Hochfrequenzbaugruppen
Fernsteuerkomponenten
Fernsteueranlagen
FUNKTECHNIK GMBH

Sales office/Beratung & Vertrieb · Design & Production/Entwicklung & Produktion

UHF- FM Synthesized Transmitter 70TX-T1

The **70TRX-T1** is a **professional 10mW narrow band multi channel transceiver** according to **EN 300220 or 300113**. Compared to its predecessor 70TRX-T, the volume was reduced by **35%**. Regarding to footprint and connecting the modules are 100% compatible.

The transmitter is produced by default for the **European ISM band** at **433/434 MHz**. All 139 channels from **433.0625 - 434.7875 MHz** are programmed in a **12.5 kHz** raster. The adjustment of the frequency is predefined for the user in a simple manner in multiples of the channel raster. Therefore, complex programming of the transmitter module is not necessary. A DIP switch or simple soldering bridges are sufficient. The integrated micro controller generates a serial data protocol from the 8-bit data word which sets the synthesizer. Up to **256 channels** can be pre-programmed on customers request.

The module is available for most of the worldwide used frequency bands in the **400 MHz** range: **406 - 418 MHz, 418 - 428 MHz, 428 - 438 MHz, 438 - 448 MHz, 456 - 466 MHz and 466 - 476 MHz**. Due to the wide range of our filters, very few variants are sufficient.

The **standby function** reduces the settling time to a minimum and at the same time there are **no emissions** in standby mode. The **70TX-T1** transmitter module is therefore predestined for use in **TDMA or frequency hopping applications**. The transmitter's **direct modulation input** in no way restricts the type of signal or code transmission. Both digital and analog data can be transmitted.

The combination with the receiver modules **70RX-S2** or **70RX-T1** offers the user a perfect radio system with long distance communication at half-duplex. 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 transceiver
- very small size
- low current consumption
- data rate up to 9600 Bd
- no licence required
- compliance to RED (2014/53/EG)
- EN 300220 or EN 300113

Applications

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

Real size

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Specifications:

Communication	Simplex	
Frequency range	433,0625 – 434,7875 MHz	12,5 / 25 kHz raster
Optional frequency range	406 – 476 MHz	other frequencies on request
Number of channels	139 at ISM	else up to 256
Output power	10mW	at 50 Ω
Output power Standby Mode	none	
Modulation	FM Narrowband	analog and digital
ACP unmodulated	typ. >70 dB	at 25 kHz channel spacing
Modulation input	5 V_{pp} (TTL)	
Deviation	± 2,5 kHz (± 300 Hz)	at sine wave with 5 V_{pp}
Data rate	DC – 5 kHz (9600 Bd)	
Temperature range	–25°C - +75°C	
Supply voltage	4,8 – 11,5 V	max. 4,6 – 12,0 V
Supply current TX	66 mA (± 2 mA)	
Supply current Standby	19 mA (± 2 mA)	
Settling Time	< 20 ms (Voltage on)	< 4 ms (Standby)
Hopping time	< 8 ms	for 800 kHz hob
Dimensions	51,8 x 31,6 x 9,7 mm	with lashes 61,8 x 31,6 x 9,7 mm
Weight	23 g	
Material	stainless steel	with M3 mounting lashes
Antenna connector	λ/4 - whip antenna (teflon)	optional SMA, SMB, MCX or coax
Outputs	Lock Detect	
Approvals	RED (EN 300220)	Europe (433,0625 – 463,0625 MHz)
	EN 300113	

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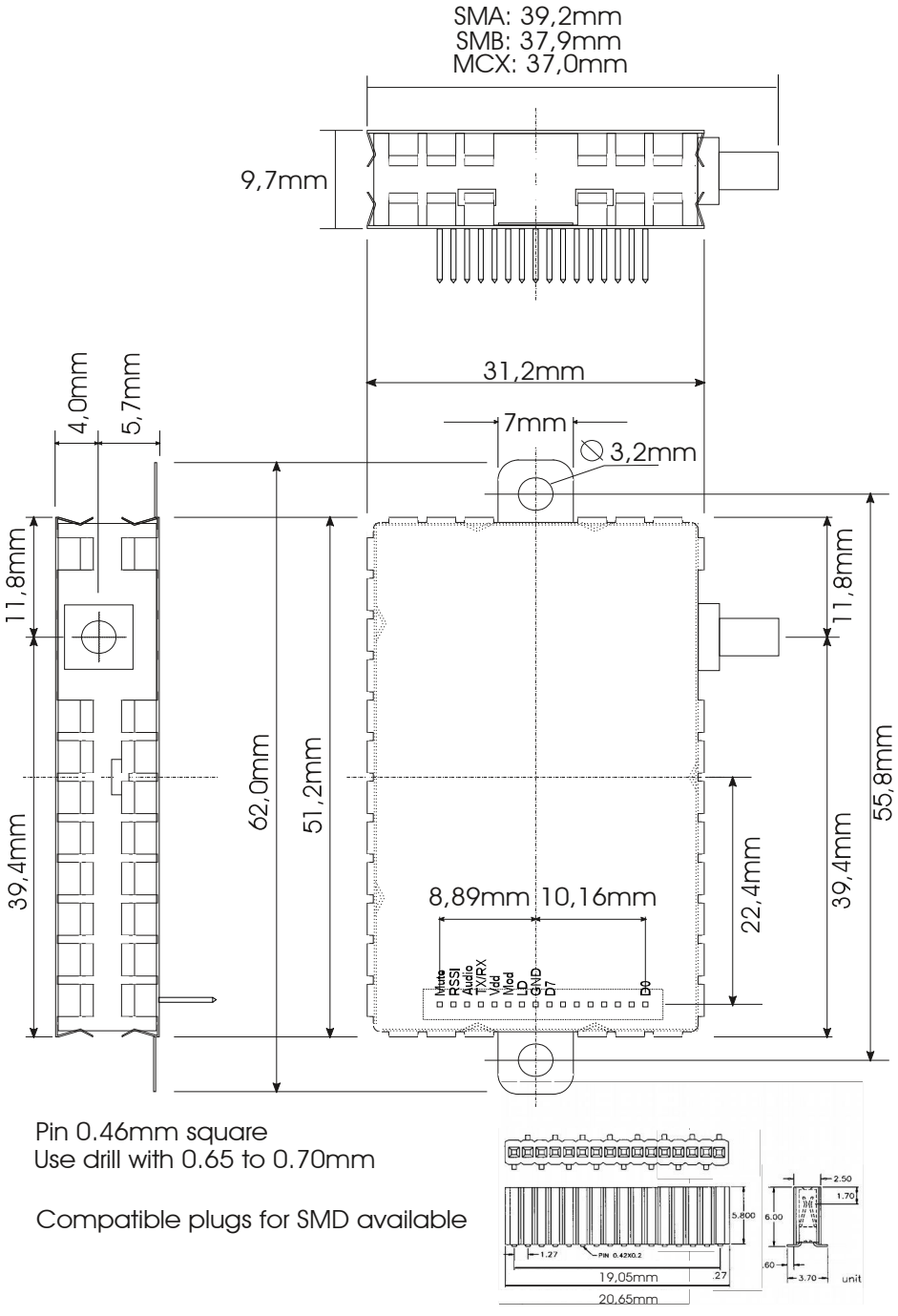
UHF-FM Synthesizer Transmitter 70TX-T1

Installation dimensions and 16 pin header:



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UHF- FM Synthesized Transmitter 70TX-T1

Description of the interface:

Mute *not connected at this module*

RSSI *not connected at this module*

Audio *not connected at this module*

TX/RX **Input: Transmit / receive switch** (internal pullup to 3,3 V)

Pin at ground = transmitting mode (TX), Pin open = receiving mode (RX)

To **switch the supply voltage** and **change the frequency**, the module must be in **RX mode**. After a waiting time of **20 ms**, the **TX mode** may be activated afterwards. This minimizes interferences of the adjacent frequency spectrum.

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

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, **no reverse voltage protection**

MOD **Input: Modulation (analog or digital)**

TTL compatible 5 Vpp (with a DC Offset of **2.5 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. A lower modulation AC voltage reduces the available deviation.

LD **Output: Lock detect indicator** (open collector)

This output indicates if the synthesizer is locked (2.8 V if locked, else 0.0 V). When changing the operating states, the PLL temporarily unlocks.

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.

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