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SEVEN CHANNEL RECEIVER

MODEL 1680/2

GENERAL DESCRIPTION

The Eddystone model 1680/2 receiver is a compact low-cost receiver for operation on seven channels in the frequency range 400kHz to 535kHz. It provides for reception of MCW (A2A), CW (A1A) with variable BFO, and FSK (F1A) with high stability carrier insertion oscillator, and has wide and narrow bandwidth positions.

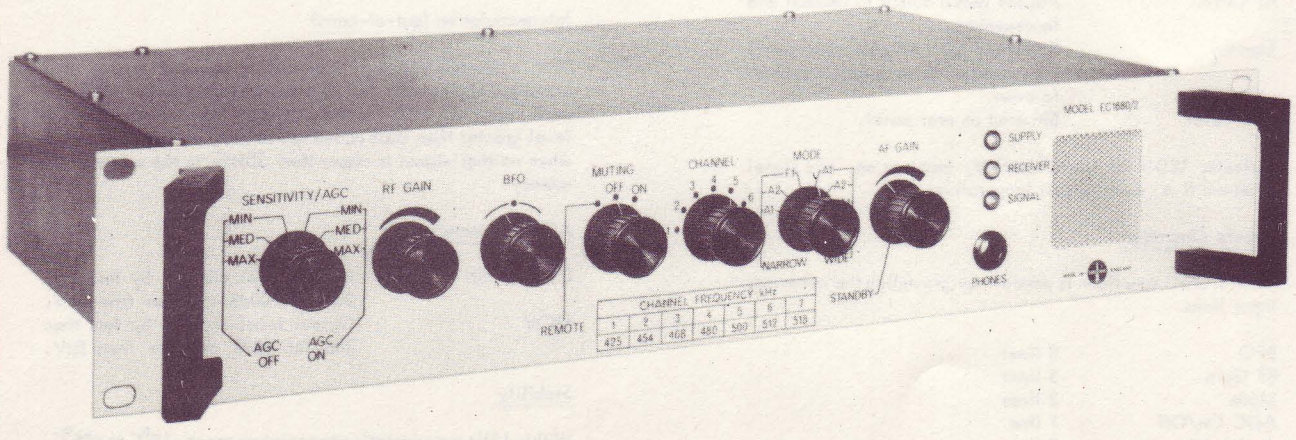
Power supply arrangements can be chosen to suit the customer's installation requirements. The standard receiver operates from standard 40Hz-60Hz AC supplies and from 24V DC supply (negative earth). For 12V or floating earth supplies, an external converter can be supplied.

Audio outputs provided are for connection to standard 600Ω circuits, output for headset, and 2 watts to an internal speaker plus 2 watts to an external speaker.

Audio-derived AGC is used for CW and FSK reception and IF-derived AGC for MCW. A manual RF gain is provided which can be used in conjunction with or instead of the AGC. A fast-acting muting circuit is included which provides 17dB of noise-quieting in the absence of a signal.

A single conversion circuit design is employed, with an output provided at the 1.4MHz intermediate frequency for connection to ancillary units, and operation in dual diversity is possible.

Remote control of all functions is available.



GENERAL SPECIFICATION

Frequency

Seven channels between 400kHz and 535kHz. Frequency range could be extended to specific customer requirement.

Intermediate Frequency

1400kHz

Reception Modes

CW	(A1A)	
MCW	(A2A)	
FSK	(F1A)	(required audio output to be specified by customer)

Aerial Input

50Ω unbalanced
30VRMS continuously applied will not damage the receiver.

Power Supplies

AC 100V/130V and 200V/250V (40Hz-60Hz) standard fitting.
24V DC with negative earth standard fitting.
12V DC and 24V DC with floating earth optional extra.
Consumption 25VA.

Environmental

Operational	:	-10°C to +55°C
Storage	:	-40°C to +70°C
Humidity	:	95% at +40°C
Vibration	:	Compatible with all marine specifications.

Dimensions

Panel	:	483mm x 88mm (19 inches x 3.5 inches)
Intrusion into rack	:	282mm (11 inches) over cover plus 50mm (2 inches) for cabling.
Weight	:	6.5Kg.

Controls

Aerial Attenuator	:	3 position providing nominal 0dB, -20dB, -40dB.
AGC	:	On/Off switch combined with aerial attenuator.
RF Gain	:	Can be used with AGC On or Off.
BFO	:	Range ±3kHz provided.
Muting	:	On/Off control. Muting threshold dependent on RF gain setting.
Remote	:	Remote/local selection, combined with muting control.
Channel	:	Selects channels 1-7.
Mode	:	Select CW, MCW or FSK with a choice of two bandwidths.
AF Gain	:	Adjusts audio output to headset and loudspeaker.
Standby	:	Combined with AF gain removes HT from receiver leaving power applied to oven.
Line Level	:	Situated on rear panel.

Indicator LED's for power applied, receiver on, and signal received (i.e. mute circuit inoperative).

Remote Operation

Control of all functions is possible by grounding the necessary input lines.

BFO	:	8 lines
RF Gain	:	5 lines
Mode	:	2 lines
AGC On/Off	:	1 line
Aerial Attenuator	:	2 lines
Muting On/Off	:	1 line
Bandwidth	:	1 line
Channel	:	3 lines

PERFORMANCE SPECIFICATION

(Not to be interpreted as a test specification)

Sensitivity

1μV for 12dB SINAD on CW.

Selectivity

Wide	±1.5kHz at -6dB ±3kHz at -60dB
Narrow	±150Hz at -6dB ±300Hz at -60dB

Image Rejection

Greater than 80dB

IF Rejection

Greater than 90dB

Audio Output

Line 600Ω balanced or unbalanced	:	Preset to +10dBm maximum.
Headset	:	600Ω nominal, output adjusted by AF gain control to +10dBm maximum.
Loudspeaker	:	2 watts maximum.
External loudspeaker	:	2 watts maximum into 8Ω.

Overall Response

Level within 6dB over 300Hz to 1.5kHz in wide bandwidth. Distortion better than 5%, typically 2%.

Blocking

With a wanted signal 60dB above 1μV, an unwanted carrier 10kHz off-tune must be of a level greater than 110dB above 1μV to affect the output by 3dB.

Cross Modulation

With a wanted carrier 60dB above 1μV adjusted to give standard output at an audio frequency of 1400Hz, an unwanted signal 20kHz off-tune and modulated 30% at 1000Hz must be of a level exceeding 90dB above 1μV to produce an audio output greater than 30dB below standard output.

Intermodulation (in-band)

The third order intermodulation products at 600Hz and 1800Hz produced by two carriers of level 80dB above 1μV tuned to produce outputs of 1000Hz and 1400Hz will be more than 30dB below standard output when the individual carriers each provide an output equal to standard output.

Intermodulation (out-of-band)

With a wanted signal 1μV producing standard output, two unwanted signals adjusted to produce a third order intermodulation product at the wanted frequency, must each be of a level greater than 80dB above 1μV to produce standard output when neither signal is closer than 30kHz to the wanted frequency.

AGC Characteristic

CW and FSK	:	Output level changes by less than 3dB for 100dB increase from 2μV.
MCW	:	Output level changes by less than 3dB for 90dB increase from 5μV.

Stability

Within 15Hz over operating temperature range -10°C to +55°C.