HELTUN™
IMPOSSIBLY SMART

TOUCH PANEL SWITCH QUINTO
HE-TPS05 USER MANUAL
V1.0

Table of Contents

Overview

This is the user manual for the HELTUN HE-TPS05 Advanced Programmable Touch Panel Switch. The HE-TPS05 brings 'Impossibly Smart' capabilities to your home lighting, electric outlets, or motorized blinds, door locks, gates, and valves. It replaces an existing in-wall switch and brings over-the-Internet monitoring, control, and advanced programmability to five connected devices. Quinto is 'Impossibly Thin' on the wall yet packed with features to provide the ultimate in control and convenience.

Controls up to five systems with two different power sources
Thanks to Quinto's five-channel relays it can manage either: 1) up to five On/Off devices, 2) three On/Off devices and one bidirectional motor, or 3) one On/Off device and two bidirectional motors. Two independent relay channel inputs allow control of systems with different power sources or use of relay outputs as dry contacts. Each relay can be loaded up to 5 Amps.

Connects to Z-Wave lights and dimmers
Quinto 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 Quinto's button backlights to provide feedback of connected light state (On/Off).

Controls motorized devices
Quinto can also be used to manage motorized systems like shades/blinds, driveway gates, water valves, or window and door locks. It also allows association with relay switches to control opening and closing of connected motorized devices. If door/window sensors are installed, they may be associated with Quinto backlights, enabling them to indicate device state (Open/Closed).

Touch panel buttons have multiple functions
Quinto has five high sensitivity capacitive touch buttons with two-color backlights (red/blue) for each. 15 backlight brightness levels can be configured manually or set to automatically adjust to ambient light conditions making them always easy to see. Each button can be configured to control relay output state (#1-5) in any of nine different modes.

Five ways to trigger programmed scenarios
An onboard Real Time Clock (RTC) enables Quinto to trigger scenarios where connected devices are set to a schedule. Another powerful feature lets Quinto trigger connected device scenarios when temperature, humidity, or light sensor values change. Quinto buttons may also directly trigger scenarios on controller — with each backlight indicating scene status.

Know how much energy you use
Quinto can determine how much energy is used by connected devices any particular day, week, or month. Just specify the consumption of the load in watts for each 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
Quinto 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
- 5 frame colors: White, Gloss Black, Matte Black, Silver, Chrome
- 6 glass colors: White, Black, Yellow, Green, Red, Blue
- 5 capacitive-touch buttons
- Red and Blue LED backlights for each button
- 15 brightness levels (adjustable) for each button backlight
- 5 channel relay outputs, resistive load up to 5A each
- 2 independent relays inputs, dry contact
- Operating temperature: 0°C to +50°C
- Power supply: 85-265VAC 50Hz/60Hz or 24-48VDC
- Power consumption: 1W
- Relay switching with HELTUN Advanced Zero-Cross Technology

- Relay life time: 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 20 devices from the network
- Schedule Mode
- Motorized device control (roller shutter mode)
- Each of five buttons can control any relay output
- Up to five different relay channels can be controlled by one button
- Each button can be set up to control devices from associated groups
- Each button backlight & relay outputs can be managed by a gateway or associated device
- Each button can trigger scenes
- Each button backlight can indicate a scene, or associated device state
- Any channel may be excluded from control
- Nine modes for each button:
  1. Switch-ON
  2. Switch-OFF
  3. Timer: ON>OFF
  4. Timer Reversed: OFF>ON
  5. Inverse state
  6. Two-Button Inverse
  7. Momentary
  8. Momentary Reversed
  9. Roller Shutter
- 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 (15 levels).
- Backlight standby mode (different brightness for active and inactive states)
- Backlight blinking function (for easy identification among other Z-Wave devices)
- Backlight colours 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-TPS05 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-TPS05.

WARNING: Electrical power must be switched off during installation.

1. Placement of the HE-TPS05 is of utmost importance for proper operation and must be away from sunlight and sources of direct heat. We recommend installing the HE-TPS05 approximately 1.5 meters above the floor.

2. Remove the touch panel unit and backplate of the HE-TPS05 from the packaging.

3. FIRST ENSURE THE POWER IS OFF at the main circuit breaker (Fig. 1), and then test the wires with a probe or multimeter to verify. Insert the power wires to the HE-TPS05 "POWER" terminal by inserting a small Phillips-head screwdriver in the slot beneath each terminal and unscrew to open. Follow *Fig. 2: Connection Diagram* and instructions below:
   • **Power wires:** for AC power (85-265VAC) connect Line & Neutral wires to L & N terminals labeled "POWER" (Fig 2. left diagram). For DC power (24-48VDC) connect "+" wire to terminal N and "-" wire to terminal L (Fig 2. right diagram).
   • **Source 1 wire:** connect the required power source for relays 1, 2 and 3 to the terminal labeled "IN 1-3".
   • **Source 2 wire:** connect the required power source for relays 4 and 5 to the terminal labeled "IN 4-5".
   • **Loads:** connect the required loads to the relay output terminals labeled "OUT-1", "OUT-2", "OUT-3", "OUT-4", "OUT-5".

   Note: HELTUN recommends installing cord terminals (electric wire ferrule) on the ends of wires before connecting them to the HE-TPS05 outputs (various colors terminals are included in the packaging).
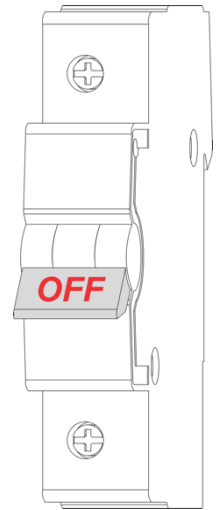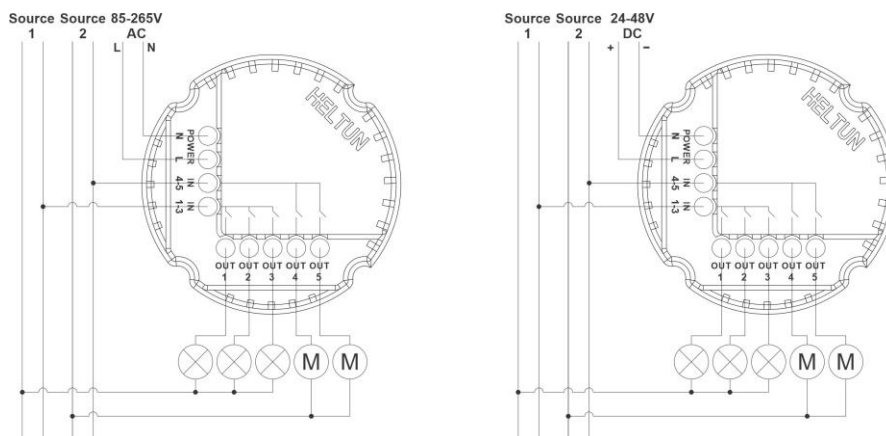

Figure 1: Circuit Breaker

Figure 2: Connection Diagrams

4. Make sure the HE-TPS05 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-TPS05 touch panel unit onto the backplate by first carefully aligning the two top snap connectors (Fig. 3), 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 (see photo above). The HE-TPS05 will start up with original default factory settings (all button backlights 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 operates using DC voltage (24-48VDC).

Figure 3: Install Touch Panel Unit

Disassembly

1. ENSURE POWER IS SWITCHED OFF at the main circuit breaker AND ALL BUTTON BACKLIGHTS ARE OFF.
2. To remove the HE-TPS05 touch panel unit, grasp firmly at the bottom and pull backwards while tilting outwards until all tabs disconnect.
3. Remove screws from backplate and disconnect the wires by inserting a small Phillips-head screwdriver into the slot beneath each wire, then unscrew to release.

Touch Panel Operation

The HE-TPS05 has five relays, five touch buttons and two-color backlights (red and blue) for each button.

1. Each relay can be controlled by any touch button or via a Z-Wave network (using a Z-Wave gateway).

2. Each touch button can be configured to control any relay output state (from one to five) in the modes below:

1) **SWITCH-ON:** Press button: relay output switches to ON state (i.e. contacts are closed).

2) **SWITCH-OFF:** Press button: relay output switches to OFF state (i.e. contacts are opened).

3) **TIMER: ON>OFF:** Press button: relay output switches to ON for the specified time, then reverts to OFF. (Tip: This function is useful to open/close garage doors, blinds, curtains, etc.)

4) **TIMER REVERSED: OFF>ON:** Press button: relay output switches to OFF for the specified time then reverts to ON. (Tip: This function is useful for switching off security systems for a short time.)

Note: Time can be configured from 0 sec to 43200 sec (12 hours).

5) **INVERSE STATE:** Press button: relay output inverts state: (ON to OFF) or (OFF to ON).

6) **TWO-BUTTON INVERSE:** When two buttons are in Inverse mode, after pressing a button the corresponding relay (connected to that button) inverts its state: (from ON to OFF, or from OFF to ON) and the second relay will be switched OFF.

Note: In this mode both relays cannot be switched ON simultaneously. Can be used for motors direction control.

7) **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.

8) **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.

9) **ROLLER SHUTTER:** When two relays are connected to the same button, they will operate in 'roller shutter' mode. After entering this mode, relays will switch to OFF state, and never switch ON simultaneously. The relay behavior is as follows for this four-touch cycle (in this order):
- 1st press: first relay will be switched ON, second relay will be switched OFF
- 2nd press: both relays will be switched OFF
- 3rd press: second relay will be switched ON, first relay will be switched OFF
- 4th press: both relays will be switched OFF

The above mentioned two relays are defined according to parameters 40 & 41 (e.g. if "54" is set as the parameter value, it means the fifth relay and fourth relay will be operated in inverse mode).

Note: This can be used to control motor directions with one button only.

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

3. Each 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).

If the HE-TPS05 is associated with a Z-Wave gateway, the scene controller, light, temperature & humidity sensor info, and ten binary switches will appear. The scene controller indicates which button was pressed, held, or released and allows the running of scenes on the Z-Wave gateway. The first five binary switches indicate, and allow the control of, the button backlights. The remaining five binary switches indicate and control the relay outputs.

Scenarios

Scenarios can be created that allow connected devices to be triggered by a sensor or onboard Real Time Clock (RTC). The HE-TPS05 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 has to configure the output number, state, sensor type, state change condition, and threshold in the Parameters (from 42 - 51) which will trigger the scenes.

Factory Reset (RES)

To reset the HE-TPS05 to factory defaults, simultaneously press the two bottom buttons and single central touch button, and hold all three for five seconds. If successful, the two upper buttons will turn blue for three seconds then the device will restart.
NOTE: This factory reset procedure will change all parameters to the original factory default values and will also exclude the device from any associated Z-Wave network.
Please use this procedure only when the network primary controller is missing or otherwise inoperable.

Power and Energy Consumption

The HE-TPS05 monitors all connected loads active (i.e. 'real time') power, and total energy consumption, through software energy consumption logic. This data is periodically reported to the main Z-Wave controller according to Parameter 05.

Total Energy Consumption is the electrical power being used by connected device in real time during use. Power usage is calculated by the software using the values that were manually set when configuring Parameters 52-56, multiplied by the time tracked when the HE-TPS05 corresponding output was in an ON state. Using your connected device's power consumption specification (see associated owner's manual), set the load in Watts for: "OUT-1" in Parameters 52, "OUT-2" in Parameter 53, "OUT-3" in Parameter 54, "OUT-4" in the Parameter 55, and "OUT-5" in Parameter 56.

Resetting Cumulative Consumption Memory

The HE-TPS05 enables you to erase stored consumption data through the Z-Wave network as follows:
1. Make sure the HE-TPS05 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: Power cycling the HE-TPS05 (On>Off>On) will not erase the consumption data as it is stored in non-volatile memory.

Z-Wave Network

The HE-TPS05 may be operated in any Z-Wave network with other Z-Wave-certified devices from other manufacturers. The HELTUN HE-TPS05 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 HE-TPS05 to a Z-Wave network

To add the HE-TPS05 to 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-TPS05, simultaneously press the two bottom touch buttons and hold them for three seconds.
3. The two upper buttons will then sequentially blink 'blue-red'
4. If the inclusion has been successful, the two upper buttons will turn blue for three seconds.
5. If the inclusion was not successful, the two upper buttons 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 HE-TPS05 from a Z-Wave network

To remove the HE-TPS05 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-TPS05, simultaneously press the two bottom touch buttons and hold them for three seconds.
3. Two upper buttons will sequentially blink blue-red.
4. If the exclusion has been successful, the two upper buttons will turn red for three seconds.
5. If the exclusion was not successful, the two upper buttons will turn blue for three seconds. In that case repeat the exclusion process.

Note: If the HE-TPS05 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' (DSK provided on the HE-TPS05 Security Card) should be used during the inclusion process.
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.

Figure 4: Security Code & QR Code

To add the HE-TPS05 to a Z-Wave network using **SmartStart**:
1. Input the HE-TPS05 DSK code to the controller's Node Provisioning List
2. Power on the device.
3. Wait for the inclusion process to complete.
4. A successful "Add" will be confirmed by a message on the Z-Wave controller.

Note: The device DSK and QR code are printed on the HE-TPS05 back panel plus on the additional Security Card included in the HE-TPS05 packaging.

Firmware OTA Update

To wirelessly update the HE-TPS05 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-TPS05 (see https://www.heltun.com/support)
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, all buttons will sequentially blink blue-red (this will take a few minutes).
6. When the Firmware has updated, all button backlights will turn off for two seconds and the HE-TPS05 will reboot.
7. When the update has been completed, the HE-TPS05 will return to normal operation.
8. If desired, verify the update was successful by checking firmware version from the gateway/controller.

Associations

Association enables the HE-TPS05 to control up to 20 other Z-Wave devices over the network. The HE-TPS05 has 11 Endpoints and 21 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-TPS05 has 21 association groups

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

Group 3 – "Touch 1 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. The group supports one Node.

Group 4 – "Touch 2 Basic Set": is assigned to touch N2. 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.

Group 5 – "Touch 2 Multilevel Set": is assigned to touch N2. It sends MULTILEVEL SWITCH command class frame when touch N2 was held. Is used to send UP/DOWN command to the associated devices. The group supports one Node.

Group 6 – "Touch 3 Basic Set": is assigned to touch N3. 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.

Group 7 – "Touch 3 Multilevel Set": is assigned to touch N3. It sends MULTILEVEL SWITCH command class frame when touch N3 was held. Is used to send UP/DOWN command to the associated devices. The group supports one Node.

Group 8 – "Touch 4 Basic Set": is assigned to touch N4. 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.

Group 9 – "Touch 4 Multilevel Set": is assigned to touch N4. It sends MULTILEVEL SWITCH command class frame when touch N4 was held. Is used to send UP/DOWN command to the associated devices. The group supports one Node.

Group 10 – "Touch 5 Basic Set": is assigned to touch N5. 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.

Group 11 – "Touch 5 Multilevel Set": is assigned to touch N5. It sends MULTILEVEL SWITCH command class frame when touch N5 was held. Is used to send UP/DOWN command to the associated devices. The group supports one Node.

Group 12 – "LED 1 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. The group supports one Node.

Group 13 – "LED 2 Basic Set": is assigned to led N2. 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.

Group 14 – "LED 3 Basic Set": is assigned to led N3. 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.

Group 15 – "LED 4 Basic Set": is assigned to led N4. 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.

Group 16 – "LED 5 Basic Set": is assigned to led N5. 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.

Group 17 – "Relay 1 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. The group supports one Node.

Group 18 – "Relay 2 Basic Set": is assigned to relay N2. 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.

Group 19 – "Relay 3 Basic Set": is assigned to relay N3. 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.

Group 20 – "Relay 4 Basic Set": is assigned to relay N4. 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.

Group 21 – "Relay 5 Basic Set": is assigned to relay N5. 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.

EndPoints 1-10 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 1-10 groups mapping to root device (EndPoint 0) groups:

EndPoints 1-10 groups	Root (EndPoint 0) groups
Endpoint 1, Group 2 – "LED 1 Basic Set"	Group 12 – "LED 1 Basic Set"
Endpoint 2, Group 2 – "LED 2 Basic Set"	Group 13 – "LED 2 Basic Set"
Endpoint 3, Group 2 – "LED 3 Basic Set"	Group 14 – "LED 3 Basic Set"
Endpoint 4, Group 2 – "LED 4 Basic Set"	Group 15 – "LED 4 Basic Set"
Endpoint 5, Group 2 – "LED 5 Basic Set"	Group 16 – "LED 5 Basic Set"
Endpoint 6, Group 2 – "Relay 1 Basic Set"	Group 17 – "Relay 1 Basic Set"
Endpoint 7, Group 2 – "Relay 2 Basic Set"	Group 18 – "Relay 2 Basic Set"
Endpoint 8, Group 2 – "Relay 3 Basic Set"	Group 19 – "Relay 3 Basic Set"
Endpoint 9, Group 2 – "Relay 4 Basic Set"	Group 20 – "Relay 4 Basic Set"
Endpoint 10, Group 2 – "Relay 5 Basic Set"	Group 21 – "Relay 5 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 configure 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-TPS05, 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.

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

HE-TPS05 Settings Using Z-Wave Protocol (Gateway)

All configuration parameters are accessed through COMMAND_CLASS_CONFIGURATION

Time Configuration

Parameter 01 – Time correction by controller
If this Parameter value = 1 and the HE-TPS05 is connected to a Z-Wave gateway, the HE-TPS05 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.
Note. When auto-correction is turned off, the gateway will set the time once during the device inclusion to the Z-Wave network time.

Parameter 02 – Week Day
This parameter allows manually adjustment of the day of the week in case the HE-TPS05 is not connected to any Z-Wave gateway, or Parameter 01 (auto-correction) is selected as 0. The factory-default value is 1. 1=Monday, 2=Tuesday, 3=Wednesday, 4=Thursday, 5=Friday, 6=Saturday, 7=Sunday.

Parameter 03 – Hour
This Parameter allows manual adjustment of **Time: Hours**.

Parameter 04 – Minute
This Parameter allows manual adjustment of **Time: Minutes**.

Sensor Configuration

Parameter 05 – Energy Consumption Meter Consecutive Report Interval
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 sensor readings change, the device will send the report to the gateway regardless of this parameter value. In order to not increase traffic on your network, it is not recommended to reduce the value of this parameter.

Parameter 06 – Sensor Consecutive Report Interval
When the HE-TPS05 is connected to a Z-Wave gateway (controller), it periodically sends the gateway reports from room temperature, humidity, and light sensors even if there aren't any changes in those 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 ten minutes.
Note: If the sensor readings change, the device will send a report to the gateway regardless of parameter value. In order to not increase network traffic, don't reduce the value of this parameter. We recommend reducing the value of this parameter only in cases of poor connection, when reports from the device do not always reach the gateway.

Parameter 07 – Air Temperature Sensors Report Threshold
This parameter determines the change in temperature level (in °C) that results in a temperature sensor report being sent to the gateway. The value of this parameter should be x10, (e.g. for 0.4°C, use the value "4"). For example, if the parameter value is 3 and sensor reading is 24.0°C the HE-TPS05 will send new sensor readings to the gateway only when the temperature reaches 24.3°C and above, or 23.7°C and below. Values from "1" (0.1°C) to "100" (10.0°C) may be selected. Use the value "0" if there is a need to stop sending the reports. The factory-default value is "5" (0.5°C).
Note: The HE-TPS05 sensor is very sensitive to ambient temperature changes and can often detect shifts as small as ±0.1°C. Therefore, HELTUN recommends setting this parameter at "2" (0.2°C) or above, to reduce the data transfer load across your Z-Wave network.

Parameter 08 – Humidity Sensor Report Threshold
This parameter determines the percentage (%) change in humidity level that results in a humidity sensor report being sent to the gateway. For example, if the parameter value is 40% and sensor reading is 10% the HE-TPS05 will send a new sensor reading to the gateway only in cases where the humidity is 50% and above, or 30% and below. Values from 1% to 25% may be selected. Use the value "0" if there is a need to stop sending the reports. The factory-default value is "2" (2%).
Note: The HE-TPS05 sensor is very sensitive to ambient humidity changes and can often detect shifts as small as ±1%. Therefore, HELTUN recommends setting this parameter at 2% or above, to reduce the data transfer load across your Z-Wave network.

Parameter 09 – Light Sensor Report Threshold
This parameter determines the percentage (%) change in ambient illumination that results in a light sensor report being sent to the gateway. A value from 10% to 90% may be selected. Use the value "0" if there is a need to stop sending the reports. The factory-default value is "50" (50%).
Note: The HE-TPS05 sensor is very sensitive to changes in ambient illuminance and can often detect shifts as small as ±1%. Therefore, HELTUN recommends selecting a large threshold (between 50% - 90%) to reduce the data transfer load across your Z-Wave network.

Parameter 10 – Touch Buttons Sensitivity Threshold
This parameter adjusts Touch Button Sensitivity 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 need to do so.

Parameter 11 – Temperature Sensor Calibration
This parameter defines the offset value for the air temperature sensor. If the internal temperature sensor is not correctly calibrated then it may be manually calibrated by adjusting the values up to +/- 10.0°C. This offset value will be added or subtracted from the internal air temperature sensor reading. The offset value should be multiplied by 10. For example, to make the offset –1.5°C, set the parameter value to "–15".
The factory-default value is "0" (0.0°C).

BACKLIGHT
The HE-TPS05 has two brightness levels for its button backlights: 1) **Active Level** – when a button is touched, its backlight become brighter, and 2) **Inactive Level** – after one second of inactivity all backlights dim. The actual brightness level may be adjusted manually or automatically.

Parameter 12 – Active State 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 13 – Backlight Auto-Brightness Control
The HE-TPS05 can adjust its backlight level automatically depending on the ambient room brightness.
If the Parameter value = "0" Inactive Level brightness will be controlled manually and set to the level defined by Parameter 14.
If the Parameter value = "1" Inactive Level brightness will be controlled automatically depending on the room illumination.
The factory-default value is 1.

Parameter 14 – Backlight Brightness (Manual Mode)
The Backlight Brightness Level Parameter will take effect when Parameter 13 is set to Manual Control (value = 0).
The brightness may then be manually adjusted in Parameter 14 from 1 (lowest) to 10 (brightest).
The factory-default value is 8.

Parameters 15-19 – Button Backlight Control Source
0 – Backlight is disabled (both color LEDs are turned off)
1 – Controlled by touch button
2 – Controlled by gateway or associated device
The factory-default value: "1"
Note: If the LED backlight is disabled (the parameter value is set to "0") it is also impossible to control it from the gateway

Parameters 20-24 – Touch Button Number for Relays Output Control
0 – Controlled by gateway or associated device
1 – Controlled by touch button N1 (Top Left)
2 – Controlled by touch button N2 (Top Right)
3 – Controlled by touch button N3 (Bottom Left)
4 – Controlled by touch button N4 (Bottom Right)
5 – Controlled by touch button N5 (Center)
Factory default value: Each relay corresponds to its button (e.g. for Relay "3" the default value is touch button "3")

Parameters 25-29 – Hold 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).
Factory default value: 1
Note: Regardless of this parameter, the device will send to the gateway the touch state (pressed, held, released) by scene notifications.

Parameters 30-34 – Click control mode
0 – Click function disabled
1 – Relay inverts state (toggles ON to OFF, OFF to ON) according to 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 parameters 35-39.

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 Parameters 35-39.

Factory default value: 1

Parameters 35-39 – Relay Timer mode duration

These parameters specify the duration in seconds for the Timer mode (value 5 or 6 in Parameters 30-34 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 open/close garage doors, blinds, curtains, etc. or 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).

Factory default value: "0"

Note: If the parameter value is set to "0" it will operate as a short contact (about 0.5 sec).

Parameters 40, 41 – Relay Inverse Mode

The values in this parameter will specify the relay numbers that will operate in inverse mode. For this purpose, the value will be encoded as a 2-digit number "AB" where "A" is the number of the first relay, and "B" is number of the second relay. For example, if the parameter value is "35" or "53" it means the relays N3 and N5 will operate in inverse mode. Relays can operate in an inverse mode in two different ways:

1. When the first and the second relays are connected to two different buttons. In this case, after pressing a button, the corresponding relay connected to that button will toggle its state ('ON to OFF' or 'OFF to ON'), and the other relay will be switched OFF.

2. When two relays are connected to the same button. In this case, the relays will operate in roller shutter mode and their behavior will follow these four cycles:

- **1st press of button**: the first relay will be switched ON, the second relay will be switched OFF
- **2nd press of button:** both relays will be switched OFF
- **3rd press of button**: the second relay will be switched ON, the first relay will be switched OFF
- **4th press of button**: both relays will be switched OFF

Note: In this mode, both relays cannot be switched ON at the same time (i.e. simultaneously).

Note: Switching OFF one relay will always operate before switching ON another relay to prevent both relays from being ON at the same time.

Note: Two groups of inverse relays can be specified, one group in Parameter 35 another group in Parameter 36

Parameters 42-51- Relays 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 (1 through 5)

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 relays still can be controlled manually using touch buttons according to Parameters 30-34 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.

Parameters 52-56 – Relay Load Power in Watts.
You may specify load consumption (in Watts) for each relay channel (1 through 5) in order to calculate total energy consumption relative to the time each relay is ON. The factory default-value: 0

Parameters 57-61 – Associations Mode
These parameters are intended for use when Multilevel Switch Group Associations (Groups 3, 5, 7, 9, & 11) have been activated. They define the logic of values changing if one of the touch buttons has been held for more than one second. They are useful options 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

Factory Default Parameters

Number	Size	Name	Description	Default Value	Available Values
01	1 byte	TIME CORRECTION	Time correction by controller	1	0, 1
02	1 byte	WEEKDAY	Week Day	1	1, 2, 3, 4, 5, 6, 7
03	1 byte	HOUR	Time Hour	0	0 to 23
04	1 byte	MINUTE	Time Minute	0	0 to 59
05	1 byte	METER REPORT INTERVAL	Energy Consumption Meter Consecutive Report Interval, minutes	10	1 to 120
06	1 byte	SENSORS REPORT INTERVAL	Sensors Consecutive Report Interval	10	1 to 120
07	1 byte	TEMPERATURE REPORT THRESHOLD	Temperature difference to send to controller, value X 10	5	0, 1 to 100
08	1 byte	HUMIDITY REPORT THRESHOLD	Humidity difference to send to controller, value X 10	2	0, 1 to 25
09	1 byte	LIGHT REPORT THRESHOLD	Luminance difference to send to controller in %	50	0, 10 to 90
10	1 byte	TOUCH SENSITIVITY	Touch buttons sensitivity: 1 = lowest sensitivity 10 = highest sensitivity.	6	1 to 10
11	1 byte	TEMP SENSOR CORRECTION	Temperature sensor calibration, x10	0	-100 to +100
12	1 byte	BACKLIGHT ACTIVE COLOR	Active state backlight color	1	0, 1
13	1 byte	BACKLIGHT AUTO BRIGHTNESS	Backlight auto-brightness control	1	0, 1
14	1 byte	BACKLIGHT MANUAL BRIGHTNESS LEVEL	Backlight brightness in manual mode	8	1 to 10
15	1 byte	BACKLIGHT1 CONTROL SOURCE	Backlight 1 control source	1	0, 1, 2
16	1 byte	BACKLIGHT2 CONTROL SOURCE	Backlight 2 control source	1	0, 1, 2
17	1 byte	BACKLIGHT3 CONTROL SOURCE	Backlight 3 control source	1	0, 1, 2
18	1 byte	BACKLIGHT4 CONTROL SOURCE	Backlight 4 control source	1	0, 1, 2
19	1 byte	BACKLIGHT5 CONTROL SOURCE	Backlight 5 control source	1	0, 1, 2
20	1 byte	RELAY1 CONTROL SOURCE	Relay 1 control source	1	0, 1, 2, 3, 4, 5
21	1 byte	RELAY2 CONTROL SOURCE	Relay 2 control source	2	0, 1, 2, 3, 4, 5
22	1 byte	RELAY3 CONTROL SOURCE	Relay 3 control source	3	0, 1, 2, 3, 4, 5
23	1 byte	RELAY4 CONTROL SOURCE	Relay 4 control source	4	0, 1, 2, 3, 4, 5
24	1 byte	RELAY5 CONTROL SOURCE	Relay 5 control source	5	0, 1, 2, 3, 4, 5
25	1 byte	HOLD1 CONTROL MODE	Hold control mode for touch button 1	1	0, 1, 2, 3
26	1 byte	HOLD2 CONTROL MODE	Hold control mode for touch button 2	1	0, 1, 2, 3
27	1 byte	HOLD3 CONTROL MODE	Hold control mode for touch button 3	1	0, 1, 2, 3
28	1 byte	HOLD4 CONTROL MODE	Hold control mode for touch button 4	1	0, 1, 2, 3
29	1 byte	HOLD5 CONTROL MODE	Hold control mode for touch button 5	1	0, 1, 2, 3
30	1 byte	CLICK1 CONTROL MODE	Click control mode for touch button 1	1	0, 1, 2, 3, 4, 5, 6

31	1 byte	CLICK2 CONTROL MODE	Click control mode for touch button 2	1	0, 1, 2, 3, 4, 5, 6
32	1 byte	CLICK3 CONTROL MODE	Click control mode for touch button 3	1	0, 1, 2, 3, 4, 5, 6
33	1 byte	CLICK4 CONTROL MODE	Click control mode for touch button 4	1	0, 1, 2, 3, 4, 5, 6
34	1 byte	CLICK5 CONTROL MODE	Click control mode for touch button 5	1	0, 1, 2, 3, 4, 5, 6
35	2 bytes	RELAY1 TIMER DURATION	Timer mode duration for button 1	0	0 to 43200
36	2 bytes	RELAY2 TIMER DURATION	Timer mode duration for button 2	0	0 to 43200
37	2 bytes	RELAY3 TIMER DURATION	Timer mode duration for button 3	0	0 to 43200
38	2 bytes	RELAY4 TIMER DURATION	Timer mode duration for button 4	0	0 to 43200
39	2 bytes	RELAY5 TIMER DURATION	Timer mode duration for button 5	0	0 to 43200
40	1 byte	RELAY INVERSE GROUP1	Group 1 relay inverse mode	0	0, 12, 13, 14, 15, 21, 23, 24, 25, 31, 32, 34, 35, 41, 42, 43, 45, 51, 52, 53, 54
41	1 byte	RELAY INVERSE GROUP2	Group 2 relay inverse mode	0	0, 12, 13, 14, 15, 21, 23, 24, 25, 31, 32, 34, 35, 41, 42, 43, 45, 51, 52, 53, 54
42	4 bytes	RELAY CONTROL SCENARIO1	Relays control by sensors Group 1	0	0, 10000000 to 53112359
43	4 bytes	RELAY CONTROL SCENARIO2	Relays control by sensors Group 2	0	0, 10000000 to 53112359
44	4 bytes	RELAY CONTROL SCENARIO3	Relays control by sensors Group 3	0	0, 10000000 to 53112359
45	4 bytes	RELAY CONTROL SCENARIO4	Relays control by sensors Group 4	0	0, 10000000 to 53112359
46	4 bytes	RELAY CONTROL SCENARIO5	Relays control by sensors Group 5	0	0, 10000000 to 53112359
47	4 bytes	RELAY CONTROL SCENARIO6	Relays control by sensors Group 6	0	0, 10000000 to 53112359
48	4 bytes	RELAY CONTROL SCENARIO7	Relays control by sensors Group 7	0	0, 10000000 to 53112359
49	4 bytes	RELAY CONTROL SCENARIO8	Relays control by sensors Group 8	0	0, 10000000 to 53112359
50	4 bytes	RELAY CONTROL SCENARIO9	Relays control by sensors Group 9	0	0, 10000000 to 53112359
51	4 bytes	RELAY CONTROL SCENARIO10	Relays control by sensors Group 10	0	0, 10000000 to 53112359
52	2 bytes	RELAY1 LOAD POWER	Power of the Relay 1 load in Watts	0	0 to 1100
53	2 bytes	RELAY2 LOAD POWER	Power of the Relay 2 load in Watts	0	0 to 1100
54	2 bytes	RELAY3 LOAD POWER	Power of the Relay 3 load in Watts	0	0 to 1100
55	2 bytes	RELAY4 LOAD POWER	Power of the Relay 4 load in Watts	0	0 to 1100
56	2 bytes	RELAY5 LOAD POWER	Power of the Relay 5 load in Watts	0	0 to 1100
57	1 byte	TOUCH1 ASSOCIATION MODE	Touch control mode for associations with touch button 1	0	0, 1, 2
58	1 byte	TOUCH2 ASSOCIATION MODE	Touch control mode for associations with touch button 2	0	0, 1, 2
59	1 byte	TOUCH3 ASSOCIATION MODE	Touch control mode for associations with touch button 3	0	0, 1, 2
60	1 byte	TOUCH4 ASSOCIATION MODE	Touch control mode for associations with touch button 4	0	0, 1, 2
61	1 byte	TOUCH5 ASSOCIATION MODE	Touch control mode for associations with touch button 5	0	0, 1, 2

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