Integrated Display and Non-display Industrial Computers

Catalog Numbers 6181P, 6189V-6181TRAY, 6189V-6181SSD32GB, 6189V-6181SSD64GB, 6189V-6181SSD256GB, 6189V-BOOKBRKT, 6189V-DPDVI, 6189V-DPVGA, 6189V-PCIR, 6189V-EXTPCI2, 6189V-PSU6181AC, 6189V-PSU6181DC, 6189V-8GSODDR3, 6189V-16GSODDR3, 6189V-ODD, 6189V-ACCESSBOX6181

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.

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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).

Preface

Chapter 1

Features

Chapter 2

Install the Computer

Chapter 6

Troubleshoot the System

Chapter 7

Use a Touch Screen

Chapter 8

Clean the Computer

Appendix A

Install Accessories

Index

Notes:

This manual is a user guide for 6181P integrated display and non-display industrial computers. It provides procedures to the following:

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

Summary of Changes

This manual contains new and updated information as indicated in this table.

Topic	Page
Relocated Summary of Changes table to Preface section and removed Summary of Changes section.	7
Added publication IC-TD001 to table in Additional Resources section.	9
Added footnote 4 to Table 1.	15
Added text in parentheses in footnote 1 of Figure 1 table.	16
Added RAID Configuration section.	22

Abbreviations

The following abbreviations are used in this publication.

Abbr	Meaning	Abbr	Meaning
ACPI	Advanced configuration (and) power interface	PCB	Printed circuit board
AHCI	Advanced host controller interface	PCDC	Product Compatibility and Download Center
AMI	American Megatrends, Inc.	PCH	Platform control hub
AMT	Active management technology	PCI	Peripheral component interconnect
BIOS	Basic input/output system	PCIe	Peripheral component interconnect express
CF	CompactFlash	PELV	Protective extra low voltage
CPU	Central processing unit	PERR	PCI parity error
CMOS	Complementary metal oxide semiconductor	POST	Power on self-test
COM	Communication (serial port interface)	PSU	Power supply unit
DDR	Double data rate (RAM)	PXE	Pre-boot execution environment
DIMM	Dual in-line memory module	RAID	Redundant array (of) independent disks
DP	DisplayPort (digital display interface)	RAM	Random access memory
DVI	Digital video interface	RTC	Real time clock
eDP	Embedded DisplayPort	SAS	Serial attached SCSI
EEA	European Environment Agency	SATA	Serial advanced technology attachment
EMC	Electromagnetic compatibility	SCSI	Small computer system interface
ESD	Electrostatic discharge	SELV	Safety extra low voltage
EWF	Enhanced write filter	SERR	PCI signal error
FAT	File allocation table	SLC	Single-level cell
IDE	Integrated device electronics	SPD	Serial presence detect
IEC	International Engineering Consortium	SSD	Solid-state drive
LAN	Local area network	TFT	Thin film transistor
LVDS	Low-voltage differential signaling	UEFI	Universal extensible firmware interface
MLC	Multilevel cell	USB	Universal serial bus
NEMA	National Electrical Manufacturers Association	UPS	Uninterruptible power source
ODD	Optical disk drive	VBAT	Voltage (battery)
OSK	On screen keyboard	VDDR	Voltage (DDR RAM)
PCAP	Protective capacitive (touch screen)	VGA	Video graphics array

Additional Resources

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

Resource	Description
Industrial Computers and Monitors Specifications Technical Data, publication IC-TD001	Provides technical specifications for Rockwell Automation industrial computers and monitors, which includes 6181P industrial computers.
Industrial Integrated Display Computers Product Information, publication 6181P-PC001	Provides basic product information on the 6181P integrated display and non-display computers.
Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1	Provides general guidelines to install a Rockwell Automation industrial system.

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

Notes:

Features

Topic	Page
Computer Overview	11
Operating Systems	12
Computer Options	13
Before You Begin	15
Parts List	16
Hardware Features	16
System Features	19

Computer Overview

The 6181P integrated display and non-display industrial computers provide you with a simplified, all-in-one touch screen and a CPU with the technology to support everything from traditional Microsoft and Linux operating systems to virtualized images. This platform was designed to complement the Intel fourth generation Core-i processors and bring technology such as USB 3.0, DisplayPort, and Intel Rapid Start capabilities to these computers.

6181P integrated display industrial computers answer the needs of the industries we serve by offering a variety of display sizes, models, and mounting methods. Display and non-display models are available, with display sizes offered in both standard (4:3 and 5:4) format and widescreen (16:9) format. 6181P integrated display computers with stainless steel bezels address NEMA 4X requirements and are a choice selection for food and beverage applications. Various mounting methods are possible with these computers in landscape and portrait orientations, as well as a space-saving 'bookshelf' mounting option on non-display versions.

The 6181P integrated display computers with an aluminum bezel provide several easy-to-use features for quicker decisions and action:

- Front status indicators - Provide a quick at-a-glance status about the personal computer hardware.
- Front lockable USB 3.0 port - Provides easy but controlled access to files, images, and system data.
- Front User Interface Button (UIB) - Provides one-touch UEFI (BIOS) access upon startup and is user-configurable for application flexibility.

The 6181P integrated display industrial computers offer a platform that is designed, built, and tested to withstand the wear and tear of everyday use in tough, industrial environments.

Operating Systems

The following Microsoft-licensed operating systems are available:

- Windows 7 Professional (64 bit), Service Pack 1
- Windows Server 2008 R2 Standard (64 bit), Service Pack 1
- Windows Embedded Standard (WES) 7 (64 bit), Service Pack 1
- Windows 10 IoT Enterprise (64 bit)

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

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) site: https://compatibility.rockwellautomation.com/Pages/home.aspx.

Windows 7 Professional (32 bit), Service Pack 1 can also be downloaded from the Rockwell Automation PCDC site.

Computer Options

This table summarizes options available for 6181P industrial computers. A comparative summary of features for the computers is in Industrial Computers and Monitors Specifications Technical Data, publication [IC-TD001](#).

Table 1 - Computer Options

Cat. No. (6181P-)	Model	Level[1]	Series	Power	Display Size (in.)	Aspect Ratio	Touch Screen	Bezel	Storage	Windows OS[3]
00N2MW71AC	NDM	Performance	F	AC	—	—	—	None (non-display)	MLC SSD	7 Professional SP1
00N2MW71DC				DC						
00N2SWX1AC				AC					SLC SSD	10 IoT Enterprise
00N2MWX1DC				DC						
00N2SW71AC				AC						7 Professional SP1
00N2SW71DC				DC						
00N2SE71AC				AC						WES 7 SP1
00N2SE71DC				DC						
00N3MW71AC		Advanced		AC					MLC SSD	7 Professional SP1
00N3MW71DC				DC						
00N3MWX1AC				AC						10 IoT Enterprise
00N3MWX1DC				DC						
00N3SW71AC				AC					SLC SSD	7 Professional SP1
00N3SW71DC				DC						
00N3MS81AC				AC					MLC SSD (2)	Server 2008 R2 SP 1[4]
00N3MS81DC				DC						
12A2MW71AC	1200P	Performance		AC	12	4:3	Resistive	Aluminum	MLC SSD	7 Professional SP1
12A2MW71DC				DC						
12A2MWX1AC				AC						10 IoT Enterprise
12A2MWX1DC				DC						
12A2SW71AC				AC					SLC SSD	7 Professional SP1
12A2SW71DC				DC						
12A2SE71AC				AC						WES 7 SP1
12A2SE71DC				DC						
15A2MW71AC	1500P	Performance		AC	15	4:3	Resistive	Aluminum	MLC SSD	7 Professional SP1
15A2MW71DC				DC						
15A2MWX1AC				AC						10 IoT Enterprise
15A2MWX1DC				DC						
15A2SW71AC				AC					SLC SSD	7 Professional SP1
15A2SW71DC				DC						
15A2SE71AC				AC						WES 7 SP1
15A2SE71DC				DC						
15C2MW71AC				AC				Stainless steel	MLC SSD	7 Professional SP1
15C2MW71DC				DC						
15C2MWX1AC				AC						10 IoT Enterprise
15C2MWX1DC				DC						
15C2SW71AC				AC					SLC SSD	7 Professional SP1
15C2SW71DC				DC						
15A3MW71AC		Advanced		AC			PCAP	Aluminum	MLC SSD	
15A3MW71DC				DC						
15A3MWX1AC				AC						10 IoT Enterprise

Table 1 - Computer Options (continued)

Cat. No. (6181P-)	Model	Level[1]	Series	Power	Display Size (in.)	Aspect Ratio	Touch Screen	Bezel	Storage	Windows OS[3]
15A3MWX1DC	1500P	Advanced	F	DC	15	4:3	PCAP	Aluminum	MLC SSD	10 IoT Enterprise
15A3SW71AC				AC					SLC SSD	7 Professional SP1
15A3SW71DC				DC						
15B3MW71AC				AC	15[2]	16:9			MLC SSD	
15B3MW71DC				DC						
15B3MWX1AC				AC						10 IoT Enterprise
15B3MWX1DC				DC						
15B3SW71AC				AC					SLC SSD	7 Professional SP1
15B3SW71DC				DC						
17A2MW71AC	1700P	Performance		AC	17	5:4	Resistive	Aluminum	MLC SSD	7 Professional SP1
17A2MW71DC				DC						
17A2MWX1AC				AC						10 IoT Enterprise
17A2MWX1DC				DC						
17A2SW71AC				AC					SLC SSD	7 Professional SP1
17A2SW71DC				DC						
17A2SE71AC				AC						WES 7 SP1
17A2SE71DC				DC						
17C2MW71AC				AC				Stainless steel	MLC SSD	7 Professional SP1
17C2MW71DC				DC						
17C2MWX1AC				AC						10 IoT Enterprise
17C2MWX1DC				DC						
17C2SW71AC				AC					SLC SSD	7 Professional SP1
17C2SW71DC				DC						
17A3MW71AC		Advanced		AC			PCAP	Aluminum	MLC SSD	
17A3MW71DC				DC						
17A3MWX1AC				AC						10 IoT Enterprise
17A3MWX1DC				DC						
17A3SW71AC				AC					SLC SSD	7 Professional SP1
17A3SW71DC				DC						

Table 1 - Computer Options (continued)

Cat. No. (6181P-)	Model	Level[1]	Series	Power	Display Size (in.)	Aspect Ratio	Touch Screen	Bezel	Storage	Windows OS[3]
19A2MW71AC	1900P	Performance	F	AC	19	5:4	Resistive	Aluminum	MLC SSD	7 Professional SP1
19A2MW71DC				DC						
19A2MWX1AC				AC						10 IoT Enterprise
19A2MWX1DC				DC						
19A2SW71AC				AC					SLC SSD	7 Professional SP1
19A2SW71DC				DC						
19A2SE71AC				AC						WES 7 SP1
19A2SE71DC				DC						
19C2MW71AC				AC				Stainless steel	MLC SSD	7 Professional SP1
19C2MW71DC				DC						
19C2MWX1AC				AC						10 IoT Enterprise
19C2MWX1DC				DC						
19C2SW71AC				AC					SLC SSD	7 Professional SP1
19C2SW71DC				DC						
19A3MW71AC		Advanced		AC			PCAP	Aluminum	MLC SSD	
19A3MW71DC				DC						
19A3MWX1AC				AC					MLC SSD	10 IoT Enterprise
19A3MWX1DC				DC						
19A3SW71AC				AC	19[2]	16:9			SLC SSD	7 Professional SP1
19A3SW71DC				DC						
19B3MW71AC				AC					MLC SSD	
19B3MW71DC				DC						
19B3MWX1AC				AC					MLC SSD	10 IoT Enterprise
19B3MWX1DC				DC						
19B3SW71AC				AC					SLC SSD	7 Professional SP1
19B3SW71DC				DC						

(1) Performance computer models have Intel Core i3 processors and Advanced computer models have Intel Core i7 processors.

(2) 15.6 inches and 18.5 inches for diagonal sizes of 15 and 19 inch widescreen displays, respectively.

(3) All operating systems are 64 bit.

(4) RAID configuration is only available on these two models, 6181P-00N3MS81DC and 6181P-00N3MS81AC.

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 the 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 clips[1] • Keys for front access cover lock[2] • Assembly screw bag
Documents	• Integrated Display Industrial Computers Product Information, publication 6181P-PC001 • One of the following cutout templates: – 6181P and 6181X Industrial Computers Cutout Template for Standard Display Models (4:3 and 5:4 aspect ratios), publication 6181P-DS002[1] – 6181P and 6181X Industrial Computers Cutout Template for Widescreen Display Models (16:9 aspect ratio), publication 6181P-DS003[1] • Production test report

(1) Shipped only with integrated display computers.

(2) Shipped only with integrated display computers with aluminum bezels; see the table in Computer Options on page 13 for more information.

Hardware Features

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

External Components and I/O

Figure 1 - Non-display Computers

Side and Back Views   Bottom View
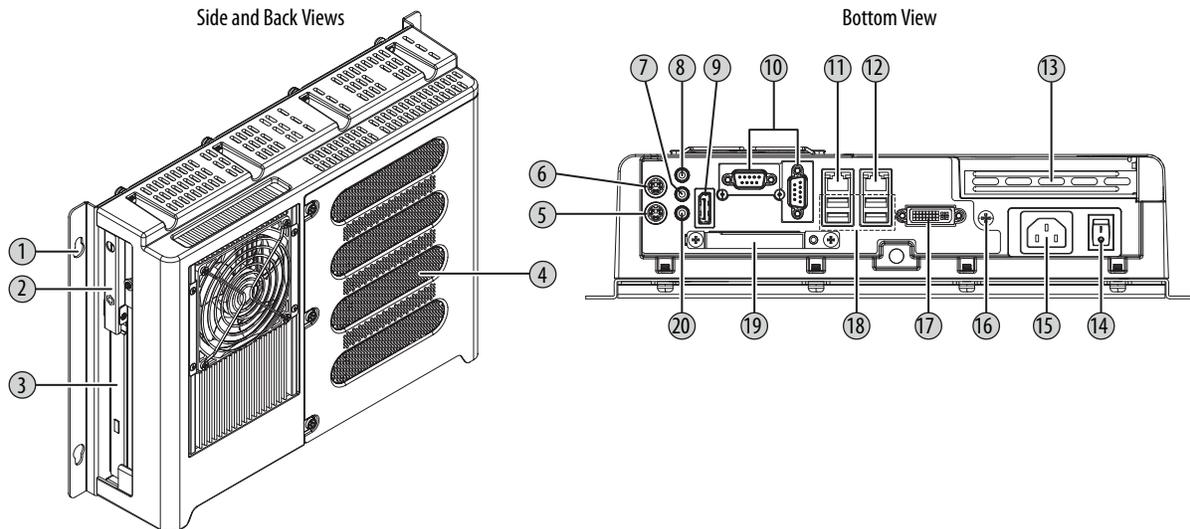
Item	Component
1	Mounting hole, 4
2	SSD
3	Drive bay[1]
4	Rear cover
5	PS/2 keyboard port
6	PS/2 mouse port
7	Audio line-out jack

Item	Component
8	Audio line-in jack
9	DisplayPort connector
10	Serial COM ports, 2
11	LAN 2 Ethernet port (8P8C/RJ45)
12	LAN 1 Ethernet port (8P8C/RJ45)
13	PCIe x8 riser slot cover
14	Power switch

Item	Component
15	Power input, AC or DC[2]
16	Functional ground screw
17	DVI-I port
18	External USB 3.0 ports, 4[3]
19	CompactFlash Type II card slot
20	Microphone-in jack

(1) Bay for ODD, second SSD (only on computers with Windows Server 2008 R2 Standard OS for RAID configuration), or no drive. An ODD is available on all Advanced models, and can be added to Performance models.

(2) Model dependent.

(3) All non-display models have four external USB 3.0 ports and one internal USB 3.0 port.

Figure 2 - Integrated Display Computers

Front, Side, and Back Views   Bottom View
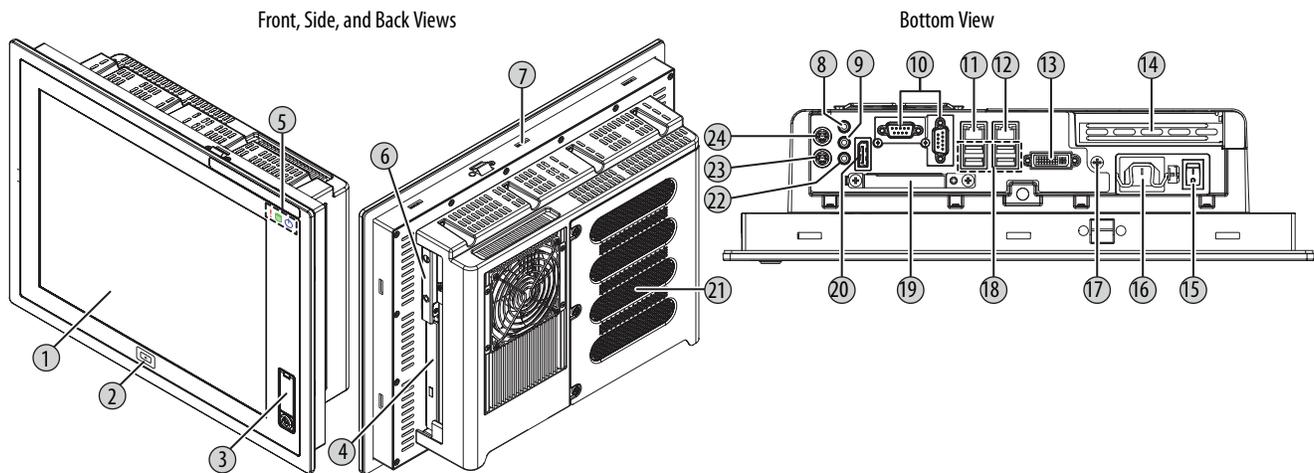
Item	Component	Item	Component	Item	Component
1	Touch screen and display panel	9	Audio line-out jack	17	Functional ground screw
2	User interface button (UIB)[1]	10	Serial COM ports, 2	18	External USB 3.0 ports, 4[4]
3	Front access cover[2]	11	LAN 2 Ethernet port (8P8C/RJ45)	19	CompactFlash Type II card slot
4	ODD[2]	12	LAN 1 Ethernet port (8P8C/RJ45)	20	DisplayPort connector
5	Status indicator icons, 3[2]	13	DVI-I port	21	Rear cover
6	SSD	14	PCIe x8 riser slot cover	22	Microphone-in jack
7	Mounting slots	15	Power switch	23	PS/2 keyboard port
8	Audio line-in jack	16	Power input, AC or DC[3]	24	PS/2 mouse port

(1)   Available only on display models with aluminum bezel.

(2)   An ODD is available on all Advanced models, and can be added to Performance models. For further information, see Install an Optical Disk Drive on page 120.

(3)   Model dependent.

(4)   All display models have four external USB 3.0 ports and one internal USB 3.0 port. Display models with an aluminum bezel have an additional external USB 3.0 port on the bezel (behind the front access cover).

Internal Components

The illustrations in this section show the system board layouts for all 6181P non-display and integrated display computers.

Figure 3 - Motherboard
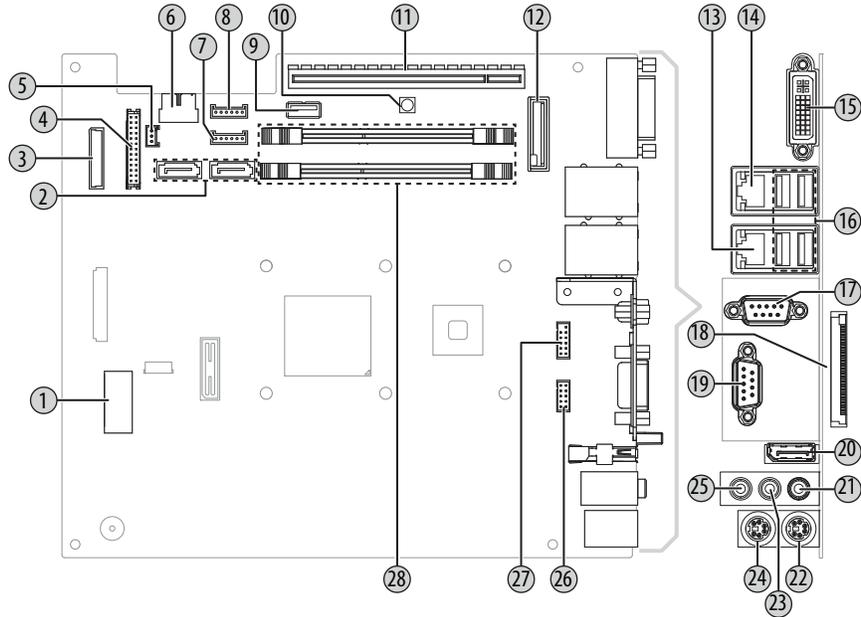
Item	Component
1	Power connector
2	Mini-SATA cable connector, 2
3	eDP signal cable connector
4	Panel cable connector
5	Power switch cable connector
6	USB cable connector
7	SATA power cable connector
8	System fan 1 connector
9	Internal USB 3.0 connector

Item	Component
10	Clear UEFI button
11	Riser-card board connector
12	Battery socket
13	1 Gb LAN 2 port
14	1 Gb LAN 1 port
15	DVI-I port
16	Rear USB 3.0 ports, 4
17	RS-232 serial port, (COM2)
18	CompactFlash Type II slot
19	RS-232 serial port (COM1)

Item	Component
20	DisplayPort connector
21	Microphone-in jack
22	PS/2 keyboard port
23	Audio line-out jack
24	PS/2 mouse port
25	Audio line-in jack
26	COM1 cable connector
27	COM2 cable connector
28	DDR3 DIMM slot, 2

Figure 4 - Panel Adapter Board (only in display models)

Item	Component
1	eDP signal cable connector
2	LVDS connector to the internal display
3	Touch screen connector
4	Panel cable connector
5	LCD backlight connector to the internal display
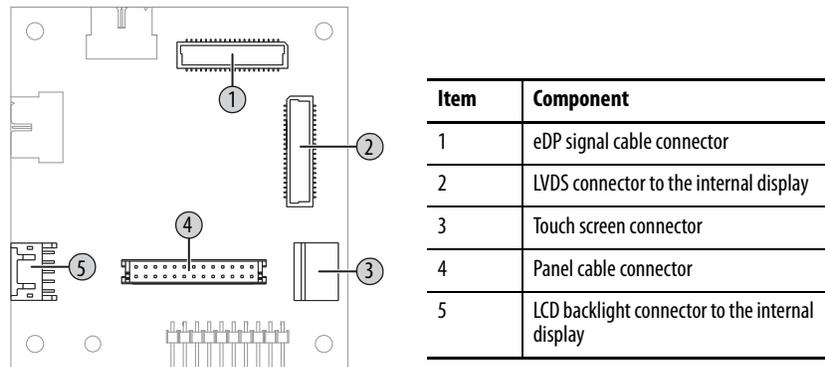
Figure 5 - Riser-card Board, Single-slot

Item	Component
1	Motherboard connector
2	PCIe x8 expansion slot
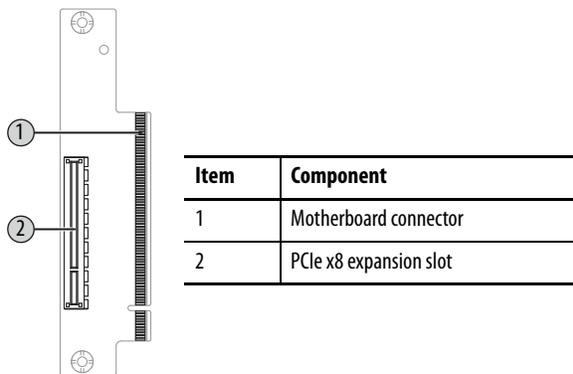
System Features

The following system features are found on this line of integrated display computers.

Multi-touch Touch Screens

The 6181P integrated display industrial computers offer models with glass-front, multi-touch PCAP touch screens. The multi-touch technology provides up to two simultaneous touches and common gesturing (such as flicking, rotating and pinch-to-zoom) when you operate the touch screen. These touch screens can also be operated with gloves.

PCAP touch screens are calibrated at the factory so you do not have to calibrate. The touch screen glass has an anti-reflective coating, which results in a visually appealing and durable touch screen ideal for industrial applications.

Status Indicators and UIB

Integrated display computers with aluminum bezels have three status indicators and a UIB on the front panel. The status indicators provide a quick, at-a-glance view of the computer's status for system temperature, drive activity, and power. Complete descriptions of the indicators are shown in the table below.

The UIB provides you with an easy, one-click access to either the BIOS/UEFI upon startup or applications in the operating system (OS). The functionality can be configured to be any keystroke (up to three keystrokes) in the OS or can be disabled all-together. Configuration of this button is done in the BIOS/UEFI. See User Interface Button (UIB) on page 80 for more information to configure the UIB.
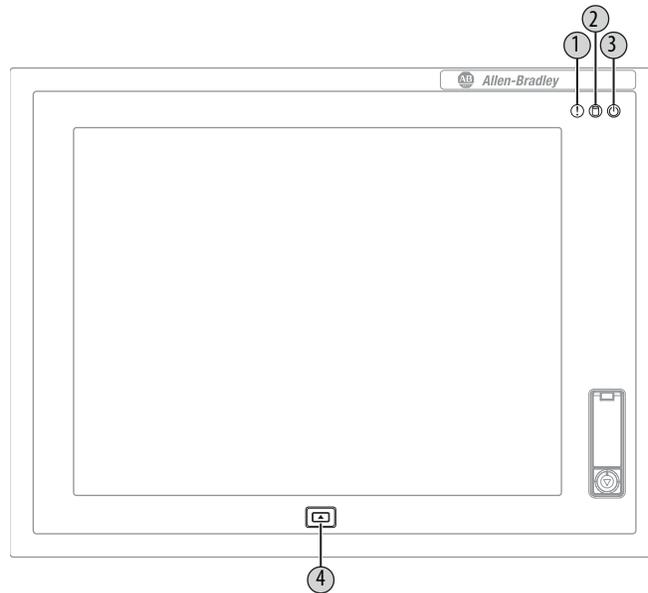
Item	Icon	Indicator	Status	Description
1	**!**	System health status	Red	The temperature threshold of the computer has been exceeded.
			Off	System health is normal.
2		Drive access status	Green	Drive activity.
			Off	No drive activity.
3		Power status	Blue	The computer is operational.
			Amber	The computer is in standby mode.
			Off	The computer is off.
4		User Interface Button (UIB)	—	The UIB can be used as a programmable navigation button. Press during computer startup to access the UEFI. See User Interface Button (UIB) on page 80 to configure the UIB.

Hardware Monitor and Watchdog Timer Utilities

The 6181P computer system images are provided with an integrated Hardware Monitor utility and a Watchdog Timer service. The utilities are available in the images but you must install and enable them.

Hardware Monitor

The Hardware Monitor is an integrated utility that runs on the OS. It monitors the computer temperature and views the system fan speed (if a fan is present). This utility is similar to what you see when you run a third-party program, such as SpeedFan.

Hardware Monitor has a default temperature threshold that can be adjusted by the user. Once the temperature threshold is selected and the service is running, the utility displays a popup message on the display, which indicates that the computer has reached the selected temperature threshold. There is no action taken as a result of the popup and there are no event logs created.

Watchdog Timer

Watchdog timer is a utility that runs on the OS and 'watches' the system. If there is a program error or hardware malfunction that causes the OS to 'hang,' the watchdog timer times out and causes the system to automatically restart. An event log is created after the system restarts because the computer experienced an incorrect shutdown sequence.

This utility is beneficial for situations where constant user interface is not possible, and it is desired to keep the computer up and running for visual and display purposes.

See Watchdog Timer on page 81 for more information on configuring the watchdog timer.

Intel Active Management Technology (AMT) 9.0

Intel® Active Management Technology (AMT) 9.0 is supported on 6181P computers with the Intel Core i7 Quad-core processor. AMT provides remote access and manages products through either the BIOS/UEFI or OS. By default, the 6181P computers are shipped with the AMT disabled. You must enable it to take advantage of the remote management capabilities. For additional information on Intel AMT, visit http://www.intel.com.

See AMT Configuration on page 78 for more information to configure the AMT.

RAID Configuration

Redundant array of independent disks (RAID) configuration can be done on only the two non-display computer models with Windows 2008 Server R2 operating system, catalog numbers 6181P-00N3MS81AC and 6181P-00N3MS81DC.

Install the Computer

Topic	Page
Installation Precautions	24
Installation Guidelines	25
Mounting Clearance Requirements	26
Computer Dimensions	27
Required Tools	30
Install the Computer	30
Connect Peripherals	36
Connect Power	37
Functional Ground Screw	39
Connect to a Network	40

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 22. Without appropriate precautions, there can be potential difficulties with electromagnetic compatibility in other environments due to conducted as well as radiated disturbance.

This equipment is UL Listed and supplied as an open type equipment. To meet some regulatory requirements, the computer must be mounted in an enclosure that is suitably designed for environmental conditions that can be present and appropriately designed to help prevent personal injury resulting from accessibility to live parts. The enclosure must be accessible only by using a tool.

All 6181P integrated display computers are shipped with a gasketed bezel to meet specified NEMA, UL Type, and IEC IP ratings only when mounted in a panel or enclosure with an equivalent rating.

In addition to this publication, see the following:

- Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1, for more installation requirements
- NEMA 250 and IEC 60529, as applicable, for explanations of the degrees of protection provided by enclosures

European Union Directive

This computer meets the European Union Directive requirements when installed within the European Union or EEA regions and have the CE marking. 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 used only indoors. All other I/O cables must be less than 3 m (9.84 ft) and used only indoors.

To comply with EN 55024 and EN 55032, use the following for cable types.

Cable Type	Required Attribute
LAN	Shielded or unshielded
USB	Shielded
Serial RS-232	Shielded
DVI	Shielded
DP	Shielded
VGA	Shielded
DC power	Unshielded
AC power	Unshielded[(1)]

(1) Use the AC power cord shipped with the computer.

Installation Guidelines

Follow these guidelines to make sure your computer provides service with excellent reliability:

- 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 26 for further information. Never allow air passages to become obstructed.

- The ambient air temperature must not exceed the maximum operating temperature as follows:

  – Non-display, 12 in. (4:3), 15 in. (4:3), and 17 in. (5:4) computer models: -20...+60 °C (-4...+140 °F)

  – 15.6 in. (16:9), 18.5 in. (16:9), and 19 in. (5:4 and 16:9) computer models: 0...50 °C (32...122 °F)

- 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, which includes the touch screen and LCD panel.

- The relative humidity of the ambient air must not exceed 10...90% noncondensing at 50%.

- The enclosure or cover must always remain in place 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

IMPORTANT Computers generate heat. Therefore, 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 components, such as storage drives.

Figure 6 - Minimum Clearances
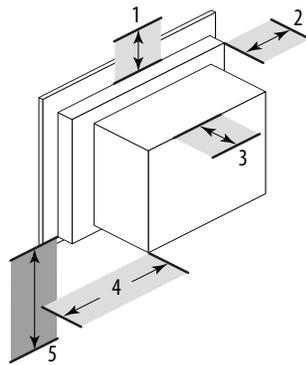
Item	Description	Value
1	Top	50 mm (2 in.)
2	Left (for airflow)	50 mm (2 in.)
3	Rear	50 mm (2 in.)
4	Right (for airflow and drive access)	127 mm (5 in.)
5	Bottom (for I/O port access and ventilation)	102 mm (4 in.)

Right and left are based on facing the front of the computer.

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

Figure 7 - Non-display Computer
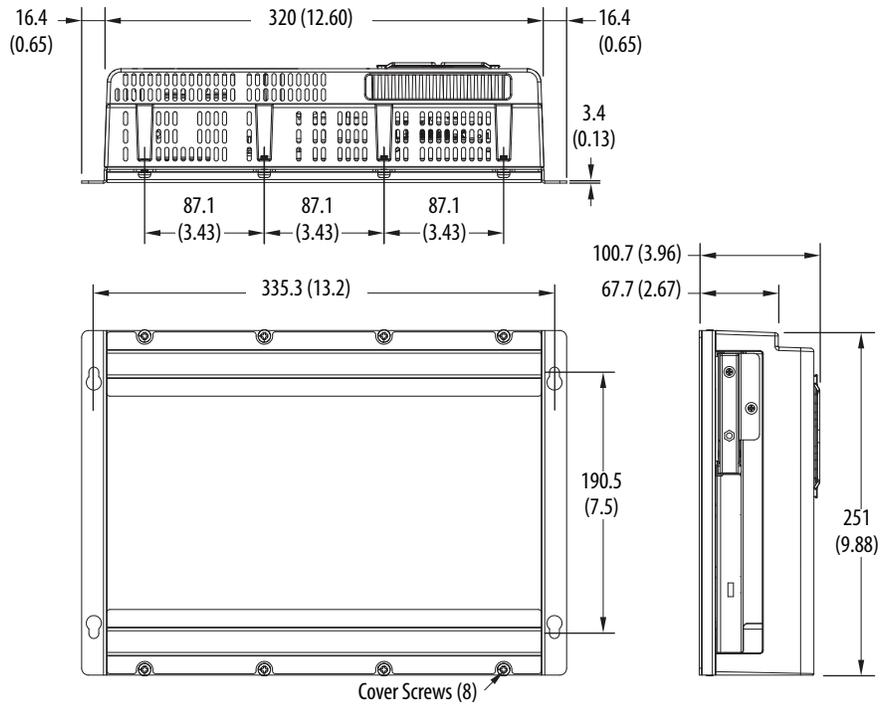
Figure 8 - 1200P (12-inch) Computer with 4:3 Display
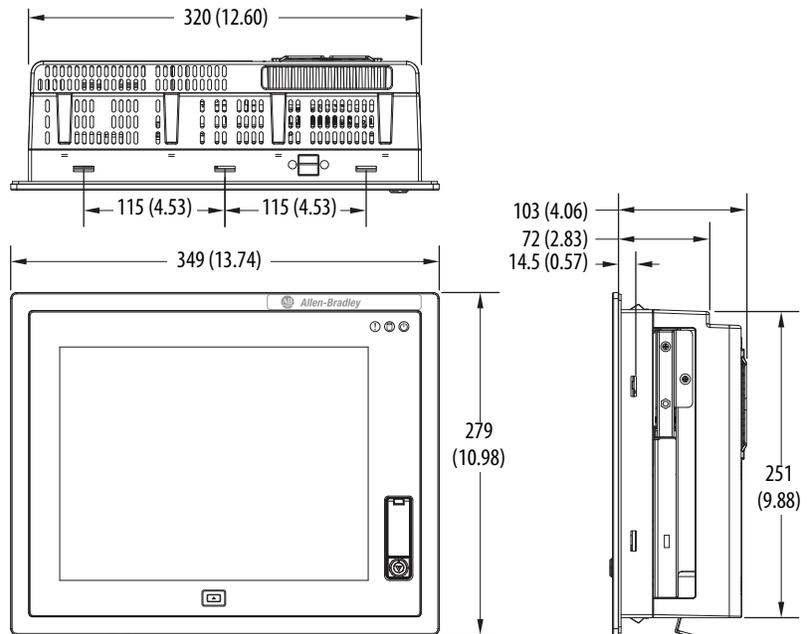
Figure 9 - 1500P (15-inch) Computer with 4:3 Display
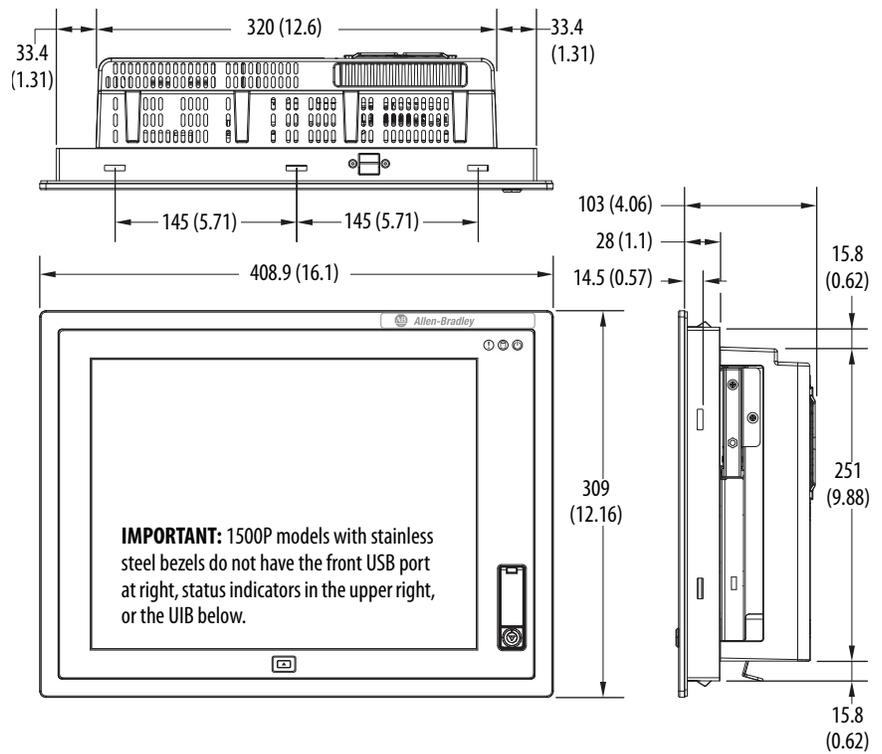
Figure 10 - 1500P (15-inch) Computer with Widescreen (16:9) Display
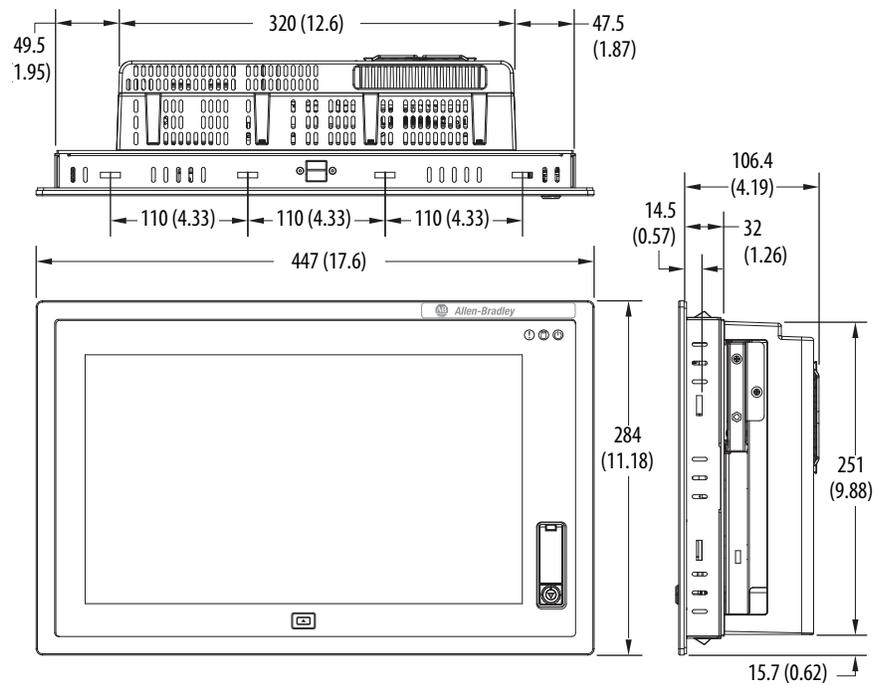
Figure 11 - 1700P (17-inch) Computer with 5:4 Display
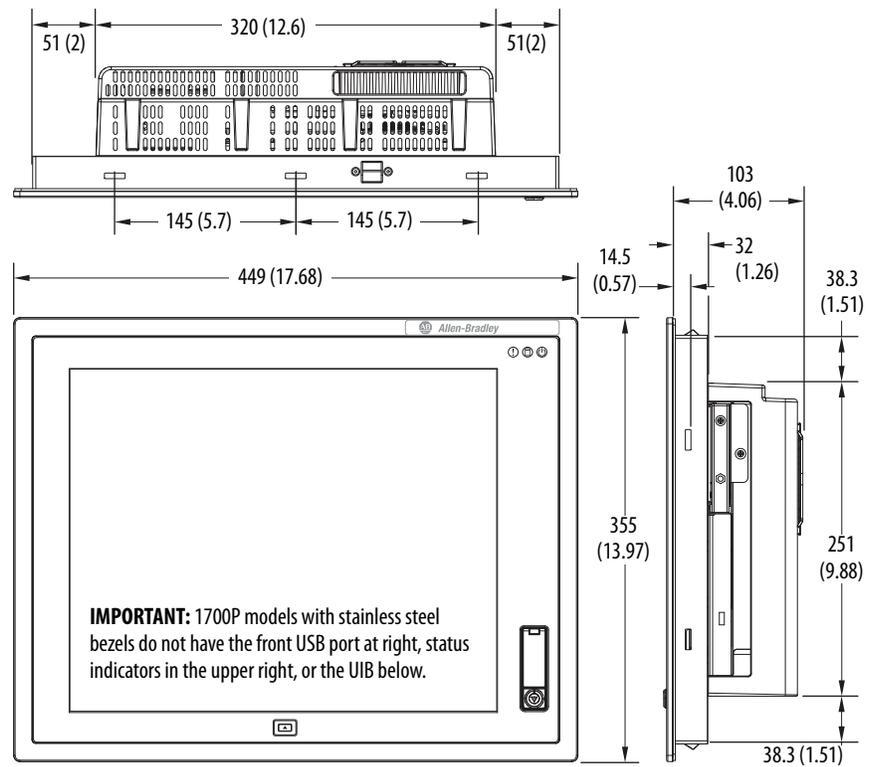
Figure 12 - 1900P (19-inch) Computer with 5:4 Display
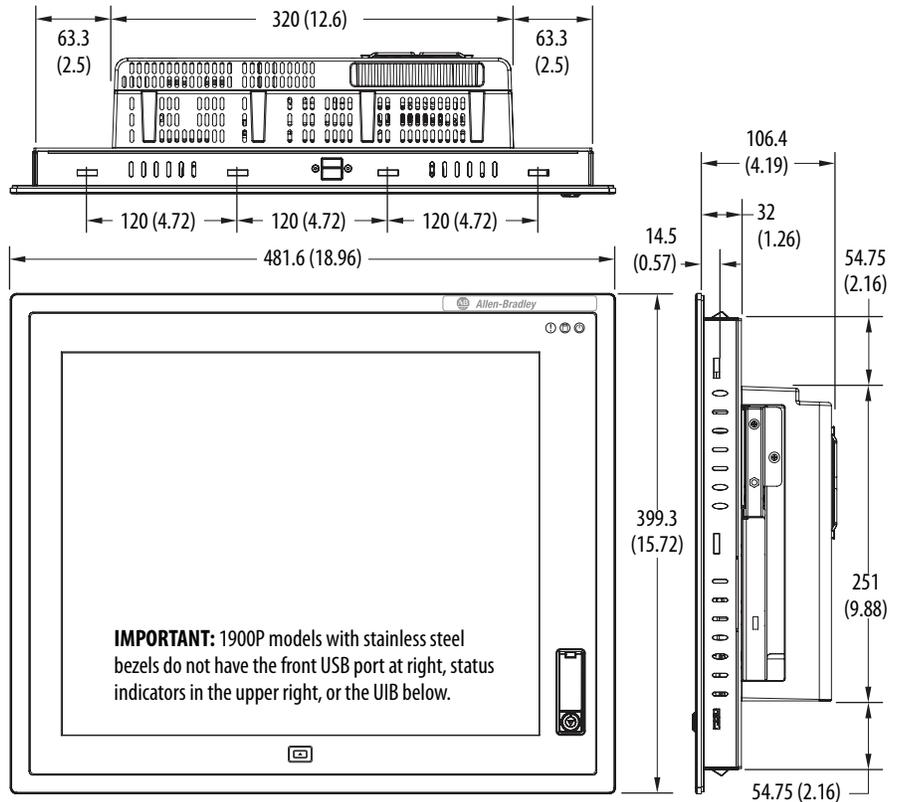
Figure 13 - 1900P (19-inch) Computer with Widescreen (16:9) Display
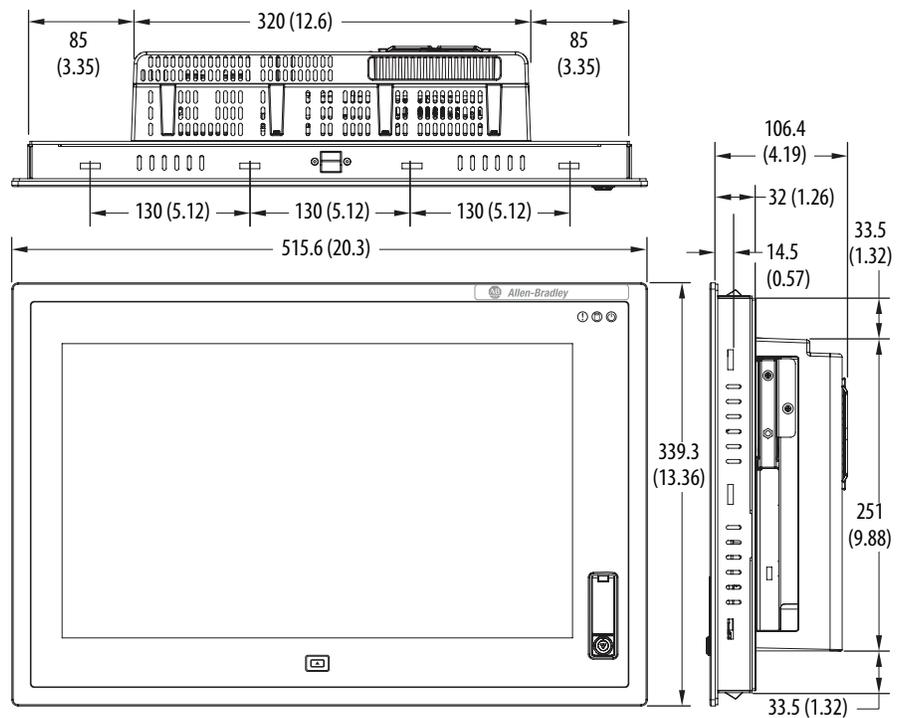
Required Tools

These tools are required for computer installation:

- #2 cross-head screwdriver
- Panel cutout tools (for panel mounting)
- Drill motor and drill bit (for wall, machine, and table mounting)
- Anti-static wriststrap

Install the Computer

The computers support the following mounting options:

- Panel mount (integrated display computer models)
- Wall, machine, table, and bookshelf mounts (non-display computer models)

Panel Mounting Guidelines

Observe these guidelines when installing the computer in a panel:

- Remove all electrical power from the panel before you make the cutout.
- Confirm that there is adequate space behind the panel. For specific information, refer to <u>Mounting Clearance Requirements</u> on <u>page 26.</u>

- Cut supporting panels to specifications before installation. Take precautions so metal cuttings do not enter components already installed in panel.

  Supporting panels must be at least 14 gauge for proper sealing against water and dust and to provide proper support. The mounting hardware supplied accommodates panel thickness between 1.5…5.5 mm (0.06…0.22 in.).

- Make sure the area around the panel cutout is clear.

- Certain restrictions apply when you mount a integrated display computer in a panel. See Figure 14 for details.

Figure 14 - Acceptable and Unacceptable Mounting Positions for Integrated Display Computers

Acceptable

In either position, front USB port must be near bottom of display.

≤60° from Vertical   ≤60° from Vertical

Unacceptable
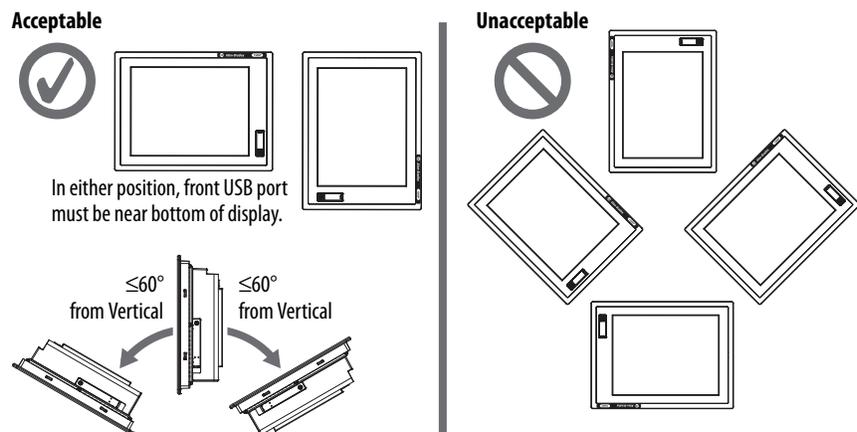
ATTENTION: Failure to follow these guidelines can result in personal injury or damage to the panel components.

- Integrated display computers have mounting-assist clips on the top and bottom of the bezel. When the computer is placed into a panel cutout, the mounting-assist clips snap into place and hold the computer in position while you install the mounting clips.

  Certain restrictions apply when you use mounting-assist clips. See Figure 15 for details.

Figure 15 - Acceptable and Unacceptable Mounting Positions for Using Assist Clips
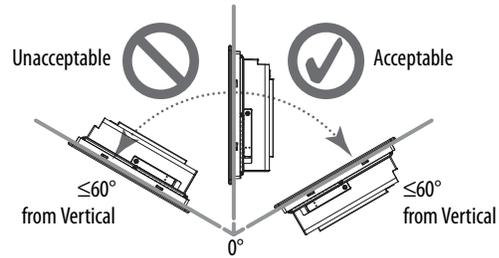
> ⚠️ **ATTENTION:** The mounting-assist clips on integrated display computers are no substitute for the mounting clips. You must install the mounting clips for safety, NEMA, UL Type, and IEC IP compliance.
>
> Failure to follow these guidelines can result in personal injury or damage to the panel components.

Panel Cutout Dimensions

A cutout template is shipped with each integrated display computer model. 6181P and 6181X Integrated Display Industrial Computers Cutout Template, publication 6181P-DS002, is included with standard display models (4:3 and 5:4 aspect ratios). 6181P Integrated Display Industrial Computers Cutout Template, publication 6181P-DS003, is included with widescreen display models (16:9 aspect ratio).

The computers must be mounted to meet the panel cutout dimensions specified below.

Model	Cutout Dimensions (H x W), Approx	
	Standard Models	**Widescreen Models**
1200P	254.0 x 324 mm (10.0 x 12.76 in.)	—
1500P	285.6 x 386.6 mm (11.24 x 15.22 in.)	260.2 x 420 mm (10.24 x 16.54 in.)
1700P	329.5 x 424 mm (12.97 x 16.69 in.)	—
1900P	363.5 x 449.6 mm (14.31 x 17.7 in.)	321 x 493 mm (12.64 x 19.41 in.)

Mount the Integrated Display Computer in a Panel

Mounting clips secure the integrated display computer to the panel. The number of clips varies by model.

Model	Bezel	Clips (qty.)		Cat. No.	Description
1200P Standard	Aluminum	10		6189V-MCLPS3	Replacement mounting clips (14)
1500P Standard					
1500P Widescreen		12			
1700P Standard		10			
1900P Standard		14			
1900P Widescreen					
1500P	Stainless steel	10			
1700P		12			
1900P		14			

Follow these steps to mount the computer in a panel.

1. Remove power from the panel.

2. Verify that the panel surface around the area to be cut is clean and free of be debris.

   ⚠️ **ATTENTION:** Take precautions so metal fragments do not enter components already installed in the panel to avoid personal injury or damage to the panel components.

3. Cut an opening in the panel by using the appropriate panel cutout dimensions.

4. Attach cables to the computer before installation if rear access to the computer is limited after installation.

   For where to attach cables, see .

   AC power models: If necessary, remove the AC retention clip before you install the computers in a panel cutout. Reattach the clip after you install the computer.

5. Make sure the sealing gasket is properly positioned on the computer.

   This gasket forms a compression-type seal. Do not use sealing compounds.

6. Place the computer in the panel cutout.

7. Slide the mounting clips into the holes on the top, bottom, and sides of the computer.

8. Hand-tighten the mounting clips around the bezel by following the tighten sequence below.

All Models except 1900P with
4:3 and 5:4 Displays and Aluminum Bezel

1500P Model with 4:3 Display
and Stainless Steel Bezel
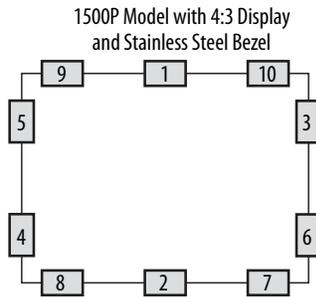
1700P Model with 5:4 Display and
Stainless Steel Bezel
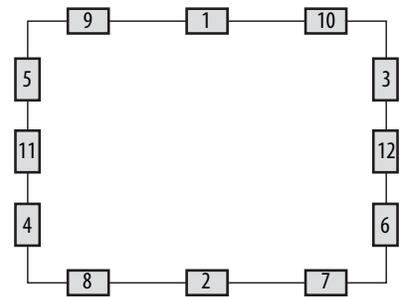
1500P Model with Widescreen (16:9) Display
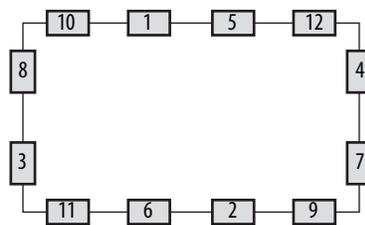
All 1900P Models
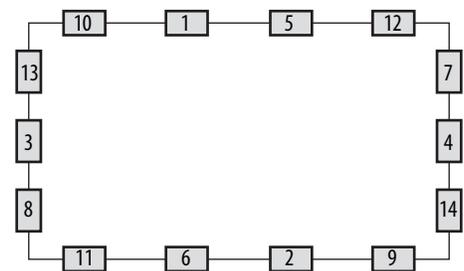
9. Repeat this process at least three times until the clips are hand-tight and the gasket is compressed uniformly against the panel.

10. Tighten the mounting clips to a torque of 1.35 N•m (12 lb•in) by following the torque sequence on the previous page. Do not overtighten.

11. Repeat this process at least three times until the clips are properly torqued. Verify that the gasket is compressed uniformly against the panel.

ATTENTION: Tighten the mounting clips to the specified torque to provide a proper seal and to help prevent product damage. Rockwell Automation assumes no responsibility for water or chemical damage to the computer or other equipment within the enclosure because of improper installation.

Mount the Non-display Computer

Follow these steps to mount a non-display computer.

IMPORTANT	Certain restrictions apply when you mount the computer to a wall or with a bookshelf mounting bracket. See Figure 16 for details.
	The bookshelf mounting bracket, catalog number 6189V-BOOKBRKT, must be ordered separately.
	For horizontal mounting, see page 26 for mounting clearance requirements.

1. Verify that the power is disconnected.

2. Depending on your application, drill holes to accommodate M5-sized screws.

   See for mounting hole locations and dimensions.

3. Mount the computer by using four M5 pan head screws.

   Tighten to a torque that is appropriate for the screw and material.

Figure 16 - Acceptable and Unacceptable Mounting Positions for Non-display Computers

Acceptable

For Vertical Mounting

For Horizontal Mounting

Under Table Mount
(top view of computer)

Machine or Table Mount
(top view of computer)

Bookshelf Mounting

Unacceptable
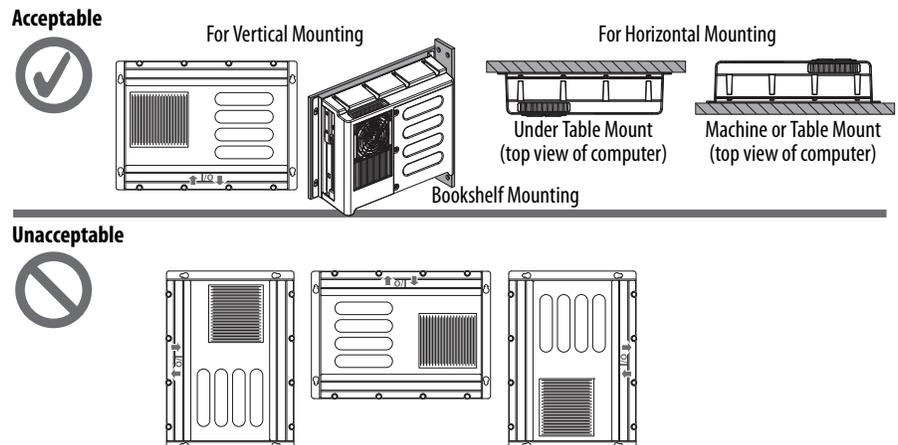
Connect Peripherals

The following illustration shows the I/O port panel of the computers. Peripheral components compatible to each port are inside the callout figures.
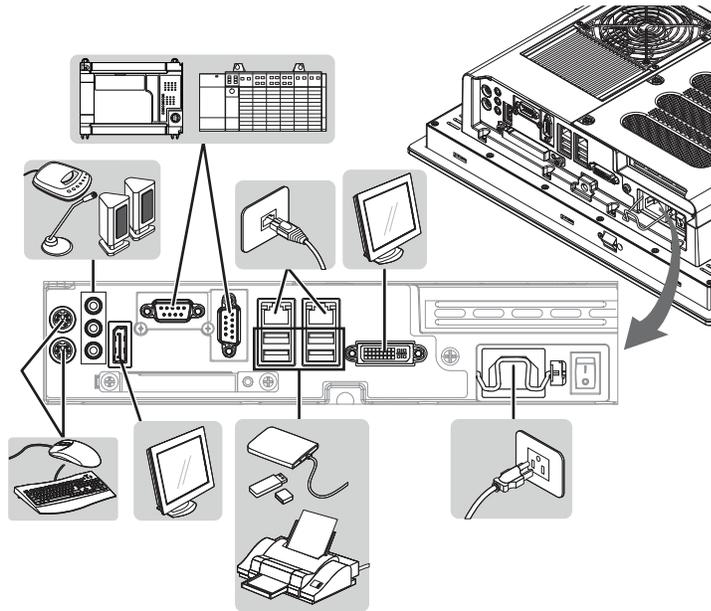
Integrated display computer models with aluminum bezels have USB ports on both the
I/O port side panel and the front panel. Use these ports to connect various USB devices to the computer, such as an external drive.

> **TIP**   Use a DP-to-VGA adapter (cat. no. 6189V-DPVGA) to connect an external VGA display to the DisplayPort of the computer.
>
> Use a DP-to-DVI-D adapter (cat. no. 6189V-DPDVI) to connect an external LCD display to the DP of the computer.
>
> Use a DVI-I-to-VGA adapter (cat. no. 6189V-DVIVGA) to connect an external VGA display to the DVI-I port of the computer.

All USB ports are enabled or disabled through settings in the UEFI set-up menu. For more information, see .

No.	Description
1	Front access cover
2	USB 3.0 port, Type A
3	USB key
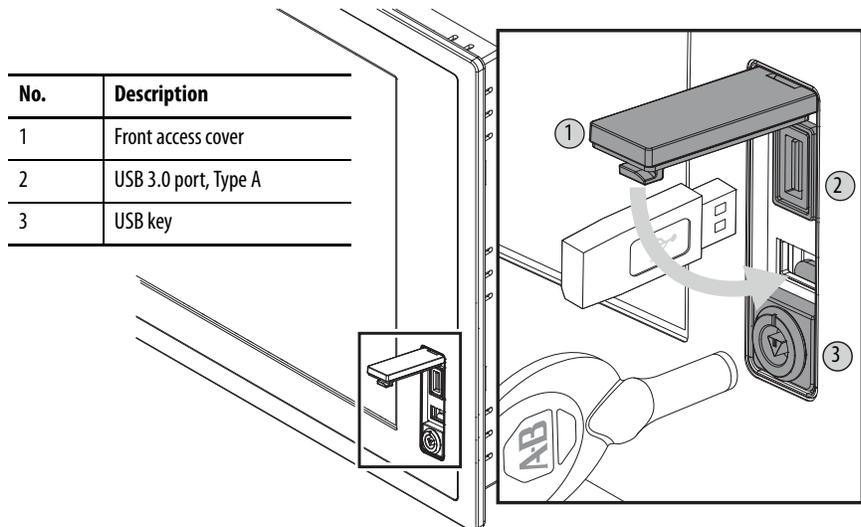
Connect Power

The computer connects to either a 100…240V AC or 18…32V DC power source, depending on the model.

> ⚠️ **ATTENTION:** When you connect power to the computer for the first time, these actions occur:
>
> - The default 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.
>
>   Do not disconnect power from the system until after the Windows Setup procedure is completed. If power is disconnected during this procedure, it 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 help protect against unexpected power failure or power surges.
>
> Always shut down the Windows operating system before you disconnect power to the computer to minimize performance degradation and operating system failures.

Connect AC 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.

> **TIP**   If you use an alternate IEC60320 cord, make sure the female end of the cord is sized appropriately for the retention clip.

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

1. Connect the power cord to the AC power input (A).

2. Secure the power cord in place with the retention clip (B).
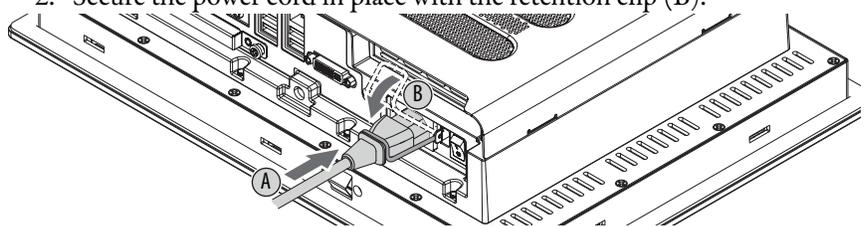
3. Connect the AC power cord to a power source.

> ⚡ **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.

4. Apply 100…240V AC power to the computer.

Connect DC Power

Computers with catalog numbers that end in DC have a DC input terminal block for you to connect to a 18…32V DC power source.

The functional ground screw must be grounded on DC power models for EMC regulatory compliance. DC power models support operation from either a SELV or PELV power source. The DC common (DC-) can be connected together to the functional ground screw to support some SELV cases where grounding at the computer is required by the end user.

The power supply is internally protected against reverse polarity.

> ⚠ **ATTENTION:** Use a SELV isolated and ungrounded power supply as input power to the computer. This power source provides protection so that under normal and single fault conditions, the voltage between the conductors and Functional Earth/Protective Earth does not exceed a safe value.

Follow these steps to connect the computer to a DC power source.

> **IMPORTANT**   A functional ground screw connection is required for EMC compliance.

1. Turn off the main power switch or breaker.

2. Verify that the DC power wires meet these requirements:
   - Material: Stranded copper
   - Wire gauge: 0.326…3.31 mm^2 (22…12 AWG)

3. Insert each DC power wire into the correct terminal-block on the DC power adapter (A).

4. Secure the DC power wires to the terminal-block screws of the DC power adapter (B).

5. Connect the DC power adapter to the power supply terminal block (C).

6. Secure the DC power adapter into place with the terminal-block screws (D).

   Torque the terminal screws to 0.687 N•m (6.1 lb•in).

7. Connect the computer to earth ground by using a 1.5 mm^2 (16 AWG) or larger external wire.

   Use a ground wire with an insulation color that is approved by local inspection authority.

8. Apply 18…32V DC power to the computer.
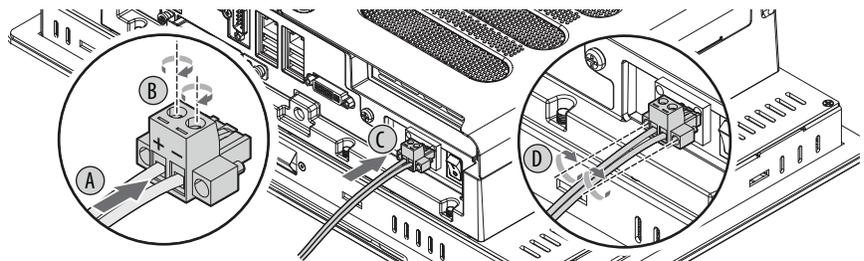
Functional Ground Screw

Functional ground screw requirement depends on the power source.

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 an insulation color that is approved by local inspection authority.

AC Power Models

The pre-installed functional ground screw is not required for safety or regulatory compliance. AC power models are already grounded through the AC power cord. If a supplemental ground is required, use the functional ground screw in the I/O port panel of the computer.

DC Power Models

The pre-installed functional ground screw is not required for safety but is required for EMC regulatory compliance.

Figure 17 - Functional Ground Screw Location

Non-display Models   Display Models
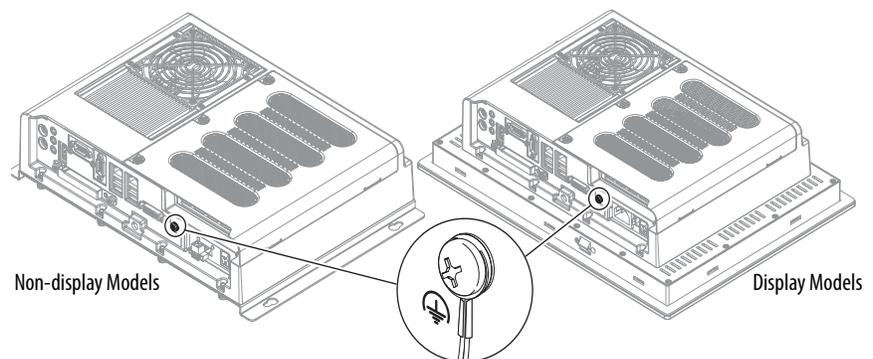
Connect to a Network

The computers have two 1 Gb LAN ports that connect to an Ethernet network by using CAT5 or CAT5e twisted-pair Ethernet cabling with RJ45 connectors.
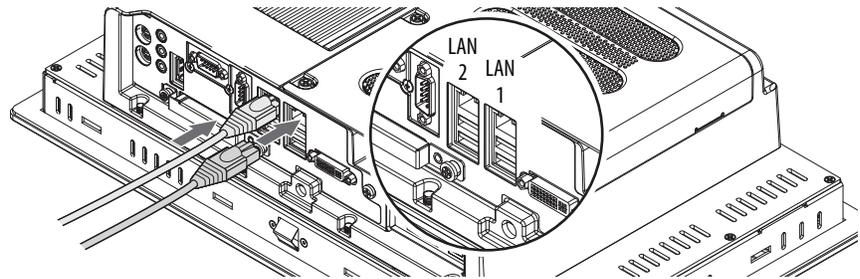
IMPORTANT	To help prevent performance degradation of Ethernet communication, do not subject the computer or cables to extreme radiation or conducted high-frequency noise.
	In industrial environments, proper cable routing and power conditioning is required for reliable Ethernet communication. We recommend that you route all Ethernet cabling through dedicated metal conduits. For improved reliability, install ferrite bead filters at the cable ends.

The LAN 1 port supports AMT functionality for computers with the Intel i7 processor (Advanced computer models) that are configured for AMT.

See for more information.

The LAN 2 port supports VMware ESXi communication.

IMPORTANT	When prompted during the set-up process, Rockwell Automation recommends that you select the Public Network option for the most secure network connection. However, you are ultimately responsible for what network security setting is the most appropriate one.

Operate the Computer

Topic	Page
Operating Guidelines	41
Touch Screen Precautions	42
Start the Computer	42
Restart the Computer	43
Shut Down the Computer	43
Adjust the Display Brightness	44

Operating Guidelines

Follow these operating guidelines for your computer:

- Operator access is limited to the front of the computer, which includes the display and the touch screen (if available).

  > **IMPORTANT** Access to components behind the panel where the computer is installed and the front USB port (if available) is restricted to authorized and properly trained personnel.

- When mounted in an enclosure, keep the enclosure door closed during operation so dust and other airborne contamination do not infiltrate the computer. Open the door only for routine maintenance.

  > **SHOCK HAZARD:** Do not operate the computer with the covers removed. An electric shock hazard exists. 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 you shut down the computer, do not apply power again until shutdown is complete.

Touch Screen Precautions

⚠️ **WARNING:** If the LCD screen darkens or if the backlight is not functioning properly, the screen may be difficult to read and use of this screen could result in a potentially hazardous outcome. Do not use the LCD touch screen under these circumstances.

The design of the system must take into account the possibility of the LCD screen or LCD touch screen losing functionality and unable to be used to maintain or change control of the system. The touch screen shall not be the single point of control of critical functions and is not intended to replace an E-stop.

Design of the system should follow all applicable code and good engineering practice. Factors to consider include the following:

- The possibility of an unreadable LCD screen
- The possibility of an inoperable touch screen
- Unexpected communication errors or delays
- Operator error in the control of the system
- Proper use of E-stops and other safety practices

The user shall provide means to achieve a safe state during anomalies and confirm that the system has adequate redundancy for critical functions.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Start the Computer

Follow these steps to start the computer.

IMPORTANT   The following steps apply to when the computer must be manually started. See Connect Power on page 37 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. Install power to the power input of the computer.

   AC powered models: See Connect AC Power on page 37 for how to install the AC power cord into the AC power input on the computer.

   DC powered models: See Connect DC Power on page 38 for how to install DC power to the DC power input on the computer.

4. Apply power to the computer.

    AC powered models: Plug the AC power cord into a power source or wall outlet.

    ⚠ **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.

    DC powered models: Apply 18…32V DC power to the computer.

5. Press the power switch on the computer.

    See <u>Hardware Features on page 16</u> for the power switch location.

The computer performs certain actions when it is started or reset. See <u>Restart the Computer on page 43</u> for what is done.

If your system does not start or you notice other anomalies, refer to <u>Troubleshoot the System</u> starting on <u>page 101</u>.

Restart the Computer

Use any of the following methods to restart your computer.

- From the Start menu, choose Restart.
- Press Ctrl+Alt+Delete on an attached keyboard and click Restart.
- Use AMT commands (only for Advanced computer models; see <u>page 13</u> to see if your computer qualifies and <u>page 78</u> for more about AMT configuration).

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 the computer 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.

Shut Down the Computer

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

Method	Actions
Windows OS	With an attached mouse and keyboard, do one of the following. • Press Ctrl+Alt+Delete and click Shut Down. • From the Start menu, click or choose Shut Down.
Power switch	Momentarily press the power switch to shut down the computer. See <u>Hardware Features on page 16</u> for the power switch location.

Adjust the Display Brightness

Integrated display computers have an adjustable display brightness setting that can be adjusted in the BIOS/UEFI or in the Windows operating system. The display brightness default setting is 70%.

See for how to adjust the brightness through the BIOS/UEFI.

IMPORTANT	If you increase the brightness from the default setting, it reduces the life of the LED backlight, particularly at high temperatures.

Replace Components

Topic	Page
Replacement Parts	45
Voltage Precautions	45
Electrostatic Discharge Precautions	46
Pre-configuration	46
Post-configuration	47
Required Tools	47
Remove the Cover	47
Reinstall the Cover	48
CompactFlash Card	48
Solid-state Drive	49
Replace a SSD	50
Replace or Add Memory Modules	51
Replace the RTC Battery	53
Replace the Power Supply Unit	55
Replace the Optical Disk Drive	58

Replacement Parts

You can view a list of replacement parts at http://ab.rockwellautomation.com/Computers/Integrated-Display-Computers/Bulletin-6181#selection.

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

IMPORTANT	We recommend that you use only Allen-Bradley® approved 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 you remove components.

Failure to disconnect power can result in severe electrical shock to an individual or damage to the computer.

Electrostatic Discharge Precautions

> ⚠ **ATTENTION:** Electrostatic discharge (ESD) can damage static-sensitive devices or microcircuitry:
> - Disconnect all power before you work on the computer as detailed in <u>Voltage Precautions on page 45</u>.
> - Observe proper packaging and grounding techniques to help prevent damage.

Follow these ESD precautions:

- 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 anti-static wriststrap 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**   Before you install hardware or perform 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 configure the computer hardware.

Follow these steps before you remove the cover or you replace a hardware component.

1. Shut down the computer and all peripherals that are 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 ring voltages.

Post-configuration

Follow these steps after you install or remove 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, and system cables that were previously removed.

4. Reinstall the cover according to the instructions on page 48.

5. Reconnect all external cables and power to the computer.

6. Press the power switch to start the computer.

Required Tools

The following tools are required for component replacement:
- #2 cross-head screwdriver
- Anti-static wriststrap
- Side cutters (to cut 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 rear cover (an integrated display computer is shown).

1. Follow the steps for Pre-configuration on page 46.

2. Loosen the three screws that secure the rear cover (A).

3. Open the cover (B) and detach it from the chassis (C).

Integrated Display Model Shown
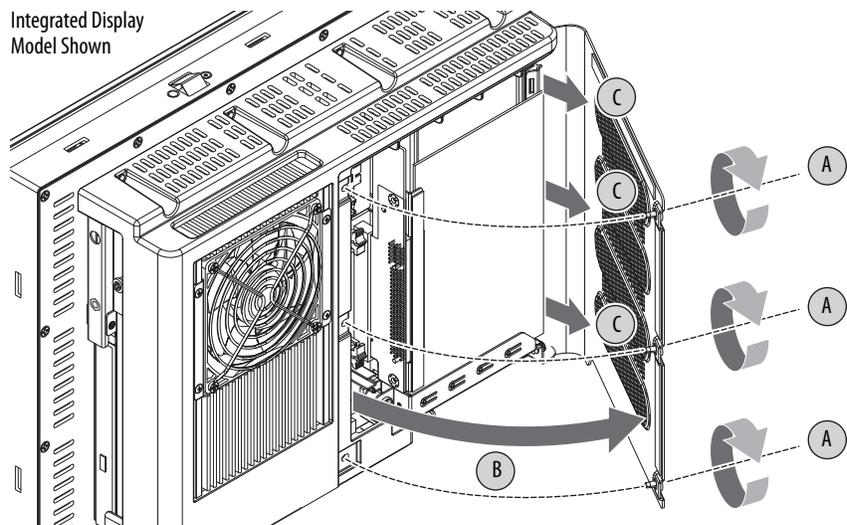
4. After you install, replace, or upgrade internal computer components, reinstall the cover as detailed in Reinstall the Cover on page 48.

Reinstall the Cover

Follow these steps to reinstall the rear cover (an integrated display computer is shown).

1. Follow steps 1...3 for .

2. Reattach the rear cover to the chassis (1).

3. Close the cover (2).

4. Tighten the three screws to secure the rear cover (3).

Integrated Display Model Shown
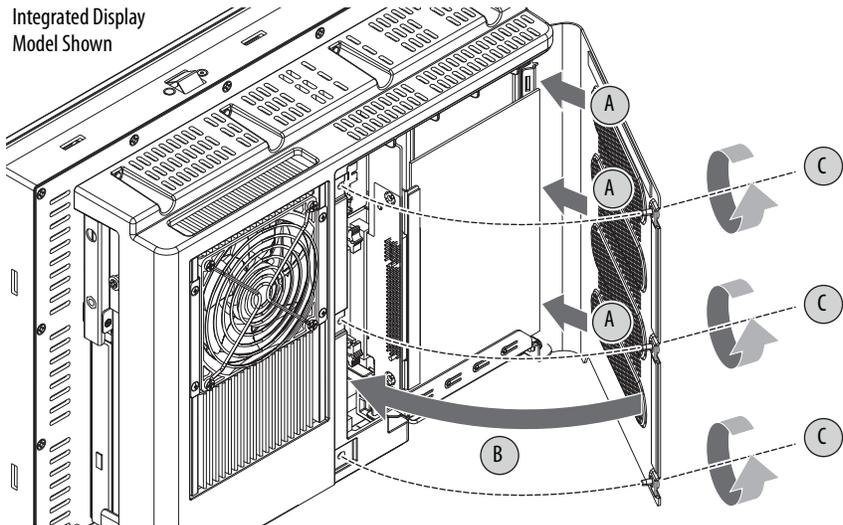
5. Follow steps 4 and 5 for .

CompactFlash Card

The computers have a CompactFlash (CF) Type II card slot to load CF cards on the I/O port panel below the serial ports. See for the CF card slot location.

IMPORTANT	The CF card slot is a bootable slot for DOS and Linux operating systems but not for Windows operating systems.
	You can insert or remove a FAT32-formatted CF card from this slot while the computer is on. For a NTFS-formatted CF card, use the Windows 'Safely Remove/Eject Media' process.

Table 2 - Available CompactFlash Drives

Cat. No.	Description
6189V-CFSSD8GB	8 GB CompactFlash drive
6189V-CFSSD16GB	16 GB CompactFlash drive

Follow these steps to load a CF card.

1. Loosen the two screws that secure the CF card slot cover.

2. Remove the CF card slot cover.

3. Insert the CF card into the slot until it is firmly seated.

> ⚠️ **ATTENTION:** When properly seated, more than 80% of the CF card easily inserts into the slot before you encounter resistance. If you encounter resistance before then, remove the card, rotate it 180°, and reinsert.
>
> Do not force the card into the slot. Forcing the card into the slot can damage the connector pins.

4. Reattach the CF card slot cover.

5. Tighten the two screws to secure the slot cover.

Solid-state Drive

Follow these precautions when you work with a solid-state drive (SSD).

> **IMPORTANT**   Back up or clone your computer before you replace a SSD.
>
> For more information to back up your system image, see AMI Rescue on page 87.

- Do not touch internal components.
- Always handle the SSD by its frame.
- Do not remove or install a drive with the power on except in circumstances allowed by the operating system.
- Store the SSD in an anti-static 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 46 before you remove a SSD.
>
> Failure to follow proper safety precautions can result in severe electrical shock to an individual or ESD damage to the computer and its components.

Table 3 - Available SSDs and Drive Trays

Cat. No.	Description
6189V-6181SSD32GB	32 GB SSD pre-installed in SSD tray
6189V-6181SSD64GB	64 GB SSD pre-installed in SSD tray
6189V-6181SSD256GB	256 GB SSD pre-installed in SSD tray

Replace a SSD

Follow these steps to replace a SSD, which is on the side of the computer.

IMPORTANT	Before you replace a SSD, you must first back up the OS image.
	To back up the OS image to a USB storage drive, see Make a Backup on page 89.

1. Read and follow Solid-state Drive on page 49 before you perform any drive removal.

2. Follow the steps for Pre-configuration on page 46.

3. Remove the one screw that secures the drive assembly (A).

4. Loosen the screw to release the carrier lever (B).

5. Extend the carrier lever (C), then use it to slide the assembly out of the drive bay (D).

6. Use the extended carrier lever to slide the assembly into the drive bay (E).

7. Retract the carrier lever (F) and tighten its screw to lock in place (G).

8. Secure the drive assembly with the one screw (H).

9. Follow the steps for Post-configuration on page 47.

10. To restore the OS image, see Restore OS Image From a USB Storage Drive on page 94.
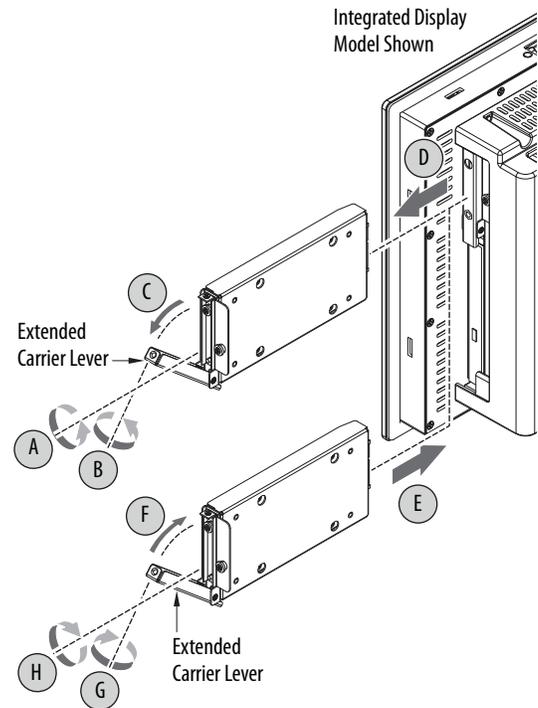
Replace or Add Memory Modules

The computers have two dual-channel DDR3 SO-DIMM slots that support up to 16 GB maximum system memory.

Figure 18 - Memory Module Slots and Module Alignment
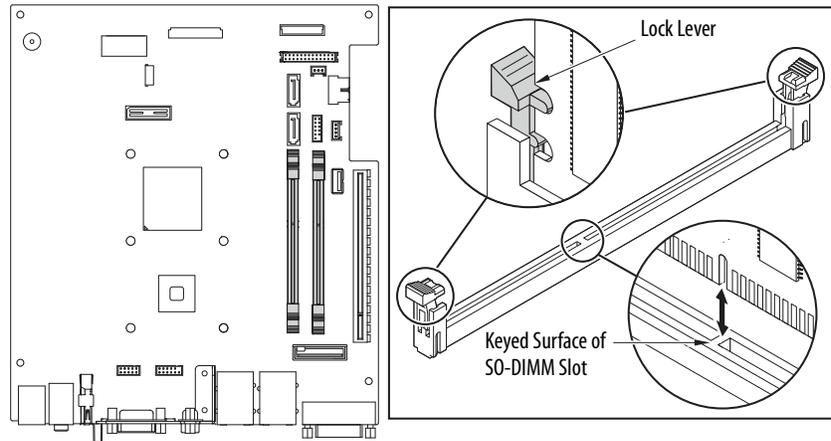
IMPORTANT	Computer performance is optimized when both slots are populated with memory modules of the same capacity.
	All 6181P computers ship with a dual memory module configuration.

Memory Configuration Guidelines

Follow these guidelines when you replace or add memory to the computers:

- Use only standard unbuffered memory modules that conform to both PC3-10600 and SPD compliance industry 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.

Table 4 - Available Memory Modules

Cat. No.	Description
6189V-8GSODDR3	2 x 4 GB DDR3 SO-DIMM modules
6189V-16GSODDR3	2 x 8 GB DDR3 SO-DIMM modules

Replace or Add a Memory Module

Follow these steps to replace or add a memory module.

IMPORTANT	Use an anti-static wriststrap connected to the work surface, and properly grounded tools and equipment.

1. Follow the steps for <u>Pre-configuration on page 46</u>.

2. Remove the computer cover as detailed in <u>Remove the Cover on page 47</u>.

TIP	To install more memory, proceed to <u>step 5</u> of this section.

3. Locate the memory module that you want to replace. See <u>Internal Components on page 18</u> for memory location on the motherboard.

4. Remove the selected memory module.

    a. Use your thumbs or fingers to push open the lock levers, which releases the memory module from its slot for easy removal. See <u>Figure 18 on page 51</u>.

    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 anti-static bag.

5. Install the new memory module.

    a. Hold the memory module by its edges as you remove it from its anti-static bag.

    b. Orient the module so the notch on its bottom edge aligns with the keyed surface of the SO-DIMM slot. See <u>Figure 18 on page 51</u>.

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

    c. Press the module fully into the slot to engage the lock levers. See <u>Figure 18 on page 51</u>.

6. Reinstall the computer cover as detailed in <u>Reinstall the Cover on page 48</u>.

7. Follow the steps for <u>Post-configuration on page 47</u>.

Replace the RTC Battery

The computers use nonvolatile memory that requires a real time clock (RTC) lithium battery to retain system information when power is removed. The RTC battery is next to the SO-DIMM1 slot.

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

On-time (hrs/wk)	Expected Battery Life (yrs)
0	4
40	5.5
80	7
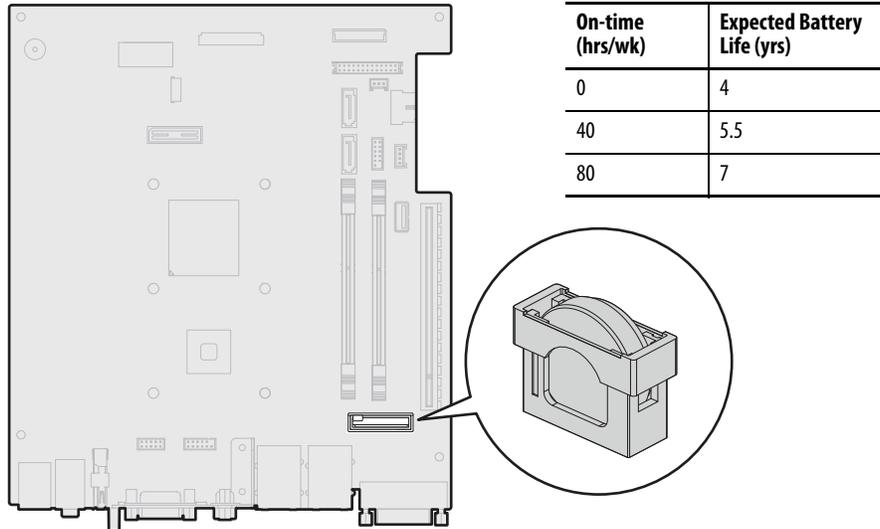
If the computer does not retain the correct time and date, replace the battery.

⚠️ **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 the rated temperature ranges on page 25.
- Do not dispose of a used battery in water or fire.

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

Follow these steps to replace the RTC battery.

> **IMPORTANT**   Depending on your model, replace with a similar CR2450-type coin battery rated for at least a 0…85 °C (32…185 °F) operating temperature range.

1. Follow the steps for <u>Pre-configuration on page 46</u>.

2. Remove the computer cover as detailed in <u>Remove the Cover on page 47</u>.

3. If necessary, remove any accessory boards or cables that prevent access to the RTC battery socket.

4. Remove the old battery.

    a. Pull the battery cover straight out of the battery socket.

    b. Pull the old battery from its socket.
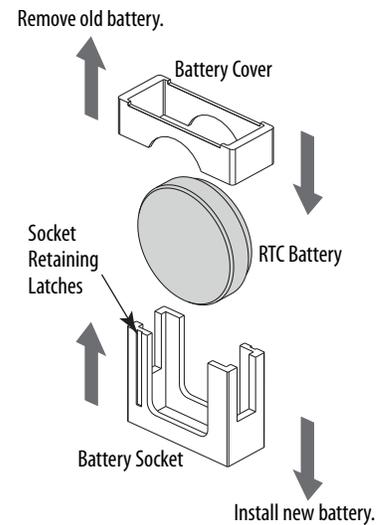
5. Install the new battery.

    a. Insert the new battery with the positive polarity (+) side nearest the SO-DIMM memory slots.

    Verify that the battery is seated correctly.

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

    b. Reinstall the battery cover.

6. Follow the steps for <u>Post-configuration on page 47</u>.

7. During POST, press F2 on an attached keyboard or press the UIB[1] to access the UEFI setup and reconfigure settings.

   For more information on UEFI setting, see <u>page 61</u>.

   Remove old battery.
   Battery Cover
   Socket Retaining Latches
   RTC Battery
   Battery Socket
   Install new battery.

   UIB location
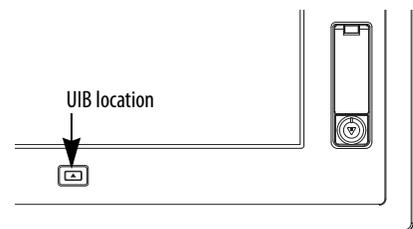
> **IMPORTANT**   If you replace the battery, then all UEFI settings return to their default settings. UEFI settings other than default must be reconfigured after you replace the battery.

> This computer contains a sealed lithium battery that could need replacement over the life of the computer.
>
> At the end of its life, collect the battery contained in this computer separately from any unsorted municipal waste.

---

(1)   The UIB is only on the front of integrated display computers with aluminum bezels.

Replace the Power Supply Unit

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

> **IMPORTANT** Use an anti-static wriststrap that is connected to the work surface and properly grounded tools and equipment when you handle internal computer components.

Table 5 - Available Power Supply Units

Cat. No.	Description
6189V-PSU6181AC	AC power supply unit
6189V-PSU6181DC	DC power supply unit

1. Follow the steps for .

2. Place the computer on a flat, steady surface so the rear cover is faced upward.

3. Remove the eight screws that secure the computer to the display panel (A).

4. Lift and slide the computer forward so you can unplug the display cables (B).

DC Powered Integrated Display Model Shown
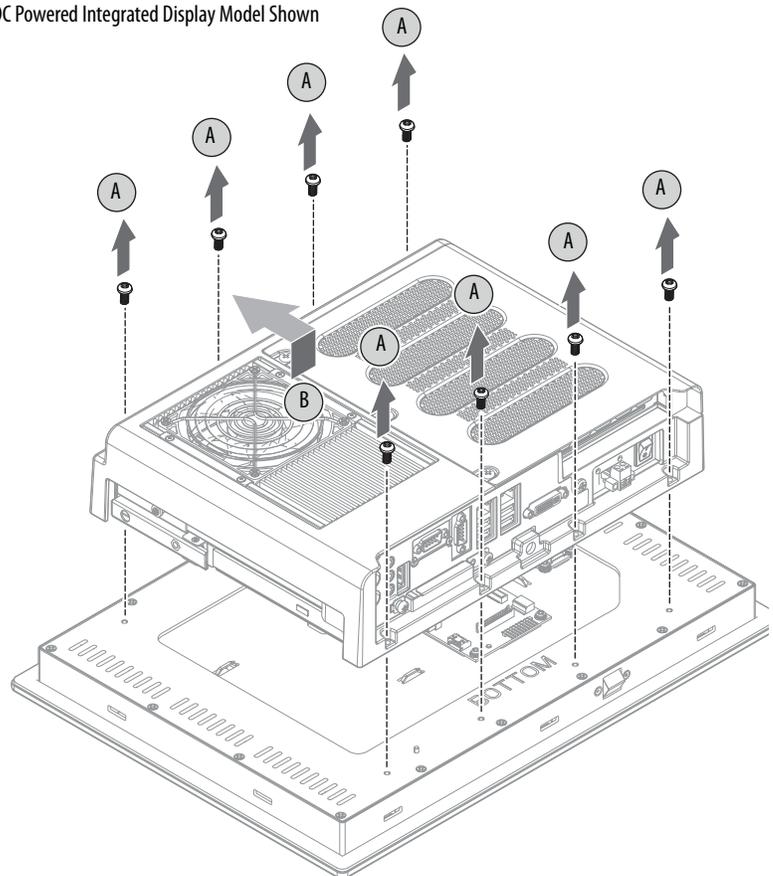
5. Disconnect the eDP signal (C) and panel (D) cables from the panel adapter board.

IMPORTANT	For integrated display computers with aluminum bezels, do not disconnect the USB 3.0 cable between the motherboard and front bezel USB port. If necessary, cut cable ties so the computer can be 'hinged' into a safe work position while the USB 3.0 cable remains connected. The USB 3.0 cable is fragile so keep it connected to avoid any possible damage. Replacement cable ties are supplied with the replacement power supply.

6. Lift the computer (E) off the display panel.
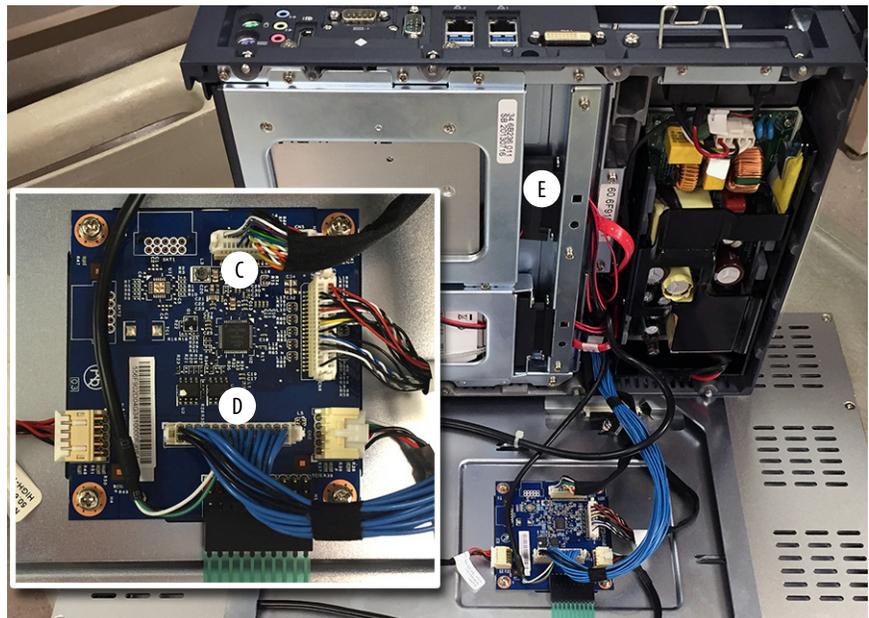
7. Turn over the computer to access the PSU.

8. **For DC-powered integrated display computer models:** remove the screws that secure the two power connectors (F) from the PSU.
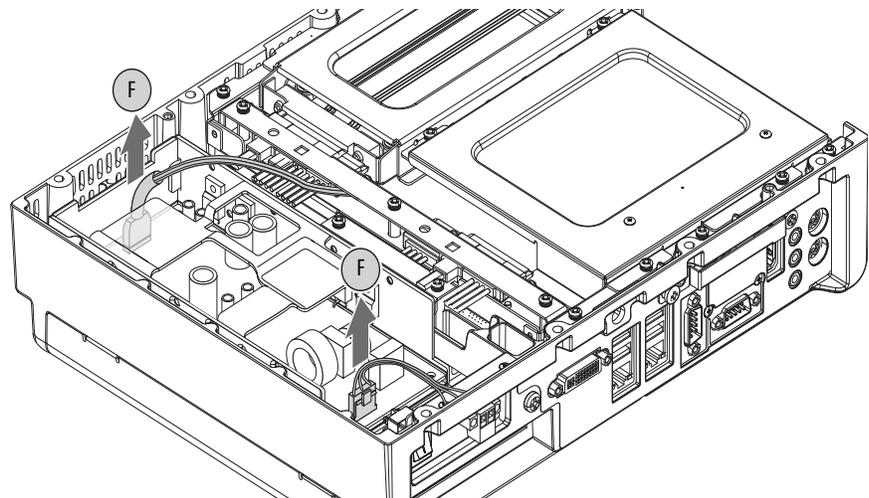
9. Disconnect the two power connectors (F).

10. Turn over the computer to access the rear cover.

11. Remove the rear cover.

    a. Loosen the three screws that secure the rear cover (G).

    b. Open the cover and detach it from the chassis (H).

DC-powered Integrated Display Model Shown
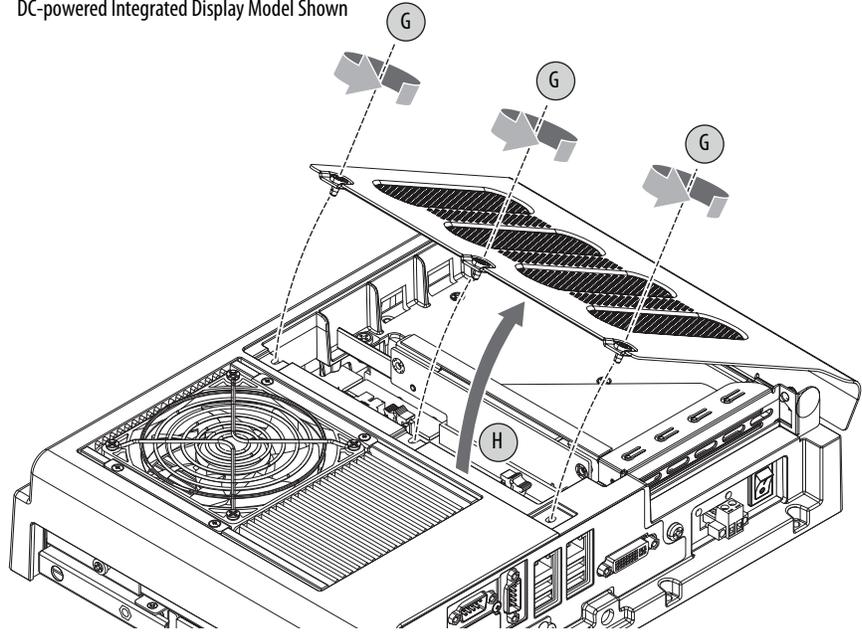
12. Remove the two screws (I) that secure the PSU to the chassis.
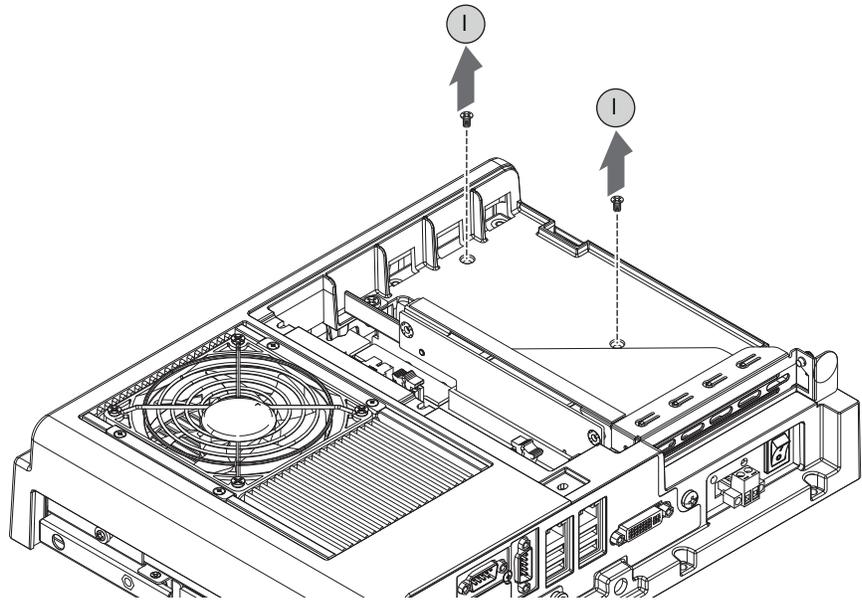
13. Turn over the computer to access the PSU.

14. Remove the PSU (J).

AC-powered Integrated
Display Model Shown
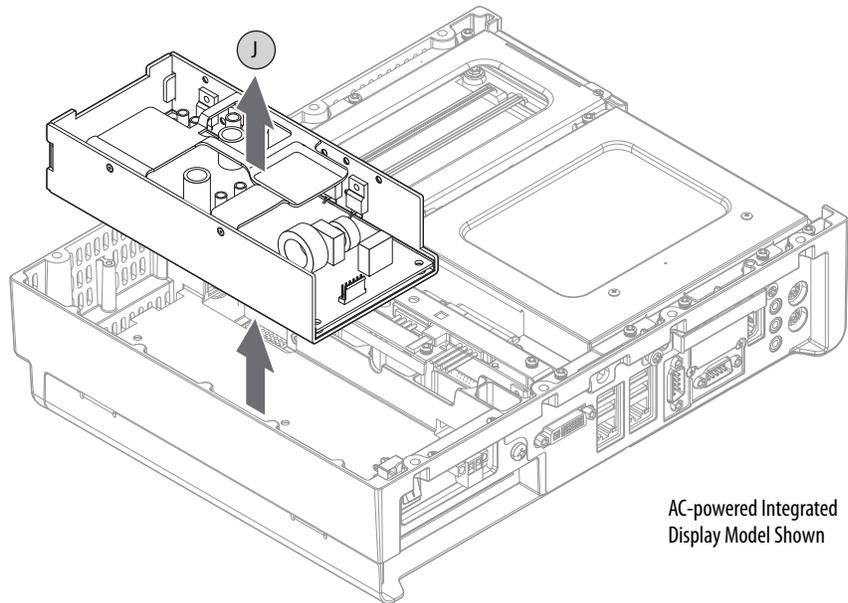
15. Install the new PSU in the reverse order of the removal steps.

    a. Torque the two screws to 1.4 N•m (12 lb•in) to secure the new PSU.

    b. Before you reinstall the computer to the display unit, verify that the
       following are properly connected:

       –the two PSU power connectors and their screws

       –the eDP signal and panel cables

    c. Remove and replace any cut cable ties.

16. Follow the steps for .

Replace the Optical Disk Drive

Only Advanced models are sold with an optical disk drive (ODD) installed.
Follow these steps to replace an optical disk drive (ODD).

IMPORTANT	Use an anti-static wriststrap that is connected to the work surface and properly grounded tools and equipment when you handle internal computer components.

Table 6 - Available ODD

Cat. No.	Description
6189V-ODD	Optical disk drive (ODD) and four mounting screws

1. To access the ODD bay, follow steps 1…6 for .

2. Turn over the computer to access the ODD.

   The ODD is next to the solid-state drive (SSD).

3. Locate and remove the four mounting screws for the ODD.
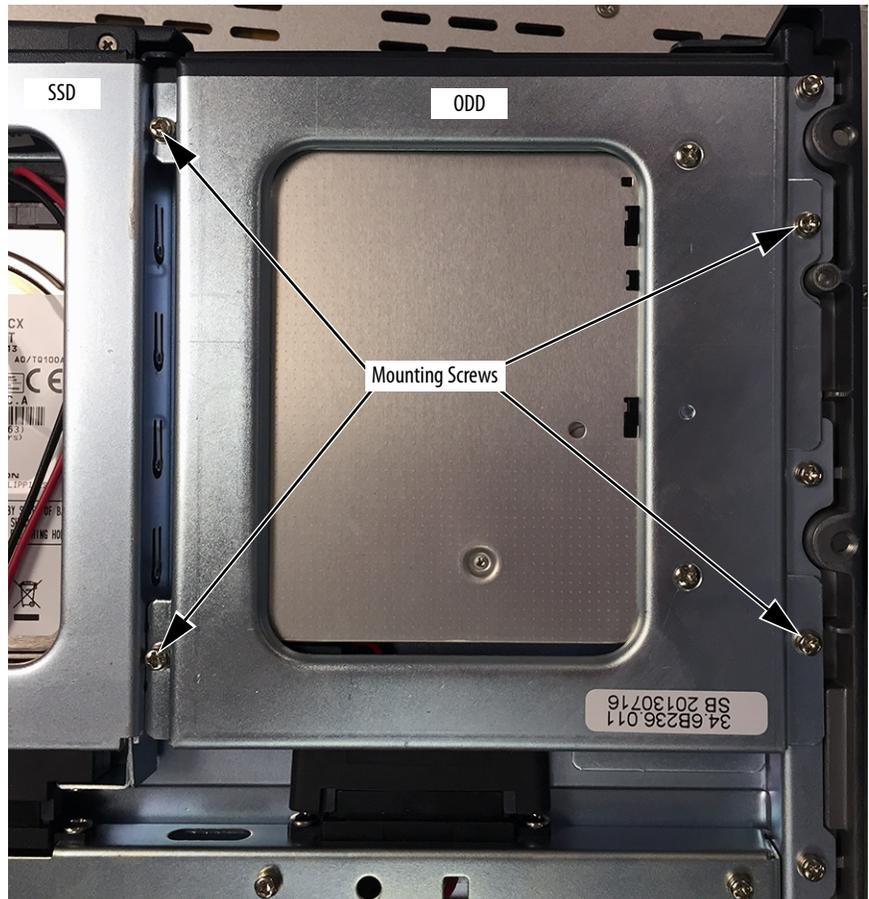
4. Move the loosened ODD until you can access its SATA cable.
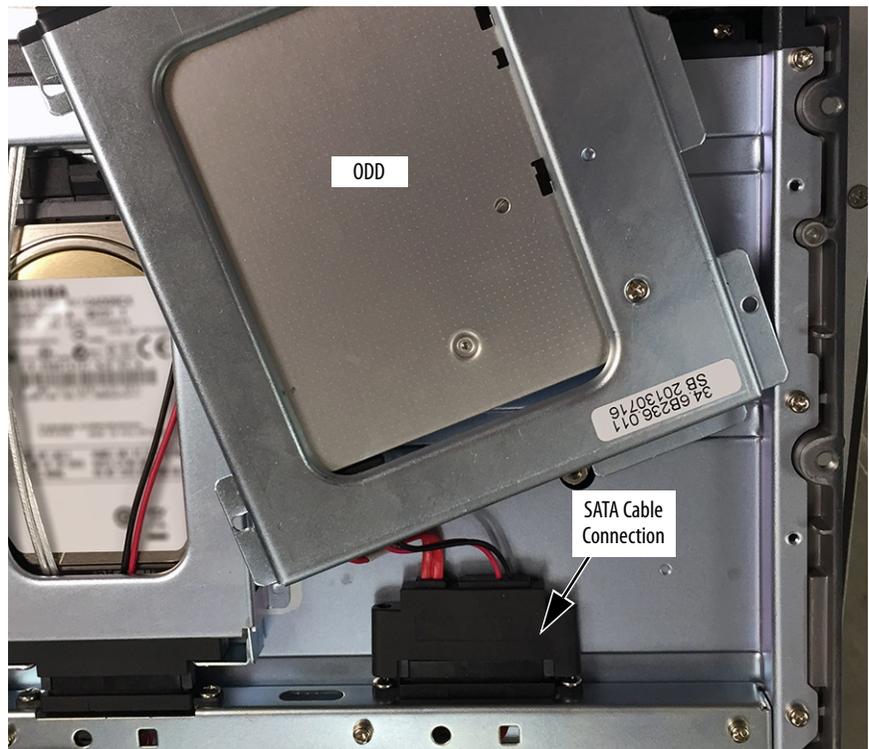
5. Gently pry the SATA cable away from its terminal connection.
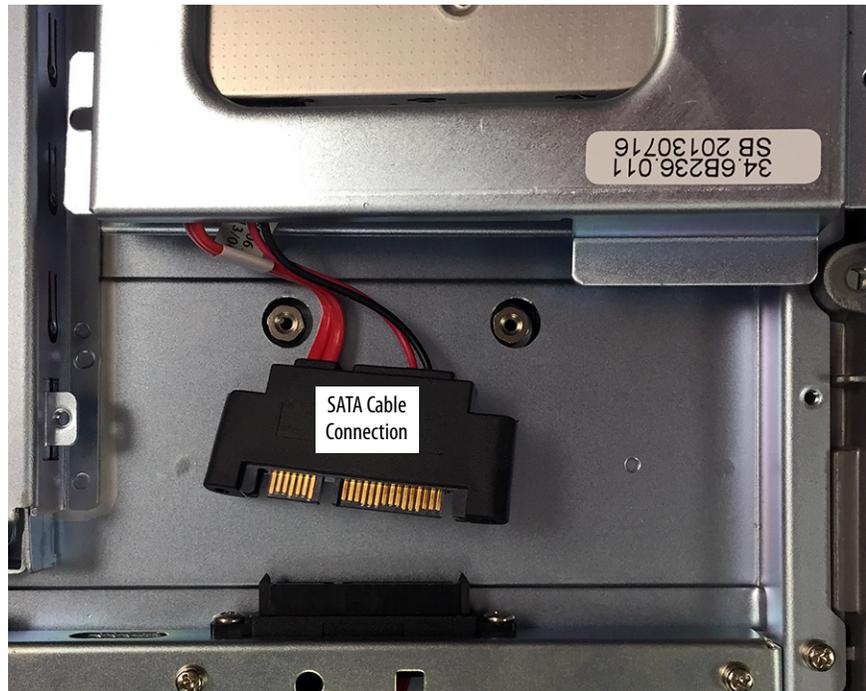
6. Discard this ODD.

   See <u>Dispose of the Computer on page 106</u> for how to safely dispose the ODD.

7. Plug in the SATA cable of the new ODD.

8. Install the new ODD with the four supplied screws.

9. Reassemble the computer in the reverse order of the removal steps.

10. Follow the steps for <u>Post-configuration on page 47</u>.

When you restart the computer, it automatically detects the ODD in the BIOS and OS, so no additional configuration is needed.
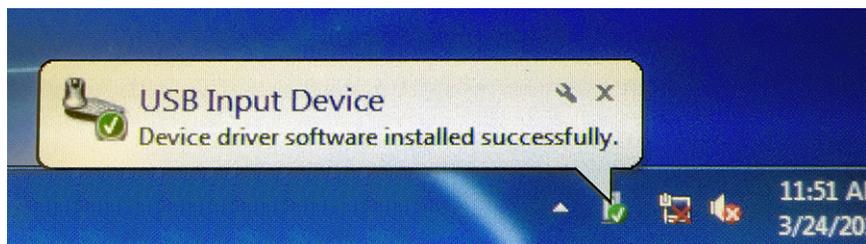
Set Up the UEFI Utility

Set-up Utility Overview

The set-up utility is a hardware configuration program built into the 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 UEFI is already configured and optimized so there is no need to run this utility. However, you can 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 help prevent any conflicts.
- Read the current amount of system memory.
- Change the boot drive order.
- 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 or UIB on front of display[(1)]	Accesses a graphical interface of set-up environment. **IMPORTANT:** Screen shots in this chapter are from the UEFI graphical interface.
DEL (delete)	Accesses a text mode set-up environment.

(1)   UIB is only available on integrated display computers with aluminum bezels.

Set-up Screen Overview

The set-up screen is the main screen for the UEFI graphical interface. On the left are six menu buttons that are stacked vertically. Each menu button provides access to information, commands, or configurable options for the following topics:

- Firmware Update
- Firmware Configuration
- Diagnostics
- AMI Rescue
- Restore OS Image From a USB Storage Drive
- Exit
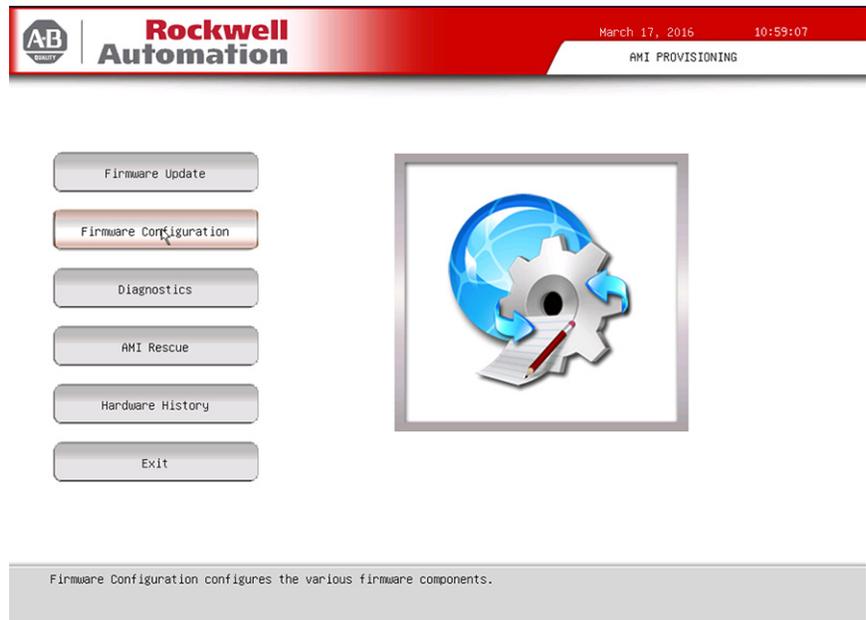
TIP	The UEFI graphical interface can be driven with either the integrated touch screen or a keyboard and mouse. An On Screen Keyboard (OSK) pops up automatically when you enter an entry field.

Firmware Update

You can update your system firmware from the Firmware Update menu.
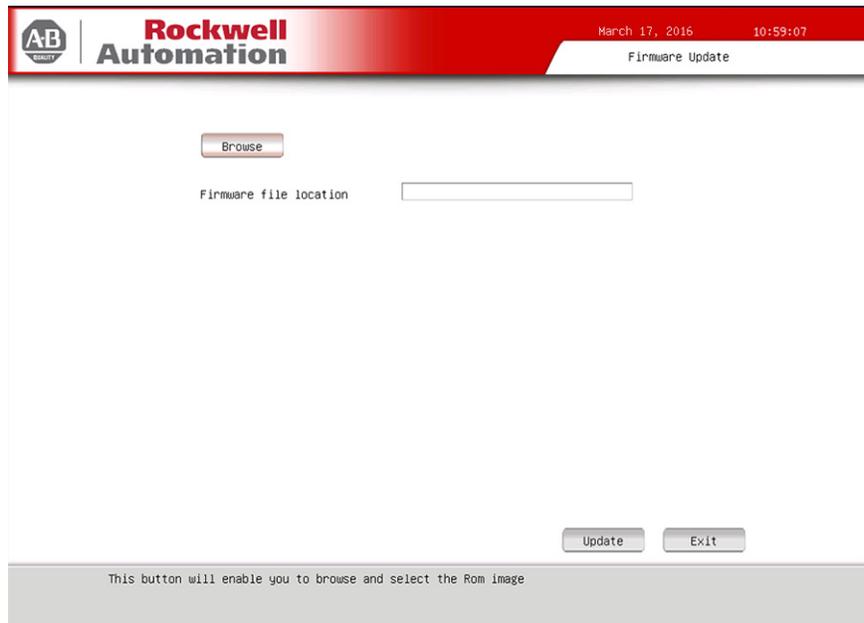
Parameter	Description
Browse	Click to navigate to the firmware file saved onto a media.
Firmware file location	Select or type the file name for the firmware file.
Update	Click to initialize the update process.
Exit	Click to exit the set-up utility.

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/compatibility/ to check 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. On the left are six menu options that are stacked vertically.
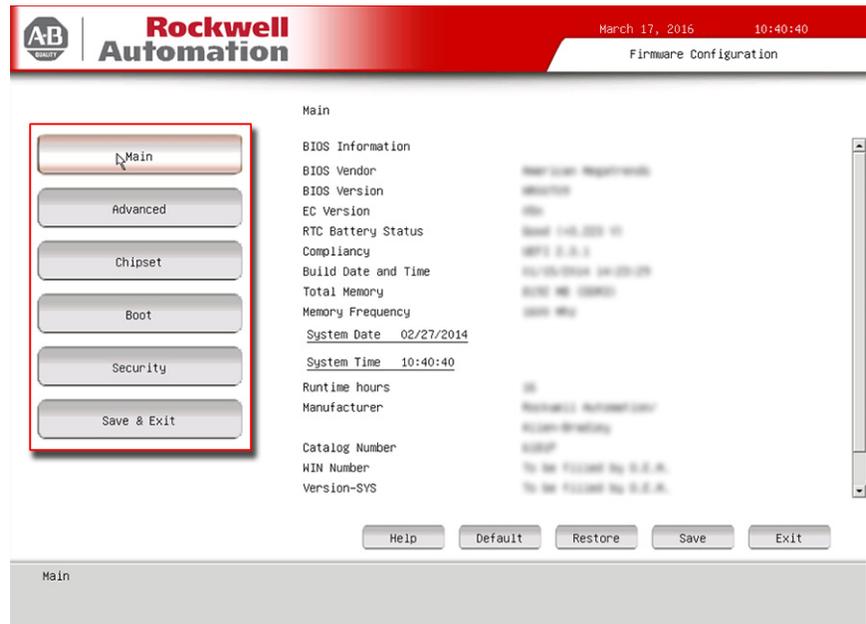
Menu	Description
Main	Use this menu to view general computer information and for basic system configuration.
Advanced	Use this menu to configure information for the PXE, PCI, ACPI, processor, SATA, USB, power, video graphics, super I/O, hardware monitor, and AMT.
Chipset	Use this menu to configure system 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	Saves changes and reset, discards 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 how to use 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 screen.
Exit	Click to close the set-up utility.

Main
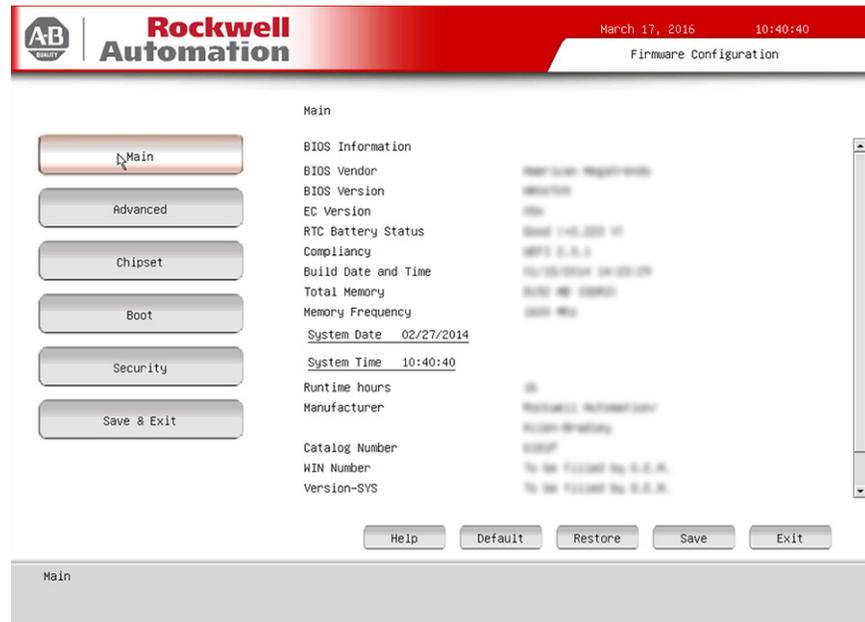
Parameter[1]	Description
BIOS Vendor	BIOS manufacturer
BIOS Version	BIOS version information
EC Version	EC version information
RTC Battery Status	Standby battery voltage
Compliancy	UEFI version information
Build Date and Time	Date and time BIOS was created.
Total Memory	Total system memory and memory type (in parentheses)
Memory Frequency	Frequency of installed memory
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 version, manufacture date
Version-Board	System board version information
Serial Number	Unique system serial number

(1)   See page 64 for an explanation of common buttons near the bottom of screen.

Advanced

Enable PXE Boot

When PXE boot is enabled, a computer boots from a server on a network before it boots the operating system on the local storage drive.
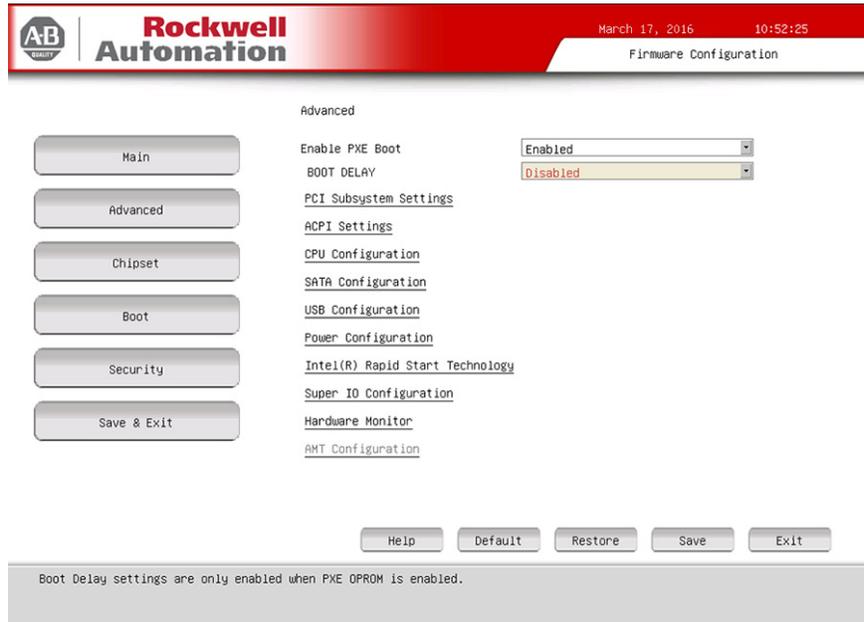
Parameter[1]	Description
Enable PXE Boot	Enables or disables boot option for legacy network devices. Options: Enabled or Disabled (default)
Boot Delay	Enables or disables boot delay, which delays the boot process by the time selected. Options: Disabled (default), 100s, 200s, 300s (seconds) **IMPORTANT:** This data field is only visible when PXE boot is enabled.

(1)   See page 64 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)

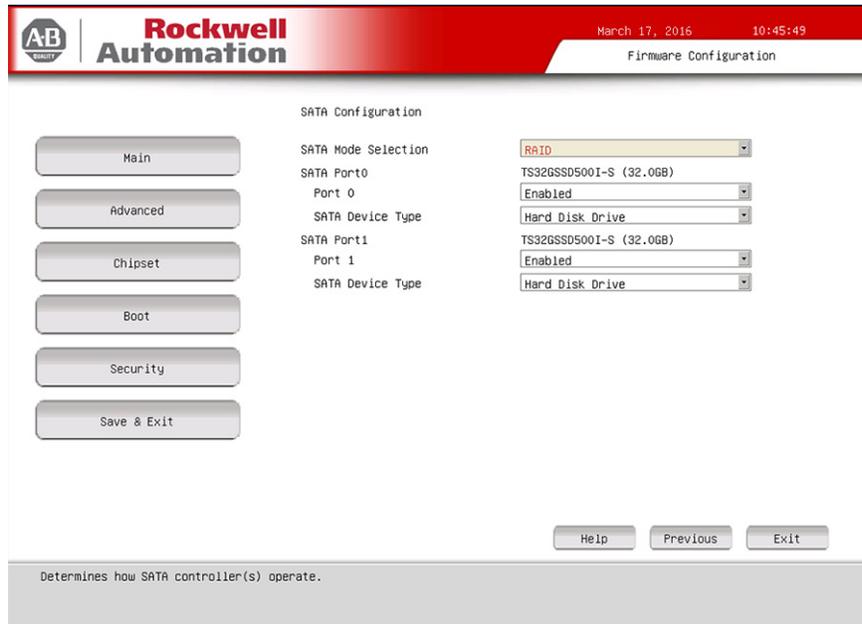(1)   See for an explanation of common buttons near the bottom of screen.

ACPI Settings

Parameter[1]	Description
ACPI Sleep State	Use to set the ACPI sleep state and manage power. Suspend Disabled: Computer power is totally removed by a mechanical switch. S3 (default): RAM remains powered on.

(1) See page 64 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	Enables or disables the hyper-threading technology. Options: Enabled (default) or Disabled
Intel Virtualization Technology (VT-x)	When enabled, a hypervisor can use the extra hardware capabilities provided by Vanderpool Technology. Options: Enabled or Disabled (default)
Intel Virtualization Technology for Directed I/O (VT-d)[2]	Enables or disables VT-d. Options: Enabled or Disabled (default)

(1)   See page 64 for an explanation of common buttons near the bottom of screen.

(2)   Supported on computers with Intel i7-4700EQ processors.

SATA Configuration (AHCI mode)
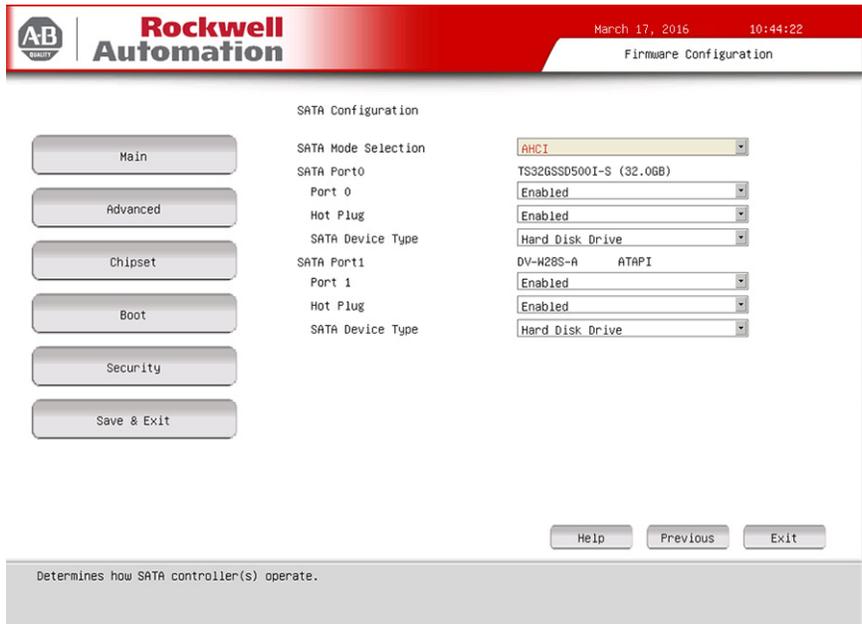
Parameter[1]	Description
SATA Mode Selection	Select an operation mode for the onboard SATA controller. In this case, the AHCI mode (default) is selected.
SATA Port (0, 1)	Indicates the SATA drive connected to the SATA connector.
Port (0, 1)	Enables or disables the SATA drive connected to the SATA port. Options: Enabled (default) or Disabled
Hot Plug	Enables or disables hot plug support for the SATA port. Options: Enabled (default) or Disabled **IMPORTANT:** Make sure all writes to the drive are complete before you remove the drive from the system to avoid the risk of data corruption.
SATA Device Type	Indicates the drive type connected to the SATA port. Options: Hard Disk Drive (default) or Solid-state Drive

(1)   See page 64 for an explanation of common buttons near the bottom of screen.

SATA Configuration (RAID mode)

Parameter[1]	Description
SATA Mode Selection	Select an operation mode for the onboard SATA controller. In this case, RAID mode is selected.[2]
SATA Port (0, 1)	Indicates the drive make, model, and size.
Port (0, 1)	Enables or disables the SATA port. Options: Enabled (default) or Disabled
SATA Device Type	Indicates the SATA drive type connected to the SATA connector. Options: Hard Disk Drive (default) or Solid-state Drive

(1)   See page 64 for an explanation of common buttons near the bottom of screen.
(2)   Applies only to computers that ship with the Windows Server 2008 R2 operating system.

SATA Configuration (IDE mode)
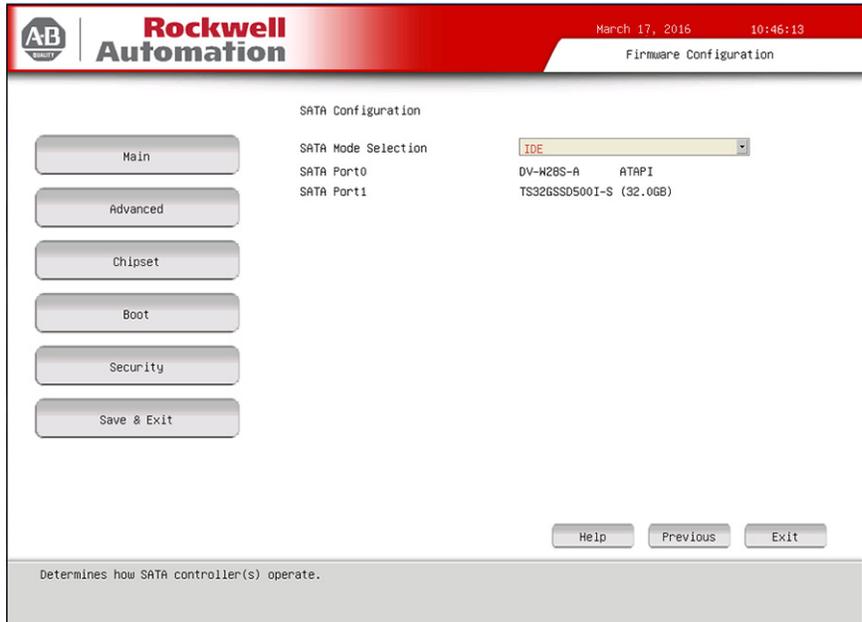
Parameter[1]	Description
SATA Mode Selection	Select an operation mode for the onboard SATA controller. In this case, the IDE mode is selected.
SATA Port (0, 1)	Indicates the drive make, model, and size.

(1)   See page 64 for an explanation of common buttons near the bottom of screen.

USB Configuration

Parameter[1]	Description
USB Ports	Enables or disables a USB port. Options: Enabled (default) or Disabled Port #0: Front[2] of computer Ports #1…#4: Bottom of computer Port #5: Internal (on motherboard; see page 18 for its location) **IMPORTANT:** If you disable a USB port, it reduces access risk from unauthorized or malicious sources.

(1) See page 64 for an explanation of common buttons near the bottom of screen.

(2) Applies only to integrated display computers with aluminum bezel.

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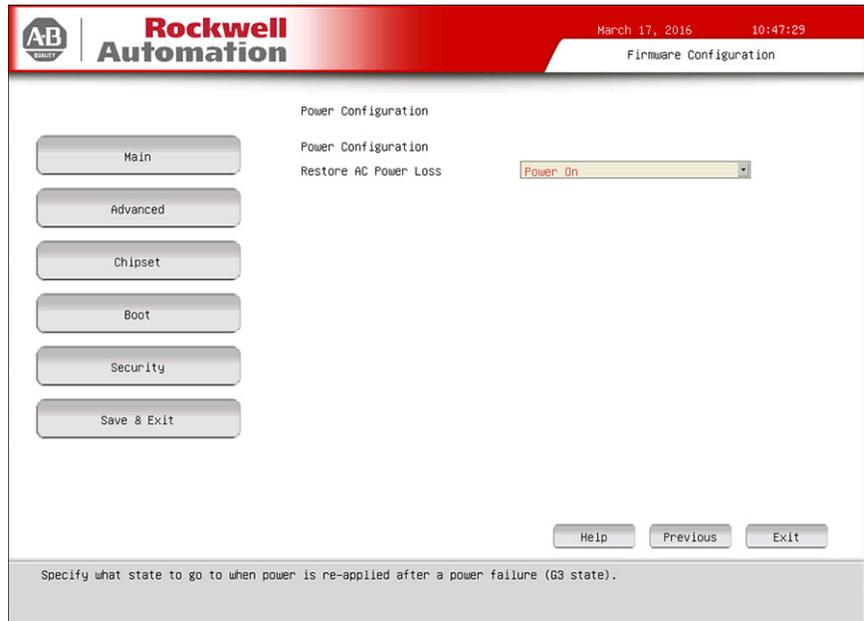
Parameter[1]	Description
Restore AC Power Loss	Specify what state to go to when power is reconnected after a power failure (G3 state).
	Options: Power off, Power on (default), Last State

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

Intel® Rapid Start Technology
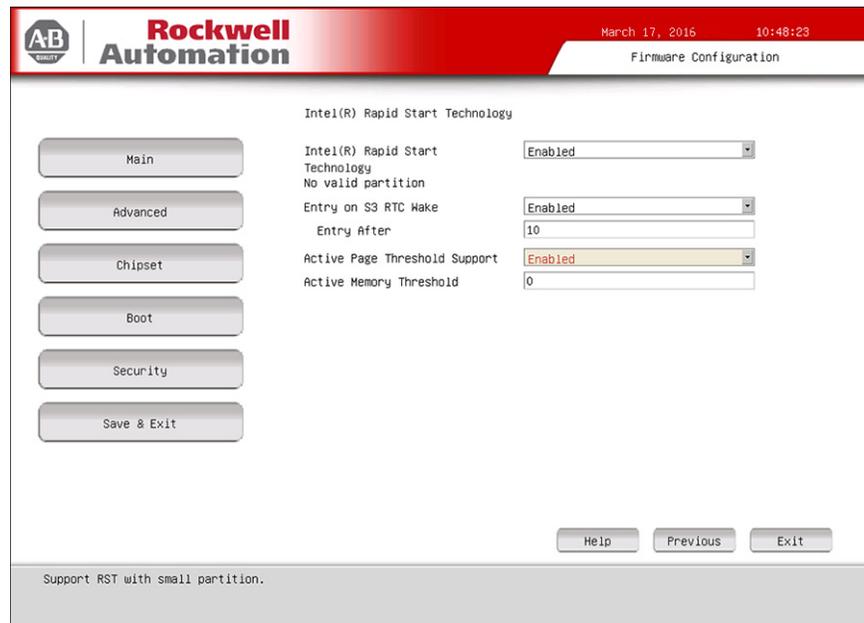
Parameter[1]	Description
Intel® Rapid Start Technology	Enables or disables Intel Rapid Start Technology. Options: Enabled or Disabled (default) **IMPORTANT:** The SSD must first have a private partition allocated that is equal in size to the computer RAM.
Entry on S3 RTC Wake[2]	Enables or disables Rapid Start invocation upon S3 RTC wake. Options: Enabled (default) or Disabled
Entry After[2]	Enables or disables RTC wake timer at S3 entry. Number range: 10 (default) or 0…120 (all in seconds)
Active Page Threshold Support[2]	Enables or disables support for Rapid Start Technology when the partition size is less than the amount of memory in the system. Options: Enabled or Disabled (default)
Active Memory Threshold[2]	Enables the system to support Rapid Start Technology when the partition size is greater than the Active Page Threshold size in MB. When set to 0 (auto mode), it checks if partition size is enough at S3 entry. Options: 0 (default), 1…65535

(1)   See page 64 for an explanation of common buttons near the bottom of screen.

(2)   This data field is visible only when the Intel® Rapid Start Technology data field is enabled.

Super I/O Configuration
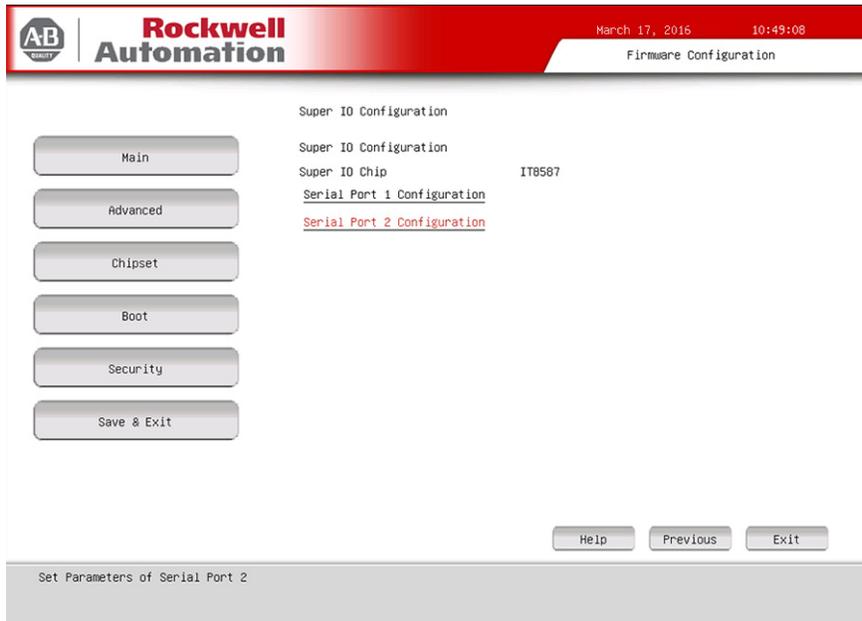
Parameter[1]	Description
Super I/O Chip	Displays the Super I/O chipset information.
Serial Port 1 Configuration	Select to set parameters for serial port 1.
Serial Port 2 Configuration	Select to set parameters for serial port 2.

(1)   See page 64 for an explanation of common buttons near the bottom of screen.

Table 7 - Serial Port 1 Configuration
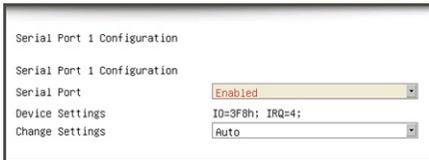
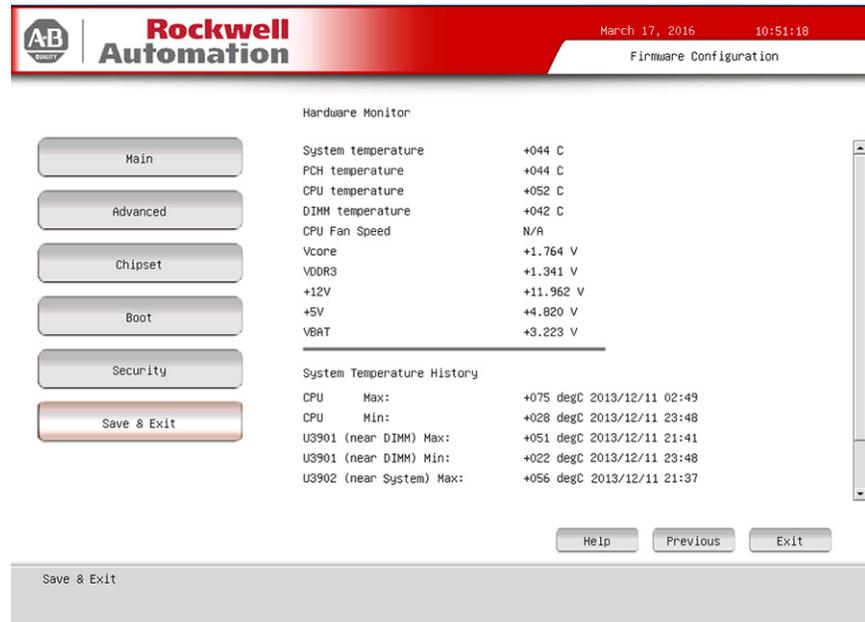| Parameter	Description
Serial Port	Enables or disables the serial (COM1) port. Options: Enabled (default) or Disabled
Device Settings	Displays the Base I/O address and IRQ setting of serial port 1.
Change Settings	Select an optimal setting for the super I/O device. Options: Auto (default), I/O=3F8h; IRQ=4, I/O=2F8h; IRQ=4, I/O=3E8h; IRQ=4, I/O=2E8h; IRQ=4

Table 8 - Serial Port 2 Configuration

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

Hardware Monitor

For an explanation of this feature, see .

Parameter[1]	Description
Hardware Monitor System temperature PCH temperature CPU temperature DIMM temperature CPU Fan Speed[2] Vcore VDDR3 +12V +5V VBAT	Displays the current temperatures and core voltages of various hardware components. All values are read-only.
System Temperature History CPU Max: CPU Min: U3901 (near DIMM) Max: U3901 (near DIMM) Min: U3902 (near System) Max: U3902 (near System) Min: U3904 (near PCH) Max: U3904 (near PCH) Min:	Displays the minimum and maximum temperatures for the CPU and applicable sensors over a 24-hour time period (time stamp is 24-hour clock). All values are read-only.

(1)   See page 64 for an explanation of common buttons near the bottom of screen.

(2)   This data field is visible only on computers with an Intel i7-4700EQ processor.

AMT Configuration

For an explanation of this feature, see .
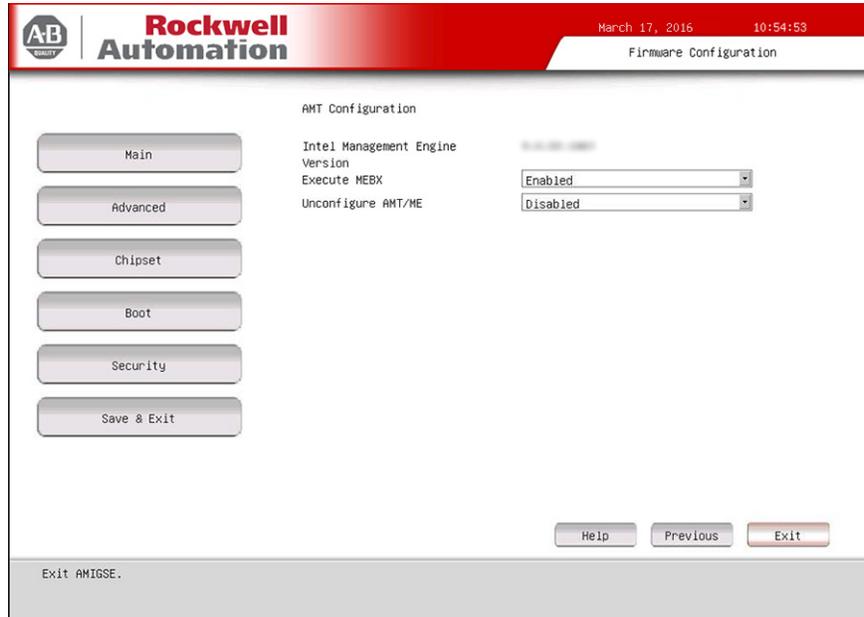
IMPORTANT	AMT configuration is only available on Advanced computer models. See page 13 to see if your computer qualifies.

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 64 for an explanation of common buttons near the bottom of screen.

Chipset
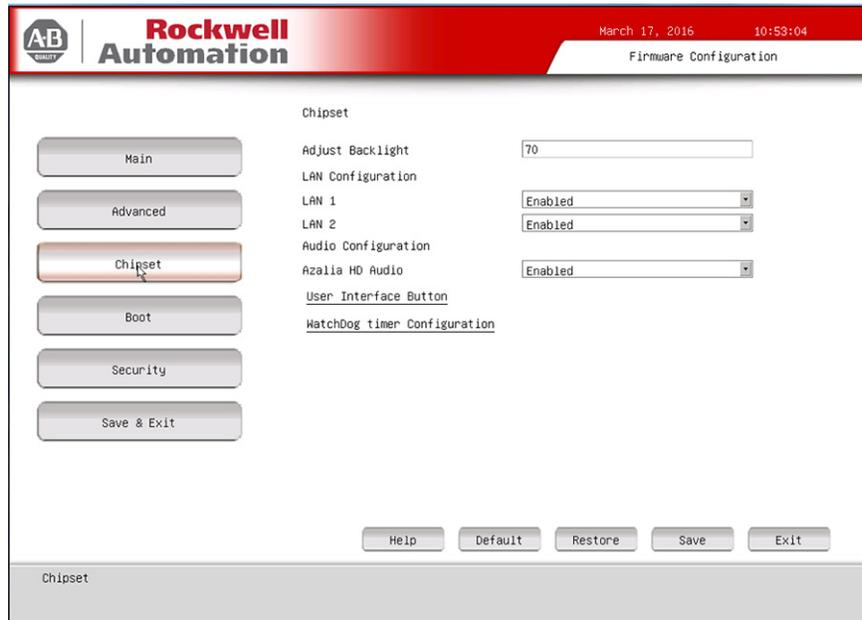
Parameter[1]	Description
Adjust Backlight	Adjust the internal LCD LED backlight brightness. Number range: 1 to 100 with 100 as full (100%) brightness; 70 is default. **IMPORTANT:** Increasing the brightness from the default setting reduces the life of the LED backlight, particularly at high temperatures.
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
User Interface Button	Select this item to set parameters for the user interface button.
Watchdog timer Configuration	Select this item to set parameters for the watchdog timer.

(1)   See <u>page 64</u> for an explanation of common buttons near the bottom of screen.

User Interface Button (UIB)

To access the UIB configuration screen, do the following.

1. On computer startup, enter the BIOS/UEFI.

2. On the Main screen, click Firmware Configuration.

3. On the Firmware Configuration screen, click Chipset.

4. On the Chipset screen, click User Interface Button.
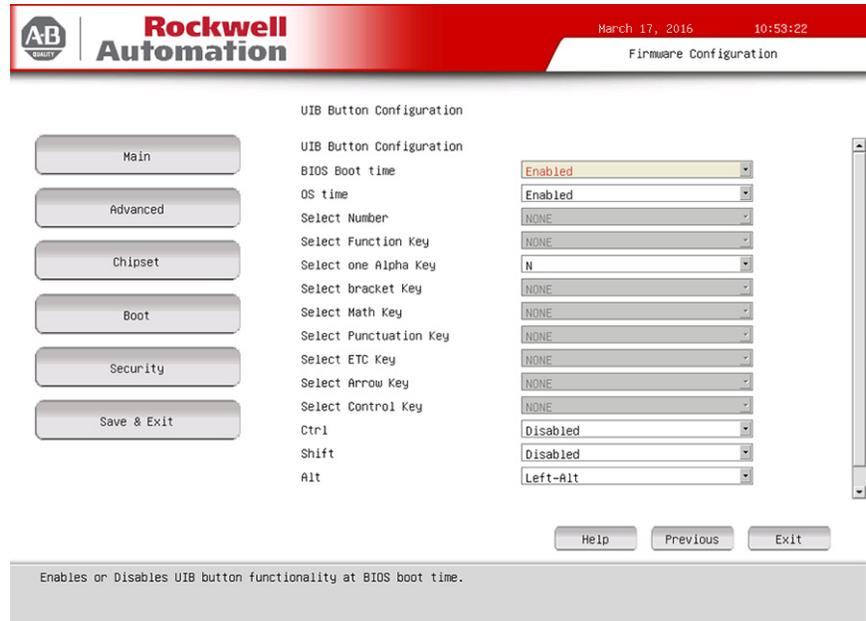
> **IMPORTANT**   This screen is only available on integrated display computers with aluminum bezels.

Parameter[1]	Description
BIOS Boot time	Enables or disables UIB access to UEFI menu during POST. Options: Enabled (default) or Disabled
OS time	Enables or disables UIB functionality at OS time. Options: Enabled (default) or Disabled
Select Number	Select a number key to represent UIB. Options: None (default) or 0…9
Select Function Key	Select a function key to represent UIB. Options: None (default) or F1…F12
Select one Alpha Key	Select an alphabet letter (Alpha) key to represent UIB. Options: N (default), a…z, or A…Z
Select bracket key	Enables or disables key combination with bracket key. Options: None (default) or (,), [,], {, }, <, >
Select Math key	Enables or disables key combination with Math key. Options: None (default) or =, +, -
Select Punctuation key	Enables or disables key combination with punctuation key. Options: None (default) or ` ; ' : " , ? . ! &
Select ETC key	Enables or disables key combination with ETC key. Options: None (default) or ~, @, #, $, %, ^, *, _, \, /, |, space bar

Parameter[1]	Description
Select Arrow key	Enables or disables key combination with arrow key. Options: None (default) or Up, Down, Right, Left
Ctrl	Enables or disables key combination with CTRL key. Options: Disabled (default), Left-CTRL, or Right-CTRL
Shift	Enables or disables key combination with Shift key. Options: Disabled (default), Left-Shift, or Right-Shift
Alt	Enables or disables key combination with ALT key. Options: Disabled, Left-ALT (default), or Right-ALT

(1)   See page 64 for an explanation of common buttons near the bottom of screen.

Watchdog Timer

For an explanation of this feature, see Watchdog Timer on page 21.
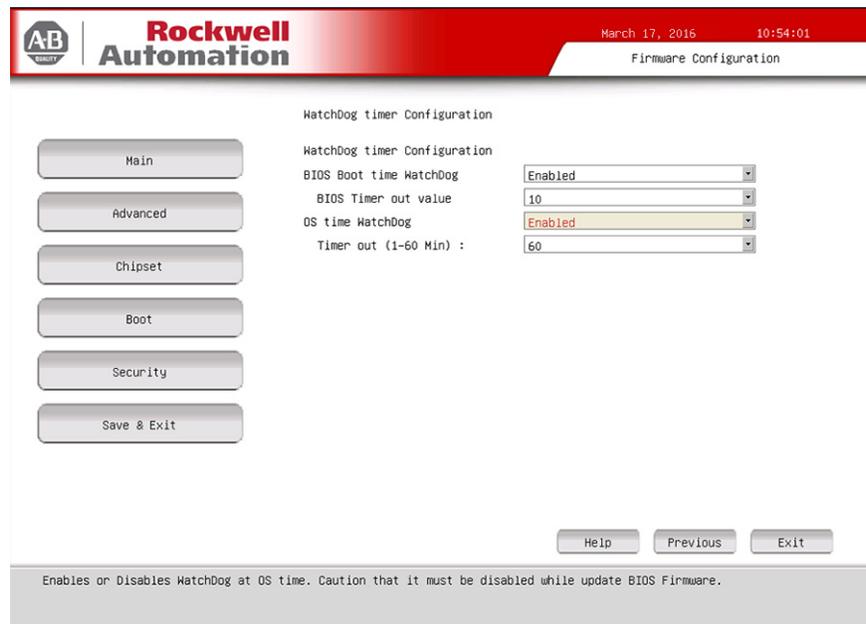
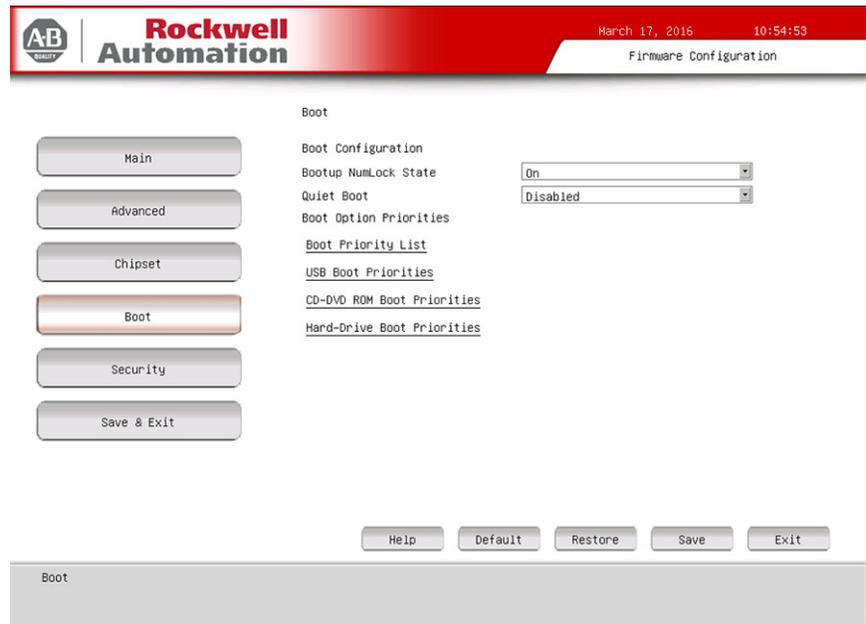| Parameter[1]	Description
BIOS Boot time Watchdog	Enables or disables BIOS boot timeout. Options: Enabled or Disabled (default)
BIOS Timer Out value[2]	Set BIOS timer timeout value (10, 20, or 30 minutes). 10 is default.
OS time Watchdog	Enables or disables OS timeout. Options: Enabled or Disabled (default)
Timer Out (1-60 Min)[3]	Set Watchdog timer timeout value (1…60 minutes) in 1 minute increments. 60 is default.

(1)   See page 64 for an explanation of common buttons near the bottom of screen.
(2)   This field is only visible when BIOS Boot time Watchdog is enabled.
(3)   This field is only visible when OS time Watchdog is enabled.

IMPORTANT	If you enable the BIOS Boot time Watchdog, then it must be disabled before you update the BIOS firmware.

Boot

Parameter[1]	Description
Bootup NumLock State	Enables or disables the Num Lock key on boot. Option: On (default) or Off
Quiet Boot	Enables or disables Quiet Boot option. Option: Enabled or Disabled (default) **IMPORTANT:** When enabled, this option hides the POST screen messages at computer startup.
Boot Priority List	Change the boot order. By default, these devices are the boot priority: • USB key • CD-ROM • SSD • PXE • UEFI shell • PCI/PCIe RAID/SCSI/SAS card Follow instructions in the dialog box to change the boot order, and to enable or disable options.
USB Boot Priorities	Change the USB boot order through a dialog box. See the Boot Priority List description for the dialog box options.
CD-DVD ROM Boot Priorities[2]	Change the CD-DVD ROM boot order through a dialog box. See the Boot Priority List description for the dialog box options.
Hard Drive Boot Priorities	Change the hard disk drive boot order through a dialog box. See the Boot Priority List description for the dialog box options.

(1) See page 64 for an explanation of common buttons near the bottom of screen.
(2) This data field is only visible on computers with CD-ROM drives.

Security

Parameter[1]	Description
Administrator Password	Sets the administrator password. Use this password to reduce assess risk from unauthorized or malicious sources. **IMPORTANT:** If you forget the administrator password, there are two ways to reset it: • Remove and replace the battery; see Replace the RTC Battery on page 53. • Clear the UEFI; see Clear the UEFI on page 105.
User Password	Sets the user password. Use this password to reduce assess risk from unauthorized or malicious sources. **IMPORTANT:** If you forget the user password, there are two ways to reset it: • Remove and replace the battery; see Replace the RTC Battery on page 53. • Clear the UEFI; see Clear the UEFI on page 105.

(1)   See page 64 for an explanation of common buttons near the bottom of screen.

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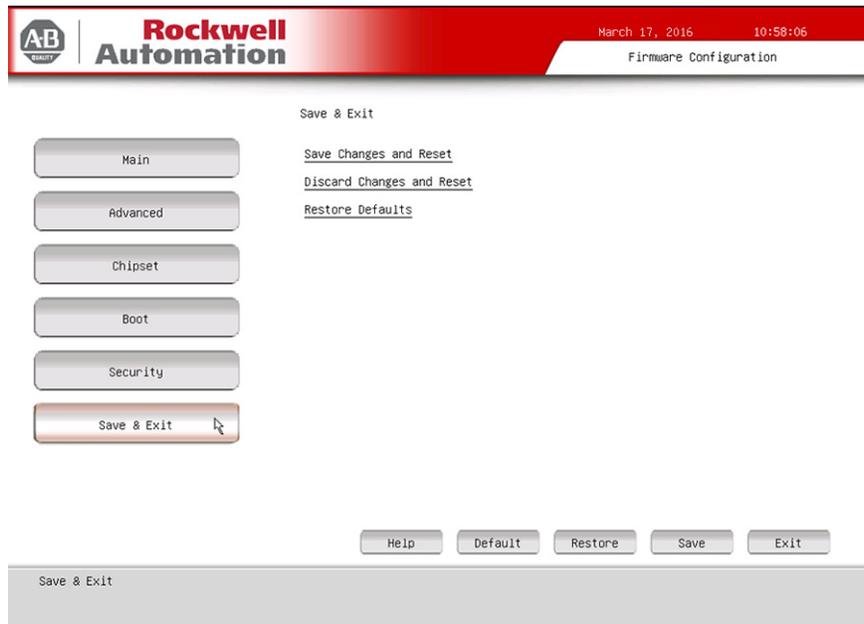
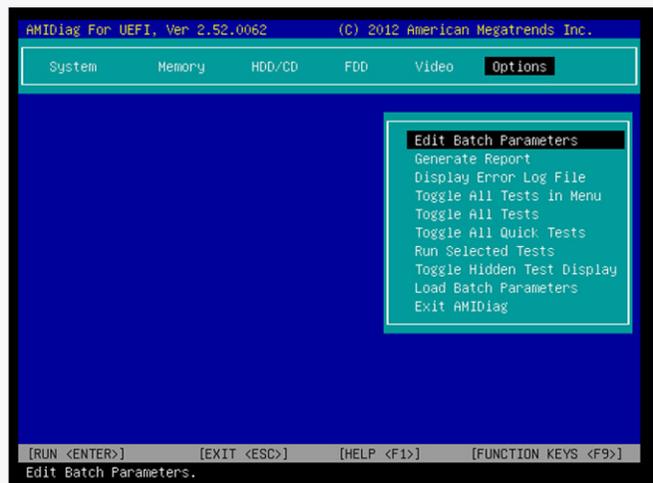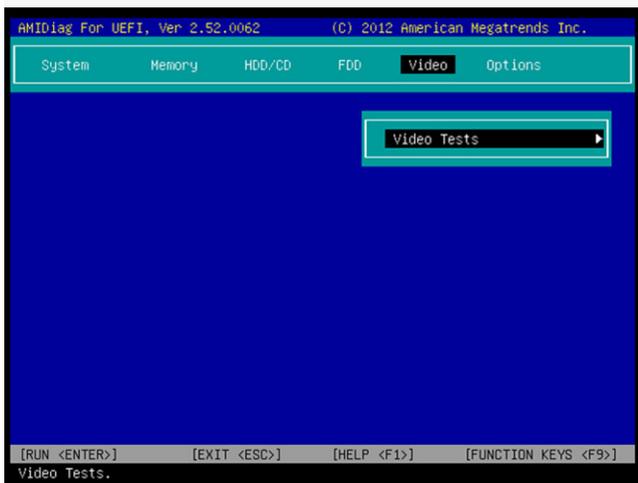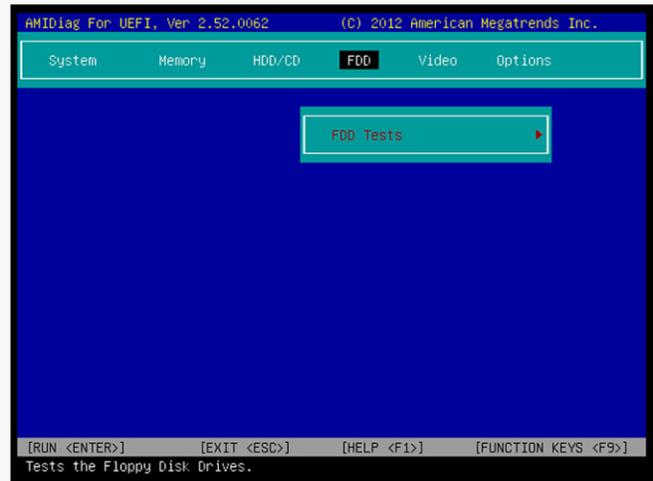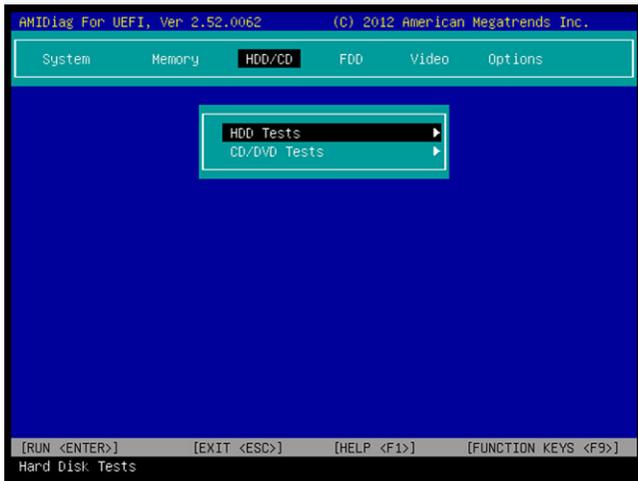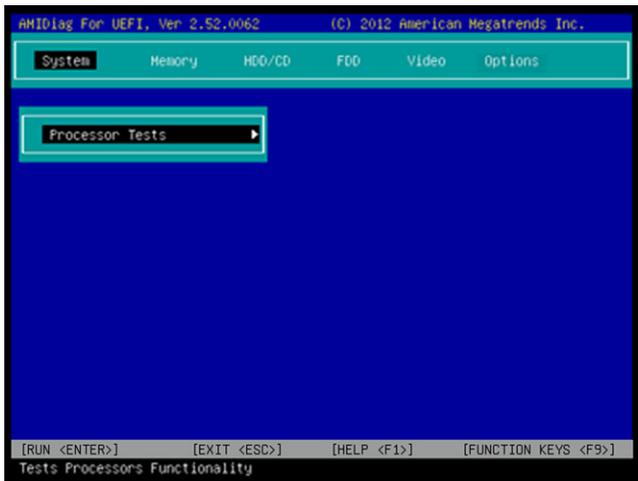| Parameter[1]	Description
Save Changes and Reset	Saves changes that are made and closes the set-up utility.
Discard Changes and Reset	Discards changes that are made and closes the set-up utility.
Restore Defaults	Loads the optimal defaults in the set-up menu.

(1)　See page 64 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, ODD, video, and other hardware.
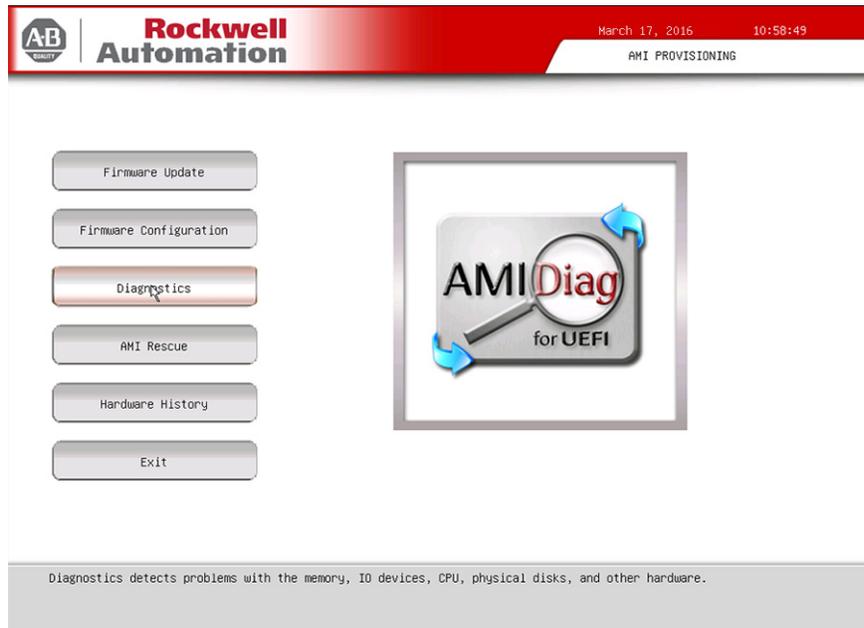
Select a menu option by pressing the up ↑ or down ↓ arrow keys and pressing Enter when a menu is highlighted. Press the left ← or right → arrow keys to toggle between the six Diagnostics menu selections.

```
AMIDiag For UEFI, Ver 2.52.0062        (C) 2012 American Megatrends Inc.

  System      Memory      HDD/CD      FDD      Video      Options


    Processor Tests          ▶










 [RUN <ENTER>]        [EXIT <ESC>]      [HELP <F1>]      [FUNCTION KEYS <F9>]
Tests Processors Functionality
```

```
AMIDiag For UEFI, Ver 2.52.0062        (C) 2012 American Megatrends Inc.

  System      Memory      HDD/CD      FDD      Video      Options


                    Pattern Test
                    Extended Pattern Test
                    Walking 1's Test
                    Walking 0's Test
                    Random Memory Test
                    Address Test
                    Refresh Test
                    Cache Memory Test
                    Data Bus Test
                    Quick Memory Test


 [RUN <ENTER>]        [EXIT <ESC>]      [HELP <F1>]      [FUNCTION KEYS <F9>]
Performs memory write/read/compare tests with multiple patterns
```

```
AMIDiag For UEFI, Ver 2.52.0062        (C) 2012 American Megatrends Inc.

  System      Memory      HDD/CD      FDD      Video      Options


            HDD Tests          ▶
            CD/DVD Tests       ▶










 [RUN <ENTER>]        [EXIT <ESC>]      [HELP <F1>]      [FUNCTION KEYS <F9>]
Hard Disk Tests
```

```
AMIDiag For UEFI, Ver 2.52.0062        (C) 2012 American Megatrends Inc.

  System      Memory      HDD/CD      FDD      Video      Options


                        FDD Tests          ▶










 [RUN <ENTER>]        [EXIT <ESC>]      [HELP <F1>]      [FUNCTION KEYS <F9>]
Tests the Floppy Disk Drives.
```

```
AMIDiag For UEFI, Ver 2.52.0062        (C) 2012 American Megatrends Inc.

  System      Memory      HDD/CD      FDD      Video      Options


                    Video Tests          ▶










 [RUN <ENTER>]        [EXIT <ESC>]      [HELP <F1>]      [FUNCTION KEYS <F9>]
Video Tests.
```

```
AMIDiag For UEFI, Ver 2.52.0062        (C) 2012 American Megatrends Inc.

  System      Memory      HDD/CD      FDD      Video      Options


                    Edit Batch Parameters
                    Generate Report
                    Display Error Log File
                    Toggle All Tests in Menu
                    Toggle All Tests
                    Toggle All Quick Tests
                    Run Selected Tests
                    Toggle Hidden Test Display
                    Load Batch Parameters
                    Exit AMIDiag


 [RUN <ENTER>]        [EXIT <ESC>]      [HELP <F1>]      [FUNCTION KEYS <F9>]
Edit Batch Parameters.
```

The following table lists the shortcut options in the Diagnostics menu.

Button	Description
Esc	Stops a test in progress or exits Diagnostics from any of the six menu options.
Enter	Runs the highlighted test or option.
F1	Displays the Help screens.
F2	Edits batch parameters.
F3	Loads batch parameters.
F4	Saves batch parameters.
F5	Selects or deselects the current test.
F6	Selects or deselects all tests in menu.
F7	Selects or deselects all tests.
F8	Selects or deselects all quick tests.
F9	Displays a list of the Diagnostic function keys.
F10	Runs the selected test or tests.

AMI Rescue

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

IMPORTANT	The following instructions are for the built-in backup and restore utility, AMI Rescue. You can also use third-party utility or software to create an image backup and restore. System images are also available from the Rockwell Automation® Product Compatibility and Download Center: (PCDC) site: https://compatibility.rockwellautomation.com/Pages/home.aspx.

The Make A Backup function does 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 Restore from An Image function overwrites any data on the primary operating system partition on the internal drive.
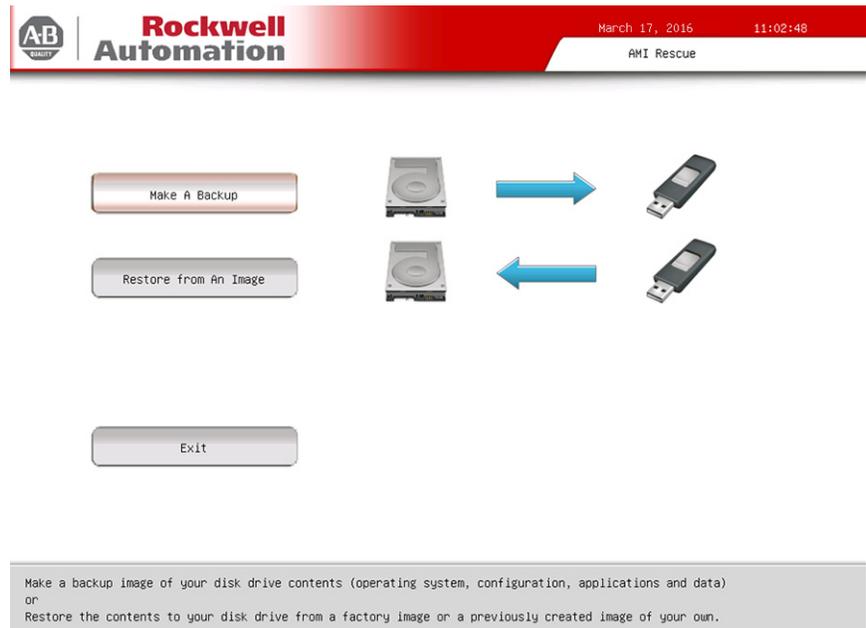
Parameter	Description
Make A Backup	Click to take you through steps to back up the desired data.
Restore from An Image	Click to take you through steps to restore the desired data.
Exit	Click to exit the AMI Rescue or press F4.

Make a Backup

Follow these steps to back up the system image.

IMPORTANT	Attach a FAT32-formatted USB storage device to the computer before you perform these steps. Use a USB storage device appropriately sized for the amount of data being backed up.

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

2. Click Make a Backup.

3. In the Source to Backup From field, click Browse to locate the backup source.

   The backup is automatically assigned a name based on the system date.

4. Click Advanced to select the partitions to back up.

5. Select all Disk 1 options so the entire OS image is backed up.
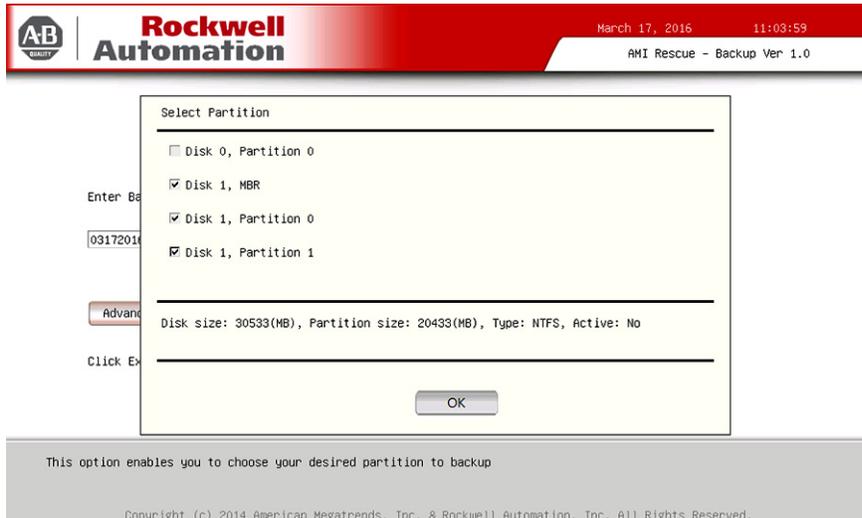
> **IMPORTANT**   Do not select Disk 0; it is meant for the USB mass storage device.

6. Click OK.

7. Click Exit.

8. In the Destination of Image File field, click Browse to locate the destination source.

9. From the List of Volumes menu, select the external USB drive.
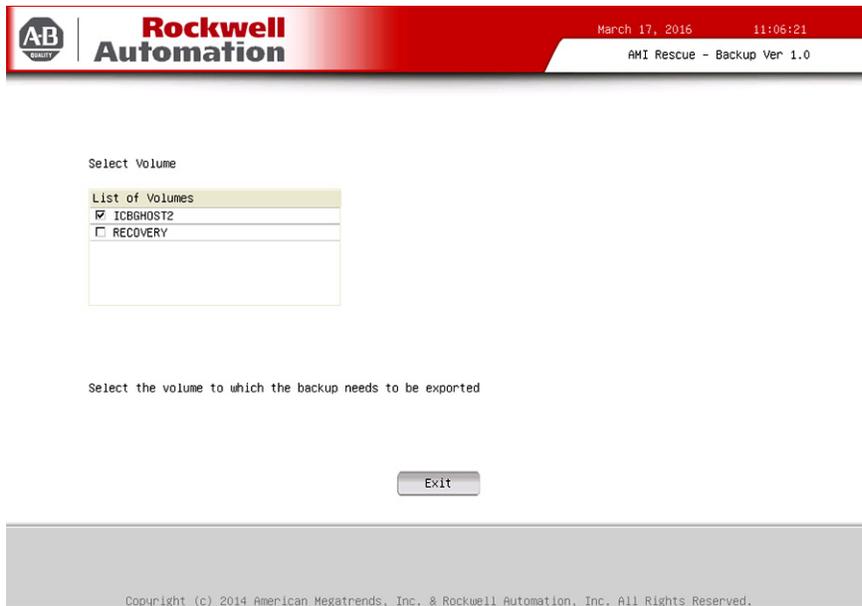
> **IMPORTANT**   Do not select Recovery; it is the factory OS image that you wish to back up.

10. Click Exit.

11. Click Backup Now.

Restore OS Image From a Hidden Partition

Perform the following steps to restore your computer to factory default settings.

IMPORTANT	When you restore from a back-up image, all data on the target drive is replaced. Make sure all data is backed up before you proceed with the following steps.

1. Click the AMI Rescue menu to access the AMI Restore screen.

2. Click Restore from an Image.

3. In the Source of Image File field, click Browse to locate the image source.
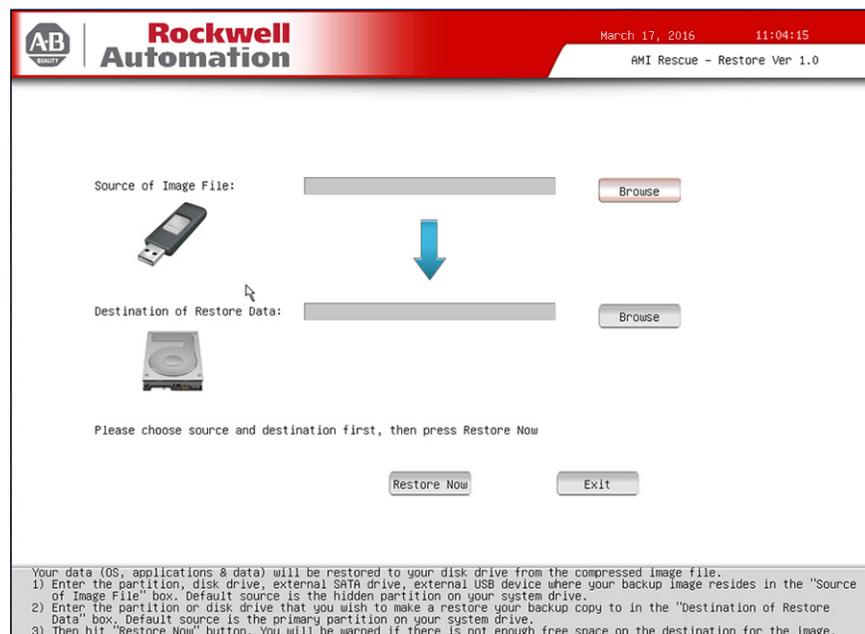
4. From the List of Volumes menu, select Recovery.
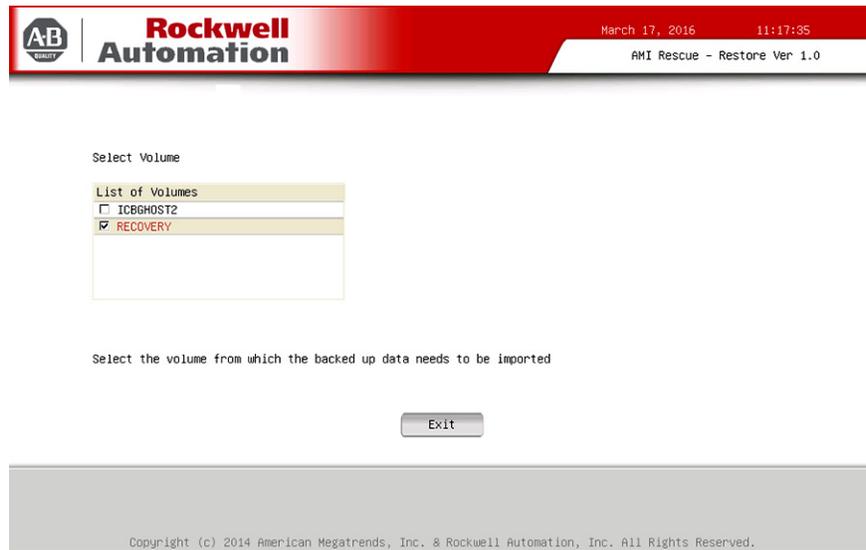
> **IMPORTANT**   Recovery is the default OS image source, which is the hidden partition on your internal storage drive.
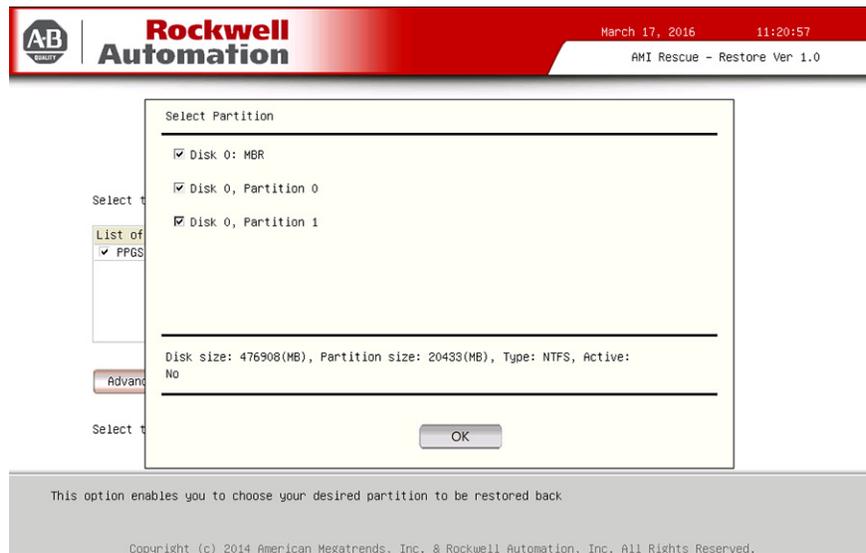
5. Click Exit.

6. In the Destination of Restore Data field, click Browse to locate the destination source.

7. From the List of Labels menu, select the default destination.

> **IMPORTANT**   The Label name is similar or identical to the above example.

8. Click Advanced.

9. On the Select Partition screen, select all boxes for Disk 0 so the entire OS image is restored.

10. Click OK.

11. Click Exit.

12. Click Restore Now to start the restoration process.

IMPORTANT	The following warnings may appear:

The restored destination may not
has enough space due to the
compression rate of backup
image. Continue?

Yes   No

If prompted, click Yes to continue.

Target partitions will be
overwritten. Continue?

Yes   No

If prompted, click Yes to continue.

Do you want to keep the current
partition table?

Yes   No

If prompted, click No to continue.

The current partition table will
be restored to previous state.
Continue?

Yes   No

If prompted, click Yes to continue.

Restore OS Image From a USB Storage Drive

Perform the following steps to restore your computer with a backed-up OS image on an external USB storage drive.

IMPORTANT	To perform these steps, you must already have a backed-up OS image on an external USB storage drive from <u>Make a Backup on page 89</u>. Connect the USB storage drive to the computer before you perform these steps.

1. Click the AMI Rescue menu to access the AMI Restore screen.

2. Click Restore from an Image.

3. In the Source of Image File field, click Browse to locate the image source.
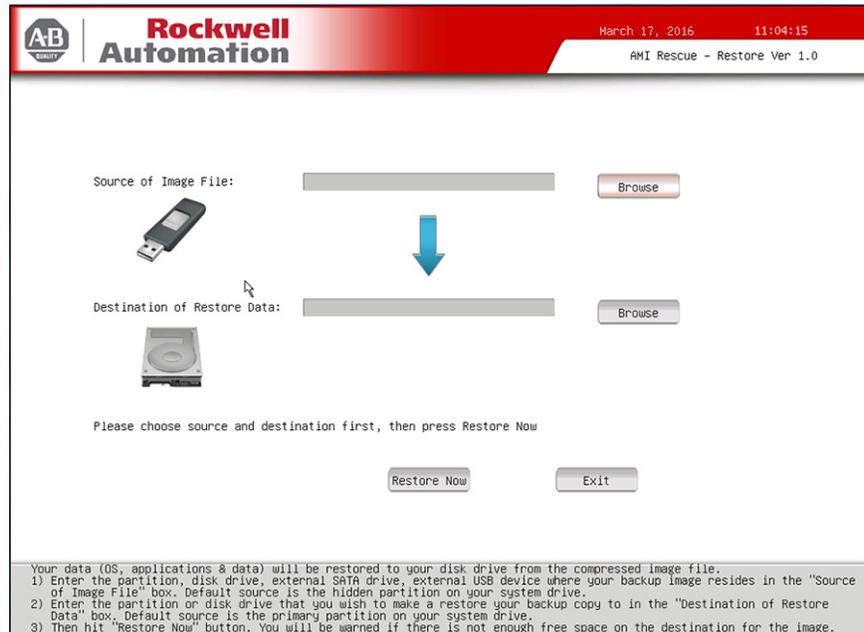
4. From the List of Volumes menu, select the USB storage drive.
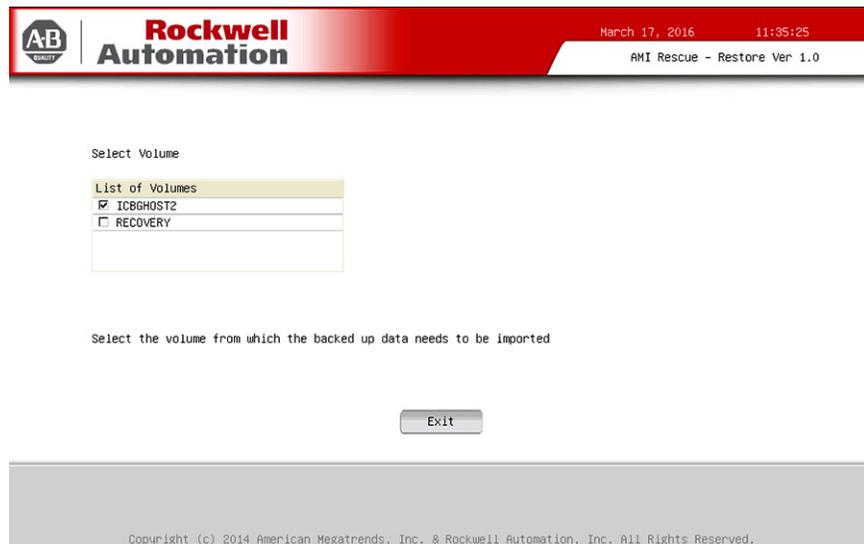
IMPORTANT	Do not select Recovery; it is the OS image on the computer that you wish to restore.

5. Click Exit.

6. In the Destination of Restore Data field, click Browse to locate the destination source.

7. From the List of Labels menu, select the USB storage drive.
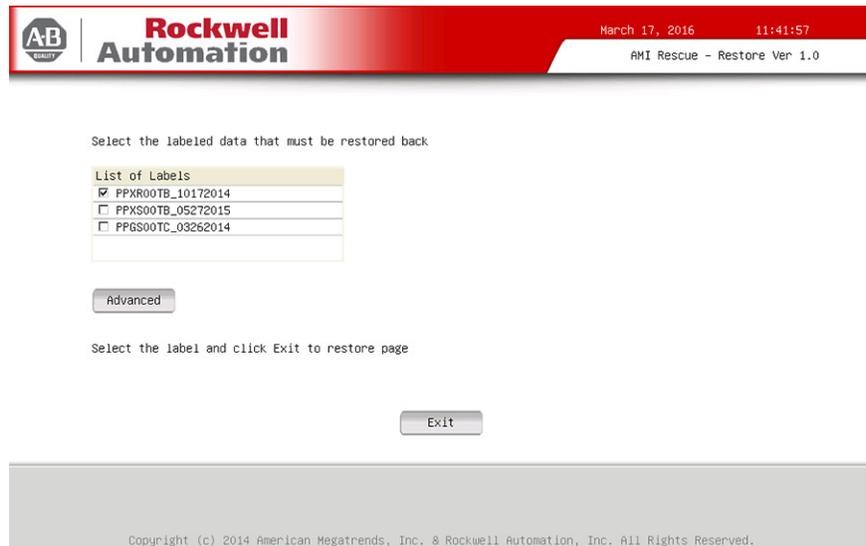
IMPORTANT	If no labels are visible, then the backed-up OS image folder must be moved to the root directory of the USB storage drive. The backup is automatically assigned a name based on the system date, such as '03172016_00.'

8. Click Advanced.

9. On the Select Partition screen, select all boxes for Disk 0 so the entire OS image is restored.

10. Click OK.

11. Click Exit.

12. Click Restore Now to start the restoration process.

> **IMPORTANT**   The following warnings may appear:
>
> ```
> The restored destination may not
> has enough space due to the
> compression rate of backup
> image. Continue?
>           Yes            No
> ```
>
> If prompted, click Yes to continue.
>
> ```
> Target partitions will be
> overwritten. Continue?
>           Yes            No
> ```
>
> If prompted, click Yes to continue.
>
> ```
> Do you want to keep the current
> partition table?
>           Yes            No
> ```
>
> If prompted, click No to continue.
>
> ```
> The current partition table will
> be restored to previous state.
> Continue?
>           Yes            No
> ```
>
> If prompted, click Yes to continue.

Hardware History

You can view various hardware parameters from the Hardware History menu. It shows the total hours that the computer has been powered up, or runtime. It also displays the minimum and maximum temperatures over the entire runtime.

All displayed values are read-only, and the time stamp is 24-hour clock.
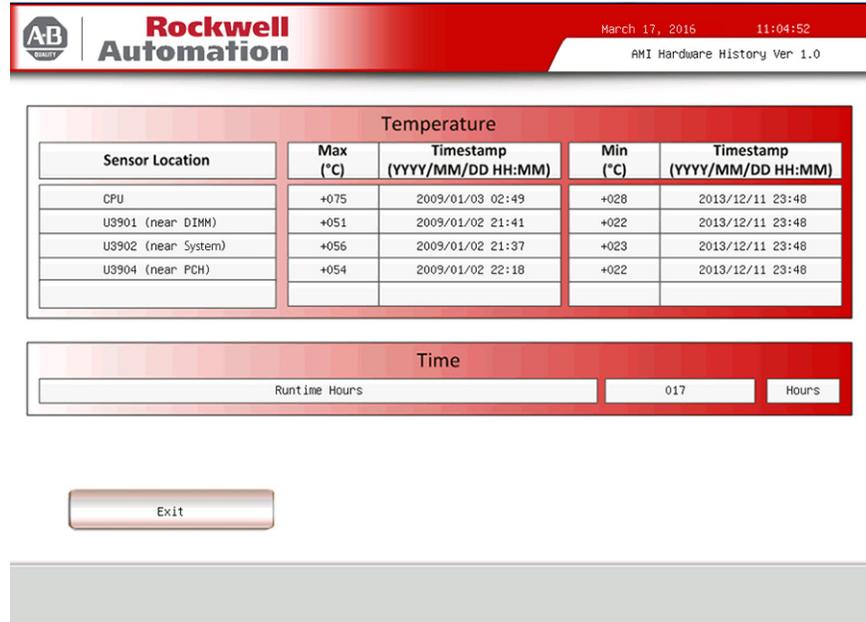
Menu	Description
Temperature	Same hardware temperatures as identified in System Temperature History of Hardware Monitor; see page 77 for more information.
Time	Total runtime hours. In the above screen shot, the runtime hours are 17.
Exit	Returns you to the set-up menu screen (page 62).

Exit

Use the Exit menu to close the UEFI set-up utility.

Notes:

Chapter 6
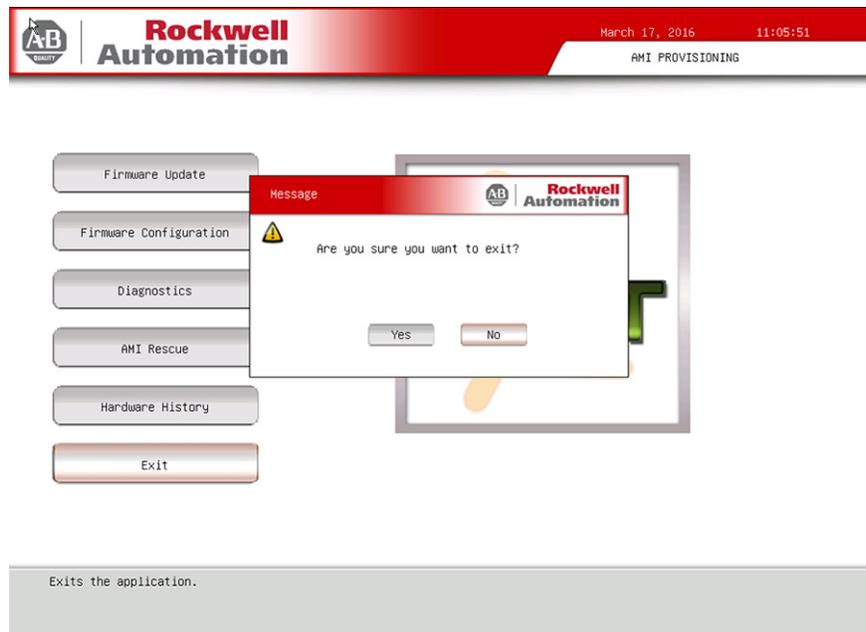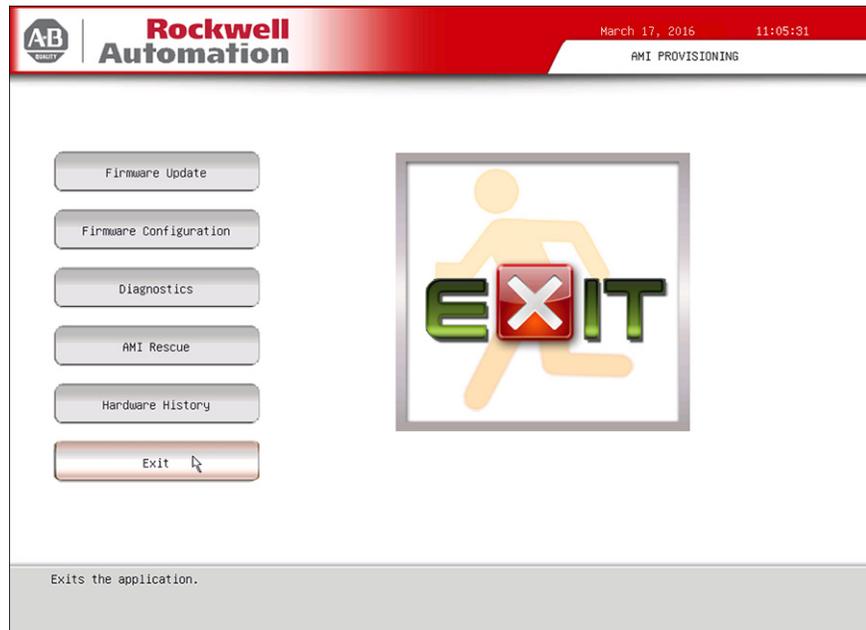
Troubleshoot the System

Topic	Page
Hardware Monitoring	101
Troubleshooting	102
Diagnostics	103
Load the System Defaults	104
Clear the UEFI	105
Ship or Transport the Computer	105
Dispose of the Computer	106

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.

2. Apply power to the computer.

3. During POST, press F2 to access the UEFI set-up utility.

4. Click Firmware Configuration on the Main Menu screen.

5. Click Advanced from the Firmware Configuration main screen.

6. Click Hardware Monitor on the Advanced screen.

See [Hardware Monitor on page 77](#) 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 43](#) for more information.

2. Disconnect power to the computer.

3. Disconnect all peripheral devices from the computer.

4. If a keyboard and mouse are used, verify that they are properly connected.

5. If an external display is used, verify that it is properly connected.

6. Connect power to the computer. During POST, one of three events occurs:

   - The start-up process is completed.
   - 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	Reconnect all 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	Proceed to [Diagnostics on page 103](#).

Diagnostics

If you completed the troubleshooting steps and issues remain, use the Diagnostics menu in the UEFI set-up utility to isolate the issue. Diagnostics tests computer components to determine the cause of a malfunction.

IMPORTANT	Before you access diagnostics, first perform these steps:
	• Connect an external keyboard to the computer
	• If you plan to test the CD-ROM drive, install a media disk
	• If you plan to update firmware, connect a USB drive with new firmware

Press F2 during POST or press F10 at any time to access the UEFI set-up utility:

- F2 during POST accesses the main menu of the UEFI set-up utility.

  Select Diagnostics on the main menu.

IMPORTANT	For integrated display computers with aluminum bezels, you can access the diagnostic utility during POST by pressing the UIB on the front of the display; see page 20 for more information about the UIB.

- F10 directly accesses the Diagnostics menu of the UEFI set-up utility.

Follow these steps to save diagnostic reports.

1. Select Generate Report in the Options menu and press Enter.

2. Select Report destination and press Enter.

3. Select File and press Enter.

4. Select the device path to generate the log report and press Enter.

   If you need to generate the report in the current file system, press Enter.

   Otherwise, select Continue and press Enter.

5. Enter log file details (file name and heading) for the report.

   The default file name is AMIDiag.LOG.

6. Set the report parameters, such as log errors, log test activities, log test start time, log test end time, log errors only, log errors only with time, Append to old log file, Log device info on fail, Log device info on abort.

7. To exit the submenu, Select Continue and press Enter.

You do not need to disconnect or move your computer to perform an initial diagnosis. The selected test affects the process, which can take as little as 5 minutes or as long as 8 hours. After Diagnostics has run, you can generate a report for analysis by a technical support representative, which expedites any necessary repair process.

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 computer performance.

Follow these steps to load the system defaults.

1. Restart the computer as specified in <u>Restart the Computer on page 43</u>.

2. During POST, press F2 to access the UEFI set-up utility.

IMPORTANT	For integrated display computers with aluminum bezels, you can access the diagnostic utility during POST if you press the UIB on the front of the display; see <u>page 20</u> for more information about the UIB.

3. Click Firmware Configuration on the set-up screen.

4. Click Default (A) on the Main screen.

5. Click Save (B) to save your changes.

6. Click Exit (C) to exit the UEFI set-up utility.
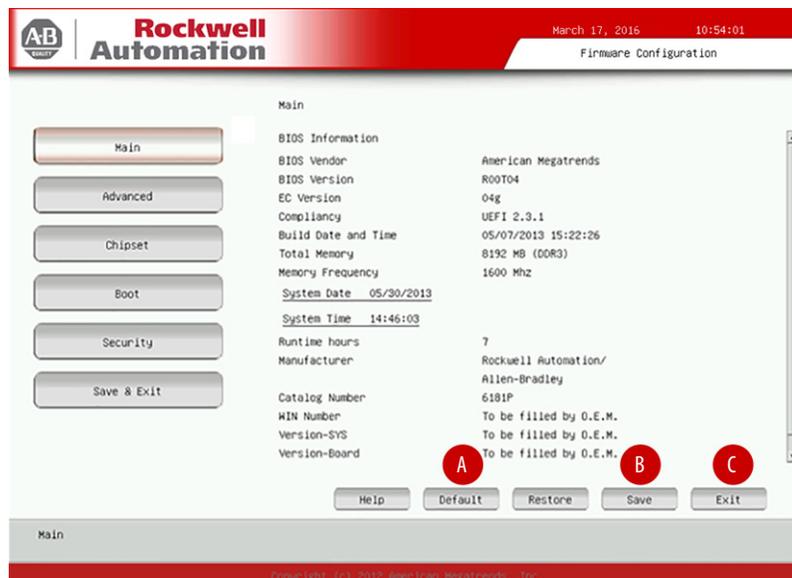
Clear the UEFI

You must clear the system configuration values that are stored in the UEFI if the following conditions are present:

- The system configuration has been corrupted
- An incorrect setting has caused error messages to be unreadable
- You cannot access the UEFI set-up utility to load the system defaults

Follow these steps to clear the UEFI.

1. Back up all system data and then shut down the computer.

2. Follow the steps for <u>Pre-configuration on page 46</u>.

3. Remove the cover as detailed in <u>Remove the Cover on page 47</u>.

IMPORTANT	Use an anti-static wriststrap that is connected to a grounded surface.

4. Locate the Clear UEFI button on the motherboard.

5. Press and hold the button for three seconds before you release it.

6. Reinstall the cover as detailed in <u>Remove the Cover on page 47</u>.

7. Follow the steps for <u>Pre-configuration on page 46</u>.
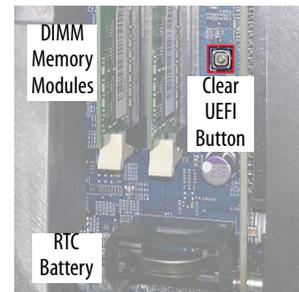
IMPORTANT	When you clear the UEFI, all UEFI settings return to their defaults. Settings other than default must be reconfigured after the UEFI is cleared.

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

Ship or Transport the Computer

If you must ship the computer via common carrier or otherwise transport it to another location for service 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. To avoid damage to the computer, you must uninstall the computer and place it in its original packing material before you ship it. Rockwell Automation is not responsible for damage to a computer that is shipped or transported while installed in a machine, panel, or rack.

Dispose of the Computer

At the end of its life, collect the computer separately from any unsorted municipal waste.

You cannot dispose of computer equipment like other waste material. Most computers and monitors contain heavy metals that can contaminate the earth. Therefore, check with local health and sanitation agencies for ways to safely dispose of computer equipment.

If a storage drive is part of what you plan to dispose, then verify that any data on it has been permanently erased or that you destroy the drive before it is disposed.

Use a Touch Screen

Topic	Page
Touch Screen Technology	107
Driver Software	107
PCAP Touch Screen Technology	108
Resistive Technology	108
Calibrate the Resistive Touch Screen	109

Touch Screen Technology

Integrated display computers are shipped with the touch screen controller installed and connected. The touch screen controller connects internally to a USB port.

Driver Software

The Microsoft touch screen driver is already loaded on the computer as part of the operating system. An alternate touch screen driver is also available for download at the Rockwell Automation® Product Compatibility and Download Center (PCDC) site:
https://compatibility.rockwellautomation.com/Pages/home.aspx.

> **TIP**   If you must reinstall the touch screen driver, the touch screen utility automatically detects the USB port used by the touch screen controller.

PCAP Touch Screen Technology

PCAP touch screens do not need any calibration. If you try to calibrate a PCAP touch screen through the Windows Tablet PC Settings, you receive a warning.
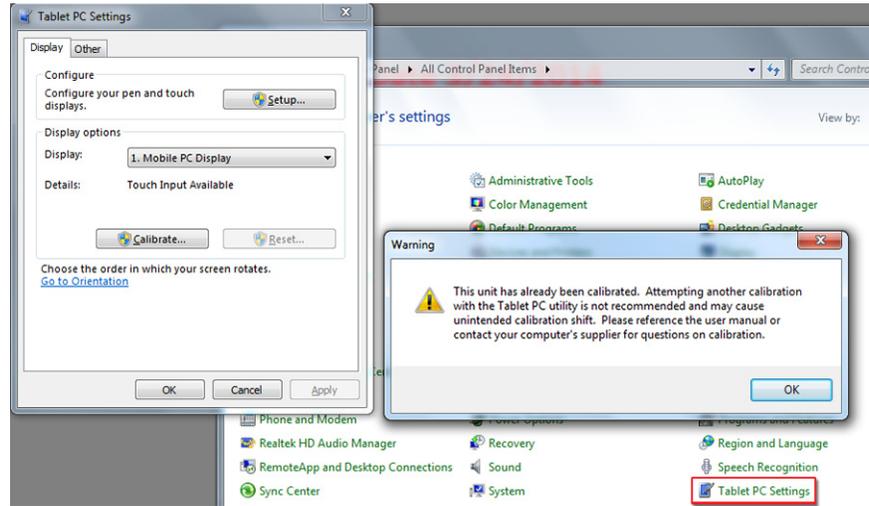
IMPORTANT	PCAP touch screens are only on Advanced computer models. See Computer Options on page 13 to see if your computer level is Advanced.

Resistive Technology

Resistive touch screens are activated when you apply pressure to the touch screen with your finger. You can operate a resistive touch screen while wearing gloves.

Resistive touch screens accept only single finger input. Multi-finger input or 'palm contact' can cause an incorrect touch input.

⚠	**ATTENTION:** Do not use sharp instruments to activate the touch screen. Scratching the surface of the touch screen can damage the display.

IMPORTANT	Resistive touch screens are only on Performance computer models. See Computer Options on page 13 to see if your computer is Performance Level.

Calibrate the Resistive Touch Screen

The resistive touch screen supplied with the computer is factory-installed and calibrated.

Perform the following steps to recalibrate the touch screen.

1. From the Windows control panel menu, select Tablet PC Settings.
2. On the Display tab of Tablet PC Settings, click Calibrate.
3. Follow the calibration instructions on the touch screen.
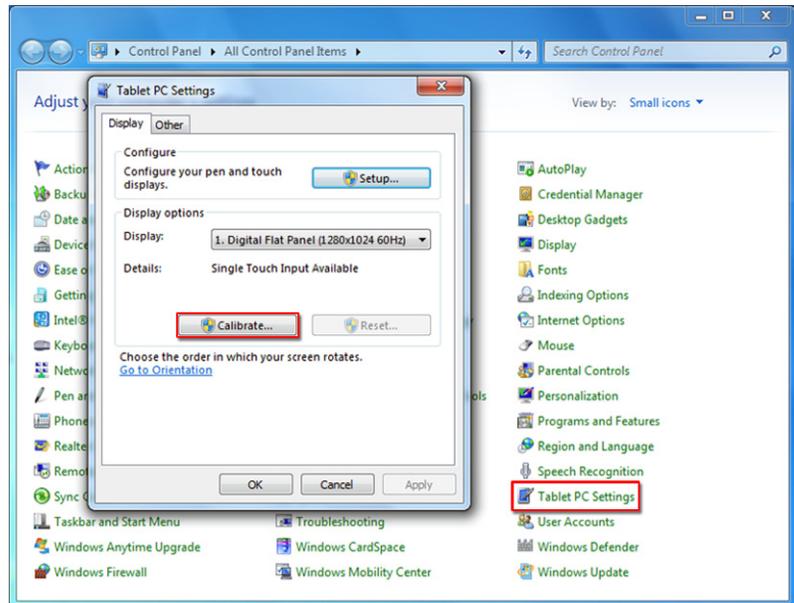
Notes:

Clean the Computer

Topic	Page
Clean the Computer	111

Clean the Computer

To maintain your computer, it is important to clean the display, heat sink, and vent holes, and to remove grease or paint.

> **IMPORTANT** 6181P computer bezels resist the following chemicals:
> - Alcohol (methyl or ethyl)
> - Cleaning naphtha
> - Commercial glass cleaners
> - Ammonia (10% dilute solution)
> - Oil (hydraulic or motor)
> - Diesel fuel
> - Gasoline (unleaded)
> - Antifreeze mixtures (such as ethylene glycol)
> - Automatic transmission fluid

Clean the Integrated Display

Perform the following steps to clean the display.

1. Disconnect power from the computer at the power source.

   ⚠ **ATTENTION:** If the computer has a touch screen, it is possible for screen objects to activate during equipment washdowns if the computer is turned on.

2. Clean the display with a mild soap by using a clean sponge or a soft cloth.

   ⚠ **ATTENTION:** Use of abrasive cleansers or solvents can damage the display window. Do not scrub or use brushes.

   High-pressure washes can also damage the front bezel and gaskets.

3. Dry the display with a chamois or moist cellulose sponge to avoid water spots.

Clean the Fan (Intel Core i7 models)

Perform the following steps to clean the fan.

1. Disconnect power from the computer at the power source.

2. Vacuum dust and debris out of the fan.

Clean the Heat Sink and Vent Holes

Perform the following steps to clean the chassis.

1. Disconnect power from the computer at the power source.

2. Disconnect all peripheral devices from the computer.

3. Vacuum dust and debris from the heat sink and vent holes.

Remove Paint and Grease from Bezel

Perform the following steps to remove paint and grease from the bezel of computers properly mounted in NEMA Type 4/4X or IEC IP66 enclosures.

1. Close and lock the access cover on the front bezel.

IMPORTANT	Step 1 does not apply to computers with a stainless steel bezel.

2. Remove paint splashes and grease by rubbing lightly with isopropyl alcohol.

    > ⚠ **ATTENTION:** Make sure the isopropyl alcohol does not come in contact with the equipment labels. Alcohol can cause the label printing to smear.

3. Use a mild soap or detergent solution to remove residue.

4. Rinse with clean water.

Install Accessories

Topic	Page
Available Accessories	113
Pre-installation Checklist	113
Install an Add-in Card	114
Install More Memory	119
Install the Bookshelf Mounting Bracket	119
Install an Optical Disk Drive	120

Available Accessories

You can view a list of available accessories at http://ab.rockwellautomation.com/Computers/Integrated-Display-Computers/Bulletin-6181#selection.

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

> **IMPORTANT** We recommend that you use only Allen-Bradley® approved accessories.

Pre-installation Checklist

Review the following information before you install any accessories:
- Voltage Precautions on page 45
- Electrostatic Discharge Precautions on page 46

Install an Add-in Card

Integrated display and non-display computers support half-length, full-height add-in cards. Half-length PCI/PCIe cards are 106.68 mm (4.2 in.) high by 175.26 mm (7.0 in.) long.

The following table lists PCI/PCIe slots and configurations supported by the display and non-display computers.

Computer Model	Default One-slot Configuration	Alternate One-slot Using PCI Riser Kit (Cat. No. 6189V-PCIR)	Alternate Two-slot Using PCI/PCIe Extender Kit (Cat. No. 6189V-EXTPCI2)
All display and non-display	1 PCI Express x8	1 PCI	• 2 PCI • 2 PCIe x4 • 1 PCIe x4 + 1 PCI

Any PCI/PCIe configuration supports 12 W (maximum) internal to the PCI/PCIe slot and 28 W (maximum) external to the computer, for a maximum load of 40 W. Verify that your card does not exceed its thermal ratings.

When the computer operates at its maximum rated temperature, the ambient temperature in the PCI/PCIe slot with a 4 W fanless card can reach 70 °C (158 °F). With a 12 W load, the ambient temperature can reach 90 °C (194 °F). Your PCI/PCIe slot temperatures can be lower based on the power usage of your specific application.

> **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 you remove 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 anti-static wriststrap connected to the work surface, and properly grounded tools and equipment.

Follows these steps to install an add-in card (the performance computer is shown).

1. Follow the steps for Pre-configuration on page 46.

2. Remove the computer cover as detailed in Remove the Cover on page 47.

3. Remove the screw that secures the slot cover (A).

4. Pull out the slot cover (B) and store it.

Integrated Display Model Shown

Two-slot Riser Board Shown
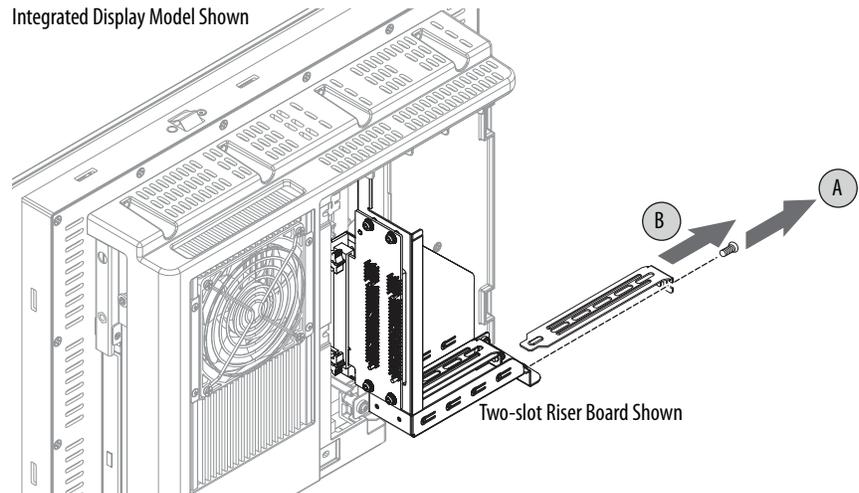
> ⚠️ **ATTENTION:** Do not discard the slot cover. If the add-in card is removed in the future, the slot cover must be reinstalled to maintain proper cooling.

5. Remove the add-in card from its protective packaging.

6. Slide the add-in card into a compatible riser board slot (C).

   Press to verify that it is firmly seated in the slot.

7. Secure the add-in card with the screw (D).

Integrated Display Model Shown

Two-slot Riser Board Shown
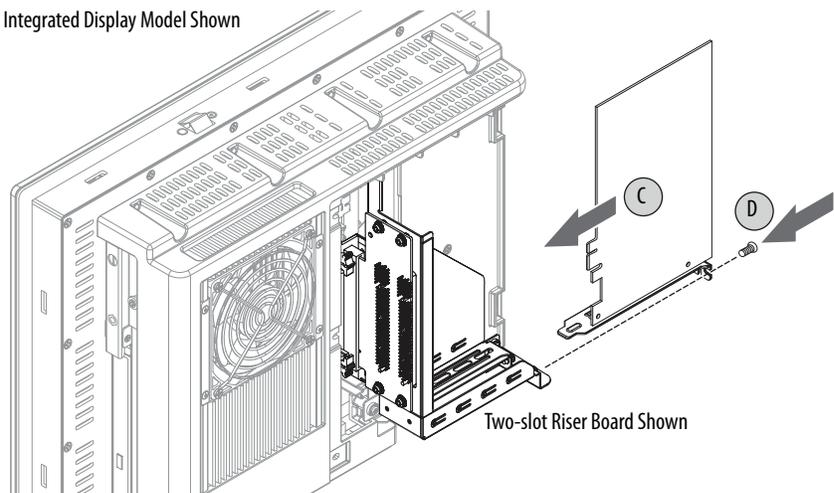
8. Connect any necessary cables to the add-in card.

9. See any installation instructions that came with the add-in card to verify that all installation steps are followed.

10. Follow the steps for .

PCI/PCIe Riser Board Options

You can use the PCI/PCIe expansion slot kit, catalog number 6189V-EXTPCI2, to change the default one-slot PCI/PCIe riser board to the following:

- Two-slot PCI riser board
- Two-slot PCIe x4 riser board
- Two-slot riser board with one PCI slot and one PCIe x4 slot

Figure 19 - PCI/PCIe Riser Board Options

One-slot PCI Riser Kit, Cat. No. 6189V-PCIR   Alternate Two-slot PCI/PCIe Extender Kit, Cat. No. 6189V-EXTPCI2
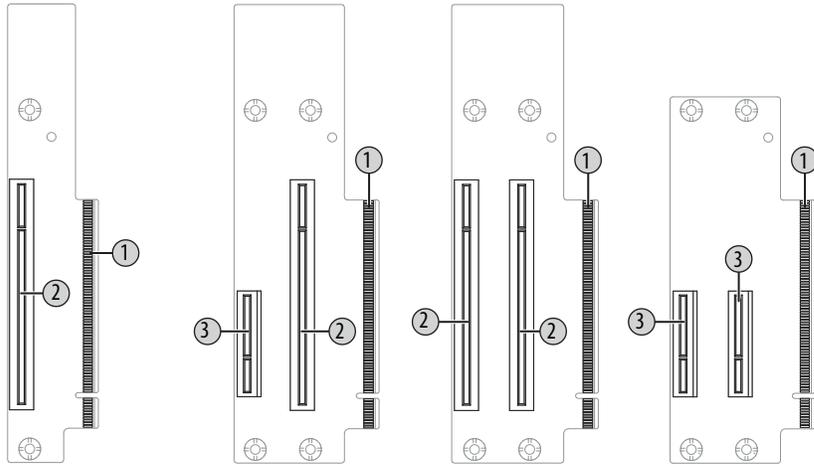
Item	Component
1	Motherboard connector
2	PCI expansion slot
3	PCIe x4 expansion slot

Follow these steps to install the PCI/PCIe expansion slot kit (the integrated display computer is shown).

⚠ **SHOCK HAZARD:** Electrostatic discharge (ESD) can damage the computer and components. Read and follow Electrostatic Discharge Precautions on page 46 before you remove the rear cover.

Failure to follow proper safety precautions could result in severe electrical shock or damage to the computer.

1. Follow the steps for Pre-configuration on page 46.

2. Remove the computer cover as detailed in Remove the Cover on page 47.

3. Remove the three screws that secure the default PCIe x8 riser board bracket (A).

4. Remove the PCIe x8 riser board assembly from the chassis (B).

Integrated Display Models Shown

Single-slot Riser Board

Two-slot Riser Board
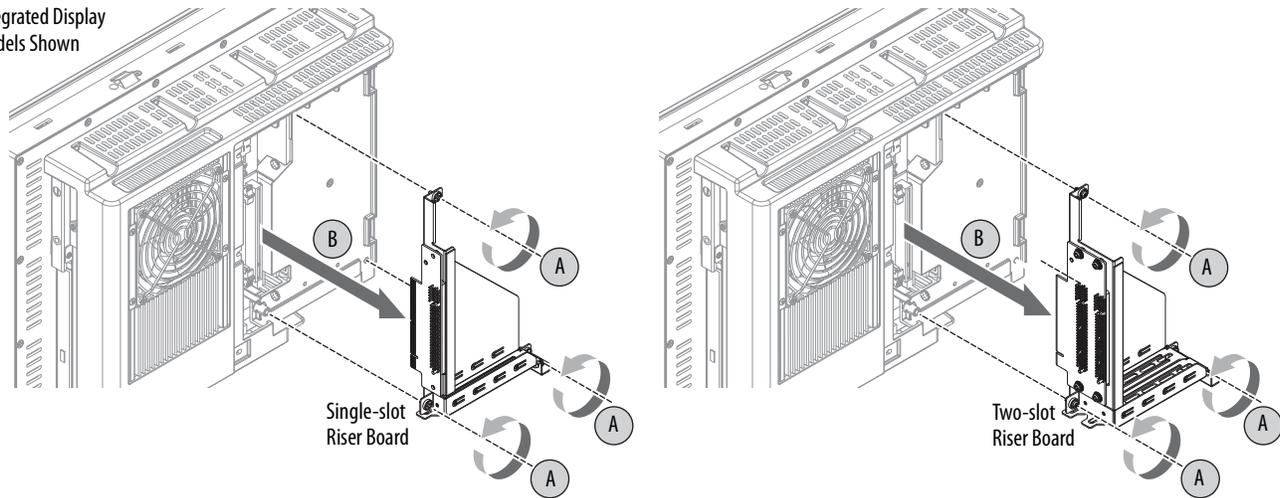
5. Remove the screws that secure the default riser board (C).

6. Remove the riser board from its bracket (D).

Single-slot Riser Board

Two-slot Riser Board
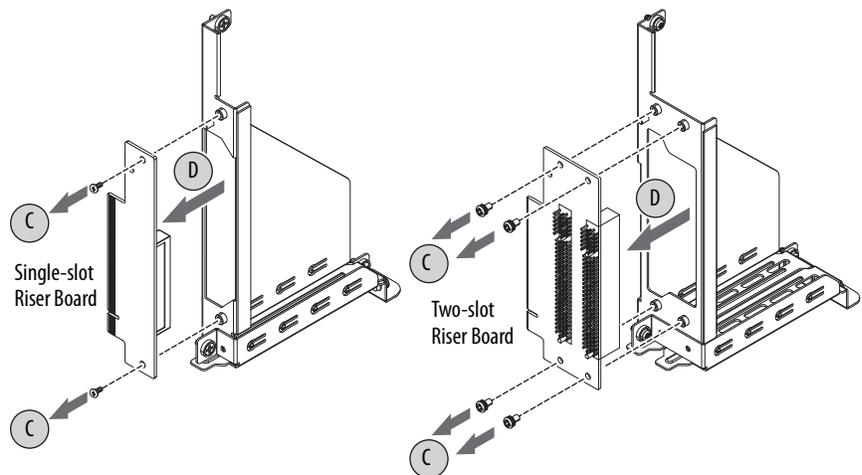
7. Place the default riser board with its screw on a static-dissipating work surface or inside an anti-static bag.

8. Hold the new riser board by its edge and remove it from its protective packaging.

9. Align the new riser board with the PCI/PCIe riser board bracket (E).

10. Secure it with the screws provided with the kit (F).

If you are installing	Then use	Secure it with
A two-slot riser board	The PCI/PCIe riser bracket provided with the kit	Four screws
A single-slot riser board	The default PCI/PCIe riser bracket	Two screws

Single-slot Riser Board   Two-slot Riser Board
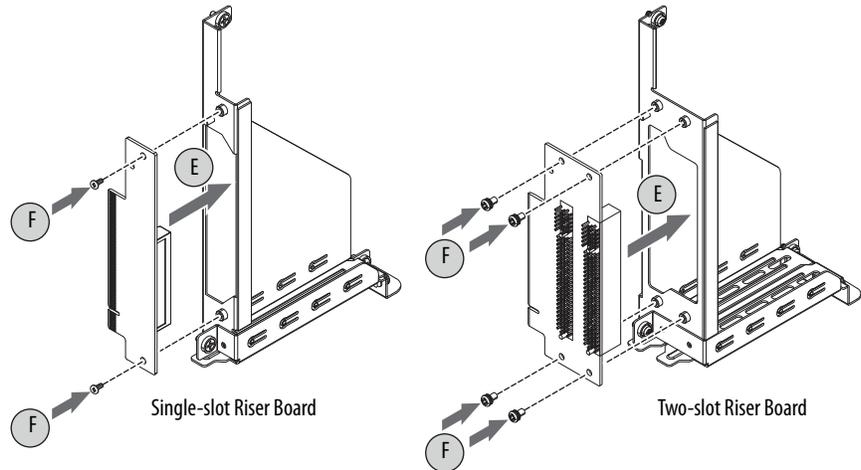
11. Insert the riser board connector in the onboard expansion slot.

    Verify that the board is properly seated in the slot (G).

12. Tighten the three screws to secure the PCI/PCIe riser board assembly to the chassis (H).

Integrated Display
Models Shown

Single-slot
Riser Board

Two-slot
Riser Board
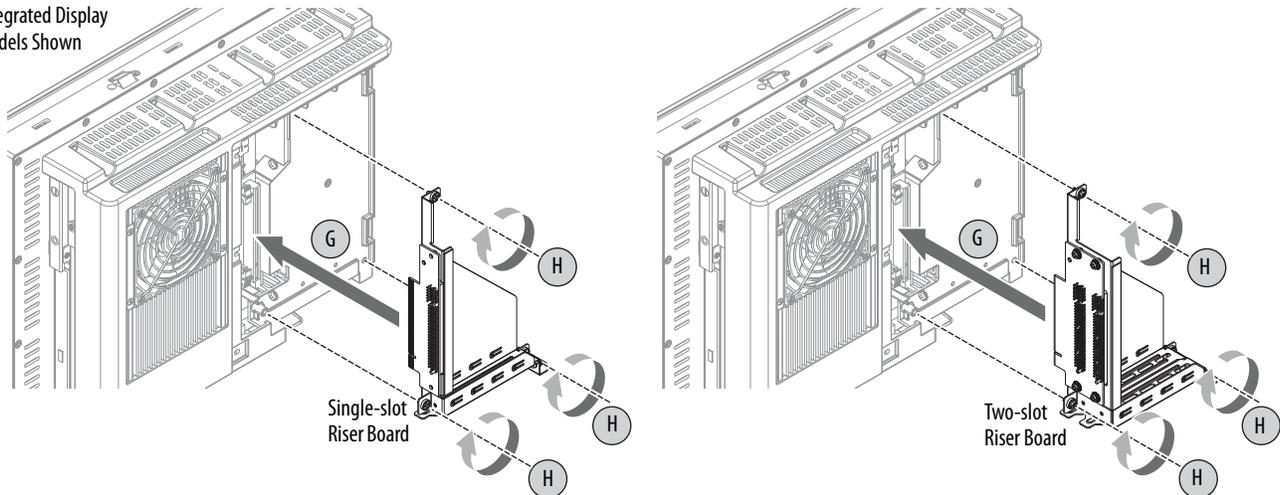
IMPORTANT	Verify that the mounting bracket does not pinch any cables under the bracket.

If you intend to install	Then
A compatible add-in card **now**	Proceed to <ins>page 114</ins> for instructions.
An add-in card **later**	1. Reinstall the rear cover. 2. Apply power to the computer.

13. Follow the steps for <ins>Post-configuration on page 47</ins>.

Install More Memory

The motherboard of the integrated display computers has two SO-DIMM slots that support up to 16 GB maximum system memory.

For further information on how to install more memory, see Replace or Add Memory Modules on page 51.

Install the Bookshelf Mounting Bracket

A bookshelf mounting bracket is available only for non-display computers.

Table 9 - Available Bookshelf Mounting Bracket

Cat. No.	Description
6189V-BOOKBRKT	Bookshelf mounting bracket and 8 mounting screws

Follow these steps to mount the bracket and to attach a non-display computer to the bracket.

1. Decide where you want to mount the bracket.

   - If you plan to mount the bracket and computer in a panel, see Panel Mounting Guidelines on page 30.
   - See Figure 20 for the bookshelf mounting bracket dimensions. Verify that the mounting location provides room for peripheral connections and adequate ventilation for the non-display computer.

   > **IMPORTANT** See Figure 16 on page 35 for acceptable mounting positions for the bookshelf mounting bracket.

Figure 20 - Bookshelf Mounting Bracket Dimensions
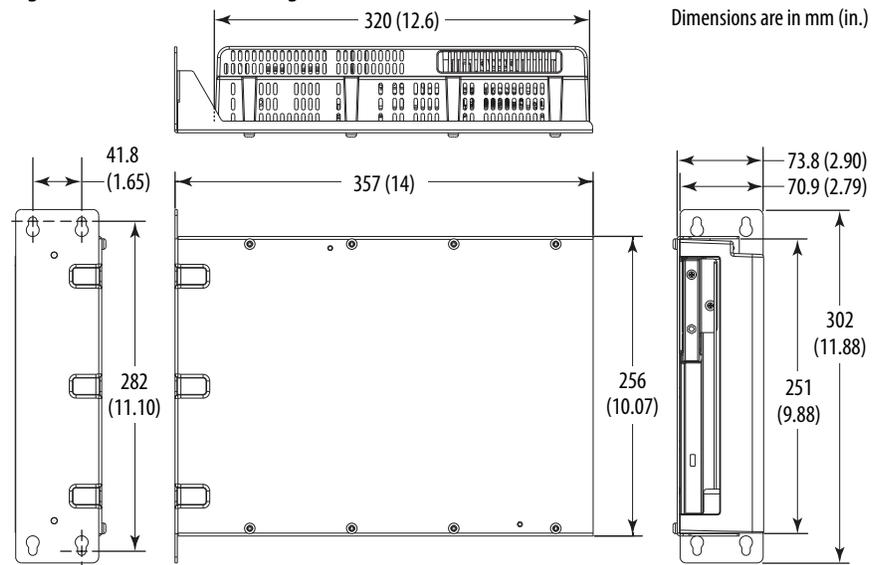
2. With the mounting bracket as your template, mark and drill the four holes that you need to mount the bracket.

3. Mount the mounting bracket.

    Tighten the four screws to a torque that is appropriate for the screws and
    mounted material.

4. Remove the eight screws that secure the back cover of the computer.

    See Figure 7 on page 27 for where these screws are located.

    Save these eight screws and the back cover.

5. Use the eight screws supplied with the mounting bracket to mount the
    computer to the bracket.

    Tighten to a torque that is appropriate for the screws.

6. See Chapter 3 for operating guidelines and to start the computer after
    the computer and bracket are mounted.

Install an Optical Disk Drive

Performance models are not sold with an optical disk drive (ODD) but one can
be installed.

IMPORTANT	Use an anti-static wriststrap that is connected to the work surface and properly grounded tools and equipment when you handle internal computer components.

Table 10 - Available ODD

Cat. No.	Description
6189V-ODD	Optical disk drive (ODD) and four mounting screws

1. To access the ODD bay, follow steps 1...6 for Replace the Power Supply
    Unit on page 55.

2. Turn over the computer to access the ODD bay.

    The ODD bay is next to the solid-state drive (SSD).

3. Remove the four bracket screws.

4. Discard the bracket and four bracket screws.

5. Remove the two slot cover screws.

6. Discard the slot cover and screws.

SSD

Bracket

Bracket Screws

Slot Cover Screws   Slot Cover
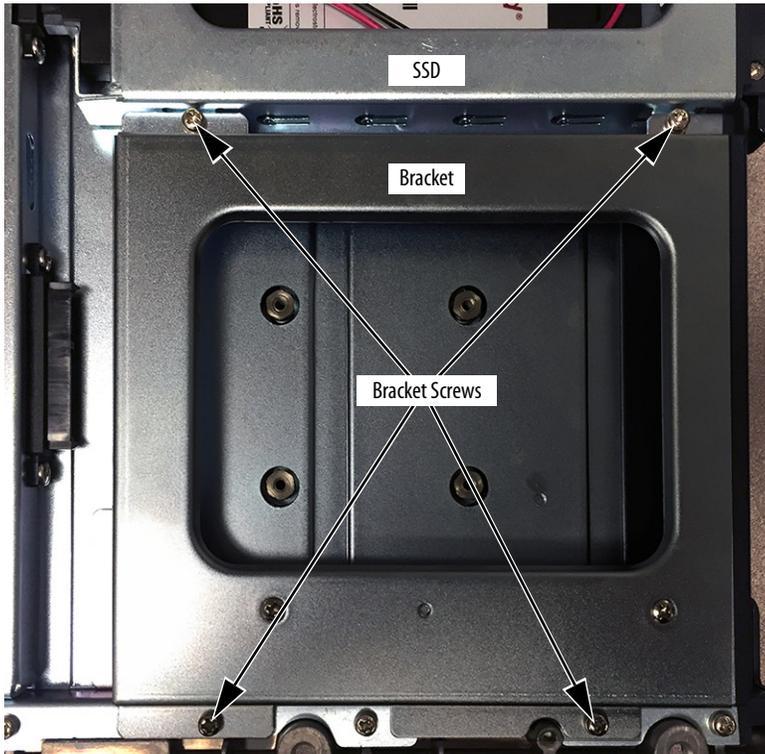
7. Plug in the SATA cable connection of the ODD.

8. Install the ODD with the four supplied mounting screws.

SATA Cable
Connection

ODD

Mounting Screws

9. Reassemble the computer in the reverse order of the removal steps.

10. Follow the steps for .

When you restart the computer, it automatically detects the ODD in the BIOS and OS, so no additional configuration is needed.

Notes:

Notes:

Rockwell Automation Support

Use the following resources to access support information.

Technical Support Center	Knowledgebase Articles, How-to Videos, FAQs, Chat, User Forums, and Product Notification Updates.	https://rockwellautomation.custhelp.com/
Local Technical Support Phone Numbers	Locate the phone number for your country.	http://www.rockwellautomation.com/global/support/get-support-now.page
Direct Dial Codes	Find the Direct Dial Code for your product. Use the code to route your call directly to a technical support engineer.	http://www.rockwellautomation.com/global/support/direct-dial.page
Literature Library	Installation Instructions, Manuals, Brochures, and Technical Data.	http://www.rockwellautomation.com/global/literature-library/overview.page
Product Compatibility and Download Center (PCDC)	Get help determining how products interact, check features and capabilities, and find associated firmware.	http://www.rockwellautomation.com/global/support/pcdc.page

Documentation Feedback

Your comments will help us serve your documentation needs better. If you have any suggestions on how to improve this document, complete the How Are We Doing? form at http://literature.rockwellautomation.com/idc/groups/literature/documents/du/ra-du002_-en-e.pdf.

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