



Installation & User Guide

Z-Wave RS Room Sensor



Introduction

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.

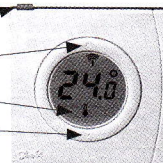
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LED button

Temperature UP

Display (backlit)

Temperature DOWN



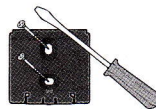
Installation



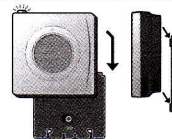
1. Remove the back panel by sliding it downwards.



2. Insert the batteries.



3. Fix the back panel to the wall.



4. Gently slide Z-Wave RS on the back panel.

Display Information

Display	LED	Explanation
		Room temperature displayed
	Green fast flash	Inclusion or exclusion in progress
	Red flash	Inclusion or exclusion failed
		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

Z-wave info

Generic Device Class	Multilevel sensor
Specific Device Class	Routing Multilevel Sensor
Device type	Routing slave
SDK	4.55
NWI	Yes
Explorer frames	Yes
Manufacturer ID	0x0002
Product Type ID	0x0003
Product ID	0x8010

Z-wave command classes

Command Class	Version	Description	GB
BASIC	V1	<ul style="list-style-type: none"> Basic SET: Not Supported Basic GET: Multilevel Sensor Get Basic REPORT: Multilevel Sensor Report (1°C accuracy) 	
MANUFACTURER_SPECIFIC	V2	Danfoss and Z-Wave RS IDs	
VERSION	V2	Version of the command classes, the Z-wave library and the Z-Wave RS	
BATTERY	V1	Battery status	
MULTI_CMD	V1	Conserve battery, transmitting multiple commands in a single packet	
WAKE_UP	V2	Wake-up interval range 5 min. to 24h (default: 60 minutes)	
PROTECTION	V2	0 = No protection 2 = User interface locked	
CONFIGURATION	V2	Z-Wave RS specific configuration.	
SENSOR_MULTILEVEL	V6	Reports reading from the room temperature sensor.	
CENTRAL_SCENE	V1	Pushing the LED button triggers transmission of CENTRAL_SCENE_NOTIFICATION.	
THERMOSTAT_SETPOINT	V3	When a set-point temperature is selected on the display, a set-point report containing the value is sent to the controller.	
SCHEDULE	V1	When a temperature and number of hours are selected on the display, an override schedule report will be sent to the controller containing the values.	
INDICATOR	V1	Control of the LED indication.	

Functions

1. Room Temperature Sensor

Command Class	SENSOR_MULTILEVEL	The room temperature can be read on the display, as indicated by the icon . When included into Z-Wave network, a temperature report is sent to the controller during wake-up and also when the temperature has changed beyond configured threshold limit.
Display accuracy	0.1°C	
Sensor read	Every 5 min.	
Report sent	During WakeUp If report threshold passed	
CONFIGURATION COMMAND CLASS		Default Range
Report threshold	0.5°C	0.1 to 10°C

2. Toggle Switch

Command Class	CENTRAL_SCENE	When the LED button is clicked a CENTRAL_SCENE_NOTIFICATION is sent to the controller.
Supported key attributes	0x00 / 0x01 / 0x02	

3. Control of LED

Command Class	INDICATOR	The controller can start and stop a flashing indication of the LED button using the Indicator Set command. The frequency, number of flashes and color of the session are controlled by 4 configuration parameters.
Indicator Set	0xFF = Start LED flash session	
	0x00 = Stop running session	
CONFIGURATION COMMAND CLASS		Default Range
LED on time	100 ms	100 to 500 ms in 100 ms steps
LED Flash period	1 s	0 to 65535 seconds
Number of LED flashes (duration)	5	0 to 255 flashes
LED Colour	Green	Green, Red

4. Change Set-Point

Command Class	THERMOSTAT_SETPOINT	The up and down arrow buttons are used to select a new set-point temperature. After a set-point has been selected, it will flash for 5 seconds. After that the measured temperature is displayed again and the Z-Wave RS sends the selected temperature as a THERMOSTAT_SETPOINT_REPORT to the Z-Wave controller.	
CONFIGURATION COMMAND CLASS		Default	Range
Setpoint control function	Enabled	Disabled / enabled	
Set-point display resolution	0.5°C	From 0.1 to 10°C in 0.1°C steps	
Max set-point and override limit	28°C	From min setpoint/override limit to max 40°C	
Min set-point and override limit	12°C	From min 0°C to max. setpoint/override limit	
Setpoint Type in Thermostat_Setpoint_Reports	Heating #1	Heating #1, Cooling #1, Auto Changeover	

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5. Override Thermostat Scheduler

Command Class	SCHEDULE	The up and down arrow buttons are used to select the temporary override temperature. The selected value flashes on the display for 5 seconds. Before the 5 seconds are gone, push the LED button to select number of hours to override. The selected number of hours will flash for 5 seconds. After that the measured temperature is displayed again and the Z-Wave RS sends the selected temperature and the number of hours as a SCHEDULE_REPORT to the Z-Wave controller.
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CONFIGURATION COMMAND CLASS	Default	Range
Temporarily override scheduler	Enabled	Disabled / Enabled
Set-point display resolution	0.5°C	From 0.1 to 10°C in 0.1°C steps
Max set-point and override limit	28°C	From min setpoint/override limit to max. 40°C
Min set-point and override limit	12°C	From min 0°C to max. setpoint/override limit

Configuration Command Class

No.	Configuration parameter	Default	Range	Encoding
1	Temperature Report threshold	0.5°C	0.1 to 10°C	2 bytes 1 = 0.1°C 100 = 10.0°C
2	Set-point display resolution	0.5°C	From 0.1 to 10°C in 0.1°C steps	2 bytes 1 = 0.1°C 100 = 10.0°C
3	Min set-point and override limit	12°C	From min 0°C to max setpoint/override limit	2 bytes 0 = 0°C 40 = 40°C
4	Max set-point and override limit	28°C	From min setpoint/override limit to max 40°C	
6	Setpoint control function	Enabled	Disabled / enabled	1 byte 0 = Disabled 1 = Enabled
7	Temporarily override scheduler	Enabled	Disabled / enabled	
8	Setpoint Type in Thermostat_Setpoint_Reports	Heating	Heating #1, Cooling #1, Auto Changeover	1 byte 1 = Heating #1 2 = Cooling #1 10 = Auto Changeover
9	LED on time	100ms	100 to 500ms in 100ms steps	1 byte 1 = 100ms 5 = 500ms
5	LED Flash period	1s	0 to 65535 seconds	2 bytes
10	Number of LED flashes (duration)	5	0 to 255 flashes	1 byte
11	LED Color	Green	Green, Red	1 byte 0x01 = Green 0x02 = Red

Z-Wave Networks

The Z-Wave RS can be included and operated in any Z-Wave network with other Z-Wave certified devices from any other manufacturers.

All constantly powered Z-Wave nodes in the same network will act as repeaters regardless of the vendor.

Z-Wave best practice

- After a successful "Inclusion" the controller must send a WAKE_UP_INTERVAL_SET command to the Z-Wave RS in order to specify where and when the Z-Wave RS should communicate wirelessly.
- After sending the WAKE_UP_INTERVAL_SET command, the controller must assign return routes, so the Z-Wave RS can reach its destination i.e. the nodeID set in the WAKE_UP_INTERVAL_SET command.
- The nodeID set in the WAKE_UP_INTERVAL_SET command must be for a permanently listening device which responds to the commands sent from the Z-Wave RS. If the controller is turned off for extended periods, the Z-Wave RS will use the batteries too fast.
- Although the Z-Wave RS supports single commands, multi commands must always be used to ensure long battery lifetime.

Z-Wave Inclusion

- Ensure that the Z-Wave RS is factory reset.
- Activate "Inclusion" on the Z-Wave controller.
- Press the LED button on the Z-Wave RS.
- Observe both controller and Z-Wave RS for status of the process.

Z-Wave Exclusion

- Activate "Exclusion" on the Z-Wave controller.
- Hold down the 3 buttons on the Z-Wave RS for 5 seconds (up, down and LED buttons).
- Observe both controller and Z-Wave RS for status of the process.

Z-Wave WakeUp

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.

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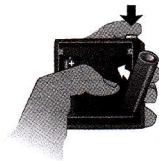
Z-Wave Node Information Frame

Each time the LED button is pressed the Z-Wave RS will send NIF. This is also true when the Z-Wave RS is in tamper-proof mode.

Factory Reset



1. Remove one of the batteries.



2. Press and hold the LED button while reinserting the battery until the LED flashes red (approx. 5 seconds). The Z-Wave RS is now reset to factory defaults.

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Technical Specifications

Battery	Alkaline 2 x AA, 1.5 V
Battery lifetime	Up to 4-5 years
Backlight	Green LED
Ambient temperature	0° to +40°C
Battery monitoring	The sensor has a built-in monitoring circuit, which will detect low or critical battery level.
Transmission frequency	868.42 MHz
Transmission range in normal buildings	Up to 30 m
Transmission power	Max. 1 mW
IP class	21
Dimensions	81 mm x 66 mm x 21 mm

Certifications

