Wavin Tempower Controls

WTC-3 Maintenance Program

FOR RESIDENTIAL, COMMERCIAL
AND INDUSTRIAL APPLICATIONS

Intelligent Solutions for

Heating & Cooling Projects

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1. About this manual

The WTC-3 standalone PC program has been developed to check all the functions and setting of the WTC-3 unit, and to follow all data in real time as well as to pre-set the values.

1.1 General Information

This program requires Windows 2000 Professional (SP4),Windows XP Professional or Home Edition or Windows Vista 32-bit operating systems. Proper operation on other operating systems including Windows 7, Windows 95,Windows 98, Windows ME or Windows NT 4 is not guaranteed by Elan System. The WTC-3 program is not a commercial product. It is distributed only by Wavin Group inside its affiliate network. The program has no trial version and does not provide a trial period. Prior to the installation process, the responsible Wavin Group person(s) — hereinafter mentioned as Licensor(s), should be contacted for an application license. The Licensor is able to generate a full or a time-limited license to a qualifying customers.

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To obtain the most recent version of the WTC-3 program and/or to obtain a valid licenses please contact Wavin Group staff directly.
Please read the hardware and soft ware requirements chapter to see technical requirements. The installation process is described in this document, however the program can also be distributed in the format of a downloadable single installation file. Running of this single installation file will result in a one step installation process described later in this document.

2. Installation

The program does not require an installation process, simply save the WTC-3 configurator folder as a new folder and run the WavinTest.exe program.

2.1 Other settings

The program uses the USB port for the communication. Generally this port is blocked only for Microsoft plug & play peripherals. To open this port as a virtual COM port Virtual COM port (VCP) drivers cause the USB device to appear as an additional COM port available to the PC. Application software can access the USB device in the same way as it would access a standard COM port.
This VCP driver and installation guide can download from the following site:

http://www.ftdichip.com/Drivers/VCP.htm

2.2 Connect WTC-3 with laptop computer

To create a proper connection between your laptop and the WTC-3 base unit, the WTC-3 communication cable must be used. This cable is available only within Wavin Group.

2.3 Connect the communication cable

The interface needs to connect the USB port of the laptop and the RS port of WTC-3

Note:
the WTC-3 must be powered, otherwise the connection cannot be established.

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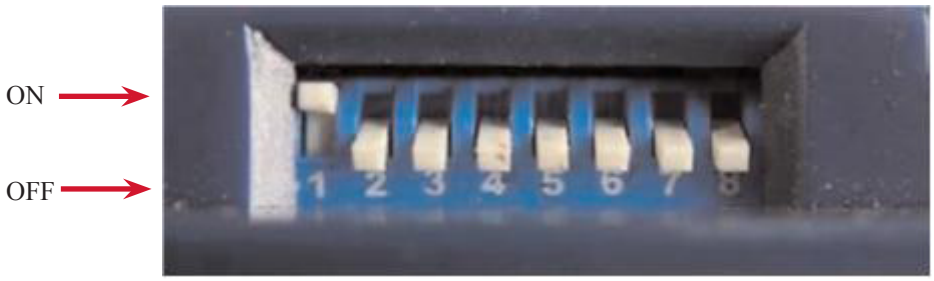
2.4 Set the address

The program and WTC-3 must be on the same address. Set dip switch 1 on the communication switch of WTC-3 as shown below:

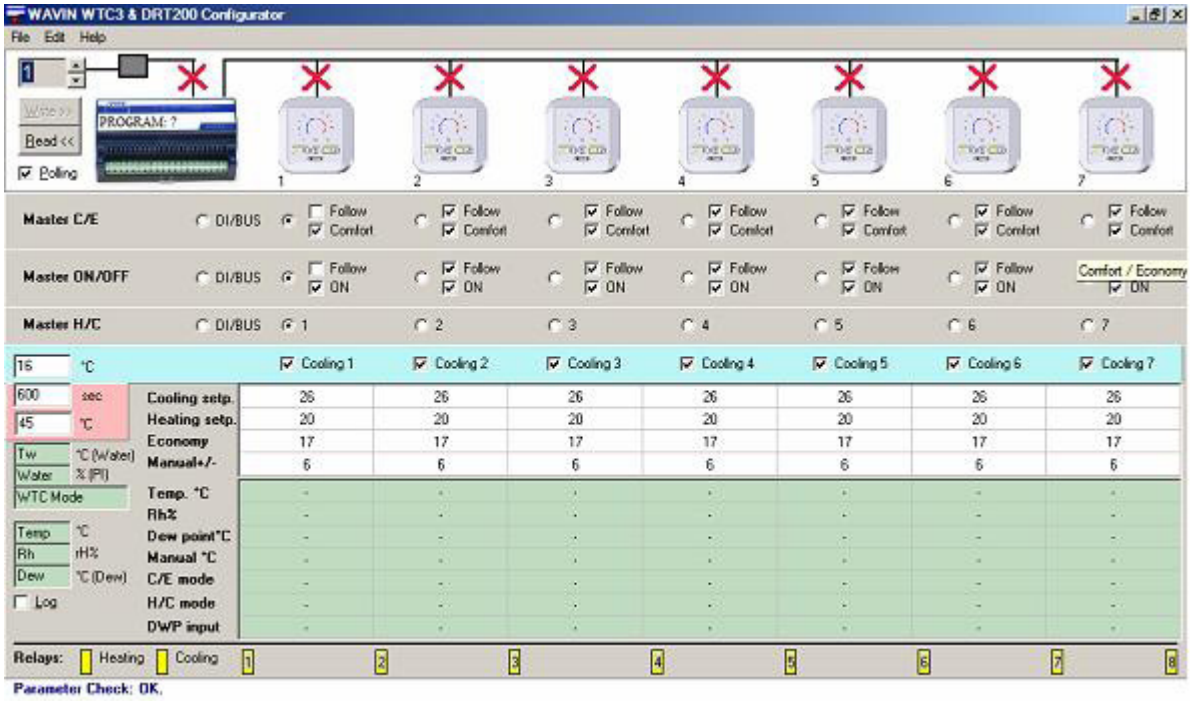


1	2	4	8	16	32	64	128

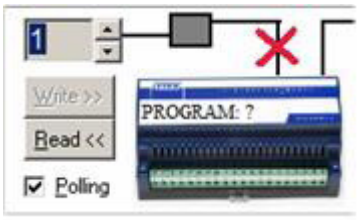
Address range is 1 - 254

Example: address 9: switch 1 and 4 ON (1 + 8 = 9)

2.5 Run WTC-3 maintenance program

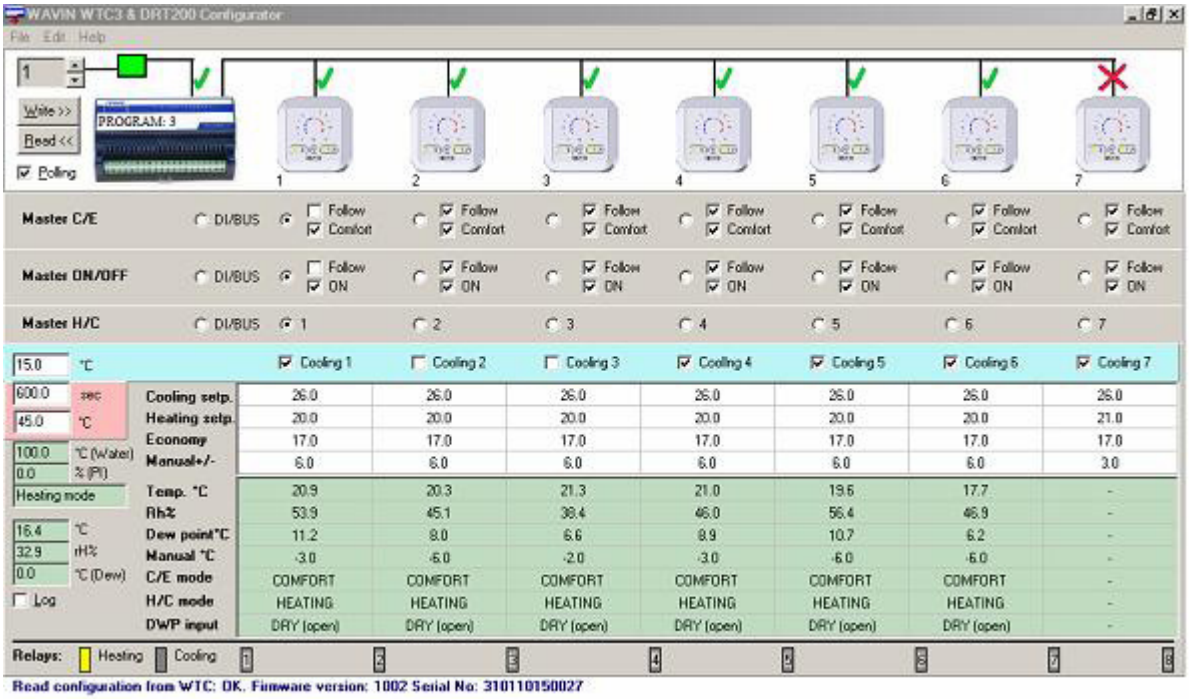


2.6 Set the same address as the connected WTC-3 has been set before



When the communication is established

- The communication box become green
- Green stick appear next to every connected DRT-200 thermostat
- Become visible all measured date



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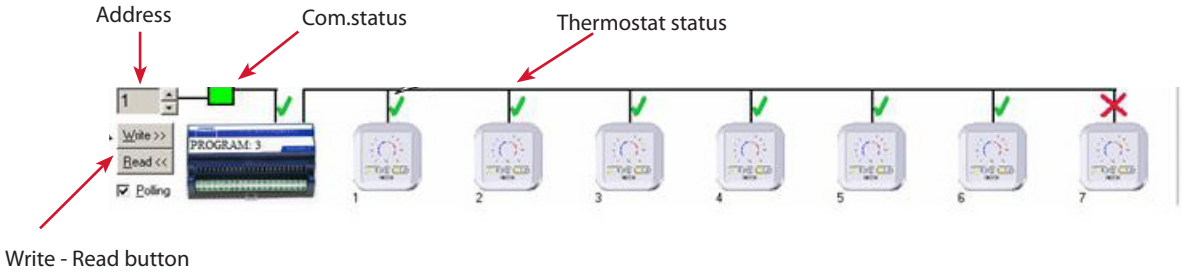
3. Configuration

3.1 Explanation



Address:	Set address of WTC-3
Com. Status:	Box is green when connection establishes, grey when no connection
Write/Read buttons:	Write (save) settings to the WTC, Read settings from WTC
Polling:	When is checked the communication is continuous
Thermostat status:	Green sticker shows the connected DRT-200 thermostat. X: not connected or no live contact.

3.2 Setting Master and Slave option of DRT-200 room thermostat

May be set the "Master" or "Slave" status for each DRT-200 thermostat. When the circle is checked then selected thermostat will be the Master. Once you can selet only one thermostat!

Master C/E:	Comfort / Economy mode setting
Master ON/OFF:	ON / OFF the DRT-200 room thermostat
Master H/C:	Heating / Cooling mode setting
DI/BUS:	control via Building Management system or external unless voltage contact
Follow:	DRT-200 thermostat will follow the settings of Master DRT-200 thermostat or the BMS
Comfort:	option to reset the comfort mode at the "Slave" thermostats when the "Master" in economy mode
ON:	option to turn the "Slave" thermostat ON when the "Master" thermostat is OFF

3.3 Switch thermostats off from cooling

The checked boxes are allowing the cooling , the empty ones disable the cooling!

3.4 Setting of DRT-200 parameters

Cooling setp.	26.0	26.0	26.0	26.0	26.0	26.0	26.0
Heating setp.	20.0	20.0	20.0	20.0	20.0	20.0	21.0
Economy	17.0	17.0	17.0	17.0	17.0	17.0	17.0
Manual+/-	6.0	6.0	6.0	6.0	6.0	6.0	3.0

May be set for each connected DRT-200 room thermostat different set points.

Cooling setp.:	Reference temperature for cooling in °C
Heating setp.:	Reference temperature for heating in °C
Economy:	Economy temperature set point in °C
Manual +/-:	Temperature setting range (+/-3 °C or +/-6 °C)

3.5 Measured values

Temp. °C	20.9	20.3	21.3	21.0	19.6	17.7	-
Rh%	53.9	45.1	38.4	46.0	56.4	46.9	-
Dew point°C	11.2	8.0	6.6	8.9	10.7	6.2	-
Manual °C	-3.0	-6.0	-2.0	-3.0	-6.0	-6.0	-
C/E mode	COMFORT	COMFORT	COMFORT	COMFORT	COMFORT	COMFORT	-
H/C mode	HEATING	HEATING	HEATING	HEATING	HEATING	HEATING	-
DWP input	DRY (open)	DRY (open)	DRY (open)	DRY (open)	DRY (open)	DRY (open)	-

This table contains all measured values and actual settings of DRT-200 room thermostat.

Temp. °C: Measured room temperature by DRT-200	
Rh%:	Measured room relative humidity by DRT-200
Dew point °C:	Calculated dew point temperature
Manual ° C:	Actual setting of requested temperature on DRT-200
C/E mode:	Actual mode in heating "Comfort" or "Economy"
H/C mode:	Actual mode of operation "Heating" or "Cooling"
DWP input:	Status of connected dew point sensor (DRY(open)=no condensation, WET(closed)=condensation

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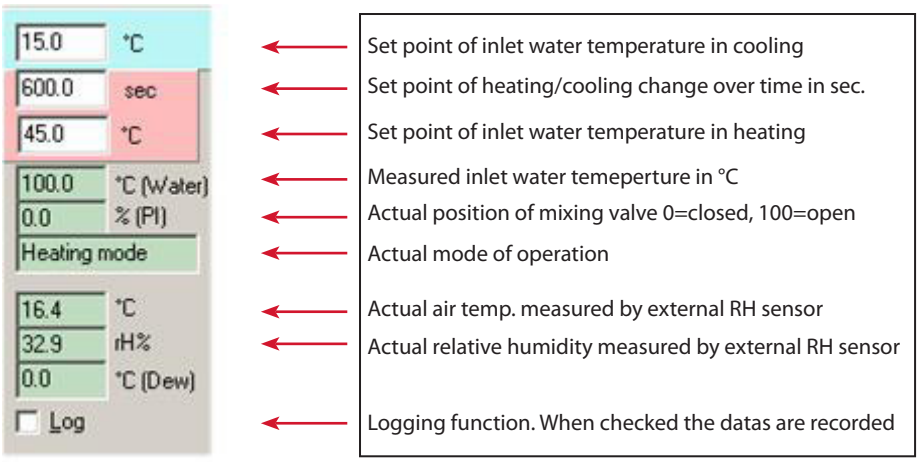
3.6 Output relays

The boxes are shows the actual status of output relays.

- **Yellow**: in operation (valves are open)
- **Grey**: out of operation (valves are closed)

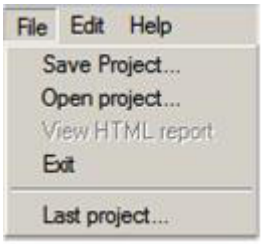
3.7 Heating/Cooling water data



4. Access of WTC-3 Functions

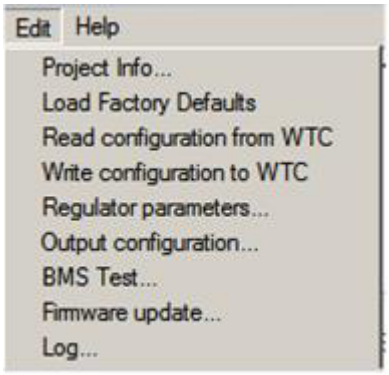
All functions can be achieved from Panel pull-down menu

4.1 File menu



- **Save project…** Save the actual project to an html file
- **Open project…** Open a saved project
- **View HTML report :** view the printout of the saved project report
- **Exit :** Exit from the program
- **Last project…** Loading the last project settings to apply on an other project

4.2 Edit menu



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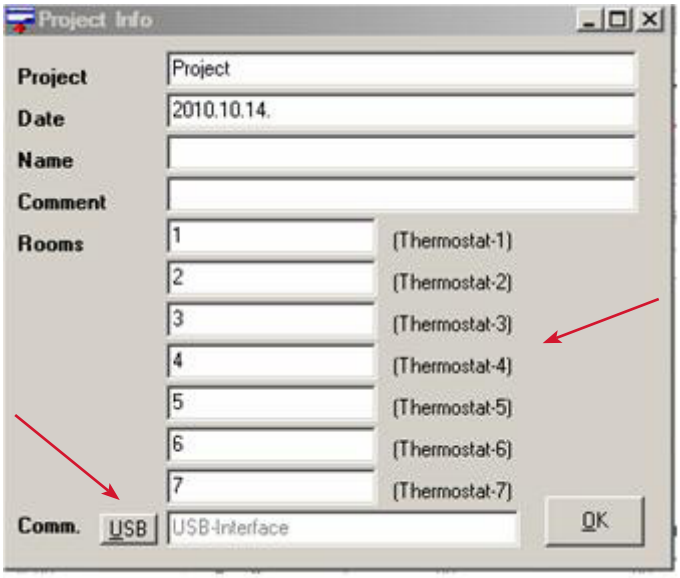
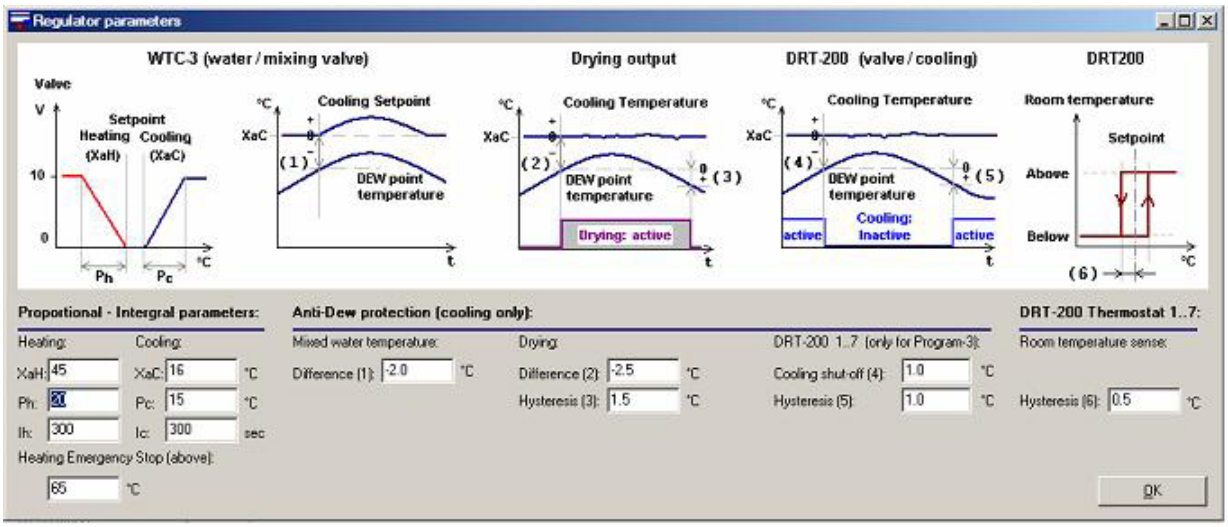
Project info… Setting of the project details



Setting the name of the rooms by thermostats

Setting of communication USB or TCP/IP

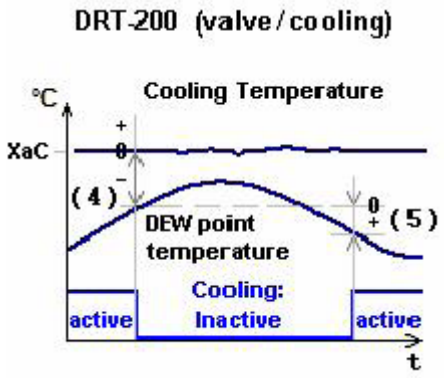
Load Factory Defaults	This function load in all saved factory default datas
Read Configuration from WTC:	same function like the "Read" button
Write Configuration from WTC:	same function like the "Write" button
Regulator parameters:	Regulator parameters panel contains all data related to the dew point monitoring and control.



XaH:	Heating set point
XaC:	Cooling set point
Ph:	Proportional parameter for heating (fixed)
Ih:	Integral parameter for heating (fixed)
Pc:	Proportional parameter for cooling (fixed)
Ic:	Integral parameter for cooling (fixed)
Difference (1) for mixing valve:	range +12,5..-12,5 difference between set point and calculated dew point
Difference (2) for drying:	range +12,5.. -12,5 difference between set point and calculated dew point
Hysteresis (3) for drying:	range 0..+12,5 different between turn on and off. Kind of "overcooling"!
Cooling shut-off (4) for DRT:	range +12,5.. -12,5 difference between set point and calculated dew point
Hysteresis (5) for DRT:	range 0.. +12,5 different between turn on and off. Kind of "overcooling"!
Hysteresis (6) for DRT:	range 0.. +12,5 different between turn on and off. Valid for heating and cooling.
Heating Emergency Stop(above):	all actuator will close and the pump stop if inlet water temperature reach this value (fixed)

5. Setting variations

5.1 WTC-3 + DRT-200 + pipe temperature sensor



DRT-200 measuring the room temperature and relative humidity. WTC-3 can calculate from these data the dew point value. With the software you can set two control parameters.

- **Temperature parameter (4)** : you can set this value between -12,5 °C and +12,5 °C. This value will add to the fixed or measured inlet water temperature and compare with the actual calculated dew point value. According to the result the DRT-200 will close the defined actuator on the circuit.
- **The Hysteresis (5)** parameter define the temperature of the overcooling.

Example: Room temp.:26 °C Relative humidity 50% > Dew point 15 °C
Temperature parameter: -2 °C In this case the WTC-3 will start to close the actuator when the calculated dew point is reach the 13 °C. If you set +2 °C then the WTC will start to close the circuit at 17 °C.

This parameter can help to set a right value of temperature difference between the inlet water temperature and the ceiling surface temperature.

The circuit will open again when the calculated dew point reach the set point temperature + the hysteresis value.

Example: If the value of the Hysteresis set for 1 °C then the WTC will open the actuator(s) when the calculated dew point decrease to or under 12 °C (13-1) or 16° C (17-1)

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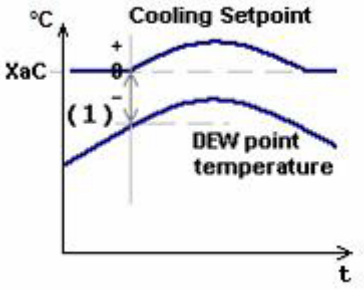
5.2 WTC-3 + DRT-200 + pipe temperature sensor + mixing valve

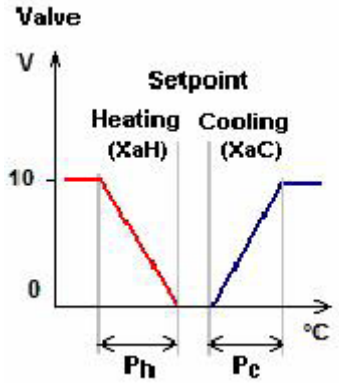


If the CHC system is installed with mixing valve then the control will be much more accurate thanks to the proportional regulation of WTC-3.

To keep the possible highest cooling capacity with the ceiling cooling system the WTC-3 will interact to inlet (mixed) water temperature first when a condensation risk occur.

- **Temperature parameter (1)** : you can set this value between -12,5 °C and +12,5 °C. This value will add to the fixed or measured inlet water temperature and compare with the actual calculated dew point value. According to the result the WTC will increase the mixed water temperature and always keep the set temperature parameter between the calculated dew point and mixed inlet water temperatu re.

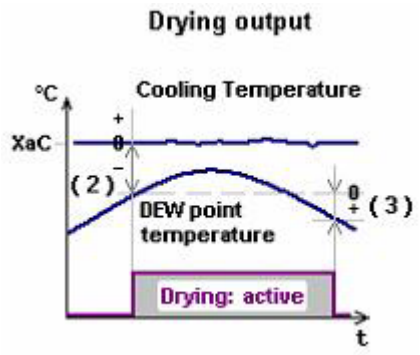
Example: Room temp.:26 °C Relative humidity 50% > Dew point 15 °C
Temperature parameter: -2 °C In this case the WTC-3 will start to increase the inlet water temperature when the calculated dew point is reach the 13 °C



The proportional regulation parameters are fixed in the software!
According to the result of dew point c alculation the WTC will regulate the mixing valve with 0-10 V.
(0V- fully closed , 10V- fully open)

In normal situation this PI regulation is enough to prevent the condensation on the ceiling surface but in emergency case when this regulation is not enough the DRT-200 will close the actuator(s) (see Version 1.)

5.3 WTC-3 + DRT-200 + pipe temperature sensor + mixing valve + dehumidifier



If the CHC system is installed with mixing valve and drying unit (dehumidifier) then the base unit can control the humidity in the room beside of the proportional regulation. With the software you can set 2 control parameters.

- **Temperature parameter (2)** : you can set this value between -12,5 °C and +12,5 °C. This value will add to the fixed or measured inlet water temperature and compare with the actual calculated dew point value. According to the result the WTC will start the dehumidifier(s).
- **The Hysteresis (3)** parameter define the temperature of the overcooling. That means the drying keep on running longer a bit then the set point to prevent the quick restart.

Example: Room temp.:26 °C Relative humidity 50% > Dew point 15 °C
Temperature parameter: -2 °C In this case the WTC-3 will start the dehumidifier(s) to dry the air in the room(s) when the calculated dew point reaches the 13 ° C.

In normal situation the drying mode can prevent the condensation on the ceiling surface but if its not enough then the PI regulation will interact with the increase of inlet water temperature. In emergency case the DRT-200 will close the actuator(s) if necessary (see Version 1.).

5.4 Performance or Comfort optimization

Within Europe many different weather conditions are being.
There are areas where the CHC system needs to be optimized for performance (possible highest cooling capacity) because of very hot summer or other areas more important the comfort because the extreme weather conditions are not typical.
The possible highest cooling capacity is defined by the actual condensation level. When the condensation risk occurs then the control system must to interact with one of above mentioned process.
Possible to set the sequence of regulation with help of the two regulator parameters (Temperature and Hysteresis). These parameters will define witch regulation start first.

Performance optimization
Sequence: dehumidifier → mixing valve → DRT-200 (emergency stop)

Comfort optimization
Sequence: mixing valve → dehumidifier → DRT-200 (emergency stop)

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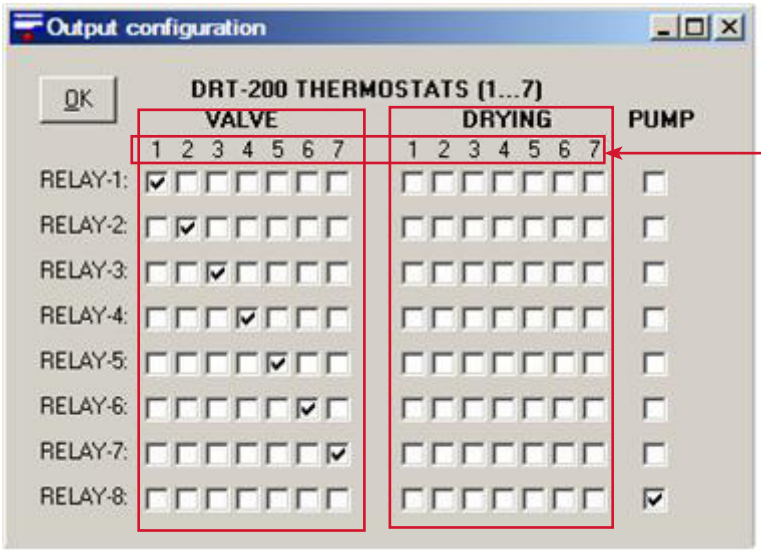
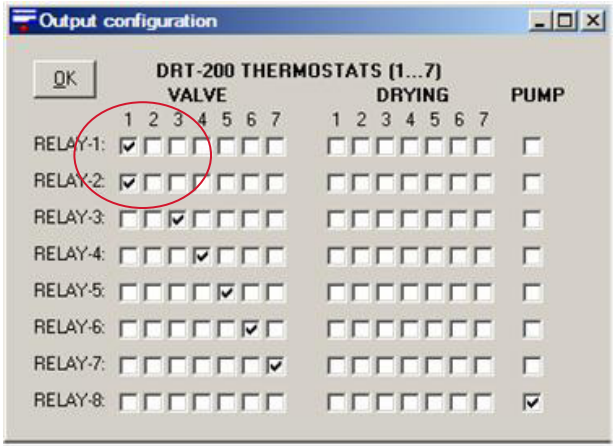
5.5 Output configuration

With this window you can configure the room thermostat and output relays.
Can be set many different configuration by checked the selected box.

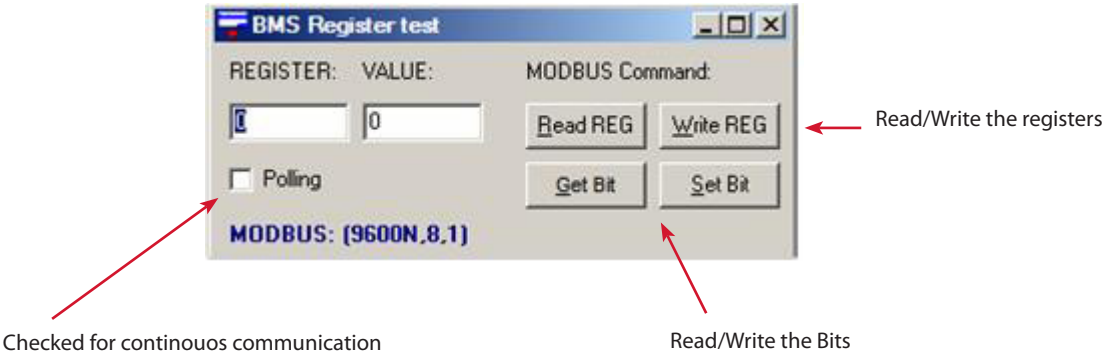


Groups are define the functions (Valve -Actuator- , Drying –Dehumidifier-, Pump)
Example: If you want to control two relays (outputs) with only one room t hermostat then the setting will be the following:



5.6 BMS Test

With this function it si possible to test the WTC-3 functions with a simulated BMS connection



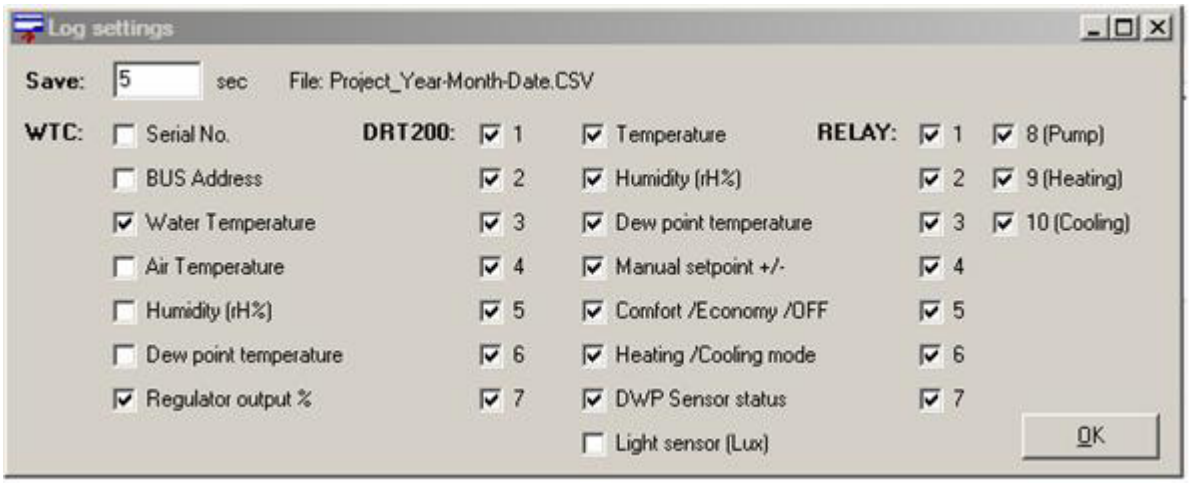
5.7 Firmware update

With this function it is possible to replace the old software of WTC-3 for a new one.

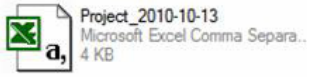
When the Laptop is connected to the WTC-3 and the connection is established then you can "Start" the software update. The program automatically replaces the software for the new one and keeps all settings.

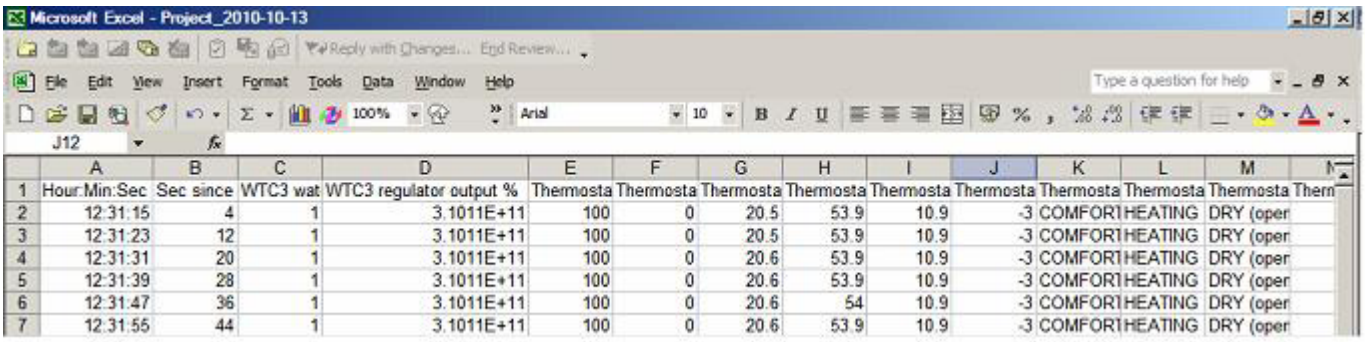
5.8 Log

With this command you can record all measured data at predefined time intervals.



Can be set the saving time interval in second and all requested data what you want to record. To start the logging function just checked the Log box on the main panel and the recording starting automatically according to the setting. This function automatically create an **"csv"** extract file in the "Project" folder with the saved prject name. This file can be open with Microsoft Excel.





	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Hour:Min:Sec	Sec since	WTC3 wat	WTC3 regulator output %	Thermosta	Thermosta	Thermosta	Thermosta	Thermosta	Thermosta	Thermosta	Thermosta	Thermosta
2	12:31:15	4	1	3.1011E+11	100	0	20.5	53.9	10.9	-3	COMFORT	HEATING	DRY (oper
3	12:31:23	12	1	3.1011E+11	100	0	20.5	53.9	10.9	-3	COMFORT	HEATING	DRY (oper
4	12:31:31	20	1	3.1011E+11	100	0	20.6	53.9	10.9	-3	COMFORT	HEATING	DRY (oper
5	12:31:39	28	1	3.1011E+11	100	0	20.6	53.9	10.9	-3	COMFORT	HEATING	DRY (oper
6	12:31:47	36	1	3.1011E+11	100	0	20.6	54	10.9	-3	COMFORT	HEATING	DRY (oper
7	12:31:55	44	1	3.1011E+11	100	0	20.6	53.9	10.9	-3	COMFORT	HEATING	DRY (oper

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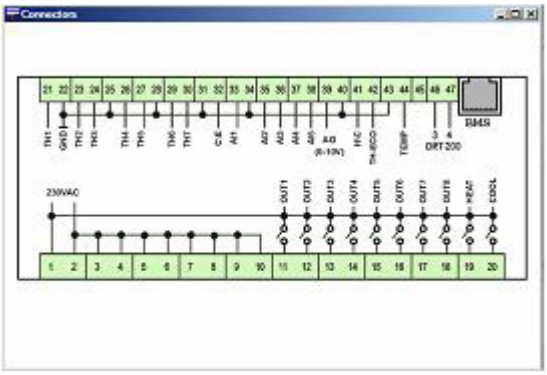
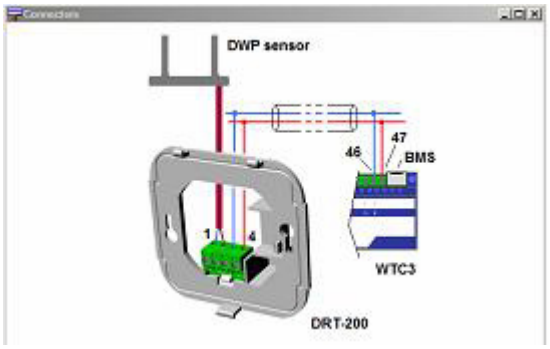
5.9 Help menu

Connectors You can check here the connection of WTC-3 and DRT-200



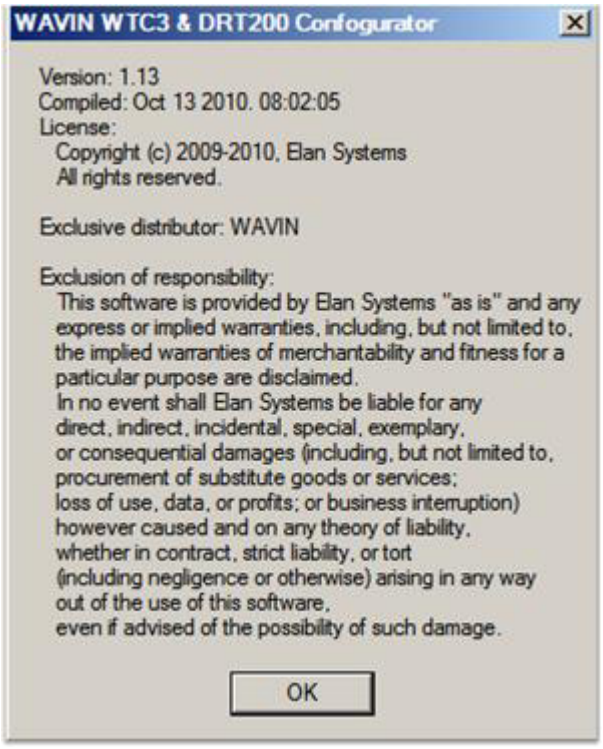


Wavin Home Page This function open the Wavin Home page (www.wavin.com)

Update Can be download and update this maintenance software.

You can check, download and install the latest version of Configurator software with the Start button. With the "History…" button you can see all earlier versions. **This function can works only in case of ONLINE INTERNET connection!**

Version This window shows information about the Configurator software



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Wavin Tempower

Sales & Product Guide

Wavin Tempower forms part of a comprehensive range of plastic systems to provide intelligent solution for all building & installation,civil & infrastructure projects. These include:

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- Surface Heating and Cooling
- Soil and Waste Discharge
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- Foul Water discharge
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- Cable Ducting
- Water and Gas Distribution

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