



VRC20-Hx Ultra VGA Multi-
Scanning 20-inch Color Monitor

Installation and Operating
Information

Order Number: EK-VRC20-HX. A01

August 1994

The information in this document is subject to change without notice and should not be construed as a commitment by Digital Equipment Corporation.

Restricted Rights: Use, duplication, or disclosure by the U.S. Government is subject to restrictions as set forth in subparagraph (c) (1) (ii) of the Rights in Technical Data and Computer Software clause at DFARS 252.227-7013.

FCC ID: ARFKDM2077

Note: This equipment has been tested and found to comply with the limits for a Class B 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. Any changes or modifications made to this equipment may void the user's authority to operate this equipment.

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 and television reception; 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:

- Re-orient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment to 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.

DO NOT attempt to modify this equipment. If modified, your authority to operate this equipment might be voided by the FCC.

Canadian Department of Communications Statement

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications.

DEC and the DIGITAL logo are trademarks of Digital Equipment Corporation. VGA is a registered trademark of International Business Machines Corporation. SVGA and VESA are registered trademark of the Video Electronic Standards Association.

The Energy Star emblem does not represent EPA endorsement of any product or service.

Copyright © Digital Equipment Corporation 1994. All rights reserved.
Printed in Taiwan.

Contents

About This Guide	v
1 Installation	
1.1 Monitor Installation	1-1
1.2 User Controls	1-2
2 Servicing	
2.1 Cleaning the Monitor	2-1
2.2 Maintenance and Troubleshooting	2-1
2.2.1 Identifying and Correcting Problems	2-1
2.2.2 Troubleshooting Table	2-2
2.3 Servicing the Monitor	2-3
2.3.1 DECmailer	2-3
2.3.2 Carry-In Service	2-3
2.3.3 Monitor Disposal	2-3
3 Specifications	
3.1 Monitor Specifications	3-1
3.2 Scanning Modes	3-2
3.3 Pin Assignments	3-3
3.4 Power Management System	3-3
3.5 Environment	3-4

Figures

1-1	Monitor Control Panel	1-2
-----	-----------------------------	-----

Tables

1-1	User Controls and Functions	1-2
1-2	Save and Reload Functions	1-5
1-3	Secondary User Controls and Functions..	1-6
2-1	Identifying and Correcting Problems	2-2
3-1	Factory Pre-set Resolution and Frequencies	3-2

About This Guide

Overview

The VRC20-Hx Monitor is a 20-inch *multi-scanning* color monitor with high resolution, compatible with VGA and SVGA built-in modes.



The VRC20-Hx offers the following features:

- Power management system that exceeds the EPA Energy Star requirements for saving energy
- Anti-glare screen with anti-static coating
- User controls for screen alignment, color adjustment, and mode control

- Manual and automatic degauss control

This product has been designed and manufactured to minimize the impact to the environment. The monitor also has a power management feature, which a personal computer can control to reduce the monitor's output power levels while not in use, thus saving energy.

Audience

This guide is intended for users who wish to install the monitor.

Conventions

The following conventions are used in this document:

Convention	Meaning
Note	Provides general information.
Caution	Provides information to prevent damage to equipment.
Warning	Provides information to prevent injury.

Installation/Operating Guidelines

Observe the following basic rules for installation and use.

Do . . .

- Use the power cord supplied with the monitor, which is UL-, CSA-, and VDE-approved, designed for a **grounded** outlet.
- Turn the monitor off when you clean the monitor or if you do not use it for an extended period of time.

Do Not . . .

- Exceed the ac power output rating of the ac outlet of your computer or other source.
- Move the monitor on a stand over carpet or thresholds.
- Push objects into the monitor's openings.
- Add accessories that are not designed for this monitor.
- Operate the monitor near water or in a damp environment, which could cause an electrical shock hazard.
- Operate the monitor near magnets, motor devices, transformers, high power lines, or large steel pillars, which can cause distortion in the picture.
- Obstruct the ventilation openings in the monitor's cabinet, such as placing the monitor on a rug or within an enclosure.
- Place the monitor near a radiator or heat source.
- Use liquid cleaners or aerosol cleaners. Instead, use a damp cloth for cleaning.

Warning

The monitor weighs 30 Kg (66 lbs), so it may require two people to lift the monitor out of its box.

1

Installation

1.1 Monitor Installation

To connect your monitor:

1. Make sure the power to the monitor and the computer is off.
2. Connect the monitor's signal cable to the 15-pin interface connector on the High Resolution Graphic Video Adapter on the back of the computer.
3. Plug in the ac power cord to the monitor, then to a properly-grounded ac electrical outlet.

Turn On Power to Monitor

Push the power switch button to turn on the monitor. The power indicator LED to the left of this switch should light green.

Installation

1.1 Monitor Installation

Figure 1-1 Monitor Control Panel



1.2 User Controls

Table 1-1 User Controls and Functions

Control	Action
Power	Push the switch. When the power is on, the LED beside the power switch is on.
Power Indicator	The power LED color has the following states: Green Normal operation Yellow Stand-by and suspend state Amber Off state

(continued on next page)

Installation

1.2 User Controls

Table 1–1 (Cont.) User Controls and Functions

Control	Action
Degauss Switch	This monitor is equipped with automatic and manual degaussing. Automatic degaussing is operative when 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 pressing the switch for a few seconds.

Caution

Please allow a minimum of 20 minutes to elapse between uses of the degauss button. Do not hold the button down continuously to avoid decreasing the life of the degauss circuitry.



Contrast— Press the right side of the button to sharpen contrast. Press the left side of the button to reduce contrast.



Brightness— Press the right side of the button to increase brightness. Press the left side of the button to reduce brightness.

Note


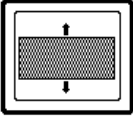

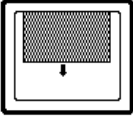

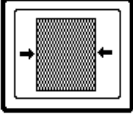

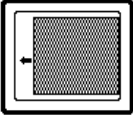
If the picture is too small or not centered, the monitor does not recognize the input frequency mode. Adjust the position and size of the picture using the controls that follow.

(continued on next page)

Installation

1.2 User Controls

Table 1-1 (Cont.) User Controls and Functions

Control	Screen	Adjustment
		Vertical Size — Press the right side of the button to increase the vertical size of the image. Press the left side of the button to decrease the vertical size of the image.
		Vertical Shift — Press the right side of the button to move the image upward. Press the left side of the button to move the image downward.
		Horizontal Size — Press the right side of the button to increase the horizontal size of the image. Press the left side of the button to decrease the horizontal size of the image.
		Horizontal Shift — Press the right side of the button to move the image to the right position. Press the left side of the button to move the image to the left position.

Installation

1.2 User Controls

Table 1–2 Save and Reload Functions

Control	Action
SAVE	Press the SAVE button to save the display mode parameters that you just set manually. The mode indicator light will blink to indicate that the save has occurred.

Caution

If the **SAVE** button is not pressed, the settings will not be permanently stored. Pressing the **SAVE** or **RELOAD** button affects only those parameters that can be changed in the current display mode but does not affect those parameters that can be changed in the other display mode. See **MODE** control.

RELOAD When the mode indicator light is **off**, pressing the **RELOAD** button reloads the factory settings for the image size, position, brightness and contrast.

When the mode indicator light is **on**, pressing the **RELOAD** button reloads the factory settings for image color temperature (R-, G-, and B-Gain), pincushion, trapezoid, and rotation.

Installation

1.2 User Controls

Table 1–3 Secondary User Controls and Functions

Control	Action									
MODE	The MODE button allows you to switch between the Primary controls and Secondary controls.									
	<table border="1"> <thead> <tr> <th>Mode Indicator</th> <th>Controls</th> <th>Adjustments Affected</th> </tr> </thead> <tbody> <tr> <td>Off</td> <td>Primary:</td> <td>H-position, H-size, V-position, V-size, brightness, and contrast.</td> </tr> <tr> <td>On</td> <td>Secondary:</td> <td>R-gain, G-gain, B-gain, pincushion, trapezoid, and rotation.</td> </tr> </tbody> </table>	Mode Indicator	Controls	Adjustments Affected	Off	Primary:	H-position, H-size, V-position, V-size, brightness, and contrast.	On	Secondary:	R-gain, G-gain, B-gain, pincushion, trapezoid, and rotation.
Mode Indicator	Controls	Adjustments Affected								
Off	Primary:	H-position, H-size, V-position, V-size, brightness, and contrast.								
On	Secondary:	R-gain, G-gain, B-gain, pincushion, trapezoid, and rotation.								
	<p style="text-align: center;">Note</p> <p>If no changes are made to the secondary controls for sixty seconds, the mode automatically returns to primary controls.</p>									
R-Gain	Press the left side of the button to decrease red video output. Press the right side of the button increase red video output.									
G-Gain	Press the left side of the button to decrease green video output. Press the right side of the button to increase green video output.									
B-Gain	Press the left side of the button to decrease blue video output. Press the right side of the button to increase blue video output.									


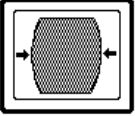

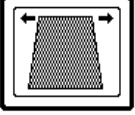

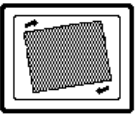
Note

Initially, all three gain settings are at maximum.

(continued on next page)

Installation 1.2 User Controls

Table 1–3 (Cont.) Secondary User Controls and Functions

Control	Screen	Secondary Control Adjustments
		<p>Pincushion—Corrects a bowed image. Press the right side of the button to increase the amount of side pincushion. Press the left side of the button to decrease the amount of side pincushion.</p>
		<p>Trapezoid—Corrects a trapezoid image. Press the right or left side of the button to correct the distorted image shape to a rectangle.</p>
		<p>Rotation—Corrects a rotated image. Press the right side of the button to rotate the display screen clockwise. Press the left side of the button to rotate the display screen counter clockwise. This control is used to compensate for any magnetic field effect on the display.</p>

2

Servicing

2.1 Cleaning the Monitor

To clean the monitor:

1. Unplug the monitor.
2. Clean the monitor with a soft, slightly damp cloth. **Do not** use an aerosol cleaner directly on the screen.

Caution

Do not use benzene, thinner, or any volatile substance to clean the monitor, as these product may discolor the monitor's cabinet. Likewise, do not place rubber or vinyl on the monitor.

2.2 Maintenance and Troubleshooting

2.2.1 Identifying and Correcting Problems

The following can be sources of problems:

- Communications cables
- Host system
- Nearby power or electrical sources

Servicing

2.2 Maintenance and Troubleshooting

2.2.2 Troubleshooting Table

Use Table 2–1 to identify and correct any problem areas.

Table 2–1 Identifying and Correcting Problems

Symptom	Possible Cause	Suggested Solution
Display does not appear.	Brightness or Contrast control is set too low.	Increase the brightness and contrast control setting.
	Power Management feature is active in the off state.	Press any key and allow 20 seconds for the monitor to warm up.
	There is no power.	Check the power cord. Use another ac outlet.
Video display has moving dots and distorted lines. The display rolls or flickers.	There is electromagnetic interference.	Move any electromechanical device, such as a fan or a motor, away from the monitor or move the monitor.

Warning

Serious shock hazards exist inside this display. There are no user serviceable parts inside. DO NOT remove covers under any circumstances or attempt to service the monitor yourself. Call a qualified service representative.

Servicing 2.3 Servicing the Monitor

2.3 Servicing the Monitor

Digital provides a wide range of maintenance programs for monitors. It is recommended that you use either DECmailer or Carry-In Service when servicing the VRC20-Hx monitor. If needed, use the original box and packing material to send the unit to the service location. Contact your local Digital Services office.

2.3.1 DECmailer

DECmailer provides a mail-in service for the VRC20-Hx monitor. Ship the monitor to your nearest Digital Servicenter using a common carrier. The monitor will be repaired or exchanged and returned to you.

2.3.2 Carry-In Service

Digital Carry-In Servicenters are located in major cities around the world. They offer convenient, cost-effective repair service with a 48-hour turnaround time.

2.3.3 Monitor Disposal

Warning

If you need to dispose of a unit, ask a qualified service representative for the proper procedure. Improper disposal could result in personal injury from implosion.

3

Specifications

3.1 Monitor Specifications

Monitor	50.8 cm (20 in) non-glare, non-static
Active area	36.0 × 27.0 cm (±0.5 cm)
Height	45.0 cm (17.7 in)
Width	48.0 cm (18.9 in)
Depth	48.0 cm (18.9 in)
Swivel	±45°
Tilt	-5° to +10°
Weight	30 Kg (66 lbs)
Video Signal	0.7V p-p R, G, B color (positive) 75Ω.
H-Sync	TTL, or SYNC on Green, positive or negative, 1KΩ min. 30K to 82KHz (multi-scanning).
V-Sync	TTL, or SYNC on Green, positive or negative, 1KΩ min. 50 to 120 Hz.
Connector	15-pin D-sub
Power input	90 - 135 Vac, 2.5 A max at 60 Hz; 180 - 264 Vac, 1.25 A max at 50 Hz (auto-switching)
Power consumption	150 W (max)
Environment:	
Operating Temperature	+10 to +40°C
Humidity	10 - 90% relative humidity (noncondensing)

Specifications

3.2 Scanning Modes

3.2 Scanning Modes

To minimize adjustment needs, the monitor has 11 factory pre-set display standards, shown in Table 3–1. When the monitor detects any of these display standards, it automatically adjusts the picture size and centering. All the vertical refresh rates are *non-interlaced*.

Table 3–1 Factory Pre-set Resolution and Frequencies

Mode	Pre-set Addressability (Pixels x Lines)	Vertical Refresh (Hz)	Horizontal Frequency (kHz)
1	640 x 480 (VGA/60)	59.95	31.47
2	1152 x 900 (76)	76.15	71.81
3	640 x 480 (VGA VESA 75)	75.00	37.50
4	720 x 400 (70)	70.08†	31.47
5	800 x 600 (SVGA VESA 75)	75.00†	46.88†
6	1024 x 768 (VESA 70)	70.07	56.48
7	1024 x 768 (VESA 75)	75.03†	60.02†
8	1024 x 864 (Digital)	60.02	54.05
9	1280 x 1024 (60)	60.10	64.98
10	1280 x 1024 (72)	72.56	77.17
11	1280 x 1024 (75)	75.03	79.98

†positive polarities

Specifications

3.3 Pin Assignments

3.3 Pin Assignments

The pin assignments for the 15-pin D-type connector are:

Pin	Signal	Pin	Signal	Pin	Signal
1	Red	6	Red Return	11	NC ¹
2	Green	7	Green Return	12	NC
3	Blue	8	Blue Return	13	H-SYNC
4	ID Connect to pin 10	9	NC ¹	14	V-SYNC
5	GND	10	Logic GND	15	NC

¹NC = no connection

3.4 Power Management System

The monitor has three power-saving states, indicated by the LED on the front panel:

LED	State	Power Consumption†	Recovery Time
Green	On	Normal 150 w (max)	-
Yellow	Standby/ Suspend	< 30 watts	3 s
Dark amber	Off	< 8 watts	15 s

† These power-saving states exceed the Environmental Protection Agency (EPA) Energy Star requirements using the Video Electronics Standard Association (VESA) methodology for Display Power Management Signals.

The Power Management function requires TTL horizontal and vertical sync. For proper operation of this Power Management System, make sure that the monitor signal cable is connected to the host system and that the host system is On.

Specifications
3.5 Environment

3.5 Environment

This product has been designed and manufactured to minimize the impact to the environment. The packaging is recyclable and the monitor can be returned for proper disposal.

Acoustic Levels

Preliminary declared values per ISO 9296 and ISO 7779:

Product	Sound Power Level ¹		Sound Pressure Level ²	
	L _{w Ad} , B		L _{p Am} , dBA	
	Idle	Operate	Idle	Operate
VRC20-Hx	<4.0	<4.0	<35	<35

¹1 B = 10 dBA.

²Operator position.

Asbestos

This product does not use asbestos in any form.

Flame Retardants

The enclosures do not contain polybrominated diphenylether (PBDE) as a flame retardant additive; therefore, they do not emit toxic dibenzofuran and dibenzodioxin gases.

Ozone Depleting Substances (ODS)

The VRC20-Hx is in full compliance with the labeling requirements in the U.S. Clean Air Act Amendments of 1990. It does not contain, nor is it manufactured with, a Class 1 ODS, as defined in Title VI Section 611 of this act.

Specifications

3.5 Environment

PVC

The plastic enclosures are not made of rigid PVC. The material has a non-halogenated, flame-retardant system and is cadmium free.

Recyclable Material

The packaging material can be recycled, or you can save it to return the monitor to a service center for repair or disposal.

VCCI Class 2

この装置は、第一種情報装置（商工業地域において使用されるべき情報装置）で商工業地域での電波障害防止を目的とした情報処理装置等電波障害自主規制協議会（VCCI）基準に適合しております。

従って、住宅地域またはその隣接した地域で使用すると、ラジオ、テレビジョン受信機等に受信障害を与えることがあります。

取扱説明書に従って正しい取り扱いをして下さい。

