HEATIT ZM DIMMER

Installers manual

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POWER METERING

SMART START

S2 SECURITY

OTA UPDATE

Z-WAVE PLUS

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1. INTRODUCTION

Heatit ZM Dimmer is an inwall dimmer for installation in European electrical wall boxes. The dimmer enables the user to control light sources from the Z-Wave network and/or an external switch.

The Heatit ZM Dimmer works on most low loads of both LEDs and other light fixtures without causing flickering. When connecting low loads it is recommended to use a bypass.

The dimmer may be connected to two external switches that can be used to control the lights, associated devices and scenes.

Heatit ZM Dimmer has active power metering and it gives you real time information about your power consumption.

NB! DIMMING
Dimming may be challenging, and we recommend checking the compatibility of different light sources before installation. We are happy to answer any questions.

2. 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 is different depending on the manufacturer, their target audience and intended use/application. Please review the functionalities implemented by the primary controller 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.

3. BEHAVIOUR 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 of the Z-Wave network.

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4. QUICK START

1. Switch off the mains voltage (turn off the fuse).
2. Open the junction box.
3. Connect according to the wiring diagram as shown in chapter 6 "Installation & wiring".
4. After verifying the connections, switch on the mains voltage.
5. Set the primary controller in add mode (security/non-security).
6. Press the reset button on dimmer 3 times in a rapid sequence. The Heatit ZM Dimmer is now included in your Z-Wave network.

5. ILLUSTRATIONS
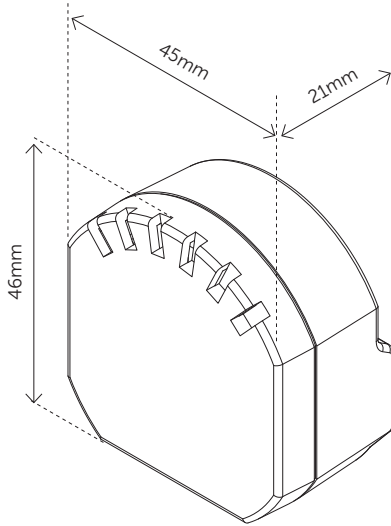
6. INSTALLATION GUIDELINES

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!

Max tightening torque for terminal screws: 2Nm

NB! The dimmer can be used in a 2 and 3-wire mode. In 2-wire mode, neutral can only be connected to the load and not the dimmer itself. The dimmer automatically detects if it is connected in 2 or 3-wire mode.

1. Turn off the fuse.
2. Connect the Live to the dimmer terminal marked "L".
     Optional: Connect the Neutral to the dimmer terminal marked "N".
3. Connect the load terminal marked "L" to the dimmer terminal marked ⚡
4. Connect the load terminal marked "N" directly to Neutral.
5. Install the dimmer in the junction box. Make sure that no wires are pinched.

S1: External momentary switch. Used for dimming the load Can be used as a scene controller.

S2: External momentary switch. Can be used for either dimming or scene controller.

Wiring diagram
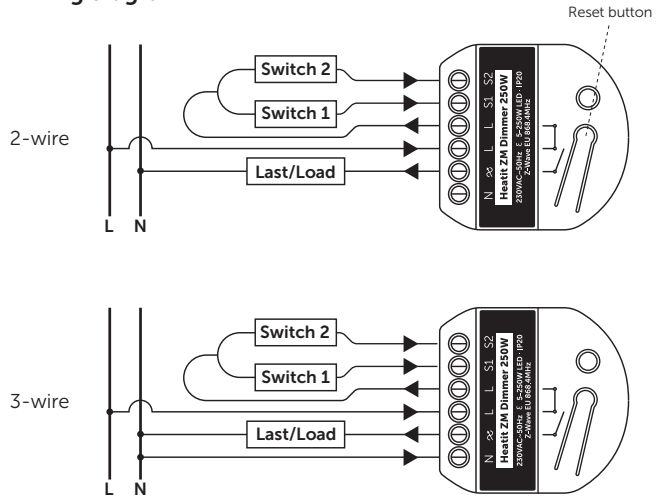
7. EXTERNAL SWITCH
Momentary Switch (NO)
When using external switches, the switch functionality can be selected using Parameter 6 and 7. The connected switches must be normally open switches.

8. ADD/REMOVE
The primary controller/gateway has a mode for adding or removing devices. Please refer to your primary controller manual on how to set the primary controller in add/remove mode.

The device may only be added or removed from the network if the primary controller 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 meters range from the gateway can minimize faults during the Interview process.

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

8.1 Standard (Manual)
Add/remove mode is indicated on the device by a blinking green LED. It indicates this for 90 seconds until a timeout occurs, or until the module has been added to/removed from the network. Configuration mode can also be cancelled by performing the same procedure used for starting Configuration mode.

To start the configuration process, press the reset button 3 times in rapid succession. The LED will light up in solid green for 3 seconds if add/remove is successful. The device is now ready for use with default settings.

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

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

8.2 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 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.

9. FACTORY RESET
Please read this before installation
Press and hold the reset button. After 3 seconds the LED will start to blink green. After 20 seconds the LED will start blinking green rapidly. You may now release the button. If reset was successful the LED will light up in solid green for 3 seconds.
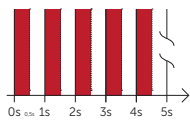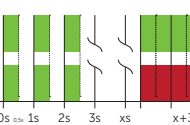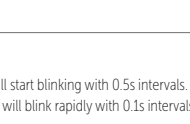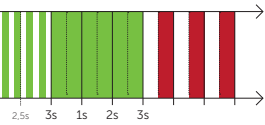
Please use this procedure only when the network primary controller is missing or otherwise inoperable.
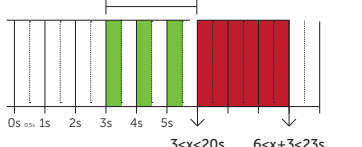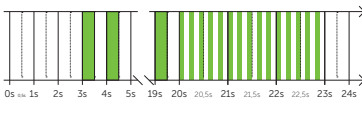
10. STARTUP
After powering up the device for the first time, all the parameters will have default settings.

11. LED BLINKING PATTERNS DESCRIPTION
The device supports numerous LED blinking patterns to make it as easy as possible to identify what the device is doing.

Device Not in Network The LED will blink red when the device is not added to a Z-Wave network.	
Add/Remove When device enters add/remove mode the LED will blink green. If successful, the LED will light up in solid green for 3 seconds. If unsuccessful, the LED will light up in solid red for 3 seconds.	Successful / Unsuccessful

Factory Reset
If the button is held for more than 3 seconds, the GREEN LED will start blinking with 0.5s intervals.
When the button has been held for 20 seconds, the GREEN LED will blink rapidly with 0.1s intervals for 3 seconds.

Figure 1 (success)
Within the 3 second period the button must be released.
If the button is released within this period, the device will indicate that it has been successfully reset by lighting up in solid GREEN for 3 seconds. The device will then start blinking RED because it is not included in a gateway.

Figure 2 (fail) If the button is released before the 3 seconds period, the device will indicate fail by turning RED LED on for 3 seconds.	
Figure 3 (fail) The button MUST be released between 20 and 23 seconds for local reset to take place. If held longer, the device will ignore the command.	

12. 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.

13. 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 module is added to the Z-Wave home network. The primary controller will ask for a 5-digit code, which can be found underneath the QR-code.

14. 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.

15. 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.

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

16. ASSOCIATION GROUPS

MULTI LEVEL SWITCH DEVICE	DESCRIPTION
Group 1 Lifeline	Lifeline. (Normally used by the Z-Wave Controller) Sends: - Switch Multilevel Report - Device Reset Notification - Indicator Report - Meter Report - Central Scene Notification - Configuration Report - Notification Report Max nodes in group: 1
Group 2 Basic Set	-Basic Set. Sends Basic Set commands representing the status of the dimmer when changed. OFF/ON (0x00, 0xFF) 1-99% (0x01, 0x63) Max nodes in group: 5
Group 3 Switch Multilevel	-Switch Multilevel When S1 or S2 is pressed/held/released and when changed from gateway or from an association. Press: OFF/ON (0x00, 0xFF) Held: Multilevel Switch Start Level Change/Stop Level Change Command Level Increase Start / Level Increase Stop Level Decrease Start / Level Decrease Stop Released: Multilevel switch set (Synchronization of values) Max nodes in group: 5

17. CONFIGURATION PARAMETERS

Z-Wave products are supposed to 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. None of the parameters below 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	Power restore level	The state the dimmer should return to once power is restored after a power failure.	0	0	100	Off.
				1	99		1% - 99%.
				100	100		Returns to level before power outage (Default).
2	1	Switch ON level	Defines the dimming level when restored from the OFF state.	0	0	0	Restores last dim level (Default)
				1	99		1% - 99%.
3	4	Automatic turn OFF	Time for the dimmer to turn off automatically after turning it on.	0	0	0	Auto OFF disabled (Default).
				1	86400		Duration 1 - 86400 seconds.
4	4	Automatic turn ON	Time for the dimmer to turn on automatically after turning it off.	0	0	0	Auto ON disabled (Default).
				1	86400		Duration 1 - 86400 seconds.
5	1	Turn off delay time	The time it takes before the dimmer turns off after turning it off.	0	0	0	Disabled (Default).
				1	60		Duration 1 - 60 seconds.
6	1	S1 functionality	Decide the S1 switch functionality.	0	0	0	Single press and hold for dimming. Double press for 100%. Triple press for inclusion. (Default).
				1	1		Scene controller.
				2	2		Scene controller and Dimming
				3	3		Disabled.
7	1	S2 functionality	Decide the S2 switch functionality.	0	0	1	Single press and hold for dimming. Double press for scene controller. Triple press for inclusion.
				1	1		Scene controller functionality (Default).
				2	2		Scene controller and Dimming
				3	3		Disabled.
8	1	Dimming duration	Define how long it takes to dim when using the external switch..	0	0	50	Instantly.
				1	100		1 - 100 = 0.1 - 10 sec. (Default 5 seconds).
9	1	Choose the dimmer curve	Choose if the dimmer uses Linear or Logarithmic dimming.	0	0	0	Linear dimming (Default).
				1	1		Logarithmic dimming.
10	1	Load dimming mode	Choose the dimming type.	0	0	0	Trailing edge (Default).
				1	1		Leading edge.
11	1	Maximum dim level	Highest dim level of the dimmer.	2	99	90	2% - 99%. (Default 90).
12	1	Minimum dim level	Lowest dim level of the dimmer.	1	98	15	1% - 98%. (Default 15).
13	1	Meter report threshold	Threshold for device to send meter report in W.	0	0	10	Disabled.
				1	250		1 - 250W (Default 10W).
14	2	Meter report interval	Time interval between consecutive meter reports in seconds.	30	65535	810	30 - 65535 sec. (Default 810 sec=13,5 min).
15	1	ON/OFF Functionality	Decide if the connected load should only turn ON/OFF and not dim	0	0	0	0 ON/OFF mode disabled. (Default).
				1	1		1 ON/OFF mode enabled.

18. AUTOCALIBRATION OF MAXIMUM DIM LEVEL

The dimmer supports an autocalibration feature for the maximum dim level. Autocalibration will initiate if flimmer is detected. The Maximum dim level parameter (11) will be updated automatically upon completion of the autocalibration. The value will also be reported to the gateway.

19. MANUAL CALIBRATION OF MINIMUM DIM LEVEL

The minimum dim level may be calibrated by using the "Min." button on the device. To adjust the minimum level, hold down the "Min." button. The lighting will start from the lowest level and increase the dim level slowly. Release the button when the desired minimum dim level is reached. The minimum dim will now be set on the dimmer. Minimum dim level parameter (12) will be updated automatically.

20. ON/OFF FUNCTIONALITY

The dimmer has support for non-dimmable loads. To activate this feature, change parameter (15) "ON/OFF functionality" to 1. When this is active, the load can no longer be dimmed, but only turned ON and OFF. When using this functionality, we recommend using the dimmer in 3-wire mode. Some light fixtures might not be compatible with 2-wire mode.

21. OVERLOAD PROTECTION

The dimmer supports an overload protection feature. When the connected load exceeds 250W, the dimmer will send a notification to the gateway using the Notification Command Class. (Not all gateways support this feature, so depending on the gateway you may or may not get a warning). The dimmer will continue to function normally until it reaches 300W. It will then turn off the load to protect itself.

22. COMMAND CLASSES

Besides the mandatory command classes, the device has support for the following command classes:

22.1 Basic Command Class

Basic Set commands are mapped to Multilevel Switch and are also used to control the dimming level and associated devices in group 2. Uses the following values:

0x00 = OFF
0xFF = ON
0x01...0x63 = 1% - 99%

22.2 Multilevel Switch Command Class

Multilevel Switch commands are used to control the dimming level and associated devices in group 3.
Uses the following values:
0x00 = OFF
0xFF = ON
0x01...0x63 = 1% - 99%

22.3 Meter Command Class

The device supports Meter Command Class Get, and the device 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	810s, configurable
Electric	W	0x02	2	2	10W, configurable 810s, configurable

22.4 Indicator Command Class

The device supports Indicator Command Class.
The indicator Command Class will turn ON/OFF internal LED as wanted as well as turning the load ON/OFF.

22.5 Central Scene Command Class

The device supports the Central Scene Command Class. This command class is used to perform actions chosen in the controller.

The following attributes are supported:

BUTTON	SCENE NUMBER	KEY ATTRIBUTE	DESCRIPTION
S1 (External switch 1)	1	0x00	Pressed 1 time
		0x01	Released (send only after button was held)
		0x02	Held down (send only when held for more than 500ms)
		0x03	Pressed 2 times
		0x04	Pressed 3 times
S2 (External switch 2)	2	0x00	Pressed 1 time
		0x01	Released (send only after button was held)
		0x02	Held down (send only when held for more than 500ms)
		0x03	Pressed 2 times
		0x04	Pressed 3 times

22.6 Notification Command Class

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

NAME	VALUE	EVENT/ STATE	STATE VARIABLE	STATE VARIABLE AFTER	NOTIFICATION NAME	VALUE
Power management	0x08	State	Overload status	Idle	Overload detected	0x08

23. 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	v1		Yes
Firmware Update MD	v5		Yes
Indicator	v3		Yes
Manufacturer Specific	v2		Yes
Multi Channel Association	v3		Yes
Power level	v1		Yes
Security	v1	Yes	
Security 2	v1	Yes	
Supervision	v1	Yes	
Transport Service	v2	Yes	
Version	v3		Yes
Z-Wave Plus Information	v2	Yes	
Application Status	v1		Yes
Basic	v2		Yes
Central Scene	v3		Yes
Configuration	v4		Yes
Meter	v5		Yes
Notification	v8		Yes
Switch Multilevel	v4		Yes

PRODUCT INFO Heatit ZM Dimmer 250W

FEATURES

- Z-Wave
- Dimmer for inwall installations
- 2 or 3-wire
- 5W - 250W
- LED, incandescent and halogen
- SmartStart
- Scene controller
- Firmware update (OTA)
- Power metering
- Overload protection
- Short circuit protection
- Surge protection
- Overheat protection
- Two external switches
- Min. dim level adjustable
- Max. dim level auto-calibration
- On/off functionality
- Supports encryption mode S0, S2 Authenticated Class, S2 Unauthenticated Class

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

TECHNICAL DATA

Protocol	Z-Wave Plus, 868.4MHz
Chip	Z-Wave 800 chip
Rated voltage	230VAC 50Hz
Power	5W - 250W
Ambient temperature	5°C to 40°C
Storage temperature	-30°C to 70°C
Humidity	10% to 85% RH
Range RF	Min. 40 meters
Screw terminals	Max. 2.5mm² 2Nm
IP Code	IP20
Size (DxWxH)	46 x 45 x 21mm
Approvals	Z-Wave Plus v2, CE, Nemko

MAINTENANCE

The device is maintenance-free. Indoor use only.

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CONTROLS

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