

OVERVIEW

The HELTUN fan coil thermostat is a programmable electronic room heating/cooling thermostat designed for flush mounting into most standard wall boxes. It maintains a constant ambient temperature using internal air temperature sensor.

It is recommended for the control of air conditioning systems such as split and multi-split systems, systems with chillers and fan coil units, central air conditioning systems, multi-zone VRF / VRV air conditioning systems, etc. The fan speed is controlled by three relay outputs and two more relay outputs are for the control of cooling and heating valves. The thermostat has two independent inputs for relay channels which allow it to control fan and valves with different power sources or to use relay outputs as dry contacts. Each relay can be loaded up to 5A.

The thermostat has an LCD screen with auto or manual adjustable brightness, six sensitive capacitive touch control buttons and internal air temperature, humidity and light sensors. The thermostat is also equipped with software energy consumption logic.

The device has an integrated 5th generation secure Z-Wave Plus module which allows the use of the device with Z-Wave Home Automation system. Non secure, S0 secure, S2 unauthorized and S2 authorized inclusion modes are supported. The thermostat can be associated and control up to 50 different Z-Wave devices.

One of three operation modes can be selected either manually or via the Z-Wave controller/gateway: COM, TIME, ECO. The thermostat operates in four climate modes: Heating & Cooling, Heating only, Cooling only, Ventilation.

The LCD screen with white icons has a user-friendly interface, displaying: air temperature, humidity level, user set temperature, operating mode, climate mode, fan speed, time, weekday and Z-Wave network status.

TECHNICAL SPECIFICATIONS

- Front frame dimensions: 89x89x9mm
- Back dimensions: 53x53x28mm
- Material: Flame retardant plastic, tempered glass
- 4 frame colors: Silver, Chrome, Black, White
- 6 glass colors: White, Black, Yellow, Green, Red, Blue
- LCD: 73x42mm, black with white icons
- 6 sensitive 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 relays input
- Relays life time: 100.000 switches
- Internal ambient brightness sensor
- Internal temperature sensor
 - Measurement range: -30°C to +80°C
 - Accuracy: ±0.5°C
- Internal humidity sensor
 - Measurement range: 0 – 80%RH
 - Accuracy: ±3.0%RH
- Software energy consumption logic
- Operating temperature: 0°C – +50°C
- Power supply: 100V – 230VAC, 50Hz/60Hz
- Power consumption: 1.5W
- IP class: IP21
- Z-Wave Plus SDK: V6.71
- Security: S0, S2 unauthorized, S2 authorized

FUNCTIONAL SPECIFICATIONS

- Inclusion/exclusion into/from z-wave network
 - Non Secure
 - S0 secure
 - S2 unauthorized, S2 authorized
- Association control of 50 devices from network
- 3 operation modes:
 - COM - comfort (full power) mode,
 - TIME - 4 time schedule for 7 days of the week,
 - ECO - energy saving mode
- 4 climate modes:
 - Heating & Cooling,
 - Heating only,
 - Cooling only,
 - Ventilation
- 3 levels for Fan speed control
- Auto or manual Fan speed control
- Temperature sensors calibration
- Temperature set intervals: 4.0°C to 37.0°C
- Choosing a temperature hysteresis
- Choosing a degree (Celsius / Fahrenheit)
- Adjustable LCD brightness: Auto or Manual
- LCD standby mode
- Child lock
- Power consumption logic
- Factory reset
- OTA function (Firmware update over the air).

INSTALLATION

We recommend the installation conforms to your local regulations and is undertaken by a qualified electrical engineer. Positioning of the thermostat is of the utmost importance and must be away from sunlight and sources of direct heat. We recommend installation about 1.5 metres above the floor.

Electrical power must be switched off during all aspects of installation.

1. Remove the front cover and back plate of the thermostat from the main box.
2. ENSURING THE POWER IS OFF and using a small cross head (Phillips) screwdriver connect the wires to the thermostat terminals:
 - a) POWER is for the device lead power source. It can be 110VAC – 240VAC
 - b) Connect the required power source for Fan (Relays 1, 2 and 3 outputs) to terminal IN-1-3.
 - c) Connect the required power source for Heating / Cooling valves (Relays 4 and 5 outputs) to terminal IN-4-5.
 - d) 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 middle speed
 - OUT-3 for the Fan high speed
 - OUT-4 for the cooling valve
 - OUT-5 for the heating valve
3. Making sure "TOP" is uppermost secure the back plate into the wall mounting box using the screws provided. Install the thermostat body by carefully aligning the top snap connectors and then pushing on the front cover with gentle pressure ensuring it snaps firmly into position all the way round.
4. Switch On the main power and the thermostat will start up showing the original default factory settings.
5. Remove protective film by pulling the tab in the top right hand side.

DISASSEMBLY

1. ENSURE POWER IS SWITCHED OFF AND SCREEN IS BLANK.
2. To remove thermostat body grasp firmly and pull back from the bottom until all tabs disconnect.
3. Remove screws from back plate and disconnect the wires.

TOUCH PANEL OPERATION

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

- + Plus
- Minus
- 🕒 Time
- 🌡️ Climate
- SPEED Fan Speed
- MODE Mode

"+" key will increase set point temperature by 0.5°C (or 1°F), and "-" key will decrease set point temperature by 0.5°C (or 1°F). The set point temperature is displayed in the bottom left corner of the display as "SET TEMP".

Note: The minimum set point is 4.0°C (39°F) and the maximum set point is 37.0°C (99°F).

The thermostat has four working mode – HEATING, COOLING, VENTILATION and IDLE. The state is displayed in the center at the bottom of the screen.

OPERATING MODES

The thermostat current mode is displayed in the middle right line of display under "OPERATING MODE" section.

The thermostat can operate in 4 climate modes:

- 🌡️ – Heating & Cooling
- 🔥 – Heating only
- ❄️ – Cooling only
- 🌀 – Ventilation only

Change the climate mode by touching the 🌡️ key and reselecting as above.

And it has 3 operating modes:

- COM – general comfort (full power) mode.
- TIME – time mode allows to set a different temperature for different periods of the day
- ECO – economy (power efficient / energy saving) mode.

Change the operating mode by touching the MODE key and reselecting as above.

Each operating modes have individual temperature set points. The thermostat will operate automatically depending on the current SET TEMP point. To change the set point values choose the desired mode and press "+" key to increase or press "-" key to reduce the value. Alternatively control from the Z-wave gateway.

COM (comfort) MODE

This mode is recommended for normal comfort.
Factory default set point is 25.0°C (77°F)

TIME MODE

Allows to set up time and different temperature for Morning, Day, Evening, Night period for each 7 days of the week.
Factory defaults: Morning time = 06:00, t=24.0°C, Day time = 09:00, t=20.0°C, Evening time = 18:00, t=23.0°C, Night time = 23:00, t=18.0°C

ECO (energy saving) MODE

Use this mode if lower energy consumption is required. It can also be used when absent from all or part of the property for a length of time.
Factory default set point is 20.0°C (68°F)

Note: The minimum set point for each mode is 4.0°C (39°F) and the maximum set point is 37.0°C (99°F).

TIME SETTINGS

Adjust home temperature according to personal habits by reducing it whilst away from home and increasing in the evenings and early mornings.

The thermostat can be set individually for morning, day, evening and night. For example, it can be assigned for Morning period start at 7.00, then Day starting at 9.00 (when absent for work etc.), then Evening starting at 18:00 (half an hour before occupants return). The Night regime then begins at 23.30 (bedtime).

Separate temperature settings can be made for all 4 periods for every day of the week.



To set up the time and temperature for each period go to the Time menu by pressing and holding the 🕒 key for 3 seconds. The display will show the Time menu.

To set up the start time for each period choose the period by pressing the 🕒 key than adjust the time by pressing the SPEED key for increase or MODE key for decrease. Do this action for all 4 periods: Morning, Day, Evening and Night.

The temperature for each period is displayed in the left bottom corner. To set up it choose the week day by pressing the 🌡️ key, choose the period by pressing 🕒 key and adjust the temperature by pressing "+" or "-" keys. Do this action for every day of the week.

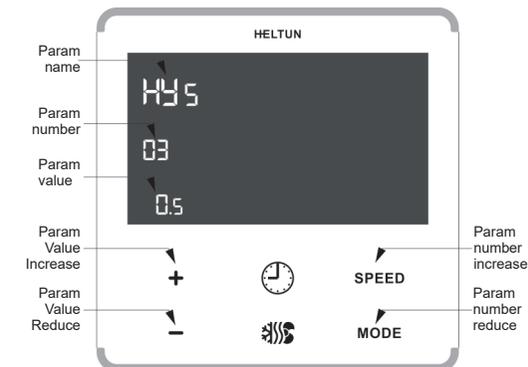
Note: TIME mode works only in case of the correct time being set. The time can be automatically corrected by polling from your gateway if the Parameter 8 value is 1 or set manually in Parameters 10, 11 and 12 in the settings menu.

Note: In the TIME mode the SET POINT of the thermostat will be automatically changed depending on the period. The SET POINT can be adjusted manually out of the TIME menu but it will be effective only until the next period.

SETTINGS MODE

To activate the settings mode, press and hold the 🌡️ key for 3 seconds. The display will show the settings menu. In the top left corner is the parameter display indication (the parameter name), in the left center is the parameter number and in the left bottom corner is the parameter value.

To scroll the menu navigation just press the SPEED key to go up and the MODE key to go down. To change the parameters value press the "+" or "-" keys.



To leave the Settings mode to go to the main display mode press and hold the 🌡️ key for 3 seconds.

The thermostat will automatically leave to the display mode if no action is detected for 10 seconds.

PARAMETERS LIST

Parameter Number	Display Indication	Description	Default Value	Available Values
01	dEdg	Degree Mode	°C	°C, °F
02	Atc	Air Temperature Calibration, °C / °F	0 / 0	-9.5-9.5 in °C -17 - 17 in °F
03	HYS	Temperature Hysteresis, °C / °F	0.5 / 0.9	0.1-9.5 in °C 0.1 - 17 in °F
04	diF	Temperature difference to send to Z-Wave controller, °C / °F	0.2 / 0.3	0.1-1.0 in °C 0.1 - 1.8 in °F
05	iCr	Time correction by Z-Wave controller	1	0, 1
06	iFo	Time format	0	0, 1
07	dAy	Week Day	1	1 - 7
08	iH	Time Hour	0	0 - 23
09	iL	Time Minute	0	0 - 59
10	brH	Active display brightness level	4	1 - 4, but =>Param23
11	brL	Inactive display brightness level	3	1 - 4, but <=Param22
12	Abr	Auto LCD brightness control	1	0, 1
13	Ab1	Auto brightness level 1 max lumens	30	0 - 5000
14	Ab2	Auto brightness level 2 max lumens	200	0 - 5000
15	Ab3	Auto brightness level 3 max lumens	3000	0 - 5000
16	gat	Gateway	0	0, 1
17	nEt	Inclusion / Exclusion Mode	Ecl	Inc, Ecl

Parameter 01 (dEdg) – Degree mode

Celsius (°C) or Fahrenheit (°F) degree mode can be chosen. Floor and air temperature, as well as set point and all parameters will be indicated in the chosen mode. Factory default value is Celsius (°C).

Parameter 02 (Atc) – Air Temperature Calibration

This parameter defines the offset value for room air temperature. If the internal air temperature sensor is not correctly calibrated changes of temperature can be made by adjusting the value by up to +9.5°C or +17°F. This value will be added or subtracted from the internal air temperature sensor reading. Factory default value is 0

Parameter 03 (HYS) – HYSTERESIS

The parameter defines the hysteresis value for temperature control. The thermostat will stabilize the temperature with selected hysteresis. For example, if the SET POINT is set for 25°C and HYSTERESIS is set for 0.5°C the thermostat will change the state to HEATING if the temperature will be lower than 24.5°C and it will change the state to COOLING if temperature reaches 25.5°C.

You can change the hysteresis from 0.1°C up to a maximum of 9.5°C in Celsius mode and from 0.1°F to 17°F in Fahrenheit mode. Factory default values are 0.5°C or 0.9°F.

Parameter 04 (diF) – Temperature difference to send to Z-Wave controller / gateway

The thermostat will send a new temperature to the gateway only in case if the temperature change is greater or equal than the value specified in this parameter. From 0.1C to 1.0C can be chosen. Factory default value is 0.2C

Note: The thermostat is very sensitive to changes of ambient temperature and can often vary by ±0.1C, therefore it is recommended to set this parameter from 0.2 and above to reduce the load on your Z-Wave network.

Parameter 05 (iCr) – Time correction by Z-Wave controller / gateway

If this parameter value is 1 and the thermostat is connected to Z-Wave gateway the thermostat time and weekday will be periodically polled and corrected from the gateway. To switch off the auto correction set the parameter value 0. Factory default value is 1.

Parameter 06 (iFo) – Time format

24-hours or 12-hours time indication format can be chosen.

0 = 24 hours format. 1 = 12 hours (AM/PM) format

Factory default value is 0.

Parameter 07 (day) – Week day

This parameter allows manual adjustment of the day of the week in case the thermostat is not connected to any gateway or Parameter 05 (auto correction) selected as 0.

Parameter 08 (iH) – Hour

This parameter allows manual adjustment of the hours.

Parameter 09 (iL) – Minute

This parameter allows manual adjustment of the minutes.

DISPLAY BRIGHTNESS

The thermostat has two states of brightness.

Active state – when press any key and commence adjustments.

Inactive state – after five seconds of inactivity it will revert to inactive state.

The display brightness in either state can be adjusted.

Parameter 10 (brH) – Display brightness high level

The brightness level can be selected in the active state from values 1 (lowest brightness) to 4 (highest brightness) but the level cannot be lower than the level of brightness for the inactive state (param 11). Factory default value is 4.

Parameter 11 (brL) – Display brightness low level

This parameter defines the brightness level of the display in the inactive state. The level can be selected from values 1 to 4 but the level cannot be higher than the level of brightness for the active state (param 10). Factory default value is 3.

Parameter 12 (Ab2) – Auto brightness

The thermostat can adjust its display brightness automatically depending on the illumination of the ambient environment. The comfort brightness of the screen can be chosen depending on the room illumination in Parameters 13, 14 and 15.

Value 1 = Active the function, Value 0 = Inactive the function

Factory default value is 1.

Note: The illumination of the environment can be checked at any time in the centre of the display (on time position) in the device MENU on Parameter 12 or via your Z-Wave gateway

Parameter 13 (Ab1) – Auto brightness level 1 max lumens

The value indicates the maximum level of ambient illumination during which the brightness of the display will be at level 1 (at the lowest level). For example if this parameter value is set 30 and the ambient illumination is in range 0-30 the display will be in lowest brightness level. As soon as the illumination will be 31 or higher the display brightness will be changed to Level 2. Factory default value is 30.

Parameter 14 (Ab2) – Auto brightness level 2 max lumens

This parameter indicate the maximum illumination for display brightness level 2. In case if the illumination is in range Parameter 13 (Ab1) - Parameter 14 (Ab2) the display brightness will be on level 2. If the illumination drops below the value of parameter 13 the brightness of the display will be decreases to level 1, and if the illumination increases beyond the value of parameter 14 the display brightness will rise to level 3. Factory default value is 200.

Parameter 15 (Ab3) – Auto brightness level 3 max lumens

This parameter indicate the maximum illumination for display brightness level 3. In case if ambient illumination raise above this value the display brightness will be changed to Level 4. Factory default value is 3000.

Parameter 16 (gat) – Gateway

If Fibaro Home Center Lite or Fibaro Home Center 2 is used as a gateway for correct communication of the devices set this parameter value 1. For other gateways choose 0. Factory default value: 0.

Parameter 17 (nEt) – INCLUSION / EXCLUSION MODE

If the thermostat is included in the z-wave network the antenna will be indicated in the main display and Inc will be indicated in the Param value. If the thermostat is not included in the network, no antenna will be indicated in the main display and the Param value will be ECL.

To include or exclude the thermostat into/from your home automation gateway, activate inclusion or exclusion mode on your gateway then go to Param 17 in the device Menu and press "+" key for inclusion and the "-" key for exclusion.

For more details go to point "Z-Wave Network" of this manual.

CHILD LOCK – LOC

To activate the child lock mode, press and hold the SPEED key till the  icon will be indicated in the bottom right corner of the display (about 5 seconds). To deactivate the child lock press the SPEED key until the  icon disappears.

FACTORY RESET – RES

By pressing and holding the "MODE" key for 6 seconds, the thermostat will enter the Factory Reset mode and "Res" will appear in left bottom corner, "y" and "n" in the center. Press "+" key if reversion to factory default settings is required or the SPEED key to cancel. The factory reset will change all the parameters to the original factory defaults and will also exclude from the Z-Wave network.

Z-WAVE NETWORK

Inclusion

To include the thermostat in the Z-Wave network

- Go to the "SETTINGS" mode by pressing and holding the  key for 3 seconds
- Go to "Parameter 17 – nEt" of the menu by using the SPEED key for scrolling up and the "MODE" key for scrolling down in parameters.
- In the value position will be seen the current state of the network. It should be ECL. If Inc is indicated, an exclusion must be first performed.
- Start the inclusion mode from the gateway
- Press "+" key on the device to start inclusion process
- Lines will be moving in value position.
- The "Inc" should appear in the value position if the inclusion has been successful. The "Err" will appear if the inclusion was not completed.

Note: In case the device has been part of the Z-Wave network before and not excluded since, inclusion is not possible. In this case, exclusion must be performed before inclusion.

If the thermostat is included in the network, in the bottom right corner of the main screen the antenna icon will be displayed with connection lines . If not on the network then it will be displayed without lines .

Security: S0, S2 unauthorized and S2 authorized inclusion modes are supported. If you use S2 authorized inclusion mode the security key should be used in inclusion process. **NOTE:** Be sure to save this key. Without the key it is impossible to perform an inclusion in S2 authorized mode.

Exclusion

To exclude the thermostat from the Z-Wave network

- Go to "SETTINGS" mode by pressing and holding the  key for 3 seconds
- Go to "Parameter 17 – nEt" of the menu
- In the value position the current state of network state will be displayed. It should be "Inc". If the "ECL" is indicated the device is already excluded.
- Start the exclusion from the gateway.
- Press the "-" key to start the exclusion process
- Lines will be moving in the value position.
- The "Ecl" should appear with successful deletion.
- If the "Err" appear then start the exclusion process again.

If the thermostat is included in the network, in the bottom right corner of the main screen the antenna icon will be displayed with connection lines . If not on the network it will be displayed without lines .

ASSOCIATION

Association enables the thermostat to control other Z-Wave products from the network. Up to 50 other products from different manufacturers can be within the association grouping. The thermostat has six association groups:

Group 1 is for Life Line and used to connect Z-Wave gateway.

Groups 2-6 are assigned to relays 1-5 and can be associated with up to 10 devices each. Through Groups 2-6 the thermostat sends Basic Set command with value 0 (Off state) when the relay goes to OFF state and sends 255 (ON state) when the relay goes to ON state.

THERMOSTAT SETTINGS USING Z-WAVE PROTOCOL (GATEWAY)

All configuration parameters are accessed through COMMAND_CLASS_CONFIGURATION

Parameter Number	Parameter Size	Description	Default Value	Available Values
01	1 byte	Degree Mode (0=°C, 1=°F)	0	0, 1
02	2 bytes	Air Temperature Calibration in °C, x10	0	-95 - 95
03	1 byte	Temperature Hysteresis in °C, x10	5	1 - 95
04	1 byte	Temperature difference to send to controller, value X 10	2	1 - 10
05	1 byte	Time correction by controller	1	0, 1
06	1 byte	Time format	0	0, 1
07	1 byte	Week Day	1	1 - 7
08	1 byte	Time Hour	0	0 - 23
09	1 byte	Time Minute	0	0 - 59
10	1 byte	Active display brightness level	4	1 - 4, but =>Param23
11	1 byte	Inactive display brightness level	3	1 - 4, but <=Param22
12	1 byte	Auto LCD brightness control	1	0, 1
13	2 bytes	Auto brightness level 1 max lumens	30	0 - 5000
14	2 bytes	Auto brightness level 2 max lumens	200	0 - 5000
15	2 bytes	Auto brightness level 3 max lumens	3000	0 - 5000
16	1 byte	Gateway	0	0, 1
17-50		Reserved by manufacturer		
51	1 byte	Touch buttons sensitivity. 20=Super sensitive. 70=lowest sensitivity.	50	20 - 70
52	2 bytes	Power of the Relay 1 load in W	0	0 - 5000
53	2 bytes	Power of the Relay 2 load in W	0	0 - 5000
54	2 bytes	Power of the Relay 3 load in W	0	0 - 5000
55	2 bytes	Power of the Relay 4 load in W	0	0 - 5000
56	2 bytes	Power of the Relay 5 load in W	0	0 - 5000
57	2 bytes	Morning start time. Format: HHMM. e.g.08:00 should be sent as 0800	0600	0000 - 2359
58	2 bytes	Day start time. Format: HHMM.	0900	0000 - 2359
59	2 bytes	Evening start time. Format: HHMM.	1800	0000 - 2359
60	2 bytes	Night start time. Format: HHMM.	2300	0000 - 2359
61	2 bytes	Monday Morning temperature, valueX10	240	40 - 370
62	2 bytes	Monday Day temperature, valueX10	200	40 - 370
63	2 bytes	Monday Evening temperature, valueX10	230	40 - 370
64	2 bytes	Monday Night temperature, valueX10	180	40 - 370
65 - 68	2 bytes	Tuesday schedule temperatures: P65=morning t°C, P66=day t°C, P67=evening t°C, P68=night t°C		40 - 370
69 - 72	2 bytes	Wednesday schedule temperatures		40 - 370
73 - 76	2 bytes	Thursday schedule temperatures		40 - 370
77 - 80	2 bytes	Friday schedule temperatures		40 - 370
81 - 84	2 bytes	Saturday schedule temperatures		40 - 370
85 - 88	2 bytes	Sunday schedule temperatures		40 - 370

2-YEAR LIMITED WARRANTY

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 shall 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. 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 REINSTATLLATION 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 THERMOSTAT 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 THERMOSTAT 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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