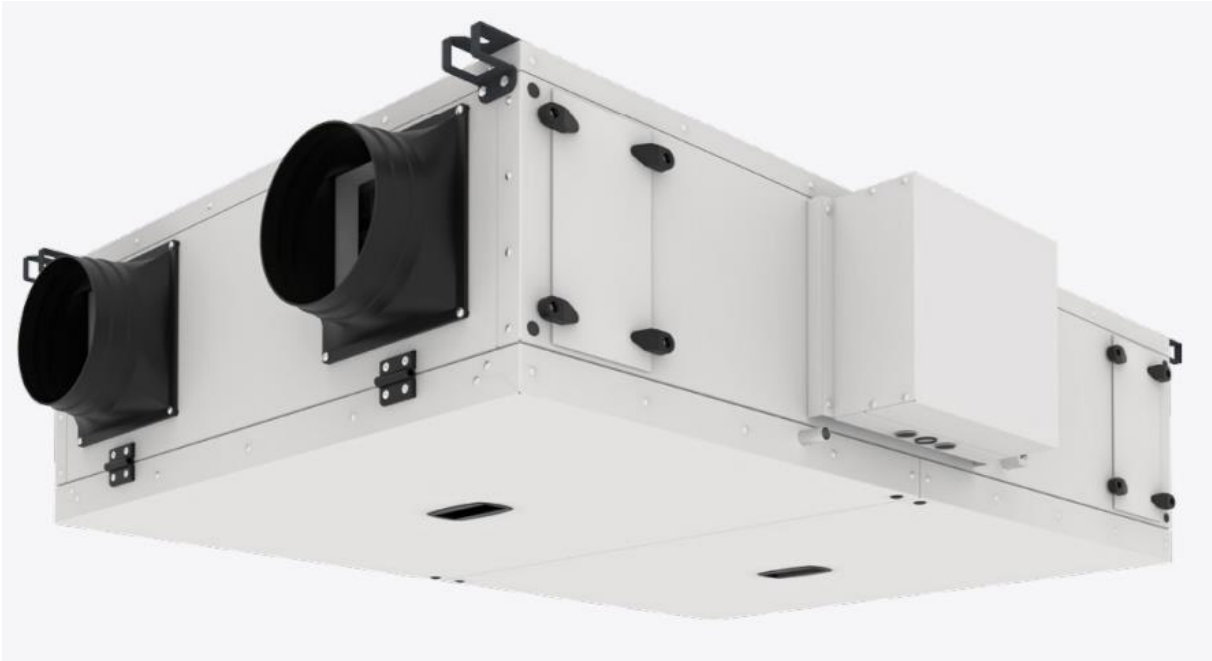


INSTALLATION AND OPERATING INSTRUCTIONS



AZURE
COUNTER FLOW HEAT RECOVERY VENTILATION

1. GENERAL INSTALLATION AND OPERATING INSTRUCTIONS

This document is the document you can reference for installation and use instructions. You should read these instructions before proceeding an operation on the devices for your safety. This document should be issued to the relevant person after the installation and commissioning of the device has been carried out.

1.0. Warning and safety instructions

To avoid any danger, all safety instructions must be observed. The electrical connection must be fully isolated from the supply up to the final assembly. Damage due to improper transport and storage is not covered by the warranty

1.1. Warranty claims- Exclusion of liability

Any damages to the unit or parts of it due to improper handling or misuse by the purchaser or the fitter cannot be considered subject to guarantee if these instructions have not been followed correctly.

The use of materials not offered or recommended by the manufacturer is not recommended. The damage caused by this reason is not covered by the warranty.

1.2. Certificate

If the product is correctly assembled and used for its intended purpose, it meets the European Standards applicable at the date of manufacture.

1.3. Receipt

The delivery contains one of the following unit types:

MODEL	ORDER NO	MODEL	ORDER NO
AZURE 300		AZURE 1400	
AZURE 500		AZURE 2200	
AZURE 700		AZURE 3200	

Please check delivery immediately on receipt for accuracy and damage. If damaged, please notify carrier immediately. In case of delayed notification, any possible claim may be void

1.4. Storage

Devices should be stored in a closed area away from moisture and dust, in such a way as not to be damaged. The storage of the devices must be done in such a way as to prevent damage to the electrical components and the air inlet - outlet sections.

1.5. Transport

The transport of the devices must be done with carefully. All manufactured devices are shipped from the factory after all tests and controls have been made before shipment.

The transport must be carried out by trained and experienced personnel and the necessary safety precautions should be taken to prevent overturning and slipping of the device. During transport of the devices it should be ensured that the weight is evenly distributed over the four corners.

The unit is packed ex works in a timber frame so that it is protected against normal transport strain.

1.6. Application- Operation

AZURE devices are designed in 6 different models to correspond the need of up to 3500 m³/h air flow. There is a F7 class filter on the fresh air side and a F6 class filter on the exhaust side as standard. The units are produced according to European Union energy criteria and have EcoDesign label.

AZURE devices are designed with high energy efficient, low sound pressure and low power consumption plug fans. Plug fans with EC motors can be driven with 3 fixed speeds or steplessly with the help of an air quality sensor thanks to build in smart control system.

The ventilation unit must only be used according its intended purpose!

1.7. Function and operation modes

Thanks to the counter flow high efficiency heat recovery exchanger contained in the Azure devices, the heat of the blown air is recovered and transferred to fresh air. The heat recovery efficiency depends on several factors, which include, among other things, air humidity and the temperature variation of outside air and exhaust air.

Electrical preheaters are designed for cold/extra cold climates to prevent condensing air from freezing. The preheaters are designed to fit inside the unit, 2 safety thermostats are supplied as standard with all units for extended safety.

AZURE devices are designed in accordance with VDI6022. Inside of the unit is easily cleanable. The used seals are closed cell and prevent germ reproduction. All components that require service, have their own service doors. This way the unit does not have to be disconnected from ducting system for servicing

1.8. Performance data

Mechanical connections must be made correctly in order to obtain maximum efficiency from the device. The device's thermal efficiency, sound level and electrical performance may vary depending on the ambient conditions the device is operating. These conditions may affect the measurement result on site and vary from the catalogue data.

1.9. Heat systems

The simultaneous use of controlled domestic ventilation (AZURE units) and heat systems which depend on room air (tile oven, gas stove etc.) requires compliance with all applicable regulations. The use of heat systems which depend on room air are only permitted in state-of-the-art dense apartments with separate combustion air supply; only then are AZURE and heat systems decoupled from each other and operable meeting the demands.

The relevant applicable regulations on the combined use of heat systems, domestic ventilation and extractor hoods (Federal Association of Chimney Sweeps (ZIV)) must be observed!

1.9.1. General construction-law requirements

The ventilation unit with heat recovery must not be used simultaneously with fuel-burning heat systems and in residential units with heat systems which depend on room air, which are connected to multiple exhaust systems. Potential combustion air ducts and flue gas systems must be capable of being shut off from fuel-burning heat systems for the proper operation of the ventilation system with a ventilation unit with heat recovery.

The ventilation units with heat recovery must only be installed and operated in rooms with heat systems which depend on room air, if their flue gas venting is monitored by specific (on-site) safety devices, which shut down ventilation systems when activated; so that the AZURE unit is shut down during the "combustion period". It will be necessary to ensure that the use of the domestic ventilation system does not result in a negative pressure larger than 4 Pa in the residential unit.

1.10. Technical data

MODEL	AZURE					
	300	500	700	1400	2200	3200
Boosted Air Flow (m³/h)						
Normal Air Flow (m³/h)						
Reduced Air Flow (m³/h)						
Filter Class (Exhaust Air/ Fresh Air)	F6/F7	F6/F7	F6/F7	F6/F7	F6/F7	F6/F7
Rated Current (A) (Ventilation)	3,50	3,50	3,50/0/0	5,00/0/0	7,80/0/0	13,20/0/0
Rated Current (A) (Pre-heating)		7,30	4,00/4,00/4,00	7,90/7,90/7,90	12,30/12,30/12,30	18,40/18,40/18,40
Max. Total Rated Current (A)		10,80	7,50/4,00/4,00	12,90/7,90/7,90	21,10/12,30/12,30	31,60/18,40/18,40
Fan Power Consumption (kW)	0,34	0,34	0,34	1,00 kW	1,56	2,60
Pre- Heater Power Consumption (kW)		1,60	2,30	4,30	7,05	10,50
Max. Power Consumption (kW)		1,94	2,64	5,30	8,61	13,10
Supply Voltage/ Frequency	230 V/ 50 Hz/ 1 –			380 V/ 50 Hz/ 3 –		
Standby losses	< 1 W					
Design	IP20					
Weight (kg)	60	80	125	150	185	225
Sound Pressure (dB)	41	42	47	54	52	54
Permissible air temperatures	-20 ° C to 40 ° C					
Wiring diagram						

2. INSTALLATION

2.0. Assembly

AZURE compact devices are suitable for ceiling mounting thanks to the hanging apparatuses found on. Due to noise level which change according to working conditions, it is recommended to install the AZURE units in the different rooms. Ensure that there is a waste water connection in the installation area. Please consider the information on the "condensation outlet"! Assembly should take place in such a way to enable preferably short ventilation ducts and their trouble-free connection to the unit. Tight bends in the channel will cause high pressure drops.

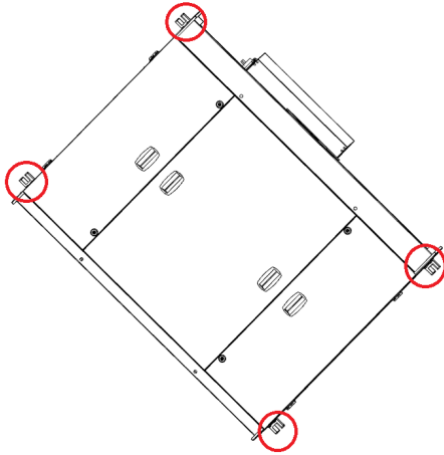
Important note:

- The ventilation ducts must be rigid
- Flange connections must be leakproof and firm
- The terminal box is connected to the side of the casing and maintenance and service space should be left for the doing any work on the device.
- The assembly of the AZURE compact unit must only take place in rooms that are free of frost, as there is a danger of freezing. The room temperature must not fall below +5 °C
- If an external heater is connected, there must be at least 1 m piping before and after the heater, which must be made of non-flammable material!

2.1. Ceiling installation

Make sure the ceiling and fixing components can carry the device before installing The AZURE compact device. Unsuitable mounting material can lead to the unit falling uncontrollably from the ceiling. Different methods of protection should be used to prevent damage to devices due to the model.

Four mounting brackets including rubber buffers are mounted to the unit for ceiling installation. Assembly with appropriate ties and accessories can be carried out.



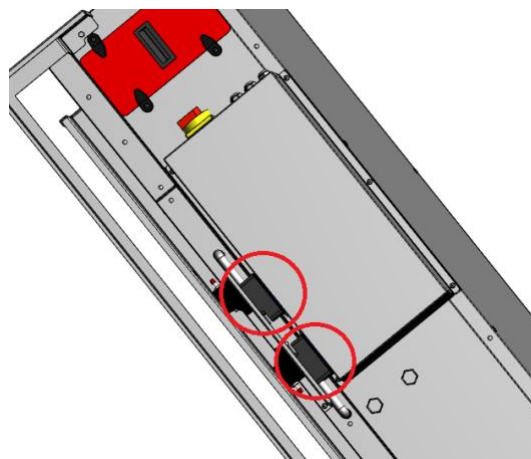
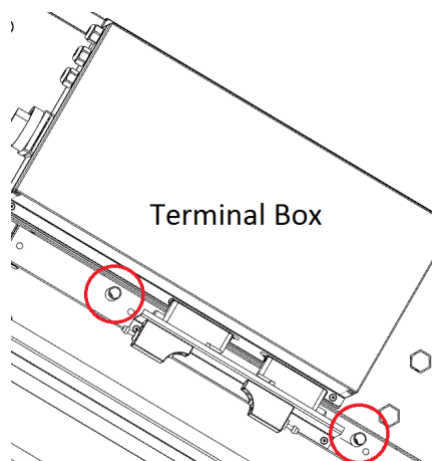
When installing to ceiling, it is recommended that the heat exchanger is removed from the unit to reduce the installation weight when lifting.

2.2. Condensation outlet

The humidity of exhaust air condenses to water during the heating period. The condensation water pan is made of stainless steel. An incline of at least 3° must be observed and the connection to the local drainage system must be ensured on site.

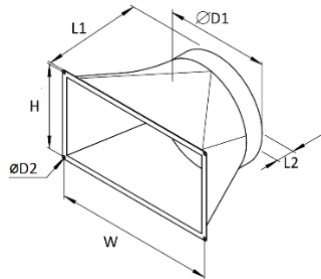
Condensate pump can be used for depending on requirements and conditions.

The condensation outlet must be made frost-proof!



2.3. Flange connection/ adapter pieces

Flange connections are recommended for Azure compact units are below



MODEL	Description	Order No	H	W	L1	L2	D1	D2
AZURE 300								
AZURE 500								
AZURE 700								
AZURE 1400								
AZURE 2200								
AZURE 3200								

Flange connections must be leakproof and firm.

2.4. Installation unit

If installed in heated rooms and higher humidity, condensation can occur on the outside of the unit in the outside and extract air area. In this case, water-vapor-tight insulation is to be installed on the surface in this area. Furthermore, the outside and exhaust air ductwork should be insulated sufficiently.

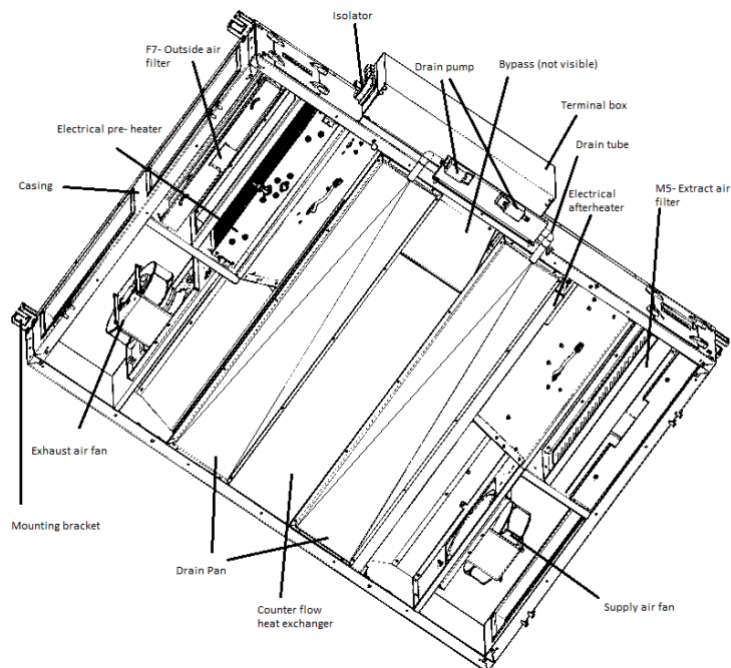
If installed in unheated areas (e.g. frost-protected attic), sufficient insulation must be installed on the outside of the unit. Otherwise, condensate formation could occur on the casing sides. Frost-proof condensate drainage must be installed, perhaps with a heater

2.5. Electrical connection

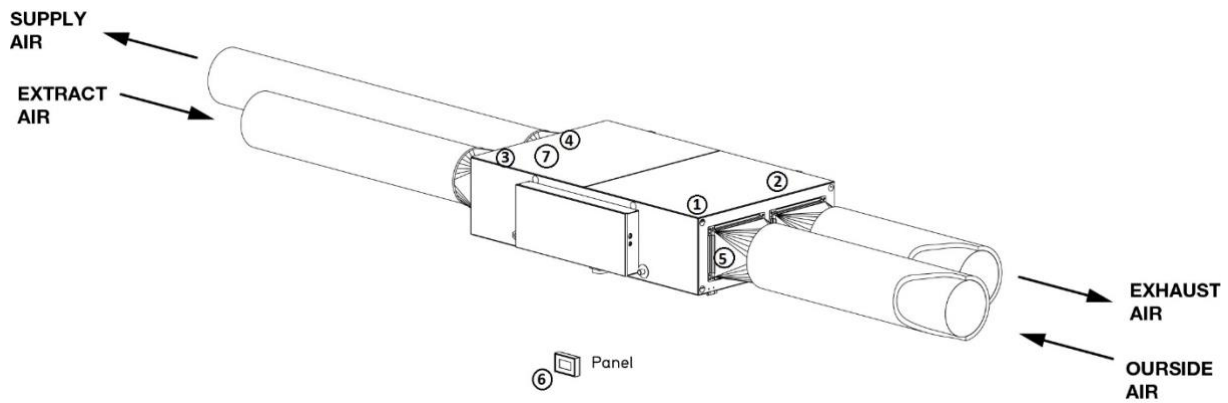
All work must be carried out with the equipment fully isolated from the power supply. The electrical connections must be carried out in accordance with the relevant wiring diagram and must only be carried by certified electricians!

3. FUNCTIONAL DESCRIPTION

3.0. Unit overview



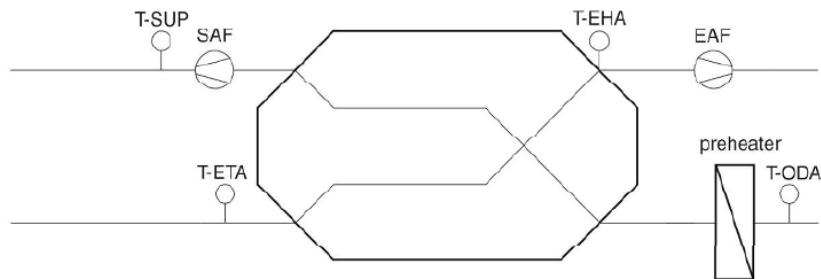
3.1. Functional diagram



Pos	Name	Item no.
1	Outside air sensor	
2	Exhaust air sensor	
3	Extract air sensor	
4	Supply air sensor	
5	Adapter	
6	Controller Panel	
7	Frost protection sensor	

3.2. Functions

3.2.0. Pre-heater and deicing



The pre-heater, which is standard on the azure devices, comes after outside air F7 filtration. This application is to ensure that the heat recovery exchanger is protected from freezing in very cold weather.

All preheaters are controlled by one digital output and solid-state relays with zero cross detection.

Pre-heater enabling/disabling

Enabling/disabling of the pre- heater by the user/installer (factory setting: deactivated).

Overheat safety control of pre- heater

The preheater is equipped with two safety temperature limiters, the STL (auto reset = trigger temperature +xx °C) and (manual reset = trigger temperature +xx °C) are connected in series.

Once a safety temperature limiter is triggered, the preheater will be disconnected from the power supply and an alarm will be displayed on the controller.

The preheater only works if the supply air fan is operating on a minimum flow rate and there are no errors. If the unit is switched to standby or unit-off mode, the preheater will switch off immediately. The supply air fan is stopped 90 seconds later and the outdoor air flaps are closed.

One alarm input for overheated preheater.

Deicing strategy

The heat exchanger frost-protection function is divided into 3 steps:

Step I: Activation of the preheater

The preheater will start if the following conditions are met:

Condition I: T-ODA is lower than -4 °C.

Condition II: T-EHA is lower than +0 °C.

Condition III: Preheater is not disabled.

If all conditions are met, the preheater will be switched on and controlled according to T-EHA.

PID-modulator values must be configurable.

Step II: Reducing the flow rate / EHA and SUP air fan

Condition I: Preheater has been switched on for longer than 3 minutes (100% power).

Condition II: T-EHA is lower than 0 °C.

If both conditions are met, the EHA and SUP air volume will be reduced 50 % but not more than 50 % of the total flow rate. The preheater will not be deactivated in this period.

Step III: Emergency shutdown

[Condition I: The flow rate of the exhaust and supply air fan is reduced for longer than 5 min.

OR

Condition II: The preheater is deactivated.]

AND

Condition III: T-EHA is lower than 0 °C.

If the conditions are met, the preheater will be deactivated, and the supply air fan will be shut down with a delay time of 90 sec.

The heat exchanger frost-protection will be deactivated, and the unit resumes with normal operation if the following conditions are met:

Condition I: T-ODA is higher than -3 °C.

OR

Condition II: T-EHA is higher than +4 °C.

3.2.1. RUN output

The RUN output can, for example, serve as a signal for building control systems to determine the system status. A relay output is located on the unit (label: "RUN ") and as soon as the AZURE unit is in ventilation mode, the contact is closed.

3.2.2. External contact signal

The AZURE unit can be put into standby mode or ventilation mode through the "External contact "function.

- Contact open = Standby mode
- Contact closed = Ventilation mode

If the AZURE unit is switched to ventilation mode via the controller "Ext. sensor "the external contact must first be closed and then opened to put the AZURE into standby mode. This is also the case if the AZURE unit has been put into standby mode via the controller. The external contact must first be opened and then closed to put the AZURE into ventilation mode.

3.2.3. Fire mode

The AZURE unit can be put into two operating modes (exhaust air mode or standby mode) through the "Fire mode "function (Fire contact):

- "Unit off "(Standby)
- "Extract air "

These modes can be selected from the controller "Fire mode ". If the fire contact is opened, the previously selected operating mode will be activated.

The controller will be locked during this time.

3.2.4. Manual mode

3.2.4.1. CAV

Manual control of the fans: 3 stage fan control in constant air volume mode (reduced, normal, boosted). Each ventilation stage (reduced, normal, boosted) has its own installer definable setpoint value (m³/h)

3.2.4.2. Constant RPM

Manual control of the fans: 3 stage fan control in constant air volume mode (reduced, normal, boosted). Each ventilation stage (reduced, normal, boosted) has its own installer definable setpoint value (%)

3.2.4.3. CAP/ VAV

Control of the fans according to one installer selectable setpoint air pressure value (Pa)

3.2.5. Flaps

When there is any ventilation demand, the outdoor air flap and exhaust air flap always open automatically. They also close immediately if both fans are turned off in case of unit shutdown.

3.2.6. Ventilation on demand (VOD)

Ventilation on demand only works in CAV or constant RPM mode

Input selector

According to the connected sensor type (CO₂ or VOC) the correct measurement unit ppm is shown on the HMI and in the webserver.

For this reason, the right sensor type connected to each analog input must be selectable. CO2 sensor can be done in E-Tool or on the HMI.

VOD enabling/disabling

Enabling/disabling of VOD mode by the user/installer (factory setting: deactivated)

Scaling for different sensor types

Linear function adjustment for sensors is possible in the scaling menu.

	CO2	VOC	FTF
X1	1.7 V	1.7 V	0 V
Y1	400 ppm	450 ppm	0% rH
X2	10 V	10 V	10 V
Y2	2000 ppm	2000 ppm	100% rH

Possibility to connect up to 6 sensors of the same type to one analog input with external hardware: MM6-24/D.

When there are several sensors of the same type connected to one analog input, the highest sensor value is used in the control.

VOD function

Two “threshold values” (ppm or rH, one for minimal and one for boost stage) can be selected for each sensor type:

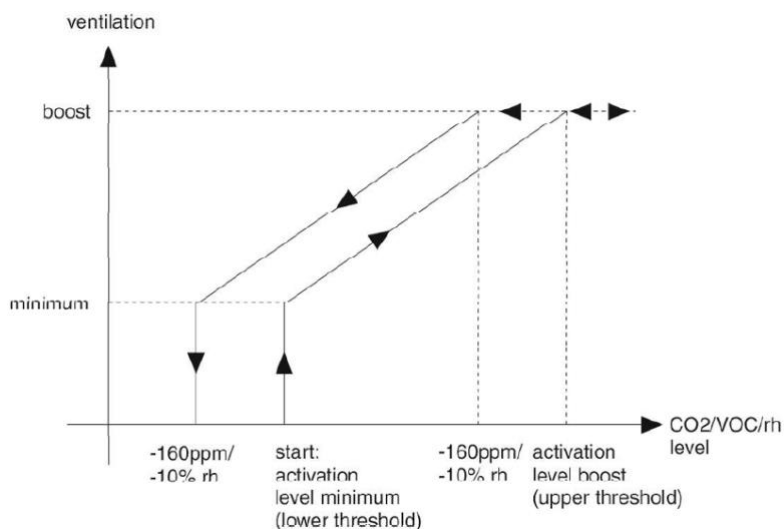
- CO2, 0-2000ppm
- Relative humidity 0-100%
- The VOC sensor can work with the same settings as the CO2 sensor.

Stepless fan control according to sensor signal.

When the upper threshold value is reached, the ventilation unit will operate at boost stage. The ventilation unit therefore increases or decreases the flow rate capacity before reaching the threshold value depending on the threshold / current value comparison.

VOD starts ventilation when the following conditions come up:

- VOD must be enabled by the user.
- There is a signal from the connected sensor and the start threshold is reached.



Unit switches back to standby or last operation if there is no sensor demand anymore (sensor value lower than lower threshold-hysteresis).

VOD stop function

If the sensor demand does not decrease after 2h of operation at boost stage, the unit switches to standby or last operation. However, the unit can be always started manually.

After 0-24 h of standby it runs again in VOD mode if there is a sensor signal

The stopping time (0...24 h) is selectable by the installer. The VOD stop function can be disabled, when the stopping time is set to 0.

3.2.7. Time control

Each day has three individual time sequences. The time sequences are available in each ventilation stage (reduced, normal, boosted) when the unit is in CAV mode.

Ventilation on demand (VOD) has one-time channel to activate/ deactivate this function in one definable sequence per day

3.2.8. Defective sensor detection

If any sensor is defective the unit is shut down and an alarm is shown on the HMI: Sensor error T-xxx

3.2.9. Automatic bypass

3.2.9.1. What is the function of automatic bypass in your ventilation unit

The main function of Automatic bypass is not to channel the fresh outside air through the heat exchanger, but rather through the so-called "bypass channel" in the unit past the heat exchanger and directly into the supply air rooms

Bypass closed: Outside air is channeled through heat exchanger into the room = Active heat recovery

Bypass open: Outside air is channeled through heat exchanger into the room = Active heat recovery

Outside air is channeled directly into the room = Inactive heat recovery, indirect "cooling" of room air.

3.2.9.2. When is the unit bypass used?

The bypass is normally used in the summer months for so-called "night cooling". With regard to night cooling, the effect of cool outside temperatures is used in comparison to room or inside temperatures.

The bypass can also be used in transition periods (spring and autumn) if the room temperature is significantly higher than the outside air temperature during the day due to high windows ("natural bypass cooling").

The night cooling effect and "natural bypass cooling" is strongly influenced by the temperature differences between outside air/supply air and room air, the flow rate, the shade and the required cooling loads. Bypass cooling will never replace air conditioning!

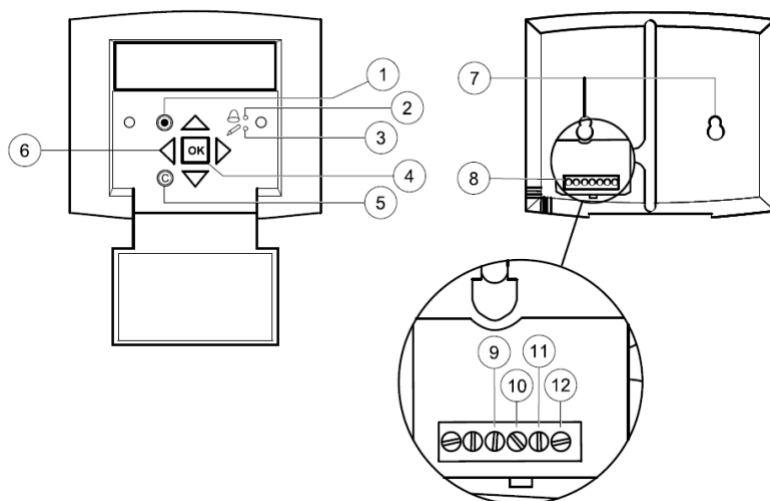
3.2.9.3. Bypass functional description

The airflow through the exchanger is controlled by a by-pass damper. Both dampers are controlled by the same analogue output "Y2 exchanger" or by two digital outputs "Exchanger 3-pos. actuator, increase" and "Exchanger, 3-pos. actuator, decrease", and are wired so that one opens as the other closes.

If the cooling recovery has been configured, there is a cooling requirement and the extract air temperature is a settable amount lower than the outdoor temperature, cooling recovery can be activated. When cooling recovery is activated the heat exchanger signal will be reversed to give increasing recovery on increasing cooling demand. The function also activates the heating function "Free heating": if heating is required and the outdoor temperature is higher than the extract air temperature, outdoor air will primarily be used.

4. CONTROLLER

4.0. Surface-mounted controller with touch screen (the images are going to be revised later.)



Position	Explanation
1	Alarm button: Gives access to the alarm list.
2	Alarm LED: Indicates alarm by flashing red light.
3	Write LED: Indicates by flashing yellow light that parameters can be set or changed.
4	OK button: Press this button to be able to change or set parameters whenever possible. Also used to move between changeable parameters in one dialogue window frame.
5	Cancel button: Used to abort a change and return to the initial setting.
6	Right/Left & Up/Down buttons: Used to move up, down, left & right in the menu tree. Up/Down buttons are also used to increase or decrease values when setting or changing parameters.
7	Mounting holes.
8	Connection block.
9	Connection to brown cable.
10	Connection to yellow cable.
11	Connection to white cable.
12	Connection to black cable.

4.1. The menu system (the images are going to be revised later.)

4.1.1. Running mode

```
Running mode
Selected functions
Alarm events
Input/Output
```

4.1.1.1. Running mode unit

The unit's running mode can be changed without logging on.

```
Running mode
Auto
```

The running mode can be set to **Auto**, **Off**, **Manual reduced run** or **Manual normal run**.

The **Auto** mode should normally be used.

Off can be used to stop the unit for service and similar. **Manual normal run** or **Manual reduced run** will start the unit even if the timer says that the running mode should be "Off".

If the running mode is set to **Off**, **Manual normal run** or **Manual reduced run**, a C alarm is activated: Running mode Manual.

The alarm automatically resets when the running mode is set to **Auto** again.

```
Running time
SAF: 14.6 h
EAF: 14.4 h
```

Shows the accumulated running times for the fans.

4.1.1.1. Selected functions

```
Control function
Supply air control
Fan control
Pressure
```

In these menus, you can see how some of the most important functions have been configured. Changes cannot be made.

```
Heating: Water
Exchanger: Plate exc
Cooling: Water
```

Heater, exchanger and cooling type. If one of the functions is not used, it will be shown as "Not used".

```
Free cool active: No
```

This function is used during the summer to cool the building night-time using cool outdoor air, thereby reducing the need for cooling during the day and saving energy.

```
Support control
active: Yes
CO2/VOC active
If timer on
```

Support control is used for adjusting the room temperature outside of the normal running time. If there is a heating or cooling demand in the room, the unit will start and the temperature will be adjusted.

```
Fire damper function
Not active
Operation when alarm
Stopped
```

The fire function determines the settings for the fire dampers and the unit's running mode when a fire alarm is activated.

```
External setpoint
Not active
```

An analogue input can be configured for an external setpoint device e.g. TG-R4/PT1000.

4.1.1.2. Alarm events

```
24 Nov 14:32 B
Malfunction supply
air fan
Acknowledged
```

Alarm log, containing the 40 latest alarm events. The most recent event is listed first. The alarm log can only be used for viewing the alarm history. Alarms are handled in a special area, see the section Alarm handling.

4.1.1.3. Inputs/ Outputs

```
AI
DI
UI
AO
DO
```

These menus show the current values for all configured inputs and outputs. These are read-only menus. No changes can be made here. Universal inputs can be configured as either analogue or digital inputs. Analogue inputs and digital outputs are shown here as examples.

4.1.1.4. Analogue inputs/ outputs

```
AI1: 18.5 Outd temp
AI2: 20.3 Supply temp
AI3: 28.2 Frost prot
AI4: 19.9 Room temp1
```

The current values for the analogue inputs and outputs are shown here.

4.1.1.5. Digital inputs/ outputs

```
DO1:Off SAF 1/1-speed
DO2:Off EAF 1/1-speed
DO3: On SAF 1/2-speed
DO4:Off EAF 1/2-speed
```

This menu shows if the digital inputs and outputs are On or Off.

4.1.2. Temperature

Here you can view all actual and setpoint values for temperature control. The menu is visible to all users, regardless of log on level. However, to make changes you need at least Operator authority.

Only menus for activated functions will be shown.

4.1.2.1. Setpoint supply air temperature control

```
Outd temp:18.4°C
Supply air temp
Act: 19.8°C Setp→
Setp: 20.0°C
```

Here, actual and setpoint values are shown, as well as the outdoor temperature if an outdoor sensor has been configured. This is a read-only menu. No settings can be made here.

```
Supply air temp
Setp: 20.0°C
```

Submenu: Setpoint.

4.1.2.2. Setpoint outdoor temperature compensated supply air control

```
Outd temp:18.4°C
Supply air temp
Actual: 19.8°C Setp→
Setp: 20.0°C
```

Here, actual and setpoint values are shown, as well as the outdoor temperature if an outdoor sensor has been configured. This is a read-only menu. No settings can be made here.

```
Outdoor comp setp
-20.0°C = 25.0°C
-15.0°C = 24.0°C
-10.0°C = 23.0°C
```

Submenu: Setpoint.

In control modes Supply air control/Room control and Supply air control/Extract air control, the setpoint relationship is used when supply air control is active.

```
Outdoor comp setp
-5.0°C = 23.0°C
0.0°C = 22.0°C
5.0°C = 20.0°C
```

Use the eight breakpoints to generate a setpoint / outdoor temperature relationship.

```
Outdoor comp setp
10.0°C = 19.0°C
20.0°C = 18.0°C
```

In-between-values are calculated using straight lines between breakpoints.

Setpoints for temperatures lower than the lowest breakpoint and higher than the highest breakpoint are calculated by extending the line between the two last breakpoints at either end.

Example: At the lower end the setpoint is increasing by 1°C for every 5 °C lowering of the outdoor temperature. So, the setpoint at -23°C would be 25°C + 0.6x 1.0°C = 25.6°C.

4.1.2.3. Setpoint Cascaded room temperature control

```
Room temp1
Actual: 22.0°C
Setpoint: 21.5°C →
```

In control mode Supply air control/Room control, the setpoint is used when cascade connected room control is active.

```
If cascade control
max/min supply setp
Max: 30.0°C
Min: 12.0°C
```

Submenu for setting the min and max limitation temperatures for the supply air.

```
Room temp2
Actual: 21.8°C
```

If two room sensors have been configured, you will also get this menu. The controller uses the average temperature of the two sensors.

4.1.2.4. Setpoint Cascaded extract air temperature control

```
Extract air temp
Actual: 21.0°C
Setpoint: 21.1°C
```

In control mode Supply air control/Extract air control, the setpoint is used when cascaded extract air control is active.

```
If cascade control
max/min supply setp
Max: 30.0°C
Min: 12.0°C
```

Sub menu for setting the min and max limitation temperatures for the supply air.

4.1.2.5. Setpoint Outdoor compensated room temperature/extract air control

```
Room temp1
Actual: 22.0°C
Setp: 21.5°C →
```

Offers the possibility to compensate the room temperature/extract air temperature against the outdoor temperature. Note that the curve must be adjusted for optimal functionality!

```
Outdoor comp setp
-20.0°C = 25.0°C
-15.0°C = 24.0°C
-10.0°C = 23.0°C
```

This function operates according to the assumption that one may accept a slightly higher indoor temperature when it is warm outside and vice versa, providing an excellent opportunity for conserving energy.

```
Room temp2
Actual: 21.8°C
```

```
Outdoor comp setp
10.0°C = 19.0°C
20.0°C = 18.0°C
```

```
If cascade control
max/min supply setp
Max: 30.0°C
Min: 12.0°C
```

4.1.2.6. Support control heating/Support control cooling

```
Support heating
Room temp for
Start: 15.0°C
Stop: 21.0°C
```

Support control is normally used when room temperature control or extract air control has been configured, to prevent a too large offset in temperature when the unit is "Off".

```
Support cooling
Room temp for
Start: 30.0°C
Stop: 28.0°C
```

"Support control Heating" or "Support control Cooling" will run if support control is configured, the running mode is "Off" (timer control OFF and not in extended running) and if conditions call for support control.

Minimum run time is settable 0 to 720 minutes (FS= 20 minutes).

4.1.2.7. Frost protection temperature

Frost protection
Actual: 30.9°C

Relevant value for the water temperature at the frost protection sensor. Frost protection can be set to function either on Y1, Y4 or on both. The function only supports a single sensor.

4.1.2.8. Exchanger de-icing

Deicing exchanger
Actual: 11.2°C
Setp: -3.0°C
Hysteresis: 1.0°C

This menu is shown if exchanger de-icing has been configured. If the temperature at the de-icing sensor drops below the setpoint value, the de-icing function is started. It is stopped when the temperature has risen above the setpoint plus the set differential.

4.1.2.9. Heat exchanger efficiency monitoring

Efficiency exch
Actual: 93%
Output exchanger
Actual: 100%

The function calculates the heat exchanger temperature efficiency in % when the output signal to the exchanger is higher than 5 % and the outdoor temperature is lower than 10°C. The function requires an extract air sensor, an exhaust air sensor and an outdoor sensor or an efficiency sensor, extract air sensor and outdoor sensor.

When the control signal is lower than 5% or the outdoor temperature is higher than 10°C the display will show 0%.

4.1.2.10. Recirculation

The first of the three below menus can be found under Configuration in the controller. The fourth menu is located under Temperature.

Enable temp
control when
recirculation
Heat and cooling →

Recirculation is a function for mixing the air in the room using the supply air fan. The function can be used even when there is no heating or cooling demand. When using recirculation control, the extract air fan stops, and a recirculation damper opens which allows the air to circulate through the unit.

Constant or
setpoint offset
when recirculation:
Constant

EAF running during
recirculation: No

It is selectable whether or not the extract air fan should run during recirculation.

Offset SAF when
frequency control
and recirculation:
0.0 Pa

During recirculation, offset SAF makes it possible to add to the supply air fan an offset to the setpoint during normal operation. If pressure control has been configured, the offset is set in Pa. If flow control has been configured, it is set in m3/h. If manual control has been configured, the offset is set in %.
If you have selected the Offset function, which is a deviation from the regular supply air setpoint, you will instead be given the option to change this offset value here.

4.1.3. Air control

This menu is only shown if frequency controlled fans have been configured.

Depending on the choice of fan control, different combinations of the menus below will be shown.

4.1.3.1. Pressure control SAF (there are also corresponding menus for EAF)

```
Pressure control SAF
Actual: 480 Pa
Setp: 490 Pa →
```

Here, Actual and Setpoint values are displayed. This is a read-only menu. No settings can be made here.

```
Pressure control SAF
Setp 1/1: 490 Pa
Setp 1/2: 300 Pa
```

Submenu Setpoint values for normal speed (1/1) and reduced speed (1/2).

```
Outdoor comp setp
-20 °C = -50 Pa
10 °C = 0 Pa
Act comp: -5 Pa→
```

Submenu outdoor compensation. An outdoor temperature dependent compensation of the pressure setpoint value can be added. The compensation can be set for either the supply air fan alone or for both fans.

```
Comp sens:Room temp1
15 °C = 0 Pa
20 °C = 0 Pa
25 °C = 0 Pa
```

Submenu extra compensation. A temperature dependent compensation similar to the one above but with selectable temperature source.

4.1.3.2. Flow control SAF (there are also corresponding menus for EAF)

```
Flow control SAF
Actual: 1800 m3/h
Setp: 2000 m3/h →
```

Setpoint Flow control. Here, Actual and Setpoint values are displayed. This is a read-only menu. No settings can be made here.

```
Flow control SAF
Setp 1/1: 2000 m3/h
Setp 1/2: 1000 m3/h
```

Submenu Setpoint values for normal speed (1/1) and reduced speed (1/2).

```
Outdoor comp setp
-15 °C = -200.0 m3/h
10 °C = 0.0 m3/h
Act comp: 0.0 m3/h→
```

Submenu Outdoor compensation. An outdoor temperature dependent compensation of the pressure setpoint value can be added. The compensation can be set for either the supply air fan alone or for both fans.

```
Comp sens:Room temp1
15 °C = 0 m3/h
20 °C = 0 m3/h
25 °C = 0 m3/h
```

Submenu Extra compensation. A temperature dependent compensation similar to the one above but with selectable temperature source.

4.1.3.3. Manual frequency control SAF (there are also corresponding menus for EAF)

```
Frequency control
manual SAF
Output: 75% →
```

Here, Actual and Setpoint values are displayed. This is a read-only menu. No settings can be made here.

```

Frequency control
manual SAF
Output 1/1: 75%
Output 1/2: 50%

```

Submenu Setpoint values for normal speed (1/1) and reduced speed (1/2).
The setpoint is set in % of the full output. 100 % = 10 V output signal.

```

Outdoor comp output
-20 °C = -40 %
10 °C = 0 %
Act comp: 0 % →

```

Submenu outdoor compensation. An outdoor temperature dependent compensation of the pressure setpoint value can be added.

The compensation can be set for either the supply air fan alone or for both fans.

```

Comp sens:Room temp1
15 °C = 0 %
20 °C = 0 %
25 °C = 0 %

```

Submenu extra compensation. A temperature dependent compensation similar to the one above but with selectable temperature source.

4.1.3.4. Frequency control external

```

Frequency Control
manual SAF
Output: 0 % →

```

For fan control using an external control signal, e.g. via a VAV optimizer.

```

Outdoor comp outp
-20 °C = -40 %
10 °C = 0 %
Act comp: 0 % →

```

```

Comp sens:Room temp1
15 °C = 0 %
20 °C = 0 %
25 °C = 0 %

```

```

Controller output
comp if cooling
0 at R U S= 0 %
100 at R U S= 0 %

```

```

Controller output
comp if heating
0 at R U S= 0 %
100 at R U S= 0 %

```

```

Controller output
compensation
Not active

```

```

Compensation only
when
1/1-speed : No
defrosting: No

```

4.1.3.5. Frequency control SAF with EAF slave/flow control (also available for opposite function)

```

Pressure ctrl SAF
Actual: 480 Pa
Setp.: 490 Pa →

```

A pressure control where either the SAF or EAF is operated as a slave. This function is also available featuring flow control.

```

Pressure ctrl SAF
Setp 1/1: 500 Pa
Setp 1/2: 250 Pa

```

```

Outdoor comp output
-20 °C = 0 Pa
10 °C = 0 Pa
Act comp: 0 Pa →

```

```

Comp sens:Roomtp.1 15
°C = 0 Pa
20 °C = 0 Pa
25 °C = 0 Pa →

```

```

Controller output
comp if cooling
0 at R U S= 0 %
100 at R U S= 0 %

```

```

Controller output
comp if heating
0 at R U S= 0 %
100 at R U S= 0 %

```

```

Controller output
compensation
Not active

```

```

Compensation only
when
1/1-speed : No
defrosting: No

```


4.1.3.6. CO₂

```
CO2
Actual: 920ppm
Setp: 1000pm
```

In applications with varying occupancy, the fan speed can be controlled by the air quality as measured by a CO₂ sensor. CO₂ can be set to function either on Y2, Y4 or both.

4.1.4. Time Setting

4.1.4.1. General

This menu is only shown if humidity control has been configured.

```
Time/Date
Timer normal speed
Timer reduced speed
Extended running
Timer output1 →
Timer output2 →
Timer output3 →
Timer output4 →
Timer output5 →
Holidays →
```

Corrigo has a year-base clock function. This means that a week-schedule with holiday periods for a full year can be set. The clock has an automatic summertime/wintertime change-over.

Individual schedules for each week-day plus a separate holiday setting. Up to 24 individual holiday periods can be configured. A holiday period can be anything from one day up to 365 days. Holiday schedules take precedence over other schedules.

Each day has up to two individual running periods. For two-speed fans and pressure controlled fans there are daily individual schedules for normal speed and reduced speed, each with up to two running periods.

Up to 5 digital outputs can be used as timer controlled outputs. Each with individual week-schedules with two activation periods per day. These outputs can be used to control lighting, door locks etc. Only outputs which have been configured will be shown. Timer output 5 can be used to control a recirculation function.

4.1.4.2. Time/ Date

```
Current time: 18:21
Date: 2016-11-10
Weekday: Monday
```

This menu shows and permits the setting of time and date. Time is shown in 24-hour format. Date is shown in the format YY-MM-DD

4.1.4.3. Timer normal speed

```
Normal speed
Monday
Per 1: 07:00 - 16:00
Per 2: 00:00 - 00:00
```

There are 8 separate setting menus, one for each weekday and one extra for holidays. Holiday schedules take precedence over other schedules.

For 24 hour running, set a period to 0:00 – 24:00.

To inactivate a period, set the time to 00:00 – 00:00. If both periods of a day are set to 0:00 – 0:00, the unit will not run at normal speed that day.

```
Normal speed
Monday
Per.1: 07:00 - 16:00
Per.2: 22:00 - 24:00
```

If you want to run the unit from one day to another, e.g. from Mon 22:00 to Tue 09:00, the desired running time for the various days must be entered individually.

First Mon 22:00 – 24:00.....

```
Normal speed
Tuesday
Per.1: 00:00 - 09:00
Per.2: 00:00 - 00:00
```

...then Tue 00:00 – 09:00..

4.1.4.4. Timer reducer speed

```
Reduced speed
Sunday
Per.1: 10:00 - 16:00
Per.2: 00:00 - 00:00
```

These settings will be ignored if single speed fans are configured.

Should periods for normal speed and periods for reduced speed overlap, normal speed takes precedence.

Structure and function is otherwise identical with Timer Normal speed.

4.1.4.5. Extended running

```
Extended running
60 min
Time in ext running
0 min
```

Digital inputs can be used to force the unit to start although the timer says the running mode should be "Off".

For 2-speed fans and pressure/flow controlled fans, inputs for normal speed and reduced speed can normally be used.

The unit will run for the set time. If the running time is set to 0 the unit will only run as long as the digital input is closed.

4.1.4.6. Extra time outputs 1...5

Up to 5 digital outputs can be used as timer controlled outputs. Only outputs which have been configured will be shown. Each with individual week-schedules with two activation periods per day.

```
Timer output2
Wednesday
Per.1: 05:30 - 08:00
Per.2: 17:00 - 23:00
```

Each timer output has 8 separate setting menus, one for each weekday and one extra for holidays. Holiday schedules take precedence over other schedules

If the function Recirculation has been configured, Timer output 5 can be used for controlling start/stop of the Recirculation function.

4.1.4.7. Holidays

```
Holidays (mm:dd)
1: 01-01 - 02-01
2: 09-04 - 12-04
3: 01-05 - 01-05
```

Up to 24 separate holiday periods for a full year can be set.

A holiday period can be any number of consecutive days from one and upwards. The dates are in the format: MM-DD.

When the current date falls within a holiday period, the scheduler will use the settings for the weekday "Holiday".

4.1.5. Access rights

There are four different access levels, **Normal** level which has the lowest access and does not require logging on, **Operator** level, **Service** level and **Admin** level which has the highest access. The choice of access level determines which menus are shown, as well as which parameters can be changed in the displayed menus.

The basic level only permits changes in Running mode and gives read-only access to a limited number of menus.

Operator level gives access to all menus except Configuration.

Service level gives access to all menus except the submenus Configuration/In- and Outputs and Configuration/System.

Admin level gives full read/write access to all settings and parameters in all menus

```
Log on
Log off
Change password
```

Repeatedly press down-arrow when the start-up display is shown until the arrow-marker to the left of the text-list points to Access rights. Press RIGHT.

4.1.5.1. Log on

```
Log on
Enter password:****
Actual level: None
```

In this menu it is possible to log on to any access level by entering the appropriate 4-digit code. The log on menu will also be displayed should you try to gain access to a menu or try to do an operation requiring higher authority than you have.

Press the OK button and a cursor marker will appear at the first digit position. Repeatedly press the UP button until the correct digit is displayed. Press the RIGHT button to move to the next position. Repeat the procedure until all four digits are displayed. Then press OK to confirm. After a short while the text on the line: Present level will change to display the new log on level. Press the LEFT button to leave the menu.

Factory set passwords:

Admin: 1111

Service: 2222

Operator: 3333

Normal: 5555

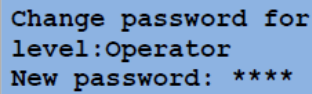
4.1.5.2. Log off

```
Log off?
No
Actual level:Admin
```

Use this menu to log off from the present level to the basic "no-log on" level.

If the access level is Operator, Service or Admin, the user will automatically be logged off to Normal after a settable time of inactivity. The time is settable.

4.1.5.3. Change password



Change password for
level:Operator
New password: ****

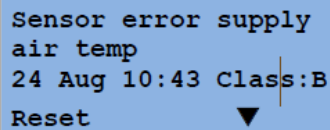
You can only change the password for access levels lower or equal to the presently active level.

4.1.5.4. Alarm handing

If an alarm condition occurs, the red alarm LED on the front panel of units with display or the alarm LED on a connected display unit will start flashing. The LED will continue to flash as long as there are unacknowledged alarms.

Alarms are logged in the alarm list. The list shows type of alarm, date and time for the alarm and the alarm class (A, B or C alarm).

To access the alarm list, press the alarm button, the front panel button with the red button-top.



Sensor error supply
air temp
24 Aug 10:43 Class:B
Reset ▼

If there are multiple alarms, this is indicated by up / down arrow symbols at the right-hand edge of the display.

Use the UP and DOWN buttons to access the other alarms.

At the left end of the bottom display line the alarm status is shown. For active, unacknowledged alarms the space is blank. Alarms that have been reset will be indicated by the text Acknowledged. Still active or blocked alarms are indicated by the text Acknowledged or Blocked.

Alarms are acknowledged by pressing the OK button. You are then given the choice of acknowledging the alarm or blocking the alarm.

Acknowledged alarms will remain on the alarm list until the alarm input signal resets.

Blocked alarms remain on the alarm list until the alarm has reset and the block has been removed. New alarms of the same type will not be activated as long as the block remains.

Class A and B alarms will activate alarm output(s) if these have been configured.

Class C alarms do not activate the alarm output(s).

Class C alarms are removed from the alarm list when the alarm input resets even if the alarm has not been acknowledged.

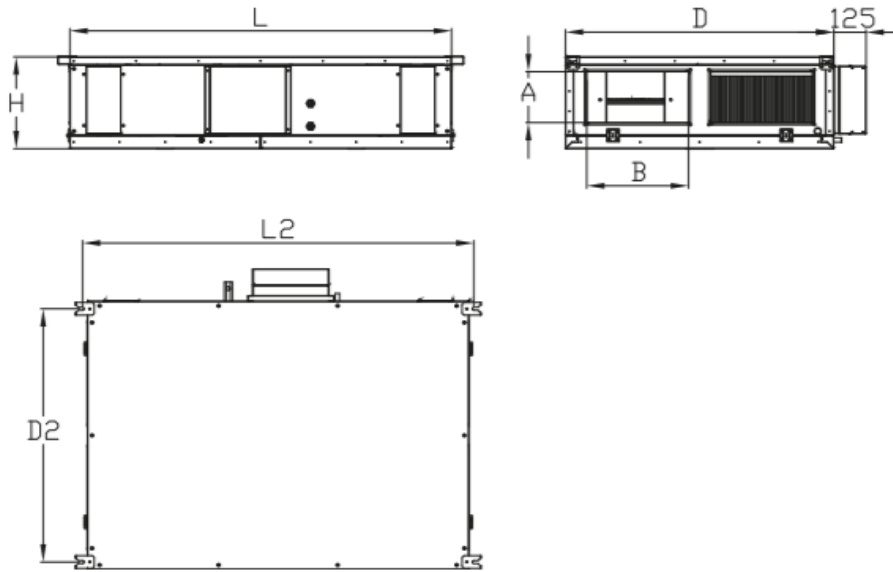
4.1.5.5. Language

If RIGHT is pressed three times when the start menu is shown, a menu is displayed in which the language can be changed.

The different language files are stored in the application memory and are downloaded to the work memory. If a Corrigo has been reloaded with a program revision newer than the factory revision using E tool©, the controller will not allow language files to be downloaded from the application memory. This is because there is a risk that the language files are not compatible with the new revision. Therefore, you are limited to the two languages you have downloaded using E tool.

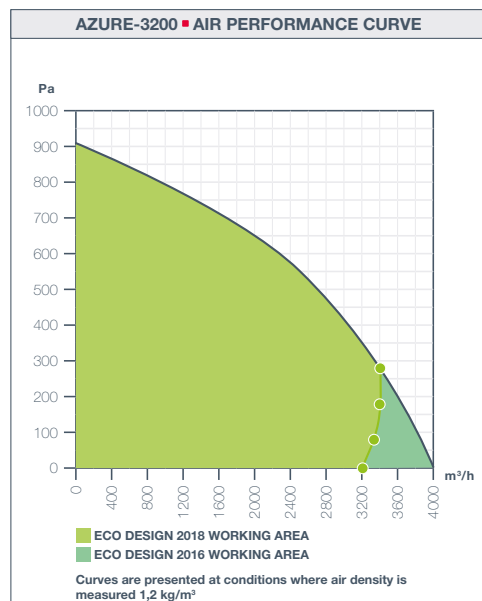
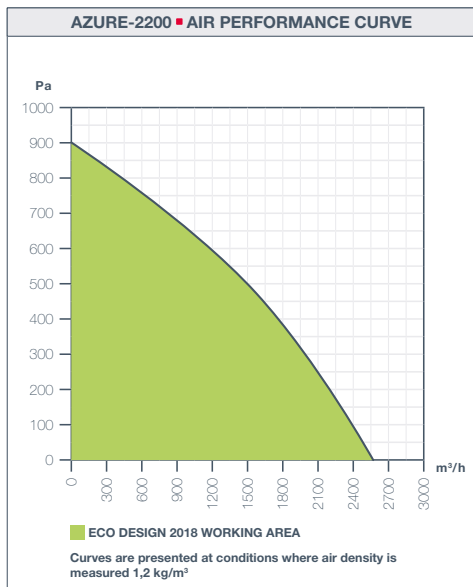
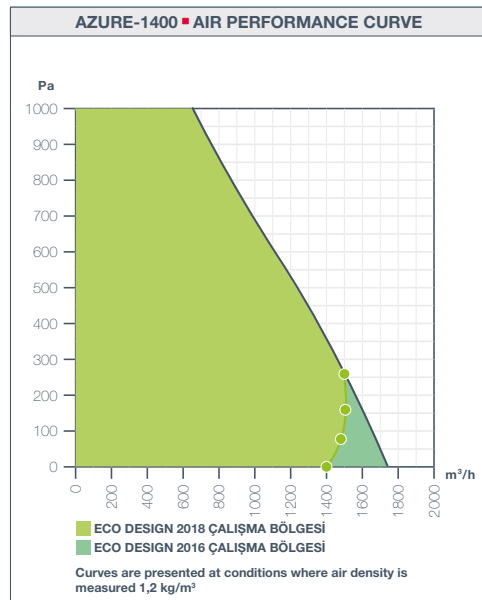
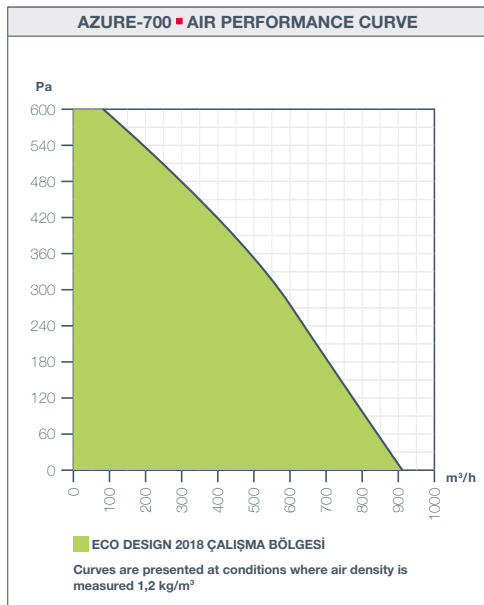
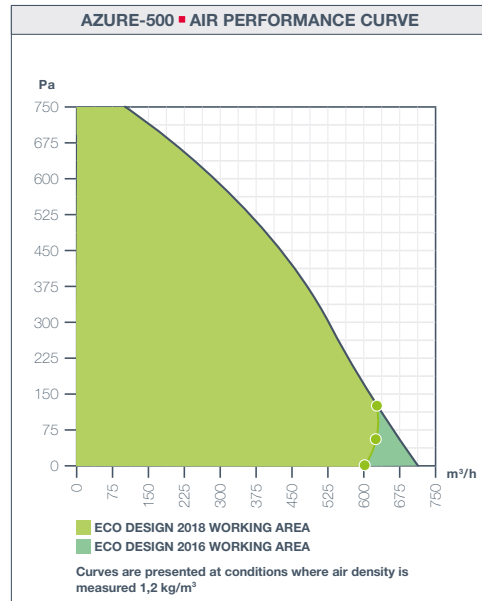
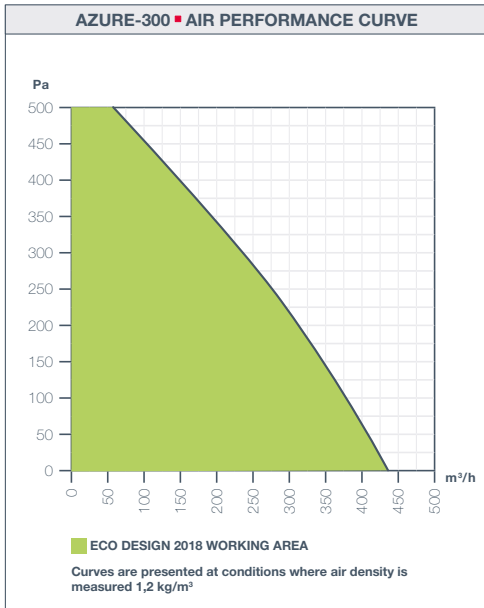
5. DIMENSIONS & CHARACTERISTIC CURVES

5.0. Dimensions

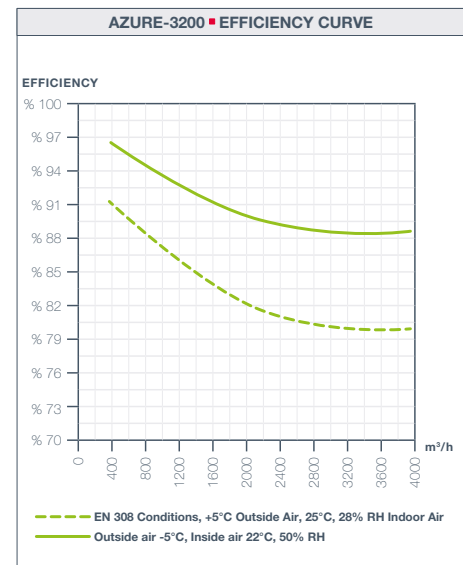
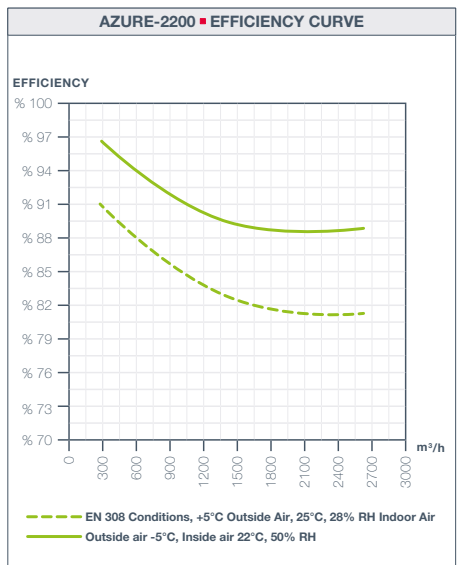
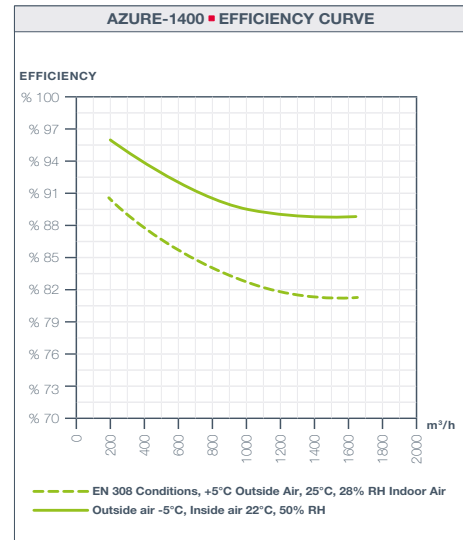
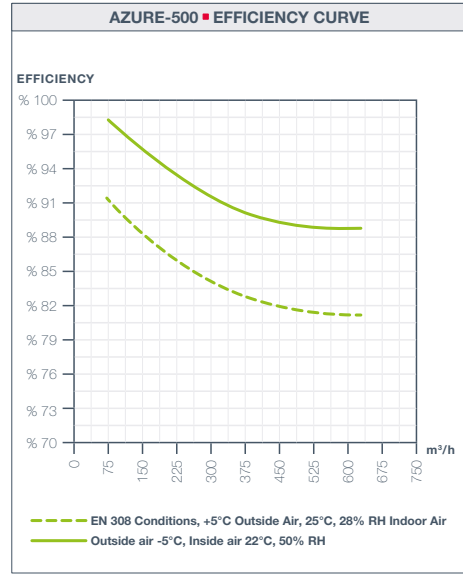
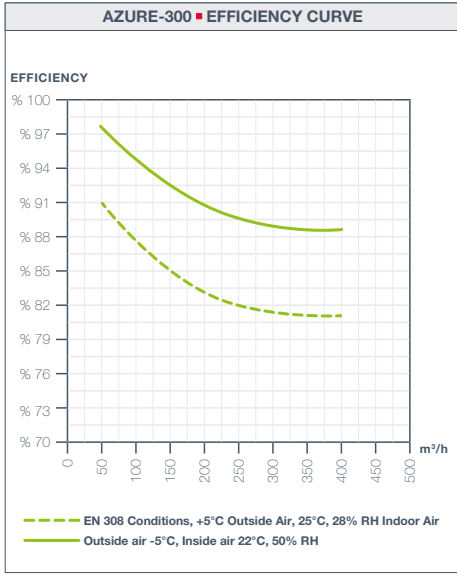


MODEL	DIMENSIONS (mm)					
	L	D	H	L2	D2	AXB
300	1300	680	360	1338	620	160 X 160
500	1300	880	360	1338	820	200 X 200
700	1500	1055	360	1530	995	150 X 300
1400	1550	1355	400	1588	1295	250 X 500
2200	1850	1675	485	1888	1615	300 X 500
3200	2125	1950	567	2163	1888	400 X 700

5.1. Characteristic curves
 5.1.1. Air performance Curves



5.1.2. Efficiency Curves



6. SERVICE AND MAINTENANCE

Make sure that the power connection is disconnected before doing any work on the device.
Danger of electric shock; moving parts (fan) and hot surfaces.

*Maintenance and service work must be performed by a minimum of 2 authorized personnel.
Do not forget that the heat recovery device is heavy!
Be careful about suddenly opening doors downwards!*

6.0. Removing/cleaning cross counter flow heat exchanger

Heat exchanger are very heavy and can contain condensation water!

- I. Unscrew the screws of the device service doors
- II. Open device service covers (There may be water in the drain pan, be careful!)
- III. Unscrew all screws from the heat exchanger fastener
- IV. Remove the heat recovery exchanger protection cover
- V. Carefully pull heat exchanger from the unit
- VI. Vacuum the fins with a vacuum cleaner to clean. (Do not clean the counter flow heat exchanger with water!)



i)



ii)



iii)



iv)



v)

6.1. Filter change

Make sure that the power connection is disconnected before doing any work on the device.
Danger of electric shock; moving parts (fan) and hot surfaces.

The inspection openings on the ventilation unit enable the easy change of external filter (F7) and exhaust air filter (F5)

Be careful about suddenly opening doors downwards!

- I. Filter service doors are on the side of the device

- II. Unscrew the screws of the device service doors
- III. Remove the service door completely
- IV. Remove filter from slides
- V. Be careful to air flow direction when installing the filter back into



i)



ii)



iii)



iv)

The Azure compact unit is equipped with fine filters on the outside and extract airside as standard (pursuant to DIN EN 13779)

It is recommended that filters be checked every six months for degree of soiling (danger of mould formation) and, if necessary, cleaned.

Even if the filters have not reached the level of pollution, they are recommended to be replaced within 1 year. If the filters are damp or mouldy, they must be exchanged immediately!

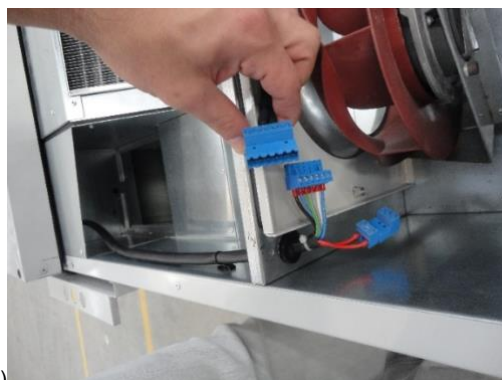
6.2. Service and maintenance of fans

Make sure that the power connection is disconnected, and fan is not moving before doing any work on the device.

- I. Unscrew the screws of the device service doors. Open device service covers (There may be water in the drain pan, be careful!)
- II. Unplug the power connector on the fan
- III. Remove the fan pressure hoses
- IV. Remove the fan grips
- V. Remove the fan slowly and carefully
- VI. Be careful to electrical connections when installing the fans back into



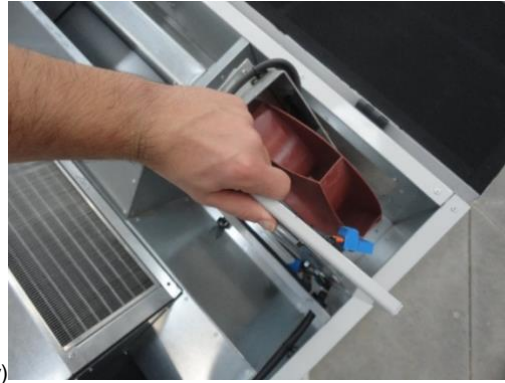
i)



ii)



iv)



v)

6.3. Service and maintenance of pre-electrical heater

Make sure that the power connection is disconnected before doing any work on the device.
 Danger of electric shock; moving parts (fan) and hot surfaces.

- I. Unscrew the screws of the device service doors. Open device service covers (There may be water in the drain pan, be careful!)
- II. Unplug the electrical connections on the electric heater
- III. Unscrew all screws from the pre-electrical heater fastener
- IV. Remove the pre-electrical heater slowly and carefully
- V. Be careful to electrical connections when installing the pre-electrical heater back into



i)



ii)



iii)



iv)

6.4. Reset function

The manual reset takes place by pressing the reset lever, which is located directly on the electrical pre-heater.
 Make sure that the power connection is disconnected before doing any work on the device.
 Danger of electric shock; moving parts (fan) and hot surfaces.

- I. Unscrew the screws of the device service doors. Open device service covers (There may be water in the drain pan, be careful!)

- II. Press down reset lever.
- III. Close the service doors and reconnect ventilation unit to power supply.

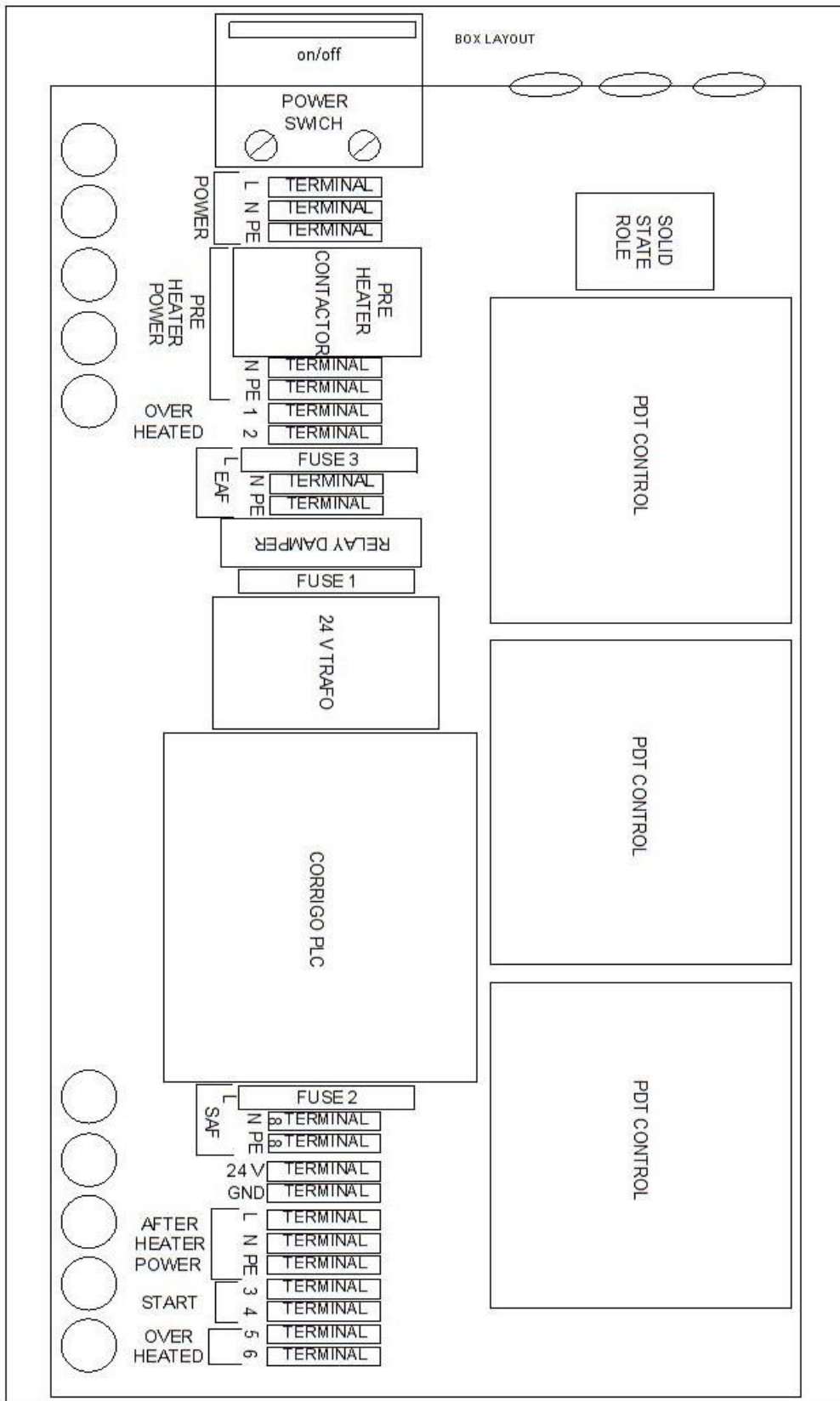
Manual reset: 90°C

Automatically reset: 70°C

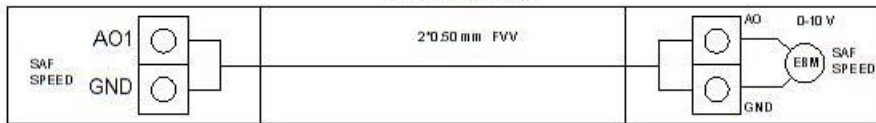
6.5. Terminal box with isolator/main switch

The terminal box that is connected to the side of the casing ensures free access to the electronic component.

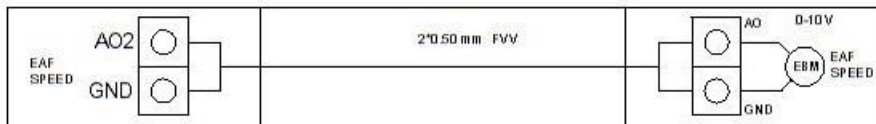
7. Wiring Diagram (the diagrams are going to be revised later.)



SAF CONTROL



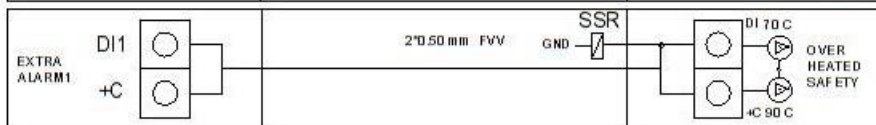
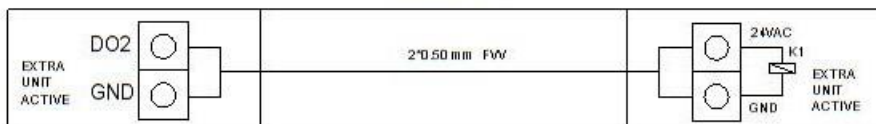
EAF CONTROL



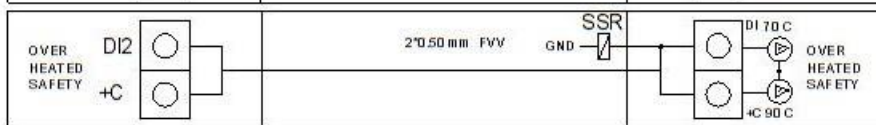
DAMPER



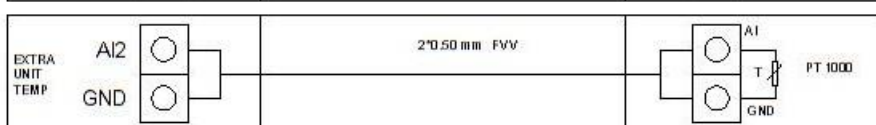
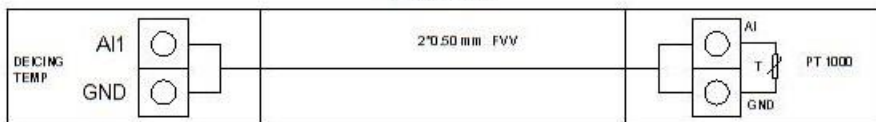
PRE HEATER ELECTRICAL ONE STEPS



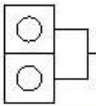
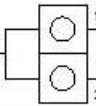
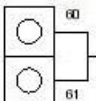
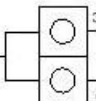
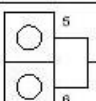
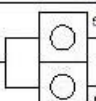
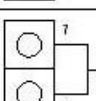
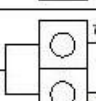

AFTER HEATER ELECTRICAL ONE STEPS



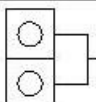
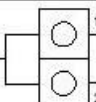
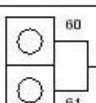
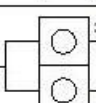
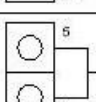
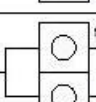
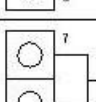
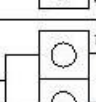

SENSORS



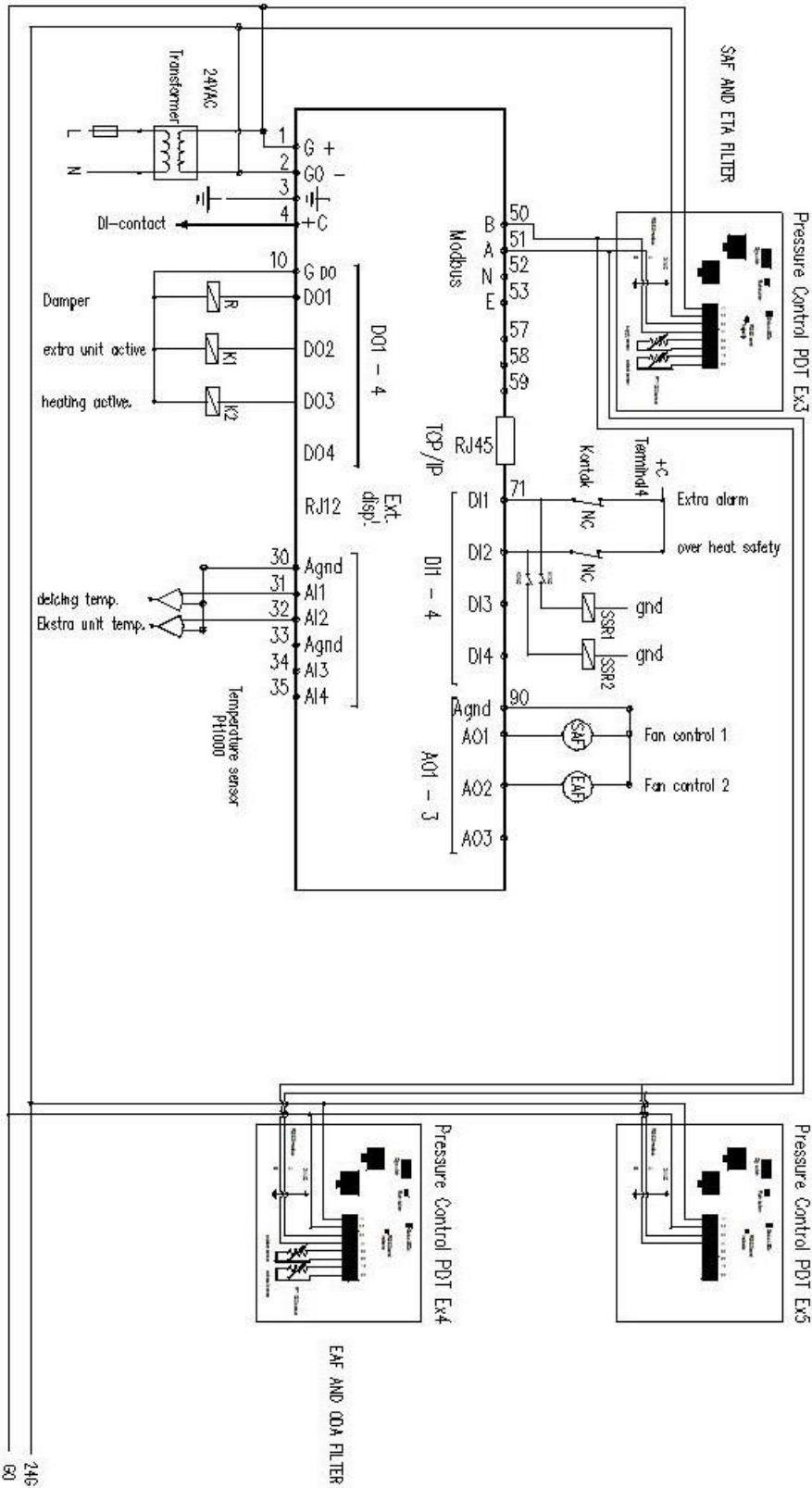
AZURE 700
PDT1 CONTROL(EX-3)

	CABLE	UNIT
24 VAC GND 	2*0.50 mm FW	 1 24 VAC PDT 1 2 GND
PLC PORT 2 MODBUS A B 	2*0.50 mm FW Shielded	 3 B PDT 1 4 A
PDT 3UA1 	2*0.50 mm FW	 5 PT 1000 SUPPLY AIR TEMP 6 T
PDT 3UA2 	2*0.50 mm FW	 7 PT 1000 EXTRACT AIR TEMP 8 T
	+1 SAF PRESSURE - 1 SAF PRESSURE +2 FILTRE PRESSURE - 2 FILTRE PRESSURE	1-PDT 12C-2(EX-3)

PDT1 CONTROL(EX-4)

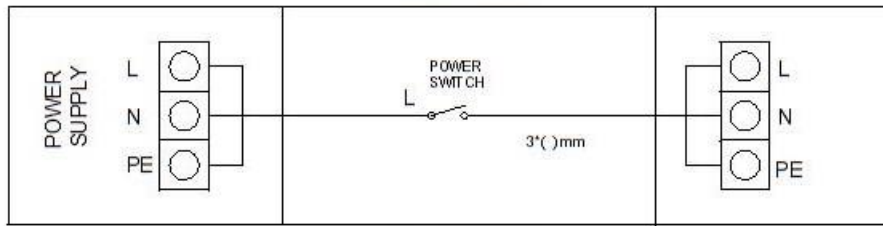
	CABLE	UNIT
24 VAC GND 	2*0.50 mm FW	 1 24 VAC PDT 1 2 GND
PLC PORT 2 MODBUS A B 	2*0.50 mm FW Shielded	 3 B PDT 1 4 A
PDT 3UA1 	2*0.50 mm FW	 5 PT 1000 OUTDOOR AIR TEMP 6 T
PDT 3UA2 	2*0.50 mm FW	 7 PT 1000 EXHAUST AIR TEMP 8 T
	+1 EAF PRESSURE - 1 EAF PRESSURE +2 FILTRE PRESSURE - 2 FILTRE PRESSURE	1-PDT 12C-2(EX-4)

WIRING DIAG RAM 152W-3

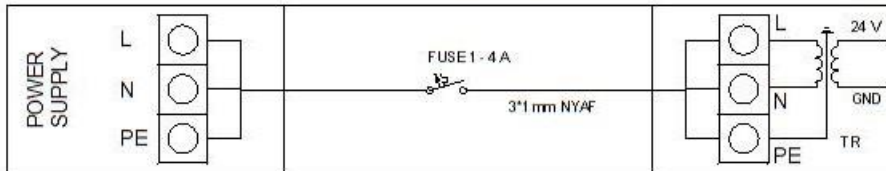


246
80

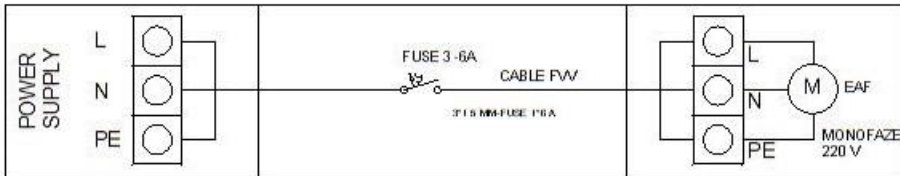
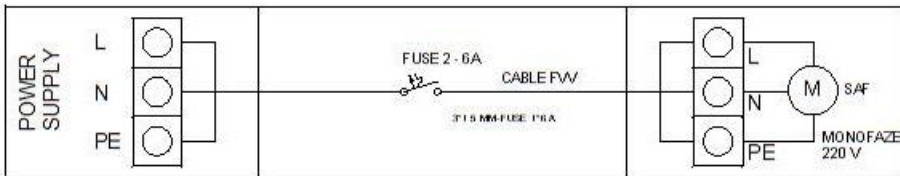
POWER SWITCH



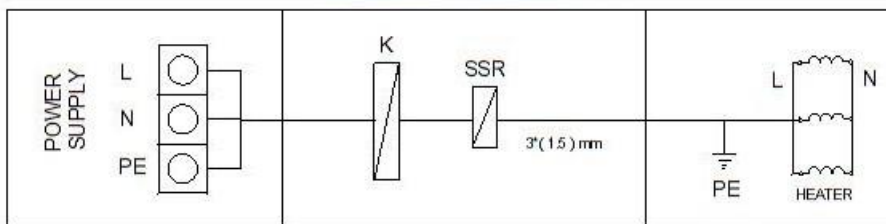
POWER SUPPLY



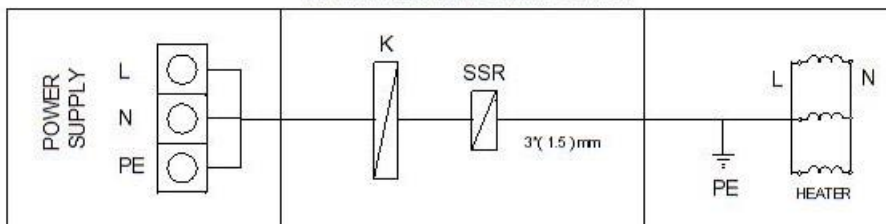
SINGLE PHASE FAN POWER SUPPLY



PRE HEATER POWER SUPPLY



AFTER HEATER POWER SUPPLY



8. Spare parts

Sparer Part' Name	Order No:
Exhaust Air Fan Assembly	
Fresh Air Fan Assembly	
Main PCB	
Air Temperature Sensor (PT1000)	
Surface Temperature Sensor (PT1000)	
Heat Exchanger	
Heat Exchanger - Fixing sheet metal	
By-pass Actuator	
Main Transformer	
Contactator	
Presigo PCB	
Presigo PCB - CAP version	
TTC Triac Controller	
Fuse	
HMI Connection Cable	
Electrical Preheater	
Filter Service Door	
STB (Pre- / Afterheater)	
Door (Small Left)	
Door (Small Right)	
Door (Big Middle)	
Relais (Bypass-motor / WW pump)	
Main switch	
Fuse holder	
Suspension	
Terminal box (Cover)	
Terminal box (mainpart w/ top hat rail)	
Star knob for fan fixation	

9. Accessories

Accessory Name	Order No:
Standard Medium Filter (F6)	Standard Medium Filter (F6)
Standard Fine Filter (F7)	Standard Fine Filter (F7)
Display HMI with Conneciton Cable	Display HMI with Conneciton Cable
Water Heater	Water Heater
Water Cooler	Water Cooler
DX Cooler	DX Cooler
VOC Sensor Room	VOC Sensor Room
CO2 Sensor Room	CO2 Sensor Room
VOC Sensor Duct	VOC Sensor Duct
CO2 Sensor Duct	CO2 Sensor Duct
Condansate Pump	Condansate Pump
b	



Distributed by **frigicoll**

MAIN OFFICE
Blasco de Garay, 4-6
08960 Sant Just Desvern
(Barcelona)
Tel. +34 93 480 33 22
<http://home.frigicoll.es/>
<http://www.kaysun.es/>

MADRID
Senda Galiana, 1
Poligono Industrial Coslada
Coslada (Madrid)
Tel. +34 91 669 97 01
Fax. +34 91 674 21 00
madrid@frigicoll.es