



TELTONIKA T-BoxRelay

USER'S MANUAL V1.1



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1.ABOUT THIS DOCUMENT

This document describes the T-BoxRelay hardware integration, configuration and software configuration. This document should help T-BoxRelay integrators to integrate and configure the system.

The document describes the mechanical and electrical installation and configuration. Document also describes how to test and run T-BoxRelay for the first time.

2.INTRODUCTION

T-BoxRelay is an add-on for T-BoxN12R or T-Box/GPS-800, which enables to switch high power devices via GSM network. T-BoxRelay has eight SPDT (single pole double throw) relays inside, which can control eight high power devices. Usage of this device is really wide: from everyday house control to complicated systems installed in industrial companies.

T-BoxN12R was designed for M2M (machine to machine) applications or other wireless solutions. Integrated Nokia 12 GSM module enables flexible wireless communications over GSM network. All this, connected with T-BoxRelay, extends opportunities to have a multiple system which ensure your intentions. Simply send SMS to turn on house alarm, or use WAP to watch the condition of all house equipments.

Common, normally open and normally closed output contacts enables to connect one device and have on/off function, or connect two devices and have 1stON(2ndOFF) or 2ndON(1stOFF) function. For example, we can connect house heating system and operate with it ON or OFF, or we can build a system which turns heating OFF when we turn house alarm ON and vice-versa.

The light diodes in front of the device afford ground for seeing the indication of power supply and watching in which state connected device is now. So it is easy to control your T-BoxRelay and quickly find the problem in case of some troubles in one of the devices.

All these features enable to use this mobile solution in wide range of applications.

3.MECHANICAL INTEGRATION

3.1.Package contents

These are the contents of your package:

- 1) T-BoxRelay module,
- 2) 8x connectors MSTB 2,5 HC/3-ST, 5x connectors MSTB 2,5 HC/2-ST,
- 3) CD with user manual,
- 4) Quick start guide

3.2.Dimensions

3.2.1.T-BoxRelay case

The plastic case of T-BoxRelay is green and suitable for fitting with electronic instruments that can hook to the DIN EN 50022.

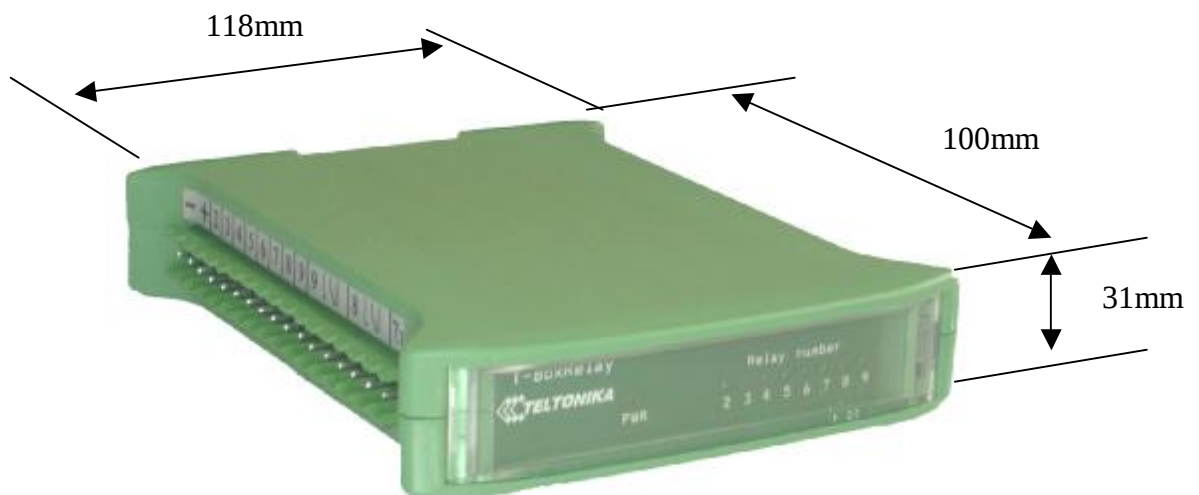
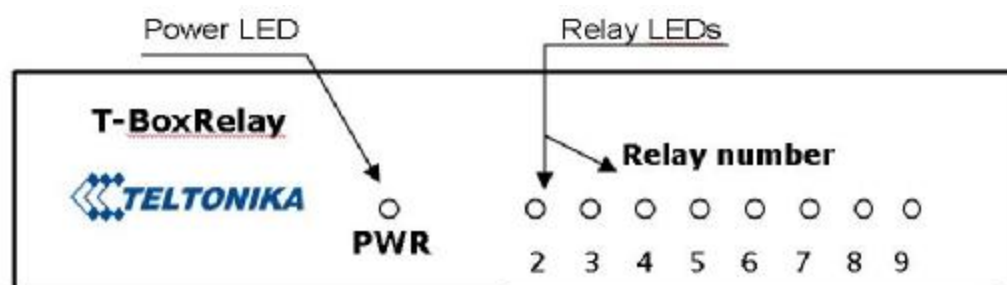
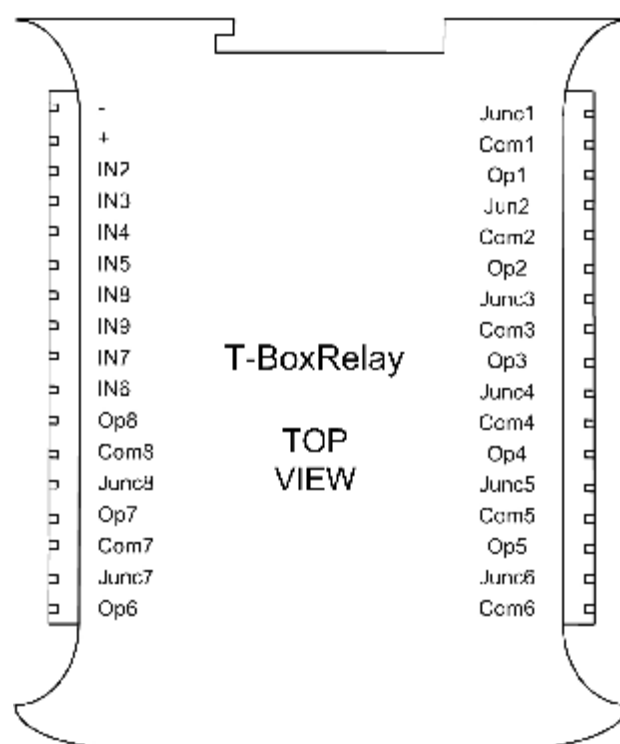


Figure 1. Picture of T-BoxRelay

T-BoxRelay front panel



3.2.3.T-BoxRelay top view



4.ELECTRICAL INTEGRATION

4.1.Electrical characteristics

4.1.1.Connector pin-out

Table 1. **Connector pin-out**

Pin name	Description
-	GND
+	Device power. Voltage 12V DC. Power consumption 7875mW peak up to.
IN2	Input 2. Open collector input. 0...1V - true. 1...12V - false.
IN3	Input 3. Open collector input. 0...1V - true. 1...12V - false.
IN4	Input 4. Open collector input. 0...1V - true. 1...12V - false.
IN5	Input 5. Open collector input. 0...1V - true. 1...12V - false.
IN8	Input 8. Open collector input. 0...1V - true. 1...12V - false.
IN9	Input 9. Open collector input. 0...1V - true. 1...12V - false.
IN7	Input 7. Open collector input. 0...1V - true. 1...12V - false.
IN6	Input 6. Open collector input. 0...1V - true. 1...12V - false.
NOP8	Normally open output 8. Active when signal is given to the input 8.
COM8	Common pin for NOP8 and NCL8
NCL8	Normally closed output8. Active in default mode.
NOP7	Normally open output 7. Active when signal is given to the input 7.
COM7	Common pin for NOP7 and NCL7.
NCL7	Normally closed output7. Active in default mode
NOP6	Normally open output6. Active when signal is given to the input 6.
NCL1	Normally closed output1. Active in default mode
COM1	Common pin for NOP1 and NCL
NOP1	Normally open output 1. Active when signal is given to the input1.
NCL2	Normally closed output2. Active in default mode
COM2	Common pin for NOP2 and NCL2
NOP2	Normally open output2. Active when signal is given to the input2.
NCL3	Normally closed output3. Active in default mode
COM3	Common pin for NOP3 and NCL3.
NOP3	Normally open output3. Active when signal is given to the input3.
NCL4	Normally closed output4. Active in default mode
COM4	Common pin for NOP4 and NCL4
NOP4	Normally open output4. Active when signal is given to the input4.
NCL5	Normally closed output5. Active in default mode
COM5	Common pin for NOP5 and NCL5
NOP5	Normally open output5. Active when signal is given to the input5.
NCL6	Normally closed output6. Active in default mode
COM6	Common pin for NOP6 and NCL6.
NOP6	Normally open output6. Active when signal is given to the input6.

4.1.2. Grounding

The ground for power supply is marked as “-“. Please ensure that polarity is correct when connecting wires. The ground for the inputs and outputs remains the same.

4.1.3. Power supply

T-BoxRelay uses 12V direct current. Please use AC/DC converter to adjust your household 220V to T-BoxRelay power supply. The same power source can be applied to T-BoxN12R and this can make your scheme simpler.

4.1.4. Digital Inputs

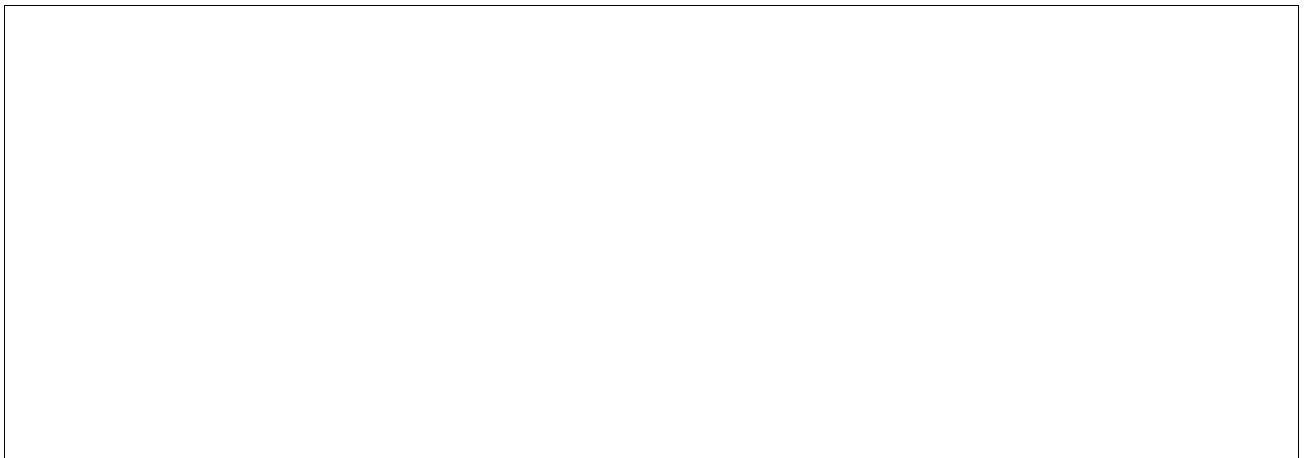
There are seven open collector inputs. If the input voltage is less than 1V, relay switches over, else, if input voltage is more than 1V (up to 12V), relay turns to default position. The resistance of an input is about 2k Ω .

4.1.5. Outputs

There are three kinds of outputs in T-BoxRelay:

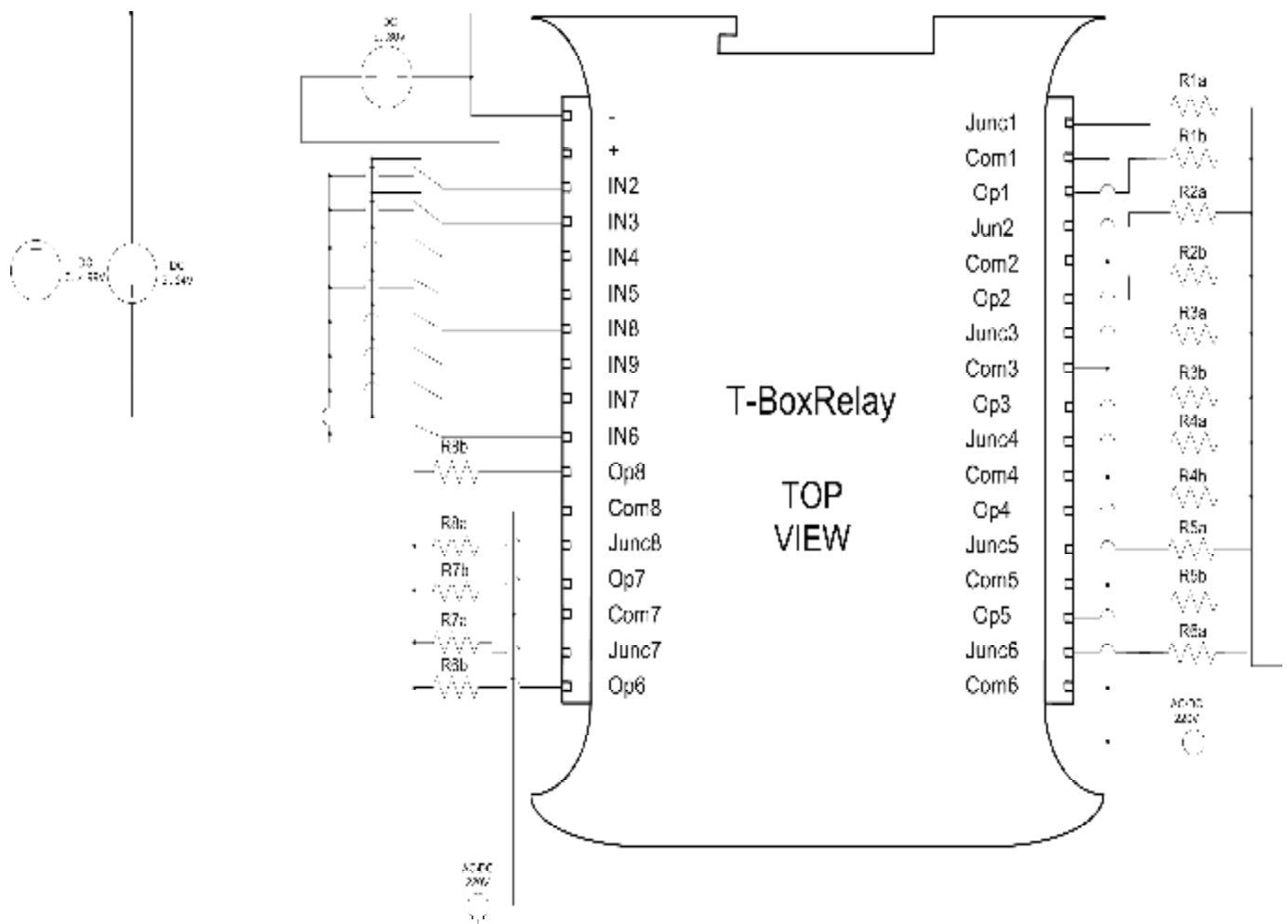
- a) NCL output. Normally closed output, operates until the relay is switched, when the input voltage is more than 1V.
- b) NOP output. Normally open output, operates when less than 1V voltage is given to the input and relay is switched.
- c) COM output. It is common output for both pins (NCL and NOP).

Outputs can hold 250V voltage and 10A (15A peak) current.



4.2.Sample electrical connection

4.2.1.Sample scheme



5. TROUBLESHOOTING

5.1.T-BoxRelay doesn't power up

- 1) If the T-BoxRelay works well, the "PWR" LED should be always on. Please make sure you have connected the power supply wires to T-BoxRelay according the scheme (positive terminal of power supply to pin 2 and GND to pin1) and that these wires are firmly holding the connector.
- 2) Please make sure that your power supply (AC/DC converter or battery) is 12V and at least 500mA.

5.2.Failed to control a device

- 1) If T-BoxRelay works properly the output LEDs should be on when input is given. If it doesn't, make sure that the plug is firmly holding the connection. Make sure that you are trying to control the right output. Does the number of input and output coincide? Also check your T-BoxN12R (or other control device), it might be breakdown, or wires might be snapped off.
- 2) Make sure that output contact is firmly in its position and check if device, which you want to control, is working properly in normal conditions (just put the plug in the socket), and there is a possibility that the socket doesn't supply voltage.
- 3) Check if your mobile phone is configured properly, and your T-BoxN12R (or other controller) is installed correctly. If there are some misunderstandings read T-BoxN12R user manual or contact our technical support.
- 4) Check your T-BoxRelay output and input voltage. Does it suit with values produced in this document? Input can't overstep 12V (0...1-true; 1...12-false), outputs can't overrun 250V voltage and 10A current.

6. TECHNICAL SPECIFICATIONS

6.1. Mechanical specifications and operating conditions

Parameter	Min	Typical	Max	Unit
Size		118 × 100 × 31		mm
Weight		148 ± 10		g
Storage temperature	-40		+85	C°

6.2. Absolute maximum ratings

Parameter	Max	Unit
Maximum digital input voltage	12	V
Maximum output current	10 (Peak to 15)	A
Maximum output voltage	250	V

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

6.3. Electrical parameters

Parameter	Min	Typical	Max	Unit
Power supply voltage		12		V
Peak power consumption		7875		mW
Digital input high voltage	0		0.99	V
Digital input low voltage	1		12	V
Digital input resistance		20		kΩ

7. TECHNICAL SUPPORT

If you encounter any problems when using our products, please refer to Troubleshooting on page 11. If you do not find a solution for your problem, please contact our technical support by writing an e-mail to support@teltonika.lt . We will be pleased to help you.

If you are interested in other products from Teltonika, please visit our website www.teltonika.lt, where you will find our newest products.

If you are interested in product pricing or want to order our products with different antennas, connectors or built-in programs, please contact our sales department by writing an e-mail to sales@teltonika.lt .