



User Manual for the Radio Module 70RX-S1

SAFETY- RF EXPOSURE COMPLIANCE

This device has been designed to use as 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.

Label Requirement:

- A label should 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 RX FCC ID: PUX70RX-S1"

1. Purpose and application of the radio module 70RX-S1

The 70RX-S1 radio receiver is a FM-narrow bandwidth type radio module. It's a multi channel, synthesizer controlled device in the range from 420 – 510 MHz, in 12.5 or 25 KHz spacing.

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

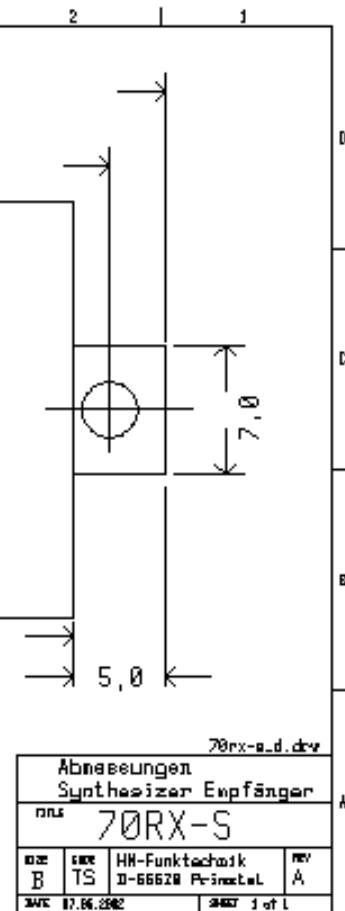
- radio remote control devices for machinery in industrial sites
- burglar alarm system, data in general and voice, only in alarm conditions
- data transmission in telemetry systems
- data transmission in wireless hand held terminal systems
- wireless data transmission in general



Hochfrequenzbaugruppen
Fernsteuerkomponenten
Fernsteueranlagen
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2. Dimensions and connections to peripheral devices



The header strip is symmetrical to the modul!
Dimensions in mm +/- 0.2
Sight from above (through the modul!!!!)
Pins with 50mil grid (1.27mm)

Module height: 12.5mm
Tolerance: +/- 0.2 mm



3. Port description and technical data

Mute	Mute output of the modul Open collector output to recognize a radio carrier, mute threshold at about -116dBm for 20dB SINAD CCITT (if the signal is less than -116dBm 0.0 V, else 4.6 V), the hysteresis is 1-2dB
RSSI	Field strength indicator of the received carrier the released DC voltage is proportional to the field strength (typ. 0.8 V DC at -120 dBm and 2.7 V DC at -65 dBm input level)
Audio	NF output of the modul, 1 Vss (at a nominell frequency deviation of 2,5 KHz) with a DC offset of about 2 V, frequency range 0 Hz - 5 KHz (DC capable), inverted
TX/RX	<i>not connected at this modul</i>
Vdd	Power supply of the modul 5 – 11 V DC stabilized , minimum voltage 4.6 V (f.e. 4x 1.2 V NiCd or NiMH), absolut maximum voltage 12 V, 78x12 not recommended because of voltage variation, internal low drop voltage stabilization to 4.6V, no reverse voltage protection
MOD	<i>not connected at this modul</i>
LD	Lock detect output of the modul Open Collector output shows if the internal synthesizer is locked or not (3.3 V if locked, else 0.0 V)
GRD	Ground of the modul (also connected to the complete case)
D0 – D7	Frequency setting of the modul Output of the lowest possible frequency, if not connected. Grounding of the pins D0 - D7 will higher the frequency stepwise (D0 12.5 KHz, D1 25 KHz, D2 50 KHz,..., D7 1.6 MHz). The easiest way of an implementation is the use of a DIP-switch, which is connected with one side to ground and the other side to D0 – D7. A frequency list to find your desired frequency is available at our homepage.
Supply current	25 mA (+ / - 2mA)
Sensitivity	at least -121dBm (for 12dB SINAD measured with CCITT filter)
Data rate	max. 9600Bd
Antenna	$\lambda/4$ – whip antenna (teflon), optional SMA, SMB or MCX
Frequency accuracy	+ / - 1.5 KHz
Temperature stability	+ / - 2.5 KHz (- 20°C .. + 55°C)



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4. Restrictions

- **Do not use the 70RX-S1 radio modul to transmit voice**
- **Do not build illegal spy devices using the 70RX-S1 radio module**
- **Do not operate the modules at lower or higher supply voltages as specified**
- **Do not put reverse voltage to the modul (it will be damaged)**

This device complies with Part 15 of the FCC Rules. 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.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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

info@hmradio.com