

50 W VHF TRANSCEIVER

The EMRY 991 unit is a VHF ground transceiver derived from the TELERAD 900 series technology which already proved its utmost reliability. Especially designed for voice communication in control towers, control shelters or ships, the EMRY 991 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 (EMRY 991 A) or 24 V DC only (EMRY 991 B).

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, bandwidth, power level, squelch threshold level parameters.
- **Frequency accuracy :**
1 ppm
- **Remote control :**
By series link RS 485, 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 EMRY 991 A:**
 - a.c. : 85-265 V, 47-63 Hz
 - d.c. : 21-31 V (rated 24 V)
- **Power supply EMRY 991 b:**
 - d.c. : 21-31 V (rated 24 V)

TRANSMITTER SECTION

- **Offset carrier transmission (channels at 25 kHz):**
According to annex of ICAO, compatible 2, 3 or 4 carriers
- **Output power:**
 - Rated power on 50 Ω : > 50 W
 - Reduced power: adjustable down to 10 W
 - Reduced power on load mismatch: 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 Ω 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 (reference 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 : \leq -45 dB (ref. 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 $\Delta F > 100$ kHz
- **Harmonics:**
< -36 dBm
- **Wide band noise at \pm 1% of F0:**
< -150 dBc/Hz

RECEIVER SECTION

- **Channel scanning (optional):**
Main operation + 9 channels maximum
- **Sensitivity:**
(S+N)/N > 10 dB for a 1.5 μ V signal 30 % modulated at 1000 Hz (CCITT weighting)
- **Selectivity:**
 - 25 kHz channel spacing:
> \pm 8 kHz at -6 dB / \leq \pm 18.5 kHz at -60 dB
 - 8.33 kHz channel spacing:
> \pm 3.5 kHz at -6 dB / \leq \pm 8 kHz at -60 dB
- **Image rejection:**
 \geq 80 dB
- **3rd order intermodulation:**
 \geq 80 dB for 2 signals, 0.5 and 1 MHz apart (ref. 0.5 μ V)
- **Crossmodulation :**
 \geq 95 dB for an interfering signal 0,5 MHz apart (ref. 1.5 μ V)
- **Intermediate frequency:**
21.4 MHz
- **Local oscillator radiation:**
 \leq -75 dBm
- **Squelch:**
Adjustable (locally or through remote control) from 1 to 15 μ V
- **Reception AF:**
 - Output line: 600 Ω balanced
 - Line output level: adjustable up to +10 dBm
 - A.G.C.: \leq 3 dB variation of AF level between 1.5 μ V and 500 mV
 - 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: \leq 5 % at 1 kHz for 60 % mod.
 - Output power on loudspeaker : < 5 W
 - Transmit side tone: Yes. May be disabled.
 - Recorder output: 600 Ω source, 1.55 V emf

CLIMATIC CHARACTERISTICS

- **Operating temperature:**
-20°C to +55°C
- **Humidity:**
95 % at 40°C (without condensation)

MECHANICAL CHARACTERISTICS

- **Dimensions (Length x Height x Depth):**
483 mm (19") x 132 mm (3 U) x 465 mm (rack version)
- **Weight:**
11 kg

OPTIONS

- AM-FM version EMRY 991 F A-B
- Scanning option
- Coaxial relay
- Accessories : microphone, headset, control unit for remote operation
- Maintenance : measuring panel for maintenance, PCB extension