

SALUS

Digital Electronic Thermostat With RF



Instruction Manual
Model No RT300RF



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 unit 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 room thermostat?

... an explanation for householders

A room thermostat simply switches the heating system on and off as necessary. It 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.

Turning a 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 room thermostat to a lower setting will result in the room being controlled at a lower temperature, and saves energy.

The heating system will not work if a time switch or programmer has switched it off.

The way to set and use your room thermostat is to find the lowest temperature setting that you are comfortable with, and then leave it alone to do its job. The best way to do this is to set the room thermostat to a low temperature – say 18°C – and then turn it up by one degree each day until you are comfortable with the temperature. You won't have to adjust the thermostat further. Any adjustment above this setting will waste energy and cost you more money.

If your heating system is a boiler with radiators, there will usually be only one 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.

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 RT300RF from SALUS Controls is a stylish and accurate digital thermostat with a large, easy to read Liquid Crystal Display (LCD). This thermostat has been specifically designed to be used for both Volt Free and AC heating applications, can replace most common residential thermostats and is designed to be used with electric, gas or oil heating control systems. Unlike ordinary single unit design thermostats, this is a new type of thermostat separating 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.

Features

- Volt free switching option
- Frost protection
- Large, easy to read LCD with blue backlight
- Burner on symbol
- User friendly



INSTALLATION

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

The RT300RF Control Centre is easily installed using the Industry Standard back plate supplied with the unit – this is used purely for mounting purposes, as no wiring is needed for the Control Centre. The back plate can be mounted directly to the wall surface.

The ideal position to locate the RT300RF Control Centre 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 operation of 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 RT300RF in enclosed areas such as cellars and basements is not recommended.

CONNECTING THE RT300RF 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 RT300RF 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 (13A max.). The Receiver should be mounted in a location where it will not come into contact with water, moisture or condensation.

The Receiver On/Off switch is accessible from the front face of the Receiver, as shown in this picture:



On the front cover of the Receiver you will see that there is the On/Off switch and two Light Emitting diodes (LEDs). The switch allows you to turn off the Receiver if necessary to prevent it calling for heat. The bottom LED (red) will illuminate when the switch is in the 'On' position and the unit is receiving power. The top LED (green) illuminates when the Receiver unit is receiving a heat call transmission from the Control Centre.

The wiring terminals and RF Address Code setting DIP switches are located on the rear of the Receiver, as shown in this picture:

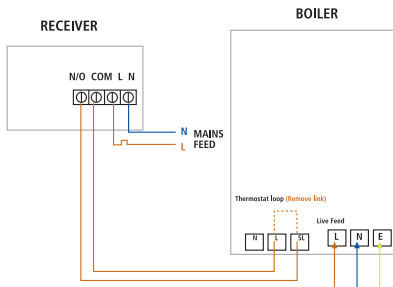


RECEIVER WIRING TERMINALS

Terminal	Identifier	Description
1	NO	Normally Open [N/O]
2	COM	Linked Live feed (230V AC heating applications only)
3	L	Live feed (230V AC)
4	N	Neutral

TYPICAL WIRING INSTALLATIONS

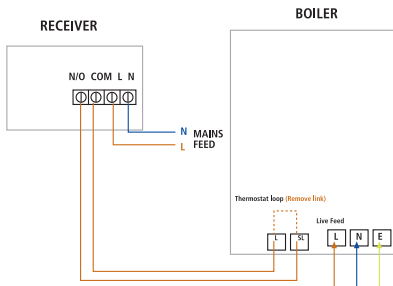
a. 230V AC Installation



Notes:

- Receiver unit should have a permanent 230V AC main supply
- Confirm that the Boiler has an external thermostat loop and is configured for 230V switching
- If the boiler has two terminals for the thermostat, remove the link from the boiler

b. 24V Installation



Notes:

- Receiver unit should have a permanent 230V AC main supply
- Confirm that the Boiler has an external thermostat loop and is **NOT** configured for 230V switching
- If the boiler has two terminals for the thermostat, remove the link from the boiler

CONTROL CENTRE JUMPER SETTINGS

Changes to the jumper settings should only be made by the Engineer carrying out the installation or other qualified person.

The installer should select the jumper positions required if changes need to be made to the factory default settings. These jumpers are found on the rear of the Control Centre.



Jumper	Function
Span	Movable jumper for selecting temperature span of $\pm 0.5^{\circ}\text{C}$ (factory default setting) or $\pm 1.0^{\circ}\text{C}$
1,2,3,4,5	Removable jumpers for altering the RF address code when used in conjunction with the corresponding DIP switch on the Receiver.

NOTE: The Reset button must be pressed after changing jumper positions. The Reset button is accessible behind the small hinged door on the front right hand side of the Control Centre.

RF ADDRESS CODE SETTING

If there is another unit being used nearby, e.g. in the next house or as part of a multiple installation, your Receiver may be fault triggered by the other Control Unit. You can change the RF Address Code to help prevent this problem.

Each Receiver can only respond to RF transmissions from a Control Centre that has the same RF address code setting.

Disconnect any AC power to the Receiver, and remove the batteries from the Control Centre before attempting any adjustment of the RF Address Code switches and jumpers. If you are not sure how to carry out this operation correctly, consult either with a qualified electrician or heating engineer.

To adjust the RF address code of the Receiver, simply push up one or more of the 5 DIP switch levers on the DIP switch bank located on the back of the receiver (the levers are numbered 1 to 5 from bottom to top, as shown in the picture below), and then make a note of the setting of each switch:



To adjust the RF address code of the Control Centre, remove one or more of the jumper caps located on the back of the unit (labelled 1,2,3,4 and 5, and shown in the picture below) so that the jumper settings match the settings made on the receiver:



For example, if the DIP switches on the Receiver were set as follows:

1	-	ON
2	-	OFF
3	-	OFF
4	-	OFF
5	-	ON

Then you would need to remove jumper caps 2,3 and 4 on the Control Centre to make sure that they are both set with the same RF address code. Please make sure that you keep any of the jumper caps you remove in a safe place, in case you later need to change the RF address setting again.

You must press RESET on the Control Centre after making any changes to the RF address code settings.

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 approximately 30 metres indoors, 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 range is generally 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. To check the RF reception, follow the following steps:

1. Press the UP button on the Control Centre until the set point temperature is higher than room temperature by a few degrees.
2. Wait for a few seconds. The Burner on (heat call) indicator should appear on the bottom left of the LCD on the Control Centre.
3. Check the green LED on the receiver unit - it should be lit.
4. Press the DOWN button to adjust the set point temperature to be lower than room temperature.
5. Wait for a few seconds, and the Burner on (heat call) indicator should disappear and the green LED should switch off.
6. If at step 3 the green LED is not illuminated, press the RESET button on the Control centre and try to place the Control Centre closer to the Receiver.
7. Repeat steps 1 to 5.

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 (red LED lit). If this isn't the problem you can also alter the RF address code by following the 'RF Address Code Setting' section of this manual, and then repeat steps 1 to 5 (note that the RESET button on the Control Centre should be pressed after altering the address code).

MULTIPLE THERMOSTAT INSTALLATIONS

If you are using more than one RT300RF digital thermostat in the same installation, be sure that there is at least a 1 metre gap between receiver units to avoid crosstalk and other RF interference.

When installing multiple thermostats, you should assign different RF address codes for each RT300RF by following the instructions in the 'RF Address Code Setting' section of this manual. Each RT300RF should be introduced to the installation one at a time with all other Receiver units switched off. Also make sure that the batteries are removed from all other Control Centres.

Install each unit following the 'Testing the RF Transmission' section above - once you are happy with the operation of one unit you can install the next.

Once all the RT300RF units have been installed, if one unit then seems to function abnormally, try changing the RF address code of that unit's Control Centre and its corresponding Receiver, making sure that the new RF address code is different to all others in the installation.

The control centre sends RF On/Off signals every 10 minutes to ensure the Receiver is in the correct state. If for some reason the first RF signal is interrupted you may notice the Control Centre has stopped or started calling for heat but the Receiver hasn't switched. Simply wait 10 minutes until the next RF signal is transmitted and the receiver unit should then switch correctly.

AFTER INSTALLATION

The following table shows the settings of the RT300RF digital thermostat after Power on, or after RESET is pressed:

Function	Status After Reset or Power On
Operation Mode	Normal mode
Room Temperature	22.0 °C, updated within 5 seconds
Set Point Temperature	20.0 °C
Frost Protection indicator	Off
Heat indicator	Off
Low-Battery Warning indicator	Off, updated within 5 seconds
Output Relay	Off

After Power on, the thermostat will operate in Normal mode (Normal mode is when the thermostat is displaying the room temperature):

- The set point temperature is reset to the default setting
- The room temperature display is updated within 5 seconds
- The control process starts

USER INTERFACE AND CONTROLS

The status and operation of the RT300RF is clearly shown on the large backlit Liquid Crystal Display (LCD).

This display allows the user a clear indication of the current room temperature, and the status of the heating system.

There are few user controls for the RT300RF, making this thermostat very easy to operate. These controls are shown below, along with a description of each of their functions.



USER CONTROL FUNCTION SUMMARY

Key / Operation	Symbol	Functions
UP key		Increases the selected setting
DOWN key		Decreases the selected setting
BACKLIGHT / FROST key		Manually turns on the LCD backlight for 5 seconds, or activates / deactivates Frost Protection
RESET button		Resets the programmable thermostat to default (original factory) settings

OPERATION

The RT300RF is configured and adjusted by the use of a minimal number of user controls, and an intuitive user interface.

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



REVIEWING SET POINT TEMPERATURE



You can view the set point temperature at any time by pressing either the UP or DOWN key.

To exit from the set point review, press the BACKLIGHT / FROST key, or don't press any keys for approximately four seconds – either of these actions will return the RT300RF to displaying current room temperature.

SETTING SET POINT TEMPERATURE



You can change the set point temperature very easily while you are reviewing the set point temperature. Press the UP or DOWN keys repeatedly to change the temperature setting. The set point temperature will flash to indicate that it can be changed:

The temperature will be changed in 0.5°C steps per key press. The RT300RF will return to Normal mode if no keys are pressed for more than four seconds.

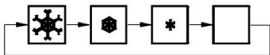
Set point temperature cannot be changed if Frost Protection mode is enabled.

FROST PROTECTION

To enable the Frost Protection mode, press and hold the BACKLIGHT / FROST button for three seconds. Once Frost Protection is enabled, the set point temperature is automatically set to 5°C to provide protection from the risk of freezing.



Whenever Frost Protection is activated, the Frost Protection indicator will flash in the sequence shown below:



To turn off Frost Protection mode, press and hold the BACKLIGHT / FROST button for three seconds.

Please be aware that the Frost Protection mode operates as an additional protection feature but should not be used in place of a correctly installed frost thermostat, which is required to override all other controls in the system.

The backlight will remain illuminated for approximately 5 seconds.

OTHER FUNCTIONS AND CONTROLS

Backlight

The backlight of the RT300RF is switched on automatically whenever any of the keys are pressed. The backlight will remain illuminated for approximately 5 seconds after the last key press, except if you are changing the set point temperature – in this case, the backlight will remain illuminated throughout the setting change process.

The backlight will not illuminate if the RT300RF battery is low.

Battery Status

The RT300RF checks the battery voltage frequently during normal operation. If the battery voltage is sensed as being low (this is normally when the battery voltage falls to a level of around 2.6V), 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 any possible operating problems.

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.

Sleep Mode

By pressing both the UP and DOWN keys together, the RT300RF will enter SLEEP mode. In this mode, all the RT300RF functions will be paused to save battery power.

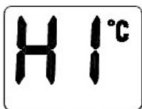
While in SLEEP mode:

- The LCD display will be blank.
- All output from the Control Unit will be turned off immediately.

Press any key to wake up the RT300RF and cancel SLEEP mode.

TEMPERATURES OUTSIDE THE OPERATING RANGE

Temperatures below 10 °C are displayed without the leading '0'. Temperatures exceeding the measurable range will be indicated by 'HI' for temperatures above the upper limit, and 'LO' for temperatures below the lower limit, as shown in the images below:



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 RT300RF electronic 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 RT300RF electronic thermostat fail to function correctly, check:

- The batteries are the correct type, fitted correctly and are not exhausted - fit new batteries if in doubt.
- Heating system is switched on.
- The RT300RF Receiver is switched on.
- If the RT300RF 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:	RT300RF
Type:	Digital thermostat, designed for Volt Free and AC heating applications.
Frequency	868 MHz

Temperature

Scale:	Celsius
Range:	5 °C to 35 °C
Resolution:	0.5 °C
Tolerance:	Less than ± 0.5 °C at 25 °C
Display Range:	5.0 °C to 45.0 °C
Display Resolution:	0.5 °C

Frost Protection

Setting:	5 °C
Setpoint Temperature Range:	5 °C to 35 °C

Control Centre

Power Source:	2 x AA alkaline batteries (don't use rechargeable batteries)
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Receiver

Power Source:	230V AC / 50Hz
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Switch Rating

Switching Voltage:	0 - 230V AC / 50Hz
Switching Current:	16A resistive, 5A inductive
Protection Rating:	IP30

Environment

Operating Temperature:	0 °C to + 40 °C
Storage Temperature:	- 10 °C to + 60 °C

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Customer Name:

Customer Address:

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Post Code: Tel No:

Email:

Engineers Company:

Tel No:

Email:

Intallation Date:

Engineers Name:

Engineers Signature:





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