3M™ Multi-Touch Chassis Display User Guide

Models C2254PW and C2234PW

Read and understand all safety information
contained in this document before using this product.

3M

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CHAPTER 1

Introduction

Overview

Congratulations on the purchase of your 3M™ Touch Systems Multi-Touch Chassis display. This guide describes how to set up your 3M™ Multi-Touch Chassis Display.

The 3M Touch Systems product line of chassis displays offers the Multi-Touch Chassis Display for kiosk, ATM, and industrial enclosures. All Multi-Touch Chassis Displays are encased in rugged metal instead of plastic. These displays feature a touch sensor interface, several mounting options, and sturdy construction.

The Multi-Touch Chassis Display is a 22" LCD with 16:10 aspect ratio. 3M Multi-Touch Technology, based on 3M projected capacitive touch technology and electronics, offers fast and accurate multi-touch touch functionality for next-generation, multi-touch applications.

This display provides full multi-touch functionality including traditional pinch, expand and rotate features. Each touch is independently recognized thereby supporting full multi-touch and multi-user input.

The Multi-Touch Chassis Display uses projected capacitive technology with an all glass front surface and provides multi-touch functionality in a highly durable form factor. The fast response rate enables the creation of multi-touch applications and supports real time rendering of maps and other speed sensitive applications.

The display also features space saving designs, high resolution, and low power consumption. These qualities make the Multi-Touch Chassis Display ideal for applications that require superior color, resolution, and clarity.

Important Safety Information

Read and understand all safety information before using this product. Follow all instructions marked on the product and described in this document. Pay close attention to the following installation warnings and safety precautions.

Intended Use

The 3M Touch Systems Multi-Touch Chassis Display was designed for touch input and tested to replace an existing display. These displays are intended for indoor use only and are not designed for use in hazardous locations.

Explanation of Signal Word Consequences

⚠ **DANGER:** Indicates a potentially hazardous situation, which, if not avoided, will result in death or serious injury and/or property damage.

⚠ **WARNING:** Indicates a potentially hazardous situation, which, if not avoided, could result in death or serious injury and/or property damage.

⚠ **CAUTION:** Indicates a potentially hazardous situation, which, if not avoided, may result in minor or moderate injury and/or property damage.

CAUTION: Indicates a potentially hazardous situation, which, if not avoided, may result in property damage.

⚠ **DANGER**

To avoid the risk of fire and/or explosion which will result in serious injury or death:

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

⚠ **WARNING**

To avoid the risk of fire which could result in serious injury or death:
• Do not remove the cover or back of the display -- dangerous voltages inside.

⚠ **WARNING**
To avoid the risk of electric shock which could result in serious injury or death:
• Do not remove the cover or back of the display. The backlight inverter output is at high voltage.
• This device must be operated with the original power supply and cable provided as shown below: • LITEON PA-1081-01 or EDAC EA11001C-120 for the C2254PW   • LITEON PA-1041-0 or EDAC EA10521E-120 for the C2234PW
• Do not use a damaged power supply.
• Plug power cord into appropriate grounded power source.
• Do not use a power cord that is frayed or otherwise damaged.
To avoid the risk of electric shock which may result in serious injury or death:
• Do not service the display yourself. There are no user serviceable parts inside. Refer all servicing to qualified service personnel. Any change or modification to the equipment not expressly approved by the party responsible for compliance could void your authority to operate such equipment.
• Do not use non-conforming replacement parts.
• Do not place wet or damp objects on the display.
• Do not expose the display to rain or other sources of water, steam, or moisture.
• Do not place foreign objects on the display or its cables.
• Do not remove the cover or back of the display.
• Ensure that connecting the unit to the power source will not overload the power source.

⚠ **CAUTION**
To avoid the risk of potential damage to the display electronics:
• Always use the VESA mounting holes when using an arm attachment. Do not drill additional holes in the unit to mount plates other locations
• Do not use longer screws as they could potentially damage electronics inside the display.
To avoid the risk of glass breakage which may result in minor or moderate injury:
• To avoid risk of injury the when handling the display be aware that the sensor edges are very sharp.
• Handle the display with care to avoid breaking the touch sensor. The display contains glass parts. Dropping the display may cause the glass parts to break.
• Ensure mounting screws are tightened fully to prevent instability.
• Do not place foreign objects on the display.
• Ensure that mounting the unit will not adversely affect the stability of the end equipment when installing in free standing equipment or using the VESA mount.

⚠ **CAUTION**
To avoid the potentially hazardous situations associated with the use of alcohol or other solvents which may result in minor or moderate injury or property damage:
• Follow all instructions and recommendations in the manufacturer's Material Safety Data Sheet and product label.
• Be sure to follow solvent manufacturer's precautions and directions for use when using any solvents
• It is important to avoid using any caustic chemicals on the touch sensor.
To avoid possible environmental contamination which may result in minor or moderate injury:
• The lamp(s) inside this product contain mercury (Hg) and must be recycled or disposed of in accordance with local, state, or federal laws. Check your individual state's requirements to see if specific recycling requirements exist for mercury-containing products or other electronic products. Refer to http://www.nema.org/lamprecycle/ or call 3M Touch Systems 1-866-407-6666 for further information.
• Dispose of the flat panel display according to applicable governmental regulations.

Important Notes

- In extreme temperature and humidity situations, you may observe condensation between the touch screen and the display. To minimize this condition, place the unit where it will be used and allow a 24-hour environmental stabilization period prior to powering on the display. Any noticeable condensation is temporary and will have no long term affect on the operation of the display.

- You are cautioned that any change or modification to the equipment not expressly approved by the party responsible for compliance could void your authority to operate such equipment.

- When unplugging the power supply cord, hold the plug, do not pull by the cord.

- Do not connect or disconnect this product during an electrical storm.

- Remember to take into account that the operating temperature of the installation may be greater than the room ambient, and consideration should be given to installing the unit in an environment compatible with the maximum rated operating temperature. Specifications can be found in the product data sheet on the 3M Touch Systems website at http://www.3m.com/touch/.

- When installing the unit, ensure that it does not restrict the flow of air to any other equipment within the installation required for safe operation.

- An inherent characteristic of the PCT sensor is a fine grid pattern that may be visible under certain lighting conditions.

- Install the display in a well-ventilated area. Always maintain adequate ventilation to protect the display from overheating and to ensure reliable and continued operation.

- Do not expose this display to direct sunlight or heat. Passive heat may cause damage to the housing and other parts.

- Do not install this display in areas where extreme vibrations may be generated. For example, nearby manufacturing equipment may produce strong vibrations. The vibrations may cause the display to exhibit picture discoloration or poor video quality.
- Ensure the metal enclosure does not contact the touch sensor.
- Be sure to gasket the display to its enclosure properly to prevent damage to the touch sensor.
- To avoid ergonomic concerns:
  Do not install the display in a manner or location with awkward accessibility. Extended use may result in muscle, tendon, or fixed posture strains. It is recommended you take periodic breaks from continuous use.
- The 3M touch controllers mentioned in this document are USB compatible full speed devices.
- 3M does not warrant that we are USB compliant pursuant to USB specifications.

Service and Repair Indicators

Do not attempt to service this unit yourself. Removing the display cover may expose you to dangerous voltages or other risks. Unplug the display from the power outlet and refer servicing to qualified service personnel in the event that:

- Liquid is spilled into the product or the product is exposed to rain or water.
- The product does not operate properly when the operating instructions are followed.
- The product has been dropped or the metal case has been damaged.
- The product exhibits a distinct change in performance, indicating a need for service.
- The power cable or plug is damaged or frayed.

Touch Sensor Care and Cleaning

The touch sensor requires very little maintenance. 3M Touch Systems recommends that you periodically clean the glass touch sensor surface. Be sure to turn off your display before cleaning.

Typically, an isopropyl alcohol and water solution ratio of 50:50 is the best cleaning agent for your touch sensor. You can also use straight isopropyl alcohol.

⚠ CAUTION
To avoid the potentially hazardous situations associated with the use of alcohol or other solvents which may result in minor or moderate injury or property damage:
• Follow all instructions and recommendations in the manufacturer's Material Safety Data Sheet and product label.
• Be sure to follow solvent manufacturer's precautions and directions for use when using any solvents

⚠ CAUTION
• It is important to avoid using any caustic chemicals on the touch sensor.

- Apply the cleaner with a soft, lint-free cloth. Avoid using gritty cloths.
- Always dampen the cloth and then clean the sensor. Be sure to spray the cleaning liquid onto the cloth, not the sensor, so that drips do not seep inside the display or stain the bezel.

3M Touch Systems Support Services

3M Touch Systems, Inc. provides extensive support services through our website and technical support organization. Visit the 3M Touch Systems website at http://www.3m.com/touch/, where you can download MT 7 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:

- Touch display size, part number and serial number
- Current driver version
- Operating system used
- Information on additional peripherals

Technical Support is available Monday through Friday 8:30 a.m. to 5:30 p.m. with limited call back service after 5:30 p.m. until 8:00 p.m. US Eastern Standard Time – 9 a.m. to 5 p.m. throughout Europe.

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

- Technical Support Hot Line: 978-659-9200
- Technical Support Fax: 978-659-9400
- Toll Free: 1-866-407-6666 (Option 3)
- Email: US-TS-techsupport@mmm.com

Contact 3M Touch Systems

Contact information for all offices can be found on our website at: http://www.3m.com/touch/

CHAPTER 2

Setting up Your Multi-Touch Chassis Display

This chapter describes how to set up your 3M Touch Systems Multi-Touch Chassis Display. You need to complete the following tasks:

- Unpack the components
- Connect the video, touch display cables, and power cable
- Power on the display and test your setup
- If you are not running Windows 7 (or Tablet PC), install MT7 software from the enclosed CD. Note that this will not make multi-touch happen -- it is up to your application to enable multi-touch.

System Requirements

The Multi-Touch Chassis Display requires a personal computer (PC). The requirements for your PC are as follows:

- Your PC must have an available USB or RS-232 serial communication (COM) port. You connect the touch sensor cable to this communications port.
- Your PC must have a video card and video driver already installed for the display. If you need to install a video card or a video driver, refer to your computer documentation for instructions.

Note: Before setting up your Multi-Touch Chassis Display, refer to the "Important Safety Information" section at the beginning of this document.

Unpacking Your Touch Display

Carefully unpack the carton and inspect the contents. Your Multi-Touch Chassis Display includes the following cables and accessories:

- USB and RS-232 serial communication cables
- DVI and VGA video cables

- Power brick (90-264VAC and 47-63Hz input)
  - LITEON PA-1081-01 or EDAC EA11001C-120 for the C2254PW
  - LITEON PA-1041-0 or EDAC EA10521E-120 for the C2234PW
- US, UK or EU power cables (as needed)
- Hardware Kit -- 4 Mounting brackets (2 top and 2 side mount options), 8 screws
- Software CD and documentation

Cables Included with Your Chassis Multi-Touch Display
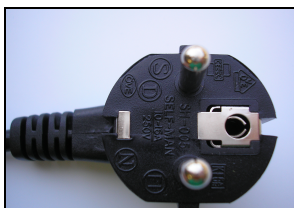

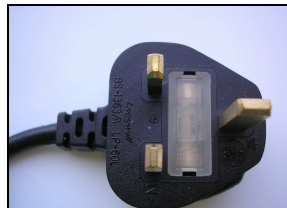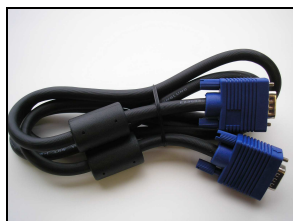**USB Cable**
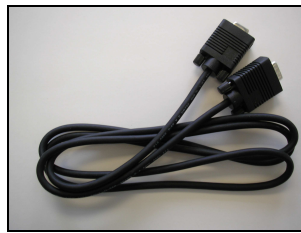
9-pin RS-232 serial cable

US power cable

Power brick

EU power cable (optional)

UK power cable (optional)

VGA cable

DVI cable

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Connecting the Touch Display

⚠ **CAUTION**
You are cautioned that any change or modification to the equipment not expressly approved by the party responsible for compliance could void your authority to operate such equipment.

To connect the Multi-Touch Chassis Display:

1. Turn off your computer. You should always turn off the computer before connecting or disconnecting a device.
2. Select either the DVI or VGA cable. Connect one end of the video cable to the video connector on the display. Connect the other end to the video card in your computer.
3. Connect one end of the touch sensor cable (*either* USB or serial) to the LCD. Connect the other end to an available port on your computer.

    Note: Do not connect *both* USB and serial cables to the display. Choose one or the other.

4. Plug the power brick into the display.
5. Connect the power cable to an appropriate grounded power source.

Testing the Multi-Touch Chassis Display

Note: The Multi-Touch Chassis Display has a power status light and video controls located on the back of the display. If enclosure space is tight and access is important, an on screen display remote control (part number 30114) is an option.

Before testing your touch display, make sure all cables are connected properly. Be sure to tighten all cable screws. After connection, turn on the power switch located on the back of the display.

To test that the display is working properly:

1. Turn on your computer.
2. Make sure the video image is displayed. If it is not, check the LED to ensure that the display is not in power save mode (amber)
3. Make sure the video image is centered within the screen area. Use the display controls to adjust the image, if necessary.

You can adjust the horizontal and vertical position, contrast, and brightness to better suit your video card and your personal preference. For additional details, refer to the Adjusting the Video Display later in this chapter.

Mounting the Multi-Touch Chassis Display

The Multi-Touch Chassis Display is designed to fit any type of enclosure. All 3M Touch Systems chassis displays are encased in rugged metal instead of plastic, making them easy to integrate.

Caution: To avoid the risk of injury when handling the display be aware that the sensor edges are very sharp.

The Multi-Touch Chassis Display includes a hardware accessory kit for mounting the unit into an enclosure. The hardware accessory kit includes four brackets and 8 screws. The mounting holes are located on all 4 sides of the display. Always use the supplied screws (M4 x 8 mm).

Caution: Always use the mounting holes when attaching to the brackets. Do not drill additional holes in the unit to mount brackets to other locations.

You can attach the brackets to the edges of the chassis. The brackets are slotted, allowing the chassis to slide in and out. You can also rotate the brackets to various positions.

Note: ESD susceptibility at the system level is dependent on the integration methodology. To ensure proper ESD protection for the chassis display in ESD sensitive applications, 3M Touch Systems recommends that the perimeter of the display be surrounded by an electrically insulating closed cell foam gasket.

Given the variety of factors that can affect the use and performance of any product, some of which are uniquely within the user's knowledge and control, it is essential that the user evaluate the specific gasket to determine whether it is suitable for a particular purpose and suitable for the user's intended application.

Articulating Arm Mounting Option

The unit has a 100 mm VESA mounting pattern on the back to allow for arm mount capability. Use M4 x 7 mm screws to secure the VESA mount stand for use only with UL listed wall mount bracket with minimum weight load capability of 20.28 lbs (9.2 kg). Follow the manufacturer's instructions included with the mounting device to properly attach your display.

Caution:
- Do not use longer screws as they could potentially damage electronics inside the display.
- Always use the VESA mounting holes when using an arm attachment. Do not drill additional holes in the unit to mount plates in other locations.

Access to the Video Controls

The Multi-Touch Chassis Display has five buttons for using the on-screen menu and adjusting the video display. These controls are located on the back of the Multi-Touch Chassis Display. These buttons let you display the on-screen menu and adjust the phase, image position, contrast, and brightness. Make sure you will be able to access the video controls once the Multi-Touch Chassis Display is installed.

If enclosure space is tight and access is important, an on screen display remote control (part number 30114) is an option.

Clearance and Ventilation

Leave at least two inches of clearance space behind the Multi-Touch Chassis Display for proper ventilation. Units have vent holes at the top and bottom on the back of the chassis -- ensure these holes are not blocked during installation. Always maintain adequate ventilation to protect the display from overheating and to ensure reliable and continued operation.

Refer to the published specifications for the maximum and minimum operating temperature and humidity conditions. Refer to the product data sheet on the 3M Touch Systems website at http://www.3m.com/touch/.

Video Card Requirements

Before you connect your touch display, make sure your computer has a video card installed that supports the native video resolution of 1680 x 1050 for the Multi-Touch Chassis Display. If you need information on installing a video card or video driver, refer to the manual that came with your video card.

Using the Standard Controls for the Video Card

In addition to the standard controls on the display, each video card has several controls that let you adjust the display settings. The software and driver for each video card is unique. In most cases, you adjust these settings by using a program or utility provided by the manufacturer of the video card.

For example, you can use the Windows Display Properties control panel to adjust the desktop area (resolution), color depth, and refresh rate. Whenever you change these settings, the image size, position, or shape may change. This behavior is normal. You can readjust the image using the display controls described in this chapter.

For more information on adjusting the desktop area/resolution, color depth, or refresh rate, refer to the user manual that came with your video card. If you change the resolution, it is a good idea to calibrate your touch screen.

Supported Video Display Modes and Refresh Rates

Your video card should support one of the display modes specified in Table 1. If you select an unsupported video mode, the display may stop working or display unsatisfactory picture quality.

Table 1. Applicable Display Mode and Refresh Rate

Display Mode	Refresh Rate (Hz)
640 x 480	60, 67, 72, and 75
720 x 400	70
800 x 600	56, 60, 72, and 75
832 x 624	75
960 x 600	59.6
1024 x 768	60, 70, 72, and 75
1152 x 720	59.9
1280 x 800	59.8
1280 x 1024	60 and 75
1680 x 1050	59.9

Configuring the Display Settings

After you connect your Multi-Touch Chassis Display and turn on your computer, you may need to configure one or more of these display settings. The ideal setting for the Multi-Touch Chassis Display is as follows:

- Display mode (also called desktop area or video native resolution) 1680 x 1050
- Refresh rate (also called vertical scan rate or vertical sync) 60 Hz
- Color depth (also called color palette or number of colors) at least 16-bit (high color)

Adjusting the Multi-Touch Chassis Video Display

This section provides guidelines for adjusting the video display and using the display controls to adjust the image to your liking. The controls for adjusting the video display are located on the back of the Multi-Touch Chassis Display. These buttons let you display the on-screen menu and adjust the phase, image position, contrast, and brightness. Before you make any adjustments:

- Be sure to adjust the controls in your normal lighting conditions.
- Display a test image or pattern whenever you adjust the video.

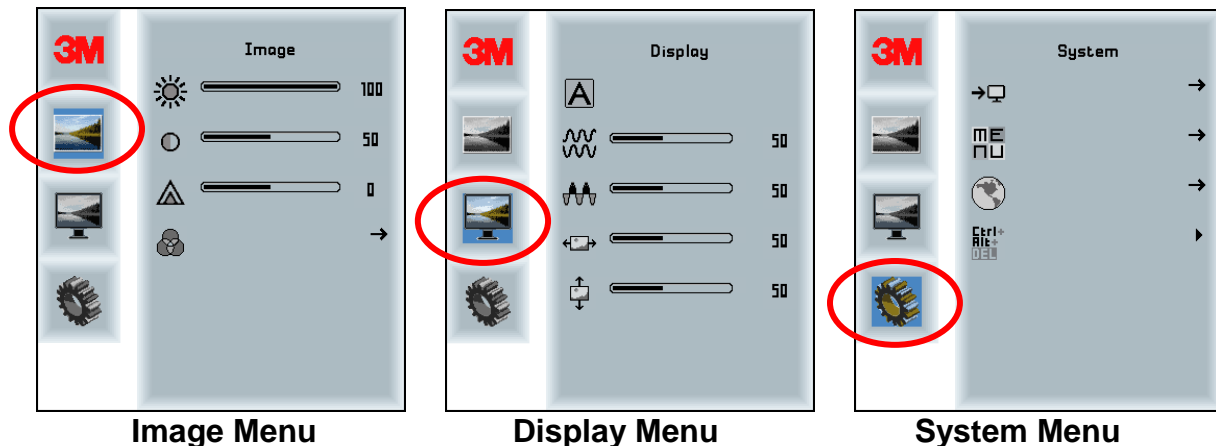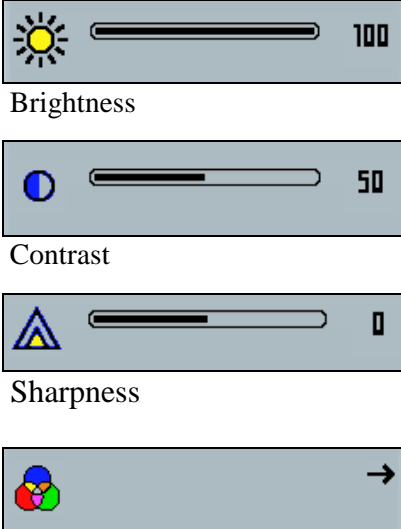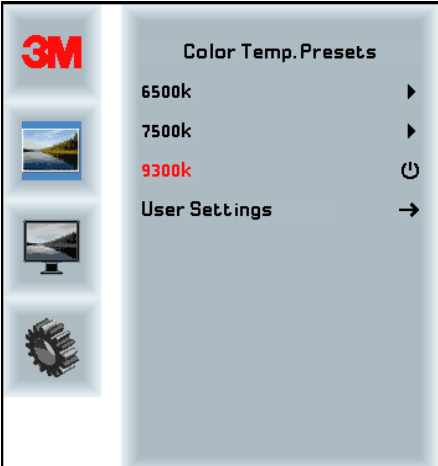Your Multi-Touch Chassis Display has five controls for adjusting the video display.

● ● ● ● ● ●
MENU SELECT + ▬ LED POWER

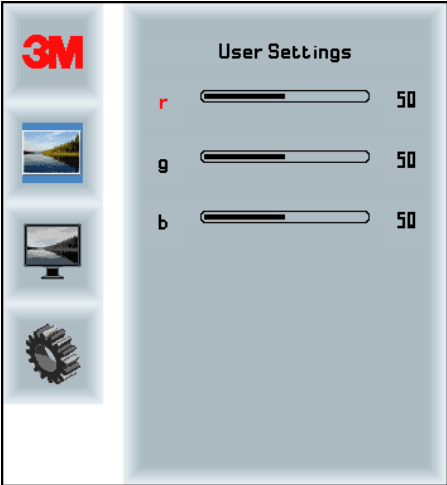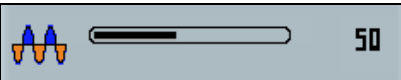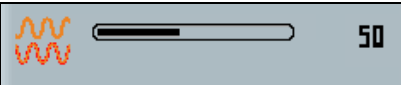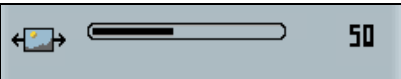Your Multi-Touch Chassis Display has four controls to adjust the video display.

- Menu – Shows or hides the on-screen display menu.
- Select -- Highlights the current menu option and enables you to scroll forward through items on the menus.
- **✚** (plus sign) -- Press **✚** to move from the Menu selection to specific choices and to increase the value of a selected option.
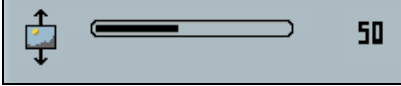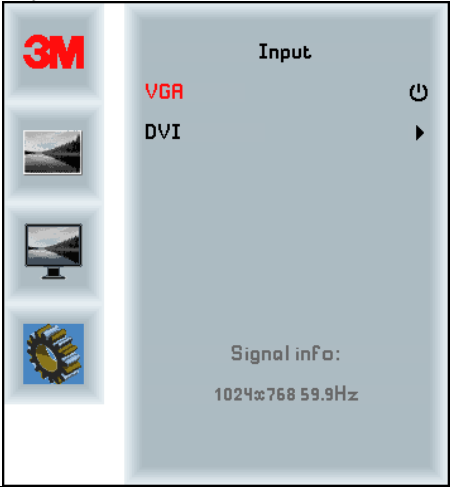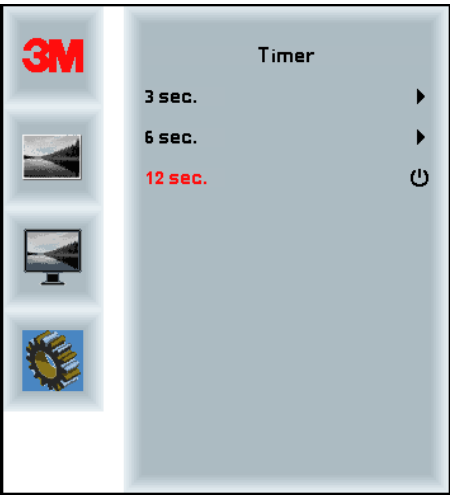- **▬** (minus sign) -- Press **▬** to decrease the value of selected option.

If you do not press any buttons, the display adjustment program times out (you can adjust this time -- up to 12 seconds) and hides the menu options. You can press the Menu button at any time to display the options again.
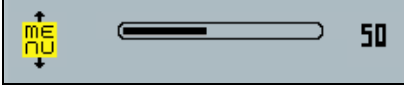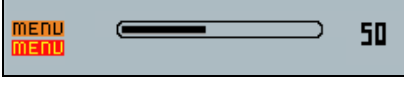
Pressing Menu will pull up the On Screen Display (OSD) menus, as shown below.

Image Menu	**Display Menu**	**System Menu**
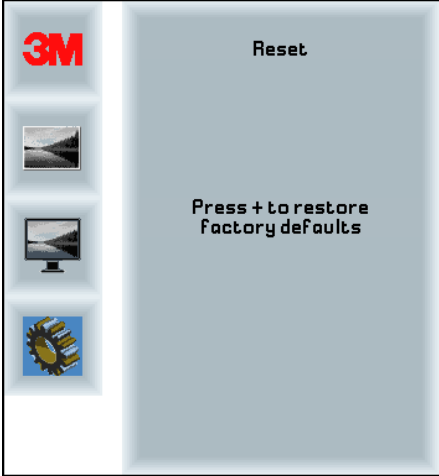
OSD Choices	Description
Image Menu	**Choices are Brightness, Contrast, Sharpness, or Color**
Brightness	**Brightness** Selecting the Brightness option will allow you to adjust the luminescence of the display. Adjust the brightness using the up and down buttons. Settings are saved automatically.
Contrast	**Contrast** Selecting the Contrast option increases or decreases the strength (lightness or dimness) of the image. Adjust the contrast using the up and down buttons. Settings are saved automatically.
Sharpness	**Sharpness** Adjusts the video quality to be sharp or blurry (special for text mode). Settings are saved automatically.
Color Temperature	**Color** **Submenu Choices are Preset Color Temp or User Settings** **Color Temperature Menu** Adjusts color temperature to presets 6500k, 7500k, 9300k or to User defined color settings. Settings are saved automatically. **Color Temperature Presets** Adjusts color temperature to presets 6500k, 7500k, 9300k or User defined color settings. Settings are saved automatically.

OSD Choices	Description
	User Settings Adjust the Red, Green and Blue channels to your preference. Settings are saved automatically.
IMAGE Auto Adjust	**Choices are Auto Adjust, Clock, Phase, H Position, V Position. Not available when using the DVI connection** **Auto Adjust** Performs automatic configuration of the Clock, Phase, Vertical and Horizontal positions. If you do an Auto Tune, the display will try to find the best setting. If you are not satisfied with the auto adjustment, fine-tune the settings manually as described below. Settings are saved automatically.
 Clock Phase H Position	**Clock** If the clock setting is not fine-tuned, you may observe periodic vertical bars of video noise on your image. These bars of noise are usually adjusted out when an Auto Adjust is performed. If the bars of noise are still present, this setting can be adjusted manually. Settings are saved automatically. **Phase** Adjust this setting so that either the vertical bars of noise are replaced by an even amount of noise across the whole screen, or the noise disappears completely. Settings are saved automatically. **H Position (Horizontal Position)** Moves image horizontally on screen either left or right. Settings are saved automatically.

OSD Choices	Description
  V Position	**V Position (Vertical position)** Moves images vertically on screen either up or down. Settings are saved automatically.
System Menu Input	**Choices include Input, OSD, Language and Reset Settings** **Input** Selects the applicable input source either VGA or DVI. Settings are saved automatically.
      Timer	**OSD Settings** **Submenu Choices are OSD Timer, OSD H Position, OSD V Position and Transparency.** **OSD Timer** Adjust how long the menu remains on the screen. Settings are saved automatically.

OSD Choices	Description
OSD H Position	**OSD H Position** Adjusts the horizontal placement of the OSD display on your screen. Settings are saved automatically.
OSD V Position	**OSD V Position** Adjusts the vertical placement of the OSD display on your screen. Settings are saved automatically.
	Transparency Adjusts the transparency of the OSD screen on your display. Settings are saved automatically.
Languages	**Language** Sets the language for the OSD -- the choices are English, French, German, Spanish, and Chinese. Settings are saved automatically.

OSD Choices	Description
 Reset Defaults	**Reset** Resets the control functions back to the original factory preset values. Settings are saved automatically.

CHAPTER 3

Enabling Your Multi-Touch Chassis Display

Windows™ 7 USB Compatibility

3M multi-touch technology works seamlessly with the Windows™ 7 operating system. The Multi-Touch display supports USB HID for direct communication. The Multi-Touch Chassis Display leverages all the multi-touch functionality that is native to Windows™ 7. Plug the display in to a system running Windows™ 7 and you'll quickly enter the world of true multi-touch functionality.

The Multi-Touch Chassis Display is compatible with Windows 7 with no additional software. Refer to Microsoft's Windows 7 documentation for additional information.

All Other Platforms

When using a Windows™ 7 serial connection or for Windows XP, Vista or Linux operating systems (either USB or serial), 3M provides MicroTouch MT 7 Software for multi-touch drivers. This guide includes information for writing your own drivers to interface with the 3M Multi-Touch Technology.

For non-Windows 7 operating system users this document provides the communication protocol necessary to talk directly with the electronics. This enables software developers using other operating systems such as Microsoft Windows™ Vista or Linux® to write their own drivers and achieve the same multi-touch results.

Multi-Touch Application Support

Remember not all applications are multi-touch ready -- Multi-touch behavior is a function of YOUR application. Check with your application vendor to determine if your software has multi-touch capability.

Installing 3M™ MicroTouch™ Software

Remember that Windows™ 7 does not require any additional software to enable multi-touch functionality.

However, for Windows™ XP, Vista or Linux® operating systems, 3M™ MicroTouch™ Software enables your Multi-Touch Chassis Display to work with your computer. 3M™ MicroTouch™ Software includes a control panel for setting your touch sensor preferences and a diagnostic utility. If you are experiencing problems with the touch sensor, you can use the diagnostic utilities provided to test the system.

For more information on installing this software and using the control panel, refer to the 3M™ MicroTouch™ Software User Guide on the accompanying CD or on the corporate website at www.3m.com/touch.
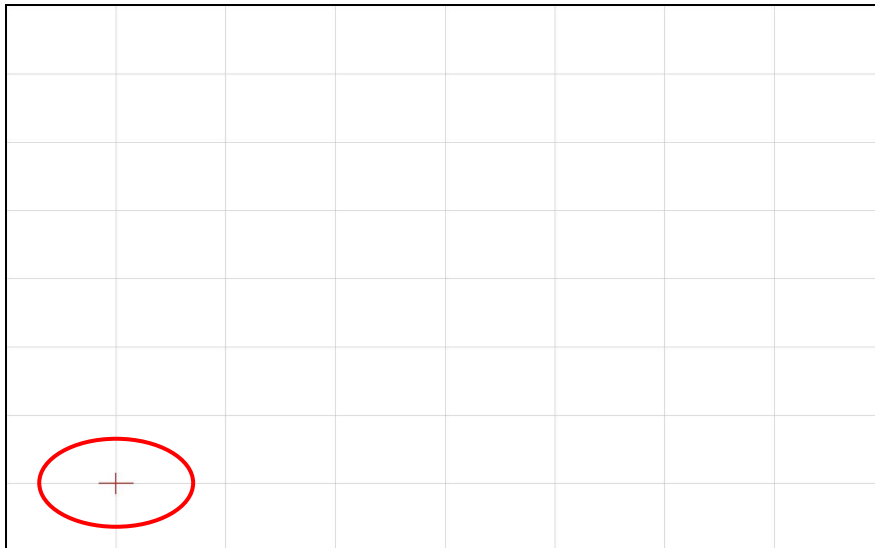
Video Alignment

The Multi-Touch Chassis has been calibrated prior to shipment and the display as delivered does not require video alignment. You should be able to accurately touch icons on the sensor. If for some reason, you cannot do this, the touch sensor's active area may not be aligned to the underlying video.

Regardless of the operating system, after you connect your touch display:

▪ If you are using Windows 7, you may calibrate by accessing the Software Diagnostic Utility (SDU) found on the enclosed CD.

Launch the SDU from the CD. Select the Tools menu and highlight Calibration. The screen below appears and you should touch the 2 targets as they appear. Press Escape to cancel Calibration.

- If you are using 3M™ MicroTouch™ MT 7 Software, launch the MT 7 Control Panel and follow the instructions on the Main tab. You'll be asked to touch 3 targets.
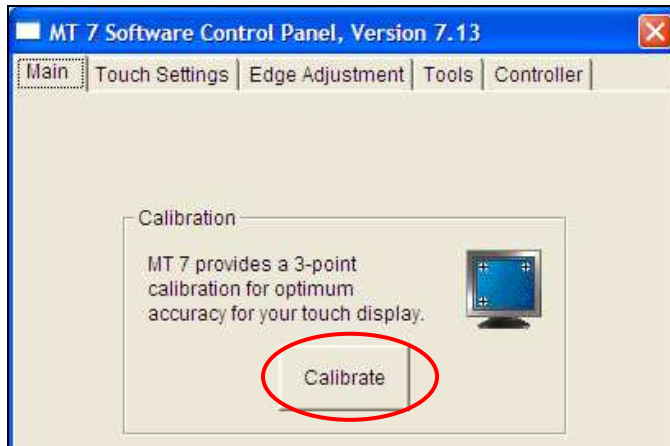
- If you are writing your own drivers, you should provide your own video alignment tool.

Use the Paint program (Start> Programs> Accessories> Paint) to determine if you have multi-touch operation. Retest the accuracy after you perform a calibration.

Multi-Touch Controllers

Refer to the *3M Multi-Touch PX4nn ASIC Controller Reference Guide* (TSD-40847) for additional details on your controller.

APPENDIX A

Troubleshooting & Maintenance

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

Display Installation Problems

Table 21. Common Display Installation Issues

Issue	Solution
No image displayed (blank screen)	**Is the display receiving power?** • Check that the computer's power cable is connected properly and securely into a grounded electrical outlet. • Check that the AC input jack is firmly plugged into the display. • Check that the display's power cable is connected properly and securely to an electrical outlet. • Try using a different power cable. • Try using a different electrical outlet.
No image displayed (blank screen)	**Is the display receiving a valid video signal from the PC?** • Check that the computer is powered on. • Check that the video cable is connected properly and securely to the display and the computer. • Check that the LED on the rear of the unit is green. • Check that no pins are bent in the video cable connector. • Check that the video card is firmly seated in the card slot in your computer.

Issue	Solution
	• Check that the video input from the video card falls within the refresh rate of the display. Refer to Table 1 for details.
	• Check that your computer is using a supported display mode. Refer to Table 1 for details.
No image displayed (blank screen)	**Is the display in Power Management mode?** • If the LED on the rear of the display is flashing amber, touch the screen, press any key on the keyboard, or move the mouse to restore operation.
No image displayed (blank screen)	**Are the brightness and contrast settings too low?** • Use the display controls to adjust these values.
Abnormal image	• Check that the video input from the video card falls within the refresh rate of the display. Refer to Table 1 for details. • Check that the video cable is connected properly and securely to the display and the computer.
Colors of image are abnormal	• Check that the video cable is connected properly and securely to the display and the computer. • Check that no pins are bent in the video cable connector.
Disturbances on the screen	• The video display adjustments are incorrect. Refer to Chapter 2 for adjusting procedures.

Troubleshooting the Touch Sensor

If you are experiencing problems with the touch sensor, check the following list of common installation errors.

Table 22. Common Touch Sensor Installation Issues

Common Installation Issues	Possible Solutions
Touch sensor does not respond to touch	• Review the installation procedures. Are all cables connected properly? • After you installed Touch Software, did you restart your PC to activate the touch sensor driver? • Remove the sensor communications cable and plug it back in. • Disconnect the power cable and plug it back in.
Touch sensor is not accurate	• Calibrate the touch sensor for the current video resolution and operating system. Refer to the Video Alignment section in Chapter 3 for additional information.

Common Installation Issues	Possible Solutions
Cursor does not follow finger movement or does not reach the edges of the sensor	• Calibrate the touch sensor for the current video resolution and operating system. Refer to the Video Alignment section in Chapter 3 for additional information.
Cursor is not located directly underneath your finger	• Open the touch sensor control panel and make sure all cursor offsets (vertical, edge/horizontal) are turned off. • Calibrate the touch sensor for the current video resolution and operating system.

Power Management

The Multi-Touch Chassis Display conforms to the Video Electronics Standards Association (VESA) Display Power Management Signaling (DPMS) standard. To benefit from power management, the display must be used in conjunction with a computer and video card that implements the VESA DPMS standard.

The PC automatically invokes the power management feature if you do not use the touch sensor, mouse, or keyboard for a user-defined period. To restore the video image, simply touch the sensor, press a key, or move the mouse. To set the period of time after which the PC will invoke the power management feature, refer to the user manual that came with your video card or PC. The touch sensor will remain on throughout this sequence.

APPENDIX B

Regulatory Information

Regulatory Agency Approvals

Your product complies with the following regulatory standards:

* FCC-B

* CE

* UL60950/IEC60950/EN60950 certified in compliance with the CB test scheme

* CCC

This equipment has been tested and found to comply within 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 residential installations. 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 interference to radio or television equipment 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.

* Move the equipment away from the receiver.

* Consult the dealer or an experienced radio/television technician for additional suggestions.

⚠ CAUTION
You are cautioned that any change or modification to the equipment not expressly approved by the party responsible for compliance could void your authority to operate such equipment.

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

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

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 the supplied grounded power supply cord and the provided shielded video interface cable with bonded ferrite cores. 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.

3M Touch Systems is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment.

CE Conformity for Europe

The device complies with the requirements of the EU RoHS Directive 2011/65/EU, the ECC directive 2004/108/EC with regard to "Electromagnetic compatibility" and 2006/95/EC with regard to "Safety".