



CADB/T-HE PRO-REG



INDEX

1. INTRODUCTION	5
2. SAFETY REGULATIONS AND "CE" MARKING	5
3. GENERAL INSTRUCTIONS	5
4. UNIT LABELLING	5
5. HANDLING	6
6. INSTALLATION.....	7
6.1. Introduction.....	7
6.1.1. Outdoor installation	11
6.2. Dimensions and free space for maintenance	12
6.3. Mounting process of an additional supply filter.....	14
6.4. Range specifications.....	14
6.5. Connections	15
6.5.1. Piping and duct connections.....	15
6.5.1.1. Connection with air duct.....	15
6.5.1.2. Connecting the water coil piping. DC Versions	15
6.5.1.3. Condensate drainage	16
6.5.2. Electrical connection	16
6.5.2.1. External Touch Display (ETD) control connection	16
6.6. Configurations	17
7. CONTROL FUNCTIONS.....	19
8. CONTROL SCHEME	20
9. REMOTE CONTROL OPERATION	21
9.1. Change language.....	21
9.2. Simplified menus / accesses.....	22
9.2.1. User level	22
9.2.2. Installer level	22
9.3. Operation modes	24
9.3.1. Constant airflow operation (CAV).....	24
9.3.2. Variable airflow operation (VAV)	27
9.3.3. Constant pressure operation (COP).....	28
9.4. Postheater control.....	32
9.4.1. Constant supply air temperature maintenance	32
9.4.2. Constant ambient temperature maintenance	32
9.4.3. Temperature set point adaptation vs. outdoor temperature.....	33
9.4.4. Automatic control mode	33
9.5. Initial temperature setpoint	33
9.6. Time programming.....	34
10. BOOST FUNCTION (ONLY AVAILABLE IN CAV AND COP MODES)	36
11. REMOTE STOP-START	37
12. FREE COOLING BY NIGHT	37
13. WATER HEATER FROST PROTECTION.....	39
14. PROTECTION OF HEAT EXCHANGER UNIT	40
15. FIRE FUNCTION (FIRE)	40
16. CONTROL OF COOLING EXTERNAL BATTERIES	41
16.1. Accessories assembly.....	42
16.2. Wiring between accessory and PRO-REG electrical board.....	45
16.2.1. Coil module BA-AF HE, BA-AFC HE, BA-DX	45
16.2.2. Filtration modules FBL-CA HE y FBL-HE	46
16.3. Control reconfiguration	47
16.3.1. Controller reconfiguration required to manage coil module BA-AF HE only as cooling coil.....	48
16.3.2. Controller reconfiguration required to manage coil module BA-AF HE as reversible coil (cooling and heating).....	49
16.3.3. Controller reconfiguration required to manage coil module BA-AFC HE in 4 pipes systems (cooling and heating).....	50
16.3.4. Controller reconfiguration required to manage DX coil module BA-DX HE (cooling and heating)	51
16.3.5. Controller reconfiguration required to manage external filter module FB-CA HE or FBL-HE.....	52

17. RESET THE CORRIGO CONTROLLER	52
18. CONTROLLER RECONFIGURATION.....	54
19. CENTRALIZED TECHNICAL CONTROL (GTC) CONNECTION	54
19.1. Bacnet TCP/IP.....	55
20. REPLACEMENT OF THE BATTERY FROM THE CORRIGO PROGRAMMABLE LOGIC CONTROLLER.....	55
21. INSPECTION, MAINTENANCE AND CLEANING	56
21.1. Replacement of filters	56
21.2. Filter installation	57
21.3. Heat exchanger.....	58
21.4. Condensation drainpipe.....	59
22. OPERATION ANOMALIES	60
22.1. General anomalies.....	60
22.2. Failure list	61
23. WIRING DIAGRAMS	63
23.1. Main unit	63
23.2. Rewiring to manage external modules (accessories).....	68

1. INTRODUCTION

Thank you for purchasing this appliance. It has been manufactured in full compliance with applicable safety regulations and EU standards.

Please read this instruction book carefully, as it contains important information for your safety during the installation, use and maintenance of this product.

Keep it at hand for future reference.

Please check that the appliance is in perfect condition when you unpack it, as all factory defects are covered by the **S&P** guarantee.

2. SAFETY REGULATIONS AND “CE” MARKING

S&P technicians are firmly committed to research and development of ever more efficient products and in compliance with current safety regulations.

The instructions and recommendations given below reflect current regulations, principally regarding safety, and therefore are based on compliance with general regulations. Therefore, we recommend all people exposed to hazards to strictly follow the safety regulations in force in your country. **S&P** will not be held liable for any possible harm or damage caused by non-compliance with the safety regulations, as well as caused by modifying the product.

The **CE** mark and the corresponding declaration of conformity are proof of the product's conformity with current EU regulations.

3. GENERAL INSTRUCTIONS

A hazard analysis of the product has been carried out as provided in the Machine Directive. This manual contains information for all personnel exposed to these hazards, with the aim of preventing possible harm or damage due to faulty handling or maintenance.

All maintenance operations (ordinary and extraordinary) must be carried out with the machine switched off and the electrical power supply disconnected.

To avoid a possible accidental start up, place a warning notice on the electrical control panel with the following text:

“Attention: control disconnected for maintenance operations”

Before connecting the power supply cable to the terminal strip, make sure the mains voltage corresponds to the voltage indicated on the specifications plate of the unit.

Regularly check the product labels. If, due to the passing of time, they are no longer legible, they must be replaced.

4. UNIT LABELLING

The machine may come with several pictograms that must not be removed. These signs are divided into:

- **Prohibition signs:** Do not repair or adjust when in operation.
- **Danger signs:** Warning of the presence of live elements inside the container bearing the sign.
- **Identification signs:** CE card, indicating product information and manufacturer's address. The CE mark indicates the product's conformity with EEC standards.



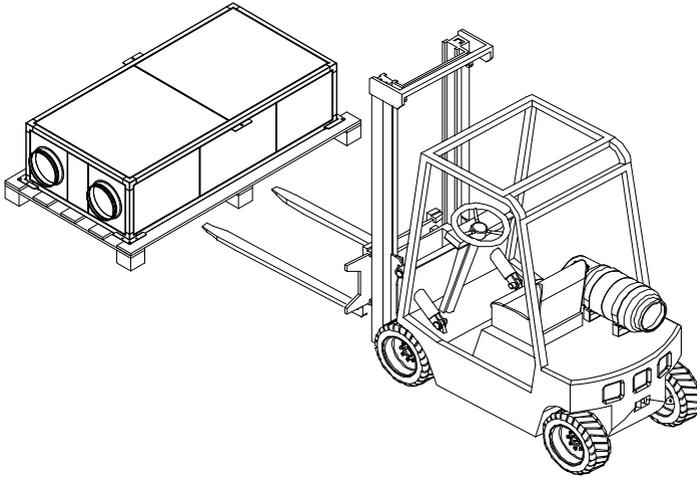
Danger signs



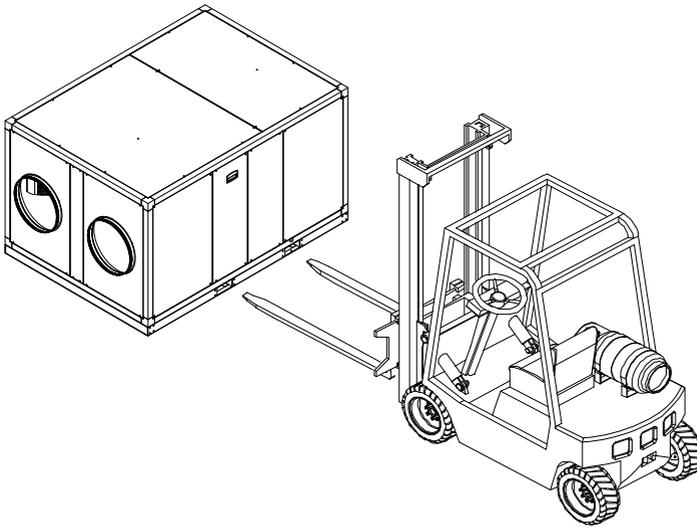
Prohibition signs

5. HANDLING

The CADB/T-HE models 04 to 33 are delivered fixed with screws to the pallets. The models 40 and 54 are equipped with a bed, due to its weight are supplied without pallets. The unit can be handled by a pallet transporter, a forklift, or a crane. The handling machines will be adapted to the load and the lifting conditions. In all cases, the lifting will be done at the device's base. The centre of gravity is located at the centre of the unit. The device must be carefully manipulated only in the horizontal position.



Models 04 to 33



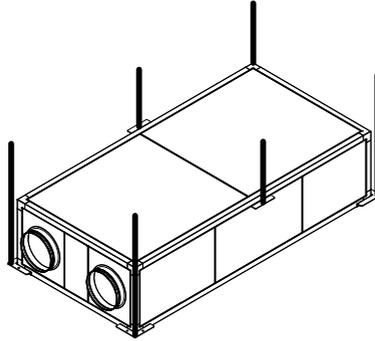
Models 40 to 54

6. INSTALLATION

6.1. INTRODUCTION

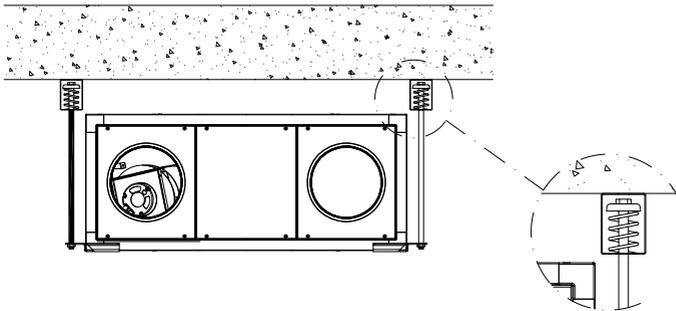
Horizontal models size 04, 08, 12, 16, 21 and 33

These models are designed to be installed hanging from the ceiling or located behind a false ceiling. The 04, 08, 12, 16, 21 and 33 models have four metal brackets, one on each lower corner. Using studded rods (\varnothing 8 mm), it can be secured to the ceiling and levelled.



The installer must make sure that the ceiling structure and the securing elements can bear the weight of the device, taking into account that it is a dynamic load.

To prevent the transmission of vibrations from the unit to the rest of the installation, it is necessary that the installer use specific isolation elements, such as antivibration devices in the supports, flexible sleeves between the unit and the ducts, and flexible couplings between the water connections and the pipelines.



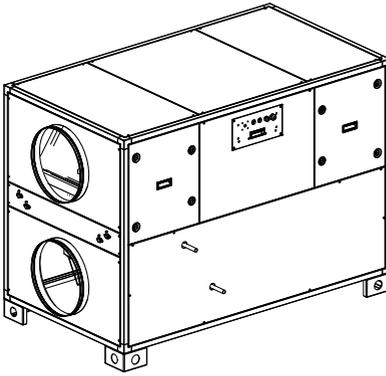
Model	Weight (kg)
4	147
8	183
12	190
16	235
21	333
33	420

Vertical models

The models size 4 to 21 are supplied with support feet, while the models size 40 and 54 are supplied with a perimetral bed. This bed must be in contact with the ground or with a fl at surface. It is essential that the weight of the equipment is distributed between all points of support to prevent unit deformation.

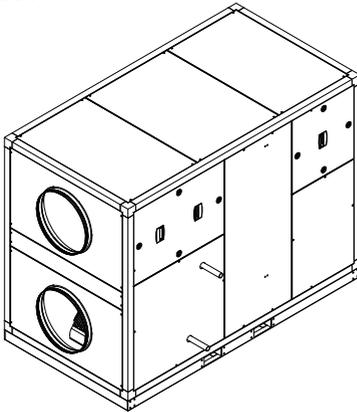
The installer must make sure that the ceiling structure and the securing elements can bear the weight of the unit, taking into account that it is a dynamic load.

Models 04 to 33



Model	Weight (kg)
4	149
8	185
12	192
16	237
21	335
33	422

Models 40 and 54



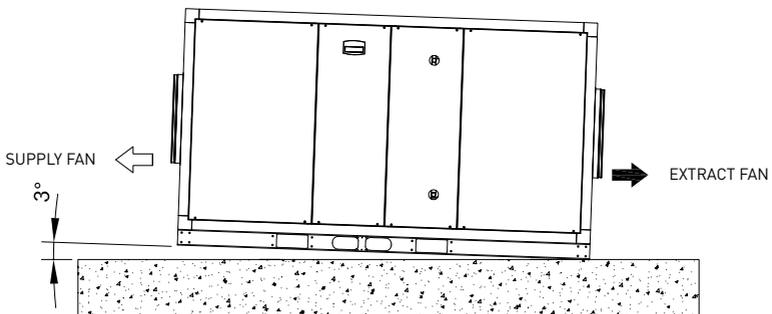
Model	Weight (kg)
40	597
54	730

Horizontal models of sizes 40 and 54

IMPORTANT!

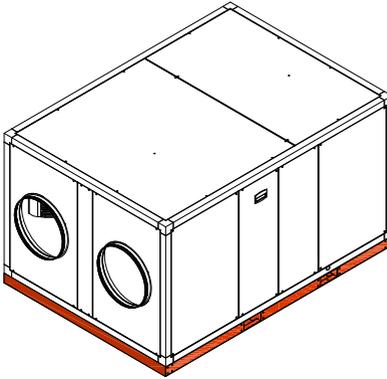
Particularities in the installation of horizontal versions LH and RH

For a correct evacuation of condensation generated into the heat exchanger, it is necessary to install the unit with a minimum slope of 3° to the side where the extraction fan is placed:



Horizontal models size 40 and 54 are supplied with a perimetral bed. This bed must be in contact with the ground or with a flat surface. It is essential that the weight of the equipment is distributed between all points of support to prevent unit deformation.

The installer must make sure that the ceiling structure and the securing elements can bear the weight of the unit, taking into account that it is a dynamic load.

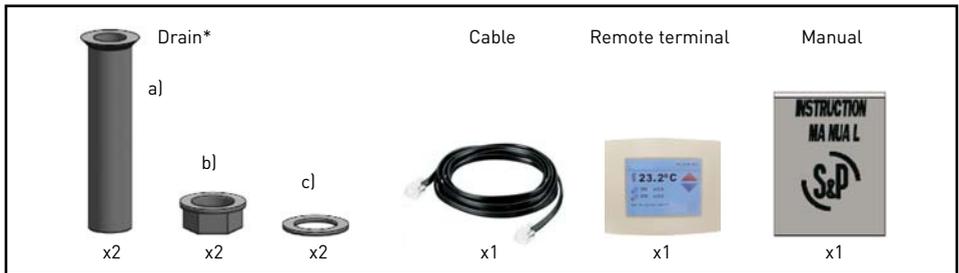


Model	Weight (kg)
40	597
54	730

For all configurations

Once secured the device in correct position, the installer have to realise the connection with air duct, connection to the electric supply, and in the case of versions with water coil, the connection with closed circuit of hot water coil.

Inside of the unit are supplied the following accessories:

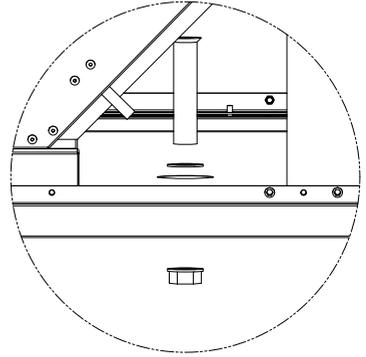
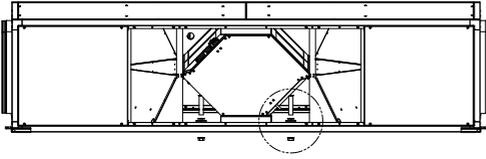


* In the models 40 and 54 the drain is installed by default in the unit.

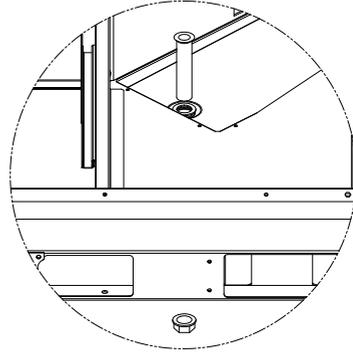
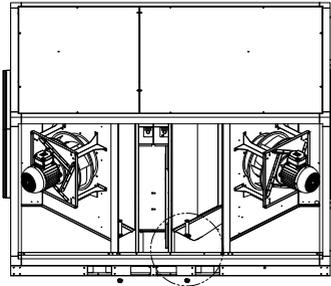
The drain is composed by 3 pieces:

- a) Drainpipe
- b) Female screw
- c) Joint ring Install the two drains as indicated in the following drawing:

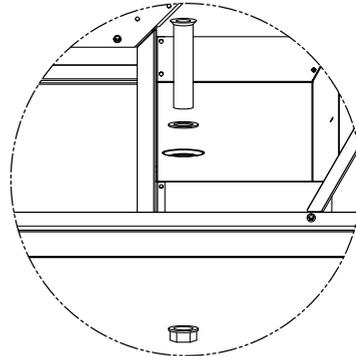
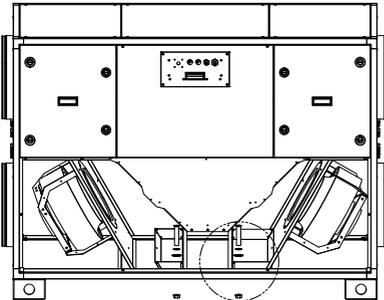
a) Horizontal versions of CADB/T HE 04 to 33



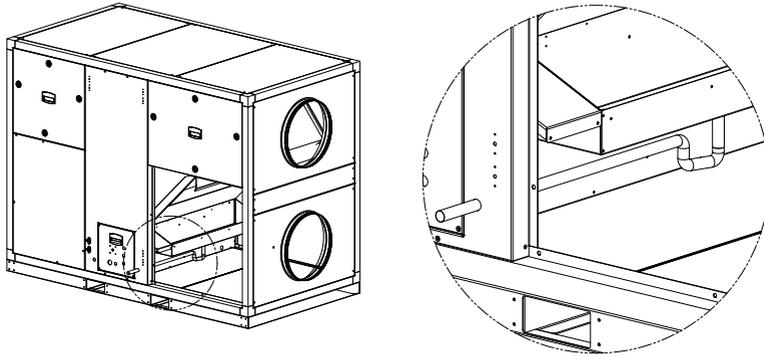
b) Horizontal versions of CADB/T HE 40 to 54



c) Vertical versions of CADB/T HE 04 to 33



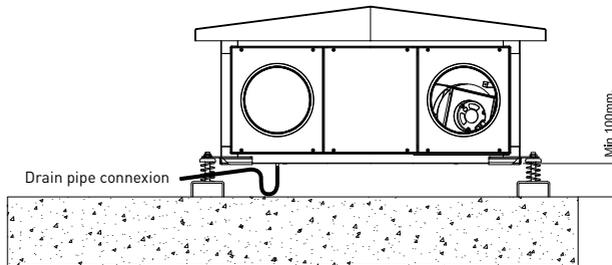
d) Vertical versions of CADB/T HE 40 to 54



In these versions, the drainpipe and the siphon are supplied mounted in the unit.

6.1.1. Outdoor installation

The CADB/T-HE PRO-REG range is designed to be mounted indoors. When it is installed outdoors, it is necessary to place the equipment under a cover which offers enough protection to prevent rain falling directly to the unit, or install the corresponding roof mounting. In horizontal version, models 04 to 33, ensure the sufficient space below the unit, to install a siphons in the drain pipe.



Rain protection canopy available, according to the heat recovery unit model:

Heat recovery unit model	Rain protection cowl model	
	Horizontal (LH / RH)	Vertical (LV / RV)
CADB-HE D/DI/DC 04	TPP-HE-H 04	TPP-HE-V 04
CADB-HE D/DI/DC 08	TPP-HE-H 08	TPP-HE-V 08
CADB-HE D/DI/DC 12	TPP-HE-H 12	TPP-HE-V 12
CADB-HE D/DI/DC 16	TPP-HE-H 16	TPP-HE-V 16
CADB/T-HE D/DI/DC 21	TPP-HE-H 21/33	TPP-HE-V 21
CADT-HE D/DI/DC 33	TPP-HE-H 21/33	TPP-HE-V 33
CADB/T-HE D/DI/DC 40	TPP-HE-H 40	TPP-HE-V 40
CADB/T-HE D/DI/DC 54	TPP-HE-H 54	TPP-HE-V 54

Avoid condensations in electrical cabinet

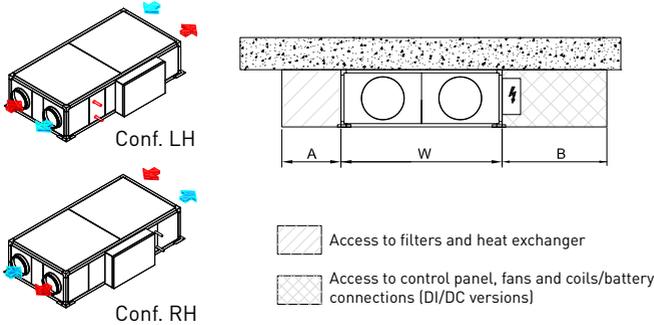
In units located in outdoor installation where the heat recovery units stop during the night or during long intervals of time, it is necessary to:

- Install isolation dampers in air inlet and air outlet.
- Add anticondensation devices in the electrical cabinet as: cabinet heating elements that prevent condensation formation on cabinet surfaces and electronic components.

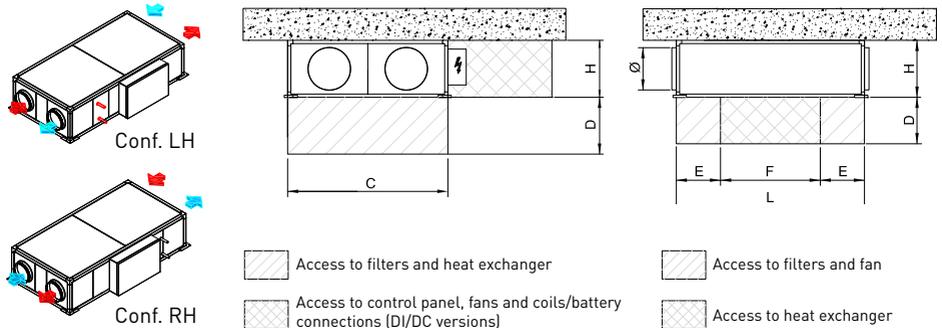
6.2. DIMENSIONS AND FREE SPACE FOR MAINTENANCE

a) Horizontal versions of CADB/T HE 04 to 21 (False ceiling installation)

Distances for maintenance in installations with access from the lateral panels

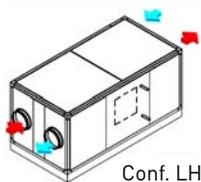


Distances for maintenance in installations with access from the inferior panels

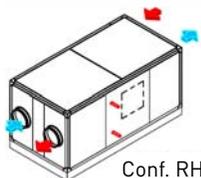


Model	W	H	L	A	B	C	D	Ø	E	F	Weight (kg)
04	760	375	1520	400	400	700	350	200	350	920	147
08	910	425	1750	450	400	860	400	250	400	950	183
12	1050	425	1700	500	400	1000	400	315	400	900	190
16	1240	450	1950	600	500	1190	425	315	400	1150	235
21	1640	550	2300	800	700	1590	525	400	500	1300	333
33	1640	650	2300	800	700	1590	625	400	500	1300	420

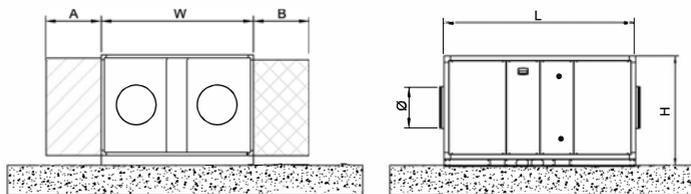
b) Horizontal versions of CADB/T HE 40 and 54 (Ground installation)



Conf. LH



Conf. RH

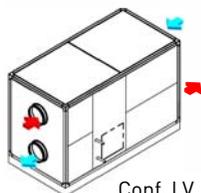


- Access to filters and heat exchanger
- Access to control panel, motors and coils/
battery connections (DI/DC versions)

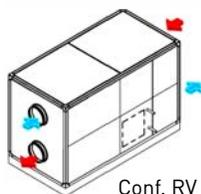
Ground installation

Model	W	H	L	A	B	Ø	Weight (kg)
40	1500	1200	2100	400	600	450	597
54	1550	1580	2250	400	750	500	730

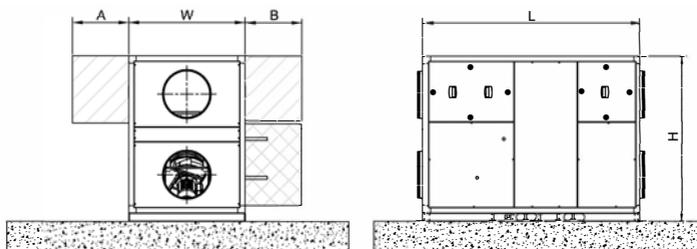
c) Vertical versions of CADB/T HE



Conf. LV



Conf. RV



- Access to filters and heat exchanger
(On-site cleaning)
- Access to control panel, motors and coils/
battery connections (DI/DC versions)

Model	W	H	L	A	B	Ø	Weight (kg)
4	540	920	1125	400	400	200	149
8	610	1020	1275	400	400	250	185
12	770	1020	1325	400	400	315	192
16	770	1070	1475	400	400	315	237
21	970	1270	1750	400	500	400	335
33	1170	1270	1750	400	500	400	412
40	1120	1580	2100	400	600	450	597
54	1500	1630	2250	400	800	500	730

6.3. MOUNTING PROCESS OF AN ADDITIONAL SUPPLY FILTER

The heat recovery unit is supplied with the filters already installed. F7 in exhaust air and M5 in supply air. In addition, it is possible to mount a second filter in the unit (accessory). (For more information see section "Replacing filters").

6.4. RANGE SPECIFICATIONS

D Models: without heater battery

Model	Complete unit						Fan		Weight (kg)
	Air connections diameter (mm)	Nominal airflow (m³/h)	Efficiency* (%)	Electrical supply	Max. abs. power (kW)	Maximum current (A)	Speed (r.p.m.)	Maximum current (A)	
CADB-HE D 04 PRO-REG	200	450	87	1/230V, 50Hz	0,2	2,2	3700	0,95	147
CADB-HE D 08 PRO-REG	250	800	86,4	1/230V, 50Hz	0,4	2,9	2650	1,3	183
CADB-HE D 12 PRO-REG	315	1.200	85,3	1/230V, 50Hz	0,95	3,5	2550	1,6	190
CADB-HE D 16 PRO-REG	315	1.600	85,5	1/230V, 50Hz	0,95	4,3	2845	2,0	235
CADB-HE D 21 PRO-REG	400	2.100	86,7	1/230V, 50Hz	0,9	4,7	1580	2,2	333
CADT-HE D 33 PRO-REG	400	3.300	85,9	3+N/400V, 50Hz	2,2	4,3	2600	2,0	420
CADB-HE D 40 PRO-REG	450	4.000	86,8	1/230V, 50Hz	2,5	15,1	2340	7,4	597
CADB-HE D 54 PRO-REG	500	5.400	87,1	1/230V, 50Hz	3,4	20,3	2110	10	730

* Humid efficiency referring to nominal airflow, outdoor conditions (-5°C / 80% RH) and indoor (20°C / 50% RH)

DC Models: with built-in hot water coil

Model	Complete unit						Fan		Hot water coil		Weight (kg)
	Air connections diameter (mm)	Nominal airflow (m³/h)	Efficiency* (%)	Electrical supply	Max. abs. power (kW)	Maximum current (A)	Speed (r.p.m.)	Maximum current (A)	Heat power T.water 80/60°C (kW)	Heat power T.water 50/45°C (kW)	
CADB-HE DC 04 PRO-REG	200	450	87,0	1/230V, 50Hz	0,2	2,2	3700	0,95	2,7	1,6	149
CADB-HE DC 08 PRO-REG	250	800	86,4	1/230V, 50Hz	0,4	2,9	2650	1,3	5,1	3,1	186
CADB-HE DC 12 PRO-REG	315	1.200	85,3	1/230V, 50Hz	0,95	3,5	2550	1,6	7,1	4,3	193
CADB-HE DC 16 PRO-REG	315	1.600	85,5	1/230V, 50Hz	0,95	4,3	2845	2,0	8,6	5,3	239
CADB-HE DC 21 PRO-REG	400	2.100	86,7	1/230V, 50Hz	0,9	4,7	1580	2,2	12,6	7,8	338
CADT-HE DC 33 PRO-REG	400	3.300	85,9	3+N/400V, 50Hz	2,2	4,3	2600	2,0	18,2	11,1	427
CADB-HE DC 40 PRO-REG	450	4.000	86,8	1/230V, 50Hz	2,5	15,1	2340	7,4	23,9	14,4	606
CADB-HE DC 54 PRO-REG	500	5.400	87,1	1/230V, 50Hz	3,4	20,3	2110	10	32,1	19,5	742

* Humid efficiency referring to nominal airflow, outdoor conditions (-5°C / 80% RH) and indoor (20°C / 50% RH)

DI Models: with built-in electric heater battery

Model	Complete unit						Fan		Electrical heater battery		Weight (kg)
	Air connections diameter (mm)	Nominal airflow (m³/h)	Efficiency* (%)	Electrical supply	Max. abs. power (kW)	Maximum current (A)	Speed (r.p.m.)	Maximum current (A)	Power (kW)	Maximum current (A)	
CADB-HE DI 04 PRO-REG	200	450	87,0	1/230V, 50Hz	1,2	6,7	3700	0,95	1	4,5	148
CADB-HE DI 08 PRO-REG	250	800	86,4	1/230V, 50Hz	2,4	12,0	2650	1,3	2	9,1	185
CADB-HE DI 12 PRO-REG	315	1.200	85,3	1/230V, 50Hz	4,0	14,9	2550	1,6	3	11,4	192
CADB-HE DI 16 PRO-REG	315	1.600	85,5	1/230V, 50Hz	4,5	20,2	2845	2,0	3,5	15,9	237
CADB-HE DI 21 PRO-REG	400	2.100	86,7	3+N/400V, 50Hz	6,9	13,8	1580	2,2	6	9,11	336
CADT-HE DI 33 PRO-REG	400	3.300	85,9	3+N/400V, 50Hz	9,7	15,7	2600	2,0	7,5	11,4	424
CADB-HE DI 40 PRO-REG	450	4.000	86,8	3+N/400V, 50Hz	11,5	28,8	2340	7,4	9	13,7	602
CADB-HE DI 54 PRO-REG	500	5.400	87,1	3+N/400V, 50Hz	15,4	38,5	2110	10	12	18,2	737

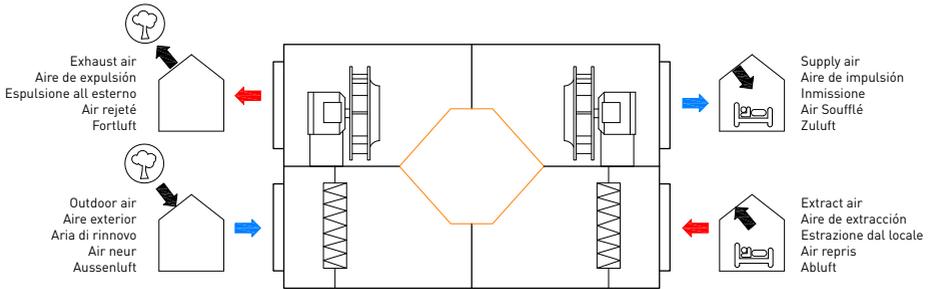
* Humid efficiency referring to nominal airflow, outdoor conditions (-5°C / 80% RH) and indoor (20°C / 50% RH)

6.5. CONNECTIONS

6.5.1. Piping and duct connections

6.5.1.1. Connection with air duct

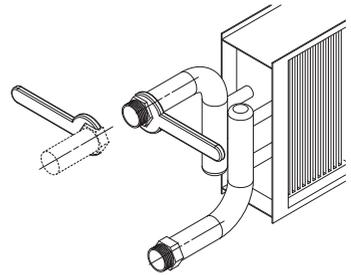
The fans are always blowing out with regard to the machine. Before making the connection of air lines, verify existing identification labels in each mouth of the heat recovery units.



6.5.1.2. Connecting the water coil piping. DC Versions

Connecting the unit to the water network

- Maximum pressure: 10 bar
- Maximum temperature: 100°C
- Minimum temperature: -20°C (with the addition of the corresponding antifreeze).
- Water coils of DC versions have threaded connections. Secure the coil manifold with the appropriate tool when tightening the threads. This will prevent the force from being transmitted to the manifold, which can damage it.



- The following table indicate the size and type of thread used on water coils for DC versions:

CADB/T-HE MODEL	THREAD
04, 08, 16, 21 and 33	1/2"
40 and 54	1"

- To ensure the installation on a hand, it is essential that the installation includes the following elements:
 - Unit intake pre-filter that traps suspended particulate matter.
 - Bleed valves should be fitted at each of the high points in the installation.
 - Auto-filter valve to keep water in the hydraulic system at all times.
 - Pressure to detect the lack of water pressure.
 - Shut-off valves must be installed at each connection on the water line to allow the unit to be isolated if necessary (to clean filters, make repairs, replace parts, etc) and avoid the need to completely drain the water circuit.
 - Anti-vibration bellows should be installed at the inlet and outlet from the unit to prevent the transmission of vibrations that could result in damage to the heat exchanger coil due to excess stress on the circuits.

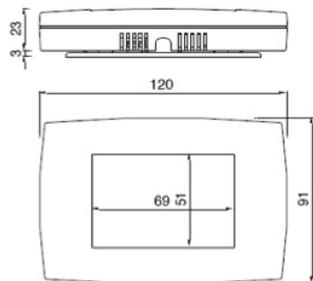
Once the installation is performed check that the heating water flow is adequate.

The ETD control has an electrical protection IP-20 degree, so it is valid; it is reserved exclusively for an indoor usage sheltered from moisture.

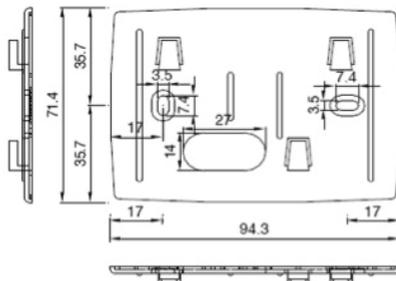
It is equipped with an internal temperature probe.

In case of an outdoor mounting of the CADB/T-HE unit OI, you can also leave it inside the housing of the electrical box. Once the parameter setting is done, the remote control can be disconnected.

Placement of the support and the remote control:



ETD remote control



Fixation support

6.6. CONFIGURATIONS

CADB/T-HE D/DI/DC PRO-REG standard configuration

From these configurations there are multiple variables that can be performed by the professional installer quickly and easily.

Panel replacement process



The CADB-HE heat recovery units are available in two configurations LH and RH in the horizontal models and LV, RV in vertical models.

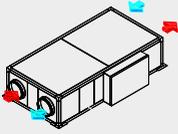
EXHAUST AIR

FRESH AIR

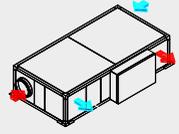
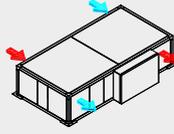
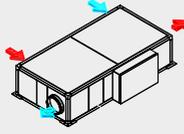
Horizontal

Factory configuration

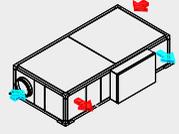
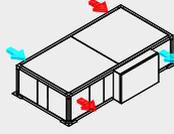
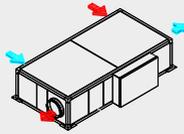
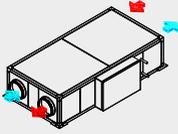
LH



Examples of some of the configurations that is possible to obtain from factory configuration



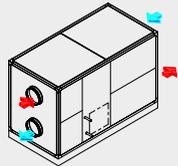
RH



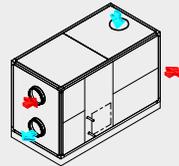
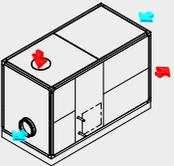
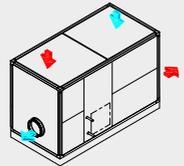
Vertical

Factory configuration

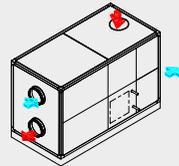
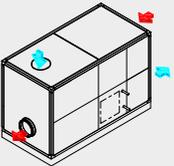
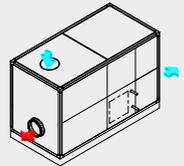
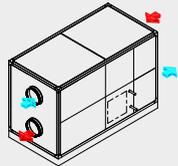
LV



Examples of some of the configurations that is possible to obtain from factory configuration



RV



7. CONTROL FUNCTIONS

MAIN ELEMENTS

Control panel includes:

General switch

Electric box including control and wiring components, with access from side panel.

FUNCTIONS

Airflow adjustments

Manual airflow adjustment, adjustable at any point of the fan curve.

Automatic airflow adjustment, according to time band (Through a timer, included in the controller)

Automatic airflow adjustment in VAV mode, according to external signal 0-10V (CO₂ accessory)

Automatic speed adjustment of the fans in Constant Arflow mode (Increase of fan speed on the basis of pollution of filters)

Automatic speed adjustment of the fans in Constant Pressure mode (Increase of fan speed when pressure in the duct system decreases)

BOOST function (Forced speed preset via external power free contact)

ON/OFF function (Remote ON/OFF via external power free contact)

Temperature regulation

Temperature probes integrated within the unit (supply, extract, inlet and outlet)

Anti-frost probe water coil (DC-Versions)

Thermal power regulation of hot water coil

Modulating 3 points control of water valve (accessory)

Regulation of water coil thermal power. 0-10V control of the water valve (accessory).

Regulation of electric heater battery thermal power in DI versions. Proportional control via SSR.

Bypass adjustments

Manual actuation of bypass

Automatic actuation of bypass function free-cooling/ free-heating and heat exchanger anti-freezing protection

Night free-cooling mode (Cooling of the building at night)

SECURITY FUNCTIONS

Control of polluted filters via pressure switches (included)

Alarm display in remote control

Detailed information of alarms

Failure in temperature probes

Failure in fan via pressure switches (included)

Fire alarm indication, via activation by external contact coming from fire switchboard.

Anti-frost protection of heat exchanger via bypass activation.

COMMUNICATION

Remote wiring control

ON/OFF remote digital input via external power free contact.

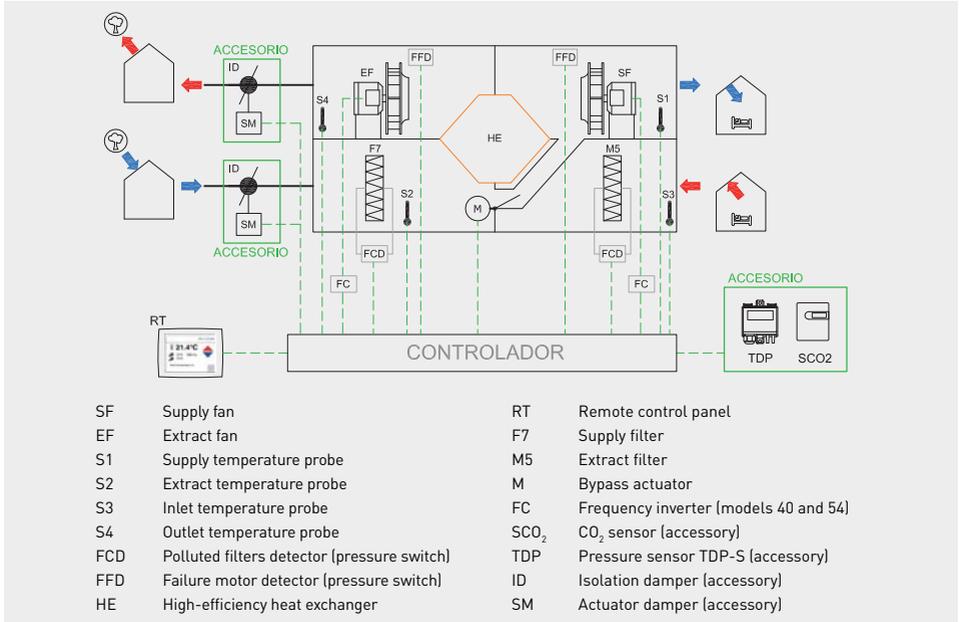
Alarm digital output via power free contact.

Modbus RTU (RS-485)

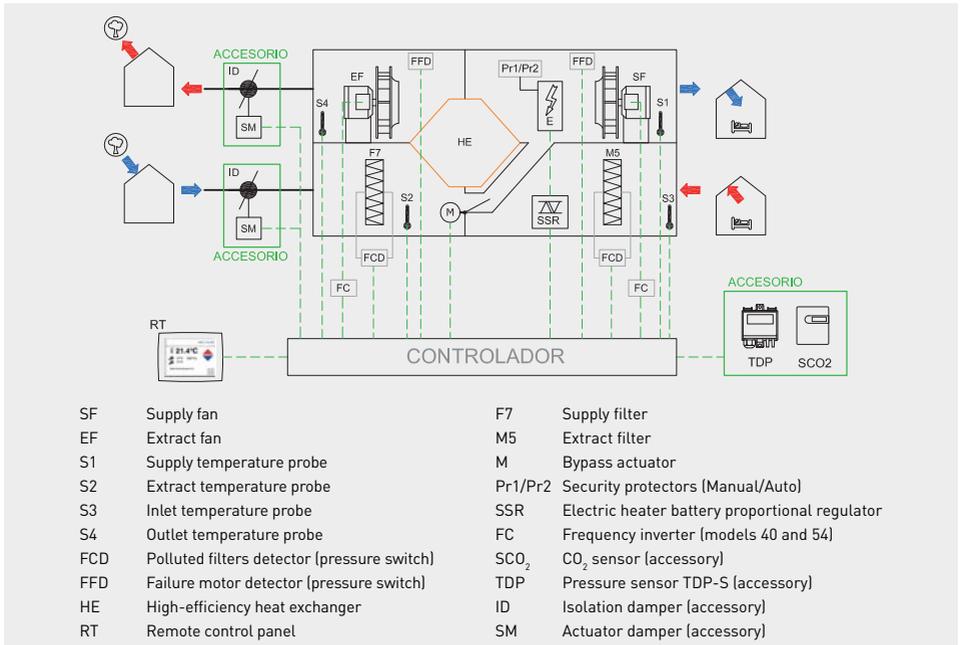
Bacnet TCP/IP

8. CONTROL SCHEME

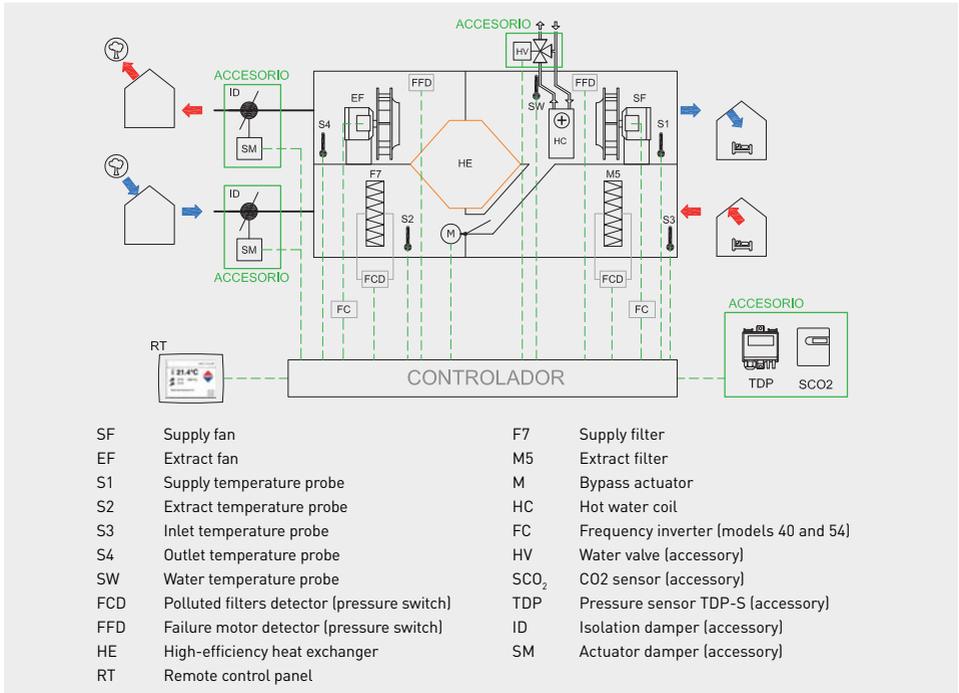
D version



DI version



DC version

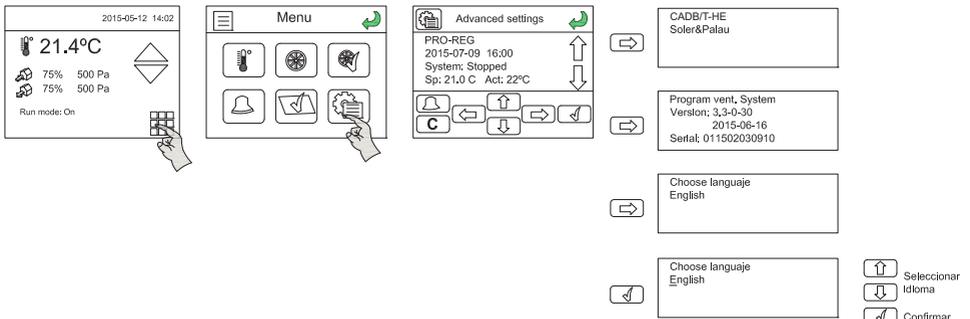


ENGLISH

9. REMOTE CONTROL OPERATION

9.1. CHANGE LANGUAGE

The RHE units can operate according to 3 modes of operation:



9.2. SIMPLIFIED MENU / ACCESSES

The unit has a quick access to the main functions.

Accesses: There are 3 access levels to the controller:

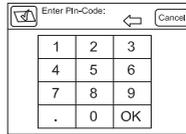
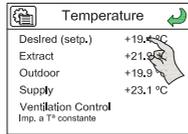
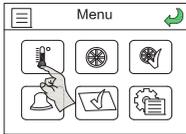
- User level (no password) – Access to the start/stop – auto or PV/GV functions and increase of the set point temperature (+/- 3°C).
- Operator level (password) – Access in read and write to adjustments and parameters, but no access to the system configuration.
- Master level (password) – Access in read and write to adjustments and parameters, as well as access to the system configuration.

9.2.1. User level

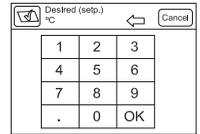
To adjust the temperature set point and the operation mode selection of the unit (use of the time program, stop the unit or possible forcing to a given speed).

These two temperatures and ventilation functions are accessible in two specific menus specially dedicated to this usage:

Adjustment the temperature setpoint



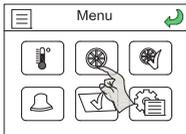
Code: 1111 OK



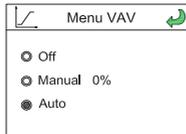
Introduce the desired temperature

To modify the temperature is necessary to enter the code.

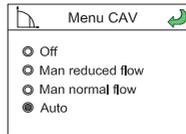
Operating mode selection



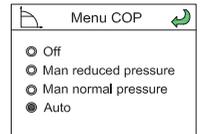
in VAV mode:



In CAV mode:



In COP mode:

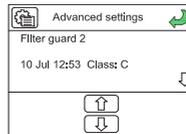
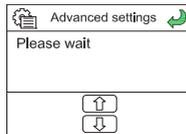
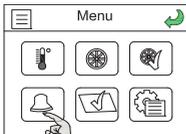


In units with electrical post-heating, if the operation mode is changed while the fans are running, the unit will stop sequentially; first switching off the electrical heater, and after 2 minutes switching off the fans, then finally the unit will re-start with the right working mode.

9.2.2. Installer level

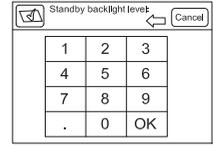
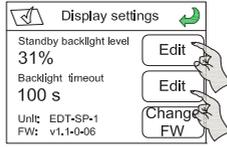
In this level is possible to adjust the operating parameters of the unit: Fan, heating, display, errors, etc.

Alarm display

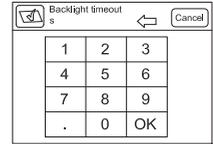


Screen display settings

Adjust the brightness and display feedback.



Introduce the desired backlight level

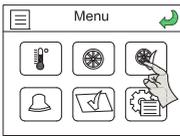


Introduce the desired time

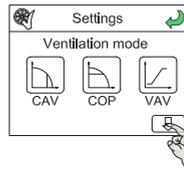
Access settings

By accessing settings can be selected:

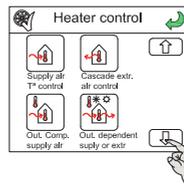
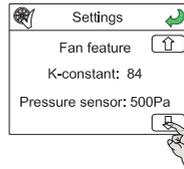
- working mode of the fans
- settings used fan
- type of post heating unit



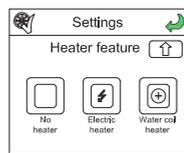
Code: 1111 OK



- Constants air volume working mode (CAV)
- Constants pressure working mode (COP)
- Variable air flow working mode (VAV)



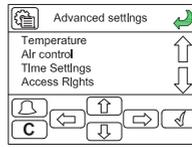
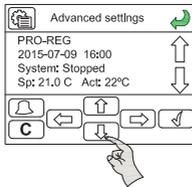
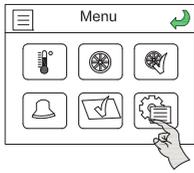
- Constant supply air temperature control
- Room temperature control
- Constant supply air temperature control with outdoor air compensation
- AUTO: The controller determines automatically the best operation mode for each situation. It is based on the measured temperatures, and can be fixed as "Supply control with outdoor compensation" or "Room temperature control"



- CADB-N-D Versions
- CADB-N-DI Versions
- CADB-N-DC Versions

Advanced parameter setting

- Used to read the message of the alarm signalled on the main screen.
- Clock programming.



Navigation is done by the navigation arrows on the bottom of the display:

- Displacement arrows
- Displacement arrows
- ENTER, Access to a parameter
- ESC, Exit from the parameter
- Confirm

Once in the advanced settings menu navigation is done by the arrows.

9.3. OPERATION MODES

The Pro-Reg units can operate in 3 operating modes:

- CAV: Operation at constant flow
- VAV: Operation at variable flow
- COP: operation at constant pressure

After a change in the selected operation mode, the fans stop and then start in the new selected mode.

9.3.1. Constant airflow operation (CAV)

Mode recommended in installations where it is necessary to maintain a constant airflow.

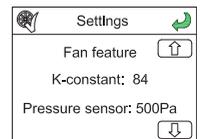
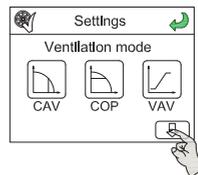
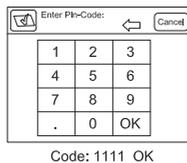
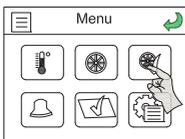
The speed of the fans is defined to correspond to a precise airflow and to keep it constant.

Independent SAF and EAF flow control: SAF and EAF are controlled each one by its respective pressure transmitter signal. Two pressure transmitters are needed (supply and extraction).

The controller performs the conversion of the signal received from the pressure transmitter to flow, using the relation $q_v = kv\sqrt{\Delta P}$. This parameter K depends on the fan construction and is different for each model.

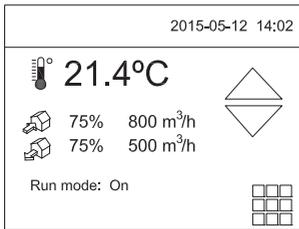
This value is already set at factory, so it should not be modified.

It is possible to display the pressure range and the K-factor of the unit, following the sequence:



In case CAV mode is selected, in the Main screen it is showed the actual m³/h of the fans with pressure transmitters and also a percentage of the maximum fan speed.

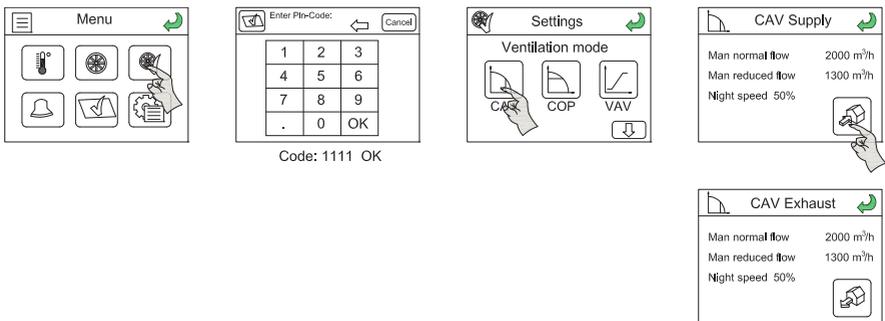
Appearance main screen when the unit is configured in CAV mode.



CAV control mode selection

Access to the simplified parameter setting menu (via the password 1111) allows:

- The selection of Normal flow and Reduced flow of each fan.
- The night set point value of the fans.



The choice between normal or reduced flow can be performed:

- manually
- automatically by programme schedule (see section Time programming)
- remotely, by external digital contact (see section stop-start remote)

The switch over between the various set points will be done manually or automatically by a time programming.

A third set point, the "night speed", may be entered via the control panel. The value in % corresponds to the percentage of the fan's maximum capacity; it will be used during the night for free cooling (see corresponding function).

The selection of CAV mode in this installer menu automatically configures the screen of the user menu. The user can then change the unit's operation without modifying the settings.



Off: stop the unit.

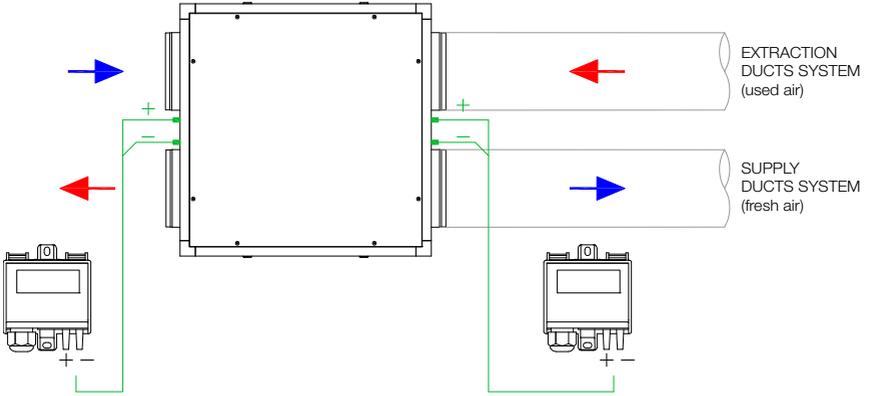
Manual Reduced flow, Manual Normal flow: set point manually selection.

Auto: selection of setpoint is done according to time programming.

Mounting scheme of pressure transmitters

When connecting the pressure transmitters TDP-S, pay special attention to the signs of high

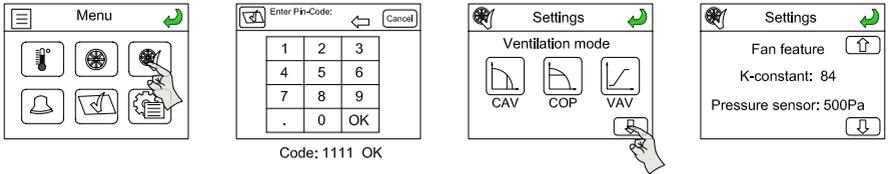
pressure + and low pressure - existing in the pressure transmitters of heat recovery and other transmitters, ensuring that connect + to + and - to -.



Sensor configuration

Make sure the measuring range of the pressure transducer corresponds to the set value in the pressure sensor.

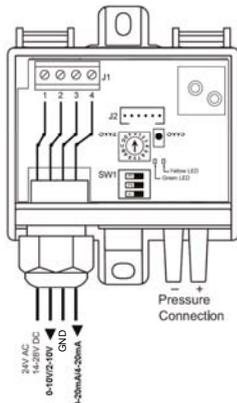
To visualize correctly the airflow, it is necessary that the pressure sensors (accessories) were configured with the same range that the one defined in the PRO-REG controller.



Code: 1111 OK

- Modification of the pressure range in the TDP-D sensor.
- Modification of the pressure range in the TDP-S sensor.

The range is set with the SW2 dial and 8 different values can be set from -50 / + 50Pa to 0-2500 Pa.



PTH-3202- SW2 position

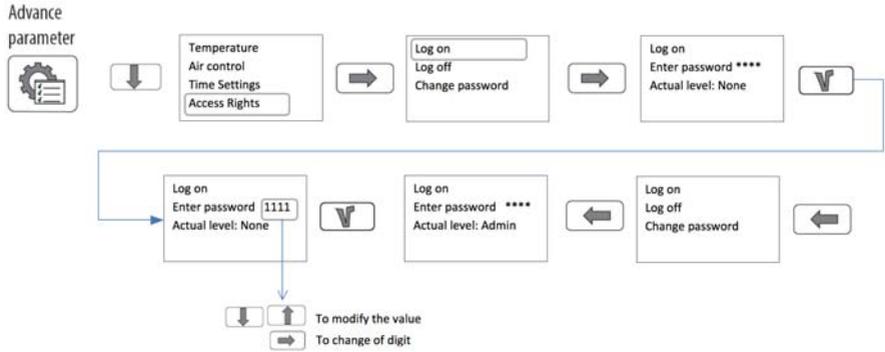
Pressure range	- SW2
-50..+50 Pa	0=On
0..+100 Pa	1=On
0..+150 Pa	2=On
0..+300 Pa	3=On
0..+500 Pa	4=On
0..+1000 Pa	5=On
0..+1600 Pa	6=On
0..+2500 Pa	7=On

Position 8->F = 0..+2500 Pa

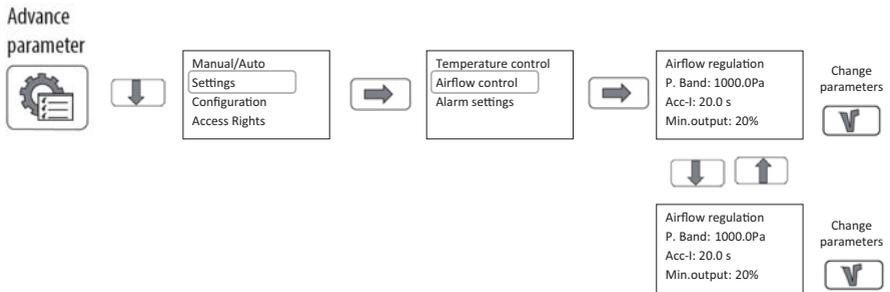
Advanced level

Occasionally, depending on the characteristics of the duct net (length and diameter) and also depending on the regulating elements (type of dampers and opening / closing times), It may be necessary to modify the Proportional and Integral bands of the fan speed control output. To modify the proportional and integral bands, from the advanced parameters menu follow the following sequence:

1- Access to system level



2- Adjust the CAV parameters



9.3.2. Variable airflow operation (VAV)

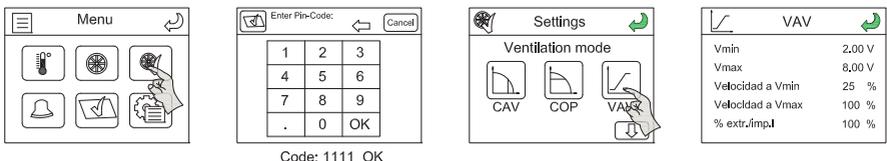
Mode recommended in single area configuration for variable airflow applications depending on a signal type 0-10v.

The set point value depends on a signal 0-10 V coming from an outdoor probe (CO₂, temperature, relative humidity, etc.) or a manual percentage. The ratio between the fans is entered in the form of a discharge/supply percentage.

Functional parameter setting:

Access to the simplified parameter setting menu (via the password 1111) allows:

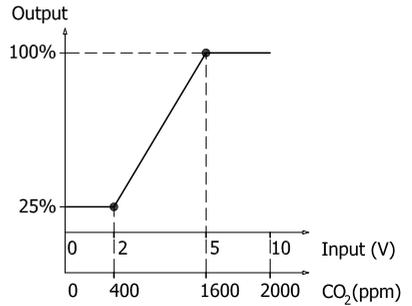
- The selection of the usage range of the signal 0-10V (see example below).
- The variation range of the supply fan's speed.
- The percentage applied to the discharge with respect to the supply.



Examples:

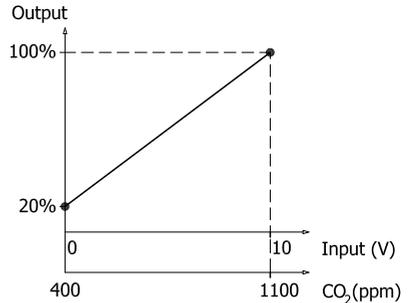
a) The proportional ramp settings of the VAV mode, depend on the range of the sensor used. S & P CO₂ sensors have a range of 0-2000ppm. However, in the market it is possible to find sensors with different ranges. Below are two examples of proportional ramp configuration with sensors 0-2000ppm and 400-1100ppm:

minimum speed = 25%
 maximum speed = 100%
 Vmin = 2 V (400ppm)
 Vmax = 8V (1600 ppm)

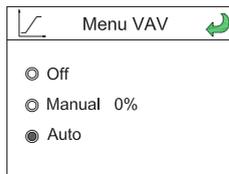
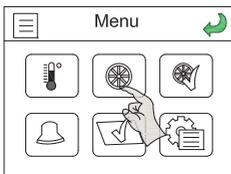


b) Control by CO₂ probe with range 400-1100ppm and output signal (0-10V)

minimum speed = 20%
 maximum speed = 100%
 Vmin = 0V (400ppm)
 Vmax = 10V (1100ppm)



The selection of VAV mode in this installer menu automatically configures the screen of the user menu. The user can then change the unit's operation without touching the settings.



Off: Stop the unit.

Manual: Manually selection of fan's speed.

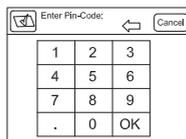
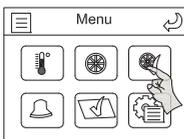
Auto: Automatic control according to external probe.

9.3.3. Constant pressure operation (COP)

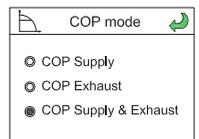
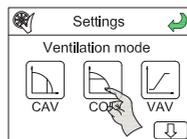
Mode recommended in a multi-area configuration for variable airflow applications with several modulation systems of the airflows installed at the network level.

Airflows automatically modulated to maintain a constant pressure value measured by an outdoor pressure sensor.

The access to the configuration menu of the COP mode is performed as follows:



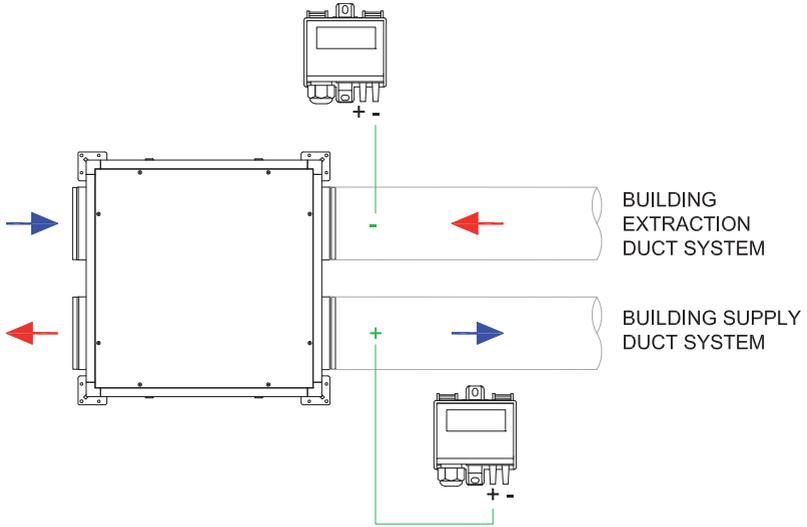
Code: 1111 OK



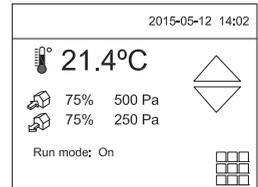
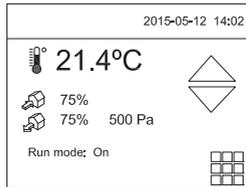
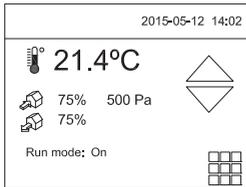
Depending on the circuit in which the regulation components are located, it is possible to choose among three COP control modes:

- **SAF pressure control with EAF slave:** SAF is controlled by the pressure transmitter signal and EAF follows SAF by a scaling factor (parameter Exhaust factor). One pressure transmitter is needed at supply.
- **EAF pressure control with SAF slave:** EAF is controlled by the pressure transmitter signal and SAF follows EAF by a scaling factor (parameter Supply factor). One pressure transmitter is needed at extraction.
- **Independent SAF and EAF pressure control:** SAF and EAF are controlled each one by its respective pressure transmitter signal. Two pressure transmitters are needed (supply and extraction).

Installation diagram pressure sensor



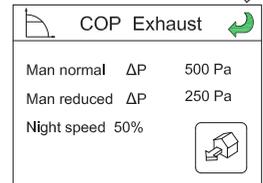
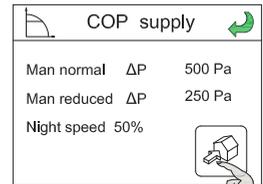
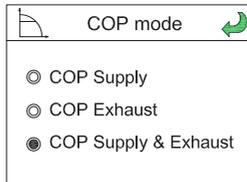
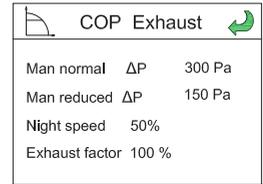
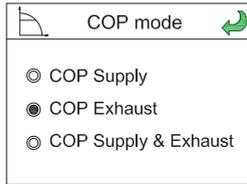
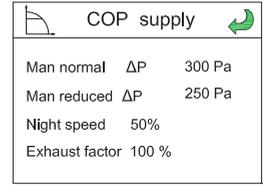
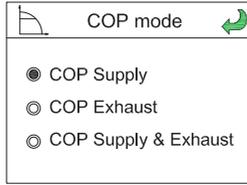
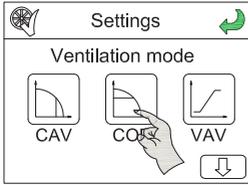
In case COP mode is selected, in the Main screen it is showed the actual Pa of the fans with pressure transmitters and also the speed of the fans (as a percentage of the maximum fan speed).



COP parameter settings mode

Access to the simplified parameter setting menu (via the password 1111) allows:

- The selection of Normal flow and Reduced flow of each fan.
- The scaling factor in case one fan is slaved.
- The night set point value of the fans.

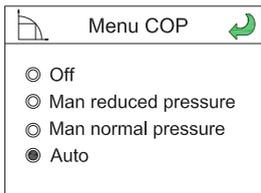
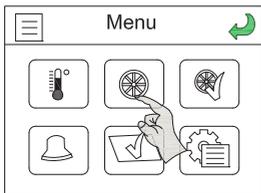


The choice between normal or reduced airflow can be performed:

- manually
- automatically with programme schedule (see section Time programming)
- remotely, by external digital contact (see section stop-start remote)

A third set point, the "night speed", may be entered via the control panel. The value in % corresponds to the percentage of the fan's maximum capacity; it will be used during the night for free cooling (see corresponding function).

The selection of COP mode in this installer menu automatically configures the screen of the user menu. The user can then change the unit's operation without touching the settings.



Off: stop the unit.

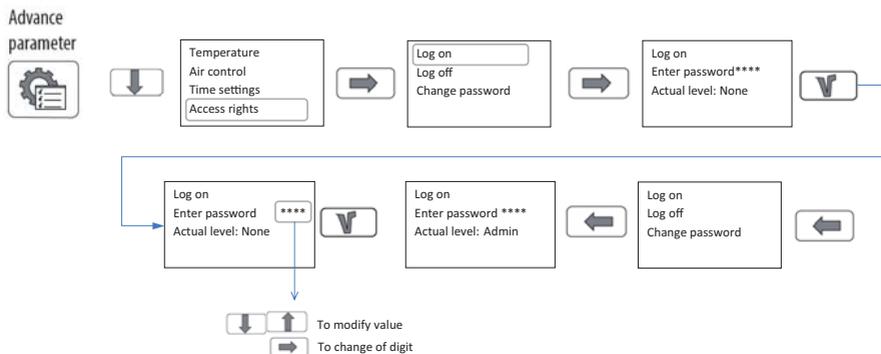
Manual Reduced pressure / Manual Normal pressure: Setting manually selection.

Auto: Selection of set point is done according to time programming (see Programme schedule section).

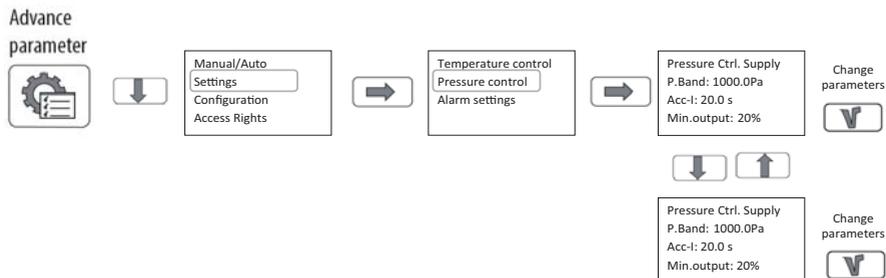
Advanced level

Occasionally, depending on the characteristics of the duct net (length and diameter) and also depending on regulating elements (type of dampers and opening / closing times), It may be necessary to modify the fans speed control output (Proportional and Integral bands). To modify the proportional and integral bands, from the advanced parameters menu follow the following sequence:

1- Access to system level

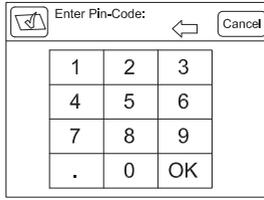
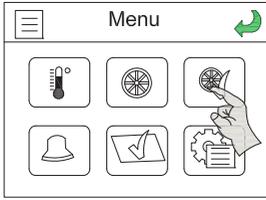


2- Adjust the COP parameters

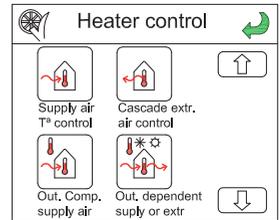
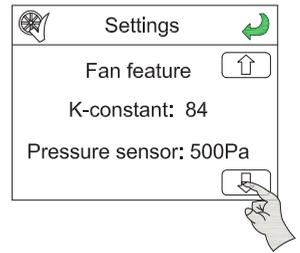
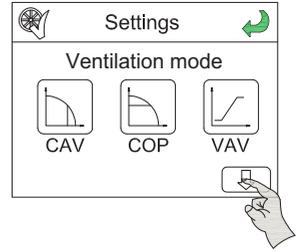


9.4. POSTHEATER CONTROL

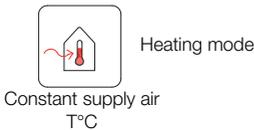
It is possible selecting between 4 different types of postheating control.
To select it follow the following sequence:



Code: 1111 OK

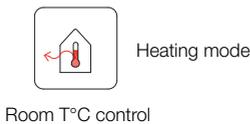


9.4.1. Constant supply air temperature maintenance



Temperature controller works comparing supply air temperature with set point defined by console.

9.4.2. Constant ambient temperature maintenance



Supply air temperature is controlled in cascade way with ambient temperature. Supply air temperature is defined depending on difference between ambient temperature and set point. In front of request, the controller tries to keep ambient temperature limiting duct temperature, which is maintained around 12 and 30°C, at same time.

9.4.3. Temperature set point adaptation vs. outdoor temperature



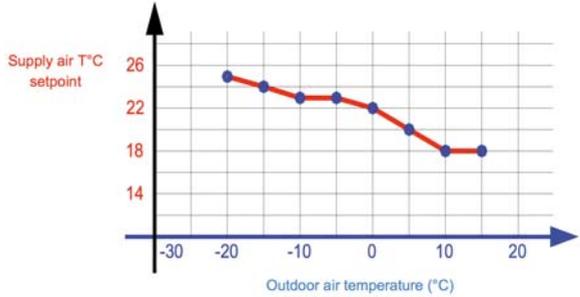
Heating mode

Constant supply air T°C with outdoor T°C compensation

Controller operation is similar to first case. In this case, main difference is defining a compensation curve defined from factory with 8 set points instead of fixing a single temperature set point.

Compensation curve

The supply set point is then adapted with respect to this curve. At any time, from the main screen you can manually change the supply temperature (range of +/-3°C).



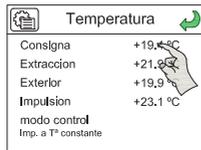
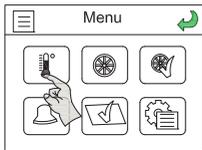
9.4.4. Automatic control mode



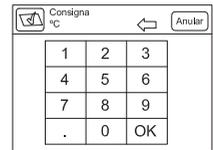
Depending on the temperatures the controller select the most suitable temperature control mode, between "Supply temperature control with compensation for outdoor temperature" and "Room temperature control".

9.5. INITIAL TEMPERATURE SETPOINT

To set the setpoint temperature to maintain, keep the following sequence:

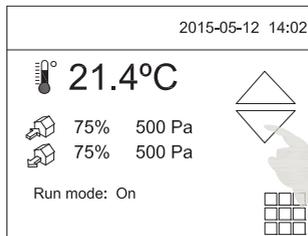


Código: 1111 OK



Introduzca la temperatura deseada

Once selected the setpoint temperature.



9.6. TIME PROGRAMMING

The controller has several clocks which allow the individual programming of: Normal Speed, Reduced Speed and Stop.

Speed selection is not available in VAV mode.

Normal speed: corresponding to normal pressure in COP mode and to normal flow in CAV mode

Reduced speed: corresponding to reduced pressure in COP mode and to reduced flow in CAV mode

Clock parameter setting:

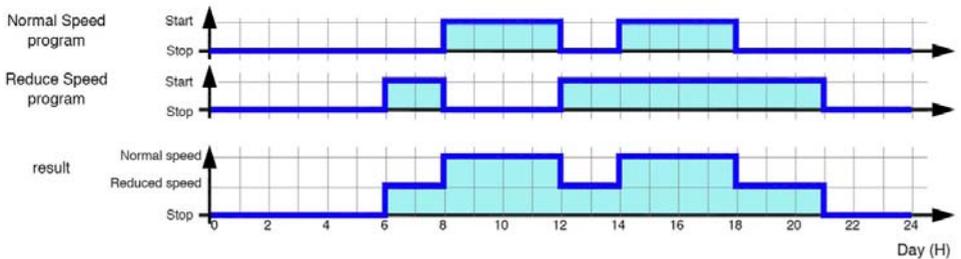
The programmer works for intervals (outside these intervals the fans are stopped). By default, the unit is supplied configured in Normal Speed 24h/day, 7 days/week. The installer can thus define two operation intervals in normal speed (only in CAV and COP modes).

It is possible to define the maximum of the two intervals per day and of speed.

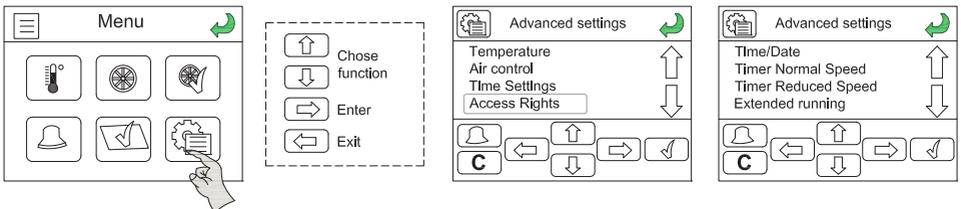
For example:

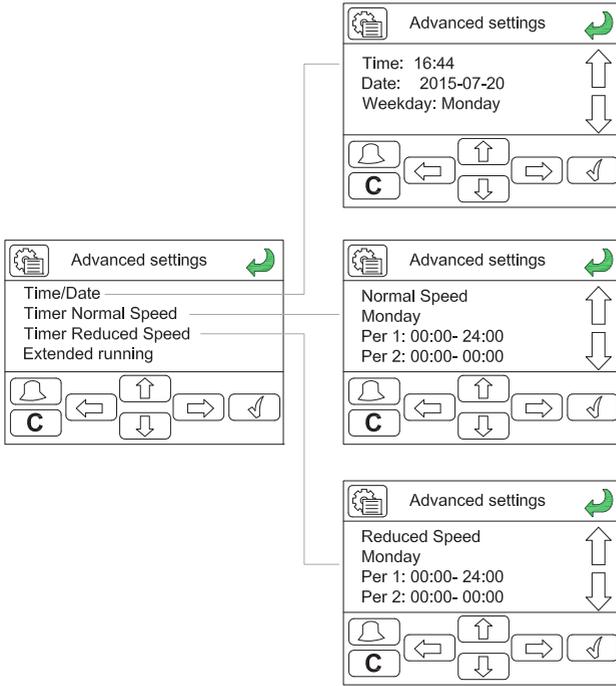
The Normal Speed can be defined from 8:00 am to 12:00 pm in period 1
 and from 2:00 pm to 6:00 pm in period 2
 and the Reduced Speed from 6:00 am to 8:00 am in period 1
 and from 12:00 pm to 9:00 pm in period 2

The PRO-REG controller will then control the fans as follows:



To access to the programme schedule, select "Time settings" in the advance parameters.



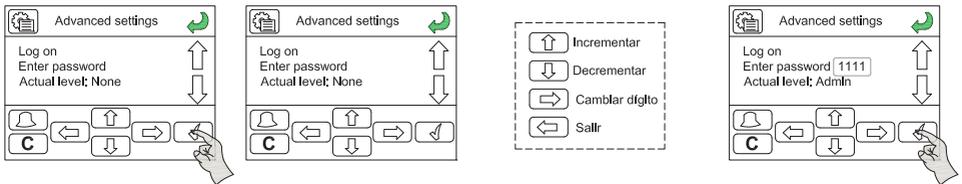


First make sure that the date and the hour set in the controller are correct.

Define the time periods when the unit will work at normal fan speed.

Define the time periods when the unit will work at reduced fan speed.

Before modify the programming it is necessary to access as "Administrator level".



In the time menu, before programming the intervals, make sure that the date and time are exact.

Time intervals parameter setting menu:

A "reduced speed prg" menu is also visible and is made up in the same way as the "normal speed prg" menu.

Time settings	Time/date	Time: hh:mm Date: aaaa:mm:dd Weekday: ddddd	
	Timer Normal Speed	Normal Speed Monday	Normal Speed Monday->Friday Per 1: 00:00- 00:00 Per 2: 00:00- 00:00
		Normal Speed Tuesday	
		--	
	Normal Speed Thursday		
	Normal Speed Friday		
	Normal Speed Saturday	Normal Speed Saturday->Holiday Per 1: 00:00- 00:00 Per 2: 00:00- 00:00	
	Normal Speed Sunday		
	Normal Speed Holiday		

The intervals are programmed day by day or copied by selecting either the same programming from Monday to Friday and/or the same Saturday and Sunday and Holidays.
 Holiday periods are to be selected at the end of the table (24 possible periods).

Time settings	Holidays	Holidays (mm:dd)
(following)		1: 01:01 - 01:01 2: 01:01 - 01:01 3: 01:01 - 01:01
		Holidays (mm:dd) 4: 01:01 - 01:01 5: 01:01 - 01:01 6: 01:01 - 01:01

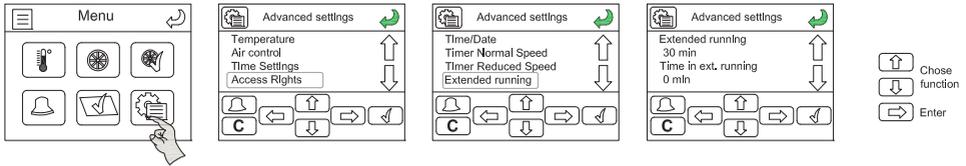
10. BOOST FUNCTION (Only available in CAV and COP modes)

By closing an external digital contact, it is possible to force the fan operation at normal speed for a setted time. (30 mins. by default)

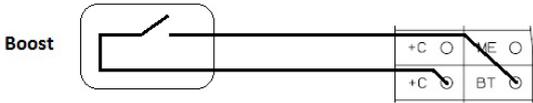
The speed corresponds to the normal pressure setpoint set in COP mode or to the normal airflow specified in CAV mode.

The Boost function can be activated, only when the unit is not within a timer period of normal speed. In this case, even if boost is executed, the timer will start to count once the period of normal speed is finished (the boost order gets delayed).

This function is not available in VAV mode.



The activation of the Boost function has to be activated with an external switch. To activate, it is necessary to close the contact between +C and BT for 3" and then open it.



Once the Boost function has been activated, to cancel the forced normal speed period, it is necessary to do a Remote STOP-START (see point 11).

11. REMOTE STOP-START

It is possible to start-stop the unit by means of an external digital contact (see electric diagrams). The contact closure between +C and ES, will produce the unit stop.



When the equipment is stopped remotely the control hand terminal displays an alarm message, warning that it is possible that the unit will be start up from remote at any time.

12. FREE COOLING BY NIGHT

By default, this feature is disabled. To enable it is necessary to access from Advance Settings. This function is used during the summer to cool off buildings during the night by using fresh outdoor air. This allows reducing the need to resort to air conditioning during the day.

To use the free cooling by night function, the information received from the outdoor probe (fresh air) and from the discharge temperature probe is used. These two probes are present and integrated in the unit at the level of the taps.

The free cooling is only active if the start-up conditions are satisfied:

Start-up conditions:

- Less than 4 days have elapsed since the last start of the installation.
- The outdoor temperature during the previous operation period exceeded the force limit of 22°C⁽¹⁾.
- It is between midnight 0:00 am⁽¹⁾ and 7:00 am⁽¹⁾ In the morning.
- The timer outputs for "normal speed", "Extended running, Normal" and "External switch" are Off.
- A time program will be activated ("Start") within the next 24 h.

If ALL the conditions are satisfied, the free cooling starts running. It runs for 3 minutes to make sure that the temperature measurements are representative (by creating a movement of air in the ducts).

After three minutes, the controller checks the stop conditions:

Stop conditions:

- The outdoor temperature is above 18°C⁽¹⁾ or below 10°C⁽¹⁾ (risk of condensation).
- The discharge temperature is less than the stop value (18°C).

- The time programs (timer) for the normal speed, normal force run and the outdoor control are set to "Stop".
- It is later than 7:00 am⁽¹⁾ in the morning.

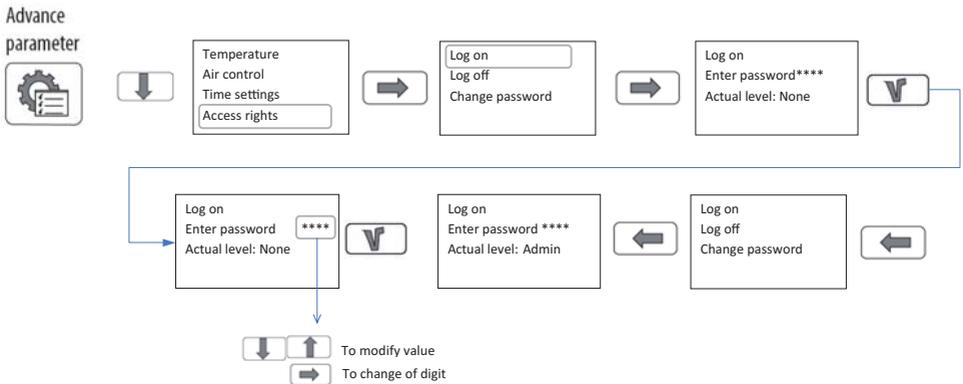
If at least one of these conditions is satisfied after the first three minutes of operation, then the unit is again stopped.

When the free cooling function is active, the fans run at maximum speed (it is possible to reduce this speed by setting the parameters); the coil and heat exchanger control outputs are switched off. The heating output remains inhibited for 60 min⁽¹⁾ after the function is stopped.

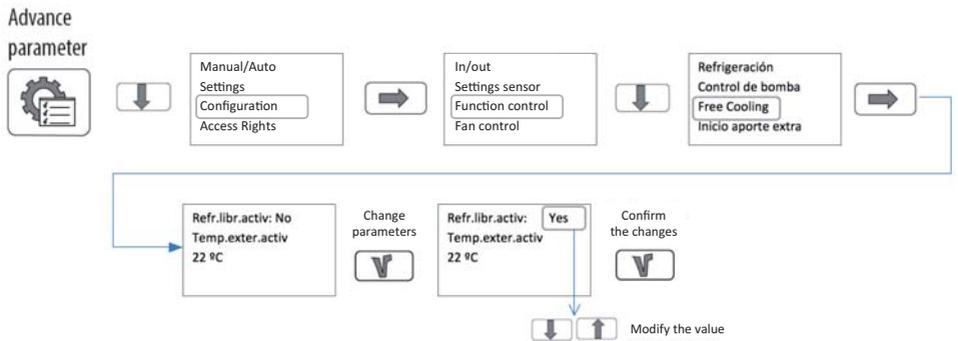
(1) default values which can be changed by a parameter setting in "expert mode".

To activate the Free Cooling Night function it is necessary to access as administrator.

1- Access to system level

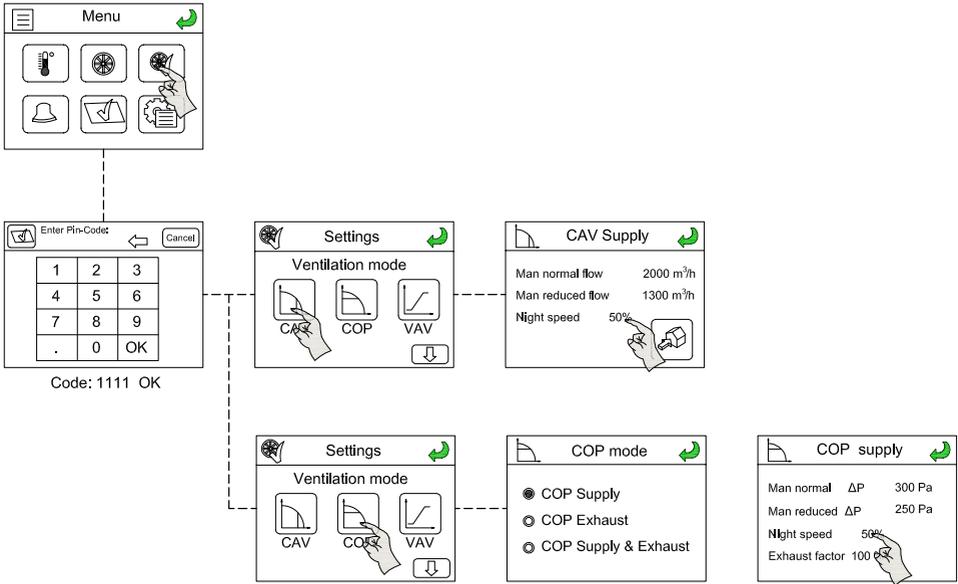


2- Activate the free cooling function and define the setpoint temperature



Define the airflow during night-free cooling

The fan speed during the night free-cooling function is defined as a percentage of the normal speed configured on the equipment.



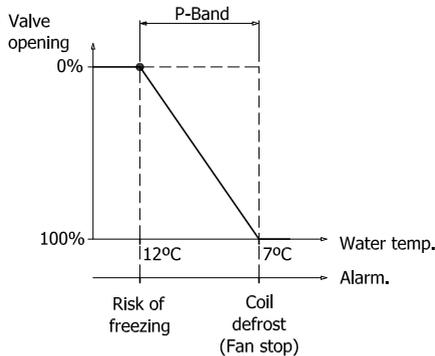
ENGLISH

13. WATER HEATER FROST PROTECTION

In models with Water Heater, the temperature of the water return is continually supervised by a probe, in order to prevent it to freeze.

In case water temperature drops below 12°C, the water valve starts to open (if it already wasn't) and *Frost Risk* alarm is activated.

If water temperature falls below 7°C, then fans are stopped and the alarm *Water temp too low, system off* is activated. Till the temperature is not over 7°C, the unit will not turn on again.



Unit in OFF mode

When the unit is OFF, antifrost protection remains active trying to maintain a constant return water temperature of 25°C.

14. PROTECTION OF HEAT EXCHANGER UNIT

- When the exhausted air falls below +5°C, it appears an ALARM in the display and the by-pass opens
- If the external (outdoor) temperature falls below -7°C, then the supply fan stops, avoiding risk of enter freezing air to the building.
- After 5 mins since the fan stopped, the unit checks the outdoor temperature, if it is higher than -7°C the unit switches on the supply fan again, else the fan keeps stop for a new period of 5 mins, and again until the temperature is higher than -7°C.

15. FIRE FUNCTION (FIRE)

It is possible to assign a digital input to the FIRE function. After receiving the signal from an external fire control unit, it will be forced a predetermined behavior of the heat recovery unit fans.

Input signal type: Potential free. It is supplied with a Bridge to avoid the appearance of the alarm [Contact open = Alarm]

It is possible to assign the following behaviors:

Fire alarm strategies

Force the Supply fan runs (Extract fan stops)

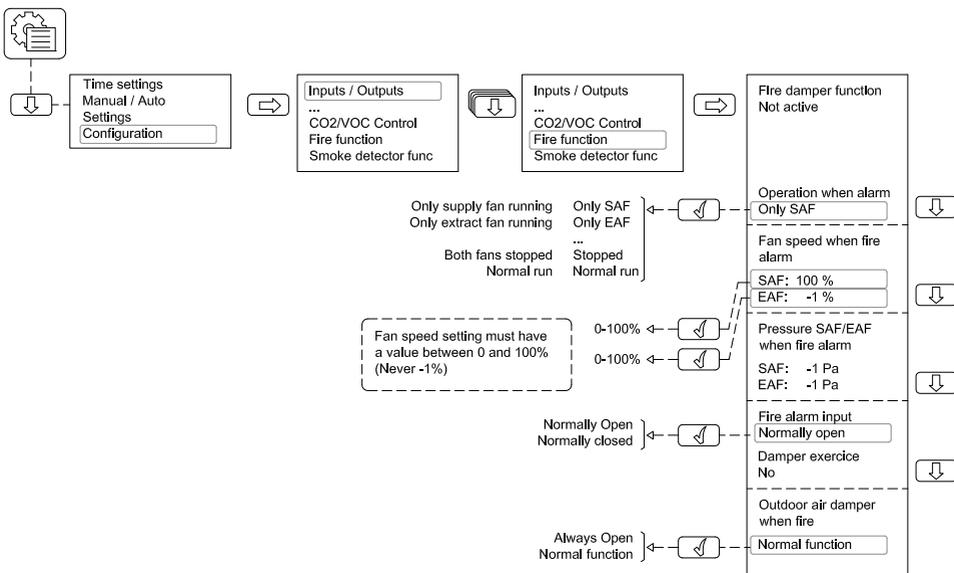
Force the Extract fan runs (Supply fan stops)

Both fans running

Both fans stopped

In all cases, upon activation of the alarm, the display shows ALARM message.

Here's, how to configure the unit's operation after the fire alarm has been activated:



16. CONTROL OF COOLING EXTERNAL BATTERIES

The heat recovery units CADB-HE are complemented by a complete range of air treatment accessories consisting of:

- Cold water battery module.
- Double battery module (cold water and hot water).
- Direct expansion battery modules.
- Exterior filtration module.
- Air purification module, specific for areas with high external pollution.

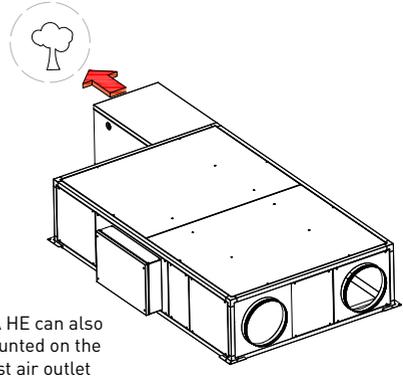
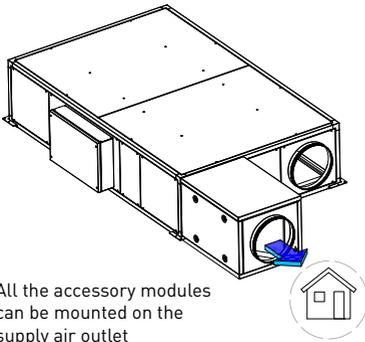
Its quick mounting system and its perfect integration with the heat recovery unit provides a considerable saving in the mounting time comparing them with the conventional accessories.

List of accessories by models:

Heat recovery unit model		Cold water battery	Direct expansion battery	Cold water battery + hot water battery (4 tubes)	Filtration module	Purification module Exterior pollution
HORIZONTAL CONFIGURATION						
CADB-HE-D/DI/DC 04	LH	BA-AF HE 04 LH	BA-DX HE 04 LH	BA-AFC HE 04 LH	FBL HE 04 H	FB-CA HE 04 H
	RH	BA-AF HE 04 RH	BA-DX HE 04 RH	BA-AFC HE 04 RH		
CADB-HE-D/DI/DC 08	LH	BA-AF HE 08 LH	BA-DX HE 08 LH	BA-AFC HE 08 LH	FBL HE 08 H	FB-CA HE 08 H
	RH	BA-AF HE 08 RH	BA-DX HE 08 RH	BA-AFC HE 08 RH		
CADB-HE-D/DI/DC 12	LH	BA-AF HE 12 LH	BA-DX HE 12 LH	BA-AFC HE 12 LH	FBL HE 12 H	FB-CA HE 12 H
	RH	BA-AF HE 12 RH	BA-DX HE 12 RH	BA-AFC HE 12 RH		
CADB-HE-D/DI/DC 16	LH	BA-AF HE 16 LH	BA-DX HE 16 LH	BA-AFC HE 16 LH	FBL HE 16 H	FB-CA HE 16 H
	RH	BA-AF HE 16 RH	BA-DX HE 16 RH	BA-AFC HE 16 RH		
CADB/T-HE-D/DI/DC 21	LH	BA-AF HE 21 LH	BA-DX HE 21 LH	BA-AFC HE 21 LH	FBL HE 21 H	FB-CA HE 21 H
	RH	BA-AF HE 21 RH	BA-DX HE 21 RH	BA-AFC HE 21 RH		
CADT-HE-D/DI/DC 33	LH	BA-AF HE 33 LH	BA-DX HE 33 LH	BA-AFC HE 33 LH	FBL HE 33 H	FB-CA HE 33 H
	RH	BA-AF HE 33 RH	BA-DX HE 33 RH	BA-AFC HE 33 RH		
CADB/T-HE-D/DI/DC 40	LH	BA-AF HE 40 LH	BA-DX HE 40 LH	BA-DX HE 40 LH	FBL HE 40 H	FB-CA HE 40 H
	RH	BA-AF HE 40 RH	BA-DX HE 40 RH	BA-DX HE 40 RH		
CADB/T-HE-D/DI/DC 54	LH	BA-AF HE 54 LH	BA-DX HE 54 LH	BA-DX HE 54 LH	FBL HE 54 H	FB-CA HE 54 H
	RH	BA-AF HE 54 RH	BA-DX HE 54 RH	BA-DX HE 54 RH		
VERTICAL CONFIGURATION						
CADB-HE-D/DI/DC 04	LH	BA-AF HE 04 LH	BA-DX HE 04 LH	BA-AFC HE 04 LH	FBL HE 04 H	FB-CA HE 04 H
	RH	BA-AF HE 04 RH	BA-DX HE 04 RH	BA-AFC HE 04 RH		
CADB-HE-D/DI/DC 08	LH	BA-AF HE 08 LH	BA-DX HE 08 LH	BA-AFC HE 08 LH	FBL HE 08 H	FB-CA HE 08 H
	RH	BA-AF HE 08 RH	BA-DX HE 08 RH	BA-AFC HE 08 RH		
CADB-HE-D/DI/DC 12	LH	BA-AF HE 12 LH	BA-DX HE 12 LH	BA-AFC HE 12 LH	FBL HE 12 H	FB-CA HE 12 H
	RH	BA-AF HE 12 RH	BA-DX HE 12 RH	BA-AFC HE 12 RH		
CADB-HE-D/DI/DC 16	LH	BA-AF HE 16 LH	BA-DX HE 16 LH	BA-AFC HE 16 LH	FBL HE 16 H	FB-CA HE 16 H
	RH	BA-AF HE 16 RH	BA-DX HE 16 RH	BA-AFC HE 16 RH		
CADB/T-HE-D/DI/DC 21	LH	BA-AF HE 21 LH	BA-DX HE 21 LH	BA-AFC HE 21 LH	FBL HE 21 H	FB-CA HE 21 H
	RH	BA-AF HE 21 RH	BA-DX HE 21 RH	BA-AFC HE 21 RH		
CADT-HE-D/DI/DC 33	LH	BA-AF HE 33 LH	BA-DX HE 33 LH	BA-AFC HE 33 LH	FBL HE 33 H	FB-CA HE 33 H
	RH	BA-AF HE 33 RH	BA-DX HE 33 RH	BA-AFC HE 33 RH		
CADB/T-HE-D/DI/DC 40	LH	BA-AF HE 40 LH	BA-DX HE 40 LH	BA-DX HE 40 LH	FBL HE 40 H	FB-CA HE 40 H
	RH	BA-AF HE 40 RH	BA-DX HE 40 RH	BA-DX HE 40 RH		
CADB/T-HE-D/DI/DC 54	LH	BA-AF HE 54 LH	BA-DX HE 54 LH	BA-DX HE 54 LH	FBL HE 54 H	FB-CA HE 54 H
	RH	BA-AF HE 54 RH	BA-DX HE 54 RH	BA-DX HE 54 RH		

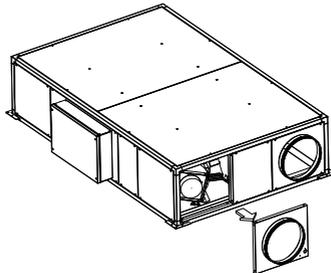
16.1. ACCESSORIES ASSEMBLY

Accessories are installed on the supply air outlet. IAQ module, FB-CA HE can also be mounted on the exhaust air outlet, for those applications in which, it will be necessary to eliminate or reduce the odor concentration in the exhaust air.

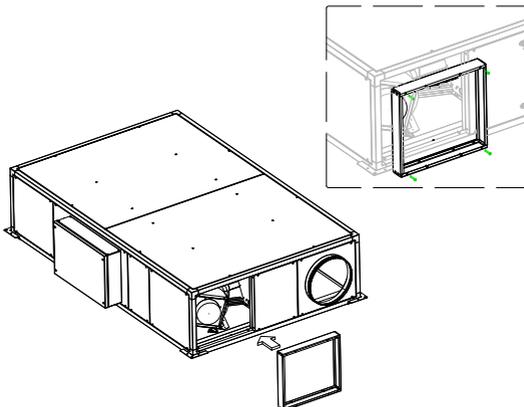


To proceed with the assembly, follow the next steps:

1. Remove the flange panel from the heat recovery unit, loosen the 4 screws that fix it.

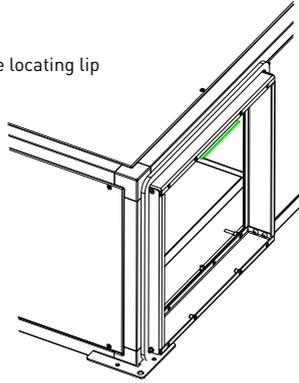


2. Mount the centering frame, by means of the 4 screws M5X12. Both centering frame and screws are delivered with the module.

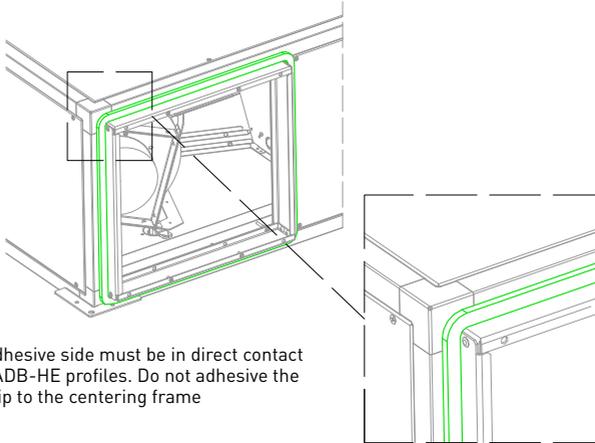


Before mounting the centering frame, verify that the locating lip in the frame is positioned in the top side.

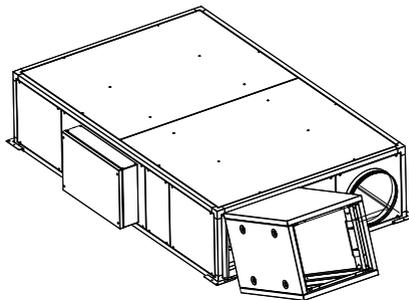
Centering frame locating lip



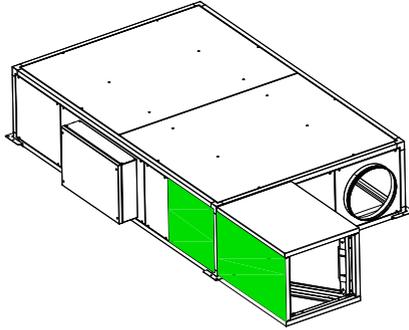
- Put the self-adhesive sealing strip, delivered in a bag included with the module, around the centering frame.



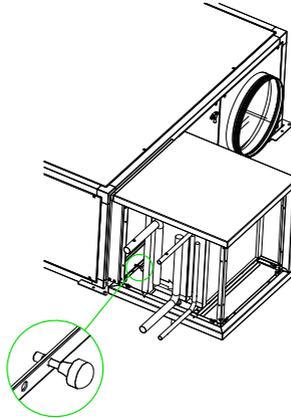
- Hook the module onto the centering frame locating lip, and then drop it by its own weight.



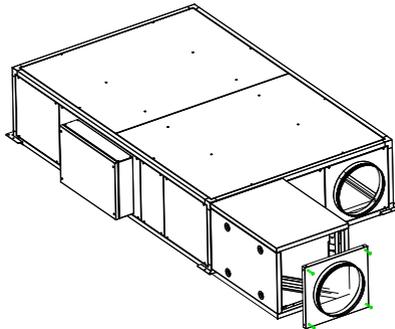
Fix the module to the heat recovery unit permanently. The access to fixing points is performed by the side of the unit, removing one of the side panes (from the CADB or from the module maintenance panel).



To carry it out, use the 4 screwed knobs delivered with the module.



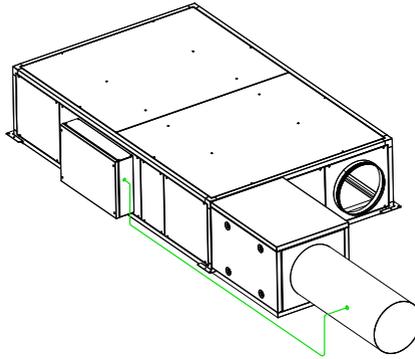
5. Finally place the flange panel (that was disassembled at the first step) over the module outlet using the 4 screws that fixed the panel to the CADB-HE.



16.2. WIRING BETWEEN ACCESSORY AND PRO-REG ELECTRICAL BOARD

16.2.1. Coil module BA-AF HE, BA-AFC HE, BA-DX

For all the coil modules, after mount the coil module it will be necessary to replace the original temperature probe fitted in the fresh air supply side by a new one delivered as accessory 5416753100 TG/K3 PT1000. Cable length = 3 m.

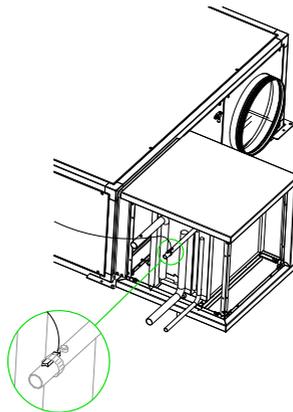


Insert the new probe downstream the coil module:

Unwire the original probe factory mounted in the electric box TSUP and wire the new probe according to the indications in the Wiring diagrams attachment.

Particularities of BA-AFC modules

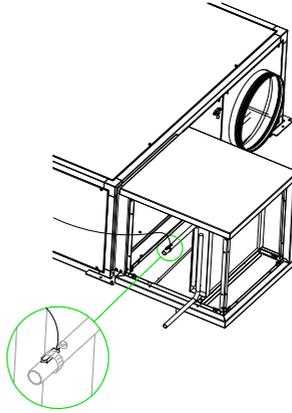
To enable water coil antifreeze protection and avoid the appearance of errors in the display, it will be necessary to install a specific temperature probe mounted directly over the hot water coil outlet collector: **9036023200 SONDA PT1000 METALICA CURVA**



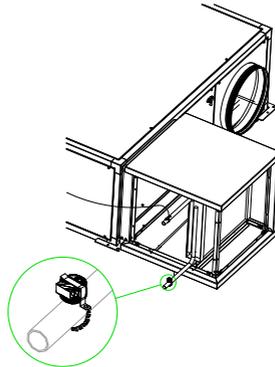
Once installed, rewire the probe to the electric cabinet, according to the indications in the electric diagrams annex.

Particularities of BA-AF reversible modules (cooling and heating)

To enable water coil antifreeze protection and avoid the appearance of errors in the display, it will be necessary to install a specific temperature probe mounted directly over the hot water coil outlet collector: **9036023200 SONDA PT1000 METALICA CURVA**



Once installed, rewire the probe to the electric cabinet, according to the indications in the electric diagrams annex.



It is possible to automatically detect the working mode (Cooling-Heating) by means of one Change-over thermostat (accessory) **5416783700 THCO**

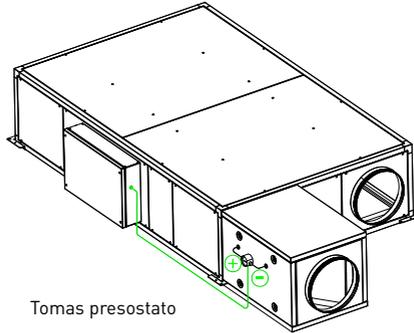
The Change-Over thermostat must be mounted in the reversible coil inlet collector, from where it detects when the received water is cool or hot (heat pump in summer or winter mode)
Once installed, rewire the THCO thermostat to the electric cabinet, according to the indications in the electric diagrams annex.

16.2.2. Filtration modules FBL-CA HE y FBL-HE

To supervise the filter clogging degree existing in the modules, it is necessary to install one of the following pressure switches (accessory)

Code	Reference	Pressure range
5407004100	PRESOSTATO DPS 2-30	20 – 300 Pa
5209177800	PRESOSTATO DPS 10-100	100 – 1000 Pa

Install the pressure switch, respecting the position of the (+) and (-) pressure connectors, according to the indications in the following image:



Connector + : Filtered air
 Connector - : Non filtered air

Adjust pressure setpoint according to the particularities of each installation (dust concentration in the external ambient, as well as filter replacement frequency). The adjustment is done by rotating the dial on the front of the pressure switch.

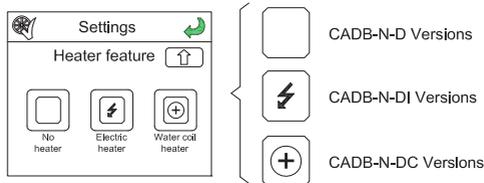
Once installed, rewire the pressure switch DPS to the electric cabinet, according to the indications in the electric diagrams annex.

16.3. CONTROL RECONFIGURATION

Once the required rewire was done, it will be necessary to reconfigure the PRO-REG controller from the Advance Parameters menu.

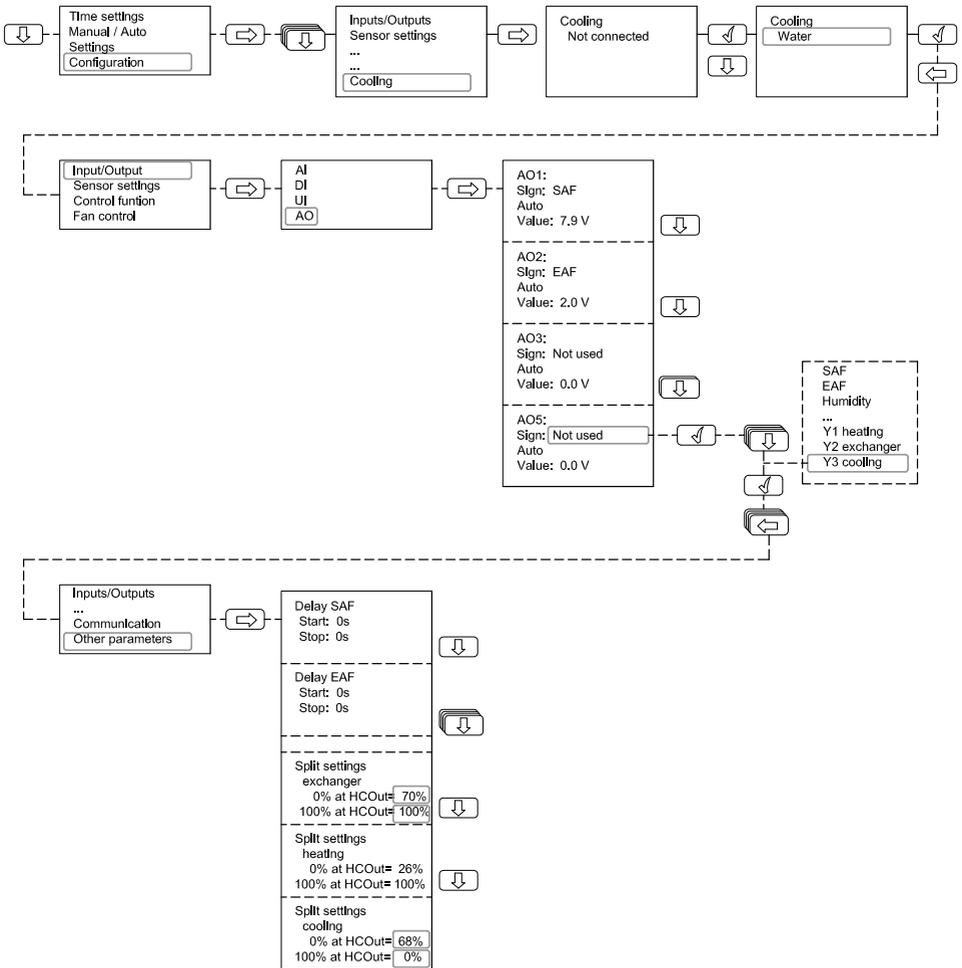
IMPORTANT:

Coil control reconfigurations made from the Advance Parameters, will be immediately erased at the moment that from the Settings – Heater feature screen, a different coil configuration is chosen:

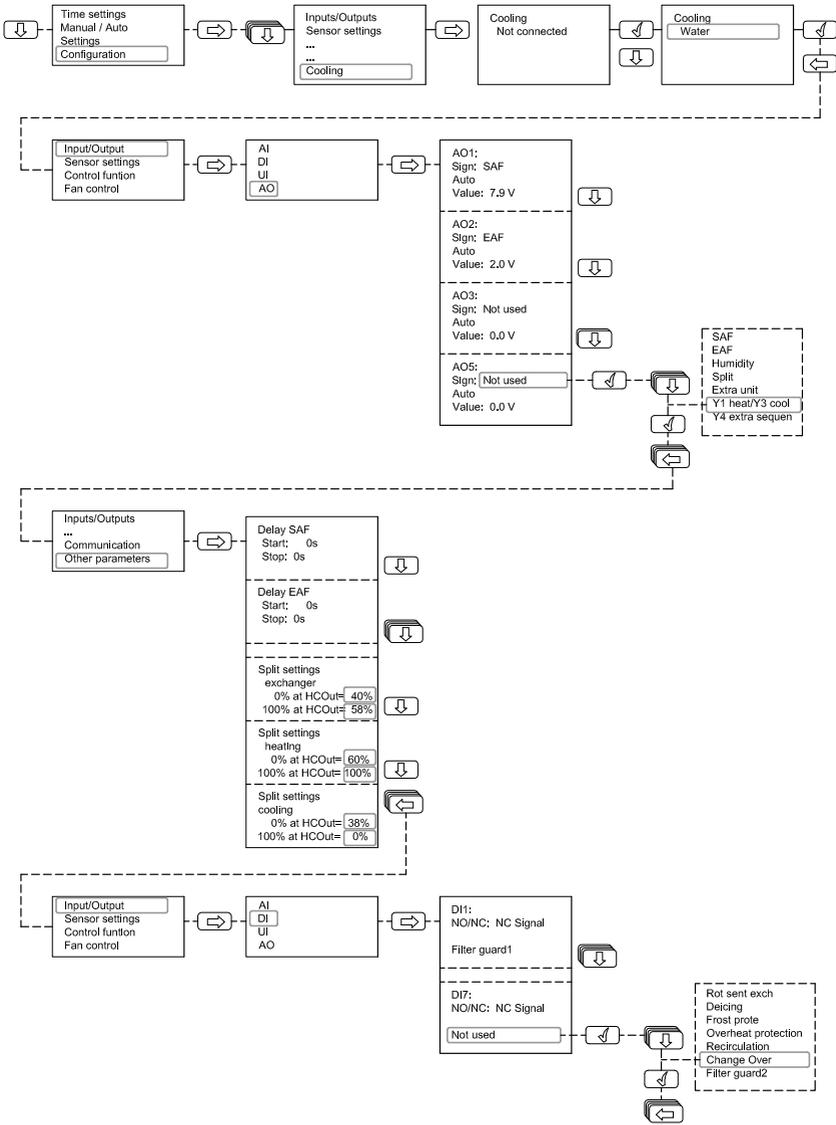
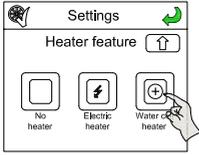


Coil module reconfiguration did not appear at **Settings – Heater feature** screen.

16.3.1. Controller reconfiguration required to manage coil module BA-AF HE only as cooling coil

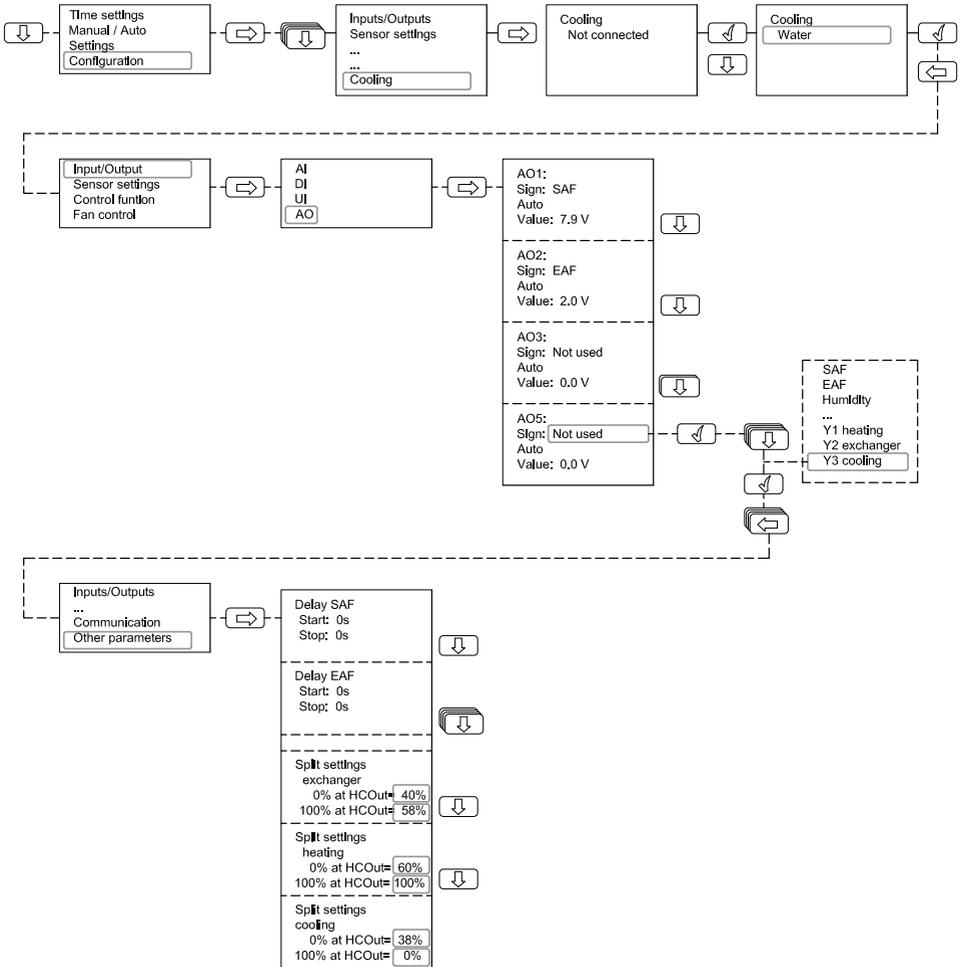
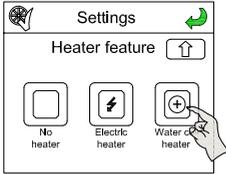


16.3.2. Controller reconfiguration required to manage coil module BA-AF HE as reversible coil (cooling and heating)



ENGLISH

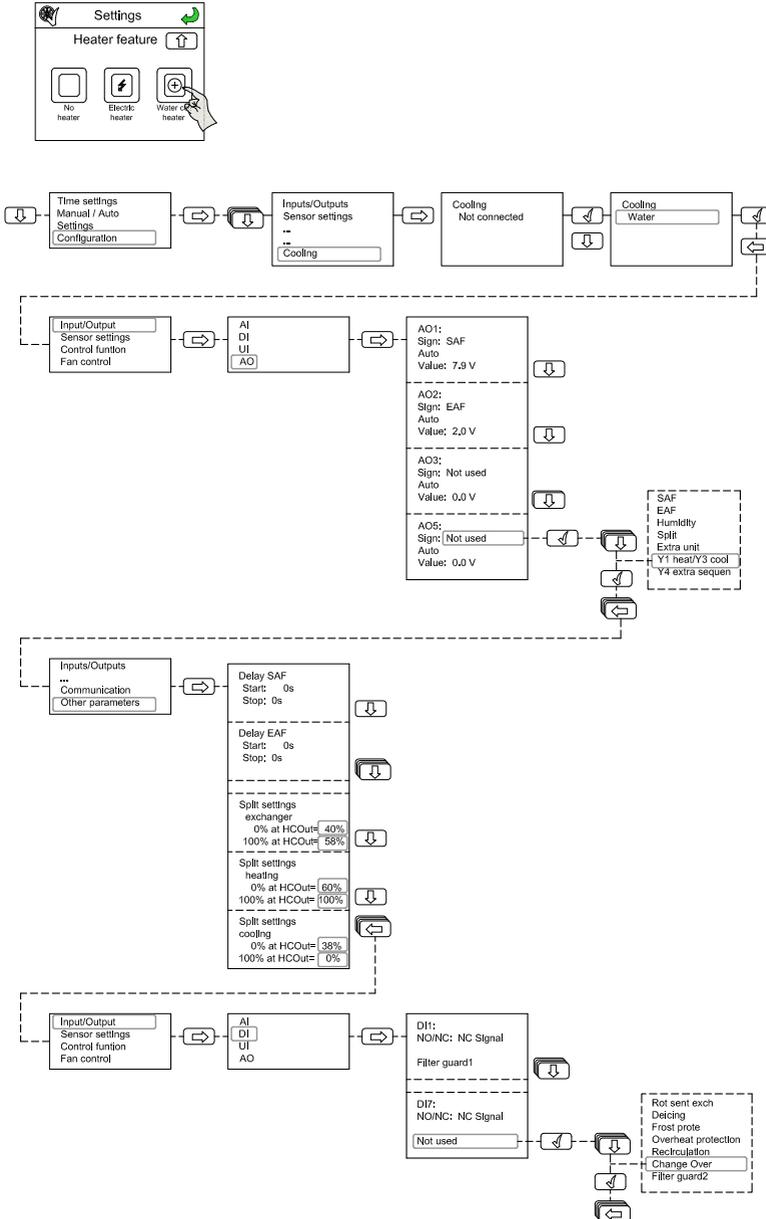
16.3.3. Controller reconfiguration required to manage coil module BA-AFC HE in 4 pipes systems (cooling and heating)



ENGLISH

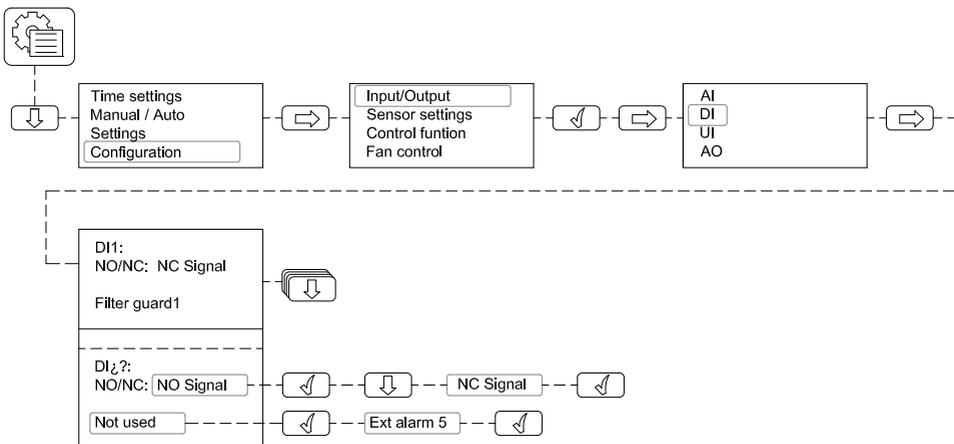
16.3.4. Controller reconfiguration required to manage DX coil module BA-DX HE (cooling and heating)

In conjunction with DX-Control kit controlling the DX-valve (All components provided by the DX system manufacturer)
 Controller reconfiguration required to manage Direct expansion module BA-AFC HE (4 pipes) cooling and heating)



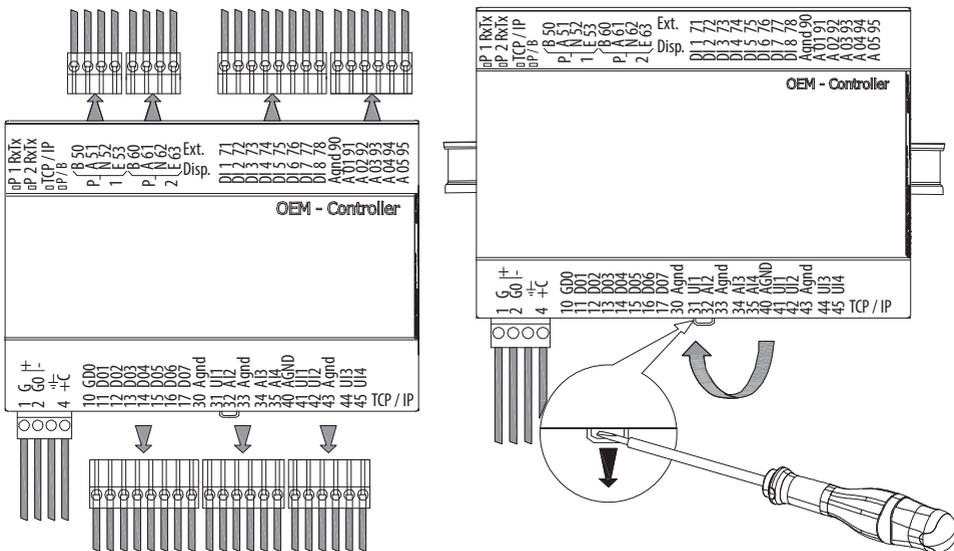
ENGLISH

16.3.5. Controller reconfiguration required to manage external filter module FB-CA HE or FBL-HE



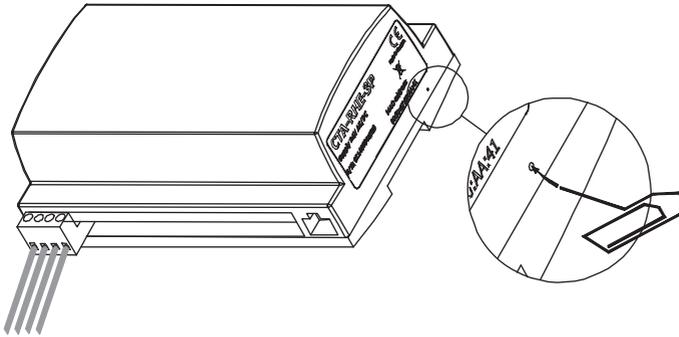
17. RESET THE CORRIGO CONTROLLER

In some cases, after several adjustments or due to a bad working, it could be necessary to reset the controller. After isolating the unit and switching-off the main switch, open the door which gives access to the electronic board. Remove all the connectors attached to the controller with the exception of the 4-way electrical supply green plug connected to terminals 1, 2, Earth and 4.

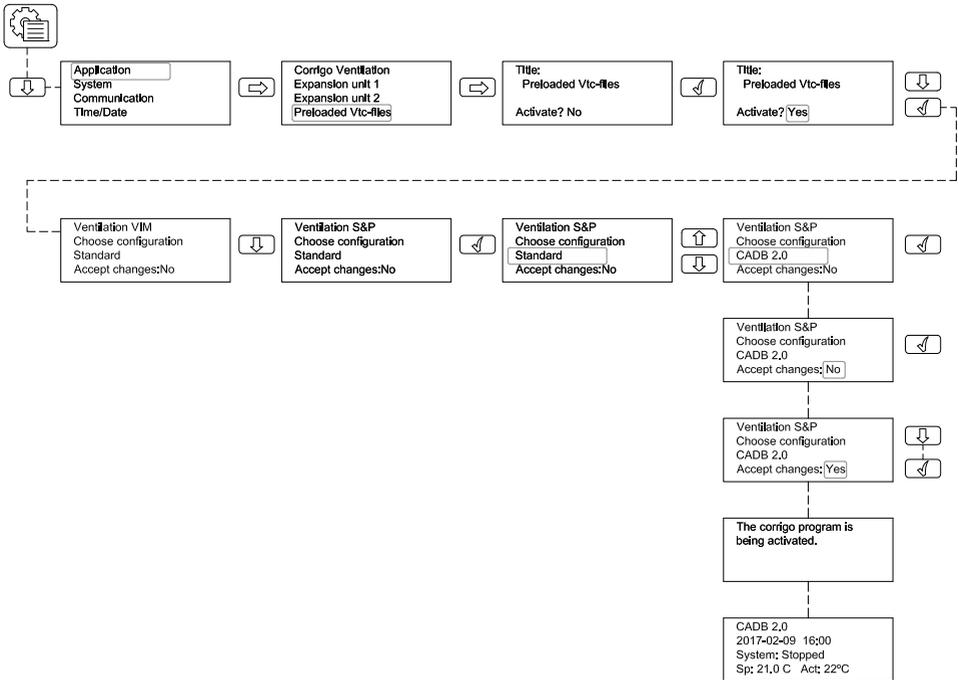


With a screwdriver, release the controller from the DIN rail on which it is mounted. To reset the controller, it must be under voltage so re-energise the CADB/T-HE at the isolator and also on the unit by switching back on the main switch.

To reset the controller use a clip as shown in the picture: connect the ETD remote control cable and hook the Corriego back onto the DIN rail. DO NOT CONNECT ANY OTHER PLUGS – AT THIS POINT, ONLY THE ETD REMOTE CONTROL AND 4-WAY ELECTRICAL SUPPLY PLUG SHOULD BE CONNECTED TO THE CORRIGO.



When the ETD cable and 4-Way electrical supply plug have been connected, perform the following sequence of operations:



Isolate the electrical power supply again. Re-connect all of the other cables to the Corriego controller and finally re-energise CADB/T-HE and the reset procedure is now complete.

The run mode of the system (I.e VAV/CAV/COP) should now be re-set-up, together with ensuring that the additional parameters (K-Constant, heater type etc.) are correct.

18. CONTROLLER RECONFIGURATION



Tras realizar el Reset del controlador, es necesario volver a reconfigurar la unidad, ya que la configuración de fábrica queda borrada.

After reset the controller, it is necessary to reconfigure the unit, as the factory settings are deleted.

Necessary reconfiguration:

- Language
- Post-heating type
- Fan working mode
- K Factor

K values corresponding to each model:

MODEL	K-FACTOR
04	46
08	69
12	69
16	69
21	131
33	131
40	131
54	166

- Pressure sensor:
If before to do the Reset, the unit was configured in COP or CAV mode.
- Advanced parameters:
The same way, all those advanced parameters that were configured before the reset was performed, must be reconfigured after the reset:
 - Night Free-cooling.
 - Time settings.
 - Modbus/Bacnet communication activation.
 - Fire alarm strategy.
 - Control of external cold water / DX coil.

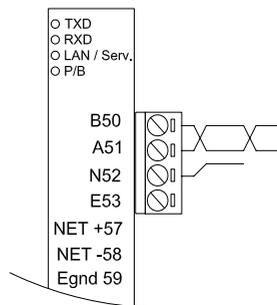
19. CENTRALIZED TECHNICAL CONTROL (GTC) CONNECTION

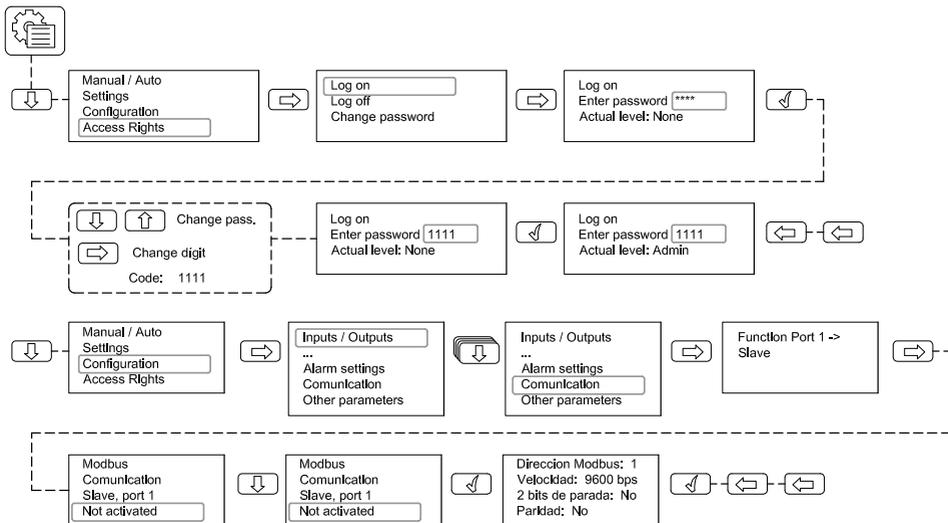
The controller in its standard version has an integrated RS485 communication port (to be used with an STP cable).

The standard controller can communicate in Modbus RTU via its RS485 port by simply activating an internal parameter.

If you need to integrate the CADB/T-HE PRO-REG unit on a Modbus RTU system, ask for our communication manual where the Modbus technical specifications and list of available registers appear.

To enable Modbus communication acces as administrator is required.



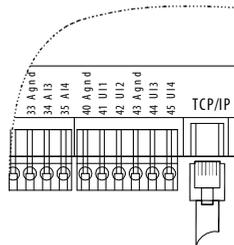


19.1. BACNET TCP/IP

The PRO-REG controller has a RJ45 connector that allows the connection to TCP/IP Bacnet. To enable the functionality, it is necessary to configure the IP direction of the unit and activate the BACnet IP function with the help of E-Tool program (downloaded from the following URL: http://www.regincontrols.com/Root/Documents/42_105786/CorrigoEventilation%203.4-1-24.zip

It is necessary to provide the names, fixed IP's, subnet mask and network interface of each unit to be connected to the same network.

If you need to integrate your CADB / T-HE PRO-REG into a BACNET system, request our communication manual where appear the technical specifications and list of available records.



20. REPLACEMENT OF THE BATTERY FROM THE CORRIGO PROGRAMMABLE LOGIC CONTROLLER

When the "battery low" alarm appears and the red indicator light is lit, it means that the backup battery to save the memory and the real time clock is too low. The procedure to change the battery is described below. A capacitor allows backing up the memory and running the clock for approximately 10 minutes after the power is switched off. If the battery can be changed in less than 10 minutes, the program does not have to be reloaded and the clock will continue to run normally.

The spare battery is type CR2032.

- Using a small screwdriver, pry up the clips on each side of the case to release the cover from the base.
- Hold the base and remove the cover.
- Grasp the battery and pull up gently until the battery exits from its holder.
- Replace the battery with a new. Warning: be sure to respect the polarity when inserting the battery.



21. INSPECTION, MAINTENANCE AND CLEANING

21.1. REPLACEMENT OF FILTERS

The Pro-Reg control incorporates a function of supervision of the filters clogging. When the filter replacement is required, the display shows an alarm message.

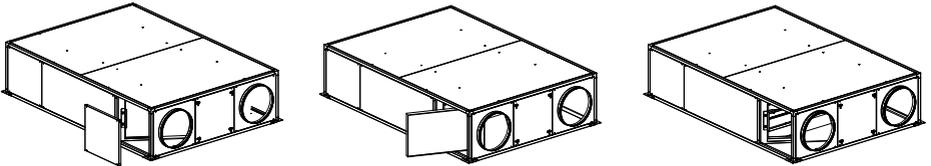
The registers ubication for filters maintenance depends on the model and version. The exact ubication of the filters is identified by a label in the profile that indicates the type of filter and its characteristics.



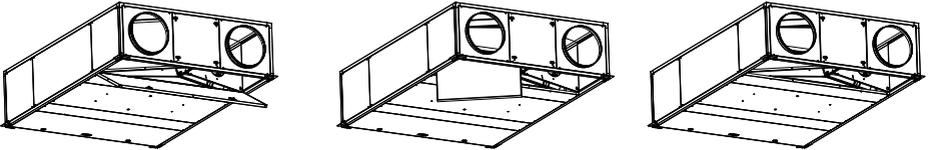
FALLING OBJECTS

By loosening the screws that hold the panels, they will be released. In units installed in ceiling, pay special attention to this operation to prevent the fall of a panel. During the maintenance signaling the area below the heat recovery unit and prevent personnel access to it.

- **Horizontal configurations of CADB/T-HE 04 to 33.** The access to filters can be done by the lateral panels and /or by the bottom panels (depending on the model):

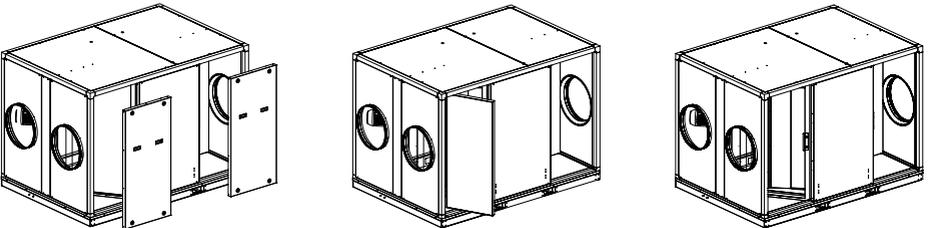


Quick access to filters from the lateral panels.

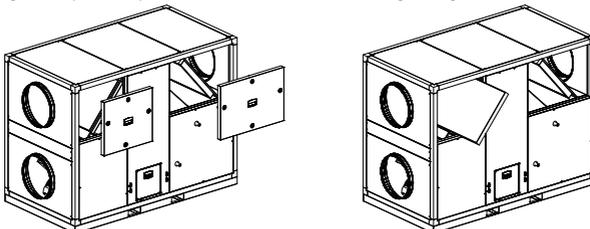


Quick access to filters from the bottom panels.

- **Horizontal configurations of CADB/T-HE 40 and 54.** The access to filters can be done by the side panels:



- **Vertical configurations of CADB/T-HE 40 and 54.** The access to filters can be done by two sides of the unit, removing the specific panels selon in the following image:



Replacement filters are delivered in a plastic bag for extra protection. Remove the bag before installing the filter into the unit.

Before installing the filter make sure that the airflow direction is correct. (indicated by an arrow in the filter).

Filters parts table

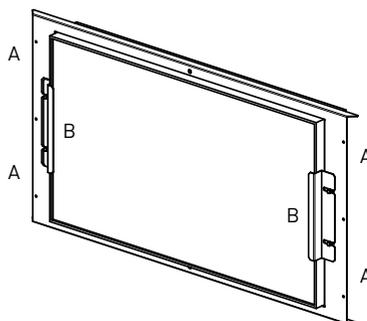
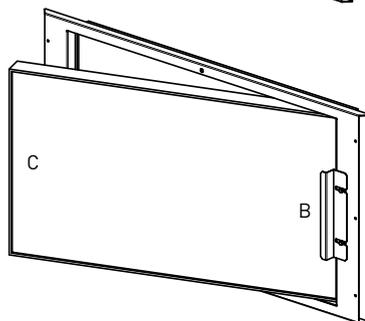
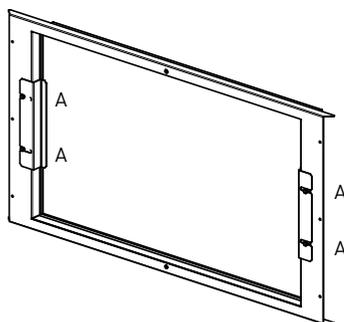
Heat recovery model	Ø (mm)	AFR-HE (Accessory filters and spare part for CADB/T-HE)			
		AFR-HE G4	AFR-HE M5	AFR-HE F7	AFR-HE F9
CADB-HE D/DI/DC 04	200	AFR-HE 200/04 G4	AFR-HE 200/04 M5	AFR-HE 200/04 F7	AFR-HE 200/04 F9
CADB-HE D/DI/DC 08	250	AFR-HE 250/08 G4	AFR-HE 250/08 M5	AFR-HE 250/08 F7	AFR-HE 250/08 F9
CADB-HE D/DI/DC 12	315	AFR-HE 315/12 G4	AFR-HE 315/12 M5	AFR-HE 315/12 F7	AFR-HE 315/12 F9
CADB-HE D/DI/DC 16	315	AFR-HE 315/16 G4	AFR-HE 315/16 M5	AFR-HE 315/16 F7	AFR-HE 315/16 F9
CADB/T-HE D/DI/DC 21	400	AFR-HE 400/21 G4	AFR-HE 400/21 M5	AFR-HE 400/21 F7	AFR-HE 400/21 F9
CADT-HE D/DI/DC 33	400	AFR-HE 400/33 G4	AFR-HE 400/33 M5	AFR-HE 400/33 F7	AFR-HE 400/33 F9
CADB/T-HE D/DI/DC 40	450	AFR-HE 450/40 G4	AFR-HE 450/40 M5	AFR-HE 450/40 F7	AFR-HE 450/40 F9
CADB/T-HE D/DI/DC 54	500	AFR-HE 500/54 G4	AFR-HE 500/54 M5	AFR-HE 500/54 F7	AFR-HE 500/54 F9

21.2. FILTER INSTALLATION

The heat recovery is supplied with mounted filters. Low pressure F7 filter for supply air and M5 for extract air. Possibility of mounting a second filter as accessory.

Installation additional filter:

1. Loosen the two sets of filter support brackets (A).
2. Remove the filter holder (B).
3. Fit the second filter (C) ensuring that the direction of air is correct (indicated in the frame of the filter).
4. Ensure that the first filter the air passes is the lower grade of filtration.
5. Once both filters have been through fitted place the filter supports (B) symmetrically and tighten the 4 brackets (A).

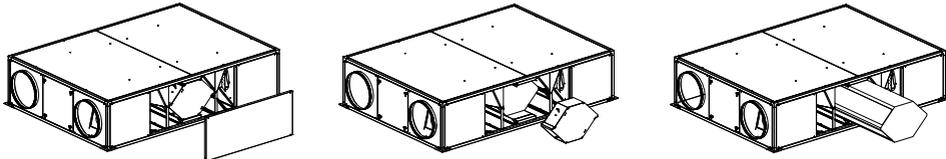


21.3. HEAT EXCHANGER

Horizontal models CADB/T HE 04 to 33

To perform the heat exchanger cleaning it is necessary to remove it from the unit. The disassembly can be easily done from the lateral panel:

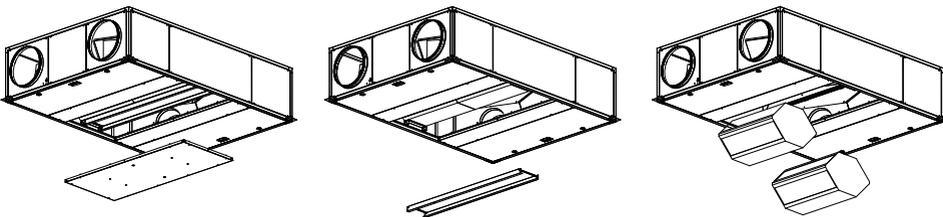
Disassembly sequence



Models 04 to 33: Access to heat exchanger cleaning from lateral panels and from the bottom panels.

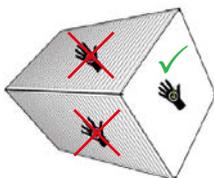
Alternatively, it is possible to disassemble the heat exchanger from the bottom panels. However, it is necessary to perform a major number of operations to proceed.

Access to the heat exchanger for bottom sequence



FALLING OBJECTS

By loosening the screws that hold the panels, those will be released. In units installed in ceiling, pay special attention to this operation to prevent the fall of a panel. During the maintenance, signaling the area below the heat recovery unit and prevent personnel access to it.



Not manipulate the heat exchanger for the finned area.

Horizontal models CADB/T-HE 04 to 54

Due to the dimensions and weight of heat exchanger, the cleaning of it has to be perform in situ, without disassembly the heat exchanger.

To access to the heat exchanger, disassembly the side panels of the heat recovery unit and proceed with the cleaning by blowing with compressed air.



Loose the 4 closures that fix the access panel and remove the panel

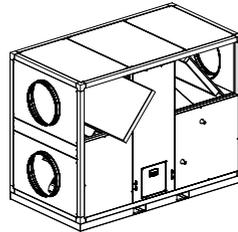
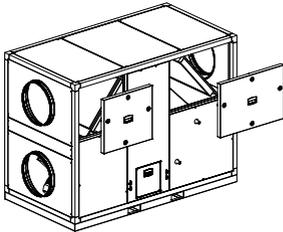


Loose the screws that fix the filter and after released, remove it. Clean the heat exchanger with blowing with compressed air

Vertical models CADB/T-HE 40 and 54

Due to the dimensions and weight of heat exchanger, the cleaning of it has to be perform in situ, without disassembly the heat exchanger.

To access to the heat exchanger, disassembly the side panels of the heat recovery unit and proceed with the cleaning by blowing with compressed air.



21.4. CONDENSATION DRAINPIPE

Inspect the drainpipe regularly and make sure it is not blocked, if this is the case, remove the obstruction. Check that the drain pipe has been made in accordance with the "CONNECTIONS" section of this manual.

22. OPERATION ANOMALIES

22.1. GENERAL ANOMALIES

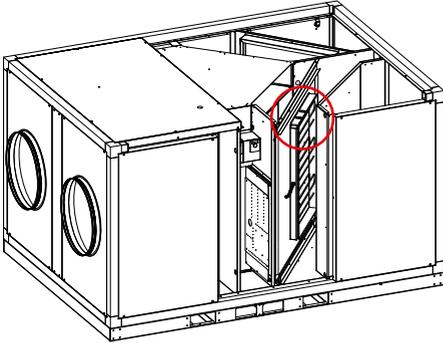
Anomaly	Cause	Solution
Difficult to start.	Reduced power supply voltage. Insufficient static torque of motor.	Check motor specification plate. Close the air inlets to reach the maximum speed. Change the motor is necessary. Contact the S&P Post-Sales service.
Insufficient airflow. Insufficient pressure.	Blocked pipes and/or inlet points closed. Fan obstructed. Filter overloaded. Insufficient rotation speed. Exchanger package blocked.	Clean inlet tubes. Clean fan. Clean or replace filter. Check power supply voltage. Clean the exchanger.
Reduction in performance after a period of acceptable operation.	Leaks in the circuit before and/or after the fan. Damaged roller.	Check the circuit and restore original conditions. Check the impeller and if necessary, replace with an original spare part. Contact the S&P post sales service.
New air temperature too cold.	Outside air -5° C or less. Models (CADB/T-HE DI): Thermal protectors Support resistances open.	Insertion of post-heating resistances. Contact the S&P post sales service. Reset by pushing the button RESET, all the thermal protectors of the resistance.
Insufficient performance of the exchanger.	Fins dirty.	Clean the exchanger.
Formation of frost on the exchanger.	Outside air below -5°C.	Insertion of post-heating devices (anti-ice). Contact the S&P Customer Advice service.
Air pulsation.	Fan working in flow conditions almost 0. Flow instability, obstruction or bad connection.	Modification of the circuit and/or replacement of the fan. Clean and/or readjust the inlet channels. Operate the electronic regulator, increasing the minimum speed (insufficient voltage). Contact the S&P Customer Advice service.
There is water inside the unit.	Drain clogged or wrongly dimensioned.	Check if exists a body/object obstructing the passage of water and remove it. Verify that the drain trap exists and is correctly sized according to the instructins of this manual.
	Only DC versions. Internal breakage of water coil.	Isolate the battery using the isolation valves. Repair the leak/ Replace the battery.
	Only Dc version. The water coil is being used for cooling purpose with cold water.	The CADB-HE DC heat recovery can be used just for post-heating function with hot water.

Access to thermal protectors (DI versions)

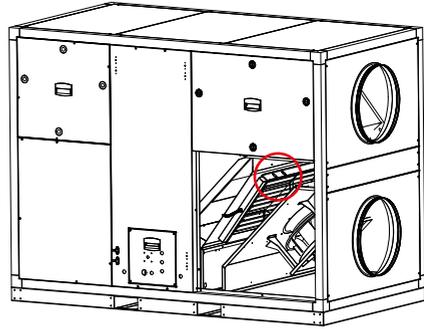
Units with internal electric batteries have a thermal protectors with automatic and manual reset. Before rearm the thermal protectors manual reset, ensure that the problem that causes its actuation has been solved.

Thermal protectors position

Horizontal models:



Vertical models:



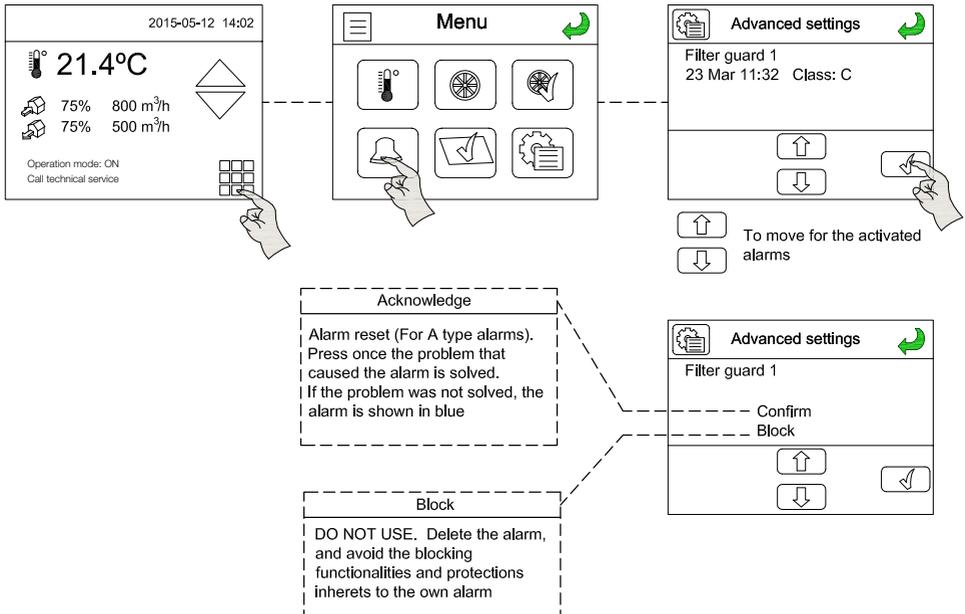
Danger of burns, there is a risk that the metal parts are at a high temperature.

22.2. FAILURE LIST

In case an alarm or a failure occurs, a “Maintenance To Do” message appears in red on the main screen. The alarm can then be consulted in the advanced menu. The error is then clearly identified on the screen. The list of error messages is given in the following subsection.

Alarms type A: they have to be acknowledged once the error has been solved to return to normal working.
Alarms type C: once the error has disappear they turns automatically off (not needed to acknowledge).

Sequence to check the alarms:

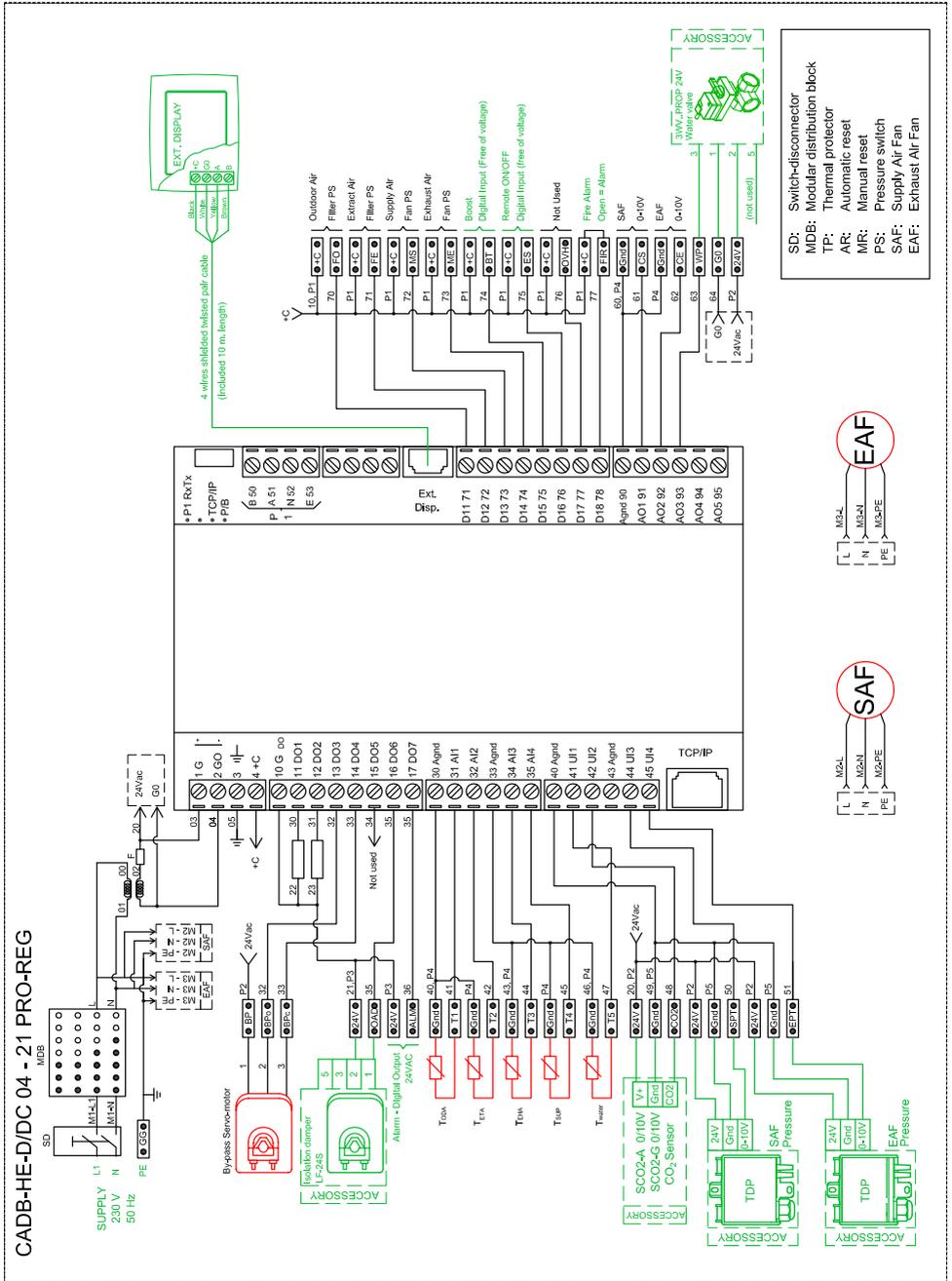


The following table shows the mode to proceed to detect and resolve any incidents shown:

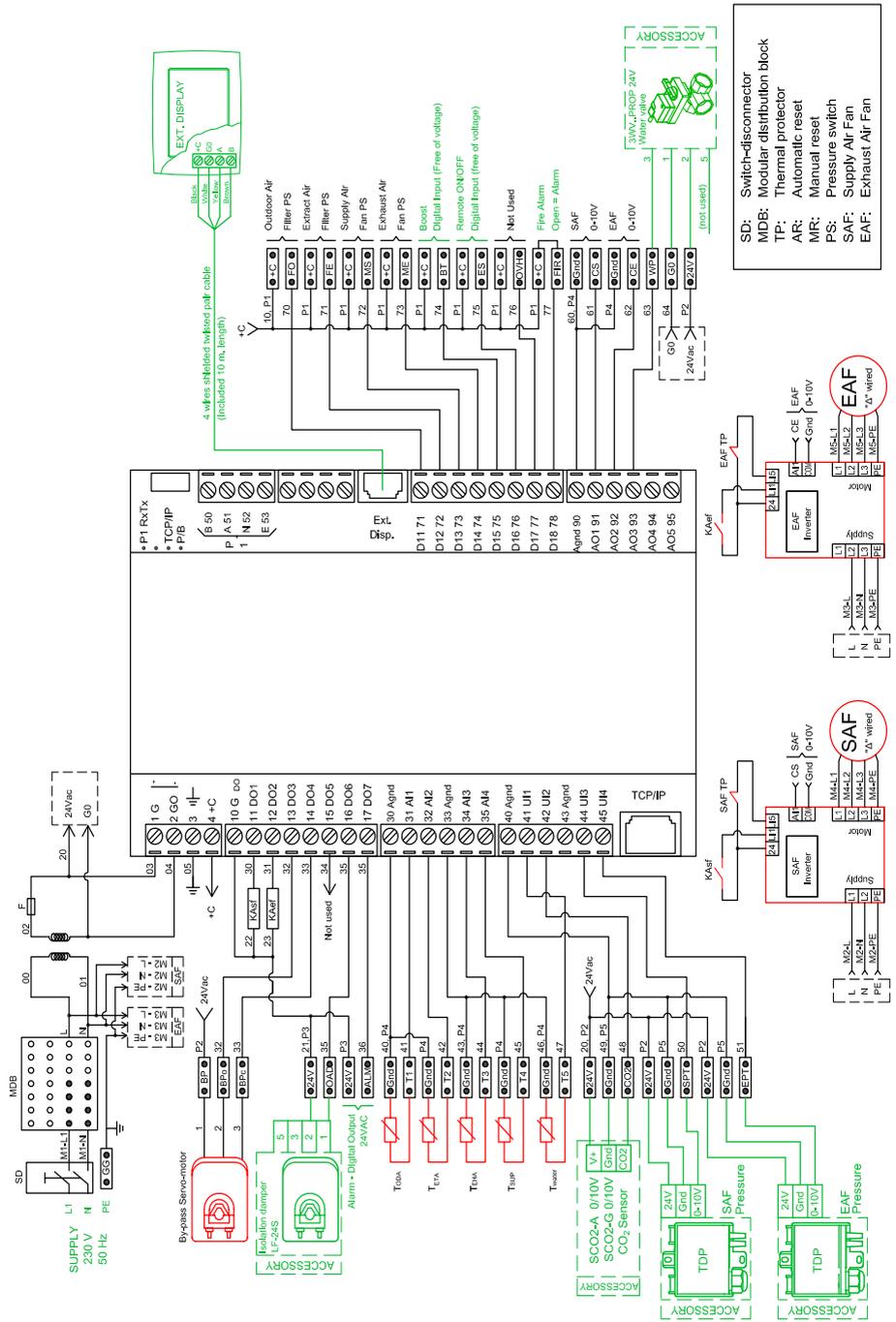
Alarm number	Alarm text	Description	Type
1	Run Error Supply Air Fan	Malfunction of supply air fan	A
2	Run Error Extract Air Fan	Malfunction of extract air fan	A
6	Change ODA Filter	Outdoor Air Filter needs replacement	C
11	Remote off active	Remote On/Off active	C
23	Electric heating is overheated	Electric Heater Thermal protectors activated	A
24	Frost risk	Frost protection function is overriding the control of the water heater output	C
25	Water temp too low, system off	Water temperature below frost limit value (<7°C)	C
27	Sensor error outdoor temp.	Malfunction of outdoor air temperature sensor	A
28	Exchanger frost risk	Exchanger deicing activated	C
41	Manual heater control	The electric heater is in manual mode	C
42	Manual heater control	The resistance is in manual mode	C
48	Internal battery error	The electric heater is in manual mode	A
49	Sensor error Supply Air temp	Malfunction of supply air temperature sensor	A
50	Sensor error Extract Air temp	Malfunction of extraction air temperature sensor	A
55	Sensor error SAF pressure	Malfunction of supply air pressure sensor	A
56	Sensor error EAF pressure	Malfunction of exhaust air pressure sensor	A
57	Sensor error Exhaust air temp	Malfunction of exhaust air temperature sensor	A
58	Sensor error Frost Protection temp	Malfunction of water temperature sensor	A
90	Change ETA Filter	Extraction Air Filter needs replacement	C

23. WIRING DIAGRAMS

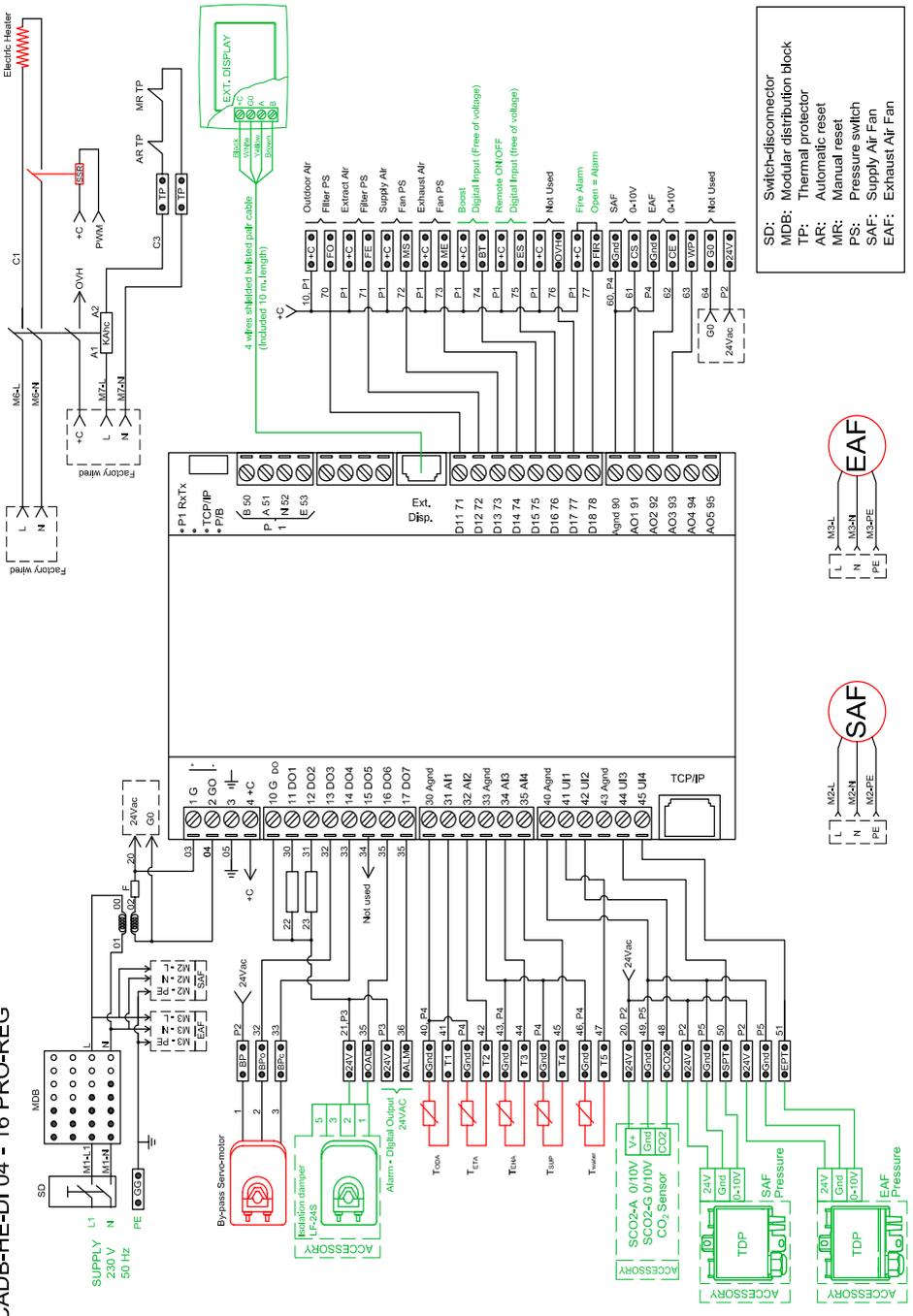
23.1. MAIN UNIT



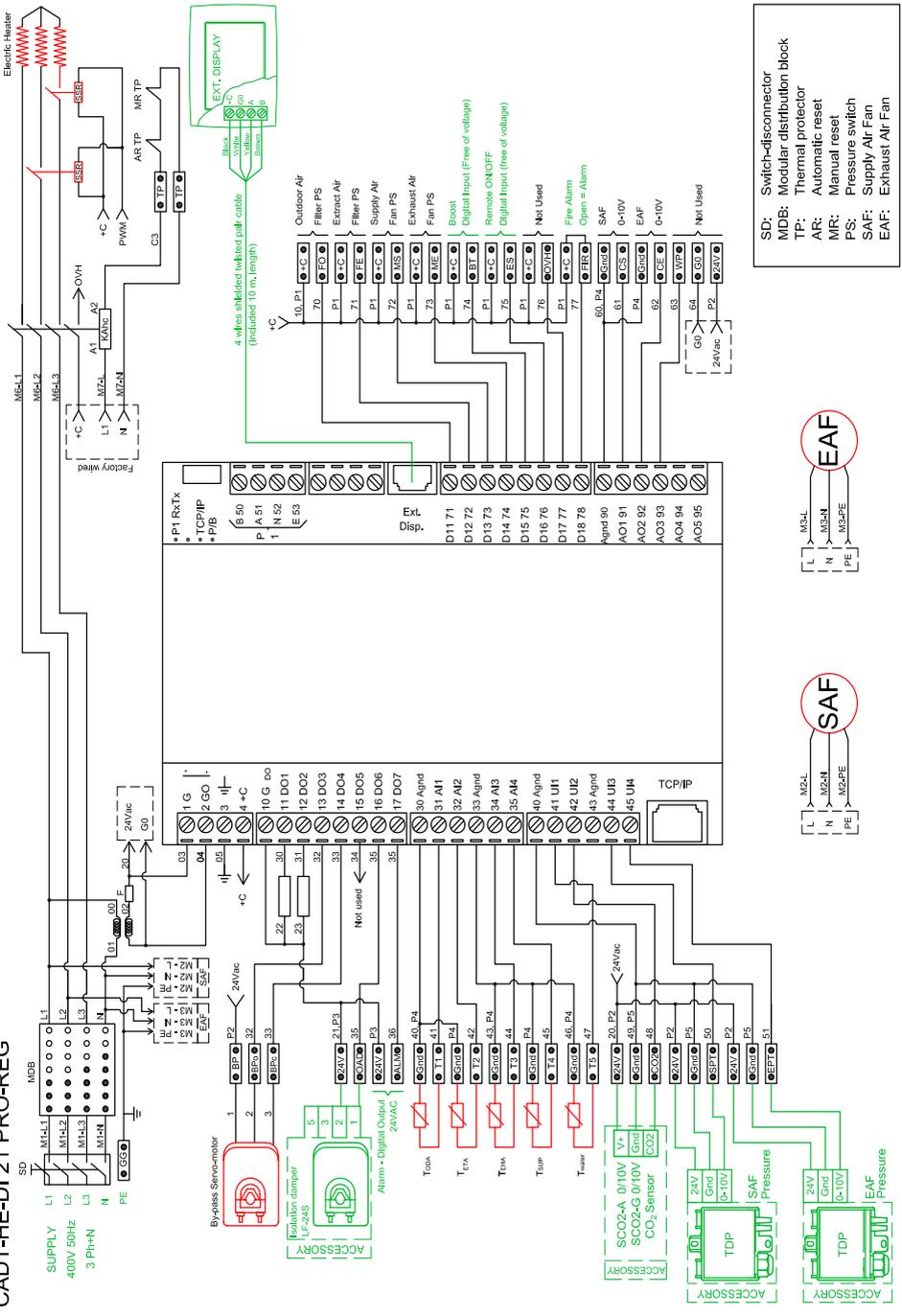
CADB-HE-D/DC 40 - 54 PRO-REG



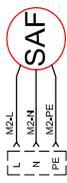
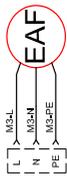
CADB-HE-DI 04 - 16 PRO-REG



CADT-HE-DI 21 PRO-REG



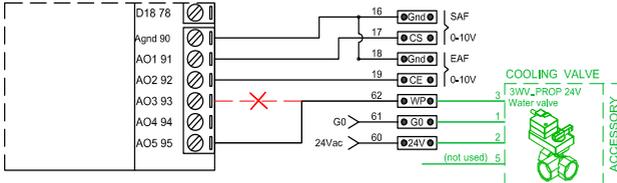
SD: Switch-disconnector
 M2B: Modular distribution block
 TP: Thermal protector
 AR: Automatic reset
 MR: Manual reset
 PS: Pressure switch
 SAF: Supply Air Fan
 EAF: Exhaust Air Fan



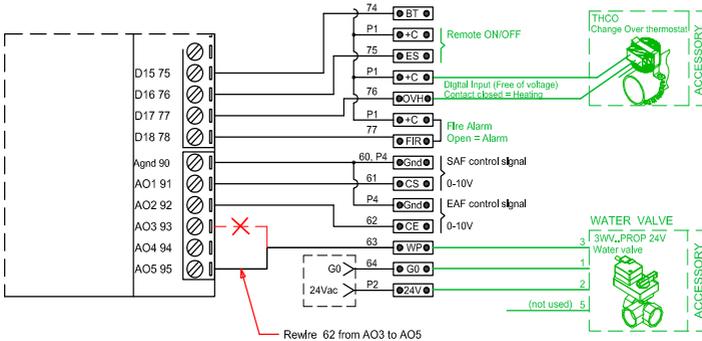
23.2. REWIRING TO MANAGE EXTERNAL MODULES (Accessories)

CADB-HE-D 04 - 54 PRO-REG

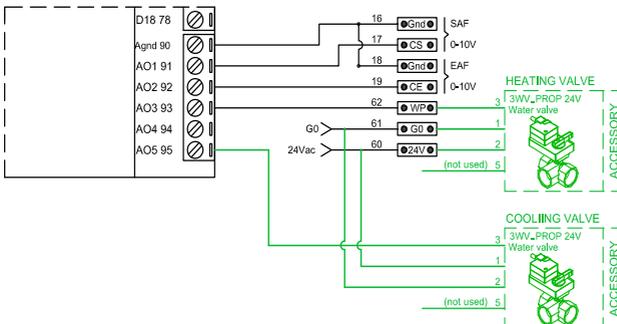
Required rewired for the control of coil module BA-AF HE accessory (Only cooling)



Required rewired for the control of coil module BA-AF HE accessory (Cooling and Heating)

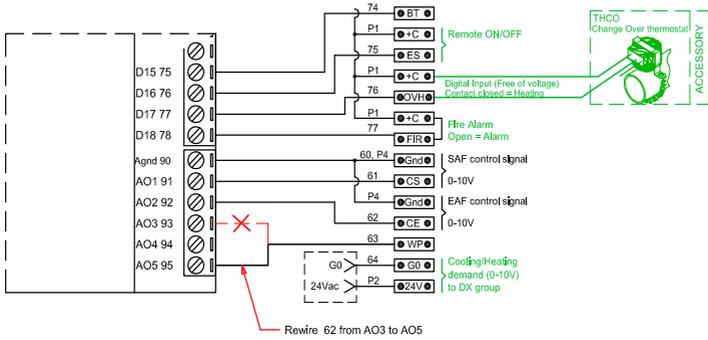


Required rewired for the control of coil module BA-AFC HE accessory (Cooling and Heating, 4 pipes)

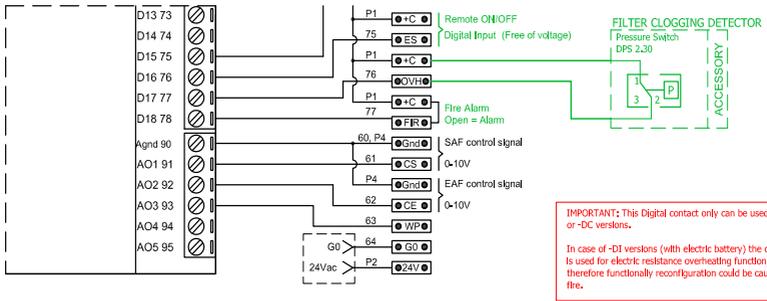


CADB-HE-D 04 - 54 PRO-REG

Required rewired for the control of coil module BA-DX HE accessory (Direct expansion coil)



Required rewired for the control of filter module FB CA HE / FBL-HE accessory





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