

CALADAIR



CARMA™ J

The best in compact heat recovery unit.



**COMMISSIONING
AND OPERATION**

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Preface



IMPORTANT!

Please read this manual carefully before use.

Legal regulations

All rights reserved.



IMPORTANT!

This manual has been compiled with the utmost care. Nevertheless, the publisher accepts no liability for any damage resulting from incomplete or inaccurate information contained in this manual. We reserve the right to modify the content of these instructions, in whole or in part, at any time and without prior notice.

The information contained in these documents is the property of the Zehnder Group. Any publication, whether in whole or in part, requires the prior written consent of the Zehnder Group. Internal copying for product evaluation or proper use is permitted and does not require prior authorization.



This manual forms an integral part of the safety measures. Therefore:

- This manual must be kept complete and in good condition. If it is lost or damaged, a replacement copy must be requested immediately.
- It must remain with the unit until it is disposed of, including in the event of relocation, sale, rental, or transfer of ownership.
- Any manuals supplied with the unit form an integral part of this documentation and are subject to the same recommendations and requirements set out herein.



This manual is provided in digital format. All additional documents (drawings, diagrams, etc.) are included as appendices to this manual. Keep this manual with the unit and ensure it remains readily available for reference by the user.

The following pictograms are used in this document:



Consult the manual before using/operate the equipment.



Important informations.



Disconnect the power supply before starting work or repairs.



Risk of compromised performance or damage to the ventilation system/risk of personal injury.



Warning: electrical hazard.

1. General information

1.1 Introduction

The CARMA J is a high-efficiency, energy-recovery, double-flow air handling unit with side-by-side horizontal airflows, designed for space-constrained installations. Its monoblock design (up to size 32) makes it easy to fit into tight mechanical rooms while ensuring excellent airtightness. It features a circular duct connection up to size 32; beyond that, it uses a rectangular connection for simpler ductwork hookup. A high-performance plate heat exchanger and low-energy EC motor fans made from composite materials help reduce energy costs. For hygiene, it includes a double-slope stainless-steel condensate pan compliant with VDI 6022 and VDI 3803, supporting healthy indoor air quality and easier maintenance. The entire range is also available with composite fan/motor assemblies to optimize energy efficiency and minimize noise levels.

1.2 Warranty

The current General Terms and Conditions of Sale are available at www.caladair.com through your customer account and may also be obtained through our usual sales channels.

This warranty shall be void in the following cases:

- the warranty period has expired;
- the unit was not installed in accordance with the applicable instructions;
- faults occurred as a result of incorrect wiring, connection, or improper use;
- replacement parts not originally supplied by the manufacturer were used, or repairs were carried out by unauthorized persons.



CAUTION!

The supplier shall not be held liable for any property damage or personal injury resulting from non-compliance with the instructions contained in this manual and the following chapters.



The manufacturer reserves the right to make changes to its products at any time without prior notice and without any obligation to update previously delivered products.

1.3 Trademarks

All trademarks are acknowledged, even if they are not listed separately. The absence of trademark designation does not mean that an item or sign is free of trademark rights.

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1.4 Safety



Always comply with the safety regulations, warnings, comments and instructions given in this document. Failure to comply with the safety regulations, instructions, warnings and comments may lead to personal injury or damage to the equipment.



In accordance with applicable regulations, installation and maintenance of the equipment must be carried out only by personnel who are technically qualified and authorized for this type of equipment and work.



It is strictly prohibited to remove or bypass any safety-system components. If any safety-system components are damaged, come loose, or are removed accidentally, the customer must notify the manufacturer.



Modifying the equipment or any specification contained in this document is strictly prohibited. Doing so may result in personal injury and/or reduced ventilation system performance.



Always disconnect the power supply to the equipment and wait for all components to come to a complete stop before carrying out any work. The equipment may cause personal injury if opened while in operation. Ensure that the equipment cannot be restarted accidentally.

When working near the equipment, follow the general accident-prevention rules.



Use the required personal protective equipment (PPE) for each procedure.

Clothing worn by personnel performing work or maintenance must comply with:

- the essential safety requirements defined by EU Regulation 2016/425
- the laws in force in the country where the equipment is installed



The installation must comply with fire-safety regulations.



The unit may be started and stopped only using the proximity switch.



While the equipment is in operation, ensure that all doors and panels are correctly fitted and fully closed.



Personal protective equipment (PPE) must be used to prevent injuries caused by electrical, mechanical (injuries from contact with sheet metal, sharp edges, etc.), and acoustic hazards.



Move the unit only as described in the handling section.



Grounding must be done in accordance with the applicable standards. Never power on a unit that is not grounded.



During operation and during inspection and maintenance, panels, doors, and access hatches must always be installed and kept closed.



All waste generated must be handled in accordance with applicable regulations.



The installer is responsible for ensuring compliance with all applicable regulations regarding indoor noise emissions and for adapting the installation and positioning of the unit as necessary.



No liability shall be accepted for damage resulting from improper use of the equipment, unauthorized repairs or modifications, or failure to comply with these instructions.

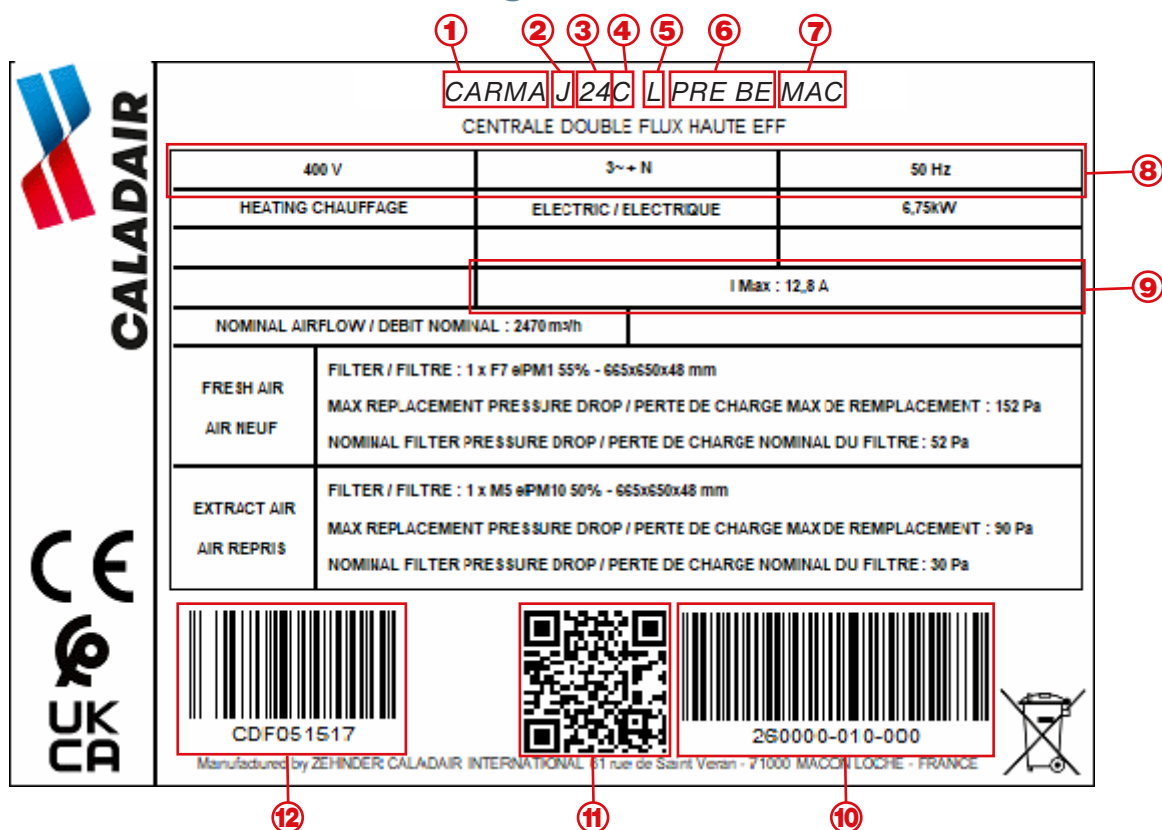


In France, SEASON versions equipped with composite fans do not comply with the July 29, 2025 decree, Article CH36 §1 of the French fire-safety regulations for public-access buildings (ERP) (except where this regulation provides an exemption).



In France, to comply with the July 29, 2025 decree, Article CH36 §1 of the French fire-safety regulations for public-access buildings (ERP), a smoke detector must be installed on any unit equipped with a composite fan (except where this regulation provides an exemption).

2. Identification and labeling



The CARMA J is identified by a label affixed to the electrical cabinet door:

Pos.	Description		
1	Range		
2	Airflow		
3	Unit size	06, 09, 13, 18, 23, 24, 32, 36, 42, 48	
4	Fan material	C (Composite), M (Metal)	
5	Configuration	R (Right), L (Left)	
6	Thermal equipment	SEASON	
		FIRST	
		PRE BE (PREMIUM BE)	
		PRE CO (PREMIUM CO)	
		INF BE (INFINITE BE)	
		INF CO (INFINITE CO)	
	Fan control mode	ECO	Fans with 2 fixed speeds (CAV)
		DIV (DIVA)	CO ₂ dependent variable-speed fans (DCV)
		MAC (MAC2)	Fans with 2 fixed airflow rates (CAV)
		QUA (QUATTRO)	CO ₂ dependent variable-airflow fans (DCV)
		LOB (LOBBY)	Constant pressure fans (VAV)
8	Power supply (3.1 Electrical specifications, page 10)		
9	Maximal current input (3.1 Electrical specifications, page 10)		
10	Manufacturing number (please quote this number whenever contacting your distributor)		
11	Unit reference code		
12	User manual QR code		



CAUTION!

Removing the identification plate and/or replacing it with other plates is strictly prohibited. If the plate is damaged, comes loose, or is removed accidentally, the customer must notify the supplier.

3. Technical specifications

3.1 Electrical specifications

	SEASON / FIRST / PREMIUM CO				SMART / INFINITE CO			
	Power	Preheater power	Reheater power	Voltage	Power	Preheater power	Reheater power	Voltage
06C	3,0 A			230V / 1Ph / 50Hz	11,7 A	2,0kW		230V / 1Ph / 50Hz
09C	3,0 A			230V / 1Ph / 50Hz	13,9 A	2,5kW		230V / 1Ph / 50Hz
13C	5,8 A			230V / 1Ph / 50Hz	6,8 A	3,75kW		400V / 3Ph + N / 50Hz
18C	4,6 A			230V / 1Ph / 50Hz	9,8 A	5,25kW		400V / 3Ph + N / 50Hz
24C	6,4 A			230V / 1Ph / 50Hz	15,0 A	8,25kW		400V / 3Ph + N / 50Hz
32C	3,4 A			400V / 3Ph + N / 50Hz	15,3 A	8,25kW		400V / 3Ph + N / 50Hz
36C	3,4 A			400V / 3Ph + N / 50Hz	16,4 A	9,0kW		400V / 3Ph + N / 50Hz
48C	4,8 A			400V / 3Ph + N / 50Hz	30,8 A	18kW		400V / 3Ph + N / 50Hz

	PREMIUM BE				INFINITE BE			
	Power	Preheater power	Reheater power	Voltage	Power	Preheater power	Reheater power	Voltage
06C	11,7 A		2,0kW	230V / 1Ph / 50Hz	20,4 A	2,0kW	2,0kW	230V / 1Ph / 50Hz
09C	13,9 A		2,5kW	230V / 1Ph / 50Hz	24,7 A	2,5kW	2,5kW	230V / 1Ph / 50Hz
13C	9,0 A		5,25kW	400V / 3Ph + N / 50Hz	14,4 A	3,75kW	5,25kW	400V / 3Ph + N / 50Hz
18C	9,8 A		5,25kW	400V / 3Ph + N / 50Hz	17,4 A	5,25kW	5,25kW	400V / 3Ph + N / 50Hz
24C	12,8 A		6,75kW	400V / 3Ph + N / 50Hz	24,8 A	8,25kW	6,75kW	400V / 3Ph + N / 50Hz
32C	13,1 A		6,75kW	400V / 3Ph + N / 50Hz	25,1 A	8,25kW	6,75kW	400V / 3Ph + N / 50Hz
36C	20,7 A		12kW	400V / 3Ph + N / 50Hz	33,7 A	9,0kW	12kW	400V / 3Ph + N / 50Hz
48C	22,1 A		12kW	400V / 3Ph + N / 50Hz	48,1 A	18kW	12kW	400V / 3Ph + N / 50Hz

	Operating temperature	Protection type	Fan material	Smoke detector	Thermal protection class	Motor power
06C	-25°C / 60°C	IP54 / B	Composite		ITP	2x170 W
09C	-25°C / 60°C	IP54 / B	Composite		ITP	2x170 W
13C	-25°C / 60°C	IP54 / B	Composite	Option	ITP	4x170 W
18C	-25°C / 45°C	IP54 / B	Composite	Option	ITP	2x500 W
24C	-25°C / 60°C	IP55 / F	Composite	Option	ITP	2x700 W
32C	-25°C / 40°C	IP55 / F	Composite	Option	ITP	2x1000 W
36C	-25°C / 40°C	IP55 / F	Composite	Option	ITP	2x1000 W
48C	-25°C / 50°C	IP55 / F	Composite	Option	ITP	2x1500 W

*ITP: Integrated thermal protection



All additional documentation (drawings, diagrams, etc.) is provided as an appendix to this manual.

3.2 Dimensional specifications

The dimensions of the CARMA J range (depending on the model) are shown in the tables below:

	A	A1	B	C	D	D1	D2	E	E1	F	H/H1*
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
06C	1985		885	575	250			365		75	250/105
09C	2090		1325	630	285			710		70	250/105
13C	2090		1325	630	285			710		70	250/105
18C	2465		1325	715	325			595		70	345/80
24C	2605		1475	790	360			655		70	345/105
32C	2605		1475	790	360			655		70	345/105
36C	2660	515	1670	935	600	205	130	600	170	75	345/105
48C	2660	515	1670	935	600	205	130	600	170	75	345/105

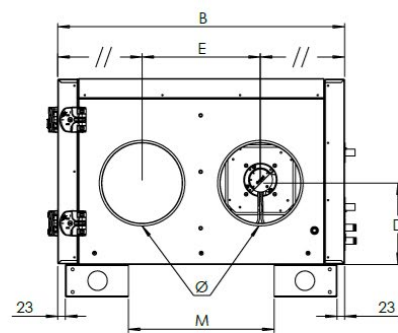
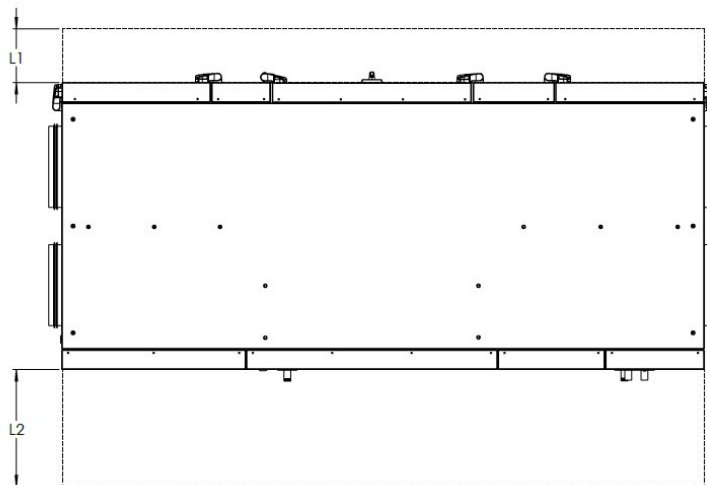
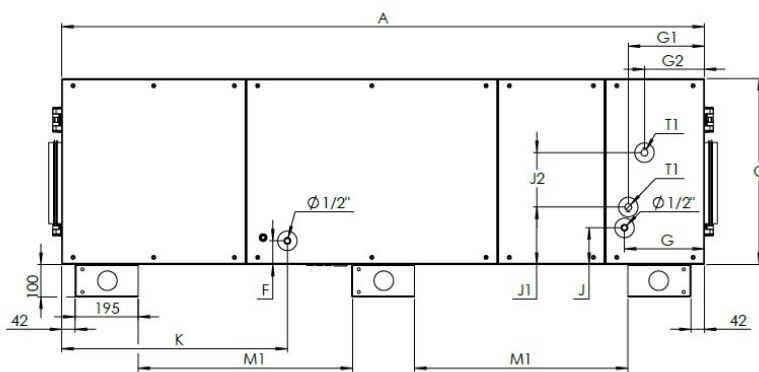
*H dimension for L configuration, H1 for R configuration

	G1	G2	J	J1	J2	K/K1*	M	M1	M2	T1	Ø
	mm	mm	mm	mm	mm	mm	mm	mm	mm	inch	mm
06C	235	185	115	180	170	660/835	450	660		1/2"	250
09C	235	185	70	135	250	690/900	890	720		1/2"	355
13C	235	185	70	135	250	690/900	890	720		1/2"	355
18C	315	250	70	135	470	760/980	890	900		3/4"	400
24C	315	250	70	140	680	760/1015	1040	970		3/4"	450
32C	315	250	70	140	680	760/1015	1040	970		3/4"	450
36C	315	250	75	140	685	850/1210	890	620	415	1"	
48C	315	250	75	140	685	850/1210	890	620	415	1"	

*K dimension for L configuration, K1 for R configuration

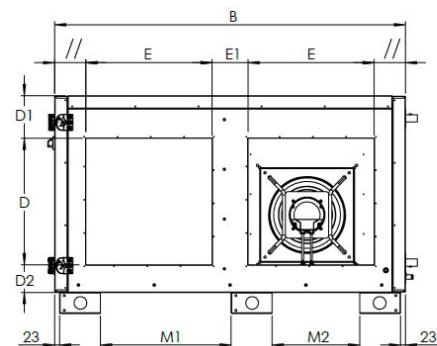
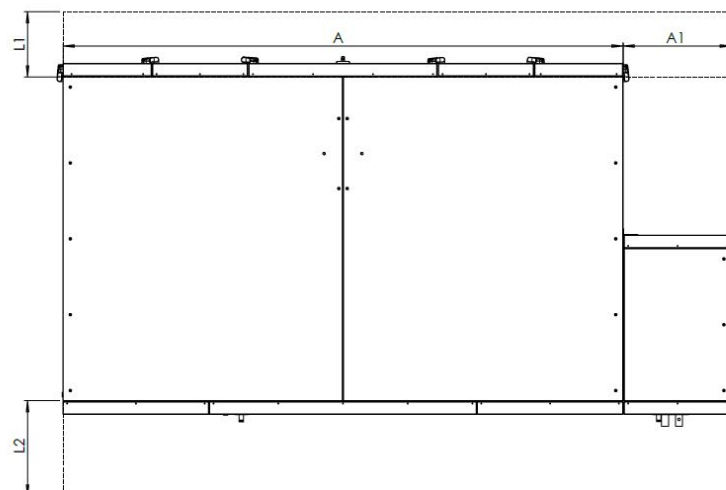
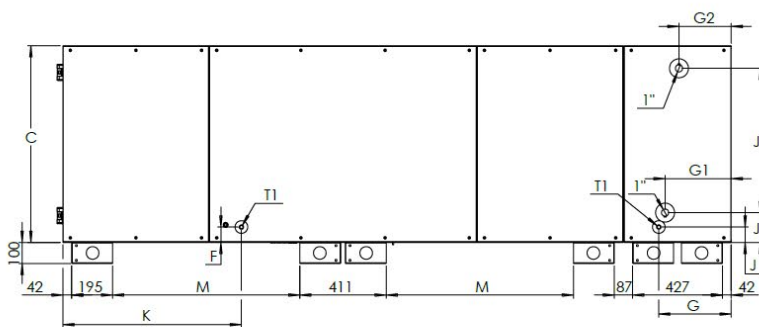
The weight of the CARMA J range (depending on the model) is shown in the tables below:

	FIRST	SMART	PREMIUM BE	PREMIUM CO	INFINITE BE	INFINITE CO
	kg	kg	kg	kg	kg	kg
06C	184	186	186	188	188	190
09C	270	273	271	277	274	280
13C	274	277	275	281	278	284
18C	322	325	327	331	330	334
24C	408	412	414	420	418	424
32C	416	420	422	428	426	432
36C	546	552	560	622	566	628
48C	554	562	566	628	574	636



CARMA J 06 to 32

Drawing representation in L configuration

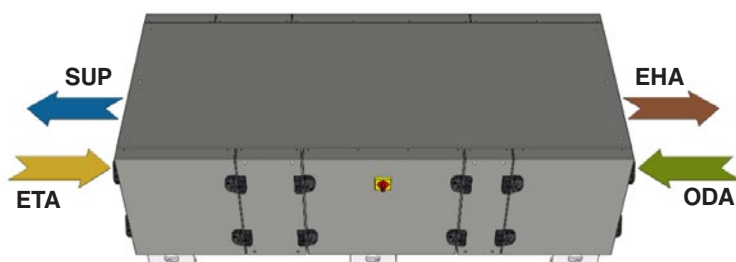


CARMA J 36 to 48

Drawing representation in L configuration

3.3 Airflow configurations

L configuration (left, in the direction of outdoor air)



LEFT-SIDE SERVICE ACCESS.

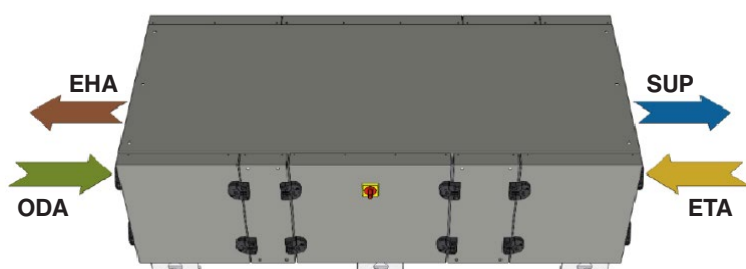
Filter and controls access doors located on the left, in the direction of outdoor air (ODA).

Side-by-side airflows.

Airflow designation:

- ODA: Outdoor air intake
- SUP: Outdoor air supply
- ETA: Return air extract
- EHA: Return air exhaust

R configuration (right, in the direction of outdoor air)



RIGHT-SIDE SERVICE ACCESS.

Filter and controls access doors located on the right, in the direction of outdoor air (ODA).

Side-by-side airflows.

Airflow designation:

- ODA: Outdoor air intake
- SUP: Outdoor air supply
- ETA: Return air extract
- EHA: Return air exhaust

3.4 Thermal equipments

For hot and temperate climates (no preheating)

		Heating			
		No	Electric	Water	Refrigerant
Cooling	No	SEASON FIRST	PREMIUM BE	PREMIUM CO*	FIRST + CBX-DX
	Water	PREMIUM CO*	PREMIUM BE + CBX-BF	PREMIUM CO* PREMIUM CO* + CBX-BF**	
	Refrigerant	FIRST + CBX-DX	PREMIUM BE+ CBX-DX	PREMIUM CO* + CBX-DX	FIRST + CBX-DX

*Sizes 06 to 32: integrated / sizes 36 to 48: external module not factory-installed

**When the hot-water coil must be different from the chilled-water coil

For cold climates (with preheating)

		Heating			
		No	Electric	Water	Refrigerant
Cooling	No	SMART	INIFINITE BE	INIFINITE CO*	SMART+ CBX-DX
	Water	INIFINITE CO*	INIFINITE BE + CBX-BF	INIFINITE CO* INIFINITE CO* + CBX-BF**	
	Refrigerant	SMART+ CBX-DX	INIFINITE BE+ CBX-DX	INIFINITE CO* + CBX-DX	SMART+ CBX-DX

*Sizes 06 to 32: integrated / sizes 36 to 48: external module not factory-installed

**When the hot-water coil must be different from the chilled-water coil

3.5 Fan control mode

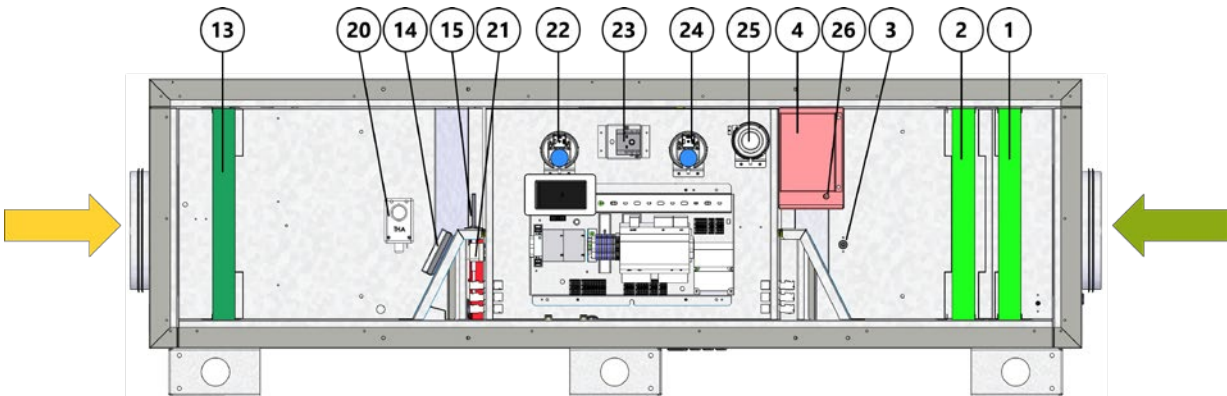
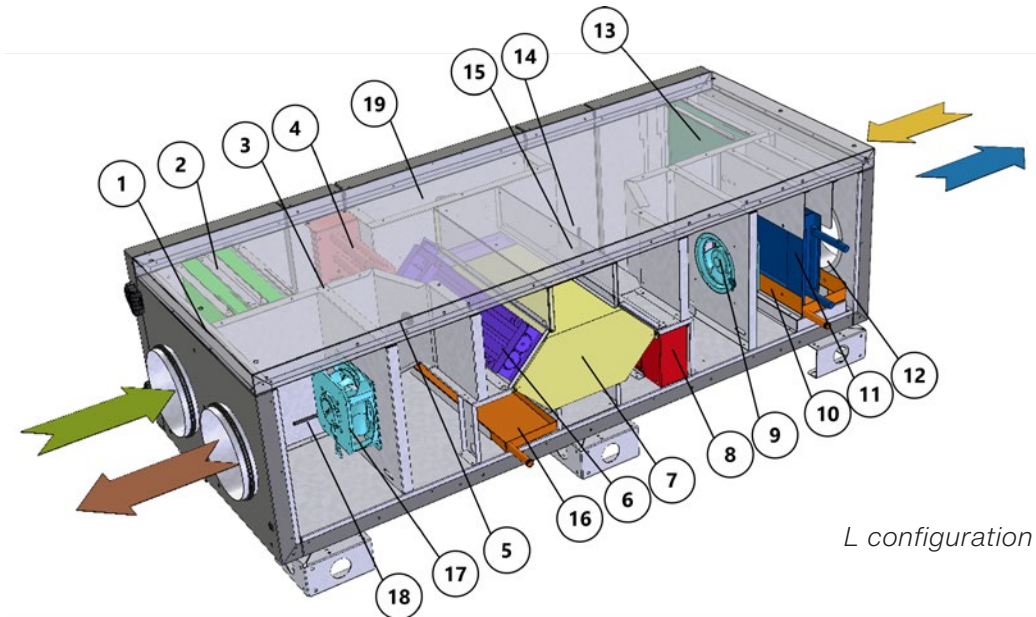
Units in this range come standard with Zehnder Easy 5.0 control, which provides smart management of ventilation and thermal performance (except for the SEASON version—see chapter «10. SEASON Control», page 66). Zehnder Easy 5.0 is communication-ready (Modbus RTU/TCP or Bacnet MSTP/IP) and includes a web server compatible with any HTML5 web browser. Zehnder Easy 5.0 is described in detail in a separate dedicated manual.

Modulation		Application	Benefit	Operating curve
ECO	Fans with two fixed speeds (CAV)	Single zone	Cost-saving option that operates the fans at two speeds according to a time schedule.	
MAC2	Fans with two fixed airflow rates (CAV)	Single zone	An efficient solution that provides the required airflow rates at both low and high fan speeds according to a predefined time schedule. This control strategy simplifies unit commissioning and maintenance.	
DIVA	CO ₂ -controlled variable speed fans (DCV)	Single zone	A cost-effective solution that modulates fan operation between two speed settings based on CO ₂ sensor.	
QUATTRO	CO ₂ -controlled variable airflow fans (DCV)	Single zone	An efficient solution that ensures the required airflow at both low and high fan speeds based on a CO ₂ sensor. This control approach streamlines unit commissioning and maintenance.	
LOBBY	Constant pressure fans (VAV)	Multi zone	An efficient solution designed to maintain the required pressure level within a duct network serving multiple zones.	

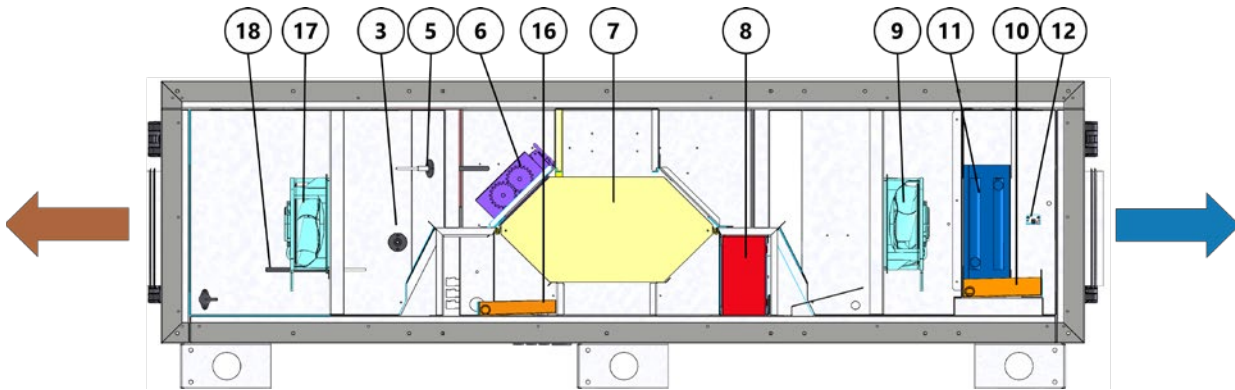
3.6 Composition and structure

3.6.1 General composition

Size 06 to 32



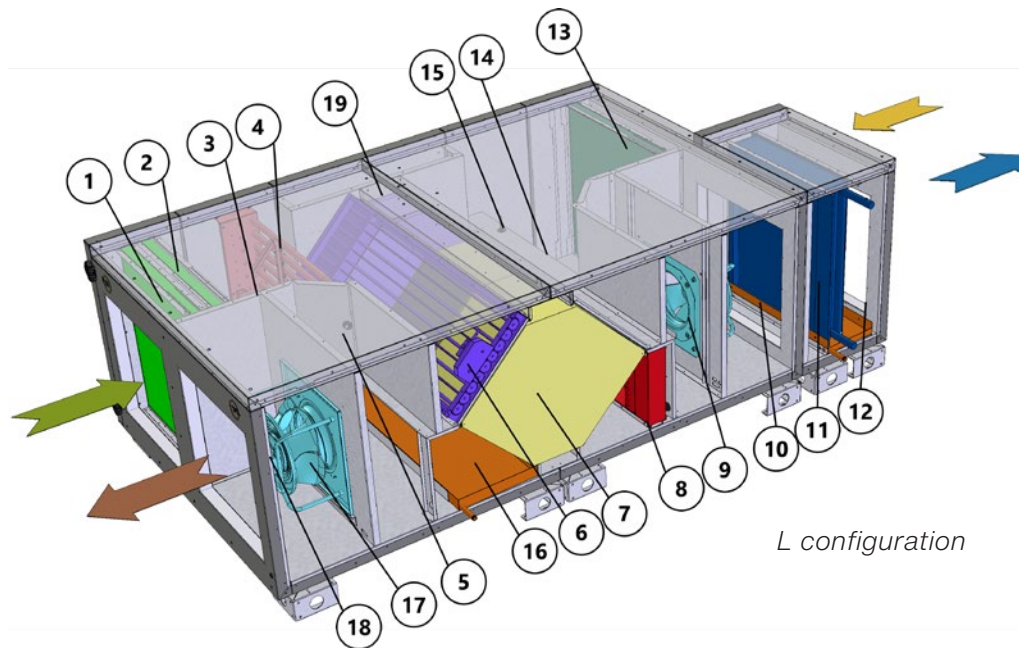
Front view (controls and filters side) - L configuration



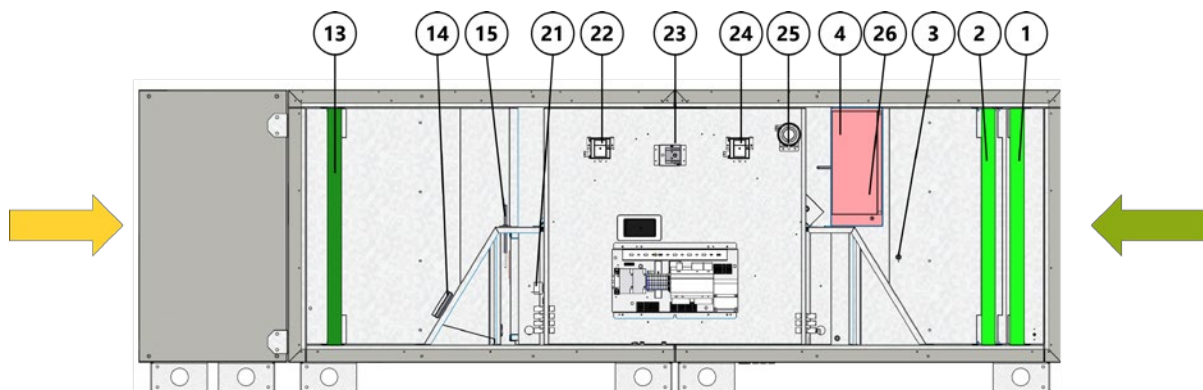
Rear view (fans and hydraulic connections side) – L configuration

Pos.	Identification	Component
1	-	Flat supply air prefilter (option)
2	FS	Double supply air filter (F7) (F9 additional filter in option)
3	SEG	Outdoor air temperature sensor (ODA)
4	DBE	Electric preheating (defrost) coil, including THSD and THLD thermostats and associated solid-state relays
5	SDB	Pre-heated air temperature sensor, control of the pre-heating coil (SMART and INFINITE)
6	BIM	Bypass with modulating motorized dumper
7	REC	Plate type recuperator with removable condensate pan
8	BE	Electric heating coil, including the THL safety thermostat (PREMIUM BE and INFINITE BE)
9	VAS	Supply air fan, including its smoke detector for sizes 13 to 48
10	-	Double-sloped condensate drain pan for the Change-Over coil (PREMIUM CO and INFINITE CO)
11	CO	Change Over coil (PREMIUM CO and INFINITE CO)
12	SSG	Supply air temperature sensor
13	FR	Extract air filter (F7)
14	CO2	CO ₂ sensor (DIVA and QUATTRO)
15	SRG	Extract air temperature sensor
16	-	Double-sloped condensate drain pan for the heat recovery unit
17	VAR	Return Air Fan
18	SDG	Exhaust extract air temperature sensor (control of the bypass)
19	-	Unit electrical control compartment
20	THA	Frost protection thermostat (PREMIUM CO and INFINITE CO)
21	THS	Electric heating coil overheat safety thermostat (PREMIUM BE and INFINITE BE)
22	DEPR / TRPR	Return air fan pressure switch (SEASON, ECO, DIVA) / Return air pressure transmitter (MAC2, QUATTRO, LOBBY)
23	-	Main power supply disconnect switch
24	DEPS / TRPR	Supply air fan pressure switch (SEASON, ECO, DIVA) / Supply air pressure transmitter (MAC2, QUATTRO, LOBBY)
25	DEP FS	Supply air filter guard (pressure switch)
26	THSD	Electric preheating coil overheat safety thermostat (SMART and INFINITE)

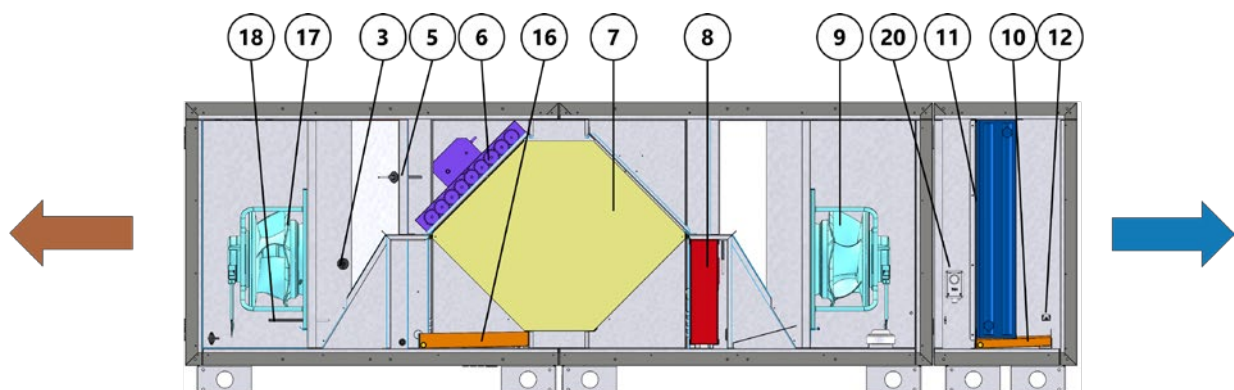
Size 36 to 48



L configuration



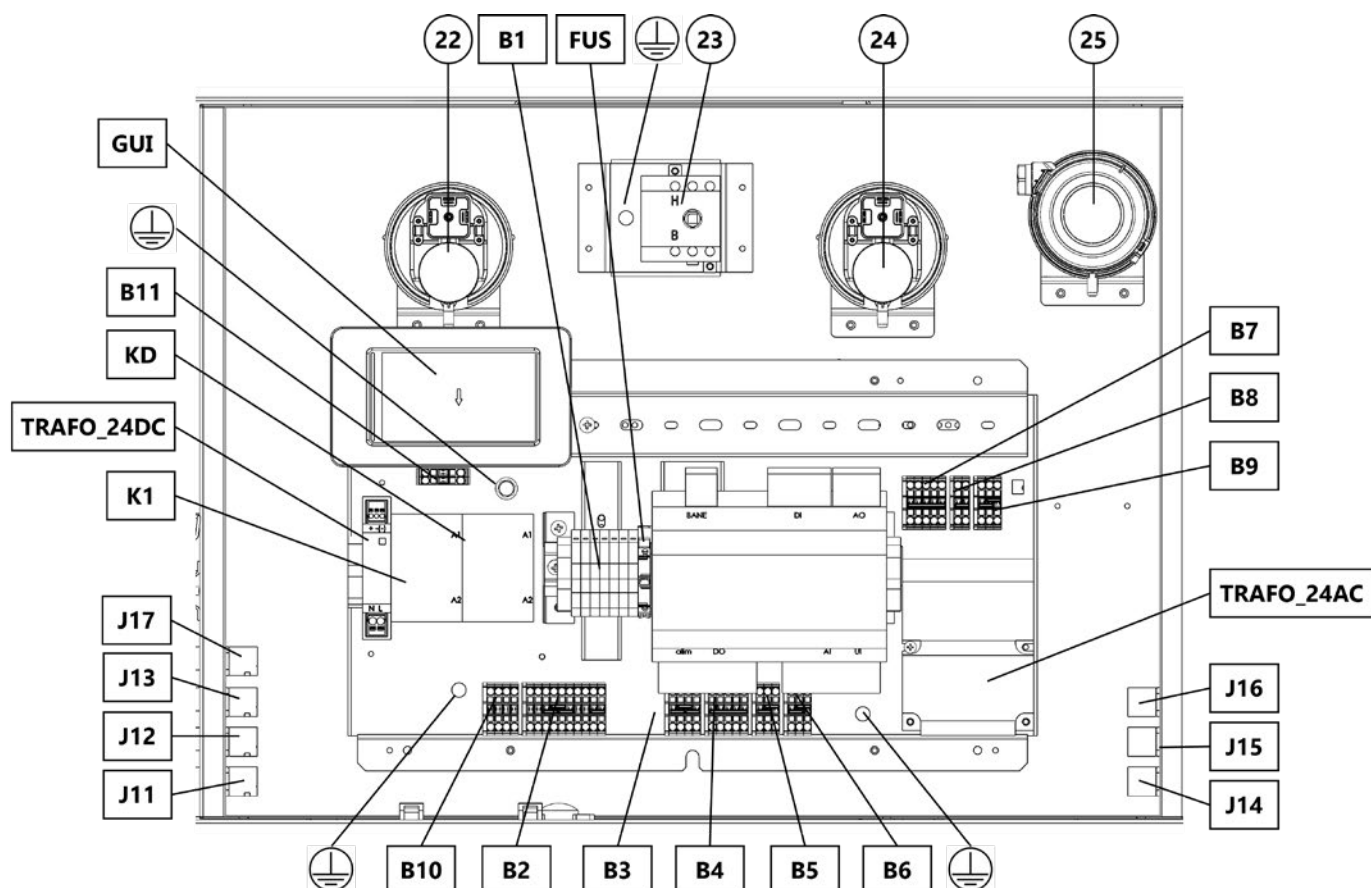
Front view (controls and filters side) - L configuration



Rear view (fans and hydraulic connections side) - L configuration

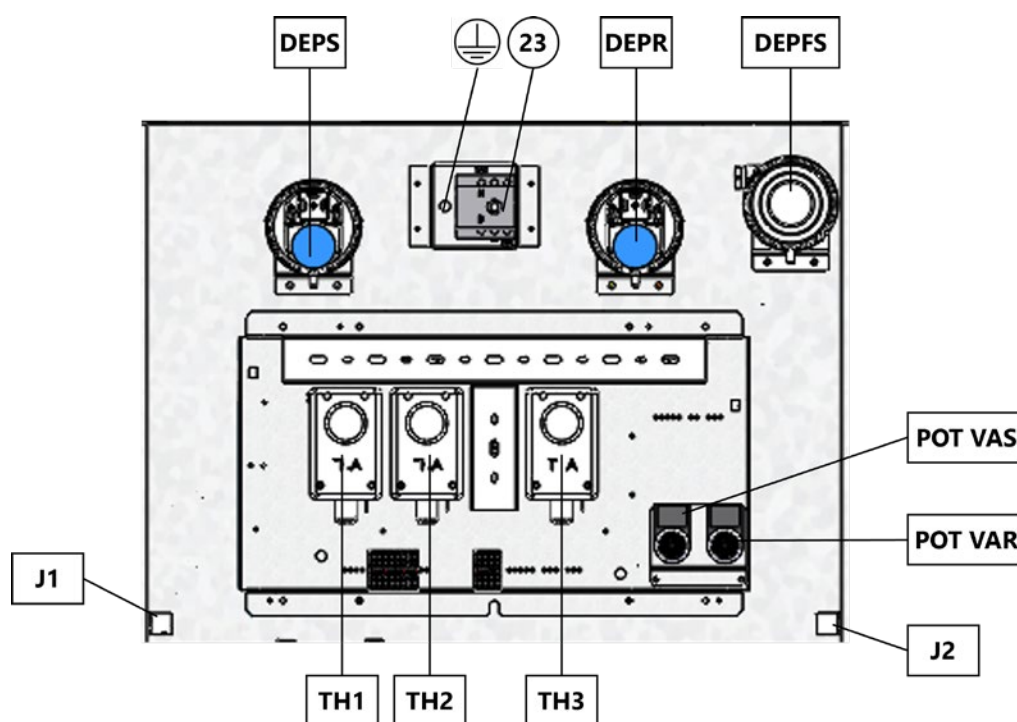
Pos.	Identification	Component
1	-	Flat supply air prefilter (option)
2	FS	Double supply air filter (F7) (F9 additional filter in option)
3	SEG	Outdoor air temperature sensor (ODA)
4	DBE	Electric preheating (defrost) coil, including THSD and THLD thermostats and associated solid-state relays
5	SDB	Pre-heated air temperature sensor, control of the pre-heating coil (SMART and INFINITE)
6	BIM	Bypass with modulating motorized dumper
7	REC	Plate type recuperator with removable condensate pan
8	BE	Electric heating coil, including the THL safety thermostat (PREMIUM BE and INFINITE BE)
9	VAS	Supply air fan, including its smoke detector for sizes 13 to 48
10	-	Double-sloped condensate drain pan for the Change-Over coil (PREMIUM CO and INFINITE CO)
11	CO	Change Over coil (PREMIUM CO and INFINITE CO)
12	SSG	Supply air temperature sensor
13	FR	Extract air filter (F7)
14	CO2	CO ₂ sensor (DIVA and QUATTRO)
15	SRG	Extract air temperature sensor
16	-	Double-sloped condensate drain pan for the heat recovery unit
17	VAR	Return Air Fan
18	SDG	Exhaust extract air temperature sensor (control of the bypass)
19	-	Unit electrical control compartment
20	THA	Frost protection thermostat (PREMIUM CO and INFINITE CO)
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22	DEPR / TRPR	Return air fan pressure switch (SEASON, ECO, DIVA) / Return air pressure transmitter (MAC2, QUATTRO, LOBBY)
23	-	Main power supply disconnect switch
24	DEPS / TRPR	Supply air fan pressure switch (SEASON, ECO, DIVA) / Supply air pressure transmitter (MAC2, QUATTRO, LOBBY)
25	DEP FS	Supply air filter guard (pressure switch)
26	THSD	Electric preheating coil overheat safety thermostat (SMART and INFINITE)

3.6.2 Electrical Board (excluding SEASON)



Identification	Item
TRAFO_24AC	230 Vac / 24 Vac control transformer with built-in fuse
TRAFO_24DC	230 Vac / 24 Vdc control transformer
	Inserts for PE protective earth connection
CLD283	EASY 5.0 electronic controller
B1...B11	Control terminal blocks
K1	Electric heater coil contactor (BE)
KD	Defrost heater coil contactor (DBE)
FUS	Fuse holder terminal block 3.15A T
J01...J99	Quick connector
GUI	Remote-mount touchscreen
22	Return Air Fan Pressure Switch (SEASON, ECO, DIVA) / Return Air Pressure Transmitter (MAC2, QUATTRO, LOBBY)
23	Main Power Supply Disconnect Switch
24	Supply Air Fan Pressure Switch (SEASON, ECO, DIVA) / Supply Air Pressure Transmitter (MAC2, QUATTRO, LOBBY)
25	Supply Air Filter Pressure Switch

3.6.3 SEASON Electrical board



Identification	Component
POT VAS	Speed setpoint potentiometer — Supply Air Fan (VAS)
POT VAR	Speed setpoint potentiometer — Return Air Fan (VAR)
TH1	Thermostat TH1 (heat recovery), sensor bulb on the fresh-air inlet
TH2	Thermostat TH2 (cooling recovery), sensor bulb on the fresh-air inlet (ODA)
TH3	TH3 thermostat (frost protection), bulb on the return-air outlet (EHA)
J1-J2	Connector; see the wiring diagram for the SEASON version
DEPS	Pressure switch for supply (blow-in) fan run-status monitoring, VAS
DEPR	Pressure switch for exhaust (return) fan run-status monitoring, VAR
DEP FS	Pressure switch for monitoring outside-air filter clogging

4. Installation

4.1 Warnings



Lifting and handling operations must be performed only by trained, specialized personnel qualified to carry out these tasks.



Select handling/lifting equipment that matches the weight of the unit delivered (refer to the weight shown at the beginning of this document in the weights and dimensions table).



Install the unit so that ambient temperature cannot damage its internal components during installation and operation.



If a suspended ceiling is used, it must allow the doors to open so you can access the inside of the unit.



From this point on, most illustrations show only the L configuration (left, in the direction of outdoor air flow).



Observe the allowable load ratings for the supports (ceiling, slab, threaded rods, etc.). The weight of each model is listed in the technical specifications; see [3.2 Dimensional specifications, page 11](#) weight and dimensional data in the table. Be sure to factor in the weight of any optional accessories.

4.2 Transport and unpacking



If there is any damage or the delivery is incomplete, contact your supplier immediately and do not proceed with installation.

- Upon receipt of the unit, check the condition of the packaging and the unit itself, as well as the number of packages received.
- Take all necessary precautions when handling, transporting, and unpacking the unit.
- When unpacking the unit, verify that:
 - all packages have been delivered;
 - all expected accessories are included (electrical components, ducts, external controls, etc.).
- Remove the protective film from the panels.
- After unpacking, dispose of all packaging materials in accordance with applicable local regulations. Ensure that packaging waste is disposed of in an environmentally responsible manner.

4.3 Delivery inspection



Check the nameplate to confirm you received the correct unit type.



If there is any damage or the delivery is incomplete, contact your supplier immediately and do not proceed with installation.

The units are delivered secured to transport supports and wrapped in protective film. Sensitive components are protected with cardboard or bubble wrap.

4.4 Handling and horizontal lifting

CRANE HANDLING	
Operator qualifications	Lifting Equipment Operator
Required Personal Protective Equipment (PPE)	
Lifting equipment	Crane and lifting gear suitable for the loads specified in the documentation
Required Tools	Specialized tools for lifting operations



Use extra care when lifting the product up to the ceiling and positioning it on the ceiling, to prevent any impact that could damage the product's structure and integrity.



If the unit is lifted using a crane, use a spreader beam and secure it with straps to keep it in its transport position (vertical position).



If the unit is transported using a forklift truck, ensure that the forklift supports the load-bearing frame.



It is recommended to handle the unit on its transport supports (1) and remove them only at the last moment, as close as possible to the installation location.

Make sure there are no obstructions in front of the airflow:



- If the ceiling is sloped, it is recommended to install the unit on the higher side of the slope.
- There shall be no beams perpendicular to the airflow.
- If light fixtures protrude from the ceiling, the airflow must be able to pass over them without being obstructed.

CAUTION!



The supplier shall not be held liable for any property damage or personal injury resulting from accidents caused by failure to comply with the instructions provided in this manual and the following chapters.

4.5 Power supply connection



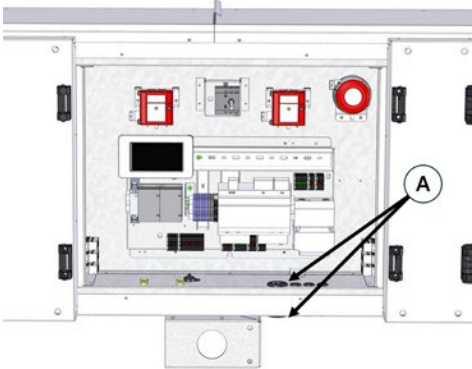
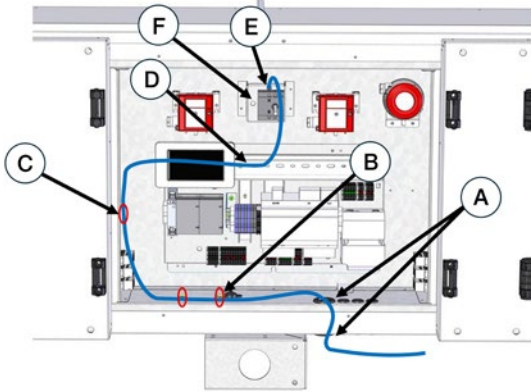
Upstream protective devices (circuit breaker and residual-current device) must be installed on the power supply circuit ahead of the ventilation unit.



CAUTION!
The supplier shall not be held liable for any property damage or personal injury resulting from non-compliance with the instructions contained in this manual and the following chapters.

Power supply connection	
Operator qualifications	Installer
Required personal protective equipment (PPE)	 
Required tools	Standard tools

Connect the power supply by following these steps:

Step	Action	Image
1	Pierce the rubber cable grommets (A) on the bottom double-wall panel of the electrical cabinet and pass the power cable through them.	
2	Pass the power supply cable through the largest cable grommets (A).	
3	Run the cable through both strain-relief clamps, then secure it with a cable tie (B).	
4	Route the power cable along the vertical panel, securing it with the Omega cable clamps (C).	
5	Feed the power cable into the wiring duct (D).	
6	Connect the main power supply to the disconnect switch (E) and the ground terminal (F).	



CAUTION!
The supplier shall not be held liable for any property damage or personal injury resulting from non-compliance with the instructions contained in this manual and the following chapters.

4.6 Condensate drainage

4.6.1 Gravity drainage — general information

As standard, the unit is designed for gravity condensate drainage (without any high points in the drain line). A trap must be installed on each condensate drain pan during installation (one trap per drain pan):

- the plate heat exchanger condensate drain pan;
- the Change Over coil condensate drain pan, if fitted (PREMIUM CO and INFINITE CO versions);
- the condensate drain pan of the duct-mounted cooling and/or reversible coil modules (CBX-BF or CBX DX).



Failure to follow the condensate trap installation requirements may cause condensate drain pan overflow and flooding inside the ventilation unit, which could result in equipment damage, malfunctions, and a risk of injury to personnel.



The location of the condensate drain and the type of connection are shown in Chapter X [10.5 Connection and setup of external user devices](#), page 68



Provide a slope of 2 to 3% in the direction of condensate flow and ensure that the drain line is neither under negative pressure nor overpressure



Provide a dedicated trap on each condensate drain line (condensate from the heat exchanger drain pan and condensate from the BF / CO / DX coil drain pans). The same trap must not be used for more than one drain line.



For proper operation, the trap must always be filled with water.



The trap must be filled during the first start-up of the air handling unit. After a period of shutdown or prolonged operation without condensate production, it may be necessary to manually refill the trap from inside the unit.



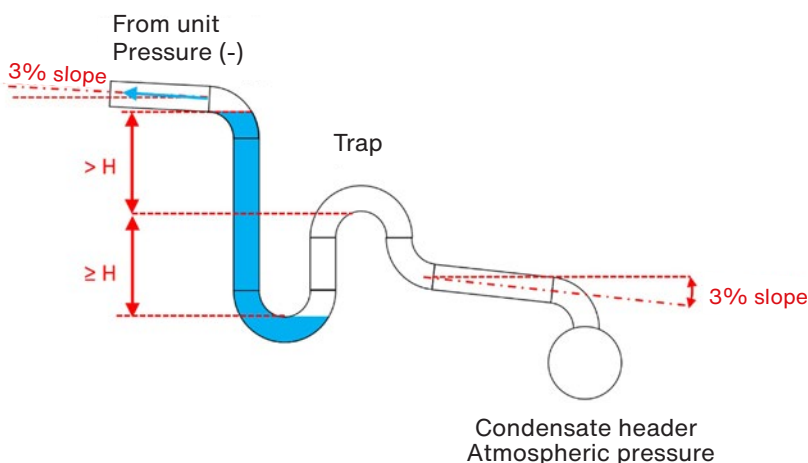
Ensure that the trap assembly is perfectly sealed to the connection provided on the air handling unit to prevent outside air from being drawn into the unit.



The height H is determined by the maximum negative pressure. Where space permits, a height of H = 120 mm will accommodate all operating conditions.

4.6.2 Plate heat exchanger trap

The requirements of Section [4.6.1 Gravity drainage — general information](#), page 23 apply.

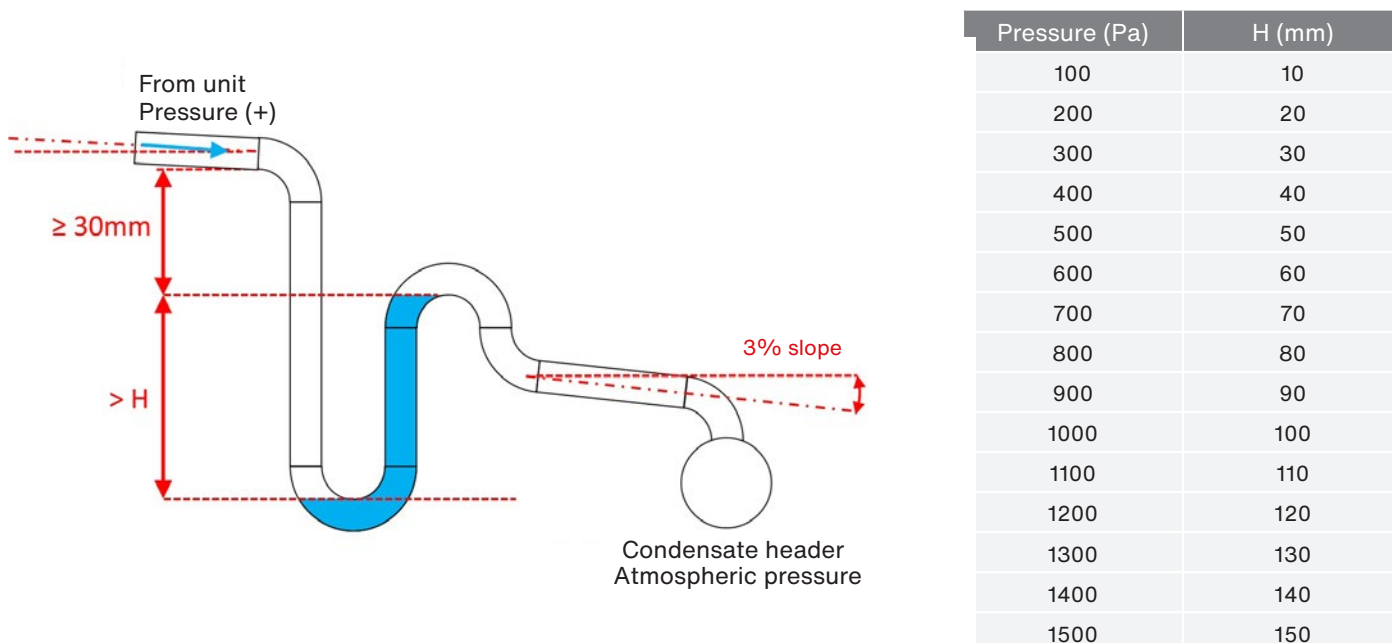


Pression (Pa)	H (mm)
100	10
200	20
300	30
400	40
500	50
600	60
700	70
800	80
900	90
1000	100
1100	110
1200	120
1300	130
1400	140
1500	150

4.6.3 Trap for integrated CO coil or remote CBX-BF / CBX-DX coil

The requirements of Section 4.6.1 Gravity drainage — general information, page 23 apply.

Unlike the plate heat exchanger condensate drain, which is subject to negative pressure relative to atmospheric pressure, the remote coil condensate drain is subject to positive pressure relative to atmospheric pressure. Consequently, a different trap height is required.



4.6.4 Condensate drainage using a condensate lift pump (optional, not installed)



Failure to follow the condensate trap installation rules may cause the condensate pan to overflow and flood the inside of the ventilation unit, which can damage the equipment, lead to malfunctions, and put personnel at risk.



The optional condensate lift pump supplied by CALADAIR must not be installed outdoors.



The optional condensate lift pump supplied by CALADAIR may only be used to drain condensate from plate heat exchangers.

If gravity condensate drainage is not possible, an optional condensate lift pump (supplied separately and not factory-installed) is available as an accessory.

The condensate lift pump allows condensate to be discharged to a level above the unit (e.g. to a roof drain, into another room, etc.) or where the drain line includes a high point.

Step	Action	Image
1	Pump	
2	Lockable power cable with connector	
3	Mounting bracket	
4	Anti-siphon device	
-	Mounting screws (x2)	
-	Clear PVC tubing (5 m length, to be cut to size)	
-	Clamp	

4.6.4.1 Maintenance

The condensate lift pump must be cleaned regularly with bleach to ensure proper operation of the internal valves and the level-detection device.

Adjust the cleaning frequency to the environment in which the unit is used.



Check that the pump is operating properly during each maintenance service.

Make sure there is no unusual noise from the pump by forcing it to run—fill the condensate collection tray with clean water.

Inspect the condition of the suction and discharge hoses, as well as their fittings.

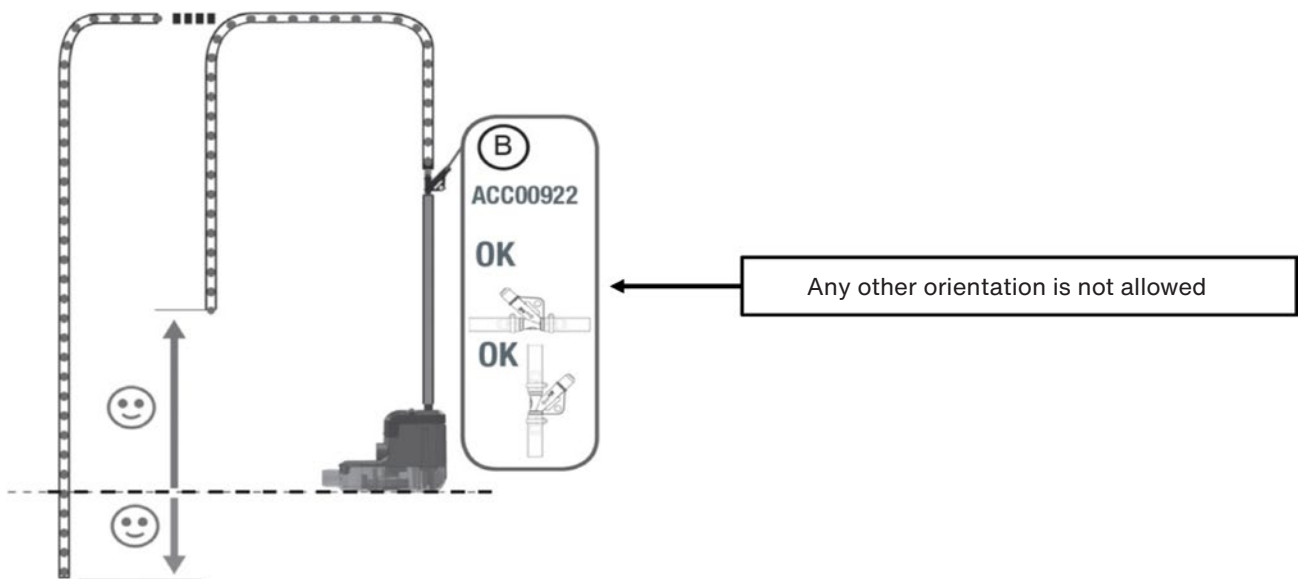
4.6.4.2 Performance and operating conditions

Description	Value
Maximum length	10 m
Maximum elevation	5 m
Maximum condensate temperature	+35°C
Thermal overheat protection (automatic reset)	+115°C
Overflow dry-contact protection (LS1 / LS2)	NC (Normally Closed) 8 A resistive – 250 VAC
Power consumption	14W

4.6.4.3 Installing the anti-siphon device

If the end of the drain hose is below the level of the condensate lift pump, a siphoning effect may occur, causing the pump to run dry repeatedly and potentially leading to pump failure. To prevent this, the anti-siphon device supplied with the condensate lift pump kit must be installed.

The anti-siphon device retains a sufficient volume of water in the pump discharge line when the pump stops. It must be installed above the pump level, either vertically or horizontally, in accordance with the recommendations below:



4.6.4.4 Operational test



After installing the pump and its accessories, a commissioning test must be carried out to ensure proper operation and to prevent potential malfunctions.

Step	Description
1	Clear the condensate tray of any debris (assembly residue, manufacturing residue, packaging material, etc.) to prevent premature wear of the pumping system, clogging of the level-sensing chamber, and clogging of the pump.
2	Slowly pour water into the condensate tray using a bottle.
3	Confirm the pump starts and stops properly to drain the water you poured in. If too much water is poured in, the overflow safety device may trip and cut power to the controller. Wait for the level to drop before turning the controller back on.

4.6.4.5 Diagnosis



If there's an issue, first check:

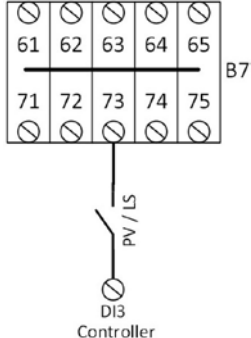
- that the suction and discharge lines are not kinked or clogged;
- that the float inside the pump is not stuck;
- that the pump's suction and discharge ports are not blocked.

Symptoms	Causes and solutions
The pump does not run, regardless of the water level in the tank.	Check the pump's power supply and wiring.
The pump runs continuously without stopping and draws little or no condensate.	Make sure the discharge head does not exceed the maximum allowed height. Check that the suction line is sealed and that there are no air leaks. Replace the pump if needed.
The pump keeps cycling on and off continuously.	Stop the pump and verify that the water column in the discharge tube does not drop. If it does, replace the pump.

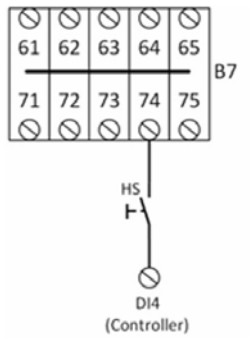
4.7 Electrical connection of external devices

The EASY 5.0 integrated smart controller provides dedicated user inputs and outputs, enabling users to monitor the unit status, force operation when required, and even control equipment remotely.

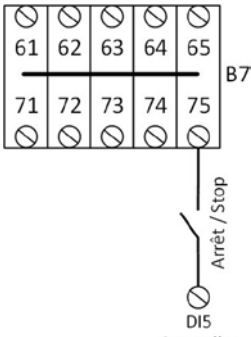
4.7.1 Digital input (DI3) Forced Low Speed (LS)

Description	Image
The external low-speed override command lets you force the unit to run at low speed, regardless of the operating mode currently requested by the time schedule. This external command takes priority over the schedule. If the ventilation unit has been stopped by the schedule, enabling the external low-speed override (reduced mode) will start the unit and run it at low speed.	

4.7.2 Digital input (DI4) Forced High Speed (HS)

Description	Image
The external high-speed override command (normal mode) forces the ventilation unit to operate at high speed, regardless of the operating level requested by the time schedule and regardless of the status of the external reduced-mode override command. The external high-speed override command (normal mode) takes priority over the time schedule and over the external low-speed override command (reduced mode).	

4.7.3 Digital input (DI5) External stop

Description	Image
The external stop command forces the ventilation unit to shut down, regardless of the operating speed requested by the time schedule, and regardless of the status of the external forced-operation commands in reduced or normal mode. Using isolation dampers on the supply and return air ducts is strongly recommended when the ventilation unit is started and stopped repeatedly.	

4.7.4 Fire protection digital input (DI8)

Description	Image
When the external fire-protection command is activated, the ventilation unit switches to fire-protection mode, regardless of the operating mode requested by the time schedule and regardless of the status of the external override commands for Reduced Mode or Normal Mode. Fire-protection mode takes precedence over all other operating modes. The unit behaviour in fire-protection mode depends on the user-defined configuration of this function. This function is disabled by default at the factory.	

4.7.5 Digital output (DO1) motorized supply air isolation damper (RMS)

Description	Image
An optional motorized supply-air isolation damper is available. It is powered directly by controller output DO1 (24 Vac). The damper is fitted with a spring-return actuator that automatically closes the damper in the event of a power failure. Installation and electrical wiring are the responsibility of the installer. The use of isolation dampers on both the supply-air and return-air ductwork is strongly recommended when the air handling unit is started and stopped frequently. When the air handling unit is operating, 24 Vac is present between terminal (32) on terminal block B3 and controller output DO1. When the unit is stopped, no voltage is present. If compliance with VDI 6022 is required and the ventilation system is intended to be shut down, additional dampers must be installed on the outdoor-air intake side and on the exhaust/return-air discharge side of the system (including this unit). These dampers shall provide at least leakage class 2 performance in accordance with EN 1751 and shall be insulated (double-skin construction with internal insulation). This type of damper is not available as an option.	

4.7.6 Digital output (DO2) motorized return air isolation damper (RMR)

Description	Image
An optional motorized supply-air isolation damper is available. It is powered directly by controller output DO2 (24 Vac). A spring-return actuator automatically closes the damper in the event of a power failure. Installation and electrical wiring are the responsibility of the installer. The use of isolation dampers on both the supply-air and return-air ductwork is strongly recommended when the air handling unit is started and stopped frequently. When the air handling unit is operating, 24 Vac is present between terminal (31) on terminal block B3 and controller output DO2. When the unit is stopped, no voltage is present. If compliance with VDI 6022 is required and the ventilation system is intended to be shut down, additional dampers must be installed on the outdoor-air intake side and on the exhaust/return-air discharge side of the ventilation system (including this unit). These dampers shall provide at least leakage class 2 performance in accordance with EN 1751 and shall be insulated (double-skin construction with internal insulation). This type of damper is not available as an option.	

4.7.7 Digital output (DO5) alarm relay

Description	Image
Factory setting = NO output (Normally Open) Output in the inactive state (open) = no active alarm, or a Class C alarm (warning) is present. Output active (closed) = a Class A or Class B alarm is active. 24 Vac output to be relayed.	

4.7.8 Digital output (DO7) Night Cooling signal relay (LOBBY version)

Description	Image
The Night Ventilation (Night Cooling) function uses the cooler outdoor temperatures available at night to reduce the indoor temperature of the building. This improves occupant comfort during the day while reducing the energy consumption of the cooling system. When the function is enabled, the objective is to maximise airflow in order to make full use of the free cooling potential of the outdoor air. For this function to operate correctly when the fans are controlled in constant-pressure mode (LOBBY), the system must be capable of forcing the duct dampers open. Otherwise, the airflow will remain limited to its normal operating value. A 24 Vac output (to be wired via an external relay) is available between terminal (47) on terminal block B3 and controller output DO7 to force the zone dampers open during the Night Ventilation (Night Cooling) period. When the function is active, 24 Vac is present between terminal (47) on terminal block B3 and controller output DO7. When the function is inactive, no voltage is present.	

4.7.9 Firefighter remote control (ADP)

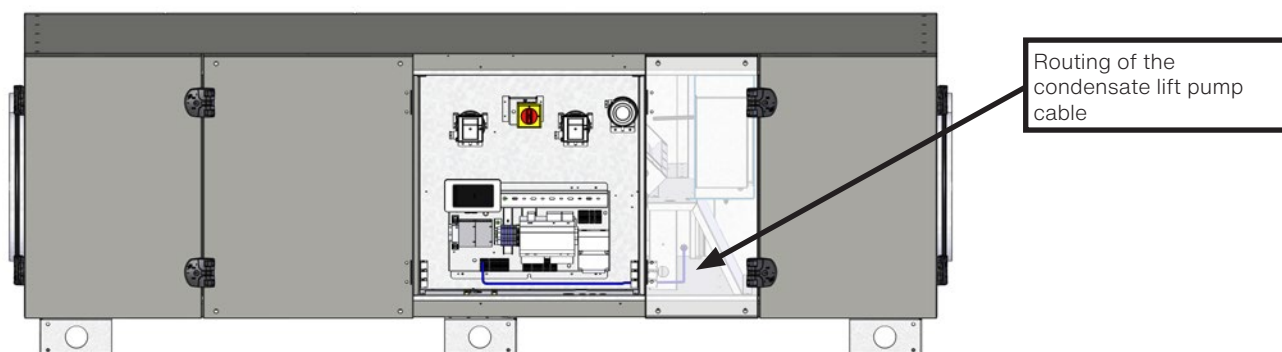
Description	Image
The ADP (or CMSI) normally closed (NC) dry contact must be wired by the installer between terminals (12) and (13) on customer terminal block B2, after removing the factory-installed jumper between these two terminals. Opening the contact cuts power to the entire 24 Vac control circuit. The air handling unit stops immediately, and any installed isolation dampers automatically close by means of their spring-return actuator. The unit automatically restarts when the circuit is closed again (ADP or CMSI contact closed). If an ADP is installed, a motorized damper with a spring-return actuator must be installed downstream of the outdoor-air filters.	

4.7.10 Standalone trip detector (DAD)

Description	Image
The DAD's dry NC (normally closed) contact must be wired by the installer between terminals (83) and (84) on terminal block B10, after removing the factory-installed jumper across these two terminals. Opening the circuit cuts the main 24 Vac supply to the entire control section. The ventilation unit stops immediately, and the isolation dampers (if installed) close using their automatic spring return. The unit restarts automatically as soon as the circuit is closed again (DAD contact closed). If a DAD is installed, plan to install a motorized damper with a safety spring return, located downstream of the outdoor air filters.	

4.7.11 PRC condensate lift pump for the heat recovery unit

Description	Image
Connect the power supply: Blue wire (Neutral) to terminal (1) on terminal block B1 Brown wire (Line/Hot) to terminal (2) on terminal block B1. Remove the jumper between terminals (81) and (82) on terminal block B10. Connect the LS1 level switch: Black wire to terminal (81) on terminal block B10 Gray wire to terminal (82) on terminal block B10. A cable grommet (A) is provided on the rear face of the unit to route the power cable connecting the electrical compartment (terminal blocks B1 and B10) to the condensate lift pump.	



Front view (controls and filters side) - L configuration

4.8 Connecting water coils

4.8.1 General information

Description	Image
Make sure the valve stem is oriented in the correct direction.	
Make sure the fluid flows in the correct direction.	

When a remote duct-mounted coil (available as the COMBIBOX option) is installed, the supply-air temperature sensor (SSG) must be repositioned downstream of the remote water coil.

If the coil is a heating coil or a changeover (reversible) coil used with a FIRST or SMART version, the optional frost-protection thermostat must be connected to the air handling unit control system.

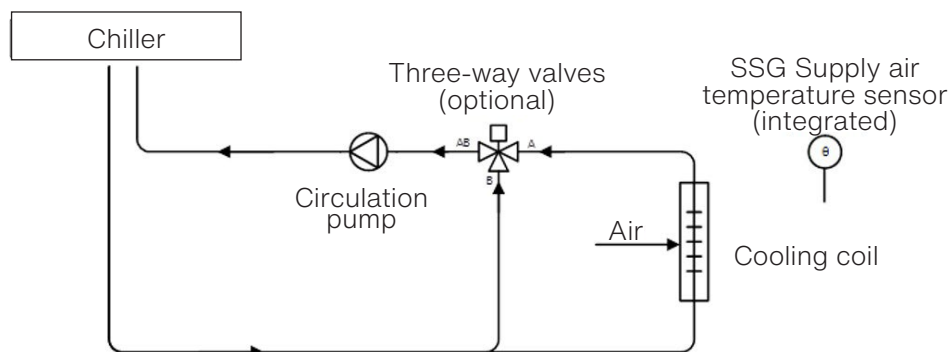
Each water coil must be equipped with a 3-way control valve (optional) to modulate the heating or cooling capacity delivered to the air stream. This valve must be wired to the control system (refer to the chapter covering coil connections according to the application: cooling only, heating only, or changeover operation).

When cooling is used, provide a gravity condensate drain or install the optional condensate lift pump kit if gravity drainage is not possible.

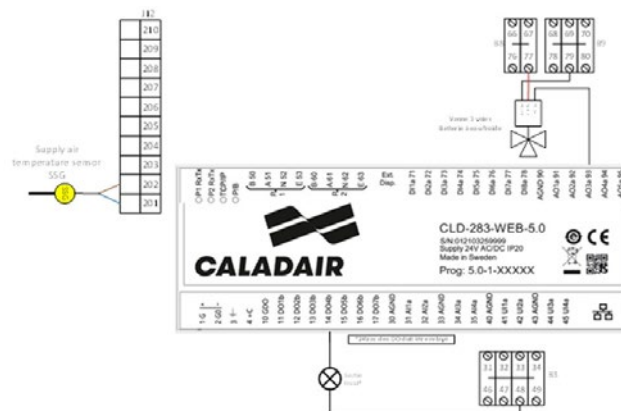
4.8.2 Cooling only

When a water coil is used, the 3-way valve (optional) must be connected to the air-handling unit's control system. The water-coil circulator is to be supplied by the installer.

The installation must follow the hydraulic piping arrangement below:



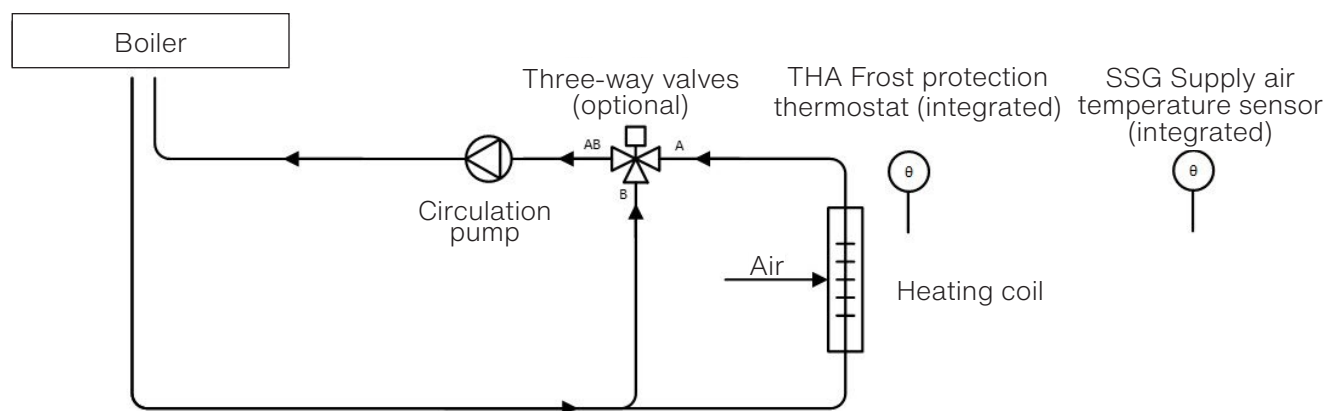
Electrical installation must comply with the following requirements:



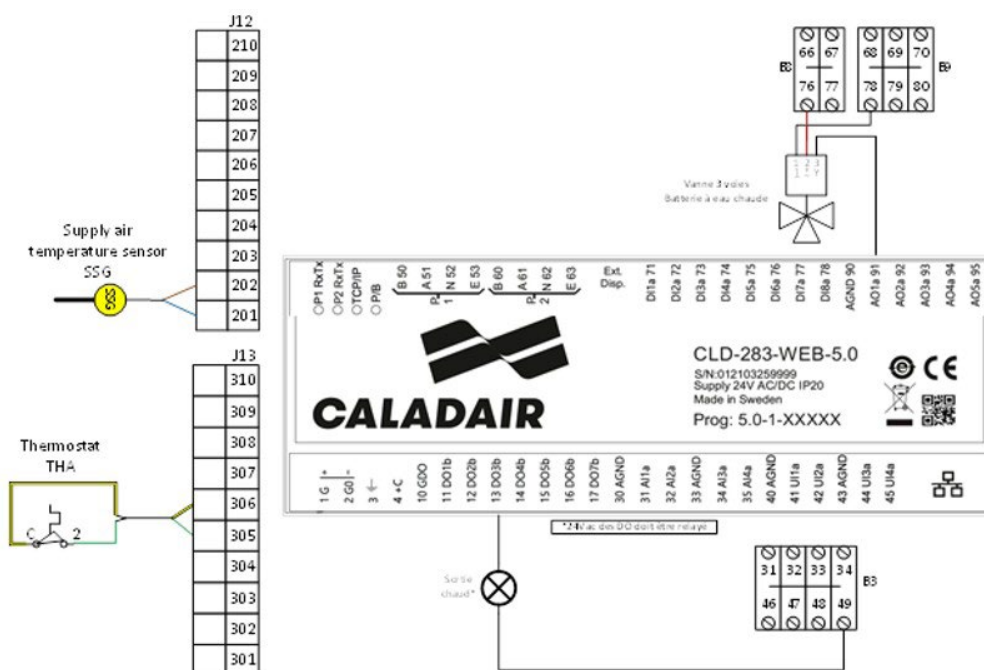
4.8.3 Heating only

When a hot-water coil is installed, the optional 3-way control valve must be connected to the air handling unit control system. The hot-water coil circulator pump shall be supplied and installed by the installer.

The installation must comply with the following hydraulic piping arrangement:



The electrical wiring must comply with the following requirements:



The THA frost-protection thermostat is a normally closed (NC) device. It must be set to +5 °C. The contact remains closed when the sensing bulb temperature is above +5 °C and opens when the temperature falls below +5 °C.

Its purpose is to protect the coil against freezing. When the contact opens, the controller stops the ventilation unit. When the temperature rises above the setpoint again, the controller automatically restarts the fans.

As long as the contact remains open, alarm (56) is displayed by the controller. This alarm is logged in the alarm history and is automatically cleared when the contact closes again.

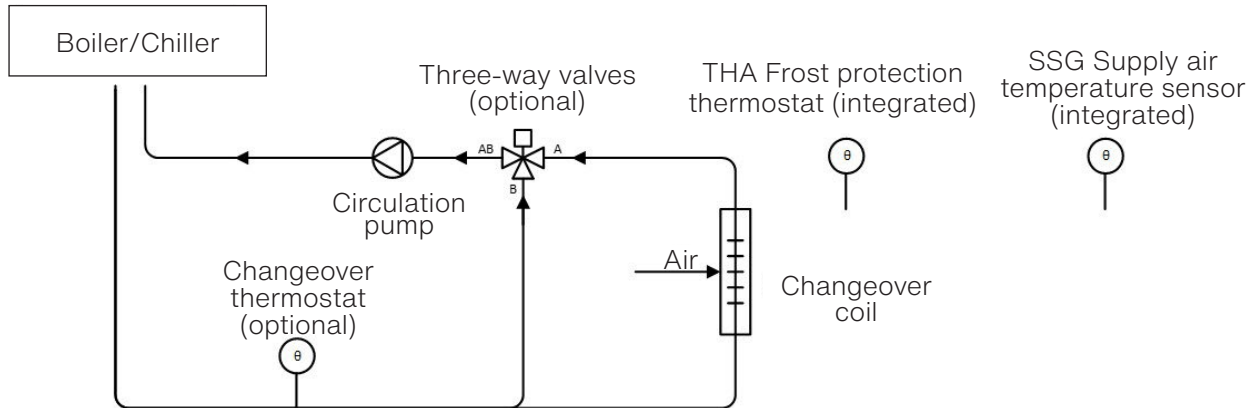
Warning: the “Heating Mode” signal is intended for control purposes only and is not designed to supply power. It must be connected via a relay. The controller output provides a 24 Vac signal (100 mA max.).

4.8.4 Reversible / Changeover

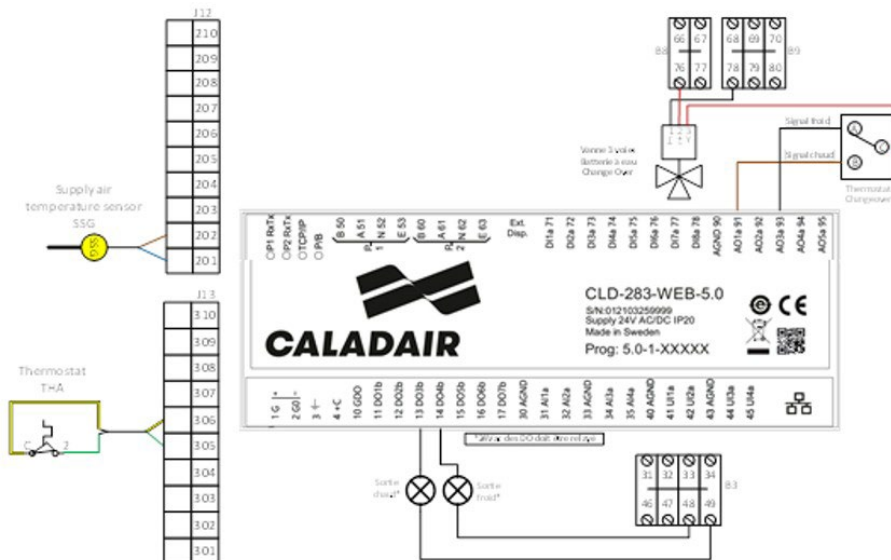
When a changeover coil is installed, the optional 3-way control valve and the changeover thermostat must be connected to the air handling unit control system. The changeover coil circulator pump shall be supplied and installed by the installer.

The changeover thermostat reverses the control action of the mixing valve according to the fluid temperature measured at the inlet of the 3-way valve. It must be installed on the water supply line to the changeover (CO) coil, upstream of the 3-way valve.

The installation shall comply with the following hydraulic piping arrangement:



The electrical wiring must comply with the following requirements:



The THA frost-protection thermostat is a normally closed (NC) device. It must be set to +5 °C. The contact remains closed when the sensing bulb temperature is above +5 °C and opens when the temperature falls below +5 °C.

Its purpose is to protect the coil against freezing. When the contact opens, the controller stops the ventilation unit. When the temperature rises above the setpoint again, the controller automatically restarts the fans.

As long as the contact remains open, alarm (56) is displayed by the controller. This alarm is logged in the alarm history and is automatically cleared when the contact closes again.

The operation of the changeover thermostat is defined in the table below:

$\geq 30\text{ °C} \pm 4\text{ °C}$	$T \leq 15\text{ °C} \pm 4\text{ °C}$
C-A contact open (C-B closed)	C-A contact closed (C-B open)

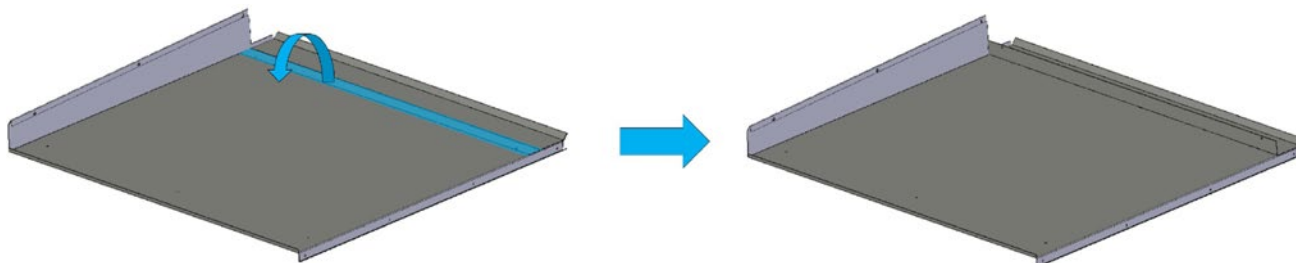
Warning: the “Heating Mode” signal is intended for control purposes only and is not designed to supply power. It must be connected via a relay. The controller output provides a 24 Vac signal (100 mA max.).

4.9 Connecting direct-expansion (DX) coils

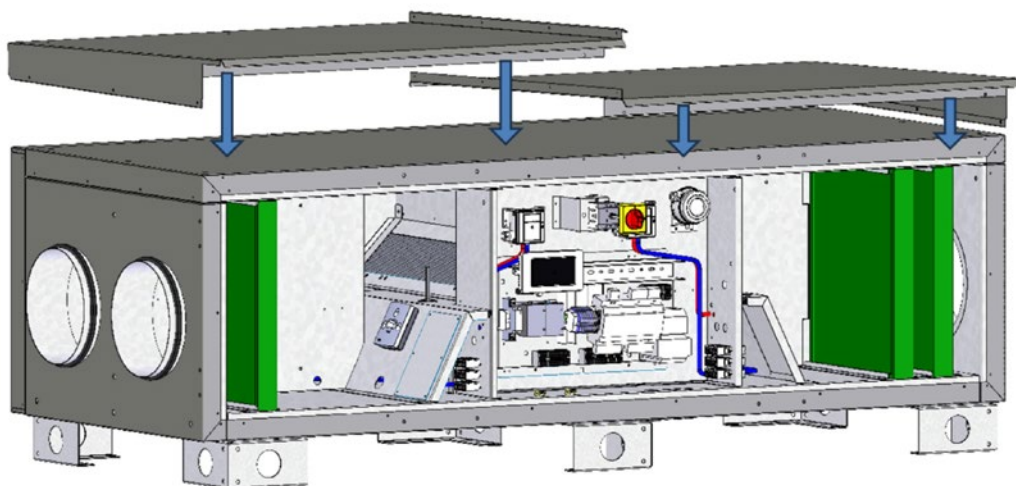
Control of a direct-expansion (DX) coil is covered in a separate, dedicated sheet that is not part of this manual. Please contact your distributor.

4.10 Rainproof roof panels

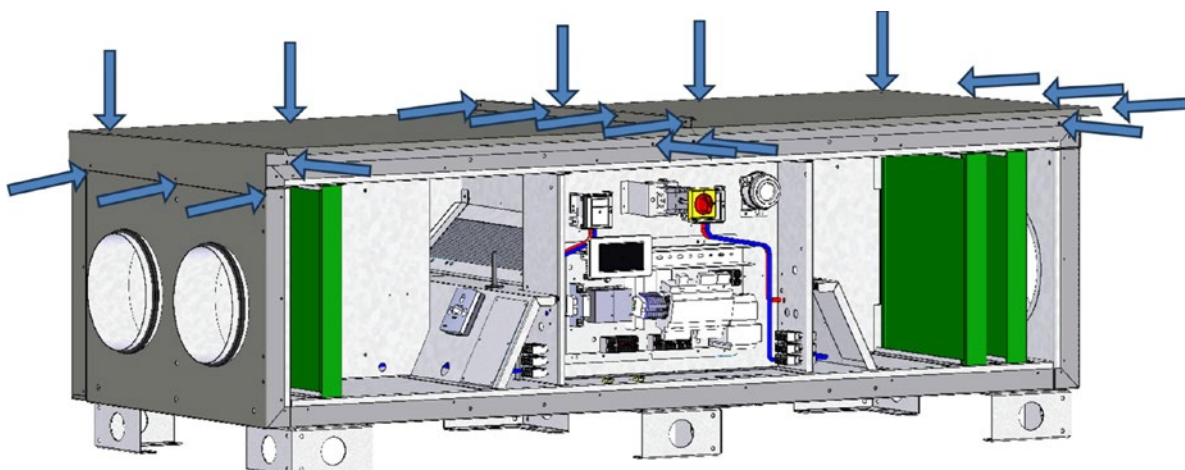
Start by manually bending the sheet-metal section shown in blue in the image below:



Position the roof panel on the unit:



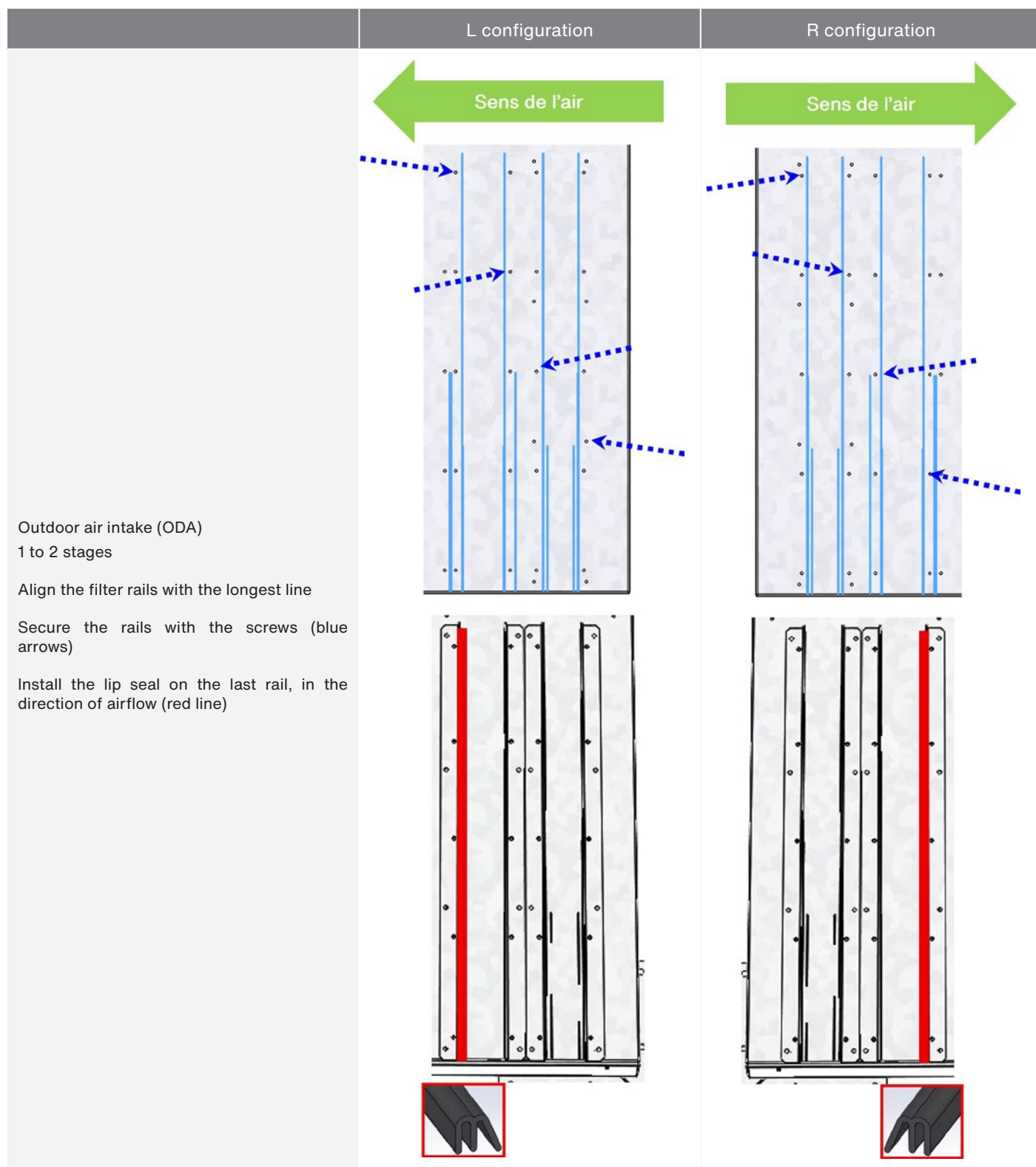
Screw the roof sections together, then fasten the roof to the unit using the supplied screws:

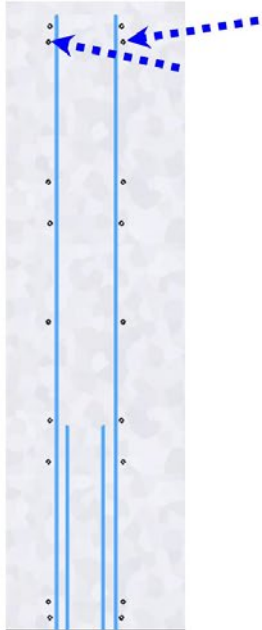
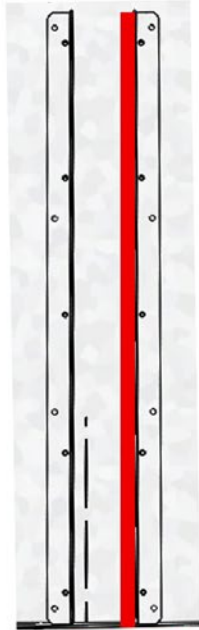
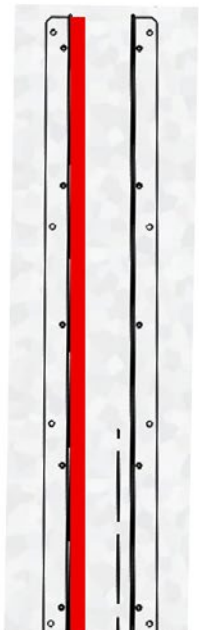


Front view (controls and filters side) – L configuration

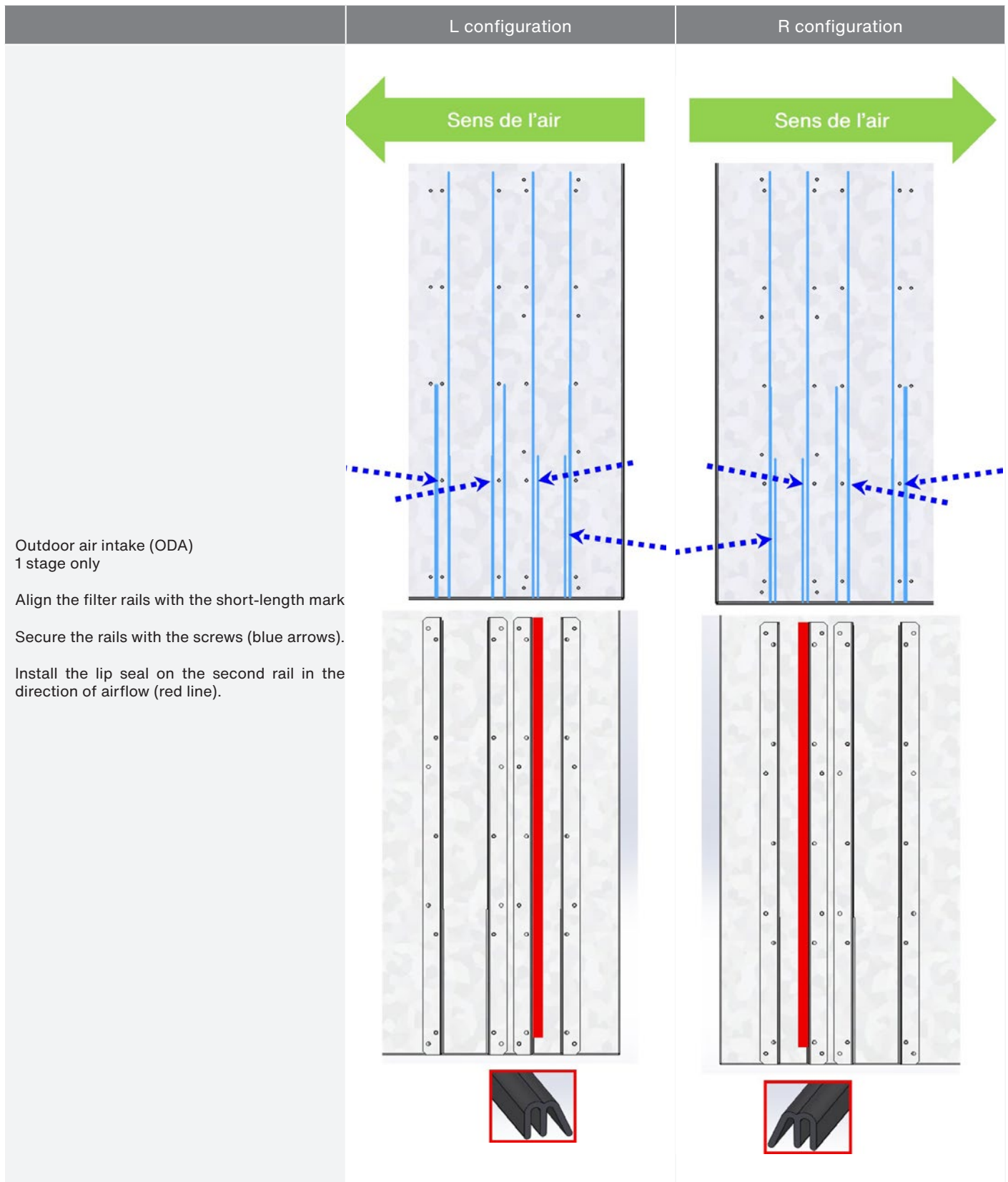
4.11 Changing filter types

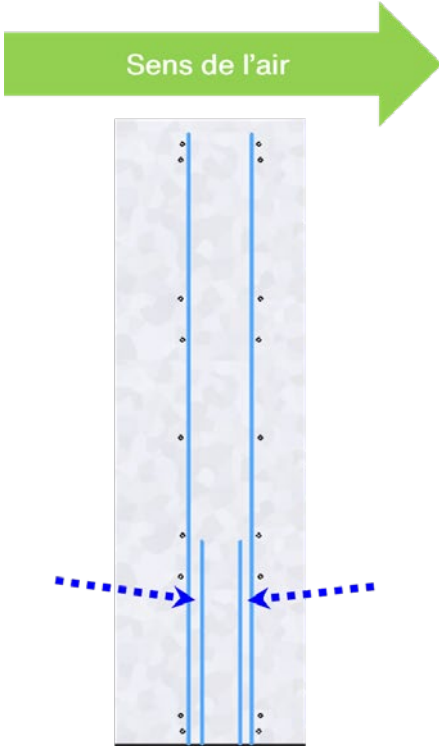
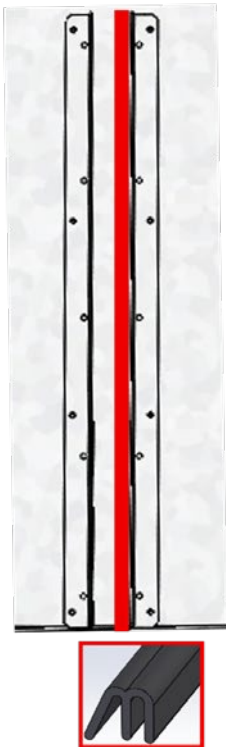
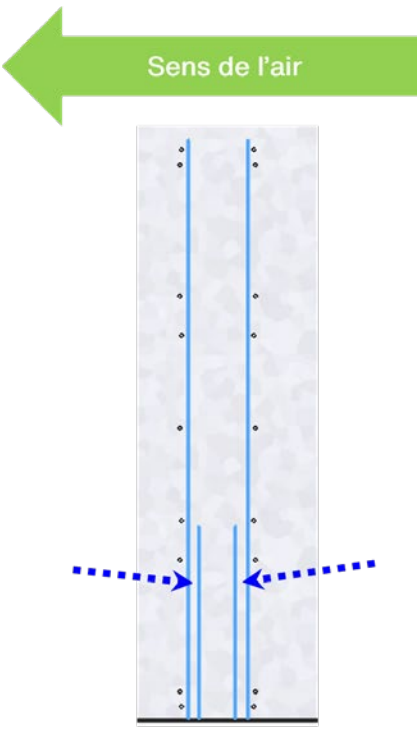
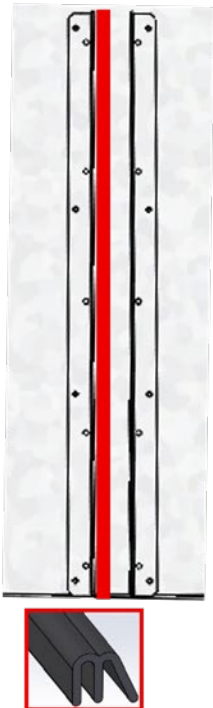
4.11.1 Flat filter installation only



	L configuration	R configuration
		
Return air extract (ETA) 1 stage only		
Line up the filter rails with the longest line.		
Secure the rails with the screws (blue arrows).		
Install the lip seal on the last rail, following the airflow direction (red line).		
		

4.11.2 Bag filter installation only



	L configuration	R configuration
Return air extract (ETA) 1 stage only Align the filter rails with the short-length line Secure the rails with the screws (blue arrows) Install the lip seal on the second rail, in the direction of airflow (red line)	 The diagram shows a vertical rectangular filter unit. A large green arrow at the top points to the right, labeled 'Sens de l'air'. Two vertical blue lines represent the filter rails. Dashed blue arrows point to the screws used to secure the rails. A red vertical line indicates the direction of airflow.  The diagram shows the filter unit with the lip seal installed on the second rail. A red vertical line indicates the direction of airflow. A small inset shows a close-up of the lip seal.	 The diagram shows a vertical rectangular filter unit. A large green arrow at the top points to the left, labeled 'Sens de l'air'. Two vertical blue lines represent the filter rails. Dashed blue arrows point to the screws used to secure the rails. A red vertical line indicates the direction of airflow.  The diagram shows the filter unit with the lip seal installed on the second rail. A red vertical line indicates the direction of airflow. A small inset shows a close-up of the lip seal.

5. General operation

Thermal energy recovery management

Based on the (adjustable) temperature setpoint, the controller continuously modulates the heat recovery rate to keep the room warm during cold periods and cool during hot periods. When conditions allow, the system can disable heat recovery and switch to free cooling or free heating. A fully configurable night-cooling function can force airflow overnight to lower the room temperature at the start of the day, improving thermal comfort while reducing energy consumption from auxiliary equipment (air conditioning, reversible heat pump, etc.).

Freeze protection for plate heat exchangers via intelligent bypass control

When outdoor temperatures are low, the fresh-air flow through the plate heat exchanger is continuously optimized to prevent the exchanger from frosting up and to maximize energy performance.

CO₂ Management in Indoor Air (DIVA and QUATTRO)

The built-in EASY 5.0 smart control system continuously adjusts the supply and exhaust fan speeds to keep the room's CO₂ level within comfort and hygiene requirements. Because the measured CO₂ level reflects how occupied the space is, when CO₂ rises the fan speed increases to boost air renewal—and when it drops, the fan speed decreases accordingly. Fan energy use and unit sound level are therefore continuously optimized.

Stop Function (Isolation)

The unit can be fitted with optional isolation dampers that automatically close when the unit is stopped or if power is lost, preventing unwanted airflow between the inside and outside of the building.

5.1 Start-Up sequence

The start-up sequence is initiated when the following conditions are met:

- The unit is powered on,
- And no Class A alarm (alarms that stop the unit) is active, or the external stop command is not active,
- And at least one time schedule (reduced speed or normal speed) is active, or forced operation (normal or reduced speed) is active, or the fire function, set to start the unit, is active, or there is an operating request from the BMS.

The start-up sequence runs for a total of 120 s. During this time, alarms are suppressed and the unit starts at the operating point defined when the thermal sequences are initialized at start-up. The minimum fan control signal does not apply.

The outdoor-air and exhaust-air damper openings open as soon as the start-up sequence is enabled. The exhaust fan control signal is released 15 seconds after the start-up sequence is activated. 15 seconds later, the supply fan control signal is released and the supply fan starts.

Once the 120 seconds have elapsed, the ventilation unit switches to normal mode at the end of the start-up sequence. The fans' minimum and maximum control signals are then taken into account, and alarm monitoring is enabled.

In the event of a power outage, the unit restarts automatically as soon as power is restored.

5.2 Shutdown sequence (post-ventilation)

The shutdown sequence is triggered when at least one of the following conditions is met:

- An alarm occurs that requires a normal unit shutdown (note: some alarms are set up for a fast shutdown; in that case, the normal shutdown sequence is bypassed and the unit stops immediately),
- Unit power is switched off,
- No active time slot,
- The fire function is set to stop the unit,
- Stop request from the BMS.

The shutdown sequence duration depends on the configured fan overrun times (post-ventilation) and the closing times of the outdoor-air and exhaust-air dampers.

When the shutdown sequence is initiated, the alarm management function and the electric heating coil output are disabled immediately, while the hot-water/chilled-water coil outputs and the heat recovery device remain active.

The supply fan stops after 180 seconds. The return fan stops 30 seconds later. Five seconds after the return fan has stopped, the outdoor-air and return-air dampers close, and all actuator control signals are then disabled.

5.3 Thermal sequence initialization

Start-up initialization brings the air handling unit to an operating point as close as possible to the value that will subsequently be calculated during normal operation. This helps prevent occupant discomfort and unnecessary energy consumption.

The thermal sequence applied during start-up initialization depends on the outdoor air temperature measured at the time the unit starts:

Outdoor temperature < +3 °C	Outdoor temperature ≥ +3 °C
The unit starts with a 100% heating demand*. As long as the supply fan run feedback signal is inactive**, the BE electric heating coil is not enabled.	The unit starts in maximum energy recovery mode.

* The 3-way valve control output or the electric heating coil control output is set to 100% (10V).

** ECO/DIVA: the DEP S pressure switch contact is open;
LOBBY : the pressure signal is below the minimum threshold;
MAC2/QUATTRO : the flow signal is below the minimum threshold.

6. Start-up

The ventilation unit is delivered preconfigured and ready for operation. However, if the factory settings do not meet your needs, complete the following specific steps:

Step	PG 5.0 Icon	Action	Additional information
1		Installation and Electrical Wiring of Options (if applicable)	
1.1		Connection of Hydraulic Components and Accessories	See "Connecting water coils"
1.2		External Controls (ADP, DAD, PV Forced Operation, GV Forced Operation, External Stop, Fire Protection) Signal Outputs (LOBBY Night Cooling, Alarm Output)	See "Electrical connection of external devices"
1.3		Wiring the EDT2 remote touchscreen room controller	See EDT2 manual
2		Controller date and time setting	See EASY5.0 manual
3		Automatic/manual daylight saving time (DST) setting	See EASY5.0 manual
4		Schedule setting	See EASY5.0 manual
5		Fan setpoint setting	See EASY5.0 manual
6		Temperature setpoint setting	See EASY5.0 manual
7		Wiring and communication ports configuration	See EASY5.0 manual
8		Setting specific functions, such as: · Night cooling · Fire protection · Freeze protection by supply airflow reduction	See EASY5.0 manual
9		Checking proper operation and PID tuning	See EASY5.0 manual
10		Backup of user settings*	See EASY5.0 manual

*Using the backup feature at the end of commissioning saves all adjusted parameters and allows a known, validated configuration to be restored at any time.

7. Maintenance

7.1 Annual general inspection

Inspect the ductwork, flexible connectors, and anti-vibration mounts, and replace them if necessary. Ensure that all components associated with the unit are properly installed so that no vibrations are transmitted to external structures.

Check the electrical connections and ensure the terminals are securely tightened.

7.2 Filter inspection

Classification		Cleaning (water + mild detergent)	Cleaning with compressed air or by vacuuming
Filtration efficiency ISO 16890	Reference		
ePM10 - 50%	M5	Limited (1 to 4 times)	YES
ePM1 - 55%	F7	NO	
ePM1 - 80%	F9	NO	

* Filter cleaning must be carried out carefully to avoid damaging the filter media.



During maintenance and filter inspection/replacement, fitted panels must be held and handled so the manometers do not drain of their liquid.

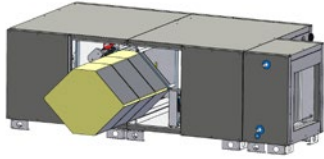
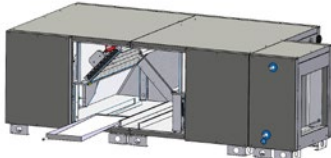


Only M5 filters may be blown out and carefully cleaned, if needed.

Frequency (in months of operation)	
Every 3 months (adjust to local conditions)	Every 12 months
Inspection (clean if necessary for M5 filters)	Filter replacement

7.3 Removal and reinstallation of the heat exchanger and its condensate drain pan

To perform the operation correctly, follow the procedure below:

Step	Action	Image
1	Stop the unit using the HMI On/Off button, then switch off the main power supply using the disconnect switch located on the front of the unit once it has come to a complete stop (after completion of the post-ventilation cycle).	-
2	Remove the condensate drain device connected to the condensate pan.	-
3	Remove the screws around the perimeter of the access panel, then remove the panel. *Hex key required.	
4	Slide out the plate heat exchanger.	
5	Slide out the condensate pan.	
6	Reinstall in the reverse order of removal, ensuring a proper seal between the condensate drain pan outlet and the trap piping.	-
7	Fill the condensate pan with water to prime the trap (for gravity drainage).  Check that the condensate lift pump, if installed, is operating correctly.	-
8	Start the unit.  Ensure that there are no abnormal noises, air leaks, or water leaks, and verify that all setpoints are achieved (pressure, airflow, temperature, etc., depending on the unit version).	-



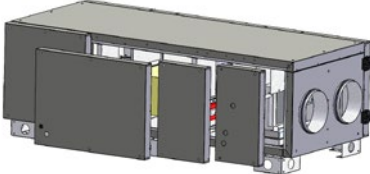
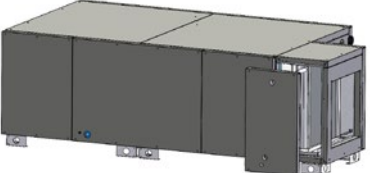
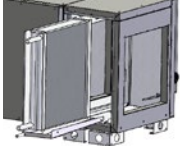
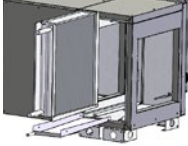
If necessary, clean the condensate drain pan and disinfect it, if required, by soaking and rinsing it with clean water. Bleach may be added if necessary.



CAUTION!

The supplier shall not be held liable for any property damage or personal injury resulting from non-compliance with the instructions contained in this manual and the following chapters.

7.4 Removing and reinstalling the CO coil and its condensate pan

Step	Action	Image
1	Stop the unit using the HMI On/Off button, then switch off the main power supply using the disconnect switch located on the front of the unit once it has come to a complete stop (after completion of the post-ventilation cycle).	-
2	Remove the condensate drain device connected to the condensate pan.	-
3	For sizes 06 to 32, remove the screws around the edges of the three access panels, then remove the panels, starting with the centre panel. For sizes 36 to 48, remove the screws around the perimeter of the access panel, then remove the panel. *Hex key required.	Size 06 to 32  Size 36 to 48 
4	Loosen the screws at the top of the coil, then slide out the coil and condensate drain pan assembly. Detach the coil from the condensate drain pan to clean the area beneath the coil.	 
5	Reinstall in the reverse order of removal, ensuring that the connection between the drain pan outlet and the trap piping is properly sealed	-
6	Fill the condensate pan with water to prime the trap (for gravity drainage).  Check that the condensate lift pump, if installed, is operating correctly.	-
7	Mettre en route la machine.  Ensure that there are no abnormal noises, air leaks, or water leaks, and verify that all setpoints are achieved (pressure, airflow, temperature, etc., depending on the unit version).	-



If necessary, clean the condensate drain pan and disinfect it, if required, by soaking and rinsing it with clean water. Bleach may be added if necessary.



CAUTION!

The supplier shall not be held liable for any property damage or personal injury resulting from non-compliance with the instructions contained in this manual and the following chapters.

7.5 Replacing the internal memory battery

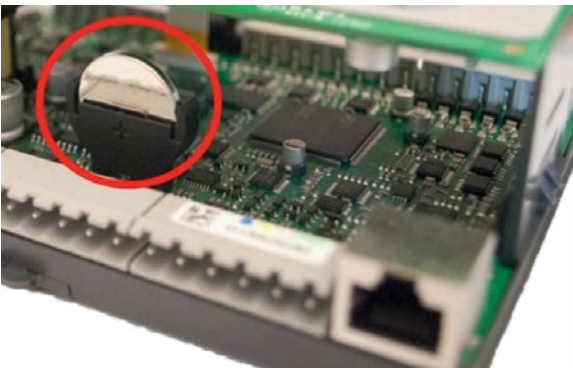


Failure to comply with the condensate trap installation requirements may cause the condensate drain pan to overflow and flood the inside of the ventilation unit. This may result in equipment damage, malfunctions, and potential hazards to personnel.

When alarm (48), "Internal Battery Error," is displayed and the battery LED (P/B) illuminates red, the backup battery for the program memory and real-time clock has reached a low charge level.

A backup capacitor maintains the stored data and real-time clock operation for at least 10 minutes after power is removed.

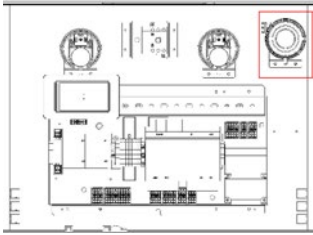
The battery replacement procedure is described below:

Step	Action	Image
1	A capacitor maintains power while the battery is being replaced.	
2	The battery must be replaced within approximately 10 minutes of switching off the power supply. If the battery replacement is completed within 10 minutes, there is no need to reload the program, and the real-time clock will continue to operate normally.  If necessary, the controller must be reprogrammed. The battery type is CR2032.	
3	Using a small screwdriver, depress the clips on both sides of the housing to separate the cover from the base. Hold the base and remove the cover. Carefully remove the battery by lifting it upward out of its holder.	
4	Install the new battery by pressing it firmly into place until it snaps into its holder.  Note: Make sure the battery is inserted in the correct orientation to ensure proper polarity.	

7.6 Sensors

7.6.1 Filter clogging pressure switch

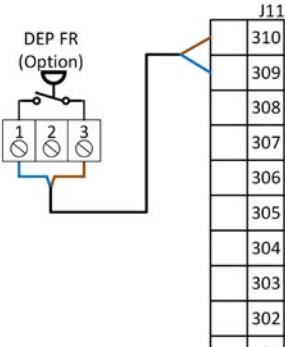
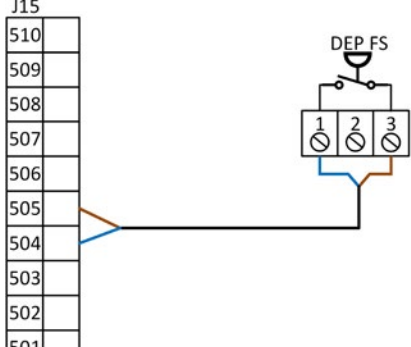
7.6.1.1 Location

Description	Image
The outdoor-air filter pressure switch is installed as standard in the electrical compartment. It is located at the upper right-hand side of the compartment.	

7.6.1.2 Threshold setting

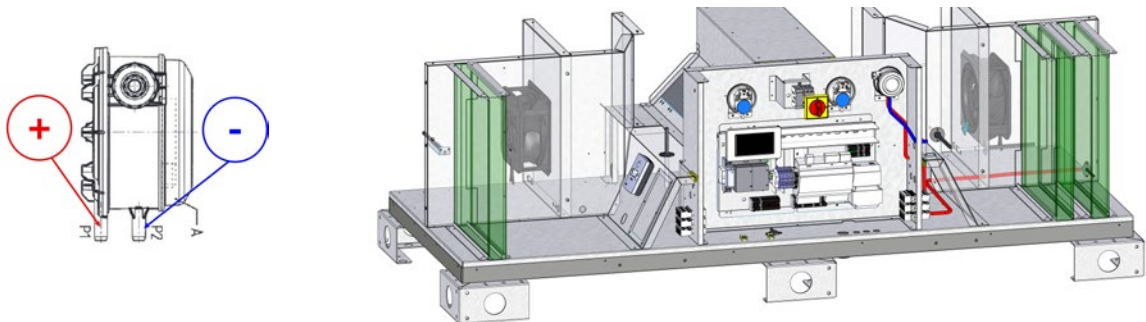
Description	Image
The pressure switches used to monitor filter loading make it possible to check the level of filter clogging by measuring the pressure drop between the filter inlet (upstream) and outlet (downstream). When the pressure drop (pressure difference) across the filter element exceeds the pressure switch setpoint, its (NO) contact closes. The factory setting for the filter pressure switch is 150 Pa for M5 filters and 200 Pa for F7 filters. If an additional filter is installed on the outdoor-air side (two-stage filtration) in addition to the standard filter, the pressure switch must be set to 300 Pa. The (+) tube is connected to the upstream pressure tap, and the (-) tube to the downstream pressure tap.	

7.6.1.3 Electrical connection

Return-air pressure switch DEP FR (option)	Return-air pressure switch DEP FS
	

7.6.1.4 Pneumatic connection

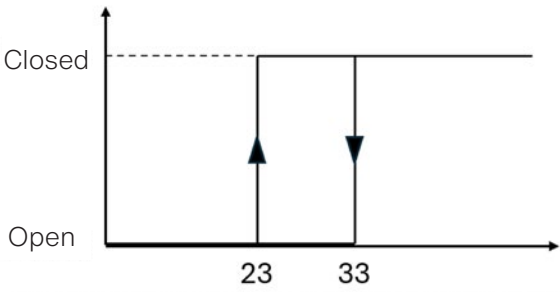
The positive pressure tube is shown in red, and the negative pressure tube is shown in blue in the diagrams below:



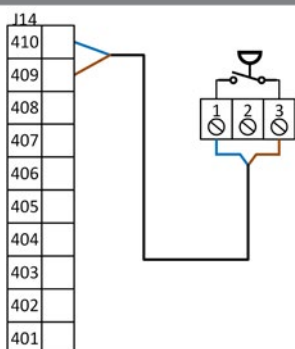
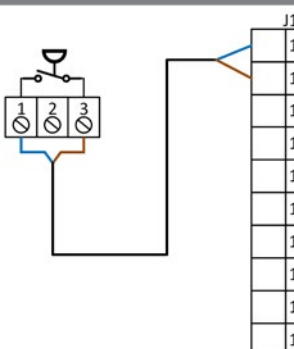
Front view (controls and filters side) – L configuration

7.6.2 Fan pressure switch (ECO and DIVA)

7.6.2.1 Trip threshold

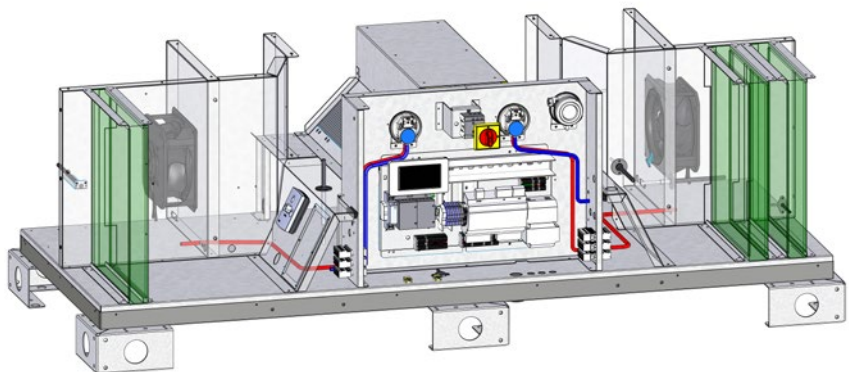
Description	Image
 Differential Pressure (Pa) measured between P1(+) and P2(-) The filter differential pressure switch is a normally open (NO) device. The contact remains open under normal conditions and closes when the fan differential pressure exceeds 33 Pa. When the differential pressure falls below 23 Pa, the contact opens again. The pressure switch must be wired between terminals (1) and (3) as shown in the electrical wiring diagram.	

7.6.2.2 Pneumatic connection

DEPR return-air pressure switch	DEPS return-air pressure switch
	

7.6.2.3 Pneumatic connection

Pressure tubes in blue for “-” and in red for “+”



Front view (controls and filters side) – L configuration

7.6.3 LOBBY Pressure transmitter

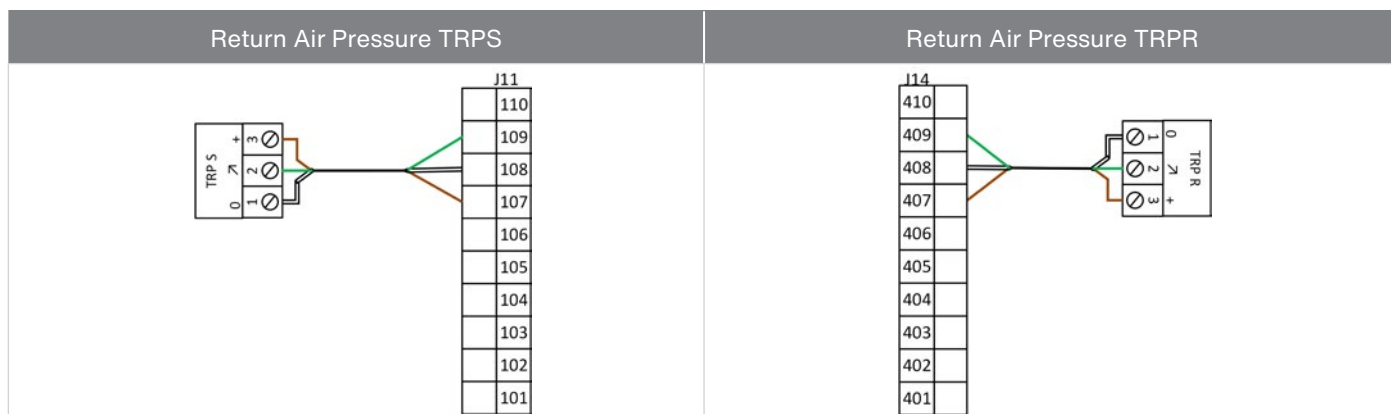
7.6.3.1 Measurement and range

Pressure transmitters are factory-calibrated and cannot be adjusted. Their signal is also used by the controller to monitor correct fan operation. The operating threshold is set to 25 Pa, while the factory-set pressure setpoint is 130 Pa.

Range	Signal	Setting
0-1600Pa	0-10V	The jumpers must be set in the lower position (see figure opposite).



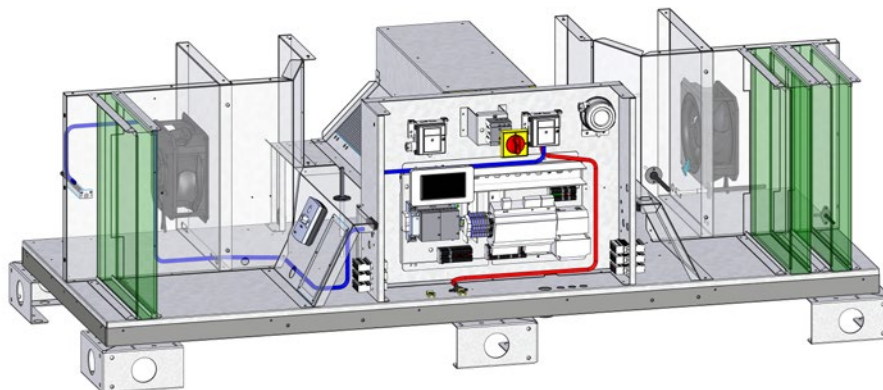
7.6.3.2 Electrical connection



7.6.3.3 Pneumatic connection

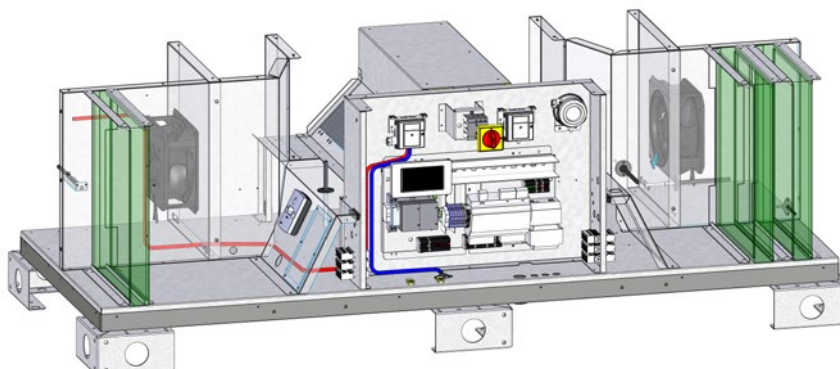
Pressure tubes: blue for “-” and red for “+”

Return Air Pressure TRPR



Front view (controls and filters side) - L configuration

Supply Air Pressure TRPS

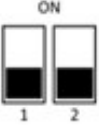


Front view (controls and filters side) - L configuration

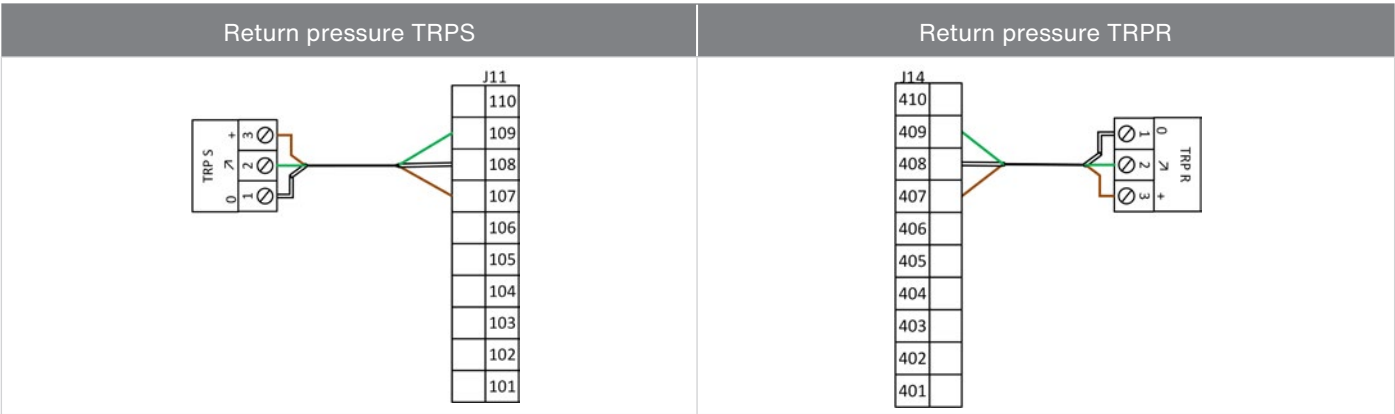
7.6.4 MAC2 and QUATTRO pressure transmitter

7.6.4.1 Measurement and range

Pressure transmitters are not adjustable. Their signal is also used by the controller to verify correct fan operation. The operating threshold is 25 Pa. The factory-set pressure setpoint is 130 Pa.

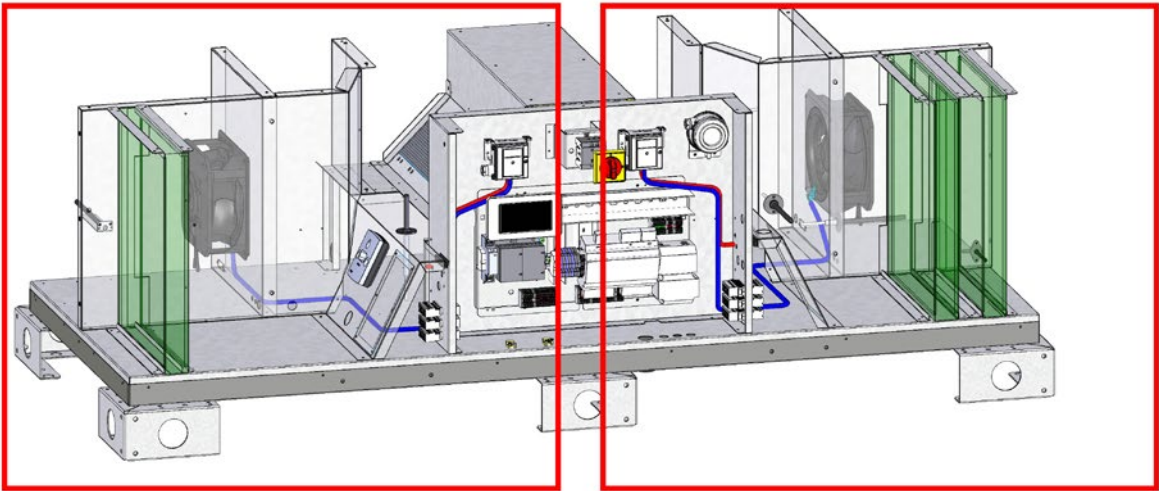
Range	Signal	Setting
0-1600Pa	0-10V	The jumpers must be set in the lower position (see figure opposite). 

7.6.4.2 Electrical connection



7.6.4.3 Pneumatic connection

Pressure tubes in blue are “-”, and pressure tubes in red are “+”



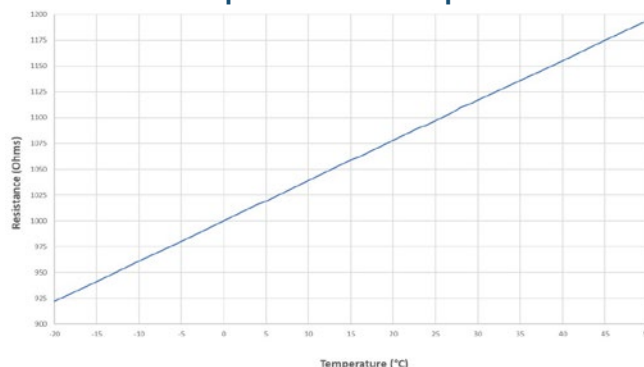
Front view (controls and filters side) - L configuration

7.6.5 Temperature sensor

The temperature sensors are of the PT1000 type. The location of each temperature sensor is shown in section «3.6.1 General composition», page 15

The curve below shows the sensing element's resistance characteristic as a function of temperature.

PT1000 temperature sensor specifications

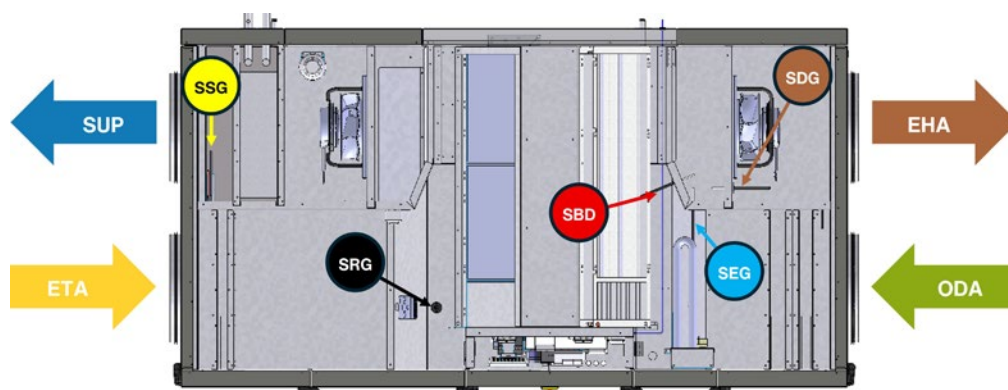
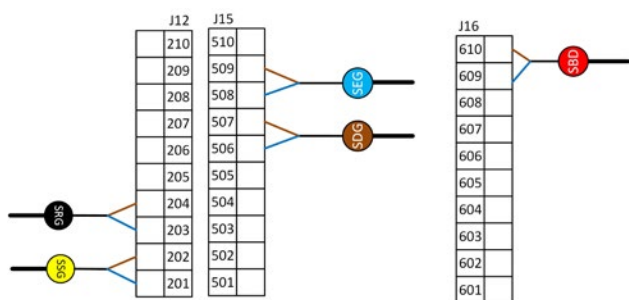


The sensor can be easily checked using an ohmmeter and a reference thermometer. The resistance measured at the disconnected sensor leads must be within $\pm 3\%$ of the value indicated in the table above for the temperature measured by the reference thermometer.

If necessary, the sensor must be replaced. If the sensor is functioning correctly but the controller displays an incorrect value, the fault may be caused by defective wiring or connectors, or by an incorrectly configured offset.

7.6.5.1 Electrical connection

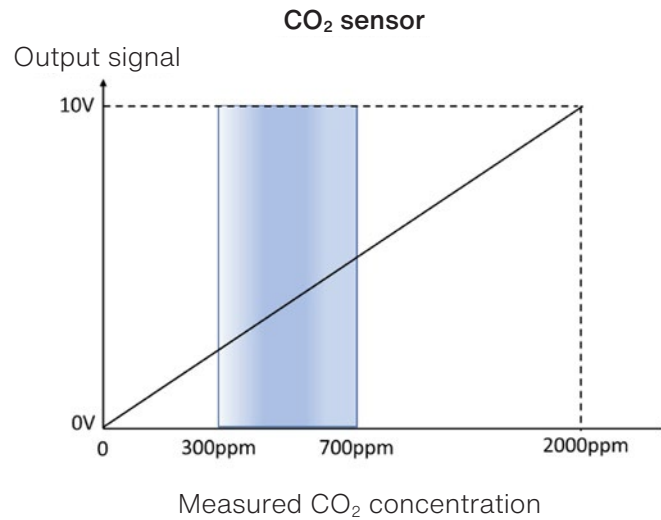
Reference	Description	Sleeve color
SEG	Air neuf ODA	Bleu
SBD	Air préchauffé	Rouge
SSG	Air soufflé SUP	Jaune
SRG	Air repris ETA	Noir
SDG	Air rejeté EHA	Marron



Top View – L configuration

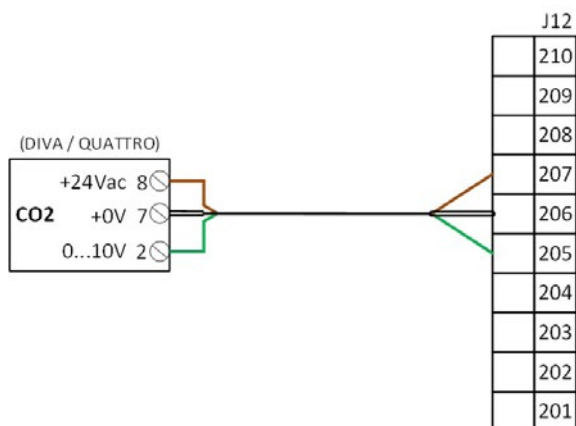
7.6.6 CO₂ sensor

The CO₂ sensor is installed in the exhaust-air duct and must not be relocated. It provides a 0-10 V analogue signal proportional to the CO₂ concentration (ppm) in the exhaust air, which can be monitored by the controller:

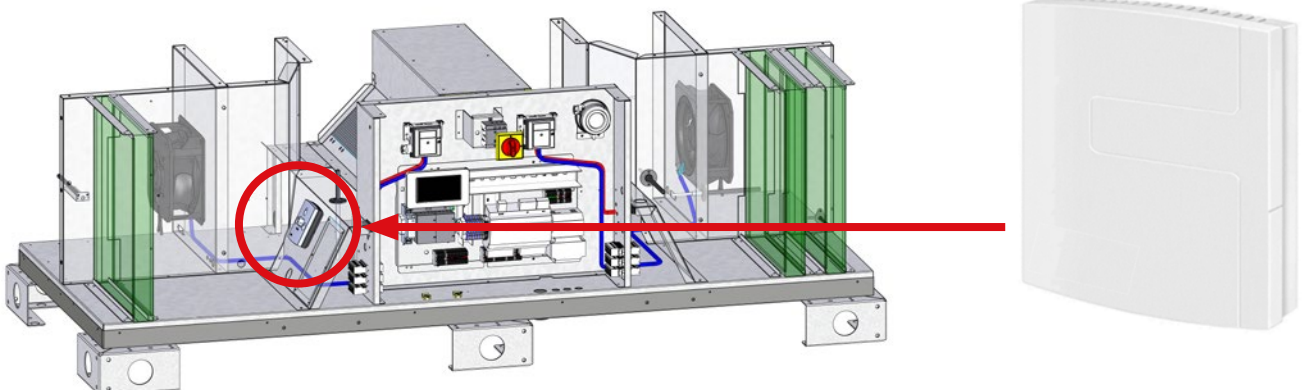


Indoor air naturally contains varying concentrations of CO₂, depending on the environment. CO₂ levels are typically above 300 ppm in rural areas and can exceed 700 ppm in densely populated urban environments.

As a result, the CO₂ sensor output is never zero and should normally remain above 3 V. If the output falls below this value, the sensor, wiring, or connectors may be faulty.



The 24 Vac power supply is connected between terminals (7) and (8), and the 0-10 V analog output signal is available on terminal (2).



Front view (controls and filters side) – L configuration

7.6.7 Smoke detector (Size 13C to 48C, optional)

Units with a rated airflow above 1,000 m³/h and a composite fan can be optionally equipped with a smoke detector.

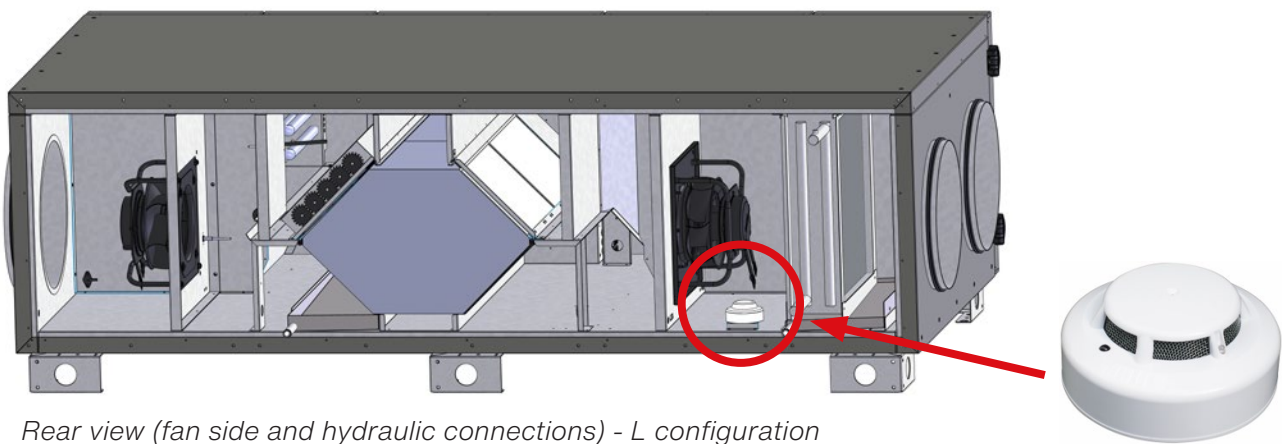


In France, SEASON versions equipped with composite fans do not comply with the July 29, 2025 decree, Article CH36 §1 of the French fire-safety regulations for public-access buildings (ERP) (except where this regulation provides an exemption).



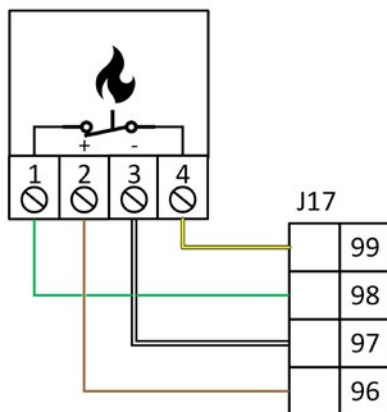
In France, to comply with the July 29, 2025 decree, Article CH36 §1 of the French fire-safety regulations for public-access buildings (ERP), a smoke detector must be installed on any unit equipped with a composite fan (except where this regulation provides an exemption).

This detector is located at the discharge of the supply fan.



This detector is powered by 24 VDC and outputs a Normally Closed fault signal (dry NC contact).

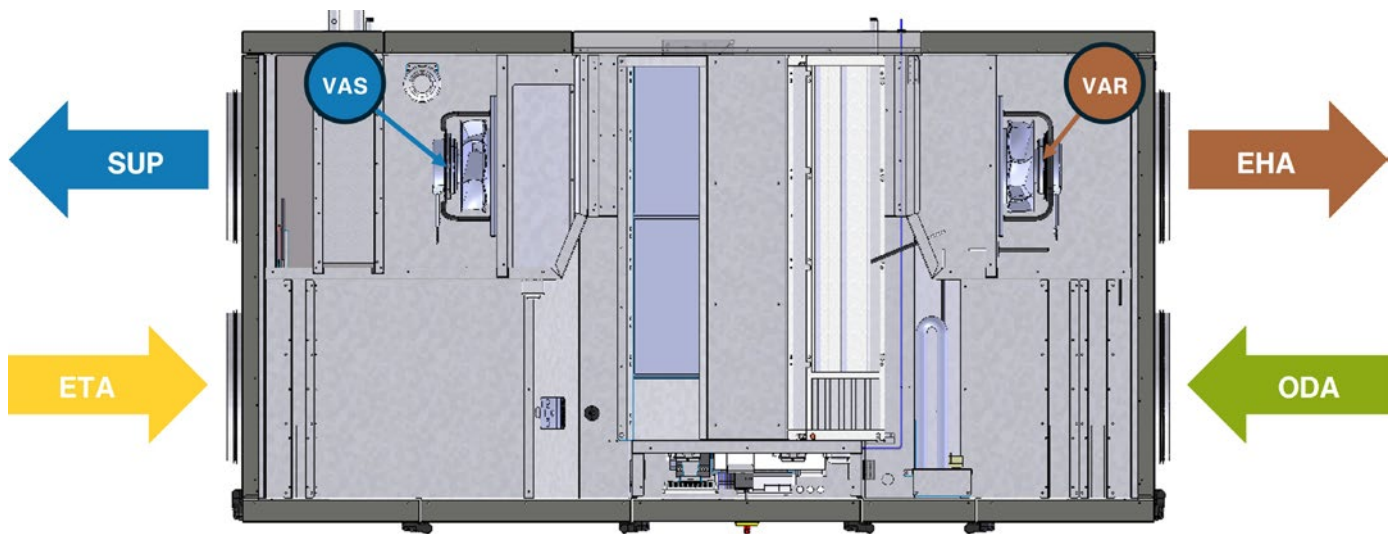
Détecteur de fumée
Smoke sensor



7.7 Actuators

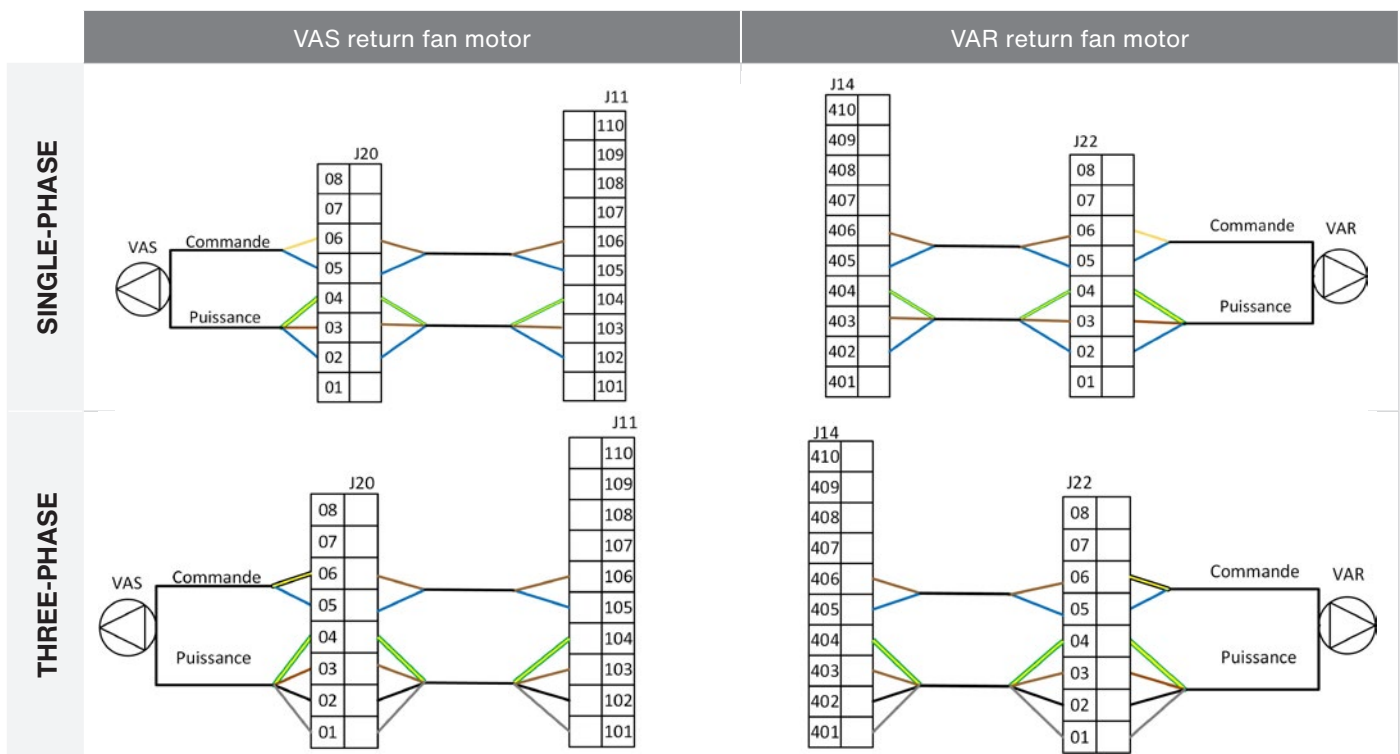
7.7.1 Fan motors

7.7.1.1 Location



Top view - L configuration

7.7.1.2 Electrical connection

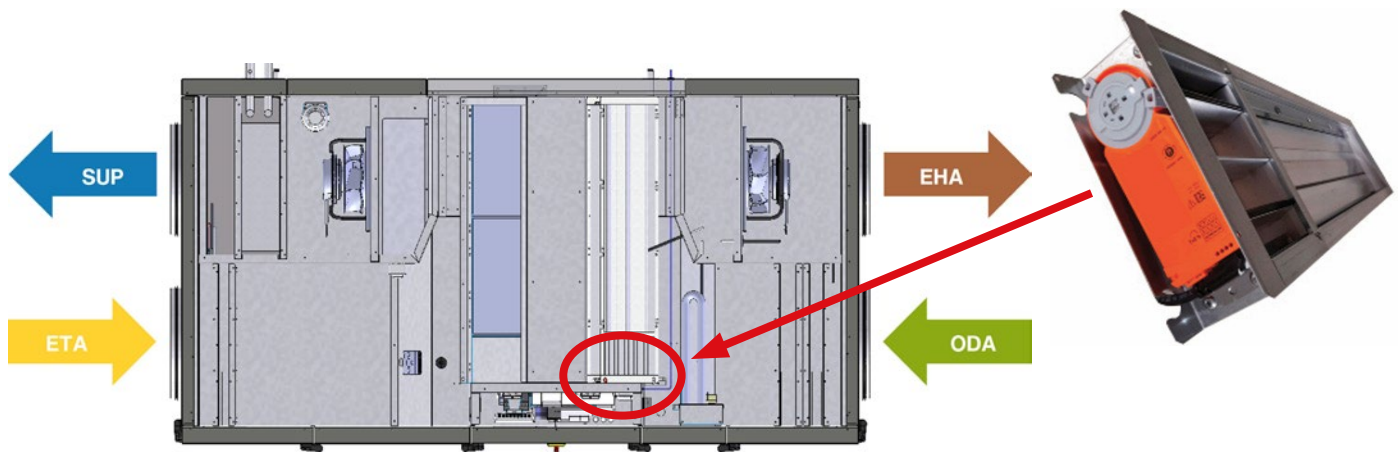


7.7.1.3 K factor for MAC2 control

Size	K factor
06C-09C	40
13C	80
18C	72
24C	98
32C-36C	145
48C	190

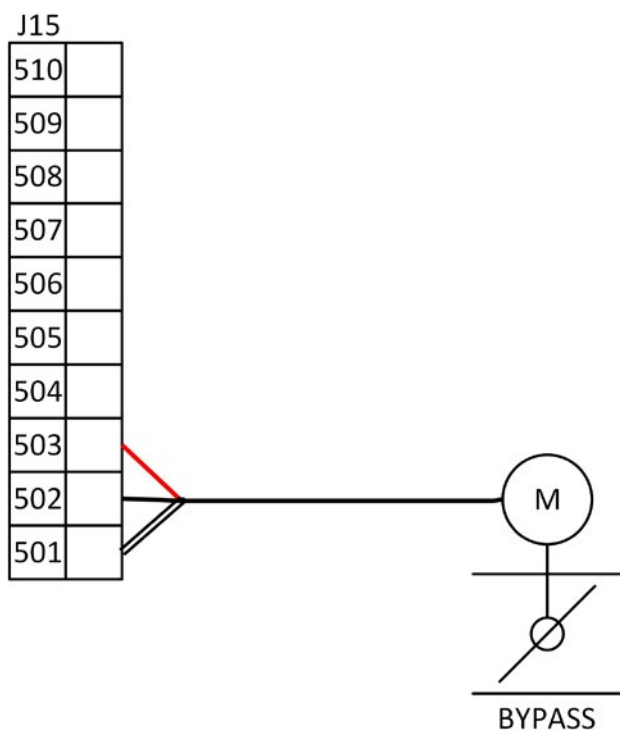
7.7.2 Bypass actuator

7.7.2.1 Location



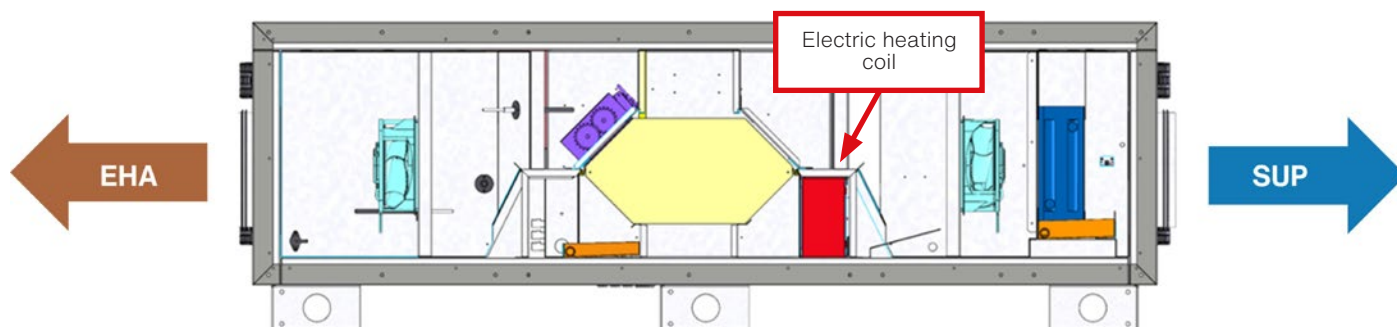
Top View - L Configuration

7.7.2.2 Electrical connection



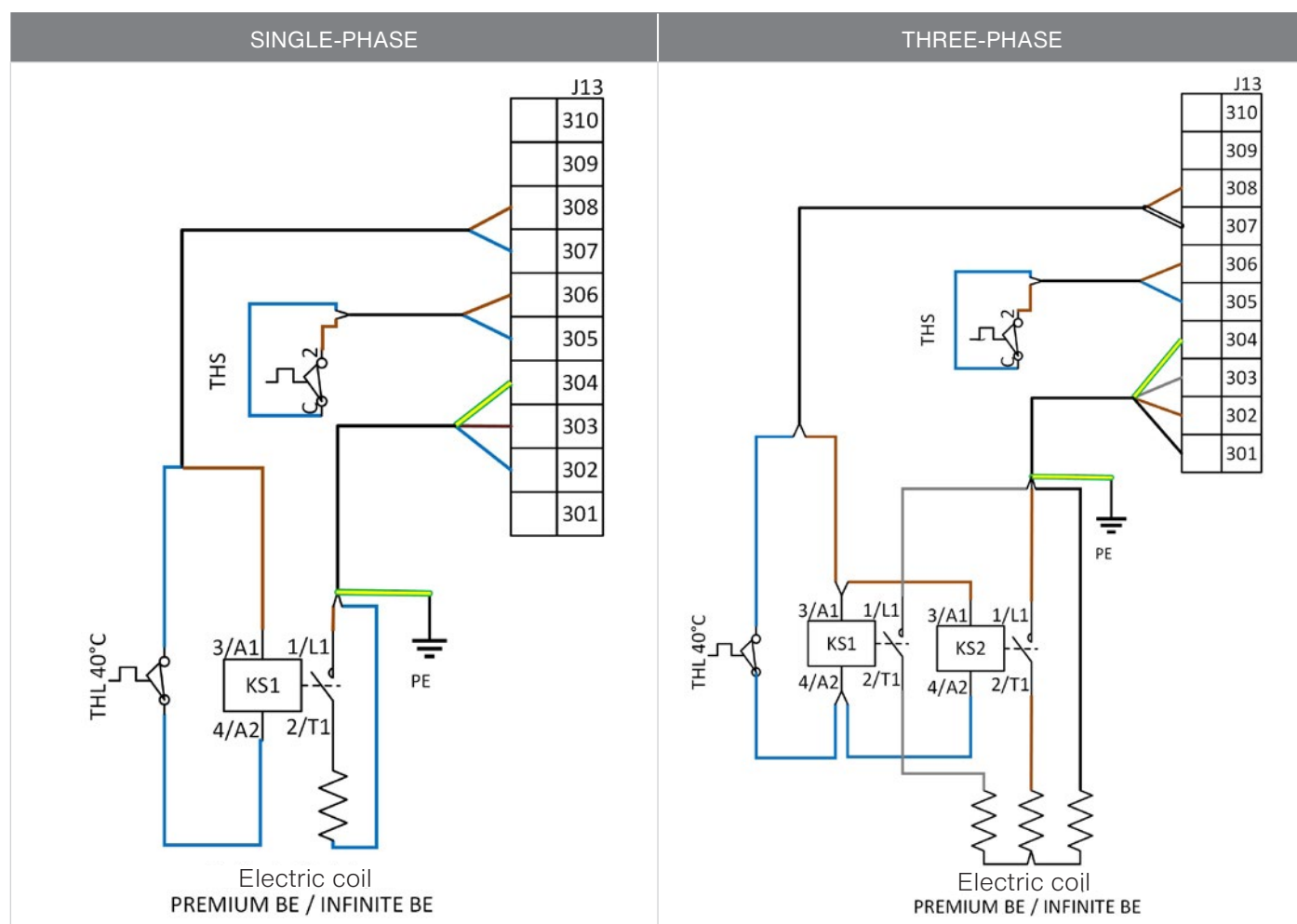
7.7.3 Electric heating coil

7.7.3.1 Location

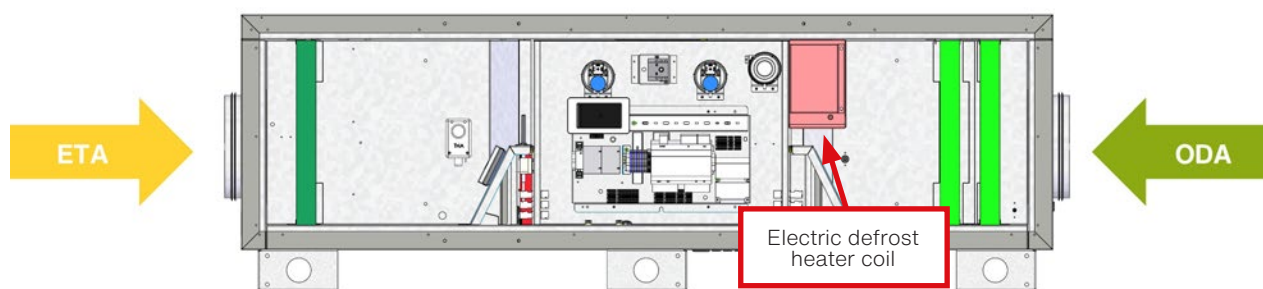


Rear view (fan side and hydronic connections) - L configuration

7.7.3.2 Electrical connection

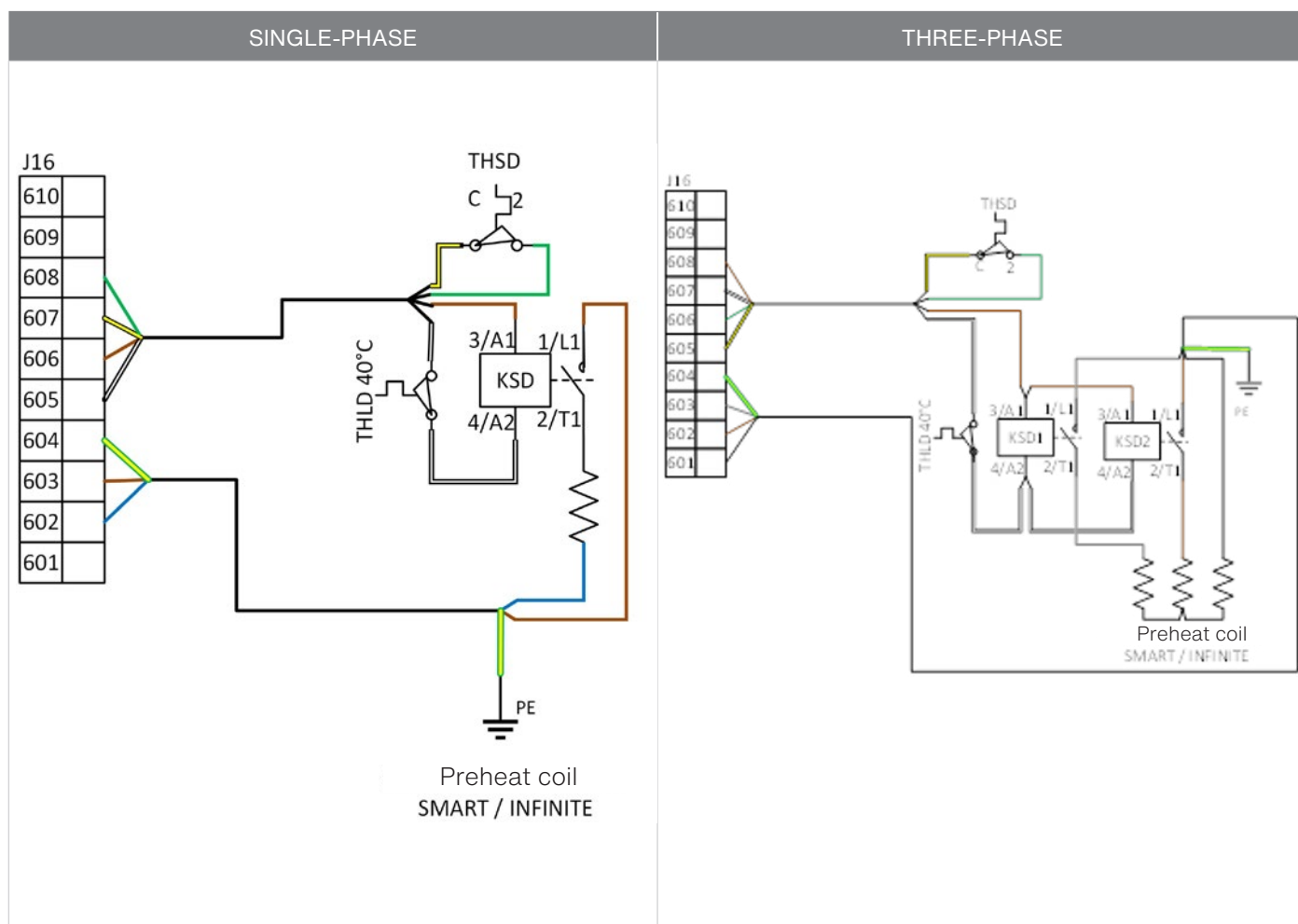


7.7.4 Electric defrost heater coil



Vue de face (côté régulation et filtres) - Configuration L

7.7.4.1 Electrical connection



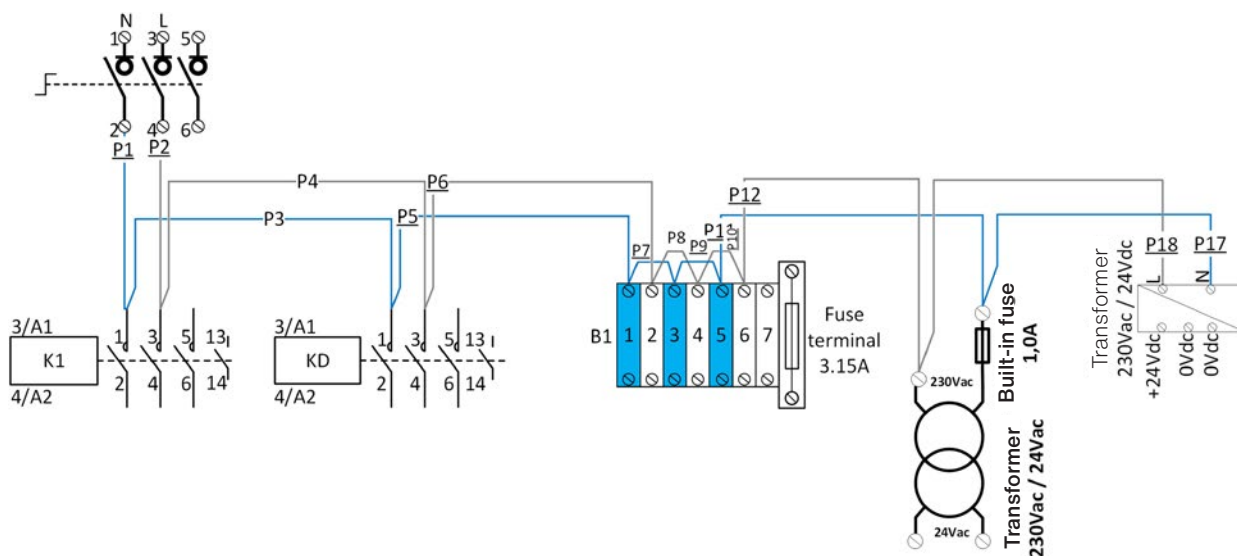
8. Wiring diagrams

8.1 Terminal jumper

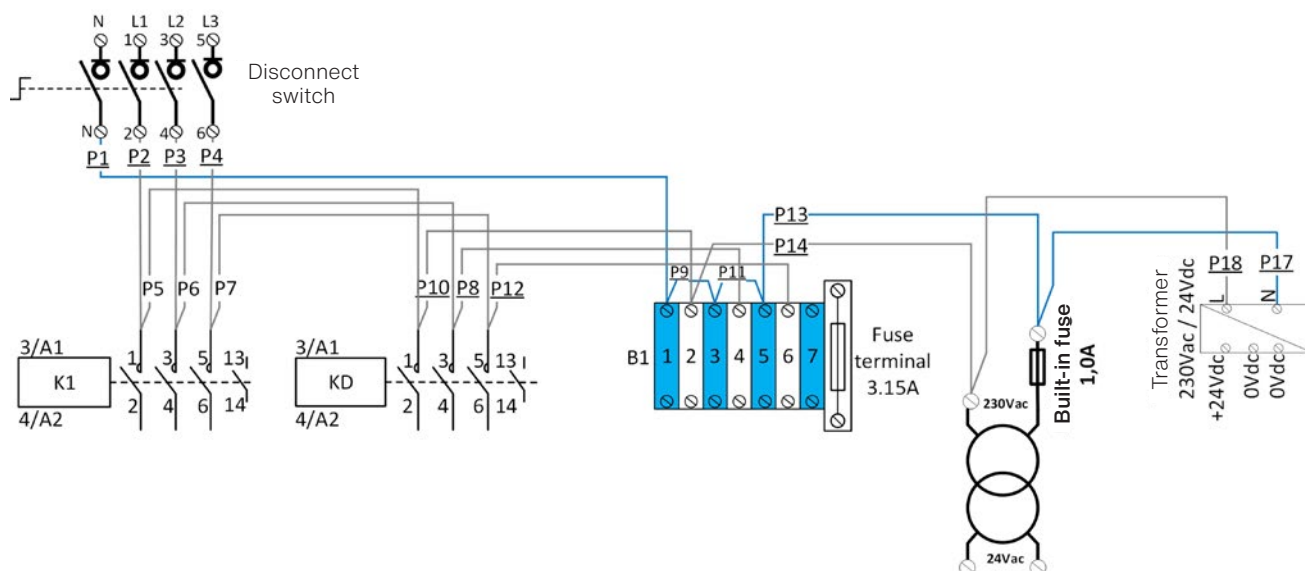
B1 SINGLE-PHASE	B1 THREE-PHASE	B2	B3	B4	B5
B6	B7	B8	B9	B10	B11

8.2 Control board power

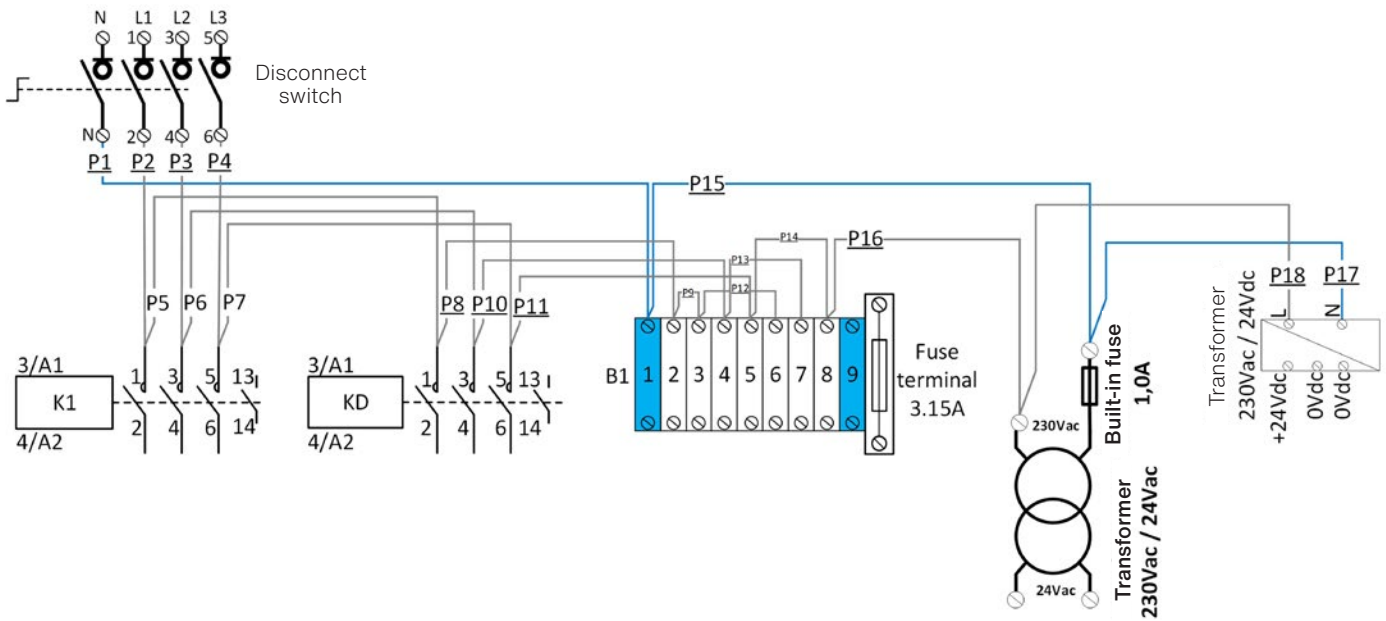
8.2.1 Single-phase fan motor and coils



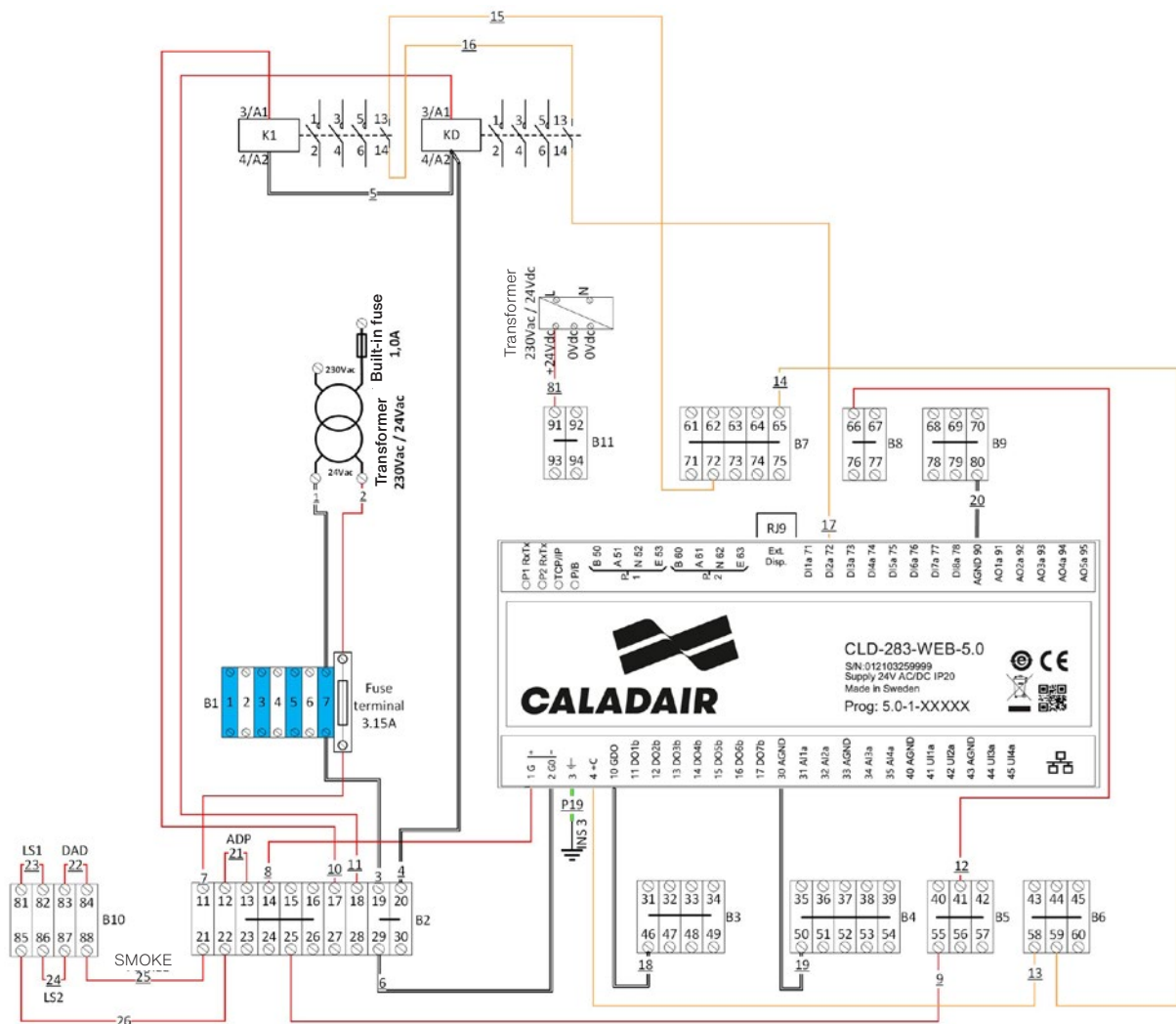
8.2.2 Single-phase fan motor and three-phase coils



8.2.3 Three-phase fan motor and coils

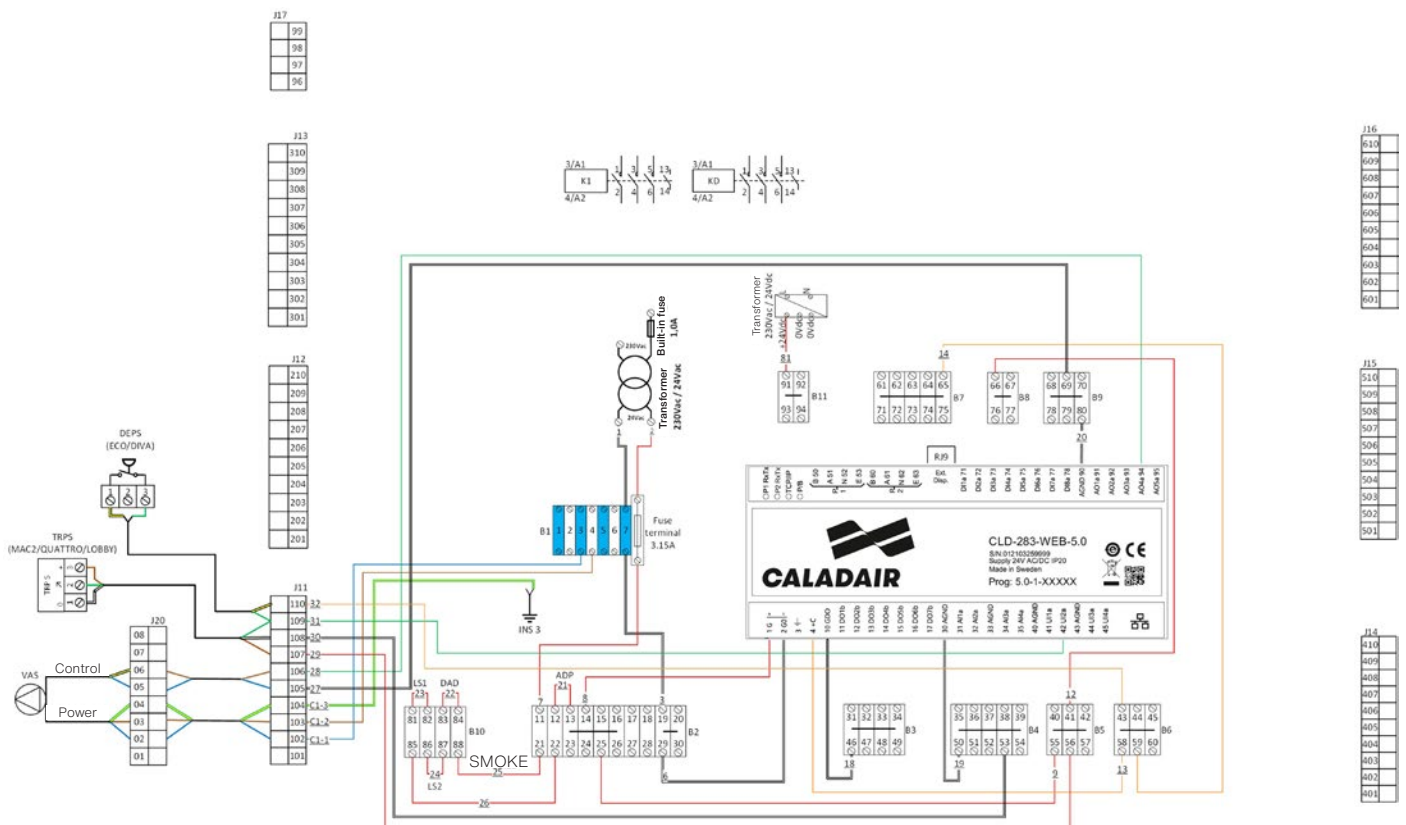


8.3 Control panel

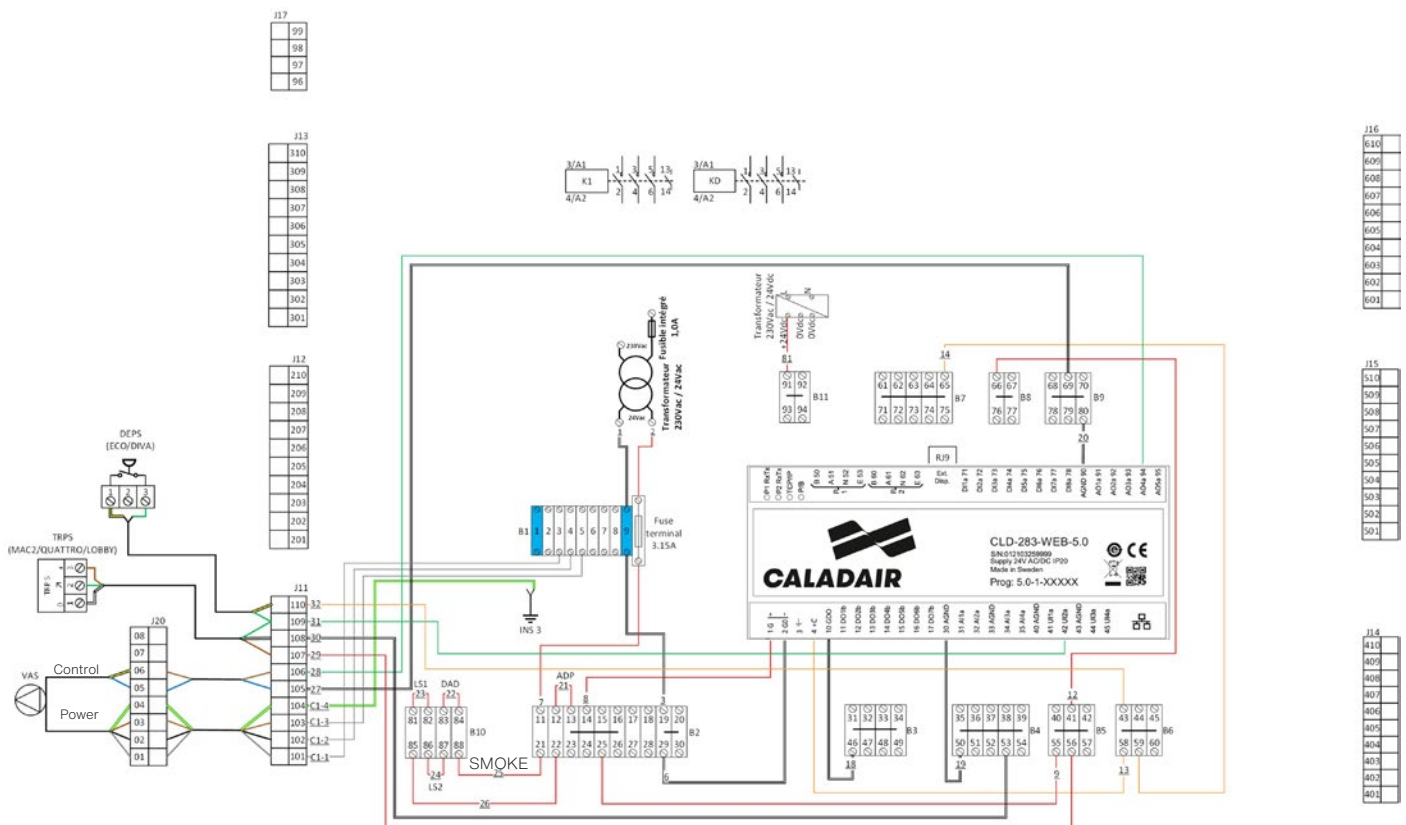


8.4 J11 connector

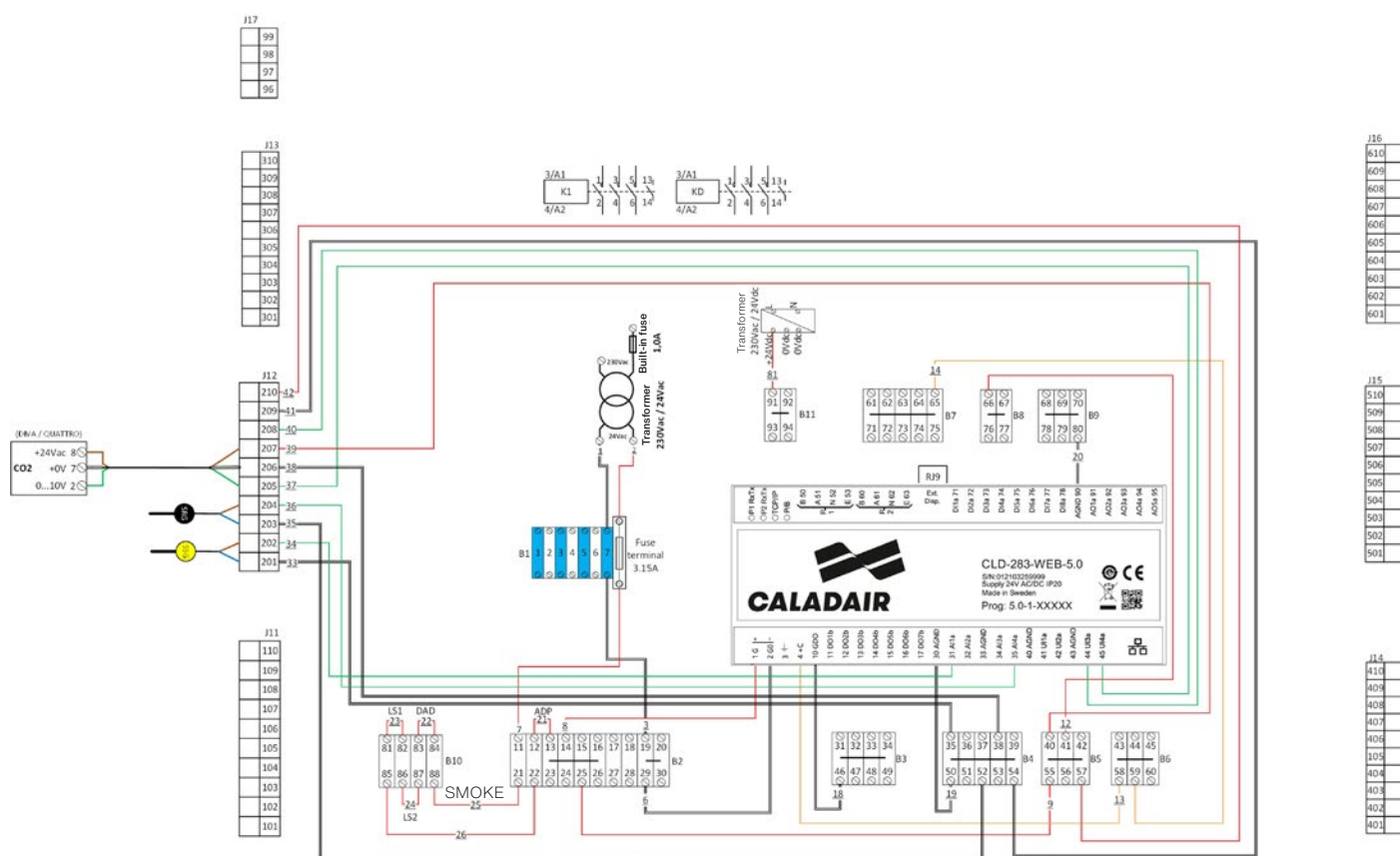
8.4.1 Single-phase fan motor



8.4.2 Three-phase fan motor

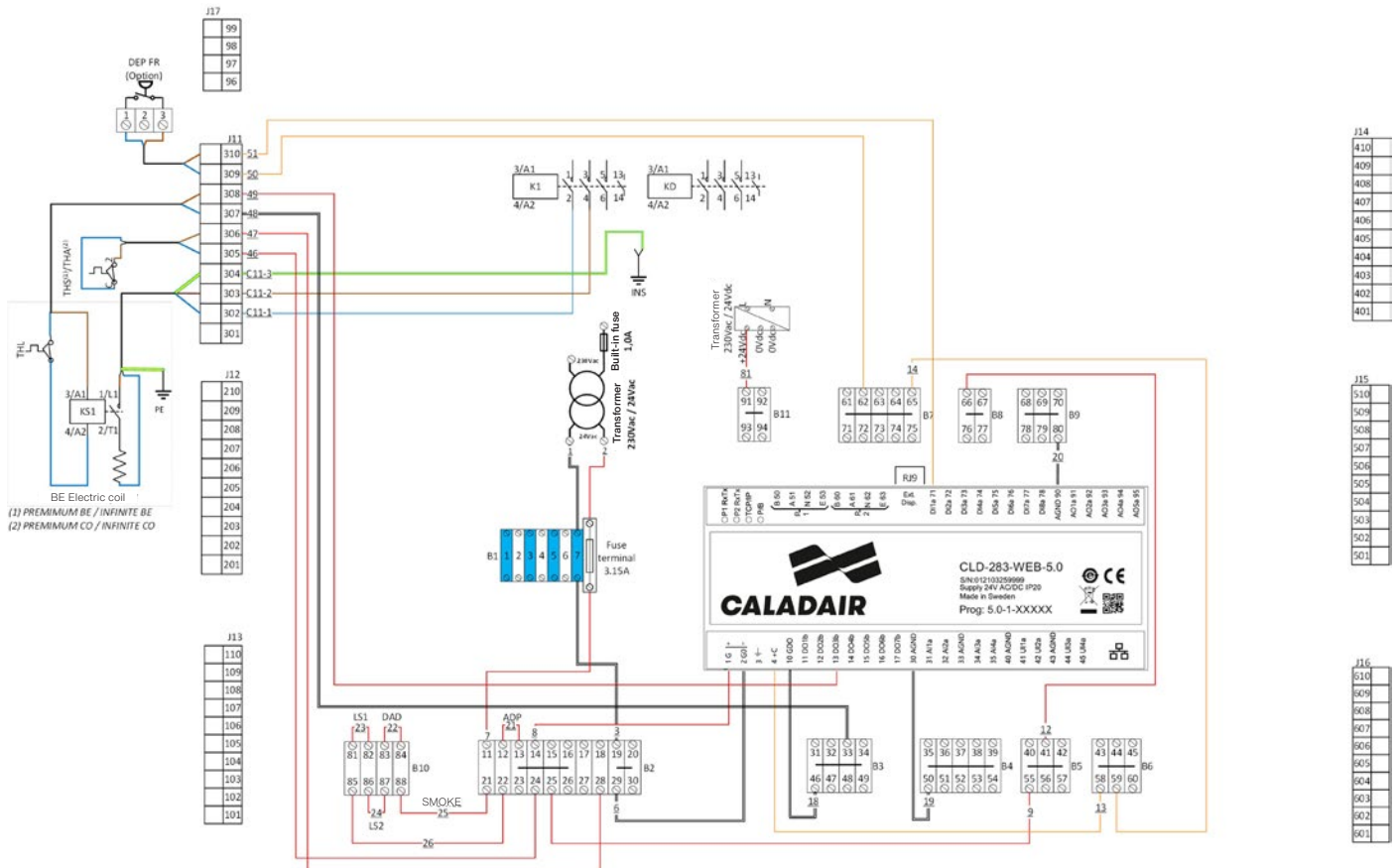


8.5 J12 connector

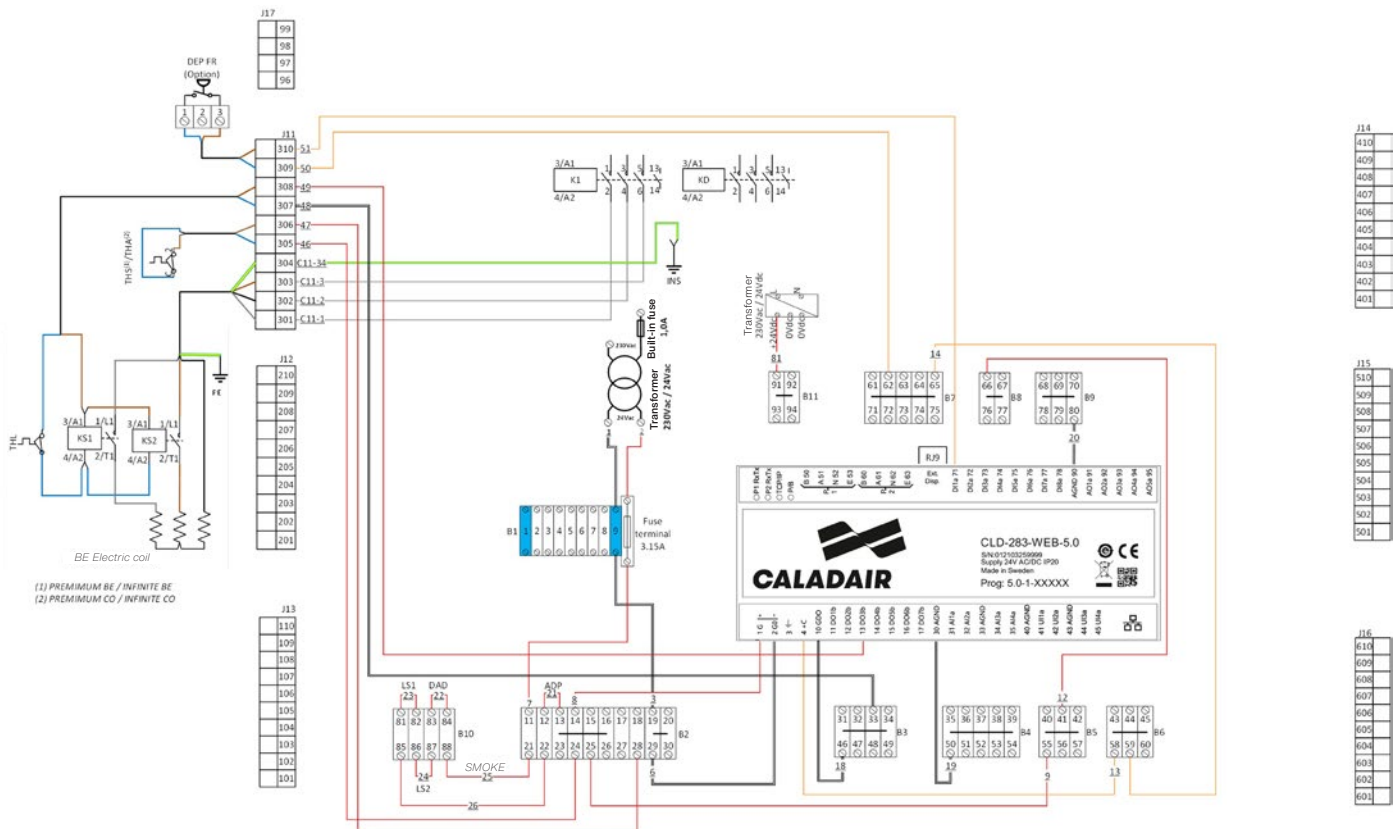


8.6 J13 connector

8.6.1 Single-phase heating coil

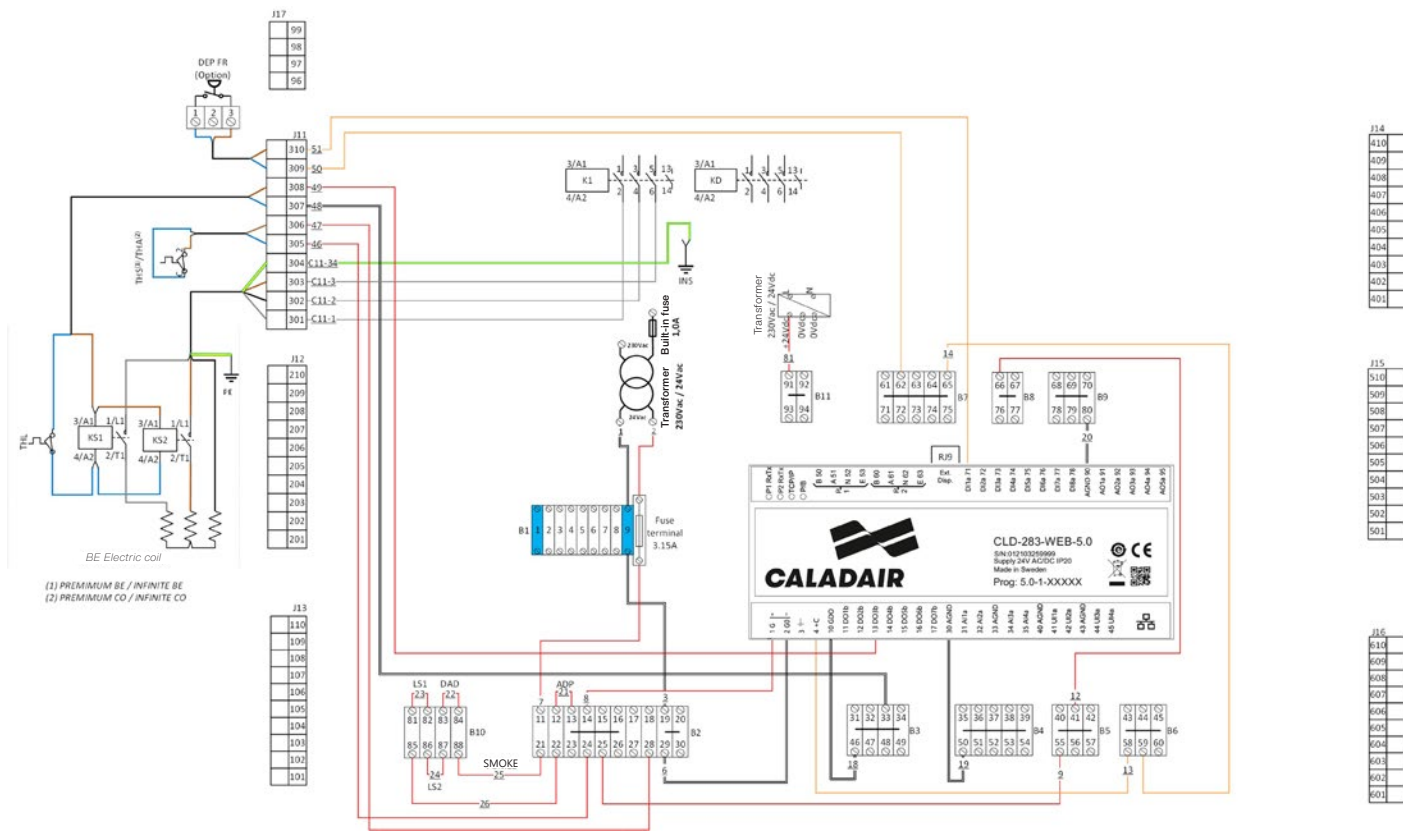


8.6.2 Three-phase heating coil, single-stage

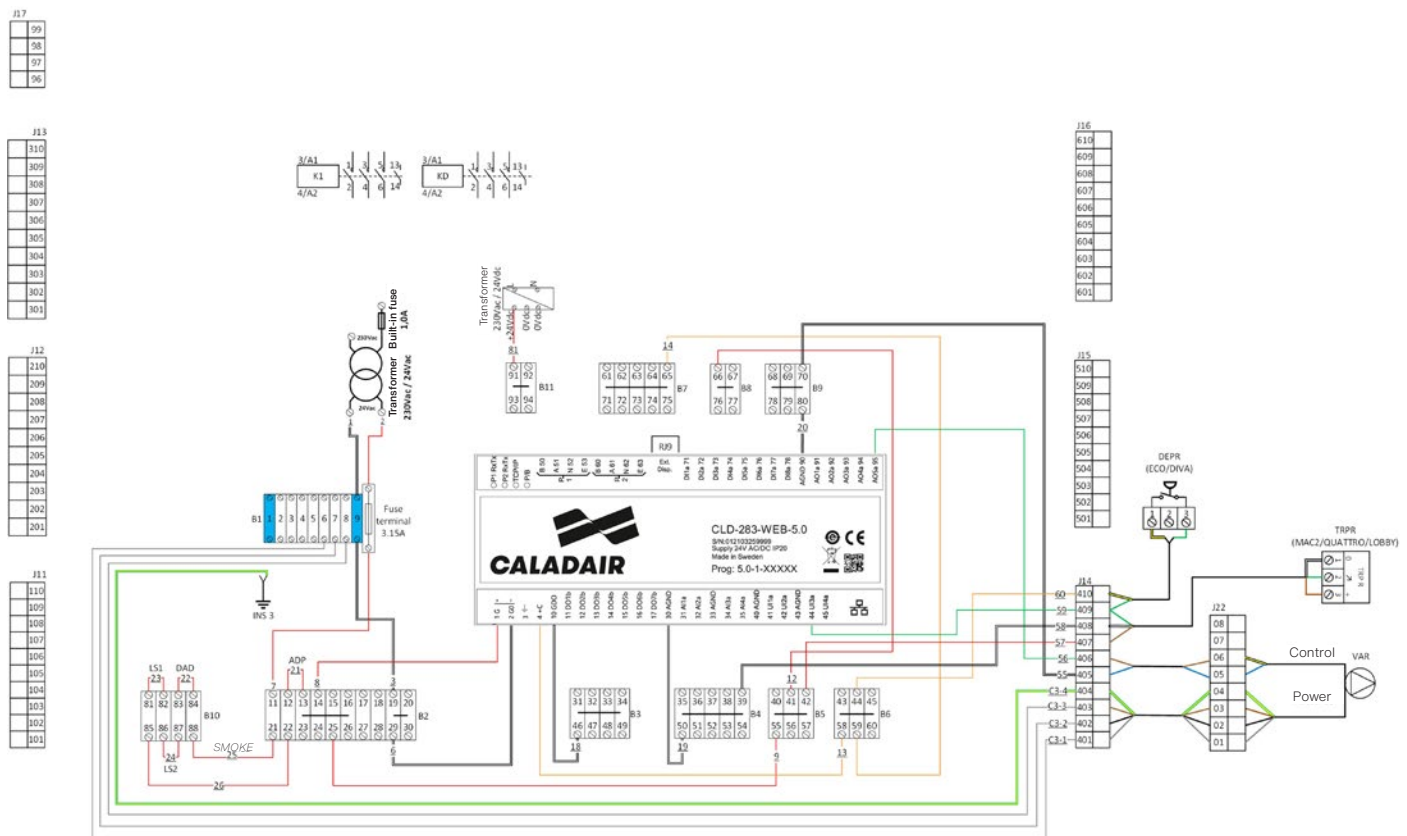


8.7 J14 connector

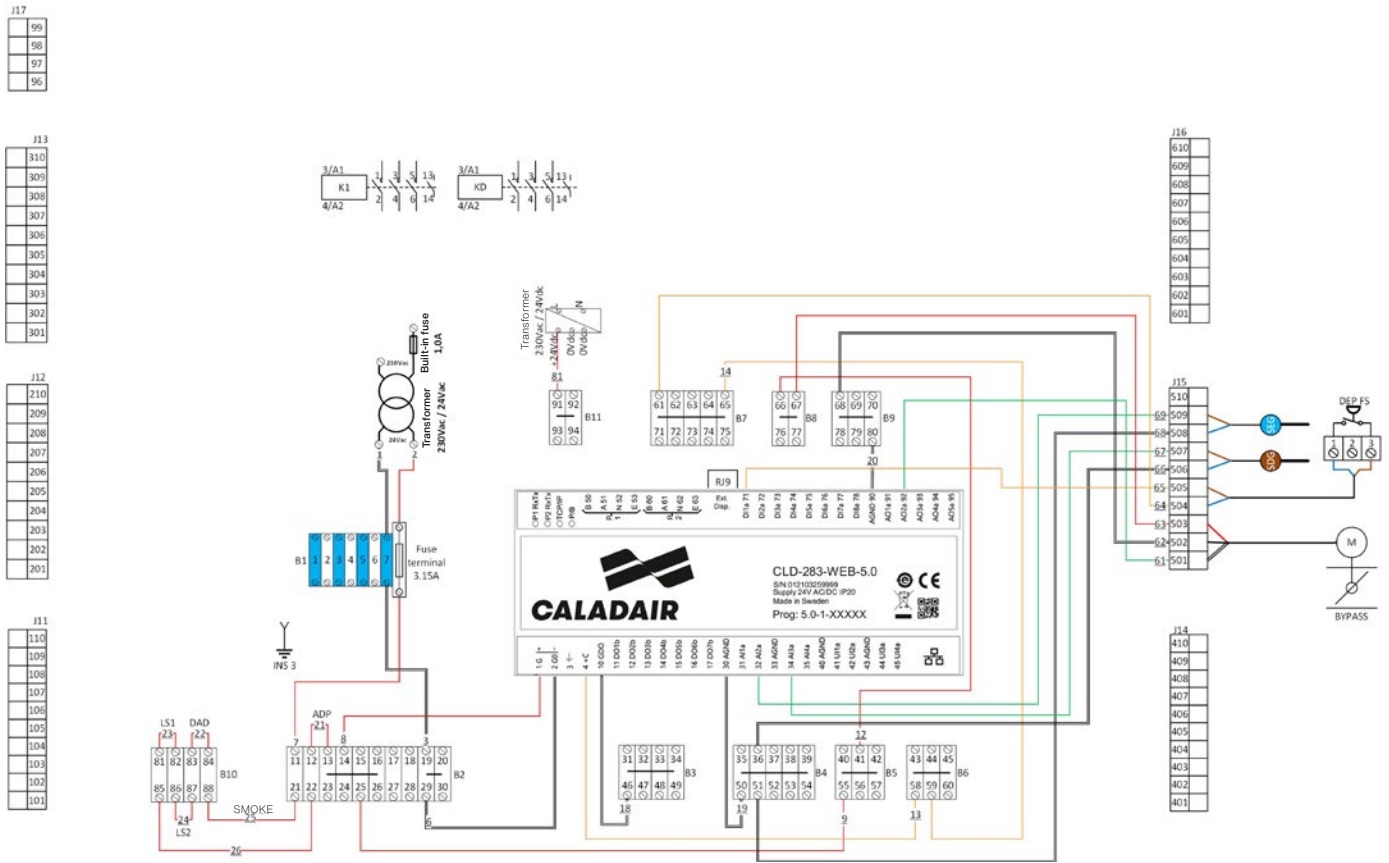
8.7.1 Single-phase fan motor



8.7.2 Three-phase fan motor

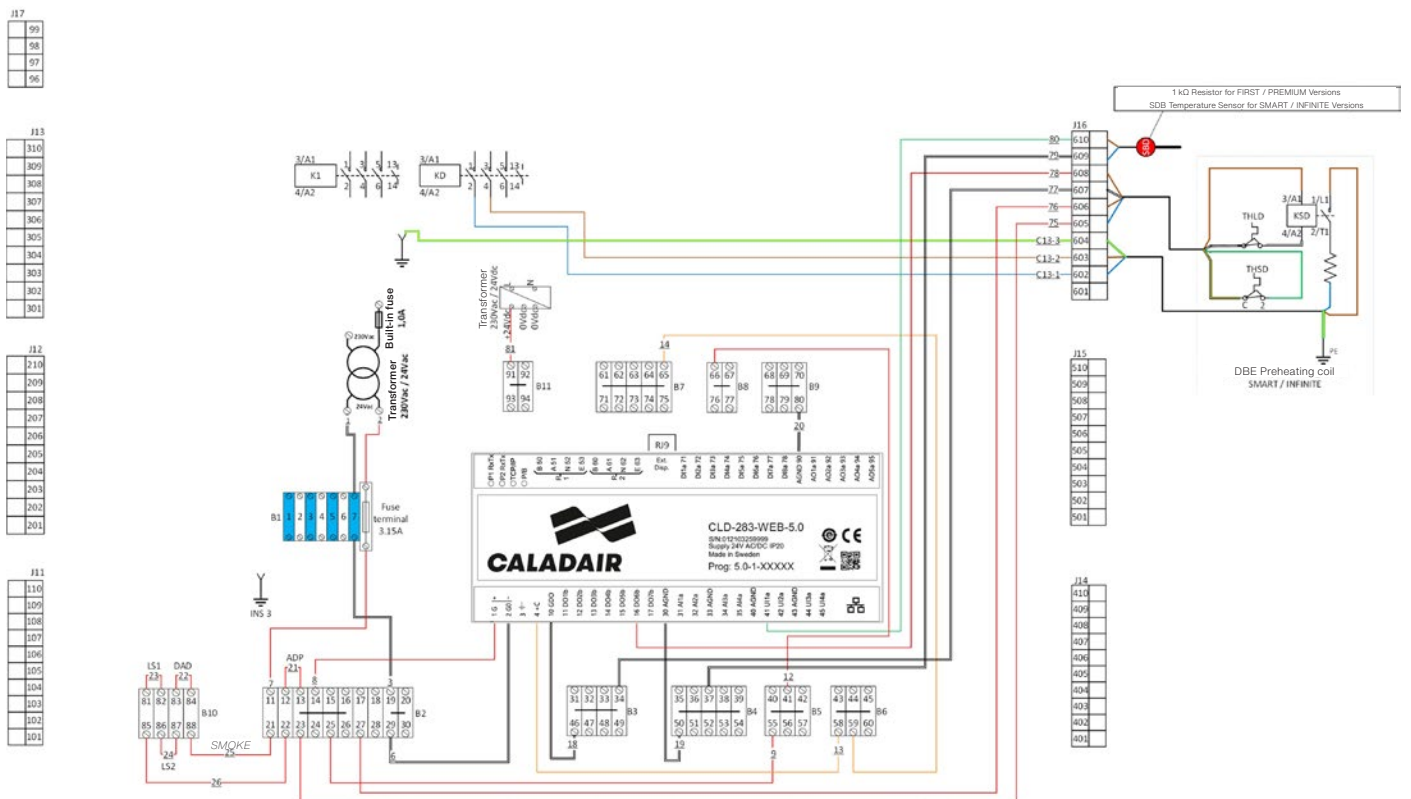


8.8 J15 connector

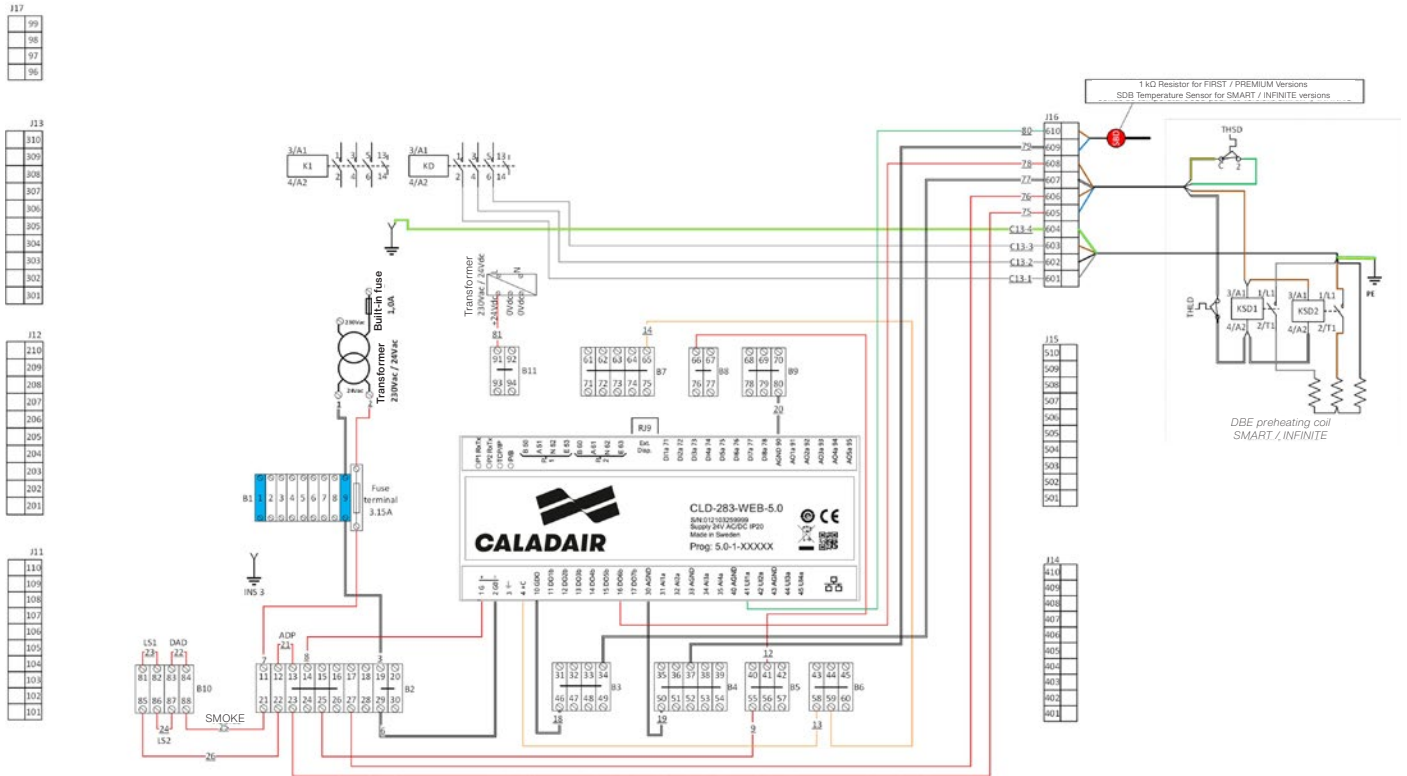


8.9 J16 connector

8.9.1 Single-phase preheating coil

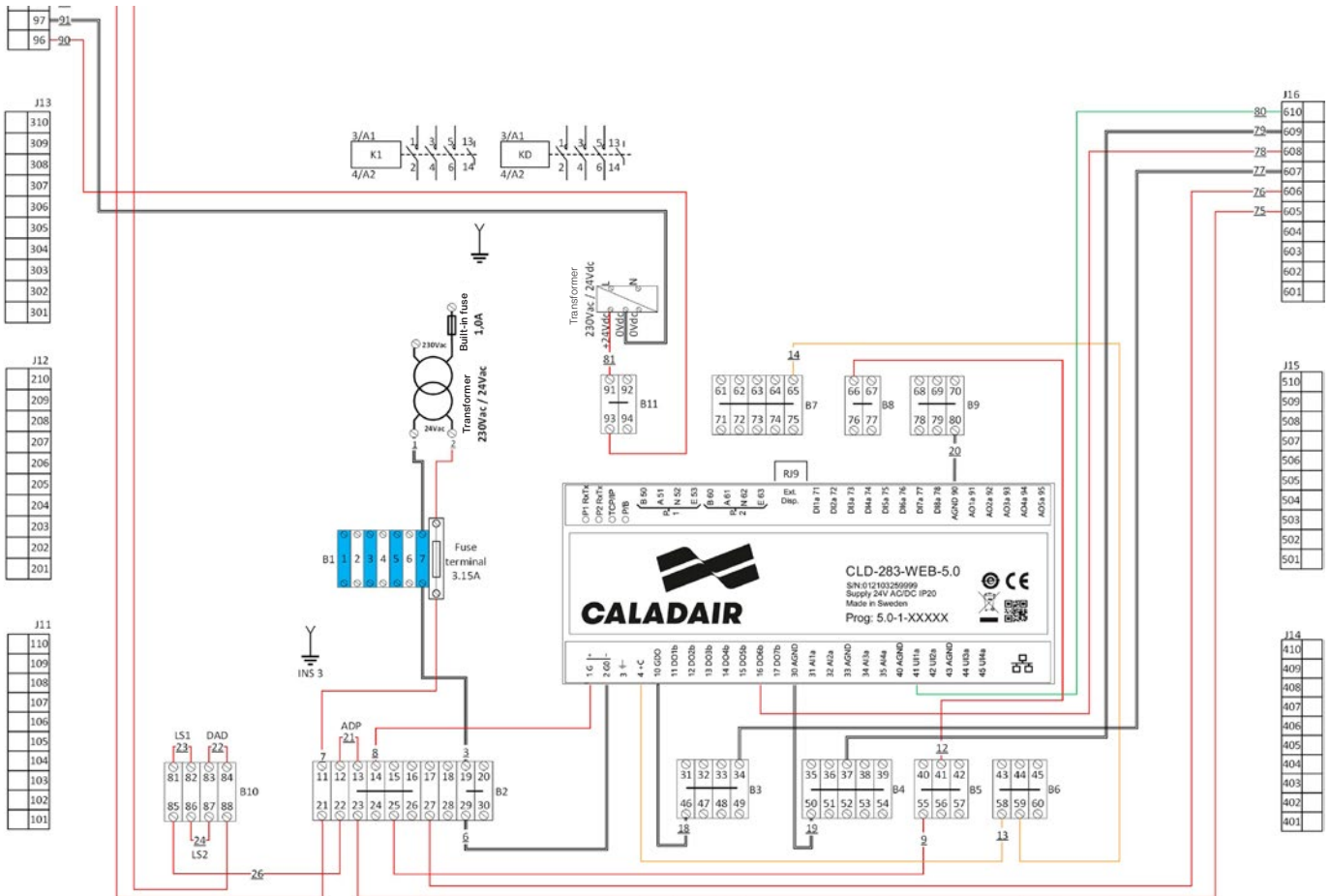


8.9.2 Three-phase preheat coil, single stage

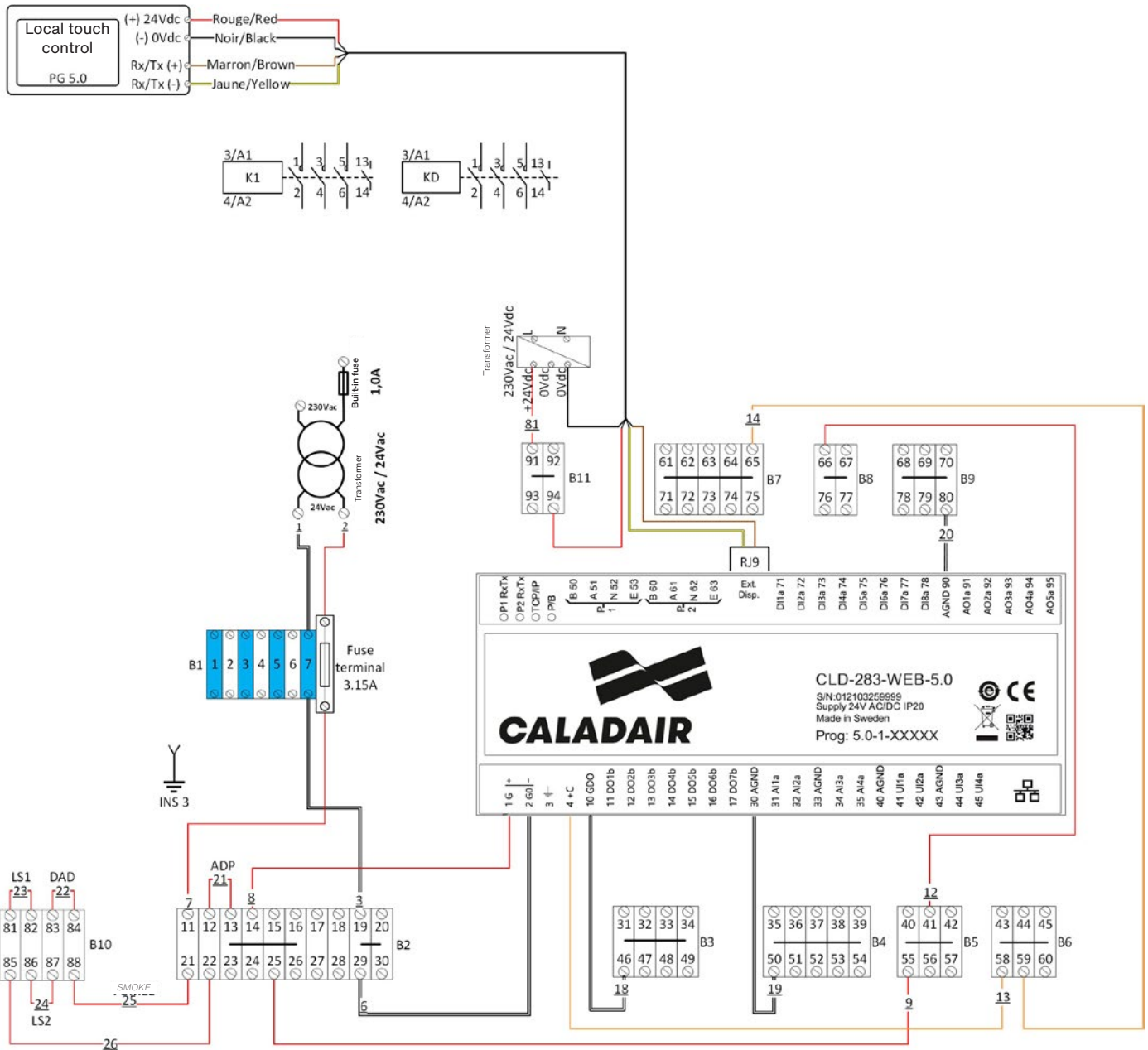


8.10 J17 connector (size 13C to 48C)

If the optional smoke sensor is installed, the female-side wiring for connector J17 is detailed in section [7.6.7 Smoke detector \(Size 13C to 48C, optional\)](#), page 52

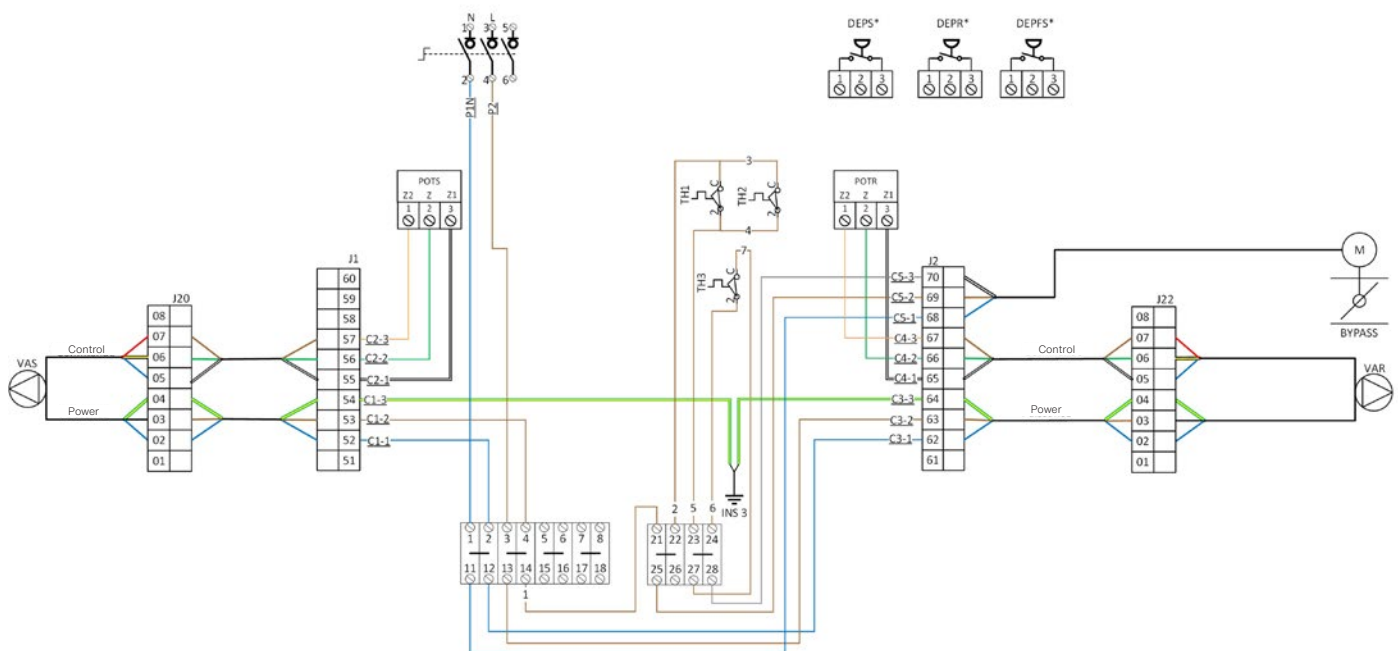


8.11 Graphical user interface

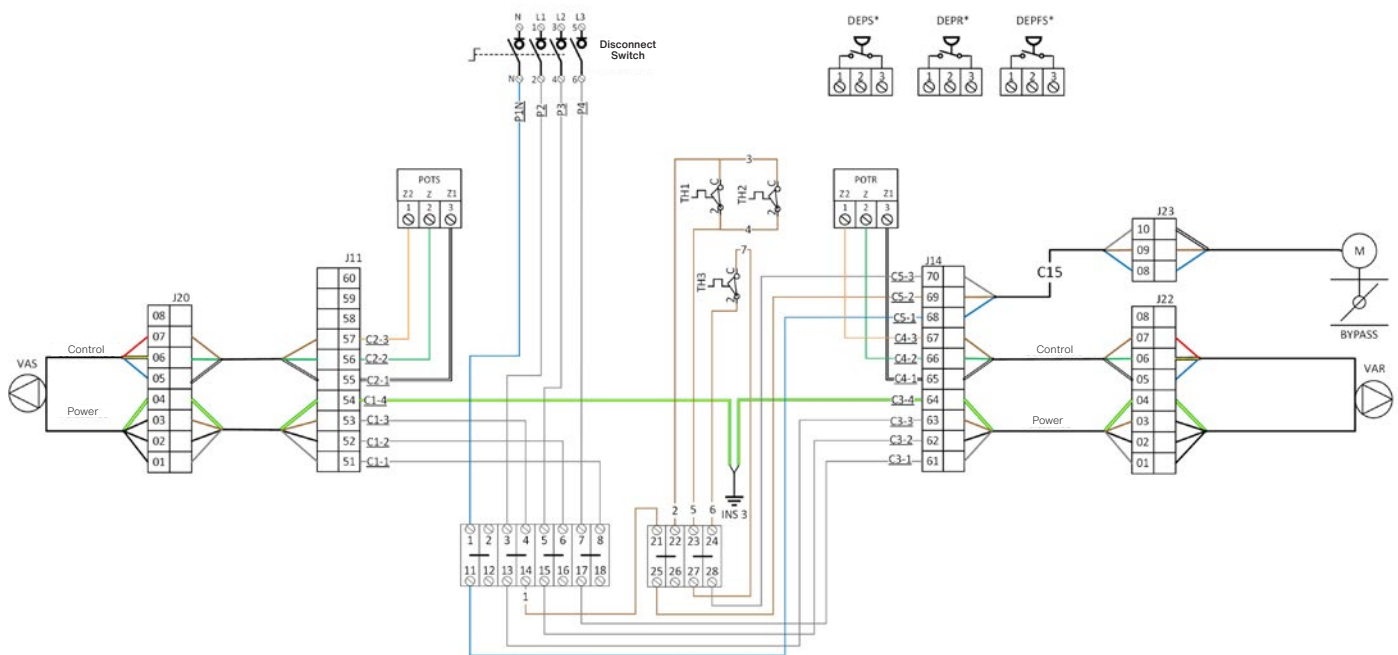


8.12 SEASON Control System General Electrical Diagram

8.12.1 Size 06C to 24C



8.12.2 Size 32C to 48C



9. EASY 5.0 control

Refer to the dedicated manual C-V0125-CSY-INM-CALADAIR-EASY50-fr.

10. SEASON control



In France, SEASON versions equipped with composite fans do not comply with the July 29, 2025 decree, Article CH36 §1 of the French fire-safety regulations for public-access buildings (ERP) (except where this regulation provides an exemption).

10.1 General information

The SEASON controller is a simplified control solution designed for air handling units. Unlike the EASY 5.0 control system, it does not incorporate an intelligent electronic controller, a local PG 5.0 touchscreen interface, or an EDT2 remote room controller.

The SEASON controller is supplied as standard with the following functions:

- Individual fan speed adjustment via an adjustable potentiometer
- hermostat-based heat recovery control with adjustable setpoint, including the following functions:
 - ▷ Heat recovery frost protection by diverting the outdoor air stream (bypass)
 - ▷ Cooling recovery, heating recovery
- Fan operating status feedback via a pressure switch (NO or NC dry contact)
- Supply air filter fouling status indication via a pressure switch (NO or NC dry contact)

The bypass damper operates in ON/OFF mode.



The SEASON controller does not provide control of heating or cooling coils.

10.2 Make-up and configuration

The makeup and configuration of the SEASON version are very similar to the base ECO version. The main differences are in the electrical board and the control-related components (temperature sensors, controller).

The SEASON version does not include any coil.

The other components shared with the standard range equipped with EASY 5.0 control are described in [3.6 Composition and structure, page 15](#)

10.3 General operating principle

When power is switched on (disconnect switch in the ON position), the Supply Air Fan (VAS) and the Return Air Fan (VAR) start after a few seconds and ramp up to the target speed set by the potentiometer positions.

The bypass damper is enabled at power-up based on the outdoor air temperature, the exhaust temperature, and the settings of the adjustable control thermostats.

	Exhaust temperature***	Outdoor air temperature**		
	< 5°C	< 18°C	18°C...24°C	> 24°C
Bypass position*	Open	Closed (heat recovery)	Open	Closed (cool recovery)

*Open = the fresh-air stream does not pass through the heat exchanger / closed = the entire fresh-air stream passes through the heat exchanger.

**Factory thermostat setpoints are provided as a baseline and must be adjusted to suit site needs. Maintain a temperature setpoint difference of at least 6°C between the two thermostats.

***The exhaust-air thermostat (TH3) must be set to a temperature $\geq 5^{\circ}\text{C}$.

10.4 User adjustment controls

10.4.1 TH1 thermostat (heat recovery)

The TH1 thermostat bulb is located in the outdoor air stream (= outdoor temperature).

The thermostat is factory-set to $+18^{\circ}\text{C}$:

Outdoor temperature < 18°C	Outdoor temperature > 18°C
Closed contact between terminals (C) and (1)	Open contact between terminals (C) and (1)

10.4.2 TH2 thermostat (cool recovery)

The TH2 thermostat bulb is located in the outdoor air stream (= outdoor temperature).

The thermostat is factory-set to $+24^{\circ}\text{C}$:

Outdoor temperature < 24°C	Outdoor temperature > 24°C
Open contact between terminals (C) and (2)	Closed contact between terminals (C) and (2)

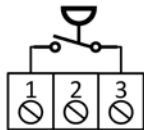
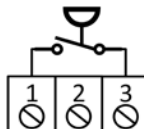
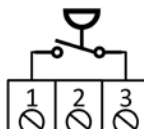
10.4.3 TH3 thermostat: frost protection

This thermostat provides frost protection for the plate heat exchanger.
The sensing bulb is installed in the exhaust airstream discharge.
The thermostat is factory-set to +5°C:

Outdoor temperature < 5°C	Outdoor temperature > 5°C
Open contact between terminals (C) and (2)	Closed contact between terminals (C) and (2)

10.5 Connection and setup of external user devices

The user can check the operating status of the fans and the level of clogging of the supply (blow) filter at any time, thanks to three pressure switches:

Device	Factory setting	User-provided electrical wiring
Supply (blowing) fan run-status pressure switch	25 Pa	DEPS*  *Wiring must be connected directly to the device.
Exhaust (return) fan run-status pressure switch	25 Pa	DEPR*  *Wiring must be connected directly to the device.
Fresh-air filter dirty-filter pressure switch	150 Pa for M5 filters 200 Pa for F7 filters	DEPFS*  *Wiring must be connected directly to the device.

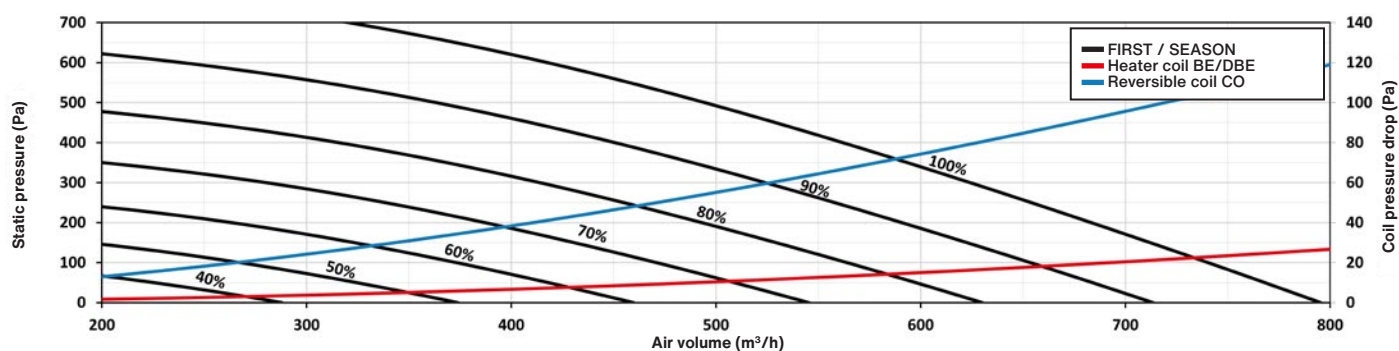
10.6 Support and maintenance

Due to the simplicity of the SEASON control system, failures are rare and are generally confined to the main components.

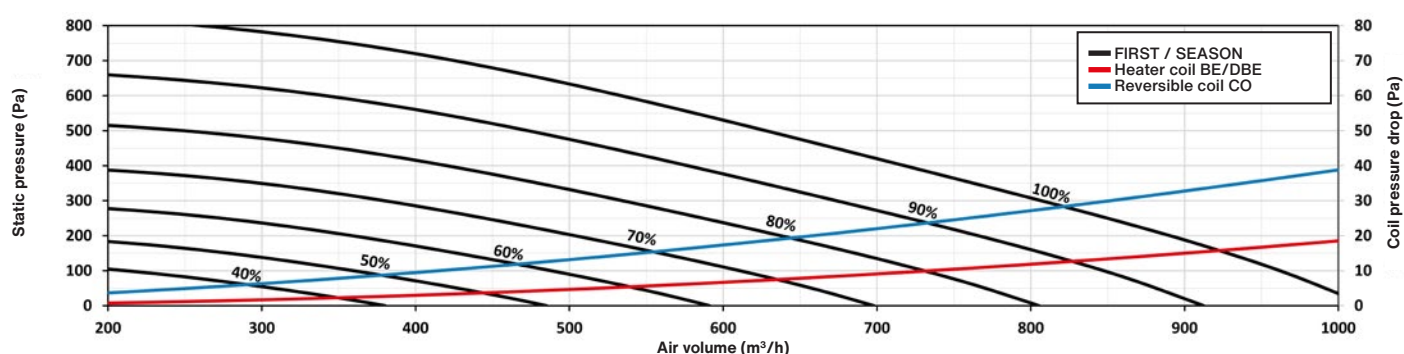
Fault	Possible causes
The supply air fan (SAF) is not running	The 0-10 V control signal potentiometer is set to 0 or is faulty (control signal at the motor input below 1 V). The 0-10 V control signal wiring is faulty, or the signal polarity is reversed. The power supply wiring is faulty. The motor is faulty.
The return air fan (RAF) is not running	
The bypass damper is not operating (the AHU supplies air at a temperature close to the outdoor air temperature at low and high outdoor temperatures).	The outdoor air temperature is within the range where the bypass is inactive (normal operation). Control thermostats TH1, TH2 and TH3 are incorrectly adjusted or faulty. The actuator wiring is faulty, or the actuator is not receiving power. The actuator is faulty.

11. Airflow performance curves

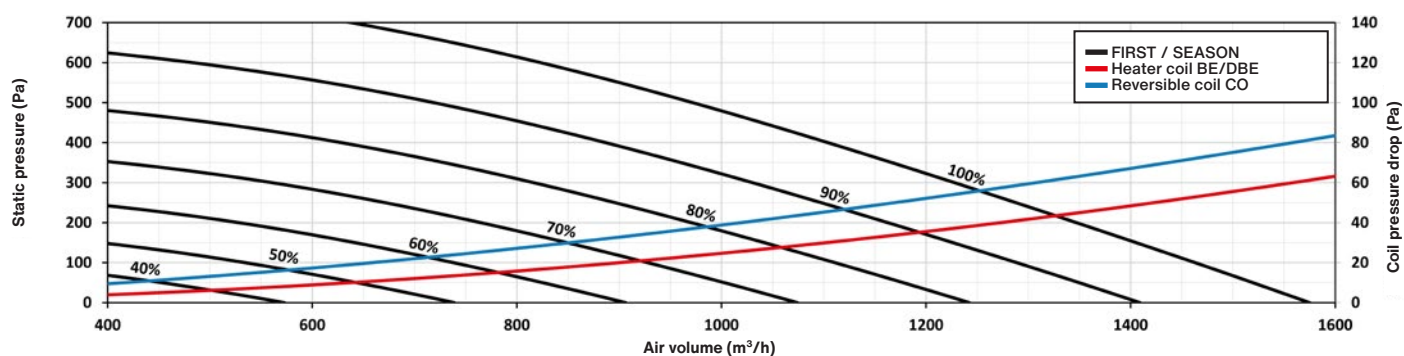
11.1 CARMA J 06C



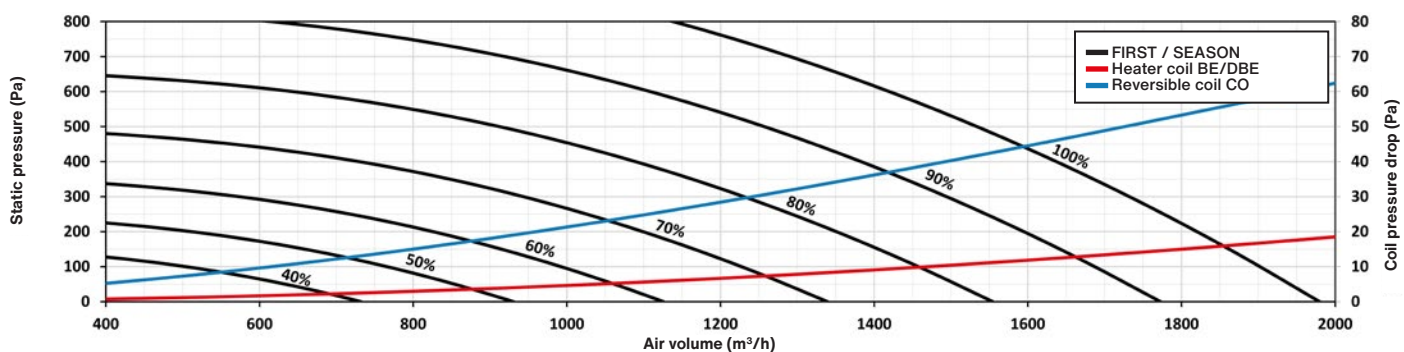
11.2 CARMA J 09C



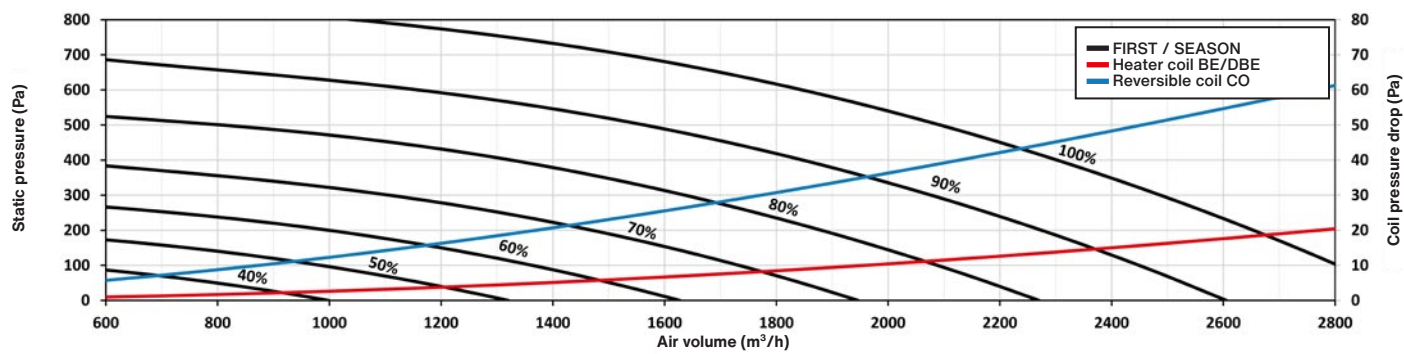
11.3 CARMA J 13C



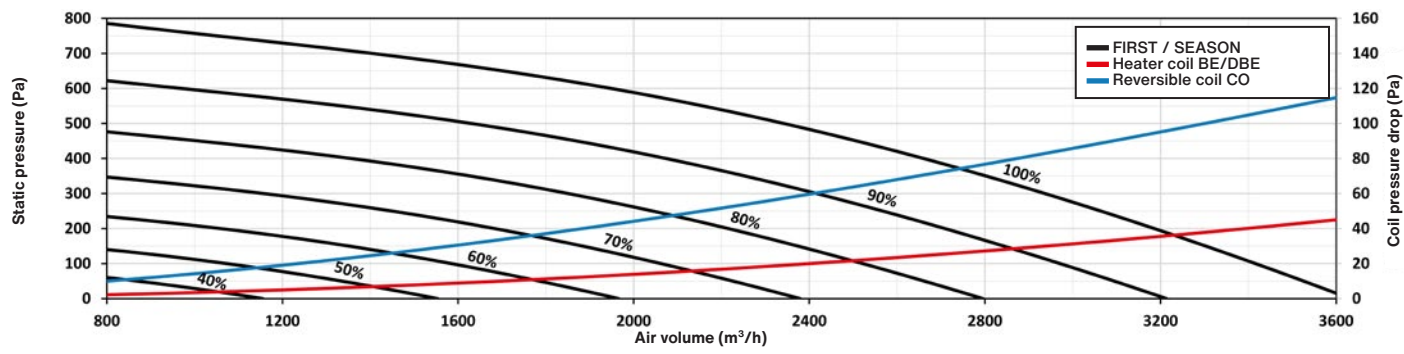
11.4 CARMA J 18C



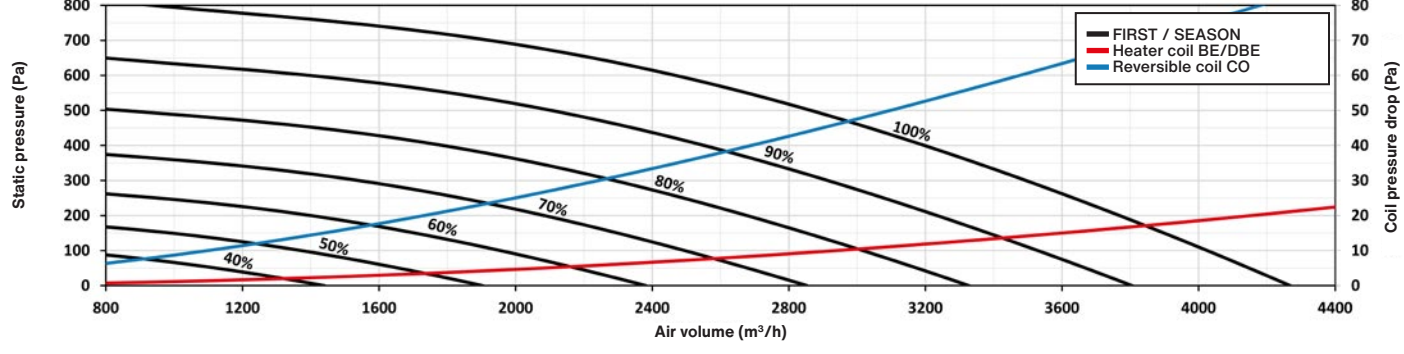
11.5 CARMA J 24C



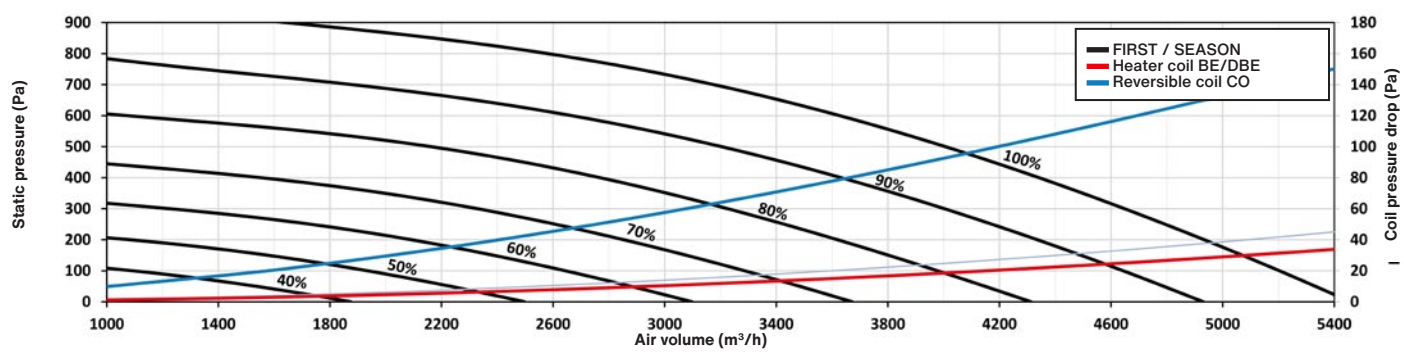
11.6 CARMA J 32C



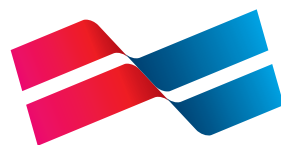
11.7 CARMA J 36C



11.8 CARMA J 48C



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