

ELECTRONIC TUBE REFERENCE

CONSOLIDATED TECHNICAL DATA

12CP4

Specialized - Cathode Ray electronic tube

1 SECTION
CONSTRUCTION
CATHODERAY

Cathode-ray display tube documented by manufacturer data for type 12CP4; available extracted source information is sparse, so no more specialized application or construction claim is made.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	—
NOMINAL HEATER	2.5 V / 2.1 A	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION1 Cathode Ray	
MAXIMUM PLATE VOLTAGE	7000 V
Promoted ratings/characteristics read from the approved National Union datasheet.	

12CP4 — Short Twelve-Inch Videotron

The **12CP4** is a short twelve-inch cathode-ray tube, historically designated as a "Videotron," designed for television and display applications. It features an indirectly heated cathode and utilizes electromagnetic methods for both electron beam deflection and focusing. The tube is characterized by its ability to produce a white fluorescent screen color.

Heater and Electrical Ratings

The 12CP4 operates with an indirectly heated cathode requiring a low-voltage, high-current heater supply. The electrical ratings and maximum limits for the electrodes are defined as follows:

Parameter	Value / Limit
Heater Voltage	2.5 V
Heater Current	2.1 A
Maximum High-Voltage Anode	7000 V
Control Grid Voltage	Never positive
Maximum Fluorescent Screen Input Power	10 mW/cm ²

The control grid must be operated such that its potential never becomes positive relative to the cathode. Additionally, the power input to the fluorescent screen must be restricted to a maximum of 10 milliwatts per square centimeter to prevent damage to the phosphor.

Typical Operation

The 12CP4 can be operated under different anode voltage conditions. The typical operating parameters for two distinct anode voltage levels are outlined below:

Parameter	Operating Point 1	Operating Point 2	Unit
Anode Voltage	6000	7000	Volts
Control Grid Voltage	<i>Adjust for suitable luminous spot</i>	<i>Adjust for suitable luminous spot</i>	—
Control Grid Voltage for Cut-off	-90	-110	Volts
Control Grid Peak-to-Peak Voltage	25	25	Volts

At either operating point, the control grid voltage is adjusted to achieve a suitable luminous spot on the screen. The grid bias required to completely cut off the electron beam is -90 volts when the anode is at 6000 volts, and increases to -110 volts when the anode is operated at its maximum rating of 7000 volts. Under both conditions, the typical peak-to-peak control grid voltage is 25 volts.

The direct interelectrode capacitance between the control grid and the cathode is approximately **12 μ F**.

Physical Dimensions and Basing

The 12CP4 is constructed with a short-neck bulb design to minimize the overall depth of the display equipment. Its physical dimensions are specified as follows:

- **Maximum Overall Length:** 18 5/8 inches
- **Maximum Bulb Diameter:** 12 7/16 inches
- **Neck Diameter:** 1 7/16 inches maximum

- **Neck Length (End of Gun):** 3 5/8 inches
- **Bulb Body Height (excluding neck):** 10 5/8 inches (with a 9 7/8 inch dimension from the face to the upper neck region)

The tube utilizes a specialized base designated as **4AF-0-0**. The pin connections, viewed from the bottom of the tube base, are assigned as follows:

- **Pin 1:** Heater
- **Pin 2:** No Connection
- **Pin 3:** Internal Connection
- **Pin 4:** Control Grid
- **Pin 5:** Cathode
- **Pin 6:** Heater
- **Recessed Cap:** Anode (High-Voltage connection located on the side of the bulb envelope)

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1938 National Union

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

1938 NATIONAL UNION

Section 1 · Cathode Ray

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Control grid cutoff voltage	— -110 V	At 6000-7000 V anode
Fluorescent screen input power	10 mW/cm²	White fluorescent screen

TUBE TINKER

An independent reference for electronic tubes, vacuum tubes, and their source documents.

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