BT-DRF-02

IMPORTANT!

Before starting work the installer should carefully read this Installation & Operation Manual, and make sure all instructions contained therein are understood and observed.
- The thermostat should be mounted and maintained by specially trained personnel only. People in the course of training are only allowed to handle the product under the supervision of an experienced fitter. Subject to observation of the above terms, the manufacture shall assume the liability for the equipment as provided by legal terms.
- All instructions in this Installation & Operation manual should be observed when working with the controller. Any other application shall not comply with the regulations. The manufacturer shall not be liable in case of incompetent use of the control. Any modifications and amendments are not allowed for safety reasons.
The maintenance may be performed by service shops approved by the manufacturer only.
- The controller functionality depends on the model and equipment. This installation leaflet is part of the product and has to be obtained.
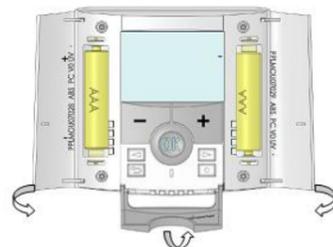
APPLICATION

- The thermostats range "BT-DRF-02" has been developed to control and manage all type of Electrical heating system or materials.
- The controllers have been designed for use in residential rooms, office spaces and industrial facilities.

Please find the Watts Vision system configuration documentation on:
http://www.wattselectronics.com

Table of content

1 Presentation

Electronic thermostat with LCD display specially designed to control different type of heating systems.
It will be your best partner to optimize your energy consumption and increase your comfort.

- Modern design with soft touch material
- Wireless Bidirectional communication 868 MHz
- Temporary override function
- Anti freeze function.
- EEPROM non volatile memory
- 2 AAA batteries
- 2 parameter menus (User and Installer)
- Humidity measurement (*)
In option
External sensor with several possibilities of regulation (Floor, combined…)
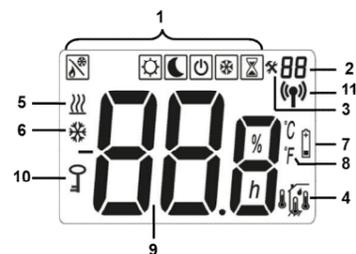
1.1 Keyboard

Minus Key **(-)** — Plus Key **(+)**
Validation Key **(OK)** — Status LED
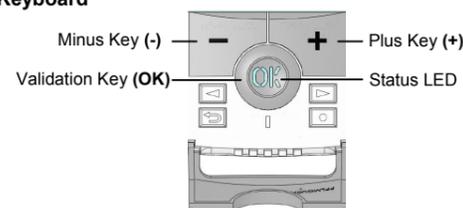
- Left Navigation key **(◄)**
- Right navigation key **(►)**
- Escape key **(➜)**
- Edition key **(●)**

1.2 LED & Display

Color of "OK" LED when backlight is lit up:
Red Fix: heating demand (**)
Green Fix: cooling demand (**)
Green flash: validation is required
Red flash: error on sensor or batteries

1. Operating mode menu (active mode is framed).
2. Parameter number if "3" is displayed.
3. Installation Parameter menu.
4. Type of used sensor and displayed temperature

Regulation => Internal sensor.

Regulation => Floor sensor (Only available with receiver)

Regulation => Internal sensor with Floor limitation.

Regulation => outside temperature measured by external sensor (connected on the back of thermostat)

Visualization of the humidity percentage (*)
5. Heating demand indication (**)
6. Cooling demand indication (**)
7. Low batteries indicator
8. °C or °F unit indicator
9. Setting or measured temperature if "4" is displayed.
Give the parameter name/value if "3" is displayed
10. Key lock indicator
11. RF indicator

2 First Installation

This section will guide you to set up your thermostat for the first time.

2.1 Batteries installation

- Open the two side's covers and insert the 2 AAA Alkaline supplied batteries (or remove the small protection sticker if the batteries are already installed in the compartment)
- Close the two side's covers.

2.2 RF installation

Please have a look at the list of all receivers compatible with this thermostat in Technical Caracteristics section.

2.2.1 With receivers

- First of all to configure your thermostat with the receiver, you must put your receiver in **RF init** mode. (refer to the receiver leaflet, only the RF receivers of the same range are compatibles)
- Press and maintain the edition key (●) during 5s, then the parameter « **INI** » must be displayed.

The thermostat will send now the radio configuration signal to the receiver.

- After few seconds, the thermostat and the receiver should exit by their self the **RF init** mode, this is the normal procedure to confirm a correct pairing.

- You can check the RF distance. Go to the room which must be regulated. Put your thermostat on the final position (On the wall or table...), then put the thermostat in Comfort mode (setting temperature position 37°C). Close the door and go to the receiver to check if the new thermostat status has received.
- Return to the thermostat and switch it off. Check on the receiver again if it's also switched off.

If the RF signals were received correctly, adjust your setting temperature as you want.
If the RF signals weren't received correctly, check the installation (Receiver position, distance...) or restart the **RF init** rules to be sure.

Remark: To make the installation easier, it will be better to have the thermostat near to the receiver during the configuration mode (a minimal distance of 1 meter must be respected).

2.2.2 Case of central (BT-CT02)
The link is done with central (BT-CT02).

2.3 Starting

The thermostat is now ready to work. Default working mode is Comfort mode

3 Working mode definition

Your thermostat has several different working modes to allow you to adjust your unit according to your life habitudes.

To change the working mode, open the small center cover to access to the navigation keys (◄) or (►). Move the frame cursor on the desired working mode and press **(OK)** to enter in the chosen operating mode.
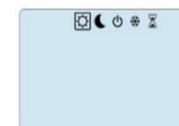
3.1 Manual mode Comfort

Manual working mode, the comfort setting temperature will be followed all the time.
By pressing **(-)** or **(+)** keys, the comfort setting temperature starts to blink and can be adjusted.
Remark: Setpoint in Comfort mode is used in Auto mode

3.2 Manual mode Reduced

Manual working mode, the reduced setting temperature will be followed all the time.
By pressing **(-)** or **(+)** keys, the reduced setting temperature starts to blink and can be adjusted.
Remarks:
- Setpoint in Reduced mode is used in Auto mode
- In cooling mode, Reduced mode acts like the OFF mode (system is stopped)

3.3 OFF mode

Use this mode if you need to switch off your installation.
Be Careful: In this mode your installation can freeze.

At any time, when display is off, press on the **(Ok)** key to display a few seconds the current temperature and time.
Remark: To exit the operating mode, use the navigation keys (◄) or (►).

3.4 Anti-freeze mode

Use this mode if you want to protect your installation against freezing.
- The anti-freeze setting temperature is fixed and can be adjusted in the parameter menu number **06 'HG'**, refer to chapter 5 (Default value 10°C).
Remark: in cooling mode, Anti-freeze mode acts like the OFF mode (installation is stopped).

3.5 Timer mode

The Timer mode allows you to adjust, the temperature for a special time. After this time, thermostat will return to older current mode.
- You can first adjust, the desired setting temperature with **(-)** or **(+)**, press **(OK)** to validate (Default value 24°C)
- In a second time, you can adjust the duration in hours "H" if below 24H, then in day "**d**" with **(-)** or **(+)**, press **(OK)** to start the function.

The logo will blink and the number of hours /days left is displayed until the end of the period.

If you want to stop the Timer function before the end, set the duration period to "**no**" with **(-)** key or use the navigation keys (◄) or (►).

3.6 Reversible mode

The reversible mode allows you to choose the working mode for your installation.
By pressing on (-) or (+) keys, the selected working mode blinks and can be modified. The user can choose:
- *Hot*: the installation operates in heating mode (winter)
- *CLd*: the installation operates in cooling mode (summer).
During this selection, the status LED will be red color if heating is selected or green color if cooling is selected.
By pressing (OK) key, you validate you selection. By pressing (◄) or (►) key or the (➜) key, you come back to the current working mode of the thermostat.

Remarks:
- This menu is only available if the parameter "21" has been set to "REv" (refer to chapter 8)
- This mode is not available if thermostat is linked with a central (BT-CT02)

3.7 AUTO mode

This mode appears when if a central is linked to your installation. In this case, the zone of the thermostat follows the program created on the Central (BT-CT02).

4 Special function

4.1 Keyboards lock Function

Use this function to prevent all change of your settings (In a child room, public area…)

- To activate the Key lock function, first maintain the escape key (➜) pressed and press simultaneously on the edition key (●).
- The "🔑" logo will be displayed on the screen.
Repeat the same procedure to unlock the key board.

4.2 Open window function

This function is able to stop heating if thermostat detects an unusual decrease of temperature (open window).
Principle:
If the displayed temperature (internal or ambient sensor) decreases by 3°C or more during a 5 minutes period (or less), the thermostat stops heating for 15 minutes. If the temperature continues decreasing, it continues to stop.
During this stop, the room temperature will blink.
Return to normal mode:
The thermostat returns automatically to normal mode after the stop period.
The function can be overridden by pressing the **(OK)** button during the stop heating phase.
The blinking temperature should stop to indicate the end of the detection.
Special cases:
- This function doesn't work if Thermostat is in Floor regulation
- This function doesn't work if Thermostat is in OFF / Antifreeze Mode
- If temperature is less than 10°C, thermostat will regulates at 10°C during the stop phase (refer to chapter 5, parameter 06)
- This function doesn't work in cooling configuration

4.3 Humidity measurement (*)

Thermostats measure the humidity in the air. This measure allows:
- To regulate the humidity in the air (refer to parameter **34** chapter 8)
- To protect your system against condensation (refer to parameter **35** chapter 8).

4.4 Visualization

With this function, you can quickly view the current temperatures of the different sensors connected to your thermostat (floor, remote, external). On the main screen, press several times on the escape key (➜). This "scroll function" is only available on the main screen:

You will see in the order of each press:
1/ the setting temperature followed by the thermostat
2/ the ambient temperature
3/ if the external sensor is connected: the outside temperature
4/ the humidity percentage (*)

Remarks :
- refer to chapter 1.2 for icon meanings
- if Parameter "**Sen**" is set on "**Air**" (refer to chapter 8), the remote sensor will be used as an external sensor.

5 Parameter's menu

Your thermostat has a parameter's menu. To enter in this menu, press and maintain the edition key (●) during 5 sec. Then parameter menu will appear and first parameter screen will be displayed

You can select a parameter which must be adjusted with navigation keys (◄) or (►). Once the parameter is chosen, toggle the value with the (OK) key, modify it with (-) or (+) and confirm your adjustment with (OK).
To leave the parameter menu, choose the parameter « End » and press (OK) or press Return key (➥).

N°	Default value & other possibilities
00	**INI: Radio configuration** Radio configuration mode for wireless communication (refer to chapter 2.2)
01	**dEG: Unit of the displayed temperatures** **°C** Celsius **°F** Fahrenheit
04	**Calibration of the internal probe** The calibration must be done after 1 day working with the same setting temperature in accordance with the following description: Put a thermometer in the room at 1.5M distance from the floor and check the real temperature in the room after 1 hour. When you enter on the calibration parameter "**no**" is displayed on the right to indicate no calibration has made. To enter the value shown on the thermometer, use the (-) or (+) keys to enter the real value. Then, press (Ok) to confirm. The message "**Yes**" should be displayed; the value will be stored in the internal memory. If you need to erase a calibration press on the escape key (➥). The old value will be erased and the message "**no**" will be displayed. *** Pay attention:** Only the heating element driven by the thermostat must be used during the complete step of the calibration.
05	**Calibration of the external wired probe** Same calibration method as described in parameter 04 above.
06	**HG: Anti-freeze temperature** <u>Default value 10°C.</u> Use the (-) or (+) keys to change the anti-freeze setting temperature. Then press (Ok) to confirm.
08	**Clr: Reset to Factory setting** Press and maintain (Ok) key during 10s to reset set point temperatures and user parameters in this menu, to factory default settings. *** Pay attention:** Ensure you that you have all necessary elements to re-setup your installation before to use this function.
09	Displayed only if the BT-DRF-02 is linked with a multizones receiver **CHA—** --: number of the linked zone
10	**Software version**
11	**End: Exit the parameter's menu** Press (OK) key to exit installation parameter menu and return to normal operation.

6 Technical characteristics

Environmental: Operating temperature: Shipping and storage temperature:	0°C - 40°C -10°C to +50°C
Electrical Protection Installation Category Pollution Degree	IP30 Class II 2
Temperature precision	0.1°C
Setting temperature range Comfort, Reduced Holiday (Antifreeze) Timer	0,5°C step 5°C to 37°C 0,5°C to 10,0°C 5°C to 37°C
Regulation characteristics	Proportional Band (PWM 2°C/10min) or Hysteresis 0.5°C
Power Supply Operating life	2 AAA LR03 1.5V Alkaline ~2 years
Sensing elements: Internal & External (option)	Internal: NTC 10kΩ at 25°C External: NTC 10kΩ at 25°C (ß = 3950)
Radio Frequency	868 MHz, <10mW.
Software version	Showed in parameter menu. **Vers xxx**
Compatible receivers	BT-M6Z02 RF BT-FR02RF BT-WR02RF / BT-WR02HC BT-PR02RF BT-CT02 Other receivers can be compatible, check on the instruction manual of your receiver
CE Directives Your product has been designed in conformity with the European Directives.	R&TTE 1999/5/EC EMC 004/108/EC RoHS 2011/65/EU
Product conformed to : Classification : Contribution :	UE 811/2013 and 2010/30/UE IV (2%)

7 Troubleshooting & Solution

My BT DRF-02 doesn't start	
Batteries Problem	- Check if the protection sticker on the batteries is removed. - Check the batteries orientation. - Check the capacity of the batteries

My BT DRF-02 Led, blinks in Red	
Problem on sensors	The logo blinks (ambient sensor) - Contact your installer or seller. The logo blinks (Floor sensor) - Check the connection of the sensor. - Disconnect the sensor, and check it with an ohmmeter (the value must be around 10kohms)
Batteries level is too less	The logo blinks (Batteries) - Replace the batteries.
Humidity measurement problem (*)	The logo blinks and the thermostat displays 'Err » - Contact your installer

My BT DRF-02 seems work correctly but the heating or the cooling doesn't work correctly	
Output	On the receiver: - Check the good reception of RF signal (refer to chapter 2.2.1) - Check the connections. - Check the power supply of the heating element. - Contact your installer.
RF communication	Check the following points : - The receiver must be put at a minimum distance of 50cm of all others electrical or wireless materials (GSM, Wi-Fi..) - The receiver shouldn't be fixed on a metallic part or too close of hydraulic pipes… (Copper…)
Sensor calibration	- Try to calibrate your thermostat (refer to user menu parameter **04**) - Contact your installer, to check & adjust the regulation parameters with your heating system.
Configuration	The logo blinks : - Cooling request is made by the central (BTCT02) but the thermostat doesn't allow (refer to parameter 21 chapter 8).
Humidity protection (*)	The logo blinks: - humidity regulation is activated (refer to parameter **34** chapter 8) - condensation is detected (refer to parameter **35** chapter 8)

8 Advanced installer's parameters menu

In order to enter in the menu, press on the escape key ➥ during 5 seconds

The following display with the first parameter appears:

- Once you entered in the menu, go to the parameter which you want change by using the keys (◄) or (►).

- Use the keys (+) or (-) to edit and modify and confirm by pushing the (OK) key.

- To leave the parameter menu, go to the parameter "**End**" and press the (OK) key.

Parameters		Installer's Advanced Menu		
N°	names	Description of the parameter	Factory value	Other possibility
20	REG	Selection of the sensor used for the regulation.	**"AIR"** Internal ambient sensor	**"amb"** External ambient sensor *Following options aren't available with all receivers:* **"FLR"** Floor sensor regulation **"FL.L"** Air regulation with floor limitation possibilities (refer to parameters 25&26)
21	MOd	Working mode selection of the thermostat	**"Hot"** Heating mode	**"Cld"** Cooling mode **"rEv"** reversible menu activation **"Aut"** Automatic mode
21 (**)	Cld	Use this option if you want to allow the zone to work in cooling mode	**"yes"** Function activated	**"no"** Function deactivated
22	🌡	View of the measured values of the internal sensor.	**"_._"** °C/°F	
23	🌡	View of the measured values of the external (Ambient) sensor.	**"_._"°C/°F**	
24	🌡	View of the measured values of the floor sensor connected to the receiver.	**"_._"°C/°F**	
25	FL.L	Lower limit of the floor temperature.	**"no"** The lower limitation is not used	From 5°C to **"FL.Hi"**
26	FL.H	Upper limit of the floor temperature.	**"no"** The upper limitation is not used	From **"FL.Lo"** to 40°C
27	tYP	Selection of regulation type.	**"bp"** Proportional band (PWM)	**"hys"** Hysteresis (On/Off)
28	UF1	Concrete choice.	**"uf1"** For liquid concrete with low thickness < 6cm	**"uf2"** For traditional concrete with thickness > 6cm
29	Bp1	Floor covering choice.	**"Bp1"** For tiling	**"Bp2"** For wood parquet (floating or not)
30	Uir	Pilot wire function for French Market application Use this option if your installation has the pilot wire installed in combination with an energy saver.	**"yes"** Function activated	**"no"** Function deactivated
31	min	Minimal value of the setting range.	**5.0°C**	From 5°C to 15.0°C
32	MAX	Maximal value of the setting range.	**37.0°C**	From 20°C to 37.0°C
33	Uin	Automatic open window detection. *(refer to chapter 4.2)*	**"yes"** Function activated	**"no"** Function deactivated
34(*)	rH	Percentage value of the humidity setting	**55%**	From 0% ("no") to 100%
35(*)	dEv	Anti-condensation function *(when condensation is detected, cooling system is stopped or/and dehumidifier is activated)*	**"yes"** Function activated	**"no"** Deactivated function
36	EEp	All parameters will be reloaded with the factory values	Press on the (OK) key during few seconds.	
37	End	To exit the installer's menu	Press on the (OK) to exit.	

(*):concerns version with humidity sensor
(**):concerns thermostat if it is linked with a central (BT-CT02) or with a BT-M6Z02 RF

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