

HEATIT DIN SMART THERMOSTAT

Z-Wave Installers manual



PRODUCT DOCUMENTS



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Heatit DIN Smart Thermostat
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1. INTRODUCTION

Smart DIN Thermostat. Heatit DIN Smart Thermostat is an electronic multifunction thermostat designed for electrical heating. The thermostat can be controlled through Z-Wave® via a Z-Wave gateway. It can also be controlled using Modbus RS-485 and the buttons on the front of the thermostat. The thermostat features a user-friendly interface.

The Heatit DIN Smart Thermostat is a versatile solution for both residential and industrial use. It functions as a standard floor heating thermostat, offering simple temperature control with three modes: Heat, Cool, and Eco. With the Heatit DIN Smart Thermostat, you get precise temperature control for a wide range of applications.

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.

The Heatit DIN Smart Thermostat features active power metering, providing real-time information about your power consumption. It also allows you to manually set the power metering value when connected to a contactor.

The device is equipped with ZeroX™ technology, which ensures the relay switches at 0V when turning on and off. This technology significantly extends the thermostat's lifespan.

The Heatit DIN Smart Thermostat has been developed for central control systems, with all features easily accessible via MODBUS RS-485.

2. ELECTRICAL LOAD COMPATIBILITY

The thermostat is designed specifically for resistive loads. When controlling large resistive, capacitive, or inductive loads, it is essential to use an appropriate contactor to protect the thermostat from excessive load to ensure safe operation.

The thermostat can withstand a resistive load of up to 16A/3600W at 230VAC. For loads above 13A, we recommend using a contactor.

3. STATEMENT REGARDING PRODUCTS FROM MULTIPLE MANUFACTURERS

Please read this before installation

This device may be used with all devices certified with the Z-Wave® Plus certificate and should be compatible with such devices produced by any manufacturer. Every primary controller/gateway is different depending on the manufacturer, their target audience and intended use/application. Please review the functionalities implemented by the primary controller/gateway you intend to use with our Z-Wave Plus certified device to ensure that it provides the necessary controls to take full advantage of our product's capabilities.

4. BEHAVIOR WITHIN THE Z-WAVE NETWORK

This device may be operated within any Z-Wave® network with Z-Wave-certified devices from other manufacturers. All non-battery-operated nodes within the network will act as repeaters regardless of manufacturer to increase the reliability of the network. On delivery, the device does not belong to any Z-Wave network. The device needs to be added to an existing network to communicate with the other devices within it. Devices may also be removed from a network. The add/remove processes are initiated by the primary controller/gateway of the Z-Wave network.

5. 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!

6. 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.
 - 5. Set the primary controller/gateway in add mode (security/non-security).
 - 6. Hold the Center button until "OFF" is shown in the display (approx. 5 seconds).
 - 7. Press the Right button once to reach "CON", and then hold the Center button until the display shows a rotating light pattern.
 - 8. The thermostat will display "INCL" when the thermostat is successfully added.
- NB! If adding/removing fails, Err (error) will appear.

7. 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. |
| ANT | External antenna connection (45 126 84). |
| 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. |
| G | Ground for Modbus. |
| B | Modbus Data (+). |
| A | Modbus Data (-). |



8. 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 Smart 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 Smart 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.

9. THERMOSTAT CONTROLS

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

10. 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.

11. DISPLAY MENU STRUCTURE

See flowchart at the end of this manual.

12. STARTUP

After powering up the device for the first time, all parameters will have default settings.

13. ADD/REMOVE

Please read this before installation

The primary controller/gateway has a mode for adding or removing devices. Please refer to your primary controller/gateway manual on how to set the primary controller/gateway in add/remove mode. The device may only be added or removed from the network if the primary controller/gateway is in add/remove mode. When the device is removed from the network, it will NOT revert to factory settings.

An always listening node must be powered continuously and reside in a fixed position in the installation to secure the routing table. Adding the device within a 2 meter range from the gateway can minimize faults during the Interview process.

There are two ways to add the device to a Z-Wave network.

13.1 Method 1: Standard (Manual)

Add/remove mode is indicated on the device by rotating LED segments on the display. It indicates this for 90 seconds until a timeout occurs, or until the device has been added to/ removed from the network. Configuration mode can also be cancelled by performing the same procedure used for starting Configuration mode.

- 1. Hold the Center button for 5 seconds.
The display will show "OFF".
- 2. Press the Right button once to see "CON" in the display.
- 3. Start the add/remove device process in your primary controller/gateway
- 4. Start the configuration mode on the thermostat by holding the Center button for approximately 2 seconds.

The device is now ready for use with default settings.

NB! When the device is removed from the gateway, the parameters are not reset. To reset the parameters, see Chapter "Factory reset".

If inclusion fails, please perform a "remove device" process and try again. If inclusion fails again, please see "Factory reset".

13.2 Method 2: SmartStart (Automatic)

SmartStart enabled products may be added to a Z-Wave network by scanning the Z-Wave QR-Code on the product if your primary controller/gateway supports SmartStart inclusion. No further action is required and the SmartStart product will be added automatically after being powered on within range of the primary controller/gateway.

14. QR-CODE PLACEMENT (DSK)

The QR-Code is needed when including a device using S2 security or SmartStart. The DSK can be found in the QR-Code and is located;

- On the product.
- In the Quick Guide.
- On the packaging box/gift box.

15. 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.

Please use this procedure only when the primary controller/gateway is missing or otherwise inoperable.

16. THERMOSTAT MODE

The thermostat has 3 modes: HEAT (heating), COOL (cooling), and ECO (energy-saving mode with reduced heating setpoint). You select "HEAT", "COOL" or "ECO" via the MODE menu option, or by adjusting Parameter "Operating Mode (MODE)".

DESCRIPTION	MENU STRUCTURE	PARAMETER
Operating mode	MODE	24

17. 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.

In standby 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.

18. 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 Center button for 2 seconds on the "MODE" menu choice, or by adjusting Parameter "Temperature display".

DESCRIPTION	MENU STRUCTURE	PARAMETER
Temperature display	Center button 2 seconds on MODE	12

19. CHOICE OF SENSOR/OPERATING MODE

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", or by setting Parameter "Sensor mode ("OPER)".

DESCRIPTION	MENU STRUCTURE	PARAMETER
Sensor mode	OPER	2

- Available sensor modes:
- F Floor sensor
 - A2 External room sensor
 - A2F External room sensor + Floor sensor
 - PWER Power regulator mode (no sensor used)

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.

20. 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 "Sensor value" (SEN).

DESCRIPTION	MENU STRUCTURE	PARAMETER
Sensor value	SEN	3

21. MIN/MAX TEMPERATURES

The thermostat allows you to set minimum and maximum temperatures for the connected sensors. You set the "FLO", "A2LO" and "FHI", "A2HI" values via the "MIN" and "MAX" menu options, or by setting Parameters.

DESCRIPTION	MENU STRUCTURE	PARAMETER
Floor sensor min temp limit	FLO	4
External sensor min temp limit	A2LO	5
Floor sensor max temp limit	FHI	6
External sensor max temp limit	A2HI	7

22. 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 or by adjusting Parameters "External sensor calibration (CAE)" or "Floor sensor calibration (CAF)". The primary controller/gateway and thermostat then displays the calibrated value.

DESCRIPTION	MENU STRUCTURE	PARAMETER
Floor sensor	CAF	8
External sensor	CAE	9

23. 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, or by setting Parameters "Active display brightness" and "Standby display brightness".

DESCRIPTION	MENU STRUCTURE	PARAMETER
Active display brightness	BR1	13
Standby display brightness	BR2	14

24. PRINCIPLES OF REGULATION

The thermostat uses temperature readings from the 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, or by setting Parameter "Regulation mode".

DESCRIPTION	MENU STRUCTURE	PARAMETER
Regulation mode	REG	10

24.1 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. 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. It can also be changed by setting Parameter "Temperature control hysteresis".

DESCRIPTION	MENU STRUCTURE	PARAMETER
Temperature control hysteresis	HYST	11

24.2 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.

25. 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, or by setting Parameter "Open window detection".

DESCRIPTION	MENU STRUCTURE	PARAMETER
Open window detection	OWD	25

26. 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 or by setting Parameter "Size of Load".

DESCRIPTION	MENU STRUCTURE	PARAMETER
Size of load	LOAD	26

27. 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 Center button once to see the total consumption, hold the Center button for 2 seconds within the "KWH" submenu to reset it.

DESCRIPTION	MENU STRUCTURE	PARAMETER
Total Consumption in kWh	KWH	—

28. DISPLAY ICONS

ICON	DESCRIPTION
	This icon will be displayed while the device is in Heat or ECO mode, and is currently heating.
	This icon will be displayed while the relay is on and the device is in Cooling mode.
	This icon shows the current signal strength.

29. 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 or when a change occurs from Z-Wave. 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)	—

30. 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)	—

31. ASSOCIATIONS

Z-Wave devices interact with other Z-Wave devices. The relationship between one device controlling another device is called an association. In order to control a subordinate device, the controlling device needs to maintain a list of devices that will receive controlling commands. These lists are called "Association Groups". They are always related to the specific event triggered (e.g., sensor reports). In case the event is triggered, all devices stored in the respective association group will receive a joint wireless command.

31.1 Setting and Removing Associations

Associations may be assigned and removed via Z-Wave commands. Please refer to your primary controller/gateway for more information.

31.2 Multi Channel support

The thermostat has support for the Multi Channel Command Class. This allows the thermostat to be perceived as multiple devices by the primary controller/gateway, which enables the reporting of multiple temperature sensors and the ability to distinguish between the reports coming from the device.

31.3 No Multi Channel support

If the primary controller/gateway or the Z-Wave devices to be associated with the thermostat do not support the Multi Channel Association Command Class (Multi Channel encapsulation), only the association groups in the root device are accessible. This device contains 3 association groups in addition to the Lifeline Group.

32. ASSOCIATION GROUPS

Without Multi Channel support:

MULTI LEVEL SWITCH DEVICE	DESCRIPTION
Group 1	Lifeline. Lifeline Group to be used by primary controller, sends: -Thermostat Mode Report -Thermostat Setpoint Report -Thermostat Operating State Report -Protection Report -Notification Report -Meter Report -Sensor Multilevel Report -Device Reset Locally Notification -Indicator Report -Configuration Report Max nodes in group: 1
Group 2	Binary Switch Set. Send Binary Switch set commands based on the internal relay state, sends: -Binary Switch Set Max nodes in group: 10
Group 3	Thermostat Setpoint set. Sends Thermostat Setpoint set commands based on own setpoint to allow for use as master thermostat, sends: -Thermostat Setpoint Set Max nodes in group: 10
Group 4	Thermostat Mode set. Sends Thermostat Mode set commands based on own mode to allow for use as master thermostat, sends: -Thermostat Mode Set Max nodes in group: 10

With Multi Channel support:

1: THERMOSTAT DEVICE	THE MAIN THERMOSTAT DEVICE
Group 1	Lifeline. Lifeline Group to be used by primary controller, sends: -Thermostat Mode Report -Thermostat Setpoint Report -Thermostat Operating State Report -Protection Report -Notification Report -Meter Report -Sensor Multilevel Report -Device Reset Locally Notification -Indicator Report -Configuration Report Max nodes in group: 1
Group 2	Binary Switch Set Send Binary Switch set commands based on the internal relay state, sends: -Binary Switch Set Max. nodes in group: 10
Group 3	Thermostat Setpoint Set Sends Thermostat Setpoint set commands based on own setpoint to allow for use as master thermostat, sends: -Thermostat Setpoint Set Max. nodes in group: 10
Group 4	Thermostat Mode Set. Sends Thermostat Mode set commands based on own mode to allow for use as master thermostat, sends: -Thermostat Mode Set Max. nodes in group: 10
2: MULTILEVEL SENSOR DEVICE	EXTERNAL SENSOR
Group 1	Lifeline. Lifeline Group for external sensor, sends: -Sensor Multilevel Report Max. nodes in group: 0
3: MULTILEVEL SENSOR DEVICE	TEMPERATURE SENSOR
Group 1	Lifeline. Lifeline Group for floor sensor, sends: -Sensor Multilevel Report Max. nodes in group: 0

33. MODBUS

The Modbus protocol implemented is RTU Over RS-485. This uses Differential data communication through 3 wires: Ground, A and B. A and B are Data+ and Data- respectively.

The default value for Device ID (Slave ID) is 1. This can be changed through the menu option SLAV. The value can be set from 1 to 250.

The default value for Baud rate is 38.4 kbps. This can be changed through the menu option BAUD. The values that can be selected are: 9.6 kbps, 19.2 kbps, 38.4 kbps, 57.6 kbps and 115.2 kbps.

DESCRIPTION	MENU STRUCTURE	PARAMETER
Slave ID	SLAV	—
BAUD rate	BAUD	—

Scan QR for all documentation related to Modbus.



34. CONFIGURATION PARAMETERS

Z-Wave products work out of the box after inclusion. Some device configuration may, however, alter the functionality to better serve user needs or unlock further enhanced features. All the parameters below do not feature altering capabilities, advanced or read only flags.

PARA NO#	PARA SIZE (BYTE)	NAME	SHORT DESCRIPTION / COMMENT	MIN	MAX	DEFAULT	DESCRIPTION OF VALUE
1	1	Disable buttons	Disable buttons, must be enabled through the parameter, or turned back on locally by holding the Center and Right button for 30 seconds until the display shows "UNLK".	0	1	0	Enabled, buttons on the front of the device work. (Default)
							Disabled, buttons on the front of the device are disabled.
2	1	Sensor mode (OPER)	Choose which sensor mode the device should operate with.			0	F, Floor sensor (Default)
				0			A2, External sensor
				1			A2F, External sensor with floor sensor limitations
				2			PWER, Power regulator mode
3	1	Sensor value (SEN)	Select the resistance value of the connected NTC.			0	10kΩ (Default)
							12kΩ
							15kΩ
							22kΩ
							33kΩ
							47kΩ
							6.8kΩ
4	2	Floor sensor minimum temperature limit	Decides the lowest temperature allowed by the thermostat when using sensor mode F, A2F.			20	100kΩ
							2°C to 40°C (Default is 2°C)
5	2	External sensor minimum temperature limit	Decides the lowest temperature allowed by the thermostat when using sensor mode A2.			20	2°C to 40°C (Default is 2°C)
6	2	Floor sensor maximum temperature limit	Decides the highest temperature allowed by the thermostat when using sensor mode F, A2F.			400	2°C to 40°C (Default is 40°C)
7	2	External sensor maximum temperature limit	Decides the highest temperature allowed by the thermostat when using sensor mode A2.			400	2°C to 40°C (Default is 40°C)
8	1	Floor sensor calibration (CAF)	Manually calibrate sensor F ±6°C.			0	-6.0°C to 6.0°C Calibrates the sensor by ±6°C. (Default is 0°C)
							NB! To set a negative value, use 256 and subtract the desired value.
9	1	External sensor calibration (CAE)	Manually calibrate sensor A2 ±6°C.			0	-6.0°C to 6.0°C Calibrates the sensor by ±6°C. (Default is 0°C)
							NB! To set a negative value, use 256 and subtract the desired value.
10	1	Regulation mode (REG)	Choose between regulation modes PWM and Hysteresis.	0	1	0	Hysteresis (default)
							PWM regulation
11	1	Temperature control hysteresis (HYST)	Choose the hysteresis used when regulation mode is set to HYST.	3	30	5	0.3°C to 3.0°C. Default is 5 (0.5°C)
12	1	Temperature display	Select what is shown on the display during Standby state.	0	1	0	Display setpoint temperature. (Default)
							Display measured temperature.
13	1	Active display brightness (BR1)	Configure the brightness of the display during active state.	1	10	10	10 to 100% (Default 100%)
14	1	Standby display brightness (BR2)	Configure the brightness of the display during standby state.	1	10	5	10 to 100% (Default 50%)
15	2	Temperature report interval	Set the time interval between consecutive temperature reports.	30	65535	845	30 to 65535 seconds.
							845s (14 min) (Default)
16	1	Temperature report hysteresis	Set the change in temperature required to send a temperature report based on change.	1	100	10	0.1°C to 10°C
							10 (1°C) (Default)
17	2	Meter report interval	Set the time interval between consecutive meter reports.	30	65535	845	30 to 65535 seconds.
							845s (14 min) (Default)
18	2	Action after error	Decide how the device should react when the overload / overheating features has turned OFF relay.			1200	0, device will turn off and show an error in the display. (Default)
				0			10 to 65535 seconds, device will attempt to turn on again after an error based on the delay specified.
19	2	Heating setpoint	Set setpoint for Heating mode.	20	400	210	2°C to 40°C. 21°C (Default)
20	2	Cooling setpoint	Set setpoint for Cooling mode.	20	400	180	2°C to 40°C. 18°C (Default)
21	2	ECO setpoint	Set setpoint for ECO mode.	20	400	180	2°C to 40°C. 18°C (Default)
22	1	Power regulator active time	Set the % of time the relay should be active when using PWER mode. (30-minute duty cycle).	1	10	2	10 to 100%. 20% (Default)

PARA NO#	PARA SIZE (BYTE)	NAME	SHORT DESCRIPTION / COMMENT	MIN		MAX	DEFAULT	DESCRIPTION OF VALUE
23	2	Thermostat state update interval	Set the time interval of how often the device updates Thermostat Setpoint set, Thermostat Mode set and Binary set to associated devices.	0		3600	Sends only when changed. 30 to 65535 seconds. 3600 seconds + when changed. (Default)	
				30	65535			
24	1	Operating Mode (MODE)	Set the thermostat mode.	0		1	OFF Thermostat will not operate	
				1			Heating mode (Default)	
				2			Cooling mode	
				3			ECO mode	
25	1	Open window detection	Choose to enable or disable the Open windows detection.	0		0	Open window detection disabled. (Default)	
				1			Open windows detection enabled.	
26	1	Size of load	Allows the user to decide the power consumption of the connected load in 100W increments.	0		0	Uses power metering values. (Default)	
				1	99		1-99 = 100-9900 Watt Allows the user to set the size of the load, used when connected to a contactor.	

35. FIRMWARE UPDATE - OTA

An OTA (Over-The-Air) update on Z-Wave products allows devices to be updated wirelessly. However, this depends on the type of primary controller/gateway you use, as not all primary controllers/gateways support the OTA function.

36. COMMAND CLASSES

Additional information regarding Command Classes and their functionality:

36.1 Basic Command Class

A Basic command to the device will change the thermostat mode. Uses the following values:
0x00 = OFF (0x00)
0xFF = HEAT (0x01)

If the thermostat is in ECO or COOL mode, 0x00 will still change the mode to OFF. ECO or COOL cannot be enabled with a Basic Set command.

36.2 Meter Command Class

The device supports Meter Command Class Get, and the thermostat will only respond on supported electric meter scales: kWh (accumulated) and Watt (instant).

The device will report when asked:

Rate type: Import (0x01)
Meter type: Electric meter (0x01)

TYPE	SCALE	VALUE	SIZE	PRECISION	REPORT HYSTERESIS
Electric	kWh	0x01	4	1	845s, configurable
Electric	W	0x01	4	1	75W (not configurable), 845s, configurable

36.3 Protection Command Class

Protection Command Class allows you to disable local control of the thermostat, this is separately from the Child Lock function.

To enable the Protection Command Class, either set Parameter 1 (disable buttons) to value 1, enabling Local Protection State 0x02, or send a Protection Set with Local Protection State 0x01 or 0x02.

During Protection State 0x01, the device is protected by a button sequence and allows for no local operation until it is unlocked. To unlock the thermostat while in Protection state 0x01, first press twice on the Left button, then press twice on the Right button and then finally twice on the Center button. This will unlock the thermostat until it goes back to standby, requiring you to unlock it again.

Protection State to 0x02 means that no operation is possible and the thermostat can only be unlocked by setting Parameter 1 to 0, or by holding the Center and Right buttons for 30 seconds.

36.4 Thermostat Setpoint Command Class

Thermostat Setpoint is implemented with 3 setpoints, Heating, Cooling and ECO. Supported setpoints are from 2°C - 40°C with 0.5°C increments.

36.5 Thermostat Mode Command Class

It is possible to change the operating mode of the thermostat by sending a Thermostat Mode set command. The accessible operating modes are:
0x00: OFF (Thermostat regulation and display are deactivated).
0x01: Heating Mode (Thermostat regulation is active).
0x02: Cooling Mode (Thermostat regulation is inverted).
0x0B: ECO Mode (Thermostat regulation is active with a separate setpoint from Heating Mode).

36.6 Thermostat Operating State Command Class

The thermostat reports the operating state of the interal relay using this Command Class.
0x00 = Idle
0x01 = Heating (used for Heating and ECO mode)
0x02 = Cooling

36.7 Indicator Command Class

The device supports the Indicator Command Class. The indicator Command Class will flash the display.

36.8 Notification Command Class

The product features security features that announce any action using the Notification Command Class. The following commands are implemented:

NAME	VALUE	EVEN/ STAT	STATE VARIABLE	STATE VARIABLE AFTER	NOTIFICATION NAME	VALUE
Heat alarm	0x04	State	Heat sensor status	Idle	Overheating detected	0x02
Power management	0x08	State	Overload status	Idle	Overload detected	0x08

36.9 Binary Switch Command Class

Binary Switch commands are used to control external relays associated with group 2.
Uses the following values:
0x00 = OFF
0xFF = ON

This Command Class is based on the operating state of the thermostat (relay on or off).

37. SUPPORTED COMMAND CLASSES

The following table lists all Command Classes supported by the Z-Wave device. The device supports S0, S2 Authenticated security and S2 Unauthenticated security.

ASSOCIATION	VERSION	INSECURE ON SECURE INCLUSION	SECURE ON SECURE INCLUSION
Association	v2		Yes
Association Group Information	v3		Yes
Device Reset Locally Notification	v1		Yes
Firmware Update MD	v5		Yes
Indicator	v3		Yes
Manufacturer Specific	v2		Yes
Multi channel Association	v3		Yes
Multi channel	v4		Yes
Power level	v1		Yes
Security	v1	Yes	
Security v2	v1	Yes	
Supervision	v1	Yes	
Transport Service	v2	Yes	
Version	v3		Yes
Z-Wave Plus Information	v2	Yes	
Configuration	v4		Yes
Basic	v2		Yes
Notification	v8		Yes
Meter	v5		Yes
Sensor Multilevel	v11		Yes
Protection	v1		Yes
Thermostat Mode	v3		Yes
Thermostat Operating State	v1		Yes
Thermostat Setpoint	v3		Yes

38. CONTROLLED COMMAND CLASSES

ASSOCIATION	VERSION	INSECURE ON SECURE INCLUSION	SECURE ON SECURE INCLUSION
Binary Switch	2		Yes

39. SECURITY

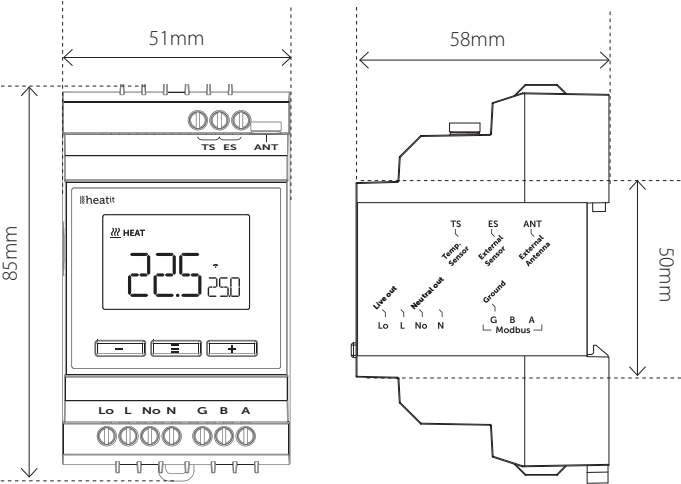
S2 security enhances Z-Wave Plus with an additional layer of AES 128-bit encryption of the wireless Z-Wave communication to prevent hacking and man-in-middle attacks on the home network.

This device supports S2 and has a Z-Wave DSK QR-Code label that may be used when the device is added to the Z-Wave home network. The primary controller/gateway will ask for a 5-digit code. They are the first underlined 5 digits located on the QR code sticker. The primary controller/gateway will then ask you to confirm the rest of the code that is contained in the QR-Code.

40. NODE INFORMATION FRAME

The node information frame is the “business card” of a Z-Wave device. It contains information about the device type and its technical features. The add and remove procedure of the device is confirmed by sending out a node information frame. Besides this, it may be necessary for certain network operations to send out a node information frame.

41. DIMENSIONS



42. 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.

42.1 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.
- Send a notification to the gateway.

42.2 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.
- Send a notification to the gateway.

42.3 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.

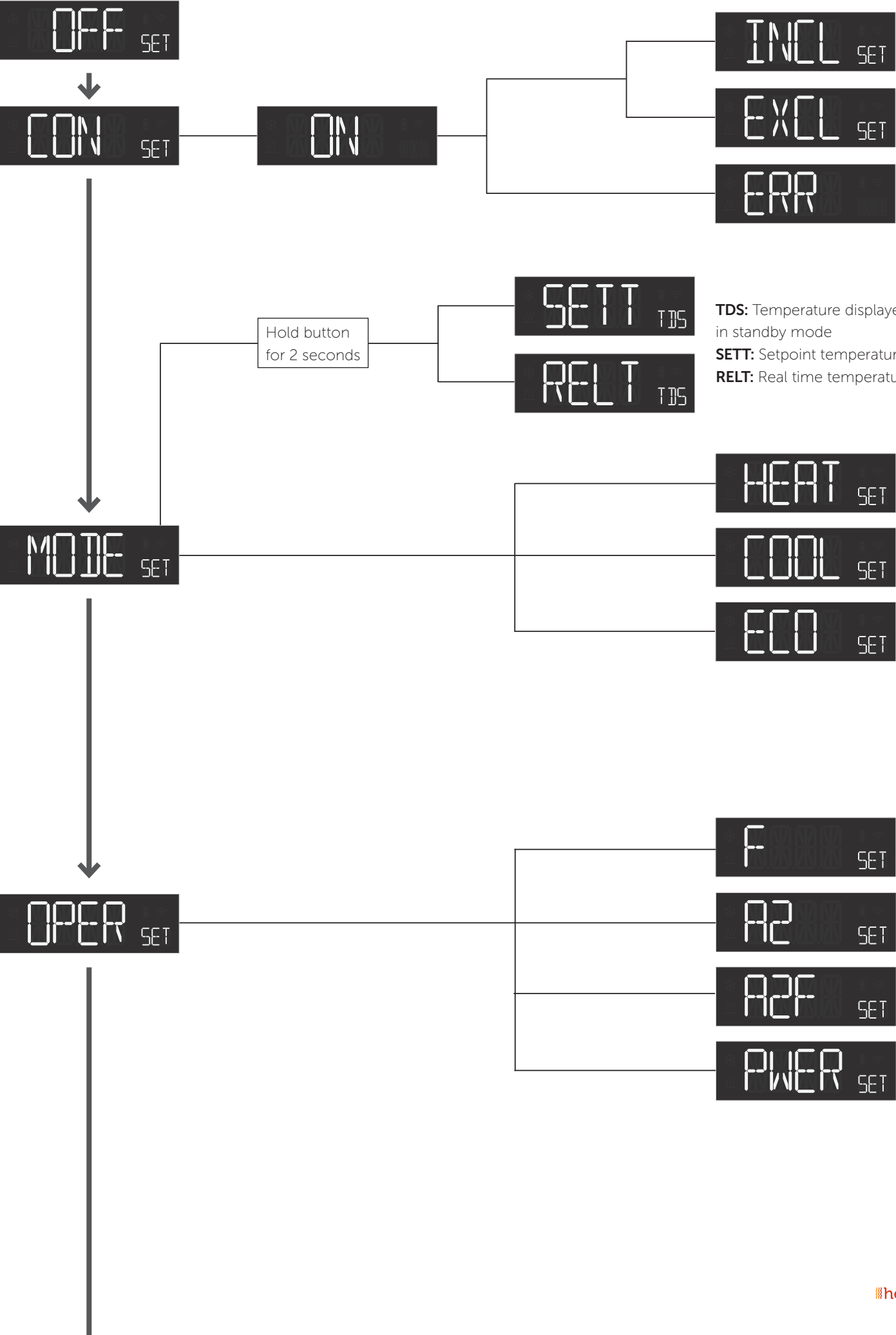
To clear the “Sensor not connected” error the device has to be disconnected from the mains, and the wiring and sensor(s) need to be checked. When the fault is resolved the mains can be reconnected and the device will function normally again.

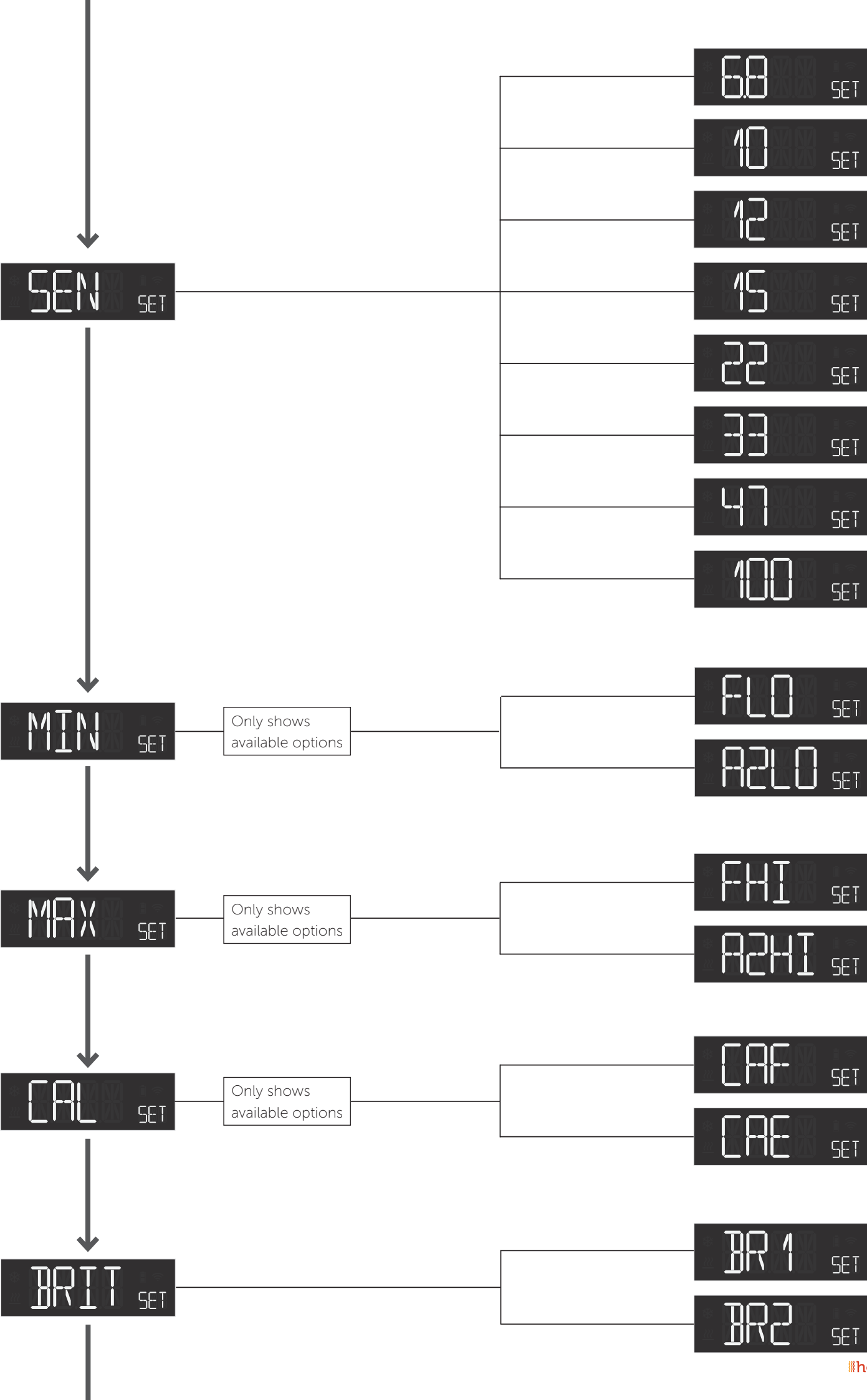
43. ERROR CODES

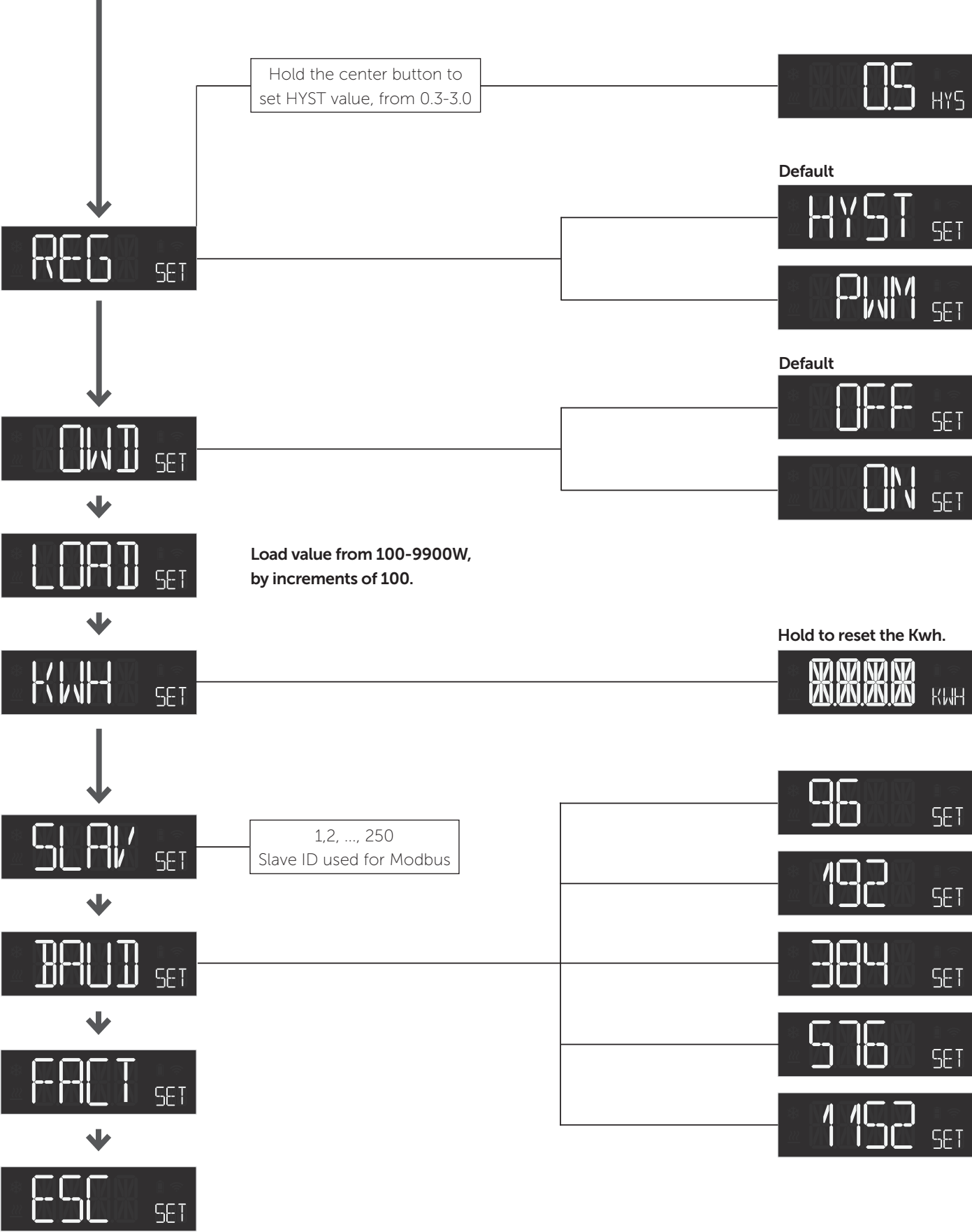
- Err Adding fail. See Chapter "Add/remove".
- Err1 Internal error. Most probably a faulty unit. Contact support.
- Err2 Radio error. Most probably a faulty unit. Contact support.
- Err4 Floor sensor error. You have chosen F or A2F sensor mode without having a floor sensor connected, or the sensor may be damaged.
- Err5 External sensor error. You have chosen A2 or A2F sensor mode without having an external sensor connected, or the sensor may be damaged.
- Err6 Overheating. Contact your electrician.
- Err7 Overload. Contact your electrician.

44. CHART - DISPLAY MENU STRUCTURE

Hold the center button for 5 seconds to enter menu.







44.1 Error messages in display



Failed to include



Internal error:
MCU and Z-Wave chip
communication failed



Radio error



Floor sensor error



External sensor error



Overheat



Overload

44.2 General display messages



Childlock activated



Childlock disabled



Backlight on when
device in standby



Backlight off when
device in standby



Open window detected



Settings stored

PRODUCT INFO Heatit DIN Smart Thermostat

FEATURES

- Smart DIN-Rail thermostat
- Z-Wave
- MODBUS RS-485
- External room sensor (wired by cable)
- Floor sensor
- Power regulator
- Temperature limiter
- 3 modes; Heat - Cool - Eco
- Hysteresis/PWM
- Temperature calibration
- Open window detection
- ZeroX™ detection
- Relay status icon
- Adjustable display brightness
- Single pole switch
- Lock mode/child lock
- Active power metering
- SmartStart
- Firmware update (OTA)
- External antenna (not supplied with the device)

The product must be used with a security-enabled Z-Wave controller in order to fully utilize security/encryption.

TECHNICAL DATA

Protocol	Z-Wave, 868.4MHz
Chip	Z-Wave 800 chip
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	2°C to 40°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
Range RF	Min. 40 meters
Screw terminals	Max. 2.5mm² 2Nm
IP Code	IP21
Size (LxWxH)	85 x 51 x 58mm
Approvals	Z-Wave Plus, CE, Nemko

Working frequency 868.42MHz, Max output power 11.74dBm. The distance between user and products should be no less than 20 cm. There is no restriction to use this product across the EU countries.

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.