

Control manual

AirCompact Control



AirCompact

EN7533056.00

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1 - Supervision and control

1.1 The program

This air handling unit is managed by its controller. In addition to its control functions, it also monitors and detects any faults with the air handling unit.

The HMI terminal displays the following data which can be edited at any time:

- Values of connected sensors
- Unit on/off cycles
- Calibration of the sensors
- Detection of alarms and log of the last 100
- The password-protected configuration and operating parameters
- Device running times and time delays
- Management of time programs (4 daily, 4 weekly and 4 yearly programs)
- Language selection (French)

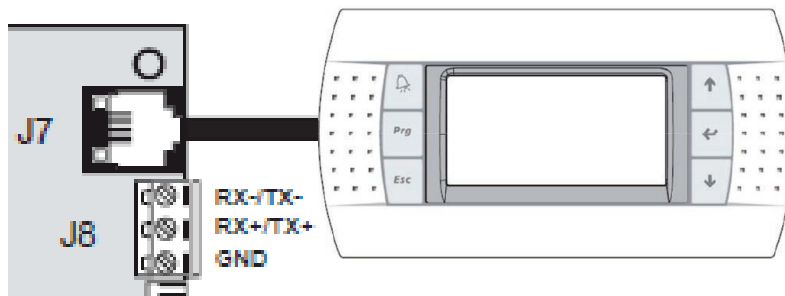
The connection with the pLAN network allows the program to use a terminal mounted on the front of the AHU and/or a wall-mounted terminal installed in the room to be air conditioned.



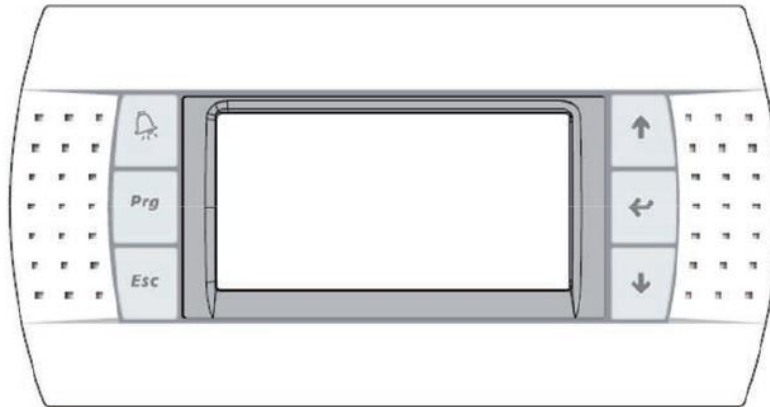
IMPORTANT: To avoid any problems, the password must be known only by qualified personnel.











1.2 The HMI terminal

The terminal provided is equipped with a remote LCD display (8 lines x 22 columns) on the outside of the unit, which has 6 keys (connected with a phone cable, max length 50m). It allows all of the program operations to be carried out. The terminal displays the unit's operating conditions at any point in time and allows the parameters to be modified; in addition, it can be disconnected from the main board as its presence is not strictly required.



1.2.1 Using the HMI terminal keys



| Key | Description |
|---|---|
|  | Returns to the main Menu mask when pressed in any loop. The Menu loop displays the state of the unit. |
|  | Provides access to the "Menu" |
|  | Resets all setpoints, parameters and time delay values to their factory settings. |
|  | The red  button is used to display alarms and confirm acknowledgeable faults. It lights up when an alarm is triggered. |
|  | The button has two functions: 1. used to manage the masks on the display (next mask) 2. used to adjust the values of the monitoring parameters (decrease) |
|  | The button has two functions: 1. used to manage the masks on the display (previous mask) 2. used to adjust the values of the monitoring parameters (increase) |
|  | Turns the unit on and off. |
|  | The  button is used to confirm changes. It is continuously backlit to indicate when the power is on. |

1.3 The room terminal (Option)

The terminal supplied is equipped with a digital display, 4 buttons and a rotary encoder.

Once installed in the premises, the device can measure the room temperature and enables remote control of the air handling unit.

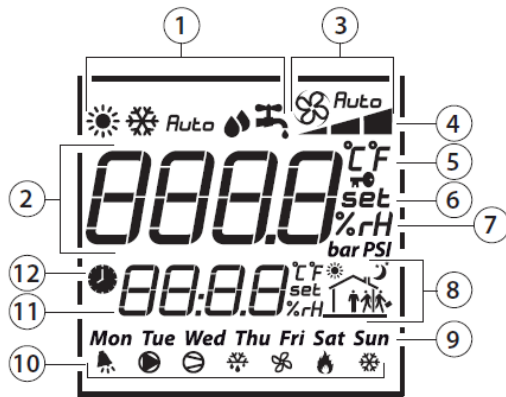


1.3.1 Controls



1. Button not used
2. A short press will activate or deactivate operation in timed zones if the time slot option has been authorised.
Press and hold (2 s) to access the timer and timed zones setting menu.
3. Button for changing the ventilation speed
4. Button for switching the unit on or off (press and hold for 2s)
5. Encoder:
 - Press to access the setpoints and confirm
 - Turn to browse between menus and modify the parameters

1.3.2 Displays



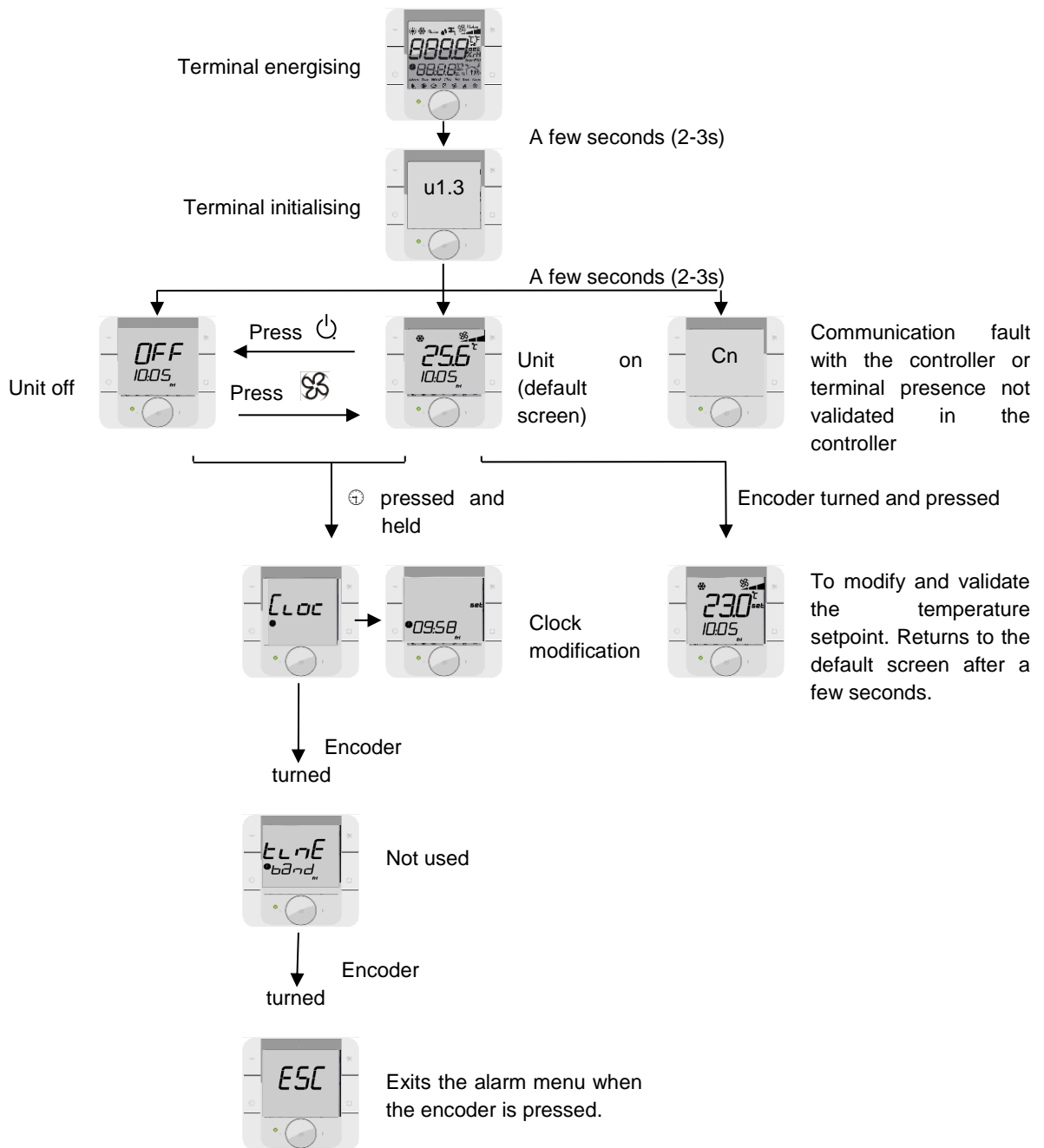
1. Unit operating mode
2. Main display area (Big area)
3. Ventilation operating mode
4. Ventilation operating speed
5. Temperature unit
6. Indicates whether the value displayed in the main area is a setpoint
7. Indicates whether the value displayed in the main area is a humidity
8. Indicates the active time slot zone
9. Day of the week
10. Operating icons
11. Secondary display area (Small area)
12. Run time range mode

Details:

1. Unit operating mode
 - ☀️ : Unit in heating mode
 - ❄️ : Unit in cooling mode
2. Main display area
 - Displays "OFF" when the unit is switched off manually via the room terminal
 - Displays the ambient temperature
 - Displays the temperature setpoint when the encoder is turned
 - Displays the various menus during browsing
 - Displays the various setting parameters
3. Ventilation operating mode
 - 🌀: Indicates that the ventilation is active and in setpoint-based flow or Supply air duct pressure mode.
 - *Auto*: Indicates that the ventilation is in automatic mode based on the regulated temperature.
 - No display: the unit has been switched off by the HMI terminal, by a major fault or to Standby by a time program.
4. Ventilation operating speed
 - 📊: The ventilation is operating at reduced flow or Eco Supply air duct pressure
 - 📊: The ventilation is operating at a nominal flow rate or Comfort Supply air duct pressure
5. Temperature unit
 - °C: temperature expressed in degrees Celsius
 - °F: temperature expressed in degrees Fahrenheit (not used)
6. Indicates whether the value displayed in the main area is a setpoint
 After the encoder has been turned and then pressed, it is possible to modify the temperature setpoint characterised by the indicator **set**.
7. Area not used
8. Area not used
9. Area not used
10. Operating icons
 Only the bell 🛎️ is used. It indicates the presence of a fault. This icon is inhibited when the faults are cleared via the HMI terminal.
11. Secondary display area
 Displays the time on the controller. This area can also be used for modifying the controller time.
12. Run time range mode

1.3.3 Room terminal information, settings and browsing


The diagram below shows the various browsing, information and setting options on the room terminal:

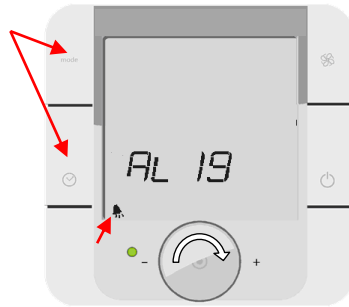


1.3.4 Managing alarms

When an alarm appears, it is accompanied by an acronym on the screen:



To find out the reference for the alarm, simply press the  and "mode" buttons for 3s:



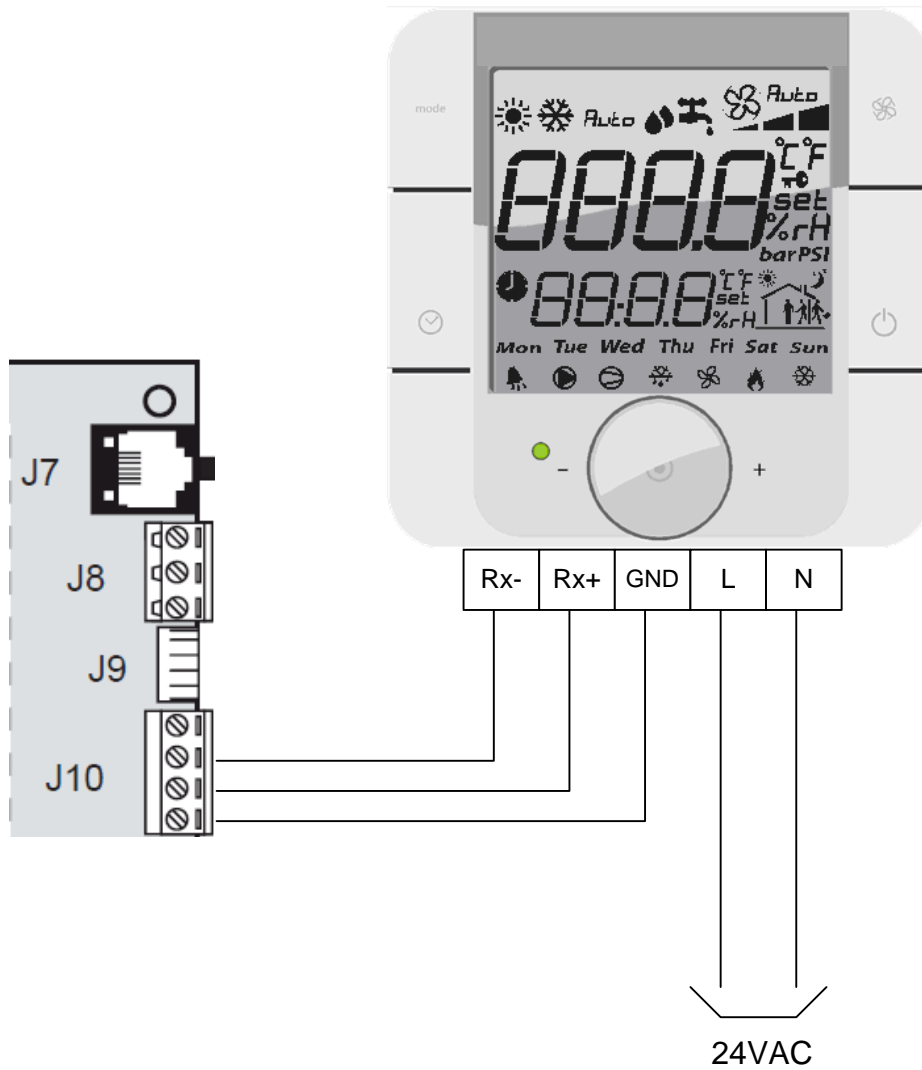
To find out whether there is more than one active alarm, turn the encoder to access the full list.

List of alarms:

| Messages Room terminal | Messages HMI terminal |
|---------------------------|-----------------------------------|
| AL01 | Supply air motor |
| AL02 | Return air motor |
| AL03 | Supply air filter CF1 dirty |
| AL04 | Supply air filter CF1 clogged |
| AL05 | Return air filter CF1 dirty |
| AL06 | Return air filter CF1 clogged |
| AL07 | Filter CF2 dirty |
| AL08 | Humidifier |
| AL09 | Heat exchanger frosted |
| AL10 | Antifreeze thermostat |
| AL11 | Electric heater safety thermostat |
| AL12 | Supply air temperature too low |
| AL13 | Supply air temperature too high |
| AL14 | Regulated temperature too low |
| AL15 | Regulated temperature too high |
| AL16 | Supply air duct pressure sensor |
| AL17 | Replace the controller battery |
| AL18 | Fire |

The disappearance of an alarm is always confirmed via the HMI terminal.

1.3.5 Electrical connections



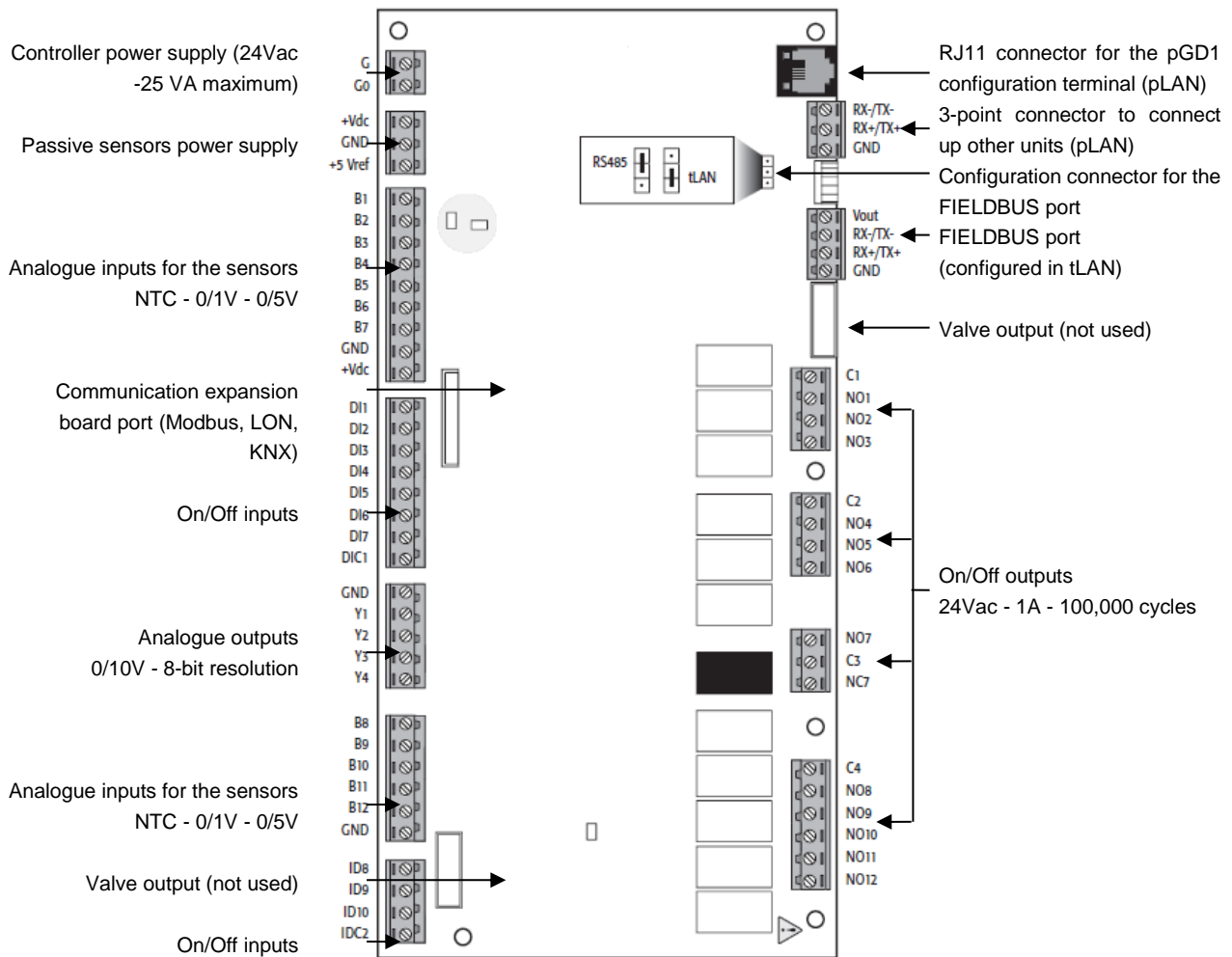
The room terminal and the controller are electrically connected using an **AWG20/22** shielded cable (not supplied by manufacturer) comprising two twisted pairs.

The first and last controller must be no more than **500m** apart. This network must never run parallel to power cables at a distance of less than **50 cm**. These cables may cross, but perpendicularly. You are requested not to form a loop with the network cable or the earth braid, and to properly separate the various cable families (control, power, earth and communication bus).

In case of transmission problems, it is vital to connect a 120Ω $\frac{1}{4}W$ electrical resistor between terminals TX+ and TX- of the room terminal, as indicated in the manual supplied with the room terminal.

1.4 The controller

The descriptions of the terminals on the controller are provided below.



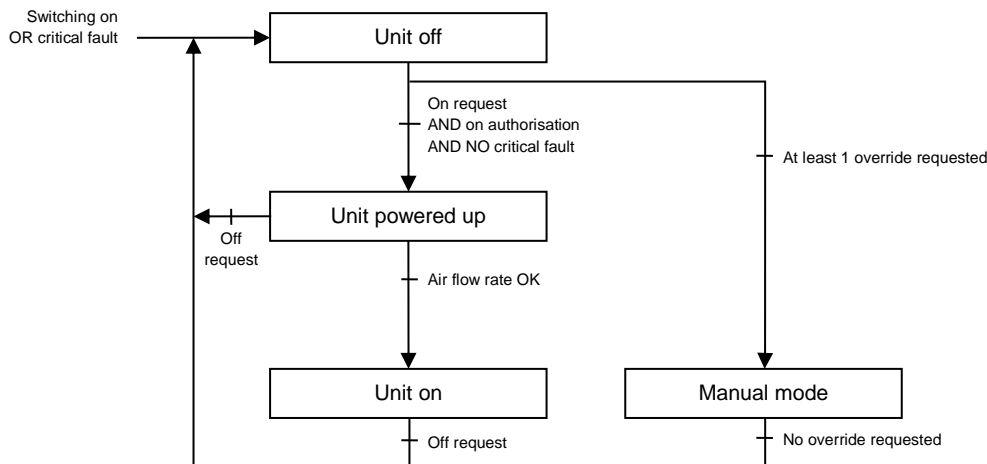
1.5 Description of the air handling units

Each air handling unit performs the following functions:

- Air filtration.
- Supply and return air ventilation (option).
- Heating of the air supplied to the room by means of a hot water coil or an electric heater.
- Heat recovery using a plate heat exchanger (option).
- Cooling of the air supplied to the room by means of a cold water coil or a condensation unit.
- Control, monitoring, reporting and regulation of its components.

1.6 Functional analysis of the control

1.6.1 Management of on and off modes



Starting up and switching off will take place locally by pressing on the ↑ and ↓ keys on the display. Remote control is available and carried out by a potential-free contact between terminals 1 and 2 in place of the factory-installed shunt.

The unit is to be switched on/off by the CMS.

The unit will start up if the 3 running orders are actuated (on the display, on the remote control and via the CMS, depending on the configuration).

If one of the 3 orders is in "Off" mode, the unit will be stopped.

1.6.2 Safety and insulating damper

The insulating damper is activated by an On/Off servomotor with spring-return.

When the unit is stopped, this damper is normally closed.

When unit start-up is requested, it will open and the controller will wait whilst the servomotor opens, then the unit will be switched to "On" and the damper held open until the next request to stop the unit or, if a safety damper is being used, for the appearance of the antifreeze protection alarm.



SMR

1.6.3 Antifreeze thermostat

The antifreeze thermostat has a manual reset and it is constantly monitored once the controller is switched on.

If an antifreeze alarm is activated, the fresh air damper is closed, the valves on the hot water coil installed in the air handling unit are opened fully and the fault is signalled.

A frost prevention function is available once the unit is switched off. This consists of leaving the hot water coil valves slightly open (adjustable value) to maintain pre-heating.

1.6.4 Fire fault

The fire fault contact (option) connected to a PLC input is used to signal the appearance of the fire fault and disables the fans.

1.6.5 Fan motors

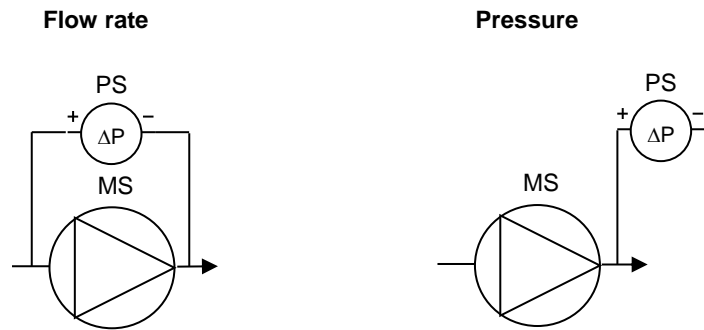
The motor or motors start when the unit is in "On" mode.

The alarm feedback from the motor(s) is used to check their electronic switching protection. If one or other of these signals is not received, the unit is stopped and the faults are signalled.

Their rotation speed is controlled using one of the 2 following modes:

1. to maintain the fans at a constant flow ("Flow rate") in accordance with the setpoint(s) on page **w0**, based on the configuration on page **p3** of the "Adjustment parameters" menu and the air quality setpoint (option) until the maximum flow rate limit on page **w3** is reached.
2. to maintain a constant pressure in the supply air duct ("Pressure") in accordance with the setpoint on page **w1** and based on the configuration on page **p3** of the "Adjustment parameters" menu.

Control modes available for the management of fans

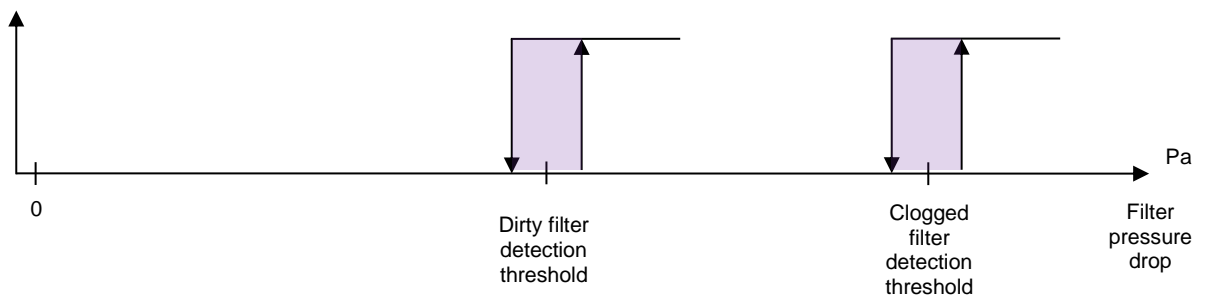
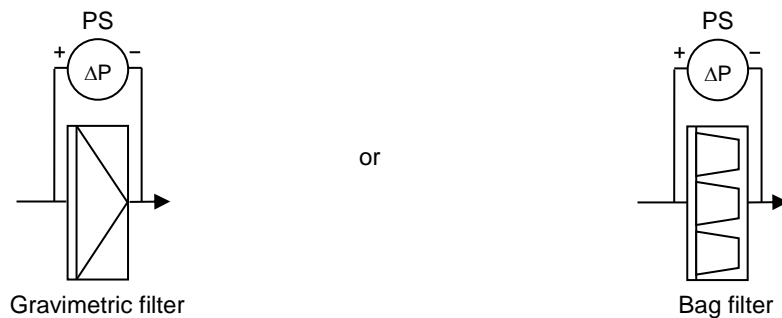


1.6.6 Filtration

3 different filters can be monitored simultaneously: 1 in the Supply air flow, 1 in the Return air flow and 1 additional filter in either of the 2 flows.

To check their fouling level, each filter is equipped with a differential pressure sensor which measures its upstream/downstream pressure drop. This sensor has a measuring range of 0-1250 Pa. In addition to monitoring the fouling level, this sensor also checks for the presence of an air flow crossing the filter, and therefore the unit, in both directions (Supply and return air). This information is required for activating the regulation.

For the additional filter, its pressure drop is checked by a pressure switch which will provide information on the saturation level reached in the controller via a contact.



1.6.7 Temperature control

The regulated temperature may be:

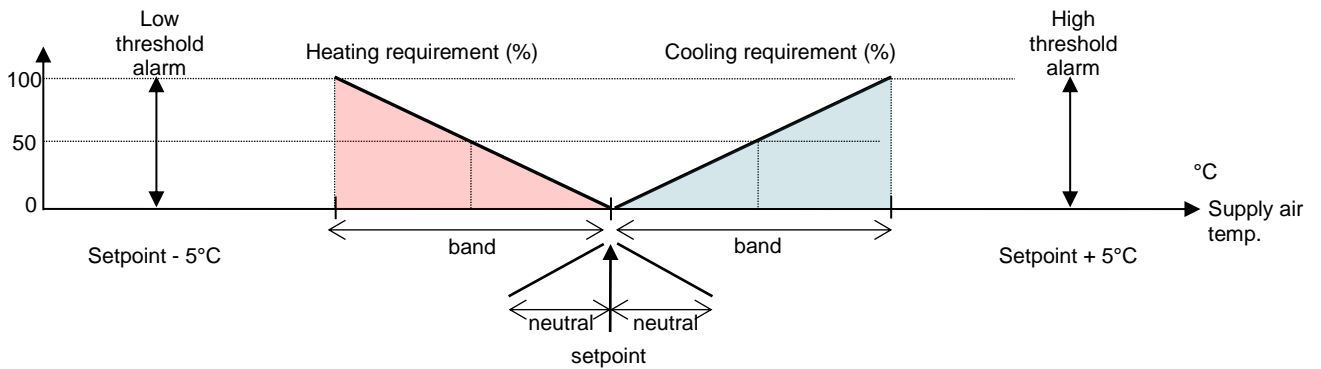
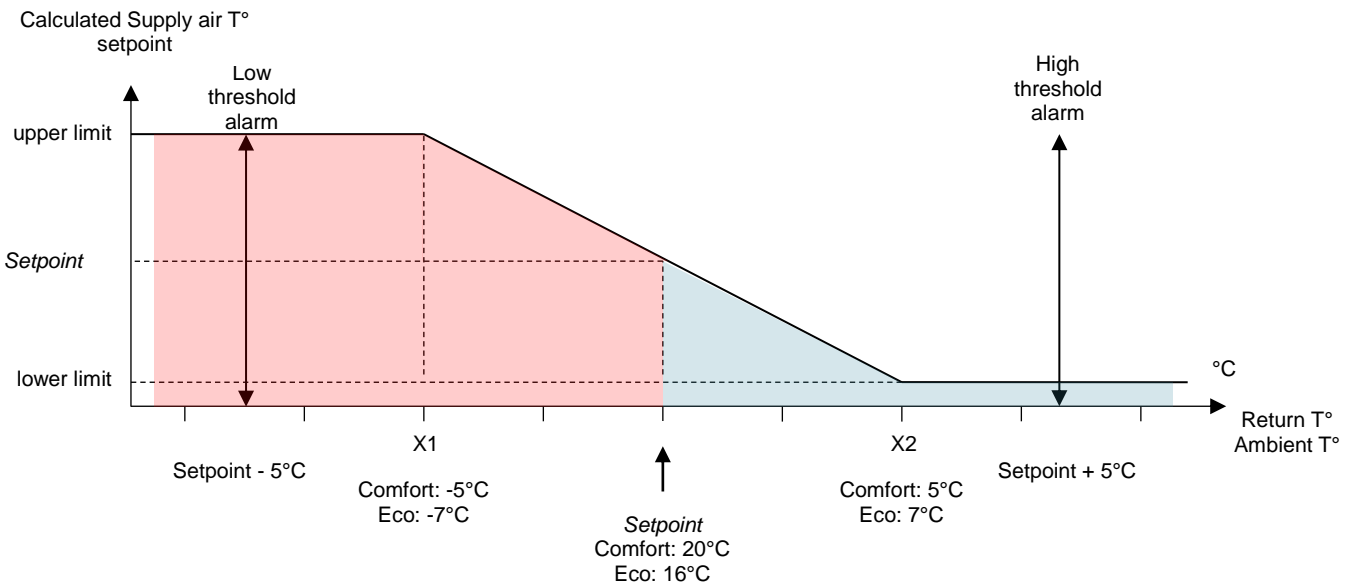
- the return air temperature
- the room temperature
- the supply air temperature

Two temperature control schemes are available:

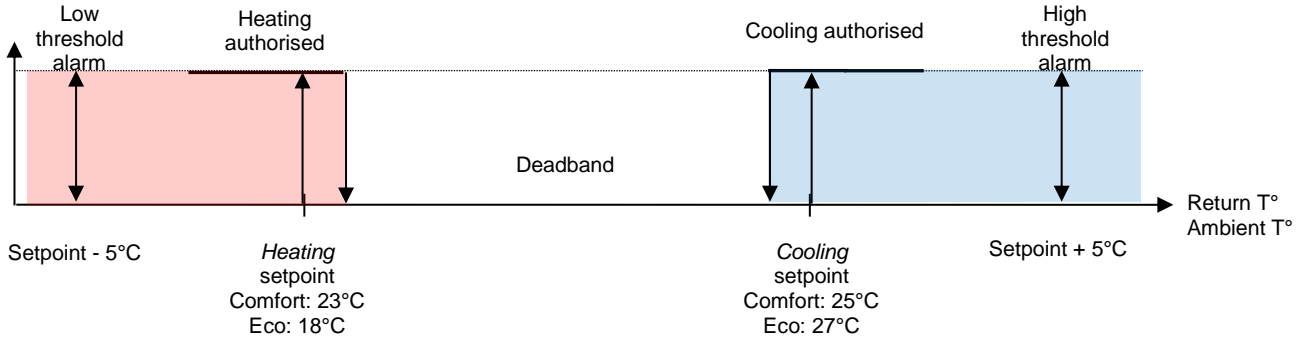
- "Precision" mode, where a low deviation from the reference temperature is requested.
- "Energy optimisation" mode, where the key factor is the cost of energy.

"Precision" mode:

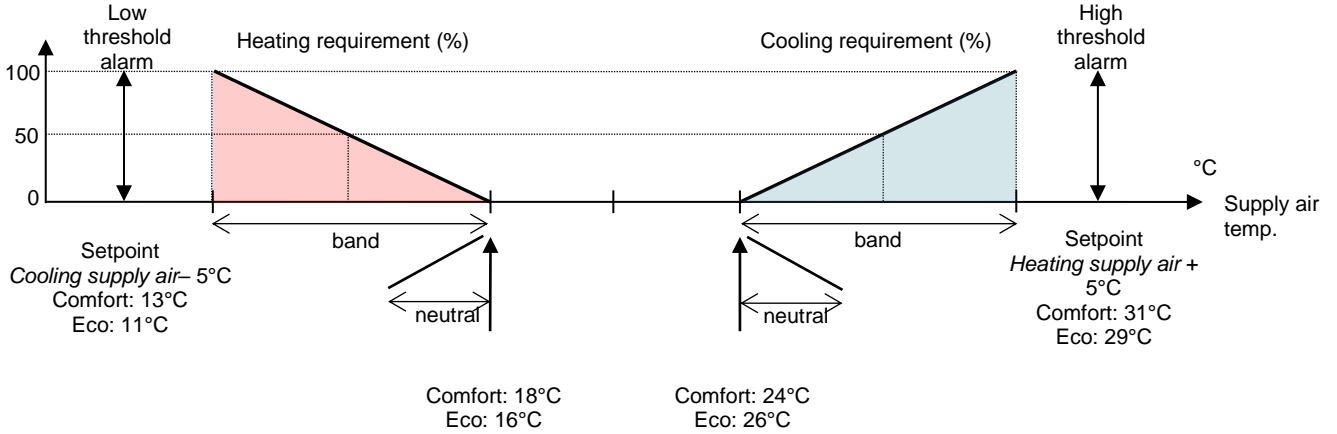
In this case, the regulated temperature is the room or return air temperature and the difference between this temperature and the setpoint enables the setpoint used as the basis for controlling the supply air temperature to be calculated.



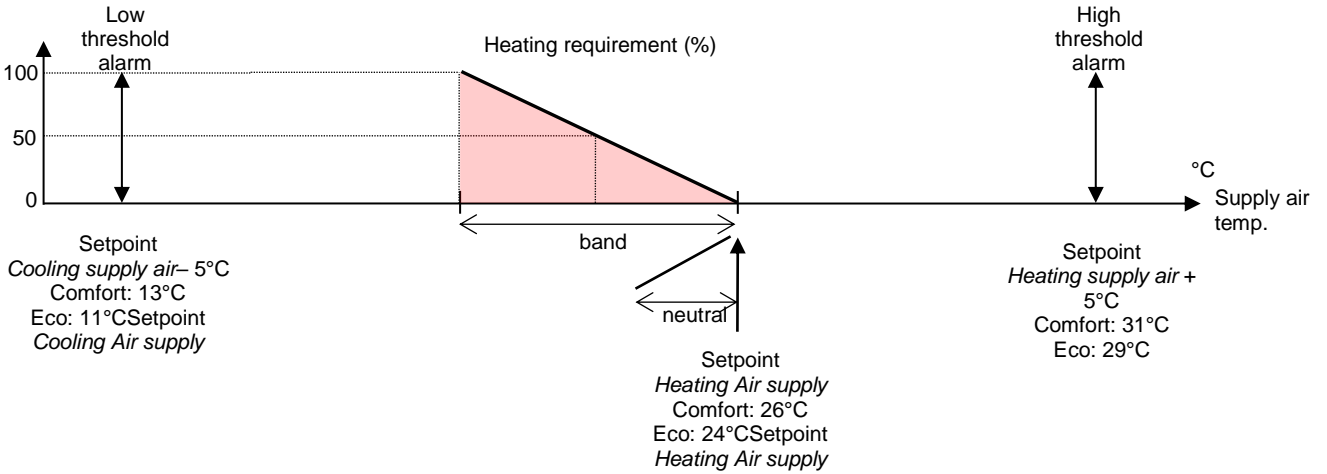
"Energy optimisation" mode:



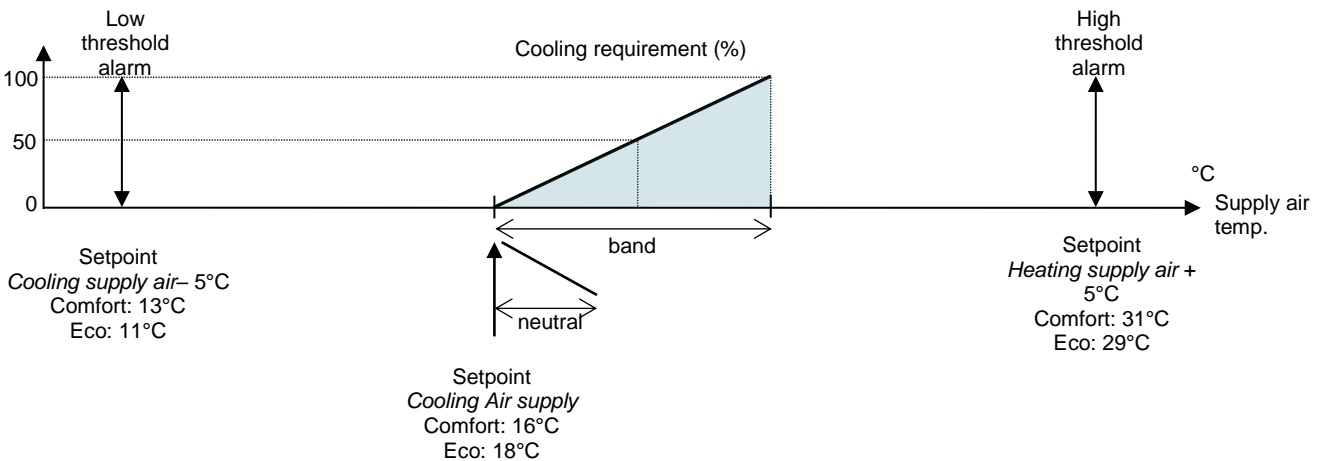
Deadband:



Heating:

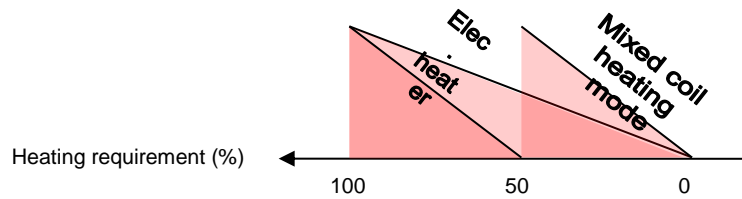


Cooling:



→ When the temperature drops, the controller will calculate the heat requirement needed to keep this temperature constant.

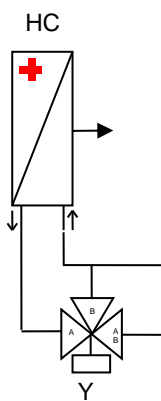
This gradually adjusts the output of the 2 heating coils (via a 3-way valve for coil 1, via a triac or using 1 or 2 stages in the case of an electric heater) or a "Mixed" type in heating mode (authorised by the water network temperature sensor for coil 2 only).



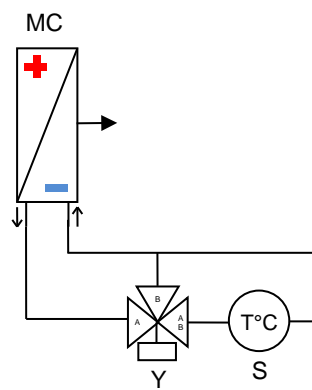
The order in which the various heat generators are activated can be configured.

Coils available to meet the heating requirements

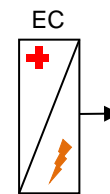
Heating coil



Mixed water coil



Electric heater

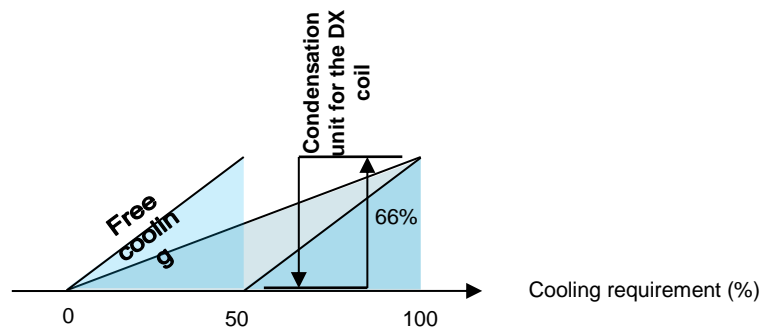
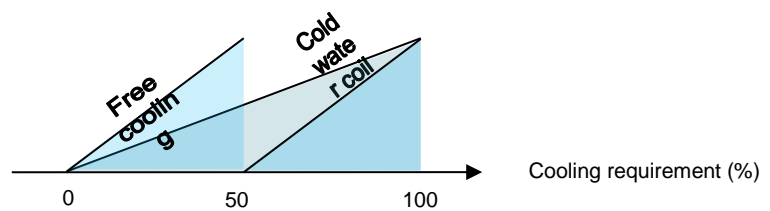


→ By increasing the regulated temperature, the controller will calculate the exact cooling requirement.

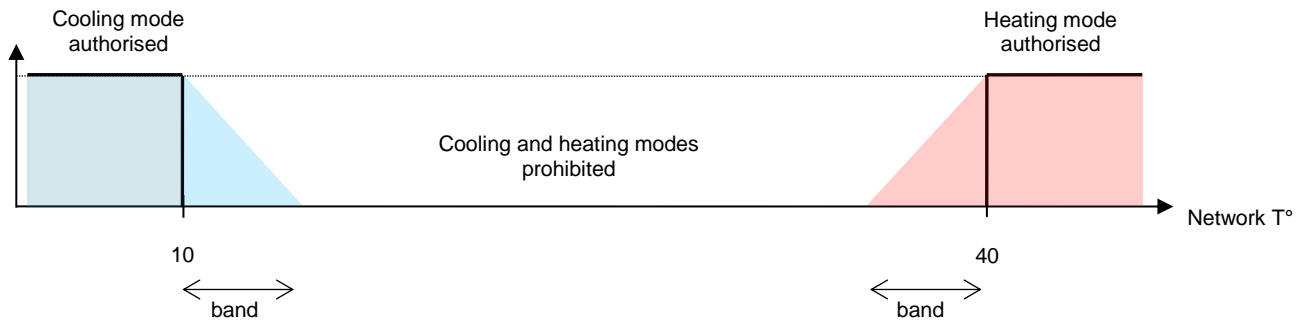
If conditions permit, it will authorise Free Cooling then gradually adjust the output of the cooling coil (via a three-way valve), "Mixed" type in cooling mode (authorised by the water network temperature sensor for coil 2 only) or DX type (direct expansion) and will request that the condensation unit starts up when the level of demand from the coil reaches 66% (adjustable) and that it stops when the demand is 33% (adjustable).

If Free Cooling is disabled, the requirement will be taken over by the coil.

The distribution of the requirement between the Free Cooling and the coil is adjustable.

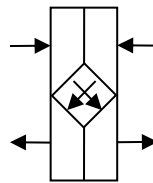


If coil 2 is configured as Mixed, the action on its valve will be limited to prevent a drift in the temperature for the return network to the heat pump.
 If there is a fault with the heat pump (information received via a potential-free (dry) contact), an alarm will be displayed.



1.6.8 Plate recovery

A differential pressure switch is used to check the fouling level on the return side of the heat recovery unit and to manage the frost protection safety function when the unit is running. This safety function activates the bypass damper. This damper is also activated if there is a Free cooling request.

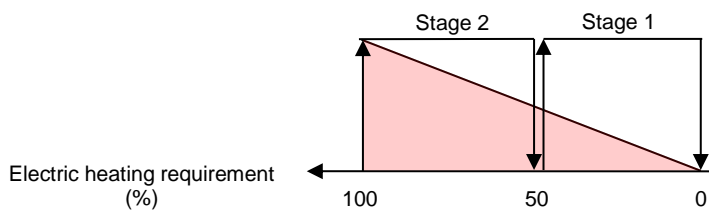


1.6.9 Electric heater

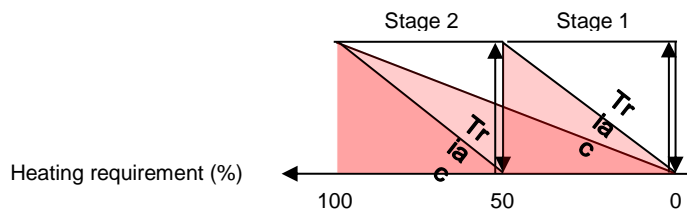
In case of a problem on the electric heater (safety thermostats), the electric heater is shut off and the fault is signalled. Load shedding of the electric heater via the input ID6 is available (function also available through communication with the CMS).

The aim is to use the same input ID1 to control either:
 This control principle does not cause an alarm to be created.

1 or 2 stages



Triac + 1 stage



1.6.10 Free cooling

The aim of this function is to make use of fresh outdoor air before starting to use the cooling coil to cool the building's supply air.

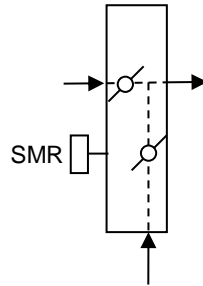
This function is only available if there is a mixing box or a plate heat exchanger equipped with a bypass damper.

Free Cooling management is based on actuating the mixing damper servomotor to alter the proportion of fresh air brought into the building and opening the plate heat exchanger bypass, if present.

To authorise Free cooling, certain conditions must be fulfilled:

- The fresh air temperature must be below 17°C.
- The fresh air temperature must be below the return (or ambient) air temperature – 3°K

If there is a mixing damper, the percentage of fresh air depends on the cooling request sent by the regulation. A minimum value of fresh air supply when the unit is stopped is adjustable.



1.6.11 Humidifier

Humidification of the intake air is managed via a self-contained humidifier equipped with a humidity sensor and authorised to operate in accordance with the order given by the controller once the unit is running at optimum levels.

A summary of faults will be sent back to the controller via a potential-free (dry) contact so an alarm is displayed.

1.6.12 CO₂ air quality

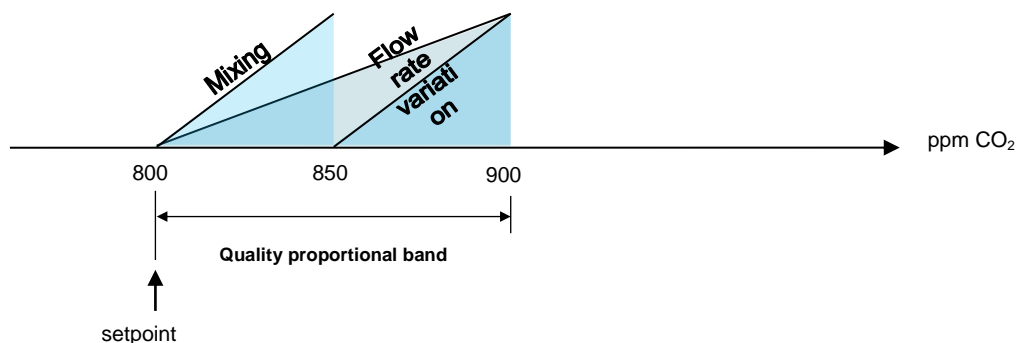
The aim is to regulate the air quality, measured in ppm of CO₂, using a duct sensor measuring the return flow, the measurement range for which is 0 to 2000ppm.

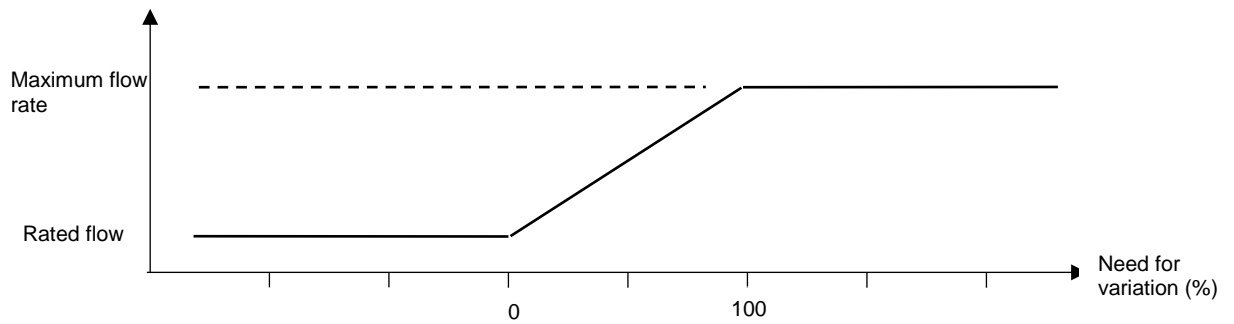
There are two possible actions to manage the air quality, which can be combined:

- Either the mixing damper is managed to alter the proportion of fresh air supplied to the building
- Or the fan flow rate is varied

In the event that the two actions are selected, the controller will actuate the mixing damper, then alter the fan flow rate.

This management is incompatible with pressure regulation in the supply air duct.





1.6.13 Night cooling


The aim of this function is to use the coolness of fresh air from outdoors during the night within the building, with an option of over-ventilation, as far as the system will allow.


This function is only available if there is a mixing box or a plate heat exchanger equipped with a bypass damper. It is activated by a timer or the CMS, whilst the room air or return air temperature is checked against a setpoint.

1.6.14 The fault relays

1 relay per fault summary level is provided:

- "Maintenance" fault summary
- "Danger" fault summary

"Maintenance" faults are alarms which only send information to notify the operator. They can be validated by pressing the  key for 3 seconds if they have disappeared.

The "Danger" faults, which are of a higher level, are alarms which send information to notify the operator, but also start a process to secure the unit. They can be validated by pressing the  key for 3 seconds if they have disappeared, and after the unit has been switched **off**.

It is possible to select the type for each fault (Danger or Maintenance), apart from for the Fire fault. It is also possible to select the direction of action for the summary relays.

1.7 Controller inputs and outputs

G 24Vac
 G0 Shared

1.7.1 Analogue inputs

Connector J3

B1 Return air temperature sensor (Option)
 B2 Supply air temperature sensor
 B3 Fresh air temperature sensor (Option)
 B4 Network water temperature sensor (Option)
 B5 Supply air filter CF1 fouling level pressure sensor
 B6 Supply air fan flow rate pressure sensor (Option)
 B7 Return air fan flow rate pressure sensor (Option)
 GND Shared

Connector J18

B8 -----
 B9 -----
 B10 Return air filter CF1 fouling level pressure sensor
 B11 Air quality sensor (Option)
 B12 Supply air duct pressure sensor (Option)

1.7.2 Digital inputs

Connector J4

DI1 Supply air fan monitoring
 DI2 Return air fan monitoring
 DI3 Filter CF2 pressure switch (optional)
 DI4 Frost protection thermostat (Option)
 DI5 Remote control
 DI6 Load shedding (Option)
 DI7 Monitoring of electric heater overheating thermostat (Option)
 DIC1 Shared

Connector J16

DI8 Fire (Option)
 DI9 Humidifier fault summary (Option)
 DI10 Heat recovery unit fouling level pressure switch (Option)
 DIC2 Shared

1.7.3 Analogue outputs

Connector J5

Y1 Supply air fan speed 0-10V control
 Y2 Return air fan speed 0-10V control (Option)
 Y3 0-10V control for the coil 1 water valve (Option)
 Y4 0-10V control for the coil 2 water valve (Option)
 GND Shared

1.7.4 Digital outputs

Connector J12

NO1 -----
 NO2 -----
 NO3 Condensation unit On control
 C1 Shared

Connector J13

NO4 Stage 1 control for the electric heaters
 NO5 Stage 2 control for the electric heaters
 NO6 Danger alarms summary relay
 C2 Shared

Connector J14

NO7 Maintenance alarms summary relay
C3 Shared

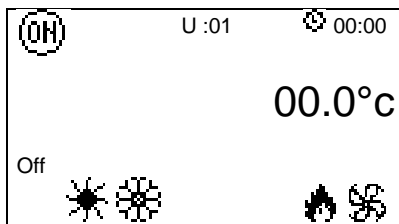
Connector J15

NO8 Mixing damper opening control
NO9 Mixing damper closing control
NO10 Plate heat exchanger bypass damper control
NO11 Insulation damper control
NO12 Humidifier control
C4 Shared

2 - Overview of the HMI module screens

2.1 Prg button

"Prg" button



U:01



Indicates the unit's address

00.0°C

Indicates the request to switch the machine on or off

00:00

Indicates the controlled temperature (ambient, exhaust or intake)

Off

Indicates the time

Indicates the state of the unit: on, off, on after a power failure, standby, switched off by a fault, switched off by CMS, post ventilation, manual mode



Indicates "Heating" operating mode



Indicates the "Cooling" operating mode

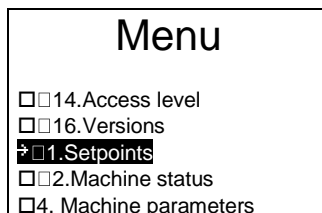


Indicates Fire alarm



Indicates the operation of the fan(s)

"Prg" button



To switch to another menu, press the **↑** or **↓** buttons to scroll through the available menus. The selected menu is opposite the arrow and on a black background. To confirm your choice, simply press **enter** or **↵**.

The available menus are as follows:

- 1. Setpoints
- 2. Machine status
- 4. Machine parameters
- 5. Adjustment parameters
- 6. Reading parameters
- 7. Fault memory
- 8. Test mode
- 9. Timer prog.
- 11. Communication
- 12. Alarms
- 14. Access levels
- 16. Versions

2.1.1 Access level selection menu

There are now three access levels:

- Level 1: User
- Level 2: Installer
- Level 3: Manufacturer

2.2 Setpoint menu

| | |
|------------------------------|---|
| Comfort w0 | Indication of the operating mode. <i>Level 2 access</i> |
| Fan flow rate | |
| Supply air 02000m3/h | Supply air fan Comfort flow rate control setpoint |
| Return air 02000m3/h | Return air fan Comfort flow rate control setpoint |
| Eco | |
| Supply air 01000m3/h | Supply air fan Eco flow control setpoint |
| Return air 01000m3/h | Return air fan Eco flow control setpoint |
| Comfort w1 | Indication of the operating mode. <i>Level 2 access</i> |
| Duct pressure | |
| 200Pa | Comfort pressure control setpoint for the Supply air duct |
| Eco 100Pa | Eco pressure control setpoint for the Supply air duct |
| Comfort w2 | Indication of the operating mode for T° regulation in "Precision" mode <i>Level 1 access</i> |
| Return air 20.0°C | Comfort (Return or Ambient air) temperature control setpoint monitored (0 to 50.0°C) |
| Eco 15.0°C | Eco (Return or Ambient air) temperature control setpoint monitored (0 to 50.0°C) |
| Supply air | |
| Upper limit 26.0°C | Upper limit for calculated Supply air T° setpoint |
| Lower limit 16.0°C | Lower limit for calculated Supply air T° setpoint |
| Comfort w3 | <i>Level 2 access</i> |
| Air quality | |
| 0800ppm CO2 | Air quality control setpoint |
| Maximum flow rate | |
| 03000m3/h | Maximum flow rate value of supply air fan for air quality control |
| Comfort w4 | Indication of the operating mode for T° regulation in "Energy optimisation" mode <i>Level 1 access</i> |
| Return air Cooling 25.0°C | Comfort Cooling (Return, Ambient or Supply air) temperature control setpoint monitored (0 to 50.0°C) |
| Eco 27.0°C | Eco Cooling (Return, Ambient or Supply air) temperature control setpoint monitored (0 to 50.0°C) |
| Return air Heating 23.0°C | Comfort Cooling (Return, Ambient or Supply air) temperature control setpoint monitored (0 to 50.0°C) |
| Eco 18.0°C | Eco Cooling (Return, Ambient or Supply air) temperature control setpoint monitored (0 to 50.0°C) |
| Deadband | Indication of the control state for the monitored temperature |

| Comfort | | w5 |
|------------|---------|--------|
| Supply air | Cooling | 16.0°C |
| | Eco | 18.0°C |
| Supply air | Heating | 26.0°C |
| | Eco | 24.0°C |

Indication of the operating mode for T° regulation in "Energy optimisation" mode *Level 1 access*
 Cooling Comfort Supply air temperature control setpoint (Regulated T° ≠ Supply air) (0 to 50.0°C)
 Cooling Eco Supply air temperature control setpoint (Regulated T° ≠ Supply air) (0 to 50.0°C)
 Heating Comfort Supply air temperature control setpoint (Regulated T° ≠ Supply air) (0 to 50.0°C)
 Heating Eco Supply air temperature control setpoint (Regulated T° ≠ Supply air) (0 to 50.0°C)

| U :01 | | w6 |
|------------------|--|--------|
| Frost protection | | 17.0°C |

Level 2 access
 Unit reactivation setpoint in "Standby" mode when there is an ambient temperature sensor

| | | w7 |
|---------------|--|-----------|
| Night cooling | | 17.0°C |
| Duct | | 200Pa |
| Supply air | | 02000m3/h |
| Return air | | 02000m3/h |

Level 2 access
 Control setpoint in "Night cooling" mode
 Supply air duct pressure control setpoint for night cooling
 Supply air fan Comfort flow rate control setpoint for night cooling
 Return air fan Comfort flow rate control setpoint for night cooling

| | | | w8 |
|-----------------|--------|--|--------|
| Electric heater | Off | | On |
| | | | |
| Stage 1 | 000.0% | | 050.0% |
| Stage 2 | 050.0% | | 066.6% |

Level 3 access
 Stage 1 on and off setpoint for the electric heater
 Stage 2 on and off setpoint for the electric heater

| | | w10 |
|--------------------|--|--------|
| Free cooling | | 17.0°C |
| Min fresh air ctrl | | 000% |

Outdoor temperature limit value for authorisation of free cooling (*Level 3 Access*)
 Fresh air minimum value (*Level 2 Access*)

| | | w12 |
|-----------------------|--|--------|
| Min. th-Tune setpoint | | 15.0°C |
| Max. th-Tune setpoint | | 30.0°C |

Level 3 access
 Min. temperature setpoint value regulated via the room terminal
 Max. temperature setpoint value regulated via the room terminal



| | |
|----------------|--------|
| w13 | |
| Filter CF1 | |
| Filter dirty | 0250Pa |
| Filter clogged | 0400Pa |

Level 2 access

Dirty supply air filter 1 saturation level detection setpoint
Blocked supply air filter 1 saturation level detection setpoint

| | |
|------------|------------------|
| w16 | |
| DX coil | |
| | Off On |
| State | 033.3% 066.6% |

Level 3 access

DX coil on and off setpoint

| | |
|------------|--------|
| w17 | |
| Changeover | |
| Heating | 40.0°C |
| Cooling | 10.0°C |
| Band limit | 02.0°C |

Level 3 access

Changeover limit setpoint value in Heating mode and water return temperature
Changeover limit setpoint value in Cooling mode and water return temperature
Value for the water return temperature control proportional band

| | |
|--|-------|
| w18 | |
| U :01 Checking duct pressure sensor | |
| Low threshold | 10Pa |
| High threshold | 900Pa |

Level 3 access

Intake duct pressure low threshold
Intake duct pressure high threshold

2.3 Machine parameters menu

This menu is Level 3 access

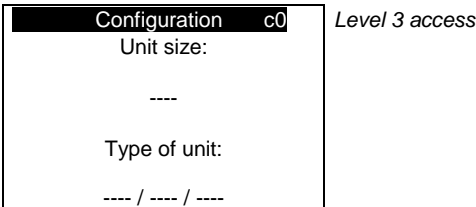
| | |
|---------------------------|---------------------|
| d1 | |
| M=Maintenance D=Danger | |
| | 0 1 2 3 4 5 6 7 8 9 |
| 0x | D D M D M D M M D |
| 1x | D M M M M D M |
| 2x | |
| 3x | |

Level 2 access

This screen is used to configure the criticality of the faults managed by the regulating controller. If a fault is shown as "Danger" the unit will be shut off. If the fault is shown as "Maintenance", only an alarm message will be given.
Criticality of faults 1 to 9
Criticality of faults 10 to 19

List of faults:

| Order | Description | Significance |
|-------|---|--------------|
| 01 | Supply air motor | Danger |
| 02 | Return air motor | Danger |
| 03 | Supply air filter dirty | Maintenance |
| 04 | Supply air filter clogged | Danger |
| 05 | Return air filter CF1 dirty | Maintenance |
| 06 | Return air filter CF1 clogged | Danger |
| 07 | Filter CF2 dirty | Maintenance |
| 08 | Humidifier | Maintenance |
| 09 | Heat recovery unit frosted – Clogging detection | Danger |
| 10 | Antifreeze protection | Danger |
| 11 | Electric heater safety thermostat | Maintenance |
| 12 | Low supply air temperature | Maintenance |
| 13 | High supply air temperature | Maintenance |
| 14 | Low room or return air temperature | Maintenance |
| 15 | High room or return air temperature | Maintenance |
| 16 | Duct pressure sensor | Danger |
| 17 | Clock lithium battery | Maintenance |



Unit size: ---, 25, 40 1V, 40 2V, 60

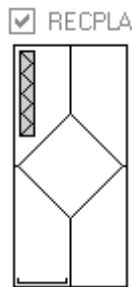
Type of unit: Special boxes/Main box/Return air box

1. Special boxes:

- CM3: 3-way mixer



- PLA: plate heat exchanger



2. Main box:

- F: Filter (always in 1st position)

- F2: 2 Filters

- V: Fan

- C: Hydraulic heating coil

- E: 2-stage electric heating coil

- T: Triac electric heating coil + 1 stage

- F: Hydraulic cooling coil

- M: Mixed hydraulic coil

- X: DX cooling coil (direct expansion)

See appended table

3. Return air box

The flow of return air cannot be FV only.

| Configuration c1 | | Level 3 access |
|------------------|------|--|
| Filter CF2 | ---- | Presence of a second filter at the inlet |
| Return air unit | ---- | |

Filter CF2 : *Without, With*
Return air unit: *Without, With*

| Configuration c2 | | Level 3 access |
|------------------|------|----------------|
| Heating coil | ---- | |
| Cooling coil | ---- | |
| Electric heater | ---- | |
| ---- | | |

Heating coil:

- *Without:* No coil
- *Hydro:* Hot water coil
- *Elec:* Electric heater

Cooling coil:

- *Without:* No coil
- *Hydro:* Cold water coil
- *DX:* Refrigerant fluid direct expansion coil
- *Mixed:* Cold or hot water coil monitored by a network water T° sensor

Electric heater:

- *Without:* No electric heater
- *2-stage + On/Off:* 2-stage on/off electric heater
- *On/Off + Triac:* 1-stage On/Off or 1-stage Triac electric heater

| Configuration c3 | | Level 3 access |
|--------------------|------|----------------|
| Heat recovery unit | ---- | |
| Damper | ---- | |
| Mixing | ---- | |

Heat recovery unit : *Without, With*

Damper: *Without, With*

Mixing: *Without, With*

| Configuration c4 | | Level 3 access |
|----------------------|------|----------------|
| Frost protection th. | ---- | |
| th-Tune | ---- | |
| Control priority | -- | |

Th. Antifreeze protection: *Without, With*

th-Tune: *Without, With*

Control priority: *Precision or Energy optimisation mode*

| Configuration c5 | | Level 3 access |
|------------------|------|----------------|
| Humidifier | ---- | |

Humidifier: *Without, With*

| | |
|-------------------------|----------|
| Configuration c6 | |
| Supply air fan | K = ---- |
| Return air fan | K = ---- |

Level 3 access

Supply air fan: K coefficient values for the Supply air fan

Return air fan: K coefficient values for the Return air fan

2.4 Adjustment parameters menu

| | |
|-----------|-------|
| lg | |
| Language | ----- |

Level 1 access

Controller language selection (French)

| | |
|----------------------|----------|
| t0 | |
| Setting of the clock | |
| Time | -- :-- |
| Date | --/--/-- |

Level 1 access

Clock time correction value

Clock date correction value

| | |
|----------------------|-----------|
| Supply air p1 | |
| Cooling DB | 00.0 |
| CLG band | 0005.0 |
| T I 0150s | T D 0000s |
| Heating DB | 00.0 |
| HTG band | 0005.0 |
| T I 0150s | T D 0000s |

Level 2 access

Deadband value for Supply air temperature control in cooling mode

Proportional band for Supply air temperature control in cooling mode

Integral time and derivative time for Supply air temperature control in cooling mode

Deadband value for Supply air temperature control in heating mode

Proportional band for Supply air temperature control in heating mode

Integral time and derivative time for Supply air temperature control in heating mode

| | |
|----------------------|---------|
| Return air p2 | |
| Differential | |
| Cooling | Heating |
| 0.0 | 0.0 |

Level 2 access

Value for the Return or Ambient air temperature control differentials

In cooling mode

In heating mode

| | |
|----------------|------|
| p3 | |
| Fan management | |
| ----- | |
| Free Cooling | ---- |
| Fire | ---- |

Level 2 access

Fan management: *Without*, *Flow rate* (constant flows and independent setpoints) or *Pressure* (Constant supply air duct pressure and identical fan speed values)

Free Cooling: *Without*, *With*

Fire: *Without*, *With*

| p4 | |
|--------------|------|
| Regulated T° | ---- |
| Air quality | ---- |
| M factor | 01.0 |
| Quality band | 100 |

Level 2 access

Proportionality factor value for Supply air duct flow rate and pressure control
Air quality regulation proportional band

Regulated T°: Supply, Return or Ambient air

Air quality: Without, With (not available if the fans are monitored based on constant Supply air duct pressure)

| Supply air p5 | |
|-----------------------|-------|
| High T shift | 05.0 |
| Low T shift | -05.0 |
| Shutdown valve 1 open | 000% |
| Shutdown valve 2 open | 000% |

Level 2 access

High supply air temperature threshold shift
Low supply air temperature threshold shift

Opening value for the valve for heating coil 1 when the supply air ventilation is stopped
Opening value for the valve for heating coil 2 when the supply air ventilation is stopped

| Return air p6 | |
|---------------|-------|
| High T shift | 05.0 |
| Low T shift | -05.0 |

Level 2 access

High return (or ambient) air temperature threshold shift
Low return (or ambient) air temperature threshold shift

| p11 | |
|---|------|
| Mixing opening in "ECO Recirculation" mode | 095% |

"ECO recycling" function used in a timed program (Level 2 access)

Opening value of mixing damper in "ECO Recirculation" mode

| Fans p14 | |
|------------|-----------|
| Fans | |
| Supply air | |
| Band | 1200.0 |
| T I 0010s | T D 0000s |
| Return air | |
| Band | 1200.0 |
| T I 0010s | T D 0000s |

Level 3 access

Supply air fan flow rate control proportional band
Integral time and derivative time for supply air fan flow rate control
Return air fan flow rate control proportional band
Integral time and derivative time for return air fan flow rate control

| p15 | |
|-----------|-----------|
| Duct | |
| Band | 0595.0 |
| T I 0004s | T D 0001s |

Level 3 access

Duct pressure control proportional band
Integral time and derivative time for duct pressure

| p16 | |
|-------------------|--------|
| Supply air limits | |
| X1 offset | -5.0°C |
| Eco | -7.0°C |
| X2 offset | 5.0°C |
| Eco | 7.0°C |

Level 3 access

Supply air T° setpoint calculation parameters (See the first figure on page 14)
X1 shift value for the formula for calculating the supply air temperature Comfort setpoint
X1 shift value for the formula for calculating the supply air temperature Eco setpoint
X2 shift value for the formula for calculating the supply air temperature Comfort setpoint
X2 shift value for the formula for calculating the supply air temperature Eco setpoint

| p17 | |
|-----------|--------|
| FC offset | -3.0°C |

Level 3 access

Outdoor T° offset from regulated T° for Free Cooling authorisation

| Prioritisation p18 | | |
|--------------------|-------|-------|
| heating coils | | |
| | Start | End |
| Coil 1 | ---.- | ---.- |
| Coil 2 | ---.- | ---.- |

Level 3 access

Coil 1 actuation start and end setpoint value

Coil 2 actuation start and end setpoint value

| p19 | |
|---------------------|--------|
| Coil distribution | |
| Electric with triac | |
| Stage 2 | 050.0% |

Level 3 access

Setpoint value for the electric heater stage 2 actuation start

| p20 | |
|--------------|-----|
| Air quality | |
| Quality band | 100 |

Level 3 access

Air quality regulation proportional band

| Calibration ca1 | |
|-----------------|--------|
| Return air | 00.0°C |
| Supply air | 00.0°C |
| Fresh air | 00.0°C |
| Water network | 00.0°C |

Level 3 access

Calibration of the regulated temperature sensor (return or room)

Calibration of the supply air temperature sensor

Calibration of the fresh air temperature sensor

Calibration of network water temperature sensor

| Calibration cam | |
|-----------------------------|----|
| Pressure sensor calibration | |
| | NO |

Level 3 access -> Accessible by pressing the Prg key from the mask ca1

Manual calibration of pressure sensors. Warning: the fans must be completely stopped before using this function.

| Calibration ca2 | |
|-----------------|--------|
| Air quality | 000ppm |

Level 3 access

Calibration of air quality sensor

| Input direction | | se1 | Level 3 access |
|------------------------|----|-----|--|
| Supply air fan control | NC | | Direction of the supply air fan sensor information during operation |
| Antifreeze thermostat | NO | | Direction of the antifreeze thermostat control information during operation |
| CF2 pressure switch | NC | | Direction of the filter CF2 pressure switch control information during operation |
| Fire sensor | NC | | Direction of the fire sensor control information during operation |
| Elec heater safety | NC | | Direction of the electric heater control information during operation |
| Remote control | NC | | Direction of the control information for the remote control when "On" |

| Input direction | | se2 | Level 3 access |
|---------------------------|----|-----|--|
| Return air fan control | NC | | Direction of the return air fan sensor information during operation |
| Elec heater load shedding | NO | | Direction of the electric heater "load shedding" check information |
| Humidif. check | NC | | Direction of the humidifier check information during operation |
| Exch. pressure switch | NC | | Direction of the plate heat exchanger pressure switch control information during operation |

| Output direction | | ss1 | Level 3 access |
|------------------|----|-----|--|
| Danger | NC | | Controller contact state when there are no "Danger" faults (NO or NC) |
| Maintenance | NC | | Controller contact state when there are no "Maintenance" faults (NO or NC) |

2.5 Read-only parameters menu

2.5.1 Inputs

| | | i0 | Level 1 access |
|---------------|-------|----|--|
| Supply air | --.°C | | Supply air temperature value |
| Return | --.°C | | Controlled temperature value (return or ambient) |
| Fresh air | --.°C | | Fresh air temperature value |
| Water network | --.°C | | Network water temperature value |

| | | i1 | Level 1 access |
|---------------|-----------|----|--------------------------------|
| Fan flow rate | | | |
| Supply air | -----m3/h | | Supply air fan flow rate value |
| Return air | -----m3/h | | Return air fan flow rate value |
| Duct pressure | ----Pa | | Supply air duct pressure value |

| | | i2 | Level 1 access |
|---------------------|---------|----|---|
| Filters | | | |
| CF1 | ----Pa | | Supply air CF1 filter fouling value |
| CF1 Return | ----Pa | | Return air filter CF1 fouling value |
| Pressure switch CF2 | - | | Additional filter CF2 fouling pressure switch state |
| Air quality | ----ppm | | CO ₂ air quality value |

| | |
|----------------|---|
| i3 | |
| Supply air fan | - |
| Return air fan | - |
| Fire | - |

Level 1 access
 Supply air fan operation check state (C = on; O = off)
 Return air fan operation check state (C = on; O = off)
 Fire detection sensor check state (F = no fire; O = fire detected)

| | |
|---------------------------|---|
| i4 | |
| Humidif. check | - |
| Elec heater load shedding | - |
| Remote control | - |

Level 1 access
 Humidifier check state (C = no faults; O = fault detected)
 Load shedding command state (C = Load shedding; O = No load shedding)
 Remote control state (F = on; O = off)

| | |
|-----------------------|---|
| i5 | |
| Elec. heater safety | - |
| Antifreeze thermostat | - |
| Exch. pressure switch | - |

Level 1 access
 State of electric heater safety thermostat (C = fault detected; O = no faults)
 Frost protection thermostat state (C = fault detected; O = no faults)
 Plate heat exchanger pressure switch state (C = fault detected, O = no faults)

2.5.2 Outputs

| | |
|----------------|------|
| o1 | |
| Fan | ---% |
| Return air fan | ---% |
| Coil 1 Heating | ---% |
| Coil 2 Cooling | ---% |

Level 1 access
 Supply air fan variable frequency drive control value
 Return air fan variable frequency drive control value
 Water coil 1 valve control value (Heating or Triac)
 Water coil No.2 valve control value in "Cooling" mode (or Heating)

| | |
|---------------|-----|
| o2 | |
| Recov. bypass | --- |

Level 1 access
 Plate heat exchanger bypass damper control state

| | |
|-------------|---|
| o3 | |
| Danger | - |
| Maintenance | - |

Level 1 access
 "Danger" fault summary relay state
 "Maintenance" fault summary relay state

| o4 | | Level 1 access |
|-----------------|-----|---|
| Damper | --- | Damper control state (frost protection or insulation) |
| Electric heater | | |
| Stage 1 | --- | Electric heater stage 1 control state |
| Stage 2 | --- | Electric heater stage 2 control state |

| o5 | | Level 1 access |
|------------|-----|--|
| DX module | --- | DX module control state |
| Humidifier | --- | Humidifier operation authorisation state |

| o6 | | |
|-----------|------|--|
| Mixing | ---% | Mixing damper opening value |
| Control - | | Mixing damper control state (↑ = opened; ↓ = closed) |

2.5.3 Calculated setpoints

| wc1 | | |
|------------|-------|---|
| Calculated | --.°c | Control setpoint calculated for the Supply air temperature when the regulated temperature is Return or Room |

2.5.4 Counters

| Counters tt1 | | |
|----------------|--------|---|
| Supply air fan | | |
| -----h | Reset- | Supply air fan runtime counter reset and time |

| Counters tt2 | | |
|----------------|--------|---|
| Return air fan | | |
| -----h | Reset- | Return air fan runtime counter reset and time |

| Counters | | tt3 |
|-----------------|-------|---------|
| Electric heater | | |
| Stage 1 | ----h | Reset - |
| Stage 2 | ----h | Reset - |

Electric heater stage 1 runtime counter reset and time
 Electric heater stage 2 runtime counter reset and time

| Counters | | tt4 |
|------------|--|--------|
| Humidifier | | |
| ----h | | Reset- |

Humidifier runtime counter reset and time

| Counters | | tt5 |
|-----------|--|--------|
| DX module | | |
| ----h | | Reset- |

DX module runtime counter reset and time

| Counters | | tt6 |
|----------|--|--------|
| Bypass | | |
| ----h | | Reset- |

Plate heat exchanger bypass servomotor runtime counter reset and time

2.6 Fault memory menu

2.6.1.1.1.1.1.1

| Log | H000 |
|--------|----------|
| Alarm | |
| 00 :00 | 00/00/00 |

H000 Indicates the log number for the alarm
00/00/00 Indicates the date of the alarm
00:00 Indicates the time of the alarm
Alarm Indicates the alarm

"Prg" button

| | RH |
|-------|----|
| Reset | No |

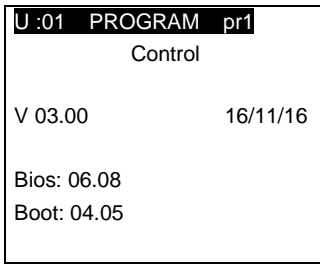
Level

3

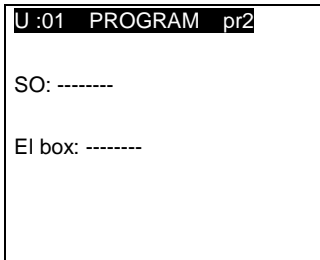
access

Reset Reset the alarm log

2.7 Versions menu



Indicates the reference of the program installed on the controller, the controller version and pLAN address.

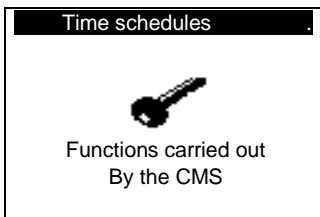


Order number for the unit

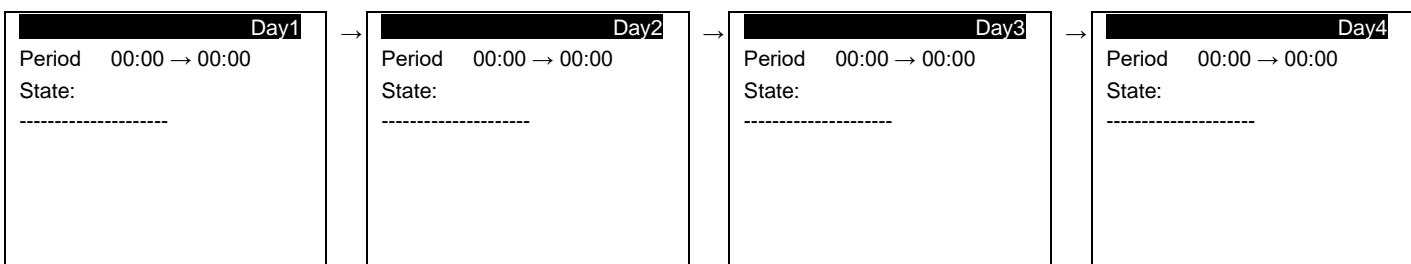
Serial number for the unit electrics box

2.8 Time schedule menu

If the unit is configured to be switched on by the CMS (Unit control = With), the menu of time schedules is not accessible and this screen appears:



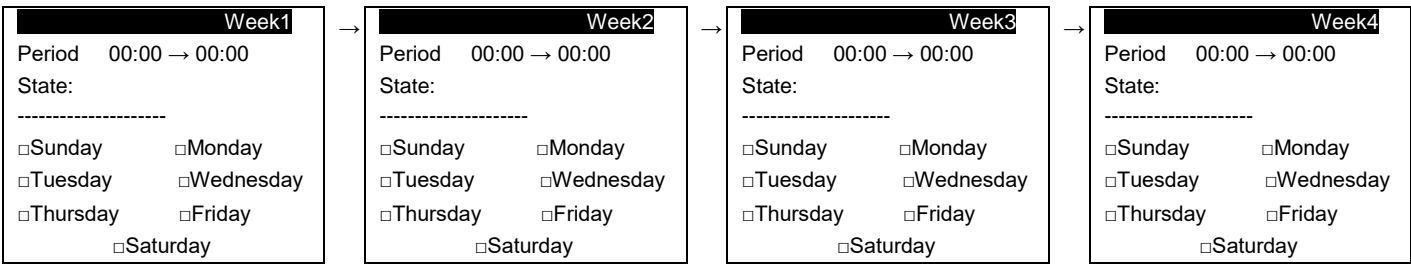
Otherwise:



Period 00:00 → 00:00 Start and end times (hour and minute) of daily time program period

State: Selection of the state during this period: -----

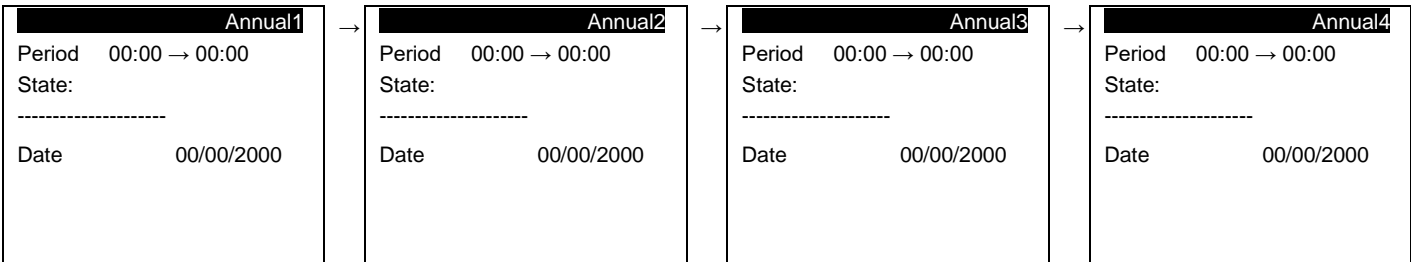
- Eco T°
- Comfort T°
- Eco flow rate
- Comfort flow rate
- Eco pressure
- Comfort pressure
- Standby
- Cool night
- ECO Recirculation



Period 00:00 → 00:00 Start and end times (hour and minute) of weekly time program period
State: Selection of the state during this period: -----
 Eco T°
 Comfort T°
 Eco flow rate
 Comfort flow rate
 Eco pressure
 Comfort pressure
 Standby
 Cool night
 ECO Recirculation

- Sunday
- Monday
- Tuesday
- Wednesday
- Thursday
- Friday
- Saturday

Day of the week on which the weekly time program is applied (■= day selected)



Period 00:00 → 00:00 Start and end times (hour and minute) of annual time program period
State: Selection of the state during this period: -----
 Eco T°
 Comfort T°
 Eco flow rate
 Comfort flow rate
 Eco pressure
 Comfort pressure
 Standby
 Cool night
 ECO Recirculation

Date 00/00/2000 Day, month and year of yearly time program

Access to the following group of screens via the **Prg** button is protected by level 3 access

| t1 | | |
|---------------|------|---|
| Fan delay | 060s | post ventilation time |
| Battery reset | N | Reset the Lithium battery replacement indicator |
| Damper | 180s | Total opening time for complete damper |
| Mixing damper | 150s | Opening time value for the mixing damper servomotor |
| Defrost | 150s | Minimum opening time value for plate heat exchanger defrost |



| Timer t2 | |
|---|----------|
| Summer/Winter: | ACTIVE |
| Transit. time | 060min |
| Start:LAST | SUNDAY |
| in MARCH | at 02.00 |
| End:LAST | SUNDAY |
| in OCTOBER | at 03.00 |

Daylight Saving Time and Standard Time switchover management activated

2.9 Communication menu

| SUPERVISION g1 | |
|---|------------|
| Protocol | ----- |
| Speed | ---- bauds |
| Address | --- |
| Unit control | --- |

Level 3 access

Choice of the communication protocol with the CMS (CAREL, LON, MODBUS RTU, KNX, WEB, MODBUS TCP)

Selection of the speed of communication with the CMS (4800 mandatory for LonWorks®)

Address of the controller on the network for communication with the CMS (001 mandatory for LonWorks®)



Selection of the On/Off control via the CMS

| pLAN NETWORK pL1 | | | | | | | |
|---|----|----|--|----|----|--|----|
| Controller address | 01 | | | | | | |
| <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 5%;">1</td> <td style="width: 15%; border-bottom: 1px dashed black;"> </td> <td style="width: 5%;">16</td> </tr> <tr> <td>17</td> <td style="border-bottom: 1px dashed black;"> </td> <td>32</td> </tr> </table> | | 1 | | 16 | 17 | | 32 |
| 1 | | 16 | | | | | |
| 17 | | 32 | | | | | |

Address of the controller on the pLAN communication network to the user terminal

pLAN network state


When the system starts up, the pLAN network may encounter a number of problems (card fault and terminal start-up) caused by incorrect connections or a wrong address. The state of the pLAN network can be displayed in real time on this special mask in order to identify which devices (controller or terminal) are correctly connected and addressed.



Network addresses 1 to 32 are displayed. The small rectangles  represent the terminals and the large rectangles , the controllers.

If the symbols flash, the pLAN may be unstable or, more likely, two components share the same address.

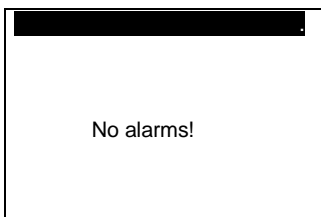
The example indicates that the network is formed of 1 controller with the address 1 and 1 terminal with the address 17.

2.10 Alarms menu

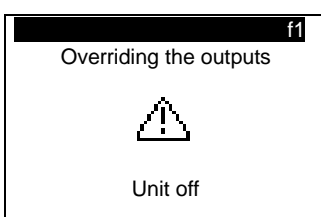
Pressing the  button confirms and clears all faults that are no longer present.

To view faults that are still present, press the buttons  

The following screen appears when no faults are present:



2.11 Test mode menu



If all the controller's outputs are overridden, the alarms will not be signalled on the door of the electrical box or on the display.

Disconnecting the display will maintain the override and may result in damage to the hardware.

This menu can only be accessed in level 3 and with the unit off.

WARNING!

ACTIVATION OF ALL OVERRIDES IS THE PROGRAMMER'S RESPONSIBILITY

NONE OF THE SAFETY DEVICES IS OPERATIONAL

The unit must be set to "OFF".

Select the unit to be changed by pressing the **↑** button or the **↓** button. Confirm by pressing **ENTER**.

The cursor places itself below the override authorisation (**free** or **overridden**). Confirm by pressing **ENTER**.

The cursor places itself under the override value. Display the new value by pressing the **↑** button or the **↓** button. Confirm by pressing **ENTER**.

The unit is now in "manual mode".

The overrides are cancelled when the unit is set back to "on"

| | |
|--------------------|-----------|
| Fans | f2 |
| ----- | |
| Supply air..... | -- |
| Return air..... | -- |
| Damper | . |
| ----- | |
| Control state..... | -- |







| | |
|--------------------|-----------|
| Fault relay | f3 |
| ----- | |
| Danger..... | -- |
| Maintenance..... | -- |

| | |
|------------------------|-----------|
| Valves | f4 |
| ----- | |
| Coil 1..... | --% |
| Coil 2..... | --% |
| DX module..... | -- |
| Electric heater | . |
| ----- | |
| Stage 1..... | -- |
| Stage 2..... | -- |

| | |
|---------------|-----------|
| Mixing | f5 |
| ----- | |
| Opening..... | - |
| Closing..... | - |
| State..... | --% |

| | |
|--------------------|-----------|
| Bypass | f6 |
| ----- | |
| Control state..... | -- |
| Humidifier | . |
| ----- | |
| Control state..... | -- |

2.12 Access level menu

| | |
|--|--|
| <p>Access levels</p> <p>Current level: 1</p> <p>Access level 1 -></p> <p>Level 2 access</p> <p>Level 3 access</p> | Displays the current level |
| <p>Access levels</p> <p> LEVEL 1 ACCESS</p> <p>Back to level 1:</p> <p>No</p> | <i>If level 1 access selected</i> |
| <p>Access levels</p> <p> LEVEL 2 ACCESS</p> <p>Password: 0000</p> | <i>If access level 2 selected and access level = 1</i> |
| <p>Access levels</p> <p> LEVEL 2 ACCESS</p> <p>Enter new code level 2?</p> <p>No</p> | <i>If password ok</i> |
| <p>Access levels</p> <p> LEVEL 2 ACCESS</p> <p>New password: 0000</p> | Re-enter the new installer password |
| <p>Access levels</p> <p> LEVEL 2 ACCESS</p> <p>Back to level 2:</p> <p>No</p> | <i>If access level 2 selected and access level = 3</i> |
| <p>Access levels</p> <p> LEVEL 3 ACCESS</p> <p>Password: 0000</p> | <i>If access level 2 selected and access level = 1</i> |

The level 2 password can be reset to the factory value. To do this, go to level 2 access and press the "Prg" button for 10 seconds.

2.13 Master/Slave menu

The Master/Slave function is used to manage several units (maximum of 8) supplying air to the same room and providing automatic weekly rotation (168 hours). This is done to ensure uniform wearing of the AHUs. A backup/additional function is also available.

| | |
|---------------------|------|
| m0 | |
| Additional | ---- |
| Unit within network | ---- |

Additional: *Without, With* (Authorisation of the Additional function for the rotation of the units)

Unit within network: *Without, With* (Authorisation of "autonomous" operation after break with bus or absence of power for rotating the units)

| | |
|---------------|--|
| m1 | |
| Unit rotation | |
| U1: - | |
| U2: - | |
| U3: - | |
| U4: - | |
| U5: - | |
| U6: - | |

Only on the unit whose address is '1'.

U1: *With rotation* (unit linked and integrated into a rotation loop), *Without rotation* (unit linked and outside of the rotation loop), *Not present* (unit not linked and outside of the rotation loop)

U2: *With rotation, Without rotation, Not present*

U3: *With rotation, Without rotation, Not present*

U4: *With rotation, Without rotation, Not present*

U5: *With rotation, Without rotation, Not present*

U6: *With rotation, Without rotation, Not present*

| | |
|--------------------|------|
| m2 | |
| U7: - | |
| U8: - | |
| Unit(s) on standby | - |
| 1 rotation per | 168h |

Only on the unit whose address is '1'.

U7: *With rotation, Without rotation, Not present*

U8: *With rotation, Without rotation, Not present*

Unit(s) on standby : 1 to 7 (according to the total number of units linked and integrated into a rotation loop – 1)

1 rotation per : 0 to 999h (when the value 0 is applied, this allows the rotation to be checked as it will be carried out every 5 minutes)

3 - Managing a network of controllers

The pLAN network is the name of the physical network that links controllers to remote HMI terminals.

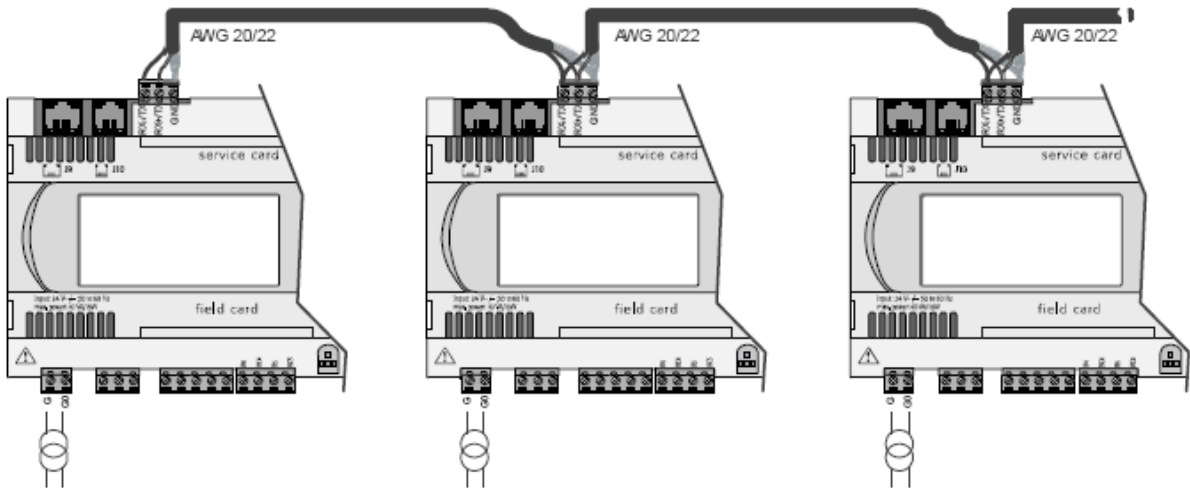
pLAN = personal Local Area Network

The connection of the controllers via the pLAN network allows the datapoints of one controller to be exchanged for another, following the logic set out by the program, i.e. the direction that these datapoints must follow and that from which they come. As a consequence, they are not programmed by the user, who must only carry out the electrical connection.

3.1 pLAN electrical connections

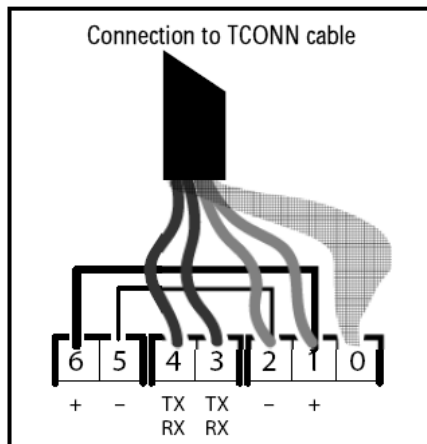
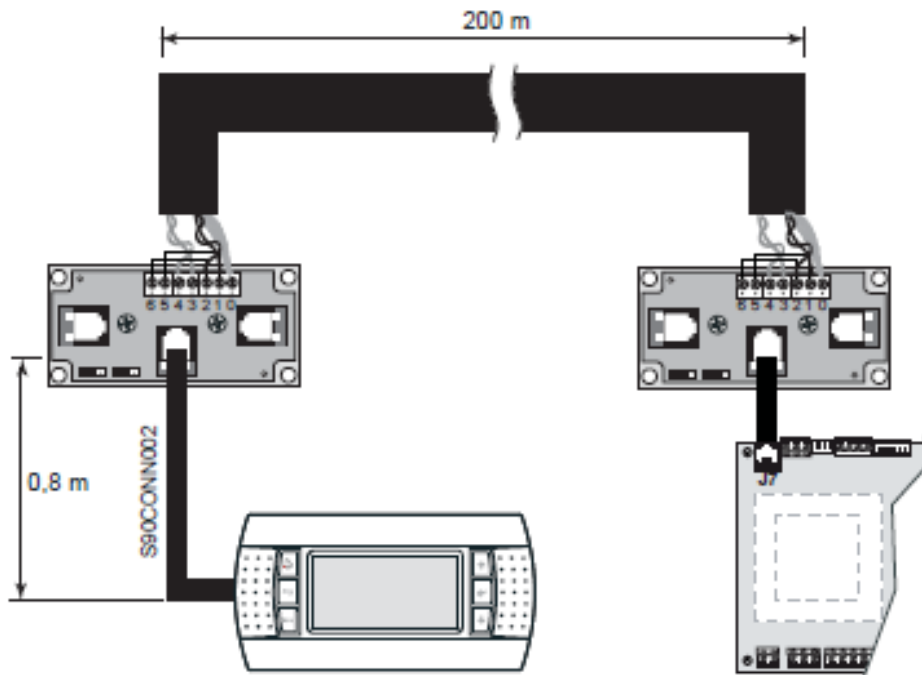
3.1.1 Connecting controllers to the pLAN

The electrical connection between the controllers under the pLAN network (RS485) is carried out using an AWG20/22 shielded cable composed of a twisted pair and a shield. The cards must be connected in parallel using the J11 connector. The first and last controller must be no more than **500m** apart.



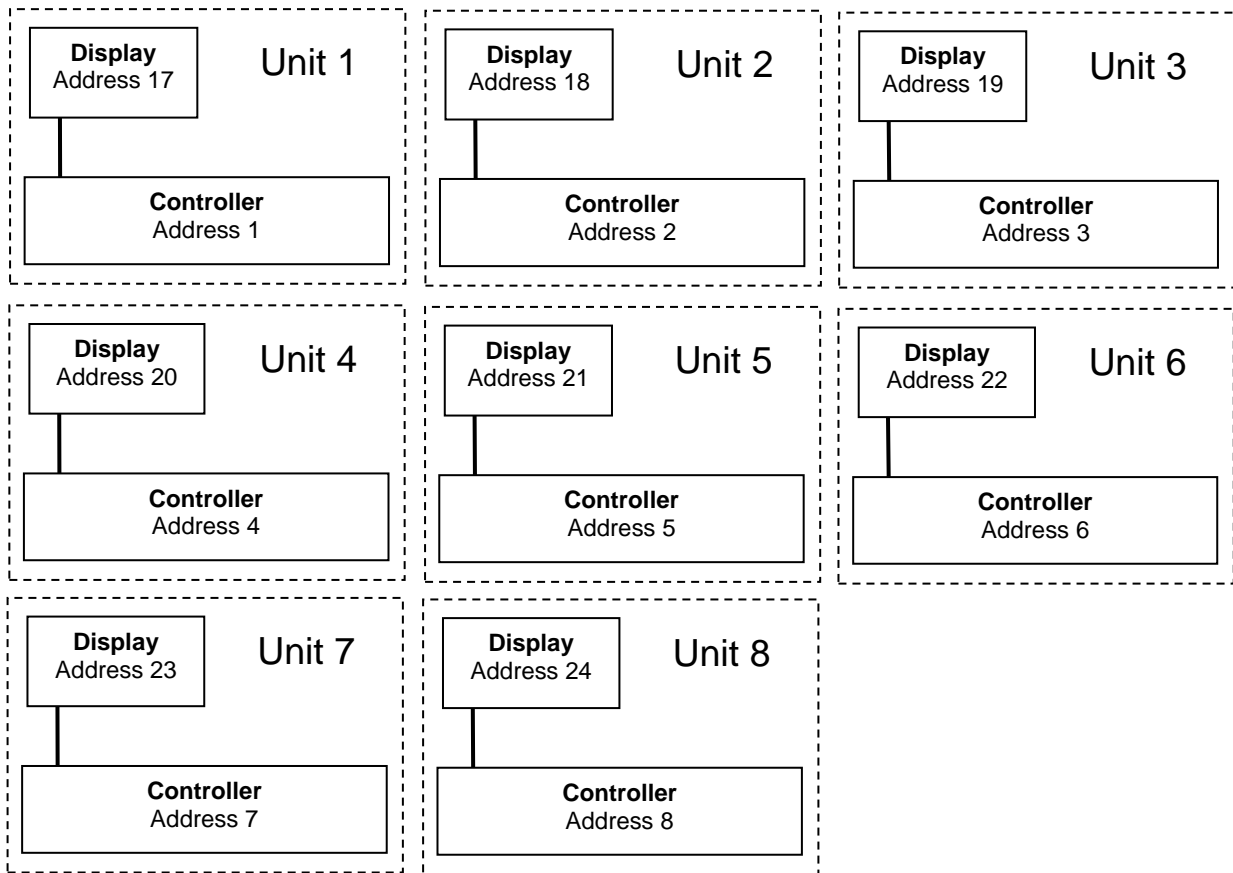
3.1.2 Connecting a remote screen to the pLAN

A remote user terminal can be connected to each controller on the pLAN network (RS485) using two additional cards and one shielded cable consisting of three AWG24 twisted pairs and a shield. The shielded cable must be no longer than **200m**.



3.2 Addressing the pLAN

Once the controllers are connected over the pLAN network, the controllers and the terminals must be addressed. There is a range of 32 possible addresses (binary logic). As a result, a total of 32 controllers and terminals can be connected over the pLAN network. The pLAN network will not work if the same address is shared by two components! The controllers and displays must be addressed as illustrated below:



3.3 Changing the controller address

The controller pLAN address can be changed, when creating a rotation loop, in page pL1 of the Parameters menu, following the diagram shown above.

3.3.1 Addressing the HMI terminals

The value of the factory-set address is '17'. In order to be able to configure the terminal's address, it must first be powered via the telephone connector. To enter configuration mode, press and buttons \uparrow \downarrow and \leftarrow (even if the terminal is already on) simultaneously for at least five seconds. The mask of the screen below appears and the pointer flashes at the top left corner:



- to change the terminal's address (display address setting) press the \leftarrow button once. The pointer will move to the address field (02).

- select the desired value using the \uparrow \downarrow buttons and confirm by pressing the \leftarrow button. If the value selected is different from that previously stored in memory, the mask of the screen below will appear and the new value will be stored in the display's permanent memory.

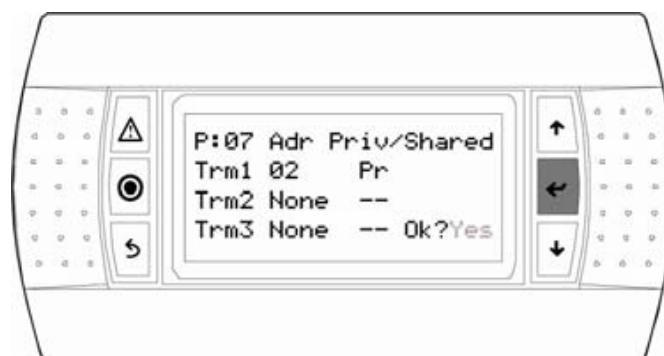


If the nn field is set to '0', the terminal will use the Point-to-Point Protocol (not the pLAN) to communicate with the controller and the "I/O Board address: 07" field will disappear as it will not be necessary.

3.3.2 Assigning private and shared terminals

Follow the procedure below if, at this point, it is necessary to change the list of terminals associated with each controller:

- enter configuration mode by pressing the \uparrow \downarrow and \leftarrow buttons as described in the previous section;
- press **enter** until the pointer moves to the "I/O board address" field;
- using the \uparrow \downarrow buttons, select the address of the desired controller. The only values selectable will be those of the controllers that are on the network. If the pLAN network is not working correctly or if no controllers are present, the field cannot be changed and will display a "--";
- press the **enter** button once more. the following mask sequences will be displayed:



- as above, press **enter** to move the pointer from field to field. Press the \uparrow \downarrow buttons to change the value of the current field. The P:xx field shows the address of the selected controller. In the example above, controller No. 07 is selected;
- to exit the configuration procedure and store the data, select "YES" in response to "OK?" and confirm with the \leftarrow button.

In the case of a shared display for a set of units (maximum 31), the terminal must be configured on each unit in "Sh" mode.

The fields in the "Adr" column contain the addresses of the terminals associated with the controller whose address is 07; the "Priv/Shared" column shows the terminal type.

Warning: HMI terminals do not have a printer output and therefore cannot be configured as "Sp" (shared printer).

If the terminal remains inactive (no buttons pressed) for more than 30 seconds, it will automatically exit configuration mode without saving any changes made.

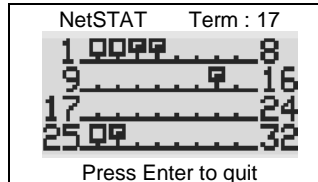
3.3.3 Checking the pLAN address

The pLAN address is displayed in the top left of the main screen, the pLAN NETWORK **pL1** screen in the "Communication" menu and the Program **pr1** screen of the "Versions" menu.

3.4 State of the pLAN

When the system starts up, the pLAN network may encounter a number of problems (card fault and terminal start-up) caused by incorrect connections or a wrong address. The state of the pLAN network can be displayed in real time on a special mask in order to identify which devices (controller or terminal) are correctly connected and addressed.

To display this special page, simultaneously press **↑ ↓** and **←** on any other terminal on the network for at least 10 seconds. After the first 5 seconds, a page is displayed; after 5 more seconds, the next page appears:



Once on the screen, network addresses 1 to 32 are displayed. The small rectangles represent the terminals and the large rectangles, the controllers. If symbols appear then disappear, the pLAN may be unstable or, more likely, two components share the same address. The number after **Term** indicates the address of the terminal used. The example shows that the network is made up of 3 controllers with the addresses 1, 2, 25 and 4 terminals with the addresses 3, 4, 15 and 26. Once the page has been verified, turn off the power, check the connections and addresses, then turn the power back on.

4 - Replacing the lithium battery

The lithium battery must be replaced by the customer when the notification alarm appears, approximately 10 years after the unit is commissioned on site.

Once the replacement has been carried out, do not forget to reset the battery check (mask tp1)

5 - Supervision

The controller may be connected to a local or remote supervision PC or to most types of CMS (Modbus, Lonworks, KNX, BACnet). For the listed functions to be used, optional cards (RS485, pCo Web, KNX, LON) or gateways (devices able to interpret various communication protocols) must be installed

NOTE:

If using a communication bus, the routing and processing of the available data are outside Manufacturer's scope of supply. They must be provided by the installer, and require the involvement of an integrator.

5.1 CMS

Modbus® RTU: insert the RS485 expansion board and connect it as described in the manual. Validating the protocol on the user terminal (screen **g1**):

- **Protocol** *MODBUS RTU*
- **Speed** *---- bds (Set in accordance with the CMS speed)*
- **Address** *001 (Different to 0)*

Modbus® TCP: insert the pCo Web card and connect it as described in the manual. Validating the protocol on the user terminal (screen **g1**):

- **Protocol** *MODBUS TCP*
- **Speed** *19200 bds (Obligatory)*
- **Address** *001 (Different to 0)*

BACnet® IP: insert the pCo Web card and connect it as described in the manual. Validating the protocol on the user terminal (screen **g1**):

- **Protocol** *BACNET IP*
- **Speed** *19200 bds (Obligatory)*
- **Address** *001 (Different to 0)*

LonWorks®: insert the expansion board (type FTT-10A) and connect it as instructed in the manual. Validating the protocol on the user terminal (screen **g1**):

- **Protocol** *LON*
- **Speed** *4800 bds (Obligatory)*
- **Address** *001 (Obligatory)*

KNX®: insert the expansion board and connect it as instructed in the manual. Validating the KNX protocol on the user terminal (screen **g1**):

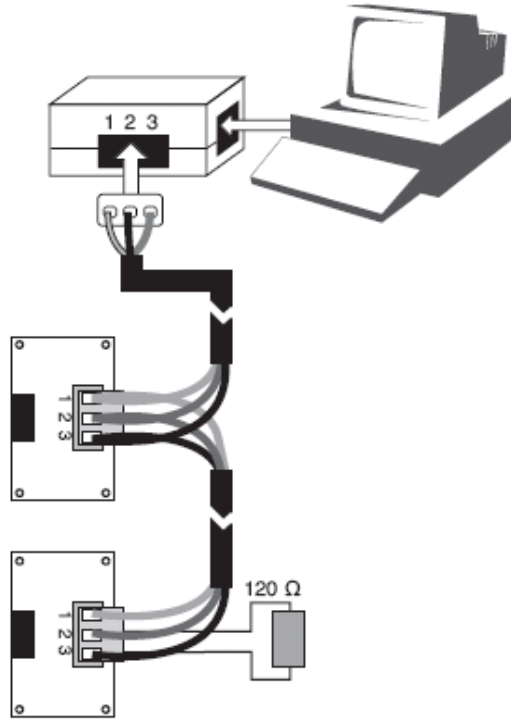
- **Protocol** *KNX*
- **Speed** *9600 bds (Obligatory)*
- **Address** *001 (Obligatory)*

5.2 The datapoint database

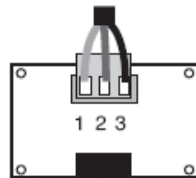
The unit comes with a communication database that includes the most important datapoints for the program, from the values of the sensors to the parameters displayed in the masks. The database contains three types of datapoint: digital datapoints, integer datapoints and analogue datapoints. The tables below list the names of these datapoints, their addresses and types (read-only (R) or read/write (R/W)).

5.3 Modbus RTU

5.3.1 Modbus RTU connection diagram



5.3.2 RS485 connection close-up



| Pin | Description |
|-----|-------------|
| 1 | GND |
| 2 | RX+/TX+ |
| 3 | RX-/TX- |

The components required for connection to the remote and/or local ModBus supervision system are as follows:

- An RS485 serial card connected to each controller.
- A standard RS485/USB converter for connection to a PC (not supplied). The converter can be connected to any network RS485 card.
- An electrical network using an **AWG20/22** shielded cable (not supplied) comprising a twisted pair and shielding with a max length of **1000 m**. This network must never run parallel to power cables at a distance of less than **50 cm**. These cables may cross, but perpendicularly. You are requested not to form a loop with the network cable or the earth braid, and to properly separate the various cable families (control, power, earth and communication bus).
- A supervision program installed on a PC (not supplied by manufacturer).

An 120Ω ¼W electrical resistor must be connected to the RS485 serial card in last position on the bus, as shown in the connection diagram.

The format of the data frame, which cannot be modified, is as follows: 8 data bits, 2 stop bits and without parity on 2 words (2 bytes), high-order, low-order.

The data format (16 bits, signed) is standard for Modbus except for analogue data which is in the format "Integer divided by 10".

The codes for the Modbus functions used are:

- 1 or 2: Read n bits
- 3 or 4: Read multiple registers (16 bits)
- 5: Write one bit
- 6: Write one register
- 8: Read diagnostics counters
- 11: Read event counter
- 15: Write n bits
- 16: Write multiple registers (16 bits)

NB: The JBus addresses are equal to the "Modbus address" - 1

5.3.3 Modbus variables

5.3.3.1 Commands

| Register hex. no. | Register decimal no. | Description | Format | Type | Adjustable values |
|--|----------------------|---|---------|-----------------|----------------------------|
| Registers accessible in read-only mode (function 1) and write mode (function 5) | | | | | |
| 0x118 | 280 | Remote on/off command | Boolean | Read-only/Write | 0: Off/1: On |
| 0x119 | 281 | Fault acknowledgement | Boolean | Read-only/Write | 0: No/1: Acknowledgement |
| 0x11A | 282 | Electric heater load shedding | Boolean | Read-only/Write | 0: Free / 1: Load shedding |
| 0x11B | 283 | Unit actuation at eco/comfort temperature | Boolean | Read-only/Write | 0: Comfort / 1: Eco |
| 0x11C | 284 | Unit actuation at eco/comfort flow rate | Boolean | Read-only/Write | 0: Comfort / 1: Eco |
| 0x11D | 285 | Unit actuation at eco/comfort pressure | Boolean | Read-only/Write | 0: Comfort / 1: Eco |

5.3.3.2 Setpoints

| Register hex. no. | Register decimal no. | Description | Format | Type | Adjustable values |
|--|----------------------|--|---------|-----------------|-------------------|
| Dampers accessible in read-only mode (functions 3 or 4) and write mode (functions 6 for char or 16) | | | | | |
| 0x0190 | 400 | Supply air fan Comfort flow rate setpoint value | Integer | Read-only/Write | m3/h /10 |
| 0x0191 | 401 | Return air fan Comfort flow rate setpoint value | Integer | Read-only/Write | m3/h /10 |
| 0x0192 | 402 | Supply air fan Eco flow rate setpoint value | Integer | Read-only/Write | m3/h /10 |
| 0x0193 | 403 | Return air fan Eco flow rate setpoint value | Integer | Read-only/Write | m3/h /10 |
| 0x0195 | 405 | Supply air duct Comfort pressure setpoint value | Integer | Read-only/Write | Pa |
| 0x0196 | 406 | Supply air duct Eco pressure setpoint value | Integer | Read-only/Write | Pa |
| 0x019A | 410 | Comfort heating regulated temperature setpoint value | Integer | Read-only/Write | °C x10 |
| 0x019B | 411 | Eco heating regulated temperature setpoint value | Integer | Read-only/Write | °C x10 |
| 0x019C | 412 | Supply air temperature maximum limit value | Integer | Read-only/Write | °C x10 |
| 0x019D | 413 | Supply air temperature minimum limit value | Integer | Read-only/Write | °C x10 |
| 0x1A1 | 417 | Air quality control setpoint | Integer | Read-only/Write | ppm |
| 0x1A2 | 418 | Supply air fan maximum flow rate value for air quality regulation | Integer | Read-only/Write | m3/h /10 |
| 0x1A6 | 422 | Cooling Comfort regulated temperature setpoint | Integer | Read-only/Write | °C x10 |
| 0x1A7 | 423 | Cooling Eco regulated temperature setpoint | Integer | Read-only/Write | °C x10 |
| 0x1A8 | 424 | Heating Comfort regulated temperature setpoint | Integer | Read-only/Write | °C x10 |
| 0x1A9 | 425 | Heating Eco regulated temperature setpoint | Integer | Read-only/Write | °C x10 |
| Register hex. no. | Register decimal no. | Description | Format | Type | Adjustable values |
| 0x1AC | 428 | Cooling Comfort supply air temperature setpoint | Integer | Read-only/Write | °C x10 |
| 0x1AD | 429 | Cooling Eco supply air temperature setpoint | Integer | Read-only/Write | °C x10 |
| 0x1AE | 430 | Heating Comfort supply air temperature setpoint | Integer | Read-only/Write | °C x10 |
| 0x1AF | 431 | Heating Eco supply air temperature setpoint | Integer | Read-only/Write | °C x10 |
| 0x1B4 | 436 | Frost protection setpoint value when the unit is in Standby | Integer | Read-only/Write | °C x10 |
| 0x1B9 | 441 | Temperature control setpoint in "Night cooling" mode | Integer | Read-only/Write | °C x10 |
| 0x1BA | 442 | Duct pressure control setpoint in "Night cooling" mode | Integer | Read-only/Write | Pa |
| 0x1BB | 443 | Supply air fan flow rate control setpoint in "Night cooling" mode | Integer | Read-only/Write | m3/h /10 |
| 0x1BC | 444 | Return air fan flow rate control setpoint in "Night cooling" mode | Integer | Read-only/Write | m3/h /10 |
| 0x1BD | 445 | Stage 1 and off setpoint value for the electric heater | Integer | Read-only/Write | % |
| 0x1BE | 446 | Stage 1 on setpoint value for the electric heater | Integer | Read-only/Write | % |
| 0x1BF | 447 | Stage 2 off setpoint value for the electric heater | Integer | Read-only/Write | % |
| 0x1C0 | 448 | Stage 2 on setpoint value for the electric heater | Integer | Read-only/Write | % |
| 0x1C4 | 452 | Free Cooling authorisation limit setpoint value in relation to the fresh air temperature | Integer | Read-only/Write | °C x10 |
| 0x1C5 | 453 | Value of the minimum % of fresh air during Free cooling management | Integer | Read-only/Write | % |

| | | | | | |
|-------|-----|--|---------|-----------------|--------|
| 0x1D0 | 464 | High threshold for supply air filter CF1 fouled fault | Integer | Read-only/Write | Pa |
| 0x1D1 | 465 | High threshold for supply air filter CF1 clogged fault | Integer | Read-only/Write | Pa |
| 0x1D5 | 469 | High threshold for return air filter CF1 fouled fault | Integer | Read-only/Write | Pa |
| 0x1D6 | 470 | High threshold for return air filter CF1 clogged fault | Integer | Read-only/Write | Pa |
| 0x1DB | 475 | Stage off setpoint value for the DX coil | Integer | Read-only/Write | % |
| 0x1DC | 476 | Stage on setpoint value for the DX coil | Integer | Read-only/Write | % |
| 0x1E5 | 485 | Changeover limit setpoint value in Heating mode and water return temperature | Integer | Read-only/Write | °C x10 |
| 0x1E6 | 486 | Changeover limit setpoint value in Cooling mode and water return temperature | Integer | Read-only/Write | °C x10 |
| 0x1E7 | 487 | Value for the water return temperature control proportional band | Integer | Read-only/Write | °C x10 |
| 0x1EB | 491 | Duct pressure sensor fault low threshold | Integer | Read-only/Write | Pa |
| 0x1EC | 492 | Duct pressure sensor fault high threshold | Integer | Read-only/Write | Pa |

5.3.3.3 Reading parameters

| Register hex. no. | Register decimal no. | Description | Format | Type | Values displayed |
|--|----------------------|--|---------|-----------|---|
| Dampers accessible in read-only mode (functions 3 or 4) | | | | | |
| 0x44C | 1100 | Supply air temperature | Integer | Read-only | Value x10 |
| 0x44D | 1101 | Return air temperature | Integer | Read-only | Value x10 |
| 0x44E | 1102 | Ambient temperature | Integer | Read-only | Value x10 |
| 0x44F | 1103 | Fresh air temperature | Integer | Read-only | Value x10 |
| 0x450 | 1104 | Water network temperature | Integer | Read-only | Value x10 |
| 0x453 | 1107 | Filter CF2 pressure switch control input state | Boolean | Read-only | 0 = No fault 1 = Fault |
| 0x454 | 1108 | Supply air fan flow rate | Integer | Read-only | Value /10 |
| 0x455 | 1109 | Return air fan flow rate | Integer | Read-only | Value /10 |
| 0x456 | 1110 | Duct pressure | Integer | Read-only | |
| 0x458 | 1112 | Supply air filter CF1 fouling | Integer | Read-only | |
| 0x459 | 1113 | Return air filter CF1 fouling | Integer | Read-only | |
| 0x45C | 1116 | Air quality in ppm of CO ₂ | Integer | Read-only | |
| 0x45E | 1118 | Supply air fan monitoring input state | Boolean | Read-only | 0 = Contact open 1 = Contact closed |
| 0x45F | 1119 | Return air fan monitoring input state | Boolean | Read-only | 0 = Contact open 1 = Contact closed |
| 0x460 | 1120 | Fire input state | Boolean | Read-only | 0 = Fault 1 = No fault |
| 0x467 | 1127 | Humidifier monitoring | Boolean | Read-only | 0 = Fault 1 = No fault |
| 0x468 | 1128 | Electric heater load shedding command or Selection of heating coil | Boolean | Read-only | 0 = Not Shed / EC 1 = Load shedding / EL |
| 0x469 | 1129 | Remote control input state | Boolean | Read-only | 0 = Off 1 = On |
| 0x46C | 1132 | Electric heater safety thermostat input state | Boolean | Read-only | 0 = Fault 1 = No fault |
| 0x46E | 1134 | Antifreeze thermostat input state | Boolean | Read-only | 0 = No fault 1 = Fault |
| 0x474 | 1140 | Supply air variable drive command signal | Integer | Read-only | |
| 0x475 | 1141 | Return air variable drive command signal | Integer | Read-only | |
| 0x476 | 1142 | Opening percentage for coil 1 | Integer | Read-only | |
| 0x477 | 1143 | Opening percentage for coil 2 | Integer | Read-only | |
| 0x47D | 1149 | "Danger" fault summary relay | Boolean | Read-only | 0 = No fault 1 = Fault |
| 0x47E | 1150 | "Maintenance" fault summary relay | Boolean | Read-only | 0 = No fault 1 = Fault |
| 0x483 | 1155 | Damper servomotor state | Boolean | Read-only | 0 = Damper closed 1 = Damper open |
| 0x484 | 1156 | Stage 1 state for the electric heater | Boolean | Read-only | 0 = Off 1 = On |
| 0x485 | 1157 | Stage 2 state for the electric heater | Boolean | Read-only | 0 = Off 1 = On |
| 0x488 | 1160 | Stage state for the DX coil | Boolean | Read-only | 0 = Off 1 = On |
| 0x48E | 1166 | Humidifier operation authorisation output state | Boolean | Read-only | 0 = Off 1 = On |
| 0x491 | 1169 | Mixing output value | Integer | Read-only | |

| Register hex. no. | Register decimal no. | Description | Format | Type | Values displayed |
|-------------------|----------------------|--|---------|------------|--|
| 0x492 | 1170 | Mixing command direction of action | Integer | Read-only | 0:Non 1:Opening 2:Closed |
| 0x49E | 1182 | Calculated supply air setpoint value | Integer | Read-only | Value x10 |
| 0x4A5 | 1189 | Supply air fan runtime counters | Integer | Read-only | in hours |
| 0x4A6 | 1190 | Option to reset the counters | Boolean | Read/Write | 1 = Reset |
| 0x4AB | 1195 | Return air fan runtime counters | Integer | Read-only | in hours |
| 0x4AC | 1196 | Option to reset the counters | Boolean | Read/Write | 1 = Reset |
| 0x4B2 | 1202 | Stage 1 electric heater runtime counters | Integer | Read-only | in hours |
| 0x4B3 | 1203 | Option to reset the counters | Boolean | Read/Write | 1 = Reset |
| 0x4B4 | 1204 | Stage 2 electric heater runtime counters | Integer | Read-only | in hours |
| 0x4B5 | 1205 | Option to reset the counters | Boolean | Read/Write | 1 = Reset |
| 0x4B8 | 1208 | Humidifier runtime counters | Integer | Read-only | in hours |
| 0x4B9 | 1209 | Option to reset the counters | Boolean | Read/Write | 1 = Reset |
| 0x4BA | 1210 | DX module runtime counters | Integer | Read-only | in hours |
| 0x4BB | 1211 | Option to reset the counters | Boolean | Read/Write | 1 = Reset |
| 0x4BC | 1212 | Heat recovery unit bypass runtime counters | Integer | Read-only | in hours |
| 0x4BD | 1213 | Option to reset the counters | Boolean | Read/Write | 1 = Reset |
| 0x4DA | 1242 | Software version number | Integer | Read-only | |
| 0x4DB | 1243 | Suffix number | Integer | Read-only | |
| 0x4DC | 1244 | Day | Integer | Read-only | |
| 0x4DD | 1245 | Month | Integer | Read-only | |
| 0x4DE | 1246 | Year | Integer | Read-only | |
| 0x4DF | 1247 | Bios version | Integer | Read-only | |
| 0x4E0 | 1248 | Bios suffix | Integer | Read-only | |
| 0x4E1 | 1249 | Boot version | Integer | Read-only | |
| 0x4E2 | 1250 | Boot suffix | Integer | Read-only | |
| 0x4E3 | 1251 | SO number part 1 | Integer | Read-only | |
| 0x4E4 | 1252 | SO number part 2 | Integer | Read-only | |
| 0x4E5 | 1253 | Box number part 1 | Integer | Read-only | |
| 0x4E6 | 1254 | Box number part 2 | Integer | Read-only | |
| 0x500 | 1280 | Unit state | Integer | Read-only | 0: Off 1: On 2: On after cutout 3: Standby 4: Stop by fault 5: Stop by CMS 6: Post ventilation 7: Manual mode |
| 0x501 | 1281 | Heating requirement supplied by unit | Integer | Read-only | |
| 0x502 | 1282 | Cooling requirement supplied by unit | Integer | Read-only | |

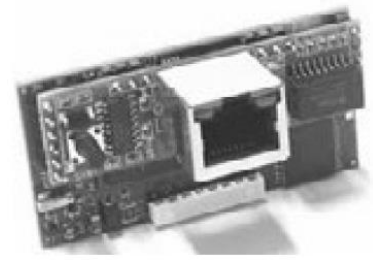
5.3.3.4 Alarms

| Register hex. no. | Register decimal no. | Description | Format | Type |
|--|----------------------|---|---------|--------|
| Dampers accessible in read-only mode (functions 3 or 4) | | | | |
| 0x514 | 1300 | Level 0 fault (critical fault) | Boolean | 0 or 1 |
| 0x515 | 1301 | Level 10 fault (Non-critical fault) | Boolean | 0 or 1 |
| 0x516 | 1302 | Supply air motor alarm | Boolean | 0 or 1 |
| 0x518 | 1304 | Filter 1 dirty alarm | Boolean | 0 or 1 |
| 0x51C | 1308 | Fire alarm | Boolean | 0 or 1 |
| 0x51D | 1309 | Antifreeze alarm | Boolean | 0 or 1 |
| 0x51E | 1310 | Electric heater overheating alarm | Boolean | 0 or 1 |
| 0x51F | 1311 | Supply air temperature too high alarm | Boolean | 0 or 1 |
| 0x520 | 1312 | Supply air temperature too low alarm | Boolean | 0 or 1 |
| 0x521 | 1313 | Room or return air temperature too high alarm | Boolean | 0 or 1 |
| 0x522 | 1314 | Room or return air temperature too low alarm | Boolean | 0 or 1 |
| 0x523 | 1315 | Return air motor alarm | Boolean | 0 or 1 |
| 0x524 | 1316 | Filter 1 blocked alarm | Boolean | 0 or 1 |
| 0x526 | 1318 | Filter 2 dirty alarm | Boolean | 0 or 1 |
| 0x527 | 1319 | Filter 2 blocked alarm | Boolean | 0 or 1 |
| 0x528 | 1320 | Filter 3 dirty alarm | Boolean | 0 or 1 |
| 0x52B | 1323 | Heat recovery unit alarm in frosting phase | Boolean | 0 or 1 |
| 0x52C | 1324 | Timer battery replacement alarm | Boolean | 0 or 1 |
| 0x52E | 1326 | Duct pressure alarm | Boolean | 0 or 1 |
| 0x530 | 1328 | Humidifier alarm | Boolean | 0 or 1 |
| 0x531 | 1329 | Ambient or return air humidity too high alarm | Boolean | 0 or 1 |
| 0x532 | 1330 | Ambient or return air humidity too low alarm | Boolean | 0 or 1 |
| 0x541 | 1345 | Heat recovery unit fouled alarm | Boolean | 0 or 1 |

5.4 Modbus TCP/IP and BACnet IP

Configuring the board

The board is factory fitted. If not, switch off the controller and insert the board (called serial card) on the controller.
Press the button found on the board whilst switching the power to the controller back on. The left-hand LED will start to flash rapidly.



Keep pressing the reset button. After approximately 30 seconds, the left-hand LED (status LED) changes from green to red then begins to flash. At this point, release the button.

The board is now initialised to the address 172.16.0.1.

You will now need to configure your PC to a fixed IP.

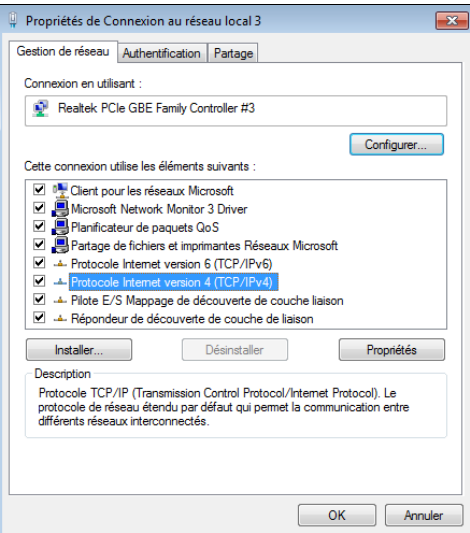
Procedure for Windows 7:

Important: you must have administrator rights to your computer

| | |
|--|--|
| <p>Go to the Start menu on your PC then Configuration Panel.</p> | |
| <p>In the Network and Internet section, click the link View network status and tasks.</p> | |
| <p>A new window will open. In the left-hand section, select Change board parameters.</p> | |
| <p>Right-click with the mouse on the name of the network connection you wish to configure. In the menu which appears, select Properties.</p> | |

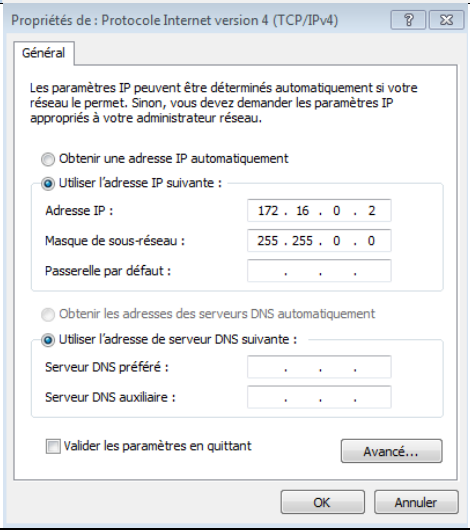
Select the line **Internet Protocol Version 4 (TCP/IPv4)**.

Click the **Properties** button.



Enter the IP address: **172.16.0.2**.
Subnet mask: **255.255.0.0**

Then, confirm

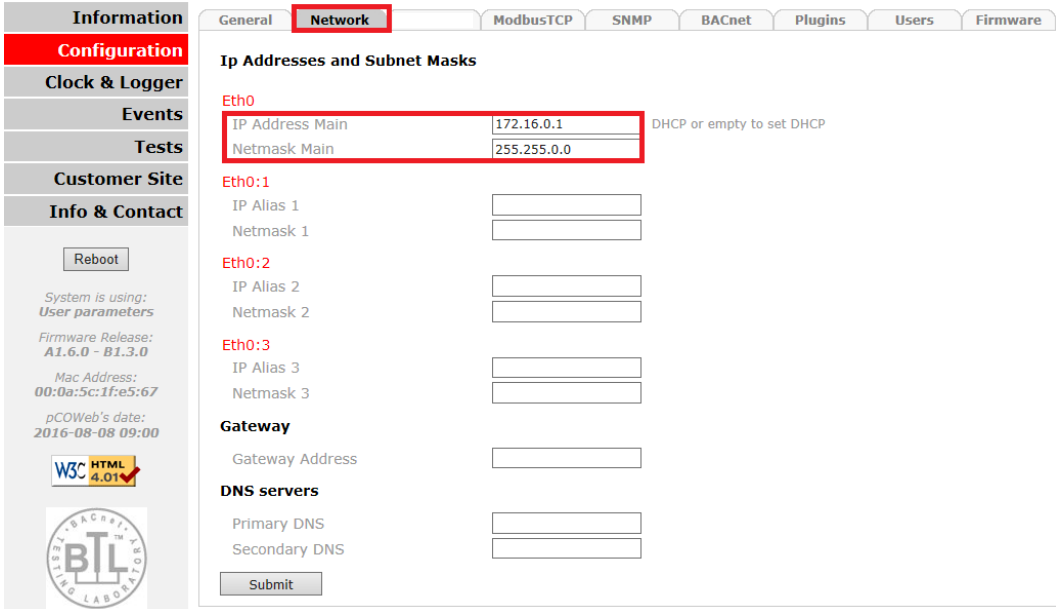


Once these elements have been edited, connect a network cable between your PC and the board.
Open an internet browser (Internet explorer, Chrome, Firefox, etc.) and enter <http://172.16.0.1> in the address bar

You will now be connected to the web server.

The login for access is admin
The password is fadmin

Click in the **Configuration** menu and select the **Network** tab.
Complete this page with the information for your local network (IP address & Netmask).



Then, in the pCO Com tab, change the protocol to Modbus Extended.

The screenshot shows the 'ModbusTCP' configuration tab. The 'Protocol' dropdown menu is set to 'Modbus Extended' and is highlighted with a red box. Other fields include 'Baud rate' (19200), 'Modbus slave address' (1), 'Digital variables*' (2048), 'Analog variables*' (5000), and 'Integer variables*' (5000). A 'Submit' button is at the bottom.

| | |
|----------------------|-----------------------|
| Protocol | Modbus Extended |
| Baud rate | 19200 (default 19200) |
| Modbus slave address | 1 (1 to 247) |
| Digital variables* | 2048 (1 to 2048) |
| Analog variables* | 5000 (1 to 5000) |
| Integer variables* | 5000 (1 to 5000) |

Next, in the BACnet tab (for BACnet communication), check that this is enabled and adjust the parameters as required.

The screenshot shows the 'BACnet' configuration tab. The 'BACnet status' dropdown menu is set to 'Enabled' and is highlighted with a red box. The 'BACnet LAN type' is 'BACnet/IP'. Other fields include 'BACnet/IP UDP port' (BAC0), 'Device Instance' (77000), 'Description' (BACnet Gateway), 'Location' (HeadQuarter), 'APDU timeout' (5000), 'APDU retries' (3), 'Password for restart' (1234), 'Alarming enabled' (No), 'Daylight Saving Time' (No), 'UTC offset' (0), 'Interval to send WhoIs' (1), 'IP address for BBMD*' (no), and 'Foreign device Time-To-Live*' (0).

| | |
|------------------------------|--|
| BACnet status | Enabled |
| BACnet LAN type | <input checked="" type="radio"/> BACnet/IP <input type="radio"/> BACnet Ethernet |
| BACnet/IP UDP port | BAC0 hexadecimal |
| Device Instance | 77000 0 to 4194303 |
| Description | BACnet Gateway |
| Location | HeadQuarter |
| APDU timeout | 5000 milliseconds |
| APDU retries | 3 |
| Password for restart | 1234 |
| Alarming enabled | <input type="radio"/> Yes <input checked="" type="radio"/> No |
| Daylight Saving Time | <input type="radio"/> Yes <input checked="" type="radio"/> No |
| UTC offset | 0 minutes, -720 to +720 |
| Interval to send WhoIs | 1 minutes, 0 to disable |
| IP address for BBMD* | no no, none or empty to disable |
| Foreign device Time-To-Live* | 0 seconds |

Once complete, confirm the page, disconnect your PC, restart the PLC and connect it to the network.

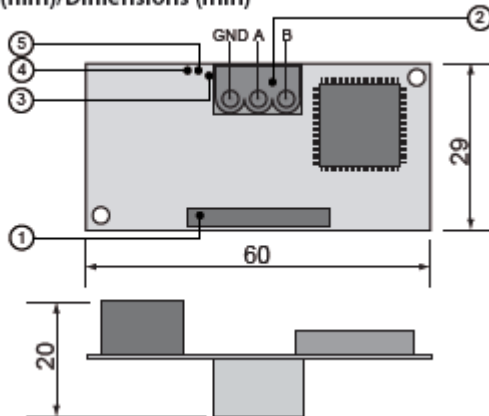
The PLC only manages Bacnet datapoints in *Binary* (Dxxx type address) and *Analogue* (Axxx type address) format.

The table is available on request.

5.5 LON

The communication card is supplied preloaded. The information data is retrieved via the CMS using a shunt on the Pin Service on the front panel of the expansion board.

Dimensioni (mm)/Dimensions (mm)



1. Connector for the controller
2. Disconnectable terminal for connection of the LonWorks® network (GND, A, B)
3. Pin service
4. Green service LED: state of the node, lit during the pin service, flashing when the board receives a command from the network, if permanently lit = board faulty
5. Red fault LED: signals a board installation problem (connection, communication speed 4800bds)

On request, the ".XIF" file is available.

5.5.1 LON scope of supply

Recap of on-site LON tasks by Manufacturer/Installer/Integrator for commissioning:

| Task | Manufacturer | Integrator | Installer |
|--|--------------|------------|-----------|
| Commissioning service | | | |
| Supply of .XIF integration file | | | |
| Installation of units equipped with LON controller | | | |
| Addressing and configuration of LON network | | | |
| Definition of master/slave zones | | | |
| Definition of setpoints and time programs | | | |

5.5.2 The digital datapoints

| Type | Index | NV name | SNVT | Direction | Description |
|------|-------|------------------|------|-----------|---|
| DGT | 1 | nvi_GTC_OnOff | 95 | input | Unit On/Off command via CMS |
| DGT | 1 | nvo_GTC_OnOff | 95 | output | Unit On/Off command return via CMS |
| DGT | -- | nvo_entree_dig_1 | 83 | output | State of digital inputs bit 0 <i>Not used</i> bit 1 <i>Not used</i> bit 2 <i>Supply air fan control state</i> bit 3 <i>Antifreeze thermostat control state</i> bit 4 <i>Not used</i> bit 5 <i>Fire sensor state</i> bit 6 <i>Electric heater thermostat sensor input</i> bit 7 <i>Remote control state</i> bit 8 <i>Return air fan control state</i> bit 9 <i>Not used</i> bit 10 <i>Not used</i> bit 11 <i>Not used</i> bit 12 <i>Not used</i> |
| DGT | -- | nvo_sortie_dig_1 | 83 | output | State of digital outputs bit 0 <i>Danger fault output</i> bit 1 <i>Maintenance fault output</i> bit 2 <i>Not used</i> bit 3 <i>Not used</i> bit 4 <i>Damper control</i> bit 5 <i>Electric heater stage 1 control</i> bit 6 <i>Electric heater stage 2 control</i> bit 7 <i>Stage control for the DX coil</i> bit 8 <i>Humidifier authorisation control</i> bit 9 <i>Plate heat exchanger bypass servomotor control</i> |
| DGT | -- | nvo_alarm_01_16 | 83 | output | Alarm 1 value: bit 0 <i>Motor alarm</i> bit 1 <i>Return air motor alarm</i> bit 2 <i>Not used</i> bit 3 <i>Supply air filter 1 dirty alarm</i> bit 4 <i>Supply air filter 1 blocked alarm</i> bit 5 <i>Not used</i> bit 6 <i>Return air filter 2 dirty alarm</i> bit 7 <i>Return air filter 2 blocked alarm</i> bit 8 <i>Additional filter 3 dirty alarm</i> bit 9 <i>Not used</i> bit 10 <i>Not used</i> bit 11 <i>Not used</i> bit 12 <i>Not used</i> bit 13 <i>Fire alarm</i> bit 14 <i>Antifreeze alarm</i> bit 15 <i>Electric heater safety thermostat alarm</i> |
| DGT | -- | nvo_alarm_17_32 | 83 | output | Alarm 2 value: bit 0 <i>Low supply air temperature alarm</i> bit 1 <i>High supply air temperature alarm</i> bit 2 <i>Low ambient or return air temperature alarm</i> bit 3 <i>High ambient or return air temperature alarm</i> bit 4 <i>Humidifier alarm</i> bit 5 <i>Heat recovery unit fouled alarm</i> bit 6 <i>pLAN alarm</i> bit 7 <i>Clock lithium battery alarm</i> bit 8 <i>Duct pressure alarm</i> bit 9 <i>Not used</i> bit 10 <i>Not used</i> bit 11 <i>Not used</i> bit 12 <i>Not used</i> |

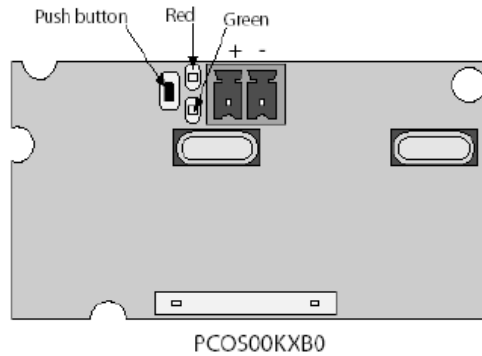
5.5.3 The analogue datapoints

| Type | Index | NV name | SNVT | Direction | Description |
|------|-------|------------------|------|-----------|---|
| ANL | 1 | nvo_custom_1 | 113 | output | Supply air filter CF1 fouling level |
| ANL | 2 | nvo_custom_2 | 113 | output | Supply air duct pressure |
| ANL | 3 | nvo_custom_3 | 113 | output | Return air filter CF1 fouling level |
| ANL | 5 | nvo_custom_5 | 113 | output | Heat exchanger fouling |
| ANL | 8 | nvo_custom_8 | 161 | output | Supply air fan flow rate |
| ANL | 9 | nvo_custom_9 | 161 | output | Return air fan flow rate |
| ANL | 16 | nvo_custom_16 | 105 | output | Room or return air temperature |
| ANL | 17 | nvo_custom_17 | 105 | output | Supply air temperature |
| ANL | 18 | nvo_custom_18 | 105 | output | Fresh air temperature |
| ANL | 19 | nvo_custom_19 | 105 | output | Network water temperature |
| ANL | 25 | nvo_sortie_ana_1 | 9 | output | Coil No.1 capacity |
| ANL | 26 | nvo_sortie_ana_2 | 9 | output | Coil No.2 capacity |
| ANL | 27 | nvo_sortie_ana_3 | 9 | output | Supply air variable drive |
| ANL | 28 | nvo_sortie_ana_4 | 9 | output | Return air variable drive |
| ANL | 37 | nvo_etat_unite | 9 | output | Unit operating state: Value 0 <i>off</i> Value 1 <i>opening of damper</i> Value 2 <i>on</i> Value 3 <i>switched on after a power failure</i> Value 4 <i>standby</i> Value 5 <i>switched off by a fault</i> Value 6 <i>switched off by CMS</i> Value 7 <i>post ventilation</i> |
| ANL | 44 | nvi_T_regul | 105 | input | Comfort regulated temperature setpoint in "Precision" mode (return or ambient) |
| ANL | 44 | nvo_T_regul | 105 | output | <i>Comfort regulated temperature setpoint return in mode "Precision" mode (return or ambient)</i> |
| ANL | 48 | nvi_D_regul | 161 | input | Comfort supply air fan flow rate setpoint |
| ANL | 48 | nvo_D_regul | 161 | output | <i>Comfort supply air fan flow rate setpoint return</i> |
| ANL | 49 | nvi_P_regul | 113 | input | Comfort duct pressure setpoint |
| ANL | 49 | nvo_P_regul | 113 | output | <i>Comfort duct pressure setpoint return</i> |

5.6 KNX

The bus used is a TP1, with a transmission speed of 9600 Bds.
This bus requires a special external power supply (supplied as an option).

5.6.1 Description of KNX communication card



| LED | | Meaning | Cause / solution |
|--------------------|---------------------|--|--|
| Red | Constantly lit | No communication between KNX card and the controller | Check the configuration: - controller address incorrect - transmission speed incorrect - wrong protocol |
| | Flashing | Communication error between KNX card and the controller | The card has been configured with a version or address not recognised by the controller BIOS |
| | Off | Communication with the controller is established | |
| Green | Constantly lit | The button has been pressed to allocate the address, and the board is awaiting the corresponding procedure from ETS | |
| | Rapidly flashing | - the XML file has not been downloaded - a rapid flash indicates receipt of the address after the button has been pressed | Proceed with configuration |
| | Slow flashing | Configuration in progress: the XML file is being downloaded by ETS | |
| Green + Red | Both constantly lit | No power supply on KNX bus | Check: KNX bus power supply, electrical connections and polarity of connections on the connector + and - terminals |

5.6.2 Configuration process

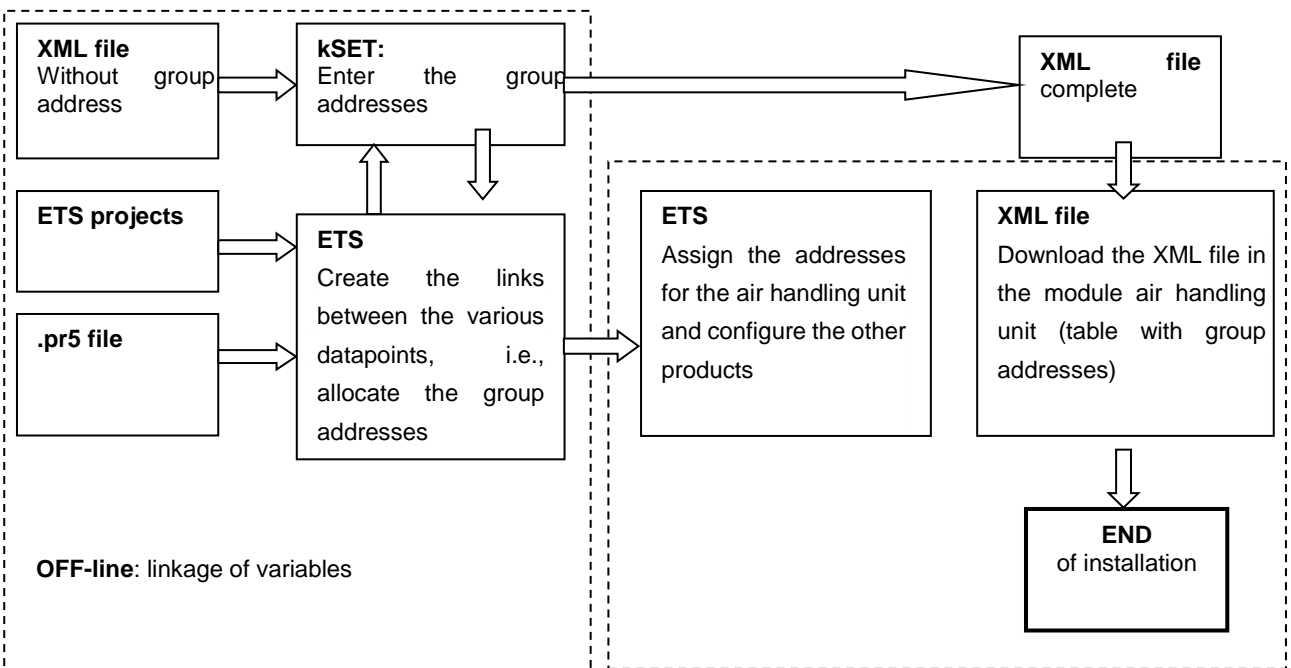
The manufacturer does not provide a system start-up, configuration, parameter setting or KNX network addressing service. The configuration of this type of network requires the creation of an ETS database. This database may only be used and managed by personnel trained in the use of KNX configuration tools and their associated specifications. Refer to the recommendations issued by the KNX association (www.knx.org) for more information on this matter.

To ensure the KNX network is correctly configured, each party must undertake to adhere to the following roles.

| Task | Brand | Integrator | Installer |
|---|-------|------------|-----------|
| Supply of the KNX communication board | x | | |
| Supply of the KSet software, the plug-in and the xml integration file | x | | |
| Installation of units equipped with KNX controller | | | x |
| Creation of the ETS database | | x | |
| Addressing and configuration of the KNX network | | x | |
| Definition of the links between KNX controllers and with the BMS | | x | |
| Definition of BMS setpoints and time schedules | | x | |

Considering the central role of the integrator, it is essential that the latter is included in the project as early as possible so as to be able to anticipate and validate the BMS architectures, integration tools, etc.

The diagram below illustrates the phases of the "configuration process" required for configuring the board correctly:



The first step of the configuration is performed OFFline (i.e. disconnected from the network). It consists of defining, within ETS, the list of products used in the project and of defining the group addresses (i.e. the data which will be exchanged between the KNX controllers).

The special feature of the KNX controller for air handling units is that the allocation of the group addresses is not performed from ETS but from the KSet software.

The creation of air handling controllers in the ETS project requires the use of a plug-in, which also enables the xml file generated with KSet to be imported and uploaded to the air handling unit controller.

KSet software

To allocate the group addresses OFFline, install and open the KSet software. In the File menu, open the xml file provided, which contains the database below.

| Description | Datapoint Name | Datapoint TypeName | Datapoint TypeCode | IN/OUT | Index | TYPE |
|--|------------------------|--------------------|--------------------|--------|-------|------|
| Supply air filter CF1 fouling level | Filtre1 | DPT_Value_Temp | 9.001 | OUT | 1112 | REG |
| Supply air duct pressure | PressionGaine | DPT_Value_Temp | 9.001 | OUT | 1110 | REG |
| Supply air temperature | TemperatureSoufflage | DPT_Value_Temp | 9.001 | OUT | 1100 | REG |
| Return air temperature | TemperatureReprise | DPT_Value_Temp | 9.001 | OUT | 1111 | REG |
| Return air filter CF1 fouling level | Filtre2 | DPT_Value_Temp | 9.001 | OUT | 1113 | REG |
| Fresh air or outdoor temperature | TemperatureNeuf | DPT_Value_Temp | 9.001 | OUT | 1103 | REG |
| Ambient temperature | TemperatureAmbiante | DPT_Value_Temp | 9.001 | OUT | 1102 | REG |
| Supply air fan flow rate | DebitVentilSoufflage | DPT_Value_Temp | 9.001 | OUT | 1108 | REG |
| Return air fan flow rate | DebitVentilReprise | DPT_Value_Temp | 9.001 | OUT | 1109 | REG |
| CO ₂ air quality | QualiteAir | DPT_Value_Temp | 9.001 | OUT | 1116 | REG |
| Network water temperature | TemperatureReseau | DPT_Value_Temp | 9.001 | OUT | 1104 | REG |
| Water coil valve No. 1 | Batterie1 | DPT_Value_Temp | 9.001 | OUT | 1142 | REG |
| Supply air fan control | VitesseVentilSoufflage | DPT_Value_Temp | 9.001 | OUT | 1140 | REG |
| Return air fan control | VitesseVentilReprise | DPT_Value_Temp | 9.001 | OUT | 1141 | REG |
| Water coil valve No. 2 | Batterie2 | DPT_Value_Temp | 9.001 | OUT | 1143 | REG |
| Mixing damper | Melange | DPT_Value_Temp | 9.001 | OUT | 1169 | REG |
| Supply air fan Comfort flow rate control setpoint | WVentSConfort | DPT_Value_Temp | 9.001 | IN | 400 | REG |
| Supply air fan Comfort flow rate control setpoint return | WVentSConfort | DPT_Value_Temp | 9.001 | OUT | 400 | REG |
| Return air fan Comfort flow rate control setpoint | WVentRConfort | DPT_Value_Temp | 9.001 | IN | 401 | REG |
| Return air fan Comfort flow rate control setpoint return | WVentRConfort | DPT_Value_Temp | 9.001 | OUT | 401 | REG |
| Supply air fan Eco flow control setpoint | WVentSEco | DPT_Value_Temp | 9.001 | IN | 402 | REG |
| Supply air fan Eco flow rate control setpoint return | WVentSEco | DPT_Value_Temp | 9.001 | OUT | 402 | REG |
| Return air fan Eco flow control setpoint | WVentREco | DPT_Value_Temp | 9.001 | IN | 403 | REG |
| Return air fan Eco flow rate control setpoint return | WVentREco | DPT_Value_Temp | 9.001 | OUT | 403 | REG |
| Comfort pressure control setpoint for the Supply air duct | WPressionConfort | DPT_Value_Temp | 9.001 | IN | 405 | REG |
| Comfort pressure control setpoint return for the Supply air duct | WPressionConfort | DPT_Value_Temp | 9.001 | OUT | 405 | REG |
| Eco pressure control setpoint for the Supply air duct | WPressionEco | DPT_Value_Temp | 9.001 | IN | 406 | REG |
| Eco pressure control setpoint return for the Supply air duct | WPressionEco | DPT_Value_Temp | 9.001 | OUT | 406 | REG |

EN

| | | | | | | |
|--|------------------------|----------------|-------|-----|-----|-----|
| Control setpoint for the monitored Comfort temperature in "Precision" mode | WTempRegulConfort | DPT_Value_Temp | 9.001 | IN | 410 | REG |
| Control setpoint return for the monitored Comfort temperature in "Precision" mode | WTempRegulConfort | DPT_Value_Temp | 9.001 | OUT | 410 | REG |
| Control setpoint for the monitored Eco temperature in "Precision" mode | WTempRegulEco | DPT_Value_Temp | 9.001 | IN | 411 | REG |
| Control setpoint return for the monitored Eco temperature in "Precision" mode | WTempRegulEco | DPT_Value_Temp | 9.001 | OUT | 411 | REG |
| Upper limit for the calculated Supply air T° setpoint in "Precision" mode | Limite MaxTSouffl | DPT_Value_Temp | 9.001 | IN | 412 | REG |
| Upper limit return for the calculated Supply air T° setpoint in "Precision" mode | Limite MaxTSouffl | DPT_Value_Temp | 9.001 | OUT | 412 | REG |
| Low limit for the calculated Supply air T° setpoint in "Precision" mode | Limite MinTSouffl | DPT_Value_Temp | 9.001 | IN | 413 | REG |
| Low limit return for the calculated Supply air T° setpoint in "Precision" mode | Limite MinTSouffl | DPT_Value_Temp | 9.001 | OUT | 413 | REG |
| CO₂ air quality setpoint | WQualiteAir | DPT_Value_Temp | 9.001 | IN | 417 | REG |
| CO₂ air quality setpoint return | WQualiteAir | DPT_Value_Temp | 9.001 | OUT | 417 | REG |
| Maximum flow rate value of supply air fan for air quality control | WVentSMaxQualite | DPT_Value_Temp | 9.001 | IN | 418 | REG |
| Supply air fan maximum flow rate value return for air quality control | WVentSMaxQualite | DPT_Value_Temp | 9.001 | OUT | 418 | REG |
| Control setpoint for the monitored Comfort Cooling temperature in "Energy optimisation" mode | WTempRegulConfortFroid | DPT_Value_Temp | 9.001 | IN | 422 | REG |
| Control setpoint return for the monitored Comfort Cooling temperature in "Energy optimisation" mode | WTempRegulConfortFroid | DPT_Value_Temp | 9.001 | OUT | 422 | REG |
| Control setpoint for the monitored Eco Cooling temperature in "Energy optimisation" mode | WTempRegulEcoFroid | DPT_Value_Temp | 9.001 | IN | 423 | REG |
| Control setpoint return for the monitored Eco Cooling temperature in "Energy optimisation" mode | WTempRegulEcoFroid | DPT_Value_Temp | 9.001 | OUT | 423 | REG |
| Control setpoint for the monitored Comfort Heating temperature in "Energy optimisation" mode | WTempRegulConfortChaud | DPT_Value_Temp | 9.001 | IN | 424 | REG |

| | | | | | | |
|---|-------------------------|----------------|-------|-----|-----|-----|
| Control setpoint return for the monitored Comfort Heating temperature in "Energy optimisation" mode | WTempRegulConfortChaud | DPT_Value_Temp | 9.001 | OUT | 424 | REG |
| Control setpoint for the monitored Eco Heating temperature in "Energy optimisation" mode | WTempRegulEcoChaud | DPT_Value_Temp | 9.001 | IN | 425 | REG |
| Control setpoint return for the monitored Eco Heating temperature in "Energy optimisation" mode | WTempRegulEcoChaud | DPT_Value_Temp | 9.001 | OUT | 425 | REG |
| Control setpoint for the Comfort Cooling supply air temperature in "Energy optimisation" mode | WTempSoufflConfortFroid | DPT_Value_Temp | 9.001 | IN | 428 | REG |
| Control setpoint return for the Comfort Cooling supply air temperature in "Energy optimisation" mode | WTempSoufflConfortFroid | DPT_Value_Temp | 9.001 | OUT | 428 | REG |
| Control setpoint for the Eco Cooling supply air temperature in "Energy optimisation" mode | WTempSoufflEcoFroid | DPT_Value_Temp | 9.001 | IN | 429 | REG |
| Control setpoint return for the Eco Cooling supply air temperature in "Energy optimisation" mode | WTempSoufflEcoFroid | DPT_Value_Temp | 9.001 | OUT | 429 | REG |
| Control setpoint for the Comfort Heating supply air temperature in "Energy optimisation" mode | WTempSoufflConfortChaud | DPT_Value_Temp | 9.001 | IN | 430 | REG |
| Control setpoint return for the Comfort Heating supply air temperature in "Energy optimisation" mode | WTempSoufflConfortChaud | DPT_Value_Temp | 9.001 | OUT | 430 | REG |
| Control setpoint for the Eco Heating supply air temperature in "Energy optimisation" mode | WTempSoufflEcoChaud | DPT_Value_Temp | 9.001 | IN | 431 | REG |
| Control setpoint return for the Eco Heating supply air temperature in "Energy optimisation" mode | WTempSoufflEcoChaud | DPT_Value_Temp | 9.001 | OUT | 431 | REG |
| Unit reactivation setpoint in "Standby" mode when there is an ambient temperature sensor | WTempHorsGel | DPT_Value_Temp | 9.001 | IN | 436 | REG |
| Unit reactivation setpoint return in "Standby" mode when there is an ambient temperature sensor | WTempHorsGel | DPT_Value_Temp | 9.001 | OUT | 436 | REG |
| Control setpoint in "Night cooling" mode | WTempNocturne | DPT_Value_Temp | 9.001 | IN | 441 | REG |

| | | | | | | |
|---|---------------|--------------------|-------|-----|------|------|
| Control setpoint return in "Night cooling" mode | WTempNocturne | DPT_Value_Temp | 9.001 | OUT | 441 | REG |
| Unit operating state 0 = off 1 = on 2 = on after power failure 3 = standby 4 = off by a fault 5 = off by CMS 6 = post ventilation | EtatUnite | DPT_Value_2_Ucount | 7.001 | OUT | 1280 | REG |
| Alarm 1 value: Bit 0 = Supply air motor alarm Bit 1 = Return air motor alarm Bit 2 = Not used Bit 3 = Supply air filter CF1 dirty alarm Bit 4 = Supply air filter CF1 blocked alarm Bit 5 = Not used Bit 6 = Return air filter CF1 dirty alarm Bit 7 = Return air filter CF1 blocked alarm Bit 8 = Additional filter CF2 dirty alarm Bit 9 = Not used Bit 10 = Not used Bit 11 = Not used Bit 12 = Not used Bit 13 = Fire alarm Bit 14 = Antifreeze protection alarm Bit 15 = Electric heater safety thermostat alarm | Alarme1 | DPT_Value_2_Ucount | 7.001 | OUT | 27 | REG |
| Alarm 2 value: Bit 0 = Low supply air temperature alarm Bit 1 = High supply air temperature alarm Bit 2 = Low ambient or return air temperature alarm Bit 3 = High ambient or return air temperature alarm Bit 4 = Humidifier alarm Bit 5 = Heat recovery unit fouled alarm Bit 6 = pLAN alarm Bit 7 = Timer lithium battery alarm Bit 8 = Duct pressure alarm Bit 9 = Not used Bit 10 = Not used Bit 11 = Not used Bit 12 = Not used | Alarme2 | DPT_Value_2_Ucount | 7.001 | OUT | 28 | REG |
| Heating requirement supplied by unit | Chaud | DPT_Value_2_Ucount | 7.001 | OUT | 1281 | REG |
| Cooling requirement supplied by unit | Froid | DPT_Value_2_Ucount | 7.001 | OUT | 1282 | REG |
| Unit On/Off command via CMS | OnoffGTC | DPT_Switch | 1.001 | IN | 280 | COIL |
| Unit On/Off command return via CMS | OnoffGTC | DPT_Switch | 1.001 | OUT | 280 | COIL |
| Reset of alarms not present command | ResetAlarmes | DPT_Switch | 1.001 | IN | 281 | COIL |

| | | | | | | |
|---|--------------------|------------|-------|-----|------|------|
| Reset of alarms not present command return | ResetAlarmes | DPT_Switch | 1.001 | OUT | 281 | COIL |
| Electric heater load shedding | Delestage | DPT_Switch | 1.001 | IN | 282 | COIL |
| Electric heater load shedding return | Delestage | DPT_Switch | 1.001 | OUT | 282 | COIL |
| Temperature-dependent machine actuation in Eco / Comfort mode | ConfortEcoTemp | DPT_Switch | 1.001 | IN | 283 | COIL |
| Temperature-dependent machine actuation return in Eco / Comfort mode | ConfortEcoTemp | DPT_Switch | 1.001 | OUT | 283 | COIL |
| Flow rate-dependent machine actuation in Eco / Comfort mode | ConfortEcoDebit | DPT_Switch | 1.001 | IN | 284 | COIL |
| Flow rate-dependent machine actuation return in Eco / Comfort mode | ConfortEcoDebit | DPT_Switch | 1.001 | OUT | 284 | COIL |
| Pressure-dependent machine actuation in Eco / Comfort mode | ConfortEcoPression | DPT_Switch | 1.001 | IN | 285 | COIL |
| Pressure-dependent machine actuation return in Eco / Comfort mode | ConfortEcoPression | DPT_Switch | 1.001 | OUT | 285 | COIL |
| "Danger" fault summary | DefautDanger | DPT_Switch | 1.001 | OUT | 1149 | COIL |
| "Maintenance" fault summary | DefautMaintenance | DPT_Switch | 1.001 | OUT | 1150 | COIL |
| Damper control (frost protection or insulation) | Registre | DPT_Switch | 1.001 | OUT | 1155 | COIL |
| Electric heater stage 1 control | BattElec1 | DPT_Switch | 1.001 | OUT | 1156 | COIL |
| Electric heater stage 2 control | BattElec2 | DPT_Switch | 1.001 | OUT | 1157 | COIL |
| DX coil stage control | BattElec3 | DPT_Switch | 1.001 | OUT | 1160 | COIL |

When all the group addresses have been defined, save the xml file (File menu) with another name.

The types of KNX Datapoint available and the respective conversion methods are listed in the table below:

| Type (Name) | Standard ID | Format | KNX range | Range available in the controller |
|---------------------------------------|-------------|------------------|--------------------------|-----------------------------------|
| Boolean (DPT_Switch) | 1.001 | 1 bit | Off / On | Off / On |
| Unsigned 8 bit (DPT_Value_1_Ucount) | 5.010 | Unsigned 8 bits | 0 to 255 | 0 to 255 |
| Signed 8 bit (DPT_Value_1_Count) | 6.010 | Signed 8 bits | -128 to +127 | -128 to +127 |
| Unsigned 16 bits (DPT_Value_2_Ucount) | 7.001 | Unsigned 16 bits | 0 to 65535 | 0 to 32767 |
| Signed 16 bits (DPT_Value_2_Count) | 8.001 | Signed 16 bits | -32768 to +32767 | -32768 to +32767 |
| Floating 16 bits (DPT_Value_Temp) | 9.001 | Floating 16 bits | -671088.64 to +670760.96 | -3276.8 to +3276.7 |

It is important to remember that the same group address cannot be assigned to more than one Datapoint.

The plugin

Declaring the air handling unit controller in the ETS project requires the use of a plug-in:

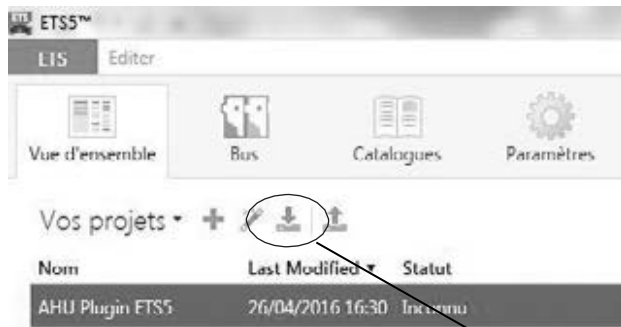
- AHU_plugin_21 for ETS3
- AHU_plugin_30 for ETS4
- AHU_plugin_ETS5 for ETS5

This plugin is used to allocate the individual addresses for the controllers and to download the table created by KSet, which is the XML file.

Installing the plugin with ETS5

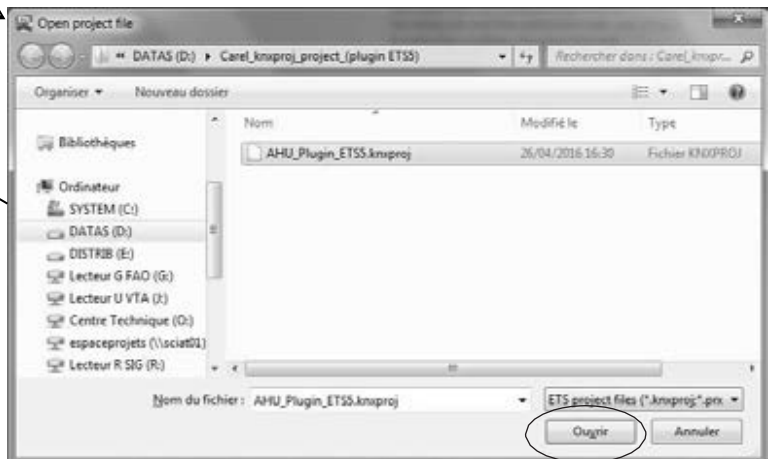
Carry out installation of the plugin AHU_Plugin_ETS5.knxproj provided.

Import "AHU_plugin_ETS5.knxproj" as shown below.



Select the plugin and follow the instructions

Once import is complete, "AHU_plugin_ETS5" should appear in the list of projects

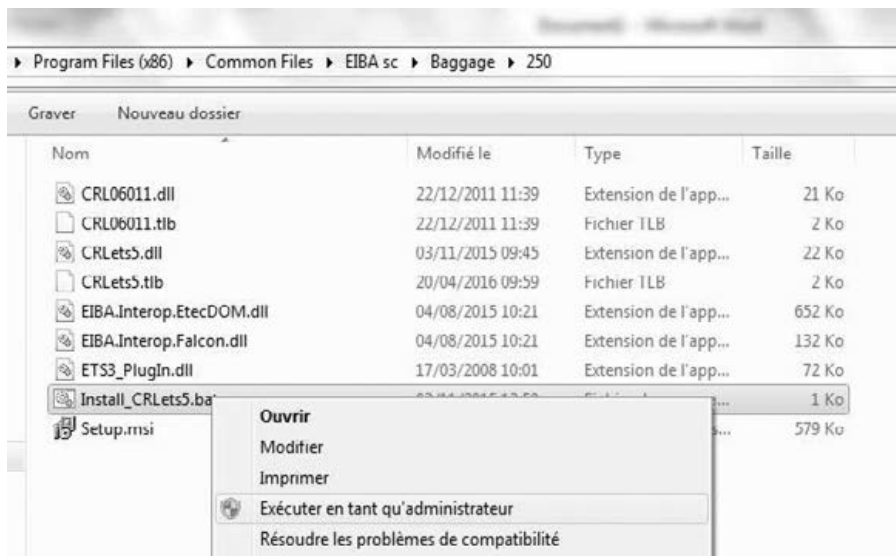


Close ETS.

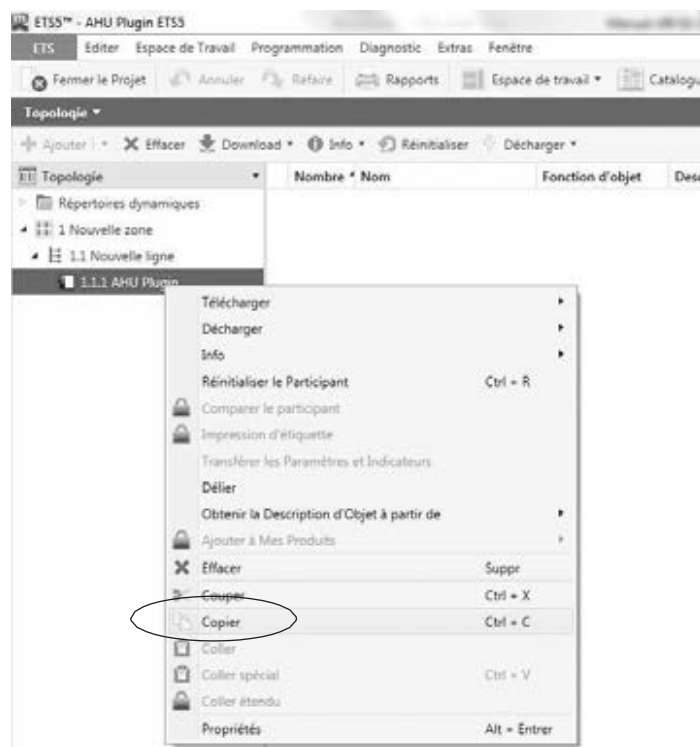
Execute the batch file in the directory below as an administrator:

For 64-bit Windows: C:\Program Files (x86)\Common Files\EIBA sc\Baggage\250\Install_CRLets5.bat

For 32-bit Windows: C:\Program Files\Common Files\EIBA sc\Baggage\250\Install_CRLets5.bat



Reopen ETS5 and open the "AHU_plugin_ETS5" project.



Copy and paste the plugin model for each device to be included in your project. The address of each device is automatically incremented. If necessary, you can manually change the address of a device in Properties.

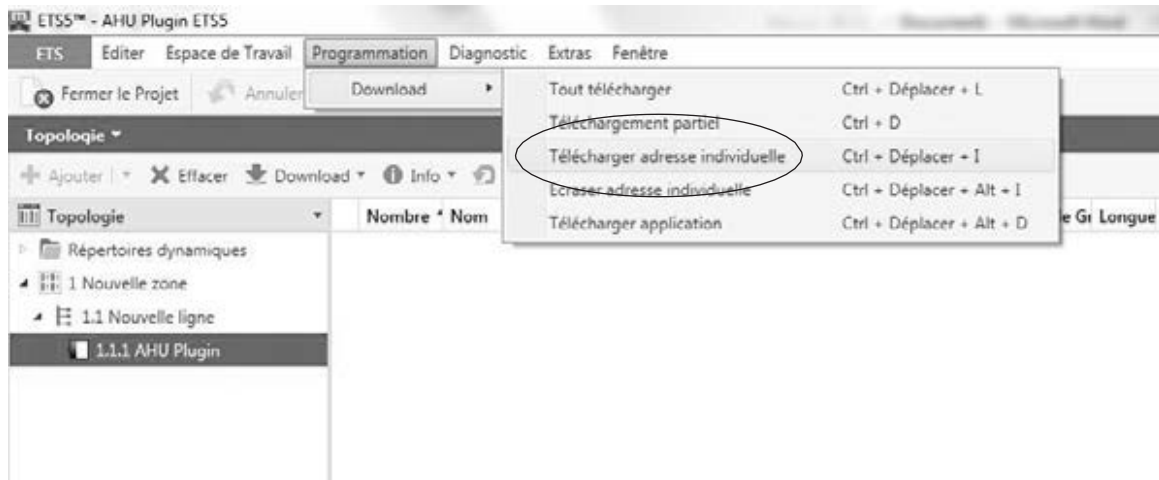
Assigning the physical address

The physical address of the KNX board is assigned using the standard ETS procedure. You must ensure that:

- The Bus wire network is drawn out and connected
- The Bus is powered on
- The optional KNX board is connected to the network
- The controller is powered on

Use the mouse to select the controller which must be configured, and right-click to select "Download" (or in the Programming menu, select "Download").

Select "Download individual address" to activate the configuration procedure and press the button on the board. The green LED on the board goes out to indicate when the operation is complete. If the board address has already been configured, the message "The address is already used by another device" is displayed.



Downloading the XML file

You must ensure that:

- The Bus wire network is drawn out and connected
- The Bus is powered on
- The KNX board is connected to the network
- The controller is powered on

On ETS5, use the mouse to select the controller which needs to be configured, select the "Parameter" tab and click "Open the dialogue box for parameters specific to the product".



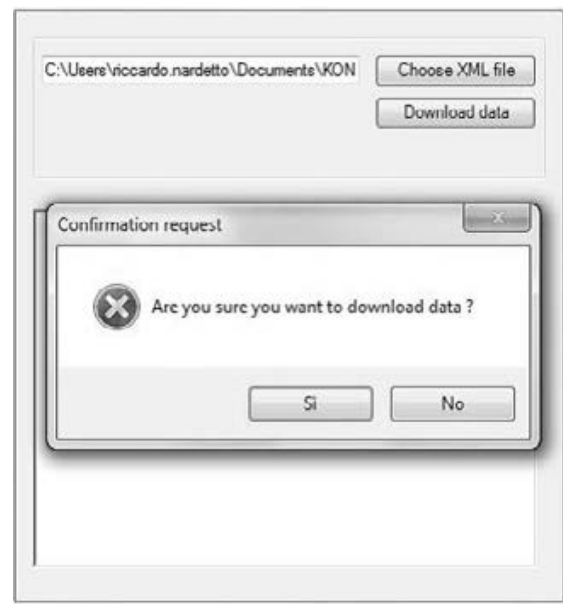
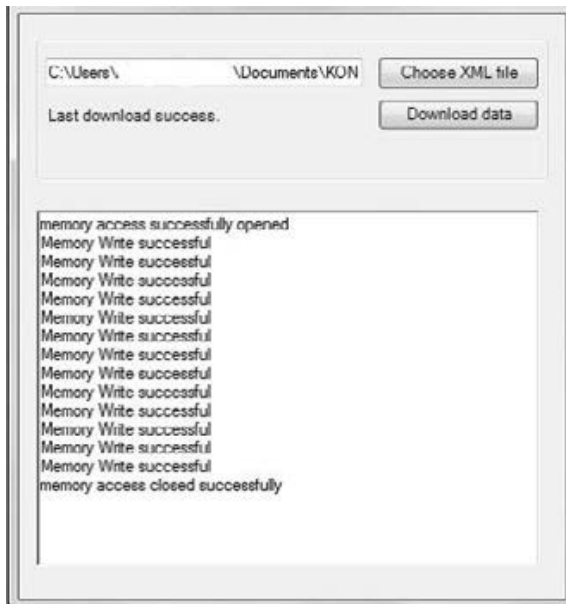
Use "Choose XML file" to open the XML configuration file required.



Click on "Download data" and confirm the confirmation request.

Wait for the message "Memory access closed successfully" to be displayed. During the loading phase indicated by the drop-down control lines under ETS5, and while the green LED on the board is flashing, no other operation can be performed. The download time may vary according to the size of the XML file and the network traffic; for a maximum size file, this time may be 2 minutes.

In extreme cases, i.e. high traffic and large XML files, the bus may be disconnected and ETS5 will signal an error. In this case, simply repeat the download.



NOTE:

This procedure is specific to the KNX board and is the only configuration operation permitted by the ETS5 program, other than allocation of the address.

The KNX datapoints loaded via this plug-in do not appear in the Group Objects tab. To check and/or modify your group addresses, you need to re-open your xml file from KSet and, once the modifications are complete, upload it via the ETS plugin.

Our PLC does not have any configuration parameters accessible within KNX. They can only be accessed from the HMI terminal.

6 - Table of alarms

* All possible options are covered by this table

| Alarm | Sources | Causes | Solutions |
|---|---|--|--|
| Room or return air temperature too high | Return air B1 or ambient air th-Tune temperature sensor | - Malfunction - Sensor disconnected - Room overheated | - Replace sensor - Reconnect sensor - Revise room loads |
| Ambient or return air temperature too low | | - Malfunction - Sensor short-circuit | - Replace sensor - Check sensor |
| Supply air temperature too high | Supply air temperature sensor B2 | - Malfunction - Sensor disconnected | - Replace sensor - Reconnect sensor |
| Supply air temperature too low | | - Malfunction - Sensor short-circuit | - Replace sensor - Check sensor |
| Supply air filter CF1 clogged | Supply air flow rate pressure sensor 0-1000 Pa B5 | - Filter too dirty | - Replace filter |
| Supply air filter CF1 dirty | | - Filter fouled | - Clean or replace filter |
| Return air filter CF1 clogged | Return air flow rate pressure sensor 0-1000 Pa B10 | - Filter too dirty | - Replace filter |
| Return air filter CF1 dirty | | - Filter fouled | - Clean or replace filter |
| Filter 3 dirty | Filter CF2 fouling level pressure switch ID3 | - Filter fouled | - Clean or replace filter |
| Humidifier | Cylinder Water ID9 | - Cylinder dirty - Water insufficiently conductive | - Change cylinder - Add a handful of salt |
| Supply air motor | Supply air fan monitoring ID1 | - Rotor blocked - Phase check - Voltage too low - Thermal protection - Short-circuit | - See causes - Check wiring - Monitor supply voltage - Monitor starting current - See causes |
| Antifreeze protection | Antifreeze thermostat ID4 | - Thermostat faulty | - See causes |
| Electric heater overheat | Electric heater safety thermostat ID6 | - Thermostat faulty | - See causes |
| Return air motor | Return air fan monitoring ID2 | - Rotor blocked - Phase check - Voltage too low - Thermal protection - Short-circuit | - See causes - Check wiring - Monitor supply voltage - Monitor starting current - See causes |
| Heat recovery unit fouled | Heat recovery unit fouling level pressure switch ID10 | - Fouling level greater than the setpoint | - Clean the heat exchanger |

Appendix: Component table – Control code (Main flow)

| | FV | F2V | FCV | F2CV | FEV | FTV | F2EV | F2TV | FCFV | FCMV | FCXV | F2CFV | F2CMV | F2CXV | FEFV | FTFV | FEMV | FTMV | F2EFV | |
|------------|------|------|--------|--------|------|-------|------|-------|--------|--------|--------|--------|--------|--------|--------|--------|-------|-------|-------|--------|
| Filtre CF2 | Sans | Avec | Sans | Avec | Sans | Sans | Avec | Avec | Sans | Sans | Sans | Avec | Avec | Avec | Sans | Sans | Sans | Sans | Sans | Avec |
| Batterie 1 | Sans | Sans | Chaude | Chaude | Elec | Triac | Elec | Triac | Chaude | Chaude | Chaude | Chaude | Chaude | Chaude | Elec | Triac | Elec | Triac | Triac | Elec |
| Batterie 2 | Sans | Sans | Sans | Sans | Sans | Sans | Sans | Sans | Froide | Mixte | DD | Froide | Mixte | DD | Froide | Froide | Mixte | Mixte | Mixte | Froide |

| | F2TFV | F2EMV | F2TMV | FFCV | FMCV | FXCV | F2FCV | F2MVCV | F2XCV | FFEV | FFTV | FMEV | FMTV | FXEV | FXTV | F2FEV | F2FTV | F2MEV | F2MTV | |
|------------|--------|-------|-------|--------|--------|--------|--------|--------|--------|--------|--------|-------|-------|------|-------|--------|--------|-------|-------|-------|
| Filtre CF2 | Avec | Avec | Avec | Sans | Sans | Sans | Avec | Avec | Avec | Sans | Sans | Sans | Sans | Sans | Sans | Avec | Avec | Avec | Avec | Avec |
| Batterie 1 | Triac | Elec | Triac | Froide | Mixte | DD | Froide | Mixte | DD | Froide | Froide | Mixte | Mixte | DD | DD | Froide | Froide | Mixte | Mixte | Mixte |
| Batterie 2 | Froide | Mixte | Mixte | Chaude | Chaude | Chaude | Chaude | Chaude | Chaude | Elec | Triac | Elec | Triac | Elec | Triac | Elec | Triac | Elec | Triac | Triac |

| | F2XEV | F2XTV | FFV | FMV | FXV | F2FV | F2MV | F2XV |
|------------|-------|-------|--------|-------|------|--------|-------|------|
| Filtre CF2 | Avec | Avec | Sans | Sans | Sans | Avec | Avec | Avec |
| Batterie 1 | DD | DD | Froide | Mixte | DD | Froide | Mixte | DD |
| Batterie 2 | Elec | Triac | Sans | Sans | Sans | Sans | Sans | Sans |

* DD -> Détection Directe



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