

Weather Compensation- Installer Factsheet



Definitions of the terms “weather compensation”, or “weather compensator”, vary, but can generally be taken to describe: “a control function which maintains internal temperatures by varying the flow temperature from the heat generator relative to the measured outside temperature” i.e. the warmer it is outside the lower the flow temperature, and that of the heat emitter(s), whilst still maintaining comfort conditions.

***From April 2018, when a gas combination boiler is installed in existing dwellings in England, an additional energy efficiency measure will be required. Weather compensation technology is listed as a suitable measure under the legally binding changes.**



There are a growing number of heating control options already available, and it is important that we, as an industry consider each one, as they say ‘One size doesn’t fit all’.

How it works

The weather compensation controller alters the boiler flow temperature directly as the outside temperature changes, ensuring timely changes in the heat delivered to the CH system, and avoiding situations sometimes experienced with “conventional” room-thermostats - where the house is either too cold (before the thermostat activates to create a demand), or too hot (residual heat released from radiators after the thermostat is satisfied, or due to poor siting of the thermostat itself)

The weather compensation control runs the boiler at as low a flow temperature as possible, but whilst still providing sufficient output to the heat emitters to maintain comfort. This helps to optimise the boilers operation in condensing mode, saving energy and maximising boiler efficiency.”

Radiators will often be at a lower temperature, particularly in warmer weather (most noticeable for end-users who previously had a non-condensing boiler where the boiler temperature control was set high e.g. 70C)

An external sensor may need to be installed on a north or west facing wall, or a wall that isn’t affected by solar gain, although many internet-enabled “Smart” controls on the market today are able to use GPS weather-data to provide the same functionality. The manufacturers’ instructions for the device should provide guidance on correct location and installation of any sensor.

Where an external sensor is used, these can be either hard-wired or wireless. Where the former is installed, this will typically require a SELV electrical connection, meaning Part P is not required to undertake the work.

When weather-compensation is installed it may be necessary to adjust the boiler control parameters to set an appropriate “temperature compensation curve”, thereby selecting what the heating flow temperature will be, based on the outside temperature.

A SMART investment

Most manufacturers offer weather-compensation control with their boilers, with the control system either being embedded within the appliance upon production, or available as an optional extra. In the same way, any required outdoor sensor is either supplied as standard, or available as an optional extra.

It is important not to deviate from the boiler manufacturers’ instructions and guidance when appliances and weather-compensation devices are being paired.

The connection of weather-compensation devices to boilers may by design limit their operation at full-rate. The device may need to be safely disconnected to operate the appliance at full-load, where this is required, such as at the time of appliance commissioning or servicing.

The manufacturers’ instructions for the appliance and/or device should be consulted.

A weather-compensation temperature control provided with a new boiler falls into the category of a “package” under ErP. Depending on the ErP control class (weather-compensation controls for use with modulating heaters will be class II or VI), they will provide a specific percentage “uplift” to the ErP boiler seasonal space-heating efficiency rating.

Manufacturers often provide free or discounted training for installers on weather-compensation devices, to help familiarise them with how the products work, and best-practice installation

Design

Systems using weather-compensation generally perform best where continuous heating is being used, or for an extended period “once” a day. Where bi-modal heating patterns are in use, the system will benefit from the addition of load-compensation (to ensure fast heat-up times following extended off periods).

Weather compensation will work well with all correctly designed systems and is also well suited for new build properties.

Weather compensation may not always be suitable for every property and/or system design. In particular, older “one-pipe” systems may suffer from under-heating.

Different controls will offer variable compensation curves, to account for individual customer preferences, the type of heat delivery (e.g. radiators or under-floor heating) and the different methods and materials used to construct the property (heat-loss).



* Domestic Building Services Compliance Guide; 2018 amendments coming into force 6th April 2018

Points to note

Depending on appliance design, when weather compensation is fitted to a combi boiler the radiator temperature may not be able to be controlled with the boiler thermostat in the conventional fashion, as weather-compensation generally overrides this function. However, some manufacturers utilise the boiler thermostat to control the compensation "curve" or "slope", and so allow greater flexibility of the flow temperature setting, based on the outside temperature. Further details will be contained in the appliance manufacturers' instructions

Some controls connected to "heat-only" appliances are able to differentiate a HW demand from a CH demand, ensuring that where HW storage is in place, this heats to a safe and acceptable temperature (typically 60C).

Many weather compensators operate the boiler circulating pump continuously, so consideration of the householder and the proximity of radiators in bedrooms should be given.

Some weather sensors still require a boiler programmer and room thermostat to be installed. The sensor will then adjust the boiler flow temperature based on outside temperatures only during a programmed period and the room thermostat will turn off the boiler and pump when it reached the correct internal air temperature.

The Heating and Hotwater Industry Council, HHIC, is a not for profit trade association committed to effectively driving, supporting and promoting the sustained growth of the UK domestic heating and hot water industry.



info@hhic.org.uk



01926 513777



@hhic

Camden House
Warwick Road
Kenilworth
CV8 1TH

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