DONEXON

varmo TZ Pro

SKU: DONEVARMOTZPRO

Quickstart

This is a **Z-Wave Device** for **Europe**. To run this device please insert fresh **2 * AA** batteries. Please make sure the internal battery is fully charged. Click on the middle button will confirm inclusion or exclusion and wakeup the device for wireless communication. A long push for 3 seconds on the middle buttons enters and leaves the management mode indicated by a "M" on the LCD display.

Important safety information

Please read this manual carefully. Failure to follow the recommendations in this manual may be dangerous or may violate the law. The manufacturer, importer, distributor and seller shall not be liable for any loss or damage resulting from failure to comply with the instructions in this manual or any other material. Use this equipment only for its intended purpose. Follow the disposal instructions. Do not dispose of electronic equipment or batteries in a fire or near open heat sources.

What is Z-Wave?

Z-Wave is the international wireless protocol for communication in the Smart Home. This device is suited for use in the region mentioned in the Quickstart section.

Z-Wave ensures a reliable communication by reconfirming every message (**two-way communication**) and every mains powered node can act as a repeater for other nodes (**meshed network**) in case the receiver is not in direct wireless range of the transmitter.

This device and every other certified Z-Wave device can be **used together with any other certified Z-Wave device regardless of brand and origin** as long as both are suited for the same frequency range.

If a device supports **secure communication** it will communicate with other devices secure as long as this device provides the same or a higher level of security. Otherwise it will automatically turn into a lower level of security to maintain backward compatibility.

For more information about Z-Wave technology, devices, white papers etc. please refer to www.z-wave.info.

Product Description

varmo TZ Pro is a Z-Wave controlled electronic radiator thermostat. It is mounted on wall heating valves and controls them by a motor. The device accepts a setpoint that is either set manually using buttons on the device or wirelessly using Z-Wave. Afterwards, the device will regulate the warm water supply to the wall radiator and compare the detected temperature to ensure, that the temperature in the room is kept at the desired level. A small LCD panel on the device displays the setpoint temperature on request.

The device has an internal scheduler, that allows to define up to 9 setpoints for up to 7 week days. Once programmed, these setpoints will be activated without any further manual or wireless interaction. Beside setting a desired temperature the device will support, frost protection and intelligent functions like a valve training function to ensure that valves are still operational after longer periods.

The varmo TZ Pro can be mounted to valves with standard M30x1.5 connector or RA2000 (Danfoss snap in).

Prepare for Installation / Reset

Please read the user manual before installing the product.

In order to include (add) a Z-Wave device to a network it **must be in factory default state.** Please make sure to reset the device into factory default. You can do this by performing an Exclusion operation as described below in the manual. Every Z-Wave controller is able to perform this operation however it is recommended to use the primary controller of the previous network to make sure the very device is excluded properly from this network.

Reset to factory default

This device also allows to be reset without any involvement of a Z-Wave controller. This procedure should only be used when the primary controller is inoperable.

Remove the battery cover and take out one battery. Press and hold the (o) button for about 10 secs while reinserting the battery. The device will go into management mode.

Safety Warning for Batteries

The product contains batteries. Please remove the batteries when the device is not used. Do not mix batteries of different charging level or different brands.

Installation

Installation

1. Start by mounting the the adapter.	RA	M30
2. Tighten an RA adapter using the Allen key. Tighten an M30 adapter by hand (max. 5 Nm).	2 mm	
3. Screw the thermostat onto the adapter and hand-tighten (max. 5 Nm).	2. 1.	
4. Press and hold ● for approx. 3 seconds to fix the thermostat		
5. Then turn the thermostat until it is correctly oriented.		

Adjustment to the radiator

The device can be adjusted to the room size. Three room sizes are known. The factory setting is P2. Use P1 if the radiator appears oversized for the room. Use P3 if it is undersized. To change the assumed room size press (p) for 3 seconds to enter management mode (M in display). Press (v) until a "Pb" is displayed in the LCD display. Hit the (o) button. Now select 1, 2 or 3 using the arrow keys and exit with (o).

Removal

To remove the thermostat, insert an appropriate tool in the hole in the thermostat"s battery chamber (see illustration). Keeping the tool in position, turn the entire thermostat anticlockwise until it is completely unscrewed.

Inclusion/Exclusion

On factory default the device does not belong to any Z-Wave network. The device needs to be **added to an existing wireless network** to communicate with the devices of this network. This process is called **Inclusion**.

Devices can also be removed from a network. This process is called **Exclusion**. Both processes are initiated by the primary controller of the Z-Wave network. This controller is turned into exclusion respective inclusion mode. Inclusion and Exclusion is then performed doing a special manual action right on the device.

Inclusion

Click on the middle button will confirm inclusion and wakeup the device for wireless communication. A long push for 3 seconds on the middle buttons enters and leaves the management mode indicated by a "M".

Exclusion

Click on the middle button will confirm exclusion and wakeup the device for wireless communication. A long push for 3 seconds on the middle buttons enters and leaves the management mode indicated by a "M".

Product Usage

The DONEXON device is operated by wireless commands from a Z-Wave controller. It is operated in two different modes:

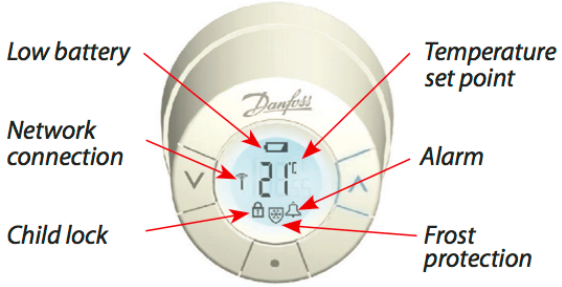
- Direct setting of Temperature Set Point by Controller. (Attention: There may be a delay in execution of a setpoint command due to the wakeup interval of the device. If the setpoint is to be changed at e.g. 16.00 and the wakeup interval is 15 minutes, make sure to send the command latest at 15.45)

The actual temperature setpoint is shown in the LCD display and can be overwritten by using the arrow keys on the device. This overwriting is temporary and only valid until the next change of the temperature setpoint either triggered from external wireless command.

The device will also recognize an open window (sudden temperature drop within short period of time) and turn down the heat for 30 minutes to save energy.

Local LCD Display

The local LCD display gives information about the status of the device



Link Test

The Thermostat allows to check the link quality to the controller device. Press the middle button (o) for 3 seconds until M is displayed. Select "LI" in display using the arrow keys, then confirm the link test with the middle button. A blinking antenna symbol indicates the link test. If the antenna symbol keeps flashing after about 3 seconds there is a problem with the wireless connection. If the antenna symbol stops flashing, the link quality is sufficient. A successfull link test will also terminate the exception mode described below.

The device applies multiple technologies to extend battery life. It is combining multi commands to a single command and adapt its behavior to the capabilities of the network controller. Make sure to use varmo TZ Pro only with Z-Wave controllers fully implementing all battery life time extention methods recommended by Danfoss.

When the battery level is low, the alarm bell icon flashes. If the battery goes flat, the system switches automatically to frost protection mode.++

Adjustment to the radiators and the room

The factory setting is P2. Use P1 if the radiator appears oversized for the room. Use P3 if it is undersized.*

- Press the middle button for at least 3 seconds until M is displayed.
- Press down (V) until Pb is displayed.
- Press the middle button
- Select P1, P2 or P3 using the arrow keys, and exit using the middler button

*The frequency of adjustment for P1, P2 and P3 varies to compensate for radiator over/under sizing.

Node Information Frame

The Node Information Frame (NIF) is the business card of a Z-Wave device. It contains information about the device type and the technical capabilities. The inclusion and exclusion of the device is confirmed by sending out a Node Information Frame. Beside this it may be needed for certain network operations to send out a Node Information Frame. To issue a NIF execute the following action:

Click on the middle button will send out a Node Information Frame (if not in exception mode).

Communication to a Sleeping device (Wakeup)

This device is battery operated and turned into deep sleep state most of the time to save battery life time. Communication with the device is limited. In order to communicate with the device, a static controller **C** is needed in the network. This controller will maintain a mailbox for the battery operated devices and store commands that can not be received during deep sleep state. Without such a controller, communication may become impossible and/or the battery life time is significantly decreased.

This device will wakeup regularly and announce the wakeup state by sending out a so called Wakeup Notification. The controller can then empty the mailbox. Therefore, the device needs to be configured with the desired wakeup interval and the node ID of the controller. If the device was included by a static controller this controller will usually perform all necessary configurations. The wakeup interval is a tradeoff between maximal battery life time and the desired responses of the device. To wakeup the device please perform the following action: Click on the middle button will wakeup the device for wireless communication (if not in exception mode).

Quick trouble shooting

Here are a few hints for network installation if things dont work as expected.

1. Make sure a device is in factory reset state before including. In doubt exclude before include.
2. If inclusion still fails, check if both devices use the same frequency.
3. Remove all dead devices from associations. Otherwise you will see severe delays.
4. Never use sleeping battery devices without a central controller.
5. Dont poll FLIRS devices.
6. Make sure to have enough mains powered device to benefit from the meshing

Association - one device controls an other device

Z-Wave devices control other Z-Wave devices. The relationship between one device controlling another device is called association. In order to control a different device, the controlling device needs to maintain a list of devices that will receive controlling commands. These lists are called association groups and they are always related to certain events (e.g. button pressed, sensor triggers, ...). In case the event happens all devices stored in the respective association group will receive the same wireless command wireless command, typically a 'Basic Set' Command.

Association Groups:

Group Number	Maximum Nodes	Description
1	1	Target for Wakeup and Override Notifications

Technical Data

Dimensions	0.0520000x0.0520000x0.0700000 mm
Weight	113 gr
Hardware Platform	ZM3102
EAN	4251660900018
IP Class	IP 20
Battery Type	2 * AA
Specific Device Class	Thermostat Radiator Valve
Firmware Version	3.30
Z-Wave Version	03.43
Certification ID	ZC08-16050002
Z-Wave Product Id	0002.5FFF.A010
Frequency	Europe - 868,4 Mhz
Maximum transmission power	5 mW

Supported Command Classes

- Battery
- Clock
- Thermostat Setpoint
- Wake Up
- Version
- Climate Control Schedule
- Multi Cmd
- Manufacturer Specific
- Protection

Explanation of Z-Wave specific terms

- **Controller** — is a Z-Wave device with capabilities to manage the network. Controllers are typically Gateways,Remote Controls or battery operated wall controllers.
- **Slave** — is a Z-Wave device without capabilities to manage the network. Slaves can be sensors, actuators and even remote controls.
- **Primary Controller** — is the central organizer of the network. It must be a controller. There can be only one primary controller in a Z-Wave network.
- **Inclusion** — is the process of adding new Z-Wave devices into a network.
- **Exclusion** — is the process of removing Z-Wave devices from the network.
- **Association** — is a control relationship between a controlling device and a controlled device.
- **Wakeup Notification** — is a special wireless message issued by a Z-Wave device to announces that is able to communicate.
- **Node Information Frame** — is a special wireless message issued by a Z-Wave device to announce its capabilities and functions.