

# SALUS

## S-Series Digital Thermostat



Instruction Manual  
Model No ST620RF



Certification Mark



## PRODUCT COMPLIANCE

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

- Electro-Magnetic Compatibility Directive 2004/108/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.

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 receiver from the wall or wall box.

When fitting batteries don't mix old and new 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 ST620RF 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. Unlike ordinary single unit design programmable thermostats, this is a new type of unit that separates the operational functions into two units.

The Receiver is used for wiring connections and heat on/off control. The Control Centre provides the user interface and temperature sensing / control. The two units are linked together by a Radio Frequency (RF) signal.

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 ST620RF easy to operate.

### FEATURES

- Touch Ring Technology
- Large LCD with White Backlight
- Stylish Casing
- Volt Free Contacts
- Intelligent Communication Technology
- 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 / day
- Secure RF Transmission  
(one million unique RF address codes)



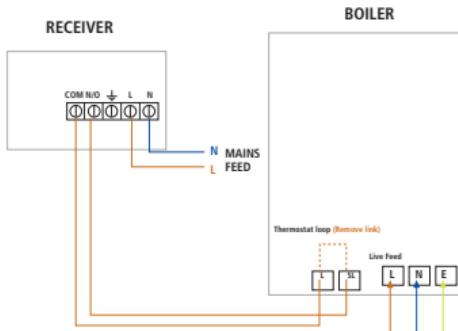
## INSTALLATION

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

The ideal position to locate the ST620RF programmable 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.

The ST620RF should be mounted in a location where it will not come into contact with moisture or condensation, as this can affect the Touch Ring operation.

To ensure trouble free reception for both the Radio Controlled Clock (RCC) and the Radio Frequency (RF) signal, 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 ST620RF in enclosed areas such as cellars and basements is not recommended.



## CONNECTING THE ST620RF RECEIVER

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 digital thermostat consult either with a qualified electrician, heating engineer or your boiler / heating system supplier for advice on how to continue.

The ST620RF Receiver should be mounted in a suitable location that is both accessible for the connection of mains and control wiring, and allows good reception of the RF signal. The Receiver needs a 230V AC mains supply to operate, and this should be fused appropriately (16A max.).

The Receiver should be mounted in a location where it will not come into contact with water, moisture or condensation. There are few electrical connections required to the ST620RF, and these connections should be made to the terminal block inside the Receiver. No Earth connection is required for the correct and safe operation of the ST620RF, but a parking terminal is provided to connect an Earth wire if one is present.

These electrical connections are shown in the table below:

Terminal	Function
COM	Common Contact (volt free input)
NO	Normally Open Contact (volt free output)
$\frac{1}{-}$	Earth Parking (No electrical connection)
L	Incoming Mains - Live
N	Incoming Mains - Neutral



## INSTALLING AND REPLACING BATTERIES

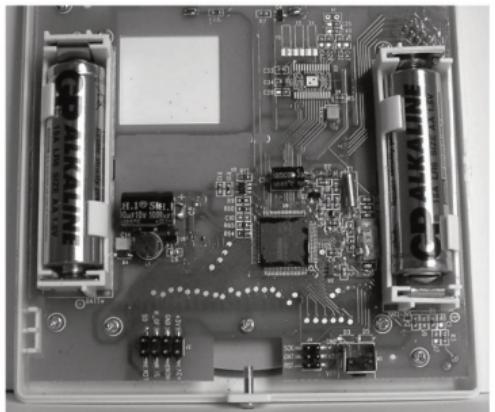
Installing or replacing the ST620RF Control Centre batteries is a straightforward operation, but does require you to open the case of the programmable thermostat.

To open the ST620RF 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 ST620RF case and retighten the securing screw.



## PAIRING THE ST620RF RECEIVER AND CONTROL CENTRE

It is important to correctly pair both the Receiver and Control Centre to ensure that the RF address codes are matched and that reliable communication is established between the units. Please follow the instructions below to ensure that the units are configured correctly.

### On the Receiver:

Press and hold the SYNC button to allow the Receiver to enter the learning mode. The Red SYNC LED will turn on to indicate it is ready to receive a signal and pair with another unit.

While the signal is being received, the SYNC LED will turn on until the pairing has completed successfully; the SYNC LED will then turn off and the Green Power LED will turn on again. The Control Centre will continue to transmit a pairing signal for 10 minutes before returning to NORMAL mode.

### On the Control Centre:

The Arrow key is not active when the ST620RF is in NORMAL mode. To access the Menu screens, press the OK key twice. The first menu displayed is the PROGRAMME menu:



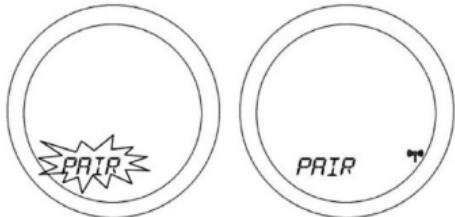
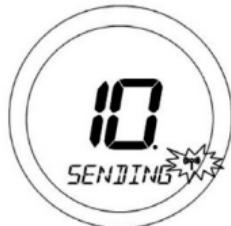
Use the Touch Ring to scroll through the Menus, and press the OK key to select the menu you want to use:



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 the Arrow key will return the ST620RF 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.

After selecting the PAIR Menu, PAIR and the RF icon are displayed.



Press the OK key to start sending the RF address code to the Receiver.  
The ST620RF Control Centre display will change to show a rundown timer:

The unit counts down for a period of 10 minutes, with the RF Signal indicator flashing while the signal is being transmitted. The RF address code will be generated randomly and the Control Centre will transmit the signal every second for the full 10 minutes until:

- The Arrow key is pressed to return to the previous display
- The OK key is pressed to return to NORMAL mode
- The 10 minute timer runs out

Note that the Receiver must be already in learning mode BEFORE attempting to access the PAIR menu on the Control Centre. If the Red SYNC LED has not turned off after 10 minutes, repeat the whole pairing process.

Pressing the Reset button on the Control Centre and the Receiver will clear the RF address code and generate a new default code which will be saved into the internal memory of the unit; there is no need to re-pair the Receiver and Control Centre. This is a quick and easy way to directly link the units in many applications.

Replacing the Control Centre batteries will not affect the RF code setting. Pressing and holding the SYNC button on the Receiver will however clear the RF address code saved into the internal memory, and switch the Receiver into learning mode, as previously described.

## TESTING THE RF TRANSMISSION

It is important to site both the Receiver and Control Centre in locations where the RF signal cannot be interrupted. The receiving range between Control Centre and Receiver is 100 metres in open air, however many factors can affect the RF transmission and shorten the operating distance, e.g. shielding by thick walls, foil back plasterboard, metal objects such as filing cabinets, general RF interference, and so on.

The operating range is generally around 30 metres, which is large enough for most household applications, but it is advisable to test the RF transmission from the intended Control Centre location to the Receiver location before fixing the Control Centre to the wall. If you are unable to get a stable RF connection between the Receiver and Control Centre, check that the Receiver is both switched on and has a mains supply (green LED lit).

The RF communication is one way, from the Control Centre to the Receiver – the Receiver does not send any signal back to the Control Centre. The RF signal indicator ("↑") only flashes once when a signal is being transmitted. Once the Receiver has established communication successfully, the green Power LED will flash for 4 seconds to indicate the process has completed correctly.

The Control Centre will transmit only when there is a need to control the heating system.

## RECEIVER LED INDICATORS

The LED indicators on the ST620RF Receiver are designed to give a clear and easily understood indication of the current state of the system.

The various LED signal combinations and descriptions of what they indicate are shown in the table below:

LED	State	Indication
Blue	On	Receiver is in Manual mode and system is calling for heat.
Blue	Flashing once per second	Receiver is in Automatic mode and system is calling for heat.
Blue	Off	Receiver is in Automatic mode and system is NOT calling for heat
Green	On	Power is on
Green	Flashing for 4 seconds	Receiver has received correct RF address and Command signal when in Failsafe mode
Red	On and flashing	Receiver is either receiving a new RF address code in SYNC mode, or has failed to store the new RF address code when in SYNC mode
Yellow	On	Receiver is in Failsafe mode after no RF signal received for over 1 hour

## AFTER INSTALLATION

After completing installation and powering up the ST620RF 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 two seconds, the ST620RF 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 ST620RF 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 ST620RF 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 on the next page.



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	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 ST620RF, 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. The ST620RF Receiver has only two slide switches, a Sync button and a Reset button.

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 selected setting and scrolls down the menu selection
Touch Ring (move anti- clockwise)	Decreases the selected setting and scrolls up the menu selection
OK Key	Enters Menu or confirms a menu selection
Arrow (Back) Key	Single touch – sets the unit back one step. Hold for two seconds sets the unit back to NORMAL mode
Reset Button	Resets the programmable thermostat to default (original factory) settings except Service setting (when Service is on)
Slide Switch	Activates and deactivates the key lock function (prevents accidental changes)



The status of the ST620RF Receiver is indicated by the use of two bi-colour Light Emitting Diodes (LEDs). The status indicators are:

Indicator	Colour	Operating Function
Blue / Yellow	Blue	Heat call mode
	Yellow	Failsafe mode
Green / Red	Green	Power on
	Red	SYNC mode



## User Control Function Summary – ST620RF Receiver

Key/Operation	Functions
Auto	Sets Receiver to Automatic mode (default setting)
Manual	Sets Receiver to Manual mode
On	Turns Relay output ON (default setting)
Cycle	Switches Receiver output on and off in a 15 minute cycle (4 minutes on, 11 minutes off)
Off	Turns Relay output OFF
SYNC Button	Enables RF signal synchronisation with ST620RF Control Centre
Reset Button	Resets the Receiver to default (original factory) settings

## OPERATION

The ST620RF 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 programmable thermostat status.



## ACCESSING THE MENUS

The Arrow key is not active when the ST620RF 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:



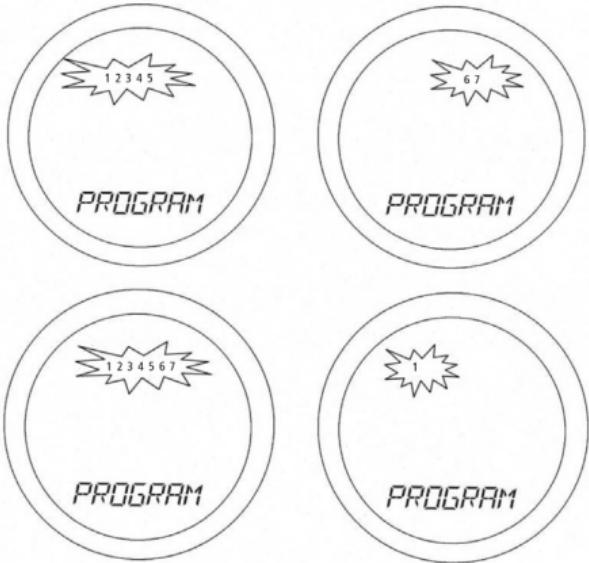
You can scroll through the menus in either direction (forwards or backwards) depending on the direction you move your finger around the Touch Ring. The menus are displayed in the order shown in the picture above. Pressing the Arrow key will return the ST620RF to NORMAL mode. The programmable thermostat 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 ST620RF

The ST620RF offers great versatility with its programming options, allowing the user to programme the ST620RF 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 ST620RF with your own settings is a very straightforward operation.

To start programming the ST620RF, 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 ST620RF 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 you will have set up Programme 1 – the ST620RF 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 ST620RF 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 ST620RF 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 ST620RF 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 ST620RF to the previous screen. Once all the days have been programmed, the ST620RF 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 ST620RF 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

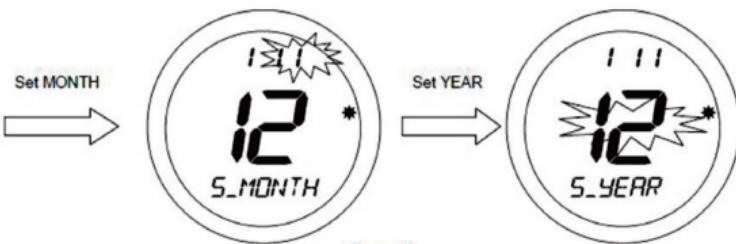
Entering the HOLIDAY menu allows you to turn the holiday override mode of the ST620RF on. The HOLIDAY mode allows the user to override all the current Programme settings with a specific temperature setting that is active between two dates entered by the user.

When the holiday start date arrives, the HOLIDAY indicator turns on and the HOLIDAY mode is switched on. As long as the ST620RF 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 ST620RF 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. 'S\_DAY' will appear on the display. Use the Touch Ring to scroll to set the date and confirm the choice using the OK button.

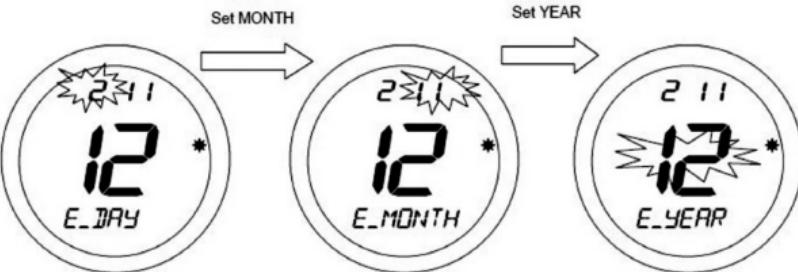
The month setting ('S\_MONTH') will then be selected – change this setting in the same way using the Touch Ring, and confirm the setting using the OK button. Finally, set the year ('S\_YEAR') – this is done in exactly the same way as previously described for the date and month.



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 ST620RF 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 ST620RF 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 ST620RF 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 ST620RF 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 on all the FROST menu screens.



Scroll the touch ring  




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 ST620RF 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 ST620RF 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 ST620RF to immediately go into SLEEP mode, as will allowing the countdown to complete. Pressing the Arrow key will return the ST620RF 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 ST620RF from SLEEP mode and restore the programmable thermostat to AUTO mode.

**N.B: The unit will not control the heating while in SLEEP mode.**



## MANUAL OVERRIDE SETTING

When the ST620RF 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 ST620RF will go back to NORMAL mode without changing the set temperature after 10 seconds of inactivity, or after pressing the Arrow key.

When the ST620RF 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 ST620RF to AUTO mode.

If the ST620RF is in Frost, or Holiday or Service mode, the set temperature can't be adjusted, only can be reviewed.



## 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.

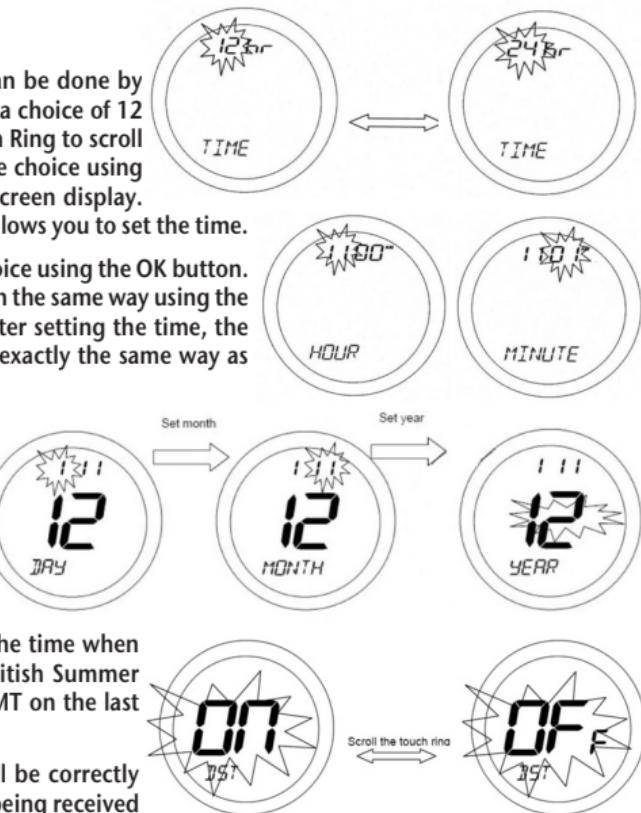
After setting the time display format, the next screen display allows you to set the time.

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.

After setting the date, the next screen display allows you to set the daylight saving time (DST) option. Use the Touch Ring to scroll to set the DST option ON or OFF, and confirm the setting using the OK button – the default setting is ON. Press the Arrow key to return to the previous screen display, or do nothing for 10 seconds and the ST620RF will return to NORMAL mode.

The DST setting allows the ST620RF to automatically adjust the time when local time changes from Greenwich Mean Time (GMT) to British Summer Time (BST) on the last Sunday in March, and then back to GMT on the last Sunday in October each year.

If the ST620RF is able to receive an RCC signal, the time will be correctly updated regardless of the DST setting, but if no RCC signal is being received and DST is ON, then the current stored time will be automatically adjusted.



## 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 ST620RF is in NORMAL mode. To access the Menu screens, press the OK key once. The first menu displayed is the PROGRAMME menu:



Scroll the touch ring

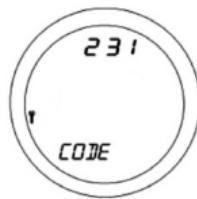


Use the Touch Ring to scroll through the Menus, and press the OK key to select the SERVICE menu. You will be prompted to turn SERVICE mode OFF or ON

The SERVICE indicator  will be displayed on all the SERVICE menu screens. The first SERVICE screen will prompt you to enter a 3 digit access code – this code is very important, as once set it will be needed to turn SERVICE mode on or off.



Set code 231



If you forget the code you will have to contact Salus technical team. Once the code has been entered, the next menu screen allows you to set the next service date for the system. Set the date in the order day, month and year:

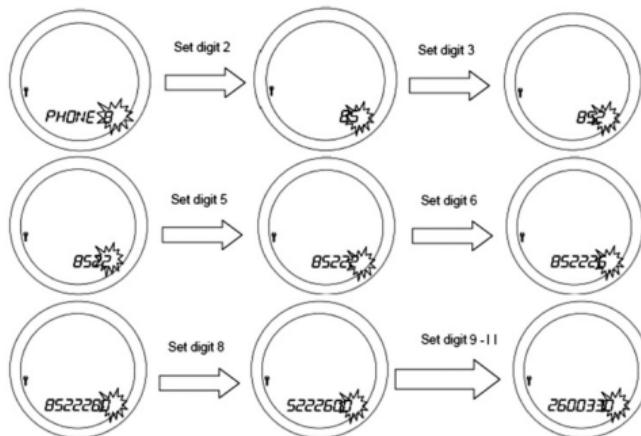


Confirm the setting using the OK key, or Press the Arrow key to return to the previous screen display. The next menu screen allows you to set a temperature setting. This temperature is the maximum temperature that the heating system will operate at once the previously set service date is reached.



The temperature is set by scrolling the Touch Ring to the desired setting, then confirming with the OK key.

After enabling SERVICE mode, there is a screen that will allow you to enter an 11 digit number – this feature is intended for you to enter your telephone number so that the end user can contact you when the next service is due. The number is entered in the same way as the code – scroll with the Touch Ring until you reach the required number, then confirm by pressing the OK key.



Repeat this action until you have entered the entire telephone number. After entering and confirming the last digit with the OK key, store the telephone number by pressing the Arrow key.

Once set as described, the SERVICE indicator will appear on the display 30 days before the set date. At seven days before the set date, the SERVICE indicator will flash and the bottom section of the display will alternate between displaying the current mode (AUTO or MANUAL), and the telephone number previously entered.

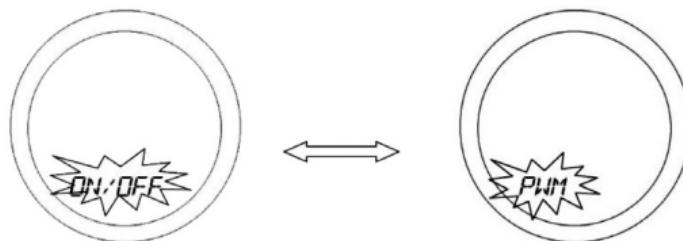
Once the SERVICE date has been reached, the system will only operate at the temperature that was previously set in SERVICE mode. The display will no longer display the operating mode, only the telephone number that has been entered and the SERVICE indicator (which will continue to flash).

To enter the SERVICE menu, press the OK or Arrow keys, and enter the code you originally set to access SERVICE mode. Once back in SERVICE mode, you can edit the telephone number, set a new servicing date, or turn SERVICE mode ON or OFF in exactly the same way as described earlier.



## CONTROL MENU

By selecting the Control menu, the installer can change the control method used by the programmable thermostat - either ON/OFF or Pulse Width Modulation (PWM). The default setting is ON / OFF.



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.**

## RADIO CONTROLLED CLOCK

The ST620RF 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.

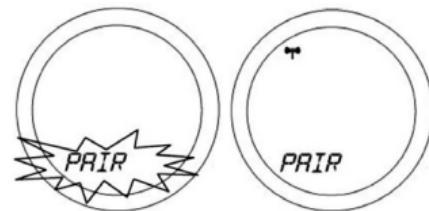
The time and date will also be automatically updated when the ST620RF is powered up, or after the Reset Button is pressed.

If for any reason the ST620RF 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.

## PAIR MENU

The PAIR mode allows the ST620RF Control Centre and Receiver to communicate with each other.

On entering the menu, scroll to select the preferred option (Pairing ON or OFF), and confirm the choice using the OK button. **Please consult the Installation section of this manual for full instructions on how to Pair the ST620RF units.**



## BATTERY STATUS

The ST620RF 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 ST620RF 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 ST620RF 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 ST620RF batteries as soon as possible to restore normal operation.

If the voltage of the replaced batteries is not high enough (if older batteries have been used) the unit will remain in OFF mode and will not reset.

## BACKLIGHT

The backlight of the ST620RF 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 ST620RF 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 ST620RF 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.**

After pressing the Reset Button, the ST620RF will revert to the following (default) settings:

Mode:	Auto
Programme:	6
Date:	Jan.1.2010
Time:	12hr, 12:00am
DST:	On
Control method:	On/Off
Holiday:	Off
Frost:	Off
Sleep:	Off
RF address code:	00000000000000000000 (20 bit)

## RECEIVER MODES

The ST620RF Receiver can operate in three different modes – AUTO or MANUAL, and also has a FAILSAFE mode of operation. These modes are selected by using the slide switches on the front of the Receiver:

## MANUAL MODE

Moving the slide switch to the 'Manual' position selects the Manual operation mode of the ST620RF. In Manual mode, the Receiver ignores the RF signal from the Control Centre and controls the output relay manually, based on the setting of the Failsafe mode switch. Please be aware that if the Control Centre is operating in Service mode when changing the Receiver switch position, the relay output may be affected.

## AUTO MODE

Moving the slide switch to the 'Auto' position selects the Automatic operation mode of the ST620RF. In this mode, the Receiver will automatically receive an RF signal from the Control Centre and control the output relay.

When in Auto Mode, if RF communication between the Receiver and Control Centre is lost for less than one hour, the Receiver remains in the same operating state it was in when the signal was lost. If the RF signal is lost for more than one hour, the Receiver will enter Failsafe mode, and control of the Receiver output will be based on the setting of the Failsafe mode switch.

## FAILSAFE MODES

Failsafe mode has three user selectable settings – 'On', 'Cycle' and 'Off'.

With the Failsafe switch in the 'On' position, the output relay will be turned on, in the 'Off' position the output relay will be turned off, and in the 'Cycle' position the output relay will be operated according to a preset time sequence (on for 4 minutes and off for 11 minutes).

When changing from Auto to Failsafe mode, the LEDs will indicate the Receiver relay status as follows:

Mode	LEDs	Indication
On	Blue and Yellow	Each LED lights alternately, approx. once per second
Off	Yellow	On
Cycle	Blue	On for 4 minutes, off for 11 minutes

If needed the user can switch to another mode 'on the fly' without having to reset the ST620RF; for instance you can switch from Auto Mode to Manual Mode with the output relay being controlled accordingly. To illustrate this point, even when switched into Manual Mode the Receiver can still receive the RF signal from the Control Centre and once the user switches to Auto Mode, the output relay will be controlled to turn on or turn off automatically once more.

## 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 ST620RF programmable 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 ST620RF programmable thermostat fail to function correctly, check:

- The batteries are the correct type, fitted correctly and are not exhausted - fit new batteries if in doubt.
- The ST620RF Receiver has mains power (Green LED on)
- The ST620RF Receiver is switched on.
- Heating system time switch or programmer is switched on.
- If the ST620RF is still not functioning correctly, press the Reset Button.

## PRODUCT SPECIFICATION

**Model:** ST620RF  
**Type:** Electronic programmable thermostat with RF module,  
designed for Volt Free heating applications.

### Clock

**Type:** Radio Controlled Clock (RCC) MSF (UK Version).  
**Reception Frequency:** 60 kHz ± 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	6:00 AM 21 °C	6:00 AM 21 °C
2	ON TEMP	8:00 AM 14 °C	8:00 AM 14 °C
3	ON TEMP	11:00 AM 21 °C	11:00 AM 21 °C
4	ON TEMP	1:00 PM 14 °C	1:00 PM 14 °C
5	ON TEMP	4:00 PM 21 °C	4:00 PM 21 °C
6	ON TEMP	9:00 PM 14 °C	9:00 PM 14 °C

### 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

## **Power Supply – Control Centre**

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

## **Power Supply – Receiver**

Power Source: 230V AC / 50Hz

## **Control**

Control Method: 1. On – Off control  
2. PWM control

## **Memory Backup**

Type: Electrically Erasable Programmable Read Only Memory (EEPROM)

## **Switching**

Switching Voltage: 0 - 230V AC / 50Hz  
Switching Current: 16A resistive, 5A inductive  
Contact Type: Volt Free

## **Radio Frequency (RF) Settings**

Operating Frequency: 868 MHz  
Max. Operating Range: 100 metres (free air)  
30 metres (indoors)  
Protection rating: IP30

## **Environment**

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



## ST620RF 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.

**Customer Name:** .....

**Customer Address:** .....

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

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

**Engineers Company:** .....

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

**Intallation Date:** .....

**Engineers Name:** .....

**Engineers Signature:** .....



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