

# Marconi Video Map Generator Type S 3202

The Marconi Video Map Generator Type S 3202 is a transistorized unit which electronically superimposes maps or other typographical markings on the screen of a PPI display in addition to the radar picture. The map or grid is marked photographically on a glass slide and converted by fixed coil scanning system into video signals.

The map plates are  $3\frac{1}{2}$  in. square, with the active map area contained within a central circle of 2 in. diameter. One cathode ray tube is used to scan one map plate, thus simplifying the optical system and giving optimum performance.

## FEATURES

Flying spot scanning employing fixed coil deflection.  
Rapid interchange of map plates.  
Inter-services preferred components employed.  
High resolution.  
Off centring of PPI display for sector working does not affect the correlation between radar display and video map display.

## Construction

Two main mechanical versions of the equipment are available. One version is internally blown with a high speed, low noise fan; while the other is designed for connection to external air conditioning equipment.

All the equipment necessary to generate video-mapping signals from one map plate is contained within one frame, mounted on runners, and fitted into a cabinet. Within the framework are, electronic circuits on printed cards which plug into edge connectors, the complete optical assembly, a heat sink assembly carrying high power transistors, the e.h.t. supply generator and a mains operated power unit.

## Circuit

Three types of coils are contained in the coil assembly namely, alignment and astigmatism coils, focus coils, and deflection coils. The alignment coils initially deflect the electron beam, so that it enters the focus and deflection fields on axis. This is necessary for optimum focussing of the beam and to avoid asymmetrical deflection errors. The focus coil assembly contains the main and dynamic focus coils, dynamic focussing being necessary to maintain the requisite resolution over the entire area of the tube face.

Depending on the edition specified, the equipment accepts either radar trigger pulses or radar gate pulses, and either resolved d.c. or resolved timebase turning data, and will produce video signals from a single map plate.

The input trigger pulses are used to generate radar gate pulses of suitable duration. These radar gate pulses then control the 'ON' time of the cathode ray tube beam, the scan correction circuits, and, for the case when d.c. turning information is used, the scan generators.

All range dependent components are mounted on one printed circuit board, adjustment being provided to allow for component tolerance; one range board being required for each specified range. It should be noted that since the scan correction components are range dependent this board is required in all editions of the equipment.

The deflection amplifiers are operated at fixed gain, but are fitted with d.c. setting controls to permit the origin of the scan rotation to be correctly positioned on the tube face.

The rotating scan is then imaged on to the map plate and a lens assembly collects and distributes the light passing through the map plate over the cathode of a low noise photo-multiplier tube. The signal from the photomultiplier tube is amplified, clipped and distributed to the associated display system.

## DATA SUMMARY

**Turning Information:** d.c. or timebase voltages varying at radar antenna rate, from:  $+10\text{ V } (\pm 1\text{ V})$  to  $-10\text{ V } (\pm 1\text{ V})$  with an input impedance of  $140\text{ k}\Omega$ ; or from:  $+50\text{ V } (\pm 5\text{ V})$  to  $-50\text{ V } (\pm 5\text{ V})$  with an input impedance of  $700\text{ k}\Omega$ .

When timebase voltages are used an antenna rotation failure signal is required.

**Fail:** between the limits  $-0.5\text{ V}$  to  $+2\text{ V}$ .

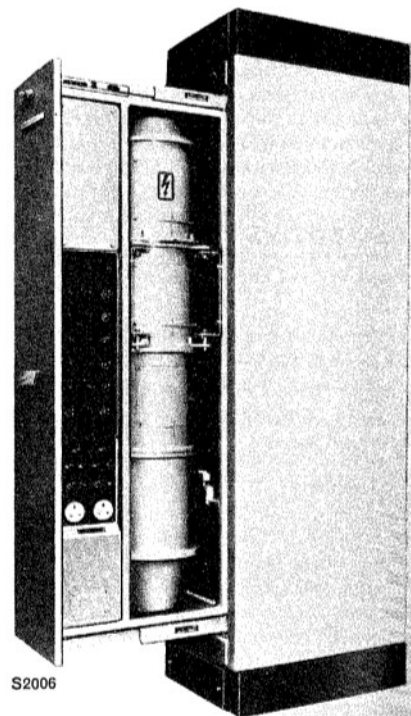
**Operable:** more negative than  $-4\text{ V}$ .

### Radar Trigger Pulses:

**PRF:** 150 Hz to 1500 Hz  
**Amplitude:** 5 V to 80 V positive going  
**Duration:** 1.5 to 10  $\mu\text{sec}$ .  
**Rise Time:** less than 1  $\mu\text{sec}$ .  
**Input impedance:**  $75\text{ }\Omega$  terminated  
 $3\text{ }\Omega$  unterminated.

### Radar Gate Pulses:

**Input level 'OFF':** more negative than  $-2.5\text{ V}$ .  
**Input level 'ON':** between the limits  $-0.5$  to  $+2\text{ V}$ .



Fixed coil video map equipment Type S3202

### Input impedance:

$75\text{ }\Omega$  terminated.  
 $3\text{ }\Omega$  unterminated.

**Ranges:** 10 nautical miles to 400 nautical miles.

**Resolution:** 1000 lines (i.e. 500 white and 500 black to the radius).

**Video outputs:** Five at  $3\text{ V } \pm 0.5\text{ V}$  positive going into  $75\text{ }\Omega$ .

### Power Requirements:

**Voltage:** either  $200\text{--}250\text{ V } \pm 10\%$  from 45 to 65 Hz.  
or  $100\text{--}125\text{ V } \pm 10\%$  from 45 to 65 Hz.  
**Power:** 0.6 kVA.

**Temperature range:**  $0^\circ$  to  $+45^\circ\text{C}$ .

### Mechanical:

**Height**  $71\frac{1}{2}$  in. (182 cm) externally blown  
 $75$  in. (190 cm) internally blown  
**Width** 16 in. (41 cm)  
**Depth** 23 in. (58.5 cm)  
 $24\frac{1}{2}$  in. (61.5 cm) overall  
**Weight** 560 lb (255 kg)  
**Finish** Oyster hammer.

## THE MARCONI COMPANY LIMITED Radar Division

Marconi House, Chelmsford, Essex  
Telephone: Chelmsford 53221. Telex: 99201  
Telegrams: Expanse Chelmsford Telex