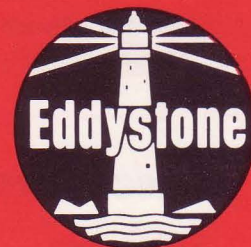


# Eddystone Radio Limited

Member of Marconi Communication Systems Limited



## General Purpose UHF Communication Receiver

**1990S  
Series**  
(PROVISIONAL)

### FEATURES

440 - 1000 MHz  
(1 GHz) coverage

AM - FM - pulse

Continuous tuning plus choice of  
synchronizer for high  
stability working

Modular construction

40-60Hz AC or 12V DC operation



Model No. 1990S



## DESCRIPTION

Model 1990S is a professional grade UHF receiver intended for communications and laboratory use. The frequency range covered is 440-1000MHz and provision is made for reception of AM, FM and PULSE transmissions. Operating voltage can be taken from any standard 40-60Hz AC supply or 12V DC\* with negative earth. The receiver employs single conversion with an intermediate frequency of 36.5MHz except FM mode when there is a further conversion to 21.4MHz.

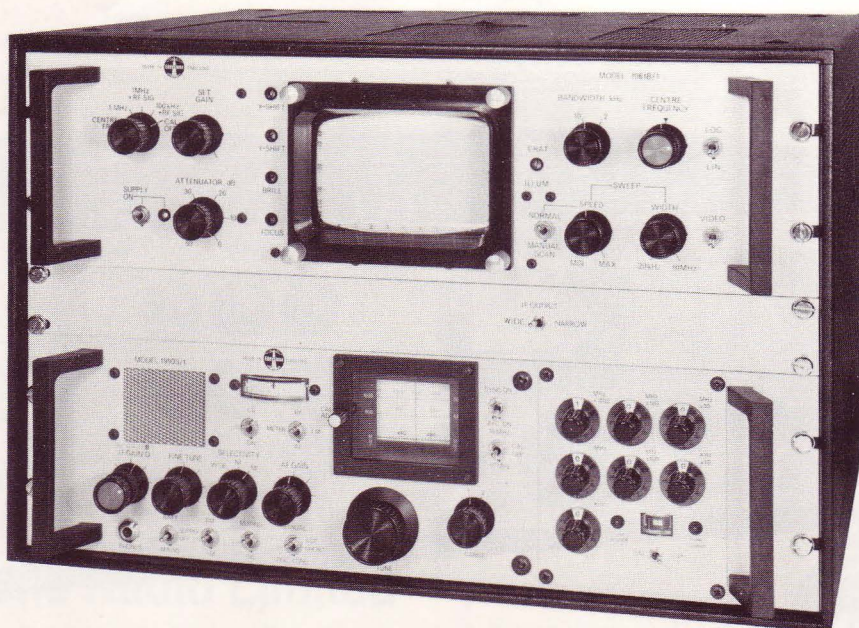
The 440-870MHz tuner and the 800-1000MHz tuner both employ a transistor first RF stage and a dual gate FET 2nd RF stage. AGC is applied to the 2nd stage and a single balanced mixer is used. Both units are varactor tuned. Provision is made for high stability working with a synchroniser unit which allows continuous tuning in steps of 1kHz.

The IF complement fitted comprises a surface acoustic wave filter with a 6dB bandwidth of 5MHz and LC filter providing a 3dB bandwidth of 400kHz. A further position can be fitted with a crystal filter to provide narrow bandwidths to special order. Low level output pre-filter and post filter IF outputs are available at low impedance for connection to ancillary equipment.

Separate detectors are employed for each mode. Manual gain adjustment is provided with independent RF/IF AGC circuits and a carrier controlled muting circuit.

The Video circuits provide separate positive and negative outputs at low impedance. A small monitor loudspeaker is fitted on the panel and outputs are available for connection to headset, external loudspeaker and 600 ohm lines. Two separate amplifiers are used one of which provides the line output alone and is equipped with preset level control. The external loudspeaker is muted when the headset is connected and the internal loudspeaker can be muted by means of a panel switch. Other facilities include a dual frequency crystal calibrator and a panel meter which can be switched to read carrier level or 600 ohm line level, and also serves as a centre-zero tuning indicator for FM. The tuning system is gear driven and frequencies are displayed on a metal film scale which has a length of 915mm (36ins) for each range. A Fine Tune Control is also provided. Modular construction is used throughout and the equipment is intended for installation in standard 483mm (19ins) racking. Accessories include a cabinet for bench mounting, a plinth loudspeaker, and special aerial systems.

A panoramic display unit is also available and to provide the 21.4MHz input required on this unit a converter can be supplied to convert down from the 1990S 36.5MHz output. A typical system interface utilizing the 1061B Panoramic Display is illustrated below.



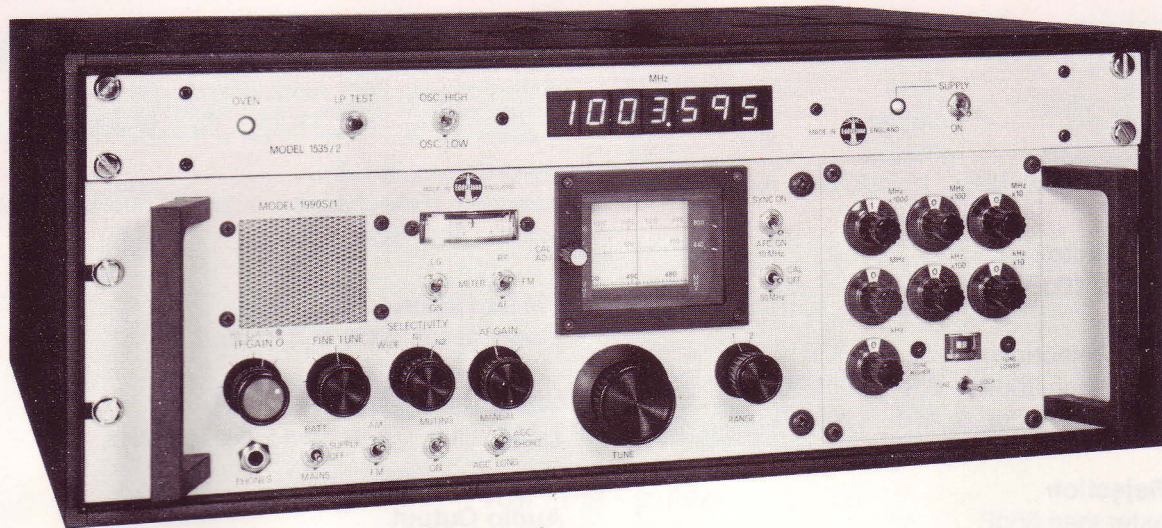
*Model 1402/2 System*

*1990S + 1061B System Mounted*

\*NOTE: Receiver **only** is operational from 12V DC supply. When systems mounted, the unit must be powered via the standard 40-60Hz AC supply.



A Frequency Display Unit type 1535/2 featuring digital readout with a resolution of 1000Hz can also be supplied. A typical system interface is illustrated below.



*Model 1402/9 System*

*1990S + 1535/2 System Mounted*

## SPECIFICATION

### Application

General-purpose solid-state VHF/UHF receiver with versatile frequency control suitable for point-to-point communications, search and surveillance, monitoring and laboratory use.

### Reception Modes

AM - FM - PULSE

### Frequency Coverage

440 - 1000MHz

### Intermediate Frequency

36.5MHz

### Filter Complement

Standard bandwidths: 5.0MHz + 400kHz  
Narrow filter to special order.

### Aerial Input

50/75 $\Omega$  unbalanced.

### Output Facilities

Separate 'wide' and 'narrow' IF outputs, positive video, negative video, external loudspeaker, headset and 600 $\Omega$  lines (bal. or unbal.).

### Oscillator Output ( $\div 10$ )

5MHz Output  
FM Audio Output

### Environmental

-10°C to +50°C (-20°C to +70°C storage).

### Calibration Accuracy

1% 440 - 1000MHz without use of built in calibrator. (Cursor adjustor at mid-position and Fine Tune at mid position). Calibrator provides 50MHz and 10MHz markers for precise frequency setting.

### Power Supplies

AC: 100/130V or 200/260V (40-60Hz)  
DC: 12V with negative earth

### Consumption (AC/12V)

Receiver complete with Synchronizer - 45W/40W.

### Dimensions and Weight (with Synchronizer)

Rack-mounting style:

Panel: 483mm  $\times$  133mm (19in  $\times$  5.25in)

Rack intrusion: 411mm (16.188in)

Weight: 19.5kg (43lb)

Bench-mounting style:

Width: 502mm (19.75in)

Height: 164mm (6.5in)

Depth: 457mm (18in)

Weight: 25kg (56lb)



## PERFORMANCE SUMMARY

### Sensitivity

(10dB S+N/N with standard o/p)

MODE	B/W	440-1000MHz
*AM	400kHz	5 $\mu$ V
**FM	400kHz	5 $\mu$ V

(\*) 30% mod at 1kHz. (\*\*) 22.5kHz deviation.

### Noise Factor

Typically 10dB

### Image Rejection

Greater than 30dB to 850-1000MHz  
40dB to 440- 870MHz

### IF Rejection

Greater than 55dB

### Stability

Free-running oscillator: 1 part in 10<sup>5</sup>/°C  
Synchronizer: 0.5 part in 10<sup>7</sup>/°C\*  
(\*) -10°C to +55°C

### AFC Capture

At least 0.5% of signal frequency (operative in free tune mode only).

### Selectivity

Dependent on filter complement (see above)  
Wide: 5MHz at 6dB  
Intermediate: 400kHz at 3dB (L/C filter)

### Dynamic Range

35dB (with AGC disabled). Taken for 5% total distortion with 60% modulation at 1kHz.

### AGC Characteristic

Less than 15dB change in output for 80dB increase in input from 5 $\mu$ V.

### FM Deviation

Linear acceptance to 75kHz.

### Video Response

Level within  $\pm 3$ dB from 20Hz to 6MHz.

### Audio Output

Ext. loudspeaker (3 $\Omega$ ): 1.5W at 10% distortion  
Line (600 $\Omega$  with CT): 20mW at 5% distortion  
Headset: Low/medium Z  
Response: Within 3dB, 200Hz-8kHz

### IF Outputs (quoted for 10 $\mu$ V signal)

Separate wide and narrow-band outputs matched to 50 $\Omega$  nominal impedance.  
Low-level wideband output: 15 $\mu$ V  
Narrow-band output\*: 50mV  
(\*) B/W set by receiver IF selectivity.

### Muting

Threshold adjustable down to 5 $\mu$ V carrier.

Our equipment is designed generally to meet "British Defence Specification 133 Class L2".

The above figures are typical only and do not form the basis of a contractual test specification.

As we are always seeking to improve our products, the information in this document gives only general indications of product capacity, performance and suitability, none of which shall form part of any contract. The information contained herein is subject to confirmation at the time of ordering.

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