



ELECTRONIC TUBE REFERENCE

1205HM

Specialized - Cathode Ray electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
CATHODERAY

Twelve-inch Ferranti radar, monitor, and display CRT with magnetic focusing and magnetic deflection. Its H-type orange screen provides very long persistence, while the second anode is rated to about 15 kV for bright persistent presentation.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	—
NOMINAL HEATER	6.3 V / 300 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	15000 V
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Published Ferranti ratings, capacitances, and typical operating data promoted where applicable; additional electrical values retained as parameters.

1205HM — Flat-Faced Radar Display Tube

The **1205HM** (also designated as **12/05HM**) is a 12-inch diameter, flat-faced cathode-ray tube (CRT) designed primarily for Plan Position Indicator (P.P.I.) radar display applications. It is classified as a replacement type and features magnetic focusing and magnetic deflection.

Screen and Phosphor Characteristics

The 1205HM is equipped with a specialized phosphor screen designed to retain radar target information between antenna sweeps.

- **Phosphor Type:** Type H

- **Fluorescence:** Orange
- **Afterglow:** Orange
- **Persistence:** Very Long

The very long persistence of the Type H phosphor is essential for slow-scan radar applications, ensuring that target trails remain visible to operators during successive sweeps.

Physical and Mechanical Specifications

The mechanical design of the 1205HM features a large-diameter bulb with a flat faceplate to minimize parallax errors during observation.

Key Dimensions

- **Maximum Overall Length:** 495 mm (with a nominal design length of 488 ± 7 mm)
- **Neck Diameter:** 35 mm nominal (35 ± 1 mm)
- **Useful Screen Diameter:** 265 mm minimum
- **Overall Face Diameter:** 305 ± 2 mm
- **Deflection Angle:** 50°
- **Faceplate Spherical Radius:** 1000 mm
- **Corner Radius:** 19 mm
- **Reference Line Diameter:** 36 mm

Bulb Profile and Ring Gauge Positions

The bulb's outer contour is defined by specific ring gauge positions measured as axial distances from the center of the screen:

Ring Gauge	Distance from Centre of Screen
280	93 ± 10 mm
230	150 ± 9 mm
180	191 ± 8 mm
130	222 ± 7 mm
80	249 ± 6 mm

The high-voltage anode connection is located on the side of the bulb, positioned 180 ± 5 mm from the screen face, utilizing a CT1 type anode cap.

Base Connections and Pinout

The tube utilizes an **International Octal** base for its primary electrical connections, with the second anode connected via the side contact.

Pin Configuration

- **Pin 1:** Not Connected
- **Pin 2:** Heater
- **Pin 3:** 1st Anode
- **Pin 4:** Not Connected
- **Pin 5:** Grid
- **Pin 6:** Not Connected
- **Pin 7:** Cathode
- **Pin 8:** Heater
- **Side Contact:** 2nd Anode

Electrical Ratings and Operating Conditions

The 1205HM operates with an indirectly heated cathode and requires specific voltage and current limits to ensure reliable performance.

Heater Characteristics

- **Heater Voltage:** 6.3 V
- **Heater Current:** 0.3 A

Absolute Maximum and Minimum Ratings

- **Maximum 1st Anode Voltage:** 850 V
- **Minimum 1st Anode Voltage:** 600 V
- **Maximum 2nd Anode Voltage:** 15.0 kV
- **Minimum 2nd Anode Voltage:** 10.0 kV
- **Maximum Cathode Current:** 150 μ A
- **Maximum Heater-to-Cathode Voltage (V_{h-k}):** 200 V
- **Maximum Heater-to-Cathode Resistance (R_{h-k}):** 1.0 M Ω
- **Maximum Grid-to-Cathode Resistance (R_{g-k}):** 1.5 M Ω

Interelectrode Capacitances

- **Cathode to all other electrodes (C_{k-all}):** < 8 pF
- **Grid to all other electrodes (C_{g-all}):** < 8 pF

Typical Operating Conditions

- **1st Anode Voltage:** 800 V
- **2nd Anode Voltage:** 10 kV
- **Grid Voltage (V_g) for Visual Cut-off:** -80 V

- **Average Modulation Drive (for 50 μ A Beam Current):** 20 V
- **Focus Coil Requirements:** Approximately 640 ampere-turns. The focus coil must be positioned so that the center of its gap is approximately 98 mm from the reference line (at the 36 mm Ring Gauge Position).

Related Designations and Equivalents

The 1205HM is equivalent to the following military and industrial designations:

- **CV1869**
- **CV2328**

These designations represent direct electrical and physical equivalents.

Technical Summary

The **1205HM** is a 12-inch flat-faced radar display tube featuring magnetic focus, magnetic deflection, and a very long persistence Type H orange phosphor screen. Operating with a 6.3 V, 0.3 A heater, it is designed for P.P.I. radar applications. The tube requires a typical first anode voltage of 800 V and a second anode voltage of 10 kV, with an International Octal base and a CT1 side contact for the second anode. It is directly equivalent to the CV1869 and CV2328.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1963 Ferranti

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

1963 FERRANTI

Section 1 · Cathode Ray

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Focusing method	Magnetic	—
Deflection method	Magnetic	—
Fluorescence	Orange	—
Persistence	Very long	—

CONSTRUCTION		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Phosphor type	H	—

APPLICATION		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Application	Radar / monitor / display CRT	—

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
First-anode voltage maximum	850 V	—
First-anode voltage minimum	600 V	—
Second-anode voltage maximum	15000 V	—
First-anode operating voltage	800 V	—
Second-anode operating voltage	10000 V	—
Grid visual-cutoff voltage	-80 V	—
Average modulation drive at 50 uA beam current	20 V	—
Focus coil excitation	640 ampere-turn	—

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Cathode-to-all capacitance maximum	8 pF	—
Grid-to-all capacitance maximum	8 pF	—

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