

Twelve-inch radar cathode-ray display tube with magnetic focusing and magnetic deflection. Cintel documentation specifies the electron-gun system and interelectrode capacitances, supporting a dedicated radar-display function rather than a conventional television picture-tube role.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	—
NOMINAL HEATER	4 V / 1 A	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION1 Cathode Ray
No fixed ratings recorded.
CRT operating ratings and direct interelectrode capacitances are published in the approved datasheet.

12MO6A Radar Tube

The **12MO6A** is a specialized 12-inch nominal diameter cathode-ray tube (CRT) designed for radar display applications. It features magnetic focusing and magnetic deflection, combined with a long-persistence orange screen.

Mechanical Construction and Physical Dimensions

The 12MO6A is constructed with a glass envelope and a flat-faced screen. Its physical dimensions are highly specified to ensure precise mounting and alignment within radar equipment:

- Overall Length:** 510 ± 10 mm

- **Greatest Diameter of Bulb:** 306.5 mm (with the bulb body dimensioned at 305 +1.5/-2 mm)
- **Minimum Useful Screen Diameter:** 265 mm
- **Neck Diameter:** 34.0 mm minimum to 35.5 mm maximum
- **Faceplate Radius of Curvature:** 1000 ± 100 mm
- **Corner Radius:** 19 ± 2 mm

A calculation of the active screen area efficiency shows that the minimum useful screen diameter utilizes approximately 86.5% of the greatest bulb diameter: $\frac{265\text{mm}}{306.5\text{mm}} \approx 86.5$

Reference Line and Component Alignment

To position external magnetic deflection and focusing components, a reference line is defined on the bulb cone. This line is located where a cylindrical gauge with an internal diameter of 36 mm and a length of 50 mm rests against the cone.

- The distance from the front face of the tube to this reference line is 180 ± 5 mm.
- The distance from the reference line to the base of the tube is 272 ± 3 mm.

The focusing coil must be positioned so that the center line of its air gap is approximately 80 mm from this reference line. Additionally, the plane passing through the tube axis and the spigot key of the base may vary from the plane passing through the tube axis and the anode cap by an angular tolerance of up to 10° (measured about the tube axis). The anode cap is located on the same side of the tube as the spigot key.

The tube is designed to be mounted in any position.

Electrical Connections and Base Configuration

The 12MO6A uses an **International Octal** base. To ensure high-voltage insulation, several pins are omitted from the base structure. The high-voltage anode connection is made via a separate cavity cap on the side of the bulb.

Pin Assignment

The pin connections, viewed from the underside of the base, are assigned as follows:

Pin	Connection
Pin 1	No connection
Pin 2	Heater
Pin 3	Pin omitted
Pin 4	Pin omitted
Pin 5	Modulator (Grid)
Pin 6	Pin omitted

Pin	Connection
Pin 7	Heater
Pin 8	Cathode
Cap	Anode (Cavity Cap BSS448/CT8)

Electrical and Screen Characteristics

Heater Ratings

The cathode is indirectly heated and can be operated using either an alternating current (a.c.) or direct current (d.c.) supply:

- **Heater Voltage:** 4.0 V
- **Heater Current:** 1.0 A

The nominal heater power consumption is calculated as: $P_{\text{heater}} = 4.0 \text{ V} \times 1.0 \text{ A} = 4.0 \text{ W}$

Inter-electrode Capacitances

The direct inter-electrode capacitances are specified as:

- **Modulator to all other electrodes:** 12.0 pF
- **Cathode to all other electrodes:** 10.0 pF

Screen and Phosphor Properties

The screen is aluminium-backed to enhance light output and protect the phosphor from ion damage. It has the following characteristics:

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

Operating Conditions and Maximum Ratings

Absolute Maximum Ratings

To prevent damage and ensure operational safety, the tube must not be operated beyond the following limits:

- **Anode Voltage:** 11,000 V
- **Modulator Voltage (Negative bias value):** 130 V
- **Modulator Voltage (Positive bias value):** 0 V

- **Peak Heater-Cathode Voltage (Heater negative with respect to cathode):** 125 V
- **Peak Heater-Cathode Voltage (Heater positive with respect to cathode):** 125 V

Typical Operating Conditions

Under typical operating conditions, the tube is configured with the following parameters:

- **Anode Voltage:** 10,000 V
- **Modulator Voltage for Cut-off:** -75 to -115 V
- **Focusing-Coil Current:** 560 Ampere-Turns (A.T.)
- **Spot Position:** When undeflected and unfocused, the center of the spot will fall within a circle of 10 mm radius concentric with the physical center of the tube face.

Technical Summary

The **12M06A** is a magnetic-focus, magnetic-deflection radar CRT featuring a 12-inch nominal diameter screen. It operates with a 4.0 V, 1.0 A heater and utilizes an International Octal base with omitted pins alongside a BSS448/CT8 anode cavity cap. Designed for long-persistence radar display applications, it features an aluminium-backed orange phosphor screen and operates typically at an anode voltage of 10,000 V. Its mechanical design incorporates precise reference line positioning and a 10 mm maximum spot eccentricity tolerance, ensuring accurate alignment in critical radar display systems.

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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Section 1 · Cathode Ray

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater Voltage	4 V	Nominal published value
Heater Current	1 A	Nominal published value
Modulator to all other electrodes	12 pF	Published direct interelectrode capacitance
Cathode to all other electrodes	10 pF	Published direct interelectrode capacitance

CONSTRUCTION		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Focusing Method	Magnetic	Published focusing method
Deflecting Method	Magnetic	Published deflection method

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