



ELECTRONIC TUBE REFERENCE

1616

Rectifier - Half Wave electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

RECTIFIER

RCA directly heated half-wave high-voltage rectifier for transmitting and industrial supplies, providing approximately 5.5 kV peak inverse-voltage capability and moderate DC current.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	4
NOMINAL HEATER	2.5 V / 5 A	PARALLEL HEATER	— / —
HEATING	Direct	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION 1 Rectifier	
PEAK INVERSE VOLTAGE	5500 V
NOMINAL OUTPUT CURRENT	130 mA
PEAK FORWARD CURRENT	800 mA
FORWARD VOLTAGE DROP	75 V
<i>Half-wave high-vacuum rectifier.</i>	

1616 — Half-Wave High-Vacuum Rectifier

The **1616** (also designated as the **GL-1616**) is a coated-filament, high-vacuum, half-wave rectifier tube designed for use in the power supplies of transmitting and industrial equipment. Because the tube features a quick-heating filament, it is particularly suited for high-voltage applications where plate and filament voltages are applied simultaneously under full load conditions.

Filament and Electrical Characteristics

The 1616 utilizes a coated-filamentary cathode. The electrical characteristics of the filament and the tube's internal voltage drop are defined by the following parameters:

- **Filament Voltage:** 2.5 V AC. Depending on the rating standard applied, the filament voltage should not deviate by more than $\pm 5\%$ or $\pm 10\%$ from the rated value.
- **Filament Current:** 5.0 A.
- **Tube Voltage Drop:** 75 V.
- **Number of Electrodes:** 2.

Mechanical Specifications and Mounting

The physical construction of the 1616 features a glass bulb and a top-cap anode connection to isolate the high-voltage plate terminal from the filament pins.

- **Bulb Type:** T-16 glass envelope.
- **Top Cap:** Medium metal cap serving as the anode (plate) terminal, with a diameter ranging from 0.550 to 0.576 inches (or specified as 0.566 ± 0.007 inches) and a minimum straight side of 0.400 inches.
- **Base:** Medium 4-pin bayonet base (A4-10).
- **Socket:** Requires a small four-contact socket, such as the UT-542-A (Stock No. 9937).
- **Physical Dimensions:**
 - Maximum overall length: 6-13/16 inches.
 - Maximum diameter: 2-1/16 inches.
 - Maximum seated height: 5-5/8 inches.
 - Maximum height to the top of the bulb: 6-1/8 inches.
- **Weight:** Net weight is approximately 3 ounces, and the shipping weight is approximately 1 pound.
- **Mounting Position:** The tube can be mounted vertically with the base down. Alternatively, horizontal mounting is permitted provided that pins 1 and 4 are oriented in a vertical plane, placing the plate on edge.

Pin Connections

Viewed from the bottom of the base, the socket connections are assigned as follows:

- **Pin 1:** Filament
- **Pin 2:** No Connection (NC)
- **Pin 3:** No Connection (NC)
- **Pin 4:** Filament
- **Top Cap:** Plate (Anode)

The plane of the electrodes is designated along the AA' axis relative to the pin layout.

Maximum Ratings

The maximum ratings for the 1616 are absolute values. Operating the tube beyond these limits may compromise its reliability and performance.

Parameter	Maximum Rating
Peak Inverse Plate Voltage	5500 V or 6000 V
Peak Plate Current	0.8 A (800 mA)
Average Plate Current	0.13 A (130 mA)
Surge / Fault Plate Current	2.5 A

The maximum surge plate current of 2.5 amperes is a transient limit. Associated equipment must be designed so that this value is not exceeded during switching operations.

Average Plate Characteristics

The relationship between plate voltage and plate current determines the operating efficiency of the rectifier. Under typical direct-current conditions, the average plate characteristics are as follows:

- At a DC plate voltage of **100 V**, the plate current is approximately **200 mA**.
- At a DC plate voltage of **150 V**, the plate current rises to approximately **370 mA**.
- At a DC plate voltage of **200 V**, the plate current is approximately **560 mA**.
- At a DC plate voltage of **250 V**, the plate current reaches approximately **760 mA**.

Technical Summary

The **1616** is a robust, high-vacuum, half-wave rectifier engineered for demanding transmitting and industrial power supplies. Operating with a 2.5 V, 5.0 A coated filament, it provides reliable rectification with a maximum peak inverse voltage rating of up to 6000 V and a maximum average plate current of 130 mA. Its quick-heating design allows simultaneous application of filament and plate voltages under full load, while its physical layout—featuring a T-16 bulb, a medium 4-pin bayonet base, and a top-cap anode—ensures adequate high-voltage isolation.



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1950 General Electric Transmitting Types

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

1950 GENERAL ELECTRIC TRANSMITTING TYPES

Section 1 · Rectifier

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum surge plate current	2.5 A	Published datasheet value
Maximum peak inverse voltage	5500 V	Published datasheet value



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1956 RCA Transmitting Tubes

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

1956 RCA TRANSMITTING TUBES

Section 1 · Rectifier

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum Plate/Inverse Voltage	6000 V	Source rating



1971 RCA HB3 Binder 6 of 7

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

1971 RCA HB3 BINDER 6 OF 7
Section 1 · Rectifier

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater/filament voltage	2.5 V	—
Heater/filament current	5 A	—
Peak inverse voltage	5500 V	—
Peak plate current	800 mA	—
Surge current	2.5 A	—
Average plate current	130 mA	—

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