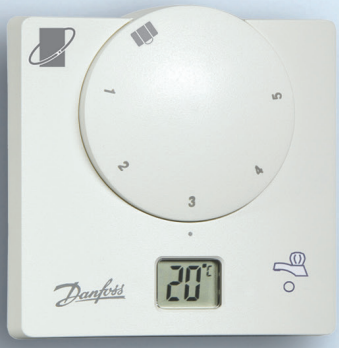
ENGINEERING
TOMORROW

ORT

OpenTherm, Modulating Control
Accurate control and cost reduction

- Suitable for use with any OpenTherm boiler
- Provides direct modulation of boiler
- Significantly improves boiler efficiency
- Accurate room temperature control
- Easy to understand user interface

ErP Product Class 5



www.heating.danfoss.co.uk

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ORT- 01 & ORT-10

Electronic Modulating Room Thermostat for OpenTherm Boilers

There are some new words entering the HVAC vocabulary, OpenTherm and modulating controls. OpenTherm is an Industry Standard for Modulating controls. OpenTherm allows a thermostat to control a boiler much more precisely, there for achieve more accurate control of the room temperature and a reduction in the amount of energy consumed.

OpenTherm explained

In basic terms all of our current room thermostats control the temperature by switching a relay that turns the heating on or off, heating full on or heating full off. An OpenTherm system however allows a thermostat to control the room temperature by telling the boiler to modulate the boiler flame, a modulating control.

Rather than using a relay, an OpenTherm thermostat "talks" to the boiler via an simple low voltage two-wire connection an messages are passed between the thermostat and the boiler.

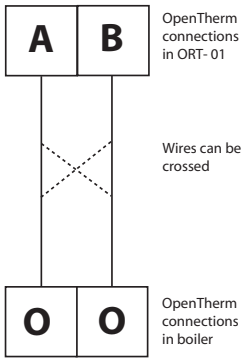
The OpenTherm Association, of which Danfoss is a member, formed by boiler and heating controls manufacturers, have agreed a standard so that our OpenTherm products are guaranteed to work with any OpenTherm Boiler.

Tests undertaken have shown that energy used to maintain a room at 20°C are significantly less using a modulating OpenTherm thermostat over a conventional electronic thermostat when combined with an OpenTherm boiler.

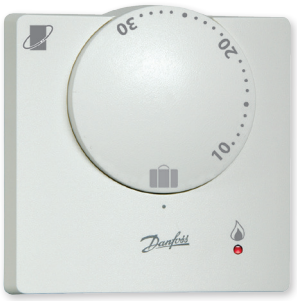
One reason is that an OpenTherm boiler with a modulating control spends longer in condensing mode by keeping the return temperature lower.

OpenTherm®

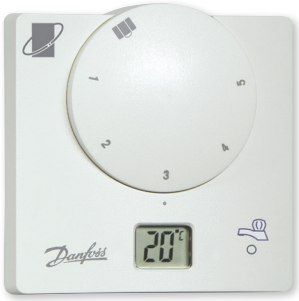
Wiring Details



Important - *To avoid damage to Boiler and Thermostat, connect only to OpenTherm connections on boiler, do not connect to any other power source.*



ORT-01



ORT-10

ORT

The ORT is a sophisticated room thermostat which provides modulating control of OpenTherm equipped condensing gas boilers. Unlike traditional thermostats, the ORT exchanges data with the boiler it controls as opposed to simple on/off commands.

This type of control, in addition to providing closer, more accurate room temperature control, also ensures that the flow temperature from the boiler is modulated down to as low a level as prevailing load permits, thus significantly increasing the proportion of the boiler operating time that is spent in economic condensing mode. The thermostat is fully compliant with the OpenTherm communications protocol including low load regulation and domestic hot water keep hot feature now in common use in many combination boilers. The thermostat utilises a micro processor which provides the accurate PI control algorithm and manages the bi-directional data communication with the boiler. User interface is by means of an easy to understand setting dial and a status LED indicator that provides information on boiler output and a common alarm indication which is lit whenever a fault is encountered within the boiler.

Control	Energy Cost in £	Energy Saving (%)	Carbon Emissions (kg CO_2)	Carbon Saving (%)
Mechanical On/Off	2.80	-	15.18	-
Electronic On/Off	2.51	10.4	13.58	10.5
OpenTherm	2.40	14.3	12.91	15.0

Features	ORT-01	ORT-10
Code Number	087N774300	087N773800
Temperature range	8-30°C	
Maximum ambient temperature	45°C	
Control type	P + I	
OpenTherm software version	2.3	
Domestic hot water keep hot feature	•	
Domestic hot water off feature (holiday mode)	•	
ID 14 low load control	•	
Thermostat output	Data	
Construction	EN60730-2-9	
IP rating	IP20	
Supply voltage	24V DC from boiler	
Wiring, non-polarised 2 wire bus	•	
Control pollution situation	Degree 2	
Ball hardness test	75°C	

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