

# openTRV

OpenTRV is a device that lets you control the heating individually for each room of your house. It talks wirelessly to a radio controlled radiator valve and signals to another OpenTRV device connected to your boiler, to turn the boiler on and off. The controls of OpenTRV are very simple: there are three buttons and one rotary stick. The target reduction for the heating component of your energy bill is 50%. As OpenTRV only heats rooms when you ask for it or when it has learned to, it uses considerably less energy than a conventional whole house single thermostat.

## DISCLAIMER

OpenTRV is currently in development and you have been supplied with an engineering sample. It is not CE certified and it may still be subject to bugs and hardware problems. For trialists, it will be installed in parallel with your existing thermostat to provide an additional heating control and will be removed after the trial is finished.

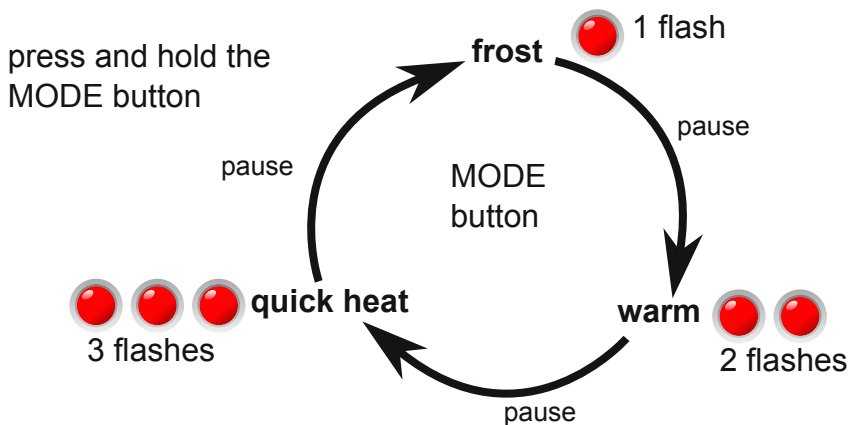
## PHILOSOPHY

What OpenTRV is there to help with:

- designed to get each part of your house warm when you need it
- reduce carbon emissions and save you money
- avoid you getting cold and uncomfortable
- help improve your comfort parsimoniously
- create the bubble of warmth that follows you around
- forget about temperature, it will keep your rooms safe from both frost and cold, and if you ever feel it is not cosy enough, there is a QUICK HEAT feature to give you a warm glow
- if you know there is a certain time every day that you want a room to be warm, it will do that too

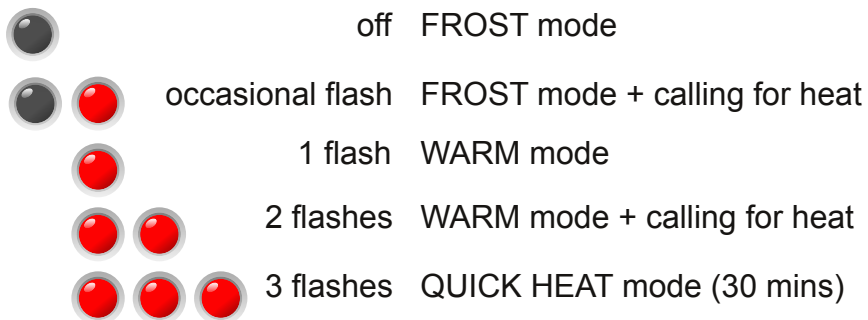
## MODE BUTTON

It is the big red button on the front of the unit. The mode cycles through three states:



To cycle between the modes, press the red MODE button and hold it down. Within 2 seconds the red LED lamp will flash a number of times to indicate the mode it is in. One flash indicates FROST mode and releasing the button after a single flash sets the controller into FROST mode. Similarly, releasing the button after a double flash sets the controller into WARM (occupied) mode and releasing after a triple flash sets the controller into QUICK HEAT heat mode.

Once the mode is set, the red LED lamp will flash as follows:



Essentially the more flashes and the more often the flashes, the more the room will be heated.

In a dark room these informational flashes will not happen.

## LEARN BUTTONS

The LEARN buttons teaches OpenTRV to get the room ready for you in advance. There are two LEARN buttons, the LEARN-AM button (top of the right hand side of the unit) and LEARN-PM button (bottom of the right hand side of the unit).

There are two ways to use the a LEARN button, depending on the current mode. When pressing a LEARN button, press it and hold it in until the LED lights up solid.

- in FROST mode, holding down a LEARN button will clear the schedule
- in WARM or QUICK HEAT mode, holding down the LEARN button will indicate that a few minutes ago is the start of the learned ON period. Every 24 hours from now until you tell it otherwise, OpenTRV will warm up this room for 60 minutes (120 in 'comfort'). There is only ever one ON period set in 24 hours for the LEARN-AM button and one ON period in 24 hours for the LEARN-PM button, so setting a new period for either AM or PM will clear the previously set AM or PM period.

## ECO/COMFORT ROTARY SETTING

There is a knob on the side of the box that will set the target temperature (anti clockwise is cooler, clockwise is warmer). It runs from approximately 17C to 23C and the LED flashes short/medium/long as you turn to give you an idea of where you are on the scale. If you find that your room is consistently too warm or cold, try adjusting the setting in the appropriate direction.

Additionally, when the knob is set to the cooler end of the scale, the ECO/COMFORT behaviour bias is set to ECO (meaning minimise energy use). Comparing ECO to COMFORT, the length of the programmed LEARN time will be 1h versus 2h duration, the speed at which the radiator is turned on and off is slower versus faster and the drop back in a darkened (unoccupied - see OCCUPANCY SENSING) room is sharper in ECO mode.

## OCCUPANCY SENSING

OpenTRV senses the light level in the room and uses that to establish if it is occupied. If it is dark and OpenTRV is in FROST or QUICK HEAT mode, the sensor is ignored and the appropriate action for the mode is taken. If it is dark and the OpenTRV is in WARM mode, the target temperature will be set back a small amount to save money and carbon emissions.

If it is dark the red LED will no longer flash to indicate the mode. There will be a barely noticeable flicker once per minute (indicating a radio communication).

## SETUP AND ADJUSTMENTS

Your installer should have done this for you already including setting the house codes but just in case, here it is. Please note that it is different whether you run your OpenTRV unit with batteries or mains power and that at the critical step 8 you should be ready with your batteries/mains power lead as appropriate.

- 1 Either take the batteries out of the OpenTRV controller (batteries) or remove the power connector (mains)
- 2 Take the batteries out of the Conrad valve. Hold down the round grey button in the battery compartment of the Conrad valve until it beeps or for at least 60 seconds
- 3 Insert batteries into the Conrad valve (pay attention to the battery orientation). The display shows C1, then a 2 digit number (the house code), C2 and again the 2 digit house code.
- 4 The Conrad valve beeps and A1 appears on the display. The pin will retract all the way inside the unit to help installation and then A2 appears on the display.
- 5 Install the Conrad valve onto your radiator and tighten up the cap nut
- 6 Prepare the batteries to plug in to the OpenTRV unit (batteries) or ready the mains plug with power (mains). You will need them quickly after the next step.
- 7 Make a momentary press of the round grey button until a beep is heard. The valve will close, the motor whirr and A3 appears on the display
- 8 As soon as the valve stops you will see the flashing antenna on the display. Quickly put the batteries into the OpenTRV unit (batteries) or plug the mains adapter into the OpenTRV unit (mains).
- 9 The LED light on the OpenTRV unit will be flashing constantly until the Conrad valve beeps (this may take 30 seconds). Once the OpenTRV unit stops flashing and you hear a beep from the Conrad valve, they are connected. At this point you can put the battery cover back on the Conrad valve and start using OpenTRV.
- 10 If this has not worked, you may see an error code on the Conrad valve or the OpenTRV unit will not stop flashing. Try the whole sequence again. If it still fails, contact the OpenTRV team (see the CONTACT US section later)

## SITING AND USE

To optimise the OpenTRV system

- Place the OpenTRV unit away from the radiator, windows and draughts
- Keep doors to your rooms normally closed

## TROUBLESHOOTING

If it is not working for you there are three options:

- 1 Open the back of the Conrad valve and using the small black spindle underneath the right hand battery, open the valve manually by using it to rotate the peg clockwise that sits underneath the left hand battery.
- 2 Unscrew and remove the Conrad valve which will open the valve to the radiator entirely
- 3 Unscrew the Conrad valve and replace with the TRV you had on the radiator before (your installer should have removed and clearly identified which TRV belongs to which radiator).

In all cases, get in touch with us at [opentrv@opentrv.org.uk](mailto:opentrv@opentrv.org.uk) and we'll be happy to get you back on track.

## CONTACT US

The OpenTRV team is always happy to talk. Our email address is [opentrv@opentrv.org.uk](mailto:opentrv@opentrv.org.uk) and we're on twitter [@OpenTRV](https://twitter.com/OpenTRV)

## NOTES