

# ESD1721

# UHF/VHF Airborne Transmitter-Receiver



■ 100-156MHz & 225-400MHz VHF/UHF bands

■ 9240 selectable channels 17 preset channels  
VHF or UHF plus VHF and UHF guard  
channels at 121.5MHz and 243MHz

■ Channel spacing 25kHz or 50kHz

■ Homing in azimuth on UHF and ADF  
interface built-in

■ Comprehensive B.I.T.E.

■ Optional remote frequency and channel  
indicator

■ All solid-state

■ Single or dual control unit operation

**The ESD1721 is a combined VHF/UHF airborne transmitter-receiver of advanced design operating over the 100-156MHz and 225-400MHz bands. This ability to communicate on VHF as well as UHF provides an Air Force with the increased flexibility of operating from civil air-strips equipped only with minimum VHF facilities. The equipment performance makes the ESD1721 ideally suited to installation in any military aircraft and it has been selected for the Tornado Aircraft used by the British and Italian Air Forces.**

The system provides all essential facilities for reliable voice and emergency communications and is compatible with both homing in azimuth and direction finding requirements. Channel spacing is set at 25kHz or 50kHz intervals to give a choice of up to 9240 channels selected directly on the remote control unit. Frequency synthesis is employed to give a high frequency stability and to provide accurate channel selection. The control unit also provides selection of 19 pre-set channels.

Two of the pre-set channels are normally the international distress frequencies of 121.5MHz and 243MHz which can also be monitored on an independent 'guard' receiver. A built-in test system is provided to check the transmit and receive functions and also the control units.

The ESD1721 transmitter-receiver is entirely solid-state, making use of the existing technology where possible including a solid-state power amplifier. The power amplifier stage consists of semiconductor devices connected in parallel with triplicate quadrature couplers operating as combining and splitting networks between complete stages. These stages are each mounted on a separate heat-sink. Solid-state switching is employed throughout, the receiver is varactor-tuned, and the frequency synthesiser is compared against a single reference oscillator.

The transmitter-receiver is of modular design housed in a sealed 1/2 ATR-short case. Access to modules for servicing is by removing the sides of the case to which the modules are attached. Heat is conducted from the modules by way of the chassis, which acts as a heat sink, to the sides of the case and hence to the external air.

An installation is completed by a mounting tray which performs the dual functions of vibration isolation and forced air cooling. In addition an optional antenna lobe switch for UHF homing in azimuth, or an optional UHF antenna switch for ADF operation may be utilised.

In two-seat aircraft an identical control unit may be installed in each cockpit. The switching for dual control operation is external to the system. In aircraft which have a less demanding environmental performance, it is possible to install the transmitter-receiver without forced-air cooling.

## Electrical

### Frequency range

UHF 225-399.975MHz VHF 100-156MHz

### Channel availability

2240 on VHF 7000 on UHF

### Channel spacing

25kHz on VHF 50kHz on UHF

### Carrier power

20W UHF (72W p.e.p. 90% modulated)  
10W VHF (36W p.e.p. 90% modulated)

### Duty cycle

1:2 5 min transmit maximum

### Modulation

a.m. A2 or A3

### Frequency accuracy

±2.5kHz after 2 minutes

### Audio output

0dBm into 600Ω

### Sensitivity

2μV e.m.f. produces a 10dB  
(S+N)/N ratio for 30% modulation at 1kHz

### Antenna

Separate connectors for VHF and UHF  
antennas

### AF response

300-3400Hz ±3dB w.r.t. 1kHz for both  
transmitter and receiver

### Power supplies

115V 400Hz, 3-phase standard or 28V d.c.  
(special)  
360VA max on transmit  
140VA max on receive

### Built-in test facilities

Confidence check on receiver sensitivity,  
transmitter power and modulation depth, and  
control unit display and function

## Mechanical

### Environmental temperature

-40°C to +70°C

### Altitude

50,000ft continuous and 70,000ft for short  
duration

### Dimensions

#### Transmitter-receiver

Height 125mm x width 194mm x  
depth 339mm

#### Control unit

Height 95.6mm x width 146.7mm x  
depth 178mm

#### Antenna lobe switch (and ADF antenna switch)

Height 65.8mm x width 98.4mm x  
depth 76.5mm

### Weights

#### Transmitter-receiver

11.25kg max

#### Control unit

1.8kg max

#### Antenna lobe switch

0.39kg max

#### Mounting tray

2.6kg max



# GEC-Marconi

## 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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