



ELECTRONIC TUBE REFERENCE

19DHP4

Specialized - Cathode Ray electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

CATHODERAY

Nineteen-inch cathode-drive picture tube with electrostatic focus, magnetic deflection, and P4 screen. Designed for high-voltage direct-view monochrome television service, it combines a large screen with conventional magnetic scanning.

GENERAL CHARACTERISTICS

BASE DESIGNATION	8HR	BASE PINS	8
NOMINAL HEATER	6.3 V / 600 mA	PARALLEL HEATER	– / –
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION 1 Cathode Ray	
MAXIMUM PLATE VOLTAGE	20000 V
MAXIMUM SCREEN VOLTAGE	60 V
MAXIMUM HEATER-CATHODE VOLTAGE	180 V
<i>CRT anode and grid-2 maximum ratings are promoted from the printed ratings block; other CRT-specific focus/drive/deflection values are preserved in parameters.</i>	

19DHP4 — 19-Inch Cathode-Ray Picture Tube

The **19DHP4** is a 19-inch, 114-degree banded cathode-ray picture tube designed primarily for television display applications. It features a straight electron gun that does not require an ion trap, electrostatic focusing, and a cathode-drive design optimized for a 50-volt Grid No. 2 supply.

Mechanical and Optical Specifications

The 19DHP4 is constructed with a J-149-F1 glass bulb and uses a B7-208 base with an 8HR basing configuration. The physical dimensions and screen characteristics of the tube are as follows:

Physical Dimensions

- **Overall Length:** 11 5/8 ± 1/4 inches
- **Neck Length:** 4 3/8 ± 1/8 inches
- **Greatest Diagonal:** 18 7/8 inches maximum
- **Greatest Width:** 16 11/16 inches maximum
- **Greatest Height:** 13 39/64 inches maximum
- **Bulb Contact Alignment:** The J1-21 contact aligns with pin position #4 within a tolerance of ± 30 degrees.

Screen and Optical Characteristics

- **Phosphor:** P4 Aluminized (JEDEC designation)
- **Light Transmittance:** Approximately 49% at the center of the screen
- **Minimum Useful Screen Dimensions (Projected):**
 - **Diagonal:** 17 9/16 inches
 - **Horizontal:** 15 1/8 inches
 - **Vertical:** 12 inches
 - **Area:** 172 square inches

Deflection Angles

- **Diagonal:** 114°
- **Horizontal:** 102°
- **Vertical:** 86°

Electrical Characteristics and Capacitances

The electrical parameters of the 19DHP4 include specific heater ratings and interelectrode capacitances necessary for proper circuit integration.

Heater Ratings

- **Heater Voltage (Typical):** 6.3 V
- **Heater Voltage Range:** 5.8 V (Minimum) to 6.9 V (Maximum)
- **Heater Current:** 600 ± 30 mA at a heater voltage of 6.3 V
- **Heater Warm-up Time:** 11 seconds

Direct Interelectrode Capacitances

- **Cathode to all other electrodes:** Approximately 5 pF
- **Grid No. 1 to all other electrodes:** Approximately 6 pF
- **External conductive coating to Anode:** 1000 pF minimum to 1500 pF maximum

Circuit Limits

- **Grid No. 1 Circuit Resistance:** 1.5 Megohms maximum

Pinout and Basing Configuration

The 19DHP4 utilizes the JEDEC 8HR basing arrangement. The connections, viewed from the bottom of the base, are assigned as follows:

Pin Number	Connection
Pin 1	Heater
Pin 2	Grid No. 1
Pin 3	Grid No. 2
Pin 4	Grid No. 4 (Focusing Electrode)
Pin 6	Grid No. 1
Pin 7	Cathode
Pin 8	Heater
Cap	Ultor (Grid No. 3, Grid No. 5, Collector)
External Coating	External Conductive Coating (Must be grounded)

Maximum Ratings (Design-Maximum System)

All voltages are positive and measured with respect to Grid No. 1 unless otherwise specified.

- **Anode Voltage:** 20,000 V maximum, 10,000 V minimum
- **Grid No. 4 (Focusing Electrode) Voltage:** -500 V to +1100 V
- **Grid No. 2 Voltage:** 60 V maximum, 25 V minimum
- **Cathode Voltage:**
 - **Maximum Negative DC Value:** 0 V
 - **Maximum Negative Peak Value:** 2 V
 - **Maximum Positive DC Value:** 100 V
 - **Maximum Positive Peak Value:** 150 V
- **Heater-Cathode Voltage:**

- **Heater negative with respect to cathode:**
 - During warm-up period (first 15 seconds or less): 450 V maximum
 - After equipment warm-up period: 200 V maximum
- **Heater positive with respect to cathode:** 200 V maximum

Typical Operating Conditions (Cathode Drive Service)

Under typical operating conditions in cathode drive service, voltages are positive and measured with respect to Grid No. 1 unless otherwise specified.

- **Anode Voltage:** 16,000 V DC
- **Grid No. 4 Voltage (Focusing Electrode):** 250 V DC (Individual tubes focus within the range of 0 V to +400 V; adjusted for 100 μ A anode current on a 15 1/8" by 12" pattern)
- **Grid No. 2 Voltage:** 50 V DC
- **Cathode Voltage:** 35 V to 55 V DC (for visual extinction of the focused raster)

Technical Summary

The **19DHP4** is a 19-inch, 114-degree banded cathode-ray picture tube featuring electrostatic focus, a straight gun design requiring no ion trap, and a cathode-drive configuration. Operating with a typical anode voltage of 16,000 V and a Grid No. 2 voltage of 50 V, it provides a projected useful screen area of 172 square inches with a P4 aluminized phosphor. The tube is characterized by its 11-second heater warm-up time, standard 6.3 V heater rating, and JEDEC 8HR basing configuration.



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1956 National Video

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1956 NATIONAL VIDEO

Section 1 · Cathode Ray

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Typical Anode Voltage	16000 V	—
Phosphor	P4	—

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater Voltage Nominal	6.3 V	—
Heater Current Nominal	600 mA	—

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Cathode to All Other Electrodes Capacitance	5 pF	Approximate
Grid 1 to All Other Electrodes Capacitance	6 pF	Approximate

TUBE TINKER

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