HM - FUNKTECHNIK GmbH

Operation and Instructions Manual

for the

Radio Modules **70TXRX-M1**

former labeling of the modules

new labeling from September 2001 on

FC - XXX - 70TX-M1 **CE 0682**

The modules are licenced in Europe[1]), USA and Canada

[1]) Licences may not be available for all of the 16 EU-countries

FUNKTECHNIK GmbH

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SAFETY- RF EXPOSURE COMPLIANCE

This device has been designed using a low power transmitter. It complies with the Federal Communications Commission (FCC) RF exposure limits for General Population/Uncontrolled exposure environment. In addition, it complies with the following Standards and Guidelines:

- FCC 96-326 (1996), Guidelines for Evaluating the Environmental Effects of Radio-Frequency Radiation.
- FCC OET Bulletin 65 Edition 01-01 (2001) Supplement C, Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields.
- ANSI/IEEE C95.1-1992, IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.
- ANSI/IEEE C95.3-1992, IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave.
- Use ONLY the supplied antenna and accessories. Unauthorized accessories may violate the FCC rules and regulations.
- The module must be installed or integrated by providing a minimum separation distance of 20 cm between the antenna and the human body at all time.

Label Requirement:

- A label must be affixed to the outside of the end product into which the authorized module/product is incorporated, with a statement similar to the following: “This device contains TX ID: XXXXXXXXXXX

1. Purpose and application of the Radio Modules 70TXRX-M1

The 70TXRX-M1 Radio Modules, comprising of the

Transmitter 70TX-M1 and the Receiver 70RX-M1

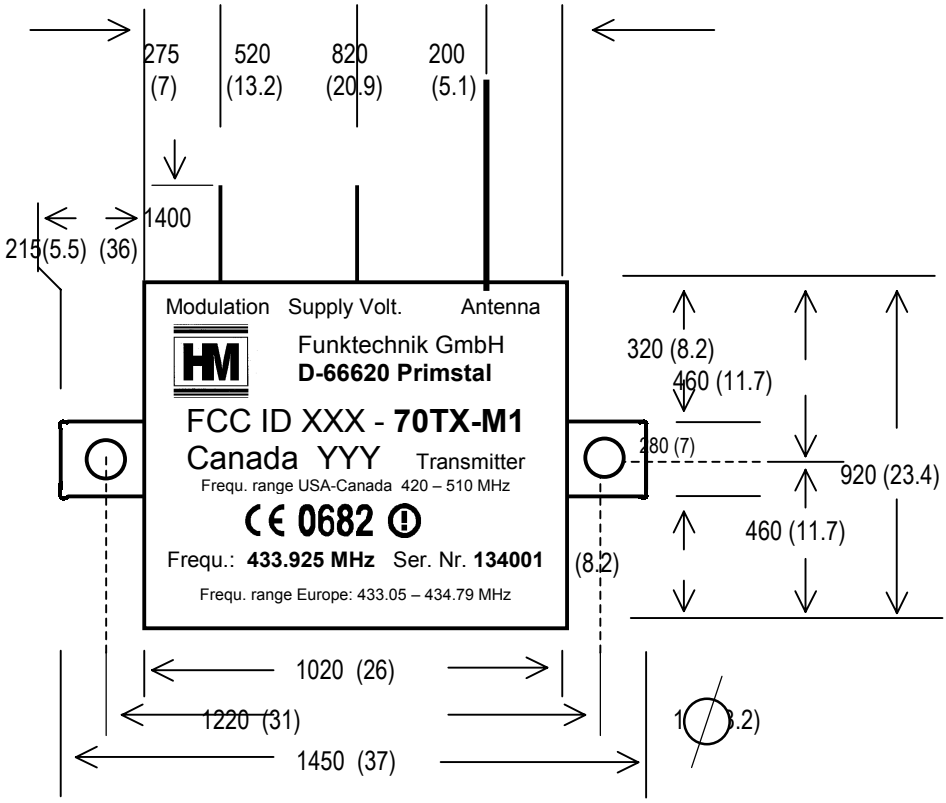
are FM-narrow bandwith type radio modules. They are single channel, crystal controlled devices on an assigned frequency in the range from 420 – 510 MHz, in 12.5 or 25 KHz spacing.

The modules are supplied by HM-Funktechnik GmbH (HM-Radio USA) as an OEM product and are to be installed in customer designed peripherals, such as

- radio remote control devices for machinery in industrial sites
- burglar alarm system, data in general and voice, only in alarm conditions
- data transmission in telemetry systems
- data transmission in wireless hand held terminal systems
- wireless data transmission in general

2. Dimensions and connections to peripheral devices

Transmitter **70TX- M1** [2])



Dimensions:

are in mil, values in brackets
are the corresponding mm numbers
Tolerance +/- 0.2 mm

[2]) Information shown on this label is not identical with the label on the module

Module hight: 400 (10)

Modulation Input

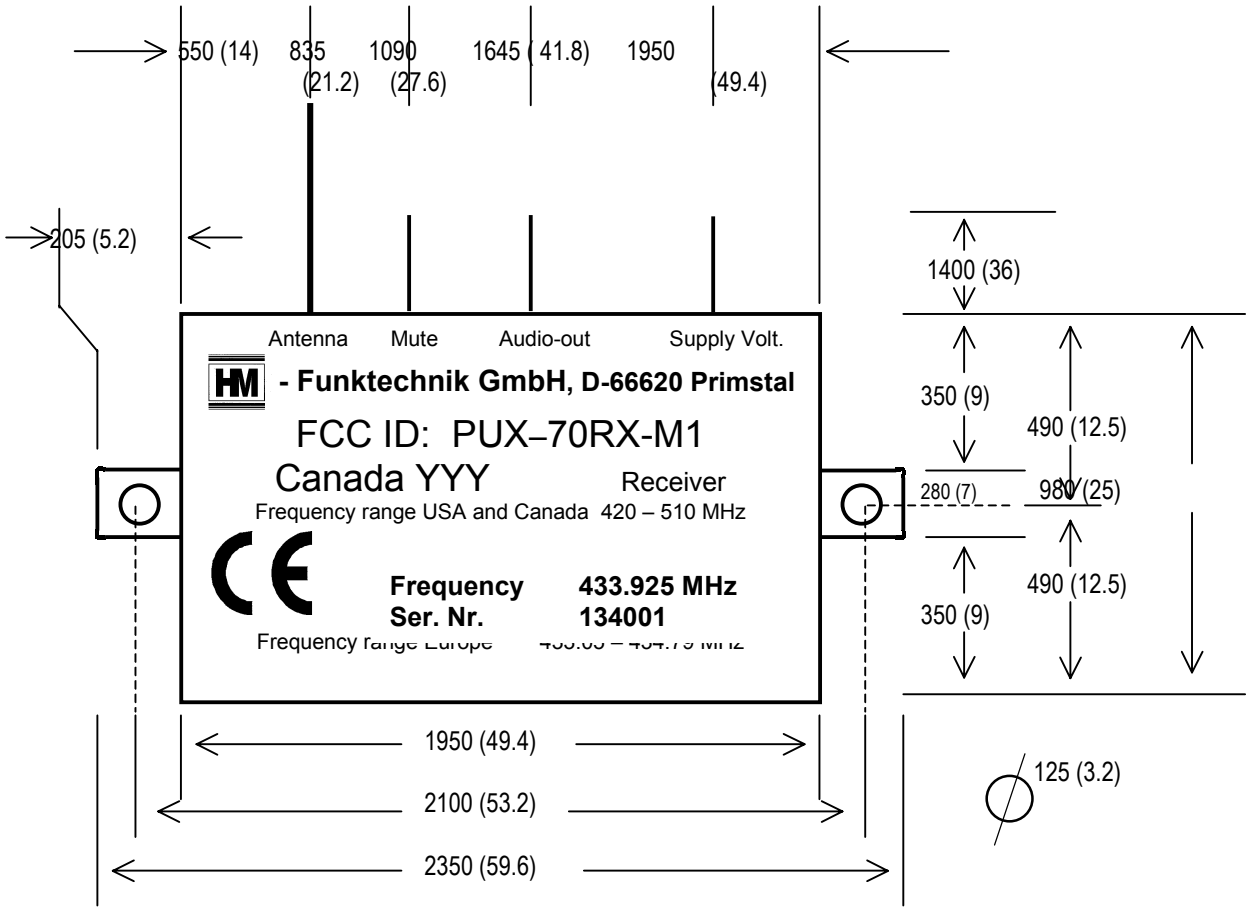
Level: TTL level, or 2,5 V DC + 2.5 V $\sin\omega t$ for + / - 2.5 KHz frequency deviation

Frequency 0 - 4 KHz, maximum

Input impedance > 4.7 KΩ

Dimensions: Receiver **70RX-M1** [3])

are in mil, values in brackets are the corresponding mm values



Module hight: 500 (12.7)

Tolerance: +/- 0.2 mm

[3]) information shown on this label is not identical with the label on the module

3. Technical data

Transmitter **70TX-M1**

Supply Voltage	minimum 4.8V	
	maximum	10 V
Absolut maximum rating	12 V DC	

Supply current	30 mA	
Modulation input	see 2	
RF – output power	10 dBm +/- 1.5 dB	conducted
Frequency accuracy	+ / - 1.5 KHz	
Temperature stability	+ / - 2.5 KHz - 20°C - + 70°C	

Receiver **70RX-M1**

Supply Voltage	minimum 4.8V	
	maximum	10 V
Absolut maximum rating	12 V DC	

Supply current	25 mA
RX-bandwith	3 KHz +/- 7.5 KHz (1. IF Filter) 20 KHz (2. IF Filter) more narrow filters upon request
Audio out	Ao + 0.5 Vpp at 2.5 KHz nominal deviation Ao depends on the frequency offset between TX and RX and may vary between 1 and 3 V DC.
Output impedance	typically 2 KΩ
AFC range	+ / - 3 KHz
Sensitivity	- 121 dBm for 12 dB SINAD CCITT weighted
MUTE signal	0 V with no RF and + 4.5 V at a RF input of typ. – 112 dBm +/- 5 dB
RSSI	available upon request instead of MUTE, 0.5 V – 2.5 V / –120 -60 dBm
Maximum RF input level	0 dBm

4. Restrictions

- **Do not supply a higher modulation input level to the TX modulation input as specified in 2**
- **Do not us the 70TXRX-M1 radio modules to transmit audio or voice**

- **Do not build illegal spy devices using the 70TXRX-M1 radio modules**
- **Do not operate the modules at lower supply voltages as specified**

For any further question, comments or advices, please contact HM-Funktechnik at

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