User Manual

Allen-Bradley

Non-display Industrial Computers

Catalog Numbers 6177R-MM, 6177R-RM, 6189V-DVIVGA, 6189V-HDDTRAY, 6189V-PCIBARMM, 6189V-PCIBARRM, 6189V-PSU600W, 6189V-RACKSLIDES, 6189V-4GDDR3, 6189V-8GDDR3, 6189V-16GDDR3, 6189V-35HDD500GB, 6189V-35SSD128GB

Important User Information

Read this document and the documents listed in the additional resources section about installation, configuration, and operation of this equipment before you install, configure, operate, or maintain this product. Users are required to familiarize themselves with installation and wiring instructions in addition to requirements of all applicable codes, laws, and standards.

Activities including installation, adjustments, putting into service, use, assembly, disassembly, and maintenance are required to be carried out by suitably trained personnel in accordance with applicable code of practice.

If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

In no event will Rockwell Automation, Inc. be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

No patent liability is assumed by Rockwell Automation, Inc. with respect to use of information, circuits, equipment, or software described in this manual.

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Throughout this manual, when necessary, we use notes to make you aware of safety considerations.

	**WARNING:** Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.
	**ATTENTION:** Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you identify a hazard, avoid a hazard, and recognize the consequence.
IMPORTANT	Identifies information that is critical for successful application and understanding of the product.

Labels may also be on or inside the equipment to provide specific precautions.

	**SHOCK HAZARD:** Labels may be on or inside the equipment, for example, a drive or motor, to alert people that dangerous voltage may be present.
	**BURN HAZARD:** Labels may be on or inside the equipment, for example, a drive or motor, to alert people that surfaces may reach dangerous temperatures.
	**ARC FLASH HAZARD:** Labels may be on or inside the equipment, for example, a motor control center, to alert people to potential Arc Flash. Arc Flash will cause severe injury or death. Wear proper Personal Protective Equipment (PPE). Follow ALL Regulatory requirements for safe work practices and for Personal Protective Equipment (PPE).

This manual contains new and updated information. Changes throughout this revision are marked by change bars, as shown to the right of this paragraph.

New and Updated Information

This table contains the changes made to this revision.

Topic	Page
Expanded Abbreviations table	10
Added link to Rockwell Automation Product Compatibility and Download Center (PCDC) website	11, 49
Revised item 2 component description in table for Figure 5	17
Updated information in 'Mounting Clearance Requirements' section	22
Moved existing installation and mounting information into 'Install the Computer' section	24
Updated IEC numbers for power cord in 'Connect Power' section	29
Added information in 'Connect Power' section	29
Added information in 'Functional Ground Screw' section	29
Added information in 'Connect to a Network' section	30
Revised and added information in 'Start the Computer' section	32
Replaced 'reset' with 'restart' in 'Restart the Computer' section	33
Added information in 'Shut Down the Computer' section	34
Added the 'Drive Precautions' section	40
Revised 'Replace an Existing HDD' title to 'Replace a Drive'	40
Revised step 8 in 'Replace the RTC Battery' section	45
Added 'Hardware Monitoring' section	83
Added Tip table in 'Troubleshooting' section	84
Revised and added information in 'Diagnostic' section	86
Added information in 'Load the System Defaults' section	87
Added 'Clear the UEFI' section	88
Added link to Rockwell Automation Computers and Operators Interface website	89
Changed title and added Specifications column to Table 1	89
Added Turkey RoHS statement in Certifications table	91
Added steps 8 through 10 in 'Install Rack Slides (1450R Computer)' section	101
Added Appendix C, Upgrade to a New BIOS	103

Notes:

Chapter 4

Component Replacement

Chapter 5

UEFI Set-up Utility

Chapter 6

System Troubleshooting

Appendix A

Specifications

Appendix B

Accessories Installation

Index

Notes:

Preface Objectives

This preface covers the following topics:

- Purpose of This Manual
- Additional Resources
- Abbreviations

Purpose of This Manual

This manual is a user guide for non-display industrial computers. It provides procedures to the following:

- Install the computer.
- Make computer connections.
- Operate the computer.
- Troubleshoot the computer.

Additional Resources

These documents contain additional information to related products from Rockwell Automation.

Resource	Description
Industrial Non-display Computers Product Information, publication 6177R-PC001	Provides basic product information on the non-display industrial computers.
Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1	Provides general guidelines for installing a Rockwell Automation® industrial system.

You can view or download publications at http://www.rockwellautomation.com/literature. To order paper copies of technical documentation, contact your local Allen-Bradley distributor or Rockwell Automation sales representative.

Abbreviations

This publication can use the following abbreviations.

Abbr	Meaning
ACPI	Advanced configuration (and) power interface
AHCI	Advanced host controller interface
AMI	American Megatrends, Inc.
AMT	Active management technology
BIOS	Basic input/output system
CF	CompactFlash
CPU	Central processing unit
CMOS	Complementary metal oxide semiconductor
COM	Communication (serial port interface)
CRC	Cyclic redundancy clock
DDR	Double data rate (RAM)
DIMM	Dual in-line memory module
DVI	Digital video interface
DVMT	Dynamic video memory technology
ECC	Error correcting code
EEA	European Environment Agency
EMC	Electromagnetic compatibility
EOS	Embedded operating system
ESD	Electrostatic discharge
EWF	Enhanced write filter
FAT	File allocation table
HDD	Hard disk drive
HORM	Hibernate once, resume many
IDE	Integrated device electronics
IEC	International Engineering Consortium
IGD	Intel graphics driver
KVM	Keyboard video mouse
LAN	Local area network
NEMA	National Electrical Manufacturers Association
ODD	Optical disk drive

Abbr	Meaning
PCB	Printed circuit board
PCDC	Product Compatibility and Download Center
PCH	Platform control hub
PCI	Peripheral component interconnect
PCIe	Peripheral component interconnect express
PEG	PCI express graphics
PELV	Protective extra-low voltage
PERR	PCI parity error
POST	Power on self test
PSU	Power supply unit
PXE	Pre-boot execution environment
RAID	Redundant array (of) independent disks
RAM	Random access memory
RIUP	Remove or insert under power
RMS	Root-mean-square
RTC	Real-time clock
SAS	Serial attached SCSI
SATA	Serial advanced technology attachment
SCSI	Small computer system interface
SELV	Safety extra-low voltage
SERR	PCI signal error
SPD	Serial presence detect
SSD	Solid-state drive
TFT	Thin film transistor
UEFI	Universal extensible firmware interface
USB	Universal serial bus
UPS	Uninterruptible power source
VBAT	Voltage (battery)
VDDR	Voltage (DDR RAM)
VGA	Video graphics array

Features

Chapter Objectives

This chapter provides information on the following topics:

- Computer Overview
- Operating Systems
- Computer Options
- Before You Begin
- Parts List
- Hardware Features

Computer Overview

Non-display industrial computers run operations from small visual interface and maintenance applications to large control and information applications. Combine an industrial display with the 750R (catalog number 6177R-MM) or 1450R (catalog number 6177R-RM) computer to complete your system.

These computers are available with performance, advanced, and server features. They come standard with a selection of I/O ports for peripheral connections and expansion slots.

Operating Systems

The following Microsoft-licensed operating systems are available:

- Windows 7 Professional (64 bit)
- Windows XP Professional, Service Pack 3
- Windows Server 2008 R2 (64 bit)

No operating system updates have been applied to the factory image beyond the service packs.

Computers with HDDs include a recovery partition with the original factory image. You can use AMI Rescue embedded in the BIOS/UEFI set-up utility to restore the operating system from the recovery partition, and create a new recovery image. Refer to AMI Rescue on page 75 for instructions.

To obtain a copy of a factory system image, contact your local technical support center or access the Rockwell Automation Product Compatibility and Download Center (PCDC) at http://www.rockwellautomation.com/support/pcdc.page.

Computer Options

This table summarizes the options available for non-display industrial computers. A comparative summary of features for the computers is in Appendix A, Specifications on page 87.

Cat. No.	Model	Form Factor	Package	Windows OS
6177R-RMPXP	1450R	4U rack mount	Performance	XP Professional SP3
6177R-RMPW7				7 Professional 64 bit
6177R-RMPNO				None
6177R-RMRNO			Redundant	
6177R-RMAW7			Advanced	7 Professional 64 bit
6177R-RMSS8			Server	Server 2008 R2 64 bit
6177R-RMSNO				None
6177R-MMPXP	750R	Machine mount	Performance	XP Professional SP3
6177R-MMPW7				7 Professional 64 bit
6177R-MMPNO				None
6177R-MMAW7			Advanced	XP Professional SP3
6177R-MMSS8			Server	Server 2008 R2 64 bit
6177R-MMSNO				None

Before You Begin

Before unpacking the computer, inspect the shipping carton for damage. If damage is visible, immediately contact the shipper and request assistance. Otherwise, proceed with unpacking.

Keep the original packing material in case you need to return the computer for repair or transport it to another location. Use both inner and outer packing cartons to provide adequate protection for a computer returned for service.

Parts List

The computers ship with the following items.

Item	Description
Hardware	• Power cord for AC power models • Mounting hardware – Rack handles for 1450R computers – Mounting brackets for 750R computers – Mounting fasteners – Cable ties for internal USB device • Keys for door lock for 1450R computers • Assembly screw bag • DVI-to-VGA adapter • Industrial Computer System Cloning Utility CD (red) • CD with CD/DVD burning software(1)
Documents	• Non-display Industrial Computers Product Information, publication 6177R-PC001 • Shipped Compact Discs (CDs) Update Release Note, publication 6000-RN009 • China RoHS hazardous material table insert • Production test report

(1) Shipped only with computers with the Windows XP Professional operating system.

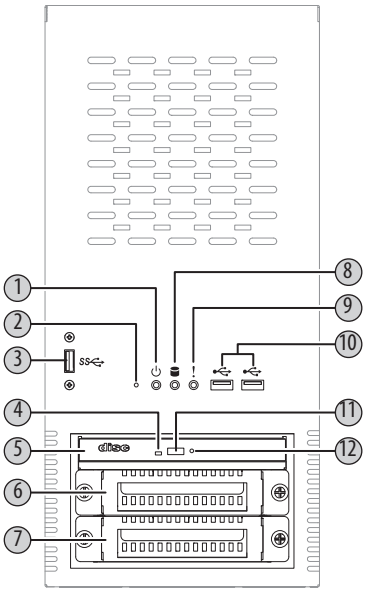
Hardware Features

The illustrations in this section show the hardware features of each computer:

- Exterior views
  - Front panel
  - Rear panel
- Status indicators
- System boards
  - Motherboard
  - Front panel board
  - HDD adapter boards
  - PCI expansion board

750R Computer

Figure 1 - Front Panel



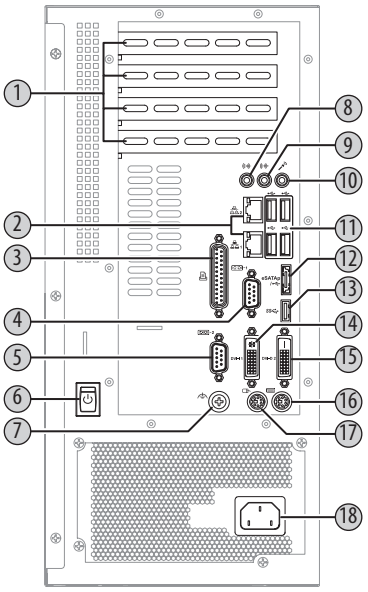
Item	Icon	Component
1		Power status indicator
2		Reset button
3	SS	USB 3.0 port
4		ODD access indicator
5		ODD SATA 2
6		HDD SATA 0(1)

Item	Icon	Component
7		HDD SATA 1(2)
8		Disk drive access status indicator
9	!	System health status indicator
10		USB 2.0 ports, 2
11		ODD eject button
12		ODD mechanical eject hole

(1) Computers with the Windows Server 2008 R2 operating system ship with two HDDs, both configured for RAID 1 operation. Computers that ship with two HDDs but no operating system are not configured for RAID 1 operation.

(2) Second HDD is optional for computers with operating systems other than Windows Server 2008 R2.

Figure 2 - Rear Panel

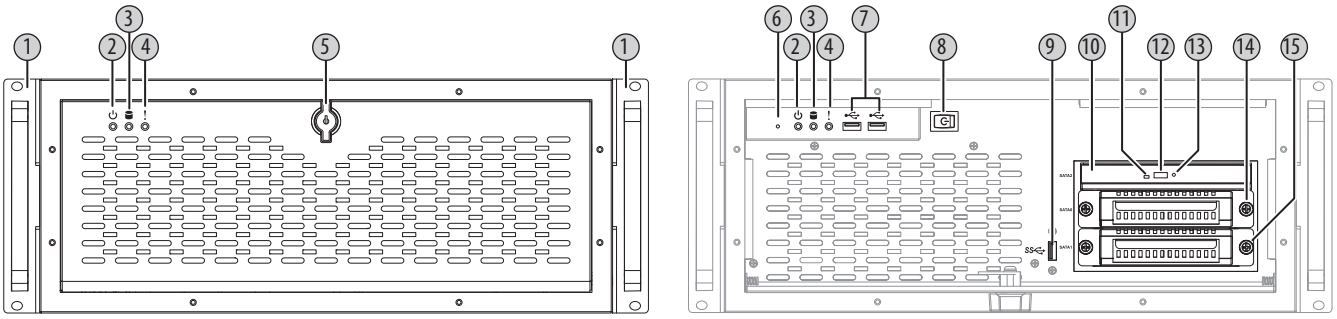


Item	Icon	Component
1		PCI expansion slot covers, 4
2		Gigabit LAN ports, 2
3		Parallel port
4	-1	Serial COM1 port (RS-232)
5	-2	Serial COM2 port (RS-232)
6		Power switch
7		Functional ground screw
8		Line-in jack
9		Line-out jack

Item	Icon	Component
10		Microphone-in jack
11		USB 2.0 ports, 4
12	eSATAp/	eSATAp port
13	SS	USB 3.0 port
14	DVI-I 1	DVI-I1 port
15	DVI-D 2	DVI-D2 port
16		PS/2 keyboard port
17		PS/2 mouse port
18		Power input, AC

1450R Computer

Figure 3 - Front Panel



With Door Closed

With Door Open

Item	Icon	Component
1		Rack handle
2		Power status indicator
3		Disk drive access status indicator
4		System health status indicator
5		Door lock

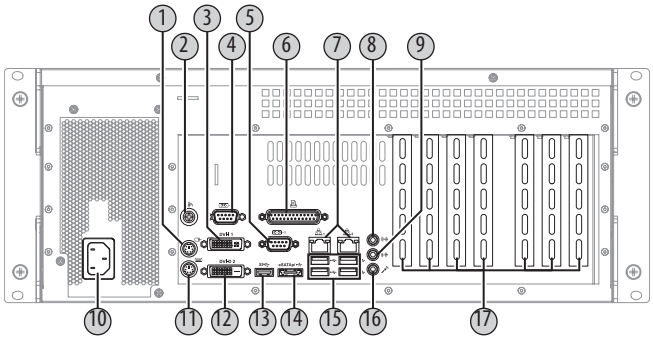
Item	Icon	Component
6		Reset button
7		USB 2.0 ports, 2
8		Power switch
9		USB 3.0 port
10		ODD SATA 2

Item	Icon	Component
11		ODD access indicator
12		ODD eject button
13		ODD mechanical eject hole
14		HDD SATA 0(1)
15		HDD SATA 1(1)(2)

(1) Computers with the Windows Server 2008 R2 operating system ship with two HDD, both configured for RAID 1 operation. Computers that ship with two HDDs but no operating system are not configured for RAID 1 operation.

(2) Second HDD is optional for computers with operating systems other than Windows Server 2008 R2.

Figure 4 - Rear Panel



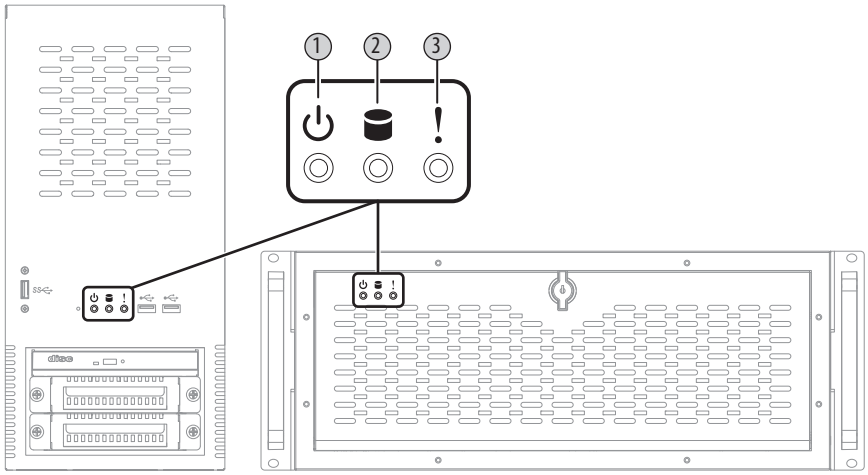
Item	Icon	Component
1		PS/2 mouse port
2		Functional ground screw
3	DVI-D 2	DVI-D2 port
4	-2	Serial COM2 port (RS-232)
5	-1	Serial COM1 port (RS-232)
6		Parallel port

Item	Icon	Component
7		Gigabit LAN ports, 2
8		Line-in jack
9		Line-out jack
10		Power input, AC
11		PS/2 keyboard port
12	DVI-I 1	DVI-I1 port

Item	Icon	Component
13		USB 3.0 port
14	eSATAp/	eSATAp port
15		USB 2.0 ports, 4
16		Microphone-in jack
17		PCI expansion slot covers, 7

Status Indicators

There are three status indicators on the front panel of the 750R and 1450R computers. These indicators aid in issue diagnosis by providing status information of different system components.



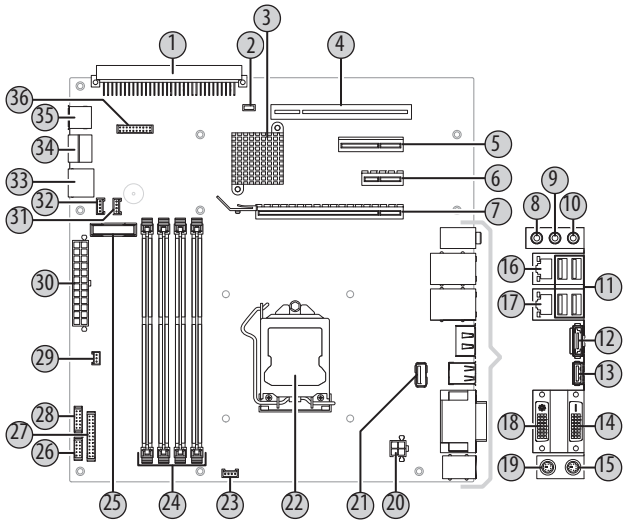
750R-Front Panel 1450R-Front Panel

Item	Icon	Indicator	Status	Description
1	⏻	Power status	Green	The computer is operating.
			Flashing orange	The computer is in Standby mode.
			Off	The computer is off.
2	⛁	Disk drive access status	Flashing red	HDD or ODD activity.
			Off	No HDD or ODD activity.
3	!	System health status	Red	The computer's temperature threshold has been exceeded.
			Off	System health is normal.

System Boards

The illustrations in this section show the system board layouts for the computers. The 750R and 1450R computers share the same set of system boards except for the PCI expansion board, which is available only on 1450R computers.

Figure 5 - Motherboard

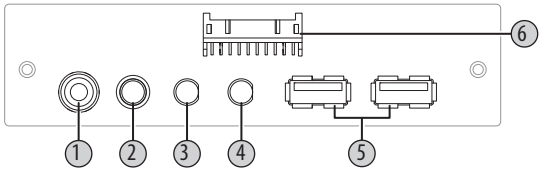


Item	Component
1	PCI expansion board connector
2	Clear UEFI (CMOS1) jumper
3	Platform control hub
4	PCI expansion slot
5	PCIe x4 expansion slot
6	PCIe x1 expansion slot
7	PCIe x16 expansion slot
8	Line-in jack
9	Line-out jack
10	Microphone-in jack
11	Rear USB 2.0 ports, 4
12	eSATAp port

Item	Component
13	Rear USB 3.0 port
14	DVI-D2 connector
15	PS/2 keyboard port
16	Gigabit LAN2 port
17	Gigabit LAN1 port
18	DVI-I1 connector
19	PS/2 mouse port
20	+12V 4 pin power connector
21	Internal USB 3.0 connector
22	LGA1155 processor socket
23	Processor fan connector
24	DDR3 DIMM slots, 4

Item	Component
25	Battery socket
26	Serial port (COM1)
27	Internal parallel connector
28	Serial port (COM2)
29	Power switch cable connector
30	ATX 24-pin power connector
31	System fan 2 connector
32	System fan 1 connector
33	SATA 3.0 cable connector
34	SATA 2.0 cable connector
35	Internal USB 2.0 connector
36	Front panel board cable connector

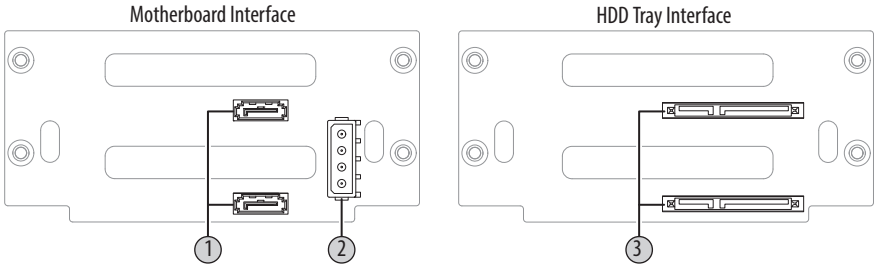
Figure 6 - Front Panel Board



Item	Component
1	Reset button
2	Power status indicator
3	Disk drive access indicator

Item	Component
4	System health indicator
5	USB 2.0 ports
6	Front panel board cable connector

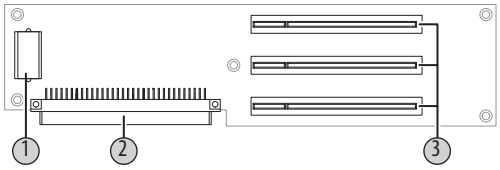
Figure 7 - HDD Adapter Boards



Item	Component
1	SATA cable connectors
2	Power connector

Item	Component
3	SATA drive connectors

Figure 8 - PCI Expansion Board (1450R computers)



Item	Component
1	PCI expansion board power connector
2	Motherboard connector

Item	Component
3	PCI expansion slots

Installation

Chapter Objectives

This chapter provides information on the following topics:

Review each mounting type and computer dimensions before installing.

Installation Precautions

Read and follow these precautions before installing the computer.

Environment and Enclosure Information

ATTENTION: This equipment is intended for use in a Pollution Degree 2 industrial environment, in overvoltage Category II applications (as defined in IEC 60664-1), at altitudes up to 2000 m (6561 ft) without derating.

This equipment is considered Group 1, Class A industrial equipment according to IEC/CISPR 11. Without appropriate precautions, there can be potential difficulties ensuring electromagnetic compatibility in other environments due to conducted as well as radiated disturbance.

This equipment is supplied as open type equipment. The interior of the enclosure must be accessible only by the use of a tool. UL Listed equipment need not be mounted inside another enclosure. Subsequent sections of this publication can contain additional information regarding specific enclosure type ratings that are required to comply with certain product safety certifications.

In addition to this publication, see the following:

- Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1, for additional installation requirements
- NEMA Standards 250 and IEC 60529, as applicable, for explanations of the degrees of protection provided by different types of enclosure

European Union Directive

This computer meets the European Union Directive requirements when installed within the European Union or EEA regions and have the CE mark. A copy of the declaration of the conformity is available at http://www.rockwellautomation.com/certification.

ATTENTION: This computer is intended to operate in an industrial or control room environment, which uses some form of power isolation from the public low–voltage mains. Some computer configurations cannot comply with the EN 61000-3-2 Harmonic Emissions standard as specified by the EMC Directive of the European Union. Obtain permission from the local power authority before connecting any computer configuration that draws more than 75 W of AC power directly from the public mains.

To comply with EN 55024, the Ethernet port LAN cable must be only used indoors. All other I/O cables must be less than 3 m (9.84 ft) and only used indoors.

Installation Guidelines

Follow these guidelines to make sure your computer provides safe and reliable service:

- The installation site must have sufficient power.

ATTENTION: To maintain an electrically safe installation, AC powered computers must be plugged into a grounded outlet.

- In dry environments, static charges can build up easily. Proper grounding of the computer helps to reduce static discharges, which can cause shock and damage electronic components.
- The enclosure must allow sufficient space around air inlets and outlets to provide the circulation necessary for cooling. See Mounting Clearance Requirements on page 22 for further information. Never allow air passages to become obstructed.
- The ambient air temperature must not exceed the maximum operating temperature specified in Table 7 on page 91. Consider a user-supplied fan, heat exchanger, or air conditioner for heat generated by other devices in the enclosure.

TIP Hot air rises. The temperature at the top of the enclosure is often higher than the temperature in other parts of the enclosure, especially if air is not circulating.

IMPORTANT The computer can operate at a range of extremes. However, the life span of any electronic device is shortened if you continuously operate the computer at its highest rated temperature.

- The humidity of the ambient air must not exceed limits specified in Table 7 on page 91 and must avoid condensation.
- The enclosure or cover must remain in place at all times during operation. The cover provides protection against high voltages inside the computer and inhibits radio-frequency emissions that can interfere with other equipment.

Mounting Clearance Requirements

When selecting an installation site for the computers, allow a minimum of 76 mm (3 in.) clearance at the front and rear of the computer for adequate ventilation and cable connections.

IMPORTANT Because of self-heating, do not operate the computer in an enclosure with the minimum clearances unless adequate ventilation or other cooling methods are used to lower the temperature within the enclosure.

Allow enough clearance to easily install or remove peripheral components, such as internal drives.

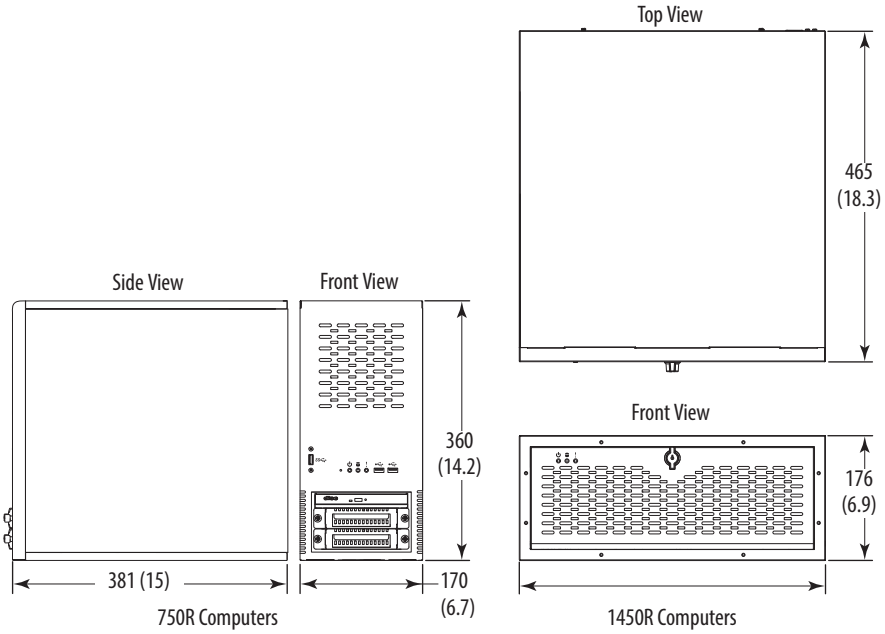
Mounting Hardware

The table lists the hardware required for each type of installation.

Description	Cat. No.	Mounting Type	Supplied with computer?	Applies to	Cat. No.
Mounting brackets (2)	N/A	Machine or wall	Yes	750R	6177R-MMPXP 6177R-MMPW7 6177R-MMPN0 6177R-MMSS8 6177R-MMAW7 6177R-MMSN0
Rack handles (2)	N/A	Rack	Yes	1450R	6177R-RMPXP 6177R-RMPW7 6177R-RMPN0 6177R-RMRN0 6177R-RMSS8 6177R-RMAW7 6177R-RMSN0
Rack slides (2)	6189V-RACKSLIDES	Rack	No		

Computer Dimensions

Review computer dimensions to estimate the clearance necessary for computer installation. Dimensions are given in mm (in.).



Required Tools

These tools are required for computer installation:

- #2 cross-head screwdriver
- Slot-head screwdriver
- Drill motor and drill bit
- Antistatic wrist strap

Install the Computer

The computers support the following mounting options:

- Machine or wall mount (for 750R models)
- Rack mount (for 1450R models)

Mount the 750R Computer

You can mount the 750R computer on any flat surface, such as a shelf inside a machine or against a wall, by using mounting brackets. Holes are provided on both sides of the 750R computer for side mounting installation.

TIP For ease of installation, use two or more people to install the computer.

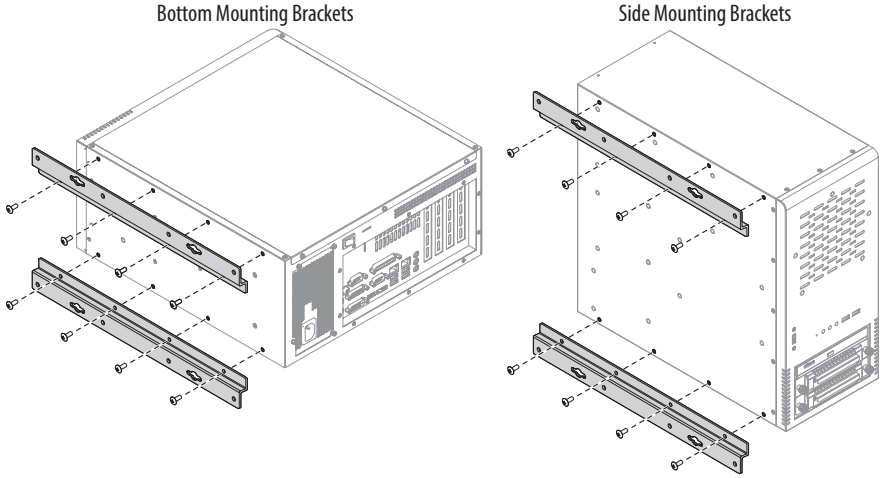
Follow these steps to mount the 750R computer.

1. Verify that the mounting location provides adequate space for cables and air flow.

   See Mounting Clearance Requirements on page 22 for recommended allowances.

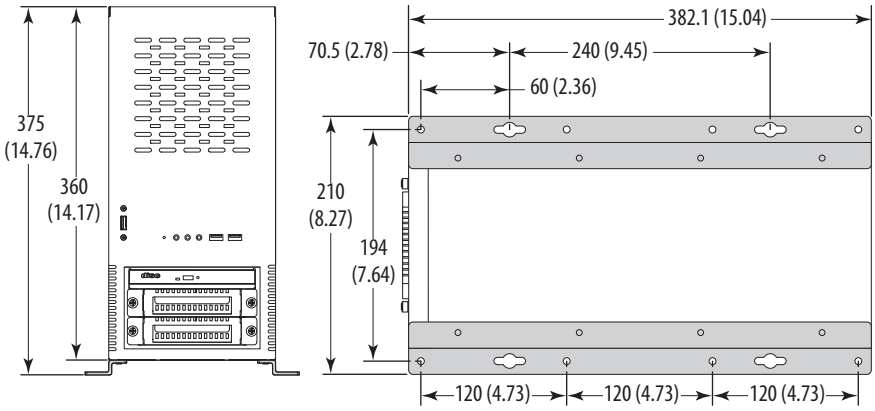
2. Decide where you will locate the mounting brackets (the bottom side for an upright installation or the side for a wall installation).
3. Attach each mounting bracket to the computer with four screws.

   Torque the screws to 1.3 N•m (12.1 lb•in).



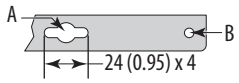
4. Use the figure and table below to decide which mounting holes to use on the bracket.
5. Depending on your application, drill holes in the wall or shelf to accommodate screws sized M6...M8.

Bottom Mounting Bracket Hole Locations

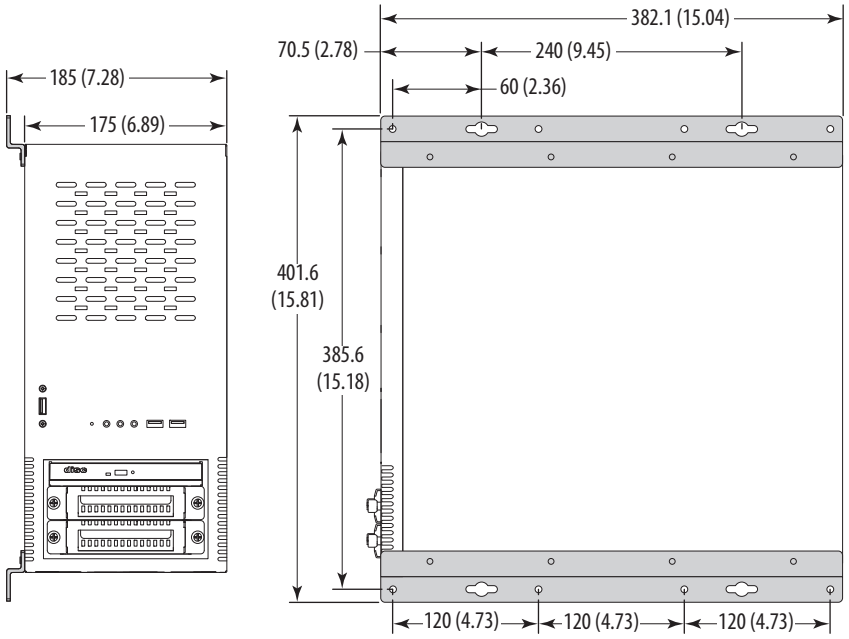


Dimensions are in mm (in.).
IMPORTANT: Bottom view enlarged for detail and not in scale to front view.

Mounting Hole Details (all brackets)



Side Mounting Bracket Hole Locations



Callout	Dim, mm (in.)	Qty	Description
A	Ø 10 (0.39)	4	Use these mounting holes for the following. • You are replacing a legacy computer. • Shock and vibration **are not** environmental elements.
B	Ø 6.5 (0.25)	8	Use these mounting holes when shock and vibration **are** environmental elements.

6. Fasten the computer to the wall or shelf with M6...M8 mounting screws.

Mount the 1450R Computer in a Rack Cabinet

You can install the 1450R computer in a rack cabinet that does the following:

- Conforms to EIA standards for equipment with 483 mm (19 in.) wide panels
- Accommodates the computer's 4U height and depth
- Provides rear clearance for cables and air flow

A rack cabinet with a depth of 610 mm (24 in.) is sufficient.

IMPORTANT Rack slides are not supplied with the computer and must be ordered separately.

See Mounting Hardware on page 22 for the catalog number necessary for ordering.

See Install Rack Slides (1450R Computer) on page 98 if you have purchased the rack slides.

The computer must be supported by rack slides or fastened to a shelf. The four flanges of the computer are intended to only secure the computer horizontally to the front mounting rails of the rack cabinet.

TIP For ease of installation, use two or more people to install the computer.

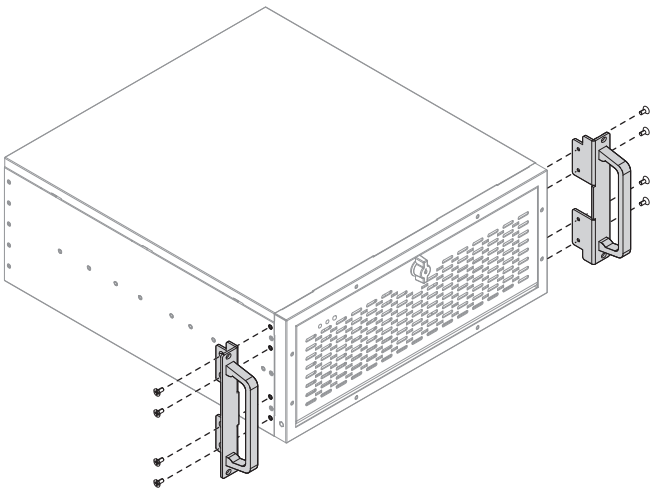
Follow these steps to mount the 1450R computer.

1. Verify that the mounting location provides adequate space for cables and air flow.

   See Mounting Clearance Requirements on page 22 for recommended allowances.

2. Attach the supplied rack handles to the computer.

   Torque the screws to 1.3 N•m (12.1 lb•in).

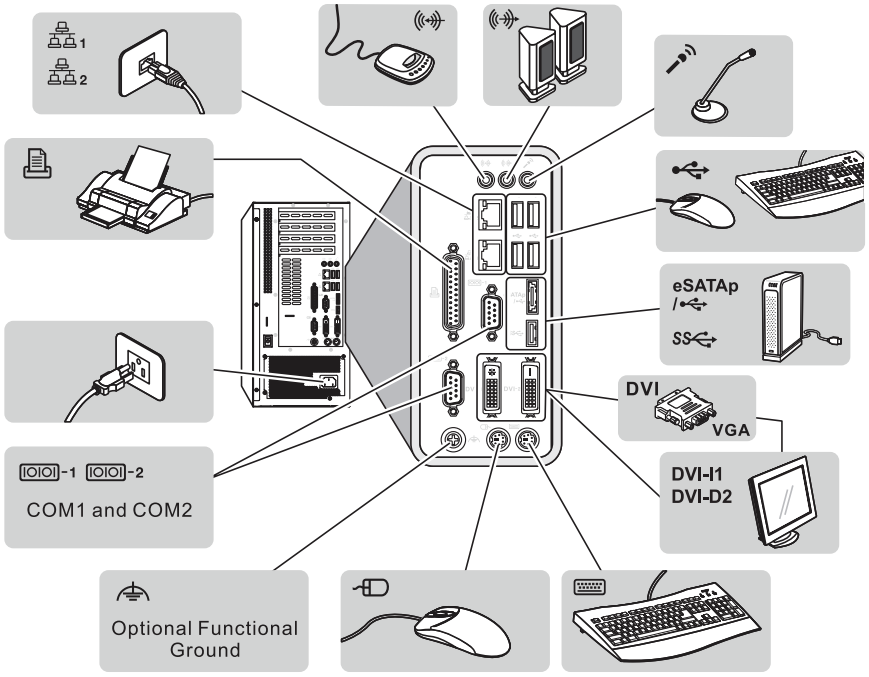


3. See Install Rack Slides (1450R Computer) on page 98 on how to install rack slides to the rack cabinet and the 1450R computer.

Connect Peripherals

The following illustration shows the I/O port panel of the computers. Peripheral components compatible to each port are inside the callout figures.

Figure 9 - 750R and 1450R Computer Peripherals



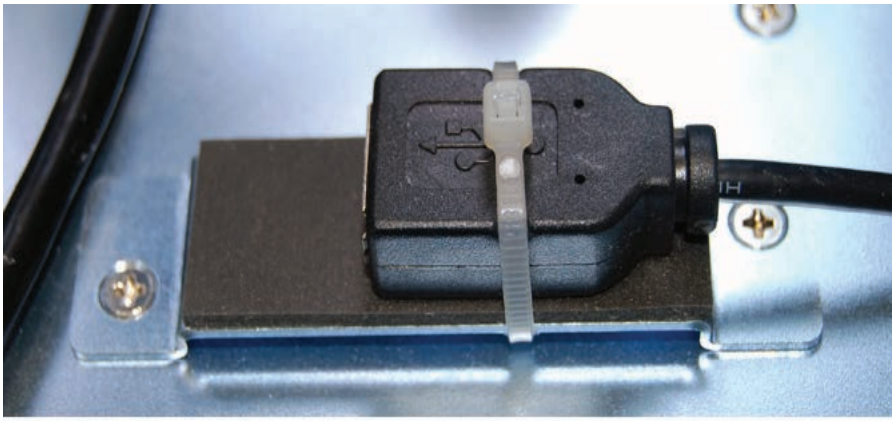
TIP

- There are three USB ports on the computer's front panel. Use these ports to connect various USB devices to the computer, such as an external drive.
- You can use a DVI-to-VGA adapter to connect an external VGA display to the DVI-I1 port of the computer.

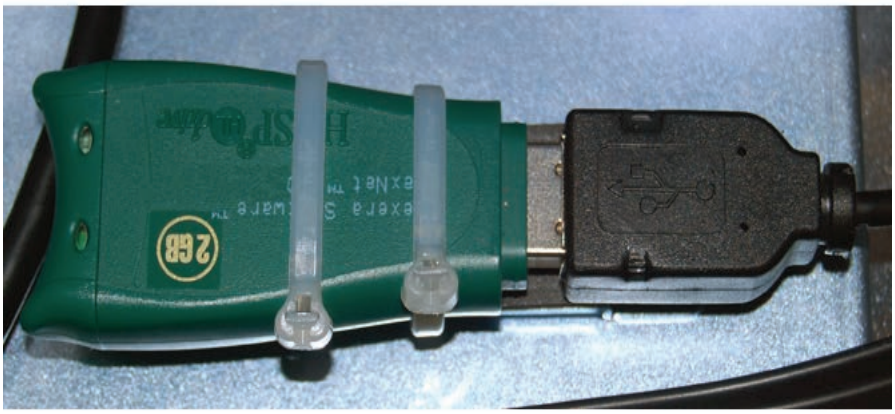
Internal USB Port

There is an internal USB port for activation dongles or other USB storage devices. The port is accessible by removing the computer cover.

See Chapter 4 for removing and reinstalling the computer cover.



Internal USB port secured with factory installed cable tie.



An activation dongle connected to internal USB port and secured with the supplied cable ties.

TIP To connect an external device, cut the factory installed cable tie that secures the internal USB port.

We recommend that you fasten any device connected to the internal USB port with the supplied cable ties.

Connect Power

A grounded, 3-prong IEC60320-C13 power cord provides power to the computer. The power supply input accepts 100...240V AC and is autoranging.

ATTENTION: When connecting power to the computer for the first time, the following actions occur:

- The default BIOS/UEFI setting automatically starts the computer after it is plugged into a power source.
- You must read and accept an End User Setup procedure for computers with a Windows operating system (requires an external display).

  Do not disconnect power from the system until after the Windows Setup procedure is completed. Disconnecting power during this procedure can result in a corrupted system image.

Operate the computer in an industrial or control room environment, which uses some form of power isolation from the public low-voltage mains.

ATTENTION: Supply the computer circuit with its own disconnect. Use an uninterruptible power source (UPS) to protect against unexpected power failure or power surges.

Always shut down the Windows operating system before disconnecting power to the computer to minimize performance degradation and operating system failures.

Follow these steps to connect the computer to an AC power source.

1. Connect the power cord to the AC power input. See Hardware Features starting on page 13 for where the power inputs are on each computer model.
2. Connect the AC power cord to a power source.

   SHOCK HAZARD: Connect the AC power cord to a power source with an earth ground. Failure to follow this warning can result in electrical shock.

3. Apply 100...240V AC power to the computer.

Functional Ground Screw

The pre-installed functional ground screw is not required for safety or regulatory compliance. However, if a supplemental ground is desired, use the functional ground screw on the rear panel of the 750R and 1450R computers. See pages 14 and 15 for where the functional ground screw is on each computer model.

If using the functional ground screw, connect the computer to earth ground by using a 1.5 mm^2 (16 AWG) or larger external wire. Use a ground wire with green insulation and a yellow stripe for easy identification.

Connect to a Network

The computers connect to an Ethernet network by using CAT5 or CAT5e twisted-pair Ethernet cabling with RJ45 connectors. See Hardware Features starting on page 13 for where the LAN ports are on each computer model.

IMPORTANT To prevent performance degradation of Ethernet communication, do not subject the computer or cables to extreme radiation or conducted high-frequency noise.

Proper cable routing and power conditioning is required for reliable Ethernet communication in industrial environments. We recommend that you route all Ethernet cabling through dedicated metal conduits. Installing ferrite bead filters at the cable ends can also improve reliability.

Operation

Chapter Objectives

This chapter provides information on the following topics:

Operating Guidelines

Follow these operating guidelines for your computer:

- If you are using an external display, turn on the display first.
- Do not operate the computer with the covers removed. Removing the covers disrupts air flow and results in overheating.

SHOCK HAZARD: All covers are required to maintain EMI shield.

- Always use the proper power down procedures as required by your operating system, such as the Shut Down command in the Microsoft Windows operating system.
- After shutting down the computer, do not apply power again until shutdown is complete.

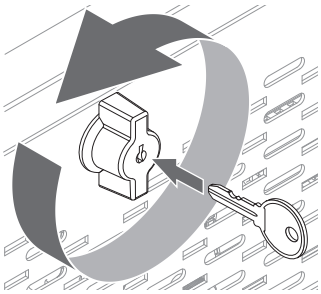
  For computers with a HDD, the HDD must come to a complete stop, which can take up to 30 seconds after shutdown is initiated.

Start the Computer

Follow these steps to start the computer.

IMPORTANT The following steps apply to when you must manually start the computer. See Connect Power on page 28 for when power is applied to the computer for the first time.

1. Make sure any connected components with separate power supplies (such as an external display) are turned on first.
2. Make sure all necessary peripheral devices are connected to the corresponding I/O ports on the computer.
3. If you have a1450R computer and the front door is locked, complete the following steps:
   a. Unlock the front door with the provided key.
   b. Open the door to access the power switch.



4. Plug the AC power cable into the power input on the computer and into a power source or wall outlet.

SHOCK HAZARD: Connect the AC power cord to a power source with an earth ground to prevent electrical shock. Failure to do so can result in electrical shock.

5. Press the computer's power switch.

   See Hardware Features starting on page 13 for the power switch location.

The computer performs certain actions every time it is started or reset. See Restart the Computer on page 33.

If your computer does not start or you notice other anomalies, refer to the Troubleshooting on page 83.

Restart the Computer

Use any of the following methods to restart your computer:

- From the Start menu, choose Restart.
- Press CTRL+ALT+DEL on an attached keyboard.
- Press the reset button.

During a restart, the computer does the following:

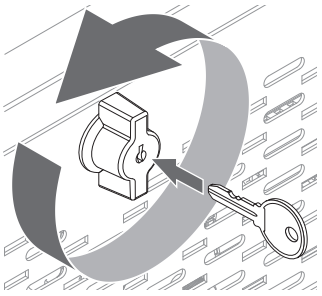
- Clears the RAM.
- Starts the POST.
- Initializes peripheral devices such as drives and printers.
- Loads the operating system.

Use an external display to view the progress of the POST, the initialization of accessory devices, and the start-up dialogs for the operating system that is installed.

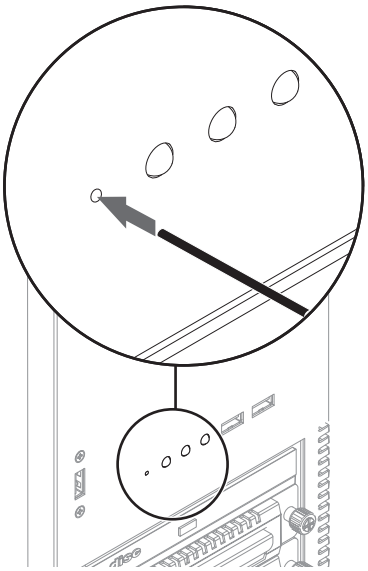
Restart the Computer with the Reset Button

IMPORTANT Press the reset button only if the system locks up or some other anomaly occurs.

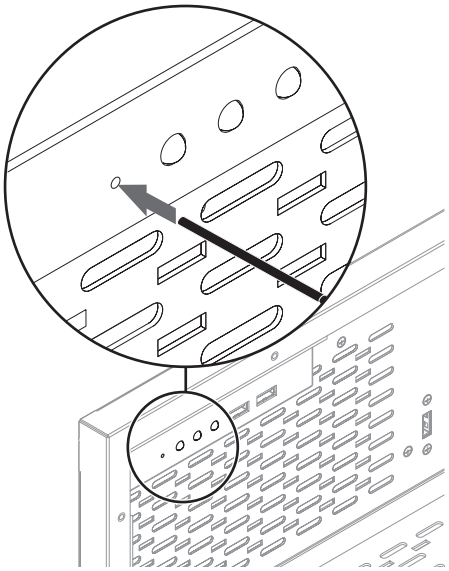
1. If you have a1450R computer and the front door is locked, complete the following steps:
   a. Unlock the front door with the provided key.
   b. Open the door to access the reset button.
2. Lightly press the tip of a stylus or any other pointed device to the computer's reset button.



Resetting the 750R Computer



Resetting the 1450R Computer



Shut Down the Computer

Use either of the following methods to shut down the computer.

Method	Actions
Windows OS	With an attached mouse, keyboard, and display, do one of the following. • Press CTRL+ALT+DEL and click Shut Down. • From the Start menu, click or choose Shut Down from the pull-down menu.
Power switch	Press the power switch to shut down the computer. See Hardware Features starting on page 13 for the power switch location.

After shutting down the computer, do not apply power again until shutdown is complete. For computers with a HDD, the HDD must come to a complete stop, which can take up to 30 seconds after shutdown is initiated.

Component Replacement

Chapter Objectives

This chapter provides information on the following topics:

Accessories and Replacement Parts

You can view a list of accessories and replacement parts at the following Rockwell Automation website at http://ab.rockwellautomation.com/Computers.

Review the specifications of a new component before installing it to make sure it is compatible with the computer. Record the model and serial number, and any other pertinent information of new components for future reference.

IMPORTANT We recommend that you use only Allen-Bradley approved accessories and replacement parts.

Voltage Precautions

The computers contain line voltages. Disconnect all power to the computer before you install or remove components.

SHOCK HAZARD: Disconnect all power to the computer before removing components.

Failure to disconnect power can result in severe electrical shock to an individual or electrostatic discharge (ESD) damage to the computer and components.

Electrostatic Discharge Precautions

ATTENTION: Electrostatic discharge (ESD) can damage static-sensitive devices or microcircuitry.

- Disconnect all power before working on the computer as detailed in Voltage Precautions on page 35.
- Observe proper packaging and grounding techniques to prevent damage.

Follow the precautions listed below:

- Transport the computer and replacement parts in static-safe containers, such as conductive tubes, bags, or boxes.
- Keep electrostatic-sensitive parts in their containers until they arrive at the designated static-free work area.
- Cover the designated work area with approved static-dissipating material:
  - Use an antistatic wrist strap connected to the work surface.
  - Use properly grounded tools and equipment.
- Keep the designated work area free of nonconductive materials, such as ordinary plastic assembly aids and foam packing.
- Avoid touching pins, leads, or circuitry.
- Always hold components with a printed circuit board (PCB) by its edges and place it with the assembly side down.

Pre-configuration

IMPORTANT When installing hardware or performing maintenance procedures that require access to internal components, we recommend that you first back up all computer data to avoid loss.

ATTENTION: Make sure to read and understand all installation and removal procedures before you begin configuring the computer hardware.

Follow these steps before removing the cover or replacing a hardware component.

1. Shut down the computer and all peripherals connected to it.
2. Disconnect all cables from power outlets to avoid exposure to high energy levels.

   If necessary, label each cable to expedite reassembly.
3. Disconnect telecommunication cables to avoid exposure to a shock hazard from ringing voltages.

Post-configuration

Follow these steps after installing or removing a hardware component.

1. Make sure all components are installed according to instructions.
2. Make sure that no tools or loose parts are left inside the computer.
3. Reinstall any expansion boards, peripherals, chassis cross members, and system cables that were previously removed.
4. Reinstall the cover according to the instructions on page 39.
5. Reconnect all external cables and power to the computer.
6. Press the computer's power switch to start the computer.

Required Tools

The following tools are required for component replacement:

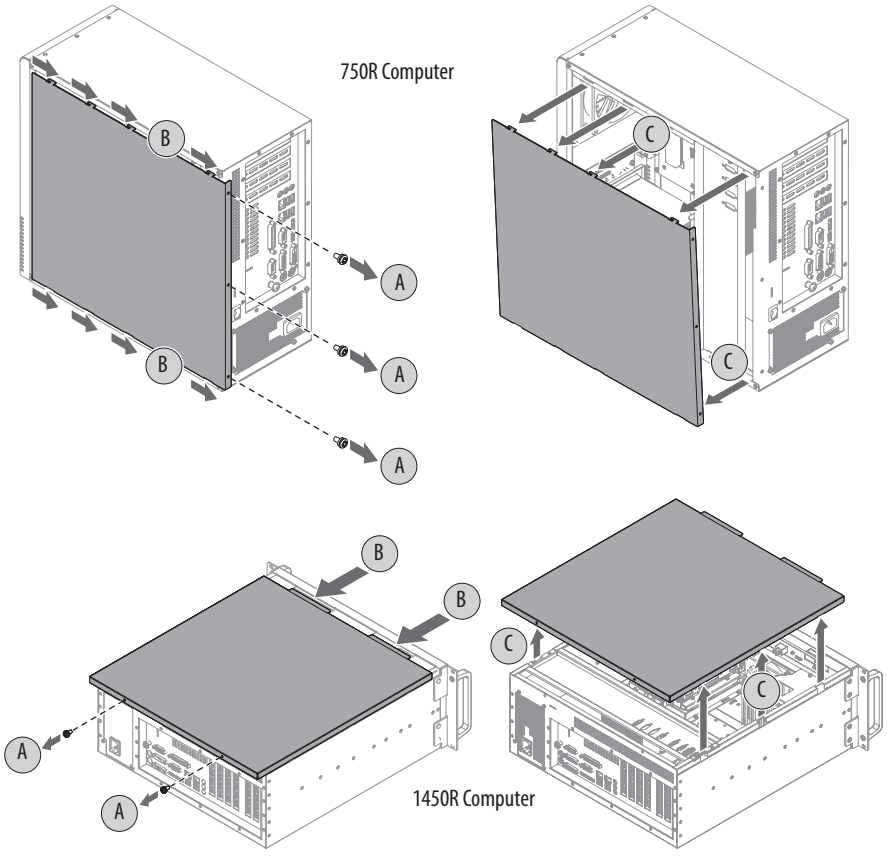
- #2 cross-head screwdriver
- Antistatic wrist strap
- Side cutters (for cutting cable ties, if necessary)

Remove the Cover

To install, replace, or upgrade internal computer components, you must first remove the cover.

Follow these steps to remove the side cover for a 750R computer or the top cover for a 1450R computer.

1. Follow the steps for Pre-configuration on page 36.
2. Unfasten the cover from the computer chassis:
   - 750R computers: Remove the three screws on the rear edge of the side cover (A).
   - 1450R computers: Remove the two screws on the rear edge of the top cover (A).
3. Slide the cover back about 1.5 cm (0.5 in.) to release the hinge tabs (B).
4. Tilt the cover up slightly to disengage the hinge tabs from their locking slots.
5. Pull the cover away from the chassis (C).



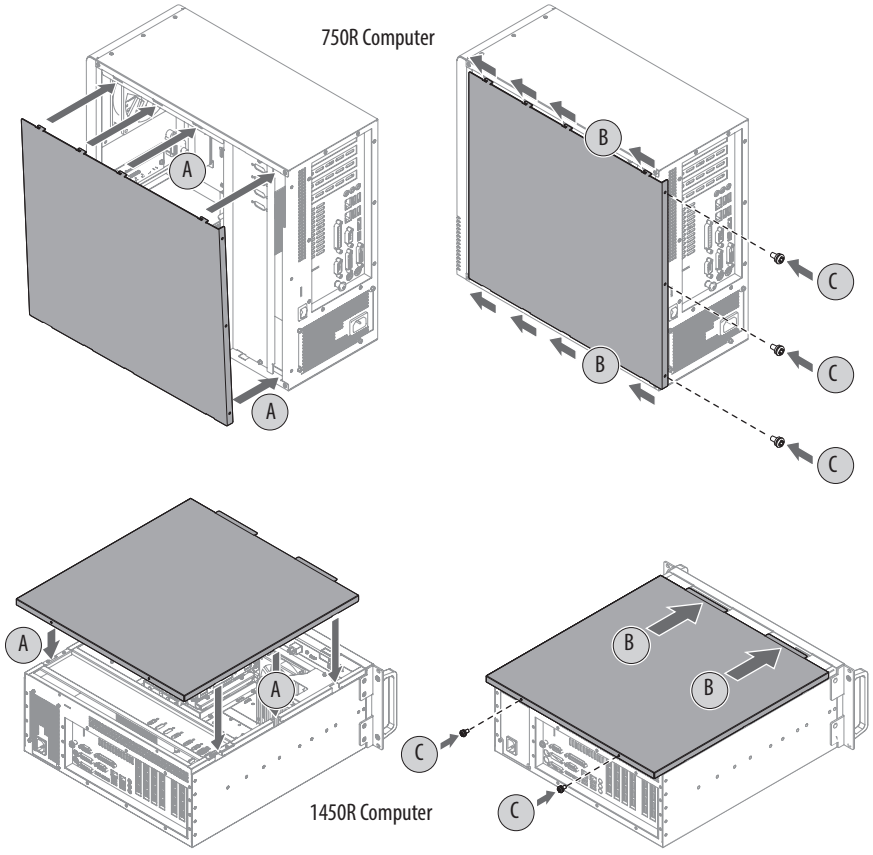
6. After installing, replacing, or upgrading internal computer components, reinstall the cover as detailed in Reinstall the Cover on page 39.

Reinstall the Cover

Follow these steps to reinstall the side cover for the 750R computer or the top cover for the 1450R computer.

1. Make sure the computer is in the upright position.
2. Follow step 1 through step 3 of the Post-configuration on page 37.
3. Position the cover so its hinge tabs align and engage the locking slots on the chassis (A).

   You can tilt the cover slightly when reinstalling to make sure that all hinge tabs are engaged and locked properly.
4. Slide the cover forward to lock the hinge tabs into place (B).
5. Secure the cover to the computer chassis.
   - 750R computers: Reinstall the three screws on the rear edge of the side cover (C).
   - 1450R computers: Reinstall the two screws on the rear edge of the top cover (C).
6. Torque the screws to 0.6 N•m (5.2 lb•in).



Drive Precautions

Follow these precautions when working with a drive.

IMPORTANT Back up or clone your computer before replacing a drive.

- Do not touch internal components.
- Always handle the drive by its frame.
- Never remove or install a drive with the power on.
- Store the drive in an antistatic bag when it is not installed.

SHOCK HAZARD: Electrostatic discharge (ESD) can damage the computer and components. Read and follow Electrostatic Discharge Precautions on page 36 before removing a drive.

Failure to follow proper safety precautions can result in severe electrical shock to an individual or ESD damage to the computer and its components.

ATTENTION: Mechanical shock can damage a drive. Do not drop or bump the drive.

Replace a Drive

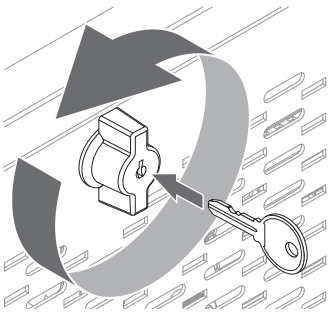
You can replace the HDD. All 6177R computers have two drive bays, but only server models have two drives that are factory installed.

IMPORTANT This section is for replacing an existing HDD in the first drive bay (SATA 0), which is the top drive bay in either computer model. See pages 14 and 15 for bay location.

If you are installing or replacing a HDD in the second (bottom) drive bay (SATA 1), see Install a Second HDD on page 91 for further information.

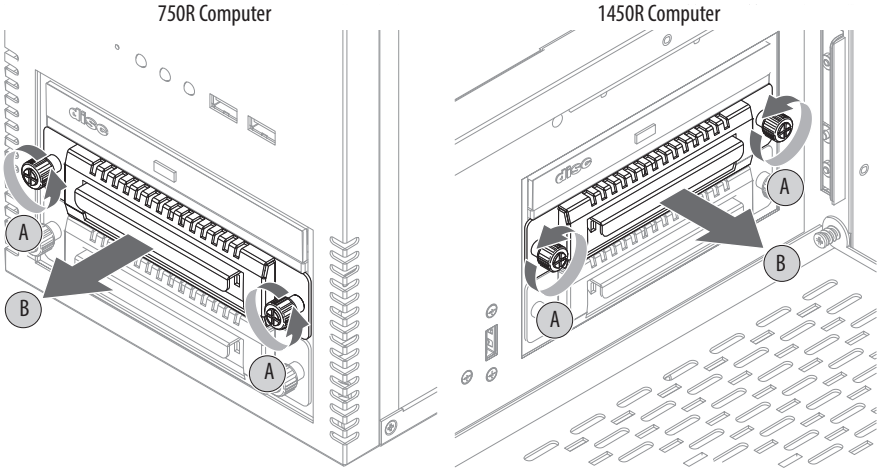
Follow these steps to replace a HDD.

1. Follow the steps for Pre-configuration on page 36.
2. If you have a1450R computer and the front door is locked, complete the following steps:
   a. Unlock the front door with the provided key.
   b. Open the door to access the drive bays.
   c. Proceed to step 3.

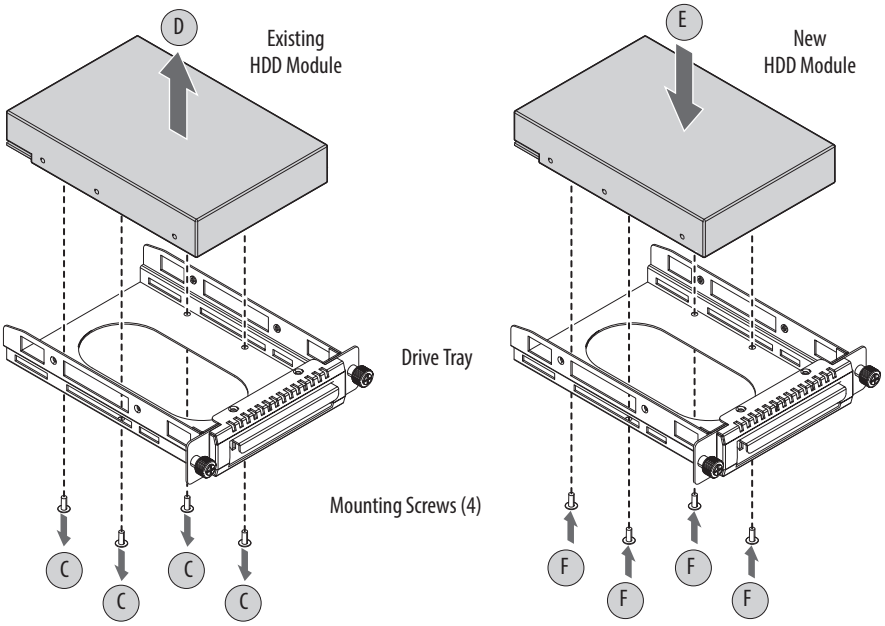


IMPORTANT Use an antistatic wrist strap connected to the work surface, and properly grounded tools and equipment.

3. Remove the HDD assembly from its bay.
   a. Loosen the two captive thumbscrews of the HDD assembly (A).
   b. Pull the HDD assembly from its bay (B).



4. Remove the HDD module from its tray.
   a. Remove the four mounting screws from the bottom of the tray (C).
   b. Detach the tray from the existing HDD module (D).

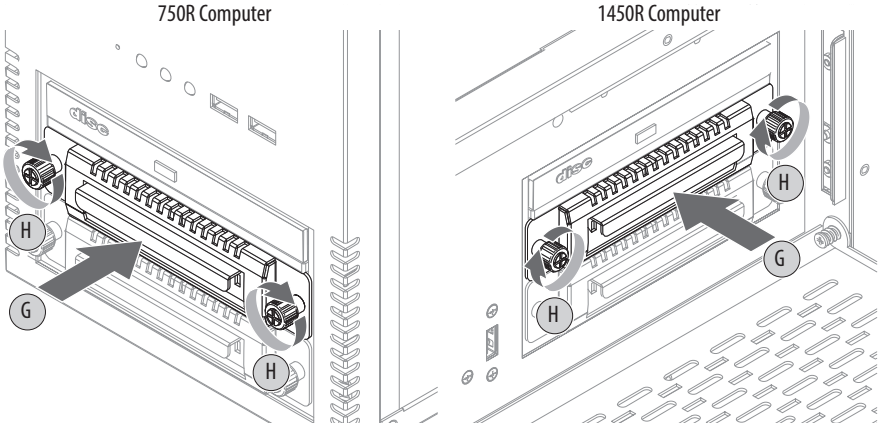


5. Install the new HDD module to the tray.

ATTENTION: Mechanical shock can damage a drive. Do not drop or bump the drive.

   a. Install the new HDD module with the PCB-side down.
   b. Fasten the drive tray over the HDD module (E).
   c. Secure the drive tray to the module with the four mounting screws (F). Torque the screws to 0.59 N•m (5.2 lb•in).

6. Return the HDD assembly into its bay (G).
7. Tighten the two captive thumbscrews of the drive assembly to secure it to the computer (H).

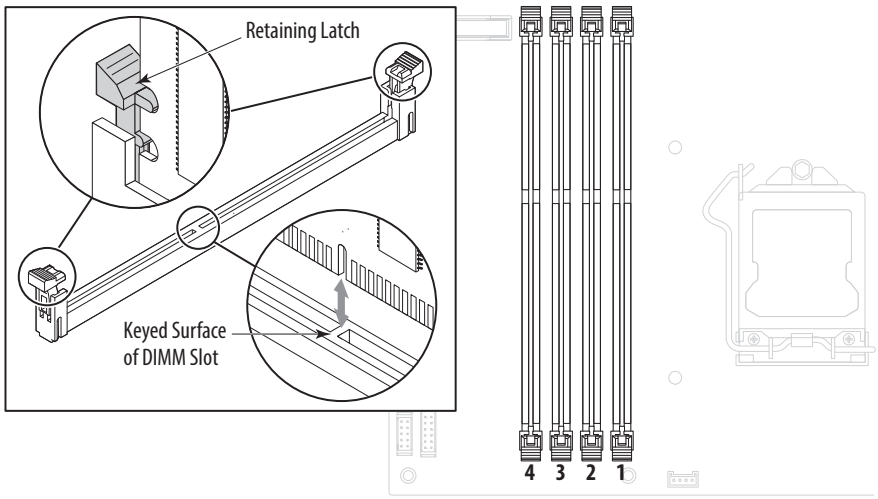


8. Follow the steps for Post-configuration on page 37.

Replace or Add Memory Modules

The motherboard of the 750R and 1450R computers has four DIMM slots that support up to 32 GB maximum system memory.

Figure 10 - Memory Module Slots and Module Alignment



IMPORTANT When installing memory in pairs, install modules in slots 1 and 3 or slots 2 and 4 for optimal performance.

Memory Configuration Guidelines

Follow these guidelines when replacing or adding memory to the computers:

- Use only standard unbuffered memory modules that conform to non-ECC 240-pin DDR3 SDRAM (PC3-10600) standards.
- Use only DDR3 type memory modules.
- Use only memory modules with gold-plated contacts.
- Always handle a memory module by its edges.

IMPORTANT We recommend that you use only Allen-Bradley approved memory modules. Refer to http://ab.rockwellautomation.com/Computers for qualified replacement parts and accessories.

Replace or Add a Memory Module

Follow these steps to replace or add a memory module.

IMPORTANT Use an antistatic wrist strap connected to the work surface, and properly grounded tools and equipment.

1. Follow the steps for Pre-configuration on page 36.
2. Remove the computer cover as detailed in Remove the Cover on page 38.

   TIP To install additional memory, proceed to step 5 of this section.
3. Locate the memory module you want to replace.

   See System Boards on page 17 for memory location on the motherboards.
4. Remove the selected memory module.
   a. Completely open the retaining latches to release the memory module from its slot and make it easier to remove. See Figure 10 on page 42.
   b. Gently pull out the memory module to remove it from its slot.
   c. Place the memory module on a static-dissipating work surface or inside an antistatic bag.
5. Install the new memory module.

   IMPORTANT When installing memory in pairs, install modules in slots 1 and 3 or slots 2 and 4 for optimal performance.

   a. Hold the memory module by its edges as you remove it from its antistatic bag.
   b. Orient the module so the notch on its bottom edge aligns with the keyed surface of the DIMM slot. See Figure 10 on page 42.

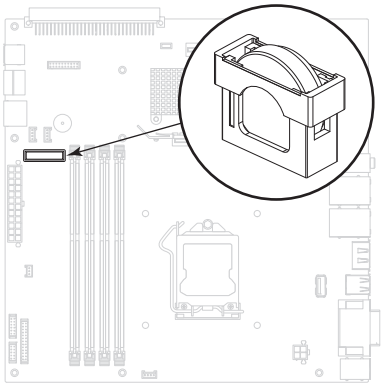
      TIP The keyed surface is off center to assist the correct alignment.

   c. Press the module fully into the slot to engage the retaining latches. See Figure 10 on page 42.

6. Reinstall the computer cover as detailed in Reinstall the Cover on page 39.
7. Follow the steps for Post-configuration on page 37.

Replace the RTC Battery

The computers use nonvolatile memory that require a RTC battery to retain system information when power is disconnected. The 3V, 600 mAh, CR2450 cell lithium battery is on the motherboard.



The battery must be replaced during the life of the computer. Battery life depends on the amount of time the computer is on, or on-time.

Table 1 - Battery Estimated Life Span

On-time (hrs/wk)	Estimated Battery Life Span (yrs)
0	4
40	5.5
80	7

If the computer does not display the correct time and date, replace the battery.

ATTENTION: A risk of fire and chemical burn exists if the battery is not handled properly.

- Do not disassemble, crush, puncture, or short external contacts.
- Do not expose the battery to temperatures higher than 60 °C (140 °F).
- Do not dispose of a used battery in water or fire.

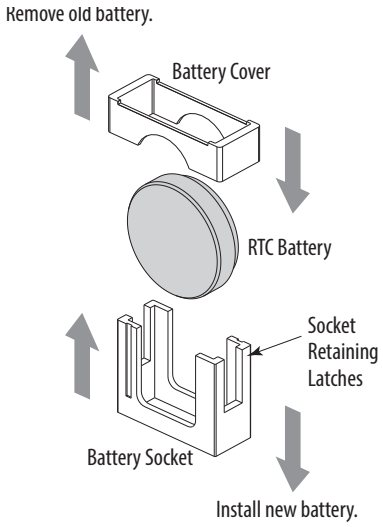
For safety information on handling lithium batteries, see Guidelines for Handling Lithium Batteries, publication AG-5.4.

Follow these steps to replace the RTC battery.

1. Follow the steps for Pre-configuration on page 36.
2. Remove the cover as detailed in Remove the Cover on page 38.
3. For 750R computers, lay the computer on its side (components showing).

4. If necessary, remove any accessory boards or cables that prevent access to the RTC battery socket.
5. Remove the old battery.
   a. Pull the battery cover straight out of the battery socket.
   b. Pull the old battery from its socket.
6. Install the new battery.
   a. Insert the new battery with the positive polarity (+ side) facing towards the SO-DIMM memory slots.

      Verify that the battery is seated completely.



TIP The battery socket retaining latches allow only one way for the battery to be installed.

   b. Reinstall the battery cover.
7. Follow the steps for Post-configuration on page 37.
8. During POST, press F2 on an attached keyboard to enter the BIOS/UEFI setup and reconfigure settings.

   See Chapter 5 for more information.

IMPORTANT Replacing the battery results in all BIOS/UEFI settings returning to their default settings. BIOS/UEFI settings other than default must be reconfigured after replacing the battery.

This computer contains a sealed lithium battery that may need to be replaced during the life of the computer.

At the end of its life, the battery contained in this computer should be collected separately from any unsorted municipal waste.

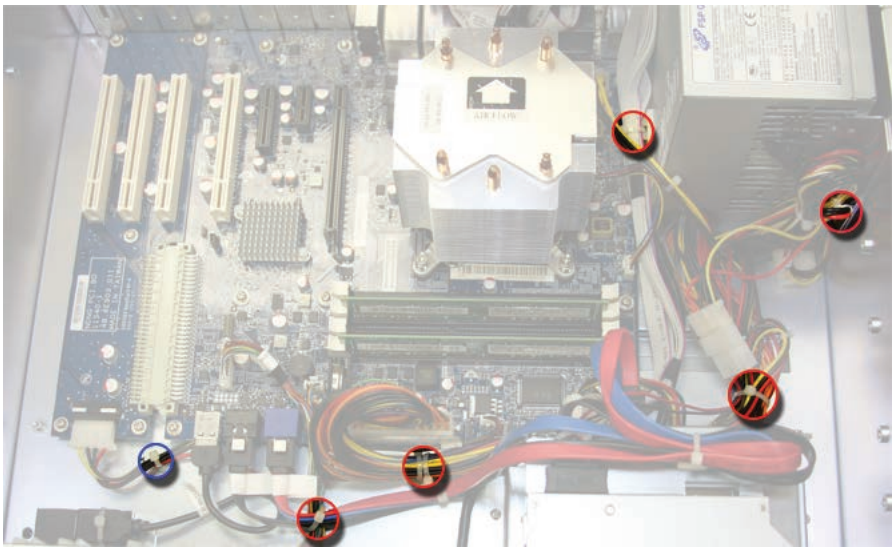
Replace the Power Supply Unit

Follow these steps to replace the power supply unit (PSU).

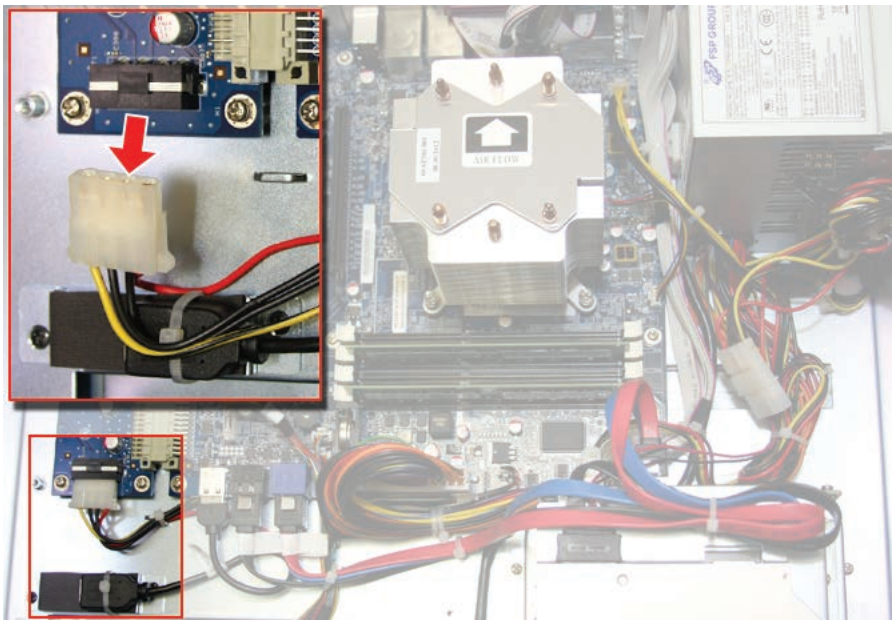
IMPORTANT Use an antistatic wrist strap that is connected to the work surface and properly grounded tools and equipment when handling internal computer components.

1. Follow the steps for Pre-configuration on page 36.
2. Remove the computer cover as detailed in Remove the Cover on page 38.
3. For 750R computers, lay the computer on its side (components showing).
4. Remove the factory-installed chassis cross member or optional I/O card retention bracket as detailed in Install I/O Card Retention Bracket on page 94.
5. Cut the cable ties with side cutting pliers in the locations shown below.

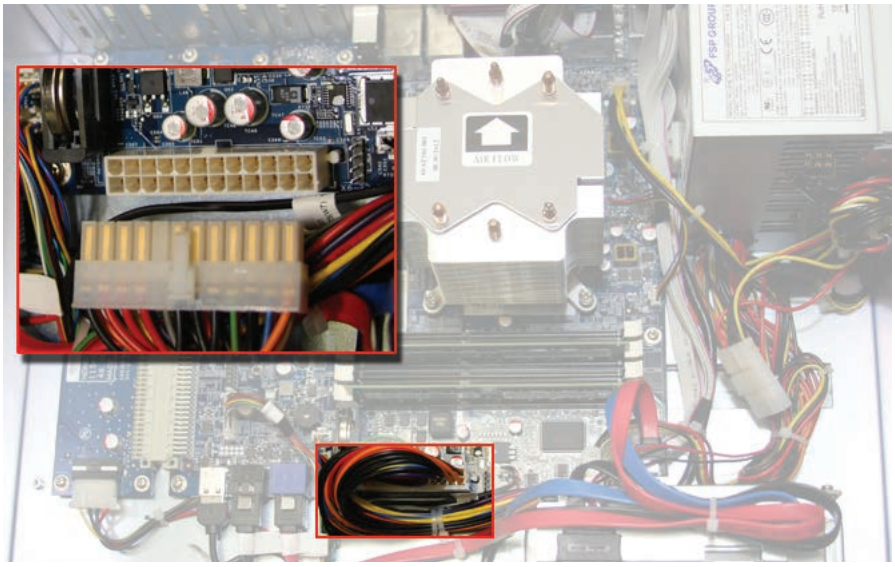
ATTENTION: The photo below shows a 1450R computer, which has six cable ties to cut. The circle with blue line is the cable tie to the PCI expansion board, which does not apply to 750R computers.



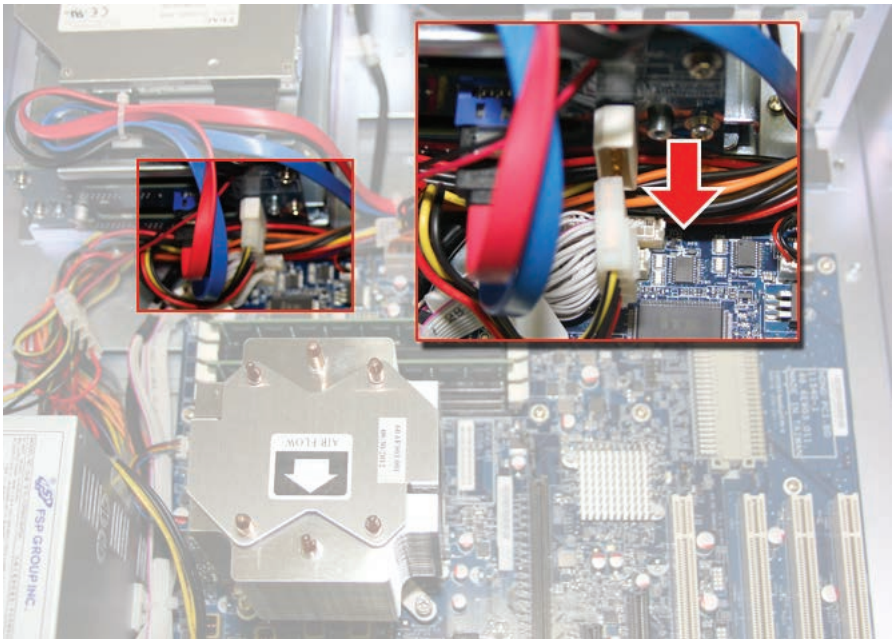
6. For 1450R computers; disconnect the 4-pin power connector from the PCI expansion board.



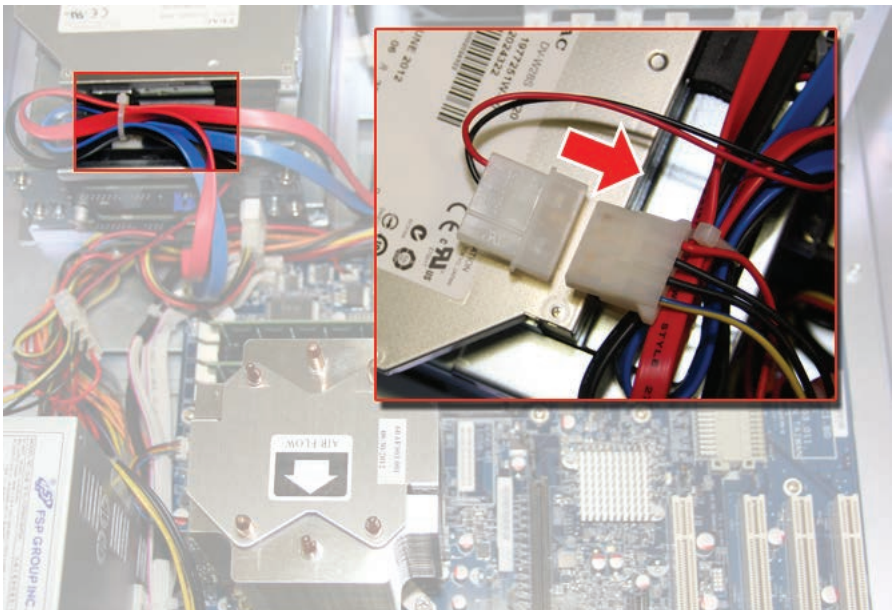
7. Disconnect the ATX 24-pin power connector from the motherboard.



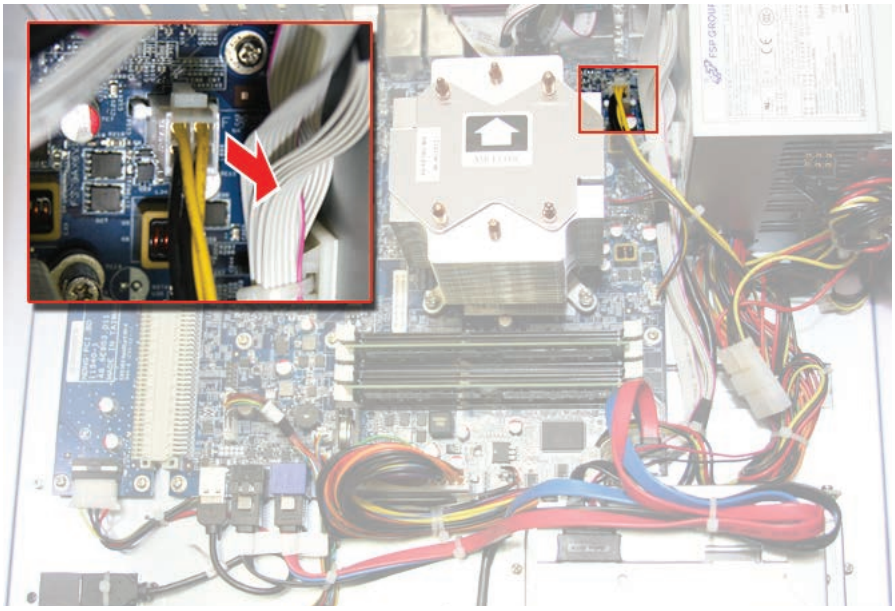
8. Disconnect the 4-pin power connector from the HDD assembly.



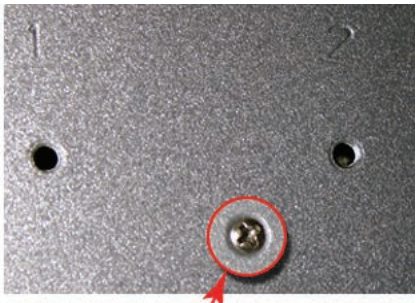
9. Disconnect the 4-pin power connector from the ODD assembly.

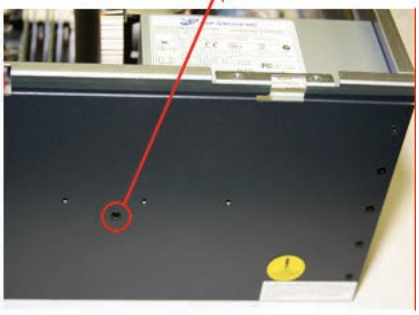


10. Disconnect the +12V 4-pin power connector from the motherboard.



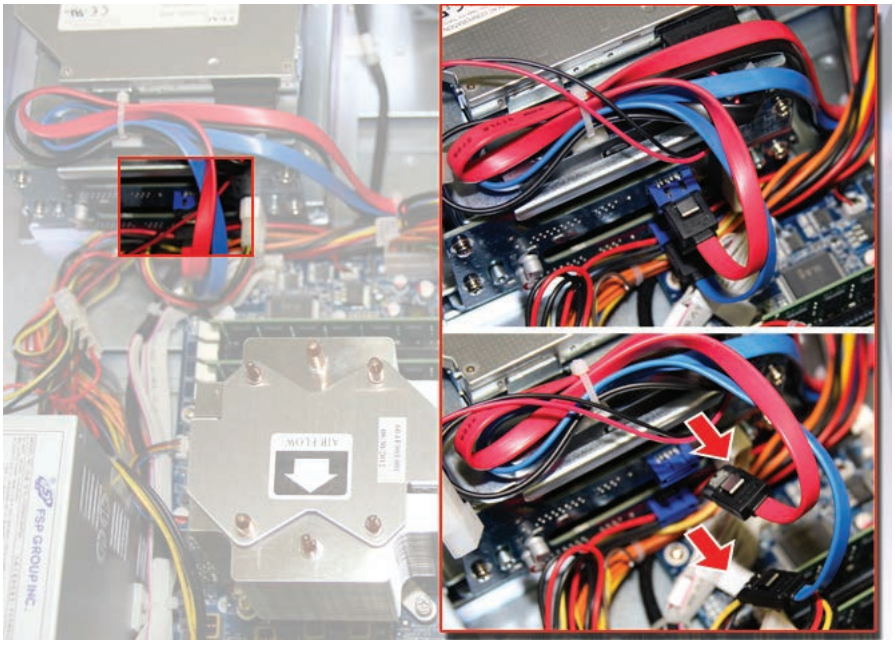
11. Remove the five screws that secure the PSU to the chassis and chassis bracket.





12. Disconnect the two SATA cables from the HDD assembly.

IMPORTANT	Mark each SATA cable so that you can reconnect them to the correct port after installing the new PSU.



13. Remove the PSU.
14. Install the new PSU in the reverse order of the removal steps.
    a. **Step 11:** Torque the five screws to 1.4 N•m (12 lb•in) to secure the new PSU.
    b. **Step 4:** Reinstall the chassis cross member or I/O card retention bracket as detailed in Install I/O Card Retention Bracket on page 94.
    c. Verify that all cables are properly connected before reinstalling the cover.
    d. Remove and replace any cut cable ties.
15. Follow the steps for Post-configuration on page 37.

UEFI Set-up Utility

Chapter Objectives

This chapter provides information about the set-up utility, including an overview of set-up utility settings you can change and how to upgrade to a new universal extensible firmware interface (UEFI). In this chapter, UEFI replaces Basic Input/Output System (BIOS) to describe the system firmware except where BIOS is specifically used, such as on a graphical interface.

The chapter covers the following topics:

Set-up Utility Overview

The set-up utility is a hardware configuration program built into the computer's UEFI. The UEFI is already configured and optimized so there is no need to run this utility. However, you may need to run the set-up utility to do the following:

- Change the system configuration.
- Change the UEFI setup when a configuration error is detected by the system.
- Redefine communication ports to prevent any conflicts.
- Read the current amount of system memory.
- Change the boot drive.
- Set or change the password or make other changes to the security settings.
- Upgrade the system firmware.
- Run the diagnostic utility to determine the cause of system malfunction.
- Restore or back up the operating system.

Access the Set-up Utility

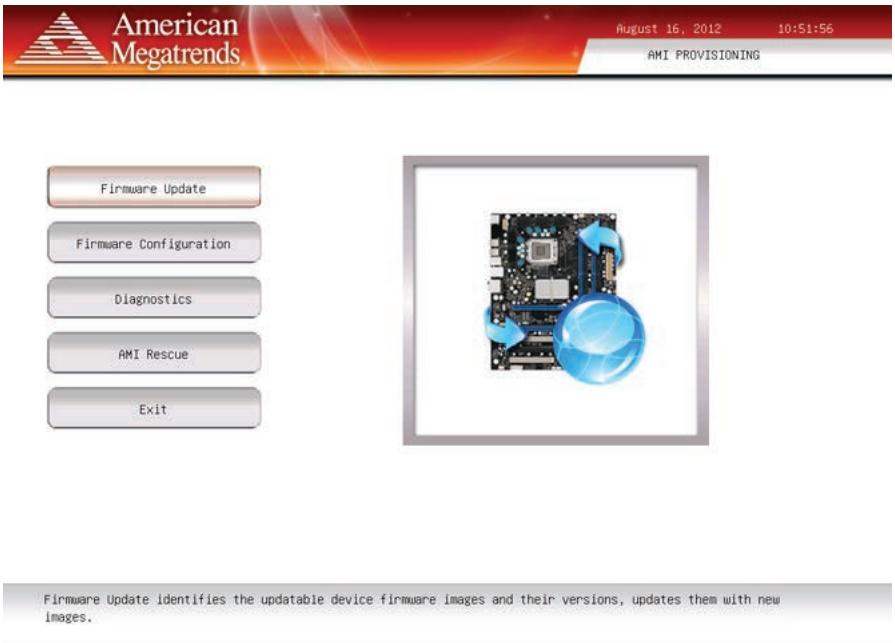
Follow these steps to access the set-up utility in your computer.

1. Start your computer.
2. During POST, you have two selections to access the set-up utility.

Press	Result
F2	Accesses a graphical interface of set-up environment. **IMPORTANT:** Screen shots in this chapter are from graphical interface.
DEL (delete)	Accesses a text mode set-up environment.

Set-up Screen Overview

The set-up utility screen is divided into two areas. On the left is the menu bar with five menu options. On the right is the information pane, which displays a list of information, commands, or configuration options associated with the menu option selected from the menu bar.

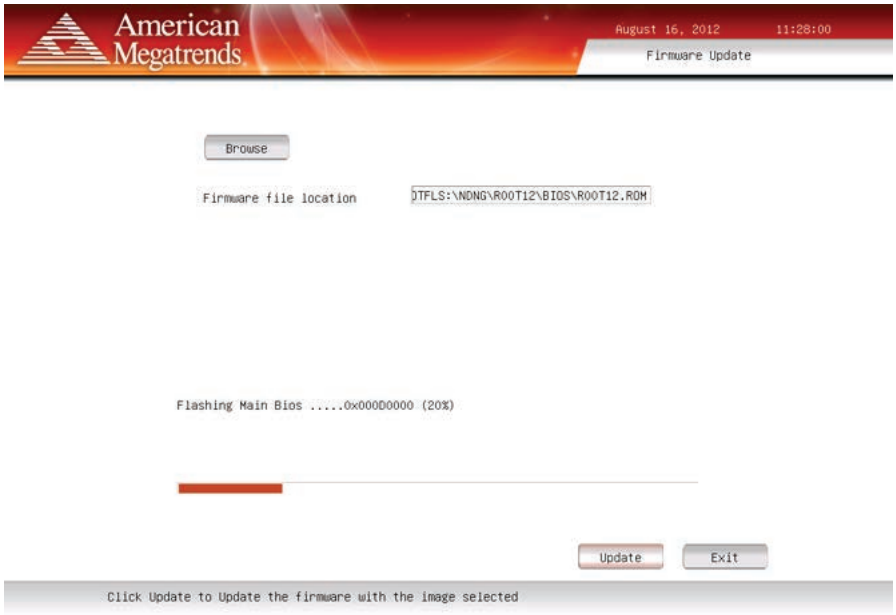


The set-up utility includes the following menu options:

- Firmware Update
- Firmware Configuration
- Diagnostics
- AMI Rescue
- Exit

Firmware Update

You can update your system firmware from the Firmware Update menu.



Parameter	Description
Browse	Click to navigate to the firmware file saved onto a media.
Firmware file location	Type the path and filename for the firmware file.
Update	Click to initialize the update process.
Exit	Click to exit the set-up utility.

Follow these steps to update the system firmware.

1. Click the Firmware Update menu.

   The Firmware Update screen appears.

2. Click Browse to locate the firmware file.

   IMPORTANT The USB mass storage device that contains the firmware file must be FAT, FAT16, or FAT32 formatted to be recognized.

   See http://www.rockwellautomation.com/support/pcdc.page for revisions and to download firmware files.

3. Click Update.

Firmware Configuration

You can view and modify the various system parameters from the Firmware Configuration menu. It features several menu buttons on the left side of the screen.

Menu	Description
Main	Use this menu to view general computer information and for basic system configuration.
Advanced	Use this menu to configure information for the PXE, PCI, ACPI, processor, SATA, USB, power, video graphics, super IO, hardware display, and AMT.
Chipset	Use this menu to configure system chipset information.
Boot	Use this menu to configure boot device priority.
Security	Use this menu to set or change user and administrator passwords.
Save & Exit	Allows you to save changes and reset, discard changes and reset, or restore defaults.

Common Buttons at the Bottom of Screens

Most screens have these common buttons.

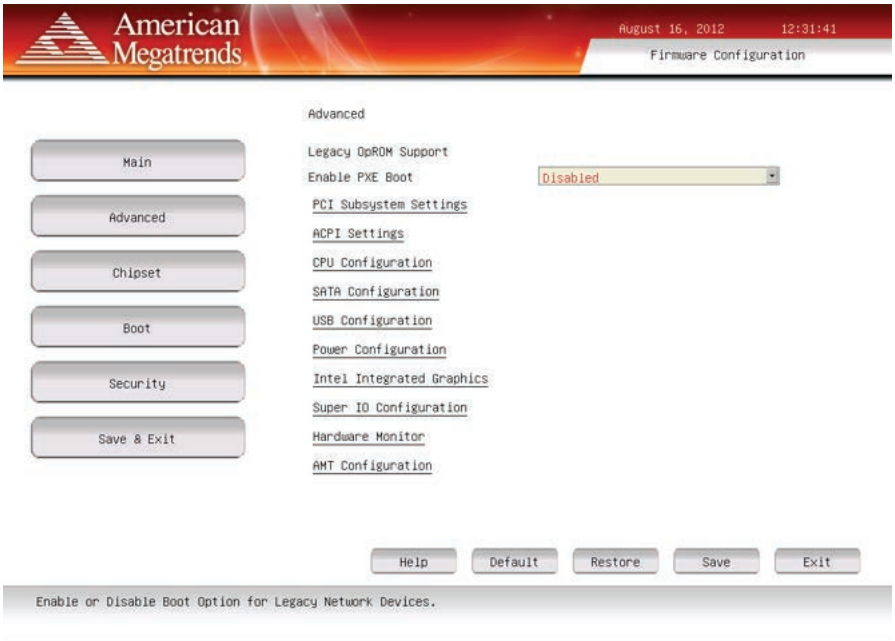
Button	Description
Help	Click for general help on using the set-up utility.
Default	Click to load the default values for all the set-up options.
Restore	Click to restore all set-up options to previously saved values.
Save	Click to save configuration changes.
Previous (not shown)	Click to navigate to the previous page.
Exit	Click to close the set-up utility.

Main

Parameter[1]	Description
BIOS Vendor	BIOS manufacturer
BIOS Version	BIOS version information
Compliancy	Unified Extensible Firmware Interface (UEFI) version information
Build Date and Time	Date and time BIOS was created.
Total Memory	Total system memory and memory type (in parentheses)
System Date	Set the system date. Format: Weekday MM:DD:YYYY (Weekday Month:Day:Year)
System Time	Set the system time. Format: HH:MM:SS (Hour:Minute:Second)
Runtime Hours	Records the total hours of computer runtime.
Manufacturer	System manufacturer
Catalog Number	Allen-Bradley catalog number with series letter
WIN Number	Warranty information number
Version-SYS	System revision, manufacture date
Version-Board	System board version information
Serial Number	Unique system serial number

(1) See page 54 for an explanation of common buttons near the bottom of screen.

Advanced

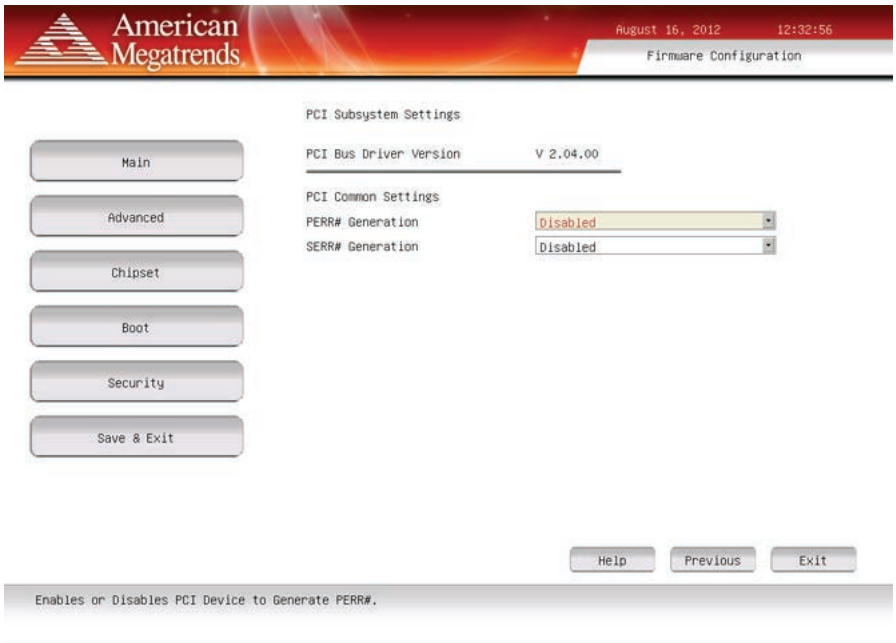


Legacy OpROM Support

Parameter(1)	Description
Enable PXE Boot	Enables or disables boot option for legacy network devices. Options: Enabled or Disabled (default)

(1) See page 54 for an explanation of common buttons near the bottom of screen.

PCI Subsystem Settings



Parameter(1)	**Description**
PCI Bus Driver Version	Displays the PCI bus driver version information.
PERR# Generation	Enables or disables PCI Device to Generate PERR#. Options: Enabled or Disabled (default)
SERR# Generation	Enables or disables PCI Device to Generate SERR#. Options: Enabled or Disabled (default)

(1) See page 54 for an explanation of common buttons near the bottom of screen.

ACPI Settings

Parameter[1]	Description
ACPI Sleep State	Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed. Options: Suspend Disabled, S1 (CPU Stop Clock), or S3 (Suspend to RAM [default])

(1) See page 54 for an explanation of common buttons near the bottom of screen.

CPU Configuration

Parameter[1]	Description
CPU Configuration	Displays processor type and maximum speed.
Processor Cores	Displays processor core count.
CPU Speed	Displays maximum speed of the processor.
64-bit	Displays 64-bit support status.
Hyper-threading[2]	Enables or disables the Hyper-Threading technology. Options: Enabled (default) or Disabled
Intel Virtualization Technology (VT-x)	When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology. Options: Enabled or Disabled (default)
Intel Virtualization Technology for Directed I/O (VT-d)[3]	Enables or disables VT-d. Options: Enabled or Disabled (default)

(1) See page 54 for an explanation of common buttons near the bottom of screen.
(2) Supported on systems with i3-2120 processors.
(3) Supported on systems with i5-2400 processors.

SATA Configuration (for computers with Windows 7 or XP operating systems)

Parameter[1]	Description
SATA Mode	Select an operation mode for the onboard SATA controller. Options: Disabled, IDE Mode, AHCI Mode (default), or RAID Mode[2]
SATA Port (0, 1, 2, 4)	Indicates the SATA HDD connected to the SATA connector.
Hot Plug	Enables or disables hot plug support for the SATA port. Options: Enabled (default) or Disabled **IMPORTANT:** Make sure all writes to HDD are complete before removing the HDD from the system to avoid risk of data corruption.
External SATA Port	Enables or disables eSATA port. Options: Enabled (default) or Disabled

(1) See page 54 for an explanation of common buttons near the bottom of screen.

(2) Applies only to computers that ship with Windows Server 2008 R2 operating system. For computers that ship with two HDDs but no operating system, the HDDs are in AHCI mode instead of RAID and each drive acts independently.

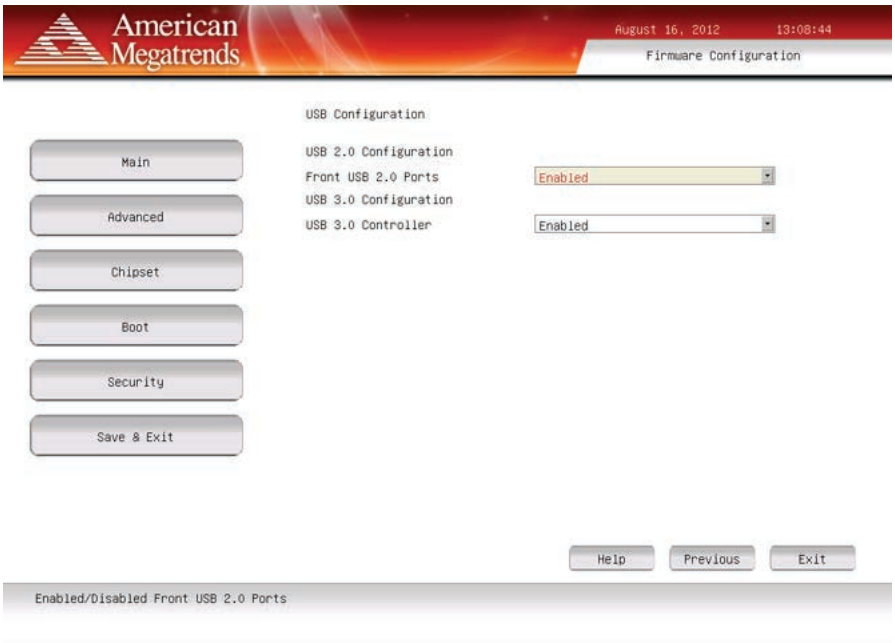
SATA Configuration (for computers with Windows Server 2008 R2 operating system)

Parameter[1]	Description
SATA Mode	Select an operation mode for the onboard SATA controller. Options: Disabled, IDE Mode, AHCI Mode, or RAID Mode (default)[2]
SATA Port (0, 1, 2, 4)	Indicates the SATA HDD connected to the SATA connector.
Hot Plug	Enables or disables hot plug support for the SATA port. Options: Enabled (default) or Disabled
External SATA Port	Enables or disables eSATA port. Options: Enabled (default) or Disabled

(1) See page 54 for an explanation of common buttons near the bottom of screen.

(2) Applies only to computers that ship with Windows Server 2008 R2 operating system. For computers that ship with two HDDs but no operating system, the HDDs are in AHCI mode instead of RAID and each drive acts independently.

USB Configuration



Parameter[1]	Description
Front USB 2.0 Ports	Enables or disables the front USB 2.0 ports. Options: Enabled (default) or Disabled
USB 3.0 Controller	Enables or disables the USB 3.0 controller. Options: Enabled (default) or Disabled

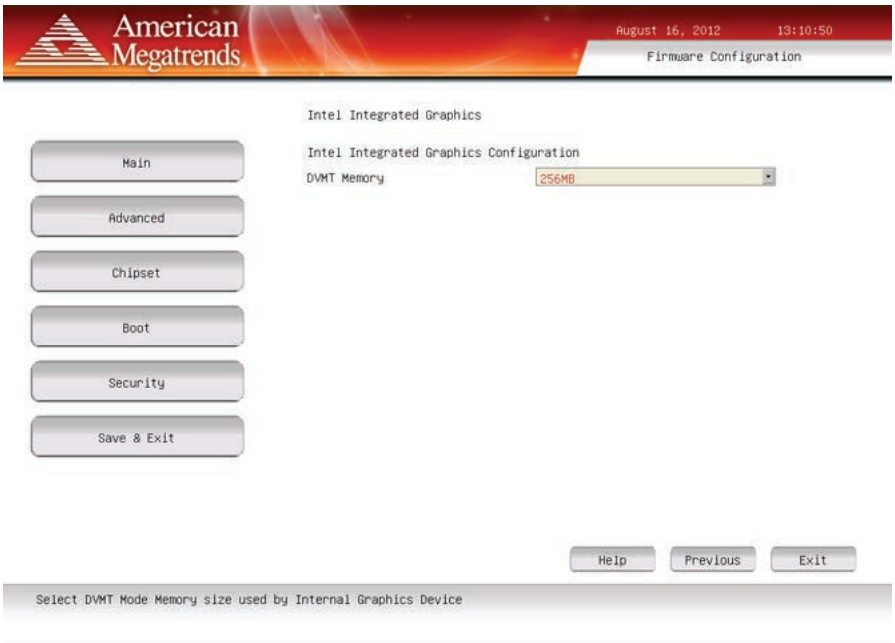
(1) See page 54 for an explanation of common buttons near the bottom of screen.

Power Configuration

Parameter[1]	Description
Restore AC Power Loss	Specify what state to go to when power is reconnected after a power failure (G3 state). Options: Power off, Power on (default), Last State

(1) See page 54 for an explanation of common buttons near the bottom of screen.

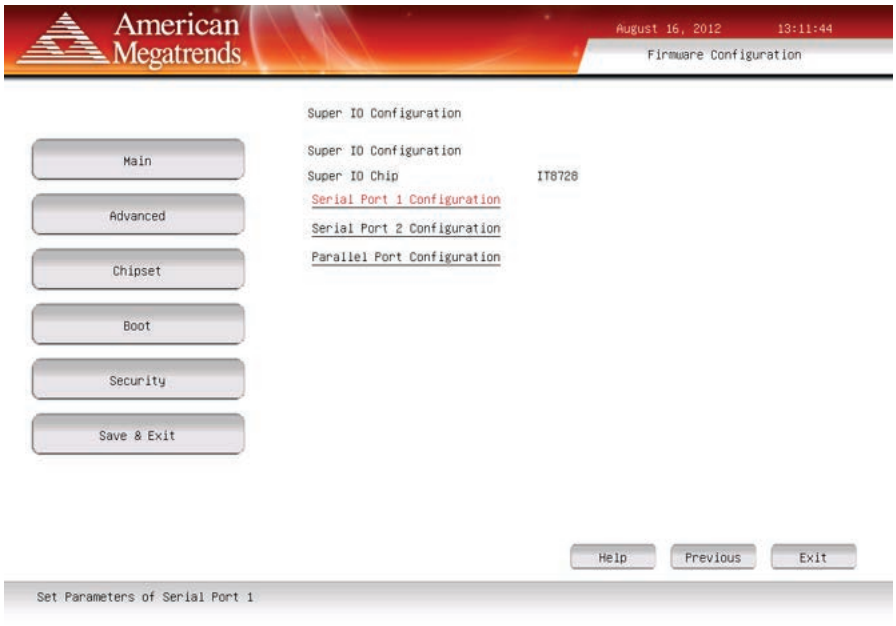
Intel Integrated Graphics



Parameter[1]	Description
DVMT Memory	Select a video memory size that can be allocated as graphics memory in the DVMT mode. Options: 128 MB, 256 MB (default), Maximum

(1) See page 54 for an explanation of common buttons near the bottom of screen.

Super IO Configuration



Parameter(1)	**Description**
Super IO Chip	Displays the Super IO chipset information.
Serial Port 1 Configuration	Scroll to this item to set parameters for the serial port 1.
Serial Port 2 Configuration	Scroll to this item to set parameters for the serial port 2.
Parallel Port Configuration	Scroll to this item to set parameters for the parallel port.

(1) See page 54 for an explanation of common buttons near the bottom of screen.

Table 2 - Serial Port 1 Configuration

Parameter	Description
Serial Port 1	Enables or disables the serial (COM1) port. Options: Enabled (default) or Disabled
Device Settings	Displays the serial port's Base I/O address and IRQ setting.
Change Settings	Select an optimal setting for the super IO device. Options: Auto (default), IO=3F8h; IRQ=4, IO=2F8h; IRQ=4, IO=3E8h; IRQ=4, IO=2E8h; IRQ=4

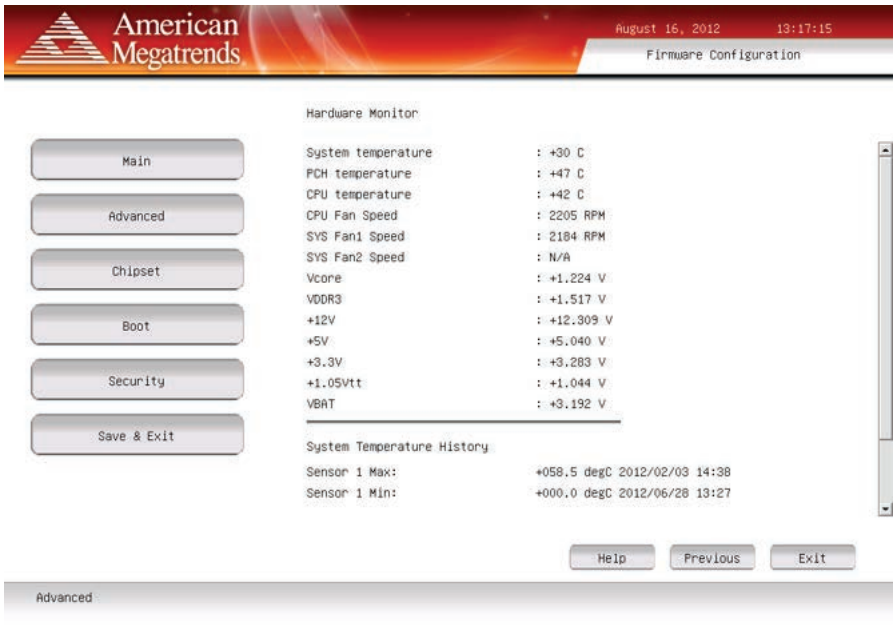
Table 3 - Serial Port 2 Configuration

Parameter	Description
Serial Port 2	Enables or disables the serial (COM2) port. Options: Enabled (default) or Disabled
Device Settings	Displays the serial port's Base I/O address and IRQ setting.
Change Settings	Select an optimal setting for the super IO device. Options: Auto (default), IO=2F8h; IRQ=3, IO=3F8h; IRQ=3, IO=3E8h; IRQ=3, IO=2E8h; IRQ=3

Table 4 - Parallel Port Configuration

Parameter	Description
Parallel Port	Enable or disables the parallel (LPT/LPTE) port. Options: Enabled (default) or Disabled
Device Settings	Displays the parallel port's Base I/O address and IRQ setting.
Change Settings	Select an optimal setting for the super IO device. Options: Auto (default), IO=378h; IRQ=5, IO=278h; IRQ=5, IO=3BCh; IRQ=5
Device Mode	Select a printer mode. Options: Standard Parallel Port Mode (default), EPP Mode, ECP Mode, EPP Mode & ECP Mode

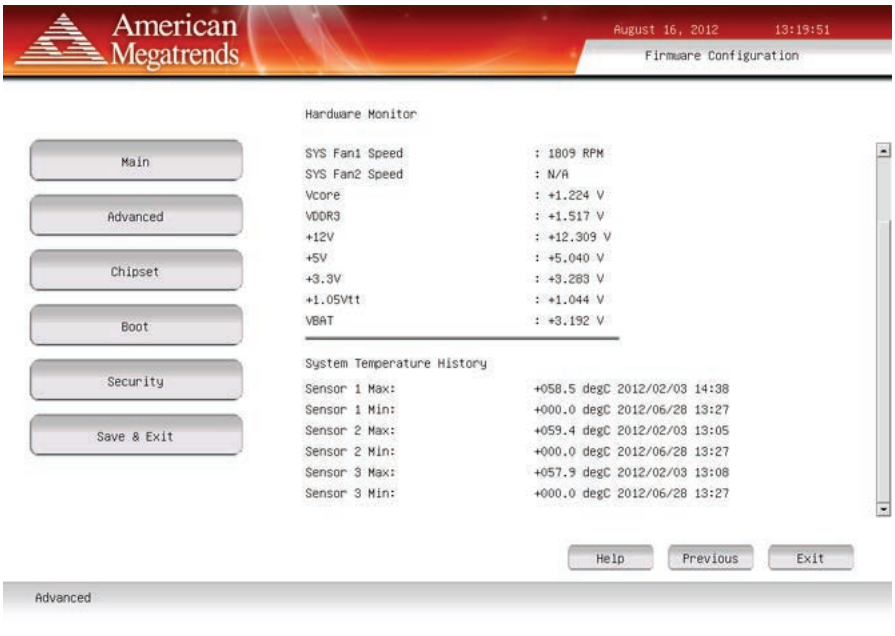
Hardware Monitor



Parameter(1)	Description
System Temperature	These items let you view and monitor the parameters for the system/processor/ PCH temperatures, voltages, and fan speed. The values are read-only as monitored by the system and show the system health status.
PCH Temperature	
CPU Temperature	
CPU Fan Speed	
SYS Fan1 Speed	
SYS Fan2 Speed(2)	
Vcore	
VDDR3	
+12V	
+ 5V	
+3.3V	
+1.05Vtt	
VBAT	

(1) See page 54 for an explanation of common buttons near the bottom of screen.
(2) Applies only to rack mounted computers.

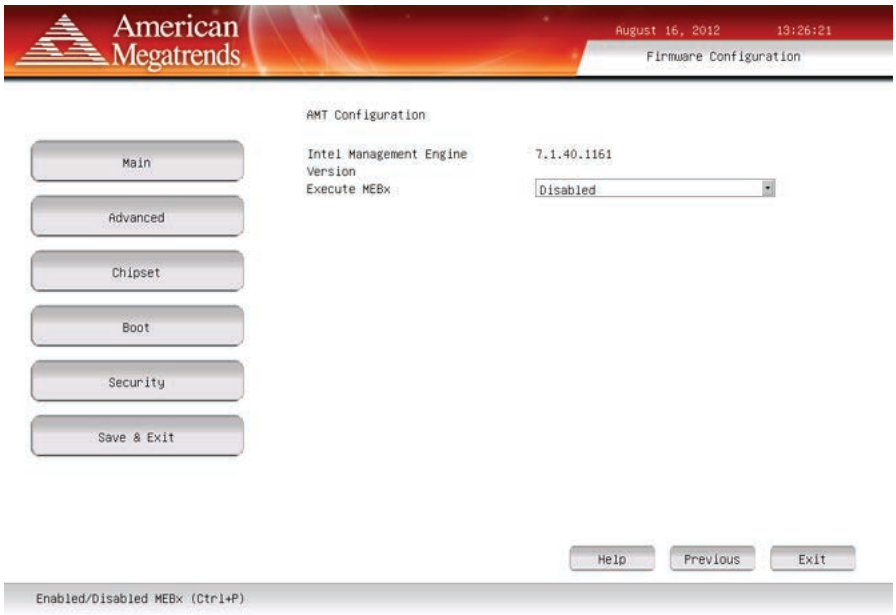
System Temperature History



Parameter[1]	Description
Sensor 1 Max	Temperatures monitored by the sensor near the front intake fan. Read-only values display temperature in Celsius with date stamp (YYYY/MM/DD) and time stamp (24-hour format).
Sensor 1 Min	
Sensor 2 Max	Temperatures monitored by the sensor near the CPU. Read-only values display temperature in Celsius with date stamp (YYYY/MM/DD) and time stamp (24-hour format).
Sensor 2 Min	
Sensor 3 Max	Temperatures monitored by the sensor near the PCH. Read-only values display temperature in Celsius with date stamp (YYYY/MM/DD) and time stamp (24-hour format).
Sensor 3 Min	

(1) See page 54 for an explanation of common buttons near the bottom of screen.

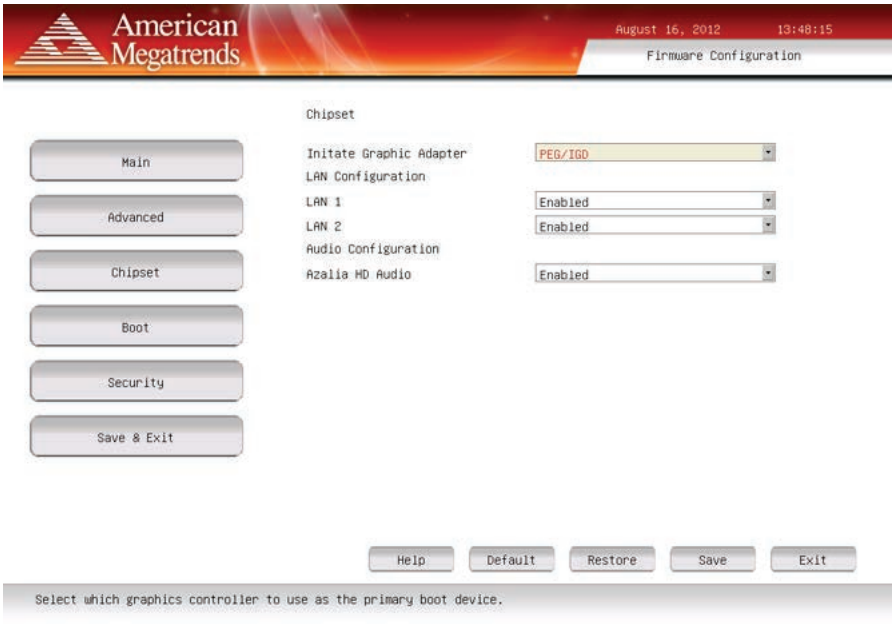
AMT Configuration



Parameter(1)	**Description**
Intel Management Engine Version	Displays the Intel Management Engine version.
Execute MEBx	Enables the Management Engine BIOS Extension (MEBx), which is accessed by pressing Ctrl+P at POST. This function is used to configure AMT. Options: Enabled or Disabled (default)
Unconfigure AMT/ME	Lets you unconfigure any provisioned management settings for AMT/ME. Options: Enabled or Disabled (default) **IMPORTANT:** 'Unconfigure AMT/ME' appears only when 'Execute MEBx' is enabled. 

(1) See page 54 for an explanation of common buttons near the bottom of screen.

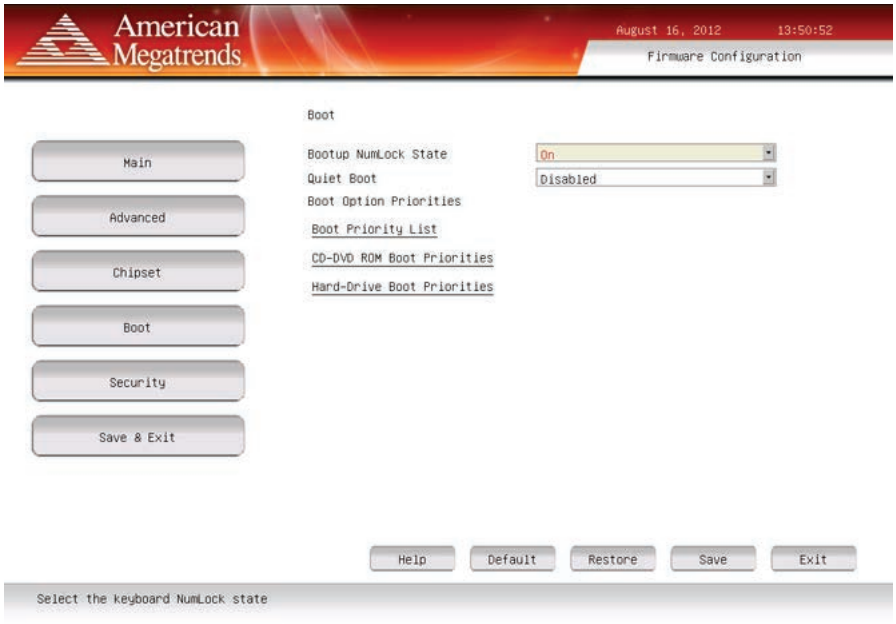
Chipset



Parameter[1]	Description
Initiate Graphic Adapter	Select which graphics controller to use as the primary boot device. Options: PCI/PEG, PEG/IGD (default), PEG/PCI
LAN 1	Enables or disables onboard LAN1 controller. Options: Enabled (default) or Disabled
LAN 2	Enables or disables onboard LAN2 controller. Options: Enabled (default) or Disabled
Azalia HD Audio	Enables or disables Azalia HD audio. Options: Enabled (default) or Disabled

(1) See page 54 for an explanation of common buttons near the bottom of screen.

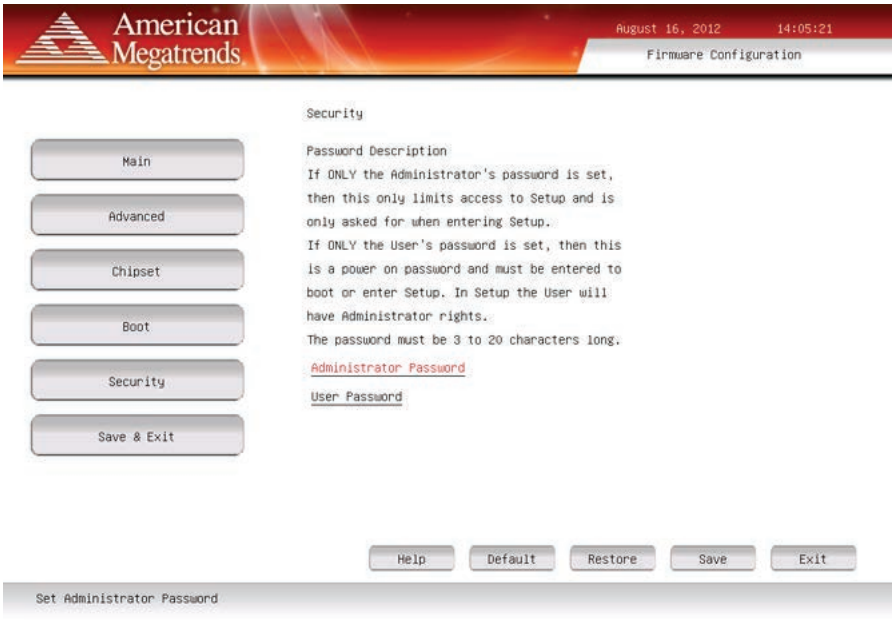
Boot



Parameter[1]	Description
Bootup NumLock State	Enables or disables the Num Lock key on boot. Option: On (default), Off
Quiet Boot	Enables or disables Quiet Boot option. Option: Enabled or Disabled (default)
Boot Option Priorities	Set the preferred boot sequence from the available devices. 1. USB key 2. CD-ROM 3. HDD 4. PXE 5. UEFI Shell 6. PCI/PCIe RAID/SCSI/SAS card

(1) See page 54 for an explanation of common buttons near the bottom of screen.

Security



Parameter[1]	Description
Administrator Password	Sets the administrator password. **IMPORTANT:** If you forget the administrator password, you can reset the password by removing and replacing the battery or changing the BIOS settings jumper on the system board.
User Password	Sets the user password. **IMPORTANT:** If you forget the user password, you can reset the password by removing and replacing the battery or changing the BIOS setting jumper on the system board.

(1) See page 54 for an explanation of common buttons near the bottom of screen.

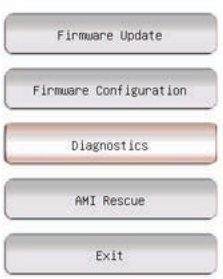
Save & Exit

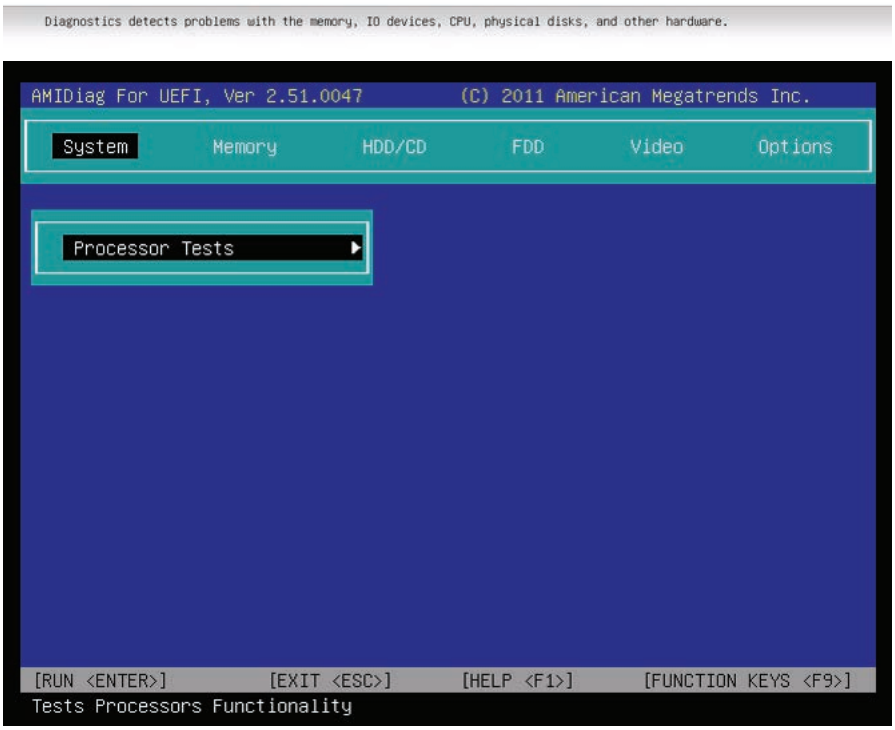
Parameter[1]	Description
Save Changes and Reset	Saves changes made and closes the set-up utility.
Discard Changes and Reset	Discards changes made and closes the set-up utility.
Restore Defaults	Loads the optimal defaults in the set-up menu.

(1) See page 54 for an explanation of common buttons near the bottom of screen.

Diagnostics

The Diagnostics menu lets you run the diagnostics utility to determine the cause of the system malfunction by testing computer components, such as the processor, memory, HDD, ODD, video, and other hardware.





AMI Rescue

The AMI Rescue menu lets you back up the system image on your computer and restore that image.

The AMI Backup function will do the following:

- Overwrite any data stored in a hidden partition.
- Save any data as a new image file stored in a hidden partition.
- Save any data on a mass storage device.

The AMI Restore function overwrites any data on the primary operating system partition on the HDD.

Parameter	Description
AMI Backup	Click to take you through the process of backing up the desired data.
AMI Restore	Click to take you through the process of restoring the desired data.
Select Volume	Select the volume where a backup needs to be exported. Or, select the volume from which the backed up data needs to be imported.
Next	Click to proceed to the next step.
Exit (F4)	Click to close AMI Rescue. Or, press F4 to close AMI Rescue

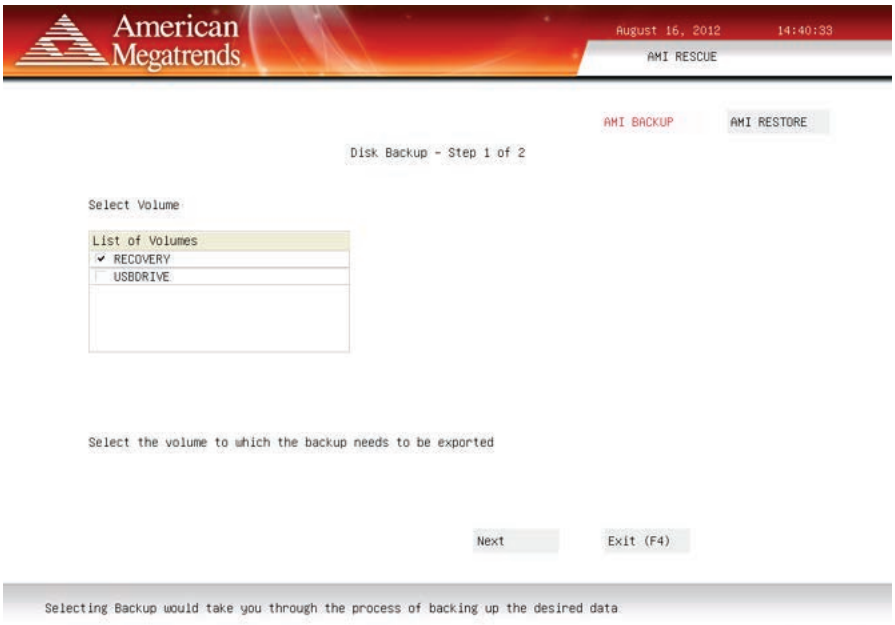
AMI Backup

Follow these steps to back up the system image.

1. Click the AMI Rescue menu to access the AMI Rescue screen.
2. Click AMI Backup.

3. Select the appropriate volume from the list.

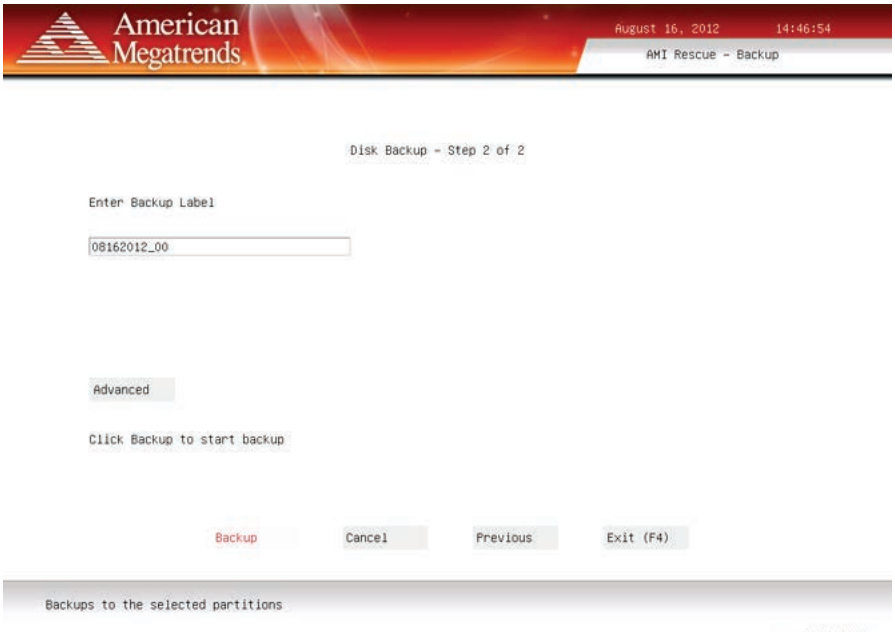
   'Recovery' is the volume name where the default backup of factory images is stored.



IMPORTANT Any USB mass storage drive or eSATA hard drive must be formatted as FAT32, have a drive label other than 'Recovery," and be non-blank.

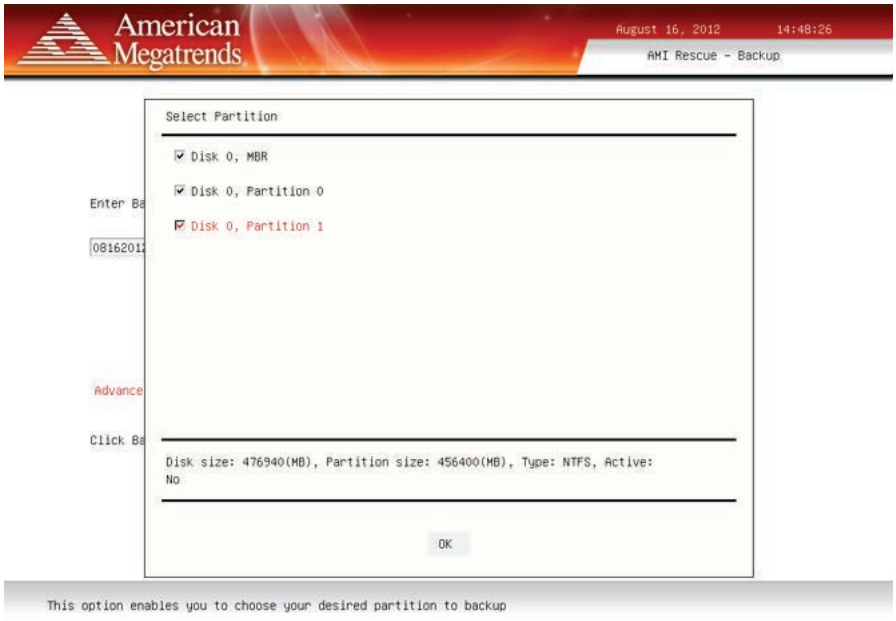
4. Click Next.
5. Enter a name for the back-up volume.

   A default back-up name is provided.



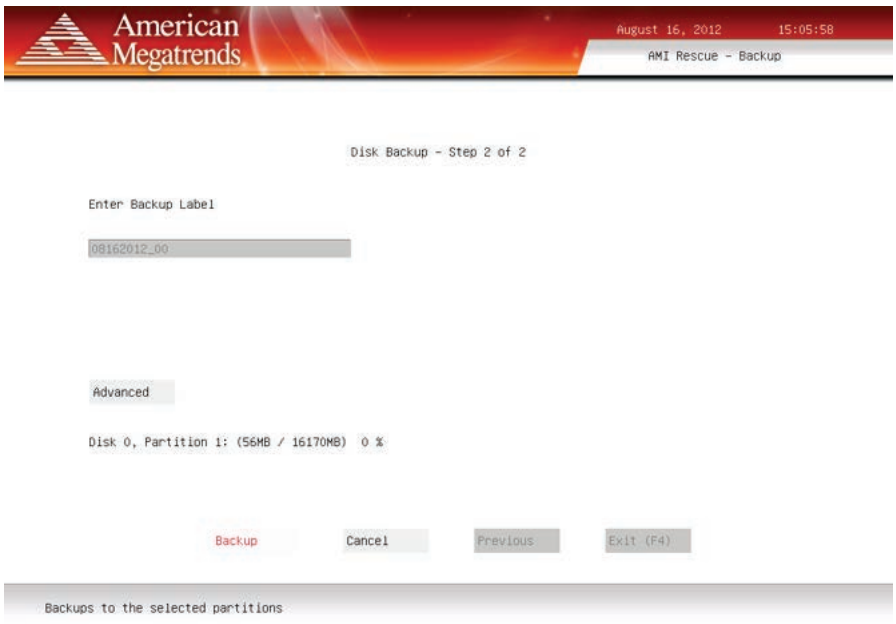
6. Click Advanced.

7. Select which disk partition you want.



TIP All checkboxes must be selected for a complete backup of the drive.

8. Click OK.
9. Click Backup to start the back-up process.



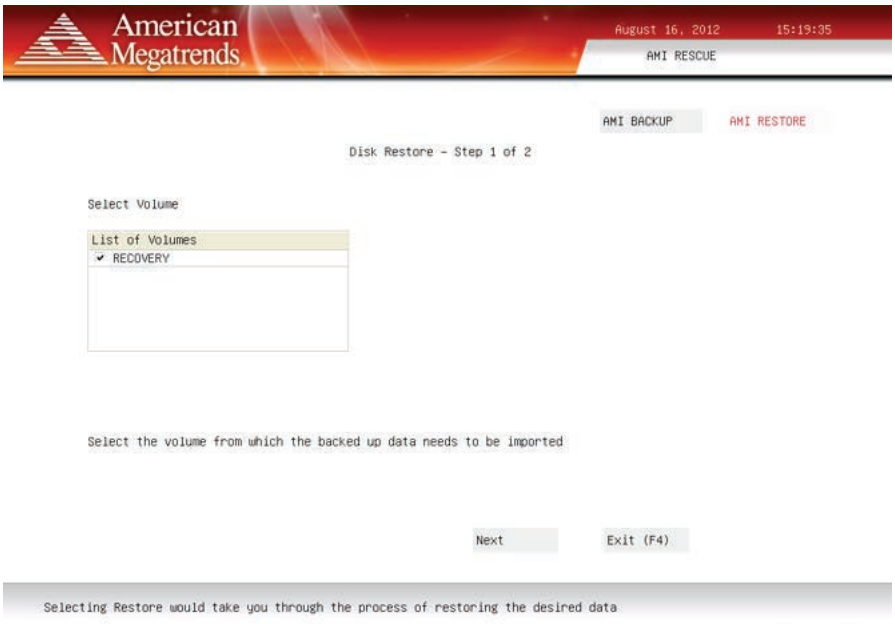
AMI Restore

Perform the following steps to restore your computer from a system image backup.

IMPORTANT	Restoring from a back-up image will completely replace any existing data on the target drive. Make sure all data is backed up before proceeding with the following steps.

1. Click the AMI Rescue menu to access the AMI Restore screen.
2. Click AMI Restore.
3. Select the appropriate volume from the list.

   'Recovery' is the volume name where the default backup of factory images is stored.

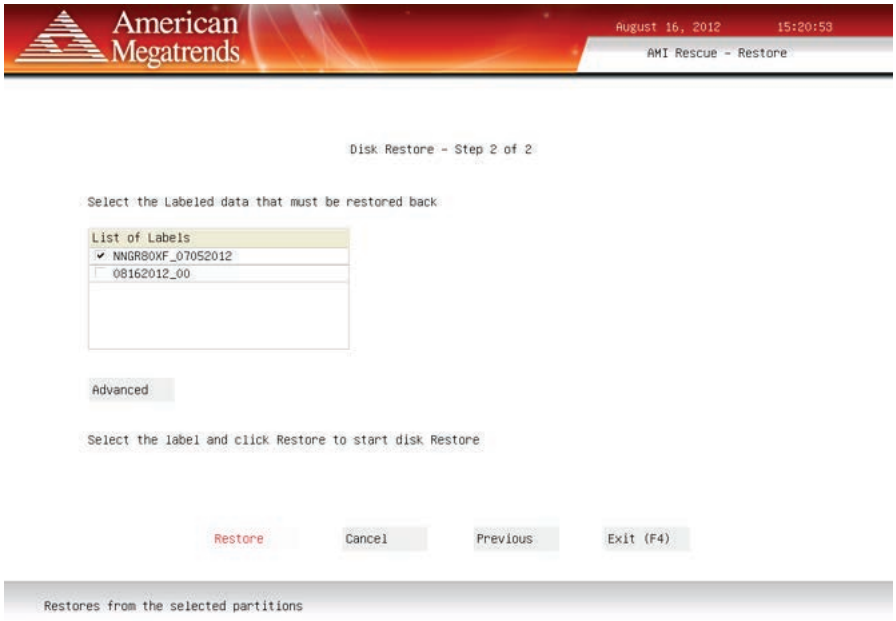


IMPORTANT	Any USB mass storage drive or eSATA hard drive must be formatted as FAT32, have a drive label other than 'Recovery," and be non-blank.

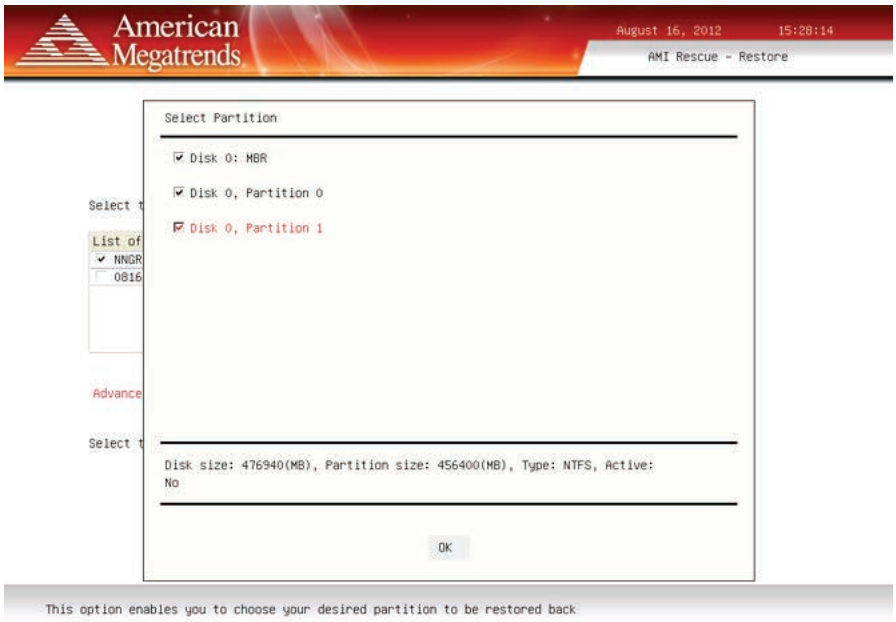
4. Click Next.

5. Select the volume label from which you want to restore.

   Default OS image backups will begin with an eight character prefix such as 'NNGR80XF' in the example below.



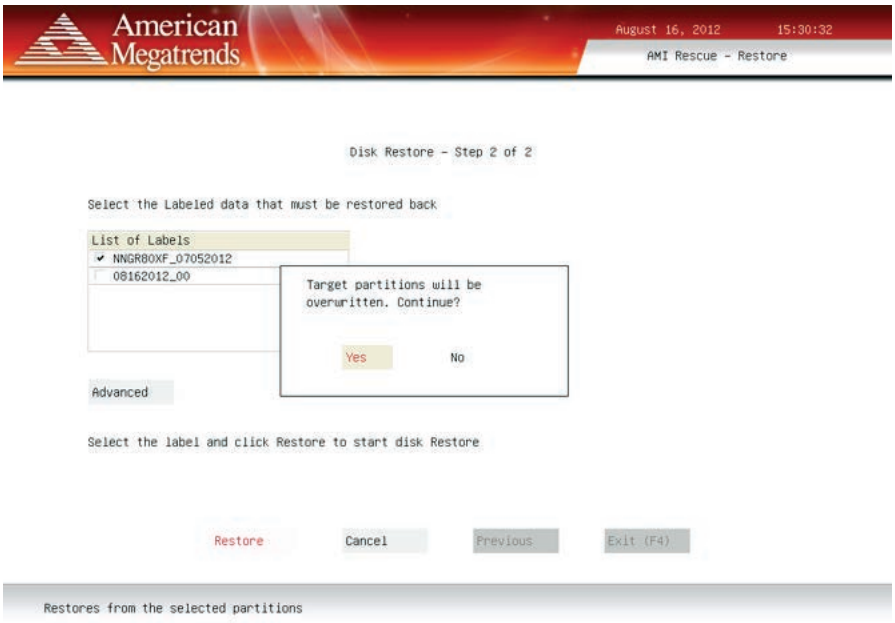
6. Click Advanced.
7. Select to which disk partition you want to restore.



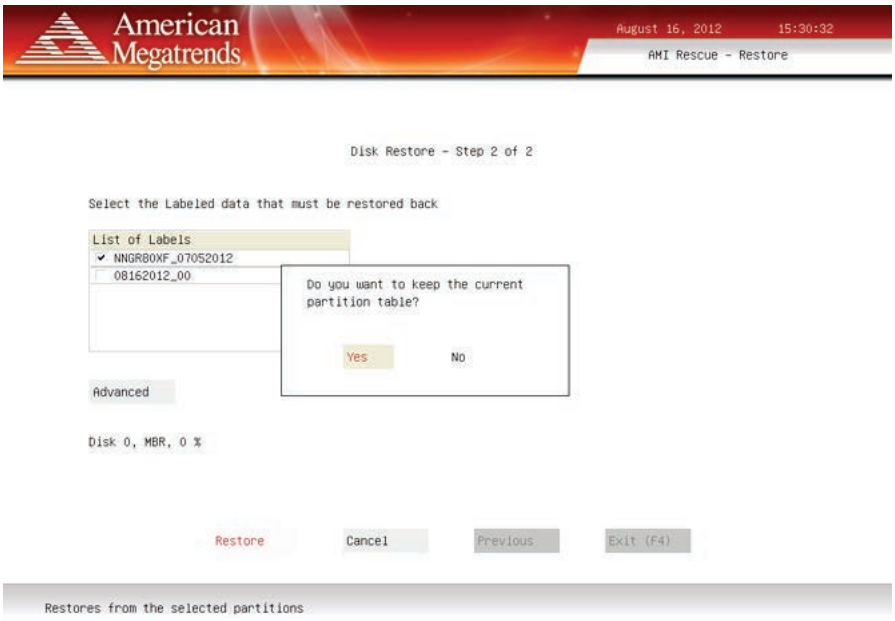
TIP All checkboxes must be selected for a complete restore of factory OS images.

8. Click OK.
9. Click Restore to start the restoration process.

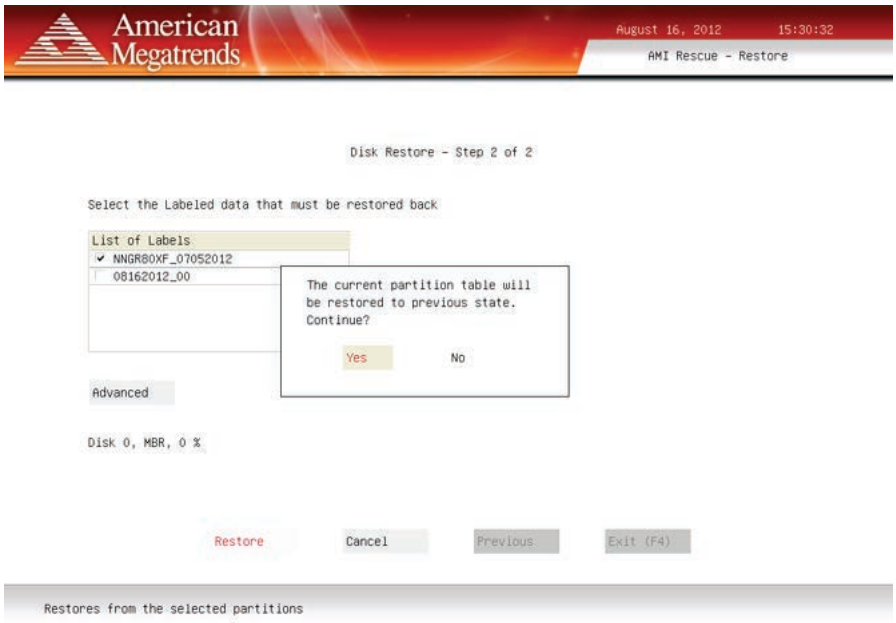
10. When the alert window, 'Target partitions will be overwritten. Continue?,' click Yes.



11. When the alert window, 'Do you want to keep the current partition table?,' click No.



12. When the alert window, 'The current partition table will be restored to previous state. Continue?,' click Yes.



13. The restoration process will now start.

Exit

The Exit menu allows you to close the set-up utility.

Notes:

System Troubleshooting

Chapter Objectives

This chapter provides information on the following topics:

Hardware Monitoring

The built-in hardware monitor of the computer tracks the operating threshold levels of the voltage and temperature sensors.

Follow these steps to determine whether an operating threshold has been reached.

1. Shut down the computer by using the appropriate method for the installed operating system.

   See Shut Down the Computer on page 34 for more information.
2. Apply power to the computer.
3. During POST, press F2 to access the UEFI set-up utility.
4. On the Main Menu screen, click Firmware Configuration.
5. From the Firmware Configuration main screen, click Advanced.

6. On the Advanced screen, click Hardware Monitor.

See Hardware Monitor on page 67 for what information is shown.

Use this menu to determine if there is an issue with internal voltages or component temperatures.

Troubleshooting

Follow these steps to identify and isolate an issue with the computer's operation.

1. Shut down the computer by using the appropriate method for the installed operating system.

   See Shut Down the Computer on page 34 for more information.

2. Disconnect power to the computer.
3. Disconnect all peripheral devices from the computer.
4. If using a keyboard and mouse, verify that they are properly connected.
5. If using an external display, verify that it is properly connected.
6. Connect power to the computer. During POST, one of three events occurs:
   - The computer completes the start-up process.
   - A nonfatal error occurs and the related error message is displayed.
   - A fatal error occurs and the start-up process terminates.

If	Then
The computer starts	Isolate the issue by connecting peripheral devices one at a time until the issue occurs.
The issue is with a specific software or driver	Reinstall the software or driver.
The issue is not related specifically to software, a driver, or a peripheral device	Refer to the troubleshooting checklists.

TIP Some computers emit beeps. These audible alerts only signal that an error is detected. The beeps can apply to nonfatal and fatal errors.

Troubleshooting Checklists

To manage common issues, use these checklists to test and verify components. If an issue occurs, refer to these checklists before calling technical support.

Issues during Startup

- Are all connections secure?
- Are the device drivers installed?
- Are the jumpers on any add-in boards correctly positioned?
- If starting from a drive:
  - Is it formatted and set up in the UEFI?
  - Are the drive's data and power cables properly connected? Verify that the computer can start from an external bootable device.
  - Is the drive tray secure? Verify that any captive thumbscrews are not loose or missing.
- Are memory modules properly installed? You can reinstall them to be sure of a good connection.
- Is the UEFI properly configured? To restore the default UEFI settings, see Load the System Defaults on page 87.

Issues after Startup

- If an issue is intermittent, you can have a loose connection. Verify that the following items are secure or properly installed:
  - All connections to the computer including any add-in cards
  - Any captive thumbscrews for the drive assembly
  - The memory modules
- Does your computer have a virus? Run an antivirus software.
- Is the UEFI properly configured? To restore the default UEFI settings, see Load the System Defaults on page 87.
- If there is a flickering display or a locked computer, restart the computer as specified in Restart the Computer on page 33. Although the computers have a regulated and protected power supply, a transient voltage in the power line or peripheral cable can cause errors.
- Is the drive's data cable properly connected? Verify that the computer can start from an external bootable device.
- Is the computer overheating? Refer to the system health status indicator on the computer's front panel. The light indicates the computer's temperature threshold has been exceeded.

  If the system health status indicator remains lit, verify the following:
  - Any fan (if available) is working.
  - Any fan filter (if available) is clean.
  - Any cooling method (such as heat sink and vents) is not blocked.
  - There is proper clearance as detailed in Mounting Clearance Requirements on page 22.
  - The air temperature is within the operating range specified in Table 7 on page 91.

Issues Running New Software

- Does the software have a hardware requirement that is not present?
- Are you using an authorized copy of the software? Some software does not work without proper activation.
- Did the software install correctly? Reinstall the software.
- Are you following the software's instructions? Refer to the software vendor's user manual.

Issues with the Add-in Card

- Is the card installed and configured correctly? Verify the jumper and other configuration settings.
- Are the card cables properly connected?
- Is the add-in card recognized in Device Manager?
- A card issue not listed here? Refer to troubleshooting information supplied by the add-in card manufacturer.

Issues with an External Display

- Are the display contrast and brightness controls properly adjusted? Refer to the operating system containing the video driver for set-up functions.
- Verify that the selected character color is not the same as the background color.
- Is the display compatible with the selected video mode?
- Is the video cable properly connected?
- Is the video driver properly installed?
- Restart the computer with the external display connected and turned on.
- Is the display functioning properly? Verify display function by operating it with another computer.

Diagnostics

If you completed the troubleshooting steps and are still having issues, use the Diagnostics menu in the UEFI set-up utility to isolate the issue. Diagnostics can determine the cause of a malfunction by testing computer components, such as the processor, memory, internal drives, video, and other hardware.

Follow these steps to run Diagnostics.

1. Restart the computer as specified in Restart the Computer on page 33.
2. During POST, press one of the following function keys on an attached keyboard:
   - F2 to access the UEFI set-up utility. Click Diagnostics on the set-up screen.
   - F10 to directly access the Diagnostics menu of the UEFI set-up utility.

You can perform an initial diagnosis without disconnecting or moving your computer. The process takes as little as five minutes or as long as eight hours, depending on the test selected. After Diagnostics has run, you can generate a report for analysis by a technical support representative, expediting any necessary repair process.

See Diagnostics on page 74 for more information.

Load the System Defaults

If the computer fails after you make changes in the set-up menus, load the system default settings to correct the error. These default settings have been selected to optimize your computer's performance.

Follow these steps to load the system defaults.

1. Restart the computer as specified in Restart the Computer on page 33.
2. During POST, press F2 to enter the UEFI set-up utility.
3. On the set-up screen, click Firmware Configuration.
4. On the Main screen, click Default (A).
5. To save your changes, click Save (B).
6. To close the UEFI set-up utility, click Exit (C).

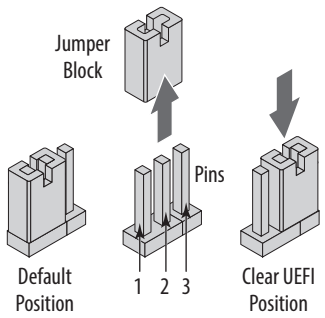
Clear the UEFI

If the system configuration has been corrupted, an incorrect setting has caused error messages to be unreadable, or you cannot access the UEFI set-up utility to load the system defaults, you must clear the system configuration values stored in the UEFI.

Follow these steps to clear the UEFI.

1. Back up all system data and then shut down the computer.
2. Follow the steps for Pre-configuration on page 36.
3. Remove the cover as detailed in Remove the Cover on page 38.
4. Locate the Clear UEFI (CMOS1) jumper on the motherboard.

   See Figure 5 on page 17 for its location.
5. Remove the jumper block from its default position (over pins 1 and 2).
6. Place the jumper block over pins 2 and 3 **for 10 seconds**.
7. Return the jumper block to its default position.



> **IMPORTANT** The jumper block must be returned to its default position over pins 1 and 2. The computer does not start if you leave the jumper block over pins 2 and 3.

8. Reinstall the cover as detailed in Reinstall the Cover on page 39.
9. Follow the steps for Post-configuration on page 37.

> **IMPORTANT** When you clear the UEFI, all UEFI settings return to their defaults. UEFI settings other than default must be reconfigured after clearing the UEFI.

10. During POST, press F2 to enter the UEFI set-up utility and reconfigure settings.

Ship or Transport the Computer

If you need to ship the computer via common carrier or otherwise transport it to another location for servicing or any other reason, you must first uninstall the computer and place it in its original packing material.

> **ATTENTION:** Do not ship or transport the computer when it is installed in a machine, panel, or rack. Doing so can damage the computer. You must uninstall the computer and place it in its original packing material before shipping. Rockwell Automation is not responsible for damage incurred to a computer that is shipped or transported while installed in a machine, panel, or rack.

Specifications

The following tables contain specifications for 750R and 1450R non-display computers. For additional specifications, go to http://ab.rockwellautomation.com/Computers.

Table 5 - Hardware and Software Specifications

Specifications	Attribute	750R (Cat. No. 6177R-MM)						1450R (Cat. No. 6177R-RM)						
		PXP	PW7	PN0	AW7	SS8	SN0	PXP	PW7	PN0	RN0	AW7	SS8	SN0
Hardware	Display	Requires external display												
	Processor	Intel Core i3-2120 (3.3 Ghz, 2C)			Intel Core i5-2400 (3.1 Ghz, 4C)			Intel Core i3-2120 (3.3 Ghz, 2C)				Intel Core i5-2400 (3.1 Ghz, 4C)		
	Hyperthreading	Yes			No			Yes				No		
	Turboboost	No			Yes (3.4 Ghz max)			No				Yes (3.4 Ghz max)		
	PCH	Intel Q67 Express												
	Remote management	Intel AMT 7.0 (without KVM)			Intel AMT 7.0 (with KVM)			Intel AMT 7.0 (without KVM)				Intel AMT 7.0 (with KVM)		
	Graphics controller	Intel HD2000												
	Video resolution (max)	1920 x 1200												
	Ethernet LAN	10/100/1000 Mbps, 2 ports; Intel 82579LM (LAN1) and Intel 82574L (LAN2)												
	Thermal solution	• 1 chassis fan • 1 heatsink fan						• 2 chassis fans • 1 heatsink fan						
	Expansion slots	• 1 PCI • 1 PCI-express x16(1) • 1 PCI-express x4 • 1 PCI-express x1						• 4 PCI • 1 PCI-express x16(1) • 1 PCI-express x4 • 1 PCI-express x1						
	System memory													
	Supplied	4 GB (2 x 2 GB)			8 GB (2 x 4 GB)			4 GB (2 x 2 GB)				8 GB (2 x 4 GB)		
	Maximum	32 GB												
	Memory type	DDR3-1333, PC3-10600, non-ECC												
	Memory slots	4												
	Hard disk drive (HDD)													
	Quantity	1				2		1			2	1	2	
	Size (min/each)	500 GB, 3.5 in.												
	Interface	SATA												
	Optical disc drive (ODD)	Slim DVD-RW												

(1) 150 W max with included 6/8 pin PCIe power connector.

Table 5 - Hardware and Software Specifications (continued)

Specifications	Attribute	750R (Cat. No. 6177R-MM)						1450R (Cat. No. 6177R-RM)						
		PXP	PW7	PN0	AW7	SS8	SN0	PXP	PW7	PN0	RN0	AW7	SS8	SN0
Hardware (continued)	I/O ports	• 2 front USB 2.0, 1 internal USB 2.0 • 1 front USB 3.0 • 4 rear USB 2.0 • 1 rear USB 3.0 • 2 serial (RS-232) • 2 Ethernet (each at 10/100/1000 Mbps) • 1 parallel • 1 eSATAp (5V, 500 mA) • 2 DVI (1 DVI-I, 1 DVI-D)(2) • 1 PS/2 keyboard • 1 PS/2 mouse												
	RAID 1 enabled	No				Yes	No				Yes	No	Yes	No
	RAID capabilities(1)	RAID 0 or RAID 1												
	Audio controller	Azalia HD Audio												
	Audio codec	Realtek ALC269												
	Audio jacks	• 1 line-in • 1 line-out • 1 mic-in												
Software	Operating system	See page 12												
	BIOS/UEFI vendor	AMI (UEFI 2.1 compliant)												

(1) With second HDD installed and RAID array configured.
(2) DVI-I port can be converted to VGA with supplied adapter.

Table 6 - Power Specifications

Attribute	750R (Cat. No. 6177R-MM), 1450R (Cat. No. 6177R-RM)
Input voltage, AC	100…240V, autoranging
Line frequency, AC	50/60 Hz
Power consumption, AC	100…240V; 10…5 A 50/60 Hz
Power management	ACPI compliant
Power supply	600 W, 80 PLUS Bronze efficiency

Table 7 - Environmental Specifications

Attribute	750R (Cat. No. 6177R-MM), 1450R (Cat. No. 6177R-RM)
Dimensions (HxWxD), approx 750R 1450R	 360 x 170 x 381 mm (14.17 x 6.69 x 15.01 in.) 176 x 431 x 465 mm (6.93 x 16.97 x 18.31 in.)
Weight, approx 750R 1450R	 13.8 kg (30.36 lb) 14.0 kg (30.80 lb)
Mounting option 750R 1450R	 Machine mount 4U rack mount
Temperature, operating 750R and 1450R	 0…50 °C (32…113 °F)
Temperature, nonoperating	-20…60 °C (-4…140 °F)
Relative humidity	10…90% noncondensing
Shock, operating	15 g (1/2 sine, 11 ms)
Shock, nonoperating	30 g (1/2 sine, 11 ms)
Acoustic noise, idle 750R 1450R	 44.3 dB at 50 cm 46.6 dB at 50 cm
Acoustic noise, max 750R 1450R	 63.4 dB at 50 cm 64.4 dB at 50 cm
Vibration, operating	0.006 in p-p, 10…57 Hz, 1.0 g peak, 57…640 Hz
Vibration, nonoperating	0.012 in p-p, 10…57 Hz, 2.0 g peak, 57…640 Hz

Table 8 - Certifications

Attribute (1)	750R (Cat. No. 6177R-MM), 1450R (Cat. No. 6177R-RM)
c-UL-us	Safety: UL/c-UL Listed per UL 60950-1
CE	Immunity standards: EN55024, EN61000-3-2, EN61000-3-3 Emission standards: EN55022 Class A Low voltage directive: LVD 2006/95/EC
FCC	Class A emissions
C-Tick	Emission standards: AS/NZS CISPR 22 Class A
KCC	Emissions standards: Class A 이 기기는 업무용(A급) 전자파적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의 지역에서 사용하는 것을 목적으로 합니다.
RoHS	European China Turkey RoHS (EEE Yönetmeliğine Uygundur. In Conformity with the EEE Regulation)

(1) See http://www.rockwellautomation/certification for declarations of conformity, certificates, and other certification details.

Notes:

Accessories Installation

Objectives

This appendix provides information about installing accessories available for this computer.

This appendix covers the following topics:

- Pre-installation Checklist
- Install a Second HDD
- Install I/O Card Retention Bracket
- Install an Add-in Card
- Install Rack Slides (1450R Computer)
- Install Additional Memory

You can view a current list of accessories at this Rockwell Automation website at http://ab.rockwellautomation.com/Computers.

ATTENTION: To avoid voiding your computer warranty, we recommend that you use only Allen-Bradley approved accessories.

Pre-installation Checklist

Review the following information before installing any accessories:

- Voltage Precautions on page 35
- Electrostatic Discharge Precautions on page 36

Install a Second HDD

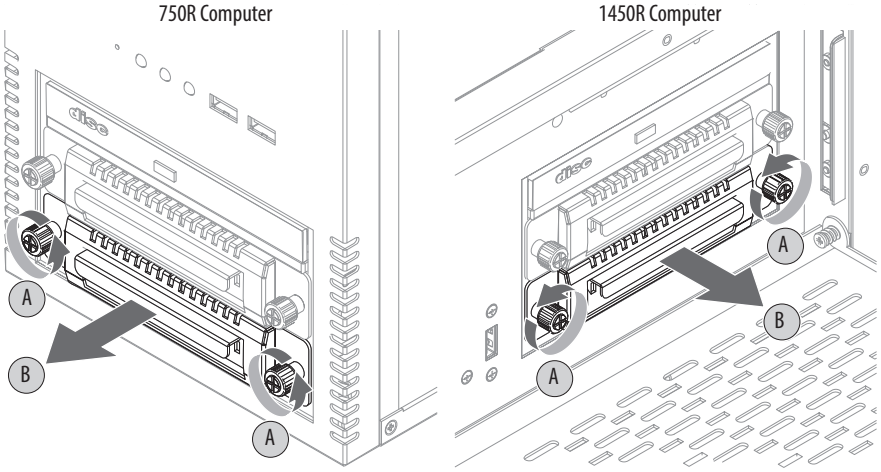
You can install another HDD in the secondary bay (SATA 1). All 6177R computers have two HDD bays but only server models have two HDDs that are factory installed.

Follow these steps to install a second HDD.

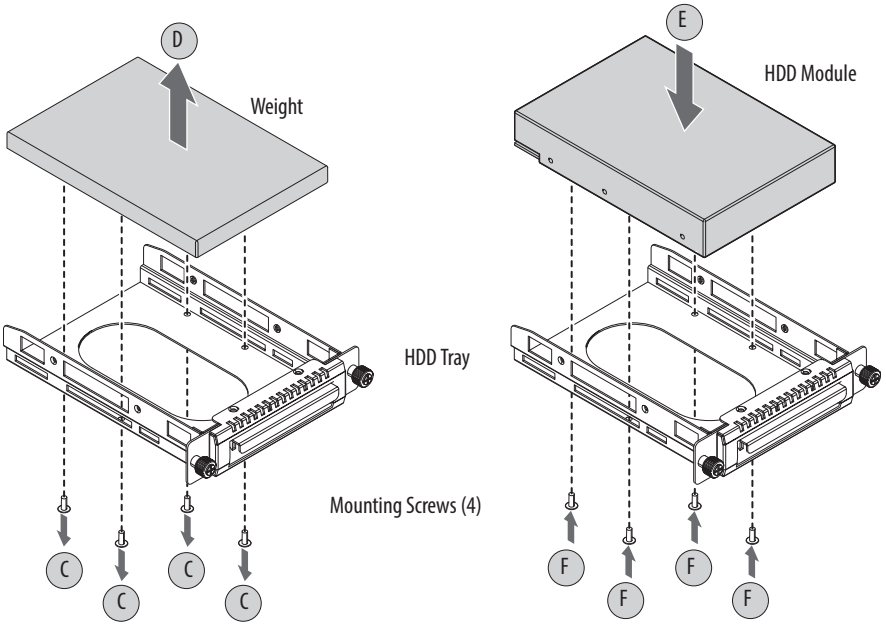
1. Follow the steps for Pre-configuration on page 36.
2. 1450R computers: perform step 2 on page 40 before proceeding to step 3.

TIP Use an antistatic wrist strap connected to the work surface, and properly grounded tools and equipment.

3. Remove the HDD assembly from the secondary bay.
   a. Loosen the two captive thumbscrews of the HDD assembly (A).
   b. Pull out the HDD assembly from its bay (B).



4. Remove the weight from the drive tray.
   a. Remove the four mounting screws from the bottom of the weight (C).
   b. Detach the tray from the weight (D).

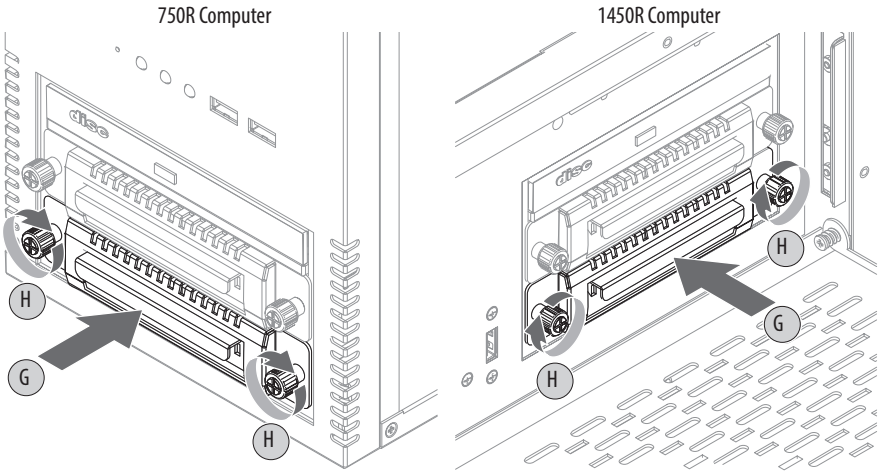


5. Install the new HDD module to the tray.

ATTENTION: Mechanical shock can damage a HDD module. Do not drop or bump the HDD module.

   a. Install the new HDD module with the PCB-side down.
   b. Fasten the tray over the HDD module (E).
   c. Secure the tray to the HDD module with the four mounting screws (F). Torque the screws to 0.59 N•m (5.2 lb•in).

6. Return the HDD assembly into its bay (G).
7. Tighten the two captive thumbscrews of the HDD assembly to secure it to the computer (H).



8. Follow the steps for Post-configuration on page 37.

Install I/O Card Retention Bracket

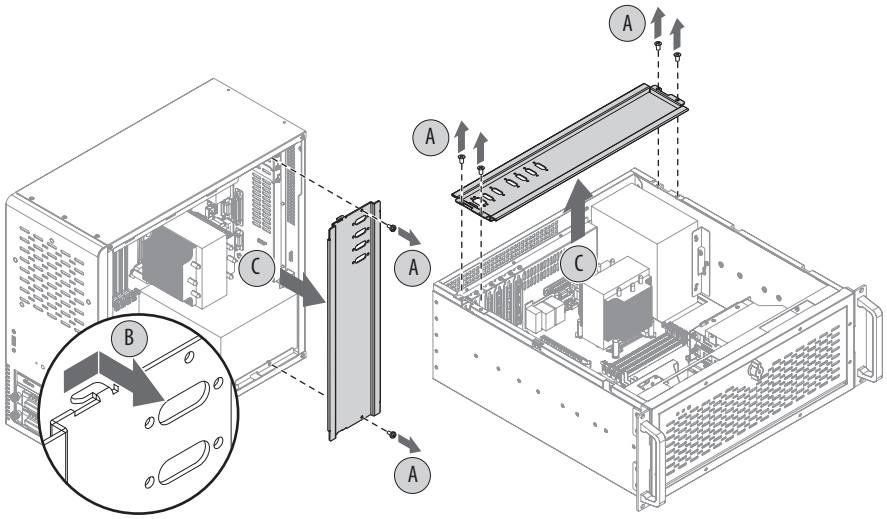
All 750R and 1450R computers have a factory-installed chassis cross member. An I/O card retention bracket (catalog number 6189V-PCIBARMM for 750R computers and catalog number 6189V-PCIBARRM for 1450R computers) provides additional seating support for I/O cards in applications where shock and vibration are issues.

Follow these steps to install the I/O card retention bracket.

1. Follow the steps for Pre-configuration on page 36.
2. Remove the computer cover as detailed in Remove the Cover on page 38.
3. Remove the factory-installed chassis cross member.
   a. 750R computers: Remove the two screws securing the chassis cross member (A).

      1450R computers: Remove the four screws securing the chassis cross member (A).

      Save all screws to install the I/O card retention bracket.
   b. 750R computers: Slide the chassis cross member to the right to release the seating slots (B).
   c. Detach the cross member from the chassis (C).

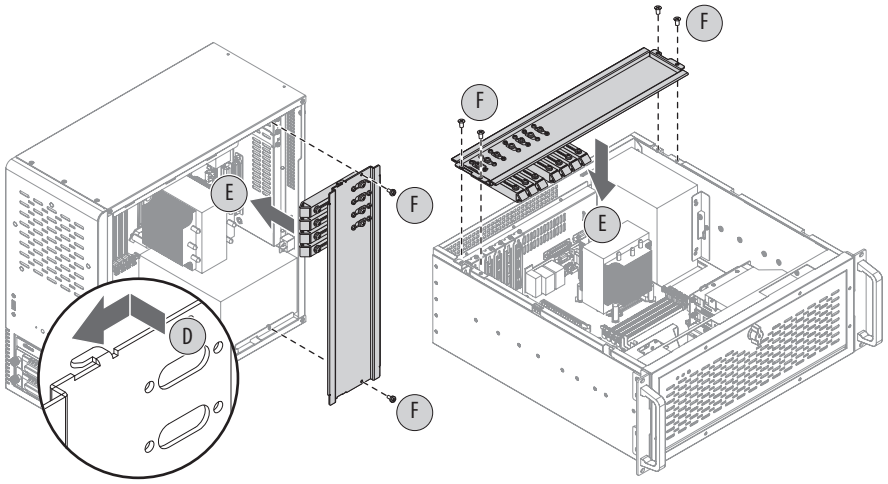


4. Install the I/O card retention bracket.

IMPORTANT	Verify that each sleeve of the I/O card retention bracket is properly aligned with its corresponding add-in card before performing step 4a for 750R computers and before performing step 4c for 1450R computers.

   a. 750R computers: Slide the I/O card retention bracket to the left to secure the seating slots (D).
   b. Align the I/O card retention bracket with the mounting holes (E).
   c. 750R computers: Secure the I/O card retention bracket to the chassis with the two screws from the factory-installed chassis cross member (F).

      1450R computers: Secure the I/O card retention bracket to the chassis with the four screws from the factory-installed chassis cross member (F).
   d. Torque the screws to 0.6 N•m (5.2 lb•in).



750R Computer 1450R Computer

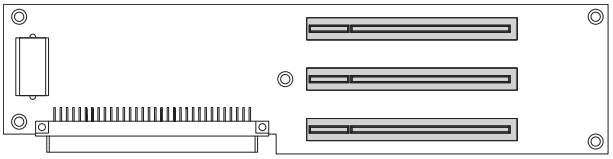
5. Reinstall the computer cover as detailed in Reinstall the Cover on page 39.
6. Follow the steps for Post-configuration on page 37.

Install an Add-in Card

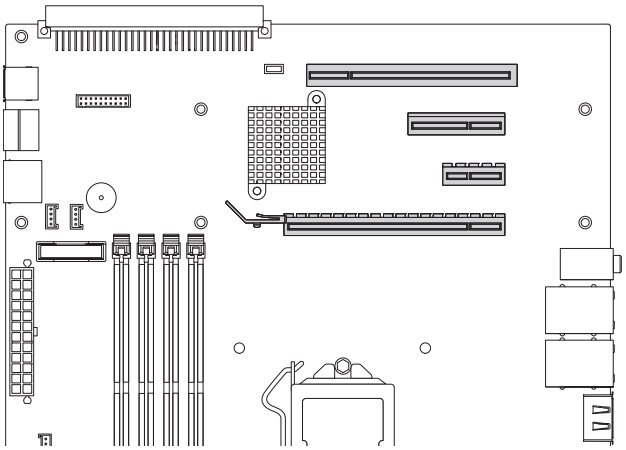
The motherboard of the 750R and 1450R computers has four PCI slots that support installation of half-length PCI add-in cards.

- One PCI slot
- Three PCI-express (PCIe) slots

In addition to these four PCI slots, the 1450R computer has a slot expansion board that provides another three PCI slots.



PCI expansion board slots of the 1450R computer.



Motherboard PCI expansion slots for 750R and 1450R computers.

ATTENTION: Add-in cards are sensitive to ESD and require careful handling.

- Hold cards only by the edges.
- Do not touch the card connectors, components, or circuits.
- After removing an add-in card, place it on a flat, static-free surface, component side up.
- Do not slide the card over any surface.

IMPORTANT Use an antistatic wrist strap connected to the work surface, and properly grounded tools and equipment.

Follow these steps to install an add-in card.

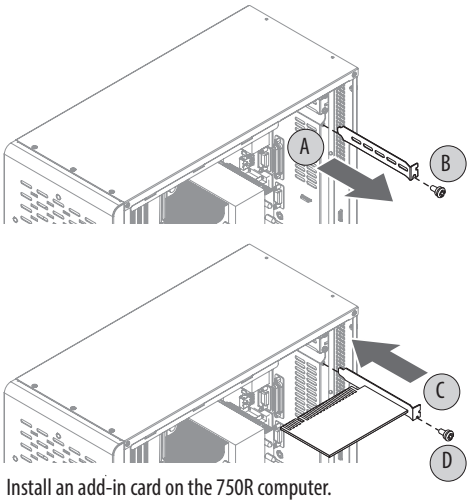
1. Follow the steps for Pre-configuration on page 36.
2. Remove the cover as detailed in Remove the Cover on page 38.
3. Remove the chassis cross member or I/O card retention bracket as detailed in Install I/O Card Retention Bracket on page 96.
4. Locate an empty PCI slot.

5. Remove the screw securing the slot cover of the selected PCI slot (A).
6. Pull out the slot cover (B) and store it.

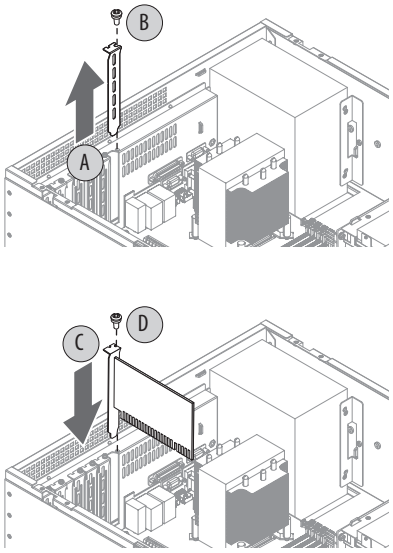
IMPORTANT	Do not discard the slot cover. If the add-in card is removed in the future, the slot cover must be reinstalled to maintain proper cooling.

7. Remove the add-in card from its protective packaging.
8. Slide the add-in card into the selected PCI slot (C).

   Press to make sure it is firmly seated.
9. Secure the add-in card bracket to the chassis with its screw (D).



Install an add-in card on the 750R computer.



Install an add-in card on the 1450R computer.

10. Connect any necessary cables to the card.
11. Reinstall the chassis cross member or I/O card retention bracket as detailed in Install I/O Card Retention Bracket on page 96.

IMPORTANT	The chassis cross member or I/O card retention bracket must be installed for vibration and shock purposes.

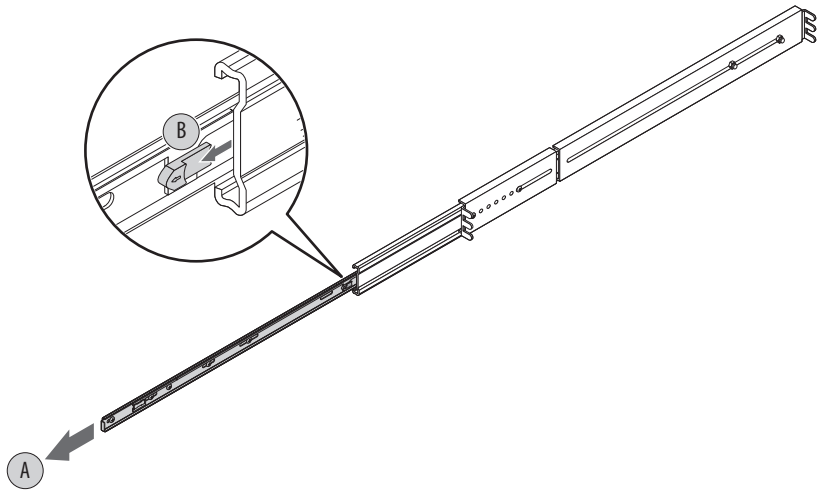
12. Refer to any installation instructions that came with the add-in card to verify that all installation steps are followed.
13. Follow the steps for Post-configuration on page 37.

Install Rack Slides (1450R Computer)

You can install the 1450R computer in a rack cabinet. The computer must be supported by rack slides or fastened to a shelf.

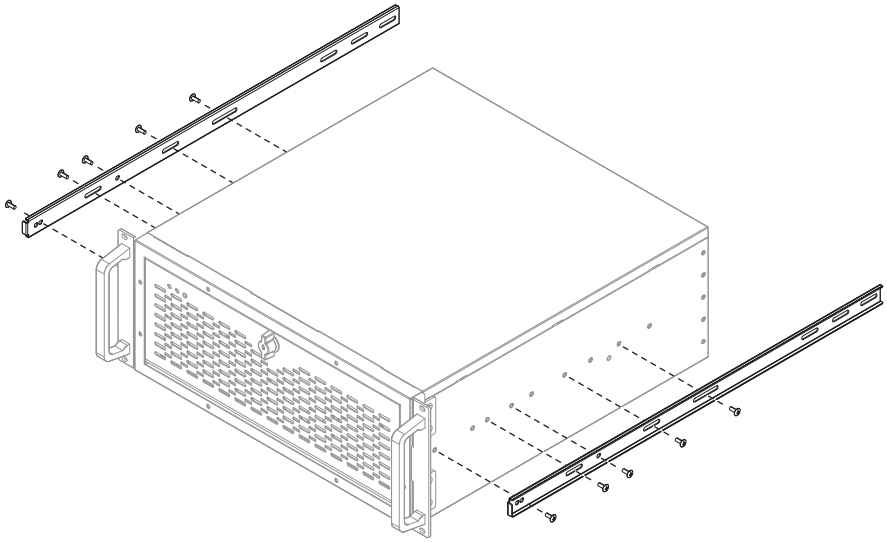
Follow these steps to install the rack slides and mount the 1450R computer in a rack cabinet.

1. Remove the inner rails from each rack slides.
   a. Extend the inner rail from the rack slide until the rail release latch clicks (A).
   b. Depress the inner rail release latch and slide the inner rail out (B).



2. Attach each rack slide to the computer by using five screws in the holes marked '2.'

   Torque the screws to 1.3 N•m (12.1 lb•in).



3. Attach the left and right mounting rails at the desired U position in the rack cabinet by using four screws (C), two adapter plates (D), and four nuts (E) for each mounting rail (F).
4. Extend the middle sliding piece of each mounting rail forward until you hear an audible click (G).

5. Align the rack slides to the corresponding slides inside the cabinet, and insert the rack slides attached to the server into the mounting rails (H).

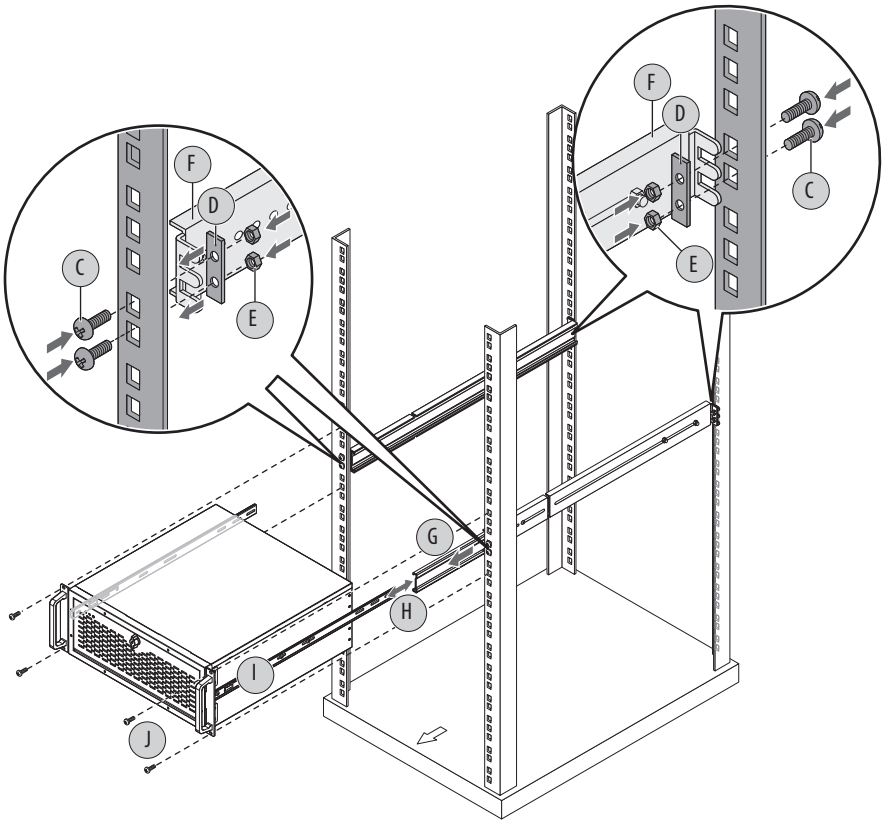
   TIP For ease of installation, make sure two or more people help to install the computer.

6. Depress the locking latch and push the computer completely into the rack until you hear a click sound (G).

   See step 1 on page 100 for further information.

7. Secure the computer to the front of the rack cabinet by using four screws (H).

   Torque the screws to 1.3 N•m (12.1 lb•in).



8. Align the rack slides to the corresponding slides inside the cabinet, and insert the rack slides attached to the server into the mounting rails (H).
9. Depress the locking latch and push the computer completely into the rack until you hear a click sound (I).

   See step 3 on page 100 for further information.

10. Secure the computer to the front of the rack cabinet by using four screws (J).

    Torque the screws to 1.3 N•m (12.1 lb•in).

11. Follow the steps for Post-configuration on page 37.

Install Additional Memory

The motherboard of the 750R and 1450R computers has four DIMM slots that support up to 32 GB maximum system memory.

See Replace or Add Memory Modules on page 42 for further information on installing additional memory.

Numerics

A

B

C

D

F

H

I

M

N

O

P

R

S

T

U

Notes:

Notes:

Rockwell Automation Support

Rockwell Automation provides technical information on the Web to assist you in using its products. At http://www.rockwellautomation.com/support you can find technical and application notes, sample code, and links to software service packs. You can also visit our Support Center at https://rockwellautomation.custhelp.com/ for software updates, support chats and forums, technical information, FAQs, and to sign up for product notification updates.

In addition, we offer multiple support programs for installation, configuration, and troubleshooting. For more information, contact your local distributor or Rockwell Automation representative, or visit http://www.rockwellautomation.com/services/online-phone.

Installation Assistance

If you experience a problem within the first 24 hours of installation, review the information that is contained in this manual. You can contact Customer Support for initial help in getting your product up and running.

United States or Canada	1.440.646.3434
Outside United States or Canada	Use the Worldwide Locator at http://www.rockwellautomation.com/rockwellautomation/support/overview.page, or contact your local Rockwell Automation representative.

New Product Satisfaction Return

Rockwell Automation tests all of its products to help ensure that they are fully operational when shipped from the manufacturing facility. However, if your product is not functioning and needs to be returned, follow these procedures.

United States	Contact your distributor. You must provide a Customer Support case number (call the phone number above to obtain one) to your distributor to complete the return process.
Outside United States	Please contact your local Rockwell Automation representative for the return procedure.

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