

T60TX-0xSTL

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1. Revision History

Issue	Changes	Changed by / Date	Approved by / Date
A1	First Issue	Jacob Hägglund 2005-01-04	

2. Relevant Marcets/Standards

EU

EN 300 220-1

EN 301 489-1/3

R&TTE

Radio Approval Standard

EMC Approval Standard

Directive 1995/05/EC

US

FCC

China

3. Product Description

The transmitters T60TX-01,2,3,4,6,8STL are aimed for remote control applications.
The transmitter is a replace product to T60TX-0xSOL.
The transmitter is a standard Tele Radio product.

The purpose of this document is to describe the requirements on the transmitters T60TX-0xSTL.

4. Product Requirements

4.1. Electrical Connections

The product has the following connections:

Batteries:

VDD + 4.5 V
 VEE + 3.0 V
 VFF + 1.5 V
 GND

Programming Contact:

VCC + 3.2V
 GND
 MISO
 MOSI
 SCLK
 RESET

4.2. Marking

The product shall be marked according to R&TTE Directive.

The product shall be marked according to FCC standard.

The product shall be marked according to the standard of Tele Radio products.

4.3. Material Requirements

No silicone is to be used in the T60TX-0xSTL.

4.4. Functional Requirements

4.4.1. Data Communication

The transmitter uses T60 as standard protocol.

The transmitter shall be compatible with the old 460-protocol.

T60 – Data Protocol (UART 2400 BAUD)

1	2	3	4	5	6	7	8	9	10	11	12
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1. Start pulse (high) 5 ms
2. Trinary code 1 - 8
3. Trinary code 9 – 16
4. Private ID 1 – 8
5. Private ID 9 – 16
6. Private ID 17 – 24
7. Data byte 1 (Gate byte)
8. Data byte 2 (Gate/Function byte)
9. Data byte 3 (Function byte)

- 10. Data byte 4 (Customer specific)
- 11. CRC byte 1
- 12. CRC byte 2

460 – Data Protocol

1	2	3	4	5	6
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- 1. Start sequence (low) 17 ms
- 2. Start sequence (data)
- 3. Trinary code 1 – 4
- 4. Trinary code 5 – 8 (After code 5 a control sequence will be sent)
- 5. Relay code 6,1,7,8
- 6. Relay code 2,3,4,5

All data is transferred as trinary code in 460-code.
 There can be three different data streams called **Minus**, **Zero** and **Plus**.
 Detailed information about the code can be found at R&D department TRAB.

This shall be tested according to 5.1

4.4.2. Programmable Parameters

The transmitter shall have a switch to set 460- or T60-code.

4.4.3. Functionality

4.4.3.1. Private ID-codes

Each T60-transmitter contains a unique non-programmable ID-code.
 The code can not be changed or erased.
 There is a total of 16.777.216 codes (transmitters) and no two transmitters have the same code.

4.4.3.2. Trinary codes

460-system uses 8 trinary switches to set an individual code. This enables 6561 different code settings in standard mode.
 T60-system uses 10 trinary switches to set an individual code. This enables 59049 different code settings.

4.4.3.3. Functions

1,2,3,4,6 or 8 functions. Each function is controlled by a push button. All 8 functions can be used simultaneously in standard T60-mode.

4.5. Electrical Requirements

4.5.1. Supply Voltage

The transmitter is designed to work with three 1.5V batteries AAA.
 The transmitter shall work within the voltage range 3.8 – 5 Volt
 This shall be tested according to 5.1

4.5.2. Reversed Polarity

The transmitter shall withstand supply voltage with reversed polarity. No damage to the transmitter shall occur when reversed voltage supply is applied.

This shall be tested according to 5.1

4.5.3. Current consumption

The unit shall have a maximum current consumption of 30 mA.

This shall be tested according to 5.1

4.5.4. Radio unit

Modulation: FSK
Operating frequency: 433,92 MHz
PCB Radio Unit

4.5.5. Antenna

Integrated on the PCB

4.5.6. Working range

50 - 100 meters (free field)

This shall be tested according to 5.1

4.5.7. EMC & Radio Approval

The unit shall work within the acceptable parameters of EMC according to R&TTE 1995/05/EC. This shall be tested and documented by an accredited test house.

4.6. Environmental Requirements

The product shall have normal functionality under the following climate conditions:

Operating temperature - 20°C to + 55°C
Relative operating humidity 10 – 90 %

Storage temperature - 20°C to + 55°C
Relative storage humidity < 90 %

This shall be tested according to 5.1

4.7. Mechanical Requirements

4.7.1. Size

113x66x35 mm (Including clip)

4.7.2. Weight

The maximum weight of the product shall be 300 grams, batteries included.

4.7.3. Enclosure Material

PC+ABS

4.7.4. Enclosure degree of protection

IP 65

4.7.5. Colour & Shape

