Industrial Monitors

ALLEN-BRADLEY • ROCKWELL SOFTWARE

Rockwell Automation

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.

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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 identify a hazard, avoid a hazard, and recognize the consequence
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.

Summary of Changes

The information below summarizes the changes to this manual since the last revision.

Revision bars, as shown in the margin, identify updated information. These are the changes for this version of the document.

Topic	Page
Revised grounding text in attention message.	14
Added grounding text in attention message.	28

Table of Contents

About This Publication

Read this preface to familiarize yourself with the rest of the manual. The preface covers:

- who should use this manual
- the purpose of the manual
- conventions used in this manual

Intended Audience

Use this manual if you are responsible for installing, using, or troubleshooting the Heavy Industrial Monitors.

Purpose of This Manual

This manual is a user guide for the monitors. It gives an overview of the system and describes procedures to:

- install a monitor in a panel, rack, or bench/tabletop.
- make monitor connections.
- configure a monitor's video setup.
- troubleshoot a monitor.

Additional Resources

For additional information on the heavy industrial monitors, refer to Heavy Industrial Monitors Installation Instructions, publication 6186M-IN001.

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

Monitor Overview

Overview

The heavy industrial monitors provide the latest in LCD flat plat technology. Combine these monitors with the heavy industrial non-display computers to create a visualization, maintenance, control, or information computing solution. The monitors offer the following features.

- 12.1, 15, 17, and 19-in. display sizes
- Active matrix TFT display
- Native video resolutions from 640x480 to 1280x1024
- Wide viewing angles
- Optional resistive and capacitive antiglare touchscreens
- One-button automatic screen setup
- Rear panel keypad with lockout feature
- Input power, ac or dc
- Space efficient enclosure that is less than 63 mm (2.49 in.) deep
- Optional rack or bench mount adapter brackets

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 monitors ship with these items.

- Accessories CD that contains the Monitor Setup Utility, and drivers
- Installation instructions and cutout template
- Mounting clips
- Cord and ac power adapter
- HD-15 analog video cable
- RS-232 serial extension cable for monitors with touchscreen
- Cable retention tie wraps

Product Catalog Numbers

Cat. No.	Display Size	Bezel	Touchscreen
6186-M12AL	12 in.	Aluminum	None
6186-M12ALTR			Resistive Touch
6186-M15AL	15 in.	Aluminum	None
6186-M15ALTR			Resistive Touch
6186-M15ALTC			Capacitive Touch
6186-M15SS		Stainless Steel	None
6186-M15SSTR			Resistive Touch
6186-M17AL	17 in.	Aluminum	None
6186-M17ALTR			Resistive Touch
6186-M17ALTC			Capacitive Touch
6186-M17SS		Stainless Steel	None
6186-M17SSTR			Resistive Touch
6186-M19AL	19 in.	Aluminum	None
6186-M19ALTR			Resistive Touch
6186-M19SS		Stainless Steel	None
6186-M19SSTR			Resistive Touch

Accessories

You can view a current list of accessories at the Rockwell Automation Allen-Bradley website http://www.ab.com/industrialcomputers.

Installing the Monitor

Chapter Objectives

This chapter shows you how to install the monitor in a panel, rack, or bench/tabletop and how to make monitor connections.

Review each mounting type and product dimensions before installation.

Hazardous Locations

This equipment is suitable for the following hazardous locations specified on the product nameplate:

- Class I, Division 2 Groups A, B, C, D.
- Class II, Division 2 Groups F, G.
- Class III, Division 1.
- nonhazardous locations.

The following statement applies to use in hazardous locations.

WARNING	Explosion Hazard
⚠	• Substitution of components may impair suitability for hazardous locations.
	• Do not disconnect equipment unless power has been removed and area is known to be nonhazardous.
	• Do not connect or disconnect components unless power has been removed.
	• All wiring must comply with N.E.C articles 501-4(b), 502-4(b), 503-3(b) as appropriate.
	• Peripheral equipment must be suitable for the location in which it is used.
	• All hazardous-location equipment must be mounted in an enclosure that is suitably designed or rated for those specific environmental conditions that will be present, and designed to prevent personal injury resulting from accessibility to live parts.

The monitors and ac adapters have an operating temperature code of T4 when operating in a 50 °C (122 °F) ambient environment. Do not install the terminals in environments where atmospheric gases have an ignition temperature less than 135 °C (275 °F).

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. See the Product Certification link at www.ab.com for Declarations of Conformity, Certificates, and other certification details.

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 W of ac power directly from the public mains.

Environment and Enclosure Information

Review the information on enclosures and environments before installing your computer.

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 m (6561 ft) 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.

Operating the capacitive touchscreen version in a high noise environment may cause the touchscreen to respond slowly to touch inputs, or may cause the position of the screen cursor to drift.

This equipment is supplied as open-type equipment. UL recognized and hazardous location equipment must be mounted in an enclosure that is suitably designed or rated for those specific environmental conditions that will be present, and designed to prevent personal injury resulting from accessibility to live parts. UL Listed equipment need not be mounted inside another enclosure in ordinary (nonhazardous) locations if NEMA Type and IEC ratings are not required, but the mounting method must limit the tilt of the product to +/- 30° from vertical. Examples include articulated arm, table-top stand, or other means having sufficient mechanical stability. The mounting means must be firmly attached to the supporting surface using screws, bolts, or clamps so the monitor cannot tip. All units ship with a gasketed bezel to meet specified NEMA and IEC ratings only when mounted in a panel or enclosure with an equivalent rating. Subsequent sections of this publication may contain additional information regarding specific enclosure-type ratings required to comply with certain product safety certifications.

Subsequent sections of this publication may contain additional information regarding specific enclosure type ratings that are required to comply with certain product safety certifications.

In addition to this publication, see:

- Industrial Automation Wiring and Grounding Guidelines, Alllen-Bradley publication 1770-4.1.

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

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 let air passages 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 very 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.

Panel Mounting

The monitors install directly into a panel with mounting clips. The number of clips varies by model.

Mounting Clips

Monitor Model	Mounting Clips
1200M	8
1500M, 1700M	10
1900M	14

Mounting Adapters

Optional mounting adapters are available to mount a monitor into the existing panel cutout of an older monitor.

Cat. No.	Description
6189V-MMA12	Panel adapter for converting 6185-B to 1200M
6189V-MMA15	Panel adapter for converting 6185-C/F/H to 1500M
6189V-MMA17	Panel adapter for converting 6185-D/J to 1700M

Required Tools

You need panel cutout tools and a #2 Phillips torque screwdriver.

Mounting Guidelines

Observe these guidelines when installing the monitor in a panel.

- Confirm that there is adequate space behind the panel.
  - Allow a minimum of 51 mm (2.0 in.) around the back, sides, and bottom, and 77 mm (3.0 in.) on the top for ventilation.
  - A cabinet with a minimum depth of 74 mm (2.9 in) is sufficient.
- 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 to be sure of proper sealing against water and dust and to provide proper support. The mounting hardware supplied accommodates panels up to 6.00 mm (0.236 in.) thick.

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

Panel Cutout Dimensions

The Cutout Dimensions table lists the panel cutout dimensions for each monitor. Use the full-size template shipped with each monitor to mark the cutout dimensions.

| Monitor Model	Cutout Dimensions, Approx. (H x W)
1200M	238.0 x 318.0 mm (9.37 x 12.51 in.)
1500M	285.6 x 386.6 mm (11.24 x 15.22 in.)
1700M	329.5 x 424.0 mm (12.97 x 16.69 in.)
1900M	363.5 x 449.6 mm (14.31 x 17.70 in.)

Mounting the Monitor in Panel

Follow these directions to mount the monitor in a panel.

1. Cut the panel opening using the appropriate cutout dimensions.

2. Attach the cables to the monitor if access to the rear of the monitor will not be possible after the installation.

3. Verify that the sealing gasket is properly positioned on the monitor.

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

4. Place the monitor in the panel cutout.

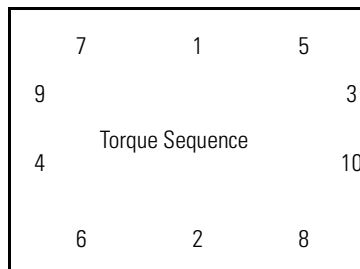**5.** Slide the mounting clips into the slots on the top, bottom, and sides of the monitor.
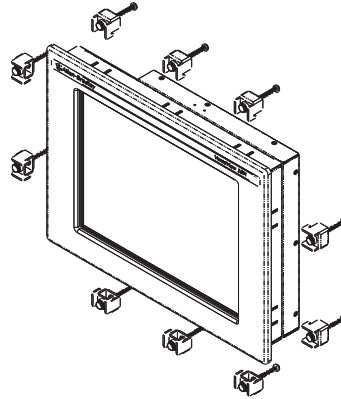
6. Tighten the clips by hand in the specified sequence, beginning with the center clips and continuing to the corner clips.
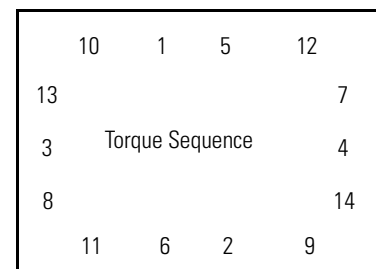
Repeat this process at least three times until the clips are hand-tight and the gasket is compressed uniformly against the panel.
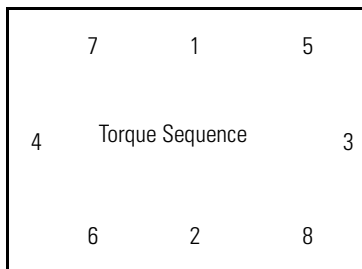
1200M Monitor

1500M and 1700M Monitor

1900M Monitor

7. Tighten the mounting clips to a torque of 1.1 N•m (10 in-lbs) in the sequence shown in step 6. 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.

Rack Mounting

You can install the 1200M, 1500M, and 1700M monitors directly into a rack by using the appropriate rack adapters.

Rack Adapters

Cat. No.	Description
6189V-MRA12	Rack adapter for 1200M monitor
6189V-MRA15	Rack adapter for 1500M monitor
6189V-MRA17	Rack adapter for 1700M monitor

Required Tools

You need the optional rack-adapter kit and a #2 Phillips screwdriver.

Mounting Guidelines

Observe these guidelines when installing the monitor in a rack.

- The height of the cabinet must accommodate the monitor's panel height.
- The depth of the cabinet must accommodate the monitor's depth plus rear clearance for cables and airflow. A cabinet depth of 74 mm (2.9 in.) is sufficient.

Mounting the Monitor in a Rack

Follow these directions to mount the monitor in a rack.

1. Place the 1200M, 1500M, or 1700M monitor in the rack adapter and attach it to the rack adapter with the screws provided.

2. Secure the monitor or adapter to the cabinet by installing screws through the holes in the monitor or adapter, and into the mounting rails behind.

Rack Adapter
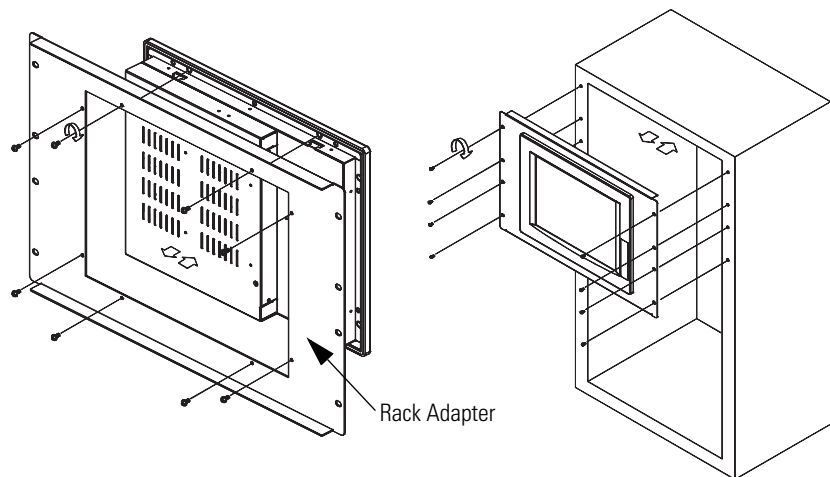
IMPORTANT	The mounting rails that run vertically along the inside edges of the front opening of an EIA-rack cabinet can be of two types.

- Wide rails have holes spaced 12.7 mm (0.5 in.) and 31.8 mm (1.25 in.) on centers, in a repeating pattern. Wide rails are prevalent in Europe.

- Universal rails have holes spaced 12.7 mm (0.5 in.), 15.9 mm (0.625 in.), and 31.8 mm (1.25 in.) on centers, in a repeating pattern. The universal rails have a hole pattern that contains the wide pattern but provides an additional hole at the midpoint of the pattern. Universal rails are most prevalent in the United States.

Bench or Tabletop Mounting

Use the optional bench/tabletop adapter for monitors, cat. no. 6189V-MBA, to mount your monitor on a bench or tabletop arm.

Required Tools

You need the bench/tabletop adapter and a #2 Phillips screwdriver.

Mounting Guidelines

Observe these guidelines when installing the monitor on an arm.

- The mounting surface and the mounting arm must be strong enough to support both the monitor and the mounting hardware.
- The interface between the arm and the monitor must meet VESA FPMPMI 100 mm standards.
- The mounting location must provide adequate clearance for positioning and moving the adjustable unit and routing cables.

Mounting the Monitor on a Bench or Tabletop

Follow these directions to mount the monitor to a bench or tabletop.

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

2. Place the monitor over the arm and insert four M4 x 0.7 screws through the arm brackets and into the monitor.

The illustration shows the mounting holes for VESA FPMPMI standard 100 mm interface pad.
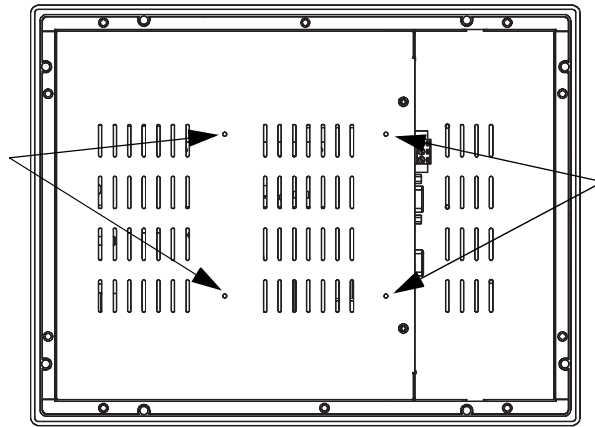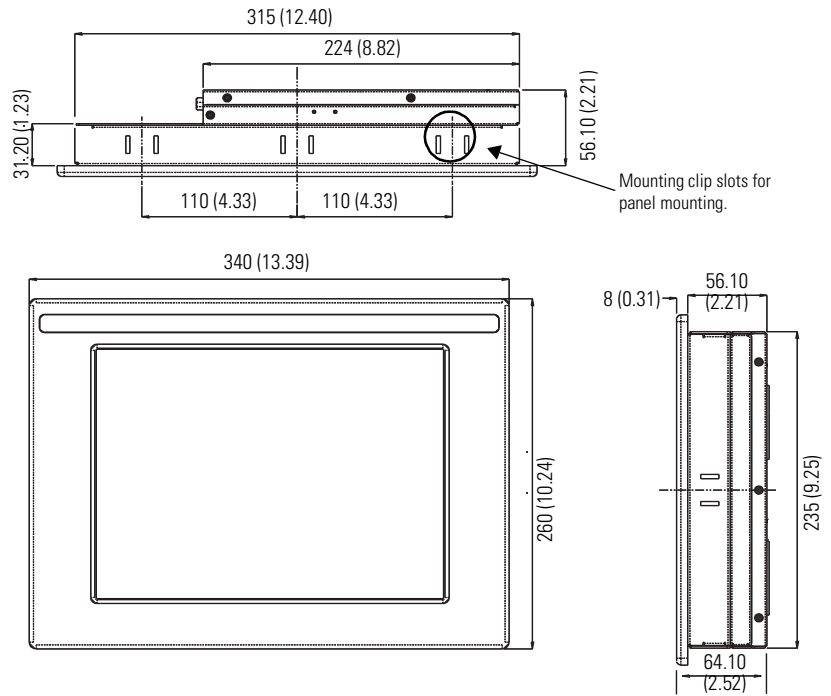

3. Tighten the screws.

Product Dimensions

The product dimensions for the monitors are in millimeters (inches).

1200M Monitor

Mounting clip slots for panel mounting.

1500M Monitor

Mounting clip slots for panel mounting.

1700M Monitor

422 (16.63)
326.25 (12.85)
58.10 (2.29)
30.0 (1.18)
150 (5.91)   150 (5.91)
Mounting clip slots for panel mounting.
452 (17.81)
58.10 (2.29)
356 (14.03)
160 (6.30)
328 (12.92)
10 (0.39)
68.10 (2.68)

1900M Monitor

447 (17.60)
320 (12.60)
73.10 (2.88)
116 (4.57)   110 (4.33)   116 (4.57)
10 (0.39)
Mounting clip slots for panel mounting.
33.6 (1.32)
482.6 (19.00)
Allen-Bradley   Versa View 1900M
399.30 (15.72)
120 (4.72)
120 (4.72)
120 (4.72)
360 (14.17)
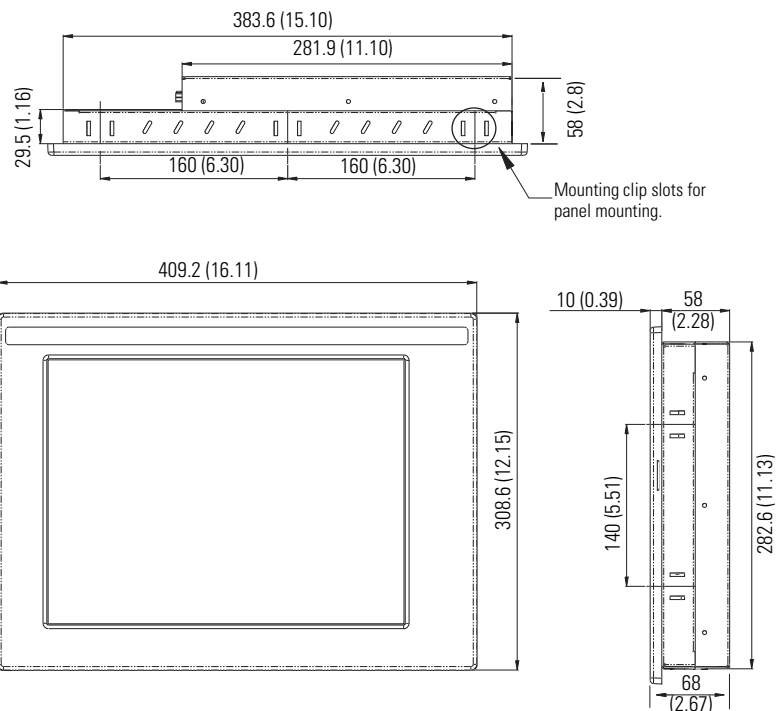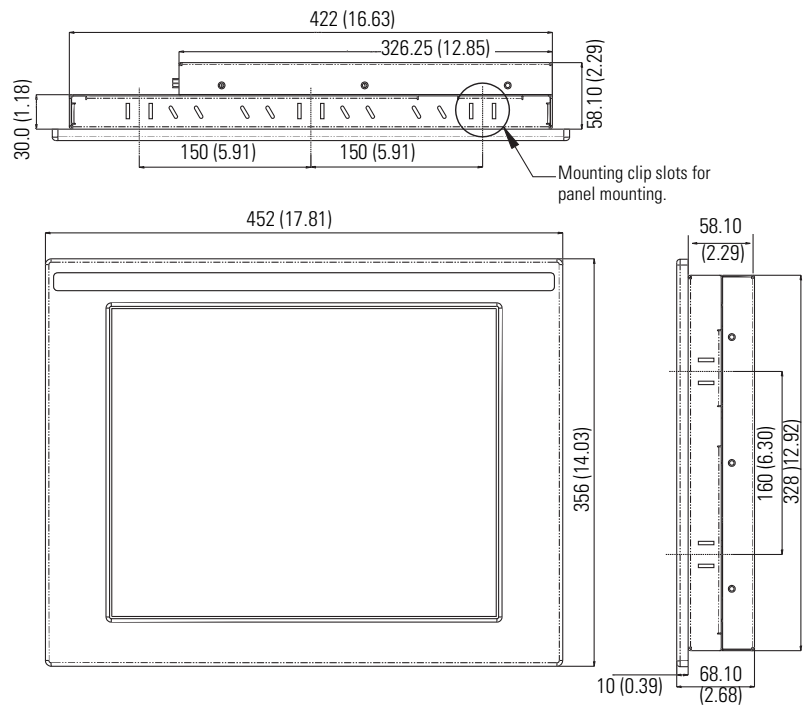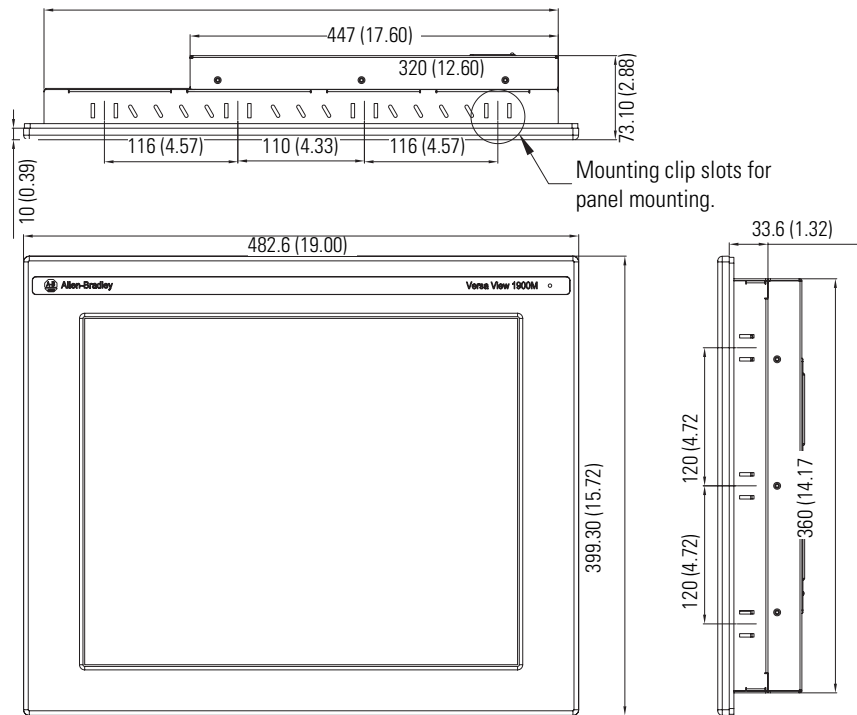
Monitor Connections

Use the connectors on the rear panel of the monitor to connect to:

- analog video source (HD-15 VGA connector).
- digital video source (DVI connector).
- serial port for touchscreen interface.
- power source ac or dc.

Monitor Connections
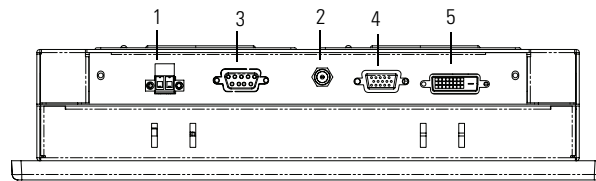
Connectors are labeled on the monitor and may vary from model to model.

Item	Description
1	Power Input, dc (terminal block)
2	Power Input, ac (ac adapter)
3	RS-232 Input (optional)
4	HD-15 Video Input
5	DVI Video Input

Connecting to a Host Analog Video Source

All monitors support analog video. Your monitor ships with a high-quality analog video cable. Use this video cable to connect a computer to the monitor.

To connect the monitor to an analog video source follow these directions.

1. Connect one end of the 2 m (6 ft) analog video cable to the female, HD-15 video input connector on the monitor.

2. Connect the other cable end to the VGA port of the computer or to the video generator VGA port, if used.

TIP	You can use cables with a maximum length of 15 m (50 ft) at lower monitor resolutions, provided they are properly constructed. Video amplifiers are available for longer distances.

TIP	You can connect the monitor to a video generator that does not conform to VGA standards if the generator provides analog RGB video signals (0.714V above reference black into 75 Ω) and separate horizontal and vertical sync signals. Depending on the signal, the monitor may or may not function properly.

Connecting to a Host Digital Video Source

All monitors support digital video. Use a digital video cable to connect the host computer to the DVI connector on the monitor. This cable is not supplied, but can be purchased as a monitor accessory.

Digital Video Cables

Cat. No.	Description
6189V-DVICBL2	Digitial video cable, 2 m (6.5 ft)
6189V-DVICBL5	Digital video cable, 5 m (16.4 ft)

Follow these steps to connect the monitor to a digital video source.

1. Connect one end of the digital video cable to the female, DVI video input connector on the monitor.

2. Connect the other cable end to the output of any DVI video source.

> **TIP**   For a DVI cable longer than 5 m (10 ft), use a DVI cable extension.

Connecting the Optional Touchscreen Interface

An optional touchscreen provides a high-resolution touch input system. The driver software included with the monitor allows the touchscreen to function with many Microsoft Windows-based industrial applications as a pointing device or mouse.

The RS-232 DB9 (female) D-shell connector on the side panel of the monitor provides the serial touchscreen interface connection to the host.

Follow these directions to connect the touchscreen interface.

1. For units with the touchscreen option, connect one end of the included touchscreen serial cable to the RS-232 port connector on the monitor.

2. Connect the other end of the cable to a serial port on the host computer.

   This port is typically COM2.

3. Tighten the captive screws on the cable connector to secure it.

Connecting ac Power

With the ac power adapter, the monitor can use a single-phase ac power supply providing 90…264V ac at 47…63 Hz.

Power must be available from a grounded outlet nearby. Whenever possible, connect the monitor to the same ac source that supplies the computer.

To connect power to the monitor follow these directions.

1. Turn off the main power switch or breaker.

2. Connect the external power-supply cable to the 12V dc power-input connector on the monitor and secure this connection by screwing the barrel over the threads.
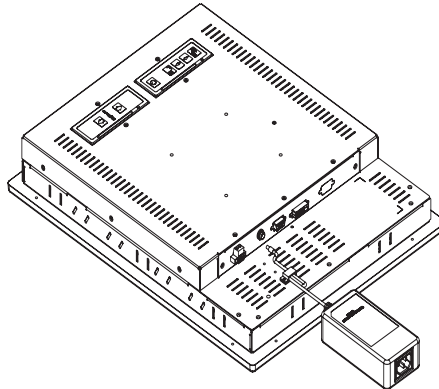
WARNING

⚠

Hazardous Location Installation

Secure the ac power cord in the adapter by the metal cage.

3. Connect the power cord into the main supply.
4. Restore ac power.

Connecting dc Power

The 1200M, 1500M, 1700M, and 1900M monitors connect to a dc power source using a dc input terminal block.

Follow these steps to connect power to the monitor.

1. Turn off the main power switch or breaker.

2. Route the power wires from your dc power supply and connect the leads to the dc input terminal block on the monitor.

   The monitors accept a 9…36V dc input power-supply connection.
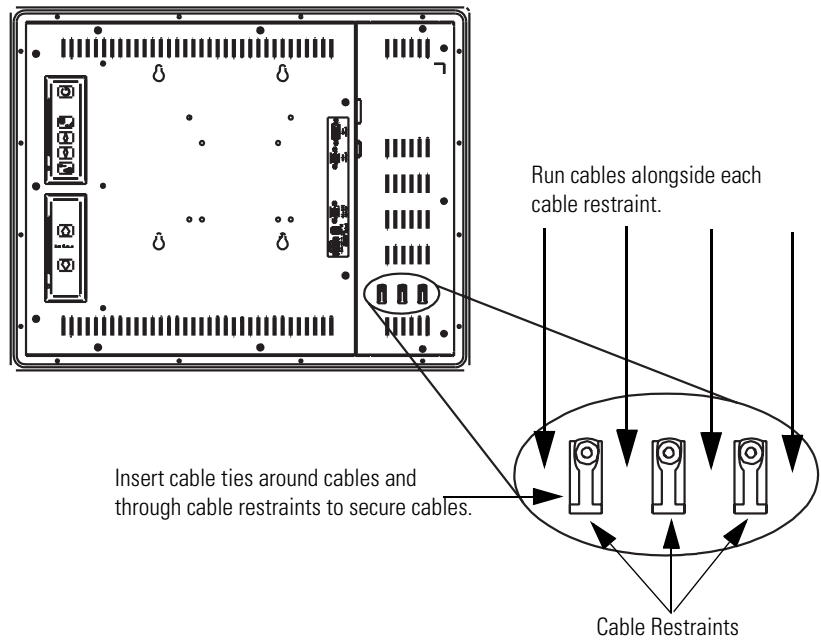

+9V…+36V   Gnd

To
Source
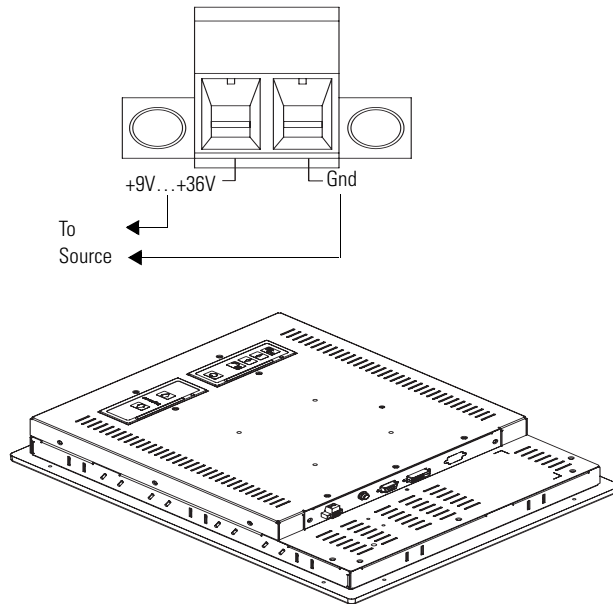
ATTENTION

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.

3. Tighten the screw terminals to provide a good connection.

4. Secure the terminal block connector to the unit by using the two side screws.

5. Restore dc power.

Securing the Cables

Secure cables to the three cable restraints on the monitor by using the supplied cable ties. Securing the cables provides strain relief on the cables and avoids loose, hanging cables.

Run cables alongside each cable restraint.

Insert cable ties around cables and through cable restraints to secure cables.

Cable Restraints

Configure the Video Setup

Chapter Objective

This chapter describes how to:

- set the monitor type.
- check and change the display resolution.
- adjust monitor brightness.
- adjust the monitor using the control keypad.
- perform the automatic setup.
- use the OSD to adjust the monitor.

Setting the Monitor Type

The monitors are Plug and Play compliant devices. If you are using Windows® 95, Windows 98, Windows 2000 or Windows XP, and if your video card supports it, enable your computer to detect Plug and Play monitors. Your computer will automatically set the monitor type. Additional setup should not be required.

If your video card does not support Plug and Play, or if you are using Windows NT®, you must set the monitor type manually.

TIP	If your video card does support Plug and Play, but it does not appear that your monitor type has been set properly, set the monitor type manually. For example, the screen image may be too large or small, or otherwise distorted.

There are two possible monitor types.

- Plug and Play Monitor for the monitors with a Plug and Play enabled system
- Default Monitor for monitors that are set up manually

IMPORTANT	The monitors use a (digital) flat panel display. However, when they are driven by the computer's analog VGA interface, they are connected as an analog device. Some setup screens may indicate that the monitor is operating as a CRT (analog) device, rather than a digital or flat-panel device.

Setting the Monitor Type Manually

The table provides procedures for setting the monitor types manually on computers with different settings.

Procedures for Manually Setting Monitor Type

Windows NT	Windows 95	Windows 98/2000/XP
1. Open Control Panel.	1. Open Control Panel.	1. Open Control Panel.
2. Open Display icon.	2. Open Display icon.	2. Open Display icon.
3. Click Settings tab.	3. Click Settings tab.	3. Click Settings tab.
4. Verify Desktop Area (Resolution) set for the desired resolutions. Best resolution for any 6186M monitor is the native resolution. See Checking and Changing the Display Resolution on page 32.	4. Click Advanced Properties button. 5. Click Monitor tab. 6. Click Change button. 7. Click Show All Devices button. 8. Verify Manufacturer: Standard monitor types.	4. Click Advanced button. 5. Click Monitor tab. 6. Verify Manufacturer: Standard monitor types 7. Verify Models. • Plug and Play Monitor • SuperVGA 800x600 • Super VGA 1024x768 • Super VGA 1280x1024
5. Verify Refresh Frequency. 60 or 75 Hz is best.	9. Click Show All Devices button. 10. Verify Manufacturer: Standard monitor types. 11. Verify Models. • Plug and Play Monitor • Super VGA 1024x768	

Checking and Changing the Display Resolution

Flat panel monitors are fixed-resolution devices. The image looks best when the monitors are operated at their native resolution. However, the monitors have advanced scaling capabilities to make the display look as good as possible while running in nonnative modes.

Native resolutions differ depending on the monitor.

- 1200M: 800x600
- 1500M: 1024x768
- 1700M: 1280x1024
- 1900M: 1280x1024

TIP   Always operate the monitor at its native resolution.

If you switch the resolution of your monitor from its native resolution, the display may look slightly distorted due to the replication techniques used to fill the full screen with an image.

To check or change your monitor's display resolution, access the Display settings in the Control Panel on your computer.

The Video Memory Requirements table lists the video memory required to operate the monitor in each video mode.

Video Memory Requirements

Resolution	Color Mode	Video Memory
640x480	256 colors (8 bit)	0.4 MB
	High color (16 bit color)	0.7 MB
	True color (24 bit color)	1.0 MB
800x600	256 colors (8 bit)	0.6 MB
	High color (16 bit color)	1.0 MB
	True color (24 bit color)	1.5 MB
1024x768	256 colors (8 bit)	0.9 MB
	High color (16 bit color)	1.7 MB
	True color (24 bit color)	2.4 MB
1280x1024	256 colors (8 bit)	1.4 MB
	High color (16 bit color)	2.7 MB
	True color (24 bit color)	4.0 MB

IMPORTANT   The 1200M and 1500M monitors display up to 262K colors (18-bit color). The 1700M and 1900M monitors display up to 16.2M colors (24-bit color). Because most computers support only 8-bit, 16-bit, or 24-bit color, you must operate the monitor in True Color mode (24-bit color) to use the full color range of the monitor. The monitor will interpret the colors correctly.

Adjust the Monitor Brightness
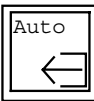
To adjust the brightness level of the monitor, use the buttons at the bottom of the monitor.

OSD Key	Control	Description
	Adjust Buttons (+/-)	Adjusts the brightness level of the monitor if pressed while the OSD is off

Adjust the Monitor Using Control Keypad

To adjust your monitor, use the buttons on the small keypad at the rear of the unit.

Control Keypad

OSD Key	Control	Description
	On/Off Switch	• Turns monitor on and off
	Menu/Return	• Opens the OSD and sub-menus • Selects the highlighted function
	Adjust Buttons (up and down arrows)	• Moves between OSD menus and submenus • Decreases or increases values in OSD menus and submenus • Provides OSD lockout when both up and down arrows are simultaneously pressed and held for 8 seconds
Auto	Auto/Exit	• Starts the Automatic Video Adjustment function

Performing the Automatic Setup

Using the Auto Setup feature, the monitor samples the input video signal and accurately adjusts the monitor.

The Auto Setup function works with most screens using reasonable video content, but Rockwell Automation ships a ScreenSet monitor setup utility on a CD-ROM to display the best possible image for setup.

IMPORTANT	The ScreenSet monitor setup utility is designed for 32-bit Windows operating systems only, Windows 95/98/NT 4.0/2000/XP or greater.

1. Insert the Accessories CD, provided with the monitor, into your computer's CD-ROM drive.

2. Start the ScreenSet utility named ScreenSet.exe.

3. Press the Auto button at the rear of your monitor.

   The auto adjustment display appears. Your screen may flicker during the Auto Setup process. When the auto adjustment is complete, the display will disappear, and your monitor should be properly adjusted.

TIP	A computer switches through several video modes while booting. The monitor stores setup information for each video mode. If you have trouble reading the display during the booting video modes, you can also press the Auto key during that time.

Changing Monitor Settings with the On-screen Display (OSD)

Use the control buttons and On-screen Display (OSD) to modify your monitor's settings while viewing the ScreenSet setup screen. See the Perform Automatic Setup section.

The OSD utility for each monitor is menu driven. You select functions to adjust by selecting a text option or icon from a menu. The menus are icon driven.

OSD Main Menu
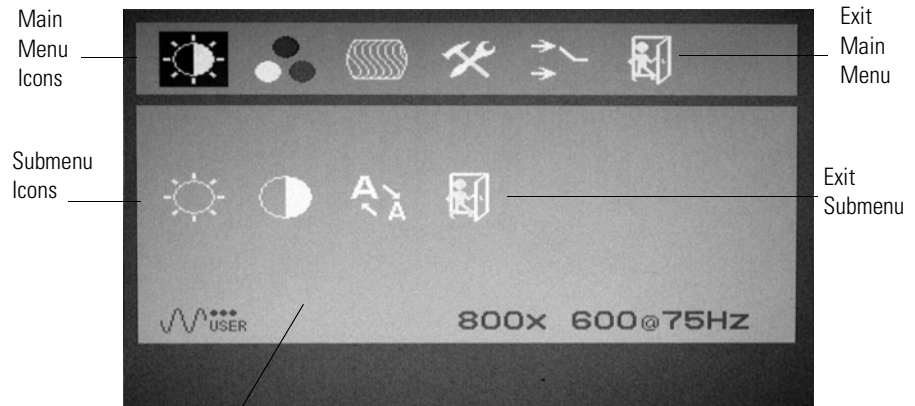
Slidebar Area to adjust settings

General OSD Menu Navigation Guidelines

- Press the Menu/Return button to open the OSD main menu.
- Press the arrow buttons to move between the function icons.

  As you move from one function to the other, the function menu changes to represent the correct icon.

- Press the Menu/Return button to activate the highlighted function.
- Use the arrow buttons to make your changes.
- Press the Exit button once to return to the OSD main menu where you can select another function.
- Press the Exit button again to exit the main menu.
- Use the arrow buttons to select the sub-function if an icon has more than one sub-function.
- Press the Menu/Return button to activate a highlighted sub-function.

OSD Menus

You can modify the settings to the monitors by using the following menus.

- Main
- Input
- Brightness, Contrast, and Sharpness
- Color
- Display Adjust
- Tools

Main Menu
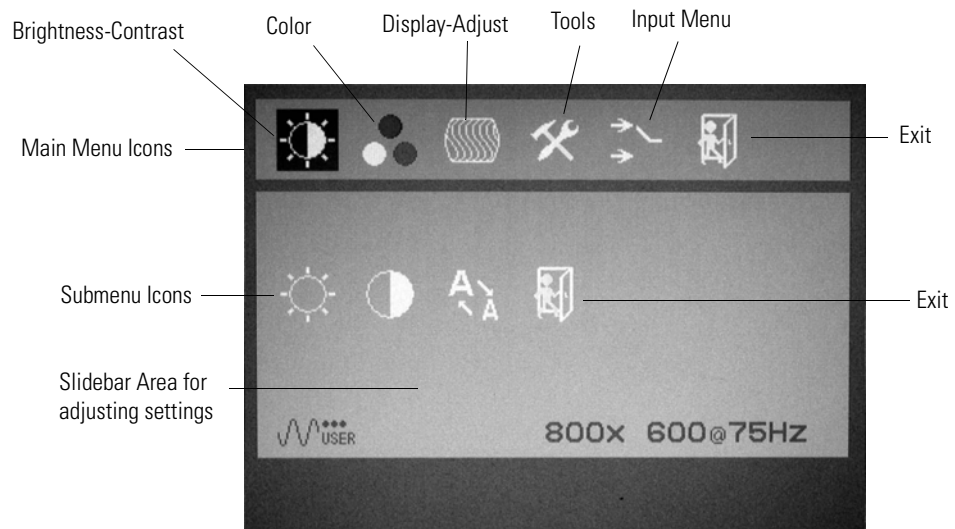
Main Menu

Icon	Function
Brightness-Contrast-Sharpness	Accesses functions to adjust the brightness, contrast, and sharpness.
Color	Accesses functions to select standard RGB levels, or manually adjust RGB levels, or set the color temperature.
Display Adjust	Accesses functions to auto-adjust the display settings or manually adjust the horizontal and vertical image position, frequency phase and width level.
Tools	Accesses functions to adjust the OSD, reset factory settings, reset factory color settings, reset position, and adjust sharpness.
Input Menu	Accesses options for selecting analog or digital picture input. The input selection depends on the signal from the computer and the type of cable connected to the monitor.
Exit	Exits the OSD main menu.

Input Menu

Input Menu ────────────────────────────────

Submenu Icons ───────

Exit

Slidebar Area for
adjusting settings ───────
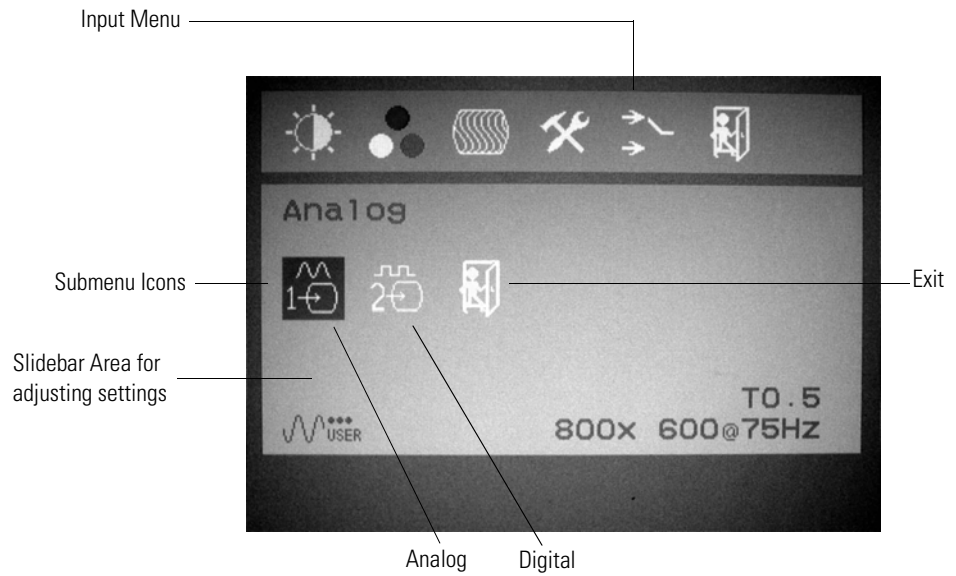
Analog   Digital

Input Menu

Icon	Function
Analog Input	Displays the incoming VGA analog signal from the 15-pin VGA input connector. [1]
Digital Input	Displays the incoming DVI digital signal from the DVI input connector. [1]
Exit	Exits the Input menu.

[1]   The industrial monitor will autodetect either an analog VGA or digital DVI input if present.

Brightness, Contrast, and Sharpness Menu

Brightness-Contrast-Sharpness Menu

Brightness

Exit
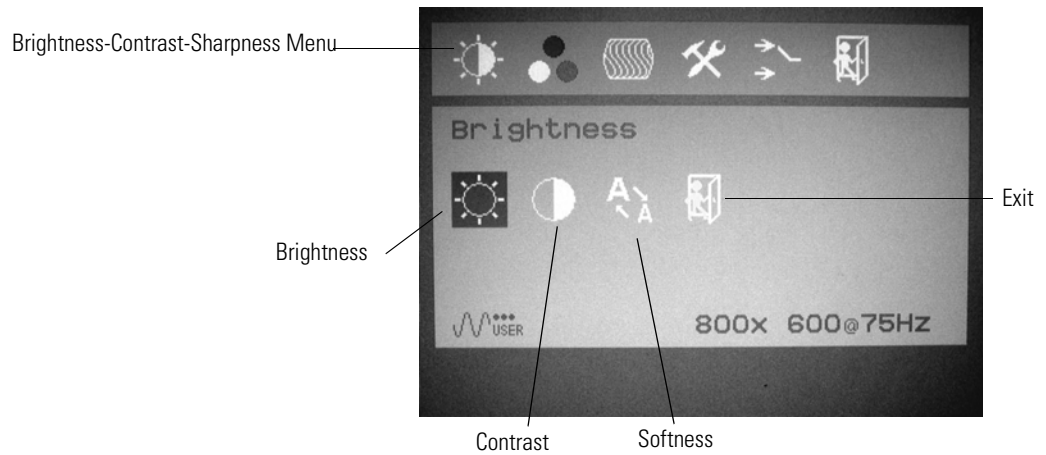
Contrast   Softness

Brightness and Contrast Menu

Icon	Function	Value Range
Brightness	Adjusts the brightness of the screen.	0…100. The default 60.
Contrast	Adjusts the contrast of the screen.	0…100. The default 60.
Sharpness	Adjusts the sharpness of the screen.	1…5 The default is 3.
Exit	Exits the Brightness and Contrast menu.	

TIP   The more common way to adjust brightness is to use the Brightness Adjust button on the back of the monitor.

Color Menu

Color Menu

RGB

Exit

Color Temp Menu

Manual RGB

Manual RGB Submenu
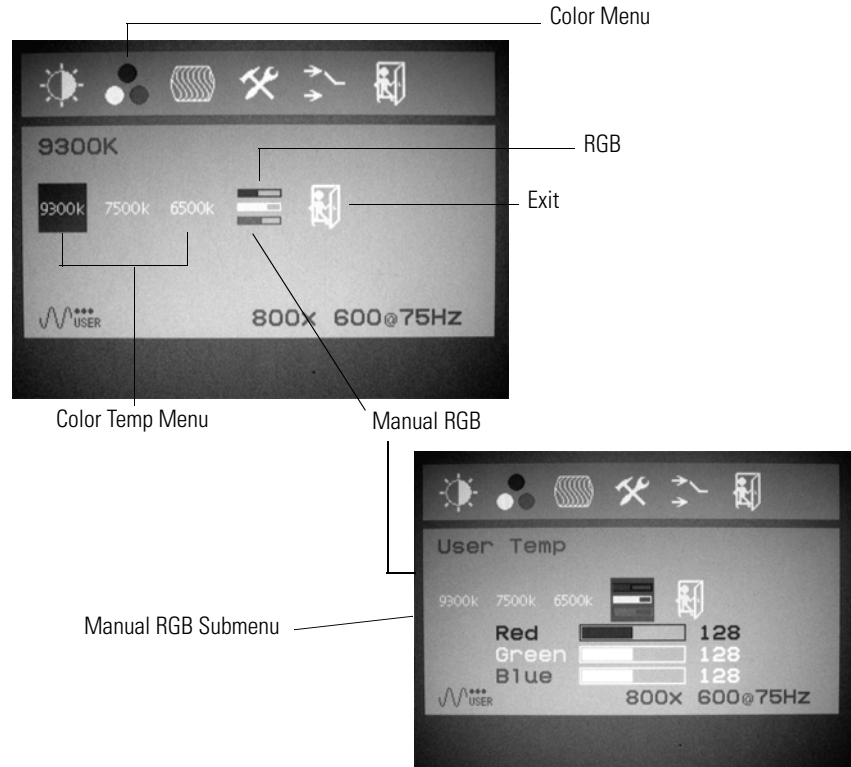
Color Menu

Icon	Function	Value Range
Color Temp Menu	Accesses the Color Temperature menu to set the color temperature and to adjust RGB color values.	
6500K 7500K 9300K	Sets the white point / color temperature. 6500K = typical PC 9300K = typical Television	6500K 7500K 9300K
RGB Submenu	Accesses the RGB menu to adjust colors. Adjusts the amount of red on screen. Adjusts the amount of green on screen. Adjusts the amount of blue on screen.	0…255 (default 128) 0…255 (default 128) 0…255 (default 128)
Exit	Exits the Color menu.	

Display Adjust Menu

Display Adjust Menu

Exit

Auto Configuration   Width   Phase   H Position   V Position
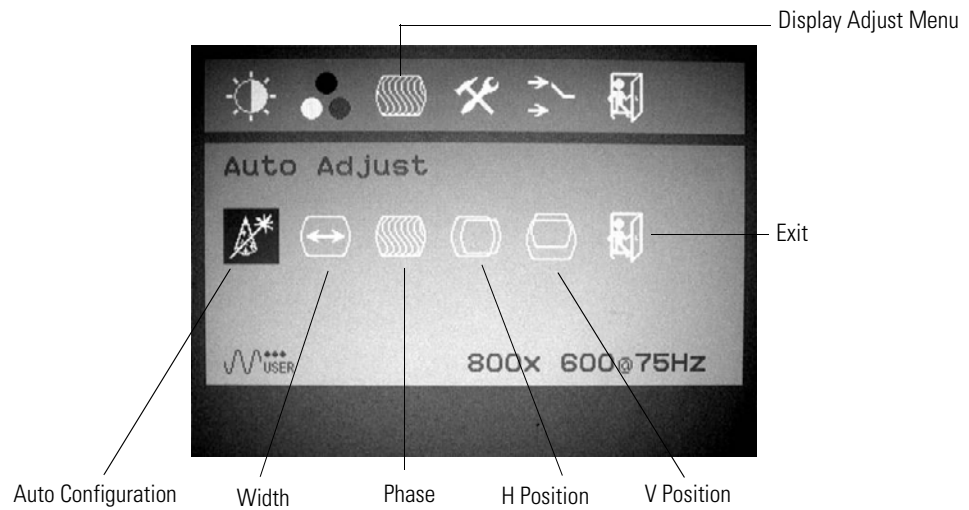
Display Adjust Menu

Icon	Function	Value Range
Auto Configuration	Automatically adjusts the horizontal and vertical image position, frequency phase, and black level.	Select the happy or sad face to accept settings.
Width	Adjusts the width.	0…100
Phase	Adjusts the sampling phase.	0…100
H Position	Adjusts the horizontal position of the image on the screen.	0…100
V Position	Adjusts the vertical position of the image on the screen.	0…100
Exit	Exits the Display Adjust menu.	

Tools Menu

Tools Menu

OSD Time Out

Exit

OSD Time Out

OSD Position   Factory Reset

OSD Position

Bottom-right Corner

Left-top Corner   Right-top Corner   Default-Center   Bottom-left Corner
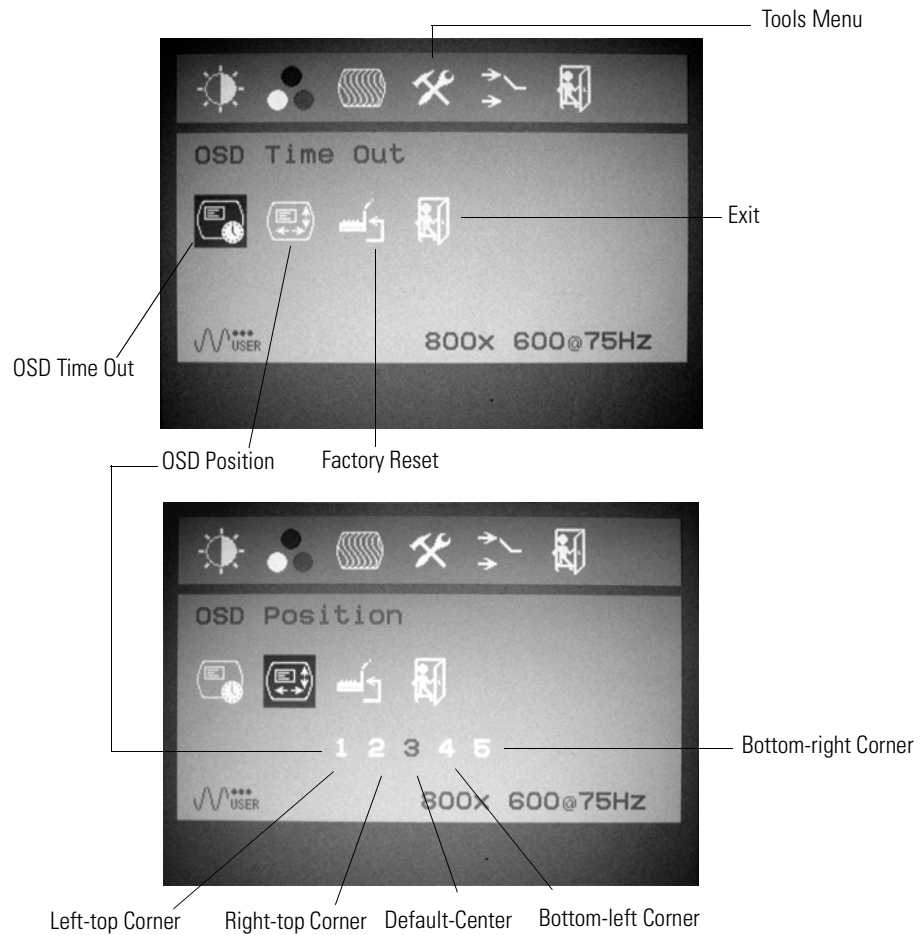
Tools Menu

Tool Functions	Description	Value Range
OSD Timeout	Sets a maximum idle time for exiting the OSD system if input is not received.	0…60 (default is 30)
OSD Position	Adjusts the position of the OSD menu on the monitor display: 1 - left top 2 - right top 3 - center 4 - left bottom 5 - right bottom	1, 2, 3, 4, 5 (default is 3)
Factory Reset	Resets all OSD settings to the factory defaults.	
Exit	Exits the Tool menu.	

IMPORTANT   All saved settings are lost when you reset OSD settings to the factory defaults.

Perform Routine Maintenance

Chapter Objective

This chapter describes how to clean the monitors and perform other routine maintenance.

Cleaning the Monitor

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

IMPORTANT	Apply the solvent 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.

ATTENTION	You can use alcoholic or ammonia cleaners to clean the polycarbonate shield or a touchscreen. However, use only one or the other at all times. A residue mixture can cause a chemical reaction.

Be careful when cleaning a touchscreen shield that is installed over the screen. Abrasive and certain chemical cleaners can easily damage the surface.

Replacing a Line Cord

To avoid shock and fire hazards, replace the monitor's power cord if the insulation breaks or if the cord develops a loose internal connection. Contact your authorized Allen-Bradley distributor for ordering information.

Other Maintenance

Qualified service personnel should perform all maintenance, except for the power cord replacement. Contact Allen-Bradley Technical Support for assistance.

Shipping or Transporting Product

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

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.

Troubleshoot the System

Chapter Objective

This chapter describes how to interpret and correct problems with the monitors.

Running the Self-test

Use the self-test feature to verify that your monitor is running correctly. If the monitor and computer are property connected but the monitor remains dark and the power indicator is blinking, run the self-test.

Follow these directions to run the self-test.

1. Power down the computer and monitor.

2. Unplug the video cable from the back of the computer.

3. Power up the monitor.

If the monitor is functioning properly, you will see a self-test box that reads, No Signal Input.

| **IMPORTANT** | This self-test box also appears during normal operation if the monitor is disconnected or damaged. |

4. Power down your monitor.

5. Reconnect the video cable to the back of the computer.

6. Turn on your computer.

7. Turn on your monitor.

8. If your monitor screen remains blank after the previous procedure, check your video controller and computer system because your monitor is functioning properly.

Troubleshooting Solutions

The troubleshooting table identifies the cause and possible solution to a problem. The table lists typical problems you may encounter.

Troubleshooting

Symptom	Action
No picture	Verify that the power cord is connected.
	Test outlet by plugging in a properly functioning device.
	Replace power cord.
	Have monitor serviced.
'No Sync' or 'No Signal, going to sleep' appears	Check the video cable connection between the computer and monitor.
	Use the self-test feature.
Screen is blank	Disable screen saver.
	Adjust the Brightness and Contrast settings using the appropriate OSD.
	Replace suspected faulty cable.
Video Mode is not supported	Check the maximum resolution and the frequency on the video port of your computer.
Picture is scrambled	Check the video cable connection between the computer and monitor.
	Perform the Auto Setup procedure.
Picture is not clear	Adjust Fine and Coarse settings as needed using the appropriate OSD menu.
Picture is fuzzy	Perform LCD Monitor reset.
	Eliminate unnecessary accessories such as video extension cables.
Vertical shaded bars on screen image	Image Lock is not properly adjusted. Reset the Horizontal positioning using the appropriate OSD.
Display is present, but 'bars' appear across it or roll through it	Eliminate ground loops by connecting monitor and computer to the same power source location, or installing an ac isolation transformer.
Picture bounces or has wavy oscillations	Check the video cable connection between the computer and monitor.
Picture has blurry streaks or 'ghosting' to the right of objects on the screen	Adjust the Contrast settings using the appriate OSD.
Images are too bright or too dark	Adjust the Brightness and Contrast settings using the appropriate OSD.
Image is not stable	Check for proper video cable installation. Replace suspected faulty cable.
Screen jitter or noisy video	Check for proper video cable installation. Replace suspected faulty cable.
	Reroute cables or replace suspected faulty cables.
	Check host and monitor grounding.
	Monitor out of adjustment. Redo Coarse and Fine adjustments using the appropriate OSD.
Image is dim, even with brightness, and contrast controls set full UP	Check for proper video cable installation. Replace suspected faulty cable.
	Test video source by connecting to another monitor that you know is operational.

Troubleshooting

Symptom	Action
Screen image is not centered or sized properly	Adjust the Horizontal and Vertical position settings using the appropriate OSD.
	Check the Image Size selection using the appropriate OSD.
	Perform the Auto Setup procedure.
Color is not uniform Colors are distorted with dark or shadowed areas White does not look white	Adjust the Color setting using the appropriate OSD.
Image position changes are not saved	Reposition the image using the appropriate OSD. Wait five seconds for the changes to be saved before you turn off power.
The power indicator blinks amber once	The monitor is saving your changes to the OSD.
The power indicator is amber.	The monitor is using its power management.
OSD does not respond to any key press except ON/OFF and Auto adjust	Firm keypress is required. Make sure OSD Lockout is disabled.

Specifications

Heavy Monitors

Attribute	Value
Display	
Display type	Color active matrix TFT LCD
Display size (diagonal) 1200M 1500M 1700M 1900M	 12.1 inch (308 mm) 15.0 inch (381 mm) 17.0 inch (432 mm) 19.0 inch (483 mm)
Display areas (WxH) 1200M 1500M 1700M 1900M	 246 x 185 mm (9.7 x 7.3 in) 305 x 229 mm (12.0 x 9.0 in) 338 x 270 mm (13.3 x 10.7 in) 377 x 302 mm (14.8 x 11.9 in)
Resolution (WxH) 1200M 1500M 1700M/1900M	 800 x 600 native mode, 256 K colors[1] 1024 x 768 native mode, 256 K colors[2] 1280 x 1024 native mode, 16.2 M colors[3]
Luminance (typical) 1200M 1500M 1700M 1900M	 400 cd/m^2 (Nits) 350 cd/m^2 (Nits) 300 cd/m^2 (Nits) 300 cd/m^2 (Nits)
Contrast ratio (typical) 1200M 1500M 1700M 1900M	 500:1 400:1 500:1 700:1
Response time (typical) 1200M 1500M 1700M 1900M	 35 ms 16 ms 8 ms 6 ms
Backlight 1200M/1500M/1700M/1900M	CCFT Tubes: 50,000 h (for 1/2 brightness)
CIE coordinates (typical) 1200M/1500M 1700M/1900M	 X: 0.313, Y:0.329 X: 0.310, Y:0.330
Touch screen description 1200M/1900M 1500M/1700M	 Resistive antiglare Resistive or capacitive antiglare

[1] Supported Standards: VGA 720 x 400 at 70 Hz (IBM Boot Mode); VESA 640 x 480 at 60/75 Hz; VESA 800 x 600 at 60/75 Hz

[2] Supported Standards: VGA 720 x 400 at 70 Hz (IBM Boot Mode); VESA 640 x 480 at 60/75 Hz; VESA 800 x 600 at 60/75 Hz; VESA 1024 x 768 at 60/70/75 Hz

[3] Supported Standards: VGA 720 x 400 at 70 Hz (IBM Boot Mode); VESA 640 x 480 at 60/75 Hz; VESA 800 x 600 at 60/75 Hz; VESA 1024 x 768 at 60/70/75 Hz; VESA 1280 x 1024 at 60/70/75 Hz

Video

Attribute	Value
Video bandwidth 1200M 1500M 1700M/1900M	50 MHz (max. video dot clock) 80 MHz (max. video dot clock) 135 MHz (max. video dot clock)
Video input signal	RGB analog (white level = 0.700V above ref. Black, into 75 Ohms, DVI single ended)
Sync input signals	Separate horizontal and vertical sync control, TTL signal levels
Video input connection 1200M/1500M/1700M/1900M	Female HD-15 or DVI (5-BNC connector support through cable adapter)

OSD Controls

Attribute	Value
OSD controls and indicators	Automatic Screen Setup, Brightness, Contrast, Sharpness, Manual Color Adjustment, Horizontal/Vertical Position, OSD Lock & Unlock, OSD Time Out timer, Factory Reset, Display Resolution Information, Power On/Off, and Sync Detected

Operator Input

Attribute	Value
Touch screen description 1200M/1900M 1500M/1700M	Resistive antiglare Resistive or capacitive antiglare

Electrical

Attribute	Value
Inputvoltage, ac	90…264V ac, autoswitching
Line frequency	47…63 Hz
Power consumption, ac 1200M 1500M 1700M/1900M	13.5 W 18 W 36 W
Input voltage, dc 1200M/1500M/1700M/1900M	9…36V dc

Environmental

Attribute	Value
Enclosure ratings 1200M/1500M/1700M/1900M	NEMA Type 1, 4, 4X, and 12, IP66
Temperature, operating [1]	0…50 °C (32…122 °F)
Temperature, storage	-20…60 °C (-4…140 °F)
Relative humidity [1]	10…90% noncondensing
Shock, operating Panel mount VESA mount	20 g (1/2 sine, 11 ms) 10 g (1/2 sine, 11 ms)
Shock, nonoperating Panel mount VESA mount	30 g (1/2 sine, 11 ms) 10 g (1/2 sine, 11 ms)
Vibration, operating	0.012in. p-p, 10...57 Hz; 2 g peak (57…500 Hz)
Vibration, nonoperating	0.012in. p-p, 10...57 Hz; 2 g peak (57…500 Hz)

[1] At 40 °C (104 °F) operating temperature, humidity should never exceed 90%. At 50 °C (122 °F), humidity should never exceed 50%. Operating the monitors beyond these limits for extended periods of time can reduce the life of the product.

Mechanical

Attribute	Value
Dimensions (H x W x D) 1200M 1500M 1700M 1900M	260 x 340 x 56 mm (10.24 x 13.39 x 2.21 in) 309 x 410 x 58 mm (12.2 x 16.14, 2.28 in) 356 x 452 x 55 mm (14.02 x 17.80 x 2.16 in) 399 x 483 x 74 mm (15.7 x 19.0 x 2.9 in)
Weight 1200M 1500M 1700M 1900M	5 kg (11 lb) 9 kg (19.8 lb) 10 kg (22.01 lb) 11 kg (24.25 lb)
Mounting options	panel, bench/tabletop, and rack (except for 1900M)

Certifications

Certification	Value
UL Listed per UL 60950-1 UL 1604 Hazardous Locations, Class I, Division 2 (when marked on the nameplate) c-UL per CSA C22.2 No. 60950-1-03 CSA Hazardous Locations per C22.2 No. 213 (when marked on the nameplate)	
CE marked for all applicable directives	
C-Tick	
RoHS compliant	

Touchscreen Serial Interface

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

For monitors equipped with touchscreens, a serial 2 m (6 ft) communication cable is included. You can also create your cable. The cable is a straight-wired serial (RS-232) cable with a male DB-9 D-shell connector on the monitor end.

The cable provides a communication 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.

Set Up the Touchscreen Interface

This section describes how to set up the touchscreen system. You will:
- enable the touchscreen interface.
- install the software on the host computer that will handle communications with the touchscreen controller.
- calibrate a touchscreen.

Enabling the Touchscreen Interface

The monitors provide a female DB-9 connector on the side of the panel. This connector provides the serial interface for the touch controller.

The table shows how to connect the wiring to the host serial port.

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

  Verify 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.

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

Calibrating a Touchscreen

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

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

Appendix C

Video Cables

You can use the HD-15 connector cable included with your monitor to connect the monitor to the host computer.

HD-15 Video Connector

The HD-15 video cable 2 m (6 ft) is equipped with a conventional HD-15 connector at each end.

The illustration shows the connector looking into pin end of male connector or solder term end of female connector.
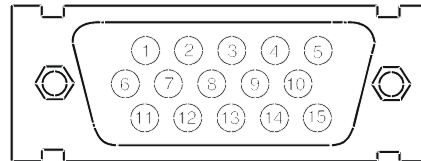
The Standard HD-15 Video Cable table provides the pin numbers and corresponding pin assignments for the HD-15 video connector with the DDC2B capability.

DVI Video Connector

The Standard DVI Video Cable table provides the pin numbers and corresponding pin assignments for the supported video connectors. Each connector is **female**.

Standard HD-15 Video Cable

Monitor (Female)	Signal Description	Host (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

Standard HD-15 Video Cable

Monitor (Female)	Signal Description	Host (Male)
11	Not Used	11
12	Bi-directional Data	12
13	Horizontal Sync	13
14	Vertical Sync (VCLK)	14
15	Data Clock (SCL)	15
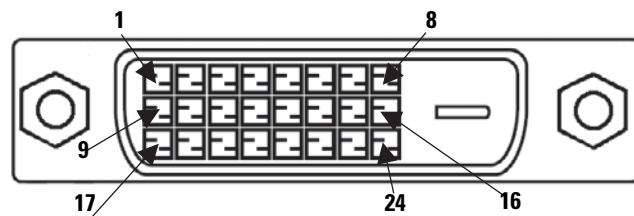
Standard DVI Video Cable

Pin #	DVI Port
1	RX2–
2	RX2+
3	RX2 Shld
4	N.C.
5	N.C.
6	DDC/CLK
7	DDC/DATA
8	N.C.
9	RX1-
10	RX1+
11	RX1 Shld
12	N.C.
13	N.C.
14	DDC/+5V
15	Gnd
16	Hot Plug
17	RX0–
18	RX0+
19	RX0 Shld
20	N.C.

Standard DVI Video Cable

Pin #	DVI Port
21	N.C.
22	Clock Shld
23	Clock+
24	Clock–

Rockwell Automation Support

Rockwell Automation provides technical information on the Web to assist you in using its products. At http://support.rockwellautomation.com, you can find technical manuals, a knowledge base of FAQs, technical and application notes, sample code and links to software service packs, and a MySupport feature that you can customize to make the best use of these tools.

For an additional level of technical phone support for installation, configuration, and troubleshooting, we offer TechConnect Support programs. For more information, contact your local distributor or Rockwell Automation representative, or visit http://support.rockwellautomation.com.

Installation Assistance

If you experience a problem with a hardware module within the first 24 hours of installation, please review the information that's contained in this manual. You can also contact a special Customer Support number for initial help in getting your module up and running.

United States	1.440.646.3223 Monday – Friday, 8am – 5pm EST
Outside United States	Please contact your local Rockwell Automation representative for any technical support issues.

New Product Satisfaction Return

Rockwell tests all of its products to ensure that they are fully operational when shipped from the manufacturing facility. However, if your product is not functioning, it may need to be returned.

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

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