



ROOM THERMOSTAT FOR FAN-COILS
(AUTO VERSION WITH ACTUATOR)



CH130ARR

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Introduction

This fan-coil thermostat control kit CH130ARR is made up of a CH130AR thermostat and a DIN bar CH172D actuator.

The CH130AR model is a fan-coil 4- or 2-pipe thermostat that allows you to control the ambient temperature both in the heating and cooling mode. These commands are sent to a CH172D actuator connected to the CH130AR by means of a two-pole cable.

The CH130AR is powered directly by the actuator and is able to drive two valves and also control a 3-speed fan-coil motor, either in manual or automatic mode.

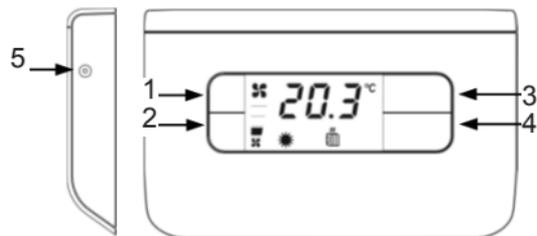
The thermostat measures the ambient temperature either through an internal probe or an external sensor. It keeps the set-point by acting on the ventilation speed.

The wide display shows the measured temperature, the fan speed, the program being run and the selected season.

The settings and data are stored in a permanent memory that will retain them even when the thermostat is not connected to the CH172D.

Controls and signals

Controls

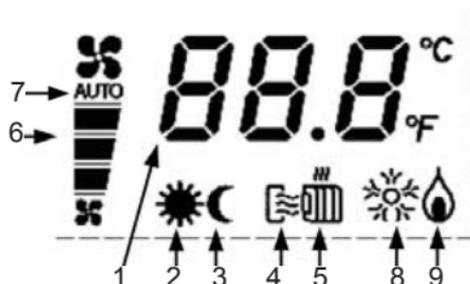


1. Fan speed increase button
2. Fan speed decrease button
3. Selected program temperature value increase button
4. Selected program temperature value decrease button
5. Thermostat reset button

Button combinations (press simultan.)

- 1+2 Summer/Winter switch
- 3+4 Comfort/Economy switch
- 2+4 Celsius/Fahrenheit switch

Signals



1. Measured temperature
2. "Comfort" symbol
3. "Economy" symbol
4. "Summer" symbol
5. "Winter" symbol
6. Fan speed symbols
7. "Automatic" symbol
8. System "ON" in summer operation
9. System "ON" in winter operation

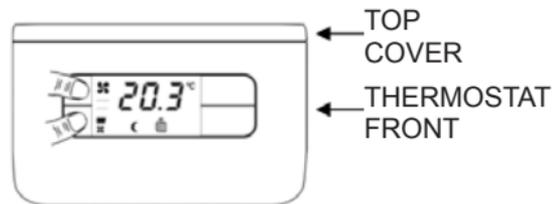
User's manual

To start the thermostat after the same has been installed, proceed as follows:

1. Select the Summer / Winter operation;
2. Select the operating mode;
3. Select the fan speed.

“Summer / Winter” selection

To switch from the “Winter” operation (i.e. heating system) to the “Summer” operation (i.e. cooling system), and vice versa, press the 1+2 button combination. The selected operation will be indicated on the display by the “Winter” or “Summer” icons.

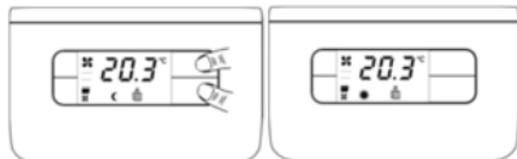


Operating modes

The CH130AR thermostat features three different manual operating modes: “Comfort”, “Economy”, and the “OFF” function (OFF).

“Comfort” operating mode

With the “Comfort” operating mode, the thermostat regulates the heating or cooling system operation in order to always keep the same comfort temperature set. To switch from “Economy” to “Comfort”, press buttons “3” and “4” simultaneously.

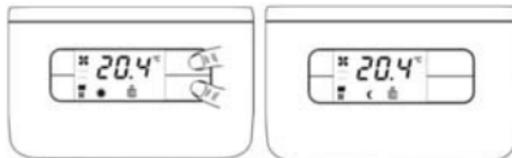


The temperature level can be modified during operation by means of buttons “3” and “4”. The temperature can be changed from 2°C to 40°C by 0.1°C steps.

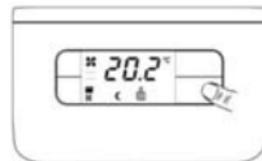


“Economy” operating mode

With the “Economy” operating mode, the thermostat regulates the heating or cooling system operation in order to always keep the same economy temperature set. To switch from “Comfort” to “Economy”, press buttons “3” and “4” simultaneously.



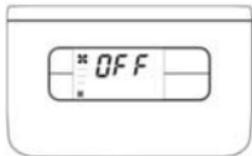
The temperature level can be modified during operation by means of buttons “3” and “4”. The temperature can be changed from 2°C to 40°C by 0.1°C steps.



“OFF” function (OFF)

The “OFF” function can be achieved by setting the fan speed to zero: in this case, the thermostat will carry out no heat regulation, not even the antifreeze one.

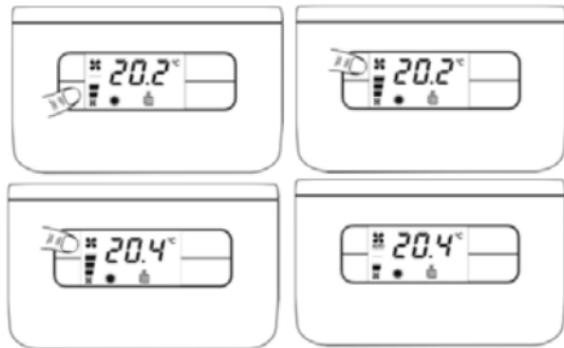
The system will switch off automatically, and the “OFF” message will appear on the display.



Fan speed selection

The fan speed can be set to three fixed levels (minimum, medium, maximum) or automatically, by pressing buttons “1” and “2”.

The “Auto” mode allows you to automatically change the fan speed depending on the ambient temperature.



Maintenance

The thermostat should be cleaned by using a soft cotton cloth. No detergent should be used.

Installation

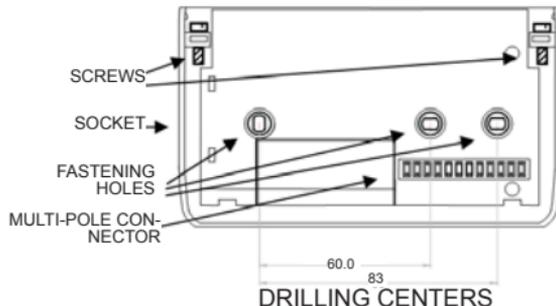
Warning! The thermostat shall be installed only by qualified personnel, in strict compliance with the law regulations in force.

The thermostat installation involves carrying out the following operations:

- Fastening the socket;
- Making the electric connections;
- Fastening the thermostat onto the socket;
- Configuring the thermostat parameters.

Fastening the socket

The thermostat is supplied complete with a socket suitable for mounting both on the wall and to rectangular or round built-in 3-seat boxes (503).



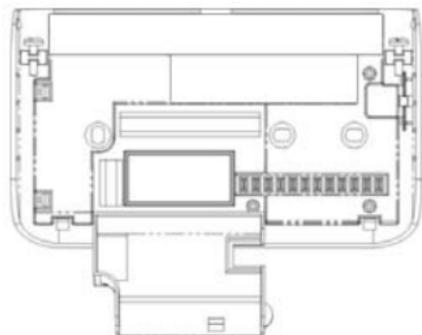
Remove the thermostat top cover.

Separate the thermostat socket and front by removing the screw by means of a suitable tool and taking the front part off.

Fasten the socket to the desired surface by means of the special fastening holes; make sure that the socket is properly engaged, with no deformation, and that the connecting multi-pole connector is located in the right bottom corner.

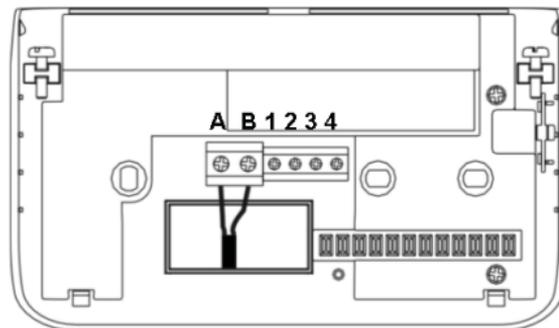
To ensure correct operation, the socket shall be placed at a height of approximately 1.5 metres from the floor, far from heat sources (direct sunlight, etc.) and doors/windows.

Electric connections



Lower the terminal protection door prior to making the connections.

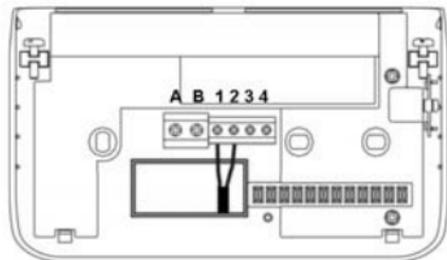
Actuator connection



Connect the power supply wires running from the CH172D actuator with terminals A and B, as illustrated in the figure.

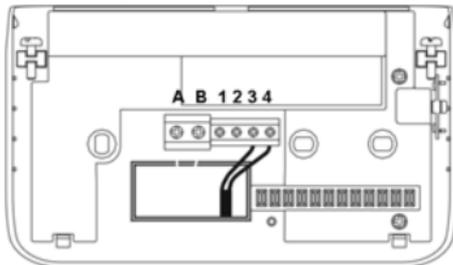
The terminals take flexible conductors having a maximum section of 2.5 mm².

Auxiliary input connection



Connect the two auxiliary input wires with screwed terminals “1” and “2”, as illustrated in the figure.

External probe connection



Connect the two external probe wires with screwed terminals “3” and “4”, as illustrated in the figure.

Fastening the thermostat onto the socket

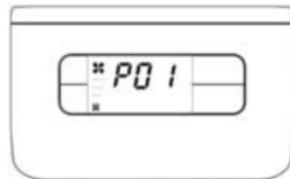
Insert and screw the thermostat down to the socket (make sure that the multi-pole connector is engaged correctly). Fit the battery top cover back into place.

Thermostat configuration

Warning! The configuration shall be performed only by qualified personnel.

The thermostat configuration allows you to customize the device operation parameters. To access the configuration program, proceed as follows:

1. Press the “Reset” button and also button 3 (with the thermostat ON).
2. Release the “Reset” button, then keep button “3” depressed for at least 3 seconds.
3. Release button “3”.



The configuration parameters are represented by an index (P01, P02...) on the display and by pressing buttons “1” and “2”, the parameter indexes will be scrolled through. Press button “3” to enter the displayed parameter.

To modify the current parameter, press buttons “1” and “2”. To exit the parameter, press button “3”. Once all parameters have been set, press button “1” until the “END” message appears, then press button “3”. Now the thermostat will save the modified parameters and will automatically exit the parameter menu.

N.B. The thermostat will send the switch-on/-off controls for the three fans and the two valves to the actuator to a fixed rate of 1 minute.

Index	Parameter	Values	Preset
P01	Type of system	1-2	1
P02	External probe	1-2-3-4-5	5
P03	Display visualization	1-2	1
P04	“Summer” valve type	1-2	2
P05	“Winter” valve type	1-2	2
P06	Auxiliary input	1-2-3	3
P07	Ambient temperature correction	-4°C – + 4°C (step 0.1°C)	0
P08	“Winter” lower limit set-point temperature	2 °C – 40°C (step 1°C)	2,0 °C
P09	“Winter” upper limit set-point temperature	2 °C – 40°C (step 1°C)	40,0 °C

Index	Parameter	Values	Preset
P10	“Summer” lower limit set-point temperature	2 °C – 40°C (step 1°C)	5,0 °C
P11	“Summer” upper limit set-point temperature	2 °C – 40°C (step 1°C)	30,0 °C
P12	Changeover lower threshold	0-24 °C	24,0 °C
P13	Changeover upper threshold	26-48 °C	48,0 °C
P14	Differential adjustment	±0.3 - ±2°C	±0.3 °C
END	Thermostat saving and reset		

P01: Type of system

1 two-tube system: the thermostat will drive only the valve (ON/OFF type) used for heating both during the heating and the cooling: in fact, the valve will control both hot water and cold water.

2 four-tube system: the thermostat will drive one valve (ON/OFF type) used for heating, plus one additional valve (ON/OFF type) used for cooling, depending on the needs of the environment.

P02: External probe

1 resumption: instead of the probe incorporated into the thermostat, an external probe can be used to read the ambient temperature and carry out heat regulation. Typically, this probe will be positioned under the fan-coil where air is sucked.

2 changeover: the external temperature probe can be placed on the fan-coil delivery tube of a 2-tube system to perform automatic changeover between the “Summer” operation and the “Winter” operation. To achieve this, you will have to set the two actuation thresholds P12 and P13. Please note that either the ambient temperature (P03 set to 1) or the set-point (P03

set to 2) will be shown on the display, yet the changeover temperature will not be shown.

3 minimum window/thermostat contact: when the contact is open, the thermostat will carry out heat regulation; when it is closed, the heat regulation will not be carried out.

4 inverted minimum window/thermostat contact: the window contact will operate with an inverted logic with respect to the statements made in previous step 3.

5 none: the external probe input will not be controlled by the thermostat.

P03: display visualization

1 ambient temperature: the ambient temperature will be shown on the display.

2 set-point: the current set point will be shown on the display.

P04: “Summer” valve type

1 normally open: in this case, the water flow is normally open and will be closed when the valve is fed.

2 normally closed: when the valve is energized, it will open the water flow.

P05: “Winter” valve type

1 normally open: in this case, the water flow is normally open and will be closed when the valve is fed.

2 normally closed: when the valve is energized, it will open the water flow.

P06: auxiliary input configuration

1 ON/OFF: in the event that several thermostats have been installed, you may decide either to drive all of them in the normal operation condition (ON) or take advantage of the OFF function (see page 5) by making use of one single control through a central point. The thermostat will be configured to OFF (OFF function) when the input is powered with 24 V (d.c. with no polarity obligation or a.c.); on the contrary, it will remain active when the input is free from voltage.

2 Summer/Winter: as with the previous case, the thermostat will be configured to “Summer” when the input is powered with 24 V (d.c. with no polarity obligation or a.c.); on the contrary, it will remain in the “Winter” mode active when the input is free from voltage.

3 none: the thermostat will carry out no operation, whatever the input status.

P07: ambient temperature correction

It can be adjusted from -4.0 to 4.0°C . This parameter is used to correct the acquired ambient temperature. As a matter of fact, the ambient temperature reading may, on some installations, not be satisfying, owing to the probe location (i.e. internal or resumption). With this parameter, a constant value upon reading can be added to or subtracted from.

P08: “Winter” lower limit set-point temperature

It can be adjusted from 2.0 to 40.0°C . It represents the lower limit for all the set-points (“Comfort” and “Economy”) in the heating mode.

P09: “Winter” upper limit set-point temperature

It can be adjusted from 2.0 to 40.0°C . It represents the upper limit for all the set-points (“Comfort” and “Economy”) in the heating mode.

P10: “Summer” lower limit set-point temperature

It can be adjusted from 2.0 to 40.0°C . It represents the lower limit for all the set-points (“Com-

fort” and “Economy”) in the cooling mode.

P11: “Summer” upper limit set-point temperature

It can be adjusted from 2.0 to 40.0°C . It represents the upper limit for all the set-points (“Comfort” and “Economy”) in the cooling mode.

P12: changeover lower threshold

It can be adjusted from 0 to 24°C . It defines the changeover function lower threshold. Below this temperature, the thermostat will be set to the cooling mode, if P02 is set to configuration 2.

P13: changeover upper threshold

It can be adjusted from 26 to 48°C . It defines the changeover function upper threshold. Above this temperature, the thermostat will be set to the heating mode, if P02 is set to configuration 2.

P14: differential adjustment

It can be set starting from $\pm 0.3^{\circ}\text{C}$ (value suitable for slow-inertia systems) to $\pm 2^{\circ}\text{C}$ (value suitable for very reactive systems).

Technical features of the thermostat

Power supply	By means of the CH172D actuator
Outputs	Actuator controls
Inputs	Auxiliary input, external probe input
Electric connections	Screwed terminals
Protection degree	IP20 (normal pollution)
Setting memorization	Non-volatile memory
Software	Class A
Temperature adjustment range	2 °C – 40 °C
Max. temperature	T45
Local signalling	LCD display
Local controls	5 buttons
Dimensions (L x H x D)	135 X 83 X 21
External temperature probe distance	10 m max.

Reference temperature gradient	4 K/h
Actuator cable max. length	100m
Conforming to the directives	2006/95/CE, 2004/108/CE, 1993/68/CE
Complying with the standards	EN60730-1, EN60730-2-9
ErP classification: ErP Class IV; 2% (EU Reg. 811/2013 - 813/2013)	

DIN bar CH172D actuator

Application and use

One single CH130AR thermostat can be connected with several actuators, so as to simultaneously control several fan-coils by using only two cables (see below).



Fastening and connecting

The unit has been designed to be built in (inside fan-coils, special panels or other suitable housings).

The unit shall be installed by qualified personnel in accordance with the EN regulations in force.

The distance between the actuator and the transmitter shall not exceed 100 m.

Connect the wires to the socket terminal block in accordance with the diagrams illustrated below.

If a two-tube system is available, connect only valve "1" (contact between terminals "C" and "V1"). In case of a four-tube system, valve "1" is dedicated to heating, whereas valve "2" (between "C" and "V2") is dedicated to cooling.

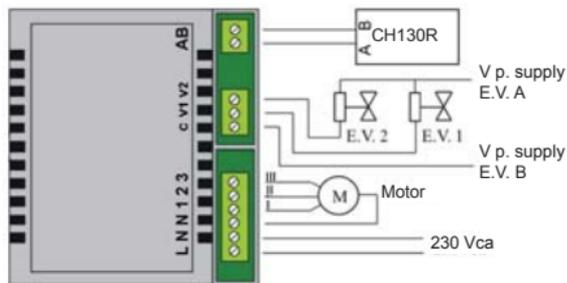
WARNING! Prior to carrying out any operation on the unit, make sure that you have disconnected the mains connecting cables.

Operation check

Refer to the specific user manual for the instruction on how to use the CH130AR thermostat.

- Make sure that the actuator is correctly connected with the thermostat.
- Power the actuator by connecting the same with the electric mains.
- Switch over, on the thermostat, the fan motor speed (3 relays) and the valve control (2 relays), then verify that they have actually switched over.

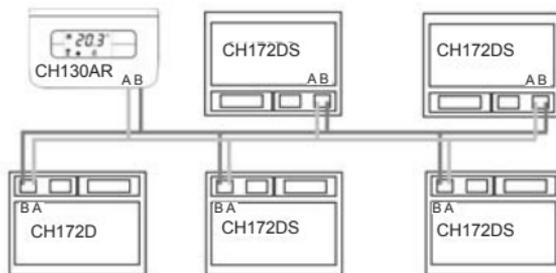
Electric connections



Connecting several actuators with a thermostat

A CH130AR is able to control up to five fan-coils at the same time, by making use of only two cables to get connected with the actuators. One of such actuators shall be a CH172D, whereas the others (four at most) shall be CH172DS.

The units shall be connected in accordance with the diagram below:



Technical features of the actuator

Power supply	230V 50 Hz
Absorbed power	2VA
Input	Thermostat controls
Relay output features	5(3)A250 V~
Voltage-free switching contacts	2 valve outputs
Network voltage switching contacts	3 motor contact outputs
Container	IP00 (pollution degree 2)
Software class	A
Max. temperature	T45
Disconnection type	1B (micro-disconnection)
Pulse voltage	4000V
Type of assembling	DIN bar
Dimensions	DIN bar 6 module container (106 x 93 x 42 mm)

Conforms with the directives	2006/95/CE, 2004/108/CE, 1993/68/CE
Complying with the standards	EN60730-1

Fantini Cosmi S.p.A. reserve the right to make any necessary technical and construction modification without any obligation to give prior notice.



DISPOSAL OF PRODUCTS

The crossed out wheeled dust bin symbol indicates that products must be collected and disposed of separately from household waste. Integrated batteries and accumulators can be disposed of with the product. They will be separated at the recycling centres. The black bar indicates that the product was placed on the market after August 13, 2005. By participating in separate collection of products and batteries, you will help to assure the proper disposal of products and batteries and thus help to prevent potential negative consequences for the environment and human health. For more detailed information about the collection and recycling programmes available in your country, please contact your local city office or the shop where you purchased the product.

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