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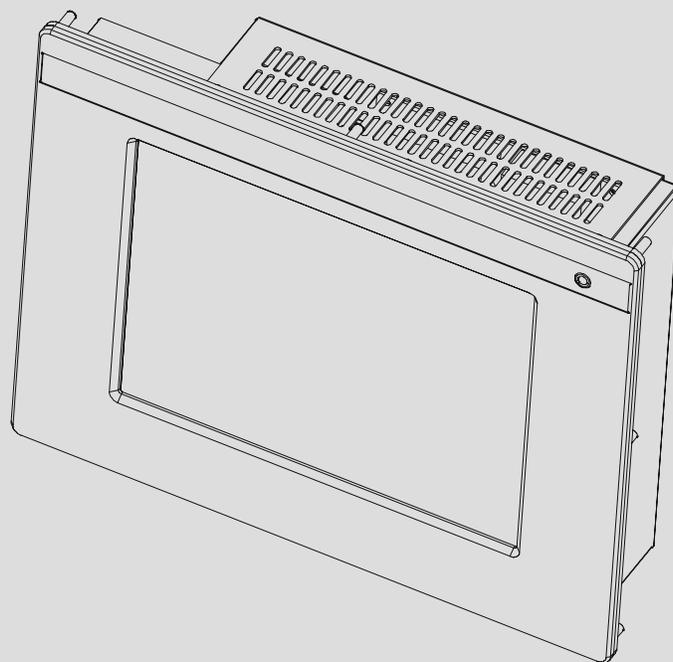
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# Industrial 10.4" Flat Panel Monitor



(Bulletin 6185-A)

*Installation and User Manual*



**Rockwell  
Automation**

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### 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) describes some important differences between solid state equipment and hard-wired electromechanical devices. Because of this difference, and 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 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 cannot assume responsibility or liability for actual use based on the examples and diagrams.

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

Reproduction of the contents of this manual, in whole or in part, without written permission of Rockwell Automation is prohibited.

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



**ATTENTION:** Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss.

**Important:** Identifies information that is especially important for successful application and understanding of the product.

# Industrial 10.4" Flat Panel Monitor

## Description

The Bulletin 6185-A 10.4" Industrial Flat Panel Monitor offers the following capabilities:

- Bright (300 nits) Active Matrix-TFT 640 x 480 display
- Displays video formats from 640 x 400 to 640 x 480 (non-interlaced)
- 140°H viewing angle
- NEMA 4/12 or 4X panel
- Touchscreen options
- AC (85-264V) or DC (24V) inputs
- Plug and Play



**ATTENTION:** The equipment described in this document generates, uses, and emits radio frequency energy. The equipment has been tested and found to comply with FCC Rules, Part 15, subpart J, for Class A computing devices.

The use of non-shielded interface or power cords with Allen-Bradley industrial monitors is prohibited.

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## Available Options

The following options are available to the 6185-A Flat Panel Monitor:

- AC and DC power options
- NEMA 4/12 or 4X (stainless steel) front panel options
- Touchscreen option
- Video cable options
- Power cord options

## Package Contents

The monitor shipping carton contains the following items:

- Monitor
- Monitor adjustment utility on floppy diskette
- Package of mounting hardware
- AC power cord (optional)
- Video cable (optional)
- This user manual

A 6185-A Flat Panel Monitor with a touchscreen option is shipped with these additional items:

- Supporting software and manuals
- RS-232 serial extension cable (optional)

## Unpacking the Unit

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

**Note:** Make sure you keep the original packaging for the monitor in case you need to return the monitor for repair.

## Installing the 6185-A Flat Panel Monitor

This section describes how to install the monitor.

### Tools Needed

In addition to the tools required to make the cutout, you will need the following tools:

- 3/8" Deep Well Socket
- 1/4" Drive Extension - 6" or longer
- 1/4" Drive Ratchet or 1/4" Drive Torque Ratchet

### Before Installation

When installing the unit, it is important to consider environmental factors at the site that could affect performance as well as possible effects from equipment operation on personnel and nearby equipment.

Following the guidelines will help ensure that the monitor will provide safe and reliable service.

- Ensure that sufficient **power** is available from a single phase AC outlet at the site.
- Ensure that sufficient **space** is available around air inlets and outlets to provide the circulation necessary for cooling. Never allow air passages to become obstructed.
- Ensure that the **ambient air temperature** will not exceed the specified maximum temperature. A user supplied fan, heat exchanger or air conditioner may be required to meet this condition in some installations.
- Leave the monitor's **enclosure or cover** in place at all times during operation. The cover affords protection against high voltages inside the monitor and inhibits radio-frequency emissions that might interfere with other equipment.
- The Federal Communications Commission has prepared a pamphlet that addresses the problem of **radio frequency interference** to radio and television reception, which should be consulted in case of problems with such interference. This publication, "How to Identify and Resolve Radio/TV Interference Problems" (Stock #004-000-00345-4) may be obtained from the US. Government Printing Office, Washington, DC 20402.

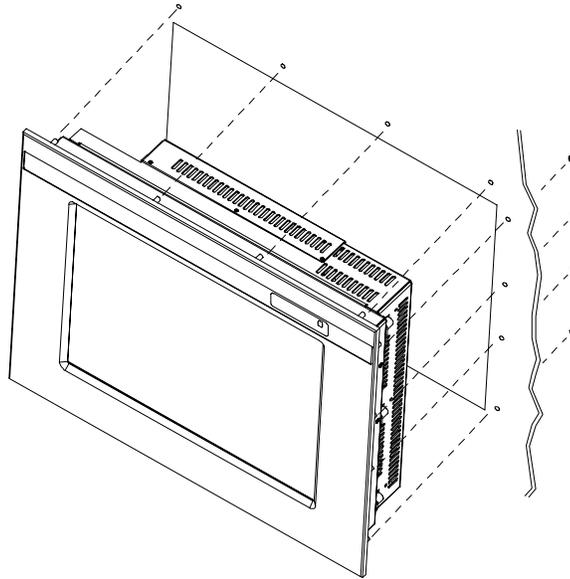
- Determine the minimum and maximum ambient **humidity** for the monitor by consulting the specification sheets at the back of this manual. Ensure that the humidity of the ambient air will not exceed these limits. In very dry environments, static charges build up very readily. Proper grounding of the equipment through the AC power cord can help reduce the likelihood of static discharges, which may cause shocks and damage electronic components.

## Panel Mounting

When properly installed, the 6185-A Flat Panel Monitor is designed to provide protection against water and dust to NEMA 4 and NEMA 12 standards.

No slides or shelves are required because the 6185-A Flat Panel Monitor is designed to be supported by the panels in which it is installed.

**Figure 1**  
**Generic Panel Mount Diagram**



## Panel Mounting Guidelines

Observe the following precautions before installing the unit in a panel:

- Confirm that there is adequate space behind the panel. Remember to allow extra space (0.5 in. or 12.7 mm) for air circulation. A cabinet with a minimum depth of 3.3 in. (84 mm) is sufficient.
- Take precautions so that metal cuttings do not enter any components that are already installed in the panel.
- Supporting panels should 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 0.25 in. (6.35 mm) thick.

**Note:** Supporting panels must be cut and drilled to specifications prior to installation.



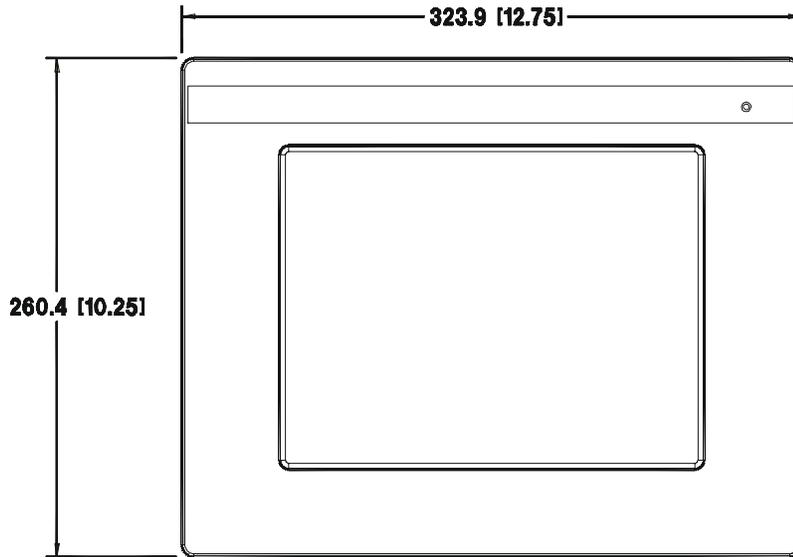
**ATTENTION:** Failure to follow these warnings may result in personal injury or damage to the panel components.

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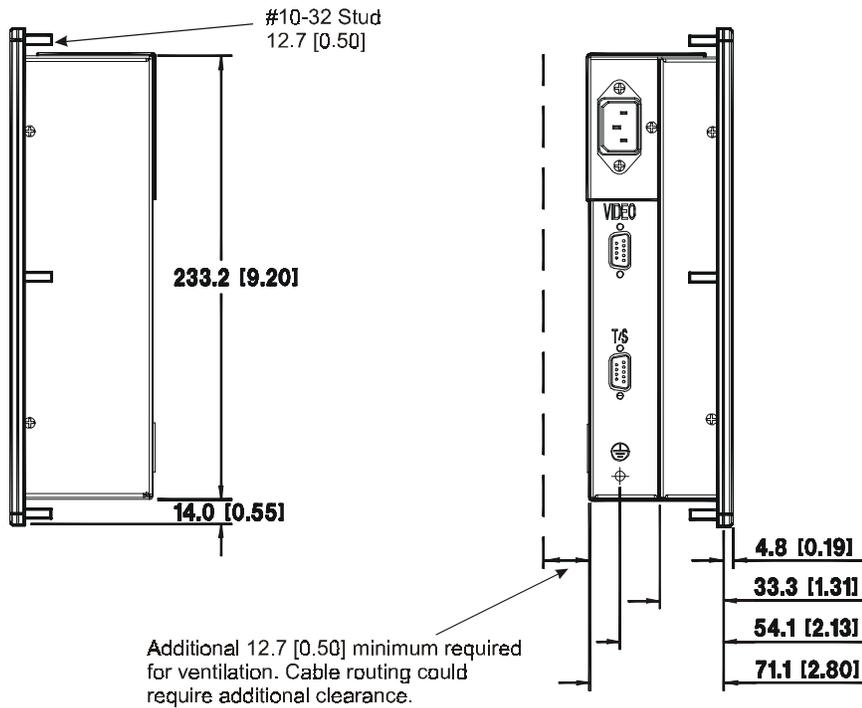
### Dimensions

This section provides diagrams you need to follow to install the unit.

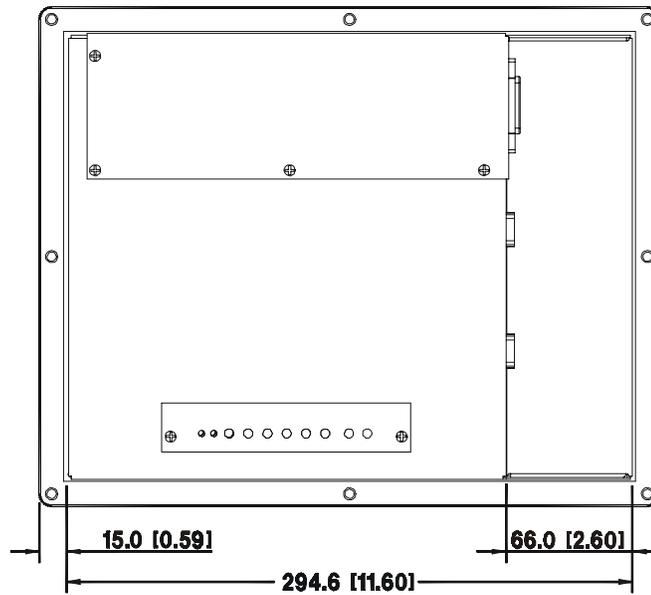
**Figure 2**  
**Dimensions (Front View)**



**Figure 3**  
**Dimensions (Side View)**



**Figure 4**  
**Dimensions (Back View)**

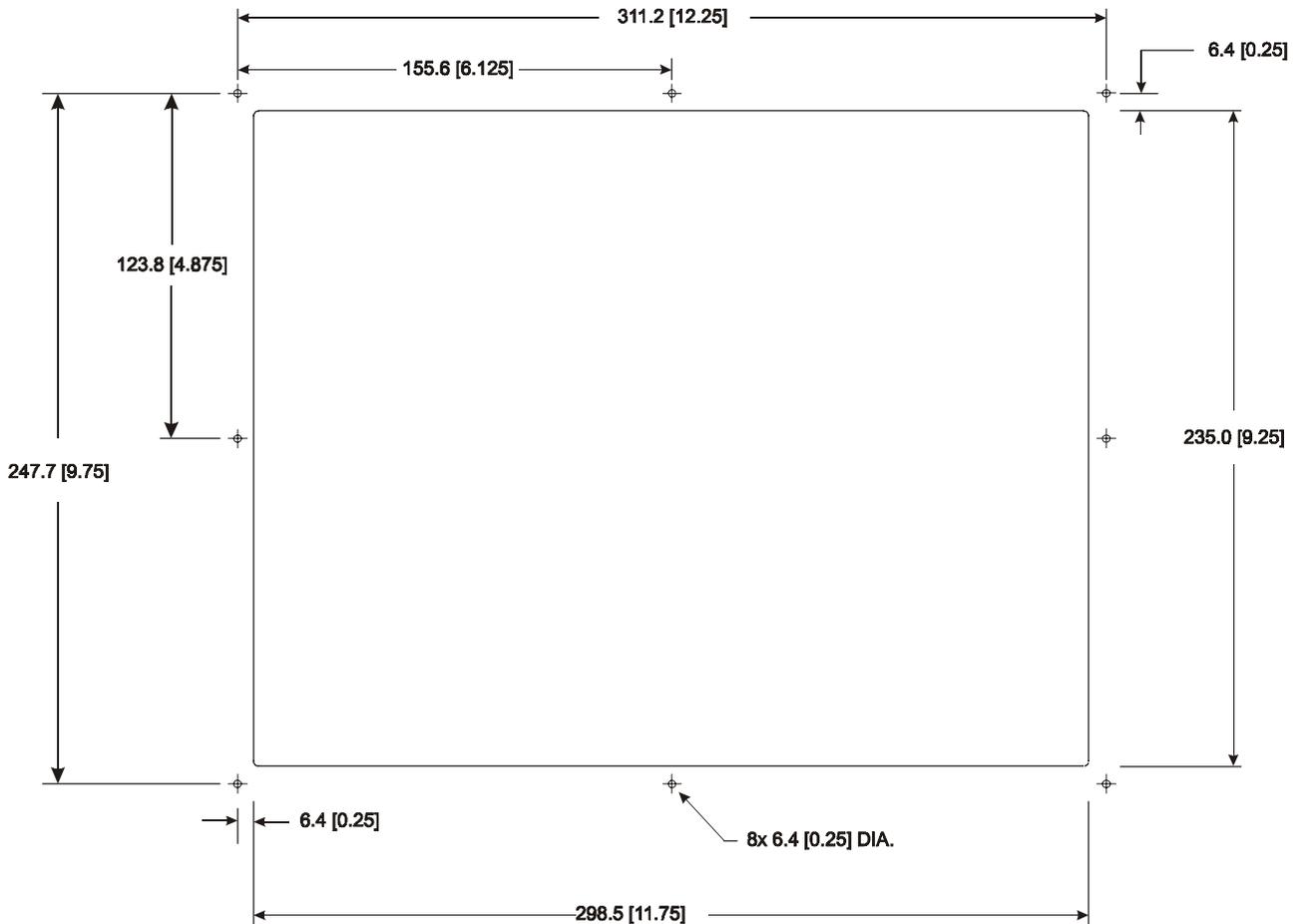


## Panel Mounting Procedure

1. Cut and drill the panel (refer to following figure). Units are in mm [inches].

**Note:** Use #10-32 or M5 self-locking nuts for mounting.

**Figure 5**  
**Panel Mounting Cutout**



2. If access to the side of the monitor is not available following installation, attach the power and video cables to the side of the monitor at this time.
3. Install the monitor in the prepared cutout. Refer to the figure on this page.
4. Install lock nuts and washers, supplied with the monitor, behind the holes running along the sides and top/bottom of the cutout in the panel.

- 
5. Tighten all mounting bolts evenly to a torque of 24 inch-pounds.



**ATTENTION:** Mounting nuts must be tightened to a torque of 24 inch-pounds to provide panel seal and avoid potential damage. Rockwell Automation assumes no responsibility for water or chemical damage to the monitor or other equipment within the enclosure due to improper installation.

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## Connecting the 6185-A Flat Panel Monitor

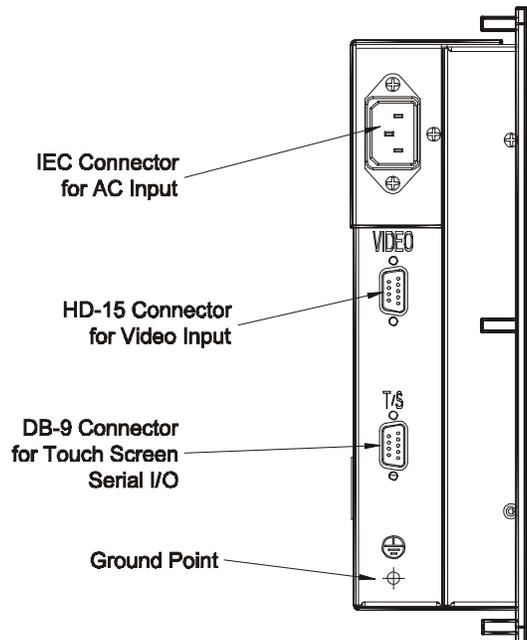
The side panel of the 6185-A Flat Panel Monitor has connectors for attaching cables to accomplish the following:

- Connecting to a host video source (HD-15 VGA connector)
- Connecting to a host touchscreen control port (DB-9 connector) (optional)
- Connecting to AC power (IEC connector) or DC power (terminal block)

**Note:** Some connectors on your monitor may differ from the following figure.

The following figure illustrates the standard configuration for the 6185-A Flat Panel Monitor.

**Figure 6**  
**Side Panel**



## Connecting the Video Source

The video connection to the host is made through a HD-15 (female) connector located on the side panel.

**Note:** For more information on using an HD-15 video cable to connect to the host computer, refer to Appendix B (Page 27).

### To establish a signal using the HD-15 connector:

1. Obtain a shielded, properly terminated video cable of length as short as possible. Longer cables (up to approximately 75 feet in some cases) may be used, provided they are properly constructed. Your package may include a six-foot video cable, if specified.
2. Connect one end of the cable to the female HD-15 video input connector on the side panel of the monitor.
3. Connect the other end to the output of any IBM-compatible VGA adapter or other video generator.

## Connecting the Touchscreen Interface

The serial touchscreen interface connection to the host is made through an RS-232 DB-9 (female) connector located on the side panel.

The optional touchscreen provides a high-resolution touch input system. Driver software included with the package allows the touchscreen to function with many popular DOS and Windows®-based industrial applications as a pointing device (mouse).

**Note:** Refer to the manual included with the touchscreen option and Appendix A of this manual (page 24) for additional details on the installation and operation of the touchscreen.

### To connect the touchscreen:

1. For units with the touchscreen option, make sure you have one of the optional serial cables.
2. Connect one end of the touchscreen serial cable to the T/S port connector on the side of the monitor.
3. Connect the other end to any communications port on the host computer.
4. Tighten the captive screws on the cable connector to secure it.

## Connecting AC Power

The 6185-A Flat Panel Monitor requires a single phase power supply providing 85 to 264V AC at 47 to 70 Hz. Power must be available at a grounded three-pin outlet located nearby. Whenever possible, connect the monitor to the same AC source that supplies the computer.

### To connect AC power to the monitor:

1. Turn off the main switch or breaker.
2. Use the ground terminal of the monitor (below the power, video and T/S connectors) to establish a chassis-to-earth ground connection. Secure one end of a ground strap to the ground terminal. Connect the other end of the ground strap to a good earth ground.

The ground terminal is an M5 screw.



**ATTENTION:** Chassis ground must be connected for safe operation of the monitor. The AC receptacle on the monitor is a 3-wire type with chassis ground pin, and the mating AC cord supplied is a 3-wire type, designed for connection to a grounded 3-pin AC outlet. However, a properly ground AC outlet is not always available, and grounding using a 3-wire cord can easily be defeated. If you fail to ground the monitor properly, the setup may result in personal injury from electrical shock or damage to the equipment.

---

3. Connect the socket end of the AC power cord to the mating connector on the rear panel of the monitor. Position the power cord retaining clip attached to the rear panel connector over the cord's socket to secure it in place.
4. Connect the plug end of the AC power cord to the main outlet.
5. Restore AC power to the outlet.

## Connecting DC Power

The 6185-A Flat Panel Monitor requires a DC power supply providing 18 to 32V DC.

### To connect DC power to the monitor:

1. Turn off the main switch or breaker.
2. Use the ground terminal of the monitor (below the power, video and T/S connectors) to establish a chassis-to-earth ground connection. Secure one end of a ground strap to the ground terminal. Connect the other end of the ground strap to a good earth ground.

The ground terminal is an M5 screw.



**ATTENTION:** Chassis ground must be connected for safe operation of the monitor. The DC screw terminals on the monitor have a chassis ground pin. However, some DC sources may not provide a proper ground path. If you fail to ground the monitor properly, the setup may result in personal injury from electrical shock or damage to the equipment.

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3. Connect the +VDC wire to the "+V" screw terminal. Connect the -VDC wire to the "-V" screw terminal. Connect the power source ground wire to the GND screw terminal. Tighten down the screw terminals.

GND
-V
+V

4. Restore DC power.

## Initial Video Setup

The 6185-A Flat Panel Monitor is configured at the factory, but typically requires initial adjustments to ensure the best screen image. Rockwell Automation provides the Flat Panel Monitor Adjustment Utility with each flat panel monitor to assist you in adjusting the monitor settings.

### Common Flat Panel Video Adjustments

The 6185-A Flat Panel Monitor provides controls to adjust the following aspects of the monitor video display:

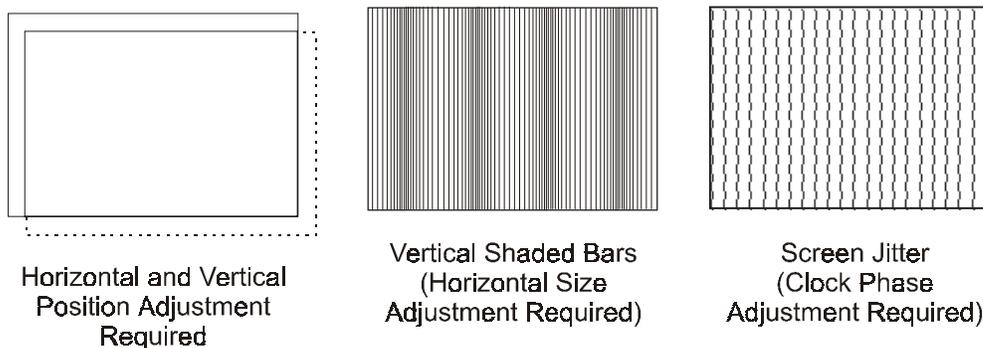
- Horizontal and vertical position
- Horizontal size of the display
- Clock phase
- Brightness and contrast

It is important that you make initial adjustments to these settings to ensure that the screen image on the flat panel monitor is set up correctly.

If the horizontal or vertical position of the display is not adjusted correctly, one edge of the screen image extends beyond the side of the monitor screen.

The horizontal size and clock phase adjustments are especially important for flat panel monitors. If the horizontal size setting is not properly adjusted, the screen image contains vertical shaded bars. If the clock phase setting is not properly adjusted, the screen image is “jittery.”

**Figure 7**  
**Monitor Video Adjustments**



You may also need to adjust the brightness or contrast of the screen image based on the conditions of the location in which the monitor is installed.

## Adjusting Settings

Use these instructions to adjust the video settings to achieve the best screen image.

**Note:** For more information on the location and operation of the controls on the monitor, refer to Page 20.

### Step 1 - Start the Adjustment Utility

1. Insert the diskette which was provided with the monitor in the floppy drive of the host computer
2. Start the Flat Panel Monitor Adjustment utility using the instructions on the diskette label.

The utility displays an image on the screen to assist you in adjusting the monitor settings.

**Note:** The utility may take several seconds to display the screen image.

### Step 2 - Adjust the horizontal size

1. Press and hold the H button on the back panel of the monitor until both the Display Active Indicator (green) and the Fault Indicator (red) begin to blink at the same time.
2. Use the + and - buttons to adjust the horizontal size until the vertical shaded bars disappear and the screen image fits the display precisely.
3. To exit this mode and save the new size, quickly press the H button. To exit without saving, press the Rst button.

**Note:** The vertical size is fixed and requires no user adjustment.

### Step 3 - Adjust the horizontal position

1. Press and hold the H button on the back panel of the monitor until the Display Active Indicator begins to blink (green).
2. Use the + and - buttons to adjust the horizontal screen position.
3. To exit this mode and save the new position, quickly press the H button. To exit without saving, press the Rst button.

**Step 4 - Adjust the vertical position**

1. Press and hold the V button on the back panel of the monitor until the Fault Active Indicator begins to blink (red).
2. Use the + and - buttons to adjust the vertical screen position.
3. To exit this mode and save the new position, quickly press the V button. To exit without saving, press the Rst button.

**Step 5 - Adjust the clock phase**

Use the Clk control to adjust the clock phase of the monitor to match the video clock rate. Adjust the control until the screen image is sharp and there is no screen “jitter.” The change should be most apparent in the vertical lines of the screen image.

**Step 6 - Adjust the brightness and contrast**

1. Use the Contrast (🔘) control to adjust the difference between the light and dark elements in the screen image.
2. Use the Brightness (☀️) control to adjust the overall intensity of the screen image.

**Note:** Allow time for the backlight on the monitor to warm up completely before you adjust the brightness control.

## Operating the 6185-A Flat Panel Monitor

This section describes how to operate the 6185-A Flat Panel Monitor. You can adjust the monitor attributes using the controls on the back panel.

### Power Indicator

A tri-color LED is provided on the front panel to indicate various operating modes. The following table describes the functions assigned to the default LED, which is a single light that can be green, amber, or red.

**Table A**  
**Power Indicator LED**

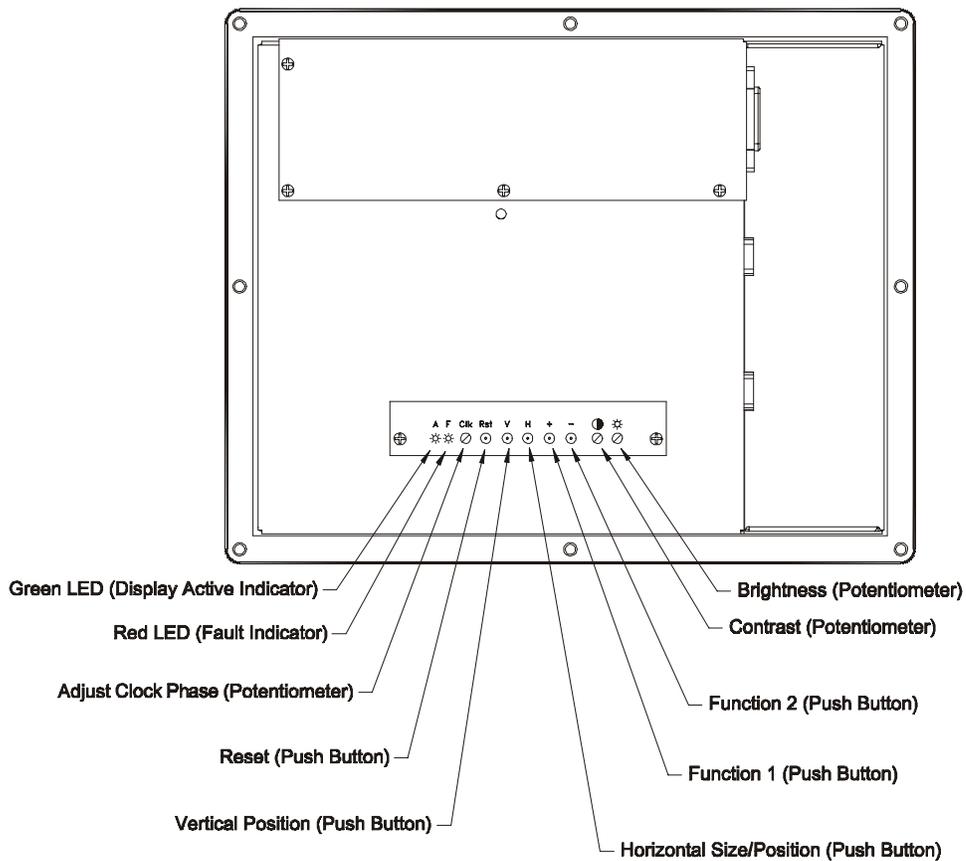
LED Color	Indication
Green (solid)	Normal operation
Amber (solid)	Power ON, loss of video sync or disconnected video cable
Green (blinking)	Adjust mode: Horizontal position
Red (blinking)	Adjust mode: Vertical position
Amber (blinking)	Adjust mode: Horizontal size

## Controls

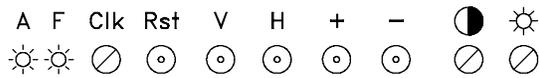
The 6185-A Flat Panel Monitor is equipped with eight user controls and two LED indicators on the rear panel.

**Note:** For more information on adjusting controls to achieve the best screen image, refer to Page 16.

**Figure 8**  
**Controls on Back Panel**



**Figure 9**  
**Controls on Back Panel (Labels)**



#### **Display Active Indicator (A)**

Indicates monitor “OK” (steady) or video adjustment mode (blinking).  
 Green LED.

#### **Fault Indicator (F)**

Indicates system “Fault” (steady) or video adjustment mode (blinking).  
 Red LED.

#### **Clock Adjust (Clk)**

Adjusts the clock phase of the monitor to best match to the video clock rate.

#### **Reset (Rst)**

Resets and reinitializes the monitor controller. Also turns off the backlight until the monitor signals stabilize. This is the same as power up reset.

#### **Vertical Position (V)**

Activates the vertical video framing mode.

#### **Horizontal Size/Position (H)**

Activates the horizontal video framing mode or the video frame width.

#### **Function 1 (+)**

Adjustment in the video framing mode or video frame width.

#### **Function 2 (-)**

Adjustment in the video framing mode or video frame width.

#### **Contrast (☉)**

Adjusts the difference between the monitor's light and dark elements. With a suitable image displayed on the screen, adjust the contrast control to achieve the best balance between image brightness and fine detail rendition.

#### **Brightness (☀)**

Adjusts the overall intensity of the monitor. After allowing the backlight to warm up for at least one minute, adjust for the least amount of brightness needed to achieve desired clarity.

## Routine Maintenance

### Cleaning

Occasionally clean the display panel and cabinet with a soft cloth dampened (not soaked) with a mild (non-abrasive) glass cleaner. Keep turning a fresh side of the cloth toward the screen surface to avoid scratching it with accumulated grit.

**Note:** The solvent should be applied only to the cloth, and not directly on the monitor screen.  
Do not use paper products as they may scratch the surface.  
To minimize the risk of abrasion, allow the screen to stand dry.

Special care should be taken when cleaning a touchscreen or polycarbonate shield that is installed over the screen. Abrasive and certain chemical cleaners can easily damage the surface. Never use alcoholic or ammoniac cleaners.

### Replacing a Line Cord

To avoid shock and fire hazards, the monitor's power cord should be replaced if the insulation becomes broken or if it develops a loose internal connection.

### Other Maintenance

Qualified service personnel should perform all maintenance, except for the power cord replacement described above and the backlight replacement explained in Appendix C (Page 28).

## Troubleshooting

You can refer to this table to help identify the cause and offer a solution to a problem. This table lists typical problems you may encounter.

**Table B**  
**Troubleshooting Table**

Symptom	Possible Problem	Action
Status LED does not come on.	Power cord not connected.	Open the 6185-A and reconnect the power cord.
	No power available at outlet.	Test outlet by plugging in a lamp or other known good device.
	Power cord faulty.	Replace power cord.
	Monitor faulty.	Have monitor serviced.
Status LED comes on but screen is blank.	Brightness control not properly adjusted.	Turn brightness control UP.
	Video cable problem	Check for proper installation of video cable(s). Refer to installation instructions. Replace suspected faulty cable(s).
	Monitor is out of adjustment or faulty.	Have monitor serviced.
Image is too bright or white.	Brightness control not properly adjusted.	Turn brightness control DOWN.
Image is dim, even with brightness and contrast controls set full UP.	Fault in video source.	Test video source by connecting to another monitor that is known to be operational.
	Fault in monitor.	Have monitor serviced.
Image is not centered.	Position controls are not properly adjusted.	Reset the horizontal and vertical positioning. Also, check to ensure that video source is operating within the monitor's range.
Image will not adjust.	Video timing outside of range.	Reset the video generator to an acceptable video format (resolution).
Image position changes are not saved.	Position mode not exited correctly.	Reposition the image using the Horizontal and Vertical positioning and save the adjustments.
Color(s) are missing.	Video cable problem.	Check for proper video cable installation. Replace suspected faulty cable.
	Fault in monitor.	Have monitor serviced.
Screen jitter or noisy video.	Monitor clock phase not properly adjusted.	Adjust monitor clock phase settings. Refer to instructions on Page 20.
	Video cable problem.	Check for proper video cable installation. Replace suspected faulty cable.
	Electrical noise interference from nearby equipment.	Check for proper video cable routing and installation. Reroute cables or replace suspected faulty cables. Check host and monitor grounding.

## Appendix A: Touchscreen Serial Interface

### Description

All touch controllers are configured by default to provide serial communications at 9600 baud, 8 data bits, 1 stop bit, no parity.

For Allen-Bradley monitors equipped with touchscreens, a serial communications cable is required. A suitable cable can be obtained from Rockwell Automation or you can create one.

The cable provides a communications channel between the touchscreen controller, which is mounted inside the monitor, and an RS-232-C serial port on the host computer. Because the touch controller obtains power from the monitor's power supply, no external touch power connections are necessary.

Software supplied with the touchscreen must be loaded on the host computer to handle communications with the touch controller over the channel.

Because the touchscreen emulates a mouse, there may be compatibility issues involving how the touchscreen emulates mouse buttons, especially multiple buttons. For a complete discussion of these issues and how to troubleshoot them, refer to the touchscreen documentation.

### Setting Up the Touchscreen Interface

This section describes how to set up the touchscreen system using the 6185-A Flat Panel Monitor. Setup involves the following:

- Enabling the touchscreen interface
- Installing the software on the host computer that will handle communications with the touchscreen controller
- Performing a calibration

### Enabling the Touchscreen Interface

The 6185-A Flat Panel Monitor provides a female DB-9 connector on the side panel. This connector provides the serial interface for the touch controller.

Interconnecting wiring to the host serial port connection is shown in the following table.

**Table C**  
**Touchscreen Interface**

Monitor (DCE Device) DB-9 (Female)	Signal Description	Host (DTE Device)	
		DB-9 (Male)	DB-25 (Male)
1	Not Connected (DCD)	1	8
2	Transmit Data (TXD)	2	3
3	Receive Data (RXD)	3	2
4	Data Terminal Ready (DTR)	4	20
5	Common Signal Return (SG)	5	7
6	Not Connected (DSR)	6	6
7	Request To Send (RTS)	7	4
8	Clear To Send (CTS)	8	5
9	Not Connected	9	22

## Installing the Touchscreen Driver Software

To install the touchscreen driver software correctly, obtain the following information about the host hardware:

- The COM port in use for the touchscreen. Ensure that the RS-232 cable is properly installed between the monitor port and the host's COM port.
- The baud rate at which the controller is operating. You will need to match the baud rate at the COM port. The controller baud rate is factory set at 9600.

**Note:** If you are using older touchscreen software, you may be prompted for the type of touchscreen controller being used. The 6185-A uses the following controllers:

- Resistive: Elo TouchSystems model E271-2210.
- Capacitive: MicroTouch model SMT-3.

Once you have obtained this information, install the software using the installation disks found in the touchscreen accessory package.

**Note:** Before installation, you may want to check the touchscreen manufacturer's site on the World Wide Web for the latest software drivers. Enter these addresses in your Internet browser:

- [www.elotouch.com](http://www.elotouch.com) for resistive touchscreens
- [www.microtouch.com](http://www.microtouch.com) for capacitive touchscreens.

## Performing a Calibration

After installing the driver software, follow the instructions in the touchscreen documentation.

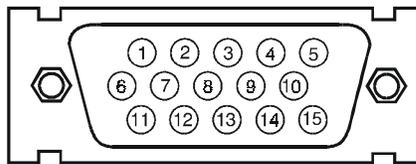
Following installation of the touchscreen software and calibration, the touchscreen is ready to use.

## Appendix B: HD-15 Video Cable

You use an HD-15 video cable equipped with a conventional HD-15 connector at each end to connect the 6185-A Flat Panel Monitor to the host computer.

**Note:** The following figure is the view looking into the pin end of the male connector or solder term end of the female connector.

**Figure 10**  
**HD-15 Video Connector**



The following table provides the pin numbers and corresponding pin assignments for the HD-15 video connector with the DDC2B capability:

**Table D**  
**Standard HD-15 Video Cable**

Monitor HD-15 (Female)	Signal Description	Host HD-15 (Male)
1	Red Video	1
2	Green Video	2
3	Blue Video	3
4	Not Used	4
5	Return	5
6	Red Video Ground	6
7	Green Video Ground	7
8	Blue Video Ground	8
9	Not Used	9
10	Sync Ground	10
11	Not Used	11
12	Bi-Directional Data	12
13	Horizontal Sync	13
14	Vertical Sync (VCLK)	14
15	Data Clock (SCL)	15

## **Appendix C: Backlight Replacement**

Over time, the backlight for the 6185-A Flat Panel Monitor will wear out. The backlights typically last 25,000 hours before they reach 50% of their original intensity or fail. Replacement backlights are available from Rockwell Automation.

### **Replacing the Backlight**

After you order and receive replacement backlights from Rockwell Automation, follow the instructions included with the backlights.

## Specifications

<b>Display</b>	
Type	Active Matrix Color Thin Film Transistor (TFT) LCD
Backlight	
Type	Cold Cathode Tube (CCT)
Life Expectancy	25,000 hours (typical)
Field Replaceable	Yes
Nominal Display Area	
Horizontal	8.3in. (211mm)
Vertical	6.2in. (158mm)
Resolution	640x480 pixels, 256K colors
Viewing Angle	
Horizontal (typical)	+/-70deg.
Vertical (typical)	+40/-70deg.
Luminance (typical)	300 nit, 88 fL
Contrast Ratio (typical)	100:1
CIE coordinates	
White	x=0.305, y=0.329
Response Time	40 msec (typical)
<b>Video</b>	
Supported Standards	640x400 at 70 Hz (VGA text) 640x480 at 60Hz (native)
Video Input Signal	RGB analog (white level = 0.714V above ref. Black, into 75 Ohms)
Sync Input Signals	H and V separate (TTL levels, positive or negative)
Input Connection	HD-15
<b>Controls and Indicators</b>	
	Back Panel - Horizontal Size, Vertical Position, Horizontal Position, Contrast, Brightness, Clock, Reset
<b>Operator Input</b>	
	Touchscreen Option - Resistive or capacitive touchscreen, with serial controller and DOS and Windows drivers
<b>Electrical</b>	
Line Voltage	85 to 264VAC, or 18 to 32VDC
Line Frequency	47-70Hz or DC
Ground Leakage	1.0 uA max at 1.5KVDC
Power Consumption	20W max, 30 VA

<b>Environmental</b>	
Panel Rating	NEMA 4/12 (built to IP65 standards), NEMA 4X Optional
Operating Temperature	0C to 50C
Storage Temperature	-20C to 60C
Relative Humidity	10% to 85% non-condensing
Operating Altitude	Sea level to 10,000 ft (3048m)
Non-Operating Altitude	Sea level to 25,000 ft (7620m)
Operating Electrostatic Discharge	8.0K VDC (IEC 801-2, level 3)
Non-Operating Electrostatic Discharge	20.0K VDC
Operating Shock	10g (1/2 sine, 11msec)
Non-Operating Shock	30g (1/2 sine, 11msec)
Operating Vibration	0.006in. p-p, 10-57Hz, 1.0g peak, 57-640Hz sine
Non-Operating Vibration	0.006in. p-p, 10-57Hz, 1.0g peak 57-640Hz sine
<b>Physical</b>	
Panel Bezel Dimensions (W x H x D)	12.8in. x 10.3in. x 0.2in. (324mm x 260mm x 5mm)
Overall Dimensions (from rear surface of front panel to back)	11.6in. x 9.2in. x 2.8in. (295mm x 233mm x 71mm)
Net Weight	6.5lb (3.0kg)
<b>Certifications</b>	
	UL 1950 Recognized Component, C-UL 950 Recognized Component, CE (89/336/EEC and 73/23/EEC), FCC Class A

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Rockwell Automation Headquarters, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414 382-2000, Fax: (1) 414 382-4444  
Rockwell Automation European Headquarters, Avenue Hermann Debroux, 46 1160 Brussels, Belgium, Tel: (32) 2 663 06 00, Fax: (32) 2 663 06 40  
Rockwell Automation Asia Pacific Headquarters, 27/F Citicorp Centre, 18 Whitfield Road, Causeway Bay, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846  
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