RECEIVER OUTFIT CGH

SUMMARY OF DATA

PURPOSE

Receiver Outfit CGH provides for dual spaced diversity reception of wireless communications in Royal Naval Shore Stations, and for the conversion of wireless signals into direct current signals suitable for operating an undulator, a teleprinter or a reperforator.

FREQUENCY

650 ko/s - 30.6 Mc/s.

BRIEF GENERAL DESCRIPTION

The outfit consists of two Receiver B40, adaptors for Frequency Shift signals, and A.F. - D.C. Converter for combining and converting amplitude modulated signals, tuning indicators and filters. An undulator is provided, and the necessary rectifiers, plugs and sockets for the speedy insertion of a teleprinter and reperforator are also fitted. The teleprinter and reperforator are not supplied as part of the outfit. The apparatus is rack mounted and is arranged so that the controls may be reached from the operator's position.

MAJOR UNITS

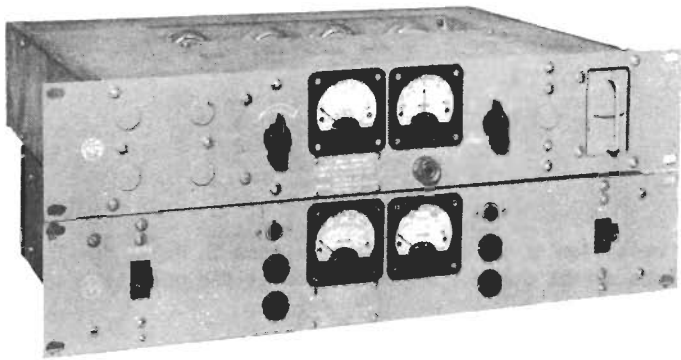
Patt. No.	Description	Physical Data			
		Height	Width	Depth	Weight
57140/A/B	Receiver B40 (2 off)	19⅜"	13⅛"	16"	114 lb
66862 or 100386	Adaptor, Receiver Frequency Shift (2 off)	3½"	19"	12½"	24 lb
	Adaptor, Receiver Frequency Shift (2 off)	3½"	19"	9½"	24 lb
66863	Power Unit for use with Patt. 66862	3½"	19"	9⅞"	22½ lb
67865	Case for Dual Diversity Converter A.F. to D.C.	7"	19"	23½"	84 lb
67866	Filter and A.G.C. Switching Unit	3½"	19"	8"	9 lb
24047	Rectifier Unit 43A	23½"	19"	7⅞"	50 lb
24029	Rectifier Unit 26B	12"	19"	8⅝"	30 lb
66532	Undulator U.G.8A	14"	18"	14½"	40 lb
67980	Indicator, Tuning Frequency Shift Visual	3½"	19"	13⅜"	24 lb
67981	Filter Unit, Frequency Shift Morse	3½"	19"	7⅛"	5¼ lb
67950	Amplifier Unit, Design 8	Part of Patt. 67865			
67951	Mixer Unit Design 14				
69752	Rectifier Unit Design 140 (2 off)				

The overall dimensions of the rack are 6' 0⅝" high 3' 5¼" wide and 3' 6" deep. The total weight of the outfit is 8 cwt.

DESCRIPTION OF MAJOR UNITS

In certain installations components of Outfit CGH are used with receivers other than B40. A more than usual fuller description of these units are given.

PATT. 66862 ADAPTOR, RECEIVER FREQUENCY SHIFT



PATT. 66862 ADAPTOR AND PATT. 66863 POWER UNIT

PURPOSE

To convert any conventional communication receiver for reception of carrier frequency shift transmissions. For dual diversity reception two Patt. 66862 Adaptors are used. A single Patt. 66863 Power Unit is used with either one or two adaptors. A Patt. 66864 relay is also used.

TYPE OF RECEPTION

Carrier frequency shift transmissions (with or without 200 c/s phase modulation) of either morse or teleprinter codes.

BRIEF TECHNICAL DESCRIPTION

Audio frequency signals from the receiver are fed through an attemuator network and band-pass filter to a carrier amplifier-limiter. The square wave output of the limiter passes to a linear demodulator which discriminates between mark and space signals. A low pass filter follows the demodulator to improve the Signal/Noise ratio and to remove any residual audio frequency components before passing the signals to a keying amplifier limiter which controls a high speed relay. When used for dual diversity the relay is fitted in one A.P.66862 adaptor only. The diversity connection between the two adaptors causes this relay to follow the stronger signal of the two in a conventional manner. To further improve efficiency of diversity reception the AGC systems of the two receivers should be combined in order that the radio receiver receiving the stronger signal controls the AGC. The low-pass filter limits the use of the converter to keying speeds of 75 bauds and less.

POWER REQUIREMENTS AND CONSUMPTION

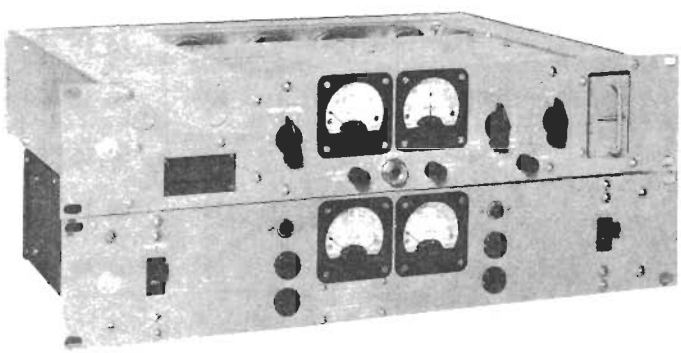
1 - Patt. 66862 Adaptor Receiver F.S.) 230V 50/60 c/s
1 - Patt. 66863 Power Unit) 46 watts

2 - Patt. 66862 Adaptor Receiver F.S.) 230 50/60 c/s
1 - Patt. 66863 Power Unit) 58 watts

REMARKS

Patt. 66862 Adaptor Receiver F.S. was the first of its type and is now superseded by Patt. 100386 which cater for keying speeds lower than and in excess of 75 bauds and also incorporates a signal variable-bias control.

PATT. 100386 ADAPTOR, RECEIVER FREQUENCY SHIFT



PATT. 100386 ADAPTOR AND PATT. 66863 POWER UNIT

PURPOSE

To convert any conventional receiver for reception of carrier frequency shift transmissions. For dual diversity reception two adaptors are used. For triple diversity reception three adaptors are used. A Patt. 66863 Power Unit is used for any of the three receiving arrangements. A Patt. 66864 relay is also used.

TYPE OF RECEPTION

Carrier frequency shift. Frequency shifts between 200 c/s and 1000 c/s without introducing distortion.

BRIEF TECHNICAL DESCRIPTION

The adaptor is designed to operate from the unbalanced audio frequency output of a receiver or line having an impedance of 600 ohms with a nominal level of 0 db ref. 1 milliwatt at approximately 2550 c/s centre carrier frequency.

A resistive "T" type network is included to improve matching of the band-pass filter to the line.

An independent volume control and associated level meter are mounted on the front panel.

The input filter has a pass band of 1700-3500 c/s.

Filtered outputs are applied to an amplifier limiter and inputs between -50 and +20 dbm can be accepted.

This is followed by a differential frequency discriminator. Any shift between 200 and 1000 c/s can be accepted to provide polar outputs to a keying amplifier-limiter. A bias control is incorporated for compensation of telegraph distortion. The D.C. keying amplifier is followed by a Carpenter High Speed Relay from which any recording equipment, teleprinter, undulator etc. may be operated. Meters are provided to indicate the input level, the demodulator outer level and line current.

For dual diversity operation an A.P. 66864 Relay is used with one of the adaptors. For triple diversity operation the three D.C. amplifier valves of two of the A.P. 100386 adaptors should be extracted. The A.P. 66864 Relay is inserted in the third A.P. 100386 adaptor. The removal of these valves enables the three adaptors to be supplied from a single A.P. 66863 Power Unit.

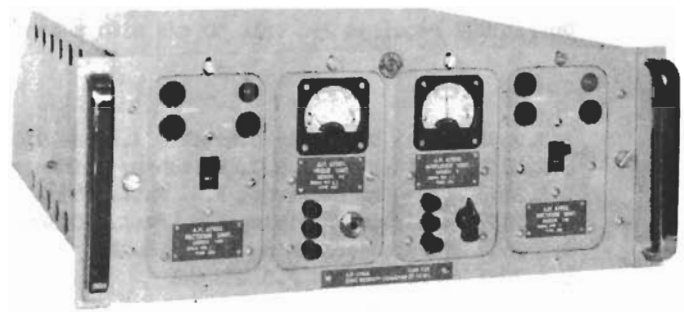
POWER REQUIREMENTS AND CONSUMPTION

1 Patt. 100386 Adaptor Receiver F.S.) 230V 50/60 c/s
1 Patt. 66864 Power Unit) 46 watts

PATT. 67865 DUAL DIVERSITY CONVERTER A.F. TO D.C.

PURPOSE

To enable any two conventional types of communication receiver to be coupled together to form a dual diversity receiving outfit for the reception of C.W. transmissions, keyed either by ON/OFF or Interrupted Carrier Keyed (I.C.K.) methods. The output of the converter is suitable for the simultaneous operation of a teleprinter, reperforator and undulator without the aid of a mechanical relay and an -80 +80 volt supply.



PATT. 67865 DUAL DIVERSITY CONVERTER A.F. TO D.C.

BRIEF TECHNICAL DESCRIPTION

To obtain complete equipment Patts. 67950, 67951 and 67952 (2 off) must be demanded. Patt. 67865 then consists of two independent A.F. amplifiers, each with tappings for 5000 and 600-ohm input, are provided for connection to two radio receivers in diversity. Two independent volume controls permit local balancing of input levels in the case of remotely-situated receivers. Switches are provided to permit operation from either or both inputs.

In order to meet prevailing conditions on the radio circuit, differential type detectors are used, whereby variations in input level are compensated by automatic correction of threshold in the D.C. amplifier.

Two identical detectors combine both signals across a common load, and the resultant signal is fed into a chain of D.C. amplifier limiters terminated by stages in paraphrase working with a two wire output.

The D.C. amplifier limiter contains test facilities, means for independent adjustment of mark and space current, signal-shaping circuit and means for manual correction of bias arising in either the equipment or transmission path.

ELECTRICAL CHARACTERISTICS

Input Impedance - 600 ohms or 5000 ohms.

Output Current - Varies non-linearly with load e.g. 55 mA with a 250 ohm load
28 mA with a 3000 ohm load.

Keying Speed - Up to 400 bauds.

POWER REQUIREMENTS AND CONSUMPTION

105V-115V-125V, 210V-230V-250V 50 c/s 130 watts (approx.)

PATT. 67866 FILTER AND A.G.C. SWITCHING UNIT

PURPOSE

To improve the signal/noise ratio under difficult reception conditions of the signal being fed to the Patt. 67865 converter and to provide a selection of A.G.C. time constants for the two radio receivers connected in diversity.

BRIEF TECHNICAL DESCRIPTION

The filter unit consists of two separate 500 c/s to 2550 c/s band pass filters. Switching facilities enable the filters to be connected to the input of each of the two channels of the A.P. 67865 converter.

The A.G.C. switching circuit provides the following facilities:-

Receiver "A" to operate independently with a choice of four A.G.C. time constants.

Receiver "B" to operate independently with a choice of four A.G.C. time constants.

Receivers "A" and "B" to operate in diversity with a choice of four A.G.C. time constants.

POWER REQUIREMENTS AND CONSUMPTION

Nil

POWER REQUIREMENTS AND CONSUMPTION

Outfit CGH requires 230 volt 50 c/s with a consumption of approx. 750 watts.

HANDBOOKS

B.R.2036 (Dual Diversity Convertor A.F. to D.C.)
B.R.2037 (Filter and A.G.C. Switching Unit)
B.R.2038 (Adaptor Receiving F.S. Patt. 66862)
B.R.2039 (Adaptor Receiving F.S. Patt. 100386)
B.R.2040 (Indicator Tuning F.S. Visual)
B.R.2041 (Filter Unit F.S. Morse)

ESTABLISHMENT LIST

E.1022

INSTALLATION SPECIFICATION

B.731