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ChassisTouch 450
User's Installation Guide

MicroTouch™
3M

3M

ChassisTouch™ 450 Monitor
User's Installation Guide

**Read and understand all safety information
before installing and using this product.**

Notice

Given the variety of factors that can affect the use and performance of a 3M Touch Systems Product (the "Product"), including that solid state equipment has operation characteristics different from electromechanical equipment, some of which factors are uniquely within User's knowledge and control, it is essential that User evaluate the 3M Touch Systems Product and software to determine whether it is suitable for User's particular purpose and suitable for User's method of application. 3M Touch Systems' statements, engineering/technical information, and recommendations are provided for User's convenience, but their accuracy or completeness is not warranted. 3M Touch Systems products and software are not specifically designed for use in medical devices as defined by United States federal law. 3M Touch Systems products and software should not be used in such applications without 3M Touch Systems' express written consent. User should contact its sales representative if User's opportunity involves a medical device application.

Important notice to purchaser

Specifications are subject to change without notice. These 3M Touch Systems' Products and software are warranted to meet their published specifications from the date of shipment and for the period stated in the specification. **3M Touch Systems makes no additional warranties, express or implied, including but not limited to any implied warranties of merchantability or fitness for a particular purpose**.

User is responsible for determining whether the 3M Touch Systems Products and software are fit for User's particular purpose and suitable for its method of production, including intellectual property liability for User's application. If the Product, software or software media is proven not to have met 3M Touch Systems' warranty, then 3M Touch Systems' sole obligation and User's and Purchaser's **exclusive remedy**, will be, at 3M Touch Systems' option, to repair or replace that Product quantity or software media or to refund its purchase price. 3M Touch Systems has no obligation under 3M Touch Systems' warranty for any Product, software or software media that has been modified or damaged through misuse, accident, neglect, or subsequent manufacturing operations or assemblies by anyone other than 3M Touch Systems. **3M Touch Systems shall not be liable in any action against it in any way related to the Products or software for any loss or damages, whether non-specified direct, indirect, special, incidental or consequential (including downtime, loss of profits or goodwill) regardless of the legal theory asserted**.

Edition

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Important safety information

Intended use

The ChassisTouch™ 450 monitor is intended to provide touch screen functions when connected to a host computer in an industrial setting. The ChassisTouch 450 monitor is *not intended* for use in hazardous locations.

The ChassisTouch 450 monitor is a component. After it is installed, the whole system of which it is a part must be inspected to confirm seal ratings and compliance with all local electrical codes.

Safety notices

Product safety information

⚠ DANGER
To reduce the risks associated with fire and explosion which, if not avoided, will cause death or serious injury and/or property damage:
▪ Do not install or use this product in a hazardous location.

⚠ WARNING
To reduce the risks associated with electrical shock, fire, or explosion which, if not avoided, could result in death or serious injury and/or property damage:
▪ Follow all product instructions. ▪ Performance of all procedures described in this document should be by trained personnel. ▪ Any servicing or other procedures not described in this manual are to be performed only by qualified personnel. ▪ Read and understand all safety information before installing and using the monitor. ▪ Engineer the installation of the monitor to take into account the operating environment (e.g., shock/vibration and/or thermal factors). ▪ Properly install the monitor with a NEMA 4X gasket that is clean, undamaged, and effective. ▪ Do not modify the monitor. ▪ Use only 3M components or 3M-approved components for repairs. ▪ If a replacement part is needed, contact 3M Touch Systems. ▪ Provide a clean, reliable ground. ▪ Use locking devices on connectors. ▪ To ensure compliance with electrical codes and safe operation of the monitor, have a licensed journeyman electrician familiar with local codes perform all wiring and installation tasks.

⚠ WARNING
To reduce the risks associated with electrical shock or fire which, if not avoided, could result in death or serious injury and/or property damage:
▪ If the monitor is mounted using a NEMA 4X panel gasket, install the unit in a Listed (UL) enclosure. ▪ If the monitor will be used in corrosive environments, it is the responsibility of the user to test and evaluate the unit in those environments. The monitor, as shipped, has not been evaluated for use in excessively corrosive environments.

⚠ **WARNING**

To reduce the risks associated with electrical shock which, if not avoided, could result in death or serious injury and/or property damage:

- Make sure that the ground potential difference between the monitor and the host computer is less than 2V.
- Before removing the monitor from its mounting or performing any other service to the monitor, disconnect power to the unit.
- Provide adequate strain relief for all communications and power cables.
- Do not use a damaged power supply.
- Do not use a power cable that is damaged or frayed or a power plug that is damaged.
- Do not allow liquid inside the monitor's metal enclosure

⚠ **WARNING**

To reduce the risks associated with electrical shock or mechanical function which, if not avoided, could result in death or serious injury and/or property damage:

- If your monitor will be used in an environment where safety is an issue, set the time for the Windows™ energy saver to be greater than the time for the Windows screen saver. Do not use a non-Windows screen saver in an environment where safety is an issue.
- If your monitor has a display power management system (DPMS) that is configurable from the display's on-screen Utility menu, do not turn off the DPMS.

⚠ **WARNING**

To reduce the risks associated with electric shock and/or burn-related injury that could result in death or serious injury and/or property damage:

- Do not open the power supply for the monitor. It contains hazardous voltage. The power supply has no user-serviceable parts or adjustments inside.

⚠ **WARNING**

To reduce the risks associated with mechanical function which, if not avoided, could result in property damage:

- Do not operate the monitor in conditions outside of the operational specifications.

⚠ **WARNING**

To reduce the risks associated with skin contact or swallowing of cleaning solutions or fluids which, if not avoided, may result in minor or moderate injury and/or cause property damage:

- Refer to the cleaner manufacturer's material safety data sheet (MSDS) and follow all instructions and recommendations on product label.

⚠ **CAUTION**

To reduce the risks associated with muscle strain which, if not avoided, may result in minor or moderate injury:

- Avoid using the monitor for long periods of time without breaks.

⚠ **CAUTION**

To reduce the risks associated with eye strain which, if not avoided, may result in minor or moderate injury:

- Use the monitor where there is neither too much ambient light nor glare on the screen.

⚠ **CAUTION**

To reduce the risks associated with environmental contamination which, if not avoided, may result in minor or moderate injury and/or cause property damage:

- Dispose of the monitor according to applicable local, state, and federal government regulations.

Safety labels   The following safety symbols appear on your ChassisTouch product and its packaging materials:

Symbol	Meaning
	Consult user instructions.
	Warning: Hazardous voltage
	Caution: Item is susceptible to electrostatic discharge (ESD) damage if proper precautions are not taken.

Contents

CHAPTER 1

Overview

About this chapter

This chapter presents an overview of the ChassisTouch™ 450 industrial monitor. The topics covered in this chapter are:

- Features of the ChassisTouch 450 monitor
- System requirements of the host computer
- Packing list for a standard ChassisTouch 450 monitor
- Related documents
- 3M Touch Systems support services

Features

The ChassisTouch 450 monitor is a flat panel industrial monitor with the following features:

- **MicroTouch™ Near Field Imaging™ (NFI) touch screen**. The NFI touch screen is durable (constructed of glass), reliable, and can be operated with industrial gloves. It calculates touches electronically by measuring disturbances in an electrostatic field near the surface of the screen.

  The NFI touch screen comes with an anti-glare and anti-reflection coating.

- **Panel mountable with seal**. The monitor comes ready to mount in a panel. When properly mounted, the front of the monitor is sealed to NEMA 4X/ IP66 ratings.

- **Display**. The monitor's display is a 15-inch active matrix Thin Film Transistor (TFT) Liquid Crystal Display (LCD). The ChassisTouch 450 monitor touch screen supports resolutions of 1024 x 768 (optimal), 800 x 600, and 640 x 480 pixels.

System requirements

The ChassisTouch 450 monitor requires a host computer that has:

- An available RS-232 serial communication (COM) port.
- A unique interrupt request (IRQ) available to the COM port that the ChassisTouch 450 monitor will use. The monitor cannot share an IRQ with another device.
- A 9-pin to 25-pin adapter if the available serial port on the host computer has 25 pins.
- A video card and video driver that is already installed. For instructions on installing a video card and video driver, refer to your host computer's documentation or the video card manufacturer's documentation.

Packing list

The ChassisTouch 450 monitor comes with the following items:

- *ChassisTouch 450 Monitor User's Installation Guide* (this manual)
- AC power cable (North American)
- AC/DC power supply (12 VDC output)
- RS-232 serial cable
- SVGA video cable
- Full scale cutout template, locknuts, and washers for mounting the monitor in a panel
- Floppy disks with Near Field Imaging (NFI) touch screen drivers for Windows XP Professional and Windows 2000 Professional operating systems.

  If your system requires Windows NT, Windows 98, or Windows 95 drivers, they are available for download from www.3Mtouch.com.

- Floppy disk with the linearization file for your NFI touch screen. If it is ever necessary to uninstall and reinstall the touch screen driver software, you may need the NFI linearization file from the floppy disk

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Important

The linearization file for your monitor can also be retrieved from www.3Mtouch.com. You will be prompted to enter your NFI touch screen serial number (located on the back of the ChassisTouch 450 monitor).

Related documents

For information on how to install and customize driver software for the ChassisTouch 450 monitor, refer to the software guide listed below that is appropriate for your operating system. The software guides may be downloaded from the 3M Touch Systems web site (www.3Mtouch.com).

- **For Windows XP Professional and Windows 2000 Professional operating systems**, refer to: *MicroTouch NFI Software Guide: For Windows XP and Windows 2000*.

Note: To install drivers for Windows XP and Windows 2000 on the ChassisTouch™ 450 monitor, follow installation instructions on page 10 of the *ChassisTouch 450 User's Installation Guide*.

- **For Windows NT™ 4.0, Windows 98, and Windows 95 operating systems**, refer to *NFI Touch Screen Software User's Guide: For Windows NT, Windows 9X, Windows 3.1, and MS-DOS™*.

Note: The sections of this software guide that pertain to Windows 3.1 and MS-DOS are not applicable to the ChassisTouch 450 monitor.

Service and repair indicators

Do not attempt to service this unit yourself. Removing the display cover may expose you to dangerous voltage or other risks. Disconnect power from the display and contact 3M Touch Systems technical support staff in the event that the monitor:

- Does not operate properly when the operating instructions are followed.
- Has been dropped or the metal enclosure has been damaged.
- Exhibits a distinct change in performance, indicating a need for service.
- Has a power cable that is damaged of frayed or a power plug that is damaged.
- Has liquid inside its metal enclosure.

3M Touch Systems support services

3M Touch Systems provides extensive support services through our website and technical support organization.Visit the 3M Touch Systems website at www.3Mtouch.com where you can download touch screen software and drivers, obtain regularly updated technical documentation on 3M Touch Systems products, and learn more about our company.

Whenever you contact Technical Support, please provide the following information:

- Part number and serial number from your monitor and the serial number of the NFI touch screen (both numbers are on the exterior of the monitor's metal enclosure)
- Current driver version
- Operating system used
- Information on additional peripherals

Technical support is available Monday through Friday 8 a.m. to 8 p.m. US Eastern Standard Time (9 a.m. to 5 p.m. throughout Europe). Limited call back service is available on Saturdays and Sundays.

You can contact 3M Touch Systems Technical Support (US only -- Eastern Standard Time) by calling the hot line or sending a fax.

- Technical Support Hot Line: 978-659-9200
- Technical Support Fax: 978-659-9400
- Toll Free: 1-866-407-6666
- Email: US-TS-techsupport@mmm.com

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Germany	+49 (0) 2131-14-0
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CHAPTER 2

Setting up the monitor

About this chapter

This chapter describes how to:

- Mount the ChassisTouch™ 450 monitor in a panel to achieve a NEMA 4X/ IP66 seal around the front of the unit.
- Connect communications cables.
- Connect power.
- Install Near Field Imaging™ (NFI) touch screen driver software.
- Make recommended energy saver settings if the ChassisTouch 450 monitor will be used in a setting where safety is an issue.
- Test the monitor.

Mounting and connecting

Materials supplied

- 14 nylon insert hex locknuts (size M5 x 0.80)
- 14 steel washers (15 mm outside diameter)
- 1 full-scale panel cutout template
- 1 panel gasket (already installed)

  Note: If it is ever necessary to remove the ChassisTouch from its panel mount and remount, be sure to install a new front panel gasket (for ordering information, see "3M Touch Systems support services" on page 3). Re-using a panel gasket could compromise the NEMA 4X seal.

⚠ **DANGER**

To reduce the risks associated with fire and explosion which, if not avoided, will cause death or serious injury and/or property damage:

▪ Do not install or use this product in a hazardous location.

Steps for mounting and connecting

> ⚠ **WARNING**
>
> **To reduce the risks associated with electrical shock, fire, or explosion which, if not avoided, could result in death or serious injury and/or property damage:**
>
> - Follow all product installation instructions.
> - Performance of all procedures described in this document should be by trained personnel.
> - Engineer the installation of the monitor to take into account the operating environment (e.g., shock/vibration and/or thermal factors).

> ⚠ **WARNING**
>
> **To reduce the risks associated with electric shock and/or burn-related injury that could result in death or serious injury and/or property damage:**
>
> - Do not open the power supply for the monitor. It contains hazardous voltage. The power supply has no user-serviceable parts or adjustments inside.

> ⚠ **WARNING**
>
> **To reduce the risks associated with electrical shock or fire which, if not avoided, could result in death or serious injury and/or property damage:**
>
> - If the monitor will be used in corrosive environments, it is the responsibility of the user to test and evaluate the unit in those environments. The monitor, as shipped, has not been evaluated for use in excessively corrosive environments.

To panel mount the monitor and achieve a NEMA 4X/IP66 seal, follow these steps:

Important

The ChassisTouch 450 monitor is designed to be mounted in a panel. If you choose to VESA-mount the monitor, use 6 mm screws with a mounting plate that is 1.6 mm thick. If the mounting plate is a different thickness, adjust the screw length accordingly.

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1. Tape the full-scale cutout template onto the panel where you want to mount the monitor.

2. Using the template as your guide, cut out the panel.

3. Drill holes through the cutout and into the panel, deburr all cuts and holes, and follow the instructions that appear on the cutout template.

4. Bring the power cable and the communications cable up to the cutout.

> ⚠ **WARNING**
>
> **To reduce the risks associated with electrical shock, fire, or explosion which, if not avoided, could result in death or serious injury and/or property damage:**
>
> - Engineer the installation of the monitor to take into account the operating environment (e.g., shock/vibration and/or thermal factors).
> - Provide a clean, reliable ground.
> - To ensure compliance with electrical codes and safe operation of the monitor, have a licensed journeyman electrician familiar with local codes perform all wiring and installation tasks.

Depending on connector depth and cabinet space, you may have to make your connections at this point, before installing the unit in the cutout. If so, skip to steps 9 and 10 and then come back come back to step 5.

5. Place the monitor in the cutout, aligning the studs with the holes in the panel. You may need assistance at this point to hold the unit in place.

> **⚠ WARNING**
>
> **To reduce the risks associated with electrical shock or fire which, if not avoided, could result in death or serious injury and/or property damage:**
>
> ▪ If the monitor is mounted using a NEMA 4X panel gasket, install the unit in a Listed (UL) enclosure.

6. Insert the unit in the cutout until the gasket material makes full contact with the panel.

> **⚠ WARNING**
>
> **To reduce the risks associated with electrical shock, fire, or explosion which, if not avoided, could result in death or serious injury and/or property damage:**
>
> ▪ Properly install the monitor with a NEMA 4X gasket that is clean, undamaged, and effective.
> ▪ Use only 3M components or 3M-approved components for repairs.

7. Attach the monitor to the panel from the back using the locknuts and washers supplied.

8. Gradually tighten diagonal pairs of locknuts until the height of the panel gasket is compressed to between 0.125 inches (3.175 mm) and 0.1 inches (2.54 mm).

Important

Do not overtighten the panel mounting locknuts. If the gasket is compressed to a height that is less than 0.1 inches (2.54 mm), the NEMA 4X/IP66 seal may be compromised and the 3M Touch Systems warranty will be invalidated.
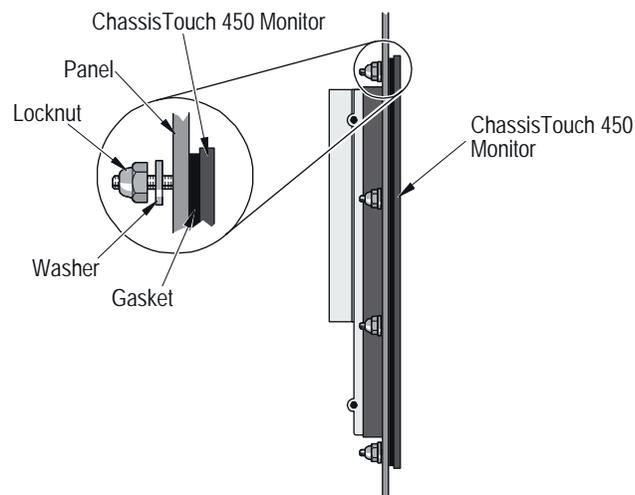

Figure 1: Panel mounting the monitor

9. Before making cable connections, make sure that an appropriate video card and video driver is installed on the host computer. For information on installing the video card and video driver, refer to your video card manufacturer's documentation.

The ideal video settings for the ChassisTouch™ 450 monitor are:

▪ Display mode (also called "desktop area" or "video resolution"):
   1024 x 768

■ Refresh rate (also called "vertical scan rate" or "vertical sync"): 60 Hz

■ Color depth (also called "color palette" or "number of colors"): 3M Touch Systems recommends that color depth be set at no less than 16-bit (high color).

The video card must support one of the display modes specified in Table A. If you select an unsupported video mode, the monitor will stop working or display an unsatisfactory picture quality.

Table A: Supported display modes and refresh rates

Display Mode	Refresh Rate (Hz)
VGA (640 x 480)	60
	75
	85 (15" failsafe mode)
SVGA (800 x 600)	56
	60
	75
	85 (15" failsafe mode)
XGA (1024 x 768)	60
	75
	85 (15" failsafe mode)

Many video cards initially display a screen image at the VGA or SVGA resolution. The ChassisTouch 450 monitor supports these resolutions (Table A), and so can display the desktop controls that let you change to the optimal resolution of 1024 x 768. For information on how to change resolution, see "Controls for adjusting the video display" on page 16.

10. Connect communications and power cables to the ChassisTouch 450 monitor by following these steps:

⚠ **WARNING**

To reduce the risks associated with electrical shock, fire, or explosion which, if not avoided, could result in death or serious injury and/or property damage:

. Use locking devices on connectors.
. To ensure compliance with electrical codes and safe operation of the monitor, have a licensed journeyman electrician familiar with local codes perform all wiring and installation tasks.

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a) Make sure that the host computer is powered off.

b) Connect one end of the video cable to the video connector on the ChassisTouch™ 450 monitor and then connect the other end to the video card in the host computer (Figure 2).
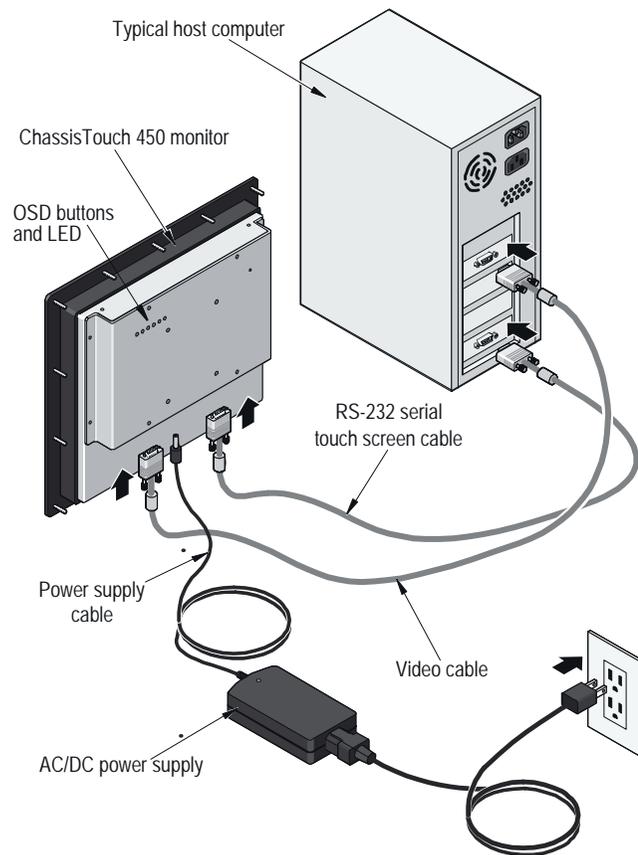

Figure 2: Connecting communications and power cables

c) Connect one end of the RS-232 serial touch screen cable to the ChassisTouch 450 monitor and then connect the other end to an available serial communication (COM) port on the back of the host computer.

Important

. Be sure to tighten all cable connections.

. Route all wiring and cabling away from heat sources and sharp metal edges to avoid damage.

Important

The ChassisTouch 450 monitor must be operated with the original power supply.

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d) Plug the AC/DC power supply into the ChassisTouch 450 monitor. Be sure to use the power supply included with the monitor.

⚠ **WARNING**

To reduce the risks associated with electrical shock which, if not avoided, could result in death or serious injury and/or property damage:

▪ Make sure that the ground potential difference between the monitor and the host computer is less than 2V.

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e) Connect the power cable to the power source. After connecting power, the monitor will automatically power on and the LED on the back of the monitor will be illuminated (for location of LED, see Figure 2 on page 9). If the LED is not illuminated try pressing the Power button located on the back of the monitor. If the LED still is not illuminated, check that the power supply is functioning properly.

Installing NFI touch screen driver

The Near Field Imaging™ (NFI) touch screen driver enables the monitor to work with the host computer.

NFI drivers for Windows XP Professional and Windows 2000 Professional operating systems came on floppy disks with your ChassisTouch 450 monitor.

The ChassisTouch 450 monitor ships with the linearization data pre-installed, so when you are prompted to install the linearization file, select Skip. If you ever need to reinstall the linearization file, you can find it in one of two places:

▪ A floppy disk that came with your monitor
▪ On www.3Mtouch.com. To download the linearization file from the web site, you will be prompted to enter your NFI touch screen serial number (located on the back of the ChassisTouch 450 monitor).

Installing the driver for Windows XP/2000 operating systems

To install touch screen software for Windows XP or Windows 2000 operating systems:

1. Close all open programs.

2. Find the floppy disk that includes the driver for Windows XP/2000 operating systems, insert it in the disk drive, and browse the floppy disk to find the file named setup.exe.

3. Open setup.exe. The installation Welcome window appears.

4. Follow the screen prompts to install the driver and then follow the on-screen instructions of the Setup Wizard.

5. Follow the Setup Wizard's on-screen instructions. The Wizard sets the baseline for the touch screen controller, downloads linearization data to the controller, and aligns the touch screen to the physical display.

Important

The ChassisTouch™ 450 monitor ships with the linearization data pre-installed, so when you are prompted to install the linearization file, select Skip

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6. When the Wizard finishes setting up the software, an Install Successful window appears.

7. For more information on how to customize NFI drivers for Windows XP and Windows 2000 operating systems, see the *NFI Touch Screen Software System Software User's Guide (for Windows XP and 2000)*. The guide is available for download at www.3Mtouch.com.

Installing the drivers for Windows NT 4.0 and Windows 9X operating systems

NFI drivers for Windows NT, Windows 98, and Windows 95 are available for download at www.3Mtouch.com. For instructions on installing and customizing these drivers, see the *NFI Touch Screen Software System User's Guide (for Windows NT, 9X, 3.1., and DOS)*. The guide is available for download from www.3Mtouch.com.

Customizing NFI touch screen drivers

The NFI touch screen driver settings that can be modified include:

■ Sensitivity of the screen to touches.

■ Access to right mouse button functions by touch.

■ Response time of the touch screen to double touches.

For instructions on how to customize touch screen settings, refer to the NFI software user's guide that is appropriate for your operating system. Software guides are listed in "Related documents" on page 2.

Energy saver

The ChassisTouch 450 monitor conforms to the Video Electronics Standards Association (VESA) Display Power Management Signaling (DPMS) standard. To benefit from power management (or "energy saver"), the monitor must be used in conjunction with a computer and video card that implements the VESA DPMS standard.

Safety recommendations

If the ChassisTouch 450 monitor is used in a setting in which unintentionally activating a button on the touch screen might have harmful consequences for people or equipment, 3M Touch Systems makes the following recommendations:

- **Set "System Standby" to "Never"** in the power dialog box of your Windows operating system.

- **Do not use the Power button** located on the back of the ChassisTouch 450 monitor. The Power button can be used to manually turn the backlights on and off.

- **Make the following changes in the Display Properties dialog box of your Windows operating system**:

    1. On the host computer, close all Windows applications and then open the **Display Properties** dialog box**.**

    2. In the **Screen Saver** tab of the dialog box, choose the number of minutes that you want to elapse from the last time the screen is touched to when the screen saver will activate.

    3. Select the power button (also located in the Screen Saver tab). A power dialog box appears.

Important

The power button is labelled differently in different operating systems:
- In Windows XP and Windows 2000: **Power**
- In Windows 9X (in the section of the dialog box named "Energy Saving Features of the monitor"): **Settings**

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    4. In the **Turn off monitor** pull-down menu, choose the number of minutes that will elapse from the last time the screen is touched to when the energy saver will be activated. *The period chosen must be greater than the period you chose for the screen saver.*

    5. Select **OK**.

⚠ **WARNING**

To reduce the risks associated with electrical shock or mechanical function which, if not avoided, could result in death or serious injury and/or property damage:

- If your monitor will be used in an environment where safety is an issue, set the time for the Windows energy saver to be greater than the time for the Windows screen saver. Do not use a non-Windows screen saver in an environment where safety is an issue.
- If your monitor has a display power management system (DPMS) that is configurable from the display's on-screen Utility menu, do not turn off the DPMS.

Testing the monitor

To test that the monitor is working properly:

1. Turn on the host computer.

⚠ **WARNING**

To reduce the risks associated with mechanical function which, if not avoided, could result in property damage:

. Do not operate the monitor in conditions outside of the operational specifications.

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2. Make sure the video image is displayed on the monitor's display. If it is not visible, first check to see if the LED on the back of the monitor is flashing orange-to-green. If not, press the Power button on the back of the monitor (see Figure 3 on page 16).

3. If the LED is flashing, the host computer's operating system has an energy saver setting that has timed out.

If you do not want the energy saver to be active and the monitor is not in a location where safety is a concern (see "Safety recommendations" on page 12), turn off the operating system's energy saver. With this setting, any touch to the touch to the touch screen will activate the display and will be recognized by the controller as a touch.

4. Make sure the video display is centered on the screen. If it needs centering, follow instructions for auto adjusting the display on page 16.

If the image is still not satisfactory after auto adjusting, follow instructions on page 17 for manually adjusting horizontal and vertical display settings.

CHAPTER 3

Adjusting the video display

Your ChassisTouch™ 450 monitor has several control buttons and an on-screen menu for adjusting the video display. For example, you can adjust:

- Pixel clock and phase to eliminate noise.
- Image contrast and brightness to your lighting conditions.
- Horizontal and vertical position of the image.

This chapter explains presents guidelines for adjusting the video display and describes how to use the available monitor controls to adjust the image to your liking.
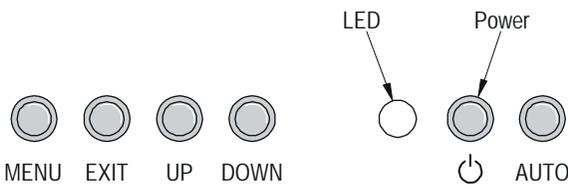
Before you make any adjustments:

- Set the controls in normal lighting conditions.
- Display a test image or pattern while making video adjustments.
- It is recommended that you first set display settings with the video driver on your host computer. After establishing video driver settings, run **AUTO** using the monitor's OSD controls. **AUTO** and other OSD functions are explained in "OSD controls" in Table B.

Controls for adjusting the video display

Your ChassisTouch 450 monitor has five controls for adjusting the video display (Table B). On the back panel there is also an LED indicator and a Power button. Pressing the Power button turns the monitor's backlights on or off but does not affect power to the monitor.

Table B: OSD functions and locations of video controls on back panel of the monitor

Name	Function of the control	Video controls on back of ChassisTouch 450 monitor
MENU	▪ The first press of the menu button calls up the On Screen Display (OSD). ▪ A second press enters the current sub-menu of the OSD. ▪ Additional presses allow you to cycle through the available sub-menu options.	
EXIT	▪ Returns to the previous OSD menu level. ▪ If you are at the top level, this closes the OSD display.	
UP	▪ Increases the value of the selected menu option.	
DOWN	▪ Decreases the value of the selected menu option.	
AUTO	▪ Brings video settings to their optimal level.	

LED   Power

MENU   EXIT   UP   DOWN   AUTO

OSD controls

Selecting **MENU** will pull up the On Screen Display (OSD) menu, as shown in Figure 3.
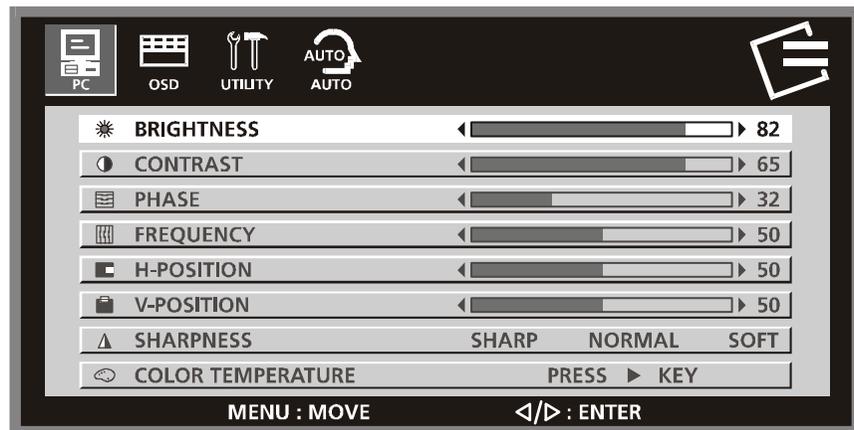

Figure 3: ChassisTouch 450 monitor On Screen Display (OSD) menu

Auto adjustment

Selecting **AUTO** on the OSD menu will start an auto adjustment of the monitor's video settings to their optimum level. If necessary, you can fine tune the parameters by selecting the **PC** icon and adjusting the options as explained below:

Brightness

Selecting the Brightness option (as in Figure 3) allows you to adjust the brightness of the display. Adjust the brightness using the **UP** and **DOWN** buttons. Press **EXIT** to confirm a setting.

Contrast

Selecting Contrast allows you to adjust the overall contrast of the display. To change the setting, use the **UP** and **DOWN** buttons. Press **EXIT** to confirm a setting.

Phase

If the phase of your monitor is not fine-tuned, you may observe unstable horizontal noise lines and cross-talking, stretching from the edge of small windows on your display.

To reduce this horizontal noise, follow these steps:

1. From the Windows desktop of the host computer, select **Start** and then select **Shut Down**. The Windows Shut Down dialog box appears on the monitor's display. (Visual noise is more visible and easier to eliminate if the display is in Windows Shut Down mode.)

2. Press the **Menu** control button to call up the OSD main menu, select the **PC** icon, and then select the Phase sub-menu.

3. Press the **UP** or **DOWN** control buttons to reduce the noise. To confirm a new phase setting, press the **EXIT** control button.

4. After adjusting the phase setting, select Cancel in the Windows **Shut Down** dialog box to return to your original Windows display.

Frequency

If the Frequency setting is not fine-tuned, you may observe periodic vertical bars of video noise.

To reduce this vertical noise, follow these steps:

1. Select **AUTO** in the OSD menu to auto adjust the monitor's display (see "Auto adjustment" on page 16).Vertical noise is usually adjusted out when the display is auto adjusted.

   If there is still noise after auto adjusting the display, adjust the OSD Frequency setting.

2. Press the **Menu** control button to call up the OSD main menu, select the **PC** icon, and then select the Frequency sub-menu.

3. Press the **UP** or **DOWN** control buttons so that the vertical bars of noise disappear completely or so that an even amount of noise is distributed across the entire screen. To confirm a new frequency setting, press the **EXIT** control button.

4. If there is any remaining noise on the screen, adjust the Phase setting (see "Phase" on page 17).

H-Position, V-Position

Selecting the H-Position or V-Position sub-menu allows you to adjust the horizontal/vertical position of the displayed image. Press the **UP** or **DOWN** control buttons to adjust the position of the video image. To confirm a new position setting, press the **EXIT** control button.

Sharpness

Selecting the Sharpness sub-menu allows you to adjust the sharpness of the video image, especially when low resolutions are displayed). Press the **UP** or **DOWN** control buttons until the desired sharpness is achieved. To confirm a new sharpness setting, press the **EXIT** control button.

Color Temperature

Selecting the Color Temperature sub-menu allows you to adjust the color balance and level of the display. There are three pre-set color settings (**Red**, **Green**, **Blue**) and an option for resetting factory default values for color (**User Color Reset**).

By adjusting a single color, you can make the picture look warmer (biased towards red) or cooler (biased towards blue). Adjusting all three levels will make colors appear more or less striking.

OSD (on-screen display) menu

Selecting the OSD icon allows you to alter how the OSD menu appears. The following adjustments can be made:

- **H-Position** and **V-Position** allow you to adjust the horizontal/vertical position of the OSD menu on the display.
- **OSD Timeout** allows you set how long the OSD menu will appear on the display between touches to the screen.
- **Language** allows you to choose the language used in the OSD menu and sub-menus (default is English).

Utility menu

The Utility sub-menus that are accessible by the user are:

- **Reset** allows you to reset OSD settings to factory defaults by selecting **Yes**.
- **Half Tone** allows you to make OSD menus transparent by selecting **Yes**.

Neither **Dynamic Brightness** nor **Information** is configurable by the user.

CHAPTER 4

Maintenance and troubleshooting

If you have a problem setting up or using your monitor, you may be able to solve it yourself. Before calling 3M Touch Systems, try the suggested actions that are appropriate for the problems you are experiencing with the monitor. You may also want to consult your video card user's manual for additional troubleshooting advice.

Maintaining your touch monitor

To maintain your display and keep your monitor operating at peak performance:

- Keep your monitor and screen clean.
- Adjust the monitor video controls. Refer to Chapter 3 for more information.
- Do not install the display in a place where ventilation may be hindered. Always maintain adequate ventilation to protect the display from overheating and to ensure reliable and continued operation.

Care and cleaning

Touch screen

The touch screen requires very little maintenance. 3M Touch Systems recommends that you periodically clean the glass touch screen surface. 3M Screen Cleaner 675 has been tested and approved for this use.

When cleaning your touch screen:

⚠ **WARNING**

To reduce the risks associated with skin contact or swallowing of cleaning solutions or fluids which, if not avoided, may result in minor or moderate injury and/or cause property damage:

- Refer to the cleaner manufacturer's material safety data sheet (MSDS) and follow all instructions and recommendations on product label.

- Do not use any chemical that corrodes glass or any vinegar-based solutions.
- Apply the cleaner with a soft, lint-free cloth. Avoid using gritty cloths.
- Always dampen the cloth and then clean the screen. Be sure to spray the cleaning liquid onto the cloth, not the screen.
- Always handle the touch screen with care. Do not pull or stress cables.

Bezel

An isopropyl (or ethanol) alcohol and water solution ratio of 50:50 is the best cleaning agent for your bezel. Apply the alcohol solution to a cotton gauze or soft cotton cloth and then clean the bezel with the cloth. Do not apply the cleaning agent directly to the bezel.

⚠ **WARNING**

To reduce the risks associated with skin contact or swallowing of cleaning solutions or fluids which, if not avoided, may result in minor or moderate injury and/or cause property damage:

- Refer to the cleaner manufacturer's material safety data sheet (MSDS) and follow all instructions and recommendations on product label.

Troubleshooting

If you have a problem setting up or using the ChassisTouch 450 monitor or the monitor's NFI touch screen, you may be able to solve it yourself. Before calling 3M Touch Systems, try the strategies discussed in this chapter that address the problems you are experiencing. If the problem seems to be video-related, you should also consult the documentation that came with the video card in your host computer.

⚠ **WARNING**

To reduce the risks associated with electrical shock, fire, or explosion which, if not avoided, could result in death or serious injury and/or property damage:

- Do not modify the monitor.
- Do not substitute components.
- Use only 3M components or 3M-approved components for repairs.

⚠ **WARNING**

To reduce the risks associated with electrical shock which, if not avoided, could result in death or serious injury and/or property damage:

- Before removing the monitor from its mounting or performing any other service to the monitor, disconnect power to the unit.

Monitor installation

No image displayed (blank screen)	**Is the monitor receiving power? Make sure that:** - Host computer's power cable is connected properly and securely to its power source. - Monitor's power cable is connected properly and securely to the power source. - AC/DC power supply is connected to the monitor properly and securely and the LED on the AC/DC power supply is lit green. - LED on the rear of the display is lit green. If it is not, try pressing the Power button on the rear of the monitor. - Try using another power cable.

Is the monitor receiving a valid video signal from the host computer? Make sure that:

- Host computer is powered on.
- Video cable is connected properly and securely to monitor and computer.
- LED on the rear of the display is lit green. If it is not, try pressing the Power button on the rear of the monitor.
- No pins are bent in the video cable connector.
- Video card is seated firmly in the card slot in the host computer.
- Host computer is using a supported display mode and video input from the video card that are within the range of refresh rates for the display (see "Table A" on page 8).

Is the monitor in energy saver mode?

- If the LED on the rear of the monitor is flashing orange-to-green, to restore operation try one or more of the following:
    - Touch the screen.
      Note: If the touch screen is in a setting where safety is an issue and the recommended settings to the Display Properties dialog box have been made (see "Safety recommendations" on page 12), a first touch to reactivate the backlights will not activate the touch screen until it is touched a second time (see "Testing the monitor" on page 13).
    - Press any key on the keyboard.
    - Move the mouse.

Are the brightness and contrast settings too low?

1. Use the host computer's video driver to set brightness, contrast, and other video settings.
2. Use the monitor's on-screen display controls to Auto adjust the display settings.
3. If the brightness and contrast (or other display settings) are still not satisfactory, use OSD menus and sub-menus to modify display features (see "OSD controls" on page 16).

Abnormal image	**Make sure that:** - Video input from the video card falls within the refresh rate of the display (see "Table A" on page 8). - Video cable is connected properly and securely to the monitor and the host computer.
Colors of image are abnormal	**Make sure that:** - Video cable is connected properly and securely to the monitor and the computer. - No pins are bent in the video cable connector. - Set colors using your video driver and then auto adjust the monitor's OSD settings (for details, see "Controls for adjusting the video display", page 15).
Disturbances on the screen	- Make sure that the video display settings are correct (see "Controls for adjusting the video display" on page 15).

NFI touch screen

If you are experiencing problems with the touch screen, check the following list of possible issues. For a list of NFI touch screen error messages and their meanings, refer to the NFI software user's guide that is appropriate for your host computer's operating system (see "Related documents" on page 2).

Touch screen does not respond to touch	■ Make sure that all cables are properly connected properly. Review set up procedures (Chapter 2). ■ Power down the monitor, wait a few seconds, and then power up the monitor again. ■ After installing the touch screen driver software, restart the host computer to activate the driver. ■ Check the communication settings. Is the touch screen trying to use the same COM port or IRQ as another device (for example, a mouse)? If so, a hardware device conflict will result and the touch screen will not work.
Cursor is not located directly underneath your finger	■ Align the touch screen by following instructions that appear in the NFI software user's guide that is appropriate for the host computer's operating system (for available software user's guides, see "Related documents" on page 2).
Cursor is extremely jittery or erratic	■ Adjust the refresh rate using the host computer's video driver and then use the monitor's OSD control buttons to auto adjust the monitor's display settings. For more information on video settings, see "Controls for adjusting the video display" starting on page 15.

APPENDIX

Specifications, standards, and certifications
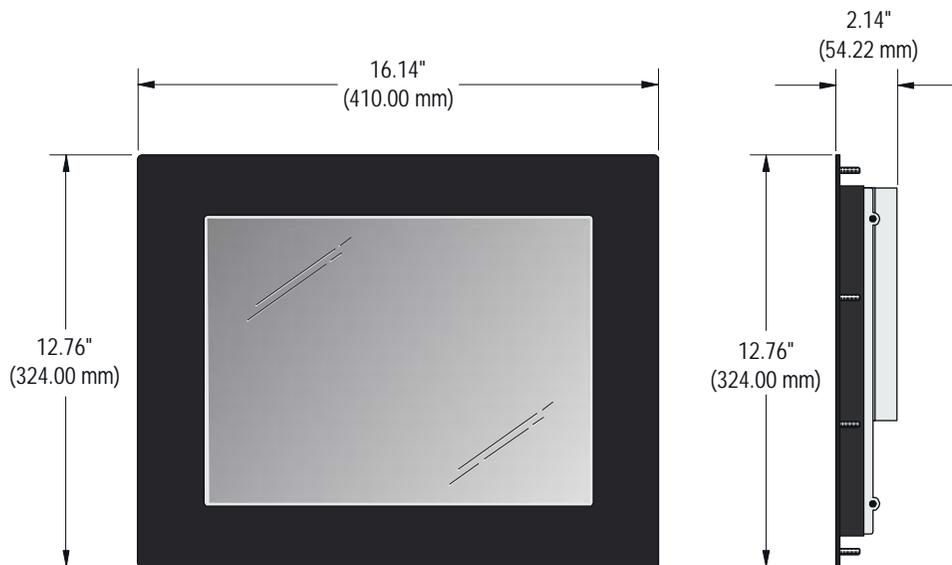
Enclosure and cutout dimensions

Figure 4: Front and side views of the ChassisTouch™ 450 monitor with dimensions

Table C: Enclosure and cutout dimensions

	Imperial	Metric
Enclosure	12.76" high × 16.14" wide × 2.14" deep	324.00 mm high × 410.00 mm wide × 54.22 mm deep
Panel cutout	11.05" high × 14.50" wide	280.72 mm high × 368.27 mm wide
Mounting clearances	2" all around	51 mm all around
Weight	14 lbs	6.35 kg
Panel stud length	0.63"	16 mm
Thread	--	M5

Panel cutout dimensions

Cutout line

Radius .10" (2.54 mm) typical

Diameter .24" (6.10 mm) typical
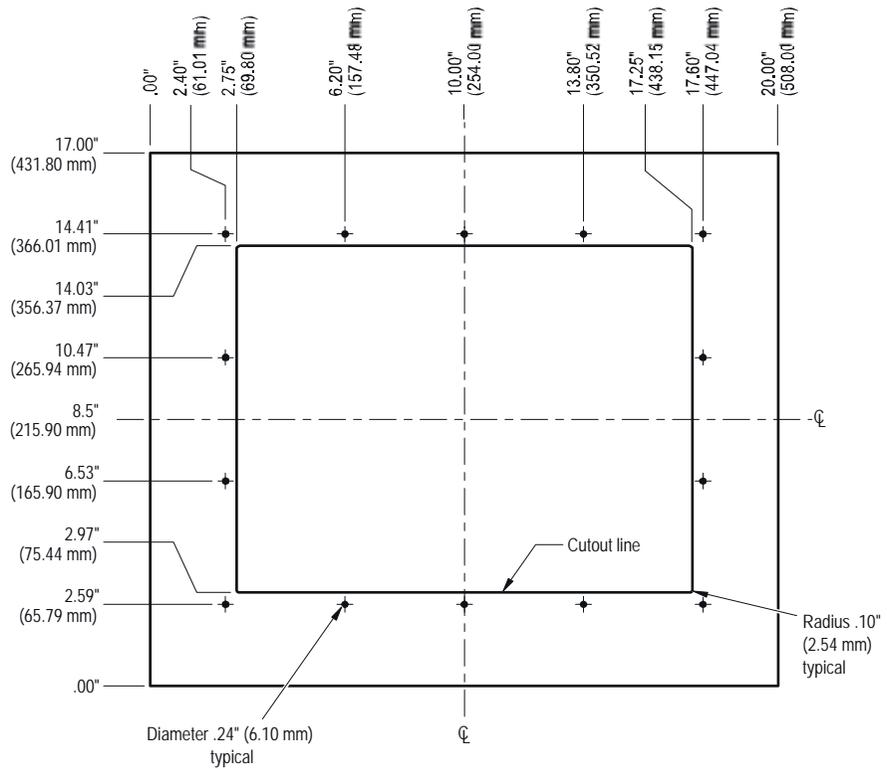
Display specifications

Operating values given are at room temperature (25°C +/- 5°C).

Display size and viewing area (diagonal)	15"
Maximum resolution	1024 X 768 XGA
Type	Color Active TFT
Panel colors (up to)	16.7 M
Contrast ratio (typical)	300:1
Brightness without touch screen (typical)	250 cd/m^2
Brightness with touch screen (typical)	230 cd/m^2
Viewing angle (typical)	H ± 65° V +50° to -60°
Backlight life expectancy (typical)	35,000 hr

Chemical resistance

Bezel

The bezel provides resistance to user abuse and to most chemicals and other substances.

Touch screen

The MicroTouch™ Near Field Imaging™ (NFI) touch screen is made of glass and will withstand most chemicals and their concentrations that do not corrode glass.

Supported operating systems

NFI touch screen drivers for Windows XP Professional and Windows 2000 Professional operating systems ship (on floppy disk) with the ChassisTouch 250 monitor.

NFI drivers for the following operating systems may be downloaded at www.3Mtouch.com:

- Windows NT
- Windows 98
- Windows 95

Communications

The communications ports available on the ChassisTouch 450 monitor are:

- RS-232C compatible asynchronous serial port
- 15-pin female video connector

Power

With the AC/DC power supply, the output power is 12 VDC.

Operating conditions

Condition	Range
Operating temperature	0°C to 50°C (32°F to 122°F)
Humidity	50°C, 5% to 95% non-condensing
Maximum operating altitude	6,560 feet (2,000 meters)
Vibration	5 to 57 Hz 0.006 in peak displacement 58 to 2000 Hz 1.0 G acceleration
Shock	Acceleration: 15 G Pulse duration: 11 ms

Non-operating conditions

Condition	Range
Storage temperature	-25°C to 60°C (-13°F to 140°F)
Maximum storage altitude	40,000 feet (12,192 meters)
Vibration	5 to 57 Hz 0.015 in peak displacement 58 to 2000 Hz 2.5 G acceleration
Shock	Acceleration: 30G Pulse duration: 11 ms

Safety standards

UL 60950 (3rd edition) EN 60950	for Information Technology Equipment
CSA C22.2 No. 60950-00	for Information Technology Equipment via UL's C-UL certification

Dust and moisture resistance

NEMA 250	Electrical Enclosures, Type 12, Type 4, Type 4X
IEC 529	Degrees of Protection Provided by Enclosures, IP66

FCC compliance

The equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with part 15 of the FCC rules: Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

FCC Warning

To assure continued FCC compliance, the user must use a grounded power supply cord and the provided shielded video interface cable with bonded ferrite cores. If a BNC cable is going to be used, use only a shielded BNC(5) cable. Also, any unauthorized changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this device

CE and EMC emissions compliance

This is a Class B product. In a domestic environment this product may cause radio interference, in which case the user may be required to take adequate measures.

- The ChassisTouch™ 450 monitor complies with the CE mark related to the Low Voltage Directive 73/23/EEC as confirmed in the Declaration of Conformity.
- The ChassisTouch 450 monitor complies with the CE mark related to the EMC Directive 89/336/EEC as confirmed in the Declaration of Conformity.

Canadian emissions compliance

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appariel numerique de la classe B respecte toutes les exigences due Reglement sur le material brouilleur du Canada.

Electromagnetic compatibility immunity standards

Electromagnetic compatibility immunity standards	EN61000-6-2
ITE immunity	EN55024
Electrostatic discharge	EN61000-4-2
Radiated immunity	EN61000-4-3
Electrical fast transient	EN61000-4-4
Surge transient	EN61000-4-5
Conducted immunity	EN61000-4-6
AC sags and dropouts	EN61000-4-11

Electromagnetic emission standards

EN55022 Class B
EN 61000-3-2 Class A
EN 61000-3-3
ICES-003 Class B
FCC CFR 47, Part 15, Subpart B, Class B
CISPR 22, Class B
AS/NZS 3548 1995, Class B, Amendments 1 and 2

Product certifications

FCC-B
UL Information Technology Equipment — United States (UL Recognized)
C-UL Information Technology Equipment — Canada
C-Tick — Australia, New Zealand
CE Information Technology Equipment — Europe

3M