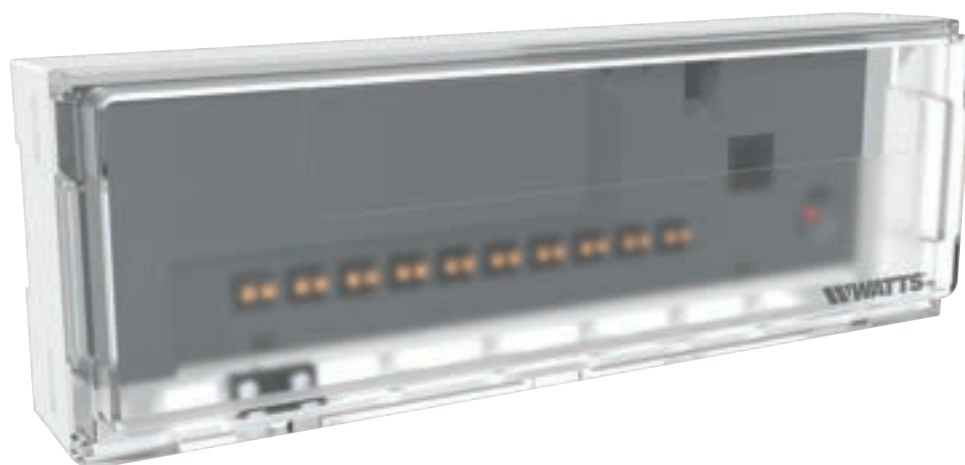


# WFC-03 HCM RF 230

Water Floor Heating and Cooling module

**Installation manual**



## USER GUIDE

GENERAL INFORMATION .....	3
Safety warnings and operating instructions.....	3
Application .....	3
PRESENTATION .....	3
Functions.....	3
Box content.....	3
First installation.....	3
PRODUCT DESCRIPTION.....	4
LED color meanings .....	4
Push button.....	4
DIP switch configuration .....	4
INPUTS / OUTPUTS.....	5
Power Supply .....	5
Heating/cooling Input.....	5
Pump Output.....	6
Humidity detection input .....	6
Dehumidifier output .....	6
Heating and cooling outputs.....	7
External antenna.....	7
SYSTEM CONFIGURATION.....	8
TROUBLE SHOOTING .....	9
TECHNICAL CHARACTERISTICS.....	9
Dimensions & weight .....	9
DIRECTIVES.....	10
RECYCLING.....	10

# 1. General information

## 1.1 Safety warnings and operating instructions

This product should be installed preferably by a qualified professional. Subject to observation of the above terms, the manufacturer shall assume the liability for the equipment as provided by legal stipulations.

All instructions in this Installation & Operation manual should be observed when working with the controller. Failures due to improper installation, improper use or poor maintenance are voiding manufacturer liability.



Any attempt to repair voids the responsibility and the obligation to guarantee and replacement from the manufacturer. 2012/19/EU (WEEE directive): Products marked with this symbol cannot be disposed of as unsorted municipal waste in the European Union. For proper recycling, return this product to your local supplier upon the purchase of equivalent new equipment, or dispose of it at designated collection points. For more information see: [www.recyclethis.info](http://www.recyclethis.info)

## 1.2 Application

The controller has been designed for use in residential rooms, office spaces and industrial facilities. Verify that the installation complies with existing regulations before operation to ensure proper use of the installation.

# 2. Presentation

The WFC-03 HCM RF 230 is especially designed to control heating and cooling in combination with WFC-03 HC controllers. The targeted application is thus 2 pipes multi zones water floor heating and cooling. This device is an option and only one module is possible per installation. It should be installed near the heating and cooling sources whereas the WFC-03 6Z HC controllers should be installed near the manifolds.

The device is an option with 3 main value proposals:

- Separate heating and cooling signal.
- Global dehumidifier control.
- Global Heating & cooling mode control.

## 2.1 Functions

It has integrated multiple functions:

- Wall mounted or mounted on DIN Rail.
- Push-in cable connections with strain relief.
- LED status indication and DIP switch for device setting.
- H&C input (230V and volt free signal).
- Humidity input (Volt free contact) or water temperature measurement (Probe not supplied) for humidity detection.
- Dehumidifier output.
- Pump or boiler output (230V and volt free signal).
- Heating output and cooling output.
- Internal RF antenna, optional external antenna.

## 2.2 Box content

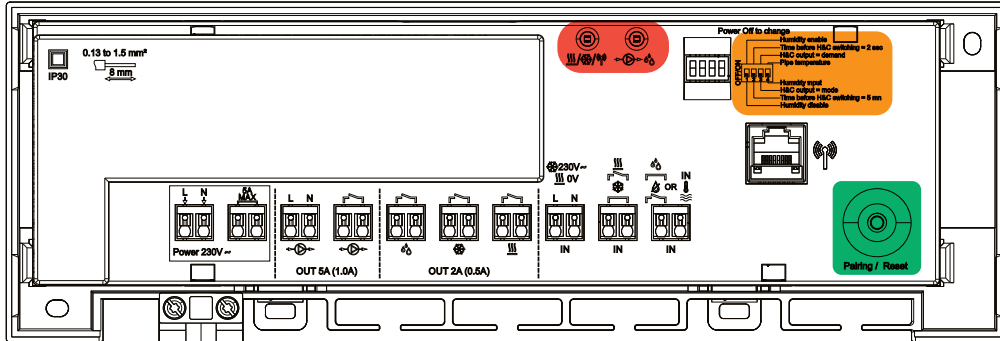


## 2.3 First installation

There are 2 ways to install the controller:

- Wall mounted using 2 screws
- Mounted on a DIN Rail

### 3. Product description



#### 3.1 LED color meanings (In Red)

LED	Meanings
Heat and Cool and RF LED (Red/Blue/Green)	<ul style="list-style-type: none"> <li>• Fix Red = Heating mode</li> <li>• Fix Blue = Cooling mode</li> <li>• Red/blue blinking = RF loss (In case of RF loss, the WFC-03 HCM RF 230 switches in Heating mode and triggers the pump)</li> <li>• Green flashing = RF communication</li> </ul>
Pump and Humidity and Error LED (Red/Blue/Green)	<ul style="list-style-type: none"> <li>• Red blinking = NTC error</li> <li>• Blue blinking = Global humidity detection (In that case, the dehumidifier is triggered)</li> <li>• Fix Green = Pump is triggered</li> <li>• Green/Blue blinking = Global humidity detection and pump activation</li> <li>• Green/red blinking = Pump is triggered and NTC error</li> <li>• Red/Blue/Green blinking = Global humidity detection and pump activation and NTC error</li> </ul>

#### 3.2 Push button (In Green)

- 10s press triggers the pairing process.
- 20s press triggers the device reset.

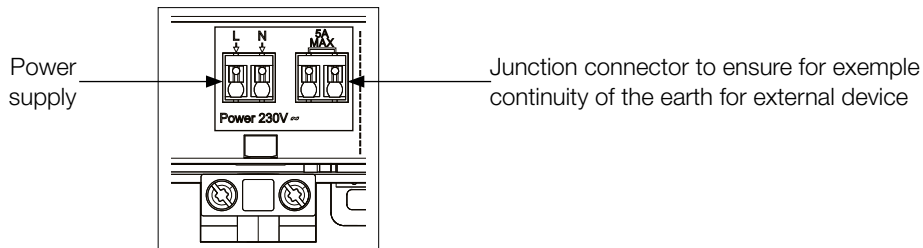
#### 3.3 DIP switch configuration (In Orange)

DIP switch number	Function	Value (default: OFF)	Configuration	Description
DIP1	Humidity activation	OFF	Disable	See 4.4 and 4.5
		ON	Enable	
DIP2	H&C switch	OFF	5 minutes	See 4.2
		ON	2 seconds	
DIP3	H&C output mode	OFF	Mode	See 4.6
		ON	Demand	
DIP4	Humidity input	OFF	Free contact input	See 4.4
		ON	NTC sensor	

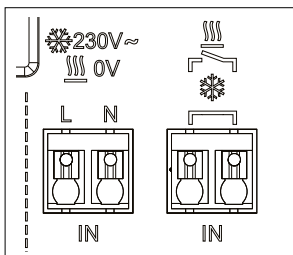
Operate the dip switch when the product is powered off.

## 4. Inputs / Outputs

### 4.1 Power Supply



### 4.2 Heating/cooling Input



Purpose:

This input allows switching the regulation mode for the system: Heating or cooling.

Source of the signal:

- A mechanical switch
- The Heat Pump
- A BT-WR02 paired on the BT-CT02 central unit as an ON/OFF device. This solution allows getting a remote control of the H&C mode from the application.

Format of the signal:

The input could be free contact or live contact 230V.

Mode	Free contact	Live contact
Heating	Opened	No signal
Cooling	Closed	230Vac

The H&C mode is then propagate over all the system.

Only one device in the system should be able to select the H&C mode (Master H&C device). Other possible H&C switch signal sources:

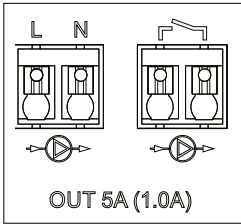
- BT-CT02 RF / BT-CT03 RF Central unit.
- H&C input on WFC-03 HC RF controllers.
- Digital thermostat configured as a Master H&C thermostat in manual or automatic mode.

The DIP switch on the WFC-03 HC RF controllers allows to select the device in charge of the H&C mode (Master H&C device).

The time before H&C switch is defined by the DIP2 (See 3.3):

- DIP2 = OFF: 5 minutes.
- DIP2 = ON: 2 seconds.

### 4.3 Pump Output



There are 2 outputs:

- Live contact output (230Vac).
- Free contact output.

These outputs can be used to trigger:

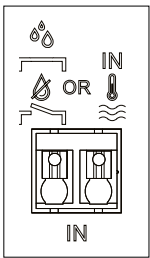
- A zone valve.
- A pump.
- A boiler or heat pump.

The 2 outputs are triggered when there are a heating or cooling demand, which is sent by the WFC-03 HC RF controller to the WFC-03 HCM RF 230.

The pump signal is always global, i.e. the pump is triggered when there is a heating or cooling demand within the system.

If a RF failure occurs, the pump is triggered all the time.

### 4.4 Humidity detection input



When DIP1 = ON (See 3.3) the product manages a humidity detection input, with 2 possible types of signal depending on DIP4 (See 3.3):

- Water temperature sensor (NTC 10k $\Omega$ ): Require BT-D03 RF RH thermostat.
- A humidity contact sensor.

#### 4.4.1 Humidity contact sensor

Format of the signal:

The input is a free contact

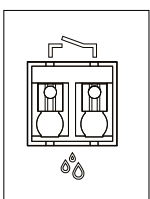
<b>No Humidity</b>	Opened contact
<b>Humidity detected</b>	Closed contact

When humidity is detected by the sensor, the information is sent to the WFC-03 HC RF controller which manages the information. Moreover the dehumidifier output is triggered.

#### 4.4.2 Water temperature sensor

The water temperature measurement is sent to all WFC-03 HC RF controllers to compute the dew point for humidity control in cooling mode (Please refer to the leaflet of WFC-03 HC RF).

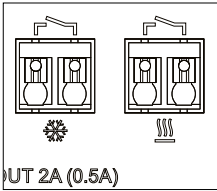
### 4.5 Dehumidifier output



When DIP1 = ON (See 3.3), the dehumidifier output (Free contact) is triggered in 2 cases:

- When the Humidity input is triggered (See 4.4).
- When the WFC-03 HC RF controller orders the dehumidifier.

#### 4.6 Heating and cooling outputs



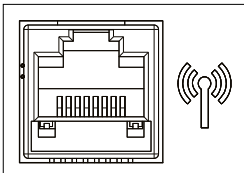
The behavior of the outputs (Free contact) is dependent of the DIP3 (See 3.3):

- DIP3 = OFF. The heating/cooling output is activated when there is a heating or a cooling demand in the installation.
- DIP3 = ON. The Heating or cooling output is triggered constantly following the mode of the installation (heating or cooling).

In case of RF failure, the heating output is triggered all the time.

#### 4.7 External antenna

The distance between 2 devices with internal antenna should be at least 50cm.



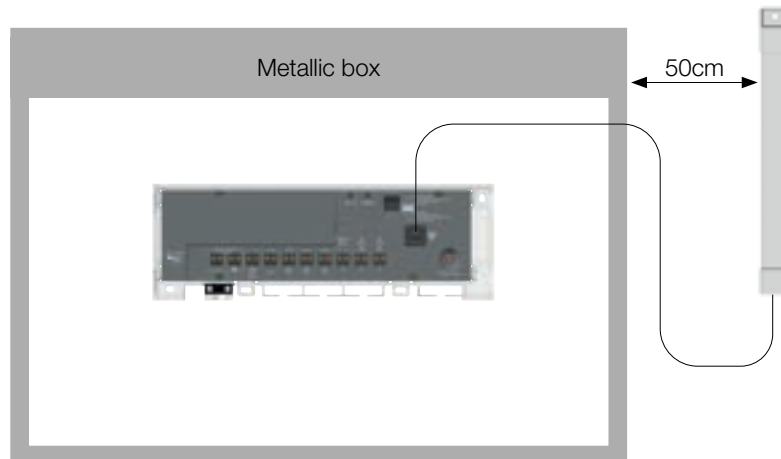
The controller embeds an internal antenna. If require, an external antenna can be connected to improve the RF communication. It could be useful if the WFC-03 HCM RF 230 is installed inside a metallic box. In that case, you need to install the external antenna outside the metallic box.



Please respect the mounting to optimize sensitivity and avoid any dysfunction.

Antenna must be installed:



- Outside the metallic box.
- In vertical position.
- And at least at 50cm of metallic parts.



## 5. System configuration

The WFC-03 HCM RF 230 should be always paired to a WFC-03 HC RF controller, even if you are using a BT-CT02 RF. There is always only one WFC-03 HCM RF 230 per installation.



Device 1: WFC-03 HCM RF 230	Device 2: WFC-03 HC RF	Remarks
 <p>Set the device to RF coupling mode. Press the button for 10 seconds.</p>	 <p>By pressing <input type="button" value="OK"/> for 5 seconds, the controller goes in RF pairing menu. By using <input type="button" value="Left Arrow"/> and <input type="button" value="Right Arrow"/> select zone 3 (Red LED), press <input type="button" value="OK"/> to enter in Pairing with a slave device mode.  All LEDs are blinking green.</p>	<p>When link is completed, WFC-03 HC RF returns to the RF pairing menu and WFC-03 HCM RF 230 returns to normal mode.</p>

## 6. Trouble shooting

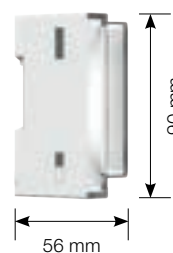
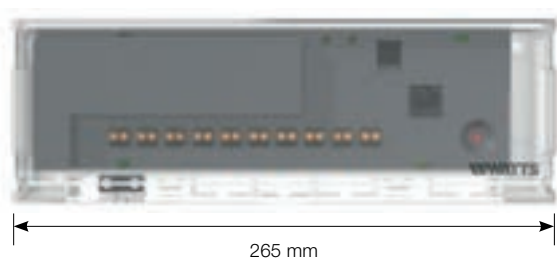
Symptom	Trouble	Description	Trouble shooting
Red / blue blinking on Heat and Cool and RF LED.	RF Issue.	The WFC-03 HCM RF 230 has lost the connection with the WFC-03 HC RF controller.	<p>Check distance between devices. If the device is installed within a metallic box, use an external antenna located outside the metallic box. External antenna is also useful for a long distance between devices.</p> <p>Usage of an external antenna on the WFC-03 HC RF and WFC-03 HCM RF 230 improves the RF communication.</p> <p>Usage of a repeater paired to the WFC-03 HC RF may be required.</p>
Red blinking on Pump / Humidity LED.	NTC error.	If DIP4 = ON, a water temperature sensor should be connected on Humidity input.	Check DIP4 setting and NTC.

## 7. Technical characteristics

	<b>WFC-03 HCM RF 230</b>
Purpose of control (EN60730 §2.2)	multi purpose control
Construction of control (EN60730 §2.5)	in-line cord control
Nature of supply	AC
Nominal voltage (V)	230
Output maximum load (5 outputs)	Relay: Pump Outputs=5A(1A) each. Other relays=2A(0,5A) each. An external fuse must be installed on each relay output sized with the maximum allowed current to protect all relay outputs.
Maximum power load pump, heating, cooling, dehumidifier outputs (W or A)	5A / 230V
Applicable LVD Standard main reference	EN 60730
Type of action (EN60730-1 §2.6)	Type 1
Software class (EN60730-1 H2.22)	Class A
Control pollution degree (Annex N EN60730-1)	2
Rated impulse voltage	Category 3: 2.5kV (230V)
Degree of protection	IP30
Class protection	Class II (double protection-no earth)
Min and Max temperature usage	0-50°C
Screwless Terminal method of disconnection	Type Y
Type of action	Type 1C (micro-interruption)
Frequency band - ERP	868.3 Mhz +/- 300 KHz – ERP < 25mW
Temperature for ball pressure test	100°C
Shipping and storage temperature	-10°C to 50°C (14°F to 122°F)
Compatibility	<ul style="list-style-type: none"> <li>• WFC-03 6Z HC 24 / WFC-03 6Z HC 230</li> <li>• WFC-03 8Z HC 24 / WFC-03 8Z HC 230</li> </ul>

### 7.1 Dimensions & weight

Weight: 0,820 kg



## 8. Directives

Designation	Description	Link
Low Voltage Directive (LVD)	The Low Voltage Directive (LVD) (2014/35/EU) ensures that electrical equipment within certain voltage limits provides a high level of protection for European citizens, and benefits fully from the Single Market.	2014/35/UE
Electromagnetic Compatibility (EMC) Directive 2014/30/EU	The Electromagnetic Compatibility (EMC) Directive 2014/30/EU ensures that electrical and electronic equipment does not generate, or is not affected by, electromagnetic disturbance.	2014/30/UE
Restriction of the use of certain hazardous substances Directive (RoHS) 2011/65/EU	Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment.	2011/65/EU
Waste Electrical & Electronic Equipment Directive (WEEE)	The WEEE Directive (2012/19/EU) aims to reduce the amount of waste electrical and electronic equipment that ends up in landfill.	2012/19/EU
Radio Equipment Directive (RED) 2014/53/EU	The Radio Equipment Directive 2014/53/EU (RED) establishes a regulatory framework for placing radio equipment on the market.	2014/53/EU

## 9. Recycling



Legislation (European directive 2002/96/EC of January 27, 2003 relating to waste electrical and electronic equipment (WEEE) and legislation national laws of the EU member states taking up this) prohibited to the owner of an electrical or electronic device to throw it or its components and electrical/electronic accessories with household waste.

Please return the used device to the free collection points indicated.

Do not hesitate to contact your town hall or municipal authorities for more further information.

The product dismantling sheet is available at:

<https://wattswater.eu/catalog/regulation-and-control/watts-vision-smart-home/controller-heat-cool-wfc-03-hc/>



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