



ELECTRONIC TUBE REFERENCE

16RP4B

Specialized - Cathode Ray electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

CATHODERAY

Direct-view cathode-ray picture tube documented by manufacturer data for type 16RP4B; available extracted technical detail is limited, so the description remains conservative.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	5
NOMINAL HEATER	6.3 V / 30 A	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION 1 Cathode Ray	
MAXIMUM SCREEN VOLTAGE	450 V
<i>CRT-specific ratings, operating conditions, capacitances, focus/deflection, cutoff, optical, and screen data are retained in section parameters.</i>	

16RP4B — Picture Tube

The **16RP4B** is a specialized cathode-ray picture tube designed for television display applications. It features a 70-degree magnetic deflection angle and utilizes magnetic focusing. The tube incorporates an electron gun design that does not require an external ion-trap magnet. It is equipped with an aluminized P4 sulfide-type phosphor screen and a filterglass faceplate to optimize visual performance.

Design and Mechanical Construction

The mechanical design of the 16RP4B is optimized for integration into television receivers. The tube has a total weight of approximately 16 lbs. Its physical dimensions include an overall length of 18.750 ± 0.375 inches and a neck length of 7.500 ± 0.188 inches.

Screen and Faceplate

The display area features a projected screen area of 139 square inches. The screen utilizes an aluminized P4 sulfide-type phosphor, which provides high brightness and contrast. The faceplate is constructed of filterglass with an approximate light transmission of 66%, which helps reduce reflections and improve the contrast ratio under ambient lighting conditions.

External Coating and Grounding

The tube is manufactured with a regular-band external conductive coating. This coating forms a capacitor with the internal anode conductive coating, which assists in high-voltage filtering. The contact area for grounding this external coating is located near the reference line of the bulb.

Physical Connections

The electrical interface consists of:

- **Anode Connection:** A recessed small cavity cap (JEDEC No. J1-21) located on the bulb cone.
- **Base:** A small-shell duodecal 5-pin base (JEDEC Group 4, No. B5-57).

Electrical Characteristics and Basing

The 16RP4B operates with an indirectly heated cathode. The nominal heater requirements are a voltage of 6.3 V and a current of 600 ± 30 mA.

Basing Configuration

The basing designation for the bottom view is **12N**. The pin and cap assignments are structured as follows:

Pin / Cap	Connection
Pin 1	Heater
Pin 2	Grid No. 1 (Control Grid)
Pin 10	Grid No. 2 (Screen Grid)
Pin 11	Cathode
Pin 12	Heater
Cap	Anode (Grid No. 3, Screen, Collector)
C	External Conductive Coating

Direct Interelectrode Capacitances

The electrostatic capacitances between the internal electrodes are specified as:

- **Cathode to all other electrodes:** 5 pF
- **Grid No. 1 to all other electrodes:** 6 pF
- **External conductive coating to anode:** 750 pF minimum to 2000 pF maximum

Maximum and Minimum Ratings

The ratings for the 16RP4B are established under the Design-Maximum system. Unless otherwise specified, all voltage values are positive with respect to the cathode.

Electrode Voltages

- **Anode Voltage:** 17,500 max V
- **Grid-No. 2 Voltage:** 450 max V
- **Grid-No. 1 Voltage:**
 - Negative bias value: 140 max V
 - Positive bias value: 0 max V
 - Positive peak value: 2 max V

Heater and Heater-Cathode Ratings

- **Heater Voltage Range:** 5.7 min V to 6.9 max V
- **Peak Heater-Cathode Voltage (Heater negative with respect to cathode):**
 - During equipment warm-up period (not exceeding 15 seconds): 450 max V
 - After equipment warm-up period: 165 max V
- **Peak Heater-Cathode Voltage (Heater positive with respect to cathode):**
 - Combined AC and DC voltage: 165 max V
 - DC component: 100 max V

Circuit Constraints

- **Grid-No. 1-Circuit Resistance:** 1.5 max MΩ

Typical Operating Conditions (Grid-Drive Service)

In typical grid-drive service, the tube is operated under the following conditions (with voltages referenced positive to the cathode):

- **Anode Voltage:** 12,000 V
- **Grid-No. 2 Voltage:** 300 V
- **Grid-No. 1 Voltage:** -28 to -72 V

The Grid-No. 1 voltage range of -28 to -72 V represents the cutoff limits required for the visual extinction of the focused raster.

Technical Summary

The **16RP4B** is a 70-degree magnetic deflection, magnetically focused picture tube featuring a 139 square inch screen with an aluminized P4 sulfide-type phosphor. It utilizes a 12N bottom-view basing configuration on a small-shell duodecal 5-pin base and a recessed small cavity cap for the high-voltage anode connection. Operating at a nominal heater voltage of 6.3 V, the tube is rated for a maximum anode voltage of 17,500 V and typical grid-drive operation at 12,000 V. Its design eliminates the need for an external ion-trap magnet, simplifying receiver design while maintaining reliable focus and raster extinction characteristics.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

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

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CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
MAGNETIC FOCUS	70 mA	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Grid No.1 to all other electrodes	6 pF	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Heater Current at 6.3 V – published value 1	6.3 mA	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Heater Current at 6.3 V – published value 2	600 mA	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Heater Current at 6.3 V – published value 3	30 mA	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Projected Area of Screen	139	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Anode Voltage	17500 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Grid-No.2 Voltage	450 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Combined AC and DC voltage	165 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Anode Voltage	12000 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid-No.2 Voltage	300 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Grid-No. 1 Voltage – published value 1	-28 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Grid-No. 1 Voltage – published value 2	-72 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Grid-No. 1-Circuit Resistance	1.5 mA	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.

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