



VTS MEDICAL SYSTEMS®

VividImage®
19 inch Optical Touch

OPERATION MANUAL

MON-VTS19-OT



MON-VTS19-OT



Notice for Users

IMPORTANT:

To aid in reporting in the case of loss or theft, or for service maintenance purposes, please record the monitor's model and serial numbers in the space provided. The numbers are located on the back of the monitor.

Model No:

Serial No:

Declaration of Conformity

This device has been evaluated to the UL 60601-1 standard:

Equipment evaluated to this standard is not suitable for use in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide (unless additional tests have been passed). Therefore this device is not suitable for use in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide.

Function, Intended Application and Mode of Operation:

The VividImage® Series of monitors are intended to be used in the displaying and viewing of video and graphics for review and analysis by trained medical practitioners. The mode of operation for this device is continuous operation.

This device is classified as Class 1 Equipment.

Accessory Equipment:

Accessory equipment connected to the analog and digital interfaces must be certified to the respective IEC standards (i.e. IEC 950 for data processing equipment and IEC 60601-1 for medical equipment). Furthermore all configurations shall comply with the system standard IEC 60601-1-1. Any equipment connected to the signal input part or signal output part configures a medical system. Therefore this equipment, and new configuration, must comply with the requirements of the system standard IEC 60601-1-1.

For a complete list of current certifications, please refer to the Specifications page of this manual.

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Tips and Safety Precautions

- Do not display a still image for ten (10) or more hours. An afterimage may remain.
- It may be difficult to see the image on the screen if the brightness is adjusted to the minimum setting.
- The quality of the video signal may influence the quality of the displayed image.
- Do not open the monitor casing.

Monitor and Accessory Checklist

- Included in the carton are the following items:

- 1 VividImage® Optical Touch Monitor
- 1 Painted Stand
- 1 Power Supply
- 1 USB Cable
- 1 Touch Setup CD
- 1 Quick Start Guide

Notes:

- Retain the carton and packing material for transporting the monitor.

Mounting

- Mounting the monitor to a boom arm requires two people.
- Always follow mounting instructions to avoid physical injury and/or damage to the monitor.

Location

- Use the monitor in a suitable environment. See “Operating Temperature” and “Storage Temperature” on the Specifications page of this manual.
- Even though the monitor is classified as medical grade, use caution around liquids as you would with any electrical appliance.
- Do not insert objects into the monitor.
- Do not place the monitor on unstable surfaces.
- In all cases, refer to the specifications in this manual to ensure proper monitor performance. Use of the monitor outside of operating specifications will void the monitor warranty and may cause permanent damage to the monitor.

Power Cord

- Do not damage the power cord. Damage to the cord may result in fire or electric shock.
- Do not add extension cords.
- Use only the power cord and power supply included with the monitor.
- Insert the power plug directly into the AC outlet.
- Do not remove or insert the power plug with wet hands. Doing so could result in electric shock.

Manual Scope

- This manual is written for use with the MON- VTS19-OT.



Connecting the Monitor and Configuring Touch Capability

Unpacking the carton

Included in the carton are the following items:

- 1 VividImage® Optical Touch Monitor
- 1 Painted Stand
- 1 Power Supply
- 1 Power Cord
- 1 USB Cable
- 1 Touch Setup CD
- 1 Quick Start Guide

If any one of these items is missing, please call VTS Customer Support at (877) VTS-1788.

Attaching the monitor to a boom arm and connecting video and power sources (optional)

The monitor ships with a stand and is generally used as a desktop device.

Optionally, the monitor may be mounted on a boom arm. The back of the monitor (see Figure 1) has a hole pattern that complies to the VESA (Video Electronics Standards Association) mounting standard. To attach the monitor to a boom arm you will need either four 4mm metric screws, 10mm long (not included), depending on the thickness of the mounting plate. Use longer screws with the thicker mounting plates.

Use the screws to attach the monitor to the mount, either in the inside square hole pattern (75mm) or the outside square hole pattern (100mm).

Note to users attaching the VividImage® Monitor to Operating Room Equipment Management System and/or Equipment Boom:

If the VividImage® Monitor is to be mounted on a boom and/or Equipment Management System, the boom vendor should have wired the appropriate cables through the boom arm.

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1. Attaching the VividImage® monitor to a boom arm requires two (2) people.
 2. One person should hold and support the monitor while the second person attaches the monitor to the boom arm.
 3. One person should align the monitor to the mounting holes while a second person physically attaches the monitor to the VESA mount attached to the boom arm.
 4. After the monitor is mounted, connect the customer supplied video cable(s) and power cord to the appropriate port on the back of the monitor. The ports on the monitor are clearly labeled (see Figure 1). For a photo of possible video sources, see Figure 2.
 5. The monitor will turn on automatically once it is connected to a power source.

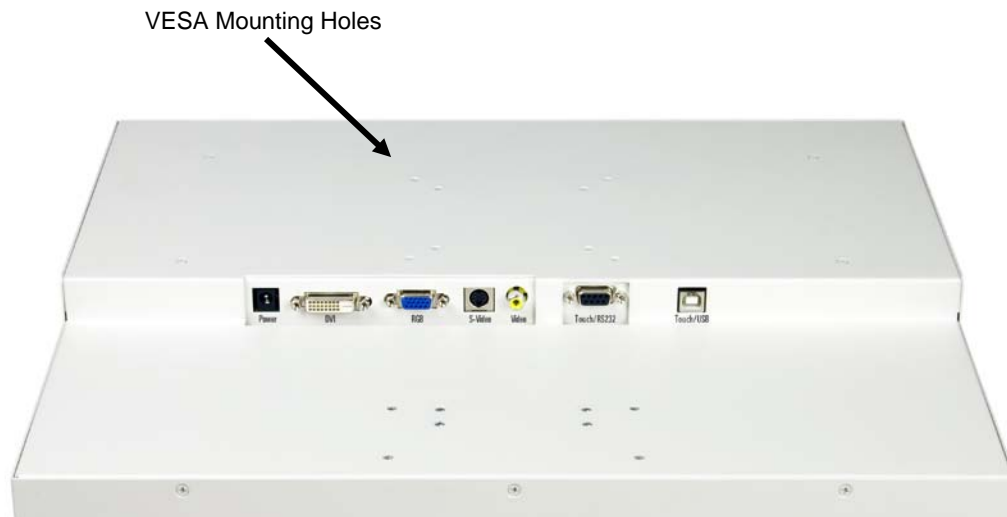


Figure 1: VividImage® 19 inch Optical Touch Monitor Rear View (without stand)

Configuring the optional touch capability

The VividImage 19 Optical Touch monitor comes preconfigured for use as a touch panel. To use the touch capability, a connection to the RS232 port or USB port must be made to the system you wish to control with the touch panel. If neither of these ports is used, the monitor functions as a monitor only, with no touch capability.

Should you ever need to reconfigure the touch panel, the Crystal Touch Manager Configuration Utility CD is included with the monitor. Please save this CD. To run the Crystal Touch Manager Configuration Utility, a computer with a CD player must be connected to the monitor with a USB or RS-232 cable.



User Interface


User Interface Buttons

The user interface for the 19 inch monitor consists of six buttons and one LED indicator. The interface is shown below in Figure 3.



Figure 3: User Interface Buttons

Power Control

Press the **POWER**  button to turn the monitor on and off.

Source

Select **SOURCE** to select the input signal type. The label for the current signal selection displays in the upper right of the screen.

Menu and Navigation Controls

Select **MENU** to access the OSD menu.

Use the down arrow key (**▼**) to scroll through the OSD menus.

To select a menu option, choose **MENU** again to access the onscreen options. The first selection on the screen then becomes highlighted. Use the down arrow key (**▼**) to move through the menu pages.

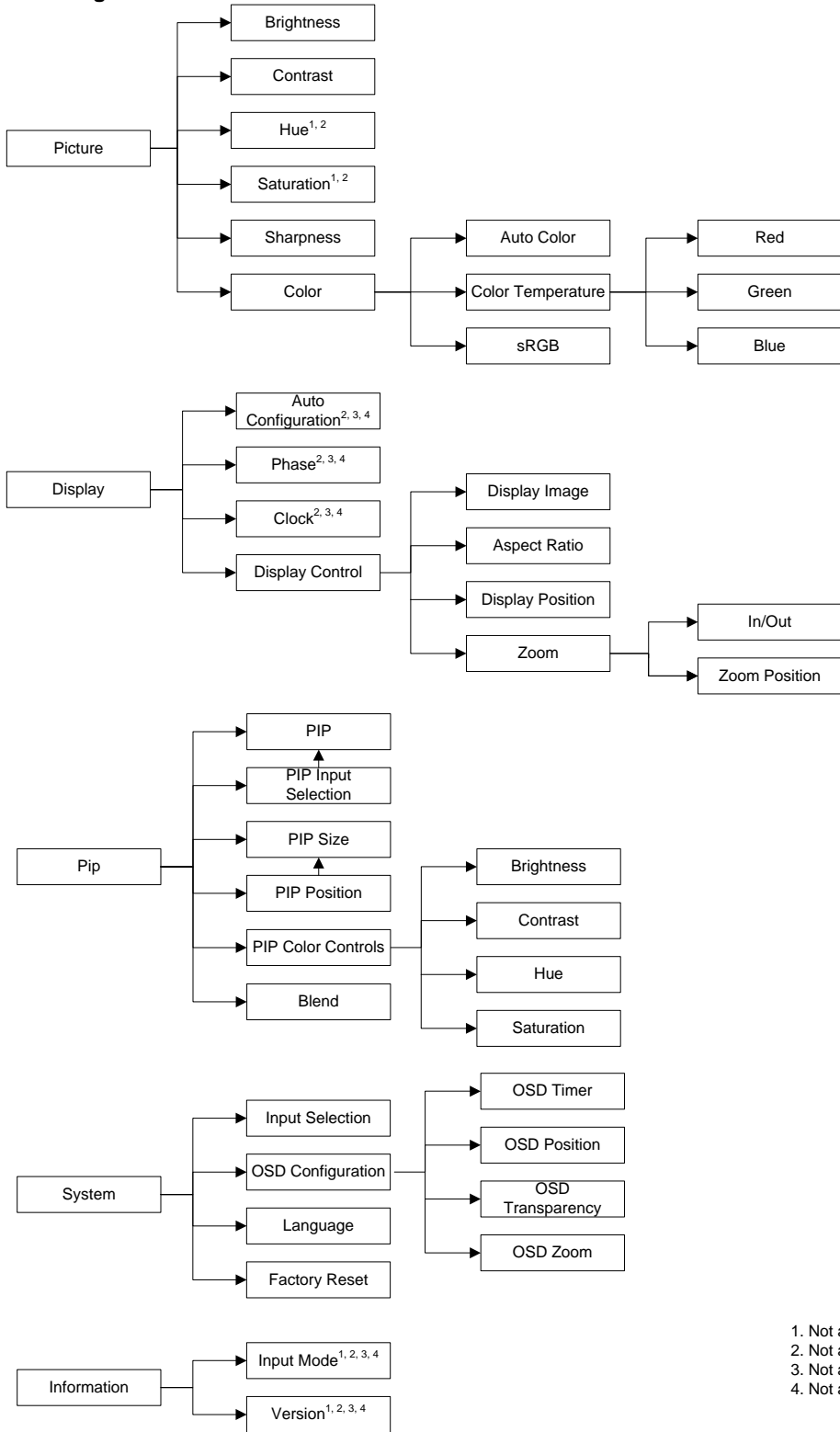
For selections with settings on the OSD menu page, use the left (**◀**) and right (**▶**) arrow keys to adjust the setting. For OSD menu selections with adjustment pages, choose **MENU** to access the adjustment page. In menus that include directional adjustments (the Zoom Position and Display Position pages), the **SOURCE/▲** key acts as an up arrow.

When there is no adjustment page, selecting **MENU** works as a back key, returning you to the previous selection.



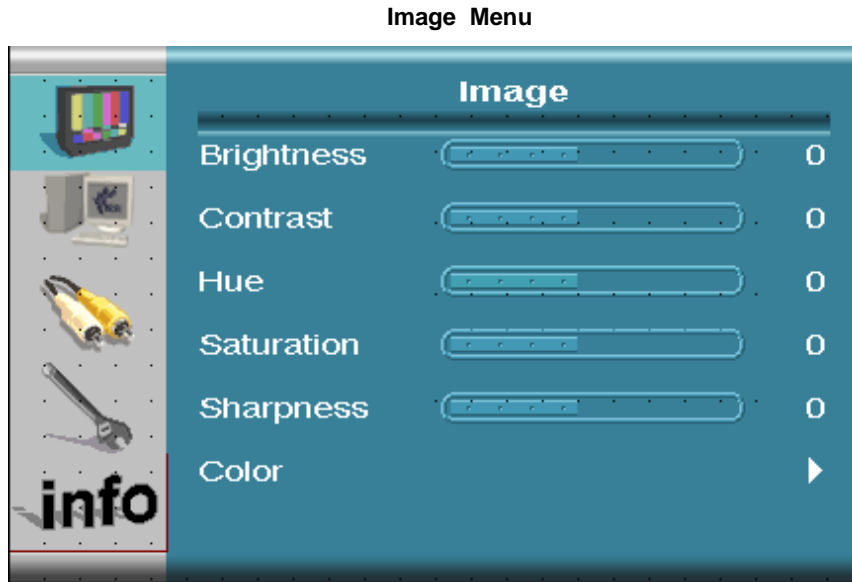
OSD (On Screen Display)

OSD Navigation



- 1. Not available with Analog RGB
- 2. Not available with DVI
- 3. Not available with Component
- 4. Not available with Video/S-Video

Figure 4: OSD Menu Navigation Options



Brightness: Adjusts the screen brightness. See the Glossary (p. 18) for more information on Brightness.

Contrast: Adjusts the image contrast. See the Glossary (p. 18) for more information on Contrast.

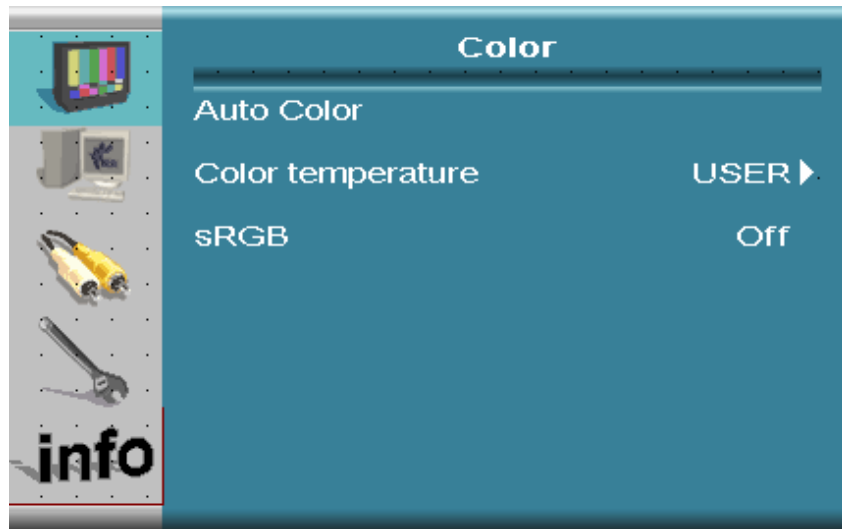
Hue: Adjusts the clarity and depth of the red, blue, and green colors. See the Glossary (p. 18) for more information on Hue.

Saturation: Adjusts the color saturation. See the Glossary (p. 18) for more information on Saturation.

Sharpness: Adjusts the image clarity.

Color: Press **MENU** again to open the Color adjustment page (shown below).

Color Menu



Auto color: Automatically adjusts the Red, Green, Blue color balance.

Color temperature: Press **MENU** to access the User adjustment page, shown below, for manually adjusting red, green, and blue levels. See the Glossary (p. 18) for more information on Color Temperature.

sRGB: sRGB is a standard color space. LCDs, digital cameras, printers, and scanners all follow the sRGB standard. When sRGB is turned on, colors display as intended when using sRGB compatible devices.

User Menu

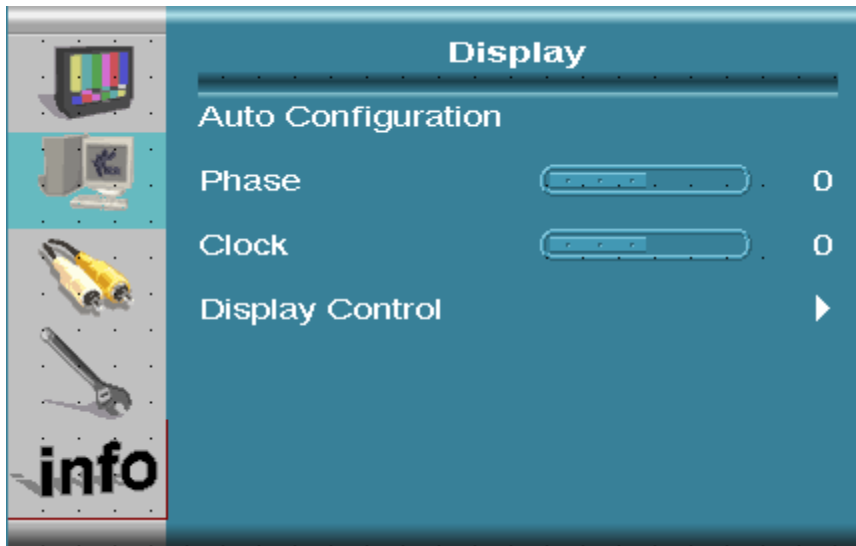


Red: Adjust the red temperature.

Green: Adjust the green temperature.

Blue: Adjust blue temperature.

Display Menu



Auto Configuration: Press the right arrow key to automatically adjust phase and clock settings.

Phase: Adjust the pixel clock to match that of the camera. See the Glossary (p. 18) for more information on Phase.

Clock: Match the clock signal from the camera. See the Glossary (p. 18) for more information on Clock.

Display Control: Opens the Display Control menu, shown below, for adjusting display position, aspect ratio, and zoom.

Display Control



Display image: Select whether to display the image at a 1:1 ratio, at the aspect ratio, or have the monitor automatically select the display ratio.

Aspect ratio: Select the display output aspect ratio. The options are:

Overscan: Fills the screen by cropping the image.

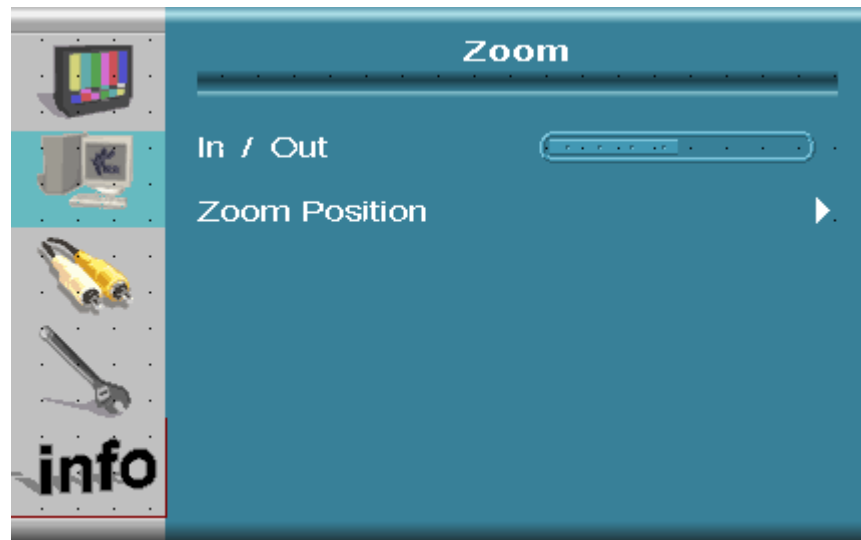
Fill All: Fills the screen by stretching or shrinking the image.

Native Aspect Ratio: Does not crop, stretch or shrink the image.

Display Position: Open the Display Position dialog box, where you can adjust the position of the image on the screen. Use the left, right, up and down arrows to move in the indicated direction.

Zoom: Open the Zoom dialog box, shown below.

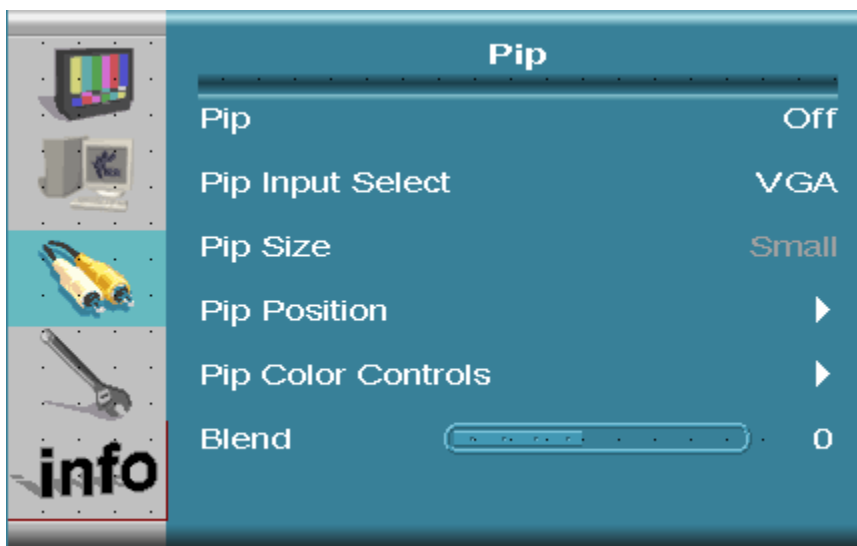
Zoom



In / Out: Expand a selected portion of the image to full screen size while maintaining the image aspect ratio.

Zoom Position: Opens the Zoom Position dialog box with directional arrows for adjusting the screen position to zoom into or out of. Use the left, right, up, and down arrows to move in the indicated direction.

PIP Control



PIP: Change to PIP (Picture-in-Picture) mode. (Information on the signals which can be used with PIP can be found on p. 14.)

PIP Input Select: Select PIP input source.

PIP Size: Select PIP screen size.

PIP Position: Open the PIP Position dialog box, where you can adjust the position of the Picture in Picture window on the screen. Use the left, right, up, and down arrows to move in the indicated direction.

PIP Color Controls: Open the PIP Color Controls menu, shown below, for adjusting brightness, contrast, hue, and saturation.

Blend: Adjust PIP screen blending level.

PIP Color Controls



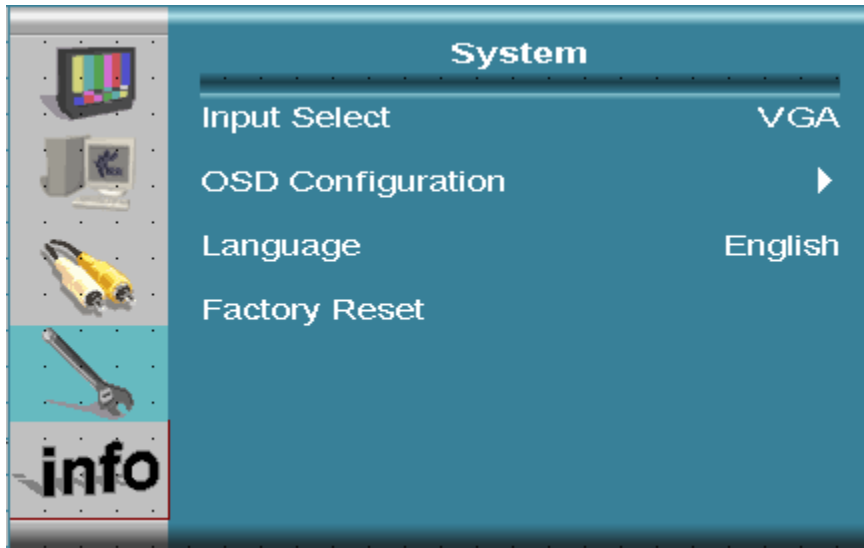
Brightness: Adjust brightness of the PIP screen. See the Glossary (p. 18) for more information on Brightness.

Contrast: Adjust the contrast of the PIP screen. See the Glossary (p. 18) for more information on Contrast.

Hue: Adjust the hue of the PIP screen. See the Glossary (p. 18) for more information on Hue.

Saturation: Adjust the saturation of the PIP screen. See the Glossary (p. 18) for more information on Saturation.

System Controls



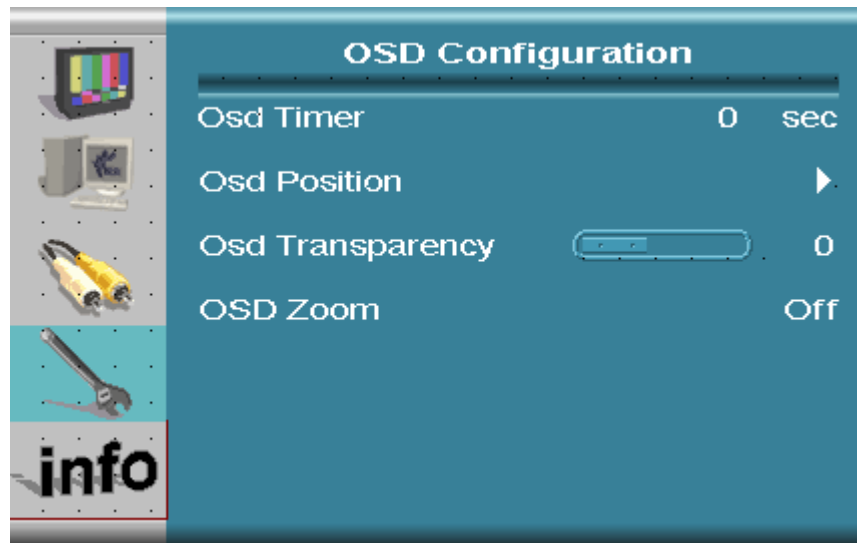
Input Select: Select the input source signal. (Information on the signals which can be used with PIP can be found on p. 14.)

OSD Configuration: Select the OSD Configuration screen, shown below, for adjusting OSD display options.

Language: Select the OSD display language. Currently only English is supported.

Factory Reset: Change all set up values to the initial factory settings. See page 15 for default setting values.

OSD Configuration Controls



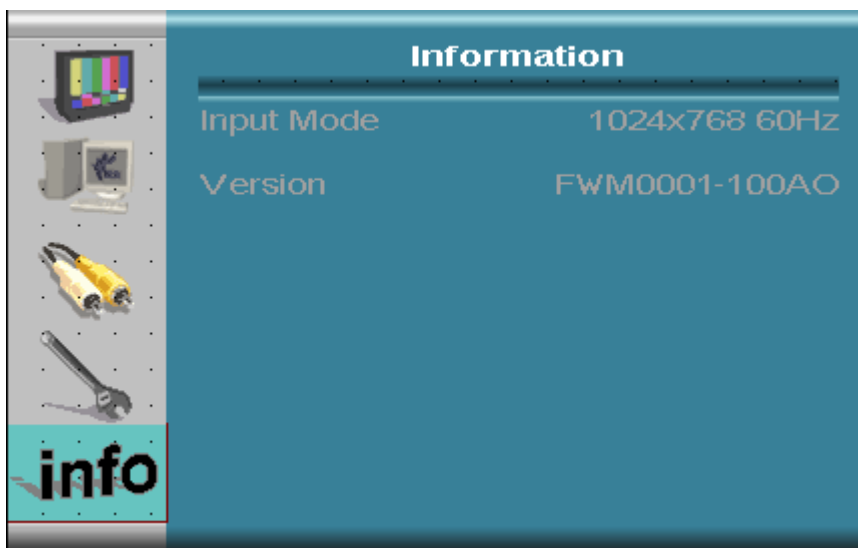
OSD Timer: Adjust the length of time that the OSD displays.

OSD Position: Adjust the position where the OSD displays.

OSD Transparency: Choose the amount of OSD transparency.

OSD Zoom: Turn the OSD zoom function on and off.

Information Controls



Input Mode: Displays size and frequency of the source signal.

Version: Shows the firmware version currently loaded on the monitor.

Picture in Picture (PIP) Signal Combinations

Listed below are signal types that can generate the main screen image and the PIP image:

- DVI
- RGB/VGA
- Composite
- S-Video

		Main Screen Image			
		DVI	RGB	Composite	S-Video
PIP Window Image	DVI	—	●	●	●
	RGB	●	—	●	●
	Composite	●	●	—	—
	S-Video	●	●	—	—

Key:

- PIP function enabled
- PIP function disabled

For example: If a Composite signal is the main screen image and a DVI signal is the PIP window image, the PIP window will display the image.

If an S-Video signal is the main screen image and a Composite signal is the PIP window image, the PIP window image will not display. This combination is not supported.

Factory Default Settings

Picture Menu	
Brightness	100
Contrast	50
Hue (Video/S-Video format only)	50
Saturation (Video/S-Video format only)	50
Sharpness	50
Color Temperature	6500 K
Color Temperature ("User" Selection Defaults)	Red – 50, Green – 50, Blue – 50
sRGB	Off
Display Menu	
Phase (VGA Only)	50
Clock (VGA Only)	45
Display Control/Display Image	Auto
Display Control/Aspect Ratio	Not Selectable
PIP	
PIP	Off
PIP Input Selection	Video
PIP Size	Small
PIP Color Controls - Brightness/Contrast/Hue/Saturation	all to 50
Blend	0
System Menu	
Input Selection	VGA
OSD Configuration/OSD Timer	12 Seconds
OSD Configuration/OSD Transparency	0
OSD Configuration/OSD Zoom	0
Language	English



Monitor Care / Troubleshooting

Monitor Care

LCD Panel

VividImage® monitors feature an optical quality acrylic panel specially coated for superior anti-reflective properties. The panel can be damaged (scratched and/or clouded) if improper cleaning solutions are used. The following products from STERIS Corporation have been tested on the panel and can be used for cleaning and disinfecting to ensure the panel does not become compromised*:

Coverage Spray HB Plus
STERIS Part # 162477



Coverage Spray TB Plus
STERIS Part # 1629B4



Cabinet

To not damage the powder-coated finish on the monitor cabinet, the cleaning and disinfecting products recommended above can be used.

*If the STERIS products are not available, a mixture of 50% methyl or ethyl alcohol and 50% water can be used to clean both the panel and monitor cabinet.

Use a clean, soft, microfiber cloth to apply the STERIS products and/or the alcohol and water solution to the panel and cabinet.

Storage

If the monitor will not be used for a long period of time, be sure to remove the power plug from the AC outlet (if accessible). Store in its original carton if available. Store in a dry location in temperatures between -4 and 140 degrees Fahrenheit/-20 and 60 degrees Celcius, as listed on the Specifications page of this manual.

Troubleshooting

Please follow these troubleshooting tips prior to contacting Customer Support.

The image is not displayed on the screen

- Are the power cord and external power supply connected properly?
- Are the power cord and AC outlet functional?
- Are the computer and/or video source(s) connected to the monitor properly?
- Are the computer and/or video source(s) turned on?
- Is the monitor connected to a computer that is in power-saving mode (check computer manual for this feature)?
- Is the video cable functional?

The image is shifted or not centered

- In the **DISPLAY > DISPLAY CONTROL > DISPLAY POSITION** menu, use the directional adjustments to shift the image location.
- If using a scope, it may not be centered with the camera head.

The image is glaring or dark

- Decrease/Increase the **PICTURE > BRIGHTNESS** OSD setting.
- If using a camera as the video source, perform a "White Balance" and check the "Iris Control" on the camera (see camera's operating manual for instructions).

Touch capability is not functioning

- Ensure that the device you wish to control is connected to the monitor's USB or RS-232 port via the appropriate cable, and that the connector is firmly seated into both the monitor and the device.



Specifications

	19" Optical Touch
VividImage® Model #	MON-VTS19-OT
INPUTS:	
Composite	•
S-Video	•
VGA	•
DVI	•
USB (Touch Control)	•
Serial RS232 (Touch Control)	•
Resolution	1280 x 1024
Aspect Ratio	5:4
Brightness (candelas/meter squared (cd/m2))	250
Contrast	1500 to 1
Viewing Angle (Horizontal & Vertical)	178
Patient Vicinity Safe	•
Dimensions (inches/millimeters)	
Width	17.02 / 432.32
Height	14.42 / 366.33
Depth	2.17 / 55.10
Weight (pounds/kilograms) (with stand)	21.0 / 9.53
Active Matrix LCD	•
Operating Temperature (Fahrenheit/Celsius)	32° to 104° F / 0° to 40° C
Storage Temperature (Fahrenheit/Celsius)	-4° to 140° F / -20° to 60° C
Voltage: Monitor Input	12 Volts (V) DC
Voltage: Power Supply Input	90-264 Volts (V) AC
Case	Aluminum, Sealed
Mounting Hole Pattern (millimeters)	VESA 100mm & 75mm
Power Supply (external)	Medical Grade
Power Requirements	12 Volts 60 Watts
Compliance	UL Medical Standard Listed, UL 60601-1 CSA No. 601.1 -M90 1st edition

Table 2: Specifications

Glossary

Brightness: The intensity of light emitted from the display. This control is similar to the effect of changing the light behind a stained glass window. As the illumination is increased the overall light output of the image is increased. The proper adjustment takes into consideration the ambient light in the room. For a brightly lit room, the brightness of the display may be increased to improve the visibility of the image. In a dimly lit room, the brightness may be decreased to reduce the impact on the eye.

Clock: This adjustment is seldom necessary, but if there is a problem with the frequency of the monitor pixel clock that it cannot exactly match the clock signal from the camera, an adjustment may be required. The symptom of a clock adjustment problem is the appearance of vertical bands in the image. Adjustment of the clock will help eliminate these artifacts.

Color Temperature (Red, Green, Blue): Increases in the temperature of a color multiplies the proportion of that color in the image by a factor. The actual amount of additional color is relative to the original level of that color in the image. If we vary the Color Temperature of the Red by 10% we add 10% of the original color to the original color proportion to get the new color.

Original Color Proportions	Color Temperature Increase	New Color Proportions
Red = 20%	10%	Red = 20% + 0.1 x 20% = 22%
Green = 70%	0%	Green = 70%
Blue = 40%	0%	Blue = 40%

Color Number 2 Proportions	Color Temperature Increase	New Color Proportions
Red = 60%	10%	Red = 60% + 0.1 x 60% = 66%
Green = 40%	0%	Green = 40%
Blue = 30%	0%	Blue = 30%

Notice that the increase in the color proportion of the Red is greater for greater original color proportions of Red. Lighter reds are increased a lesser amount than darker reds as gain is increased.

Contrast: Contrast is the differentiation between variations of similar colors. Typically contrast is set by adjusting for best color differentiation between light yellow and white.

Hue: Hue refers to the "shade" of the colors. Adjustment of this feature is applicable primarily to analog signal sources. S-Video, RGBHV and VGA are analog signals. Adjustment of hue will help to correct abnormalities in the signal. The adjustment can help in restoring the "natural" look of the colors.

Phase: This adjustment is seldom necessary, but if there is a problem with the monitor pixel clock phase or position in relation to the pixel clock generated by the camera, a phase adjustment may be required. The symptom of phase problems is the appearance of horizontal lines flickering through the image.

Saturation: Saturation refers to the purity of any particular color component (Red, Green or Blue). For example, 100% Red saturation is 100% Red, 0% Green and 0% Blue. No saturation means all the color percentages are equal. Changes in saturation will change the emphasis of the selected color component.

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Contact VTS Customer Support



VTS MEDICAL SYSTEMS®

40 Melville Park Road
Melville, NY 11747
(877) VTS-1788

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