

Problems thermostats can cause to television and radio reception

Ofcom information sheet OfW24

(previously Radiocommunications Agency information sheet RA 272)

1. Introduction

This leaflet explains how you can tell whether a thermostat is causing radio or television interference - and, if it is, how you can stop it.

Faulty thermostats can cause annoying interference to television and radio broadcast reception - normally in short bursts, which may recur at intervals. Thermostats switching on and off in central heating systems, refrigerators or freezers can all cause interference problems but thermostats installed in central heating systems are the most common cause.

Sometimes the offending thermostat is found in the house that is receiving the interference, although there have been cases where the source of the interference has been found some distance away.

2. How to check your thermostat

To identify whether your gas-boiler thermostat is the cause of television and radio interference, follow these steps:

(i) Take a portable AM (medium/long wave) radio receiver, switch it on, tune it away from a station, then stand it next to the boiler being tested.

(ii) Listen to the receiver when the thermostat is about to switch off the electricity to the gas valve. At the instant it switches, you should hear nothing at all or perhaps a faint "click" from the receiver. This indicates that the thermostat is operating correctly, and is unlikely to be the cause of any interference.

(iii) Instead of the click, you may hear a loud rasping noise lasting between about half a second and one minute. While listening to the noise, switch off the mains electricity supply to the boiler. If this switches off the noise as well, the thermostat is faulty. (You will notice that when the rasping sound stops, the boiler extinguishes almost immediately.)

To discover whether it is your thermostat that is faulty, make sure that you switch off the electricity supply during the noise or at the time you expect to hear it. The rasping noise indicates that a faulty thermostat is the cause, but it could be a neighbour's thermostat rather than your own.

If you watch the boiler cycle closely, you will usually notice the interference starting just before the boiler switches off, and ceasing at the moment the boiler switches off.

3. The problem

Regulations made under the Wireless Telegraph Act 1949 require thermostats to comply with British Standard BS EN 55014, both when installed and afterwards. We have no doubt that thermostats comply with the Standard when new, but the suppression components become ineffective over time, allowing bursts of broadband interference which affect broadcast reception.

We deal with many cases of interference caused by thermostats or the radio-suppression components fitted to them; in about 90% of these cases, the interference is attributable to thermostats in gas boilers. It seems that, as these operate in a heat-stressed environment, they are prone to more rapid deterioration than other domestic thermostats such as room thermostats, cylinder thermostats and diverter switching valves.

If the interference lasts long enough to disturb the listener/viewer, the thermostat is almost certainly in breach of the regulations. This is not a criminal offence in itself, but it is a regulatory matter for us to deal with. We can serve enforcement notices on owners of substandard thermostats, and it is an offence not to comply with such a notice. A malfunctioning thermostat may also pose a safety risk; for example, a boiler may not turn off at its pre-set temperature.

4. How we deal with complaints

In terms of enforcement, the issue is never as simple as it appears from the above description. The only effective cure is to suppress or replace the thermostat, but first it must be traced. This can be time-consuming, particularly if the interference is to radio reception, as the source may be a considerable distance from the affected equipment.

Even if the interference affects television reception (meaning that the source is likely to be more local), there may be a number of premises near enough to be the cause. Thermostats have been known to cause interference to households up to 90 metres away.

Unless the interference can be traced, which is problematic when dealing with intermittent bursts of a few seconds, it can take time to check each of the possible sources. It is often difficult to identify the offending thermostat, particularly if neighbouring householders are not at home.

We have no statutory right to enter premises in these cases. We can obtain a search warrant, if a magistrate is satisfied that there are 'reasonable grounds' to suspect that an offence is being committed on particular premises. However, an offence is only committed under the interference regulations if an enforcement notice has been served but not complied with.

There is a separate offence of 'deliberate interference' under the Wireless Telegraphy Act, which can apply whether or not a notice has been issued. However, it only applies if we have identified the offending thermostat in specific premises and have encountered deliberate non-co-operation from the householder.

Normally, we would expect to solve cases of thermostat interference by discussion and co-operation, and we would not seek to extend our powers of entry in this area. It would clearly be unfair of us to obtain a warrant to search domestic premises if the occupants were unaware of the problems being caused to neighbours.

5. Asking us to investigate

Viewers and listeners can ask us to investigate interference problems, by completing the form in our leaflet Of22 (Interference to TV and radio reception).

We will carry out an investigation free of charge unless we find that the problem is caused by deficiencies in the TV or radio installation, in which case we will make a charge of £50.

If we establish that the problem is caused by a thermostat, we must first trace the premises and then seek the owner/occupier's permission to enter and find the precise source. Householders sometimes refuse to let us in. Even if we are allowed access and the source is identified as a gas-boiler thermostat, we cannot immediately cure the problem as we are not qualified to work on gas appliances; however, we can recommend suitable additional suppression.

We usually resolve cases through negotiation and persuasion with the owner of the offending thermostat, but it can be a lengthy process.

Once a faulty thermostat has been identified, you will need a qualified service engineer to fit a new thermostat or, more likely, a new suppressor.

6. Further information

If you have any queries about the contents of this leaflet, please call our Enforcement and Interference Policy Unit on 020 7981 3165.

Ofcom produces a range of information leaflets and other publications. These are available on our website (www.ofcom.org.uk), or from:

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