TEMPLARI
THE HEAT PUMP

INSTRUCTION MANUAL

(Translation of the original instructions)

EN

T-FAN

FOR SAFE AND CORRECT USE, FOLLOW THESE INSTRUCTIONS.
KEEP THEM FOR FUTURE REFERENCE.

COM.MAN.019AB-01 - rev. 01 - 05/08/2025 - T-FAN

1 T-FAN DEVICE INSTALLATION

⚠ WARNING

ONLY QUALIFIED PERSONNEL MAY INSTALL THIS ELECTRICAL EQUIPMENT. DANGER OF FIRE OR ELECTRIC SHOCK!

⚠ WARNING

IT IS RECOMMENDED TO READ THE MANUAL COMPLETELY BEFORE PROCEEDING WITH INSTALLATION.

⚠ WARNING

PRESENCE OF ELECTRICAL CONNECTIONS TO HIGH VOLTAGE LINES.

Installation note

Data BUS cables must not be connected with direct branches forming Y or star connections.
Connect the braid of the bus cable at the HP output to the earth connection of the main electric board, and connect the braid of the BUS cable of each cable section in series, as shown in figure 3 and figure 4.
The connection between one peripheral device and the next must be made via “chain” connections, connecting the peripheral devices in sequence, making sure to respect the polarity of the cable as for the other peripheral devices (A white cable, B brown cable) as shown in figure 1. Make the “chain” connection using the two pairs of BUS terminals.

The BUS network must always be terminated at the ends with a 120 Ω resistor, between terminals A and B. Usually, the ends of the network consist of the heat pump and a peripheral device of the HCC system. A 120 Ω resistor must be inserted between terminals A and B on the peripheral device.
If the last peripheral device is a SS or VS fan coil card, a BUS pole pair can be used to insert the 120 Ω termination resistor between terminals A and B as in figure 2.

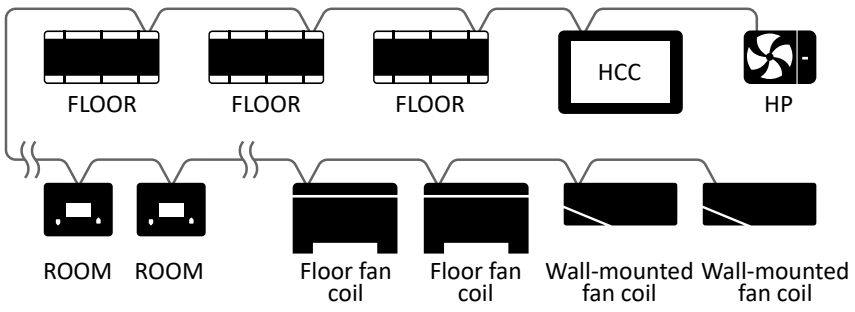


FIG. 1

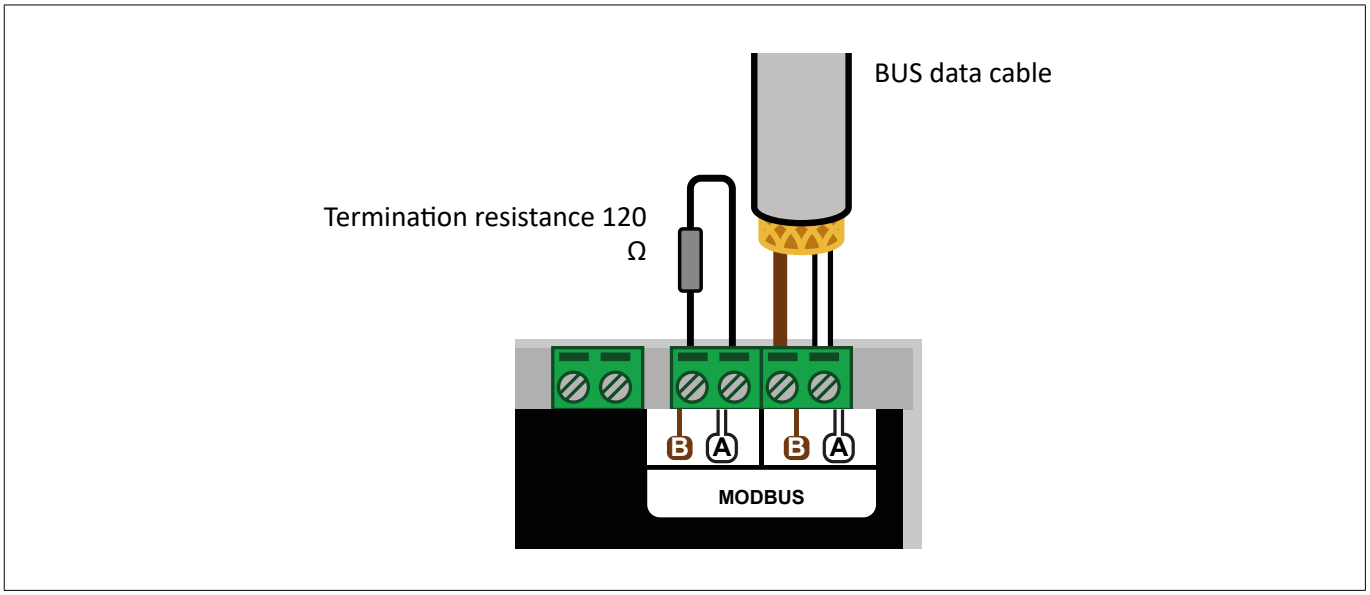

BUS data cable
Termination resistance 120
Ω
B
A
B
A
MODBUS

FIG. 2

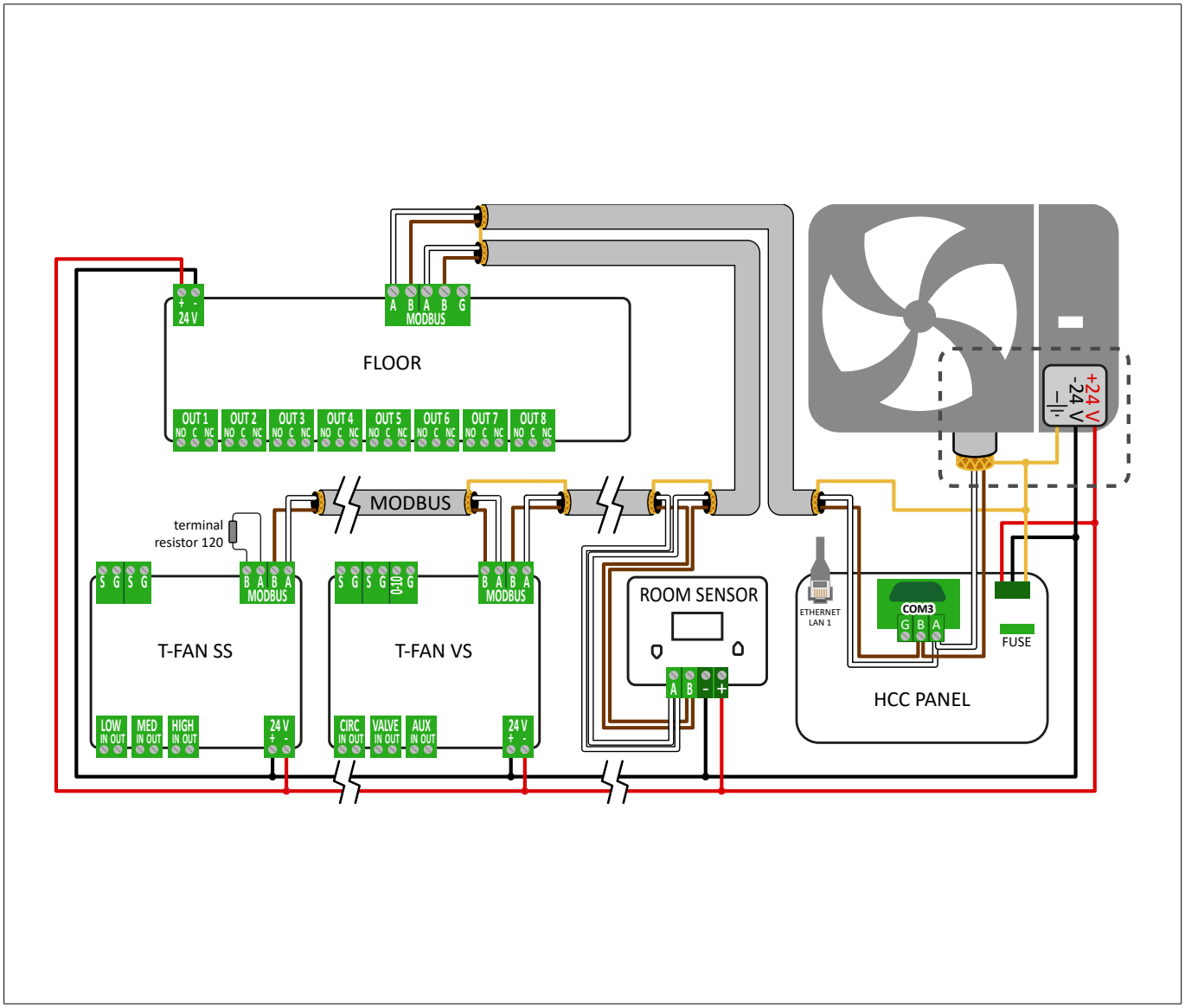

+ -
24 V
A B A B G
MODBUS
FLOOR
OUT 1 NO C NC
OUT 2 NO C NC
OUT 3 NO C NC
OUT 4 NO C NC
OUT 5 NO C NC
OUT 6 NO C NC
OUT 7 NO C NC
OUT 8 NO C NC
MODBUS
terminal
resistor 120
S G S G
B A B A
MODBUS
T-FAN SS
LOW IN OUT
MED IN OUT
HIGH IN OUT
24 V + -
S G S G 0-10
B A B A
MODBUS
T-FAN VS
CIRC IN OUT
VALVE IN OUT
AUX IN OUT
24 V + -
ROOM SENSOR
A B - +
ETHERNET LAN 1
COM3
G B A
FUSE
HCC PANEL
+24 V
-24 V

FIG. 3

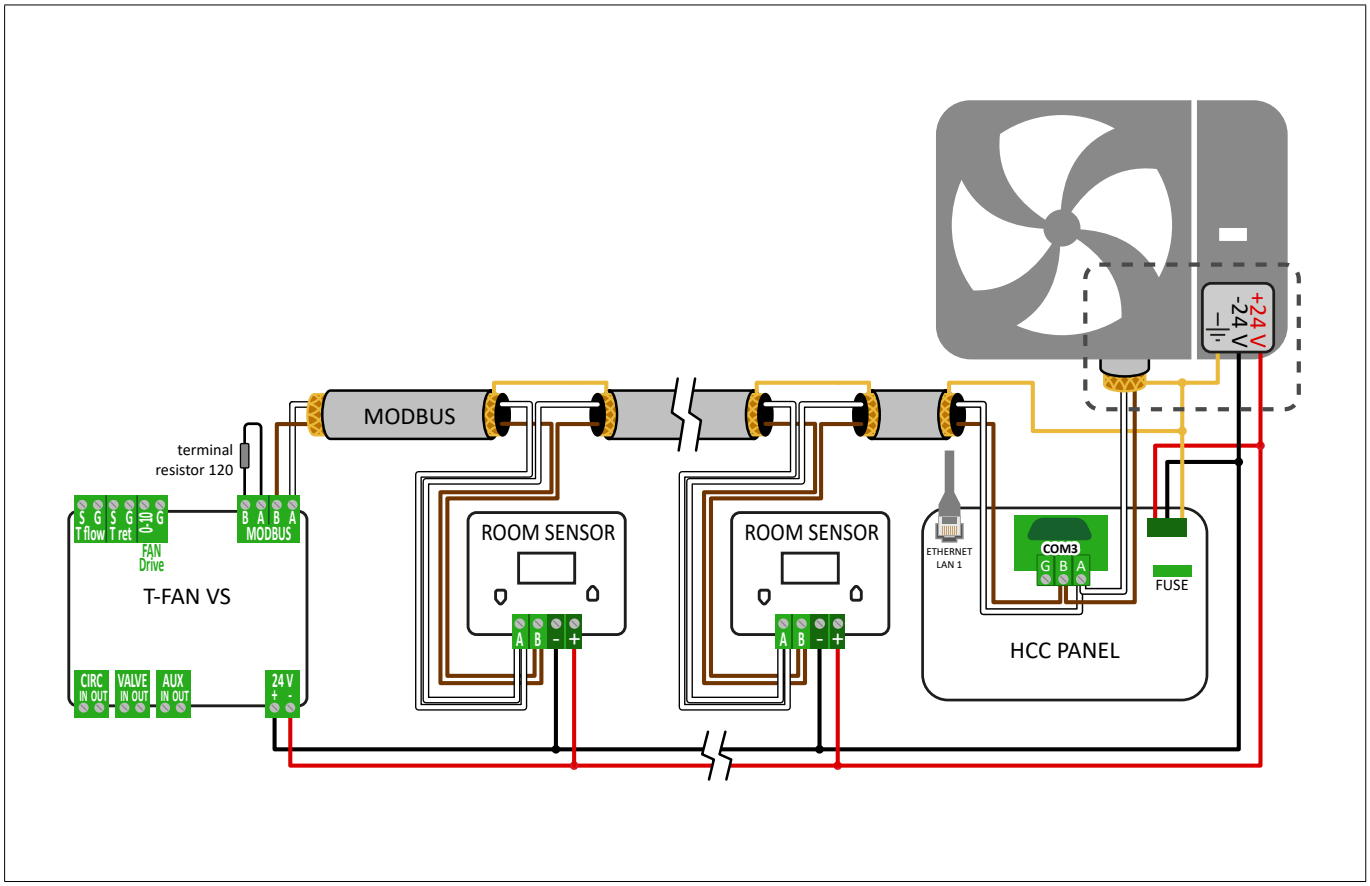
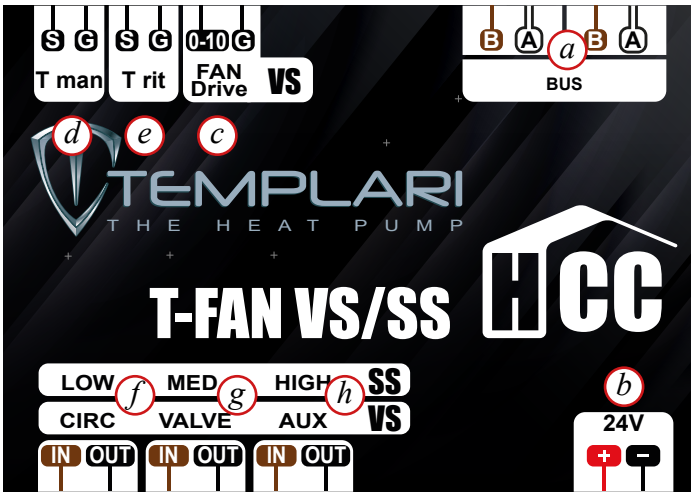


FIG. 4

1.1 VS FAN COIL (VARIABLE SPEED)

These are continuous variable speed fan coils, managed by the "T-Fan VS" electronic board, which - by communicating with the HCC system - are able to dynamically meet the heat demand of the room to which they are assigned.
The heat demand is generated by a Room or Dome sensor.

1.2 ELECTRICAL CONNECTIONS FOR "T-FAN VS"



Mandatory

a: **BUS**

A: communication BUS pole “A”, connected to pole “BMS +”. White cable by convention.

B: communication BUS pole “B”, connected to pole “BMS –”. Brown cable by convention.

b: **24 V**

+ *:* power pole +24 VDC, of the HCC power supply line.

- *:* power pole -24 VDC, of the HCC power supply line.

c: **FAN DRIVE**

0-10: control signal. Connect to pole 37 of the terminal block on the fan coil.

GND: ground signal of the control signal. Connect to pole 36 of the terminal block on the fan coil.

Optional

d: **T flow.** Flow temperature probe. NTC 10k @ 25 °C.

Pole S: flow probe signal.

Pole G: flow probe ground.

e: **T ret.** Return temperature probe. NTC 10k @ 25 °C.

Pole S: return probe signal.

Pole G: return probe ground.

f: **CIRC.** SSR control for zone circulation pump. The output is activated when the fan coil is ON

Pole IN: connect 230 VAC phase

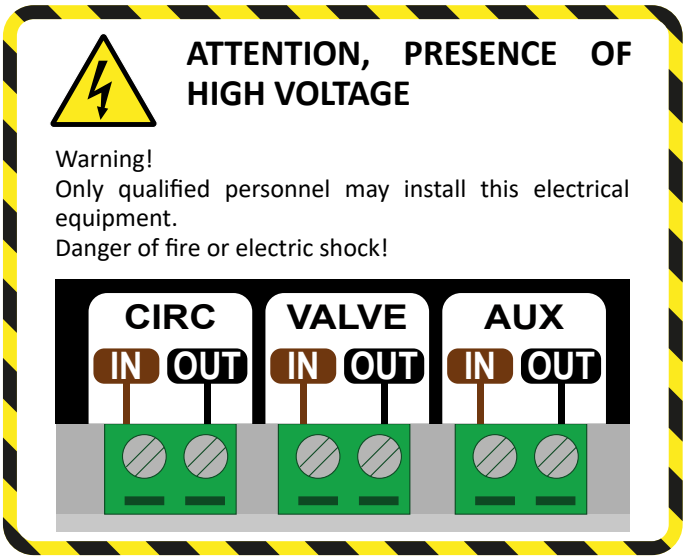
Pole OUT: controlled phase. Connect to the power pole of the zone circulation pump as shown in the circuit diagram in figure 4.

g: **VALVE:** SSR control for zone valve. The output is activated when the fan coil is ON.

Pole IN: connect 230 VAC phase.

Pole OUT: controlled phase. Connect to the power pole of the zone valve as shown in the circuit diagram in figure 5.

h: **AUX.** Auxiliary control.



1.3 VS WIRING DIAGRAM

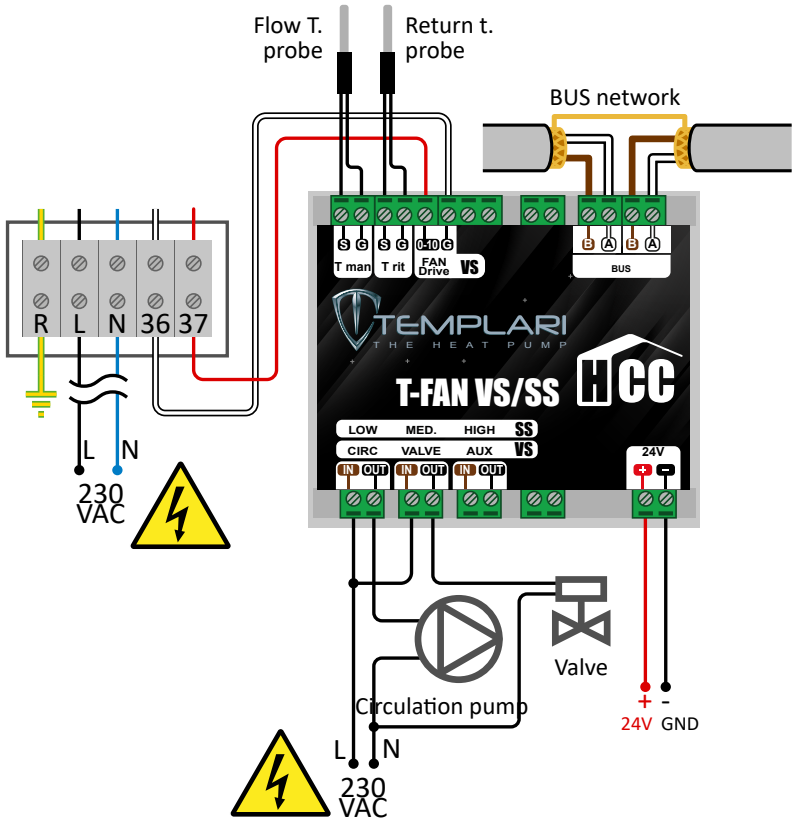
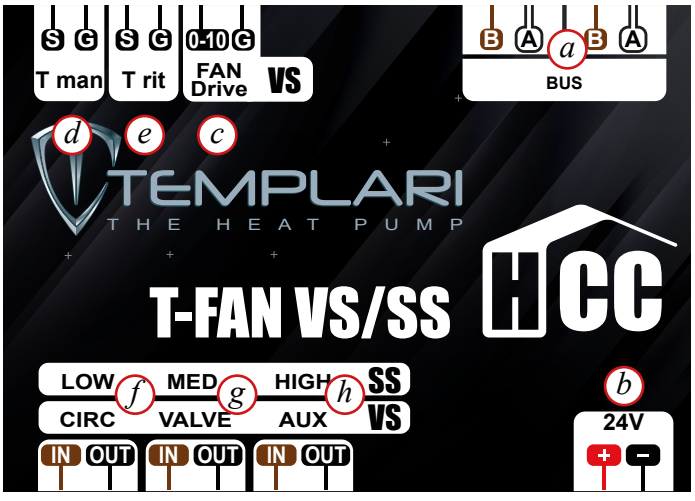


FIG. 5

1.4 SS FAN COIL (STEP - SPEED)

These are 3-speed fan coils, managed by the “T-Fan SS” electronic board, which, by communicating with the HCC system, are able to dose the volume of air necessary to keep the room demand at the setpoint, by discreetly varying the ventilation speed.
The three speeds are managed in a mutually exclusive manner. The heat demand is generated by a Room or Dome sensor.

1.5 ELECTRICAL CONNECTIONS FOR “T-FAN SS”

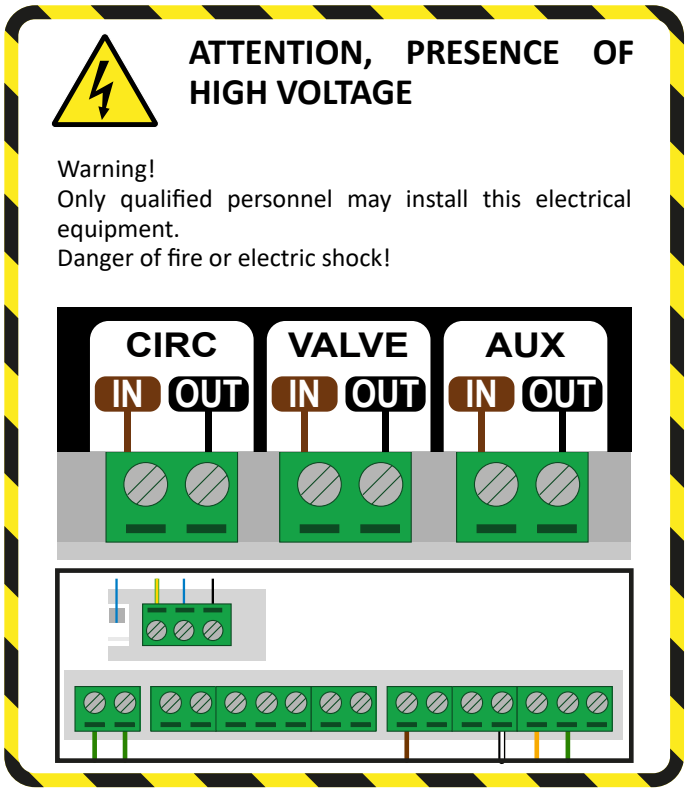


Mandatory

Ref.	
a	**BUS** **A:** communication BUS pole “A”, connected to pole “BMS +”. White cable by convention. **B:** communication BUS pole “B”, connected to pole “BMS –”. Brown cable by convention.
b	**24 V** **+ :** Power pole +24 VDC, of the HCC power supply line. **- :** Power pole -24 VDC, of the HCC power supply line.
c	**LOW** SSR control for minimum speed (speed 1). The output is activated when the fan coil is ON and the minimum speed is selected. **Pole IN:** connect 230 VAC phase. **Pole OUT:** controlled phase for MIN speed.
d	**MED** SSR control for intermediate speed (speed 2). The output is activated when the fan coil is ON and the intermediate speed is selected. **Pole IN:** connect 230 VAC phase. **Pole OUT:** controlled phase for MED speed
e	**HIGH** SSR control for maximum speed (speed 3). The output is activated when the fan coil is ON and the maximum speed is selected. **Pole IN:** connect 230 VAC phase. **Pole OUT:** controlled phase for MAX speed.

Optional

Ref.	
f	**T flow**. Flow temperature probe. NTC 10k @ 25 °C. **Pole S:** flow probe signal. **Pole G:** flow probe ground.
g	**T ret.** Return temperature probe. NTC 10k @ 25 °C. **Pole S:** return probe signal. **Pole G:** return probe ground.



1.6 SS WIRING DIAGRAM

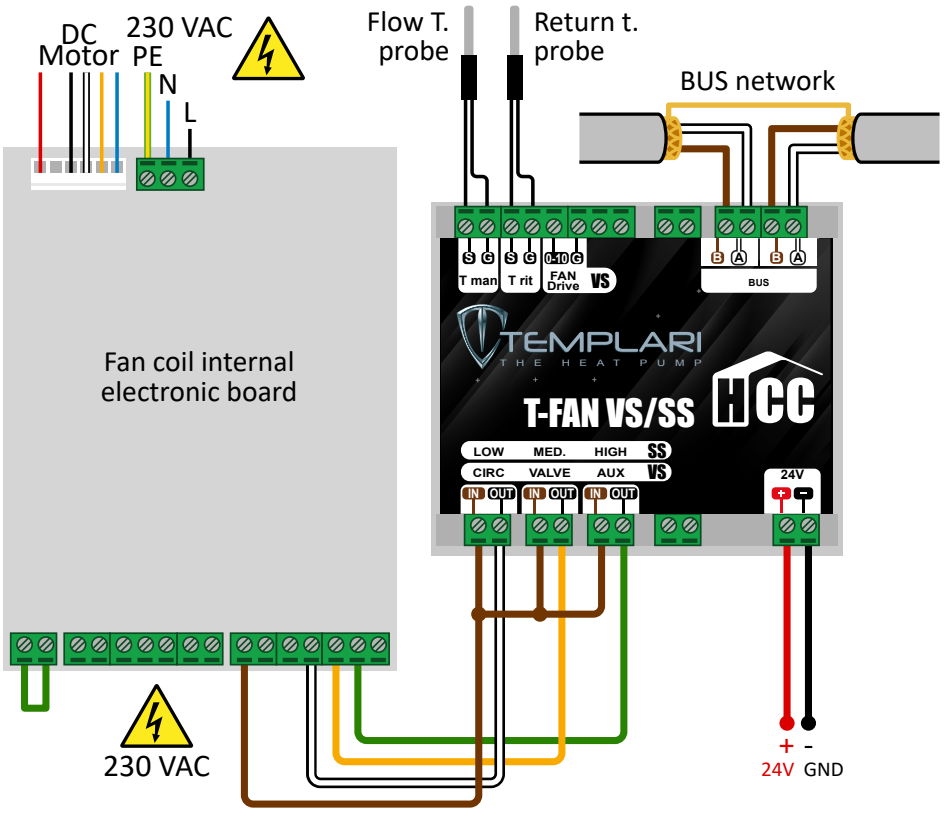


FIG. 6

2 SYSTEM CONFIGURATION

2.1 FAN COIL PERIPHERAL DEVICE ADDRESSING

The VS and SS fan coil peripheral devices are all configured by default with address 222. To use them, a new address between 20 and 31 must be assigned. Peripheral devices must be connected and addressed one at a time, otherwise they will be incorrectly addressed and the system will malfunction.
DO NOT connect several peripheral devices that are unaddressed or with address 222 to the data BUS at the same time.
For addressing see paragraph 4.3.4 Set Address of the HCC Manual.

2.2 ADDING NEW FAN COILS

To proceed with the fan coil configurations, go to the BASIC SETTINGS -> MANUFACTURER screen (figure 7).

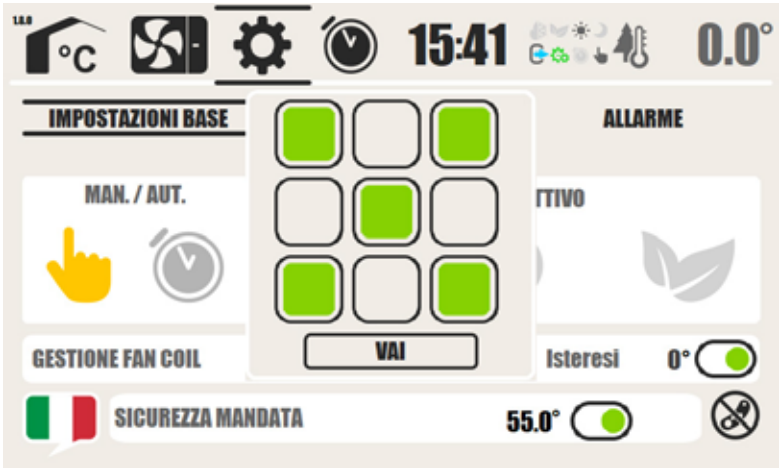


FIG. 7

Select one of the fan coils shown to the right to access the Fan Coil Installation and Configuration screen (figure 8).

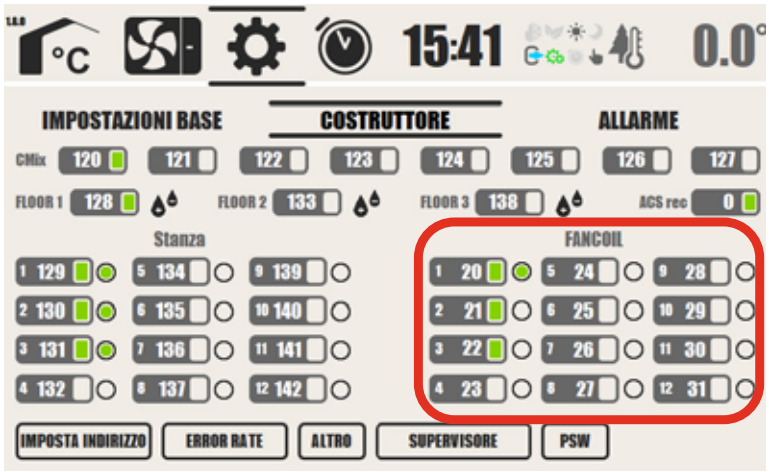
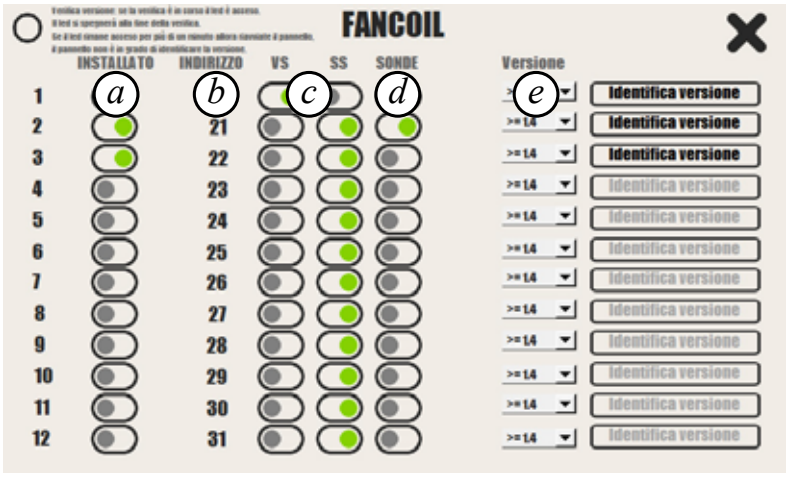


FIG. 8

2.3 FAN COIL INSTALLATION AND CONFIGURATION

Fan coils can be installed via the Fan Coil Installation and Configuration screen.



Ref.	
a	**INSTALLED.** Allows installation of the fan coil device with its address
b	**ADDRESS**. Changeable between 20 and 31, this is the address that was assigned to the peripheral device during addressing (paragraph 4.3.4 Set Address of the HCC User Manual)
c	**VS/SS**. Selector for identifying the version of the fan coil (VS or SS). Select the correct type.
d	**PROBES**. Enables the display of optional temperature, flow and return probes of the relative fan coil.
e	**Version**. The version is detected by pressing the adjacent 'Identify Version' button. If N.A. is displayed, the peripheral device was not reached or was not identified

2.4 FAN COIL ENABLING

To enable the fan coil, and therefore allow the system to use the device, go to the BASIC SETTINGS -> ADVANCED screen (figure 9).

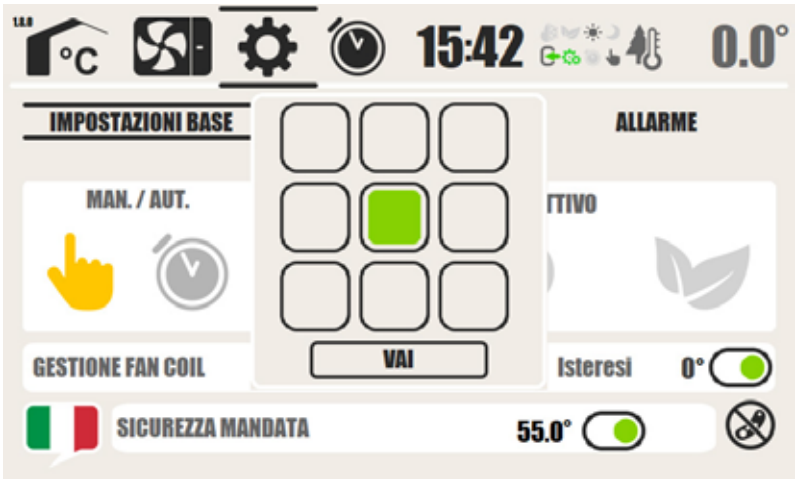


FIG. 9

Select the previously configured fan coils that you want to work with the HCC system (figure 10). If the peripheral devices are not enabled, they will not function.

FIG. 10

As a final step, it is important to go to the Basic Settings screen and select Fan Coil Management (figure 11).

FIG. 11

2.5 FAN COIL - SENSOR ASSOCIATION

Via the ROOM Sensor Settings HCC screen (see 4.3.1 of the HCC User Manual), it is possible to match the ROOM or DOME sensor with one or more previously installed and enabled fan coils (paragraph 4.3 Builder of the HCC user manual). On the following example screen, the ROOM 3 sensor is matched with fan coil 3 (figure 12).

It is possible to match multiple fan coils with one Room sensor, and it is possible to manage a single fan coil from multiple ROOM sensors. The latter case lends itself well to a ducted system, where motorised dampers will be required to independently manage the air flows of individual rooms. The dampers can be controlled by a FLOOR card that will have the task of controlling them according to the environmental demand of the various ROOM sensors.

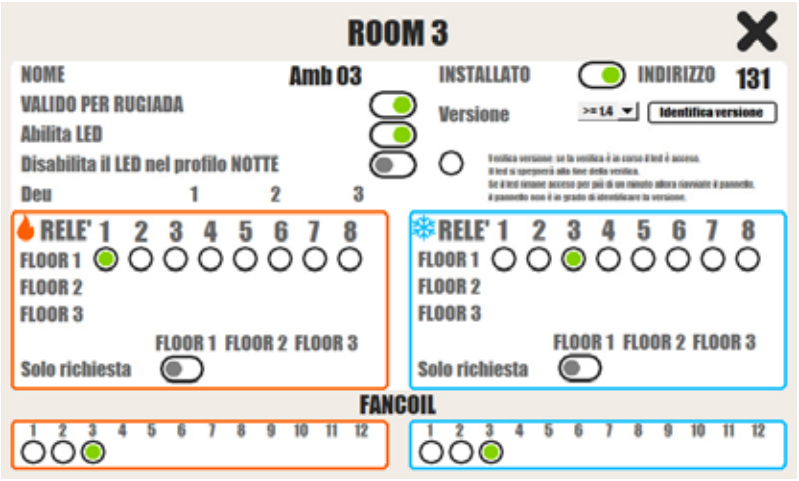


FIG. 12

2.6 OPERATION AND USAGE SETTINGS

From the Room Overview screen, it is possible to directly access the Fan Coil Overview screen by tapping the icon 

FIG. 13 *(Room Overview)*

FIG. 14 *(Fan Coil Overview)*

From the Fan Coil Overview screen, tapping on the icon of one of the fan coils opens its Basic Settings screen.

2.7 SS FAN COIL BASIC SETTINGS

Ref.	
a	Fan coil identification number or name
b	Flow temperature corresponding to the current fan coil line. The temperature is only visible if the presence of the probes was indicated on the *Fan Coil Installation and Configuration* screen.
c	Return temperature corresponding to the current fan coil line. The temperature is only visible if the presence of the probes was indicated on the *Fan Coil Installation and Configuration* screen.
d	Current fan coil ventilation speed [1~3]
e	Always ON function
f	Speed in use, Always ON mode [1~3]
g	“Speed modulation” function
h	Ventilation ranges used when the “Modulation” function is active

2.8 VS FAN COIL BASIC SETTINGS

Ref.	
a	Fan coil identification number or name
b	Flow temperature corresponding to the current fan coil line. The temperature is only visible if the presence of the probes was indicated on the *Fan Coil Installation and Configuration* screen.
c	Return temperature corresponding to the current fan coil line. The temperature is only visible if the presence of the probes was indicated on the *Fan Coil Installation and Configuration* screen.
d	Current fan coil ventilation speed [0%~100%]
e	Always ON function
f	Speed in use, Always ON mode [0%~100%]
g	“Speed modulation” function
h	Ventilation ranges used when the “Modulation” function is active

2.9 OPERATION

The room request is generated by the ROOM sensors, comparing the active Setpoint with the measured room temperature. When the ROOM sensor makes a request because the measured temperature is too far from the room setpoint, the associated fan coil will switch on to meet the current heat demand. The ventilation modes depend on the activation of the functions *Always ON and Modulation*.

Always ON function

If enabled, ventilation will always be active, allowing continuous recirculation of air in the room. The ventilation speed will be the one set by the Speed selector (2.7 *SS Fan Coil Basic Settings* point f, and 2.8 *VS fan coil basic settings* point f)

- When the room does not make a request (standby): in the standby situation, only ventilation is active. For VS models, the SSR outputs relating to the zone circulation pump and the valve are deactivated.
- When the room makes a request: if there is a room request in progress, the ventilation speed of the associated fan coil will be conditioned by whether or not the MODULATION function is enabled, which will determine the ventilation speed based on the difference between room SETPOINT and current measured temperature. If the MODULATION function is deactivated, the ventilation speed will be the one selected in the adjustment screen of the ROOM sensor relating to that fan coil (2.8 and 2.9 below). In the case of several ROOM sensors combined with the same fan coil, the ventilation speed will be the highest among the selected speeds of each ROOM sensor. If the fan coil has the MODULATION function enabled, then the speed will be determined by the sensor with the highest heat demand.

“MODULATION” function

If this function is active, the ventilation speed can vary based on the difference between the setpoint and the room temperature, called ΔTS. The speed range is set by the MIN and MAX selectors (2.7 SS Fan Coil Basic Settings, point h, and 2.8 VS Fan Coil Basic Settings, point h). The ventilation speed will increase as ΔTS increases. The parameters for adjusting the ventilation speed, based on the difference between the room temperature and the “deltaS” setpoint, are the same as those used for the “compressor control” regulation (see 3.2.2 Compressor air control regulation in the HCC Manual). If several ROOM or DOME sensors refer to the same fan coil, the highest ΔTS calculated for each room will be considered.

2.10 OPERATING SETTINGS FOR CONFIGURATION WITH ONE ROOM SENSOR AND MULTIPLE FAN COILS (1RNF)

This configuration involves the control of one or more fan coils by a single ROOM sensor. It is often used for large rooms with several fan coils, controlled by a single ROOM sensor.

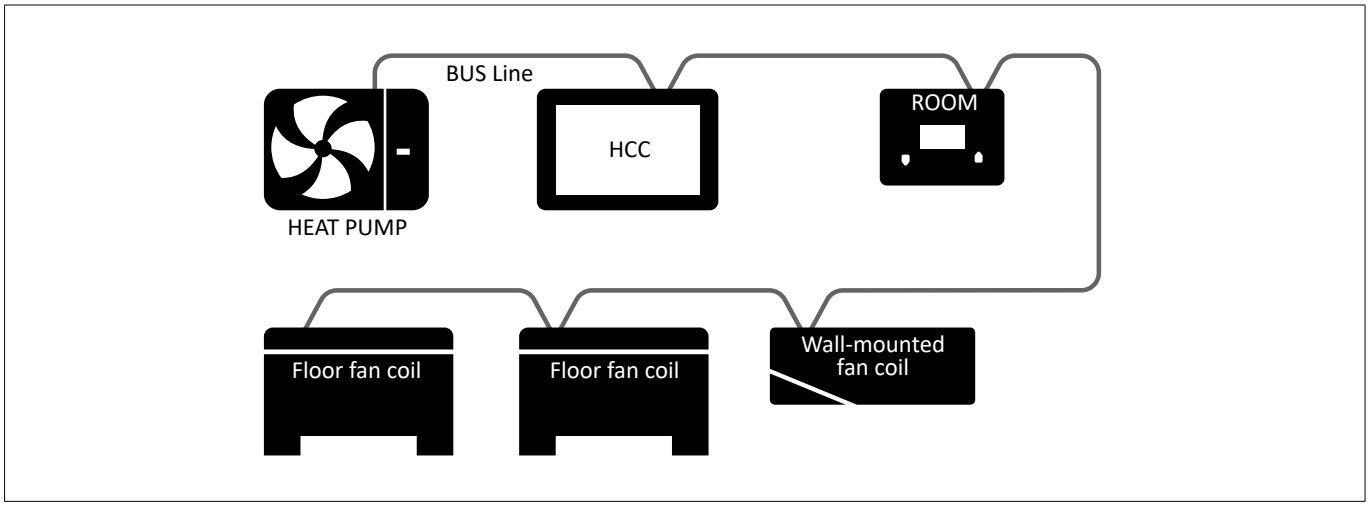


FIG. 15 *(1RNF logical diagram)*

From the overview screen related to the single ROOM sensor, it is possible to select the current operating speed of the fan coils that refer to that sensor (figure 16).

The speed selector makes it possible to select the ventilation modes: Min, Med, Max, Auto, OFF (default, AUTO). All fan coils relating to this ROOM sensor will be configured with the speed or mode selected from the screen under examination.

FIG. 16

MIN, MED, MAX, OFF speed

When the activation of a fan coil is requested in order to meet the heat demand of that room, the ventilation speed of all fan coils relating to that room will be selected. If OFF is selected, all fan coils relating to that room will be kept in the OFF state, or with minimum ventilation if the Always ON function is active

- The OFF mode does not disable the “Always ON” function of the fan coils relating to that environment.
- If “MODULATION” mode is active for a fan coil, selecting a fixed MIN, MED or MAX speed from the ROOM environment does NOT disable the “MODULATION” function.

AUTO speed

Selecting this mode activates the MODULATION function of all fan coils relating to that room. To deactivate the MODULATION function, the speed must be changed from the ROOM or DOME sensor overview screen.

Always ON function (see 2.9 Operation)

If this function is activated, on one or more fan coils, the ROOM sensor overview screen will show the relevant status icon to notify that the Always ON function has been enabled in at least one of the fan coils that refers to that room (figure 17).

FIG. 17

Modulation function (see 2.9 Operation)

This function can be activated from the ROOM sensor overview screen by selecting the AUTO speed for more than 10 seconds.
Selecting AUTO mode on the room screen will activate the MODULATION function on all fan coils relating to that room.

2.11 FUNCTION SETTINGS FOR CONFIGURATION WITH ONE FAN COIL AND N ROOM SENSORS (NR1F)

This configuration involves the control of one or more fan coils by multiple ROOM sensors. This configuration mainly concerns a ducted installation in which the different zones, each of which relating to a ROOM, manage a single central ventilation unit. The ducting of this system can be managed by a FLOOR control unit, which will have the task of managing the zone gate valves according to the demand of each individual room.

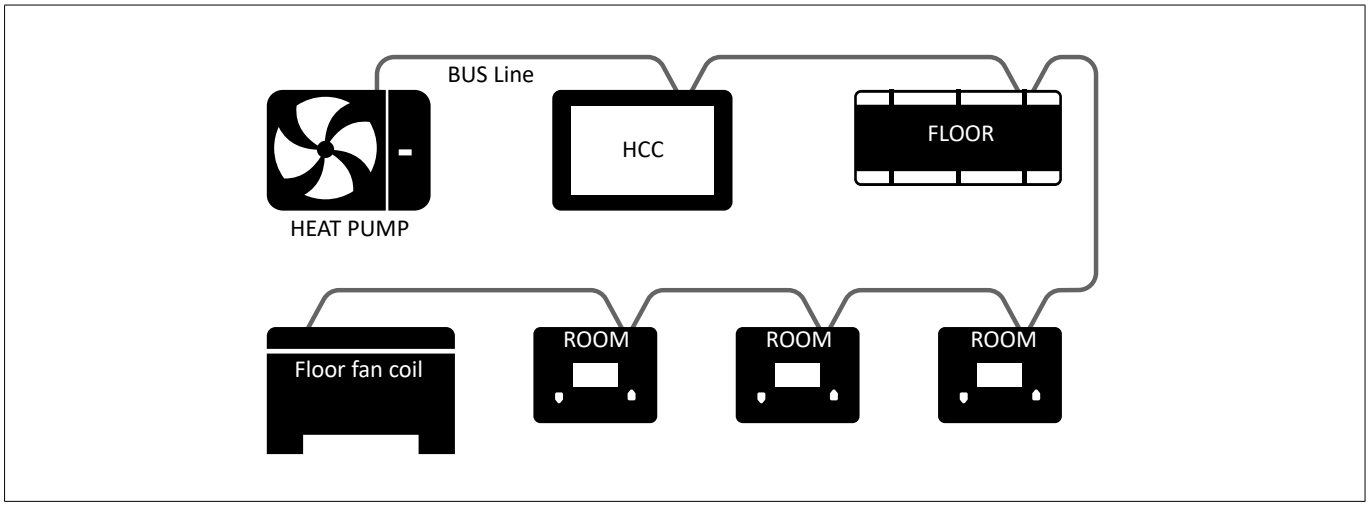


FIG. 18 *(NR1F logical diagram)*

From the screen related to each ROOM sensor it is possible to select the current operating speed of the fan coil related to those rooms, when the latter will make a heat request.

The speed selector makes it possible to select the ventilation modes: Min, Med, Max, Auto, OFF (default, AUTO).

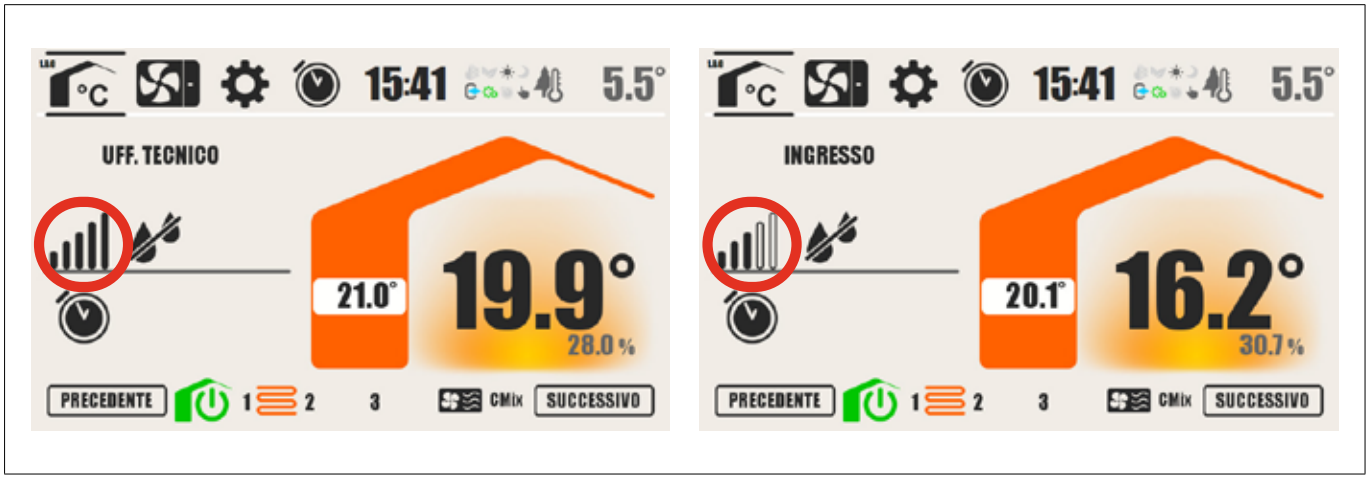


FIG. 19 *(ROOM sensor overview)*

MIN, MED, MAX, OFF speed

When the activation of a fan coil is requested in order to meet the heat demand of even only one room, the ventilation speed of the fan coil will be the one selected for the related ROOM. If there is a heat request from multiple ROOM sensors at the same time towards one fan coil, the ventilation speed of the latter will be the highest among the set/selected speeds.

If OFF mode is selected in only one room and no other room makes a heat request, the fan coil relating to that room will be kept in the OFF state, or with minimum ventilation if the Always ON function is active. If OFF mode is selected in the current room and one or more rooms make a heat request at the same time, the fan coil ventilation speed will be the highest among those set/selected by the ROOM sensors making the request.

- OFF mode in a room does not disable the “Always ON” function of the fan coil relating to that room.
- Selecting a fixed MIN, MED, MAX speed, for any of the rooms, does NOT disable the “MODULATION" function of

the fan coil relating to those rooms, if it is active. To deactivate MODULATION it will be necessary to go to the fan coil overview screen.

AUTO speed

Selecting AUTO mode allows the system to receive the requests of the various ROOM or DOME sensors relating to that fan coil, and to modulate the final ventilation speed based on the highest heat demand or MANUAL speed.

If all rooms have selected the AUTO speed, the final ventilation speed will be determined by the room with the highest heat demand (highest ΔTS).

Always ON function (see 2.9 Operation)
If this function is activated on the fan coil overview screen, the overview screen for the rooms relating to this fan coil will display the corresponding icon .

Modulation function (see 2.9 Operation)
This function can be activated both from the fan coil settings screen and from the room overview.
Selecting AUTO mode on the screen of all rooms relating to this fan coil will activate the MODULATION function of the fan coil.

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