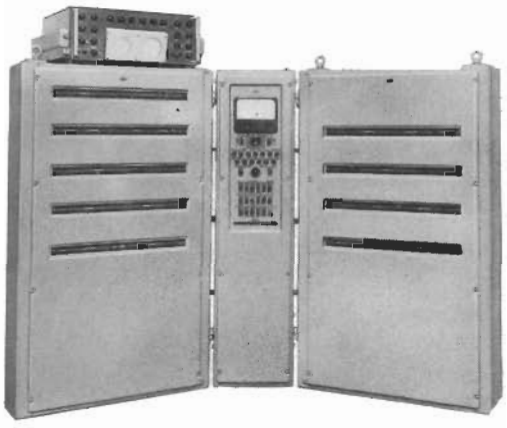
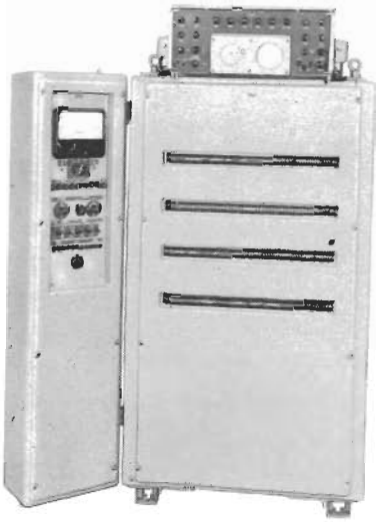
OUTFITS RJT(1) AND RJR(1)

RJT(1)
RJR(1)

SUMMARY OF DATA



Outfit RJR/1 Receiver



Outfit RJT/1 Transmitter

PURPOSE

Transmission and reception between ships of radar plotting information in the form which can be displayed by the Comprehensive Display System.

TYPE OF TRANSMISSION

Pulse code modulation of conventional narrow band HF or UHF voice channel.

BRIEF DESCRIPTION

The C.D.S. information to be transmitted consists of plan position co-ordinates in cartesian form of up to 48 Tracks, together with ancillary information comprising Track Reference No., Height to the nearest 100 ft, category and size for each target. In addition the cartesian co-ordinates of two marker pointers are included in order to assist in passing instructions etc. The co-ordinate information is stored by C.D.S. in voltage analogue form, each voltage having a value between -100 V and +100 V. The ancillary information is stored in the form of code voltages, having values which are integral multiples of 10 V between +10 V and +100 V representing in numerical order the digits 0 to 9 together with additional voltages of -30 V and -40 V which are instructional and indicate Vacant Store and Cancel Store. The stores are scanned by the C.D.S. marker switches at a rate such that the whole of the information is presented every 2¼ seconds. This sequence of voltage analogues is passed to Outfit RJT(1) which encodes it in binary form suitable for transmission over a conventional HF or UHF voice channel. At the receiving end, the signals are decoded by Outfit RJR(1) and the voltage analogues synthesised so that the original information can be displayed on a local C.D.S.

In the encoder (RJT(1)) the co-ordinate information for the tracks and pointers is fed into a high accuracy input and the ancillary information into a low accuracy input. The function of the input circuits is to serialise the information so that each item may be encoded in turn. These circuits are followed by high and low accuracy time-base circuits respectively in which the voltage analogues are converted to time analogues. The time analogues are translated into digital form after which the high and low accuracy outputs are combined in a mixer stage prior to the output stage. At this point the digital signal modulates a 1600 Hz sub-carrier which is then passed via the KH control system to the radio transmitter. The basic waveforms from which are derived the pulses for controlling the coding operations are generated by a main counter circuit. This is a crystal-controlled oscillator followed by a series of dividing stages and is synchronised to the C.D.S. marker switches.

In the decoder (RJR(1)) the sequence of operations is similar but in reverse order. Throughout both outfits, there are voltage error correction circuits and monitoring facilities. Apart from power supplies and monitoring, the equipment involves large numbers of identical circuits which are constructed as plug-in units. These units are mounted in water-cooled racks; one rack is required for the transmitter and two for the receiver. A Heat Exchange Cabinet, Des. 85 may be fitted if required.

MAJOR UNITS

Item	Pattern No.	Description	Quantity	
			RJT(1)	RJR(1)
1	AP 64912	Rack Assembly, Des. 15 L.H.		1
2	AP 64913	Rack Assembly, Des. 16 R.H.		1
3	AP 64914	Rack Assembly, Des. 17	1	
4	AP 71167	Power-supply Drawer, Des. 9	1	1
5	AP 71168	Power-supply Drawer, Des. 10	1	1
6	AP 63992	Monitor Unit Des. 24	1	1
7	AP 64915	Monitor Control Panel		1
8	AP 64916	Monitor Control Panel Des. 2	1	
9	AP 63283	Cabinet Assembly, Des. 85 (Cooling)	1	1
10	AP 71169	Cabinet, Des. 218, Power-supply	1	1
11	AP 70246	Dummy Load	1	1
12	AP 63205	Binary Counter Unit	54	65
13	AP 63206	Gating Amplifier Unit, Positive	23	58
14	AP 63207	Gating Amplifier Unit, Negative	8	28
15	AP 63284	Input Unit, Amplifier	–	1
16	AP 64001	Store Unit	–	34
17	AP 63285	Input Unit, Bias Control	–	1
18	AP 63286	Diode Gate Unit	–	13
19	AP 63287	Amplifier and Diode Switch Unit	3	15
20	AP 63288	Time-base Unit, 72P	–	2
21	AP 63289	Time-base Correction Store Unit	4	8
22	AP 63290	Time-base Unit 72R	2	–
23	AP 64382	Constant-current Unit	2	–
24	AP 63998	Output Unit, Des. 6	12	9
25	AP 63995	Frequency-doubler Unit	–	1
26	AP 63996	Crystal Oscillator Unit	1	1
27	AP 64384	Amplifier Unit, Des. 28	7	7
28	AP 63218A	Relay Unit, Des. 77	10	52
29	AP 63999	Output Unit, Des. 7	1	–
30	AP 65043	Rectifier Unit 63DY	1	1

NOTE: Items 12–29 inc. are plug-in units contained in Items 1, 2 and 3.

PHYSICAL DATA

	Height	Width	Depth
Equipment Racks	5 ft 3 in	2 ft 10½ in	1 ft 1¼ in
Monitor Unit	1 ft 10 in	1 ft 9½ in	10¼ in
Monitor Control Panel	5 ft 3 in	1 ft 2½ in	1 ft 1½ in
Power Supply Cabinet	5 ft 10 in	2 ft 4 in	1 ft 2½ in
Heat Exchanger	3 ft 9 in	1 ft 3 in	1 ft 4 in

POWER SUPPLIES

Outfit RJT(1) : 115 V 60 Hz 1Ø 0.6A (or 200/220 V d.c.)
440 V 60 Hz 3Ø 3-wire Total Currents Red 4.2A, Blue 4.0A.

Outfit RJR(1) : 115 V 60 Hz 1Ø 1.05A (or 200/220 V d.c.)
440 V 60 Hz 3Ø 3-wire Total Currents Red 6.5A, Yellow 6.4A, Blue 5.5A

HANDBOOK

BR 2213(1), (2), (3)A, (3)B.

ESTABLISHMENT LIST

E1132