

# HELTUN™

IMPOSSIBLY SMART



## TOUCH PANEL SWITCH SOLO HE-TPS01 USER MANUAL

for Hardware v.60 & Firmware v.2.2



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## OVERVIEW

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This is the user manual for the HELTUN HE-TPS01 Advanced Programmable Touch Panel Switch. The HE-TPS01 brings 'Impossibly Smart' capabilities to your home lighting, electric outlets, door locks, gates, and valves. It replaces an existing in-wall switch and brings over-the-Internet monitoring, control, and advanced programmability to one connected device. Solo is 'Impossibly Thin' on the wall yet packed with features to provide the ultimate control and convenience.

### **Controls system with up to 5A load**

Thanks to Solo's independent relay channel input it allows to control the system with any power source needs or to use the relay output as dry contacts. The relay can be loaded up to 5 Amps.

### **Connects to Z-Wave lights and dimmers**

Solo is an excellent choice for managing lighting systems. It allows connection to Z-Wave™ lights and dimmers controlling both On and Off, as well as smooth brighten (Up) and smooth dim (Down) states. Dimmer levels can be tied to Solo's button backlight to provide feedback of connected light state (On/Off).

### **Controls devices**

Solo can also be used to manage water valves and door locks. It also allows association with relay switches to control connected devices. If door sensor is installed, it may be associated with Solo backlight, enabling it to indicate device state (Open/Closed).

### **Touch panel button has multiple functions**

Solo has one high sensitivity capacitive touch button with two-color backlights (red/blue). 10 backlight brightness levels can be configured manually or set to automatically adjust to ambient light conditions making it always easy to see. The button can be configured to control relay output state in any of eight different modes.

### **Five ways to trigger programmed scenarios**

An onboard Real Time Clock (RTC) enables Solo to trigger scenarios where connected device is set to a schedule. Another powerful feature lets Solo trigger connected device scenarios when temperature, humidity, or light sensor values change. Solo button may also directly trigger scenarios on controller — with backlight indicating scene status.

### **Know how much energy you use**

Solo can determine how much energy is used by connected device any particular day, week, or month. Just specify the consumption of the load in watts for the relay channel and the device logic will calculate total consumption relative to the time since the output was in the 'ON' state.

### **Based on the latest Z-Wave platform**

Solo integrates a Z-Wave Plus™ v2 700 platform module allowing it to be used with Z-Wave home automation systems. It supports Z-Wave 'S0' and 'S2' security protocols, SmartStart technology, and can be connected ("associated") to other Z-Wave devices, such as relays, motor controllers, dimmers, etc

## TECHNICAL SPECIFICATIONS

- Front frame (on wall) dimensions: 89mm (H) x 89mm (W) x 9mm (D)
- Rear electronics package dimensions: 53mm (H) x 53mm (W) x 28mm (D)
- Materials: Tempered glass display/body, Flame retardant plastic
- 4 frame colors: White, Matte Black, Silver, Chrome
- 6 glass colors: White, Black, Yellow, Green, Red, Blue
- 1 capacitive-touch button
- Red and Blue LED backlights for the button
- 10 brightness levels (adjustable) for the button backlight
- 1 channel relay output, resistive load up to 5A
- Independent relay input, dry contact
- Operating temperature: 0°C to +50°C
- Power supply: 85-265VAC 50Hz/60Hz or 24-48VDC
- Power consumption: 1W
- HELTUN Advanced Zero-Cross relay switching technology
- Relay lifetime: 100.000 switches
- Internal ambient light sensor
- Internal temperature sensor
  - Measurement range: -30°C to +80°C
  - Accuracy: ±0.5°C
- Internal humidity sensor
  - Measurement range: 0% to 80%RH
  - Accuracy: ±3.0%RH
- IP class: IP21
- Z-Wave Plus V2 SDK: V7.11
- Z-Wave module: ZGM130S
- Requires mounting to flush electrical junction box: round or square type – min. depth 40mm

## FUNCTIONS & FEATURES

- Options for Inclusion/Exclusion to/from Z-Wave network
  - Non-Secure
  - S0 Secure
  - S2 Unauthorized, S2 Authorized with Key
- Association control of Z-Wave devices in the network
- Schedule Mode
- The button can be set up to control devices from associated groups
- The button backlight & the relay output can be managed by a gateway or associated device
- The button can trigger scenes
- The button backlight can indicate a scene, or associated device state
- The channel may be excluded from control
- Eight modes for the button:
  1. Momentary
  2. Momentary Reversed
  3. Momentary Toggle
  4. Toggle
  5. Switch ON Only
  6. Switch OFF Only
  7. Timer (ON to OFF)
  8. Timer Reversed (OFF to ON)
- Adjustable periodic measurements from:
  - Internal temperature sensor
  - Internal humidity sensor
  - Internal ambient light sensor
  - Energy consumption meter
- Calibration of Internal Room Air Temperature Sensor
- Brightness control of button backlight:
  - Automatic adjustment (depending on ambient light)
  - Manual adjustment (10 levels).
- Backlight standby mode (different brightness for active and inactive states)
- Backlight blinking function (for easy identification among other Z-Wave devices)
- Backlight colors invert
- Software energy consumption logic
- Factory reset function
- SmartStart technology for quick addition to Z-Wave networks
- OTA (Over The Air) encrypted firmware update

## INSTALLATION

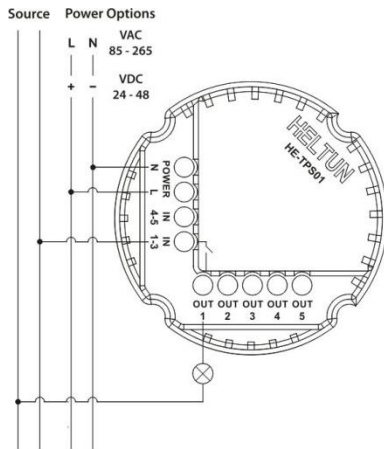
HELTUN recommends the HE-TPS01 touch panel switch be installed by a licensed electrician in a manner that conforms to local regulations and building codes. Provide these instructions to the licensed electrician who is installing the HE-TPS01.

- ≡ **Note:** It is not recommended to install the device in rooms with high humidity such as bathroom or sauna.

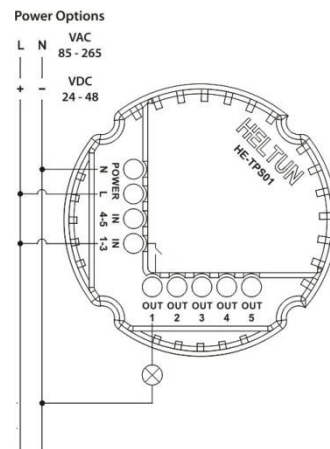


**WARNING:** ELECTRICAL POWER MUST BE SWITCHED OFF DURING INSTALLATION.

1. Placement of the HE-TPS01 is of utmost importance for proper operation and must be away from sunlight and sources of direct heat. We recommend installing the HE-TPS01 approximately 1.5 meters above the floor.
  2. Remove the touch panel unit and backplate of the HE-TPS01 from the packaging.
  3. **FIRST ENSURE THE POWER IS OFF** at the main circuit breaker, and then test the wires with a probe or multimeter to verify. Insert the wires to the correct HE-TPS01 "POWER" terminals by inserting a small Phillips-head screwdriver into the slot beneath each terminal and unscrew to open.  
Follow connection diagrams 1 or 2 and the instructions below:
    - **Power wires:** for AC power (85-265VAC) connect Line & Neutral lead wires to L & N terminals labeled "POWER". For DC power (24-48VDC) connect "+" wire to terminal L and "-" wire to terminal N.
    - **Source wire:** connect the required power source for relay to the terminal labeled "IN 1-3".
    - **Load:** connect the required load to the relay output terminal labeled "OUT-1".
- ≡ **Note:** HELTUN recommends installing cord terminals (electric wire ferrules) on the ends of wires before connecting them to the HE-TPS01 (various colors terminals are included in the packaging).

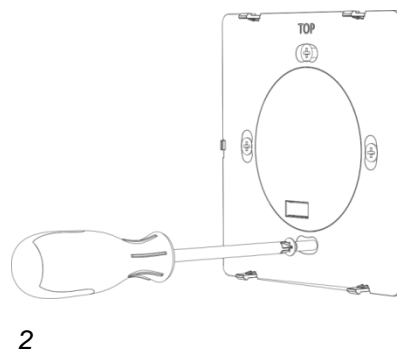
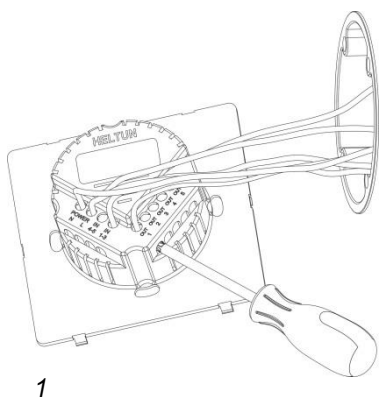


Connection Diagram 1



Connection Diagram 2

4. Making sure the HE-TPS01 backplate is oriented on the wall with the word “TOP” pointed upwards. Then secure the backplate onto the electrical junction box using the four screws provided (do not overtighten). Once the backplate is secured onto the wall, assemble the HE-TPS01 touch panel unit onto the backplate by first carefully aligning the two top snap connectors, and then gently pushing the entire display unit until it ‘snaps’ into position all the way around.
  5. Next, switch ON the main power at the circuit breaker. The HE-TPS01 will start up showing the original default factory settings (the button backlight will indicate red).
  6. Remove the clear protective film from the touch panel unit by pulling on the top right-hand tab.
- ≡ **Note:** Zero-Cross technology is unavailable if the device uses DC voltage (24-48VDC).



## DISASSEMBLY

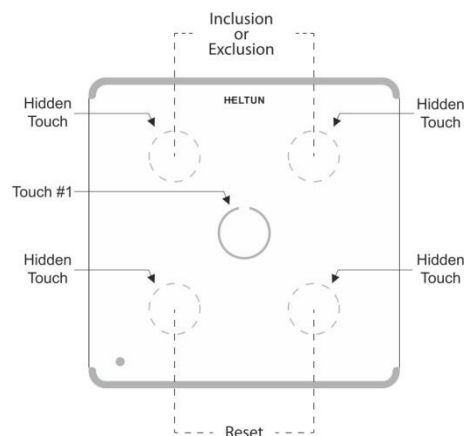
1. To disassemble, ENSURE POWER IS SWITCHED OFF at the main circuit breaker AND THE BUTTON BACKLIGHT IS OFF.
2. To remove the HE-TPS01 touch panel unit, grasp firmly at the bottom and pull backwards while tilting outwards until all tabs are disconnected.
3. Remove screws from backplate and disconnect the wires by inserting a small Phillips-head screwdriver into the slot beneath of each wire, then unscrew to release.

## FACTORY RESET

To reset the HE-TPS01 to factory defaults, simultaneously press the two bottom hidden touch buttons and hold for 6 seconds. If successful, the central button will turn OFF then the device will reboot.

The factory reset will change all the Parameters to their original factory default values (including Z-Wave frequency) and will also Exclude the device from any Z-Wave network.

- ≡ **Note:** Please use Factory Reset only when the primary network controller is missing or otherwise inoperable.



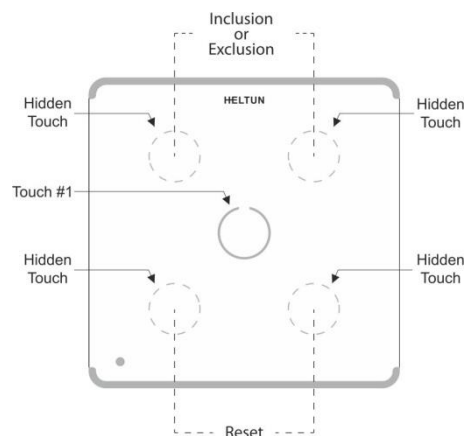
## Z-WAVE NETWORK

The HE-TPS01 may be operated in any Z-Wave network with other Z-Wave certified devices from other manufacturers. The HELTUN HE-TPS01 will act as a 'repeater' (i.e. 'range extender') for other devices regardless of manufacturer or brand to increase the reliability of the overall network.

## Adding to Z-Wave network

To add the HE-TPS01 into a Z-Wave network (i.e. "Inclusion"), do the following:

1. Start the Inclusion Mode from the gateway/controller.
  2. To start the inclusion process on the HE-TPS01, simultaneously press the two upper hidden touch buttons and hold them for three seconds.
  3. The central button will then sequentially blink blue – red.
  4. If the inclusion has been successful, the button will turn blue for three seconds.
  5. If the inclusion was not successful, the button will turn red for three seconds. In that case repeat the inclusion process.
- ≡ **Note:** For correct operating in Fibaro gateways, the Single Channel Association should be removed from the device LifeLine (EndPoint 0 Group 1).



## Removing from Z-Wave network

To remove the HE-TPS01 from a Z-Wave network (i.e. "Exclusion"), do the following:

1. Start the Exclusion Mode from the gateway/controller.
  2. To start the exclusion process on the HE-TPS01, simultaneously press the two upper hidden touch buttons and hold them for three seconds.
  3. The central button will sequentially blink blue - red.
  4. If the exclusion has been successful, the button will turn red for three seconds.
  5. If the exclusion was not successful, the button will turn blue for three seconds. In that case repeat the exclusion process.
- ≡ **Note:** If the HE-TPS01 has previously been part of a Z-Wave network and has not been Excluded since, inclusion is not possible without first performing an Exclusion or Factory Reset procedure.



## Security

S0, S2 unauthorized, and S2 authorized Inclusion Modes are supported. If you use the S2 authorized Inclusion Mode the security key should be used during the inclusion process. Security key is the first 5 digits of DSK (device DSK is printed on the HE-TPS01 back panel plus on the Security Card included in the packaging).

- ≡ **Note:** Be sure to save this key. Without the key, it is impossible to perform an inclusion in S2 authorized mode.



## SmartStart

SmartStart-enabled products can be added to a Z-Wave network by scanning the Z-Wave QR Code shown on the product with gateways/controllers that allow for SmartStart inclusion. In this case, no further action will be required and the SmartStart product will be added automatically within ten minutes of being turned on in the vicinity of a network.

To add the HE-TPS01 to a Z-Wave network using **SmartStart**:

1. Input the HE-TPS01 DSK code to the controller's Node Provisioning List (or scan the QR code).
2. Power on the device.
3. Wait for the inclusion process to complete.
4. Successful adding" will be confirmed by a message on the Z-Wave controller.

- ≡ **Note:** The device DSK and QR code are printed on the HE-TPS01 back panel plus on the Security Card included in the HE-TPS01 packaging.

## Firmware OTA Update

To wirelessly update the HE-TPS01 firmware, follow these steps:

1. Check the device current firmware version in the gateway/controller.
2. Start the process from the Z-Wave gateway/controller.

3. Download the latest firmware that corresponds to the HE-TPS01 (see <https://support.heltun.com>)
4. Set the main controller in Firmware OTA (“over-the-air”) Update Mode (see the gateway/controller manual).
5. As soon as the Firmware update begins, the button will sequentially blink blue-red (this will take a few minutes).
6. When the Firmware has updated, the button backlight will turn blue then turn off for two seconds and the HE-TPS01 will reboot.
7. When the update has been completed, the HE-TPS01 will return to normal operation.
8. If desired, verify the update was successful by checking firmware version from the gateway/controller.

## Z-Wave Plus V2 Specifications

Generic Device Class: GENERIC\_TYPE\_WALL\_CONTROLLER

Specific Device Class: SPECIFIC\_TYPE\_NOT\_USED

### Supported Command Classes

Command Class	Version	Required Security Class
Z-Wave Plus Info	V2	none
Association	V2	highest granted (S2 Authenticated, S2 Unauthenticated or S0)
Association Group Info	V3	highest granted (S2 Authenticated, S2 Unauthenticated or S0)
Multi Channel Association	V3	highest granted (S2 Authenticated, S2 Unauthenticated or S0)
Multi Channel	V4	highest granted (S2 Authenticated, S2 Unauthenticated or S0)
Switch Binary	V2	highest granted (S2 Authenticated, S2 Unauthenticated or S0)
Central Scene	V3	highest granted (S2 Authenticated, S2 Unauthenticated or S0)
Sensor Multilevel	V11	highest granted (S2 Authenticated, S2 Unauthenticated or S0)
Meter	V5	highest granted (S2 Authenticated, S2 Unauthenticated or S0)
Clock	V1	highest granted (S2 Authenticated, S2 Unauthenticated or S0)

Transport Service	V2	none
Security 0	V1	none
Security 2	V1	none
Version	V3	highest granted (S2 Authenticated, S2 Unauthenticated or S0)
Manufacturer Specific	V2	highest granted (S2 Authenticated, S2 Unauthenticated or S0)
Device Reset Locally	V1	highest granted (S2 Authenticated, S2 Unauthenticated or S0)
Powerlevel	V1	highest granted (S2 Authenticated, S2 Unauthenticated or S0)
Supervision	V1	none
Indicator	V3	highest granted (S2 Authenticated, S2 Unauthenticated or S0)
Configuration	V4	highest granted (S2 Authenticated, S2 Unauthenticated or S0)
Application Status	V1	none
Firmware Update Meta Data	V5	highest granted (S2 Authenticated, S2 Unauthenticated or S0)
Basic	V2	highest granted (S2 Authenticated, S2 Unauthenticated or S0)

**Meter Command Class:**

Meter Type	Scale	Rate Type	Precision	Size
Electric [0x01]	Electric_kWh [0x00]	Import [0x01]	2	4
Electric [0x01]	Electric_W [0x02]	Import [0x01]	0	2

## Associations

Association enables the HE-TPS01 to control other Z-Wave devices over the network. The HE-TPS01 has 3 Endpoints and 5 Association Groups. Each Association Group (except group 1) may include one other device from different brands and/or manufacturers.

### EndPoint 0 Groups:

The Root Device (EndPoint 0) of HE-TPS01 has 5 association groups

**Group 1 – “Lifeline”:** reports full state of the device and is used to communicate with the Z-Wave gateway. The group supports one Node.

- ≡ **Note:** It is not recommended to modify this group.
- ≡ **Note:** For correct operating in Fibaro gateways, the Single Channel Association should be removed from the device LifeLine (EndPoint 0 Group 1).

**Group 2 – “Touch Basic Set”:** is assigned to touch N1. Is used to send Basic Set ON (value 255) and Basic Set OFF (value 0) commands to the associated devices. Max supported nodes: 1.

**Group 3 – “Touch Multilevel Set”:** is assigned to touch N1. It sends MULTILEVEL SWITCH command class frame when touch N1 was held. Is used to send UP/DOWN command to the associated devices. Max supported nodes: 1.

**Group 4 – “LED Basic Set”:** is assigned to LED N1. Is used to send Basic Set ON (value 255) and Basic Set OFF (value 0) commands to the associated devices. Max supported nodes: 1.

**Group 5 – “Relay Basic Set”:** is assigned to relay N1. Is used to send Basic Set ON (value 255) and Basic Set OFF (value 0) commands to the associated devices. Max supported nodes: 1.

### EndPoints 1-2 Groups:

**Group 1 – “Lifeline”:** reports state of the device and used to communicate with the Z-Wave gateway. The group supports one Node.

- ≡ **Note:** It is not recommended to modify this group.

**Group 2 – “Basic Set”:** Is used to send Basic Set ON (value 255) and Basic Set OFF (value 0) commands to the associated devices. The group supports one Node and it is mapped to EndPoint 0 groups.

Here is a truth table for EndPoints 1-2 groups mapping to the root device (EndPoint 0) groups:

EndPoints 1-10 groups	Root (EndPoint 0) groups
Endpoint 1, Group 2 – “LED Basic Set”	Group 4 – “LED Basic Set”
Endpoint 2, Group 2 – “Relay Basic Set”	Group 5 – “Relay Basic Set”

### Gateway compatibility requirement:

In order to make a reliable connection and data exchange with the gateway make sure that the gateway/controller is multi-channel capable. The gateway/controller lifeline association

should be configured as a “multi-channel association.” Some Gateways need this option to be manually configured.

- ≡ **Note:** Fibaro Home Center 2: In order to enable correct communications between a Fibaro Gateway/Controller and the HE-TPS01, the lifeline association should be configured as a “multi-channel association.” Make sure that only the Multi-channel association check box is selected under Device > Settings > Advanced > Setting Association > Group1 tab (lifeline).
- ≡ **Note:** By default, there are two checkboxes for Single-channel and Multi-channel associations. Please deselect the checkbox under Single-channel associations.

## TOUCH PANEL OPERATION

The HE-TPS01 has one relay, one touch button and two-color (red and blue) backlight for the button.

1. The relay can be controlled by the touch button or via a Z-Wave network (using a Z-Wave gateway).
2. The touch button can be configured to control the relay output state in the modes below:
  - 1) **MOMENTARY:** When the button is held the relay output is ON, as soon as the button is released the relay output state changes to OFF (see Parameter 41 settings).
  - 2) **MOMENTARY REVERSED:** When the button is held the relay output is OFF, as soon as the button is released the relay output state changes to ON (see Parameter 41 settings).
  - 3) **MOMENTARY TOGGLE:** When the button is held, the relay output inverts state (from ON to OFF or from OFF to ON), as soon as the button is released the relay output inverts state again (see Parameter 41 settings).
  - 4) **TOGGLE:** On the button each press the relay output inverts state (from ON to OFF or from OFF to ON) (see Parameter 51 settings).
  - 5) **SWITCH ON ONLY:** On the button press the relay output switches to ON state only (see Parameter 51 settings).
  - ≡ **Note:** If the relay output is already in ON state, nothing will change.
  - 6) **SWITCH OFF ONLY:** On the button press the relay output switches to OFF state only (see Parameter 51 settings).
  - ≡ **Note:** If the relay output is already in OFF state, nothing will change.
  - 7) **TIMER (ON to OFF):** On the button press the relay output switches to ON for the specified time, then reverts to OFF (see Parameter 51 settings).
  - ≡ **Note:** Time can be configured from 0 sec to 43200 sec (12 hours).
  - 8) **TIMER REVERSED (OFF to ON):** On the button press the relay output switches to OFF for the specified time then reverts to ON (see Parameter 51 settings).
  - ≡ **Note:** Time can be configured from 0 sec to 43200 sec (12 hours).  
**Tip:** This function is useful for switching OFF security system or door lock for a short time.

The touch button can also be used to run scenarios or change modes in the connected gateway or associated devices.

3. The button's backlight can be configured as follows to indicate:

- a) Relay output state
- b) Touch button state
- c) Mode state in connected gateway
- d) Associated device state

≡ **Note:** It is possible to choose the light color for each state: red for ON and blue for OFF, or blue for ON and red for OFF (see Parameter 30 settings).

If the HE-TPS01 is included to the Z-Wave gateway, the scene controller, light, temperature & humidity sensors info, and two binary switches will appear. The scene controller indicates if the button was pressed, held, or released and allows the running of scenes on the Z-Wave gateway. The first binary switch indicates and control the button backlight. The second binary switch indicates and control the relay output

## SETTINGS (available through Z-Wave network)

All configuration parameters are accessed through Z-Wave  
 COMMAND\_CLASS\_CONFIGURATION

### Parameters List & Factory Defaults

Number	Size	Description	Default Value	Value Range
1	1 byte	Frequency Region	Read Only	0 ... 9
2	Reserved by the manufacturer			
3	4 bytes	Hardware and Software Versions	Read Only	XXYYZZ
4	4 bytes	Energy Consumption, kW	Read Only	Total consumption
5	1 byte	Backlight brightness control	0	0, 1 ... 10
6	1 byte	Touch buttons sensitivity. 1 = Lowest; 10 = Highest	6	1 ... 10
7	1 byte	Relay 1 output NO or NC mode	0	0, 1

8-11	Reserved by the manufacturer			
12	2 bytes	Power of the Relay 1 load in W	0	0...1100
13-16	Reserved by the manufacturer			
17	1 byte	Air Temperature Calibration in °C, value X 10, e.g. 1.0°C=10	0	-100 ... 100
18	Reserved by the manufacturer			
19	1 byte	Time correction by controller	1	0, 1
20	Reserved by the manufacturer			
21	1 byte	Week Day	1	1, 2, 3, 4, 5, 6, 7
22	2 bytes	Time: Hour and Minutes	0	0 ... 2359
23-29	Reserved by the manufacturer			
30	1 byte	Active state backlight color	1	0, 1
31	1 byte	Backlight 1 control source	1	0, 1, 2
32-40	Reserved by the manufacturer			
41	1 byte	Hold control mode for touch button 1	2	0, 1, 2, 3, 4
42-50	Reserved by the manufacturer			
51	1 byte	Click control mode for touch button 1	1	0, 1, 2, 3, 4 5, 6
52-60	Reserved by the manufacturer			
61	1 byte	Relay 1 control source	1	0, 1
62-70	Reserved by the manufacturer			

71	2 bytes	Timer mode duration for button 1	0	0 to 43200
72-110	Reserved by the manufacturer			
111	4 bytes	Relay control scenario 1	0	0, 10000000 to 13112359
112	4 bytes	Relay control scenario 2	0	0, 10000000 to 13112359
113	4 bytes	Relay control scenario 3	0	0, 10000000 to 13112359
114	4 bytes	Relay control scenario 4	0	0, 10000000 to 13112359
115	4 bytes	Relay control scenario 5	0	0, 10000000 to 13112359
116	4 bytes	Relay control scenario 6	0	0, 10000000 to 13112359
117	4 bytes	Relay control scenario 7	0	0, 10000000 to 13112359
118	4 bytes	Relay control scenario 8	0	0, 10000000 to 13112359
119	4 bytes	Relay control scenario 9	0	0, 10000000 to 13112359
120	4 bytes	Relay control scenario 10	0	0, 10000000 to 13112359
121-140	Reserved by the manufacturer			
141	1 byte	Consumption meter consecutive reporting interval, minutes	10	1 ... 120
142	1 byte	Consumption change report to send to controller	1	0, 1
143	1 byte	Sensors consecutive reporting interval, minutes	10	1 ... 120
144	1 byte	Temperature difference to send to controller, value X 10	2	0, 1 ... 100
145	1 byte	Humidity difference to send to controller, %	2	0, 1 ... 25



146	1 byte	Light sensor values difference to send to controller, %	50	0, 10 ... 99
147-170	Reserved by the manufacturer			
171	1 byte	Touch control mode for associations with touch button 1	0	0, 1, 2

## Z-Wave Frequency

### Parameter 01 – Frequency Region

The HE-TPS01 has Z-Wave 700 series chip inside which allows to use the device in different Z-Wave frequencies. If there is a need to use the device in the frequency different from the factory default, change the value of this Parameter according to the frequency list below. Modification is possible only while the HE-TPS01 is not included to Z-Wave network.

- ≡ **Note:** The factory default frequency differs depending on which region the device was intended for sale in. Check the factory default frequency on the device plate or on the packaging.
- ≡ **Note:** Do not change this Parameter value if there is no special need.
- ≡ **Note:** If change the value of this Parameter, the frequency change will be applied only after removing the device from Z-Wave network (the device will automatically reboot).
- ≡ **Note:** The change of this Parameter will result in inability to control the device, if the device was included to the controller/gateway which supports only one frequency.
- ≡ **Note:** Resetting the device to factory default settings will revert the frequency to the factory default value.
- ≡ **Note:** In most of countries it is not allowed to use the frequency different from the frequency intended for that country.

Frequency list for different regions:

0: EU (868.4 MHz, 869.85 MHz)	5: IL (916.0 MHz)
1: US (908.4 MHz, 916.0 MHz)	6: RU (869.0 MHz)
2: ANZ (919.8 MHz, 921.4 MHz)	7: CN (868.4 MHz)
3: HK (919.8 MHz)	8: JP (922.5 MHz, 923.9 MHz, 926.3 MHz)
4: IN (865.2 MHz)	9: KR (920.9 MHz, 921.7 MHz, 923.1 MHz)

The full list of Z-Wave global regions where Z-Wave works is available at Z-Wave Global Regions SiLabs page.

## Hardware & Software Versions

### Parameter 03 – Hardware and Software Versions

This Parameter allows to check the hardware and firmware versions of the device. The Parameter returns value in the format XXYYZZ, where XX is Hardware Version, YY is Firmware Major Version and ZZ is Firmware Minor Version.

- ≡ **Note:** This Parameter is read-only.

## Power and Energy Consumption

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### Parameter 04 – Energy Consumption

This Parameter allows to check the Cumulative Energy Consumption (in kW) of the connected load.

HE-TPS01 monitors Real-Time and Cumulative power Energy Consumption of connected load using advanced software logic which measures the consumption based on load power value set in Parameter 12.

Cumulative Energy Consumption is the total electrical power being used by connected load since the Parameter 04 value last reset. Power usage is calculated by the software using the values that were manually set when configuring Parameter 12, multiplied by the time tracked when the HE-TPS01 corresponding output was in ON state.

Real-Time Consumption and Cumulative Consumption are periodically reported to the Z-Wave controller according to the Parameters 141 and 142 settings.

- ≡ **Note:** This Parameter is read-only.

### Resetting Cumulative Consumption memory:

The HE-TPS01 enables you to erase stored Consumption Data through the Z-Wave network as follows:

1. Make sure the HE-TPS01 is powered.
2. If not already done so, include the device into Z-Wave Gateway network.
3. Reset memory consumption data using the Reset Command in `COMMAND_CLASS_METER` (see the Gateway owner's manual).

- ≡ **Note:** Turning the device main power off/on will not erase the consumption data as it is stored in nonvolatile memory.

### Parameter 12 – Relay Load Power in watt

This Parameter is used to specify the load power that are connected to the device output. Using your connected device's power consumption specification (see associated owner's manual), set the load in Watts. The factory default value is 0.

- ≡ **Note:** The range from 0 to 1100 watt can be selected.

## Buttons Backlight Brightness

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The HE-TPS01 has two brightness levels for its button backlight: 1) Active Level – when the button is touched, its backlight becomes brighter, and 2) Inactive Level – after one second of inactivity, its backlight dims. The actual brightness level may be adjusted manually or automatically.

### Parameter 05 – Brightness Control

The HE-TPS01 can adjust its button backlight brightness automatically depending on the illumination of the ambient environment and also allows to control it manually. Set the Parameter value to 0 to activate the Automatic Brightness Control or set from value 1

(lowest brightness) to 10 (highest brightness) for Manual Control. The factory default value is 0.

## Touch Sensitivity

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### **Parameter 06 – Touch Sensor Sensitivity Threshold**

This Parameter allows the device Touch Button Sensitivity Threshold to be adjusted from level 1 (low sensitivity) to 10 (high sensitivity). The factory default value is 6.

- ≡ **Note:** Setting the sensitivity too high can lead to false touch detection. We recommend not changing this Parameter unless there is a special need to do so.

## Outputs NO/NC Mode

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### **Parameter 07 – Output NO/NC Mode**

This Parameter determines the type of load connected to the device relay output. The output type can be NO – normal open (no contact/voltage to switch the load OFF) or NC - normal close (output is contacted / there is a voltage to switch the load OFF). Choose the value 0 if NO contact type is required or value 1 if NC type is required. The factory default value is 0 (NO mode).

## Temperature Sensor Calibration

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### **Parameter 17 – Air Temperature Calibration**

This parameter defines the offset value for room air temperature. If the internal air temperature sensor is not correctly calibrated, then manual calibration can be made by adjusting the values up to  $\pm 10^{\circ}\text{C}$ . This value will be added or subtracted from the internal air temperature sensor reading. The value of this Parameter should be x10, e.g. for  $1.5^{\circ}\text{C}$  set the value 15. The factory default value is 0

## Time Configurations

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### **Parameter 19 – Time Correction by Main Controller**

If this Parameter value = 1 and the HE-TPS01 is connected to a Z-Wave gateway, the HE-TPS01 time and day will be periodically polled and corrected from the gateway. To switch off auto-correction set the Parameter value to 0. The factory default value is 1.

### **Parameter 21 – Day of the Week Manual Adjustment**

This Parameter allows manual adjustment of the day of the week in case the HE-TPS01 is not connected to any Z-Wave gateway or auto-correction is disabled (Parameter 19 value is 0). 1 = Monday, 2 = Tuesday, 3 = Wednesday, 4 = Thursday, 5 = Friday, 6 = Saturday, 7 = Sunday. The factory default value is 1.

### Parameter 22 – Time Manual Adjustment

This Parameter allows manual adjustment of Time. The Parameter has the following format: HHMM, where HH is hours and MM is minutes. E.g. for 16:08 set the value 1608 and for 1:00 set the value 100.

## Backlights Control Source

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### Parameter 30 – Button Backlight Color

Choose the value “1” if you wish the backlight active state to be blue, and the inactive state to be red (default). Choose the value “0” if you wish the backlight active state to be red, and the inactive state to be blue. The factory default value is 1.

### Parameter 31– Button Backlight Control Source

0 – Backlight is disabled (both color LEDs are turned off)  
1 – Backlight is controlled by touch button (reflects the button state)  
2 – Backlight is controlled by gateway or associated device (the button state is ignored)  
The factory default value is 1.

- ≡ **Note:** If the backlight is disabled (the Parameter value is set to “0”), it is also impossible to control it from the gateway

## Buttons Mode

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### Parameter 41 – Button Hold (Long Press) Control Mode.

0 – Hold function is disabled  
1 – Operate like click  
2 – When the button is held the relay output state is ON, as soon as the button is released the relay output state changes to OFF (momentary switch).  
3 – When the button is held the relay output state is OFF, as soon as the button is released the relay output state changes to ON (momentary switch).  
4 – When the button is held or released the relay output state will toggle its state (ON to OFF or OFF to ON).  
The factory default value is 2.

- ≡ **Note:** Regardless of this Parameter, the device will send scene notifications about the touch state (pressed, held, released) to the gateway.

### Parameter 51 – Button Click (Short Press) Control Mode

0 – Press function disabled  
1 – Relay inverts state (toggles ON to OFF, OFF to ON) according to the relay state  
2 – Relay inverts state (toggles ON to OFF, OFF to ON) according to the button backlight state.  
3 – Relay switches to ON state only  
4 – Relay switches to OFF state only  
5 – Timer: On>Off Mode: Relay output switches to ON state (contacts are closed) then after a specified time switches back to OFF state (contacts are open). The time is specified in Parameter 71.  
6 – Timer: OFF>ON Mode: Relay output switches to OFF state (contacts are open) then after a specified time switches back to ON state (contacts are closed). The time is specified in Parameter 71.

The factory default value is 1.

## Relay Mode

### Parameter 61 – Button Number for Relays Output Control

0 – Controlled by gateway or associated device

1 – Controlled by touch button

Factory default value: 1.

**Parameter 71 – Relay Timer mode duration** This Parameter specifies the duration in seconds for the Timer mode (values 5 or 6 in Parameter 51 respectively). Press the button and the relay output goes to ON/OFF for the specified time then changes back to OFF/ON. This function can be used to turn attached devices like door lock or security OFF for a short time. The time values can be configured from 0 sec to 43200 sec (12 hours). The factory default value is 0.

- ≡ **Note:** If the parameter value is set to “0” it will operate as a short contact (about 0.5 sec).

## Scenarios

Scenarios can be created that allow connected devices to be triggered by a sensor or onboard Real Time Clock (RTC). The HE-TPS01 has built-in temperature, humidity, and ambient temperature sensors and includes a very flexible, user-friendly interface for customizing scenarios. In addition to the physical sensors, time may be used as a control source. The user should configure the output number, state, sensor type, state change condition, and threshold in the Parameters (from 111 - 120) which will trigger the scenes.

### Parameters 111-120- Relay Control by Sensors

In these Parameters, the relay state changes depending on sensor threshold value. For these configurations, Parameter values are encoded as 8-digit numbers (ABCDEFGH):

A = Relay number (can be only 1)

B = Control Mode

- 0-Temperature Sensor,
- 1-Humidity Sensor,
- 2-Light Sensor,
- 3-Time control

C = State change relative to value in EFGH Condition Value fields (see below)

0-Equal or lower than

1-Equal or higher than

D: State Change,

- 0-Switch OFF
- 1-Switch ON

EFGH: Condition Value

“Sensor Value” for Control modes 0, 1, and 2, or “Time” for Control mode 3.

If Temperature sensor has been chosen as a source in the control mode, the value should be x10, e.g. for 24.5°C use the value 0245.

If Time control has been chosen as a source in the control mode, the device logic will process values EFGH from 0 to 23:59 (in time measure), all other values will be ignored.

EF represents Hour (0 through 23), GH represents Minutes (0 through 59).

All other numbers are reserved and will not affect the operation. To disable this option simply set this Parameter to 0.

The factory-default value: “0”

**Example:** Parameter value 12010050 means A=1 (relay 1 output), B=2 (light sensor), C=0 (value lower than), D=1 (switch relay On), EFGH=0050. In this case if light sensor reading drops below 50 lum, the relay 1 output will be switched On.

- ≡ **Note:** The relay still can be controlled manually using touch button according to Parameters 41 and 51 or via gateway.
- ≡ **Note:** The logic will implement the operation when the sensor value crosses the value in the Parameter. Meaning, that if the logic switches ON the relay and you manually switch it OFF, the relay will switch ON next time when the value crosses the set Parameter.

## Sensors Report Interval

### Parameter 141 – Energy Consumption Meter Consecutive Report Interval

When the device is connected to the Z-Wave gateway (controller), it periodically sends to the gateway reports from its energy consumption meter even if there is no change in the value. This Parameter defines the interval between consecutive reports of real time and cumulative energy consumption data to the gateway. The value can be adjusted from 1 min to 120 min. The factory default value is 10 min.

- ≡ **Note:** If the consumption changes, the device will send the report to the gateway regardless of this Parameter value (the report will be sent according to value in Parameter 142).
- ≡ **Note:** It is not recommended to reduce the value of this Parameter in order not to increase the traffic on your network. We recommend to reduce the value of this Parameter only in case of poor connection, when reports from the device does not always reach the gateway.

### Parameter 142 – Control Energy Consumption Report

This Parameter determines if the consumption change will resulting in the consumption report being sent to the gateway. Use the value 0 if there is a need to stop sending the reports and value 1 to activate reports. The factory default value is 1.

- ≡ **Note:** When the device is turning ON, the consumption data will be sent to the gateway once, even if the value of this Parameter is 0.

### Parameter 143 – Sensors Consecutive Report Interval

When the device is connected to the Z-Wave gateway (controller), it periodically sends to the gateway reports from its room & floor temperature, humidity and light sensors even if there are not changes in the values. This Parameter defines the interval between consecutive reports. The value can be adjusted from 1 min to 120 min. The factory default value is 10 min.

- ≡ **Note:** If the sensor readings change, the device will send the report to the gateway regardless of this Parameter value (the report will be sent according to values in Parameters 144, 145 and 146).
- ≡ **Note:** It is not recommended to reduce the value of this Parameter in order not to increase the traffic on your network. We recommend to reduce the value of this Parameter only in case of poor connection, when reports from the device does not always reach the gateway.

### Parameter 144 – Air Temperature Sensors Report Threshold

This Parameter determines the change in temperature level (in °C) resulting in temperature sensor report being sent to the gateway. The value of this Parameter should be x10, e.g. for 0.4°C use value 4. From 0.1°C (value 1) to 10°C (value 100) can be selected. Use the value 0 if there is a need to stop sending the reports. The factory default value is 2 (0.2°C).

- ≡ **Note:** When the device is turning ON, the sensor data will be sent to the gateway once, even if the value of this Parameter is 0.
- ≡ **Note:** It is not recommended to decrease the value of this Parameter, in order not to increase the load on your Z-Wave network traffic.

### Parameter 145 – Humidity Sensor Report Threshold

This Parameter determines the change in humidity level in % resulting in humidity sensors report being sent to the gateway. From 1% to 25% can be selected. Use the value 0 if there is a need to stop sending the reports. The factory default value is 2.

- ≡ **Note:** When the device is turning ON, the sensor data will be sent to the gateway once, even if the value of this Parameter is 0.
- ≡ **Note:** It is not recommended to decrease the value of this Parameter, in order not to increase the load on your Z-Wave network traffic.

### Parameter 146 – Light Sensor Report Threshold

This Parameter determines the change in the ambient environment illuminance level resulting in a light sensors report being sent to the gateway. From 10% to 99% can be selected. Use the value 0 if there is a need to stop sending the reports. The factory default value is 50.

- ≡ **Note:** When the device is turning On, the sensor data will be sent to the gateway once, even if the value of this Parameter is 0.
- ≡ **Note:** It is not recommended to decrease the value of this Parameter, in order not to increase the load on your Z-Wave network traffic.

## Association Commands Configuration

### Parameter 171 – Association Mode

This Parameter is intended for use when Multilevel Switch Group Association (Groups 3) have been activated. It defines the logic of values changing if the touch button has been held for more than one second. This is useful option for controlling dimmers or roller shutter devices in the following three ways:

“0” – On each hold event, “UP (brighten)” and “DOWN (dim)” command will be alternately sent to associated devices.

“1” – On each hold event, the “UP (brighten)” command will be sent to associated devices.

“2” – On each hold event, the “DOWN (dim)” command will be sent to associated devices.

The factory-default value: 0.

## LIMITED WARRANTY

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HELTUN warrants this product to be free from defects in workmanship or materials, under normal use and service, for a period of one (1) year from the date of purchase by the consumer ("Warranty Period"). HELTUN will extend this Warranty Period to three (3) years from the date of consumer purchase for any consumer who registers his/her product with HELTUN at this website page: [bonus.heltun.com](http://bonus.heltun.com). This Limited Warranty applies only to the first end-user of the product and is not transferable.

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