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INCA TXF-RC

WIRELESS AUDIO TRANSMITTER

Version 3.6

COMPANY CONFIDENTIAL

 # 16022699

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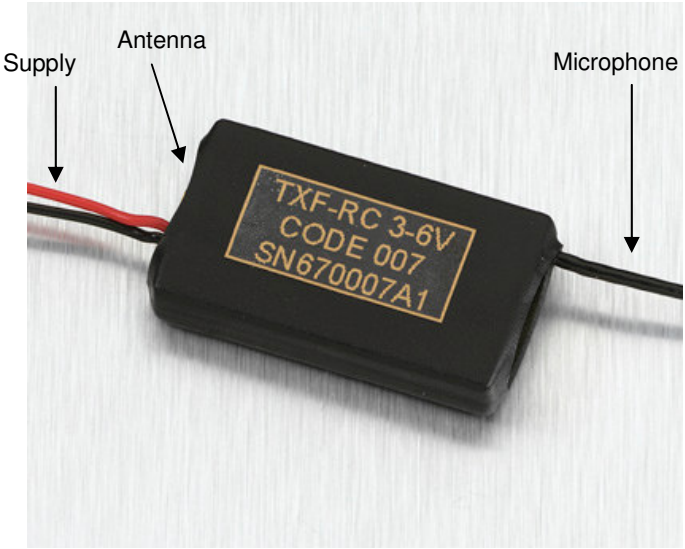
1 INCA TXF-RC WIRELESS AUDIO TRANSMITTER

1.1 Introduction

This document describes the general functions and performance of the Spectronic INCA TXF-RC transmitter.

Information on items of a specific delivery is to be found in a separate document, stating TX frequencies and remote control address codes of the individual units.

Example with external MIC



1.2 System Concept

1.2.1 General

The INCA TXF-RC is a series of wireless audio, remote controllable, small sized VHF transmitters intended for concealed room monitoring or as body transmitters.

The TX unit comes with flying leads for the battery connection and the antenna terminal has a female MMCX-connector. The TX unit is deliverable with either **internal or external microphone.**

Note: The special functions / upcodes will only be available, if using an X-IDER TX. Please refer to Section 1.2.7 Remote Control Upcodes – TXF-RC VHF .

1.2.2 Different settings

Sleep mode on / **off:** The transmitters can be switched into sleep-mode. In sleep-mode, the current consumption is only app. 100 uA, which maximizes the lifetime of the battery more than 1000 times.
In sleep-mode the receiver only goes on the air in app. 30 msec. for every 2.5 seconds to look for a valid code transmission

VOX mode on / **off:** At the expense of a little higher current consumption (app. 150 uA), the transmitter can be switched into VOX-mode, meaning that the transmitter will run only when the microphone hear acoustic signals like talking or music. This VOX is an advanced type of circuit that has the ability to distinguish voice from background noise and the power circuit is only switched on when a voice signal is present. Therefore, the switching operation is highly reliable in noisy environments.

AGC on / **off:** is integrated in the transmitter. The AGC action prevents over-modulation at high sound levels and makes it possible to listen to very weak conversation at the same time.

Scrambler on / **off**: The transmitter includes an audio scrambler-circuit, which can be switched on and off by the remote control.

The scrambler has been added for greater security, and to avoid listening in by unauthorised persons. It is based on simple frequency-inversion techniques due to the very low power needed for that sort of circuit. In the scramble mode, the audio frequency response, as well as the signal to noise ratio, are somewhat minimized compared to the unscrambled mode.

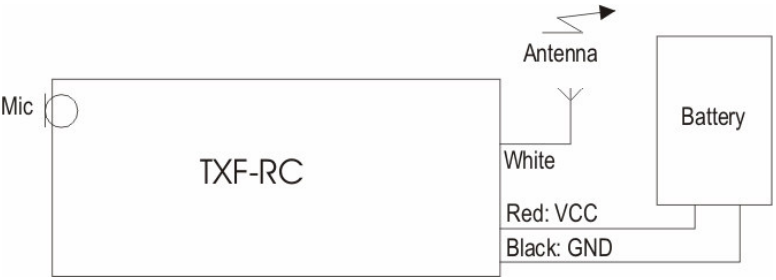
Changing channels: It is possible to shift between 4 channels by the remote control. The 4 channels (frequencies) are preprogrammed in the transmitter. During operation, it is possible to shift channel in order to use the optimal channel (frequency).

1.2.3 Application Note

To achieve maximum RF range it is advisable to keep the antenna as far away from the surroundings as possible. If an antenna is in close proximity to metal surfaces, concrete walls or the human body, the efficiency of the transmitter will be minimized due to power absorption and disturbance of the antenna radiation pattern.

For maximum battery lifetime and for minimizing the risk of being found by bug detectors or scanners, the transmitter can be switched off into sleep-mode by means of the remote control. Alternatively, simply choose VOX mode, when in doubt whether persons will be present in the room being monitored. The TX will then only go “on the air” every time conversation is detected in the room. After app. 15 sec. without conversation, the TX will go to sleep again and thus sawing battery power.

1.2.4 Wire connection



1.2.5 Transmitter

During off state, the transmitter is completely switched off, and as the remote receiver does not contain a local oscillator, as would normally be the case, when using a heterodyne receiver, everything is totally quiet and nothing can be found by e.g. spectrum analyzers or scanners. For minimum current consumption, analogue frequency modulation with an audio bandwidth of (100 - 5000) Hz (unscrambled mode) has been chosen.

1.2.6 Remote Control Receiver

The remote-receiver is realized by a very small and sensitive hybrid IC, intended for unlicensed low-power remote control. The carrier frequency is OOK (on off keyed) modulated and the system provides up to 4096 different address codes. The Spectronic X-IDER remote-control transmitter is used to send the different codes for setting up the TX. The Address Code of the Remote Control is factory set, according to customer specifications, or as specified for standard frequencies by Spectronic.

1.2.7 Remote Control Upcodes – TXF-RC VHF

X-IDER left-hand HEX switch

0	TX on
1	TX off (factory default)
2	AGC on (factory default)
3	AGC off
4	TX audio scrambler on
5	TX audio scrambler off (factory default)
6	Channel 1 (factory default)
7	Channel 2
8	Channel 3
9	Channel 4
A	VOX on
B	VOX off (factory default)
E	NTIA Compliant on
F	NTIA Compliant off (factory default)

1.3 Technical specifications

Transmitter

Output frequency range VHF	150 - 175 MHz
Min. channel raster	12.5 kHz
TX / RX antenna	Dual-band wire antenna
Output power VHF (Vsupply = 4 to 6V)	> 80 mW into 50 ohms load
Note: If the supply voltage is 4V, the output power decreases	
Frequency stability	± 2.5 ppm
Max.deviation (FM)	± 3kHz
Spurious & harmonics	< -60 dBc non-harmonic < -50 dBc harmonic
Frequency response, unscrambled	100 Hz to 5 kHz, - 3 dB
Frequency response, scrambled	280 Hz to 4 kHz, - 3 dB
Audio amplifier AGC range	45 dB
Supply voltage	3.0 V - 6.0 V
Battery types	3-4 cells (e.g. AA or AAA) or 2 x 3 V Lithium or 3.7 V Lithium Ion recharg.
Current consumption, (Vsupply = 6V)	< 70 mA DC
Current consumption, sleep mode	< 150 µA DC
Current consumption, VOX-mode (silent room)	< 175 µA DC
Dimensions (H x W x D)	32x18x5.6 mm / 1.3x0.7x0.2 inches

Remote control receiver

Remote control frequency VHF	433.92 MHz
Sensitivity	< - 90 dBm
Modulation	OOK
Coding addresses	4096

Environmental Specifications

Temperature	
Operating temp.	0 to 60° C / 32F to 140F
Storage temp.	-20 to 70° C / -4F to 158F
Humidity	max. 90% humidity
Protection	IP22