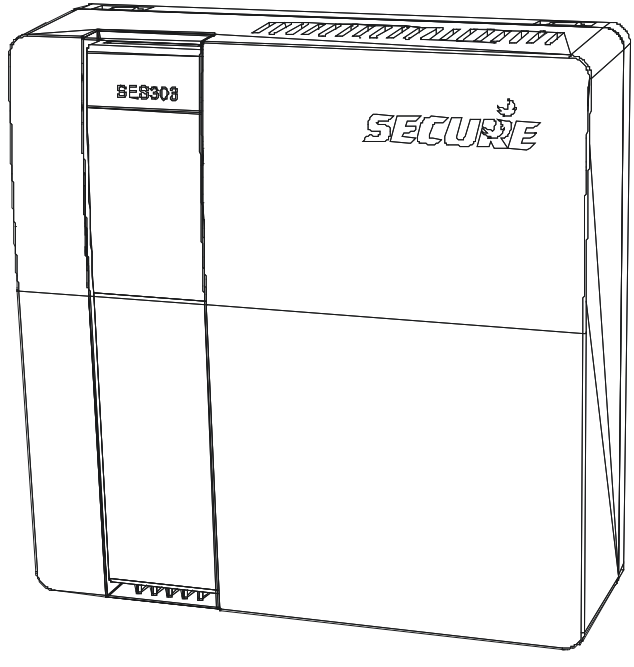
SES 302 and SES 303
Temperature & Humidity Sensor



User and Installation Instructions

BGX501-923-03

SES 302 and SES 303

The Secure SES 302 and SES 303 form part of a Z-Wave Plus™ home automation network. The SES 302 measures temperature whilst the SES 303 measures temperature and humidity. The sensors are battery-operated devices which transmit information to an associated device in a network.

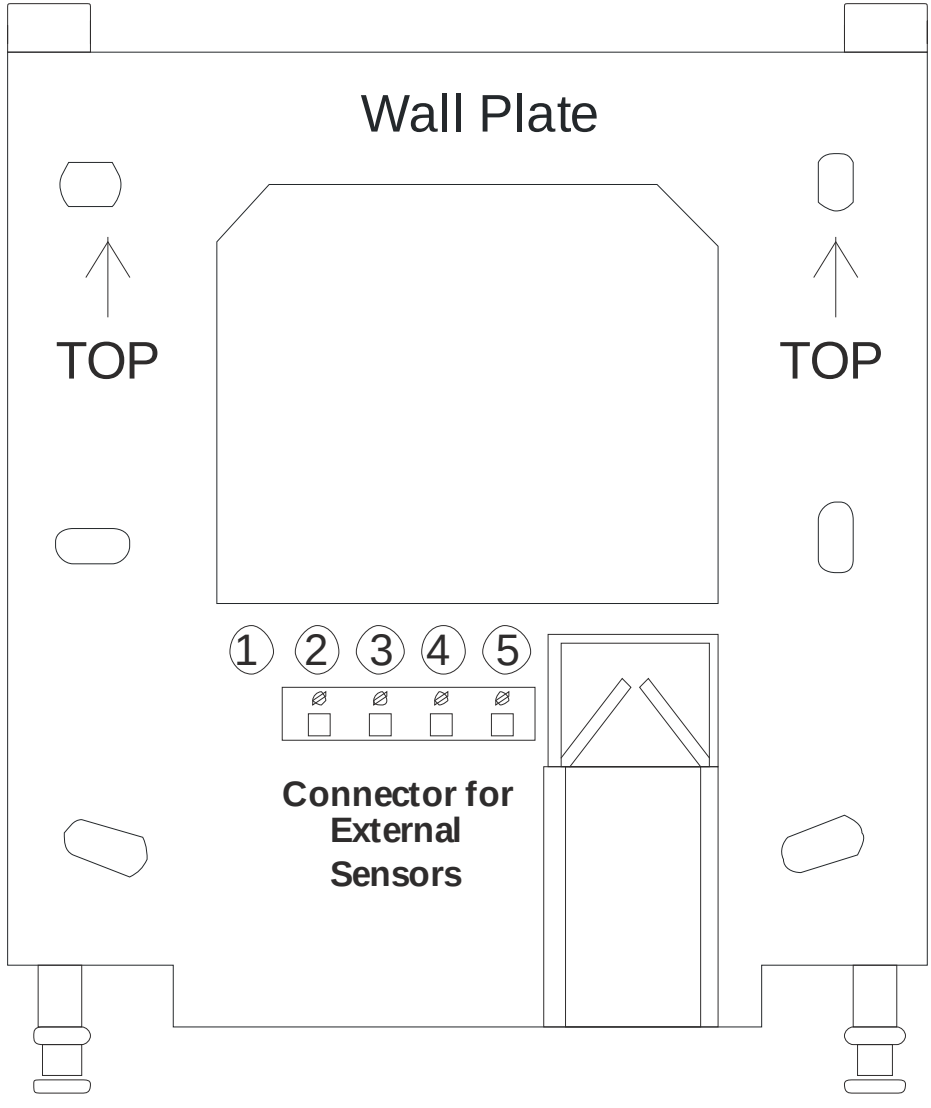
The SES 302 and SES 303 are fully compliant Z-Wave Plus™ devices which will work with other manufacturer's Z-Wave devices.

External Pipe and Tank Temperature Sensors (Optional)

The SES 302/303 can support either 1-thermistor (SES 001) or up to 4-external digital temperature sensors (SES 002/003).

Please take note of the following:

1. Refer “Product Ordering Codes” section for order details.
2. The connector for external probes is on the rear wall plate.
3. The connector is only for connecting external sensors.
4. Do not connect to the mains.



5. Refer to the Pipe/ Tank temperature sensor (SES 00x) manual for the connection diagram.

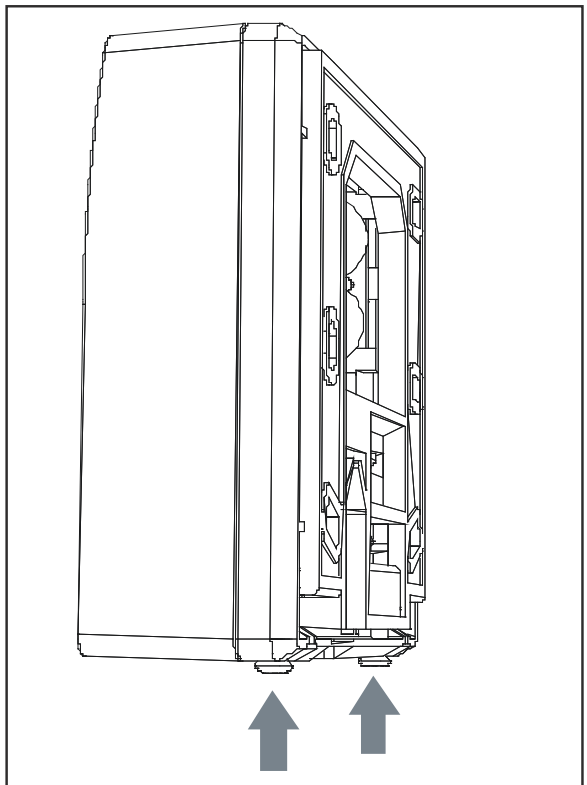
Installation

Keep the SES 302 / SES 303 in its sealed pack until all dust and debris have been cleared away prior to making connections.

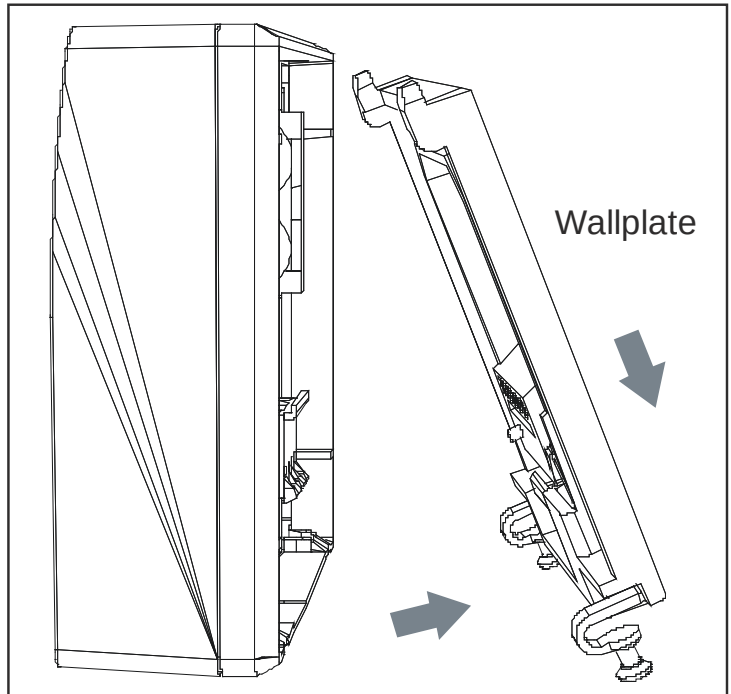
Remove the wall plate from the rear of the SES 302/303.

a) The wall plate can be released by pressing the spring clips on the bottom of the wall plate

b) While pressing spring clips, swing the wall plate out and down to remove.

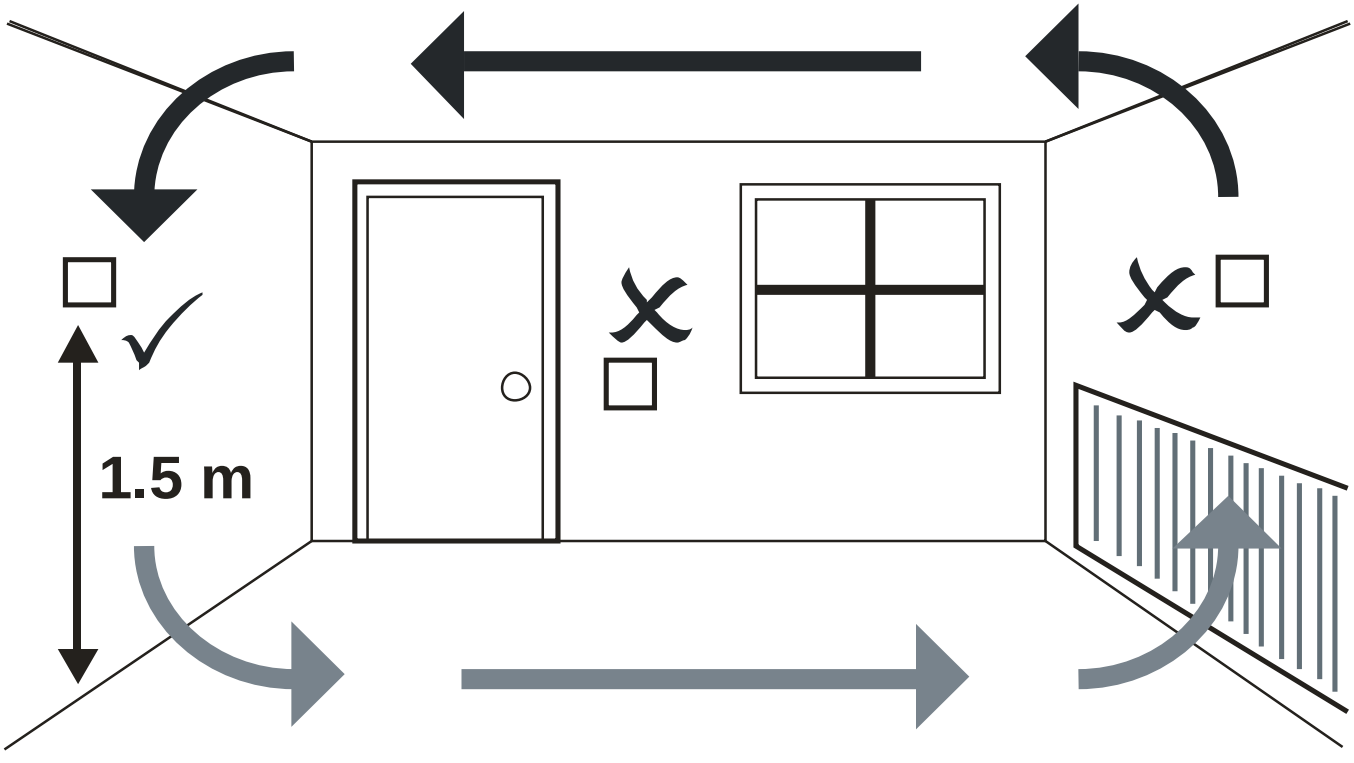


a) Push spring clips to release



b) Swing wallplate out and down

Choose the position where the unit is to be mounted (refer to the following layout).



Avoid locations alongside or behind large metal surfaces that could interfere with the low power radio signals between the unit

and the controller. The sensor should be mounted on an internal wall, approximately 1.5 metres (5 feet) above floor level and away from draughts, direct heat sources and sunlight.

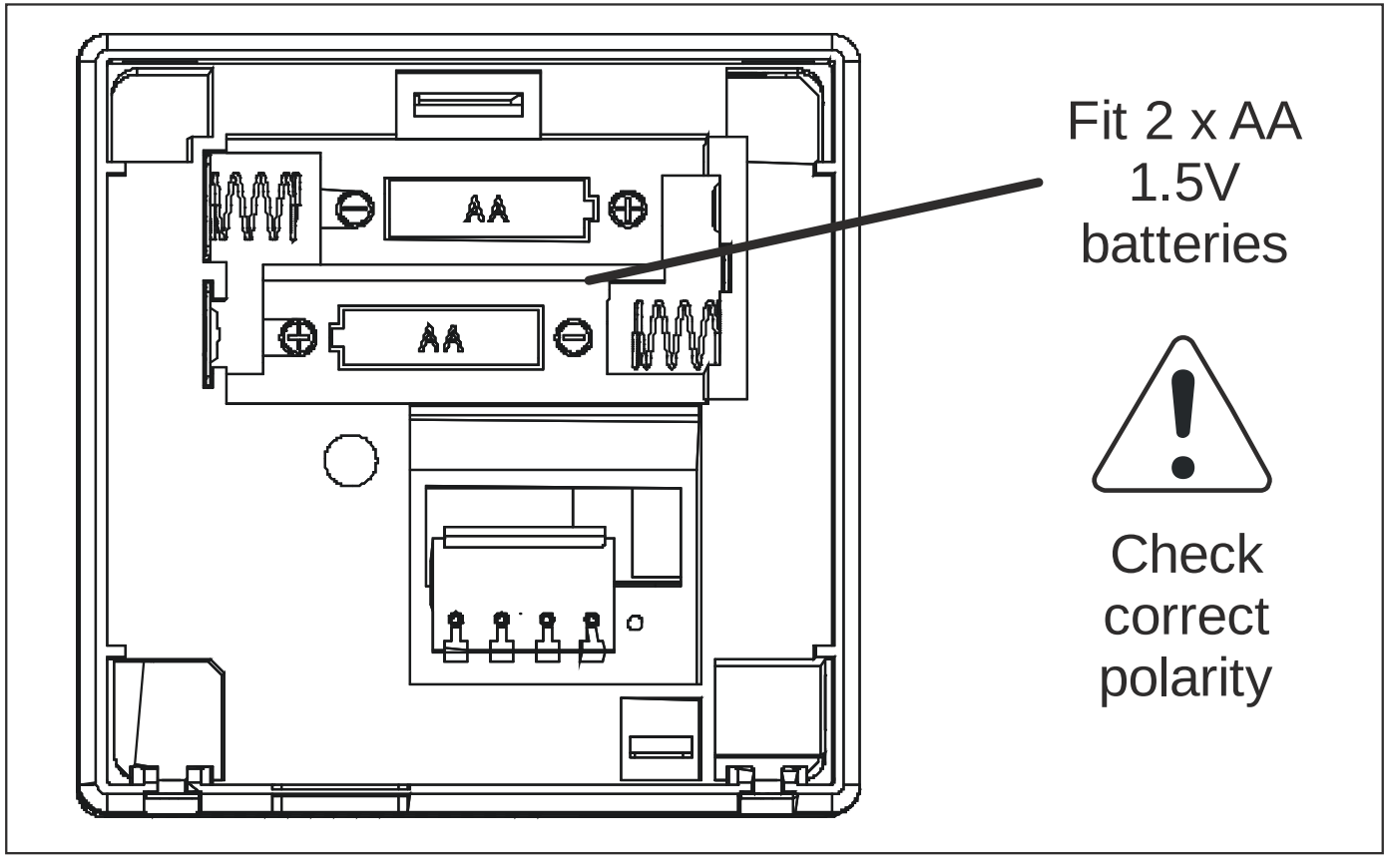
Make sure that there is sufficient space around the unit to allow easy access to the two retaining spring clips on the base of the wall plate.

It may be necessary to move the sensor around to ensure good communication.

Do not attempt to mount it on the wall until it has been included on the network.

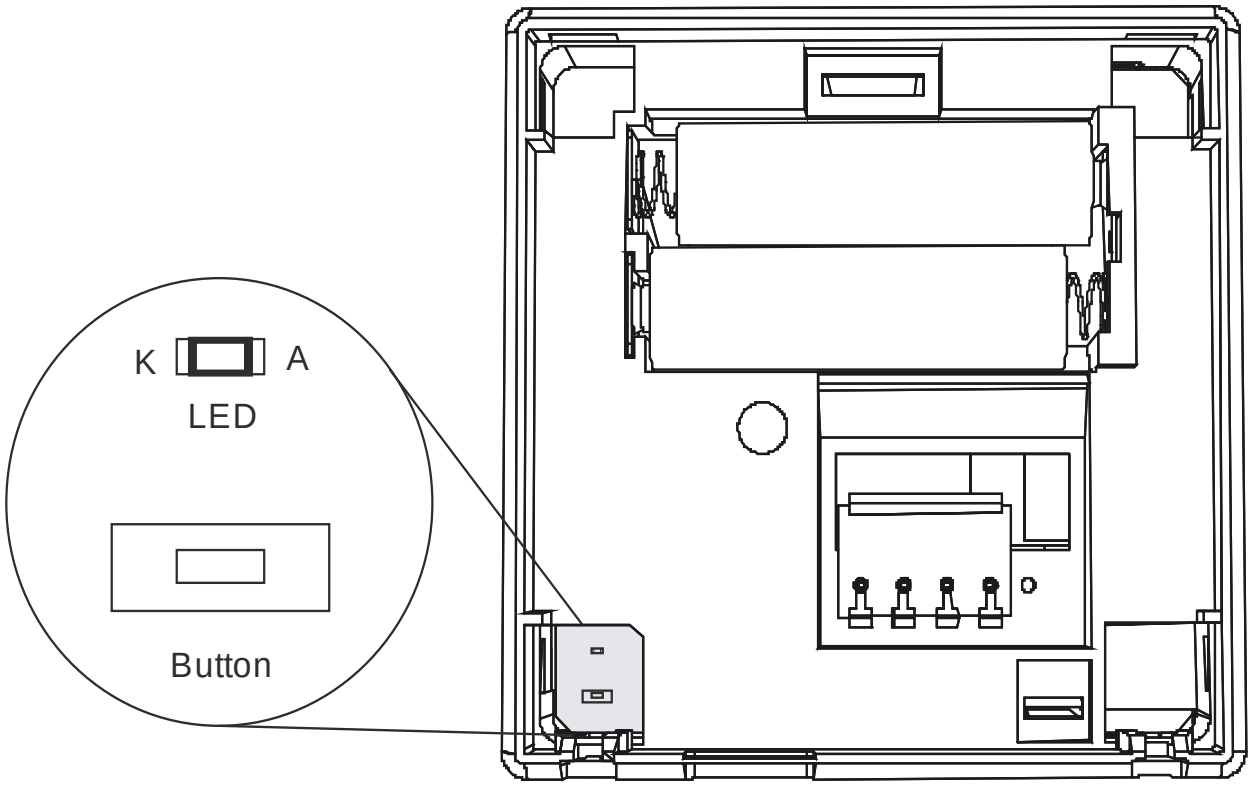
Note: Inclusion means add and exclusion means delete.

Including and Excluding a Device



Fit the two supplied AA batteries. The battery compartment is marked with a plus and minus sign. Ensure that each battery is correctly aligned. The SES 302/303 will now power up.

Step 1: On the Z-Wave controller, select Include if you are adding a device to the network or select Exclude if you are removing a device from the network. Check with the controller manufacturer’s manual.



Step 2: On the SES 302 or SES 303, press the button, hold and release after 1 second

to send a request (Network Information Frame) to join the network.

On successful inclusion the LED will flash 2 times.

The total process can take up to 20 seconds; refer to the “Radio” section for details.

If the LED flashes 4-times this means that the inclusion process has failed, so try moving the SES 302/SES 303 to another position and repeat the Inclusion steps. If the inclusion process fails again, the device may be already included in another network. So first exclude and then include the device.

The controller will show when the inclusion/ Exclusion operation is successful.

Associating a Device on a Z-Wave Network

Association process is applicable only after device included onto network) Please note that some controllers can automatically associate. Always check with the manufacturer’s manual.

Step 1: Put the controller into Association Mode.

Step 2: Press and hold SES 302/ SES 303 button for more than 1 second and then release.

Step 3: The controller will confirm association when the process is successfully completed.

RF communication check after installation

Press button for less than 1 second. The SES 302/SES 303 will send temperature report of onboard sensor.

Note: this feature only works when the device has been included in network and the nodes associated.

Sending Node Information- Press and hold SES 302/303 button for more than 1 second and then release.

Device Endpoints details

End Point No.	Reports to the nodes at the Endpoint
1	Measured Temperature report.
	Measured Humidity report.
	Low battery Alarm report.
2	Temperature report external digital sensor 01 or thermistor.
3	Temperature report external digital sensor 02.
4	Temperature report external digital sensor 03
5	Temperature report external digital sensor 04

Technical Information of Z-Wave Plus command classes

Z-Wave Plus Device Classes	Implemented Device Class
Generic	Multilevel sensor
Specific	Routing Multilevel sensor
Basic	Routing Slave
Battery operated devices do not support routing functionality.	

Command Class	**Commands Supported**
Multilevel Sensor (V6)	Get
	Report
Used to report measured sensor values to associated nodes.	
Manufacturer Specific (V2)	Manufacturer Specific Get
	Manufacturer Specific Report
	Device Specific Get
	Device Specific Report

Manufacturer ID = 0x0059 Product Type ID = 0x000D Product ID = 0x0002 (SES 302) Product ID = 0x0003 (SES 303)	
Version (V2)	Get
	Report
	Version Command Class Get
	Version Command Class Report
Battery Level (V1)	Get
	Report
Battery report is issued on a battery change or when a low-level battery is detected.	
Wake Up (V2)	Wake Up Interval Capabilities Get
	Wake Up Interval Capabilities
	Wake Up Interval Set
	Wake Up Interval Get
	Wake Up Interval Report
	Wake Up Notification

	Wake Up No More Information
Wakeup interval step is 60 seconds Minimum wakeup interval is 2 minutes Maximum wakeup interval is 24 hours Default wakeup interval is 24 hours	
Association (V2)	Set
	Get
	Report
	Remove
	Supported Groupings Get
	Supported Groupings Report
	Specific Group Get Command
	Specific Group Report Command
Product supports one group for each end point that have a maximum of 2 nodes.	
Multi Channel (V3)	Multi Channel End Point Get
	Multi Channel End Point Report
	Multi Channel Capability Get

	Multi Channel Capability Report
	Multi Channel End Point Find
	Multi Channel End Point Find
	Multi Channel Command Encapsulation

Up to a maximum of five end points supported. The number of end points on the product is detected based on the number of external sensors connected to the product at the time of Inclusion.
If external sensor not connected this command class is not supported.

Note: external digital sensors must have correct hardware address otherwise it will not work.

For example: If one external sensor is connected it should have HW address 1. If two external sensors are connected it should have HW address 1 and 2
Note: Refer to the Pipe/Tank temperature sensor (SES 00x) manual for device address setting.

Configuration (V1)	Set
	Get
	Report
For configuration details refer to the “Configuration Parameters” section.	
Device Locally Reset (V1)	Report
Button press 3 times within 3 seconds will put the device in factory default, that include setting all the configuration, Association to factory default and removing the device from Z-Wave network.	
Association Group Info (V1)	Group Name Get
	Group Name Report
	Group Info get
	Group Info Report
	Group Command List Get
	Group Command List Report
Only one association group is supported on each end point and its name is “Lifeline”.	

Profile MSB - ASSOCIATION_GROUP_INFO_REPORT_PROFILE_GENERAL Profile LSB - ASSOCIATION_GROUP_INFO_REPORT_PROFILE_GENERAL_NA	
Supported Command class and command : 1. COMMAND_CLASS_SENSOR_MULTILEVEL, SENSOR_MULTILEVEL_REPORT_V6 2. COMMAND_CLASS_BATTERY, BATTERY_REPORT	
Z-Wave Plus Info (V2)	Get
	Report

Role Type - ROLE_TYPE_SLAVE_SLEEPING_REPORTING Node Type - ZWAVEPLUS_INFO_REPORT_NODE_TYPE_ZWAVEPLUS_NODE Installer Icon- ICON_TYPE_SPECIFIC_SENSOR_MULTILEVEL_MULTIDEVICE User Icon- ICON_TYPE_SPECIFIC_SENSOR_MULTILEVEL_MULTIDEVICE	
Power Level (V1)	Power Level Set
	Power Level Get
	Power Level Report
	Power Level Test Node Set
	Power Level Test Node Get
	Power Level Test Node Report
None	

Configuration Parameters

No	Type	Unit	Resolution	Default Value	Supported Endpoints
1	Delta Temp	°C	0.1	0°C	1 - 5
2	Temp Reporting Interval	Mins	1	5 Min	1 – 5
3	Delta Humidity	RH %	0.1	5 %Rh	1
4	Humidity Reporting Interval	Mins	1	5 Min	1

Common attributes:
Access Types = Read/ Write
Size Bytes = 1, Min Value = 0, Max Value = 255
Zero configuration mean that the corresponding functionality is disabled.

Configuration value = Desired value/ Resolution.

Example: To configure Delta temperature to 2 °C. The value need to be configured in device is 2/0.1 = 20.

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 equal to desired value minus 256. For example, to set Delta Temperature to 130, it may be needed to set a value 130−256=−126.

Note: For more information about Z-Wave command classes and their use refer "SDS12652 Z-Wave Command Class Specification" ver 3 or above and "SDS12657 Z-Wave Command Class Specification" ver 2 or above.

Product Ordering Codes

SES 302	Z-Wave Temperature Sensor	NU2010302000
SES 303	Z-Wave Temperature and Humidity Sensor	NU2010303000
SES 001	Thermistor Temperature Sensor with 3m cable	BGX301-536
SES 002	Digital Pipe & Tank Temperature Sensor with 1m cable	NU5680501000
SES 003	Digital Pipe & Tank Temperature Sensor with 4m cable	NU5680601000

Technical Specifications

Specification applies to both SES 302 and SES 303 unless otherwise stated.

Electrical

Purpose of Control:	Electronic Temperature and Humidity Sensor (Independently Mounted)
Software Class:	Class A

Battery operated device using two AA batteries.
** Do not use rechargeable batteries**

Each battery:	1.5V
Nominal Life:	2 years (with onboard & 4 wired temp sensors with the default configuration)

For 5-years battery life, delta reporting should be zero and no external sensors:

(1) SES 302: configure >15min reporting interval
(2) SES 303: configure >1hour reporting interval

Measurement

SES 302:	Temperature Accuracy: ±0.5°C for 0°C to 40°C
SES 303:	Temperature Accuracy: ±0.5°C for 0°C to 40°C Humidity Accuracy: ±3% RH for 20% RH to 80% RH
SES 001:	Accuracy of optional NTC temperature probe: ±1.0°C for 15°C to 85°C
SES 002 / SES003:	Accuracy of optional pipe / tank sensor: ±0.5°C for 0°C to 65°C &±1°C for 66°C to 85°C

Mechanical

Dimensions:	85x85x30 mm
Case Material:	Thermoplastic, flame retardant
Mounting	Wall mounting to fit a single gang wall box
Weight (single unit packing):	205 ± 30 g
Ball Pressure Test Temperature:	75°C

After Care: Clean only with a clean damp cloth; do not use any aggressive cleaning agents. If cleaning agents are necessary, check compatibility before use.

Environmental

Storage temperature:	-20°C to 55°C
Operating temperature:	0°C to 40°C
Environmental humidity range:	0%RH to 95%RH
Atmospheric Range:	980 to 1035 hPa
Pollution Degree:	Degree 2
Enclosure protection:	IP30

Radio

Receiver Category:	Category 3
Power Class:	Class B
RF frequency	
Europe & UK:	868.42MHz
ANZ:	921.42MHz
RF range:	100m line of sight in open air.

Inclusion: If the Z-Wave controller does not respond within 2-seconds then the SES will try with NWI (Network Wise Inclusion). The total process can take up to 20 seconds.

This is a Z-Wave certified product and can be used with Z-Wave controllers that support its functionality. Please refer to the documentation provided by the gateway or controller manufacturer. See the Z-Wave alliance website www.z-wavealliance.org for certified controllers.

Compliance

IEC 61010-1
R&TTE directive
ETSI EN 300 220-2
EN 301 489 part 1 & 3
EN 61000 – 4 -2 & 3.

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