

**XX212-21-01**

# Virtual Matrix Display Controller Hardware Installation



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Thank you for selecting Vicon systems and products for your video needs.

Since Vicon's beginning in 1967, our only business has been the design, engineering, and production of the highest quality video systems and equipment for use in a wide variety of security, safety, control, surveillance, and communication applications.

We stand behind the quality and dependability of every product with an industry leading Beneficial Use warranty.

If you are not satisfied with a Vicon product or service, I would like to know. Your complete satisfaction is the mission of every Vicon employee.

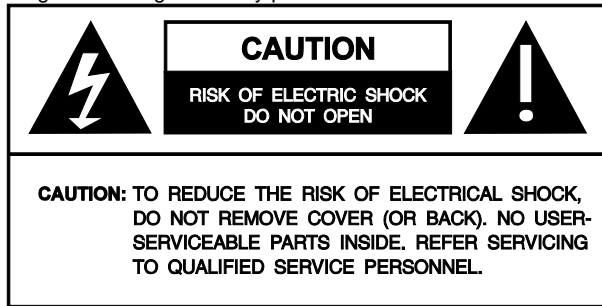
Sincerely,

Kenneth M. Darby  
President

# Important Safeguards – Indoor Use

## GRAPHIC SYMBOL EXPLANATION

The lightning bolt symbol alerts the user to the presence of dangerous voltage that may present the risk of electric shock.



The exclamation point symbol alerts the user to the presence of important operating and maintenance instructions.

## WARNING

**To reduce a risk of fire or electric shock, do not expose this product to rain or moisture.**

- 1. Read Instructions** - Read all safety and operating instructions before the product is operated.
- 2. Retain Instructions** - Retain all safety and operating instructions for future reference.
- 3. Heed Warnings** - Pay attention to all product warnings.
- 4. Follow Instructions** - Follow all operating instructions.
- 5. Installation and Wiring** - The equipment shall be installed and wired in accordance with the National Electrical Code, ANSI/NFPA 70.
- 6. Cleaning - (Do not use caustic, abrasive or aerosol cleaners)**
  - a) For units that CAN BE DISCONNECTED from the power source, use a damp cloth for cleaning.
  - b) For units that CANNOT BE DISCONNECTED from the power source, use a damp cloth for cleaning and do not allow moisture or liquids to enter vents.
- 7. Attachments** - Use only UL Listed Vicon recommended attachments to prevent unit damage and personal injury.
- 8. Water and Moisture** - Use only products designed for outdoor environments where they will be exposed to water or moisture.
- 9. Accessories** - Do not place the unit on an unstable surface to avoid falling. Use only UL Listed Vicon recommended mounting accessories.
- 10. Ventilation** - Do not block ventilating slots and openings as they ensure reliable operation. Do not place the unit near a heat source or into an enclosure unless recommended by Vicon.
- 11. Grounding** - Only products equipped with a 3-prong grounded plug should be inserted into a grounded power outlet. Contact an electrician to replace an obsolete outlet. Do not force a plug into a non-grounded outlet.
- 12. Power Cord Protection** - Power supply cords should not be routed in trafficked areas or in tight spaces where they will be pinched or used to bear weight. Allow some slack in the cord where it enters the unit.

**13. Lightning** - Disconnect the product from its power source and cable system when possible to prevent damage due to lightning and power-line surges.

**14. Power Lines** - Do not locate outside cables over power or utility lines where they can fall and make direct contact. Contact with power lines can be fatal.

**15. Overloading** - Do not overload wall outlets and extension cords to prevent risk of fire and electric shock.

**16. Object and Liquid Entry** - Never probe through, or spill liquid into, enclosure openings to prevent risk of fire or electric shock.

**17. Servicing** - Refer all servicing to qualified service personnel.

**18. Damage Requiring Service** - Obtain service when:

- a) The power-supply cord or plug is damaged.
- b) Objects have fallen or liquid has been spilled into the product.
- c) The product is not designed for outdoor use and has been exposed to water or moisture.
- d) The product does not operate per the operating instructions. Perform Vicon recommended adjustments, modifications and troubleshooting only to avoid unit damage and personal injury.
- e) The product has been dropped.
- f) The product shows a significant change in performance.

**19. Replacement Parts** - Use only Vicon specified replacement parts or an approved equivalent to prevent unit damage and injury.

**20. Safety Check** - Request safety checks to be performed following repair or maintenance to verify proper operation.

**21. ESD Precaution** - Take all normal electrostatic discharge precautions to avoid component damage during installation and operation.

**22. For 230 VAC Devices Only** - When the disconnect device is not incorporated in the equipment or when the plug on the power supply is intended to serve as the disconnect device, follow the guidelines below:

- a) For permanently connected 230 VAC units, a readily accessible disconnect device must be incorporated into the site wiring.
- b) For 230 VAC units with a plug, the outlet must be installed near the unit and be easily accessible.

**23. For Devices Requiring a Separate Power Supply** – All devices requiring a separate power supply shall be powered by a UL Listed, Class 2 Power Supply.

**24. Lithium Batteries Only:**

## WARNING

**Fire and burn hazard. Do not recharge, disassemble, heat above 212°F or incinerate. Keep battery out of reach of children and in original package until ready to use. Dispose of used batteries promptly.**

**Risk of explosion if battery is replaced by incorrect type. Dispose of used batteries according to the instructions.**

## Important Safeguards – Indoor Use (Cont)

**25. For Rack-Mounted Units Only** – The following precautions apply to all rack-mounted units.

- a) **Elevated Operating Ambient** - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (T<sub>ma</sub>) specified by the manufacturer.
- b) **Reduced Air Flow** - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.
- c) **Mechanical Loading** - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
- d) **Circuit Overloading** - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
- e) **Reliable Earthing** - Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).



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# Virtual Matrix Display Controller Connection and Setup Guide

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## General

This manual describes how to install, connect and setup the Virtual Matrix Display Controller. The VMDC can be purchased as a tower or rack-mount style with 1, 2 or 3 video cards installed, each of which can drive two monitors (1 VGA and 1 DVI, 1 VGA and 1 HDMI or 1 DVI and 1 HDMI), for a result of 2, 4 or 6 display outputs (monitors). Each monitor can then potentially display up to 64 video streams (see specification for actual display capabilities).

The VMDC is meant to be used with the V1500X-SCCS-1 System Controller, if a CCTV keypad is required.

### Note

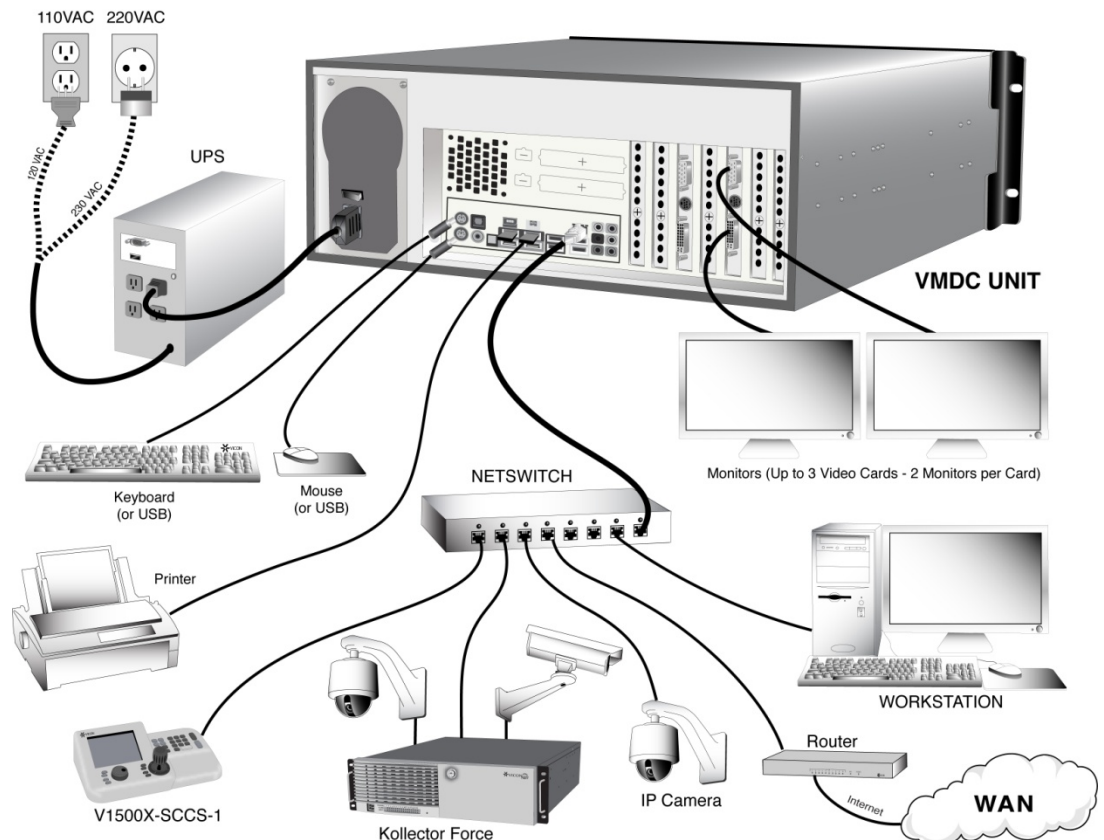
The rear panels shown are typical; your version may be slightly different but the connections will be similar.

## Installation

Carefully unpack the VMDC unit from the carton.

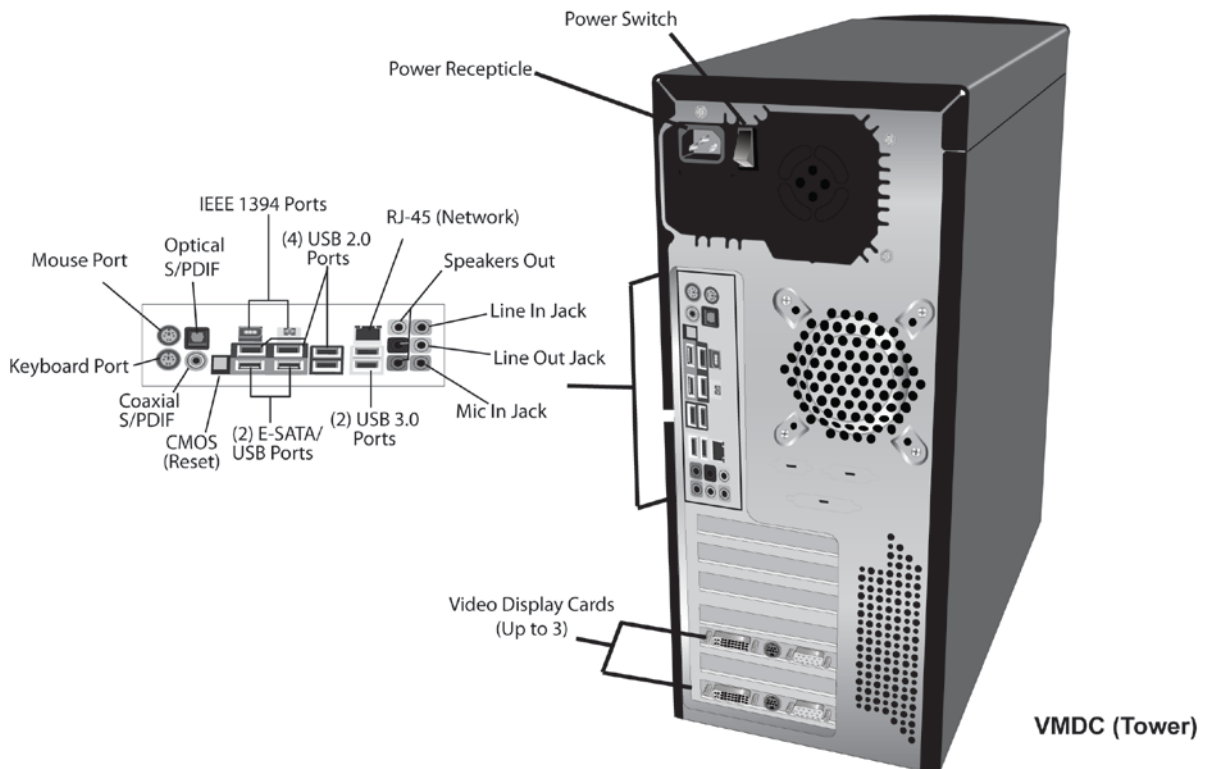
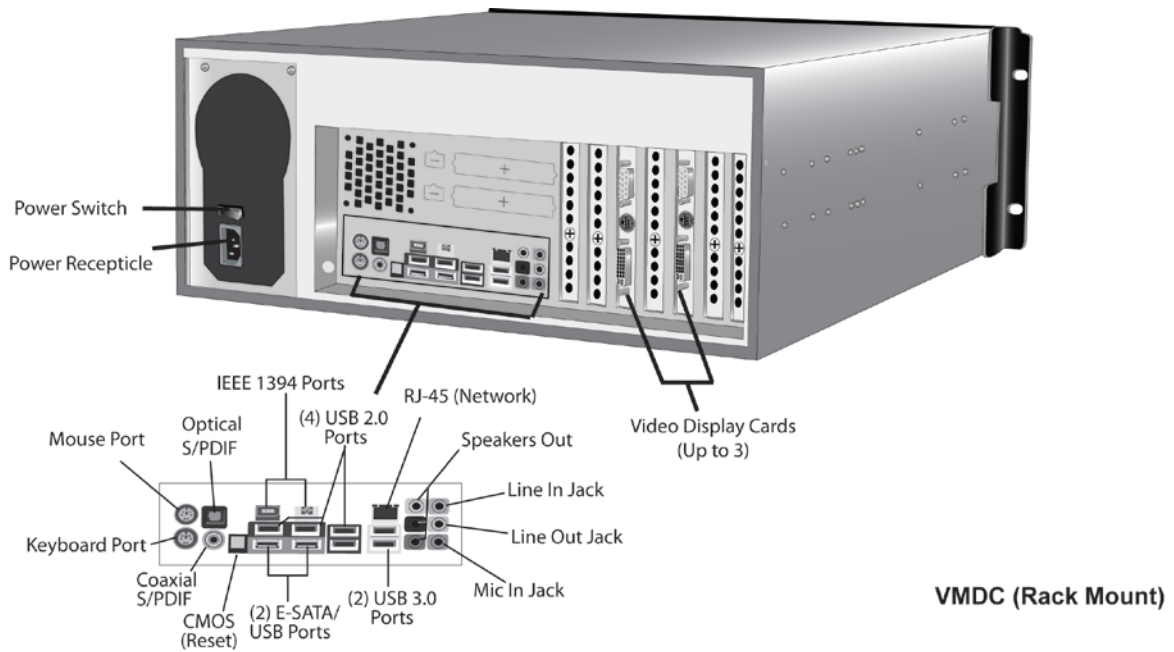
### Quick Install

The figure below is a quick installation guide that illustrates the connections for the VMDC. Detailed instructions follow.



## Rear Panel Connections

The VMDC is available as a tower or rack-mount version. Refer to the figure below for a description of the rear panel connections.



- Power Switch: Used to power on and off the power supply of the VMDC.
- Power Receptacle: Used to connect the provided power cable to a power source.
- Mouse Port: A mini-DIN type connector (green) used to connect to the provided optical mouse.
- Keyboard Port: A mini-DIN type connector (purple) used to connect to a keyboard (customer-provided).
- Optical and Coaxial S/PDIF Connectors: Used to connect digital audio out to an external audio system that supports digital optical/coaxial audio (**not applicable**).
- Clearing CMOS button: Press to clear CMOS values.
- IEEE 1394a Port: Used to connect an IEEE 1394a device.
- USB 2.0/1.1 Port (4): Used to connect to USB devices such as a mouse, keyboard, printer, flash drive, etc. (supports USB 2.0/1.1 specification).
- eSATA/USB Combo Port (2): Used to connect to an external SATA device or USB devices (supports SATA 3 GB/s and USB 2.0/1.1 specification).
- Network Port: A standard RJ-45 connector used to connect to a LAN/WAN.
- USB 3.0/2.0 Port (3): Used to connect to USB devices such as a mouse, keyboard, printer, flash drive, etc. (supports USB 3.0 specification).
- Speaker Out Jacks: Used to connect to center, rear and side speakers.
- Line In (blue), Line Out (green), Mic In (pink) Jacks: Used to connect audio devices and microphones.

## Mounting

There are two types of mounting configurations for the VMDC, either desktop (tower) or rack. To properly install the VMDC, certain simple hand tools should be available, such as a screwdriver, wrenches, pliers and wire cutters/strippers.

### Desktop

The desk or table must provide a surface of suitable strength to support the weight of the VMDC. In addition, there must be enough area left around the unit to provide suitable airflow for cooling.

### Rack

The VMDC can be mounted into a standard 19-inch (483 mm) wide vertical rack. Use the provided rack mounting ears/handles and hardware. It is recommended that at least 1 RU of space [1.75 in. (44.45 mm)] be left between multiple units mounted in the same rack for cooling purposes.

#### Warning

Failure to leave space for cooling between VMDC units may result in malfunctioning and possible failure of the VMDC.

## VMDC Connections

After the VMDC is permanently mounted, the connections are made. Refer to Rear Panel diagram and Quick Install diagram as needed.

### Important Notes

- The connection of external hardware may require simple hand tools. Do not apply power or plug-in the VMDC to any outlet until instructed to do so.
- Disable the AC power to prevent installer injury and damage to the unit.
- Before beginning the hardware installation, ensure that the following environmental conditions have been met:
- The surface on which the VMDC hardware is to be placed must be level.
- The room or area designated for the VMDC hardware installation must be well ventilated.

Make the following connections to the VMDC:

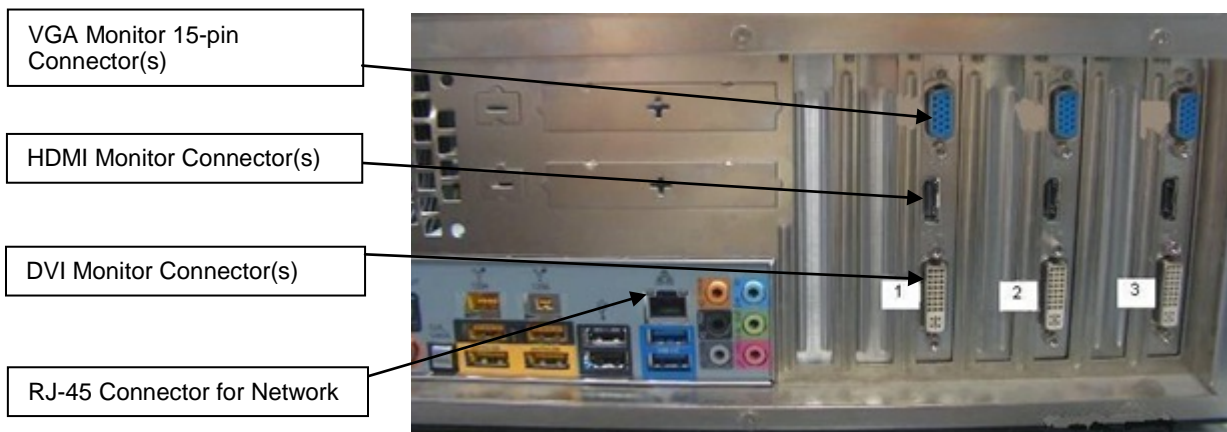
- Locate the keyboard on a flat surface near the VMDC. Connect the keyboard by inserting its connector into the correct port.
  - Locate the mouse on a flat surface near the VMDC. Connect the mouse by inserting its connector into the correct port.
  - Position the monitor(s) in a permanent fixed location. Refer to the Display Card Connections that follow for connection instructions.
  - Insert one side of a standard LAN cable to the Network Port's RJ-45 connector. Insert the other RJ-45 connector into the LAN side of the network.
  - Locate and connect all USB devices to the VMDC.
  - Insert the female end of the provided power cable into the VMDC's power receptacle. Do not connect the remaining end to a power receptacle until instructed.
- Connect the monitor(s) to the power source and switch on.

To ensure that the VMDC is protected during a power failure and that no important data is lost, it must be connected to an uninterruptible power source (UPS) before use.

- Connect the VMDC's power cord to the UPS power receptacle.
- Connect the UPS power cord to the wall outlet.
- Power on the UPS and ensure that it is working properly.
- Power on the VMDC.

## Display Card Connections

The VMDC has up to 3 factory-installed display cards. Each of the cards has three monitor outputs, one VGA connector (blue), one HDMI connector (black) and one DVI connector (white); only two monitors can be connected to each card. If there is more than one display card, the monitors must be connected in the proper order; it is suggested that if used, the DVI connection be made first. Refer to the Figure that follows.



Connect the cable from the monitor to the appropriate connector on the display card(s) on the rear panel of the VMDC; only 2 monitor connections can be used from each card; choose from the VGA, DVI or HDMI connectors. Be sure to make connections from the leftmost card first before moving to the next card, as noted in the Figure above. A DVI to VGA converter is provided in the accessory kit, if needed. Connect the keyboard and mouse to their respective USB connectors.

Additionally, 1 USB to serial port connector is supplied for serial-based PLC devices **only**; this is not for use with the System Controller.

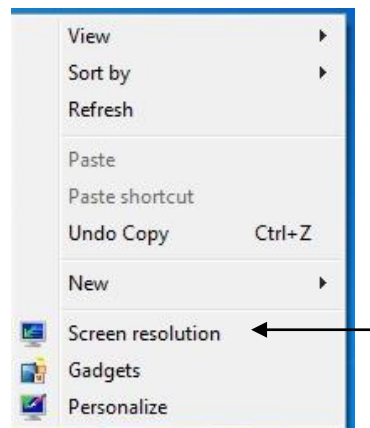


Windows will number the monitors according to their priority. Windows setup follows.

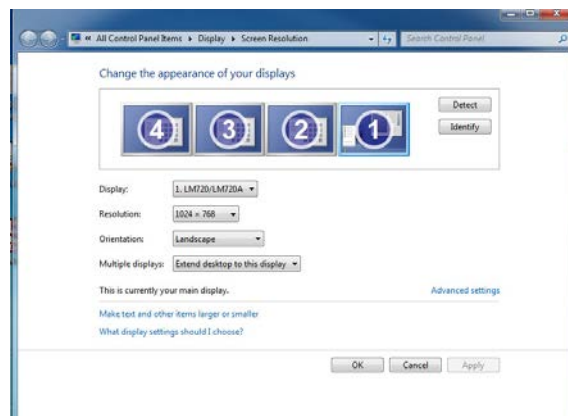
## Monitor Display Settings

After all monitors are connected and operating, the monitor layout is setup in Windows; this assures that the mouse performs correctly (moves in the correct direction) with the monitors. Monitor configuration should be done from the VMDC Settings, VMC Configuration screen; refer to VMDC Monitor Configuration that follows.

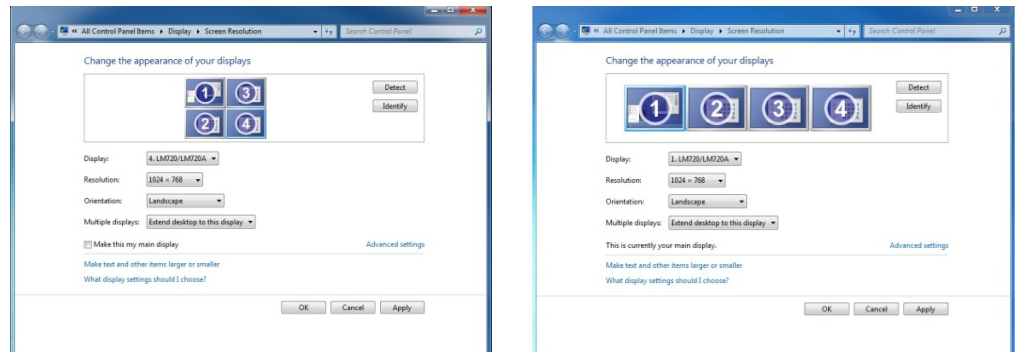
From the Windows® desktop (Windows 7 shown here), right click the mouse. A window opens, as shown below; click on Screen resolution.



When the Screen Resolution window opens, each monitor can be configured; the example below displays 4 monitors, but up to 6 monitors can be connected. Click the Identity button and the monitor number will display briefly on the monitor screen. The Detect button will find monitors if they are not currently shown.



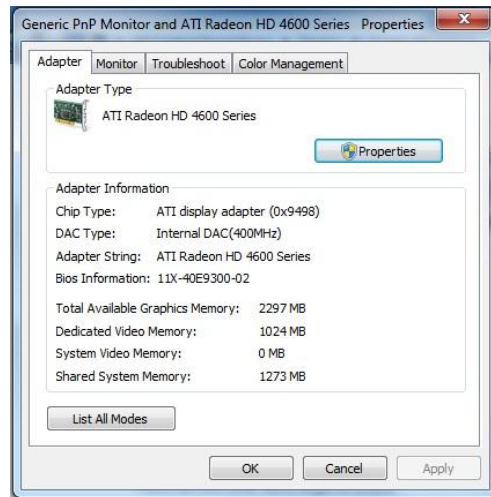
The display at the top of the window shows the selected monitor layout. The monitor icons can be moved to reflect the actual physical layout of the monitors.



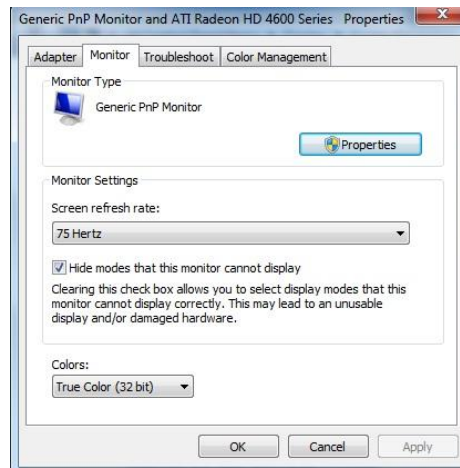
### Alternate monitor configurations

The Display field shows the monitor being configured; the dropdown list shows all current monitors. The Resolution field dropdown lists a variety of resolutions, but this should be selected through VMDC in its setup and that number will be used. Orientation can be Landscape or Portrait, or either of those flipped. The Multiple displays field should be set to Extend desktop to this display.

The following windows provide other information about the monitors. Click on the Advanced settings link. The following window will display.

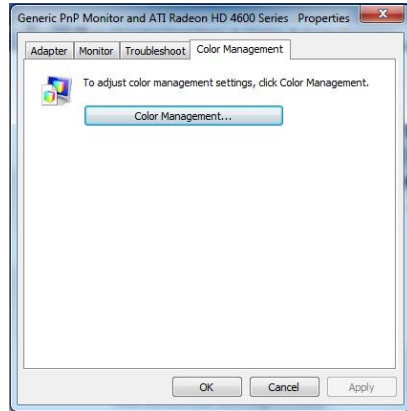


Click the Monitor tab. The following window will display.

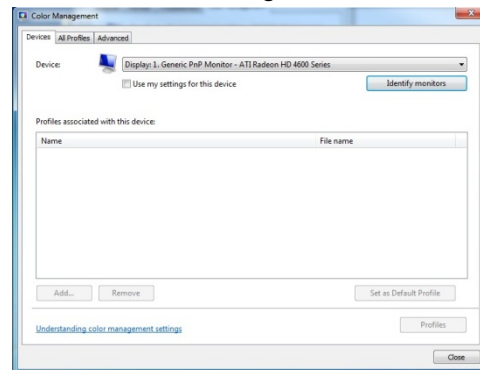


The default Screen refresh rate is 75 Hertz. When using some wide screen monitors, a slower refresh rate may be required to fill the screen. To have the screen fill out properly in these wide screen applications, set the Screen refresh rate is 60 Hertz; all monitors should be set to the same refresh rate. Colors offers True Color or High Color.

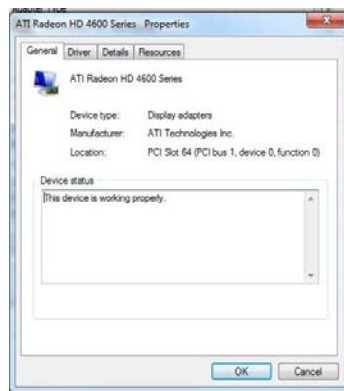
Select the Color Management tab. The following screen will display.



Click the Color Management button. The following screen displays.



Click on the Properties button. The following window will display. This window supplies information about the monitor and driver.



After the Windows configuration is complete, reboot the unit before moving on to setting Monitor Configuration in VMDC.

## Monitor Configuration in VMDC

The monitors are configured from the VMDC. Select the Setup button at the top of the Main screen. Select the Site location and from the Settings screen, click VMC Configuration. The following screen will display.

**VMC Configuration**  
Site Name : VMDC-291529 IP Address: 10.10.10.40

Select the application's mode

Load the application as Virtual Matrix application only

Load the application as Virtual matrix application and decode monitor (Requires Windows 7)

Load the application as Decode monitors only (Requires Windows 7)

Select monitors resolutions and targets

Monitor ID	Monitor's target	Resolution	Font Size	Aspect Ratio
1	RX monitor	1024 X 768	Medium	<input checked="" type="checkbox"/> Maintain Aspect Ratio
2	Virtual Matrix	1024 X 768	Medium	<input checked="" type="checkbox"/> Maintain Aspect Ratio
3	RX monitor	1024 X 768	Medium	<input checked="" type="checkbox"/> Maintain Aspect Ratio
4	RX monitor	1024 X 768	Medium	<input checked="" type="checkbox"/> Maintain Aspect Ratio

Show logo on RX monitors

Identify monitors (local monitors only)

OK Cancel

Enter the monitor details in the table:

- **Monitor ID:** Specifies the monitor number in VMDC.
- **Monitor's target:** From the dropdown menu, choose Virtual Matrix for the local monitor, Maps to display one of the map sets on the monitor, RX monitor if this unit is selected to use PC-based decode monitor or None to not use this monitor, essentially assigning each monitor with its respective window for VMDC.
- **Resolution:** Select the desired resolution of the monitor from the dropdown list.
- **Font Size:** Select form the dropdown list of Very Small, Small, Medium, Large or Very Large. This will be the overlay text size.
- **Aspect Ratio:** Check Maintain Aspect Ratio to maintain the resolution of the camera; to allow the display to fill the monitor, do not check this item.

**Note:** When the Identify monitors button is selected on this screen, a large white number will appear on the monitor screen. These numbers may be a slightly different configuration than those displayed in the Windows configuration. This will not impact on the layout.

## Technical Information

<b>Workstation Requirements (Minimum requirements)</b>	
<b>Operating System:</b>	Microsoft® Windows® 7 Professional.
<b>CPU:</b>	Intel® Core™ i7-950 processor.
<b>Motherboard:</b>	GIGABYTE GA-X58A. BIOS: X58A-UD3R F5 (Motherboard Rev 1) or X58A-UD3R FA or FE (Motherboard Rev 2)
<b>RAM:</b>	4 GB.
<b>Hard Drive:</b>	250 GB minimum.
<b>Video Card:</b>	1-3 Sapphire ATI HD 5550 with 1 DVI/HDMI and VGA output each.
<b>Power Supply:</b>	510 W minimum (use this when calculating for UPS)
<b>Electrical</b>	
<b>Input Voltage:</b>	90-230 ±10% VAC, 50/60 Hz
<b>Current:</b>	1.4 A @ 115 VAC; 0.7 A @ 230 VAC
<b>Power Consumption:</b>	161 W nominal
<b>Heat Output:</b>	563.5 btu/hour
<b>Power Connector:</b>	Standard 3-conductor female socket
<b>Mechanical</b>	
<b>Application:</b>	Indoor.
<b>Mounting:</b>	Standard 19 in. (483 mm) rack mount or stackable 3 RU height.
<b>Dimensions:</b>	Height: 5.25 in. (133.4 mm); Width: 17 in. (432 mm) without mounting ears; Depth: 23.63 in. (600 mm), including connectors.
<b>Weight:</b>	30.0 lb (13.6 kg).
<b>Construction:</b>	Steel case and hardware.
<b>Color:</b>	Black

<b>Environmental</b>	
<b>Operating Temperature:</b>	32 to 104° F (0 to +40° C).
<b>Humidity</b>	Up to 95% relative, non-condensing.
<b>Ideal Room Temperature:</b>	66 to 75° F (19 to +25° C).
<b>Ideal Room Humidity:</b>	Up to 80% relative, non-condensing.
<b>Maximum Room Temperature:</b>	50 to 86° F (10 to +30° C).
<b>Storage Room Temperature:</b>	-4 to 158° F (-20 to +70° C).
<b>Warranty:</b>	3 years parts and labor.

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