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Specialists in Animal Radio Monitoring

BIOTRACK TW-5 TRANSMITTER

Transmitters

Radio transmitters are small sealed units that contain the electronic circuitry needed to produce radio signals. To be built in to a radio tag, they must be fitted with a battery, antenna and mounting system (e.g. harness tubes for a backpack), and then encapsulated in resin ('potted').

Description of circuit

The TW-5 has a 'two-stage' transmitter circuit board with separate oscillator and amplifier/antenna matching circuits. It has an independent pulse-forming circuit (crystal-controlled Microcontroller) and is built almost entirely from surface mount components.

Electrical specification

Frequency band: 138 - 230 MHz (country-specific frequency restrictions apply)
Channel spacing: Nominally 10 kHz, 12.5 kHz or user-specified (country-specific restrictions apply)
Calibration error: $< \pm 5$ kHz (nominal), or $< \pm 1.5$ kHz for channelized transmitters.
Temperature error: $< \pm 10$ ppm (approx. ± 1.5 kHz) over temperature and voltage range.
Ageing: $< \pm 3$ ppm/year (approx. ± 0.5 kHz per year)
Extreme temp: -10 to +55 C (for frequency error)
Working temp: -40 to +60 C
Extreme volts: 2.5 to 3.6V

For antenna type: whip or loop (depending on application)

Power o/p: up to 0.5mW on wanted frequency
< 4 nW on spurious emissions between -
41 - 68 MHz
87.5 - 118 MHz
162 - 230 MHz
470 - 862 MHz
< 250 nW on other frequencies

Suitable batteries: lithium manganese dioxide cells (3V)
lithium thionyl chloride cells (3.5V); recommended
silver oxide cells (3 V from two cells in series)
NB: Not all sizes of cells of the systems listed above are suitable

Potting: Rigid acrylic
Weight: 1.5 - 1.8g (transmitter only)
Size (max.): 15 x 11 x 10 mm (built with crystal under PCB)
20 x 11 x 3 (crystal on end of PCB)

Pulse parameters

Rate: 20 - 120 pulses/minute (= 60/interval)
Interval: 3 - 0.5 seconds (= 60/rate): variable in approximately 0.1 second intervals
Length: 5 - 50 ms (variable in roughly 5 ms steps)
Current: typically 3.7 mA (dependent on application and battery etc)
(background current is 2-3 uA)

Approvals



Approved under EU Directive 1999/5/EC Radio and Telecommunications Equipment (RTTE).
Restrictions apply to frequencies of transmitters according to the country in which they are to be used.



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