# Eddystone

## H.F. COMMUNICATIONS RECEIVER

### MODEL 940


The Eddystone " 940 " is a general purpose communications receiver covering from 480 kc/s to 30 Mc/s in five overlapping ranges. It is suitable for the reception of CW, AM and SSB signals, and, by reason of the two radio frequency and two intermediate frequency stages incorporated, a high performance is secured throughout the frequency ranges. The built-in power supply unit permits direct operation from standard AC mains supplies of 110/125 and 200/240 volts, 40/60 cycles.

The first RF amplifier is of the cascode type and, as a result, the figures for noise, cross-modulation and inter-modulation are exceptionally good. There are three selectivity positions, the narrowest making use of a crystal filter with a panel-operated phasing control. The output stage is of the push-pull type and excellent quality of reproduction is available when required. Outputs are provided for speaker, line, and telephone headset.

Other features include separate RF and AF gain controls ; a panel-mounted carrier level meter ; separate detectors for AM and for CW/SSB ; an efficient noise limiter ; gear-driven slow motion drive and vernier scale ; and a stand-by switch which can also be used to control auxiliary equipment.

The construction and workmanship are of a high standard. The receiver is attractively finished in modern style and can be supplied in table and rack mounting patterns.

MODEL 940 SPEC SHEET Sept 1967. Price c.£140

# Eddystone 940 Receiver

## GENERAL INFORMATION

**Frequency Coverage**

The five positions of the wavechange switch give the following frequency ranges :—

| | | | |
|---|---|---|---|
| Band 1 | 12·7 Mc/s | to | 30 Mc/s. |
| Band 2 | 5·4 Mc/s | to | 12·7 Mc/s. |
| Band 3 | 2·4 Mc/s | to | 5·4 Mc/s. |
| Band 4 | 1·03 Mc/s | to | 2·4 Mc/s. |
| Band 5 | 480 kc/s | to | 1030 kc/s. |

**Circuit and Valve Sequence**

Single conversion superheterodyne : two RF stages : two IF stages on 450 kc/s and incorporating phased crystal filter : AM and CW/SSB detectors : push-pull audio stages : power and stabiliser circuits.

| | | | |
|---|---|---|---|
| V1 | ECC189 | (CV5331) | 1st RF Amplifier (cascode) |
| V2 | 6BA6 | (CV454) | 2nd RF Amplifier |
| V3 | 6AJ8 | (CV2128) | Mixer Stage |
| V4 | 6C4 | (CV133) | Local Oscillator |
| V5 | 6BA6 | (CV454) | 1st IF Amplifier |
| V6 | 6BA6 | (CV454) | 2nd IF Amplifier |
| V7 | 6AL5 | (CV140) | AM Detector/AGC Rectifier |
| V8 | 6BE6 | (CV453) | CW/SSB Detector |
| V9 | 12AU7 | (CV491) | Audio Amplifier/ Phase Splitter |
| V10/ V11 | 6AM5 | (CV136) | Push-pull Audio Output |
| V12 | GZ34* | (CV1377) | HT Rectifier |
| V13 | VR150/30 | (CV216) | HT Stabiliser |
| D1 | 2E1 | | Noise Limiter (silicon diode) |

(* or 5Z4G)

**Mounting Style**

The receiver is normally supplied in table mounting style. When specified as " 940/RM ", a special cabinet is fitted to allow mounting in an international 19″ size of rack.

**Power Supply**

The mains transformer has tappings for 110 and 200/240 volts 40/60 cycles, the consumption being approximately 80 watts. The HT supply is well smoothed and derived from it is a stabilised voltage which is applied to the oscillator valves.

**Tuning Drive and Scales**

The geared tuning mechanism is made to precision limits and has a reduction ratio of 140 to 1. This, in conjunction with the flywheel loading, results in smooth positive operation, free from backlash. The straight line tuning scales are clearly marked in frequency, the accuracy of calibration being within 0.5%. The vernier scale, which is read against the lowest scale on the main dial, confers an adequate degree of mechanical bandspread, available throughout the tuning range, and permits accurate re-setting.

**Signal Frequency Sections**

The coils, which are housed in a robust diecasting, have adjustable powdered-iron cores and air dielectric trimmers, giving high efficiency and enabling each group of tuned circuits to be aligned to close limits. The separate oscillator valve is fed from a stabilised high tension supply. The input impedance is nominally 75 ohms balanced or unbalanced.

**Intermediate Frequency Stages**

The well designed intermediate frequency transformers are permeability tuned to 450 kc/s. A vacuum-mounted crystal is used in the highly effective filter, which has variable phasing. A thermionic diode acts as detector on amplitude modulated telephony (A3). For other signal modes, including SSB, a mixer detector is used, incorporating a beat frequency oscillator, the pitch of which can be varied over a range ±3 kc/s.

**Controls**

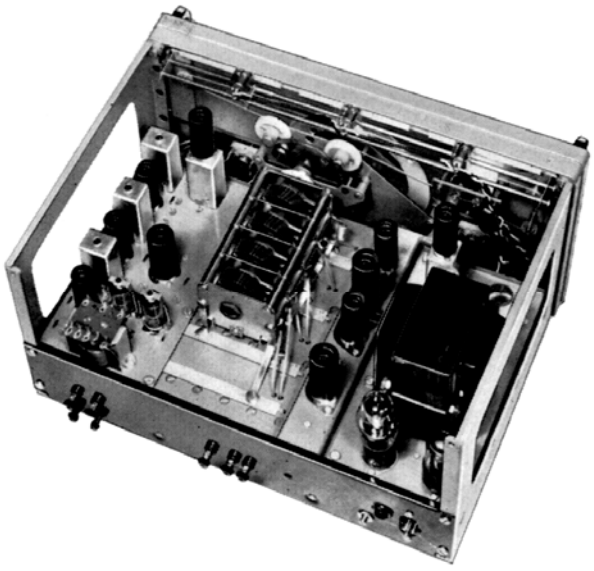
The following controls are conveniently mounted on the front panel :—

Tuning knob ; wavechange knob ; RF gain ; audio gain ; mode switch (AM — CW/SSB) ; AGC switch ; NL switch ; selectivity switch (minimum, maximum and crystal positions) ; crystal phasing ; BFO pitch ; stand-by switch ; mains switch.

At the rear is a pre-set potentiometer for setting the carrier level meter to zero.

**Other Features**

A fuse (rated at one ampere) is fitted on the primary side of the mains transformer. All connections at the rear are to spring type terminals



*Rear view of the "940" receiver illustrating the internal construction*

which give positive contact and permit quick release. Excellent ventilation is provided.
An external signal can be fed into the audio stages if desired, terminals being fitted at the rear for this purpose.

**General Construction and Finish**
The front panel and the tuner unit are robust aluminium diecastings and the other units of steel or brass. The cover is made of steel and is easily removed by withdrawing four screws at the rear. The panel is fitted with chromium plated handles, which are useful both for lifting the receiver and as a protection when the receiver is placed face downwards. Rigid side-plates protect the interior of the set. Component parts are of the highest quality and are suitable for tropical service.
The exterior finish is in two-tone grey and the modern styling leads to a most attractive appearance.

**Physical Details**
Width 16¾ in. (42·5 cms) Depth 15 in. (38·1 cms)
Height 8¾ in. (22·2 cms) Weight 44 lb. (20 kgs)

**Accessories**
Recommended accessories are Cat. No. LP.2921 or LP.2924 telephone headsets fitted with plug to match the jack on the receiver panel. The Cat. No. 935 Speaker, or alternatively the Cat. No. 906 plinth speaker, which takes the form of a base to raise the front of the receiver.

# Eddystone 940 Receiver

## AVERAGE TECHNICAL FIGURES

**Sensitivity**
A substantially constant sensitivity of 3 microvolts is maintained throughout, for a 15 dB signal-to-noise ratio, 30% modulation, 50 milliwatts output.

**Selectivity**
The following figures are indicative of the overall bandwidths provided :—

| Position | —6 dB | —20 dB | —40 dB |
|---|---|---|---|
| MINIMUM (Broad) | 10 kc/s | 15 kc/s | 22 kc/s |
| MAXIMUM (Narrow) | 4 kc/s | 8 kc/s | 12 kc/s |
| CRYSTAL* | 400 c/s | 2 kc/s | 3·5 kc/s |

* Phased for symmetrical response.

**Stability**
Negative temperature coefficient compensating capacitors are fitted to the oscillator circuits and adequate ventilation is provided to prevent undue temperature rise. As a result, an excellent degree of frequency stability is secured after the initial warm-up period.

**Image Rejection**
at 1 Mc/s .. 90 dB at 8 Mc/s .. 75 dB
at 20 Mc/s .. 40 dB

**AGC Characteristic**
The audio output level does not change by more than 9 dB when the carrier level is increased by 100 dB above 5uV.

**Audio Output**
Connections are provided for 2·5 ohm speaker and for 600 ohm lines, balanced or unbalanced. When a telephone plug is inserted in the jack on the front panel, the speaker is muted. The audio response is level within 3 dB over the range 100 c/s to 8000 c/s. Distortion does not exceed 5% at 1000 c/s when an output of 1·0 watt is fed into a 2·5 ohms load. Hum level is 46 dB below 1 watt.

**Input Impedance**
Nominally 75 ohms, balanced or unbalanced, to terminals at the rear.

**Instruction Manual**
An instruction manual supplied with each receiver.

*(END)*