

# DFE Compact

User and maintenance manual **EN**



Applicable to program versions TAC5  
Version DT 2.8.12 & DG 2.7.3



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# DFE Compact

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# 1.0 Installation manual

Applicable for the following units

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EXCHANGER	SIZES	INTEGRATED PRE-HEATING	INTEGRATED POST-HEATING	HANDING	FAN
<b>DFE Compact</b> Counterflow	450/600/1000/ 1300/1600/2000	Yes, electrical	No	Left / Right	Forward (FW)

## Disclaimer

### Danger/Warning/Caution

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- All staff concerned shall acquaint themselves with these instructions before beginning any work on the unit. Any damages to the unit or its components caused by improper handling or misuse by the purchaser or the installer cannot be considered subject to guarantee if these instructions have not been followed correctly.
- Make sure that the power supply to the unit is disconnected before performing any maintenance or electrical work!
- All electrical connections must be carried out by an authorized installer and in accordance with local rules and controls.
- Although the mains supply to the unit has been disconnected there is still risk for injury due to rotating parts that have not come to a complete standstill.
- Beware of sharp edges during mounting and maintenance. Make sure that a proper lifting device is used. Use protective clothing.
- Unit should always be operated with closed doors and panels.
- If the unit is installed in a cold place make sure that all joints are covered with insulation and are well taped.
- Duct connections/duct ends should be covered during storage and installation, in order to avoid condensation inside of the unit.
- Check that there are no foreign objects in unit, ducting system or functional sections.
- The unit is packed to prevent damage of the external and internal parts of the unit, dust and moisture penetration. If the unit is not to be installed immediately, it should be stored in a clean, dry area. If stored externally, it should be adequately protected from the weather influence.

#### RANGE OF APPLICATION

The DFE units are designed for use in comfort ventilation applications.

Depending on the variant selected, DFE units can be utilised in buildings such as office buildings, schools, day nurseries, public buildings, shops, residential buildings, etc.

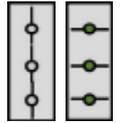
DFE units equipped with plate heat exchangers can also be used for the ventilation of moderately humid buildings; however not where the humidity is continuously high, such as in indoor swimming baths, saunas, spas or wellness centres.

#### HOW TO READ THIS DOCUMENT

Please make sure that you have read and understood the safety precautions below.

For new users, please read the chapter where the Symbols and Abbreviations used for DFE are listed.

## 2.0 Symbols and abbreviations

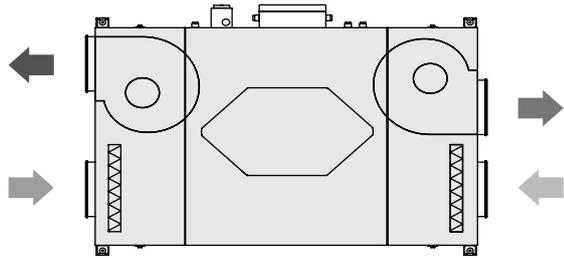
	FW	FORWARD CURVED FAN		PF	PLEATED FILTER
	PX	PLATE HEAT EXCHANGER			
	WARNING				
	Must be connected by a qualified Electrician. Warning! Hazardous voltage.				
	OUTDOOR AIR		Air from outdoor to the AHU		
	SUPPLY AIR		Air from the AHU to the building		
	EXTRACT AIR		Air from the building to the AHU		
	EXHAUST AIR		Air from the AHU to outdoor		
	COOLING COIL	BA-		IBA / KW	HEATING COIL (WATER / ELECTRICAL)
	SILENCER	GD		CTm	MOTORIZED DAMPER
	PRESSURE SENSOR	P		Tx	TEMPERATURE SENSOR Nr = x (1,2,3...)
	SLIP CLAMP	SC		MS	FLEXIBLE CONNECTION
CIRCULAR DUCT CONNECTION		ER	For inlet	SR	For outlet

# 3.0 Product Overview

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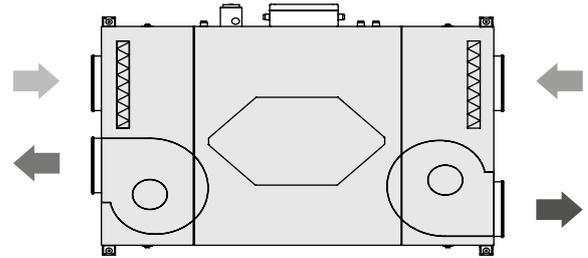
## 3.1 GENERAL OVERVIEW

RIGHT HAND UNIT (SUPPLY AIR TO THE RIGHT)

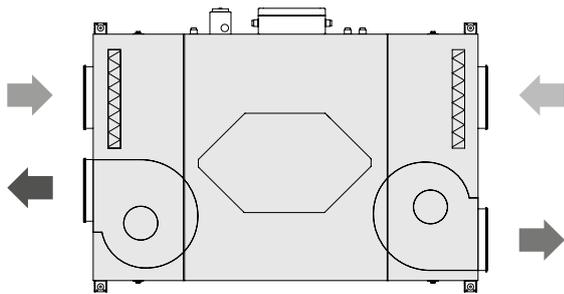


DFE Compact 450 (BOTTOM view)

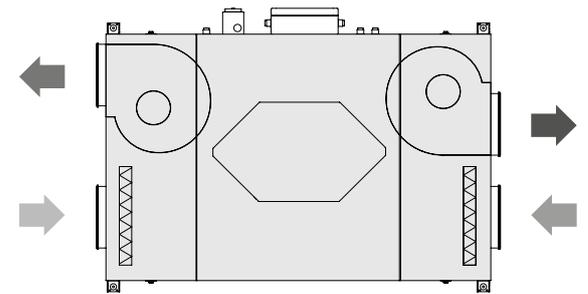
LEFT HAND UNIT (SUPPLY AIR TO THE LEFT)



DFE Compact 450 (BOTTOM view)



DFE Compact 600-2000 (BOTTOM view)



DFE Compact 600-2000 (BOTTOM view)

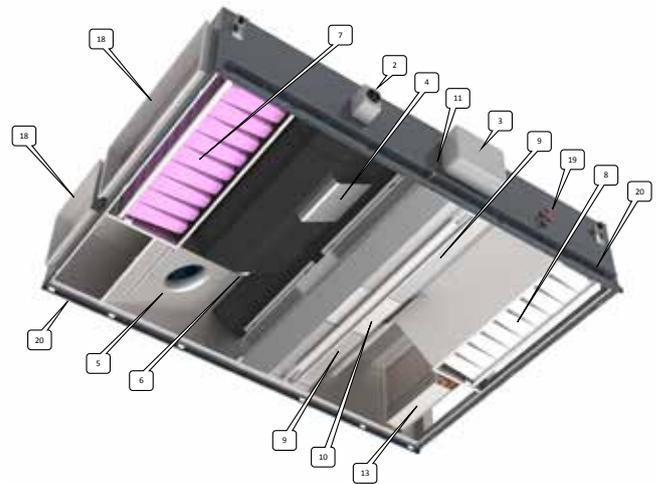
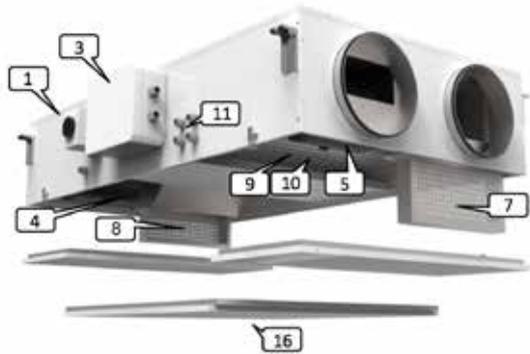


### ATTENTION

Right and left hand units have different article numbers and should be ordered accordingly. Main version described in the manuals is always the hand right version.

The difference between left and right DFE Compact units is the factory placement of the controls box on opposite sides.

## 3.2 COMPONENTS



DFE Compact

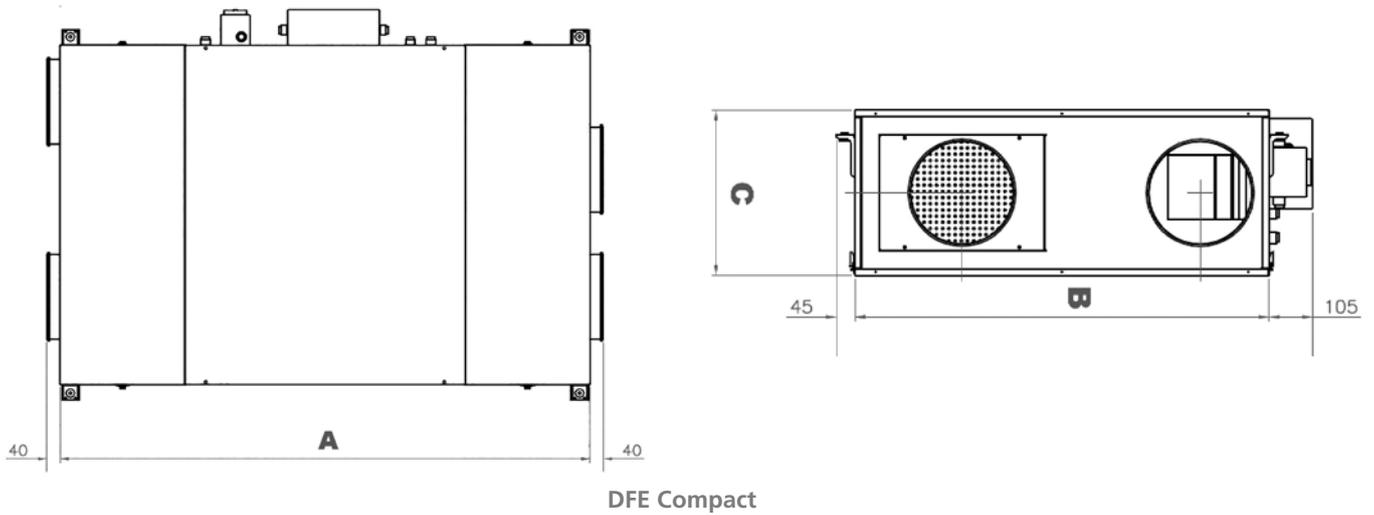
1. Main power switch
2. Main power switch for electrical coils (both internal pre-heating and post-heating)
3. Wiring box TAC5 controller
4. Supply fan
5. Extract fan
6. Kit CA -airflow measurement (option)
7. Outdoor air filter (pleated)
8. Extract air filter (pleated)
9. Heat exchanger (Plate)
10. Modulating 100% by-pass
11. Drain pan and drain pipe
12. Pre-heating electrical antifrost coil
13. Internal post-heating water or electrical coil (accessory)
14. Motorized damper (at outdoor air side - accessory)
15. Motorized damper (at exhaust air side - accessory)
16. Access panel
17. Flexible connection(accessory)
18. Slip Clamps (accessory)
19. Water connection for postheating (accessory)



**1, 2 and 3 must be installed by an accredited electrician**

Note: internal electrical coils, motorized dampers. External heating water-coil accessory is pre-mounted but has to be hydraulically and electrically connected by the installer.

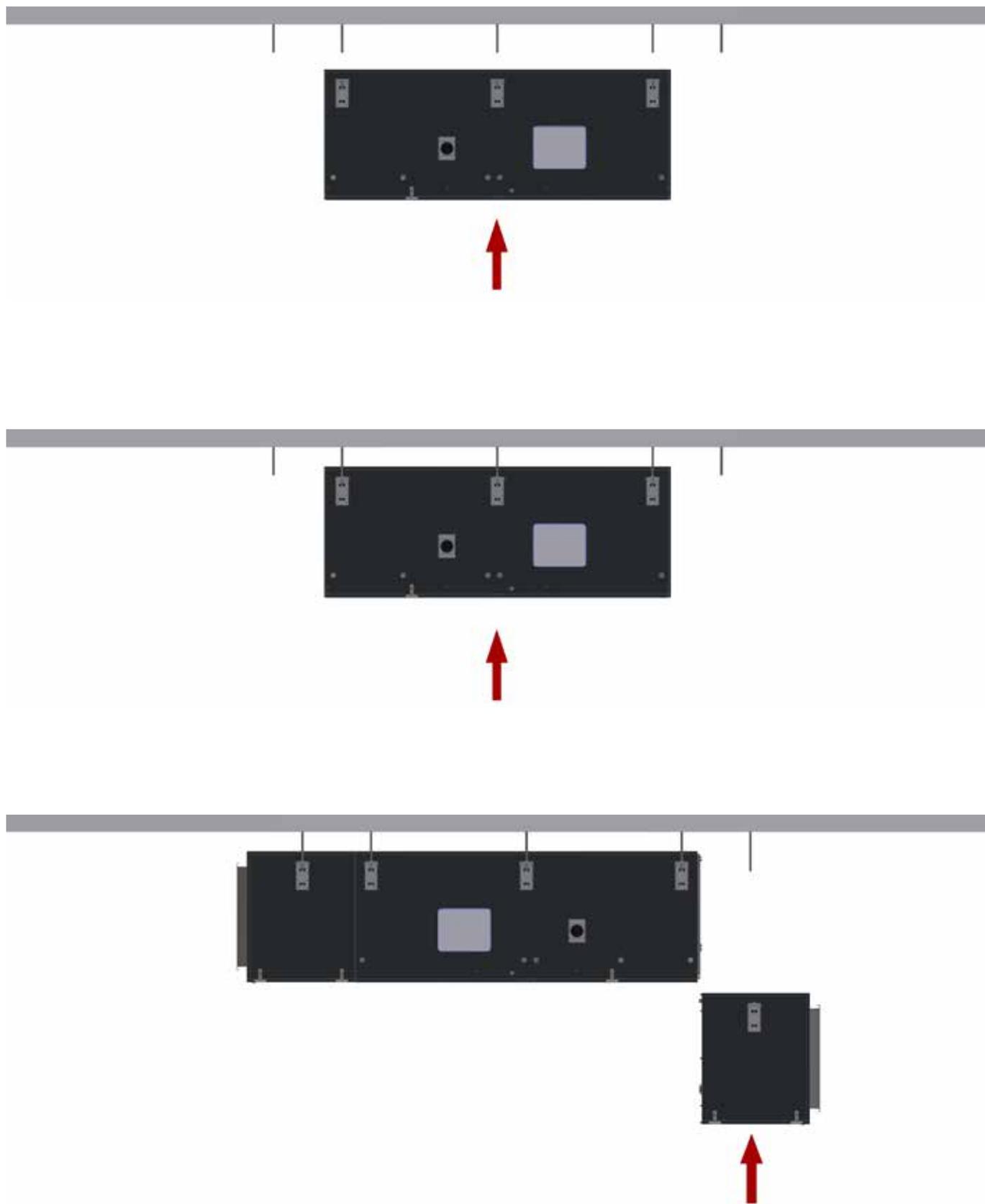
### 3.3 AIR VOLUMES AND DIMENSIONS



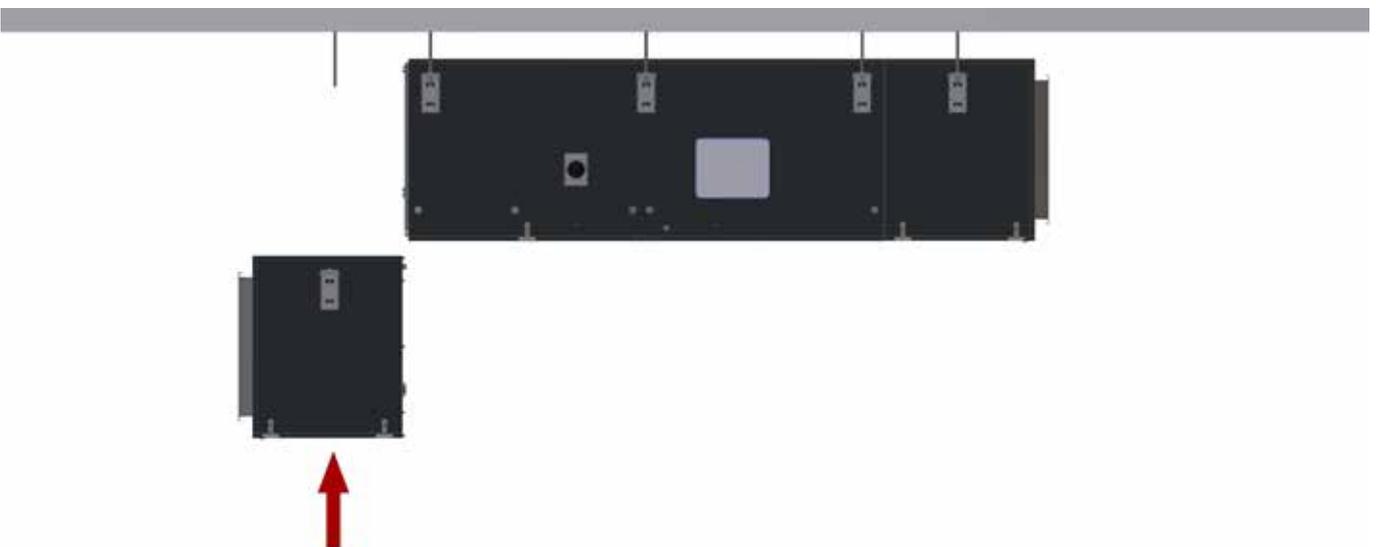
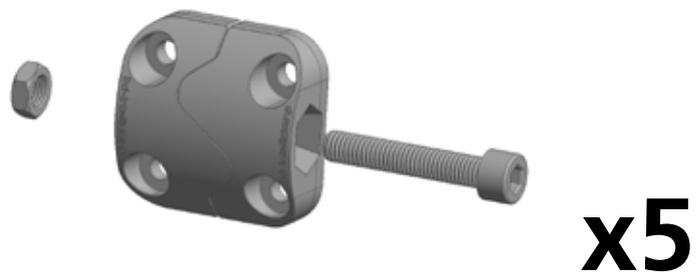
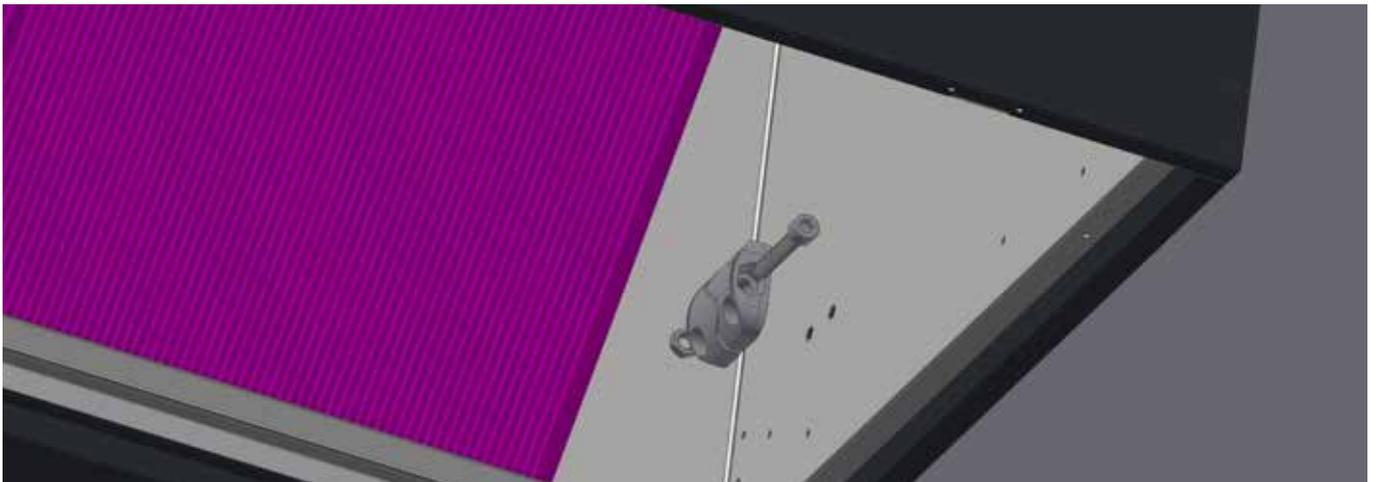
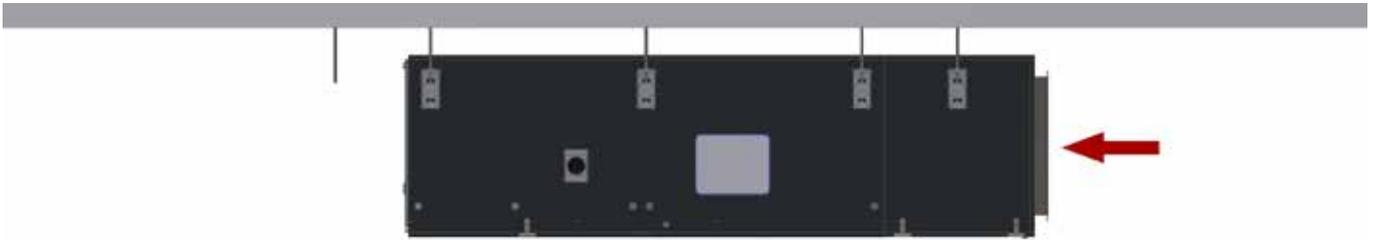
Designiaton	AIR VOLUME	A [mm]	B [mm]	C [mm]	Weight [kg]
DFE Compact 450	475 m <sup>3</sup> /h	1100	560	360	75
DFE Compact 600	630 m <sup>3</sup> /h	1490	850	320	110
DFE Compact 1000	1050 m <sup>3</sup> /h	1550	1000	400	160
DFE Compact 1300	1350 m <sup>3</sup> /h	1550	1640	400	225
DFE Compact 1600	1680 m <sup>3</sup> /h	1550	1640	400	225
DFE Compact 2000	2100 m <sup>3</sup> /h	1700	1940	400	275

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### 3.4 MECHANICAL INSTALLATION

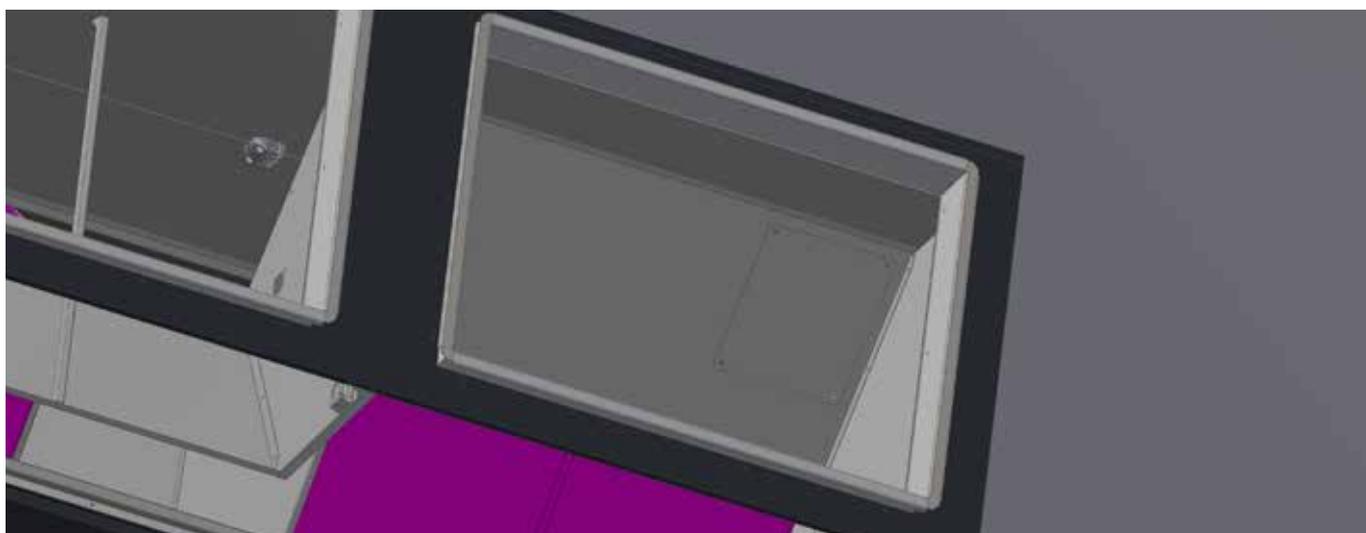
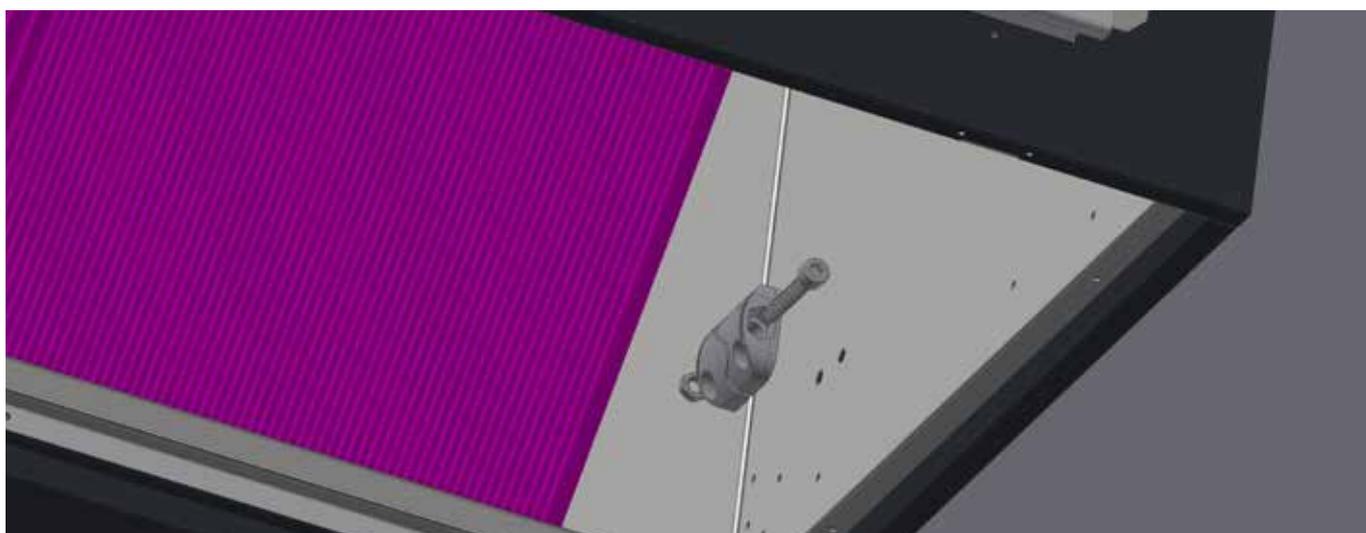
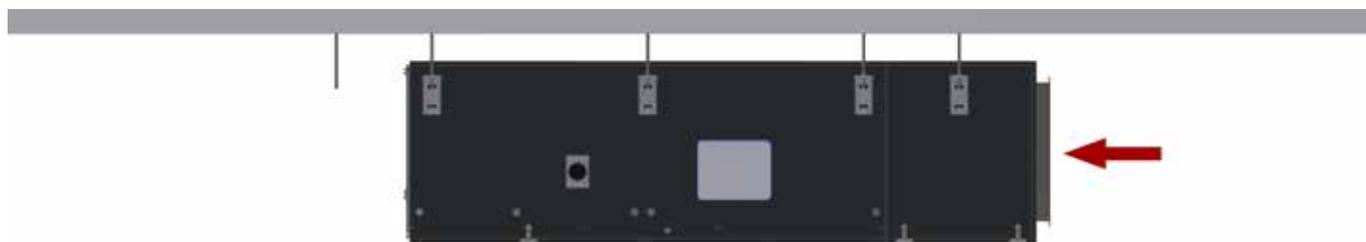


### 3.4 MECHANICAL INSTALLATION



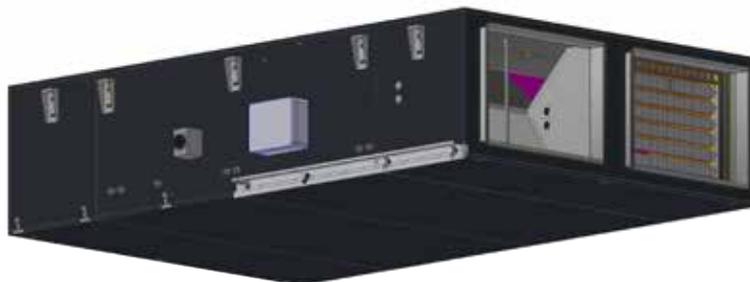
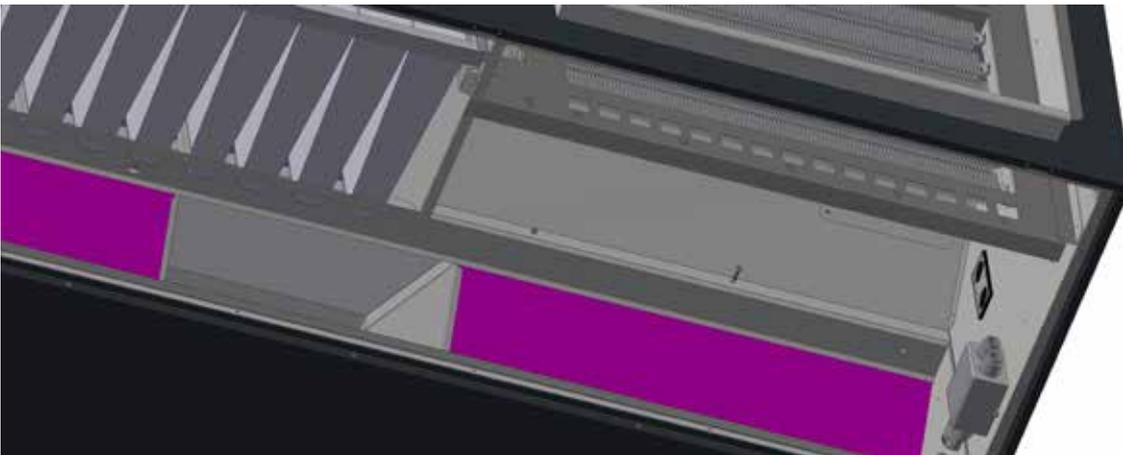
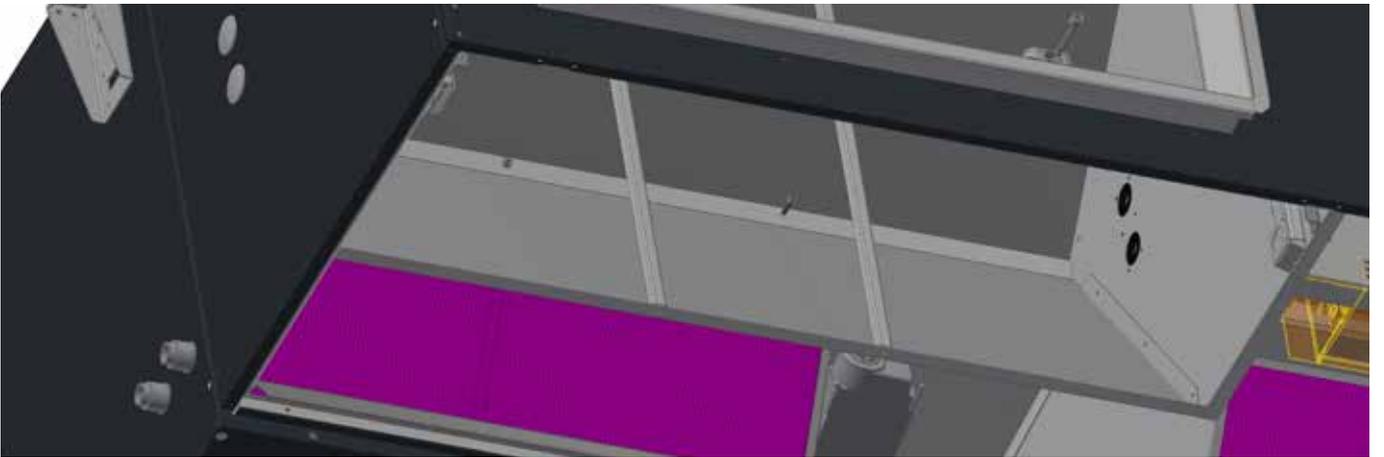
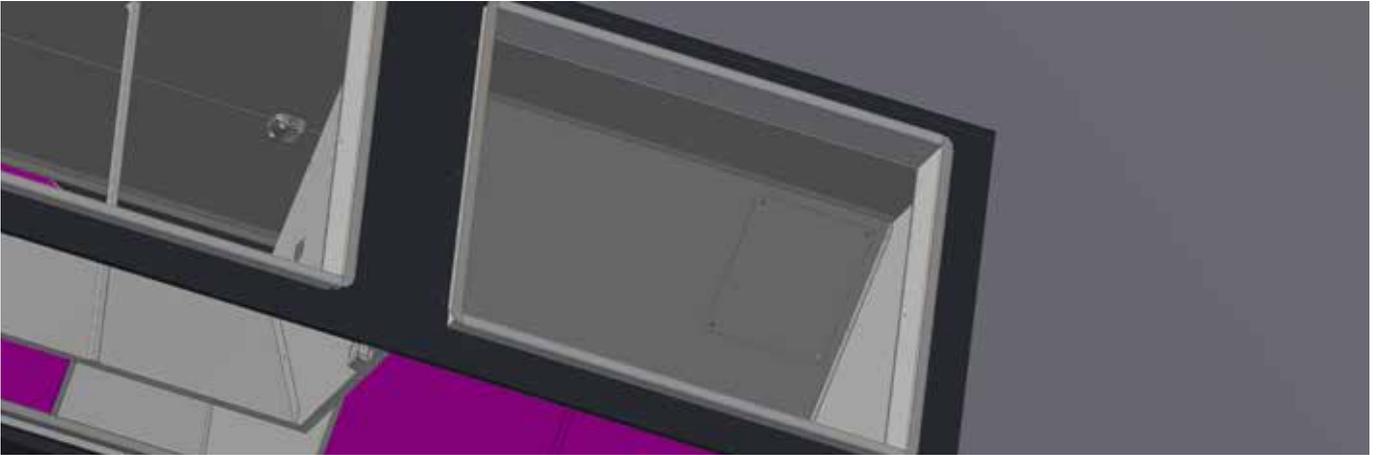
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### 3.4 MECHANICAL INSTALLATION

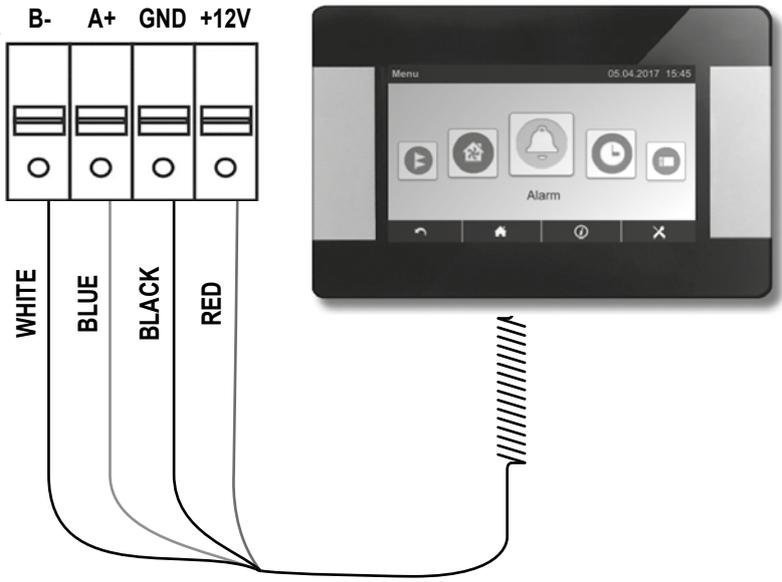
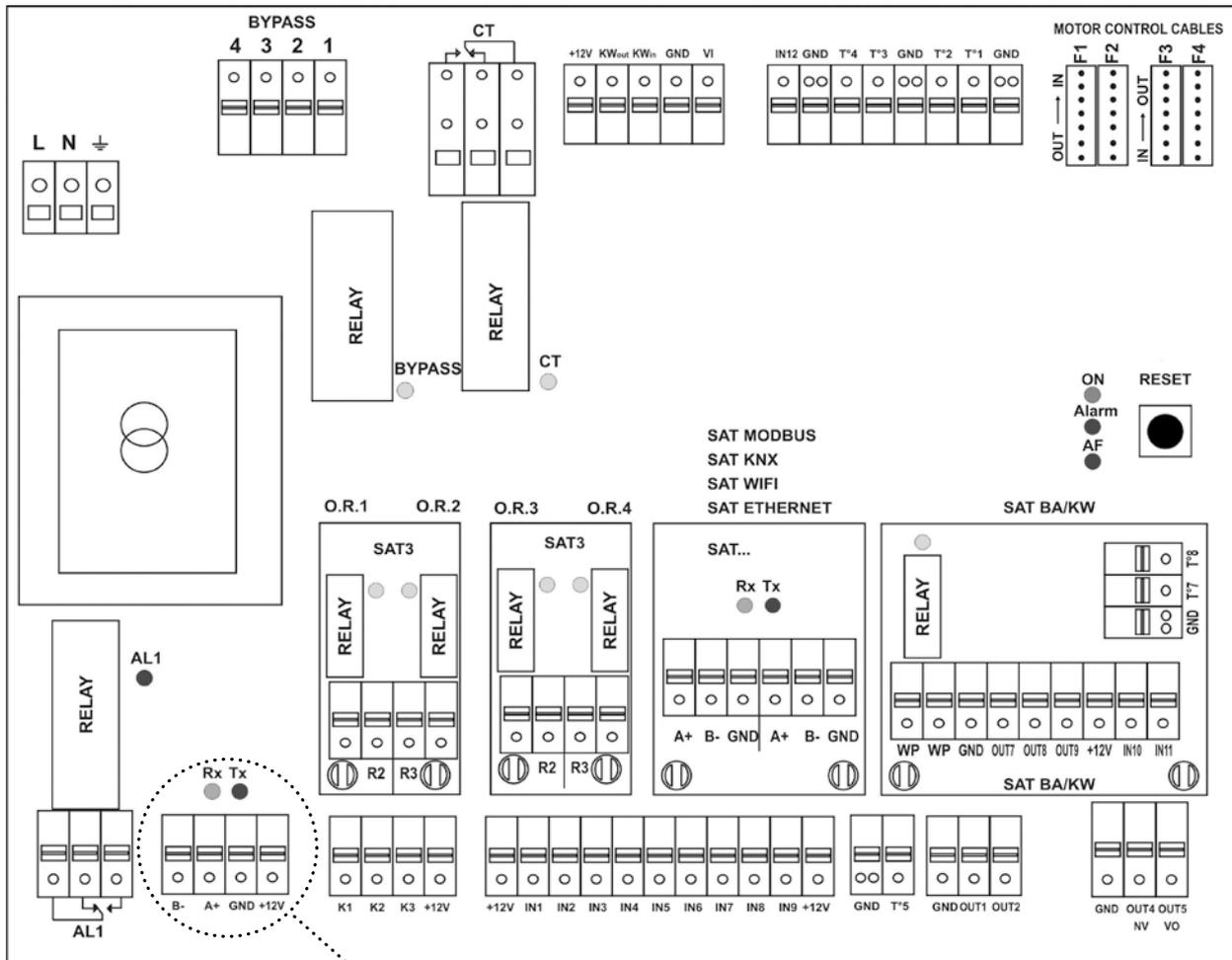


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### 3.4 MECHANICAL INSTALLATION



### 3.5 ELECTRICAL CONNECTIONS



#### Wiring

The cables used must conform to the RS-485 Standard with twisted pair conductors. The cables must be shielded. Conductor Area 0.2 mm<sup>2</sup>. The total length must not exceed 100 meters.

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### 3.6 ELECTRICAL POWER SUPPLY

DFE designation	Without Kwin coil		With Kwin coil	
DFE Compact 450	1 x 230 V	2.9 A max	1 x 230 V	9.4 A max
DFE Compact 600	1 x 230 V	3.1 A max	1 x 230 V	11.8 A max
DFE Compact 1000	1 x 230 V	7.7 A max	1 x 230 V	20.7 A max
DFE Compact 1300	1 x 230 V	11.9 A max	3 x 400V + N	20.6 A max
DFE Compact 1600	1 x 230 V	11.9 A max	3 x 400V + N	20.6 A max
DFE Compact 2000	1 x 230 V	11.7 A max	3 x 400V + N	20.6 A max



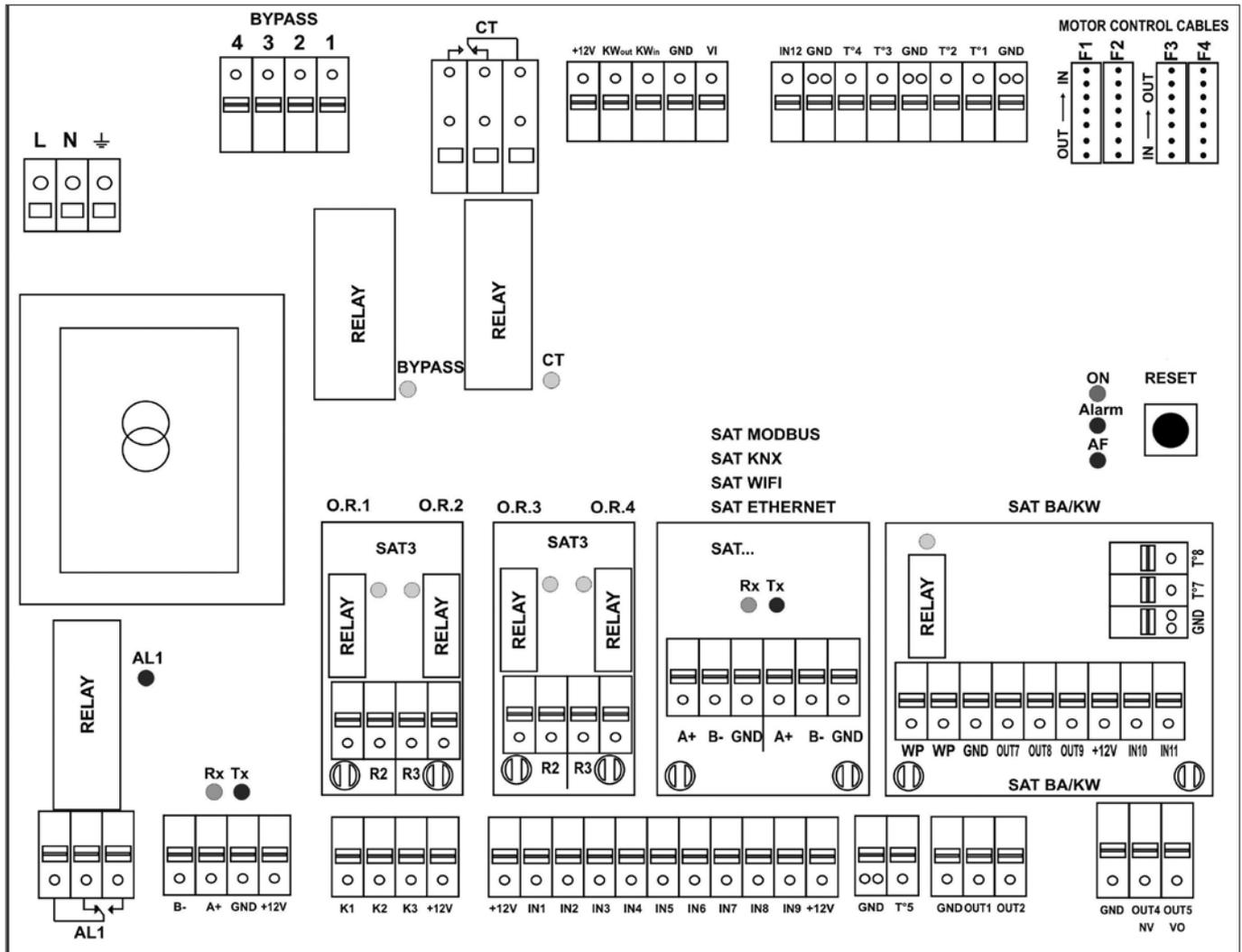
Please refer to our selection software for more detailed information of any specific lay-out or configuration.

All internal components (fans, controls, sensors, actuators...) to the control board are pre-wired at the factory.

The power supply must be connected to the safety isolating switch by a qualified electrician. Earthing is obligatory according EN61557. The fuses are of D-type, the circuit breaker is of B or B+ type.

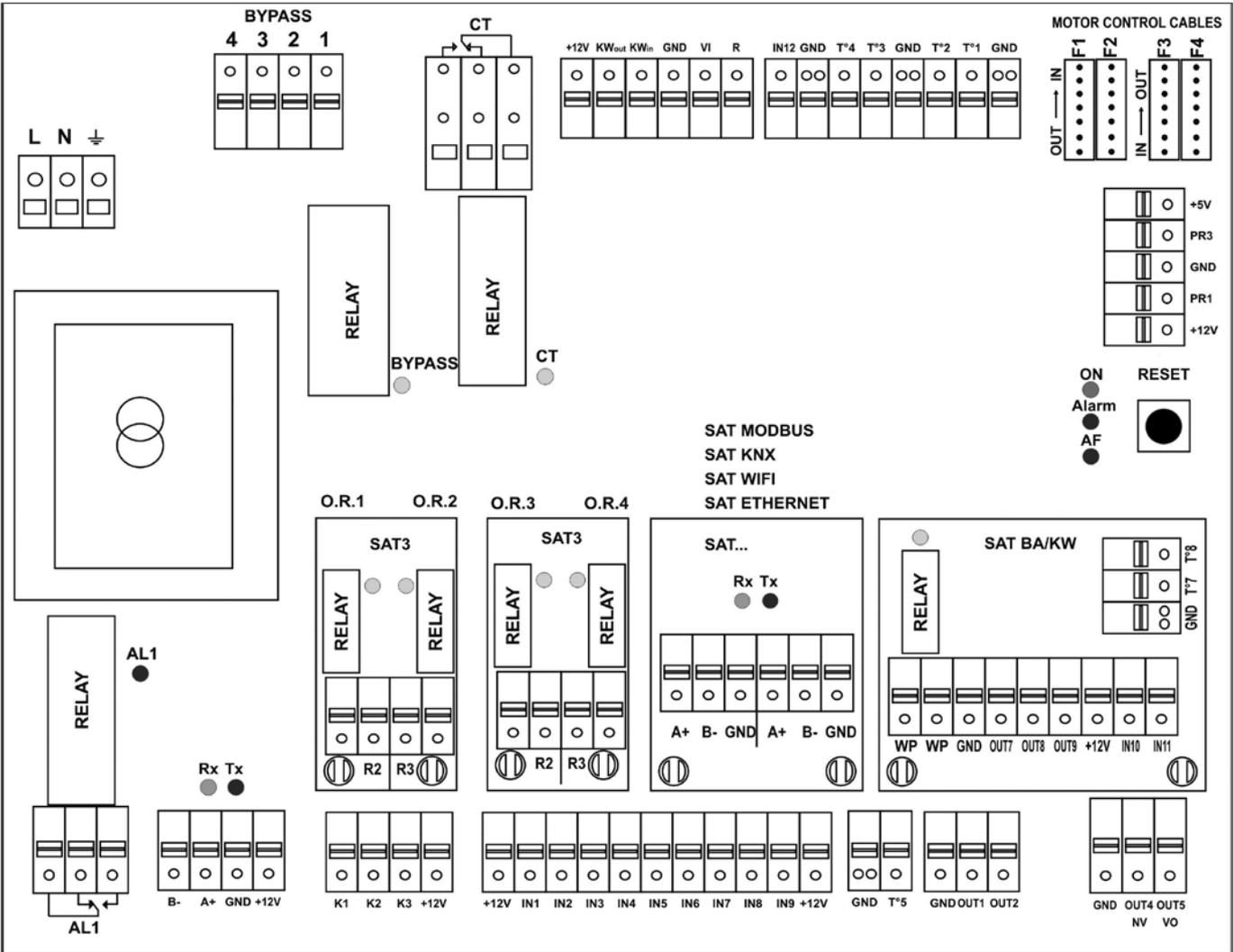
# 4.0 Wiring Overview

## MAIN CONTROL BOARD TAC5 DT



DFE Compact	
<b>CT</b> = output to CT actuator(s) (option - prewired)	<b>IN1</b> = Master selection
<b>BYPASS</b> = output to bypass actuator (prewired)	<b>IN2</b> = dPa (pressostat digital input)
<b>AL1</b> = ALARM OUTPUT (230V/5A)	<b>IN3</b> = Fire alarm input
<b>B- / A+ / GND / +12V</b> = connection to HMI TACtouch	<b>IN4</b> = Bypass open / Stop heat recovery
<b>K1</b> : Airflow MODE = m³/h K1 Demand/Pressure control = START/STOP	<b>IN5</b> = Real time clock auto/manu
<b>K2</b> : Airflow control = m³/h K2 Demand/Pressure control = 0-10V INPUT	<b>IN6</b> = ON/OFF post heating (IBA/KWout)
<b>K3</b> : Airflow control = m³/h K3 Demand/Pressure control = % ON K3 or 0-10 V INPUT	<b>IN7</b> = ON/OFF SUPPLY if fire alarm
<b>T1</b> = from outdoors T° sensor (prewired)	<b>IN8</b> = ON/OFF EXHAUST if fire alarm
<b>T2</b> = from indoors T° sensor (prewired)	<b>IN9</b> = BOOST Airflow
<b>T3</b> = to outdoors T° sensor (prewired)	<b>IN12</b> = PWM input bypass position
<b>T4</b> = IBA anti freeze protection T° sensor	<b>OUT1</b> = 0-10V OUTPUT (airflow / pressure)
<b>T5</b> = supply T° sensor for IBA/KWout coil (option - prewired)	<b>OUT2</b> = 0-10V OUTPUT (airflow / pressure)
	<b>OUT4</b> = 0-10V OUTPUT internal post heating (IBA)
	<b>OUT5</b> = 24VDC / 1A
	<b>O.R.1</b> (output relay 1 - SAT3) = PRESSURE ALARM
	<b>O.R.2</b> (output relay 2 - SAT3) = FAN ON
	<b>O.R.3</b> (output relay 3 - SAT3) = HEATING DEMAND OUTPUT
	<b>O.R.4</b> (output relay 4 - SAT3) = BYPASS STATUS
	<b>KWin</b> = output for KWin capacity control (option - prewired)
	<b>KWout</b> = output for KWout capacity control (option - prewired)

# MAIN CONTROL BOARD TAC5 DG



## DFE Compact

<b>CT</b> = output to CT actuator(s) (option - prewired)	<b>IN1</b> = Master selection
<b>KWout</b> = output for KWout capacity control (option - prewired)	<b>IN2</b> = dPa (pressostat digital input)
<b>AL1</b> = ALARM OUTPUT (230V/5A)	<b>IN3</b> = Fire alarm input
<b>B- / A+ / GND / +12V</b> = connection to HMI TACtouch	<b>IN4</b> = Bypass open / Stop heat recovery
<b>K1:</b> Airflow control = m³/h K1 Demand/Pressure control = START/STOP	<b>IN5</b> = Real time clock auto/manu
<b>K2:</b> Airflow control = m³/h K2 Demand/Pressure control = 0-10V INPUT	<b>IN6</b> = ON/OFF post heating (IBA/KWout)
<b>K3:</b> Airflow control = m³/h K3 Demand/Pressure control = % ON K3 or 0-10 V INPUT	<b>IN7</b> = ON/OFF SUPPLY if fire alarm
<b>T1</b> = from outdoors T° sensor (prewired)	<b>IN8</b> = ON/OFF EXHAUST if fire alarm
<b>T2</b> = from indoors T° sensor (prewired)	<b>IN9</b> = BOOST Airflow
<b>T4</b> = IBA anti freeze protection T° sensor	<b>IN12</b> = input pulse from heat exchanger magnet (prewired)
<b>T5</b> = supply T° sensor for IBA/KWout coil (option - prewired)	<b>OUT1</b> = 0-10V OUTPUT (airflow / pressure)
<b>PR1</b> = ΔPa from supply inlet fan (only on RX - option)	<b>OUT2</b> = 0-10V OUTPUT (airflow / pressure)
<b>PR3</b> = ΔPa from exhaust inlet fan (only on RX - option)	<b>OUT4</b> = 0-10V OUTPUT internal post heating (IBA)
	<b>OUT5</b> = 24VDC / 1A
	<b>O.R.1</b> (output relay 1 - SAT3) = PRESSURE ALARM
	<b>O.R.2</b> (output relay 2 - SAT3) = FAN ON
	<b>O.R.3</b> (output relay 3 - SAT3) = HEATING DEMAND OUTPUT
	<b>O.R.4</b> (output relay 4 - SAT3) = BYPASS STATUS
	<b>R-GND</b> = output for heat exchanger wheel speed command (prewired)

## 4.1 CIRCUIT BOARD SAT 3

The SAT3 circuit board is used for extra functions for which inputs and outputs are not included as standard in the control unit of the air handling unit. All outputs are normally open (N.O.). Maximal load: 230VAC – 4A.

The circuit board SAT3 allows for signalling of the following by means of a potential-free contact:

- Fan status
- Differential pressure alarm
- General alarm for AL1
- Bypass status
- Cooling demand

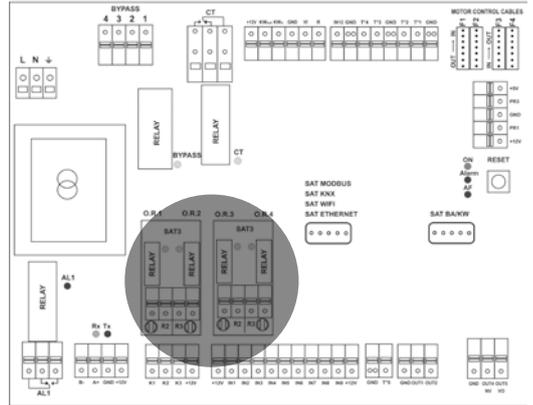
### Installation

SAT3 must be plugged onto the control board circuit (see fig.1).



**Attention:** The SAT3 must be plugged in before the circuit is powered. SAT must be plugged in correctly, wrong positioning can damage both circuits permanently.

Fig. 1



## 4.2 CIRCUIT BOARD SAT BA/KW

SAT TAC5 BA/KW is a satellite circuit designed to be fitted on the main control board. It permits control of external coils.

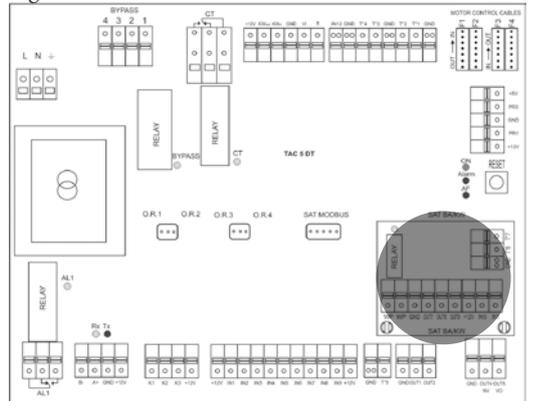
### Installation

The SAT BA/KW must be plugged onto the control board circuit (see Fig.2).



**Attention:** The SAT TAC5 BA/KW must be plugged in before the circuit is powered. SAT must be plugged in correctly, wrong positioning can damage both circuits permanently.

Fig. 2



### Wiring

The terminals of the SAT BA/KW are displayed in fig.3

**WP WP** = Cooling demand (max. 30 V-2 A)

**OUT7** = 0-10 V output to control heating- or change over capacity.

**OUT8** = 0-10 V output to control cooling capacity

**OUT9** = PWM output to control electrical coil

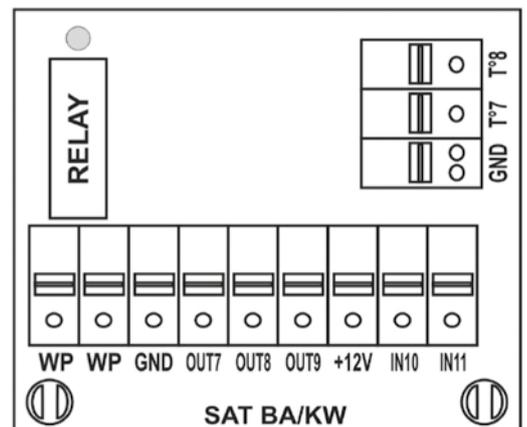
**T°7** = Heating coil frost protection sensor (T7)

**T°8** = Cooling coil frost protection sensor (T8)

**IN10** = Cooling OFF, (to force heating off use IN6)

**IN11** = Input cooling/heating (open = heating, closed = cooling)

Fig. 3





# 5.0 Functions

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## 5.1 OPERATING MODE

There are three main operating modes.

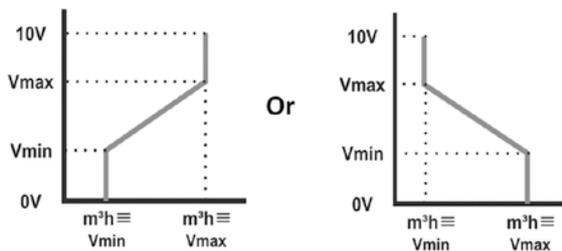
The exhaust fan(s) will operate according to the chosen percentage of the supply fan (%EXH/SUP ratio).

- **1 - Airflow control:**

Flow control involves operating the air handling unit to keep the pre-set airflow constant. The speed of the fans is automatically regulated to provide correct airflow even if the filters begin to become clogged, air terminals are blocked, etc. Airflow control mode is advantageous, since the airflow always is exactly as it was from the beginning. It should however be noted that everything that increases the pressure drop in the ventilation system, such as blocking of air terminals and dust accumulating in filters, causes the fans to run at a higher speed. This results in higher power consumption and may also cause discomfort in the form of noise. There are three airflow setpoints to be configured by the user (m<sup>3</sup>h K1, m<sup>3</sup>h K2, m<sup>3</sup>h K3).

- **2 - Demand control 0-10V:**

The airflow is controlled by a 0-10 V signal. The control signal is connected to terminals K2&GND. The assigned supply airflow is set as a percentage of a linear 0-10 V signal. The user defines the link with 4 parameters: Vmin, Vmax, m<sup>3</sup>h≡Vmin and m<sup>3</sup>h≡Vmax, applied to the following diagram.



- **3 - Pressure control:**

The airflow automatically varies to provide constant pressure in the ducting system. This type of control is also called VAV control (Variable Air Volume).

Pressure on supply: the airflow of the supply fan(s) is modulated to maintain a certain pressure Setting constant. The pressure is measured by a pressure sensor located in the supply air duct.

Pressure on exhaust: the airflow of the exhaust fan(s) is modulated to maintain a certain pressure Setting constant. The pressure is measured by a pressure sensor located in the extract air duct.

## 5.2 TEMPERATURE CONTROL

There are several options available on DFE units to ensure a comfortable temperature. The options are controlled either via supply or extract air temperature.

### Supply Air Temperature

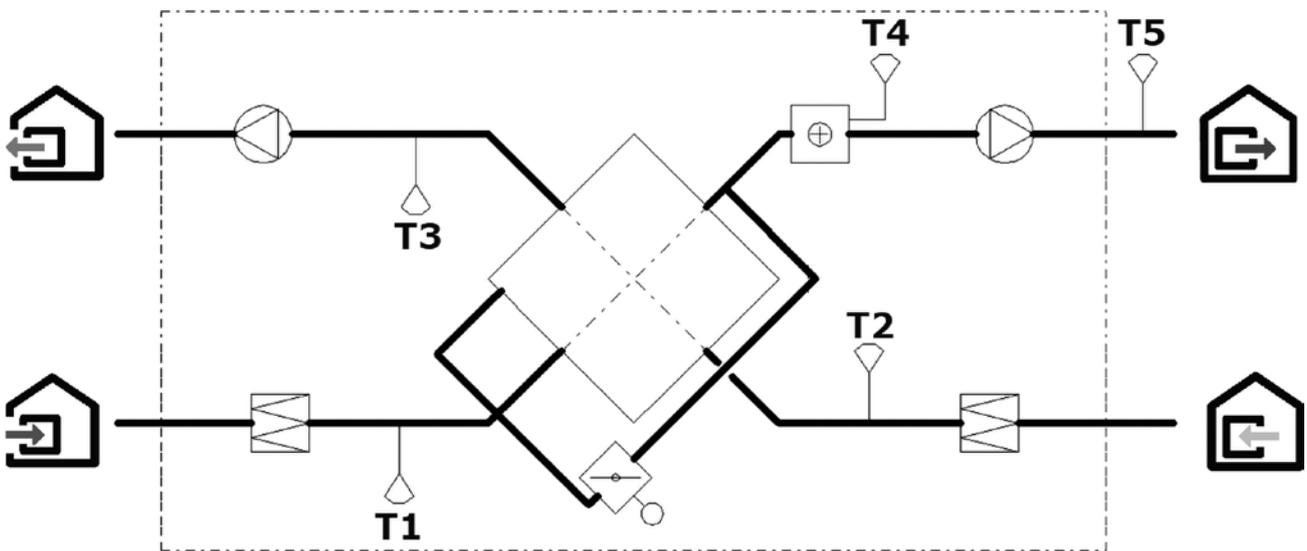
Supply temperature control is the default setting. This involves keeping a constant supply air temperature without consideration to the load in the premises. The supply air temperature is measured on sensor T5.

### Extract Air Temperature

The default temperature control can be changed to Extract temperature control via the advanced setup.

The extract air temperature is measured on sensor T2. Extract air control involves keeping a constant temperature in the extract air duct (premises), by controlling the supply air temperature. This provides a uniform temperature in the premises regardless of the load. The internal sensor T2 can be replaced with the optional external room temperature sensor.

Temperature sensor positioning:

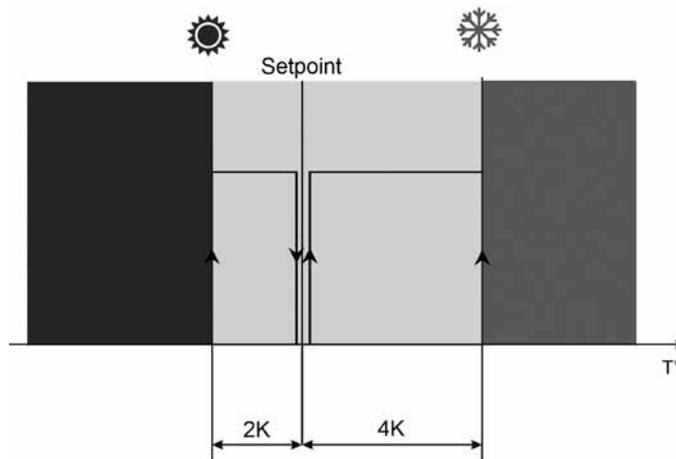


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## 5.3 CHANGE OVER FUNCTION

### 4 PIPE AUTOMATIC CHANGE OVER

The TAC5 controller allows for the control of both cooling and heating coil. Both coils are equipped with their motorised 3-way valves. The offset between the measured temperature (supply air or extract air, to be configured) and the setpoint will determine if heating or cooling is automatically activated. When the unit is equipped with both a cooling and a heating coil, only one setpoint has to be configured: Comfort temperature. The neutral band prevents the cooling and heating systems from counteracting each other. The high neutral band is added to the comfort setpoint for the activation of the cooling function and the low neutral band is subtracted from the comfort setpoint for the activation of the heating function. Both high and low neutral bands have to be configured in the advanced setup.



## 5.4 FROST PROTECTION

### HEATING COIL

The frost protection function is always active if the heating coil has been correctly configured in the product setup. The monitoring function uses the temperature sensor T4 for the integrated coil (IBA) or the temperature sensor T7 for the external coil (EBA). The function is activated when the

surface temperature of the coil drops below  $5^\circ\text{C}$ . Under these conditions the pump output is activated and the three-way valve output will be 100%. If after 15 minutes the surface temperature has not risen, the unit will shut down and generate a frost alarm.

---

## 5.4 FROST PROTECTION

### PLATE HEAT EXCHANGER

There are three strategies to protect the plate heat exchanger from freezing:

- **1 - Reduced supply air flow:**

The heat exchanger is supplied with a frost protection sensor on the exhaust air (T3) This configuration is by default on the unit. If the exhaust air temperature (T3) is  $>1^{\circ}\text{C}$  and  $<+5^{\circ}\text{C}$ :

- In airflow control mode and demand control, the supply air flow will modulate between 100% and 33% (AFlow) of the setpoint (AFn)
- In pressure control mode, the supply air pressure will modulate between 100% and 50% (AFlow) of the setpoint (AFn)

If the exhaust air temperature (T3) is  $<1^{\circ}\text{C}$ , the supply air fans will stop until the exhaust air temperature (T3) is  $>2^{\circ}\text{C}$  for 5 minutes.

- **2 - Modulating bypass:**

The modulating bypass is controlled by the exhaust temperature sensor (T3). Modulating bypass is not set as default but can be activated by advanced setup by the user. If:

- Exhaust temperature (T3)  $>+1^{\circ}\text{C}$ : bypass closed or controlled by free cooling function
- Exhaust temperature (T3)  $\leq +1^{\circ}\text{C}$ : bypass will modulate for the exhaust temperature (T3) to exceed  $+1^{\circ}\text{C}$ .

The corresponding supply air temperature will drop due to a lower airflow through the heat exchanger

- **3 - Electrical preheating coil (accessory):**

If an electrical pre-heating coil (KWin) is installed and configured, the pre-heating coil (KWin) will modulate so the exhaust temperature is  $+1^{\circ}\text{C}$ .

These Settings can be configured in ADVANCED SETUP

## 5.5 TIME SCHEDULE

The controller allows 4 time slots to be configured. For each day of the week, the operation mode can be either AUTO (operate according to time slots) or OFF.

For each time slot select:

- In Airflow Control mode: the airflow by selecting  $\text{m}^3\text{h K1}$  /  $\text{m}^3\text{h K2}$  /  $\text{m}^3\text{h K3}$  / OFF (stop)
- In Demand Control mode:
  - with only one 0-10 V signal (default) or with 2 signals to control the supply airflow: the link LS (percentage of the nominal link, cfr  $\text{m}^3/\text{h} \equiv V_{\text{min}}$  and  $\text{m}^3/\text{h} \equiv V_{\text{max}}$  in setup OR cfr  $\%TQ \equiv V_{\text{min}}$  and  $\%TQ \equiv V_{\text{max}}$  in setup) and the rate of the exhaust airflow by the supply airflow.
  - with one 0-10 V signal for supply and one 0-10 V signal for exhaust (via advanced setup): one link LS (percentage of the nominal link) for supply and one for exhaust.
- In Pressure Control mode:
  - Constant pressure on supply or exhaust: the pressure setpoint (percentage of the nominal setpoint) and the rate of the exhaust airflow by the supply airflow.
  - Constant pressure on supply and exhaust: one pressure setpoint (percentage of the nominal setpoint) for supply and one for exhaust.

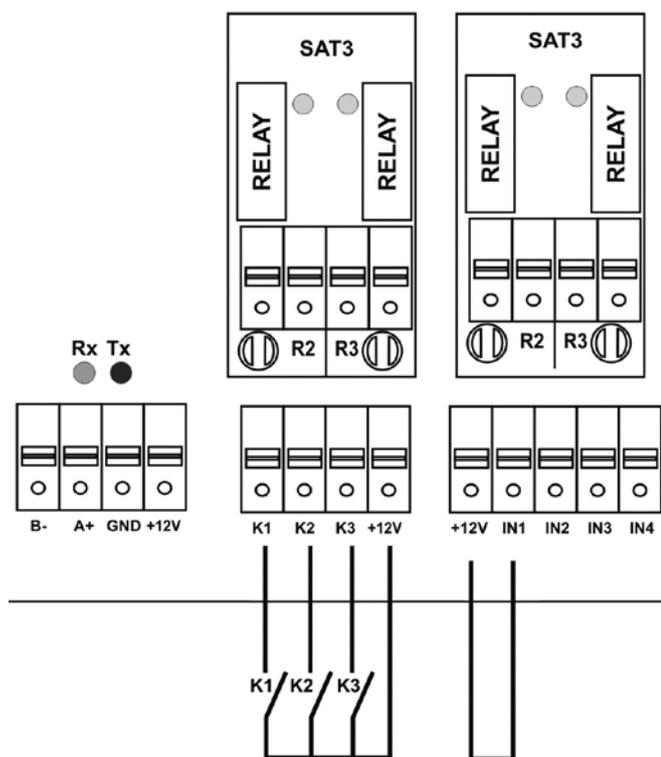
# 6.0 Test start

## GLOBAL Air handling Unit

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Quick test start on site with factory settings (not yet commissioned). This is designed to make an initial functional test. A complete Set-up must be performed afterwards.

### 6.1 TEST START WITHOUT USER INTERFACE



K1 & K2 & K3 open: Off

K1 closed: Speed 1

K2 closed: Speed 2

K3 closed: Speed 3

Nb. Only available for constant airflow mode.

## 6.2 TEST START WITH TACTOUCH INTERFACE

Main menu: Control



# 7.0 Preventive maintenance

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**Attention:** before handling and/or opening the access panels it is compulsory to shut down the unit and disconnect the power supply using the general switch located on the front panel.  
Do not isolate the power supply whilst the unit is running. If KWin and/or KWout are installed, then isolate the corresponding power supplies.

Regular maintenance is essential to guarantee good operation of the air handling unit and a long service life. The maintenance frequency will depend on the application and on the actual environment conditions but the following are general guidelines:

## 7.1 ONCE THE UNIT OPERATES IN NORMAL CONDITION

Replace the filters with a kit of replacement filters.

## 7.2 EVERY 3 MONTHS

- Check for any alarms indicated on the control device. In case of an alarm refer to troubleshooting section.
- Check the state of filter clogging. The control device allows a pre-defined 'filter alarm' threshold to be set. Replace filters if necessary. Filters that are too clogged can generate the following problems:
  - Insufficient ventilation
  - Excessive increase of fan rotation speed
  - Excessive sound levels
  - Excessive power consumption (power consumption will increase exponentially to an increase in pressure drop, for a constant airflow)
  - Unfiltered air passing through the heat exchanger (risk of clogging) and into ventilated rooms.

The list of replacement filter kits for each unit can be downloaded from our website.

- Inspection and cleaning of the inside of the unit:
  - Vacuum clean any accumulations of dust in the unit.
  - Inspect and gently vacuum clean the heat exchanger if necessary. Use a brush to protect the fins.
  - Clean any condensation stains
  - For DFE units, clean any accumulations in the drain pan.

---

## 7.3 EVERY 12 MONTHS

### 1. For plate heat exchanger (DFE) units:

- Clean the drain pan
- Clean the inside of the bypass. To access the interior of the bypass it is necessary to force it open, proceed as follows: place a jumper between terminals IN4 and +12V on the TAC5 circuit board.
- Remember to remove the jumper between terminals IN4 and +12V once cleaning of bypass is done.
- Always clean against the direction of the airflow.
- Cleaning must only be done by blowing with compressed air, vacuum cleaning with a soft nozzle or through wet cleaning with water and/or solvent. Before you begin cleaning, cover adjacent functional sections to protect them. If cleaning solvent is used, do not use solvent that will corrode aluminium or copper.

### 2. Fan maintenance:

Check again whether the power supply is shut down and fans are not running.

Inspect and clean the fan impellers to remove any dirt deposits, be careful not to alter the impeller balance (do not remove balancing clips). Check the impeller to make sure that it is not out of balance. Clean or brush off the fan motor. It can also be cleaned by carefully wiping it with a damp cloth that has been dipped in a solution of water and detergent. Clean the fan space, if needed. Remove the fans if necessary.

### 3. Check seals on the unit:

Ensure that the side access panels are fully closed and that the seals are intact. Replace if necessary.

# 8.0 Troubleshooting

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The TAC5 control board generates and reports 18 types of alarms.

The alarms are subdivided into auto resetting and non-auto resetting alarms. For the latter, a reset will be necessary once the problem has been resolved.

For each type of alarm, a full text description will be displayed on the user interface depending on the alarm type:

- Activation of contact relay (NC or NO contact)- AL 1
- Activation of SAT3 OR1 in case of pressure alarm, provided that the optional module SAT 3 is installed on the control board.
- "Alarm", "Pa" and "AF" activated LED's on control board. If the LED's are Green = everything is okay. If the LED's are Red = Alarm, something is wrong.
- Alarm on user interface.
- Alarm communication with networking modules provided that an optional communication module (Modbus RTU, MODBUS TCP/IP, and KNX) is installed on the TAC5 control board.

## 8.1 TYPE 1: ALARM INDICATING A FAN FAILURE

- Conditions:
- Causes:
  - Failure of fan Fx. This problem is usually caused by the fan motor.  
If not, the failure may be caused by an internal cable (control or power) or by the TAC5 circuit.
- Effects:

Displayed on HMI TACTouch			
Text displayed		LED ALARM	LED Pa
B.11	Fan 1 failure	RED	/
B.12	Fan 2 failure		
B.13	Fan 3 failure		
B.14	Fan 4 failure		

TAC5 control board				
AL1 relay	O.R.1	LED ALARM	LED AF	Fans
Alarm	/	ON	/	stopped
Auto reset: yes				

---

## 8.2 TYPE 2: ALARM ON THE PRESSURE VARIATION

- Conditions:

- Mode Airflow Control or Demand Control. Unit must have forward fans or backward fans with kit CA.
- External pressostat connected on IN2 input

- Causes:

- Pressure alarm setup in Airflow Control or Demand Control mode
- External pressostat connected on IN2 input has triggered

- Effects:

Displayed on HMI TACTouch			
Text displayed		LED ALARM	LED Pa
P.10	Pressure alarm - Supply air	/	RED
P.20	Pressure alarm - Extract air		
S.40	Pressure alarm from Pressure Switch*		

TAC5 control board				
AL1 relay	O.R.1	LED ALARM	LED AF	Fans
/	Closed	ON	/	Run*
Auto reset: yes				

\* unless the status has been changed in advanced setup

### 8.3 TYPE 3: ALARM REPORT DURING REFERENCE PRESSURE INITIALIZATION

- Conditions:

- Mode Airflow Control or Demand Control: during the initialization of the pressure alarm.
- Mode Pressure Control: during the initialization of the pressure reference via airflow

- Causes:

The reference pressure (P<sub>ref</sub>) cannot be identified and the fans are stopped. 4 possibilities:

1. Actual airflow < requested airflow: The requested working point is 'too high' (too high pressure loss) for the maximal available pressure at the requested airflow for this fan.
2. Actual airflow > requested airflow: the nominal airflow requested to initialize the pressure alarm cannot be reached because the lower limit of the fan's operating zone has been reached.
3. Very unstable pressure (pumping).
4. Assigned airflow not reached after 3 minutes.

If this occurs during initializing an alarm pressure, there are 2 options:

1. No action is taken: the control will operate without a pressure alarm.
2. Corrective action is taken (change the working point to one located in the working zone of the fan, by reducing the pressure system, modifying the nominal airflow...) and restart the setup operation.

If this occurs during initializing of the assignment pressure in pressure control mode: Corrective action must be taken (change the working point to one located in the working zone of the fan, by reducing the pressure system, modifying the nominal airflow ...) and restart the setup operation.

- Effects:

Displayed on HMI TACtouch			
Text displayed		LED ALARM	LED Pa
P.20	Initialisation of the reference pressure - Unstable supply air pressure	RED	/
P.21	Initialisation of the reference pressure - Unstable extract air pressure		
P.22	Initialisation of the reference pressure - Supply air flow too low		
P.23	Initialisation of the reference pressure - Extract air flow too low		
P.24	Initialisation of the reference pressure - Supply air flow not reached		
P.25	Initialisation of the reference pressure - Extract air flow not reached		
P.26	Initialisation of the reference pressure - Supply air flow too high - Min. limit of the motor		
P.27	Initialisation of the reference pressure - Extract air flow too high - Min. limit of the motor		

TAC5 control board				
AL1 relay	O.R.1	LED ALARM	LED AF	Fans
ALARM	/	ON	/	Stopped
<b>Auto reset: no</b>				

## 8.4 TYPE 4: ALARM INDICATING THE SYSTEM CANNOT FULFIL THE SETPOINT

- Conditions:

- Causes:

- The setpoint cannot be fulfilled because the upper or lower limit of the fan's working zone has been reached

- Effects:

Displayed on HMI TACTouch			
Text displayed		LED ALARM	LED Pa
S.11	"Constant Pressure" fan 1 - Measured pressure too high - Minimum air flow reached	RED	/
S.12	"Constant Pressure" fan 1 - Measured pressure too low - Maximum air flow reached		
S.13	"Constant Pressure" fan 3 - Measured pressure too high - Minimum air flow reached		
S.14	"Constant Pressure" fan 3 - Measured pressure too low - Maximum air flow reached		
S.20	"Demand control" fan 1 - Air flow too low - Reduce the pressure on this fan		
S.21	"Demand control" fan 1 - Air flow too high - Minimum limit of the motor reached		
S.22	"Demand control" fan 2 - Air flow too low - Reduce the pressure on this fan		
S.23	"Demand control" fan 2 - Air flow too high - Minimum limit of the motor reached		
S.24	"Demand control" fan 3 - Air flow too low - Reduce the pressure on this fan		
S.25	"Demand control" fan 3 - Air flow too high - Minimum limit of the motor reached		
S.34	"Constant Air Flow" fan 3 - Air flow too low - Reduce the pressure on this fan		
S.35	"Constant Air Flow" fan 3 - Air flow too high - Minimum limit of the motor reached		

TAC5 control board				
AL1 relay	O.R.1	LED ALARM	LED AF	Fans
/	/	ON	/	/
Auto reset: yes				

## 8.5 TYPE 5: ALARM INDICATING A DATA FAILURE IN THE CONTROL CIRCUIT

- Conditions:

- Causes:

- Crucial data from the circuit board has been lost

- Effects:

Displayed on HMI TACTouch			
Text displayed		LED ALARM	LED Pa
D.10	Programme Error	RED	/
D.20	Data Error		

TAC5 control board				
AL1 relay	O.R.1	LED ALARM	LED AF	Fans
Alarm status	/	ON	/	Stopped
Auto reset: no				

- Solutions:

- Try a TOTAL RESET of the data using the advanced setup. If still not resolved, order a new circuit board.

---

## 8.6 TYPE 6: FIRE ALARM

- Conditions:

- Fire alarm input must be connected to a fire detection system

- Causes:

- Activation of fire alarm input, IN3, connected to a fire detection system.  
IN3 can be configured to work as NO open contact by default or as NC if configured so in the advanced setup.

- Effects:

Displayed on HMI TACtouch			
Text displayed		LED ALARM	LED Pa
F.10	FIRE ALARM	RED	/
F.11	End of the fire alarm		

TAC5 control board				
AL1 relay	O.R.1	LED ALARM	LED AF	Fans
Alarm status	/	ON	/	*

**Auto reset: no**

\* The fans are stopped by default in the event of a fire alarm but, via the advanced setup, it is possible to configure a fixed airflow for supply (contact IN7 needs to be closed) and for exhaust (contact IN8 needs to be closed).

## 8.7 TYPE 7: MAINTENANCE ALARM

- Conditions:

- the running hours feature must be enabled in advanced setup

- Causes:

- SERVICE ALARM: the fan operating time (in hours) has exceeded the configurable threshold
- STOP FAN: the fan operating time (in hours) has exceeded the configurable threshold. This alarm stops the fans

- Effects:

Displayed on HMI TACtouch			
Text displayed		LED ALARM	LED Pa
M.10	Maintenance 3 months	RED	/
M.11	Maintenance 6 months		
M.21	Operating hours		
M.22	Operating hours - AHU off		

TAC5 control boards				
AL1 relay	O.R.1	LED ALARM	LED AF	Fans
Alarm status	/	ON	/	Stopped if SERVICE STOP FAN*
Reset via "fan run time" (TACtouch) or "alarm menu" (App)				

\* unless the status has been changed in advanced setup

## 8.8 TYPE 8: ALARM INDICATING A COMMUNICATION BREAKDOWN BETWEEN THE TAC5 CIRCUIT AND THE HMI

- Conditions:

- User interface is connected

- Causes:

- Communications failure between the TAC5 circuit and the HMI

- Effects:

Displayed on HMI TACtouch		
Text displayed	LED ALARM	LED Pa
CB COM ERROR	Red	/

TAC5 control board				
AL1 relay	O.R.1	LED ALARM	LED AF	Fans
Alarm status	/	/	/	/
Auto reset: yes				

## 8.9 TYPE 9: ALARM INDICATING A T° SENSOR T1/T2/T3 FAILURE

- Conditions:
- Causes:
  - One or more of the T° sensors T1/T2/T3 connected to the TAC5 circuit and mounted on heat exchanger is defect or not connected. These sensors are needed for the bypass control and the anti-frost procedure.
- Effects:

Displayed on HMI TACtouch			
Text displayed		LED ALARM	LED Pa
T.10	Sensor T1 disconnected	RED	/
T.11	Sensor T1 short circuit		
T.20	Sensor T2 disconnected		
T.21	Sensor T2 short circuit		
T.30	Sensor T3 disconnected		
T.31	Sensor T3 short circuit		

TAC5 control board				
AL1 relay	O.R.1	LED ALARM	LED AF	Fans
Alarm status	/	ON	/	Stopped
<b>Manual reset mandatory.</b>				

## 8.10 TYPE 10: ALARM INDICATING FAILURE ON T° SENSOR T4

- Conditions:
  - Only with internal water heating coil (IBA) option
- Causes:
  - T° sensor T4 located on the coil and connected to the TAC5 circuit is defective (open or short circuit) or not connected.  
This is used to prevent frosting of the internal heating coil. In this case, as a safety measure, the 3-way valve is opened and the circulator contact is closed.
- Effects:

Displayed on HMI TACtouch			
Text displayed		LED ALARM	LED Pa
T.40	Sensor T4 disconnected	RED	/
T.41	Sensor T4 short circuit		

TAC5 control board				
AL1 relay	O.R.1	LED ALARM	LED AF	Fans
Alarm status	/	ON	/	/
<b>Manual reset mandatory.</b>				

\* unless the status has been changed in advanced setup

## 8.11 TYPE 10 BIS: DRAIN PUMP ALARM

- Conditions:
  - Only for DFE compact
- Causes:
  - The level of condensate is higher than a set Setting (approx. 1.5 cm).  
It can also be activated if the pump is not present or defective
- Effects:

Displayed on HMI TACTouch			
Text displayed		LED ALARM	LED Pa
R.10	Condensate tray full	RED	/

TAC5 control board				
AL1 relay	O.R.1	LED ALARM	LED AF	Fans
Alarm status	/	ON	/	Stopped if SERVICE STOP FAN
Auto reset: yes				

When activated, the supply and exhaust fans are stopped. This alarm is automatically reset when the water level in the drain pan is lower than the setpoint, and the fans restart automatically.

## 8.12 TYPE 11: ALARM INDICATING FAILURE ON T° SENSOR T5

- Conditions:
  - Only with post-heating, post-cooling or free cooling with heat wheel or modulating bypass option
- Causes:
  - T° sensor T5 located in the supply duct and connected to the TAC5 circuit is open, or short-circuited. This sensor is used to regulate the post-heating or post-cooling function in the case of comfort T° control on T5 or to control the high and low thresholds to limit the supply air temperature in the case of comfort T° control on T2.
- Effects:

Displayed on HMI TACTouch			
Text displayed		LED ALARM	LED Pa
T.50	Sensor T5 disconnected	RED	/
T.51	Sensor T5 short circuit		

TAC5 control board				
AL1 relay	O.R.1	LED ALARM	LED AF	Fans
Alarm status	/	ON	/	/
Manual reset mandatory.				

### 8.13 TYPE 12: ALARM INDICATING THAT THE COMFORT T° IS TOO LOW RELATIVE TO SETPOINT T°

- Conditions:
  - Only with post-heating option
- Causes:
  - The comfort T° setpoint cannot be reached (actual T° lower than setpoint during 15 minutes, or 30 minutes if comfort on T2 instead of T5, while post heating is at maximum.)
- Effects:

Displayed on HMI TACTouch			
Text displayed		LED ALARM	LED Pa
S.50	Post-heating - T° of the supply air too low	RED	/

TAC5 control board				
AL1 relay	O.R.1	LED ALARM	LED AF	Fans
/	/	ON	/	/
Auto reset: yes				

### 8.14 TYPE 13: ALARM INDICATING HEAT EXCHANGER FROST PROTECTION ALERT

- Conditions:
  - Only with post-heating option
- Causes:
  - For DFE units:
 

Frost protection is only selected with electrical pre-heating coil (KWin) or water preheating coil (BAin) or modulating bypass. With KWin or BAin option: In certain air T° conditions as measured on the exhaust airflow after heat recovery, indicating that the internal electrical KWin coil or external hydraulic coil (BAin) has reached its limit, the TAC5 control can take over to guarantee the anti-frost function.

If T° < assignment T°-1,5°C for more than 5 minutes: supply and exhaust airflow reduction of 33% if airflow control or demand control and of 25% if pressure control mode, for 15 minutes.
- Effects:

Displayed on HMI TACTouch			
Text displayed		LED ALARM	LED Pa
A.10	Anti-freeze - Reduced air flows	RED	/

TAC5 control board				
AL1 relay	O.R.1	LED ALARM	LED AF	Fans
/	/	ON	ON	/
Auto reset: yes				

## 8.15 TYPE 14: ALARM INDICATING FROST PROTECTION ALERT – FANS STOPPED T°

- Conditions:

- Frost protection is only selected for DFE units with electrical preheating (KWin) or water preheating (BAin) or if modulating bypass

- Causes:

- With KWin or BAin option: in certain air T° conditions as measured on the exhaust airflow after the heat recovery, indicating that the internal electrical KWin coil or external hydraulic coil (BAin) has reached its limit, the TAC5 control can take over to guarantee the anti-frost function.

If T° < -5°C during 5 minutes, fans are stopped.

- With modulating bypass in frost protection (« A-FREEZE » or « AF+FREECOOL » in the advanced setup), this alarm indicates that the extracted air temperature at the exchanger output (T3 sensor) has not exceeded 1°C during 15 minutes after that the bypass has been opened at 100%.

- Effects:

Displayed on HMI TACTouch			
Text displayed		LED ALARM	LED Pa
A.11	Anti-freeze - Fans stopped	RED	/

TAC5 control board				
AL1 relay	O.R.1	LED ALARM	LED AF	Fans
Alarm status	/	ON	Blinking	Stopped
<b>Manual reset mandatory.</b>				

## 8.16 TYPE 15 BIS: ALARM INDICATING THAT THE COMFORT T° IS TOO HIGH RELATIVE TO SETPOINT T°

- Conditions:

- Only with post cooling option

- Causes:

- The comfort T° setpoint cannot be reached (actual T° lower than setpoint during 15 minutes, or 30 minutes if comfort on T2 instead of T5, while post cooling is at maximum).

- Effects:

Displayed on HMI TACTouch			
Text displayed		LED ALARM	LED Pa
S.60	Post-cooling - T° of the supply air too high	RED	/

TAC5 control board				
AL1 relay	O.R.1 relay of SAT3	LED ALARM	LED AF	Fans
/	/	ON	/	/
<b>Auto reset: yes</b>				

## 8.17 TYPE 16: ALARM INDICATING THAT THE SUPPLY T° IS TOO LOW

- Conditions:
  - Only with post heating or cooling option
- Causes:
  - This alarm indicates that the supply temperature (T5) is lower than 5°C. The fans are stopped for 1 minute. The alarm is configurable through the advanced setup and is disabled by default.
- Effects:

Displayed on HMI TACtouch			
Text displayed		LED ALARM	LED Pa
S.50	Post-heating - T° of the supply air too low	RED	/
S.60	Supply air T° too low - Fan stopped		

TAC5 control board				
AL1 relay	O.R.1	LED ALARM	LED AF	Fans
Alarm Status	/	ON	/	Stopped
<b>Manual reset mandatory.</b>				

## 8.18 TYPE 17: ALARM INDICATING HYDRAULIC COILS FROST PROTECTION ALERT

- Conditions:
  - Only with internal hydraulic post heating coil (IBA), or external heating coil (EBA)
- Causes:
  - Indicates that the anti-frost protection temperature of the hydraulic coil is lower than 4°C (configurable through advanced setup, it is important to reduce this Setting for BAin coil if an antifreeze is in the fluid). The 3-way valve is automatically opened at 100% for 15 minutes and the heating demand contact is closed (output SAT3 O.R.3). If the AHU is running, the alarm is sent after 2 minutes for a preheating coil and immediately for the others; if the AHU is not running, the alarm is sent after 5 minutes.
- Effects:

Displayed on HMI TACtouch			
Text displayed		LED ALARM	LED Pa
A.40	Anti-freeze protection of the internal post-heater (IBA)	Red	/
A.41	Anti-freeze protection of the waterborne post-heater (EBA+)		
A.42	Anti-freeze protection of the waterborne post-cooler (EBA-)		
A.43	Anti-freeze protection of the waterborne reversible coil (EBA+-)		

TAC5 control board				
AL1 relay	O.R.1	LED ALARM	LED AF	Fans
Alarm Status	/	ON	/	Stopped
<b>Manual reset mandatory.</b>				

## 8.19 TYPE 18: ALARM INDICATING AN INCORRECT POSITION OF THE MODULATING BYPASS RELATIVE TO THE ORDERED POSITION

- Conditions:
  - DFE units with modulating bypass
- Causes:
  - This alarm indicates that the modulating bypass has not reached the ordered position within 10 seconds. The most common reason for this is a damaged position sensor on the bypass actuator, and this must be replaced. Other reasons may be that the control board output is damaged, implying the replacement of the board, or a mechanical blocking verified by a visual inspection of the bypass
- Effects:

Displayed on HMI TACTouch			
Text displayed		LED ALARM	LED Pa
B.20	Position of the modulating bypass incorrect	RED	/

TAC5 control board				
AL1 relay	O.R.1	LED ALARM	LED AF	Fans
Alarm Status	/	ON	/	Stopped
<b>Manual reset mandatory.</b>				

## 8.20 TYPE 19: ALARM INDICATING THAT THE HOURS LIMIT FOR THE MAINTENANCE OF THE FILTERS HAS BEEN REACHED

- Conditions:
  - The basic setup parameter "Filters Resets" must be >0
- Causes:
  - Alarm indicating that the hours limit for the maintenance of the filters has been reached
- Effects:

Displayed on HMI TACTouch		
Text displayed	LED ALARM	LED Pa
FILTERS ALARM	Red	/

TAC5 control board				
AL1 relay	O.R.1	LED ALARM	LED AF	Fans
/	/	ON	/	/
<b>Auto reset: via dedicated reset</b>				

## 8.21 TYPE 20: ALARM INDICATING THAT THE DEFROST PROCESS IS ACTIVE

- Conditions:
  - Unit with counter flow heat exchanger
- Causes:
  - The ice forming inside of the plate heat exchanger is generating a pressure drop that is too high for the current airflow. This detection requires a Modbus pressure sensor placed on the heat exchanger and that the modulation of the fans speed is based on the airflow and not on torque
  - When the previous detection is not available, the supply T° is checked and if it falls below 11°C, it is considered that is due to the ice that reduces the heat exchanger efficiency
- Effects:

Displayed on HMI TACTouch			
Text displayed		LED ALARM	LED Pa
A.20	Defrost	RED	/

TAC5 control board				
AL1 relay	O.R.1	LED ALARM	LED AF	Fans
/	/	ON	ON	Supply stopped
Auto reset: yes				

## 8.22 REC TABLE

In the control board the "REC type" is used to define the type unit. When replacing the control board, the REC type needs to be configured in the product setup menu. The product setup menu is used to enable specific features or to modify factory settings. This must be done by an accredited technician. A code and special training is mandatory to access this menu group. The table below is valid for DFE manufactured since 2019.

Designation	Reference		Family
	Left	Right	
DFE Compact 450	11058470	11058290	7
DFE Compact 600	11058291	11058466	7
DFE Compact 1000	11058292	11058467	7
DFE Compact 1300	11059174	11059175	7
DFE Compact 1600	11058293	11058468	7
DFE Compact 2000	11058294	11058469	7
DFE Compact 450 + Elec Coil	11059094	11058455	7
DFE Compact 600 + Elec Coil	11058456	11059095	7
DFE Compact 1000 + Elec Coil	11058457	11059096	7
DFE Compact 1300 + Elec Coil	11059176	11059177	7
DFE Compact 1600 + Elec Coil	11058458	11059097	7
DFE Compact 2000 + Elec Coil	11058459	11059098	7

Designation	REC Type
DFE Compact 450 R or L	886130
DFE Compact 600 R or L	886271
DFE Compact 1000 R or L	886208
DFE Compact 1300 R or L	886268
DFE Compact 1600 R or L	886213
DFE Compact 2000 R or L	886218

What is RECTYPE? = a specific number for the unit, you need to enter to the PC board.



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