

# NCR RealPOS 60 (7601)

Release 1.1

## Hardware Service Guide



B005-0000-1976

Issue B

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## Preface

### Audience

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

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## Safety Requirements

The *NCR RealPOS 80XRT* conforms to all applicable legal requirements. To view the compliance statements see the *NCR RealPOS Terminals Safety and Regulatory Statements* (B005-0000-1589).

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.

**Caution:** This product does not contain user serviceable parts. Servicing should only be performed by a qualified service technician.

### *Fuse Replacement*

**Warning:** For continued protection against risk of fire, replace only with the same type and ratings of fuse.

**Attention:** Pour prévenir et vous protéger contre un risque de feu, remplacer la fusible avec une autre fusible de même type, seulement.

### *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.**

## References

- *NCR RealPOS 60 Site User Guide* (B005-0000-2011)
- *NCR RealPOS 60 Site Preparation Guide* (B005-0000-2012)
- *NCR RealPOS 60 Parts Identification Manual* (B005-0000-2014)

## Revision Record

Issue	Date	Remarks
A	Oct 2010	First Issue
B	Aug 2012	Release 1.1



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## Chapter 1: Product Overview

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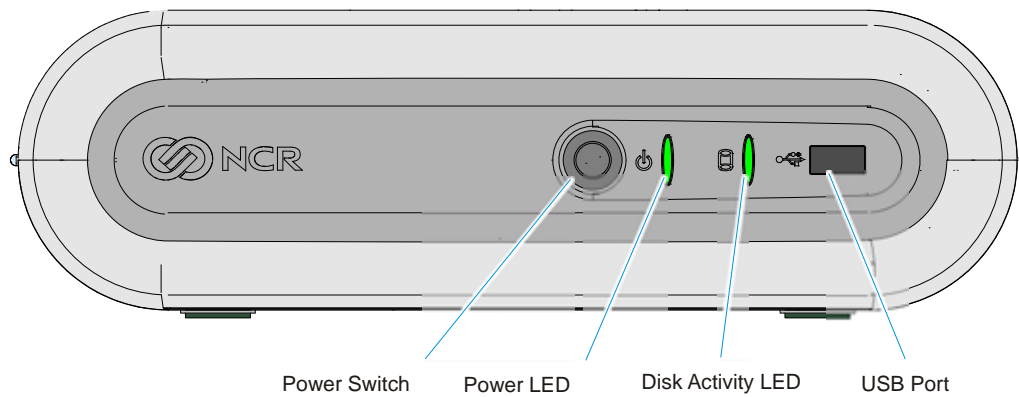
The NCR RealPOS 60 (also known as NCR 7601) is a compact POS solution that combines the reliability and security of a retail-hardened POS terminal with the performance and flexibility of industry-standard PC technology. With an open architecture and Mobile Intel® processor, the NCR RealPOS 60 supports the latest POS applications for Windows® to help you service your customers quickly and efficiently. And, it all fits in a small footprint that helps conserve valuable space at the Checkstand.

To complete your POS solution, choose from NCR's extensive line of peripherals, including printers, displays, keyboards and scanners. The NCR RealPOS 60 enables you to protect your investment in legacy serial devices or choose from the growing list of USB peripherals. The powered peripheral ports and 24V printer interface simplify cable management and reduce potential points of failure.

### Product IDs

Major Model	CPU
7601-1001	RealPOS 60, Intel Celeron Processor 900, 2.2 GHz, 1 GB DDR3 1066 MHz, 2.5" 250GB SATA HDD
7601-1010	RealPOS 60, Intel Celeron Processor 900, 2.2 GHz, 1 GB DDR3 1066 MHz, 2.5" 40GB SATA SSD
7601-2001	RealPOS 60, Intel Celeron Dual Core T3100, 2 GB DDR3 1066 MHz, 2.5" 250GB SATA HDD
7601-2010	RealPOS 60, Intel Celeron Dual Core T3100, 2 GB DDR3 1066 MHz, 2.5" 40GB SATA Solid State Drive

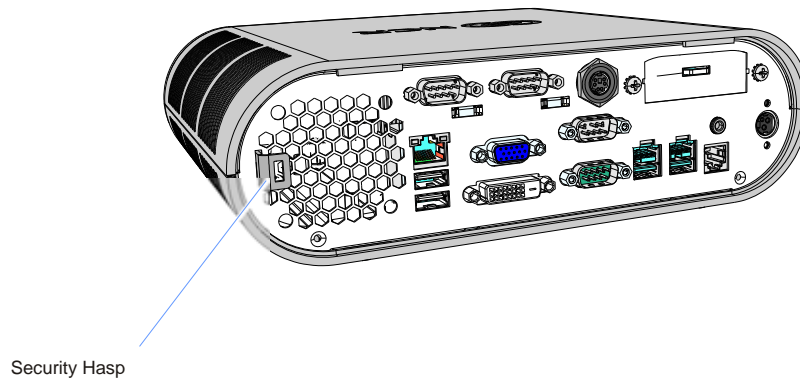
## Operator Controls



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## Cabinet Security

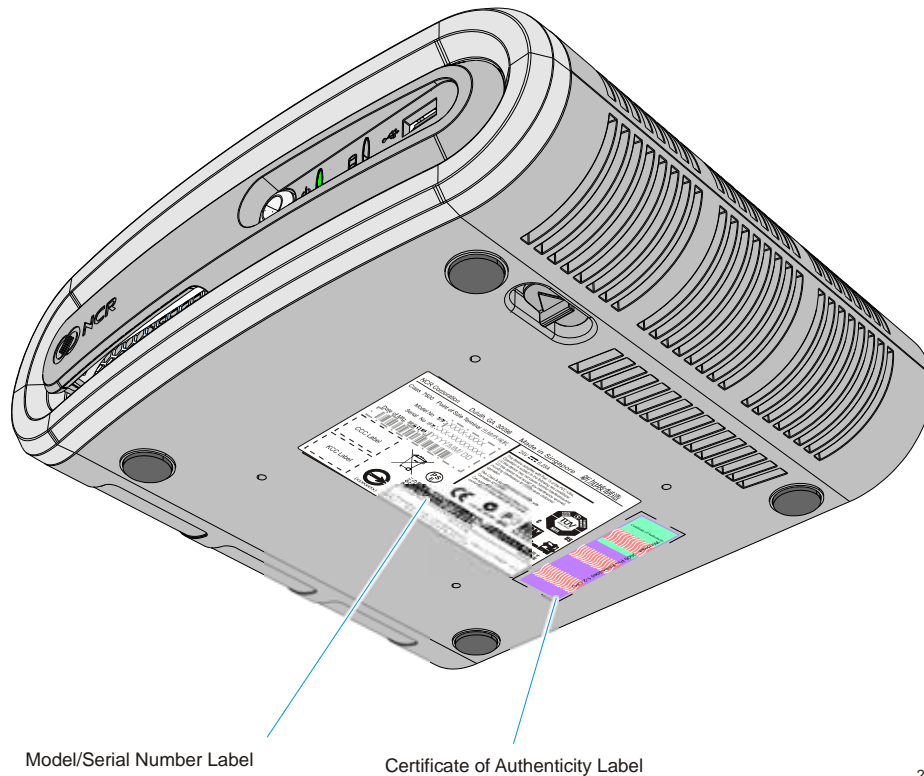
The 7601 has easy access to the internal components. However, the case can be secured to a fixed object (desk, pole, etc) by attaching a standard Kensington lock to the Security Hasp. In addition a small padlock can be attached to the hasp to prevent the unit from being opened.



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## Serial Number/Model Number Label

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



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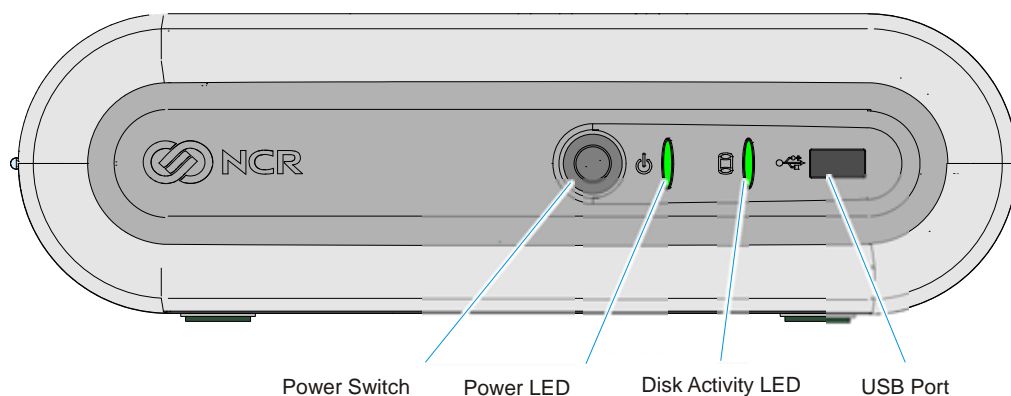
## Chapter 2: Diagnostics

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### LED Diagnostic Indicators

The two front panel LEDs also function as diagnostic indicators, defined as follows.

**Note:** The cell colors indicate the color of the LED at that particular time.



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Current System Operation	Suspect Component	System State	Power LED	Disk Activity LED	Corrective Action
Normal Operation	N/A	System ON	ON	OFF	N/A
Normal Operation	N/A	System ON with HDD Activity	ON	Flashing (HDD Access)	N/A
Normal Operation	N/A	Unit in Suspend (S3)	Blinking (1/Sec)	ON	N/A
- OFF - AC Present	N/A	<ul style="list-style-type: none"><li>• OFF</li><li>• Not in Standby</li><li>• External P/S ON</li></ul>	OFF	ON	N/A

Current System Operation	Suspect Component	System State	Power LED	Disk Activity LED	Corrective Action
<ul style="list-style-type: none"> <li>• OFF</li> <li>• AC Present</li> </ul>	Power System	<ul style="list-style-type: none"> <li>• OFF</li> <li>• Not in Standby</li> <li>• External P/S ON</li> </ul>	OFF	OFF	<ol style="list-style-type: none"> <li>1. Check AC power to P/S</li> <li>2. Check P/S</li> <li>3. Check connection between unit and P/S</li> <li>4. Check power connection from Back Panel to Motherboard and Motherboard to Front Panel</li> <li>5. Replace P/S</li> <li>6. Replace Motherboard</li> <li>7. Replace Front Panel Board</li> </ol>
Runtime	Cooling Component/CPU	Over Temperature	Flashes red/green, then solid red as temperature increases	N/A	<ol style="list-style-type: none"> <li>1. Check for blocked cooling vents</li> <li>2. Check for excessive ambient temperature</li> <li>3. Check cooling components</li> </ol>
POST	CPU	CPU not Operating	ON	ON	<ol style="list-style-type: none"> <li>1. Check for correctly installed CPU</li> <li>2. Replace Motherboard</li> </ol>
POST	BIOS Chip	BIOS Checksum Failure	ON	Flashing (4/Sec)	<ol style="list-style-type: none"> <li>1. Perform BIOS crisis recover</li> <li>2. Replace BIOS chip</li> <li>3. Replace Motherboard</li> </ol>
POST	Memory	Memory Issue	ON	Flashing (1/Sec)	<ol style="list-style-type: none"> <li>4. Check for properly installed memory</li> <li>5. Replace memory</li> <li>6. Replace Motherboard</li> </ol>
POST	Motherboard	No Display	ON	Flashing 1/4 Sec)	Replace Motherboard



Current System Operation	Suspect Component	System State	Power LED	Disk Activity LED	Corrective Action
POST	<ul style="list-style-type: none"> <li>• Display</li> <li>• Motherboard</li> <li>• Peripheral</li> </ul>	Stopped Prior to Boot	ON	Flashing (1/Sec)	<p>No Display:</p> <ol style="list-style-type: none"> <li>1. Check for power to display if no display</li> <li>2. Check cable connection between Motherboard and display</li> <li>3. Check for properly functioning display</li> <li>4. Replace Motherboard</li> </ol> <p>Display Working:</p> <ol style="list-style-type: none"> <li>1. Use display to determine failure point via onscreen message and BIOS Setup</li> </ol>
Boot Time	Boot Media (HDD, LAN)		ON	OFF	<p>HDD is Boot Device:</p> <ol style="list-style-type: none"> <li>1. Check HDD status in BIOS Setup</li> <li>2. Check connections between HDD and Motherboard</li> <li>3. Replace or re-image HDD</li> <li>4. Replace Motherboard</li> </ol> <p>LAN is Boot Device:</p> <ol style="list-style-type: none"> <li>1. Check for LAN link and activity LEDs on the Back Panel</li> <li>2. Check LAN cable</li> <li>3. Replace Motherboard</li> </ol>

## Loadable Diagnostics

The Loadable Diagnostics provide a means to test terminal hardware and the RS 232/USB connected peripherals, independent of system software.

The software is available on CD ROM:

*NCR Loadable Diagnostics*

LPIN: D370-0746-0100

The diagnostics consists of two Linux-based bootable CD ROMs:

- E-Box Tests
- Peripheral Tests - A minimum of 512 MB of memory is required to run the Peripheral Tests.

The following sections provide instructions about how to load the diagnostics and a few sample tests to familiarize you with how the software functions.

## Loading the Diagnostics

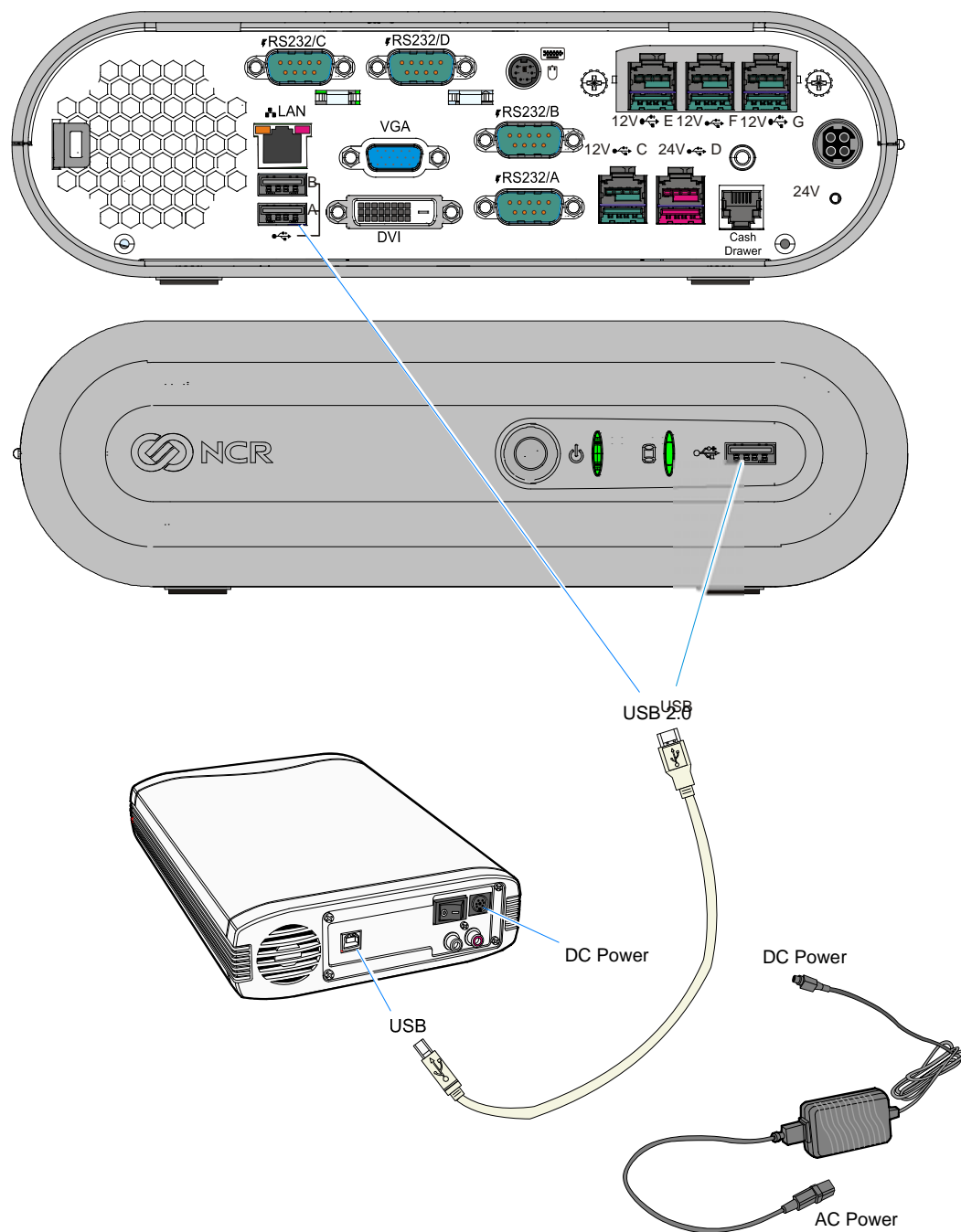
You can load the software using the following devices.

- *Internal DVD/CDROM Drive* (Peripheral Tests only)
- *TEAC External USB CD ROM Drive* (2336-K208)
- *NCR Services: External CDR/W DVD-ROM Drive* (603-9014774)

## Connecting an External USB CD-ROM Drive

The Peripheral Tests can be run from an external CD ROM drive.

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



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2. Connect the Power Supply to the DC Power connector on the CD ROM and to an AC outlet.

3. Connect a USB keyboard to the terminal.
4. Apply power to the CD-ROM drive (switch on the back).
5. Insert the diagnostic CD.
6. Apply power to the terminal.
7. Press [**F8**] during boot (when you see the NCR logo) to enter the Boot Select menu.
8. If you are using the integrated CD/DVD Drive select **CD/DVD:P1-DV-28S-V**.  
If you are using the external USB CD Drive select **USB:TEAC CD-W552E**.

## Running the Terminal Diagnostics

Insert the E-Box Tests CD in the CD-ROM drive and boot the system. When the system is boots the Main Menu is displayed.

```
#####  
NCR Loadable E-Box Diagnostics (CD Version)  
Linux Base: NSPOS9  
Copyright © 2007, 2008 NCR Corporation  
#####  
  
NCR Loadable Diagnostics  
  
1) Perform Terminal Diagnostics  
2) View Loadable Diagnostic Documentation on CD  
3) Exit and Reboot  
Select:
```

Select **Perform Terminal Diagnostics (1)** and press [**Enter**]. The available terminal tests are displayed.

```
NCR Linux Loadable Terminal Diagnostics  
  
1) Ethernet  
2) Floppy Disk Drive  
3) Storage/IDE/SATA Drives  
4) Serial Ports  
5) System Information (CPU, DMI, etc.)  
6) System Memory  
7) USB Ports  
  
E) External Tests (Floppy only)  
  
0) Exit Terminal Diagnostics  
  
Select:
```

## Storage/IDE Drives Test

1. Select **Storage/IDE Drives (3)** and press **[Enter]**. Select the device you want to test.

### Storage/IDE/SATA Device Information

- 1) Primary Master:[NOT DETECTED]
- 2) Primary Slave:[NOT DETECTED]
- 3) Primary Master:[NOT DETECTED]
- 4) Primary Slave:[NOT DETECTED]
  
- 5) SATA 1:[SATA Hard Disk]
- 6)SATA 2:[NOT DETECTED]
- 7)SATA 3:[NOT DETECTED]
- 8)SATA 4:[NOT DETECTED]
  
- 0) Exit Storage/IDE Device Information

Select:

2. Select from the list to perform the desired test(s).

### Testing SATA Hard Drive

Connection : SATA1 (via /dev/sdb)  
Model/MFG : ST380215AS  
Capacity : 80.0 GB  
Operating Mode: RAID/AHCI  
Information current as of [today's date/time]

- 1 Display SMART overall-health assessment
- 2 Display SMART disk error log
- 3 Display SMART disk selftest log
- 4 Perform SMART "short" non-destructive selftest (1 - 5 minutes)
- 5 Perform SMART "long" non-destructive selftest (up to 1 hour)
- 6 Abort SMART selftest (short or long)
- 0) Exit IDE Hard Drive Test

Select:

## Serial Ports Test

Select **Serial Ports (4)** and press [Enter]. The terminal serial port information is displayed.

For example:

### RS-232 Serial Ports

```
Serial Port #1 is configured at Port=0x3f8 and IRQ=4
Serial Port #2 is configured at Port=0x2f8 and IRQ=3
Serial Port #3 is configured at Port=0x3e8 and IRQ=11
Serial Port #4 is configured at Port=0x2e8 and IRQ=10
```

Note: The information above is how Diagnostics is currently configured. It may or may not match how the BIOS or hardware is configured. If a test fails, please check the BIOS and/or hardware settings to ensure the proper configuration is being tested.

- 1)Change Serial Port Configuration (Diagnostic operation only)
- 2)Test a Serial Port (Serial Turnaround Plug required)

0)Exit RS-232 Serial Ports

Select:

From this menu you can change the serial port configuration for diagnostic purposes or test a serial port (Serial Turnaround Plug required).

## System Information (CPU, DMI, etc.) Test

Select System Information (CPU, DMI, etc.) (5) and press [Enter]. The terminal information is displayed.

For example:

### Terminal Information

```
Terminal:7601-1000-8800
Serial Num:50-12345678
UUID: 00020003-0004-0006-000700080009
```

BIOS Version:NCR BIOS 6.2.2.0

```
CPU Version:Genuine Intel(R) CPU 575 @ 2.00GHz
CPU Speed:1995.109 MHz
```

0) Exit Terminal Information

Select:

## System Memory Test

Select **System Memory (6)** and press [**Enter**]. The system memory information is displayed.

For example:

```
Terminal System Memory
```

```
System Memory is reported by the OS as: 984252 KB
```

```
Estimate of physical memory present is: 1024 MB
```

```
0) Exit Terminal System Memory
```

Select:

## Running the Peripheral Diagnostics

### Navigation

Navigation around the peripheral screens is done using the keyboard. The arrow keys are used to move to the menu items. The **[Enter]** key is used to select the item.

### Running the Tests

Insert the *Peripheral Tests* CD in the CD-ROM drive and boot the system. When the system boots the Main Menu is displayed. This may take a minute or so to load into RAM.

At the Main Menu, highlight Peripherals and press **[Enter]**.

```
FitClient Manager LE  
+ Peripherals  
+ Platform
```

The Peripheral Diagnostics Menu contains the options available for you to test.

```
FitClient Manager LE  
- Peripherals  
  Hard Totals  
  Keylock  
  Line Display  
  MICR  
  MSR  
  POS Printer  
  Scale  
  Scanner  
  Tone Indicator  
+ Platform
```

### MSR Test

1. Using the arrow keys, highlight **MSR** and then press **[Enter]**.
2. Press **[->]** to move to the right side window.
3. Select the correct MSR profile.

**Note:** If your MSR device is not listed you can modify the parameters of the current one or create a new one by selecting Create a **New Name**. Press **[F8]** to save all changes. Keep in mind that all changes are lost when you end this session.

4. Highlight **Run Interactive Diagnostics** and then press **[Enter]**.
5. Swipe the card within the timeout period displayed. With a valid read the card information is displayed.
6. Exit the test by pressing **[Esc]**.



## Printer Test

1. Using the arrow keys, highlight **POS Printer** and then press [**Enter**].
2. Press [**->**] to move to the right side window.
3. Select the **Logical Name** field and then press [**Enter**].
4. Select the correct printer profile.

**Note:** If your Printer is not listed you can modify the parameters of the current one or create a new one by selecting Create a New Name. Press [**F8**] to save all changes. Keep in mind that all changes are lost when you end this session.

5. Make any necessary changes to the profile.

**Example:** If your printer is connected to a different COM port than what is shown in the profile you can change the setting. Press [**F8**] to save the changes to the current profile.

6. Highlight **Run Interactive Diagnostic** and then press [**Enter**].
7. Exit the test by pressing [**Esc**].

## Scanner Test

1. Using the arrow keys, highlight **Scanner** and then press [**Enter**].
2. Press [**->**] to move to the right side window.
3. Select the correct Scanner profile.

**Note:** If your Scanner is not listed you can modify the parameters of the current one or create a new one by selecting **Create a New Name**. Keep in mind that all changes are lost when you end this session.

4. Make any necessary changes to the profile.

**Example:** If your scanner is connected to a different COM port than what is shown in the profile you can change the setting. Press [**F8**] to save the changes to the current profile.

5. Highlight **Run Interactive Diagnostics** and then press [**Enter**].
6. Scan a barcode label within the timeout period displayed. With a valid read the barcode information is displayed.
7. Exit the test by pressing [**Esc**].

### Tone Indicator Test

1. Using the arrow keys, highlight **Tone Indicator** and then press [**Enter**].
2. Press [**->**] to move to the right side window.
3. Select the correct keyboard profile.

**Note:** If your keyboard is not listed you can modify the parameters of the current one or create a new one by selecting Create a New Name. Press [F8] to save all changes. Keep in mind that all changes are lost when you end this session.

4. Highlight **Run Interactive Diagnostics** and then press [**Enter**].
5. A audible tone is heard if the test is successful.
6. Exit the test by pressing [**Esc**].

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# Chapter 3: Hardware Disassembly

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## Introduction

This chapter discusses procedures for disassembling the 7601 hardware for servicing.

## Safety Requirements

**Caution:** This product does not contain user serviceable parts. Servicing should only be performed by a qualified service technician.

### *Fuse Replacement*

**Caution:** For continued protection against risk of fire, replace only with the same type and ratings of fuse.

**Attention:** Pour prévenir et vous protéger contre un risque de feu, remplacer la fusible avec une autre fusible de même type, seulement.

### *Lithium Battery Warning*

**Caution:** 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.

**Caution:** DO NOT connect or disconnect a printer, keyboard, or any other terminal-powered peripheral while the terminal is powered on. Doing so may result in peripheral or system 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.

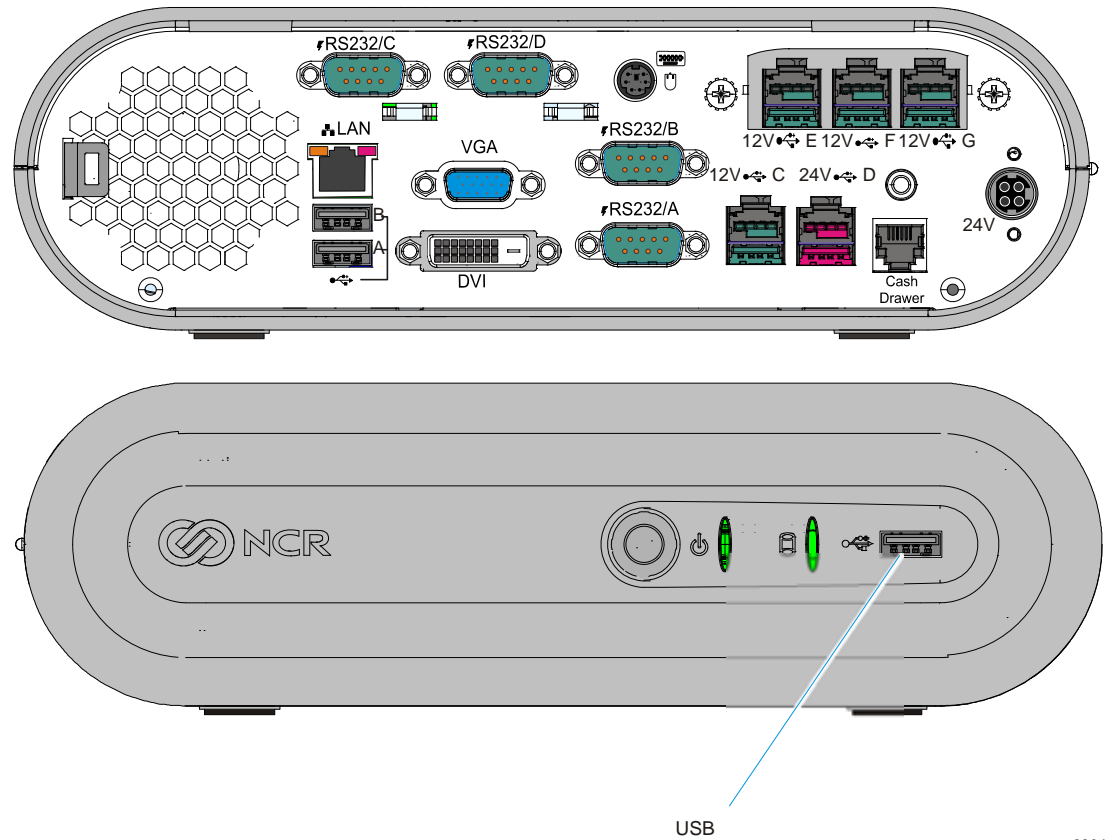
The conductor with insulation having an outer surface that is green with or without yellow stripes is the equipment-grounding conductor.

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.

## Cable Connectors

The following illustrations identify the peripheral cable connectors. For convenience there is a USB connector located on the front of the unit.



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## Terminal Disassembly Procedures

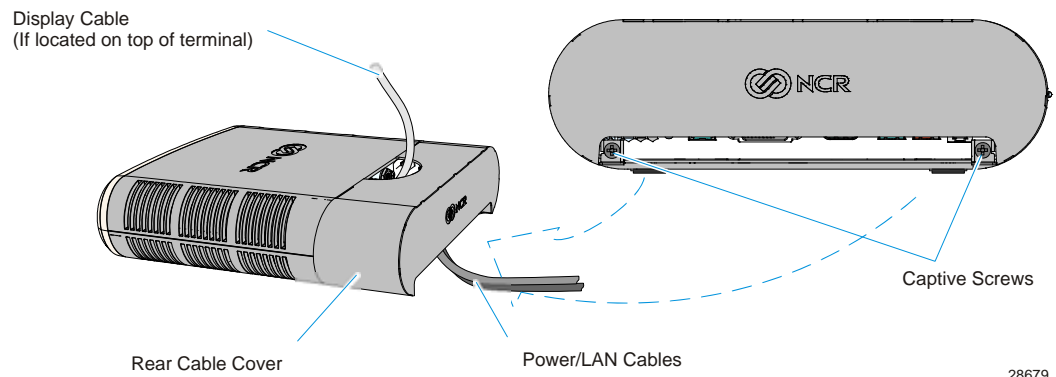
This section explains how to disassemble the 7601 for service purposes.

**Warning:** Disconnect the AC power before disassembling the Terminal.

### Removing the Rear Cable Cover

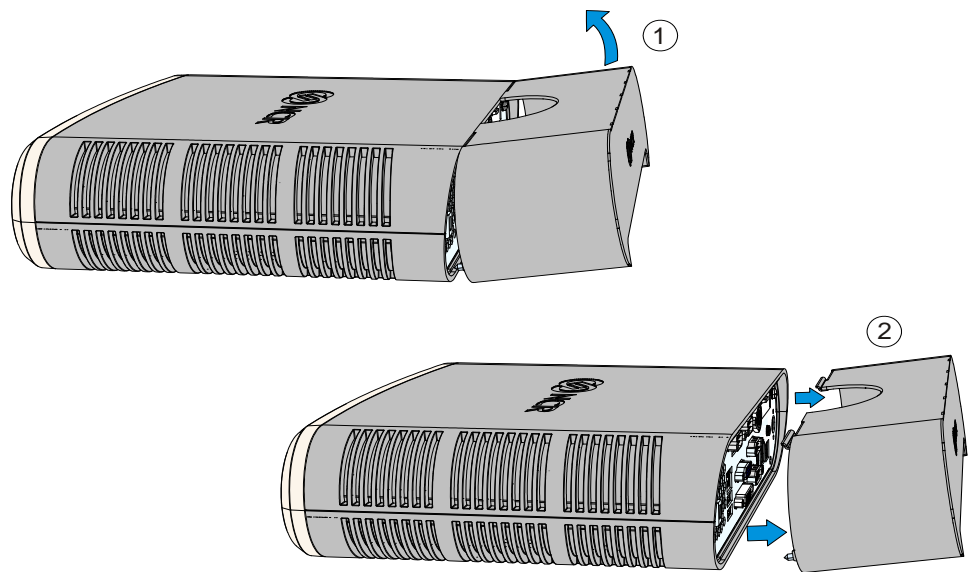
**Note:** The Rear Cable Cover is optional.

1. Loosen the Captive Screws (2) that secure the cover to the rear of the terminal.



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2. Pivot the cover as shown below to disengage the hinges to remove it from the terminal.

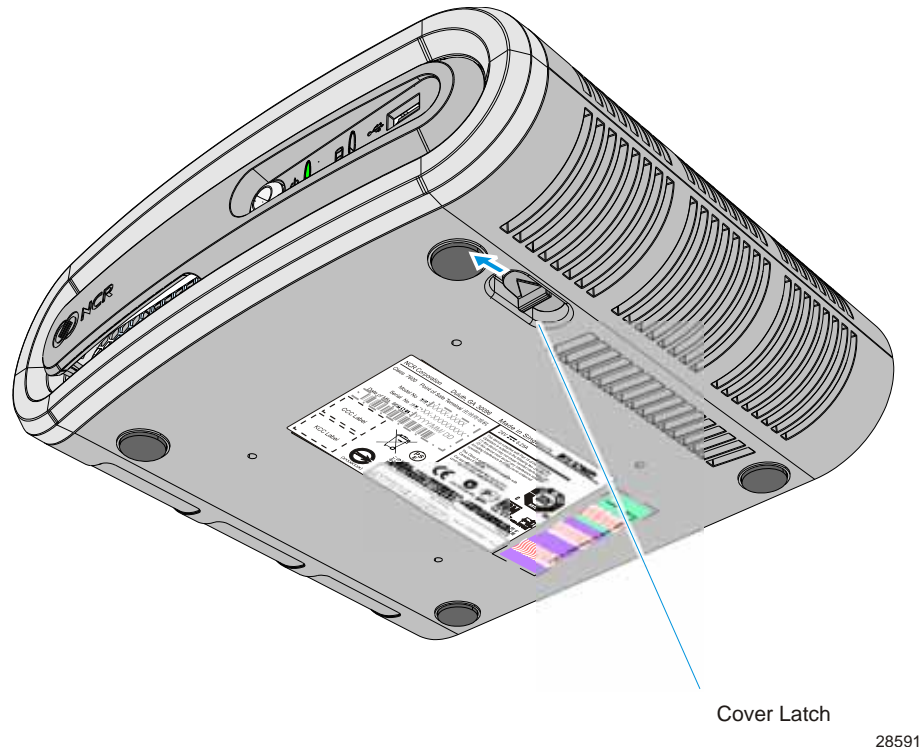


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## Opening the Top Cover

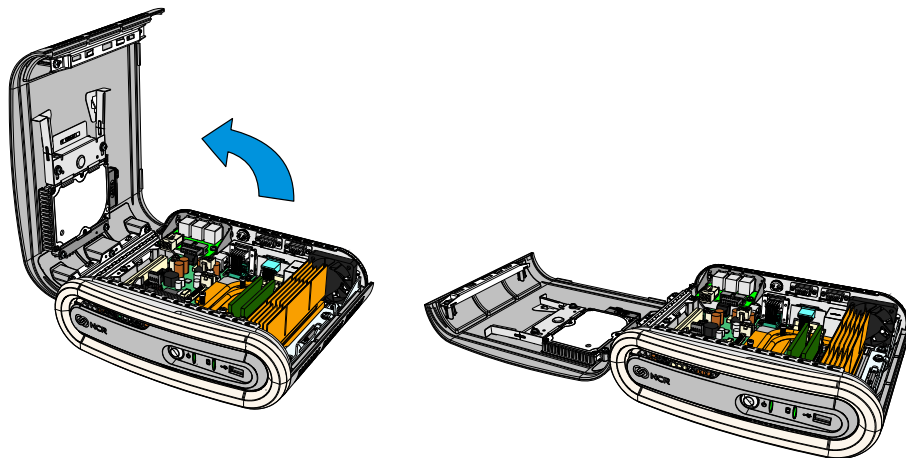
1. Slide the Cover Latch located on the bottom of the unit forward to unlock the Top Cover.

**Note:** First remove the Security Lock on the rear of the unit if present.



2. Pivot the Top Cover open and gently rest it on the table surface.

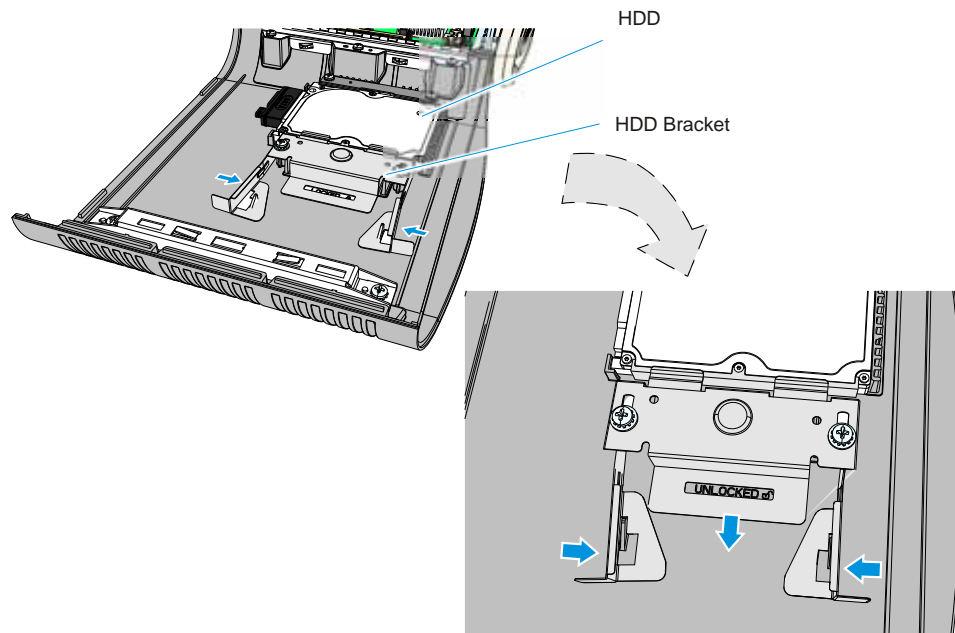
**Caution:** When opening the cover, do not allow it to drop onto the table surface. The mechanical shock can damage the HDD.



## Removing the Hard Disk Drive

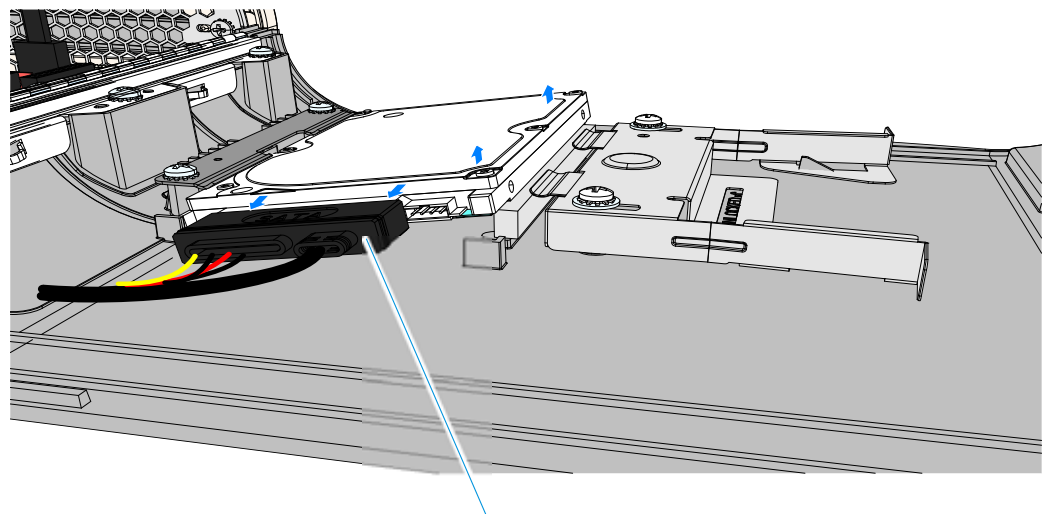
The Hard Disk Drive (HDD) is mounted on the inside of the Top Cover.

1. Squeeze the latches on the HDD Bracket as shown to unlock the bracket from the Top Cover and slide the HDD Bracket as shown until you see Unlocked displayed in the opening in the HDD Bracket.



28593

2. Tilt the HDD on one edge to remove it from the Top Cover Bracket and disconnect the HDD Data/Power Connector.



HDD Data/Power Connector

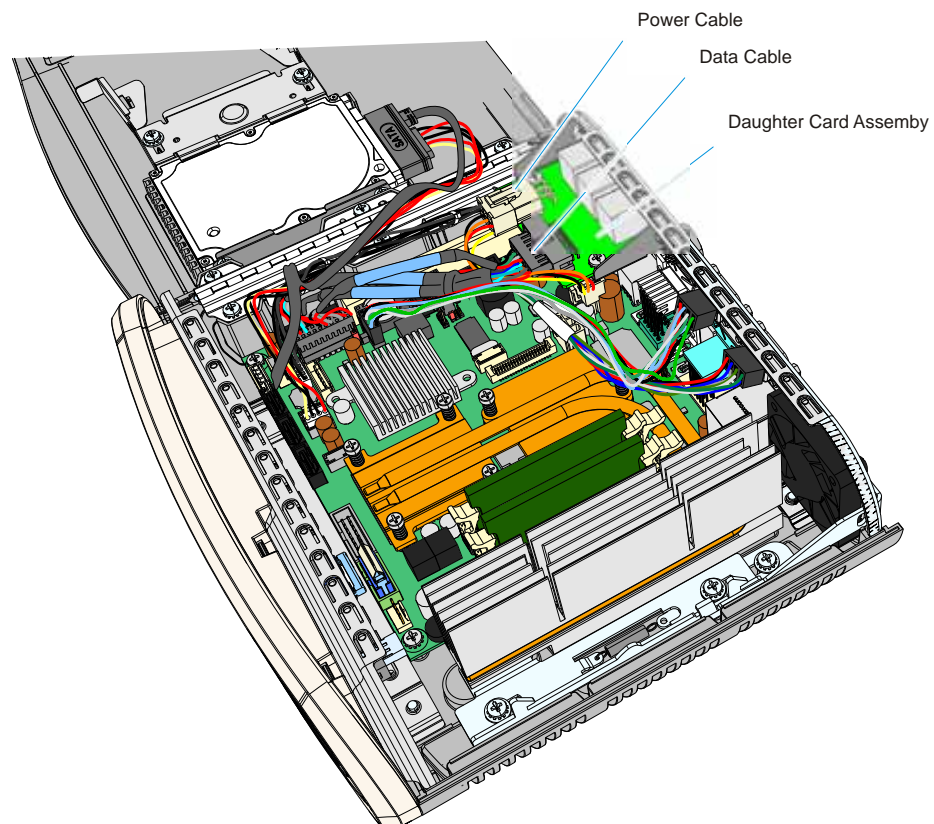
28596



## Replacing the Motherboard

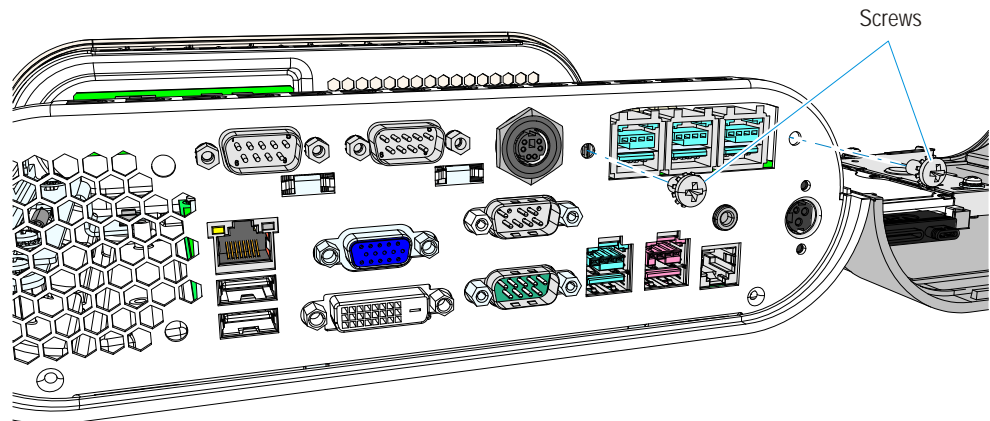
### Removing the Motherboard

1. Disconnect any external cables on the back of the terminal.
2. Open the Top Cover.
3. Remove the Daughter Card.
  - a. Disconnect the Data Cable and Power Cable from the Daughter Card Assembly.



28748

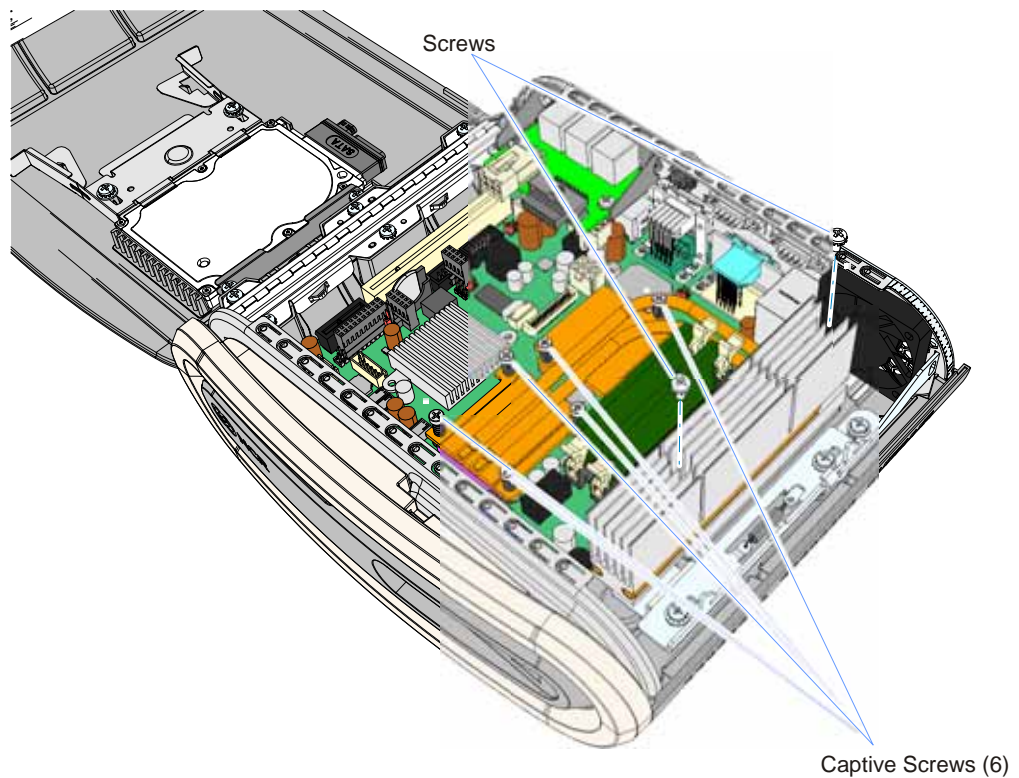
- b. Remove the screws (2) from the back of the terminal that secure the Daughter Card Assembly.



28682

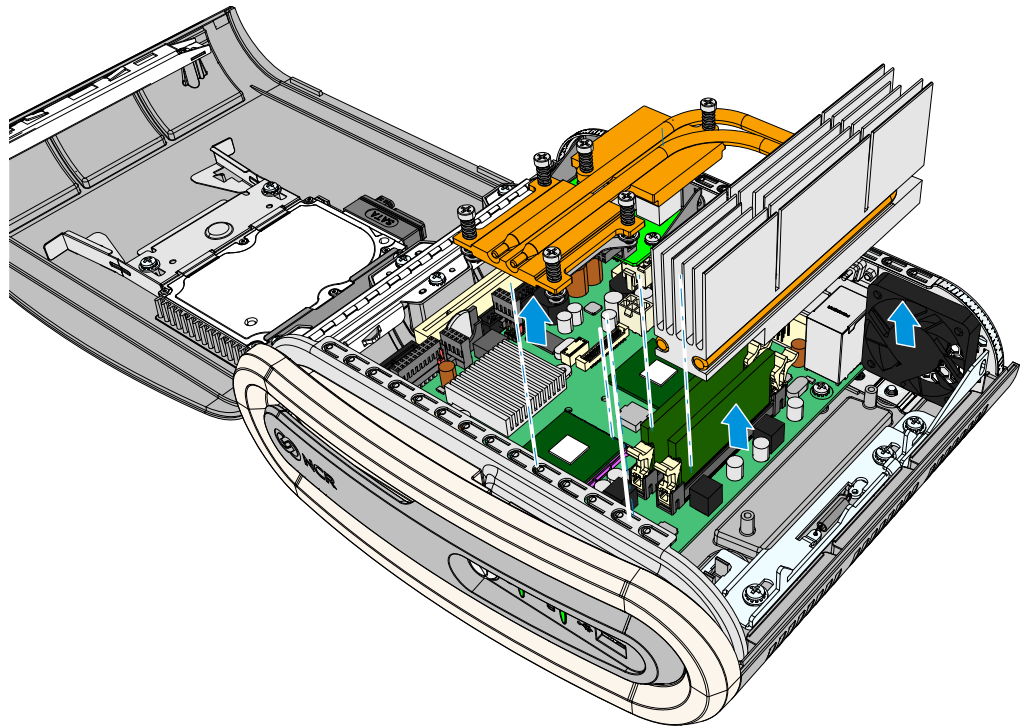
4. Remove the Cooling Solution Assembly
  - a. Remove the screws (2) that secure the Cooling Solution Assembly to the chassis.
  - b. Loosen the spring-loaded captive screws (6) that secure the Cooling Solution Assembly to the Motherboard.

**Note:** Use a sequential rotating pattern when loosening the spring-loaded screws. Loosen each screw a little at a time to evenly raise the Heatsink from the CPU.



28749

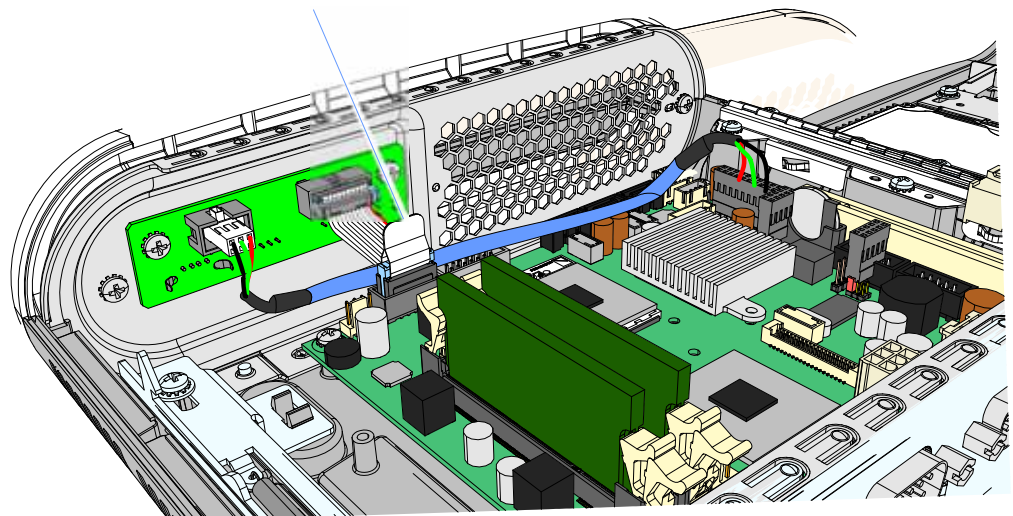
- c. Remove the Cooling Solution Assembly from the Motherboard.



28751

5. Disconnect the Power Switch Ribbon Cable from the Motherboard.

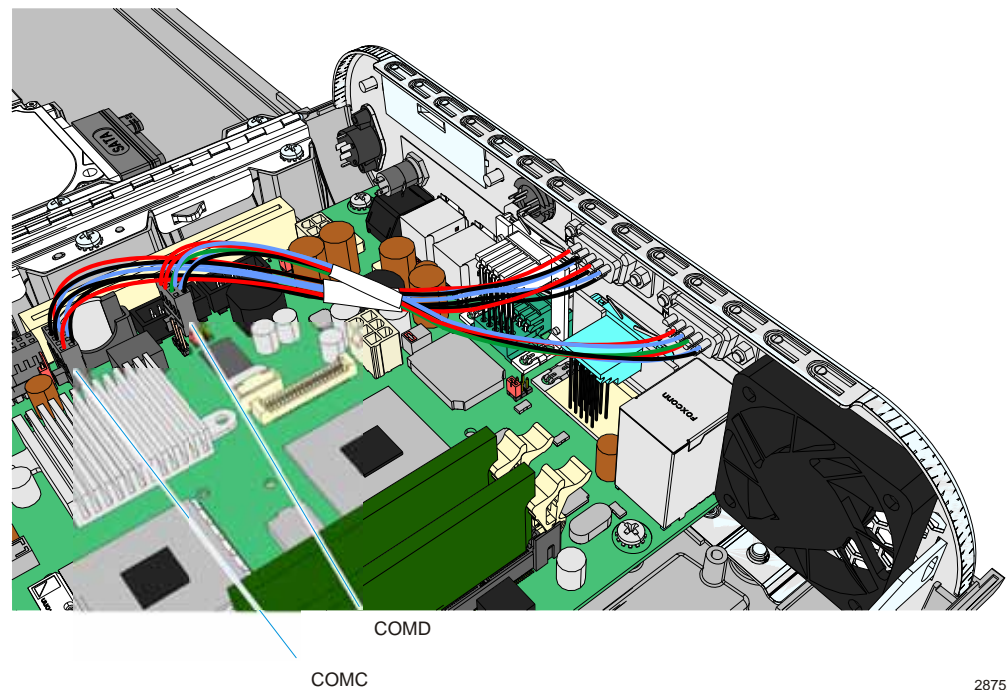
Power Switch Ribbon Cable



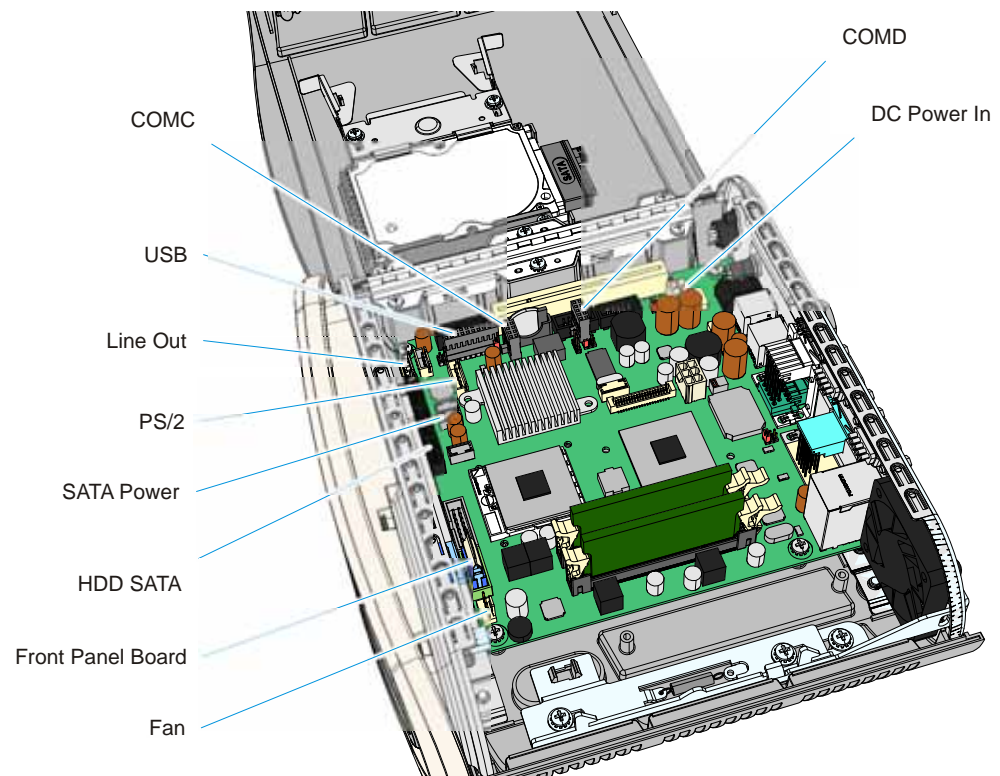
28750



6. Disconnect the COMMC and COMD Cables from the Motherboard.

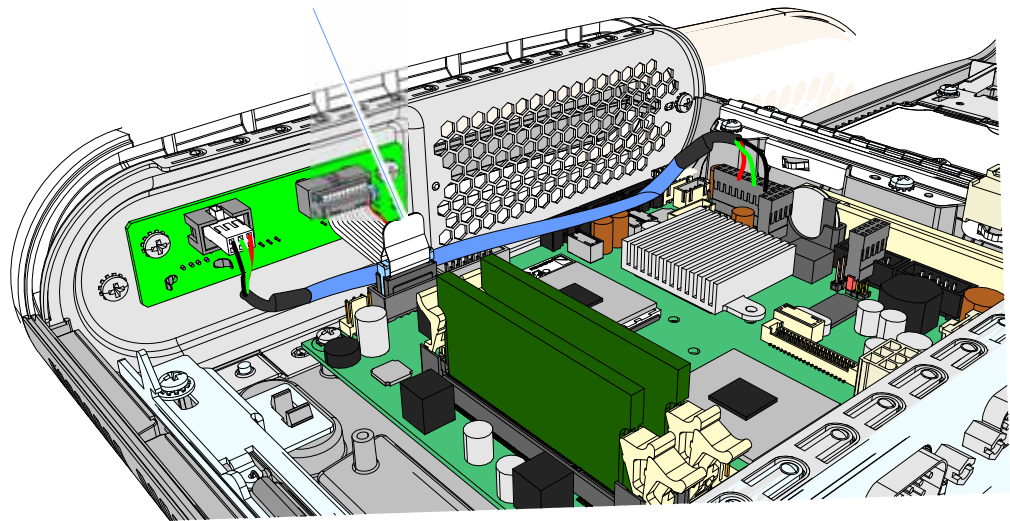


7. Disconnect the remaining cables from the Motherboard.



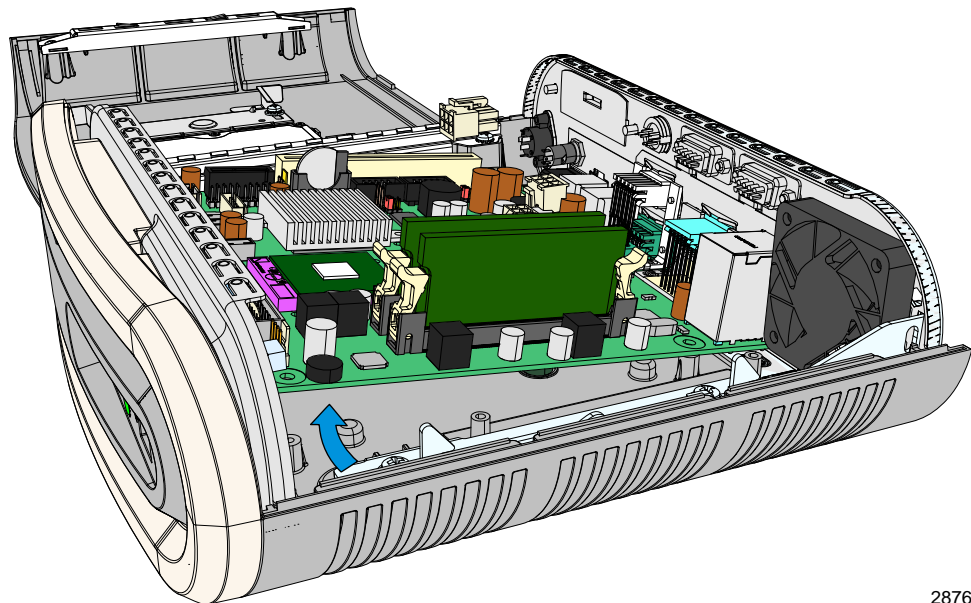
8. Remove the screws (4) that secure the Motherboard to the chassis base.

Power Switch Ribbon Cable



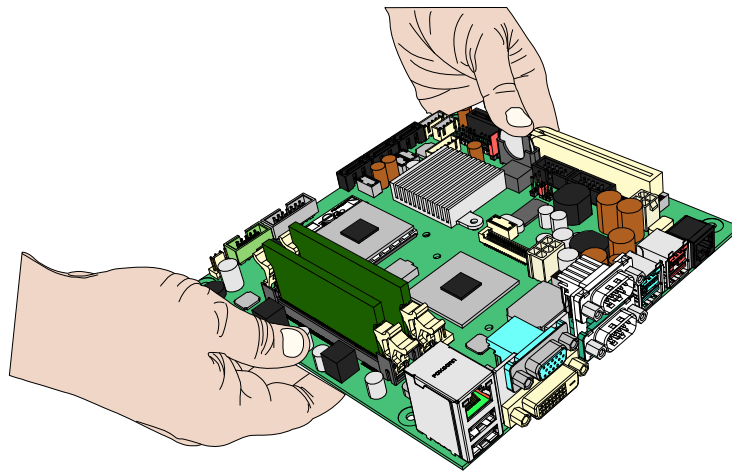
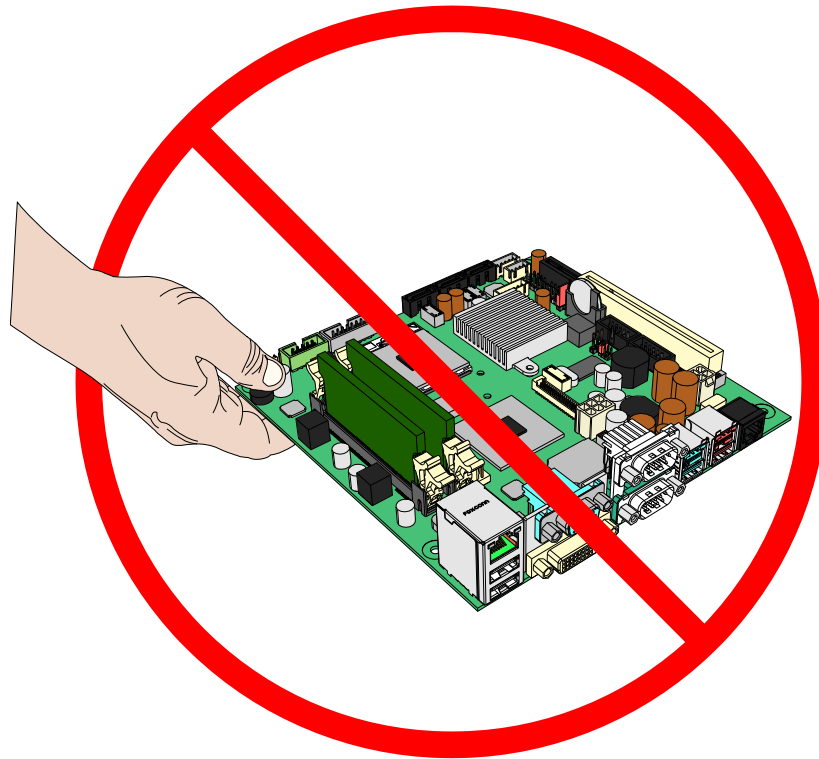
28754

9. Tilt the Motherboard as shown below and shift it toward the front of the cabinet to remove the connectors from the rear of the chassis.



28769

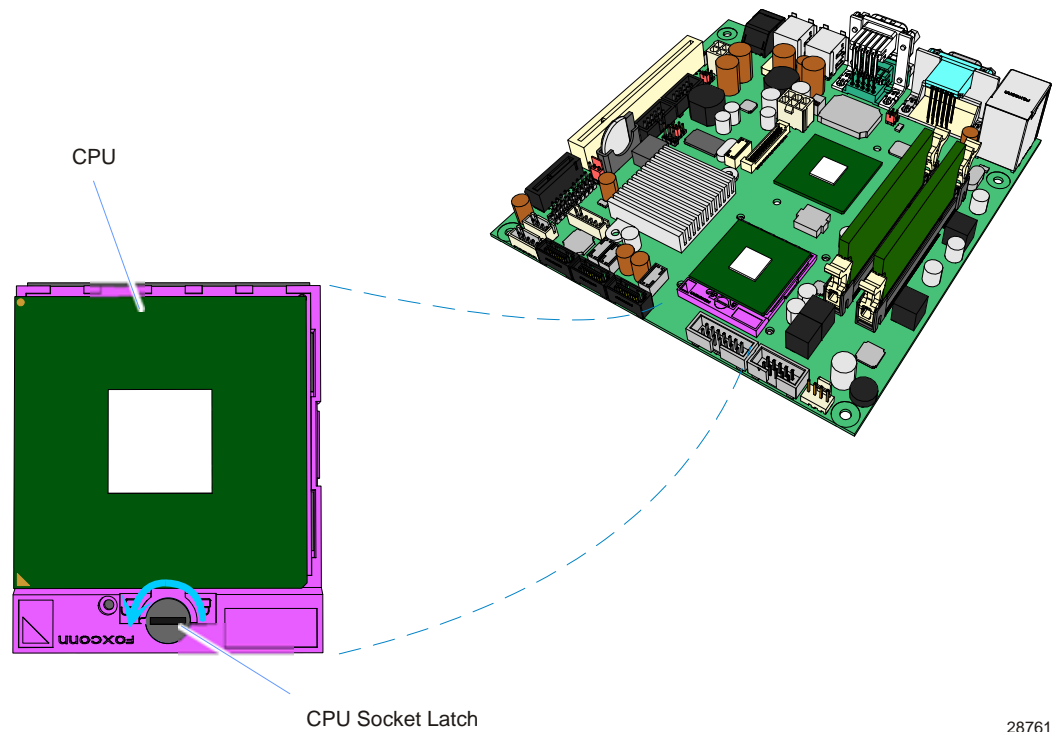
Use care in handling the Processor Board. Solder joints can be broken if the board is allowed to be flexed. Use two hands to handle the board.



28760

10. Remove the Memory Module(s) from the Motherboard. See the Replacing a Memory Module section.
11. Remove the CPU Module from the Motherboard.

- a. Using a small flat-blade screwdriver, turn the ZIFF connector locking screw one half turn counter-clockwise to release the CPU.



28761

- b. Note the orientation of the CPU Module (gold triangle location).
- c. Carefully remove the CPU and place it in an anti-static packing, which protects the CPU pins from becoming damaged.

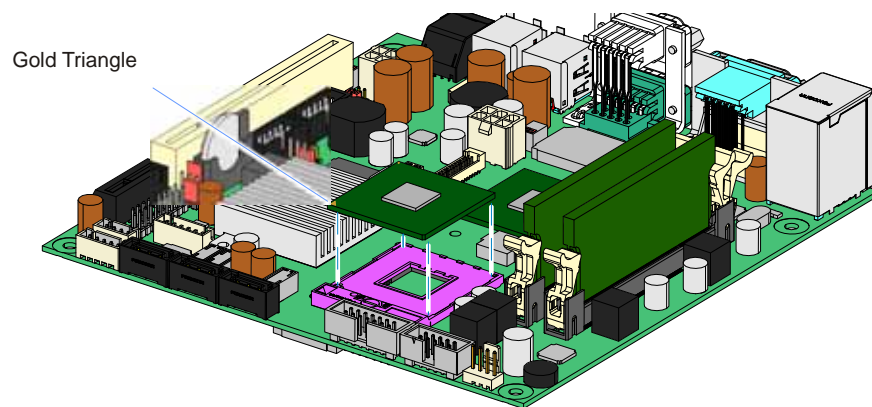
## Installing the New Motherboard

### 12. Install the CPU Module.

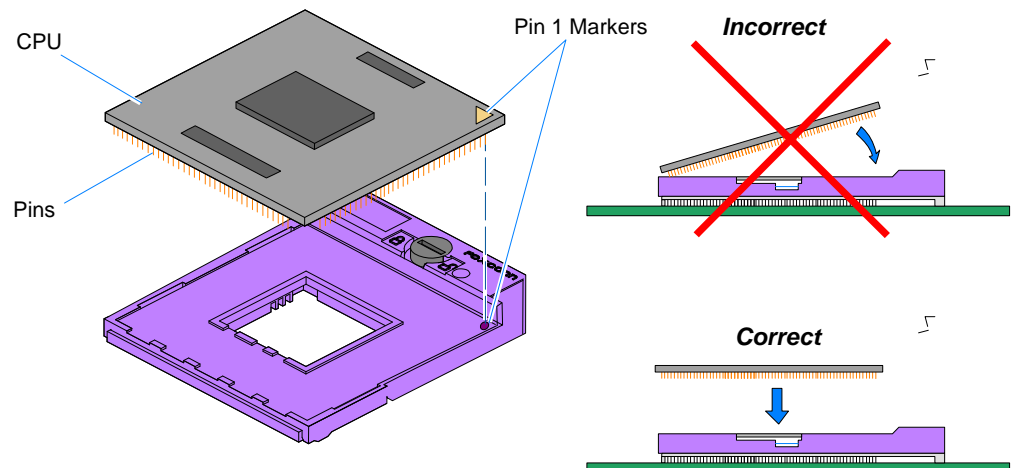
- Make sure the ZIFF Locking Screw is in the unlocked position (fully counter clockwise).
- Correctly position the new CPU over the CPU Socket, with the gold triangle located as shown below.

**Caution:** Do not touch the CPU contacts.

- Do not insert the CPU at an angle or force the CPU into the socket.
- Drop it in by its own weight.



28762

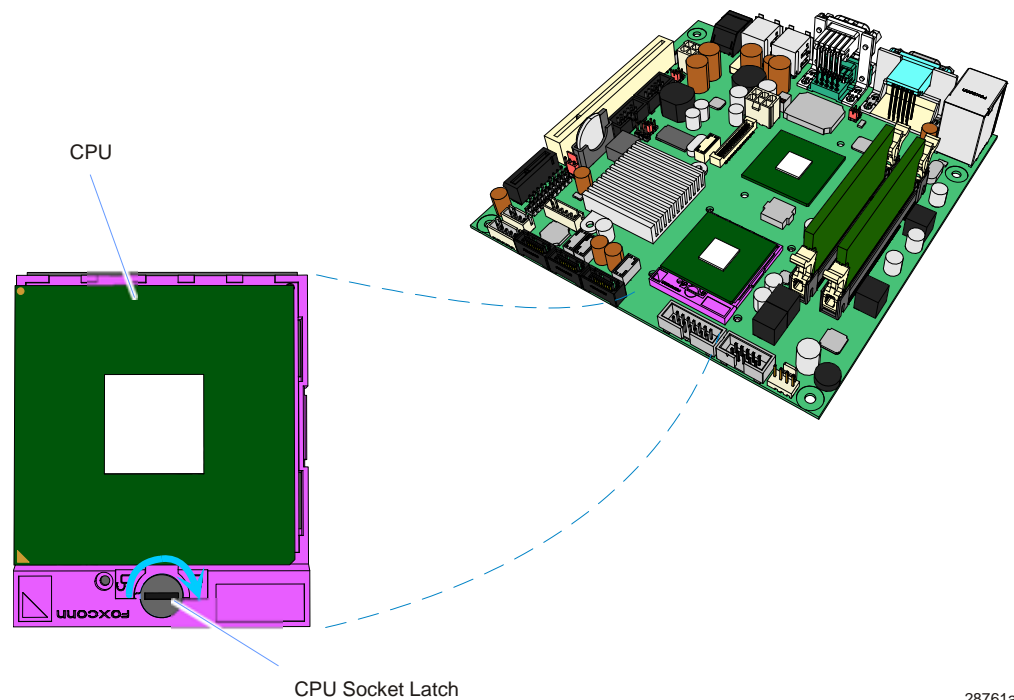


26158



- e. Using a small flat-blade screwdriver, turn the ZIF connector locking screw one half turn clockwise to lock the CPU.

**Note:** Make sure the CPU remains flat and fully seated while locking the socket.



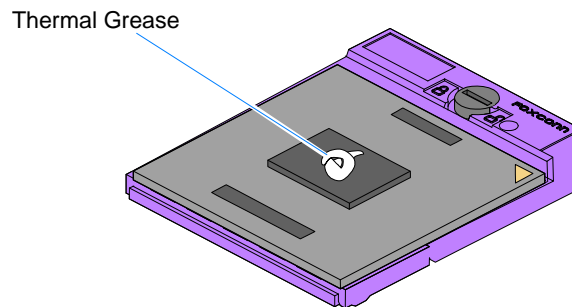
28761a

- f. Verify the board's jumper settings match the old Motherboard.
13. Install the Memory Module(s).
  14. Install the new Motherboard in the terminal chassis.
  15. Connect all of the Motherboard cables.

### Installing the Cooling Solution Assembly

Before you install the Cooling Solution Assembly replace the Thermal Pads with Thermal Grease.

16. Remove the Thermal Pads from the Cooling Solution Assembly surfaces.
17. Apply thermal grease to the CPU and Northbridge Modules. Use approximately one quarter of the contents of the grease syringe to the top of the both as shown below. Do not use the entire contents of the syringe. Too much grease can block the airflow around the CPU heat spreader. The goal is for the processor chip to be evenly covered with grease once the heatsink is installed.



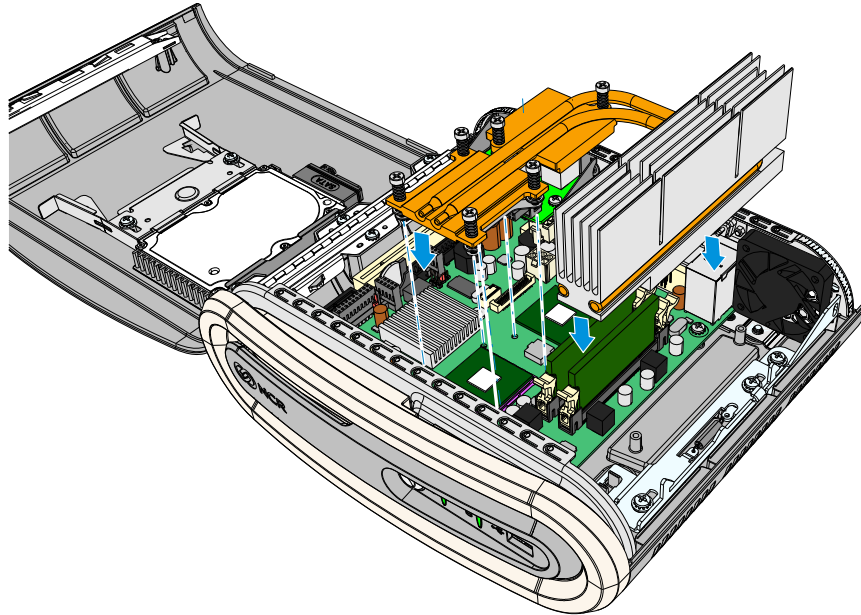
26164

- Do not apply the grease with a bare finger tip or talc-coated glove. Oils on skin and particulate on the glove can contaminate the grease.
- Make sure none of the grease gets on the circuit board. Heatsink grease is a strong electrical conductor and can short signals on the board if it crosses trace paths.
- Recheck to make sure no foreign contaminants are present on either the bottom of the heat sink or the top of the CPU.

18. Install the Cooling Solution Assembly on the Motherboard.

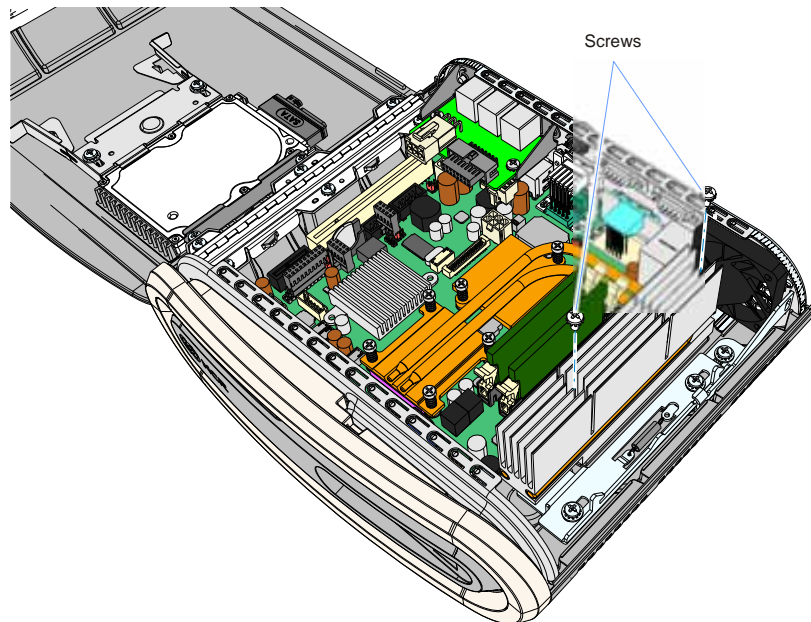
- a. Position the assembly over the CPU and tighten the six spring-loaded screws.

**Note:** Use a sequential rotating pattern when loosening the spring-loaded screws. Tighten each screw a little at a time to evenly raise the Heatsink from the CPU.



28751a

- b. Secure the assembly to the chassis (2 screws).

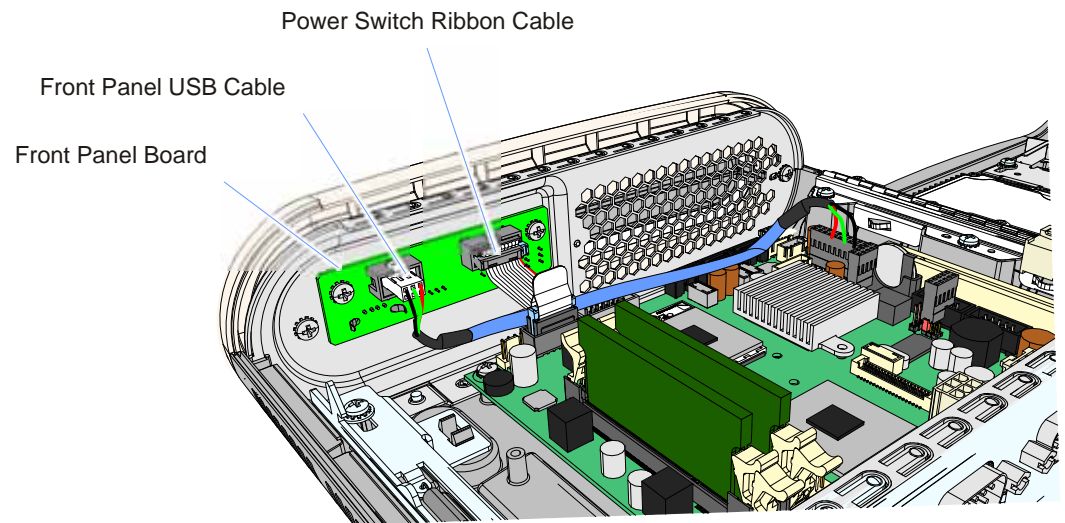


28749a

**Note:** After powering up the terminal, re-flash the BIOS to ensure the latest version is installed and verify that the terminal is fully functional (see the BIOS Updating Procedures chapter in the *NCR RealPOS 60 User Guide* (B005 0000 2011)).

## Removing the Front Panel Board

1. Open the Top Cover.
2. Disconnect the Front Panel USB Cable and Power Switch Ribbon Cable from the Front Panel.

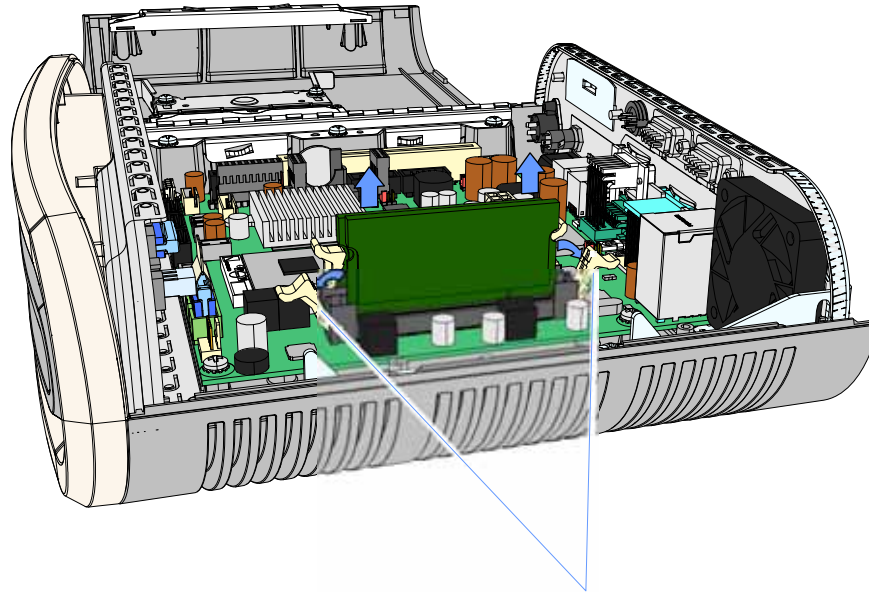


28755

3. Remove the screws (2) that secure the Front Panel Board to the Front Panel.

## Replacing the Memory Module

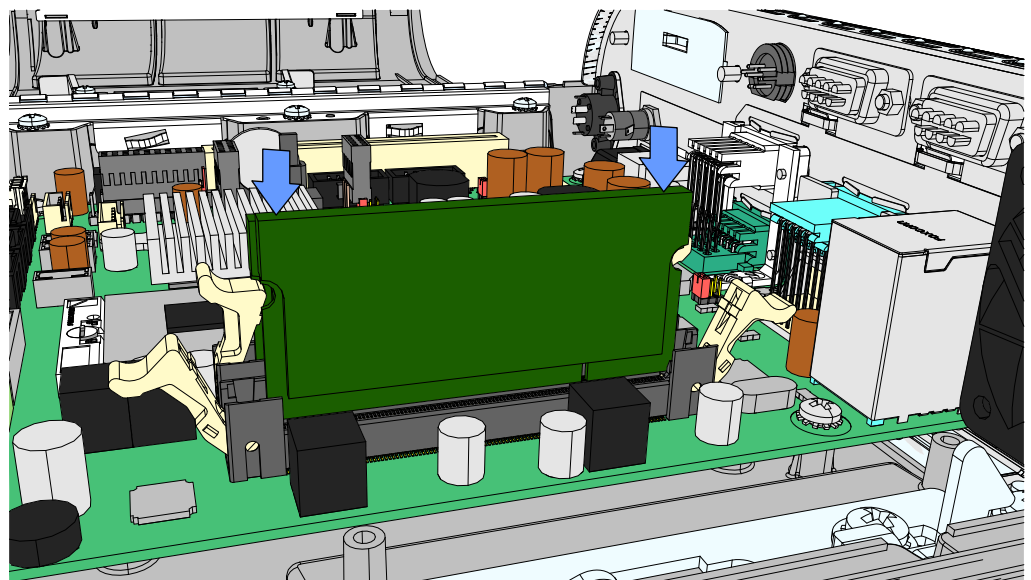
1. Remove power from the terminal.
2. Open the Top Cover.
3. Open the latches at the ends of the memory socket to release the module.



Memory Module Latches

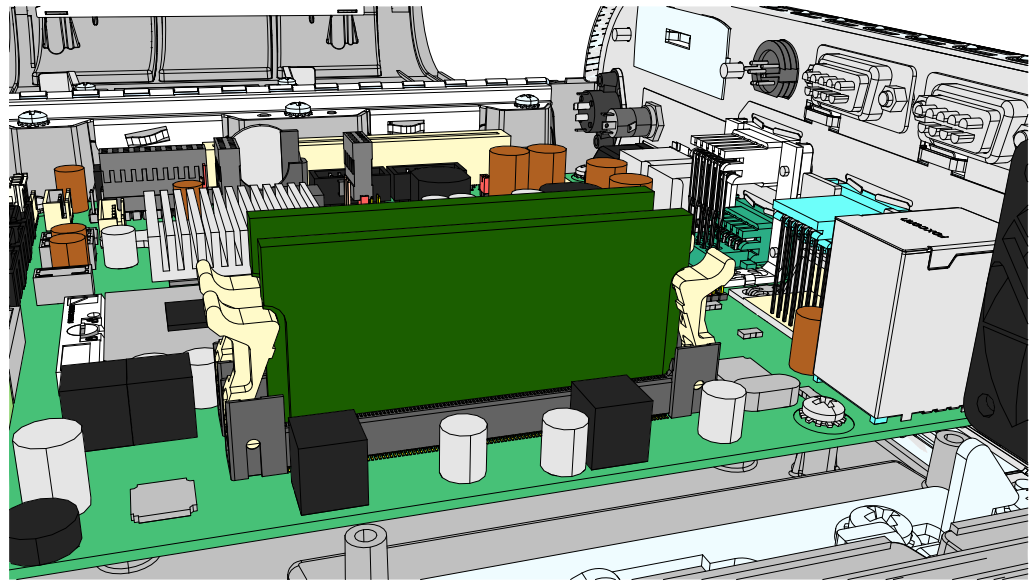
28756

4. To install the module, align it with the socket and push it straight down, applying down pressure on the ends smoothly with both hands as indicated by the arrows below. (Note that the connector is keyed.)



28757

5. Ensure that the edges of the module engage the latches and that the latches are completely closed.



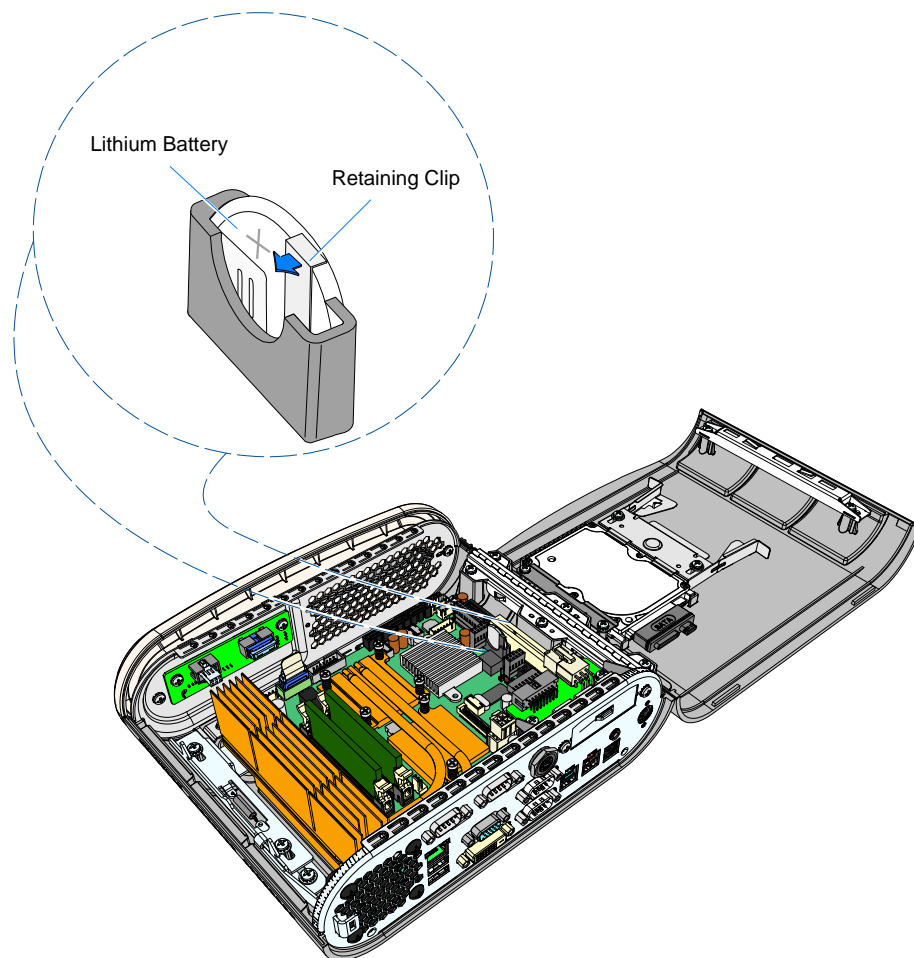
28758



## Replacing the Lithium Battery

**Caution:** 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.

1. Remove power from the terminal.
2. Open the Top Cover.
3. Note the battery's polarity before removing it so that you can replace the battery correctly.
4. Press the Retaining Clip to the side as shown and then remove the battery from of the socket.



28759

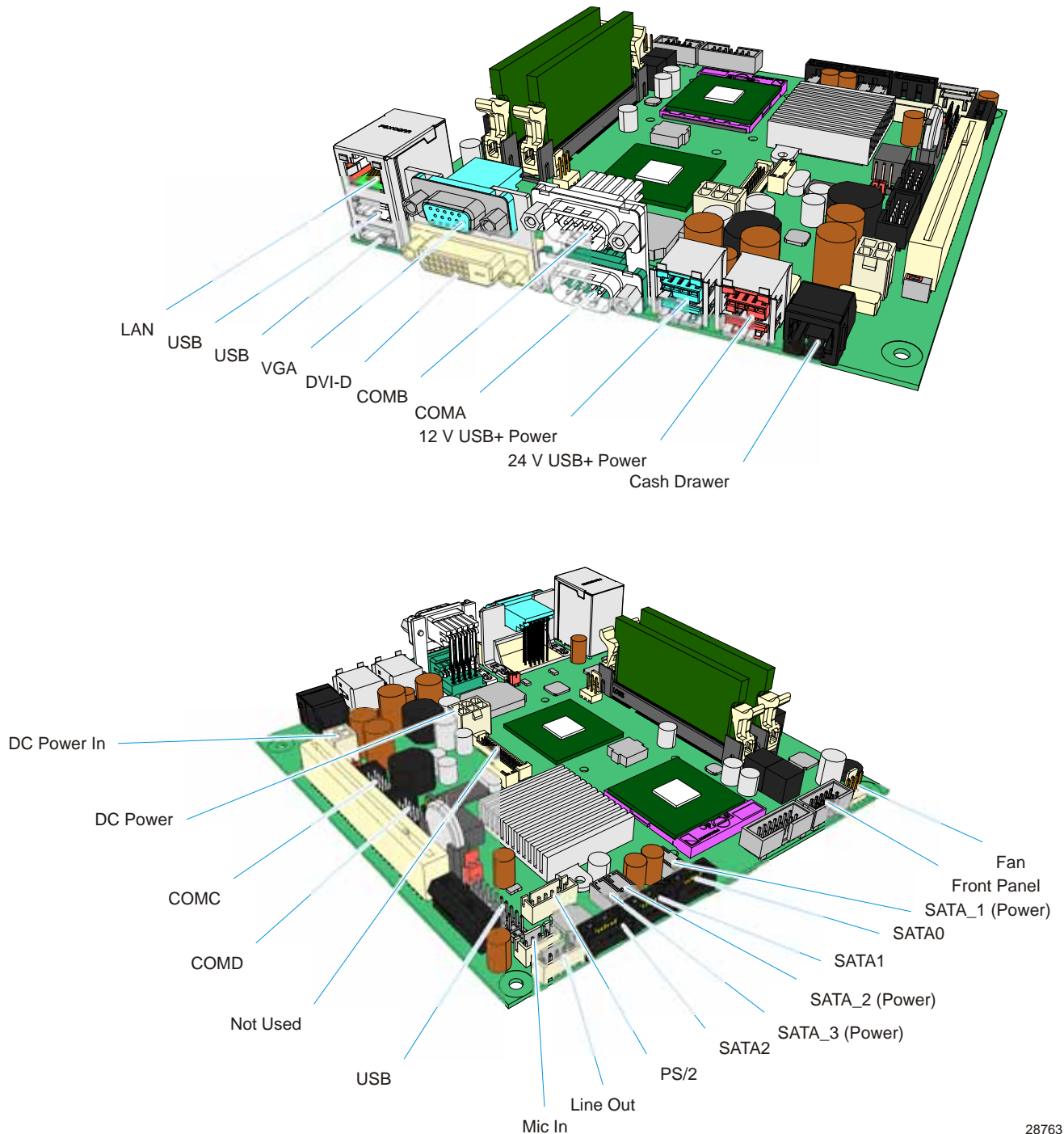
5. Insert the new battery by pushing it straight down until it is tightly locked. Battery polarity is indicated on the Motherboard next to the battery connector.
6. Close the Top Cover.
7. Apply AC Power to the Terminal.
8. Run **Setup** and set *defaults*. Set the Date/Time and make any desired special settings.





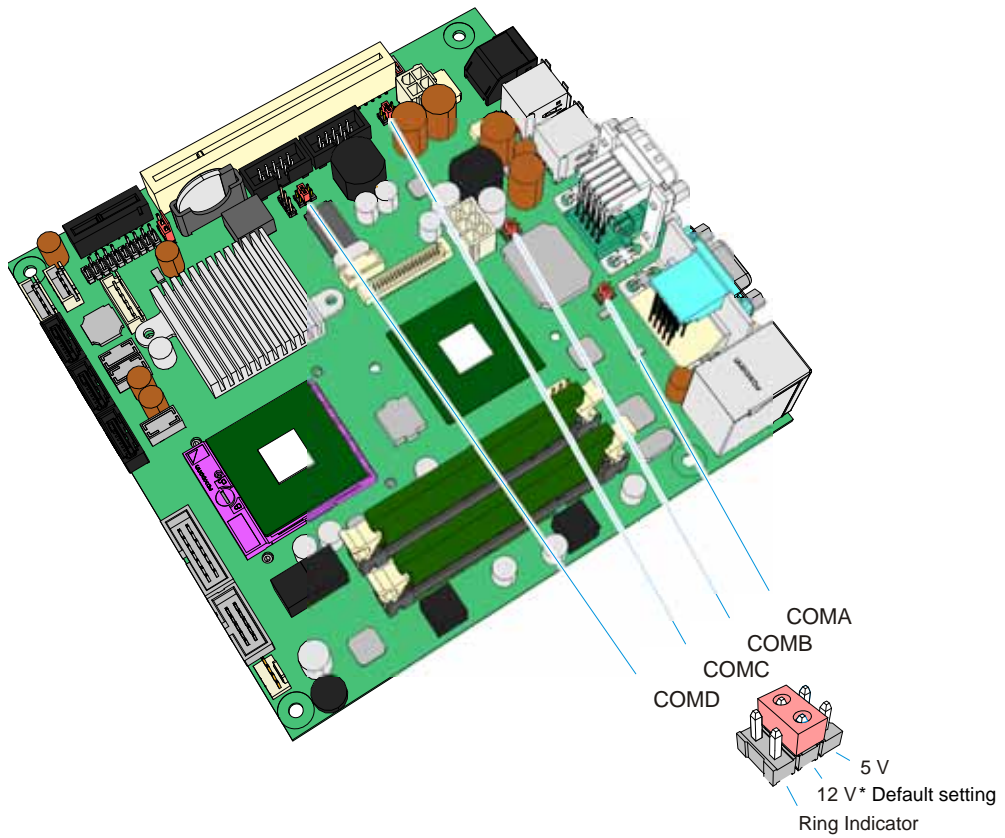
# Chapter 4: Circuit Boards

## Motherboard Connectors



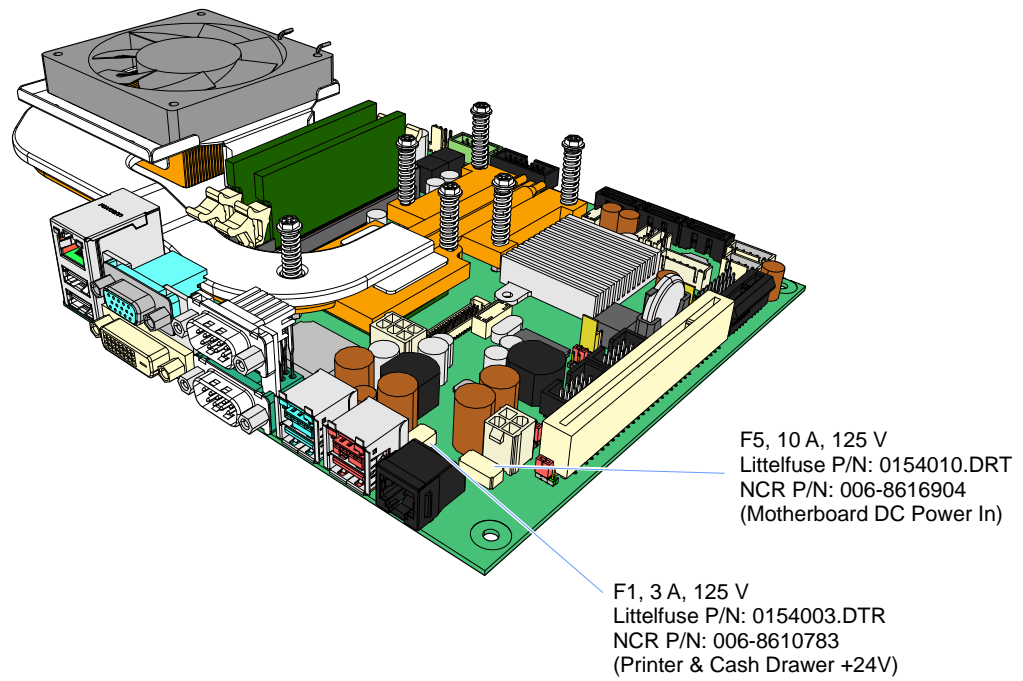
## Serial Port Jumpers

There are four serial ports available. The default setting for all is 12V.



28764

## Fuses



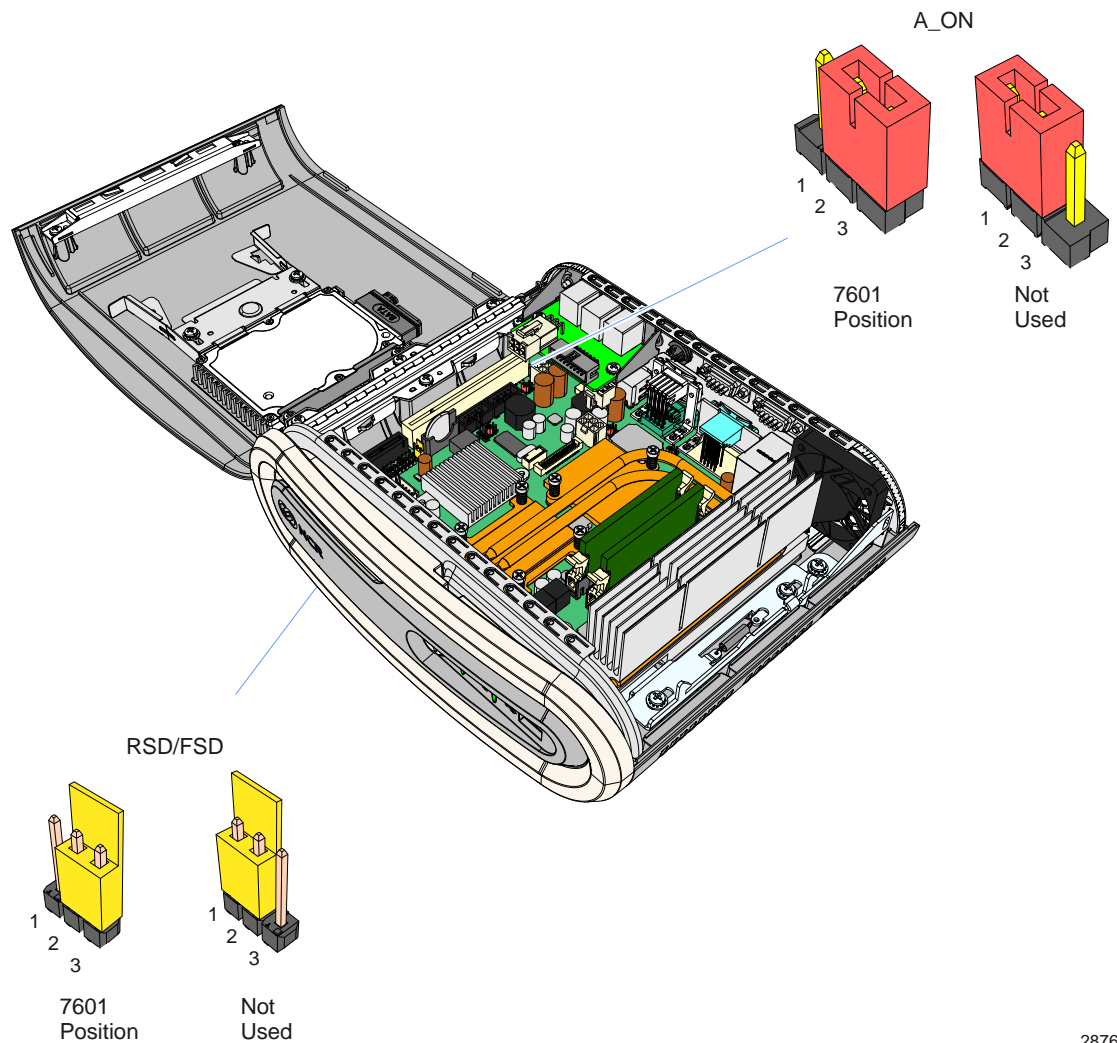
29434

## A\_ON and RSD/FSD Jumpers

The 7601 Motherboard is used in both Retail and Financial environments. These two jumpers are used to configure the board properly for these environments.

The A\_ON jumper is used to cause the terminal to turn on automatically whenever AC power is applied. It should always be set to Pins 2 - 3 for the 7601.

The RSD/FSD jumper should always be set to the Retail setting (RSD) for the 7601.



28767

## Connector Pinouts

### LAN

The LED on the right is yellow and indicates Link/Activity when lit/flashing. The LED on the left is Bi-color and indicates the following when the yellow LED on the right side is lit:

- Unlit - 10M speed
- Green: 100M speed

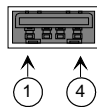
Ethernet RJ-45 & USB 1/2 Connector



- 10/100 Base T Ethernet.
- RJ Jack
- Color: None specified.

PIN No.	Signal Description	PIN No.	Signal Description
1	TD0+	2	TD0-
3	TD1+	4	TD1-
5	TD2+	6	TD2-
7	TD3+	8	TD3-

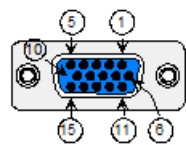
### USB1, USB2



PIN No.	Signal Description
1	+5 V
2	DATA0-
3	DATA0+
4	USB0GND

VGA Connector

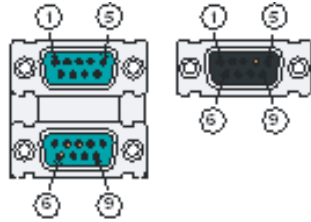
Protected by a self-healing polyfuse: Protectronics EZ Fuse P/N SMD1812P160TF or NCR Approved Equivalent. Fuse can supply 1.1 A over the temperature range.



- 15 pin D-shell
- VGA, SVGA or XGA
- Color: Blue

PIN No.	Signal Description	PIN No.	Signal Description
1	RED	2	GREEN
3	BLUE	4	N/C
5	Ground	6	Analog Ground
7	Analog Ground	8	Analog Ground
9	+5V	10	Ground
11	N/C	12	VID_SDA
13	HSYNC	14	VSYNC
15	CON_DDCCL		

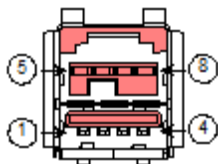
### Serial Port Connectors (A, B, C, D)



The Motherboard includes four external RS-232 ports with the following characteristics:

- Standard 9 pin D-shell
- Ports have a shunt to select between +12 V and normal RI functionality. The default is 12 V. These ports are marked with the lightning bolt symbol to signify its powered capability.
- Maximum power capability is 1.5 A from any one port with a maximum combined capability of 3.0 A for all ports. Total +12 V power peripheral current (RS-232 and USB) must NOT exceed 3.0 A.
- The +12 V outputs from the powered ports are protected by a self healing fuse.
- If a port does not have +12 V connected to pin 9, that port can be used to wake up the terminal from Standby via activity on the RI pin.
- COMA and COMMB ports are provided in a DB9 dual stack configuration. Color: Teal or Turquoise
- COMC and COMD are individually mounted on the Back Panel and connected to the Motherboard with cables. Color: Black

PIN No.	Signal Description
1	DCD (Data Carrier Detect)
2	RXD (Receive Data)
3	TXD (Transmit Data)
4	DTR (Data Terminal Ready)
5	GND (Ground)
6	DSR (Data Set Ready)
7	RTS (Request to Send)
8	CTS (Clear to Send)
9	RI (Ring Indicator) or +5V or +12V

**+24 V USB +Power Port (G)**

- The 24V Powered USB port is capable of supplying 24V at 0.5A continuous and 3.0A peak. The 24V is fused with a socketed fuse: Littelfuse P/N 154003TDR or NCR P/N 006-8610783.
- 24 V at 2.3A (max)

**Note:** This port may also be used to provide power only for a printer that uses an RS 232 I/F to connect to the 7601.

- Color: Warm Red (Pantone 032C)

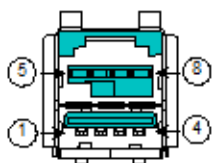
PIN No.	Signal Description	PIN No.	Signal Description
1	USB+5V	5	24V_RET
2	USBDATA-	6	+24V
3	USBDATA+	7	+24V
4	Ground	8	+24V_RET



### +12 V USB +Power port

There are four external +12 V USB +Power ports, one standard on the Motherboard (C) and three on the optional Daughter Card (E, F, G).

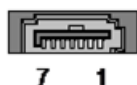
- The 12V Powered USB ports are capable of supplying 12V at 2.0A max. Each port is fused with a self healing poly-fuse: Polytronics Everfuse P/N: SMD2920P300TF/15 or NCR approved equivalent.
- A single self-healing polyfuse protects the +5V of both ports (12V and 24V USB + Power ports): Polytronics Everfuse P/N: SMD1812P160TF or NCR approved equivalent.
- Color: Teal (Pantone 3262C)
- Connector: Foxconn P/N UB11123-GHT2-4F or NCR approved equivalent



- 12 V at 1.5 A (max)
- Color: Teal

PIN No.	Signal Description	PIN No.	Signal Description
1	+5V	5	Ground
2	USB DATA-	6	+12V
3	USB DATA+	7	+12V
4	Ground	8	Ground

### SATA

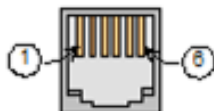


PIN No.	Signal Description
S1	Ground
S2	TXP
S3	TXN
S4	Ground
S5	RXN
S6	RXP
S7	Ground

### Cash Drawer Kickout

The 7601 Motherboard provides support for two 24V Cash Drawers on a single connector. The two cash drawers share a common switch status signal. The 24V is the same fused +24V used for the +24V USB plus power port.

- Color: None specified
- 6-position RJ45 connector



PIN No.	Signal Description
1	Frame GND
2	Solenoid A
3	Drawer A/B Open/Close Status
4	+24 V
5	Solenoid B
6	Logic GND

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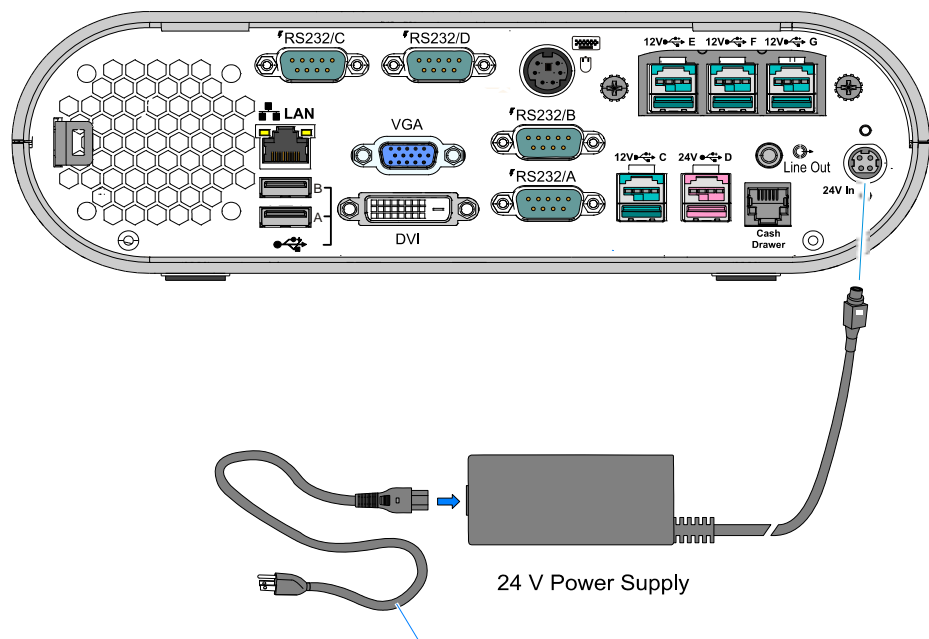
## Chapter 5: Power Supply

---

The 7601 uses an external power brick to power the terminal and its powered peripherals.

**Caution:** The 7601 requires the NCR 24 V power supply that is shipped with the terminal. Use of other power bricks may cause damage to the unit.

- 24 V, 150 W Continuous Output power
- MEPS Level V mark (efficiency 87% minimum), Energy Star 5.0 capable
- Auto Detection to switch between 115VAC or 230VAC
- PFC per EN61000-3-2 (120VAC / 240VAC operation )
- Fanless, sealed case
- 300,000 hour Mean Time Between Failures (MTBF)
- RoHS and WEEE Compliant
- Supports 24V retail printers at 55W maximum when connected to 7601



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

28689a

## AC Input

Range	Nominal Vrms	Minimum Vrms	Maximum Vrms	Input Current Max. Arms
Low (115)	100-127	90	136	2.2 A
High (230)	200-240	180	264	1.2 A

### Input Frequency Range

47 Hz – 63 Hz

## DC Output

Output Voltage	Minimum	Maximum	Regulation
24 V	0 A	6.25 A	10% / -5%

## Maximum Rated Output Power

The maximum rated output power as defined as the continuous load is 150W.

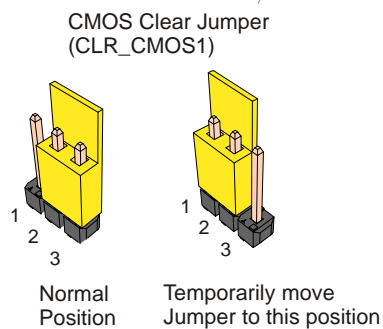
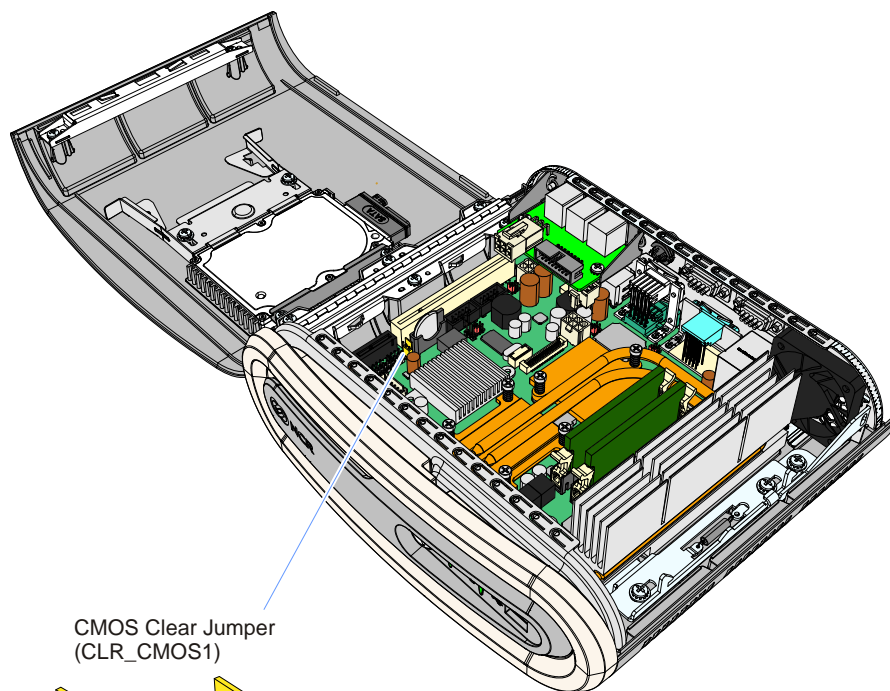
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## Chapter 6: Clearing the CMOS/Password

---

The CMOS/Password can be cleared as follows.

1. Turn the power off and disconnect power from the Terminal.
2. Open the Top Cover.
3. Temporarily move the shunt from the Normal position (Pins 1-2) to Pins 2-3.
4. Move the shunt back to the Normal position.
5. Close the Top Cover.
6. Connect power and turn on the terminal. CMOS/Password is cleared when power is applied.





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## Appendix A: IRQ Assignments

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IRQ	Priority	Default Function
0	1	System Timer
1	2	Keyboard Controller
2	N/A	Programmable Interrupt
3*	11	Communication Port (COM1)
4*	12	Communication Port (COM2)
5	13	Printer Port (LPT2)
6	14	Floppy Disk Drive Controller
7*	15	Printer Port (LPT1)
8	3	System CMOS/Real Time Clock
9*	4	ACPI Controller
10*	5	IRQ Holder for PCI Steering
11*	6	IRQ Holder for PCI Steering
12*	7	PS/2 Compatible Mouse Port
13*	8	Numeric Data Processor
14*	9	Primary IDE Channel
15*	10	Secondary IDE Channel

\* IRQ that is usually available for ISA or PCI devices.

