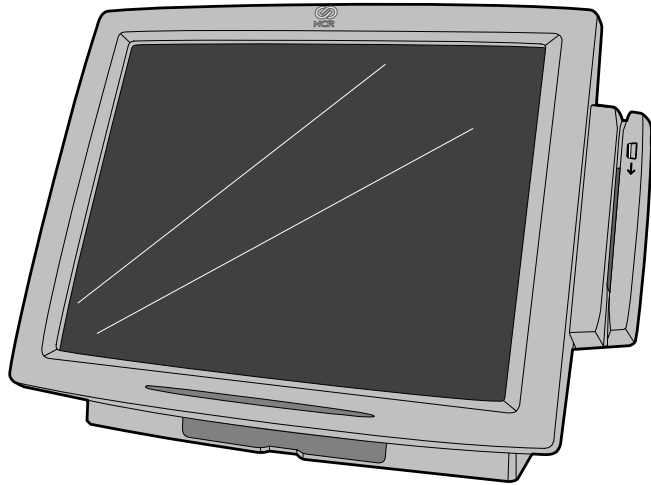


# NCR RealPOS 21 (7443)

Release 2.0

## User Guide



B005-0000-1727

Issue B

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## Preface

This book is written for hardware installer/service personnel, system integrators, and field engineers.

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## Safety and Regulatory Information

The NCR RealPOS 7443 conforms to all applicable legal requirements. To view the compliance statements see the *NCR RealPOS Terminals Safety and Regulatory Statements* (B005-0000-1589).

## References

- *NCR RealPOS 21 (7443) Site Preparation Guide*  
(B005-0000-1728)
- *NCR RealPOS 21 (7443) Hardware Service Manual*  
(B005-0000-1729)
- *NCR RealPOS 21 (7443) Parts Identification Manual*  
(B005-0000-1730)

## Revision Record

Issue	Date	Remarks
A	July 2006	First issue
B	Sept 2006	Added MSR installation section

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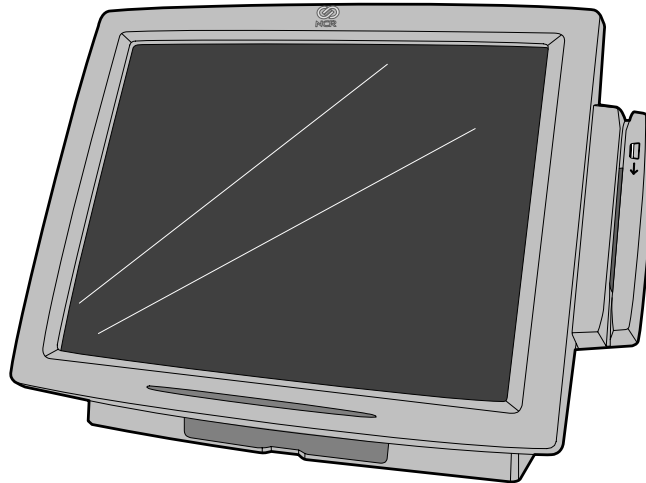
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## *Chapter 1:* Product Overview

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### Outstanding Investment Value

The NCR RealPOS 21(also known as NCR 7443) delivers exceptional value by providing a superior combination of performance, functionality, and reliability at an affordable price. Utilizing powerful Intel technology, the NCR RealPOS 21 supports the latest POS applications while accommodating future retailer needs.



## Comprehensive Lifecycle Management Strategy

Retailers who have experienced difficulties due to technology instability over time will appreciate the extended product lifecycle of the NCR RealPOS 21.

NCR selects long life components from Intel's embedded roadmap to deliver a powerful and stable POS solution built for the long term. The flexible and scaleable design of the RealPOS 21 allows retailers to respond to new requirements and maximize your systems investment.

## Retail Hardened Design

The NCR RealPOS 21 complies with NCR's strict reliability standards, which are rated among the highest in the industry. Engineered and tested to operate within the harshest retail environments, the NCR RealPOS 21 is designed to provide years of dependable operation. The proof of NCR's reliability standards may be found with the multitude of NCR POS terminals still in operation far beyond their life expectancy.

## Easy to Service and Upgrade

The NCR RealPOS 21 features simplified tool-free access to internal components including the hard disk drive, power supply, motherboard, and memory. With its enhanced serviceability and remote management capabilities via NCR Retail Systems Manager, the NCR RealPOS 21 reduces downtime, minimizes operational disruptions, and simplifies system upgrades.

## Market-Leading Value

The NCR RealPOS 21 delivers exceptional value with a bright 15" touch screen interface, powerful Intel processors, and a complete suite of optional peripherals. The NCR RealPOS 21 provides a reliable and flexible platform with market-driven options to extend and protect your investment over the long term. Backed by the NCR brand name, the NCR RealPOS 21 is synonymous with quality and reliability.

## Model Numbers

Product ID	Description	Configuration Notes
7443-2101	RealPOS 21 Diskless Model	15" LCD, 1.3 GHz Celeron M, 256MB Memory, 4 USB 2.0, 4 RS-232, LAN cable, Integrated Mono Speaker, Compact Flash Slot. Does not include power cable, MSR or customer display
7443-2121	RealPOS 21 HDD Model	15" LCD, Hard Disk Drive, 1.3 GHz Celeron M, 256MB Memory, 4 USB 2.0, 4 RS-232, LAN cable, Integrated Mono Speaker, Compact Flash Slot. Does not include power cable, MSR or customer display



## Features

- AUO 15" XGA LCD
- 350 Nits w/50K backlight
- E-Turbo 6-wire Resistive Touch Screen
- Main Board: Intel 852 GM Core logic w/Intel 479 Pin Socket
- Intel Celeron M 1.3GHz CPU
- 256MB – 2 GB DDR RAM
- One CF card slot
- One internal miniPCI slot
- Two internal COM ports ( one for touch and one for MSR option)
- Four external RS-232 ports ( 2x standard ; 2x 12V /0.5A)
- Four USB V2.0 ports (two in front and two in rear)
- Two cash drawer ports
- One 10/100 LAN port
- One VGA port ( support 12V /1.5A)
- One parallel port
- Two PS2 ( 1x mouse ; 1x keyboard)
- Two audio jacks: Stereo Line Out & Mic In
- Seagate 40G 7200rpm HDD
- Internal 180W ATX Auto-Ranging Power Supply
- Wall Mount

## Options

- 3-Track Wedge MSR
- Integrated 2x20 VFD Customer Display

## Remote Peripherals

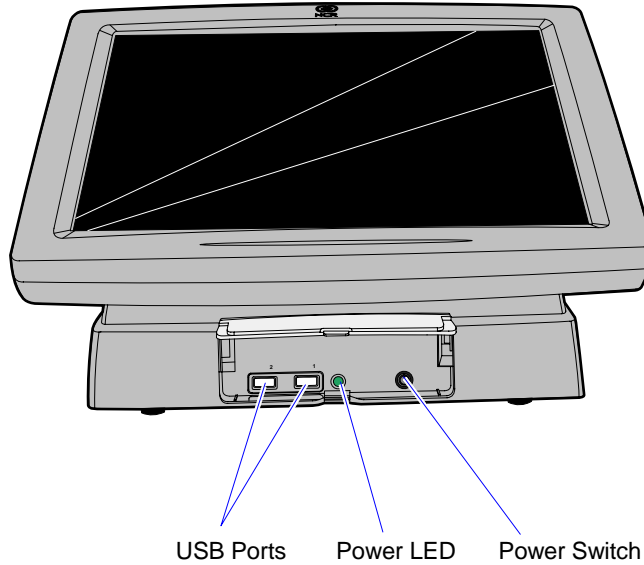
- 7167 Multi-Function Thermal Receipt Printer
- 7197 Thermal Receipt Printer
- 5932 Keyboards
- Standard PC keyboard
- 5975 Customer Display
- 5982 6.5" LCD Display
- 5992 Signature Capture
- 5945 Electronic Payment Terminal
- 2189 Full-Size Cash Drawer
- 2186 Mid-size Cash Drawer
- NCR Scanners

## Operating Systems

- Microsoft® XP Embedded, XP Professional, WePOS, and NLPOS9

## Operator Controls

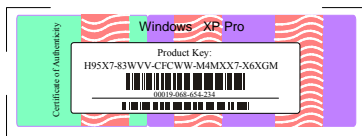
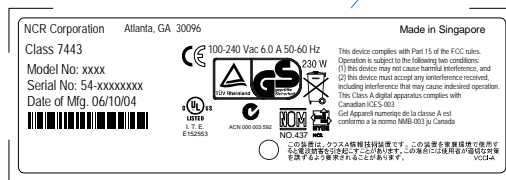
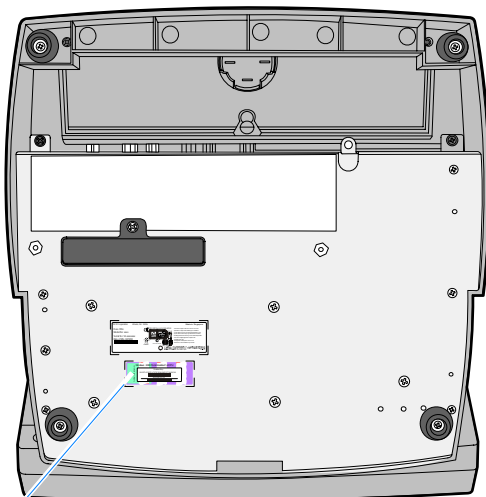
A power on/off switch located under the clear access panel on the front of the base cabinet. It may be set in the BIOS to turn the power off immediately or with a four second delay after pressing.



23555

## Serial Number/Model Number Label

The serial number and model number are included on a label, which is located at the bottom of the unit. A Certificate of Authenticity label is also included if the terminal was shipped with a pre-installed Operating System.



# Power Management

The RealPOS 21 BIOS is compliant with the Advanced Configuration and Power Interface (ACPI) 1.0b specification.

# Storage Options

## Hard Disk Drive

A standard 3.5" format 40GB 7200 RPM hard disk drive is shipped with model 7443-2121. The hard disk drive is mounted in the base cabinet and is easily accessed for service.

### Disk Partitioning

All RealPOS 21 Hard Disks with preloaded operating systems are created and released with a primary partition of a minimum 2GB, named C, which contains the specified operating system and files. A secondary partition may also be created utilizing various file systems based on the specific operating system ordered. These are outlined below:

Operating System	Primary Partition	Secondary Partition
Windows XP Embedded	Single NTFS	N/A
Windows XP Professional	Single NTFS	N/A

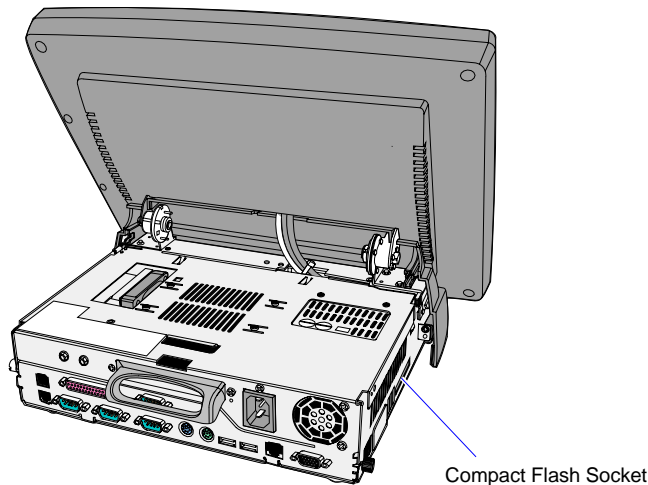
- Windows XP Embedded – A single NTFS without any partition is created that continues to grow as the physical size of the hard disk grows.
- Windows XP Professional – A single NTFS without any partition is created that continues to grow as the physical size of the hard drive grows.

## CompactFlash™ Memory

The RealPOS 21 supports non-volatile industrial grade CompactFlash memory options through the IDE interface. CompactFlash memory can be configured with or without with a hard disk and appears to the system as a fixed storage device (e.g. drive D:). It can potentially be used to store logs, tallies and totals, in lieu of retail CMOS. OPOS drivers are available to support these functions.

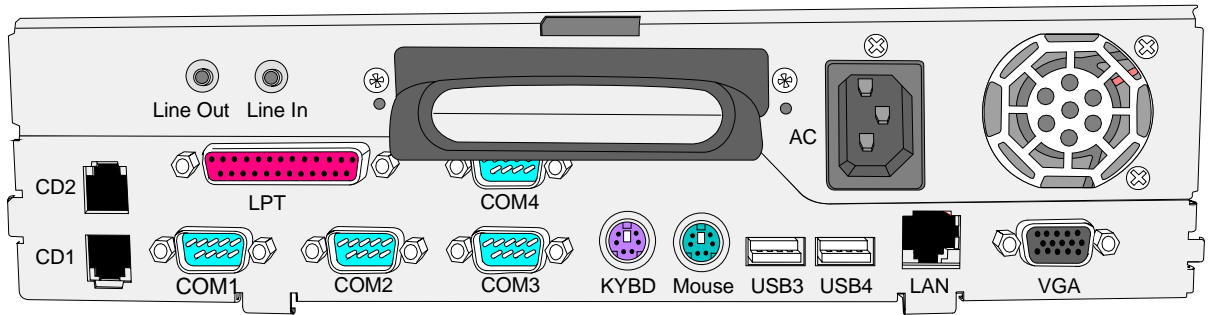
For operating system environments that do not require a hard disk (DOS, Windows XP Embedded, Linux), CompactFlash memory can be used as the primary local storage device and can be treated as a boot device provided that OS image and necessary applications files fit within available CompactFlash size. CompactFlash is always on the secondary IDE and is factory configured as the master.

The 7443 supports an IDE Compact Flash device. The socket is located inside the Base Cabinet. To access the socket you must remove the Back Cover. The socket is located on the Motherboard, inside the chassis. For information about how to remove the Back Cover see the *Removing the Back Cover* section. Insert the Compact Flash device into the socket with the top of the device facing up.



# Connectivity

Below is a view of the rear peripheral I/O panel.



23583

- Cash Drawers (2)
- RS-232 Ports (4)
- Parallel Port
- PS/2 Ports (Keyboard, Mouse)
- USB 2.0 Ports (2)
- Ethernet LAN
- LCD/CRT Port
- AC Power
- Line In
- Line Out



## RS-232

All RS-232 ports can be configured for 0, +5V or +12V (all RS-232 (terminal) powered NCR peripherals are 12V), such as:

- 7443-K456 2x20 VFD Customer Display
- 5975-1001 2x20 VFD Customer Display
- 5975-2011 256 x 64 Graphical Display
- Small hand-held scanners and electronic payment / signature capture devices

The 180 watt power supply supports multiple configured peripherals on the RP21.

**Example:** A terminal configured with 512MB memory, MSR, biometrics, Signature Capture, 7197 Thermal Printer and two cash drawers are easily supported by the power supply. However, it is possible to exceed the power capacity when multiple terminal-powered peripherals (that draw significant power) are configured. Please refer to the RealPOS 21 Power Budget Matrix (B005-0000-1731) to make sure you do not exceed limitations.

## USB

The RealPOS 21 includes 4 external USB 2.0 ports with the following characteristics:

- Plug and Play support
- USB V1.1 and 2.0 compatible
- Standard 5V USB
- DOES NOT feature positive latching cable connection and 12V or 24V power for retail peripherals as offered on the RealPOS 70 or 80/80c.

## Parallel Port

The system includes one 25 pin “D” Shell Parallel Port with support for SPP/EPP/ECP modes. This port may be used to connect legacy and/or third-party peripherals.

## PS/2 Keyboard and Mouse

The RealPOS 21 supports a PS/2 keyboard and mouse through separate PS/2 mini-DIN connectors.

## 10/100 Ethernet LAN

The RealPOS 21 features an on-board Ethernet Controller and supports the following features:

- Auto sensing 10/100 Base T Ethernet
- Wake On LAN
- PXE Boot

## BIOS Memory

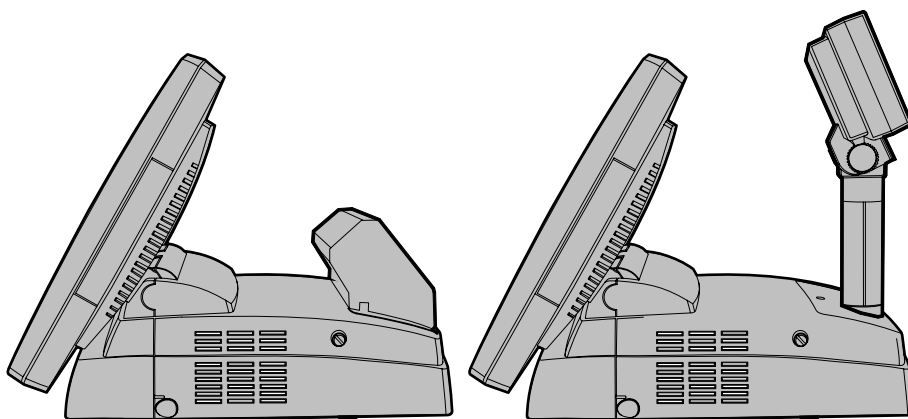
The system BIOS is based on Phoenix – AWARD Desktop BIOS v6.00PG.

- Supports PnP version 1.0a, APM version 1.2, PCI version 2.2, and ACPI version 1.0b. DMI (Desktop Management Interface) version 2.3 standard. SMBIOS (System Management BIOS) version 2.3.
- Supports Boot Block code, SMI code.
- Power on Self-Test – includes test of CPU, 8254 system timer, 8237 DMA controller, 8259 interrupt controller, video controller, video RAM, CRT interface lines, serial port, parallel port, keyboard controller, diskette drive and hard disk drive attached, and Audio configuration.
- Data constant initialization and interface of BIOS are compatible with IBM BIOS and MS-DOS.
- All BIOS routines can be used by user for controlling I/O device attached to subject product without caring for device address and operating features
- Supports device controller enable/disable control, device working mode control through the SETUP menu setting:
- Boot up device control
- Supports Multi-level system password security control. (System/Setup)
- Supports the multi-power on control by Power button, keyboard, mouse, PCI wake up, LAN wake up, Ring wake up, and RTC power on
- PnP/PCI Configuration
- Supports PC health monitor function for voltage, CPU internal temperature, system temperature detection and FAN speed control.

## Customer Displays

### 7443-K456/K454 VFD

The 7443 supports the 7443-K456/7443-K454 2x20 VFD Customer Display, which can be integrated on the Back Cover.

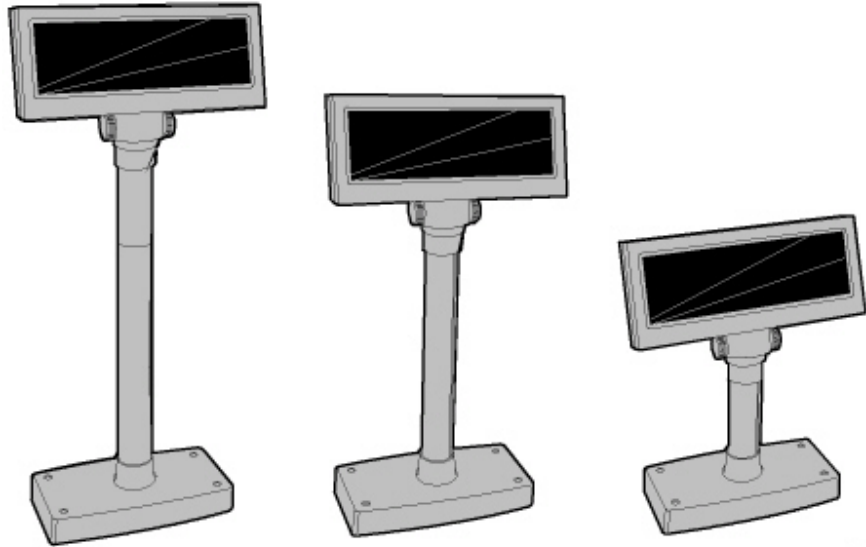


Flush-Mounted Customer Display  
(7443-K456)

Post-Mounted Customer Display  
(7443-K454)

23600

Optionally, the 7443-K454 Customer Display can be combined with the 7446-K455 Remote Base Kit to become a free-standing remote display. The remote base kit includes two posts, which provide a variety of height options ranging from 20 – 51 cm (7.8 – 20 in.).

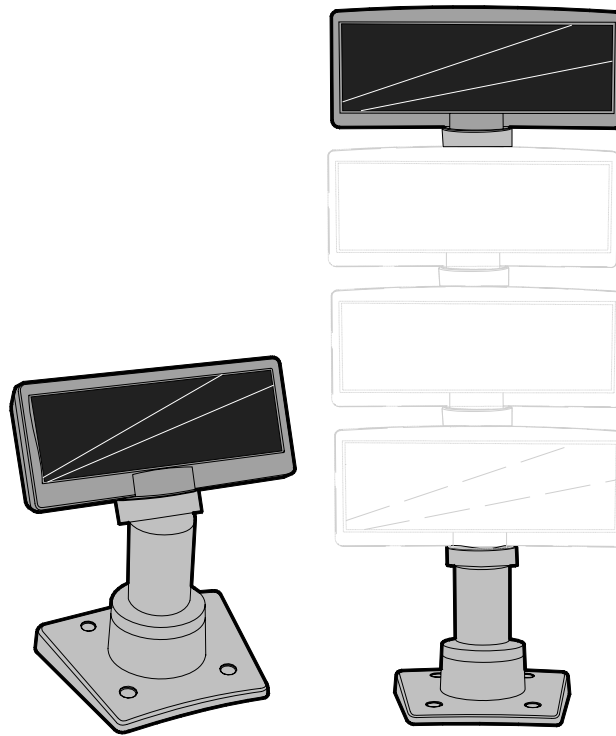


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### *Features*

- 5 x 7 pixel characters
  - international (single-byte) characters sets
  - Euro
- OPOS drivers available for supported Windows O/S
- Adapter, mounts to rear base with 2 screws (only screws required)
- 11.5cm short extension post
- 25cm long extension post
- 50 cm RS-232 cable (integrated)
- Sturdy plastic base with 4 screw mounts for attaching base to countertop (Remote)
- 2m RS-232 cable (Remote)
- Terminal Powered

## NCR 5975 2x20 VFD Customer Display



22933

The NCR 5975 Customer Display is designed to be an optional display device for the NCR retail terminals. It can also serve as a display for any industry-standard PC. It is a Vacuum Fluorescent Display (VFD).

- 5975-1000 2x20 VFD (G11)
- 5975-1001 2X20 VFD (CG1)

There are four post options, available in 4 inch increments.

## Features

- Display
  - 2X20 Character Vacuum Fluorescent Display (VFD)
  - 7X9 pixel characters
  - Character height
  - Minimum - 9mm
  - Maximum - 11mm
- PCB
  - Microcontroller
  - EIA 232 Interface support
  - USB 2.0 Interface support
- Cabinet
  - UV Stable Material
  - Available in NCR Light Gray (G-11) and NCR Charcoal Gray (CG1)
- Connectors
  - 9 pin D sub
  - Powered USB
- Cables
  - Powered EIA-232
  - Powered USB Cable
  - Unpowered EIA-232 Cable with Y-Connection for Power Brick
  - Unpowered USB Cable with Y-Connection for Power Brick
  - 1m and 4m Lengths

- Power Supply
  - Universal Power Supply (12V, 12W output)
  - 8 pin Molex Connector
- EIA-232 or USB 2.0 I/F support
  - The components for both interfaces are populated on a single printed circuit board. Both interfaces are active, though only one interface can be physically connected at a time. The display communicates via the interface connected to it.
- Mounting Options
  - Table Mount, 4-in. Post
  - Table Mount, 8-in. Post
  - Table Mount, 12-in. Post
  - Table Mount, 16-in. Post
  - Integrated Mount for NCR 7456, 7457, 7458

## Character Sets

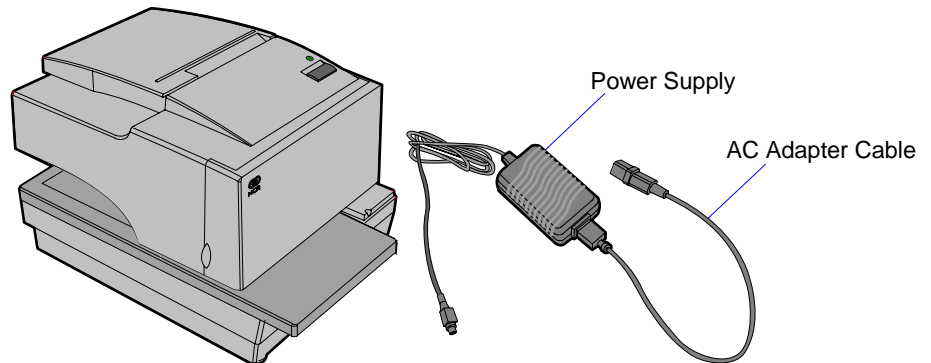
- Support for 19 character sets
- 3 Character sets in base unit
  - Code Page 858 (International)
  - Katakana
  - Code Page 866 (Cyrillic)
- 32 KB Flash Memory for support of up to 16 additional character sets



# Printers

## 7167 Printer

The NCR 7167 Printer is a fast, quiet, relatively small and very reliable multi-function printer. It prints receipts, validates and prints checks, and prints on a variety of single or multiple part forms. There is no journal as the host terminal keeps it electronically. The printer can connect through a USB port or a serial port. It receives power from an external power supply.

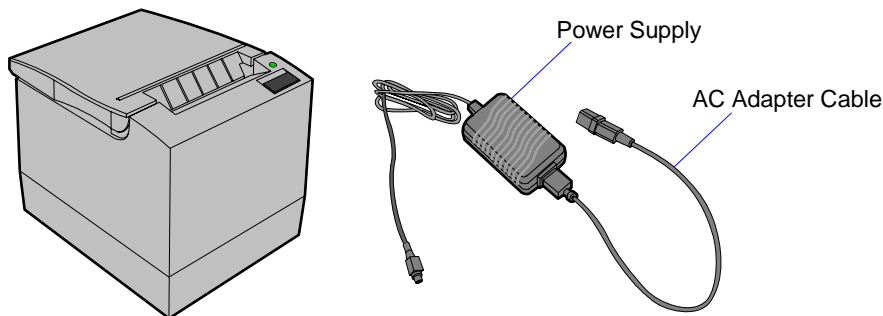


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**Note:** The Printer data cable is not included with the printer.

## 7197 Printer

The NCR 7197 Printer is a fast, quiet, relatively small and very reliable multi-function printer. It prints receipts and is capable of two-color printing. The printer can connect through a USB port or a serial port. It receives power from an external power supply.



19712b

**Note:** The Printer data cable is not included with the printer.

## Software Drivers

Peripheral drivers can be downloaded from the NCR website at:

(<http://www.ncr.com>)

1. At this site, select **Support**.
2. Under Related Items, Services; select **Drivers and Patches**.
3. Select **Retail Support Files**.
4. Select **Retail Platform Software**.

At this screen download the *NCR Retail Peripheral Software Package* for your particular Operating System. Install the software on the 7443 as a PC.

Additional peripheral drivers, such as 2x20 Customer Display and Cash Drawer, are available on this same page under **Terminals** → **7443**.

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## Chapter 2: Hardware Installation

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### Introduction

The 7443 is fully assembled at the factory. This chapter explains how to connect optional peripheral devices to the terminal.

### Installation Restrictions

- Before installing the RealPOS 21, read and follow the guidelines in the *RealPOS 21 Site Preparation Guide* (B005-0000-1728) and the *NCR Workstation and Peripheral AC Wiring Guide* (BST0-2115-53).
- Install the RealPOS 21 near an electrical outlet that is easily accessible. Use the power cord as a power disconnect device.
- Do not permit any object to rest on the power cord. Do not locate the RealPOS 21 where the power cord can be walked on.
- Use a grounding strap or touch a grounded metal object to discharge any static electricity from your body before servicing the RealPOS 21.

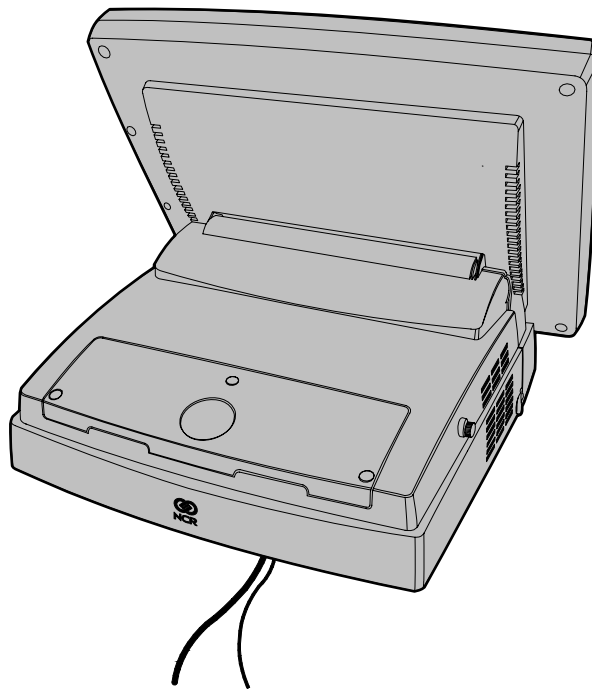
**Caution:** This unit contains hazardous voltages and should only be serviced by qualified service personnel.

**Caution:** **Do not** connect or disconnect the transaction printer while the terminal is on. This can result in system or printer damage.

# Installing Peripherals

## Peripheral Cable Routing

The peripheral cables are connected to the Connector Panel located under the Back Cover. The cables can be routed under the Back Cover or you can remove one or both of the plastic popouts in the Back Cover and route the cables out through them.

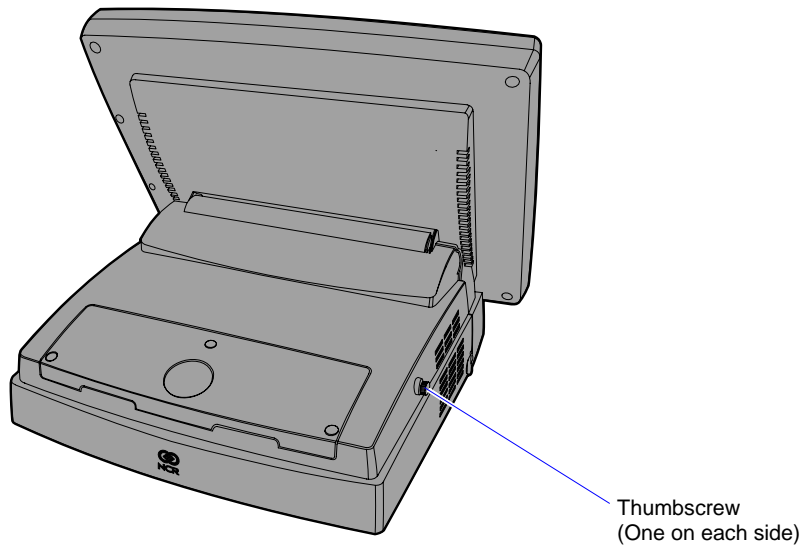


## Accessing the Cable Connectors

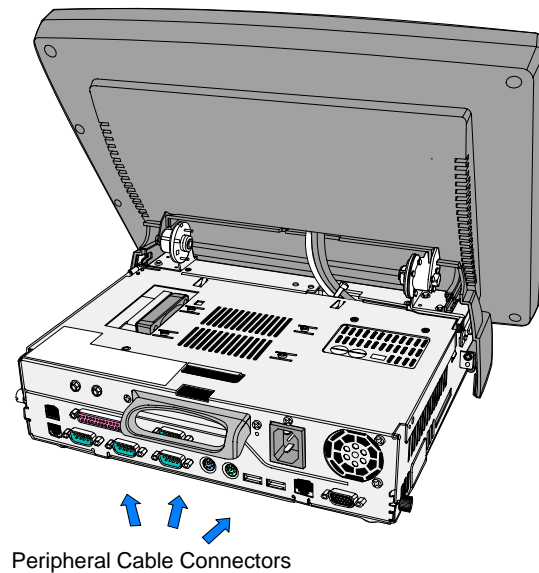
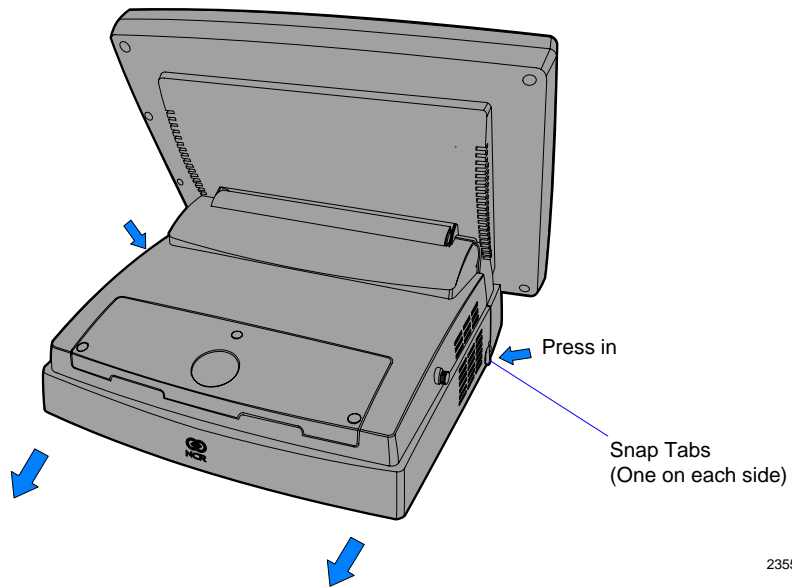
The Panel Connectors are located under Back Cover. Most cables can be connected by tilting the terminal forward and then connecting the cables. If you find it necessary to remove the cover then use the following procedures to remove the cover.

### Removing the Back Cover

1. Loosen the Back Cover Screws (2) on the sides of the terminal.

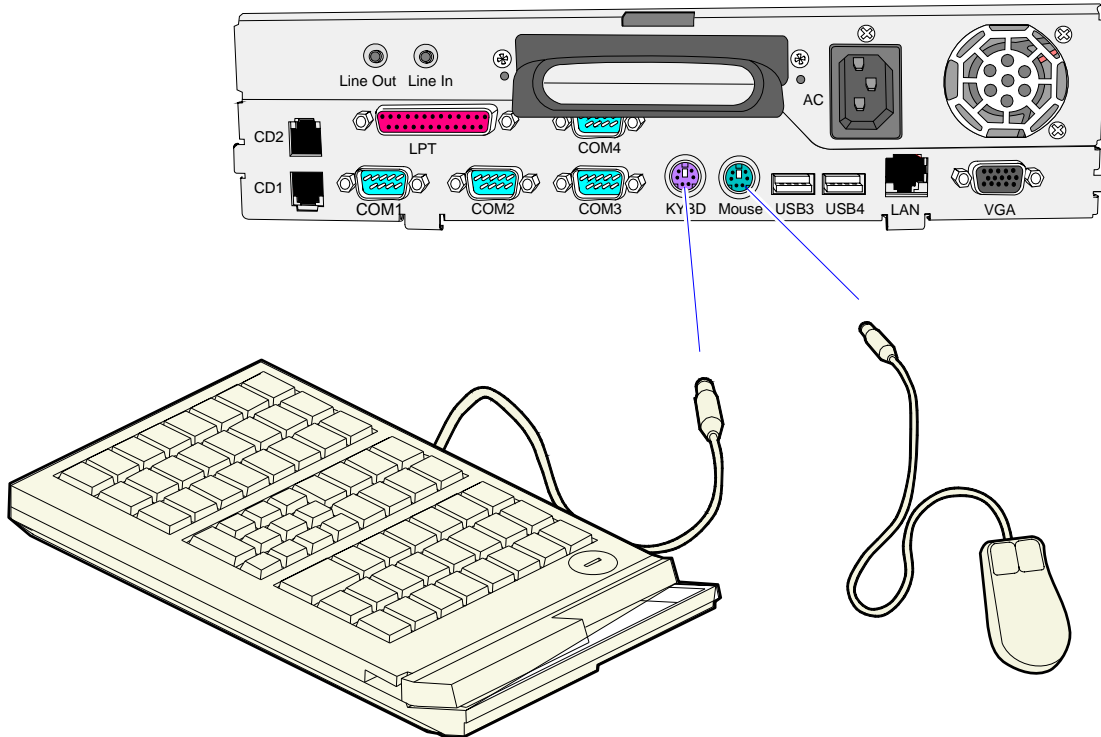


2. Grasp the Back Cover. Press in on the Snap Tabs (2) that are located on the sides of the cover and pull the cover toward the rear of the terminal.



# Keyboard and Mouse Connections

A keyboard and mouse can be directly connected to the terminal through the PS/2 connectors. A PS/2 connector is available for each.

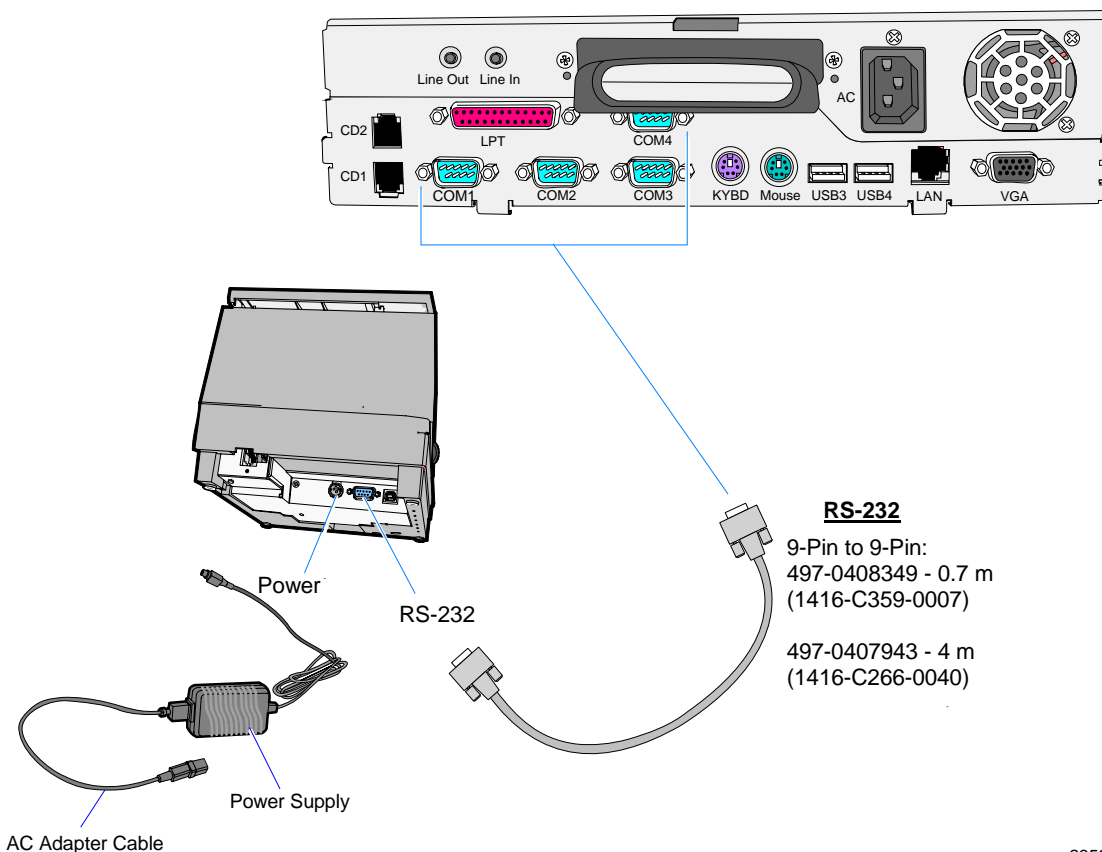


# Installing a Transaction Printer

## RS-232 Printer Connections

1. Connect the RS-232 Data Cable to one of the *RS-232 Connectors* on the printer.
2. Connect the Printer Power Supply to the *Power Connector* on the printer and to an AC outlet.

**Note:** The Power Supply requires a country specific power cord, which is ordered separately.



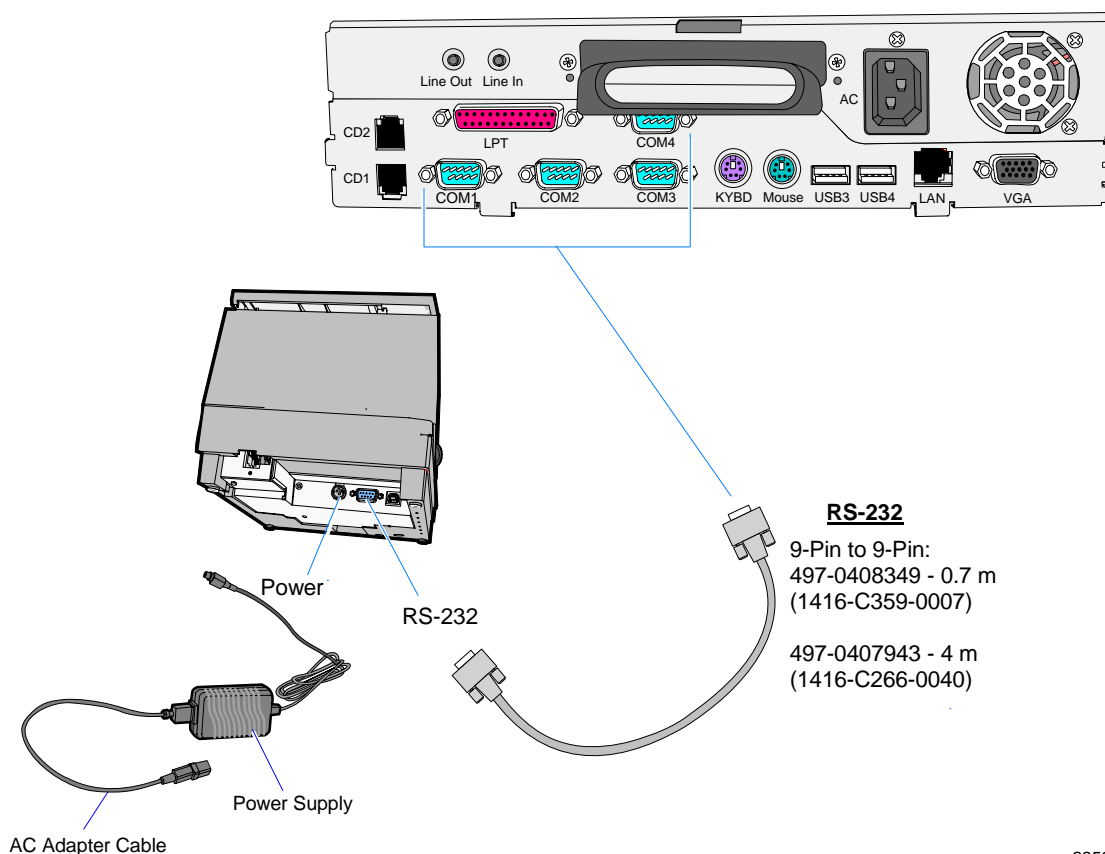


# Installing a Transaction Printer

## RS-232 Printer Connections

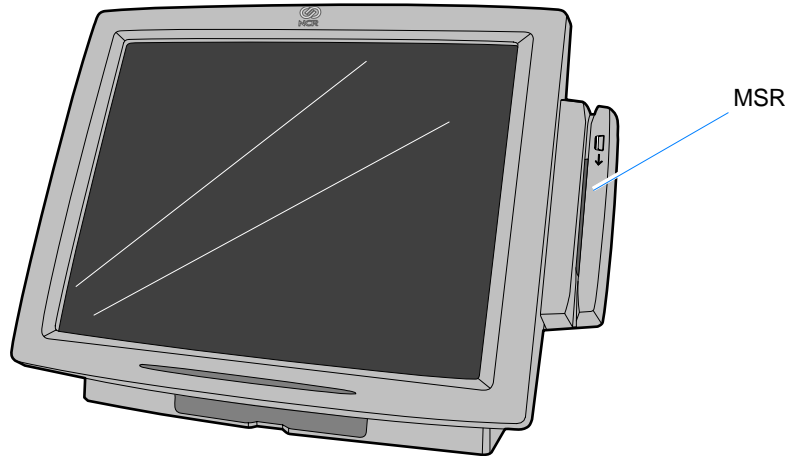
1. Connect the RS-232 Data Cable to one of the *RS-232 Connectors* on the printer.
2. Connect the Printer Power Supply to the *Power Connector* on the printer and to an AC outlet.

**Note:** The Power Supply requires a country specific power cord, which is ordered separately.



## Installing an Integrated MSR

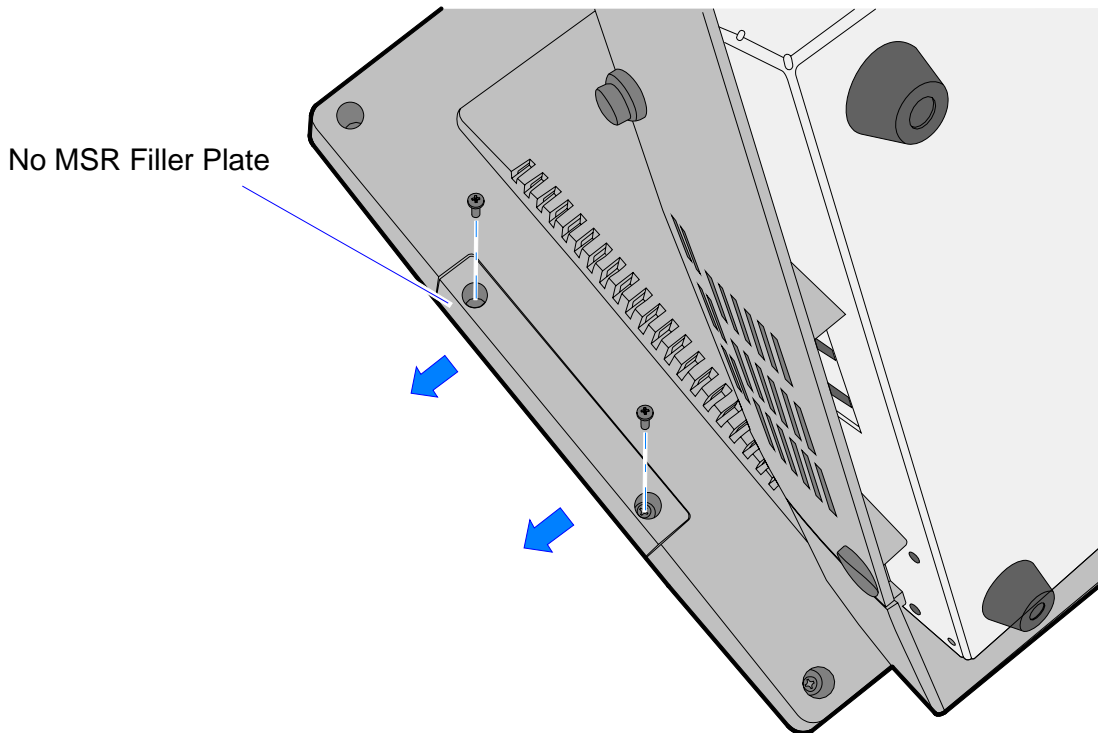
The MSR is a 3-Track ISO magnetic card reader that mounts on the side of the 7443 display assembly.



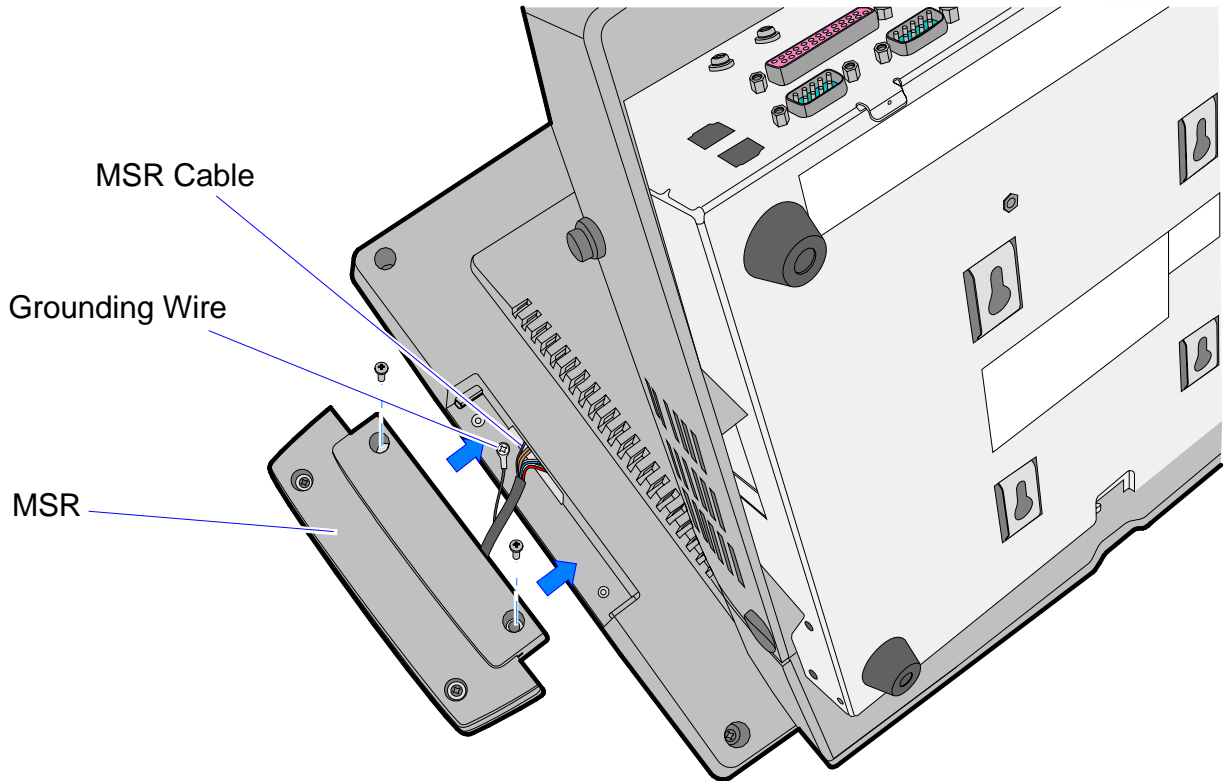
## Installing the Hardware

**Caution:** Static Electricity Discharge may permanently damage your system. Discharge any static electricity build up in your body by touching your computer's case for a few seconds. Avoid any contact with internal parts and handle cards only by their external edges.

1. Lay the unit face down on a flat surface.
2. Remove the screws (2) that secure the No MSR Filler Plate.
3. Slide the plate as shown below to remove it from the terminal.



4. Connect the MSR Cable and the Grounding Wire (screw).
5. Install the MSR as shown below.
6. Secure the MSR with screws (2).



## Configuring the MSR

The MSR may or may not need to be configured. The MSR default setting from the factory is the standard keyboard mode. If you are running OPOS you need to run the Configuration Utility to change to the OPOS mode. If OPOS is required use the following procedures to make the change;

### Downloading the Utility

1. Download the MSR Configuration Utility from the NCR web site.

<http://www.ncr.com>

- a. At this site, select **Support** →
  - b. Under Related Items, Services; select **Drivers and Patches** → **Retail Support Files** → **Retail Platform Software** → **7443** → **1xxx** → **Windows** → **Windows XP (SP 2)**.
  - c. Download the utility (**ConfigurationUtility.zip**).
2. Copy the file to a CDROM or USB Flash Drive.

### Installing the Utility

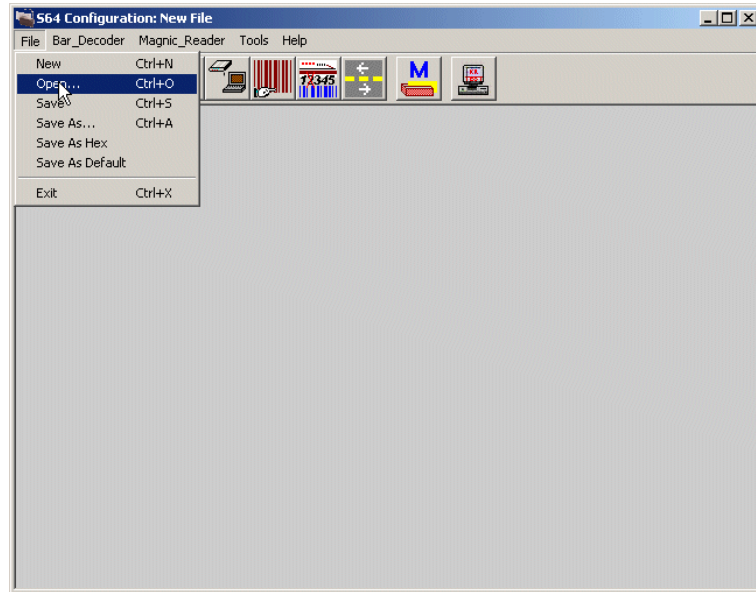
1. Connect the USB CDROM (or USB Flash Drive) containing the utility to the 7443.

**Note:** If a CDROM or Flash Drive cannot be connected to the 7443 you can use a network connection.

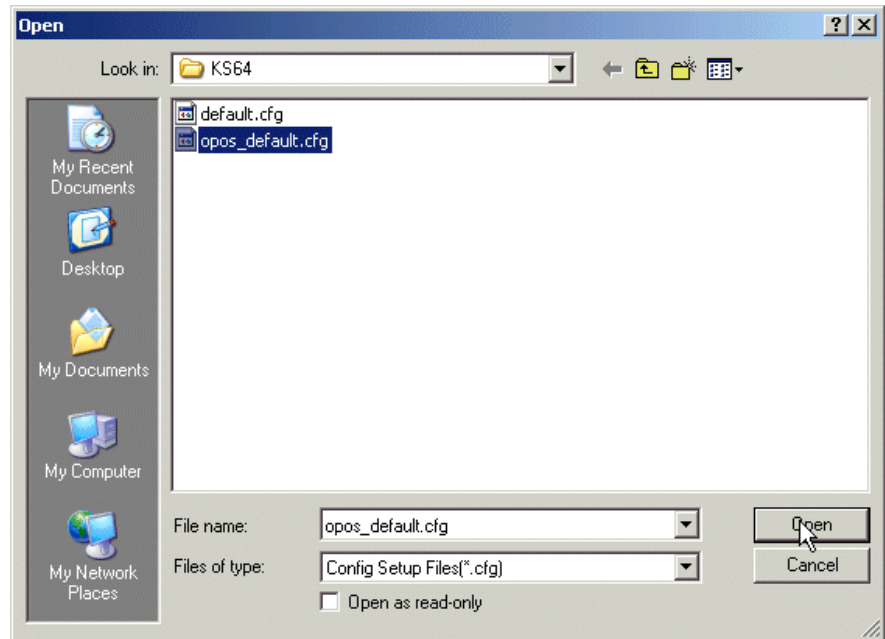
2. Power up the unit.
3. Open Windows Explorer
4. Navigate to the CDROM Drive (or USB Flash Drive).
5. Double-click **ConfigurationUtility.zip**.
6. Double-click the **Configuration** folder.
7. Double-click **Setup.exe**.
8. Accept all the defaults and complete the setup program.

## Configuring the MSR with OPOS Firmware

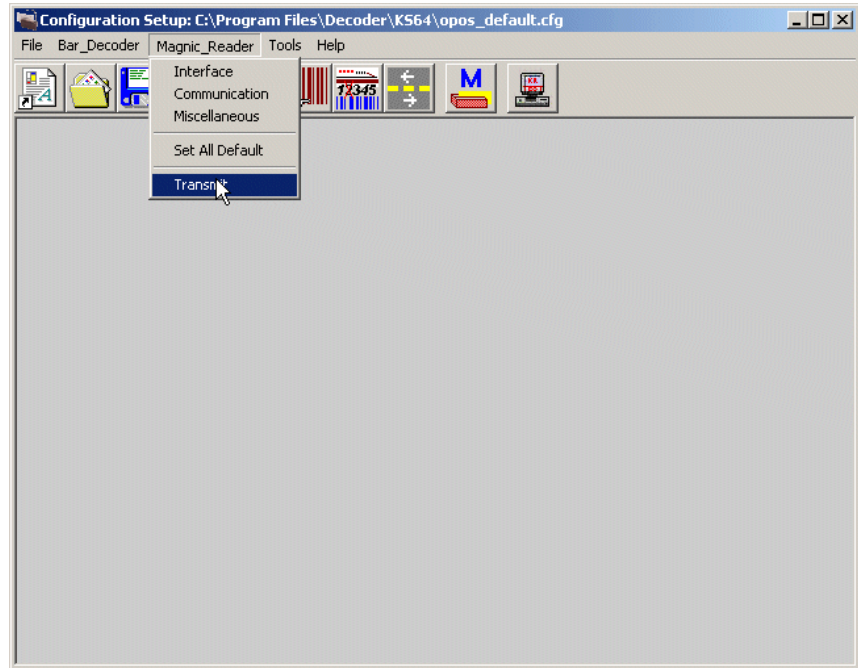
1. Start the **KS64 Decoder** from the **Start** menu (or desktop shortcut).
2. Choose **File** → **Open**.



3. Select **Opos\_Default.CFG** and then click **Open**.

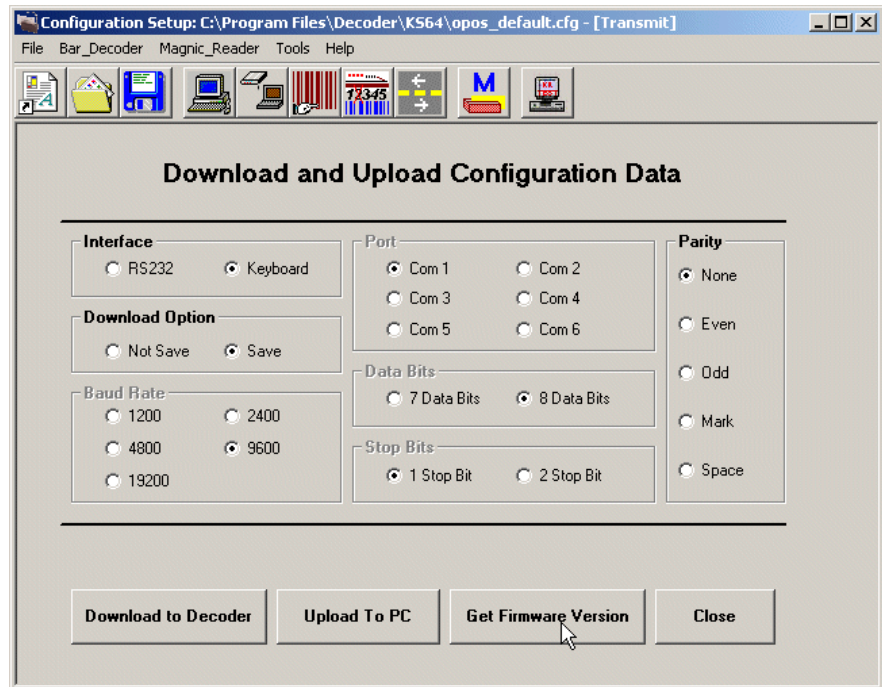


4. Choose **Magnic\_Reader** → **Transmit** to load the configuration settings into the utility.





5. Click **Get Firmware Version**.

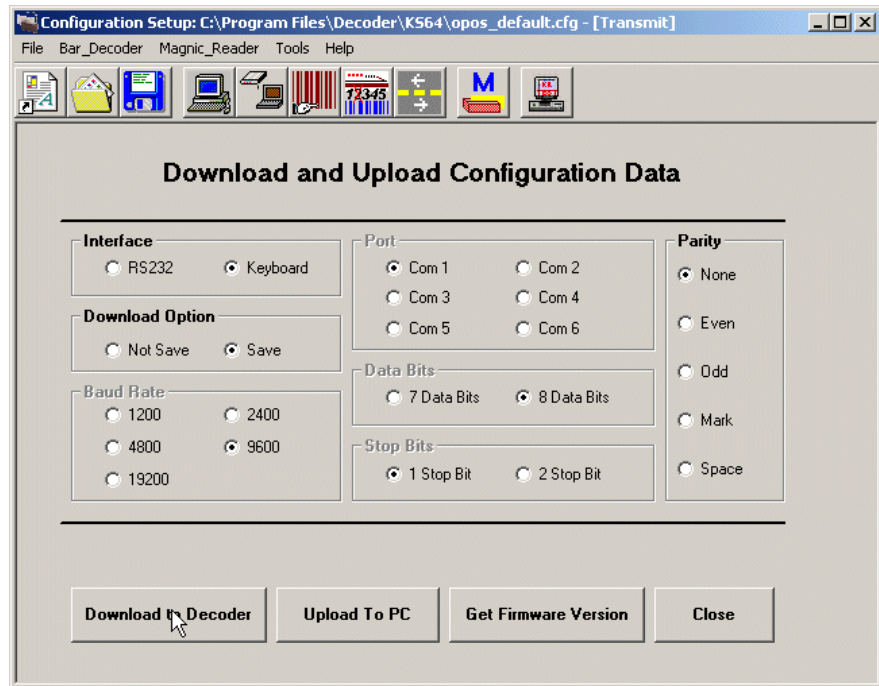


6. Confirm the version is **KS64V3.05.02-1 050428** (or later).



**Note:** It may be necessary to repeat Step 5 until the *Get Firmware Version OK* message appears.

7. Click **Download to Decoder** to load the configuration settings into the MSR.



8. Click **OK** to confirm the download.



9. Click **Close** → **Exit** to exit the utility

### Confirming the MSR Operation (OPOS)

1. From the Start Menu launch **Retail Systems Manager**.
2. Select **MSR**.
3. Select the Profile Name, **NCRMSR.1**. If this profile is not available then the customer should verify operation with their Wedge MSR Profile.
4. Select the **Diagnostics** tab.
5. Select **Attended Diagnostics**.
6. Swipe a credit card and confirm that data is displayed, indicating a good read.
7. Close the **Retail Systems Manager** and restart the terminal.

## Non-Default and Non-Default-OPOS Configurations

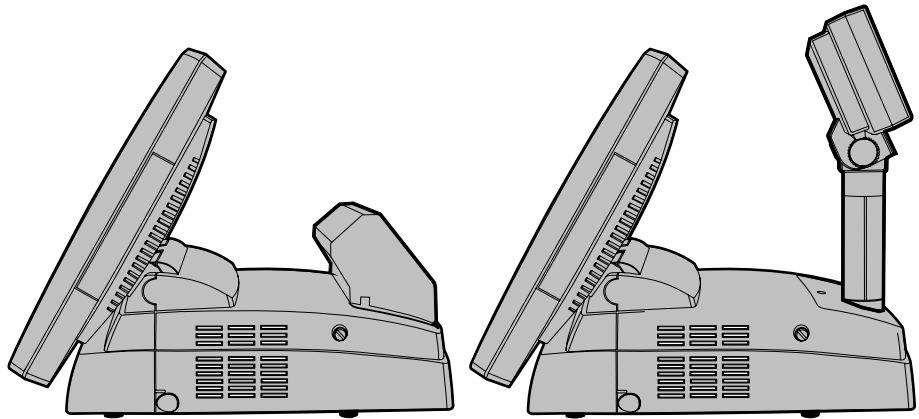
If you need to program the MSR differently than the Default or OPOS Default settings then the customer must program the MSR appropriately, using the same methods that were used when installing the original MSR.

## Installing an Integrated Customer Display

There are two types of integrated customer displays. The displays are the same but the mounts are different.

- Flush Mounted (7443-K456)
- Post Mounted (7443-K454)

The Post Mounted version has two posts of different lengths, which permit different viewing heights for the display



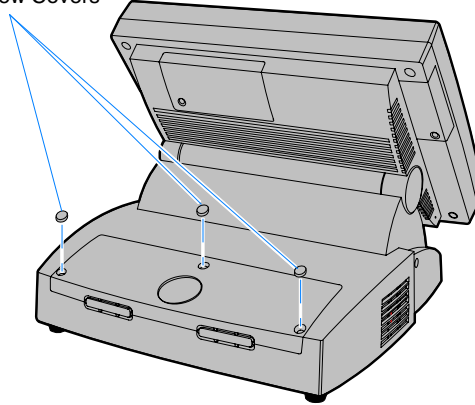
Flush-Mounted Customer Display  
(7443-K456)

Post-Mounted Customer Display  
(7443-K454)

## Installing the Flush-Mounted 2x20 Customer Display (7443-K456)

1. Remove the rubber Screw Covers (3) and then remove the screws from the Customer Display Filler Plate.

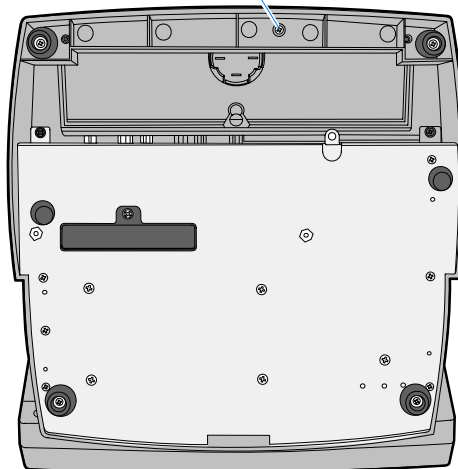
Rubber Screw Covers



22307

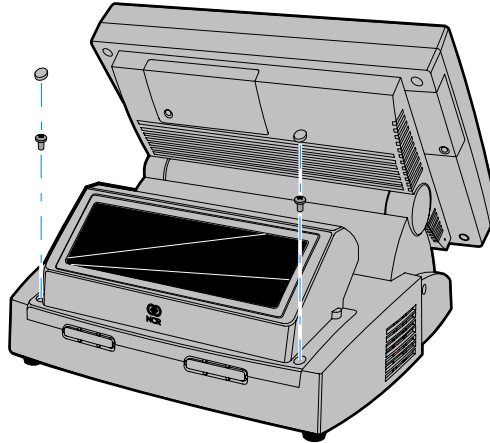
2. Remove the bottom screw in that secures the Customer Display Filler Plate and then remove the plate.

Screw



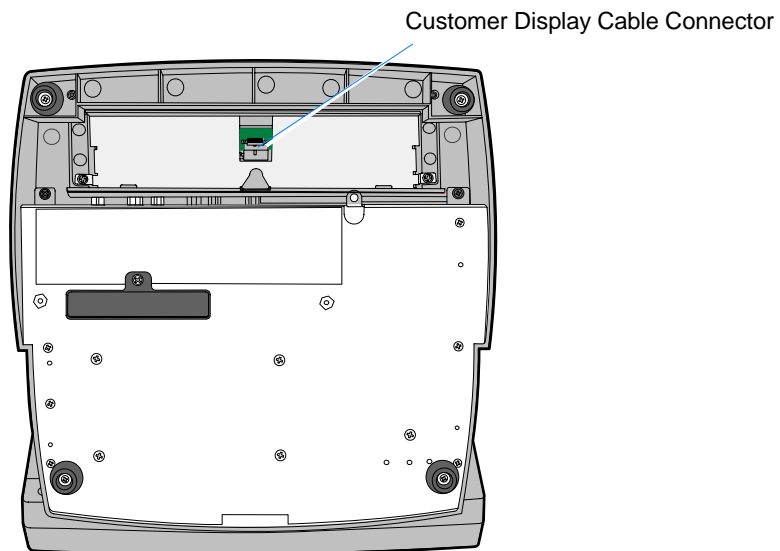
22308

3. Install the Customer Display Assembly onto the Back Cover.
4. Remove the rubber Screw Covers (2) and secure the display with screws. Replace the Screw Covers to conceal the screws.



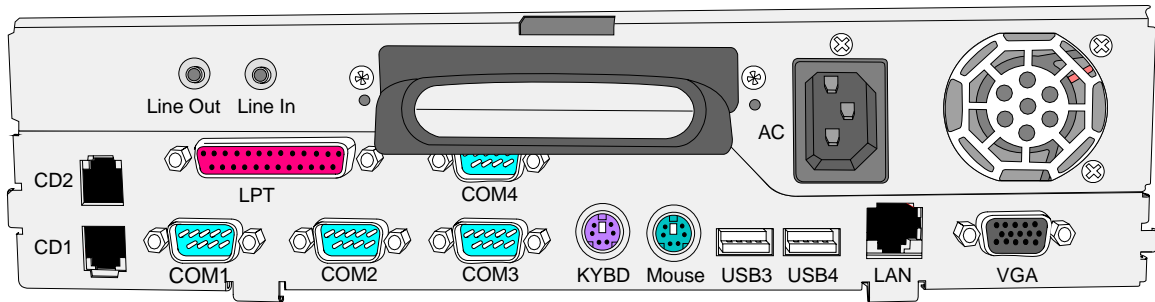
22309

5. Connect the Display Cable to the Customer Display.



22296

6. Connect the other end of the Display Cable to one of the powered RS-232 connectors on the terminal.

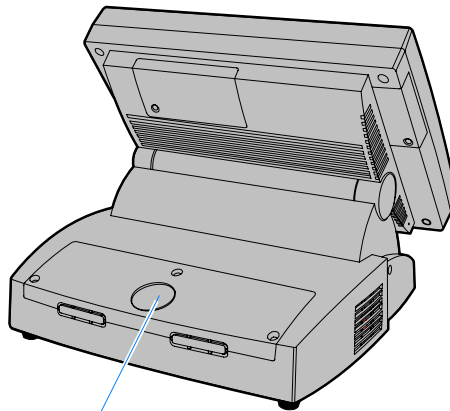


23583

**Note:** The default factory configuration for the RS-232 ports are: COM1, COM3, and COM4 are powered; COM2 is not powered.

## Installing the Post-Mounted 2x20 Customer Display (7443-K454)

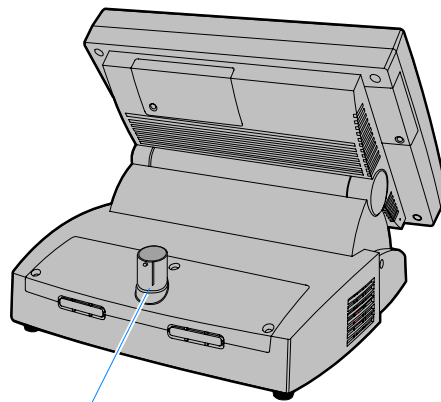
1. Remove the Customer Display Post Filler Plate from the Back Cover by reaching up under the cover and pressing the filler out.



Customer Display Post Filler Plate

21856

2. Install the Post Adapter Mount.

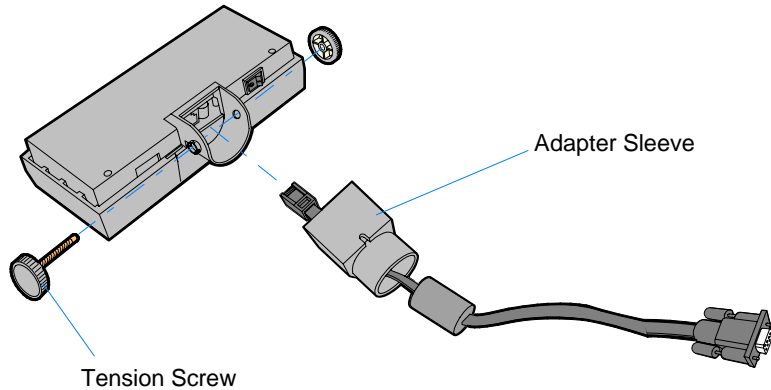


Post Adapter

21886

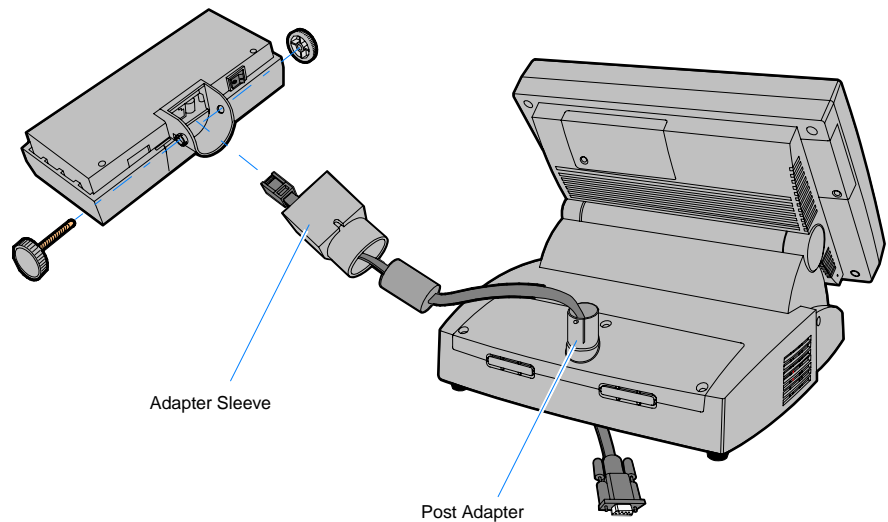


3. Remove the Tension Screw that secures the Adapter Sleeve to the display. Remove the sleeve and disconnect the cable from the display.



21685a

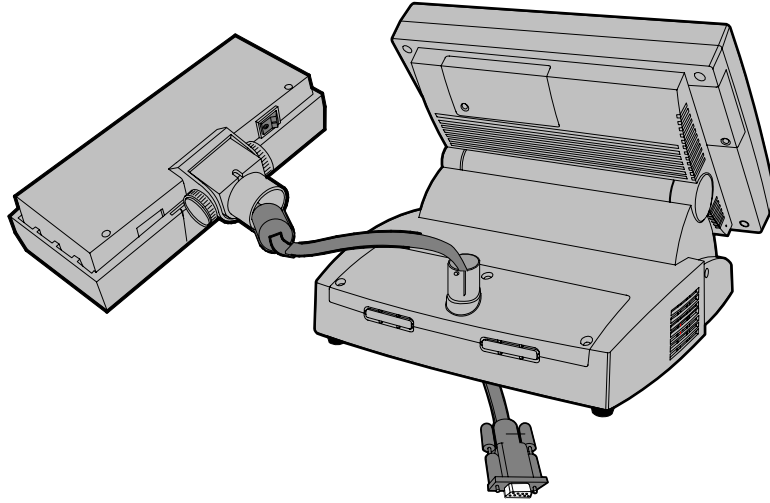
4. Route the cable up through the Post Adapter and Adapter Sleeve.



21885

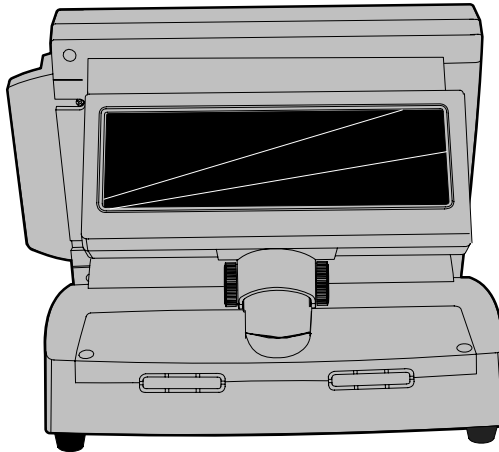
**Note:** There are two Post Extensions included in the kit. If you desire a different height for the display, install one or both extensions at this time.

5. Connect the cable and install the Adapter Sleeve in the display, securing it with the Tension Screw.



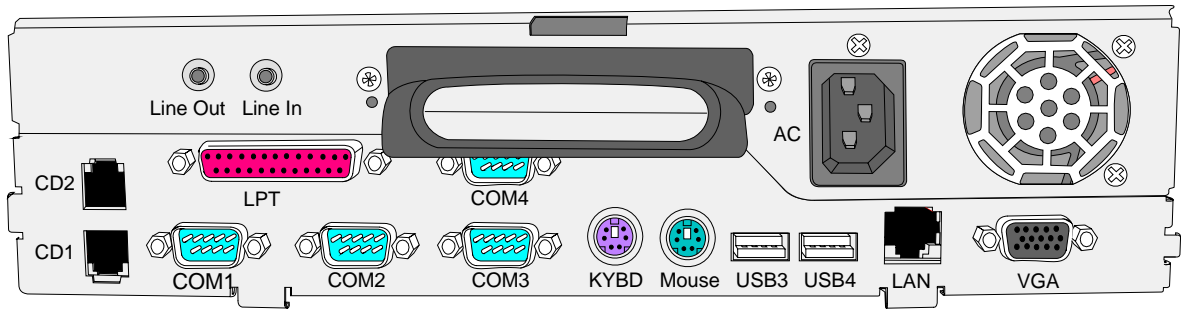
21887

6. Install the Display onto the Post Adapter.



21842

7. Connect the Display Cable to one of the powered RS-232 connectors on the terminal.

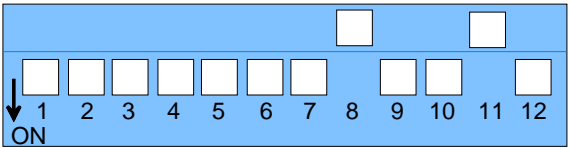


23583

**Note:** The default factory configuration for the RS-232 ports are: COM1, COM3, and COM4 are powered; COM2 is not powered.

## Dip Switch Settings

The dip switches for the display should not require any changing from the factory default settings. The default settings are shown below for reference.



22310

For a detailed descriptions of the dip switch settings see the *2x20 Customer Display* chapter.

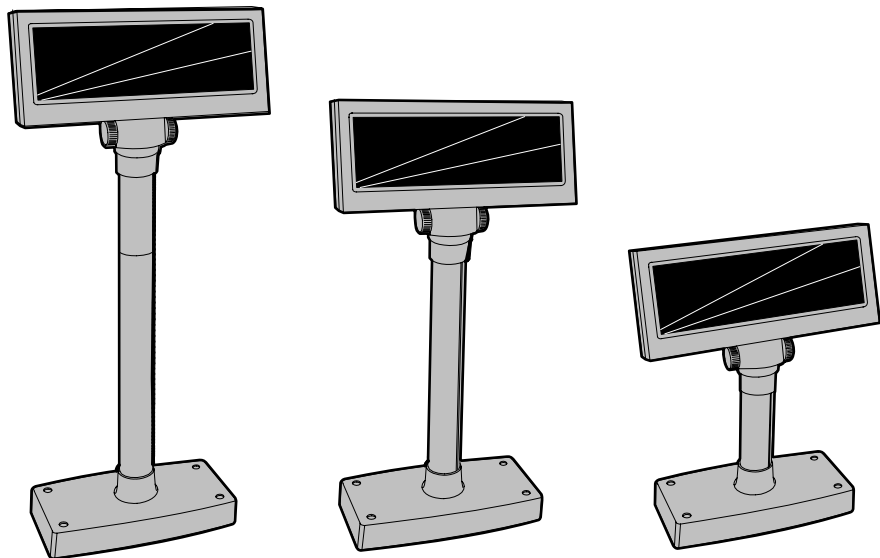
# Installing a Remote Customer Display

## Remote Customer Display

The Remote Customer Display consists of two kits:

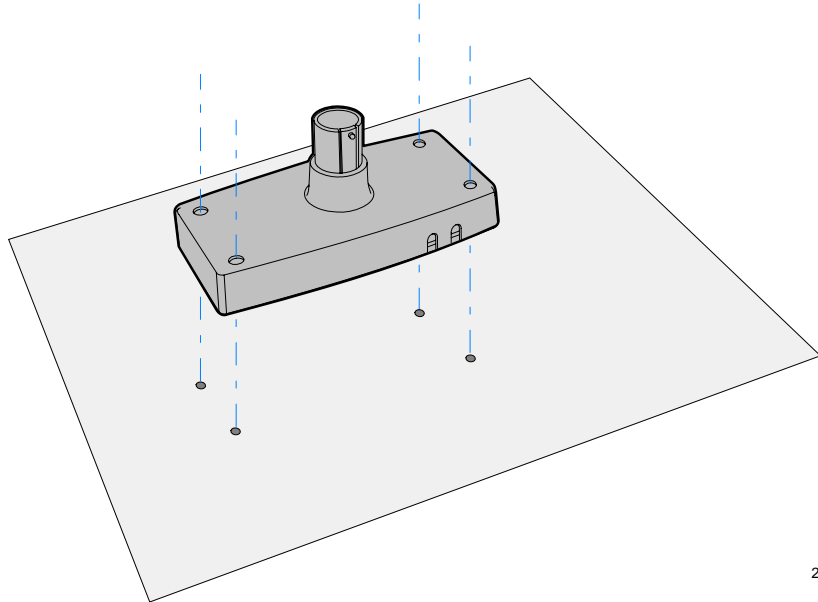
- NCR 7443-K454 Customer Display Kit
- NCR 7443-K455 Customer Display Remote Base Kit

The kit contains two posts of different lengths, which permit different viewing heights for the display.



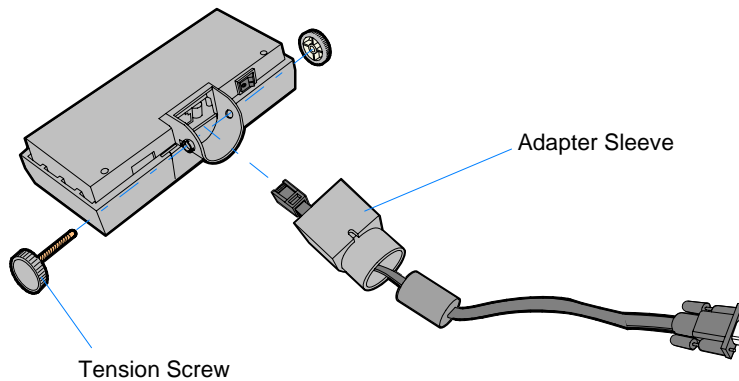
21677a

1. Using the Customer Display Base as a template mark the desired location for the four holes that will be drilled to mount the base.



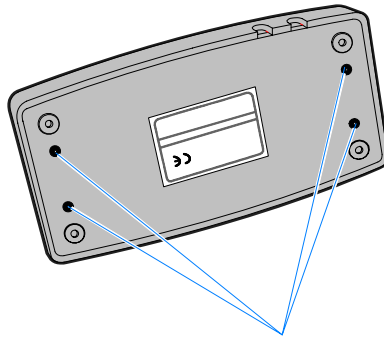
21687a

2. Remove the Cable Cover if applicable).
3. Unscrew the Tension Screw that secures the Adapter Sleeve to the display. Remove the sleeve and disconnect the cable.



21685a

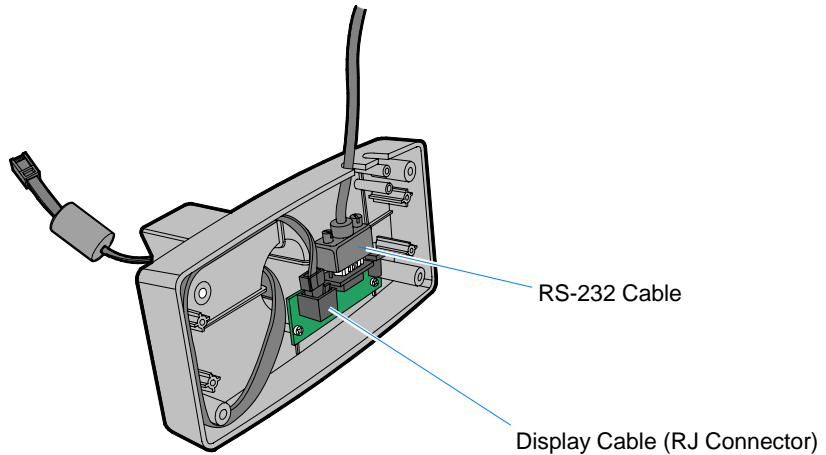
4. Remove the Base Plate from the Customer Display Base (4 screws).



Bottom Plate Screws

21678a

5. Route the Display Cable as shown below and connect it to the RJ connector on the Customer Display PCB.
6. Connect the RS-232 Cable as shown.



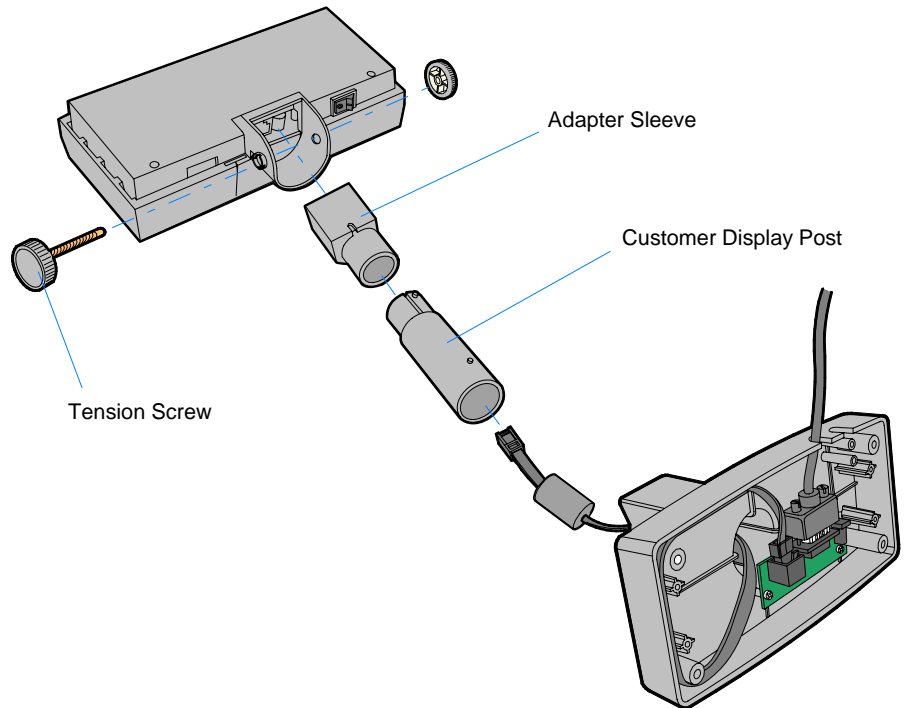
RS-232 Cable

Display Cable (RJ Connector)

21671a

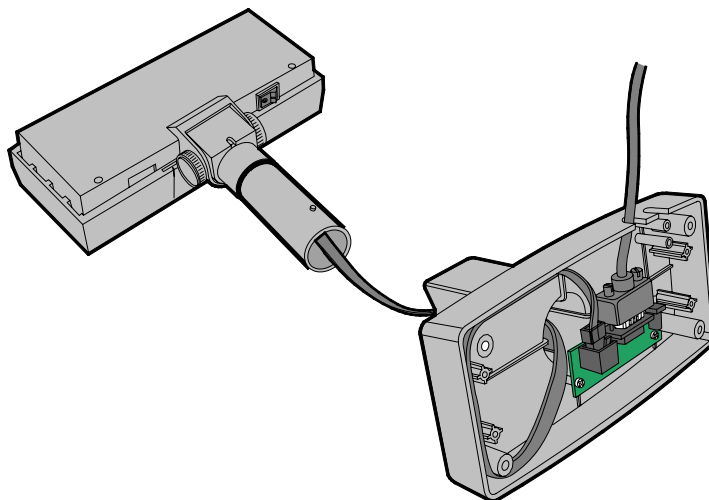
7. Route the Display Cable through the Customer Display Post and Adapter Sleeve.

**Note:** There are two Customer Display Posts included in the kit that can be used separately or combined to achieve the desired viewing height.



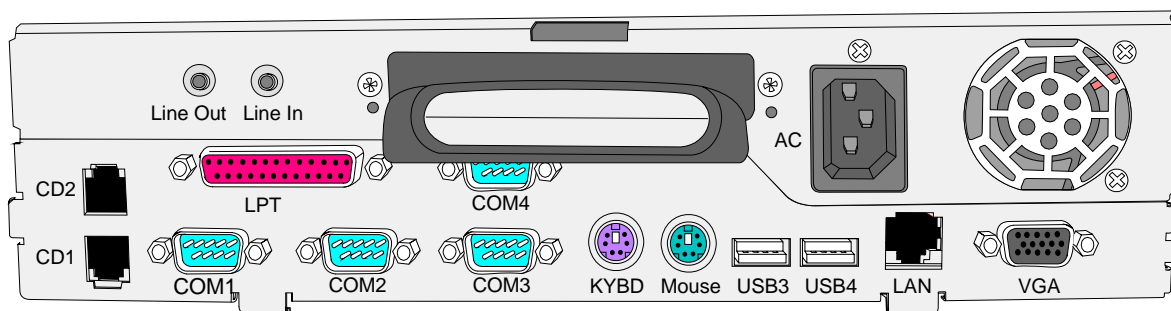
21673a

8. Connect the cable and install the Adapter Sleeve in the display, securing it with the Tension Screw.



21686a

9. Replace the Base Plate on the Customer Display.
10. Connect the RS-232 Cable to one of the powered RS-232 connectors on the terminal.



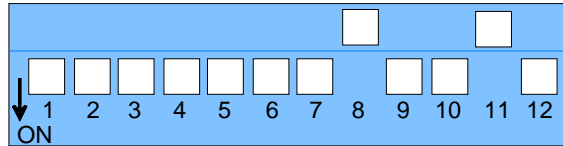
23583

**Note:** The default factory configuration for the RS-232 ports are: COM1, COM3, and COM4 are powered; COM2 is not powered.



## Dip Switch Settings

The dip switches for the display should not require any changing from the factory default settings. The default settings are shown below for reference.



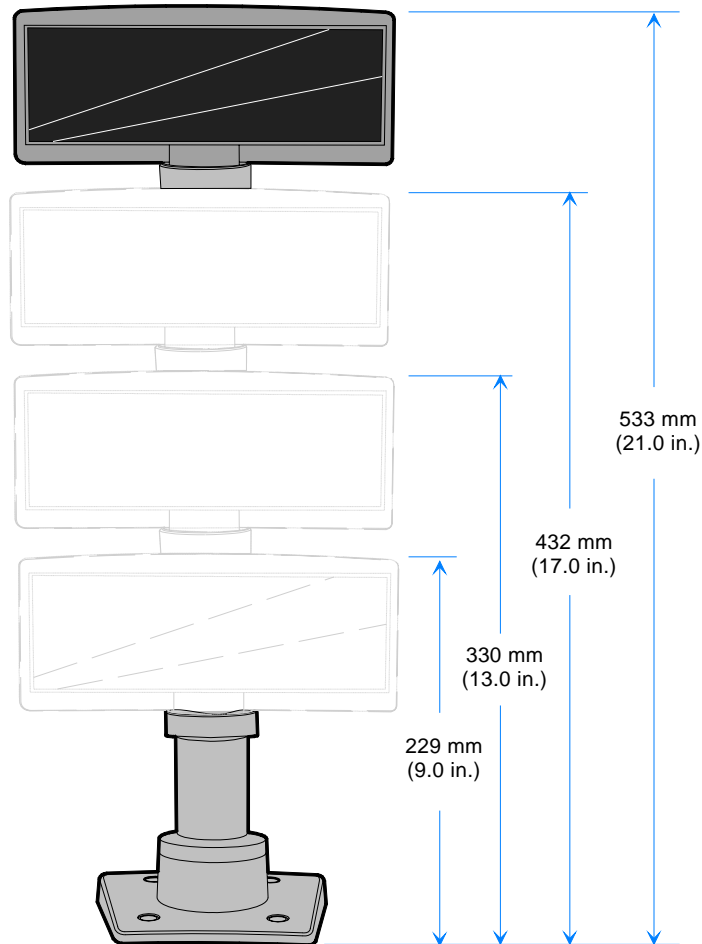
22310

For a detailed descriptions of the dip switch settings see the *2x20 Customer Display* chapter.

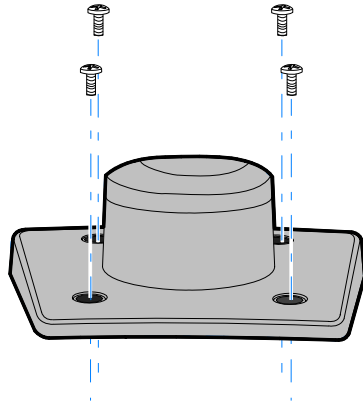
11. Mount the display to the table top using screws (4).

## Installing an NCR 5975 Remote Customer Display

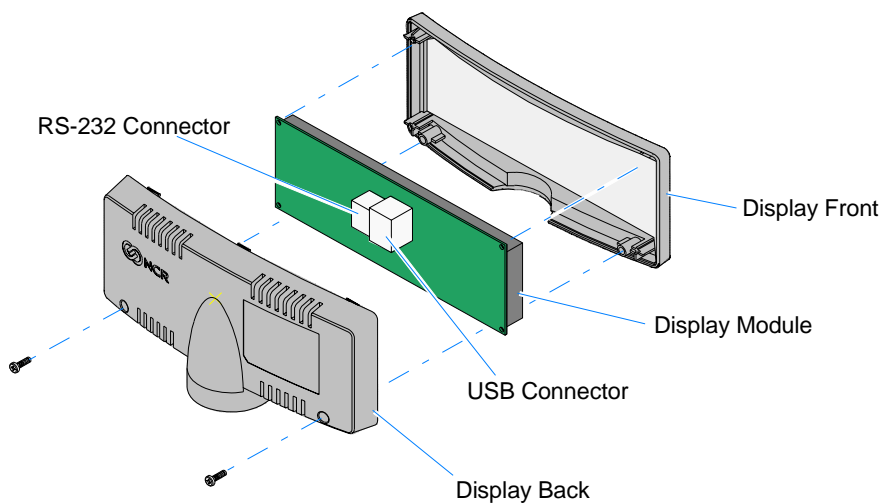
There are four different length posts available, in four inch increments.



1. Locate the Display Mount within 4 meters (13 ft.) of the host terminal.
2. Determine if the cable should be routed down through the mounting surface or if it should be run on top of the surface. Drill a hole if necessary.
3. If you are installing with a post greater than 215 mm (8.5 in.) secure the Base Plate with screws (4) that are provided.



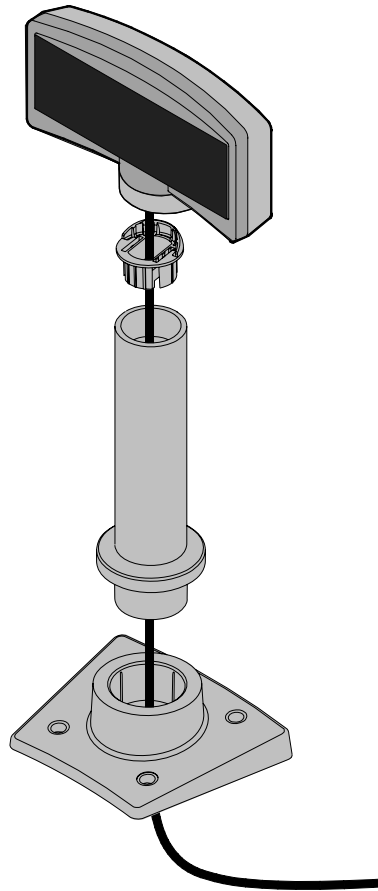
4. Connect the Interface Cable to the Display Module.
  - a. Remove the screws (2) from the Display Back.
  - b. Remove the Display Back.
  - c. Route the Interface Cable through the opening in the Display Back.
  - d. Connect the cable to the proper connector on the Display Module.



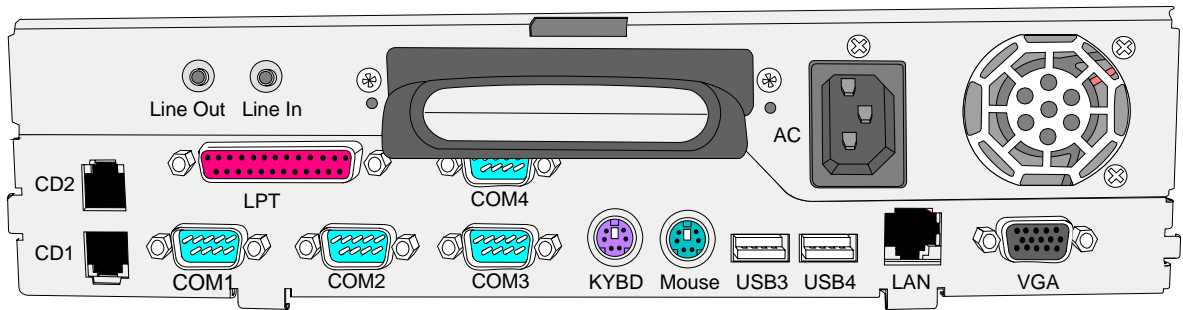
22909

- e. Reassemble the Display Assembly.

5. Route the Interface Cable through the Post
6. Assemble the Post components.



7. Connect the Display Cable to a powered RS-232 connector on the terminal.



23583

**Note:** The default factory configuration for the RS-232 ports are: COM1, COM3, and COM4 are powered; COM2 is not powered.

8. Configure the terminal serial port as follows:
  - 9600 baud
  - 8 data bits
  - 1 start bit
  - No parity
  - 1 stop bit
  - Half-Duplex

# Installing a Memory Module

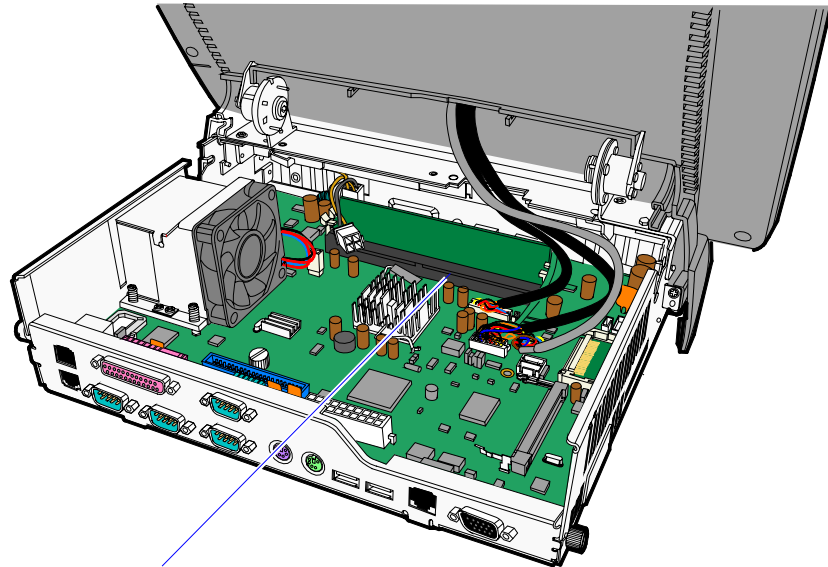
The Motherboard contains two DIMM sockets. The standard memory configuration has a 256 MB DIMM in slot #1.

To install a DIMM, follow these steps:

1. Remove the Back Cover
2. Remove the Electronics Box Cover.

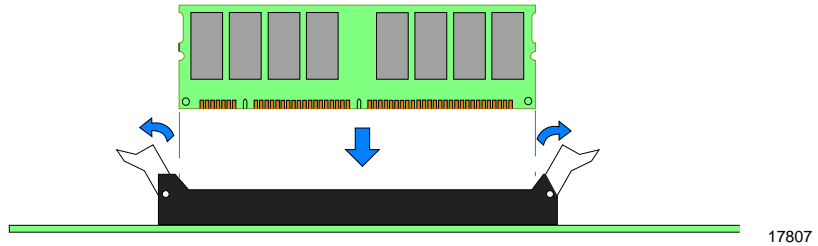
**Note:** It is not necessary to disconnect the cables to the Electronics Box Cover. You can lay it off to one side to give you enough room to access the DIMM sockets.

3. Locate the DIMM socket.

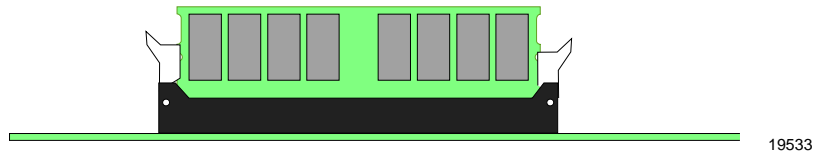


Memory DIMM Sockets

4. Open the latches at the ends of one of the sockets.



5. Align the DIMM in the socket and push it straight down (Note that the DIMM connector is keyed).
6. Ensure that the edges of the DIMM engage the latches and that the latches are completely closed.





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## Chapter 3: Setup

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### Entering Setup

1. Connect an alphanumeric PS/2 keyboard to the terminal.
2. Apply power to the terminal.
3. At the prompt at the bottom of the screen press **[Del]** to enter setup.

### BIOS Default Values

#### Standard CMOS Features

System Time	(variable)
System Date	(variable)
IDE Devices	(variable)
Drive A	[None]
Video	[EGA/VGA]
Halt On	[All , But Keyboard]

## Advanced BIOS Features

Quick Power On Self Test	[Enabled]
First Boot Device	[USB-FDD]
Second Boot Device	[HDD-0]
Third Boot Device	[LAN]
Boot Other Device	[Disabled]
Boot Up NumLock Status	[On]
Typematic Rate Setting	[Enabled]
Typematic Rate (Characters/Second)	30
Typematic Delay (msec)	250
Security Option	[Setup]
APIC Mode	[Disabled]
* MPS Version Control For OS 1.4	
HDD S.M.A.R.T Capability	[Disabled]

## Advanced Chipset Features

ACP Aperture Size (MB)	64
** On-Chip VGA Setting **	
On-Chip VGA	[Enabled]
On-Chip Frame Buffer Size	[32MB]

## Integrated Peripherals

Onboard LAN Boot ROM	[Enabled]
OnChip IDE Device	[Press Enter]
On-Chip Primary PCI IDE	[Enabled]
IDE Primary Master PIO	[Auto]
IDE Primary Slave PIO	[Auto]
Primary IDE Max. UDMA	[Auto]
IDE Primary Master IDMA	[Auto]
IDE Primary Slave UDMA	[Auto]
On-Chip Secondary PCI IDE	[Enabled]
IDE Secondary Master P10	[Auto]
IDE Secondary Slave P10	[Auto]
Secondary IDE Max. UDMA	UDMA 33
IDE Secondary Master UMDA	[Auto]
IDE Secondary Slave UMDA	[Auto]
Onboard Device	[Press Enter]
USB Controller	[Enabled]
USB 2.0 Controller	[Enabled]
AC97 Audio	[Auto]

Onboard SuperIO Device	[Press Enter]
Serial Port 1	[3F8]
Serial Port 1 Use IRQ	[IRQ4]
Serial Port 2	[2F8]
Serial Port 2 Use IRQ	[IRQ3]
UART Mode Select	[Normal]
x Rx/D , Tx/D Active	Hi,Lo
x IR Transmission Delay	Enabled
x UR2 Duplex Mode	Half
x Use IR Pins	IR-Rx2Tx2
Parallel Port 1	[378ORQ7]
Parallel Port Mode	[SPP]
x EPP Mode Select	EPP1/7
x ECP Mode Use DMA	3
Serial Port 3	[3E8]
Serial Port 3 Use IRQ	[IRQ10]
Serial Port 4	[2E8]
x Serial Port 4 Use IRQ	IRQ10
Serial Port 5	[4F8]
x Serial Port 5 Use IRQ	IRQ10
Serial Port 6	[4E8]
x Serial Port 6 Use IRQ	IRQ10
Serial Port 3-6 IRQ Share	[Enabled]

## Power Management Setup

Power Supply Type	[ATX]
Power On Control	[Press Enter]
Soft-Off by PWR-BTTN	[Delay 4 Sec.]
PWRON After PWR-Fail	[Off]
Power On by PCI PME/LAN	[Disabled]
Power On by Ring	[Disabled]
Resume by Alarm	[Disabled]
x Date(of Month) Alarm	0
x time(hh:mm:ss) Alarm	0 : 0 : 0
ACPI Function	[Enabled]
Power Management	[User Defined]
Video Off Method	[Blank Screen]
Video Off In Suspend	[Yes]
Suspend Type	[Stop Grant]
Modem Use IRQ	[NA]
Suspend Mode	[Disabled]
Suspend Mode	[Disabled]
** Reload Global Timer Events **	
Primary IDE 0	[Disabled]
Primary IDE 0	[Disabled]
Secondary IDE 0	[Disabled]

Secondary IDE 0	[Disabled]
Secondary IDE 0	[Disabled]
PCI PIRQ	[Disabled]

## PnP/PCI Configurations

PNP OS Installed	[No]
Reset Configuration Data	[Disabled]
Resources Controlled By	[Auto(ESCD)]
X IRQ Resources	Press Enter
INT Pin 1 Assignment	[Auto]
INT Pin 2 Assignment	[Auto]
INT Pin 3 Assignment	[Auto]
INT Pin 4 Assignment	[Auto]
INT Pin 5 Assignment	[Auto]
INT Pin 6 Assignment	[Auto]
INT Pin 7 Assignment	[Auto]
INT Pin 8 Assignment	[Auto]

---

## Chapter 4: Operating System Recovery

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### Introduction

This chapter discusses procedures on how to recover the Operating System from a CD-ROM. The 7443 does not have an internal CD-ROM drive. Therefore you can use one of the following:

- Teac USB External CD-ROM Drive (2336-K208)
- Network (See the *NCR FitClient Software User's Guide*, B005-0000-1235.)

**Caution:** When performing an OS recovery from a larger source image (larger disk) to a smaller destination disk, you must use a special procedure (see the *OS Recovery from a Larger Disk Image* section).

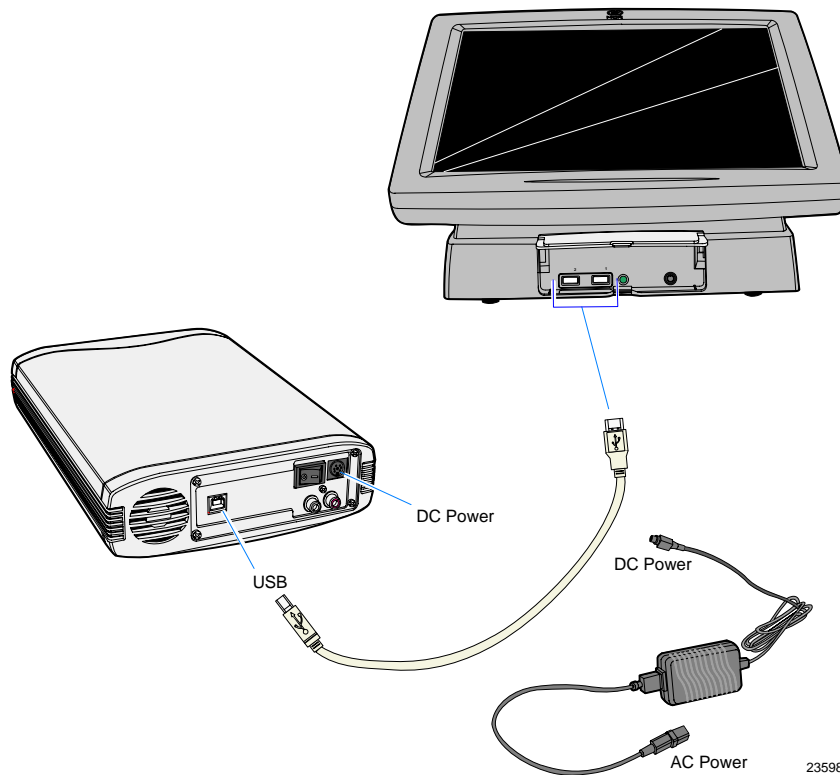
### Prerequisites

The following are required in order to perform an OS recovery from a CD.

- Bootable CD-ROM Drive (external)
- Keyboard

## OS Recovery Procedures

1. Connect the external USB CD-ROM drive to a *USB* connector on the terminal.



23598

2. Connect the Power Supply to the *DC Power* connector on the CD-ROM and to an AC outlet.
3. Apply power to the CD-ROM drive (switch on the back).
4. Apply power to the terminal.
5. Press **[DEL]** during boot to enter Setup.
6. At the Setup Utility menu, select **Advanced BIOS Features**.
7. Set the **First Boot Device** to **USB-CDROM**.



8. Press **[Esc]** to return to the Setup Utility menu.
9. Select **Save and Exit Setup**.
10. As the system reboots, insert the *NCR Partition Image Application* CD (D370-0605-0100). You should see a message during boot, indicating that the CD-ROM has been recognized.
11. At the menu, enter **1** to select the image restore function.

```
#####
      NCR Partition Image Application
#####
```

Select an option

- 1 - Process Image/Script CD
- 2 - View Partition Image Documentation
- 3 - Exit and reboot

12. At the prompt, insert the CD (disk 1 if OS occupies more than one disk) which contains the operating system image. Press **[Enter]**.
13. At the prompt to continue, press **1** (Yes) and **[Enter]** to continue.
14. Select **[A]** to continue.

Confirm Pending Operation

```
Mode is:  Restore
Image is:  nnnnnxxx
```

- 1) Target Drive is: Primary Master
- 2) Resize last data partition if possible: no
- 3) Reboot after operation complete: yes

- A) Accept arguments and continue with operation
- V) View OS Documentation
- Q) Quit and reboot

Select:

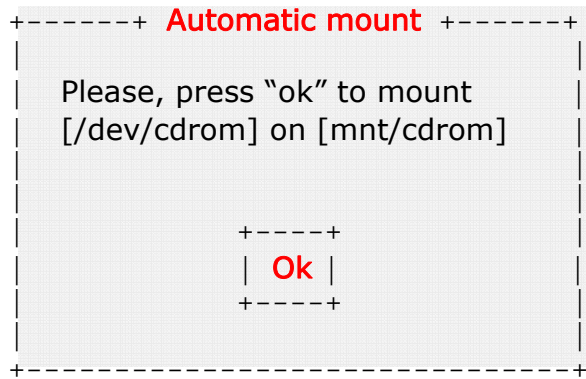
1. Press **[Enter]** at the following prompt.

### Restoring nnnnnxxx-PART1 to Primary Master partition 1

P1 has the image so CD does not need to be replaced

Press <enter> now and then again when the [OK] box appears

2. Press **[Enter]** to mount the CDRom.



3. Repeat the previous step for each CD as required.
4. Remove the CD before the system reboots.

---

## Chapter 5: BIOS Updating Procedures

---

### Introduction

This chapter discusses procedures on how to update the terminal BIOS from a CD-ROM. The 7443 does not have an internal CD-ROM drive. Therefore you can use one of the following:

- Teac USB External CD-ROM Drive (2336-K208)
- Network (See the *NCR FitClient Software User's Guide*, B005-0000-1235.)

### Prerequisites

The following are required to perform a BIOS update.

- Bootable USB CD-ROM Drive
- PS/2 Keyboard
- BIOS Software. Download from the NCR website:  
<http://www.ncr.com>
  - d. At this site, select **Support**.
  - e. Under Related Items, Services; select **Drivers and Patches**.
  - f. Select **Retail Support Files**.
  - g. Select **Retail Platform Software**.
  - h. Under Terminals, select **7443**.
  - i. Select your terminal model.
  - j. Select your OS.
  - k. Select the BIOS **7443\_nn.exe** file
  - l. Save the software to your local hard drive.

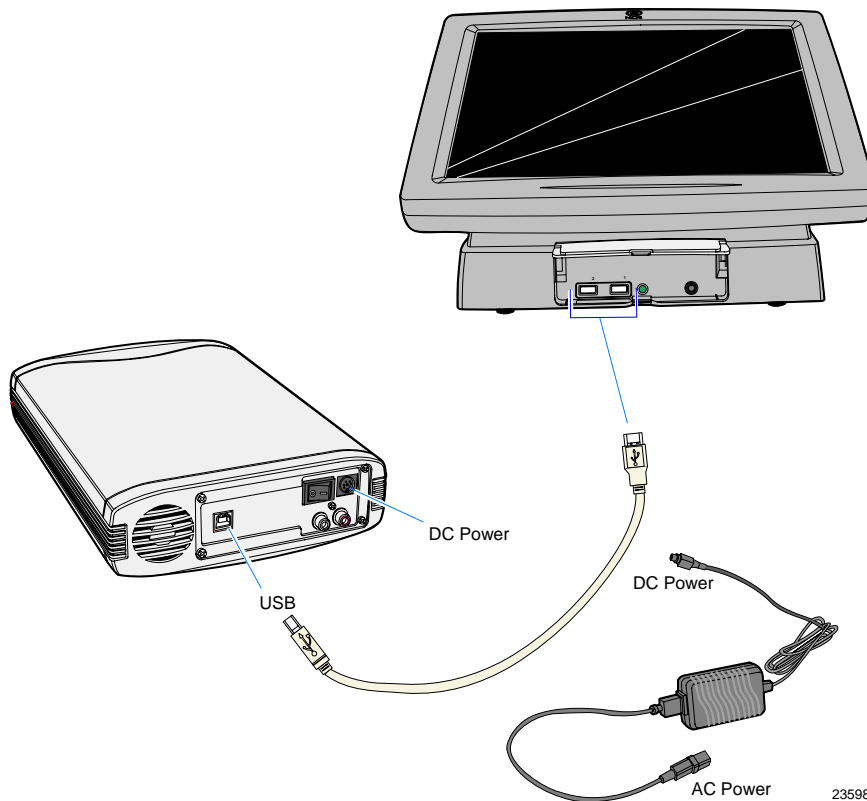
## Creating the Bootable Media

After downloading the BIOS software you need to create a bootable CD.

1. Insert a flex diskette in the PC that has the BIOS software present.
2. Execute the BIOS software (**7443\_nn.exe**). This is a self-extracting file that will extract the files to the current directory.
3. Execute the **Runme.bat** file.
4. At the DOS window prompt hit any key to continue. The program then creates the bootable flex diskette containing the BIOS update software.
5. Use the bootable flex diskette and follow your CD-RW drive manufacturer's procedures for creating a bootable CD.

## Connecting the External USB CD-ROM Drive

1. Connect the external USB CD-ROM drive to a *USB* connector on the terminal.



2. Connect the Power Supply to the *DC Power* connector on the CD-ROM and to an AC outlet.
3. Apply power to the CD-ROM drive (switch on the back).

## BIOS Updating Procedures

1. Connect a PS/2 Keyboard to the terminal.
2. Apply power to the terminal.
3. Press **[DEL]** during boot to enter Setup.
4. At the Setup Utility menu, select **Advanced BIOS Features**.
5. Set the **First Boot Device** to **USB-CDROM**.
6. Press **[Esc]** to return to the Setup Utility menu.
7. Select **Save and Exit Setup**.
8. Insert the media containing the BIOS update software.
9. Follow the screen prompts on the client to update the BIOS. You can select two methods to run the update program.
  - Automatic BIOS Update – update process runs unattended

**Note:** You will see a prompt for terminal model and serial number information if the program detects invalid information in the current BIOS, or if you are replacing the processor board, in which case there is not model/serial number information in the BIOS.

**Important:** Model/Serial Number is mandatory.
  - Interactive BIOS Update – permits you to input/replace the model/serial number information that is stored in the BIOS.

**Note:** Model/Serial number data that is currently stored in the BIOS is displayed during power up.
10. You should see a green window, indicating a successful update.
11. Disconnect the keyboard and remove the media before the system reboots.

---

## Chapter 6: 7443-K454 2x20 Customer Display

---

**Note:** For information about the NCR 5975 2x20 Customer Display see the *NCR 5975 2x20 Customer Display User Guide (B005-0000-1672)*.

### Features

- Data is displayed on two 20-column lines.
- Large blue–green characters
- The DIP switch settings emulate the command mode, baud rate, and which international character set.
- Command emulation modes include RealPOS 21 and Epson ESC/POS.
- The display area can be controlled by Windows.
- RS-232 Interface; baud rate from 4800 to 38400 bps.
- Reverse characters can be specified using the Epson command set.

### Software Drivers

Peripheral drivers can be downloaded from the NCR website (<http://www.ncr.com>)

1. At this site, select **Support**.
2. Under Related Items, Services; select **Drivers and Patches**.
3. Select **Retail Support Files**.
4. Select **Retail Platform Software**.
5. Select **Terminals** → **7443** → [**Model**] → [**Platform**] → [**OS**].
6. At this screen download the *OPOS\_Customer\_Display.ZIP* file. Install the software on the 7443 as a PC.

## General Specifications

Display method	Vacuum fluorescent display
Number of character	40 characters ( 20 columns x 2 lines)
Character font	5 x 7 Dot matrix
Display color	Blue green
Brightness	700 cd /m <sup>2</sup>
Character type	96 alphanumeric 13 kinds of international character set
Character size	9.0mm x 5.25mm
Power supply	12 Vdc
Power consumption	3 - 6 W
Panel dimensions	224 (W) x 93 (H) x 50(D) mm
Support dimensions	Long support : 22 cm Short support : 9 cm
Base dimensions	190(w)x55(h)x96(d)mm
Viewing angle	-5 - 60 degrees
Rotation angle	Maximum 270 degrees
Weight	0.6 Kg (1.25 lbs.)
Operating temperature	5 - 45°C
Operating Humidity	30%-85%
Storage Temperature	-10 - 55°C
Storage Humidity	10%-85%



# Interface

## Specifications

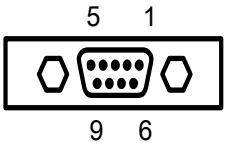
Data transmission	Serial
Synchronization	Asynchronous
Handshaking	DTR / DSR
Signal level	MARK = -3 to -15 V (logic "1") SPACE = +3 to +15 V (logic "0")
Baud rates	4800,9600 *,19200,38400 bps
Parity	None *, even
Bit length	8 bits
Stop bits	1 or more

\* Default setting

# Connector Pinouts

## RS232C Link to PC/HOST Connector

CN2 / Connector type: D-sub 9 pin female

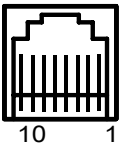


### Pin Assignment

No	Signal	Direction	Function description
2	RXD	From PC/Host to display	Receive data
3			
4			
5	GND	-	Signal ground
6	DSR	From display to PC/Host	Display ready signal
8	DSR	From display to PC/Host	Display ready signal

## Display Panel Connector

CN3 / Connector type: Phone-jack 10P/8C



### Pin assignment

No	Signal	Direction	Function description
2,3	Vin	-	Power 12 Vdc
4,5	GND	-	Signal ground
6			
7	DTR	From Display to PC/Host	Display ready signal
8			
9	TXD	From Display to Printer	Printer status data signal

# Dip Switch and Software Setting

## Command Type Selection

SW1	SW2	SW3	Command type	Default
ON	ON	ON	NCR RealPOS 21	*
OFF	ON	ON	ESC/POS	

## Baud Rate Selection

SW8	SW9	Baud rate (bps)	Default
ON	ON	4800	
OFF	ON	9600	*
ON	OFF	19200	
OFF	OFF	38400	

## Parity Check Selection

SW10	Parity check	Default
ON	None-parity	*
OFF	Even-parity	

## Demo Mode Selection

SW11	Show demo string	Default
ON	Enable	
OFF	Disable	*

## International Character Set

SW4	SW5	SW6	SW7	Character set	Code table ( 80H-FFH)	Default
ON	ON	ON	ON	U.S.A.	PC-437(USA, standard Europe)	*
OFF	ON	ON	ON	FRANCE	PC-858 (multilingual + Euro Symbol)	
ON	OFF	ON	ON	GERMANY	PC-858 (multilingual + Euro Symbol)	
OFF	OFF	ON	ON	U.K.	PC-858 (multilingual + Euro Symbol)	
ON	ON	OFF	ON	DENMARK I	PC-858 (multilingual + Euro Symbol)	
OFF	ON	OFF	ON	SWEDEN	PC-858 (multilingual + Euro Symbol)	
ON	OFF	OFF	ON	ITALY	PC-858 (multilingual + Euro Symbol)	
OFF	OFF	OFF	ON	SPAIN	PC-858 (multilingual + Euro Symbol)	
ON	ON	ON	OFF	JAPAN	Katakana	
OFF	ON	ON	OFF	NORWAY	PC-858 (multilingual + Euro Symbol)	
ON	OFF	ON	OFF	DENMARK II	PC-858 (multilingual + Euro Symbol)	
OFF	OFF	ON	OFF	SLAVONIC	PC-852	
ON	ON	OFF	OFF	RUSSIA	PC-866	
OFF	ON	OFF	OFF	PORTUGUESE	PC860	

SW4	SW5	SW6	SW7	Character set	Code table ( 80H-FFH)	Default
ON	OFF	OFF	OFF	Not used		
OFF	OFF	OFF	OFF	Not used		

## Command Control

SW12	Function	Default
ON	Depends on how SW1~SW11 are set.	*
OFF	Bypasses SW1~SW11 settings and uses the NCR RealPOS 21 settings.  Baud rate: 9600  Parity: None  Demo Mode: Disabled  Character set: USA, Standard Europe	

## Command List Table

Table –1

	NCR RealPOS 21	EPSON ESC/POS
Move cursor right	O	O
Move cursor left	O	O
Move cursor up	O	O
Move cursor down	O	O
Move cursor to right-most position	O	O
Move cursor to left-most position	O	O
Move cursor to home position	O	O
Move cursor to bottom position		O
Move cursor to specified position	O	O
Clear display screen	O	O
Clear cursor line	O	O
Brightness adjustment		O
Blink display screen	O	O
Initialize display	O	O
Select character code table		O
Select international character set		O
Select/cancel reverse character		O
Overwrite mode	O	O
Vertical scroll mode	O	O
Horizontal scroll mode	O	O

	NCR RealPOS 21	EPSON ESC/POS
Set/cancel the window range		O
Select peripheral device		O
Set starting/ending position of macro definition		O
Execute and quit macro		O
Execute self-test		O
Display time		O
Display time continuously		O
Display position		
Cursor on/off	O	O
Change to UTC enhanced mode		
Change to UTC standard mode		
Write string to upper line	O	
Write string to lower line	O	
Upper line message scroll continuously	O	
Bottom line message scroll continuously	O	
Message vertical down scroll continuously	O	
Message vertical upper scroll continuously	O	
Carriage return	O	
Line feed	O	
Back space	O	
Horizontal tab	O	
Command type select		O

Table-2

	NCR REALPOS 21	EPSON ESC/POS
Upper line message scroll once pass		
Change attention code		
Two line display		
Clear upper line and move cursor to upper left-end position		
Clear bottom line and move cursor to bottom left-end position		
Set period to upper line, last n position		
Set line blinking, upper line	O	
Clear line blinking, upper line	O	
Clear field 1 and move cursor to field 1, first position		
Clear field 2 and move cursor to field 2, first position		
Clear display range from n position to m position and move cursor to n position		
Save the current displaying data to n layer for demo display		
Turn enunciator on/off		O
Specify period		O
Specify comma		O
Specify semicolon (period + comma)		O



# Commands

## RealPOS 21 Standard Mode Command List

Command	Code (hex)	Function Description
ESC F A .. CR	1B 46 41 [DATA X 40] 0D	Write string to upper line
ESC F B .. CR	1B 46 42 [DATA X 40] 0D	Write string to lower line
ESC F D .. CR	1B 46 44 [DATA X 40] 0D	Upper line message scroll continuously
ESC F O .. CR	1B 46 4F [DATA X 40] 0D	Bottom line message scroll continuously
ESC P x y	1B 50 x y $1 \leq x \leq 14, y=1,2$	Move cursor to specified position
ESC _ n	1B 5F n     n=00,01	Set cursor on/off
ESC DC1	1B 11	Overwrite mode
ESC DC2	1B 12	Vertical scroll mode
ESC DC3	1B 13	Horizontal scroll mode
ESC @	1B 40	Initialize display
US MD2 n	1F 02 n     n=01~0Ch	Message vertical down scroll continuously
US MD1 n	1F 01 n     n=01~0Ch	Message vertical upper scroll continuously
US DC1 n	1F 11 n     n='1','2'	Set line blinking N='1' up line , n='2' low line
US DC2 n	1F 12 n     n='1','2'	Clear line blinking N='1' up line , n='2' low line
US E n	1F 45 n     n=0~FFh	Blink display screen
NULL H	0 48	Move cursor up
NULL K	0 4B	Move cursor left
NULL M	0 4D	Move cursor right

Command	Code (hex)	Function Description
NULL P	0 50	Move cursor down
NULL G	0 47	Move cursor to left-most position
NULL O	0 4F	Move cursor to right-most position
BS	08	Back space
HT	09	Horizontal tab
LF	0A	Line feed
HOM	0B	Move cursor to home position
CLR	0C	Clear display screen
CR	0D	Carriage return
CAN	18	Clear cursor line, clear string mode

## EPSON ESC/POS Command List-1

Command	Code (hex)	Function description
HT	09	Move cursor right.
BS	08	Move cursor left.
US LF	1F 0A	Move cursor up.
LF	0A	Move cursor down.
US CR	1F 0D	Move cursor to right-most position.
CR	0D	Move cursor to left-most position.
HOM	0B	Move cursor to home position.
US B	1F 42	Move cursor to bottom position.
US \$ x y	1F 24 x y (x=1~14h, y=01,02)	Move cursor to specified position.
CLR	0C	Clear display screen.
US X n	1F 58 n (01 ≤ n ≤ 04)	Brightness adjustment.
US E n	1F 45 n (n=00~ffh)	Blink display screen.
ESC @	1B 40	Initialize display.
ESC t n	1B 74 n (n=00-0fh)	Select character code table.
ESC R n	1B 52 n (n=00-0fh)	Select international character set.
US r n	1F 72 n (n=00,01)	Select/cancel reverse character.
US MD1	1F 01	Specify overwrite mode.
US MD2	1F 02	Specify vertical scroll mode.
US MD3	1F 03	Specify horizontal scroll mode.

Command	Code (hex)	Function description
CAN	18	Clear cursor line
ESC # n	1B 23 n (30h $\leq$ n $\leq$ 38h)	Command type select
US # n m	1F 23 n m, (n=0 or 1, 0<m $\leq$ 14h)	Turn enunciator on/off
US C n	1F 43 n (n=1,31 then on)	Set cursor on/off
US . n	1F 2E n, n=a displayable character code	Specify period
US , n	1F 2C n, n=a displayable character code	Specify comma
US ; n	1F 3B n, n=a displayable character code	Specify semicolon (period + comma)

## EPSON ESC/POS Command List-2

Command	Code (hex)	Function description
ESC W n s x1 y1 x2 y2	1B 57 n s x1 y1 x2 y2 n=1,2,3,4 s=0,1	Specify/cancel the window range. 1<=x1<=x2<=20 1<=y1<=y2<=2
ESC = n	1B 3D n n=1,31, select printer n=2,32, select display n=3,33, select printer, display	Select peripheral device.
US :	1F 3A	Set starting/ending position of macro definition.  Ex.: 1F 3A ..... ( macro string ) ..... 1F 3A
US ^ n m	1F 5E n m 00 ≤ (n, m) ≤ ff n=Word time m=show string time	Execute and quit macro.  It's an interval of n between the two word.  It's an interval of m between the two string.
US @	1F 40	Execute self - test
US T h m	1F 54 h m 0<=h<=17h, 0<=m<=3bh	Display time
US U	1F 55	Display time continuously

**Set International Font for ESC/POS (Table 7-11)**

n	International font set	n	International font set
0	U.S.A	7	SPAIN
1	FRANCE	8	JAPAN
2	GERMANY	9	NORWAY
3	U.K.	10	DENMARK II
4	DENMARK I	11	SLAVONIC
5	SWEDEN	12	RUSSIA
6	ITALY	15	Reserved

**Select Code for ESC/POS (Table 7-12)**

n	International font set (80H~FFH)
0	Page 0, (PC437: U.S.A., standard Europe)
1	Page 1, (Katakana for Japan)
2	Page 2, (PC858: multilingual + Euro symbol)
3	Page 3, (PC860: Portuguese)
4	Not supported
5	Not supported
6	Page 6, (PC852: SLAVONIC)
7	Page 7, (PC866: RUSSIA)

# Character Sets

## International Character Sets

ASCII Code													
Country	Hex	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
	Dec	35	36	64	91	92	93	94	96	123	124	125	126
U.S.A	#	\$	@	[	\	]	^	`	{		}	~	
France	#	\$	à	°	ç	§	^	`	é	ù	è	¨	
Germany	#	\$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß	
U.K	£	\$	@	[	\	]	^	`	{		}	~	
Denmark I	#	\$	@	Æ	Ø	Å	^	`	æ	ø	å	~	
Sweden	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü	
Italy	#	\$	@	°	\	é	^	ù	à	ò	è	ì	
Spain	Pt	\$	@	¡	Ñ	¿	^	`	¨	ñ	}	~	
Japan	#	\$	@	[	¥	]	^	`	{		}	~	
Norway	#	¤	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü	
Denmark II	#	\$	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü	
Slavonic	#	\$	@	[	\	]	^	`	{		}	~	
Russia	#	\$	@	[	\	]	^	`	{		}	~	

# USA, Standard Character Sets (20H – 7EH)

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
20H	SP	!	"	#	\$	%	&	'	(	)	ç	+	,	-	.	/
30H	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
40H	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
50H	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
60H	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
70H	p	q	r	s	t	u	v	w	x	y	Z	{		}	~	SP

# Page 0 (PC437: USA, Standard Europe) (80H – FFH)

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
80H	Ç	ü	é	â	ä	à	å	ç	ê	ë	è	ï	î	ì	Ä	Å
90H	É	æ	Æ	ô	ö	ò	û	ù	ÿ	ö	Ü	¢	£	¥	Pt	f
A0H	á	í	ó	ú	ñ	Ñ	a	o	¿	¬	½	¼	j	«	»	
B0H	☐	☐	☐		├	┤	├	├	├	├	├	├	├	├	├	├
C0H	┌	┐	└	┘	┌	┐	└	┘	┌	┐	└	┘	┌	┐	└	┘
D0H	┌	┐	└	┘	┌	┐	└	┘	┌	┐	└	┘	┌	┐	└	┘
E0H	α	β	Γ	π	Σ	σ	μ	τ	Φ	θ	Ω	δ	∞	ø	∈	∩
F0H	≡	±	≥	≤			÷	≈	°	•	.	√	n	2	■	SP



## Page 1 (Katakana) (80H – FFH)




	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
80H	$\alpha$	$\beta$	$\gamma$	$\triangle$	$\in$	$\eta$	$\theta$	$\lambda$	$\mu$	$\pi$	$\rho$	$\sigma$	$\tau$	$\Phi$	$\Omega$	$\Sigma$
90H	f	§	IE	IR	∫	$\overline{\times}$	ف	<sup>-1</sup>	<sup>2</sup>	<sup>3</sup>	x	1/2	1/	√	±	■
A0H	SP	。	「	」	、	・	□	□	□	□	□	□	□	□	□	□
B0H	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
C0H	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
D0H	□	□	□	□	□	□	□	□	□	□	□	□	□	□	"	。
E0H	↑	↓	←	→	↙	↘	↗	↖	↵	↘	↗	↖	↵	↘	↗	↖
F0H	≤	≥	≠	÷			⊥	※	※	~	~	≡	≡	Ω	⊕	⊖

**Note:** Characters A6h – DDh cannot be displayed.




## Page 2 (PC858: Multilingual+ Euro Symbol) (80H – FFH)

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
80H	Ç	ü	é	â	ä	à	å	ç	ê	ë	è	ï	î	ì	Ä	Å
90H	É	æ	Æ	ô	ö	ò	û	ù	ÿ	ö	Ü	ø	£	Ø	×	f
A0H	á	í	ó	ú	ñ	Ñ	a	o	¿	®	¬	1/2	1/4	j	«	»
B0H	☐	☐	☐			Á	Â	À	©	¶		¶	¶	¢	¥	¶
C0H	ℒ	⊥	⊥	⊥	—	†	ã	Ã	ℒ	ℒ	⊥	⊥	⊥	⊥	=	⊥
D0H	ø	Ð	Ê	Ë	È	€	Í	Î	Ï	⌋	ℒ	■	■	⌋	Ï	■
E0H	ó	ß	ô	ò	õ	Õ	μ	þ	Þ	Ú	Û	Ü	ý	Ý	-	'
F0H	-	±	=	¾	¶	§	÷	,	°	..	·	1	3	2	■	SP

## Page 3 (PC860: Portuguese) (80H – FFH)

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
80H	Ç	ü	é	â	ã	à	Á	ç	ê	Ê	è	Í	Ô	ì	Ã	Â
90H	É	À	È	ô	õ	ò	Ú	ù	Ì	Õ	Ü	¢	£	Ù	Pt	Ó
A0H	á	í	ó	ú	ñ	Ñ	a	o	¿	Ò	¬	½	¼	j	«	»
B0H					┌	┐	└	┘	┌	┐	└	┘	┌	┐	└	┘
C0H	┌	┐	└	┘	┌	┐	└	┘	┌	┐	└	┘	┌	┐	└	┘
D0H	┌	┐	└	┘	┌	┐	└	┘	┌	┐	└	┘	┌	┐	└	┘
E0H	α	β	Γ	π	Σ	σ	μ	τ	Φ	θ	Ω	δ	∞	ø	∈	∩
F0H	≡	±	≥	≤	∫	∫	÷	≈	°	•	.	√	n	2	■	SP

## Page 6 (Slavonic) (80H – FFH)

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
80H	Ç	ü	é	â	ä	û	ć	ç	İ	ë	õ	õ	î	ž	ä	ć
90H	é	Í	í	ô	ö	Ĺ	ĩ	ś	ś	Ö	Ü	Ŧ	ţ	ı	x	č
A0H	á	í	ó	ú	ą	ą	ž	ž	ę	ę		ž	č	ş	«	»
B0H					┌	á	â	ě	ş					ž	ž	
C0H					—	+	ă	ă						=		⌘
D0H	┌	┐	ā	ē	ā	ñ	í	î	ě			■	■	ţ	û	■
E0H	ó	β	ô	ń	ń	ň	š	š	ř	ú	ř	ũ	ý	ý	ţ	´
F0H	—	˘	,	˘	˘	§	÷	˘	°	˘	˘	ũ	ř	ř	■	SP

# Page 7 (Russia) (80H – FFH)

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
80H	A	Б	В	Г	Д	Е	Ж	З	Й	Ї	К	Л	М	Н	О	П
90H	Р	С	Т	У	Ф	Х	Ц	Ч	Ш	Щ	Ъ	Ы	Ь	Э	Ю	Я
A0H	a	б	в	г	д	е	ж	з	и	й	к	л	м	н	о	п
B0H																
C0H																
D0H																
E0H	р	с	т	у	ф	х	ц	ч	ш	щ	ъ	ы	ь	э	ю	’я
F0H	ð	Г	К	Н	θ	Υ	Υ	h	ð	г	к	н	θ	Υ	Υ	SP

## Command details

### Overwrite Mode

In this mode, the cursor moves from left to right, beginning at the upper left position. When the cursor reaches the end of the upper line, it then moves to the beginning (left end) of the bottom line. When the cursor reaches the end of the bottom line, it then moves back to beginning of the upper line and overwrites the previous characters.

### Vertical Scroll Mode

In this mode, the cursor moves from left to right, beginning at the upper left position. When the cursor reaches the end of the upper line, it then moves to the beginning (left end) of the bottom line.

### Horizontal Scroll Mode

In this mode, the horizontal movement of the cursor is limited to a predefined range and is limited to the upper line. (See the *Set or Cancel Window* command to set the default window as the entire upper line.)

The cursor moves from left to right, beginning at the left end of the *range*, and moves to the right until it reaches the end of the *range*. Additional characters then push the existing characters to the left, scrolling the characters to the left.

## Set the String Display Mode, and Write String to Display

To set the String Display Mode, write to the upper or lower line.

d1 d2 d3 ..... dn  $\{1 \leq n \leq 20\}$

A = upper line

B = lower line

The String Display Mode is cancelled and returns to the last mode after receiving the CLR or CAN command.

## Upper Line Message Scroll Continuously

The message (previously defined) scrolls continuously in the horizontal direction until a new command is received.

## Move Cursor Left

This command moves the cursor to the left. It operates differently when the cursor is at the beginning of the line, depending on which display mode is used.

*Overwrite Mode:* When the cursor reaches the beginning of the lower line, it then moves to the end of the upper line and overwrites the previous character. When it reaches the left end of the upper line, it then moves to the end of the lower line.

*Vertical Scroll Mode:* When the cursor reaches the beginning of the lower line, the lower line then scrolls up and replaces the upper line. The lower line is cleared and the cursor moves to the end of the lower line.

*Horizontal Scroll Mode:* The cursor remains stationary.

## Move Cursor Right

This command moves the cursor to the right. It operates differently when the cursor is at the end of the line, depending on which display mode is used.

*Overwrite Mode:* When the cursor reaches the end of the lower line, it then moves to the beginning of the upper line and overwrites the previous character. When it reaches the end of the upper line, it then moves to the beginning of the lower line and overwrites.

*Vertical Scroll Mode:* When the cursor reaches the end of the lower line, the lower line scrolls up to replace the upper line. The lower line is cleared and ready for new characters.

*Horizontal Scroll Mode:* The cursor remains stationary.

## Move Cursor Up

This command moves the cursor up one line. It operates differently when the cursor is on the upper line, depending on which display mode is used.

*Overwrite Mode:* The cursor moves to the same column in the lower line.

*Vertical Scroll Mode:* The characters displayed on the upper line are scrolled to the lower line and the upper line is cleared. The cursor remains in the same position.

*Horizontal Scroll Mode:* The cursor remains stationary.

## Move cursor down

This command moves the cursor down one line. It operates differently when the cursor is on the lower line, depending on which display mode is used.

*Overwrite Mode:* The cursor moves to the same column in the upper line.

*Vertical Scroll Mode:* The characters displayed on the lower line are scrolled to the upper line and the lower line is cleared. The cursor remains in the same position.

*Horizontal Scroll Mode:* The cursor remains stationary.

## Vertical scroll

The characters displayed on the lower line are scrolled to the upper line and the lower line is cleared. The cursor remains in the same position.

*Horizontal scroll mode:* The cursor remains stationary.

## Move Cursor to Home Position

The cursor moves to the beginning of the upper line

## Move Cursor to Left-Most Position

The cursor moves to the beginning of the current line.

## Move Cursor to Right-Most Position

The cursor moves to the end of the current line.

## Move Cursor to Bottom Position

The cursor moves to the end of the lower line.

## Move Cursor to Specified Position

The cursor moves to the  $x$  column on the  $y$  line.

## Initialize Display

The data in the input buffer is cleared and reset to the default value.

## Reset the Window

Resets the window on the display. When  $s=0$ , the window is cancelled (values:  $x1$ ,  $x2$ , and  $y$  are not required.)

When  $s=1$  the window is reset (values:  $x1$ ,  $x2$ , and  $y$  are required.)  $x1$  and  $x2$  set the position of the left column and right column, respectively, of the window.  $y$  sets the upper or lower line of the window. This function is valid only in the *Horizontal Mode*.

## Clear Display Screen, and Clear String Mode

The displayed characters are cleared and the String Mode is cancelled.

## Clear current line, and cancel string mode

The current line is cleared and the string mode is cancelled.

## Brightness adjustment

Adjusts the brightness of the vacuum fluorescent display.

When  $n=3$ , brightness=70%

When  $n=4$ , brightness=100%

## Set cursor ON or OFF

When  $n=0$ , cursor is OFF

When  $n=1$ , cursor is ON



## Control Code Set

HEX	CODE	HEX	CODE
00H	NULL	10H	DLE
01H	SOH, MD1	11H	DC1
02H	STX, MD2	12H	DC2
03H	ETX, MD3	13H	DC3
04H	EOT, MD4	14H	DC4
05H	ENQ, MD5	15H	NAK
06H	ACK, MD6	16H	SYN
07H	BEL, MD7	17H	ETB
08H	BS, MD8	18H	CAN
09H	HT	19H	EM
0AH	LF	1AH	SUB
0BH	VT, HOM	1BH	ESC
0CH	FF, CLR	1CH	FS
0DH	CR	1DH	GS
0EH	SO, SLE1	1EH	RS, SF1
0FH	SI, SLE2	1FH	US, SF2

## Code Example

```
#include      <dos.h>
#include      <stdio.h>
#include      <graphics.h>
#include      <bios.h>
#include      <conio.h>
#include      <malloc.h>

#define CR      13
#define ESC      27

union REGS regs ;
char title[] = "\n\n          VFD Testing Program " ;
char line1[] = "\n   Comport Select 1:Com1 2:Com2 3:Com3 4:Com4
6:Com6  Esc:Quit : " ;
char line2[] = "Test Prog 8/ 1/2000\n" ;
char low_line[] = "Send string to line2\n" ;
char fix_p[] = "0K2000,+25000\n" ;
char string[] = "DemoProgramm";
char string2[] = "Welcome !!2003/06/29";
        unsigned  ComPort,count,ComSelect;
        unsigned  Status,j,k,c,d,ch,chold;
void main()
{

        unsigned      data ;
        char          *ComData;
        int           tempLoop;
        unsigned char charcount1,charcount2;
ProgramStart:
        clrscr();
        printf(title);
        printf(line1);
ComPort_Select:
        ComSelect=getch();
        switch(ComSelect){
                case('1'): ComPort=0;ComData="Now = COM1,9600,N,8,1      "; break;
                case('2'): ComPort=1;ComData="Now = COM2,9600,N,8,1      "; break;
                case('3'): ComPort=2;ComData="Now = COM3,9600,N,8,1      "; break;
                case('4'): ComPort=3;ComData="Now = COM4,9600,N,8,1      "; break;
                case('6'): ComPort=5;ComData="Now = COM6,9600,N,8,1      ";
break;
                case(ESC): goto programmend;break;
        }
```

```

    default: printf("\n      Error!!");cur_homeB();goto
ComPort_Select;break;
}
charcount1=0;
charcount2=0;
ch=1;
data = _COM_CHR8 | _COM_STOP1 | _COM_NOPARITY | _COM_9600 ;
_bios_serialcom(_COM_INIT, ComPort , data) ;
cur_homeA();
printf("\n      Press any key to show (F10 to quit)  ") ;
printf(ComData);
printf("\n                      \n");
/*_bios_serialcom(_COM_SEND,ComPort,0x1b);
_bios_serialcom(_COM_SEND,ComPort,0x47);
for(tempLoop=0;tempLoop<1920;tempLoop++)
{
    _bios_serialcom(_COM_SEND,ComPort,0x58);
}*/
do
{
    if(kbhit()) //check if hit any key
    {
        c=getch();
        if (c==68 && d==0)
            goto programmend;

printf("\n      Input Data  ====  %d  ====      %c",c,c);
_bios_serialcom(_COM_SEND,ComPort,c);
    }
    /*if(charcount1<20)
    { _bios_serialcom(_COM_SEND,ComPort,string[charcount1]);
      printf("\n%c--%i--",;
        charcount1++;
    }
else
    {
        if(charcount2<20)
        { _bios_serialcom(_COM_SEND,ComPort,string2[charcount2]);
          charcount2++;}
        else
        { charcount1=0;
          charcount2=0;}
    }
delay(500);*/
//d=c;

```

```
        //ch++;
        //if (ch>15)
        //    { cur_home();
        //      for (chold=1;chold<16;chold++)
        //          delline();
        //      ch=1; }
        }
        while(1);
        programmend:
    }
    cur_home()
    {
        regs.h.ah = 2;
        regs.h.bh = 0;
        regs.h.dh = 5;
        regs.h.dl = 0;
        int86(0x10, &regs, &regs) ;
        return 0;
    }
    cur_homeA()
    {
        regs.h.ah = 2;
        regs.h.bh = 0;
        regs.h.dh = 2;
        regs.h.dl = 0;
        int86(0x10, &regs, &regs) ;
        return 0;
    }
    cur_homeB()
    {
        regs.h.ah = 2;
        regs.h.bh = 0;
        regs.h.dh = 3;
        regs.h.dl = 66;
        int86(0x10, &regs, &regs) ;
        return 0;
    }
}
```

---

## Chapter 7: Cash Drawer Interface

---

### Cash Drawer Controller Register

The Cash Drawer Controller uses one I/O addresses to control the Cash Drawer.

Register Location: I/O port 4B8h

Attribute: Read / Write

Size: 8bit

Bit	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Attribute	Reserved	Reserved	Read	Read	Write	Write	Write	Write

*Bit 7:* Reserved.

*Bit 6:* Reserved.

*Bit 5:* Cash Drawer2 “DIN bit1” pin input status.

= 1: Cash Drawer2 closed or no Cash Drawer.

= 0: Cash Drawer2 opened.

*Bit 4:* Cash Drawer1 “DIN bit0” pin input status.

= 1: Cash Drawer1 closed or no Cash Drawer.

= 0: Cash Drawer1 opened.

*Bit 3:* Cash Drawer2 “DOUT bit3” pin output control.

= 1: Open Cash Drawer2

= 0: Permit Close Cash Drawer2

*Bit 2:* Cash Drawer2 “DOUT bit2” pin output control.

= 1: Open Cash Drawer2

= 0: Permit Close Cash Drawer2

*Bit 1:* Cash Drawer1 “DOUT bit1” pin output control.

= 1: Open Cash Drawer1

= 0: Permit Close Cash Drawer1

*Bit 0:* Cash Drawer1 “DOUT bit0” pin output control.

= 1: Open Cash Drawer1

= 0: Permit Close Cash Drawer1

**Note:** Please follow the Cash Drawer control signal design to control the Cash Drawer.

## Cash Drawer Control Command Example

**Note:** Use Debug.EXE program under DOS or Windows98.

Command	Cash Drawer 1
O 4B8 01	Open
O 4B8 00	Close
<ul style="list-style-type: none"><li>• Set the I/O address 4B8h Bit0 = 1 to open the Cash Drawer1 using “DOUT bit0” pin control.</li><li>• Set the I/O address 4B8h Bit0 = 0 to permit the closing of Cash Drawer 1</li></ul>	
Command	Cash Drawer 1
I 4B8	Check Status
<ul style="list-style-type: none"><li>• The I/O address 4B8h bit4 =1 means the Cash Drawer1 is closed or there is no Cash Drawer.</li><li>• The I/O address 4B8h bit4 =0 means the Cash Drawer1 is open.</li></ul>	

---

## Chapter 8: Touch Screen Calibration Utility

---

### Introduction

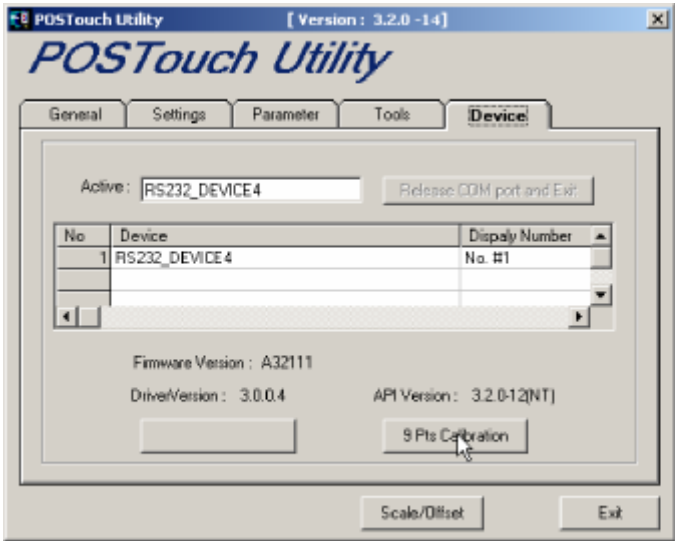
The 7443 touch screen is very stable but in the event you need to calibrate it there is a utility included for this purpose.

### Running the Calibration Utility

1. From the Windows Start button, select **Programs** → **TouchUtility** → **TouchUtility**.
2. Select the **Devices** tab.

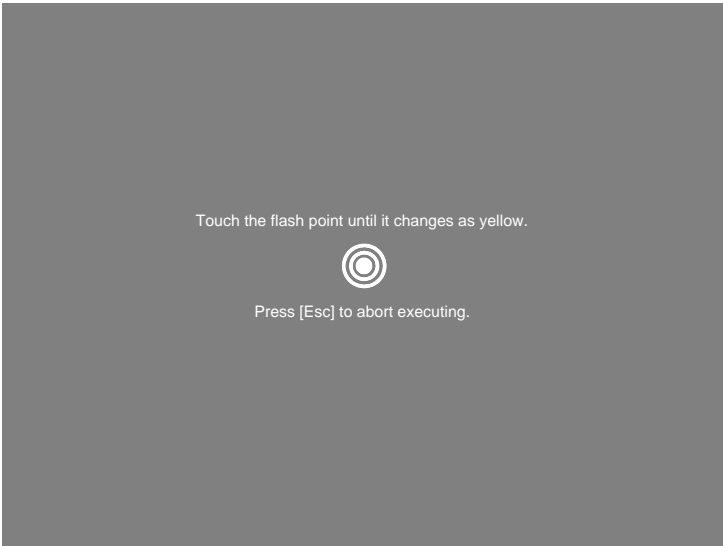


3. Select the **9-Point Calibration** button.



23710

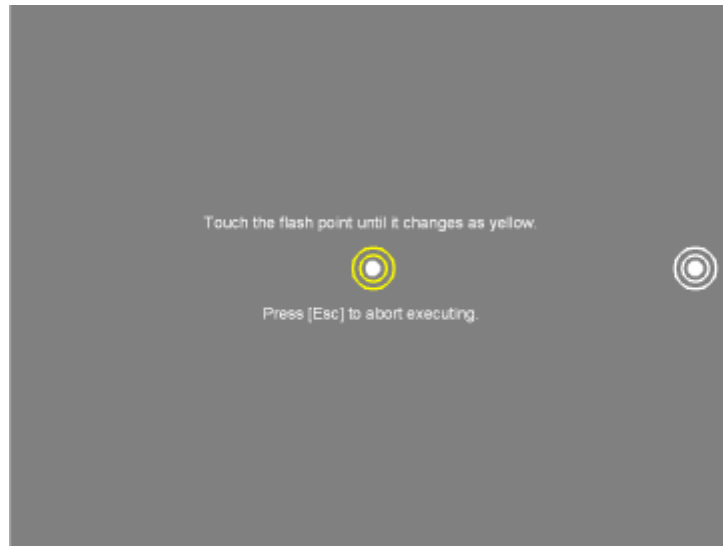
4. Place your finger on the flashing red/white target in the center of the screen and hold it until it changes to yellow.



23711

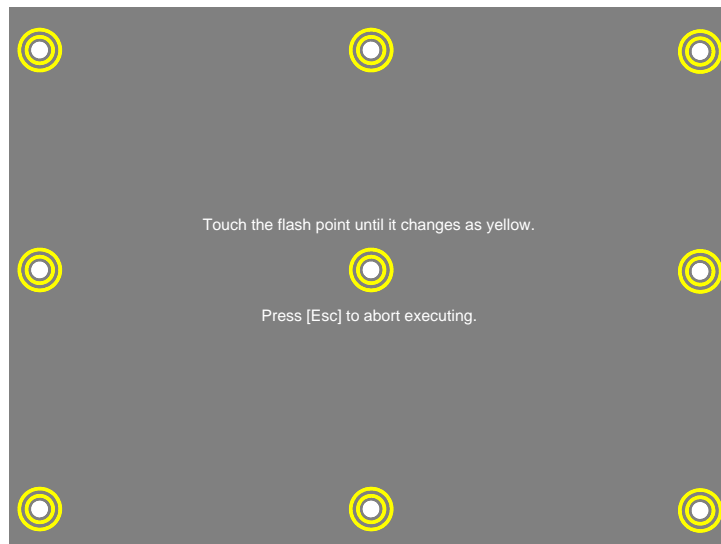


5. Repeat this procedure for the next flashing target.



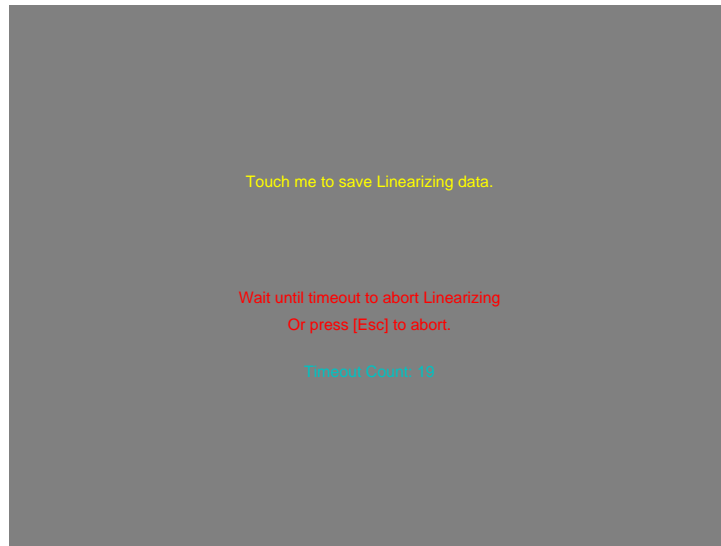
23712

6. Continue with this procedure until all nine targets have been pressed.



23713

7. Touch the screen to finalize the calibration procedure.



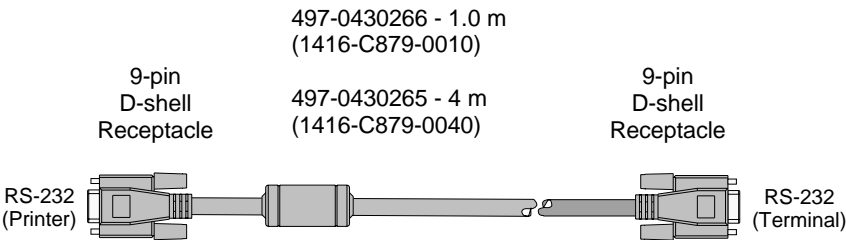
---

# Appendix A: Cables

---

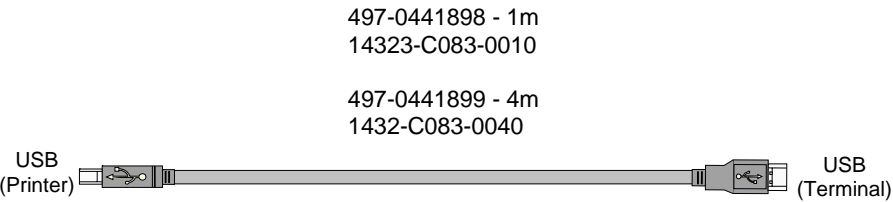
## Printer Cables

### RS-232 (9-Pin to 9-Pin)



19722c

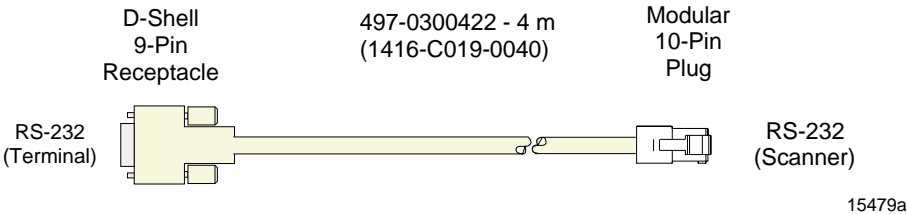
### Standard USB



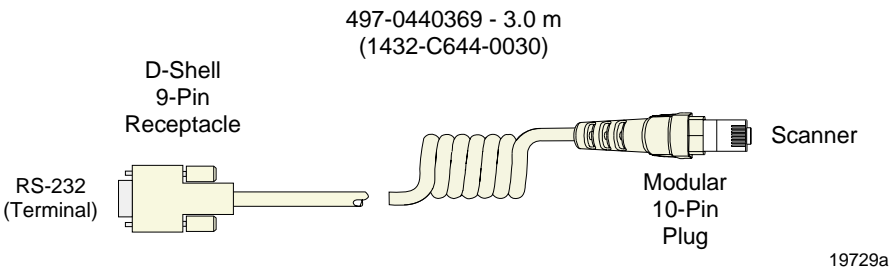
21639

# Scanner Cables

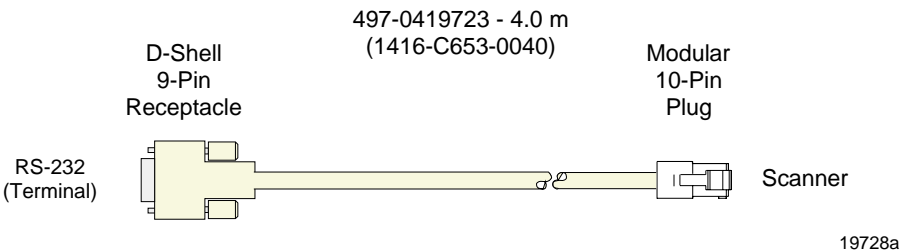
## 7872 or 7875 Scanner/Scale (RS-232)



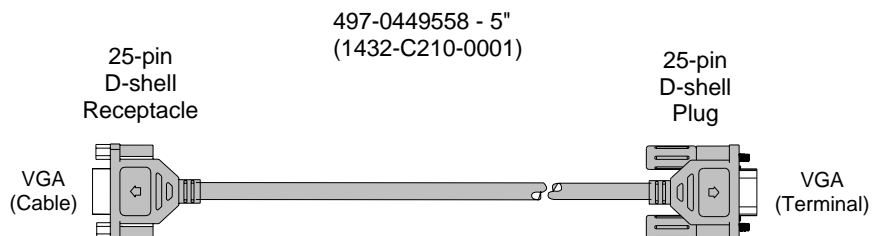
## 7892 Scanner (Powered RS-232)



## 7882 Scanner (Powered RS-232)

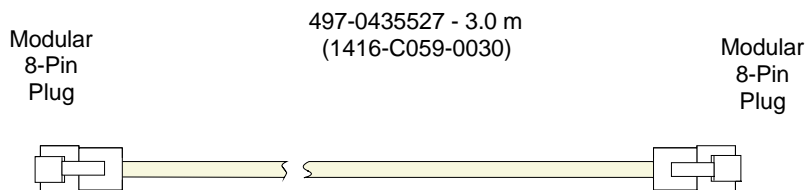


## VGA Adapter Cable



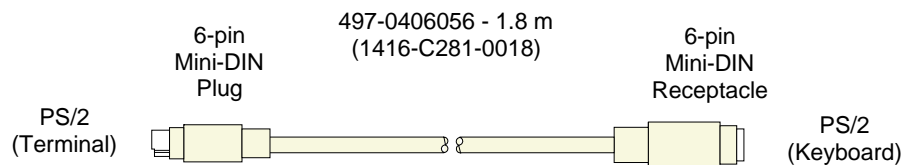
23605a

## Ethernet, 10/100BaseT



16298a

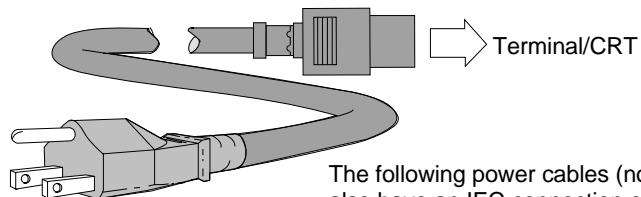
## PS/2 Keyboard Extension



15403a

## AC Power Cables

1416-C325-0030 006-1009037 - U.S.



The following power cables (not shown)  
also have an IEC connection of 45 mm:

1416-C320-0030 006-8601011 - SEV

1416-C321-0030 006-8601012 - U.K.

1416-C322-0030 006-8601019 - Australia

1416-C323-0030 006-8601010 - International

1416-C391-0030 006-8605488 - China

1416-C393-0030 006-8601001 - Japan Twist-Lock

15405a

---

# Appendix B: Memory Maps

---

System BIOS Code	FFFF:F
LAN Boot ROM	E000:0 D8FF:F
System BIOS Code for USB Device	D800:0 D7FF:"F
VGA ROM	D000:0 CC5F:F
Video RAM	C0000:0 BFFF:F
Conventional Memory	A000:0 0000:0

This memory map is based on the BIOS Load Optimized Defaults and does not have any add-on cards.

With the 2.1.3.3 BIOS the memory used for the DMI strings starts at a different location if the Legacy USB is enabled in the BIOS Setup. With Legacy USB enabled, the DMI strings start at D800:0. If Legacy USB is disabled, then the DMI strings start at F080:0.



---

## *Appendix C:* Booting from a USB Flash Drive

---

### Setting the BIOS

**Note:** The USB Flash Drive must be formatted with system files on it to make it bootable. This document does not address how to do this. There are various utilities on the after market that are available for this purpose.

1. Apply power to the terminal.
2. Press **[DEL]** during boot to enter Setup.
3. At the Setup Utility menu, select **Advanced BIOS Features** and press **[Enter]**.
4. Set the **First Boot Device** to **USB-ZIP**.
5. Set the **Second Boot Device** to **USB-HDD**.

**Note:** The system only recognizes a USB Flash Drive as being one of these two devices.

6. Press **[Esc]** to return to the Setup Utility menu.
7. Select **Save and Exit Setup**.

The Terminal should now restart and boot from the USB Flash Drive.

## Disabling the Boot Device

To disable booting from the USB Flash Drive set the Boot Device Priorities back to their original settings. The default settings are:

First Boot Device: USB-FDD  
Second Boot Device: HDD-0  
Third Boot Device: Network (LAN)

**Note:** If the Boot Device Priorities for your terminal were set to something different than the defaults, they should be set to what they were originally.

## Loading the Default Settings

1. Reboot the terminal.
2. Press **[DEL]** during boot to enter Setup.
3. At the Setup Utility menu, select **Advanced BIOS Features** and press **[Enter]**.
4. Press **[F7]** to load the optimized defaults for this page.
5. Press **[Y]** to and then **[Enter]**.
6. Press **[Esc]** to return to the Setup Utility menu.
7. Select Save and Exit Setup.