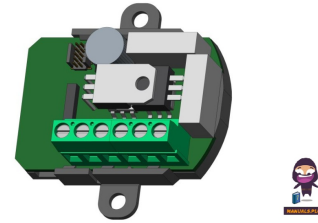**Manuals+** — User Manuals Simplified.

SMARTEH LBT-1 Bluetooth Mesh Triac Output Module

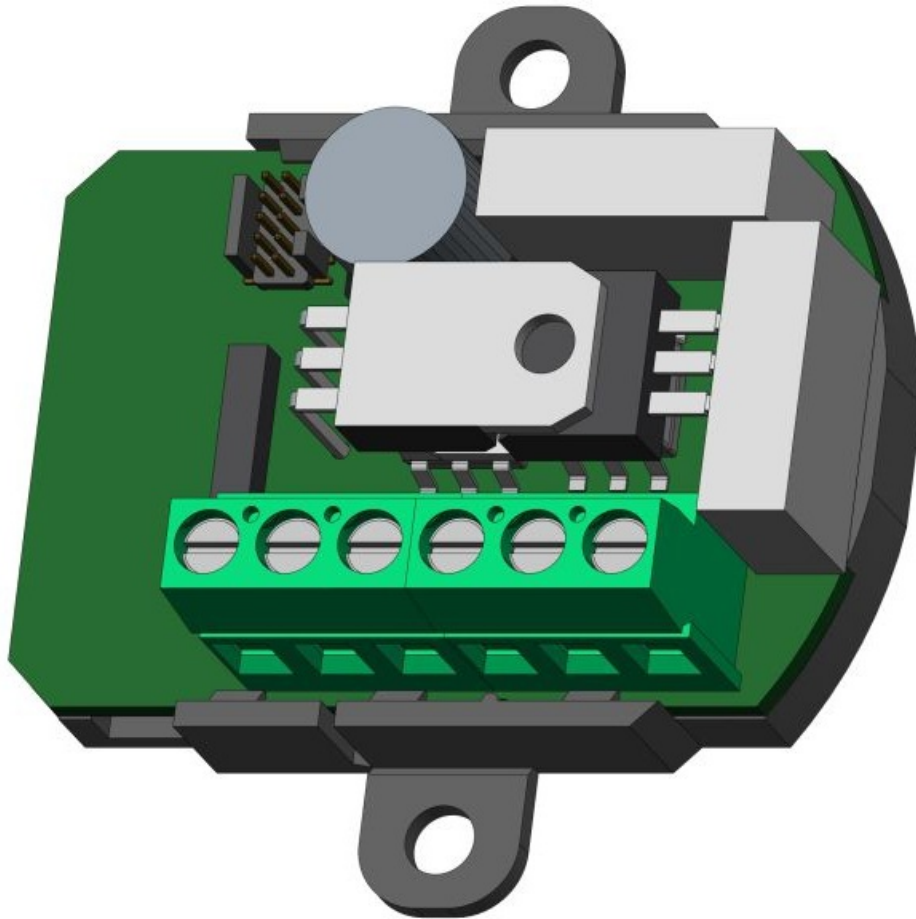# SMARTEH LBT-1 Bluetooth Mesh Triac Output Module User Manual

Contents

SMARTEH LBT-1 Bluetooth Mesh Triac Output Module

Specifications

- **Product Name:** Longo Bluetooth Products LBT-1.DO4 Bluetooth Mesh Triac output module
- **Version:** 2
- **Manufacturer:** SMARTEH d.o.o.
- **Input Voltage:** 100-240V AC

Product Usage Instructions

Safety Precautions
Ensure authorized personnel handle electrical devices operating on a 100-240V AC network. Protect devices from moisture, dirt, and damage during transport, storage, and operation.

Setup and Installation
The LBT-1.DO4 Bluetooth Mesh Triac output module operates with the LBT-1.GWx Modbus RTU Bluetooth Mesh gateway on the same Bluetooth Mesh network. Refer to the device connection diagram for proper setup.

Operation Parameters
The operation parameters for the triac output module are detailed in Table 2. Ensure proper configuration of registers for executing commands, destination addresses, vendor ID, model ID, virtual address index, application key index, and option code.

ABBREVIATIONS

- **LED** Light Emitted Diode
- **PLC** Programmable Logic Controller

- **PC** Personal Computer
- **OpCode** Message Option Code

DESCRIPTION

LBT-1.DO4 Bluetooth Mesh two triac output module is designed to be used as a shades or curtains motor control module with RMS current and voltage measuring possibility. The module can operate with a wide range of AC voltages. It can be placed inside the 60mm diameter flush mounting box. It can also be placed close to shades or curtains motor. Switch input is provided to have the possibility of manually switching On and Off the two triac outputs. This input can detect 50/60 HZ for triac 1 control and 25/30 HZ for triac 2 control. Two-position push button switch with an appropriate diode as 1N4007 should be connected to the switch input line wire as shown in Figure 4. Only one triac output, triac output 1 or triac output 2, can operate at the time.

LBT-1.DO4 Bluetooth Mesh two triac output module can only operate with Smarteh LBT-1.GWx Modbus RTU Bluetooth Mesh gateway connected to the same Bluetooth Mesh network. LBT-1.GWx Modbus RTU gateway is connected to the main control device as Smarteh LPC-3.GOT.012 7″ PLC-based Touch panel, any other PLC or any PC with Modbus RTU communication. Besides Smarteh Bluetooth Mesh devices, other standard Bluetooth Mesh devices can be integrated into above mentioned Bluetooth Mesh network. More than a hundred Bluetooth Mesh devices can be provisioned and can operate in a single Bluetooth Mesh network.

FEATURES
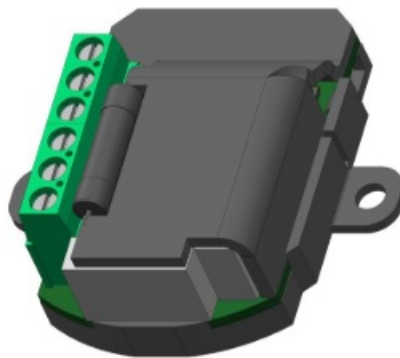
Table 1: Technical data

- **Communication standard:** Bluetooth Mesh is a low-power wireless mesh protocol and allows device-to-device communication and device-to-main control device communication.
- **Radiofrequency:** 2.4 GHz
- **Radio range for direct connection:** < 30 m, depending on application and building. By using Bluetooth Mesh topology, much bigger distances can be achieved.
- **Power supply:** 90 .. 264 V AC
- **Ambient temperature:** 0 .. 40 °C
- **Storage temperature:** -20 .. 60 °C
- **Status indicators:** red and green LED
- 2 x Triac output, 0.7 A continuous per output/ 1 A pulsing per output
- RMS current and voltage measurement, power consumption measurement
- Switch digital input
- Mounting in flush mounting box

OPERATION

LBT-1.DO4 Bluetooth Mesh Triac output module can only operate with Smarteh LBT-1.GWx Modbus RTU Bluetooth Mesh gateway while provisioned to the same Bluetooth Mesh network.
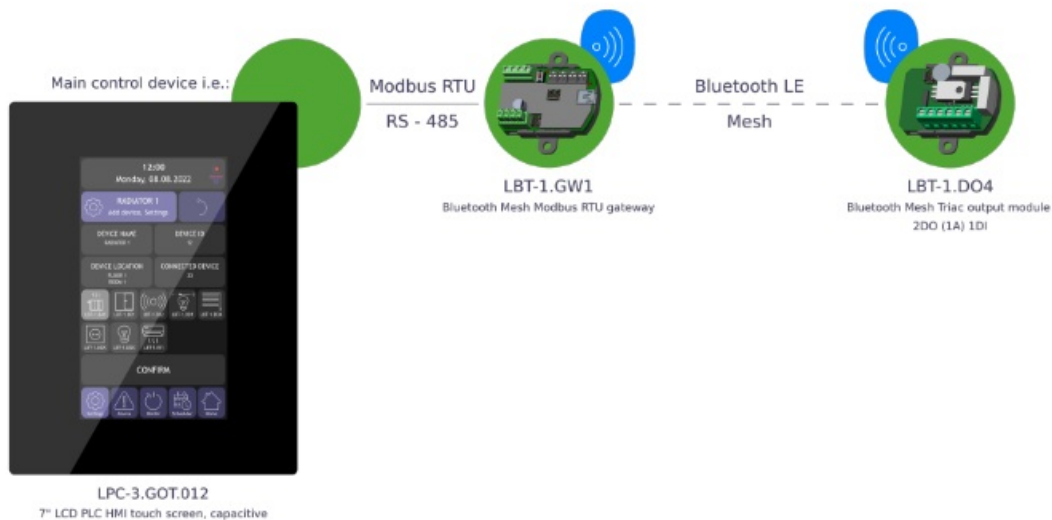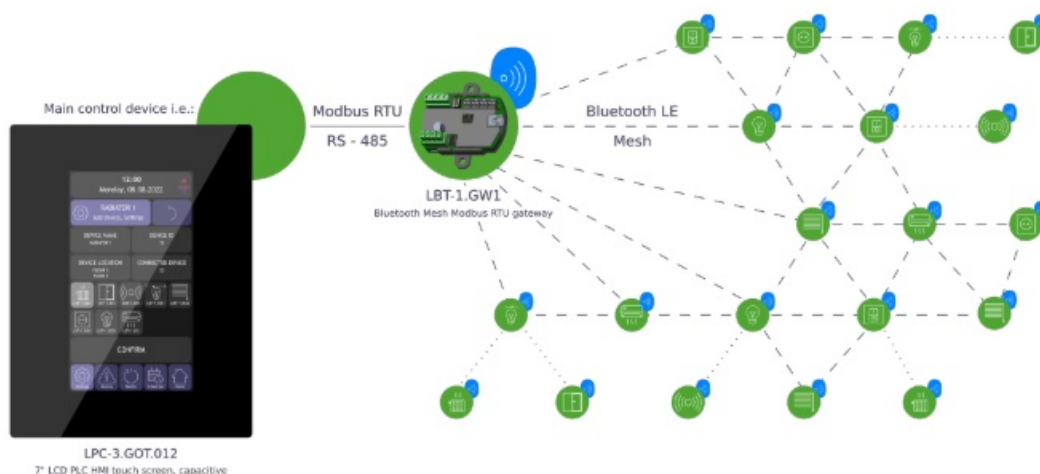

Figure 2: LBT-1.DO4 device connection

Other triac output module functions

Factory reset: This function will delete all Bluetooth Mesh network parameters stored on LBT-1.DO4 triac output module and will restore to the conditions of the initial programming, ready for provisioning. See Table 5 for more information.

Operation parameters

- **LBT-1**.DO4 Bluetooth Mesh Triac output module accepts a set of operation codes as specified in below tables 2 to 4.
- **LBT**-1.DO4 Bluetooth Mesh output module is communicating with the main control device as Smarteh LPC-3.GOT.012 via Smarteh LBT-1.GWx Modbus RTU Bluetooth Mesh gateway.
  All communication between the main control devices is LPC-3.GOT.012 or similar is performed by using Modbus RTU communication. Individual Bluetooth Mesh node configuration data should be observed by using

network provisioning tool.

Table 2: 4xxxx, Holding registers, Modbus RTU to Bluetooth Mesh gateway

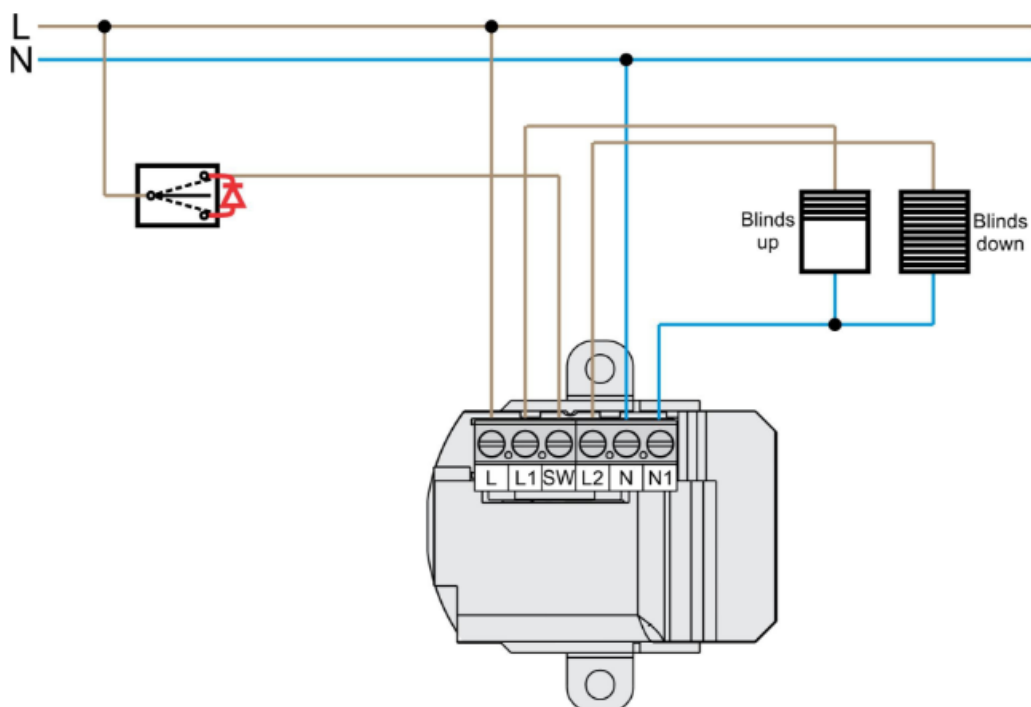| Reg.	Name	Description	Raw → Engineering data
10	Execute command	Execute command for Read and/or Write by toggling bit	Bit0 toggle → Write Bit1 toggle → Read
11	Destination address*	Destination node address. Can be a unicast, group or virtual address	0 .. 65535 → 0 .. 65535
12	Element index*	Sending node model element index	0 .. 65535 → 0 .. 65535
13	Vendor ID*	Vendor ID of the sending node model	0 .. 65535 → 0 .. 65535
14	Model ID*	Model ID of the sending node model	0 .. 65535 → 0 .. 65535
16	Virtual address index*	Index of the destination Label UUID	0 .. 65535 → 0 .. 65535
17	Application key index*	The application key index used	0 .. 65535 → 0 .. 65535
18	Option code**	Refer to the option code table	0 .. 63 → 0 .. 63
19	Payload byte length**	Refer to the option code table	1 .. 10 → 1 .. 10 bytes
20	Payload word[0]**	Refer to the option code table	0 .. 65535 → 0 .. 65535
21	Payload word[1]**	Refer to the option code table	0 .. 65535 → 0 .. 65535
22	Payload word[2]**	Refer to the option code table	0 .. 65535 → 0 .. 65535
23	Payload word[3]**	Refer to the option code table	0 .. 65535 → 0 .. 65535
24	Payload word[4]**	Refer to the option code table	0 .. 65535 → 0 .. 65535

- Observed from the network provisioning tool
- User-defined parameters, refer to the option code table

Table 4: Triac output LBT-1.DO4 option codes

Option code	Name	Description	Raw → Engineering data
1	FW version status	Firmware version status	0 .. 65535 → 0 .. 65535
2	Operation mode set	Node operation mode selection	0 → Not used 1 → Not used 2 → Not used 3 → Not used 4 → Reset 5 → Factory reset

Table 4: Triac output LBT-1.DO4 option codes

9	Wake up interval command	Command to set the time interval in which the device wakes up and sends data about the current and voltage status	0 .. 65535 → 0 .. 65535 s
10	Wake up interval status	Status of the time interval in which the device wakes up and sends data about the current and voltage status	0 .. 65535 → 0 .. 65535 s
18	Voltage status	Input voltage RMS value	0 .. 65535 → 0 .. 6553.5 V
19	Current status	Load current RMS value	0 .. 65535 → 0 .. 65.535 A
40	Digital Out 1 command	Load output 1 command, L1	0 → OFF 1 → ON
41	Digital Out 1 status	Status of load output 1, L1	0 → OFF 1 → ON
42	Digital Out 2 command	Load output 2 command, L2	0 → OFF 1 → ON
43	Digital Out 2 status	Status of load output 2, L2	0 → OFF 1 → ON
53	Load output 1 switch enable command	Command for enabling switching on the load output 1 on SW input	0 → Disable 1 → Enable
54	Load output 1 switch enable status	Enable status of the SW input for load output 1	0 → Disabled 1 → Enabled
55	Load output 2 switch enable command	Command for enabling switching on the load output 2 on SW input	0 → Disable 1 → Enable
56	Load output 2 switch enable status	Enable status of the SW input for load output 2	0 → Disabled 1 → Enabled

INSTALLATION
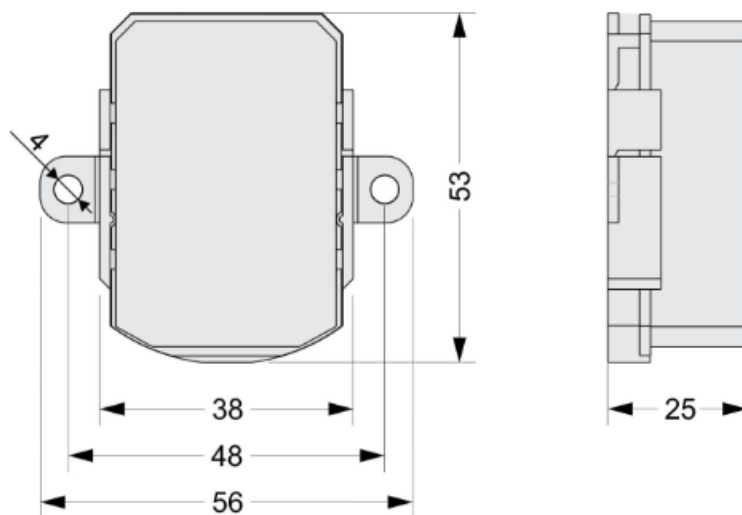

Figure 5: LBT-1.DO4 module

Table 5: Inputs and LEDs

K1.1	N1	Load output: neutral
K1.2	N	Power supply input: neutral
K1.3	L2	Load output 2: line
K1.4	SW	Switch input: line, 90 .. 264 V AC
K1.5	L1	Load output 1: line
K1.5	L	Power supply input: line, 90 .. 264 V AC
LED1: red	Error	2x blink inside 5 s time period = network/friend lost 3x blink inside 5 s time period = unprovisioned node
LED2: green	Status	1x blink = normal operation. It's also feedback for S1 reed contact, when activated with magnet.
S1	Reed contact	Mode setting contact Inside 5 s time window, perform corresponding number of swipes in duration of not less than 200 ms with permanent magnet close to the window sensor S1 reed contact position. Following window sensor action or mode will be set: Number of swipes Action ———————————————— 4 Reset 5 Factory reset A hardware reset is triggered if reed contact is continuously closed with a permanent magnet for more than 5 seconds.

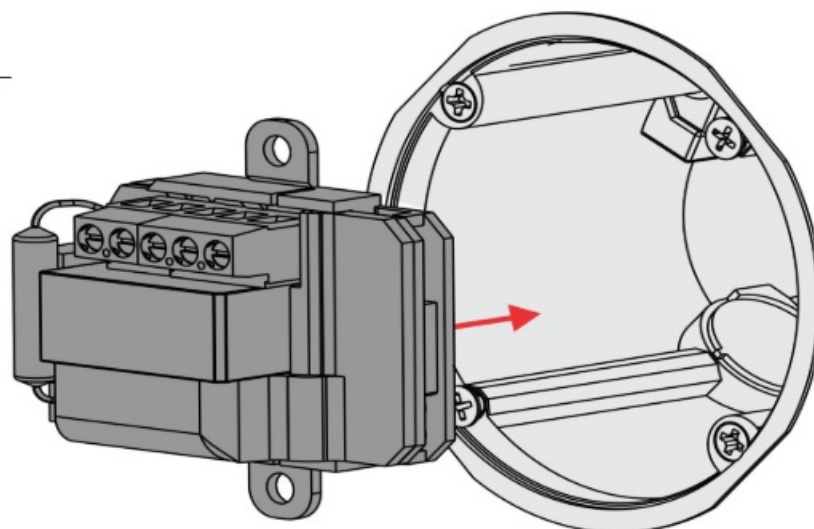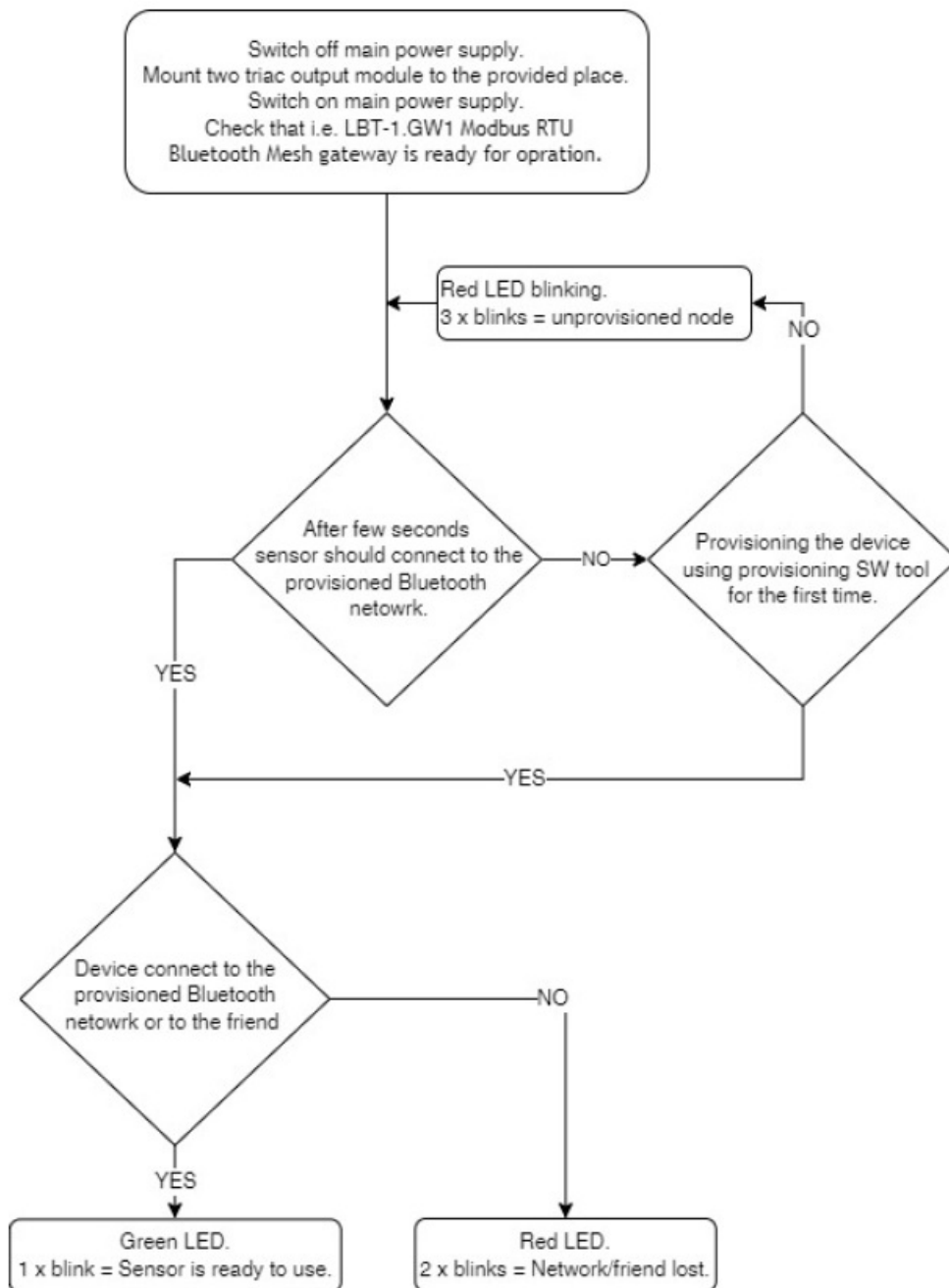**Mounting instructions**

Figure 6: Housing dimensions

Dimensions in millimeters.

Figure 7: Mounting in flush mounting box

Switch off main power supply.
Mount two triac output module to the provided place.
Switch on main power supply.
Check that i.e. LBT-1.GW1 Modbus RTU
Bluetooth Mesh gateway is ready for opration.

Red LED blinking.
3 x blinks = unprovisioned node

NO

After few seconds sensor should connect to the provisioned Bluetooth netowrk.

NO

Provisioning the device using provisioning SW tool for the first time.

YES

YES

Device connect to the provisioned Bluetooth netowrk or to the friend

NO

YES

Green LED.
1 x blink = Sensor is ready to use.

Red LED.
2 x blinks = Network/friend lost.

1. Switching Off the main power supply.
2. Mount the module up to the provided place and wire the module according to the connection scheme in Figure 4. Two position push button switches and the appropriate diode as 1N4007 should be connected to the LBT-1.DO4 module switch input line wire
   as shown in Figure 4.
3. Switching On the main power supply.
4. After a few seconds Green or Red LED starts to blink, please see the flowchart above for details.
5. If the module is not provisioned Red LED will blink 3x, the provisioning procedure has to be started. Contact the producer for more details*.
6. Once provisioning is finished, the module will continue with the normal mode of operation and this will be indicated as Green LED blinking once per 10 seconds.

Dismount in reverse order.

NOTE: Smarteh Bluetooth Mesh products are added and connected to a Bluetooth Mesh network by using

standard provisioning and configuration mobile app tools such as nRF Mesh or similar. Please contact the producer for more detailed information.

SYSTEM OPERATION

LBT-1.DO4 Bluetooth Mesh triac output module can switch power to two triac outputs, usually to power shade or curtain motors, based on 50/60Hz or 25/30Hz voltage present on module switch input or based on Bluetooth Mash command. Only one triac output can operate at a time.

Interference warning
Common sources of unwanted interference are devices that generate high-frequency signals. These are typically computers, audio and video systems, electronics transformers, power supplies and various ballasts. The distance of the LBT-1.DO4 two triac output modules to the above-mentioned devices should be at least 0.5m or greater.

WARNING

- To protect plants, systems, machines and networks against cyber threats, necessary to implement and continuously maintain up-to-date security concepts.
- You are responsible for preventing unauthorized access to your plants, systems, machines and networks and they are allowed to be connected to the Internet only, when security measures like firewalls, network segmentation, … are in place.
- We strongly recommend the updates and usage of the latest version. Usage of versions that are no longer supported may increase the possibility of cyber threats.

TECHNICAL SPECIFICATIONS

- **Power supply** 90 .. 264 V AC, 50/60 Hz
- **Max. power consumption** 1.5 W
- **Fuse** 1 A (T-slow), 250 V
- **Load voltage** Same as power supply voltage
- **Max. continuous load current per output** 0.7 A
- **Max. load current per output, 50% On / 50% Off, pulse <100 s** 1 A
- **Connection type** Screw type connectors for stranded wire 0.75 to 2.5 mm2
- **RF communication interval** Minimum 0.5 s
- **Dimensions (L x W x H)** 53 x 38 x 25 mm
- **Weight** 40 g
- **Ambient temperature 0 to** 40 °C
- **Ambient humidity** Max. 95 %, no condensation
- **Maximum altitude** 2000 m
- **Mounting position** Any
- **Transport and storage temperature** -20 to 60 °C
- **Pollution degree** 2
- **Overvoltage category** II
- **Electrical equipment** Class II (double insulation)
- **Protection class** IP 10

MODULE LABELING

Figure 10: Label

Label (sample):


```
XXX-N.ZZZ.UUU
P/N: AAABBBCCDDDEEE
S/N: SSS-RR-YYXXXXXXXXX
D/C: WW/YY
```
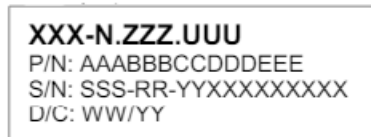
Label description:

1. XXX-N.ZZZ – full product name,
   1. XXX-N – product family,
   2. ZZZ.UUU – product,
2. P/N: AAABBBCCDDDEEE – part number,
   1. AAA – general code for product family,
   2. BBB – short product name,
   3. CCDDD – sequence code,
   4. CC – year of code opening,
   5. DDD – derivation code,
   6. EEE – version code (reserved for future HW and/or SW firmware upgrades),
3. S/N: SSS-RR-YYXXXXXXXXX – serial number,
   1. SSS – short product name,
   2. RR – user code (test procedure, e.g. Smarteh person xxx),
   3. YY – year,
   4. XXXXXXXX – current stack number,
4. D/C: WW/YY – date code,
   1. WW – week and,
   2. YY – year of production.

Optional:

- MAC,
- Symbols,
- WAMP,
- Other.

CHANGES

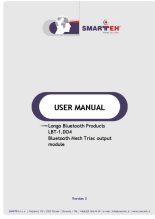The following table describes all the changes to the document.

Date	V.	Description
25.05.23	2	Reviewed text, fuse specifications.
05.05.23	1	The initial version, issued as *LBT-1.DO4 relay output module UserManual.*

FAQ

Frequently Asked Questions

- **Q: Can the LBT-1?DO4 module operates independently without the Bluetooth Mesh gateway?**
  - 'A: No, the LBT-1.DO4 module requires the Smarteh LBT-1.GWx Modbus RTU Bluetooth Mesh gateway for operation within the Bluetooth Mesh network.
- **Q: What should I do if the device is exposed to moisture or dirt?**
  - A: If the device is exposed to moisture or dirt, disconnect it from power immediately and allow it to dry completely before use. Do not attempt to operate the device until it is completely dry to prevent damage.

Documents / Resources

[SMARTEH LBT-1 Bluetooth Mesh Triac Output Module](#) [pdf] User Manual
LBT-1 Bluetooth Mesh Triac Output Module, LBT-1, Bluetooth Mesh Triac Output Module, Mesh Triac Output Module, Output Module, Module

References

- **User Manual**