

**RADAR TYPE 978/M**

**978/M**

**SUMMARY OF DATA**

**PURPOSE**

A close range, high definition surface warning radar used principally for pilotage and navigation. Large land masses etc. can be detected up to 40 miles.

**FREQUENCY**

9410 ± 50 MHz.

**POWER OUTPUT**

25 kW (peak) minimum.

**PULSE REPETITION FREQUENCY**

1000 and 2000 p/s (switchable).

**PULSE LENGTH**

1 μs at 100 p/s  
0.2 μs at 2000 p/s.

**AERIAL ROTATION SPEED**

20 rev/min for 50 Hz supply  
24 rev/min for 60 Hz supply.

**BEAM WIDTH**

Horizontal 1.2° (to 3 dB one way)  
Vertical 21° (to 3 dB one way)

**RECEIVER BANDWIDTH**

6 MHz minimum at -3 dB.

**INTERMEDIATE FREQUENCY**

60 MHz.

**POWER REQUIREMENTS AND CONSUMPTION**

115 V 60 Hz } 2 kW  
or 230 V 50 Hz }

115 V 400 Hz 345 W for magslips

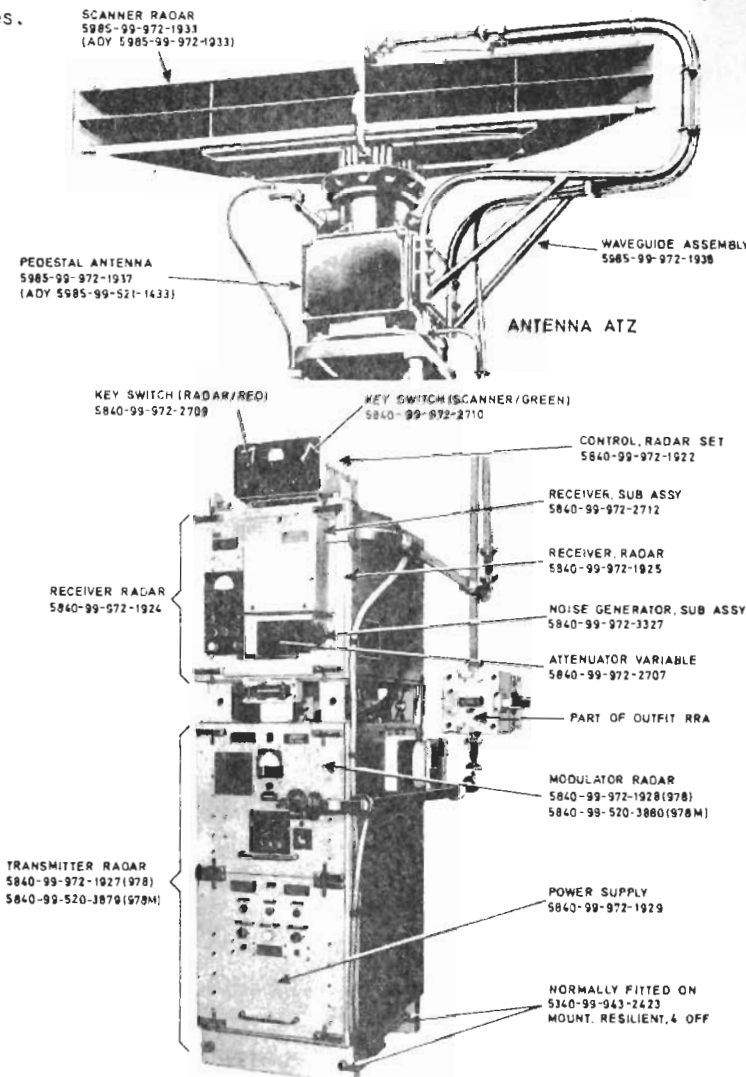
300-125 V } Any frequency 600 W For  
or 200-250 V } a.c. or d.c. anti-condensation  
heaters.

The above supplies include power for one Display Outfit JUA.

**ASSOCIATED ANTENNA**

**Antenna ATZ.** This consists of a 6 ft double cheese, the upper for transmission, the lower for reception. Connection to the office equipment is made by Waveguide Outfit, Size 16, No. 3.

**Antenna ADY.** Similar to ATZ except that the scanner has alignment sighting device and pedestal is modified for coarse/fine bearing synchro transmission in lieu of two coarse bearing magslips.



**RADAR TYPE 978 AND ANTENNA ATZ**

**MAJOR UNITS**

Pattern No.	Description	Qty.	Physical Data			
			Height	Width	Depth	Weight
W8221	Air Conditioning Unit	1*				
5840-99-972-1927 or 5840-99-520-3879	Transmitter, Radar when C.R.S.T. is fitted (978M)	1	3 ft	1 ft 5 in	1 ft 10 in	250 lb
5840-99-972-1924	Receiver, Radar	1	2 ft	1 ft 5 in	1 ft 10 in	140 lb
5840-99-972-1922	Control, Radar Set Antenna	2	5½ in	1 ft	9½ in	5½ lb
5985-99-972-1933 5985-99-521-2682 5985-99-972-1937 5985-99-521-1433	Scanner, Radar (ATZ) Scanner, Radar (ADY) Pedestal, Antenna (ATZ) Pedestal, Antenna (ADY)	1 ) ) ) )	3 ft 6 in	Turning Circle 6 ft 3 in		220 lb
*AP W8221 is only required for ships in which a supply of dry air cannot be made available from the H.P. air mains.						

**ASSOCIATED DISPLAY OUTFIT**

Display Outfit JUA (see separate Summary of Data). Normally 2 or 3 Display Outfits JUA(1),(2),(3) or (4) are fitted but Type 978 can be used with any P.P.I. and can feed up to 15 displays.

**BRIEF DESCRIPTION**

The Type 978 radar transmitter and its power supplies are self contained, the necessary switch functions being made by relay control from the Control Unit. Selection of internal or external triggering is possible by means of a switch on the front panel. A thermistor bridge in the r.f. section enables continuous monitoring of power output under true load conditions.

The receiver and its power supplies are also self-contained and operated from the Control Unit. Logarithmic amplification is used to improve the performance in conditions of rain or sea clutter. Reference signal for the a.f.c. circuits is provided by a magnetron sample pulse fed directly from the transmitter. An X-band noise source is built into the receiver for accurate measurement of overall noise factor.

Maximum range is 40 miles; minimum range less than 50 yards with 0.2 µs pulse. Range discrimination less than 50 yards on 1 mile range scale. Range accuracy 50 yards on 1 mile scale; beyond this, within half radius of centre, 2% of indicated range, and outside half radius, 1% of maximum range. Bearing accuracy ± 1°. Bearing transmission is by means of an auto-aligning 400 Hz magstrip system.

Type 978M. Transmitter and Frame Assy. Modified for use with Control Radar Sector Transmission.

**HANDBOOKS**

- BR 1152 (Type 978/M)
- (BR 1156 JUA Series)
- (BR 2382 Section 9 C.R.S.T.)

**ESTABLISHMENT LISTS**

- E 1153 (Type 978 and C.R.S.T.)
- E 1203 (waveguide Outfit, Size 16, No. 3)
- R 1521 Aerial Outfits ATZ and ADY.

**INSTALLATION SPECIFICATION**

B.852/R.3