TELERAD

Aeronautical and Maritime Radiocommunication Systems

TRANSCEIVERS 25W VHF

EMRY990A - EMRY990B

The EMRY990 unit is a VHF ground transceiver derived from the TELERAD 900 series technology which already proved its utmost reliability.

OVERVIEW

Especially designed for voice communication in control towers, control shelters or ships, the EMRY 990 is provided with a receiver guard channel scan mode.

The frequency range extends from 108 to 144 MHz VHF in 25 kHz / 12.5 kHz, or 8.33 kHz channel spacing according to ICAO annex 10 and ETS 300 676 standards. The channel spacing is implicitly given by the frequency value according to ICAO annex 10 rules: the equipment automatically switches to the right selectivity and audio frequency bandwidth.

For transmission, the operator can, at any time, select one of two output levels : nominal power or reduced power (preset in 0 to -7 dB range).

Up to 99 preset channels can be programmed by the operator, including for each channel the output power (high or low) and the squelch threshold level. The guard frequency is stored in the 99th channel at any desired value.

A comprehensive front panel allows the equipment to be directly operated at a control position. In addition to microphone and headphones connectors, speaker and radio status indicators, the operator's control interface is composed of a keyboard and a 4-lines / 20-characters-per-line LCD, operated in «menus» oriented mode.

In addition, the transceiver is provided with a serial data link and the required input/output signals for total remote control. The rear panel has separate RF connectors for transmitter and receiver section, and also a location for a coaxial relay, allowing the use of one common T/R antenna, or separate T and R antennas according the installation.

The transceiver, is 19» wide and 3U high, and can be supplied in rack mounting or desk version.

Two power supplies are available : 24 V_{DC} voltage and 85-265 V_{AC} mains voltage (EMRY990A) or 24 V_{DC} only (EMRY990B).

GENERAL CHARACTERISTICS

Frequency range:
118-144 MHz
Channel spacing:
25 kHz (12.5 kHz), 8.33 kHz automatic selection according to the frequency coding (ICAO annex 10)
Preset channels:
99 preset channels with frequency, offset frequency, bandwith, power level, squelch threshold level parameters.
Frequency accuracy:
1 ppm
Remote control:
By series link RS485, under JBUS protocol
3 wires parallel access (channels 1 to 8)
Radio squelch:
Locking of a loop to the ground to forbid transmission
Power supply EMRY990A:
- AC: 85-265 V, 47-63 Hz
- DC: 21-31 V (rated 24 V)

Power supply EMRY990B:
- DC: 21-31 V (rated 24 V)

TRANSMISSION CHARACTERISTICS

Offset carrier transmission (channels at 25 kHz):
According to annex of ICAO, compatible 2, 3 or 4 carriers
Output power:
- Rated power on 50 ohms: > 25 W
- Reduced power: adjustable down to 5 W
- Reduced power on load mismach: normal operation up to VSWR = 2. Gradual power reduction for VSWR > 2. No damage on infinite VSWR

Modulation:
- Modulation type: A3E (voice)
- Modulation input: 600 ohms balanced line
- Modulation input sensitivity: adjustable between -30 and 0 dBm for compressor threshold level
- Modulation rate: > 85 %
- Variation of the modulation rate : variation < 1 dB for a 30 dB step of the input signal above the compression threshold.
- Modulation limiter: by clipping circuit at about 95%

Modulation bandwidth at -3 dB (ref. 1000 Hz):
- 25 kHz/12.5 kHz channel spacing: 300-3400 Hz
- 8.33 kHz channel spacing: 300-2500 Hz, < -35 dB at 3200Hz

Modulation distortion:
< 5 % in 300-3400 Hz frequency range with an input level 10 dB above the compression threshold.
Residual modulation:
≤ -45 dB (reference 85% mod. at 1000 Hz)
Duty cycle:
The equipment is designed to operate at rated power up to 50°C with 1/2 transmit/receive ratio (transmit time = 1 mn). For worse operational condition, a reduction of the output power may happen. A control for external cooling fan allows permanent Tx.
Spurious:
< -46 dBm for ΔF > 100 kHz
Harmonics:
< -36 dBm
Wide band noise at + 1% of F0:
< -150 dBc/Hz

RECEPTION CHARACTERISTICS

Channel scanning (optional):
Main operation + 9 channels maximum
Sensitivity:
(S+N)/N > 10 dB for a 1.5 µV signal 30 % modulated at 1000 Hz (CCITT weighting)
Selectivity:
- 25 kHz channel spacing: > ± 8 kHz at -6 dB / ≤ ± 18.5 kHz at -60 dB
- 8.33 kHz channel spacing: > ± 3.5 kHz at -6 dB / ≤ ± 8 kHz at -60 dB

Image rejection:
≥ 80 dB
3rd order intermodulation:
≥ 80 dB for 2 signals, 0.5 and 1 MHz apart (ref. 0.5 µV)
Crossmodulation:
≥ 95 dB for an interfering signal 0,5 MHz apart (ref. 1.5 µV)
Intermediate frequency:
21.4 MHz
Local oscillator radiation:
≤ -75 dBm
Squelch:
Adjustable (locally or through remote control) from 1 to 15 µV
Reception AF:
- Output line: 600 ohms balanced
- Line output level: adjustable up to +10 dBm
- A.G.C.: ≤ 3 dB variation of AF level between 1.5 µV and 500mV
- Audio bandwidth at -4 dB (ref. 1000 Hz):

25 kHz channel spacing: 300-3400 Hz
8.33 kHz channel spacing: 300-2500 Hz
- AF distortion: ≤ 5 % at 1 kHz for 60 % mod.
- Output power on loudspeaker: < 5 W
- Transmit side tone: Yes. May be ajustable.
- Recorder output: 600 ohms source, 1.55 V emf

CLIMATIC CHARACTERISTICS

- **Operating temperature:**

-20°C to +55°C
- **Humidity:**

95 % at 40°C (non-condensing)

MECHANICAL CHARACTERISTICS

Dimensions (Lenght x Height x Depth) :
483 mm (19") x 132 mm (3 U) x 470 mm
Weight:
10 kg

OPTIONS

- Scanning
- Coaxial relay
- Accessories : microphone, headset, control unit for remote operation
- Maintenance: measuring panel for maintenance, PCB extension

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