



SCS311 / SCS317 Installation Instructions



SCS311 or SCS317 Wireless Programmable Room Thermostat

Programmable room thermostats are widely recognised as one of the best ways in which to control central heating. The SCS311 & SCS317 programmable room thermostats have a large display and intuitive user interface, making them easy to set up and use. The SCS311 & SCS317 use a sophisticated time proportional integral (TPI) algorithm for accurate temperature control and energy efficiency. The SCS311 & SCS317 operate within a wider Z-Wave RF network, as a secondary or inclusion controller under any 3rd party gateway or other primary controller. When operating in a network that includes a gateway, it offers full access to the heating program whilst still maintaining control of the devices within its heating sub system. The SCS311 & SCS317 use the Wake Up Command Class to synchronise and exchange data with any 3rd party Gateway or Controller.

Installation and connection should only be carried out by a suitable qualified person and in accordance with the relevant wiring regulations.

Warning: Isolate mains supply before commencing installation.¹

TPI Temperature control software

Thermostats using TPI (Time Proportional Integral) control algorithms will reduce the temperature swing that normally occurs when using traditional bellows or thermally operated thermostats. As a consequence, a TPI regulating thermostat will maintain the comfort level far more efficiently than any traditional thermostat.

When used with a condensing boiler, the TPI thermostat will help to save energy as the control algorithm allows the boiler to operate in condensing mode more consistently compared to older types of thermostat.

- For Gas boilers set the TPI setting to 6 cycles per hour (default setting)
- For Oil boilers set the TPI setting to 3 cycles per hour
- For Electric heating set the TPI setting to 12 cycles per hour

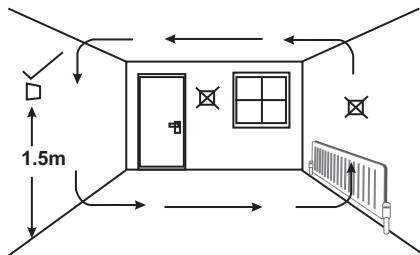
To adjust this setting go to the SET UP MENU and select TPI CYCLES

Fitting the SCS311 / SCS317 Programmable Room Thermostat

First install the 2 x AA batteries provided making sure that they are fitted correctly as indicated by the markings in the battery compartment on the front of the SCS311 and SCS317.

Once the SCS311 or SCS317 is successfully included / paired the SCS311 or SCS317 can be installed in its correct location.

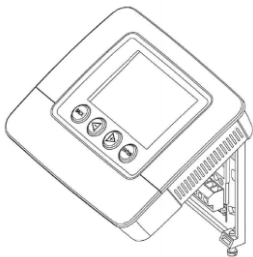
Avoid installing the SCS311 / SCS317 against or behind any large metal surfaces which could interfere with the radio signals. The SCS311 / SCS317 should be mounted on an internal wall approximately 1.5 metres from floor level using the wall plate provided and should be in a position away from draughts, direct heat and sunlight. Ensure that there will be enough space to allow easy access to the two retaining screws located at the base of the wall plate.



Before fixing the wall plate in position check to see that the thermostat is still able to communicate satisfactorily with the controller by turning the thermostat temperature up the controller should provide the appropriate response.

Offer the plate to the wall in the position where the SCS311 / SCS317 is to be mounted and mark the fixing positions through the slots in the wall plate. Drill and plug the wall, then secure the plate into position. The slots in the wall plate will compensate for any misalignment of the fixings.

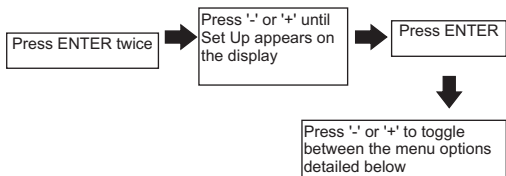
Complete installation by swinging the SCS311 / SCS317 into position by engaging with the lugs at the top of the wall plate before pushing it carefully home into its plug-in terminal block.



Tighten the 2 captive screws on the underside of the unit.

Accessing SET UP MENU/ Z-WAVE Menu

To access the SET UP MENU take the following steps.



Menu Options

Select clock format	This allows the display to show the time in 24 hour or AM/PM format
Daylight saving	This is the adjustment made in the UK when the clocks go back or forward in the Autumn and Spring Default setting ON
Standby temperature	This is the temperature setting used when in Standby or Holiday mode (Min 5°C / Max 30°C) In cold weather the heating will activate if the temperature being measured falls below this temperature setting
Lower temperature limit	This sets the lowest temperature setting the SCS311 or SCS317 will allow to be programmed Default setting 5°C

Upper temperature limit	<p>This sets the highest temperature setting the SCS311 or SCS317 will allow to be programmed</p> <p>Default setting is 30°C</p>	
TPI cycles per hour	<p>This setting helps the TPI energy saving software to operate correctly depending on the type of heating system you have</p>	
Optimum start	<p>This calculates the amount of time the SCS311 or SCS317 may need to switch on in advance of the next target temperature setting in order to meet the requirement</p>	
Tamper setting	<p>This setting allows a 4 digit release code to be set up to stop unauthorised adjustments being made in multi occupancy buildings</p>	
Set up Z-Wave	<p>Sub Menu</p> <p>Include node / receiver</p> <p>Exclude node / receiver</p> <p>Send NIF</p> <p>Learn</p>	<p>Description</p> <p>Include other devices onto the network.</p> <p>Remove devices from a network.</p> <p>Sends a Node Information Frame (NIF) as a broadcast message.</p> <p>Used for inclusion or exclusion by another controller. This mode can be used for the reception of the primary controller role following a controller shift initiated by the current primary controller.</p>

	Listen	Puts the SCS311 or SCS317 into listen mode, for up to 60 seconds.
	Associate node	Used to manually associate devices to control.
	Disassociate node	Used to manually disassociate all associated switches.
	Controller shift	Used to offer the Primary Controller role to another controller.
	Protocol reset	Used to reset the Z-Wave network.

Include / Exclude

When the Include/Exclude function has been selected it will wait for a request to join the network from another node.

If the installer does not start the Inclusion/Exclusion process of the other node within 60s, or the SCS311 or SCS317 does not receive a response within 3 minutes from another node, then a failed outcome will be indicated.

Note 1: When including a device that supports Thermostat Mode HEAT, the SCS311 or SCS317 will automatically associate it to Group 2 (switch association group).

Note 2: If an associated node to SCS311 or SCS317 is excluded from the network, it will be removed from the Association Group it is stored in.

Learn

When the Learn function has been selected the SCS 311 or SCS317 will wait to be included to or excluded from another controller.

If the installer does not start the inclusion/exclusion process of the other node within 60s, or the SCS311 or SCS317 does not receive a response within 3 minutes of beginning exclusion with another node, then a failed outcome will be indicated.

Note 1: any associations will be cleared if the SCS 311 /317 have engaged in Learn mode with another controller regardless of a successful or failed outcome.

Note 2: the SCS 311 /317 does not support control group replication.

Listen

Puts the SCS311 or SCS317 into a listening state enabling it to receive messages outside of the Wake Up Notification Period. This state lasts for at least 60 seconds or until the user cancels it by pressing BACK.

Associate/Disassociate

This function allows the installer to manually associate /disassociate devices to Association Group 2. When associated the node will be under direct control of the SCS311 or SCS317 heating algorithms. On selecting associate, the installer has 60s to initiate a NIF from desired node. In the event of the 60s period elapsing a failed message will be shown on the display.

Controller Shift

This allows the installer to manually relinquish the primary controller role of the SCS311 or SCS317. When selecting Controller Shift the installer have 60s to initiate Learn Mode on the other controller for the controller shift to take place. (The SCS311 and SCS317 will timer out after 3min if a acceptable response is not received)

If the operation is successful the SCS311 or SCS317 will become a secondary or inclusion controller depending on the new primary controller's capabilities.

Protocol Reset

Provides a full protocol reset and a restoration of all network parameters to their defaults, and generates a new random home ID to operate on. A network reset does not change the heating schedules stored on the device.

A success or failure message will be shown on the display within 5 seconds.

Network Update Scheme

When the SCS311 or SCS317 is a secondary or inclusion controller with a SUC or SIS present in the system, it will request network updates every four hours, to ensure that it has an up to date version of the network table

Installer Settings

There are a number of 'Installer Settings' that should be set on installation.

These can be found under the 'SET UP MENU' on page 13 of the user instructions.

Clock Format	AM/PM or 24 Hour clock display - Default setting AM/PM
Daylight saving	On or Off - Default setting ON
Standby temperature	Frost protection setting – Default setting 5°C
Upper and Lower Temperature limits	Default settings 30°C and 5°C
TPI Cycles	This setting will change according to the type of boiler being used - Default setting 6 For Gas boiler this setting should be 6 cycles per hour For Oil boilers this setting should be 3 cycles per hour For Electric panel heaters this should be 12 cycles per hour
Optimum Start	On or Off – Default setting Off

The TPI Cycles setting and Optimum Start settings should be carefully set on installation as this will affect system performance.

Z-Wave Device Classes	Implemented Device Class
Generic	GENERIC_TYPE_THERMOSTAT
Specific	SPECIFIC_TYPE_NOT_USED
Basic	BASIC_TYPE_CONTROLLER
Command Classes Supported	Description
Manufacturer specific	Secure Controls (UK) Ltd Manufacturer ID Manufacturer ID = 0x0059 Product Type = 0x0004 Product ID = 0x0001
Version	Provides the version number of the application and the protocol stack used
Wake up (v2)	Defines frequency, and to which node, the unit will send Wake up notification. SCS311 or SCS317 remains awake for 10 seconds after the last message, or until Wake up notifications received.
Thermostat set point (v2)	Supports HEAT and AWAY HEATING HEAT. Set, is mapped to the temporary (advance) override. The sent set point will be applied to the end of the current heating cycle. Get, reports the current target temperature. AWAY HEATING Sets and reports the temperature for both STANDBY and HOLIDAY modes.
Multilevel sensor	Reports ambient temperature in °C or °F to 1 decimal place, and sends an unsolicited message to gateway node in Association Group 1 when temperature change by ΔT

Schedule	SET commands will change or update the program held within the SCS311 or SCS317.		
	Parameter Name	Value	Comments
	Number of IDs supported	42/6	SCS311 - 6 schedules, 1 day SCS317 - 42 schedules, 7 days
	Start Time	8/2	SCS311 - Start hour and minute supported SCS317 - Weekdays start time supported
	Number of CC supported	1	
	Supported CC 1	67	Thermostat set point v2
	Supported CC 1 support	1	Only set command accepted
	Override support / Supported override types	130	Overrides supported Advance and run forever supported
	The Get command will provide number of scheduled which can be configured / set.		

Binary switch	<p>Set command</p> <ul style="list-style-type: none"> - 0x00, Cancel holiday mode - 0xFF, Set holiday mode, starting from today and lasts for 7 days, previously stored holiday dates are over written <p>Get command</p> <ul style="list-style-type: none"> - 0xFF, Holiday mode is on/enabled - 0x00, Holiday mode is off <p>Precise dates can only be set locally on SCS311 or SCS317</p>
Thermostat operating state	<p>Reports either call for heat (active) or idle</p> <p>When SCS311 or SCS317 sends a control message to the switch(es) in Association Group 2 it will send an unsolicited thermostat operating state report to the gateway node in Association Group 1</p>
Battery level	<p>Reports battery level as a %, levels below 20% will report a low battery warning to gateway nodes in Association Group 1</p>
Association	<p>Two association groups are supported</p> <p>Group 1 - This node receives unsolicited message from the following events</p> <ul style="list-style-type: none"> - Thermostat set point - Thermostat operating state - Schedule - Multilevel sensor - Battery - Binary switch <p>Only one node can be associated to Association Group 1.</p>

Group 2 - Central heating node controlled by the SCS311 or SCS317 will determine how best to communicate with the device. If thermostat mode Heat Mode is supported the control message will be sent as Thermostat Set HEAT and Thermostat mode set Off, otherwise the device will be controlled by Basic set On and Off commands.

Up to four nodes can be associated to Association Group 2.

Configuration

Parameters (sequential order)

No	Size	Units	Resolution	Min Value	Max Value	Default Value
1	1	°C / °F	1	°C=0 -127	°F=128 -255	0
2	1	°C / °F	1	5	30	5
3	1	°C / °F	1	5	30	5
4	1	°C / °F	1(0.1)	1(0.1)	50 (5)	5(0.5)

Temperature unit selection
 Lower temperature limit
 Upper temperature limit
 Delta T (1°C = 10)

Basic

The Basic command class is mapped to the thermostat set point, with HEAT as the parameter.

Following parameters are used for SET:

0x00 – Enables energy saving mode, temporarily overrides the set temperature with the standby temperature.

0xFF – Set comfort mode, temporarily regulates the room temperature to 21 degrees.

GET command provides the following responses:

0x00 – Energy saving mode enabled

0xFF – Energy saving mode disabled

Basic SET commands will be sent to control devices in Association Group 2 if they do not support the appropriate modes in the thermostat mode command class.

Command Classes Controlled	Description
Time	<p>TIME and DATE GET request the information from node associated to Association Group 1 (the gateway node). If not available the SCS311 or SCS317 will rely on time entered locally.</p> <p>Time and Date will be requested from the gateway shortly after association or power up and then once per day. Unsolicited TIME and DATE REPORTS can be sent to the SCS311 or SCS317 at any time.</p>
Thermostat mode	Supports thermostat mode SET commands (OFF or HEAT) to devices in Association Group 2
Application status	When SCS311 or SCS317 cannot action or respond to messages received, an Application Rejected Request will be sent as a response.
Basic	Basic SET commands will be sent to control devices in Association Group 2 if they do not support the appropriate modes in the thermostat mode command class.

Note 1: Unless otherwise stated all command classes are version 1

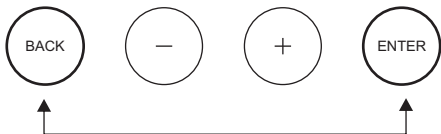
Note 2: "The Delta T" is the change between temperature readings required for the SCS311 or SCS317 to send temperature reports to the Gateway node in Association Group 1. Setting this to its lowest value, 0.1°C, will provide more frequent updates but at higher cost to the battery.

Resetting the SCS311 / SCS317

Electronic equipment can in some circumstances be affected by electrical interference.

If the display becomes frozen or scrambled simply press both the BACK and ENTER button simultaneously.

Using this procedure will restore the SCS311 / SCS317 to the original factory settings, the Time and date will remain correct.



Specification – SCS311 / SCS317

Power Supply	2 x AA Batteries
Contact type	Micro-disconnection
Wiring configuration	Voltage free c/o contacts (SPDT)
Temperature differential	0.5°C
Temperature accuracy	+/- 0.5°C to 21°C
Standards	EN 60730-2-9
Dimensions (WxHxD)	120mm x 100mm x 26.5mm
Weight	0.3kg (approx)
Enclosure	Flame retardant thermoplastic
Ingress protection	IP30
Pollution degree	Degree 2
Insulation class	Class II (Double Insulated)
Temperature range	0°C to 40°C
Transmitter Frequency	868 MHZ
Receiver Category	Category 3
Power Class	Class B





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