenerate, at full strength, signals which have become too weak. Used with digital signals, it ignores extraneous voltages such as noise.

Reset Button

A switch which causes the computer to reboot.

RI

Ring Indicator.

RS-232 C (Recommended Standard 232)

An Electronic Industries Association standard interface between data terminal equipment (DTE) and data circuit-terminating equipment (DCE) with serial binary data interchange.

RS-422 A (Recommended Standard 422)

An electrical interface using a 40-pin connector and balanced line voltage for long distance capability.

RTC (Real Time Control) Protocol *(ADK)*

A sophisticated multiplexing system using contention rules to open communication yielding faster and more efficient use of the radio channel.

RTS (Request To Send or Ready To Send)

A modem control signal on a standard RS-232-C connector that puts the modem in originate mode to start sending data.

RXD

Received Data.

SanDisk

A brand of flash memory card. (See also: ATA Card, Flash Card, Spinning Media, or Hardcard)

Scroll

To move through text or graphics (up, down, left, or right) to see parts of the window not shown onscreen.

Serial Interface

An interface in which the terminal or computer sends single bits of information to the other device, one after another.

Serial Lid

A cap for the 6100 Computer which contains various communications capabilities.

Set *(SNMP)*

A basic SNMP PDU operation that lets a management station tell an agent to change a value that agent stores. A way to manipulate management information.

SG

Signal ground.

Single Frequency

If a wireless station is using a *single frequency,* it operates on the selected frequency in a list of frequencies. The default is the first frequency in the list.

SRAM Card

A memory storage PC Card which functions like a floppy disk.

Stack

A dynamically shrinking and expanding area of memory in which data items are stored in consecutive order and removed on a Last In, First Out basis (LIFO).

Stylus

A pen-shaped device, used for input on a touch screen by tapping or sliding.

TCOM or Telecom

Telecommunications.

Terminal

Circuit terminating device such as a hand-held computer.

(ADK) Portable elements in the radio data network. Provide a wireless portability with two-way interactive data communication capabilities.

Tethered

A scanning device requiring a cable between the computer and the scanner.

Toggle *(ADK)*

Action of turning an option on or off.

Touch Screen

A display which responds to tactile pressure as input.

TTY

Two-way TTY asynchronous data link protocol.

TXD

Transmit data

UART (Universal Asynchronous Receiver Transmitter)

This chip allows a serial port to communicate with other computers or networks through the peripherals. Devices

such as internal serial modems rely on the UART for
communications.

UCC (Uniform Code Council)

The UCC is responsible for many things, one of which is the
administration of UCS. The UCC is also responsible for
assigning UPCs to suppliers.

UCS (Uniform Communications Standard)

UCS is an EDI Standard that applies specifically to the
grocery retail industry.

UPC (Universal Product Code)

A bar code symbology used throughout the grocery and
retail industries.

Upload

The transmission of data from a mobile computer to a host
computer.

WAN (Wide Area Network)

A network that covers a large geographic area. Contrast
with LAN.

Window *(ADK)*

An area on your screen in which you view an application or
data.

Wireless

The transmission of data using radio waves.

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