

RADAR TYPES 278, 993, 986 AND 987

OFFICE EQUIPMENT

SUMMARY OF DATA

278  
993  
986  
987

PURPOSE

A general purpose receiver-transmitter complete in itself, intended to be associated with a wide range of aerial and display units to form a complete S-Band radar equipment.

BRIEF DESCRIPTION

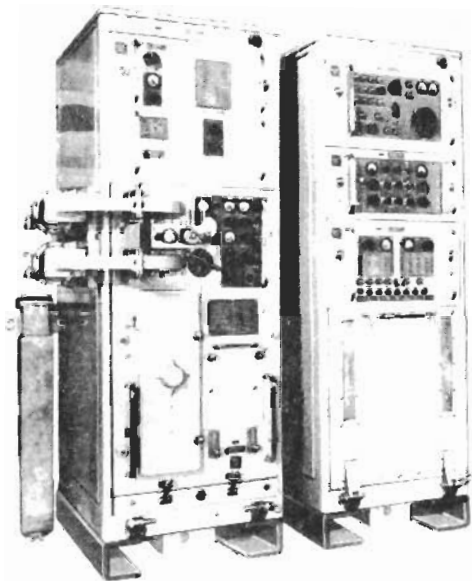
The magnetron is driven by a hydrogen thyratron modulator, the pulse-forming network being locally or remotely switched to one of two pulse lengths; synchronisation can be internal or external. A pre-pulse output is available to trigger an IFF interrogator on internal synchronisation only. The magnetron duplexer, local oscillator and its controls, are grouped in a single unit.

The receiver channel consists of a balanced crystal mixer feeding an IF pre-amplifier. Two logarithmic amplifiers are used, one for each of the bandwidths. A linear wide-band amplifier is also incorporated for noise factor measurement. Relays, local or remote controlled, select the desired band-widths. The logarithmic amplifiers feed a video amplifier which in turn feeds a bank of ten cathode followers. The local oscillator of the receiver is controlled by an electronic AFC system with its own tuning meter.

Power supplies are self-contained and stabilised as required. The EHT supply is also self-contained and is manually adjustable. A comprehensive interlock and electronic fault-protection system is incorporated.

A waveguide switch is built in and enables the Receiver-Transmitter to be connected to an aerial, to an external dummy load, or to a built-in S-Band noise source for noise factor measurement.

Incorporated test facilities comprise, wavemeter, IF step attenuator, calibrated directly in noise factor, and a RF power meter which may be switched to a radiated power monitor at the aerial head. Important voltages and currents are monitored from unit switch positions. The equipment houses a CT52 wavemonitor which displays selected unit waveforms, transmitter spectrum, AFC discriminator curve and external IFF video pulse.



PERFORMANCE

- Power Output : 600 kW peak nominal
- Pulse Repetition Frequency : (a) Internal Trigger 400 or 500 p/s  
(b) External Trigger 100 to 550 p/s
- Pulse Length : 0.5  $\mu$ s or 2.0  $\mu$ s
- Receiver Bandwidth : 0.85 MHz or 3.0 MHz switched
- Intermediate Frequency : 30 MHz

Basic Composition of Each Type

| TYPE   | AERIAL OUTFIT | PEDESTAL UNIT | AERIAL CONTROL UNIT | OFFICE EQUIPMENT |
|--------|---------------|---------------|---------------------|------------------|
| 278(1) | ANU(1)        | AP 67541A     | AP 65743B           | )                |
| 278(2) | ANU(2)        | AP 64620      | AP 70210            | )                |
| 278(3) | ANU(3)        | AP 67541B     | AP 65743B           | ) AP 173047      |
| 278(4) | ANU(4)        | AP 64620      | AP 70210            | ) Cabinet Radar  |
| 278(5) | ANU(5)        | AP 186065     | AP 186054           | )                |
| 278(M) | AZR           | AP 186554     | AP 186560           | ) AP 173050      |
| 993    | AKD           | AP 186208     | AP 186365           | ) Cabinet Power  |
| 986    | AKR           | AP 62254      | AP 57592            | ) and Video      |
| 987    | AQT           | AP 65128      | AP 57592            | )                |

- Outputs for Display Units : (a) Video output — ten channels +5 V peak into 68 ohms  
(b) Trigger output — single coaxial line into standard AP junction box giving ten outputs each +10 V peak into 68 ohms, coincident with transmitted pulse.
- Triggers for External Equipment : (a) IFF pre-pulse 36.5  $\mu$ s before transmitted pulse, +15 V peak into 68 ohms, 1  $\mu$ s duration.  
(b) Monitor pre-pulse 2 to 4  $\mu$ s before transmitted pulse, 13 V  $\pm$  5 V peak into 68 ohms, 1  $\mu$ s duration.

**MAJOR UNITS AND PHYSICAL DATA**

|                                       | Height                | Width                 | Depth               | Weight               |
|---------------------------------------|-----------------------|-----------------------|---------------------|----------------------|
| 5840-173239 Modulator                 | 45.7 cm<br>(18 in.)   | 55.9 cm<br>(22 in.)   | 68.6 cm<br>(27 in.) | 87.1 Kg<br>(192 lb)  |
| 5840-173238 Receiver-Transmitter      | 96.5 cm<br>(38 in.)   | 55.9 cm<br>(22 in.)   | 68.6 cm<br>(27 in.) | 165.0 Kg<br>(364 lb) |
| 5840-173190 Tuning Unit RF (Band I)   | 54.6 cm<br>(21.5 in.) | 16.5 cm<br>(6.5 in.)  | 43.2 cm<br>(17 in.) | 22.7 Kg<br>(50 lb)   |
| 5840-173057 Tuning Unit RF (Band II)  | 54.6 cm<br>(21.5 in.) | 16.5 cm<br>(6.5 in.)  | 43.2 cm<br>(17 in.) | 22.7 Kg<br>(50 lb)   |
| 5840-173058 Tuning Unit RF (Band III) | 54.6 cm<br>(21.5 in.) | 16.5 cm<br>(6.5 in.)  | 43.2 cm<br>(17 in.) | 22.7 Kg<br>(50 lb)   |
| 5840-173052 Control, Power Supply     | 24.1 cm<br>(9.5 in.)  | 55.9 cm<br>(22 in.)   | 68.6 cm<br>(27 in.) | 48.1 Kg<br>(106 lb)  |
| 5840-173051 Amplifier IF and Video    | 30.2 cm<br>(12 in.)   | 55.9 cm<br>(22 in.)   | 68.6 cm<br>(27 in.) | 30.8 Kg<br>(68 lb)   |
| 5840-173054 Power Supply              | 30.5 cm<br>(12 in.)   | 55.9 cm<br>(22 in.)   | 68.6 cm<br>(27 in.) | 66.7 Kg<br>(147 lb)  |
| 5840-173053 Power Supply EHT          | 49.5 cm<br>(19.5 in.) | 49.5 cm<br>(19.5 in.) | 55.9 cm<br>(22 in.) | 95.7 Kg<br>(211 lb)  |
| 5840-173047 Cabinet Radar             | 183.0 cm<br>(72 in.)  | 61.0 cm<br>(24 in.)   | 76.2 cm<br>(30 in.) | 158.8 Kg<br>(350 lb) |
| 5840-173050 Cabinet Power and Video   | 183.0 cm<br>(72 in.)  | 61.0 cm<br>(24 in.)   | 76.2 cm<br>(30 in.) | 197.3 Kg<br>(435 lb) |

**POWER REQUIREMENTS**

440 V, 3 phase, 50-60 Hz 3.2 kVa.  
Anti-condensation heaters 115 V ac or 220 V dc 200 VA

**VENTILATION**

An external forced air supply of 18.4m<sup>3</sup>/min (650 cu. ft/min) at 2.54 cm (1 in.) water gauge and maximum inlet temperature 46°C. is required.

**HANDBOOK**

BR 2358(1)(2)

**ESTABLISHMENT LIST**

E 1280

**INSTALLATION SPECIFICATION**

B 900