Integrated Display Computers

Catalog Numbers 6181P, 6181F

About This Publication

This publication provides procedures on how to install the integrated display computers. It also describes how to make peripheral, power, and network connections. For information on operating and troubleshooting, refer to the user manual listed under Additional Resources.

Important User Information

Solid state equipment has operational characteristics differing from those of electromechanical equipment. Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls (publication SGI-1.1 available from your local Rockwell Automation sales office or online at http://literature.rockwellautomation.com) describes some important differences between solid state equipment and hard-wired electromechanical devices. Because of this difference, and also because of the wide variety of uses for solid state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.

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.
IMPORTANT	Identifies information that is critical for successful application and understanding of the product.
ATTENTION ⚠	Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you to identify a hazard, avoid a hazard, and recognize the consequences.
SHOCK HAZARD ⚡	Labels may be located 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 located on or inside the equipment, for example, a drive or motor, to alert people that surfaces may reach dangerous temperatures.

Environment and Enclosure Information

Review the information on enclosures and environments before installing the product.

ATTENTION	Environment and Enclosure
	This equipment is intended for use in a Pollution Degree 2 industrial environment, in overvoltage Category II applications (as defined in IEC publication 60664-1), at altitudes up to 2000 meters without derating.

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

This equipment is supplied as open type equipment. UL Listed equipment need not be mounted inside another enclosure if NEMA Type, UL, or IEC ratings are not required, but the mounting method must limit the tilt of the product to +/- 30 degrees from vertical. Examples include articulated arm, table-top stand, wall mount or other means having sufficient mechanical stability and which is secured to the mounting surface. Units that are not rack-mount ship with a gasketed bezel to meet specified NEMA Type, UL, and IEC ratings only when mounted in an enclosure with equivalent ratings. Subsequent sections of this publication may contain additional information regarding specific enclosure type ratings required to comply with certain product safety certifications.

In addition to this publication, see:

- Industrial Automation Wiring and Grounding Guidelines, Allen-Bradley publication 1770-4.1, for additional installation requirements.

- NEMA Standards publication 250 and IEC publication 60529, as applicable, for explanations of the degrees of protection provided by different types of enclosure.

European Union Directive Compliance

This product meets the European Union Directive requirements when installed within the European Union or EEA regions and has the CE mark. A copy of the Declaration of Conformity is available at the Rockwell Automation / Allen-Bradley website: www.ab.com/certification

ATTENTION ⚠	This product is intended to operate in an industrial or control room environment, which utilizes some form of power isolation from the public low voltage mains. Some computer configurations may not 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 watts of AC power directly from the public mains.

ATTENTION ⚠	To comply with EN 55024 and EN 61000-6-2, the Ethernet port LAN cable must be less than 30 m (98.42 ft) and used only indoors, not exit the building at any point. All other I/O cables must be less than 3 m (9.842 ft) and used only indoors.

Operating Systems

The computers are shipped with one of these operating systems:

- Windows 2000 Professional, Service Pack 4 with Update Rollup 1
- Windows XP Professional, Service Pack 2b

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

For your convenience, 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 rotating-media hard drives include a recovery partition on the system drive containing the original factory image. You can use the supplied System Accessories/Cloning CD to restore the operating system from the recovery partition, create a new recovery image, and create bootable external recovery media.

Refer to the Cloning Utility documentation, publication 6000-TD001, for instructions. You can view or download publications at http:\\literature.rockwellautomation.com

Computers with solid state drives have been customized to accommodate the unique properties of the solid state drive. Some of the pre-installed customizations include:

- No paging file
- System restore set to zero and disabled
- DLLCACHE directory emptied

Computers with solid state hard drives do not contain a recovery partition. If additional drive space is required, copy the I386 directory to external media; then delete the I386 directory from C:\I386, which is approximately 400 MB.

To obtain the original factory image on bootable external recovery media, which also includes the I386 source directory, contact your local technical support center.

Multilingual User Interface CD Pack

The Microsoft Multilingual User Interface (MUI) CD Pack contains a collection of different language sets that can be installed into the operating system. MUI packs are available for all Windows XP operating systems and provide a localized start menu and system icons support.

The instructions for installing MUI languages on your computer are supplied with the MUI CD Pack.

Before You Begin

Before unpacking the product, 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 product for repair or transport it to another location. Use both the inner and outer packing cartons to ensure adequate protection for a unit returned for service.

Parts List

The computers are shipped with these items.

- System Accessories/Cloning CD
- Support CD
- Microsoft Multilingual User Interface (MUI) CD Pack
  This CD pack is not included with computers containing the Windows 2000 operating system.
- Mounting clips, except for the 1200P Non-display computer
- AC power cord, when appropriate
- PS/2 Y-adapter cable for keyboard and mouse connection (supplied with all 6181P Series A and 6181H 1500P Series B computers)
- Installation guide and cutout template

Installation Guidelines

Follow these guidelines to make sure your product provides safe and reliable service.

- The installation site must have sufficient power.

ATTENTION	To maintain an electrically safe installation, the product must be connected to earth ground when installed. Follow the appropriate grounding requirements associated with your specific product type as described in this installation document.

- The enclosure must have sufficient space around air inlets and outlets to provide the circulation necessary for cooling. Never allow air passages to become obstructed.

- The ambient air temperature must not exceed the maximum operating temperature. Consider heat produced by other devices in the enclosure. You may need a user-supplied fan, heat exchanger, or air conditioner to meet this condition.

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

- The humidity of the ambient air must not exceed specified limits.
- In dry environments, static charges build up readily. Proper grounding of the equipment through the AC power cord helps to reduce static discharges, which may cause shocks and damage electronic components.
- The enclosure or cover must remain in place at all times during operation. The cover provides protection against high voltages inside the product and inhibits radio-frequency emissions that might interfere with other equipment.

Install the Computer

There are various ways you can install the computer.

- Panel mount
- Bench or tabletop

Review each mounting type and product dimensions before installation.

Panel Mounting

Before installing the computer in a panel, review the following information.

- Required tools
- Panel mounting guidelines
- Panel cutout dimensions
- Product dimensions

Required Tools

The following tools are required for product installation.

- Panel cutout tools
- #2 Phillips screwdriver

Panel Mounting Guidelines

Observe these guidelines when installing the unit in a panel.

- Confirm that there is adequate space within the panel enclosure.
- Cut supporting panels to specifications before installation. Take precautions so that metal cuttings do not enter components already installed in panel.
- Supporting panels must be at least 14 gauge to ensure proper sealing against water and dust and to provide proper support. The mounting hardware supplied accommodates panels up to 6.25 mm (0.25 in) thick.

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

Panel Cutout Dimensions

Computer Model	**Cutout Dimensions (H x W)**
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 Computer in a Panel

Follow these steps to mount the monitor in a panel.

1. Remove power from the panel.

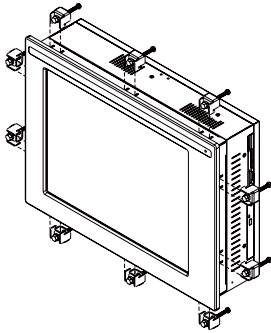| **ATTENTION**	Remove all electrical power from the panel before making cutout.
	Make sure the area around the panel cutout is clear.
	Failure to follow these warnings may result in personal injury or damage to the panel components.

2. Cut an opening in the panel using the appropriate panel cutout dimensions.

3. Make sure the sealing gasket is properly positioned on the computer.
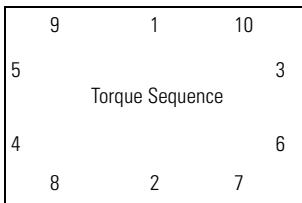
   This gasket forms a compression type seal. Do not use sealing compounds.

4. Place the computer in the panel cutout.

5. Slide the mounting clips into the slots on the top, bottom and sides of the computer.

6. Gradually tighten the clips one at a time around the bezel using the specified sequence.

   The sequence begins with the center clips and continues to the corner clips. Repeat this process at least three times until the clips are hand-tight and the gasket is compressed uniformly against the panel.

7. Tighten mounting clips to a torque of 1.4 Nm (12 lb•in) using the sequence in the previous step.

   Do not over-tighten.

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 product or other equipment within the enclosure because of improper installation.

Bench or Tabletop Mounting

You can mount the 1500P or 1700P computer on a bench or tabletop using an optional adapter (6189V-MBA). The back of the computer has four mounting points that are VESA 100 mm standard.

Mounting Guidelines

Observe these guidelines when installing the computer on an arm.

- The mounting surface must be strong enough to support both the computer and the mounting hardware.
- The mounting arm must be strong enough to support the computer. The arm must meet VESA FPMPMI 100 mm standards.
- The mounting location must provide clearance for mounting and positioning the adjustable unit and routing cables.
- Per UL Listing restrictions, the product must be mounted with a tilt of +/- 30° or less from vertical.
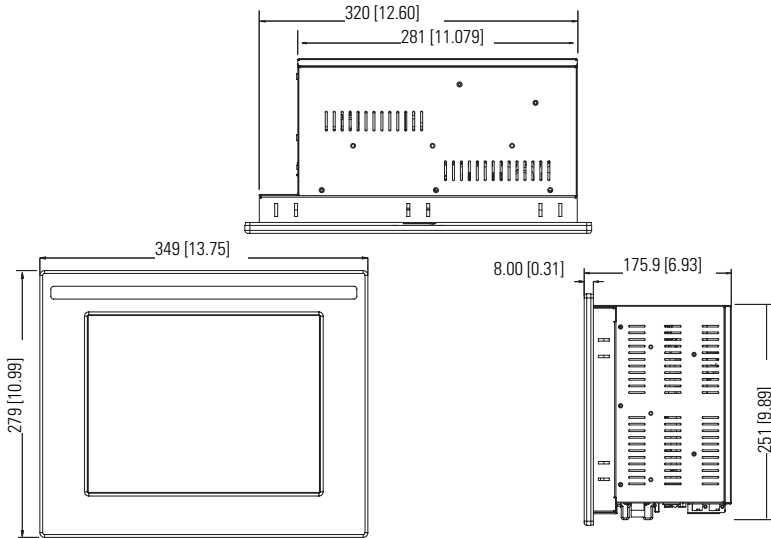
Mount the Computer on a Bench or Tabletop

1. Mount the arm to the benchtop or tabletop using screws, bolts, or clamps so the computer cannot tip.

2. Place the computer over the arm, and insert four M4 x 0.7 screws through the arm brackets and into the back cover of the computer.
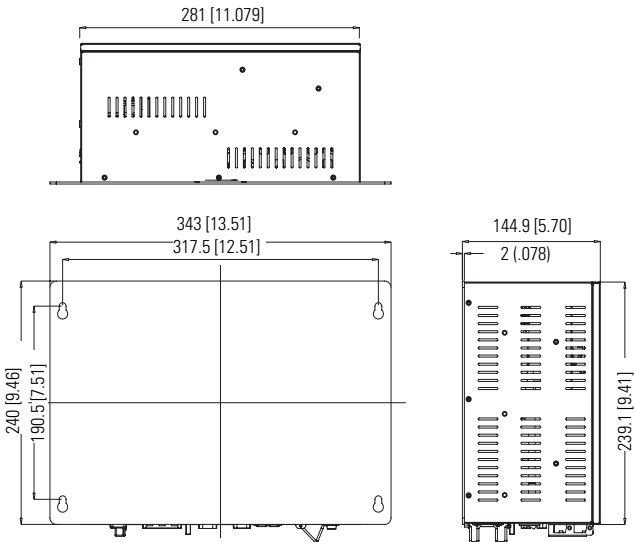
3. Tighten the screws.

Product Dimensions

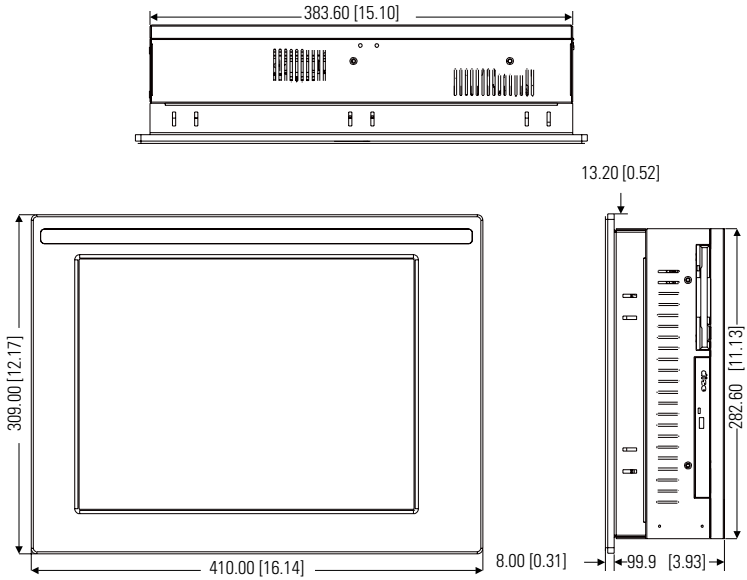Product dimensions for each computer model are given in mm (in).
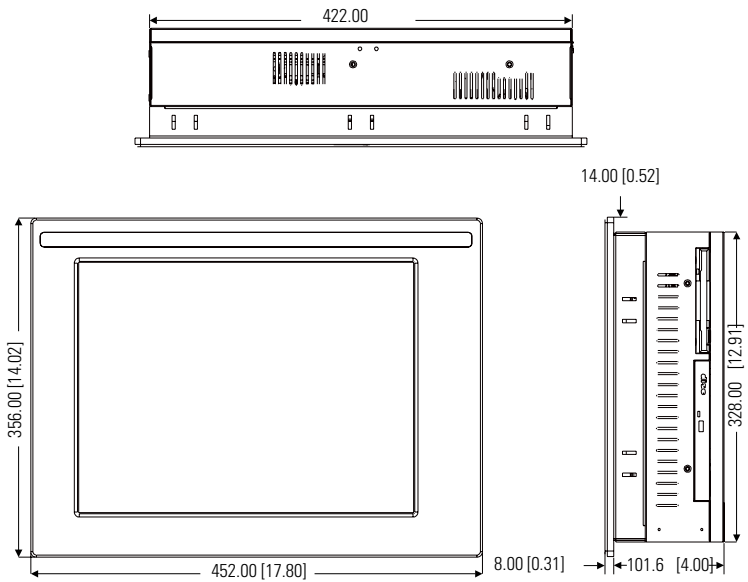
1200P Integrated Display Computer

1200P Non-display Computer

1500P Integrated Display Computer
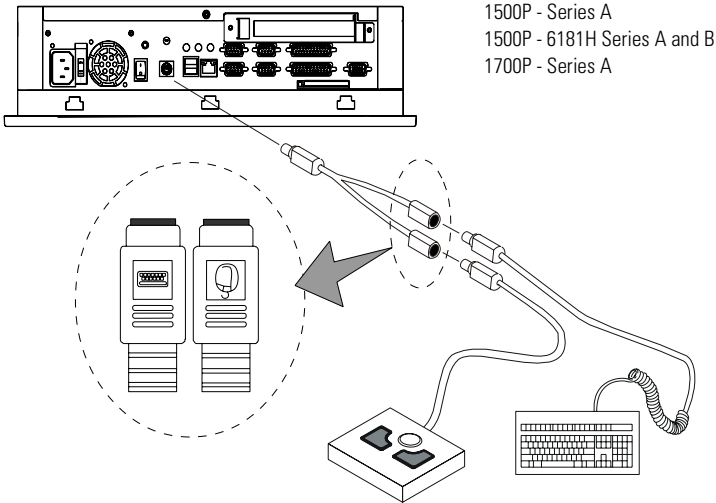
383.60 [15.10]

13.20 [0.52]

309.00 [12.17]

282.60 [11.13]

410.00 [16.14]   8.00 [0.31]   99.9 [3.93]

1700P Integrated Display Computer

422.00

14.00 [0.52]

356.00 [14.02]

328.00 [12.91]

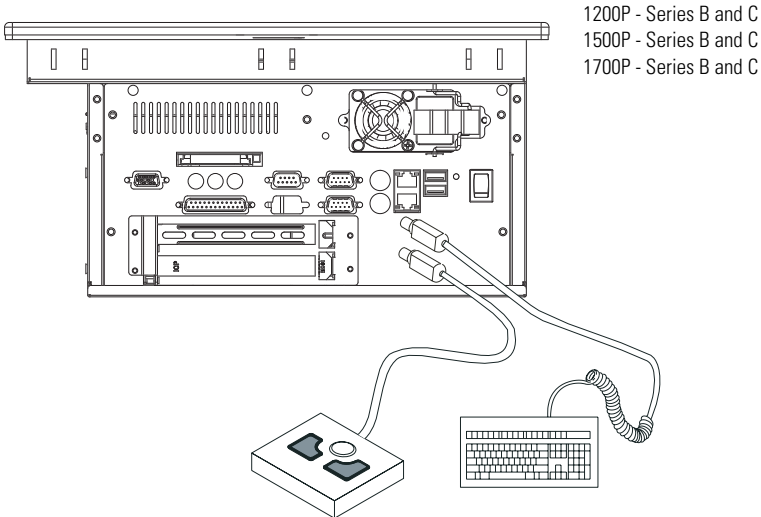452.00 [17.80]   8.00 [0.31]   101.6 [4.00]

Connect the Keyboard and Mouse

You can connect a keyboard to the PS/2 port on the bottom of the computer. You can connect both a keyboard and mouse to this port using the Y-adapter cable that ships with the 6181P Series A computers.
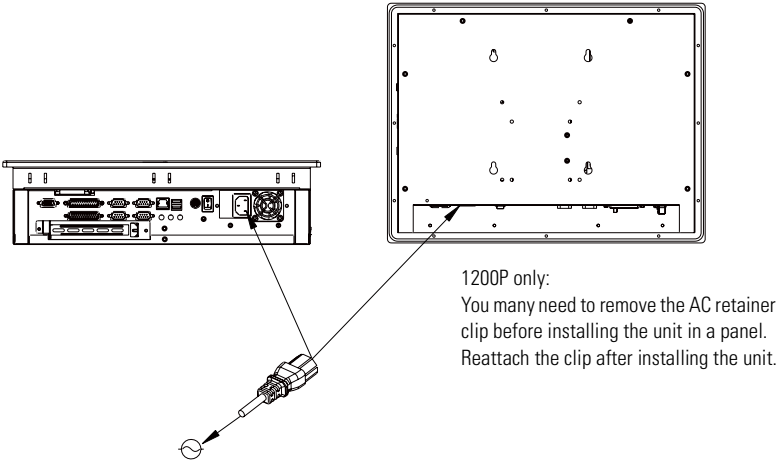

1500P - Series A
1500P - 6181H Series A and B
1700P - Series A

The 6181P Series B and later computers have separate PS/2 ports for the keyboard and mouse.

1200P - Series B and C
1500P - Series B and C
1700P - Series B and C

Connect AC Power

A standard IEC 320 power cord provides power to the computer. The power supply input accepts 120/240V AC. The power supply is autoswitching.

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

1200P only:
You many need to remove the AC retainer clip before installing the unit in a panel. Reattach the clip after installing the unit.

⚠ ATTENTION	Connect the AC power cord to a power source with an earth ground to prevent electrical shock. Failure to follow this warning could result in electrical shock.
	The computer circuit should have its own disconnect. Use an Uninterruptible Power Source (UPS) to protect against unexpected power failure or power surges.
	Always shut down the operating system before removing power to minimize performance degradation and operating system failures.

Connect DC Power

The 1200P computers with an integrated 24V DC power supply support these electrical ratings:
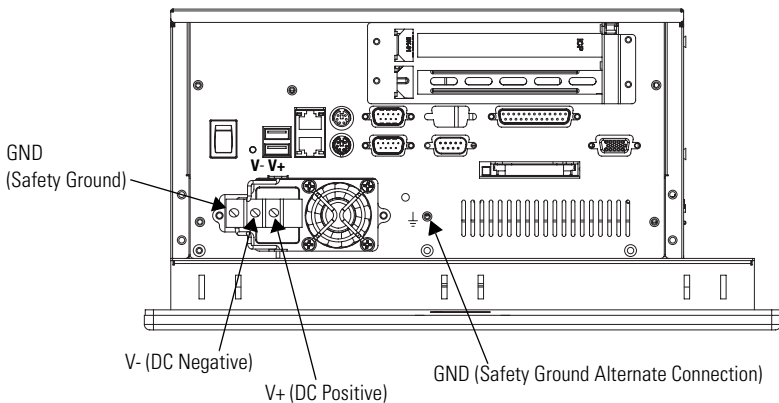
- 18 to 32V DC (24V DC nominal)
- 6.3 A at 24V DC

The power supply is internally protected against reverse polarity.

ATTENTION ⚠	Use a Class 2/SELV (Safety Extra-Low Voltage) isolated and ungrounded power supply as input power to the workstation. 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.

1. Secure the DC power wires to the terminal block screws.

2. Secure the ground wire to the GND terminal screw.

3. Apply 24V DC power to the terminal.

GND (Safety Ground)

V- V+

V- (DC Negative)

V+ (DC Positive)

GND (Safety Ground Alternate Connection)

ATTENTION ⚠	Connect the product to earth ground using a 1.31 mm2 (16 AWG) or larger external wire. The ground wire should have green insulation with a yellow stripe for easy identification.

Connect to the Network

The computer connects to the Ethernet network 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 radiated or conducted high-frequency noise.
	Proper cable routing and power conditioning is required to ensure reliable Ethernet communication in industrial environments. Rockwell Automation recommends that you route all Ethernet cabling through dedicated metal conduits. Installing ferrite bead filters at the cable ends may also improve reliability.

Replace the Battery

The computer contains a lithium battery to maintain CMOS settings and the real-time clock. The battery is in a battery holder on the computer's CPU board. Replace this battery as needed with a Panasonic battery, part number CR2032, or equivalent.

WARNING ⚠	To avoid the danger of explosion, only replace the battery with part number CR2032 or a recommended equivalent. Dispose of used batteries according to the manufacturer's instructions.

Backlight Disposal

ATTENTION ⚠	The backlight assembly in this unit contains mercury. At the end of its life, this equipment should be collected separately from any unsorted municipal waste.

Ship or Transport the Product

If you need to ship your product via common carrier or otherwise transport it to another location, you must first uninstall the product and place it in its original packing material

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

Specifications

6181P and 6181F Integrated Display Computers

Specification	Value
Display description	Active Matrix Color TFT
Touchscreen, optional	Resistive antiglare
Display size 1200P 1500P 1700P	12.1 in 15.0 in 17.0 in
Display area (W x H) 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)
Resolution, native 1200P 1500P 1700P	800 x 600, 256K colors 1024 x 768, 256K colors 1280 X 1024, 16.7M colors
Response time	15 ms (typical)

Electrical Specifications

Specification	Value
Input voltage, ac	90…264V ac, autoswitching
Line frequency	47…63 Hz
Power consumption, AC 1200P, 1500P, 1700P 1200P (6181P-2X Non-display)	150 VA (1.5 A @ 100 V rms, 0.63 A @ 240 V rms) 140 VA (1.4 A @ 100 V rms, 0.58 A @ 240 V rms)
Input voltage, DC[1] 1200P and 1200P (6181P-2X Non-display)	18…32 V dc
Power consumption, DC[1] 1200P 1200P (6181P-2X Non-display)	150 W 140 W

[1]   Applies to 6181P computers with rotating media only.

Mechanical Specifications

Specification	Value
Weight 1200P 1500P 1700P	9.2 kg (21 lb) 10 kg (23 lb) 12.6 kg (28 lb)
Dimensions (H x W x D), approx. 1200P 1500P 1700P	279 x 349 x 176 mm (10.99 x 13.75 x 6.93 in) 309 x 410 x 109 mm (12.17 x 16.14 x 4.29 in) 356 x 452 x 110 mm (14.02 x 17.80 x 4.32 in)
Cutout dimensions (H x W), approx. 1200P 1500P 1700P	254 x 324 mm (10.00 x 12.76 in) 285 x 386.6 mm (11.24 x 15.22 in) 329.5 x 424 mm (12.97 x 16.69 in)

Environmental Specifications

Specification	Value
Temperature, operating	0…50 °C (32…122 °F)
Temperature, storage	-20…60 °C (-4 to 140 °F)
Relative humidity	10%…90% without condensation
Shock, operating	15 g (1/2 sine, 11 ms) [1] [2]
Shock, nonoperating	30 g (1/2 sine, 11 ms) [1]
Vibration, operating Computers, rotating hard drive Computers with solid state drive	1.0 g peak (10…500 Hz) [1] [2] 1.5 g peak (10…500 Hz) [1] [2]
Vibration, nonoperating	2.0 g peak (10…500 Hz) [1]
Enclosure ratings	NEMA Type 1, 12, 4, IEC IP66 NEMA Type 4X for stainless steel units only

[1] Applies to panel-mounted products only.

[2] The floppy drive and optical disc drive are considered maintenance devices. You should not operate computers with these devices in environments with the shock and vibration levels listed.

Certification [1]	
c-UL-us	UL 60950 recognized component, c-UL 950 recognized component, or UL/c-UL listed when marked
CE	Marked for all applicable directives
RoHS compliant	
C-Tick	Australian Radiocommunications Act, compliant with: AS/NZS CISPR 11; Industrial Emissions

[1] See http://ab.com for declarations of conformity, certificates, and other certification details.

Additional Resources

For additional information on the 6181P and 6181F integrated display computers, refer to the following publications.

Resource	Description
Integrated Display Computers User Manual, publication 6181P-UM001	Gives an overview of the system and provides procedures to install the computer, set up computer connections, operate the computer, and troubleshoot the computer.
Cloning Utility Technical Data, publication 6000-TD001	Provides information on how to create and restore a backup image of your computer's hard drive.

These publications are on the System Accessories/Cloning CD, which are shipped with your computer. You can download electronic versions of these publications from the Rockwell Automation website http://literature.rockwellautomation.com.