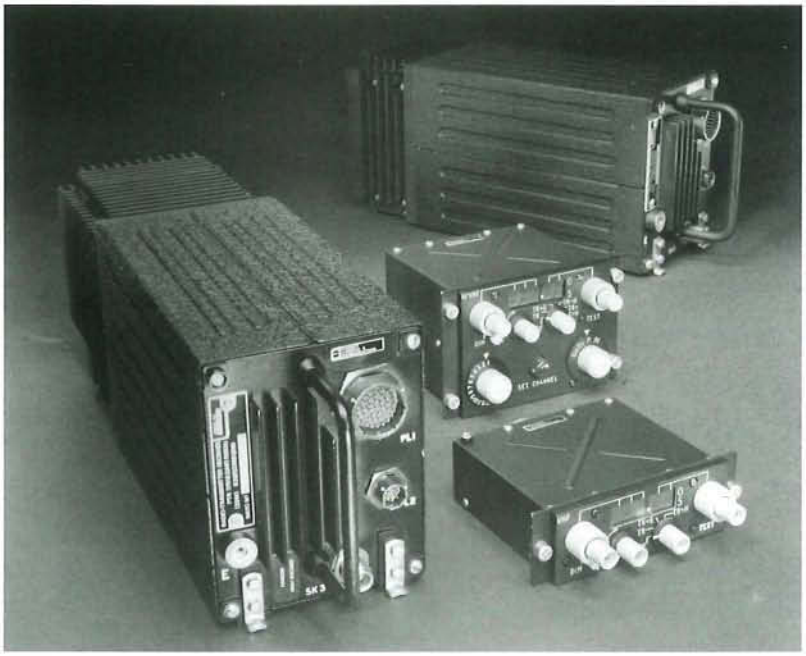
GEC-Marconi Electronic Systems

Airborne VHF (AM) Radio

ESD1741



- *Frequency range 100 to 155.975 MHz*
- *2240 synthesised channels at 25kHz spacing*
- *Well-proven modern design techniques*
- *Comprehensive B.I.T.E.*
- *Optimum reliability and maintainability*
- *Low cost of ownership*
- *Ideal for retrofit applications*
- *Optional extras available*

The ESD1741 is a lightweight V.H.F. military airborne transceiver designed to provide high-reliability air-to-air and air-to-ground communications under severe electrical and environmental conditions. It is suitable for use in all types of helicopter and fixed-wing aircraft and is intended primarily for air traffic control use, but this role may be extended, with optional extras, to include homing and continuous a.m. reception on the international distress frequency of 121.5 MHz.

The ESD1741 operates over the frequency range 100 to 155.975 MHz and provides 2240 channels separated at 25 kHz intervals throughout the range. The channel spacing can be modified to 50 kHz should it be required to interface the ESD1741 with existing, older equipments having a lower frequency stability. The power output is 10W minimum, under all conditions of operation.

The equipment consists of two units, the transceiver and the control unit. Two alternative control units are available which either provide manual selection only of frequency or manual selection of frequency plus 30 preset channels. Both control units incorporate a built-in test equipment facility to check output power, modulation depth, and receiver sensitivity. A non-volatile store is used to provide the preset channel memory. Optional extra facilities include a guard receiver module which plugs into the main transceiver chassis and a homer which is in the form of an external unit.

The design philosophy has concentrated not only on achieving an adequate performance at an acceptable cost but on ensuring a balanced approach to reliability and maintainability and therefore to the overall cost of ownership. To this end, well-proven design techniques with low-stressed components, using modular construction and solid-state circuitry, have been employed.

The ESD1741 is one of a family of equipments which has considerable growth-potential and which already includes the ESD1751 10/20W UHF airborne transceiver. Details of this equipment are available on request..

The ESD1741 and ESD1751 are designed for dual V.H.F. and U.H.F. installations, the electrical interface and mechanical dimensions of each being identical. Control units are common for all applications. Furthermore, one control unit can be used to operate the two transceivers providing a combined V.H.F./U.H.F. installation.

A remote frequency and channel indicator is also available as an option.

Maximum commonality of modules and metal-work has been achieved in all these equipments: all non-common modules, power amplifier and receiver front end are contained in a detachable rear casting.

Power for the transmitter and control unit is taken from the aircraft +28V d.c. supply.

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General

Frequency range
100 to 155.975 MHz in 25 kHz increments

Channel separation
25 kHz standard
50 kHz optional

No. of channels
2240 (with 25 kHz spacing)

Environmental
Generally to DEF STAN 07-55 and BS 3G100 part 2

Operating temperature
-25°C to +70°C (switches on at -55°C)

Power input (transmit)
28V d.c. at 3.5A

MTBF
800 hours - transceiver and controller

Size

Transceiver:
1/2 ATR short

Height:	160.2 mm
Width:	124.8mm
Length:	327.4mm

Manual controller (ESD1753N):

Width:	146.05mm
Height:	47.6mm
Depth:	108.25mm (excluding front panel controls and rear connector)

Manual/preset (ESD1744AA) controller:

Width:	146.05mm
Height:	94.9mm
Depth:	108.25mm (excluding front panel controls and connector)

Remote frequency and channel Indicator (ESDI756C):

Width:	92mm
Height:	25mm
Depth:	154.8mm (excluding rear connector)

Weight

Transceiver:	5kg (10W)
Manual controller:	0.7kg
Manual/preset controller:	1.4kg
Remote frequency & Channel Indicator:	0.3kg.
Guard Rx. module:	0.3kg

Transmitter
Output power
10W/20W minimum into 50Ω

Frequency accuracy
±5p.p.m. including ±2p.p.m. drift per year

Distortion
Not more than 5% at 80% mod.

Microphone input
250mV p.d. into 300Ω balanced, either VOGAD or Non VOGAD

Modulation control
VOGAD holds modulation depth within ±10% of preset level for ±20dB of signal input variation

Receiver (Main)

Sensitivity
An input of 4µV e.m.f. modulated 30% at 1kHz gives a signal-plus-noise to noise ratio of 10dB or better

Selectivity

Standard

25kHz	6dB	18kH minimum
	60dB	50kHz maximum
To Special Order:		
50kHz	6dB	36kHz minimum
	60dB	100kHz maximum

Spurious rejection
At least 80 dB down

Image
At least 65 dB down

Adjacent channel
At least 60 dB down

AGC
Not greater than 6 dB change in audio level of 4µV to 1V e.m.f. variation in r.f. signal level

Audio output
4V ±2 dB across 50W or greater (unbalanced) for 80% modulation

Audio response
±3dB, 300 Hz to 3500 Hz

Receiver (Guard)

Sensitivity
An input of 7µV e.m.f. modulated 30% at 1kHz gives a signal-plus-noise to noise ratio of 10dB or better

Audio output
As for main receiver, uses common output amplifier

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Radar and Defence Systems

Electronic Systems Division

Browns Lane, The Airport, Portsmouth, Hampshire, PO3 5PH.

Telex: 869442 MARDEF G

Tel: (+44) 01705 226000 Fax: (+44) 01705 226001

e-mail: charles.andrews@gecm.com

USA

GEC-Marconi Office, 1111 Jefferson Davis Highway, Crystal Gateway North, Suite 800, Arlington, Virginia 22202, USA Tel: 1(703) 4166582 Fax: 1(703) 4160135

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