HEATIT DIN THERMOSTAT

Installers manual

PRODUCT DOCUMENTS

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Heatit DIN Thermostat
54 304 39

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1. INTRODUCTION

DIN thermostat. Heatit DIN Thermostat is an electronic multifunction thermostat designed for electrical heating. The thermostat has a user-friendly interface that can be controlled via the buttons on the front of the thermostat.

The Heatit DIN Thermostat is a versatile solution for both residential and industrial use. It can function as a standard floor heating thermostat, offering simple temperature control with three modes: Heat, Cool, and Eco.
Additionally, it features a specially designed industrial function (INDU) that allows it to handle setpoints ranging from -30°C to 85°C, making it ideal for demanding industrial applications. It can also be used as a plus/minus snow melting thermostat (PLUS), adjusting temperatures for efficient snow and ice melting on outdoor areas, driveways, or stairs. With the Heatit DIN Thermostat, you get precise temperature control for a wide range of purposes.

The thermostat clicks easily onto a standard DIN rail and can be installed in the main switchboard. The thermostat has connection for two external temperature sensors.

Heatit DIN Thermostat has active power metering and it gives you real time information about your power consumption. It also allows you to set the power metering value manually in case of connection with a contactor.

The device has implemented ZeroX™ technology. This technology makes sure the relay switches at 0V when turning on and off. With this technology the thermostat will have a much longer lifetime.

The thermostat can withstand a resistive load of up to 16A/3600W at 230VAC. For loads above 13A, we recommend using a contactor.
The thermostat is designed for resistive loads. When using large resistive, capacitive, or inductive loads, a contactor should be used.

2. INSTALLATION DISCLAIMER

Installation must be done by a qualified electrician in accordance with national building codes. Before installation, disconnect the power to the device from the mains. During installation of the device, power to the device must be disconnected AT ALL TIMES!

3. QUICK START

1. Switch off the mains voltage (disable the fuse).
2. Fasten the device onto the DIN rail.
3. Connect the wires according to the description in Chapter "Connections".
4. After verifying the connections, switch on the mains voltage.

4. CONNECTIONS

Max tightening torque for terminal screws: 2Nm.
If the cable used has multiple strands using an end sleeve is advised.

TS Temperature/Floor sensor
NTC type 6.8, 10, 12, 15, 22, 33, 47 or 100kΩ.
Default 10kΩ.

ES External sensor
NTC type 6.8, 10, 12, 15, 22, 33, 47 or 100kΩ.
Default 10kΩ.

Lo Live out, output from the device.
L Live, Power connection (Live) 230VAC.
No Neutral out, output from the device.
N Neutral, Power connection (Neutral) 230VAC.

5. INSTALLATION

In order to have power metering values, the load needs to be connected to both N Out and L Out.

Use the following procedure to install the DIN thermostat:

1. Place the top part of the DIN rail mounting on the Heatit DIN Thermostat over the top of the DIN rail so it hooks onto the rail.
2. Use a flathead screwdriver to push the DIN rail mounting tab downward.
3. Tilt the bottom of the Heatit DIN Thermostat until it touches the DIN rail. Now let go of the DIN rail mounting tab so it locks into place.
4. Make all the necessary connections to the device (max tightening torque for all screw terminals is 2Nm). Apply power to the device after all connections have been made.

6. THERMOSTAT CONTROLS

ICON	NAME	DESCRIPTION
—	Left	Previous. Decrease set temperature.
☰	Middle	Menu confirm. Menu enable.
+	Right	Next. Increase set temperature.

7. LOCAL SETTINGS MENU

To enter the settings menu, hold the Center button for 5 seconds. The display will display "OFF". You are now in the settings menu. While in the settings menu, "SET" will be displayed in the bottom right of the display. You can now scroll up and down using the Left and Right buttons. Some options have submenus. To navigate the submenus, press the Center button once to enter or exit the submenu. Press the Left and Right buttons to find your desired value and hold the Center button for 2 seconds to confirm your selection. "STOR" will appear to indicate settings are stored.

8. DISPLAY MENU STRUCTURE

Each function has its own menu structure, for the menu structures, see flowcharts at the end of this manual.

9. STARTUP

After powering up the device for the first time, all parameters will have default settings and the thermostat will start by asking which function is to be used.

10. FACTORY RESET

Enter the menu by holding the Center button for about 5 seconds. Navigate in the menu with the Right button until you see "FACT." Press the Center button once, and when "-- --" starts blinking in the display, hold the Center button for about 5 seconds to perform a reset. You may also initiate a reset by holding the Right and Center buttons together for 60 seconds.

When either of these procedures has been performed, the thermostat will perform a complete factory reset. The device will display "RES" for 5 seconds while performing a factory reset. When "RES" is no longer displayed, the thermostat has been reset.

11. FUNCTIONS

11.1 THER, Thermostat mode

When the device is set to THER, it will operate as a normal thermostat. Power regulator (PWER) is limited to thermostat mode.

11.2 INDU, Industrial mode

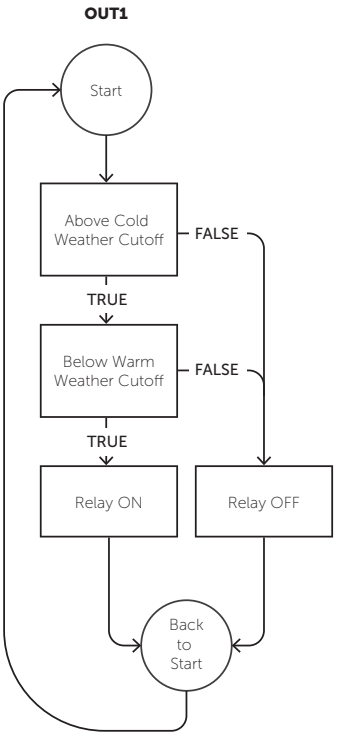
When the device is set to INDU the operating parameters are changed. The setpoint can instead of 2°C and 40°C, be set to -30°C to 85°C.

11.3 PLUS, Plus/Minus mode

In this mode, the thermostat can be used to control outdoor snow melting heating cables using either the outside temperature, or with a combination of the outside temperature and the ground temperature.

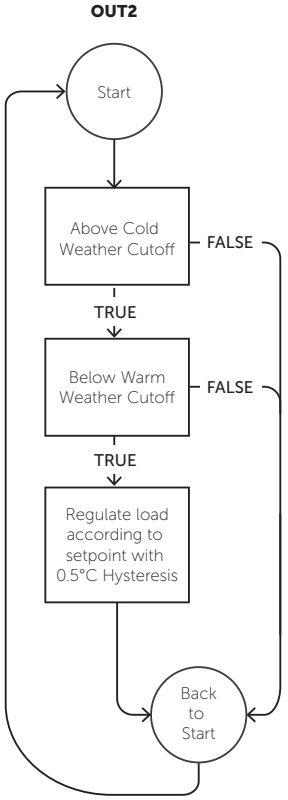
OUT1

In OUT1, the load is turned on when the measured external sensor temperature is between the COLD and WARM limits.



OUT2

In OUT2, it regulates the temperature in the ground based on a setpoint. It does this only when the external sensor temperature is within the COLD and WARM limits.



12. STANDBY AND MAIN SCREEN

When the thermostat remains untouched for a while, it will automatically go to the standby screen. The standby screen will show you certain information based on which mode the thermostat is set to.
During THER and INDU mode, it will show the setpoint temperature by default. By pressing any button once, you will see the measured temperature. By pressing the Left or Right button multiple times, you will change the setpoint.

In PLUS, it changes depending on if OUT1 or OUT2 is chosen. During standby in OUT1, it will show the Outdoor temperature, while in OUT2, it will show the Setpoint. Pressing any button while in OUT1 doesn't change anything. Pressing any button in OUT2 will first show the measured Outdoor temperature, and pressing the Left or Right button multiple times will allow you to change the regulation setpoint for the ground sensor.

13. TEMPERATURE SHOWN IN DISPLAY

During standby, the display shows the setpoint by default. You can change what is shown by choosing either measured temperature "RELT", or the setpoint "SETT"
You select "SETT" or "RELT" via holding down the middle button for 2 seconds on the "MODE" menu choice.

DESCRIPTION	MENU STRUCTURE	PARAMETER
Temperature display	Local Settings (MODE)	–

14. CHOICE OF SENSOR

The thermostat has multiple sensors and sensor modes. This lets you configure the thermostat to work correctly in most installations. The sensor mode/operating is selected from the menu option "OPER".

DESCRIPTION	MENU STRUCTURE	PARAMETER
Sensor mode	OPER	–

Available sensor modes for THER and INDU:

F Temperature/Floor sensor
A2 External room sensor
A2F External room sensor + Temperature/Floor sensor
PWER Power regulator mode (no sensor used) (Limited to THER)

Available sensor modes for PLUS:

OUT1 Outdoor air temperature
OUT2 Outdoor air temperature and ground sensor

NOTE: Some types of floors require a limit of 27°C for the floor temperature (check the manual from the floor manufacturer). An external floor sensor must be connected to monitor and control the floor temperature when A2F is selected. By default, the floor temperature maximum limit is set to 27°C. The minimum and maximum temperature limits are 2°C and 40°C respectively.

15. SELECTING SENSOR VALUE

The thermostat allows the selection of multiple different resistance values for the NTC sensors.
Both sensors must use the same NTC value.
The supported sensor values are as follows: 6.8, 10, 12, 15, 22, 33, 47 or 100KΩ. You select "SEN" via the menu option, or by setting Parameter 3 (Sensor value (SEN)).

DESCRIPTION	MENU STRUCTURE	PARAMETER
Sensor value	SEN	–

16. CALIBRATION

If the temperature sensor readout is inaccurate, you can correct it by up to ±6°C. You calibrate using the CAL menu option and selecting the appropriate sensor. The thermostat then displays the calibrated value.

DESCRIPTION	MENU STRUCTURE	PARAMETER
Floor sensor	CAF	–
External sensor	CAE	–

17. BRIGHTNESS

The display brightness for active and standby states are managed separately. You can set the values from the menu using the menu options "BR1" for active display brightness, and "BR2" for standby display brightness under the "BRIT" menu.

DESCRIPTION	MENU STRUCTURE	PARAMETER
Active display brightness	BR1	–
Standby display brightness	BR2	–

18. PRINCIPLES OF REGULATION

The thermostat uses temperature readings from the internal sensor and/or from external wired sensors, it regulates the temperature using either hysteresis (HYST) or PWM based on your choice.

You select "HYST" or "PWM" via the REG menu option.

DESCRIPTION	MENU STRUCTURE	PARAMETER
Regulation mode	REG	–

18.1 Hysteresis

Hysteresis sets the offsets that are used with the setpoint to determine when the load is switched on and off relative to the measured temperature.

You can adjust the thermostat hysteresis, choosing values between 0.3°C and 3.0°C using "HYST". The default setting is 0.5°C. When using water-based heating, we recommend a hysteresis of 1.0°C.

You may change the hysteresis by entering the local settings menu and holding the Center button for 2 seconds when "REG" is displayed. Here you can choose values between 0.3 and 3.0.

DESCRIPTION	MENU STRUCTURE	PARAMETER
Temperature control hysteresis	HYST	–

18.2 Pulse-width modulation PWM

With PWM regulation enabled, the thermostat will regulate based on duty cycles. The thermostat is turned on and off in percentage intervals of the cycle. The amount of time the relay will be on is based on how far the measured temperature is from the setpoint.

19. OPEN WINDOW DETECTION (OWD)

Open Window Detection (OWD) is a function which will reduce the thermostat setpoint on detection of an open window. This happens when the temperature sensor registers a rapid temperature drop.

When OWD is activated, the setpoint is reduced to 5°C in order not to waste energy. OWD will automatically be cancelled if it has been active for more than 1 hour, or if the temperature increases by 3°C. OWD can also be cancelled manually by increasing/decreasing the setpoint with the Left and Right buttons.

You enable or disable "OWD" via the OWD menu option.

DESCRIPTION	MENU STRUCTURE	PARAMETER
Open window detection	OWD	–

20. SIZE OF LOAD

The device has power metering, but in some cases, you might want to adjust the measured value, for example if it is connected by contactor. By default, it is set to 0 and it uses the power metering values. You can adjust it in increments of 100W up to 9900W, using the "LOAD" menu option.

DESCRIPTION	MENU STRUCTURE	PARAMETER
Size of load	LOAD	–

21. KWH VALUE IN MENU

The device supports power metering to give insight into the power consumption of the device. The total consumption of the device can be seen in the system from the "kWh" menu option. Enter the "KWH" submenu by pressing the middle button once to see the total consumption, hold the middle button for 2 seconds within the "KWH" submenu to reset it.

DESCRIPTION	MENU STRUCTURE	PARAMETER
Total Consumption in kWh	KWH	–

22. DISPLAY ICONS

ICON	DESCRIPTION
	This icon will be displayed while the device is in Heat, ECO, OUT1* or OUT2* mode, and is currently heating.
	This icon will be displayed while the relay is on and the device is in Cooling** mode.

*Only available for PLUS mode **Not available in PLUS*

23. DISPLAY ON/OFF (DON/DOFF)

The display on the device can be configured to remain off while in standby. It only turns on when buttons are pressed. Hold the Left and Center buttons for 10 seconds to toggle the setting. The display shows "DOFF" when active and "DON" when disabled, though it lights up on any button press.

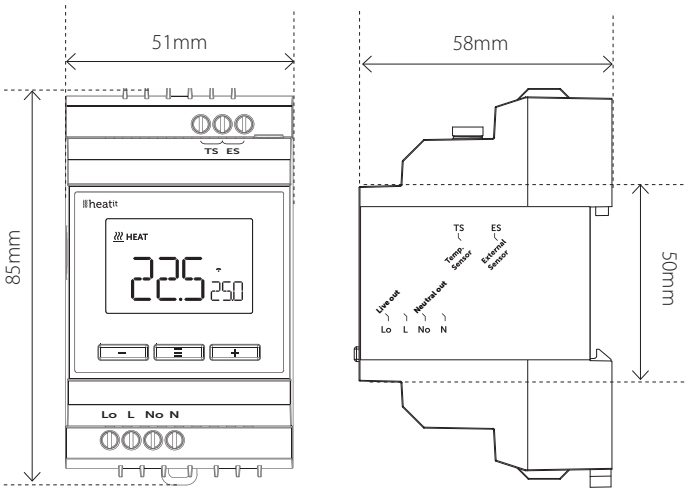
DESCRIPTION	MENU STRUCTURE	PARAMETER
Display ON/OFF	(Button-based)	–

24. CHILD LOCK

Child lock prevents local button operations on the display. Hold the Left and Right buttons for 10 seconds. When enabled, "LOCK" appears on the display; when disabled, "OPEN" is shown.

DESCRIPTION	MENU STRUCTURE	PARAMETER
Child lock	(Button-based)	–

25. DIMENSIONS



26. SAFETY FEATURES

The device has safety features to ensure safe operation and warn the user of any faults/unexpected behavior. The device has an Overheat and Overload function. If the thermostat registers an Overheat or Overload incident, the thermostat will switch off and an error will appear in the display.

26.1 Overheating

The device features internal temperature sensors that detect overheating. It warns the user and turns off the relay to prevent any damage.

When overheating is detected, the device will:

- Turn off the relay.
- Display Err6 in the display.

26.2 Overload

The device features a 16A overload protection. The overload is triggered if there is a current draw of more than 16A.

When overload is detected, the device will:

- Turn off the relay.
- Display Err7 in the display.

26.3 Sensor failure

The device has the ability to detect when there is no sensor connected or the sensor is broken or otherwise defective, causing an open circuit.

When the device detects the sensor error, the device will:

- Turn off the relay.
- Display an ERR4 or ERR5 in the display, changes based on which sensor is not connected/faulty.

To clear the "Sensor not connected" error, the device has to be disconnected from the mains. Then, the wiring and sensor(s) need to be checked. When the fault is resolved the mains can be reconnected and the device will function normally again.

27. ERROR CODES

Err1 Internal error. Most probably a faulty unit. Contact support.

Err3 Internal error. Most probably a faulty unit. Contact support.

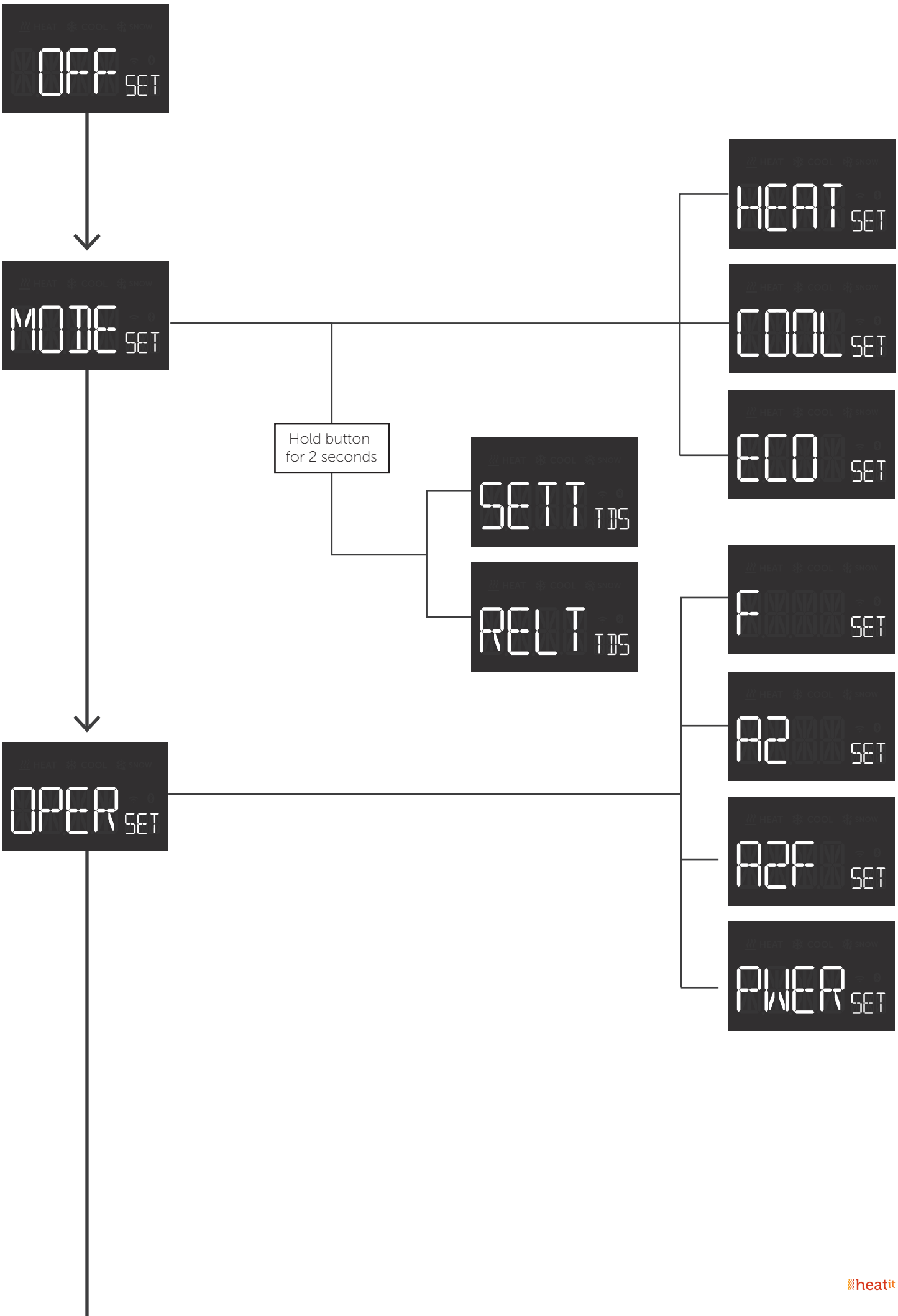
Err4 Temperature/Floor sensor error. You have chosen F, A2F or OUT2 without having a temperature/floor sensor connected, or the sensor may be damaged.

Err5 External sensor error. You have chosen A2, A2F, OUT1 or OUT2 without having an external sensor connected, or the sensor may be damaged.

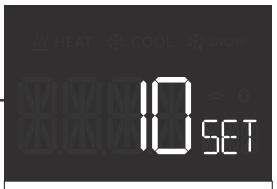
Err6 Overheating. Contact your electrician.

Err7 Overload. Contact your electrician.

28.CHART - DISPLAY MENU STRUCTURE (THER)



THER



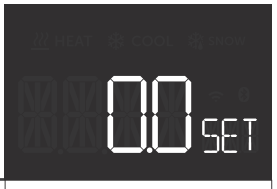
Selectable NTC values:
6.8, 10, 12, 15,
22, 33, 47, 100
Default is 10

Selectable values:
2 - 40 in increments
of 0.5.
Default is 5

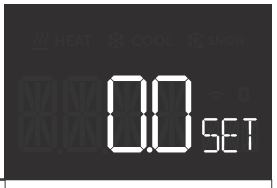
Selectable values:
2 - 40 in increments
of 0.5.
Default is 5

Selectable values:
2 to 40 in
increments of 0.5
Default is 40

Selectable values:
2 to 40
in increments of 0.5
Default is 40



Selectable values:
-6 to 6 in
increments of 0.1
Default is 0



Selectable values:
-6 to 6 in
increments of 0.1
Default is 0

Selectable values:
10 to 100 in
increments of 10
Default is 100

Selectable values:
10 to 100 in
increments of 10
Default is 50

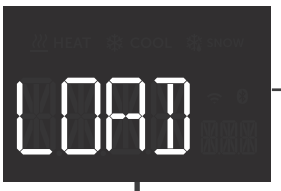
Default

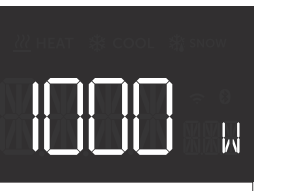
Hold button
for 2 seconds

Selectable values:
0.3 to 3 in
increments of 0.1
Default is 0.5

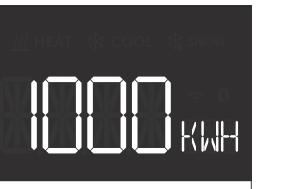
THER

Default





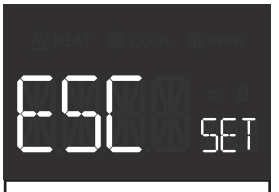
Selectable values:
0 to 9900 in
increments of 100
Default is 0



Reset kWh by
holding center
button

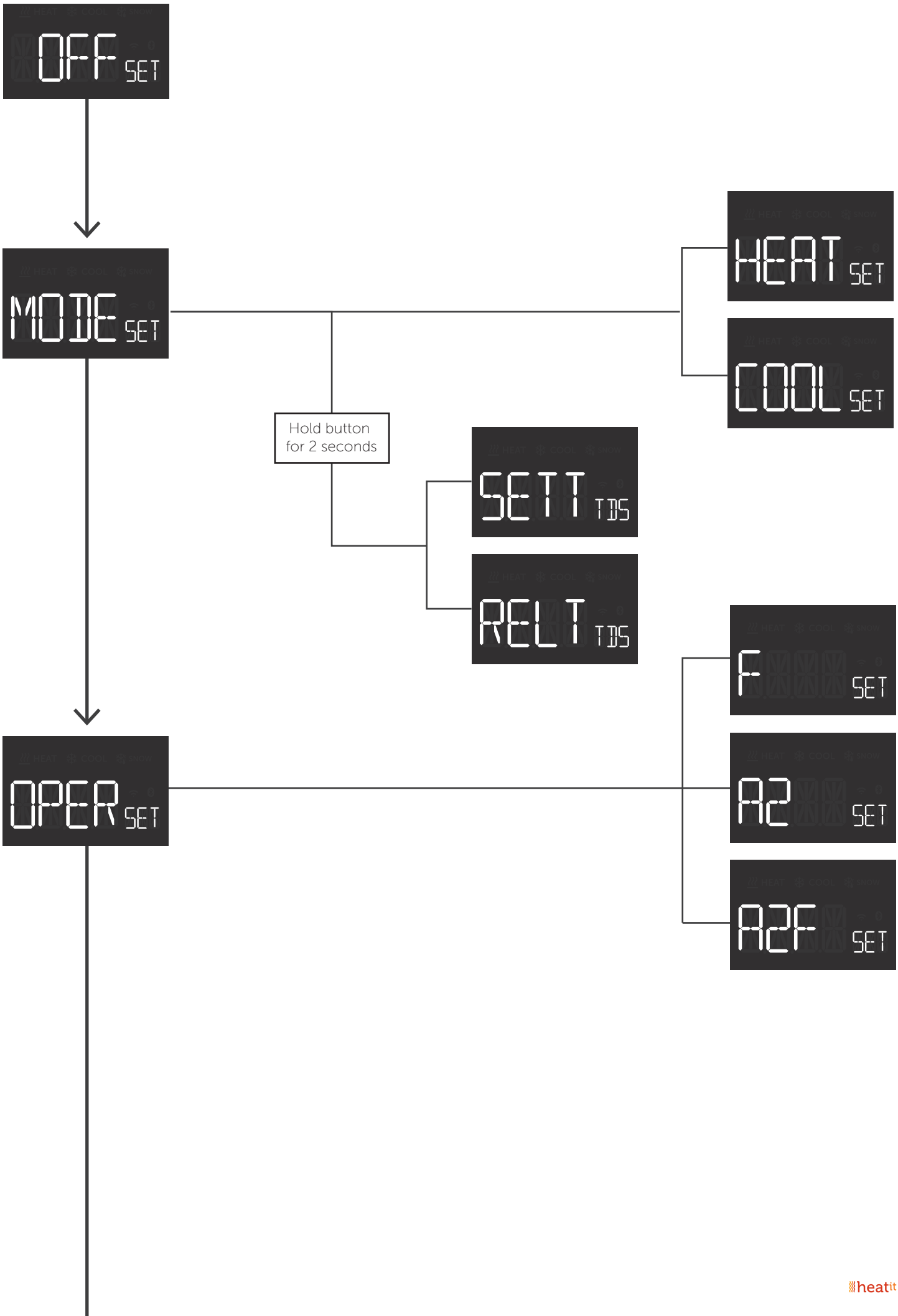
Press middle button once

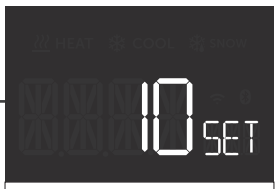
Hold middle button for factory reset



Exit menu

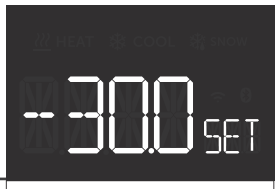
29. CHART - DISPLAY MENU STRUCTURE (INDU)





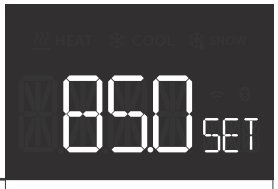
Selectable NTC values:
6.8, 10, 12, 15,
22, 33, 47, 100
Default is 10

Selectable values:
(-30) - 85 in increments
of 1.
Default is -30

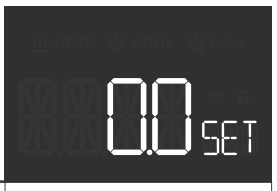


Selectable values:
(-30) - 85 in increments
of 1.
Default is -30

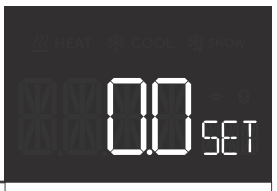
Selectable values:
(-30) to 85 in
increments of 1
Default is 85



Selectable values:
(-30) to 85 in
increments of 1
Default is 85



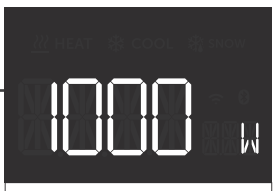
Selectable values:
-6 to 6 in
increments of 0.1
Default is 0



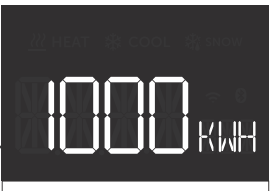
Selectable values:
-6 to 6 in
increments of 0.1
Default is 0

Selectable values:
10 to 100 in
increments of 10
Default is 100

Selectable values:
10 to 100 in
increments of 10
Default is 50

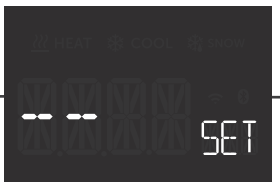


Selectable values:
0 to 9900 in
increments of 100
Default is 0



Reset kWh by holding center button

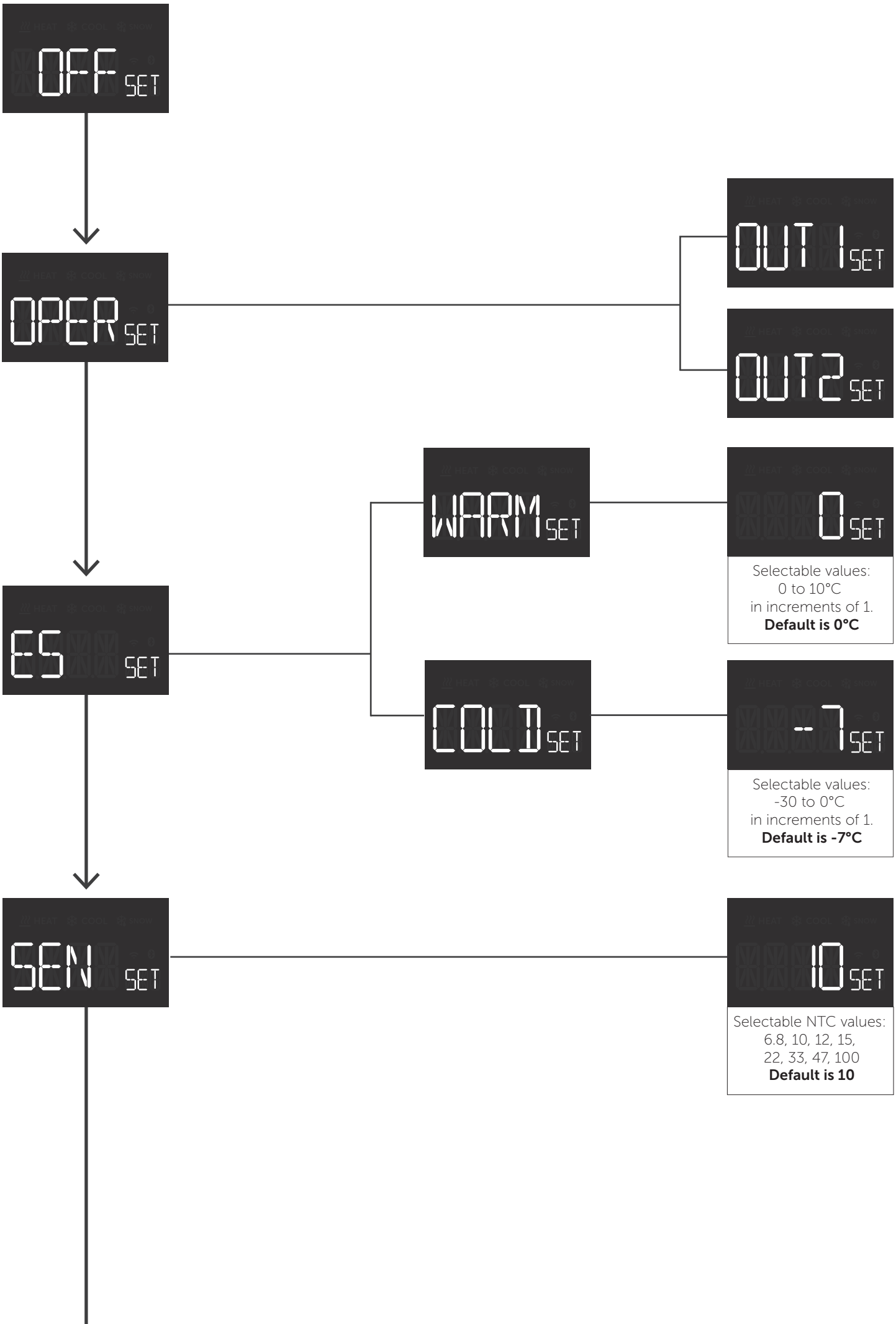
Press middle button once



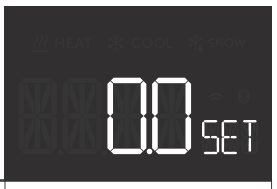
Hold middle button for factory reset

Exit menu

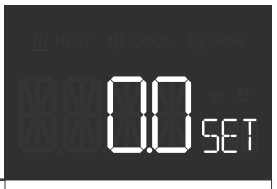
30.CHART - DISPLAY MENU STRUCTURE (PLUS)



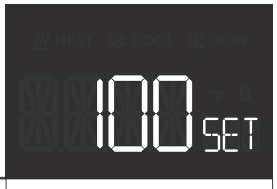
PLUS



Selectable values:
-6 to 6 in
increments of 0.1
Default is 0

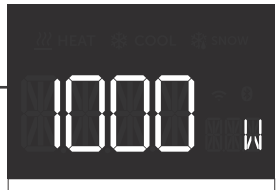


Selectable values:
-6 to 6 in
increments of 0.1
Default is 0



Selectable values:
10 to 100 in
increments of 10
Default is 100

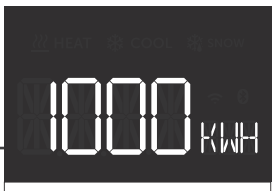
Selectable values:
10 to 100 in
increments of 10
Default is 50



Selectable values:
0 to 9900 in
increments of 100
Default is 0

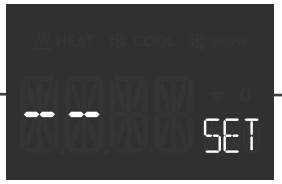
heatit

PLUS



Reset kWh by holding center button

Press middle button once



Hold middle button for factory reset

Exit menu

30.1 Error messages in display

Internal error:
MCU chip
communication failed

Temperature/Floor sensor error

External sensor error

Overheat

Overload

30.2 General display messages

Childlock activated

Childlock disabled

Backlight on when device in standby

Backlight off when device in standby

Open window detected

Settings stored

heatit

PRODUCT INFO Heatit DIN Thermostat

FEATURES

- DIN-Rail thermostat
- 2 temperature sensors (wired by cable)
  - External/Room sensor
  - Temperature/Floor
- 3 modes: Heat - Cool - Eco
- INDU - low and high temperatures -30C° to 85°C
- PLUS; ± function
- Power regulator
- Temperature limiter
- Temperature calibration
- Hysteresis/PWM
- ZeroX™ detection Open window detection
- Relay status icon
- Adjustable display brightness
- Single poled switch
- Lock mode/child lock
- Overload protection
- Overheat protection
- Active power metering
- External antenna (not supplied with the device)

TECHNICAL DATA

Rated voltage	230VAC 50Hz
Max load	3600W (resistive load)
Max current	16A
Power consumption	<2W
Power regulator	Time cycle 0 to 30 min.
Ambient temperature	5°C to 40°C
Regulation temperature	-30°C to 85°C
Storage temperature	-30°C to 70°C
Hysteresis	0.3°C to 3.0°C (default 0.5°C)
Humidity	10% to 85% RH
Compatible with NTC-sensor with values	6.8, 10, 12, 15, 22, 33, 47 or 100kΩ @ 25°C
Length NTC sensor	Max. 50 meters
Screw terminals	Max. 2.5mm² 2Nm
IP Code	IP21
Size (LxWxH)	85 x 51 x 58mm
Approvals	CE, Nemko

Hereby, Heatit Controls AS, declares that this device is in compliance with the essential requirements another relevant provisions of Directive 2014/53/EU.

MAINTENANCE

The device is maintenance-free. Indoor use only.

Do not dispose of electrical appliances as unsorted municipal waste, use separate collection facilities. To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources. To return your used device, please use the return and collection systems or contact the retailer where the product was purchased. They can take this product for environmental safe recycling.

We develop and design our products in accordance with our strict quality requirements (ISO 9001) and environmental requirements (ISO 14001). All electrical installations must be carried out by an authorized electrical installer. The product must be installed in accordance with our installers manual and national building codes. Any wrongful installation, misuse, damage of the product, is not covered under warranty. Updated documentation is available at www.heatit.com and/or documents.heatit.com. Heatit Controls AS can not be held liable for any type of errors or omittances in our product information. Product specifications may change without further notice.

heatit CONTROLS

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