

SALUS

S-Series Digital Thermostat



Instruction Manual
Model No ST620/ST620PB



Certification Mark

CE

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.

What is a programmable room thermostat?

... an explanation for householders

A programmable room thermostat is both a programmer and a room thermostat. A programmer allows you to set 'On' and 'Off' time periods to suit your own lifestyle. A room thermostat works by sensing the air temperature, switching on the heating when the air temperature falls below the thermostat setting, and switching it off once this set temperature has been reached.

So, a programmable room thermostat lets you choose what times you want the heating to be on, and what temperature it should reach while it is on. It will allow you to select different temperatures in your home at different times of the day (and days of the week) to meet your particular needs.

Turning a programmable room thermostat to a higher setting will not make the room heat up any faster. How quickly the room heats up depends on the design of the heating system, for example, the size of boiler and radiators.

Neither does the setting affect how quickly the room cools down. Turning a programmable room thermostat to a lower setting will result in the room being controlled at a lower temperature, and saves energy.

The way to set and use your programmable room thermostat is to find the lowest temperature settings that you are comfortable with at the different times you have chosen, and then leave it alone to do its job. The best way to do this is to set low temperatures first, say 18°C, and then turn them up by one degree each day until you are comfortable with the temperatures. You won't have to adjust the thermostat further. Any adjustments above these settings will waste energy and cost you more money.

If your heating system is a boiler with radiators, there will usually be only one programmable room thermostat to control the whole house. But you can have different temperatures in individual rooms by installing thermostatic radiator valves (TRVs) on individual radiators. If you don't have TRVs, you should choose a temperature that is reasonable for the whole house. If you do have TRVs, you can choose a slightly higher setting to make sure that even the coldest room is comfortable, then prevent any overheating in other rooms by adjusting the TRVs.

The time on the programmer must be correct. Some types have to be adjusted in spring and autumn at the changes between Greenwich Mean Time and British Summer Time.

You may be able to temporarily adjust the heating programme, for example, 'Override', 'Advance' or 'Boost'. These are explained in the manufacturer's instructions.

Programmable room thermostats need a free flow of air to sense the temperature, so they must not be covered by curtains or blocked by furniture. Nearby electric fires, televisions, wall or table lamps may prevent the thermostat from working properly.

INTRODUCTION

The ST620 from SALUS Controls is a stylish and accurate 5/2 or 7 day programmable electronic thermostat with a large, easy to read Liquid Crystal Display (LCD). This programmable 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 ST620 easy to operate.

FEATURES

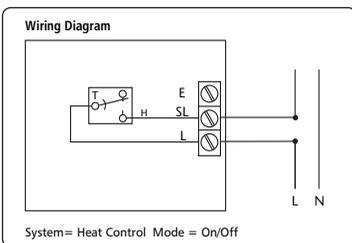
- Touch Ring Technology
- Large LCD with White Backlight
- Stylish Casing
- Volt Free Contacts
- Battery Powered with Replacement Indicator
- Frost Protection
- Burner on Symbol
- Radio Controlled Clock (RCC)
- Manual Time / Date Setting Option
- Holiday Function
- Service Function
- Six Time / Temperature Settings



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 ST620 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.



To ensure trouble free reception for the Radio Controlled Clock (RCC), always ensure that the programmable thermostat is mounted away from any possible sources of interference (such as radios, TV sets, computers, etc.), and is not mounted on or in close proximity to large metal objects. Installing the ST620 in enclosed areas such as cellars and basements is not recommended. There are only two electrical connections required to the ST620, and these connections should be made to the terminal block inside the programmable thermostat. No Earth connection is required for the correct and safe operation of the ST620, 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 programmable thermostat consult either with a qualified electrician, heating engineer or your boiler / heating system supplier for advice on how to continue.

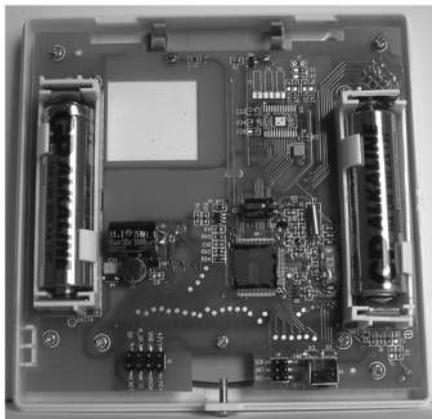
INSTALLING AND REPLACING BATTERIES

Installing or replacing the ST620 batteries is a straightforward operation, but does require you to open the case of the programmable thermostat - **always isolate the AC Mains supply before opening the unit.**

To open the ST620 case, undo the securing screw on the bottom of the case (just to the right of the hole for the Reset Button):



After undoing the screw pull it forward until the screw stops moving, then carefully separate the two halves of the case by gently pulling in an upwards direction. Once the case has been separated, the batteries should be visible:



Ensure that the batteries are inserted correctly, paying careful attention to the polarity markings on the battery and next to the battery holders. After inserting the batteries, refit the ST620 case and retighten the securing screw.

AFTER INSTALLATION

After completing installation and powering up the ST620 for the first time the programmable thermostat will behave in the following way:

All the indicators on the display and the backlight will be turned on.



After 2 seconds the ST620 will then operate in NORMAL mode and display the current room temperature, with the RCC indicator flashing.



All programmable thermostat settings will be returned to default values.

If the Reset Button is pressed, the ST620 will behave in the same way as described above, except that any previously saved user settings stored in the internal memory will be deleted and overwritten with the default settings.

USER INTERFACE AND CONTROLS

The status and operation of the ST620 is clearly shown on the large backlit Liquid Crystal Display (LCD).

This display allows the user to see at a glance the current status of the heating system, as well as a clear indication of the current room temperature.

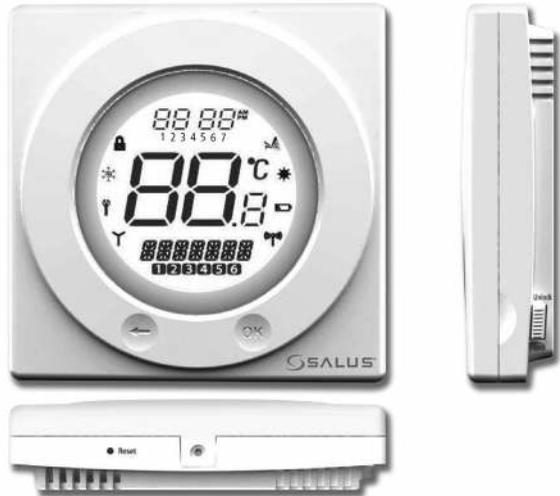


The display consists of a combination of symbols and alphanumeric displays. The top row is a time and day of the week indicator, the centre row is used to indicate temperature (in Celsius), and the bottom row is an alphanumeric display for menu and status messages. The symbols around the outside of the display are status indicators – an explanation of what these indicators mean is shown below.

Indicator	Description	Function
	Clock Display	Displays the day and time
	Temperature indicator	Displays set or measured temperature
	Alphanumeric Display	Displays menu and other status messages
	Programme Number indicator	Displays the number of the active (selected) programme
	Heat Mode indicator	Indicates heating output is turned on.
	Holiday indicator	Indicates Holiday operation mode is selected
	Battery Status	Indicates battery is low
	RF Signal indicator (not used on ST620)	Indicates the unit is transmitting a wireless signal
	RCC indicator	Indicates the status of the Radio Controlled Clock
	Service indicator	Indicates Service function is active
	Frost Mode indicator	Indicates frost setting is turned on
	Touch Lock indicator	Indicates touch lock is activated

There are few user controls for the ST620, making the programmable 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 ST620 is configured and adjusted by the use of an innovative and stylish Touch Ring, and two touch sensitive buttons. The Touch Ring surrounds the programmable 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.



ACCESSING THE MENUS

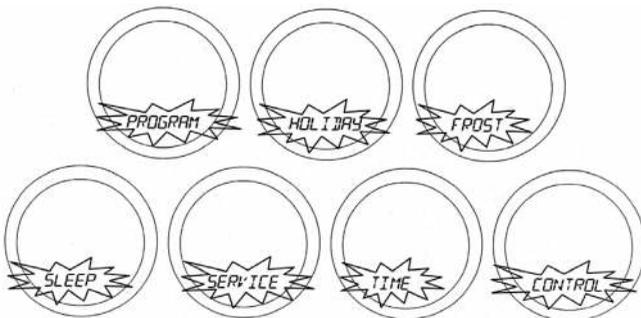


The Arrow key is not active when the ST620 is in NORMAL mode. To access the Menu screens, press the OK key twice. The first menu displayed is the PROGRAMME menu:

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

You can scroll through the menus in either direction (forwards or backwards) depending on the direction you move your finger around the Touch Ring. The menus are displayed in the order shown in the picture above.

Pressing and holding the Arrow key for 2 seconds will return the ST620 to NORMAL mode. The programmable 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.

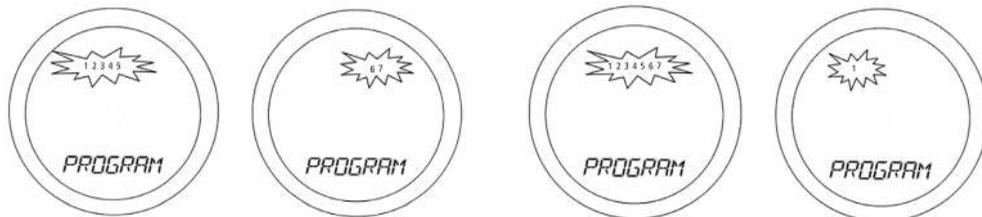


PROGRAMMING THE ST620

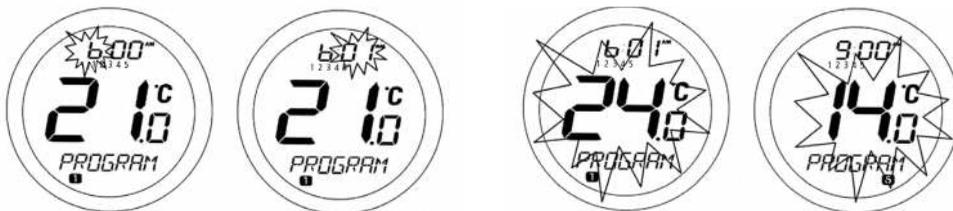
The ST620 offers great versatility with its programming options, allowing the user to programme the ST620 to operate on an individual, 5/2 or 7 day control cycle. The programmable thermostat has a default set of Programmes that have been designed to meet the needs of most users. If these default programmes are not suitable for your particular situation, reprogramming the ST620 with your own settings is a very straightforward operation.

To start programming the ST620, press the OK key when in NORMAL mode. This will by default select the PROGRAMME menu - press the OK key once more to start the programming process.

Initially, the Weekdays will be selected and flashing – you can scroll through all the various options for day selection (Weekdays, Weekend, 7 days, or individual days) by using the Touch Ring. As usual, pressing the OK key will select the desired option.



After correct selection of the day option, the ST620 display will change to the next programming screen. These screens allow you to set the required time and temperature settings to provide optimum control for your heating system.

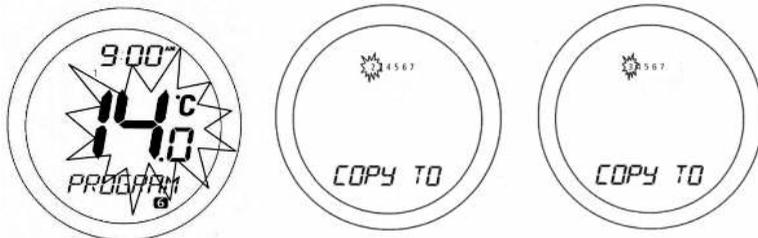


The hour setting will be the first setting that needs to be adjusted, and this will easily be seen because the 'hours' section of the time will be flashing. Using the Touch Ring, scroll up or down to adjust the hour to the required setting and then press the OK key to confirm.

After confirming this setting the 'minutes' section of the time will then start to flash. Change this setting using the Touch Ring in the same way that you changed the hour setting, confirming your setting with the OK key. Finally, set the desired temperature setting by scrolling with the Touch Ring and again confirm with the OK key.

Following this sequence will have set up Programme 1 – the ST620 display will then move on to Programme 2. Continue to add your desired settings for each of the programmes through to Programme 6 in the same way as Programme 1 (hour, minutes, and temperature).

If you decide to enter settings for individual days rather than Weekdays or Weekends, the ST620 also offers a time saving COPY function that allows the user to copy settings from one day to another.



After entering the settings in Programmes 1 to 6 for Monday, the ST620 display will change to display a COPY TO screen. On this screen, scroll to the day that you want to copy the settings to using the Touch Ring, and then confirm this by pressing the OK key. The ST620 will then move to the next day and ask if you would like to copy again.

In the example here, Monday has been programmed, and the next day that has not been programmed is Tuesday. Once the settings for Tuesday have been programmed by copying, the settings can then be copied to Wednesday, and so on.

Pressing the Arrow key at any time will return the ST620 to the previous screen. Once all the days have been programmed, the ST620 will revert to NORMAL mode.

Please be aware that each of the programme time settings must be in sequence: for example, Programme 3 cannot be set with a time earlier than Programme 2. If this situation occurs, then the ST620 may operate in an unpredictable way. The programmable thermostat will return to NORMAL mode after 10 seconds if no Key is pressed or if no movement is detected on the Touch Ring. In this case, the Programmes will not be updated

HOLIDAY OVERRIDE MODE

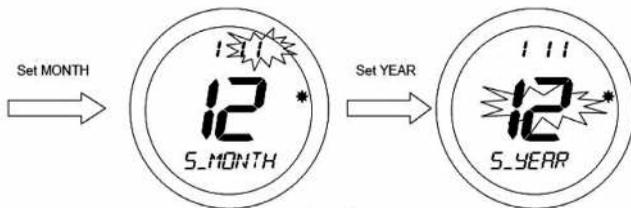
Entering the HOLIDAY menu allows you to turn the holiday override mode of the ST620 on. The HOLIDAY mode allows the user to override all the current Programme settings with a specific temperature setting that is active between two dates entered by the user.

When the holiday start date arrives, the HOLIDAY indicator turns on and the HOLIDAY mode is switched on. As long as the ST620 is in HOLIDAY mode the FROST protection mode will be disabled. When the holiday end date is reached, the HOLIDAY mode will be turned off automatically and the ST620 will operate in AUTO mode. The HOLIDAY mode indicator  will be displayed on all the HOLIDAY menu screens.

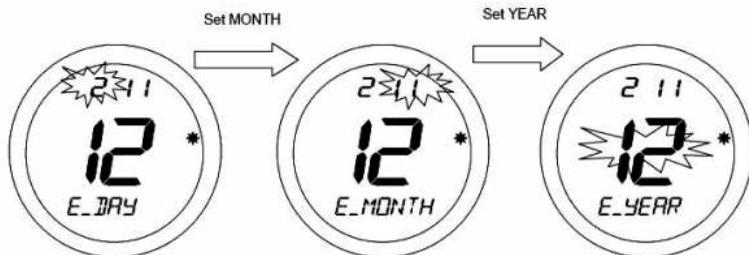
To start entering the Holiday Override settings, press the OK key once. 'SDAY' will appear on the display. Use the Touch Ring to scroll to set the date and confirm the choice using the OK button.



The month setting ('S_MONTH') will then be selected – change this setting in the same way using the Touch Ring, and confirm the setting using the OK button. Finally, set the year ('S_YEAR') – this is done in exactly the same way as previously described for the date and month.



After confirming the year setting by pressing the OK key, the display will then change to display the first screen for entering the holiday end date ('E_DAY', 'E_MONTH' and 'E_YEAR')



Use the Touch Ring to enter the date in exactly the same way as for the holiday start date.

By default, the HOLIDAY mode start and end dates are set to the current date. Make sure that the end date is after the start date – if not, the HOLIDAY mode will be disabled.

The final setting to be entered is the protection temperature you want set while HOLIDAY mode is active.



Use the Touch Ring to set the preferred temperature and confirm the choice using the OK button. Once the temperature setting is confirmed, the HOLIDAY mode will be activated. While in this mode the HOLIDAY mode indicator  will be shown on the display, but there will not be any MANUAL or AUTO indication.



Pressing the Touch Ring will change the display to show the current temperature setting, but this setting cannot be adjusted while in this mode.

CANCELLING HOLIDAY OVERRIDE MODE

When in HOLIDAY mode, pressing the OK key will make the display change between CANCEL and HOLIDAY every 0.5 seconds as shown below:



Pressing the OK key will cancel HOLIDAY mode and return the ST620 to AUTO mode. Pressing the Arrow key leaves the programmable thermostat in HOLIDAY mode.

REVIEWING THE SET TEMPERATURE

NORMAL mode is when the thermostat is displaying the room temperature; if you press the Touch Ring anywhere except the OK and Arrow keys when the ST620 is in NORMAL mode you can check the set temperature setting.



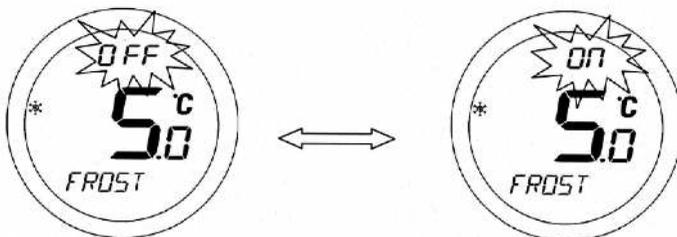
This will display the current set temperature. The set temperature will be displayed for two seconds before the LCD changes to display the room temperature again.

The ST620 will go back to NORMAL mode without changing the set temperature after 10 seconds of inactivity, or after pressing the Arrow key.

FROST MENU

Entering the FROST menu allows you to turn the frost protection mode of the ST620 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 screens.



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.

If the ST620 is operating in FROST mode the LCD will not indicate MANUAL or AUTO, but 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. Press the OK key to confirm the setting.



SLEEP MENU

The SLEEP mode allows the ST620 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.

Pressing the OK Key at any time within the 5 seconds will cause the ST620 to immediately go into SLEEP mode, as will allowing the countdown to complete. Pressing the Arrow key will return the ST620 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 ST620 from SLEEP mode and restore the programmable thermostat to AUTO mode. **N.B** unit will not control the heating while in sleep mode.



MANUAL OVERRIDE SETTING

When the ST620 is in NORMAL mode, press the Touch Ring anywhere except the OK and Arrow keys to enter the Manual Override 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.

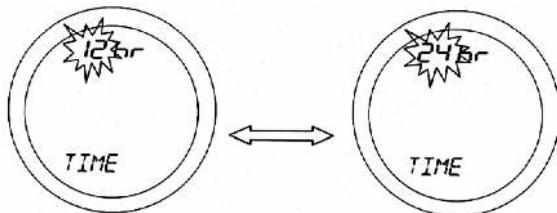
The ST620 will go back to NORMAL mode without changing the set temperature after 10 seconds of inactivity, or after pressing the Arrow key.



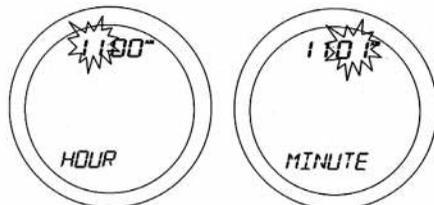
When the ST620 is operating in Manual Override mode, the LCD will display MANUAL instead of AUTO. The manual setting will remain in effect until the next programme time is reached, programme or clock settings are changed, an operating mode change is detected or the Manual Override mode is cancelled.

Manual Override mode can be cancelled at any time by pressing and holding the Arrow key for 2 seconds – this will return the ST620 to AUTO mode.

MANUAL SETTING OF TIME AND DATE

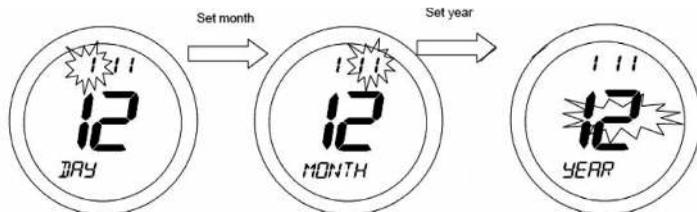


If the time and date setting need to be set manually, this can be done by accessing the TIME menu. The first option within the menu is a choice of 12 or 24 hour clock setting.



On entering the menu, use the Touch Ring to scroll to the preferred option (12 or 24 hour clock), and confirm the choice using the OK button. Use the Arrow key to return to the previous screen display. After setting the time display format, the next screen display allows you to set the time.

Use the Touch Ring to scroll to set the hour and confirm the choice using the OK button. The minute setting will then be selected – change this setting in the same way using the Touch Ring, and confirm the setting using the OK button. After setting the time, the next screen display allows you to set the date – this is set in exactly the same way as previously described for the time. Press the Arrow key to return to the previous screen display, or do nothing for 10 seconds and the ST620 will return to NORMAL mode.



RADIO CONTROLLED CLOCK



The ST620 time and day of the week settings are updated automatically every day (at 12:00 AM or 2:00 AM) by the use of a very accurate internal Radio Controlled Clock.

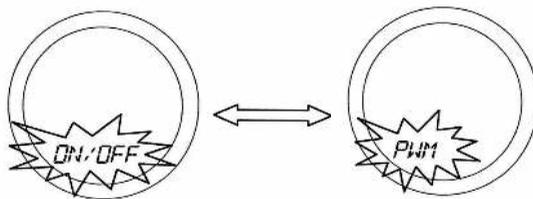
The RCC status indicator will be displayed for 10 minutes during clock updates. The indicator will flash during the time update process, after which the indicator will be displayed for 5 minutes before turning off.

The time and date will also be automatically updated when the ST620 is powered up, or after the Reset Button is pressed.

If for any reason the ST620 fails to automatically update the time setting, then the data stored in the internal memory will be used. The clock settings can also be changed manually if required – manual settings will be overwritten at the next successful automatic update.

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.



SERVICE MENU

The service menu should only be selected or changed by the engineer carrying out the installation, or other qualified person. It is strongly recommended that you familiarise yourself with the instructions contained in the operation section of this manual before attempting to change any of the settings in the service menu. During commissioning, the installation engineer has the option to enter either his mobile or office telephone number as both a reminder when the system is due to be serviced, and as a way for the home owner to make contact when the service is due. The arrow key is not active when the ST620 is in normal mode. To access the menu screen, press the OK key once. The first menu display is the PROGRAM menu.



BATTERY STATUS

The ST620 checks the battery voltage frequently during normal operation. If the battery voltage is sensed as being low, the low battery indicator will be displayed on the screen. Although the programmable thermostat will continue to operate normally at this stage, you should replace the batteries as soon as possible to prevent the ST620 entering OFF mode.





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 ST620 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 ST620 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.

BACKLIGHT

The backlight of the ST620 is switched on automatically whenever the Touch Ring is activated, or any of the keys are pressed. The backlight will remain illuminated for approximately 6 seconds after the last key press, except if you are changing settings within the Clock, Programme or Temporary Override modes – in this case, the backlight will remain illuminated for 10 seconds after the last key press. The backlight will not illuminate if the ST620 battery is low, or if the Slide Switch is in the LOCKED position.

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 ST620 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 ST620 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 ST620 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 ST620 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 installation. SALUS Controls sole liability for breach of this warranty will be (at its option) to repair or replace the defective product.

PRODUCT SPECIFICATION

Model: ST620
Type: Electronic non-programmable thermostat, designed for Volt Free heating applications.

CLOCK

Type: Radio Controlled (RCC) MSF (UK Version).
Reception Frequency: 60 kHz \pm 300 Hz
Display Modes: 12 or 24 hour clock display.

PROGRAMMING

Programming Modes: User selectable for 5/2 or 7 day option
Number of Programmes: Six (6) user programmes plus factory default programme.
Override Facility: User selectable programme override facility.
Holiday Facility: User selectable option to temporarily override selected programme.

DEFAULT PROGRAMMES

Programme	Output	Weekday	Weekend
1	ON TEMP	6:00AM 21°C	6:00AM 21°C
2	ON TEMP	8:00AM 14°C	8:00AM 14°C
3	ON TEMP	11:00AM 21°C	11:00AM 21°C
4	ON TEMP	1:00PM 14°C	1:00PM 14°C
5	ON TEMP	4:00PM 21°C	4:00PM 21°C
6	ON TEMP	9:00PM 14°C	9:00PM 14°C

TEMPERATURE

Scale:	Celsius
Tolerance:	Less than ± 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

POWER SUPPLY

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

MEMORY BACKUP

Type:	Electrically Erasable Programmable Read Only Memory (EEPROM)
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SWITCHING

Switching Voltage:	0 - 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



www.salus-tech.com

Sales: Email: sales@salus-tech.com Tel: 01226 323961

Technical: Email: tech@salus-tech.com Tel: 01226 323961

SALUS Controls plc, SALUS House, Dodworth Business Park South,
Whinby Road, Dodworth, Barnsley S75 3SP