WFC-03 6Z HC 24
WFC-03 6Z HC 230
WFC-03 8Z HC 24
WFC-03 8Z HC 230

Water Floor Controller Wired
Heating & Cooling

Installation manual



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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.

This device may be used by children aged at least 8 years and by people with reduced physical, sensory or mental capabilities or lack of experience or knowledge, if they are properly supervised or if instructions relating to the safe use of the device have been given to them and if the risks involved have been understood.
Children should not play with the device. Cleaning and user maintenance must not be carried out by children without supervision.

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

1.2 Application

The installation must be protected by a two-pole circuit breaker adapted to the power of the connected equipments. 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 Connecting box WFC HC is especially designed to control your Under Floor Heating and Cooling system. It allows easy and quick connection of thermostats and actuators.
4 versions are available:

	230V version	24V version
6 zones	WFC-03 6Z HC 230	WFC-03 6Z HC 24 (Require external 230V/24V transformer: TRF03 230/24)
8 zones	WFC-03 8Z HC 230	WFC-03 8Z HC 24 (Require external 230V/24V transformer: TRF03 230/24)

2.1 Functions

It has integrated multiple functions:

- Wall mounted or mounter on DIN Rail
- Push-in cable connections with strain relief
- LED status indication and DIP switch for device setting
- Easy merging of the zones on the same thermostat
- Link between 2 connecting boxes (to share H&C mode, clock signal and pump signals)
- H&C input (230V and volt free signal) and Clock input (230V)
- Separate heating and cooling Volt free outputs
- Pump or boiler output (230V and volt free signal)
- Heating and cooling output (Volt Free signal)
- Anti-Grip management
- Overheating security
- Humidity detection input, dehumidifier switching

2.2 Box content





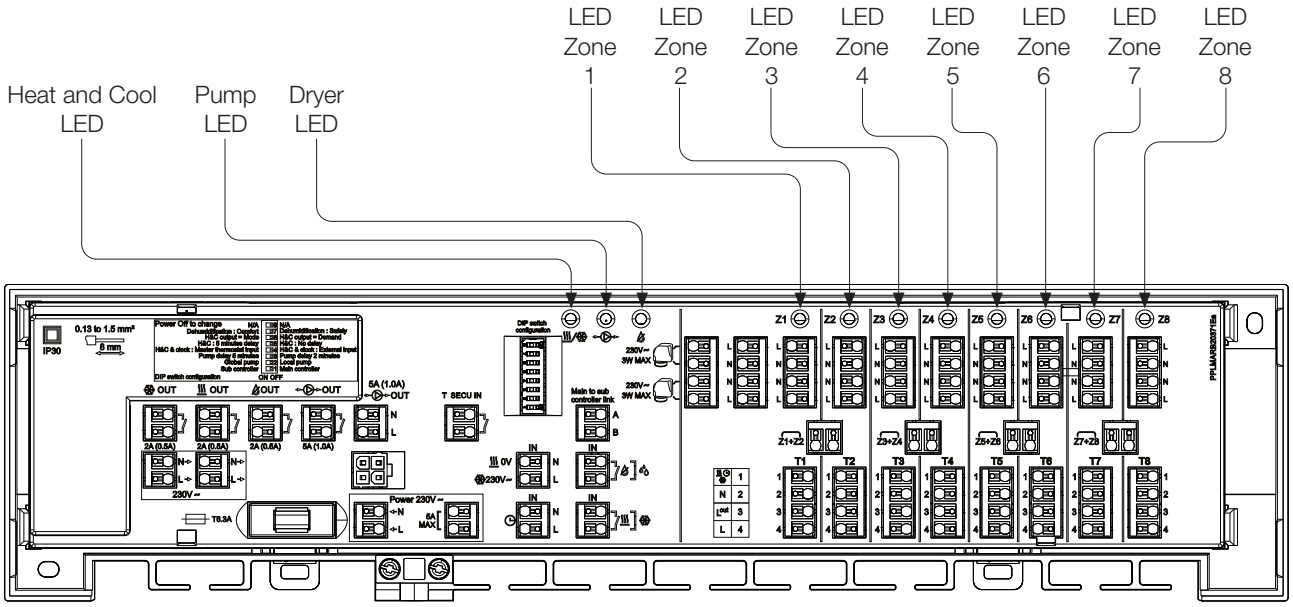
2.3 First installation

There are 2 ways to install the controller:

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

We recommend to use twin shielded 4 wires cable (e.g. Style 2717 22AWG 80° FT4) between the controller and each thermostat.

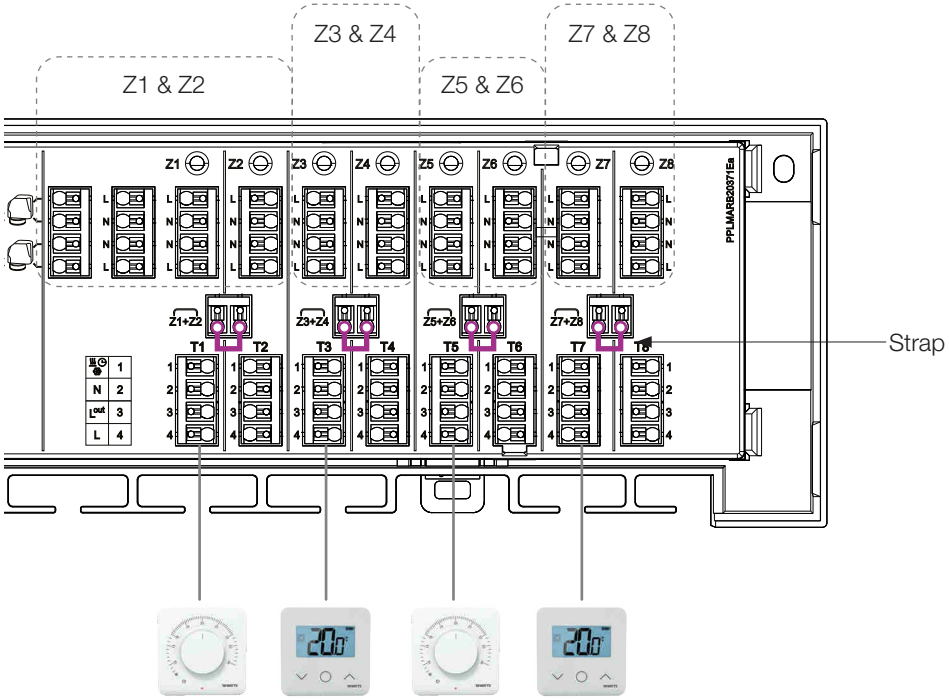
3. Product description



3.1 LED color meanings

LED	Meanings	
Heat and Cool LED	• Fix Red = • Fix Blue = • Blinking Red (2 times/second) = • Blinking Purple (2 times/second) =	Heating mode Cooling mode Overheating detection Communication issue between controllers
Pump LED	• Fix Green =	Pump is triggered
Drier LED	• Fix Blue =	Dehumidifier is triggered
LED per zone	• Fix Red = • Fix Blue =	Heating demand in the zone Cooling demand in the zone

3.2 Straps



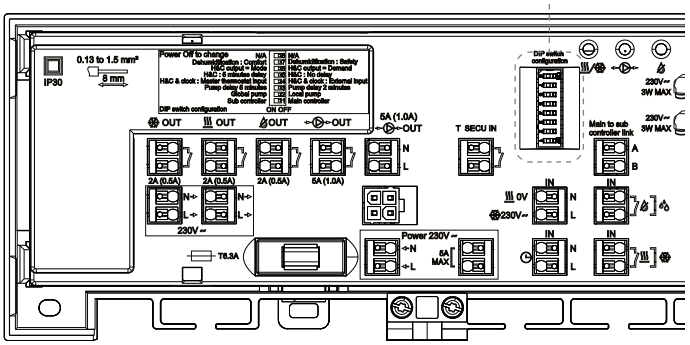
You can add strap to merge zones on the same thermostat

	Actuators without strap	Actuators with strap
Zone 1	6	8
Zone 2	2	
Zone 3	2	4
Zone 4	2	
Zone 5	2	4
Zone 6	2	
Zone 7*	2	4
Zone 8*	2	

*for WFC-03 8Z HC 24 and WFC-03 8Z HC 230

3.3 DIP switch configuration

	ON	OFF
DIP8	☐	■
DIP7	☐	■
DIP6	☐	■
DIP5	☐	■
DIP4	☐	■
DIP3	☐	■
DIP2	☐	■
DIP1	☐	■



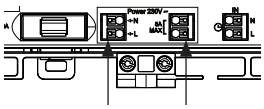
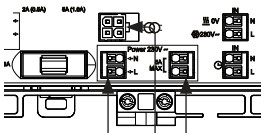
⚠ Operate the dip switch when the product is powered off.

DIP switch number	Function	Value (default: OFF)	Configuration	Description
DIP1	Controller function	OFF	Main Controller	See 4.2
		ON	Sub Controller	
DIP2*	Pump (available only on main controller, the sub is always local)	OFF	Local pump	See 4.5
		ON	Global pump	
DIP3	Pump start delays	OFF	2min	See 4.5
		ON	5min	
DIP4*	H&C Order / Clock	OFF	External H&C input / external clock input	See 4.3
		ON	Master Thermostat	
DIP5*	Time before H&C switch	OFF	No delay	See 4.6
		ON	5 minutes delay	
DIP6	H&C outputs	OFF	Demand on any zone	See 4.6
		ON	Mode	
DIP7	Dehumidification	OFF	Safety	See 4.7
		ON	comfort	
DIP8	Not used			

*Available only on main controller (dip switch 1 => OFF)

4. Inputs / Outputs

4.1 Power Supply

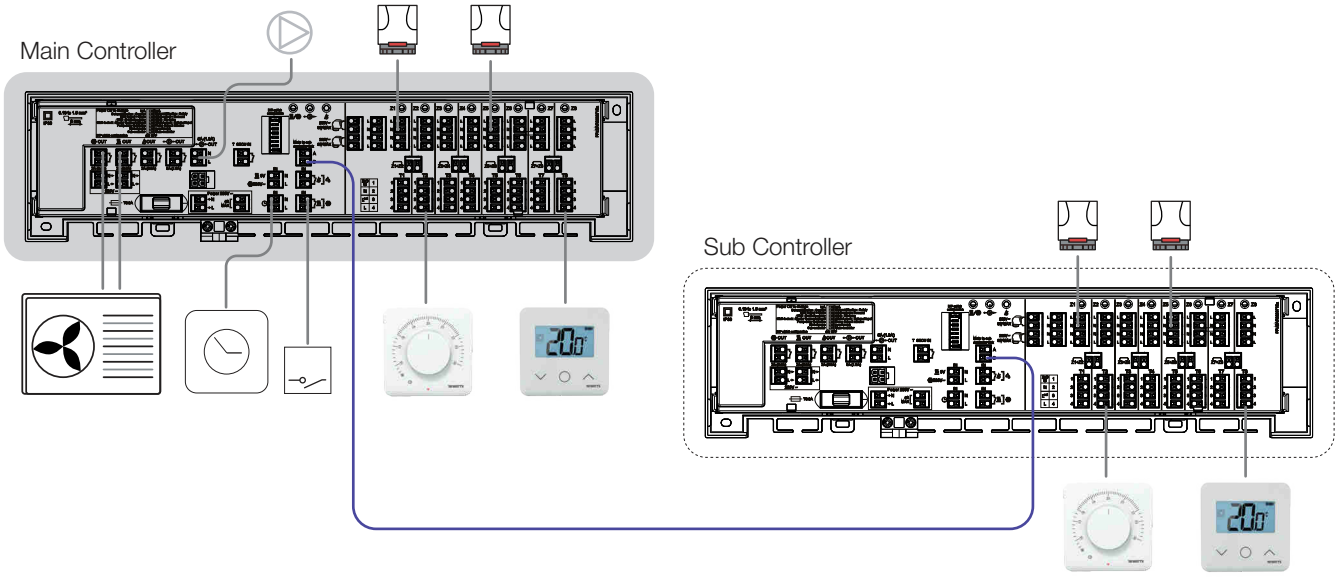
WFC-03 6Z HC 230 / WFC-03 8Z HC 230	 Power supply — Junction connector to ensure for example continuity of the earth for external device
WFC-03 6Z HC 24 / WFC-03 8Z HC 24 Require to use transformer supplied by Watts (4 cables): WAT TRF03 230/24	 Power supply — Junction connector to ensure for example continuity of the earth for external device — 230V/24V transformer

4.2 Connection between controllers

The purpose is to share:

- The Heating and Cooling mode for the whole installation
- The Pump signal
- The Clock signal

One controller is the main controller and the other one controller is the sub controller. This is defined by DIP switch 1 (See 3.3).



Main controller	Sub controller
• Manage the H&C and clock signal of the installation (H&C input, Clock input or master thermostat) and transmit the signal to the sub controller. • Can manage the global pump of the installation. • Can manage the global heating or cooling demand.	• Follow the H&C and clock signals from the main controller or the master thermostat • Send the local heating or cooling demand to the main controller • Manage only the local pump

4.3 Heating/cooling Input

Purpose:
This input allows to switch the regulation mode: Heating or cooling. WT-A03 HC or WT-D03 or WT-DP03 thermostats are required.

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.

Free contact input	Live signal input
H&C In 	H&C In  230V Signal

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

If 2 controllers are connected:
- The H&C input should be wired on the main controller.
- The H&C mode is sent by the main controller to the sub controller.

Another way to control the Heating and Colling switch of the system is to use a WT-D03 / WT-DP03 thermostat configured as a master thermostat (Manual or Automatic H&C switch).
Configuration of the DIP switch 4 is required on the main controller:
- External H&C input if DIP switch 4 = OFF.
- Master thermostat if if DIP switch 4 = ON.

See 3.3

4.4 Clock input

Purpose:
This input allows to switch all thermostats in Comfort or Eco mode (WT-A03 HC or WT-D03 or WT-DP03)

Source of the signal:
- WT-DP03 HC configured as a clock.
- An external clock.
- A BT-WR02 paired on the BT-CT02 central unit as an ON/OFF device.

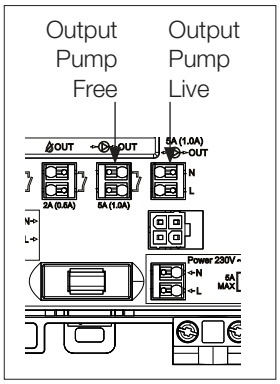
Live signal input
Clock In  230V Signal

Format of the signal:
The input is a live contact 230V.

Mode	Live contact
Comfort	No signal
Eco	230Vac

If 2 controllers are connected:
- The clock should be wired on the main controller.
- The clock signal is sent by the main controller to the sub controller.

4.5 Pump Output



There are 2 outputs:
- Live contact output (230Vac).
- Free contact output.

The 2 outputs are triggered when there are a heating or cooling demand.
- In the controller if DIP switch 2 = local.
- In the system if DIP switch 2 = Global (Applicable only on the Main Controller: See 4.2).

See 3.3

The delay between the heating or cooling demand and the pump activation is configurable.
- Pump starts 2 minutes after heating or cooling demand if DIP switch 3 = OFF.
- Pump starts 5 minutes after heating or cooling demand if DIP switch 3 = ON.
  Beyond 5 minutes the system resume normal behavior.

See 3.3

4.6 Heating and cooling outputs

There are 2 Free contact Outputs (Fig. A):
- Heating output.
- Cooling output.

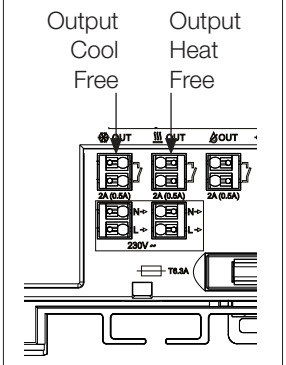
You can configure 2 types of Output using DIP switch 6:
- Demand: Heating or cooling outputs will be triggered if there is any heating or cooling demand in the installation.
  The output follows the pump output on the main controller (See 5.2).
  DIP switch 6 = OFF
- Mode: Heating or cooling outputs follow the working mode of the installation.
  DIP switch 6 = ON

See 3.3

The switching between Heat or Cool mode is detected in few seconds, the system allows to choose when this switch is applied.
- Few seconds (about 10s): When system is able to switch quickly (ex: Installation with a boiler and a schiller). DIP switch 5 = OFF.
- 5 minutes: When the system needs time to switch (Ex: Reversible heat pump). In this configuration the led display the new mode but the pump, the heating relay and the cooling relay are OFF during 5min. Beyond 5 minutes, the system resumes a normal behavior. DIP switch 5 = ON

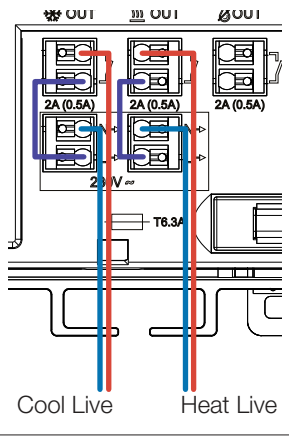
See 3.3

Fig. A



2 Live, Neutral connectors allow to convert the outputs in live contact (See Fig B).

Fig. B

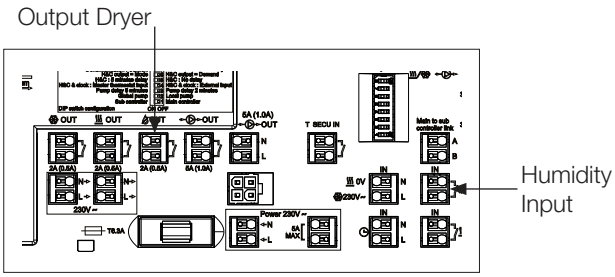


4.7 Humidity detection input, dehumidifier output

The product has a humidity detection input.

Format of the signal:
The input is a free contact

No Humidity	Opened contact
Humidity detected	Closed contact



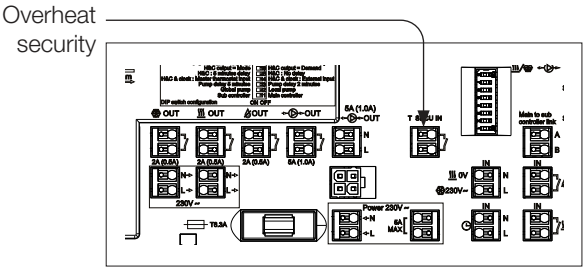
When humidity is detected in cooling mode, the behavior is dependent of DIP switch 7 (See 3.3):

- DIP switch 7 = OFF. The is a safety approach of the humidity management.
  . Local pump is stopped.
  . Cooling output is stopped if DIP switch 6 = OFF (Demand).
  . Local dehumidifier is triggered.
  . If the controller is a sub controller, the pump signal is not sent to the main controller.
- DIP switch 7 = ON. This is a comfort approach of the humidity management.
  . Local dehumidifier is triggered during 2 hours then the dehumidifier is stopped.

4.8 Overheating input

This is a Free contact input.

Closed Contact	No overheating
Opened Contact	Overheating detection



As soon as overheating input is detected:

- The local pump is stopped (Hardware management).
- The Heat and Cool LED is blinking Red (See 3.1).
- The heating or cooling demand are not send to the other controller (in SUB configuration).

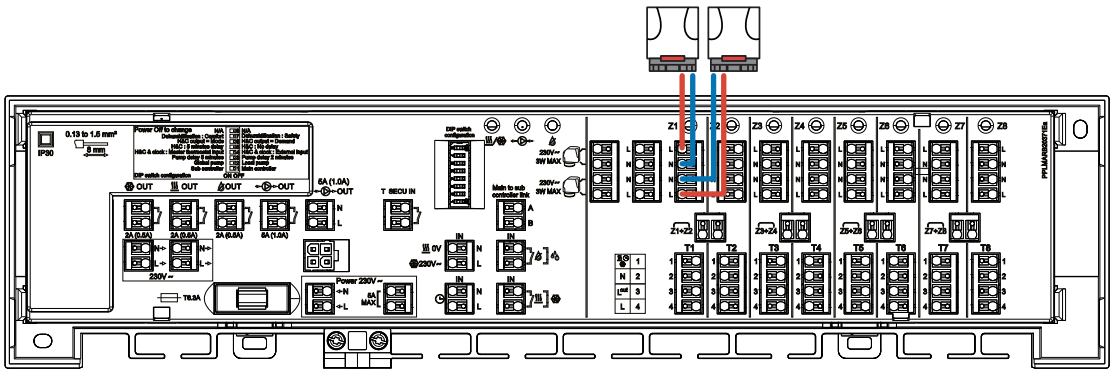
You can install 2 contact thermostats in serial to protect against overheating and overcooling.

4.9 NC actuators

Connect one NC actuator per connector:

- 24V actuators for WFC-03 6Z HC 24 and WFC-03 8Z HC 24.
- 230V actuators for WFC-03 6Z HC 230 and WFC-03 8Z HC 230.

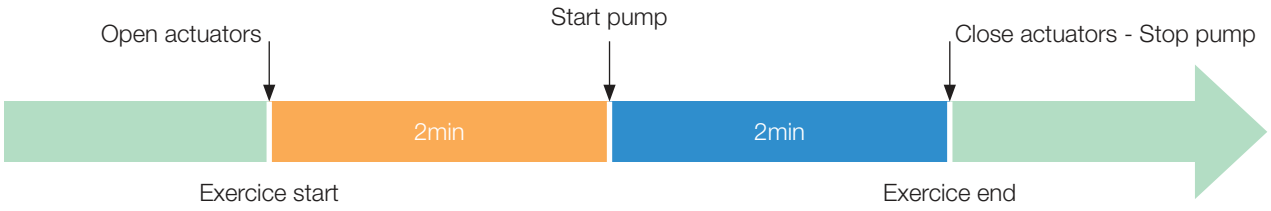
NO actuators are not supported.



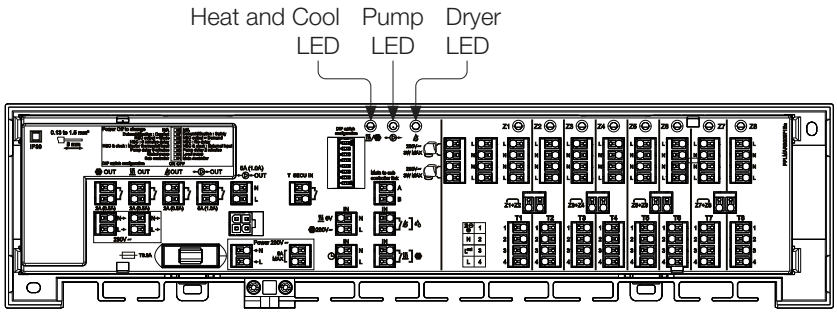
5. Other Features

5.1 Anti Grip Function

The feature is triggered every 168 hour (1 week) without any action of the controller.



5.2 Trouble shooting



Symptom	Trouble	Description	Trouble shooting
1	The 3 LEDs are blinking 5 times per sec.	Configuration error: • 2 controllers configured as a main controller. • Standalone controller configured as a sub controller. The controller is stopped	Correct configuration on the DIP switch.
2	The Heat & Cool LED blinks in red 2 times per sec.	The thermal security thermostat is triggered, leading to stop the pump, the heating and cooling outputs (in demand configuration). See 4.8	Control the security thermostat (or the wiring) or the water temperature of the installation.
3	The Heat & Cool LED blinks in purple 2 times per sec.	The communication between 2 controllers (1 main controller and 1 sub controller) is stopped during more than 60s. Local regulation on each controller is maintained.	Control connection between controllers.
4	The Heat & Cool LED blinks in red 2 times every 2 sec.	No H&C signal received by the controller from the Master thermostat. The controllers remains in heating mode.	Control the DIP switch or the master thermostat setting or the connection between the master thermostat and the controller.
5	The Heat & Cool LED blinks alternatively in red and blue.	Perturbation of the H&C signal.	Control the wires between the controller and all thermostats.
6	The controller is turned off while the product is powered.	A valve is defective.	Turn off the product. Unplug all cables. Identify the faulty valve and replace it. Change the fuse. Rewire the product.

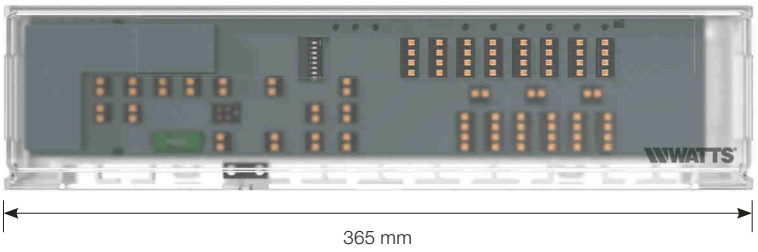
6. Technical characteristics

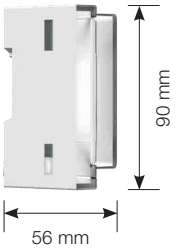
	WFC-03 6Z HC 24 / WFC-03 6Z HC 230 WFC-03 8Z HC 24 / WFC-03 8Z HC 230
Purpose of control (EN60730 §2.2)	multi purpose control
Construction of control (EN 60730 §2.5)	in-line cord control
Nature of supply	AC
Nominal voltage (V)	230 or 24
Output maximum load (5 outputs)	Relay: 5A (1A) 5A external fuse must be installed to protect all relay outputs (embedded fuse protects only actuator outputs and electronics of the device)
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 EN 60730-1)	2
Rated impulse voltage	Category 3: 2.5kV (230V)
Degree of protection	IP30
Class protection	Class II (double protection-no earth)
Protective fuse for outputs (relay outputs)	No protection for outputs — external fuse should be installed for relay outputs (5A)
Protective fuse for actuators	Fuse clip 6,3A (1449W) for 230V controller Fuse clip 630mA (15,12W) for 24C controller
Min and Max temperature usage	0-55°C
Screwless Terminal method of disconnection	Type Y
Type of action	Type 1C (micro-interruption)
Temperature for ball pressure test	100°C
Shipping and storage temperature	-10°C to 50°C (14°F to 122°F)
Compatibility	• WT-A03 • WT-A03 HC • WT-D03 • WT-DP03

6.1 Dimensions & weight

WFC-03 6Z HC 24 - WFC-03 6Z HC 230 - WFC-03 8Z HC 24 - WFC-03 8Z HC 230:

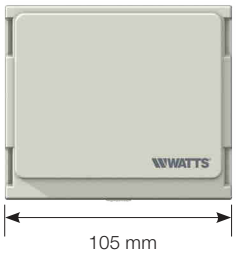
Weight: WFC-03 6Z HC 230 = 0,850 kg - WFC-03 8Z HC 230 = 1,100 kg

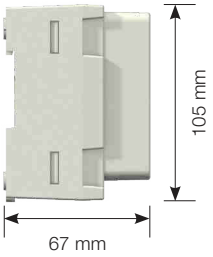




External 230V/24V transformer TRF03 230/24:

Weight: 1,350 kg

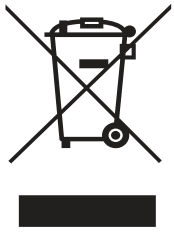




7. Directives

Designation	Description	Link
Low Voltage Directive (LVD) 2014/35/EU	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

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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