

ELECTRONIC TUBE REFERENCE

CONSOLIDATED TECHNICAL DATA
2 SECTIONS
CONSTRUCTION
RECTIFIER-RECTIFIER

1815

Rectifier - Full Wave electronic tube

Philips directly heated full-wave high-vacuum rectifier for receiver power supplies. Its dual-anode construction provides substantially greater rectified current than smaller contemporary mains-receiver rectifiers.

GENERAL CHARACTERISTICS

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

SECTION RATINGS

SECTION1 Rectifier	
MAXIMUM PLATE VOLTAGE	500 V
NOMINAL OUTPUT CURRENT	180 mA
Directly heated full-wave high-vacuum rectifier.	

SECTION2 Rectifier	
No fixed ratings recorded.	
Second physical rectifier section added for documented full-wave construction.	

1815 — Full-Wave High-Vacuum Rectifier

The **1815** is a directly heated, full-wave high-vacuum rectifier valve designed primarily for use in alternating current (A.C.) mains receivers. Manufactured by Philips, this device is engineered to convert

high-voltage A.C. into a steady direct current (D.C.) supply for radio receivers and associated electronic equipment.

Construction and Physical Specifications

The 1815 is constructed within a glass envelope with a maximum overall length of 145 mm (excluding the base pins) and a maximum diameter of 59 mm. The internal structure features two independent anode plates designed for full-wave rectification, sharing a common directly heated filament.

The base and pinout configurations are documented under two distinct standards:

- An **A40** base configuration utilizing connection reference **5**.
- An **A 10** base configuration utilizing an **S III** base connection.

Both configurations provide the necessary external connections for the high-voltage A.C. anode inputs and the directly heated filament, which also serves as the cathode connection for the rectified D.C. output.

Filament and Electrical Ratings

The 1815 utilizes a directly heated filament designed for low-voltage, high-current operation. The nominal electrical characteristics of the filament are as follows:

Parameter	Value
Filament Voltage (V_f)	4.0 V
Filament Current (I_f)	Approx. 2.5 A
Calculated Filament Power (P_f)	10.0 W

The filament power calculation ($P_f = V_f \times I_f$) yields a nominal power consumption of 10.0 W, which is typical for rectifiers of this class to ensure sufficient thermionic emission.

Maximum Operating Limits

To maintain the structural and electrical integrity of the valve, the 1815 must be operated within its maximum rated limits. These absolute limits are defined for both the input alternating voltage and the output rectified current:

Rating	Maximum Value
Maximum A.C. Anode Voltage ($V_{a \max} / V_{\text{eff}}$)	$2 \times 500 \text{ V}_{\text{RMS}}$
Maximum Rectified D.C. Current ($I_{a \max}$)	180 mA

These ratings allow the 1815 to support the power requirements of multi-tube A.C. mains receivers, providing a robust high-voltage supply.

Rectification Characteristics and Load Regulation

The output performance of the 1815 depends on the applied secondary A.C. voltage (V_{eff}) from the power transformer. The relationship between the rectified output voltage (V_d) and the load current (I_a) demonstrates the internal voltage drop of the high-vacuum rectifier under load:

- **At $V_{\text{eff}} = 2 \times 500 \text{ V}$:** The rectified output voltage V_d is approximately 700 V under no-load conditions (0 mA). As the load current increases to the maximum rated 180 mA, the output voltage drops to approximately 430 V.
- **At $V_{\text{eff}} = 2 \times 400 \text{ V}$:** The rectified output voltage V_d starts at approximately 560 V at 0 mA and decreases to approximately 320 V at 180 mA.
- **At $V_{\text{eff}} = 2 \times 300 \text{ V}$:** The rectified output voltage V_d starts at approximately 420 V at 0 mA and drops to approximately 200 V at 180 mA.

These values illustrate the regulation characteristics of the valve, which must be factored into the design of the receiver's power supply filter network.

Technical Summary

The **1815** is a classic **directly heated, full-wave high-vacuum rectifier** designed by Philips for A.C. mains receivers. Operating with a **4.0 V, 2.5 A** filament, it supports a maximum input voltage of **2 x 500 V_{RMS}** and delivers up to **180 mA** of rectified D.C. current. Housed in a glass envelope measuring up to **145 mm by 59 mm** and fitted with an **A40** or **A 10** base, the 1815 provides reliable high-voltage rectification with well-documented load regulation characteristics across a range of operating voltages.



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1938 Philips Miniwatt Vacuum Tube Catalog

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

1938 PHILIPS MINIWATT VACUUM TUBE CATALOG

Section 1 · Rectifier

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum AC no-load voltage per plate	500 V	FullWave
Maximum DC output current	180 mA	FullWave

1938 PHILIPS MINIWATT VACUUM TUBE CATALOG

Section 2 · Rectifier

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum AC no-load voltage per plate	500 V	FullWave
Maximum DC output current	180 mA	FullWave



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1999 Philips 0-D

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

1999 PHILIPS 0-D

Section 1 · Rectifier

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	40 V	Nominal

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater current	2.5 A	Nominal
A.C. anode voltage	500 V	Maximum
Rectified current	180 mA	Maximum

1999 PHILIPS 0-D

Section 2 · Rectifier

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	40 V	Nominal
Heater current	2.5 A	Nominal
A.C. anode voltage	500 V	Maximum
Rectified current	180 mA	Maximum

TUBE TINKER

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