UHF-FM Synthesized Transmitter 70TX-S

The 70TX-S is a high quality 1**0mW FM narrow band multi-channel data radio transmitter** according to EN300220 and Part 15. The 70TX-S is available for the frequency range from **200 to 500 MHz** with a maximum switching bandwidth of 10 MHz. The integrated standby function reduces the start-up time to a minimum.

The transmitter is produced as standard for the European ISM band at 433/434 MHz. 139 channels between 433.0625 and 434.7875 MHz are programmed in a 12.5 kHz raster. The frequency setting of the 70TX-S is thus easily pre-defined in multiples of the channel raster. A complex programming of the transmitter module is therefore not necessary. In the simplest case, a DIL switch or simple solder jumpers are sufficient. The internal microcontroller generates a serial data protocol out of the 8 bit data word at the input port which sets the synthesizer. Up to 256 channels can be pre-programmed on customer request.

The direct modulation input does not restricts the type of signal or code transmission. In addition to purely digital data, sound or voice signals are also transmitted without problems. Even the transmission of very low frequencies up to DC is possible with small restrictions.

The 10mW transmission power allows a free operation all over Europe without registration. In combination with the 70RX-S2 or 70RX-M2 receiver modules a long-range radio systems can be set up for simplex or half-duplex operation. Together with our remote control unit **FSM24** the user can expect a free field range of more than **2000 m**.

Features

- narrow band multi channel transmitter
- very small size
- less current consumption
- data rate up to 9600 Bd
- no licence required
- compliance to RED (2014/53/EU), EN 300 220
- FCC and Canada notifications

Applications

- Remote control systems
- Industrial applications
- Telemetry systems
- Alarms
- Security systems

Pictures 25% sized up

Hochfrequenzbaugruppen
Fernsteuerkomponenten
Fernsteueranlagen
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Specifications:

Communication	Simplex	
Frequency range	433,0625 – 434,7875 MHz	12,5 / 25 kHz raster
	optional 410 – 510 MHz	other frequencies on request
Number of channels	139 (standard ISM)	max. 256
Output power	10 mW	at 50 Ω
Modulation	FM narrow band	analog and digital
ACP-unmodulated	typ. >70 dB	
Data input level	5 V_{pp} (TTL) for 4.8 V type	3.3 V_{pp} for 3.5 V type
Deviation	± 2,4 kHz (± 200 Hz)	by sinus with 5 V_{pp} (3.3 V_{pp})
Data rate	DC – 5 kHz (9600 Bd)	
Settling time	< 20 ms (Voltage on)	< 4 ms (Standby)
Hopping time	< 8 ms	for 800 kHz hob
Output power standby	typ. -50dBm	so reception is possible in the nearfield
Temperature range	- 25 °C.... + 75 °C	
Supply voltage	**4.8 V type:** 4.8 – 11.5 V	max. 4,6 – 12.0 V
	3.5 V type: 3.5 – 11.0 V	max. 3,3 – 12.0 V
Supply current 4.8 V type	Transmit 37mA (± 2 mA)	Standby: 18 mA (± 2 mA)
Supply current 3.5 V type	30mA (± 2 mA)	16 mA (± 2 mA)
Dimensions	25,5 x 23,6 x 8,9 mm	with lashes 37,0 x 23,6 x 8,9 mm
Weight	9,5 g	
Material	stainless steel	with M3 mounting lashes
Antenna connector	λ/4 – whip antenna (teflon)	optional SMA, SMB or MCX
Approvals	RED (EN 300 220)	Europe (433,0625 – 434,7875 MHz)
	FCC (Part 15)	USA (420 – 510 MHz)
	CAN	Canada (420 – 430 / 450 – 470 MHz)

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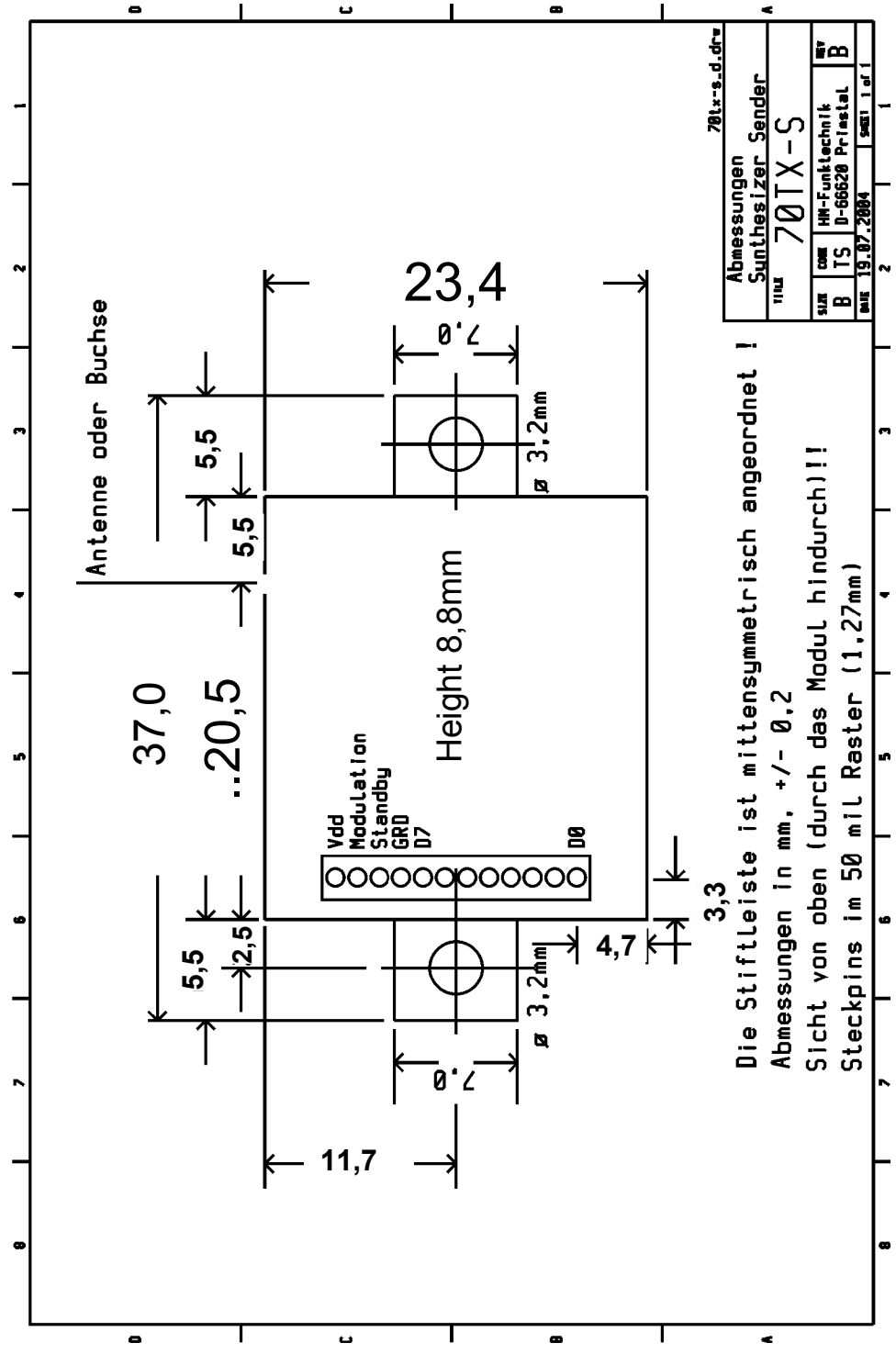
Installation dimensions and 12 pin header:



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Description of the interface:

Vdd **Input: Power supply of the module**

4.8 V type: 4.8 – 11.5 V DC stabilized, minimum voltage 4.6 V, maximum voltage 12.0 V, internal low drop voltage stabilization to 4.6 V

3.5 V type: 3.5 – 11.5 V DC stabilized, minimum voltage 3.3 V, maximum voltage 12.0 V, internal low drop voltage stabilization to 3.3 V

no reverse voltage protection

Mod. **Input: Modulation (analog or digital)**

4.8 V type: TTL compatible 5 Vpp (with a DC Offset of **2.5 V** or **AC coupled**)
3.5 V type: 3,3 V_{pp} (with a DC Offset of **1,65 V** or **AC coupled**)
The input is DC capable. Shifting of the DC-Offset therefore changes the transmission frequency. The unconnected input has a DC offset equal to half the nominal modulation voltage. Either the incoming modulation signal must have the same DC offset or be coupled via a capacitor (we recommend 1uF). However, a capacitor cuts off low frequencies of the spectrum.

The nominal deviation of 2.4 kHz is achieved at a modulation voltage of 5 Vpp (3.3 Vpp). A lower modulation AC voltage reduces the available deviation of the module.

Standby **Input: Transmit / standby switch** (internal pullup to 3,3 V)

Pin at ground = transmitting mode (TX), Pin open = standby mode

To **switch the supply voltage** and **change the frequency**, the module must be in **standby mode**. After a waiting time of **20 ms**, the **TX mode** may be activated afterwards. Otherwise, interference of the adjacent frequency spectrum may occur. In standby mode, reception of the transmitter signal is possible in the transmitter's near field.

GRD **Ground of the module** (also connected to the metal case)

D0 – D7 **Frequency setting of the module**, based on bit pattern (int. pullup to 3.3 V)

Output of the lowest possible frequency if not connected. Grounding of the weighted pins D0 - D7 rises the frequency stepwise (f.e. at 12.5 kHz raster: D0 12.5 kHz, D1 25 kHz, D2 50 kHz,..., D7 1.6 MHz). The easiest way of the implementation is a DIP-switch which is connected to DO – D7 and grounded on the other side. The corresponding table to set up your desired frequency is available on our homepage.

$$frequency = start\ frequency + raster * \sum_{i=0}^{7} \left(Di * 2^{i} \right)$$