

# S-Series Digital Thermostat

Model No ST320



Instruction Manual





## PRODUCT COMPLIANCE

This product complies with the essential requirements of the following EC Directives:

- Electro-Magnetic Compatibility directive EMC2004/108/EC
- Low Voltage Directive 2006/95/EEC
- EC Marking directive 93/68/EEC

## SAFETY INFORMATION

These instructions are applicable to the Salus Controls model stated on the front cover of this manual only, and must not be used with any other make or model.

These instructions are intended to apply in the United Kingdom only, and should be followed along with any other statutory obligations - if you are in any doubt, please contact the Salus Controls technical helpline.

This accessory must be fitted by a Competent person, and installation must comply with the guidance provided in the current editions of BS7671 (IEE Wiring Regulations) and Part 'P' of the Building Regulations. Failure to comply with the requirements of these publications could lead to prosecution.

Always isolate the AC Mains supply before opening or removing the unit from the wall or wall box.

When fitting batteries don't mix new and old batteries together. Do not use rechargeable batteries.

Please leave these instructions with the end user where they should be kept in a safe place for future reference.

## INTRODUCTION

A thermostat is a device that is used to switch the heating system in your home on and off as needed. It works by sensing the air temperature and switching on the heating when the air temperature falls below the thermostat setting, and switching it off once the set temperature has been reached.

The ST320 from Salus Controls is a stylish and accurate electronic thermostat with a large, easy to read LCD display. The thermostat has been specifically designed to be used Volt Free.



The use of the revolutionary Touch Ring technology makes for simple usage, and is coupled with a unique, smart design. The LCD display will show the current room temperature and the 'one touch' operation makes the ST320 easy to operate.

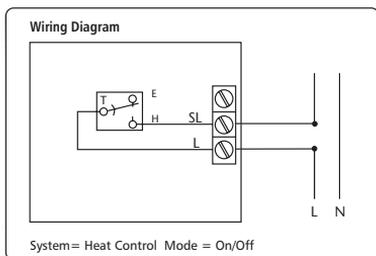
## FEATURES

- Touch Ring Technology
- Large LCD with white backlight
- Stylish Casing
- Volt Free Contacts
- Battery Powered with Replacement Indicator
- Frost Protection
- Burner on symbol

## INSTALLATION

Please read the important safety information at the start of this manual before you start to install the device.

The ideal position to locate the ST320 thermostat is about 1.5m above floor level. It should be mounted in a location where the thermostat is accessible, reasonably lit and free from extremes of temperature and draughts. Do not mount the thermostat on an outside wall, above a radiator or in a location where it may be subjected to direct sunlight.



There are only two electrical connections required to the ST320, and these connections should be made to the terminal block inside the thermostat. No Earth connection is required for the correct and safe operation of the ST320, but a parking terminal is provided to connect an Earth wire if one is present. These connections are shown in the drawing and table below:

Terminal	Function
L (COM)	Live
SL (NO)	Switched Live (output)
Earth	Earth Parking (No electrical connection)

**NOTE:** All electrical installation work should be carried out by a suitably qualified Electrician or other competent person.

If you are not sure how to install this thermostat consult either with a qualified electrician, heating engineer or your boiler / heating system supplier for advice on how to continue.

## USER INTERFACE AND CONTROLS

The status and operation of the ST320 is clearly shown on the large backlit Liquid Crystal Display (LCD).



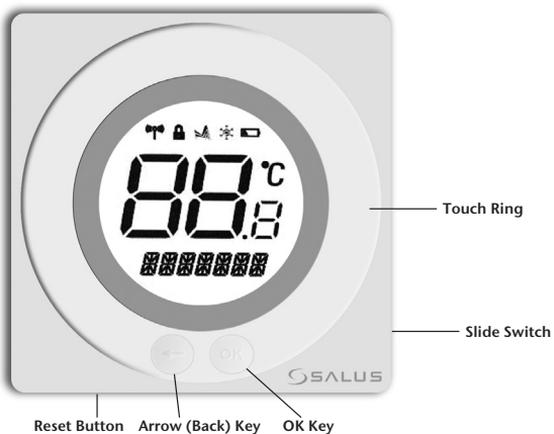
The display consists of a combination of symbols and alphanumeric displays. The top row is a set of status symbols, the centre row is used to indicate temperature (in Celsius), and the bottom row is an alphanumeric display for menu and status messages.

The status symbol functions are:

Indicator	Description	Function
	RF Signal indicator (Not used with ST320)	Indicates the unit is transmitting a wireless signal
	Touch Lock indicator	Indicates touch lock is activated
	Heat Mode indicator	Indicates heating output is turned on.
	Frost Mode indicator	Indicates frost setting is turned on
	Battery Status	Indicates battery is low

There are few user controls for the ST320, making the thermostat very easy to operate. The controls are a Touch Ring (which surrounds the user display), two touch sensitive buttons, a reset button and a slide operated switch mounted on the side of the thermostat.

These controls are shown below, along with a description of each of their functions.



### USER CONTROL FUNCTION SUMMARY:

Key / Operation	Functions
Touch Ring (move clockwise)	Increases the set temperature and scrolls down the menu selection
Touch Ring (move anti- clockwise)	Decreases the set temperature and scrolls up the menu selection
OK Key	Enters Menu or confirms a menu selection
Arrow (Back) Key	Single touch- sets the unit back 1 step. Hold for 2 seconds sets unit back to normal mode
Reset Button	Resets the thermostat to default (original factory) settings
Slide Switch	Activates and deactivates the key lock function (prevents accidental changes)

## OPERATION

The ST320 is configured and adjusted by the use of an innovative and stylish Touch Ring, and two touch sensitive buttons. The Touch Ring surrounds the thermostat display, and is operated very easily by moving your finger around the ring.



The backlit Liquid Crystal Display (LCD) gives a highly visible, easily readable indication of the thermostat status.

## REVIEWING THE SET TEMPERATURE

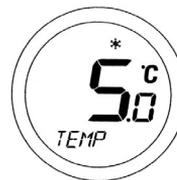
If you press the Touch Ring anywhere except the OK and Arrow keys when the ST320 is in NORMAL mode (NORMAL mode is when the thermostat is displaying the room temperature), you can check the set temperature setting.



This will display the current set temperature. The set temperature will be displayed for two seconds before the LCD changes to display the room temperature again.

If the ST320 is operating in Frost Mode the LCD will display both the room temperature and also the Frost Mode indicator . To turn off FROST mode, select the FROST menu and then by using the Touch Ring scroll to the OFF setting. OFF will then be displayed on the LCD.

After pressing the Touch Ring, the LCD will display the preset Frost Mode temperature of 5 °C (this temperature is factory set and cannot be adjusted).



Pressing the OK or Arrow keys will return the ST320 to NORMAL mode.

## CHANGING THE SET TEMPERATURE

When the ST320 is in NORMAL mode, press the Touch Ring anywhere except the OK and Arrow keys (as described in the previous section), to enter the Review Set Temperature mode. The currently set temperature will be displayed on the LCD and will flash.



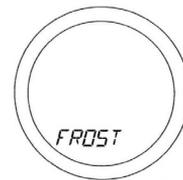
When the set temperature is flashing, press the Touch Ring and move your finger clockwise to increase the set temperature, or anti-clockwise to decrease the set temperature. Press OK at any time to confirm the selection. Note that the set temperature display will not flash while being adjusted – this is normal and the display will start to flash again approximately 0.5 seconds after the Touch Ring is released.

The ST320 will go back to NORMAL mode without changing the set temperature after 10 seconds of inactivity, or after pressing the Arrow key.

**If the ST320 is in FROST mode, the set temperature cannot be adjusted. Turn off FROST mode as described below to allow the set temperature to be changed.**

## ACCESSING THE MENUS

The Arrow key is not active when the ST320 is in NORMAL mode. To access the Menu screens, press the OK key twice. The first menu displayed is the FROST menu:



Use the Touch Ring to scroll through the Menus, and press the OK key to select the menu you want to enter:

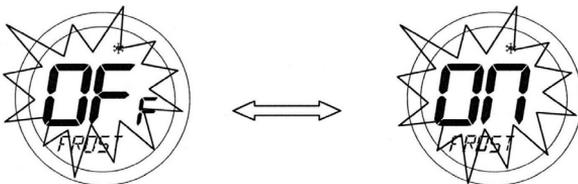


Pressing the Arrow key will return the ST320 to NORMAL mode. The thermostat will also return to NORMAL mode after 10 seconds if no Key is pressed or if no movement is detected on the Touch Ring.

## FROST MENU

Entering the FROST menu allows you to turn the frost protection mode of the ST320 on or off. The FROST mode temperature is preset at 5 °C; this temperature is factory set and cannot be adjusted.

The FROST mode indicator  will be displayed in all the FROST menu



On entering the menu, use the Touch Ring to scroll to the preferred option (OFF or ON), and confirm the choice using the OK button. Use the Arrow key to return to the Menu Option display.

## SLEEP MENU

The SLEEP mode allows the ST320 to conserve power by turning off the LCD display. Entering the SLEEP menu allows you to activate this power saving feature from a 5 second run down timer.

**N.B** unit will not control the heating while in sleep mode.

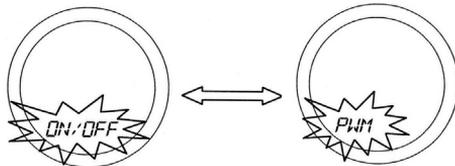


Pressing the OK Key at any time within the 5 seconds will cause the ST320 to immediately go into SLEEP mode, as will allowing the countdown to complete. Pressing the Arrow key will return the ST320 to the Menu display mode.

Pressing the Touch Ring for 1 second will turn on the LCD backlight, and pressing the Touch Ring for 3 seconds will wake the ST320 from SLEEP mode and restore the thermostat to NORMAL mode.

## CONTROL MENU

By selecting the Control menu, the user can change the control method used by the thermostat - either ON/OFF or Pulse Width Modulation(PWM). On entering the menu, scroll to select the preferred option (ON/OFF or PWM control), and confirm the choice using the OK button. Use the Arrow key to return to the Menu Option display. PWM mode should only be selected by the Engineer carrying out the installation, or other qualified person.





### OFF MODE

The low battery indicator  will be displayed if battery voltage is detected as "low", in this case, the thermostat functions normally during battery low except the backlight is turned off. The ST320 will enter into OFF mode if the battery voltage falls drastically low, and all outputs will turn off. As all functions except sampling the battery voltage are disabled in OFF mode, it is recommended that you replace the ST320 batteries as soon as possible to restore normal operation. If the replaced batteries voltage is not high enough (treat as older batteries), maybe the unit is still in OFF mode and can't reset.

### SLIDE SWITCH

The Slide Switch has two positions: UNLOCKED and LOCKED.

In the LOCKED position, the Touch Lock indicator  will be visible on the LCD, and it will not be possible to change the ST320 settings. If you are unable to change any thermostat settings, check that the Slide Switch is in the UNLOCKED position.

### RESET BUTTON

The Reset Button is provided as a way to restore the thermostat to its default factory settings. Pressing this button will delete any previously entered settings.

### ENERGY TIP

One way to set and use your room thermostat is to find the lowest temperature setting that you are comfortable with, and then leave it set at this temperature. You can do this by setting the room thermostat to a low temperature, (for example 17 °C) and then increasing the setting by one degree each day until you are comfortable with the room temperature - you won't have to adjust the thermostat further, as adjustment above this setting will waste energy - a 1 °C increase in temperature is equal to 3% of your heating costs.

## MAINTENANCE

The ST320 thermostat requires no special maintenance. Periodically, the outer casing can be wiped clean using a dry cloth (please DO NOT use solvents, polishes, detergents or abrasive cleaners, as these can damage the thermostat). There are no user serviceable parts within the unit; any servicing or repairs should only be carried out by Salus Controls or their appointed agents.

Should the ST320 thermostat fail to function correctly, check:

- Thermostat batteries are the correct type, fitted correctly and are not exhausted - fit new batteries if in doubt.
- Heating system time switch or programmer is switched on.
- If the ST320 is still not functioning correctly, press the Reset Button.

## WARRANTY

Salus Controls warrants that this product will be free from any defect in materials or workmanship, and shall perform in accordance with its specification, for a period of two years from the date of purchase. Salus Controls sole liability for breach of this warranty will be (at its option) to repair or replace the defective product.

## PRODUCT SPECIFICATION

**Model:** ST320  
**Type:** Electronic non-programmable thermostat, designed for Volt Free heating applications.

## TEMPERATURE

**Scale:** Celsius

**Tolerance:** Less than  $\pm 0.5$  °C at 25 °C  
**Sampling Rate:** Every 15 seconds

**Display Range:** 0.0 °C to + 45.0 °C  
**Display Resolution:** 0.5 °C

**Set Temperature Range:** 5.0 °C to + 35 °C  
**Resolution:** 0.5 °C

## CONTROL

**Control Method:**

1. ON – OFF control
2. PWM control

## POWER SUPPLY

**Power Source:** 2 x AA alkaline batteries (Don't use rechargeable batteries)  
**Battery Life:** Approximately 1 year

## SWITCHING

**Switching Voltage:** 230V AC / 50Hz  
**Switching Current:** 10A resistive, 3A inductive  
**Contact Type:** Volt Free

## ENVIRONMENT

**Operating Temperature:** 0 °C to + 50 °C  
**Storage Temperature:** - 10 °C to + 60 °C

## 2 Channel Programmer Model No. EP200

The EP200 is a feature packed programmer allowing independent control of central heating and hot water. This 5/2 or 7 day programmer boasts the same functions as the EP100 but gives the individual features to both channels. Fitted with the industry standard back plate, this makes the EP200 ideal for new installations or upgrades. A simple switch alternates the EP200 between 5/2 or 7 day.

### Features

- Individual control of central heating and hot water
- 3 On/Off periods
- Large, easy to read LCD with blue back light
- Holiday function
- Advance 1 hour function
- Built-in start up programme
- Simple to use functions
- Heat/hot water called indicator lights around advance buttons
- Memory back-up
- Industry standard back plate for ease of wiring
- User friendly
- Automatic daylight saving (BST) adjustment

## Single Channel Programmer Model EP100 & EP101

The EP100/EP101 is a 5/2 or 7 day electronic time switch designed for single channel applications. This time switch boasts 3 on/off switch periods, easy to read LCD display with backlight, holiday and advanced functions, indicator light and simple programming. A simple switch alternates the EP100/EP101 between 5/2 or 7 day programming.

### Features

- Timed control of central heating
- 3 On/Off periods
- Large, easy to read LCD with blue back light
- Holiday function
- Advance 1 hour function
- Heat called indicator light around advance button
- Built-in start up programme
- Simple to use functions
- Memory back-up
- Industry standard back plate for ease of wiring
- User friendly
- EP101 is Volt Free selectable

## Digital Electronic Thermostat Model No. RT300

The RT300 is a stylish and accurate thermostat with a large, easy to read LCD display. The LCD display will show the current room temperature in stand-by mode. A one-touch operation makes the RT300 easy to operate. A back light and frost function add to the features of the RT300.

### Features

- Volt free contacts
- Stylish casing
- Battery powered with replacement indicator
- Frost protection
- Large, easy to read LCD with blue back light
- Burner on symbol
- Easy access battery door
- Industry standard back
- User friendly

## Digital Electronic Thermostat with RF Model No. RT300RF

Offering all the benefits of the RT300 but with the added convenience of no wires, the RT300RF is ideal for use wherever it is impractical to run wires between the thermostat and other controls within the heating system.

### Features - Same industry leading features as the RT300, plus:

- Selectable volt free contacts
- Receiver, complete with surface mounting
- Max indoor transmitter range of 30 metres

## Programmable Room Thermostat Model No. RT500

The RT500 is a stylish 5/2 or 7 day programmable room thermostat, which has been designed to provide automatic time and temperature control of all domestic central heating applications. The RT500 can switch circulating pumps, boilers and motorised valves. Intended where the householder has a variety of heating needs from day to day, the RT500 thermostat gives you a feature packed unit but still maintains simplicity for the user.

### Features

- |  |  |   |
|--|--|---|
| <ul style="list-style-type: none"> <li>• Volt free contacts</li> <li>• 5/2 or 7 day programming flexibility</li> <li>• Built-in start up programming for quick installation</li> </ul> | <ul style="list-style-type: none"> <li>• Battery powered with replacement indicator</li> <li>• Frost protection</li> <li>• Large, easy to read LCD with blue back light</li> <li>• 5 time/temperature changes</li> </ul> | <ul style="list-style-type: none"> <li>• Burner on symbol</li> <li>• Easy to use programming</li> <li>• Easy access battery door</li> <li>• Industry standard back plate for ease of wiring</li> <li>• User friendly</li> </ul> |
|--|--|---|

## Programmable Room Thermostat with RF Model No. RT500RF

The RT500RF is ideal for use in situations where it is impractical to run wires between the thermostat location and other controls within the heating system. The RF version has all the benefits of the RT500 with the added simplicity of no wires. Again, maintaining simplicity for the installer.

### Features - Same industry leading features as the RT500, plus

- Selectable volt free contacts
- Receiver, complete with surface mounting
- Max indoor transmitter range of 30 metres

## Mechanical Room Thermostat Model No. RT100

The RT100 mechanical room thermostat is widely used in commercial, industrial and residential buildings. It is suitable for room temperature control and is very easy to install, with high sensitivity and reliability.

### Features

- Smart and simple housing
- 2 wire installation
- Suitable for replacement market
- Volt free contacts
- High sensitivity and reliability

## Electronic Room Thermostat Model No. RT200

The RT200 is a mains voltage electronic room thermostat that provides automatic temperature control for all central heating applications. The accuracy of the RT200 will improve system efficiency and reduce running costs. The RT200 boasts an easy to use dial which provides simple operation for the user.

### Features

- Stylish Casing
- Simple to use
- Indicator light to show heat called for
- Easy to install
- Industry standard back plate for ease of wiring
- User Friendly

## Control Packs Model Nos. CP122, CP222, CP322

Control Packs are a convenient way of purchasing all the controls you require. All packs are designed for single pump installations where both heating and hot water are being supplied.

**CP122 - This pack includes:**

- 1 x 22mm 2 Port Motorised Valve • 2 Channel Programmer • Room Thermostat • Wiring Centre

**CP222 - This pack includes:**

- 2 x 22mm 2 Port Motorised Valve • 2 Channel Programmer • Cylinder Thermostat • Room Thermostat • Wiring Centre

**CP322 - This pack includes:**

- 1 x 22mm 3 Port Motorised Valve • 2 Channel Programmer • Cylinder Thermostat • Room Thermostat • Wiring Centre

Variable packs can be provided upon request – please contact our Sales Office for details

**MORE PRODUCTS FROM SALUS CONTROLS**

## Domestic Circulating Pump Model Nos. MP100 & MP200

The Salus MP100 & MP200 Circulating pump offers outstanding performance and reliability to the installer and the user. Suitable for all domestic circumstances both models have been designed for a quiet and reliable life. A 3 speed motor enables precise pump to system matching, thereby reducing hydraulic noise to a minimum.

### With 5 Year Guarantee

## 2 & 3 Port Motorised Valves

Model Nos.

MV322 - 3 Port Motorised Valve in 22mm

MV222 - 2 Port Motorised Valve in 22mm

MV328 - 3 Port Motorised Valve in 28mm

MV228 - 2 Port Motorised Valve in 28mm

Salus Motorised Valves offer the ultimate choice for installers. A simple to replace actuator that requires no need to drain down. The actuator comes complete with a manual lever for filling or draining down the heating system. These valves offer outstanding performance and high reliability to the user. Suitable for all domestic circumstances as well as certain commercial applications. The actuator and valve bodies are supplied together but actuators can be purchased seperately. Both 2 port and 3 port valves are available in 22mm and 28mm to cover all applications.

### Features

- 2 Port Motorised Valves - suitable for S & C Plan applications.
- 3 Port Motorised Valves - suitable for Y & W Plan applications.
- Industry colour coded 1m flying lead.

## Thermostatic Radiator Valves

Model Nos. TRV310S, TRV310A, TRLS5, TRLS10 & TRV31LS5

TRV310S - 15mm Straight TRV with Reducer

TRLS10 - 15mm Lockshield with Drain Off

TRV310A - 15mm Angled TRV with Reducer

TRV31LS5 - TRV Pack with 15mm Angled TRV,  
Lockshield & Reducers

TRLS5 - 15mm Lockshield

## ST320 Warranty

Thankyou for purchasing the Salus ST320 Digital Thermostat. In the rare event that this Salus product needs guarantee service, please contact the dealer from whom it was purchased or a member of the Salus Controls technical team.

Customer Name: .....

Customer Address: .....

..... Post Code: .....

Tel No: ..... Email: .....

Engineers Company: .....

Tel No: ..... Email: .....

Intallation Date: .....

Engineers Name: .....

Engineers Signature: .....



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