6186M Industrial Performance Monitors

Catalog Numbers 6186M-12PN, 6186M-12PT, 6186M-15PN, 6186M-15PT, 6186M-15PNSS, 6186M-15PTSS, 6186M-17PN, 6186M-17PT, 6186M-17PNSS, 6186M-17PTSS, 6186M-19PN, 6186M-19PT, 6186M-19PNSS, 6186M-19PTSS

Allen-Bradley
by ROCKWELL AUTOMATION

User Manual

Original Instructions

Important User Information

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

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

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

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

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

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

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

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

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

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

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

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

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

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

The following icon may appear in the text of this document.

Identifies information that is useful and can help to make a process easier to do or easier to understand.

Table of Contents

About This Publication

This manual provides procedures for suitably trained personnel to install, connect, operate, configure, and troubleshoot industrial performance monitors.

Download Firmware, AOP, EDS, and Other Files 0151

Download firmware, associated files (such as AOP, EDS, and DTM), and access product release notes from the Product Compatibility and Download Center at rok.auto/pcdc.

Summary of Changes

This publication contains the following new or updated information. This list includes substantive updates only and is not intended to reflect all changes.

Topic	Page
Added Accessories table in Overview chapter	7
Removed Rack Mount as a mounting option from Mount chapter	17
Replaced terms with inclusive language in Video Source Connection section	23
Removed 6189V-DVICBL2 and 6189V-PCIDVI cables from Video Source Connection section	23
Removed 6189V-SCRNCOVER accessories from Care and Cleaning section	37
Replaced terms with inclusive language in HD-15 Video Connector section	43

Additional Resources

These documents contain additional information concerning related products from Rockwell Automation. You can view or download publications at rok.auto/literature.

Resource	Description
Industrial Performance Monitors Installation Instructions, publication 6186M-IN002	Provides instruction to install a 6186M industrial performance monitor.
Industrial Computers and Monitors Specifications Technical Data, publication IC-TD001	Provides technical data for 6186M industrial performance monitors.
EtherNet/IP™ Network Devices User Manual, ENET-UM006	Describes how to configure and use EtherNet/IP™ devices to communicate on the EtherNet/IP network.
Ethernet Reference Manual, ENET-RM002	Describes basic Ethernet concepts, infrastructure components, and infrastructure features.
UL Standards Listing for Industrial Control Products, publication CMPNTS-SR002	Assists original equipment manufacturers (OEMs) with construction of panels, to help confirm that they conform to the requirements of Underwriters Laboratories.
Industrial Components Preventive Maintenance, Enclosures, and Contact Ratings Specifications, publication IC-TD002	Provides a quick reference tool for Allen-Bradley® industrial automation controls and assemblies.
Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1	Provides general guidelines for installing a Rockwell Automation industrial system.
Product Certifications website, rok.auto/certifications.	Provides declarations of conformity, certificates, and other certification details.

Notes:

Overview

Allen-Bradley® 6186M Series G industrial performance monitors provide the latest in liquid crystal display (LCD) flat-panel technology. Combine these industrial performance monitors with non-display industrial computers to create a visualization, maintenance, control, or information computing solution.

Features

Allen-Bradley 6181M Series G industrial performance monitors offer the following features:

- Available in 12, 15, 17, or 19 inch active matrix display sizes
- Default video resolutions from 800x600 to 1280x1024
- Wide viewing angle with anti-glare coating
- One-button automatic screen adjust
- Rear panel keypad with lockout feature
- Windows®, Linux®, and Disk Operating System (DOS) compatible
- AC or DC input power
- Space efficient enclosure, less than 63 mm (2.49 in.) depth
- Optional resistive touch screen

Product Catalog Numbers

Available 6186M Series G industrial performance monitors are listed in Table 1.

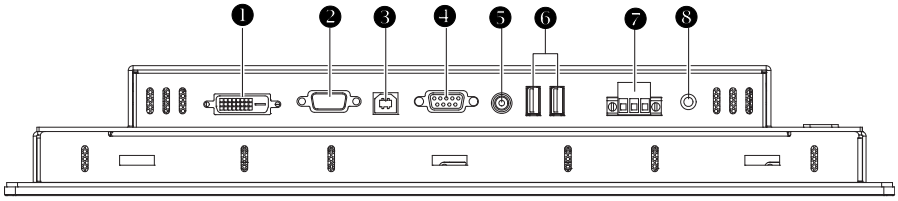
Table 1 - Catalog Number Explanation: 6186M Series G Industrial Performance Monitors

Catalog Number 6186M-	Display Size	Bezel Material	Touch Screen Type
12PN	12 in.	Aluminum	None
12PT			Resistive touch screen
15PN	15 in.	Aluminum	None
15PT			Resistive touch screen
15PNSS		Stainless steel	None
15PTSS			Resistive touch screen
17PN	17 in	Aluminum	None
17PT			Resistive touch screen
17PNSS		Stainless steel	None
17PTSS			Resistive touch screen
19PN	19 in.	Aluminum	None
19PT			Resistive touch screen
19PNSS		Stainless steel	None
19PTSS			Resistive touch screen

Peripheral Connections

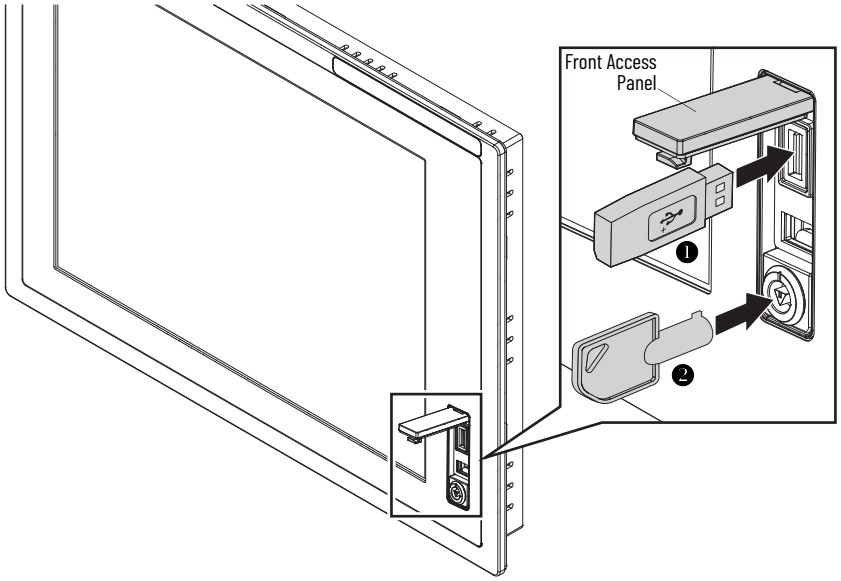
Table X shows the available I/O ports for your peripheral connections on the underside of your industrial performance monitor.

Table 2 - I/O Port Locations: All Models



Note No.	Icon	Description
1	DVI	DVI port for digital video source
2		HD-15 VGA port for analog video source
3		USB port, Type B for connection to host computer
4		Serial port (RS-232) for touch screen interface
5		Power input, AC adapter
6		USB device ports, Type A (2)
7	–	Power input, DC terminal block
8		Functional ground screw

Table 3 - I/O Port Locations: Aluminum Bezel Models



Note No.	Description
1	USB DevicePort™, Type A
2	USB key

SHOCK HAZARD: Risk of fire or explosion. USB device ports cannot be used in hazardous locations. Only connect the USB device for initial setup and maintenance. Disconnect the USB device once the initial setup or maintenance is complete. Keep the front access panel closed when the USB device port and USB key are not in use.

Accessories

A list of all current accessories can be found on the Rockwell Automation Industrial Monitors website.

Table 4 - Accessories

Category	Catalog Number	Description
Adapters	6189V-MMA12	Panel adapter for converting 6185-B to 1200M
	6189V-MMA15	Panel adapter for converting 6185-C, 6185-F, and 6185-H to 1500M
	6189V-MMA17	Panel adapter for converting 6185-D and 6185-J to 1700M
AC Power	6189V-MPS3	Replacement AC power adapter
	6189V-MPSDIN	DIN rail mounting accessory for AC power adapter
Cables	6189V-DVICBL5	Digital video cable, 5 m (16.4 ft)
	6189V-TCHCBL2	Serial touch cable, RS-232 cable, 1.8 m (6 ft)
	6189V-USBCBL2	USB/USB touch cable, Type A to Type B, 1.8 m (6 ft)
	6189V-USBKEY	USB key
	6189V-VGACBL2	Analog video cable, 1.9 m (6.3 ft)
Mounting Hardware	6189V-MBA	Adapter for bench or tabletop mounting
	6189V-MCLPS3	Replacement mounting clips (quantity of 14)

Approximate Dimensions

Dimensions are shown in millimeters (inches). Dimensions are not intended to be used for manufacturing purposes.

Figure 1 - Approximate Dimensions: 1200M Industrial Performance Monitor

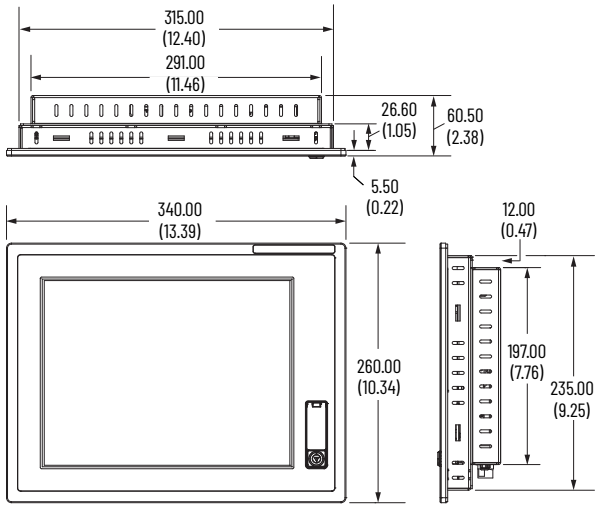


Figure 2 - Approximate Dimensions: 1500M Industrial Performance Monitor, Aluminum Bezel

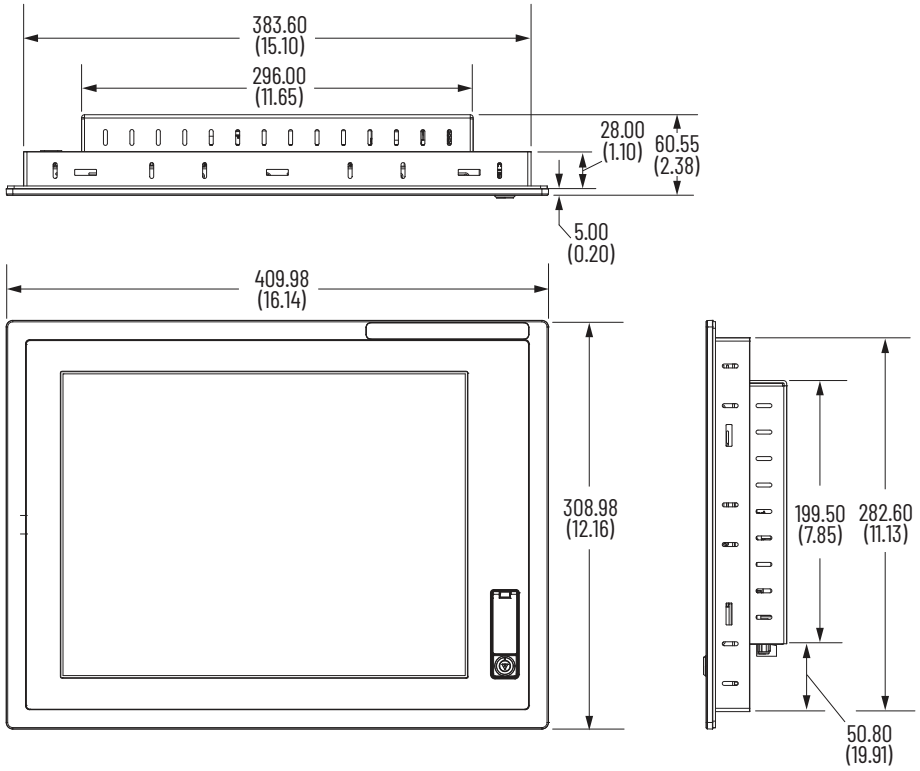


Figure 3 - Approximate Dimensions:1500M Industrial Performance Monitor, Stainless Steel Bezel

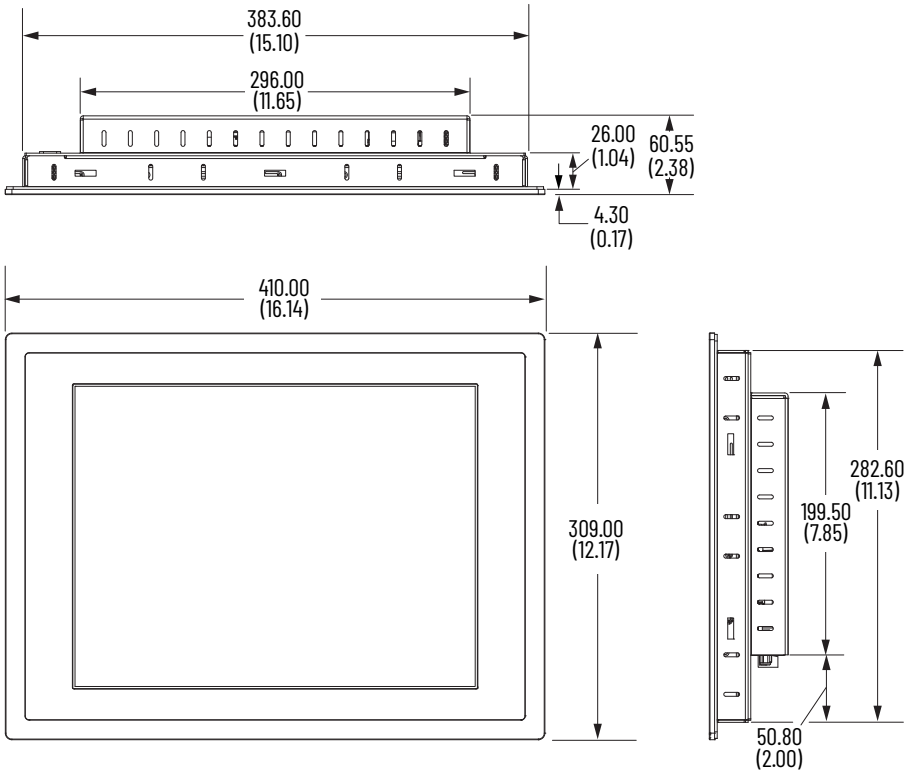


Figure 4 - Approximate Dimensions: 1700M Industrial Performance Monitor - Aluminum Bezel

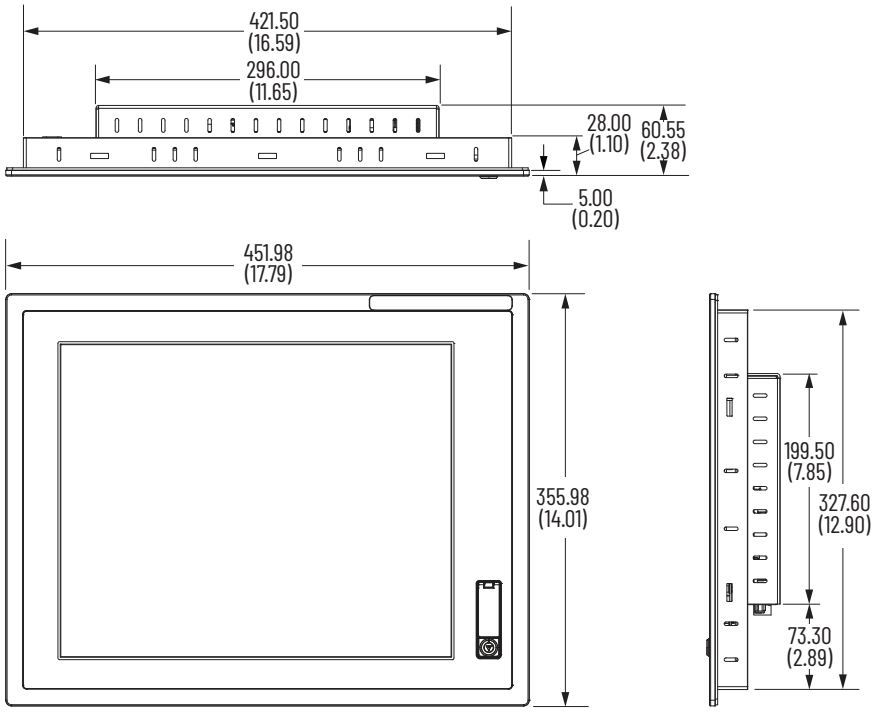


Figure 5 - Approximate Dimensions: 1700M Industrial Performance Monitor - Stainless Steel Bezel

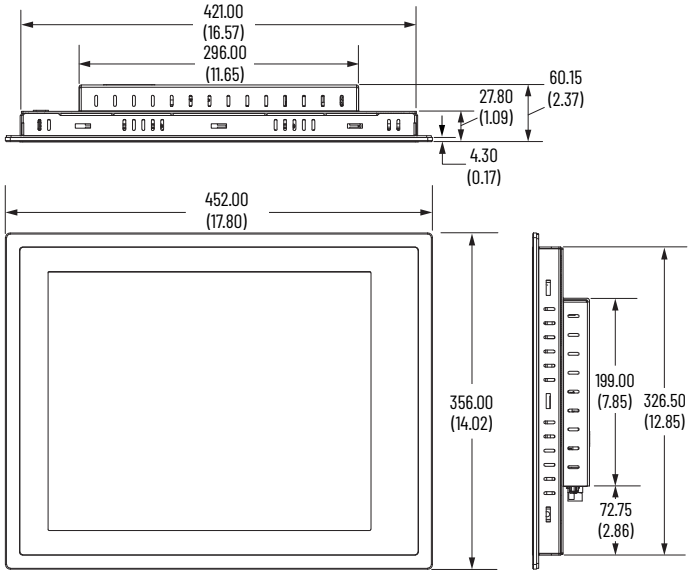


Figure 6 - Approximate Dimensions:1900M Industrial Performance Monitor - Aluminum Bezel

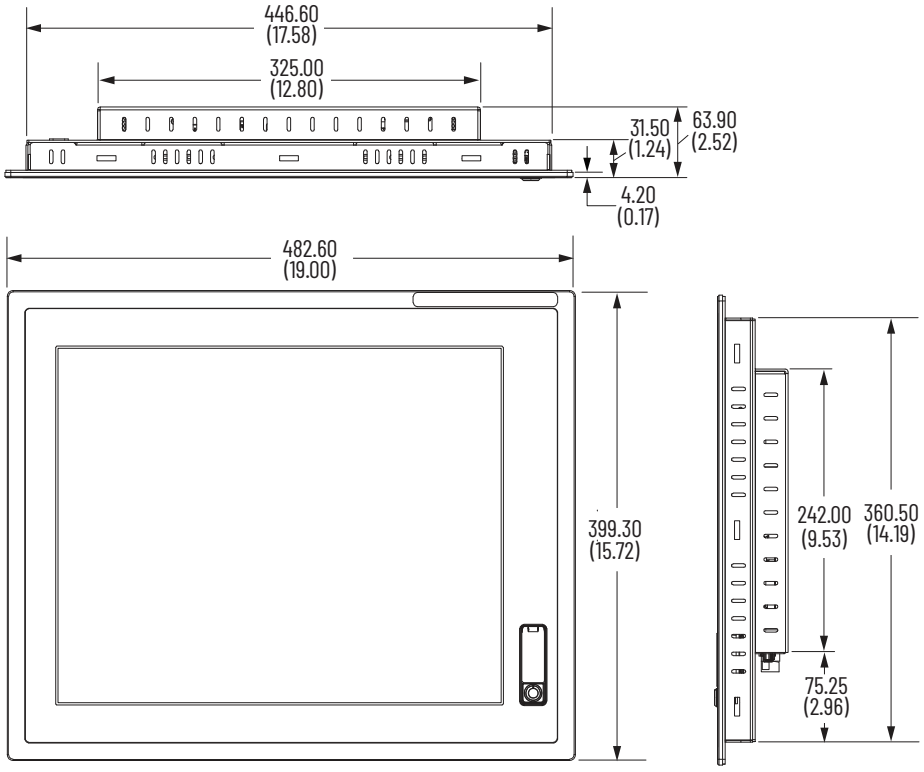
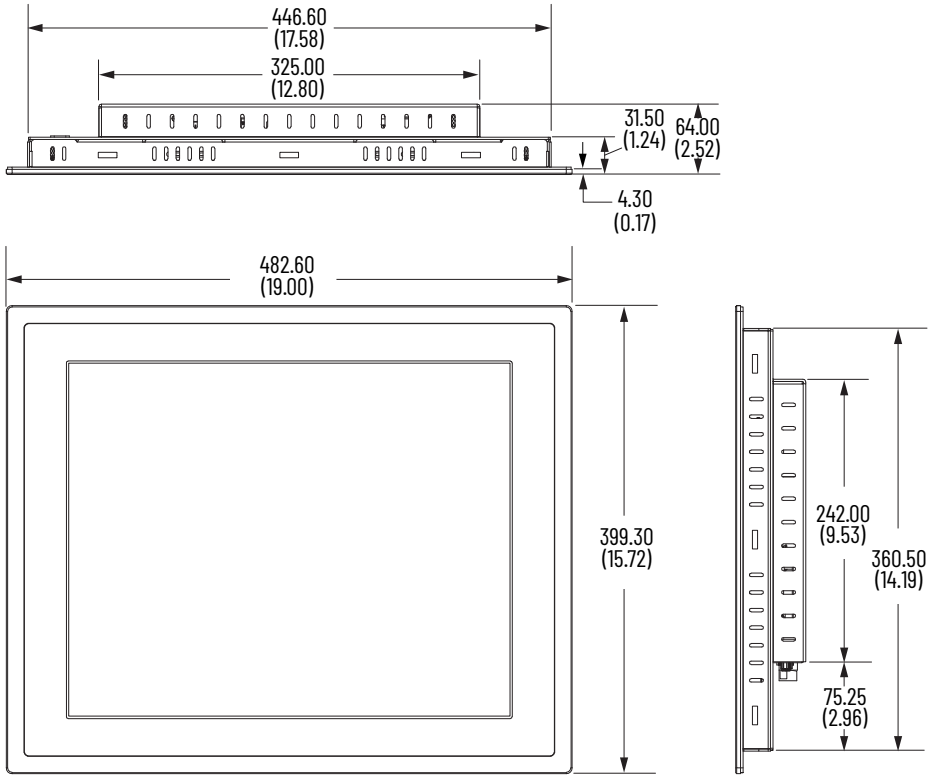


Figure 7 - Approximate Dimensions: 1900M Industrial Performance Monitor - Stainless Steel Bezel



Prepare for Installation

Installation Precautions

Hazardous Locations

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

- Class I, Division 2 Groups A, B, C, D
- Non-hazardous locations

The following statement applies to use in hazardous locations.

North American Hazardous Location Approval

The following information applies when operating this equipment in hazardous locations.
Products marked "CL I, DIV 2, GP A, B, C, D" are suitable for use in Class I Division 2 Groups A, B, C, D, Hazardous Locations and nonhazardous locations only. Each product is supplied with markings on the rating nameplate indicating the hazardous location temperature code. When combining products within a system, the most adverse temperature code (lowest "T" number) may be used to help determine the overall temperature code of the system. Combinations of equipment in your system are subject to investigation by the local Authority Having Jurisdiction at the time of installation.
 **WARNING: Explosion Hazard –** • Do not disconnect equipment unless power has been removed or the area is known to be nonhazardous. • Do not disconnect connections to this equipment unless power has been removed or the area is known to be nonhazardous. Secure any external connections that mate to this equipment by using screws, sliding latches, threaded connectors, or other means provided with this product. • Substitution of components may impair suitability for Class I, Division 2. • If this product contains batteries, they must only be changed in an area known to be nonhazardous.

Environnements dangereux

Cet équipement peut être utilisé dans les environnements suivants:

- Classe I, Division 2, Groupes A, B, C et D .
- Classe II, Division 2, Groupes F et G .
- Classe III, Division 1 .
- non dangereux.

La mise en garde suivante s'applique à une utilisation en environnement dangereux.

Approbation nord-américaine pour emplacements dangereux

Informations sur l'utilisation de cet équipement en environnements dangereux.
Les produits marqués "CL I, DIV 2, GP A, B, C, D" ne conviennent qu'à une utilisation en environnements de Classe I Division 2 Groupes A, B, C, D dangereux et non dangereux. Chaque produit est livré avec des marquages sur sa plaque d'identification qui indiquent le code de température pour les environnements dangereux. Lorsque plusieurs produits sont combinés dans un système, le code de température le plus défavorable (code de température le plus faible) peut être utilisé pour déterminer le code de température global du système. Les combinaisons d'équipements dans le système sont sujettes à inspection par les autorités locales qualifiées au moment de l'installation.
AVERTISSEMENT: Risque d'Explosion – Couper le courant ou s'assurer que l'environnement est classé non dangereux avant de débrancher l'équipement. Couper le courant ou s'assurer que l'environnement est classé non dangereux avant de débrancher les connecteurs. Fixer tous les connecteurs externes reliés à cet équipement à l'aide de vis, loquets coulissants, connecteurs filetés ou autres moyens fournis avec ce produit. La substitution de composants peut rendre cet équipement inadapté à une utilisation en environnement de Classe I, Division 2. S'assurer que l'environnement est classé non dangereux avant de changer les piles.

Les écrans et l'adaptateur c.a. ont le code de température T4, c'est-à-dire une température de fonctionnement maximum de 135 °C pour une température ambiante de 50 °C. N'installez pas les écrans dans des environnements contenant des gaz atmosphériques inflammables à moins de 135 °C.

Control Drawing - Class I Division 2 and Zone 2 (USB Port, Type A)

The following control drawing is provided to comply with the National Electrical Code, Article 500 pertaining to Class I, Division 2, Groups A, B, C, D, and Class I, Zone 2, Group IIC.

Figure 8 - Industrial Performance Monitors USB Port, Type A, and Peripheral Devices

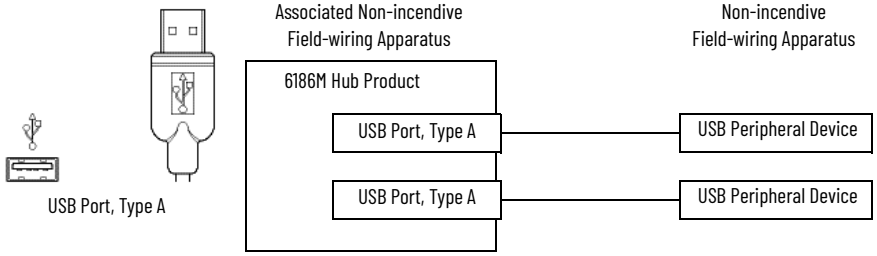


Table 5 - Industrial Performance Monitors USB Port, Type A, and Peripheral Device Circuit Parameters

Parameter	Value	Parameter Definition
$V_{OC\ (USB)}$	5.25V DC	Open circuit voltage of each host USB port. The maximum applied voltage rating, $V_{max\ (peripheral)}$, of each peripheral device shall be greater than or equal to $V_{OC\ (USB)}$. $V_{max\ (peripheral)} \geq V_{OC\ (USB)}$, as appropriate
$I_{SC\ (USB)}$	950 mA	Maximum output current of each host USB port. The maximum current, $I_{max\ (peripheral)}$, to which each USB peripheral device can be subjected shall be greater than or equal to $I_{SC\ (USB)}$. $I_{max\ (peripheral)} \geq I_{SC\ (USB)}$
$C_{a\ (USB)}$	20 µF	This value is the maximum total capacitance that can be connected to each USB port. The total capacitance of each USB peripheral and its cable must not exceed the indicated value. The maximum total capacitance, $C_{i\ (peripheral)}$, and cable capacitance of each separate USB peripheral device shall be less than or equal to $C_{a\ (USB)}$. $C_{i\ (peripheral)} + C_{cable} \leq C_{a\ (USB)}$
$L_{a\ (USB)}$	3.11 µH	This value is the maximum total inductance that can be connected to each USB port. The total inductance of each peripheral device and its cable must not exceed the indicated value. The maximum total inductance, $L_{i\ (peripheral)}$, and cable inductance of each separate USB peripheral device shall be less than or equal to $L_{a\ (USB)}$. $L_{i\ (peripheral)} + L_{cable} \leq L_{a\ (USB)}$

Control Drawing - Class I Division 2 and Zone 2 (USB Port, Type B)

The following control drawing is provided to comply with the National Electrical Code, Article 500 pertaining to Class I, Division 2, Groups A, B, C, D, and Class I, Zone 2, Group IIC.

Figure 9 - Industrial Performance Monitors USB Port, Type B

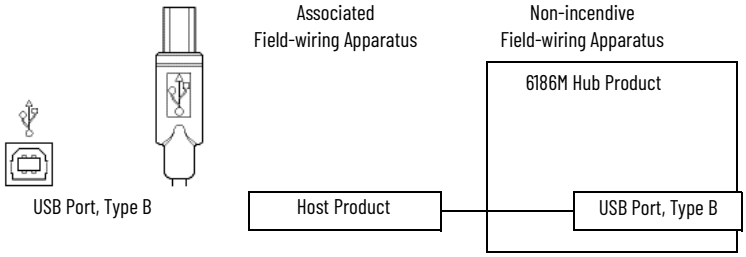


Table 6 - Required Circuit Parameters for USB, Type B, Connector - Connect to Host

Parameter	Value	Parameter Definition
$V_{Bmax\ (USB)}$	5.25V DC, max	Maximum applied voltage rating of the 6186M USB Type B connector. The output of the host product shall not exceed this value. $V_{Bmax\ (USB)} \geq V_{OC\ (Host\ USB)}$
$I_{Bmax\ (USB)}$	110 µA, min	Maximum current required at the 6186M USB Type B connector. The host product must be capable of a minimum of this value. $I_{SC\ (Host\ USB)} \leq I_{Bmax\ (USB)}$
$C_{iB\ (USB)}$	0 µF	Total capacitance of the 6186M USB Type B connector. The host product must be capable of tolerating this value of capacitance. $C_{a\ (Host\ USB)} \geq C_{iB\ (USB)} + C_{cable}$
$L_{iB\ (USB)}$	0 µH	Total Inductance of the 6186M USB Type B connector. The host product must be capable of tolerating this value of inductance. $L_{a\ (Host\ USB)} \geq L_{iB\ (USB)} + L_{cable}$

Application Information

The circuit parameters of associated field-wired apparatus for use in hazardous locations shall be coordinated with the host product such that their combination remains nonincendive. The industrial performance monitors and USB peripheral devices shall be treated in this manner.

Each industrial performance monitor provides two separately powered USB ports. The circuit parameters for each USB port are found in tables on page 12 and page 13.

IMPORTANT Circuit parameters of USB peripheral devices and their associated cabling must be within the limits in the tables on page 12 and page 13 for the devices and their cabling to remain nonincendive when used with the USB ports of industrial performance monitors.

For the comparison of $C_{a\ (USB)}$ and $C_{i\ (peripheral)}$, use the capacitance of each individual connected USB peripheral device and its associated cable C_{cable}.

For the comparison of $L_{a\ (USB)}$ with $L_{i\ (peripheral)}$, use the inductance of each individual peripheral device and its associated cable for L_{cable}.

If cable capacitance and inductance are not known, the following values may be used:

$$C_{cable} = 60\ pF/ft\ (197\ pF/m)$$

$$L_{cable} = 0.20\ \mu H/ft\ (0.66\ \mu H/m)$$

Compliance

European Union Directive Compliance

This product meets the European Union Directive requirements when installed within the European Union or EEA regions and have the CE marking. A copy of the declaration of the conformity is available at rok.auto/certifications.

ATTENTION: This equipment is intended to operate in an industrial or control room environment, which uses some form of power isolation from the public low-voltage mains. Obtain permission from the local power authority before you connect any monitor configuration that draws more than 75 W of AC power directly from the public mains.
All I/O cables must be used only indoors.

Connect peripheral cables to the appropriate I/O ports on your industrial performance monitor. To comply with EN 61326-1, see Peripheral Connections on page 9 for the required cable types.

Environment and Enclosure Information

ATTENTION: This equipment is intended for use in a Pollution Degree 2 industrial environment, in overvoltage Category II applications (as defined in IEC 60664-1), at altitudes up to 2000 m (6561 ft) without derating.
This equipment is considered Group 1, Class A industrial equipment according to IEC/EN 61326-1. Without appropriate precautions, there can be potential difficulties with electromagnetic compatibility in other environments due to conducted as well as radiated disturbance.
This equipment is 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 help 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 ± 60° from vertical. Examples include an 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 that are required to comply with certain product safety certifications.
In addition to this publication, see the following:

- Industrial Automation Wiring and Grounding Guidelines, 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 that your product provides safe and reliable service:

- The installation site must have sufficient power.

ATTENTION: The AC adapter for your industrial performance monitor must be grounded to maintain an electrically safe installation.
Grounding the industrial performance monitor itself is not required.
To ground the AC adapter: Connect the product to earth ground with the supplied AC cord ground wire or 0.9 mm^2 (18 AWG) or larger external wire.
The ground wire should have green insulation with a yellow stripe for easy identification.

- 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 surrounding air temperature must not exceed the maximum operating temperature, either inside or outside of the enclosure. Consider heat produced by other devices in the enclosure. You might need a user-supplied fan, heat exchanger, or air conditioner to meet this condition.

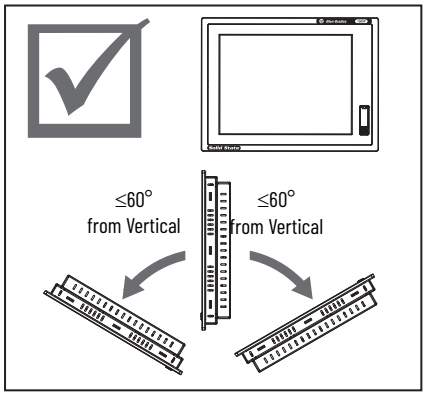
Hot air rises. The temperature at the top of the enclosure is often higher than the temperature in other parts of the enclosure, especially if air is not circulating.

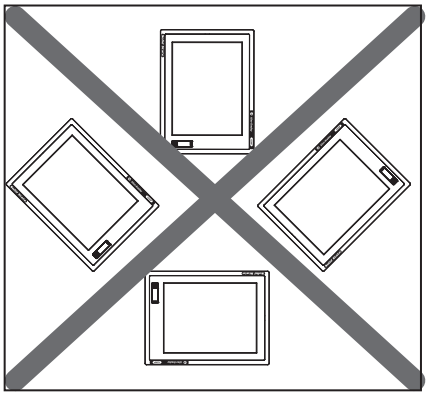
The product can operate at a range of extremes. However, the life span of any electronic device is shortened if you continuously operate the product at its highest rated temperature.

- The humidity of the surrounding 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 can cause shocks and damage electronic components.
- The enclosure or cover must always remain in place during operation. The cover provides protection against high voltages inside the product and inhibits radio frequency emissions that might interfere with other equipment.

ATTENTION: Industrial computers and industrial performance monitors are not safety devices. Follow standard safety practice and redundancy in the application of this product.

- When mounted, the product cannot be tilted more than 60° from vertical.





Unpack the Product

IMPORTANT Before you unpack your industrial performance monitor, inspect the shipping carton for damage. If damage is visible, immediately contact the shipper and request assistance. Otherwise, continue to unpack the product.

Keep the original packing material including the inner and outer packing cartons, in case you must return your industrial performance monitor for service or transport to another location.

To help protect the LCD from inadvertent damage, set your industrial performance monitor on a clean microfiber towel with the LCD facing downward throughout the installation process.

Your industrial performance monitor ships with these items:

- Mounting clips
- Cutout template
- AC power supply and applicable power cord
- HD-15 analog video cable
- DVI cable
- Touch screen serial cable (only for industrial performance monitors with touch screen display)
- USB cable
- Cable retention tie wraps
- Installation instructions, publication 6186M-IN002
- Accessories CD that contains the installation files for monitor drivers and the ScreenSet monitor setup utility

Mount

All 6186 industrial performance monitors can be panel mounted and bench or table mounted. DIN rail mount for an AC adapter is also feasible when a DIN rail bracket, cat. no. 6189V-MPSDIN.

Required Tools

These tools are required for mounting.

Required Tools by Mount Type

Mount Type	Required Tools
Panel Mount	Cutting tools appropriate for the panel material
	#2 Phillips torque screwdriver
	For an existing panel cutout: See Table 11 on page 13 for a list of available mounting adapters.
Bench or Table Mount	Mounting arm with VESA™ FPMPMI 100 mm standard interface
	Optional adapter, catalog number 6189V-MBA
	M4 x 0.7 screws (quantity of 4)
	#2 Phillips torque screwdriver
DIN Rail Mount for AC Adapter	DIN rail bracket, catalog number 6189V-MPSDIN
	DIN rail
	#2 Phillips torque screwdriver

Panel Mount Installation

For panel mount installation, your industrial performance monitor installs directly into a panel with supplied mounting clips. The number of clips varies by model.

Table 7 - Supplied Mounting Clips

Model	Mounting Clip Quantity
1200M, 1500M, and 1700M, Aluminum Bezel	10
1700M, Stainless Steel Bezel	12
1900M	14

Panel Mount Guidelines

Optional mounting adapters are available to mount a monitor into the existing panel cutout of previous model performance monitors. See Table 4 on page 7 for a list of panel mounting adapters.

Observe these guidelines when installing your industrial performance monitor in a panel.

ATTENTION: Risk of personal and/or product damage. Failure to follow these mounting guidelines can result in personal injury or damage to the panel components.

- Confirm that there is adequate space behind the panel.
  - Allow a minimum clearance of 51 mm (2.0 in.) around the back, sides, and bottom, and a minimum clearance of 77 mm (3.0 in.) on the top for ventilation.
  - A cabinet with a minimum depth of 112 mm (4.4 in.) is sufficient.
- Cut support panels to specifications before installation.
  - To achieve proper sealing against water and dust and to provide proper support, the support panels must be at least 14 gauge.
  - The supplied mounting clips accommodate panels up to 6.00 mm (0.236 in.) thick.
  - Plan the mounting area according to the panel cutout dimensions.

Catalog Number	Model	Approximate Cutout Dimensions [mm (in.)] (H x W)
6186M-12	1200M	238.0 x 318.0 (9.37 x 12.51)
6186M-15	1500M	285.6 x 386.6 (11.24 x 15.22)
6186M-17	1700M	329.5 x 424.0 (12.97 x 16.69)
6186M-19	1900M	363.5 x 449.6 (14.31 x 17.70

  - Use the cutout template supplied with your industrial performance monitor.
- Take precautions so that operating temperatures or other environmental specifications of your industrial performance monitor are followed both inside and outside of the enclosure. See Table 28 on page 46 for environment specifications.

Step A: Prepare the Panel Cutout

1. Use the full-size template shipped with your industrial performance monitor to create the cutout.
2. Cut the marked area with the appropriate cutting tools for the panel material.

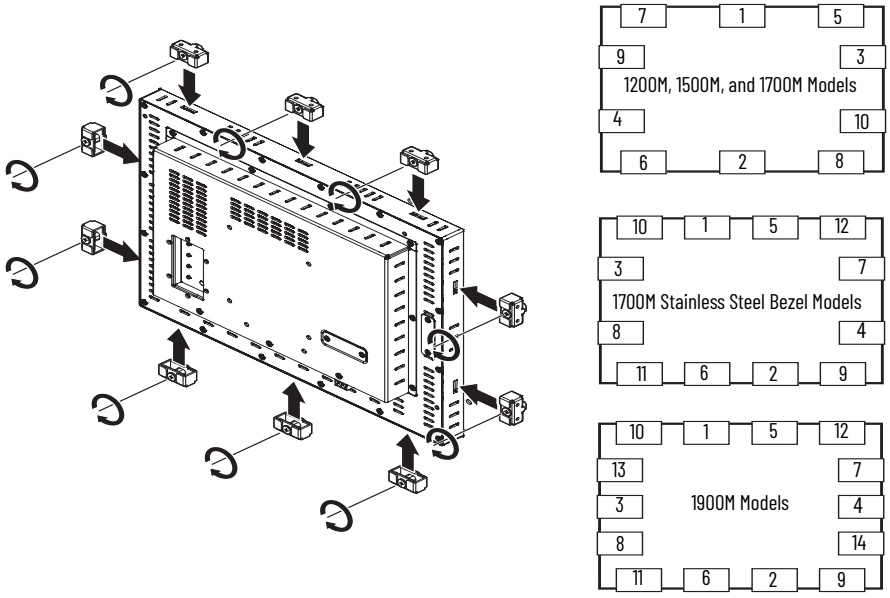
   Take precautions so metal cuttings do not enter components that are already installed in a panel.

3. Remove any debris from the cutout.

Step B: Secure the Industrial Performance Monitor

Follow these steps to mount your industrial performance monitor in a panel.

Figure 10 - Panel Mount Installation: Mounting Clip Tightening and Torque Sequence



1. Attach the cables to your industrial performance monitor.
   See Table 2 on page 6 port locations

   Access to the back side of your industrial performance monitor can be limited after it is mounted in the panel.
2. Be sure that the sealing gasket is properly positioned on your industrial performance monitor.

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

3. Place your industrial performance monitor in the prepared panel cutout.
4. Slide the supplied mounting clips into the slots on the top, bottom, and sides of your industrial performance monitor as shown in Figure 10.
5. Hand-tighten the mounting clips around the bezel by following the tightening sequence as shown in Figure 10.
6. Tighten the mounting clips to a torque of 1.35 N·m (12 lb·in) by following the torque sequence as shown in Figure 10.

ATTENTION: Risk of product damage. Do not overtighten the mounting clips. The mounting clips must be tightened to the specified torque in Figure 10 to provide a proper seal and help 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.

7. Repeat the torque sequence at least three times until all mounting clips are torqued to 1.35 N·m (12 lb·in) and the sealing gasket is compressed uniformly against the panel.

Bench or Tabletop Mount

Perform the following steps to attach your industrial performance monitor to a bench or table.

Bench or Table Mount Guidelines

Observe these guidelines when installing your industrial performance monitor on an arm:

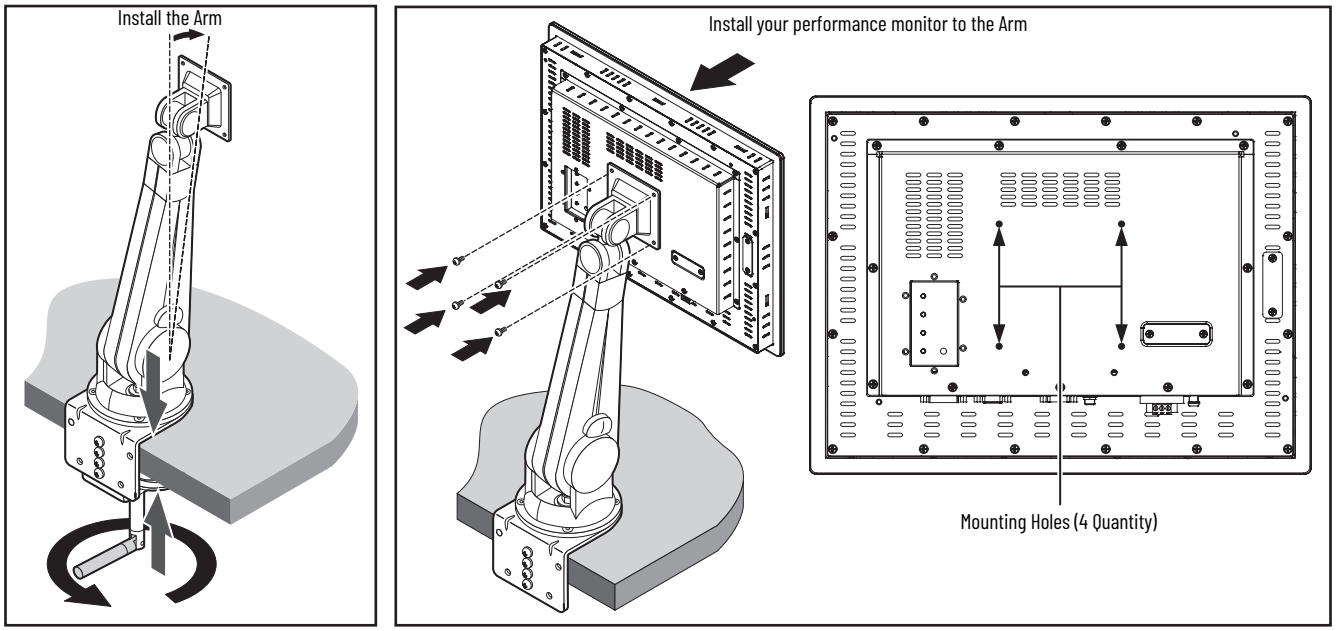
- The mounting surface and the mounting arm must be strong enough to support the weight of both your industrial performance monitor and the mounting hardware. See Table 29 on page 46 for the approximate weight of your industrial performance monitor.
- The interface between the arm and your industrial performance monitor must meet VESA FPMPMI 100 mm standards.
- An adapter, Catalog Number 6189V-MBA, is available for bench or tabletop mounting.
- The mounting location must provide adequate clearance for positioning and moving the adjustable unit and routing cables.

Mount the Industrial Performance Monitor

Follow these directions to mount your industrial performance monitor to a bench or tabletop.

Figure 11 shows the mounting holes for a VESA FPMPMI standard 100 mm (3.94 in.) interface pad.

Figure 11 - Bench or Table Mount Installation: Installation Sequence



1. Using screws, bolts, or clamps provided by the arm manufacturer to mount a mounting arm (not supplied) to the bench or tabletop.

IMPORTANT Be sure that the arm is properly secured to accommodate the weight of your industrial performance monitor. See Table 29 on page 46 for the approximate weight.

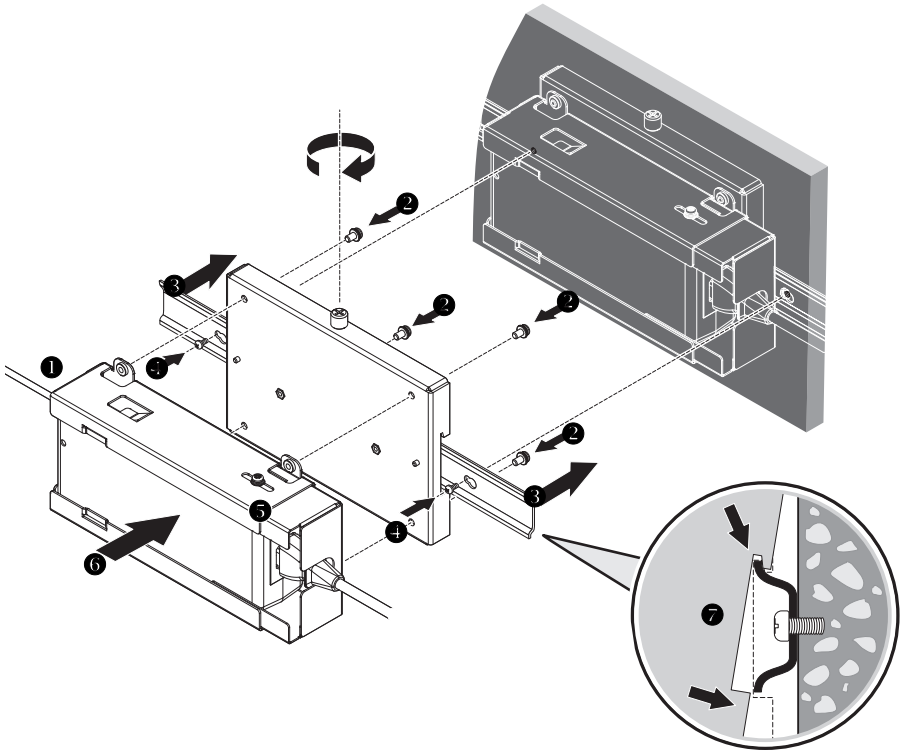
2. Alight the industrial performance monitor with the VESA interface of the arm.
3. Insert four M4 x 0.7 screws through the VESA interface and into the mounting holes on your industrial performance monitor.
4. Tighten the four M4 x 0.7 screws.

DIN Rail Mount for AC Power Adapter

The supplied AC power adapter can be mounted to a DIN rail using the DIN rail bracket, catalog number 6189V-MPSDIN.

Follow these steps to mount the AC power adapter to a DIN rail.

Figure 12 - Install a DIN Rail Mount Bracket, Catalog Number. 6189V-MPSDIN



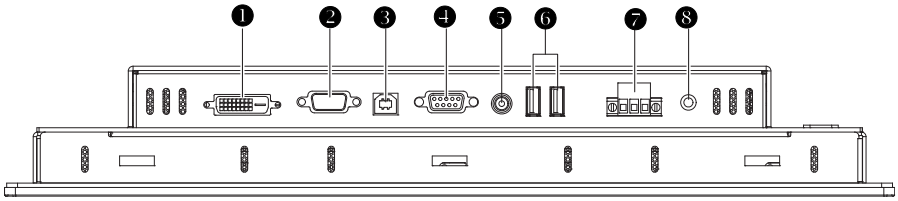
1. Attach the DIN rail bracket to the bottom of the AC power adapter **(1)**.
2. Secure the DIN rail bracket with four M4x6 mm screws (supplied) **(2)**.
3. Torque the screws to 0.882 N·m (7.811 lb·in).
4. Attach the DIN rail to the wall or installation surface **(3)** with two M4x6 mm screws (supplied) **(4)**.
5. Torque the M4x6 mm screws to 0.882 N·m (7.811 lb·in).
6. Insert the upper lip of the DIN rail bracket on the top edge of the DIN rail **(5)**.
7. Press the AC adapter firmly against the lower edge of the rail **(6)**.
8. Tighten the fastener on the DIN rail bracket **(7)**.

Notes:

Connect

The cables can be connected to the I/O ports on the underside of your industrial performance monitor.

Table 8 - I/O Port Locations: All Models



Note No.	Icon	Description
1	DVI	DVI port for digital video source
2		HD-15 VGA port for analog video source
3		USB port, Type B for connection to host computer
4		Serial port (RS-232) for touch screen interface
5		Power input, AC adapter
6		USB device ports, Type A (2)
7	–	Power input, DC terminal block
8		Functional ground screw

Video Source Connection

All 6186M industrial performance monitors support digital video. Your industrial performance monitor ships with a high-quality DVI cable. Use this supplied DVI cable to connect your performance monitor to a digital video source.

Connect to a Host Digital Video Source

Follow these steps to connect your performance monitor to a digital video source.

If a DVI cable greater than 5 m (16.4 ft) is required for your site, a DVI cable extension can be used.

1. Connect the pinned end of the supplied DVI cable to the DVI video port on your performance monitor.
2. Connect the other end of the DVI cable end to the output of any DVI video source.

Connect to a Host Analog Video Source

All 6186M performance monitors support analog video. Your performance monitor ships with a high-quality analog video cable. Use this supplied video cable to connect your performance monitor to a video source.

To connect your performance monitor to an analog video source, follow these directions.

1. Connect one end of the 1.9 m (6.3 ft) analog video cable to the socket end of the HD-15 video input connector your performance monitor.

   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.

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

   You can connect your performance 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, your performance monitor might or might not function properly.

Connect the Optional Touch Screen Interface

An optional touch screen provides a high-resolution touch input system. The driver software that is included with your performance monitor allows the touch screen to function with many Microsoft Windows® and Linux® operating systems (OSs) such as a pointing device or mouse.

A touch screen interface to your industrial computer can be configured using either the serial RS-232 connection or the USB connection.

Connect the Optional Serial RS-232 Touch Screen Interface

The RS-232 DB9 (socket end) D-shell connector on the bottom side of your performance monitor provides the serial touch screen interface connection to the host.

Table 9 shows how to connect the RS-232 wirings to the host serial port.

Table 9 - Connect RS-232 Wiring to Host Serial Port

Performance Monitor (DCE Device)	Signal Description	Host (DTE Device)
DB-9 Pinned End		DB-9 Socket End
1	Not Connected (DCD)	1
2	Transmit Data (TXD)	2
3	Receive Data (RXD)	3
4	Data Terminal Ready (DTR)	4
5	Common Signal Return (SG)	5
6	Not Connected (DSR)	6
7	Request to Send (RTS)	7
8	Clear to Send (CTS)	8
9	Not Connected	9

For units with the touch screen option, follow these directions to connect the touch screen interface.

1. Connect one end of the included touch screen serial cable to the RS-232 port connector on your performance monitor.
2. Connect the other end of the cable to a serial port on the host computer.
3. Tighten the captive screws on the cable connector.

Connect the USB and Optional USB Touch Screen Interface

The USB type A connection to the host computer is used to allow USB devices and the optional USB touch screen interface to the host computer.

Follow these directions to connect the touch screen interface.

1. Connect the USB Type B plug end connector end of the included USB cable to the USB Type B socket end connector on your performance monitor.
2. Connect the USB Type A plug end connector on the USB cable to the USB A Type socket end connector on the host computer.

Install the Touch Screen Driver Software

IMPORTANT Before you install the touch screen driver software, check the following for the interface you are using.

- For a RS-232 interface: Verify that the supplied RS-232 cable is properly installed between the RS-232 input connector on your performance monitor and the host's COM port.
- For a USB interface: Verify that the USB cable is properly installed between the USB input connector on your performance monitor and a USB port on the host computer.

1. Install the touch screen driver that is found within the supplied accessories CD or at rok.auto/pcdc.

Perform a Calibration

1. Follow the calibration instructions in the touch screen documentation.

   The touch screen is ready for use.

Connect the Power Source

ATTENTION: Risk of product damage. The performance monitor can connect to either a 100...240V AC or a 9V...36V DC power source, but cannot be connected to AC and DC voltage simultaneously.

Connect AC Power

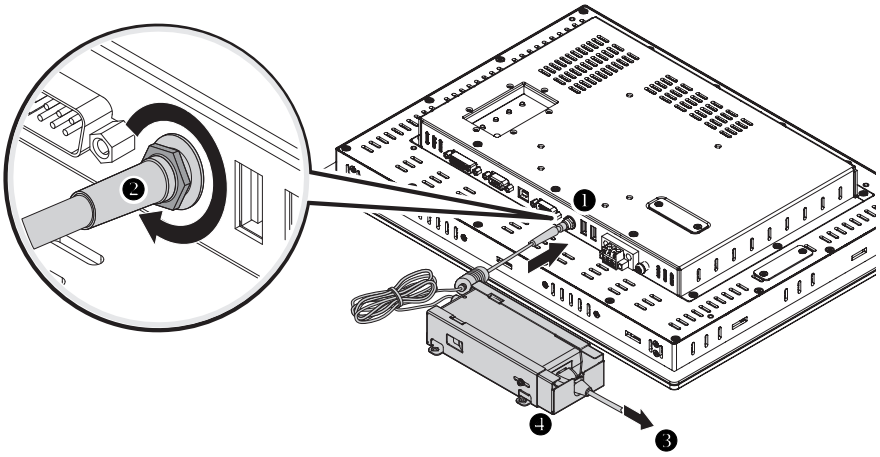
Your performance monitor can use a single-phase AC power supply providing 100...240V AC at 47...63 Hz with the supplied AC power adapter.

To connect AC power to your performance monitor, follow these directions.

IMPORTANT

- Only use the AC adapter supplied with your performance monitor.
- Do not use the AC adapter and external DC simultaneously.
- Power must be available with a ground connection nearby. Whenever possible, connect your performance monitor to the same AC source that supplies your industrial computer.

1. Turn off the main power switch or breaker.
2. Connect the 12V AC input cable of the AC adapter to the 12V DC power-input connector on your performance monitor (**1**)
3. Screw the barrel over the threads (**2**) to secure the connection.



4. Use the provided AC power cord (**3**) to hard wire the AC power.
5. Verify that the power cord is firmly secured to the AC power adapter by the metal cage that is already attached to the adapter (**4**).

WARNING: For installation in hazardous locations, secure the AC power cord with the included metal cage.

6. Restore AC power.

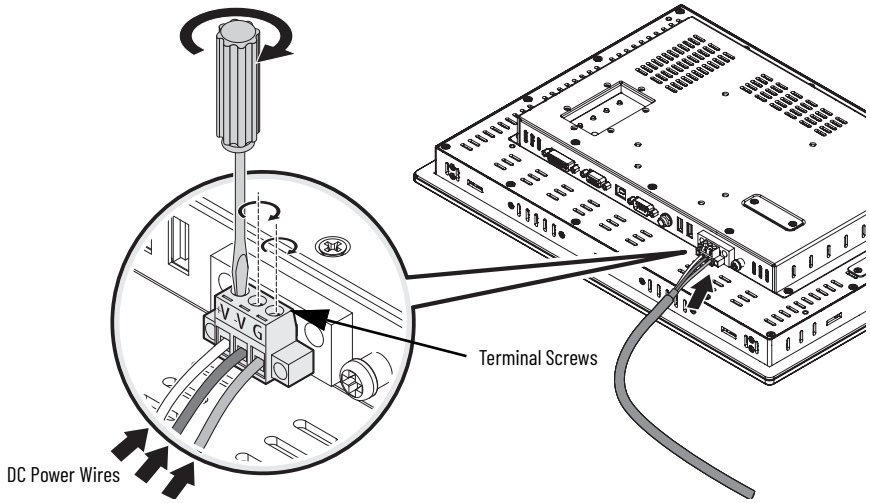
Connect DC Power

Your performance monitor connects to a 9...36V DC power source through a DC input terminal block. The DC power option supports operation from either a safety extra low voltage (SELV) or protective extra-low voltage (PELV) power source. The power supply is internally protected against reverse voltage polarity

ATTENTION: Use a SELV isolated and ungrounded power supply as input power to your performance monitor. This power source provides protection so, under normal and single fault conditions, the voltage between the conductors and the functional earth/protective earth does not exceed a safe value.

IMPORTANT Do not use the AC adapter and external DC simultaneously.

Follow these steps to connect power to your performance 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 your performance monitor.

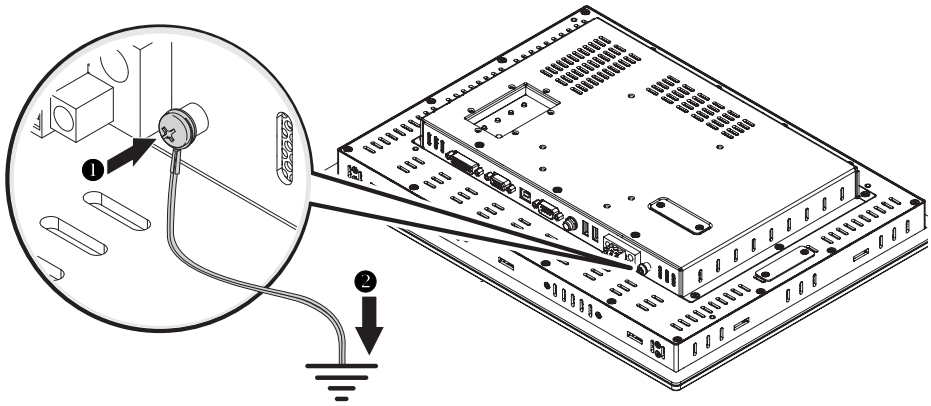
   Your performance monitor does not require a ground connection to meet any regulatory compliance when connecting DC power.
3. Tighten the terminal screws to provide a good connection.
4. Secure the terminal block connector to the unit with the two side screws.
5. Restore DC power.

Secure the Cables

In shock and vibration environments it is important reduce movement of all connected cables. When the cables are secure, it provides strain relief and avoids loose hanging cables.

1. Secure all of the cables to each other or a fixed object after using the supplied cable ties.

Connect the Functional Ground Screw (optional)



The factory installed functional ground screw is not required for safety or regulatory compliance. However, if a supplemental ground is desired, use the functional ground screw in the I/O port panel of your performance monitor (**1**).

If you use the functional ground screw, use a 1.5 mm^2 (16 AWG) or larger external wire to connect the product to earth ground (**2**).

Use a ground wire with green insulation and a yellow stripe for easy identification.

Notes:

Configure

Settings can be configured via the Windows® operating system (OS), the control buttons on the back side of your industrial performance monitor, or through the on-screen display (OSD). These settings include:

- Set your industrial performance monitor type
- Change the display resolution
- Adjust monitor brightness
- Adjust the display
- Enable Auto Adjust

Adjust Via the OS

Set Your Industrial Performance Monitor Type

If you are using a Windows® Plug and Play (PnP) OS, your industrial performance monitor type is automatically detected during the startup process.

If your video card does not support PnP or if you are using the Windows NT OS, you must manually set your industrial performance monitor type. Some early model video cards must also be enabled to detect your industrial performance monitor type.

If your video card supports PnP, but it does not appear that your monitor type has been set properly (such as the screen image being too large, too small, or distorted), you must manually set your industrial performance monitor type.

Your industrial performance monitor uses a (digital) flat-panel display. However, when driven by your industrial computer's analog VGA interface, it is connected as an analog device. Some setup screens indicate that the industrial performance monitor is operating as a CRT (analog) device, rather than a digital or flat-panel device.

Change the Display Resolution

Flat-panel monitors are fixed-resolution devices, meaning the image looks best when your industrial performance monitors are operated at their default resolution. Advanced scaling capabilities are available, however, to make the display look as clear as possible while running in other modes.

The default resolution differs by model type.

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

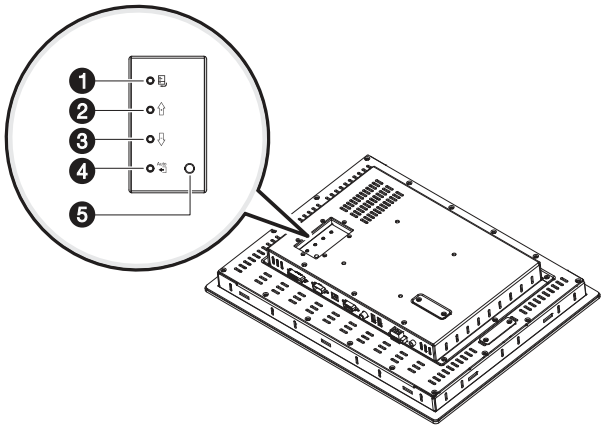
Always operate your industrial performance monitor at its default resolution. If any other resolution is selected, the appearance of text on its screen might look slightly distorted due to the replication techniques used to fill the full screen with an image.

To check the current display resolution or change it, access the 'Display' settings in the 'Control Panel' from the OS.

Use the Control Buttons

Use the control buttons on the rear panel of your industrial performance monitor to adjust settings.

Table 10 - Control Buttons



Note No.	Icon	Control	Function in Normal Mode	Function in OSD Mode
1		Menu/Return	Displays the OSD	Selects the highlighted OSD function.
2		Brightness controls(1)	Increases the display brightness.	Moves the OSD selection to the right. Increases the value of the selected OSD setting.
3			Decreases the display brightness.	Moves the OSD selection to the left. Decreases the value of the selected OSD setting.
4		Auto Adjust	Initiates automatic adjustment of the image display.	Closes the OSD screen.
5	–	Power/display status indicator	Green: The industrial performance monitor is on and the video signal is in sync with the video scaling engine. Orange: The industrial performance monitor is on but the video signal is not in sync with the video scaling engine; the performance monitor is in standby mode. Off: The industrial performance monitor is turned off.	

(1) Press and hold the brightness control buttons simultaneously for 3 seconds to enable OSD lockout mode. The OSD lockout mode helps prevent access to the OSD. To disable this mode, press and hold the buttons again.

Lock or Unlock OSD

OSD Lockout helps prevent unauthorized or unintentional adjustments to OSD functions.

To perform an OSD lock or OSD unlock on your industrial performance monitors while the OSD is off:

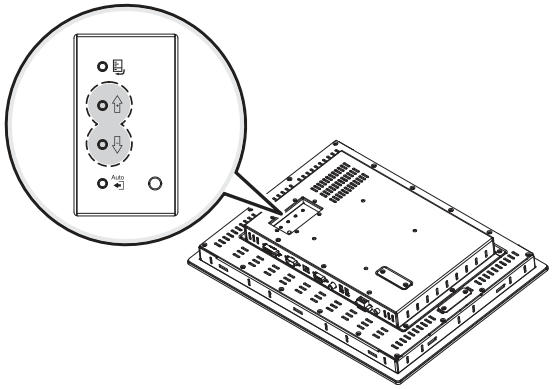
1. Press and hold the up and down arrow buttons simultaneously for at least 3 seconds.

Adjust the Brightness

The default setting varies by display size and LCD model used. Perform the following steps to adjust the brightness.

If the monitor brightness is set higher than the factory default setting, the life of the LCD display is reduced.

1. Press either of the + - buttons on the rear panel of your industrial performance monitor to adjust the brightness.



Automatic Video Adjustment Control

The 'Auto Adjust' function applies only to a VGA **analog** video source. The 'Auto Adjust' function has no effect on a DVI digital video source.

1. Press the 'Auto Adjust' Auto button.

   Your industrial performance monitor samples the input video signal and accurately adjusts the screen size, position, and phasing.

ScreenSet Monitor Setup Utility

Though the 'Auto Adjust' functions for most screens using reasonable video content, Rockwell Automation provides a ScreenSet monitor set-up utility (supplied in CD format) to achieve the best possible image.

Before installing the ScreenSet monitor set-up utility, verify the:

- interface being used, either a RS-232 cable or a USB cable, is properly installed between the input connector of your industrial performance monitor and the port of your host computer and
- controller communication rate of the COM port or USB port and the touchscreen controller communication rate is set at the same baud value. The controller communication rate is factory-set at 38,400 baud.

The ScreenSet monitor set-up utility is designed for Windows 32-bit OS and Windows 64-bit OS only.

1. Insert the CD supplied with your industrial performance monitor into the CD-ROM drive of your computer.
2. Locate and start the ScreenSet utility that is named 'ScreenSet.exe'.
3. Press the 'Auto Adjust' button. See Table 10 on page 30 for the location of the button.

   The screen might flicker during the auto setup process.

   The auto adjustment screen appears.

   When the auto adjustment is complete, your industrial performance monitor is properly adjusted.

   Your computer will cycle through several video modes during the set-up process. Your performance monitor stores the set-up information for each video mode. If you have difficulty reading the display during the starting video modes, press the 'Auto Adjust' button during the starting video modes.

Change Monitor Settings

Use the control buttons and OSD to modify the settings for your industrial performance monitor while viewing the ScreenSet setup screen.

The OSD contains similar menu functions for each monitor. The menus are icon driven.

Use the OSD

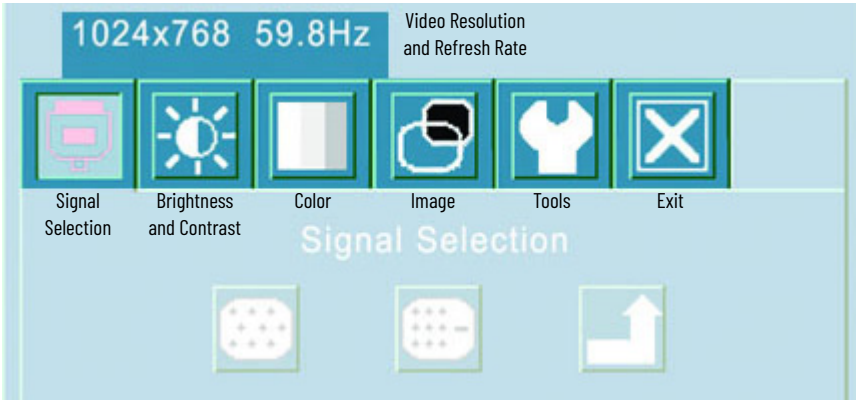
General OSD Menu Navigation Guidelines

Table 11 - OSD Navigation Buttons

Icon	Control	Function
	Menu/Return	• Open the OSD main menu • Activate the highlighted function • Activate a highlighted subfunction
	Arrow + (Up), Arrow - (Down)	• Move between the function icons • Make your changes • Select the subfunction if an icon has more than one subbutton As you move from one function another, the function menu changes to represent the correct icon.
	Back	Press once to return to the OSD main menu to select another function
	Exit	Press to exit the OSD main menu

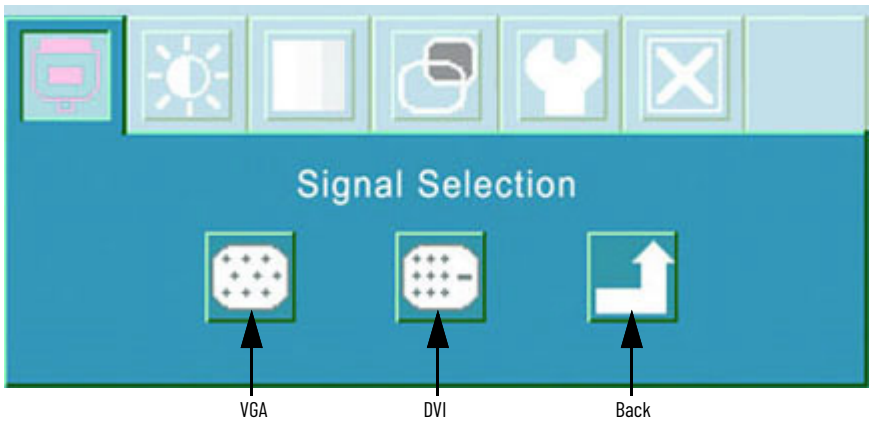
OSD Menus

Table 12 - Main Menu



Icon	Function
Signal Selection	Accesses options for selecting analog or digital picture input. The input selection depends on the signal from the computer and the type of cable that is connected to the monitor.
Brightness and Contrast	Accesses functions to adjust the brightness and contrast.
Color	Accesses functions to select standard RGB levels, manually adjust RGB levels or set the color temperature.
Image	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.
Exit	Exits the OSD main menu.

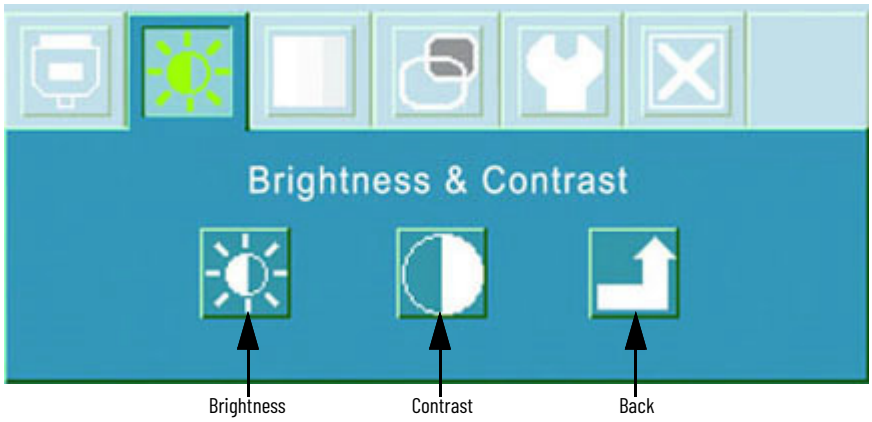
Table 13 - Signal Selection Menu



Icon	Function
VGA (analog input)	Displays the incoming VGA analog signal from the 15-pin VGA input connector (1)
DVI (digital input)	Displays the incoming DVI digital signal from the DVI input connector (1)
Back	Returns to the OSD main menu.

(1) The industrial performance monitor auto detects either an analog VGA or digital DVI input if present.

Table 14 - Brightness and Contrast Menu



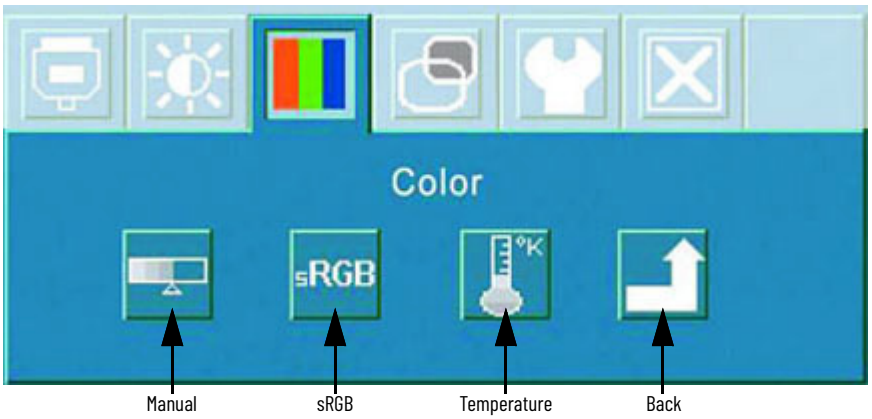
Icon	Function	Value Range
Brightness	Adjusts the brightness of the screen	0...100 (1)
Contrast	Adjusts the contrast of the screen	0...100 with the default 50
Back	Returns to the OSD main menu	–

(1) The factory default setting can vary by the size of your industrial performance monitor size and LCD model used.

The more common way to adjust brightness is to use the 'Brightness Adjust' button on the back of your performance monitor. See Use the Control Buttons on page 30 for instruction.

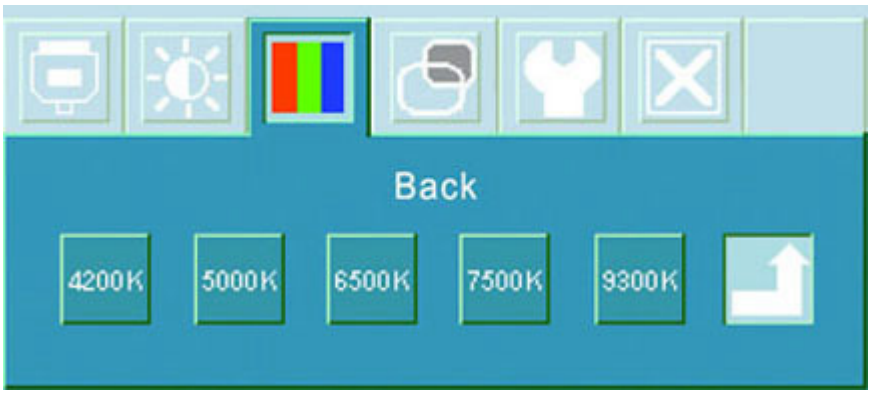
ATTENTION: When the brightness is adjusted higher than the factory default setting, the life of the LCD is reduced.

Table 15 - Color Menu



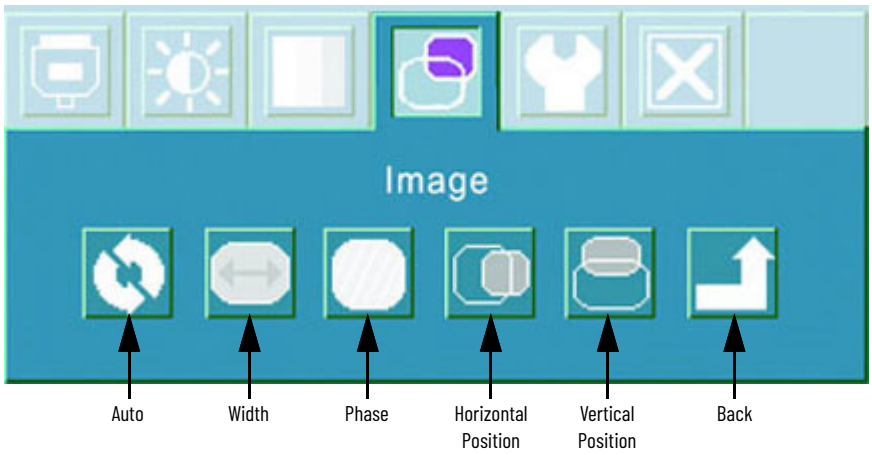
Function	Description	Value Range
Manual	Adjusts the amount of red, green, and blue on the screen	0...100
sRGB	Automatically adjusts the RGB settings	–
Temperature	Adjusts the color temperature values	–
Back	Returns to the OSD main menu	–

Table 16 - Color Menu, Temperature Submenu



Function	Description	Value Range
Temperature	Sets the white point/color temperature that is based on degrees Kelvin (K): • 4200 • 5000 • 6500 = typical personal computer • 7500 • 9300 = typical television and monitor default setting	4200...9300
Back	Returns to the Color menu	–

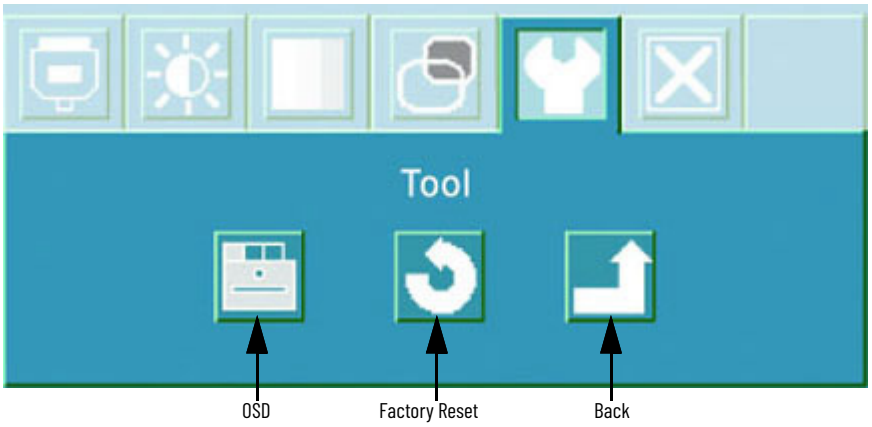
Table 17 - Image Menu



Function	Description	Value Range
Auto	Automatically adjusts the horizontal and vertical image position, frequency phase, and black level.	–
Width	Adjusts the width.	0...100
Phase	Adjusts the sampling phase.	0...100
Horizontal Position	Adjusts the horizontal position of the image on the screen.	0...100
Vertical Position	Adjusts the vertical position of the image on the screen.	0...100
Back	Returns to the OSD main menu.	–

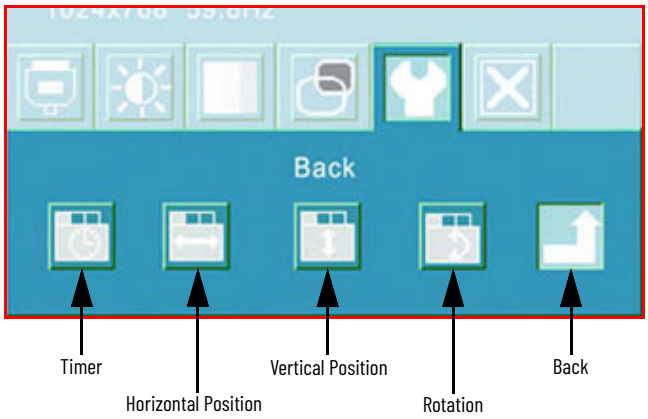
The functions within the Image menu are not available with a DVI connection.

Table 18 - Tool Menu



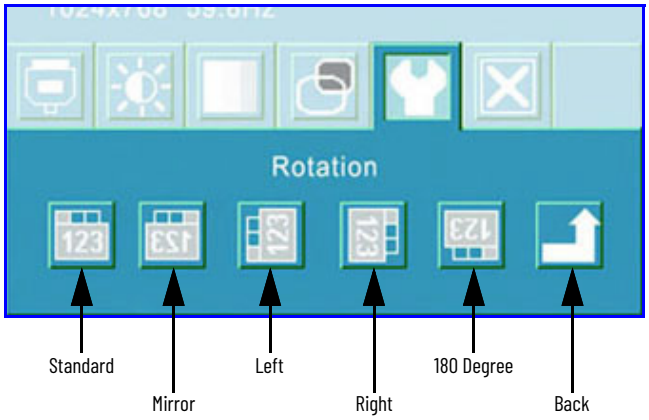
Function	Description
OSD	Accesses the OSD submenu (see Table 19 on page 36)
Factory Reset	Resets all OSD settings to factory defaults
Back	Returns to the OSD main menu

Table 19 - OSD Submenu



Function	Description	Value Range
Timer	Sets a maximum idle time for exiting the OSD system if input is not received	0...60 seconds in increments of 1 second
Horizontal Position	Adjusts the horizontal position of the OSD menu	0...100
Vertical Position	Adjusts the vertical position of the OSD menu	0...100
Rotation	Adjusts the direction of the OSD menu (see Table 20)	–
Back	Returns to the Tools menu.	–

Table 20 - Rotation Submenu (1)



Function	Description
Standard	Images are upright and text is read left-to-right
Mirror	Images and text are reversed (backwards)
Left	View moves from bottom-to-top of monitor
Right	View moves from top-to-bottom of monitor
180 Degree Rotation	Images and text rotate to 180 degrees
Back	Returns to the Tools menu

(1) The term 'Rotation' is the screen rotation, not the physical rotation of your industrial performance monitor. Your industrial performance monitor cannot be physically tilted more than 60° from its vertical as stated in Installation Guidelines on page 15.

Maintenance

This chapter describes how to clean your industrial performance monitor and perform other routine maintenance.

Prepare for Maintenance

Depending upon your schema, other connected components might require be shut down before disconnecting your industrial performance monitor.

1. Disconnect power to your industrial performance monitor.

   WARNING: Disconnect power before performing maintenance. Do not clean the liquid crystal display (LCD) display with power that is still applied to your industrial performance monitor. Cleaning the LCD display with power connected can result in unintended activation of screen items.

2. If your industrial performance monitor is in a hazardous location, the following steps are required before proceeding with maintenance.
   a. Remove your industrial performance monitor from its panel, rack, or arm from a bench/table.
   b. Carefully move your industrial performance monitor to a non-hazardous location.

Care and Cleaning

LCD Display

A screen cover for flat front bezels is available as an optional accessory (see Table 4 on page 7) for your industrial performance monitor. The screen cover helps to extend the life of the LCD display and make it easier to clean the LCD display.

ATTENTION: Risk of product damage. Do not use of abrasive cleansers or solvents, which can damage the LCD display. Do not scrub or use brushes.

With your industrial performance monitor powered off, complete the following steps to clean the LCD display.

1. Use a dry, lint-free cloth, such as a microfiber cloth to gently wipe the dust from the surface of the LCD display.
2. If additional cleaning is needed:
   a. Lightly dampen a microfiber cloth with water or a cleaner made specifically for cleaning LCD display surfaces.
   b. Gently wipe the LCD display with as little pressure as possible.
   c. Press the power button to apply power to your industrial performance monitor.

Exterior Surfaces

1. Vacuum dust and debris from the vent holes.
2. Dampen a clean cloth with water.
3. Gently wipe the exterior surfaces of your industrial performance monitor.
4. If additional cleaning is needed for exterior surfaces:

   For basic dirt and debris removal:

   a. Apply a non-abrasive cleaner, such as a mild soap, to a clean, damp cloth.

   b. Gently wipe the exterior surfaces.

   For paint or grease removal:

   a. Apply isopropyl alcohol to a clean cloth.

   ATTENTION: Do not allow the isopropyl alcohol to come in contact with the equipment labels. Isopropyl alcohol causes the label print to smear.

   b. Gently wipe away the paint or grease from the exterior surfaces except for the equipment labels.

   c. Dampen a clean, damp cloth with water.

   d. Gently wipe over the exterior surfaces where the isopropyl alcohol came in contact with the exterior surfaces.

Replace the Power Cord

SHOCK HAZARD: Risk of severe electric shock. Failure to disconnect power before removing and installing components can result in severe electric shock to an individual or electrostatic discharge (ESD) damage to the computer and components. If your industrial performance monitor is mounted in a hazardous location, before performing any maintenance procedures:

- review the information in Hazardous Locations on page 11 for equipment that is used in hazardous locations and
- perform all steps within the Prepare for Maintenance on page 37.

To avoid shock and fire hazards, replace the power cord of your industrial performance monitor 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 Rockwell Automation Technical Support for assistance.

Shipment and Transport

Perform the following steps to ship or transport your industrial performance monitor to another location for maintenance.

ATTENTION: Do not ship or transport your industrial performance monitor when it is installed in an enclosure, panel, or rack. You must uninstall your industrial performance monitor and place it in its original packing material before shipping. Rockwell Automation is not responsible for any damage to an industrial performance monitor that is shipped or transported while installed in a machine, panel, or rack.

1. Perform all steps within the Prepare for Maintenance on page 37.
2. Place your industrial performance monitor into its inner and then outer original packaging.
3. Apply shipping tape to the box to secure it shut.
4. For return information to Rockwell Automation: Contact your local distributor, Rockwell Automation representative, or visit the Product and Application Support.

End of Life Disposal

You cannot dispose of monitors like other waste material. Most monitors contain heavy metals that can contaminate the earth. Check with local health and sanitation agencies for ways to dispose of equipment properly.

The backlight assembly in this unit contains mercury. At the end of its life, your performance monitor must be collected separately from any unsorted municipal waste.

Notes:

Troubleshoot

This chapter describes how to identify and resolve monitor anomalies.

Run the Self-test

Use the self-test feature to verify that your industrial performance monitor is running correctly. If your industrial performance monitor and industrial computer are properly connected but your industrial performance monitor screen remains dark and the power indicator is flashing, run the self-test.

Follow these directions to run the self-test.

1. Power down your industrial computer and industrial performance monitor.
2. Unplug the video cable from the back of your industrial computer.
3. Power up your industrial performance monitor.

   If your industrial performance monitor is functioning properly, a self-test box appears with 'No Signal'.

   The same self-test box message appears during normal operation if your performance monitor is disconnected.
4. Power down your industrial performance monitor.
5. Reconnect the video cable to the back of your industrial computer.
6. Power on your industrial computer and your industrial performance monitor simultaneously.

   If your industrial performance monitor screen remains blank, your industrial performance monitor is functioning properly. Your video controller and computer system could be the cause of the issue.

Troubleshooting

The troubleshooting table lists typical problems that you can encounter when using your industrial performance monitor. It contains symptoms and possible actions to correct a problem.

Table 21 - Troubleshooting

Symptom	Action
'No signal' message.	Check the video cable connection between your computer and performance monitor. Make sure you are using the video cable that is supplied with your performance monitor or a similar high-quality cable.
	Perform the automatic video adjustment function. See Automatic Video Adjustment Control on page 31.
Screen is blank.	The video mode could be out of range. Revert to the default resolution. See Change the Display Resolution on page 29.
	Disable the screen saver.
	Adjust the brightness and contrast settings by using the appropriate OSD menu.
	Verify that the power cord is connected.
	Test the power outlet by plugging in a properly functioning device.
	Replace the suspected faulty cable or power cord.
	Have the performance monitor serviced. See Shipment and Transport on page 38 for information.

Table 21 - Troubleshooting (Continued)

Symptom	Action
Out of range message.	Check the maximum resolution and the frequency on the video port of your computer.
Picture is scrambled.	The video mode could be out of range. Revert to the default resolution. See Change the Display Resolution on page 29.
	Check the video cable connection between your computer and performance monitor. Make sure you are using the video cable that is supplied with your performance monitor or a similar high-quality cable.
	Check the maximum resolution and the frequency of the video port of your computer.
	Perform the automatic video adjustment function. See Automatic Video Adjustment Control on page 31.
Picture is not clear.	Verify the screen refresh frequency rate from your operating system (OS). 1. Click the Control Panel > Displays > Settings. 2. Select the Monitors tab and then click Advanced. 3. Try refresh frequencies of 60 Hz, 70 Hz, or 75 Hz. **TIP:** A setting higher than 75 Hz will not display.
	Check the video cable connection between your computer and performance monitor. Make sure you are using the video cable that is supplied with your performance monitor or a similar high-quality cable.
	Perform a monitor power reset.
	Eliminate unnecessary accessories such as video extension cables.
	Perform the automatic video adjustment function. See Automatic Video Adjustment Control on page 31.
Vertical shaded bars on-screen image.	Image lock is not properly adjusted. Reset the horizontal positioning using the appropriate OSD menu. See Table 20 on page 36.
Picture has blurry streaks or ghosting to the right of objects on the screen.	Adjust the contrast settings using the appropriate OSD menu. See Table 14 on page 33.
Images are too bright or too dark.	Adjust the brightness and contrast settings by using the appropriate OSD menu. Brightness problems that cannot be corrected can be the result of poor video signal output from the video source. See Table 14 on page 33.
Image is not stable.	The video mode is out of range. Revert to the default resolution. See Change the Display Resolution on page 29.
	Check for proper video cable installation. Replace the suspected faulty cable.
Screen jitter or noisy video.	The video mode is out of range. Revert to the default resolution. See Change the Display Resolution on page 29.
	Check for proper video cable installation. Replace the suspected faulty cable.
	Reroute the cables or replace suspected faulty cables.
	Check the host computer and monitor grounding.
Image is dim even with brightness and contrast controls set to the highest level.	Check for proper video cable installation. Replace the suspected faulty cable.
	Test the video source by connecting to another monitor that you know is operational. Brightness problems that cannot be corrected can be the result of poor video signal output from the video source.
Screen image is not centered or sized properly.	The video mode is out of range. Revert to the default resolution. See Change the Display Resolution on page 29.
	Adjust the horizontal and vertical position settings by using the appropriate OSD menu. See Table 20 on page 36.
	Check the image size selection by using the appropriate OSD menu. See Table 17 on page 35.
	Perform the automatic video adjustment function. See Automatic Video Adjustment Control on page 31.
Color is not uniform, colors are distorted with dark or shadowed areas, or white does not look white.	Adjust the color setting using the appropriate OSD menu. See Table 15 on page 34.
The power indicator is amber.	The monitor is using its power management.
Lock icon appears when any OSD key is pressed.. 	Press and hold both brightness buttons (on the back side of your performance monitor) for at least 3 seconds to unlock the OSD menu. See Table 10 on page 30 for the location of these buttons.

Video Cable Connection

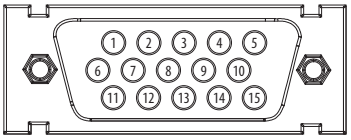
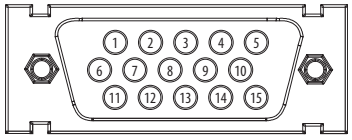
Use the HD-15 video cable and DVI cable supplied with your industrial performance monitor to connect your performance monitor to the host computer.

HD-15 Video Connector

The supplied 1.83 m (6 ft) HD-15 video cable is equipped with a conventional HD-15 connector at each end.

Table 22 provides the pin numbers and corresponding pin assignments for the HD-15 video connector with the DDC2B capability.

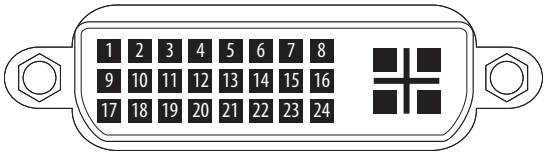
Table 22 - Standard HD-15 Video Cable

Monitor — Plug End of Cable	Signal Description	Host — Pinned End of Cable
		
1	Red Video	1
2	Green Video	2
3	Blue Video	3
4	Not Used	4
5	Hot Plug Detect	5
6	Red Video Ground	6
7	Green Video Ground	7
8	Blue Video Ground	8
9	VGA Power	9
10	Not Used	10
11	Not Used	11
12	DDC Data	12
13	Horizontal Sync	13
14	Vertical Sync	14
15	DDC Clock	15

DVI Video Connector

Table 23 provides the pin numbers and corresponding pin assignments for the supplied 2 m (6.56 ft) DVI video cable. Each connector is female.

Table 23 - Standard DVI Video Cable



Pin No.	DVI Port	Pin No.	DVI Port
1	DATA2-	13	Not Used
2	DATA2+	14	DVI Power +5V
3	DATA 2/4 Shield	15	Ground
4	Not Used	16	Hot Plug Detect
5	Not Used	17	DATA0–
6	DDC Clock	18	DATA0+
7	DDC DATA	19	DATA 0 Shield
8	Not Used	20	Not Used
9	DATA1-	21	Not Used
10	DATA1+	22	Clock Shield
11	DATA 1/3 Shield	23	Clock+
12	Not Used	24	Clock–

Technical Specifications

Technical Data

Table 24 - Display

Attribute	1200M Models	1500M Models	1700M Models	1900M Models
Display Type	Color active matrix TFT LCD			
Display Size (Diagonal) [in. (mm)]	12.1 (307)	15.0 (381)	17.0 (432)	19.0 (483)
Display Areas [mm (in.)] (WxH)	246 x 185 (9.7 x 7.3)	304 x 228 (12.0 x 9.0)	338 x 270 (13.3 x 10.7)	376 x 301 (14.8 x 11.9)
Default Resolution (WxH)	800 x 600, 262K colors	1024 x 768, 16.2M colors	1280 x 1024, 16.7 M colors	
Supported Resolution and Refresh Rates (1)	720 x 400 @ 70 Hz 640 x 480 @ 60 Hz, 75 Hz 800 x 600 @ 60 Hz, 75 Hz 1024 x 768 @ 60 Hz, 70 Hz, 75 Hz 1280 x 1024 @ 60 Hz, 75 Hz			
Luminance, Typical	450 cd/m^2 (Nits)		350 cd/m^2 (Nits)	300 cd/m^2 (Nits)
Contrast Ratio, Typical	1000:1	700:1	1000:1	1300:1
Aspect Ratio	4:3		5:4	
Response Time, Typical	<35 ms			
Backlight Life, Minimum	50,000 hours to half-life at 25 °C (77 °F)			

(1) These resolution and refresh rates are typically supported for each monitor size up to its default resolution.

Table 25 - Video

Attribute	1200M Models	1500M Models	1700M Models	1900M Models
Video Bandwidth (1)	42 MHz	80 MHz	140 MHz	140 MHz
Analog Video Input Signal	RGB analog (2)			
Analog Sync Input Signals	Separate horizontal and vertical sync control, TTL signal levels			
Video Input Connectors	—			
Analog Video Signal	HD-15 VGA			
Digital Video Signal	DVI			

(1) Maximum video dot clock.
(2) White level = 0.700V above ref. Black, into 75 Ω.

Table 26 - USB Interface

Attribute	1200M Models	1500M Models	1700M Models
Type B USB port	1 back side (host computer port)		
Type A USB 2.0 port	Front side (aluminum bezel only): 1 quantity Back side: 2 quantity		
Current capacity	500 mA per port		

Table 27 - Electrical

Attribute	1200M models	1500M models	1700M models	1900M models
Input voltage, AC	100...240V AC, auto switching			
Line Frequency	47...63 Hz			
Power Consumption, Max(1)	34 W		55 W	57 W
Input Voltage, DC	9...36V DC			

(1) Maximum power consumption with three USB ports fully loaded at 500 mA each.

Table 28 - Environment Specifications

Attribute		1200M models	1500M models	1700M models	1900M models
Enclosure Ratings (1)		NEMA UL 50 Type 1, 4, 4X, 12, and IP66			
Temperature (2)	Operating	0...55 °C (32...131 °F)		0...50 °C (32...122 °F)	
	Non-operating	-20...+60 °C (-4...+140 °F)		-20...+60 °C (-4...+140 °F)	
Relative Humidity		10...90% noncondensing			
Shock	Operating	20 g (1/2 sine, 11 ms)			
	Non-operating	30 g (1/2 sine, 11 ms)			
Vibration (3)		2 g peak, 10...640 Hz			

(1) Applies to panel-mounted monitors only.
(2) At 40 °C (104 °F) operating temperature, the humidity must not exceed 90%.
At 50 °C (122 °F) operating temperature, the humidity must not exceed 50%.
Operating the monitors beyond these limits for extended periods of time can reduce the life of the product.
(3) For operating and non-operating conditions.

Table 29 - Mechanical

Attribute		1200M models	1500M models	1700M models	1900M models
Dimensions [mm (in.)](HxWxD)		260 x 340 x 61 (10.24 x 13.39 x 2.4)	309 x 410 x 61 (12.2 x 16.14 x 2.4)	356 x 452 x 61 (14.02x17.80x2.4)	399 x 483 x 64 (15.71 x 19 x 2.52)
Approximate Weight [kg (lb)]	Aluminum Bezel	4.4 (9.75)	7.3 (16)	8.6 (19)	10.2 (22.5)
	Stainless Steel Bezel	–	8.6 (19)	10.1 (22.25)	11.9 (26.25)
Mounting Options	Panel	✓	✓	✓	✓
	Rack	✓	✓	–	–
	Bench	✓	✓	✓	✓
	Tabletop	✓	✓	✓	✓
	DIN Rail for AC Power Adapter	✓	✓	✓	✓

Certifications

For declarations of conformity, certificates, and other certification details, see rok.auto/certifications.

Table 30 - Certifications

Attribute	1200M models	1500M models	1700M models	1900M models
Certifications	UL Listed Class I, Division 2, per ISA 12.12.01 (when marked on the nameplate) cUL Listed Class I, Division 2, per CSA No. 213 (when marked on the nameplate)			
	CE marked for all applicable directives RoHS compliant			
	C-Tick			
	China RoHS			
	Türkiye RoHS			

Notes:

Rockwell Automation Support

Use these resources to access support information.

Technical Support Center	Find help with how-to videos, FAQs, chat, user forums, Knowledgebase, and product notification updates.	rok.auto/support
Local Technical Support Phone Numbers	Locate the telephone number for your country.	rok.auto/phonesupport
Technical Documentation Center	Quickly access and download technical specifications, installation instructions, and user manuals.	rok.auto/techdocs
Literature Library	Find installation instructions, manuals, brochures, and technical data publications.	rok.auto/literature
Product Compatibility and Download Center (PCDC)	Download firmware, associated files (such as AOP, EDS, and DTM), and access product release notes.	rok.auto/pcdc

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Waste Electrical and Electronic Equipment (WEEE)

At the end of life, this equipment should be collected separately from any unsorted municipal waste.

Rockwell Automation maintains current product environmental compliance information on its website at rok.auto/pec.

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