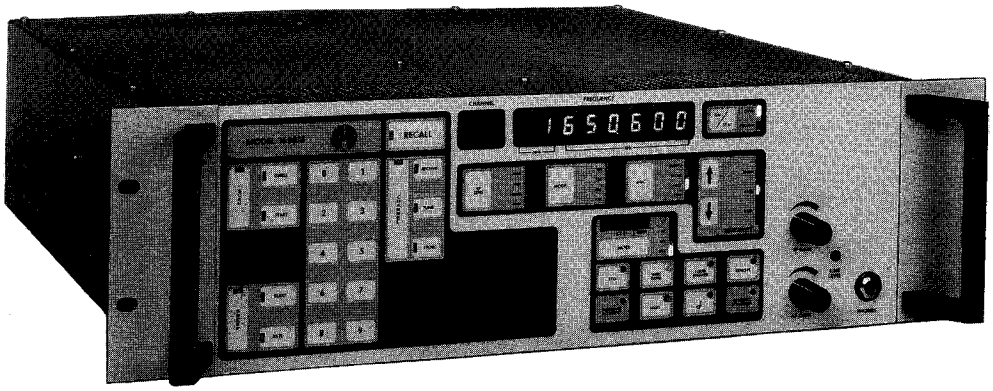
Eddystone

1650/6 RECEIVER

PART 1

INSTALLATION NOTES OPERATING INSTRUCTIONS AND SERVICE DATA



Eddystone Radio

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1650/6 HANDBOOK INDEX

- PART 1 -

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First Edition.....1650/6 Handbook Part 1. May 1988.

1650/6 Handbook Ammendment

SOFTWARE REVISION 1. 1650/6 RECEIVER

EPROM : 13IC8 (11898PB) Page 'E'

Mod. Record Label Status : 1 (ONE)

Installation

1) Remove power from the receiver and with reference to Section 5.2 MODULE ACCESS AND REMOVAL - remove front panel assembly.

2) Support front panel assembly on it's handles and remove the microcomputer cover - see Section 5.2.4 MICROCOMPUTER ASSEMBLY.

3) Remove the microcomputer lid - Section 5.2.4 and locate 13IC8.

4) Observing the Component Handling precautions for MOS devices described in in Appendix A.1, replace EPROM 13IC8 with 11898PB.

5) Replace microcomputer lid and restore front panel assembly to receiver as Section 5.2.

Operation

This software revision affects only the 'out of lock' indication of the synthesiser.

Circuit diagrams BP1827 Main IF/Audio Board, BP1828 Synthesiser and VCO Board and Section Four : Circuit Description should be studied along with the following:-

An 'out of lock' condition of either of the two synthesiser loops is detected by the microcomputer. Where this condition persists for a period of one second, the microcomputer causes the signal path of the main IF/audio board to be open circuit by selecting an unused position (0) on BCD-decimal decoder 10IC7. This deselects relays 10RLJ,K,L,M,N,P and so disconnects the 1.4MHz signal path.

The microcomputer measures the 'out of lock' time by monitoring the relevant input during repetitive program cycles and accumulating the result. The receiver is therefore, by implication, under 'local control' and the 'clock line' 1PL1-3 is High (1). During 'remote control' however, 'clock line' 1PL1-3

is Low (0) and the microcomputer performs only one program cycle and then waits for the next data word to be sent. In order to test for the 'out of lock' condition under 'remote control' it is necessary therefore to take the 'clock line' 1PL1-3 High (1) for a period of one second so that the microcomputer (now under local control) can test for the 'out of lock' condition with repetitive program cycles.

Performance

Insertion loss under 'out of lock' conditions.

f. input 1MHz >80dB below standard output

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Eddystone Radio Ltd *July 1989.*

SECTION ONE : INTRODUCTION

WARNING

Before connecting the receiver to the power supply SECTION TWO : INSTALLATION must be read especially with regard to the instructions concerning wiring of the mains connector. Information about first aid in the case of electric shock and about the 'Health and Safety at Work Act 1974 (United Kingdom)' is bound at the rear in Appendix A.

The 1650/6 Handbook is organised into two volumes; Part 1 and Part 2. This is Part 1 and consists of the following sections:-

SECTION ONE : INTRODUCTION which includes safety warnings, a general description of the receiver and ancillaries with a data summary and typical performance.

SECTION TWO : INSTALLATION which details physical dimensions and fittings and all external connections. Setting-up procedures and fuse details are also given.

SECTION THREE : OPERATION which describes all the receiver's controls and their use.

SECTION FOUR : CIRCUIT DESCRIPTION which explains operation with reference to the block and circuit diagrams.

SECTION FIVE : MAINTENANCE details alignment and setting up techniques as well as test procedures for the microcomputer related parts.

SECTION SIX : SPARES lists all printed circuit and related electronic components used in the 1650/6.

1.1 GENERAL DESCRIPTION

The Eddystone 1650/6 is a purpose designed variant of the 1650 receiver in order to meet the requirements of Specification ME 0634 issue 1.4.1. The main features are restricted 'local' operation, 100kHz IF output, three selectable IF bandwidths and fast 'remote' control. The two audio outputs, at 600 ohms and 8 ohms, are centred about 5kHz at the tuned frequency with an erect frequency response matching that of the bandwidth selected. Selectivity, AGC and frequency settings are input via the front panel membrane keyboard. The frequency is displayed to 5Hz on eight seven segment displays while selectivity, AGC and meter settings are seen as LED 'bars' through the membrane panel. Further LED indicators

are used to show 'remote' operation and 'wideband' input selection. During 'remote' operation, selected by the remote control system only, the keyboard is locked out and no 'local' operation is possible. The aerial input impedance is 50 ohms as is the 100kHz IF output both using BNC connectors. The 'remote' and 'ancillaries' connections utilise 9 way and 25 way 'D' connectors respectively. The receiver is rack mounted, constructed of zinc plated steel using stainless steel or zinc plated fixings.

1.2 DATA SUMMARY

Frequency coverage	10kHz to 30MHz.
Selectivity	16kHz, 8kHz, 3kHz.
AGC Slow Fast	Attack 300mS. Decay 4 Seconds. Attack 20 mS. Decay 300mS.
Aerial input	50 ohms BNC socket.
IF output	100kHz at 100mV/50 ohms (adjustable internally) BNC socket.
AF output line	1mW/600 ohms isolated output with center tap and electrostatic screen. (Preset adjustment via front panel).
AF output loudspeaker	1 Watt/8 ohms.
Headphone jack	4mW/600 ohms (with facility to mute external LS if required).
External antenna switch	Open collector transistor O/P 50mA maximum current, 30V maximum voltage. Transistor 'on' above 10.5 MHz.
Remote control	Synchronous system 40 bit word at 1200-4800 bits per second. Frequency setting to 10Hz.
Power supply	240V $\pm$ 10% 50Hz single phase.
Power consumption	40-60VA. (depending on settings).
Temperature range	+10 to +40deg. C (operating) -40 to +70deg.C (storage).
Maximum humidity	95% relative at +40 deg.C.
Width	483mm (19in).
Height	3U 132.5mm (5.22in).
Depth	499mm (19.65in) intrusion into rack.
Weight	approx. 17.24Kg. (38lb).

1.3 TYPICAL PERFORMANCE

THE 1650/6 meets the requirements of ME 0634 issue 1.4.1. The main differences are outlined below.

Sensitivity	17dB S/N for 3uV PD input with 8kHz bandwidth at 2 MHz.	
Selectivity	-6dB	-60dB
16kHz position	18kHz	30kHz
8kHz	9kHz	12kHz
3kHz	3.7kHz	5kHz
1st Image	100dB.	
2nd Image	85dB.	
IF rejection	90dB.	
Frequency stability	Better than 10 Hz over the operating temperature range.	
AGC characteristic	3dB change in output for a 90dB increase above AGC threshold.	
Intermodulation	The level of third order intermodulation products produced by two in-band signals of 100mV PD will be at least 40dB below that of either signal.	
Radiation	Less than 10uV PD (50 ohms) over 0-120MHz.	
Remote control speed	50-80mS depending on frequency step size.	