Danfoss

Z-Wave RS Room Sensor

SKU: DAN_RS-Z

Quickstart

This is a **Multilevel Sensor** for **Europe**. To run this device please insert fresh **2 * 2 x AA 1,5V** batteries. Please make sure the internal battery is fully charged. To add this device to your network execute the following action:

Press the LED button on the Z-Wave RS.

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.

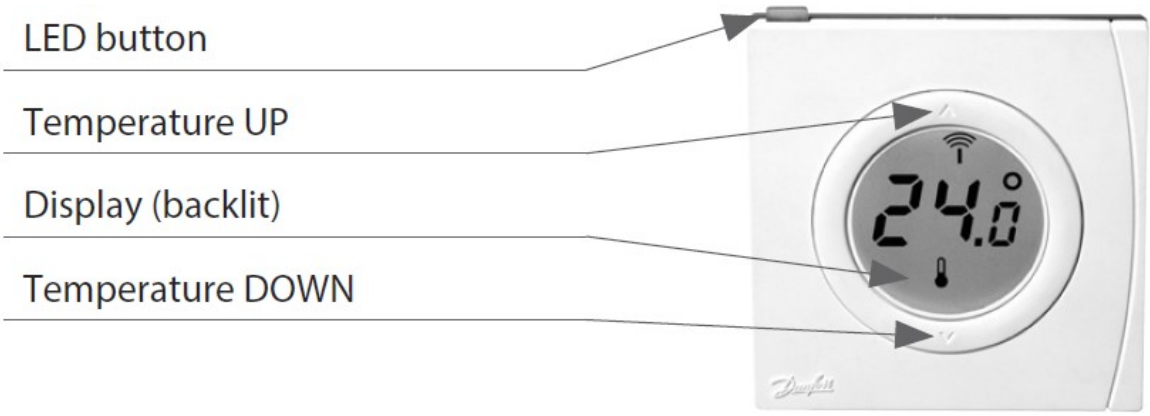
This device and every other certified Z-Wave device can be **used together with any other certified Z-Wave device regardless of brand and origin** as long as both are suited for the same frequency range.

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

Z-Wave RS is a battery operated temperature sensor. When included into Z-Wave wireless network, its buttons can also be used to control the heating system.



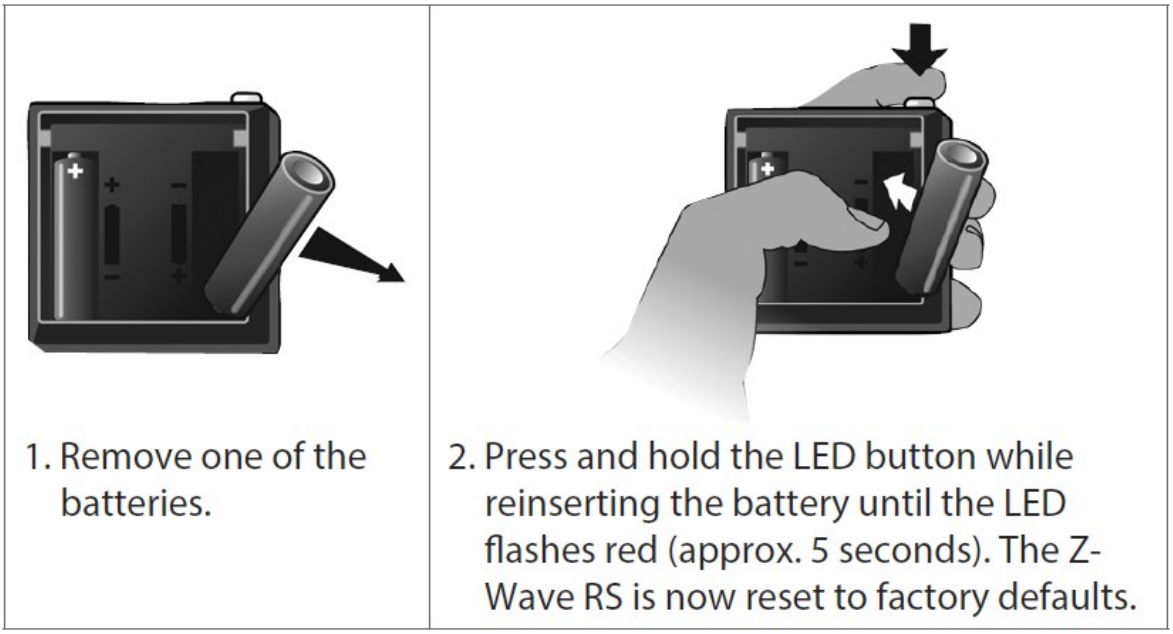
Prepare for Installation / Reset

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

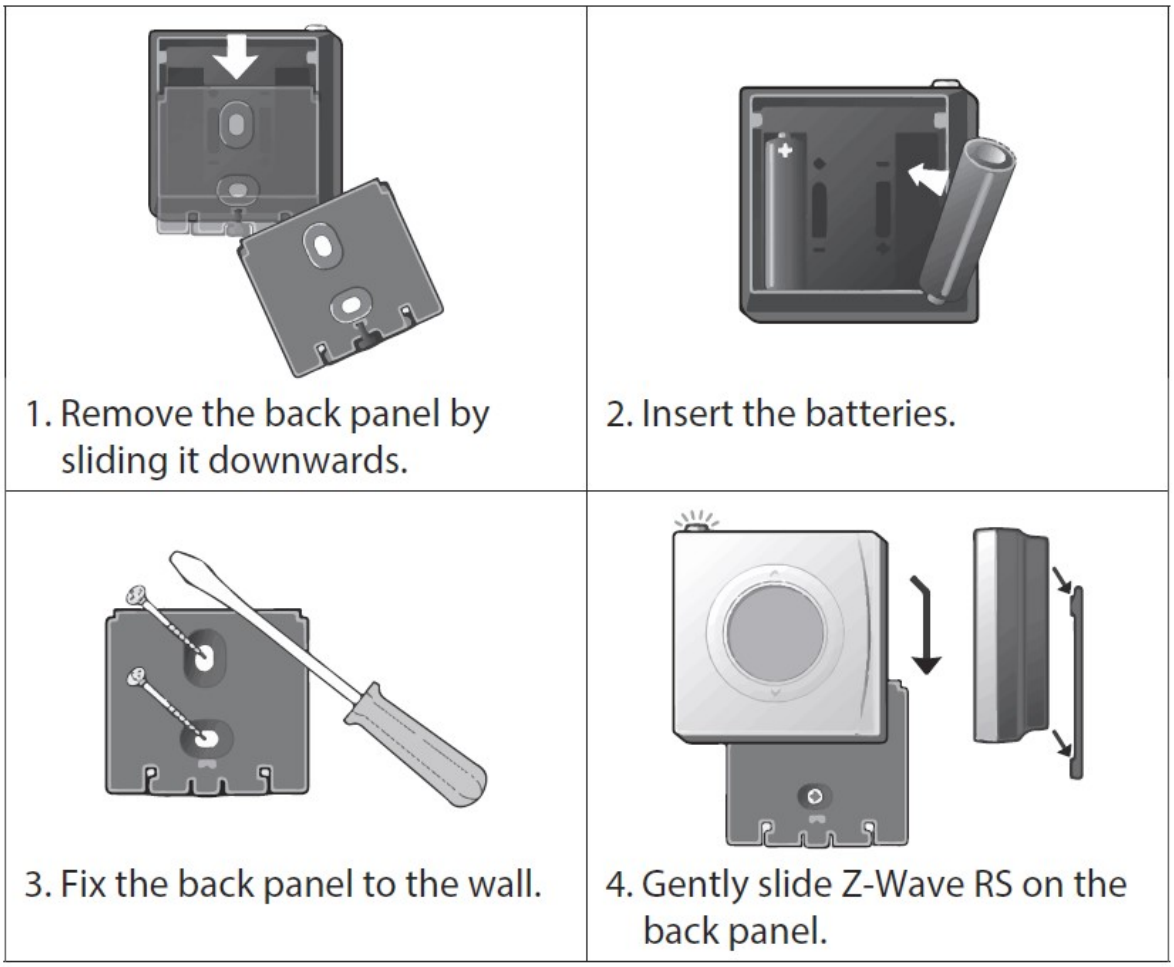
This device also allows to be reset without any involvement of a Z-Wave controller. This procedure should only be used when the primary controller is inoperable.



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



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**.

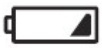
Devices can also be removed from a network. This process is called **Exclusion**. Both processes are initiated by the primary controller of the Z-Wave network. This controller is turned into exclusion respective inclusion mode. Inclusion and Exclusion is then performed doing a special manual action right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

Inclusion

Press the LED button on the Z-Wave RS.

Exclusion
Hold down the 3 buttons on the Z-Wave RS for 5 seconds (up, down and LED buttons).

Product Usage

Display	LED	Explanation
		Room temperature displayed
	Green fast flash	Inclusion or exclusion in progress
	Red flash	Inclusion or exclusion failed
 (blinks)		The Z-Wave RS is included, but does not get any reply from the Controller
	Red flash every 150 second	Low battery level
	Red flash every 30 second	Critical battery level
		Tamper-proof enabled by the controller

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: Each time the LED button is pressed the Z-Wave RS will and send NIF. This is also true when the Z-Wave RS is in tamper-proof 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: A controller can only communicate with the Z-Wave RS when it is awake. The intervals when the Z-Wave RS is awake can be set using the WakeUp Command Class. By default the WakeUp interval is 60 minutes. The Z-Wave RS can be woken manually by pushing any of the three buttons, and will stay awake for 10 seconds.

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	Lifeline

Configuration Parameters

Z-Wave products are supposed to work out of the box after inclusion, however certain configuration can adapt the function better to user needs or unlock further enhanced features.

IMPORTANT: Controllers may only allow configuring signed values. In order to set values in the range 128 ... 255 the value sent in the application shall be the desired value minus 256. For example: To set a parameter to 200 it may be needed to set a value of 200 minus 256 = minus 56. In case of a two byte value the same logic applies: Values greater than 32768 may needed to be given as negative values too.

Parameter 1: Temperature Report threshold

Size: 2 Byte, Default Value: 5

Setting	Description
1 - 100	0.1 to 10°C

Parameter 2: Set-point display resolution

Size: 2 Byte, Default Value: 5

Setting	Description
1 - 100	From 0.1 to 10°C in 0.1°C steps

Parameter 3: Min set-point and override limit

Size: 2 Byte, Default Value: 12

Setting	Description
0 - 40	From min 0°C to max setpoint/override limit

Parameter 4: Max set-point and override limit

Size: 2 Byte, Default Value: 28

Setting	Description
0 - 40	From min setpoint/override limit to max 40°C

Parameter 5: LED Flash period

Size: 2 Byte, Default Value: 1

Setting	Description
0 - 65535	seconds

Parameter 6: Setpoint control function

Size: 1 Byte, Default Value: 1

Setting	Description
0	Disabled
1	Enabled

Parameter 7: Temporarily override scheduler

Size: 1 Byte, Default Value: 1

Setting	Description
0	Disabled
1	Enabled

Parameter 8: Setpoint Type in Thermostat_ Setpoint_Reports

Size: 1 Byte, Default Value: 1

Setting	Description
1	Heating
2	Cooling
10	Auto Changeover

Parameter 9: LED on time

Size: 1 Byte, Default Value: 1

Setting	Description
1 - 5	100 to 500ms in 100ms steps

Parameter 10: Number of LED flashes (duration)

Size: 1 Byte, Default Value: 5

Setting	Description
0 - 255	flashes

Parameter 11: LED Color

Size: 1 Byte, Default Value: 1

Setting	Description
1	Green
2	Red

Technical Data

Dimensions	76x76x23 mm
Weight	70 gr
Hardware Platform	ZM3102
EAN	5702425110177
IP Class	IP 21
Battery Type	2 * 2 x AA 1,5V
Device Type	Multilevel Sensor
Generic Device Class	Multilevel Sensor
Specific Device Class	Routing Multilevel Sensor
Z-Wave Version	4.55.00
Certification ID	ZC08-14070002
Z-Wave Product Id	0x0002.0x0003.0x8010

Supported Command Classes

- Basic
- Battery
- Central Scene
- Configuration
- Indicator
- Manufacturer Specific
- Multi Command
- Sensor Multilevel
- Protection
- Schedule

- Thermostat Setpoint
- Version
- Wake Up

Controlled Command Classes

- Multi Command

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.
