Solutions for Demanding Applications

VarTech Systems Inc.

Industrial CRT and Flat Panel Displays

20” Auto Sync Color Monitor

For Models:

VT20B-CI . VT20B-CI2

User’s Guide

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

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Section

1

WARNINGS and FCC Statement

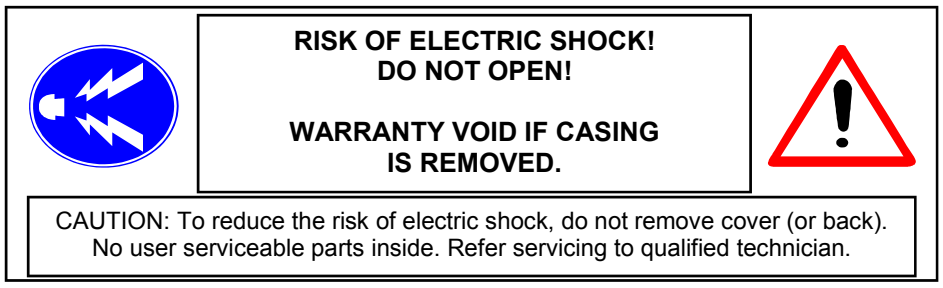
WARNING

TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS MONITOR TO RAIN OR MOISTURE.

"HIGH VOLTAGE EXISTS ON THE CATHODE-RAY TUBE ANODE LEAD OF THIS MONITOR. BEFORE SERVICING, DETERMINE THE PRESENCE OF HIGH VOLTAGE BY CONNECTING THE H.V. METER BETWEEN THE ANODE OF CRT CAP AND CHASSIS ONLY."

CAUTION

1. Keep monitor away from excessive dust, high temperature, moisture or direct sunlight.
2. Use in well ventilated area and do not cover ventilation openings.
3. Unauthorized modifications of this equipment or substitution or attachment of not shielded connecting cable may cause excessive interference.
4. When the monitor is not in use for a long time, turn off power switch.



IMPORTANT SAFETY INSTRUCTIONS

Prior to using this product, please ensure that you have carefully followed all the procedures outlined in the user's manual for this product.

1. Read all of these instructions.
2. Save these instructions for later use.
3. Follow all warnings and instructions marked on the product.
4. Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
5. Do not use this product near water.
6. Do not place this product on an unstable cart, stand or table. The product may fall causing serious damage to the product.
7. Slots and openings in the cabinet and the back or bottom are provided for ventilation; to ensure reliable operation of the product and to protect it from overheating, those openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface. This product should never be placed near or over a radiator or heat register. This product should not be placed in a built-in installation unless proper ventilation is provided.
8. This product should be operated from the type of power source indicated on the marketing label. If you are not sure of the type of power available, consult your dealer or local power company.
9. This product is equipped with a 3-wire grounding type plug, a plug having a third (grounding) pin. 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 purpose of grounding -type plug.
10. Do not allow anything to rest on the power cord. Do not locate this product where persons will walk on the cord.
11. If an extension cord is used with this product, make sure that the total of the ampere ratings on the products plugged into the extension cord do not exceed the extension cord ampere rating. Also, make sure that the total of all products plugged into the wall outlet does not exceed 15 amperes.
12. Never push objects of any kind into this product through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electric shock. Never spill liquid of any kind on the product.
13. Do not attempt to service this product yourself, as opening or removing covers may expose you to dangerous voltage points or other risks. Refer all servicing to service personnel.
14. Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
    A. When the power cord or plug is damaged or frayed.
    B. If liquid has been spilled into the product.
    C. If the product has been exposed to rain or water.
    D. If the product does not operate normally when the operating instructions are followed. Adjust only those controls that are covered by the operating instructions since improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal operation.
    E. If the product has been dropped or the cabinet has been damaged.
    F. If the product exhibits a distinct change in performance, indicating a need for service.

Federal Communications Commission Requirements

The equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of FCC rules. These limits are designed to provide reasonable protection against harmful interference in an industrial installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in strict 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 measure:

- Reorient or relocate the receiving antenna.

- Increase the separation between the equipment and the 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/TV technician for help.
Shielded interconnected cables and shield power cords must be employed with this equipment to insure compliance with the pertinent RFD emission limits governing this device.

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

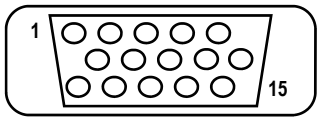
Notice of Compliance with Canadian Interference-causing Equipment Regulations
This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Section

2

CONNECTORS

15 Pin D CONNECTOR: This is an industry standard connector providing easy connection to VGA type video sources			
Pin	Function	Pin	Function
1	Red Video In	8	Blue Return
2	Green Video In	9	+5V
3	Blue Video In	10	Ground
4	GND	11	Ground
5	Self Test	12	SDA
6	Red Return	13	Horizontal sync
7	Green Return	14	Vertical sync
		15	SCL



HD15 Connector

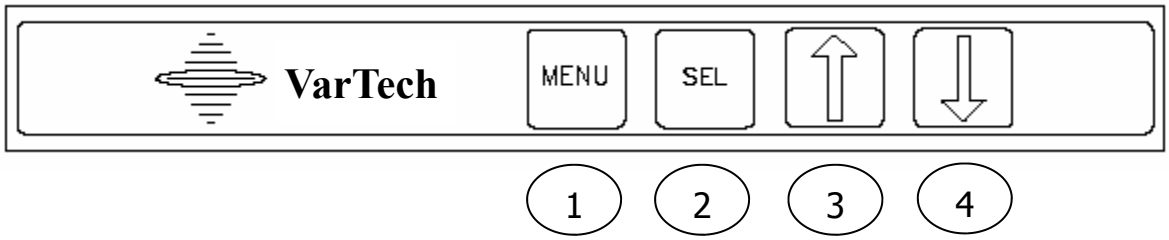
NOTE: External brightness and contrast controls MUST be connected in order to display an image on the screen. An extension cable is included to connect to the external controls.

Timings				
	VGA1 640 X 350	VGA2 720 X 400	VGA3 640 X 480	MAC35k
Mode	**1**	**2**	**3**	**4**
Hor. Freq (kHz)	31.468	31.468	31.468	34.975
Vert. Freq. (Hz)	70.09	70.09	59.94	66.62
Dot Clock (MHz)	25.175	28.322	25.175	31.3344
Hor. Total Time	31.778	31.778	31.778	28.59
Hor. Active Time (us)	26.058	26.058	26.058	20.421
Front Porch (us)	0.318	0.318	0.318	2.553
SYNC Pulse Width (us)	3.81	3.81	3.81	2.042
Back Porch (us)	1.589	1.589	1.589	3.574
Border (us)	0.32	0.32	0.32	0
Vert.Total Time (ms)	14.268	14.268	16.683	15.01
Vert. Active Time (ms)	11.504	13.156	15.762	13.723
Front Porch (ms)	0.985	0.159	0.064	0.086
SYNC Pulse Width (ms)	0.06356	0.06356	0.06356	0.086
Back Porch (ms)	1.716	0.889	0.794	1.115
Border (ms)	0.191	0.222	0.254	0
SYNC Polarity (H,V)	+,-	-,+	-,-	-,-

Timings			
	MAC 49.7K	VESA 56.5K	64K
Mode	**5**	**6**	**7**
Hor.Freq. (KHz)	49.722	56.476	64.02
Vert. Freq. (Hz)	74.543	70.069	60.00
Dot Clock (MHz)	57.28	75.00	110.00
Hor.Total Time (us)	20.112	17.707	15.625
Hor. Active Time (us)	14.525	13.653	11.625
Front Porch (us)	0.559	0.32	0.300
SYNC Pulse Width (us)	1.117	1.813	1.600
Back Porch (us)	3.911	1.920	2.100
Border (us)	0	0	0
Vert. Total Time (ms)	13.415	14.272	16.670
Vert. Active Time (ms)	12.550	13.599	16.000
Front Porch (ms)	0.02	0.053	0.031
SYNC Pulse Width (ms)	0.06	0.106	0.047
Back Porch (ms)	0.784	0.513	0.594
Border (ms)	0	0	0
SYNC Polarity (H,V)	-,-	-,-	+,+

CONTROL LOCATION

NOTE: VT20B-CI/VT20B-CI2
All controls are located on the rear of the monitor.



OSD (On Screen Display menu) CONTROLS AND ADJUSTMENTS: There are four switches on the control panel with Key Function:		
	Feature	**Function**
1	MENU	Call the Main-Menu OSD
2	SEL	Select different OSD functions
3	UP	Change the setting of the selected OSD function.
4	DOWN	Change the setting of the selected OSD function.

USER CONTROLS
Power control Push the switch

Power indicator
The power LED is green when the display is in normal operation.

Degauss switch
This monitor is equipped with automatic and manual OSD degaussing. Automatic degaussing is operativewhen the monitor is cold (after being off for approximately 20 minutes). Therefore, if the monitor is repositioned while it is warm and discoloration is observed, it is important to remember to turn off the monitor and let it cool. When powering the monitor back on, it will then degauss automatically and discoloration will disappear. Manual degaussing is operative by selecting the OSD degauss function.

Caution: Please allow a minimum of 20 minutes to elapse between uses of the degauss function.

SCREEN CONTROL DEFINITIONS	
Feature	**Function**
Brightness	To adjust the overall screen intensity
Contrast	To adjust the intensity difference between the video image and the background display raster
V-center	To adjust the vertical position of the display image
V-size	To adjust the vertical size of the display image
H-phase	To adjust the horizontal position of the display image
H-size	To adjust the horizontal size of the display image
Pincusion	To adjust the bowing of the display image size
Trapezoid	To adjust the size difference between the top and bottom of the display image
Pin balance	To adjust the ratio of the size pincushion adjustments of the display image
Parallel	To adjust the rectangular shape of the display image
Rotation	To adjust the display image tilt
OSD H-position	To adjust the horizontal position of the OSD control
OSD V-position	To adjust the vertical position of the OSD control
OSD timer	To adjust the time duration of the OSD control until it is turned off
Top corner	To adjust the symmetry of the top two display corners
Bottom corner	To adjust the symmetry of the bottom tow display corners
V-focus	To adjust the vertical focus of the display image
H-focus	To adjust the horizontal focus of the display image
V-linearity	To adjust the vertical linearity of the display image
H-linearity	To adjust the horizontal linearity of the display image
Information	To display input video signal specifications
Recall	To recall a previous stored setup
Degauss	To degauss the CRT in order to correct for image purity
R,G,B user color adjust	To adjust the individual color balances
6500K color select	To select the 6500K color balance
9300K color select	To select the 9300K color balance
OSD Exit	To exit the OSD controls

POWER MANAGEMENT FUNCTION

The Power Management function, which is controllable through the required software, provides four distinct power states:

DISPLAY POWER MANAGEMENT SIGNALING (DPMS)	
Mode	**Function**
On	Normal operation; screen stays on. Power LED is green.
Standby	Screen blanks after preset idle time. Power LED of Display is Yellow.
Suspend	Some electronic circuits go off after a preset idle time. Power LED is Yellow.
Off	Display power is off after preset idle time or when system is powered off. Power LED is Amber.

Power Consumption **The following is a description of these power states and the power consumed state:**				
Mode	**H-sync**	**V-sync**	**Video**	**Power Consumption**
On	Pulse	Pulse	Active	Pw (maximum)
Standby	No pulse	Pulse	Blanked	<30 Watts
Suspend	Pulse	No pulse	Blanked	<30 Watts
Off	No pulse	No pulse	Blanked	<15 Watts

NOTE:
1. The power management function requires TTL horizontal and vertical sync.
2. This monitor is Energy Star compliant when used with a computer equipped with DPMS.

REINITIALIZING POWER

To reactivate a display that had gone inactive under its Power Management function, do one of the following:

1. If the display has powered off under its Power Management function due to the system unit being switched off, you must power up the system unit to reactivate the display.
2. If the display has deactivated under its Power Management function due to exceeding a pre-set idle time, you may reactivate the display by any one of the following:
   - press any key on the keyboard
   - move the mouse (if so equipped)
   - press any segment on the TouchSelect panel (if so equipped).

Section

5

TROUBLESHOOTING

In the event that you experience trouble with your Display, check the following items before contacting Vartech Systems. The most common problems usually involve an incorrectly configured Video Card or an incorrect connection from the Video Card to the Display. Do not exceed the maximum refresh rate recommended for the display.

TROUBLESHOOTING GUIDE	
Problem	**Troubleshooting Tips**
No image on display screen	1. Check that power cord of the Display has been connected securely into wall outlet or grounded extension cable or strip. 2. Check that power switch of the Display has been pressed and LED on front of Display is lit. 3. Check that Video (Signal) Cable from the Display has been securely and correctly connected to the 15-pin Video Connector on the rear panel of the Computer. 4. Check that Video Card is firmly seated in card slot of Computer motherboard. 5. Check that the Brightness and/or the Contrast adjustments of the Display have not been turned down to minimum levels.
Picture is small or distorted and Control Buttons will not correct	1. Check that the video signal being input from the Video Card falls within the frequency range of the Display. 2. Check that Video (Signal) Cable from the Display has been securely and correctly connected to the 15-pin Video Connector on the rear panel of the Computer. 3. If you have used an adapter to convert the 15-pin Video (Signal) Cable Connector from the Display to fit the connector on the rear of the Computer, check that the pin assignment of the adapter matches that of the 15-pin Mini D-Sub pin assignment of the Display.
Colors of image on screen are abnormal	1. Check that a magnetized item is not nearby. 2. Check that Video (Signal) Cable from the Display has been securely and correctly connected to the 15-pin Video Connector on the rear panel of the Computer. 3. If you have used an adapter to convert the 15-pin Video (Signal) Cable Connector from the Display to fit the connector on the rear of the Computer, check that the pin assignment of the adapter matches that of the 15-pin Mini D-Sub pin assignment of the Display. 4. Press and release Degauss button on the Display.

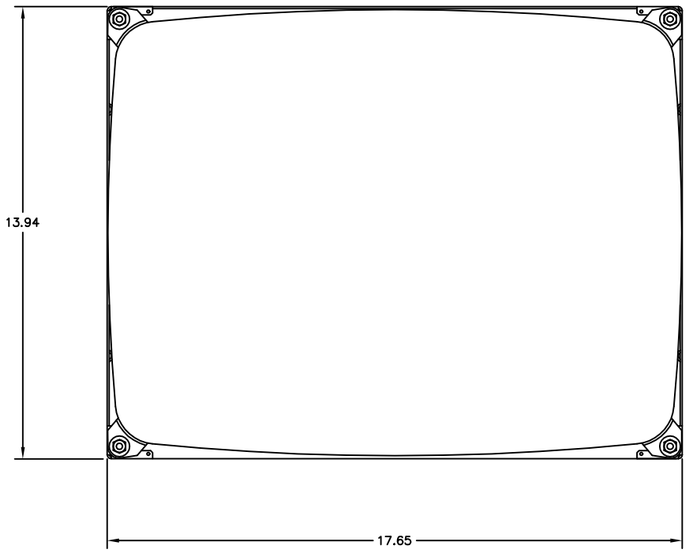
Section

6

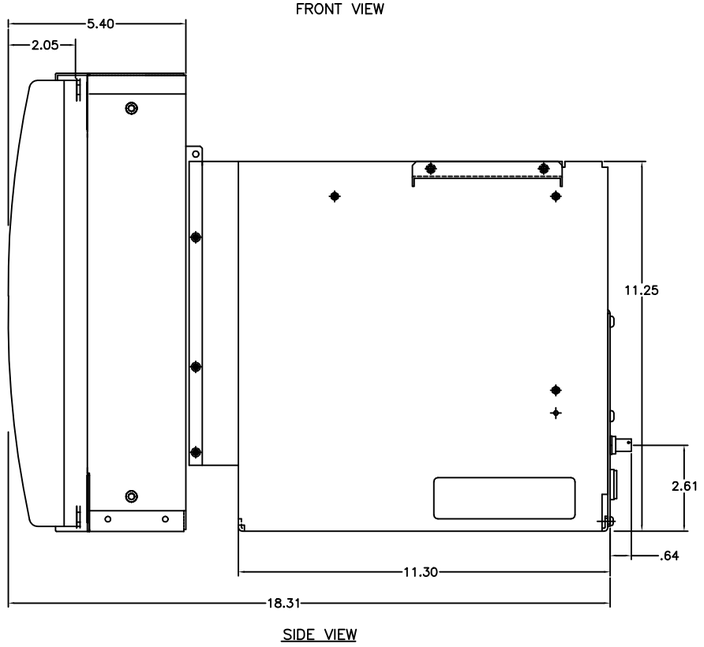
MOUNTING INSTRUCTIONS

Mechanical Drawings		
Model	**Description**	**Page(s)**
VT20B-CI/VT20B-CI2	20” Intecolor Configured Chassis Mount Mechanical Drawing	11

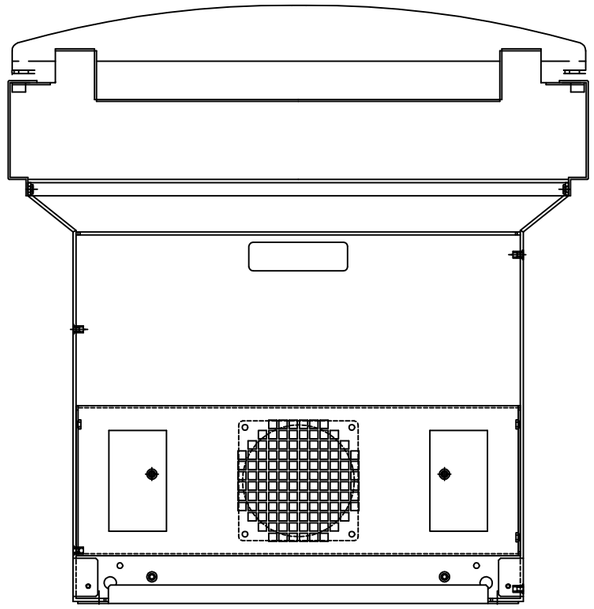
CHANGE HISTORY			
FILE INDEX	DESCRIPTION	APPROVAL INITIAL	DATE
1	PRELIMINARY RELEASE		

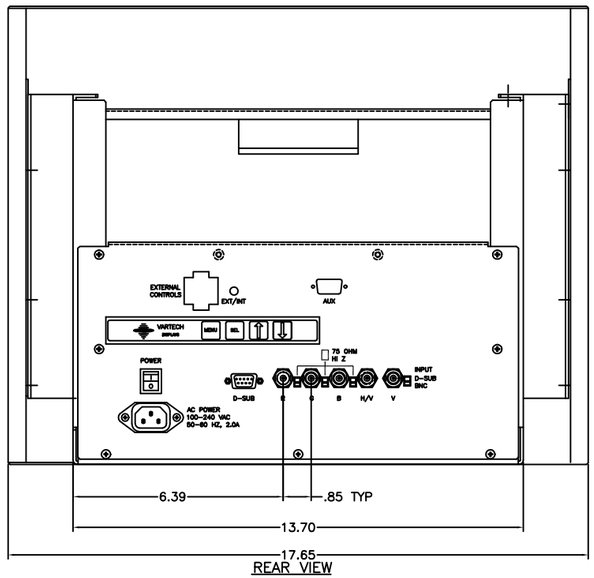


FRONT VIEW



SIDE VIEW





REAR VIEW

NOTES:

1. ALL DIMENSIONS ARE NOMINAL AND FOR REFERENCE ONLY. THIS DRAWING SHOULD NOT BE USED FOR DESIGN PURPOSES.
2. UNIT WEIGHT: APPROX. 54 LBS (CONFIGURED AS SHOWN)

QTY	ITEM		MFR. PT.NO.	DESCRIPTION	SYM/NOTE

LIST OF MATERIALS

DDI	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND APPLY BEFORE FINISH. SURFACE ROUGHNESS .125. TOLERANCE ON FRACTIONS ± 1/64, DECIMALS ±.XX=.02 ±.XXX=.005, ANGLES ± 1/2°	DRAWN RKH DATE 12JUN02	VarTech Systems Inc.
		CHECKED	
		DRAFTING	OUTLINE DRAWING VT20B-CI2
	MATERIAL	ENGINEER	
		MANUF	
VT20B-CI	FINISH	APPROVED	SIZE D — DWG NO. 600-2051 — REV 1
USED ON		QA	SCALE 1 : 2 — SHEET 1 OF 1
APPLICATION			FILE NUMBER: 6002051-R1 1

Section

7

SPECIFICATIONS

ENGINEERING SPECIFICATIONS		
	VT20B-CI	VT20B-CI2
Size	20”	
Pitch	.31mm	
Resolution Capabilities	VGA to SXGA	
Active Display Area	15.15” x 11.41” / 384.8 mm x 289.8 mm	
Phosphor	Medium Short P22	
Deflection Angle	90º	
Power Source	120 VAC 60Hz/220 VAC 50Hz (auto switching) 2.0A at AC 120V 60Hz | 1.0A at 220V 50Hz	
Power Consumption	130 Watts	
Horizontal Frequency	30kHz to 95kHz	30kHz to 64kHz
Vertical Frequency	50Hz to 120Hz	
Bandwidth	135MHz	
Video Input Connector	HD15(F) and 5BNC	
Video Input Signal	Analog 0.7 Vp-p	
Sync	Separate Horizontal and Vertical TTL Syncs Or Composite TTL Syncs Or Sync on Green 0.3V p-p	
Temperature	Operating: 0 to 50ºC Storage: -20 t0 60ºC	
Humidity	Operating: 10 to 90% NC Storage: 5 to 95% NC	
Altitude	0 to 10,000 feet	
Note: For continued compliance with Electromagnetic Compatibility limits, this monitor must be used with the signal lead supplied.		

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