

# Zehnder Neotime

Installation, Service and User Manual

always the best climate



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## Legal regulations

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### Zehnder manufacturer's warranty

The current device terms are available online

(<https://www.caladair.com/en/espace-client/media/sales-terms-and-conditions>).

Hardcopies can be obtained via our established sales channels.

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## Safety and environmental guidelines

In accordance with the regulations in force, the installation and maintenance of the equipment must only be carried out by technically qualified personnel authorised for this type of equipment and work.

Use the necessary Personal Protective Equipment to avoid injury from electrical, mechanical (injuries from contact with metal sheets, sharp edges, etc.) and acoustic hazards.

Do not use the appliance for any purpose other than that for which it is designed. This device may only be used to convey air free of hazardous compounds, construction dust, etc.

Move the device as described in the chapter on handling.

Grounding must be done in accordance with the applicable standards. Never switch on an ungrounded appliance.

Before carrying out any work, make sure that the equipment is switched off and wait for the moving parts of the ventilation unit to come to a complete stop before opening the doors, panels and access hatches.

During operation, inspection and service panels, doors and hatches must always be fitted and closed.

The appliance can only be switched on and off via the isolator switch.

The safety and control equipment must not be removed, short-circuited or disabled.

The installation must comply with fire safety regulations.

All waste produced must be handled in accordance with the regulations in force.

It is the responsibility of the installer of the equipment to ensure compliance with the regulations concerning noise emissions inside the building and to adapt the installation and location conditions if necessary.

We accept no liability for damage resulting from misuse of the equipment, unauthorised repair or modification or failure to observe these instructions.

Applicable from serial number: CD225200

## 1. Technical specifications

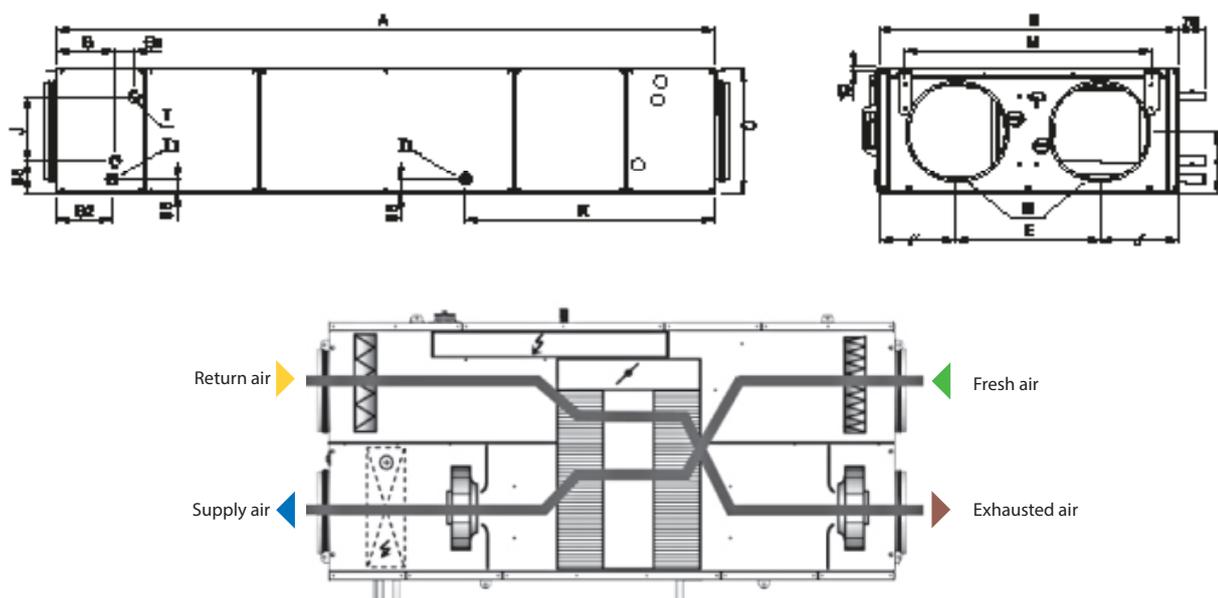
### 1.1. Electrical performance data

Model Zehnder Zehnder Neotime	Power Electric motor (W)	Temp. Use (°C / °C)	Protection class Class	Thermal protection	FIRST, PREMIUM CO, SEASON		INFINITE CO, SMART		PREMIUM BE		INFINITE BE	
					Power supply voltage (V/Ph/Hz)	Protection intensity (A)						
600	2 x 169	-20 / 60	IP54/B	ITP*	230/1/50	2.8	230/1/50	8.2	230/1/50	8.2	230/1/50	13.7
900	2 x 220	-20 / 60	IP44/B	ITP*	230/1/50	3.4	230/1/50	14.3	230/1/50	11.0	230/1/50	21.9
1300	2 x 400	-20 / 40	IP44/F	ITP*	230/1/50	8.6	230/1/50	23.6	230/1/50	19.5	230/1/50	34.7
1800	2 x 400	-20 / 40	IP44/F	ITP*	230/1/50	8.6	230/1/50	24.9	230/1/50	24.9	400/3+N/50	15.1
2500	2 x 400	-20 / 40	IP44/F	ITP*	230/1/50	8.6	230/1/50	31.4	230/1/50	31.4	400/3+N/50	19.5

\*ITP: integrated thermal protection

### 1.2. Dimensional data

Model Zehnder Neotime	∅	A	B	C	D	E	F1	F2	F3	G	G1	G2	J	K	M	M1	M2	M3	T	T1	SEASON	FIRST, SMART	PREMIUM BE, INFINITE BE	PREMIUM CO, INFINITE CO
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg	kg	kg	kg
600	250	1700	780	330	160	370	-	-	-	150	50	145	170	645	640	-	-	-	1/2"	1/2"	120	127	130	135
900	315	2020	965	415	210	460	-	-	-	150	50	145	250	780	750	-	-	-	1/2"	1/2"	180	190	195	200
1300	355	2190	1220	415	190	600	795	735	660	430	50	425	250	880	950	1170	510	510	1/2"	1/2"	255	265	270	275
1800	400	2275	1220	495	245	600	915	725	635	430	50	425	330	885	950	1115	580	580	1/2"	1/2"	275	285	290	295
2500	400	2395	1740	495	235	910	840	785	770	430	50	425	330	985	1350	1235	580	580	3/4"	1/2"	380	390	400	405



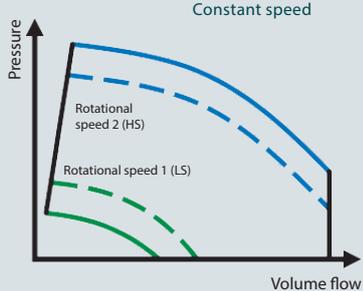
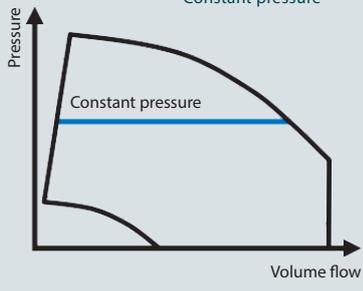
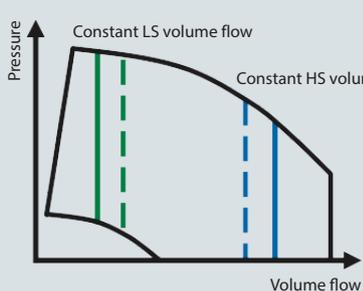
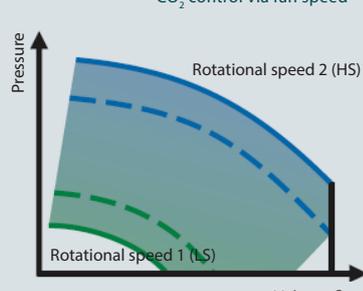
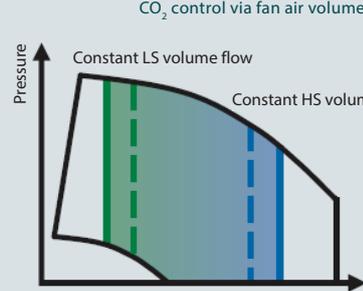
Zehnder Neotime						
Maintenance area (mm)		600	900	1300	1800	2500
Access to filter / electrical cabinet	L1	275	375	520	520	690
Fan access	L2	225	320	380	435	435
Access to fans / exchanger / co coil	L2	470	560	670	670	1020

## 2. General

Zehnder Neotime is a range of high-efficiency, plug & play, compact, single-piece indoor ventilation units designed for indoor installation, especially in false ceilings. The range is available in 5 sizes to cover unit flows up to 2500m<sup>3</sup>/h.

It is equipped as standard with the Zehnder Easy 5.0 controller, which provides intelligent ventilation and thermal management (except for the SEASON version, see chapter 19 SEASON CONTROLLER). The Zehnder Easy 5.0 controller is a communicative device (Modbus RTU/TCP or Bacnet MSTP/IP) and has an integrated web server that is compatible with any HTML5 browser. The Zehnder Easy 5.0 controller is described in a separate manual.

	INTEGRATED THERMAL CONTROL AND EQUIPMENT		
	Electric defrosting coil EDC	Electric heating coil BE	Changeover coil CO
FIRST			
SMART	✓		
PREMIUM BE		✓	
PREMIUM CO			✓
INFINITE BE	✓	✓	
INFINITE CO	✓		✓

	Fan control type	Description
SEASON	Constant speed (without controller)	Fan speed can be adjusted manually by means of an individual potentiometer located on the front of the fan unit.
ECO	Constant speed 	2 adjustable independent fan speeds 2 independent time periods for each speed can be set.
LOBBY	Constant pressure 	2 adjustable independent fan pressures 2 independent time periods for each speed can be set.
MAC2	Constant air volume 	2 adjustable independent fan air volumes 2 adjustable independent time periods for each air volume.
DIVA	CO <sub>2</sub> control via fan speed 	The fan speed varies continuously and proportionally between 2 fan speeds depending on the CO <sub>2</sub> concentration measured at the extract.
QUATTRO	CO <sub>2</sub> control via fan air volume 	The fan air volume varies continuously and proportionally between 2 fan speeds depending on the CO <sub>2</sub> concentration measured at the extract.

The Zehnder Neotime range is supplied as standard with a modulating bypass that provides the following functions:

- Protection against icing of the plate heat exchanger
- Management of the thermal recovery rate
- Free cooling
- Night cooling
- Free heating

If you wish to extend the functional capabilities, the Zehnder Neotime range of ventilation units can be coupled with the optional Combi Box modules, which allow the following coils to be installed in the duct:

- Cold water coil
- Direct expansion coil (hot and/or cold)
- Changeover coil
- Hot water coil

The Zehnder Easy 5.0 controller can only accommodate:

- A heating coil + a cooling coil
- A changeover coil alone.

The Zehnder Easy 5.0 controller cannot accommodate:

- A heating and cooling coil for dehumidification
- A heating coil and a changeover coil.

### 3. Upon receipt of the material

#### 3.1. Quality checks

On receipt of the material, check the condition of the packaging and the material, as well as the number of packages. In case of damage, make detailed comments on the carrier's delivery note and inform your supplier immediately.

#### 3.2. Unpacking

When unpacking the equipment, check the following points:

- Presence of total number of packages
- Presence of the expected accessories (electrical equipment, sleeves, (external) controls, etc.)

Remove the protective film from the sheets.

After unpacking the material, the waste must be disposed of according to local regulations and standards.

No packaging should be released into the environment.

#### 3.3. Storage

As long as the unit is not installed and connected to the air distribution network, it must be stored in a sheltered, dry place at a temperature between -20 °C and +40 °C as the packaging is not suitable for storage in bad weather.

### 4. End of service life

Through its membership of the eco-organisation ECOLOGIC, CALADAIR meets the financing obligations for the collection, removal and treatment of waste electrical and electronic equipment.

When installing or uninstalling this equipment, the user or installer can contact the Ecologic company, which will offer a collection solution to dispose of the obsolete product in a suitable way.

Telephone: +33 (0)1 30 57 79 09

Internet: [www.e-dechet.com](http://www.e-dechet.com)

### 5. Packaging and packages

The Zehnder Neotime ventilation unit is delivered mounted on wooden palletes or PCB feet and wrapped in a protective plastic film. The fragile parts are protected by cardboard pieces.

In the LOBBY constant pressure version, the units are delivered with a package containing a pressure tap and a crystal tube to be connected to the supply duct during installation.

### 6. Identification and labelling

The ventilation unit can be identified by its identification label:

**NEOTIME 2500 INFINITE CO MAC2**  
 HIGH EFFICIENCY RECOVERY UNIT / CENTRALE DOUBLE FLUX HAUTE EFF

230 V	~	50 Hz
CHANGEOVER	WATER / EAU	8 bar/105°C max
DEFROST / DEGIVRAGE	ELECTRIC / ELECTRIQUE	5.25kW
0	Max : 31.4 A	
NOMINAL AIRFLOW / DEBIT NOMINAL : 1692 m³/h		VDI 6022 CERT. N°..... No .....
FRESH AIR - AIR NEUF	FILTER / FILTRE : 1 X F7 (ePM1 55%) - 690x440x48 mm	
	MAX REPLACEMENT PRESSURE DROP / PERTE DE CHARGE MAX DE REMPLACEMENT : 151 Pa	
	NOMINAL FILTER PRESSURE DROP / PERTE DE CHARGE NOMINALE DU FILTRE : 51 Pa	
EXTRACT AIR - AIR REPRIS	FILTER / FILTRE : 1 X M5 (ePM10 50%) - 690x440x48 mm	
	MAX REPLACEMENT PRESSURE DROP / PERTE DE CHARGE MAX DE REMPLACEMENT : 87 Pa	
	NOMINAL FILTER PRESSURE DROP / PERTE DE CHARGE NOMINALE DU FILTRE : 29 Pa	

\*CDF044842\*      N° 21.03.072      SERIAL N° / N° DE FAB : 123456-789

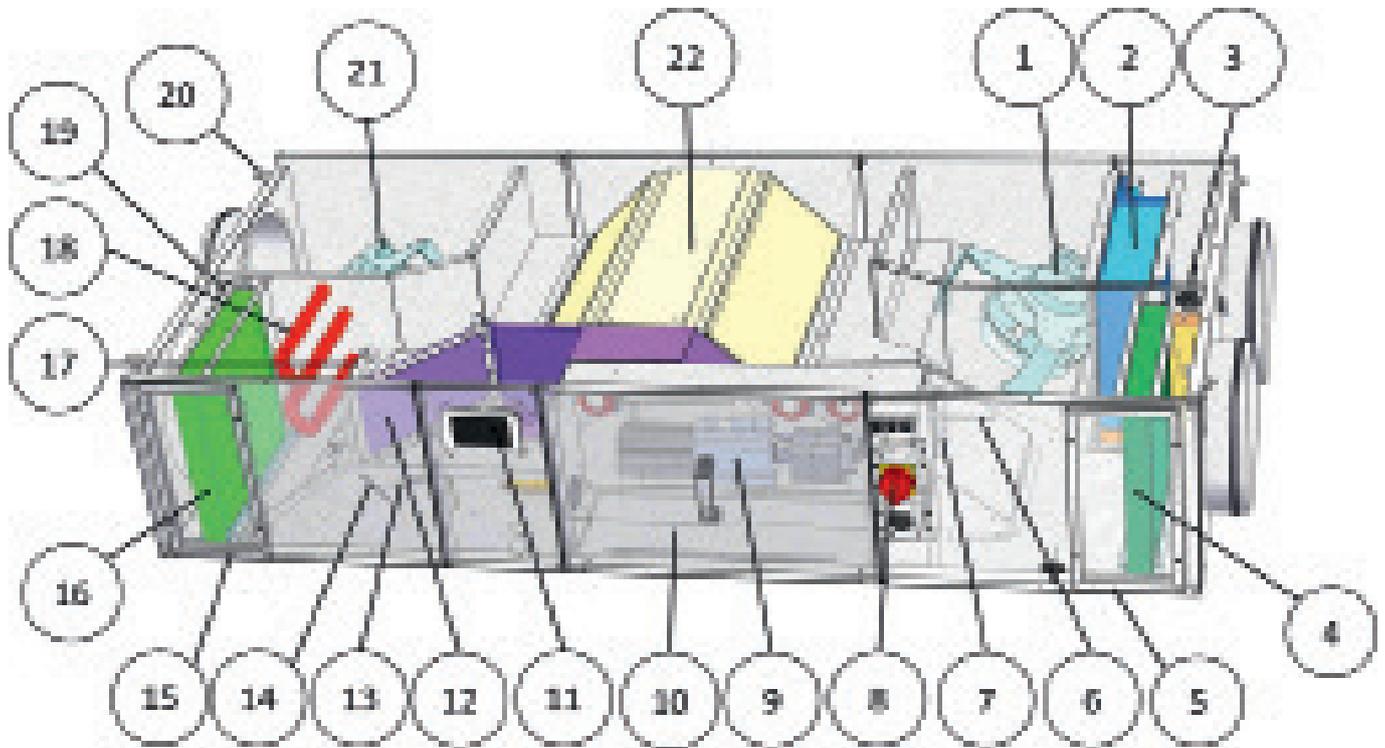
Manufactured by ZEHNDER CALADAIER INTERNATIONAL 61 rue de Saint Veran - 71000 MACON LOCHE - FRANCE

1	Unit size	
	600	See air performance curves Chapter 20 AIR PERFORMANCE CURVES
	900	
	1300	
	1800	
	2500	
2	Type of control and integrated thermal equipment	
	SEASON	Fan control via potentiometer and heat recovery control via thermostats (no Zehnder Easy 5.0 control).
	FIRST	Zehnder Easy 5.0 controller without integrated coil
	SMART	Zehnder Easy 5.0 controller with integrated electric defrost coil control (EDC)
	PREMIUM BE	Zehnder Easy 5.0 controller with integrated electric heating coil control (EHC)
	PREMIUM CO	Zehnder Easy 5.0 controller with integrated electric changeover coil control (CO)
	INFINITE BE	Zehnder Easy 5.0 controller with control of integrated electric defrosting coil and integrated electric heating coil (EDC + EHC)
	INFINITE CO	Zehnder Easy 5.0 controller with control of the integrated electric defrosting coil and the integrated changeover coil (EDC + CO)
3	Fan control type	
	ECO	Constant speed
	LOBBY	Constant pressure
	MAC2	Constant volume
	DIVA	CO <sub>2</sub> in variable speed
	QUATTRO	CO <sub>2</sub> in variable discharge capacity
4	Type of power supply	
	400V - 3~ + N - 50 Hz	Three-phase + Neutral
	230V - 1~ - 50 Hz	Single-phase
5	BE: Effective capacity of the electric heating coil in (kW) CO: Temperature/Max. pressure	
6	Characteristics of the defrosting coil (EDC)	
7	Maximum absorbed current in (A)	
8	Production number to be mentioned in all communication with the supplier	

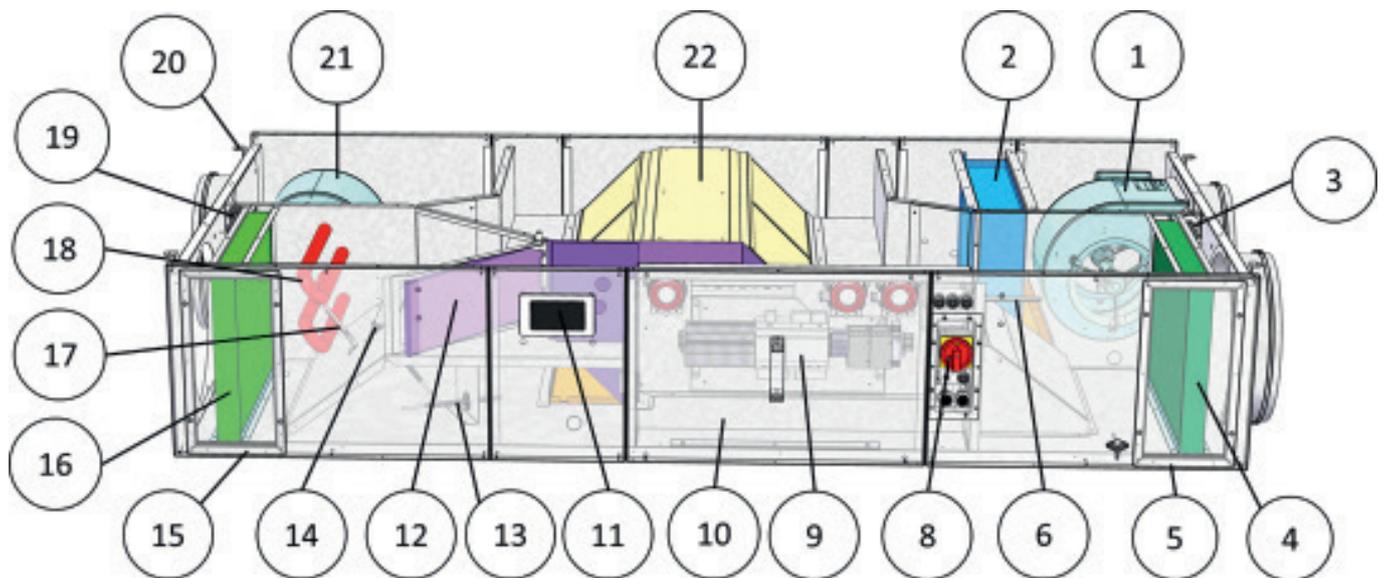
7. Overview and construction

7.1. General overview of the unit

Zehnder Neotime 600-900

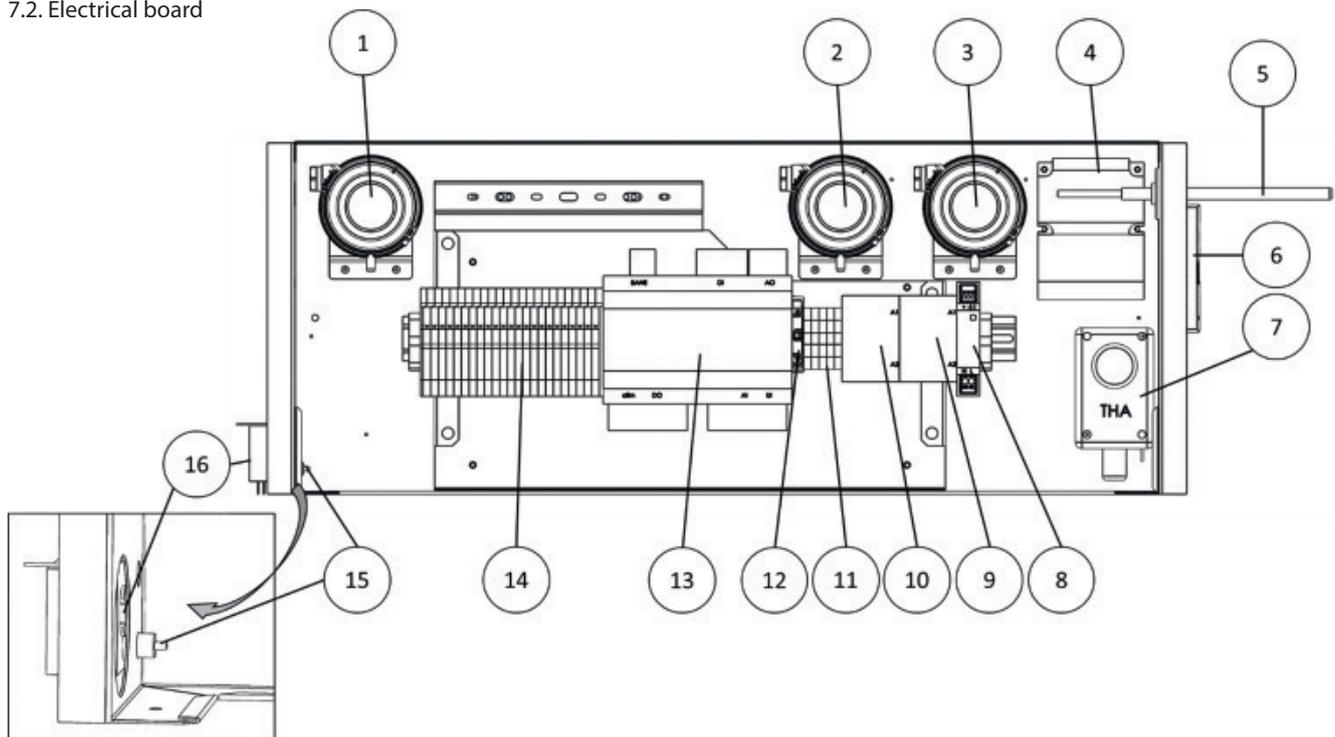


Zehnder Neotime 1300-1800-2500



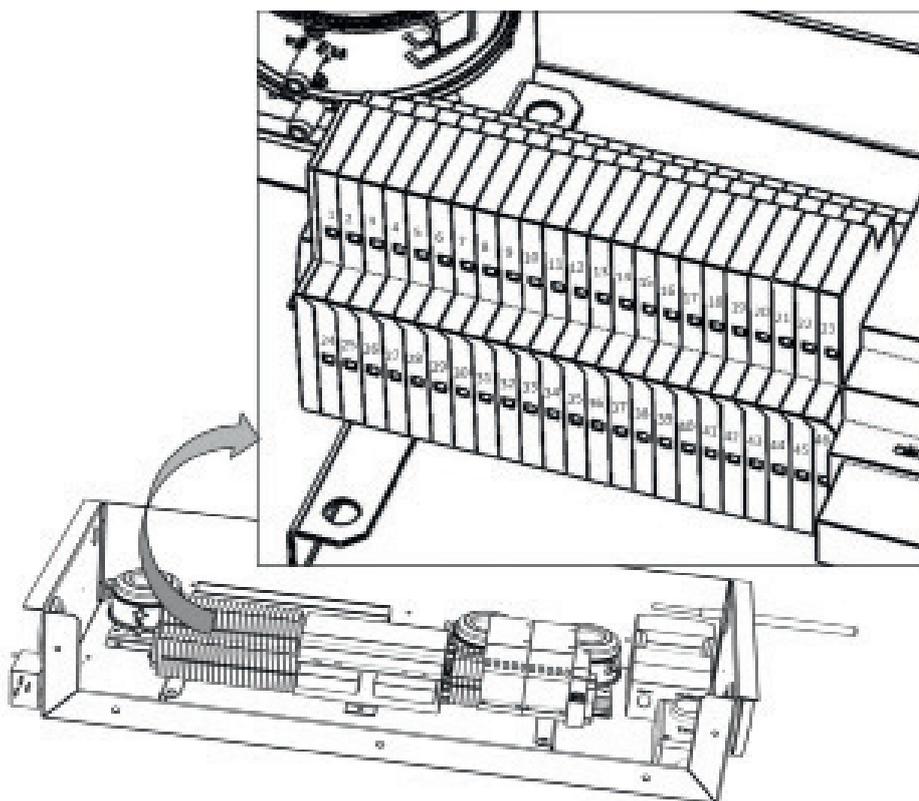
Reference point	Designation	Component
1	SAF	Supply air fan
2	CO/BE	Changeover coil (CO) or electric coil (EC)
3	SSG	Supply temperature sensor
4	RF	Extract filter
5		Removable panel for access to extract filter
6	SRG	Extract temperature sensor
7	CO <sub>2</sub>	CO <sub>2</sub> sensor (DIVA or QUATTRO)
8	IG	Main power cut-off switch
9	REG	Electrical board (control)
10		Removable panel for access to electrical board
11	PG 5.0	Local touchscreen control
12	BIM	Bypass register
13	SDG	Defrost coil temperature sensor (exhaust air for bypass management)
14	SBD	Defrost temperature sensor (SMART / INFINITE)
15		Removable panel for access to intake air filter
16	SF	Supply filter
17		Defrost coil safety thermostat bulb THSD
18	EDC	Electric defrosting coil (SMART / INFINITE)
19	SEG	Outdoor temperature sensor (intake air)
20		Fixing brackets (x 4 for Zehnder Neotime 600-900; x 8 for Zehnder Neotime 1300...2500)
21	EAF	Extract air fan
22	REC	Plate heat exchanger

7.2. Electrical board



Reference point	Designation	Component
1	DEP SF	Supply filter pressure switch (intake air)
2	DEP S	Feedback pressure switch for supply air fan (ECO / DIVA)
	TRP S	Intake air pressure transducer (LOBBY)
3	DEP R	Feedback pressure switch for extract air fan (ECO / DIVA)
	TRP R	Extract air pressure transducer (LOBBY/ MAC2/ QUATTRO)
4	TRAFO	Control transformer 230V AC / 24V AC
5	SRG	Extract temperature sensor
6	CO <sub>2</sub>	CO <sub>2</sub> sensor (DIVA and QUATTRO)
7	THA	Frost protection thermostat (PREMIUM CO)
8		Power supply transformer 230V AC / 24V DC for local touch control PG 5.0
9	K1	Electric coil (EC) contact transmitter
10	KD	Electric defrosting coil contact transmitter (intake air preheating) (EDC)
11		Supply and extract air fan terminals (SAF and EAF)
12		Fuse holder terminal 3.15A T
13	CLD-283	Electronic controller
14		Terminal blocks (see details below)
15		Safety thermostat reset button THSD (SMART/INFINITE)
16	THSD	Safety thermostat for electric defrosting coil (intake air preheating) (SMART/INFINITE)

### 7.3. Control terminals and user connections



Designation	Definition	Terminals	Connection
RFS	Remote fire stop	1-2	To be connected to the terminals of an NC contact of the remote fire stop. (Shunt between terminals (1)-(2) at the factory)
ATD	Autonomous trigger detector	3-4	To be connected to the ATD fault contact. (Shunt between terminals (3)-(4) at the factory)
THA	Frost protection thermostat	5-6	To be connected to terminals (C) and (2) of the THA frost protection thermostat (units in the PREMIUM CO and INFINITE CO versions equipped with a changeover coil) Shunt between terminals (5)-(6) at the factory (FIRST/SMART)
THS	Overheating safety thermostat	5-6	To be connected to terminals (C) and (2) of the THS safety thermostat (units in the PREMIUM BE and INFINITE BE versions equipped with an electric heating coil) Shunt between terminals (5)-(6) at the factory (FIRST/SMART)
Zehnder EDT2	Power supply +24V DC Zehnder EDT2 room touch control	7-8	To be connected to the (N) and (+24V) terminals of the Zehnder EDT2 room touch control respectively (observe polarity).
LS RO	Low-speed remote order	9-10	To be connected to an external NO (normally open) contact
HS RO	Low-speed remote order	11-12	To be connected to an external NO (normally open) contact
ARR EXT	External stop	13-14	To be connected to an external NO (normally open) contact
V3V BC	3-way valve Hot water heating coil	15-16-17	To be connected to the modulating 3-way valve of the hot water coil (see chapter 11.1 Remote hot water coil)
COOLING NEED	Hot water heating coil pump	18 + DO3 of the controller	To be connected to the ON/OFF switch of the hot water circulator (Attention: 24V AC output to be relayed) see chapter 11.1 Remote hot water coil
COOLING NEED	Cold water cooling coil pump	19 + DO4 of the controller	To be connected to the ON/OFF switch of the cold water circulator (Attention 24V AC output to be relayed) (see chapter 11.2 Remote cold water coil)
AL	Alarm reporting	20 + DO5 of the controller	24V output available if the unit is faulty (Attention 24V AC output to be relayed)
NC Night	Night cooling	22 + DO7 of the controller	24V output available if the unit is linked to the LOBBY EC option for opening the terminal registers during night cooling. (Attention 24V AC output to be relayed)
V3V BF	3-way valve Cooling coil	28-29-30	To be connected to the 3-way valve of the cold water coil (see chapter 11.2 Remote cold water coil)
MSR	Motorised supply register	35 + DO1 of the controller	To be connected to terminals (1) and (2) of the supply register
MER	Motorised exhaust register	36 + DO2 of the controller	To be connected to terminals (1) and (2) of the motorised extract register
THSD	Overheating safety thermostat for electric intake air preheating coil	44-45	To be connected to terminals (C) and (2) of the overheating THSD safety thermostat (units in the SMART and INFINITE versions equipped with an electric preheating coil) Shunt between terminals (44)-(45) at the factory (FIRST/PREMIUM)

## 8. Installation

### 8.1. Handling

The ventilation unit may only be transported in its installation position.

If the product is handled by a forklift truck, ensure that the truck supports the load-bearing structure. Adapt the choice of handling equipment to the weight of the equipment received (refer to the weight given at the beginning of the document).

If the unit is transported by crane, use a lifting beam and strap the product to keep it in the transport position (horizontal airflow).

Pay particular attention when placing the product on the ground in order to avoid any impact that could damage the structure and integrity of the product.

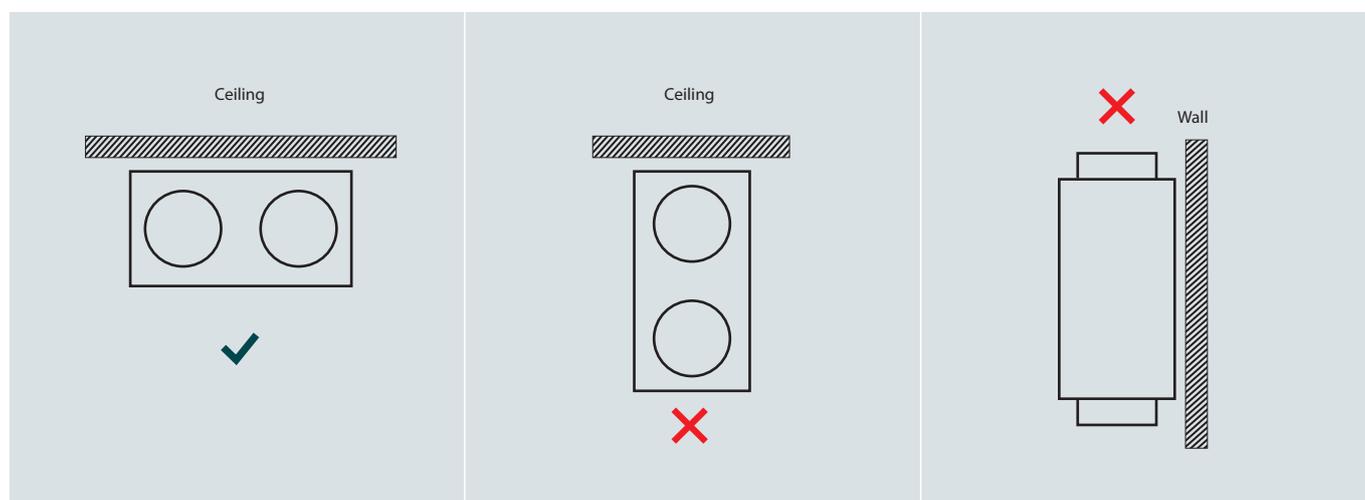
### 8.2. Setting up

The Zehnder Neotime unit has no roof and should only be installed indoors or sheltered from the weather.

It is designed for suspended mounting with threaded rods. It can also be installed on a frame suspended from the building structure itself, taking care to ensure that the permissible loads are respected (the installer is responsible for the frame).

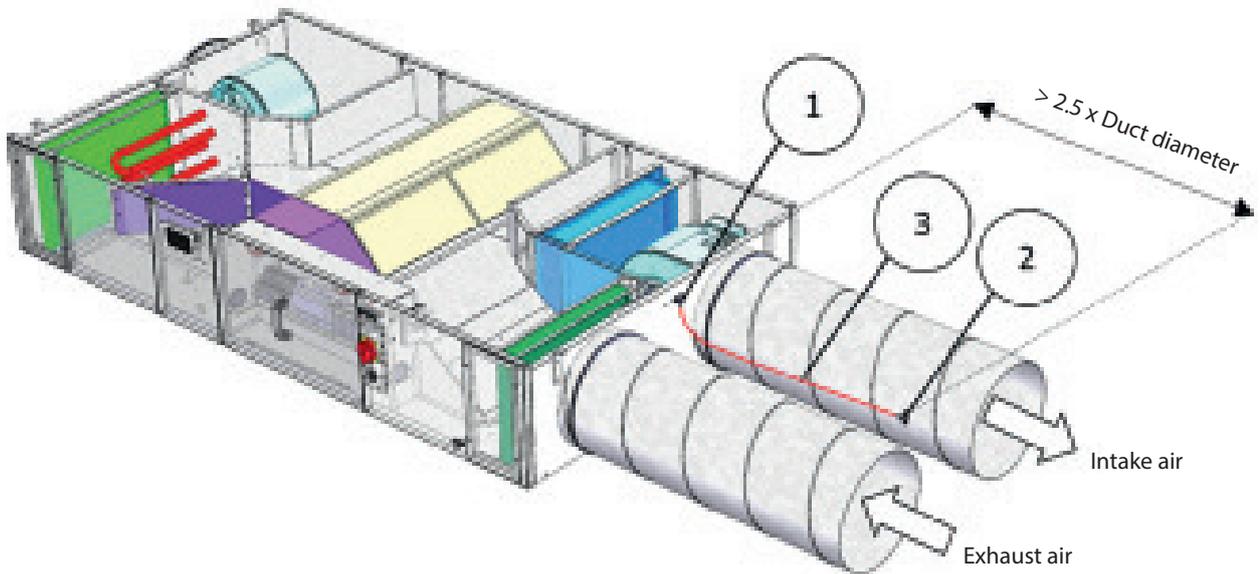
In general, install the unit in such a way that the ambient temperature cannot damage the internal the internal components of the unit during set-up and operation.

The unit must always be horizontal. Vertical installation is not permitted:



8.3. Connection of the supply pressure tap (LOBBY)

On Zehnder Neotime LOBBY units, connect the supply air pressure tap (1) to the supply air duct using the pressure tap (2) and the crystal tube supplied with the unit (3).



8.4. Installation of filter clogging control manometers

As an option, the ventilation unit can be equipped with (Caladair reference: OPT004223) an air filter pressure drop control kit comprising:

- 1 graduated liquid column manometer to be filled on site (measuring range 0-1000 Pa)
- 1 container of coloured filling liquid
- 2 pressure taps
- 1m transparent crystal connecting tube
- Small items (screws, brackets).

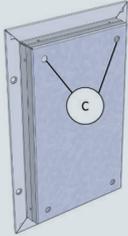
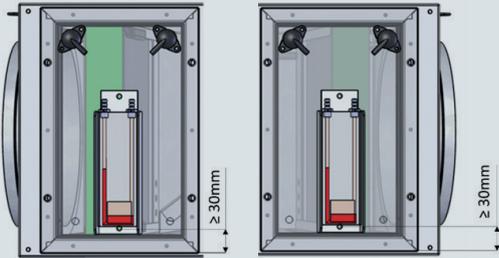
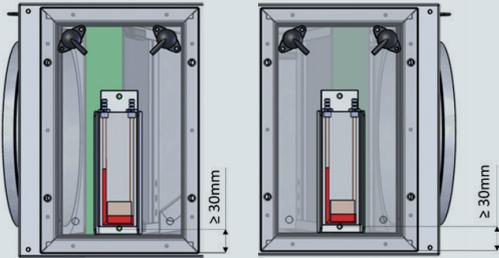
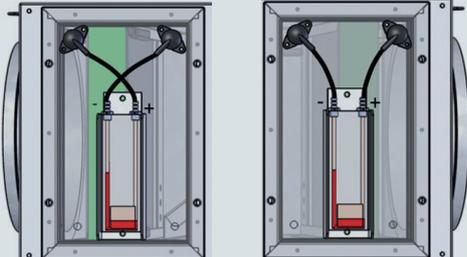
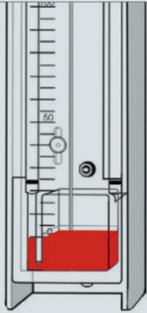
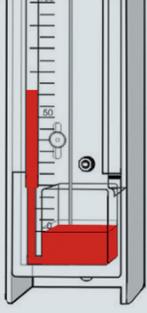
Allow 1 kit per filter to be fitted.

The installation of all components is the responsibility of the installer.

The panels that support the pressure measurement points and the measuring device are pre-drilled at the factory for easy installation.

If the system is required to comply with the requirements of VDI 6022 and if the system needs to be shut down, the ventilation system (of which this unit is a part) must be completed with an additional damper on the fresh air inlet side, in order to meet the requirements. This damper must comply with at least air tightness class 2 of standard EN 1751 and must be insulated (double casing with intermediate insulation). This type of damper is not available as an option.

Step	Description	Details
1	Remove the 2 access panels (A) and (B) for the supply and extract air filters	See below
	<p>The diagram shows a side view of the ventilation unit with two access panels labeled 'A' and 'B'. Panel A is on the left side, and panel B is on the right side. The unit has a central control panel and a filter compartment.</p>	

Step	Description	Details
2	Visually locate the 2 upper holes (C) pre-drilled in the factory on the inner casing of the 2 panels and drill the 2 sheets forming the double casing (double skin) on either side to a diameter of 10mm using a drill bit suitable for drilling sheet metal (e.g. stepped drill bit).	
3	Sweep or vacuum the shavings to prevent them from entering the liquid column manometer and the fan unit when refitting.	
4	Pre-position the 2 pressure measurement taps on the external face of the panels in the holes previously made.	
5	Pre-position the pressure measurement device on the outside of the panels, as low as possible below the level of the 2 pressure taps. Ensure that the measuring device is vertical when finally reassembled and that the fixing screw at the bottom is at least 30mm from the bottom edge of the panel.	
6	Taking into account the (+) and (-) terminals, connect the pressure measurement taps to the measuring device using the transparent crystal tube and adjust the length so that there is no risk of bending, which could affect the measurement. The pressure connection upstream of the filter in the air flow direction is connected to the pressure tap (+) of the liquid manometer. The pressure connection downstream of the filter is connected to the pressure tap (-) of the liquid manometer.	
7	Hold the components in position and secure them with the self-drilling screws provided. Pre-drilling is not necessary.	
8	Refit the 2 equipped panels equipped to the ventilation unit.	
9	Fill the manometers using the container provided: Unscrew the left-hand connector piece (-) after disconnecting the transparent crystal tube Slowly pour in the liquid to the zero mark Replace the connector piece (tighten it firmly but moderately) and reconnect the transparent crystal tube If necessary, adjust the position of the graduated ruler to adjust the zero point. Keep the rest of the container for possible future refilling.	
10	Switch on the ventilation unit and check the tightness of the panels on the structure and of the whole device installed previously.	
11	Check that the manometer is working properly and that the transparent crystal tubes are correctly positioned: the indicated pressure drop must be positive but must not exceed the values indicated in chapter 14.2 Filter quality check.	



When carrying out maintenance and checking/replacing filters, the fitted panels should be held and handled in an upright position so that the manometers do not discharge their liquid.

8.5. Installation of the plate heat exchanger syphon



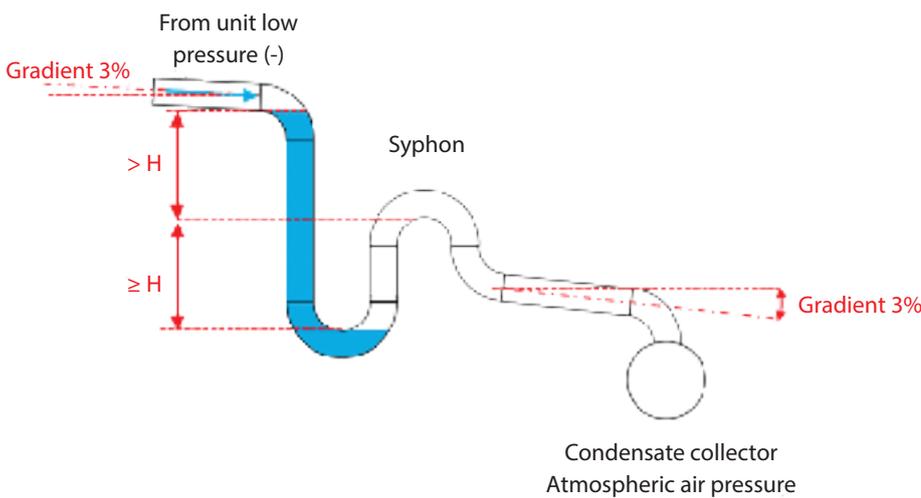
Non-compliance with the installation rules for condensate syphons can lead to the condensate tray overflowing and to internal flooding of the ventilation unit, which can result in damage to the equipment, malfunctions and danger to personnel.

The condensate drain tap is male G 1/2", see 1.2. Dimensional data.  
Connect a syphon for the exchanger's condensate.

The syphon must always be filled with water in order for it to work. The syphon must be filled when the ventilation unit is started up for the first time, and it may be necessary to manually fill the syphon from inside the central ventilation unit after a long period without condensation.

Provide a separate syphon on each condensate drain hose (exchanger condensate and CO coil condensate). The same syphon cannot be used for several drains.

Make sure that the syphon device is perfectly sealed with the connection tap provided in the central ventilation unit in order to prevent any external air from being drawn in.



Vacuum (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

The height  $H$  depends on the maximum vacuum. If there are no space constraints, a height of  $H = 120\text{mm}$  can be used for all applications. The installation of a syphon with an integrated non-return device (ball, spout, damper, etc.) means that this minimum height constraint is not necessary.

Ensure that there is a 2-3% gradient towards the condensate drain to drain off the condensate and that the collector is neither under- nor over-pressurised.

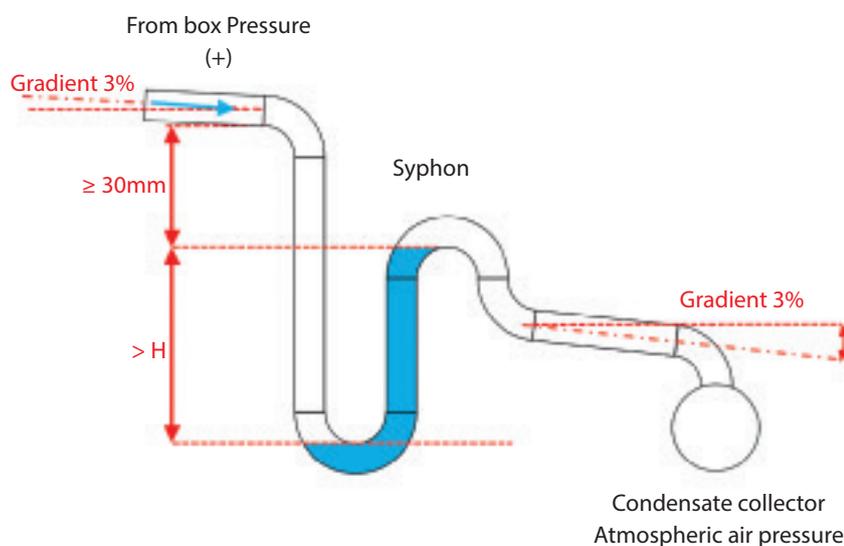
#### 8.6. Installation of the remote coil syphon

The requirements of chapter 8.5 Installation of the plate heat exchanger syphon apply.



When carrying out maintenance and checking/replacing filters, the fitted panels should be held and handled in an upright position so that the manometers do not discharge their liquid.

Unlike the condensate drain of the plate heat exchanger, which is under low pressure relative to atmospheric pressure, the condensate drain of the remote coil is under overpressure relative to atmospheric air pressure, which requires a different syphon height.



Vacuum (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

The height H depends on the maximum downstream pressure of the coil (condensate tray). If there are no space constraints, a height of  $H = 120\text{mm}$  can be used for all applications.

Ensure that there is a 2-3% gradient towards the condensate drain to drain off the condensate. Make sure that the collector is neither under- nor over-pressurised.

#### 8.7. Installation of the changeover coil condensate syphon (CO)

##### 8.7.1. Zehnder Neotime 600 ... 900

The connection must meet the same requirements as for the installation of a remote coil syphon (see 8.6 Installation of the remote coil syphon).

##### 8.7.2. Zehnder Neotime 1300 ... 2500

The connection must meet the same requirements as for the installation of a plate heat exchanger syphon (see 8.5 Installation of the plate heat exchanger syphon).



When carrying out maintenance and checking/replacing filters, the fitted panels should be held and handled in an upright position so that the manometers do not discharge their liquid.

#### 8.8. Connection to the air network

For the air connection, select the duct sections according to the dimensions of the flexible sleeves, which must be correctly tensioned. The ducts must be insulated and the first accessories (elbows, tees, etc.) must be located at a distance of at least 2.5 times the diameter in order to avoid any disturbance (turbulence) of the airflow that could affect the proper functioning of the ventilation unit.

#### 8.9. Connection of power supply

It is necessary to provide protection devices (circuit breaker, differential) upstream of the ventilation unit's power supply cable.

The power supply cable is connected directly to the back of the isolating switch on the front of the ventilation unit.

Drill a hole in the rubber grommet on the front and pass the power cable through it.

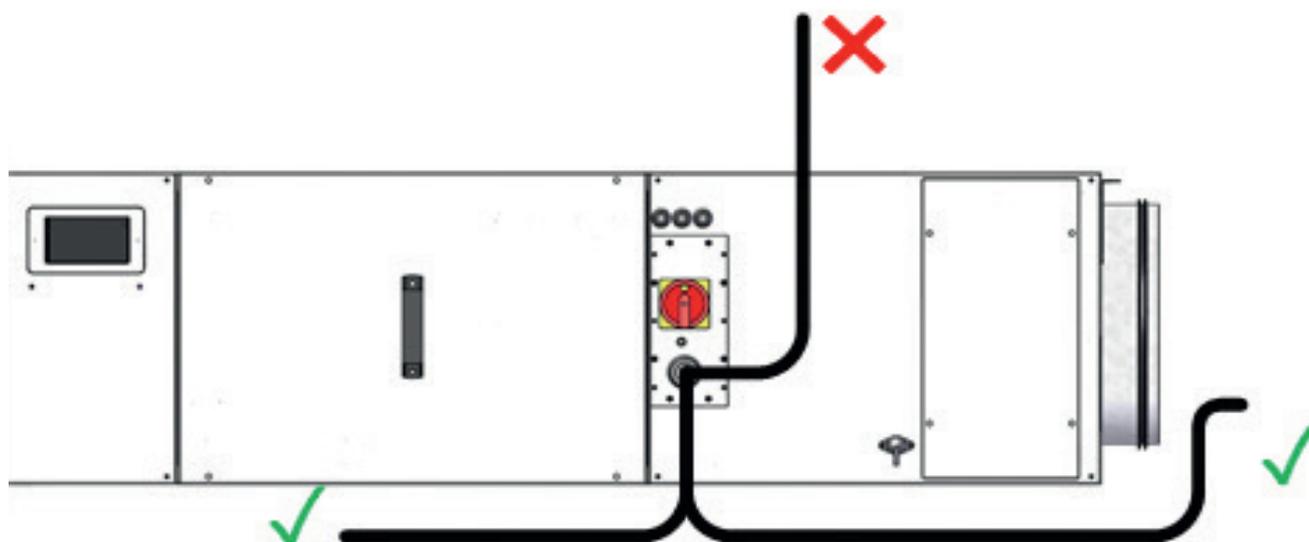
Connect the power supply wires directly to the terminal block of the isolator switch (use crimped cable ends).

Connect the ground wire (PE) to the crimped nut clamp provided for this purpose (use a lug terminal for M6 screws). The ground wire (PE) should be slightly longer than the phase and neutral wires.

Securely attach and clamp the power cable to a fixed part (frame, cable tray, etc.).



The power cable must enter the grommet from below.

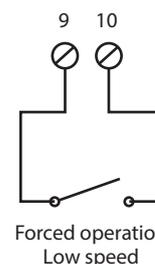


The image may differ from the actual model but the principle remains the same.

## 9. Electrical connection of external devices

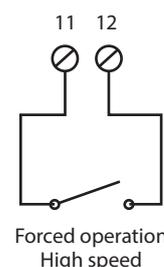
### 9.1. External control of low-speed forced operation (reduced operation)

The external low speed forced operation command allows the unit to be forced to operate at low speed, regardless of the current operating mode requested by the time schedule. The external control has priority over the time schedule. If the central ventilation unit is switched off by the time schedule, the activation of the external forced low-speed control (reduced operation) will force the central unit to start up at low speed.



### 9.2. External control of high-speed forced operation (normal operation)

The external high-speed forced operation command (normal operation) forces the ventilation speed of the central ventilation unit to high speed, regardless of the operating speed requested by the time schedule and regardless of the status of the external low-speed forced operation command. The external high-speed forced operation command (normal operation) has priority over the time schedule and the external low-speed forced operation command (reduced operation).

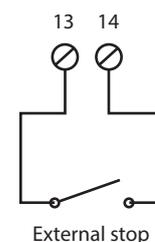


If the central ventilation unit is switched off by the time schedule, the activation of the external forced high-speed command (normal operation) will force the unit to start up at high speed.

### 9.3. External shutdown control

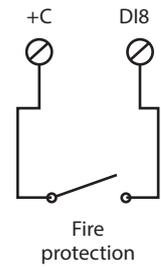
The external shutdown control forces the central ventilation unit to shut down, regardless of the operating mode requested by the time schedule and regardless of the status of the external forced operation commands for reduced or normal operation.

The use of isolation registers on the supply and extract air circuits is highly recommended in case of repeated starting and stopping of the ventilation unit.



9.4. External fire protection control

When the external fire protection control is activated, the central ventilation unit operates in fire protection mode, regardless of the operating mode requested by the time schedule and regardless of the status of the external forced operation controls for reduced or normal operation. The fire protection mode has priority over all other operating modes. The operation of the machine depends on the function settings made by the user. By default, the function is inactive when the equipment leaves the factory. The potential of terminal (+C) is available on terminals (9), (11) and (13) of the customer's terminal block.



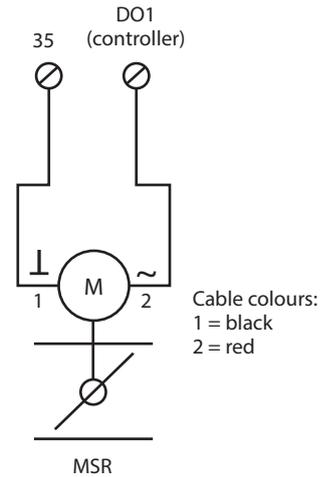
9.5. Motorised supply air register control (MSR)

The motorised supply air register can be supplied as an option. It is powered directly from the controller's DO1 output (24V AC). It has a safety return spring that ensures the register closes in the event of a power failure.

Installation and electrical connection are the responsibility of the installer. The use of isolation registers on the supply and extract air circuits is highly recommended in case of repeated starting and stopping of the ventilation unit.

When the ventilation unit is in operation, there is a voltage of 24V AC between terminals (35) and (DO1). When idle, there is no voltage.

If the system is required to comply with the requirements of VDI 6022 and if the system needs to be shut down, the ventilation system (of which this unit is a part) must be completed with an additional damper on the fresh air inlet side, in order to meet the requirements. This damper must comply with at least air tightness class 2 of standard EN 1751 and must be insulated (double casing with intermediate insulation). This type of damper is not available as an option.



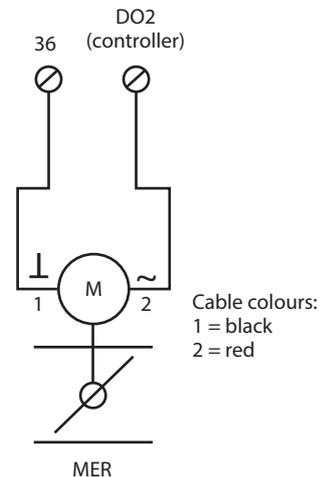
9.6. Motorised exhaust air register control (MER)

The motorised exhaust air register can be supplied as an option. It is powered directly from the controller's DO2 output (24V AC). It has a safety return spring that ensures the register closes in the event of a power failure.

Installation and electrical connection are the responsibility of the installer. The use of isolation registers on the supply and extract air circuits is highly recommended in case of repeated starting and stopping of the ventilation unit.

When the ventilation unit is in operation, there is a voltage of 24 V AC between terminals (36) and (DO2). When idle, there is no voltage.

If the system is required to comply with the requirements of VDI 6022 and if the system needs to be shut down, the ventilation system (of which this unit is a part) must be completed with an additional damper on the fresh air inlet side, in order to meet the requirements. This damper must comply with at least air tightness class 2 of standard EN 1751 and must be insulated (double casing with intermediate insulation). This type of damper is not available as an option.

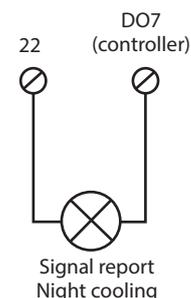


9.7. Night cooling signal (LOBBY)

The night cooling function takes advantage of the cooler outside temperatures at night to lower the internal temperature of the building and thus improve daytime comfort while limiting the energy consumption of any cooling systems. When the function is active, the aim is to maximise the airflow to make the most of the free cooling energy available outside.

For this function to be fully functional when the fans are regulated at constant pressure (LOBBY), it is necessary to be able to force the opening of the registers in the network, otherwise the air volume will be limited to an average value.

A 24V AC output (to be relayed) is provided between the terminals (22) of the customer terminal block and DO7 of the controller to force the opening of the zone registers during the night cooling period. When the function is active, there is a voltage of 24V AC between terminal (22) of the terminal block and (DO7) of the controller. When idle, there is no voltage.

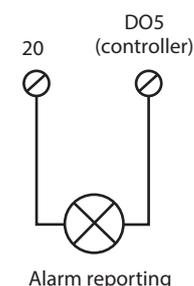


### 9.8. Alarm signal

The output contact is polarised at 24V AC and is programmed as NO at the factory:

No alarm or class C alarm (warning) (See alarm table)	Class A or B alarm is active (See alarm table)
No voltage between terminal block (20) and (DO5) of the controller	24V AC voltage between terminal terminal block (20) and (DO5) of the controller

The alarm signal is limited to 100mA. Under no circumstances should it be used to supply a consumer directly. The signal must be relayed.

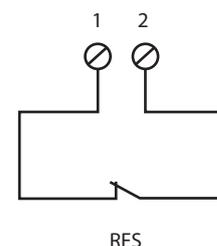


### 9.9. Remote fire stop - RFS

The dry NC (normally closed) contact of the RFS (or CMSI) must be connected by the installer between terminals (1) and (2) of the customer terminal block after having removed the shunt installed at the factory on these 2 terminals.

Opening the circuit cuts off the general 24V AC power supply to the entire control unit. The ventilation unit is immediately stopped and the isolation registers (if present) are closed by their automatic return spring.

The unit restarts automatically as soon as the circuit is closed (closing of the RFS or CMSI contact).

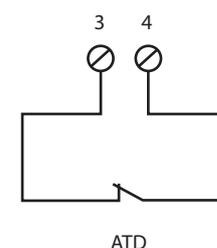


### 9.10. Autonomous trigger detector - ATD

The dry NC (normally closed) contact of the ATD must be connected by the installer between terminals (3) and (4) of the customer terminal block after having removed the shunt installed at the factory on these 2 terminals.

Opening the circuit cuts off the general 24V AC power supply to the entire control unit. The ventilation unit is immediately stopped and the isolation registers (if present) are closed by their automatic return spring.

The unit restarts automatically as soon as the circuit is closed (closing of the ATD contact). If an ATD is installed, a motorised register with a safety return spring should be fitted downstream of the intake air filters.



### 10. Integrated changeover coil (CO) connection

The integrated CO coil can be used for heating only, cooling only, or changeover.

The connections to be respected (3-way valve and circulator) are the same as for the coils installed in the duct (see chapter 11 CONNECTION OF REMOTE COILS IN DUCTS) with the difference that it is not necessary to move the supply air temperature sensor.

### 11. Connection of remote coils in ducts

The entire Zehnder Neotime range can be combined with the COMBI BOX range in order to extend the basic functionality, particularly in cases where remote cooling coils are to be added to the duct system.

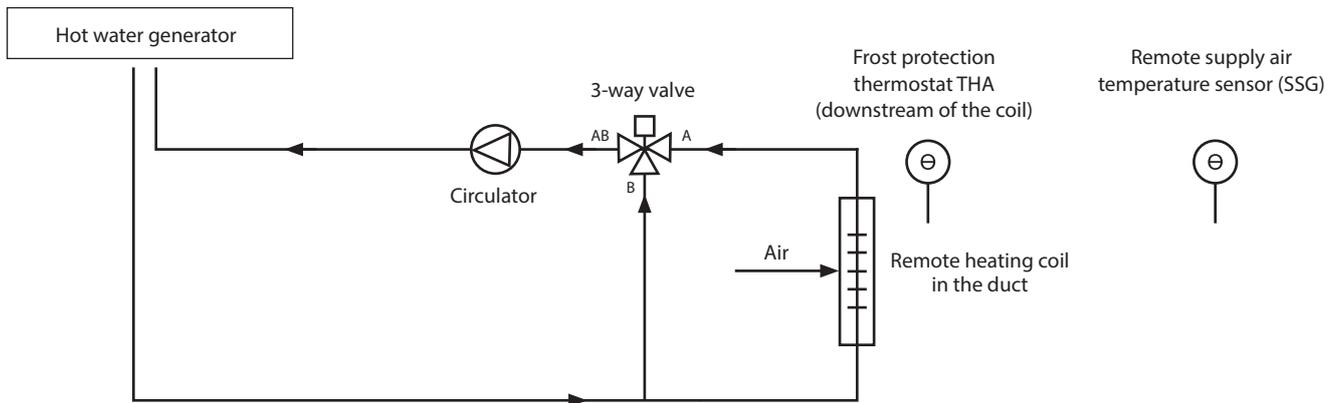
#### 11.1. Remote hot water coil

When a duct-mounted hot water coil (available as an option in Combi Box) is used, the following accessories must be connected:

- 3-way valve (available as an option)
- The THA frost protection thermostat (available as an option)
- The pump (circulator) for the irrigation of the coil (selection and supply the responsibility of the installer)

It is also necessary to move the ventilation supply air temperature sensor (SSG) downstream of the remote hot water coil.

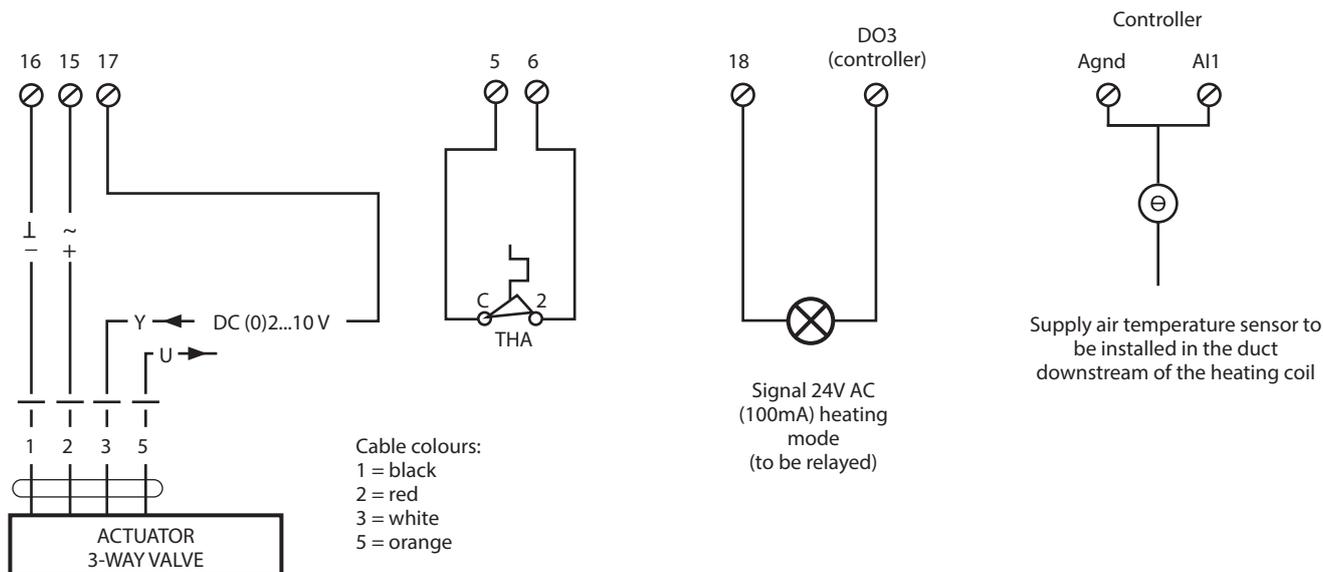
The installation must comply with the following hydraulic connection principle:



The hydraulic connection and installation of the hot 3-way valve must meet the following requirements:

<p>Observe the direction of the valve axis</p>	
<p>Observe the flow direction of the fluid</p>	

The electrical connection must meet the following requirements:



The THA frost protection thermostat is of the NC (normally closed) type. It should be set to +5°C. It is closed when the bulb temperature is above +5°C and opens when the temperature drops below +5°C. Its function is to protect the coil from freezing. When the contact opens, the controller stops the ventilation. When the temperature rises, the controller restarts the fans. As long as the contact is open, the controller displays the alarm (56). This alarm is stored in the alarm history and is automatically acknowledged when the contact closes.

Please note that the "heating mode" signal is a control signal and not a power signal. Therefore, it must not be used as a power supply and must be relayed. The signal sent by the controller is 24V AC (100mA max).

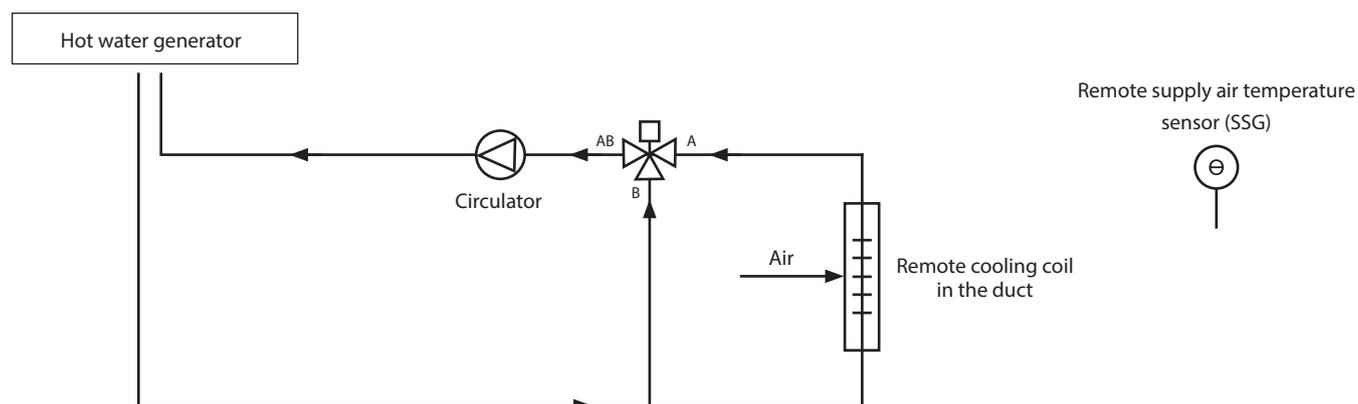
### 11.2. Remote cold water coil

When a remote cold water coil (available as an option in COMBI BOX) is used, it is necessary to connect the 3-way valve (available as an option) to the controller of the ventilation unit.

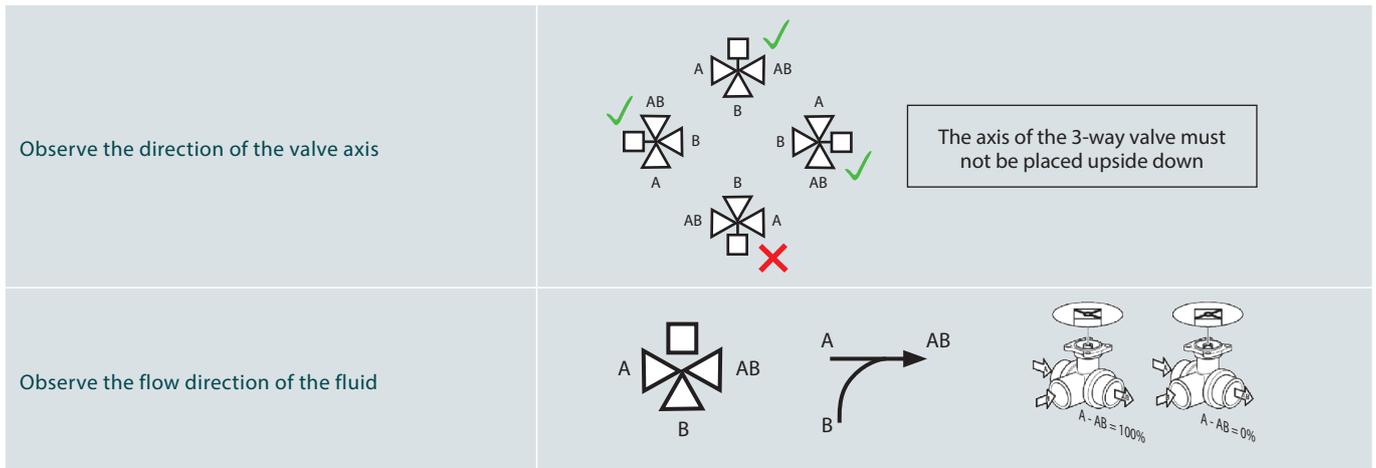
The coil circulator is the responsibility of the installer.

It is also necessary to move the ventilation supply air temperature sensor (SSG) downstream of the remote cold water coil.

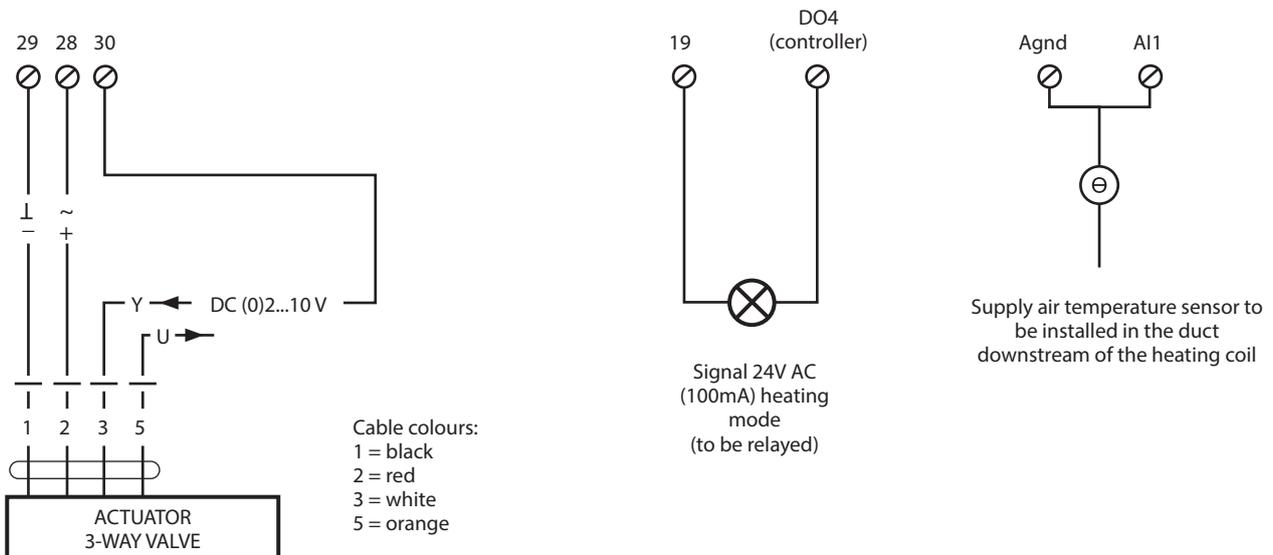
The installation must comply with the following hydraulic connection:



The hydraulic connection and installation of the 3-way valve must meet the following requirements:



The electrical connection must meet the following requirements:



Please note that the “cooling mode” signal is a control signal and not a power signal. Therefore, it must not be used as a power supply and must be relayed. The signal sent by the controller is 24V AC (100mA max).

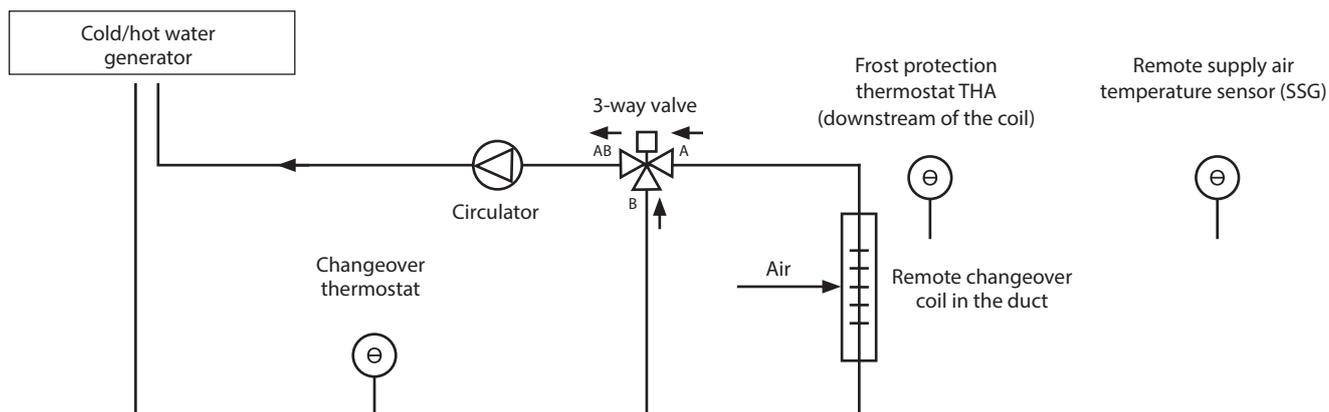
### 11.3. Remote changeover coil

When a remote changeover coil (available as an option in Combi Box) is used, it is necessary to connect the 3-way valve (available as an option) and the changeover thermostat to the controller of the ventilation unit.

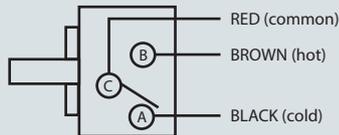
The changeover coil circulator is the responsibility of the installer.

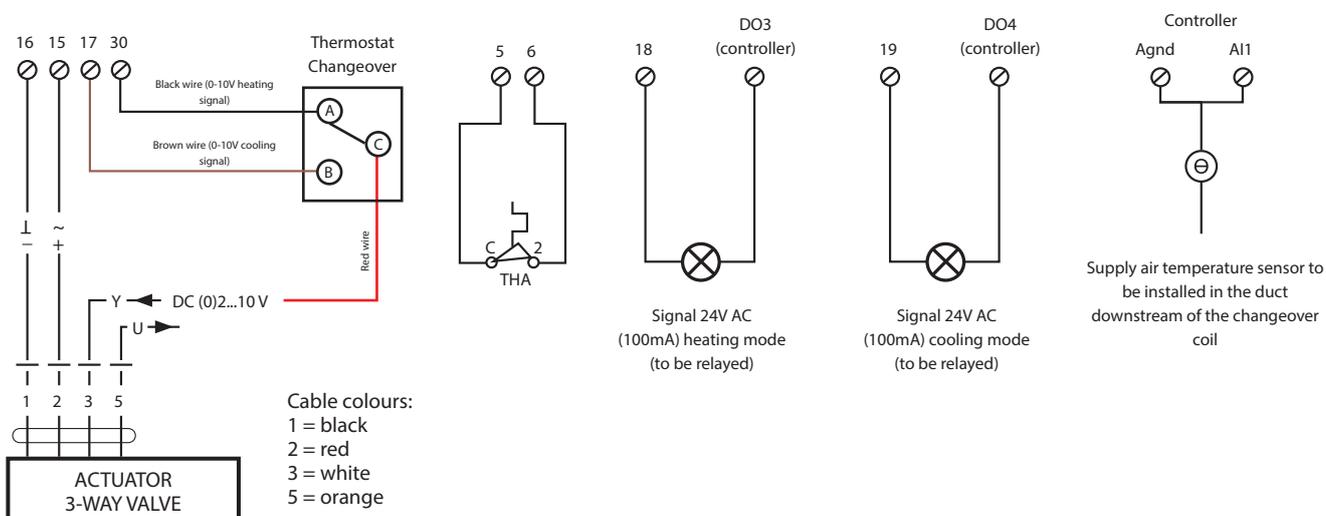
It is also necessary to move the supply air temperature sensor (SSG) downstream of the remote changeover coil.

The changeover thermostat allows the control of the mixing valve to be reversed depending on the temperature of the fluid measured at the mixing valve inlet. It should be installed in the water supply line of the CO coil, upstream of the 3-way valve.



Electrical connection of the actuator to the changeover thermostat

Changeover thermostat side		Terminal block and actuator side	
		Red wire	Y (control signal) of the actuator
		Brown wire	17 (heating signal)
		Black wire	30 (cooling signal)



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

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

Please note that the “cooling mode” and “heating mode” signals are control signals and not power signals. Therefore, they must not be used as a power supply and must be relayed. The signal sent by the controller is 24V AC (100mA max).

11.4. Remote direct expansion (DX) cooling/heating/reversible coil

The control of a direct expansion (DX) coil is described in a separate document and is independent of this manual. Please contact your supplier.

## 12. General functions

### 12.1. Installation of the thermal sequence

Initialisation at start-up allows the unit to be started at an operating point that is as close as possible to the one that will be recalculated during operation in order to avoid any source of discomfort and unnecessary energy consumption. The initialisation of the thermal sequence at start-up depends on the outdoor temperature measured at the time the machine is started:

Outdoor temperature < +3 °C	Outdoor temperature ≥ +3 °C
<p>The unit starts when 100% heat is required*.</p> <p>As long as the feedback signal of the supply air fan is idle**, the electric heating coil is not activated.</p>	<p>The unit starts with maximum energy recovery.</p>

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

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

### 12.2. Start-up sequence

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

The unit is ON

There are no active class A alarms (alarms that shut down the unit) or the external control is not active

At least one time programme (reduced operation or normal operation) is active, or a forced operation (normal operation or reduced operation) is active, or the fire protection function set to start the unit is active, or there is a request for operation from the BMS.

The start-up sequence takes a total of 120 seconds. During this time, the alarms are disabled (except for the THS electric coil overheating alarm (63), which is monitored during this period) and the AHU starts up at the operating point defined at the initialisation of the thermal sequences at start-up. The minimum fan control signal does not apply.

The openings of the intake air and exhaust air registers open as soon as the start sequence is activated. The control signal for the extract fan is enabled 15 seconds after the start sequence is activated. 15 seconds later, the control signal for the extract air fan is enabled and the extract air fan starts. The outputs for controlling the 3-way valves and the heating or cooling pumps are activated.

Once the 120 seconds have elapsed, the fan unit switches to normal mode at the end of the start-up sequence. The minimum and maximum fan control signal is then taken into account and the alarm monitoring function is activated.

In the event of a power failure, the unit will automatically restart as soon as the power supply is restored.

### 12.3. Shutdown sequence (post-ventilation)

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

Appearance of an alarm whose action requires the normal shutdown of the unit (note that some alarms are programmed for rapid shutdown, in which case the shutdown sequence is ignored and the unit shuts down immediately);

The unit is switched to OFF;

No active time range;

The fire protection function is set to stop the unit;

Stop request from the BMS.

The shutdown sequence lasts for a time related to the setting of the fan shutdown time limits (post-ventilation) and the intake air and exhaust air register closing time limits. When the shutdown sequence is activated, the alarm management function and the electric coil output are immediately deactivated (the hot/cold water and recovery coil outputs remain active). The supply fan is switched off after 180 seconds. The extract fan is switched off 30 seconds later. The intake air and extract air registers are closed 5 seconds after the extract air fan has stopped and all actuator control signals are deactivated.

### 13. Starting up

However, if the factory settings do not meet the requirements, the specific actions to be taken are:

- Installation and electrical wiring of optional extras
- Controller date and time setting
- Setting the summer/winter time changeover (automatic changeover by default)
- Time schedule settings
- Fan setpoint setting
- Temperature setpoint setting
- Communication protocol setting (if communication used)
- Setting of specific functions (according to version and need):
  - Night cooling: activation time and fan setpoint offset
  - Fire protection
  - Icing protection by reducing the airflow rate

By using the save user settings function at the end of the commissioning process, a normally functional configuration can be restored at any time.

### 14. Maintenance

#### 14.1. Annual general quality check

Check the ducts, flexible sleeves and anti-vibration pads and replace them if necessary.

Check that all the components connected to the control unit are in place so that no vibrations can be transferred to external items.

Check the electrical connections and the tightness of the terminals.

#### 14.2. Filter quality check

Classification		Reference	Cleaning* (Water + gentle detergent)	Extraction* Supply*
Filtration efficiency ISO 16890				
ePM10 - 50%		M5	Restricted (1 to 4 times)	YES
ePM10 - 55%		F7	NO	

\*Filter cleaning must be carried out with care to avoid damaging the filter media.

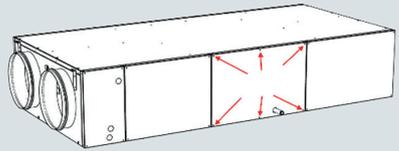
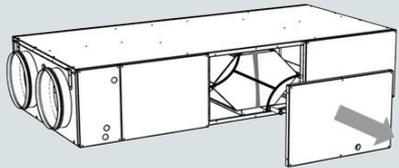
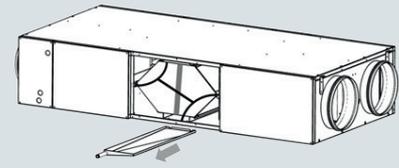
Only M5 filters can be blown out and cleaned with care.



When carrying out maintenance and checking/replacing filters, the fitted panels should be held and handled in such a way that the manometers do not discharge their liquid.

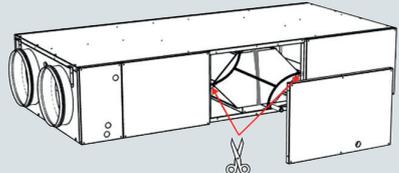
Frequency (in months of operation)	
Every 3 months (to be adapted according to local conditions)	Every 12 months
Verification (Cleaning if necessary for M5 filters)	Filter replacement

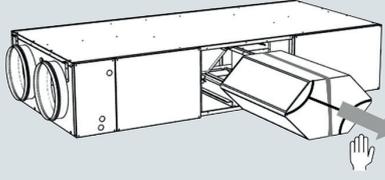
### 14.3. Removal and installation of the exchanger condensate tray

Step	Removal	
D1	Stop the machine and cut off the power supply using the isolating switch on the front of the machine.	
D2	Remove the existing condensate discharge to allow removal of the side access panel.	
D3	Remove the Phillips head screws from the edge of the panel.	
D4	Remove the side access panel.	
D5	Remove the condensate tray.	
Step	Installation	
R1	Proceed in the reverse order to the removal process, taking care to observe the sealing at the connection between the condensate tray connection and the syphon piping.	
R2	Fill the condensate tray with water to fill the syphon.	
R3	Start the machine. Check for water or air leaks.	

The condensate tray can be cleaned and disinfected by soaking and rinsing with clean water, if necessary with bleach.

### 14.4. Removal and installation of the exchanger

Step	Removal	
D1...D4	The procedure is the same as for the removal of the condensate tray. See chapter 14.3 Removal and installation of the exchanger condensate tray	
D5	Cut the compressed seal strips with a cutting blade or scissors.	

Step	Removal	
D6	Remove the exchanger by pulling on its carrying strap, taking care not to damage the heat exchange surfaces of the exchanger, which could impair the performance of the machine.	
D7	Place the exchanger on a clean, dust-free surface, protected from any impact that could cause damage. Cover it with a protective film if it is to be stored for a long time or if there is to be work in the vicinity that is likely to produce dust. Identify the direction of assembly to be observed for reassembly.	
Step	Installation	
R1	Proceed in the reverse order to the removal process, taking care to respect the direction of assembly of the exchanger and checking the integrity of the seals placed on each side. Replace them if necessary.	
R2	Check the syphon for water and refill if necessary.	
R2	Start the machine. Check that there is no abnormal noise and that the performance and setpoints (pressure, volume flow, temperature, etc. depending on the version) are achieved.	

The exchanger can be cleaned by rinsing with clean water, if necessary using a spray. Allow sufficient time for drainage and drying to prevent water droplets from entering the supply air system.

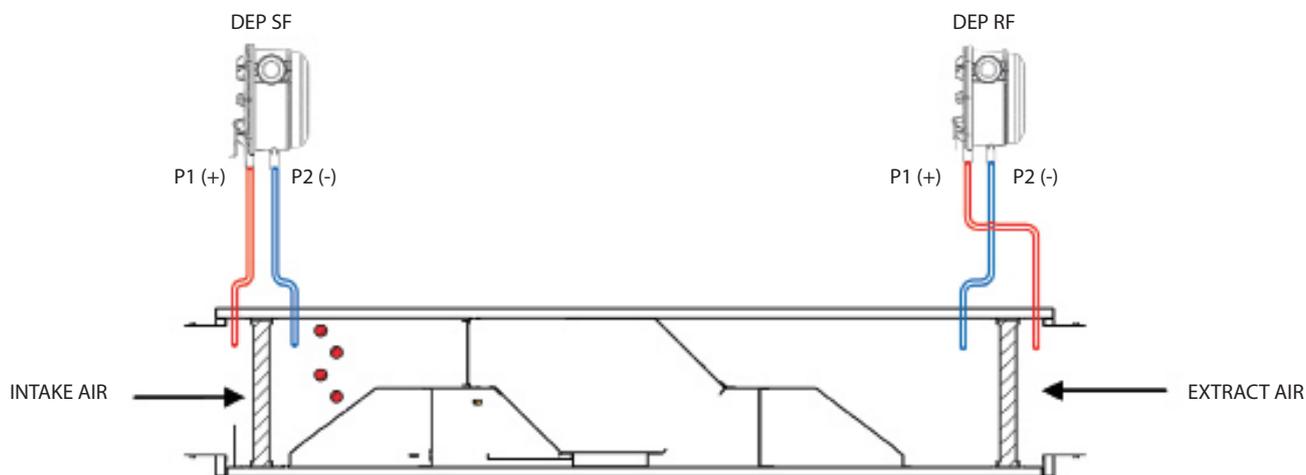
#### 14. Troubleshooting - maintenance

When the ventilation unit is malfunctioning, it is recommended that you first:

- Check the tightness and connection of the terminal blocks and electrical plugs
- Check the setting and consistency of the control parameters and setpoints.

##### 15.1. Connection and setting of the filter control pressure switch

Pressure switches for monitoring the clogging of filters allow the degree of clogging in filters to be checked by measuring the pressure drop between the inlet (upstream) and the outlet (downstream) of the filter. When the pressure drop (pressure difference) of the filter element exceeds the setting of the pressure switch, the NO contact of the pressure switch closes. The factory setting of the filter pressure switch is 150 Pa for M5 filters and 200 Pa for F7 filters. If an additional filter is installed for the intake air (double filter stage) in addition to the standard filter, the pressure switch must be set to 300 Pa.

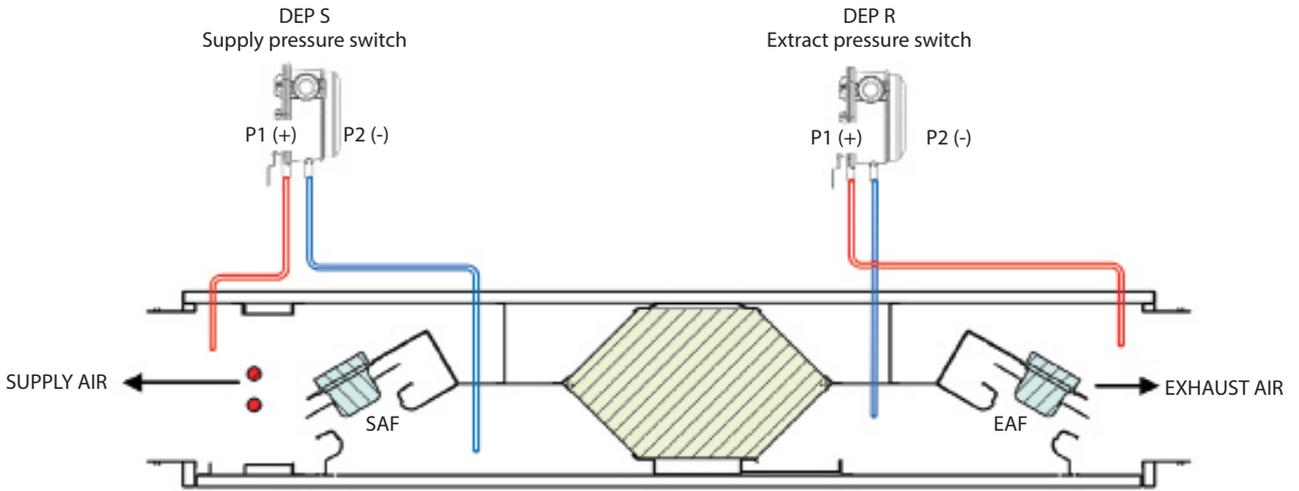


Refer to the wiring diagram for details on the electrical connection of the pressure switches.

15.2. Connection and setting of the fan feedback pressure switches (ECO and DIVA)

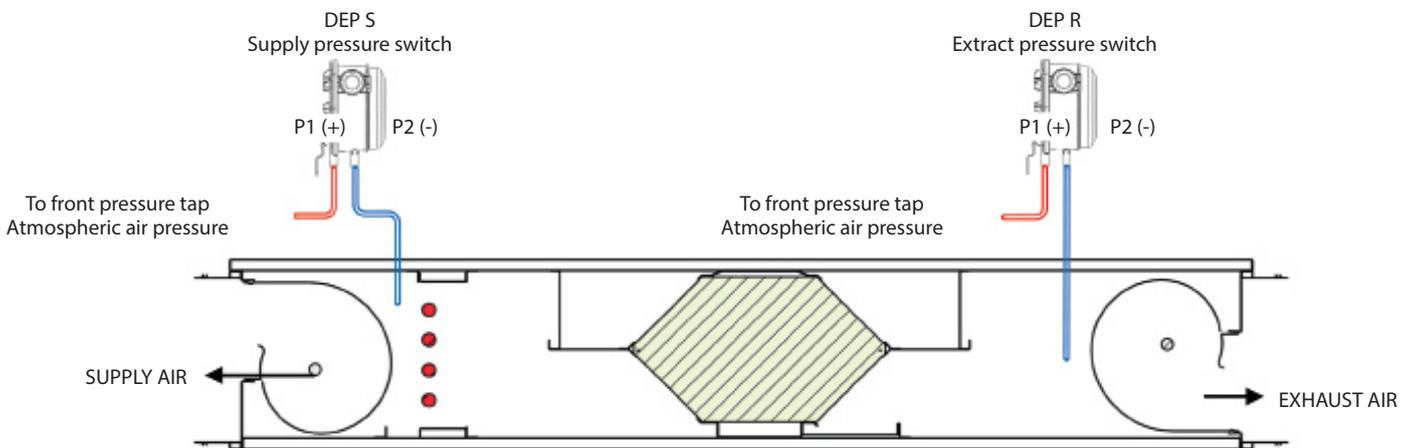
The fan operation control pressure switches allow the pressure difference between the fan inlet and outlet to be monitored at any time, thus indicating whether the fan is operating correctly or not.

Zehnder Neotime 600 - 900



The factory setting for the pressure switches is 25 Pa.  
Refer to the wiring diagram for details on the electrical connection of the pressure switches.

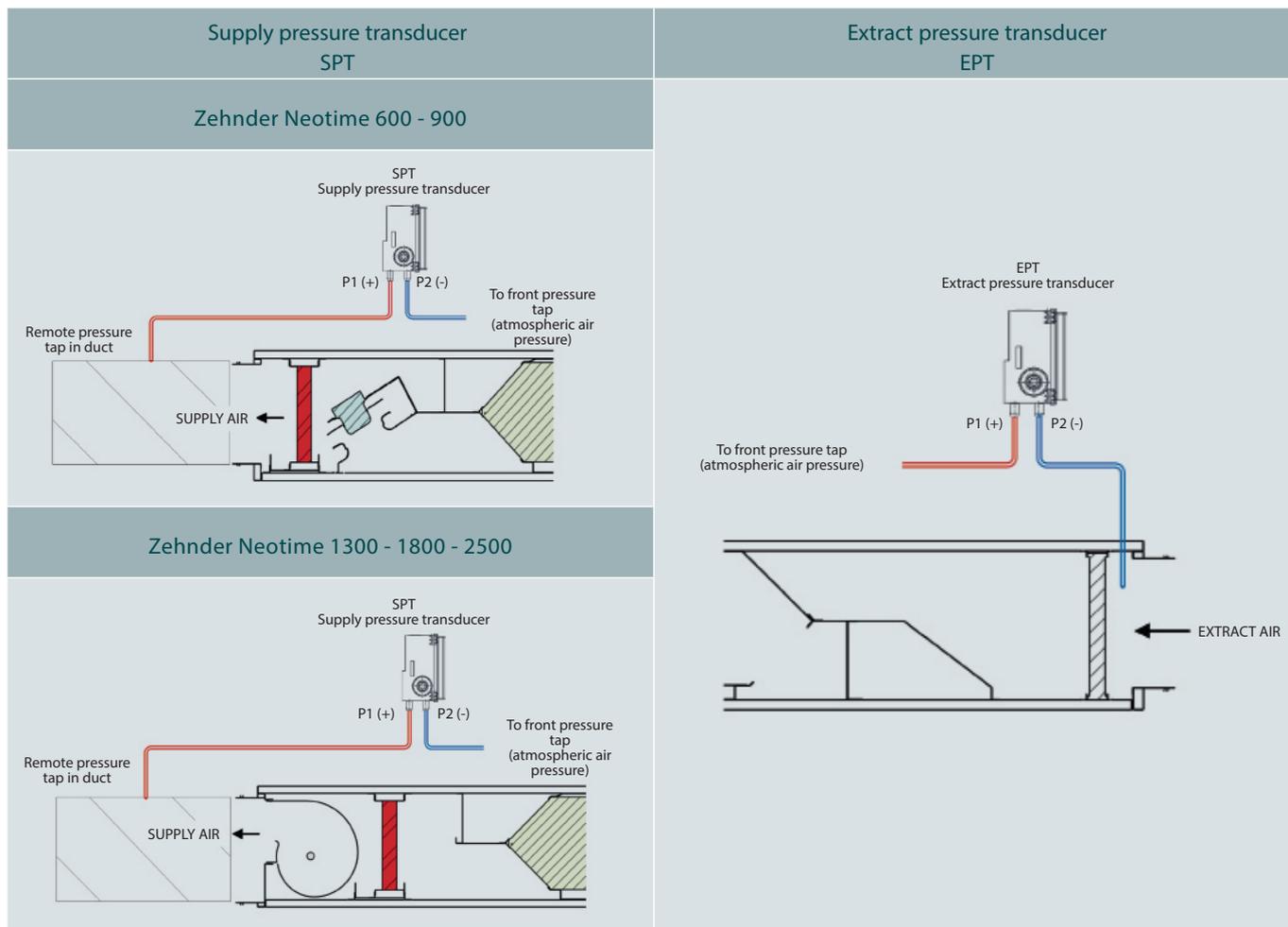
Zehnder Neotime 1300 - 1800 - 2500



The factory setting for the pressure switches is 25Pa.  
Refer to the wiring diagram for details on the electrical connection of the pressure switches.

15.3. Connection and setting of pressure transducers (LOBBY)

The pressure transducers convert the relative air pressure measured at the air supply and extract of the unit into an analogue 0-10V signal which is transmitted to the controller.



Pressure transducers cannot be adjusted. The signal is also used by the controller to check that the fans are working properly. The threshold is 25 Pa.

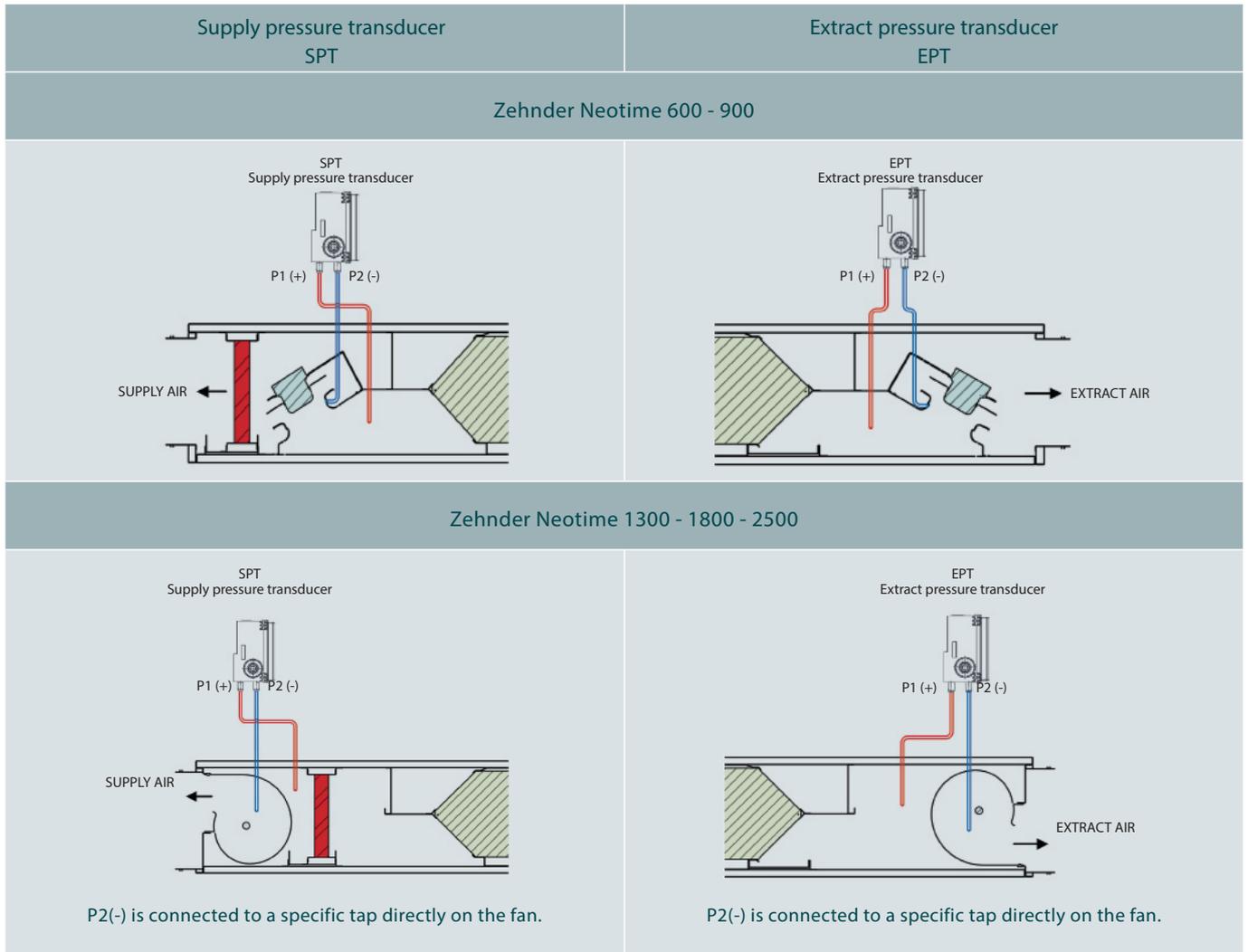
The factory setting is 130 Pa.

Refer to the electrical diagram (see chapter 16 Electrical control wiring diagram) for details of the electrical connection of the pressure transducers.

		Zehnder Neotime LOBBY	Setting the position of the pressure transducer jumpers
Gauge		600...2500	
SPT		0-1600 Pa / 0-10 V	
EPT			

15.4. Connection of pressure transducers (MAC2 and QUATTRO)

The pressure transducers convert the differential air pressure measured into an analogue 0-10V signal, which is transmitted to the controller. This signal is then converted by the controller into a volume signal.

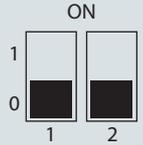


For the MAC2 and QUATTRO versions, the P1(+) pressure switch pressure tap must be connected upstream of the fan bell, and P2(-) must be connected directly to the inlet ring.

The signal is also used by the controller to check that the fans are working properly (run and deviation monitoring). The threshold is different for each machine model:

Machine (MAC2)	Reduced operation volume	Normal operation volume	S + R fan difference threshold	S + R fan difference threshold
Zehnder Neotime 600	250	500	155	150
Zehnder Neotime 900	350	700	225	210
Zehnder Neotime 1300	550	1100	500	330
Zehnder Neotime 1800	750	1500	550	450
Zehnder Neotime 2500	1000	2000	650	600

Refer to the electrical diagram (see chapter 16 Electrical control wiring diagram) for details of the electrical connection of the pressure transducers.

		Zehnder Neotime MAC2/QUATTRO		Setting the position of the pressure transducer jumpers
Gauge		600	900...2500	
SPT	0-1600 Pa / 0-10 V	0-300 Pa / 0-10 V		 <p>The jumpers are in the OFF position (position 0)</p>
EPT				

#### 15.5. Overheating safety thermostats THS and THSD

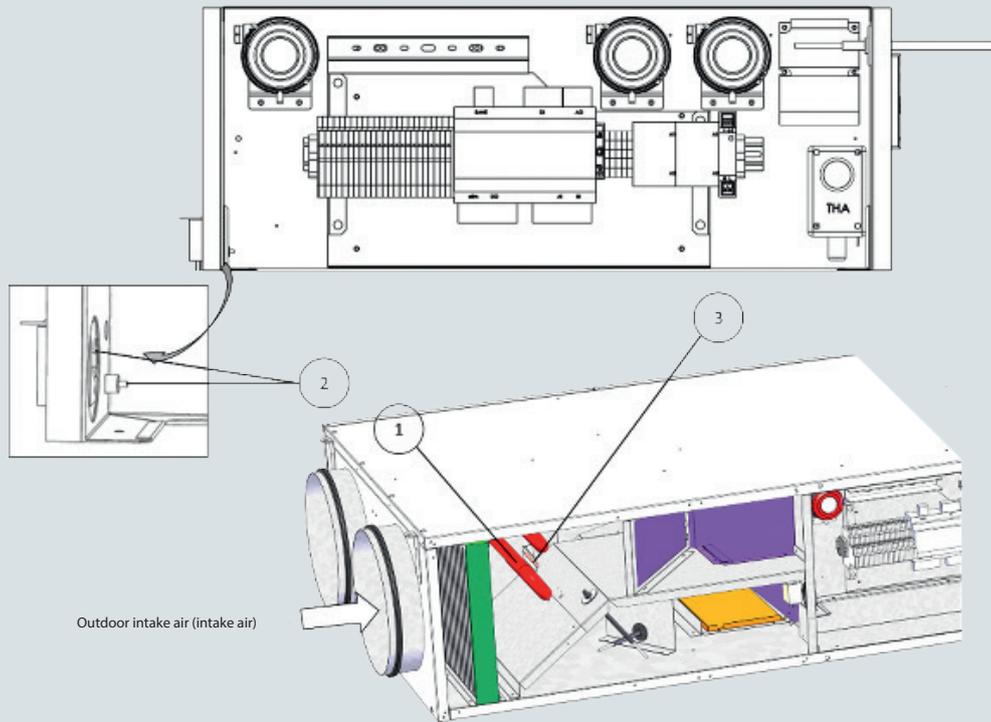
When overheating has been detected by the THS or THSD overheating safety thermostats, it is necessary to reset them by pressing the white reset button after removing the protective cap screwed on the thermostat body itself.

Before resetting the thermostat, it is necessary to know the cause of the overheating and to remedy it in order to avoid any damage to the equipment. There may be overheating of the electric coil, for example, due to a faulty solid state relay and/or fan, or due to a power failure when the coil was at full power (check for alarms).

The bulbs of the overheating safety thermostats are placed directly:

- On the electric heating coil (EHC) for the THS
- On the electric intake air preheating coil for the THSD.

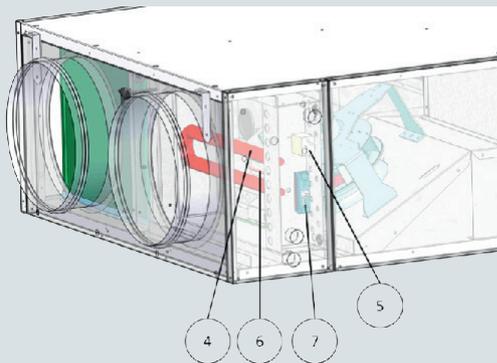
THSD – overheating safety thermostat for electric defrosting coil  
(intake air preheating coil)



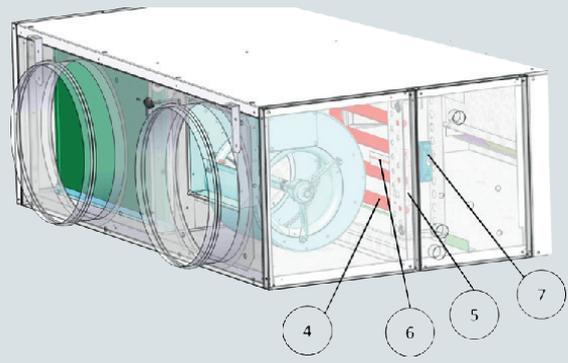
(1) Electric defrosting coil (intake air preheating) (2) overheating safety thermostat (THSD)  
Electric defrosting coil (intake air preheating) (3) Thermostat bulb (THSD)

THS – overheating safety thermostat for electric coil (EHC)

Zehnder Neotime 600-900



Zehnder Neotime 1300-1800-2500



- Reference points:
- (4) Electric heating coil
  - (5) Overheating safety thermostat (THS) for electric heating coil (EHC)
  - (6) Thermostat bulb (THS)
  - (7) Static relay (KS1)

### 15.6. Replacing the internal memory battery

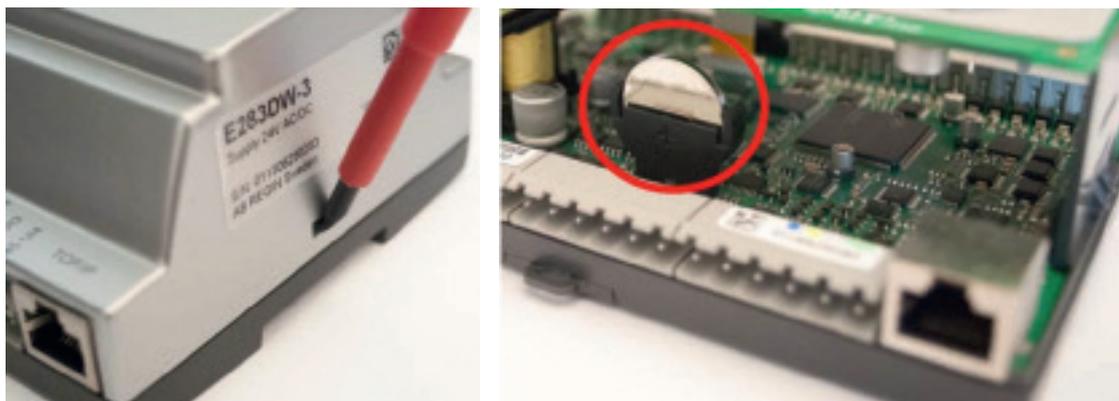
The appearance of the low battery alarm (alarm #78) indicates that the battery powering the internal memory and Real Time Clock (RTC) is too low and may fail to operate in the event of a power failure.

The procedure for replacing the battery is described below. A condenser takes over when the battery is removed. The battery should be replaced within approximately 10 minutes after the power supply is cut off.

If the battery replacement takes less than 10 minutes, it will not be necessary to reload the programme and the clock will continue to operate normally. If necessary, the controller must be reprogrammed.

It is a CR2032 battery.

Press the clips on either side of the housing with a small screwdriver to release the cover from the base. Hold the base and remove the cover.

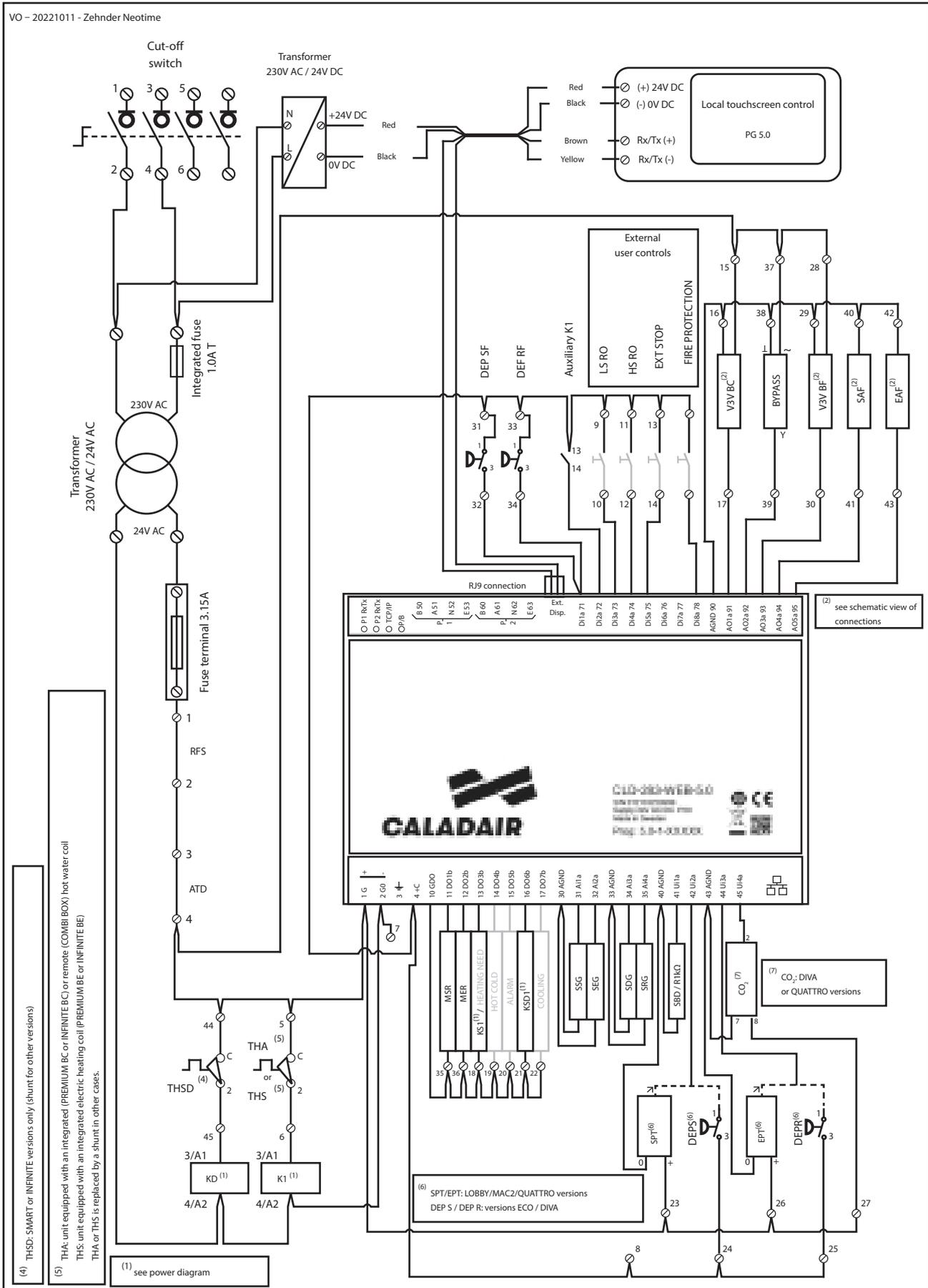


Hold the battery and gently pull it upwards until it comes out of the battery holder.

Replace the new battery by pressing firmly on it to slide it into its holder.

Note: Pay attention to the direction of the battery to ensure correct polarity.

16. Electrical control wiring diagram



Standard equipment (depending on unit version)		
BYPASS	Control signal for bypass recovery actuator	All versions
DEP SF	Supply filter pressure switch	All versions
DEP RF	Extract filter pressure switch	Optional, factory-wired
Auxiliary K1	Auxiliary contact of contact transmitter K1	All versions
SAF	Control signal for supply fan	All versions
EAF	Control signal for extract fan	All versions
THA	Frost protection thermostat	If equipped with a hot water coil (PREMIUM BC / INFINITE BC), or control of a remote water coil in the COMBI BOX duct
THS	Overheating safety thermostat for electric heating coil	If equipped with an electric heating coil (PREMIUM BE / INFINITE BE)
THSD	Overheating safety thermostat for electric defrosting coil	If equipped with an electric defrosting coil (SMART / INFINITE)
KD	Electric defrosting coil contact transmitter (EDC)	
KSD1	Defrosting coil static relay (EDC)	If equipped with an electric defrosting coil (SMART / INFINITE) single-phase 230V AC or three-phase 400V AC
KSD2	Defrosting coil static relay (EDC)	If equipped with a three-phase 400V AC electric defrosting coil (SMART / INFINITE)
K1	Electric heating coil (EHC) contact transmitter	
KS1	Static relay for electric heating coil (EHC)	If equipped with an electric heating coil (PREMIUM BE / INFINITE BE) single-phase 230V AC or three-phase 400V AC
KS2	Static relay for electric heating coil (EHC)	If equipped with an electric heating coil (PREMIUM BE / INFINITE BE) three-phase 400V AC
BE	Electric heating coil	If equipped with an electric heating coil (PREMIUM BE / INFINITE BE)
EDC	Electric defrosting coil	If equipped with an electric defrosting coil (SMART / INFINITE)
SSG	Supply temperature sensor	All versions Equipped with a yellow sleeve
SEG	Outdoor temperature sensor	All versions Equipped with a blue sleeve
SDG	Defrosting temperature sensor (exhaust air)	All versions Equipped with a brown sleeve
SRG	Extract temperature sensor	All versions Equipped with a black sleeve
SBD	Defrost coil temperature sensor (preheated intake air)	If equipped with a defrosting coil (SMART / INFINITE) Equipped with a red sleeve
R1kΩ	1k Ohm resistance	If not equipped with an EDC defrosting coil (FIRST/ PREMIUM)

Standard equipment (depending on unit version)		
CO <sub>2</sub>	CO <sub>2</sub> sensor	DIVA / QUATTRO
DEP S	Pressure switch for supply fan operation (SAF)	ECO / DIVA
DEP R	Pressure switch for extract fan operation (EAF)	ECO / DIVA
TRP S	Supply air pressure transducer	LOBBY / MAC2 / QUATTRO
TRP R	Extract air pressure transducer	LOBBY / MAC2 / QUATTRO

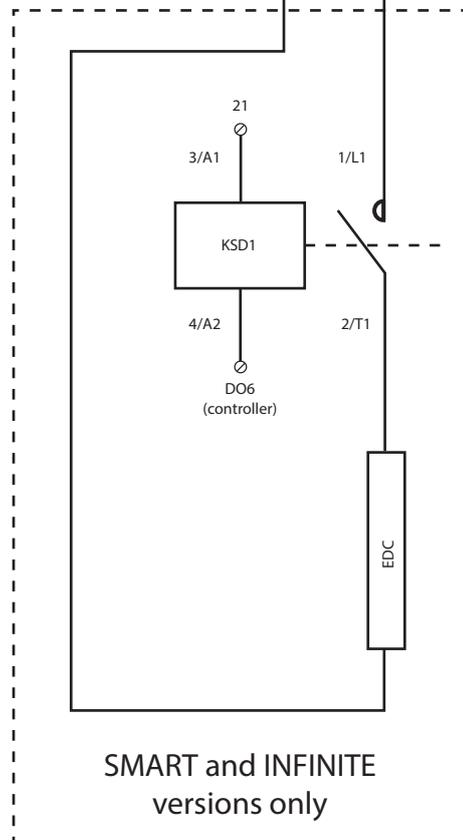
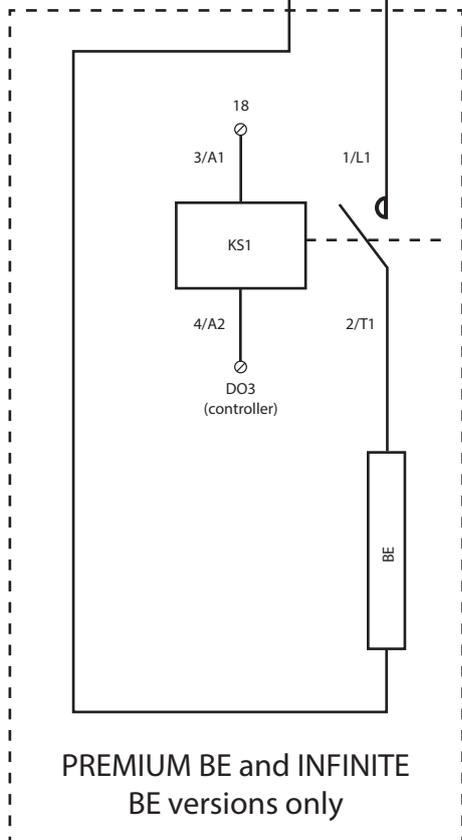
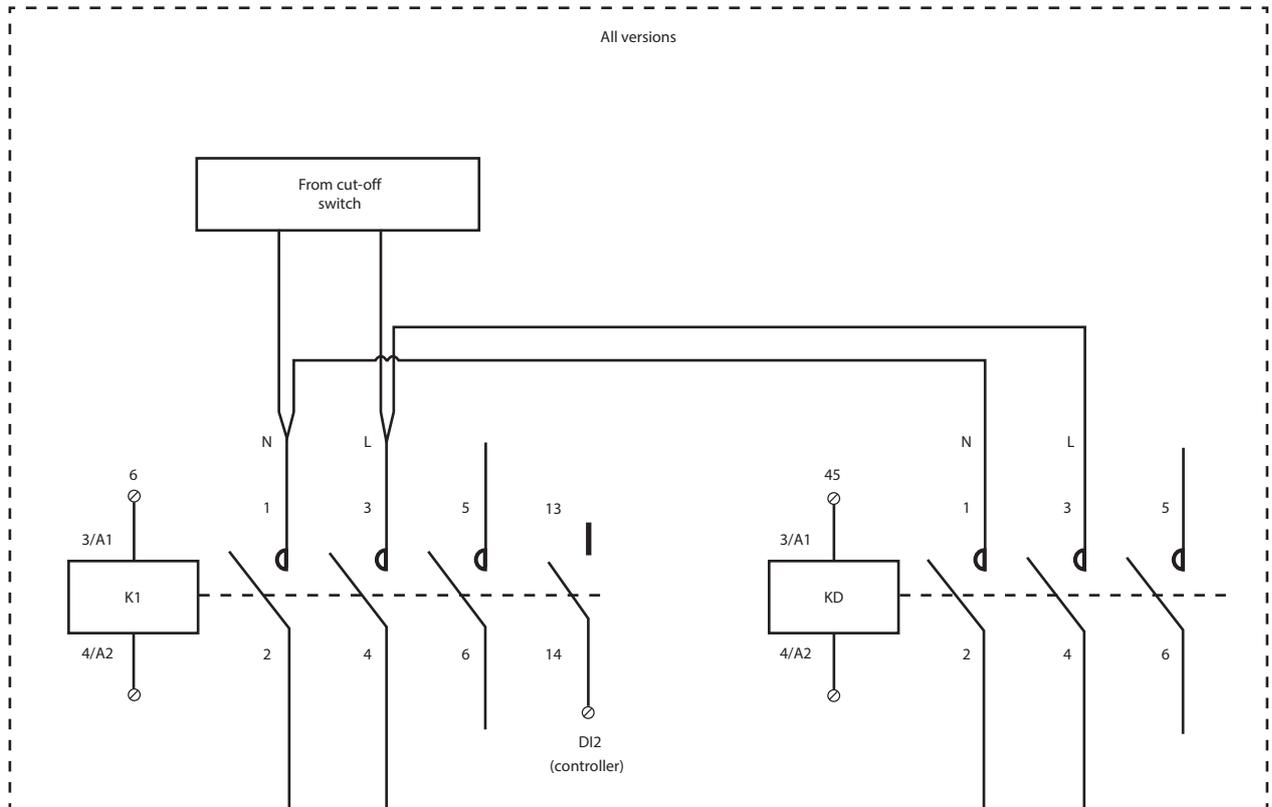
Optional equipment (to be wired on site according to user requirements)	
LS RO	External control of low-speed forced operation (reduced operation) by NO dry contact
HS RO	External control of high-speed forced operation (normal operation) by NO dry contact
EXT STOP	External control of unit shutdown via NO dry contact
RFS	Remote fire stop by NC dry contact
ATD	Autonomous trigger detector by NC dry contact
ALARM	Polarised 24V AC digital on/off output for alarm signal
COOLING (NIGHT COOLING)	Polarised 24V AC digital on/off output for active night cooling signal
HEATING NEED	Polarised 24V AC digital on/off output for active heating need
COOLING NEED	Polarised 24V AC digital on/off output for active cooling need
MSR	Output for controlling the opening of the motorised supply register polarised at 24V AC
MER	Output for controlling the opening of the motorised extract register polarised at 24V AC
V3V BC	0-10V control signal for the 3-way valve of the hot water heating coil (BC)
V3V BF	0-10V control signal for the 3-way valve of the cold water cooling coil (BF)

## 17. Electrical power wiring diagrams

### 17.1. Single-phase 230V AC electric heating and defrosting coils

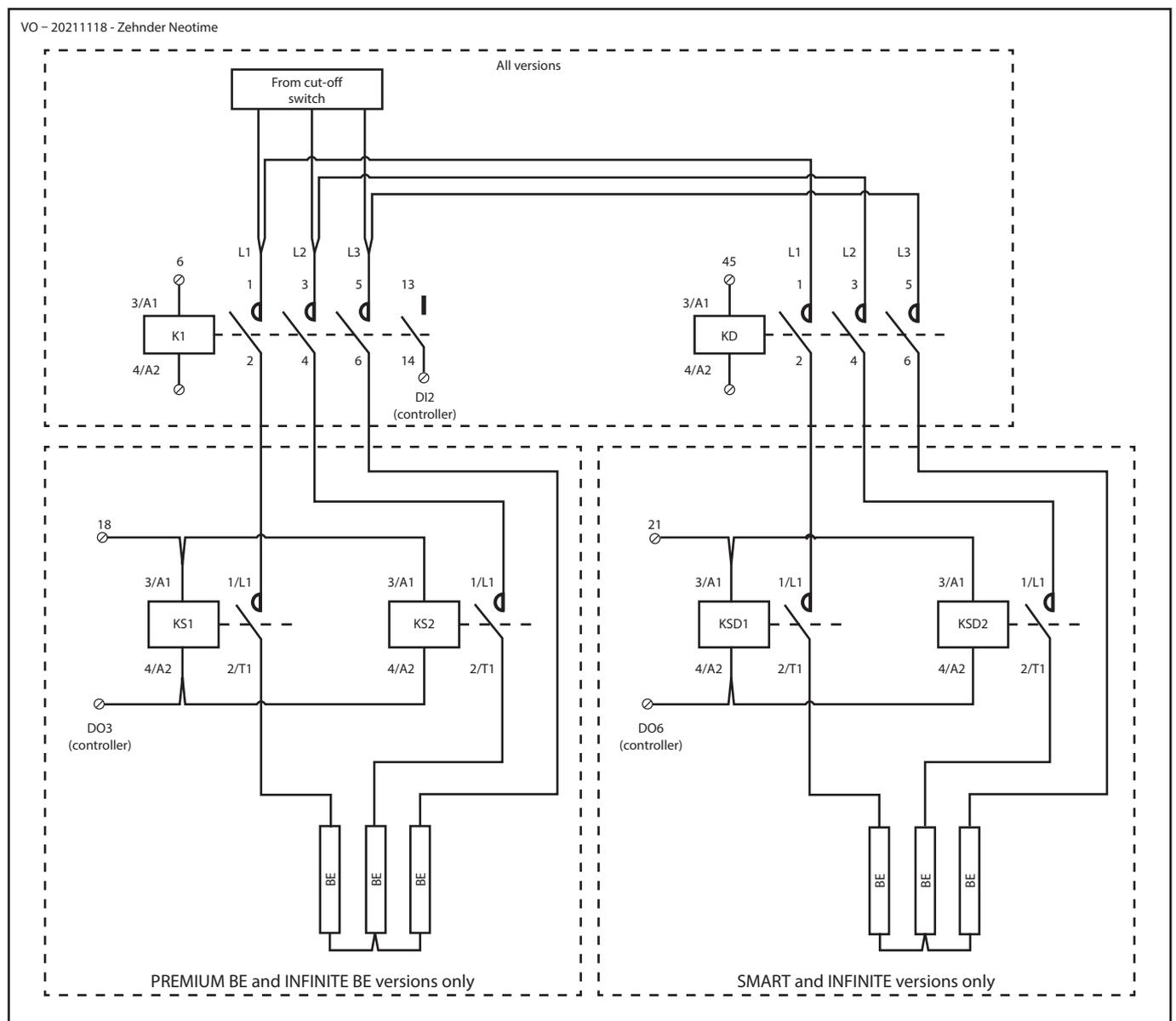
Zehnder Neotime	Versions included					
	FIRST	SMART	PREMIUM BE	PREMIUM CO	INFINITE BE	INFINITE CO
600		✓	✓	✓	✓	✓
900		✓	✓	✓	✓	✓
1300		✓	✓	✓	✓	✓
1800		✓	✓	✓		✓
2500		✓	✓	✓		✓

VO – 20211118 - Zehnder Neotime



17.2. Three-phase 400V AC electric heating and defrosting coils

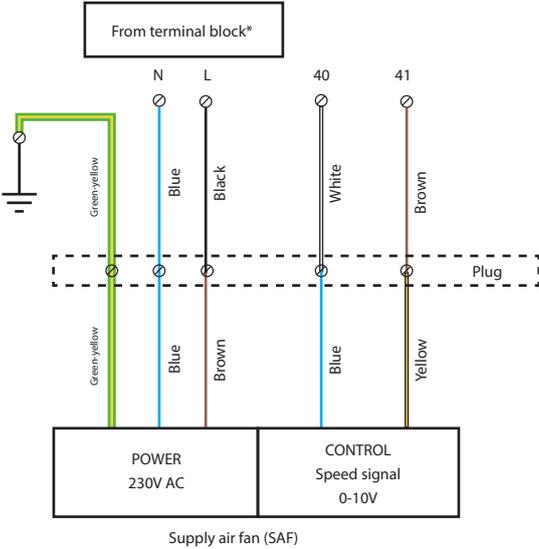
Zehnder Neotime	Versions included					
	FIRST	SMART	PREMIUM BE	PREMIUM CO	INFINITE BE	INFINITE CO
1800					✓	
2500					✓	



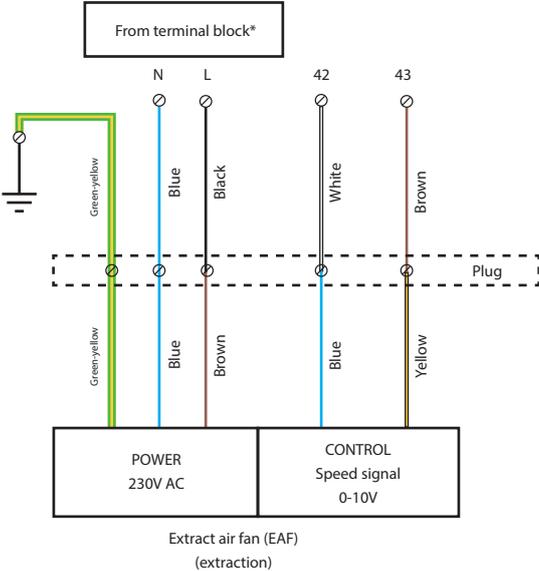
17.3. Motorised fans

Zehnder Neotime 600-900 motors

Supply



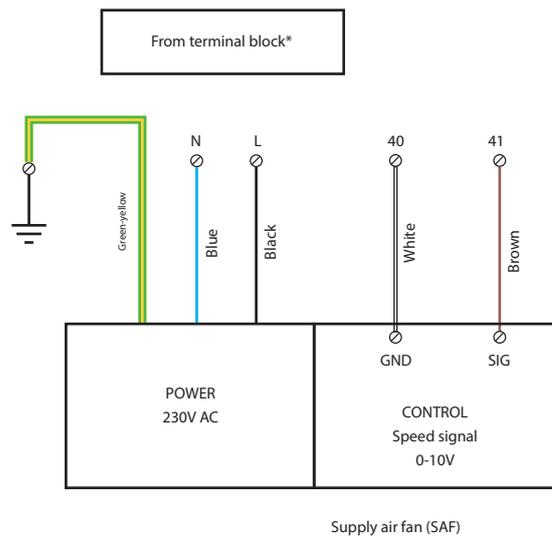
Extract



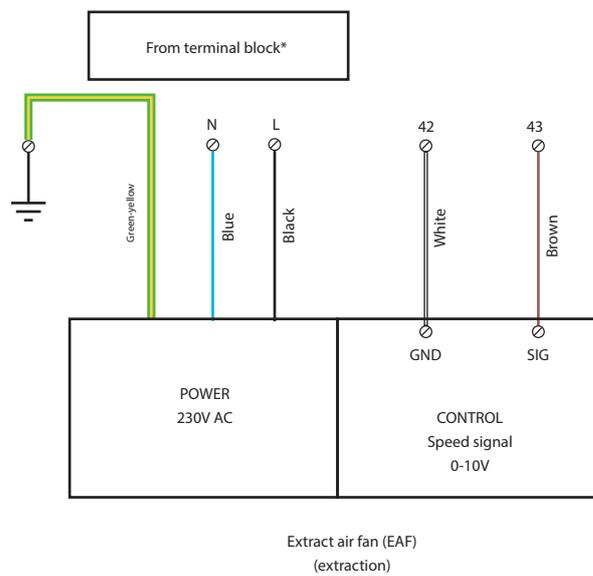
Zehnder Neotime 1300-1800-2500 motors

\*Fan power supply terminal block see 7.2 Electrical board.

Supply



Extract



## 18. ZEHnder Easy 5.0 controller

See specific manual MS-CDF-020 - Zehnder Easy 5.0 controller.

## 19. SEASON controller

### 19.1. General

The SEASON controller is a simplified and streamlined solution for controlling the ventilation unit. In contrast to the Zehnder Easy 5.0 controller, it does not have an intelligent electronic controller, a local touch control PG 5.0 or a remote Zehnder EDT2 room touch control.

The SEASON controller includes as standard:

- Individual fan speed setting via adjustable potentiometer

- Heat recovery management by adjustable thermostat, including the functions:

- Frost protection of the heat exchanger by bypassing the intake air flow in the case of a machine equipped with a plate heat exchanger.

- Cold recovery, heat recovery.

- Fan operation report via pressure switch (NO or NC dry contact)

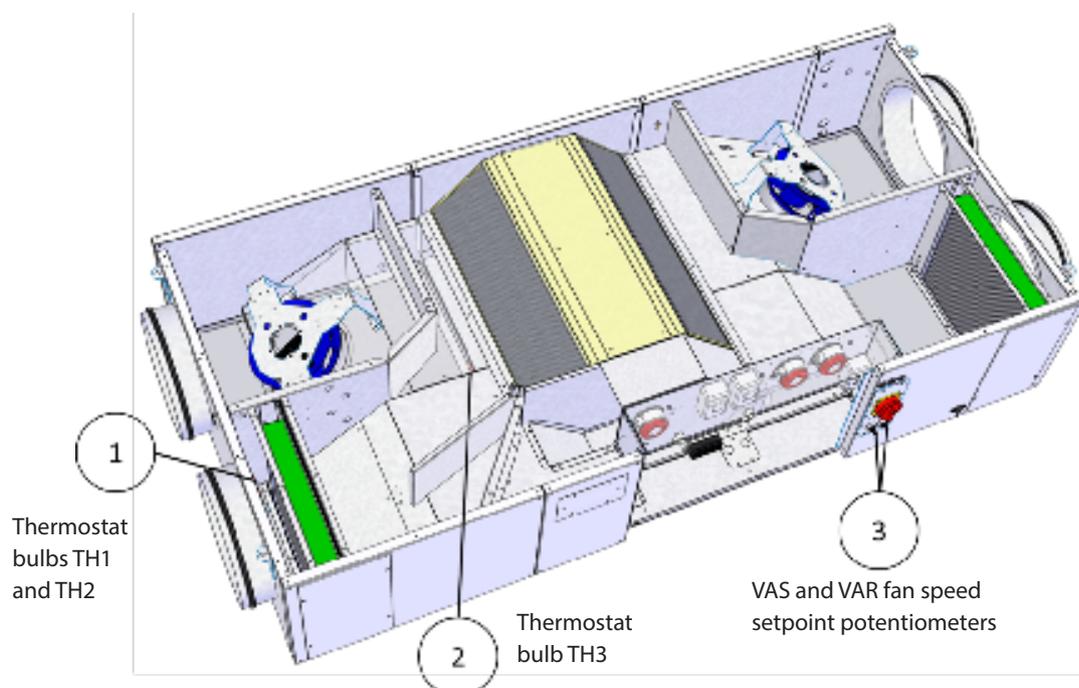
- Reporting the state of clogging in intake air filters (NO or NC dry contact).

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

The bypass register operates in on-off mode.

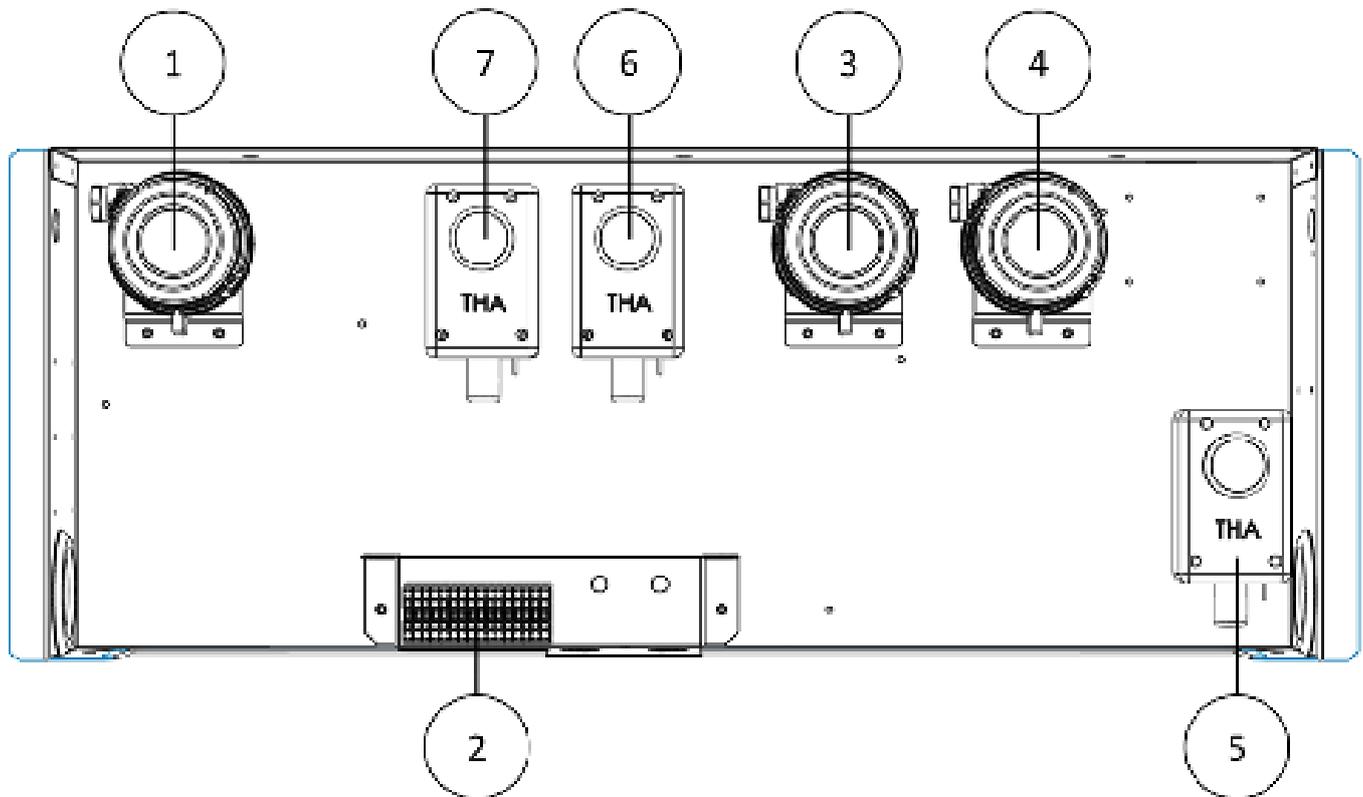
### 19.2. Overview and construction

The overview and construction of the SEASON version is very similar to the basic ECO version. The differences are mainly in the electrical board and the control components (temperature sensors, controller). The SEASON version does not have a battery.



The other components common to the standard range equipped with the Zehnder Easy 5.0 controller are presented in chapter 7.1 General overview of the unit.

19.3. Electrical compartments and user controls



Reference point	Name	Component
1	DEP SF	Pressure switch to control the clogging of the intake air filter
2		Electric terminal block
3	DEP S	Pressure switch to control the operation of the supply fan (SAF)
4	DEP R	Pressure switch for extract fan operation (EAF)
5	TH3	Control thermostat TH3 (frost protection)
6	TH2	Control thermostat TH2 (cold recovery)
7	TH1	Control thermostat TH1 (heat recovery)

#### 19.4. General operating principle

When the power is switched on (isolating switch in ON position), the supply air fan and the extract air fan start after a few seconds to reach the set speed requested by the potentiometer position.

The bypass flap is activated when the power is switched on depending on the outside air temperature, the exhaust temperature and the setting of the (adjustable) control thermostats.

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

\*Open = the intake air flow does not pass through the exchanger / closed = the entire intake air flow passes through the exchanger

\*\*Values for the factory settings of the thermostats to be adapted as required. Maintain a temperature difference of at least 6°C between the 2 thermostats.

\*\*\*The thermostat placed at the exhaust (TH3) must be set at a temperature  $\geq 5^\circ\text{C}$ .

#### 19.5. User settings

##### 19.5.1. Thermostat TH1 (heat recovery)

The TH1 thermostat bulb is placed in the intake air flow (= outdoor temperature).

The factory setting of the thermostat is +18 °C:

Outdoor temperature < 18 °C	Outdoor temperature > 18 °C
Contact closed between terminals (C) and (1)	Contact open between terminals (C) and (1)

##### 19.5.2. Thermostat TH2 (cold recovery)

The TH2 thermostat bulb is placed in the intake air flow (= outdoor temperature).

The factory setting of the thermostat is +24 °C:

Outdoor temperature < 24 °C	Outdoor temperature > 24 °C
Contact open between terminals (C) and (2)	Contact closed between terminals (C) and (2)

##### 19.5.3. Thermostat TH3 for frost protection

This thermostat ensures the frost protection function of the plate heat exchanger.

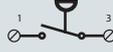
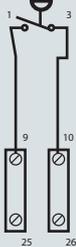
The bulb is placed in the exhaust air flow.

The factory setting of the thermostat is +5 °C:

Outdoor temperature < 5 °C	Outdoor temperature > 5 °C
Contact open between terminals (C) and (2)	Contact closed between terminals (C) and (2)

#### 19.6. Connecting and setting external user devices

At any time, the user can check the operating status of the fans and the state of clogging of the supply air filter through the use of 3 pressure switches:

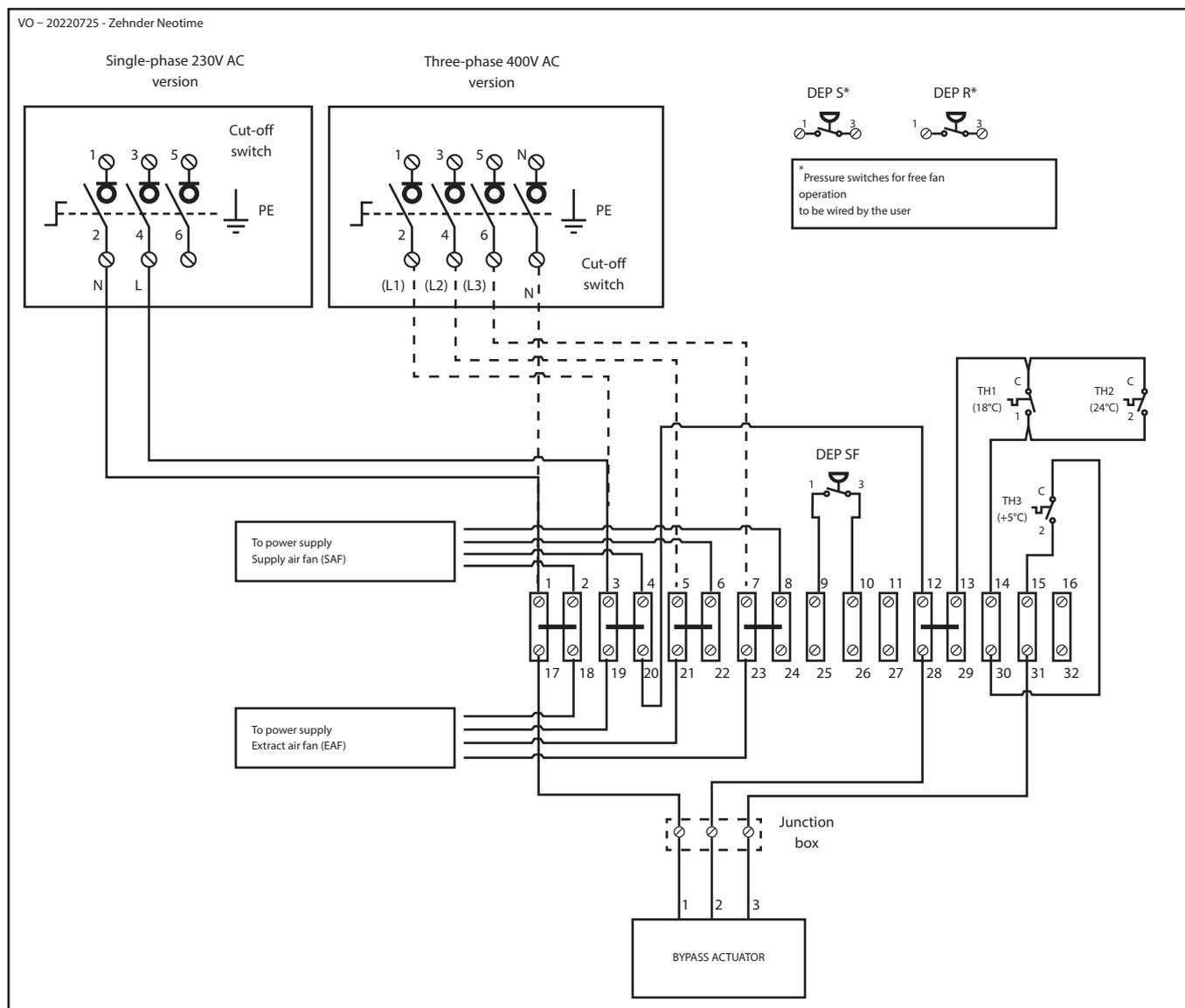
Device	Factory setting	Electrical connection responsibility of the user
Pressure switch to control the operation of the supply fan (SAF)	25 Pa	<p>DEP S</p>  <p>The connection is to be made directly to the device.</p>
Pressure switch to control the operation of the extract fan	25 Pa	<p>DEP R</p>  <p>The connection is to be made directly to the device.</p>
Pressure switch for clogging of the intake air filter	150 Pa M5 filters 200 Pa F7 filters	<p>DEP SF</p>  <p>The connection must be made between terminals (25) and (26).</p>

19.7. Troubleshooting and maintenance

As the SEASON control system is very simple, the risk of breakdowns is relatively limited and confined to the main components.

Fault	Possible causes
The supply air fan is not working	<p>The 0-10V control signal potentiometer is in position 0 or is defective (control signal at the motor input below 1V).</p> <p>The 0-10V control signal wire is defective or the signal polarity is reversed.</p> <p>The power supply wiring is defective.</p> <p>The motor is defective.</p>
The extract air fan is not working	<p>The 0-10V control signal potentiometer is in position 0 or is defective (control signal at the motor input below 1V).</p> <p>The 0-10V control signal wire is defective or the signal polarity is reversed.</p> <p>The power supply wiring is defective.</p> <p>The motor is defective.</p>
The bypass flap is not working (the unit blows air at a temperature close to the outdoor temperature at low/high outdoor temperatures)	<p>The outdoor temperature is in the range where the bypass is inactive (normal case).</p> <p>Control thermostats TH1, TH2, TH3 are incorrectly set or defective.</p> <p>The actuator wiring is defective, the actuator is not powered.</p> <p>The actuator is defective.</p>

## 19.8. General SEASON wiring diagram

**Note:**

The power supply for the bypass actuator is provided between terminals (1) and (2) of the actuator.

When the power is supplied:

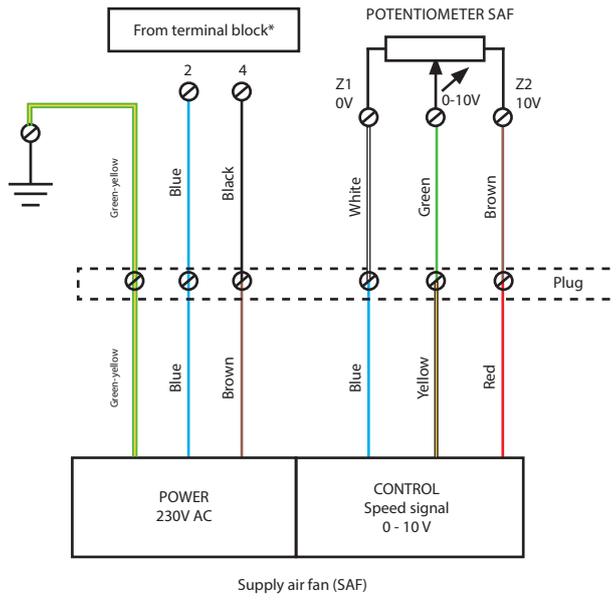
The potential is absent in terminal (3) of the actuator, the actuator is open, the air is diverted from the exchanger and there is no energy recovery

The potential is present at terminal (3) of the actuator, the actuator is closed, the air flows through the exchanger and energy recovery is active (100%).

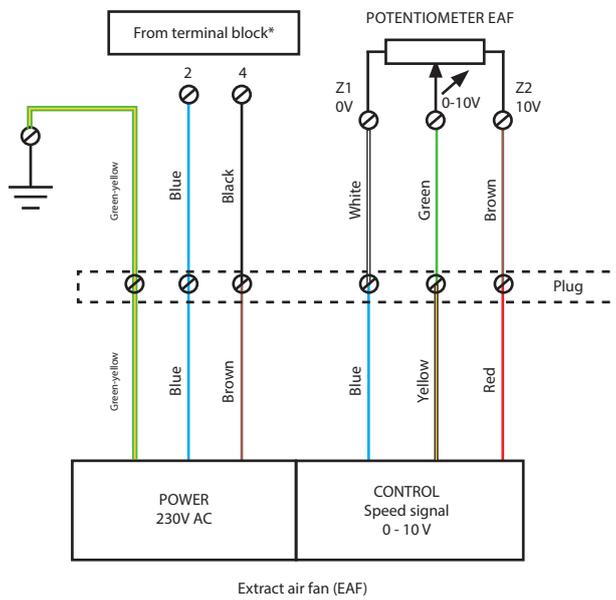
19.9. Electrical wiring diagram for SEASON motorised fans

Zehnder Neotime 600-900 motors

Supply

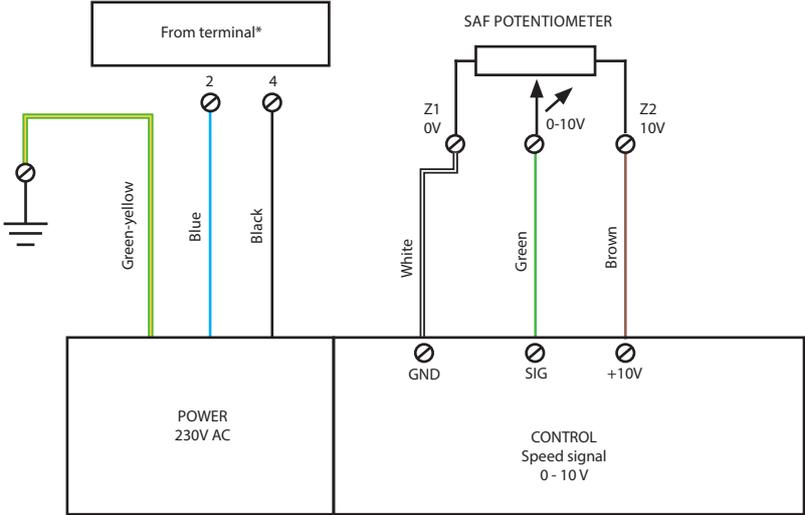


Extract



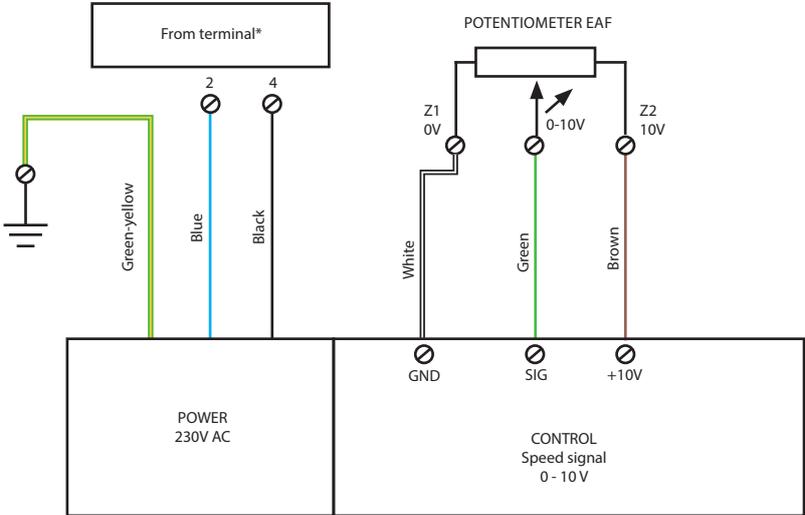
Zehnder Neotime 1300-1800-2500 motors

Supply



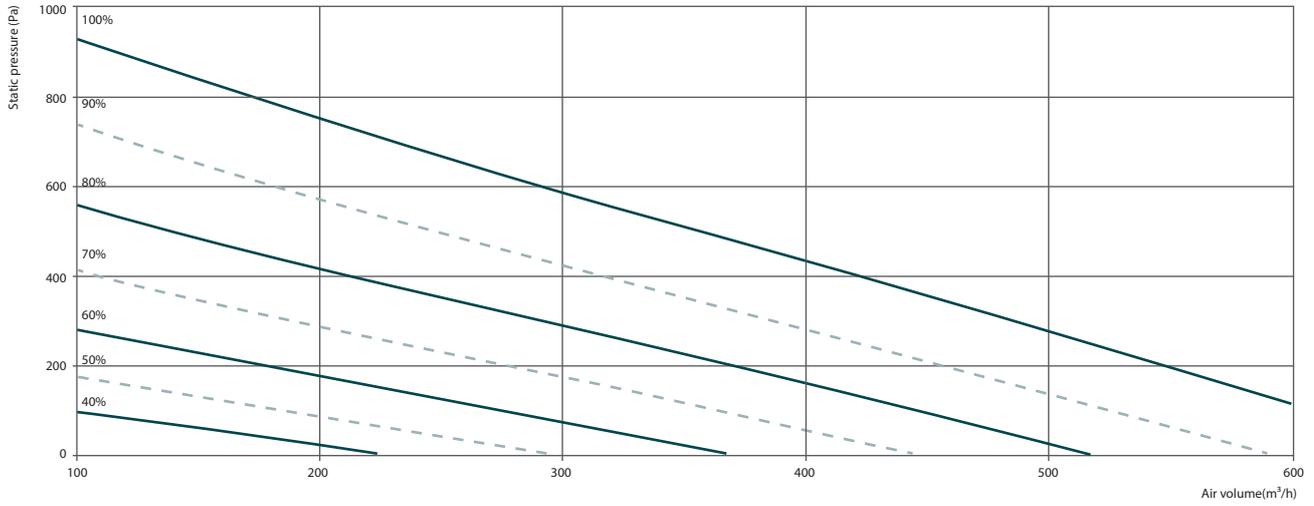
Supply air fan (SAF)

Extract

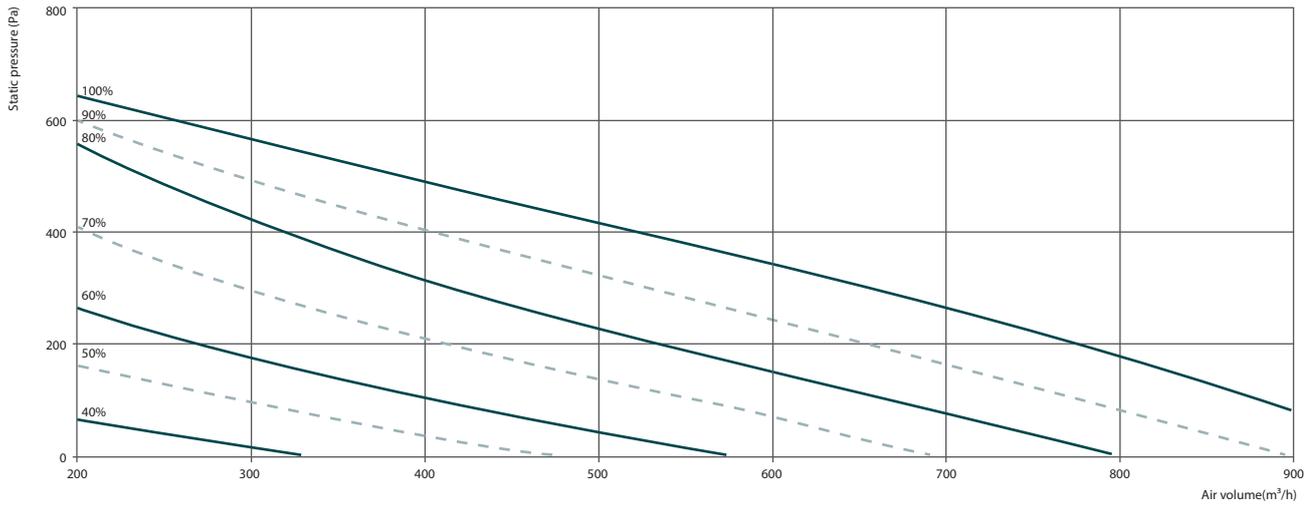


Extract air fan (EAF)

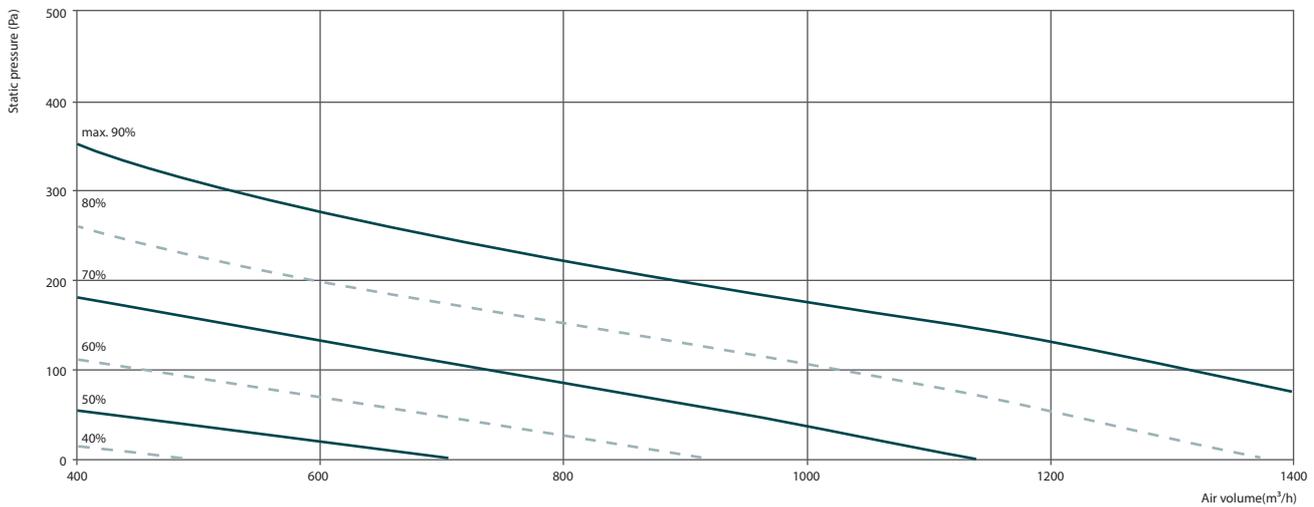
20. Air performance curves  
Zehnder Neotime 600



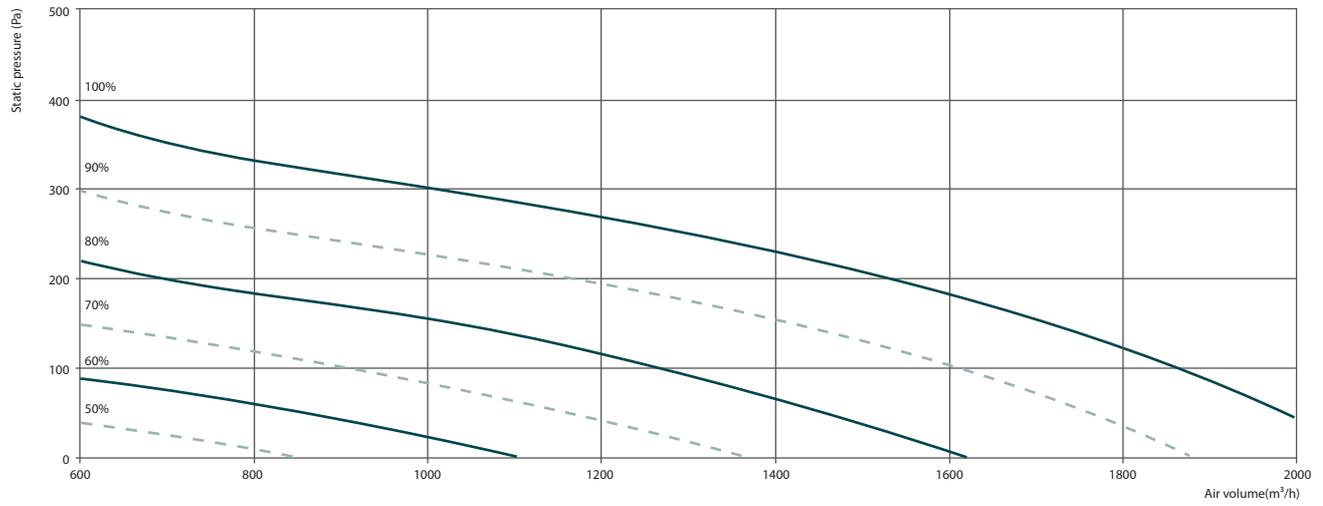
Zehnder Neotime 900



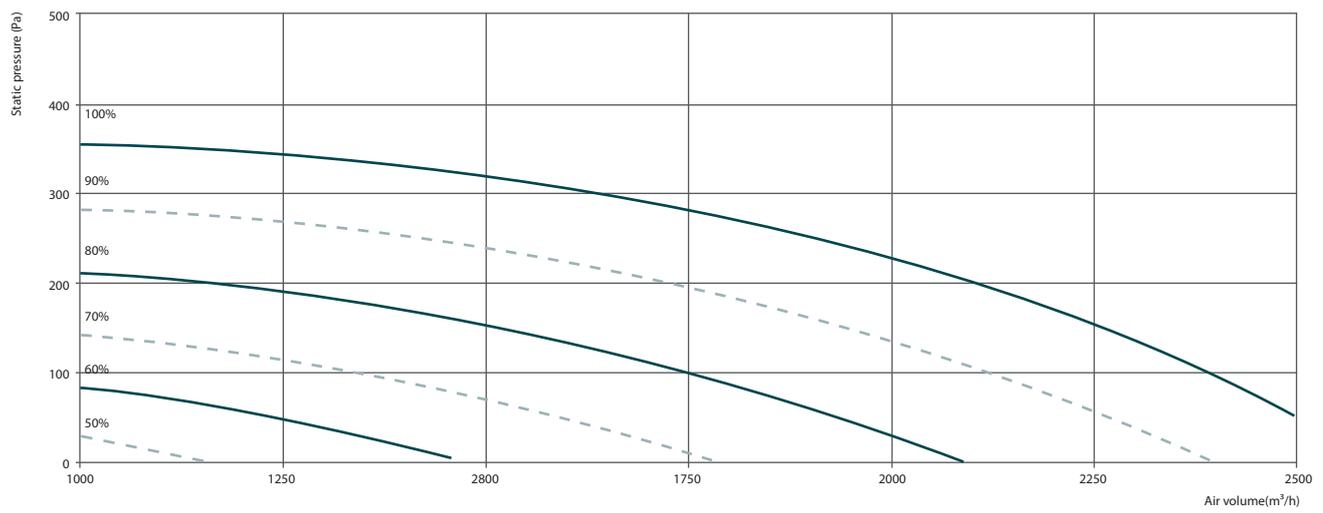
Zehnder Neotime 1300



Zehnder Neotime 1800

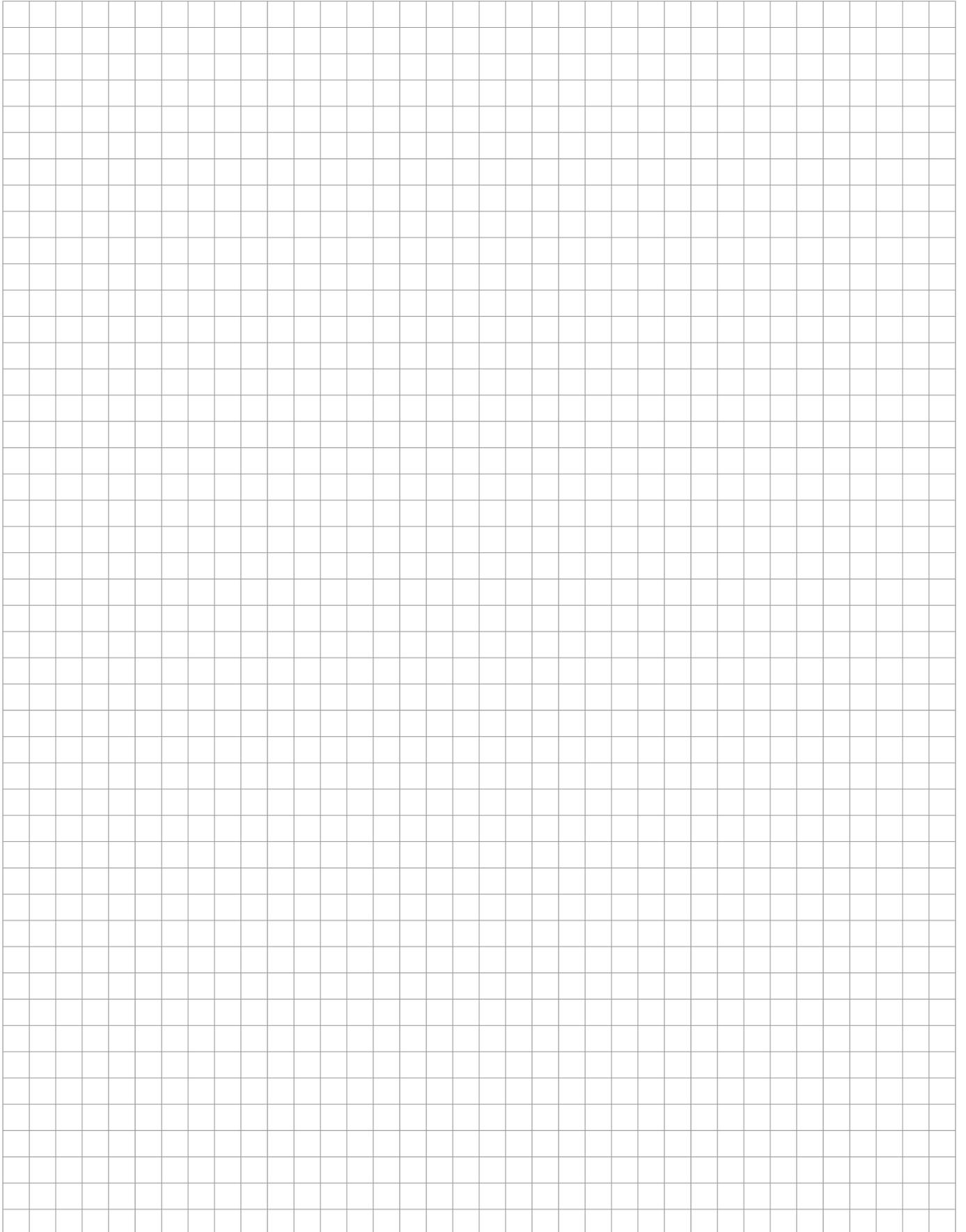


Zehnder Neotime 2500

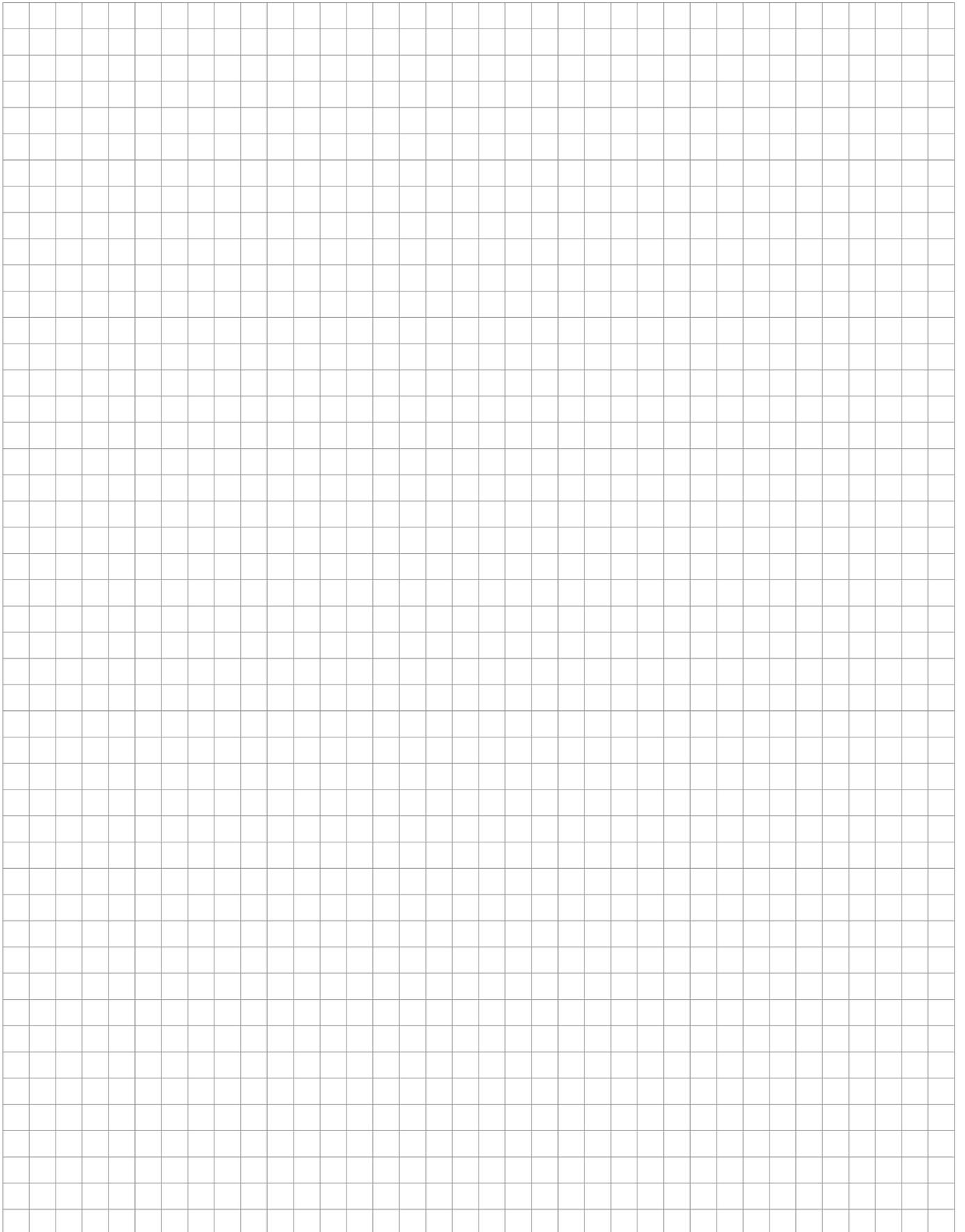




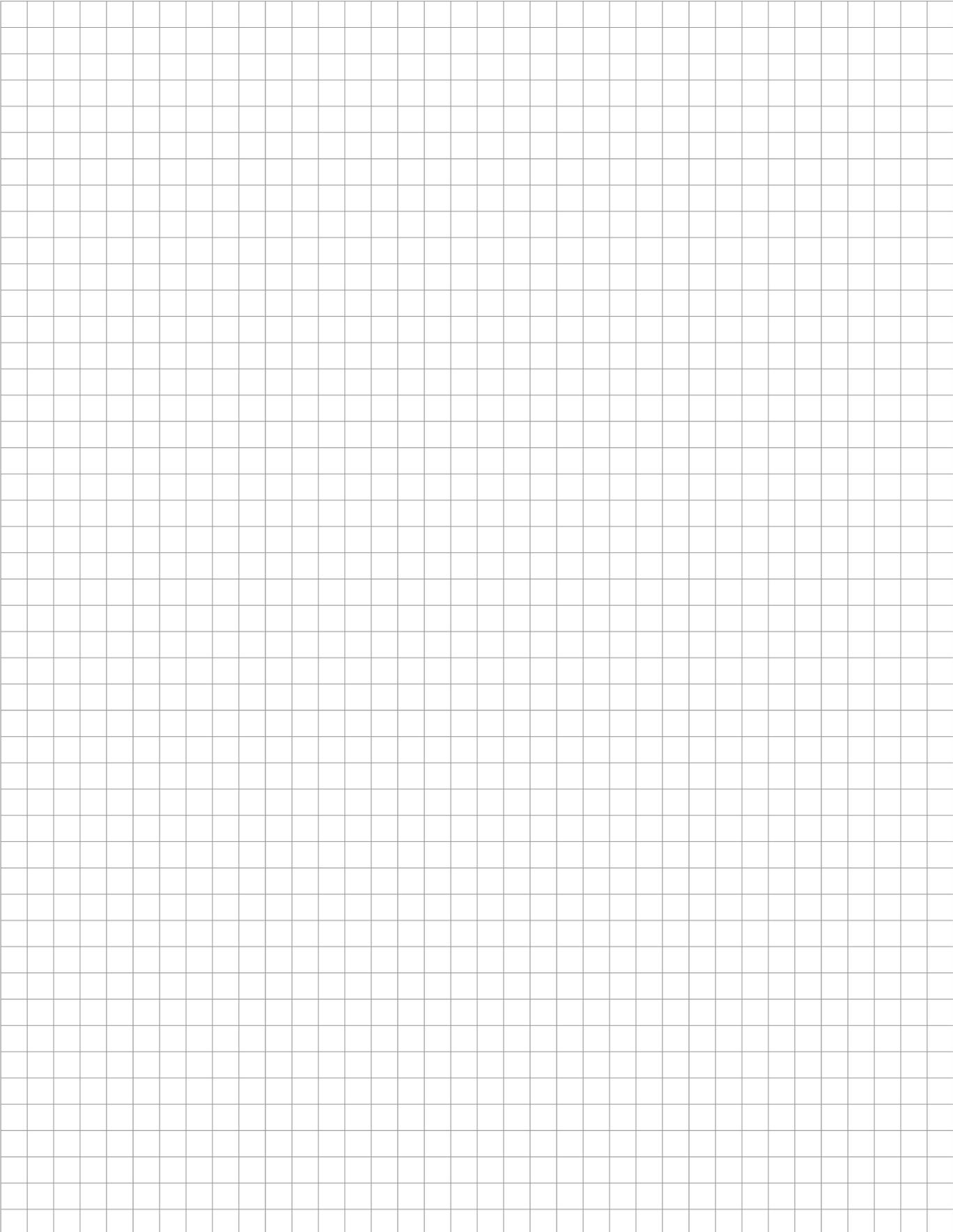
Notes



Notes



Notes



Mâcon Loché, on 29 August 2022  
Ref: EU

## EU-Declaration of conformity

We declare under our sole responsibility that the products

ECOVOR™ - ECOBLUE™ – ECONIZER™- NOE™ - NOE LOBBY™  
MINIMAX™ - MINIBLUE™ - MINIBLUE LOBBY™ - MAXIPLUS™ - CITYCOOL™  
COMBIBOX CONCEPT™ - CMH – EVENTYS™  
CARMA™ - Zehnder Neotime™ - FREETIME™ - EXAECO™- HEXAMOTION™- SILVERTOP™ - EVERSKEY™  
ELECTROPACK™ - AQUAPACK™ - LOBBY™ - SYSTEM TOP™ - SYSTEM DIV™ - WONDERROOM™  
CVFMI - CVFTI - CVFM - CVFT  
REFLEX™ - DIABLO™ - PYROSTAR™ - CDF  
EVERKIT™  
THERMOVER™

satisfy the provisions of the following applicable Directives and harmonised standards:

Machinery Directive 2006/42/EC  
Low Voltage Directive 2014/35/EU  
EMC Directive - Electromagnetic Compatibility Directive 2014/30/EU  
RoHS II Directive - Directives on the restriction of the use of certain hazardous substances in electrical and electronic equipment 2011/65/EU and 2015/863/EU  
ErP Directive 2009/125/EC



Furthermore, for the products

COMBIBOX CONCEPT™ - CMH - CARMA™ - EXAECO™ - EVENTYS™ - FREETIME™ - Zehnder Neotime™  
- HEXAMOTION™ - SILVERTOP™ - THERMOVER™ - EVERKIT™ (Dual flow unit section)

the following standards and specifications were applied:

EN 1886: 2008 - Ventilation for buildings. Air handling units.  
Mechanical performance

EN 13053+A1: 2011 - Ventilation for buildings. Air handling units.  
Rating and performance for units, components and sections.

This declaration is valid only for products installed according to the supplied instructions and  
having undergone no modification.

Hervé Nuzzo,  
President

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SIRET: 317 273 365 00054 ■ VAT No: FR 41 317 273 365 ■ APE 2825Z

