Thermostat specifications SRT 321

Power supply:	2 x AAA alkaline batteries
Temperature accuracy:	+/- 0.5°C
Transmitter frequency:	868MHz
Dimensions:	86mm x 86mm x36.25mm
Pollution control:	Degree2
Design standard:	EN60730 - 2-9
Temperature range:	5°C – 30°C
Rated Impulse voltage:	Cat 1 – 1500v
Enclosure protection:	IP30
Operating temperature Range:	0-40°C
Double Insulated:	Yes
Case material:	Thermoplastic, flame retardant

SECURE

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SECURE

SRT 321

User and Installation Instructions

Electronic Room Thermostat &
Temperature Sensor (Tx) - Z-Wave

The Secure SRT 321 forms part of a Z-Wave Plus™ home automation network.

The SRT 321 is a wireless electronic battery powered room thermostat that uses interoperable two-way RF mesh networking technology to provide optimum comfort with close control of the energy used to heat the home without the need for additional wiring or unsightly cable runs.

This document provides information specific to the Z-Wave Plus technology implemented on SRT 321, to ensure correct interoperability between third party devices.

The SRT 321 has been developed to control central heating systems where the demand temperature can be set locally or remotely by a third party device. The SRT 321 also has the capability to act as a temperature sensor.

USER INSTRUCTIONS

The Secure SRT 321 thermostat uses the latest control technology to provide extremely accurate temperature control which will help to keep your energy usage as low as possible without affecting your comfort levels. In fact comfort levels may well be improved as the control accuracy should ensure that the room does not 'overheat' before switching off.

The display will show the required temperature setting and can be adjusted in increments of 1°C.

To adjust the required temperature setting turn the dial anti clockwise to decrease it and clockwise to increase it.

When the thermostat is in the 'call for heat' condition a flame symbol will appear in the display.

Pressing the temperature setting dial will allow the user to check the current actual measured room temperature which will be displayed for approx 7 seconds before returning to the set temperature.

The aerial symbol complete with radio wave symbols in the display of the SRT 321 thermostat indicates that it is communicating satisfactorily with the rest of the system.

A flashing radio wave indicates a loss of communication. This may be temporary and can often be restored by turning the thermostat dial and increasing or decreasing the temperature to make the thermostat send a temperature update to a controller. If this has no effect please see Z-Wave pairing instructions on page 12.

A radio mast symbol with no radio waves indicates that the SRT 321 has not been signed on to enable it to communicate with the Z-Wave system. In this case you may wish to contact the Installer as the indication is that the product has not been commissioned when the installation took place. Alternatively see the Z-Wave pairing instructions on page 12.

Note: This product can be included and operated in any Z-Wave network with other Z-Wave certified devices from other manufacturers and/or other applications. All non-battery operated nodes within the network will act as repeaters regardless of vendor to increase reliability of the network.

Battery Replacement

The SRT 321 runs on 2 x type AAA (Alkaline) non rechargeable batteries and is designed to give a battery life of approximately two years – under normal usage conditions.

When the batteries are nearing the end of their life a low battery symbol will appear in the display and the batteries should be changed within a few days.

If the batteries are not changed at this point eventually a 'LO' battery message flashes intermittently in the display and if this happens the batteries should be changed immediately.

To change the batteries it is necessary to remove the thermostat from the wall. To do this first undo the two captive screws at the base of the thermostat and swing the thermostat up and away from the wall plate.

Remove the old batteries and replace them with two new AAA size alkaline batteries ensuring that they are fitted correctly as indicated by the terminal markings in the battery compartments.

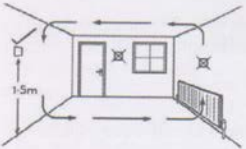
Once the batteries are fitted, re-fit the thermostat to the wall plate by engaging with the lugs at the top of the wall plate and push the thermostat into position. Locate it over the captive screws at the base of the wall plate and tighten so that the thermostat is locked into position.

Check the temperature setting is correct and adjust if necessary.

Please dispose of old batteries responsibly

Fitting the SRT 321 Room Thermostat

Avoid installing the thermostat against or behind any large metal surfaces which could interfere with the radio signals. The SRT 321 should be mounted on an internal wall approximately 1.5 meters 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.



Offer the plate to the wall in the position where the SRT 321 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 the installation by swinging the room thermostat into position by engaging with the lugs at the top of the wall plate before pushing it carefully into its plug-in terminal block.

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

Now ensure that the system is responding to the ON/OFF commands from the Room Thermostat and explain its operation to the householder before handing over these User Instructions.

DIL switch settings – 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.

- DIL switch numbers 7 and 8 should be set as diagram opposite.
- 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.

Switch positions for different TPI settings.

INSTALLATION MENU / INSTRUCTIONS

Set DIL switch 1 to 'ON' position on the back of the unit, scroll through the function menu by rotating the dial, to select the required function press the dial. On selecting a function the character will start flashing while waiting for a response from the 3rd party device, a successful response will display a P after the character and a failure will be displayed with an F.

If no response has been received from a 3rd party unit within the time-out period, the SRT 321 will report a failure.

To exit installation mode, change DIL switch 1 to its 'OFF' position.

Note: All functionality is not accessible in Installation mode.

Mode Indication	Z-Wave Function
I	Add Node onto network (See Point 1,4)
E	Remove Node from network (See Point 1,4)
N	Transmit Node Information Frame (NIF) (See Point 2)
L	Learn Mode - use this command for: (See Point 1,5,8) Add or Remove with another controller (does not support control group copy) Adding and reception of a primary role Receive Period Enabled (Listening).
Li	This function will keep the unit awake for 60sec, no Pass or Fail response will be provided
P	Protocol Reset (See Point 9) - Press twice to activate, will restore all parameters back to factory default settings (Please use this procedure only when the primary controller is missing or otherwise inoperable)
A	Associate Control Unit (See Point 3,4,6)
D	Disassociate Control Unit 3, 6
C	Controller Shift (See Point 3) This function allows the installer to manually relinquish the primary controller role of the SRT 321 to become a secondary or inclusion controller.

1 Once the character starts flashing the installer has 60 sec to activate the 3rd party unit, once the 3rd party unit has been activated the process must be completed within 240 sec or SRT 321 will timeout.

2 If an outcome is not received within 5sec the SRT 321 will report a failure.

3 On selecting this function the installer has 60s to initiate a 3rd party unit before the SRT 321 times out and reports a failure

4 Nodes supporting 'Thermostat Mode Command Class' will be associated/dissociated with Group 2 and nodes supporting 'Binary Switch Command Class' will be associated/dissociated with Group 3.

5 All association settings will be lost if learn mode has been activated with another controller regardless of a pass or fail result, any associations settings will have to be re-configured either remotely or manually.

6 Nodes can be added/removed from any of the groups in the 'Association Command Classes' by using these commands.

7 In the instance both 'Thermostat Mode' and 'Binary Switch' Command Class are supported, the SRT 321 will default to use the 'Thermostat Mode Command Class'.

8 Once the character starts flashing the installer has 20 sec to activate the 3rd party unit and the process must be completed within 20 sec (2 sec. classic inclusion, than after 3 retries for NWI inclusion)

9 No time delay between two successive presses.

Network Update Scheme

When the unit is a secondary or inclusion controller with a SUC/SIS present, the unit will request network updates once every 23 hours.

SUPPORTED DEVICE AND COMMAND CLASSES

Z-Wave Plus Device Classes	Implemented Device Classes
Generic Device Class	GENERIC_TYPE_THERMOSTAT
Specific Device Class	SPECIFIC_TYPE_THERMOSTAT_GENERAL_V2
Basic Device Class	Reporting Portable Controller

Supported Command Classes

Command Class	Commands Supported
Basic CC (V1)	Set
	Get
	Report
Mapping of Basic CC: Basic Set: 0x00 = ENERGY SAVING MODE (Temperature Set Point = 5˚C) 0xFF = COMFORT MODE (Temperature Set Point = 21°C) Basic Report: 0x00 = ENERGY SAVING MODE (Temperature Set Point = 5˚C) 0xFF = COMFORT MODE (Temperature Set Point > 5˚C)	
Manufacturer Specific (V2)	Get
	Report
	Device Specific Get
	Device Specific Report

Manufacturer ID = 0x0059 Product Type ID = 0x0001 Product ID = 0x0005 (SRT 321) Device ID Type 0 and 1 for serial number (Data format Binary, length 4 Bytes)	
Version (V2)	Get
	Report
	Version Command Class Get
	Version Command Class Report
Provides the version number of the Z-Wave stack, Command Class, Firmware and Hardware.	
Z-Wave Plus Info (V2)	Get
	Report
Role Type: ROLE_TYPE_CONTROLLER_PORTABLE_REPORTING Node Type: ZWAVEPLUS_INFO_REPORT_NODE_TYPE_ZWAVEPLUS_NODE Installer Icon: ICON_TYPE_GENERIC_THERMOSTAT_HVAC User Icon: ICON_TYPE_GENERIC_THERMOSTAT_HVAC	
Association (V2)	Set
	Get
	Report
	Remove
	Supported Groupings Get
	Supported Groupings Report
	Specific Group Get
	Specific Group Report

SRT 321 supports 6 association groups, Group 1 (Lifeline) is having only one node and Group 2 to Group 6 are having maximum 4 nodes.	
Association Group Info (V1)	Group Name Get
	Group Name Report
	Group Info get
	Group Info Report
	Group Command List Get
	Group Command List Report
Six association groups are supported.	
Group 1: name - "Lifeline" Profile MSB - ASSOCIATION_GROUP_INFO_REPORT_PROFILE_GENERAL Profile LSB - ASSOCIATION_GROUP_INFO_REPORT_PROFILE_GENERAL_LIFELINE Supported Command class and command - COMMAND_CLASS_BATTERY, BATTERY_REPORT COMMAND_CLASS_THERMOSTAT_SETPOINT, THERMOSTAT_SETPOINT_REPORT COMMAND_CLASS_SENSOR_MULTILEVEL, SENSOR_MULTILEVEL_REPORT COMMAND_CLASS_THERMOSTAT_OPERATING_STATE, THERMOSTAT_OPERATING_STATE_REPORT COMMAND_CLASS_DEVICE_RESET_LOCALLY, DEVICE_RESET_LOCALLY_NOTIFICATION	

Group 2: name - "Thermostat Mode Control" Profile MSB - ASSOCIATION_GROUP_INFO_REPORT_PROFILE_SENSOR Profile LSB - AGI_REPORT_PROFILE_MULTILEVEL_SENSOR_TYPE_TEMPERATURE Supported Command class and command - COMMAND_CLASS_THERMOSTAT_MODE, THERMOSTAT_MODE_SET
Group 3: name - "Switch Control" Profile MSB - ASSOCIATION_GROUP_INFO_REPORT_PROFILE_SENSOR Profile LSB - AGI_REPORT_PROFILE_MULTILEVEL_SENSOR_TYPE_TEMPERATURE Supported Command class and command - COMMAND_CLASS_SWITCH_BINARY, SWITCH_BINARY_SET
Group 4: name - "Battery Info" Profile MSB - ASSOCIATION_GROUP_INFO_REPORT_PROFILE_GENERAL Profile LSB - ASSOCIATION_GROUP_INFO_REPORT_PROFILE_GENERAL_NA Supported Command class and command - COMMAND_CLASS_BATTERY, BATTERY_REPORT

Group 5: name - "Thermostat Set point" Profile MSB - ASSOCIATION_GROUP_INFO_REPORT_PROFILE_GENERAL Profile LSB - ASSOCIATION_GROUP_INFO_REPORT_PROFILE_GENERAL_NA Supported Command class and command - COMMAND_CLASS_THERMOSTAT_SETPOINT, THERMOSTAT_SETPOINT_REPORT	
Group 6: name - "Air Temperature" Profile MSB - ASSOCIATION_GROUP_INFO_REPORT_PROFILE_GENERAL Profile LSB - ASSOCIATION_GROUP_INFO_REPORT_PROFILE_GENERAL_NA Supported Command class and command - COMMAND_CLASS_SENSOR_MULTILEVEL, SENSOR_MULTILEVEL_REPORT	
Thermostat Mode (V1)	Set
	Get
	Report
	Supported Get
	Supported Report
Only 'Heat Mode' is supported within this command class, which can only read, it cannot be set.	

Battery Level (V1)	Get
	Report
Provides the current battery voltage level. Battery Level Reports and Low Battery Warnings (Battery Level Reports with parameter = 0xFF) can be sent unsolicited to nodes in Group 4.	
Thermostat Set point (V1)	Set
	Get
	Report
	Supported Get
	Supported Report
Set Point type of Heating is supported. The SRT 321 will accept Set Point SET commands if the set point type matches the thermostat type configuration. SRT 321 will send a Set Point Report in response to a Set Point GET message or unsolicited message can be sent to nodes in Group 5 when the set temperature is changed locally on the SRT 321.	
Multilevel Sensor (V1)	Get
	Report
The SRT 321 will respond to the Multilevel Sensor GET command with a Multilevel Sensor REPORT. This report can be requested or sent unsolicited to the nodes in Group 6. If the temperature sensor functionality is disabled, the SRT 321 will report 0x8000.	

Thermostat Operating State (V1)	Get
	Report
Thermostat Operating State Command Class is used to obtain the operating state of the thermostat. Only Heat State supported.	
Device Locally Reset (V1)	Report
Protocol reset put the device in factory default mode, all the configuration and association set to factory default and removing the device from Z-Wave network.	
Configuration (V1)	Set
	Get
	Report
The unit supports 3 single byte configurations for the temperature sensor in the range 1-3 respectively. Configuration Parameter Number 1: Value: 0x00 - 0x7F Disables the temperature sensor, 0x80 - 0xFF Enables temperature sensor. Default value = 0xFF Configuration Parameter Number 2: Value: 0x00 - 0x7F Celsius, 0x80 - 0xFF Fahrenheit. Default value= 0 Configuration Parameter Number 3: Value: 1 to 100 - Delta Temperature in 0.1˚C steps Default value = 10 (1.0˚C)	

Wake Up (V2)	Wake Up Interval Capabilities Get
	Wake Up Interval Capabilities Report
	Wake Up Interval Set
	Wake Up Interval Get
	Wake Up Interval Report
	Wake Up Notification
	Wake Up No More Information
Wake Up Commands are available through the 'Wake Up Capabilities Report'. Default wakeup settings will be used if the unit is not included onto a network or has not received a valid wake up interval.	
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
Powerlevel Command Class defines RF transmit power controlling commands useful when installing or testing a network.	

Supported Command Classes

Command Class	Commands Controlled
Thermostat Mode (V1)	Set
This Command Class will use thermostat modes 'OFF' and 'HEAT' to control a 3rd party unit. The SRT 321 will be associated in group 2.	
Switch Binary (V1)	Set
This will use SET commands to control a 3rd Party unit, and be associated in group 3.	

Note: For more information about Z-Wave command classes and their use refer to "SDS12652 and SDS12657 Z-Wave Command Class Specification" version 8 or above.

Note: To preserve battery life in a wider system, it is recommended that minimum default values are set for the following parameters:

- Wake up Interval: 15 Minutes (min)
- Temperature Report: Δ0.5°C (min) and/or Wake up (15 Mins)