



360 Herndon Parkway
Suite 1400
Herndon, VA 20170
<http://www.rheintech.com>

APPENDIX F: MANUAL



- 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 Europe¹⁾, USA and Canada

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



FUNKTECHNIK
GmbH

HOCHFREQUENZBAUGRUPPEN
FERNSTEUERKOMPONENTEN
FERNSTEUERANLAGEN

Sales office
Beratung & Vertrieb

HM-FUNKTECHNIK - HELMUT MEIER
ZUM HANDEBERG 3 · D-66620 PRIMSTAL
TELEFON: 0 68 75 / 91 05-0
FAX: 91 05-10
E-mail: HMRADIO@AOL.COM
Internet: <http://www.HMRADIO.de>

Design & Production
Entwicklung & Produktion

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

The 70TXRX-M1 Radio Modules, comprising of the



360 Herndon Parkway
Suite 1400
Herndon, VA 20170
<http://www.rheintech.com>

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.

Warning: Use ONLY the supplied antenna and accessories. Unauthorized accessories may violate the FCC rules and regulations.



360 Herndon Parkway
Suite 1400
Herndon, VA 20170
<http://www.rheintech.com>

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

are FM-narrow bandwidth 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

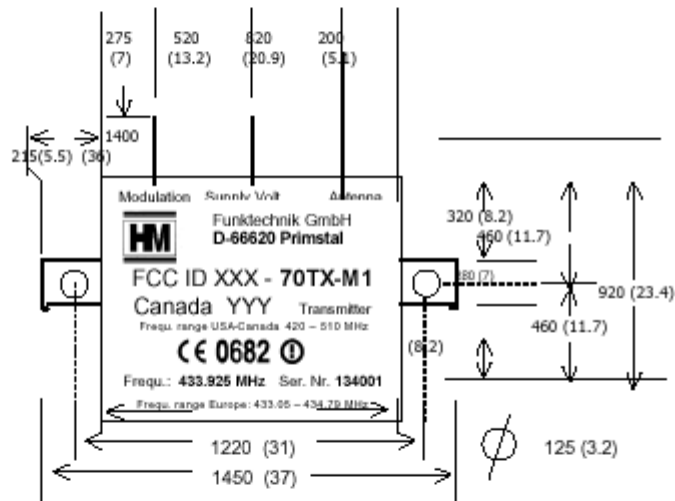
Transmitter **70TX-M1**

Dimensions:

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

*) Information shown on this label is not identical with the label on the module

Module height: 400 (10)



Modulation Input:

Level: TTL level, or 2,5 V DC + 2.5 V sin(ωt) for +/- 2.5 KHz frequency deviation

Frequency 0 - 4 KHz, maximum

Input impedance > 4.7 KΩ

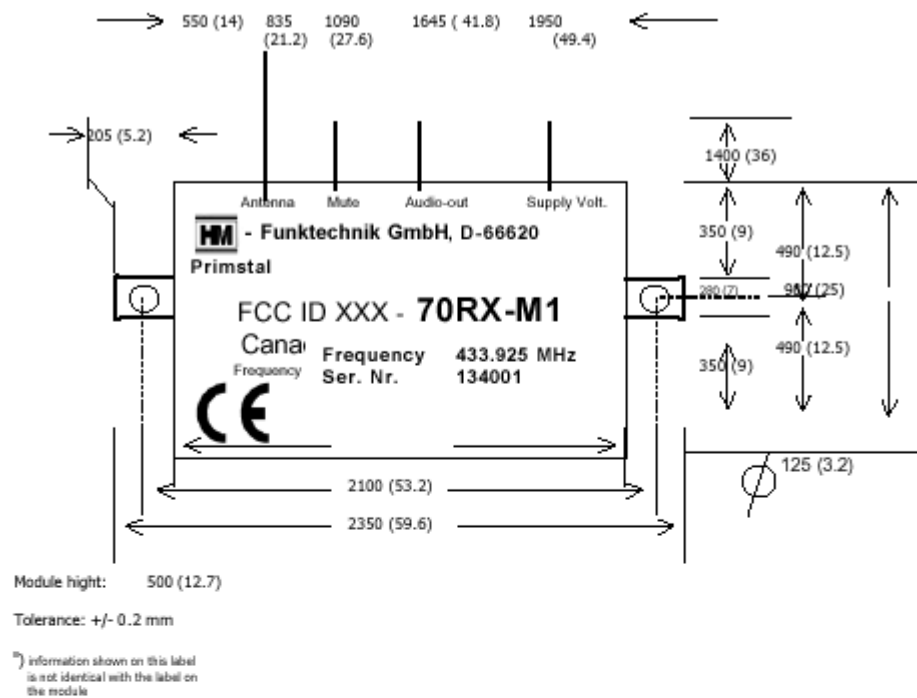
Dimensions: Receiver **70RX-M1**

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





360 Herndon Parkway
Suite 1400
Herndon, VA 20170
<http://www.rheintech.com>



3. Technical data

Transmitter **70TX-M1**

Supply Voltage	minimum 4.8V	
	maximum	10 V
<u>Absolute maximum rating</u>	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
----------------	--------------



360 Herndon Parkway
Suite 1400
Herndon, VA 20170
<http://www.rheintech.com>

	maximum	10 V
<u>Absolute maximum rating</u>		12 V DC
Supply current		25 mA
RX-bandwidth		3 KHz +/- 7.5 KHz (1. IF Filter) 20 KHz (2. IF Filter) more narrow filters upon request
Audio out		A _o + 0.5 V _{pp} at 2.5 KHz nominal deviation A _o depends on the frequency offset between TX and RX and may vary between 1 and 3 V DC.
Output impedance	typically	2 K Ω
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 or a higher frequent audio signal to the TX modulation input as specified in 2**
- **Do not use the 70TXRX-M1 radio modules to transmit audio or voice, except in alarm and emergency situations**
- **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

HMRADIO@AOL.COM