

Integrated Display Industrial Computers

Catalog Numbers 6181F, 6181P



Important User Information

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

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

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

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

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

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

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



WARNING: Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.



ATTENTION: Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you identify a hazard, avoid a hazard, and recognize the consequence.

IMPORTANT

Identifies information that is critical for successful application and understanding of the product.

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



SHOCK HAZARD: Labels may be on or inside the equipment, for example, a drive or motor, to alert people that dangerous voltage may be present.



BURN HAZARD: Labels may be on or inside the equipment, for example, a drive or motor, to alert people that surfaces may reach dangerous temperatures.



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

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

New and Updated Information

This table contains the changes made to this revision.

Topic	Page
Expanded 'Abbreviations' section	10
Added information in 'Operating Systems' section	12
Added link to Rockwell Automation Product Compatibility and Download Center (PCDC) website	12, 49, 57, 59
Removed 'Multilingual User-interface CD Pack' section	12
Reduced what compact discs (CDs) are shipped with computer in 'Parts List' section	14
Added information to 'Required Tools' section	24
Added steps in 'Mount the Display Computer in a Panel' section	25
Added a step in 'Mount the Non-display Computer to a Wall' section	26
Added information in 'Connect Power' section	27
Added information in 'Connect AC Power' section	28
Revised and added information in 'Operating Guidelines' section	31
Revised and added information in 'Start the Computer' section	32
Replaced 'reset' with 'restart' in 'Restart the Computer' section	33
Added information in 'Restart the Computer' section	33
Updated link to Rockwell Automation Computers and Operators Interface website	35, 50, 53
Added information in 'Remove the Cover' section	37
Added information in 'Reinstall the Cover' section	38
Added 'Load a Card in the Bottom CF Card Slot' section	41
Added Attention table in 'Drive Precautions' section	42
Added information in 'Replace a Performance and Non-display Computer Drive' section	42
Added information in 'Replace a Standard Computer Drive' section	43
Revised section title from 'Add-in Cards' to 'Install an Add-in Card'	46
Added step 3 in 'Replace the RTC Battery' section	52
Added Tip table in 'Hardware Monitoring' section	55
Added Tip table in 'Troubleshooting' section	56
Added information in 'Troubleshooting Checklists' section	58
Replaced 'Diagnostic Utility' section with 'Load the System Defaults' section	59
Added information in 'Clear the CMOS' section	59
Added introductory paragraph in Appendix A	63
Changed title and added Specifications column to Table 1	63
Added Turkey RoHS statement in Certifications table	66
Added information in 'Driver Software' section	67
Revised information in 'Upgrade the BIOS from an External CD Drive' section	69
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Notes:

Preface Objectives

This preface covers the following topics:

- [Purpose of This Manual](#)
- [Additional Resources](#)
- [Abbreviations](#)

Purpose of This Manual

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

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

Additional Resources

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

Resource	Description
6181P Integrated Display Computers Installation Instructions, publication 6181P-IN010	Provides procedures on how to install the computer and make connections.
Cloning Utility for Rockwell Automation Industrial Computers Technical Data, publication 6000-TD002	Provides information on how to create and restore a back-up image of your computer's hard disk drive.
EFW and HORM Configuration Utility Technical Data, publication 6000-TD003	Provides information on how to configure Enhanced Write Filter (EFW) and Hibernate Once, Resume Many (HORM) features for computers with the Windows 2009 Embedded Standard operating system.
Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1	Provides general guidelines for installing a Rockwell Automation® industrial system.

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

Abbreviations

This publication can use the following abbreviations.

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

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

Features

Chapter Objectives

This chapter provides information on the following topics:

- [Computer Overview](#)
- [Operating Systems](#)
- [Computer Options](#)
- [Before You Begin](#)
- [Parts List](#)
- [Hardware Features](#)

Computer Overview

Integrated display industrial computers combine a TFT flat-panel display with industrial computing power for performing visual interface, maintenance, and basic information applications. These panel mount devices offer 12-, 15-, and 17-inch displays with a resistive touch-screen option for operator input, and a solid state or hard disk drive. A non-display version is also available.

These computers are available in standard and performance models. Performance models have aluminum or stainless steel bezels, both with a flush design to reduce debris build-up around the display. Aluminum bezels offer application access through a lockable, front-accessible USB 2.0 port. Optional stainless steel bezels are available to fulfill NEMA 4X requirements.

By combining industrially hardened displays and computers in a single machine, these panel mounted computers provide an entire solution in one chassis and catalog number. Because there are no external display cables or separate component mounting requirements, system integration is simplified.

Operating Systems

The following Microsoft-licensed operating systems are available:

- Windows 7 Professional (32 bit)
- Windows XP Professional, Service Pack 3
- Windows Embedded Standard (WES) 2009

Computers with Windows XP Professional Operating System

- No operating system updates have been applied to the factory image beyond Service Pack 3.
- The I386 source directory for Microsoft Windows is on the system drive of your computer off the root directory, C:\I386. This allows for easy removal and addition of Windows components.

Computers with WES 2009 Operating System

- All operating system updates have been applied as of September 2009.
- Computers include a utility for configuring the Enhanced Write Filter (EWF) and Hibernate Once, Restore Many (HORM) features. Refer to the EWF and HORM Configuration Utility for Rockwell Automation Computers Technical Data, publication [6000-TD003](#), for instructions.

Computers with HDDs include a recovery partition with the original factory image. Refer to the Cloning Utility for Rockwell Automation Industrial Computers Technical Data, publication [6000-TD002](#), for instructions.

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

Computer Options

This table summarizes the options available for the integrated display industrial computers. A comparative summary of features for the computers is in Appendix A, [Specifications on page 61](#).

Table 1 - Integrated Display Industrial Computers

Cat. No.	Model	Series	Display Size (in.)	Storage	Touchscreen	Package	Windows OS			
6181F-2PW7	NDM	E	N/A	SSD	N/A	Performance	7 Professional 32 bit			
6181F-2PW7DC ⁽¹⁾										
6181P-2PW7				HDD						
6181P-2PW7DC ⁽¹⁾										
6181P-2PXP										
6181P-2PXPDC ⁽¹⁾										
6181F-12TPW7	1200P	E	12.1	SSD	Yes	Performance	7 Professional 32 bit			
6181F-12TPW7DC ⁽¹⁾										
6181F-12TPWE				Standard				WES 2009		
6181F-12TPWEDC ⁽¹⁾										
6181F-12TPXP									XP Professional SP3	
6181F-12TPXPDC ⁽¹⁾										
6181F-12TSXP										
6181F-12TSWE				Performance	WES 2009					
6181P-12NSXP						HDD	No	XP Professional SP3		
6181P-12NXP				Yes	Performance				7 Professional 32 bit	
6181P-12TPW7										
6181P-12TPW7DC ⁽¹⁾				Standard	XP Professional SP3					
6181P-12TPXP										
6181P-12TPXPDC ⁽¹⁾										
6181P-12TSXP										
6181F-15TPW7				1500P	E	15	SSD	Yes	Performance	7 Professional 32 bit
6181F-15TPW7DC ⁽¹⁾										
6181F-15TPW7SS ⁽²⁾							Standard			
6181F-15TPWE										
6181F-15TPWEDC ⁽¹⁾	XP Professional SP3									
6181F-15TPWESS ⁽²⁾										
6181F-15TPXP										
6181F-15TPXPDC ⁽¹⁾	Performance	WES 2009								
6181F-15TPXPSS ⁽²⁾			HDD				No	XP Professional SP3		
6181F-15TSXP	Yes	Performance							7 Professional 32 bit	
6181F-15TSWE										
6181P-15NSXP	Standard	XP Professional SP3								
6181P-15NXP										
6181P-15TPW7										
6181P-15TPW7DC ⁽¹⁾			Performance				7 Professional 32 bit			
6181P-15TPW7SS ⁽²⁾										
6181P-15TPXP								XP Professional SP3		
6181P-15TPXPDC ⁽¹⁾										
6181P-15TPXPSS ⁽²⁾										
6181P-15TSXP	Standard									

Table 1 - Integrated Display Industrial Computers (continued)

Cat. No.	Model	Series	Display Size (in.)	Storage	Touchscreen	Package	Windows OS	
6181F-17TPW7	1700P	E	17	SSD	Yes	Performance	7 Professional 32 bit	
6181F-17TPW7DC ⁽¹⁾								
6181F-17TPW7SS ⁽²⁾								
6181F-17TPWE								
6181F-17TPWED ⁽¹⁾								
6181F-17TPWESS ⁽²⁾								
6181F-17TPXP								
6181F-17TPXPSS ⁽²⁾								
6181F-17TPXPDC ⁽¹⁾								
6181F-17TSXP								
6181F-17TSWE								
6181P-17NSXP				HDD	No	Standard	WES 2009	
6181P-17NPXP								
6181P-17TPW7								
6181P-17TPW7DC ⁽¹⁾								
6181P-17TPW7SS ⁽²⁾								
6181P-17TPXP								
6181P-17TPXPDC ⁽¹⁾								
6181P-17TPXPSS ⁽²⁾								
6181P-17TSXP								
6181P-17TSXP	HDD	Yes	Performance					7 Professional 32 bit
6181P-17TPW7								
6181P-17TPW7DC ⁽¹⁾								
6181P-17TPW7SS ⁽²⁾								
6181P-17TPXP								
6181P-17TPXPDC ⁽¹⁾								
6181P-17TPXPSS ⁽²⁾								
6181P-17TSXP								
6181P-17TSXP				HDD	No	Standard	XP Professional SP3	
6181P-17TPW7								
6181P-17TPW7DC ⁽¹⁾								
6181P-17TPW7SS ⁽²⁾								
6181P-17TPXP								
6181P-17TPXPDC ⁽¹⁾								
6181P-17TPXPSS ⁽²⁾								
6181P-17TSXP								
6181P-17TSXP	HDD	Yes	Performance					XP Professional SP3
6181P-17TPW7								
6181P-17TPW7DC ⁽¹⁾								
6181P-17TPW7SS ⁽²⁾								
6181P-17TPXP								
6181P-17TPXPDC ⁽¹⁾								
6181P-17TPXPSS ⁽²⁾								
6181P-17TSXP								
6181P-17TSXP				HDD	No	Standard	WES 2009	
6181P-17NSXP								
6181P-17NPXP								
6181P-17TPW7								
6181P-17TPW7DC ⁽¹⁾								
6181P-17TPW7SS ⁽²⁾								
6181P-17TPXP								
6181P-17TPXPDC ⁽¹⁾								
6181P-17TPXPSS ⁽²⁾								
6181P-17TSXP								

- (1) Models with a catalog number ending in DC operate from DC power.
- (2) Models with a catalog number ending in SS have a stainless steel bezel.

Before You Begin

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

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

Parts List

The computers ship with the following items.

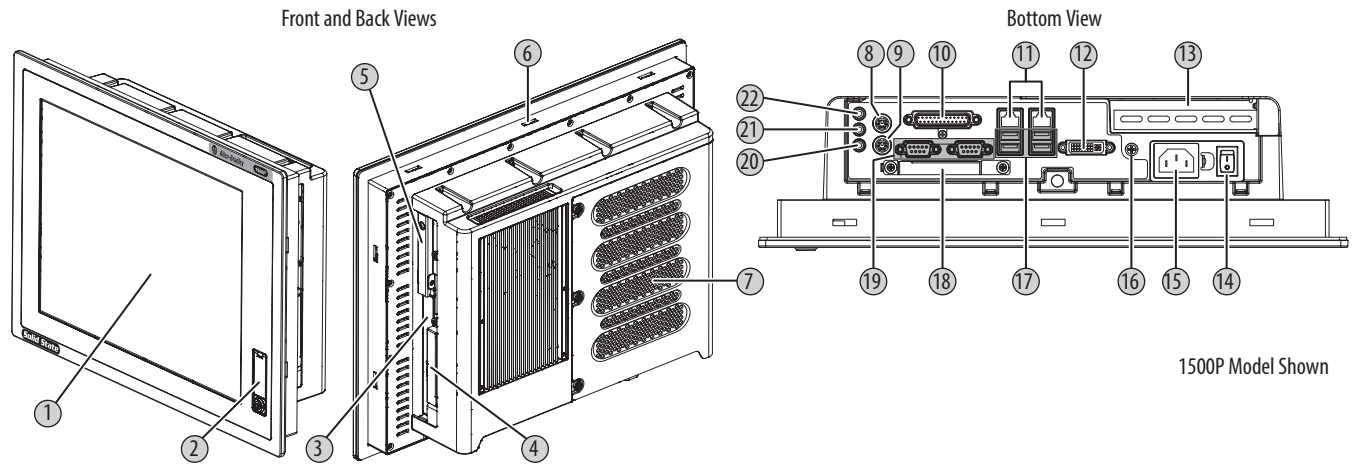
Item	Description
Hardware	<ul style="list-style-type: none"> • Power cord for AC power models • Mounting clips⁽¹⁾ • Keys for front access cover lock⁽²⁾ • Assembly screw bag • Industrial Computer System Cloning Utility CD (red) • CD with CD/DVD burning software⁽³⁾
Documents	<ul style="list-style-type: none"> • Integrated Display Industrial Computers Installation Instructions, publication 6181P-IN001 • Shipped Compact Discs (CDs) Update Release Note, publication 6000-RN009 • 6181P and 6181X Industrial Computers Cutout Template, publication 6181P-DS002⁽¹⁾ • China RoHS hazardous material table insert • Production test report

- (1) Shipped only with display computers.
- (2) Shipped only with computers with aluminum bezels; see the table in [Computer Options on page 13](#) for more information.
- (3) Shipped only with computers with the Windows XP Professional operating system.

Hardware Features

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

Figure 1 - Performance Computers



1500P Model Shown

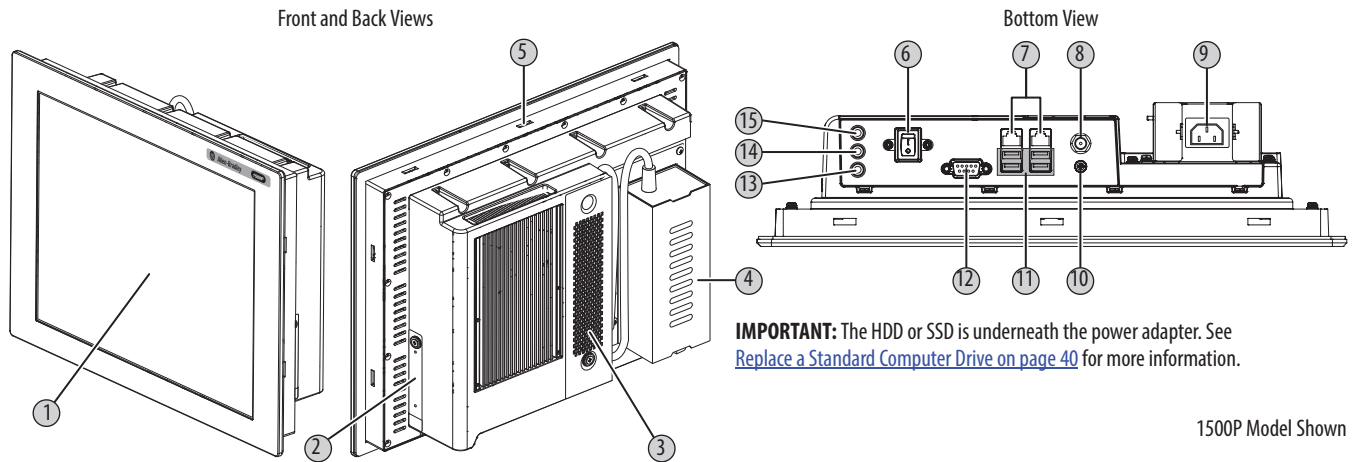
Item	Component
1	LCD panel ⁽¹⁾
2	Front access cover ⁽²⁾
3	Optical disc drive
4	CompactFlash Type II card slot
5	HDD or SSD bay
6	Mounting slots
7	Rear cover
8	PS/2 mouse port

Item	Component
9	PS/2 keyboard port
10	Parallel port
11	Ethernet ports (RJ45), 2
12	DVI-I port
13	PCI riser slot cover ⁽³⁾
14	Power switch
15	Power input, AC or DC ^{(4) (5)}

Item	Component
16	Functional ground screw
17	USB ports, 4
18	CompactFlash Type II card slot
19	Serial COM ports, 2
20	Microphone-in jack
21	Audio line-out jack
22	Audio line-in jack

- (1) With or without optional touch screen.
- (2) Protects the front USB port. This option not available on models with stainless steel bezel.
- (3) 1500P and 1700P models have one PCI riser slot; 1200P and non-display models have two PCI riser slots.
- (4) Model dependent.
- (5) The DC power input has a pre-installed ground bus strip.

Figure 2 - Standard Computers



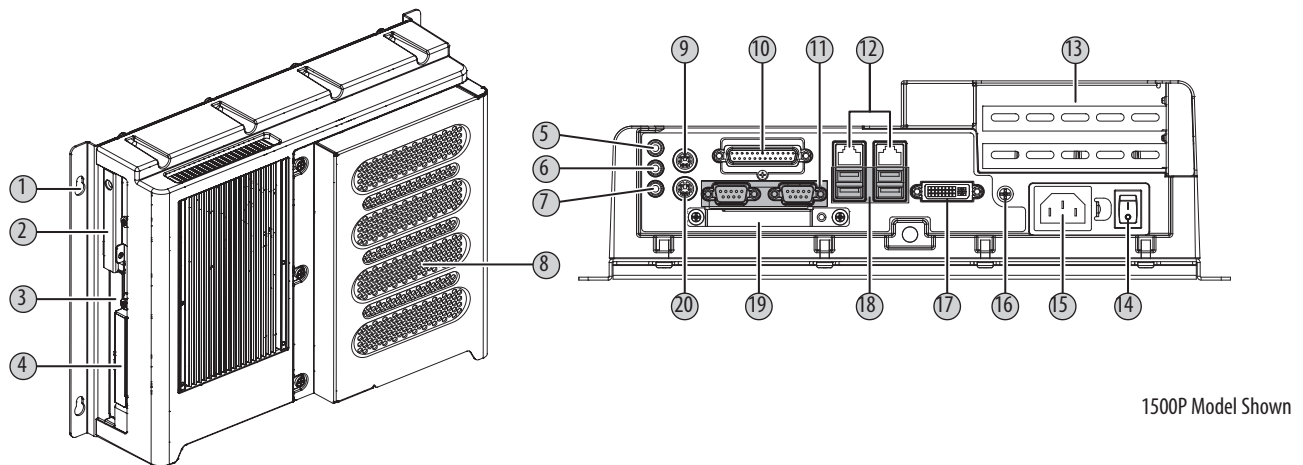
Item	Component
1	LCD panel ⁽¹⁾
2	CompactFlash Type II card slot
3	Rear cover
4	Power adapter
5	Mounting slots

Item	Component
6	Power switch
7	Ethernet ports (RJ45), 2
8	Power input, DC ⁽²⁾
9	Power input, AC
10	Functional ground screw

Item	Component
11	USB ports, 4
12	Serial COM port
13	Microphone-in jack
14	Audio line-out jack
15	Audio line-in jack

- (1) With or without optional touch screen.
- (2) Use supplied adapter only.

Figure 3 - Non-display Computers



Item	Component
1	Mounting hole, 4
2	HDD or SSD
3	Optical disc drive
4	CompactFlash Type II card slot
5	Audio line-in jack
6	Audio line-out jack
7	Microphone-in jack

Item	Component
8	Rear cover
9	PS/2 mouse port
10	Parallel port
11	Serial COM ports, 2
12	Ethernet ports (RJ45), 2
13	PCI riser slot cover, 2
14	Power switch

Item	Component
15	Power input, AC or DC ^{(1) (2)}
16	Functional ground screw
17	DVI-I port
18	USB ports, 4
19	CompactFlash Type II card slot
20	PS/2 keyboard port

- (1) Model dependent.
- (2) The DC power input has a pre-installed ground bus strip.

Installation

Chapter Objectives

This chapter provides information on the following topics:

- [Installation Precautions](#)
- [Installation Guidelines](#)
- [Mounting Clearance Requirements](#)
- [Computer Dimensions](#)
- [Required Tools](#)
- [Install the Computer](#)
- [Connect Peripherals](#)
- [Connect Power](#)
- [Functional Ground Screw](#)
- [Connect to a Network](#)

Review each mounting type and computer dimensions before installing.

Installation Precautions

Read and follow these precautions before installing the computer.

Environment and Enclosure Information



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

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

This equipment is supplied as an open type equipment. The interior of the enclosure must be accessible only by the use of a tool. UL Listed equipment does not need to be mounted inside another enclosure.

In addition to this publication, see the following:

- Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#), for additional installation requirements
- NEMA Standard 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 mark. A copy of the declaration of the conformity is available at <http://www.rockwellautomation/certification>.



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

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

Installation Guidelines

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

- The installation site must have sufficient power.



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

- In dry environments, static charges can build up easily. Proper grounding of the computer helps to reduce static discharges, which can cause shock and damage electronic components.
- The enclosure must allow sufficient space around air inlets and outlets to provide the circulation necessary for cooling. See [Mounting Clearance Requirements on page 20](#) for further information. Never allow air passages to become obstructed.
- The ambient air temperature must not exceed the maximum operating temperature as specified in [Table 5 on page 63](#). Consider a user-supplied fan, heat exchanger, or air conditioner for heat generated by other devices in the enclosure.

TIP

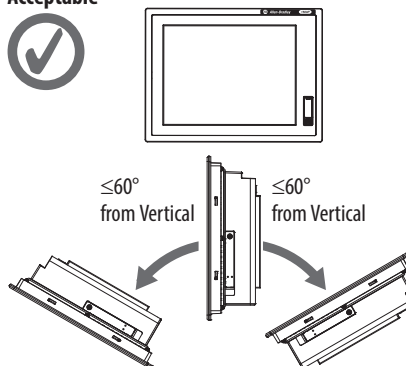
Hot air rises. The temperature at the top of the enclosure is often higher than the temperature in other parts of the enclosure, especially if air is not circulating.

IMPORTANT

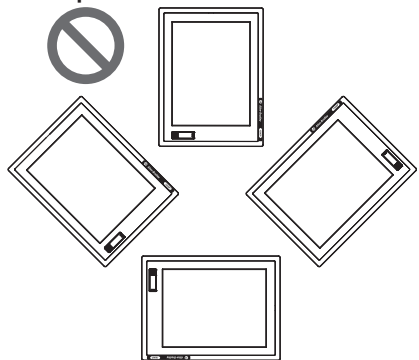
The computer can operate at a range of extremes. However, the life span of any electronic device is shortened if you continuously operate the computer at its highest rated temperature.

- The humidity of the ambient air must not exceed limits specified in [Table 5 on page 63](#) and must avoid condensation.
- The enclosure or cover must remain in place at all times during operation. The cover provides protection against high voltages inside the computer and inhibits radio-frequency emissions that can interfere with other equipment.
- When mounted, the computer cannot be tilted more than 60° from vertical.

Acceptable



Unacceptable

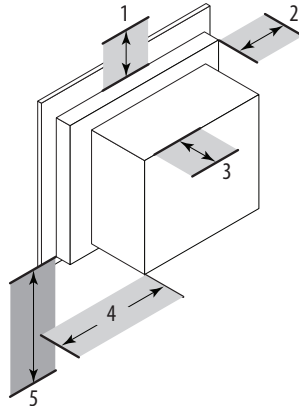


Mounting Clearance Requirements

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

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

Figure 4 - 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 5 - Non-display Computer

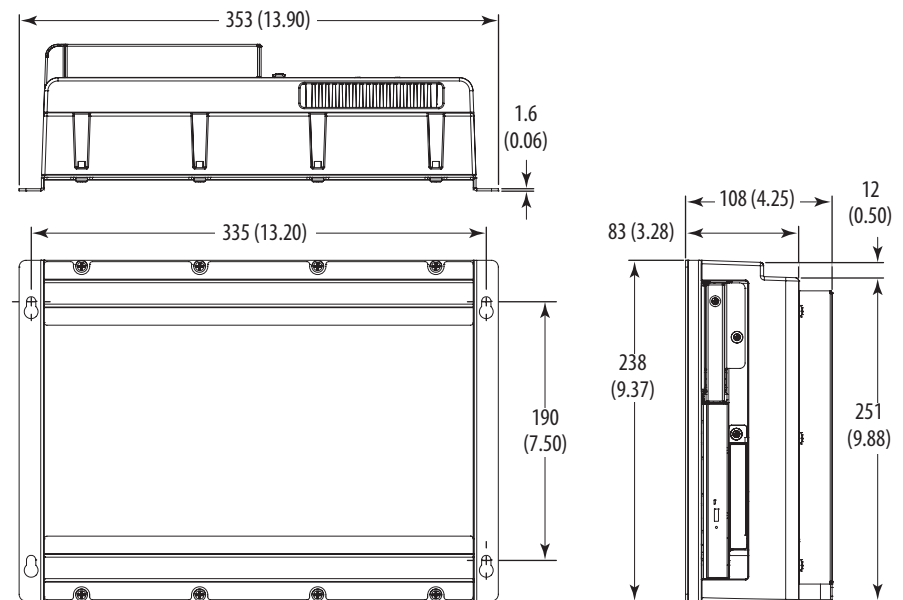


Figure 6 - 1200P Integrated Display Computer – Performance

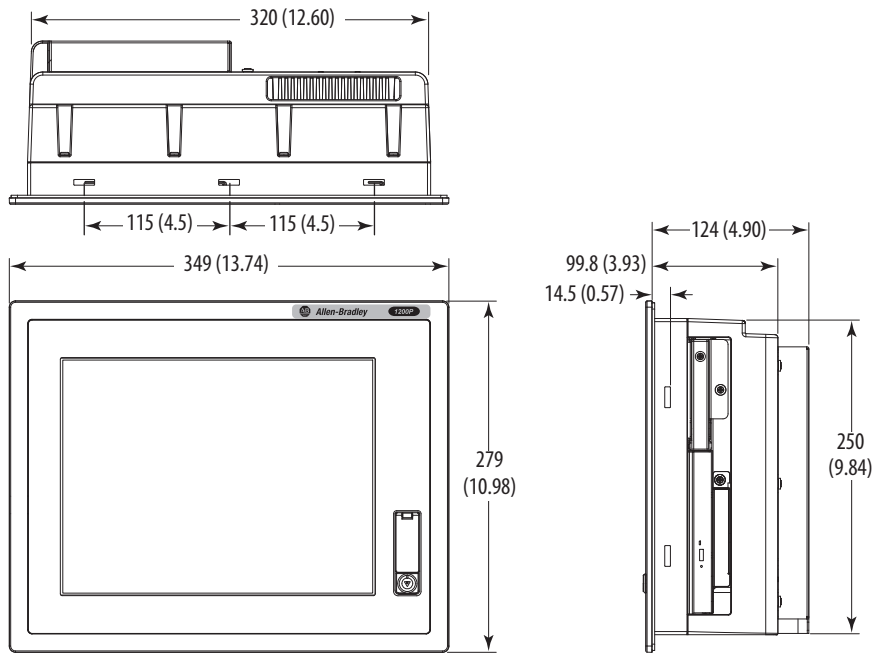


Figure 7 - 1200P Integrated Display Computer – Standard

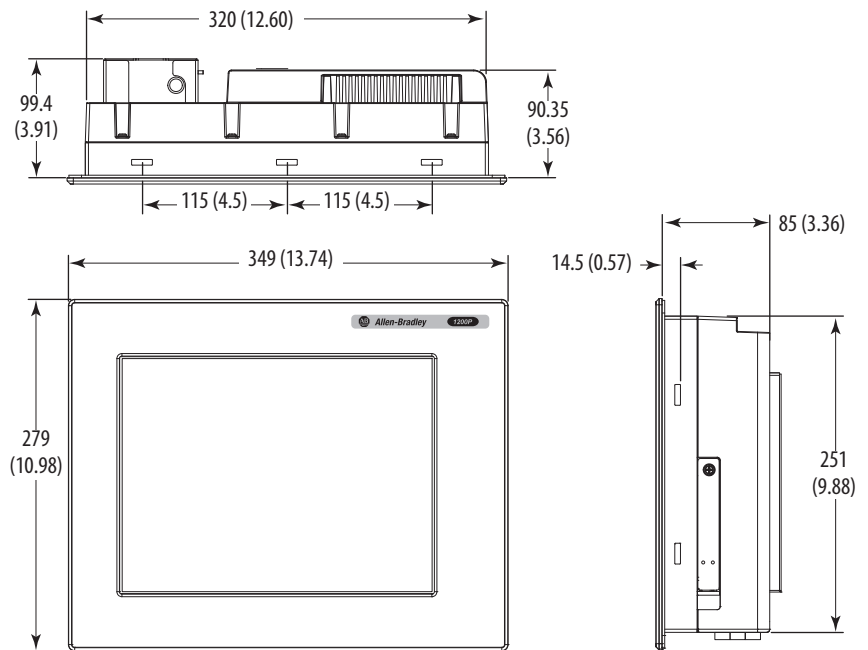


Figure 8 - 1500P Integrated Display Computer – Performance

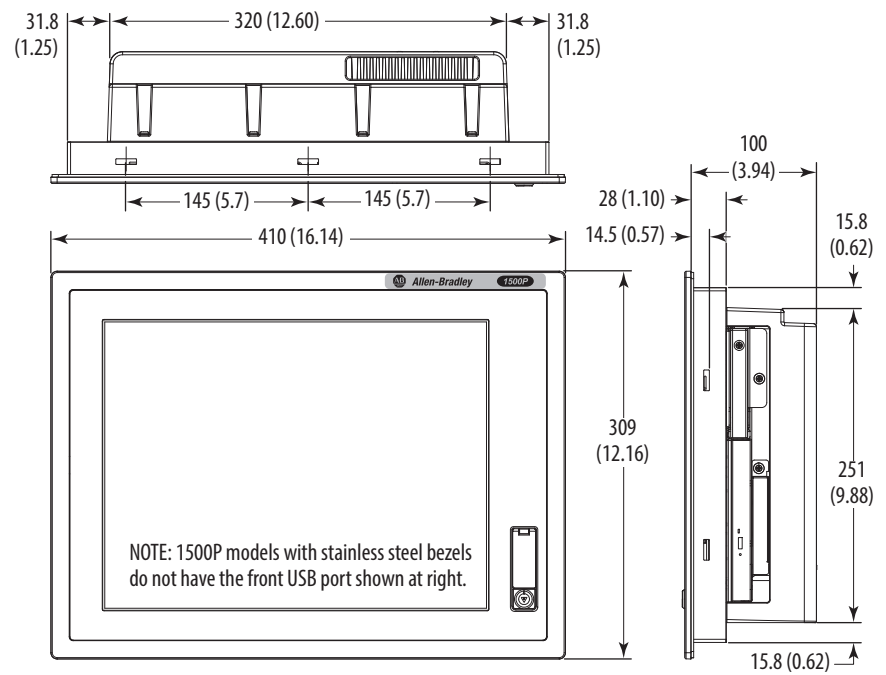


Figure 9 - 1500P Integrated Display Computer – Standard

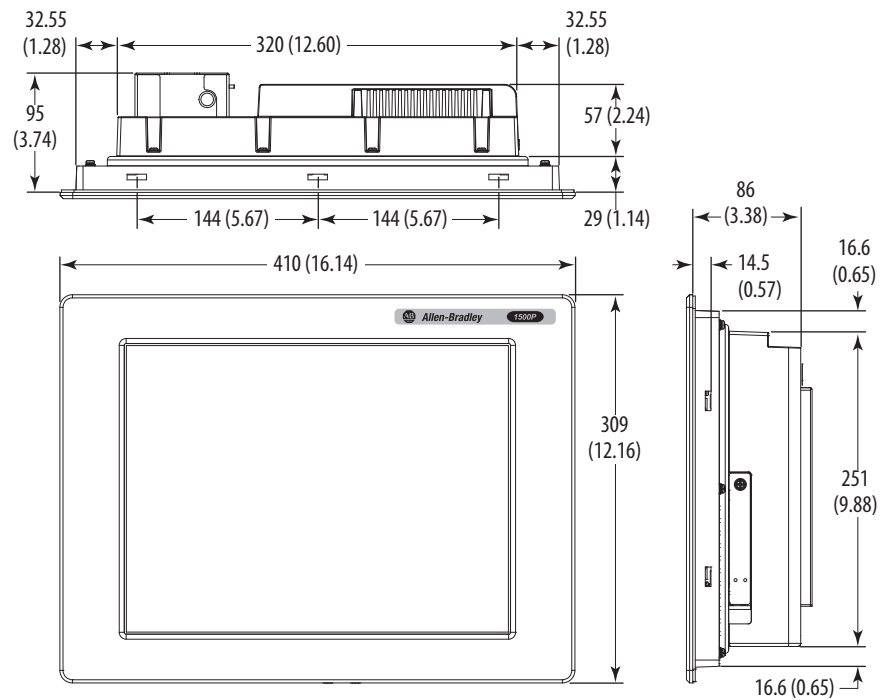


Figure 10 - 1700P Integrated Display Computer – Performance

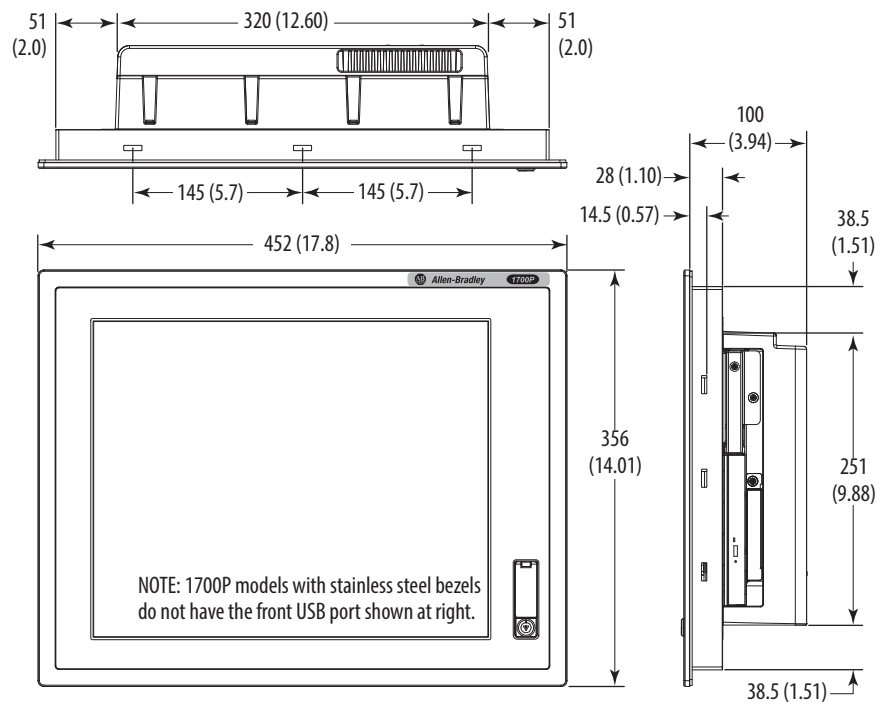
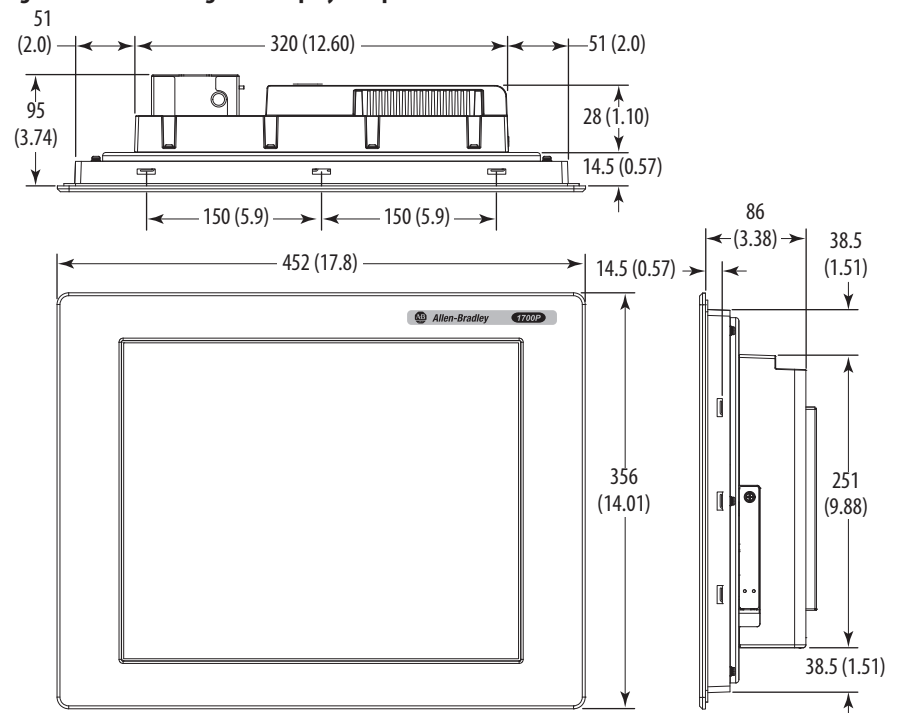


Figure 11 - 1700P Integrated Display Computer – Standard



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 mounting)
- Antistatic wrist strap

Install the Computer

The computers support the following mounting options:

- Panel mount (display computer models)
- Wall mount (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 making the cutout.
- Confirm that there is adequate space behind the panel. For specific information, refer to [Mounting Clearance Requirements](#) on [page 20](#).
- 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.



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

Panel Cutout Dimensions

Included with the shipped computer is 6181P and 6181X Industrial Computers Cutout Template, publication [6181P-DS002](#), which is a cutout template for each computer model.

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

Model	Cutout Dimensions (H x W), approx
1200P	254.0 x 324.0 mm (10.0 x 12.76 in.)
1500P	285.0 x 386.6 mm (11.24 x 15.22 in.)
1700P	329.5 x 424.0 mm (12.97 x 16.69 in.)

Mount the Display Computer in a Panel

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

Model	Clips (qty.)
All with aluminum bezel and 1500P with stainless steel bezel	10
1700P with stainless steel bezel	12

Cat. No.	Description
6189V-MCLPS3	Replacement mounting clips (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 debris.



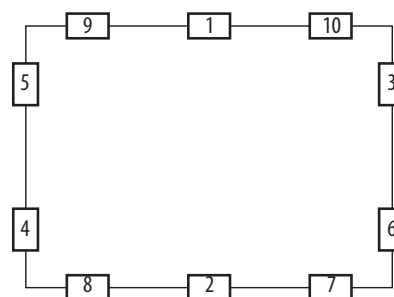
ATTENTION: Take precautions so metal cuttings do not enter components already installed in panel to avoid personal injury or damage to the panel components.

3. Cut an opening in the panel using the appropriate panel cutout dimensions.
4. Attach cables to the computer before installation if rear access to the computer will be limited after installation. For where to attach cables, see [Connect Peripherals on page 27](#).

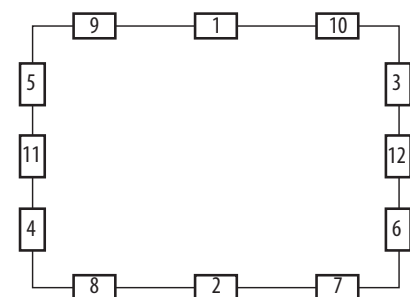
AC power models: You might need to remove the AC retention clip before installing the computers in a panel cutout. Reattach the clip after installing the computer.

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 tightening sequence below.

All Display Models with Aluminum Bezel
and 1500P Display with Stainless Steel Bezel



1700P Display with Stainless Steel Bezel



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 torquing sequence on the previous page, making sure to not overtighten.
11. Repeat this process at least three times until the clips are properly torqued, making sure the gasket is compressed uniformly against the panel.



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

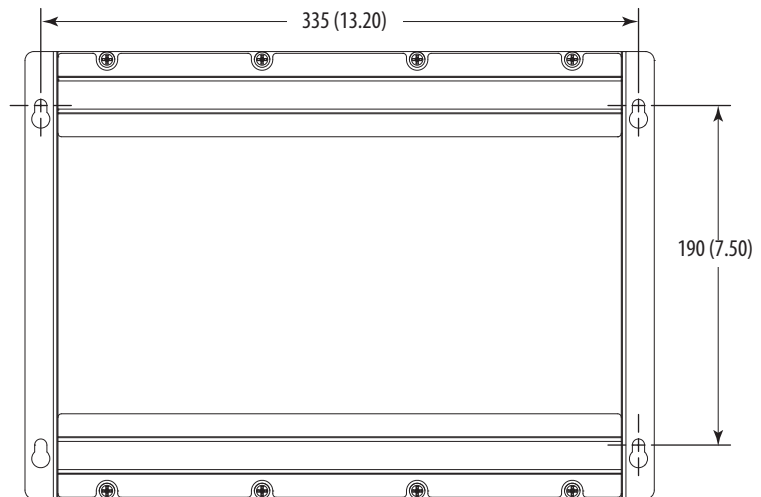
Mount the Non-display Computer to a Wall

Follow these steps to mount a non-display computer.

1. Verify the power is disconnected.
2. Drill holes in the wall to accommodate M5-sized screws.
3. Mount the computer to the wall by using four M5 pan head screws.

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

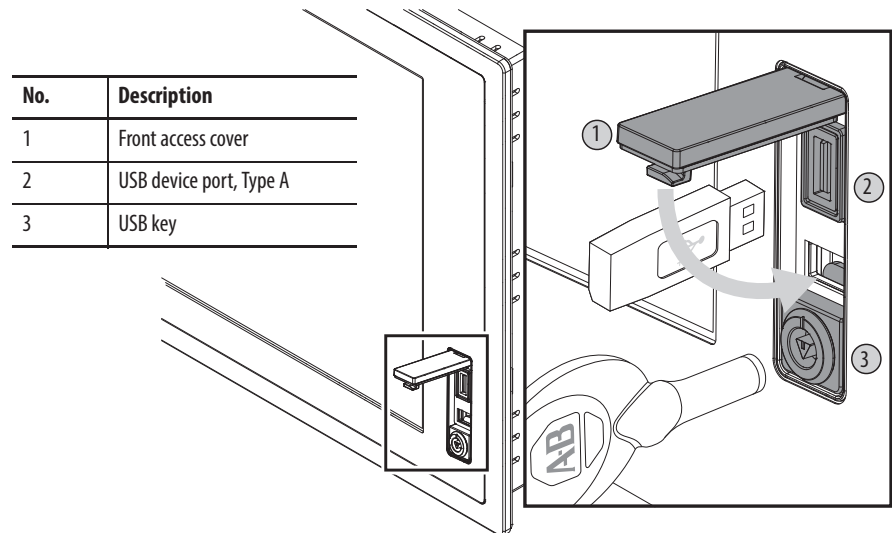
The illustration shows the mounting hole locations with dimensions in mm (in.).



Connect Peripherals

Connect the required peripherals, such as keyboard and mouse, to the corresponding I/O ports on the computer. Refer to the appropriate illustrations for connector locations in [Hardware Features](#) starting on [page 13](#).

Display computer models with aluminum bezels have USB ports located 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. The front USB port is enabled or disabled through settings in the BIOS set-up menu.



Connect Power

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



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

- The default BIOS 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. Disconnecting power during this procedure can result in a corrupted system image.

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



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

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

Connect AC Power

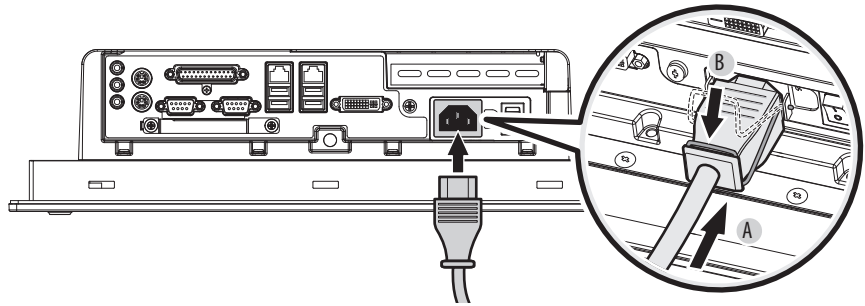
A grounded, 3-prong IEC60320-C13 power cord provides power to the computer. The power supply input accepts 100...240V AC and is autoranging.

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

Performance and Non-display Computers

Follow these steps to connect performance and non-display computers 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.



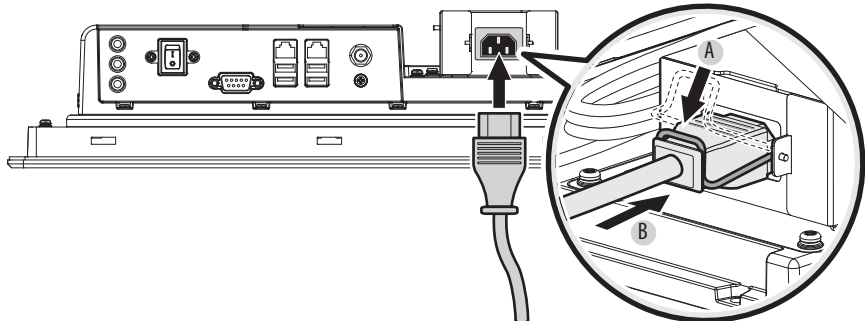
SHOCK HAZARD: Connect the AC power cord to a power source with an earth ground. Failure to follow this warning can result in electrical shock.

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

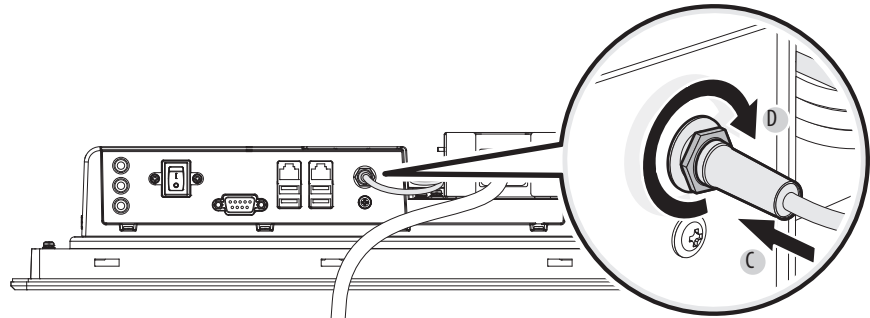
Standard Computers

Follow these steps to connect standard computers to an AC power source.

1. Connect the power cord to the AC power input (A).
2. Secure it in place with the retention clip (B).



3. Connect the DC barrel connector to the power input jack (C).
4. Twist the locking ring clockwise to secure it in place (D).



5. 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.

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

Connect DC Power to Performance and Non-display Computers

Performance and non-display computers with catalog numbers ending in DC have a DC input terminal block for connecting to a 18...32V DC power source.

DC power models support operation from either a SELV or PELV power source. A pre-installed ground bus strip lets you connect the DC common and functional ground terminals together. This is to support some cases of SELV where grounding at the computer is required by the end user.

The power supply is internally protected against reverse polarity.



ATTENTION: Use a Class 2/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.

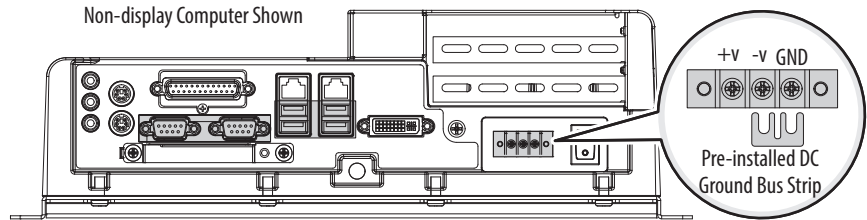
Follow these steps to connect the computer to a DC power source.

1. Turn off the main power switch or breaker.
2. Verify that the DC power wires meet these requirements:
 - Material: Stranded copper
 - Wire gauge: 0.325...0.823 mm² (22...18 AWG)

- Secure the DC power wires to the correct terminal-block screws, and the DC ground wire to the GND terminal screw.

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

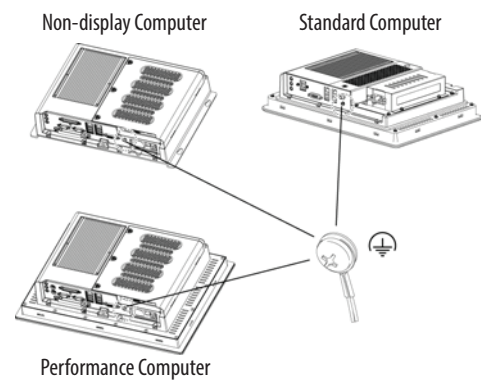
- Apply 18...32V DC power to the computer.



Functional Ground Screw

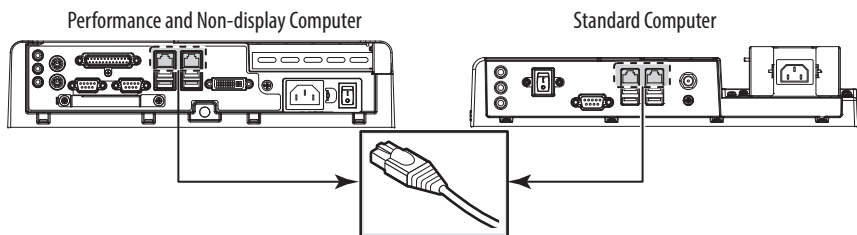
The pre-installed functional ground screw is not required for safety or regulatory compliance. However, if a supplemental ground is desired, use the functional ground screw in the I/O port panel of the computer.

If using the functional ground screw, connect the computer to earth ground by using a 1.5 mm² (16 AWG) or larger external wire. Use a ground wire with green insulation and a yellow stripe for easy identification.



Connect to a Network

The computers connect to an Ethernet network by using CAT5 or CAT5e twisted-pair Ethernet cabling with RJ45 connectors.



IMPORTANT

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

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

Operation

Chapter Objectives

This chapter provides information on the following topics:

- [Operating Guidelines](#)
- [Start the Computer](#)
- [Restart the Computer](#)
- [Shut Down the Computer](#)

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 touchscreen (if available).



ATTENTION: 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.
- Do not operate the computer with the covers removed. Removing the covers disrupts air flow and results in overheating.



SHOCK HAZARD: Do not operate the computer with the covers removed. An electrical shock hazard exists. All covers, including the slot covers, are required to maintain EMI shield.

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

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

Start the Computer

Follow these steps to start the computer.

IMPORTANT The following steps apply to when you must manually start the computer. See [Connect Power on page 27](#) 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. **AC powered models:** See [Connect AC Power on page 28](#) or [Standard Computers on page 28](#) for how to install the AC power cord into the AC power input on the computer.

DC powered models: See [Connect DC Power to Performance and Non-display Computers on page 29](#) for how to install DC power to the DC power input on the computer.

4. **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 to prevent electrical shock. Failure to do so can result in electrical shock.

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

5. Press the computer's power switch.

See [Hardware Features on page 15](#) for power switch location.

The computer performs certain actions every time it is started or reset. See [Restart the Computer on page 33](#) for what is done.

If your computer does not start or you notice other anomalies, refer to Troubleshooting starting on [page 53](#).

Restart the Computer

Use either of the following methods to restart your computer:

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

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 keyboard and mouse, do one of the following. <ul style="list-style-type: none"> • Press CTRL+ALT+DEL and click Shut Down. • From the Start menu, click or choose Shut Down from the pull-down menu.
Power switch	Press the power switch to shut down the computer. See Hardware Features on page 15 for the power switch location. IMPORTANT: Access to components behind the panel where the computer is installed is restricted to authorized and properly trained personnel.

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

Notes:

Component Replacement

Chapter Objectives

This chapter provides information on the following topics:

- [Accessories and Replacement Parts](#)
- [Voltage Precautions](#)
- [Electrostatic Discharge Precautions](#)
- [Pre-configuration](#)
- [Post-configuration](#)
- [Required Tools](#)
- [Remove the Cover](#)
- [Reinstall the Cover](#)
- [CompactFlash Card](#)
- [Drive Precautions](#)
- [Replace a Drive](#)
- [Install an Add-in Card](#)
- [Replace or Add Memory Modules](#)
- [Replace the RTC Battery](#)

Accessories and Replacement Parts

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

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

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

Voltage Precautions

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



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

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

Electrostatic Discharge Precautions



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

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

Follow the precautions listed below:

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

Pre-configuration

IMPORTANT

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



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

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

1. Shut down the computer and all peripherals connected to it.
2. Disconnect all cables from power outlets to avoid exposure to high energy levels.
If necessary, label each cable to expedite reassembly.
3. Disconnect telecommunication cables to avoid exposure to a shock hazard from ringing voltages.

Post-configuration

Follow these steps after installing or removing a hardware component.

1. Make sure all components are installed according to instructions.
2. Make sure that no tools or loose parts are left inside the computer.
3. Reinstall any expansion boards, peripherals, and system cables that were previously removed.
4. Reinstall the cover according to the instructions on [page 38](#).
5. Reconnect all external cables and power to the computer.
6. Press the computer's power switch to start the computer.

Required Tools

The following tools are required for component replacement:

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

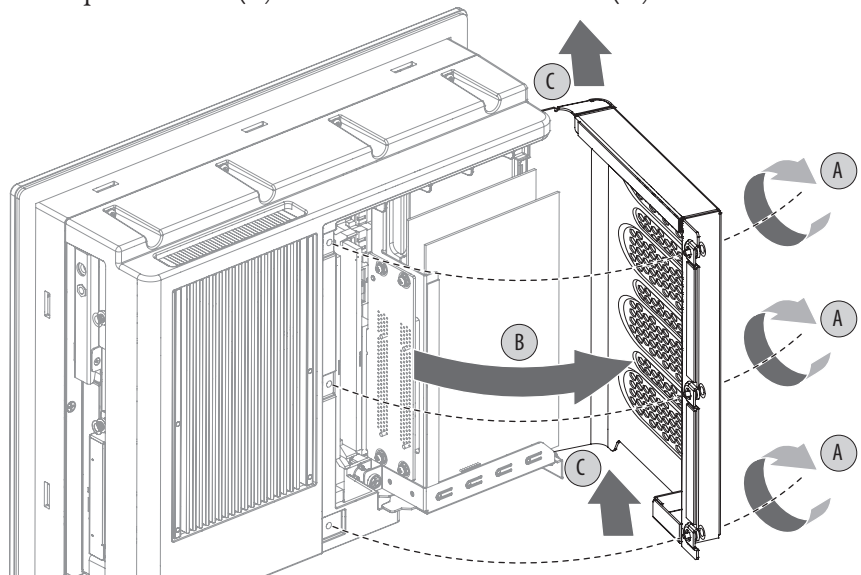
Remove the Cover

To install, replace, or upgrade internal computer components, you must first remove the cover. The procedure for removing the rear cover is different for the computer models.

Performance and Non-display Computers

Follow these steps to remove the rear cover (the performance computer is shown).

1. Follow the steps for [Pre-configuration on page 36](#).
2. Loosen the three screws that secure the rear cover (A).
3. Open the cover (B) and detach it from the chassis (C).

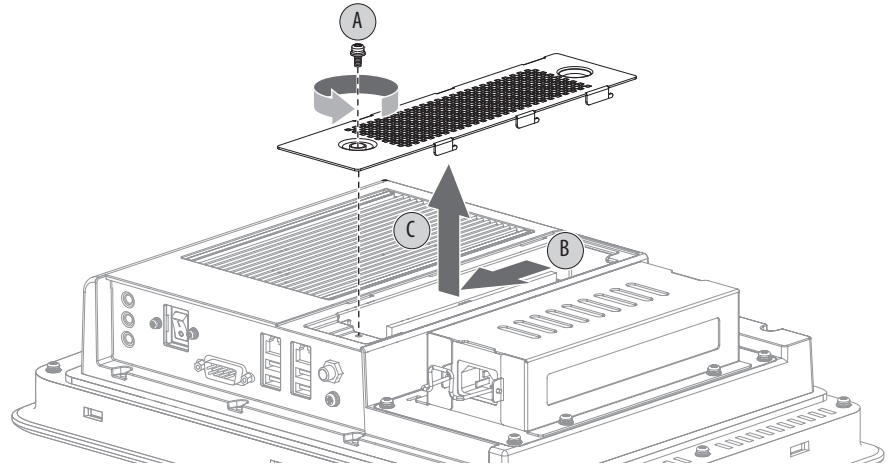


4. After installing, replacing, or upgrading internal computer components, reinstall the cover as detailed in [Reinstall the Cover on page 38](#).

Standard Computers

Follow these steps to remove the rear cover.

1. Follow the steps for [Pre-configuration on page 36](#).
2. Loosen the one screw that secures the rear cover (A).
3. Slide the cover downward to release the inner tabs from the chassis (B).
4. Detach the rear cover from the chassis (C).



5. After installing, replacing, or upgrading internal computer components, reinstall the cover as detailed in [Reinstall the Cover on page 38](#).

Reinstall the Cover

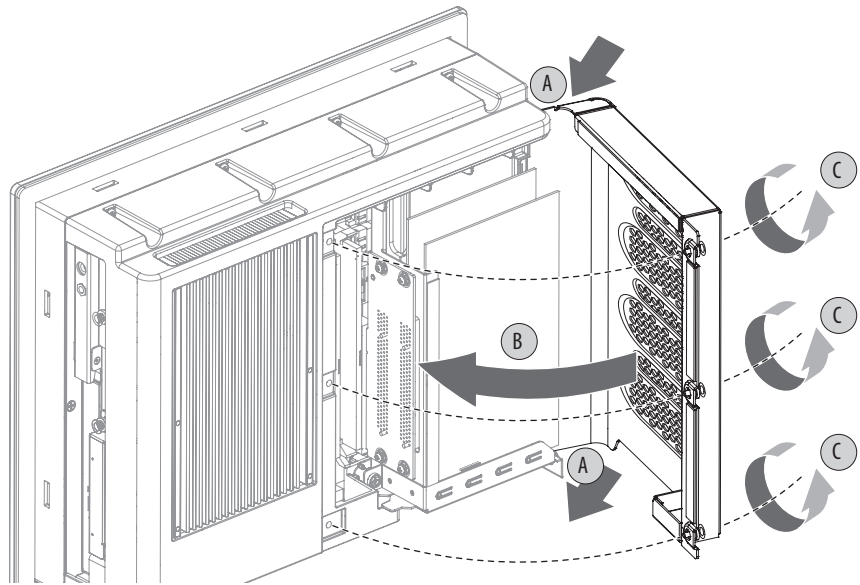
The procedure for reinstalling the rear cover is different for the computer models.

Performance and Non-display Computers

Follow these steps to reinstall the rear cover (the performance computer is shown).

1. Follow steps 1...3 for [Post-configuration on page 37](#).
2. Reattach the rear cover to the chassis (A).
3. Close the cover (B).

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

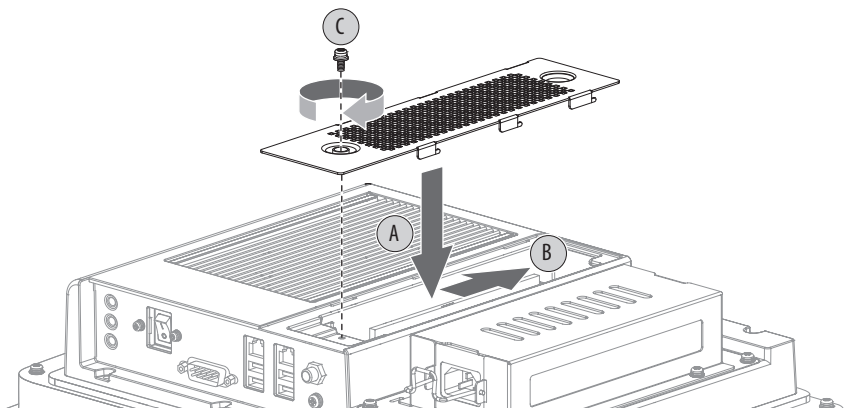


5. Follow steps 4 and 5 for [Post-configuration on page 37](#).

Standard Computers

Follow these steps to reinstall the rear cover.

1. Follow steps 1...3 for [Post-configuration on page 37](#).
2. Insert the rear cover tabs on the slats lining the internal slot bay (A).
3. Slide the cover upward to engage the tabs to the chassis (B).
4. Tighten the one screw to secure the rear cover (C).



5. Follow steps 4 and 5 for [Post-configuration on page 37](#).

CompactFlash Card

The computers have a CompactFlash (CF) Type II card slot for loading CF cards:

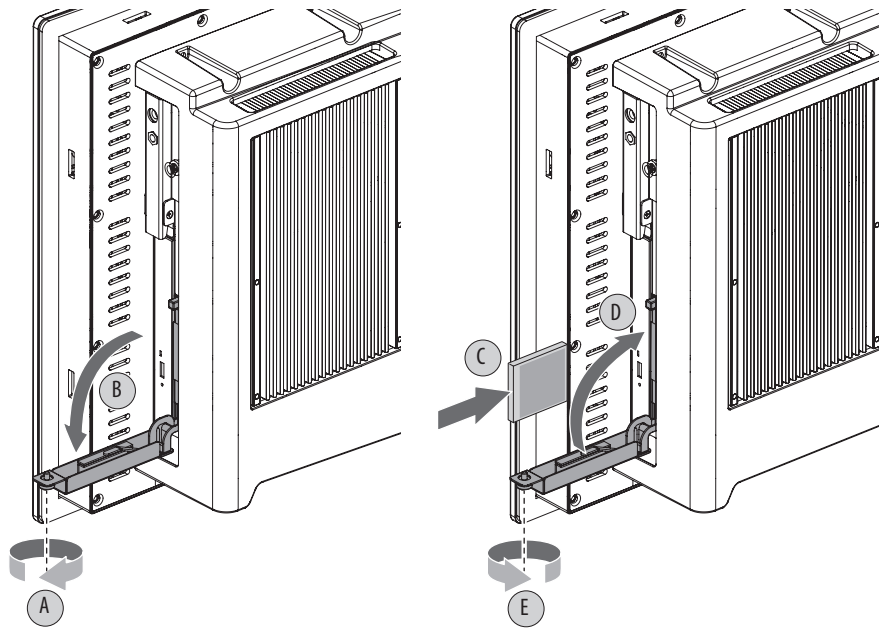
- The standard computers have one CF slot on the right side of the computer.
- Performance and non-display computers have two CF slots: one on the right side of the computer, and another on the I/O port panel below the serial ports.

Load a Card in the Right CF Card Slot

Follow these steps to load a CF card in the card slot of all three computer models.

IMPORTANT The CF card slot on the right side of all computer models is not hot-swappable. You must first shut down the computer before you can insert or remove a card from this slot.

1. Follow the steps for [Pre-configuration on page 36](#).
2. Loosen the screw that secures the CF card slot cover (A).
3. Open the CF card slot cover (B).



4. Insert the CF card into the slot (C) 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.

5. Close the CF card slot cover (D).
6. Tighten the screw to secure the slot cover (E).
7. Follow the steps for [Post-configuration on page 37](#).

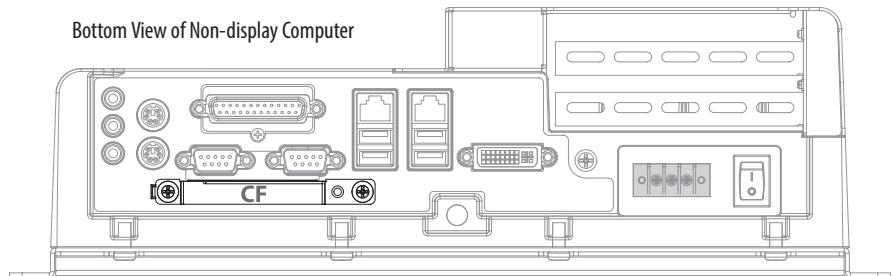
Load a Card in the Bottom CF Card Slot

Follow these steps to load a CF card in the bottom card slot of performance and non-display computer models.

IMPORTANT The CF card slot on the bottom of performance and non-display computers is hot-swappable. You can insert or remove a card from this slot while the computer is on.

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

Bottom View of Non-display Computer



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.

Drive Precautions

Follow these precautions when working with a drive.

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

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



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

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



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

Replace a Drive

The procedures for replacing a drive (HDD or SSD) are different for the computer models.

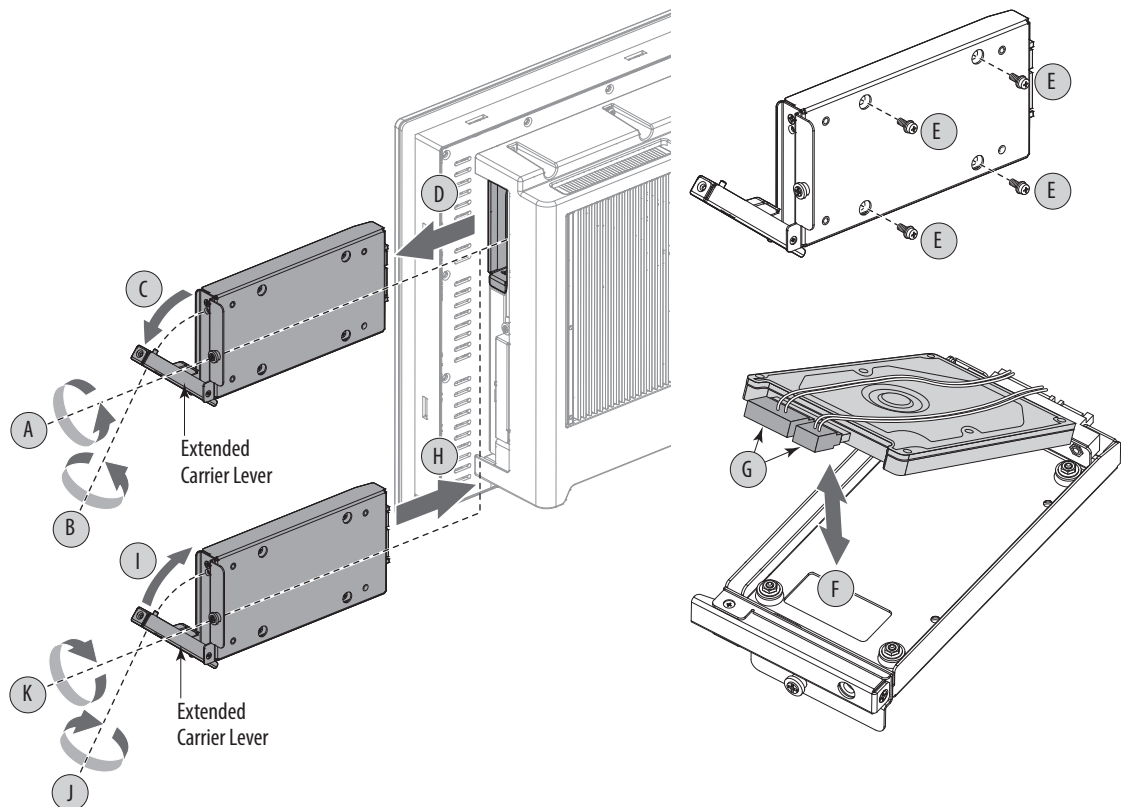
Replace a Performance and Non-display Computer Drive

The drive (HDD or SSD) in performance and non-display computers is on the right side of the computer.

Follow these steps to replace the drive.

1. Read and follow [Drive Precautions on page 42](#) before performing any drive removal.
2. Follow the steps for [Pre-configuration on page 36](#).
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. Remove the four screws that secure the drive to its carrier (E).
7. Lift the cable connector end of the drive (F) and disconnect the power and data cables (G).
8. Remove the default drive from its carrier.

9. Hold the new drive by its edge and remove it from its protective packaging.
 10. Align the new drive on the carrier (F).
 11. Connect the power and data cables to the drive (G).
 12. Secure the new drive to the carrier with the four screws (E).
- Torque the screws to 0.452 N•m (4 lb•in).
13. Use the extended carrier lever to slide the assembly into the drive bay (H).
 14. Retract the carrier lever (I) and tighten its screw to lock in place (J).
 15. Secure the drive assembly with the one screw (K).



16. Follow the steps for [Post-configuration on page 37](#).

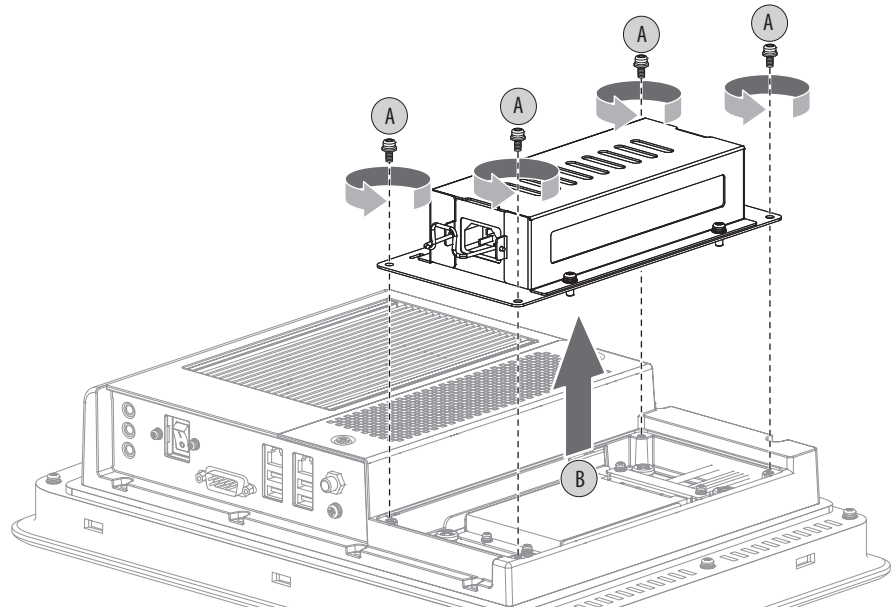
Replace a Standard Computer Drive

The drive (HDD or SSD) in standard computers is under the power adapter assembly.

Follow these steps to replace the drive.

1. Follow the steps for [Pre-configuration on page 36](#).
2. Disconnect the DC barrel connector from the power input jack.
See [page 29](#) for more information on the DC barrel connection.

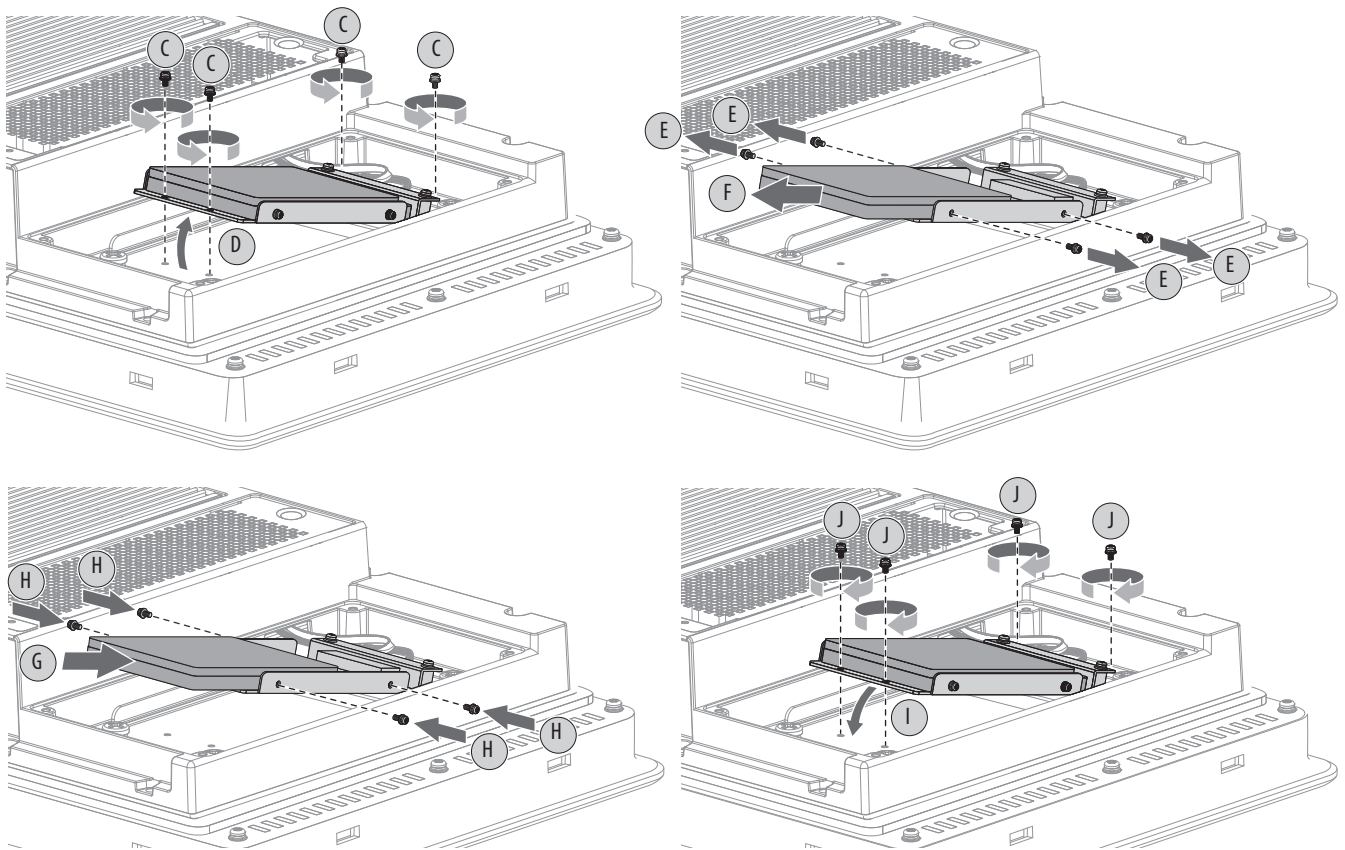
3. Remove the four screws that secure the power adapter assembly (A).
4. Remove the power adapter assembly from the chassis (B).



TIP Refer to [Figure 12 on page 45](#) for the corresponding letters in parentheses in steps 5 through 13.

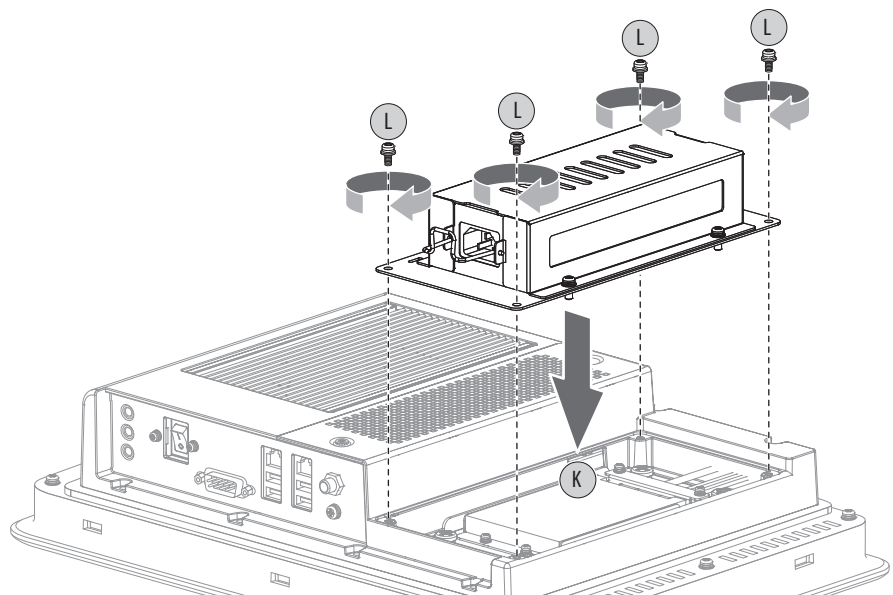
5. Remove the four screws that secure the drive assembly (C).
6. Lift the bottom end of the drive metal frame about 45° from the chassis (D).
7. Remove the four screws that secure the drive (E).
8. Slide the default drive out of its metal frame (F).
9. Hold the new drive by its edge and remove it from its protective packaging.
10. Slide the new drive into its metal frame and make sure it's properly engaged to the power and data cables (G).
11. Secure the drive to its frame with four screws (H).
12. Lay the bottom end of the drive metal frame on the chassis (I).
13. Secure the drive assembly with the four screws (J).

Figure 12 - Drive Replacement for Standard Computers



14. Place the power adapter assembly over the drive assembly (K).

15. Secure the power adapter assembly with the four screws (L).



16. Reconnect the DC barrel connector as detailed on [page 29](#).

17. Follow the steps for [Post-configuration on page 37](#).

Install an Add-in Card

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

IMPORTANT Even though the standard computer has onboard PCI slots, its chassis design prevents it from supporting add-in card installation.

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

Computer Model	Default Configuration	Alternate Configuration A Using PCI Extender Kit (Cat. No. 6189V-EXTPCIS)	Alternate Configuration B Using PCI Extender Kit (Cat. No. 6189V-EXTPCIS)
Integrated display computer	1200P	2 PCI	—
	1500P	1 PCI	2 PCI
	1700P	1 PCI	2 PCI
Non-display computer	2 PCI	1 PCI + 1 PCI Express	—

The PCI slot supports a maximum load of 4 W. Make sure your card does not exceed its thermal ratings. When the computer is running at its maximum rated temperature, the ambient temperature in the PCI slot with a 4 W fanless card in operation may reach 80 °C (176 °F). With a 1 W load, the ambient temperature may reach 70 °C (158 °F).



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

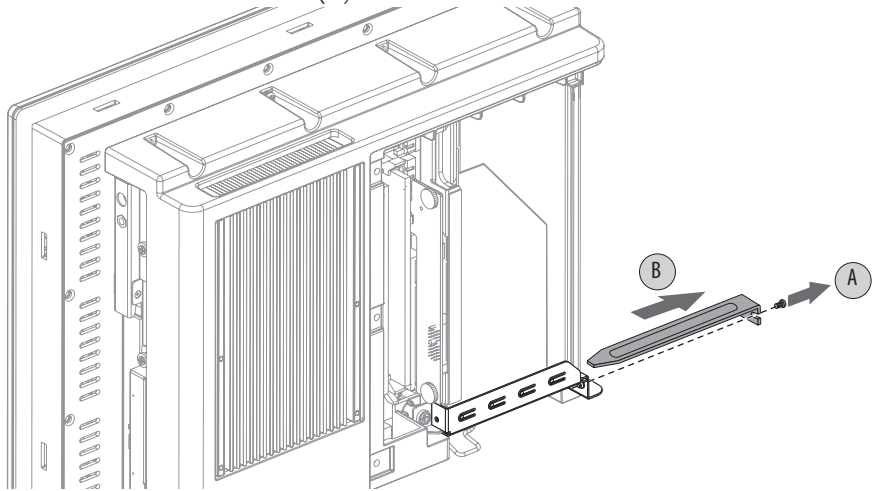
- Hold cards only by the edges.
- Do not touch the card connectors, components, or circuits.
- After removing an add-in card, place it on a flat, static-free surface, component side up.
- Do not slide the card over any surface.

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

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

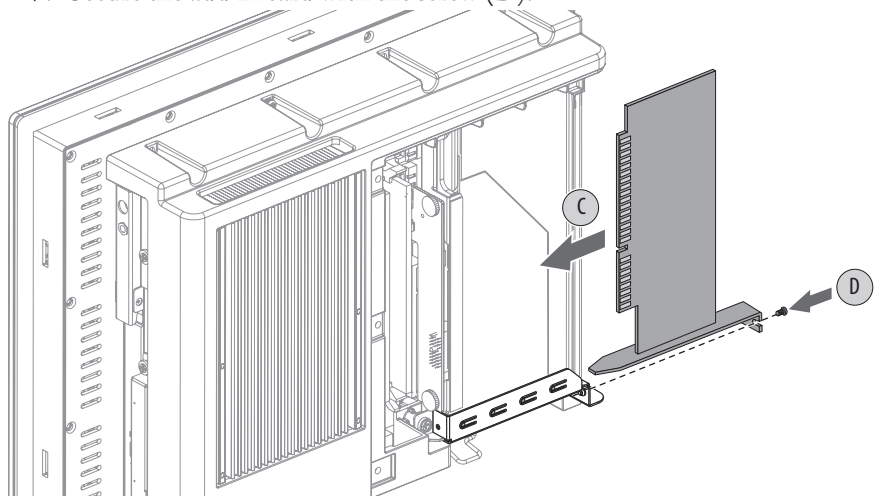
1. Follow the steps for [Pre-configuration on page 36](#).
2. Remove the computer cover as detailed in [Remove the Cover on page 37](#).

3. Remove the screw that secures the slot cover (A).
4. Pull out the slot cover (B) and store it.



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 make sure it is firmly seated in the slot.
7. Secure the add-in card with the screw (D).



8. Connect any necessary cables to the add-in card.
9. Refer to any installation instructions that came with the add-in card to verify that all installation steps are followed.
10. Reinstall the computer cover as detailed in [Reinstall the Cover on page 38](#).
11. Follow the steps for [Post-configuration on page 37](#).

PCI Riser Board Options

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

- Two-slot PCI riser board
- One-slot PCI Express riser board
- Two-slot riser board with one PCI slot and one PCI Express x1 slot

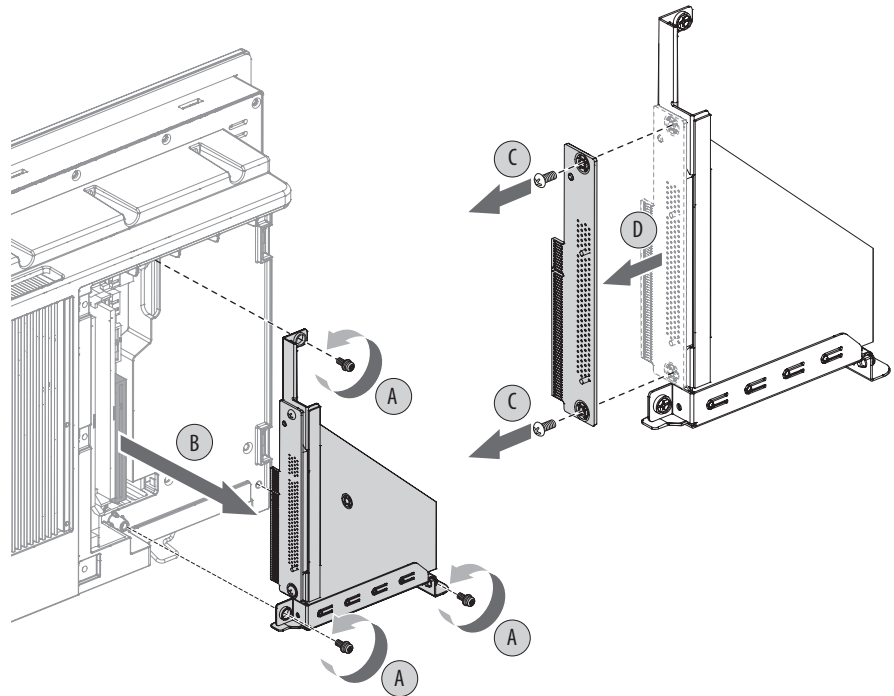
Follow these steps to install the PCI expansion slot kit (the performance computer is shown).



SHOCK HAZARD: Electrostatic discharge (ESD) can damage the computer and components. Read and follow [Electrostatic Discharge Precautions on page 36](#) before removing the rear cover.

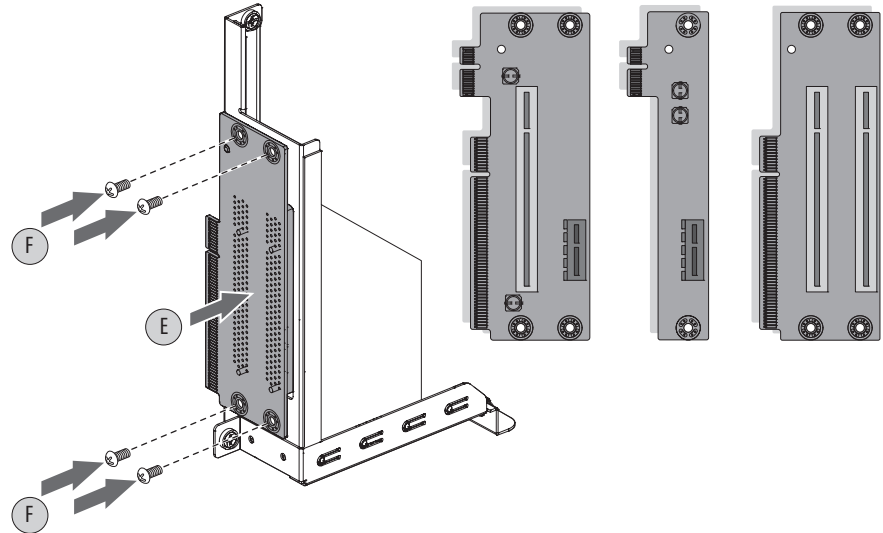
Failure to follow proper safety precautions can result in severe electrical shock or damage to the computer.

1. Follow the steps for [Pre-configuration on page 36](#).
2. Remove the computer cover as detailed in [Remove the Cover on page 37](#).
3. Loosen the three screws that secure the PCI riser board bracket (A).
4. Remove the PCI riser board assembly from the chassis (B).
5. Remove the two screws that secure the default riser board (C).
6. Remove the riser board from its bracket (D).



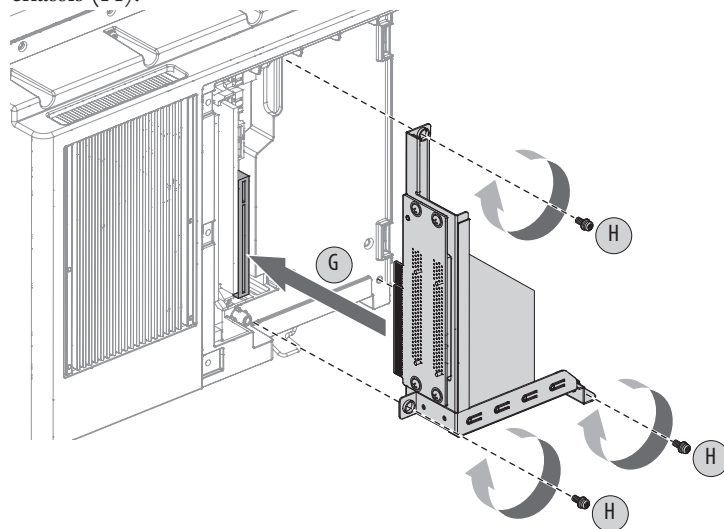
7. Place the default riser board with its screw on a static-dissipating work surface or inside an antistatic bag.

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 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 riser bracket provided with the kit	Four screws
A single-slot riser board	The default PCI riser bracket	Two screws

11. Insert the riser board connector in the onboard expansion slot making sure the board is properly seated in the slot (G).
12. Tighten the three screws to secure the PCI riser board assembly to the chassis (H).



IMPORTANT Make sure the mounting bracket does not pinch any cables under the bracket.

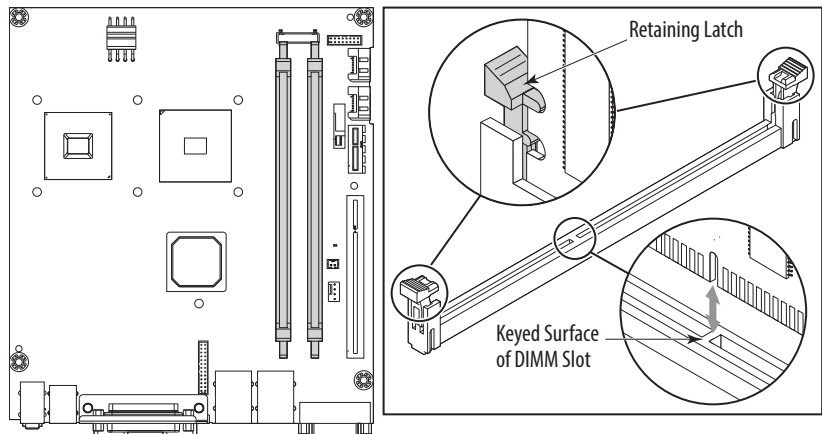
If you intend to install	Then
A compatible add-in card now	Proceed to page 46 for instructions.
An add-in card later	<ol style="list-style-type: none"> 1. Reinstall the rear cover. 2. Apply power to the computer.

13. Reinstall the rear cover as detailed in [Reinstall the Cover on page 38](#).
14. Follow the steps for [Post-configuration on page 37](#).

Replace or Add Memory Modules

The computers have two dual-channel DDR2 DIMM slots that support up to 4 GB maximum system memory.

Figure 13 - Memory Module Slots and Module Alignment



ATTENTION: Some older Microsoft Windows operating systems limit the maximum usable memory capacity to approximately 3 GB.

Memory Configuration Guidelines

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

- Use only standard unbuffered memory modules that conform to both PC2-3200 and SPD compliance industry standards.
- Use only DDR-II type memory modules.
- Use only memory modules with gold-plated contacts.
- Always handle a memory module by its edges.

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

Replace or Add a Memory Module

Follow these steps to replace or add a memory module.

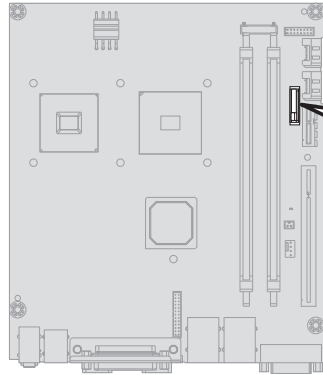
IMPORTANT Use an antistatic wrist strap connected to the work surface, and properly grounded tools and equipment.

1. Follow the steps for [Pre-configuration on page 36](#).
2. Remove the computer cover as detailed in [Remove the Cover on page 37](#).
TIP To install additional memory, proceed to [step 4](#) of this section.
3. Remove the selected memory module.
 - a. If necessary, use side cutters to cut the cable tie from the retaining latches that hold the selected memory module.
 - b. Completely open the retaining latches to release the memory module from its slot and make it easier to remove. See [Figure 13 on page 50](#).
 - c. Gently pull out the memory module to remove it from its slot.
 - d. Place the memory module on a static-dissipating work surface or inside an antistatic bag.
4. Install the new memory module.
 - a. Hold the memory module by its edges as you remove it from its antistatic bag.
 - b. Orient the module so the notch on its bottom edge aligns with the keyed surface of the DIMM slot. See [Figure 13 on page 50](#).
TIP The keyed surface is off center to assist the correct alignment.
 - c. Press the module fully into the slot to engage the retaining latches. See [Figure 13 on page 50](#).
 - d. Fasten a replacement cable tie around the DIMM slot latches.
 - e. Pull the end of the cable tie to lock it in place.
 - f. Using side cutters, cut the excess length of the cable tie.
5. Reinstall the computer cover as detailed in [Reinstall the Cover on page 38](#).
6. Follow the steps for [Post-configuration on page 37](#).

Replace the RTC Battery

The computers use nonvolatile memory that require a RTC battery to retain system information when power is removed. The lithium battery is on the computer's motherboard next to the DIMM1 slot.

The 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.

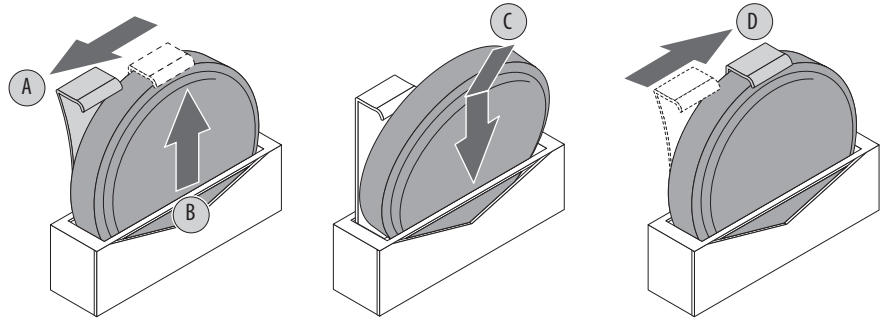
- Do not disassemble, crush, puncture, or short external contacts.
- Do not expose the battery to temperatures higher than 60 °C (140 °F).
- Do not dispose of a used battery in water or fire.

For safety information on handling lithium batteries, see Guidelines for Handling Lithium Batteries, publication [AG-5.4](#).

Follow these steps to replace the RTC battery.

1. Follow the steps for [Pre-configuration on page 36](#).
2. Remove the computer cover as detailed in [Remove the Cover on page 37](#).
3. If necessary, remove any accessory boards or cables that prevent access to the RTC battery socket.

4. Disengage the battery latch (A) from the battery.
5. Remove the old battery from its socket (B).
6. Insert the new battery, with the positive polarity (+ side) facing the latch, in the socket, making sure the battery is seated completely (C).
7. Engage the battery latch (D).



IMPORTANT Do not over-bend the battery latch when replacing the RTC battery. The latch must retain contact with the battery for proper operation.

8. Reinstall the computer cover as detailed in [Reinstall the Cover on page 38](#).
9. Follow the steps for [Post-configuration on page 37](#).
10. During POST, press F2 on an attached keyboard to enter the BIOS setup and reconfigure settings.

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



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

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

Notes:

System Troubleshooting

Chapter Objectives

This chapter provides information on the following topics:

- [Hardware Monitoring](#)
- [Troubleshooting](#)
- [Troubleshooting Checklists](#)
- [Diagnostic Utility](#)
- [Load the System Defaults](#)
- [Clear the CMOS](#)
- [Ship or Transport the Computer](#)

Hardware Monitoring

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

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

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

See [Shut Down the Computer on page 30](#) for more information.

2. Apply power to the computer.
3. During POST, press F2 to access the BIOS set-up utility.

TIP Use the arrow keys on a keyboard to navigate between BIOS menus and menu selections.

4. Select the Hardware Monitor menu from the BIOS-Advanced menu.

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 30](#) for more information.

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

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

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

Troubleshooting Checklists

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

Issues during Startup

- Are all connections secure?
- Are the device drivers installed?
- Are the jumpers on any add-in boards correctly positioned?
- If starting from a drive:
 - Is it formatted and set up in the BIOS?
 - Are the drive's data and power cables properly connected? Verify that the computer can start from an external bootable device.
- Are memory modules properly installed? You can reinstall them to be sure of a good connection.

- Is the BIOS properly configured? You can restore the default BIOS settings by either of the following methods:
 - Load system defaults as detailed in [Load the System Defaults on page 59](#).
 - Use the CMOS jumper to reset the BIOS as detailed in [Clear the CMOS on page 59](#).

Issues after Startup

- If an issue is intermittent, you can have a loose connection. Verify that the following items are secure or properly installed:
 - All connections to the computer including any add-in cards
 - The memory modules
- Does your computer have a virus? Run an anti-virus software.
- Is the BIOS properly configured? To restore the default BIOS settings, see [Load the System Defaults on page 59](#).
- If there is a flickering display or a locked computer, restart the computer as specified in [Restart the Computer on page 33](#). Although the computers have a regulated and protected power supply, a transient voltage in the power line or peripheral cable can cause errors.
- Is the drive's data cable properly connected? Verify that the computer can start from an external bootable device.
- Is the computer overheating? Verify the following:
 - Any fan (if available) is working.
 - Any fan filter (if available) is clean.
 - Any cooling method (such as heat sink and vents) are not blocked.
 - There is proper clearance as detailed in [Mounting Clearance Requirements on page 18](#).
 - The air temperature is not exceeding its rated specification in [Table 5 on page 65](#).

Issues Running New Software

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

Issues with the Add-in Card

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

Issues with the Integrated Display

- Verify that the selected character color is not the same as the background color.
- Try setting to the native resolution. Refer to [Table 3 on page 64](#).

Issues with an External Display

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

Diagnostic Utility

If you completed the troubleshooting steps and are still having issues, you can use a diagnostic utility to isolate the issue. This utility determines the cause by testing computer components.

Computers shipped before January of 2013 include a system diagnostic (green) CD with this diagnostic utility. If you need a copy of the CD, please contact your local distributor or Rockwell Automation representative, or use the resources on the back cover of this publication.

By using the diagnostic utility, you can perform an initial diagnosis without disconnecting or moving your computer. No software is installed nor does the utility affect any software already installed. Depending on the tests selected, the process can take as little as five minutes or as long as eight hours. After the diagnostic utility is run, you can generate a report for analysis by a technical support representative, expediting 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 your computer's performance.

Follow these steps to load the system defaults.

1. Restart the computer as specified in [Restart the Computer on page 41](#).

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

TIP Use the arrow keys on a keyboard to navigate between BIOS menus and menu selections.

3. Depending on your computer series, press or select the system defaults and exit the BIO set-up utility.

Clear the CMOS

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

Follow these steps to clear the CMOS.

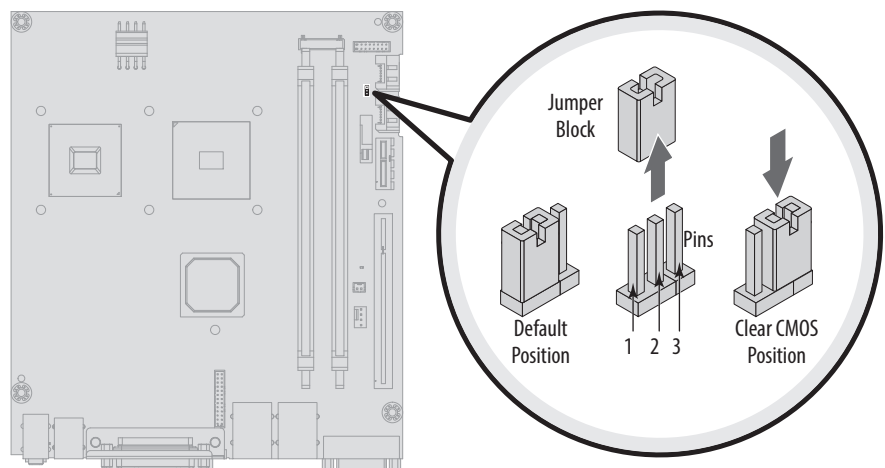
1. Back up all system data and then shut down the computer.

2. Follow the steps for [Pre-configuration on page 36](#).

3. Disconnect the power and peripheral cables from the computer.

4. Remove the rear cover as detailed in [Remove the Rear Cover on page 33](#).

5. Locate the CMOS jumper (CN6) on the motherboard.



6. Remove the jumper block from its default position (over pins 1 and 2).

7. Place the jumper block over pins 2 and 3 **for 10 seconds**.

8. Return the jumper block to its default position.

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

9. Reinstall the rear cover as detailed in [Reinstall the Rear Cover on page 35](#).
10. Follow the steps for [Post-configuration on page 33](#).

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

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

Ship or Transport the Computer

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



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

Maintenance

Chapter Objectives

This chapter provides information on the following topics:

- [Clean the Computer](#)
- [Backlight Assembly Disposal](#)

Clean the Computer

It is important to maintain your computer by cleaning the display, heat sink and vent holes, and removing grease or paint.

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 wash-downs if the computer is turned on.

2. Clean the display with a mild soap or detergent 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.

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

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.



ATTENTION: 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.

Backlight Assembly Disposal



ATTENTION: The backlight assembly in this computer can contain mercury. At the end of its life, this equipment should be collected separately from any unsorted municipal waste.

Specifications

The following tables contain specifications for the 1200P, 1500P, and 1700P integrated display industrial computers. For additional specifications, go to <http://ab.rockwellautomation.com/Computers>.

Table 2 - Hardware and Software Specifications

Specification	Attribute	6181F, 6181P
Hardware	Processor	
	Performance	Intel Core Duo U2500, 1.2 GHz/2M L2 cache/533 MHz 9 W
	Standard	Intel Celeron M423, 1.06 GHz/1M L2 cache/533 MHz 5.5 W
	System chipset	Intel 945GME, ICH7-M
	System memory slots	Dual channel DDR2, 2 DIMM slots, 4 GB max
	System memory, installed	
	Performance	4 GB
	Standard	2 GB
	Expansion slots ⁽¹⁾	
	1200P and non-display	2 PCI (upgradable to 1 PCI + 1 PCI Express)
1500P	1 PCI (upgradable to 2 PCI slots or 1 PCI + 1 PCI Express)	
1700P	1 PCI (upgradable to 2 PCI slots or 1 PCI + 1 PCI Express)	
CompactFlash Type II slot		
	Performance	2 slots (one bootable ⁽²⁾ , one hot-swappable)
Standard	1 slot, bootable ⁽²⁾	
Storage drive		
	6181P Performance/Standard	2.5-in. SATA rotating hard disk drive, 100 GB min
	6181F Performance	2.5-in. SATA SLC solid-state drive, 32 GB min
6181F Standard	CompactFlash solid-state drive, 16 GB min	
Optical disc drive		
	Performance	Slim DVD-RW/CD-RW
Standard	None	
I/O ports		
	Performance	<ul style="list-style-type: none"> • PS/2 mouse port • PS/2 keyboard port • Parallel port • DVI-I port • 2 serial COM ports • 4 rear USB ports • 1 front USB port⁽³⁾ • Audio line in/line out • Microphone
	Standard	<ul style="list-style-type: none"> • 1 serial COM port • 4 USB ports • Audio line in/line out • Microphone
Ethernet LAN		2 gigabit LAN ports (RJ45)
Software	Operating systems	Windows 7 Professional (32 bit) Windows XP Professional, Service Pack 3 Windows Embedded Standard 2009

(1) Performance models only.

(2) The CompactFlash card must be inserted in the bootable slot before power is applied.

(3) Not available on 1500P and 1700P display computers with stainless steel bezel.

Table 3 - Display Specifications

Attribute	6181F, 6181P
Display	Active Matrix Color TFT
Touch screen (optional)	Resistive antiglare
Display size (diagonal) 1200P 1500P 1700P	308 mm (12.1 in.) 381 mm (15 in.) 432 mm (17 in.)
Display area (WxH) 1200P 1500P 1700P	246 x 185 mm (9.7 x 7.3 in.) 305 x 229 mm (12 x 9 in.) 338 x 270 mm (13.3 x 10.7 in.)
Native resolution 1200P 1500P 1700P	800 x 600, 256K colors 1024 x 768, 16.7M colors 1280 x 1024, 16.7M colors
Viewing angle Horizontal Vertical	60° 40°
Response time	15 ms (typical)

Table 4 - Power Specifications

Attribute	6181F, 6181P
Performance and non-display, AC Input voltage Line frequency Power consumption	100...240V AC autoranging 47...63 Hz 110VA (0.95 A @ 100V rms, 0.46 A @ 240V rms)
Performance and non-display, DC Input voltage Power consumption	18...32V DC 95 W (5.28 A @ 18V, 2.97 A @ 32V)
Standard models, AC Input voltage Line frequency Power consumption	100...240V AC autoranging 47...63 Hz 100VA (1.0 A @ 100V rms, 0.42 A @ 240V rms)
Standard models, DC Input voltage ⁽¹⁾ Power consumption	20V DC 65 W (3.25 A @ 20V)
Heat dissipation ⁽²⁾	65W (222 BTU/h)

(1) Power adapter required.

(2) Add-in cards and peripherals are not included in the heat dissipation value. Calculate heat dissipation separately for installed add-in cards and peripherals.

Table 5 - Environmental Specifications

Attribute	6181F, 6181P
Weight, approx	
Non-display	7.7 kg (17.0 lb)
1200P Performance	9.5 kg (20.9 lb)
1200P Standard	7.85 kg (17.31 lb)
1500P Performance	10.7 kg (23.6 lb)
1500P Performance w/stainless steel bezel	11.9 kg (26.2 lb)
1500P Standard	9.0 kg (19.8 lb)
1700P Performance	12.6 kg (27.8 lb)
1700P Performance w/stainless steel bezel	14.5 kg (32.1 lb)
1700P Standard	11.0 kg (24.3 lb)
Dimensions, overall (HxWxD), approx	
Non-display	251 x 353 x 108 mm (9.88 x 13.90 x 4.25 in.)
1200P Performance	279 x 349 x 124 mm (10.98 x 13.74 x 4.90 in.)
1200P Standard	279 x 349 x 99 mm (10.98 x 13.74 x 3.91 in.)
1500P Performance	309 x 410 x 100 mm (12.16 x 16.14 x 3.94 in.)
1500P Standard	309 x 410 x 95 mm (12.16 x 16.14 x 3.74 in.)
1700P Performance	356 x 452 x 100 mm (14.01 x 17.80 x 3.94 in.)
1700P Standard	356 x 452 x 95 mm (14.01 x 17.80 x 3.74 in.)
Panel cutout dimensions (HxW)	
1200P	254 x 324 mm (10.00 x 12.76 in.)
1500P	285 x 386.6 mm (11.24 x 15.22 in.)
1700P	329.5 x 424 mm (12.97 x 16.69 in.)
Enclosure Ratings (for display models only) ⁽¹⁾	
Performance	NEMA Type 1 NEMA Type 12 NEMA Type 4 IEC IP66
Performance w/stainless steel bezel	NEMA Type 1 NEMA Type 12 NEMA Type 4 NEMA Type 4X IEC IP66
Standard	NEMA Type 1 NEMA Type 12 NEMA Type 4 IEC IP66
Temperature, operating ⁽²⁾	
All Standard models	0...50 °C (32...122 °F)
Non-display	0...55 °C (32...131 °F)
1200P and 1500P Performance	0...55 °C (32...131 °F)
1700P Performance	0...50 °C (32...122 °F)
Temperature, nonoperating	-20...60 °C (-4...140 °F)
Relative humidity	10...90% without condensation
Altitude, operating	2,000 m (6,561 ft)
Altitude, nonoperating	12,000 m (40,000 ft)
Shock, operating ⁽²⁾⁽³⁾	15 g (1/2 sine, 11ms)
Shock, nonoperating ⁽²⁾⁽³⁾	30 g (1/2 sine, 11 ms)
Vibration, operating ⁽²⁾⁽³⁾	
6181P	0.006 in. p-p 10...57 Hz; 1 g peak (57...640 Hz)
6181F	0.012 in p-p 10...57 Hz; 2 g peak (57...640 Hz)
Vibration, nonoperating ⁽²⁾⁽³⁾	0.012 in p-p 10...57 Hz; 2 g peak (57...640 Hz)

(1) Type ratings apply only when computer is properly mounted on a flush surface of an equivalent type enclosure.

(2) The optical disc drive (ODD) is considered a maintenance device. Therefore, do not operate computers with ODDs in temperatures above 45 °C (113 °F) or in environments with the shock and vibration levels listed.

(3) Applies only to panel mounted display computers and wall mounted non-display computers.

Table 6 - Certifications⁽¹⁾

Attribute	6181F, 6181P
c-UL-us	UL/c-UL Listed per UL 60950-1 and CSA C22.2 No. 60950-1-03
CE	Marked for all applicable directives: EMC 2004/108/EC LVD 2006/95/EC
C-Tick	Australian Radiocommunications Act, compliant with: AS/NZS CISPR 11; Industrial Emissions
RoHS	China RoHS Turkey RoHS (EEE Yönetmeliğine Uygunudur. In Conformity with the EEE Regulation)

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

Use a Touchscreen

Touchscreen Controller

Computers with a touchscreen are shipped with the touchscreen controller installed and connected. The touchscreen controller connects internally to a USB port. The touchscreen is factory configured with the proper USB and touchscreen driver settings, so no user configuration is required.

Driver Software

The touchscreen driver is already loaded on the computer. The driver software is also available for download at the Rockwell Automation Product Compatibility and Download Center (PCDC) at <http://www.rockwellautomation.com/support/pcdc>.

TIP If you must reinstall the touchscreen driver, the touchscreen utility automatically detects the USB port used by the touchscreen controller.

Resistive Touchscreen Technology

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



ATTENTION: Do not use sharp instruments to activate the touchscreen. Scratching the surface of the touchscreen can damage the display.

Calibrate the Touchscreen

The touchscreen supplied with the computer is factory installed and calibrated.

Perform the following steps to recalibrate the touchscreen.

1. Run the touchscreen configuration utility through the Programs menu of the operating system.
2. Start the calibration routine offered within the utility.
3. Follow the calibration instructions on the touchscreen.

Notes:

Upgrade to a New BIOS

BIOS Upgrade Procedure

Sometimes a new BIOS is released to enhance the performance of your computer or to correct a defect. In such cases, you can download BIOS upgrades at the Rockwell Automation Product Compatibility and Download Center (PCDC) website at <http://www.rockwellautomation.com/support/pcdc>. CD and floppy disk drive upgrades are available.

Upgrade the BIOS from a CD Drive

Follow these steps to upgrade the BIOS in your computer from an external CD drive.

1. Attach the following external peripherals to your computer:
 - Display (for non-display models)
 - Keyboard
 - CD drive (for standard models)
2. Access the Rockwell Automation PCDC website at <http://www.rockwellautomation.com/support/pcdc>.
3. Click the Get Downloads tab (A).
4. Click the Find Product Downloads link (B).



5. Use the Product Search criteria to find your specific computer model.
6. Follow the instructions on the PCDC site to find your BIOS.

TIP

You must be registered with the Rockwell Automation PCDC website to download files.

You must accept a User Agreement before files can be downloaded.

7. After the download completes, click Open to access the folder where ZIP files were downloaded.



8. Open the downloaded file to locate and extract the ISO (*.iso) file.
9. Write the ISO file to a blank CD/CD-RW with the included CD Write utility (or one of your choice).
10. With the BIOS upgrade CD in the CD drive, restart the computer.
11. During POST, press F2 to access the BIOS set-up utility.
 - TIP** Use the arrow keys on a keyboard to navigate between BIOS menus and menu selections.
12. Navigate through the BIOS set-up utility to where you can select the CD drive as your boot source.
13. Save your change and exit the BIOS set-up utility.
14. Follow the directions that appear on the display to properly upgrade the BIOS.

Upgrade the BIOS from an External Floppy Disk Drive

Follow these steps to upgrade the BIOS in your computer from an external floppy disk drive.

1. Attach the following external peripherals to your computer:
 - Display (for non-display models)
 - Keyboard
 - Floppy disk drive
2. Follow [step 2](#) through [step 7](#) in [Upgrade the BIOS from a CD Drive](#) starting on [page 69](#) before proceeding to [step 3](#) in this section.
3. Open the downloaded file to locate and extract the executable (*.exe) file.
4. Run the extracted executable file and then write that file to a floppy disk inserted in the external floppy disk drive.

This creates a BIOS upgrade floppy disk that you can use to start your computer.

5. With the BIOS upgrade disk in the external floppy disk drive, restart the computer.
6. During POST, press F2 to access the BIOS set-up utility.

TIP Use the arrow keys on a keyboard to navigate between BIOS menus and menu selections.

7. Navigate through the BIOS set-up utility to where you can select the floppy disk drive as your boot source.
8. Save your change and exit the BIOS set-up utility.
9. Follow the directions that appear on the display to properly upgrade the BIOS.

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Rockwell Automation Support

Rockwell Automation provides technical information on the Web to assist you in using its products.

At <http://www.rockwellautomation.com/support> you can find technical and application notes, sample code, and links to software service packs. You can also visit our Support Center at <https://rockwellautomation.custhelp.com/> for software updates, support chats and forums, technical information, FAQs, and to sign up for product notification updates.

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

Installation Assistance

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

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

New Product Satisfaction Return

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

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

Documentation Feedback

Your comments will help us serve your documentation needs better. If you have any suggestions on how to improve this document, complete this form, publication [RA-DU002](#), available at <http://www.rockwellautomation.com/literature/>.

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