

HELTUN

FAN COIL THERMOSTAT HE-FT01

USER MANUAL V1.0



Table of Content

Overview.....	3
Technical Specifications.....	3
Disassembly.....	6
Touch Panel Operation.....	6
Climate Control Modes.....	7
Heating & Cooling.....	7
Heating.....	7
Cooling.....	7
Ventilation.....	7
Fan Speed Modes.....	7
Operating Modes.....	8
COM - Comfort Mode.....	8
TIME - Temperature Schedule Mode (Auto).....	8
ECO - Energy Saving Mode.....	9
OFF – Operating modes disabled.....	9
Child Lock (LOC).....	9
Factory Reset (RES).....	9
Settings Menu.....	9
Parameter List.....	10
Time Configuration.....	11
Temperature Configuration.....	11
Display Brightness.....	11
Touch Sensitivity.....	12
Power and Energy Consumption.....	12
Hardware & Firmware Versions.....	12
Z-Wave Network.....	12
Adding to a Z-Wave network.....	13
Removal from a Z-Wave network.....	13
Security.....	13
SmartStart.....	14
Firmware OTA Update.....	14
Associations.....	14
Z-Wave Plus V2 Specifications.....	15
Thermostat Settings Using Z-Wave Protocol (Gateway).....	15
Factory default parameters.....	16
Warranty (2-Year).....	18

Overview

This is the user manual for the HELTUN HE-FT01 Advanced Programmable Thermostat for Fan Coil Heating/Cooling Systems. The HE-FT01 can be flush mounted over standard round or square electrical junction boxes. It is designed to maintain a constant room temperature using internal air temperature sensor.

It is recommended for control of air conditioning/heating systems such as: split/multi-split systems, chillers and fan coil unit systems, central air conditioning systems, multi-zone VRF/VRV air conditioning systems, etc. The fan speed is controlled by three relay outputs. Two more relay outputs control cooling and heating valves. The HE-FT01 has two independent inputs for relay channels which allow it to control fans and valves with different power sources or to use relay outputs as dry contacts. Each relay can carry a load of up to 5A.

The HE-FT01 has an LCD screen with auto-sensing or manually adjustable brightness control, six sensitive capacitive touch-control buttons, and internal sensors for air temperature and humidity. The HE-FT01 is also equipped with light sensor and software energy consumption logic.

The HE-FT01 integrates a Z-Wave 700 platform module allowing it to be used with Z-Wave home automation systems. The HE-FT01 supports Z-Wave 'S0' and 'S2' security protocols, SmartStart technology, and can be connected ("associated") to 50 other Z-Wave devices, such as relays, switchers, etc.

You can select one of four operation modes (COM, TIME, ECO, OFF) either manually, or by using a Z-Wave controller/gateway. The HE-FT01 operates in four Climate Modes: Heating & Cooling, Heating only, Cooling only, Ventilation, and has six levels for fan speed control: Low, Medium, High, Auto Medium, Auto High, Off.

The display has a user-friendly interface, showing: air temperature, humidity level, user set point, operating mode, climate mode, fan speed, time, weekday and Z-Wave network status. Display brightness adjusts to ambient light conditions automatically making it always easy to read.

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
- LCD: 73mm x 42mm (3.3 inch), black with white segments
- 6 capacitive-touch buttons
- 5 relays with resistive load up to 5A each
 - 2 relays for cooling and heating valves
 - 3 relays for fan speed
- 2 independent relay inputs (dry contact)
- Relay switching with HELTUN Advanced Zero-Cross Technology
- Relays 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
- Software energy consumption logic
- Operating temperature: 0°C to +50°C
- Power supply: 85-265VAC 50Hz/60Hz, 24-48VDC
- Power consumption: 1W
- 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 50 devices from network
- 4 operational modes with individual temperature set points:
 - **COM** – Comfort Mode
 - **ECO** – Energy saving Mode
 - **TIME** – Schedule Mode
 - **OFF** – Idle
- Four climate modes:
 - Heating & Cooling,
 - Heating only,
 - Cooling only,
 - Ventilation only
- Six Fan Speed control modes:
 - Low speed
 - Medium speed
 - High speed
 - Auto Medium speed
 - Auto High speed
 - Off
- Four Time Schedules for 7 days of the week:
 - Morning
 - Day
 - Evening
 - Night
- Periodic measurements from:
 - Internal temperature sensor
 - Internal humidity sensor
 - Internal ambient light sensor
 - Energy consumption logic
- Calibration of Internal Room Air Temperature Sensor
- Temperature set intervals: 4.0°C to 37.0°C
- HELTUN Advanced Zero-Cross relay switching technology
- Temperature hysteresis selection range: 0.2°C to 10.0°C
- Temperature measurement: Celsius (°C) or Fahrenheit (°F)
- Time format: 24 or 12 hours (AM/PM)
- LCD brightness:
 - Automatic adjustment (depending on ambient light)
 - Manual adjustment (15 levels).
- LCD standby mode (different brightness for active and inactive states)
- LCD backlight blinking function (for easy identification among other Z-Wave devices)
- Child lock mode (touch buttons lockout mode)
- Power consumption software 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-FT01 thermostat 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-FT01.

WARNING: Electrical power must be switched off during installation.

1. Placement of the HE-FT01 is of utmost importance for proper operation and must be away from sunlight and sources of direct heat. We recommend installing the HE-FT01 approximately 1.5 meters above the floor.
2. Remove the display unit and backplate of the HE-FT01 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 power wires to the HE-FT01 "POWER" terminal by inserting a small Phillips-head screwdriver in the slot beneath each terminal to open. Follow the connection diagram and instructions below:

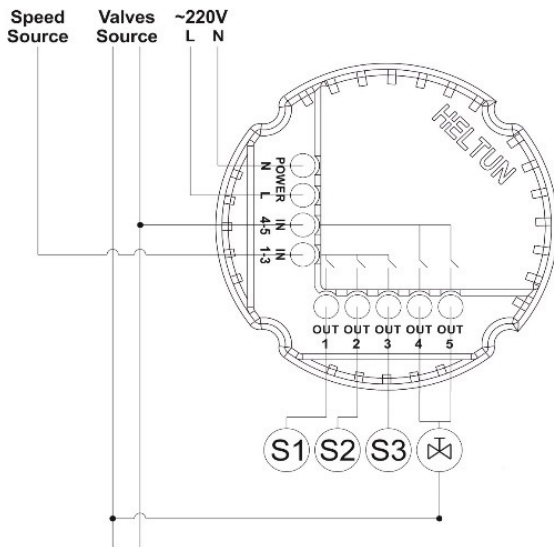
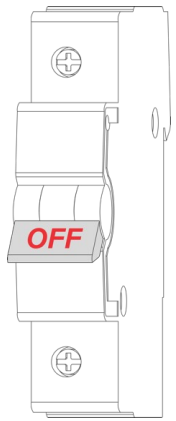


Figure 1: Connection diagram for 1-valve system

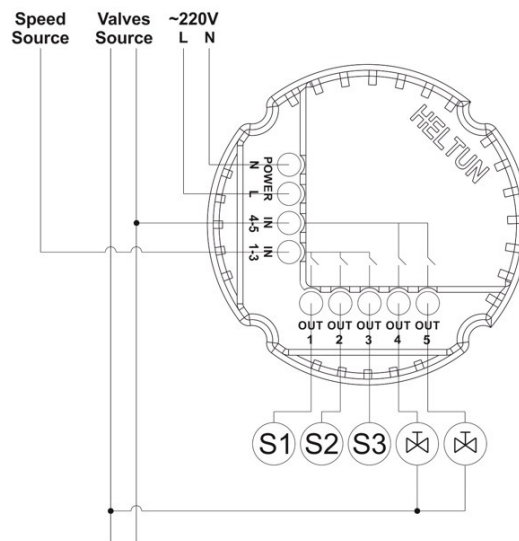


Figure 2: Connection diagram for 2-valve system

- Power wires: connect Line & Neutral wires to L & N terminals labeled "POWER"
- Fan Speed: connect the required power source for Fan (Relays 1, 2 and 3 outputs) to terminal IN-1-3.
- Heating/Cooling valves: connect the required power source for Heating/Cooling valves (Relays 4 and 5 outputs) to terminal IN-4-5.
- Loads: Connect the loads to relays output terminals:
 OUT-1, OUT-2, OUT-3, OUT-4, OUT-5:
 OUT-1 for the Fan low speed
 OUT-2 for the Fan medium speed
 OUT-3 for the Fan high speed
 OUT-4 for the heating valve
 OUT-5 for the cooling valve

4. Make sure the HE-FT01 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-FT01 display 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-FT01 will start up showing the original default factory settings.
6. Remove the clear protective film from the display by pulling on the top right-hand tab.

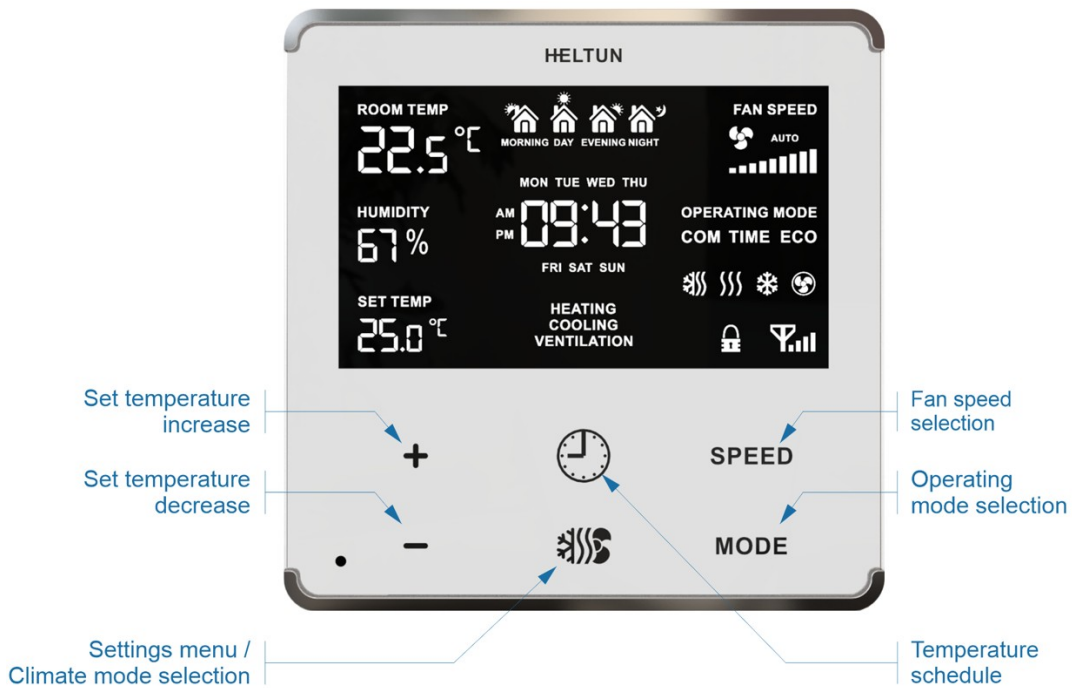


Disassembly

1. To disassemble, ENSURE POWER IS SWITCHED OFF at the main circuit breaker AND THE LCD SCREEN IS BLANK.
2. To remove the HE-FT01 display 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 and turning counter-clockwise to release.

Touch Panel Operation

The touch panel has six capacitive-touch buttons which require minimal pressure to operate.



Symbol:	Name:	Function:
+	Plus	Increase Set Point Temperature
-	Minus	Decrease Set Point Temperature
🕒	Time	Change Schedule
🌡️	Climate	Change Climate Modes and Open Parameters Menu
SPEED	FAN Speed	Change Fan speed
MODE	Mode	Change the Operational Mode: (COM, TIME, ECO, OFF)

The Plus “+” button will increase Set Point temperature by 0.5°C (1°F) with each touch. The Minus “-” button will decrease Set Point temperature by the same 0.5°C (1°F). The Set Point temperature is displayed in the bottom left corner of the LCD display under “SET TEMP.”


Note: The minimum Set Point is 4.0°C (39°F) and the maximum Set Point is 37.0°C (98°F).

The HE-FT01 has four operating states: 1) **HEATING** (OUT-4 is On, OUT-5 is Off), 2) **COOLING** (OUT-5 is On and OUT-4 is Off), 3) **VENTILATION** (both OUT-4 and OUT-5 are Off) and 4) **IDLE** (all outputs are Off). In the HEATING and COOLING states, in addition to OUT-4 & OUT-5, one output from OUT-1, OUT-2, & OUT-3 will be switched on depending on selected speed. The icons HEATING, COOLING, & VENTILATION are displayed in the center, bottom of the display. Those icons will disappear when the HE-FT01 is in IDLE mode.

Climate Control Modes

The current Climate control mode is shown on the middle-right position of the LCD under “**OPERATING MODE.**”

The HE-FT01 can operate in 4 climate modes:

Icon	Device mode	Mode in Z-Wave gateway
	Heating & Cooling	“Auto Changeover”
	Heating	“Heat” or “Energy Heat”
	Cooling	“Cool” or “Energy Cool”
	Ventilation	“Fan”

Change the climate mode by touching the “**Climate**” button () and selecting as shown above.

Heating & Cooling

In this mode, the HE-FT01 switches automatically between heating and cooling states. The primary purpose of automatic climate control is to manage the temperature of the area to provide maximum comfort. This means the thermostat will heat the room when the room temperature is lower than the temperature Set Point, and it will cool the room when room temperature is higher than the Set Point.

Note: This Mode is available only for “COM” and “TIME” Operating Modes.

Note: According to Z-Wave protocol standards, your Z-Wave gateway will show this mode as “Auto Changeover.”

Heating

This mode is used when only heating is needed as in winter. In this mode, when the room temperature is lower than the Set Point, the thermostat will switch ON the heater (OUT-4 will be ON, OUT-5 will be OFF). When room temperature goes higher than the Set Point, it will switch to IDLE mode (all five outputs will be OFF).

Note: According to Z-Wave protocol standards, your Z-Wave gateway will show this mode as: 1) “**Heat**” if you have selected “COM” Operating Mode, and as 2) “**Energy Heat**” if you have selected “ECO” Operating Mode.

Cooling

This mode is used when only cooling is needed as in summer. In this mode, when the room temperature is higher than the Set Point, the thermostat will switch ON the air conditioner (OUT-5 will be ON, OUT-4 will be OFF). When the temperatures goes lower than the Set Point, the thermostat will goes to IDLE mode (all five outputs will be OFF).

Note: According to Z-Wave protocol standards, your Z-Wave gateway will show this mode as: 1) “**Cool**” if you have selected the “COM” Operating Mode, and as 2) “**Energy Cool**” if you have selected “ECO” Operating Mode.

Ventilation

In Ventilation mode the thermostat circulates air around the room without heating or cooling (heating and cooling valves are closed: OUT-4 and OUT-5 will be always OFF).

Note: when in Ventilation mode, all Operating Modes (COM, TIME, ECO) are disabled and "OFF" will be displayed under "SET TEMP" on the LCD.

Note: According to Z-Wave protocol standards your Z-Wave gateway will show this mode as “**Fan.**”

Fan Speed Modes

The HE-FT01 has six fan speeds:

- Low speed
- Medium speed
- High speed
- Auto Medium speed
- Auto High speed
- OFF

In **Low**, **Medium**, and **High** speeds, the thermostat always runs the selected speed (OUT-1 will be ON in case if Low speed is selected, OUT-2 will be ON for Medium speed, OUT-3 will be ON for High speed).

At **Auto Medium** speed, the thermostat will run at **Low speed** if the Set Point and room temperatures difference is less than 1.0°C, and **Medium speed** if the Set Point and ambient temperatures difference is higher 1.0C.

At **Auto High** speed mode, the thermostat will run at **Low speed** if the Set Point and room temperatures difference is less than 1.0°C. It will run **Medium speed** if the Set Point and room temperatures difference is higher than 1.0°C but less then 2.0°C. And it will run on **High speed** if the Set Point and room temperatures difference is higher than 2.0°C. If the Fan Speed selected is **OFF**, the thermostat will go to **IDLE** mode (all outputs will be Off).

Note: depending on speed level, only one output from the group OUT-1, OUT-2, or OUT-3 will be ON.

Operating Modes

The HE-FT01 thermostat has Four Operating Modes as follows:

COM – **Comfort Mode**

TIME – **Time Mode** (enables different scheduled temperature Set Points per time and day)

ECO – **Economy Mode** (for power efficient & energy savings)

OFF – Operating modes disabled

You may change Modes by touching the “**MODE**” button (bottom right of LCD) until the desired Mode is reached. Each Operating Mode has individual temperature Set Points for each Climate Mode (Heating & Cooling Modes). The HE-FT01 will operate automatically depending on the current Set Point indicated under the “**SET TEMP**” label on the LCD. To change the Set Point value, choose the desired Operating Mode (COM, TIME or ECO), choose the Climate Mode (“Heating”, “Cooling” or “Heating & Cooling”) and press the Plus “+” button to increase, or Minus “-” button to decrease, the corresponded Set Point value. You may alternatively control Set Points for each Operating and Climate Mode through your Z-Wave gateway software.

COM - Comfort Mode

This mode is recommended for maximum comfort. Under this Operating Mode there are three different Climate control modes: “Heating”, “Cooling” and “Heating & Cooling.” And each Climate Mode has its own individual Set Point. Choose the desired climate mode and adjust the temperature Set Point for each mode separately.

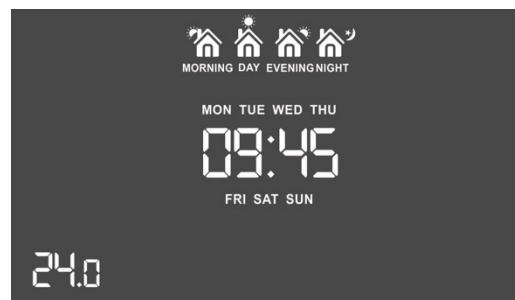
Note: In your Z-Wave gateway you will see three Set Points corresponding to different climate modes: “**Auto Changeover**” in Z-Wave corresponds to “**Heating & Cooling**” climate mode in the HE-FT01, “**Heat**” corresponds to “**Heating**” climate mode, and “**Cool**” corresponds to “**Cooling**” climate mode.

Note: “**Ventilation**” Climate Mode will disable (Switch Off) all Operating Modes including COM.

TIME - Temperature Schedule Mode (Auto)

The Temperature Schedule (TIME) Mode can adjust home temperatures automatically to align with your personal habits, saving energy while you are away, and maintaining a comfortable temperature while you are active at home.

The HE-FT01 can have different Schedules for Morning, Daytime, Evening and Night. For example, the “Morning” Schedule could be set to 25.0°C (77°F) starting at 7:00. The “Day” Schedule could then be set to 11.0°C (or 52°F) at 9:00 when everyone has gone to work or school, and so on. Here are recommended Scheduled Set Points for heating during the work week – you may wish to change these on weekends depending on your family’s schedule (see example below):



Schedule Mode	Set Time	Set Point Temperature
Morning	6:00	24.0°C (75°F)
Day	9:00	20.0°C (68°F)
Evening	18:00	23.0°C (73°F)
Night	23:00	18.0°C (64°F)

To set up the time and temperature for each Schedule press and hold the Clock “🕒” button for three seconds. The display will then change to the Time menu.

To set up the start time for each Schedule, choose the Schedule by pressing the Clock “🕒” button then adjust the time by pressing the “**SPEED**” button to increase, or “**MODE**” button to decrease. Press the Clock “🕒” button again to advance to the next schedule and set the time for all four: Morning, Day, Evening & Night.

To choose the temperature Set Points for each Schedule, choose the day of the week by pressing the “**Climate**” button (🌡️), then choose the Schedule by pressing the Clock “🕒” button and adjust the temperature Set Point up or down by pressing the Plus “+” or Minus “-” buttons. Do this action for each day of the week.

Note: All four times (Morning, Day, Evening, & Night) are the same for all seven days of the week.

Note: TIME mode will only work properly if the correct current time and date have been set. The time can be automatically corrected from your Z-Wave gateway if the Parameter 01 value is set to 1. Or it can be set manually in Parameters 03, 04, and 05 in the Settings Menu (see below).

Note: When in TIME mode, the temperature Set Point (under the label on the LCD: SET TEMP) will be automatically changed depending on the Schedule. At any time, the Set Point can be adjusted up or down manually but it will be in effect only until the next Schedule.

Note: Under TIME mode, the Set Points for all climate modes are the same.

Note: In your Z-Wave gateway this mode will be shown as “**Auto**”. It is impossible to change the TIME Mode Set Points through a Z-Wave gateway. If you change the Operating Mode to “Auto” through your Z-Wave gateway, the Climate Mode, “Heating & Cooling,” will be selected on the HE-FT01 according to the value of Parameter 41 (1=“Heating & Cooling,” 2=“Heating,” & 3=“Cooling”).

ECO - Energy Saving Mode

This Mode can be used if lower temperatures and energy consumption is desired. It can also be used at night or when away the property for a length of time. Under this Operating Mode there are two different Climate control modes: “Heating” and “Cooling”. Each Climate Mode has its individual Set Point. Choose the desired climate mode and adjust the temperature set point for each mode separately.

Note: In your Z-Wave gateway you will see two Set Points corresponding to different climate modes: “**Energy Save Heating**” in the Z-Wave gateway corresponds to “**Heating**” climate mode in the HE-FT01, “**Energy Save Cooling**” corresponds to “**Cooling**” the HE-FT01 climate mode.

Note: “**Ventilation**” Climate Mode will disable (Switch Off) all Operating Modes including ECO.

OFF – Operating modes disabled

In this operating mode only Ventilation climate mode can operate. If “Heating”, “Cooling” or “Heating & Cooling” climate modes are selected the device goes to IDLE state.

Child Lock (LOC)

The Child Lock feature allows you to disable the HE-FT01 touch buttons temporarily. To activate the Child Lock Mode, press and hold the “**SPEED**” button for five seconds until the Lock Icon (🔒) appears in the bottom right corner of the display. To deactivate the Child Lock, press the “**SPEED**” button until the Lock Icon (🔒) disappears.

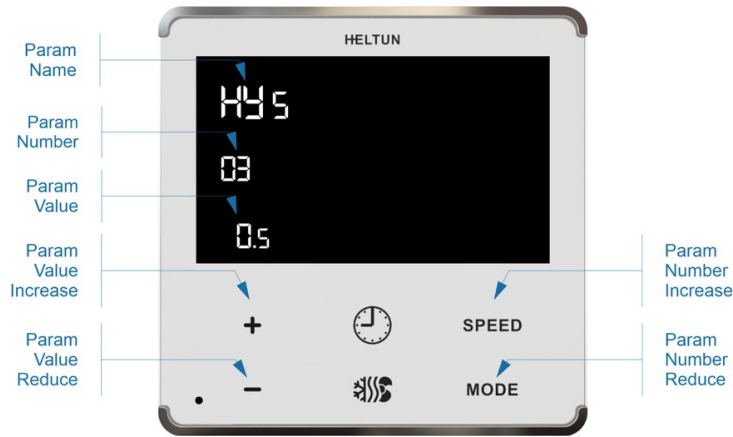
Factory Reset (RES)

By pressing and holding the “**MODE**” button for 6 seconds, the HE-FT01 will enter Factory Reset Mode, displaying “**REs**” in the left bottom corner, “**y**” and “**n**” in the center. Press the Plus (+) button to revert to factory settings, or the “**SPEED**” button to cancel. The factory reset will change all the Parameters to their original factory default values 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.

Settings Menu

To enter the Settings Menu, press and hold the “**Climate**” button (🌡️) for three seconds. The abbreviated Parameter **Name** will be displayed in the top left corner of the LCD. The left center will display the Parameter **Number**. And the bottom left corner will display the Parameter **Value**.



To scroll through the menu, press the “**SPEED**” button to go up and the “**MODE**” button to go down.
To change the Parameter value, press the Plus “+” or Minus “-” buttons.

To leave the Settings Menu press and hold the “**Climate**” button (🌡️) for 3 seconds or just wait, If no action is detected for 10 seconds the display will automatically revert to the main display mode.

Parameter List

Group	Number	Name	Description	Default Value	Value Range
<u>Time configuration</u>	01	tCr	Time correction by gateway	1	0, 1
	02	tFo	Time Format	0	0, 1
	03	dAy	Day of the Week	1	1, 2, 3, 4, 5, 6, 7
	04	tIH	Time: Hour	0	0..23
	05	tIL	Time: Minute	0	0..59
<u>Temperature configuration</u>	06	dEg	Temperature Units Selection	0	0 = °C, 1 = °F
	07	AtC	Air Temperature Calibration	0	-9.5...9.5 in °C -17...17 in °F
	08	HyS	Temperature Hysteresis	0.5 / 0.9	0.2...10.0 in °C 0.3...18.0 in °F
<u>Display Brightness</u>	09	Abc	Display auto-brightness control	1	0, 1
	10	ldb	Display brightness manual control level	10	1...15
<u>Touch Sensitivity</u>	11	tCH	Touch button sensitivity: 5 = Highest sensitivity, 50 = Lowest sensitivity	15	5...50
<u>Versions</u>	12	Hrd	Hardware Version		Read Only
	13	APP	Application Version		Read Only
<u>Z-Wave</u>	14	bSA	Mode selection upon Basic Set Action command: 0: No action 1: COM with Heating & Colling Climate Mode 2: COM with Heating Climate Mode. 3: COM with Cooling Climate Mode. 4: TIME with Heating & Cooling Climate Mode 5: TIME with Heating Climate Mode. 6: TIME with Cooling Climate Mode. 7: ECO with Heating Climate Mode. 8: ECO with Cooling Climate Mode. 9: Ventilation Climate Mode	2	0, 1, 2, 3, 4, 5, 6, 7, 8, 9
	15	nEt	Inclusion / Exclusion Mode	EcL	InC, EcL
	16	rEg	Frequency Region	EU	EU: Europe US: USA AU: Australia HO: Hong Kong IN: India IL: Israel RU: Russia CN: China JP: Japan OR: Korea

Time Configuration

Parameter 01 (“tCr”) – Time Correction By Main Controller

If this Parameter value = 1 and the HE-FT01 is connected to a Z-Wave gateway, the HE-FT01 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 (“tFo”) – Time Format

You may select either 24-hour or 12-hour time format. Parameter value 0 = 24 hour format. Parameter value 1 = 12 hour (AM/PM) format. The factory-default value is 0.

Parameter 03 (“dAy”) – Day of the Week

This parameter allows manually adjustment of the day of the week in case the HE-FT01 is not connected to any Z-Wave gateway, or Parameter 01 (auto-correction) is selected as 0. The factory-default value is 1.

Parameter 04 (“tIH”) – Hour

This Parameter allows manual adjustment of **Time: Hours**.

Parameter 05 (“tIL”) – Minute

This Parameter allows manual adjustment of the **Time: Minutes**.

Temperature Configuration

Parameter 06 (“dEg”) – Temperature Units

You may select: Celsius (value = 0), or Fahrenheit (value = 1), temperature units for all floor & air temperatures, as well as Set Points & Parameters. The factory-default value is degrees Celsius (0°C).

Parameter 07 (“AtC”) – 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 accomplished by adjusting the values up to $\pm 9.5^{\circ}\text{C}$ ($\pm 17^{\circ}\text{F}$). This value will be added or subtracted from the internal air temperature sensor reading. The factory-default value is 0.

Parameter 08 (“HyS”) – Temperature Hysteresis (HyS)

This Parameter defines the **hysteresis value** for temperature control. The HE-FT01 will stabilize the temperature with the selected hysteresis. For example, if the SET POINT is set for 25°C and HYSTERESIS is set for 0.5°C , the HE-FT01 will change the state to IDLE if the temperature reaches 25.0°C . It will change the state to HEATING if the temperature becomes lower than 24.5°C , and will change the state to COOLING if the temperature rises beyond 25.5°C . The hysteresis value can be changed from 0.2°C to 10.0°C range in Celsius mode, and 0.3°F to 18.0°F in Fahrenheit. The factory-default value is 0.5°C (0.9°F).

Display Brightness

The HE-FT01 has two brightness levels for its LCD display: **Active Level** – when any key is pressed the display becomes brighter, and **Inactive Level** – after ten seconds of inactivity the display becomes less bright. The actual display brightness in either level may be adjusted (see below).

Parameter 09 (“Abc”) – Display Auto-Brightness Control

The HE-FT01 can adjust its display brightness automatically depending on the ambient room brightness. Parameter value 0 = Manual Control: **Inactive Level** brightness will be set to the level defined by Parameter 10. Parameter value 1 = Automatic Brightness Control. The factory-default value is 1.

Parameter 10 (“Idb”) – Display Brightness Level

The Display Brightness Level Parameter will take effect when Parameter 09 is set to Manual Control (value = 0). The LCD brightness may then be adjusted from 1 (lowest brightness) to 15 (highest brightest). The factory default value is 10.

Note: The measured environment illumination level is displayed in the TIME position and also can be checked at any time via a Z-Wave gateway.

Touch Sensitivity

Parameter 11 (“tCH”) – Touch Sensor Sensitivity Threshold

Parameter 11 allows the device Touch Sensor Sensitivity Threshold to be adjusted from level 5 (very sensitive) to 50 (minimal sensitivity). The factory-default value is 15.

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.

Power and Energy Consumption

The HE-FT01 monitors the **Load Active Power** in real time and the **Total Energy Consumption** through Software energy consumption logic. Data is periodically sent to the main Z-Wave controller according to Parameter 32.

Total Energy Consumption is the electrical power being used by your climate control system in real time during use. Power usage is calculated by the software using the values that were manually set when configuring Parameters 36-40, multiplied by the time measured when the HE-FT01 is active in each mode. Using your climate system specifications (see your owner’s manual), set the load in Watts for: **Fan low speed** in Parameters 36, **Fan medium speed** in Parameter 37, and **Fan high speed** in Parameter 38. Set the **cooling power** in Watts in Parameter 39, and **heating power** in Parameter 40.

Resetting cumulative consumption memory

The HE-FT01 allows you to erase stored consumption data through the Z-Wave network as follows:

1. Make sure the HE-FT01 has power.
2. Include it into Z-Wave gateway/network
3. Reset memory consumption data using Reset Command in COMMAND_CLASS_METER (see controller manual).

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

Hardware & Firmware Versions

Parameter 12 (“Hrd”) – Hardware Version

This Parameter allows you to manually check the **hardware version** of the HE-FT01 directly from the device.

Note: This parameter is read-only.

Parameter 13 (“APP”) – Firmware Version

This Parameter allows you to manually check the **Firmware Version** directly from the device. Display information follows this format: Major Version - displayed at the Hours position, Minor Version - displayed at the Minutes position. Software Build - displayed at the bottom left corner at the “SET TEMP” position.

Note: This parameter in read-only.

Z-Wave Network

The HE-FT01 may be operated in any Z-Wave network with other Z-Wave certified devices from other manufacturers. The HELTUN HE-FT01 will act as a ‘repeater’ for other devices regardless of manufacturer or brand to increase the reliability of the overall network.

Parameter 14 (“bSA”) – Basic Set Action

This Parameter defines which Operating Mode the HE-FT01 reverts to if the Basic Set command is received. If the Basic Set command value is 0 (OFF state) the HE-FT01 will go to OFF mode and switch the operating state to IDLE. If the Basic Set command value is 0xFF (ON state) the HE-FT01 will change the Mode to the corresponding Parameter value (as follows).

- 0: No action
- 1: COM with Heating & Cooling Climate Mode
- 2: COM with Heating Climate Mode.
- 3: COM with Cooling Climate Mode.
- 4: TIME with Heating & Cooling Climate Mode.
- 5: TIME with Heating Climate Mode.
- 6: TIME with Cooling Climate Mode.
- 7: ECO with Heating Climate Mode.
- 8: ECO with Cooling Climate Mode.
- 9: Ventilation Climate Mode

The factory-default value is 2.

Parameter 15 (“nEt”) – Inclusion / Exclusion Mode

If the HE-FT01 is included in a Z-Wave network, the Antenna Icon (📶) will be shown in the LCD main display and “InC” will be indicated as this Parameter’s value. If it is not included in the network, no Antenna Icon will be shown in the main display, and the Parameter value will be “EcL”. To include or exclude the HE-FT01 into, or from, your home automation gateway network, activate Inclusion or Exclusion Mode on your gateway, then go to Parameter 15 in the Device Menu and press the Plus (+) button for Inclusion, or Minus “-” for Exclusion. For more details see below.

Parameter 16 (“rEg”) – Frequency Region

This Parameter allows you to manually adjust the Frequency region. Modification is possible only while the HE-FT01 is in a ‘Non-Included State.’ While in an ‘Included State,’ the Antenna Icon (📶) will be shown at the bottom right corner of the LCD screen and modification of this Parameter will be disabled. To navigate through the different values use the Plus (+) and Minus (-) buttons. After the Frequency Region has been selected, hold the Clock (🕒) button to save the Parameter value and reboot the device for the new settings to take effect.

Note: This parameter is read-only.

Adding to a Z-Wave network

To add HE-FT01 into a Z-Wave network (inclusion), do the following:

1. Enter “SETTINGS” Mode by pressing and holding the “Climate” button (🌡️) for three seconds.
2. Scroll menu to “Parameter 15 – nEt” using the “SPEED” button to scroll up, and the “MODE” button to scroll down.
3. The current state of the network will display in the Parameter Value position (bottom left corner). It should display “EcL”.
Note: If “InC” is displayed, the HE-FT01 must first be Excluded from an existing Z-Wave network (see “Removal from a Z-Wave Network” below).
4. Start the Inclusion Mode from the gateway/controller.
5. On the HE-FT01 in Parameter 15, press the Plus “+” key to start the Inclusion process.
6. Note that lines will be moving in the Parameter value position (bottom left corner).
7. The Antenna with signal strength bars (📶) icon should appear at the bottom right corner if Inclusion was successful.
8. If the Antenna (📶) icon without bars is displayed or “Err” is in the Value position, the HE-FT01 Inclusion was not successful (try repeating steps 4-7).

Removal from a Z-Wave network

To remove HE-FT01 from a Z-Wave network (exclusion), do the following:

1. Enter “SETTINGS” Mode by pressing and holding the “Climate” button (🌡️) for three seconds.
2. Scroll menu to “Parameter 15 – nEt” using the “SPEED” button to scroll up, and the “MODE” button to scroll down.
3. The current state of the network will display in the Parameter Value position (bottom left corner). It should display “InC”.
Note: If “EcL” is displayed, the HE-FT01 is already Excluded.
4. Start the Exclusion Mode from the gateway/controller.
5. Press the Minus “-” button in the HE-FT01 Parameter 15 to start the Exclusion process
6. Note that lines will be moving in the Parameter value position (bottom left corner).
7. The Antenna (📶) icon should appear in the bottom right corner and “EcL” in the value position if the Exclusion was successful.
8. If the Antenna with signal strength bars (📶) icon or “InC” in value position are displayed, repeat the Exclusion process.

Note: If the HE-FT01 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.

Note: If the HE-FT01 is included in the Z-Wave network the antenna icon will appear in the bottom right corner of the main screen with signal strength bars (📶).

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.

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-FT01 to a Z-Wave network using **SmartStart**:

1. Set the main controller in Security S2 Authenticated “Add Mode”
2. Input the HE-FT01 DSK code to the controller
3. Power on the device.
4. Wait for the Inclusion process to complete.
5. A successful “Add” will be confirmed by display of the Antenna with signal strength bars (📶) icon in the bottom right corner of the main screen.

Note: The device DSK and QR code are printed on the HE-FT01 back panel plus on the manual included in the HE-FT01 packaging.



Firmware OTA Update

To wirelessly update the HE-FT01 firmware, follow these steps:

1. Check the current firmware version in the settings Parameter 13
2. Start the process from the Z-Wave gateway/controller
3. Download the firmware that corresponds to the HE-FT01.
4. Set the main controller in Firmware OTA (“over-the-air”) Update Mode (see gateway/controller manual).
5. As soon as Firmware update begins, “LOAD” text will be displayed on the screen (this will take a few minutes).
6. When the Firmware has updated, “UPd” will display on the screen for three seconds and the HE-FT01 will reboot.
7. When the update has completed, the HE-FT01 will return to normal operation.
8. If desired, verify the update was successful by checking the firmware version in Parameter 13 of the Settings Mode.

Associations

Association enables the HE-FT01 to control other Z-Wave devices over the network. An Association Groups may include up to 50 other devices from different brands and/or manufacturers (10 devices on each group except group 1). The HE-FT01 has six association groups:

1st Association Group – “Lifeline”: reports the 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.

2nd Association Group – “Fan Low Speed (OUT-1)” is used to turn the associated devices on/off reflecting OUT-1 operation. The group supports one Node.

3rd Association Group – “Fan Medium Speed (OUT-2)” is used to turn the associated devices on/off reflecting OUT-2 operation. The group supports one Node.

4th Association Group – “Fan High Speed (OUT-3)” is used to turn the associated devices on/off reflecting OUT-3 operation. The group supports one Node.

5th Association Group – “Heater (OUT-4)” is used to turn the associated devices on/off reflecting OUT-4 operation. The group supports one Nodes.

6th Association Group – “Cooler (OUT-5)” is used to turn the associated devices on/off reflecting OUT-5 operation. The group supports one Node.

Note: Through Groups 2-6 the HE-FT01 sends Basic Set command with value 0 (Off) when the relay goes to OFF state and sends 255 (On) when the relay goes to ON state.

Z-Wave Plus V2 Specifications

Generic Device Class: GENERIC_TYPE_THERMOSTAT

Specific Device Class: SPECIFIC_TYPE_THERMOSTAT_GENERAL_V2

Supported Command Classes

Command Class	Version	Secure
COMMAND_CLASS_ZWAVEPLUS_INFO [0x5E]	V2	
COMMAND_CLASS_ASSOCIATION [0x85]	V2	YES
COMMAND_CLASS_ASSOCIATION_GRP_INFO [0x59]	V3	YES
COMMAND_CLASS_MULTI_CHANNEL_ASSOCIATION [0x8E]	V3	YES
COMMAND_CLASS_THERMOSTAT_OPERATING_STATE [0x42]	V1	YES
COMMAND_CLASS_THERMOSTAT_MODE [0x40]	V3	YES
COMMAND_CLASS_THERMOSTAT_FAN_STATE [0x45]	V2	YES
COMMAND_CLASS_THERMOSTAT_FAN_MODE [0x44]	V4	YES
COMMAND_CLASS_THERMOSTAT_SETPOINT [0x43]	V3	YES
COMMAND_CLASS_SENSOR_MULTILEVEL [0x31]	V11	YES
COMMAND_CLASS_METER [0x32]	V4	YES
COMMAND_CLASS_CLOCK [0x81]	V1	YES
COMMAND_CLASS_TRANSPORT_SERVICE [0x55]	V2	
COMMAND_CLASS_SECURITY [0x98]	V1	
COMMAND_CLASS_SECURITY_2 [0x9F]	V1	
COMMAND_CLASS_VERSION [0x86]	V3	YES
COMMAND_CLASS_MANUFACTURER_SPECIFIC [0x72]	V2	YES
COMMAND_CLASS_DEVICE_RESET_LOCALLY [0x5A]	V1	YES
COMMAND_CLASS_POWERLEVEL [0x73]	V1	YES
COMMAND_CLASS_SUPERVISION [0x6C]	V1	
COMMAND_CLASS_INDICATOR [0x87]	V3	YES
COMMAND_CLASS_CONFIGURATION [0x70]	V4	YES
COMMAND_CLASS_APPLICATION_STATUS [0x22]	V1	
COMMAND_CLASS_FIRMWARE_UPDATE_MD [0x7A]	V5	YES
COMMAND_CLASS_BASIC [0x20]	V2	YES

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

Thermostat Settings Using Z-Wave Protocol (Gateway)

All configuration parameters are accessed through COMMAND_CLASS_CONFIGURATION

Parameters 01 – 11, 14 – same with the device [Settings Menu](#) (see [parameter list](#) for details)

Parameters 12, 13, 15 ... 30 – reserved by the manufacturer

Parameter 31 – Sensors Consecutive Report Interval

When the device is connected to the Z-Wave gateway (controller), it periodically sends the gateway reports from room & floor temperature, humidity, and light sensors even if there are not 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 10 min.

Note: If the sensor readings change, the device will send the report to the gateway regardless of this parameter value. In order not to increase traffic on your network, it is not recommended to 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 32 – 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, we recommend not reducing this value.

Parameter 33 – Air Temperature Sensors Report Threshold

This parameter determines the change in temperature level (in °C) resulting in temperature sensor reports being sent to the gateway. The value of this parameter should be x10, e.g. for 0.4°C, use the value “40.” You may select from 0.5°C to 10°C. Use the value “0” if you need to stop sending the reports. The factory-default value is 0.5°C (5).

Parameter 34 – Humidity Sensor Report Threshold

This parameter determines the percentage change in relative humidity level which will trigger a report being sent to the gateway. From 2% 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.

Parameter 35 – Light Sensor Report Threshold

This parameter determines the change in the ambient illumination level that will trigger a 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.

Parameters 36-40 – Relays load power in watt.

It is possible to specify the consumption of the loads in watts for each relays channel.

The device will calculate total consumption relative to the time, during which the output of the relays is in the ON state.

Factory default value: 0

Parameter 41 – TIME mode operation

This parameter determines the Climate Mode (Heating or Cooling) to which HE-FT01 will switch when the TIME operating mode is selected. If the value = 1 the thermostat will go to Heating & Cooling mode, if value = 2 the thermostat goes to Heating mode, if the value = 3 the thermostat goes to Cooling Mode.

The factory default value is 1.

Parameters 42-45 – Schedule Time

Use these parameters to manual set the Morning, Day, Evening and Night times for the Temperature Schedules.

The value of these parameters has format HHMM, e.g. for 08:00 use value 0800 (time without a colon). From 00:00 to 23:59 can be selected.

The factory default value for Morning (Parameter 42) is 0600.

The factory default value for Day (Parameter 43) is 0900.

The factory default value for Evening (Parameter 44) is 1800.

The factory default value for Night (Parameter 45) is 2300.

Parameters 46-73 – Schedule Temperature

Use these parameters to manual set the temperature for each day Schedule.

The value of this parameter should be x10, e.g. for 22.5°C use value “225.” From 4°C to 37°C can be selected.

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	TIME FORMAT	Time format	0	0, 1
03	1 byte	WEEKDAY	Week Day	1	1, 2, 3, 4, 5, 6, 7
04	1 byte	HOUR	Time Hour	0	0...23
05	1 byte	MINUTE	Time Minute	0	0...59
06	1 byte	DEGREE MODE	Degree Mode	0	0, 1(C_F)
07	1 byte	AIR TEMP CORRECTION	Air Temperature Calibration in °C, x10	0	-95 ... 95
08	1 byte	TEMP HYSTERESIS	Temperature Hysteresis in °C, x10	5	2...100
09	1 byte	AUTO BRIGHTNESS	Display auto-brightness control	1	0, 1
10	1 byte	MANUAL BRIGHTNESS	Display manual brightness level	10	1...15
11	1 byte	TOUCH THRESHOLD	Touch buttons sensitivity. 5 = Highly sensitive. 50 = Lowest sensitivity	15	5...50
12, 13	1 byte	Reserved by the manufacturer			
14	1 byte	BASIC SET MODE	Mode to switch to when Basic Set command received	2	0, 1, 2, 3, 4, 5, 6, 7, 8, 9

15 ... 30	1 byte	Reserved by the manufacturer			
31	1 byte	SENSORS REPORT TIME	Sensors consecutive reporting interval, minutes	10	1...120
32	1 byte	CONSUMPTION REPORT TIME	Consumption meter consecutive reporting interval, minutes	10	1...120
33	1 byte	TEMPERATURE THRESHOLD	Temperature difference to send to controller, value X 10	5	0, 5...100
34	1 byte	HUMIDITY THRESHOLD	Humidity difference to send to controller, %	2	0, 2...25
35	1 byte	LIGHT THRESHOLD	Light sensor values difference to send to controller, %	50	0, 10...99
36	2 bytes	OUT-1 LOAD	Power of the Relay 1 load in W	0	0 ... 5000
37	2 bytes	OUT-2 LOAD	Power of the Relay 2 load in W	0	0 ... 5000
38	2 bytes	OUT-3 LOAD	Power of the Relay 3 load in W	0	0 ... 5000
39	2 bytes	OUT-4 LOAD	Power of the Relay 4 load in W	0	0 ... 5000
40	2 bytes	OUT-5 LOAD	Power of the Relay 5 load in W	0	0 ... 5000
41	1 byte	TIME MODE OPERATION	TIME mode operation	1	1, 2, 3
42	2 bytes	MORNING START TIME	Morning start time. Format: HHMM. e.g.08:00 should be sent as 0800	0600	0000...2359
43	2 bytes	DAY START TIME	Day start time. Format: HHMM.	0900	0000...2359
44	2 bytes	EVENING START TIME	Evening start time. Format: HHMM.	1800	0000...2359
45	2 bytes	NIGHT START TIME	Night start time. Format: HHMM.	2300	0000...2359
46	2 bytes	MONDAY MORNING TEMP	Monday Morning temperature, valueX10	240	40...370
47	2 bytes	MONDAY DAYTIME TEMP	Monday Day temperature, valueX10	200	40...370
48	2 bytes	MONDAY EVENING TEMP	Monday Evening temperature, valueX10	230	40...370
49	2 bytes	MONDAY NIGHT TEMP	Monday Night temperature, valueX10	180	40...370
50	2 bytes	TUESDAY MORNING TEMP	Tuesday Morning temperature, valueX10	240	40...370
51	2 bytes	TUESDAY DAYTIME TEMP	Tuesday Day temperature, valueX10	200	40...370
52	2 bytes	TUESDAY EVENING TEMP	Tuesday Evening temperature, valueX10	230	40...370
53	2 bytes	TUESDAY NIGHT TEMP	Tuesday Night temperature, valueX10	180	40...370
54	2 bytes	WEDNESDAY MORNING TEMP	Wednesday Morning temperature, valueX10	240	40...370
55	2 bytes	WEDNESDAY DAYTIME TEMP	Wednesday Day temperature, valueX10	200	40...370
56	2 bytes	WEDNESDAY EVENING TEMP	Wednesday Evening temperature, valueX10	230	40...370
57	2 bytes	WEDNESDAY NIGHT TEMP	Wednesday Night temperature, valueX10	180	40 ... 370
58	2 bytes	THURSDAY MORNING TEMP	Thursday Morning temperature, valueX10	240	40...370
59	2 bytes	THURSDAY DAYTIME TEMP	Thursday Day temperature, valueX10	200	40...370
60	2 bytes	THURSDAY EVENING TEMP	Thursday Evening temperature, valueX10	230	40...370
61	2 bytes	THURSDAY NIGHT TEMP	Thursday Night temperature, valueX10	180	40...370
62	2 bytes	FRIDAY MORNING TEMP	Friday Morning temperature, valueX10	240	40...370
63	2 bytes	FRIDAY DAYTIME TEMP	Friday Day temperature, valueX10	200	40...370
64	2 bytes	FRIDAY EVENING TEMP	Friday Evening temperature, valueX10	230	40...370
65	2 bytes	FRIDAY NIGHT TEMP	Friday Night temperature, valueX10	180	40...370
66	2 bytes	SATURDAY MORNING TEMP	Saturday Morning temperature, valueX10	240	40...370
67	2 bytes	SATURDAY DAYTIME TEMP	Saturday Day temperature, valueX10	200	40...370
68	2 bytes	SATURDAY EVENING TEMP	Saturday Evening temperature, valueX10	230	40...370
69	2 bytes	SATURDAY NIGHT TEMP	Saturday Night temperature, valueX10	180	40...370

70	2 bytes	SUNDAY MORNING TEMP	Sunday Morning temperature, valueX10	240	40...370
71	2 bytes	SUNDAY DAYTIME TEMP	Sunday Day temperature, valueX10	200	40...370
72	2 bytes	SUNDAY EVENING TEMP	Sunday Evening temperature, valueX10	230	40...370
73	2 bytes	SUNDAY NIGHT TEMP	Sunday Night temperature, valueX10	180	40...370

Warranty (2-Year)

HELTUN warrants this product to be free from defects in the workmanship or materials, under normal use and service, for a period of two (2) years from the date of purchase by the consumer. If at any time during the warranty period the product is determined to be defective or malfunctions, HELTUN will repair or replace it (at HELTUN's option).

If the product is defective, (i) return it, with a bill of sale or other dated proof of purchase, to the place from which you purchased it; or (ii) contact HELTUN Customer Care at support@heltun.com. HELTUN Customer Care will make the determination whether the product should be returned or whether a replacement product can be sent to you.

THIS WARRANTY DOES NOT COVER REMOVAL OR REINSATLLATION COSTS. THIS WARRANTY SHALL NOT APPLY IF IT IS SHOWN BY HELTUN THAT THE DEFECT OR MALFUNCTION WAS CAUSED BY DAMAGE WHICH OCCURRED WHILE THE PRODUCT WAS IN THE POSSESSION OF A CONSUMER. THIS WARRANTY SHALL NOT OBLIGATE HELTUN FOR ANY LABOR COSTS AND SHALL NOT APPLY TO DEFECTS IN WORKMANSHIP OR MATERIALS FURNISHED BY YOUR INSTALLER AS CONTRASTED TO DEFECTS IN THE PRODUCT ITSELF. IMPLIED WARRANTIES OF MERCHANTABILITY OF FITNESS FOR A PARTICULAR PURPOSE SHALL BE LIMITED IN DURATION TO THE AFORESAID TWO YEAR PERIOD. HELTUN'S LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, OTHER THAN DAMAGES FOR PERSONAL INJURIES, RESULTING FROM ANY BREACH OF THE AFORESAID IMPLIED WARRANTIES OR THE ABOVE LIMITED WARRANTY IS EXPRESSLY EXCLUDED. THIS LIMITED WARRANTY IS VOID IF DEFECT(S) RESULT FROM FAILURE TO HAVE THIS PRODUCT INSTALLED BY A QUALIFIED HEATING AND AIR CONDITIONING CONTRACTOR. IF THE LIMITED WARRANTY IS VOID DUE TO FAILURE TO USE A QUALIFIED CONTRACTOR, ALL DISCLAIMERS OF IMPLIED WARRANTIES SHALL BE EFFECTIVE UPON INSTALLATION.

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