CHACON

Model Reference : 54311

Programmable Electronic Room Thermostat

Installation and Operation Manual

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Table of content

1. Introduction

Keys

This wireless thermostat has 8 input keys: COMF/ECON, ^,v, PROG, OK, ▢, SET, and internal RESET Button.

Keys	Functions
COMF/ECON	Select Comfort, Economy or Defrost set-temp
^ and v	Adjust the desired set-temperature
PROG	Cancel program override/ select program in program setting mode
OK	Return to normal mode
▢ Button	Turn on setback function in heating system/ switch to off mode in cooling system
SET	Enter setting modes/ change program day in program setting mode
RESET	Reset the thermostat to default state. This key is located on the PCB

Reset

This wireless thermostat will be hard reset after reset button is pressed. It will be soft reset after power up.

Default of Comfort, Econ and Setback:

If System option is set to Heat:
Comfort: 21.0°C (70°F)
Econ: 19.0°C (66°F)
Setback: = Econ – 3°C (6°F) = 16.0°C (60°F)

If System option is set to Cool:
Comfort: 24.0°C (75°F)
Econ: 27°C (81°F)

Function	**Hard reset**	**Soft reset**
Operation mode	Normal mode	
Temperature scale	Depends on option switch	
Room temperature	The current room temperature	
Set-temp	Base on the current time and program	
Preset Set-temps	Default	Retrieved from EEPROM
Clock	00:00	Retrieved from EEPROM
Day	Monday	Retrieved from EEPROM
Program day	5 –2 or 7 – days depends on Program day option	
Program profile	Reset to default (Refer to 5.1.3)	Retrieved from EEPROM
Program	All days are reset to Program 1	Retrieved from EEPROM
Program override	All cleared	
System	Heat or Cool mode depends on System option	
Control mode	On – Off or PWM control depends on Control mode option	

Span	Span depends on Span option	
Low battery warning	Cleared, to be renewed within 4 seconds	
LCD backlight	Off	
Short cycle protection timer	Reset	
Power down flag	Reset	
ID code	Reset to 0	Retrieved from EEPROM
Output status	Off - An Off message is sent out	

2. Technical Characteristics

2.1. Heating system

2.1.1. Pulse Width Modulation (PWM)

This wireless thermostat offers Pulse width modulation control that enables a set point temperature to be maintained in a precise and convenient way. In the case of under floor heating, the duration of opening for the valve actuator is regulated by comparing continuously the set point temperature with the actual temperature. In this way, the room temperature can reach the set temperature with minimal temperature deviation. Subsequently, the room temperature is constantly maintained via the PWM control. In the case of the thermostat is used with radiator or convector heating system, PWM can be switched off if necessary.

2.1.2. Setback Temperature

This wireless thermostat has setback temperature function. Once the setback button is activated, the set point temperature is 3^0C or 6^0F lower than the Econ set-temp. For example, if the Econ set-temp is at 22^0C, then the setback temperature is 19^0C.

Press  button to toggle between normal set-temperature and setback function, icon  will flash and animate to indicate that the setback function is activated.

2.1.3. Frost Protection

The thermostat can be made to offer frost protection. After enable this function, the set-point temperature become 5^0C(41^0F).

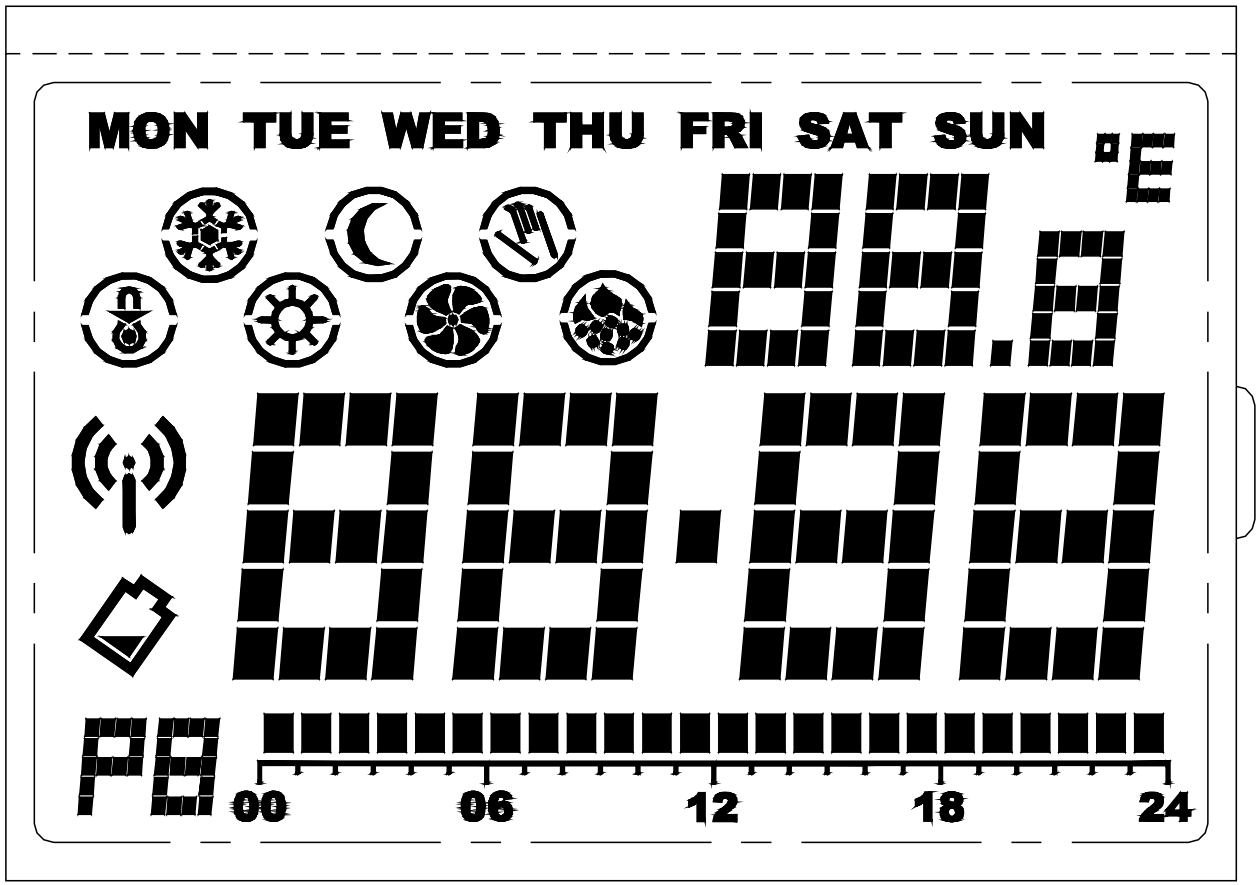
To activate the frost protection, press and hold COMF/ECON buttons for 1.5 seconds. Frost protection indicator is animating to indicate that the frost protection function is activated.

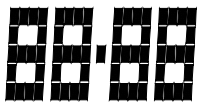
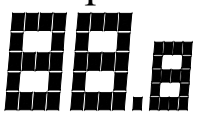
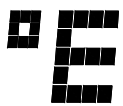
2.2 Cooling function

This wireless thermostat offers the selection of using the devise in cooling system. In this case, turning the "Heat/Cool" switch to on position to activate the Cooling. In the case of cooling, PWM is switched off automatically.

Press button to toggle between off mode and normal operation. Cool mode indicator is animating to indicate off mode is set.

3. Reference to display screen



LCD indicators	Function
Day of week indicator MON TUE WED THU FRI SAT SUN	Display day of week
Clock display 	Display clock, time and other information
Temperature display 	Displays room-temp, set-temp and other information
Temperature scale indicator 	“°C” for Celsius / “°F” for Fahrenheit
Program indicator 	Indicates that the thermostat is operating in Program mode and display the setting
Comfort indicator 	Indicates that the current set-temp is Comfort
Econ indicator 	Indicates that the current set-temp is Econ

Defrost mode indicator 	Indicates that the current set-temp is Defrost
Setback indicator 	Indicates that the current set-temp is Setback
Heat mode indicator 	Indicates the thermostat is operating in heat mode
Cool mode indicator 	Indicates operating in cool mode/ A rotating fan animate if cooling is turn on/ Outside circle and center dot flash in off mode
Program override indicator 	Indicates program is overridden
Transmit indicator 	Indicates radio signal is being transmitted
Low bat indicator 	Indicates battery is low

4. Heating/Cooling Operation

4.1. Heating operation

When the thermostat controls heating system, heating icon  will be displayed.
The heater will be turned on when the room temperature is lower than the set-point temperature, and the heating indicator is animating.
The red LED on the remote power unit will be turn on to indicate that the heating device is turned on.

4.2. Cooling operation

When the thermostat controls cooling system, cooling icon  will be displayed.
The Cooling system will be turned on when the room temperature is higher than the set-point temperature, and he cooling indicator is animating.
The red LED on the remote power unit will be turn on to indicate that the cooling device is turned on.

5. Programming

5.1. Set the time & day

1. In normal mode, press and hold SET button for 4 seconds, until LCD display “C” (Clock).
2. Release SET to enters clock setting mode, the clock freezes and the center dot does not flash.
3. Hour is flashing, press “^” or “v” button to adjust
4. Press SET to change to minute. Press “^” or “v” button to adjust
5. Press SET to change to day. Press “^” or “v” button to adjust
6. Press SET again to save and exit or it will return to the front screen after 15 seconds.

At any time press OK or wait 15 seconds will return to Normal mode.

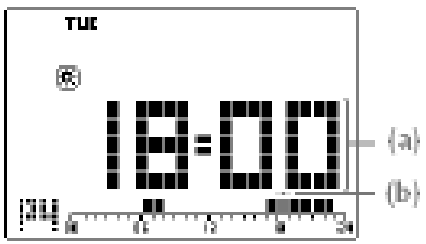
5.2. Setting program

There are altogether 9 programs.

1. In normal mode, press and hold SET button for 7 seconds, until LCD display “P” (Program).
2. Release SET to enters Program setting mode.
3. Press SET to select the day to program.

   If the Program day option is set to “5 – 2”, then the day selectable are “MON – FRI”, “SAT – SUN” and “MON – SUN”. The program data display changes accordingly.
4. Press PROG to change the program. Program is selectable form 1 to 9.

5. To edit the program, press "^" or "v" to move the cursor. The Time and temperature mode indicators change accordingly. Then, the black dot start flashing, meanwhile there is a digit displays the hour of being program.
6. Press COMF/ECON to toggle the temperature mode between Comfort and Econ. The Temperature mode indicator changes accordingly.
7. Below example shows Program 4 is assigned to Tuesday. The cursor is moved to 18:00 and at 18:00 the temperature mode is Comfort



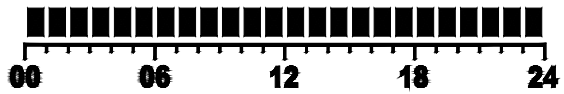
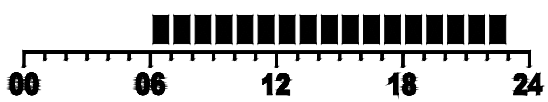
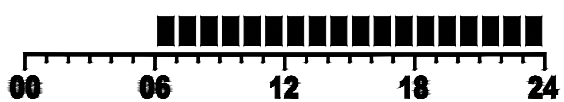
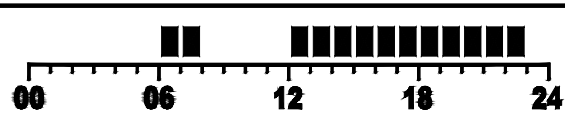
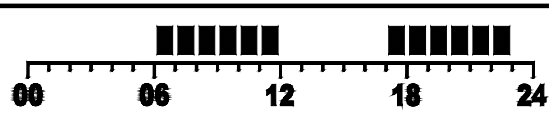
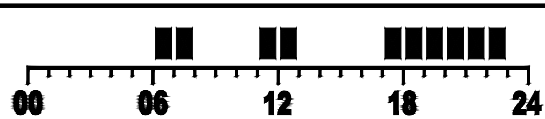
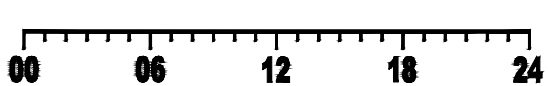
(a) Represents the hour of being program
(b) is flashing

8. For day group, program data display will be cleared if the program of the days is not the same.
9. This example shows the day group of "MON – FRI". Programs of these 5 days are not the same and the program data display are all cleared .In this display the "^", "v" and COMF/ECON keys do not response. If PROG is pressed then it will initialize the program of all the days of the group into default (Program 1).

At any time press OK or wait 15 seconds will return to Normal mode.

Note: where the black dot means the selected hour is set to comfortable mode, else economic mode is selected.

All 9 programs are predefined programs and they are user changeable, the default program profiles shown as below.

Program number	Program profile
Program 1 – “All Comfort”	
Program 2 – “Work day 1”	
Program 3 – “Work day 2”	
Program 4 – “Rest day 1”	
Program 5 – “Rest day 2”	
Program 6 – “Half day work 1”	
Program 7 – “Half day work 2”	
Program 8 – “Two periods”	
Program 9 – “All Econ”	

5.3. Review and adjust the set-temp

Comfortable mode icon is  , while Economic mode icon is  .
At the normal operation mode, the control temperature could be set.

1. Press and hold ^ or v (for less than 2 seconds) to view the current set-point temperature. The example shows Econ set-temp is 19.0^{0}C. Release the key will return to normal mode.
2. Continue to hold the key for 2 seconds until the set-point temperature flash to adjust the control temperature.
3. Press ^ or v again to increase or decrease the temperature setting.
4. Hold ^ or v button to enter fast advances adjustment.
5. Press COMF/ECON to toggle between Comfort and Econ set-temp. The Temperature mode indicator changes accordingly.
6. For heat mode, press and hold COMF/ECON for 1.5 seconds will change to Defrost set-temp. Defrost set-temp is fixed at 5.0°C/41°F and is not adjustable. The temperature display will not flash and pressing ^ or v will not change it. This is for review only.
7. For heat mode, if Setback mode has been set beforehand, press [ ] will display the setback temperature to adjust. If setback mode has not been set, the [ ] will not response. Setback set-temp is initialized to Econ set-temp minus 3°C/6°F, but once it is create it is independent to the Econ set-temp until the Setback function activates next time. Setback set-temp cannot be higher than Econ set-temp. For cool mode, press [ ] doesn't have any effect.

At any time press OK or wait 10 seconds will return to Normal mode.
Note: Control temperature can only be set in the range from 10^0C to 35^0C in step of 0.5^0C (45^0F to 95^0F, 1^0F step).
In Heat mode, the Econ set-temp cannot be set higher then that of Comfort. In Cool mode, condition vice versa.

5.4. Program override

Program override is function in Normal mode in which the program set point is temporary changed. There are 3 types of program override. Program override indicator flashing when set.

5.4.1. Temporary program override

1. Press ▲ button to toggle between normal set-temperature and setback function in heat mode, press ▲ button to toggle between normal set-temperature and off mode in cool mode.
2. Press and release COMF/ECON button (for less than 1.5 seconds) to toggle between comfortable and economic set temperature. Program override icon will be displayed and the temporary set temperature mode will be displayed accordingly.
3. Continue to hold the key for 1.5 seconds to change the set-temp to Defrost.
4. The Override indicator is flashing and Temporary program override is set.

Note: For cool mode, setback and defrost and not available, which will shows "-- -" or "--" at set-temp.

5.4.2. Timer/ Permanent override

1. In normal mode, press and hold SET button (less than 3 seconds), until LCD display “O” (Override).
2. The current set-temp and the override time is played. Override time is flashing.

If it was no override set before (program control) “00h” will be displayed and the Override indicator is cleared.

For off mode in cooling “-- -“ or “--“ will be displayed at the temperature.

If Temporary override was set before, then “-- -“ and the Override indicator will be displayed.

If Timer or Permanent override was already set then the remaining time or “9999” (Permanent override) and the Override indicator will be displayed.

Press ^ or v to set the override period.

3. Press PROG will immediately change the override time to “00h” which effectively return the thermostat to Program control.

“h” means hour and “d” means day.

“9999’ means it is Permanent override.

“-- -“ means it is Temporary override.

4. Press COMP/ECON to select Comfort or Econ set-temp.
5. Press ▭ to select Setback (Heat mode) or activate Off mode (Cool mode)
6. Press and hold COMP/ECON for 1.5 seconds to select Defrost set-temp (Heat mode only).

At any time press OK or wait 10 seconds will return to Normal mode.

6. Installation Instructions

This electronic thermostat must be installed by an authorized, qualified engineer, and only in accordance with the wiring diagram. Installation must also be in accordance with your electricity supplier's regulations. Only the power control (remote power unit) unit needs to be installed.
In order to the room temperature to be monitored accurately and regulated precisely, the remote power unit must be installed in a suitable location. The position of the remote power unit installation should be the area where it is not cover by curtains, furniture or anything. Thermostat must not be installed too closed to any heat source, such as stove, lights and direct sunlight. Also, it should not be installed in a position where it will be exposed to draught.
Important: The remote power unit must be disconnected from its power supply before it's housing is opened.

Wall mounting
The housing cover must be separated from the base plate before the controller is fitted. Follow the steps as below:

1. Remove the screw from the bottom of the housing.
2. Open the housing by pulling off its cover on the bottom side.
3. Mounting holes are located at the back housing. Mark their locations on the wall where the thermostat to be installed. Drill holes and insert the wall anchors and then screw the base plate firmly on the wall or the flush mounted socket.

7. Basic settings

Terminals

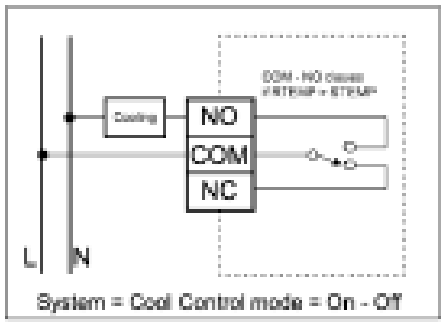
There are five terminals on the Remote Control Unit, which are used to connect to the power supply and the controlled device.

Terminal	Function
COM	Common
NO	Normal Open
NC	Normal Close

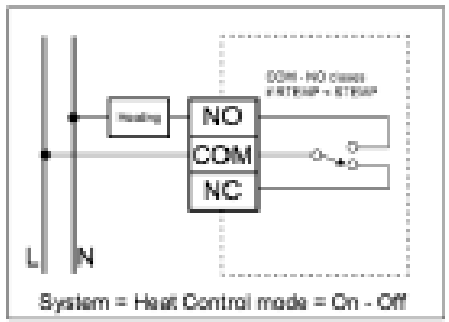
Wiring diagram

Connect the system wires to the terminals according to below wiring diagram.

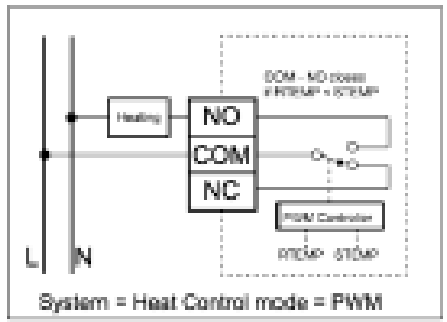
1. Connect 230VAC live to terminal “COM”.
2. Connect heater/Cool in series with terminal “NO” and 230VAC Neutral.
3. Closed the housing.



System = Cool Control mode = On - Off



System = Heat Control mode = On - Off



System = Heat Control mode = PWM

Switches

Switch	Function	OFF	On
C/H	Heat /cool system	Heat (Default)	Cool
PWM	Control mode	On-off Control (Default)	PWM Control
7D/5-2D	Programming day	5-2 days (Default)	7 days
F/C	Temperature Scale	Celsius (Default)	Fahrenheit

Switch		Control mode	
SPAN2	SPAN1	On-Off Control	PWM Control
Off (Default)	Off (Default)	0.50C/ 1oF	1.00C/ 2oF, 300seconds
Off	On	1.00C/ 2oF	2.00C/ 4oF, 300seconds
On	Off	1.50C/ 3oF	1.00C/ 2oF, 300seconds
On	On	2.00C/ 4oF	2.00C/ 4oF, 300seconds

8. Specifications

Dimensions	135(W)x105(H)x32(D)mm
Materials	Polycarbonate (PC)
Weight	300 g
Battery:	Alkaline AA 1.5V x 2
Remote power unit power supply:	~ 230V AC/ 50Hz
Remote power unit output rating:	~ 3(1) A /230V AC
Temperature control range:	10-35^{0}C
Temperature Control Span:	0.5/1/2 ^{0}C
Operating temperature:	0^{0}C - 50^{0}C
Storage temperature:	-20^{0}C - 60^{0}C