

TR-62D

Transceiver Module for Wireless M-Bus

Data Sheet

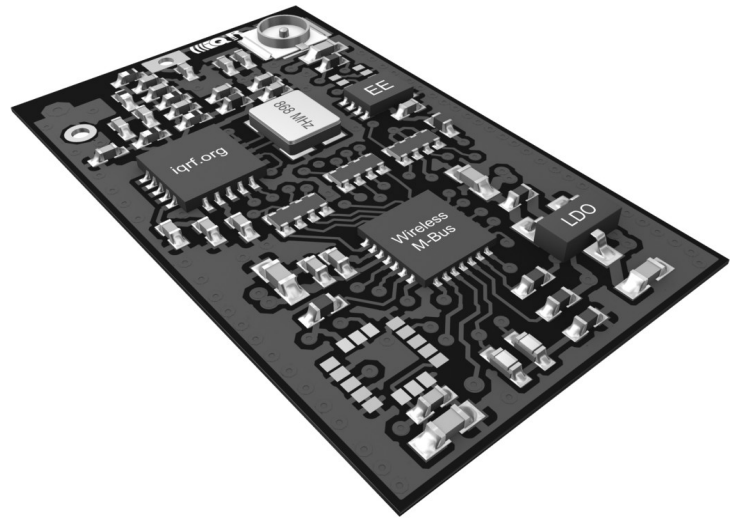
Preliminary



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Description

TR-62D is a family of IQRF transceiver modules intended for Wireless M-Bus. It operates in the 868 MHz license free ISM (Industry, Scientific and Medical) frequency band. Its highly integrated ready-to-use design requires no external components. Extra low power consumption predetermines these modules for battery powered applications.



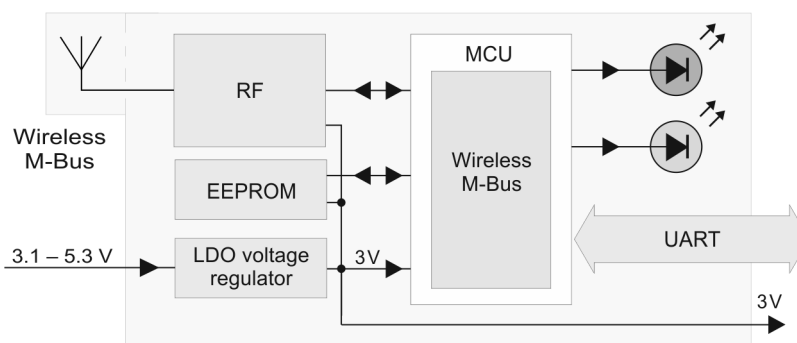
Key features

- Embedded Wireless M-Bus protocol, without operating system
- Wireless M-Bus EN 13757-4:2005 modes S1, T1, S2 and T2
- UART ↔ Wireless M-Bus converter
- UART pins: RX, TX
- FSK modulation
- RF band 868 MHz
- RF output power up to 7 mW
- Extra low power consumption
- +3 V LDO regulator output
- 2 LEDs
- Options: on-board antenna, U.FL connector
- SIM card format

Applications

- Wireless M-Bus
- Telemetry
- Automated meter reading (AMR)
- Heat, electricity, gas and water meters

Block diagram



Information contained in this publication regarding device applications and the like is provided only for your convenience and may be superseded by updates. It is your responsibility to ensure that your application meets with your specifications.

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Electrical specifications

Typical values unless otherwise stated

Parameters specified in this datasheet are typical values. They are at power supply $V_{OUT} = 3\text{ V}$ only. V_{OUT} voltage different from 3 V can impact on RF range and other parameters.

Supply voltage (V_{CC})	3.1 V to 5.3 V
LDO output (V_{OUT})	+3 V \pm 60 mV ($V_{CC} > 3.1\text{ V}$), 100 mA max.
Operating temperature ¹	-40 °C to +85 °C
Supply current	
Sleep mode	1 μ A (Pin C8 must be at logic high level)
Run mode	6.2 mA
Rx mode	19 mA (RF IC in Rx mode, MCU in sleep mode)
Tx mode	36 mA (RF IC in TX mode, 13 dBm, MCU in run mode)
Nominal frequency	868.30 and 868.95 MHz
RF data modulation	FSK (Frequency Shift Keying)
RF data transmission bit rate	32.768 kb/s (mode S) 100 kb/s (mode T)
RF sensitivity	-98.8 dBm
RF output power	8.5 dBm (mode T), 6.7 dBm (mode S)
RF range ² (TR-62DA)	Up to 315 m (mode T), 245 m (mode S)
Input voltage on C5 and C8 pins	0 V to V_{OUT}
Size (L x W x H)	25.0 mm x 14.9 mm x 3.0 mm (TR-62D) 31.8 mm x 14.9 mm x 3.0 mm (TR-62DA)

Note 1: RF range may change with lower temperature. Frost, condensation or humidity over 85% may disable module functionality. Module suitability should be tested in final application before volume use.

Note 2: Strongly depends on module orientation and surroundings

Users have to ensure observing local provisions and restrictions relating to the use of short range devices by software, e.g. the CEPT ERC/REC 70-03 Recommendation and subsequent amendments in EU.

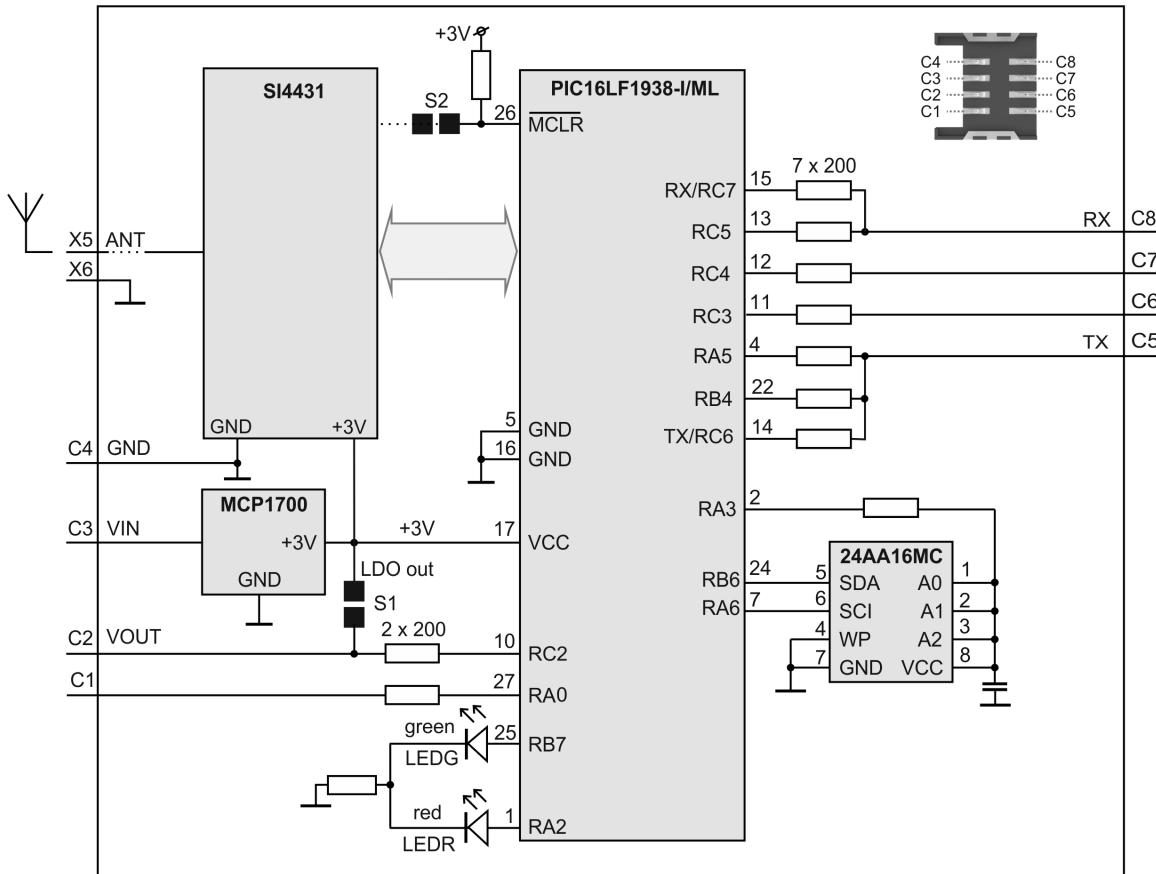
Caution: Electrostatic sensitive device. Observe appropriate precautions for handling.

Absolute maximum ratings

Stresses above listed maximum values may cause permanent damage to the device and affect device reliability. Functional operation at these or any other conditions beyond those specified is not supported.

Supply voltage (V_{CC})	5.5 V
Voltage on C5 and C8 pins	-0.3 V to ($V_{OUT} + 0.3\text{ V}$)
Storage temperature	-50 °C to +100 °C
Ambient temperature under bias	-40 °C to +85 °C

Simplified schematic

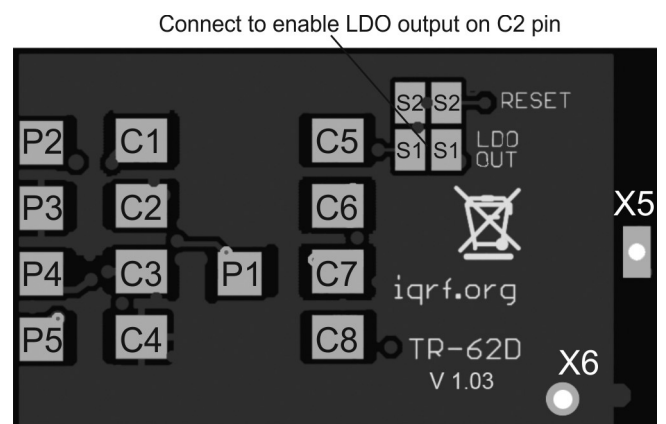


Basic components

IC	Type	Manufacturer
MCU	PIC16LF1938-I/ML	Microchip
RF IC	SI4431	Silicon Labs
LDO voltage regulator	MCP1700	Microchip
EEPROM	24AA16/MC	Microchip

Pin	Name	Description
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C1	Do not use, leave unconnected	
C2	VOUT	+3 V LDO output (if S1 connected)
C3	VIN	Power supply voltage
C4	GND	Ground
C5	TX	UART TX
C6	Do not use, leave unconnected	
C7	Do not use, leave unconnected	
C8	RX	UART RX . Must be in log. H. in idle state.
X5	ANT	Antenna input
X6	GND	Ground
P1–P5		For factory programming only
S1		LDO output enable. Connect to enable (default disabled).
S2		Leave disconnected.

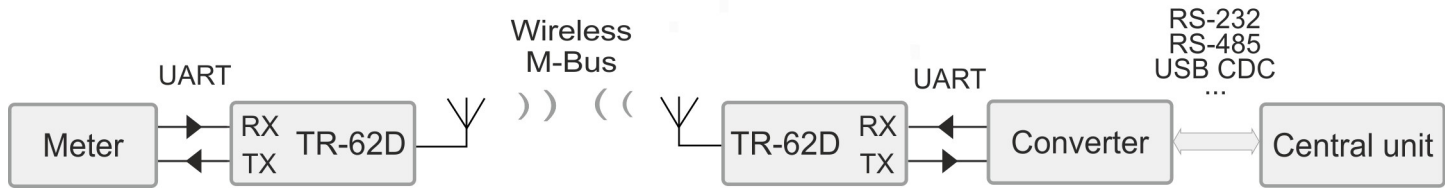


Bottom view

Application

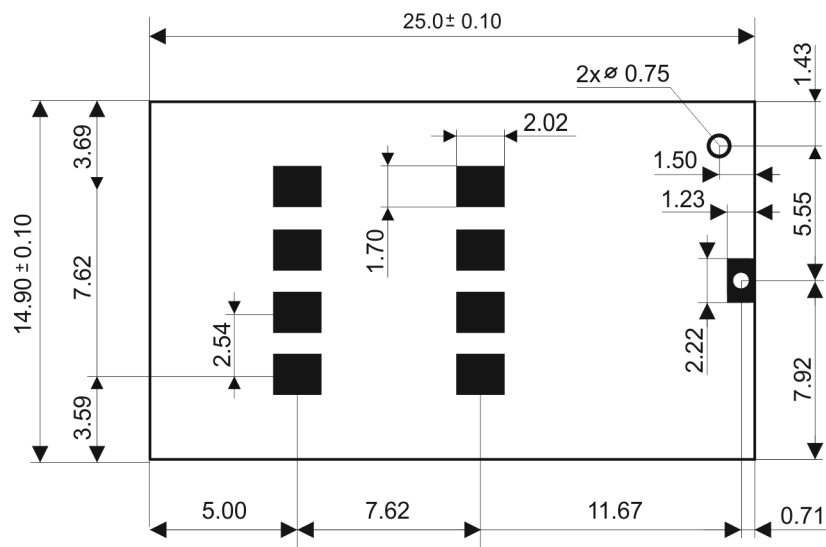
See the *Wireless M-Bus Implementation in TR-62D User's guide*.

Typical usage

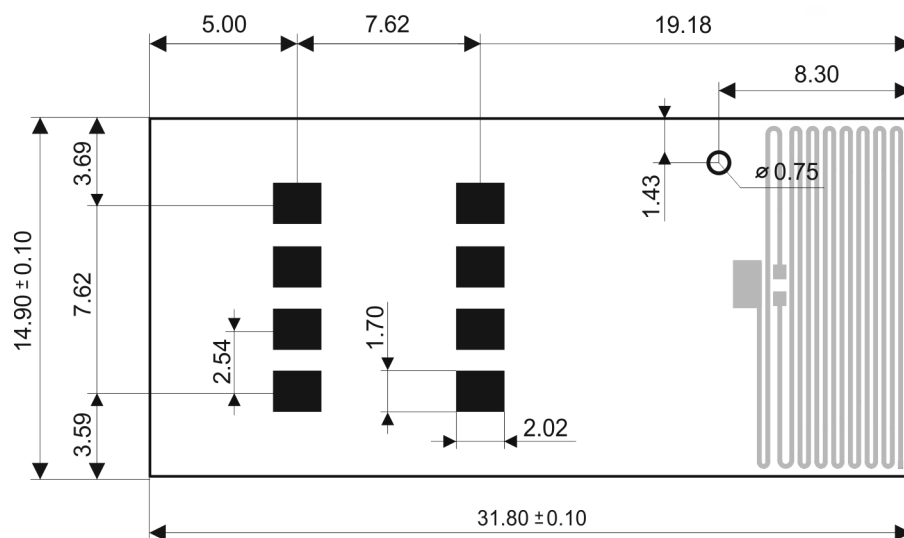


Dimensions

TR-62D(C)



TR-62DA



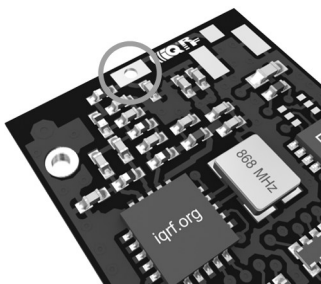
Top view, Units: mm

Recommended SIM connector: KON-SIM-01

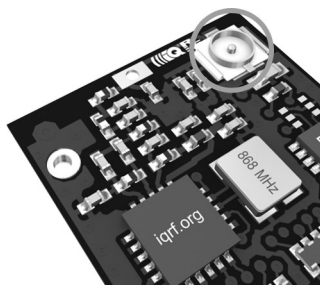
Product information**Ordering codes**T R - 6 2 D A

antenna options: **n**il - soldering pad-hole (no antenna, no U.FL connector)
 A - PCB antenna
 C - U.FL connector (mini coax)

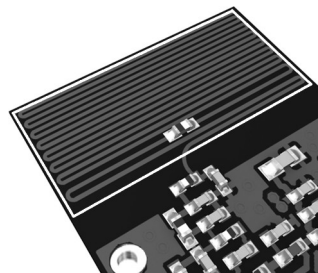
Type	Antenna connection
TR-62D	Soldering pad-hole
TR-62DC	U.FL connector
TR-62DA	Built-in PCB antenna



TR-62D



TR-62DC



TR-62DA

Document history

- 130607 Preliminary. Operational temperature range extended.
- 130506 Preliminary

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