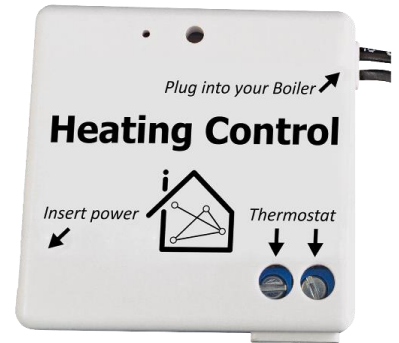


Quickstart: Heating Control EU

Technical specifications

Normal operating voltage	5 Volt (mini-USB connector)
Frequency range	868.42 MHz
Wireless range	30 ~ 50meter line of sight.
Protocols supported	OpenTherm only!



Basic operations

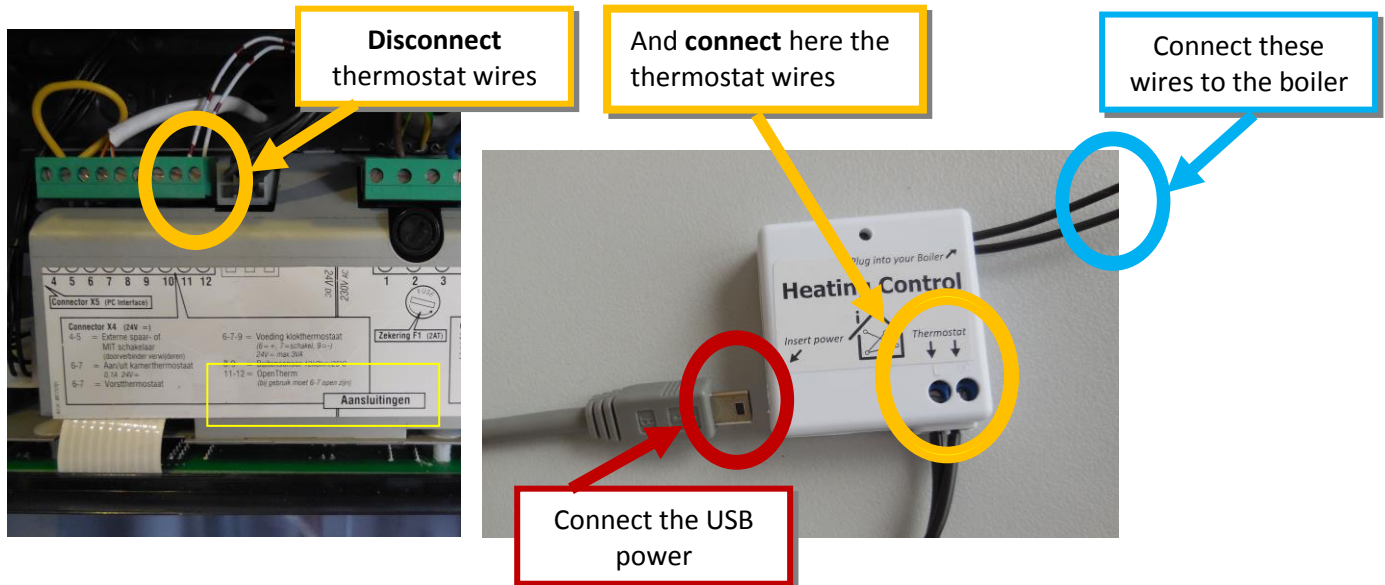
- Override or request the temperature set point of your thermostat
- Control the heating in your house with Lifestyles and Rules
- An intern schedule which will change the temperature set points on a preconfigured timetable
- Reporting thermostat related values like room temperature
- Reporting boiler related values like boiler pressure, modulation level or water temperature

Mounting

- Place the *Heating Control* unit between your thermostat and your boiler. (you need both opentherm)

Example:

1. Open your boiler and lookup if it supports OpenTherm protocol.
2. Remove the wires of your thermostat and place them into the *Heating Control* unit.
3. Insert the *Heating Control* wires into the boiler connector.
4. Now place the USB power.



Include or exclude in Z-Wave network ¹

1. Press and hold the push button for 2 seconds and release to start the inclusion or exclude process.
2. When classic inclusion failed, the product will start Network Wide Inclusion automatically.



¹ Make sure your Z-Wave controller is in the correct operation mode (include or exclude).

Technical Manual: Heating Control EU

Caution:

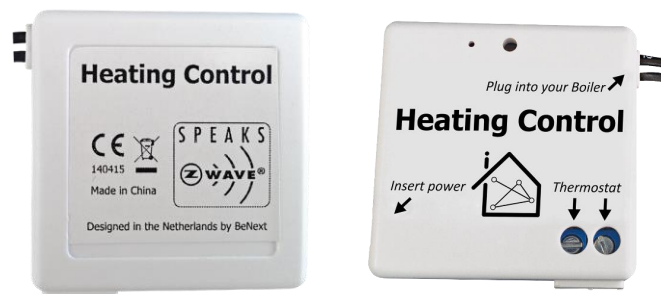
- This device is using a radio signal that passes through walls, windows and doors. The range is strongly influenced by local conditions such as large metal objects, house wiring, concrete, furniture, refrigerators, microwaves and similar items. On average, the indoor range is approximately 30 meters.
- Do not expose this product to excessive heat or moisture.
- Prevent long term exposure to direct sunlight.
- Do not attempt to repair this product. If the product is damaged or if you are in doubt about the proper operation, take the product back to the place of purchase.
- Do not clean the product with any liquid.
- Indoor use only.

Technical details

Max. operating voltage	5 Volt (mini-USB B connector) connect only a galvanic isolated power supply
Frequency range	868.42 MHz
Wireless range	Approximately 30 ~100 meters in line of sight. Min. 150 meters with good mesh network (max 4 hops).
Thermostat protocol support	OpenTherm only!
Boiler protocol support	OpenTherm only!
Temperature reporting	Yes
Temperature control setpoint	Yes, we use cmd class 0x46 see below
Storage temperature	-5 °C to +65 °C
Storage humidity	10% to 70%
Operating temperature	10 °C to 40 °C
Operating humidity	30% to 80%

Product dimensions (length x width x height)

Heating Control = 41 x 41 x 13 mm



Indication mode

The indicator light gives various statuses of the device as follows:

1. Ready for learn mode: indicator light blinks every second
2. Learn in progress (add): indicator light blinks 2 times per second
3. Learn in progress (remove): indicator light blinks 3 times every 1.5 second
4. Learn mode success: indicator light is on for one second
5. RF message send failed: indicator light blinks 6 times rapidly

Supporting command classes:

Basic type: BASIC_TYPE_ROUTING_SLAVE

Generic type: GENERIC_TYPE_THERMOSTAT

Specific type: SPECIFIC_TYPE_NOT_USED

Listening: TRUE, Z-Wave Lib: 6.51

COMMAND_CLASS_VERSION,
COMMAND_CLASS_SENSOR_MULTILEVEL,
COMMAND_CLASS_VERSION,
COMMAND_CLASS_MANUFACTURER_SPECIFIC,
COMMAND_CLASS_ASSOCIATION,
COMMAND_CLASS_CLIMATE_CONTROL_SCHEDULE,
COMMAND_CLASS_THERMOSTAT_SETPOINT,
COMMAND_CLASS_CONFIGURATION,
COMMAND_CLASS_CRC_16_ENCAP,
COMMAND_CLASS_FIRMWARE_UPDATE_MD_V2



Routing slave

This Z-Wave product will be used as slave. Slave nodes are nodes in a Z-Wave network that receive commands and perform actions based on the command. A routing slave can route Z-Wave messages to other nodes in the network. This device is always awake and does not go to sleep mode because it is an AC powered device.

This device can act as a wireless repeater to forward commands for another device in the Z-Wave network to expand the range of the network. This function works for every Z-Wave device from any manufacturer when included into the same Z-Wave network.

Unlike a normal slave a routing slave can store a number of static routes which he uses to send a routed rf frame to another node.

Include initiator

The include initiator is used when Primary and Inclusion Controllers include nodes into the network. When both the include initiator have been activated simultaneously the new node will be included to the network (if the node was not included previously).

Exclude initiator

The exclude initiator is used by primary and inclusion controllers to exclude nodes from the network. When the exclude initiator and a slave initiator are activated simultaneously, it will result in the slave being excluded from the network (and reset to node ID zero). Even if the slave was not part of the network it will still be reset by this action.

Z-Wave compatibility

Because this is a Z-Wave device, it means it can co-operate with other Z-Wave devices of other manufacturers. It can co-exist in a Z-Wave network existing with product from other manufacturers.

Hops & retries

The Z-Wave range has a range of up to 30 meters in line of sight. This signal is not limited to the 30 meter range due to routing the Z-Wave message to other nodes in the network. This way the range of the Z-Wave network can be expanded to 150 meters indoors (limit of 4 hops).

Open Therm

Open Therm is a standardized protocol for boilers and thermostats to communicate with each other. But not every thermostat or boiler supports Open Therm. Please look carefully in the manual of those products if they support Open Therm.

NOTE: When you want to use the Heating Control both thermostat as boiler should support Open Therm.

In Appendix A and Appendix B is a list of the thermostats and boilers, which are supported by the Heating Control.

Please note that if your thermostat or boiler are not listed but do support Open Therm doesn't mean that the Heating Control cannot be used. The chance is still present that it still works as intended. Only we can't guarantee it. In case your thermostat/boiler is not listed but still works with the Heating Control we would appreciate it if you can let us know. We'd like to have the list as complete as possible

Z-Wave information

Class: 0x20 COMMAND_CLASS_BASIC

The basic command class is mapped to the THERMOSTAT_MODE_COMMAND_CLASS.

BASIC_ON: Override the setpoint of the thermostat. The value of the override is mapped to the heating (0x01) setpoint type, configured with the THERMOSTAT_SETPOINT command class. The default value is 20 °C.

BASIC_OFF: Override the setpoint of the thermostat. The value of the override is mapped to the energy saving (0x0B) setpoint type, configured with the THERMOSTAT_SETPOINT command class. The default value is 8 °C.

Class: 0x86 COMMAND_CLASS_VERSION

This command class is used to obtain information about the *Heating Control*. The Z-Wave library type, the Z-Wave protocol version and the application version will be reported.

Class: 0x31 COMMAND_CLASS_SENSOR_MULTILEVEL_V6

Request a value of a specific sensor type with the SENSOR_MULTILEVEL_GET command.

The Heating Control supports the following types:

- 0x01: Room temperature (of the room thermostat)
- 0x09: Barometric pressure
- 0x22: Outside temperature

Any other sensor type will be ignored by application.

If a SENSOR_MULTILEVEL_GET command is sending without a sensor type (version 1), then the 'air temperature' (0x01) is reported.

Class: 0x72 COMMAND_CLASS_MANUFACTURER_SPECIFIC

This will report information about the manufacturer. This product will contain the manufacturer ID of *BeNext*. Manufacturer ID of *BeNext* is 138, the ID of this product is 33.

Class: 0x85 COMMAND_CLASS_ASSOCIATION

The association command class is used to associate other devices with the *Heating Control*. The devices that are associated will receive unsolicited reports.

The *Heating Control* has one association group.

Group 1**Maximum supported nodes: 1**

Every unsolicited report will be sent to the nodes in this group.

Class: 0x43 COMMAND_CLASS_THERMOSTAT_SETPOINT

This command class has two purposes. The first one is to set the reference temperature for the schedule set in with the CLIMATE_CONTROL_SCHEDULE.

The second one is to activate a temperature with the THERMOSTAT_MODE_SET or the basic command class. The Heating Control supports two set point types:

- 0x01: Heating
- 0x0B: Energy Save heating

Other set point types will be ignored by application.

Class: 0x46 COMMAND_CLASS_CLIMATE_CONTROL_SCHEDULEChange the temperature set point within a wake up notification.

Send a temperature offset (compared to the thermostat set point) with the override set command when the *Heating Control* sends a wake up notification.

BYTE 1: COMMAND_CLASS_CLIMATE_CONTROL_SCHEDULE

BYTE 2: SCHEDULE_OVERRIDE_SET

BYTE 3: Override type

BYTE 4: Override state

The override type is the 0x01: Temporary override and is changed when the schedule reached a new switch point.

The override type is the 0x02: Permanent override and is changed when a new SCHEDULE_OVERRIDE_SET is send to the *Heating Control*.

The override state is the value offset (compared to the thermostat set point) * 0.1 °C.

Example: Temporary overrides the temperature to 22 °C:

1. Send a THERMOSTAT_SETPOINT_SET, value 20 °C.
2. Send a CLIMATE_CONTROL_OVERRIDE_SET, override type = 0x01, override state = 0x14 (2.0 °C).

Example: Permanent override the temperature to 15 °C:

1. Send a THERMOSTAT_SETPOINT_SET, value 20 °C.
2. Send a CLIMATE_CONTROL_OVERRIDE_SET, override type = 0x02, override state = 0xCE (-5.0 °C).

Class: 0x56 COMMAND_CLASS_CRC_16_ENCAP

Any fame can be requested from the *Heating Control* using the CRC-16 encapsulation. It is also possible to activate (with configuration) the sending of unsolicited reports using the CRC-16 encapsulation.

Class: 0x7A COMMAND_CLASS_FIRMWARE_UPDATE_MD_V3

The *Heating Control* supports OTA. This means that it is possible with a capable controller to update your firmware using Z-Wave.

class: 0x70 COMMAND_CLASS_CONFIGURATION_V1

Configure parameters:

1. Set to default

Description: Set all configuration values to default values (factory settings).
Read more in chapter configuration reset.

Size: 1 byte*

Param1: If 0xFF then set to default

Param2, 3, 4: Not used

2. Data request interval

Description: The interval that data is requested (and therefore updated) from the thermostat and boiler.

Default: 0x14 (20 seconds)

Param1: Value in seconds

Param2, 3, 4: Not used

Size: 1 byte*

3. T room update difference

Description: The value that the room temperature must differ (compared to his previous send value) before an unsolicited room temperature report is send to the associated node.

Default: 0x01 (0.1 °C)

Param1: Value in 0.1 °C

Param2, 3, 4: Not used

Size: 1 byte*

4. T setpoint update difference

Description: The value that the temperature setpoint must differ (compared to his previous send value) before an unsolicited temperature setpoint report is send to the associated node.

Default: 0x05 (0.5 C)

Param1: Value in 0.1 C

Param2, 3, 4: Not used
Size: 1 byte*

5. Unsolicited CRC

Description: Configure if the unsolicited reports are send with the CRC-16 encapsulation. Not that the receiving node should support this encapsulation to parse the Z-Wave frame!

Default: 0x00 (disabled)

Param1: 0x00: disabled
0x01 – 0xFF: enabled

Param2, 3, 4: Not used

Size: 1 byte*

6. Type of 'special' thermostat

Description: Type of 'special' thermostat. NOTE: when remeha Celcia 20 support is set than any other thermostat cannot be set (!) NOTE2: when Remeha Celcia 20 gives 'Fout 203' send cfg value again

Default: 0x00 (disabled)

Param1: 0x00: No special
0x01: Remeha Celcia 20
0x02: Honeywell (rounded temperatures)

Param2, 3, 4: Not used

Size: 1 byte*

7. Status auto report

Description: Status auto report boiler/thermostat report.

Default: 0x00 (disabled)

Param1: 0x00: Disable boiler/thermostat status messages auto report
0x01 – 0xFF: Enable boiler/thermostat status messages auto report

Param2, 3, 4: Not used

Size: 1 byte*

8. na

Description: Do not use

Default: 0x00

Param1: 0x00

Param2, 3, 4: Not used

Size: 1 byte*

9. Enable/Disable thermostat schedule

Description: Enable/Disable thermostat schedule inside the heatingcontroller

Default: 0x00 (disabled)

Param1: 0x00: Disable thermostat schedule
0x01 - 0xFF: Enable thermostat schedule

Param2, 3, 4: Not used

Size: 1 byte*

Auto updating of values

The *Heating Control* has a built-in function where some values are automatically reported. Values are requested from the thermostat and when noticed that changed they will be reported.

The room temperature:

If the value is changed by 0.1 °C*, the room temperature is reported with the following frame:

```
COMMAND_CLASS_SENSOR_MULTILEVEL
SENSOR_MULTILEVEL_REPORT
Sensor type = 0x01
Value = room temperature value
```

The temperature set point

If the value is changed by 0.5 °C*, the temperature set point is reported with the following frame:

```
COMMAND_CLASS_CLIMATE_CONTROL_SCHEDULE
SCHEDULE_OVERRIDE_REPORT
Override type = 0x01
Value= override value
```

* This is the default value. This can be changed with the configuration command class.

Configuration reset

The *Heating Control* supports a configuration reset function. Configuration reset means that all configuration values are defaulted.

This function can be activated by sending a configuration set frame:

```
CONFIGURATION_SET
Parameter: 0x01
Size: 0x01 (can't be different from 1)
Value: 0xFF (can be any value except for 0x55)
```

When the value of configuration value is requested two possible values can be returned.

```
CONFIGURATION_REPORT
Parameter: 0x01
Value 0x55: Configuration settings of the device are altered.
              The device will report this even if the configuration parameters are changed
              back to the default value.
Value 0xAA: Configuration of the device is untouched.
              Note that this value will not change to 0x55 upon modifying the wake up interval
              and that re-setting the value to 0xAA will always reset the wake up interval.
```

Troubleshooting

Frequently Asked Questions

Q: Why do I still need to have an opentherm thermostat?

A: The HeatingController override the temperature setpoint in your opentherm thermostat, the thermostat keeps controlling your boiler/Centralheating.

Appendix A: Thermostats

ATAG Wize
Bosch TF30
Honeywell Basicstat Modulation
Honeywell Chronotherm Modulation CMT937
Honeywell Chronotherm Modulation CMT8851A1006
Honeywell Chronotherm Modulation CMT8851M1000
Honeywell Chronotherm Touch
Honeywell Chronotherm Touch Modulation
Honeywell Chronotherm Vision Modulation
Honeywell Chronotherm Wireless Modulation
Honeywell Round Modulation Opentherm (recommended, and very easy to use!)
Honeywell Round Wireless Opentherm RF (Y87RF1004)
Hoval TopTronic-T/RS-OT
ICY Smart Thermostat
Quby (Toon)
Remeha c-Mix Regelmodule + 2x Remeha iSense
Remeha Celcia 20
Remeha iSense
Siemens QAA73
Termet Regulator OPEN-THERM typ CR 11011 (WKZO 624000000)
Theben RAM 850 top2
Viessmann Vitovent 300 controller

Appendix B: Boilers

Atag A244EC
ATAG E325EC
Brink Allure B25 HR
Ferroli Megadens
Geminox THRI 2-17 DC
Hitachi RWM-2.0FSN3E
Hoval TopGas Comfort 16KW
Intergas Kombi Kompakt HR
Intergas Kombi Kompakt Hreco
Intergas Kompakt Solo HRE
Intergas Prestige CW6
Nefit TopLine Compact HRC25 + EMS-OT
Remeha Avanta
Remeha Calenta
Remeha Quinta 28c
Remeha Quinta 35c
Remeha Quinta Pro
Remeha Tzerra
Remeha W28 Eco
Techneco Elga (+ Remeha Calenta)
Termet Ecocondens 30 1F (WKJ1301000000)
Vaillant EcoTEC CW5+
Vaillant hrSolide C
Vaillant VHR NL 24-28C
Vaillant VHR NL 24-28C
Vaillant VHR NL 24-28C