

CST38 User Manual

VHF MICROEAR

"DESKTOP" TRANSMITTER



SN: _____

Rev. 02

Date: 16 May 2017

BRIEF DESCRIPTION

CTK38 is composed by a VHF transmitter (**CST38**) and a power supply (**PSP910**).

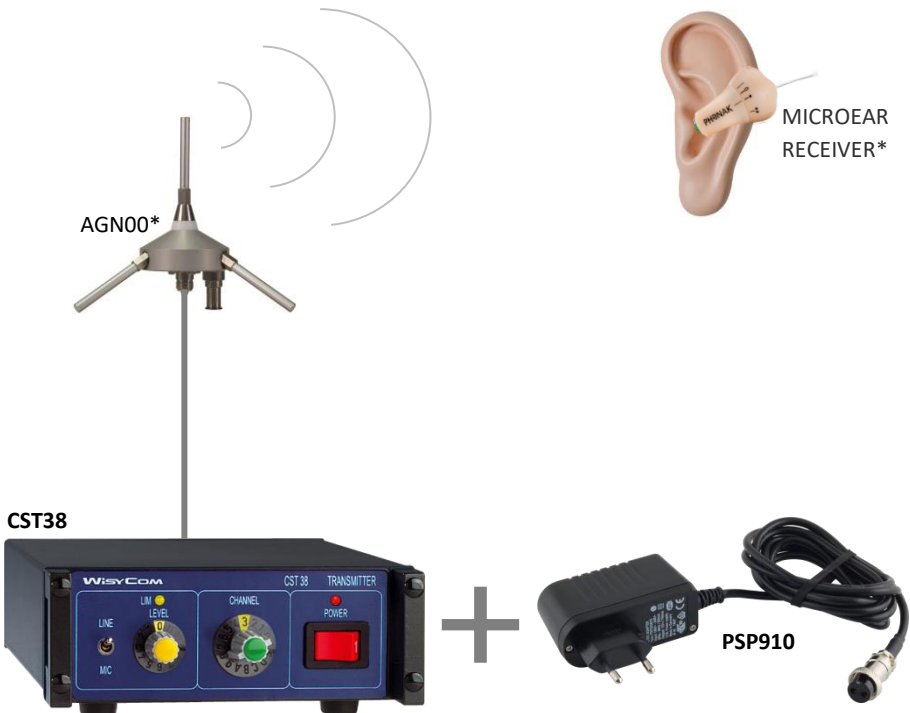
The CST38 transmitter has been especially designed to allow best usage of MicroEar's family "in-ear receivers" and many modulation parameters such as deviation, level/frequency curve, compression factor has been optimized. Therefore CST38 assures maximum performances of MicroEar both as sound quality and as audio level (in any case limited because of the very small size of receiver).

Higher power transmitter are available to further increase the coverage area (cell); it is also possible to link in parallel several transmitters (in iso-frequency mode) to create a multiple cells coverage.

MicroEar internal battery has about 30 hours working autonomy; in any case the original battery once activated (taking out metal label) has a limited life even in power off.

When empty battery, MicroEar will drastically reduce audio level and receiver sensitivity.

Example of VHF IEM System



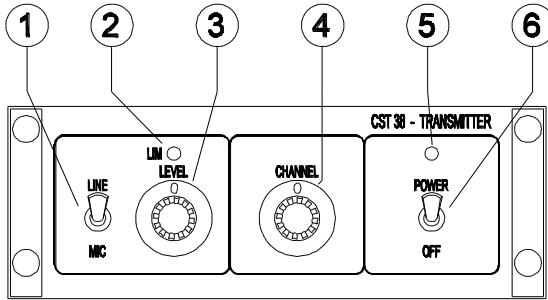
* Not included

SAFETY INSTRUCTION

- Read this safety instruction and the manual first
- Follow all instructions and information.
- Do not lose this manual.
- Do not use this apparatus under the rain or near the water.
- Do not install the apparatus near heaters or in hot environments, do not use outside the operating temperature range.
- Do not open the apparatus, only qualified service technician are enabled to operate on it. The apparatus needs servicing when it is not properly working or is damaged by liquids, moisture or other objects are fallen in the apparatus.
- Use only accessories or replacement parts authorized or specified by the manufacturer.
- Clean the apparatus only with dry cloths, do not use liquids.
- Report the serial number and the purchasing date in front of the manual. It is needed to have proper replacement parts or accessories from the manufacturer.
- When replacement parts are needed, use only replacement parts authorized from the manufacturer. Substitution with not authorized parts could result in electric shock, hazards or fire.
- Keep attention on all the labels with warnings or hazards on the apparatus.

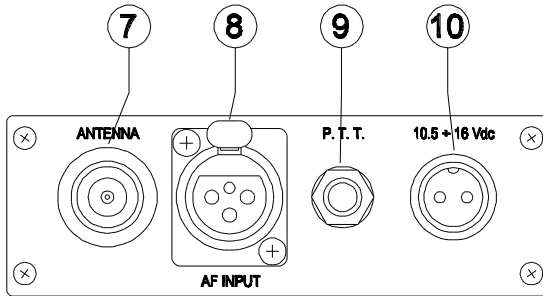
WARNING: The apparatus is intended for professional use; anyway the manufacturer alerts the user that the headphone output power of the apparatus could exceed the level of 85 dB(A) of sound pressure level and this could be dangerous for the hearings. Do not use the headphone with high power level or for long time. Reduce the power or suspend the hearing in case of any kind of hearing problem.

FRONT PANEL



- 1) SELECTOR: modulation audio input level range (**Micro / Line**).
- 2) LED INDICATION: peak-indicator / limiter-on status (yellow Led).
- 3) ADJUSTMENT: audio input sensitivity.
With the optimum sensitivity adjustment, the yellow Led [2] must flash under modulation peaks.
- 4) SELECTOR: transmitting channel (**0 ÷ F**).
- 5) LED INDICATION: apparatus is on (red Led).
- 6) SWITCH: On / Off (**Power**).

REAR PANEL



7) CONNECTOR: antenna (N-F type connector).

8) CONNECTOR: modulation audio input (XLR3-F type connector).

The audio input line is transformer balanced and floating.

- pin 1 = ground;
- pin 2 = AF-a input;
- pin 3 = AF-b input.

9) CONNECTOR: transmission activation (Push To Talk) (mono ¼" - 6.3 mm, standard jack type).

The transmission is allowed when the central pin (hot) is connected to external ring (ground).

Note #1: in the standard version of CST 38, when the PTT plug is not inserted, the carrier is still activated.

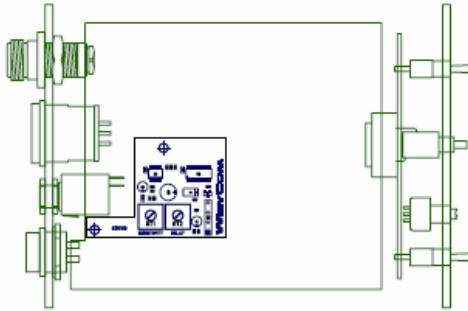
Instead, when the CST 38 is provided with the optional VOX 38 – Voice Activated Circuit board, the carrier is activated automatically only when the input audio-signal reaches the activation-threshold pre-set in the VOX 38 board. However, the external PTT circuit (if connected) can override the VOX 38 device and force the CST 38 in continuous transmission.

10) CONNECTOR: dc power input (10.5 ÷ 16 Vdc).

- (• pin 1 = +Vdc, • pin 2 = ground).

OPTIONAL

VOX 38 - Voice Activated Circuit board



VOX 38 board, mounted
on the CST 38 main board

This device is useful to switch on automatically the carrier of the transmitter only when the modulating signal is present on the TX's input. The circuit is mounted on a printed-circuit board, that has to be factory-mounted in the transmitter.

Once the modulation audio signal reaches the pre-set threshold, the transmitter is activated.

When the modulating audio signal is not more present, the carrier is switched off again, after a pre-set delay time. Consequently the relevant *MicroEar* receiver is muted by its built-in squelch circuit, preventing the listening of unwanted noise.

Two pre-setting values can be adjusted by means of relevant screwdriver-trimmers situated on the printed-circuit board: RT1 for audio "sensitivity" and RT2 for "delay" time.

TECHNICAL SPECIFICATIONS

- Switchable channels : 16, preset in the 140 ÷ 250 MHz range (other upon request).
- Switching-window : 10 MHz (other upon request).
- Frequencies : microprocessor controlled PLL synthesizer circuit, with 25 kHz minimum step [1].
They are easily PC reprogrammable by the optional "UPK 32 Programming kit".
- Channel spacing : 25KHz standard (*Other on request*)
- Frequency error : < ±5 ppm, in the rated temperature range.
- Temperature range : -10 ÷ +55 °C.
- RF output power : 300 ÷ 10 mW (± 1 dB) [1].
- RF output impedance : 50 ohm (type N-F connector).
- Spurious emissions : < 2 nW.
- Transmission activation : remote PTT (Push To Talk) circuit, wired to ¼" (6.3 mm) mono jack connector.
The transmission is allowed when the central pin (hot) is connected to external ring (ground). See **Note #1** on front page.
- Modulation : FM (peak deviation = ±5 kHz).
- Mod. audio input : transformer balanced, floating.
- Mod. audio input level : **Micro / Line** switchable, and externally adjustable between:
⇒ **Micro** = -64 ÷ -34 dBu (0.5 ÷ 15 mV)
- Input impedance = > 2 Kohm
⇒ **Line** = -22 ÷ +8 dBu (60 ÷ 1,950 mV)
- Input impedance = > 10 kohm.
- Peak-limiter : automatic, with dynamic-range > 30 dB over the level set for the nominal modulation.
- NR system : compressor circuit with noise-gate, specially adapted to the **MicroEar** receivers.
- AF bandwidth : 200 Hz ÷ 5 kHz (-3 dB).
- Distortion : < 0.5 % (0.25% typ.).
- SND/N ratio : > 80 dB (83 dB typ.), CCITT measured.
- Led indications : ⇒ Transmitter On (red LED)
⇒ Limiter On (yellow LED).
- Powering : 10.5 ÷ 16 Vdc, 300 mA max. (negative ground).
- Dimensions : 40 x 120 x 175 mm.
- Weight : 700 g ca.

NOTE [1]: according to local regulations

MANUFACTURER DECLARATIONS

In compliance with the following requirements

- RoHS Directive (2002/95/EC)



- WEEE Directive (2002/96/EC)
Please dispose of the diversity transmitter at the end of its operational lifetime by taking it to your local collection point or recycling center for such equipment

ITALY ONLY

Obblighi di informazione agli utilizzatori

ai sensi dell'art. 13 del Decreto Legislativo 25 luglio 2005, n. 151 "Attuazione delle Direttive 2002/95/CE, 2002/96/CE e 2003/108/CE, relative alla riduzione dell'uso di sostanze pericolose nelle apparecchiature elettriche ed elettroniche, nonché allo smaltimento dei rifiuti"

Smaltimento di apparecchiature elettriche ed elettroniche di tipo professionale



Il simbolo del cassonetto barrato riportato sull'apparecchiatura o sulla sua confezione indica che il prodotto alla fine della propria vita utile deve essere raccolto separatamente dagli altri rifiuti.

La raccolta differenziata della presente apparecchiatura giunta a fine vita è organizzata e gestita dal produttore. L'utente che vorrà disfarsi della presente apparecchiatura dovrà quindi contattare il produttore e seguire il sistema che questo ha adottato per

consentire la raccolta separata dell'apparecchiatura giunta a fine vita.

L'adeguata raccolta differenziata per l'avvio successivo dell'apparecchiatura dismessa al riciclaggio, al trattamento e allo smaltimento ambientale compatibile contribuisce ad evitare possibili effetti negativi sull'ambiente e sulla salute e favorisce il reimpiego e/o riciclo dei materiali di cui è composta l'apparecchiatura.

Lo smaltimento abusivo del prodotto da parte del detentore comporta l'applicazione delle sanzioni amministrative previste dalla normativa vigente.

Iscrizione al Registro A.E.E. n. IT0910000006319

Compliance

| <i>Model</i> | <i>In Compliance with</i> | <i>Max Power & Freq. range</i> | <i>Country</i> |
|--------------|--------------------------------------------------------------------------------------------------------------------|------------------------------------|----------------|
| CST38 | EN 301 489-1/-9 EN 600065 EN 300 422-1/-2 EN 300 454-1/-2 | 300mW* ¹ 140-250MHz | Europe CE |
| | FC PART 74 FCC-ID: POUCST38 RSS-210 IC: 11967A-CST38 Limited to 210-216MHz | 50mW EIRP 210-216MHz | USA, Canada |

*¹ CST38 is not an SRD device, thus it requires specific authorization by your local frequency authority!

Before putting the device into operation, please observe the respective country-specific regulations!

Statements regarding FCC and Industry Canada

EN

This device complies with Industry Canada RSS-210. Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

The antenna(s) must be installed and operated at a minimum distance of 20cm between the radiator and your body.

This radio transmitter IC: 11967A-CST38 has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

FR

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio RSS-210. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Les antennes doivent être installées et utilisées à une distance minimale de 20 cm entre l'émetteur et votre corps

L'émetteur IC: 11967A-CST38 a été approuvé par Industrie Canada pour travailler avec les typologies d'antennes ci-dessous avec le gain maximal admissible indiqué. Les types d'antenne non inclus dans cette liste, ayant un gain supérieur au gain maximal indiqué pour ce type, sont strictement interdits pour être utilisés avec cet appareil.

| Antenna Code | Description | Max permissible gain [dBi] |
|--------------|--------------------------|----------------------------|
| AWN38-V11 | 1/4λ whip antenna | 2,14 |
| AGN00-V9 | 1/4λ mobile whip antenna | 2,14 |

This device complies with Part 15 of the FCC Rules and with RSS-210 of Industry Canada.

Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications made to this equipment not expressly approved by Wisycom srl may void the FCC authorization to operate this equipment.



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