

# USER GUIDE

## NCR Mobile Gateway Controller (7641)

Release 1.1

B005-0000-2293  
Issue B



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# Preface

## Audience

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

**Notice:** This document is NCR proprietary information and is not to be disclosed or reproduced without consent.

## Safety Requirements

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



**Caution:** The on/off switch is a logic switch only. The AC line voltage primaries are live at all times when the power cord is connected. Therefore, disconnect the AC power cord before opening the unit to install features or service this terminal.

### ***Lithium Battery Warning***



**Warning:** Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type as recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.



**Attention:** Il y a danger d'explosion s'il y a remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type ou d'un type recommandé par le constructeur. Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

### ***Battery Disposal (Switzerland)***

Refer to Annex 4.10 of SR814.013 for battery disposal.

### ***IT Power System***

This product is suitable for connection to an IT power system with a phase-to-phase voltage not exceeding 240 V.

### ***Peripheral Usage***

This terminal should only be used with peripheral devices that are certified by the appropriate safety agency for the country of installation (UL, CSA, TUV, VDE) or those which are recommended by NCR Corporation.



**Warning:** DO NOT connect or disconnect the transaction printer while the terminal is connected to AC power. This can result in system or printer damage.



**Warning:** DO NOT connect or disconnect any serial peripherals while the terminal is connected to AC power. This can result in system or printer damage.

### ***Grounding Instructions***

In the event of a malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This product is equipped with an electric cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into a matching outlet that is properly installed and grounded in accordance with all local codes and ordinances. Do not modify the plug provided – if it will not fit the outlet, have the proper outlet installed by a qualified electrician. Improper connection of the equipment-grounding conductor can result in a risk of electric shock.

The conductor with insulation having an outer surface that is green with or without yellow stripes is the equipment-grounding conductor.

If repair or replacement of the electric cord or plug is necessary, do not connect the equipment-grounding conductor to a live terminal. Check with a qualified electrician or service personnel if the grounding instructions are not completely understood, or if you are in doubt as to whether the product is properly grounded.

Use only 3-wire extension cords that have 3-prong grounding plugs and 3-pole receptacles that accept the product's plug. **Repair or replace damaged or worn cords immediately.**

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## Out of Box Failure (OBF)

If you experience an out of box failure (OBF) during installation or staging related to a missing, wrong or defective unit or item, simply provide NCR with a detailed description of the issue and the item will be replaced free of charge. For assistance with this process send an email to [CustomerSat.Retail@ncr.com](mailto:CustomerSat.Retail@ncr.com) with the following details:

- NCR Sales Order # (Sales Order # are located on the box)
- Date of Product Installation
- Product Model #
- Unit Serial #
- NCR part # of defective/missing/wrong component
- Description of Failure (please be specific. For example: “display will not power on”)
- Customer/Requestor’s contact name, phone number and/or e-mail address
- Address to ship replacement part(s)

Transport the product in its original packaging to prevent impact damages.

If you do not have access to a computer, you may leave a voice message at: 1-800-528-8658 (USA), or (International) +1-770-623-7400. When leaving a message, please provide a phone number and/or an email address so NCR can contact you if additional details are needed.



**Note:** Used equipment that experiences a failure does not qualify as an OBF and should go through the NCR warranty process.

## Warranty

Warranty terms vary by region and country.

All parts of this product that are subject to normal wear and tear are not included in the warranty. In general, damages due to the following are not covered by the warranty.

- Improper or insufficient maintenance
- Improper use or unauthorized modifications of the product.
- Inadequate location or surroundings. Site installation must conform to guidelines listed in the *NCR Mobile Gateway Controller Site Preparation* (B005-0000-2294) and the [NCR Workstation and Peripheral AC Wiring Guide](#) (BST0-2115-53).

For detailed warranty arrangements please consult your contract documents.

## Returning Defective Hardware for Service

Use the following procedure to report/return defective hardware.

Call the *NCR Customer Care Center* at 1-800-262-7782 and have the following information available when you place the call.

- Class/Model number of the defective equipment
- Serial Number of the defective equipment
- Equipment location in the store
- Description of the problem, including any system error codes, error condition, or guidance to the area of failure.

The NCR Agent will provide you with a work order number, which serves as your Return Material Authorization (RMA). Please provide the RMA on the outside of the shipping box.



**Note:** A work order must be opened for each device that is shipped for repair.

### Shipping Address:

NCR Corporation-DCA Depot  
200 Hwy 74 South  
Peachtree City, GA 30276  
Attn: Dock Door 8

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### *Appendix A: Powered Serial Port Settings*

#### **Revision Record**

<b>Issue</b>	<b>Date</b>	<b>Remarks</b>
A	Aug 2013	First Issue
B	Aug 2015	Release 1.1

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# Chapter 1: Product Overview

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## Introduction



The *NCR Mobile Gateway Controller (MGC)* is a smart controller with pre-loaded software that provides mobile devices access to traditional retail peripherals, including scanners, cash drawers, payment MGCs and receipt printers. It can also be fitted with a stand to hold a mobile device. The MGC can be conveniently and unobtrusively placed throughout a store to handle transactions and service shopper's needs beyond just a tablet alone.

The MGC is a *smart controller* package that allows mobile devices to claim and release traditional retail peripherals. This device maintains retail connectivity including 12V/24V powered ports. Designed to utilize passive cooling and solid state storage, it offers a sealed cabinet for highest reliability. Modern aesthetics allow the device to be used under the counter or on the counter top if desired with optional Stand for tablets and displays.

A mobile device can *claim* an *NCR Mobile POS Assistant* station for as long as it is needed. Therefore, during peak periods, the mobile device can act as an additional fixed POS MGC instead of a mobile device. Once it is released, the station is available to other mobile devices. In markets where credit card readers aren't prevalent or available on a mobile POS device, the *NCR Mobile POS Assistant* provides more payment options by allowing credit and debit cards to be used with an existing payment MGC infrastructure.

## Product IDs

Major Model	CPU
7641-1001	RealPOS 10 Mobile Gateway Controller, Intel Atom D2550 Dual Core 1.86 GHz Celeron, 2 GB DDR3, Solid State Drive

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# Mobile Gateway Architecture



## POS Configurations

The MGC can be configured with mobile or traditional displays to act as a typical POS station.



iPad Tablet Stand



Generic Display Stand

## Peripheral Support

The MGC is compatible with NCR's traditional Retail hardened peripherals (printers, scanners, cash drawers, etc.). The MGC provides flexible connectivity options to power the peripherals.



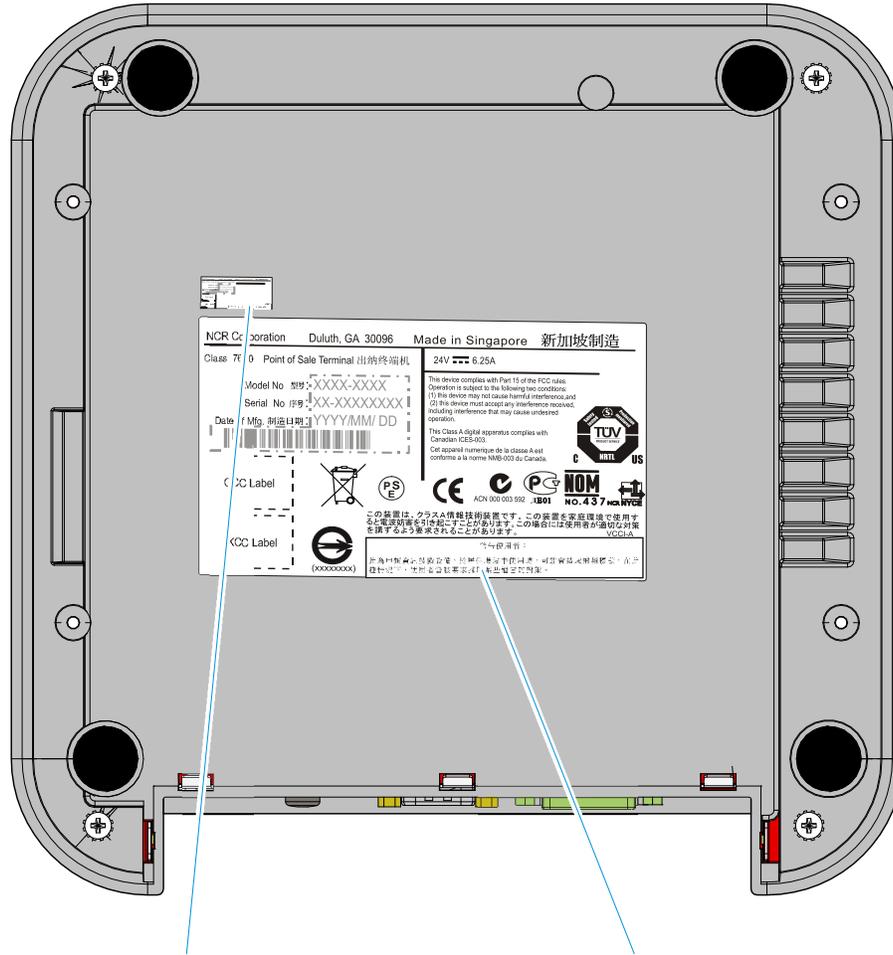
## Operator Controls



Power Switch

# Serial Number/Model Number Label

The serial number and model number are included on the Certification Label located on bottom of the MGC. A Microsoft Certificate of Authenticity (COA) label is included if the MGC is ordered and shipped with a pre-installed Microsoft Operating System. There are two types of Microsoft COA stickers.



Certificate of Authenticity Label

Model/Serial Number Label

# Features

## MotherBoard

- Intel's NM10 Chipset
- Intel's D2550 dual core mobile processor.
- Up to 4GB DDR3 Memory, 800/1066 MHz, 2 Memory Sockets
- Serial ATA (SATA) Hard Drive Interface
- Option for single 2.5" Hard Drive
- High-speed 10/100/1000 Mb Ethernet
- Two Type-A USB Connectors
- Four Powered Serial ports
- DVI-D connector
- VGA connector
- PS/2 Connector supporting Mouse and Keyboard through a Y-cable
- One 12V USB+Power port
- One 24V USB+Power port
- Dual cash drawer support from one connector using Y-cable
- Audio Line Out (Unamplified)
- Three 12V USB+Power ports on a USB Daughter Card (Optional)
- DC Power Jack for Power Brick

## Storage Media

- MO297 SATA Solid State Drive (Feature)

## Power Supply

- 150W Output power
- Switching Power Supply, External 24V Adapter
- MEPS Level V mark (efficiency 87% minimum)
- Supports 24V retail printers at 55W maximum when connected to 7600

## Operating Systems

- Windows 7 Professional
- Windows XP Professional, SP3
- SLEPOS11 SP2
- POSReady 2009
- POSReady 7

## Graphics

The Motherboard has integrated graphics on board. PCI Express x16 graphics adapters are not supported.

### Output ports

Dual independent displays in Concurrent (Clone) and Extended Desktop modes are supported by the 7600.

#### **VGA**

Analog display signals for legacy monitors. Standard DB-15 connector on rear IO.

#### **DVI**

Standard DVI-D connector on rear IO, Foxconn QH11121-DBGH-4F or equivalent.

# Power Management

The BIOS supports the Advanced Configuration and Power Management Interface (ACPI) 3.0 specification. A key feature of ACPI is that the operating system, not the BIOS, configures and implements power management. The MGC supports the Global system power states defined by ACPI:

## G3 Mechanical Off

A computer state that is entered and left by a mechanical means

**Example:** Turning off the system's power through the movement of a large red switch.

Various government agencies and countries require this operating mode. It is implied by the entry of this off state through a mechanical means that no electrical current is running through the circuitry and that it can be worked on without damaging the hardware or endangering service personnel. The OS must be restarted to return to the Working state. No hardware context is retained. Except for the real-time clock, power consumption is zero.

## G2/S5 Soft Off

A computer state where the computer consumes a minimal amount of power. No user mode or system mode code is run. This state requires a large latency in order to return to the Working state. The system's context will not be preserved by the hardware. The system must be restarted to return to the Working state. It is not safe to disassemble the machine in this state.

## G1 Sleeping

A computer state where the computer consumes a small amount of power, user mode threads are not being executed, and the system appears to be off (from an end user's perspective, the display is off, and so on). Latency for returning to the Working state varies on the wake environment selected prior to entry of this state (for example, whether the system should answer phone calls). Work can be resumed without rebooting the OS because large elements of system context are saved by the hardware and the rest by system software. It is not safe to disassemble the machine in this state.

## G0 Working

A computer state where the system dispatches user mode (application) threads and they execute. In this state, peripheral devices (peripherals) are having their power state changed dynamically. The user can select, through some UI, various performance/power characteristics of the system to have the software optimize for performance or battery life. The system responds to external events in real time. It is not safe to disassemble the machine in this state.

## ACPI Sleep States (S0 - S5)

Under the G1 sleeping state ACPI defines levels of system sleep state support. The MGC supports the following sleeping states:

- S0: Normal Powered-On state
- S1 (Standby): The S1 sleeping state is a low wake latency sleeping state. In this state, no system context is lost (CPU or chip set) and hardware maintains all system contexts.



**Note:** The 7600 does not support S1 state. Turning off the backlight and hard drives provides the equivalent power savings (due to Intel's processor C-states feature) at nearly zero latency.

- S2: Not supported
- S3 (Suspend to Ram): The S3 sleeping state is a low wake latency sleeping state. This state is similar to the S1 sleeping state except that the CPU and system cache context is lost (the OS is responsible for maintaining the caches and CPU context). Control starts from the processor's reset vector after the wake event. In NCR systems, during S3, power is only provided to the on-board USB ports.



**Note:** When the MGC resumes from an S3 state, all the USB devices re-enumerate. This causes speaker tones as if they were disconnected and then reconnected. This does not present a problem and the USB devices will continue to operate correctly.

### *Requirements for S3 support:*

- O/S must be built on a system with S3 enabled in the BIOS
- Some peripherals may not be S3 capable, which can prevent the system from entering S3 state.
- "S4 (Suspend to Disk): The S4 state is the lowest power, longest wake latency sleeping state supported by ACPI. In order to reduce power to a minimum, it is assumed that the hardware platform has powered off all devices. Platform context is maintained.

### *Requirements for S4 support:*

- O/S must be built on a system with S3 enabled in the BIOS
- Some peripherals may not be S4 capable, which can prevent the system from entering S4 state.

Reference the *ACPI Specification* for details.

*Peripherals:* ACPI defines power states for peripherals which are separate from the system power state. The device power states range from D0 (fully-on) to D3 (off) It is the responsibility of the driver developer for each peripheral to define and support the available power states.

Power State	S0Working	S1Standby	S2	**S3 Suspend to RAM	S4Hibernate	**S5Soft Off
Supported: Y / N	Y	Y	N	Y	Y	Y
Description	Fully Functional	<ul style="list-style-type: none"> <li>• Video Back Light Off</li> <li>• HDD Off</li> <li>• Cache Flush</li> <li>• Memory in Slow Refresh</li> <li>• CPU Halted</li> </ul>		<ul style="list-style-type: none"> <li>• Video Back Light Off</li> <li>• HDD Off</li> <li>• Cache Flush</li> <li>• Memory in Slow Refresh</li> <li>• CPU Halted</li> </ul>	<ul style="list-style-type: none"> <li>• Video Back Light Off</li> <li>• HDD Off</li> <li>• Cache Flush</li> <li>• Memory in Slow Refresh</li> <li>• CPU Halted</li> </ul>	OFF
Power Supply Status	On	On		Powered Down**	Powered Down**	Powered Down**
Power Consumption*	37	24		2	1	<1
Wake Options:						
Power Switch	N/A	Y		Y	Y	Y
PS/2 Keyboard	N/A	Y		Y	N	N
PS/2 Mouse	N/A	Y		Y	N	N
USB Keyboard	N/A	Y		Per O/S	N	N
USB Mouse	N/A	Y		Per O/S	N	N
LAN (magic packet)	N/A	Y		Y	Y	Y
RTC Alarm	N/A	Y		Y	Y	Y
Serial Port (RI)	N/A	Y		N	N	N

**Note:** Power consumption based on the following configuration with no peripherals Intel Atom 270, 512MB DIMM, HDD

\*Maintains small voltage to support wake circuits)

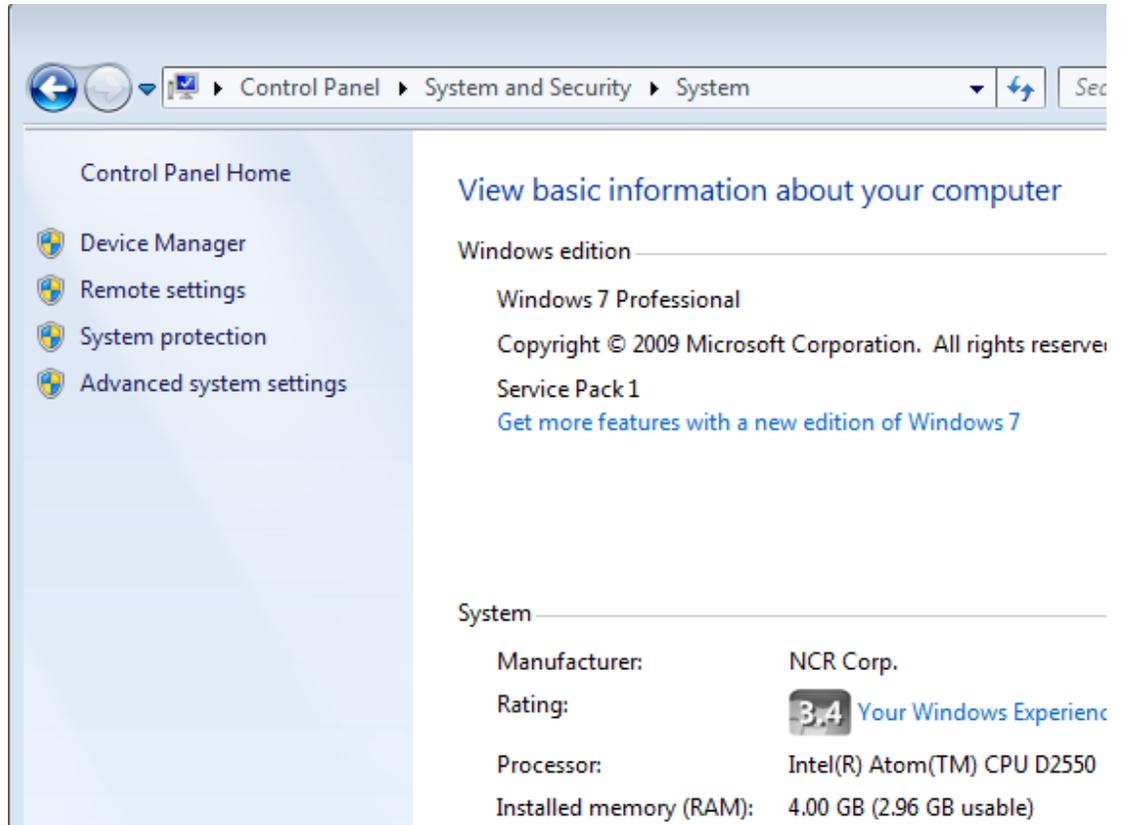
\*\*The external power supply is ON while in S3-S5. The motherboard shuts down all power circuits except for a small voltage to support wake circuits. Power to the 24V USB printer port and the Cash drawer is also disconnected while in S3-S5

## Enabling Wake on LAN

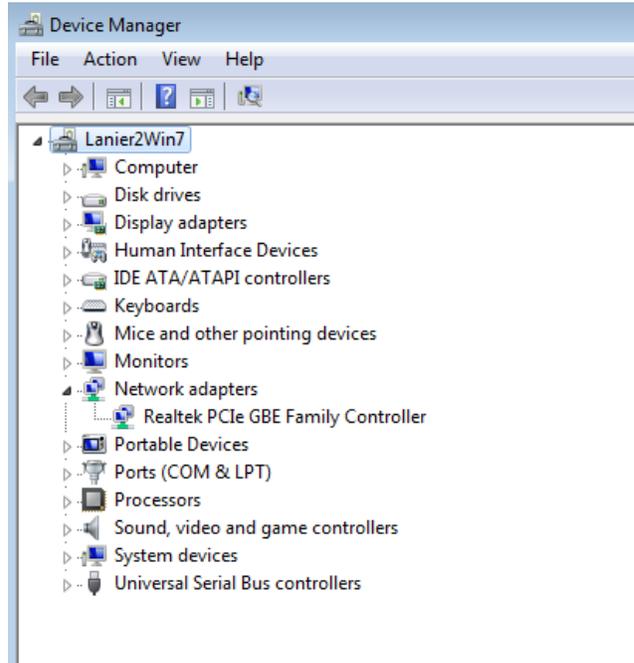
In order for Wake on LAN to function the Network driver must be enabled (factory default). The procedure for enabling the driver depends on which operating system you are using.

### Windows 7

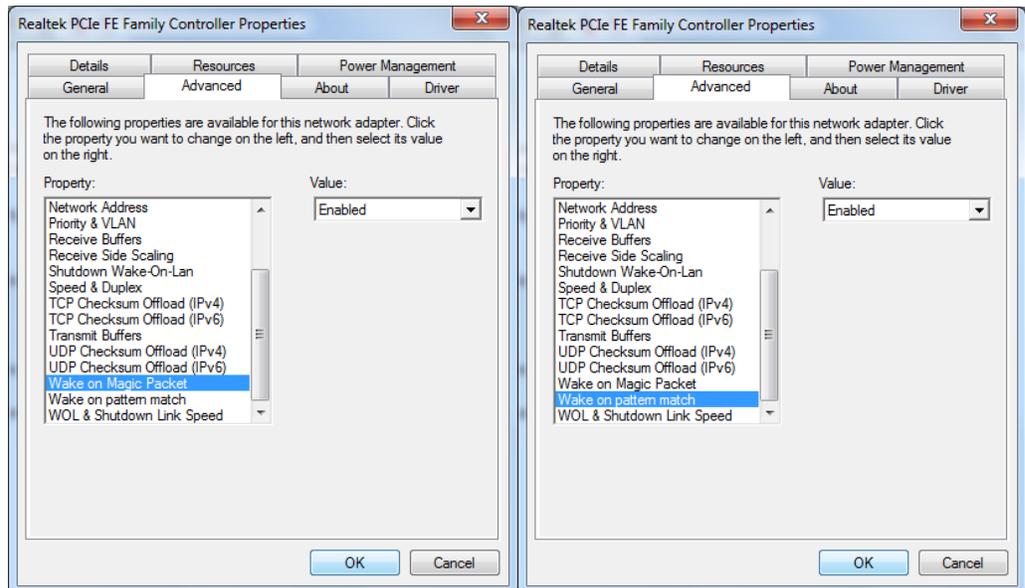
1. **Computer** >> **System Properties***tab* >> **Device Manager**



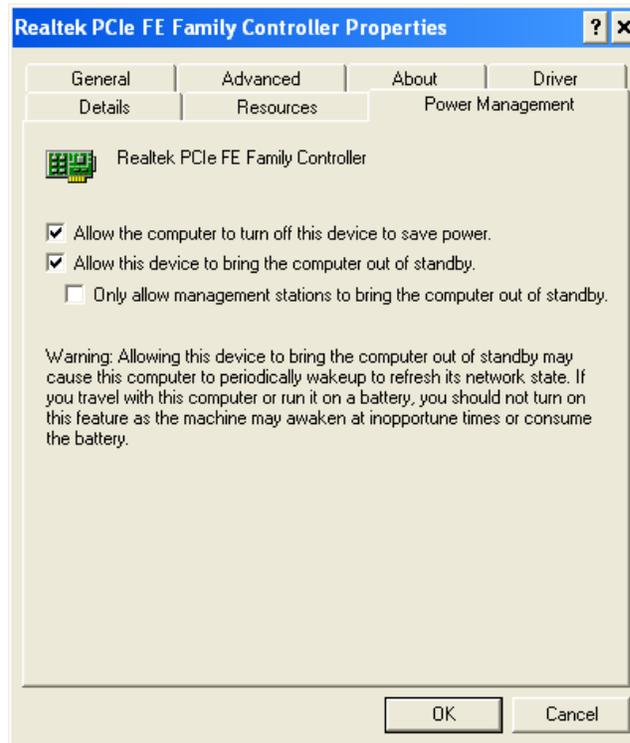
2. Select **Network adapters**.
3. **Right-click Realtek PCIe FE Family Controller >> Properties.**



4. Under the *Advanced* tab both *Wake on Magic Packet* and *Wake on Pattern Match* should be **Enabled**. Select **OK** after making any changes.



5. Under the *Power Management* tab all option boxes should be checked. Select **OK** after making any changes.

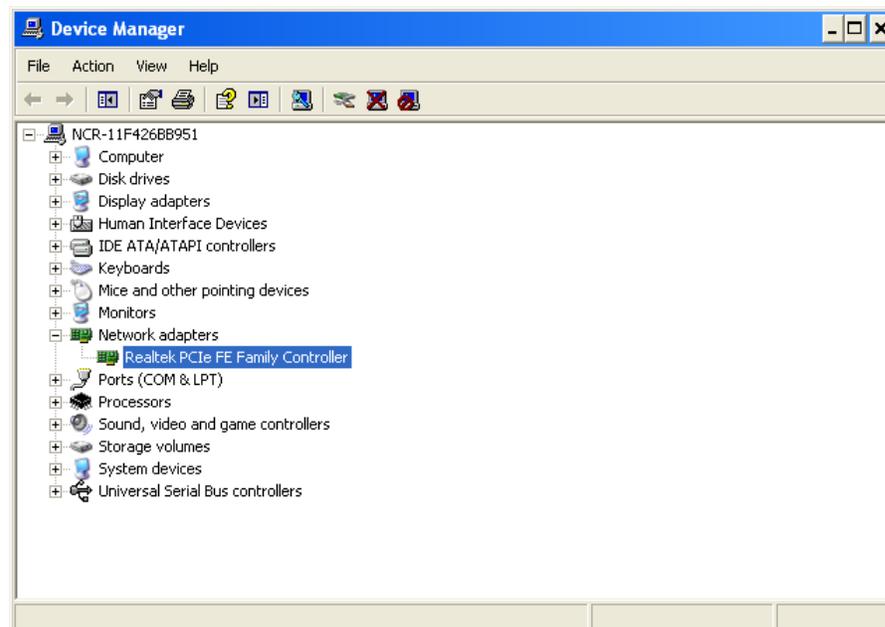


## Windows XP

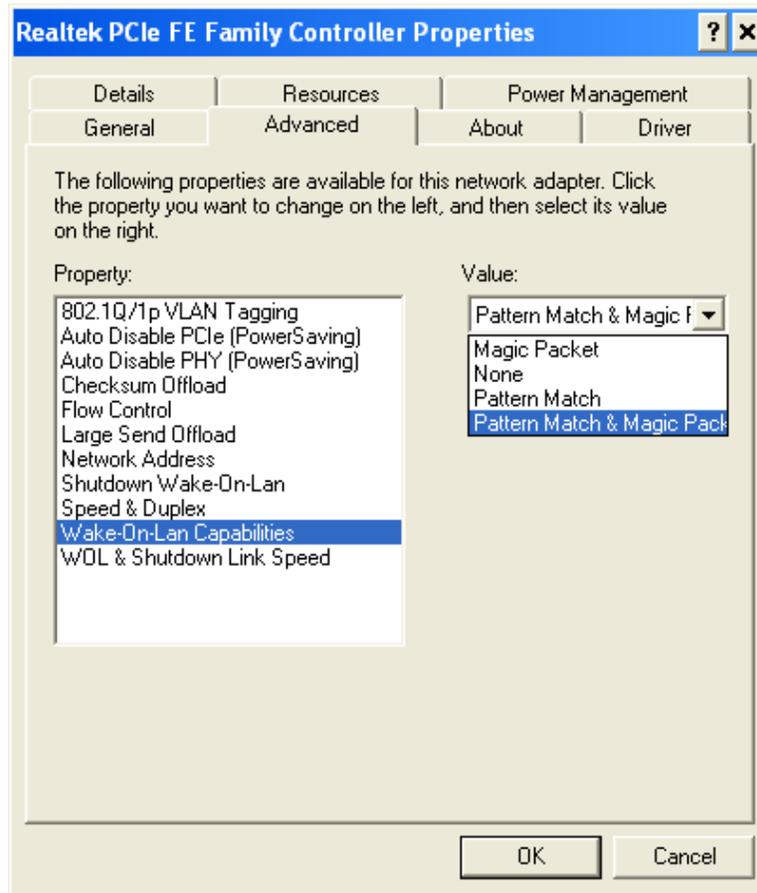
1. **Select Start** → **Control Panel** → **Hardware** Tab → **Device Manager** button.



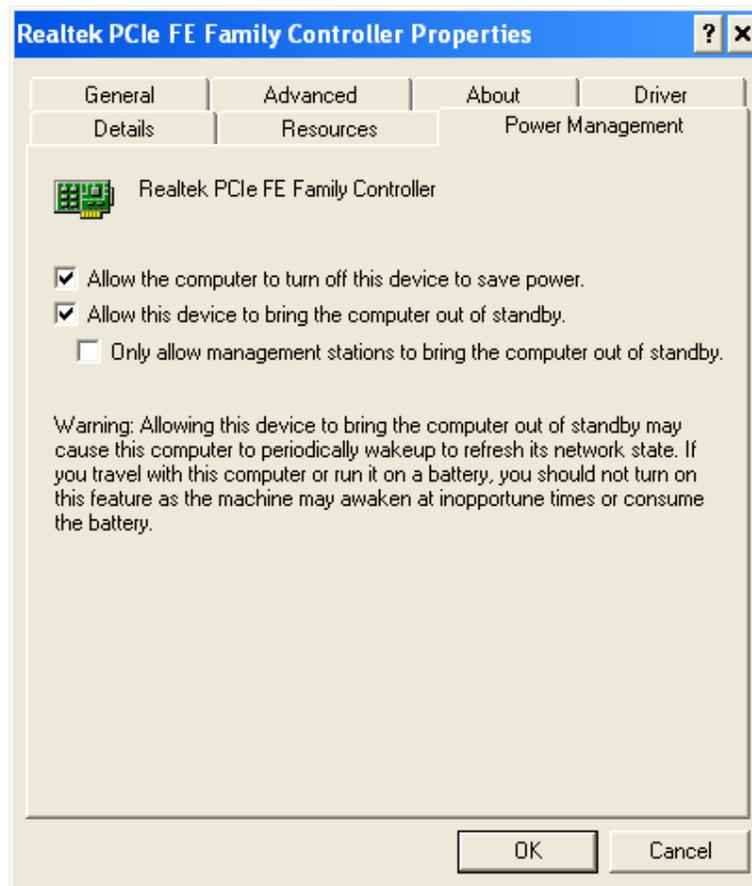
2. Select **Network adapters**.
3. Right-mouse click the *Realtek PCIe FE Family Controller* driver and the select **Properties**.



4. Under the Advanced tab the Wake on Magic Packet should be Enabled. Select OK after making any changes.



5. Under the Power Management tab the option boxes as shown below should be checked. Select OK after making any changes.



## ACPI Processor C-States

ACPI defines the power state of system processors while in the G0 working state as being either active (executing) or sleeping (not executing). Processor power states are designated C0, C1, C2, C3, ...Cn.

The C0 power state is an active power state where the CPU executes instructions. The C1 through Cn power states are processor sleeping states where the processor consumes less power and dissipates less heat than leaving the processor in the C0 state.

While in a sleeping state, the processor does not execute any instructions. Each processor sleeping state has a latency associated with entering and exiting that corresponds to the power savings. In general, the longer the entry/exit latency, the greater the power savings when in the state.

To conserve power, OSPM places the processor into one of its supported sleeping states when idle. While in the C0 state, ACPI allows the performance of the processor to be altered through a defined "throttling" process and through transitions into multiple performance states (P-states).



**Note:** The MPC Atom D2550 Processor supports C0 and C1 states. Support of deeper sleep states is not required due to its inherently low power consumption.

# Operator Displays

## NCR 5943 12.1-Inch LCD



The NCR 5943 LCD is an LED backlit LCD display (XGA, 1024 x 768). The display is powered by the terminal from a +12V USB Plus Power port. The remote mount must be ordered separately.

- LCD panel
  - Display Size: 12.1-inch
  - LCD Technology: TFT, Pixel Configuration: RGBW Rectangle
  - LCD Backlit Technology: LED-Backlit
  - Native Format: 1024x768, 262,144 colors: (RGB 6bits) color depth or greater
  - Viewing Direction: 12 o'clock
  - 50K hour minimum backlight ½ life at rated luminance
- VESA & Industry Standards
- Retail hardened display
- Dual video inputs, standard analog (DB15) video interface and DVI interface
- No OSD controls - all SW driven
- Flexible cable length options (compatibility with NCR 1m & 4m external cables)
- Clean (hidden) cable management
- ISO 3-Track/JIS 2-Track MSR (Optional)

## NCR 5943 15-Inch LCD



The NCR 5943 LCD is an LED backlit LCD display (XGA, 1024 x 768). The display is powered by the terminal from a +12V USB Plus Power port. The remote mount must be ordered separately.

- LCD panel
  - Display Size: 15-inch
  - LCD Technology: TFT, Pixel Configuration: RGBW Rectangle
  - LCD Backlit Technology: LED-Backlit
  - Native Format: 1024x768, 262,144 colors: (RGB 6bits) color depth or greater
  - Viewing Direction: 12 o'clock
  - 50K hour minimum backlight ½ life at rated luminance
- Standard VGA and DVI video inputs
- VESA 75 Mounting Compliance
- Retail hardened display
- Standard VGA and DVI video inputs
- No OSD controls - all SW driven
- ISO 3-Track/JIS 2-Track MSR (Optional)
- Integrated speakers

## NCR 5967 12-Inch Touch LCD



The NCR 5967 Touch LCD is an LED backlit LCD display (XGA, 1024 x 768) with capacitive touch screen. The display is powered by the terminal from a +12V USB Plus Power port. The remote mount must be ordered separately.

- LCD panel
  - Display Size: 12.1"
  - LCD Technology: TFT, Pixel Configuration: RGBW Rectangle
  - LCD Backlit Technology : LED-Backlit
  - Native Format: 1024x768, 262,144 colors: (RGB 6bits) color depth or greater
  - Display Mode: Normally white
  - Viewing Direction: 12 o'clock
  - 370 cd/m2 (typ), 300 cd/m2 (min) luminance to user
- 50K hour minimum backlight ½ life at rated luminance
- VESA & Industry Standards
- Spill proof and sealed
- Dual video inputs, standard analog (DB15) video interface and DVI interface.
- LCD LED Backlight is controllable using soft DDC/CI UTILILTY at full or reduced brightness (no physical DDC/CI UTILILTY buttons)
- ISO 3-Track/JIS 2-Track MSR (Optional)
- USB Port

## NCR 5967 15-Inch Touch LCD



The NCR 5967 Touch LCD is an LED backlit LCD display (XGA, 1024 x 768) with capacitive touch screen. The display is powered by the terminal from a +12V USB Plus Power port. The remote mount must be ordered separately.

- LCD panel
  - Display Size: 15-inch
  - LCD Technology: TFT, Pixel Configuration: RGBW Rectangle
  - LCD Backlit Technology: LED-Backlit
  - Native Format: 1024x768, 262,144 colors: (RGB 6bits) color depth or greater
  - 50K hour minimum backlight ½ life at rated luminance
- Touch Sensor; Capacitive Touch, USB I/F
- Standard VGA and DVI video inputs
- VESA 75 Mounting Compliance
- Retail hardened display
- Standard VGA and DVI video inputs
- No OSD controls - all SW driven
- ISO 3-Track/JIS 2-Track MSR (Optional)
- Integrated speakers
- USB Port

## NCR 5954 15-Inch DynaKey



The NCR RealPOS 5954 USB DynaKey is a Point-of-Sale (POS) keypad with a built-in 15-inch flat panel Liquid Crystal Display (LCD). Unique to the DynaKey is a set of ATM-style keys (DynaKeys), which are located beside the display. The functions of these keys change depending on the software application appearing on the LCD.



**Note:** USB DynaKey requires Windows XP/XPe.

The combined display and keypad is designed to reduce operator training time, simplify complex POS transactions and improve associate/cashier productivity. Combined with the appropriate applications software, the DynaKey can virtually eliminate the need for an operator to memorize function key locations and sequence.

The USB DynaKey interfaces with the host terminal via two cables.

- Digital Video Interface (DVI) cable for video
- Powered Universal Serial Bus (USB) for data and power

The DynaKey is available in two color schemes.

- Light Gray (G11)
- Charcoal Gray (CG1)

## NCR 5982 6.5-Inch LCD Display

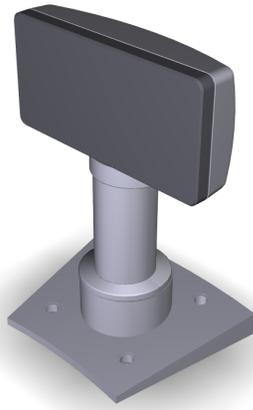
The 5982 LCD Display is a MGC-powered color 6.5 Inch VGA LCD.



### Features

- 5-inch VGA Monochrome LCD (640 x 480 VGA)
- Contrast Control
- LED Back Light
- Keyboard Mount
- Low-Post Table-Top Mount
- VGA Video
- Powered by 12 V USB Cable

## NCR 5976 2x20 LCD Customer Display



The NCR RealPOS 5976-1xxx Customer Display is a 2-line x 20-character LED backlit Liquid Crystal Display (LCD), which can display any downloadable codepage of single byte characters. It supports both RS-232 and USB interfaces.

- 5976-1100 2x20 LCD (G11)
- 5976-1200 2X20 LCD (CG1)

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

### Features

- 2x20 Character Liquid Crystal Display (LCD)
- LCD Technology: Advance Black Nematic (ABN)
  - True white on black LED display
  - Sealed against dust and spill resistant
- High-Contrast/High Bright
- Low Power Consumption
- 7x9 pixel characters
- Character height
  - Minimum - 9.5mm
  - Maximum - 10.5mm
- LED backlight: 50K hour minimum backlight life at ½ rated luminance
- Luminance: 200-500 nits
- Three pre-loaded Code pages
  - Up to 19 downloadable Code pages
- MB Flashable memory

## 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 that is 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)
- 2 MB Flash Memory for support of up to 16 additional character sets

# Keyboards

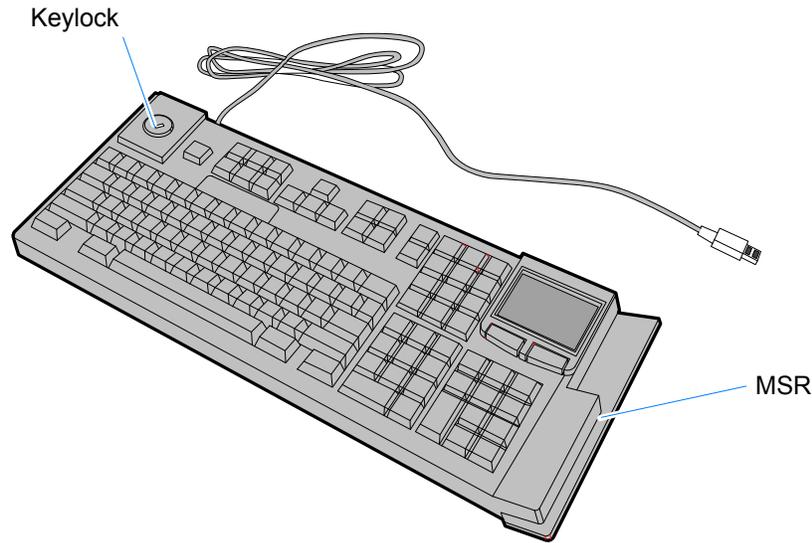
## NCR 5932 Keyboards

The NCR 5932 Keyboards are intended for harsh retail environments and contain an internal membrane to protect against objects such as paper clips, staple wires, pins, and so forth, from falling between the keys and damaging the electronics. This technology improves overall reliability not typically found in standard PC keyboards or many retail keyboards.

The Mobile Gateway Controller supports the following NCR 5932 Keyboards:

- NCR 5932-5xxx USB Big Ticket Keyboard
- NCR 5932-66xx USB Compact Keyboard

## NCR 5932-5xxx USB Alphanumeric Big Ticket Keyboard



19586

The *NCR USB Alphanumeric Big Ticket Keyboard* is a multifunction keyboard that is two keyboards built into one.

The keyboard consists of two major sections:

- 38-key POS keyboard
- Industry-standard alphanumeric PC keyboard

The keyboard contains the key matrix and other POS-specific functions such as keylock, speaker, system status indicator, and magnetic stripe reader (MSR). This 5932 keyboard also has a USB port to connect a Scanner or other USB device.

### Features

The NCR 5932 USB Keyboard supports the following features:

- Integrated Touch Pad, Keylock, Speaker, 3-Track Magnetic Stripe Reader (MSR)
- Keyboard Status LEDs
- USB cable
- Additional external USB ports
- No language characteristics



**Note:** Refer to NCR 5932 USB Keyboard User's Guide (B005-0000-1395) for further detailed information.

## NCR 5932-66xx USB Programmable POS Keyboard

The NCR 5932 PS/2 Programmable POS Keyboard is a multifunctional keyboard that is two keyboards built into one.

The keyboard consists of two major sections:

- 32-key Point-Of-Sale Keyboard
- PC type Alphanumeric Keyboard

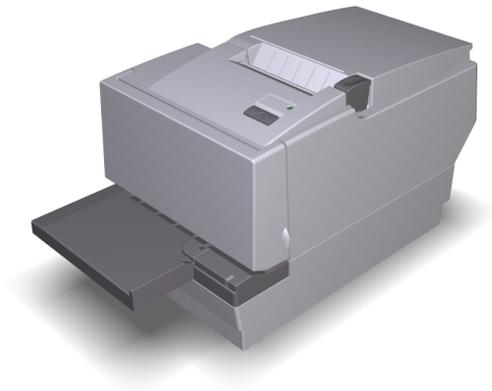


The keyboard includes the following features:

- Keylock
- Tone Indicator
- Keyboard Status Indicator
- Magnetic Stripe Card Reader (MSR)
- Glide Pad

## Printers

### NCR 7167 Printer

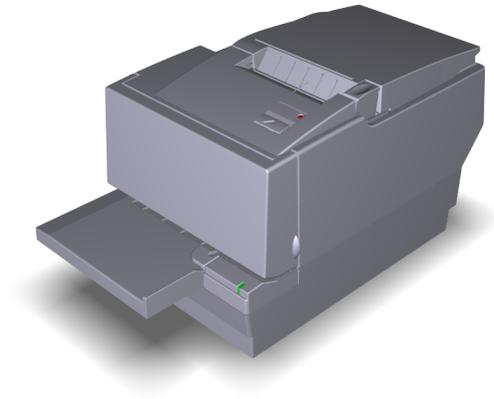


The NCR 7167 Printer is a fast, quiet, relatively small and very reliable multi function printer. It prints receipts, validates and prints checks, and prints on a variety of single or multiple part forms. There is not journal as it is kept electronically by the host terminal. The printer can connect through a USB port or a serial port. It can receive power from a power supply or through a USB+ power cable.

#### Features

- Print speed up to 90 lines/sec (44 columns)
- Supports 80/58 mm media rolls
- Easy drop-in paper loading
- Dual Interface board w/auto-sensing

## NCR 7168 Printer



The NCR 7168 Printer is a fast, quiet, relatively small and very reliable multiple-function printer with front and back printing on the receipt paper capability. It prints receipts, validates and prints checks, and prints on a variety of single- or multiple-part forms. There is no journal as it is kept electronically by the host computer.

The industry-standard RS-232C communication interface allows the 7168 to be connected to any host computer that uses RS-232C or USB communication interface.

The receipt station uses thermal printing technology. Therefore, there is no ribbon cassette to change and paper loading is extremely simple. Printing on single- or multiple-part forms, validating checks, and printing checks is also easy in the accommodating slip station.

Another feature is the Magnetic Ink Character Recognition (MICR) check reader with parsing, which reads account numbers on checks for easy verification. An extended slip table is available for handling large forms and is standard with the MICR option.

### Features

- Print speed up to 52 lines/sec (44 columns)
- Supports 58/80 mm media rolls
- Easy drop-in paper loading
- Dual Interface board w/auto-sensing

## NCR RealPOS 7197 Printer



The *NCR 7197 Printer* is a fast, quiet, relatively small and very reliable printer. The printer can connect through a USB port or a serial port. It receives power from the 24V connector on the terminal or from an external power supply.

### Features

- Print speed up to 90 lines/sec (44 columns)
- Supports 80/58 mm media rolls
- Easy drop-in paper loading
- Dual Interface board w/auto-sensing

## NCR 7198 Printer

The NCR 7198 printer is a fast, quiet, relatively small and very reliable printer with front and back printing on the receipt paper capability. The printer can connect through a USB port or a serial port. It can receive power from a power supply or through a USB+ power cable.



The NCR 7198 Printer is a fast, quiet, relatively small and very reliable printer with front and back printing on the receipt paper capability. The printer can connect through a USB port or a serial port. It can receive power from a power supply or through a USB+ power cable.

### Features

- Print speed up to 52 lines/sec (44 columns)
- Supports 58/80 mm media rolls
- Supports RoL media
- Automatic paper detect (type)
- Easy drop-in paper loading
- Dual Interface board w/auto-sensing



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## Chapter 2: Hardware Installation

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### Installation Restrictions

- Before installing the NCR Mobile Gateway Controller (MGC), read and follow the guidelines in the *NCR Mobile Gateway Controller Site Preparation Guide* (B005-0000-2194) and the *NCR Workstation and Peripheral AC Wiring Guide* (BST0-2115-53).
- Install the MGC 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 MGC 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 MGC.



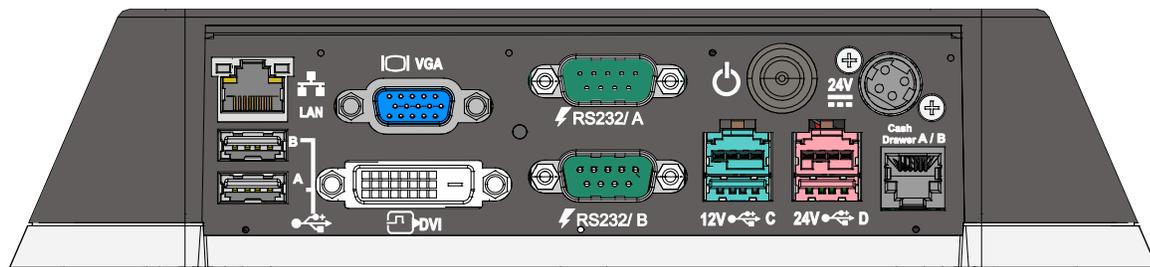
**Caution:** This unit contains hazardous voltages and should only be serviced by qualified service personnel.



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

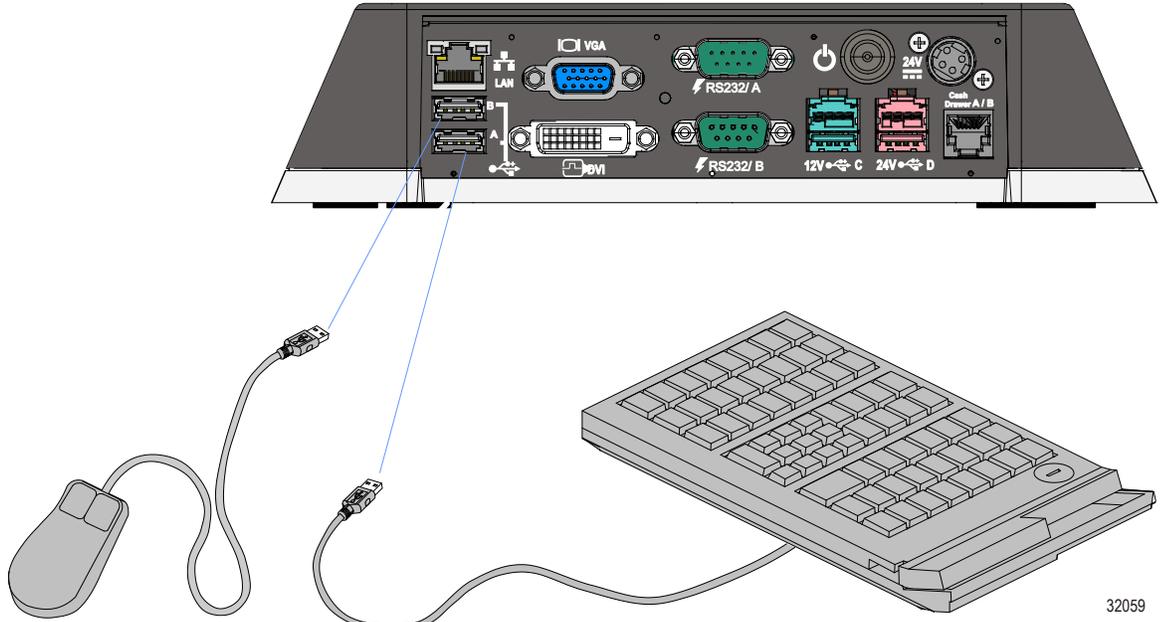
## Installing the Terminal

1. Unpack the terminal in the desired location.
2. Connect the external cables to the connectors located on the rear of the unit. See the specific peripheral sections for each peripheral connections.



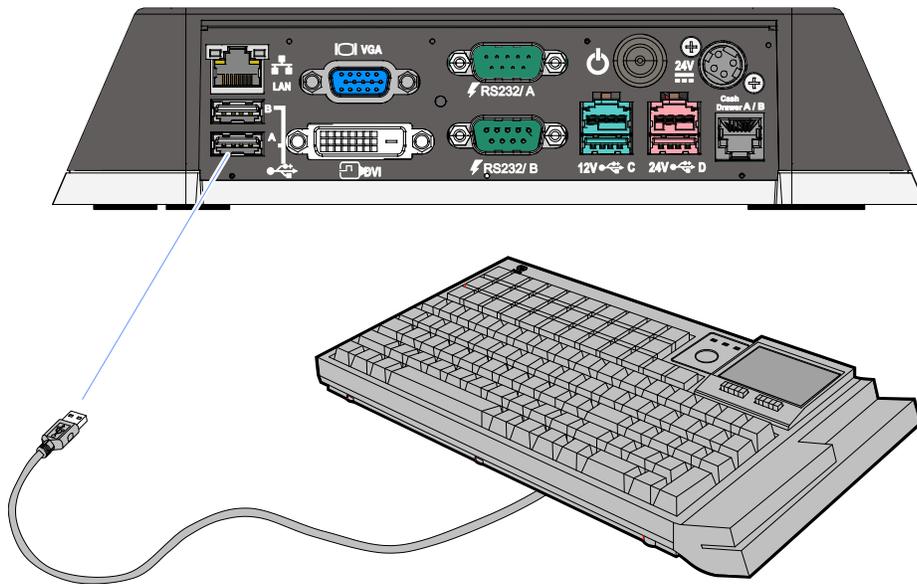
## Installing the Keyboard and Mouse

The MGC supports USB and PS/2 type keyboards. Only USB mice are supported. See the following examples of supported configurations.



32059

USB Keyboard and USB Mouse



32060

USB Keyboard w/Glide Pad

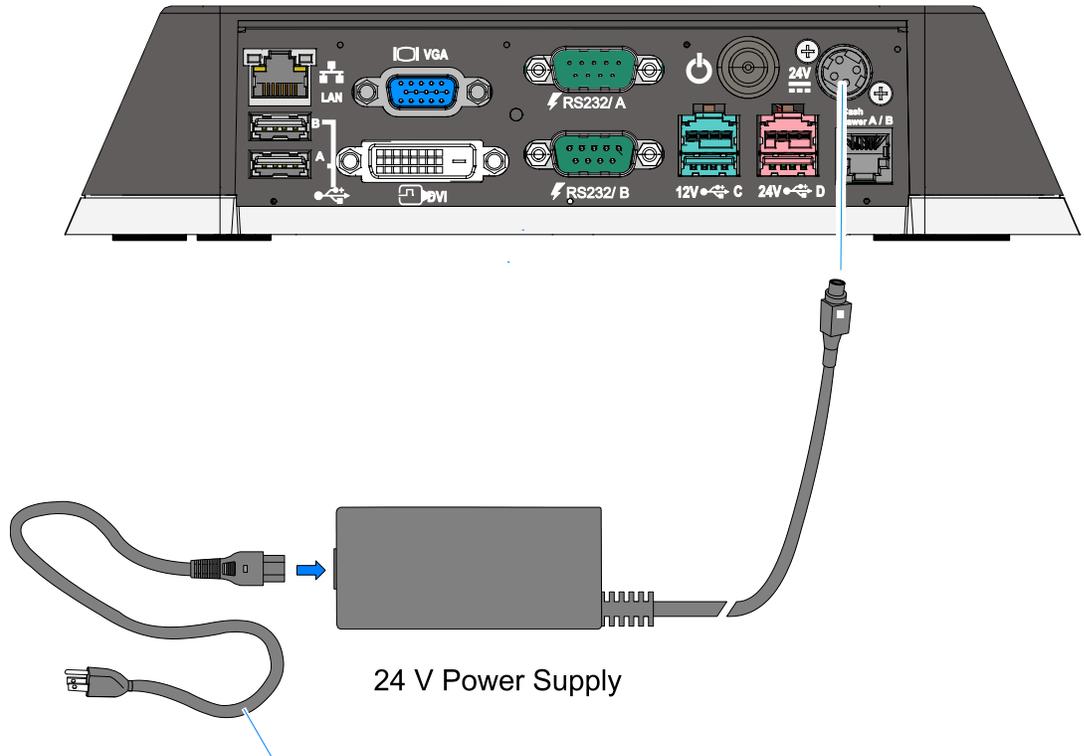
## Connecting AC Power

The MGC power supply is an external 24 V power brick.



**Caution:** The MGC requires the NCR 24 V power supply that is shipped with the terminal. Use of other power bricks may cause damage to the unit.

1. Connect the Power Supply cable to the DC Power connector on the terminal.
2. Connect the AC Power Cord to the Power Supply and to an AC outlet.



1416-C325-0032 006-1009037 - U.S.

Standard International power cables:

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

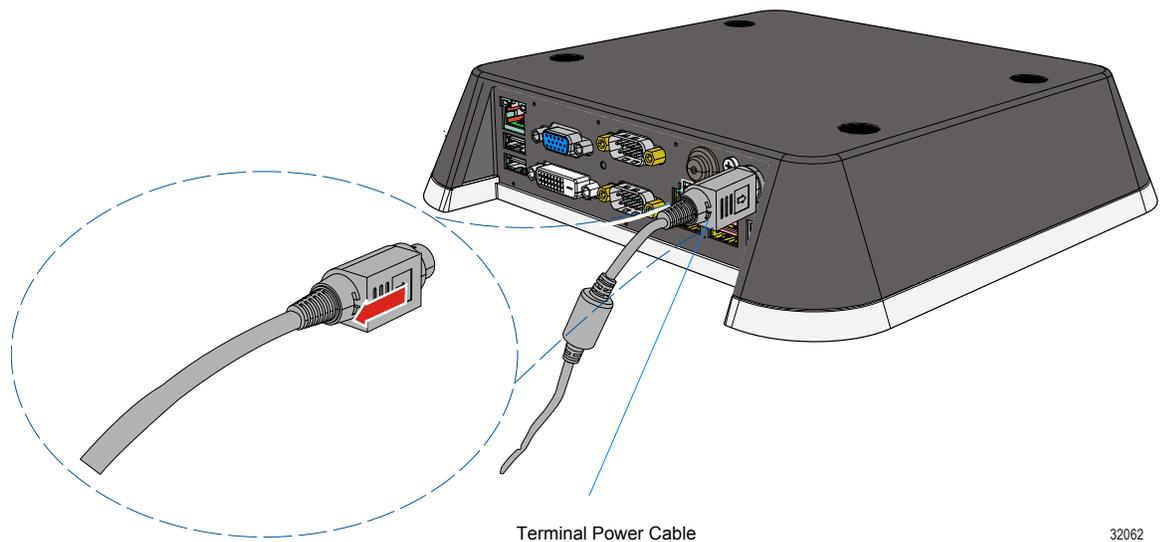
1416-C391-0030 006-8605488 - China

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

9851-K106-V001 007-9983284 - India, South Africa

## Disconnecting the Power Cable

The Power Cable connector locks into position when connected to the terminal and cannot be removed by simply pulling on the cable. You must grasp the connector and slide the outside housing out from the terminal to unlock it from the terminal connector.

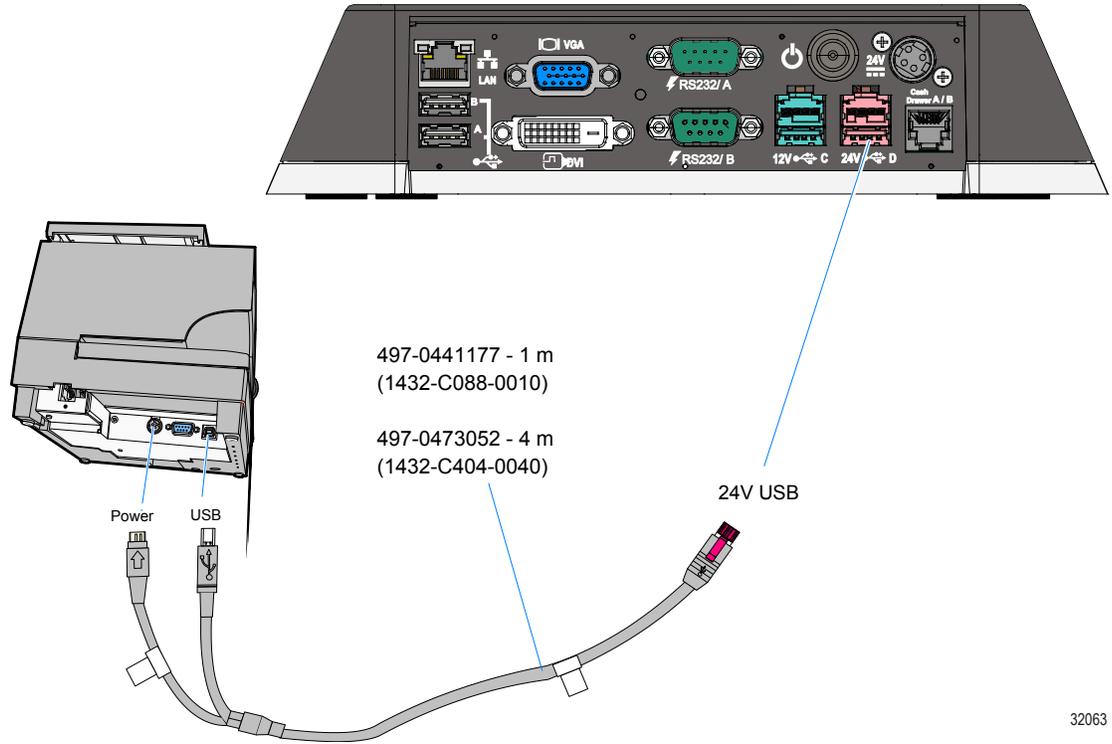


# Installing the Transaction Printer

The printers can interface through a USB connector or an RS-232 connector.

## USB Installation

Connect the Powered USB Printer Interface Cable to the *USB Connector* and *Power Connector* on the printer and to the *24 V Powered USB Connector* on the terminal.



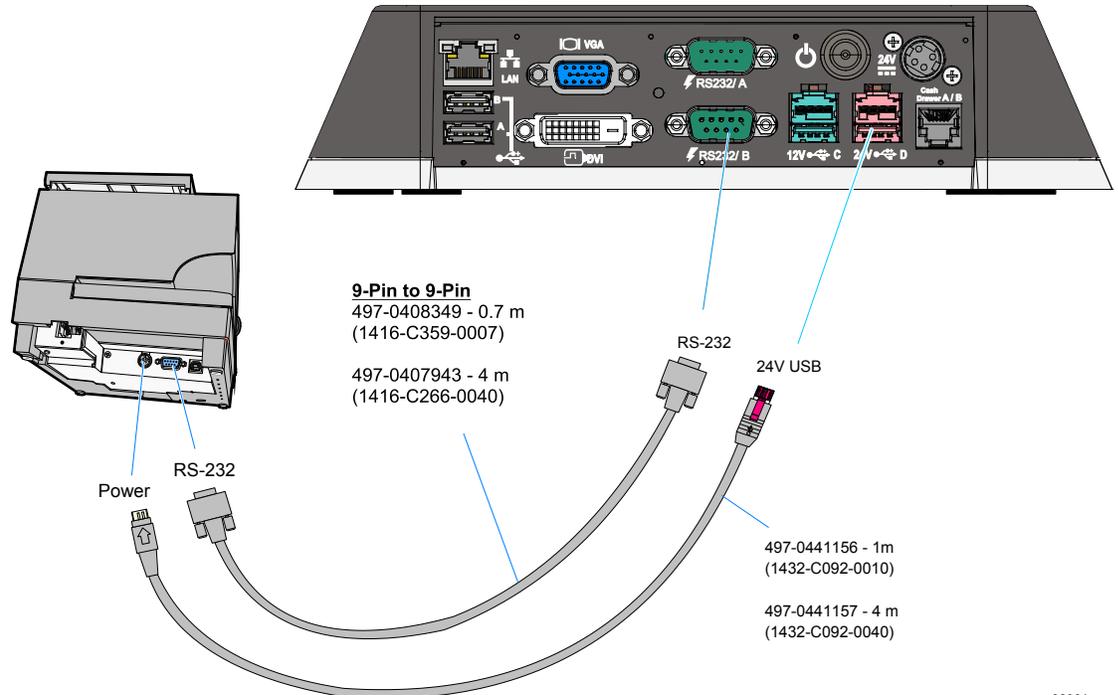
## RS-232 Installation

1. Connect the RS-232 Printer Interface Cable to the RS-232 connector on the printer and to a **non-powered** RS-232 connector on the terminal.



**Note:** The factory default setting for the RS-232 ports is **powered**. See the Appendix: Powered Serial Port Settings.

2. Connect the Powered USB Printer Interface Cable to the *Power Connector* on the printer and to the *24V Powered USB Connector* on the terminal.



## Integrating an iPad

The NCR 1668-2000 iPad Stand is used to integrate an iPad on an MGC. The stand is secured with two screws into the top of the MGC.

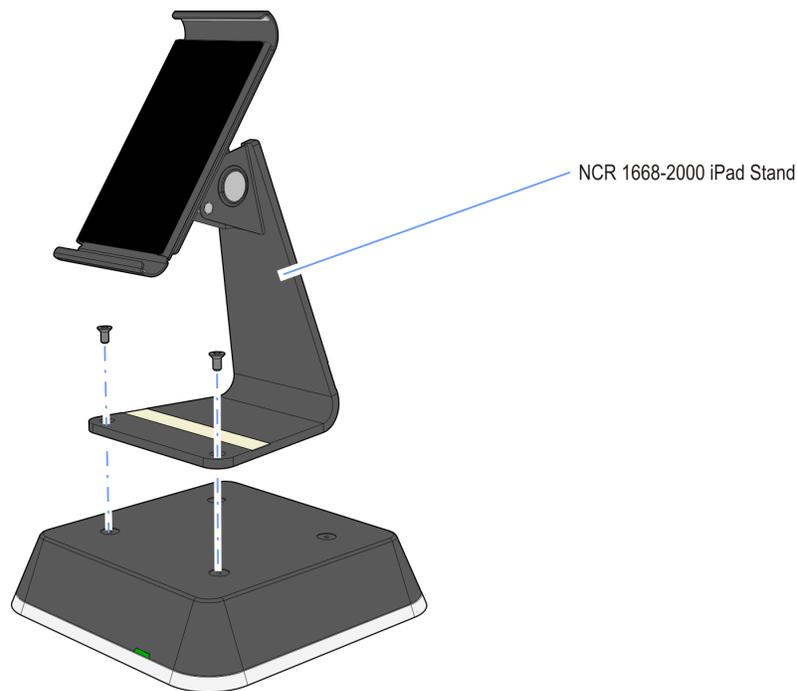


**Note:** The screws to secure the stand are included with the MGC. They are taped to the cabinet in a plastic bag for shipping.

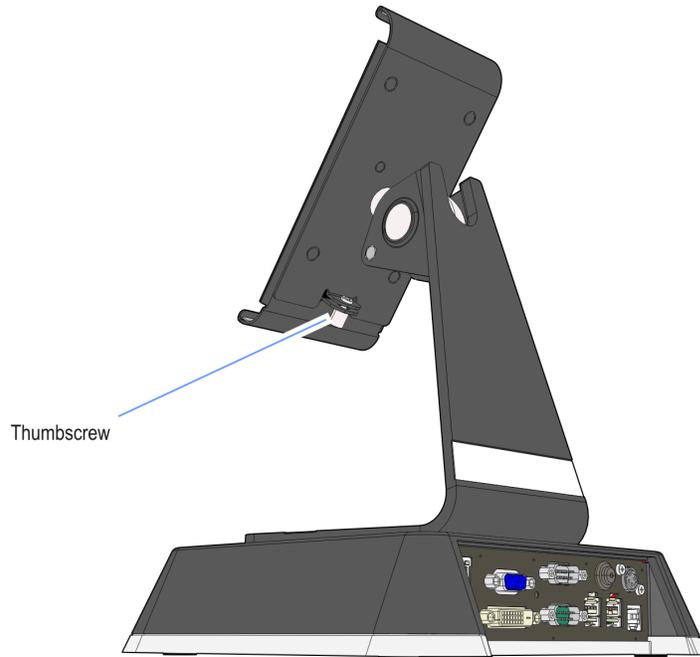
1. Install the stand on top of the MGC (2 screws).



**Note:** There are two sets of screw holes in the top of the MGC, which facilitates mounting the display to face the front or rear of the MGC.

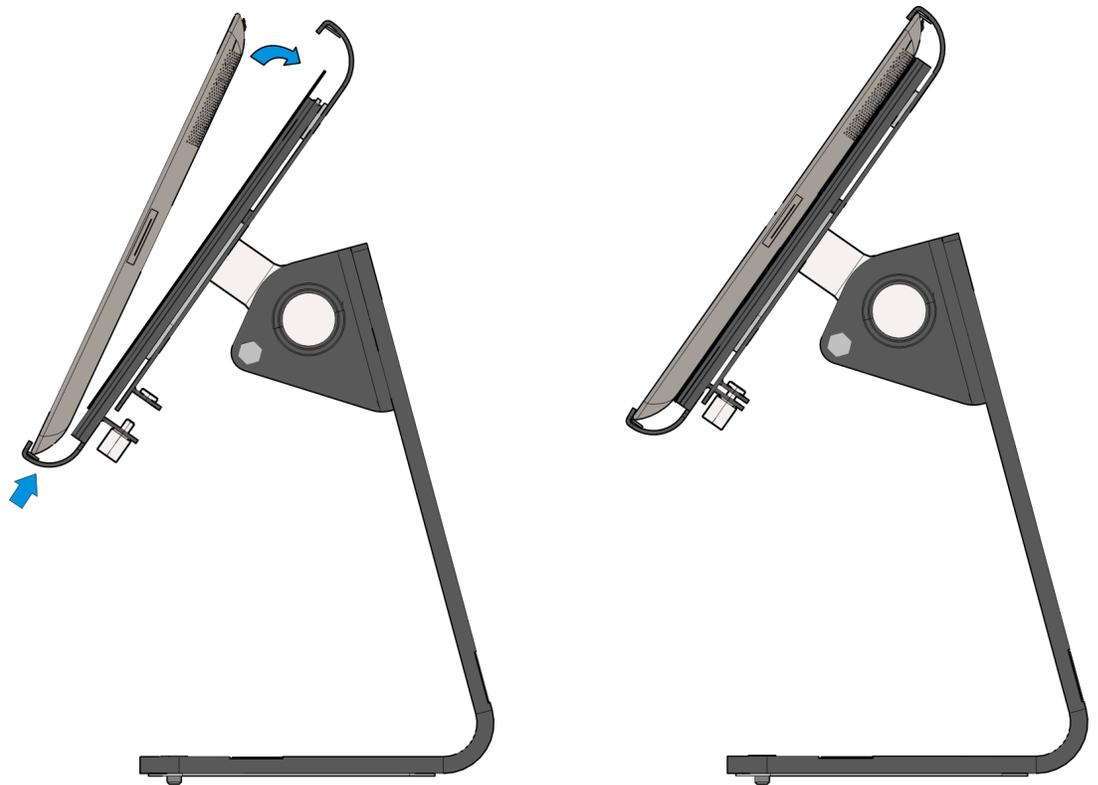


2. Loosen the thumbscrew on the Display Bracket.



32590

3. Install the iPad in the spring-loaded Display Bracket. Secure the bracket by tightening the thumbscrew.



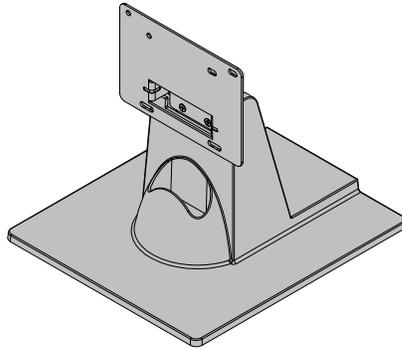
32598



## Installing a Remote Customer Display

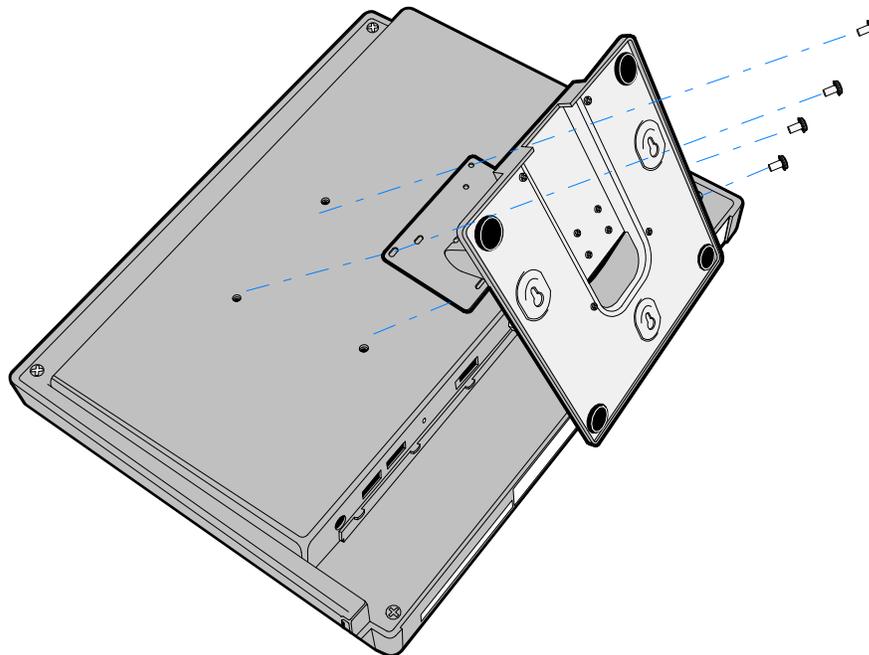
The Standard Remote Mount (5964-K031) is used to mount the following NCR displays.

- NCR RealPOS 5943 12.1-Inch Monitor
- NCR RealPOS 5943 15-Inch Monitor
- NCR RealPOS 5967 12.1-Inch Touch Monitor
- NCR RealPOS 5967 15-Inch Touch Monitor



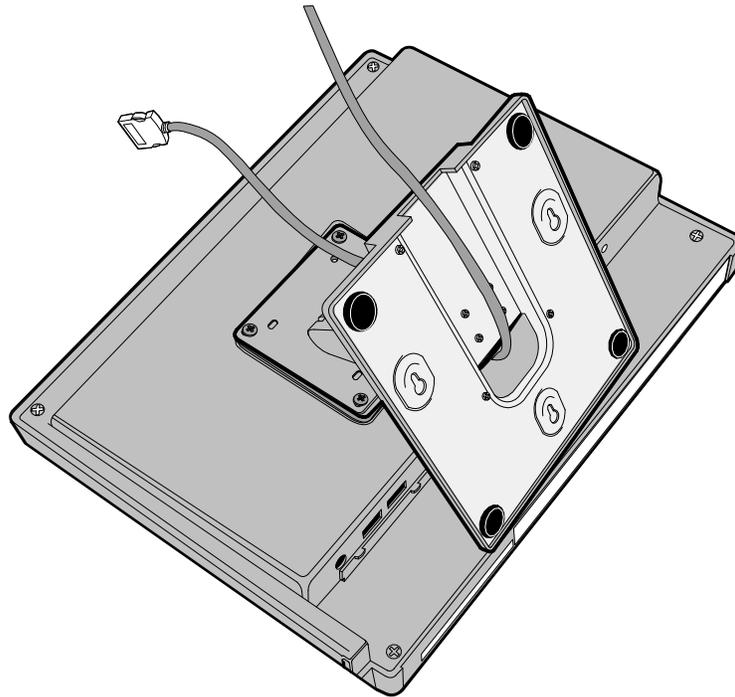
21151b

1. Install the mount onto the back of the Operator Display (4 screws).



26473

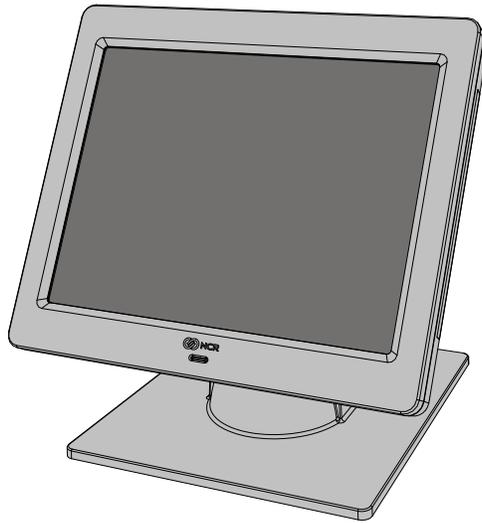
2. Route the cable(s) down through the mount and out the back of the base.



26474

3. Connect the cable to the proper connector on the host terminal. (See the specific display cable connection sections.)

# NCR RealPOS 5943/5967 12-inch LCD Cable Connections



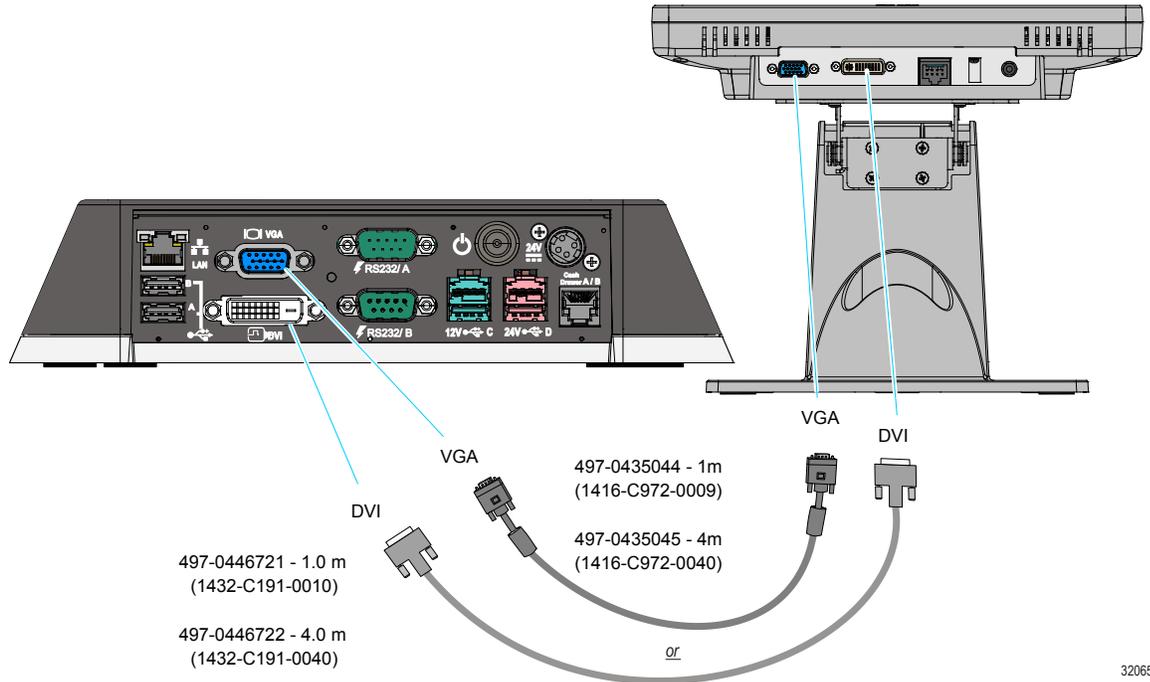
31827

The following illustrations show the cable connections for the 5943 LCD and the MGC terminal. There are two cables required.

- VGA or DVI cable for video
- Powered Universal Serial Bus (USB) for data and power

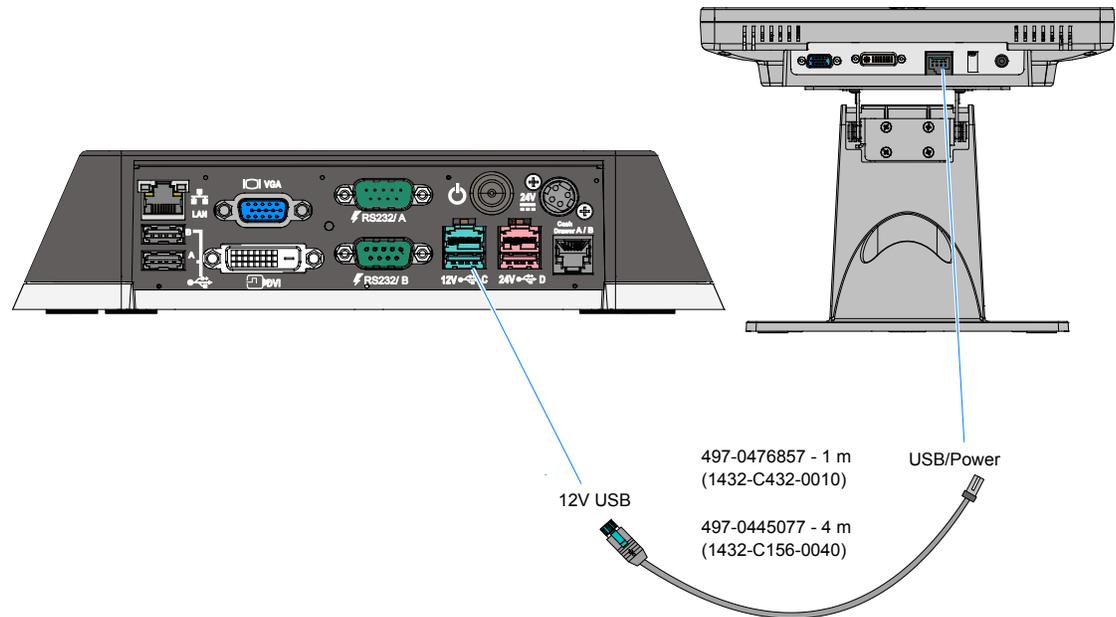
## VGA/DVI Connections

Connect either a VGA or a DVI cable.



## Powered USB Cable Connections

Connect the Powered USB Cable to the 5943 LCD and to one of the 12V Powered USB connectors on the MGC terminal.



32066

For more information see:

- the *NCR RealPOS 5943 12" LCD User Guide* (B005-0000-2043)
- the *NCR RealPOS 5967 12" LCD User Guide* (B005-0000-2182)

## NCR RealPOS 5943/5967 15-inch LCD Cable Connections



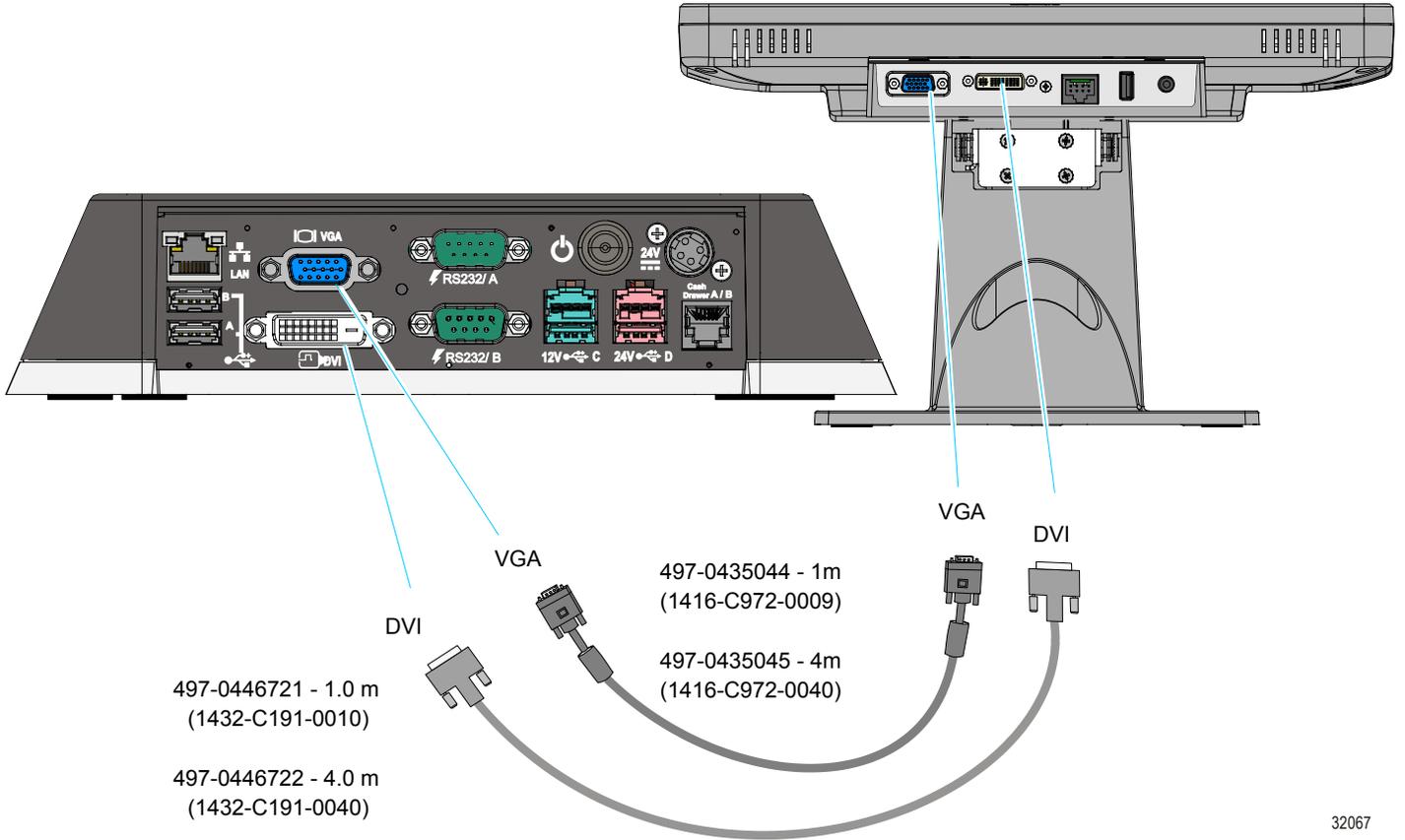
31828

The following illustrations show the cable connections for the 5943 LCD and the MGC terminal. There are two cables required.

- VGA or DVI cable for video
- Powered Universal Serial Bus (USB) for data and power

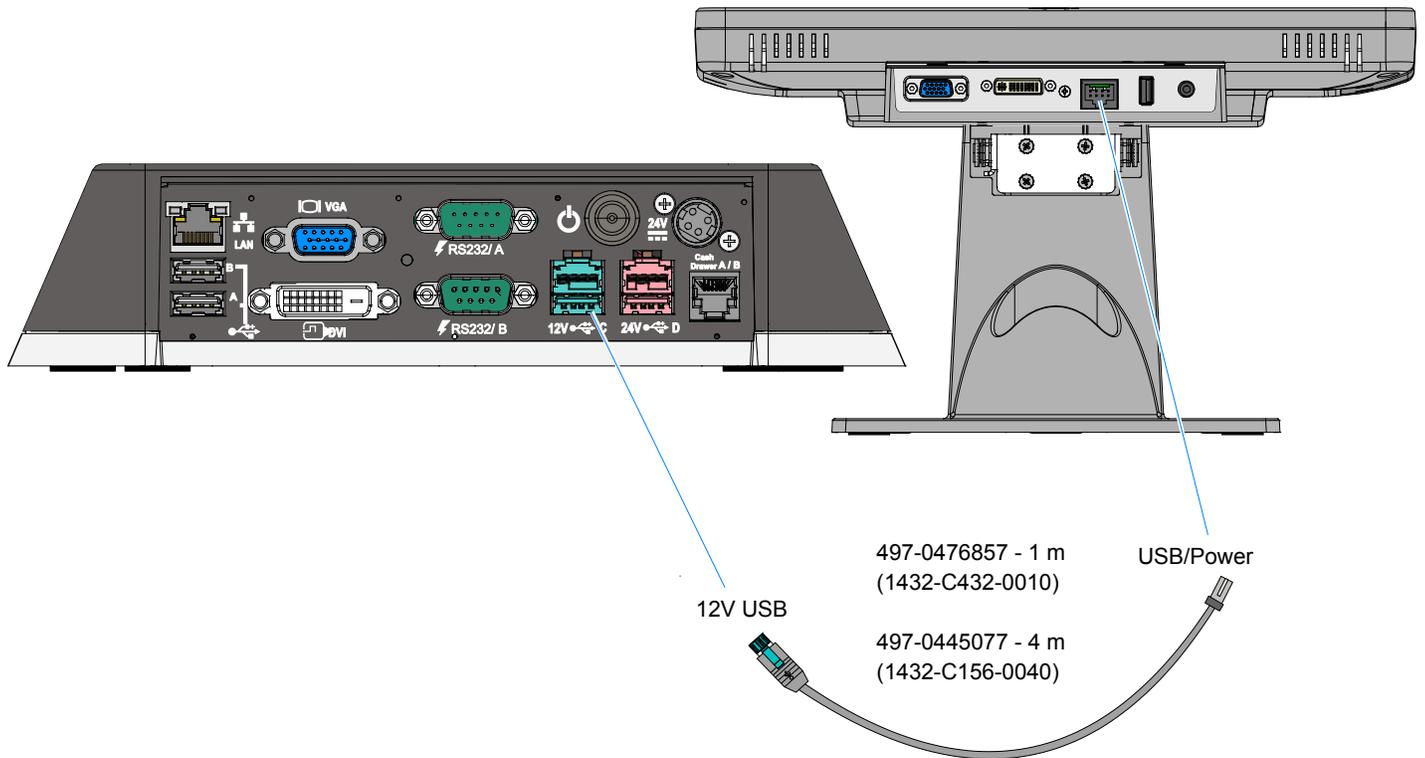
## VGA/DVI Connections

Connect either a VGA or a DVI cable.



## Powered USB Cable Connections

Connect the Powered USB Cable to the 5943 LCD and to one of the 12V Powered USB connectors on the MGC terminal.



32068

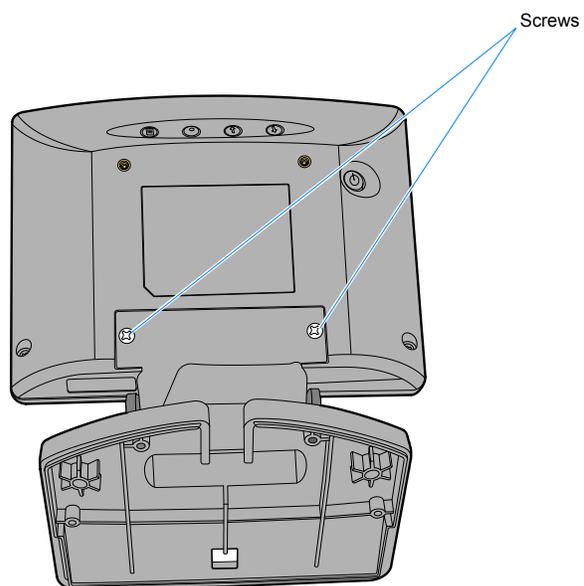
For more information see:

- the *NCR RealPOS 5943 15" LCD User Guide* (B005-0000-2182)
- the *NCR RealPOS 5967 15" LCD User Guide* (B005-0000-2193)

## Installing a 5982 6.5-Inch LCD



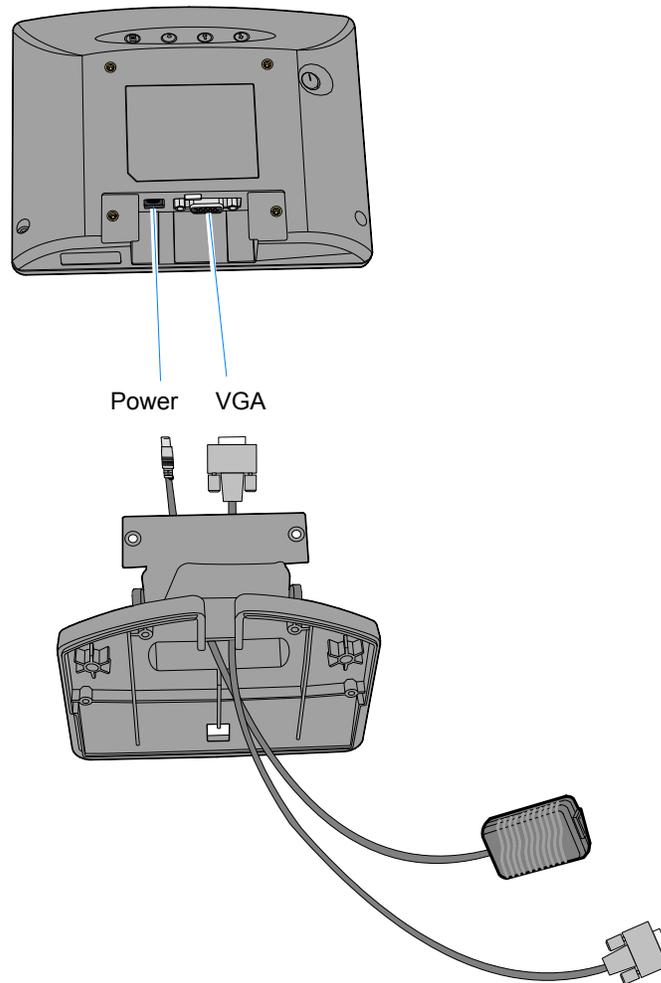
1. Remove the Base from the Display (2 screws).



2. Route the VGA and Power cables up through the bottom of the Base and connect them to the Display.



**Note:** The power cable can be either an External Power Supply or a Powered USB cable.

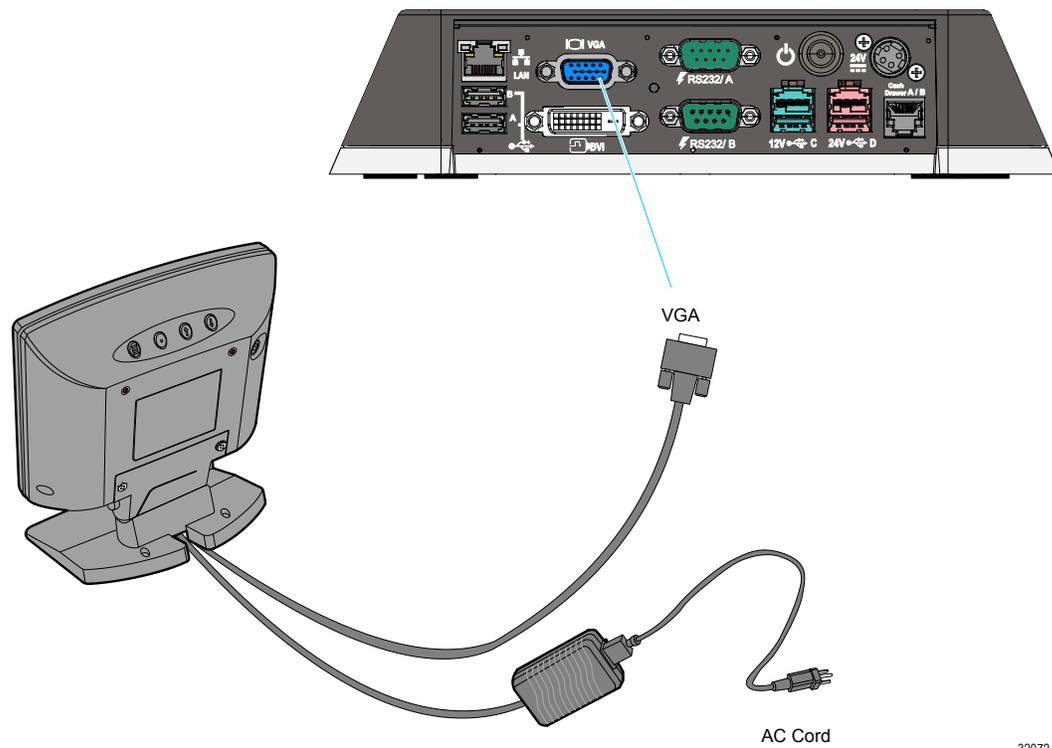


23435

3. Install the Base to the Display (2 screws).
4. Route the cables out the rear of the Base.
5. Connect the Power Cable:

## External Power Supply

- a. Connect the AC Cord to the Power Supply.



32072

- b. Connect the VGA cable to the VGA port on the host terminal.
- c. Connect the power cable to an AC source.



## Installing a Secondary Display (Dual Display)

The 7610 Motherboard uses an integrated video controller. This controller supports a Monitor port (VGA) and a Digital Display port (DVI) on the motherboard connector row. These two ports provide a single display mode (DVI or VGA) or a dual display mode (DVI and VGA). Dual display mode can be a clone (same video data displayed on both displays) or an extended desktop (the desktop spans across both displays).

The dual mode is configured using the *Intel® Graphics Media Accelerator* control panel.

1. Power down the system.
2. Connect the secondary display.



**Note:** Both displays must be connected to the 7610 before powering up the system.

3. Apply power to the system.
4. **Right click** the Desktop and then select **Graphics Properties** from the menu to start the control panel. The following screen indicates the system was previously configured with a single VGA display (Monitor).



## Extended Desktop Display Mode

1. Select **Multiple Displays**.



2. From the Operating Mode drop-down menu select **Extended Desktop**.
3. Select **PrimaryDevice**: Monitor or Digital Display. (This display has the Start button and Taskbar)
4. Select **SecondaryDevice**: Digital Display or Monitor. (This display is the desktop extension)

You can re-position the displays as desired by dragging the 1 or 2 icons in the Position box.

5. Select **Apply**.



6. Select **OK** within 15 seconds to accept the new settings.



6. Select **OK** to close the Control Panel.

## Installing a Cash Drawer

The small dimension of the MGC permits the terminal to rest directly on most cash drawers. However, other peripherals like the keyboard or printer may or may not fit. The Cash Drawer can connect to the Cash Drawer connector or to the transaction printer.

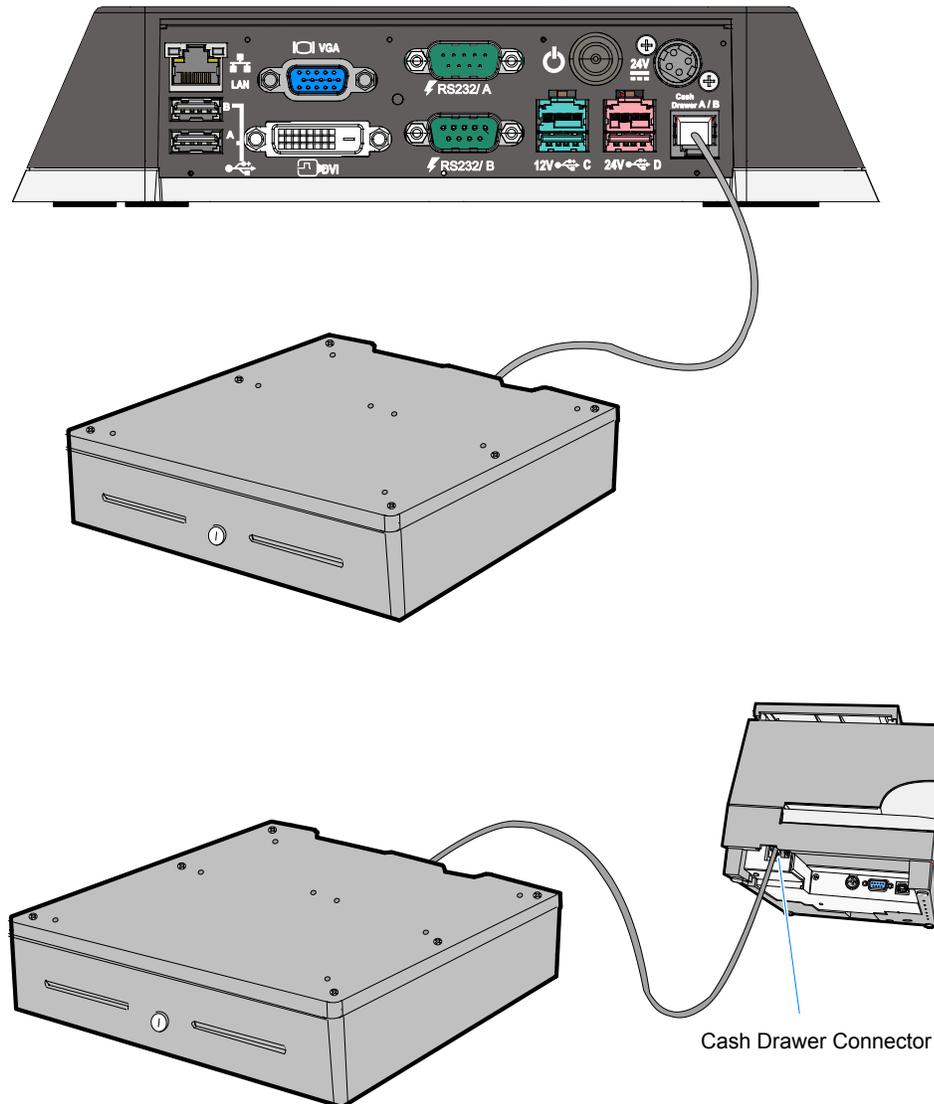


**Note:** The MGC is not designed for integration with any current NCR cash drawer.

The MGC supports the following Cash Drawers:

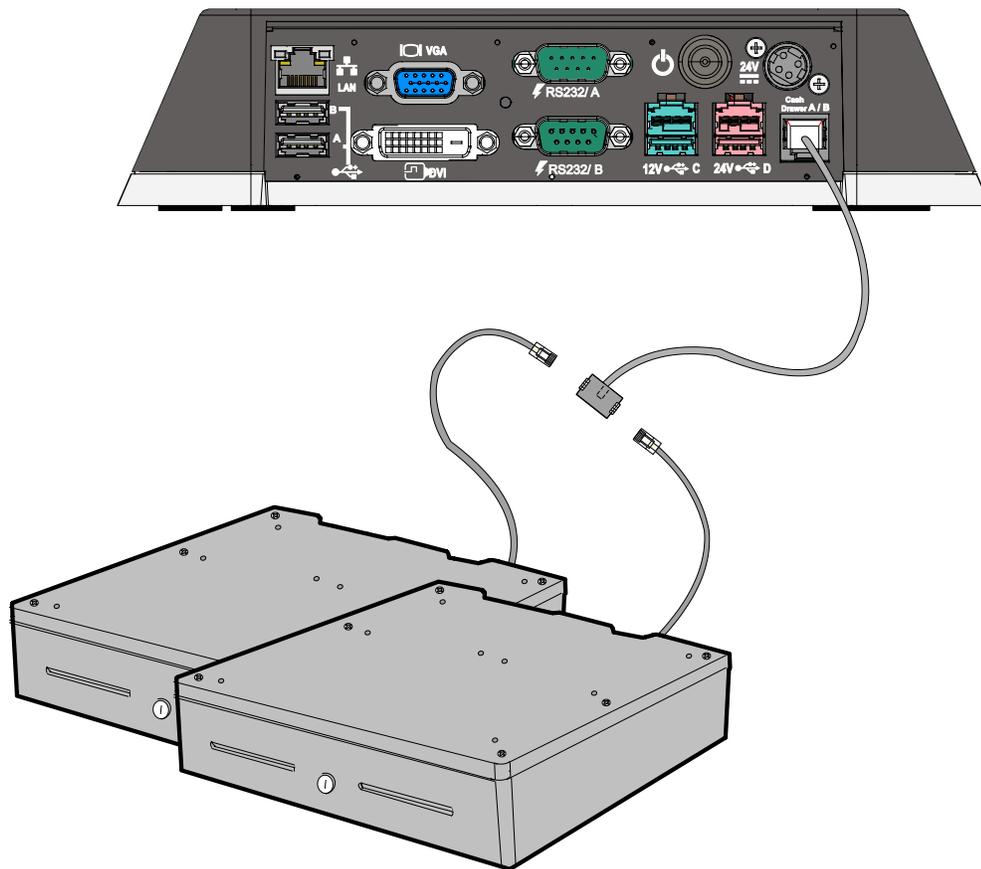
- 2185 Flip Top Drawer
- 2186 Compact Cash Drawer
- 2189 Full-size Cash Drawer

The Cash Drawer can be connected to the Back Panel on the MGC or to the Cash Drawer Connector on the transaction printer.



## Installing Two Cash Drawers

The MGC supports a 2-drawer configuration with a Y-cable (1416 C372 0006).



# Dual Display Clone Mode

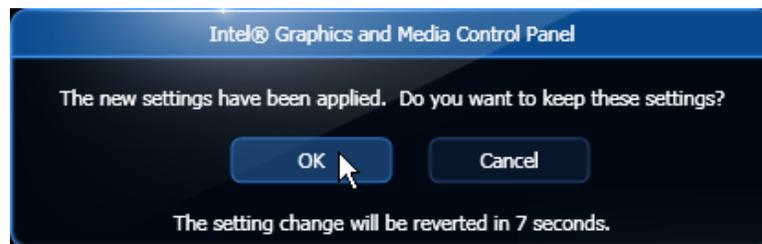
1. Select **Multiple Displays**.



2. From the Operating Mode drop-down menu select **Clone Display**.
3. Select the Primary Device: **Monitor** or **DigitalDisplay**.
4. Select the Secondary Device: **DigitalDisplay** or **Monitor**.
5. Select **Apply**.



6. Select **OK** within 15 seconds to accept the new settings.



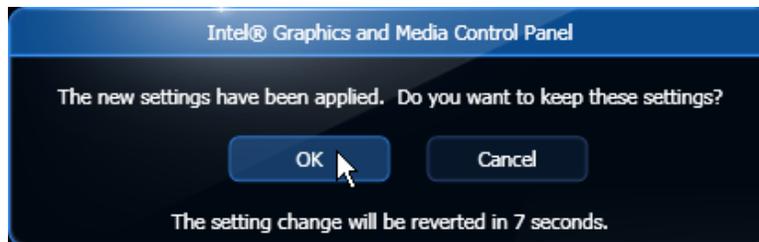
7. Select **OK** to close the Control Panel.

## Single Display Mode

1. Select **Multiple Displays**.



1. From the Operating Mode drop-down menu select Single Display
2. Select **Monitor** (or **DigitalDisplay**).
3. Select **Apply**.
4. Select **OK** within 15 seconds to accept the new settings.



5. Select **OK** to close the Control Panel.

## Intel Graphics Controller Hot Keys

Hot Keys provide the same functionality as the Intel Graphics Control Panel with specific keystrokes on the keyboard. These hotkeys are listed in the Intel Control Panel under the Hot Keys tab. The most useful Hot Keys are:

[CTRL][ALT][F1] - Monitor in single display mode

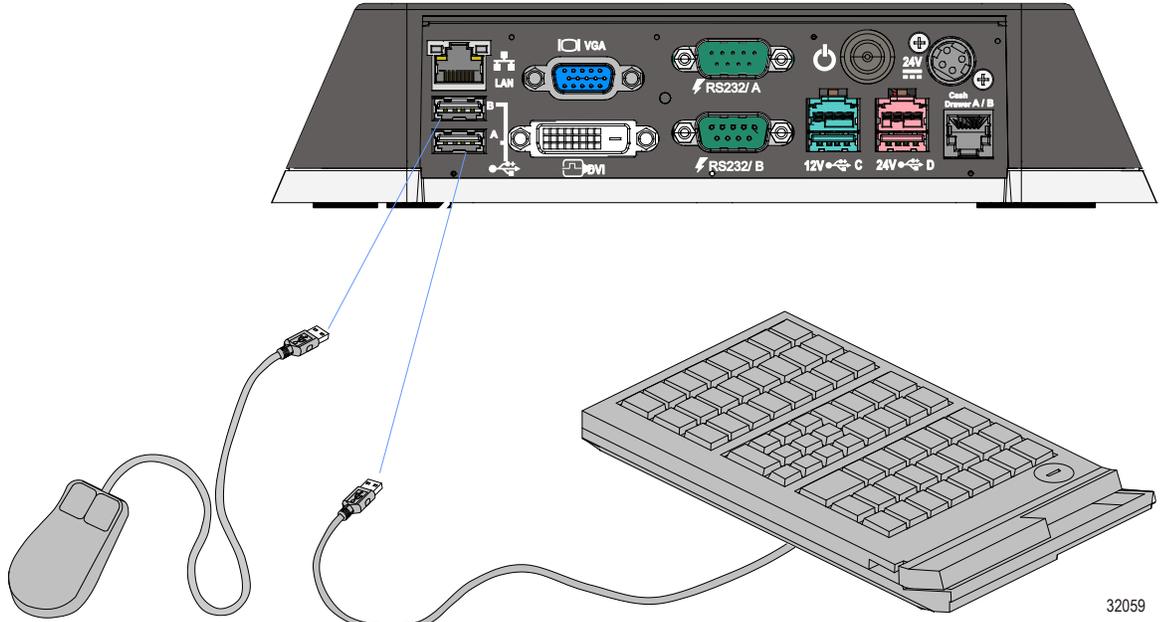
[CTRL][ALT][F4] - Digital Display in single display mode



**Note:** The Hot Keys can be used to recover from a blank display in Windows. This is true only if Windows Desktop loads completely; meaning, if Windows is waiting for a login/password entry or if Plug and Play is waiting for operator input, the Hotkeys are not yet active.

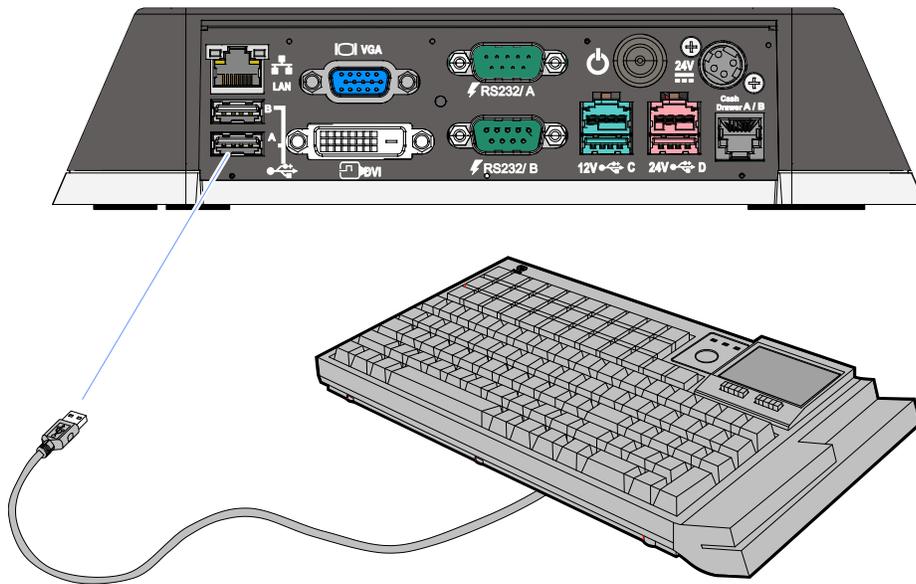
## Installing the Keyboard and Mouse

The MGC supports USB and PS/2 type keyboards. Only USB mice are supported. See the following examples of supported configurations.



32059

USB Keyboard and USB Mouse



32060

USB Keyboard w/Glide Pad

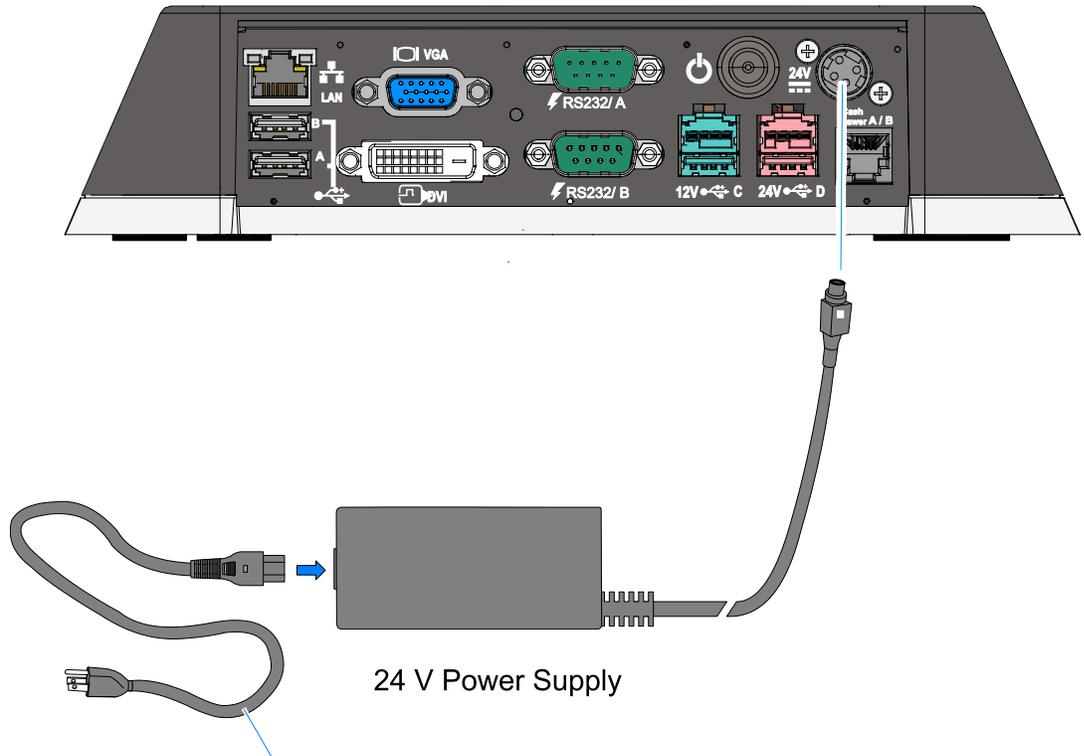
## Connecting AC Power

The MGC power supply is an external 24 V power brick.



**Caution:** The MGC requires the NCR 24 V power supply that is shipped with the terminal. Use of other power bricks may cause damage to the unit.

1. Connect the Power Supply cable to the DC Power connector on the terminal.
2. Connect the AC Power Cord to the Power Supply and to an AC outlet.



1416-C325-0032 006-1009037 - U.S.

Standard International power cables:

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

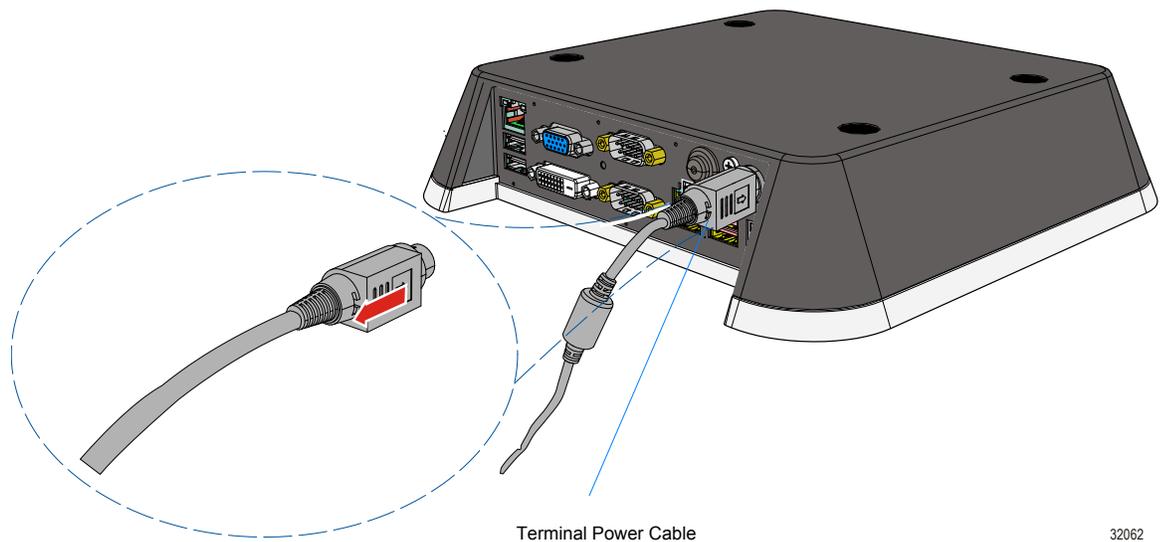
1416-C391-0030 006-8605488 - China

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

9851-K106-V001 007-9983284 - India, South Africa

## Disconnecting the Power Cable

The Power Cable connector locks into position when connected to the terminal and cannot be removed by simply pulling on the cable. You must grasp the connector and slide the outside housing out from the terminal to unlock it from the terminal connector.

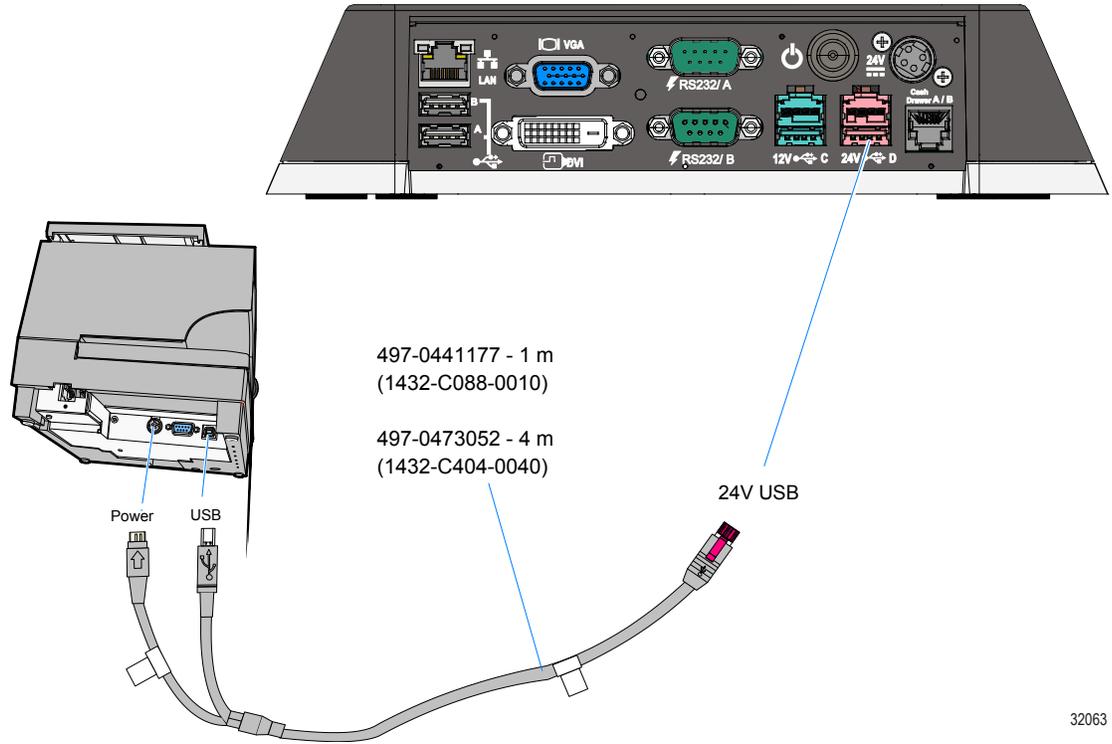


# Installing the Transaction Printer

The printers can interface through a USB connector or an RS-232 connector.

## USB Installation

Connect the Powered USB Printer Interface Cable to the *USB Connector* and *Power Connector* on the printer and to the *24 V Powered USB Connector* on the terminal.



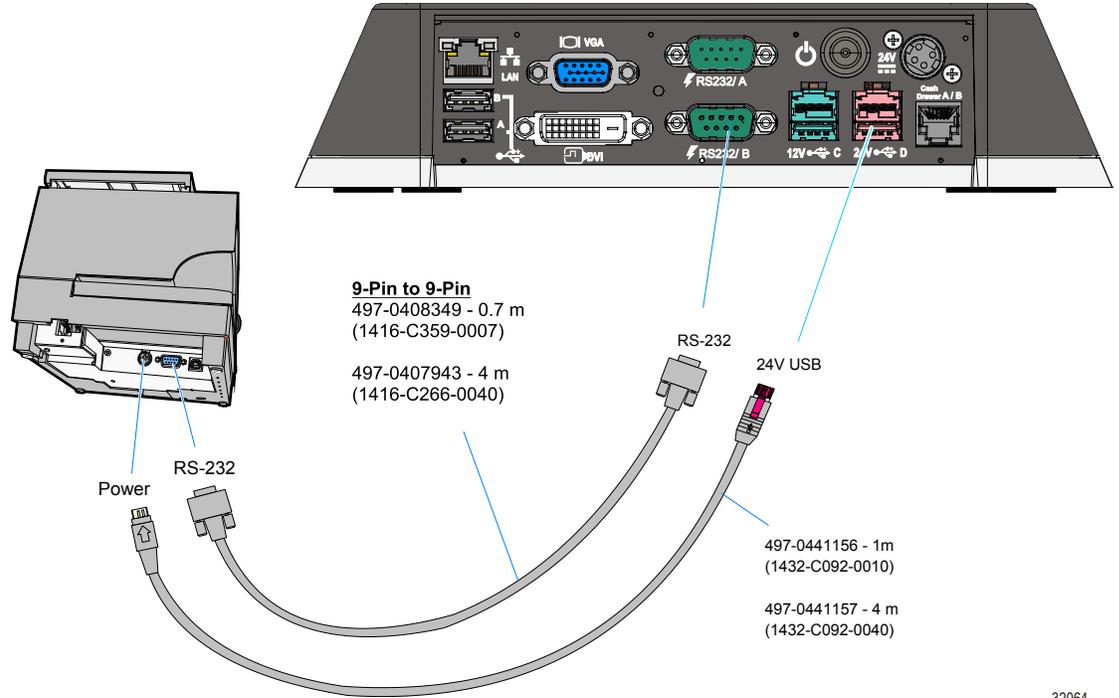
# RS-232 Installation

1. Connect the RS-232 Printer Interface Cable to the RS-232 connector on the printer and to a **non-powered** RS-232 connector on the terminal.



**Note:** The factory default setting for the RS-232 ports is **powered**. See the Appendix: Powered Serial Port Settings.

2. Connect the Powered USB Printer Interface Cable to the *Power Connector* on the printer and to the *24V Powered USB Connector* on the terminal.



## Integrating an iPad

The NCR 1668-2000 iPad Stand is used to integrate an iPad on an MGC. The stand is secured with two screws into the top of the MGC.

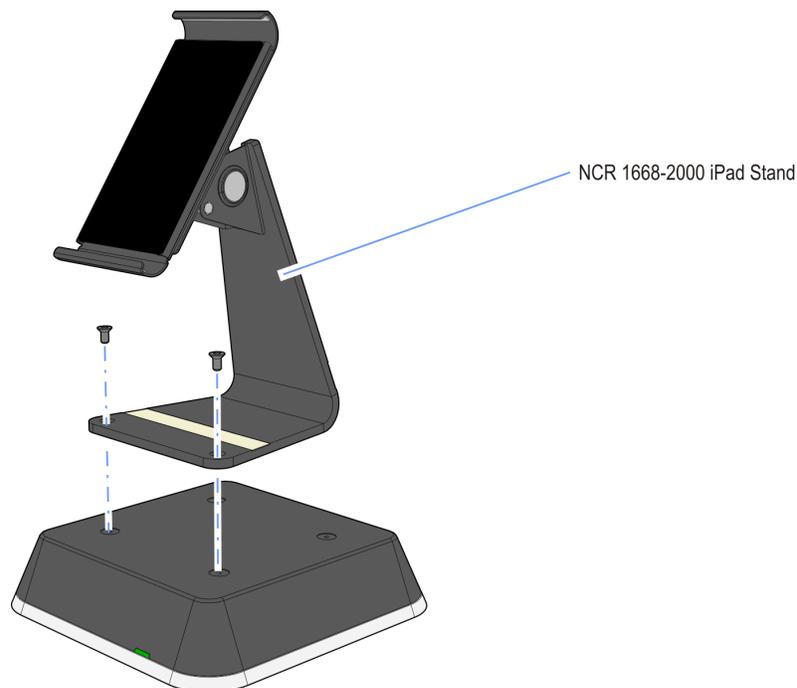


**Note:** The screws to secure the stand are included with the MGC. They are taped to the cabinet in a plastic bag for shipping.

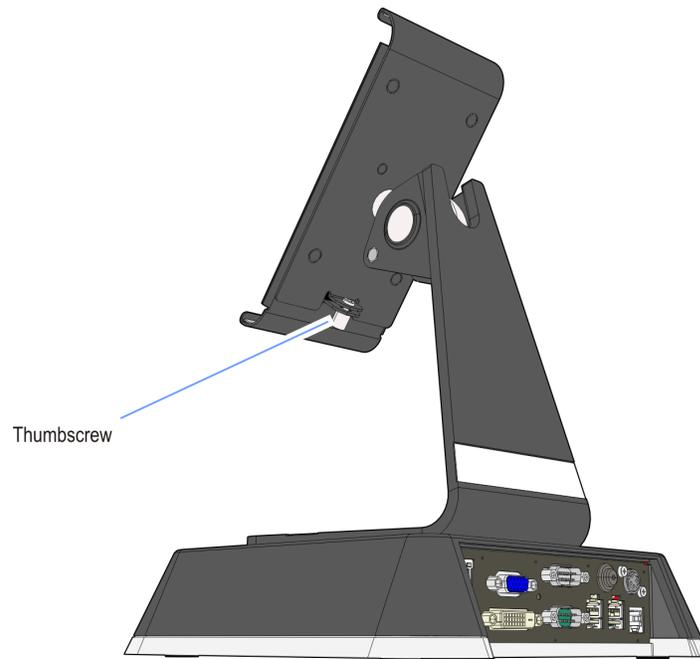
1. Install the stand on top of the MGC (2 screws).



**Note:** There are two sets of screw holes in the top of the MGC, which facilitates mounting the display to face the front or rear of the MGC.

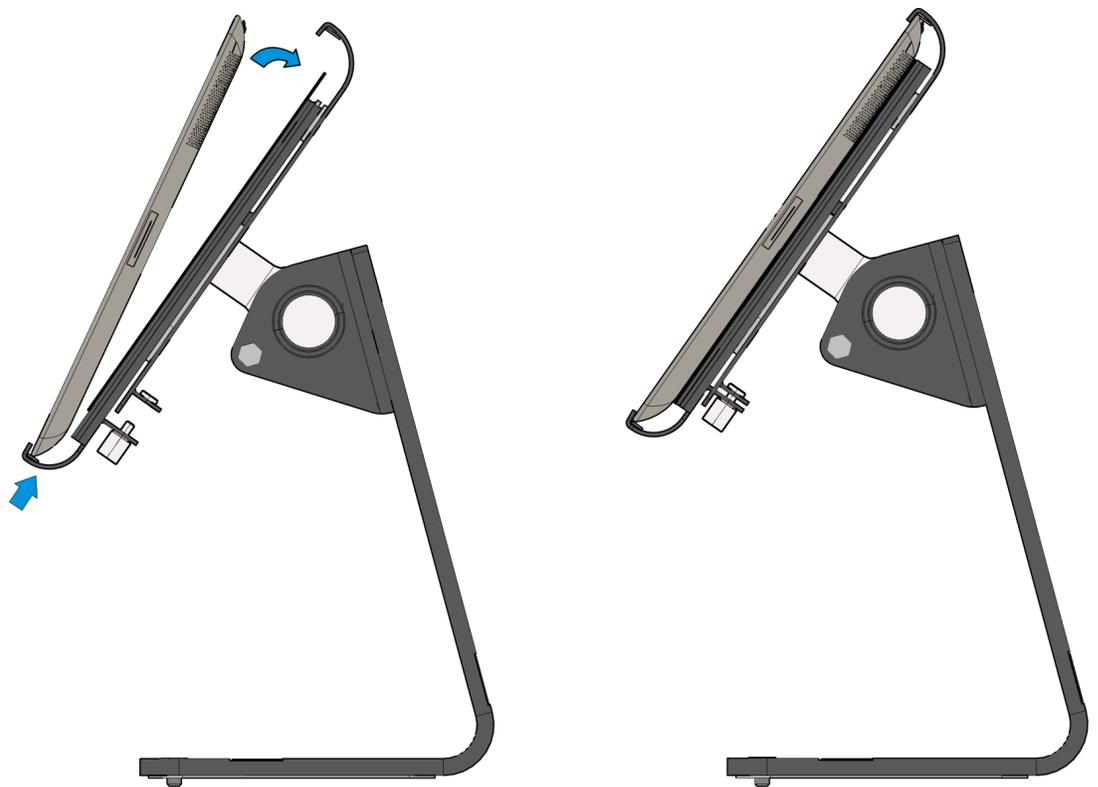


2. Loosen the thumbscrew on the Display Bracket.



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3. Install the iPad in the spring-loaded Display Bracket. Secure the bracket by tightening the thumbscrew.



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# POS Developer Guide to .Net MGC Programming

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This document outlines the basic tools and configuration required for a typical POS developer to interface with the .Net version of the Mobile Gateway Controller. This document explains the steps required to setup up and the interfaces to the MGC software. Overview comments and sample code are provided for all steps. This document is more of a detailed explanation of all required steps as opposed to a quick start reference.

## Software Packages

The MGC software is installed in 3 separate installations.

**MGC Station** – This is the software that loads on the Mobile Gateway Controller itself. The station is responsible for communicating with the physical devices. All access to these devices is done through web service interfaces.

XML configuration files identify what ports the devices are attached as well as what type of device is in use. The configuration is done through the *DeviceManager.xml* file. A general overview of this file is found [here](#). The [Pin Pad](#), [Line Display](#) and [Tone Control](#) have additional configuration information designed to minimize the code required to control those devices.

Technical details of all available options can be found in the *DeviceManager.xsd* file. The Web services side of the MPC station requires no configuration. The status of the MPC station is available through the web browser. To query the status of the MPC Station browse to <http://localhost:8081/PS/Status.html>. Replace localhost host with the DNS name or IP address of the machine running the MGC software. If port 8081 is not available, this can be changed in the *PeripheralStation.xml* file.

Technical details of all available options can be found in the *PeripheralStation.xsd* file. The MGC Station software runs as a service.

**MGC Station Manager** - The Station Manager is responsible organizing peripherals from many MGC stations into POS stations ready for use by the POS client applications. POS stations are not necessarily the same as MGC stations.

An MGC station refers to the hardware controlling the physical devices. The MGC station is limited to the number of ports that are on the hardware. Since the devices required by a POS vary from application to application, a POS station does require a 1 to 1 relationship with the MGC station. In many cases, 1 MGC station can support multiple POS stations.

All of the devices required for a POS station do not have to be connected to the same MGC station. The claiming and releasing of a POS station is done through the MGC Station Manager. The MGC Station Manager is a standalone application that must be installed on a system that can communicate with all POS clients and MGC stations in an installation. If you have POS clients and MGC stations on separate networks, you will require a MGC Station Manager for each network.

The MGC Station Manager requires configuration information to identify all of the MGC stations on the network (user specified station name and the DNS name/IP address associated with the MGC) as well as what devices make up a POS Station. The POS Station is given a name and the identity of each device (station name and device name) that makes up the station. The configuration file is `PeripheralStationManager.xml` and the technical details of all available options can be found in the `PeripheralStationManager.xsd`.

The status of the MGC Station Manager is available through the web browser. To query the status of the MGC Station Manager browse to <http://localhost:8081/PSM/Status.html>. If the 8081 port is not available, this can be changed in the `PeripheralStationManager.xml` file. The MGC Station Manager software runs as a service.

**MGC Developer Kit** – This kit contains all of the MGC components needed for the POS client application to communicate with the local device manager. The POS client application simply communicates with the local device manager. Whether the devices are local to the client application or remote at an MGC station, communicates to the local device manager are nearly the same.

All of the remote communications are handled by the local device manager. Just like the MGC Station, configuration of the devices (whether local or remote) is done through the `devicemanager.xml` file.

## Getting Started In Code

**Initialization:** The MGC client software must be initialized. All MGC software is initialized through the Platform Manager. The Platform Manager is responsible for starting all of the managers and components associated with the MGC software. This is run on both the MGC station and the MGC client application. The Peripheral Station manager uses the *MasterConfiguration.xml* file to determine what managers are to be loaded. At minimum, PlatformManager and DeviceManager must be configured to be installed. Additional managers typically include: DiagnosticsManager (used for tracing) and ObjectFactoryManager (allows 3<sup>rd</sup> party devices to be installed and run by the MGC software). Technical details of *MasterConfiguration* file can be found in the *MasterConfiguration.xsd* file.

### In Code....

#### To Initialize the Platform Manager and Device Manager,

Add a reference to:

Ncr.As.PlatformManager.dll,

Ncr.As.Interfaces.PlatformManager.dll

Ncr.As.Interfaces.DeviceManagerInterface.dll

```
using Ncr.Managers.PlatformManager;  
using Ncr.Managers.DeviceManager;
```

```
// Access the singleton instance of the PlatformManager  
IPlatformManager PlatformManager =  
Ncr.Managers.PlatformManager.PlatformManager.Instance;
```

```
// Initialize the platform  
string masterConfigurationFilePath = @"C:\Program Files (x86)  
\NCR\AdvancedStore\POS\Configuration\MasterConfiguration.xml" ;  
string posClientId = "PosStation1";
```

```
PlatformManager.Initialize(masterConfigurationFilePath,  
posClientId);
```

```
// Access the DeviceManager  
IDeviceManager deviceManager = PlatformManager.DeviceManager;
```

## To Claim a POS Station

(Required for remote device configuration, not local device configurations)

```
// Get a list of available stations. Null indicates that MPC Station
// Manager is not //online. Any empty list indicates that there are no
// available stations.
string[] availableStations = deviceManager.AvailableStations();

// Claim a station.
bool success = deviceManager.ClaimStation(availableStations[0]);
```

## Use Peripherals to Provide Input Data to the Client Application

Data from peripherals is returned to the Pos Application through events.

Add a reference to:Ncr.As.Interfaces.InputManagerInterface.dll

```
using Ncr.Managers.InputManager;

// register with the DeviceManager to catch events when input data is
// available.
deviceManager.DataReceivedEvent += deviceManager_DataReceivedEvent;

void deviceManager_DataReceivedEvent(IInputTuple inputData)
{
    // Save the input data received in the input tuple
}

// create a list to hold all of the valid termination keys for the
// current
// user prompt. All input devices identify termination keys in the
// devicemanager.xml
// file. These values are key to turning on devices for particular
// prompts.
Collection<string> validInputTerminators = new Collection<string>();
// The strings Scanner and Msr are used in the devicemanager.xml file.
validInputTerminators.Add("Scanner");
validInputTerminators.Add("Msr");
// Tell the device manager we are looking for input from the list of
// devices.
deviceManager.StartInputProcess(validInputTerminators);

// when satisfactory input data has been received, instruct the device
// manager to quit //prompting for data.
deviceManager.StopInputProcess();
```

## Printing Receipt Data

If not already in place, add a reference to:Ncr.As.Interfaces.DeviceManagerInterface.dll

```
using Ncr.Managers.DeviceManager;
```

```
// ask the device manager for the printer interface by name
IPrinterDevice printer = deviceManager.GetDevice("Printer") as
IPrinterDevice;
// or ask by device type
IPrinterDevice printer = deviceManager.GetDevice(typeof(IPrinterDevice))
as IPrinterDevice;

// instruct the printer that we are about to print at a particular
station.
PrinterError error = printer.PrepareToPrint(PrinterStation.Receipt);

// feed receipt lines to the printer and handle errors.
List<string> receiptData = new List<string>();
// ... build your receipt data
foreach( string receiptLine in receiptData )
{
    PrinterError error = printer.Write(receiptLine);
    if ( error != PrinterError.None )
    {
        // Handle the printer error.
    }
}

// Instruct the printer to finish the receipt.
PrinterError error = printer.WaitForPrintingToComplete();
if ( error != PrinterError.None )
{
    // Handle the printer error.
}
```

The `IPrinterDevice` interface has numerous methods to assist in building lines of data that are passed to the printer's `Write` method. These methods include setting font attributes associated with the text, printing barcodes and graphics and performing 2 sided printing. Please refer to the `IPrinterDevice` interface documentation for additional details.

## Operating the Cash Drawer

.If not already in place, add a reference

to:Ncr.As.Interfaces.DeviceManagerInterfaces.dll

```
using Ncr.Managers.DeviceManager;

// ask the device manager for the cashDrawer interface by name
ICashDrawerDevice cashDrawer = deviceManager.GetDevice("CashDrawer") as
ICashDrawerDevice;
// or ask by device type
ICashDrawerDevice cashDrawer = deviceManager.GetDevice(typeof
(ICashDrawerDevice)) as ICashDrawerDevice;

// open the drawer
cashDrawer.OpenDrawer();

// query for the drawer status to look for a close
bool isOpen = cashDrawer.DrawerOpen;
// or hook to the event signaling the drawer is closed
cashDrawer.DrawerClosed += cashDrawer_DrawerClosed;

void cashDrawer_DrawerClosed(ICashDrawerDevice obj)
{
    // handle the drawer closing event.
}
// or use the termination key assigned to the cash drawer to prompt for
input
// as done above.
```

## Release a POS Station

(required for remote device configuration, not local device configurations)

```
// Release the station by the name that was used earlier for claiming
the station.
string claimedStation = "Station1";
deviceManager.ReleaseStation(claimedStation);
```

## Shut Down the Platform Manager

```
PlatformManager.Shutdown();
```

---

## Chapter 4: BIOS Setup

---

### Entering Setup

1. Connect an alphanumeric USB keyboard to the terminal.
2. Apply power to the terminal.
3. When you see the NCR logo displayed press **[Del]**.

### How to Select Menu Options

The following keyboard controls are used to select the various menu options and to make changes to their values.

- Use the arrow keys to select (highlight) options and menu screens.
- Use the **[Enter]** key to select a submenu.
- Use the **[+]** and **[-]** keys to change field values.
- To view help information on the possible selections for the highlighted item, press **[F1]**.
- To save the changes, move the cursor to the *Exit Menu*, select either **Save Changes & Exit** or **Save Changes**, and press **[Enter]**.

### Restoring Factory Settings

To reset all values to their default settings for the **current screen**, press **[F9]** and then **[Enter]** when the confirmation message is displayed. The terminal automatically loads the BIOS default values. To reset all BIOS settings to their default settings go to the Exit menu, press F9, select either **Save Changes & Exit** or **Save Changes**, and press **[Enter]**.



**Note:** The 7610 Motherboard is used on other products and has a jumper that is used to select the proper BIOS defaults. If the Motherboard is replaced be sure this jumper is set to the RSD setting.

See the *BIOS Default Settings* sections later in this chapter for the pre-installed Setup defaults.

## BIOS Default Values

*NCR BIOS Version: A24*

### Main Menu

<b>System Time</b>	(variable)
<b>System Date</b>	(variable)
<b>System Information</b>	(Displays System Information)
<b>Boot Features</b>	
NumLock	[On]
<b>Error Manager</b>	
View Error Manager Log	[Enter]
Clear Error Manger Log	[Enter]

## Advanced Menu

<b>Boot Configuration</b>	
Quick Boot	[Disabled]
Boot Menu	[Enabled]
High Resolution Graphics	[Enabled]
Diagnostic Splash Screen	[Disabled]
Diagnostic Summary Screen	[Disabled]
BIOS Level USB	[Enabled]
USB Legacy	[Enabled]
Console Redirection	[Disabled]
UEFI Boot	[Enabled]
Legacy Boot	[Enabled]
Load OPROM	[On Demand]
<b>ACPI Configuration</b>	
Deep Standby	[Disabled]
<b>Processor Configuration</b>	
Single Processor Mode	[Disabled]
Intel (R) HT Technology	[Enabled]
Enable XD	[Enabled]
Machine Check	[Enabled]
Fast Strings	[Enabled]
Processor Power Management	[Disabled]
<i>Thermal Configuration</i>	
. TM1	[Enabled]
. TM2	[Enabled]
. DTS	[Enabled]
. Thermal Offset	[Disabled]
. Active Trip Point Hi Fan	[71 C]
. Active Trip Point Lo Fan	[55 C]
. Passive Trip Point	[95 C]

. Passive TC1 Value	[ 1]
. Passive TC2 Value	[ 5]
. Passive TSP Value	[10]
. Critical Trip Point	[POR]
P-States (GV3)	[Enabled]
Boot Performance Mode	[Max Performance]
ACPI 3.0 T-States	[Enabled]
C-States	[Disabled]
<b>Serial ATA (SATA)</b>	
SATA Device	[Enabled]
SATA Controller Mode	[AHCI]
Device 0 (Port 0)	[Not Installed]
Device 1 (Port 1)	[INTEL SSDSA2CT - 40]
▶ SATA Port 0 Configuration	
. Port Location	[Internal]
. Hot Plug	[Enabled]
. Interlock Switch	[Disabled]
. Port Multiplier	[Disabled]
▶ SATA Port 1 Configuration	
. Port Location	[Internal]
. Hot Plug	[Enabled]
. Interlock Switch	[Disabled]
. Port Multiplier	[Disabled]
<b>North Bridge Configuration</b>	
Clock Spread Spectrum	[Min Spread Spectrum]
Primary Display Selection	[IGD]
DMI ASPM	[Enabled]
▶ IGD Configuration	
. IGD - Boot Type	[VBIOS Default]
. IGD - Panel Scaling	[Auto]

<b>South Bridge Configuration</b>	
SMBUS Device	[Enabled]
Enable Serial IRQ	[Enabled]
Serial IRQ Mode	[Continuous]
CLKRUN# Logic	[Enabled]
ICH Internal LAN	[Enabled]
Wake on LAN	[Enabled]
LAN OPROM Selection	[Enabled]
HPET Support	[Enabled]
HPET Memory Map BAR	[F#D00000]
State After G3	[Last State]
▶ SB Azalia Configuration	
. Azalia	[Enabled]
. Azalia PME Enabled	[Enabled]
. Azalia Vci Enabled	[Enabled]
▶ SB USB Configuration	
. UHCI Controller #1	[Enabled]
. UHCI Controller #2	[Enabled]
. UHCI Controller #3	[Enabled]
. UHCI Controller #4	[Enabled]
. EHCI	[Enabled]
▶ SB PCI Express Configuration	
. ▶ PCI Express Port 1/2 Config	
. . . PCI Express Root Port 1	[Enabled]
. . . IO APIC Support	[Disabled]
. . . Automatic ASPM	[Auto]
. . . PME Interrupt	[Enabled]
. . . Hot Plug SCI	[Disabled]
. . . Extended Synch Enable	[Disabled]
. . . URR	[Disabled]

. . . FER	[Disabled]
. . . NFER	[Disabled]
. . . CER	[Disabled]
. . . SEFE	[Disabled]
. . . SENFE	[Disabled]
. . . SECE	[Disabled]
. ▶ PCI Express Root Port 3	[Disabled]
. ▶ PCI Express Root Port 4	[Disabled]
<b>LPC Configuration</b>	
Onboard UART1	[Enabled]
CPU FAN SPEED	[60% OF MAX]
<b>SMBIOS Event Log</b>	
Event Log Validity	Valid
Event Log Capacity	Space Available
Event Log	[Enabled]
View SMBIOS event log	[Enter]
Mark SMBIOS events as read	[Enter]
Clears SMBIOS events	[Enter]
<b>Intel Fast Flash Standby</b>	
iFFS Support	[Disabled]
<b>Hardware Health Monitoring</b>	<b>Typical (Acceptable Range)</b>
CPU Core 1 Temperature	[56°C] (less than 95°C)
CPU Core 2 Temperature	[56°C] (less than 95°C)
CPU Core 3 Temperature	[60°C] (less than 95°C)
CPU Core 4 Temperature	[60°C] (less than 95°C)
System Temperature	[46°C] (less than 70°C)
DIMM Temperature	[43°C] (less than 70°C)
CPU Fan Speed	[ N/A]
System Fan Speed	[ N/A]
V CPU Core	[ 1.168 V] (1.00 - 1.30)

---

V 1.05S	[ 1.040 V] (0.90 - 1.20)
V 3.3S	[ 3.312 V] (3.05 - 3.55)
V 5S	[ 4.972 V] (4.60 - 5.40)
V 12S	[12.096 V] (11.20 - 12.80)
V 5A	[ 4.921 V] (4.60 - 5.40)
V Batt	[ 3.264 V] (3.0 - 3.5)

## Security Menu

Supervisor Password is:	Cleared
User Password is:	Cleared
Set Supervisor Password	[Enter]
Supervisor Hint String	[ ]
Set User Password	[Enter]
User Hint String	[ ]
Min. password length	[ 1]
Authenticate User on Boot	[Disabled]
HDD Password Select	[User Only]
HDD Security Status	
HDD00 Password State	Frozen
Set HDD00 User Password	[Enter]
Trusted Platform Module {TMP}	
Flash Controller Lock	[Enabled]

## Boot Menu

Boot Priority Order	
1. PCI LAN: Realtek PXE B01 D00	
2. ATA HDD0: [HDD]	
3. ATA HDD1:	
4. Other HDD	
5. USB HDD:	
6. USB CD:	
7. USB FDD:	
8. ATAPI CD:	
9. Internal Shell	

---

## Chapter 5: BIOS Updating Procedure

---

### Introduction

This chapter discusses procedures on how to recover the Operating System. The software is distributed on bootable CD/DVD/USB Flash Drive media.

There are two methods that can be used.

- Bootable USB DVD Drive
- USB Flash Drive (64-Bit Operating Systems)
- Network - Refer to the *NCR Retail Systems Manager (RSM) Software User's Guide*, (B005-0000-1518) for information about this procedure.

### Prerequisites

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

- Bootable CD/DVD-ROM drive
- Keyboard

The following are required to perform a SPI/BIOS update.

- USB Keyboard
- BIOS Software. Download from the NCR website:

<http://www.ncr.com>

1. At this site, select the Support tab.
2. Select **Drivers and Patches >> Retail Support Files >> NCR RealPOS and SelfServ Terminal and Operating Systems >> NCR RealPOS 60 Rel. 2.0 (7601-2xxx) >> BIOS.**
3. Select the desired BIOS File.
  - ISO Image - Used with CD ROM boot device
  - Disk Image - Used with Floppy Disk boot device
  - Network Image - Used with Network boot
  - USB Memory Key Image - Used with USB boot device
4. Save the software to your local hard drive.

## Creating the Bootable Media

### Creating a Bootable CD

The downloaded file is a CD image file (ISO) containing the files necessary to create a bootable CD. A system with a CD/DVD burner is required to perform this function.

1. Insert a writable CD in the CD/DVD burner drive.
2. Record the downloaded image file onto the CD using a utility that is capable of burning ISO files.



**Note:** You cannot simply drop the file on the CD and burn it. You must use software capable of recording ISO images onto CDs.

### Creating a Bootable USB Memory Drive

The downloaded file contains the files necessary to create a bootable USB Memory Drive.

1. Insert a USB drive that is formatted as FAT (or FAT32).
2. Unzip the downloaded files.
3. Copy the files to the root directory of the USB drive.
4. Open a DOS command window.
5. Change directory to the USB Memory Drive.
6. Execute the following command:

```
Syslinux -fma <USB drive letter>
```

**Example:** Syslinux -fma f:

This command erases any bootable methods that may be present on the USB drive and replaces it with the SPI/BIOS update process.

If the resulting USB memory drive is not bootable, try the following command. This runs slower but is more effective.

```
Syslinux -sfma <USB drive letter>
```

**Important:** Do not run syslinux by double-clicking on it because it may affect the boot drive of the terminal being used to create the drive.

**Windows 7 Note:** The above commands must be executed as administrator. Failure to run as administrator results in an MBR write failure. To open a command shell with administrator privileges perform the following:

**Start** → **All Programs** → **Accessories** → **Command Prompt** →  
[right-click] **"Run as"** → **Administrator**

## BIOS Updating Procedures

1. Insert the media containing the BIOS update software into the terminal.
2. Connect a USB keyboard.
3. Press **[F8]** during boot (when you see the NCR logo) to enter the Boot Select menu.
4. Select **USB:[name of device]**.
5. The terminal boots and displays the BIOS Update main menu.

There are six options from the main menu to run the update program. Three run automatically and two are interactive. *Option 1, the Automatic BIOS Update* executes automatically in 10 seconds unless the up/down arrow is pressed.

### ***Automatic Method***

With the Automatic Method you may see a prompt to enter the DMI (Desktop Management Interface), which is the terminal Class/Model/Serial information. This happens if the program detects invalid DMI information in the current BIOS, or if you are replacing the processor board, which has no Class/Model/Serial information in the BIOS. DMI information is mandatory.

### ***Interactive Method***

This method permits you to input/replace the Class/Model/Serial information that is stored in the BIOS.



**Note:** DMI information that is currently stored in the BIOS is displayed during power up. Press **[Tab]** at the NCR Logo to remove the logo. Press **[Pause]** to freeze the screen. Press **[Esc]** to continue.

6. Make a menu selection and follow the screen prompts (Option 1 is recommended).
 

```

1 Update BIOS - No prompt for Serial/Model/Class unless invalid
***** Forced Update of Serial/Model/Class Information *****

2 Update BIOS - Always enter Serial/Model/Class

3 Update DMI only - Serial/Model/Class update ONLY (no BIOS Update)
***** For Service Personnel Only *****

4 Update BIOS - Default Serial/Model/Class
```

### ***Option 1 - Update BIOS - No prompt for Serial/Model/Class unless invalid***

1. Highlight Option 1 and press **[ENTER]**. (Executes automatically in 10 seconds unless the up/down arrow is pressed.)
2. The Flash Program updates the BIOS and automatically reboots the terminal.

***Option 2 - Update of BIOS - Always enter Serial/Model/Class***

This option prompts for Class/Model/Serial information at the beginning of the program and then updates the BIOS only.

1. Highlight Option 2 and press **[ENTER]**.
2. At the prompt press **[ENTER]** to enter the Class/Model/Serial Number information (DMI). Follow the onscreen format instructions.

**Example:** 7610-1000-8801**[ENTER]**  
54-19378230**[ENTER]**

3. Press **[1]** to confirm the data and to continue.
4. The Flash Program updates the BIOS and automatically reboots the terminal.

***Option 3 - Update DMI only - Serial/Model/Class update ONLY (no BIOS Update)***

This option lets you enter the DMI information only. The BIOS is not updated.

1. Highlight Option 3 and press **[ENTER]**.
2. At the prompt press **[ENTER]** to enter the Class/Model/Serial Number information (DMI). Follow the onscreen format instructions.

**Example:** 7610-1000-8801**[ENTER]**  
54-19378230**[ENTER]**

3. Press **[1]** to confirm the data and to continue.
4. Remove the USB device before the system boots.
5. System is ready for operation.

***Option 4 - Update BIOS - Default Serial/Model/Class information***

This option is for Service Personnel only. It updates the BIOS but leaves the *Class/Model/Serial* fields empty (erased). The DMI information is then entered when the board is installed in a terminal.

1. Highlight Option 4 and press **[ENTER]**.
2. The BIOS are updated and the system reboots.
3. Remove the BIOS Update media before the system boots.
4. System is ready for operation.

---

## Chapter 6: Operating System Recovery

---

### Introduction

This chapter discusses procedures on how to recover the Operating System. The software is distributed on bootable CD/DVD/USB Flash Drive media.

There are two methods that can be used.

- Bootable USB DVD Drive
- USB Flash Drive (64-Bit Operating Systems)
- Network - Refer to the *NCR Retail Systems Manager (RSM) Software User's Guide*, (B005-0000-1518) for information about this procedure.

### Prerequisites

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

- Bootable CD/DVD-ROM drive
- Keyboard

## Windows XP Pro/POSReady 2009

1. Insert the *NCR Partition Image Application* CD (D370-0605-0100) into the CD/DVD drive.
2. Connect a keyboard to the terminal.
3. Apply power to the terminal.
4. Press **[F8]** during boot (when you see the NCR logo) to enter the Boot Select menu.
5. Select **USB:[name of device]**.
6. You should see a message during boot, indicating that the device has been recognized.
7. At the menu, enter **1** to select the image restore function and press **[Enter]**.

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

```
Select an option
1 - Process Image/Script CD
2 - View Partition Image Documentation on CD
3 - Interactive Create/Restore Via Network/USB
4 - Exit and reboot
```

8. At the prompt, insert the CD containing the operating system image (disk 1 if OS occupies more than one disk). Wait until the LED on the DVD drive stops blinking and then press **[Enter]**.
9. Press **[A]** at the following prompt to accept the arguments and to begin the restore process. Press **[Enter]**.

```
Confirm Pending Operation
```

```
Mode is: restore
```

```
2) Drive is: USB/SATA Storage A Size: 250GB
3) Directory path is: /Images/
4) Filename is: nnnnnaaa
5) Reboot after operation complete: yes
6) Resize last data partition if possible: no
7) Resize last data partition to: Full Disk
8) Write zeros to drive before restore: no
9) RAID - restore to 2nd drive: none
```

- ```
A) Accept these arguments
V) View OS Documentation
Q) Quit and reboot
```



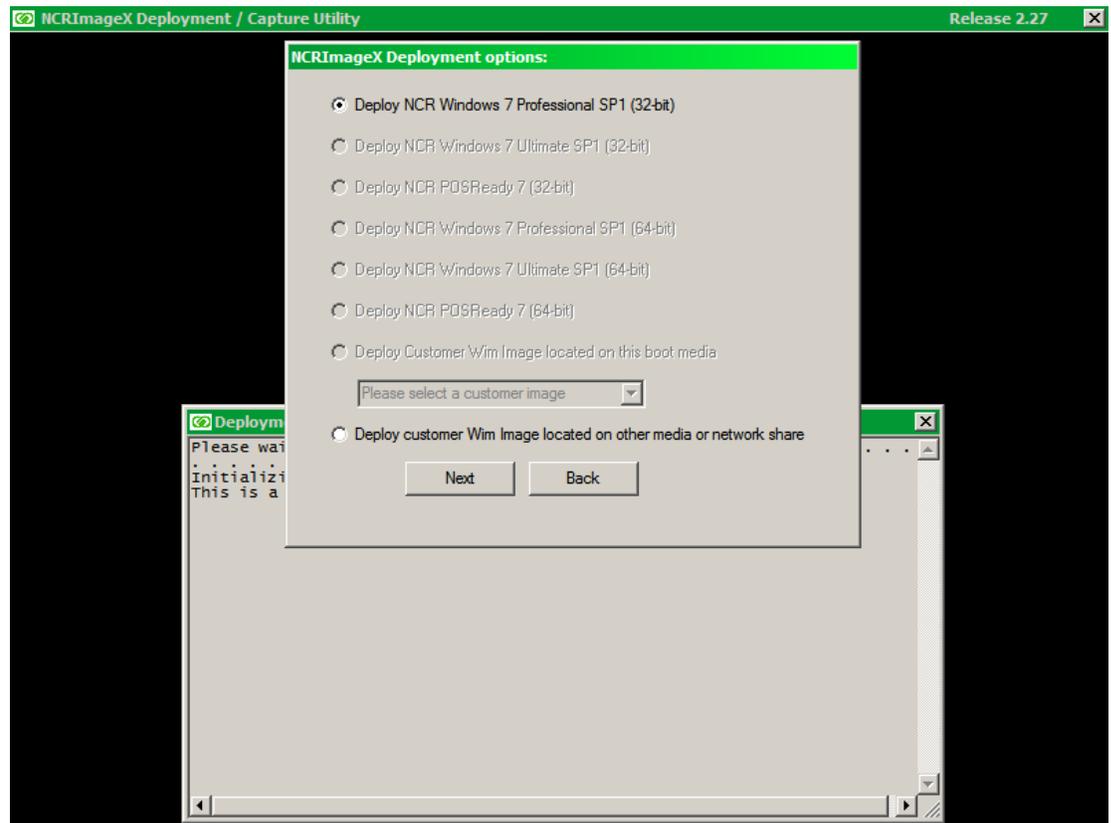
## Windows 7/POSReady 7

The *NCRImageX Deployment/Capture Utility* application is used to deploy and capture Windows images. It is available on a bootable DVD along with the operating system image.

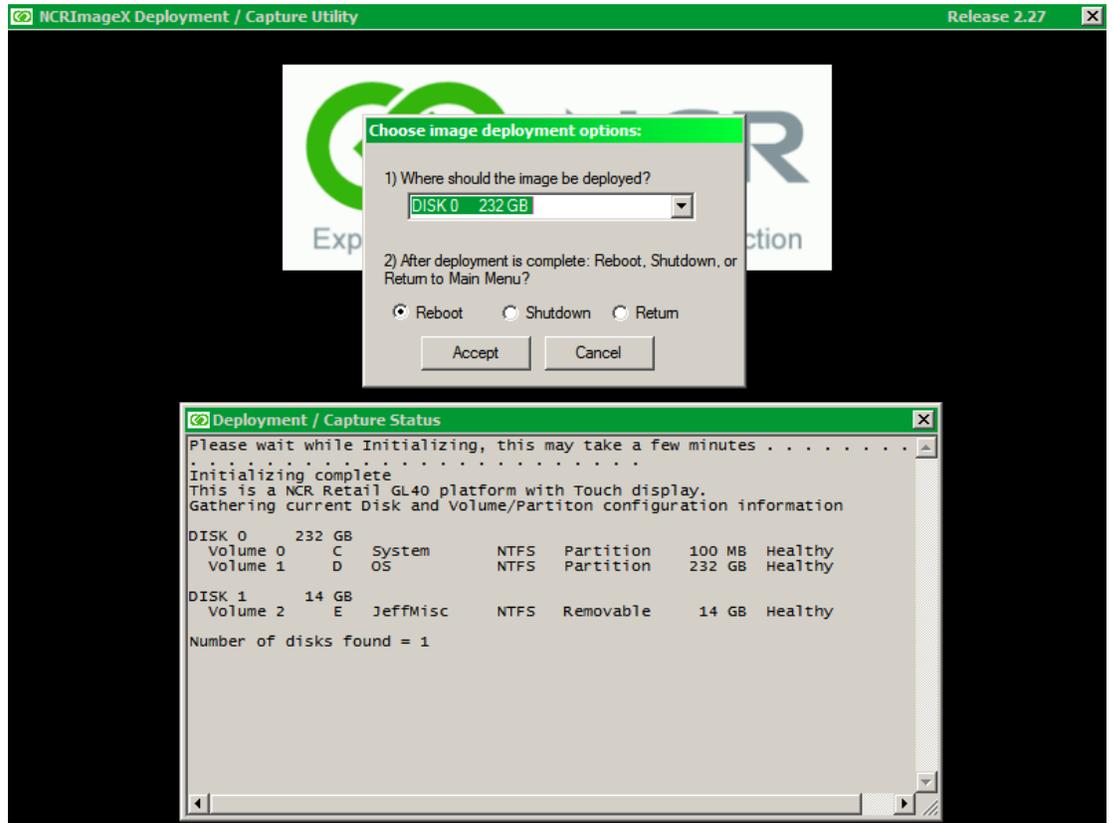


**Note:** If you are recovering a dual drive system that is configured as a RAID you should change the system back to a non-RAID configuration before performing the OS recovery. After recovering the primary disk you can then re-configure the RAID.

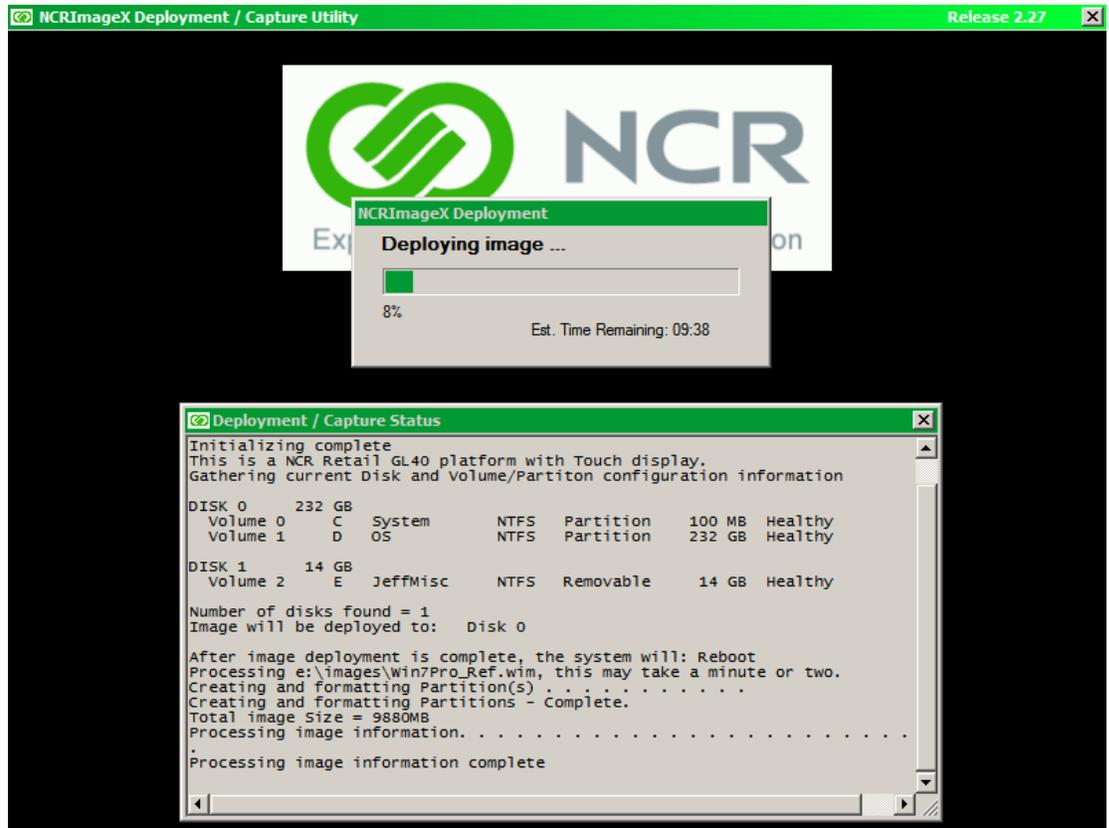
1. Connect a keyboard to the terminal.
2. Insert the imaging utility DVD into the DVD drive (USB Flash Drive for 64-Bit)
3. Apply power to the terminal.
4. Press **[F8]** during boot (when you see the NCR logo) to enter the Boot Select menu.
5. Select **USB:[name of device]**.
6. You should see a message during boot, indicating that the device has been recognized.
7. The Options Menu displays the available operating systems on the media. Verify it is the correct OS and then select **Next**.



8. Select the destination where the image should be deployed from the drop down menu. Also select the radio button to reboot the terminal after the image has been installed. Select **Accept**.



9. As the image is deployed a progress bar indicates the status.



10. After the image has been put on to your terminal, you are given the message "Press OK to Reboot". Select **OK**.
11. Remove the DVD before the system reboots.
12. Complete the Windows 7/POSReady 7 setup.

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## Appendix A: **Powered Serial Port Settings**

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The serial ports on the 7600 can be configured as powered or not. The default setting for all the ports is 12 V powered. To change the settings open the Top cover and change the jumpers on the Motherboard using the illustrations below.



