



Solutions for Demanding Applications

**VarTech Systems Inc.**

Industrial CRT and Flat Panel Displays



**VT19A-D Series**  
19" Multi-frequency Color Monitor

Models Supported:

**VT19A-D**

**User's Guide**




Read these instructions completely before attempting to operate your new Color Display.

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**SAFETY INSTRUCTIONS**

The following general safety precautions are for both operating and service personnel. These precautions must be observed during all phases of operation, service and repair of this monitor. Failure to comply with these precautions, or with specific warnings noted elsewhere in this manual, violates safety standards of design and manufacture. The seller assumes no liability for the customer's failure to comply with these requirements.

SAFETY SYMBOLS		
Symbol	Name	Description
	Danger	High Voltage. Alerts the user to the presence of dangerous voltages within the product enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.
	Attention	Refer to manual. Alerts the user to the presence of important operating and maintenance (service) instructions in the literature accompanying the monitor
	Earth Ground	Denotes protective earth ground terminal.

**SAFETY PRECAUTIONS**

**Please read carefully all of the safety instructions below. Keep this manual for later use.**

- The voltage ratings and the rated frequency are listed at rear side of this product. Do not connect with any source of other voltage or frequency and please follow all warnings and instructions marked on the product.
- This product is equipped with a 3-wire grounding type plug. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding-type plug. Choose a Tandem Blade attachment plug configuration power cord for 230V AC input.
- If any faults occur with the equipment, disconnect the power supply cord from the unit first. When unplugging, pull the plug itself, not the cord. Pulling the cord can lead to broken wires and possibly electric shock or fire.
- Do not place this product on an unstable cart, stand, or table. The product may fall, causing serious damage to the product.
- Unplug this product from the wall outlet before cleaning and use a damp cloth to clean it. Do not use liquid cleaners or aerosol cleaners. If any liquids spill into the equipment, quickly unplug the unit and have it checked by a qualified technician before using again.
- Never push objects of any kind into this product through cabinet openings as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electric shock.
- Do not attempt to service this product yourself or open the cabinet for any reason. Opening or removing covers may expose you to dangerous voltages or other risk. Refer all servicing to service personnel.
  - ◆ If the power cord or plug is damaged or frayed.
  - ◆ If liquid has been spilled into the product or the product has been exposed to rain or water.
  - ◆ If the product has been dropped or the cabinet has been damaged.
  - ◆ If the product exhibits a distinct change in performance indicating a need for service.

Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions.

## **POWER CORD**

### **For units used at 120V**

Use a UL Listed cord set consisting of a minimum No. 18 AWG type SVT or a SJT, rated 6A 125V, three-conductor cord a maximum of 15ft in length and a parallel blade, grounding type attachment plug.

### **For units used at 240V (U.S. use)**

Use a UL Listed cord set consisting of a minimum No. 18 AWG type SVT or SJT, rated 6A 250V, three-conductor cord, maximum of 15ft in length and a tandem blade, grounding type attachment plug.

### **For units used at 240V (outside of U.S.)**

Use a cord set consisting of a minimum No. 18 AWG cord and grounding type attachment plug rated 6A 250V. The cord set should have the appropriate safety approvals for the country in which the equipment will be installed and be marked HAR.

## **FCC STATEMENT:**

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.

### **Accessories:**

This device has been tested and found to comply with the limits of a Class A digital device, the accessories associated with this equipment are following:

- Shielded video cable.
- Power Cord.

These accessories are required to be used in order to ensure compliance with FCC Rules. It is the responsibility of the user to provide and use these accessories.

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

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

### **CAUTION:**

Changes or modifications not expressly approved by the manufacturer responsible for compliance could void the user's authority to operate the equipment.

## **Technical Service Warning for X-ray Radiation Protection:**

This product contains electrical and mechanical parts essential for X-ray protection. For replacement purposes, use only part types shown in the parts list. Do not substitute.

**INSTALLATION CONSIDERATIONS**

- The voltage ratings and the rated frequency are listed on the rear of this product. Do not connect with any source of other voltage or frequency and please follow all warnings and instructions marked on the product.
- This product is supplied with a 3-wire grounding type plug. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding-type plug. Choose a Tandem Blade attachment plug configuration power cord for 230V AC input.
- Install equipment near a power outlet that is easily accessible. If any faults occur with the equipment, disconnect the power supply cord from the unit first.
- Be sure that the power cord:
  - ◆ is easily accessible
  - ◆ may be unplugged quickly
  - ◆ may be pulled free of furniture or equipment quickly.
- Do not allow anything to rest on the power cord. Damage to a power cord can cause fire or electrical shock. Do not locate this product where persons may walk or trip over the power cord.
- Do not place this product on an unstable cart, stand, or table. The product may fall, causing serious damage to the product.
- Allow adequate air circulation to prevent internal heat build-up. Do not place monitor on surfaces (rugs, blankets, etc.) or near materials (curtains, draperies, etc.) that may block ventilation openings.
- Avoid installing the monitor near heat sources such as radiators or air ducts unless proper ventilation is provided, or in places subject to direct sunlight, excessive dust, mechanical shock or vibration.
- Do not install this monitor in areas exposed to rain or moisture.
- Keep the monitor away from loudspeakers, electrical motors, power mains, or other strong magnetic fields, as the image may be affected.

## **CONNECTION TO VIDEO SOURCE**

Follow the instructions below to attach the monitor to your system.

- Make sure the power to the monitor and the computer is turned off.
- If necessary, install the video card. For more information, refer to the video card manual.
- Connect the one end of the video cable to the monitor and the other end to the video connector on the system. )Select HD for HD15 (VGA) and DB9 (CGA/EGA) or BNC for 3, 4 or 5 wire systems using the BNC connectors) If you are unsure which connector is the video connector, consult your computer or video card manual for instructions. Secure both ends with retaining screws.
- Three termination switches for red, green, blue need to be set at 75 ohms for normal operation. They can be set for the high impedance position for loop through applications
- Connect the one end of the power cord to the monitor and the other end to the power outlet.
- Apply power to the computer, then the monitor.

## **RECOMMENDED USE OF MONITOR**

When setting up and using the monitor, pay special attention to the following for optimum performance.

- Do not use your monitor against a bright background or where sunlight or other light sources will shine directly on the screen.
- The monitor should be placed just below eye level (10" - 15") for optimum viewing.
- Set the monitor's brightness to match the ambient room light.
- For optimum focus, the contrast control should not be set to the maximum unless the input signal level is extremely low. Also, the brightness control should be set to a point where the overall background area just begins to disappear.
- Your monitor should not be used in damp, dusty, or dirty areas.
- Handle your monitor with care when transporting it.
- Clean the CRT surface with a lint-free, non-abrasive cloth and a non-alcohol, neutral, non-abrasive cleaning solution or glass cleaner.

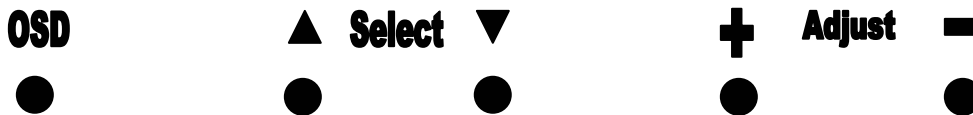
## **REPACKING**

Retain the original carton and packing materials for safe transport of this unit in the future.

## USER CONTROLS

All user-adjustable controls may be accessed through the on-screen controls. The on-screen control panel is activated by pressing the OSD Control button. The on-screen control buttons are as follows:

### OSD CONTROL LAYOUT:



### ADJUSTMENT PROCEDURE

Press the OSD button to activate the OSD menu.

Move through the list by pressing either of the Select (Up) or Select (Down) buttons. A yellow icon will indicate the active function.

Press the Adjust (+) or Adjust (-) buttons to get the desired image.

The microprocessor will automatically memorize the user settings when the on-screen display menu disappears or is exited.

### OTHER CONTROLS / INDICATORS

#### Green/Amber/Red LED

Indicates Power On, Power Saving or Stand-by State, or Off State when lit.



#### Main Power Switch

Used to turn main power ON of OFF.

#### Degauss Switch

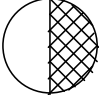
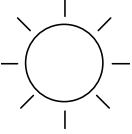
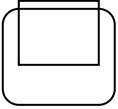
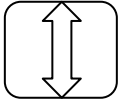
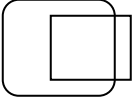
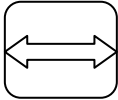
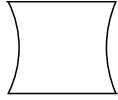
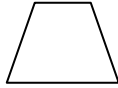
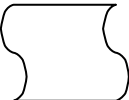

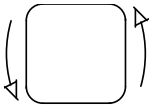
Used to correct purity problems by degaussing the CRT.

#### Note:


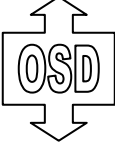
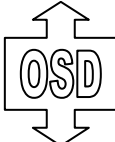
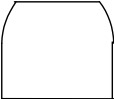
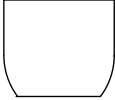


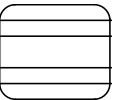
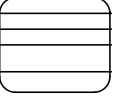
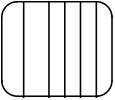
Some product supplied with brightness (  ) and contrast (  ) symbols under the select button. Please disregard.

## OSD ADJUSTMENTS






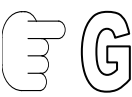
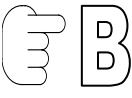



All user-adjustable controls are accessed through the on-screen controls. After normal power up, activating the on-screen control (OSD) button will activate the OSD Menu. The user navigates around the OSD menu by pressing the Select (Up) or Select (Down) buttons, and modifies the OSD settings by pressing the Adjust (+) or Adjust (-) buttons. The on-screen control panel will display the following icons:

Symbol	Feature	Function
	<b>Contrast</b>	Adjusts the contrast (video gain). Setting 0 = 0FL. Setting 100 = maximum gain.
	<b>Brightness</b>	Adjusts the brightness (video bias). Setting 0 extinguishes 10% grayscale. Setting 100 = 1-2FL background.
	<b>Vertical Centering</b>	Adjusts the Vertical Centering. Setting 0 moves image down. Setting 100 moves image up.
	<b>Vertical Size</b>	Adjusts the Vertical Size. Setting 0 = minimum size. Setting 100 = maximum size (overscan).
	<b>Horizontal Position</b>	Adjusts the Horizontal Phase. Setting 0 moves image to left. Setting 100 moves image to right.
	<b>Horizontal Size</b>	Adjusts the Horizontal Size. Setting 0 = minimum size (approx. 1:1). Setting 100 = maximum size (overscan).
	<b>Image Geometry</b>	
	Pincushion	Setting 0 = minimum correction (looks pincushion). Setting 100 = maximum correction (looks barreled).
	Keystone	Setting 0 = minimum correction (large on top). Setting 50 = no correction. Setting 100 = maximum correction (large on bottom).
	Side Pin Balance Control	Setting 0 = minimum correction (center line curved to right). Setting 50 = no correction (center line is straight). Setting 100 = maximum correction (center line curved to left).
	<b>Edge Geometry</b>	
	Parallelogram Control	Setting 0 = minimum correction (leans to left). Setting 50 = nominal correction. Setting 100 = maximum correction (leans to right).
	Rotation Control	Setting 0 = minimum correction (rotates counter clockwise). Setting 50 = no correction. Setting 100 = maximum correction (rotates clockwise).

## OSD ADJUSTMENTS CONT.

Symbol	Feature	Function
	<b>OSD Settings</b>	
	OSD Horizontal Position	Adjusts the OSD Horizontal position. Setting 0 moves image to left. Setting 100 moves image to right.
	OSD Vertical Position	Adjusts the OSD Vertical Position. Setting 0 moves image to down. Setting 100 moves image to up.
	OSD Time	Adjusts the time that the OSD remains on before exiting. Selections are 6 sec, 12 sec, or Always On
	<b>Corner Geometry</b>	Setting 0 = minimum horizontal focus voltage. Setting 100 = maximum horizontal focus voltage.
	Top Corner Control Pincushion	Setting 0 = minimum correction (top corners curved out). Setting 50 = no correction (top corners are straight). Setting 100 = maximum correction (top corners bowed in).
	Bottom Corner Control Pincushion	Setting 0 = minimum correction (bottom corners curved out). Setting 50 = no correction (bottom corners are straight). Setting 100 = maximum correction (bottom corners bowed in).
	Vertical Focus	Setting 0 = minimum vertical focus voltage. Setting 100 = maximum vertical focus voltage.
	Horizontal Focus	Setting 0 = minimum horizontal focus voltage. Setting 100 = maximum horizontal focus voltage.
	<b>Linearity</b>	
	Vertical Linearity	Setting 0 = minimum correction (center compressed). Setting 100 = maximum correction (top & bottom compressed).
	Vertical Linearity Balance	Setting 0 = min. correction (compressed area moves down). Setting 50 = nominal correction (compressed area is centered). Setting 100 = max. correction (compressed area moves up).
	Horizontal Linearity	Setting 0 = minimum correction (image is widest). Setting 100 = maximum correction (left side is compressed).

## OSD ADJUSTMENTS CONT.

Symbol	Feature	Function
	<b>Information</b>	Displays horizontal and vertical timing information.
	<b>Recall</b>	Recalls original factory setting for the video mode.
	<b>Degauss</b>	Degausses the monitor to correct purity problems
	<b>Color Adjustments</b>	
	Red Gain	User adjustable Red color gain for color matching purposes.
	Green Gain	User adjustable Green color gain for color matching purposes.
	Blue Gain	User adjustable Blue color gain for color matching purposes.
	<b>Color Temperature</b>	
	6550K	Recalls the 6550K Color Temperature.
	9300K	Recalls the 6550K Color Temperature.
	<b>OSD Exit</b>	Exits the OSD menu. Upon exiting, all user settings are stored as one of the six user modes.

# 4

## VIDEO CONNECTIONS

The monitor is fitted with the following signal inputs:

**HD15(F) CONNECTOR:** (Figure 1) Connects to standard PC type graphics cards. The monitor can display standard VGA graphics modes at 640 x 480 @60Hz, 70Hz, 800 x 600 @56Hz, 60Hz, DOS text, 1024x768 (interlaced)

PIN	FUNCTION	PIN	FUNCTION
1	Red Video	9	NC (grounded in monitor)
2	Green Video	10	Digital ground
3	Blue Video	11	Digital ground
4	NC	12	NC
5	NC	13	Horizontal sync
6	Red return	14	Vertical sync
7	Green return	15	NC
8	Blue return		

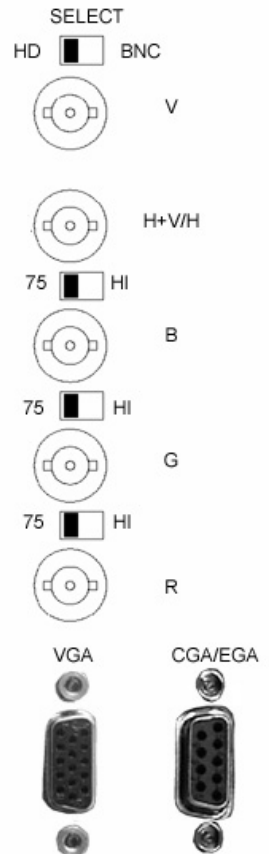


Figure 1: Female Type

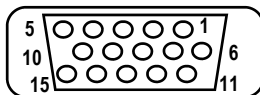
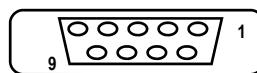


Figure 2: Female Type



Sync. Type	DB9 Connector (Figure 2)	
	CGA	EGA
Pin No.		
1	GND	GND
2	GND	Sec. Red
3	Red	Red
4	Green	Green
5	Blue	Blue
6	Intensity	Sec. Green/Intensity
7	Reserved	Sec. Blue
8	H-Sync	H-Sync
9	V-Sync	V-Sync

BNC CONNECTORS	
R	Red video 0.7V pk-pk / 75 ohm
G	Green video 0.7V pk-pk / 75 ohm
B	Blue video 0.7V pk-pk / 75 ohm
H	Horizontal TTL syncs or composite TTL syncs
V	Vertical TTL syncs

## FACTORY PRESET MODES

	Video Format	Resolution	Horizontal Frequency (kHz)	Refresh Frequency (Hz)		Sync Format
1	9008R	624 x 233	15.626	60.10	Progressive	Sync-on-Green
2	HON 4500	721 x 662	17.886	50.03	Interlaced	Sync-on-Green
3	8943L-04	476 x 324	21.495	60.72	Progressive	Sync-on-Green
4	9008-SE	640 x 375	24.000	60.15	Progressive	Sync-on-Green
5	ABB08ST	640 x 384	24.780	60.44	Progressive	Sync-on-Green
6	9002-3SE	581 x 378	28.000	70.00	Progressive	Sync-on-Green
7	MOORE	640 X 400	28.301	59.96	Progressive	Sync-on-Green
8	8943L-01	640 X 480	30.643	59.97	Progressive	Sync-on-Green
9	RS343-1023	1261 X 1023	30.690	60.00	Interlaced	Sync-on-Green
10	8949-HON	630 x 448	31.246	66.20	Progressive	Sync-on-Green
11	IBM VGA	640 x 480	31.469	31.469	Progressive	Sync-on-Green
12	IBM VGA	720 x 400	31.469	70.09	Progressive	Digital Sep Sync
13	9008NDC	583 x 431	31.548	68.43	Progressive	Digital Sep Sync
14	9010-F1	706 x 498	32.000	60.04	Progressive	Sync-on-Green
15	8949FISH	512 x 480	36.693	72.66	Progressive	Sync-on-Green
16	VESA	640 x 480	37.500	75.00	Progressive	Digital Sep Sync
17	9010-F2	912 x 644	40.000	59.97	Progressive	Sync-on-Green
18	VESA	640 x 480	43.269	85.01	Progressive	Digital Sep Sync
19	VESA	800 x 600	46.875	75.00	Progressive	Digital Sep Sync
20	9000-SE	890 x 651	48.000	69.97	Progressive	Sync-on-Green

RUNNING A HORIZONTAL FREQUENCY OVER 50KHZ OR BELOW 15KHZ, WILL PLACE THE MONITOR INTO POWER SAVING MODE. PLEASE USE THE VGA CARD'S UTILITY SOFTWARE TO CHANGE THE FREQUENCY SETTING. (REFER TO THE MANUAL OF YOUR VGA CARD.)

In addition to the 20 factory preset modes (see the factory preset mode table, above), the monitor can store up to 6 user-defined mode settings. For example, if your video card is set up to run RS343-1023 at 60Hz, you can adjust the screen size, position, distortion, brightness and contrast as you desire. The monitor will automatically save this information to one of six memory locations. However, your user settings will not be restored by the RECALL function.

**TROUBLESHOOTING**

The following list represents possible anomalies you may encounter with subsequent troubleshooting procedures. Please refer to this checklist prior to contacting a service representative.

SYMPTOM	WHAT TO CHECK
No Picture.	<ul style="list-style-type: none"> <li>◆ Check to make sure the AC power cord is plugged in.</li> <li>◆ Power Switch should be in the ON position.</li> <li>◆ Check to make sure there is power at the AC outlet by plugging in another piece of equipment (such as a lamp) to the outlet.</li> </ul>
No picture, yet LED indicator is on.	<ul style="list-style-type: none"> <li>◆ Make sure the PC is turned on.</li> <li>◆ Check to make sure the video signal cables are firmly connected in the video card socket.</li> <li>◆ Check to make sure the video card is securely seated in the PC</li> </ul>
The image does fill the screen or the shape is distorted.	<p>This is typical when first setting up a monitor with a new computer or operating system. Here are adjustments for this and other distortions.</p> <ul style="list-style-type: none"> <li>◆ Adjust the Horizontal Size and position and the vertical size and position controls until the image fills the screen, and adjust the geometry controls to “square” the image.</li> </ul>
Image is scrolling or unstable.	<ul style="list-style-type: none"> <li>◆ Check the pin assignments and signal timings of the monitor and your video card.</li> <li>◆ Signal cables should be completely attached to the computer.</li> </ul>
The colors are not right. too large or small	<ul style="list-style-type: none"> <li>◆ Check to make sure the video signal cables are firmly connected to the monitor and the computer.</li> <li>◆ Adjust the color balance via the OSD</li> </ul>
The screen is too bright or dark	<ul style="list-style-type: none"> <li>◆ Adjust the brightness control.</li> </ul>
Picture is fuzzy.	<ul style="list-style-type: none"> <li>◆ Adjust the Focus Control via the OSD.</li> <li>◆ Adjust the Brightness and Contrast Controls.</li> </ul>
The screen is shaking or a wave pattern is present in the picture.	<ul style="list-style-type: none"> <li>◆ Verify that the signal timing from the computer is within the specification of the monitor.</li> <li>◆ Move any source of magnetic fields, such as motors or transformers, away from the monitor. (Refer to the FCC Statement for more tips.)</li> </ul>

ENGINEERING SPECIFICATIONS	
CRT Size	19" (18" Diagonal)
Deflection Angle	90°
Dot Pitch	.27mm
Phosphor	Medium Short P22
Active Display Area	14.05" x 10.55" 357mm x 268mm
Power Source	100-240VAC 60/50Hz Auto-sensing
Power Consumption	120 Watts maximum
Scan Frequency	Horizontal: 15 to 50kHz Vertical: 50 to 160Hz
Video Bandwidth	230mHz
Video Input Connectors	5BNC, HD15(VGA) and DB9(CGA/EGA)
Resolution Capabilities	CGA to SVGA
Video Input Signal	Analog 0.7V p-p positive / 75 ohm (BNC and VGA) TTL (CGA/EGA)
Sync Input Signal	Separate Horizontal & Vertical TTL syncs Or composite TTL syncs Or sync on green: 0.3Vp-p negative
Color	VGA 16.7million CGA 8 color EGA 8/64 Color
Temperature	Operating: 5 to 40°C Storage: 20 to 85°C
Humidity	Operating: 20 to 80% NC Storage: 10 to 90% NC

Due to a policy of continual improvement the information in this guide is subject to change without notice.

**VARTECH SYSTEMS INC.**

**HEADQUARTERS**

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Baton Rouge, Louisiana 70809

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International Phone: 001.225.298.0300

Fax: 225.297.2440

Email: [sales@vartechsystems.com](mailto:sales@vartechsystems.com)

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