

TELERAD

Aeronautical and Maritime Radiocommunication Systems

**TRANSCEIVER
50W UHF**

EMRY1410N



OVERVIEW

The EMRY1410N unit is a UHF ground transceiver derived from the TELERAD 900 series technology which already proved its utmost reliability.

MAIN FEATURES

It is designed to meet the needs of aeronautical radio communications in the UHF band, in amplitude modulation (A3E).

According to the version, it can be exploited in FM mode (F3E). It is specially designed for voice communication in control towers, control shelters or ships.

The frequency range extends from 225 to 400 MHz, in 25 or 12.5 kHz channel spacing.

Up to 99 channels can be programmed by the operator, including for each channel the output power (high or low) and the squelch threshold level.

The EMRY1410N can be adapted to various installations. Mainly designed to be operated by a controller from a front panel with all the requirement elements and allow ergonomics, the set is also equipped with all access means required for remote operation and control/supervision serial link.

The human-machine control interface is a combination of a keyboard and a display of 4 lines of 20 characters, with everything operated in "menus" mode. The rear panel has separated access for transmission and reception antennas, as well as a coaxial relay location to allow a single antenna to be connected.

Scanning of a maximum of 10 channels is available on this equipment as an option.

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

Two power supplies are available: 24V_{DC} voltage and 100-240V_{AC} mains voltage (according to the version)..

GENERAL CHARACTERISTICS

Frequency range:

225-400 MHz

Modulation types:

- A3E (any versions)
- F3E (EMRY1410NFx versions)

Channel spacing:

25 kHz and 12.5 kHz

Preset channels:

99 preset channels with frequency, bandwidth, power level, squelch threshold level parameters

Frequency accuracy:

± 1 ppm between -20°C and +55°C

Remote control:

By serie link RS485, under JBUS protocol or current loop 0/20mA

Radio Tx inhibit:

Locking of a loop to the ground to forbid transmission

Power supply:

- AC: 85-265 V, 47-63 Hz
- DC: 21-31 V (rated 24 V)

Operating temperature:

- -20°C to +55°C
- 95% relative humidity at +40°C (non-condensing)

Storage temperature:

-40°C to +80°C

Dimensions (Width x Height x Depth):

483 mm (19") x 132 mm (3U) x 470 mm

Weight:

12 kg about

■ **TRANSMISSION CHARACTERISTICS**

Operation over a 225-400 MHz wideband without adjustment.

Output power under 24 V=:

- 50 W ± 0.5 dB rated power, adjusted down to 10 W by the user.
- Power on load mismatch : Normal operation up to SWR=2. Gradual power reduction for SWR > 2. No damage on infinite VSWR

A3E modulation:

- Modulation rate: > 85%
- Harmonic distortion: < 5% at 1 kHz (Typ. 1%)
- AF bandwidth at 3 dB in 25 kHz mode: > 300-3400 Hz , ≤ -30 dB at 5000 Hz
- Residual modulation: < -50 dB (0 dB at 85% MOD 1000Hz) (Typ. 55 dB)

F3E modulation (EMRY1410NFx versions) :

- Frequency excursion: 4.25 kHz ± 0.5 dB (at 1 kHz)
- Modulation bandwidth at -4 dB : > 300-3400 Hz
- Harmonic distortion: < 5 %
- Residual modulation : < -35 dB (0 dB at 4.25 kHz excursion at 1 kHz)

Sensitivity :

- Adjustable from -30 dBm to 0 dBm by step of 6 dB

Modulation limiter:

By clipping circuit at about 95%

Duty cycle:

The equipment is designed to operate at rated power up to 45°C with 1/2 transmit/receive ratio (transmit time = 1 mn). For worse operational condition, a reduction of the output power may happen. Two cooling fans allow permanent Tx (2 speeds according temp.)

Harmonics :

< -80 dBc

Noise at ± 1% of Fo :

< -150 dBc/Hz

■ **RECEPTION CHARACTERISTICS**

Sensitivity:

(S+N)/N ≥ 10 dB, m=3 : 1.5 µV (CCITT weighting)

Selectivity:

≥ ± 11 kHz at -6 dB, ≤ ± 25 kHz at -60 dB

Image rejection:

≥ 80 dB

3rd order intermodulation:

≥ 80 dB for 2 signals, 500 kHz apart (ref. 0.5 µV)

Crossmodulation:

≥ 95 dB, interfering signal 500 kHz apart (ref. 1.5 µV)

Squelch:

Adjustable (locally or through remote control) from 1 to 15 µV

AF outputs:

- Output line: 600 ohms balanced
- Line output level: adjustable from +10 dBm to -17 dBm, at 80% of modulation
- AGC regulation: ≤ 3 dB variation of AF level between 3 µV and 500 mV emf
- Bandwidth at 3 dB (25 kHz spacing): > 300-3400 Hz
- Harmonic distortion: ≤ 5 % at 1 kHz , m = 0.6 in AM ≤ 8 % at 1 kHz , ΔF = 4.25 kHz in F3E
- Headset plug: 2 mW max on 600 ohms
- Output power on headset: 6W max under 8 ohms
- Transmit side tone: Yes (may be disabled)
- AF compressor: threshold at 50% (not activated by default, activable by external configuration)

RF outputs:

- Level on 50 ohms: 2 dBm ± 3 dB (Tx excitation)
- Noise under the carrier: > 150 dBc/Hz (at 1% of FO)

■ **OPTIONS - VERSIONS**

Options - Accessories:

- Tx/Rx coaxial relay
- Scanning (10 channels) (ADAP2)
- Accessories: microphone, headset, control unit for remote operation
- Maintenance: measuring panel for maintenance, PCB extension

Different versions:

- EMRY1410NA: A3E - AC/DC version
- EMRY1410NB: A3E - 24 VDC version
- EMRY1410NF A: A3E, F3E - AC/DC version
- EMRY1410NF B: A3E, F3E - 24 VDC version