

SP-1450/N-E

Airborne
Intercommunications
System



The SP-1450/N-E Intercommunications System (ICS) completes the company's line of defence communications products for applications onboard fixed-wing and rotary-wing aircraft. It has been designed to manage all radio communications and navigation equipment, data links and internal/external communications facilities and to integrate their functionality into a single, Tempest proven, architecture.

The SP-1450/N-E ICS provides switching and routing functions to configure the platform's internal and external communications resources and relevant access by the users to such facilities. These functions are supported by control, amplification and interfacing for all the radio communications facilities installed on the platform and by flexible intercom facilities. The SP-1450/N-E ICS is currently installed onboard NH-90 and EH-101 helicopters of several NATO countries.

The digital design of the SP-1450/N-E ICS is modular, flexible and based on an open architecture so that it can be configured to meet various requirements. Extensive use of fibre optics connections and appropriate wiring layouts are used to reduce crosstalk and EMI in order to satisfy all TEMPEST requirements.

The SP-1450/N-E ICS is configured into the following LRUs:

- Communications Management Unit (CMU) SP-1451/N-E
- Main Station Unit (MSU) SP-1452/N-E
- Secondary Station Unit (SSU) SP-1453/N-E

CMU

The Communications Management Unit, including the WTG/DVO (=Warning Tone Generator/Direct Voice Output Unit - is a digital switching matrix which, under control by the MIL-STD-1553 Bus (or ARINC 429) of the aircraft, configures the communications resources by implementing the following functions:

- Control of the operating parameters of the radios, cryptos and modems
- Routing of crypto and modems through external communications equipment HF to V/UHF and V/UHF to HF relay, i.e. Retransmission over the V/UHF channel of information received over the HF channel and viceversa
- Public Address function by using of external audio amplifier
- Management and routing of Navigation Aids, alarms and alert signals
- External interfaces number growth up capability by embedded board population.

The audio signals to/from the communications equipment connected to the CMU is digitised, formatted and routed to the MSU and SSU over a high speed optical bus.

The Communications Management Unit is capable of supporting up to 10 Main Station Units and 5 Secondary Station Units, to interface and control up to:

- 20 T/R radio channels (HF and V/UHF Transceiver Units)
- 8 Crypto Equipment (Narrow band and/or Wideband)
- 25 Audio Nav, warning and alarm inputs
- 5 Audio stereo outputs
- 1 LINK-11 DTS
- 3 Outputs to VFDR
- Embedded ambient Noise suppressor feature.

MSU

Each Main Station Unit allows the Main crew members (pilots and mission operators) to control the assigned on board audio sources (Radio transceivers, NAVAIDS/SONAR/ESM, etc.) and to interface their own headset with the desired audio channels.

SSU

The Secondary Station Unit allows the Secondary crew members (gunner, loading ramp operator, ground service personnel) to be a user of the assigned audio set, so to receive external communications channels or to access the intercom facilities.

Different System configurations are available for aircraft of different types, all using common units and modules. System designed in cooperation with Becker for MSU and SSU.

MAIN FEATURES

- TEMPEST performance compliant with AMSG 784B Volume I requirements
- EMI performance compliant with MIL-STD-461 specifications
- MIL-E-5400 requirements
- Extended components/functions integration, to allow for weigh and volume saving
- Full system redundancy for critical functions
- Analogue Back-up circuitry for three Main Users
- Interface with different cryptos and LINK-11 DTS
- Integrated Warning Tones Generation and management function Integrated Headset Interfaces (hi/lo impedance and/or stereo headset compatible)
- Sunlight readable and NVG compatible operator panels
- Hot-mic mode in intercom operation
- Software oriented design for maximum flexibility and growth capability
- Digital switching matrix for voice/data routing and distribution

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- Selection by the user of the desired communications channel(s)
- Remote control of the system's configuration by the aircraft computer over multi-bus interface (MIL-STD-1553)
- BITE capability with identification of the failure at LRU level
- Modular construction
- Use of fibre optics signal bus to avoid crosstalk.

TECHNICAL SPECIFICATION

- **Audio Interface Bandwidth** 300Hz to 3500Hz

AUDIO INPUT (ADJUSTABLE)

- **Minimum level at 150 Ohm** 100mVrms
- **Maximum level at 150 Ohm** 2.5Vrms
- **Minimum level at 600 Ohm** 500mVrms
- **Maximum level at 600 Ohm** 11Vrms

AUDIO OUTPUT

- **Minimum level at 150 Ohm** 100mVrms
- **Maximum level at 150 Ohm** 1.4Vrms
- **Minimum level at 600 Ohm** 500mVrms
- **Maximum level at 600 Ohm** 5Vrms

HEADSET

- **Earphone Output mono (nominal)** At 150/600 Ω , power 250 mW +/-10 %.
- **Earphone Output stereo (nominal)** At 300 Ω + 300 Ω ; power 125 mW + 125 mW
- **Bus interfaces** MIL-STD-1553B
ARINC-429
- **Primary power** +28Vdc as per MIL-STD-704
- **Power consumption** SP-1451/N-E -CMU 75W
SP-1452/N-E -MSU 17W
SP-1453/N-E -SSU 10W
- **Operating temperature** -40°C to +71°C (Without forced air cooling)
- **Storage temperature** -55°C to +90°C
- **Relative humidity** Up to 95%
- **Altitude** Up to 70,000ft
- **EMC** As per MIL-STD-461/462
- **TEMPEST** As per AMSG 784B volume I

DIMENSIONS AND WEIGHT

- **SP-1451/N-E - CMU** 3/4 ATR -9.5Kg
- **SP-1452/N-E - MSU** 110mm(W)x95.2mm(H)x146mm(L) - 1.27Kg
- **SP-1453/N-E - SSU** 91mm(W)x80mm(H)x151mm(L) -1Kg
- **MTBF(as per MIL-HDK-217D)** CMU \geq 1500 OH
MSU \geq 6000 OH
SSU \geq 12000 OH
- **MTTR** 20min

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