

**MODEL:
MMS-21C**

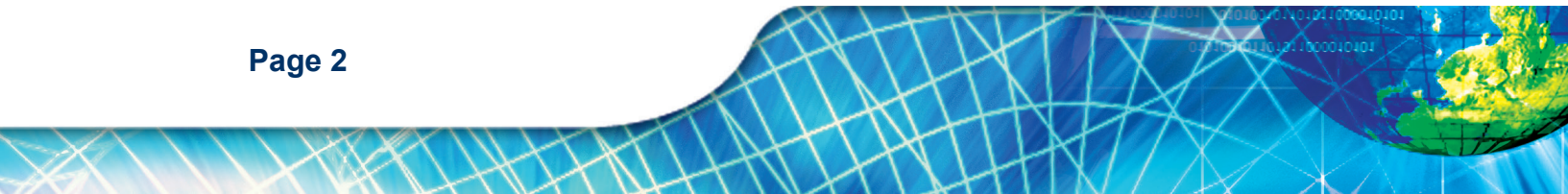
21.5" LCD Monitor

User Manual



Revision

Date	Version	Changes
April 16, 2019	1.01	Updated Section 2: Packing List Modified Table 1-1: Technical Specifications
March 9, 2018	1.00	Initial release



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Manual Conventions



WARNING

Warnings appear where overlooked details may cause damage to the equipment or result in personal injury. Warnings should be taken seriously.



CAUTION

Cautionary messages should be heeded to help reduce the chance of losing data or damaging the product.



NOTE

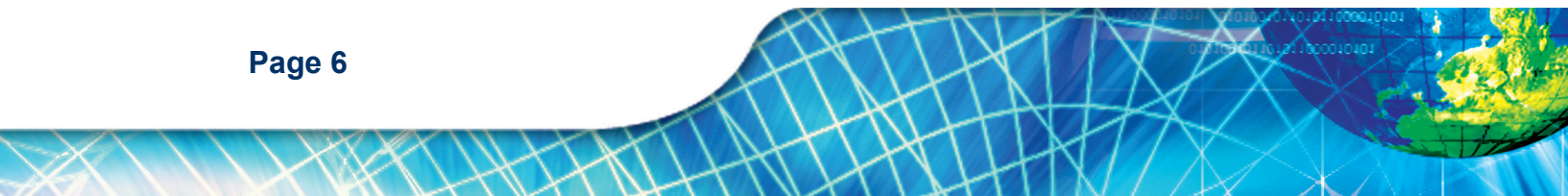
These messages inform the reader of essential but non-critical information. These messages should be read carefully as any directions or instructions contained therein can help avoid making mistakes.

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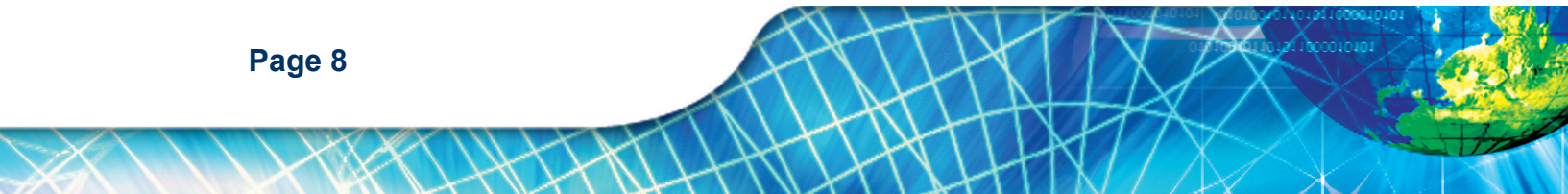
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Chapter

1

Introduction

1.1 Overview



CAUTION:

1. A PDF version of user manual (included in the bundle USB flash drive) and a hard copy of quick installation guide are provided. Please refer to the documents before/during installation.
 2. Model definition: MMS-21CXXXXXXXXXX (The “X” can be A-Z, 0-9, - or Blank to denote marking purpose.)
 3. The monitor may not be used in the presence of flammable anesthetics mixture with air, oxygen or nitrous oxide. No part of this product may come in contact with a patient. Never touch the product and a patient at the same time. This product is capable of displaying Radiology (PACS) images for reference, not diagnostic purpose only. For mission critical applications, we strongly recommend that a replacement unit be immediately available.
 4. The MMS-21C should connect to other devices to display images.
-



Figure 1-1: MMS-21C with Optional Stand

The MMS-21C is a monitor, equipping with multiple analog and digital input interfaces, that allows connection to various devices without extra effort. In addition, its loop through technology enables simultaneous display on other monitors, extending the input signal.

1.1.1 Operating Principle

The MMS-21C is designed to receive some popular image signals and display the images on the screen. The monitor settings can be adjusted either by the OSD button or the SmartOSD application program on PC.

The SmartOSD application program is to provide users with a simple interface to adjust monitor settings remotely from PC.

1.1.2 Intended Use

The LCD monitor is a display equipped with multiple analog and digital interfaces, which can display alphabetical, numerical and graphical data.

1.1.3 Intended User

Professional and General Adults

- General Adults:
Someone who is over 18 years old with no significant disease can read English manual, and move 6~7 kg object by himself.
- Professional:
Someone who with the requirement of general adult and corresponds with below: Has ever been a participant of R&D, assembling, testing of LCD monitor.

1.2 Features

Some of the MMS-21C features are listed below:

- Full HD LCD panel
- Accepts 10 V ~ 28 V DC power input
- Supports VESA 75 and VESA 100 mounting
- Multiple video input and loop through output interfaces
- Optional projected capacitive touchscreen

1.3 Front View

The front side of the MMS-21C includes the LCD panel and power LED (**Figure 1-2**). The bottom right corner contains three small icons indicating the functions of the corresponding control buttons located below the screen or on the rear side.

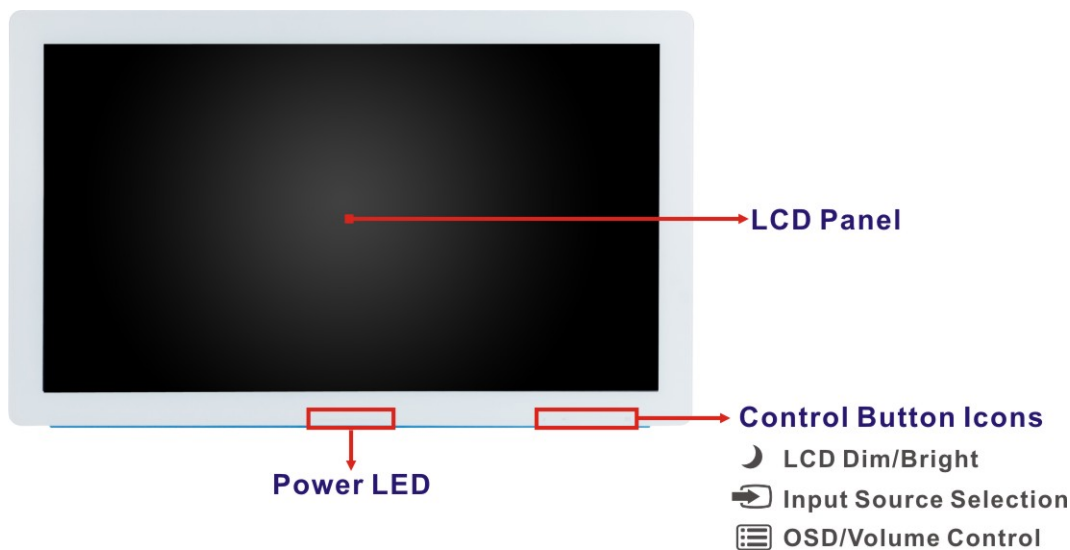


Figure 1-2: Front View



CAUTION:

- The touch panel and glass are fragile components. Please be cautious when using these parts.
- The device is not related to biocompatibility test and report. But the operator must wear silicone gloves when using the touch panel function.

1.4 Rear View

The rear side of the MMS-21C contains VESA 75 and VESA 100 mounting screw holes, and I/O interfaces and control buttons listed below (**Figure 1-3**).

- 3G-SDI input and output connectors (optional)
- 10 V ~ 28 V DC power input jack (lockable)
- Analog input and output connectors (when analog inputs included, see **Section 1.4.1**)
- Audio input connector
- DVI-D input connector
- Equipotential ground pin
- GPIO (RJ-45, reserved for future use)
- HDMI input and output connectors (when HDMI inputs included)
- Input source selection button
- LCD dim/bright button
- OSD/volume control knob
- Power switch
- USB Type A connector for FW update
- USB Type A connector for touchscreen (touchscreen models only)
- VESA 75 mounting screw holes
- VESA 100 mounting screw holes
- VGA input connector

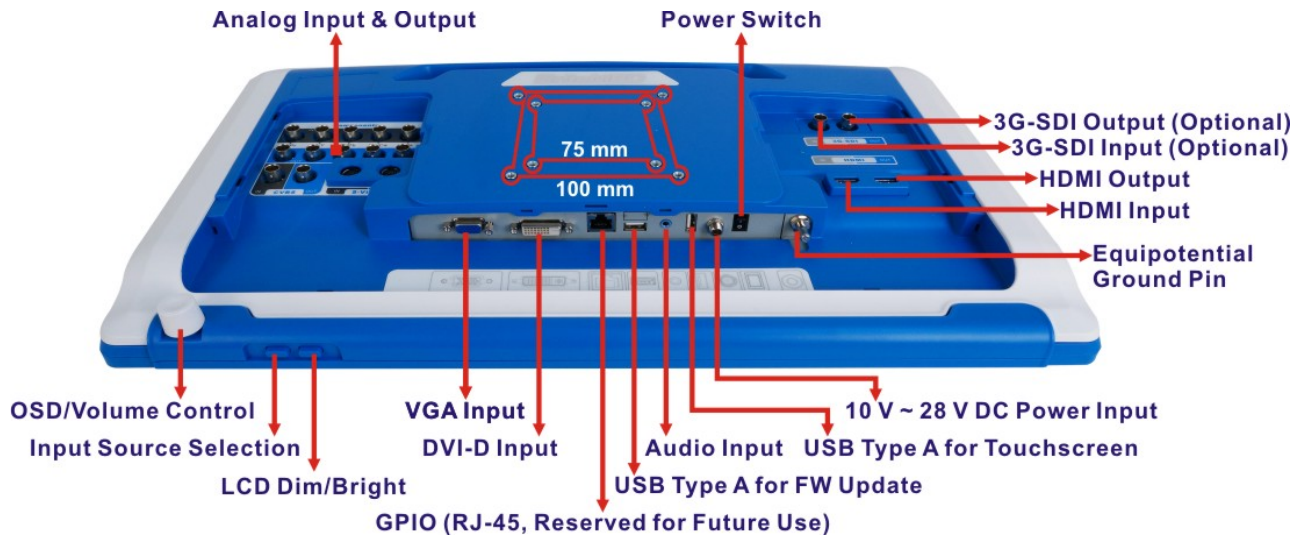


Figure 1-3: Rear View

1.4.1 Connector Interface Panels

1.4.1.1 Analog Input and Output Connectors (when analog inputs included)

The MMS-21C can provide additional analog input and output interfaces via an I/O board, including component, composite and S-video interfaces (**Figure 1-4**). **Be sure to use RG-59 (or above) cables for analog input/output connection.**

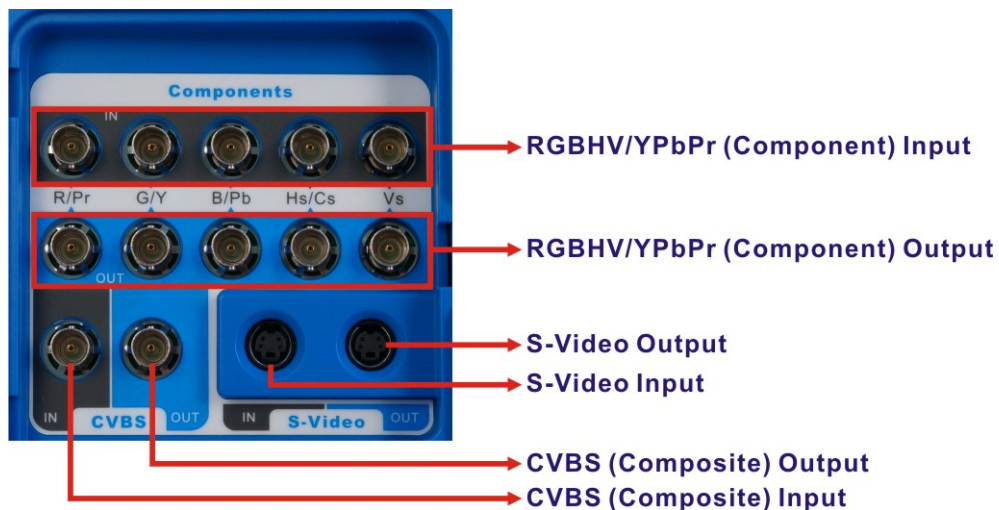


Figure 1-4: Analog Input and Output Connectors

1.4.1.2 3G-SDI and HDMI Connectors (when 3G-SDI and HDMI inputs included)

The MMS-21C can provide additional 3G-SDI and HDMI interfaces via an I/O board, including input and output interfaces (**Figure 1-5**).

3G-SDI connection cable requirement: RG-59 (or above) cables; conductor impedance: 75 Ohm; BNC connector impedance: 75 Ohm.

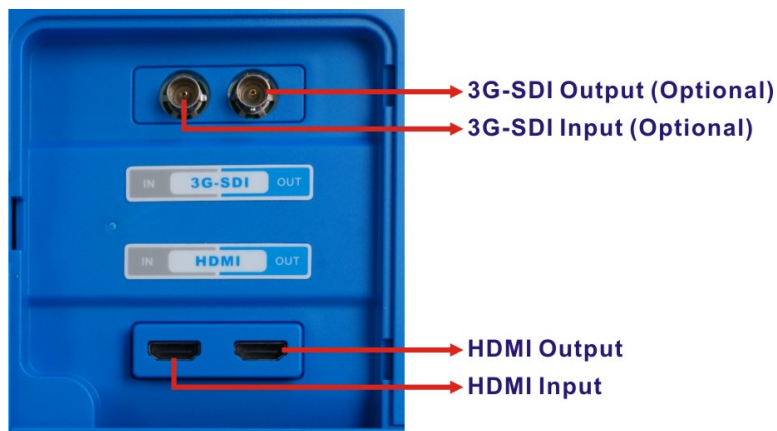


Figure 1-5: 3G-SDI and HDMI Connectors

1.5 Side Panels

Each side panel consists of a speaker as indicated in **Figure 1-6**.



Figure 1-6: Side Panels

1.6 Technical Specifications

The technical specifications for the MMS-21C are listed in **Table 1-1**.

Display	
LCD Panel	AUO G215HVN01 V1
LCD Size	21.5" (color)
Aspect Ratio	Widescreen, 16:9
Max. Resolution	1920 x 1080
Brightness (nits) (max.)	250±10%
Contrast Ratio	5000:1 (typical)
Viewing Angle (H/V)	178°/178°
Color Temperature	4500K, 5500K, 6500K, 7500K, User
Touchscreen (Touchscreen Models Only)	
Front Cover Glass	Anti-glare glass
Touch Function	PCAP
Control Board Interface	USB
Gloss/Haze	80%/3% ~ 8%
Transmission Rate	87%
Control Buttons, Indicators and I/O Interfaces	
Connectors	One VGA signal input (DB-15) One DVI-D signal input One Audio input jack One USB Type A for FW update One USB Type A for touchscreen (touchscreen models only) One GPIO (RJ-45, reserved for future use) One DC power input jack (ψ5.5/2.5, with lock) One power switch One equipotential ground pin Optional: 1. With analog interface Two composite NTSC/PAL connectors (BNC, one for signal input, one for signal output) Two S-video connectors (4-pin mini-DIN, one for signal input, one for signal output)

	<p>Two sets of RGBHV/YPbPr connectors (BNC, one for signal input, one for signal output)</p> <p>2. With HDMI interface</p> <p>Two HDMI 1.4 connectors (Type A, one for signal input, one for signal output)</p> <p>3. With 3G-SDI interface</p> <p>Two 3G-SDI connectors (BNC, one for signal input, one for signal output; optional)</p>
Speaker Output	2 x 0.8 W amplifiers
OSD & Function Keys	<p>One OSD/volume control knob (rear)</p> <p>One Input source selection button (bottom)</p> <p>One LCD dim/bright button (bottom)</p>
LED Light	Power LED light bar (green: power on; orange: sleep)
Power	
Power Input	DC 10 V ~ 28 V
Power Adapter	<p>Medical grade</p> <p>AC 100 V ~ 240 V, 2.0-1.0 A, 50-60 Hz</p> <p>DC 12 V, 5.42 A</p>
Power Consumption	35 W (approximately)
Physical and Environmental	
Mounting	VESA 75 and VESA 100
Dimensions (W x H x D)	530 mm x 325 mm x 53 mm
Net Weight	6.6 kg
Operating Temperature	0°C ~ 40°C
Storage Temperature	-20°C ~ 60°C
Transportation Temperature	-20°C ~ 60°C
Humidity	10% ~ 90%, non-condensing
Pressure	70 kPa ~ 106 kPa
Safety	<p>ANSI/AAMI ES60601-1 (R2012);</p> <p>CAN/CSA C22.2 No. 60601-1;</p> <p>EN60601-1;</p> <p>FCC Part18</p>

Table 1-1: Technical Specifications

1.6.1 VESA Timing

The following table lists the VESA timing standards that are supported by the MMS-21C.

Resolution	Refresh Rate
640x480	60Hz
640x480	72Hz
640x480	75Hz
800x600	56Hz
800x600	60Hz
800x600	72Hz
800x600	75Hz
848x480	60Hz
1024x768	43Hz
1024x768	60Hz
1024x768	70Hz
1024x768	75Hz
1152x864	75Hz
1280x768	60Hz
1280x768	60Hz
1280x768	75Hz
1280x800	60Hz
1280x800	75Hz
1280x960	60Hz
1280x1024	60Hz
1280x1024	75Hz
1360x768	60Hz
1600x1200	60Hz
1920x1080	60Hz

1.7 Dimensions

The MMS-21C dimensions are shown in the figures below.

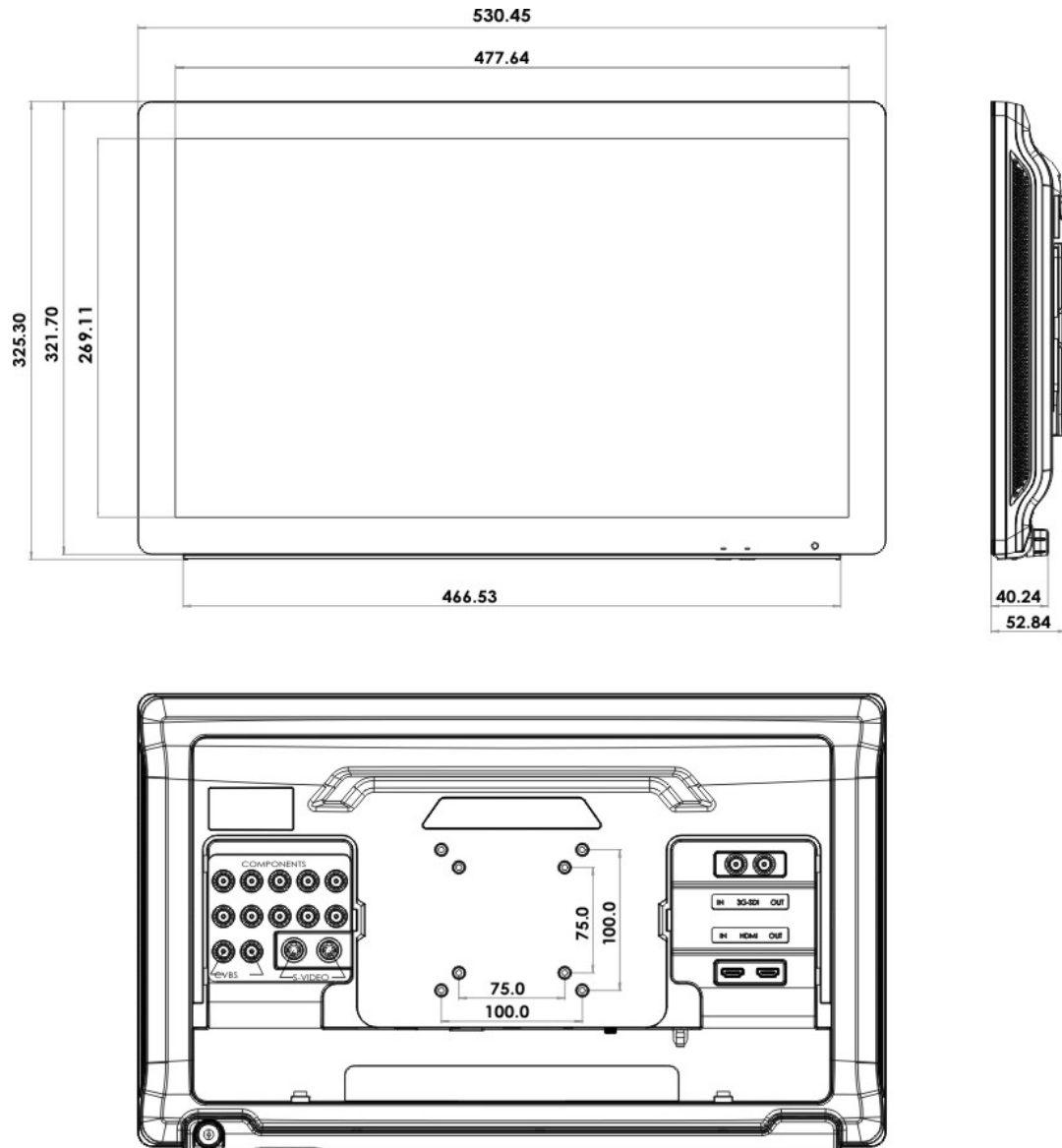


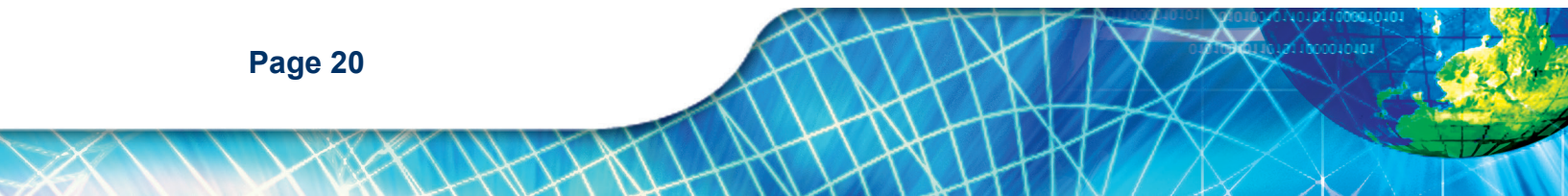
Figure 1-7: MMS-21C Dimensions (mm)



Chapter

2

Packing List



2.1 Unpacking

To unpack the MMS-21C, please follow the steps below:



WARNING:

The front side LCD screen has a protective plastic cover stuck to the screen. Only remove the plastic cover after the MMS-21C has been properly installed. This ensures the screen is protected during the installation process.

- Step 1:** Use box cutters, a knife or a sharp pair of scissors that seals the top side of the external (second) box.
- Step 2:** Open the external (second) box.
- Step 3:** Use box cutters, a knife or a sharp pair of scissors that seals the top side of the internal (first) box.
- Step 4:** Lift the monitor out of the boxes.
- Step 5:** Remove both polystyrene ends, one from each side.
- Step 6:** Pull the plastic cover off the MMS-21C.
- Step 7:** Make sure all the components listed in the packing list are present.

2.2 Packing List







CAUTION:

Please use the supplied accessories to avoid damage to the device.

The MMS-21C series is shipped with the following components:

Model No.	Monitor	Power Adapter	Power Cord (EU or US Type)	VGA Cable	DVI Cable	Touchscreen Cable	Equalization Grounding Cable
MMS-21C-R10	✓	✓	✓	✓	✓		✓
MMS-21CA-R10	✓	✓	✓	✓	✓		✓
MMS-21CH-R10	✓	✓	✓	✓	✓		✓
MMS-21CT-R10	✓	✓	✓	✓	✓	✓	✓
MMS-21CTH-R10	✓	✓	✓	✓	✓	✓	✓

Quantity	Item	Image
1	MMS-21C	
1	Power adapter (FSP; FSP065M-DHA)	
1	Power cord, EU type or US type, varies by territories	
1	VGA signal cable	







Quantity	Item	Image
1	DVI signal cable	
1	Potential equalization grounding cable	
1	Touchscreen USB cable	
1	Quick Installation Guide	
1	USB flash drive (includes user manual and utility)	

Table 1-1: Packing List

Make sure all the components listed in the packing list are present. If any of these items are missing or damaged, contact the distributor or sales representative immediately.

2.3 Optional Items

The following are optional components which may be separately purchased:

Item and Part Number	Image
Stand (P/N: STAND-A19-RS)	

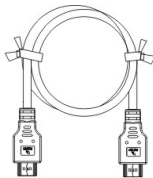


Item and Part Number	Image
HDMI cable	
HDMI input and loop-through add-on module (assemble-to-order) (P/N: MMSO-HDMI-R10)	
3G-SDI input and loop-through add-on module (assemble-to-order) (P/N: MMSO-3GSDI-R10)	

Table 1-2: Optional Items

Chapter

3

Installation

3.1 Safety Precautions

Please follow the safety precautions outlined in this section.

3.1.1 General Safety Precautions

Please ensure the following safety precautions are adhered to at all times.

- ***The disconnecting device of supply mains of LCD monitor is AC inlet on the external power adapter*** (FSP, FSP065M-DHA) that came with the MMS-21C. Please make sure the disconnecting device shall be easily accessible after installation of LCD monitor.
- ***Follow the electrostatic precautions*** outlined below whenever the MMS-21C is opened.
- ***Make sure the power is turned off and the power cord is disconnected*** whenever the MMS-21C is being installed, moved or modified.
- ***Do not apply voltage levels that exceed the specified voltage range.*** Doing so may cause fire and/or an electrical shock.
- ***Electric shocks can occur*** if the MMS-21C chassis is opened when the MMS-21C is running.
- ***Do not drop or insert any objects*** into the ventilation openings of the MMS-21C.
- ***If considerable amounts of dust, water, or fluids enter the MMS-21C***, turn off the power supply immediately, unplug the power cord, and contact the MMS-21C vendor.

3.1.2 Anti-static Precautions



WARNING:

Failure to take ESD precautions during the installation of the MMS-21C may result in permanent damage to the MMS-21C and sever injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the MMS-21C. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the MMS-21C is opened and any of the electrical components are handled, the following anti-static precautions are strictly adhered to.

- ***Wear an anti-static wristband:*** Wearing a simple anti-static wristband can help to prevent ESD from damaging any electrical component.
- ***Self-grounding:*** Before handling any electrical component, touch any grounded conducting material. During the time the electrical component is handled, frequently touch any conducting materials that are connected to the ground.
- ***Use an anti-static pad:*** When configuring or working with an electrical component, place it on an anti-static pad. This reduces the possibility of ESD damage.
- ***Only handle the edges of the electrical component:*** When handling the electrical component, hold the electrical component by its edges.

3.2 Installation Precautions

When installing the power module, please follow the precautions listed below:

- **Power turned off:** When installing the MMS-21C, make sure the power is off. Failing to turn off the power may cause severe injury to the body and/or damage to the system.
- **Certified Engineers:** Only certified engineers should install and modify onboard functionalities.
- **Grounding:** The MMS-21C should be properly grounded. The voltage feeds must not be overloaded. Adjust the cabling and provide external overcharge protection per the electrical values indicated in the user manual.

3.3 Mounting the MMS-21C

The MMS-21C equips with VESA 75 and VESA 100 mounting screw holes on the rear panel (**Figure 3-1**). The user can mount the monitor onto a VESA (Video Electronics Standards Association) compliant device.

To install the optional stand, align the stand bracket with the VESA 100 mounting screw holes on the rear panel of the MMS-21C (**Figure 3-1**), then secure it to the monitor by inserting and tightening four retention screws .

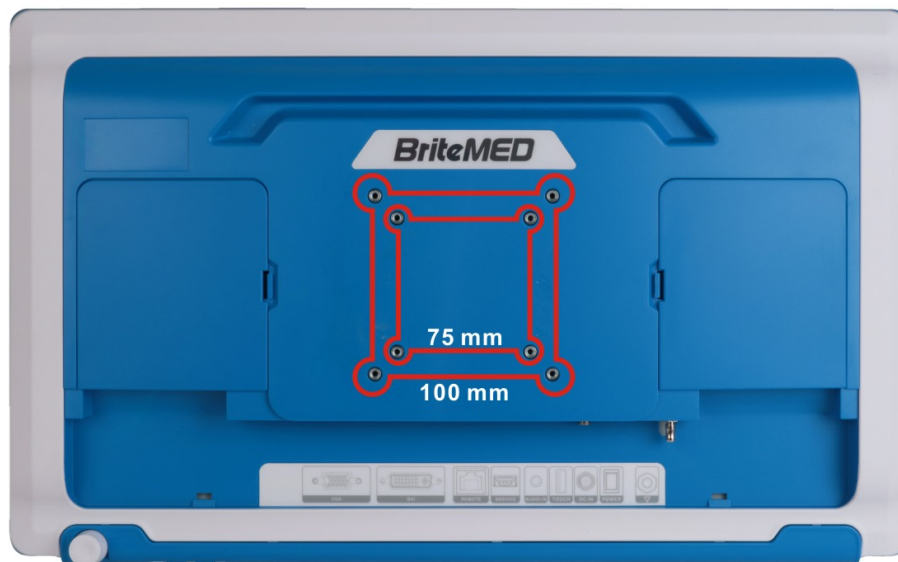


Figure 3-1: VESA 75 and VESA 100 Mounting Screw Holes



NOTE:

Mounting screw specifications:

- Diameter: 4.0 mm
 - Length: 8.0 mm
-

3.4 Before Powering On



NOTE:

Please refer to **Figure 1-3** and **Figure 1-4** to find the I/O interface locations.

Before powering on the MMS-21C, the user has to connect the signal input source and power source, as well as the following two cables to the MMS-21C:

- **Potential equalization grounding cable:** This cable is used to connect the monitor and signal input source, so that both connected devices have the same voltage.
- **Touchscreen USB cable (touchscreen models only):** For using the touchscreen function, use this cable to connect the touch panel to the system.

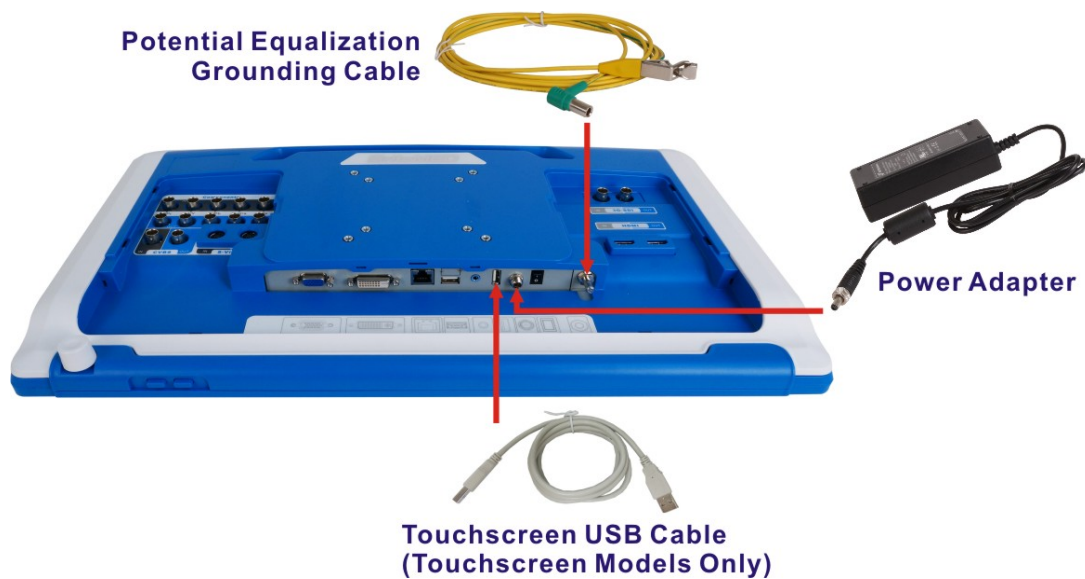


Figure 3-2: Connecting the MMS-21C



NOTE:

To prevent disconnection, ensure to fasten the connected cables, such as the VGA cable, DVI cable, BNC cable and power adapter.

After connecting and securing all the required cables, please re-install the cable cover to hide the cables under it (**Figure 3-3**).



Figure 3-3: MMS-21C with the Cable Cover Installed

3.5 Powering On/Off the Monitor

To power on/off the monitor, please follow the steps below:

Step 1: Ensure the monitor is connected to a power source.

Step 2: Press the power switch (**Figure 3-4**) to power on or off the monitor.

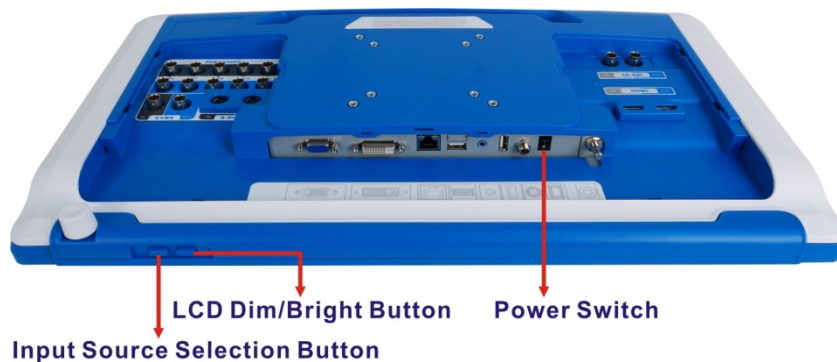


Figure 3-4: Buttons and Switch

Step 3: The user may toggle the input source selection button to select the signal input source, and the LCD dim/bright button to dim the LCD (**Figure 3-4**).

Chapter

4

On-Screen Display (OSD) Controls

4.1 Using the OSD Control Knob

The OSD control knob is located on the bottom left corner of the rear panel (**Figure 4-1**). To change the monitor settings using the OSD control knob, follow the steps below:

Step 1: Press the control knob to open the OSD window.



OSD Control Knob

Figure 4-1: OSD Control Knob

Step 2: Rotate the control knob to select an item, and then press the knob to confirm the selection.

Step 3: When an item is selected, rotate the control knob to change its setting.

Step 4: Press the control knob to confirm the setting and exit.

4.2 OSD Menu Structure and Options

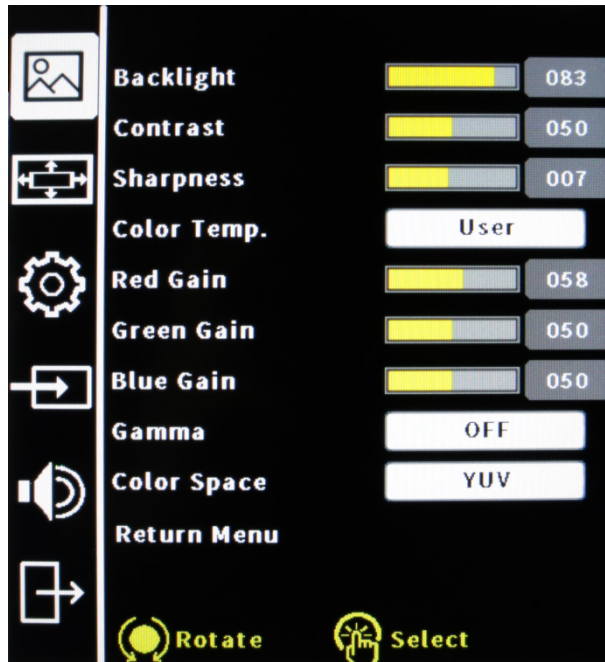

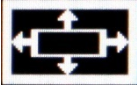
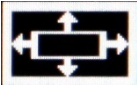



Figure 4-2: OSD Menu

Table 4-1 shows the OSD menu structure and options for the MMS-21C monitor.

OSD Menus	Items	Values/Options
	Backlight	0 to 100
	Contrast	0 to 100
	Sharpness	0 to 15
	Color	0 to 100
	Tint	0 to 100
	Color Temp.	4500, 5500, 6500, 7500, User
	Red Gain	0 to 100
	Green Gain	0 to 100
	Blue Gain	0 to 100
	Gamma	OFF, 2.0, DICOM
	Color Space	YUV, RGB

OSD Menus	Items	Values/Options
	Img Size	<p>The available options are varied by input sources (image input or video input).</p> <p>Image input: FILL ALL, FILL ASPECT, 1 TO 1, Hori. ZOOM, Vert. ZOOM</p> <p>Video input: FILL ALL, 1 TO 1, Normal, ZOOM, WIDE, Hori. ZOOM, Vert. ZOOM</p> <p>For detailed information of each option, please refer to the following:</p> <p>FILL ALL: Enlarges or shrinks the image to fill the entire screen.</p> <p>FILL ASPECT: Enlarges or shrinks the image, maintaining its aspect ratio, until the screen can display the entire image.</p> <p>1 TO 1: Displays as the actual image size.</p> <p>ZOOM: Enlarges the image, maintaining its aspect ratio. When the monitor is 4:3 ratio and the image is 16:9 ratio, this option can eliminate the black borders displayed on the upper and lower side, but the image will exceed the screen on the left and right side; when the monitor is 16:9 ratio and the image is 4:3 ratio, this option can eliminate the black borders displayed on the left and right side, but the image will exceed the screen on the upper and lower side.</p> <p>WIDE: This option takes effect for the images with 4:3 ratio. When the Display Layout item is set to PIP/Side by side, the result of this adjustment will be the same as FILL ALL.</p> <p>NORMAL: For an image with 4:3 ratio, the 16:9 screen will display a 4:3 image. If the aspect ratio of the input and output images are close, the result of this adjustment will be the same as FILL ALL.</p> <p>Hori. ZOOM: Enlarges or shrinks the image, maintaining its aspect ratio, to fill the left and right borders of the monitor.</p> <p>Vert. ZOOM: Enlarges or shrinks the image, maintaining its aspect ratio, to fill the upper and lower borders of the monitor.</p>
	Over Scan	<p>ORIGINAL, 3%, 5%, 10%</p> <p>NOTE: This item is available only when using the analog input interfaces.</p>
	H Position	<p>0 to 100</p> <p>NOTE: This item is available only when using the VGA or component input interfaces.</p>
	V Position	<p>0 to 100</p> <p>NOTE: This item is available only when using the VGA or component input interfaces.</p>

OSD Menus	Items	Values/Options
	Phase	0 to 100 NOTE: This item is available only when using the VGA or RGBHsVs/RGBCs input interfaces.
	Frequency	0 to 300 NOTE: This item is available only when using the VGA or RGBHsVs/RGBCs input interfaces for image input.
	Auto	Automatically adjusts the H Position , V Position, Phase and Frequency settings. NOTE: This item is available only when using the VGA or RGBHsVs/RGBCs input interfaces for image input.
	Freeze	ON, OFF
	Display Layout	Single, PIP, Side by side NOTE: When setting to PIP/Side by side , if the main window source is HDMI input and the second window has no signal, the second window will start automatic search; if the second window source is HDMI input and the main window has no signal, the main window will start automatic search.
	PIP Size	0 to 100 NOTE: This item is available only when the Display Layout item is set to PIP .
	PIP H Position	0 to 100 NOTE: This item is available only when the Display Layout item is set to PIP .
	PIP V Position	0 to 100 NOTE: This item is available only when the Display Layout item is set to PIP .
	PIP Alpha Blend	0 to 100 NOTE: This item is available only when the Display Layout item is set to PIP .
	PIP SWAP	Swaps the two source screens. NOTE: This item is available only when the Display Layout item is set to PIP .
	DPMS	1 mins, 3 mins, 5 mins
	Auto Search	ON, OFF
	OSD Transparency	0 to 100
	OSD H Position	0 to 100




OSD Menus	Items	Values/Options
	OSD V Position	0 to 100
	OSD Timeout(sec.)	3 sec., 5 sec., 10 sec., 30 sec., 60 sec.
	Restore Default	Restores to the default settings
	Source	Sets the input source.
	Volume	0 to 30
	Balance	-15 to 15
	Mute	ON, OFF
	Audio Bits	16 bits, 20 bits, 24 bits NOTE: This item is available only when using the optional SDI input interface.
	Resolution	Displays the current resolution.
	Serial NO.	Displays the serial number of the monitor.
	FW Version	Displays the firmware version.

Table 4-1: OSD Menu Structure and Options

Chapter

5

MMS SmartOSD

5.1 Overview

The MMS SmartOSD is a proprietary On-Screen Display (OSD) software solution that enables easy monitor setting adjustments in a Windows environment. Please refer to the following sections to install and use the software.

5.2 Installing the MMS SmartOSD

To install the MMS SmartOSD, please follow the steps below:

Step 1: Use a USB Type A to Type A cable to connect the USB Type A connector for FW update on the MMS-21C to the USB connector of a computer (**Figure 5-1**).

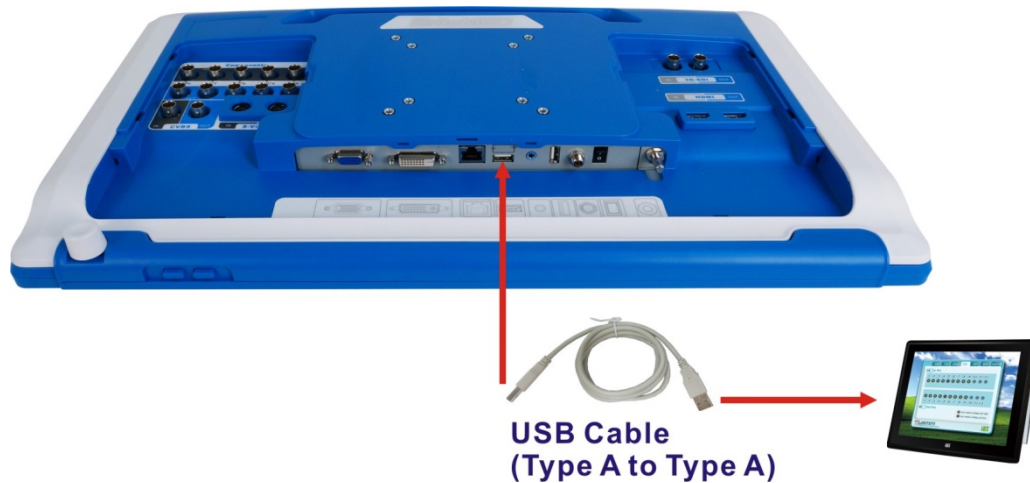


Figure 5-1: Using the USB Cable to Connect MMS-21C to a Computer

Step 2: Windows installs the device driver automatically.

Step 3: Run the MMS SmartOSD setup file included in the bundled USB flash drive.

Step 4: The Setup Wizard welcome window appears (**Figure 5-2**).

Follow the onscreen instructions to complete the software installation.

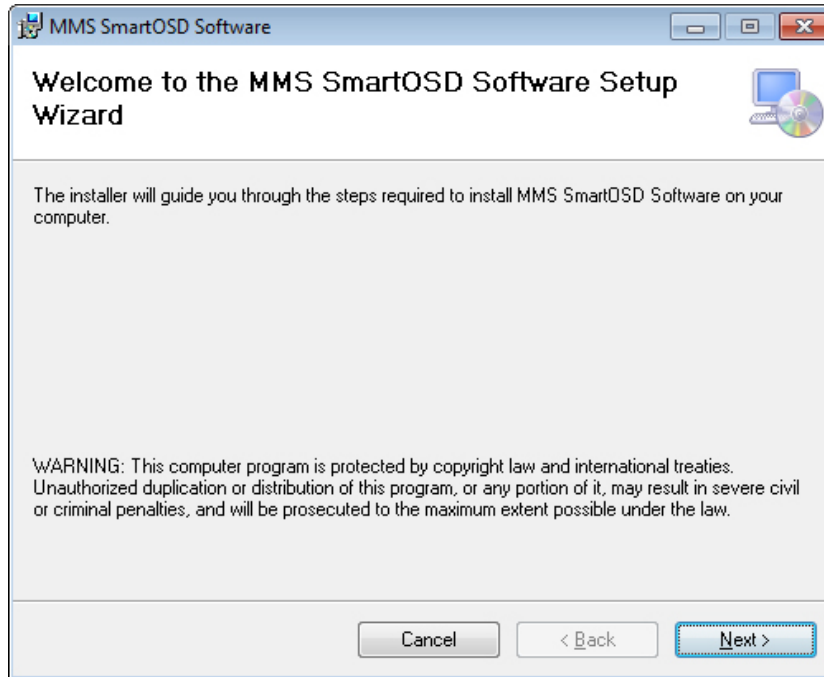


Figure 5-2: Setup Wizard Welcome Window

Step 5: If the MMS SmartOSD software is installed to the connected computer, an MMS SmartOSD icon (**Figure 5-3**) should appear on the Windows desktop.



Figure 5-3: MMS SmartOSD Icon

5.3 Using the MMS SmartOSD

To use the MMS SmartOSD, please follow the steps below:

- Step 1:** Ensure that the MMS-21C is connected to the computer (**Figure 5-1**).
- Step 2:** Double click the MMS SmartOSD icon (**Figure 5-3**) on the Windows desktop to launch the MMS SmartOSD.
- Step 3:** The MMS SmartOSD menu appears (**Figure 5-4**). For the detailed information of its configuration options, please refer to **Table 4-1**.

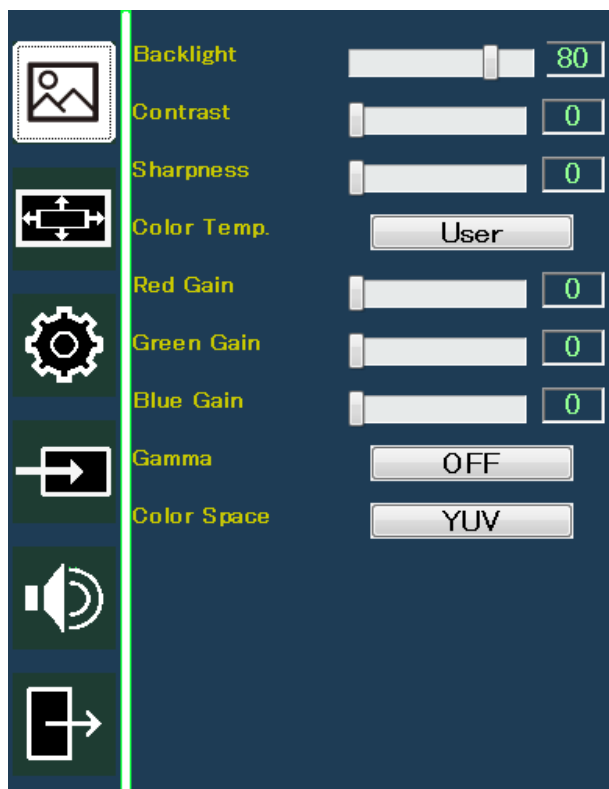




Figure 5-4: MMS SmartOSD Menu

Chapter

6

Troubleshooting

Problem	Solution
MMS-21C do not power on.	<ol style="list-style-type: none"> 1. Check whether power source is connected correctly, and fasten the connector from the power adapter. 2. Check whether the power switch is on or not
MMS-21C has no signal.	<p>Check whether the signal cable is connected correctly, then press the Input Source Selection Button to choose input source. Or rotate the OSD control knob to choose  to set the input source, then press the knob to confirm the selection.</p>
MMS-21C is on black screen.	Press the LCD Dim/Bright Button to check whether the LCD is dimmed.
Touchscreen is no working.	Make sure if the touchscreen USB cable is connected.
No sound.	Rotate the OSD/volume control knob directly.
Image size is not suitable for display.	Enter the image size adjustment menu  by using the OSD control knob, then press the knob to confirm the selection
I can't find the MMS Smart OSD icon on the computer.	<p>Before installing, make sure USB cable is connected to a computer and the MMS-21C.</p> <p>Install MMS Smart OSD firmware from USB flash drive, then run the MMS Smart OSD setup file automatically.</p>

Appendix

A

Regulatory Compliance

DECLARATION OF CONFORMITY

This equipment has been tested and found to comply with specifications for CE marking. If the user modifies and/or installs other devices in the equipment, the CE conformity declaration may no longer apply.

FCC INFORMATION

This equipment has been tested and found to comply with limits of a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against interference. This equipment can radiate radio frequency energy and, if not installed and used in accordance with the instructions, it may interfere with other radio communications equipment. There is no guarantee that interference will not occur in a particular installation. If this equipment is found to cause harmful interference to radio or television reception, the user is encouraged to try to correct the interference by carrying out one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the distance between the equipment and the subject of interference.
- Plug the equipment into an outlet on a different electrical circuit than that to which the subject of interference is connected.
- Consult the dealer or an experienced radio/TV technician for help.

NOTICES TO USER

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

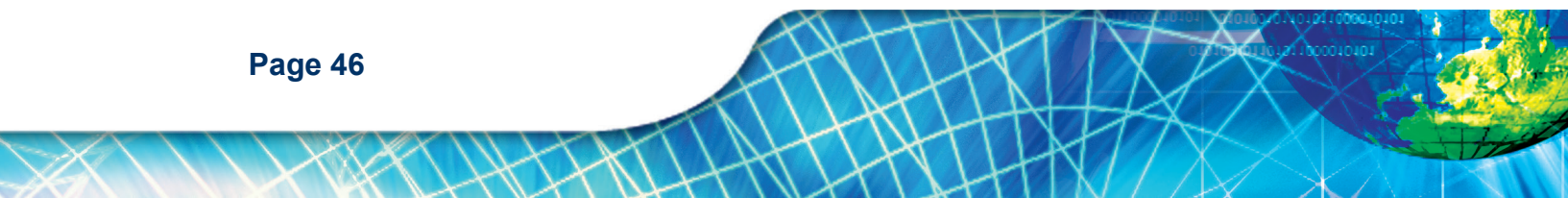
This equipment generates or uses radio frequency energy. Changes or modifications to this equipment may cause harmful interference unless the modifications are expressly approved in the instruction manual. The user could lose authority to operate this equipment if an unauthorized change or modification is made.



Appendix

B

Product Disposal



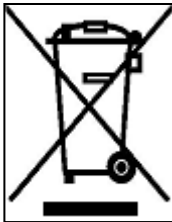


CAUTION:

Risk of explosion if battery is replaced by an incorrect type. Only certified engineers should replace the on-board battery.

Dispose of used batteries according to instructions and local regulations.

- Outside the European Union - If you wish to dispose of used electrical and electronic products outside the European Union, please contact your local authority so as to comply with the correct disposal method.
- Within the European Union–The device that produces less waste and is easier to recycle is classified as electronic device in terms of the European Directive 2012/19/EU (WEEE), and must not be disposed of as domestic garbage.



EU-wide legislation, as implemented in each Member State, requires that waste electrical and electronic products carrying the mark (left) must be disposed of separately from normal household waste. This includes monitors and electrical accessories, such as signal cables or power cords. When you need to dispose of your display products, please follow the guidance of your local authority, or ask the shop where you purchased the product. The mark on electrical and electronic products only applies to the current European Union Member States.

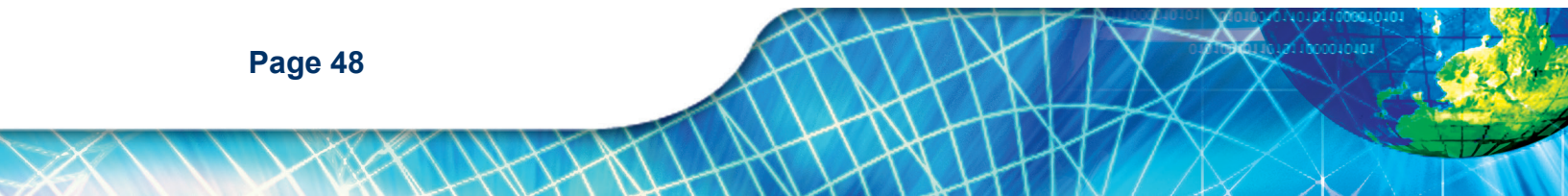
Please follow the national guidelines for electrical and electronic product disposal.



Appendix

C

Maintenance and Cleaning Precautions



When maintaining or cleaning the MMS-21C, please follow the guidelines below.

C.1 Maintenance and Cleaning

Prior to cleaning any part or component of the MMS-21C, please read the details below.

- The interior does not require cleaning. Keep fluids away from the interior.
- Be careful not to damage the small, removable components inside.
- Turn off before cleaning.
- Never drop any objects or liquids through the openings.
- Be cautious of any possible allergic reactions to solvents or chemicals used when cleaning.
- Avoid eating, drinking and smoking nearby.
- The enclosures of the monitor glass/touch panel, power adapter and DC power cable, and the video cables and power cord are intended to be routinely cleaned by the user with 75% ethanol alcohol.

C.2 Cleaning Tools

Some components may only be cleaned using a product specifically designed for the purpose. In such case, the product will be explicitly mentioned in the cleaning tips. Below is a list of items to use for cleaning.

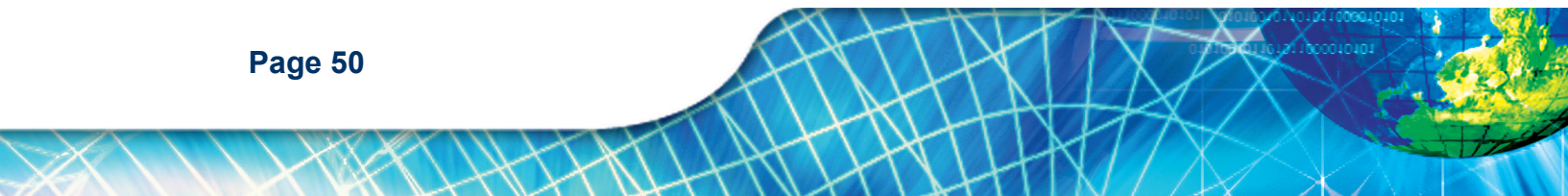
- **Cloth** – Although paper towels or tissues can be used, a soft, clean piece of cloth is recommended.
- **Water/Ethanol alcohol** – A cloth moistened with water or 75% ethanol alcohol can be used.
- **Using solvents** – The use of solvents is not recommended as they may damage the plastic parts.
- **Cotton swabs** - Cotton swaps moistened with rubbing alcohol or water are excellent tools for wiping hard to reach areas.
- **Foam swabs** - Whenever possible, it is best to use lint free swabs such as foam swabs for cleaning.

























Appendix

D

Symbol Definitions



The following symbols appear on the product, its labeling, or the product packing. Each symbol carries a special definition, as defined below:

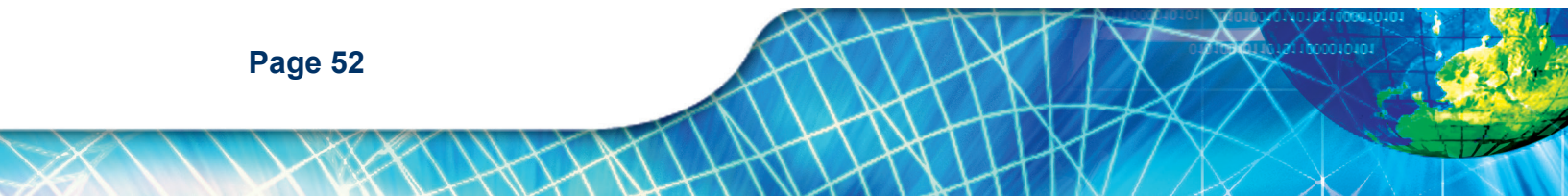
	Warning		Caution
	Dangerous: High voltage		Power adapter
	Direct current		Indicates equipotential earth ground
	Indicates protective earth ground		Fragile, handle with care
	This side up		Keep dry
	Consult the operating instructions		Refer to instruction manual
	Altitude limitation		Humidity limitation
	Atmospheric pressure limitation		Temperature limit
	Indicates the manufacturer		
	Indicates proof of conformity to applicable European Economic Community Council directives and to harmonized standards published in the official journal of the European Communities.		
	Medical equipment is in accordance with ANSI/AAMI ES60601-1 (R2012) and CAN/CSA C22.2 No. 60601-1 in regards to electric shock, fire hazards, and mechanical hazard.		
	Tested to comply with FCC Class B standard.		
	This symbol indicates that the waste of electronic equipment must not be disposed as unsorted municipal waste and must be collected separately. Please contact the manufacturer or other authorized disposal company to decommission your equipment.		
	This product is recyclable.		



Appendix

E

EMC Test Summary



Guidance and manufacturer's declaration – electromagnetic emission		
This LCD monitor is intended for use in the electromagnetic environment specified below. The customer or the user of the LCD monitor should assure that it is used in such an environment.		
Emissions test	Compliance	Electromagnetic environment – guidance
RF Emissions CISPR 11	Group 1	The LCD monitor uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF Emissions CISPR 11	Class B	The LCD monitor is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations IEC 61000-3-3	Complies	

Guidance and manufacturer's declaration – electromagnetic immunity			
This LCD monitor is intended for use in the electromagnetic environment specified below.			
The customer or the user of the LCD monitor should assure that it is used in such an environment.			
Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment – guidance
Electrostatic discharge (ESD) IEC 61000-4-2	Contact: ± 8 kV Air: ± 15 kV	Contact: ± 8 kV Air: ± 15 kV	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC 61000-4-4	5/50ns, 100kHz, ± 2 kV	5/50ns, 100kHz, ± 2 kV	Mains power quality should be similar to that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	1.2/50 (8/20) μ s LtL: ± 1.0 kV LtG: ± 2.0 kV	1.2/50 (8/20) μ s LtL: ± 1.0 kV LtG: ± 2.0 kV	Mains power quality should be similar to that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	0 % <i>UT</i> for 0.5 cycle (1 phase) 0% <i>UT</i> for 1 cycle 70% <i>UT</i> for 25/30 cycles (50/60 Hz) 0% <i>UT</i> for 250/300 cycles (50/60 Hz)	0 % <i>UT</i> for 0.5 cycle (1 phase) 0% <i>UT</i> for 1 cycle 70% <i>UT</i> for 25/30 cycles (50/60 Hz) 0% <i>UT</i> for 250/300 cycles (50/60 Hz)	Main power quality should be that of a typical commercial or hospital environment. If the user of monitor requires continued operation during power mains interruptions, it is recommended that monitor be powered from an uninterruptible power supply or a battery. Note: <i>UT</i> is the A.C. mains voltage prior to application of the test level.
Power frequency (50/60Hz) Magnetic field IEC 61000-4-8	30 A/m	30 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.

Guidance and manufacturer's declaration – electromagnetic immunity			
This LCD monitor is intended for use in the electromagnetic environment specified below. The customer or the user of the monitor should assure that it is used in such an environment.			
Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment – guidance
Conducted RF IEC 61000-4-6 Amplitude modulated	150 kHz to 80 MHz 3V ISM Bands 6V <input checked="" type="checkbox"/> 80%/1kHz	150 kHz to 80 MHz 3V ISM Bands 6V <input checked="" type="checkbox"/> 80%/1kHz	WARNING: Portable RF Communications equipment (including peripherals such as antenna cables and external antennas) should be used no closer than 30 cm (12 inches) to any part of the device, including cables specified by the manufacturer. Otherwise, degradation of the performance of this equipment could result.
Radio-frequency Electromagnetic field. Amplitude modulated	IEC 61000-4-3	150 kHz to 80 MHz 3V/m <input checked="" type="checkbox"/> Prof. Healthcare <input checked="" type="checkbox"/> 80%/1kHz	WARNING: Portable RF Communications equipment (including peripherals such as antenna cables and external antennas) should be used no closer than 30 cm (12 inches) to any part of the device, including cables specified by the manufacturer. Otherwise, degradation of the performance of this equipment could result.
Proximity fields from RF wireless communication equipment	IEC 61000-4-3	380 - 390 MHz 27 V/m; PM 50%; 18 Hz 430 - 470 MHz 28 V/m; (FM ± 5 kHz, 1 kHz sine) PM; 18 Hz 704 - 787 MHz 9 V/m; PM 50%; 217 Hz 800 - 960 MHz 28 V/m; PM 50%; 18 Hz 1700 - 1990 MHz 28 V/m; PM 50%; 217 Hz 2400 - 2570 MHz 28 V/m; PM 50%; 217 Hz 5100 - 5800 MHz 9 V/m; PM 50%; 217 Hz	WARNING: Portable RF Communications equipment (including peripherals such as antenna cables and external antennas) should be used no closer than 30 cm (12 inches) to any part of the device, including cables specified by the manufacturer. Otherwise, degradation of the performance of this equipment could result.