

Single Sideband Adaptor

RA. 63

- **PILOT CARRIER, SUPPRESSED CARRIER AND DSB RECEPTION**
- **UPPER OR LOWER SIDEBAND SELECTION**
- **50 dB UNWANTED SIDEBAND REJECTION**
- **ENTIRELY SELF-CONTAINED**



The Single Sideband Adaptor Type RA.63 enables users to take full advantage of the very high stability of the RA.17 H.F. Communications Receiver to receive s.s.b. radio telephony. The adaptor is extremely versatile, and is capable of receiving all conventional s.s.b. transmissions and d.s.b. radio telephony. Single sideband reception of d.s.b. signals offers great advantages in that the effects of selective fading are reduced and adjacent channel interference can be minimized by choosing the better sideband.

Switched filters are employed, enabling alternative upper or lower sideband operation. These filters are designed to provide a bandwidth of 2500 c/s with a sharp cut-off to ensure satisfactory suppression of the unwanted sideband and of the residual carrier.

The unit is wholly self-contained, incorporating its own power supply and a.f. circuits. The only connection to the receiver is that to the i.f. output socket, leaving normal operation of the receiver unchanged provided that a high stability receiver, such as the Racal RA.17 or RA.117 is used.

Two standard versions of the adaptor are available, the RA.63G for the British market and the RA.63H, which is designed to North American standards. These differ only in mechanical details of plugs and sockets.

A third version is available for use where improved frequency stability is required, designated type RA.63D. This version incorporates a crystal controlled 82 kc/s oscillator in place of the LC oscillator.

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Publication No.

276-1

TECHNICAL DESCRIPTION

The input to the RA.63G/H is mixed with the output from a stable LC oscillator operating at a nominal frequency of 82 kc/s. The frequency of this oscillator is variable over a range of ± 1 kc/s and provides the accurate control of tuning essential to take full advantage of the carrier and unwanted sideband rejection given by the sideband filters.

In the RA.63D an ovened crystal is incorporated for extra stability.

The mixer output, centred at 18 kc/s, is passed to either the upper or lower sideband filter according to the setting of the selector switch on the front panel. These multi-section filters provide a high degree of rejection of all signals other than that in the wanted sideband.

The chosen sideband from the filter is then mixed with the output at 18 kc/s from a fixed frequency oscillator in a product detector, thereby converting the signal to audio frequency. The a.f. stage is provided with a gain control, built-in loudspeaker, headphone jack and a number of independent line outputs. H.T. and heater supplies are included in the equipment, making it entirely self-contained.

The adaptor is designed to operate on a 100 kc/s signal from the i.f. output of the RA.17/RA.117 or any other suitable high stability communications receiver.

TECHNICAL SPECIFICATION

Modes of Operation	S.S.B. (Pilot or Suppressed Carrier). D.S.B.
Input Frequency	100 kc/s.
Fine Tuning (RA.63G and H)	± 1 kc/s.
Input Impedance	75 Ω unbalanced.
Input Level (from 75 Ω terminated source)	50–500 mV.
Sideband Selection	Upper or Lower (Switched).
Unwanted Sideband Rejection	Better than 50 dB above 500 c/s.
Audio Response	500–3000 c/s ± 3 dB.
Audio Outputs	Panel: Monitor loudspeaker Headphone jack. Rear: 50 mW at 3 Ω . Three outputs of 3 mW at 600 Ω .
Power Supplies	100–125V and 200–250V a.c. 45–65 c/s, 15VA approximately.
Dimensions	3½ in. (9 cm.) high x 19 in. (48 cm.) wide x 12¾ in. (32.5 cm.) deep.
Weight	16½ lb. (7.5 kg.).
Environmental Conditions	Operating temperature range: 0° to +55°C. Storage temperature range: -26° to +70°C. Relative humidity: 95% at 40°C.

The RACAL policy is one of continuous improvement, and consequently the equipment may vary in detail from the description and specification in this publication.



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JC/N1266/DL

Printed in England