HP 13279B
Color Monitor
Operator's Manual

HP part number 13279-90001
August 1, 1983

X-RAY RADIATION NOTICE

MODEL 13279B

ACHTUNG

Während des Betriebs erreugt dieses Gerät Röntgenstrahlung. Das Gerät ist so abgeschirmt, dass die Dosisleistung weniger als 36 pA/kg (0.5 mR/h) in 5 cm Abstand von der Oberflache der Katodenstrahlröhre beträgt. Somit sind die Sicherheitsbestimmungen verschiedener Lander u.A. der deutschen Röntgenverordnung eingehalten.

Die Stärke der Röntgenstrahlung hängt im Wesentlichen von der Bauart der Katodenstrahlröhre ab, sowie von den Spannungen, welche an dieser anliegen. Um einen sicheren Betrieb zu gewähriesten, dürfen die Einstallungen der Niederspannungs und das Hochspannungsnetzteils nur nach der Anleitung in Kapital V des Handbuches vorgenommen werden.

Die Katodenstrahlröhre darf nur durch die gleiche Type ersetzt werden. (Siehe Kapital VI für Conrac-Ersatzteile).

Das Gerät ist in Deutschland zugelassen unter der Nummer BW/138/82/Rö

WARNING

When operating, this instrument emits x-rays; however, it is well shielded and meets safety and health requirements of various countries, such as the X-ray Radiation Act of Germany.

Radiation emitted by this instrument is less than 0.5 mR/hr at a distance of five (5) centimeters from the surface of the cathode-ray tube and its associated low-voltage and high-voltage circuitry. To ensure safe operation of the instrument, adjust both the low-voltage and high-voltage power supplies as outlined in Section V of this manual (if applicable).

Replace the cathode-ray tube with an identical CRT only. Refer to Section VI for proper Conrac part number.

Number of German license: BW/138/82/Rö

RADIATION SAFETY NOTICE:

This equipment complies with U.S. Department of Health and Human Services X-radiation safety rules, 21 CFR, sub-chapter J, FCC 20780, and VDE 0871 applicable at the time of equipment manufacture. Compliance with VDE 0806 pending certification.

HP Computer Museum
www.hpmuseum.net

For research and education purposes only.

THE FCC WANTS YOU TO KNOW

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

ALWAYS USE APPROVED CABLE AND ENCLOSURES

This equipment meets FCC requirements regarding non-interference with radio communications only when all of the following conditions are met.

1. All signal input/output connections are made with manufacturer approved low-loss coaxial cable (Belden 5259 or equivalent).

2. All signal input/output connections are properly terminated with a 75 ohm, non-inductive load.

3. Total signal input/output cable length ... including loop-through (daisy chain) connections with other devices and/or equipment ... does not exceed 100 feet (30 meters) in length.

4. The equipment is operated inside a manufacturer approved cabinet or enclosure.

NOTE

It is the responsibility of OEMs to ensure full FCC system compliance once the monitor has been integrated into the system ... both electrically and mechanically.

Any modifications to the monitor ... either electrically or to its mechanical architecture ... will invalidate FCC verification testing performed by the manufacturer.

General Information

INTRODUCTION

This manual contains installation and operation instructions for the HP 13279B Color Monitor.

NOTE

Maintenance information is contained in the HP 13279B Service Manual (HP part number 13279-90002). Maintenance procedures should be performed by qualified service personnel only.

The monitor can provide pixel resolution up to 809 (vertical points) x 1080 (horizontal points). The monitor has been designed to display computer generated text, graphics and image data. Typical applications include:

- Industrial control
- Water and Power Management
- CAD/CAM
- Satellite Imaging
- Medical Imaging
- Traffic Management

The monitor uses a special high resolution black matrix CRT and precision in-line (PIL) technology to provide a high quality display requiring a minimum of convergence adjustments.

The RGB (red, green, blue) color inputs will accept either standard EIA RS 170 or high resolution RS 343 composite video data. (Composite video signals have the horizontal and vertical synchronizing signals superimposed on one or more of the RGB signals.) A separate "sync" input is present to allow the monitor to accept non-composite signals (where the sync signal is provided separately from the RGB signals). The monitor can also be configured to accept line scan rates from 525 to 1225 lines/frame.

Other features include:

- preset brightness and contrast controls
- optional black and white channel
- built-in manual degaussing
- dynamic focus
- fail-safe scan circuitry

Maintenance is simplified by the use of modular assemblies and fewer service adjustments.

The monitor can be placed on a table or rack mounted. It can be configured to operate on ac input voltages from 100 to 234 volts.

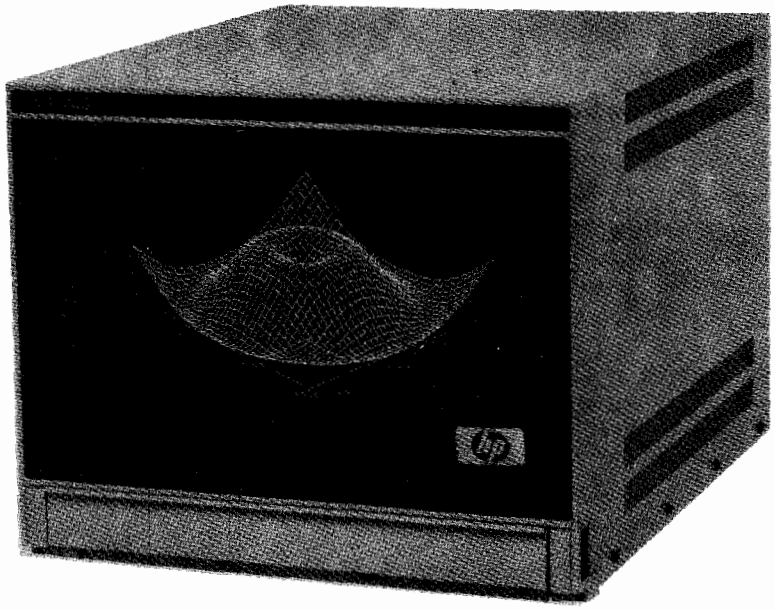


Figure 1-1. HP 13279B Color Monitor

Table 1-1. Monitor Specifications

Screen

Resolution :	1080 horizontal by 809 vertical pixels
Maximum Brightness :	50 foot lamberts
Screen Size :	Height 11.6 in (29.46 cm) Width 15.1 in (39.35 cm) Area 175.16 in2 (1159.25 cm2)
Aspect Ratio :	4-3

Overall Dimensions

Height :	15.7 in (39.88 cm)
Width :	18.97 in (48.18 cm)
Depth :	22.59 in (57.38 cm)
Weight :	80 lb (36.29 kg)

Signal Characteristics

Composite Video :	0.35 to 2.0 volts p-p (1.0 volts p-p nominal) for each of the RGB inputs. Sync is a negative signal on the green channel.
Non-Composite Video :	0.25 to 1.4 volts p-p (0.7 volts p-p nominal) for each of the RGB inputs. Black is negative.

External Sync :	1.0 to 8.0 volts p-p (4.0 volts nominal), negative.
Return Loss :	Greater than 40 dB from dc to 5.5 MHz Greater than 20 dB at 30 MHz
Video Bandwidth :	100 Hz to 40 MHz, +/- 3 dB at video amplifier output.
Pulse Response :	Rise Time: 10 nsec at output of video amplifier Fall Time: 13 nsec at output of video amplifier

Computer Interface

RS 170 compatible for 15.75 kHz scan rate
RS 343 compatible for 36.75 kHz scan rate

Connectors

Channel A :	Separate loop-through BNC connectors for each of the RGB inputs. Each has switch selectable termination - High Z or 75 Ohm.
Channel B :	Single loop-through BNC connector.
Ext. Sync :	Single loop-through BNC connector.
Sync :	External composite sync is provided with loop-through capability. Internal and external sync is jumper selectable with a jumper plug on the Video Processor Input board.

Scan Characteristics

Scan Rate :	15,750 to 36,750 lines/sec interlaced or non-interlaced.
Retrace Time :	Horiz 5 usec (nominal) Vert 550 usec (nominal)
Scan Failure :	High voltage shutdown on failure of horizontal or vertical scan.

Environmental Limits

Temperature :	32°F to 122°F (0°C to 50°C)
Humidity :	10% to 90% relative, non-condensing
Altitude :	Up to 10,000 feet (3,000 meters)

Safety

Radiation :	Complies with U.S. Department of Health and Human Services X-radiation safety rules, 21 CFR, subchapter J, applicable at time of manufacture.
Electrical :	Complies with UL and CSA requirements applicable at time of manufacture.

Power Requirements

100-234 selectable at time of manufacture.

Frequency :	50 to 60 Hz, +/- 10%
Power :	155 watts, 170 watts maximum

Options

Option 065 Long persistence phosphor

Installation

Installation of the monitor consists of :

- unpacking the monitor
- connecting the power cord
- connecting the color and sync signal lines
- selecting operating modes
- turning the monitor on

WARNING

Avoid striking or scratching the CRT, especially on the neck of the tube or the screen area. Failure to observe this warning can result in the glass tube imploding and injuring personnel.

Unpacking the Monitor

The monitor should be unpacked and installed by a Hewlett-Packard customer engineer.

Connecting the Power Cord

Once the monitor has been positioned, connect the power cord as shown in figure 2-1.

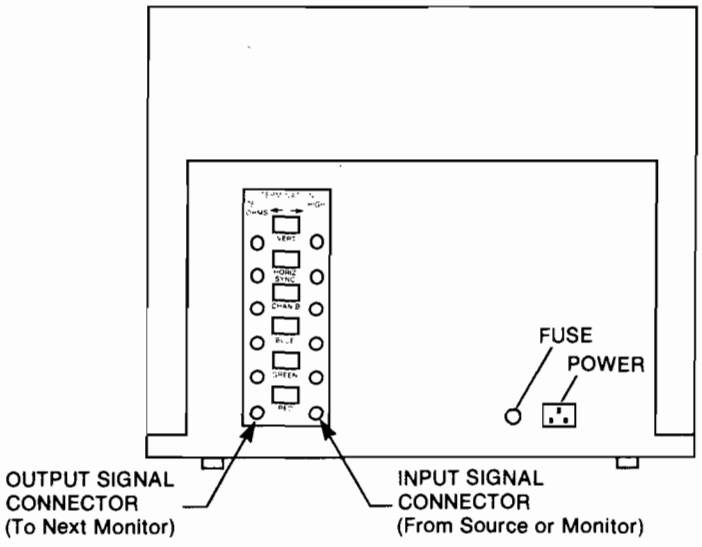


Figure 2-1. Monitor Rear Panel Connections

Connecting the Color and SYNC Lines

Connect the RED, GREEN, and BLUE signal lines to their respective input jacks, located at the back of the monitor as shown in figure 2-2a. If there is a separate signal line for the SYNC signal, connect it to the EXTERNAL SYNC jack at the back of the monitor (see figure 2-2b). Normally the SYNC signal is combined with the GREEN color signal and does not require a separate line.

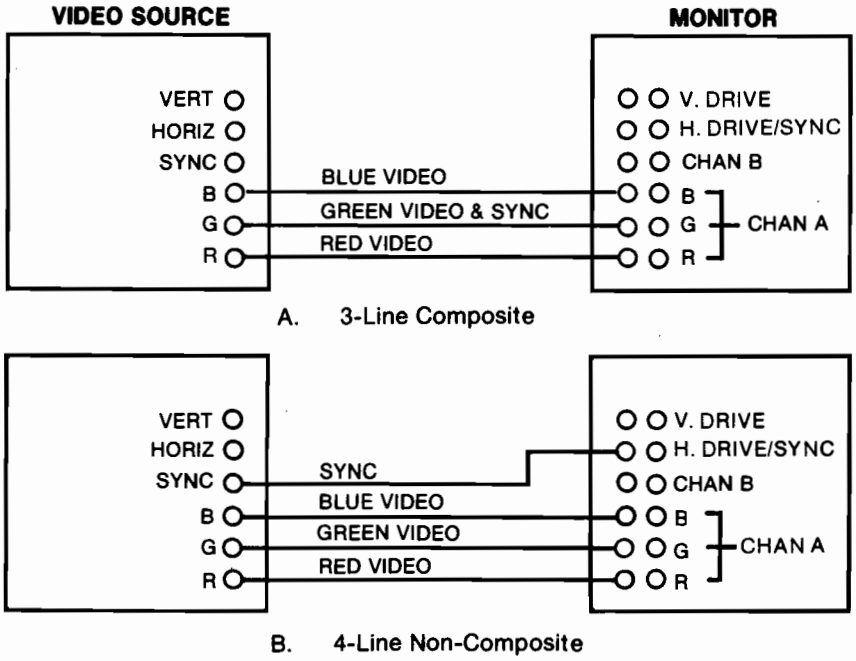
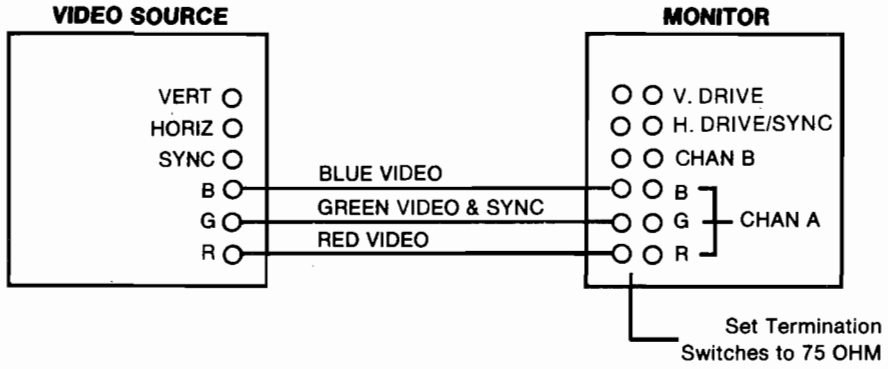
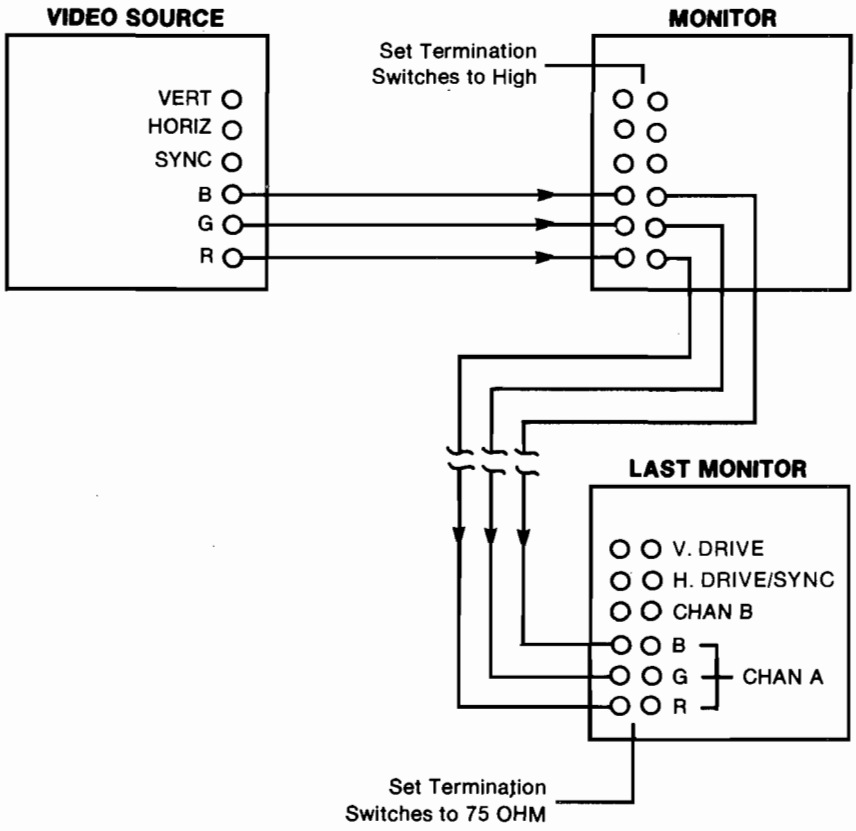


Figure 2-2. Connecting Video Signals to the Monitor

If only one monitor is to be driven by the video signals, set the termination switches for each of the input jacks to the 75 Ohm position. If two or more monitors are to be used, set the switches to the high impedence position (see figure 2-3).



A. Single Monitor Connections



B. Daisy Chain Connections

Figure 2-3. Setting the Termination Switches

If more than one monitor is used, the next monitor in the chain are connected to the "output" jacks at the rear of the monitor (see figure 2-4). The last monitor in the chain should have its termination switches set to the 75 Ohm position to properly terminate the lines.

Select the Operating Mode

Select normal or preset settings for brightness and contrast. Select Channel A by setting the CHANNEL A-B front panel switch to the "out" position. (Refer to section 3.)

Turn the Monitor On

Turn the monitor on using the POWER switch on the front panel. Adjust the brightness and contrast controls to the desired levels. The monitor is now ready to receive video data.

Operating Instructions

Introduction

This section contains operating and operator maintenance instructions for the monitor. Read all of the instructions carefully before attempting to operate the equipment. Pay special attention to notes cautions and warnings to avoid personal injury or damage to the equipment.

In Case Of Difficulty

WARNING

If the monitor fails to operate properly, do not attempt repair. Instead, refer maintenance problems to qualified maintenance personnel.

The operating information consists of:

- Controls and Indicators. — A list of operator controls and indicators together with a brief description is given in table 3-1. The locations of the controls and indicators are shown in figure 3-1.
- Operating Procedures. — Step-by-step procedures are given for operating the monitor.
- **Operator Maintenance. — Procedures are given for cleaning the screen.**

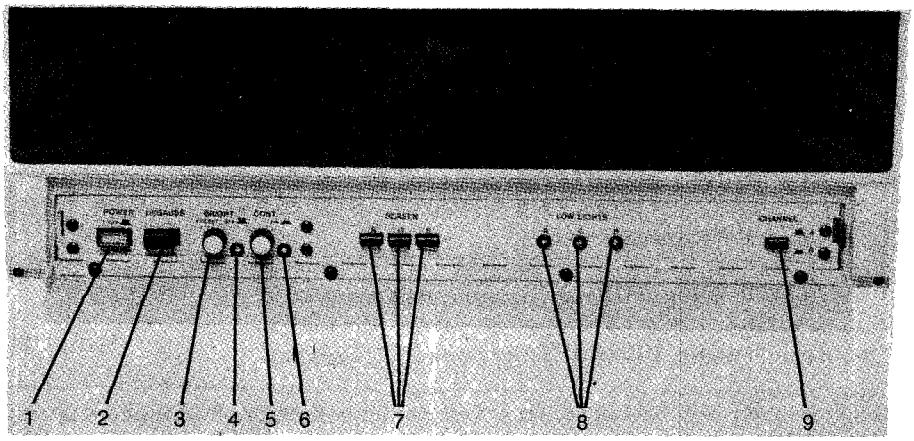


Figure 3-1. Location of Controls and Indicators

Table 3-1. Descriptions of Controls and Indicators (left to right)

(1) **POWER**	Press to turn monitor on; press again to turn off.
(2) **DEGAUSS**	Press and hold (7-10 seconds) to turn on built-in degausser; Release to turn off.
(3) **BRIGHT**	Turn to adjust raster brightness. Press in to select preset brightness level. Pull out to allow manual adjustment.
(4) **PRESET**	Turn to set brightness level for preset setting of BRIGHT control.
(5) **CONT**	Turn to adjust raster contrast. Press in to select preset contrast. Pull out to allow manual adjustment.
(6) **PRESET**	Turn to set contrast level for preset setting of CONT control.
(7) **SCREEN**	Press the red, green, or blue, switches to turn off the indicated electron beam (used for alignment).
(8) **LOW LIGHTS**	Turn to control the brightness of the red, green, or blue electron beams (used for alignment).
(9) **CHANNEL**	Press to select input from channel A or B. Channel A (normal operation) is selected when the switch is up. Channel B (monochromatic operation) is selected when the switch is in the down position.

Normal Operation

To set up the monitor for normal operation use the following procedure:

Step 1. Make sure that the input signal and power cables have been properly connected (refer to section 2).

Step 2. Set the red, green, and, blue SCREEN buttons to the out positions.

Step 3. Set the CHANNEL select switch to the out position.

Step 4. Set the BRIGHT and CONT switches to the out position.

Step 5. Set the POWER switch to on.

Step 6. Wait 20-30 minutes for the display to stabilize.

Step 7. Press and hold the DEGAUSS switch for 7-10 seconds.

The monitor is now ready to display data. You can adjust the brightness and contrast using the following procedure.

Adjusting Brightness and Contrast

To adjust the brightness or contrast of the display use the following procedure:

Step 1. Perform the turn-on procedure described earlier.

Step 2. Pull out the BRIGHT and CONT controls to allow manual adjustment.

Step 3. Turn to BRIGHT and CONT controls to select the desired levels of brightness and contrast.

Cleaning the Screen

Dust and dirt on the screen may degrade the picture quality. If the screen requires cleaning, use the following procedure:

Step 1. Turn the POWER switch off.

Step 2. Dampen but DO NOT saturate a clean, lint-free towel with liquid glass cleaner.

Use only low lint, nonabrasive paper towels, such as KAYDRY® disposable towels, manufactured by Kimberly-Clark. Use a thin film optical cleaner such as TFC® (Thin Film Cleaner for optical components) manufactured by OCLI (Optical Coating Laboratory Inc., P.O. Box 1599, Santa Rosa CA, 95402).

NOTE

Do not spray or otherwise apply cleaner directly to the screen. Excess cleaner may flow between the screen and trim panels.

Step 3. Clean the screen using light pressure and circular motions to avoid streaks.

Step 4. Carefully dry the screen with a second clean, lint-free towel.

Step 5. Return the monitor to service using the turn-on procedure.