



Distance-from-Threshold Indicator

(using 5-inch Bright Display Type S 3004)

THE role of distance-from-threshold indicator (DFTI) is just one of the many applications of the Marconi Bright Display Type S 3004, which uses the 5 in. direct-view storage tube. Its great advantage over all conventional PPI displays is that it may be used under all lighting conditions and does not need to be operated in a darkened room.

In this particular application the display may be used in a control tower to monitor current air-traffic patterns in the vicinity of an aerodrome without reference to a third party. The controller may select (a) the approach path to the runway in use, from 10 miles out to the point of touchdown, (b) the area from the take-off end of the runway in use out to a distance of 10 miles, or (c) the normal PPI picture, centred on the aerodrome, out to a distance variable between 10 and 20 miles radius. This last position will give a picture of all aircraft within the general circuit pattern of the aerodrome while the first two positions enable a more detailed observation to be made of aircraft, on the final approach to land, or immediately after take-off.

The display unit has been kept to the minimum size, using the most advanced semiconductor and printed-circuit techniques, so that as little of the valuable space in the control tower as possible is used.

Because of the integrating effect of the storage tube, it is recommended that only radar systems with high discrimination against fixed targets, such as the Marconi S 264 series of MTI radars (pages 337 and 338) are used with this display.

Features

- 5-inch high-brightness direct-view storage tube.
- Semiconductors and printed circuits extensively used.
- Small size.
- Low heat dissipation – convection cooling.
- Plug-in printed circuit boards for ease of maintenance.
- Long periods possible between routine maintenance checks.
- Capable of integration with any surveillance radar systems.
- Controllable persistence.

Immediate push-button erasure of picture.

Automatic erasure when new viewing area selected.

Visual indication of runway threshold selected or of centred picture.

EQUIPMENT

Two units make up the display equipment, a viewing unit and a power and waveform unit. These two units may be operated up to 300 ft (90 m) apart.

The viewing unit includes only those circuits that need to be close to the display tube, so that it takes up as little space as possible at the control position. It includes the direct-view storage tube, e.h.t. supplies, video and deflection amplifiers, switching circuits, scan-fail protection and erasure circuits. The viewing unit is capable of continuous operation with the tube face at any angle between vertical and 45° from vertical.

The power and waveform unit, contains time-base integrators, off-centre units, bright-up waveform generator, video drive units and power supplies. This unit is generally housed in the equipment room at the bottom of a control tower.

The standard display equipment is designed to accept d.c. turning information of 10 or 50 V peak amplitude. Additional wall-mounting equipment makes it possible for any other form of turning information to be used.

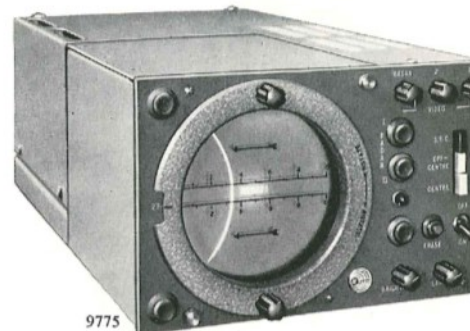
Data Summary

Inputs:

Separate inputs for each of two radar systems, each comprising:

- (i) Video. Up to 3 channels, 1 to 6 V peak signal, positive-going from a level between earth and +0.5 V. Signal-to-noise down to 3:1 on limiting signals. Source impedance 50–100 Ω. Pulse lengths down to 0.5 μs.
- (ii) Sync. pulses. Positive, 5–50 V. Source impedance 50–100 Ω.
- (iii) Turning information: x and y d.c. potentials of 10 or 50 V peak amplitude. Other turning information via a separate wall-mounting rack.

Screen luminance: Up to 1100 foot-lamberts.



Bright Display Type S 3004.

Display ranges:

- (i) Off-centred positions, 10 n.miles per tube diameter.
- (ii) Centre position, 10–20 n.miles per tube radius, centred on the aerodrome.

Display off-centring: Up to six off-centred positions corresponding to approach areas at each end of three runways. Selected by rotating graticule on face of display.

Display linearity: Maximum positional error less than 2½% of display diameter.

Power supplies: 200, 220 or 240 V (±10%) 45–65 c/s, single-phase a.c.

Consumption 350 W approx.

Ambient temperature range: 0 to +45°C. Variation without adjustment of controls, ±10°C.

Dimensions:

Height	Width	Depth	Weight
5½ in.	8½ in.	17 in.	20 lb
(14.3 cm)	(22.5 cm)	(43.2 cm)	(9.1 kg)

Viewing unit

Power and waveform unit

2 ft 9 in.	1 ft 10 in.	1 ft 3 in.	120 lb
(84 cm)	(56 cm)	(38 cm)	(54.5 kg)

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