

Instruction Manual

TPSRF51 (957707) - BOSS™ Universal RF Programmable Room Thermostat (Wireless) (7 day, 5/2 day and 24 hour programme options)

Thank you for purchasing this product. If installing for someone else, please ensure that the instructions are handed to the householder.

Please read this manual prior to installation or use.

Always isolate the mains power supply before removing the unit from the backplate.

Do not mix old and new batteries. 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

Installation

TPSRF51 Control Unit is easily installed using the backplate supplied with the unit – this is purely for mounting purposes, as no wiring is needed for the Control Unit. The backplate can be mounted directly to the wall surface without using a back box.

The ideal position to locate the TPSRF51 RF Programmable Room Thermostat is about 1.5m above floor level, 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 receiving of the Radio Frequency (RF) signal, always ensure that the programmable thermostat is mounted away from any possible sources of interference (such as radio, TV sets, computer, etc.), locating the TPSRF51 in enclosed areas such as cellars and basements is not recommended, position your thermostat where the temperature will be representative of that in the zone being controlled.

Connecting the TPSRF51 RF 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 TPSRF51 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.

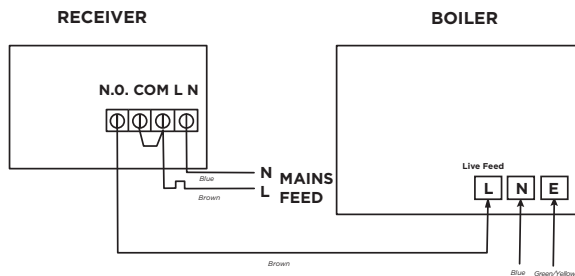
On the front cover of the Receiver you will see that there is the On/Off switch and two light emitting diodes (LEDs). The switch allows you to turn off the Receiver if necessary to prevent it calling for heat. The top LED (orange) will illuminate when the switch is in the “On” position and the unit is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

The wiring terminals and RF Address Code setting DIP switches are located on the rear of the Receiver.

Receiver Wiring Terminals

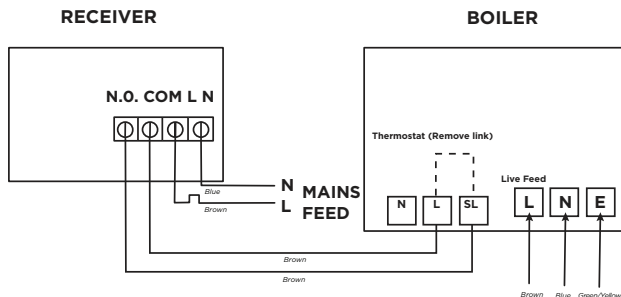
Terminal Name	Function
N	Neutral input 230VAC/50Hz
L	Live input 230VAC/50Hz
1:COM	Switch common terminal
2:NO	Normal open (Volt-Free Contact)
3:NC	Normal close (Volt-Free Contact)

Direct Control Boiler



Notes: Receiver unit should have a permanent 230V AC main supply

Combi Boiler



Notes:

- Receiver unit should have a permanent 230V AC main supply
- If the boiler has two terminals for the thermostat, remove the link from the boiler

Control Unit 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 Unit.

Jumpers	Description
Address code	5 DIP switch levers for 5 bits address code for RF communication (All jumpers default are closed)
Span	3x1 pins jumper for +/-0.5°C or 1.0°C (factory default setting) selection It is used to define the system to run at +/-0.5°C or 1.0°C difference to the set temperature

Notes :

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 Unit.

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 triggered by the other Control Unit. You can change the RF Address Code to help to prevent this problem.

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

Disconnect any AC power to the Receiver, and remove the batteries from the Control Unit before attempting any adjustment of the RF Address Code switch 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, and then make a note of the setting of each switch.

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, and then make a note of the setting of each switch. Then set the 5 DIP switch levers on Control Unit same as the RF Receiver setting so that the address code settings match each other.

For example, if Receiver DIP switches set as following, 1 - ON 3 - OFF 5 - ON
Controller unit dip switch should be set as same: 2 - OFF 4 - OFF

You must press **Reset** on the Control Unit after making any changes to the RF address code settings.

Testing the RF Transmission

It is important to site both the Receiver and Control Unit in locations where the RF signal cannot be interrupted.

The receiving range between Control Unit 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, etc.

The range is generally large enough for most household applications, but it is advisable to test the RF transmission from the intended control unit location to the receiver location before fixing the control unit to the wall.



To check the RF reception, follow the following steps:

1. Press the **▲** button on the Control Centre until the set 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 Unit.
3. Check the green LED on the receiver unit – it should be lit.
4. Press the **▼** button to adjust the set 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 **The Reset** on the control unit and try to place the control unit closer to the receiver.
7. Repeat steps 1-5.






If you are unable to get a stable RF connection between the Receiver and Control Unit, check that the Receiver is both switched on and has a mains supply (orange 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 should then repeat steps 1 to 5 (note that the **Reset** button on the Control Unit should be pressed after altering the address code).

User Instructions

User Control Function Summary

Key	Function
▲	Increase temperature setting
▼	Decrease temperature setting
	Changes unit to comfort mode
	Changes unit to economy mode
D	Set the day of the week
H	Set the hour of day
M	Set the minute
Set	Key for Program settings
Select	Key for Program settings
ON/OFF	Short Press: Power off mode Long press for 3 seconds: user setting selection for Offset
Reset	To reset the thermostat

Function of indicator

	Indicator	Function
1	Day of week indicator M T U W T H F S A S U	1. show the current day in normal mode 2. show the program day in program mode
2	Real time clock 18:88 AM PM	1. show the current time 2. show the set time during program mode
3	Temperature 88.8°C	1. show the room temperature in the resolution of 0.5°C 2. show the set temperature during program mode in the resolution of 0.5°C
4	Program No. indicator 1 2 3 4 5 6	Show the current program number
5	Heat indicator 	Indicates the channel is turned on for heating
6	Low-batt indicator 	Indicates battery replacement is required
7	Auto/Comf/Econ/Off mode indicator AUTO   OFF	Indicates current mode: Auto/Comfort/Economy/Off
8	Set icon SET	Indicates unit in setting mode
9	Program icon PROG	Indicates unit in programming mode. Both SET and PROG are shown at the same time as SET PROG
10	Snowflake icon 	Indicates when unit is in OFF mode

Initial Power Up:

- After power up or Reset is pressed, the thermostat is reset.
- During system reset, all LCD segments are turned on for 2 seconds or until any key is pressed. After 2 seconds and all keys are released, the thermostat is initialized. The typical reset display is shown below.

Following table is the setting of the thermostat after reset.

Default Operation Mode Setpoint

Mode	Default settings
Comf mode	21°C
Econ mode	16°C
Off mode	5°C

Default Clock and Operation Mode

Item	Default values
Clock	12:00AM
Day of week	Monday
Mode	AUTO
Program	5/2 days



Default Program Setpoint Temperatures

Program	Weekday (Mon to Fri)	Weekend (Sat to Sun)
1	Time: 06:30	Time: 08:00
	Temp: 21°C	Temp: 21°C
2	Time: 08:00	Time: 10:00
	Temp: 18°C	Temp: 21°C
3	Time: 12:00	Time: 12:00
	Temp: 21°C	Temp: 21°C
4	Time: 14:00	Time: 14:00
	Temp: 18°C	Temp: 21°C
5	Time: 18:00	Time: 18:00
	Temp: 21°C	Temp: 21°C
6	Time: 22:30	Time: 23:00
	Temp: 16°C	Temp: 16°C

Day/Time Setting

- To set the day, press **D** repeatedly to step through. Press and hold the key 2 seconds, the Day of the Week will change continuously.
- To set the hour, press **H** repeatedly to step through. Press and hold the key, the numbers will change continuously.
- To set the minute, press **M** repeatedly to step through. Press and hold the key 2 seconds, the numbers will change continuously.




View/Change temperature setting mode

- In the home screen in Auto/Comfort/Economy/Off mode, press **▲** or **▼** to enter View/Change temperature settings.
- The LCD will show the current temperature setting with flashing numbers and the SET icon is displayed.
- Press **▲** or **▼** again to increase or decrease the set temperature in 0.5°C steps.
- Press and Hold **▲** or **▼** for 2 seconds to enter fast advance in 1.0°C steps.
- In Auto/Comfort/Economy mode, the temperature can be set from 5°C to 30°C. In OFF mode, the temperature is set at 5°C and cannot be changed.
- During changing the set temperature, only **▲**, **▼** and **Set** have functionality.
- If the **Set** key is pressed or no further keys have been pressed after 5 seconds, the setting is saved and it will return to the home screen automatically.




Change Operation Mode

The thermostat can operate in four different modes: AUTO, COMF, ECON or OFF. The default mode is AUTO.

1) **COMF** mode

- Press  anytime in other modes to enter COMF mode. The screen displays  and the setting flashes for 5 seconds. When the temperature flashes, the setting can be changed (default 21°C) by using **⬇** or **⬆** in increments of 0.5°C. Press and hold the buttons, the setting will change continuously in increments of 1.0°C.
- Wait 5 seconds to confirm the temperature. Next time the thermostat is in COMF Mode, this setting will be remembered.
- Anytime during the COMF mode press , it will go back to the AUTO (automatic) mode. Symbol on the LCD will be off, **AUTO** icon will be displayed.



2) **ECON** mode

- Press  anytime to change into ECON mode.  will be displayed on the LCD. Change the setting (default 16°C) the same as in COMF mode. Anytime during the ECON mode, press  to return to AUTO (automatic) mode

3) **AUTO** mode

- Automatic mode sets the thermostat to follow the temperature program. **AUTO** is displayed on LCD. Change the setting the same as in COMF mode.

4) **OFF** mode

- Off mode sets the thermostat to maintain a minimum temperature of 5°C (default) that acts as a frost protection measure. This value cannot be changed.
- In AUTO/COMF/ECON mode, pressing **ON/OFF** will change to OFF mode.
- In OFF mode, press **ON/OFF** again to revert to the previous mode.
- In OFF mode, press  to change into COMF mode. Press again to change to Auto mode.
- In OFF mode, press  to change into ECON mode. Press again to change to Auto mode.

Temporary Override Mode

- During AUTO mode, the programmed temperature can be adjusted manually by pressing the **Λ** or **V** buttons. The setting will flash for 5 seconds, then return to the home screen.
- This temperature override is cancelled at the next programmed temperature change.
- During Temporary Override mode, the program number is not displayed.
- Temporary Override mode remains active until the clock or program settings are adjusted, COMF/ECON/OFF mode is activated, or the next program time is reached.

Program Setting Mode

You can change the program setting as follows:

1. Press **Set** to enter programming mode. Days will flash on the LCD for 10 seconds. Press **Λ** or **V** repeatedly to step through the days, in consequent of 7 day, 5/2 day and 24 hour programme options:
--- [M], [TU], [W], [TH], [F], [SA], [SU] -- [M, TU, W, TH, F], [SA, SU] -- [M, TU, W, TH, F, SA, SU] ...
2. Press **Select** at any time to confirm the selection.
 - Press **Set** to return to the home screen.
3. Program 1 will display with the Hours flashing. Press **Λ** or **V** to change.
 - Press **Select** to set the hour.
 - Press **Set** to return to the home screen and store the setting.
4. Program 1 will be displayed with the Minutes flashing, press **Λ** or **V** to change
 - Press **Select** to set the minute
 - Press **Set** to return to the home screen and store the setting.
5. Program 1 will display with the temperature flashing, press **Λ** or **V** to change
 - Press **Select** to set the temperature.
 - Press **Set** to return to the home screen and store the setting.
6. Program 1 and its temperature is set, Program 2 and the Hour will flash for 10 seconds to allow you to set, repeat steps 3 to 5 (above).
7. After Program 6 is set, the next Day will flash as in step 1.
8. Repeat step 1 to 6 to set the rest days.

Note:

- During steps 1-8 (above), only **Λ** or **V**, **Select** and **Set** have functionality.
- During steps 1-8 (above), if there is no key press within 10 seconds, the unit will store the current setting and return to AUTO mode.

Chronological sequence of programming

- If you set the start time of a programme to be later than a subsequent set programme, the subsequent programme start time will be changed to the same.
- Similarly, if you set the time earlier than the previous program, the previous program start time will be changed. The temperature setting will also be changed. See following examples:

Original

Program		
1	Time: 06:30am	Temp: 21°C
2	Time: 08:00am	Temp: 18°C
3	Time: 10:00am	Temp: 23°C
4	Time: 12:00pm	Temp: 21°C
5	Time: 6:00pm	Temp: 21°C
6	Time: 10:30pm	Temp: 16°C

Now if you change program 2 start time from 8.00am to 1.00pm, the new program setting is as below and uses the temperature setting of the last period as the current setting i.e. use 21°C in our example.

New

Program		
1	Time: 06:30am	Temp: 21°C
2	Time: 1:00pm	Temp: 18°C
3	Time: 1:00pm	Temp: 23°C
4	Time: 1:00pm	Temp: 21°C
5	Time: 6:00pm	Temp: 21°C
6	Time: 10:30pm	Temp: 16°C

Similarly, if you set the time earlier than a previous program time, similar changes are applied. For example:

Original

Program		
1	Time: 06:30am	Setpoint Temp: 21°C
2	Time: 08:00am	Setpoint Temp: 18°C
3	Time: 10:00am	Setpoint Temp: 23°C
4	Time: 12:00pm	Setpoint Temp: 21°C
5	Time: 6:00pm	Setpoint Temp: 19°C
6	Time: 10:30pm	Setpoint Temp: 16°C

If you change program 5 start time from 6pm to 7am. The new program setting is as below using the temperature setting of the last conflicting programme i.e. uses 19°C in our example.

New

Program		
1	Time: 06:30am	Setpoint Temp: 21°C
2	Time: 7:00am	Setpoint Temp: 18°C
3	Time: 7:00am	Setpoint Temp: 23°C
4	Time: 7:00am	Setpoint Temp: 21°C
5	Time: 7:00am	Setpoint Temp: 19°C
6	Time: 10:30pm	Setpoint Temp: 16°C

Installer Setting Mode:

There is one setting for installer:

- Offset from -3.0°C to +3.0°C.


1. Press and hold **ON/OFF** over 2 seconds, the unit is in Offset selection. LCD will display OFS and stored offset temperature.
2. Press **▲** or **▼** to change offset by 0.5°C steps.
3. Press **Select** to save the value and return to the home screen.

Note: During any time if there is no subsequent key press within 10 seconds or Set is pressed, the unit will store the setting and return to the home screen.


Temperature measurement

- Temperature Sampling Rate: Every 15 seconds while backlight is off
- Temperatures exceeding the measurement range (0.0°C - 35°C) will be indicated by "HI" and "LO".

Control Status Indication:

Heating indicator  is displayed when the heat channel is switched ON.

Low Battery

- When battery voltage below 2.4V, the low battery indicator  will be displayed on LCD.
- When low battery occurs, the backlight will not illuminate.

Battery Cut-off Handling

- When the batteries reach cut-off voltage 2.1V, the LCD will turn off.
- After battery cut-off occurs, the thermostat will enter a cut-off state until new batteries have been fitted.