
Section 7. Displays

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Description

The IBM PS/1 computer will have either a Color or Black and White PHOTO GRAPHIC Display.

The IBM Color PHOTO GRAPHIC Display is a non-interlaced, VGA compatible color, direct-drive analog display with externally selected vertical modes. The display has a power switch, power-on indicator, headphone jack, and controls for brightness, contrast, and audio, and comes with a tilt leg. The IBM Black and White PHOTO GRAPHIC Display has the same description except with shades of gray rather than color.

Models

- 104 – 125V ac 50/60 Hz, Northern Hemisphere
- 200 – 240V ac 50 Hz, Northern Hemisphere.

Characteristics

- Vertical addressability of 350, 400, or 480 lines
- Self-test with a white screen test pattern
- 75-ohm direct-drive analog video input, 0.0 – 0.7V dc
- 305 millimeter (12 inch) cathode ray tube
- Etched, anti-glare faceplate
- Phosphor type: P-22 (Color), WD (Black and White)
- Horizontal deflection rate of 31.5 kHz, \pm 0.5 kHz
- Horizontal blanking time of 5.7 microseconds
- Vertical deflection rate of 60 – 70 Hz
- Vertical blanking time of 0.88 millisecond
- Automatic degaussing (Color only)
- 1.1 meters (4 feet) display cable with a miniature 15-pin D-shell connector
- 1.1 meters (4 feet) display power/audio cable with a 15-pin D-shell connector
- 1.8 meters (6 feet) detachable AC line cord for the 200 – 240V ac version
- 1.8 meters (6 feet) nondetachable AC line cord for the 104 – 125V ac version
- Miniature 32 ohm headphone jack: stereo (Color), monaural (Black and White)
- Speaker with volume control.

PHOTO GRAPHIC is a trademark of the International Business Machines Corporation.

Vertical Modes

The display monitors the polarity of the synchronization pulses from the video controller and selects the number of scan lines according to the following figure.

Figure 7-1. Display Vertical Modes

VSYNC Polarity	HSYNC Polarity	Data Scan Lines	Data and Border Scan Lines
+	+	Reserved	Reserved
+	-	350	362
-	+	400	414
-	-	480	496

Signals

The display receives the video signals from a current source with a 150-ohm termination. The signal input impedance is 75 ohms. The video signals have a range of 0.0–0.7V dc. The vertical synchronization pulse width is 63.556 microseconds. The horizontal synchronization pulse width is 3.813 microseconds. The self-test signal, when open, enables the full raster test. The audio signal input has a range of 0–50 mV rms. The audio output is produced in the headphone or speaker. The display will supply a 36V output (30–40V dc range) with the maximum power output not to exceed 90 watts.

Display Connector

The following figure shows the pin numbers and signal assignments for the signal cable miniature 15-pin D-shell connector.

Figure 7-2. Display Connector Signals

Pin	Signal (Color)	Signal (Black and White)
1	Video red	No pin
2	Video green	Video
3	Video blue	No pin
4	Reserved	No pin
5	Self test	Self test
6	Video red return	Orientation pin
7	Video green return	Video return
8	Video blue return	No pin
9	Reserved	No pin
10	Ground	Ground
11	Monitor sense (Ground)	Monitor sense (Open)
12	Monitor sense (Open)	Monitor sense (Ground)
13	Horizontal sync	Horizontal sync
14	Vertical sync	Vertical sync
15	Reserved	No pin

Power/Audio Cable

The following figure shows the pin numbers and signal assignments for the power cable 15-pin D-shell connector.

Figure 7-3. Power/Audio Cable Connector Pin Definition

Pin	Signal (Color)	Signal (Black and White)
1	+ 36 volts	+ 36 volts
2	+ 36 volts	+ 36 volts
3	Ground	Ground
4	Reserved	Reserved
5	Reserved	Reserved
6	Audio left channel	Audio
7	Audio return	Audio return
8	Audio right channel	Reserved
9	+ 36 volts	+ 36 volts
10	Ground	Ground
11	Ground	Ground
12	Reserved	Reserved
13	Reserved	Reserved
14	Ground	Ground
15	Audio return	Reserved

Specifications

The following are specifications for the displays.

Size

- Width: 320 millimeters (12.6 inches)
- Depth: 430 millimeters (16.9 inches)
- Height: 280 millimeters (11.0 inches).

Weight

- 12.7 kilograms (28 pounds) - Color
- 10 kilograms (22 pounds) - Black and White.

Cables

- AC Line Cord: 1.8 meters (6 feet)
- Display: 1.2 meters (4 feet)
- Power/Audio: 1.2 meters (4 feet).

Operational

- Temperature: 15 to 35 degrees C (60 to 95 degrees F)
- Humidity: 8% to 80%
- Altitude: 0 to 2134 meters (0 to 7000 feet).