KSDR ECOWATT®

Compact single flow air handling unit with control

INDEX

1. GENERAL POINTS

1.1 Warnings

This product has been manufactured in compliance with a number of technical safety rules and regulations, according to EC standards. The EC declaration, along with the instructions, can be downloaded from the website www.vim.fr.
Before installing and using this product, please read these instructions carefully as they contain significant guidelines for your safety and the safety of users during the installation, commissioning and maintenance of this product.
Once you have installed the product, attach these instructions to the machine so that they are available for subsequent consultation.

This product must be installed (implementation, wiring, commissioning, maintenance) and all other interventions must be performed by a professional in application of any applicable safety trade standards, regulations and rules.
The installation must conform to the requirements in relation to Electromagnetic Compatibility and the Low Voltage Directive.

VIM may not be held responsible for any bodily injury and/or damage to property caused in the event that the safety guidelines are not respected or if the product is in any way modified.

The KSDR ECOWATT® single flow units are intended for single air flow ventilation and air handling applications in kitchens or tertiary buildings.

Indoor (recommended) or outdoor installation:
- Max. permanent environment temperature:
  - -20°C/+50°C for sizes 08 & 18.
  - -25°C/+40°C for size 28.
  - -25°C/+55°C for size 38.
- To prevent any damage to electronic components (very low temperature, condensation), the safety switch located on the front panel must be kept in the "ON" position with the exception of any maintenance periods.
- Relative humidity: max. of 95% without condensation.
- Potential explosive atmosphere: N/A
- Atmosphere with low salinity, without any corrosive chemical agents.

1.2 Safety guidelines

- Make sure that you use the appropriate PPE (Personal Protective Equipment) before any handling operation.
- Before installing the air handling unit, make sure that the support and location are resistant enough to bear the weight of the unit and accessories.
- Observe with the danger labels present on the various access doors or panels:
- Electrical equipment/Rotating machine/Potentially flammable dust-laden filters:

- Do not open the access doors until the electrical power has been cut from the padlockable switch disconnecter located on the unit.
- If there is work to be performed on the device, cut the electrical power on the main circuit breaker and make sure that nobody is able to accidentally restart it.
- Make sure that any mobile parts are stationary.
- Check that the plug fan is not accessible from the wiring spur line (wiring duct or steel mesh protection).

Before starting-up the device, check the following points:

- Make sure that the device does not contain any foreign bodies.
- Check that all the components are fastened in their original locations.
- Manually check that the fan does not scrape and is unblocked.
- Check the wiring of the earthing electrode.
- Check that the access lid is securely closed.

1.3 Receipt - Storage

In the event of any fault, non-conformity or total or partial breakdown of the delivered products, the Buyer must issue its written reservations on the carrier's receipt in accordance with Article 133-3 of the French Commercial Code and confirm them within 72 hours by registered letter with a copy sent to VIM.

If the Buyer does not issue any reservations upon receipt, it may not take any subsequent action against us.
The product must be kept out of bad weather and protected from any impacts and stains caused by any projections of any kind during its transport from the supplier to the end client, and on the work site prior to installation.

1.4 Warranty

The equipment supplied by VIM is under a 12-month warranty - Parts only - as of the invoice date. VIM undertakes to replace any parts or equipment which are recognised as being faulty by our services, with the exception of any damages or penalties such as operating losses, commercial damage or other moral prejudice or indirect damages.

Our warranty excludes any faults related to any improper use or any use that is not in keeping with the recommendations of our instructions, any flaws observed following normal wear and tear, any incidents caused by negligence, a lack of monitoring or maintenance or any faults due to a poor installation of the devices or unsuitable storage conditions prior to assembly.

Under no circumstances may VIM be held responsible for any transformed or even any partially repaired equipment.

2. PRESENTATION OF RANGE - PRODUCT

2.1 Range

Use: Supply of fresh air into buildings with heating or cooling. Installation on stands or attached by brackets, either indoors or outdoors.

4 sizes: 08 (800 m^3/h), 18 (1 800 m^3/h), 28 (2 800 m^3/h), 38 (3 800 m^3/h).

5 Models:

- **KSDR ECOWATT®**
  - **EI:** electric heater integrated.
  - **EC:** heating water coil integrated, with 3-way valve supplied but not fitted.
  - **EF:** cooling water coil integrated, with 3-way valve supplied but not fitted.
  - **ER:** reversible heating/cooling water coil integrated, with 3-way valve supplied but not fitted.
  - **ECF:** heating and cooling water coils integrated, with 2 3-way valves supplied but not fitted.

2 Configurations:

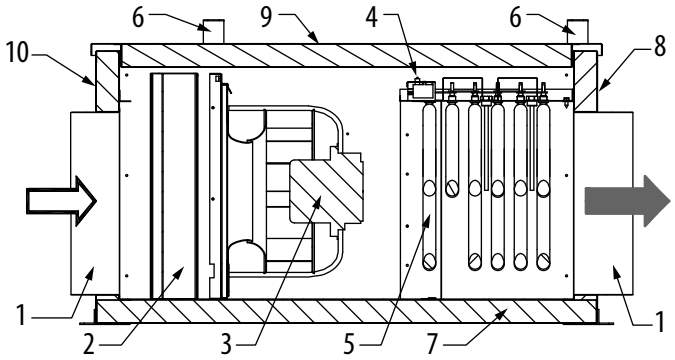
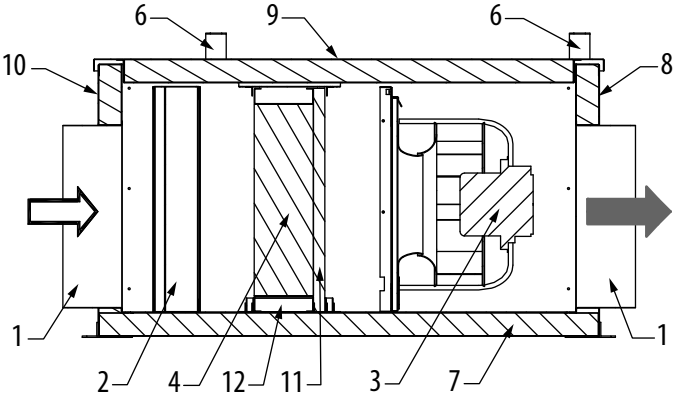
- **EXD:** External arrangement, right hand access and connection sides, in air direction.
- **EXG:** External arrangement, left hand access and connection sides, in air direction.

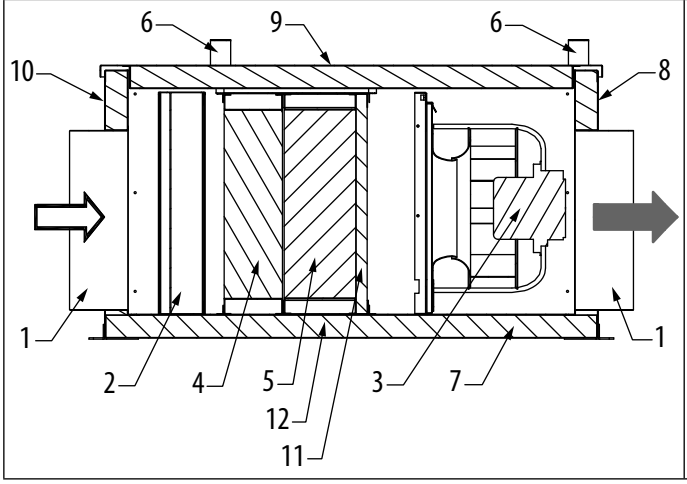
Communicating controller assembled/wired ready to be connected:
Variable flow (VAV), constant flow (CAV), constant pressure (COP).
Temperature adjustment by integrated CORRIGO controller specific to VIM.
Modbus communicating on RS485 port and Bacnet IP on TCP/IP port.
ETD remote touch control included.

Example of complete designation: KSDR ECOWATT® EI 38 EXD CORRIGO Bat Elec Tri 30kW CTA

2.2 Products - Main components

Coil/heater arrangements: electrical (EI), hot water (EC), cold (EF), reversible (ER) or hot and cold water (ECF):

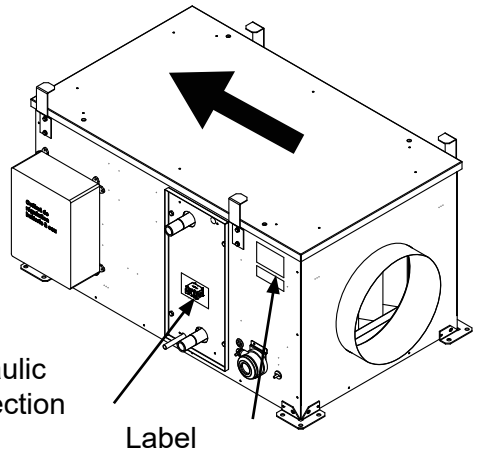
EI model	Marking	Designation
	1 2 3 4 5 6 7 8 9 10	Pipe connection Filter Plug fan Safety thermostats (2) Electric resistance Lid safety brackets Back Outlet face Lid Inlet face
EC, EF and ER models	**Marking**	**Designation**
	1 2 3 4 6 7 8 9 10 11 12	Pipe connection Filter Plug fan Hot water, cold water or reversible coil Lid safety brackets Back Outlet face Lid Inlet face Droplet eliminator (EF or ER) Drain tray (EF or ER)

ECF model	Marking	Designation
	1 2 3 4 5 6 7 8 9 10 11 12	Pipe connection Filter Plug fan Hot water coil Cold water coil Lid safety brackets Back Outlet panel Lid Inlet panel Droplet eliminator Drain tray

3. INSTALLATION

3.1 Identification of unit/Symbols

Identification label - glued to the machine above the control unit



Hydraulic connection label

Label characteristics

KSDR ECOWATT® EI 38 EXG **Code : 686204**

CORRIGO Bat Elec Tri 30kW CTA

Specifications:

Voltage: Tri 400V~ + N 50Hz~50Hz

Total power: 31 kW

Total current: 46.3 A

Fan power: 1 kW
Fan current: 1,6 A

Electric heater power: 6 x 5 kW
Electric heater current: 43.3 A

AIRFLOW

ELECTRIC CONNECTION:
electric connections must be done according to NF C 15 100 and NF S 61 932 standards.

COMMISSIONING AND YEARLY MAINTE : refer to O&M

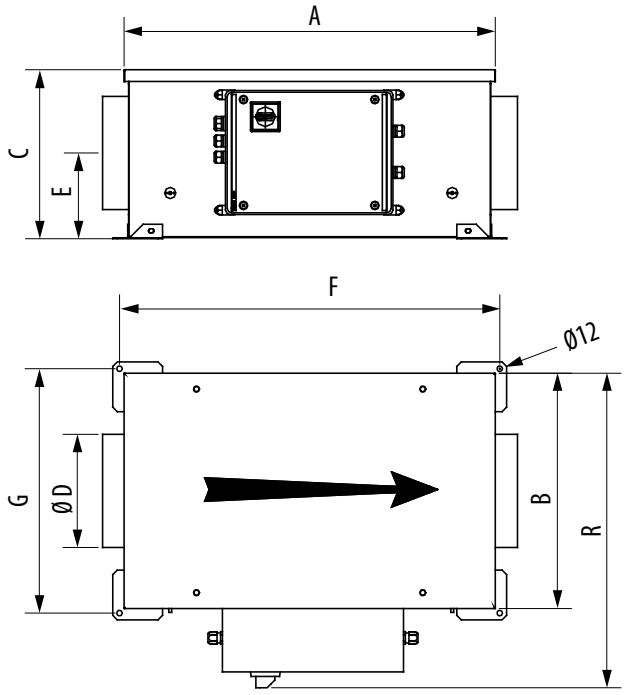
ZA Mégy Sud - F 79800 SOUDAN Tel: 05.49.06.60.00 Weight: 112 kg

CE 15328

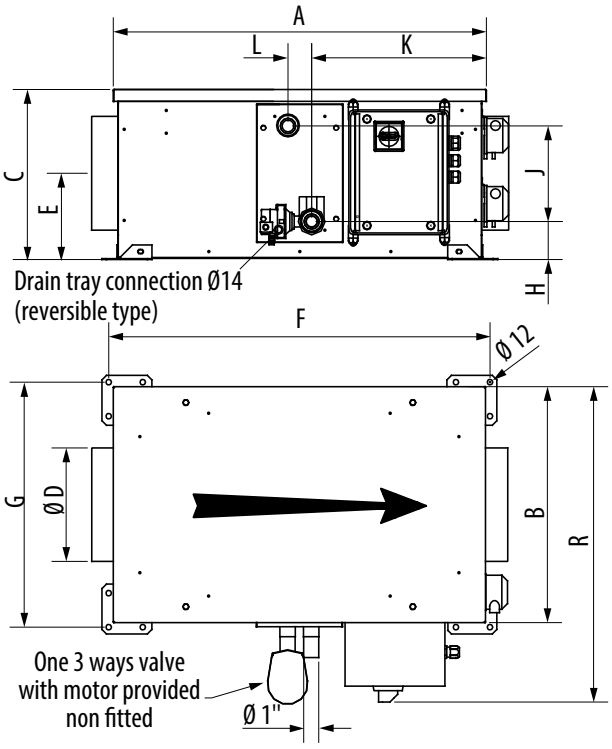
ViM

3.2 Sizes and weights

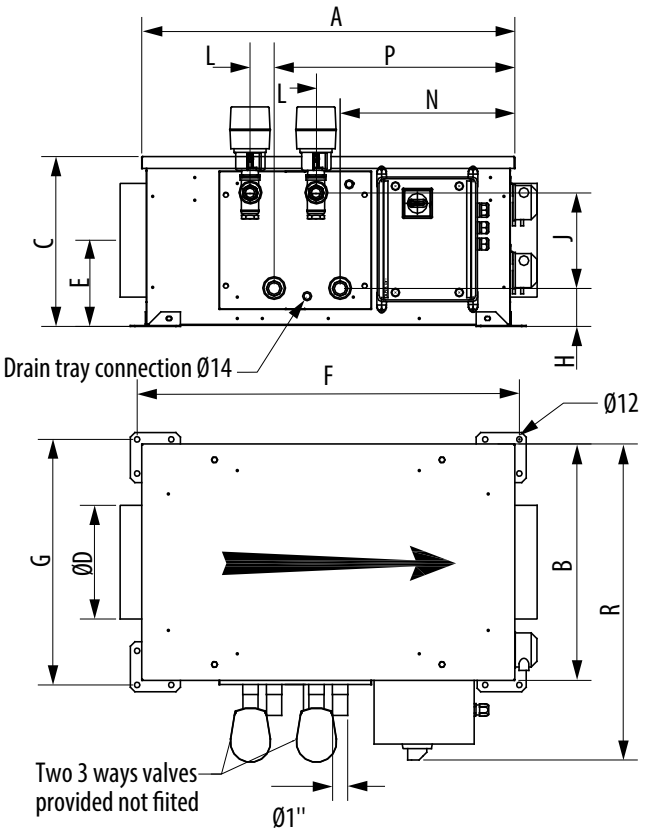
Electric heater (EI)



Hot water (EC) or reversible water (ER) coil

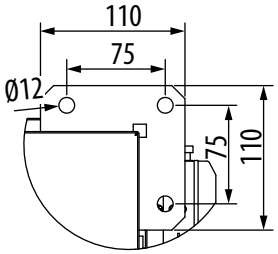


Heating coil + cooling coil (ECF)



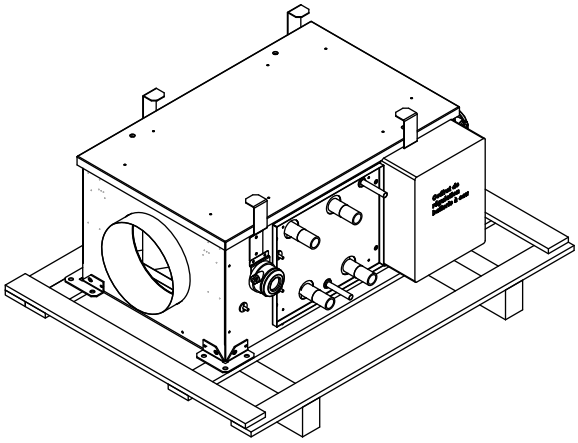
Size	Casing sizes (mm)						Fixation	
	A	B	C	Ø D	E	R	F	G
KSDR ECOWATT® 08	820	520	370	250	190	695	840	540
KSDR ECOWATT® 18	1120	670	600	355	275	845	1140	690
KSDR ECOWATT® 28	1120	670	600	400	275	845	1140	690
KSDR ECOWATT® 38	1120	670	600	400	265	845	1140	690

Attachment bracket



Size	Water coil						Weight (kg)		
	H	J	K	L	N	P	EI	EC, EF or ER	ECF
KSDR ECOWATT® 08	85	210	400	52	437	582	55	58	67
KSDR ECOWATT® 18	105	390	675	52	565	740	99	104	127
KSDR ECOWATT® 28	105	390	675	52	565	740	103	115	131
KSDR ECOWATT® 38	105	390	675	52	565	740	112	121	140

3.3 Handling



The units are delivered already screwed to pallets made to fit the sizes of the casing.
KSDR ECOWATT® air handling units can be handled by pallet truck, by forklift truck or by crane. Handling machines will be adapted to the raising load and conditions.
The lifting will be preformed in all cases from the base of the device attached to a pallet. The centre of gravity is located at the centre of the unit.
The device must be handled with care and only in a horizontal position.

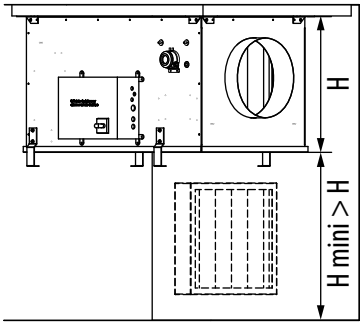
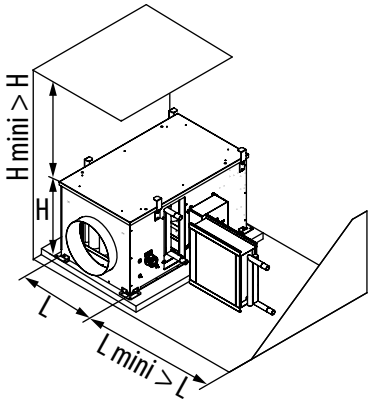
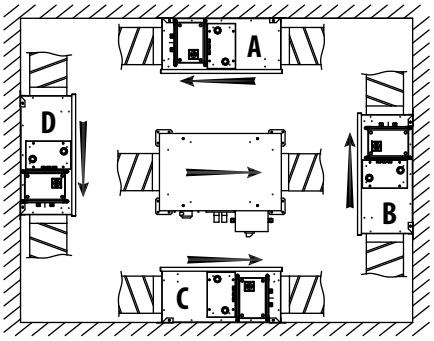
3.4 Location and Attachment

The KSDR ECOWATT® AHU must be placed on a horizontal and smooth surface that is able to bear the load. The EXD and EXG models are intended for indoor or outdoor installation.

In all cases, provide for any ducts, wiring accessories, anti-vibration and anti-freezing protection equipment of the water coil. In areas with a high snowfall, additional protection should be considered. It is important to provide for enough space so that the panels can be opened, started p and maintained (filter, fan, coils/electric heaters). No not place the unit against a wall in order to prevent the transmission of structure-borne noise.

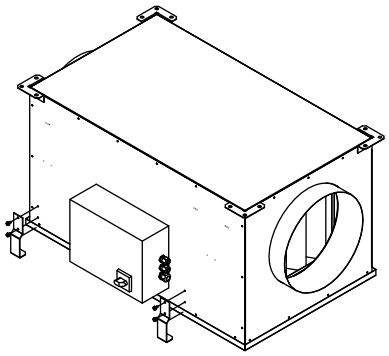
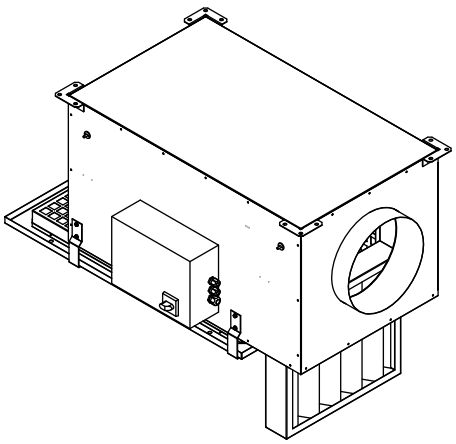
The casing must be attached to a completely flat support by the side holes provided for this purpose. Assembly operations should be performed on anti-vibration supports or plates and the wiring should involve soft spool pieces.

Provide the following necessary clearances for maintenance operations:

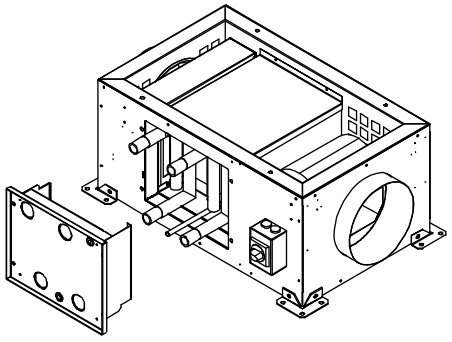
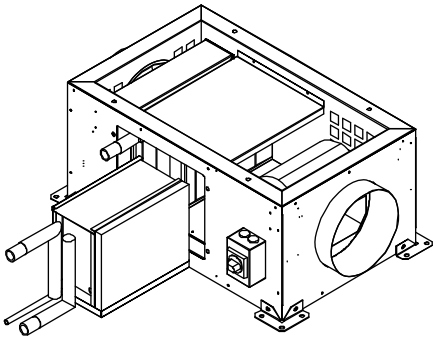
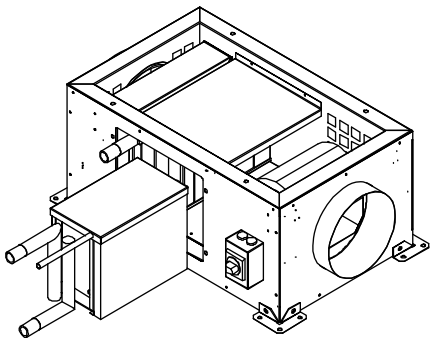
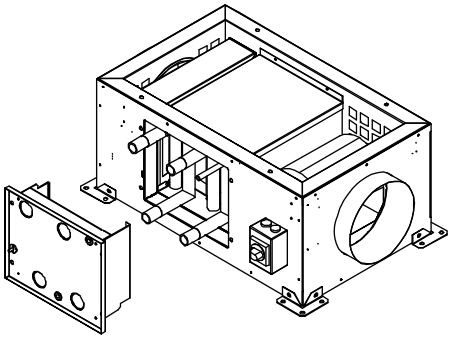
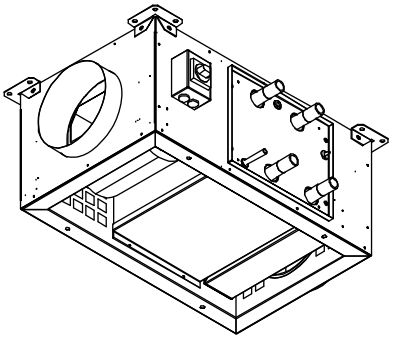
Suspended assembly	Assembly on the floor
	
Various assemblies	
	Note: • In the cooling water and reversible coils versions, only positions **A** and **C** are possible. • In the cooling water and reversible coils versions in position **A**, invert the drain tray (see below) • To use anti-vibration supports, only position **C** is possible.

If the casing is attached to the ceiling, previously install the 4 lid safety brackets delivered. They allow it to be transferred onto its side so that the passage of the filter can open. All you have to do is take it out and replace it with a new filter.

To completely remove the lid, slide it sideways.

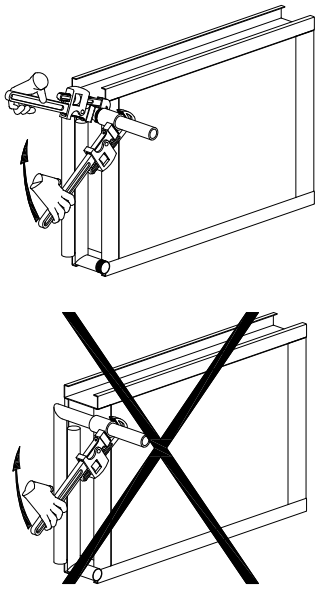
Assembly A	
	
Unscrew the 8 screws from the sheets attached on the sides of the casing. Screw them back on to attach the 4 brackets. This will allow the fastening screws to be unscrewed from the lid without it falling.	

Assembly A:
Inversion of the drain tray (KSDR ECOWATT® EF, ER and ECF)
The position of the drain tray of the KSDR ECOWATT® with cooling water or reversible coil is factory configured to be attach the casing to the floor.
For an inverted fastening to the ceiling, you must remove the condensate collection pan.

1 - Disassemble the drawer by unscrewing the 4 HM8 screws with the 13 spanner	2 - Take out the pan with the cooling water coil and the eliminator
	
3 - Invert the pan by slotting it above the coil	4 - Put the unit back into the casing
	
5 - Invert the plug and the lead-through opening and re-assemble the drawer.	
	

4. HYDRAULIC CONNECTION

4.1 Wiring of water coils



The hydraulic features of the unit are particular to your installation and are determined by IT selection: Loss of head in relation to the water/Flow of water. Refer to the selection in order to dimension the network, accessories and pump.

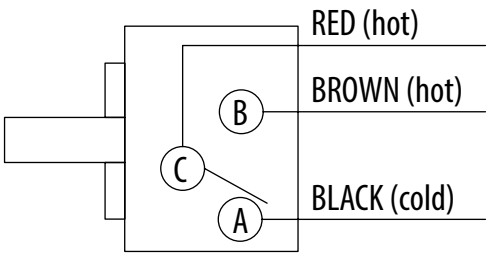
The connection of the piping to the coil must not impose any mechanical, vibration or thermal (dilatation) constraints.
Coils are delivered already threaded at the ends.

During tightening on the threading of the coil, keep the piping in reverse, for instance using a pin spanner to stop the pipes from becoming damaged through twisting.

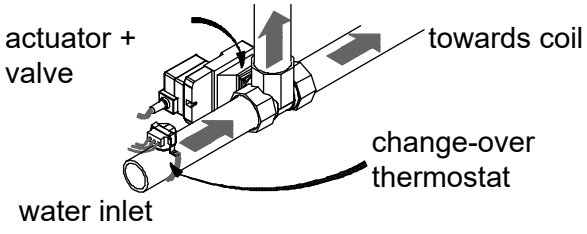
Respect the water input and output direction indicated on the label glued to the coil panel.

Discharge of drain tray (ER, EF and ECF versions only)
The installed coil is equipped with an eliminator and a stainless steel drain tray welded at the angles.

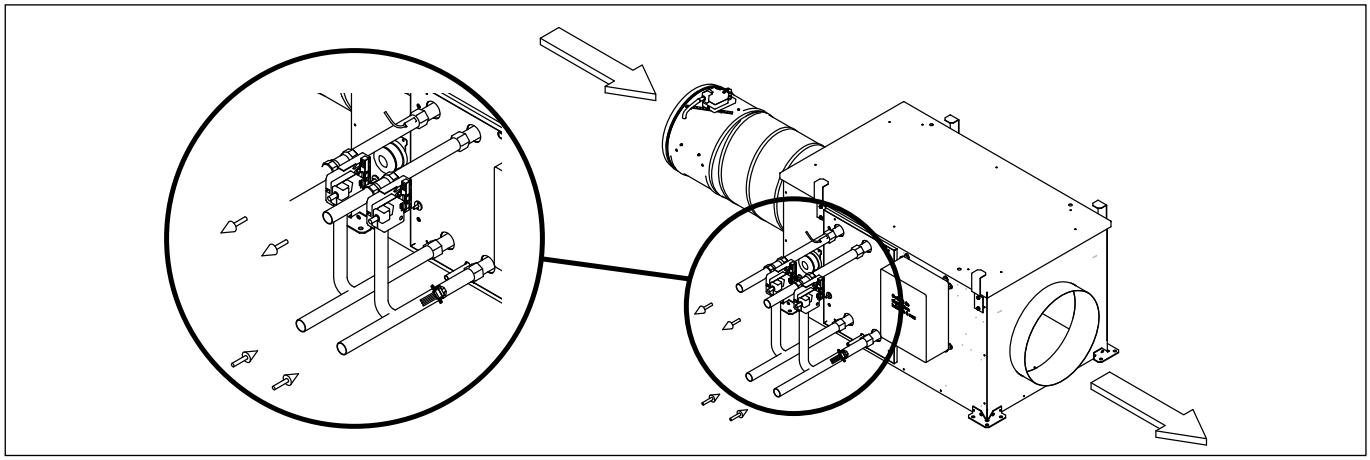
Change over thermostat (ER versions only)
A Change over thermostat (THCO sensor) should be installed on the hydraulic network and wired to the electric panel of the unit. It allows the control of the mixing valve to be inverted in installations with only one coil, according to the fluid temperature detected at the entry to the valve.



Technical features:
- Inverter Contact Output 240 V~, 3 A
- Calibration of C-A Contact open 30 ± 4 °C
- C-A Contact closed 15 ± 4 °C
- Spring locking on the piping
- Electrical wiring of 3 wires of 1,500 mm
- IP 65 protection



4.2 Connection of valves



The coil tubes are 1", no gas, with a male thread at the end.
Motorised 3-way valves are not delivered already assembled.
Respect the positioning of the mixing valve on the network and the water input and output directions indicated on the label glued to the coil panel.

5. AIRFLOW CONNECTION

5.1 Connection of ducts

Ducts should not exercise any mechanical constraints on the unit.
Check that the plug fan is not accessible from the connection spur line (protection by the connection duct or steel mesh air inlet).
Do not reduce the diameter of ducts at the exit of connection spur lines.
On the other hand, the diameter can be increased to reduce the passage speeds in the network and to limit the head losses, energy consumption and noise level.
According to the configuration of the installation and the required noise level, the addition of a silencer may be necessary at the air supply.

Take care in sealing the networks over all their lengths, from the inputs to the outputs. In circular, preferably use accessories with seals (at least of classification C according to EN12237).

The fresh air duct must be insulated at all times to prevent any leakage and condensation problems. The insulation level, especially in cold rooms and regions, must be reinforced.
Applicable regulations must be respected in all cases as a minimum requirement.

5.2 Connection of accessories

For all electrical connections on the cabinet of the KSDR ECOWATT®: please see §"6.7 Wiring diagrams of external elements, CAV, VAV and COP adjustments.".

Motorised damper
When the unit is fitted with a water coil, you should consider the use of a motorised damper with anti-freeze protection located on the fresh air network. Whenever possible, use a motorised damper with reinforced sealing.

Use	Code	Designation	Description
KSDR ECOWATT® 08	165485	**REEV 250**	Anti-freeze or fire motorised damper with airtight section + external seals
KSDR ECOWATT® 18-28	165487	**REEV 355**	Anti-freeze or fire motorised damper with airtight section + external seals
KSDR ECOWATT® 38	165488	**REEV 400**	Anti-freeze or fire motorised damper with airtight section + external seals
KSDR ECOWATT® 08 to 38	165384	**LF 230 S**	On-off motor with return spring 4 Nm 230V 1 and auxiliary contact
KSDR ECOWATT® 08 to 38	165384	**LF 230 S**	On-off motor with return spring 4 Nm 230V 1 and auxiliary contact

Extract air sensor
For room temperature adjustment, you must install an air temperature sensor in the desired room. For return temperature adjustment, a duct temperature sensor must be assembled for recirculation.

Code	Designation	Description
132258	**TG-R5/PT1000**	Room temperature sensor
132257	**TG-K3/PT1000**	Duct temperature sensor

Control units
1 or 2 speed comfort control units, high speed activation panel.

Code	Designation	Description
720420	**BDEA**	Shunt release panel
730395	**BCCA 1V**	1 speed comfort control unit
730400	**BCCA 2V**	2 speed comfort control unit

Differential pressure sensor – Operating in COP (Constant Pressure)
For constant pressure operations, you must install a pressure sensor in the supply duct at a minimum distance of 2 times the diameter of the connection.

Application	Code	Designation	Description
KSDR ECOWATT® 08/38	132105	**SPRD-B 800**	Pressure sensor in panel 0-800 Pa 0,5-4,5V
SPRD accessory	132143	**KTPR**	2 pressure sensor kit + screws + 2 m translucent tube

Air quality sensor to measure CO2 - Operating in VAV (Variable flow)
For variable flow operations, you must install an air quality (generally CO2) sensor either in return air duct, or room air duct in the room to be treated.

Code	Designation	Description
132376	**SCO2 AA-010-400-1100**	Room sensor with 400-1000 ppm display 0-10V Output signal
132262	**SHUR-010**	SHUR 0-10 Hygrometry sensor 0-100% RH wall assembly
132375	**SCO2 A-010-400-1100**	Room sensor without 400-1000 ppm display 0-10V Output signal
132377	**SCO23 G MIX 400-1100**	400-1100 ppm Duct sensor 0-10V or 4-20mA Output signal

6. ELECTRICAL CONNECTION

6.1 Electrical characteristics

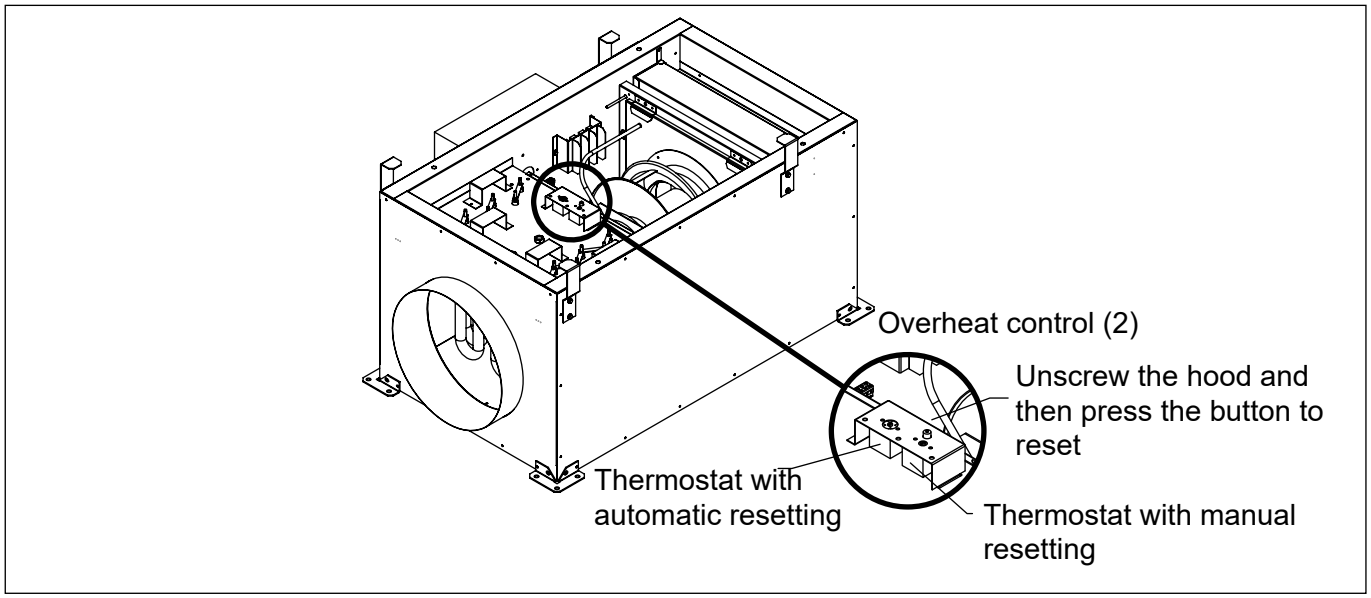
The power or connection cables of accessories must pass through the grommets provided on the adjustment cabinet on the front panel.

Overall unit
Power and intensity for the whole KSDR ECOWATT® selected
Capacity of the power connection terminal block: 10 mm², coupling torque: 2.5Nm

Model	Plug Fan				
	Max. speed (tr/min)	Frequency (Hz)	Voltage (V)	Max. P absorbed (W)	Current (A)
KSDR ECOWATT® EI 1 Phase	2649	50/60	1 Phase 230V	193	1,5
KSDR ECOWATT® 08 EI 3 Phase	2649	50/60	1 Phase 230V	193	1,5
KSDR ECOWATT® 08 EC-EF-ECF-ER	2649	50/60	1 Phase 230V	193	1,5
KSDR ECOWATT® 18 EI	2850	50/60	1 Phase 230V	415	1,8
KSDR ECOWATT® 18 EC-EF-ECF-ER	2850	50/60	1 Phase 230V	415	1,8
KSDR ECOWATT® 28 EI	2800	50/60	1 Phase 230V (200-277)	715	3,1
KSDR ECOWATT® 28 EC-EF-ECF-ER	2800	50/60	1 Phase 230V	715	3,1
KSDR ECOWATT® 38 EI	2580	50/60	3 Phase 400V + N	1000	1,63
KSDR ECOWATT® 38 EC-EF-ECF-ER	2580	50/60	3 Phase 400V + N	1000	1,63

Model	Electric heater				Full unit		
	Voltage (230/400V)	P absorbed (W)	Intensity (A)	Voltage (V)	Voltage (230/400V)	Total P (kW)	Current (A)
KSDR ECOWATT® 08 EI 1 Phase	1 Phase	6000	26,1	230V	1 Phase	6,5	28,0
KSDR ECOWATT® 08 EI 3 Phase	3 Phase + N	9000	13,0	400V	3 Phase+ N	10,5	15,0
KSDR ECOWATT® 08 EC-EF-ECF-ER					1 Phase	1,8	2,5
KSDR ECOWATT® 18 EI	3 Phase + N	15000	21,7	400V	3 Phase + N	16,6	23,9
KSDR ECOWATT® 18 EC-EF-ECF-ER					1 Phase	2	2,8
KSDR ECOWATT® 28 EI	3 Phase + N	24000	34,6	400V	3 Phase + N	26,5	38,2
KSDR ECOWATT® 28 EC-EF-ECF-ER					1 Phase	2,9	4,1
KSDR ECOWATT® 38 EI	3 PhaseV + N	30000	43,3	400V	3 Phase + N	31,5	45,4
KSDR ECOWATT® 38 EC-EF-ECF-ER					3 Phase + N	1,9	2,6

EI model - Technical data of electric heaters
An electric heater is installed inside the unit of the EI models. It is fully wired and connected to the controller.
Location of thermostats and reinforcement of the manual thermostat:

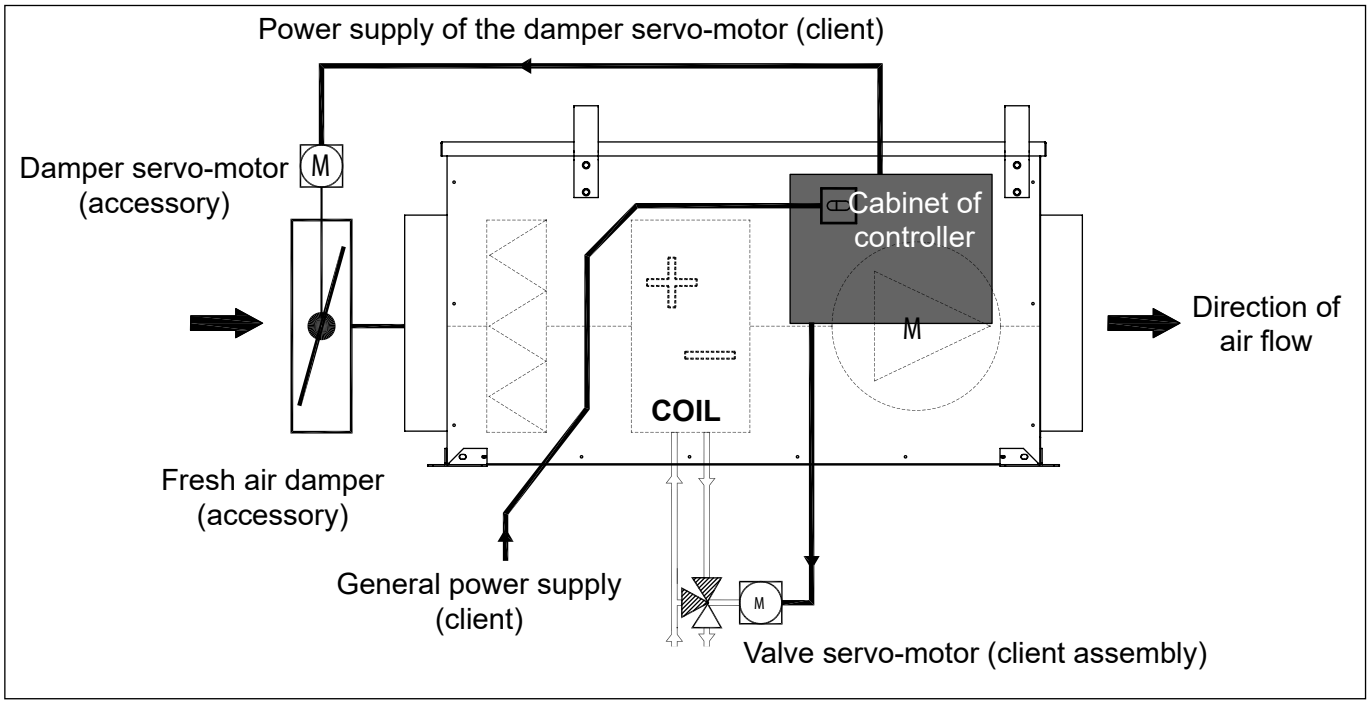


Units equiped with electric heaters can have lower heating powers upon request.

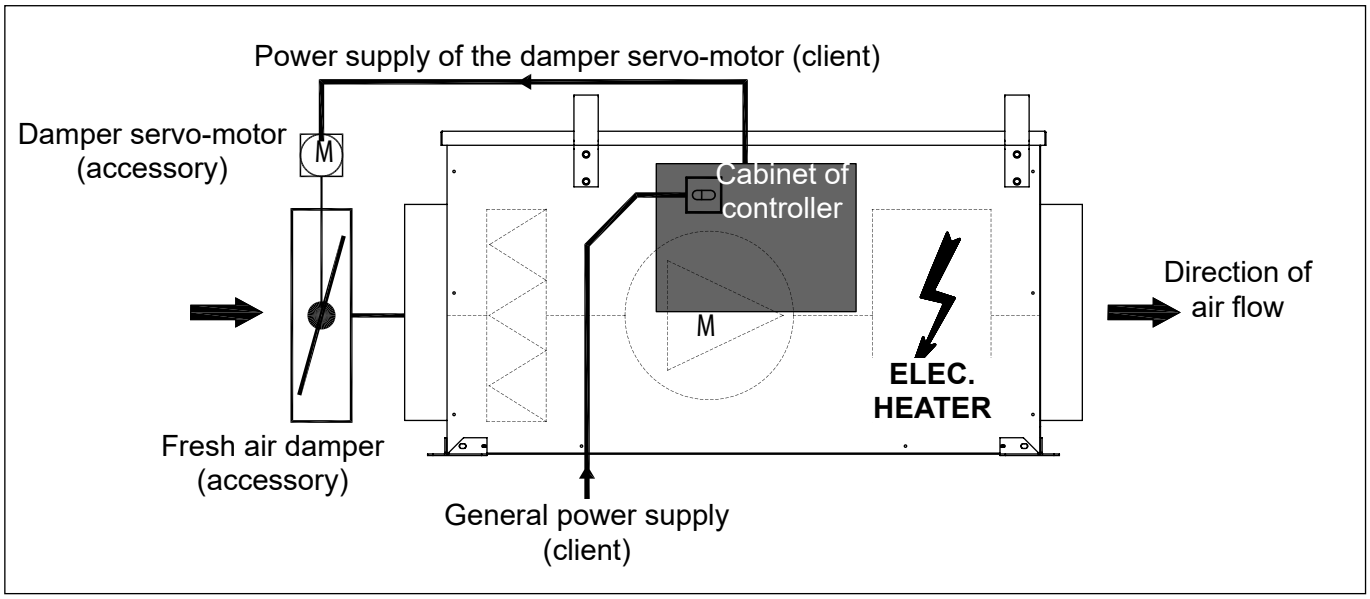
Sizes	Power supply	Resistance no.	Power of a pin (KW)	Total (KW)	Possibility of reducing power
KSDR ECOWATT® 08	230V - 1Ph	2	3	6	**3 kW** by removing 1 resistance of 3 kW
KSDR ECOWATT® 08	400V - 3 Ph	3	3	9	**No**
KSDR ECOWATT® 18	400V - 3 Ph	3	5	15	**No**
KSDR ECOWATT® 28	400V - 3 Ph	3	03 and 05	24	**09 KW** by removing 3 resistances of 5 kW **15 KW** by removing 3 resistances of 3 kW
KSDR ECOWATT® 38	400V - 3 Ph	6	5	30	**15 KW** by removing 3 resistances

6.2 Electric panel - power supply principle

KSDR ECOWATT® with water coil



KSDR ECOWATT® with electrical battery



6.3 Technical characteristics of the CORRIGO controller

- Power voltage 24 V AC ±15%, 50.60Hz or 21.36 V DC
- Power consumed of E.W-3 models: 12 VA, 6 W (DC)
- Room temperature 0...50°C
- Storage temperature -40...+50°C
- Max. room humidity 90% RH
- Protection index IP20
- Connection of withdrawable terminal blocks, 4 mm^2
- Saving the memory: an integrated long-life battery allows adjustments to be saved over an extended period, with real time included.

Electromagnetic compatibility directive:
This product meets the requirements of directive 2004/108/EC of the European Parliament and Council (EMC) through compliance with standards EN 61000-6-1 and EN 61000-6-3.

RoHS:
This product meets the requirements of directive 2011/65/EU of the European Parliament and Council.

Input
Analogue input for PT1000 sensors (precision +I- 0,4°C) or 0...10 V DC (precision +I- 0,15% of the whole output signal). 12-bit resolution in the A/D signal conversion.
Digital input for potential-free contacts

Output
Analogue output 0...10 V DC, 1 mA, protection against short-circuits Digital output Mosfet output, 24 V AC/DC, continuous 2 A. Max. 8 A in total.

Communication ports
1 Web server TCP/IP port, TCP/IP communication, BACnet/IP.
2 Modbus and EXOline Communication RS485 ports (REGIN language).

Indications

Operation indications:	the green LED is lit when the CORRIGO is powered up.
Alarm indication:	the red LED flashes and the alarm text is displayed on screen.
General alarm:	this output can be configured

E tool© configuration software
Required equipment: operating system of MS Windows 2000, 8, 7, XP, Vista, Windows 7, Windows 8 or Windows 10 available on www.vim.fr.

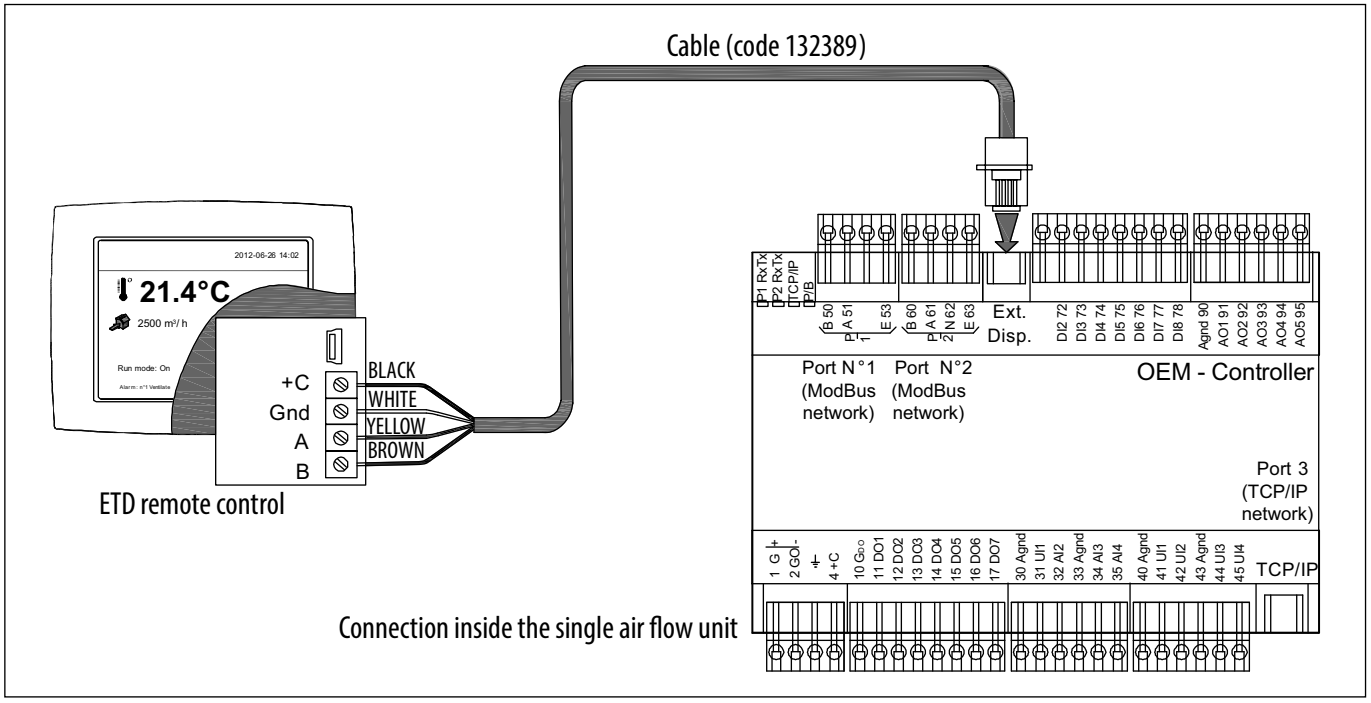
6.4 Connection of the control with ETD display

The ETD control is delivered with a 10 m cable (possible extension of up to 100 m) fitted with an RJ10 4P4C connector for wiring to the CORRIGO. Use the available grommet to connect to the inside of the unit.

The ETD control is IP30; it is exclusively reserved for use indoors and protected from any humidity.
It is fitted with an internal temperature sensor.

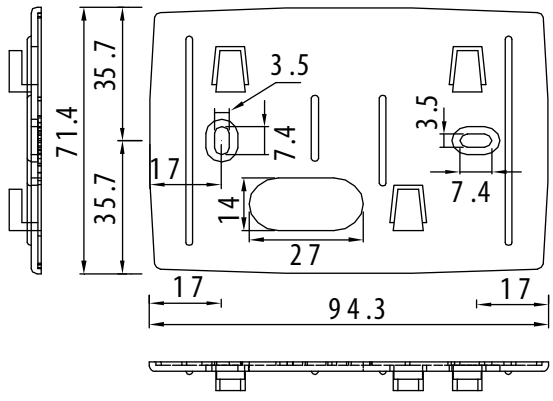
Once it has been configured, the command control can be disconnected.

Wiring diagram

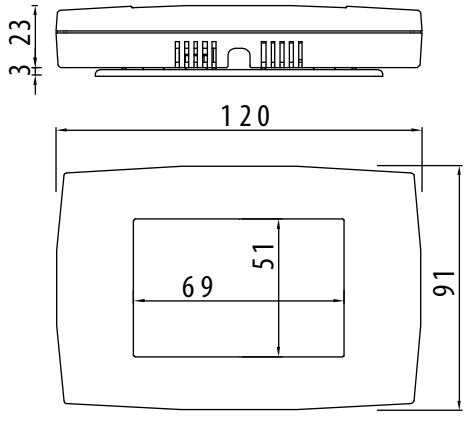


Implementation of the support and command control

Fastening support

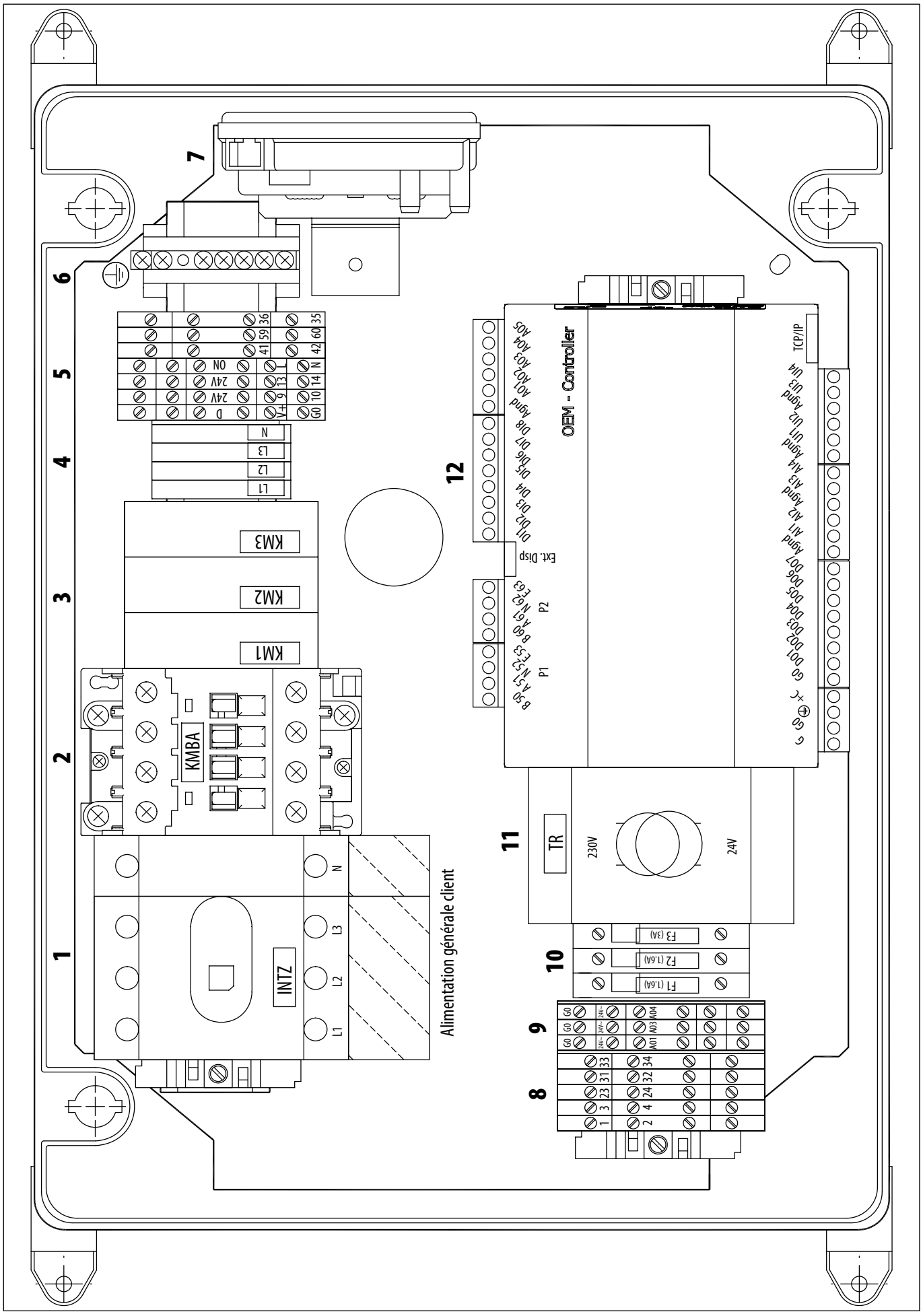


ETD command control



6.5 Input - output tables (terminal block/signal/variable/function)

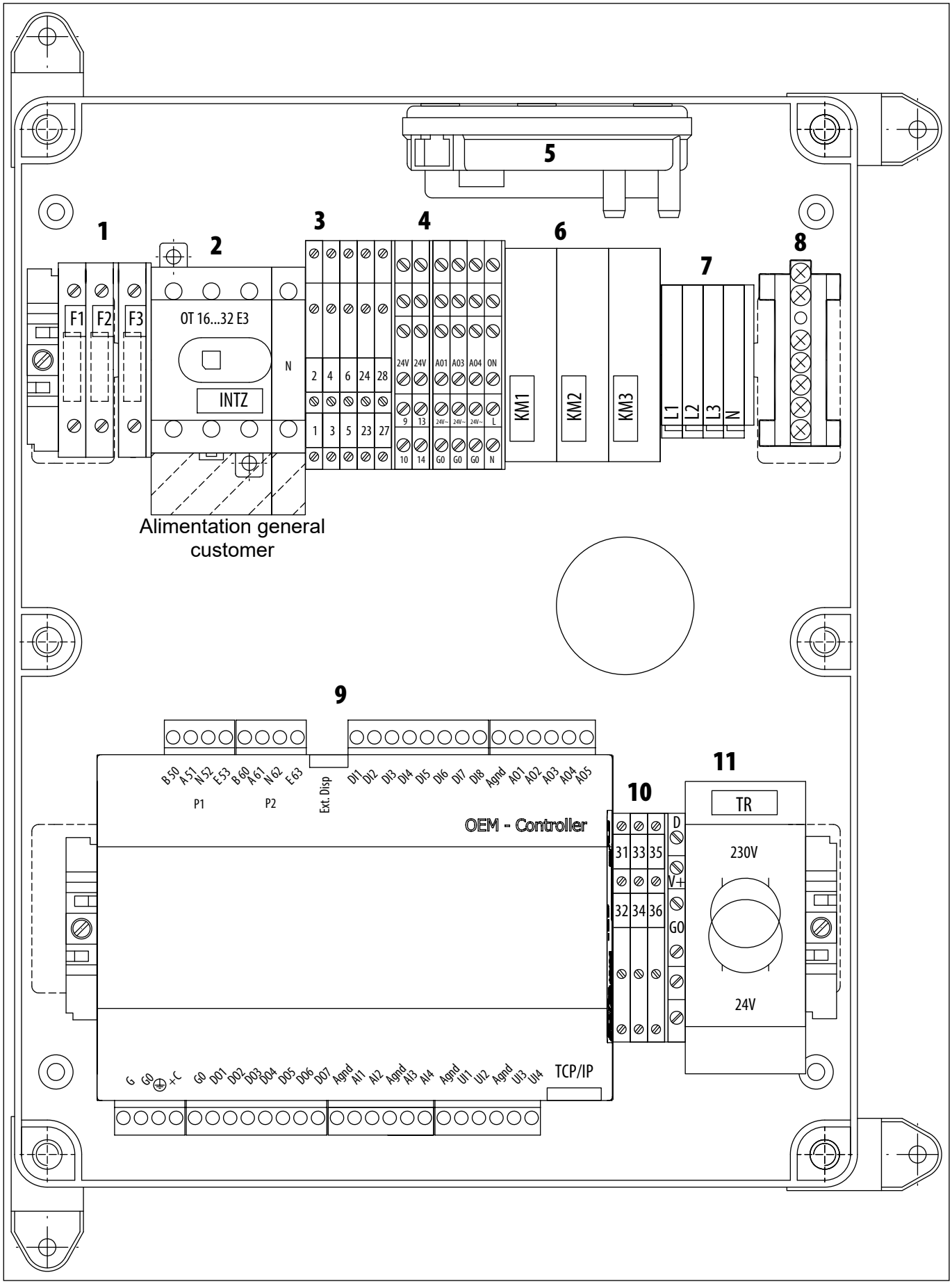
EI model



Marking		Designation
1	INTZ L1-L2-L3-N	General client power on INTZ switch disconnecter
2	KMBA	Electrical resistance supply
3	KM1 KM2 KM3	Fresh air damper HS running -
4	L1-L2-L3-N	Plug fan power supply
5	9-10	External set point for fan (0-10V)
	13-14	Pressure sensor (suct. chamber)
	ON-L-N	Fresh air damper
	41-42	Y1 - PWM
	59-60	Alarms (summary)
	35-36	Fire
	D - V+ - G0	D: signal, V+: power supply +10V, G0: Mass, for External set point for fan
6	⏚	Earth electrode
7		Pressure regulator
8	1-2	Supply temperature sensor
	3-4	Room/return temperature sensor
	23-24	Filter pressure switch
	31-32	External on/off
	33-34	External PV/GV requested
9	A01-G0	Signal Y1 (hot)
		(in the event of an additional external coil/electric heater)
	A03-G0	Signal Y3 (cold)
	A04-G0	Supply (fan speed)
10	F1-F2-F3	Control circuit protection fuses (F1=1.6A ; F2=1.6A ; F3=2.0A)
11	TR 230V - 24V	Transformer 230V/24V 50Hz
12	CORRIGO E28	- EXT Disp: connection of the ETD remote touch screen.
		- Agnd/AI4: wiring of the exterior temperature sensor.

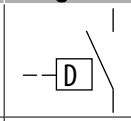
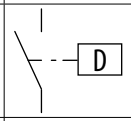
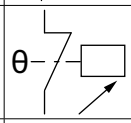
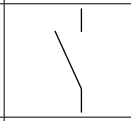
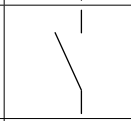
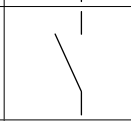
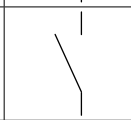
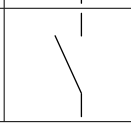
Client connections in grey.

EC, ER, EF, ECF models



Marking		Designation
1	F1-F2-F3	Control circuit protection fuse (F1=1.6A ; F2=1.6A ; F3=2.0A)
2	INTZ L1-L2-L3-N	General client power supply on INTZ switch
3	1-2	Supply temperature sensor
	3-4	Room/return temperature sensor
	5-6	Water temperature sensor with anti-freeze protection
	24-26	Filter pressure switch
	27-28	Change-over sensor
4	9-10	External set point for fan 0-10V)
	13-14	Pressure sensor (suct. chamber)
	A01-G0	Signal Y1 (hot)
	A03-G0	Signal Y3 (cold)
	A04-G0	Supply (fan speed)
	L-N	Fresh air damper
5		Pressure switch
6	KM1 KM2 KM3	Fresh air damper HS running -
7	L1-L2-L3-N	Plug fan power supply
8	⏚	Earth electrode
9	CORRIGO regulating device 28ES 3P	- EXT Disp: connection of the ETD remote touch screen.
		- Agnd/A14: wiring of the exterior temperature sensor
10	31-32	External on/off
	33-34	External PV/GV requested
	35-36	Fire
	D - V+ - G0	D: signal, V+: power supply +10V, G0: Mass, for External set point for fan
11	TR 230V-24V	Transformer 230V/24V 50Hz

Client connections in grey

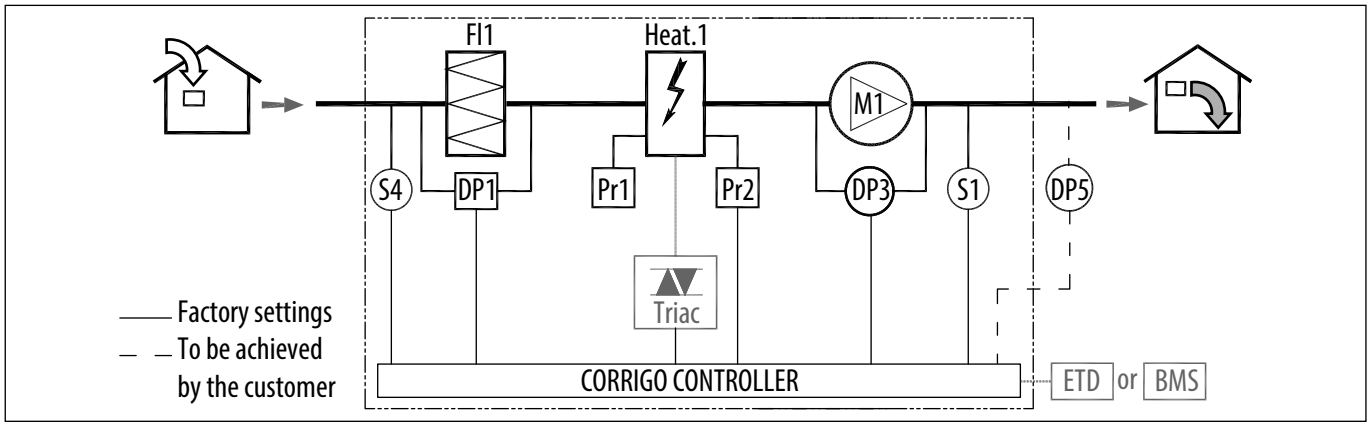
Analogue inputs (Sensors)				
Terminal block	**Signal**	**Variable**	**Name**	**Description**
21-22		DI 1	Free	Do not connect
23-24		DI 2	Filter monitoring	Monitoring of filter blockages
25-26		DI 3	Temperature limiting system	Monitoring of the activation of safety thermostats in the event that the electric heater overheats
27-28		DI 4	Change-over thermostat	Monitoring of the water circuit inflow temperature to select the hot/cold mode of the reversible coil
31-32		DI 5	M/A ventilation	Request to start or stop the system Comment: stop is a priority on the clock
33-34		DI 6	High speed manual override	Start-up request at maximum speed The override is a priority on the "clock"
35-36		DI 7	Entry into fire safety mode	Selection request of the unit into fire mode (see chapter for the explanation on this operating mode)
37-38		DI 8	Free	Do not connect

Analogue outputs (controller): towards damper servo-motors, auxiliary coil/electric heater, etc.				
Terminal block	**Signal**	**Variable**	**Name**	**Description**
SA1 (24V-Gnd)	0-10V	AO1	Heating	Proportional control 0-10V of the heating request
SA2 (24V-Gnd)	0-10V	AO2	Mixing damper	Proportional control 0-10V for the mixing damper (optional)
SA3 (24V-Gnd)	0-10V	AO3	Cooling	Proportional control 0-10V of the cooling request
SA4 (24V-Gnd)	0-10V	AO4	Supply ventilation	Proportional control 0-10V of the blowing fan
SA5 (24V-Gnd)	0-10V	AO5	Free	Do not connect

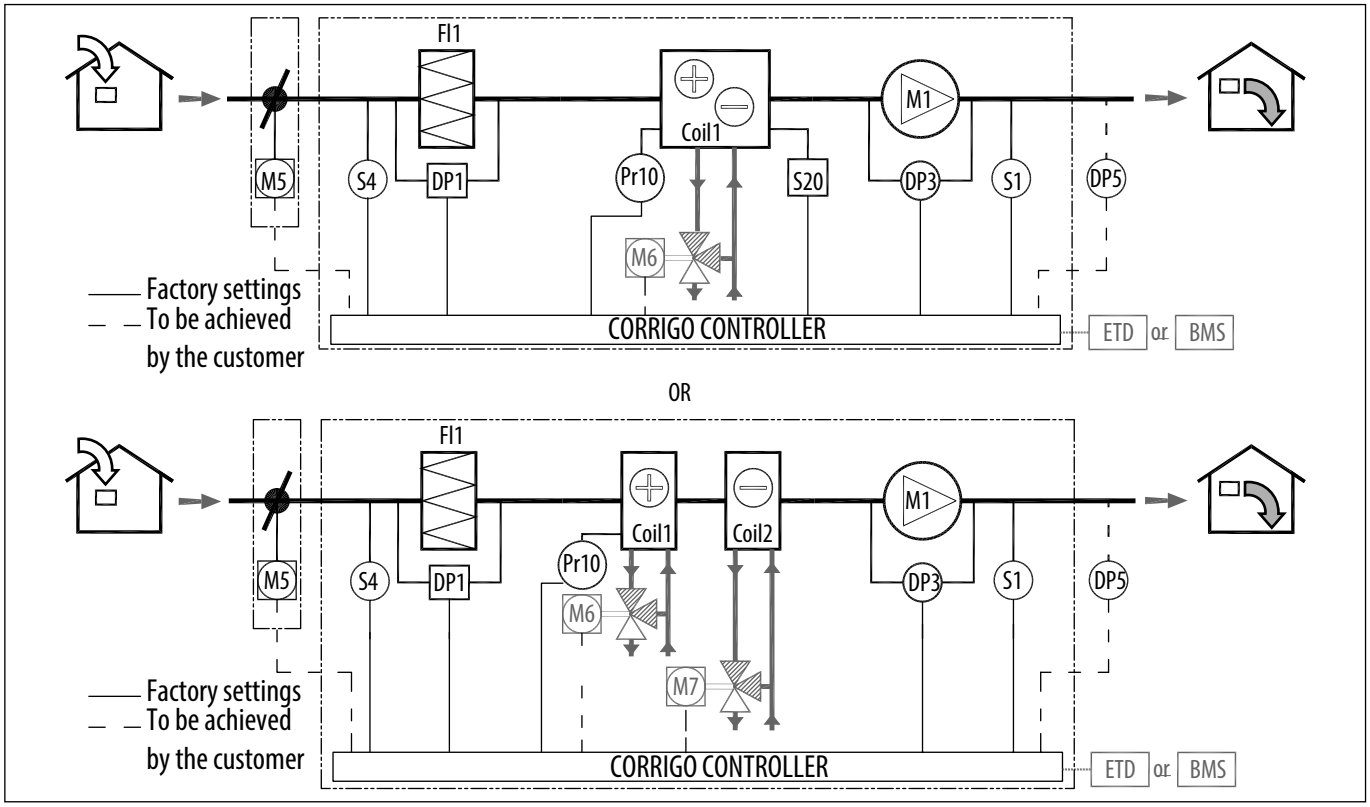
Logical output (actuators and feedback): the contacts are potential-free				
Terminal block	**Signal**	**Variable**	**Name**	**Description**
KM1: 12-11-14 N-L-on	11 12 14 or 230V	DO1	Blowing fan	Control output for fresh air damper servo-motor. Max. contact capacity: 8A/230V AC12 and 8A/24V DC12 on resistive loads. Available: - Either by a dry contact for general use - Or for a use of a 230V damper with a control per 230V signal (borne on) and a 230V power supply (L-N)
KM2: 12-11-14	11 12 14	DO2	HS running	High speed running Max. contact capacity: 8A/230V AC12 and 8A/24V DC12 on resistive loads.
KM3		DO3		Do not connect Max. contact capacity: 8A/230V AC12 and 8A/24V DC12 on resistive loads.
KM4: 12-11-14	11 12 14	DO4	Alarm summary	Alarm information reporting
/	24Vac	DO5		Do not connect
/	24Vac	DO6		Do not connect
41-42	24Vac	DO7	Heating	PWM control for electric heater triac

6.6 Controller display panels

KSDR ECOWATT® EI



S1	Supply air T° sensor	**M5**	Fresh air damper (accessory)	**DP5**	Differential pressure sensor (COP mode accessory)
S4	Fresh air T° sensor	**M6**	Valve with actuator	**Bat1**	Dual mode coil/heating coil
R	Corrigo controller	**M7**	Valve with actuator	**Bat2**	Cooling coil
Pr10	Antifrost sensor	**FI1**	Fresh air filter	**ETD**	Touch display for KSDR control
S20	Change-over thermostat	**DP1**	Fresh air filter pressure switch		
M1	Motor-fan	**DP3**	Airflow measure		

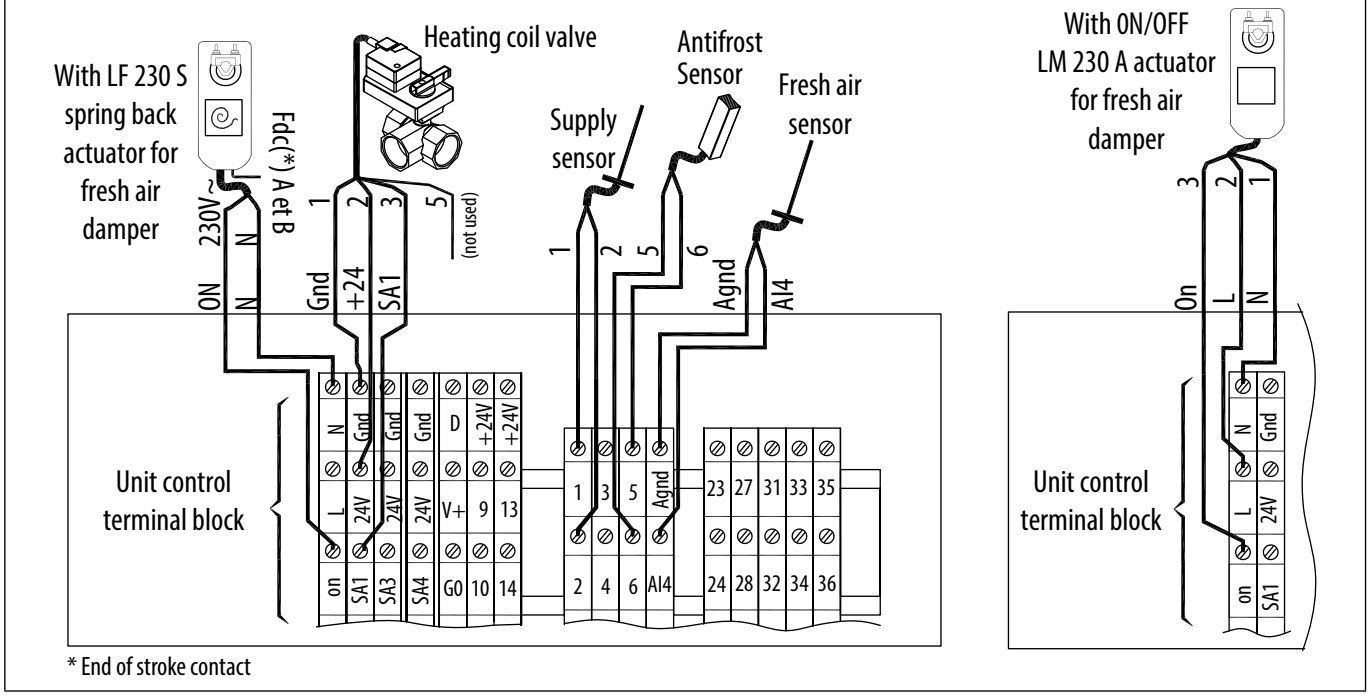


S1	Supply air T° sensor	**M5**	Fresh air damper (accessory)	**DP5**	Differential pressure sensor (COP mode accessory)
S4	Fresh air T° sensor	**M6**	Valve with actuator	**Bat1**	Dual mode coil/heating coil
R	Corrigo controller	**M7**	Valve with actuator	**Bat2**	Cooling coil
Pr10	Antifrost sensor	**FI1**	Fresh air filter	**ETD**	Touch display for KSDR control
S20	Change-over thermostat	**DP1**	Fresh air filter pressure switch		
M1	Motor-fan	**DP3**	Airflow measure		

6.7 Wiring diagrams of external elements, CAV, VAV and COP adjustments.

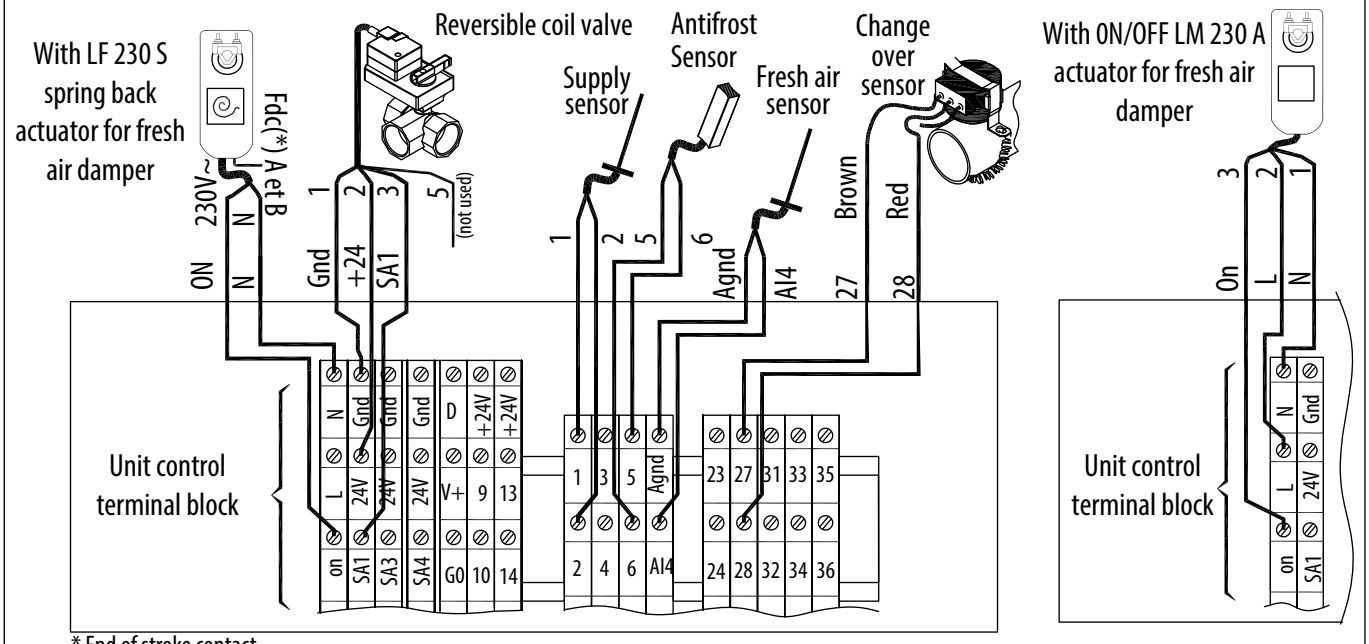
For an adjustment according to a room temperature, a room temperature sensor TG-R5/PT1000 (accessory) must be added to connectors 3 and 4. The supply and fresh air sensors must remain connected under all circumstances.

EC model - hot water coil (delivered already assembled) + motorised damper (accessory)



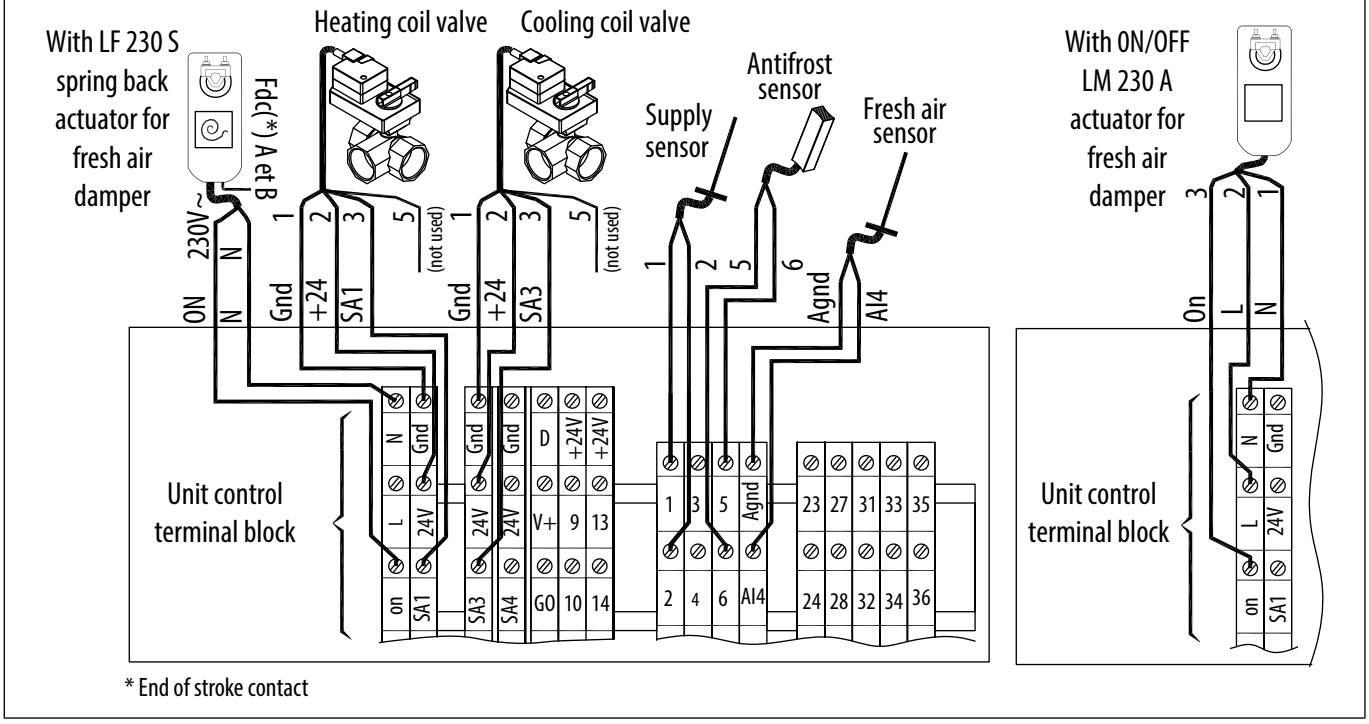
* End of stroke contact

ER model - reversible water coil (delivered already assembled - cold or hot) + motorised damper (accessory)



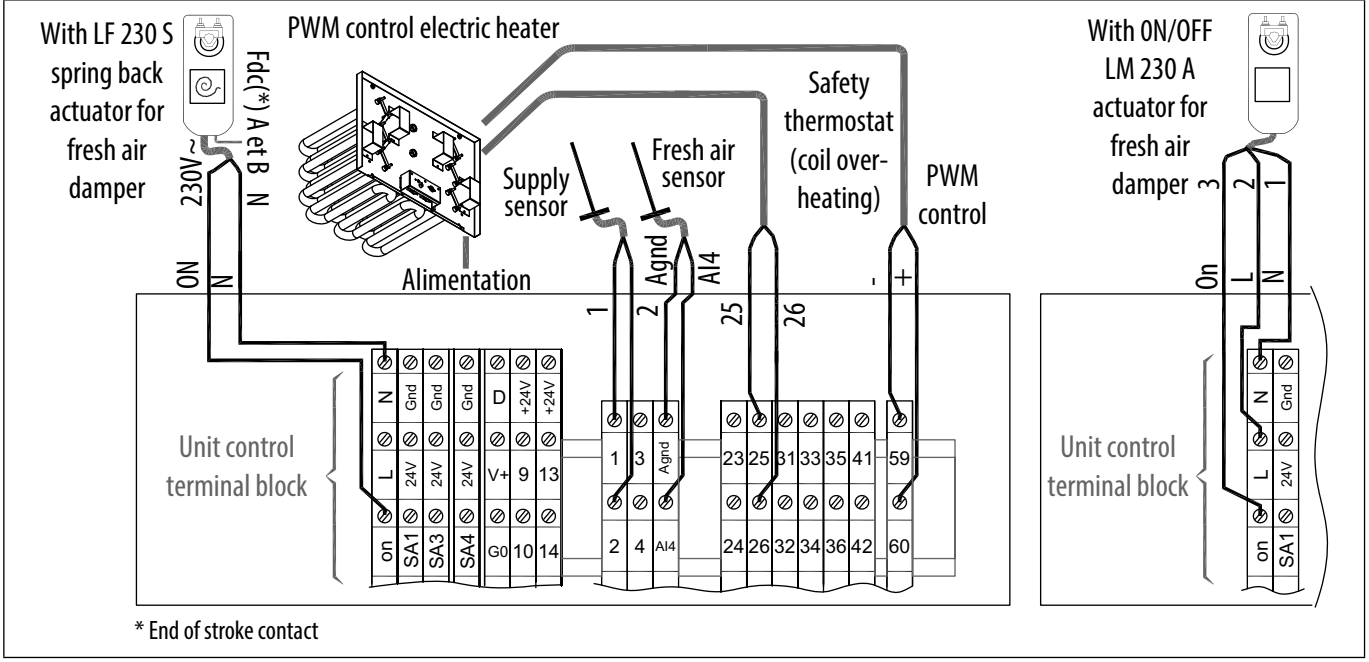
* End of stroke contact

ECF model - 2 separate water coils (hot water + cold water circuit) + motorised damper (accessory)



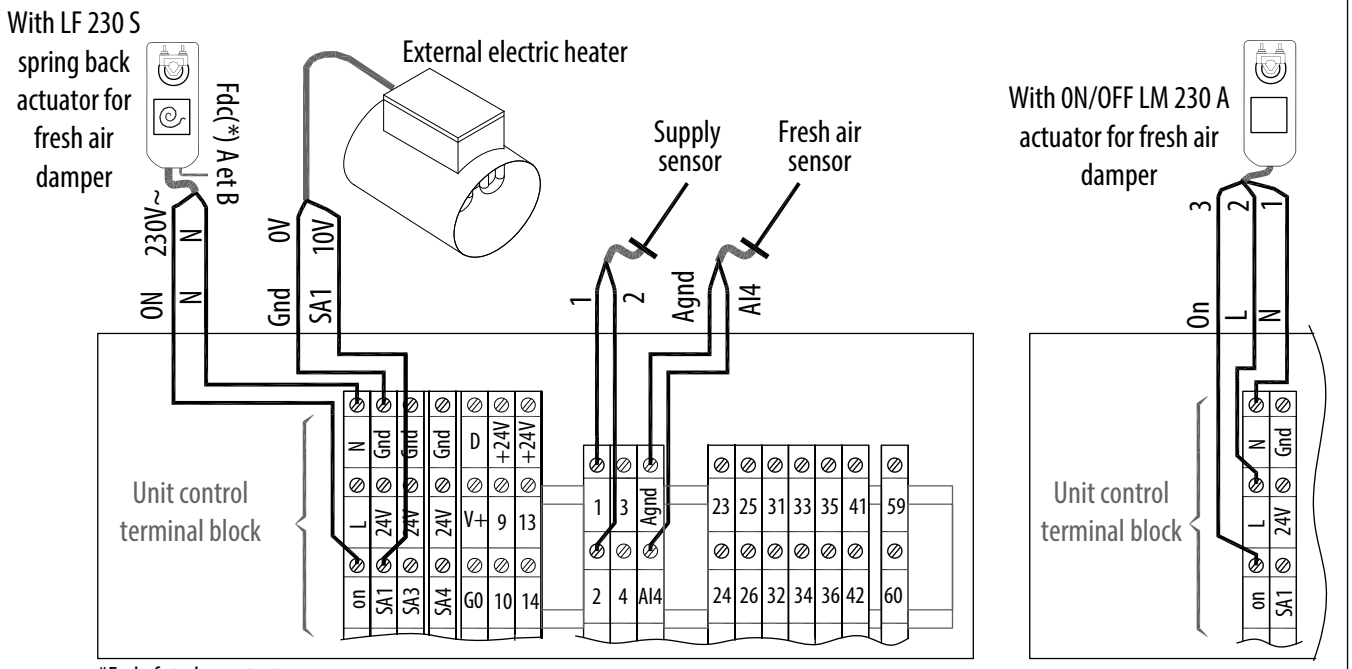
* End of stroke contact

EI model - electric heater integrated + motorised damper (accessory)



* End of stroke contact

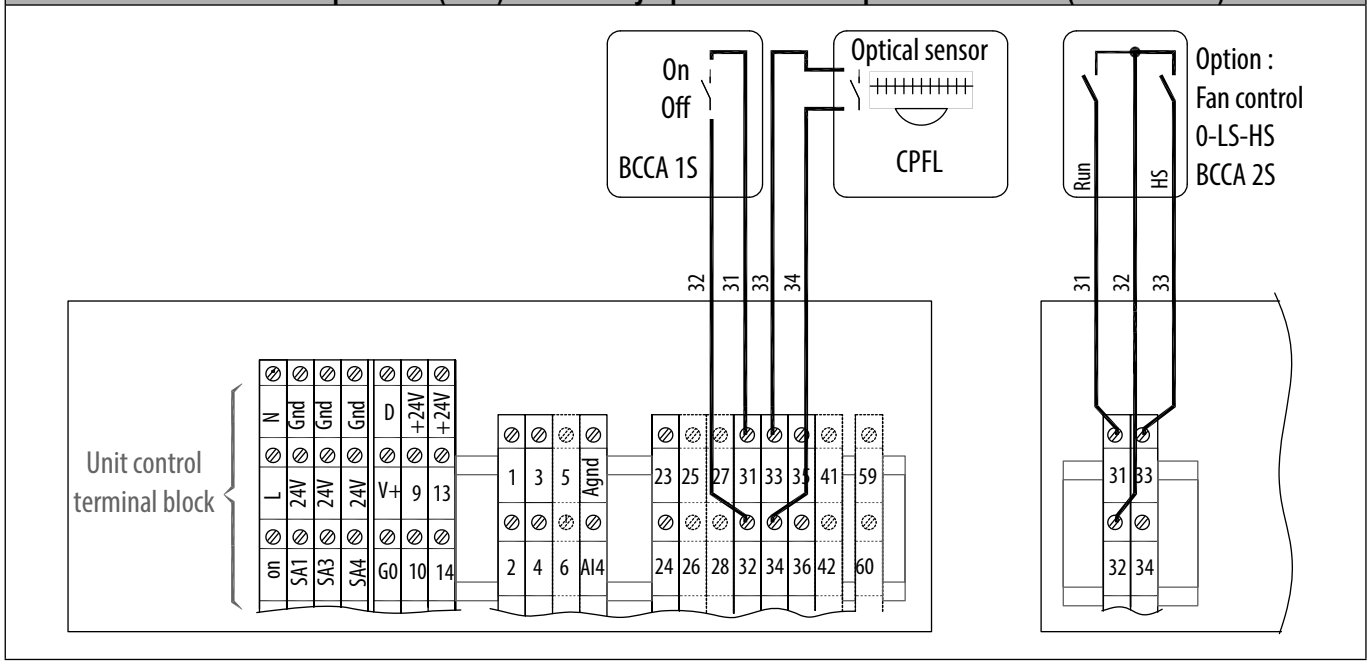
EI, EC, EF and ECF models
external electric heater 0/10 V control (accessory) + motorised damper (accessory)



*End of stroke contact

Servo-motors and external electric heaters are provided as accessories.
In the case of an external coil/electric heater, the supply temperature sensor must be moved. Use a TGK3 PT1000 sensor, and attach it instead of the sensor integrated into the unit at terminal blocks 1-2.
For the EC and ECF models, the external electric heater control is connected in parallel with the hot water coil control, and both coil/heater are coordinated simultaneously.

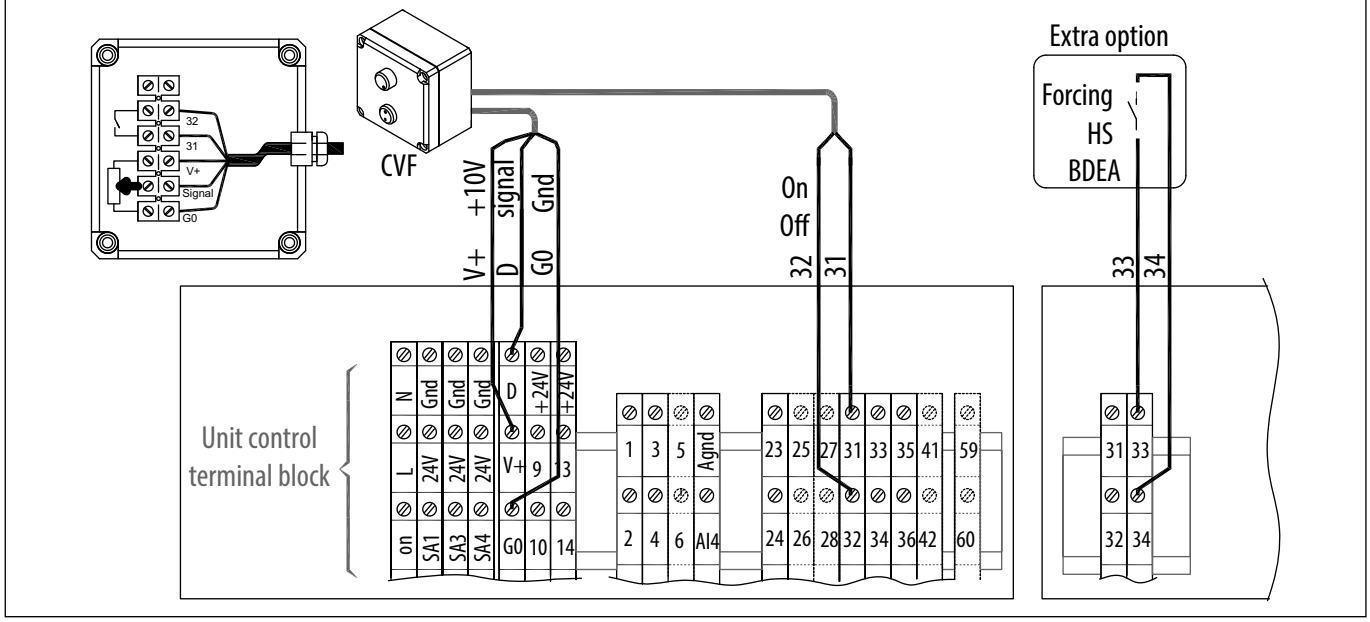
Constant flow operation (CAV) - control by optical sensor or panel 0 / PV / GV (accessories)



Controls and sensors are accessories.

Note, all controls must be established using potential-free contacts.

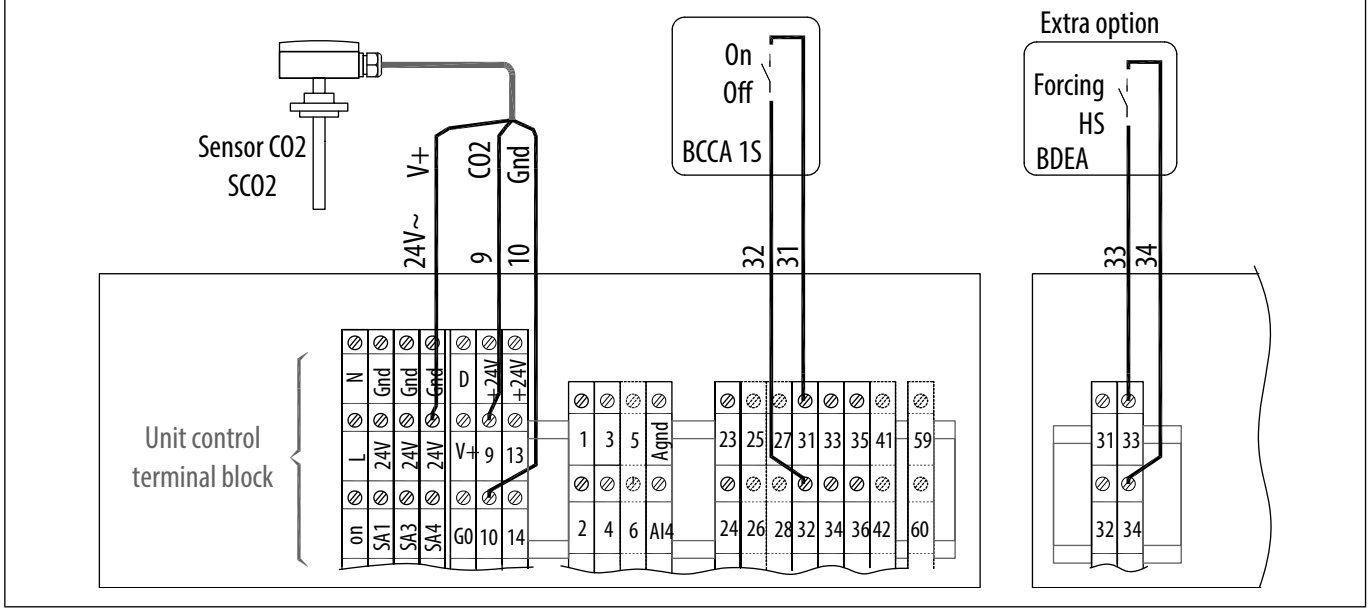
Variable flow operation (VAV) – CVF (accessory)



Controls are accessories.

The unit is pre-programmed for the use of a remote control ON/OFF + CVF variation and a 0-10V signal stemming from the fan.

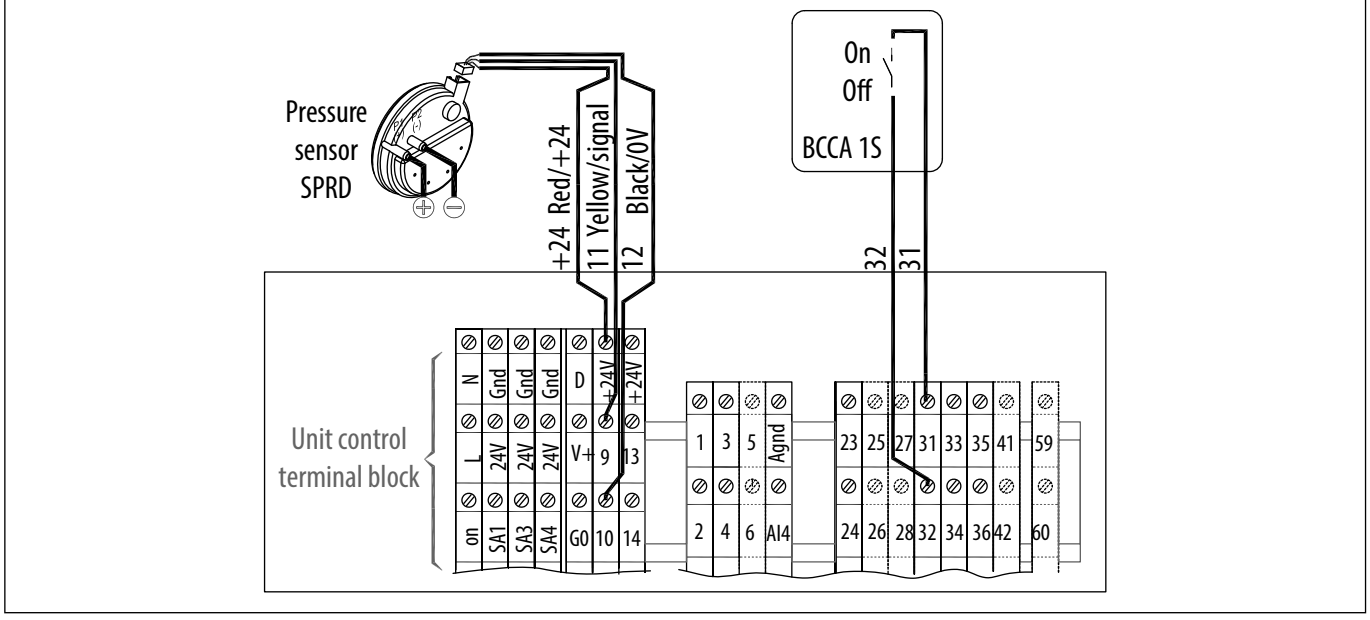
Variable flow operation (VAV) – CO2 (accessory)



Controls and sensors are accessories.

The unit is pre-programmed for the use of a CO2 measurement sensor with a range of 0 - 2000 ppm and a 0-10V signal Vdc.

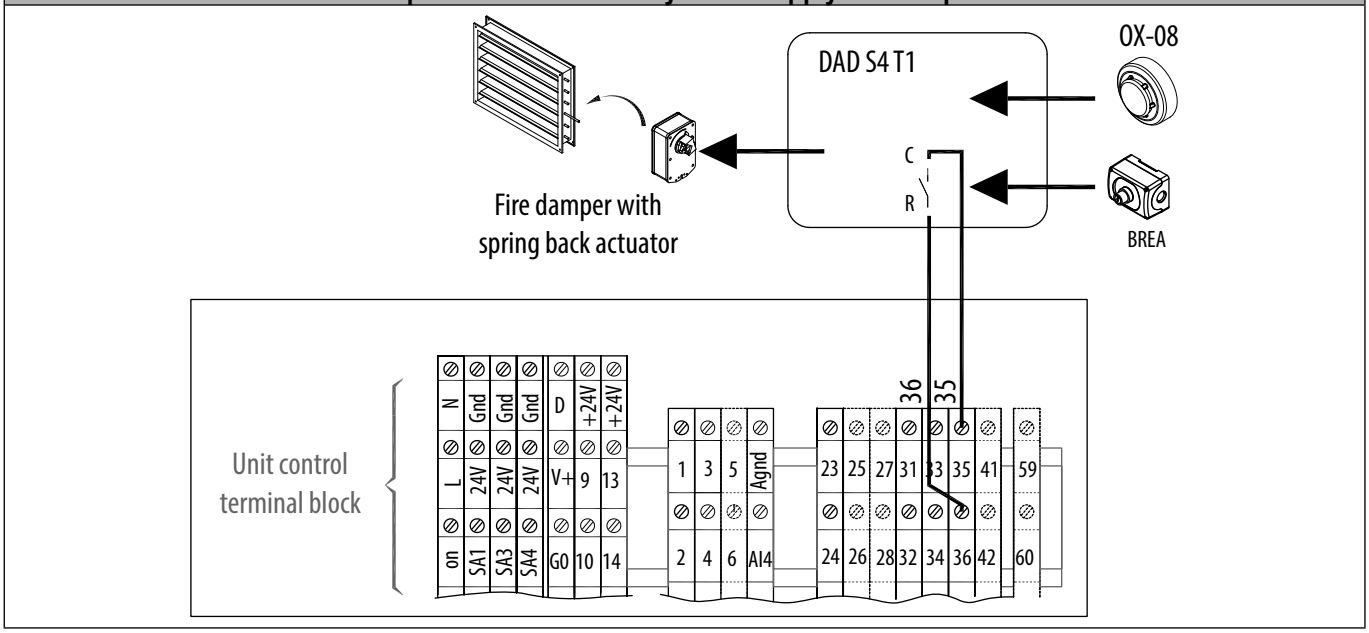
Constant pressure operation (COP) - supply pressure sensor (accessory)



Controls and sensors are accessories.

The unit is pre-programmed for the use of a pressure sensor of 0-800 Pa and a 0.5 - 4.5V signal Vdc.

Operation with a DAD system - supply fire damper



Dampers, DAD and sensors are accessories.

7. COMMISSIONING

All KSDR ECOWATT® units are subject to an EC control and a function test before they are delivered.

Factory inspection of units:

- Electrical conformity tests: Earth bonding / Insulation of powered-up parts.
- Control of temperature sensor readings (Supply temp., exterior temp., anti-freeze temp. according to option).
- Control of supply fan alone (Control of corresponding flow sensor).

Factory configuration of units:

- Ventilation mode = CAV mode (description § "8.2 Constant flow operation (CAV)").
- High speed = Max. flow of the unit, Low speed = Max. flow / 2.
- Plug fan type: determined according to the flow coefficient K, particular to fans (description § "8.12 Measuring air flows - modifying the coefficient K")
- Heating mode = constant supply temp. (description in § "8.5 Temperature adjustment").
- Coil/electric heater type (description in **"Operating modes"** paragraph**: Implementation of the unit"**): according to the requested option if the unit does not have a Coil/electric heater, the electrical resistance is selected by default).

The controller must be commissioned and configured by a qualified person in respect of the safety instructions described in § "1.2 Safety guidelines". In Mainland France, this service can be provided by VIM and its qualified service providers. **Contact us**. It can only occur once the installation and electrical, air flow and hydraulic wiring operations are complete.

Before commissioning and configuration, ascertain the necessary data, flows, pressures, temperatures, desired operating mode and installation diagrams:

- Make sure that the device does not contain any foreign bodies.
- Check that all the components are fastened in their original locations.
- Manually check that the fan does not scrape and is unblocked.
- Check that all exterior electrical parts are connected.
- Check that electrical connections/ground connection are sealed.
- Check voltages, intensities, gauges of thermal protections.
- Check the rotating direction of the fan - the direction of the air flow.
- Check the air flow rate.
- Check for any clogging of the filter - clean or change it as necessary.
- Enter the adjustment parameters, simulate the operation of coils/alarms/safety procedures.

8. ADJUSTMENT - FUNCTIONS/PARAMETERS

KSDR ECOWATT® CORRIGO controller	EI	EC	EF	ER	ECF
MAIN ELEMENTS					
- Main proximity switch on the front of the unit control panel	●	●	●	●	●
- Regulating device and terminal block integrated into the unit and accessible in the cabinet located on the front panel	●	●	●	●	●
- Fresh air temperature sensor TGK3 PT1000	●	●	●	●	●
- Supply air temperature sensor TGK3 PT1000	●	●	●	●	●
- Anti-freeze temperature sensor TGA1 PT1000 (EC - ER - ECF)		●	●	●	●
- "CHANGE OVER" THCO sensor to be installed at the coil water inflow (ER)				●	
- Extract air temperature sensor TG-K3 PT1000 or room temp. sensor TG-R5 PT1000		○	○	○	○
- 3 ways valve, motorised - proportional 0-10V supplied but not fitted		●	●	●	●
- Pressure switch to control filter clogging	●	●	●	●	●
FUNCTIONALITIES					
Adjusting and displaying flows					
- Constant or fixed airflow (CAV mode), up to 2 different set point flows	●	●	●	●	●
- Variable airflow according to an external 0-10V signal, of the command control or remote control (VAV mode)	●	●	●	●	●
- Management of airflows according to time slots (Clock)	●	●	●	●	●
- BOOST function by external contact	●	●	●	●	●
- STOP function by external contact	●	●	●	●	●
Adjusting internal water coils					
- Adjusting the power by activating a 3-ways valve		●	●	●	●
Adjusting internal electric heaters					
- Proportionally adjusting the power of the electric heaters	●				
Adjusting an external electric heaters (accessory)					
- Proportionally adjusting the power of the electric heaters by a 0-10V signal	○	○	○	○	○
- Coordinating a damper servo-motor (accessory) in relation to fresh air	●	●	●	●	●
Controls and Safety					
- Filter clogging signal	●	●	●	●	●
- Fault signal on temperature sensors	●	●	●	●	●
- Ventilation fault signal	●	●	●	●	●
- Signal indicating that a set point has not been observed (Airflow, Pressure, Temp.)	●	●	●	●	●
- Fire alarm from a contact related to the external fire detection system	●	●	●	●	●
- Alarm indicating a fault in the communication between the controller and command control	●	●	●	●	●
- Freeze risk control on the water coil (opening the valve, stop if the water temperature drops below 7°C in heat mode)		●		●	●
- Alarm history	●	●	●	●	●
COMMUNICATION					
- Remote control with graphic touch screen (ETD)	●	●	●	●	●
- MODBUS RTU in standard mode (RS485)	●	●	●	●	●
- BACNET IP on TCP/IP port	●	●	●	●	●
- Web server application on TCP/IP port	●	●	●	●	●

Temperature adjustment loop:

The temperature set point and the heating/cooling mode (constant supply temperature - constant room temperature) are entered via the touch screen.

The supply or room temperature is maintained at the set point value by using the output of the regulator "Y1 heating", "Y2 mixing damper", "Y3 Cooling". A single PI loop is used.

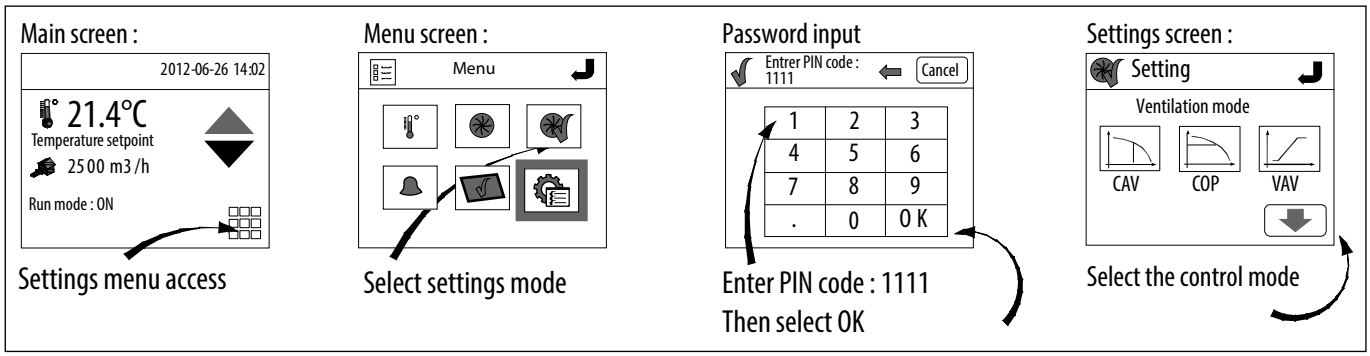
8.1 Simplified menus/Access

The KSDR ECOWATT® provides quick access to the main functions.
Access: there are 3 levels of access to the controller:

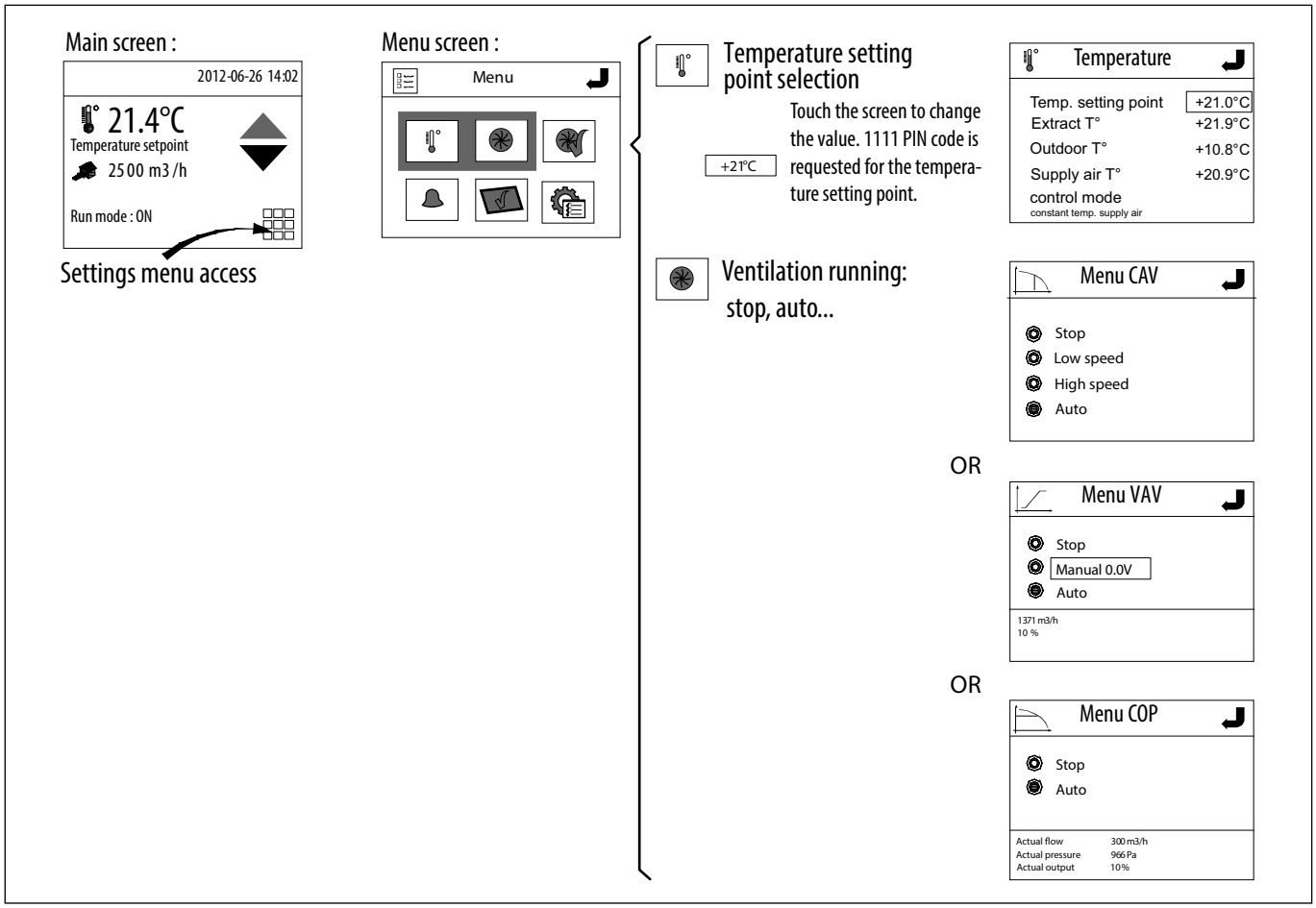
- User level (no password) - Access to on/off functions - auto or LS/HS and increase in set point temperature (± 3°C)
- Operator level (password) - Access in read and edit mode to settings and parameters, but no access to system configuration
- Master level (password) - Access in read and edit mode to settings and parameters, plus access to system configuration

KSDR ECOWATT® can operate according to 3 operating principles:

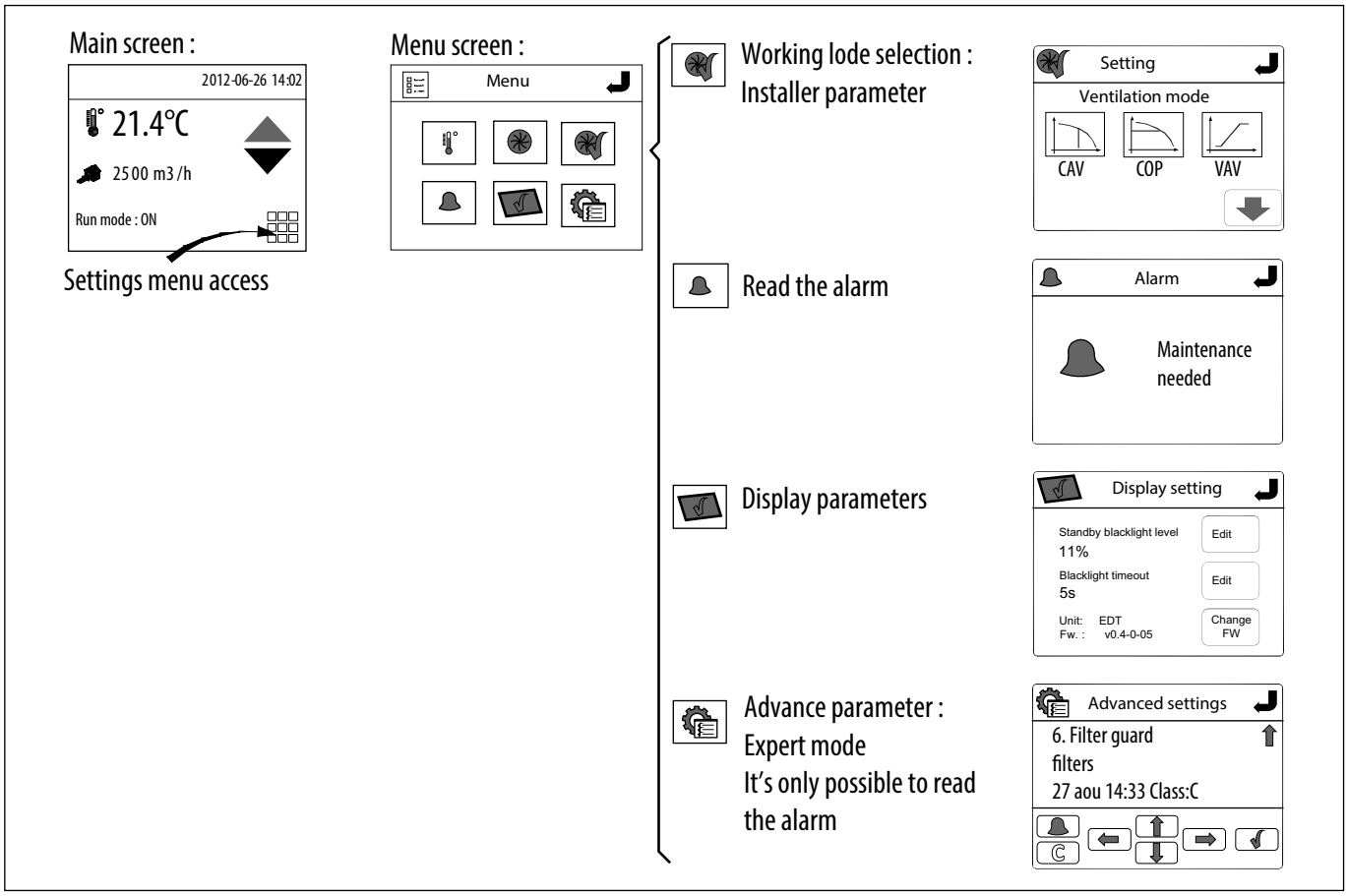
- CAV: Constant airflow operation
- VAV: Variable speed operation
- COP: Constant pressure operation



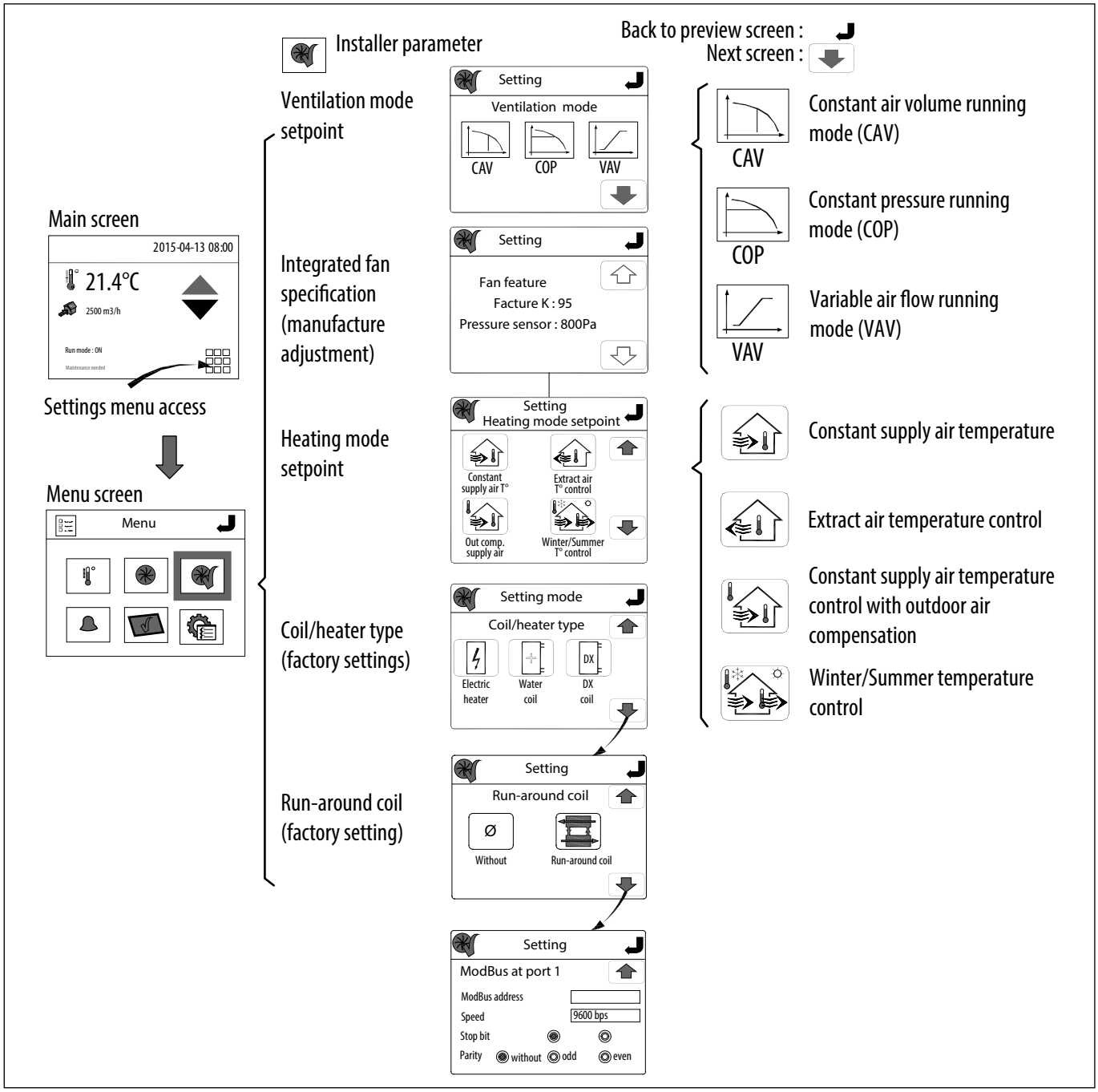
The user level:
To adjust a set point temperature and select the unit operating mode (use of the time programme, stopping the unit or, as applicable, overriding any given speed).
These two temperatures and ventilation functions are accessible from the two specific menus dedicated to this use.



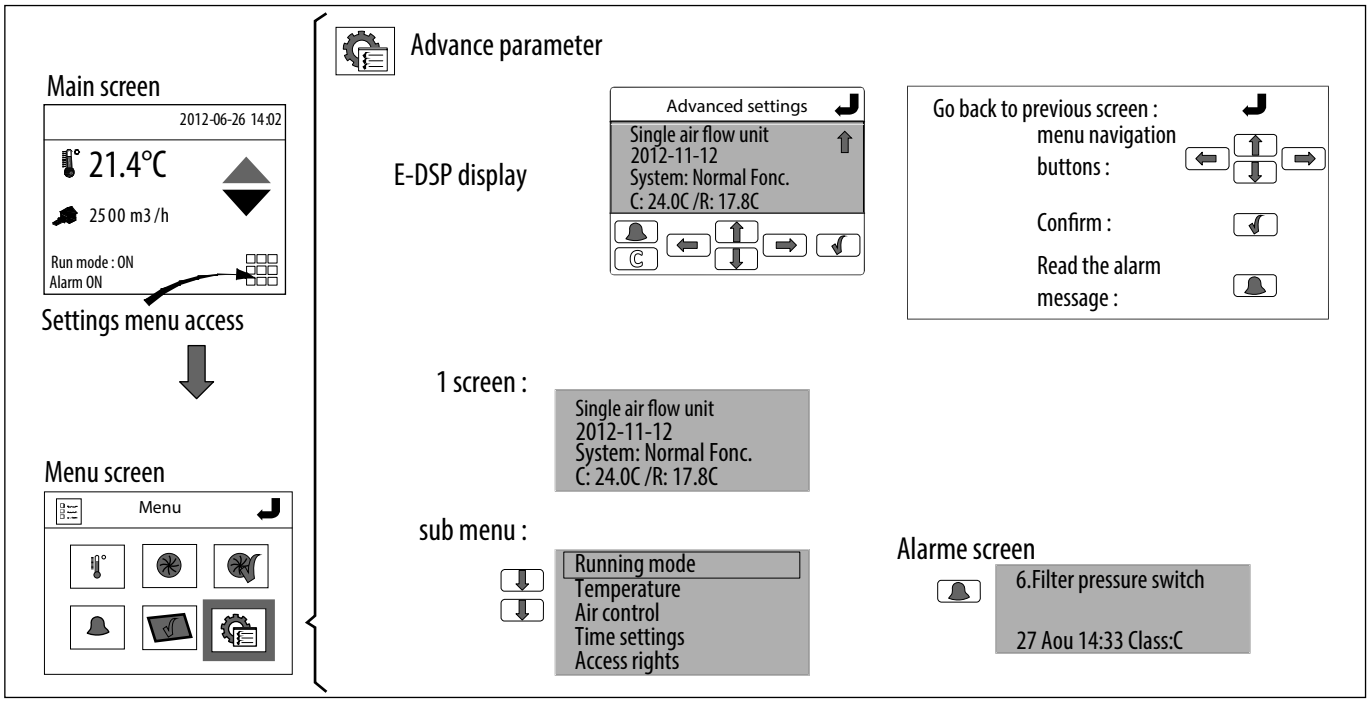
The installer level:
To configure the operating mode of the unit, fan, coil/electric heater, console, reading of faults, etc.



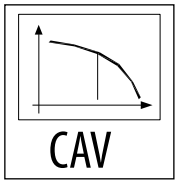
Choice of operating mode:



Advanced configuration in expert mode:
Used to read the message of the alarm indicated on the main screen and program the clock

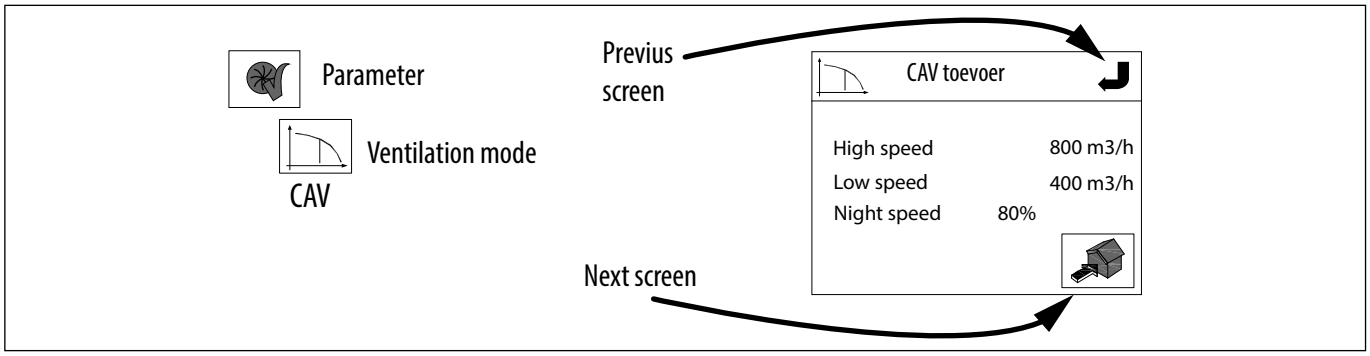


8.2 Constant flow operation (CAV)



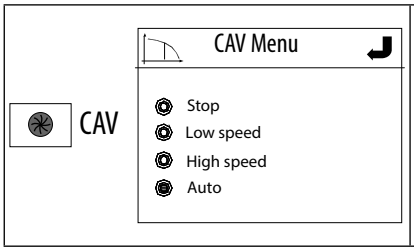
Recommended mode to directly obtain the desired flow in an installation.
The speed of the fan is defined to provide an accurate flow and maintain it at a constant level.
The supply air flow is controlled. The "Low Speed" and "High Speed" flow set points are adjusted independently in m^3/h in the ETD command control.
The pressure transmitter measures the differential pressure on the fan suction chamber. The flow arising from the pressure measurement is calculated by the controller, according to a coefficient K particular to the fan.
The change-over between the various set points will be completed manually or automatically by time programming.
The PI adjustment loop of the fan maintains the set point by adjusting the fan.
A third "night speed" set point may be entered via the control panel. The value as a % corresponding to the percentage of the maximum fan speed will be used during night cooling (see corresponding function).
A timeout of 60 seconds is integrated into the programme to guarantee that the heating elements are protected in the event that a unit stop request is made.

Functional configuration on ETD
Access to the simplified configuration menu (via password 1111) enables:
- Low Speed and High Speed flows of the fan to be selected.
- The night set point value of the fan.



The selection of this mode in this installer menu automatically configures the user menu screen. The user can therefore change the operating mode of the unit without touching the settings.

Adjustment for use on ETD

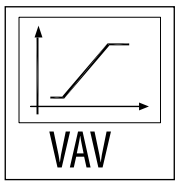


Stop, Low Speed, High Speed

Auto = according to clock or status of the control terminal (start/stop + PV/GV)

Comment: the control by terminals 31-32 / 33-34 is a priority.

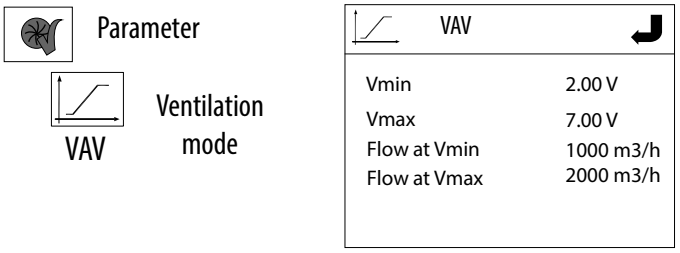
8.3 Variable flow operation (VAV)



Recommended mode in mono zone configuration for variable flow applications according to a 0-10V signal
The flow set point value is a function of a 0-10 V signal stemming from an exterior sensor (CO2, temperature, hygrometry, etc.) or a manual percentage.

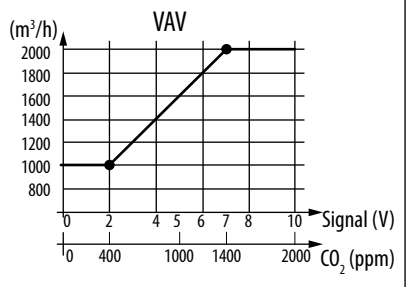
Functional configuration on ETD
Access to the simplified configuration menu (via password 1111) enables:

- The user range of the 0-10V signal to be selected (see example below)
- The variation range of the supply fan flows



Vmin, Vmax =
using range from the connected sensor

M3/h at Vmin, M3/h at Vmax =
supply air flow range



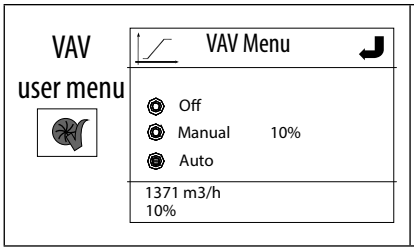
Example:

Wiring of a SCO2 sensor with a measurement range of 0-2000 ppm (0-10V)
For use of the range of 400-1400 ppm, you must select Vmin=2V and Vmax=7V
If we use the example with flows that must develop from 1,000 to 2,000 m³/h, we obtain a curve as shown opposite.

Note: the use of the GV override entry allows the CO2 sensor to be overridden at the set point value m³/h to Vmax (here 2,000 m³/h irrespective of the value measured by the sensor).

The selection of this mode in this installer menu automatically configures the user menu screen. The user can therefore change the operating mode of the unit without touching the settings.

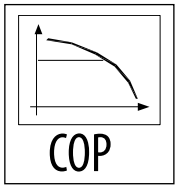
Adjustment for use on ETD



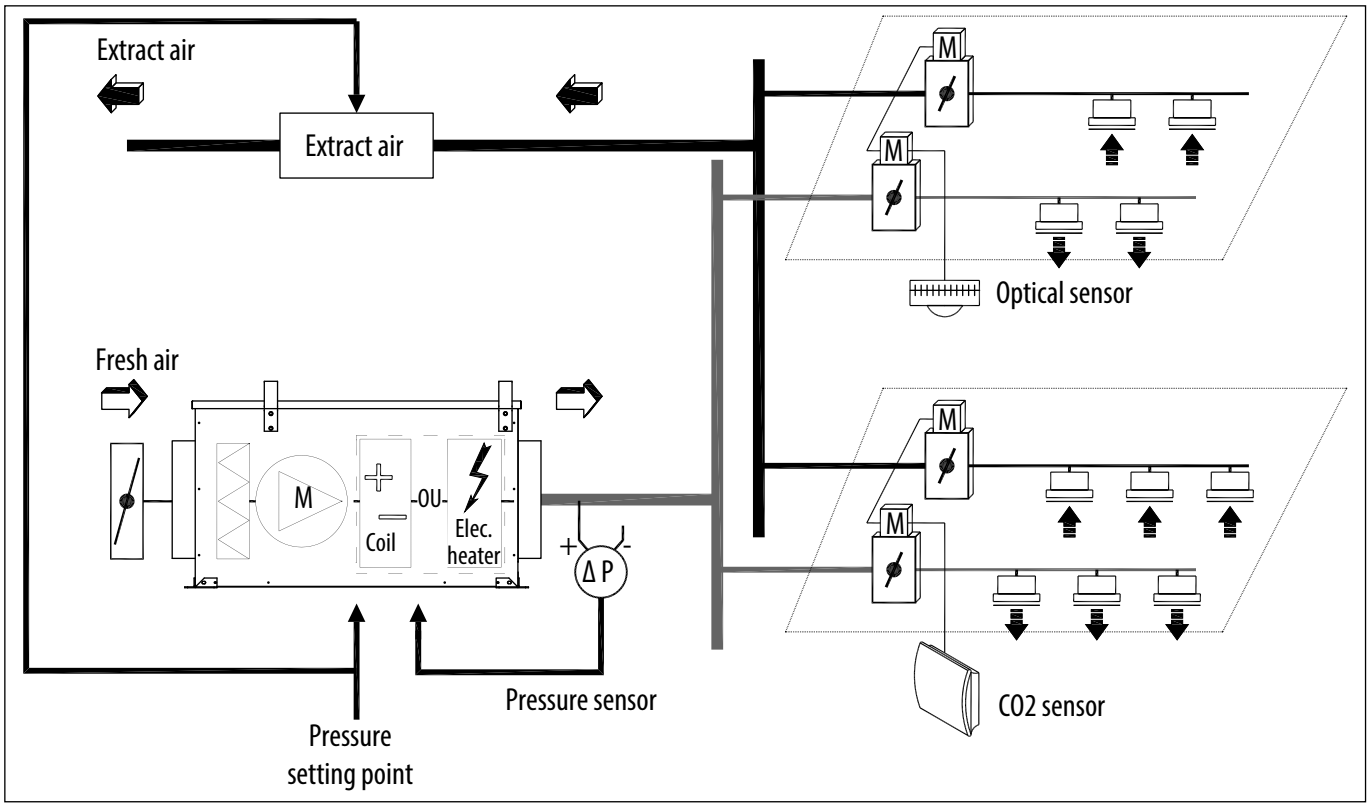
Stop or Manual X % = manual adjustment of a flow corresponding to: Min flow + X %[Max flow - Min flow]

Auto = used according to clock and status of the control terminal (start/stop + sensor)
Comment: the control by terminals 31-32 / 33-34 is a priority.

8.4 Constant pressure operation (COP)



Recommended mode in multi zone configuration, for variable flow applications with devices to modulate flows installed at the level of the network.



Flow automatically modulated in order to maintain a constant pressure value measured by an external pressure sensor. The ETD control screen will indicate on which network the pressure sensor is placed (See Accessories - differential pressure sensor).
The pressure set point is manually entered in Pa.

Ventilation mode Pressure setting point 60Pa Air flow 300m³/h M3/h at Vmin 1000 m3/h Pressure 966Pa Output signal 1V	The ETD command control screen displays the flow in real time at the desired pressure. Pressure set point = desired pressure value in the selected network. The selection of this mode in this installer menu automatically configures the user menu screen. The user can therefore change the operating mode of the unit without touching the settings.

Adjustment for use on ETD

COP Use  COP Menu Stop Auto Actual flow 300 m3/h Actual pressure 966Pa output signal 10V	Stop Auto = operation according to clock or status of the control terminal (start/ stop of unit) Comment: a control by terminals 31-32 / 33-34 is a priority.

8.5 Temperature adjustment

8.5.1 Maintaining a constant supply temperature

Parameter Heating mode Constant supply air T°C	The temperature is adjusted by comparing the blown air temperature and the set point value configured with the console. This is the default factory setting, and the blown air temperature sensor is provided and should be attached to the supply duct.

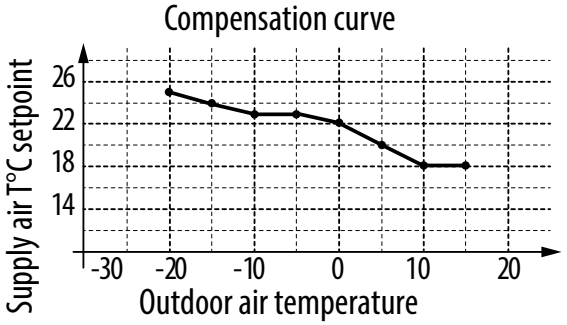
The user has the option of a +/-3°C override in relation to this initial set point from the main screen.

8.5.2 Maintaining a constant room or return temperature

Parameter Heating mode Cascade connected extract air temperature control	The supply is adjusted in cascade mode with the room or return temperature. The discrepancy between the room or return temperature and the set point determines the supply temperature. A room or extract air sensor must be added. The adjustment is a response to a request to maintain a room or return temperature, by reducing the temperature gained. This is included in an admissible range of 12 to 30C°, controlled by a supply sensor provided, to be attached to the duct.

The user has the option of a +/-3°C override in relation to this initial set point from the main screen.

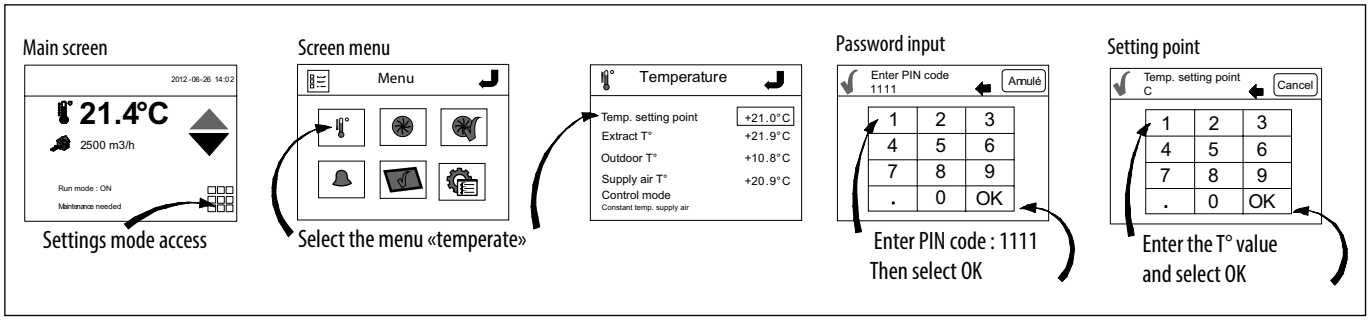
8.5.3 Adapting the temperature set point according to the exterior temperature

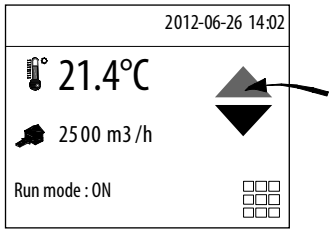
Parameter Heating mode Constant supply air T°C with outdoor T°C compensation	

The adjustment operates in a similar way to the 1st case.
Instead of a single temperature set point, a compensation curve is defined by the factory by 8 set points. The supply set point is thus adapted in relation to this curve, and the override of more or less 3°C possible from the main screen continues to be accessible. The necessary external temperature sensor is provided and assembled, and the blown air temperature sensor is provided and should be attached to the supply duct.

8.5.4 Initial value of the temperature set point

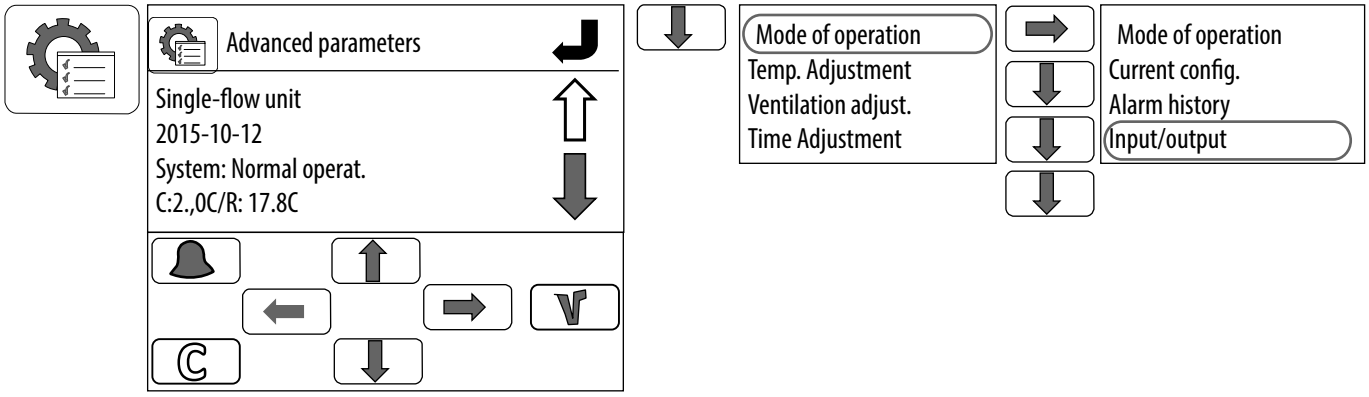
An initial set point value can be defined from the "Temperature" screen in the menus. The set point is adjusted by default to 21°C and can be adjusted between 12 and 30°C.



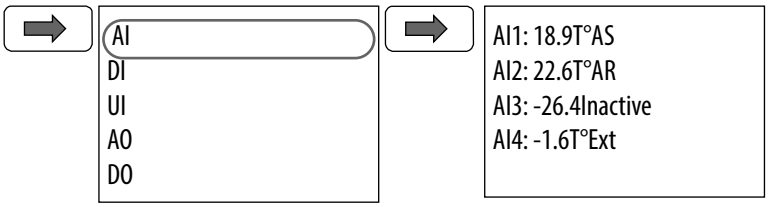


The user has the option of a +/-3°C override in relation to this initial set point from the main screen.

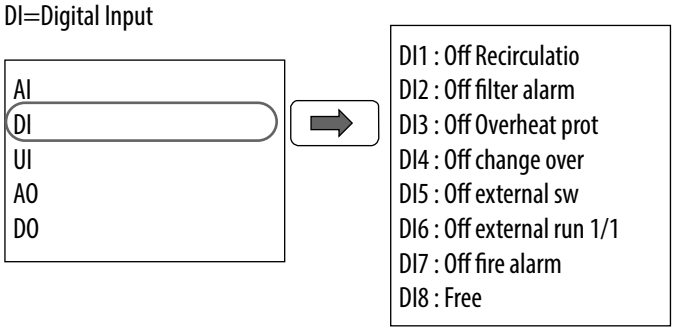
8.6 Expert menu – controller inputs/outputs status



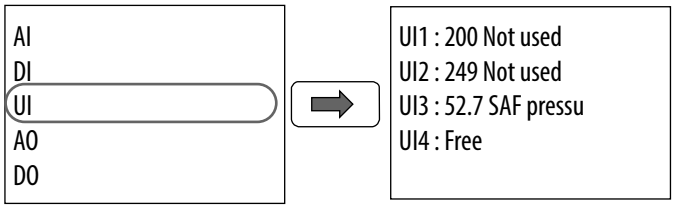
AI=Analogue Input



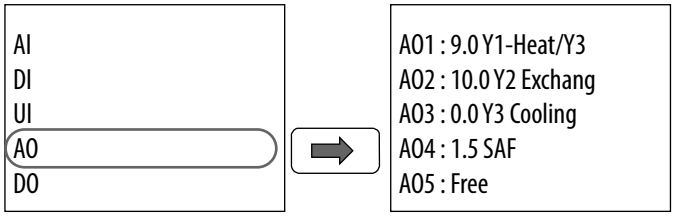
DI=Digital Input



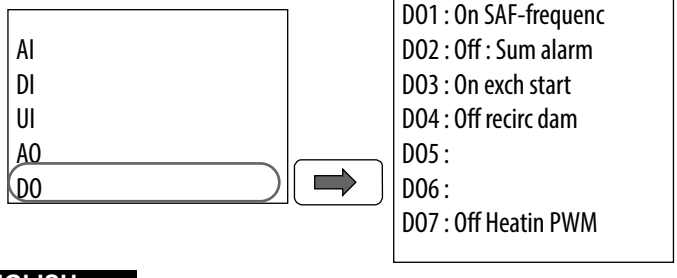
UI=Universal Input



AO=Analogue output



AO=Analogue output



MEANING OF INPUTS AND OUTPUTS:

AI1 : 18.9T°Supply temp
AI2 : 22.6T°Extract temp
AI3 : -26.4 Frost prot
AI4 : -1.6T°Outdoor temp

DI1: Not used, Free for futur recirculation
DI2: Filter Pressure switch
DI3: Overheating thermostat of electric heater
DI4: Change over thermostat
DI5: External stop
DI6: External high speed override
DI7: Fire
DI8:

UI1: External set point (0-10V or COP signal) ….m^3/h or Pa
UI2:
UI3: 52.7 Pressure measurement on the supply fan (Pa)
UI4:

AO1: 0-10V signal sent in heating mode
AO2: 0-10V signal sent to run-around coils (RAC)
AO3: 0-10V signal sent in refreshing mode
AO4: 0-10V signal sent to supply fan
AO5:

DO1: Contact to start up supply fan
DO2: Contact to start up night-time free cooling
DO3: Contact to start up supply fan
DO4: Alarms summary
DO5:
DO6:
DO7: PWM signal of the electric heater

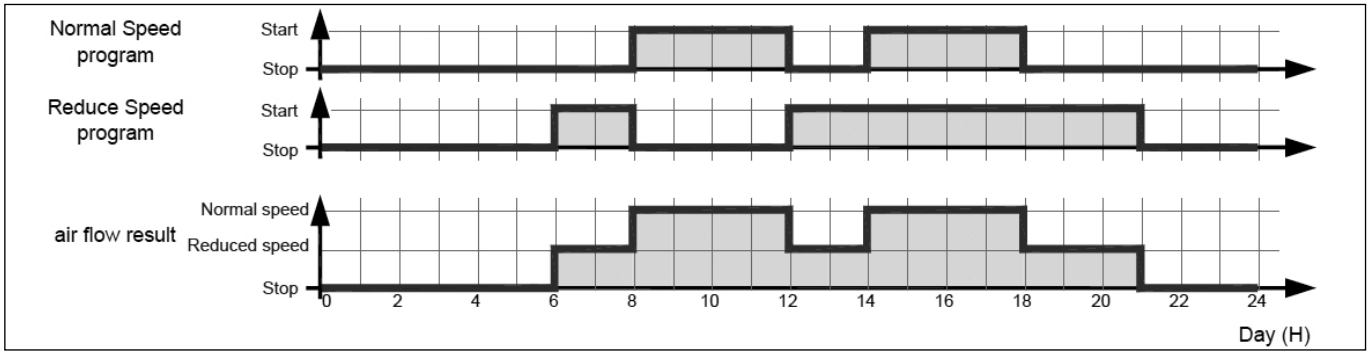
8.7 Time programming

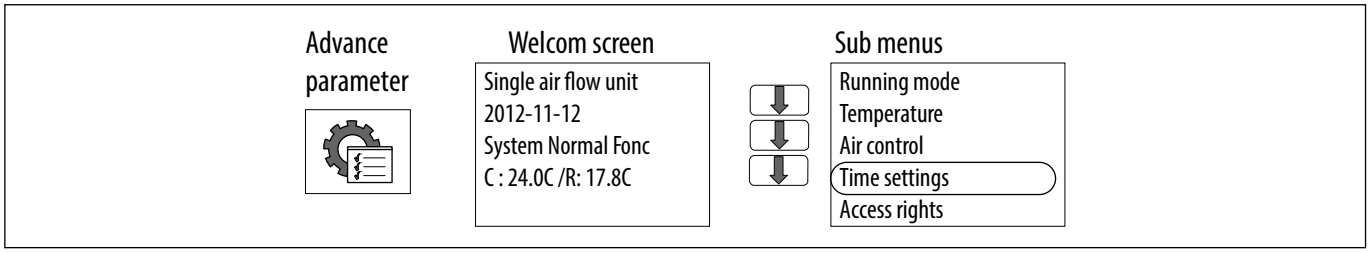
The controller has several clocks which allow the individual programming of: Reduced flow, Normal flow, Stop.
Holiday periods can be programmed and the switch to the summer clock is automatic.
A night cooling function can be programmed to start up the CTA outside of programmed periods.

Clock configuration:
Only operating ranges are programmed (outside of these ranges, the fan is off).
The installer can therefore set out two operating ranges in normal speed (default speed or high speed) and in "reduced" speed (low speed when two speeds are possible). The normal speed is prioritised over reduced speed; in the event that programming schedules overlap, the unit will operate in normal speed.
For each speed, two ranges can be entered each day.
For instance:

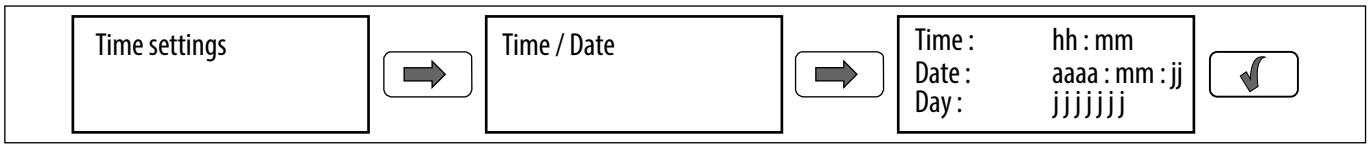
High Speed can be programmed between		8:00 a.m. and 12:00 p.m. in period 1
	and between	2:00 p.m. and 6:00 p.m. in period 2
and Low Speed between		6:00 a.m. and 8:00 a.m. in period 1
	and between	12:00 p.m. and 9:00 p.m. in period 2

The automaton will therefore control the fan as follows:





In the time menu, before the ranges are programmed, check that the current date and time are accurate.
Adjustments can be made as follows



To access the fields, press the validation button (a cursor appears).
Then use the arrows to change the value.
Once the desired value is obtained, press the validation button again.
After all the fields are entered on the final validation, the cursor disappears.

Time slot configuration menu
A "reduced speed prg" table can also be seen; it includes the same information as for "normal speed prg"

Time settings	Time / Date	Time: hh:mm Date: aaaa:mm:jj Weekday: jjjjjjj	
	Timer Normal speed	Normal speed Monday Per 1: 00:00- 00:00 Per 2: 00:00- 00:00	Normal speed Monday->Friday Per 1: 00:00- 00:00 Per 2: 00:00- 00:00
		Normal speed Tuesday Per 1: 00:00- 00:00 Per 2: 00:00- 00:00	
		…	
		Normal speed Thursday Per 1: 00:00- 00:00 Per 2: 00:00- 00:00	
		Normal speed Friday Per 1: 00:00- 00:00 Per 2: 00:00- 00:00	
		Normal speed Saturday Per 1: 00:00- 00:00 Per 2: 00:00- 00:00	Normal speed Saturday->Holiday Per 1: 00:00- 00:00 Per 2: 00:00- 00:00
		Normal speed Sunday Per 1: 00:00- 00:00 Per 2: 00:00- 00:00	
		Normal speed Holidays Per 1: 00:00- 00:00 Per 2: 00:00- 00:00	

The ranges are programmed either day by day or by a copying system by selecting either the same programming from Monday to Friday and/or the same on Saturdays and Sundays and holiday periods.
Holiday periods should be selected at the end of the table (24 periods are possible).

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

8.8 Override

A digital entry makes it possible to override the operation of the unit in a normal regime. The override period is adjustable; the timeout is adjusted from the factory at 0s to be compatible with our presence detection systems and our control buttons.
Terminal blocks are available in the terminal cabinet (use of a potential-free contact).

Time settings	Extended running	Extended running 0 min Time in ext. Running Extended: 0 min

8.9 Night-time Free Cooling

This function is used during summer to cool buildings at night, using external fresh air. This reduces the need to use air conditioning during the day.

To use the free cooling function, the controller will use the information stemming from the fresh air temperature sensor and the return or room temperature sensor.

The free cooling is only effective if start-up conditions are met.

Start-up conditions:

- Fewer than 4 days have elapsed since the the installation was last started up.
- The outdoor temperature during the previous operating period surpassed the pre-adjusted limit of 22°C (1).
- It is between 12:00 a.m.(1) and 7:00 a.m.(1).
- The time programmes for high speed, the manual start-up in high speed and the external control are on "Stop".
- A time programme will be activated ("Start") during the next 24 hours.

If ALL the conditions are met, the free cooling begins. It continues for 3 minutes to make sure that the temperature measurements are representative (by the creation of an air movement in the ducts).

After three minutes, the controller verifies the stop conditions.

Stop conditions:

- The exterior temperature is above 18°C(1) or below 10°C(1) (condensation risk).
- The return temperature is below the stop value (18 °C).
- The time programmes (timer) for normal speed, normal override and external control are on "Start".
- It is after 7:00 a.m.(1).

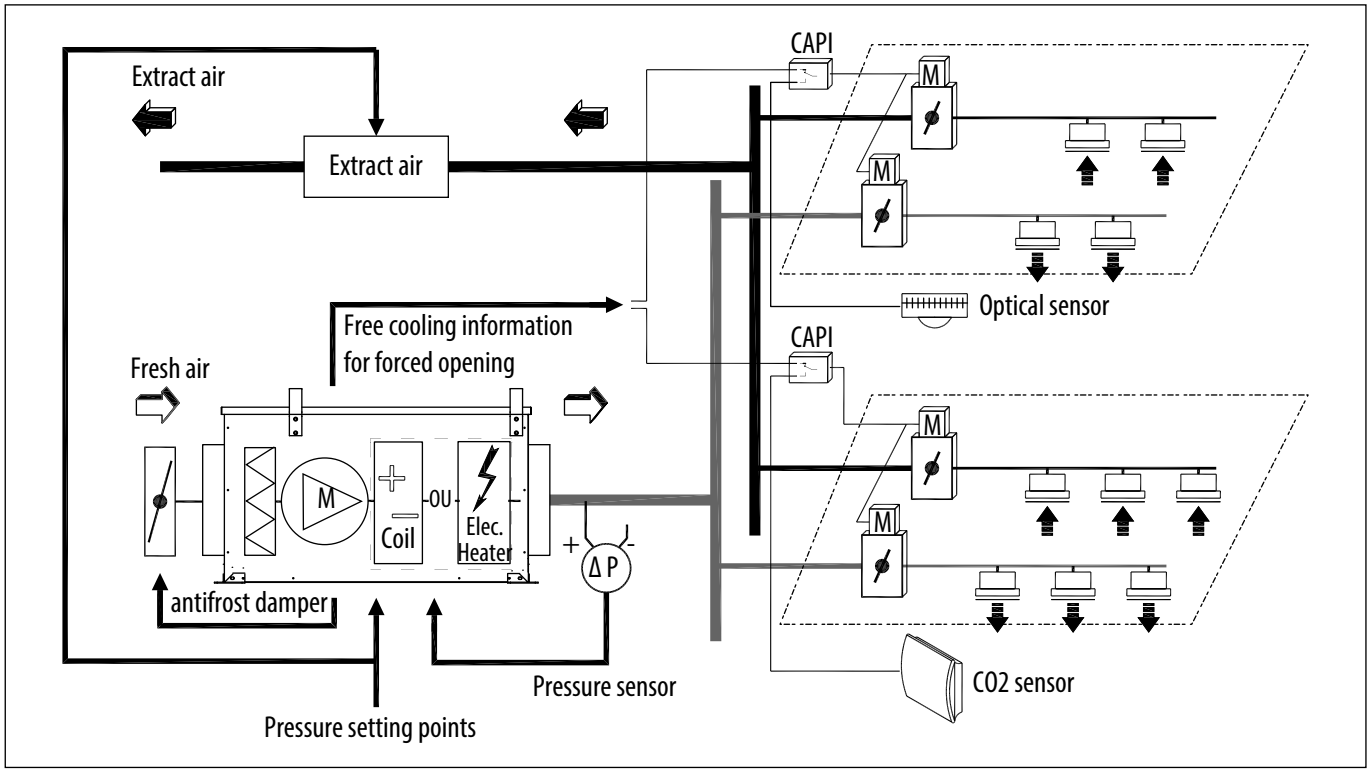
If at least one of these conditions is met after the first three minutes of operation, the installation is then stopped again.

When the free cooling function is active, the fan resorts to maximum speed (this speed can be reduced by configuration), and the coil/electric heater control outputs are cut. The heating output continues to be blocked for 60 minutes (1) after the function has ended.

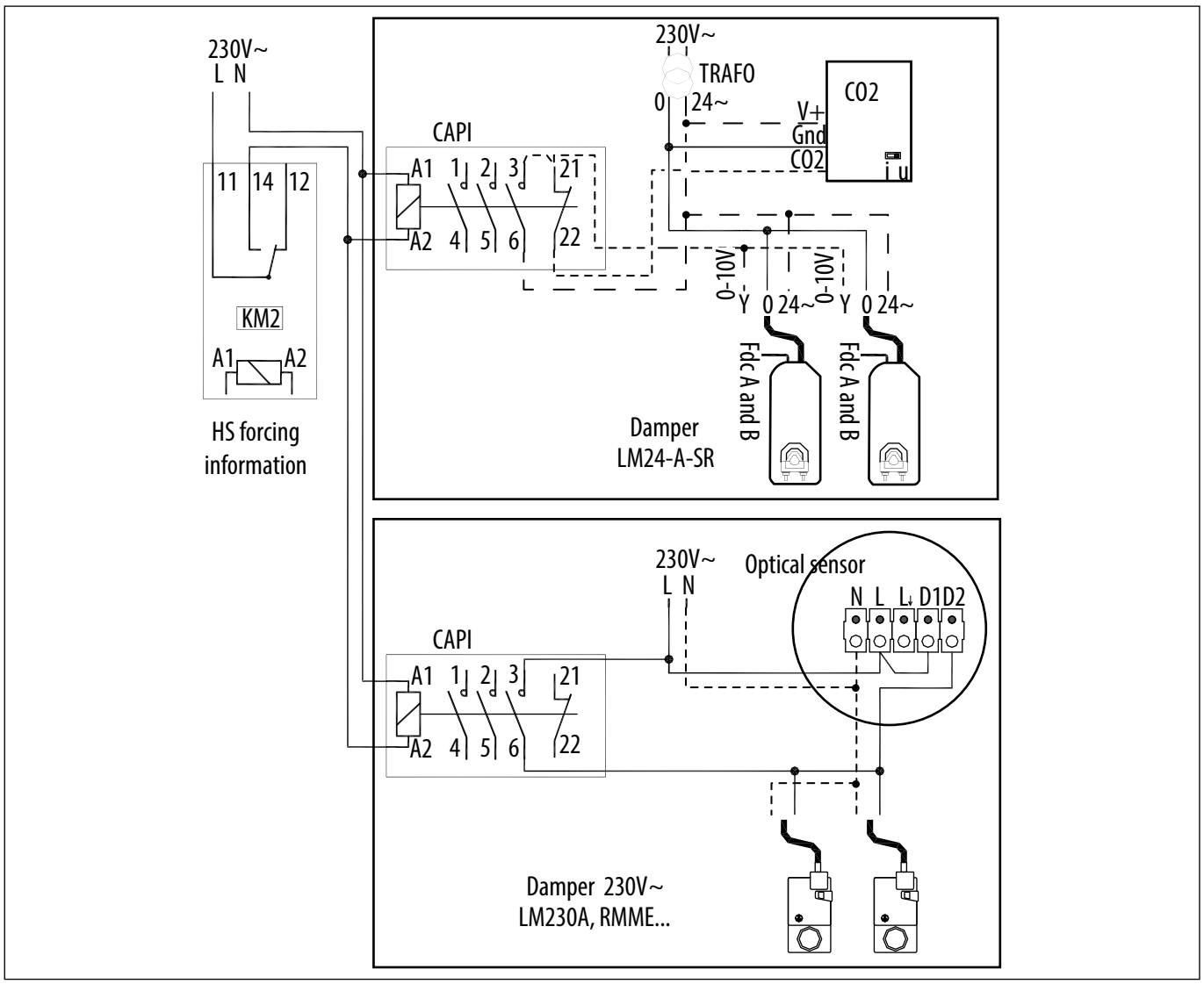
(1) The default values can be altered by configuration in "expert mode".

Particular conditions of use of the night-time free cooling in constant pressure mode (COP)
In constant pressure mode (COP) during the night, the flow modulation dampers of the various zones can be in a closed position, or adjusted to the minimum flow. To take advantage of night-time free cooling, the opening of these dampers must be forced to allow the free cooling flow to pass through. We recommend the use of a power connector cabinet for the purpose of CAPI relay.

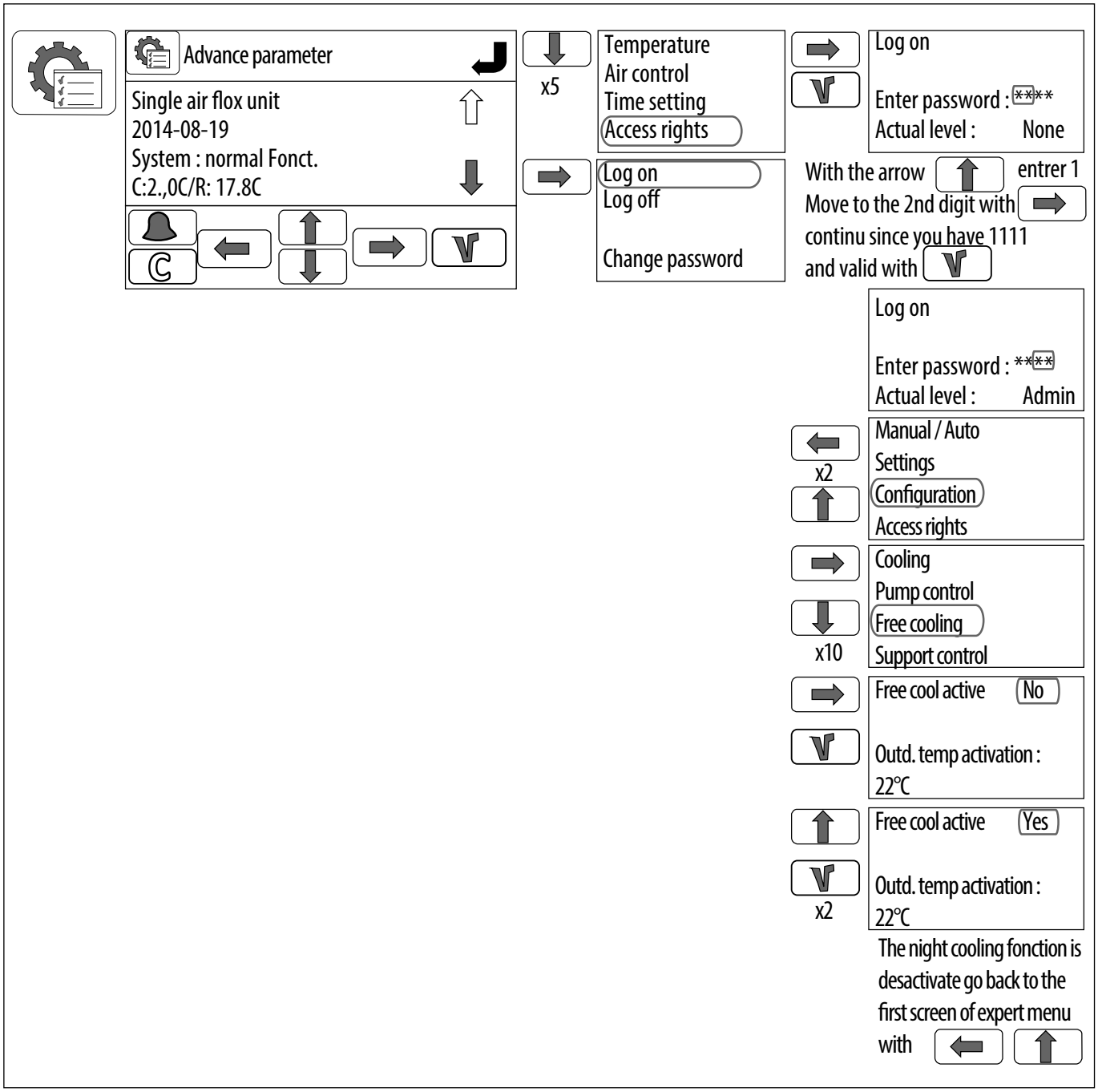
Original and wiring plan (example)



In order to benefit from night-time free cooling, the opening of the modulation dampers must be forced, as shown by the wiring principle below



It is also possible to deactivate the free cooling function from the expert menu:



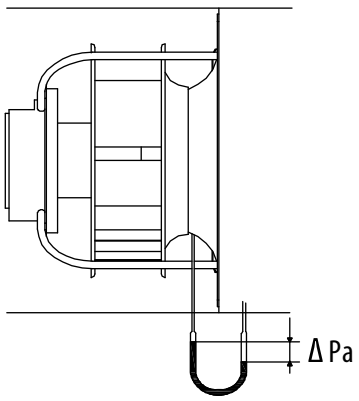
8.10 Anti-freeze protection of the hot water coil

For the anti-freeze protection of the hot water coil, the water controller is sent to the regulating device by a TGA1 PT1000 sensor attached to the coil output collector (See diagram "4.2 Connection of valves"). The regulating device generates a signal at all times for the valve motor which allows a sufficient hot water flow to be maintained in order to prevent frost in the coil.
If the water controller drops below the critical point (7°C), the fan is stopped and the damper (accessory) is closed and an alarm is activated.
The anti-freeze protection continues to be active when the fan is off.

8.11 Entry for an external fire signal

The adjustment is configured to receive a fire contact. If the fire entry is activated, the unit is stopped. When the unit has been stopped by the fire entry, it can only be restarted after the alarm has been discharged. An automatic re-start can be configured. Two terminals are available for this entry (see wiring).

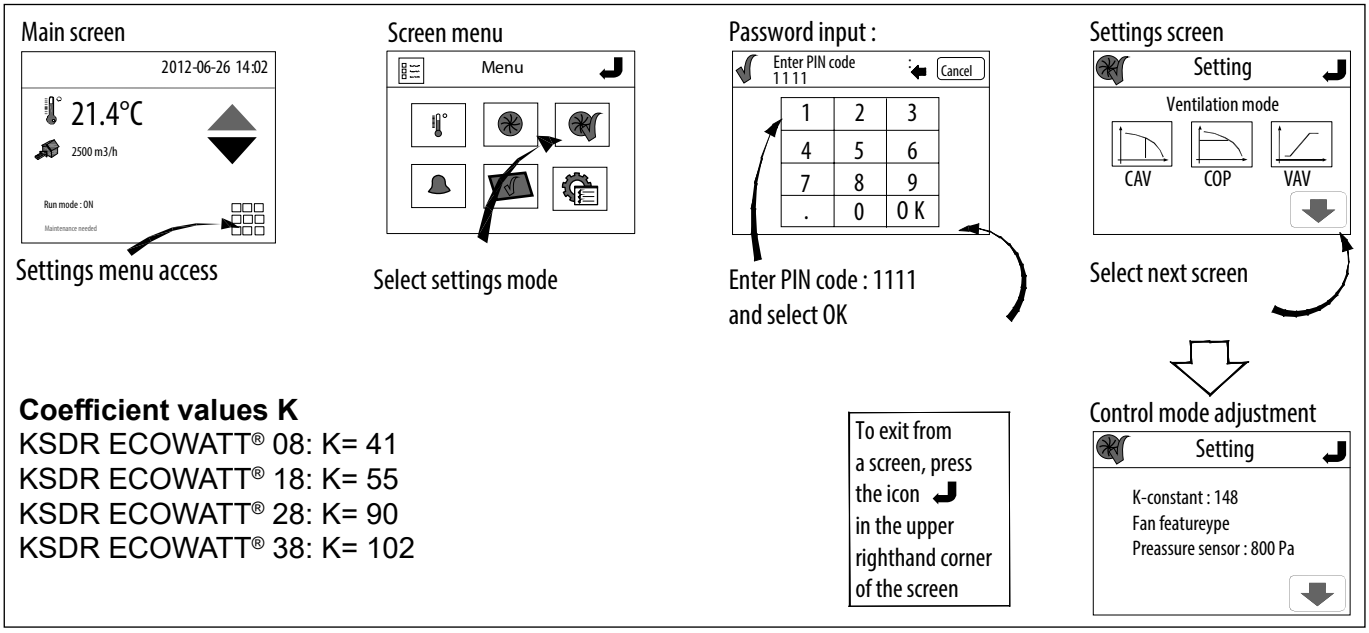
8.12 Measuring air flows - modifying the coefficient K



The KSDR ECOWATT® fan is equipped with a differential pressure sensor, connected to the controller.

KSDR ECOWATT® 08 to 38 = 0 - 800 Pa and a signal of 0.5 - 4.5 Vdc.
The pressure sensor measures the static pressure difference before the suction chamber and in the suction cone.

The air flow can be calculated according to the following equation: Qv = K x √ΔPa
Qv flow in m^3/h The coefficient K takes into account the particular features of each fan.

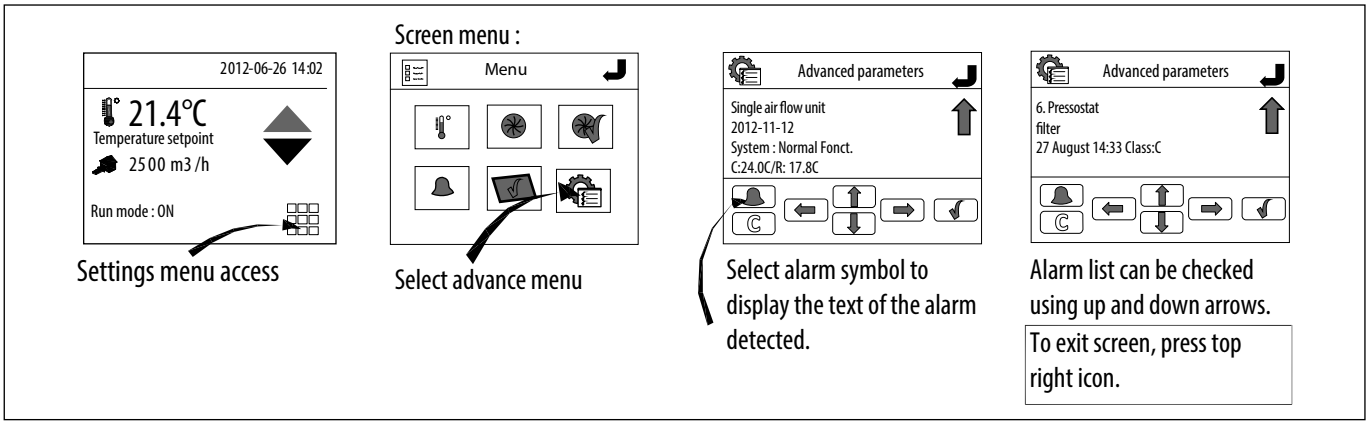


Coefficient values K
KSDR ECOWATT® 08: K= 41
KSDR ECOWATT® 18: K= 55
KSDR ECOWATT® 28: K= 90
KSDR ECOWATT® 38: K= 102

8.13 List of faults

If a fault or alarm appears, a "Maintenance to be preformed" message appears in red on the main screen. The alarm type can also be consulted in the advanced menu; the fault is therefore clearly identified on screen. The list of fault messages is provided below.

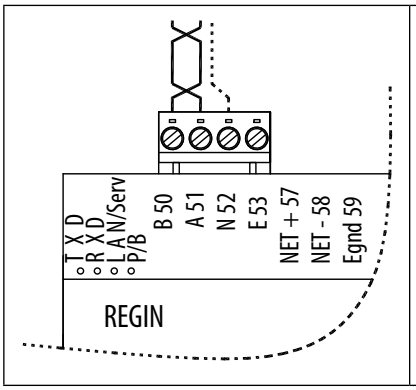
Comment: alarms are declared with a type C alarm classification; resetting is automatic as soon as the problem has been resolved (no manual discharge is to be performed).



Marking	Alarm text	Description
1	Vent. fault AN	Fan pressure switch fault (Fresh Air)
2	Vent. fault AE	Not used here
6	Clogging of filter	Filter pressure switch indicates a faults
10	Fire alarm	Fire alarm activated (exterior request activated)
13	Supply ctrl error	Set point not achieved
23	Electrical Bat. overheating	Safety thermostat of the electric heater activated
24	Risk of freezing	Coil water temperature low (<12°C set value)
25	Anti-freeze temp. low (frost protection)	Coil water temperature too low (<7°C)
27	(Outdoor) sensor error	Malfunction of a connected sensor
29	Rotating exchanger protection	Not used here
31	Ctrl AN error	Fan fault (Fresh Air)
32	Ctrl AE error	Not used here
41	Manual ctrl heat	Heating output in manual control
42	Manual ctrl exchange	Not used here
43	Manual ctrl cold	Cold valve output in manual control
48	Internal battery low	Change the internal battery
49	AN Temp. sensor error	Malfunction of the supply air sensor
50	AE Temp. sensor error	Malfunction of the extract sensor
51	Room sensor error 1	Malfunction of the room sensor 1
53	AE Temp. sensor error	Not used here
55	AN pressure sensor error	Malfunction of the pressure sensor
56	AE pressure sensor error	Not used here
58	Anti-freeze Temp. sensor error	Malfunction of the anti-freeze sensor

9. COMMUNICATION

9.1 Connection to a Centralised Building Management in Modbus RTU language

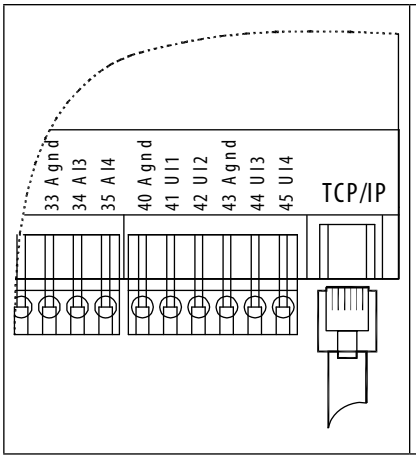


The CORRIGO controller has an integrated RS485 communication port (to be used with an STP cable); it makes possible communication in MODBUS RTU with a GTC.

Modbus interchange protocol and table

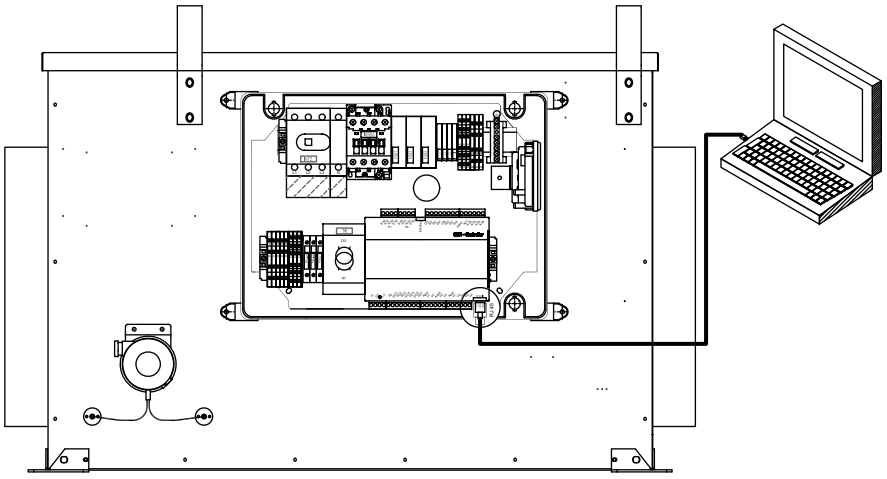
Refer to the NT_MODBUS CORRIGO_KSDR ECOWATT instructions available on our website www.vim.fr

9.2 Connection to a Centralised Building Management in BACnet IP language



The CORRIGO controller has a RJ45 connector which provides connection to a TCP/IP network compatible with a network in BACnet IP language.
The IP address of each CORRIGO must be configured and the BACnet IP function must be activated using the E Tool programme (available for download at www.vim.fr) or with the ETD touch console.
Beforehand, you must have the names, fixed IP addresses, sub-net masks and the default gateway of each unit that you want to connect to the same network.

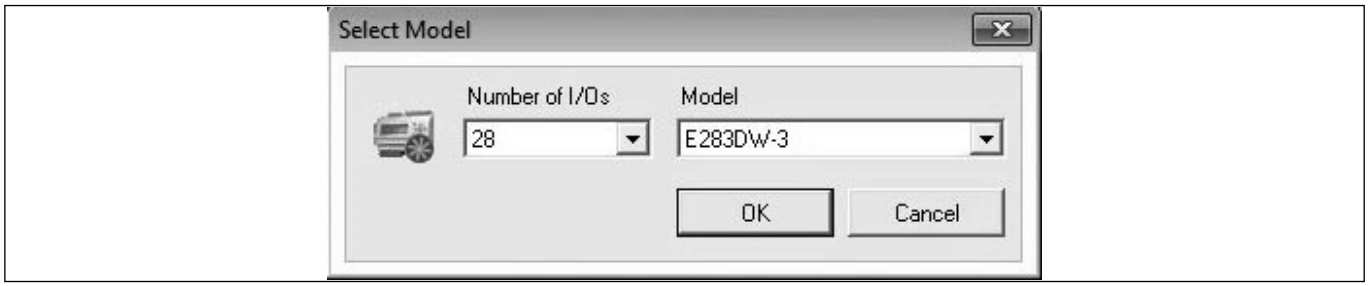
Example:
Name: CTA 1 BUREAU
Fixed IP Address: 192.168.10.100
Sub-net mask: 255.255.255.0
Default gateway:
192.168.10.1
Download and install the ETOOL programme on your PC (www.vim.fr - produit - traitement d'air -KSDR - Etool).
Connect your PC to the CORRIGO with a network cable; the unit must be electrically powered and the proximity switch must be ON for the controller to be powered.



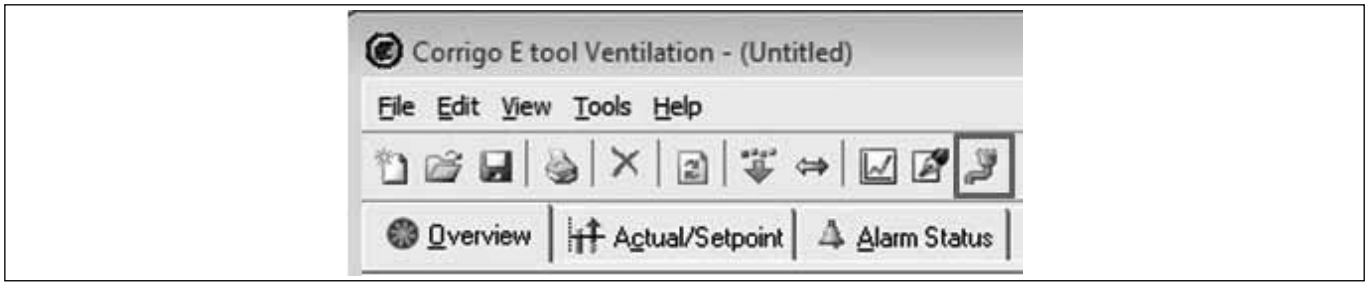
Click on the following item on the desktop:

The following screen is displayed:

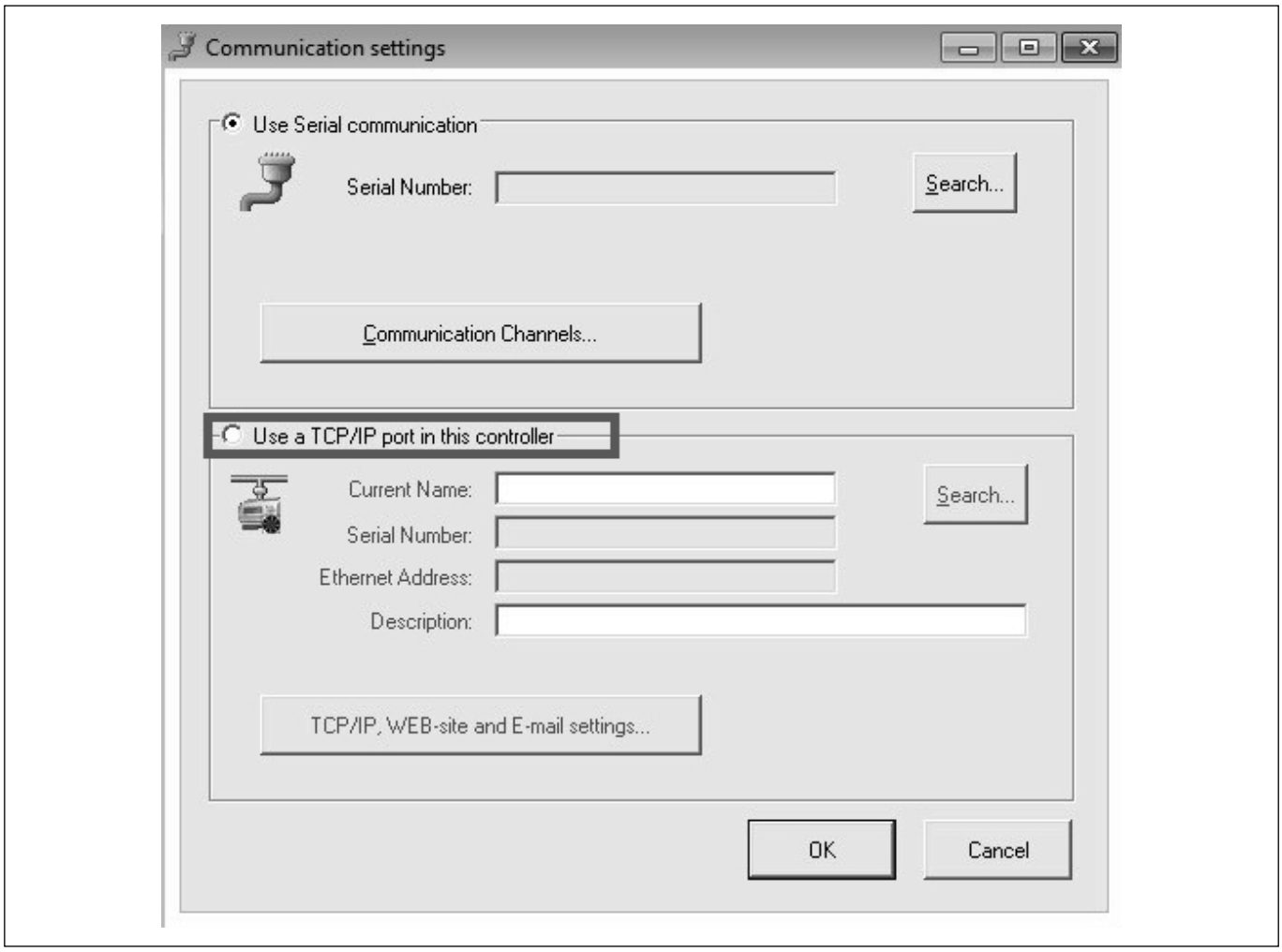
On the first screen, choose the type of CORRIGO that is connected and from the list, select:
Relating to the CORRIGO V3 3 ports used (E283W-3).



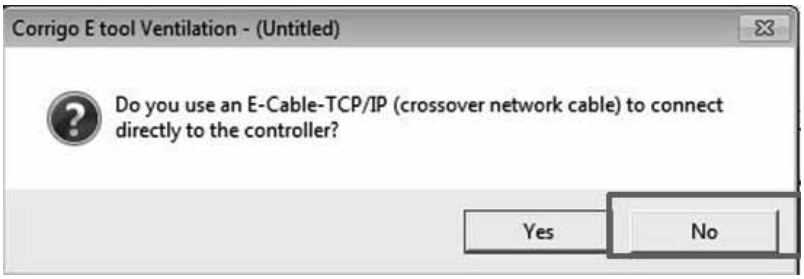
Click on the icon below to declare the type of connection.



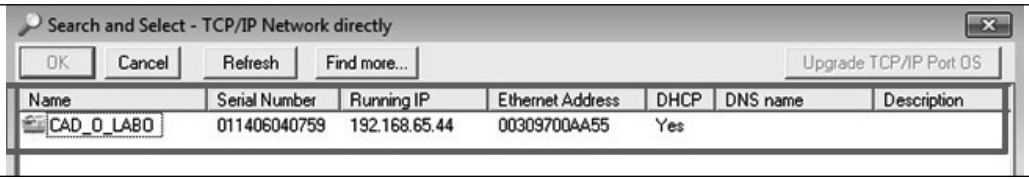
Tick use TCP/IP port



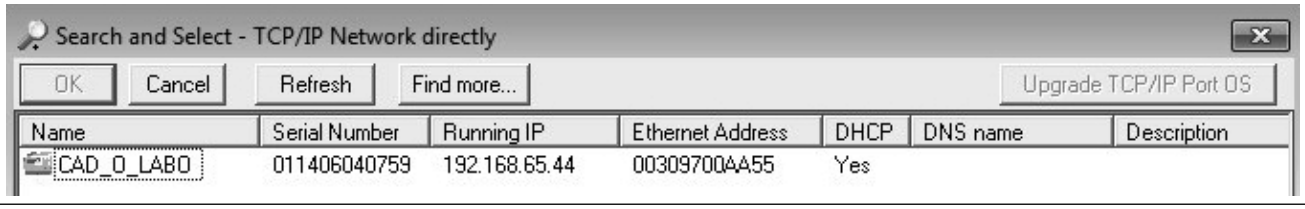
Answer “NO” to the question about the use of a regular lay rope.



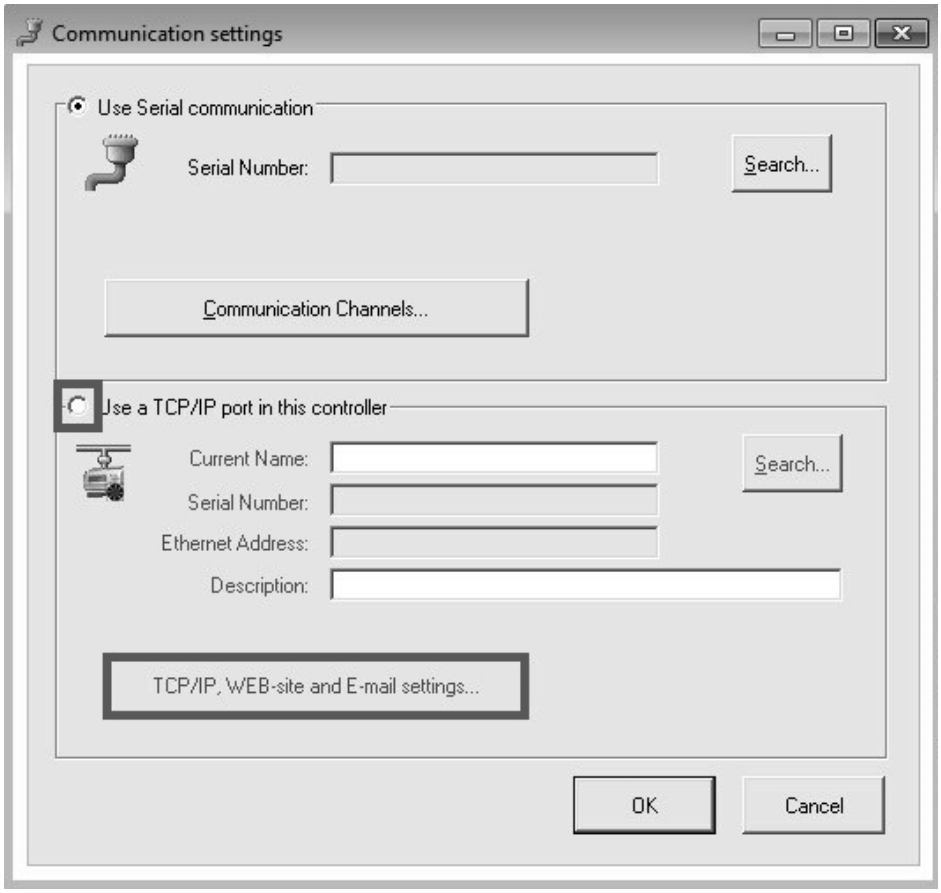
A search is then performed for any connected CORRIGO.



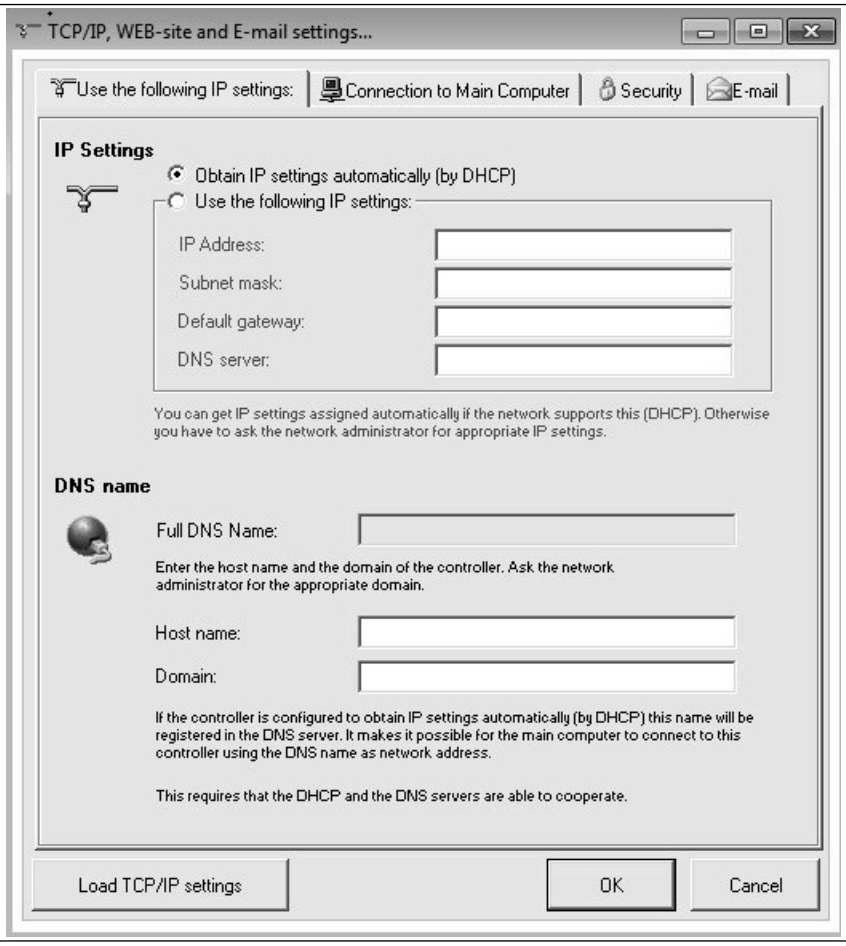
The name and serial number of the CORRIGO appear - select the automaton to be connected if there is more than one on the network and press OK.



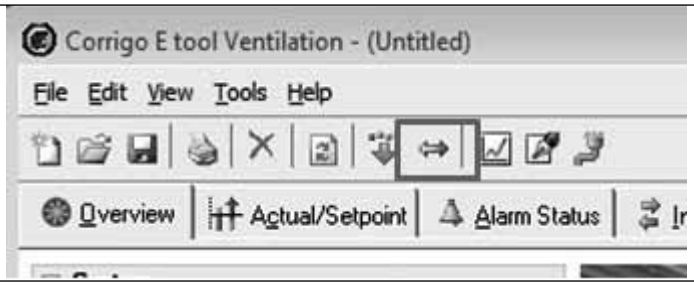
Return to the previous screen where the selected unit is displayed; you can give a name to the CORRIGO by altering the text in the box: "Current name" and press "TCP/IP settings, website and E-mail":



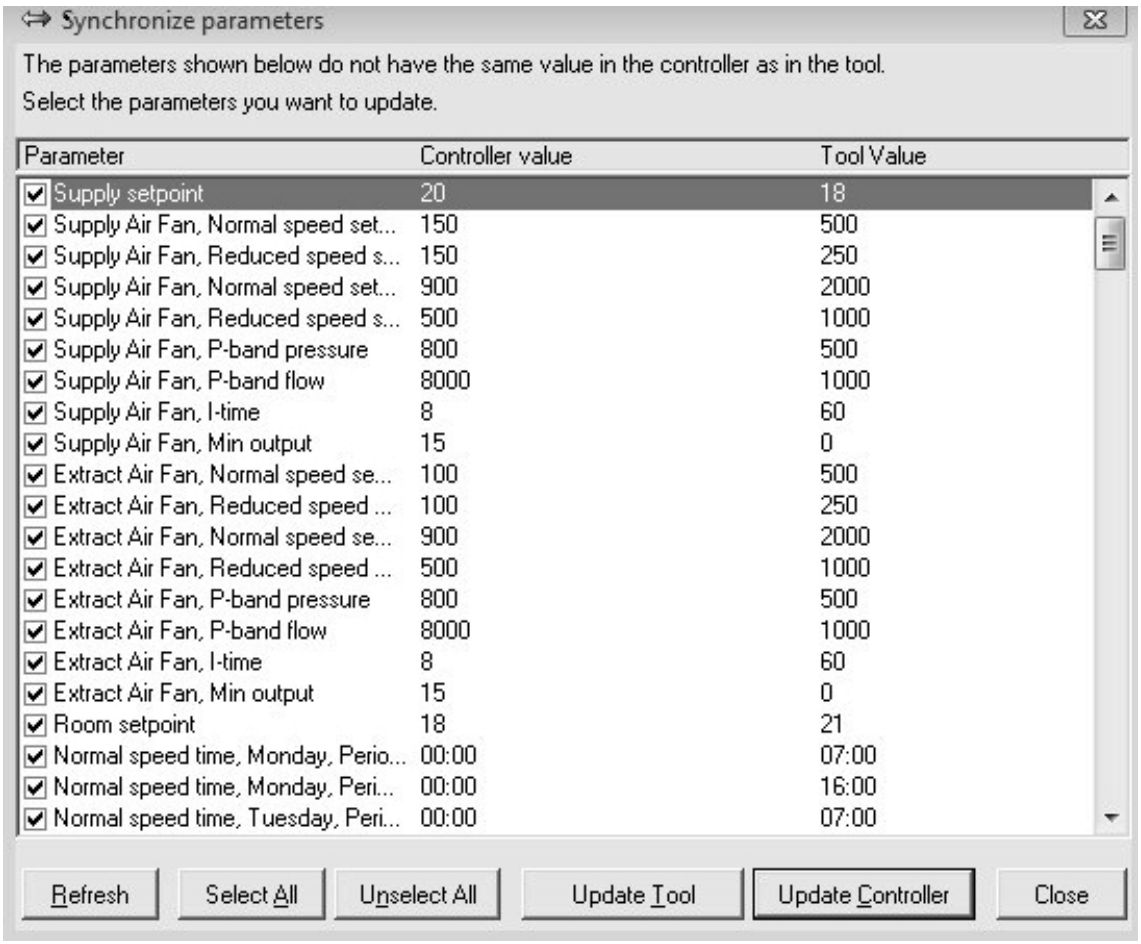
Tick "Automatically obtain an IP address (by DHCP) and click on "Load TCP/IP settings" to load the information on the CORRIGO.



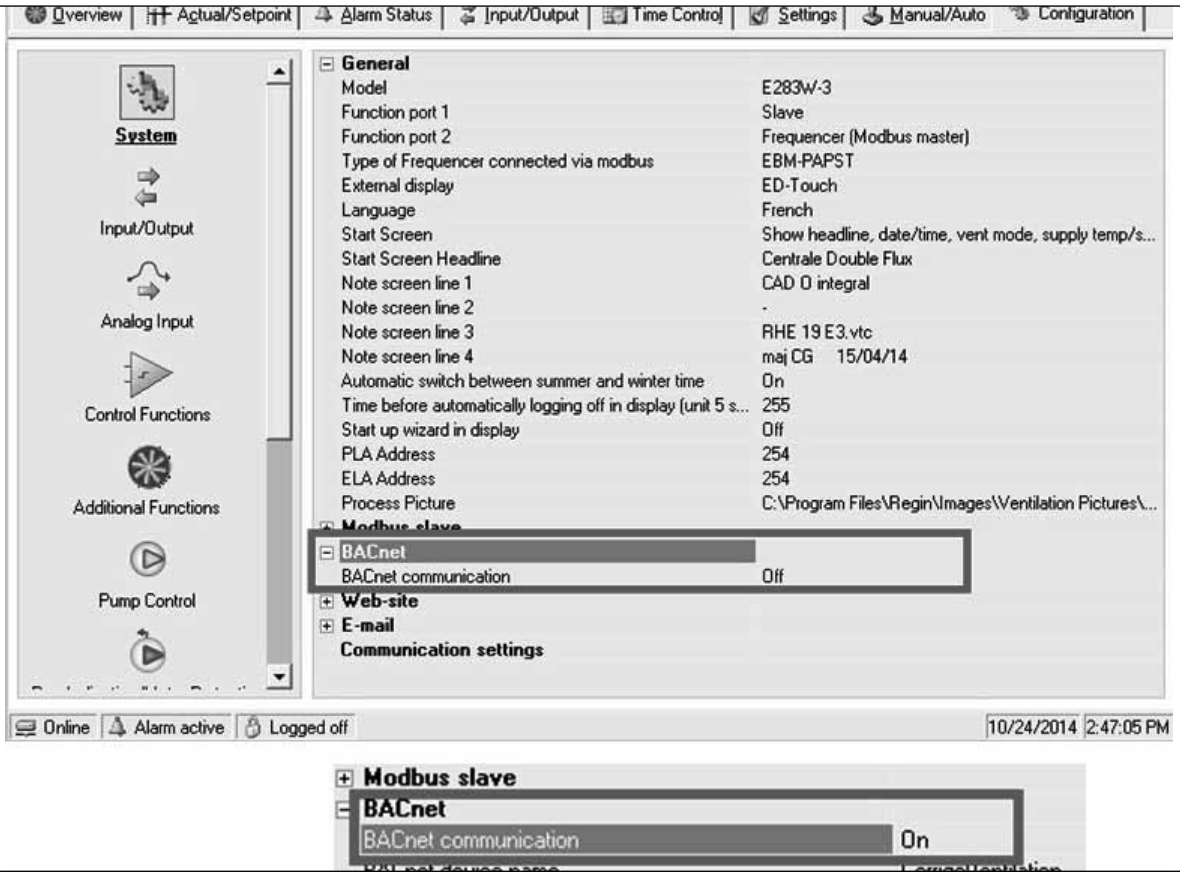
Synchronising the CORRIGO with the PC allows the configuration (VTC) of the CORRIGO to be recovered.

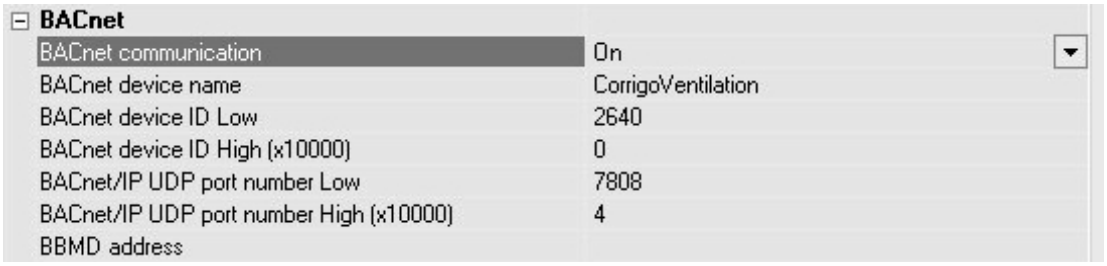


Updating E Tool Importing the parameters of the CORRIGO. **NOTE: DO NOT CLICK ON UPDATE THE CONTROLLER.**



Activation of the BACnet, and then select "On":

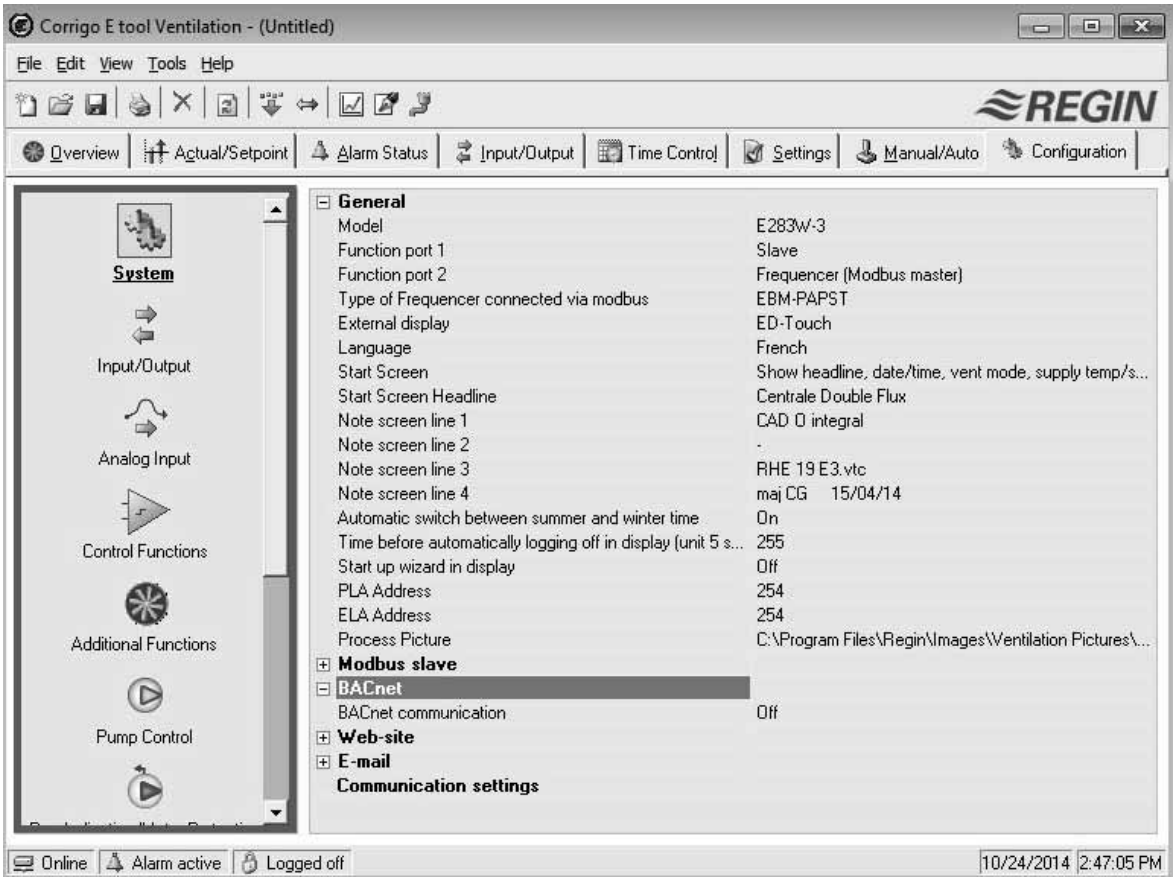




It is possible to rename the ID BACnet of the CORRIGO 'CorrigoVentilation' for 'CTA…' for example.
All CORRIGO have the same controller ID BACnet by default, lower figures = 2640.
Different codes must be provided when several units are installed on the same network.
By default, it can be allocated the last 4 figures of the serial number of the CORRIGO.

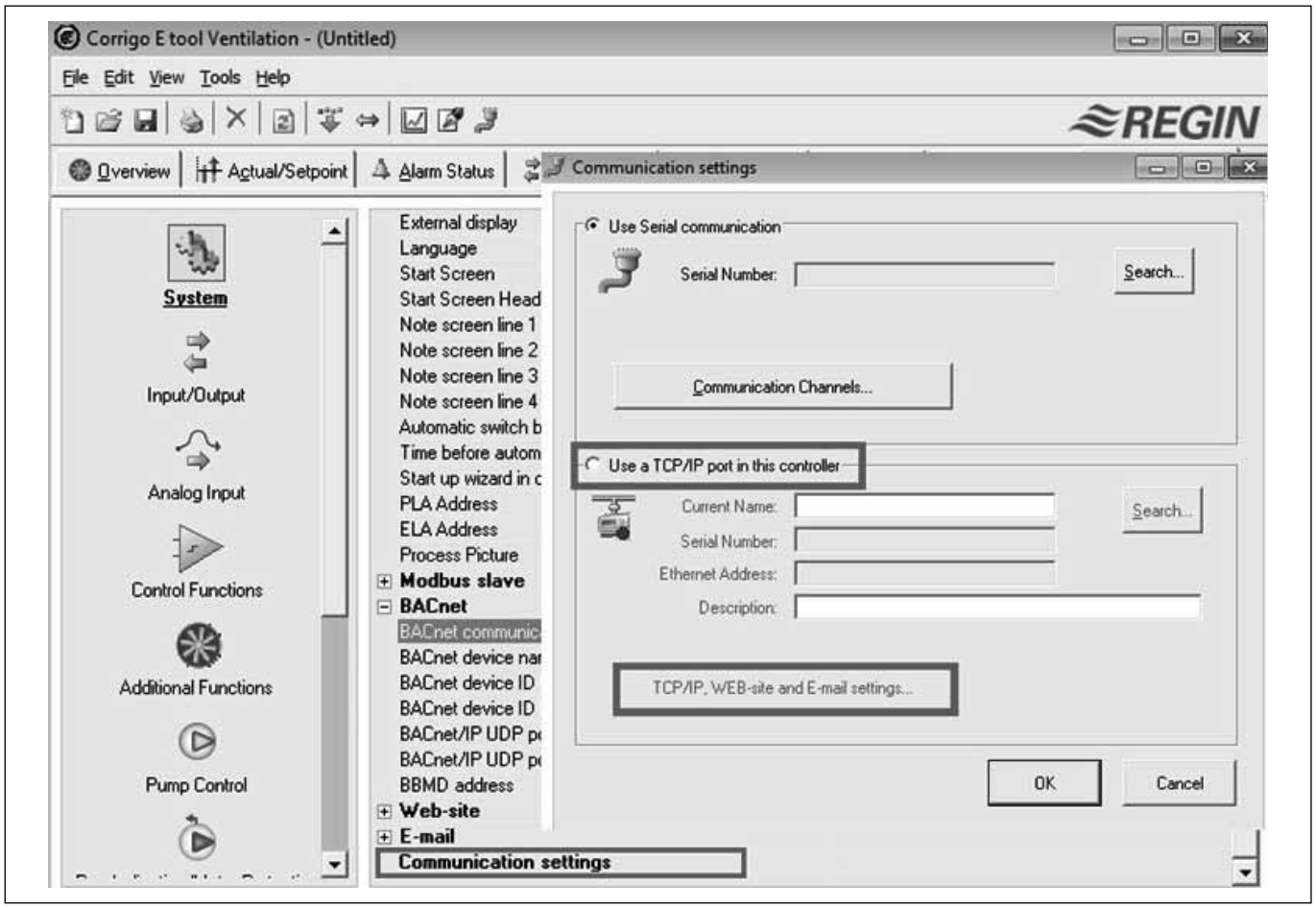
Once this operation is complete, the modifications made on E Tool must be synchronised with the CORRIGO.

Place the mouse cursor on the left hand side of the screen and right click the mouse:



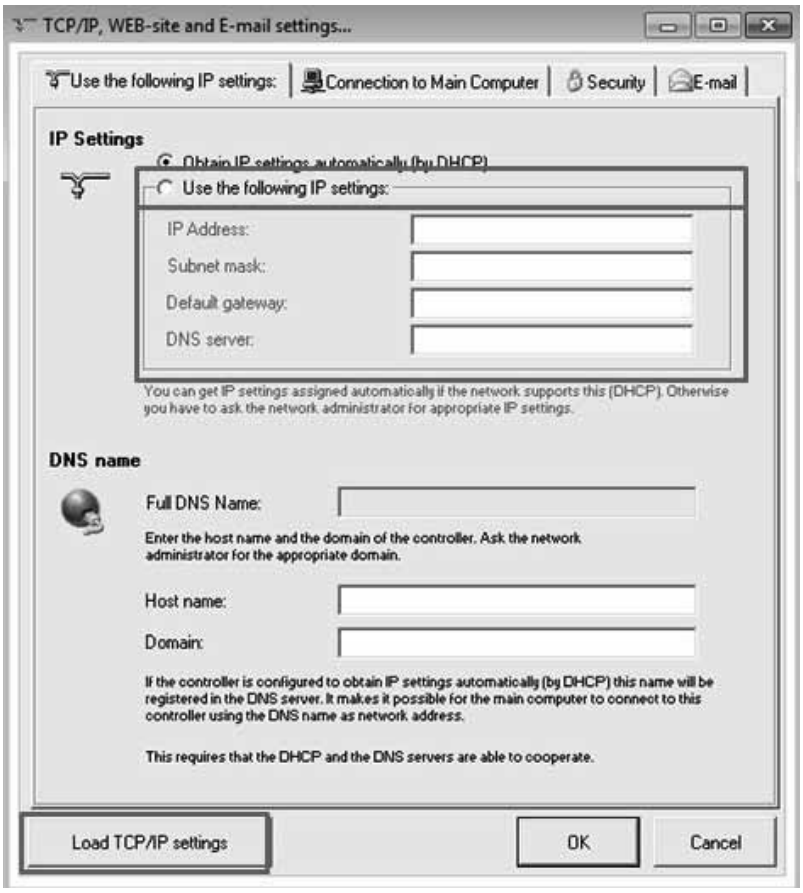
Click on synchronise parameters ⇔, any modifications that have been made appear, and click on modify the CORRIGO, the admin code: 1111 will be requested to validate the entry.

After activating the BACnet, an IP address must be allocated to the unit so that it can be integrated into the network.
Go to "communication port settings", and a window is displayed on screen:



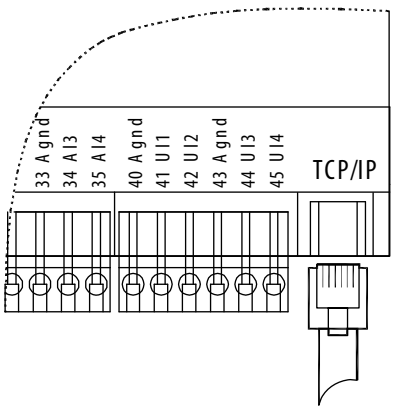
Click on use the following IP settings, and enter the information provided by the client in the relevant boxes, for instance: IP Address: 192.168.010.100 - Sub-net mask: 255.255.255.000

Default gateway (first 9 figures identical to those of the IP address) and the last 3 are specific.
To validate, click on load the TCP/IP settings.



The CORRIGO is ready to be installed on the desired TCP/IP network and to communicate in BACnet.
The implementation file of the BACNET BICS protocol (BACnet protocol Implementation Conformance Statement) is available at www.vim.fr.

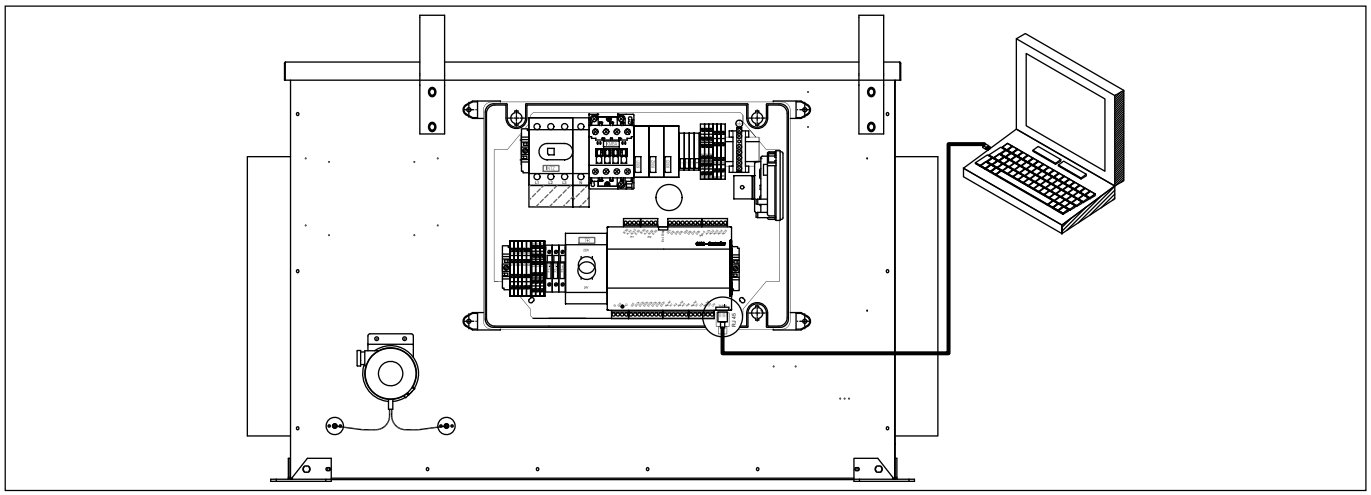
9.3 Integrated web server application



The CORRIGO controller of the KSDR ECOWATT® is equipped with an integrated web server, which makes it possible, via simplified access, to consult and take actions on the latter like on any element of an intranet network.

It is also possible to control the CORRIGO via the internet; however, the settings must be configured by the relevant network administrator (contact us for a copy of the procedure to follow).

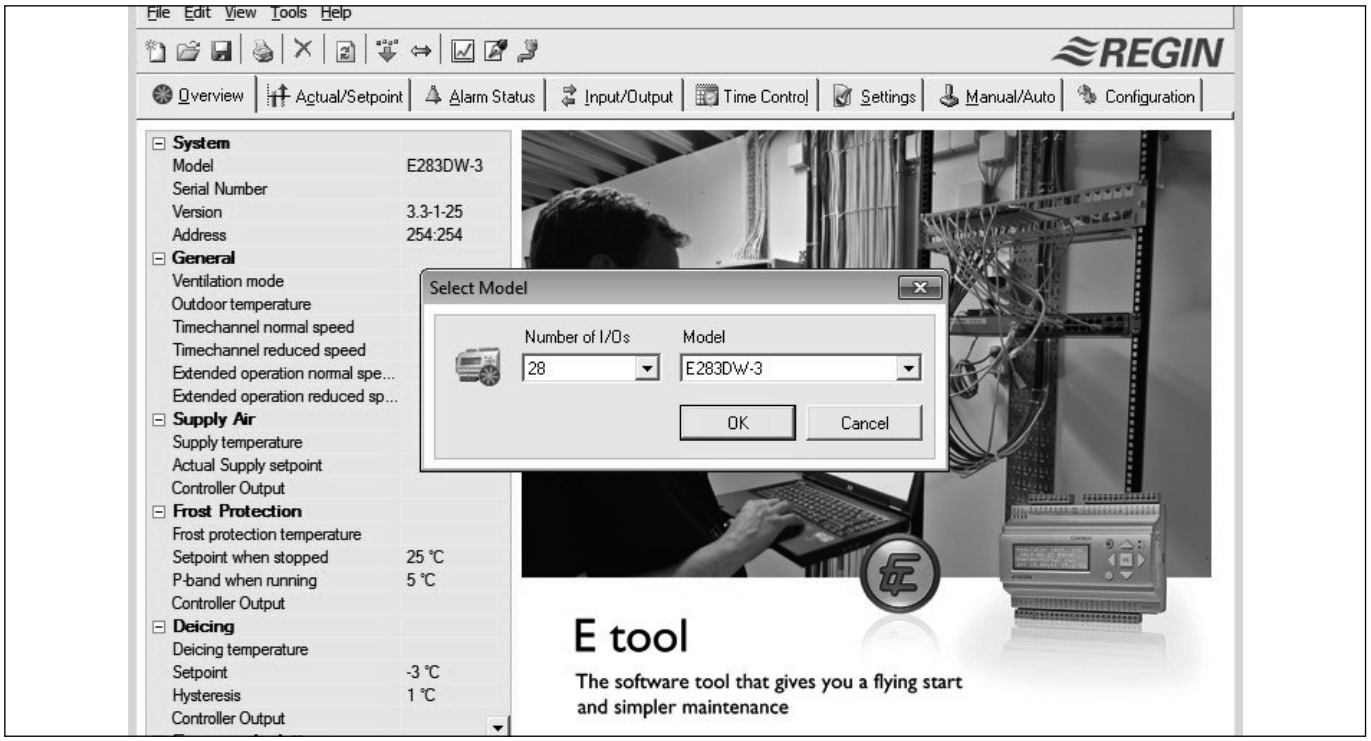
The CORRIGO controller is connected to the TCP/IP network by a network cable on the RJ45 connector.



Download and install the E Tool programme on your PC (www.vim.fr – produit – traitement d'air – KSDR ECOWATT® - E tool)
Connect the CORRIGO with a network cable to your PC; the unit must be electrically powered and the proximity switch must be ON for the controller to be powered.

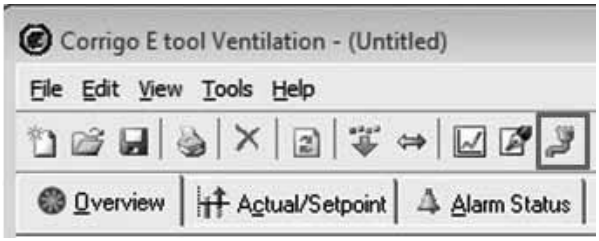
Click on the following item on the desktop:

The following screen is displayed:

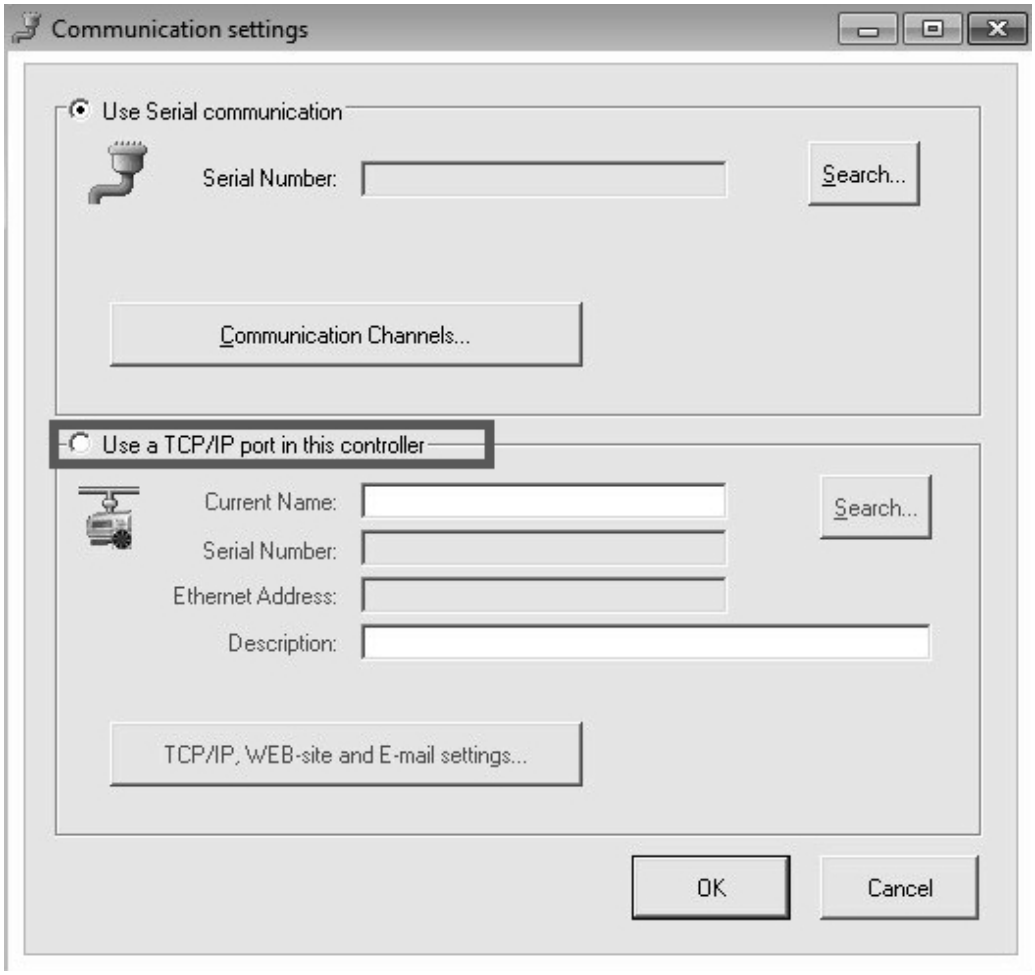


On the first screen, choose the type of CORRIGO that is connected and from the list, select: Relating to the CORRIGO V3 3 ports used (E283W-3).

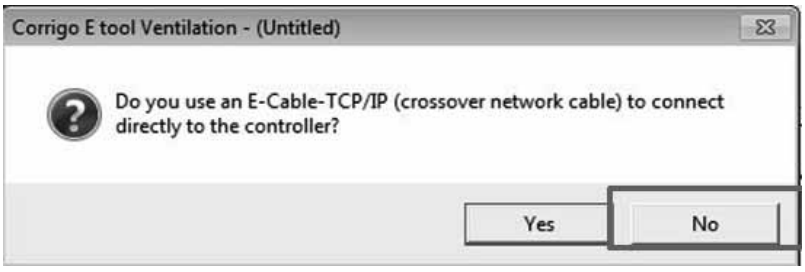
Click on the icon below to declare the type of connection.



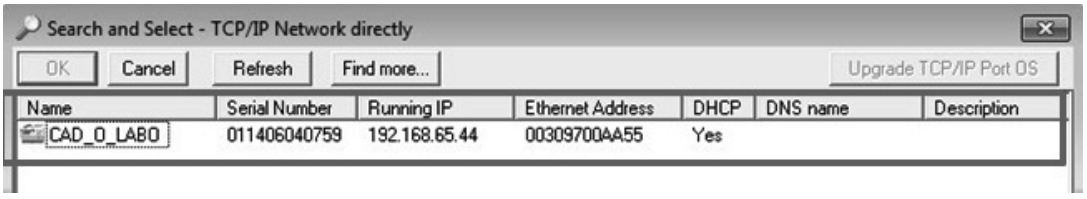
Tick use TCP/IP port



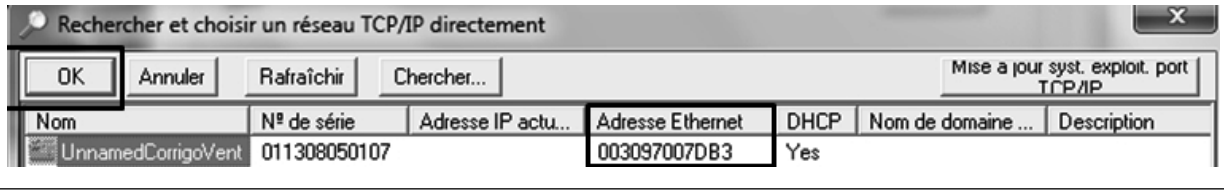
Answer “NO” to the question about the use of a regular lay rope.



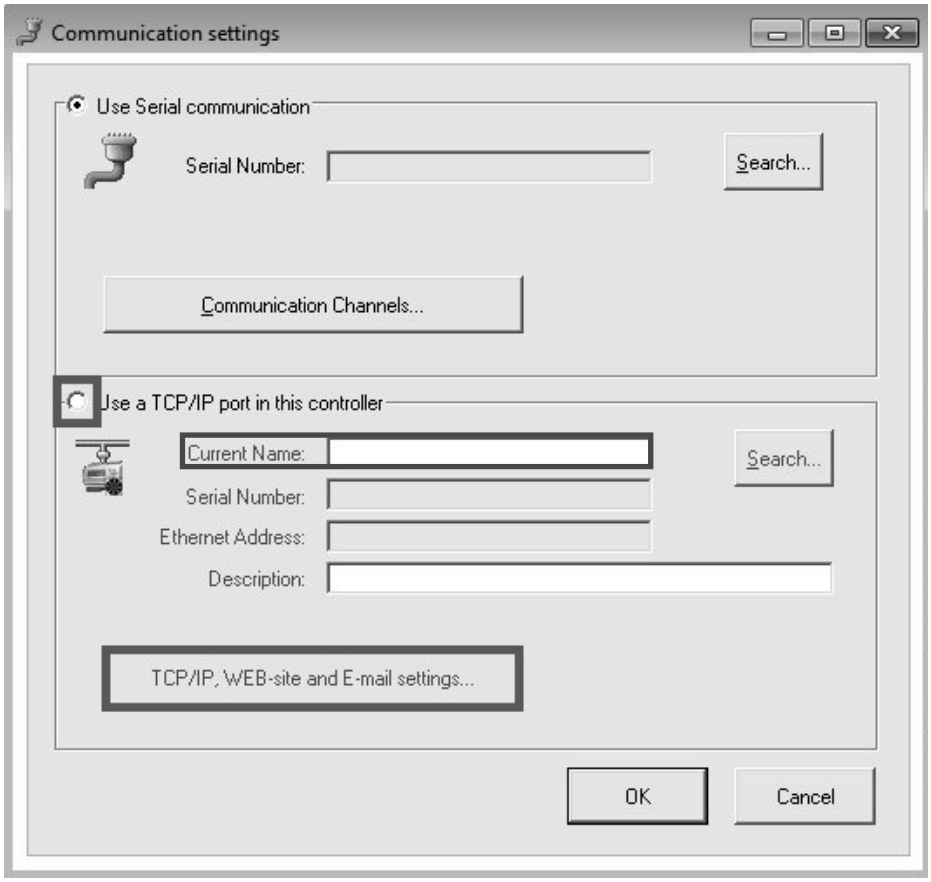
A search is then performed for any connected CORRIGO.



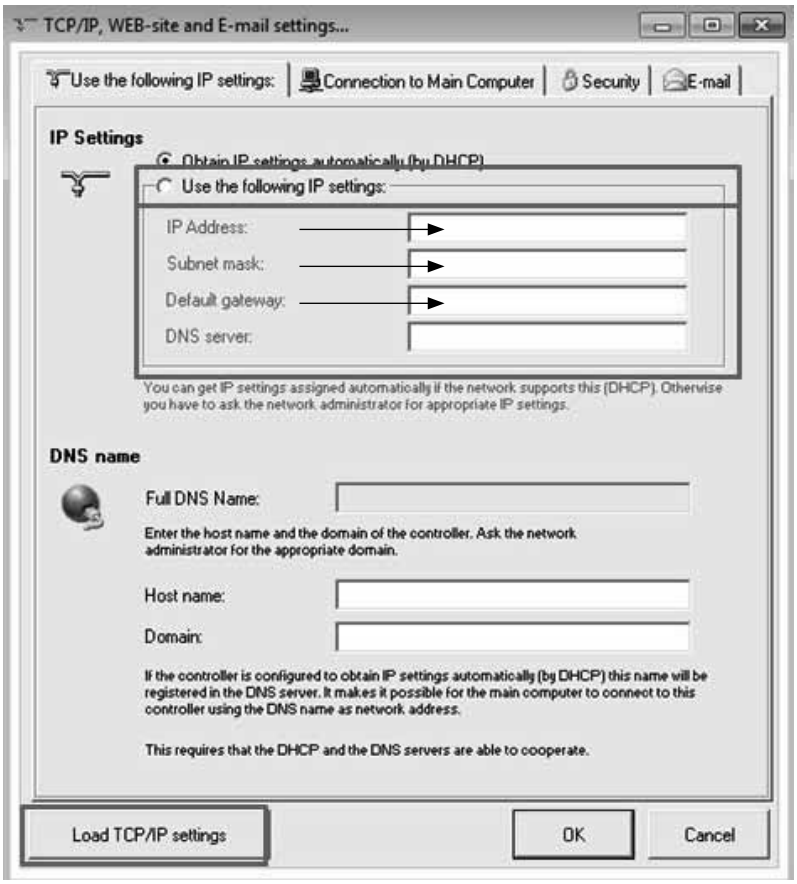
The names and serial numbers of the CORRIGO appear - select the automaton to be connected if there is more than one on the network and press OK. [Note the Ethernet address of the controller (actual address of the controller often called MAC) as you may be asked to provide it by the network administrator.]



Return to the previous screen where the selected unit is displayed; you can allocate a name to the CORRIGO by altering the text in the box: "Current name" and press "TCP/IP settings, website and E-mail":



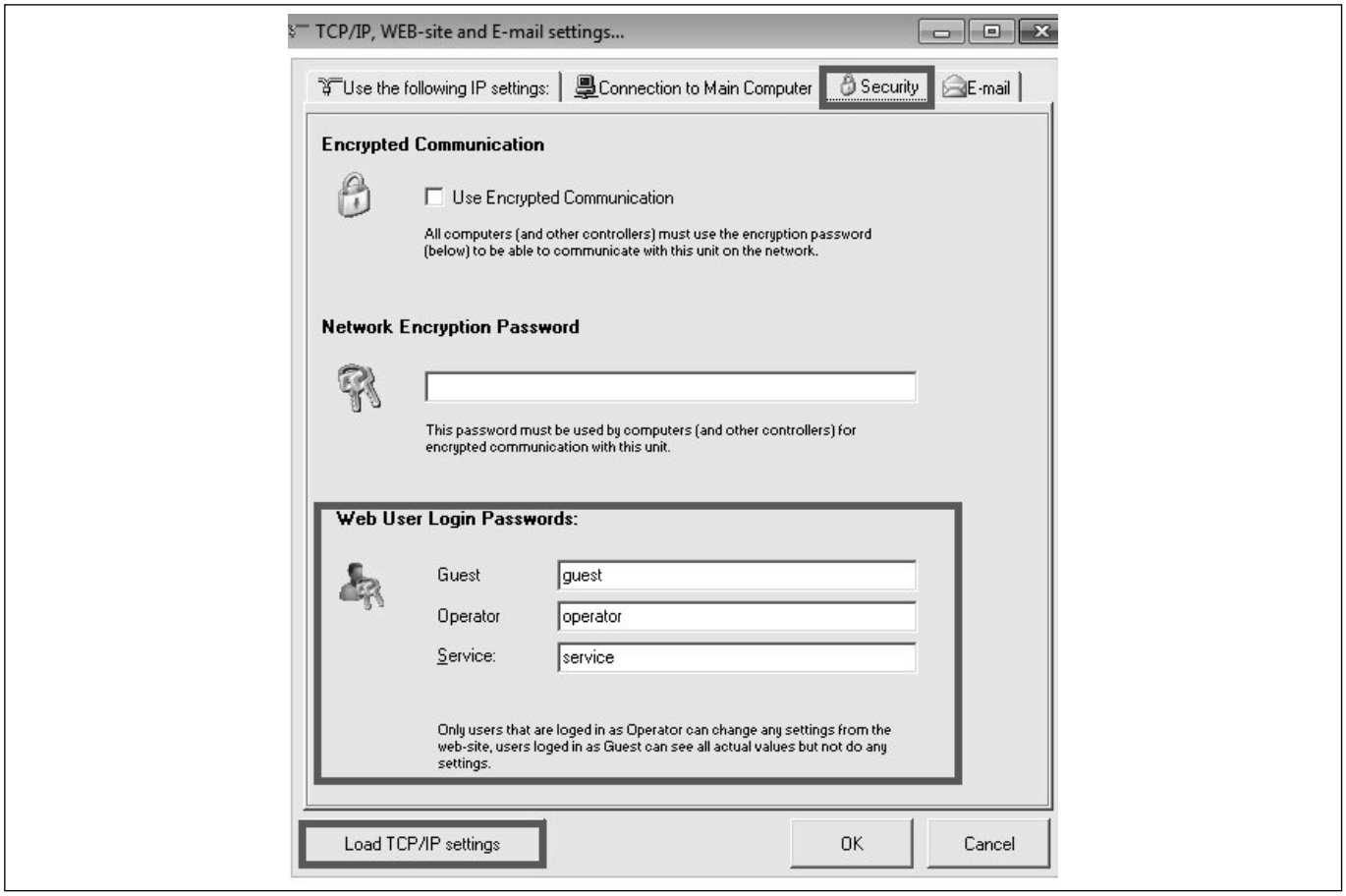
Click on "use the following IP settings", and enter the information provided by the network administrator in the relevant boxes, for instance:
IP Address: 192.168.010.100 Sub-net mask: 255.255.255.000
Default gateway (first 9 figures identical to those of the IP address) and the last 3 are specific.



Click on the "security" tab

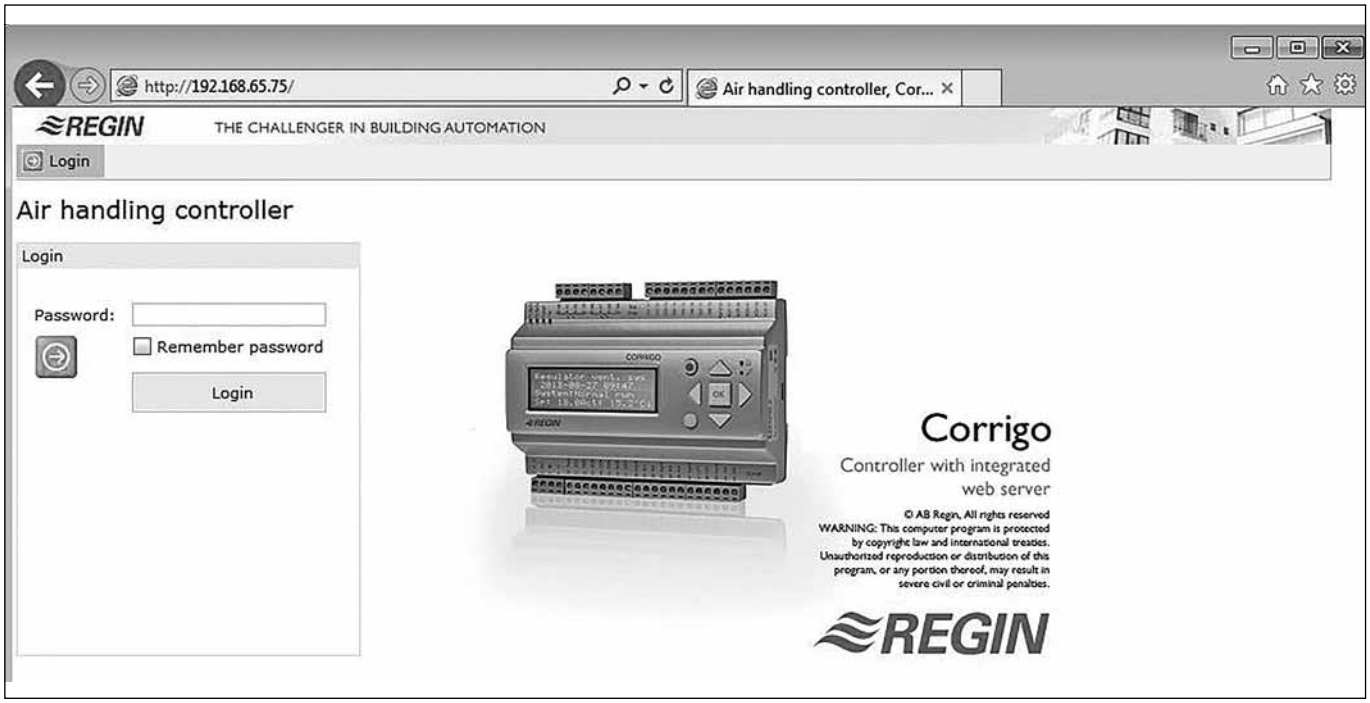
You can change the default passwords which you will be asked to provide when connecting to the web page. The various passwords allow you either to view only the settings (guests) or to view and modify the settings (operator or service).
To validate, click on "load the TCP/IP settings".

The CORRIGO is now configured for your network.



From your explorer, you can now enter the IP address of the controller and connect to the web page of the controller. For the example above, enter: 192.168.010.100

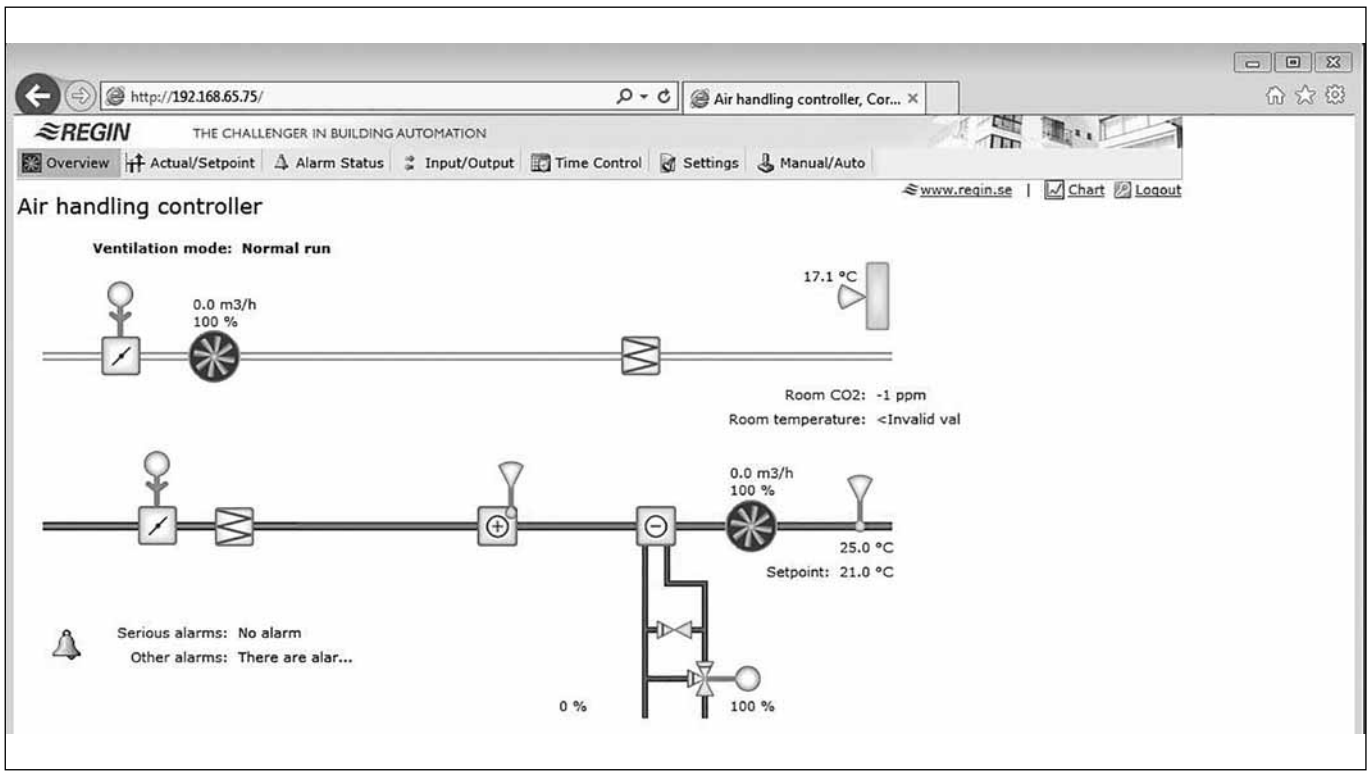
The following page is displayed on screen:



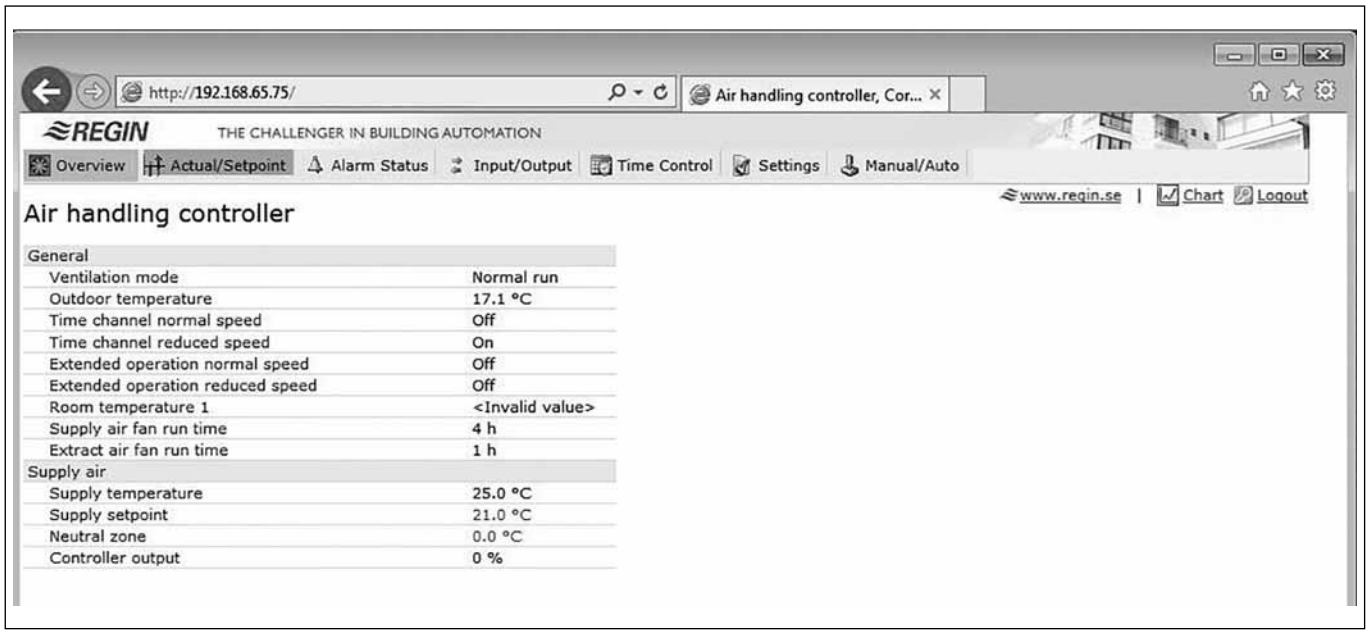
Enter the password corresponding to your level of authorisation by default:

- **guest**: consultation of values only
- **operator or service**: consultation and modifications of values.

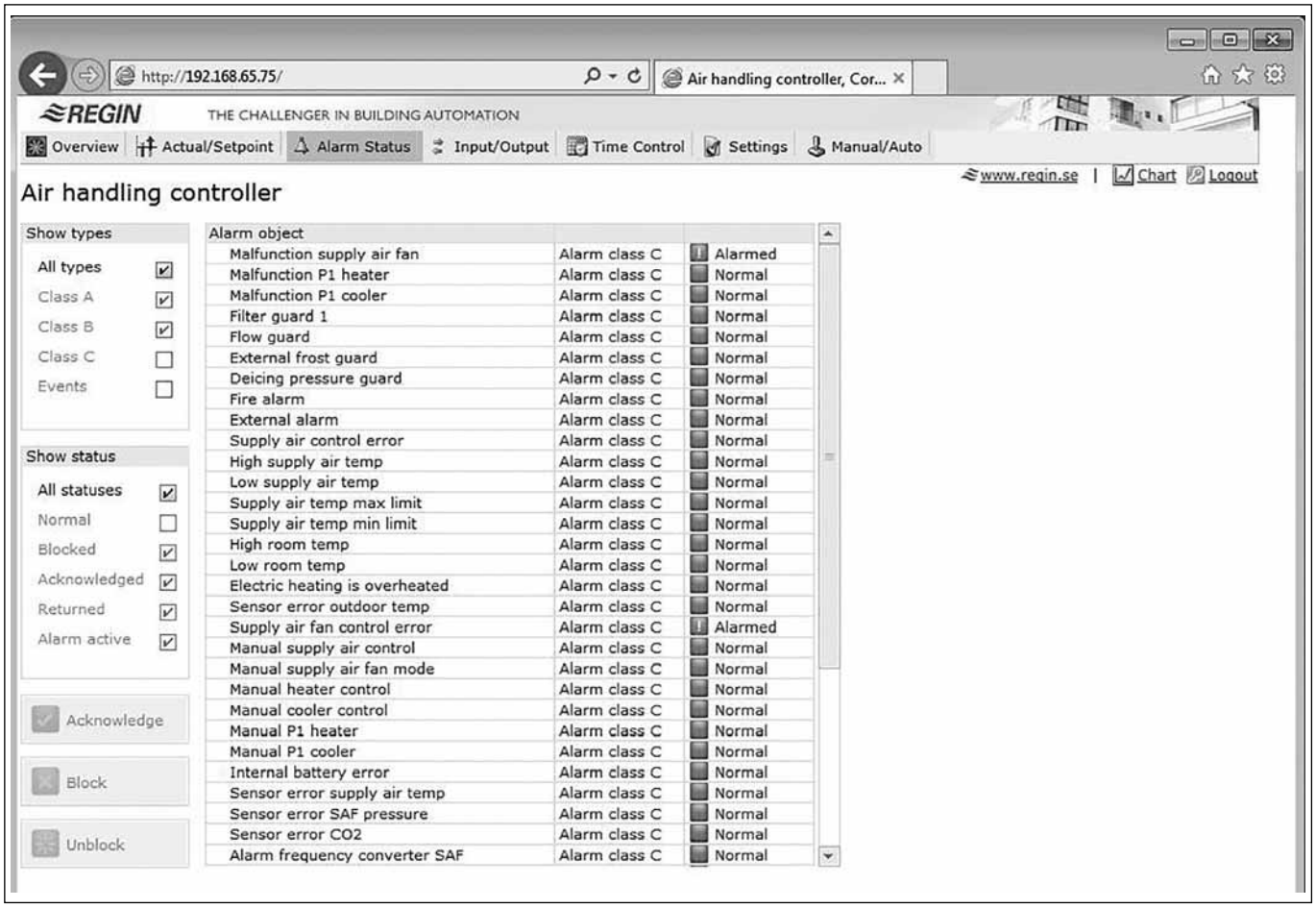
Click on execute the application to display the window below, which represents the current status of the unit in real time.



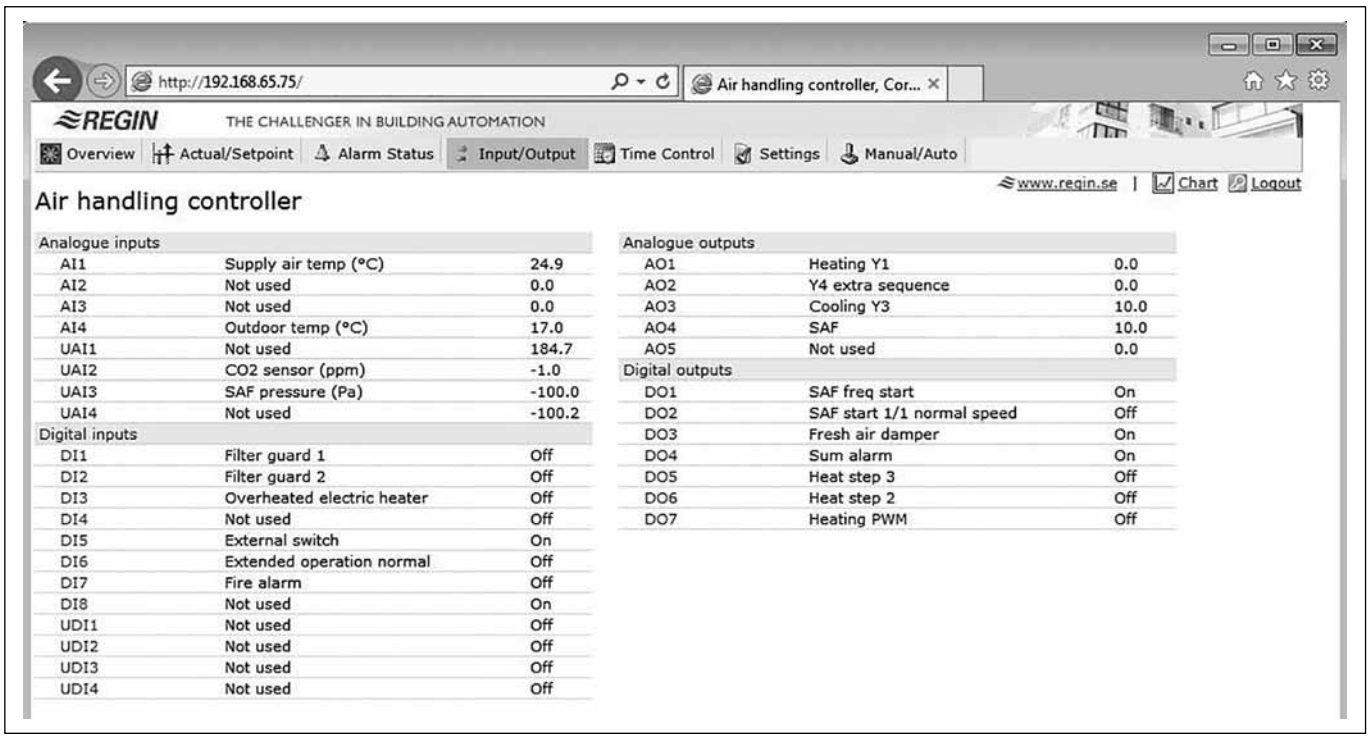
The 2nd tab includes current values and instructions. We strongly recommend that you modify only routine instructions; such as the set temperature and the flows in normal and reduced speed, and not to modify they other values.



The 3rd tab displays the alarms:

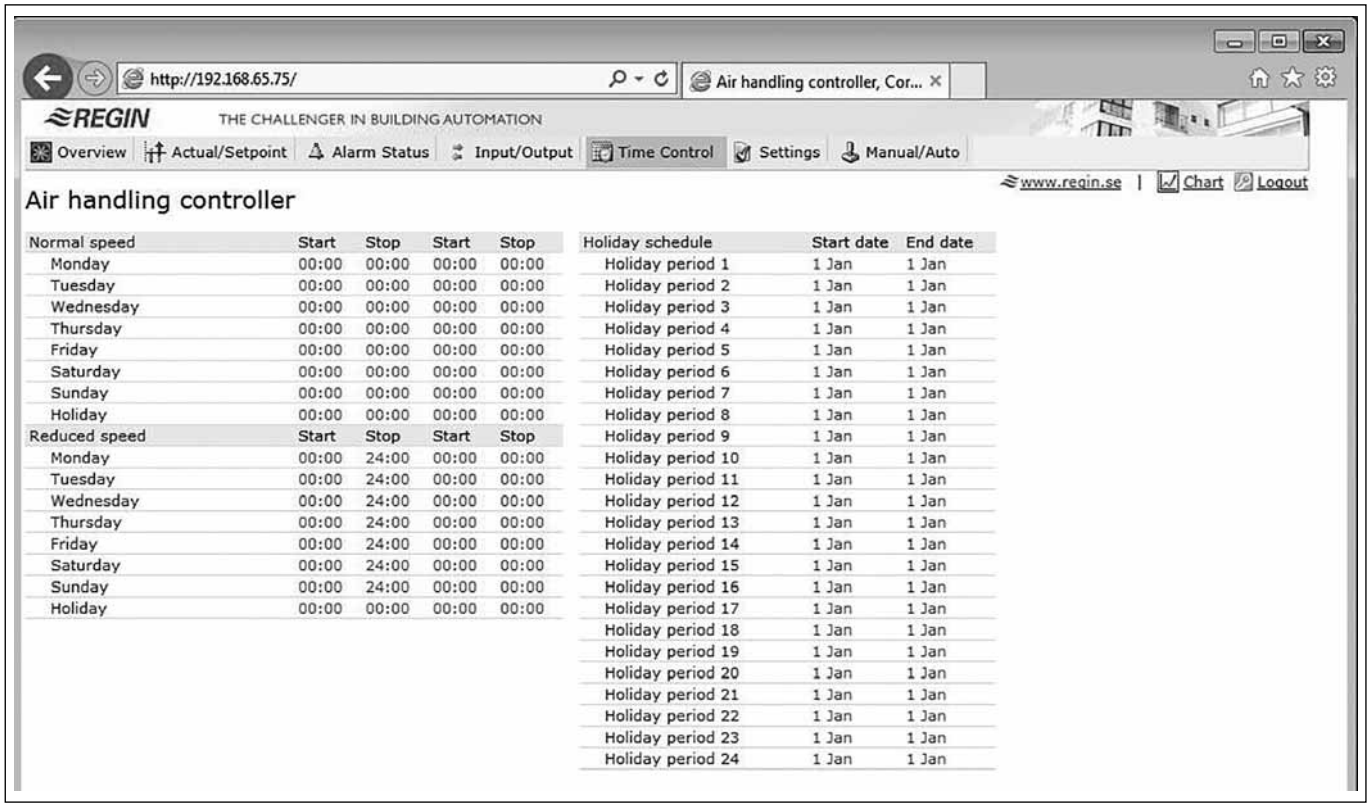


The 4th tab displays the status of inputs/outputs of the controller:



For further details, see "8.6 Expert menu – controller inputs/outputs status".

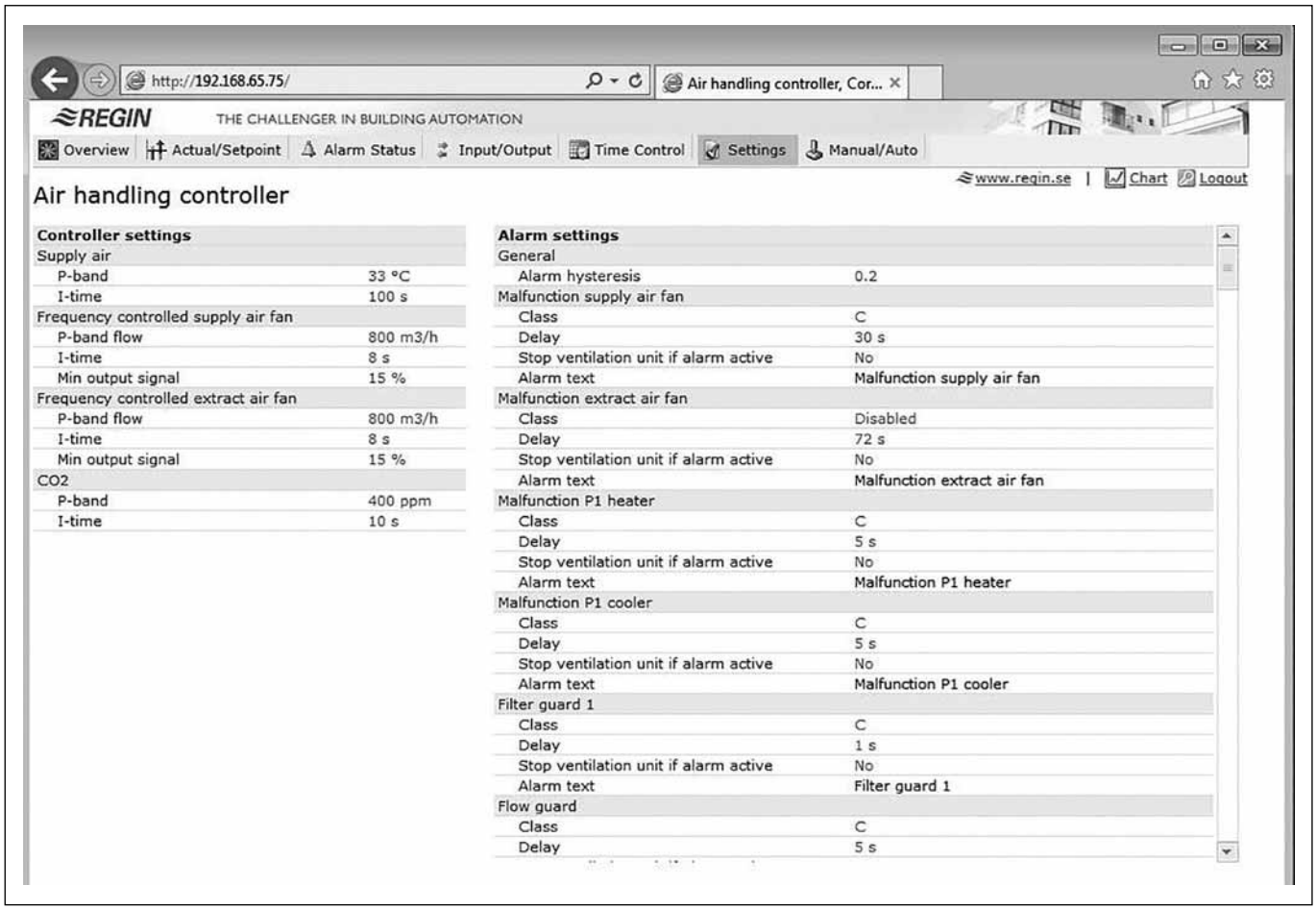
The 5th tab allows the automatic operating hours to be programmed on an hourly basis:



Normal speed	Start	Stop	Start	Stop
Monday	00:00	00:00	00:00	00:00
Tuesday	00:00	00:00	00:00	00:00
Wednesday	00:00	00:00	00:00	00:00
Thursday	00:00	00:00	00:00	00:00
Friday	00:00	00:00	00:00	00:00
Saturday	00:00	00:00	00:00	00:00
Sunday	00:00	00:00	00:00	00:00
Holiday	00:00	00:00	00:00	00:00
Reduced speed	**Start**	**Stop**	**Start**	**Stop**
Monday	00:00	24:00	00:00	00:00
Tuesday	00:00	24:00	00:00	00:00
Wednesday	00:00	24:00	00:00	00:00
Thursday	00:00	24:00	00:00	00:00
Friday	00:00	24:00	00:00	00:00
Saturday	00:00	24:00	00:00	00:00
Sunday	00:00	24:00	00:00	00:00
Holiday	00:00	00:00	00:00	00:00

Holiday schedule	Start date	End date
Holiday period 1	1 Jan	1 Jan
Holiday period 2	1 Jan	1 Jan
Holiday period 3	1 Jan	1 Jan
Holiday period 4	1 Jan	1 Jan
Holiday period 5	1 Jan	1 Jan
Holiday period 6	1 Jan	1 Jan
Holiday period 7	1 Jan	1 Jan
Holiday period 8	1 Jan	1 Jan
Holiday period 9	1 Jan	1 Jan
Holiday period 10	1 Jan	1 Jan
Holiday period 11	1 Jan	1 Jan
Holiday period 12	1 Jan	1 Jan
Holiday period 13	1 Jan	1 Jan
Holiday period 14	1 Jan	1 Jan
Holiday period 15	1 Jan	1 Jan
Holiday period 16	1 Jan	1 Jan
Holiday period 17	1 Jan	1 Jan
Holiday period 18	1 Jan	1 Jan
Holiday period 19	1 Jan	1 Jan
Holiday period 20	1 Jan	1 Jan
Holiday period 21	1 Jan	1 Jan
Holiday period 22	1 Jan	1 Jan
Holiday period 23	1 Jan	1 Jan
Holiday period 24	1 Jan	1 Jan

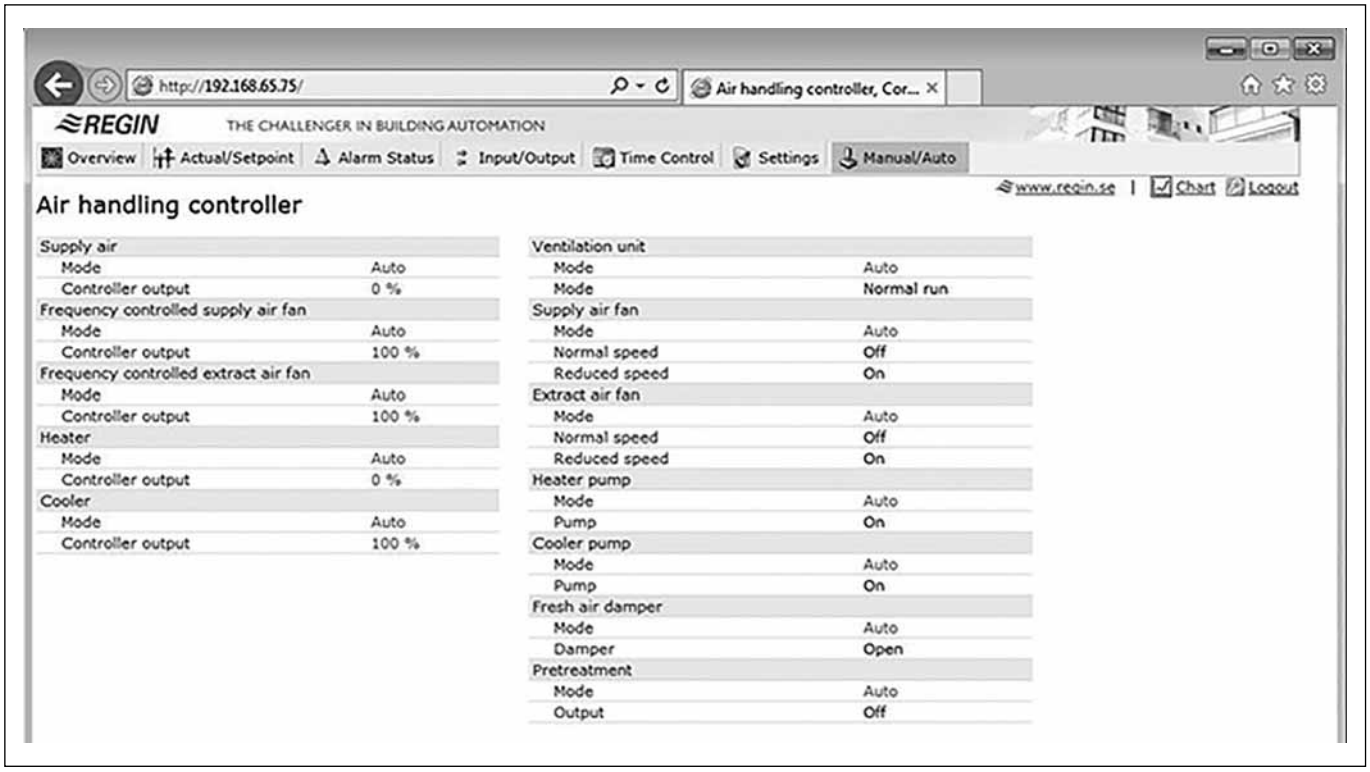
The 6th tab includes the proportional and integral values and the settings to activate certain alarms. **DO NOT MODIFY THE VALUES.**



Controller settings	
Supply air	
P-band	33 °C
I-time	100 s
Frequency controlled supply air fan	
P-band flow	800 m3/h
I-time	8 s
Min output signal	15 %
Frequency controlled extract air fan	
P-band flow	800 m3/h
I-time	8 s
Min output signal	15 %
CO2	
P-band	400 ppm
I-time	10 s

Alarm settings	
General	
Alarm hysteresis	0.2
Malfunction supply air fan	
Class	C
Delay	30 s
Stop ventilation unit if alarm active	No
Alarm text	Malfunction supply air fan
Malfunction extract air fan	
Class	Disabled
Delay	72 s
Stop ventilation unit if alarm active	No
Alarm text	Malfunction extract air fan
Malfunction P1 heater	
Class	C
Delay	5 s
Stop ventilation unit if alarm active	No
Alarm text	Malfunction P1 heater
Malfunction P1 cooler	
Class	C
Delay	5 s
Stop ventilation unit if alarm active	No
Alarm text	Malfunction P1 cooler
Filter guard 1	
Class	C
Delay	1 s
Stop ventilation unit if alarm active	No
Alarm text	Filter guard 1
Flow guard	
Class	C
Delay	5 s

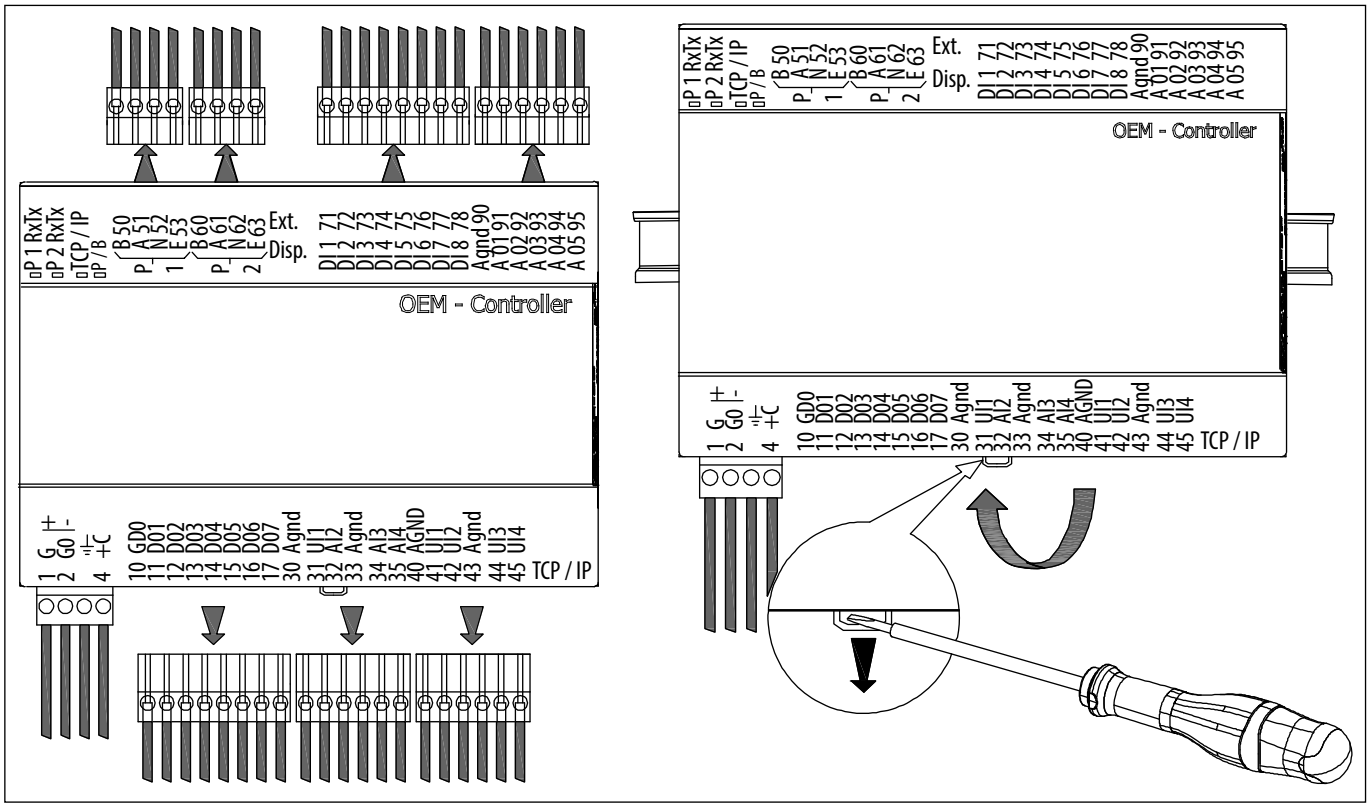
Tab 7 allows the various elements to be manually or automatically controlled:



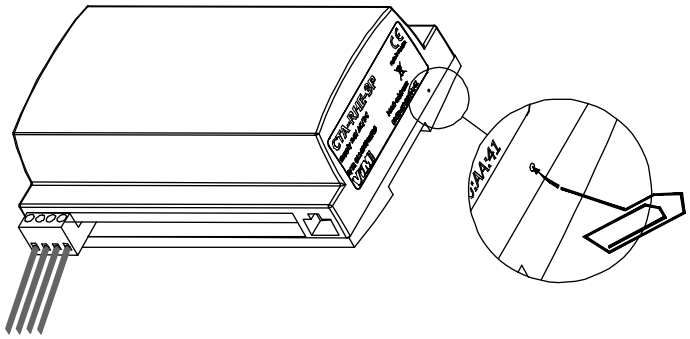
Except to perform certain tests, you are advised to leave the system on AUTO.

9.4 Rebooting the CORRIGO controller

In some cases, after many adjustments or following a malfunction, it is sometimes necessary to reboot the programmer.
After cutting the electrical power supply of the unit by the proximity switch, open the door which provides access to the controller. Remove all connectors from the CORRIGO except for the power supply.



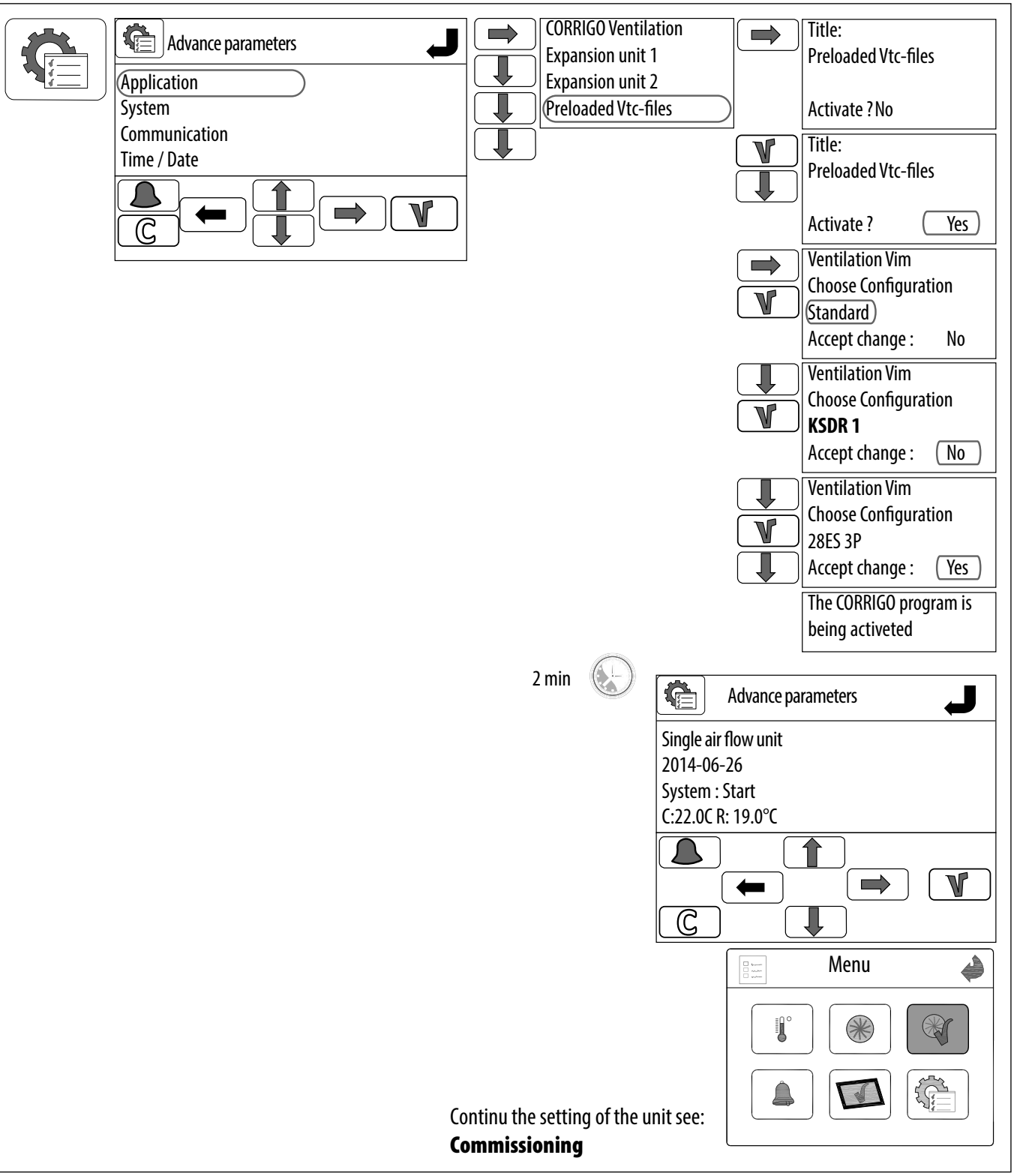
Using a screwdriver, unclip the CORRIGO from the DIN rail.



To perform the reboot, the CORRIGO must be powered on; power the unit by turning the proximity switch.
Using a fine rod (trombone type) reboot the CORRIGO.

Clip the CORRIGO to the DIN rail by reversing the unclipping operation, without reconnecting the connectors except for the command control.

From the command control, perform the following operations:

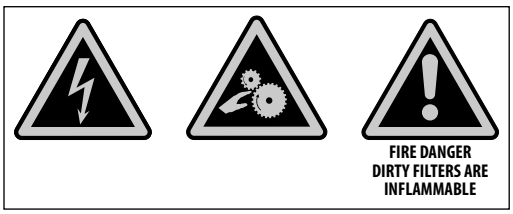


Continu the setting of the unit see:
Commissioning

Cut the electrical power supply, reconnect the connectors to the CORRIGO and close the unit.

10. MAINTENANCE

10.1 Prior precautions



- Make sure that you use the appropriate PPE (Personal Protective Equipment) before any handling operation.
- Observe the danger labels present on the various access doors: **Electrical equipment/Rotating machine/Potentially flammable dust-laden filters.**

Do not open the access doors until the electrical power has been cut from the padlockable switch disconnecter located on the unit. If there is work to be performed on the device, cut the electrical power on the main circuit breaker and make sure that nobody is able to accidentally restart it. Make sure that any mobile parts are stationary.

10.2 Maintenance frequency

Observe the minimum legal obligations.
The table below provides a reference of the average maintenance frequencies.
It does not take into account any particular factors such as indoor or outdoor installation, the intensity of atmospheric pollution, the number of occupants or the number of hours of operation.

Body	At commissioning	Minimum of every 6 months
Filter	Check for clogging - clean	Remove dust or replace
Fan	Check the connections - direction of rotation	Check for clogging - Clean if necessary
Electric panel	Check the connections	Check the connections
Electric heater	Check the connections	Check the connections
Water coil	Inspect the sealing	Check for clogging - clean if necessary Control the sealing/tighten any connections
Eliminator		Clean
Condensate drain tray	Inspect the sealing/flow	Clean
Pressure switches	Check the electrical/air flow connections	Check operation
Sensors	Check operation/adjustment	Check operation/adjustment
Flexible sleeves	Check that they are correctly attached and sealed.	Replace if necessary
Fresh air inlet/discharge grill	Check that they are present and attached.	Clean
Duct networks	Check that they are correctly connected and sealed.	Clean
Nozzles/ducts/plenums	Check that the wiring is sealed	Clean

10.3 Maintenance/replacement of the fresh air filter

As a standard feature, KSDR ECOWATT® include a fresh air filter: G4 pre-filter or F7 filter (optional).
Clogging of filter controlled by a differential pressure switch with information reported about adjustment.

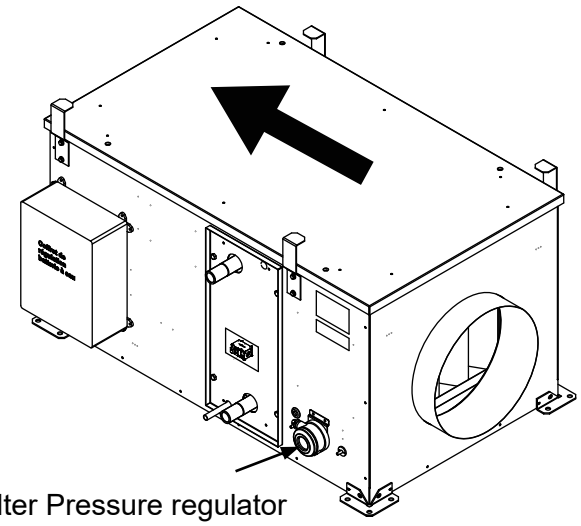
Size	Quantity	G4 or F7 Filter (mm)
08	1	390 x 265 x 100
18 - 28 - 38	1	541 x 495 x 100

Filter replacement: (see § "10.7 Replacement parts")

- Cut the electric power supply at the primary circuit-breaker.
- Remove the access lid (4 M6 screws).
- Unlock the filter by spinning the latch to 90° and remove it.
- Remove any dust from the compartment near to the filter.
- Place the new filter in its position, and put the latch back.
- Re-assemble the lid.
- Restart the unit; the filter alarm has automatic discharge and it should disappear from the alarms.

Nb: When commissioning for the first time, once the installation is complete, you should clean or even replace the filter.

Clogging of filter controlled by a pressure regulator installed and wired up to the controller.



Filter Pressure regulator

The adjustments are as follows:

Size	DP1
08	150Pa
18	150Pa
28	200Pa
38	200Pa

10.4 Casing maintenance

To facilitate maintenance, the plug fan can be extracted from the unit:

- Disassemble the access lid.
- Disconnect the quick connector from the motor wiring.
- Clean with compressed air or soapy water.
- Do not use ammonium detergents.
- Re-assemble the unit and return the connector to its place.

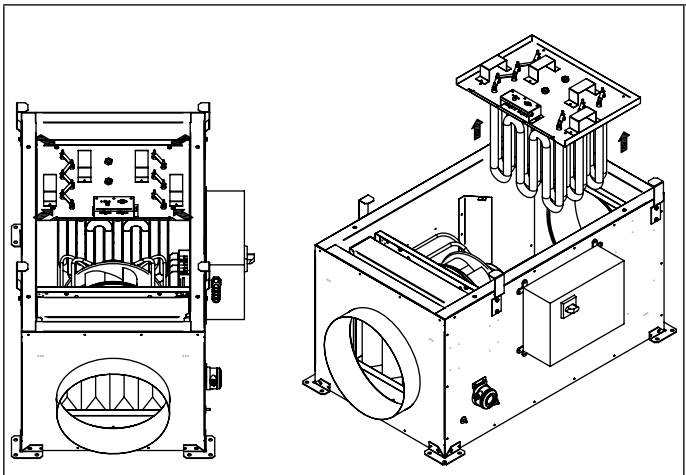
10.5 Maintenance/replacement of the fan

After a long period of use, dust may deposit on the fan; therefore, dust removal operations are necessary.

To extract the fan:

- Cut the electric power supply at the primary circuit-breaker.
- Open the access doors.
- Disconnect the power and control plug connectors on the side.
- Disconnect the pressure sensor.
- Unscrew the two M8 screws using a Ø13 spanner of the plate support.
- Remove the fan.
- Clean the fan using a damp cloth - do not hose the fan.
- Put it back in place by reversing the disassembly procedure.

10.6 Maintenance/replacement of the electric heater



Before the heating season, remove any dust from the resistances with compressed air or using a suction and a soft brush. Visually inspect the condition of the components and tighten any connections if necessary.

- Cut the electric power supply at the primary circuit-breaker.
- Open the access doors.
- Visually inspect the condition of the components and tighten any connections.
- Disconnect the cables before taking the electric heater out.

Be careful not to snatch or damage the cables when pulling on the electric heater.

10.7 Replacement parts

Code	Type	Name
132370	ETD touch screen control	ETD Corrigo 28I/O remote touch control
132388	Corrigo E28 ES 3P	Corrigo E28-3 Ports
132389	Command control connecting cable	10m connecting cable for E3-DSP screen
132375	CO2 sensor	SCO2 A 010 400-1100ppm 0-10V CO2 room sensor
132376	CO2 sensor	SCO2 AA 010 400-1100ppm 0-10V CO2 room display sensor
132377	CO2 sensor	SCO2 G MIX 400-1100ppm 0-10V 4-20mA CO2 duct sensor
132258	Room sensor	TG-R5/PT1000 Wall room sensor 0 to 30°C
132262	Hygrometry sensor	SHUR 0010 Hygrometry sensor 0-10V 0-100% RH wall assembly
680623	M5 filter	FSDA M5 Filter 390x265x98 KSDA 10 KSDR 08
680624	M5 filter	FSDA M5 Filter 541x495x98 KSDA 17/24/35/38 KSDR 18/28/38
680625	G4 filter	FSDA G4 Filter 390x265x98 KSDA 10 KSDR 08
680627	G4 filter	FSDA G4 Filter 541x495x98 KSDA 17/24/35/38 KSDR 18/28/38
680628	HPE F7 filter	FSDA F7 Filter 390x265x98 KSDA 10 KSDR 08
680629	HPE F7 filter	FSDA F7 Filter 541x495x98 KSDA 17/24/35/38 KSDR 18/28/38
5509314900	Plug fan	PFOI 08 Plugfan ECM D250 193W Mono 230 V KSDR 08
5509315000	Plug fan	PFOI 18 Plugfan ECM D250 415W Tri 400 V KSDR 18
018212	Plug fan	PFOI 19 Plugfan ECM D280 715W Mono CAD O Integral 19 KSDR 28
018213	Plug fan	PFOI 25 Plugfan ECM D310 1000W Tri CAD O Integral KSDR 38
068364	Cooling coil	BAT EG 4R KSDA 10 KSDR 08 Cooling coil
068365	Heating and reversible coils	BAT EC/ER 3R KSDA 10 KSDR 08 Heating and reversible coils
068368	Heating and reversible coils	BAT EC/ER 3R KSDA 17/24/35 KSDR 18/28/38
068369	Cooling coil	BAT EG 4R KSDA 17/24/35 KSDR 18/28/38

10.8 Maintenance/replacement of the water coil

In order to preserve the features of the coil, drain the water circuit once a year.
According to ambient pollution, and despite the filtration, dust may deposit on the coil.

After disassembly, the coil can be cleaned using a water jet, steam or compressed air; take care not to damage the vanes of the coil.
For any units equipped with reversible cold coils (ER), clean the condensate pan with water and a non-abrasive detergent. Check that the air trap is discharged and controlled.

10.9 Replacement of the CORRIGO controller battery

When the low battery alarm appears and the red indicator lights up, that means that the backup battery to save the memory and real time clock is too low.

The procedure for changing the battery is described below.
A capacitor makes it possible to save the memory and operate the clock for about 10 minutes after the current has been cut.

If the battery is changed in under 10 minutes, there is no need to reload the programme and the clock continues to operate as normal.
The replacement battery is of the CR2032 type.

- Press the clip on each side of the panel with a small screwdriver to loosen the base lid.
- Hold the base and remove the lid.
- Grip the battery and softly pull upwards until the battery is removed from its enclosure.
- Take a new battery and slide it into the support. Pay attention to the direction of assembly of the battery in order to respect polarity.

11. WASTE MANAGEMENT

11.1 Treatment of Packaging and non-hazardous waste

Packaging (non-returnable pallets, cardboard, film, wooden packaging) and other non-hazardous waste must be recovered by an approved service provider.

It is strictly forbidden to burn it or bury it or place it in any uncontrolled waste dump.

11.2 Treatment of professional WEEE

This product must not be disposed or processed with household waste; instead, it should be deposited at an appropriate collection point for waste electrical and electronic equipment (WEEE).

Non contractual document. In a bid to constantly improve equipment, the manufacturer reserves the right to undertake any technical modification without any prior notice.

VIM
Les prés de Mégy Sud – SOUDAN
CS 60120 - 79401 ST MAIXENT L'ECOLE CEDEX
Tel.: 05 49 06 60 38 or 05 49 06 60 25 – Fax: 05 49 06 60 36
sav@vim.fr - www.vim.fr