

CLIMATIC™ 60

User manual



BALTIC
FLEXY
FLATAIR
AIRCOOLAIR
COMPACTAIR



CLIMATIC™ 60

CONTROL MANUAL

Ref : CL60_ROOFTOP-IOM-0213-E

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CLIMATIC 60 CONTROLLER

The new generation of microprocessor based control, CLIMATIC 60 may be fitted to the LENNOX rooftop range. It inherits 20 years of technology and field operating experience from its predecessors the CLIMATIC 1, CLIMATIC 2 and CLIMATIC 50.

LENNOX has found the latest hardware technology available on the market place and developed software specifically designed for rooftop applications, maximising the LENNOX unit's efficiency and performance.

COMPATIBILITY

This documentation is compatible with the following programs:

- BALTIC / FLEXY 2 ranges from software version RT060 STD - Version 2 - Rev 2.0.
- AIRCOOLAIR / FLATAIR / CCOMPACTAIR from software version RT060 STD - Version 2 - Rev 2.0.

WARNING

Any parameter modification should be carried out by trained and licensed competent technician. Before start-up or restart of a unit controlled by the CLIMATIC 60, it is mandatory to check adequacy between CLIMATIC 60 and the unit with its options. In case of wrong parameters, the inputs / outputs connections could be incorrect and may create some operation problems for the units and ultimately breakdowns. LENNOX cannot be held responsible for any claims on the units due to a wrong parameters sequence or a parameters modification carried out by non competent technicians. In this case, the warranty will be legally null and void.

DS60 MENU

Throughout the document, parameters and set points which are explained are identified with their address menu where they will be accessible with the display DS60 (ref § DS60 display).

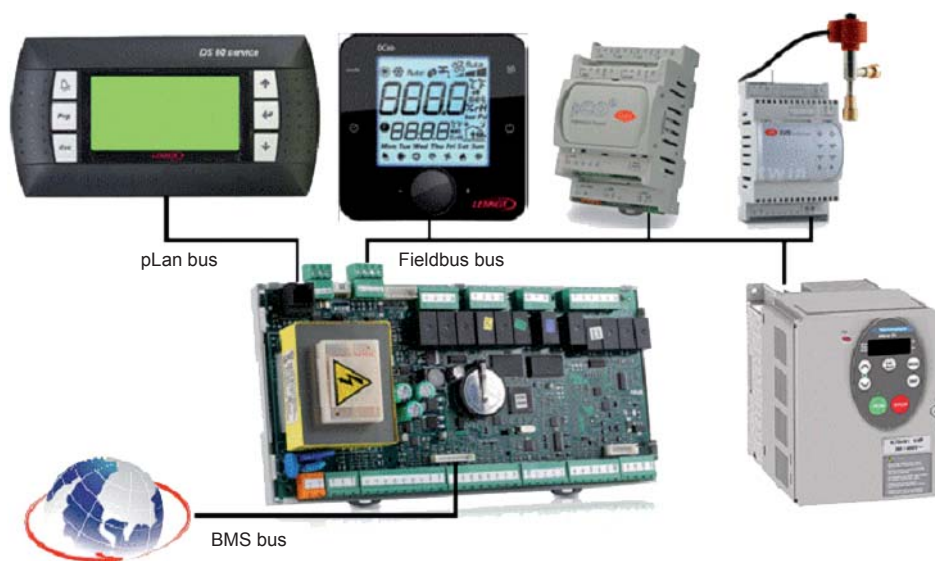
Example, the customer set point explained in the AIR MANAGEMENT § is indicated with the reference (2222), meaning that this set point may be changed at the address (2222) with the display DS60.

Mainly addresses of parameters accessible at the «User» level (2xxx) are identified in the document.

«Expert level» set points (3xxx) accessible with password may be mentioned if they are important for the operation of the unit and not accessible at the «User» level.

The full list of parameters and set point is given at the end of the document.

OVERVIEW



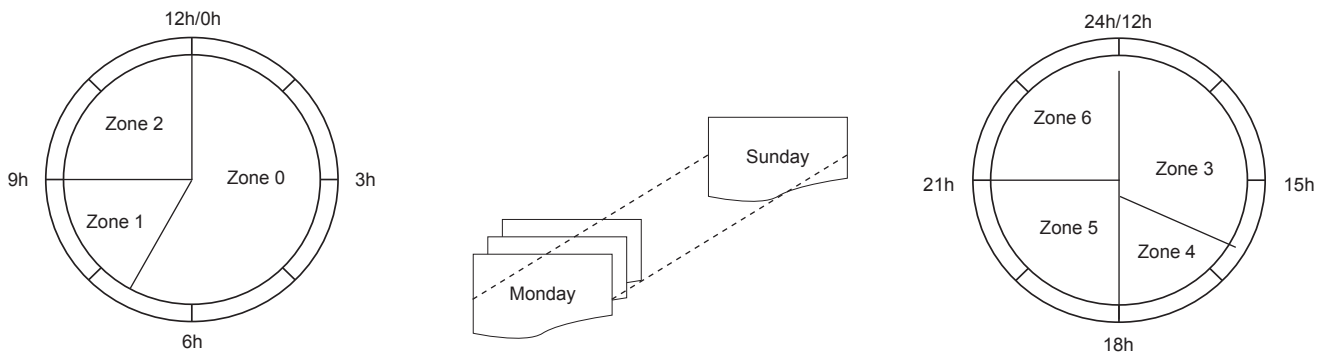
SCHEDULING ZONE

Function

The CLIMATIC 60 is provided by a real time clock which offers solutions to specify a weekly schedule.

Description

The CLIMATIC 60 schedule manages up to 7 different clock zones per day from 00h00 to 24h00 and from Monday to Sunday. The zone can start at different time each day of the week in order to optimise the operating of the unit.



Settings

The different settings to adjust the scheduling zone are available in the menu:

(2134): setting of the number of zone - Changeable only if the Expert mode has been activated

(2141): start time for zone 0, always 00h00 to start each day

(2142): start time of zone 1 adjustable every day from Monday to Sunday

(2143): start time of zone 2 adjustable every day from Monday to Sunday

(2144): start time of zone 3 adjustable every day from Monday to Sunday

(2145): start time of zone 4 adjustable every day from Monday to Sunday

(2145): start time of zone 5 adjustable every day from Monday to Sunday

(2146): start time of zone 6 adjustable every day from Monday to Sunday

Factory settings:

- Number of zone : 3
- Zone 0 00h00 Monday to Sunday
- Zone 1 06h00 Monday to Saturday
- Zone 2 22h00 Monday to Saturday

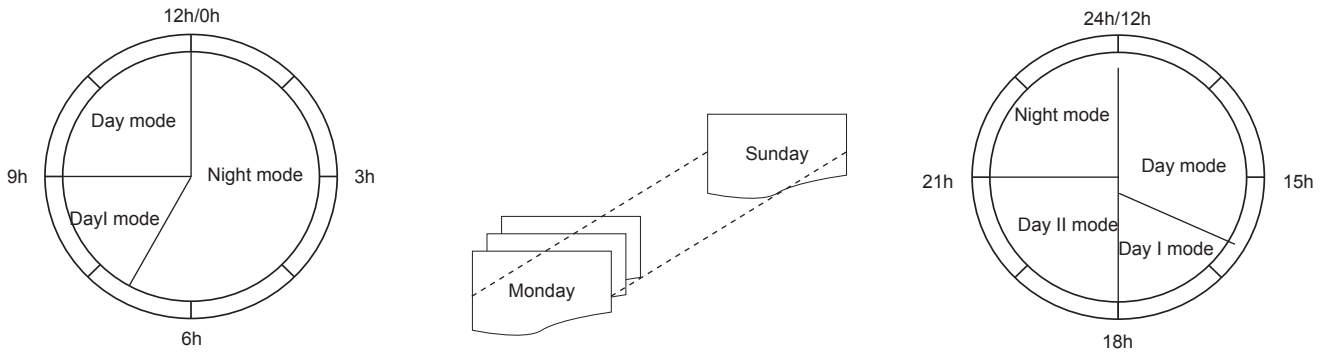
SCHEDULING MODE

Function

The CLIMATIC 60 is able to control different modes for each zone in order to optimise the operating of the unit.

Description

The CLIMATIC 60 can manage up to 4 different modes. - Night / Day / Day I / Day II



Settings

The different settings to adjust the scheduling mode are available in the menus:

(2135): setting of the number of mode - Changeable only if the Expert mode has been activated

(2151): mode used during the period of zone 0 adjustable every day from Monday to Sunday

(2152): mode used during the period of zone 1 adjustable every day from Monday to Sunday

(2153): mode used during the period of zone 2 adjustable every day from Monday to Sunday

(2154): mode used during the period of zone 3 adjustable every day from Monday to Sunday

(2155): mode used during the period of zone 4 adjustable every day from Monday to Sunday

(2156): mode used during the period of zone 5 adjustable every day from Monday to Sunday

(2157): mode used during the period of zone 6 adjustable every day from Monday to Sunday

Factory settings:

- Number of mode : 3
- Night Mode on Zone 0 from Monday to Sunday
- Day Mode on Zone 1 from Monday to Saturday
- Night Mode on Zone 2 from Monday to Saturday

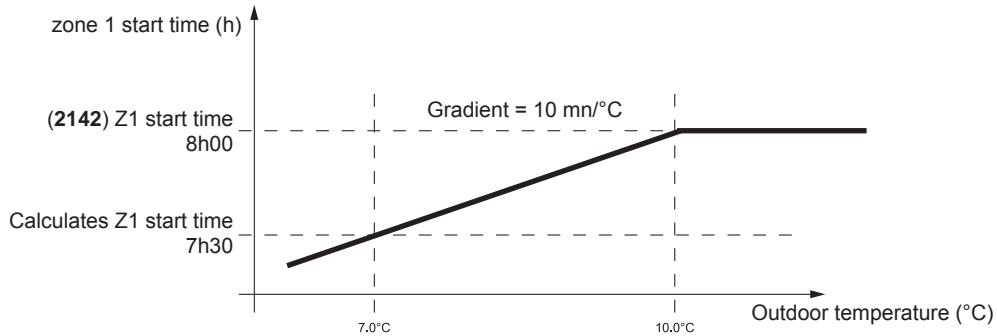
SCHEDULING ZONE ANTICIPATION

Function

The CLIMATIC 60 allows the start up of the unit before the pre-specified hour of the first zone (zone 1) of the day.

Description

This function is able to start the unit in zone 1 earlier if the outdoor temperature is under a specify threshold. The typical application is to start the unit in heating mode if the weather is too cold compare to the actual season.



Example:

(2142): zone 1 start time: 8h00,

(2161): outside air temperature threshold to activate function: 10.0°C,

(2162): gradient (slope): 10 mn/°C.

In this example the foot is set to the value 10.0°C, which means zone 1 will always start at 8h00 if the outside air temperature is higher than 10.0°C. If the outside air temperature is less than 10.0°C zone 1 will start according to the selected gradient and the difference between the foot value and the actual outside air temperature ($10.0 - 7.0 = 3.0 \times 10 = 30$ min). Then, the new start time for zone 1 is 7h30.

Settings

The different settings to adjust the anticipation are available in the menu:

(2161): outside air temperature threshold to activate function

(2162): gradient (slope)

ROOM TEMPERATURE

Function

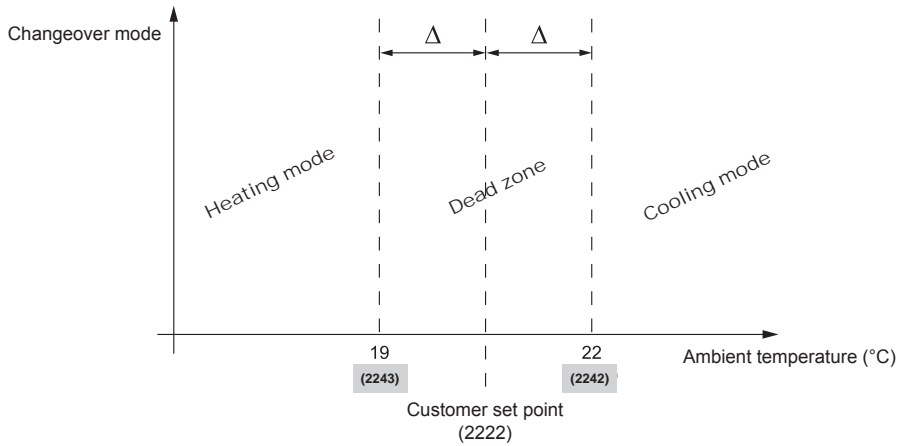
The CLIMATIC 60 controls the fresh or heat temperature according to the specified set point. The controller is programmed to maintain a temperature as comfortable as possible with the most economic usage of the unit.

Description

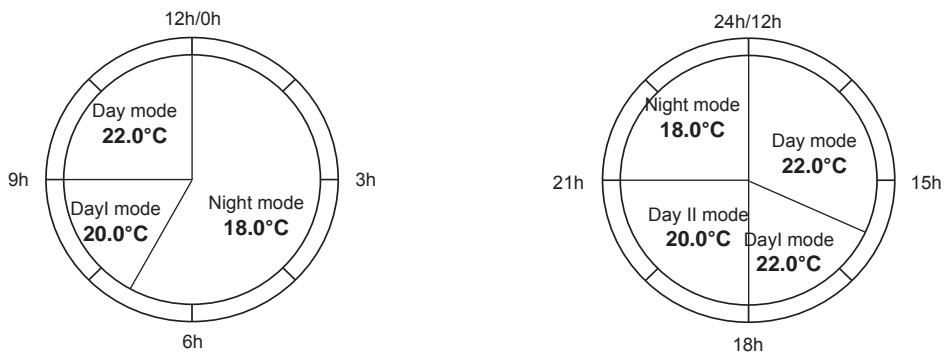
The room temperature is maintained between a minimum threshold (the heating set point) and a maximum threshold (the cooling set point). The dead zone is defined between these 2 thresholds.

1. Fix value

For a friendly use, a single room temperature set point is used. This setting is set in the middle of the dead zone. If the thresholds (2243) or (2242) are modified, the set point (2222) is automatically calculated to the average value.

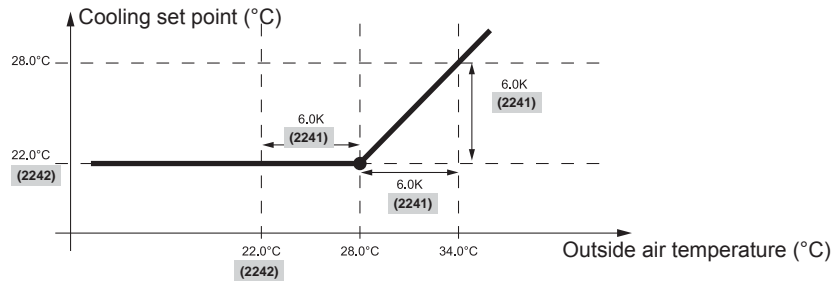


The cooling and heating thresholds can be specified according to the scheduling and can take different mode for each schedule mode (Night, Day, Day I, Day II and BMS).



2. Dynamic cooling set point

The CLIMATIC 60 determines the appropriate air set point according to the outside temperature in order to optimise the energy consumption. This function acts as a proportional shift of the cooling set point.



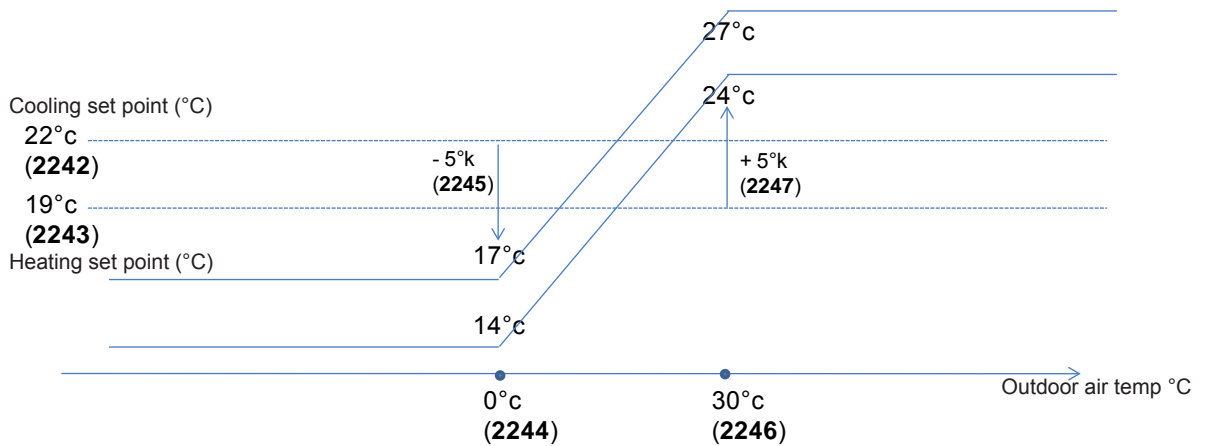
The dynamic set point starts to increase the cooling threshold when the outside temperature is over the cooling set point plus the dynamic set point.

Example:

The cooling threshold has been set to 22.0°C and the dynamic set point has been set to 6K. The cooling threshold will start to drift when the outside air temperature will be $\geq 28.0^\circ\text{C}$ ($22.0 + 6.0$) and the new threshold will follow the outside temperature evolution keeping a 6.0K difference. So when the outside air temperature will reach 34.0°C, the new threshold will be 28.0°C.

3. Set point offset according to outside temperature

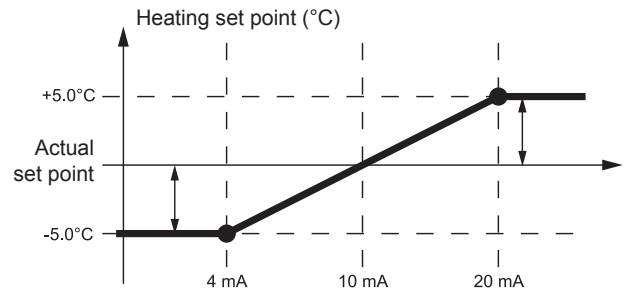
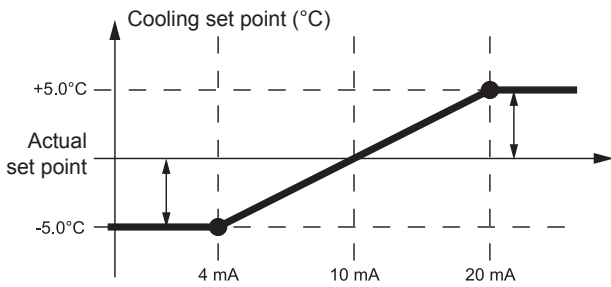
CLIMATIC 60 may offset the cooling and heating set points and so the dead zone according to the outside air temperature.



In the example above, setpoints (2245) and (2247) are set to -5k and +5k, from factory setting the are at 0k.

4. External current 4/20mA offset

In this case, the set point is set by one of the previous solution and can be adjust with an offset of +/- 5.0°C.



5. DC60 value

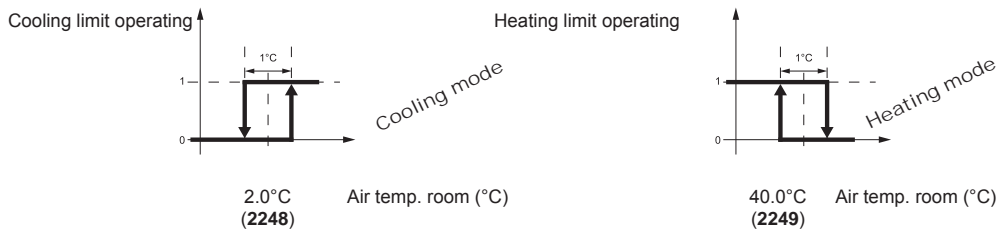
The CLIMATIC 60 receives the room set point from the DC60. If the read set point is different from the one calculated by the CLIMATIC 60, the new set point is set by the DC60 during the actual zone. Each time the zone is changing, the DC60 set point is overwritten by the CLIMATIC 60 set point.

6. BMS value

The CLIMATIC 60 receives the room set point from the BMS. Refers to the “BMS” paragraph for more details.

The control algorithm is protected by two safety limits.

- If the room temperature reaches the low limit in cooling mode, the compressor(s) are automatically stopped,
- If the room temperature reaches the high limit in heating mode, the compressor(s) or heaters are automatically stopped.



Settings

The different settings to adjust the ambient air temperature are available in the menus:

| | |
|---------|---|
| (2222): | customer (DC/DM) set point |
| (2241): | Dynamic set point (cooling setpoint offset according to outside temperature) |
| (2242): | set point of cooling mode |
| (2243): | set point of heating mode |
| (2244) | outdoor temperature low threshold for room temperature setpoint slope |
| (2245) | room temp setpoint offset according to low outdoor air temp |
| (2246) | outdoor temperature high threshold for slope on the room temperature setpoint |
| (2247) | room temp setpoint offset according to high outdoor air temp |
| (2248): | room temperature threshold for unloading cooling mode |
| (2249): | room temperature threshold for unloading heating mode |
| (3221) | offset for room temperature value |

THERMOSTAT / HYGROSTAT CONTROL

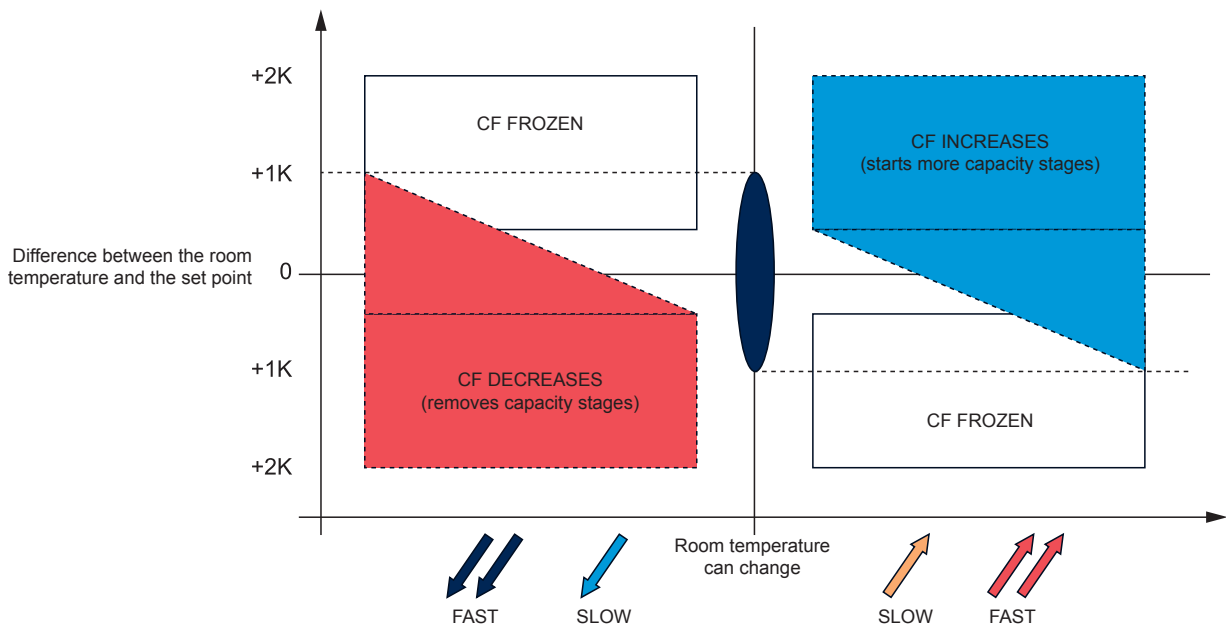
Function

The CLIMATIC 60 is controlling the heating and cooling staging according to the gap between measured temperature(s) and set point(s) and depending of the settings of the controller.

Control of the the room temperature

Description

The CLIMATIC 60 adjusts and holds the room air temperature as close as possible to the set point, by controlling the number of compressor stages, depending on the thermal load of the system. The controller constantly calculates the required capacity to reach the temperature set point. This variable is called "CAPACITY FACTOR" (CF) and its value can vary from 0 to 100%.



In order to anticipate, the reference point is recalculated each time the difference between air temperature and set point reaches a minimum or a maximum.

CLIMATIC 60 is calculating two Capacity Factor, for the room temperature one for heating mode and another one for cooling mode. It is possible to act on the system reaction speed by modifying Integral time set points in (3228) for cooling mode and (3229) in heating mode. Increasing the integral time value will increase the time to react (slow-down).

In order to improve the management of staging, those room temperature capacity factors will determine the blowing air temperature setting point following the rules hereunder:

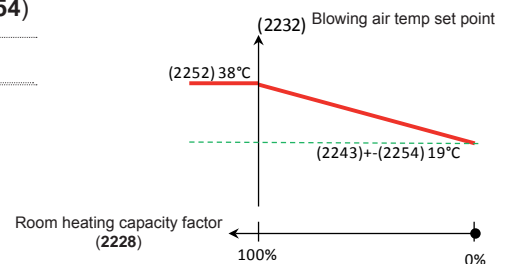
In heating mode

Proportional rule between

| | |
|-----------|---|
| (CF) Heat | Blowing air temperature set point visible in menu (2232) |
| 0% | Threshold : room temperature Heating set point (2243) + offset (2254) |
| 100% | (2252) |

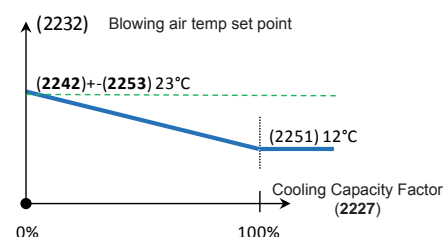
Example

- If the Heating Capacity Factor (2228) is reaching 0% according to room temperature heating set point (2243), measured room temperature and integral time (3229),
 - then the calculated blowing air temperature set point (2232), will be equal to the room temperature heating set point (2243) + offset for low limit threshold in heating mode (2254).



In cooling mode
Proportional rule between

| | |
|---------|--|
| CF Cool | Blowing air temperature set point visible in menu (2232) |
| 0% | Threshold : room temperature Cooling set point (2242) + (2253) |
| 100% | (2251) |



Example

- If the Cooling Capacity Factor **(2227)** is reaching 100% according to room temperature cooling set point **(2242)**, measured room temperature and integral time **(3228)**,
- then the calculated blowing air temperature set point **(2232)**, will be equal to the low limit threshold in cooling mode **(2251)**.

In dead zone

| | | |
|---------|---------|--|
| CF Heat | CF Cool | Blowing air temperature set point visible in menu (2232) |
| 0% | 0% | Outside air temperature, limited by Threshold of room temperature Heating set point and Threshold of room temperature Cooling set point. |

The various components of the roof top are then staging according to a priority level and with a capacity factor calculated from the measured blowing air temperature and the blowing air temperature set point calculated as above.

In the CLIMATIC 60 there are 7 capacity factors calculated for the blowing air :

1. Damper for Free-Heating
2. Compressors in heating mode (Heat pump)
3. 1st Additional heaters (Gas, Elec. or Water)
4. 2nd Additional heaters (Elec. or Water)
5. Damper for Free-Cooling
6. Compressors in cooling mode
7. Chilled water

The controller is calculating for the seven components the necessary capacity to reach the temperature set point. It is directly linked to the number of control stages of the unit. Thus for a unit with 4 stages of regulation, the CF will start and stop a stage with the following values: ~0-25-50-75-100%

Each capacity factor is linked to an integral time allowing to act on the reaction speed.

Nota - In Dead zone, the control may follow different rules. Smooth function **(2233)**

- Smooth = No - If 'No' is selected, when the room temperature is in dead zone, after ten minutes all power factors of supply control are forced to zero. So no compressors or heaters will be switched on. This choice is the one from factory setting.
- Smooth = Dead Z. If 'Dead Z.' is selected, when the room temperature is in dead zone, the supply air temperature is maintained with the compressors or heaters.
- Smooth = Comfort. If 'Comfort' is selected, the supply temperature is fully controlled using all possibilities with the unit.

WARNING In this mode the supply temperature will be fully controlled in all modes. This mode is best for comfort but not for Energy Savings. Use this mode only when necessary

Settings

The different settings to adjust the air room temperature control are available in the menus:

| | |
|----------------|---|
| (2233): | Smooth mode activation |
| (2251): | low limit threshold in cooling mode |
| (2252): | high limit threshold in heating mode |
| (2253): | offset for high limit threshold in cooling mode |
| (2254): | offset for low limit threshold in heating mode |
| (3228) | integral time control for cooling mode |
| (3229) | integral time control for heating mode |
| (3435) | integral time control, compressor in cooling mode |
| (3445) | integral time control, compressor in heating mode |
| (3735) | 1st heaters, integral time control |
| (3738) | 2nd heaters, integral time control |
| (3823) | integral time control fresh air damper |
| (3913) | integral time control, chilled water |

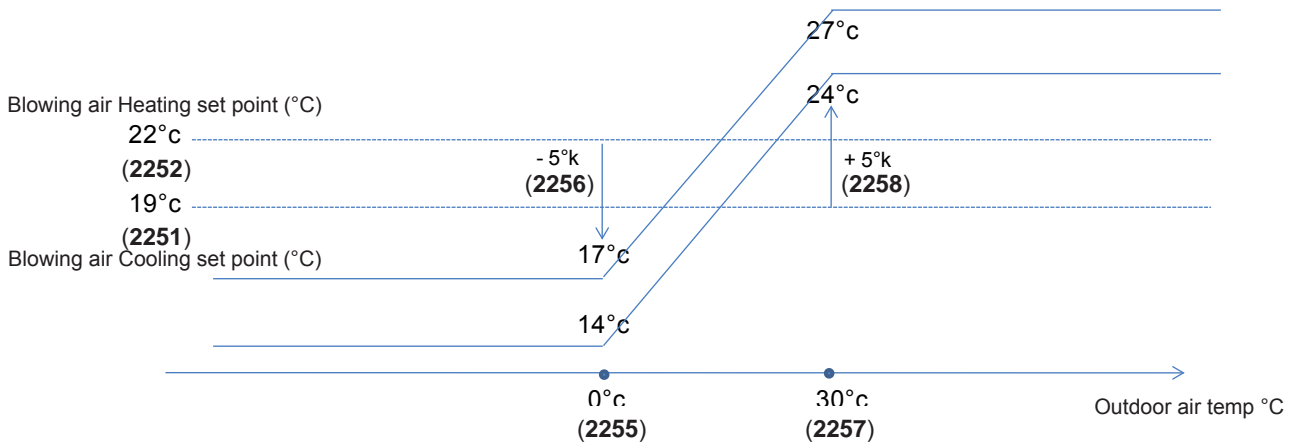
Control of the the Blowing air temperature

Description

In some application it may be interesting to control only the blowing air temperature, without controlling the room air temperature.

This function may be activated using menu (3211) and in this case, the various components of the roof topp are then staggung according to a priority level and with a capacity factor calculated from the measured blowing air temperature and the blowing air temperature set point which is then set by the users in menus (2251) et (2252).

additionnaly, as in the set point offset according to outside temperature, the CLIMATIC 60 may offset the cooling and heating set points and so the dead zone according to the outside air temperature.



In the example above, setpoints (2256) and (2258) are set to -5k and +5k, from factory setting the are at 0k.

Settings

The different settings to adjust the blowing air temperature control are available in the menus:

| | |
|---------|--|
| (2251): | low limit threshold in cooling mode |
| (2252): | high limit threshold in heating mode |
| (2255): | outdoor temperature low threshold for slope on the supply temperature setpoint |
| (2256): | coefficient of the low outside temperature for the slope of the supply temperature setpoint |
| (2257): | outdoor temperature high threshold for slope on the supply temperature setpoint |
| (2258): | coefficient of the high outside temperature for the slope of the supply temperature setpoint |
| (3211) | choice of the control (room temperature or supply) |

HUMIDITY SET POINT (OPTION)

Function

The CLIMATIC 60 offers in option, the possibility to manage the relative humidity. The controller is programmed to maintain an humidity as comfortable as possible with the most economic usage of the unit.

Description

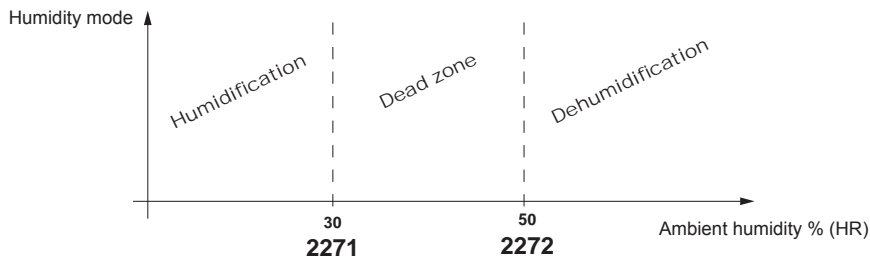
The relative humidity is maintained between 2 thresholds (a minimum threshold corresponding to the point of humidification and a maximum threshold corresponding to the point of dehumidification).

During dehumidifying mode:

- The fan speed is forced on low speed threshold (2329).
- If the Outside humidity is high (> dehumidifying setpoint (2271) - 10.0%hr) then Free-Cooling or Free-Heating is disabled and the fresh air damper is closed.

During Humidification mode:

- If the outside humidity is low (<humidifying setpoint (2272) + 10.0%hr) then Free-Cooling or FreeHeating is Disabled and the damper is closed.

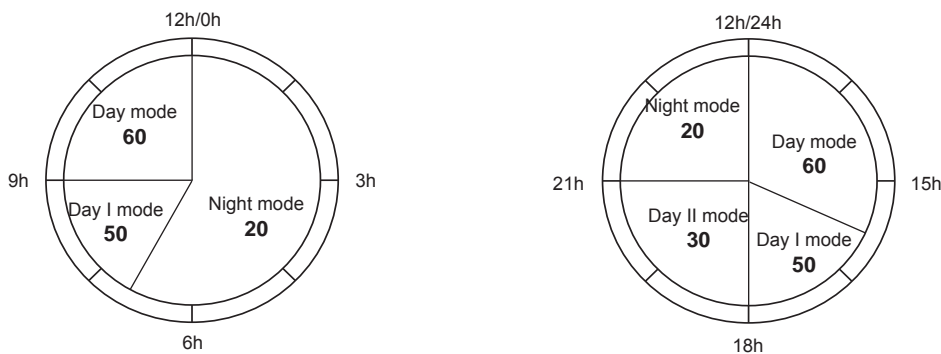


The dehumidification is ensured by the compressors in cooling mode or during the dead zone.

Note that if this function is activated, priority is given to the room humidity control instead of the room temperature control.

The humidification is ensured by a 0/10V signal controlled by a PI algorithm.

The humidification and dehumidification thresholds can be specified according to the scheduling and can take different mode for each schedule mode (Night, Day, Day I, Day II and BMS).



Settings

The different settings to adjust the flow control are available in the menu:

| | |
|---------|--|
| (3241): | Setpoint to activate function |
| (2271): | set point of dehumidification |
| (2272): | set point of humidification |
| (3244): | integral time control for dehumidification |
| (3245): | integral time control for humidification |

BLOWER

Function

The CLIMATIC 60 manages the main supply fan with a variable speed transmission.

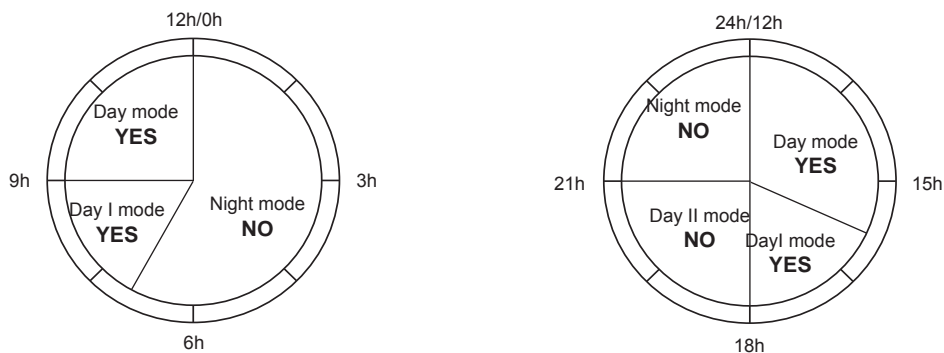
Description

The supply blower is controlled by a variable speed inverter which offers various advantages:

- Soft start and stop of the blower,
- Speed reduction during the dead zone to optimise the energy consumption,
- Automatic speed control according to the desired airflow.

The supply blower activation can be specified according to the scheduling and can take different mode for each schedule mode (Night, Day, Day I, Day II and BMS)

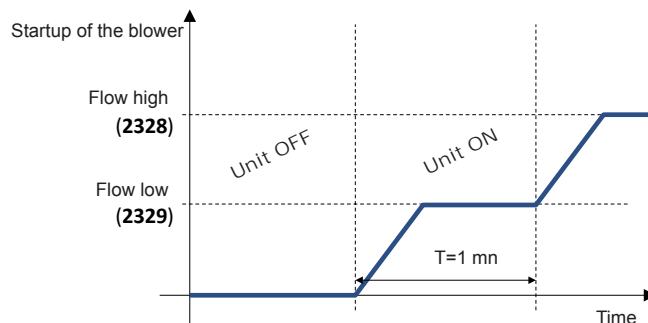
- menu (2316) define the start / stop status of the fan.
- menu (2317) define the start / stop status of the fan in dead zone (cooling / heating mode) following 3 settings:
 - 'Off' = The fan is stopped after 2 mn
 - 'On' = The fan keeps running
 - 'Cyclic' = The fan is ON for (3324) seconds and stops for (3325) seconds - minimum 120s.



The control of the blower is configurable according to three modes with the setting (2327):

- "Standard": The fan is progressively set to the nominal air flow desired when the unit is switch ON.

When the unit is starting, the fan speed is increased progressively to reach the low speed set point value (2329). 1 mn later the fan speed is again increased progressively to reach the nominal set point value (2328).



- "Dead zone": if the unit is in dead zone, the fan speed is set to the low speed set point value (2329). Acceleration and deceleration are done progressively.
- "Part load": the fan is controlled according to the cooling / heating capacity. if the unit is in dead zone, the fan speed is set to the low speed set point value (2329). If the control is asking for heating or cooling, the fan speed is proportionally set to the nominal speed (2328).
This mode is available only in room temperature control mode. In case of blowing air temperature control, this mode cannot be activated.

In addition, in the 3 speed control mode above, the air flow control can be done in 2 different way according to the setting of the menu **(3332)**.

- “Manual”: The airflows are expressed as a percentage of the maximum speed. No variation are applied the speeds stay where they have been set.
- “Auto”: The airflows are expressed in m³/h. the fan speed is controlled to have its value **(2326)** reaching the required set point. With this mode it is possible to get a constant air flow whatever happen to the duct pressure losses or the filter ...

For the units with economizer, the set point **(3335)** allow to compensate the air flow (speed) according to the opening of the fresh air damper (to take into account the pressure losses of the return air ducting network)

- At 100% fresh air, the speed is according to nominal threshold **(2328)** or low speed threshold **(2329)**
- At 0% fresh air, the speed is taking in account the compensation **(3335)**.

The fan speed is limited according to the kit (motor + fan) defined in set points **(3336)** et **(3337)**.

- “Minimum”: minimum fan speed,
- “Maximum”: maximum fan speed

Settings

The different settings to adjust the blower set points are available in the menu:

| | |
|----------------|---|
| (2316): | setpoint for activation operation of component |
| (2317): | setpoint for activation operation in room control dead zone |
| (2318): | temperature threshold for activation night refreshment function |
| (2327): | choice of speed function |
| (2328): | nominal threshold for air flow control |
| (3334): | low threshold for air flow control |
| (3331): | choice of functionality |
| (3335): | coefficient for compensation of losses of the air damper |
| (3336): | minimum threshold for air flow control |
| (3337): | maximum threshold for air flow control |

COMPRESSOR

Function

The CLIMATIC 60 manages the compressor(s) according to the room air temperature demand and engages the number of compressor calculated to reach the ambient set point.

Description

The CLIMATIC 60 offers possibilities to disable all compressors of the unit in the menu (2471). This setting disables definitely all compressors in the select mode (Night, Day, Day I, Day II and BMS).

| Setting (2471) | Compressor authorization (2 circuits with 2 compressors) |
|----------------|--|
| NO | |
| YES | |

The same strategy can be applied according to the changeover mode in the menu (2481) (cooling) and (2491) (heating).

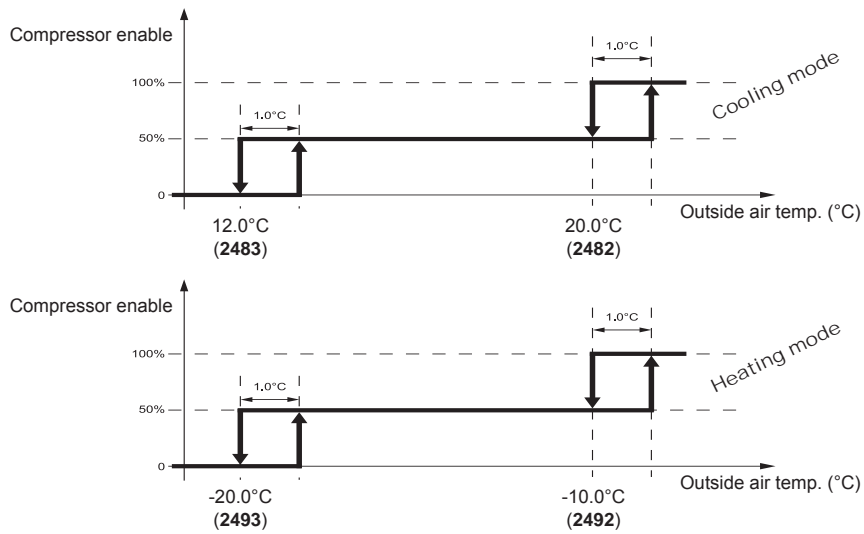
| Setting (2481) | Compressor authorization (2 circuits with 2 compressors) |
|----------------|--|
| NO | |
| YES | |

| Setting (2491) | Compressor authorization (2 circuits with 2 compressors) |
|----------------|--|
| NO | |
| YES | |

Moreover the compressor(s) can also be disabling separately on the circuit - circuit 1 (2472) circuit 2 (2473) - Note this opportunity can also be done by dry contact (refer to the “free input/output” paragraph).

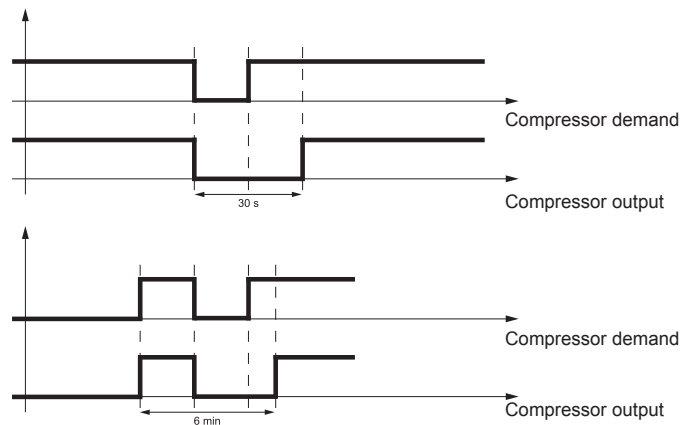
| Setting (2472) - (2473) | Compressor authorization (Circuit with 2 compressors) |
|-------------------------|---|
| 0 | |
| 1 | |
| 2 | |
| 3 | |

The outside air temperature can also be used to disable automatically the compressor. There are up to 2 thresholds to unload 50% or 100% of compressors on the unit.



The compressor is subject to various operating time in order to prevent from damage operating.

- The minimum OFF time of the compressor is fixed to 30 s,
- The minimum between 2 starts of the same compressor is fixed to 6 minutes.



Settings

The different settings to configure the compressors are available in the menu:

(2471): setpoint for activation operation of all compressor, cooling/heating mode

(2472): enable circuit 1, separate comp.1 or/and comp.2

(2473): enable circuit 2, separate comp.1 or/and comp.2

(2481): setpoint for activation operation in cooling mode

(2591): setpoint for activation operation in heating mode

(2482): outside temperature threshold, unload 50% of compressors

(2483): outside temperature threshold, unload 100% of compressors

(2492): outside temperature threshold, unload 50% of compressors

(2493): outside temperature threshold, unload 100% of compressors

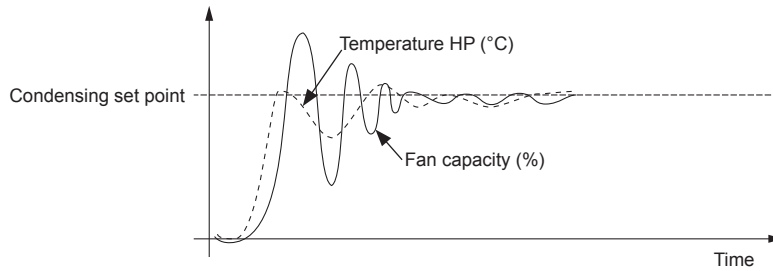
CONDENSER FAN

Function

The CLIMATIC 60 is used to maintain the high pressure as stable as possible in order to increase the performance of the unit.

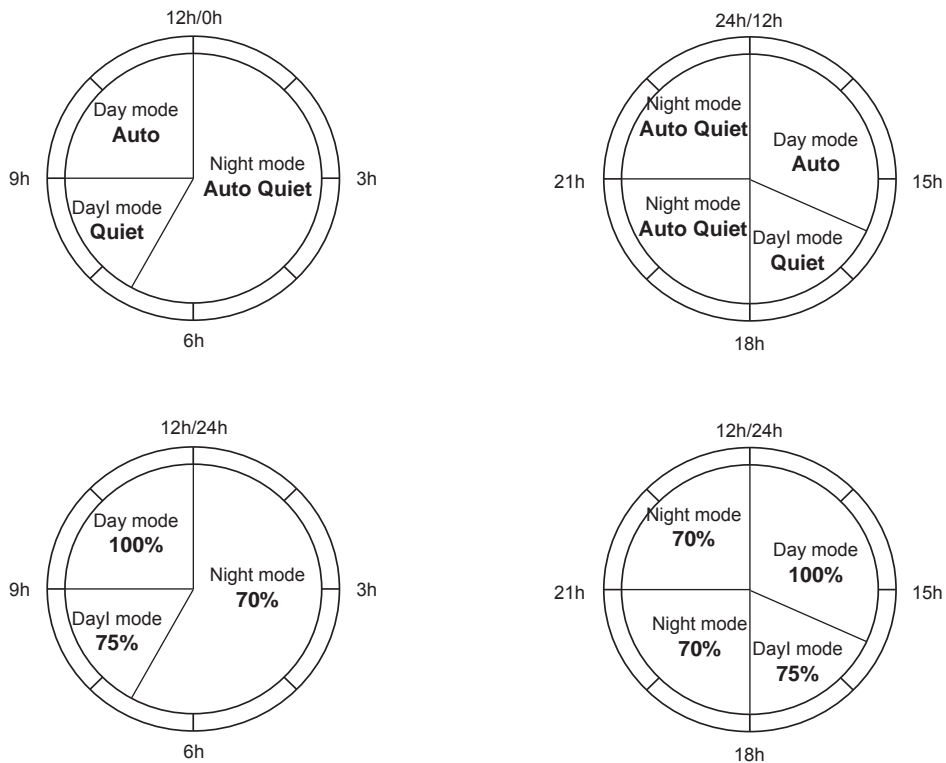
Description

The CLIMATIC 60 uses a PI algorithm to command fan stages or a speed inverter, depending on the unit type.



Moreover, for units with variable speed fans (option), the CLIMATIC 60 controls the fan speed limit which allows progressive adaptation of the unit to the building load and reduces the noise level - See hereunder operation of «Quiet» and «Auto Quiet»
It also exists a "Fixed" mode where the fan speed is adjusted to the set point (3523) .

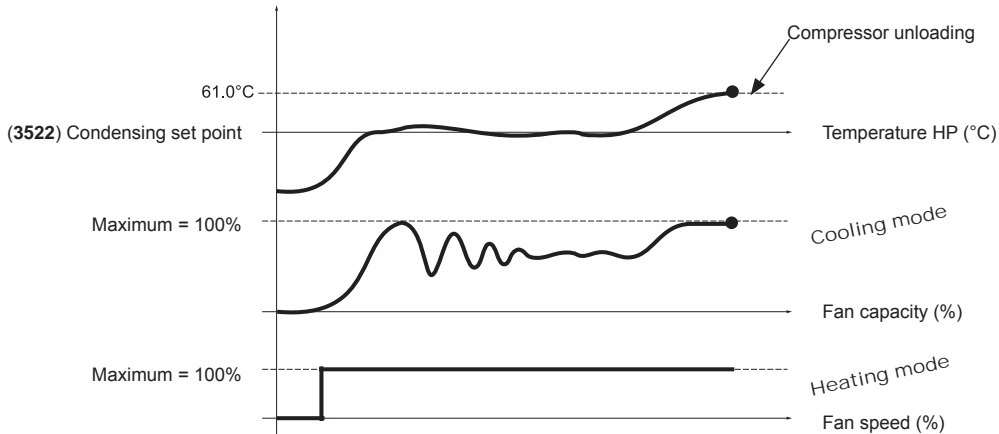
The maximum speed and the fan management can be adjusted according to the schedule mode in order to benefit from the different fan control types in heating or cooling.



The acoustic mode offers 4 possibilities to manage the condenser fan in the menu (3521):

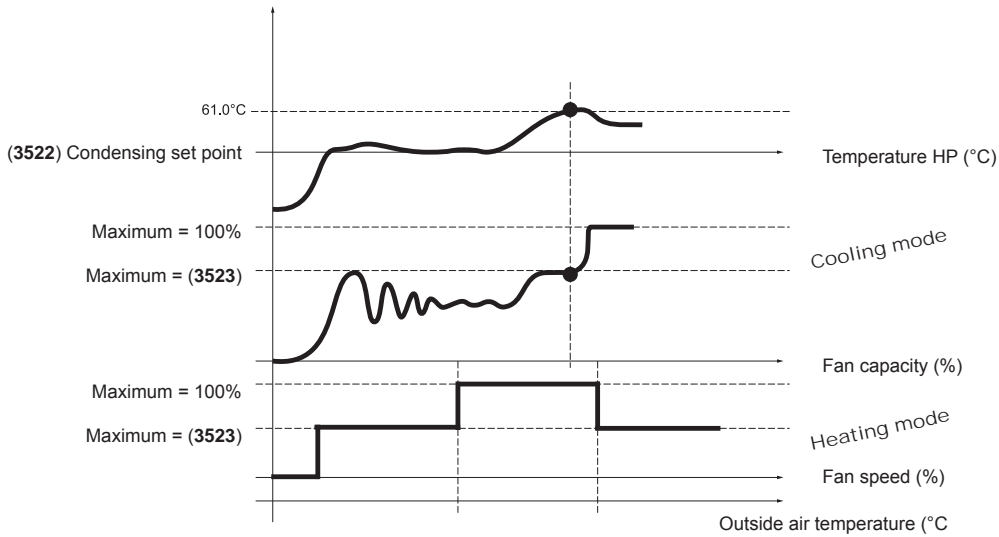
1. "Auto":

In this mode, the fan capacity is not limited and can go up to the maximal speed.



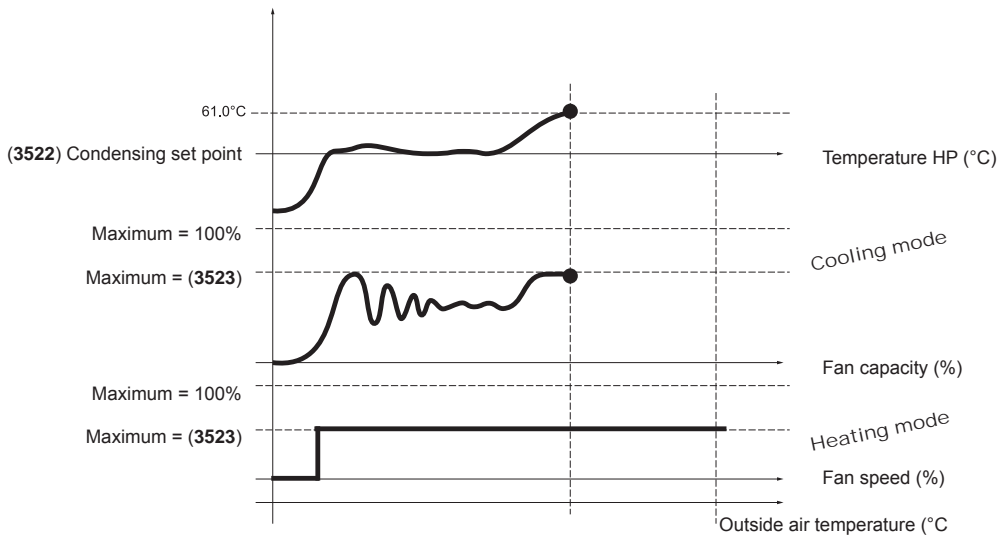
2. "Quiet":

In this mode, the fan speed is limited according to the maximum set in the menu (3523). In case of too high condensing temperature, the CLIMATIC 60 unlocks this limit to prevent from unloading compressor.



3. "Auto Quiet":

This mode is similar to the "Quiet" mode except that the fan speed limit is never unlocked. In case of high condensing temperature the CLIMATIC 60 will unload a compressor to prevent from HP cut.



3. "Auto Quiet":

In this mode, the fan speed is adjusted to the set point value (3523).

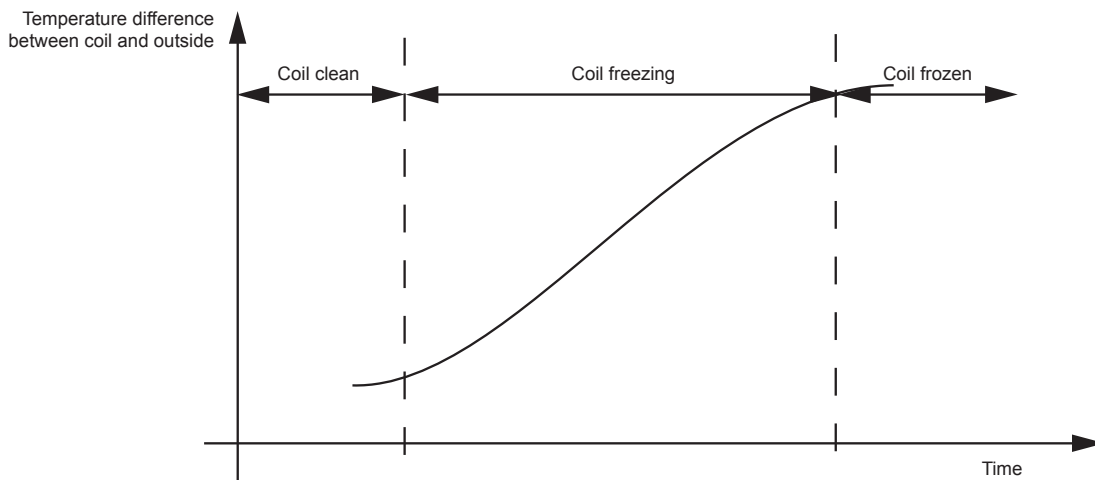
COIL DEFROST

Function

The CLIMATIC 60 manages defrost procedure to avoid ice on the evaporator coil in heating mode (winter season).

Description

To avoid icing of the external air exchanger during winter operating, it's necessary to reverse the refrigerant cycle. The dynamic defrost allows the unit to start the defrost procedure only when the coil is frozen. This achieves through the measurement of the temperature between the coil and the outside air.



The defrost procedure is activated if the following conditions are met during 1 minute:

- the outside air temperature is \leq (3541),
- one of the compressor(s) on the circuit has been running for a time \geq (3543) since the last defrost,
- the saturated temperature ratio is \leq (3542).

The defrost procedure is characterized by the following steps:

1. start electrical heater during 2 min (rooftop with electrical heater only),
2. stop the compressors on the concerned circuit,
3. wait for 5 s
4. reverse the 4WV
5. start all compressors on the circuit (if the blowing T° is not too low),
6. start all condenser fans when the HP $\geq 50.0^\circ\text{C}$,
7. stop all condenser fans when the HP $\leq 42.0^\circ\text{C}$,
8. repeat the steps 6. to 7. N times (N is configurable in the menu (3544), 3 from factory setting)
9. stop the compressors of the circuit,
10. wait for 1 min to equalise the pressure in the circuit,
11. start the fans 30s to dry the condensenser
12. end of procedure; restart the unit in heating mode.
13. reverse the reversing valve after 5 s if $\Delta P > 2$ bar.

In menu (3545), it is possible to start only one compressor per circuit with tandem during the defrost.

FRESH AIR DAMPER

Function

Ensure a minimum fresh air introduction into the room and/or a free-cooling, free-heating, thus reducing electric consumption.

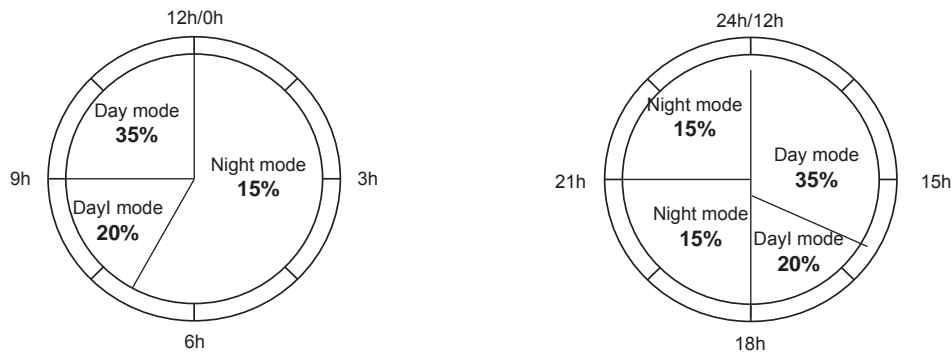
Description

Fresh air setting

Adjustement by setpoint

The fresh air rate is adjustable by set point for each schedule mode (Night, Day, Day I, Day II BMS)

2823 → Minimum opening of the fresh air damper, %, adjustment by zone.



It is also possible to set a second threshold for minimum fresh air opening in case of very low outside air temperature

(3828) Activation of second minimum opening fresh air threshold

(3829) Second minimum fresh air damper opening, %, adjustment by zone.

(3832) Outside air temperature set point to activate the second threshold

It is also possible to set a maximum fresh air threshold in set point **(3822)**.

Adjustement by free contacts (Optional)

With the customized free contacts, the fresh air rate can be adjusted (See Customized Input / Output (BE.60))

- Contact closed on [No F.A.], the unit will close completely the fresh air damper.
- Contact closed on [All F.A.], the unit will open completely the fresh air damper.
- Contact closed on [x% F.A.], the unit will open the damper to x%.

If several contacts customized with this functionality are closed, the fresh air damper will open according to the sum value of all closed contacts. In any case, the minimum fresh air rate will be fixed according to the highest value between the set point and the free contacts request.

Adjustement by external signal (Optional)

The minimum fresh air can be remotely modified by a 4-20mA signal (See Customized Input / Output (BE.60))

For a 4mA signal of, the threshold is set to 0%, for a 20mA signal, it is set to 100%, a linear rule is applied in between.

Fresh air damper calibration

The real fresh air volume introduced into the system is not always proportional to the damper opening percentage, particularly when the return air duct system is sized to give excessive pressure losses.

This may result with excessive fresh air input, and thus with an increase of the system exploitation costs.

In the menu **(3825)**, it is possible to enable the fresh air calibration which is then performed by measuring temperature of blowing air, return air and outside air.

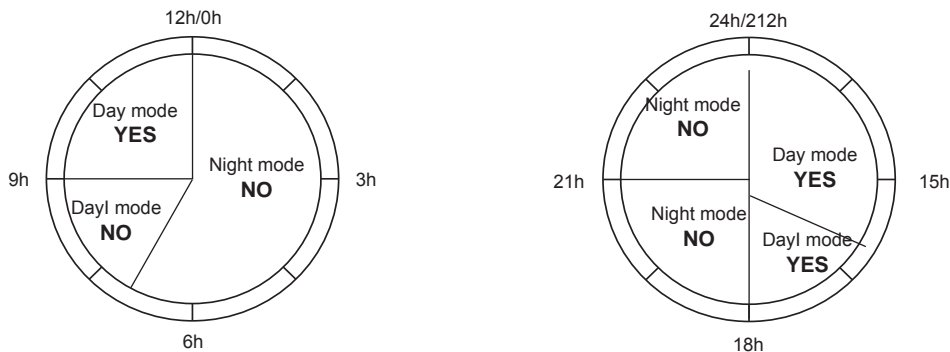
The CLIMATIC 60 calculates and stores the exact percentage of fresh air for each damper position.

This sequence takes place periodically when all heating and cooling elements are off.

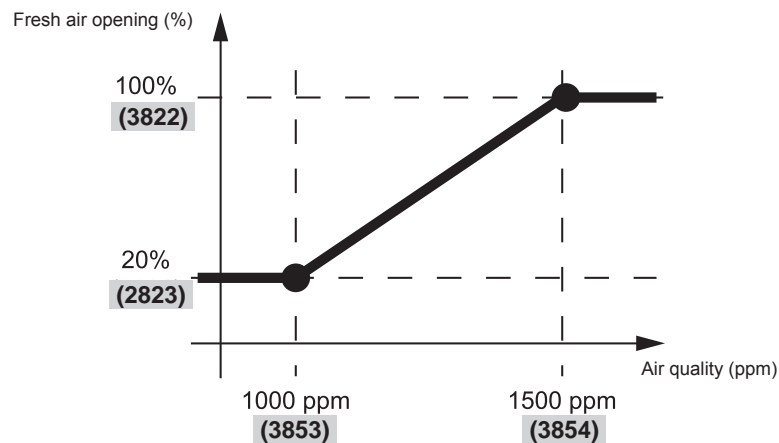
CO² air quality sensor (optional)

The CLIMATIC 60 offers a solution to optimise the air quality through to a CO² sensor.

The activation of the air quality control can be specified according to the scheduling and can take different value for each schedule mode (Night, Day, Day I, Day II and BMS) in the menu **(3851)**.



The CLIMATIC 60 controls the fresh air damper to maintain a fine air quality in the room place. The damper is moving from the minimum setting **(2823)** to the maximum setting **(3822)** according to the minimum air quality **(3853)** and the maximum air quality **(3854)**. If the air quality reach a level set in **(3855)** the alarm is activated.

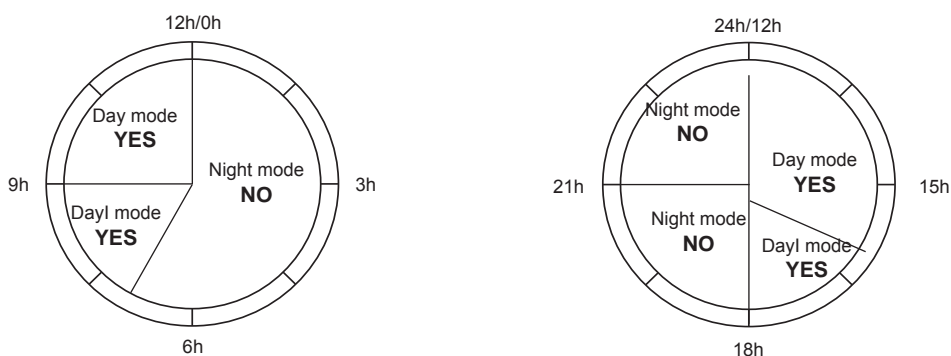


Free cooling - Free heating

From a room temperature need (Capacity Factor) the damper opens according to a proportional rule on the blowing temperature, 0% need = Minimum fresh air **(2823)** and 100% need = maximum opening threshold **(3822)**

The user may choose to limit the fresh air damper operation with contacts or set points modification (see § above). The outdoor temperature or humidity value may also limit the opening.

The free cooling or the free heating activation can be specified according to the scheduling and can take different mode for each schedule mode (Night, Day, Day I, Day II and BMS) in the menus **(3831)** and **(3841)**.



Outdoor temperature

The free cooling and the free heating are also enabled according to the outside air temperature. There are 2 settings (3832) and (3833) for the free cooling and two settings (3842) and (3843) to define the start and stop temperature thresholds.

Outdoor humidity (Optional)

If humidity control option is selected, the Free-cooling is stopped if the external absolute humidity (water weight) is higher than the indoor absolute humidity

Free contact (Optional)

Stop of Free-Cooling by closing customized free contacts (see minimum fresh air § above).

[No FreeC] = This function is disabled.

- Contact closed on [No F.A], the unit will close completely the fresh air damper.
- Contact closed on [All F.A], the unit will open completely the fresh air damper.
- Contact closed on [No FreeC] or [No FreeH], the function is disabled.

Settings

The different settings to adjust the fresh air damper are available in the menu:

| | |
|---------|--|
| (2823): | set point of minimum fresh air |
| (3822): | set point of maximum fresh air |
| (3825): | state of calibration function |
| (3831): | setpoint for activation operation of function free cooling |
| (3832): | outside lower temperature threshold, unload free cooling |
| (3833): | outside upper temperature threshold, unload free cooling |
| (3841): | setpoint for activation operation of function free heating |
| (3842): | outside lower temperature threshold, unload free heating |
| (3843): | outside upper temperature threshold, unload free heating |
| (3853): | minimum threshold for control |
| (3854): | maximum threshold for control |
| (3855): | upper air quality threshold of alarm |

EXHAUST (OPTION)

Function

The CLIMATIC 60 manage 2 different type of exhaust

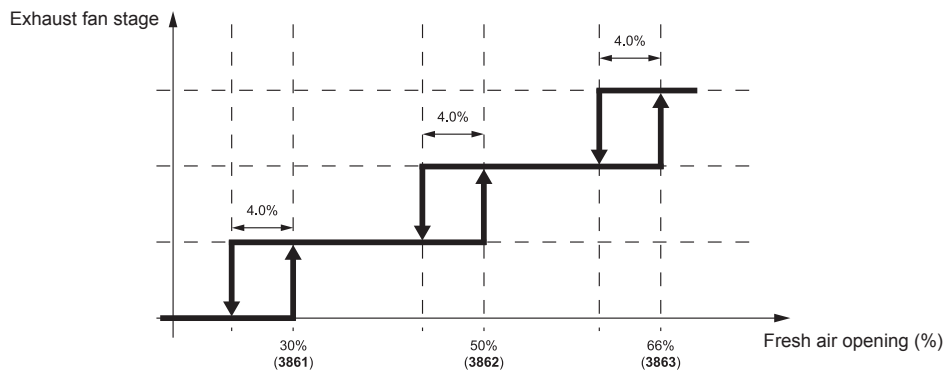
- A step control up to three exhaust fans to assure a good differential pressure between the supply and the return air. Starts and stops of these fans depend on the opening of the fresh air damper
- A continuous exhaust when the unit is equipped with a variable speed fan.

Description

Step control exhaust

The exhaust fan(s) are activated according to the fresh air opening pourcentage of the damper.

- if the fresh air opening \geq (3861), the stage 1 is turned on,
- if the fresh air opening \geq (3862), the stage 2 is turned on,
- if the fresh air opening \geq (3863), the stage 3 is turned on.



Continuous exhaust fan

The exhaust fan is then working in parallel with the blower (see relative §) with a nominal air flow threshold (3864), a minimum air flow threshold (3865) and a coefficient to compensate the fresh air damper closing (3866).

Settings

The different settings to adjust the exhaust fan are available in the menu:

| | |
|---------|--|
| (3861): | opening percentage threshold of actuator for 1st fan |
| (3862): | opening percentage threshold of actuator for 2nd fan |
| (3863): | opening percentage threshold of actuator for 3rd fan |
| (3864): | nominal threshold for air flow control |
| (3865): | low threshold for air flow control |
| (3866): | coefficient for compensation of losses of the air damper |

ENERGY RECOVERY (OPTION)

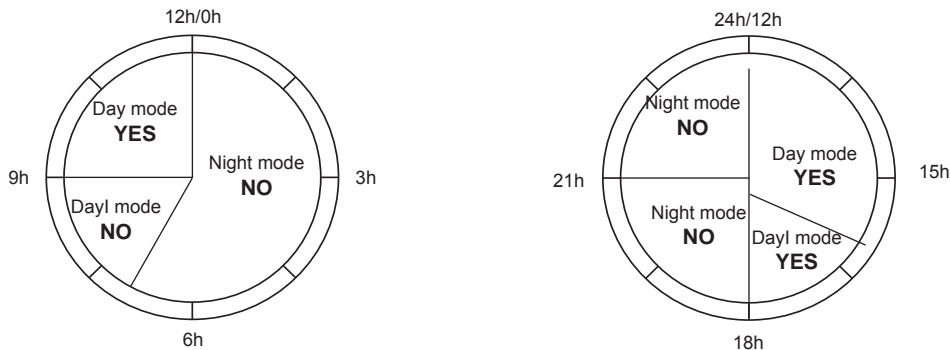
Function

The CLIMATIC 60 offers in option a solution to recover the energy of the exhaust air. There are 3 types of recovery:

- plate heat exchanger for BALTIC™ units,
- rotary wheel exchanger for FLEXY™ units.
- Thermodynamic heat recovery for BALTIC™ units

Description

The recovery activation can be specified according to the scheduling and can take different mode for each schedule mode (Night, Day, Day I, Day II and BMS) in the menu (3871).



The recovery control depends on mainly the outside air temperature. The recovery is activated if:

- outside temperature \geq return air temperature in cooling mode,
- outside temperature \leq return air temperature in heating mode.

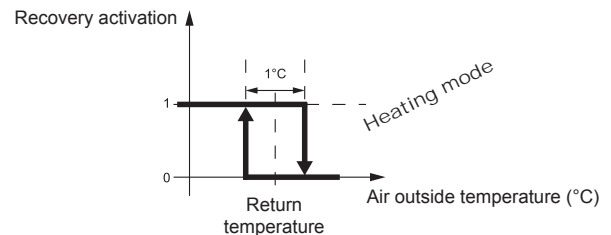
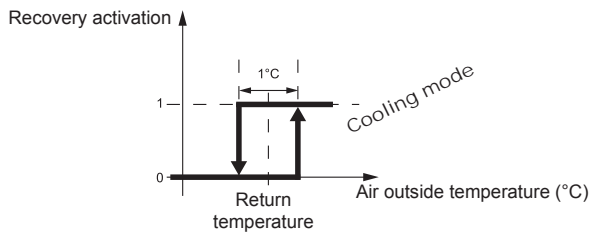


Plate heat exchangers - BALTIC™

For BALTIC™ units using plate heat exchangers, the CLIMATIC 60 activates the by-pass damper. It opens if the free-cooling is activated or to defrost the heat exchanger. The defrost is activated by a differential pressure switch installed in the module.

In order to defrost, the damper bypass is opened for 6 minutes. 15 operating minutes minimum are required between two defrosts.

Enthalpie wheel - FLEXY™

For FLEXY™ units using enthalpie wheel, the CLIMATIC 60 activates the wheel motor if $|\text{Outside air } t^\circ - \text{return air } t^\circ| \geq (3872)^\circ\text{K}$

If the outside air temperature is below the threshold (3873) the wheel is likely to icing; to avoid this phenomenon the motor is stopped 3 minutes every hour to defrost the wheel.

Thermodynamic heat recovery - BALTIC™

For BALTIC™ units using thermodynamic heat recovery, the compressor(s) dedicated to heat recovery is (are) managed as additional capacity stage(s).

So, the setpoints 3421, 3431 and 3441 deccribed in the COMPRESSOR § enables also these compressors.

However, the compressors assigned to heat recovery are activated only if the following conditions are met:

- The return air temperature is $> 16^\circ\text{C}$
- The fresh air damper opening is $> 22\%$.

Priority is then given to energy recovery compressors compared to other compressors whether the fresh air damper opening is $> 50\%$.

Priority is then given to other compressors compared to the energy recovery compressors if the fresh air damper opening is $< 50\%$

EXTRA HEATING (OPTION)

Function

The CLIMATIC 60 can manage up to 3 types of supplement of heating according to the type of unit.

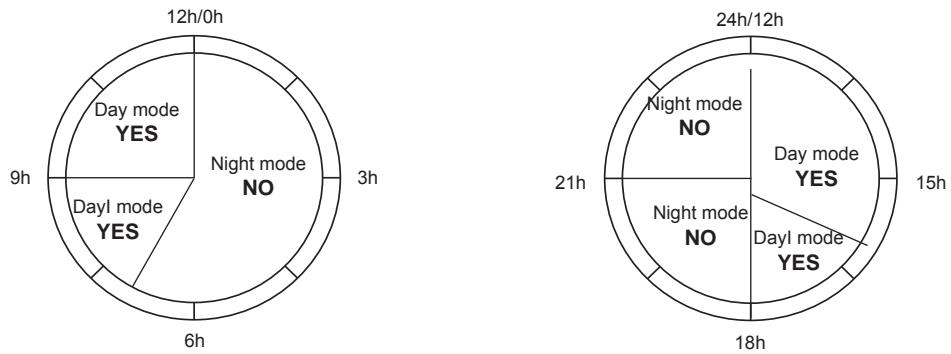
- gas,
- electrical heaters,
- hot water coils.

Description

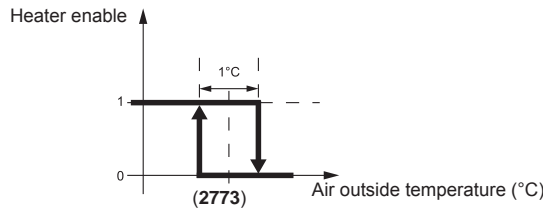
The CLIMATIC 60 can control simultaneously 2 types of supplement of heating:

- heater 1: gas, electrical heaters, or hot water coils,
- heater 2: electrical heaters, or hot water recovery,

The heater (1 or 2) activation in the menus **(3721)** and **(3724)** can be adjusted according to the scheduling and can take different values for each schedule mode (Night, Day, Day I, Day II and BMS).



The supplement of heating is managed as an additional stage according to the outside temperature .



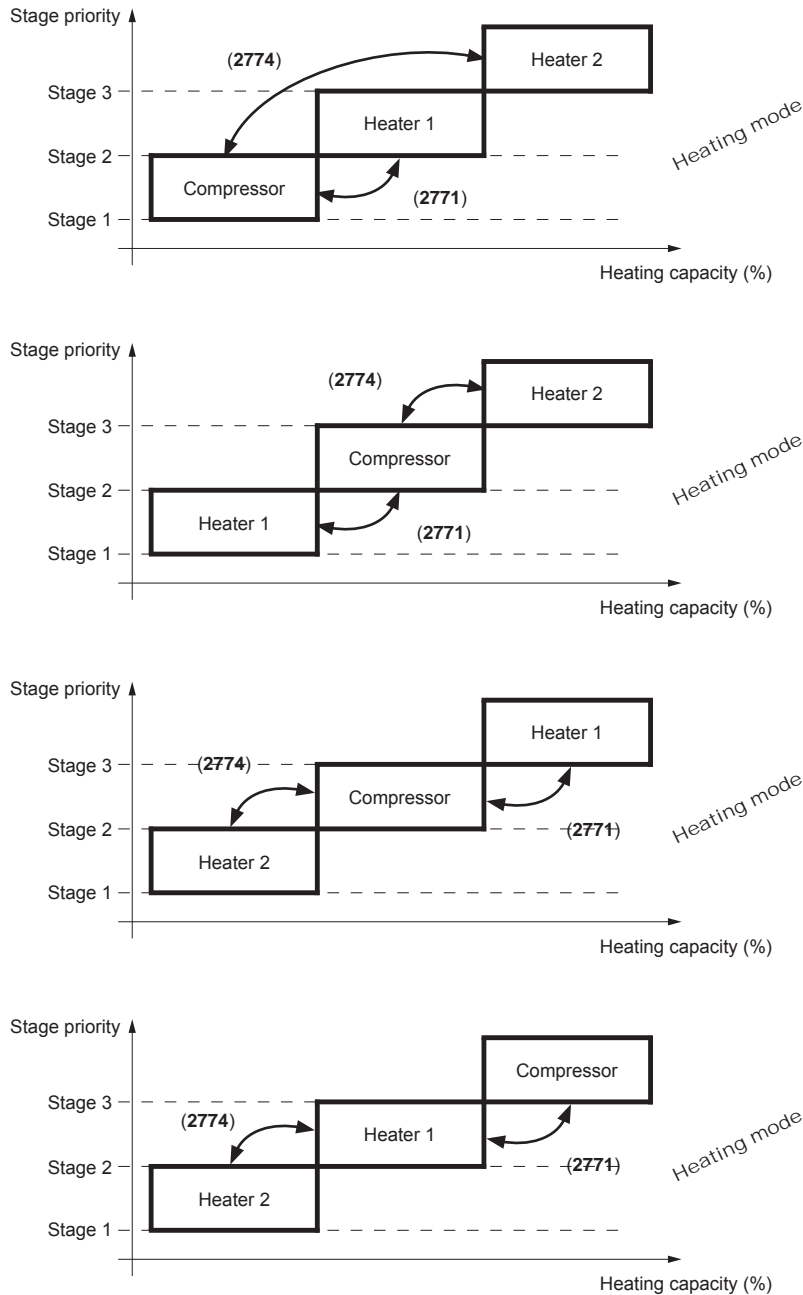
The priority between the compressor(s) and the heater(s) can be predefined in the menus **(2771)** and **(2774)**.

The various possibilities to sequence the heater 1 are:

- **(2771)** = "Never": the compressor(s) are started first, then the heater 1, (by default)
- **(2771)** = "Always": the heater 1 is started first, then the compressor,
- **(2771)** = "Out low": the heater 1 is started first if the outside temperature is \leq **(2772)**, then the compressor,
- **(2771)** = "Out high": the heater 1 is started first if the outside temperature is \geq **(2772)**, then the compressor.

The various possibilities to sequence the heater 2 are:

- **(2774)** = "Last": the compressor(s) are started first, then the heater 2, (by default)
- **(2774)** = "First": the heater 2 is started first, then the compressor.



Electrical heaters

The capacity of electrical heaters controlled piloted by Triac may be limited. The set point (3751) sets the maximum threshold

Hot water

Protection against freezing with minimum water flow - If the outside air temperature is below the set point (3762), the valve will open to a minimum set in the threshold (3761) .

Freezing fault

In general, in case of hot water coil icing détection, the valve will open to 100%. Due to certain hydraulic network, pumps or tracing, the coil protection is done by closing the valve. This can be activated with the set point (3763).

Hot water circulator

The CLIMATIC may drive a circulator for the hot water hydraulic circuit.

The circulator activation mode can be adjusted according to the circuit.in the menu (3771)

- [Stopped] No circulator
- [Frost.AI] Circulator activation in case of freezing fault
- [Heat.Mode] Circulator activation in heating mode for air temperature regulation
- [Power On] Circulator activation as soon as the blowing fan is activated

FREE INPUT/OUTPUT

Function

The CLIMATIC 60 has free input / output on the main board BM60 and the expansion board BE60 to offer different possibilities to customize input / output for remote control of the unit.

Description

The free customized input / output number is:

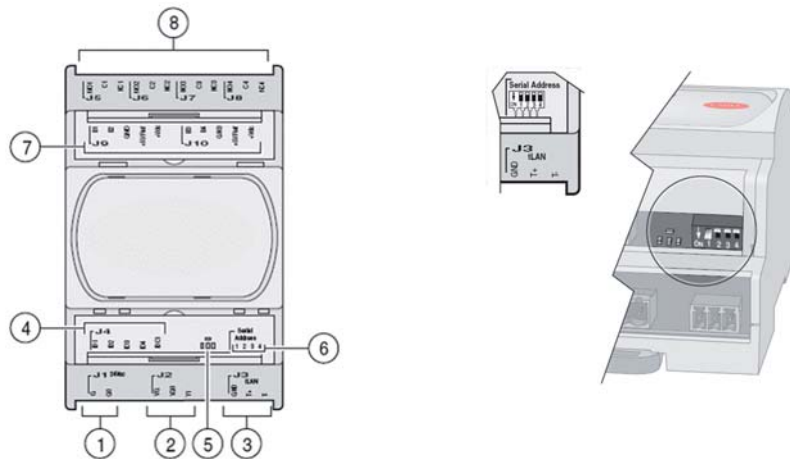
- 2 free input contacts (normally opened) on BM60,
- 1 or 2 free output contact (normally opened) on BM60,
- 4 free input contacts (normally opened) on BE60,
- 4 free contacts (normally opened) output on BE60,
- 4 free analog inputs on BE60.

WARNING - Depending on the options ordered, all I / O configurable are not available. In the following Price List option code is indicated between brackets.

Ex (DCBO) Price list code of expansion card option

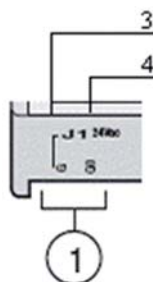
The expansion board BE60 is an additional board fixed on DIN rail. The description of the various connectors is:

1. power supply of the board,
2. analog output 0/10V: not used,
3. network bus to the CLIMATIC 60 BM60,
4. 4 digital inputs: dry contacts only,
5. LED status of the network bus,
6. serial address dip-switch of the network bus,
7. 4 analog inputs configurable by pair B1-B2 and B3-B4,
8. 4 digital outputs: dry contacts only.



Power supply

The expansion board BE60 is powered in 24Vac, +/-15%, 50-60Hz, Pmax=6W.



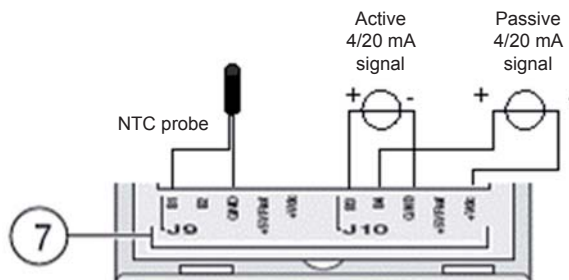
Analog input

The 4 analog inputs can be used as NTC probe (-50T90 °C; R/T 10 KΩ at 25 °C) or 4/20mA (Impedance = 100Ω) current signal. They are configurable by pair B1-B2 and B3-B4. The configuration of the type of the input is automatically set by the CLIMATIC 60.

- 0 input on the BM60
- 4 inputs on the BE60 dry contact board option (**DCBO**):

| | |
|-----------|---|
| BE-J9-B1 | not available if air quality sensor (CO2S). If Humidity sensor (ADCP), Ntc BMS isn't available. |
| BE-J9-B2 | not available if humidity sensor (ADCP). If Air quality sensor (CO2S), Ntc BMS isn't available. |
| BE-J10-B3 | not available if circuit leak détection (RLKD) |
| BE-J10-B4 | if circuit leak détection (RLKD) only Ntc BMS is available. |

| | |
|-----------|---|
| Ntc Room | control, room temperature by NTC probe |
| Ntc BMS | BMS, temperature (NTC) reading for BMS |
| HR. BMS | BMS, relative humidity (4-20mA) reading for BMS |
| Sp Temp. | shift of the setpoint (4mA=-5K, 20mA=+5K) |
| Sp F.Air | fresh air set point, value (4mA=0%, 20mA=100%) |
| Sp Speed | speed blower set point, value (4mA=low level, 20mA=nominal level) |
| T. Out. | control, outside temperature by 4-20mA sensor |
| T. Room | control, room temperature by 4-20mA sensor |
| HR. Out. | control, outside relative humidity by 4-20mA sensor |
| HR. Room. | control, room relative humidity by 4-20mA sensor |



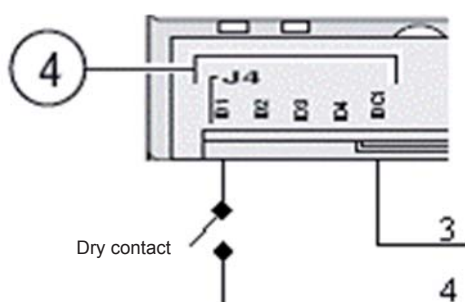
Digital input

The 6 digital inputs must be used with dry contacts according to the following example. The digital input can be configured to be used as one of these items:

- 2 inputs on the BM60
 - BM-J4-ID4, not available if electrical heaters on fresh air (**ELPS**)(**ELPH**).
 - BM-J4-ID7, not available if static recovery module (**HRMO**).
- 4 inputs on the BE60 Dry Contact Board option (**DCBO**)
 - BE-J4-ID1, always available.
 - BE-J4-ID2, always available.
 - BE-J4-ID3, always available.
 - BE-J4-ID4, not available if humidifier.

Note: These points are available by Dry Contact or by BMS request.

| | |
|----------|---|
| On/Off | Status of the request for unit (ON/OFF) |
| Reset Al | reset, alarm |
| Summer | control, unloaded heating mode |
| Winter | control, unloaded cooling mode |
| Low Fan | blower, force reduced flow (low speed) |
| High Fan | blower force nominal flow (high speed) |
| No F.A | fresh air, force the damper to close (0%) |
| 10% F.A | fresh air, force the damper to minimum opening (10%) |
| 20% F.A | fresh air, force the damper to minimum opening (20%) |
| 30% F.A | fresh air, force the damper to minimum opening (30%) |
| 40% F.A | fresh air, force the damper to minimum opening (40%) |
| 50% F.A | fresh air, force the damper to minimum opening (50%) |
| All F.A | fresh air, force the damper to full opening (100%) |
| No FreeC | fresh air, unloaded Free-Cooling mode |
| No FreeH | fresh air, unloaded free-heating mode |
| No Air.Q | air quality, unloaded control |
| Defrost | circuit, defrosting cycle delayed (compressor) |
| 50% Cp. | circuit, unloaded immediately 50% of compressors running |
| No Comp. | circuit unloaded all compressor |
| No HPump | circuit, unloaded all compressor in heat-pump mode |
| No Cp&Ht | circuit and heaters, unloaded all |
| 50% Ht. | heaters, unloaded immediately 50% of heaters running |
| No Heat. | heaters, unloaded all heaters |
| Prio.Ht. | control, force the priority of the heaters vs compressors |
| TCB G | TCB, G |
| TCB B | TCB, B |
| TCB Y1 | TCB, W1 |
| TCB Y2 | TCB, W2 |
| TCB W1 | TCB, Y1 |
| TCB W2 | TCB, Y2 |
| for BMS | BMS, input reading for BMS |
| M. DayII | schedule, force the DayII mode |
| M. DayI | schedule, force the DayI mode |
| M. Day | schedule, force the Day mode |
| M. Night | schedule, force the Night mode |
| M. BMS | schedule, force the BMS mode |



Digital output

The digital outputs are dry contacts and the maximum commutable power is 2000VA, 250Vac.

The digital output can be configured to be used as one of these items:

- 2 relays on the BM60

BM_J14-NO7 not available if 2 steps of electrical heaters (**ELHS**)(**ELHH**) or gas burner units BAG, BAM, FGA, FDA.

BM_J15-NO12 not available if size 24 to 42. (C-Box)

- 4 relays on the BE60 dry contact board option (**DCBO**)

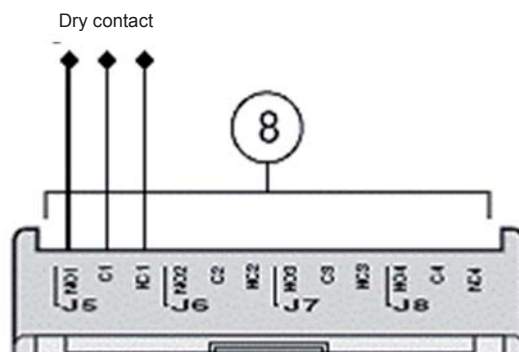
BE-J5-NO1 not available if exhaust fan (**PEFA**)

BE-J6-NO2 always available.

BE-J7-NO3 always available.

BE-J8-NO4 not available if humidifier.

| | |
|----------|---|
| Alarm | alarm, general |
| Minor A | alarm, minor |
| Major A | alarm, major |
| Filter A | alarm, dirty filters or missing |
| Blower A | alarm, blower |
| Comp. A | alarm, circuit (compressor) |
| Gas A | alarm, gas burner |
| Elec. A | alarm, electrical heaters |
| Frost. A | alarm, supply temperature too low (freeze protection) |
| Smoke A | alarm, smoke détection |
| Power | On / OFF status |
| Defrost | circuit, defrosting cycle requested or activated (compressor) |
| Heating | control, heating mode activated |
| Dead Z. | control, dead zone mode activated |
| Cooling | control, cooling mode activated |
| by BMS | BMS, activated by BMS |
| M. DayII | schedule, DayII mode activated |
| M. DayI | schedule, DayI mode activated |
| M. Day | schedule, Day mode activated |
| M. Night | schedule, Night mode activated |
| M. BMS | schedule, Mode BMS activated |
| Sched.Z0 | schedule, zone 0 activated |
| Sched.Z1 | schedule, zone 1 activated |
| Sched.Z2 | schedule, zone 2 activated |
| Sched.Z3 | schedule, zone 3 activated |
| Sched.Z4 | schedule, zone 4 activated |
| Sched.Z5 | schedule, zone 5 activated |
| Sched.Z6 | schedule, zone 6 activated |



Settings

The different settings to configure the custom I/O are available in the menus:

(3121): setting of functionality for relay bm n7

(3122): setting of functionality for relay bm n12

(3123): setting of functionality for relay be-1 n1

(3124): setting of functionality for relay be-1 n2

(3125): setting of functionality for relay be-1 n3

(3126): setting of functionality for relay be-1 n4

(3131): setting of functionality for digital input bm id4

(3143): setting of functionality for digital input bm id7

(3133): setting of functionality for digital input be-1 id1

(3134): setting of functionality for digital input be-1 id2

(3135): setting of functionality for digital input be-1 id3

(3136): setting of functionality for digital input be-1 id4

(3141): setting of functionality for analog input be-1 b1

(3142): setting of functionality for analog input be-1 b2

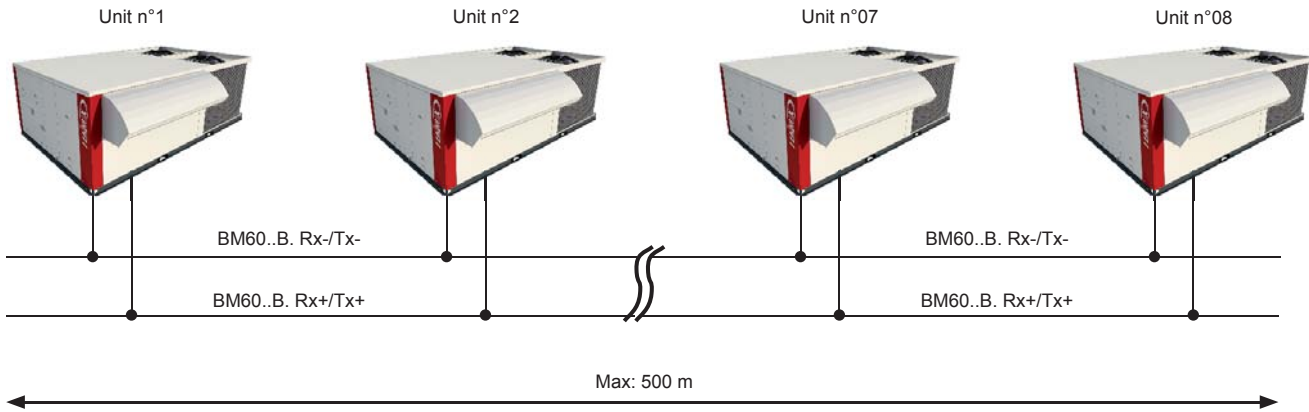
(3143): setting of functionality for analog input be-1 b3

(3144): setting of functionality for analog input be-1 b4

MASTER / SLAVE

Function

The CLIMATIC 60 offers possibilities to connect up to 8 units to allow relationship between each unit in order to perform the system.



The pLAN bus is connected to CLIMATIC 60 on the J8 connector of board BM60. A star connection is not recommended. For an optimum operation it is advised to connect a maximum of two cables per unit.

The cable length should not exceed 500 m and must use a 2 pairs with general shield like LiYCY-P (0.34 mm²).

Description

There are 4 different modes to manage the units:

- Cool / Heat,
- token,
- backup,
- backup revolving.

Cool / Heat mode

In this mode, all units are running in stand-alone, but the changover mode is fixed by the master unit.

- if the master request for cooling air, the slave units can't run in heating mode,
- if the master request for heating air, the slave units can't run in cooling mode.

The token mode

This mode limits the number of compressor(s) in operation. The setting (3174) defines the maximum number of compressor(s) running simultaneously for all the units connected.

The backup mode

it is used to help the system in case of alarm(s) on the running unit. The unit in standby will start only if one of the other running unit(s) is in alarm. In that case the unit in alarm will be stopped and replaced by the one which was in standby.

The backup revolving mode

This mode is similar to the "backup mode", but the CLIMATIC 60 manages also the rotation between the units declared every Tuesday at 9h00.

Reference set point

For all these modes, the room temperature set point of the slaves unit(s) can be adjusted as well as the master unit set point. In this way when the set point is modified by the DC60 connected to the master, all slaves units will receive the new set point. The activation of this Function is available in the menu (3176).

The CLIMATIC 60 offers various solutions to optimise the control, by fixing a reference temperature, humidity and CO₂. The ambient and outside temperatures, the external air humidity and the CO₂ air quality can be synthesized to obtain a reference value, used for the control, (3177) to (3179). There are up to 3 modes to manage the probes / sensors in master / slave connection:

- "not used": all units run according to their own probes / sensors,
- "master": all units run according to the master probes / sensors,
- "average": all units run according to the average of the probes / sensors of all units connected.

DS60 DISPLAY

Function

The DS60 terminal is a plug and play display, designed for maintenance and service people who want to access to advanced functionalities.

WARNING - As a safety protection for service people, if a DS60 is plugged on the unit, it is becoming the master in order to avoid problem during commissioning or servicing, so all actions on the ON/OFF remote control (DC60, BMS) are disable.

Description

The terminal address must be assigned to establish the communication with the CLIMATIC 60. The procédure to configure the DS60 is:

1. Press the buttons “↓”, “↑”, “←” keys at the same time during 5 seconds,
2. Use the “←” key to move the cursor on the address number,
3. Use the “↓”, “↑” keys to select the value “32” for the DS60 (or DS50) and confirm with the “←” key (The cursor go directly to the next data).



4. If the address has been modified, the next screen is displayed. In that case restart step 1.



5. Use the “↓”, “↑” keys to select the desired address of CLIMATIC 60. CLIMATIC 60 address must be at the address “1” except if there is several units linked. The next screen is displayed.



6. Press the “←” key to go to the next step.

7. The following screen describes the used connection type. Set the display as a Private "Pr" terminal. The other terminals (Trm2 and Trm3) are not used. So their addresses must be adjusted to "None". Finally confirm the modifications, swapp the text "No" to "Yes" and validate with the "←" key.



After a start up, the first screen contains the main information about the CLIMATIC 60's software.



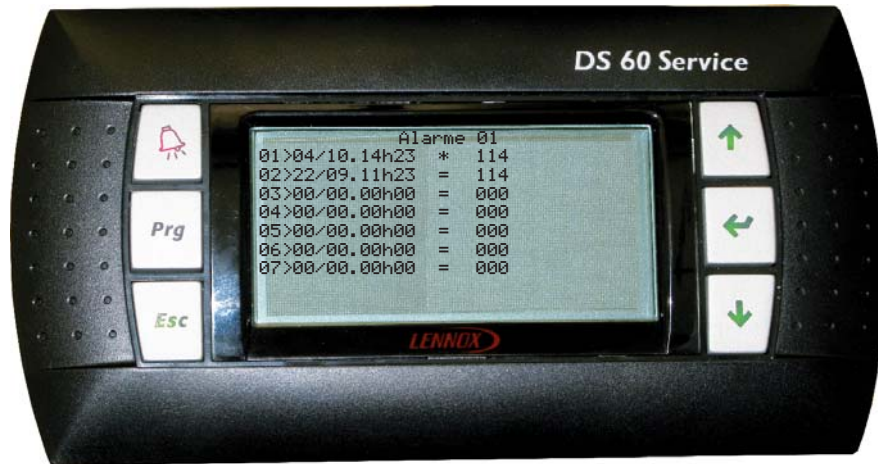
The DS60 is organised in 3 menus:

- (1000): alarms history,
- (2000): user menus for maintenance people,
- (3000): expert menus for agreed Lennox authorized Service company (restricted area with password).



To access to alarms history, press the "ALARM" key when you are in the main menu (0000). The CLIMATIC 60 saves up to the last 32 alarms. An active alarm is signaled by the symbol "*" whereas an alarm inactive is symbolized by the "=".

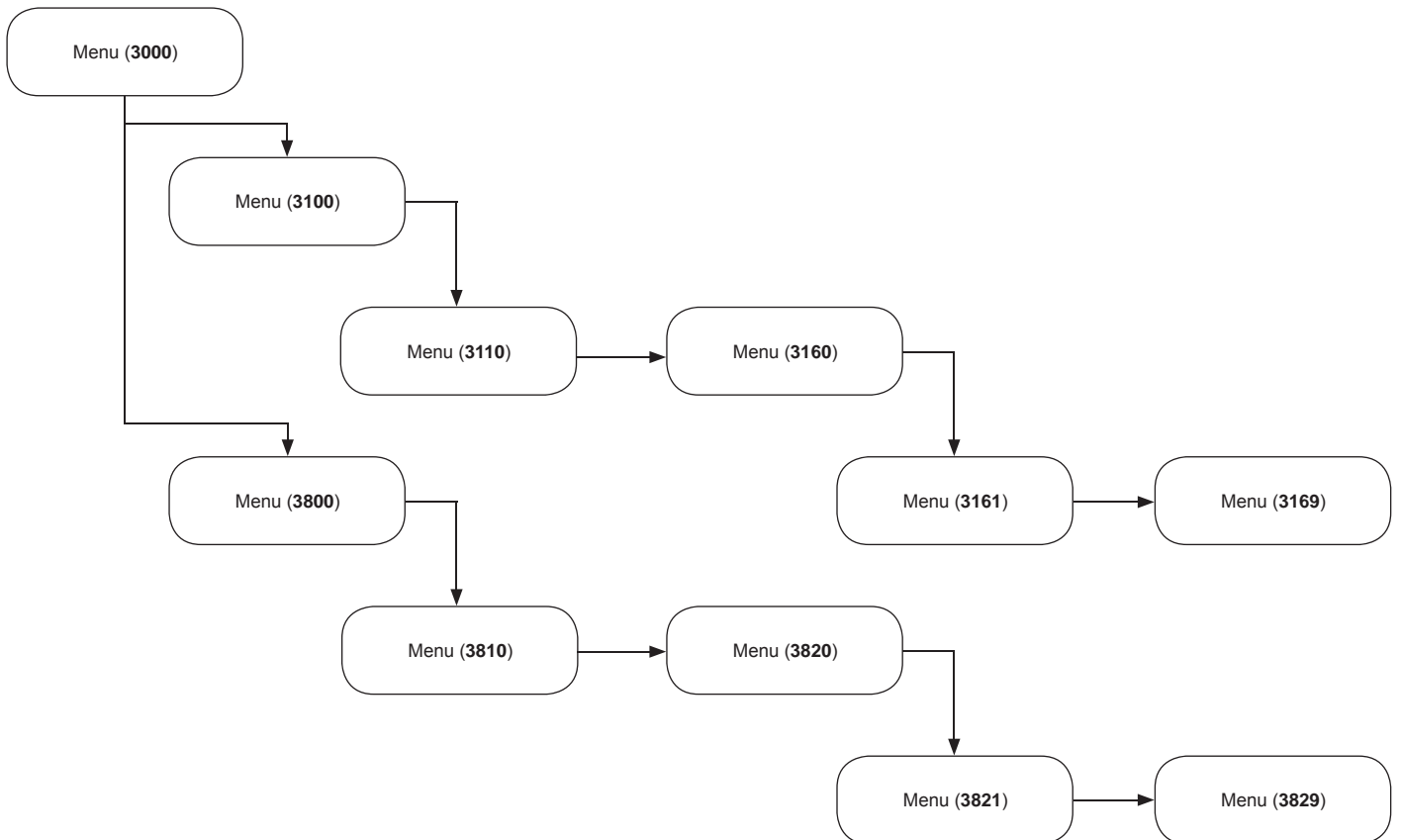
To reset the current active alarm(s) press the “ALARM” key.



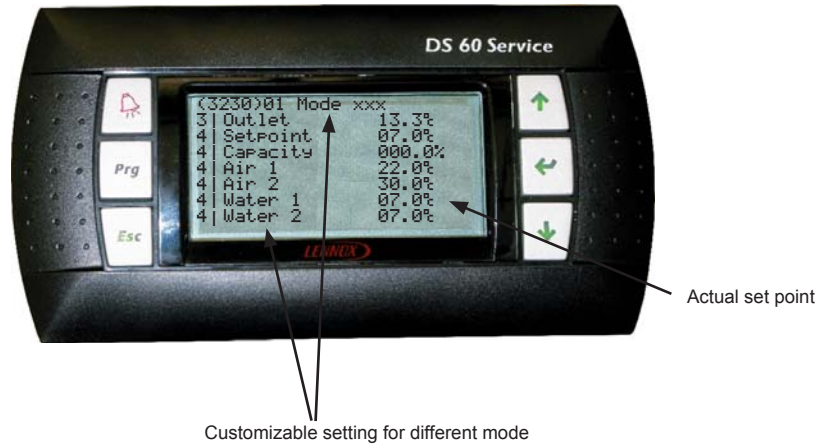
The menus are organised in arborescence tree with submenus as per the scheme hereunder. The actual menu is identified by a 4 digit number between brackets displayed in the top left corner of the screen.

The complete menu list is detailed in the appendix at the end of the document:

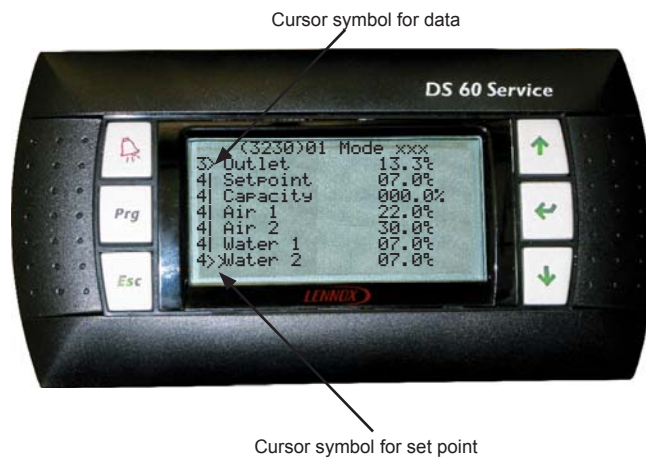
- Description of each menu
- Explanation of each menu code digit.
- Type of information in the menu - Read (R), Write (W), Possibility to write in different schdule zone (Z)
- Min / Factory / Max values



The “↓” and “↑” keys are used to move the cursor on the desired item. Then use the “←” key to enter in the selected submenu. To escape a menu use "ESC" the key.



The submenus contains 2 types of data: the read only data (like a temperature probe for example) and the read/write setpoints (like the cooling ambient setpoint for example). The data are identified by a cursor symbol ">" (and by a close-padlock in the upper right corner) whereas the setpoint are identify by a symbol ">>" (and by an open-padlock in the upper right corner).



To modify a setting, move the cursor on the desired item and press the "←" key. A new screen displays information concerning this set point. To modify it, use the "↓" and "↑" keys and validate by pressing the "←" key. If the setting is customizable according to the schedule mode, press the "PRG" key to select different value for the Day, Day I, Day II & Night mode.



⏏: to quickly increment or decrement the setting, hold the "↓" or "↑" keys during some time.

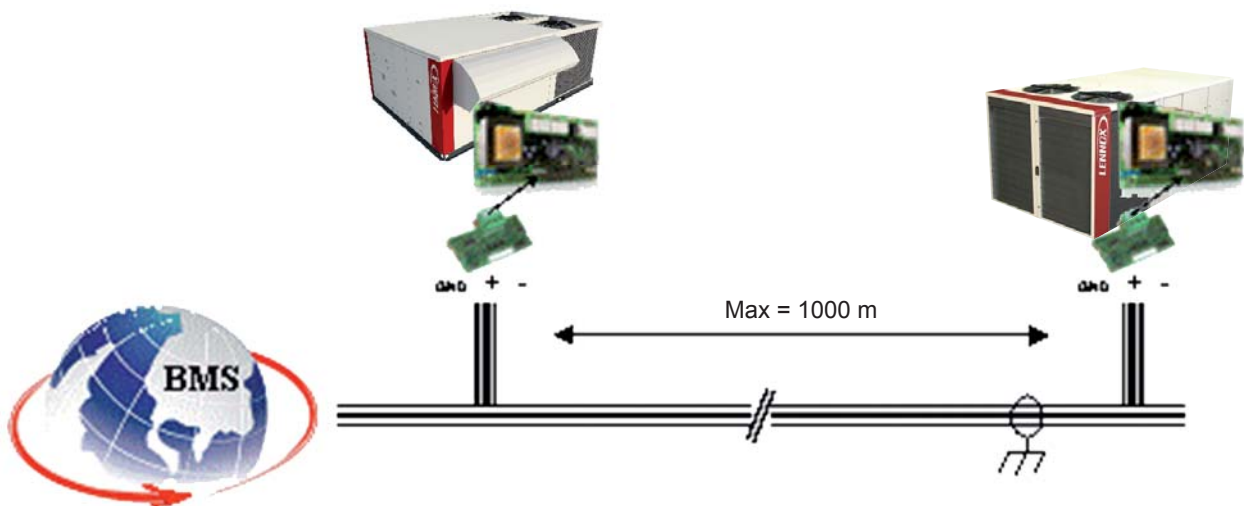
BMS

Function

BMS (building management systems) are systems for the integrated management of all the technological functions of a building, including access control, safety, fire détection, lighting, intelligent elevators, and air-conditioning. The resulting advantages of such solutions are simpler and more efficient management of the building from a single control station, reduction in running costs, possibility of statistical analysis of all data, immediate identification and response to faults and alarms. This amply justify the little extra cost of the air-conditioning unit BMS connectable. Today not only the quality and the reliability of the instruments are important, but also the degree of external connectivity they can offer.

Description

The communication bus is connected on CLIMATIC 60's serial card board on the BM60. A star connection is not recommended, for an optimum operation, it is advised to connect a maximum of two cables per unit. In case of RS485 bus, a resistance of 120Ω 1/4W can be connected on the last unit between the terminals + and -.



The CLIMATIC 60 offers different possibilities of BMS protocol:

- Modbus RTU,
- Trend,
- Bacnet,
- Lon Works.

Modbus is a serial communications protocol published by Modicon in 1979, and has become a standard communications protocol in industry. It is now the most commonly available method to connect industrial electronic devices.

Controllers communicate using a master–slave technic, in which only one device (master) can initiate transactions (called 'queries'). The other devices (slaves) answer by supplying the requested data to the master, or by taking the action requested in the query.

LENNOX units implement Modbus slave protocol with the following settings:

| | |
|-------------------|---------------------------------|
| Serial Line | RS485 (EIA/ TIA - 485 Standard) |
| Transmission Mode | RTU (Remote Terminal Unit) |
| Baudrate | 1200→19200 Bauds |
| Data bits | 8 bits |
| Parity | None |
| Stop bits | 2 bits |

Settings

The different settings to configure the BMS are available in the menu:

(3181): address of the unit (bus id)

(3182): choice of type of protocol

(3183): choice of speed of bus

(3184): watchdog counter

«Watchdog» functionality with CLIMATIC 60.

As the CLIMATIC 60 is passive on the bus, it cannot detect a communication failure with BMS; if any, the Roof-top would continue to operate with the last setting sent by the BMS before the failure whatever they were.

In order to avoid this scenario and tell regularly the CLIMATIC 60 that it is still connected to the BMS, the BMS system has to send regularly to the adress 01h a number above 0.

On its side the CLIMATIC 60 is decreasing the adress 01H value of 5 units every 5 seconds. If the adress 01H reach 0, the climatic 60 consider the communication as lost and switch to stand alone mode.

Example, the BMS is sending the value 1000 to the adress 01h, after 200s if the BMS has not sent anything else, the value will reach 0, the CLIMATIC 60 will consider the communication as lost and the unit will regulate with its own parameters.

Modbus, BACnet, Trend, Carel

Please see the different corresponding tables in the appendix 1.

LonWorks

Please see the different corresponding tables in the appendix 2.

INPUTS / OUTPUTS CLIMATIC BOARDS

Digital inputs

Please see the different corresponding tables in the appendix 3.

Digital outputs

Please see the different corresponding tables in the appendix 4.

Analogic inputs

Please see the different corresponding tables in the appendix 5.

Analogic outputs

Please see the different corresponding tables in the appendix 6.

Serial port

Please see the different corresponding tables in the appendix 7.

ALARMS

| CODE | DESCRIPTION |
|------|---|
| 1 | Blower, Flow Switch, Cut Off |
| 2 | Water Condenser, Flow Switch, Cut Off |
| 4 | Blower, Filters, Dirty |
| 5 | Blower, Filters, Missing |
| 9 | Unit Power Supply |
| 11 | Electrical Heaters, Overheating |
| 12 | Fresh Air, Electrical Heater, Overheating |
| 13 | Hot Water, Risk Of Frosting |
| 14 | Gas Burner 1, Failure |
| 15 | Gas Burner 2, Failure |
| 16 | Gas Burner, Overheating |
| 21 | Supply Temperature, Too High |
| 22 | Supply Temperature, Too Low |
| 23 | Room Temperature, Too High |
| 24 | Room Temperature, Too Low |
| 25 | Water Condenser Temperature, Too Low |
| 26 | Water Condenser Temperature, Too High |
| 29 | Air Quality, Too High |
| 31 | Humidifier, Failure |
| 32 | Room Humidity, Too Low |
| 33 | Room Humidity, Too High |
| 41 | Pump 1, Electrical Failure |
| 51 | Recovery, Motor Failure |
| 52 | Recovery, Wheel Failure |
| 54 | Recovery, Filters, Dirty |
| 56 | Recovery Air Flow, Faulty Sensor |
| 59 | Recovery, Outlet Temperature, Faulty Probe |
| 61 | BM, Master, Failure |
| 62 | BM, Slaves, Failure |
| 70 | Real Time Clock, Failure |
| 71 | BE.1, Communication Bus |
| 72 | BE.2, Communication Bus |
| 73 | Blower, Inverter, Communication Bus |
| 74 | Exhaust, Inverter, Communication Bus |
| 75 | Circuit 1, Condenser Fan, Inverter, Communication Bus |
| 76 | Circuit 2, Condenser Fan, Inverter, Communication Bus |
| 80 | Air Flow, faulty sensor |
| 81 | Room Temperature, Faulty Probe |
| 82 | Room Humidity, Faulty Sensor |
| 83 | Outside Temperature, Faulty Probe |
| 84 | Outside Humidity, Faulty Sensor |
| 85 | Supply Temperature, Faulty Probe |
| 86 | Water Condenser, Inlet, Faulty Probe |
| 87 | Water Condenser, Outet, Faulty Probe |
| 88 | Return Temperature, Faulty Probe |
| 89 | Air Quality, Faulty Sensor |
| 91 | Blower, Fan, Failure or Exhaust, Fan, Failure |
| 92 | Blower, Inverter, Failure |
| 93 | Exhaust, Fan, Failure |
| 94 | Exhaust, Inverter, Failure |

| CODE | DESCRIPTION |
|------|--|
| 99 | Fire / Smoke, Detected |
| 101 | EVD, Communication Bus |
| 102 | Circuit 1, Condenser Fan, Failure |
| 103 | Circuit 1, Condenser Fan, Inverter Failure |
| 110 | Circuit 1, Refrigerant Leak, Detected |
| 114 | Circuit 1, Compressor, Electrical Failure |
| 115 | Circuit 1, High Pressure, Cut Off |
| 116 | Circuit 1, Reversing Valve, Blocked |
| 117 | Circuit 1, Low Pressure, Cut Off |
| 118 | Circuit 1, Risk Of Frosting |
| 119 | Circuit 1, Low Condensing Temperature |
| 121 | Circuit 1, Low Superheat |
| 122 | Circuit 1, High Superheat |
| 123 | Circuit 1, Low Subcooling |
| 124 | Circuit 1, High Subcooling |
| 127 | Circuit 1, MOP, Maximum Operating Pressure |
| 128 | Circuit 1, LOP, Low Operating Pressure |
| 129 | Circuit 1, High Condensing Temperature |
| 132 | Circuit 1, Expansion Valve, Motor |
| 141 | Circuit 1, High Pressure, Faulty Sensor |
| 142 | Circuit 1, Low Pressure, Faulty Sensor |
| 143 | Circuit 1, Liquid Temperature, Faulty Probe |
| 144 | Circuit 1, Suction Temperature, Faulty Probe |
| 202 | Circuit 2, Condenser Fan, Failure |
| 203 | Circuit 2, Condenser Fan, Inverter Failure |
| 210 | Circuit 2, Leak Refrigerant, Detected |
| 214 | Circuit 2, Compressor, Electrical Failure |
| 215 | Circuit 2, High Pressure, Cut Off |
| 216 | Circuit 2, Reversing Valve, Blocked |
| 217 | Circuit 2, Low Pressure, Cut Off |
| 218 | Circuit 2, Risk Of Frosting |
| 219 | Circuit 2, Low Condensing Temperature |
| 221 | Circuit 2, Low Superheat |
| 222 | Circuit 2, High Superheat |
| 223 | Circuit 2, Low Subcooling |
| 224 | Circuit 2, High Subcooling |
| 227 | Circuit 2, MOP, Maximum Operating Pressure |
| 228 | Circuit 2, LOP, Low Operating Pressure |
| 229 | Circuit 2, High Condensing Temperature |
| 232 | Circuit 2, Expansion Valve, Motor |
| 241 | Circuit 2, High Pressure, Faulty Sensor |
| 242 | Circuit 2, Low Pressure, Faulty Sensor |
| 243 | Circuit 2, Liquid Temperature, Faulty Probe |
| 244 | Circuit 2, Suction Temperature, Faulty Probe |

| CODE | DESCRIPTION |
|------|--|
| 310 | Circuit 3, Leak Refrigerant, Detected |
| 314 | Circuit 3, Compressor, Electrical Failure |
| 315 | Circuit 3, High Pressure Cut Off |
| 316 | Circuit 3, Reversing Valve, Blocked |
| 317 | Circuit 3, Low Pressure Cut Off |
| 319 | Circuit 3, Low Condensing Temperature |
| 321 | Circuit 3, Low Superheat |
| 322 | Circuit 3, High Superheat |
| 323 | Circuit 3, Low Subcooling |
| 324 | Circuit 3, High Subcooling |
| 327 | Circuit 3, MOP, Maximum Operating Pressure |
| 328 | Circuit 3, LOP Low Operating Pressure |
| 329 | Circuit 3, High Condensing Temperature |
| 341 | Circuit 3, High Pressure, Faulty Sensor |
| 342 | Circuit 3, Low Presure, Faulty Sensor |
| 343 | Circuit 3, Liquid Temperature, Faulty Probe |
| 344 | Circuit 3, Suction Temperature, Faulty Probe |

**ALARM 001:
BLOWER, FLOW SWITCH CUT OFF****Description**

The differential pressure between the treatment unit and the filters is too small, although the fan has been running for more than 3 minutes.

Action

Immediate shut down of the complete unit.

Reset

Once the flow has been detected for 2 minutes, the alarm is automatically deleted. Up to 3 trips can occur during a day and are saved in the alarm history. The two first trips don't give the alarm alert, and the alarm counter is reset every day at 11 am. The third trip activates the fault report and must be manually reset.

Possible cause(s)

- Air system obstructed or closed,
- Belts broken,
- Problem with the fan wiring,
- Problem with the pressure transmitter wiring,
- Incorrect settings of the safety threshold.

Remedies

- Check the system,
- Replace the belts,
- Check the connections,
- Check the settings.

**ALARM 002:
WATER CONDENSER, FLOW SWITCH CUT OFF****Description**

The flow switch has detected a low water flow rate in the condenser heat exchanger for more than 20 seconds whereas the unit was enabling.

Action

Immediate shut down of the compressors.

Reset

Once the flow has been detected for 2 minutes, the alarm is automatically deleted. Up to 3 trips can occur during a day and are saved in the alarm history. The two first trips don't give the alarm alert, and the alarm counter is reset every day at 11 am. The third trip activates the fault report and must be manually reset.

Possible cause(s)

- Problem with the pump control wiring,
- Problem with the flow switch wiring,
- Dirty or clogged water filter,
- Wrong setting of the flow switch,

Remedies

- Check the pump connections,
- Check the flow switch connections,
- Clean the water filter,
- Check the flow switch settings.

**ALARM 004, 005:
FILTERS, CLOGGED OR MISSING****Description**

The differential pressure between the treatment unit and the filters is too small, although the fan has been running for more than 3 minutes.

- Filters missing: $\Delta P < \text{safety threshold}$, (2334)
- Filters clogged: $\Delta P > \text{safety threshold}$. (2335)

Action

The alarm is signalling.

Reset

The alarm is automatically deleted once the pressure returns to the authorized operating range.

If Dirty or Missing Filters Alarm keeps active during 168 hours (7 days non stop) the Blower is turned off and locked.

To reset this alarm, the power must be shut off, then the unit restarts for 15 minutes. If no filters alarm appears during this 15 minutes, the counter and the alarm is reset to zero, and the unit operate normally. If an alarm occurs during the 15 minutes the unit is stopped again and need again a power shut off.

This alarm is only for the Roof Top filters.

Possible cause(s)

- Filters removed and not replaced,
- Filters clogged,
- Problem with the pressure transmitter wiring,
- Incorrect setting for the safety thresholds (2334) and (2335)

Remedies

- Fit new filters,
- Clean or replace the filters,
- Check the connections,
- Check the settings (2334) and (2335).

**ALARM 011, 012:
ELECTRICAL HEATERS, OVERHEATING****Description**

The status of the safety thermostat of the electrical heater signals an overheating on the system.

Action

Immediate shut down of the electrical heaters.

Reset

Manual reset.

Possible cause(s)

- Problem with wiring of the electrical heaters,
- Air system obstructed or closed,
- Filter clogged,
- Belts broken.

Remedies

- Check the connections of the electrical heaters,
- Check the air system,
- Clean the filters,
- Replace the belts.

**ALARM 013:
HOT WATER, RISK OF FROSTING****Description**

The status of the hot water signals a risk of frosting on the system.

Action

The alarm is signalling.

Reset

The trip is manually reset.

Possible cause(s)

- Problem with wiring.

Remedies

- Check the connections.

**ALARM 014, 015, 016:
GAS BURNER, FAILURE****Description**

The gas burner control box has generated a fault and is no longer controlling the fume extractor fan.

Action

Immediate shut down of the gas burner. The alarm is signalling.

Reset

Once the burner control box has been reset for 2 minutes, the alarm 014 or 015 is automatically deleted. Up to 3 trips can occur during a day and are saved in the alarm history. The two first trips don't give the alarm alert, and the alarm counter is reset every day at 11 am. The third trip activates the fault report and must be manually reset. The alarm 016 requests a manual reset.

Possible cause(s)

- Problem with wiring connection.

Remedies

- Check the gas burner connections.

**ALARM 021, 022, 023, 024, 025, 026:
TEMPERATURE, OUT OF RANGE****Description**

The temperature measured by the probe is outside of the permitted range or the hot water system frost thermostat is activated.

- Alarm 021: the blowing air temperature is higher than the safety limit,
- Alarm 022: the blowing air temperature is lower than the safety limit,
- Alarm 023: the room air temperature is higher than the safety limit,
- Alarm 024: the room air temperature is lower than the safety limit,
- Alarm 025: the water condenser temperature is higher than the safety limit,
- Alarm 026: the water condenser temperature is lower than the safety limit.

Action

Alarms 022 / 024: No action - Alarms 025 / 026: Stop compressors

Alarm 022:

1st threshold - All compressors stop. Fresh air damper closed.

2nd threshold : If there is a hot water coil; the complete unit stops immediately. Otherwise; the unit stops after 15 minutes.

Alarm 021:

1st threshold -One compressor or heating stage stops immediately, then others progressively

2nd threshold - All the compressors and all the back-up heating stages stop

Fault displayed -

Reset

Automatic resetting of fault as soon as the temperature returns to within the permitted operating range, except 3rd safety threshold lower limit which requires a manual reset

Possible cause(s)

- Insufficient airflow / Air damper jammed open
- Frost safety thermostat activated
- Temperature probe failed,
- Problem with wiring of probe.

Remedies

- Check the air system / Check the air damper, mechanically and electrically
- Replace probe,
- Check the connections of the probe.

**ALARM 029:
AIR QUALITY, TOO HIGH****Description**

The air quality measured by the sensor is over of the high limit.

Action

The alarm is signalling.

Reset

The alarm is manually reset.

Possible cause(s)

- Problem with wiring connection (sensor in short circuit or disconnected),
- Sensor damaged.

Remedies

- Check the wiring connections,
- Replace the sensor.

**ALARM 031:
HUMIDIFIER, FAILURE****Description**

The status of the humidifier signals a failure on the system.

Action

The alarm is signalling. The humidifier is stopped.

Reset

The alarm is automatically reset.

Possible cause(s)

- Problem with wiring connection.

Remedies

- Check the wiring connections.

**ALARM 032, 033:
ROOM HUMIDITY, OUT OF RANGE****Description**

The air ambient humidity is outside the permitted range.

- Alarm 32: the air ambient humidity is lower than the threshold limit,
- Alarm 33: the air ambient humidity is higher than the threshold limit.

Action

The alarm is signalling.

Reset

The alarm is automatically deleted once the temperature has reached the permitted operating range for 2 min.

Possible cause(s)

- Problem with wiring connection.

Remedies

- Check the wiring connections.

**ALARM 041:
PUMP 1, ELECTRICAL FAILURE****Description**

The electrical protection of the circulator has operated.

Action

The alarm is signalling. The pump is stopped.

Reset

Manual reset.

Possible cause(s)

- Problem with wiring connection.

Remedies

- Check the wiring connections.

**ALARM 051:
RECOVERY, MOTOR FAILURE****Description**

The CLIMATIC 60 has detected a failure on the recovery motor.

Action

The alarm is signalling. The motor is stopped.

Reset

The alarm is manually reset.

Possible cause(s)

- Problem with wiring connection.

Remedies

- Check the wiring connections.

**ALARM 052:
RECOVERY, WHEEL FAILURE****Description**

The outlet recovery temperature is over than the safety limit.

Action

The alarm is signalling. The wheel is stopped.

Reset

Once the recovery temperature decrease under the limit for 2 minutes, the alarm is automatically deleted. Up to 3 trips can occur during a day and are saved in the alarm history. The two first trips don't give the alarm alert, and the alarm counter is reset every day at 11 am. The third trip activates the fault report and must be manually reset.

Possible cause(s)

- Problem with wiring connection (sensor in short circuit or disconnected),
- Sensor damaged.

Remedies

- Check the wiring connections,
- Replace the sensor.

**ALARM 054:
RECOVERY, FILTER DIRTY****Description**

The outlet recovery temperature measured by the probe is higher than the setting (**3875**).

Action

The alarm is signalling.

Reset

The alarm is manually reset.

Possible cause(s)

- Problem with wiring connection.

Remedies

- Check the wiring connections.

**ALARM 061, 062:
CLIMATIC BOARD LINK, FAILURE****Description**

The link between the master / slave CLIMATIC 60 boards is faulty.

- Alarm 61: Master CLIMATIC 60 N°1 board disconnected,
- Alarm 62: Slave CLIMATIC 60 board disconnected.

Action

- Swap immediately the unit in stand alone mode.
- The alarm is signalling.

Reset

Once the communication is re-established for 30 s, the alarm is automatically deleted. Up to 6 trips can occur during a day and are saved in the alarm history. The five first trips don't give the alarm alert, and the alarm counter is reset every day at 6 am. The sixth trip activates the fault report and must be manually reset.

Possible cause(s)

- Problem with wiring connection,
- CLIMATIC 60 board power off,
- CLIMATIC 60 board damaged.

Remedies

- Check the wiring connections,
- Check the power of CLIMATIC 60 board,
- Replace the CLIMATIC 60 board.

**ALARM 070:
REAL TIME CLOCK BOARD, FAILURE****Description**

The real time clock board of the CLIMATIC 60 doesn't work. The battery is out of order or wrongly placed.

Action

The alarm is signalling.

Reset

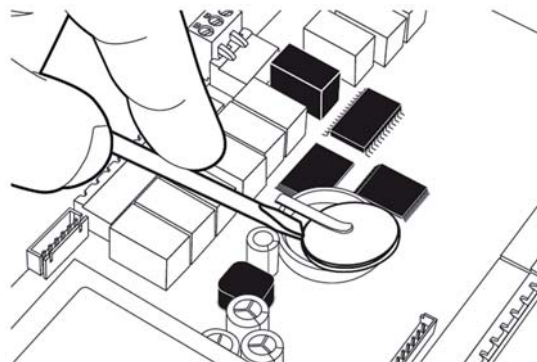
The alarm is manually reset.

Possible cause(s)

- Battery level too low,
- CLIMATIC 60 board damaged.

Remedies

- Replace the battery (do not dispose of the product in a municipal waste; it must be disposed of through specialist waste disposal centres),
- Replace the CLIMATIC 60 board.



**ALARM 071, 072:
EXPANSION BOARD LINK, FAILURE****Description**

The link between the expansion board(s) 1 or 2 and the CLIMATIC 60 is disconnected.

- Alarm 71: the expansion board N°1 is disconnected from the CLIMATIC 60,
- Alarm 72: the expansion board N°2 is disconnected from the CLIMATIC 60.

Action

- Immediate shut down of the unit.
- The alarm is signalling.

Reset

Once the communication is re-established for 30 s, the alarm is automatically deleted.

Possible cause(s)

- Problem with wiring connection,
- Wrong expansion board address,
- Expansion board damaged.

Remedies

- Check the wiring connections,
- Check the expansion board address (refer to the "FREE INPUT / OUTPUT" paragraph),
- Replace the expansion board.

**ALARM 073, 074, 075, 076:
INVERTER LINK, FAILURE****Description**

The link between the inverter and the CLIMATIC 60 has been disconnected for 5 s.

- Alarm 073: the blower inverter is disconnected from the CLIMATIC 60,
- Alarm 074: the exhaust inverter is disconnected from the CLIMATIC 60,
- Alarm 075: the condenser fan inverter of circuit 1 is disconnected from the CLIMATIC 60,
- Alarm 076: the condenser fan inverter of circuit 2 is disconnected from the CLIMATIC 60,

Action

- Alarm 073: immediate shut down of the complete unit. The alarm is signalling,
- Alarm 074: immediate shut down of the complete unit. The alarm is signalling,
- Alarm 075: immediate shut down of circuit 1. The alarm is signalling,
- Alarm 076: immediate shut down of circuit 2. The alarm is signalling,

Reset

Once the communication is re-established for 2 minutes, the alarm is automatically deleted.

Possible cause(s)

- Problem with wiring connection,
- Wrong inverter address,
- Inverter damaged.

Remedies

- Check the wiring connections,
- Check the inverter address,
- Replace the inverter.

ALARM 056, 059, 080, 081, 082, 083, 084, 085, 086, 087, 088, 089, 141, 142, 143, 144, 241, 242, 243, 244, 341, 342, 343, 344:**PROBE & SENSOR, FAULTY****Description**

- The temperature probe or pressure sensor measured by the CLIMATIC 60 or other expansion boards is incorrect. The device may be disconnected or in short circuit for 5s.
- Alarm 056: the recovery air flow sensor value is incorrect,
- Alarm 059: the outlet recovery air temperature probe value is incorrect,
- Alarm 080: the supply air flow sensor value is incorrect,
- Alarm 081: the room air temperature probe value is incorrect,
- Alarm 082: the room air humidity sensor value is incorrect,
- Alarm 083: the outside air temperature probe value is incorrect,
- Alarm 084: the outside air humidity sensor value is incorrect,
- Alarm 085: the supply air temperature probe value is incorrect,
- Alarm 086: the inlet water condenser temperature probe value is incorrect,
- Alarm 087: the outlet water condenser temperature probe value is incorrect,
- Alarm 088: the return air temperature probe value is incorrect,
- Alarm 089: the air quality sensor value is incorrect,
- Alarm 141, 241, 341: the high pressure sensor value on circuit 1, 2 or 3 is incorrect,
- Alarm 142, 242, 342: the low pressure sensor value on circuit 1, 2 or 3 is incorrect,
- Alarm 143, 243, 343: the liquid temperature probe value on circuit 1, 2 or 3 is incorrect,
- Alarm 144, 244, 344: the suction temperature probe value on circuit 1, 2 or 3 is incorrect,

Action

- Alarm 056: immediate shut down of the recovery module. The alarm is signaling,
- Alarm 059: immediate shut down of the recovery module. The alarm is signaling,
- Alarm 080: immediate shut down of the complete unit. The blower still works, The alarm is signaling,
- Alarm 081: immediate shut down of the complete unit. The blower still works, The alarm is signaling,
- Alarm 082: immediate shut down of the complete unit. The blower still works, The alarm is signaling,
- Alarm 083: immediate shut down of the complete unit. The blower still works, The alarm is signaling,
- Alarm 084: immediate shut down of the complete unit. The blower still works, The alarm is signaling,
- Alarm 085: immediate shut down of the complete unit. The blower still works, The alarm is signaling,
- Alarm 086: immediate shut down of all circuit. The alarm is signaling,
- Alarm 087: immediate shut down of all circuit. The alarm is signaling,
- Alarm 089: don't stop the unit. The alarm is signaling,
- Alarm 141, 241, 341: immediate shut down of the circuit 1, 2 or 3. The alarm is signaling,
- Alarm 142, 242, 342: immediate shut down of the circuit 1, 2 or 3. The alarm is signaling,
- Alarm 143, 243, 343: immediate shut down of the circuit 1, 2 or 3. The alarm is signaling,
- Alarm 144, 244, 344: immediate shut down of the circuit 1, 2 or 3. The alarm is signaling,

Reset

Once the data read is coherent for 2 minutes, the alarm is automatically deleted.

Possible cause(s)

- Problem with wiring connection,
- Probe or sensor damaged.

Remedies

- Check the wiring connections,
- Replace the probe or sensor.

**ALARM 091:
BLOWER OR EXHAUST FAN, FAILURE****Description**

The fan motor control is no longer active.

- Alarm 091: the air conditioning fan motor or the exhaust fan motor control is no longer active,

Action

Immediate shut down of the complete unit. The alarm is signalling.

Reset

The alarm is manually reset.

Possible cause(s)

- Fire safety thermostat active
- Thermal motor protection devices activated,
- Problem with wiring connection,
- Fan motor damaged.

Remedies

- Reset the thermostat,
- Check the air system,
- Check the connection,
- Replace the fan motor.

**ALARM 099:
FIRE / SMOKE, DETECTED****Description**

The stand-alone detector switch (DAD) has detected the presence of smoke in the unit.

Action

Immediate shut down of the complete unit and fresh air damper opening (or closing with set point (**3114**)). The alarm is signalling.

Reset

The alarm is manually reset.

Possible cause(s)

- Problem with the DAD

Remedies

- Check the connection.

**ALARM 092, 094, 103, 203:
FAN INVERTER, FAILURE****Description**

The CLIMATIC 60 has detected an alarm on the pump inverter or the fan inverter.

- Alarm 092: inverter failure of the blower fan,
- Alarm 094: inverter failure of the exhaust fan,
- Alarm 103: inverter failure of the condenser fan on circuit 1,
- Alarm 203: inverter failure of the condenser fan on circuit 2.

Action

- Alarm 092: immediate shut down of the complete unit. The alarm is signalling,
- Alarm 094: immediate shut down of the complete unit. The alarm is signalling,
- Alarm 103: immediate shut down of the circuit 1. The alarm is signalling,
- Alarm 203: immediate shut down of the circuit 2. The alarm is signalling.

Reset

Once the communication is re-established for 2 minutes, the alarms 094 / 103 / 203 are automatically reset.

For the alarm 092, once the communication is re-established for 2 minutes, the alarm is automatically reset. Up to 3 trips can occur during a day and are saved in the alarm history. The two first trips don't give the alarm alert, and the alarm counter is reset every day at 11 am. The third trip activates the fault report and must be manually reset.

Possible cause(s)

- Problem with wiring connection,
- Pump or fan damaged,
- Inverter damaged.

Remedies

- Check the inverter connection,
- Replace the pump or fan,
- Replace the inverter.

**ALARM 102, 202:
CONDENSER FAN, ELECTRICAL FAILURE****Description**

The thermal motor protection of the condenser fan has detected an over temperature for 5 s, while the fan motor was in demand for at least 5 s.

- Alarm 102: thermal motor protection of the condenser fan on circuit 1,
- Alarm 202: thermal motor protection of the condenser fan on circuit 2.

Action

- Alarm 102: the alarm is signalling,
- Alarm 202: the alarm is signalling

Reset

Once the data read is coherent for 2 minutes, the alarm is automatically deleted. Up to 3 trips can occur during a day and are saved in the alarm history. The two first trips don't give the alarm alert, and the alarm counter is reset every day at 11 am. The third trip activates the fault report and must be manually reset.

Possible cause(s)

- Wrong air flow operating,
- Problem with wiring connection,
- Fan motor damaged.

Remedies

- Check the air system,
- Check the connection,
- Replace the fan motor.

**ALARM 110, 210, 310:
LEAK REFRIGERANT, DETECTION****Description**

The CLIMATIC 60 has detected a risk of leakage of the refrigerant circuit.

Action

The alarm is signalling.

Reset

The alarm is manually reset.

Possible cause(s)

- Problem of refrigerant capacity.

Remedies

- Check the frigorific system operation

**ALARM 114, 214, 314:
COMPRESSOR, ELECTRICAL FAILURE****Description**

The thermal magnetic circuit breaker protection or the thermal motor protection of the compressor has tripped.

- Alarm n14: thermal magnetic circuit breaker on circuit n,

Action

Immediate shut down of the complete circuit. The alarm is signalling.

Reset

Once the circuit has been stopped for 30 minutes, the alarm is automatically deleted. Up to 3 trips can occur during a day and are saved in the alarm history. The two first trips don't give the alarm alert, and the alarm counter is reset every day at 11 am. The third trip activates the fault report and must be manually reset.

Possible cause(s)

- Problem with wiring connection,
- Coil condenser dirty,
- Fan condenser not operating.

Remedies

- Check the wiring connection,
- Clean the coil condenser,
- Check the fan operating.

**ALARM 116, 216, 316:
REVERSING VALVE, BLOCKED****Description**

The CLIMATIC 60 hasn't measured a difference of pressure of 2 bars for 5 s, while a compressor was running for 30 s.

- Alarm n16: reversing valve blocked on circuit n,

Action

Immediate shut down of the complete circuit. The alarm is signalling.

Reset

Once the circuit has been stopped for 2 minutes, the alarm is automatically deleted. Up to 3 trips can occur during a day and are saved in the alarm history. The two first trips don't give the alarm alert, and the alarm counter is reset every day at 11 am. The third trip activates the fault report and must be manually reset.

Possible cause(s)

- Problem with wiring connection,
- Problem of reversing valve.

Remedies

- Check the wiring connection,
- Replace the reversing valve.

**ALARM 117, 217, 317:
LOW OPERATING PRESSURE, FAULTY****Description**

The suction temperature calculated by the LP pressure sensor is lower than the permitted threshold. The temperature has reached -27.0°C for more than 2 mn while a compressor is running for 2 mn. The alarm is disable during the defrost procedure.

- Alarm n17: suction temperature too low on circuit n,

Action

Immediate shut down of the complete circuit. The alarm is signalling.

Reset

Once the circuit has been stopped for 2 minutes, the alarm is automatically deleted. Up to 3 trips can occur during a day and are saved in the alarm history. The two first trips don't give the alarm alert except if a trip is still present for 1 hour, and the alarm counter is reset every day at 11 am. The third trip activates the fault report and must be manually reset.

Possible cause(s)

- Problem of refrigerant capacity.

Remedies

- Check the frigorific system operation.

ALARM 118, 218: WATER EVAPORATOR, RISK OF FROSTING

Description

The evaporating pressure measured by the LP sensor is too low and may pose a risk for the water evaporator. These alarms are disabled if the glycol rate is greater than 45%. The LP pressure has reached the limit of 0°C for 2 minutes while a compressor was running for at least 2 minutes. This alarm is disabled during 1 minute when a compressor start or stop or during the defrost procedure.

- Alarm 118: risk of frosting the water evaporator by circuit 1,
- Alarm 218: risk of frosting the water evaporator by circuit 2.

Action

Immediate shut down of the complete circuit. The alarm is signalling.

Reset

Once the suction pressure is higher than 0°C for 2 minutes, the alarm is automatically deleted. Up to 3 trips can occur during a day and are saved in the alarm history. The two first trips don't give the alarm alert except if a trip is still present for 1 hour, and the alarm counter is reset every day at 6 am. The third trip activates the fault report and must be manually reset.

Possible cause(s)

- Problem of refrigerant capacity
- Problem with the expansion valve.

Remedies

- Check the frigorific system operation,
- Replace the expansion valve.

ALARM 121, 221, 321: EVAPORATOR, TEMPERATURE SUPERHEAT TOO HIGH

ALARM 122, 222, 322: EVAPORATOR, TEMPERATURE SUPERHEAT TOO LOW

Description

The CLIMATIC 60 indicates an over-temperature:

- Alarm n21: superheat temperature too low on circuit n,
- Alarm n22: superheat temperature too high on circuit n,

Action

These alarms are only reported: it had no effect on compressors.

Reset

The alarm is automatically deleted if the temperature is correct. This trip is saved in the alarm history only if the DS60 is connected or if 999 faults were activated during one day.

The daily counter is automatically reset every day at 11 am. The 999th trip is locked and must be manually reset.

Possible cause(s)

- Problem of refrigerant capacity
- Problem with the expansion valve.

Remedies

- Check the frigorific system operation,
- Replace the expansion valve.

**ALARM 123, 223, 323:
CONDENSER, TEMPERATURE SUBCOOLING TOO LOW****ALARM 124, 224, 323:
CONDENSER, TEMPERATURE SUBCOOLING TOO HIGH****Description**

The CLIMATIC 60 indicates an over-temperature:

- Alarm n23: air / water evaporator subcooling too low on circuit n,
- Alarm n24: air / water evaporator subcooling too high on circuit n,

Action

These alarms are only reported: it had no effect on compressors.

Reset

The alarm is automatically deleted if the temperature is correct. This trip is saved in the alarm history only if the DS60 is connected or if 999 faults were activated during one day.

The daily counter is automatically reset every day at 11 am. The 999th trip is locked and must be manually reset.

Possible cause(s)

- Problem of refrigerant capacity
- Problem with the expansion valve.

Remedies

- Check the frigorific system operation,
- Replace the expansion valve.

**ALARM 127, 227, 327:
MAXIMUM OPERATING PRESSURE (MOP), FAULTY****ALARM 128, 228, 328:
LOW OPERATING PRESSURE (LOP), FAULTY****Description**

The suction pressure measured by the CLIMATIC 60 is outside a permitted range.

- Alarm n27: Max operating pressure on circuit n,
- Alarm n28: Low operating pressure on circuit n,

Action

These alarms are only reported: it had no effect on compressors.

Reset

The alarm is automatically deleted if the pressure is correct. This trip is saved in the alarm history only if the DS60 is connected or if 999 faults were activated during one day.

The daily counter is automatically reset every day at 11 am. The 999th trip is locked and must be manually reset.

Possible cause(s)

- Problem of refrigerant capacity

Remedies

- Check the frigorific system operation

**ALARM 119, 219, 319:
CONDENSER, TEMPERATURE TOO LOW****ALARM 129, 229, 329:
CONDENSER, TEMPERATURE TOO HIGH****Description**

The CLIMATIC 60 indicates an over-temperature:

- Alarm n19: Condensing temperature too low on circuit n,
- Alarm n29: Condensing temperature too high on circuit n,

Action

These alarms are only reported: it had no effect on compressors.

Reset

The alarm is automatically deleted if the temperature is correct. This trip is saved in the alarm history only if the DS60 is connected or if 999 faults were activated during one day.

The daily counter is automatically reset every day at 11 am. The 999th trip is locked and must be manually reset.

Possible cause(s)

- Problem of refrigerant capacity

Remedies

- Check the frigorific system operation

CLIMATIC™ 60

APPENDIX

Ref : CL60_ROOFTOP_Appendix-IOM-0213-E

BMS

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APPENDIX 1

Modbus, BACnet, Trend, Carel

| @Address | | R/W | DESCRIPTION | MIN | Fact. | MAX |
|----------|---------|-----|---|-------|-------|-------|
| 0 | | | | | | |
| 1 | Integer | R/W | bms, watchdog counter | 0 | 0 | 32767 |
| 2 | Analog | R/W | control, bms day, set point of cooling mode | 8.0 | 22.0 | 35.0 |
| 3 | Analog | R/W | control, bms day, set point of heating mode | 8.0 | 19.0 | 35.0 |
| 4 | Analog | R/W | economizer, bms day, set point of minimum fresh air | 0.0 | 20.0 | 100.0 |
| 5 | Analog | R/W | control, bms night, set point of cooling mode | 8.0 | 35.0 | 35.0 |
| 6 | Analog | R/W | control, bms night, set point of heating mode | 8.0 | 15.0 | 35.0 |
| 7 | Analog | R/W | economizer, bms night, set point of minimum fresh air | 0.0 | 0.0 | 100.0 |
| 8 | Analog | R/W | control, bms day, set point of dehumidification | 0.0 | 100.0 | 100.0 |
| 9 | Analog | R/W | control, bms day, set point of humidification | 0.0 | 0.0 | 100.0 |
| 10 | Analog | R/W | control, bms night, set point of dehumidification | 0.0 | 100.0 | 100.0 |
| 11 | Analog | R/W | control, bms night, set point of humidification | 0.0 | 0.0 | 100.0 |
| 12 | Analog | R/W | blower, bms day, nominal threshold for air flow control | 0.0 | ~ | 100.0 |
| 13 | Analog | R/W | blower, bms night, nominal threshold for air flow control | 0.0 | ~ | 100.0 |
| 14 | Integer | R/W | power meter, value for reset memory | 0 | 0 | 65536 |
| 15 | Integer | R/W | clock, hour setting | 0 | ~ | 23 |
| 16 | Integer | R/W | clock, minute setting | 0 | ~ | 59 |
| 17 | Integer | R/W | clock, day setting | 1 | ~ | 31 |
| 18 | Integer | R/W | clock, month setting | 1 | ~ | 12 |
| 19 | Integer | R/W | clock, year setting | 0 | ~ | 99 |
| 20 | Analog | R/W | emulation, value of the room temperature send by bms | -99.9 | -99.9 | 99.9 |
| 21 | Analog | R/W | emulation, value of the room humidity send by bms | 0.0 | 0.0 | 100.0 |
| 22 | Analog | R/W | emulation, value of the outside temperature send by bms | -99.9 | -99.9 | 99.9 |
| 23 | Analog | R/W | emulation, value of the outside humidity send by bms | 0.0 | 0.0 | 100.0 |
| 24 | Integer | R/W | emulation, value of the air quality send by bms | 0 | 0 | 2000 |
| 25 | Analog | R/W | emulation, value of the speed blower send by bms | 0.0 | 0.0 | 100.0 |
| 26 | Integer | R | power meter, value of the real power | 0 | ~ | 65536 |
| 27 | Integer | R | power meter, value of the reactive power | 0 | ~ | 65536 |
| 28 | Integer | R | power meter, value of the power factor | 0 | ~ | 65536 |
| 29 | Integer | R | power meter, value (weight low) of the real energy | 0 | ~ | 65536 |
| 30 | Integer | R | power meter, value (weight high) of the real energy | 0 | ~ | 65536 |
| 31 | Integer | R | power meter, value (weight low) of the reactive energy | 0 | ~ | 65536 |
| 32 | Integer | R | power meter, value (weight high) of the reactive energy | 0 | ~ | 65536 |
| 33 | Analog | R | control, set value of cooling mode | 8.0 | ~ | 35.0 |
| 34 | Analog | R/W | control, customer (dc/dm) set point | 8.0 | 20.5 | 35.0 |
| 35 | Analog | R | control, set value of heating mode | 8.0 | ~ | 35.0 |
| 36 | Integer | R | alarm, codes | 0 | ~ | 999 |
| 37 | Analog | R | control, value of the room temperature | -99.9 | ~ | 99.9 |
| 38 | Analog | R | control, value of the outside temperature | -99.9 | ~ | 99.9 |
| 39 | Analog | R | control, value of the supply temperature | -99.9 | ~ | 99.9 |
| 40 | Analog | R | control, value of the return temperature | -99.9 | ~ | 99.9 |
| 41 | Analog | R | control, value of the room humidity | 0.0 | ~ | 100.0 |
| 42 | Analog | R | control, calculated value of the room absolute humidity | 0.0 | ~ | 99.9 |
| 43 | Analog | R | control, value of the outside humidity | 0.0 | ~ | 100.0 |
| 44 | Analog | R | control, calculated value of the outside absolute humidity | 0.0 | ~ | 99.9 |
| 45 | Integer | R | blower, value of differential pressure sensor on air flow | 0 | ~ | 1000 |
| 46 | Integer | R | economizer, value of air quality sensor | 0 | ~ | 2000 |
| 47 | Analog | R | economizer, opening percentage send to the actuator | 0.0 | ~ | 100.0 |
| 48 | Analog | R | gas heaters, opening percentage calculated for the valve | 0.0 | ~ | 100.0 |
| 49 | Analog | R | electrical heaters, power percentage calculated for the triac | 0.0 | ~ | 100.0 |

| @Address | | R/W | DESCRIPTION | MIN | Fact. | MAX |
|--------------------------------------|---------|-----|---|--------|-------|-------|
| 50 | Analog | R | hot water coil, opening percentage calculated for the valve | 0.0 | ~ | 100.0 |
| 51 | Analog | R | humidifier, power percentage calculated for the proportional signal | 0.0 | ~ | 100.0 |
| 52 | Analog | R | remote control, value of the signal, be-1 b1, temperature | -99.9 | ~ | 99.9 |
| 53 | Analog | R | remote control, value of the signal, be-1 b2, temperature | -99.9 | ~ | 99.9 |
| 54 | Analog | R | remote control, value of the signal, be-1 b3, temperature | -99.9 | ~ | 99.9 |
| 55 | Analog | R | remote control, value of the signal, be-1 b4, temperature | -99.9 | ~ | 99.9 |
| 56 | Analog | R | remote control, value of the signal, be-1 b1, humidity | 0.0 | ~ | 100.0 |
| 57 | Analog | R | remote control, value of the signal, be-1 b2, humidity | 0.0 | ~ | 100.0 |
| 58 | Analog | R | remote control, value of the signal, be-1 b3, humidity | 0.0 | ~ | 100.0 |
| 59 | Analog | R | remote control, value of the signal, be-1 b4, humidity | 0.0 | ~ | 100.0 |
| 60 | Integer | R | unit, count value (weight low) of operating time | 0 | ~ | 65536 |
| 61 | Integer | R | unit, count value (weight high) of operating time | 0 | ~ | 65536 |
| 62 | Integer | R | blower, count value (weight low) of operating time | 0 | ~ | 65536 |
| 63 | Integer | R | blower, count value (weight high) of operating time | 0 | ~ | 65536 |
| 64 | Integer | R | circuit 1 compressor 1, count value (weight low) of operating time | 0 | ~ | 65536 |
| 65 | Integer | R | circuit 1 compressor 1, count value (weight high) of operating time | 0 | ~ | 65536 |
| 66 | Integer | R | circuit 1 compressor 2, count value (weight low) of operating time | 0 | ~ | 65536 |
| 67 | Integer | R | circuit 1 compressor 2, count value (weight high) of operating time | 0 | ~ | 65536 |
| 68 | Integer | R | circuit 2 compressor 1, count value (weight low) of operating time | 0 | ~ | 65536 |
| 69 | Integer | R | circuit 2 compressor 1, count value (weight high) of operating time | 0 | ~ | 65536 |
| 70 | Integer | R | circuit 2 compressor 2, count value (weight low) of operating time | 0 | ~ | 65536 |
| 71 | Integer | R | circuit 2 compressor 2, count value (weight high) of operating time | 0 | ~ | 65536 |
| 72 | Integer | R | blower, calculated value of air flow | 0 | ~ | 32767 |
| 73 | | | not used | -32768 | ~ | 32767 |
| 74 | Integer | R | Alarm, 1 | 0 | ~ | 65536 |
| | | | bit.0 = (70) Real Time Clock | | | |
| | | | bit.1 = (71) BE.1, Communication Bus | | | |
| | | | bit.2 = (72) BE.2, Communication Bus | | | |
| | | | bit.3 = (9) Unit power supply | | | |
| | | | bit.4 = (81) Room Temperature, Probe | | | |
| | | | bit.5 = (82) Room Humidity, Sensor | | | |
| | | | bit.6 = (83) Outside Temperature, Probe | | | |
| | | | bit.7 = (85) Supply Temperature, Probe | | | |
| | | | bit.8 = (88) Return Temperature, Probe | | | |
| | | | bit.9 = (22) Supply Temperature, Too Low | | | |
| | | | bit.10 = (80) Air Flow, Sensor | | | |
| | | | bit.11 = (73) Blower, Inverter, Communication Bus | | | |
| | | | bit.12 = (1) Blower, Flow Switch Cut Off | | | |
| | | | bit.13 = (91) Blower, Fan | | | |
| | | | bit.14 = (92) Blower, Inverter | | | |
| bit.15 = (99) Fire / Smoke, Detected | | | | | | |

| @Address | | R/W | DESCRIPTION | MIN | Fact. | MAX |
|---------------------------------------|---------|-----|---|-----|-------|-------|
| 75 | Integer | R | Alarm, 2 | 0 | ~ | 65536 |
| | | | bit.0 = (74) Exhaust, Inverter, Communication Bus | | | |
| | | | bit.1 = (93) Exhaust, Fan | | | |
| | | | bit.2 = (94) Exhaust, Inverter | | | |
| | | | bit.3 = | | | |
| | | | bit.4 = (59) Recovery, Outlet Temperature, Probe | | | |
| | | | bit.5 = (56) Recovery, Air Flow, Sensor | | | |
| | | | bit.6 = (51) Recovery, Motor | | | |
| | | | bit.7 = (52) Recovery, Wheel | | | |
| | | | bit.8 = | | | |
| | | | bit.9 = (13) Hot Water, Risk Of Frosting | | | |
| | | | bit.10 = (41) Pump 1, Electrical | | | |
| | | | bit.11 = (11) Electrical Heaters, Overheating | | | |
| | | | bit.12 = (12) Fresh Air, Electrical Heater, Overheating | | | |
| | | | bit.13 = (14) Gas Burner 1 | | | |
| | | | bit.14 = (15) Gas Burner 2 | | | |
| bit.15 = (16) Gas Burner, Overheating | | | | | | |
| 76 | Integer | R | [Alarm - Major] | 0 | ~ | 65536 |
| | | | bit.0 = (141) Circuit 1, High Pressure, Sensor | | | |
| | | | bit.1 = (142) Circuit 1, Low Pressure, Sensor | | | |
| | | | bit.2 = (143) Circuit 1, Liquid Temperature, Probe | | | |
| | | | bit.3 = (144) Circuit 1, Suction Temperature, Probe | | | |
| | | | bit.4 = (114) Circuit 1, Compressor, Electrical | | | |
| | | | bit.5 = (115) Circuit 1, High Pressure Cut Off | | | |
| | | | bit.6 = (116) Circuit 1, Reversing Valve, Blocked | | | |
| | | | bit.7 = (117) Circuit 1, Low Pressure Cut Off | | | |
| | | | bit.8 = (118) Circuit 1, Risk Of Frosting | | | |
| | | | bit.9 = (132) Circuit 1, Expansion Valve, Motor | | | |
| | | | bit.10 = (75) Circuit 1, Condenser Fan, Inverter, Communication Bus | | | |
| | | | bit.11 = (102) Circuit 1, Condenser Fan | | | |
| | | | bit.12 = (103) Circuit 1, Condenser Fan, Inverter | | | |
| | | | bit.13 = (86) Water Condenser, Inlet, Probe | | | |
| | | | bit.14 = (87) Water Condenser, Outlet, Probe | | | |
| bit.15 = (101) evd, communication bus | | | | | | |

| @Address | R/W | DESCRIPTION | MIN | Fact. | MAX | |
|--|---------|-------------|-----|-------|-------|---|
| 77 | Integer | R | 0 | ~ | 65536 | Alarm, 4 |
| | | | | | | bit.0 = (241) Circuit 2, High Pressure, Sensor |
| | | | | | | bit.1 = (242) Circuit 2, Low Pressure, Sensor |
| | | | | | | bit.2 = (243) Circuit 2, Liquid Temperature, Probe |
| | | | | | | bit.3 = (244) Circuit 2, Suction Temperature, Probe |
| | | | | | | bit.4 = (214) Circuit 2, Compressor, Electrical |
| | | | | | | bit.5 = (215) Circuit 2, High Pressure Cut Off |
| | | | | | | bit.6 = (216) Circuit 2, Reversing Valve, Blocked |
| | | | | | | bit.7 = (217) Circuit 2, Low Pressure Cut Off |
| | | | | | | bit.8 = (218) Circuit 2, Risk Of Frosting |
| | | | | | | bit.9 = (232) Circuit 2, Expansion Valve, Motor |
| | | | | | | bit.10 = (76) Circuit 2, Condenser fan, Inverter, Communication Bus |
| | | | | | | bit.11 = (202) Circuit 2, Condenser Fan |
| | | | | | | bit.12 = (203) Circuit 2, Condenser Fan, Inverter |
| | | | | | | bit.13 = (2) Water Condenser, Flow Switch Cut Off |
| | | | | | | bit.14 = (25) Water Condenser Temperature, Too Low |
| bit.15 = (26) Water Condenser Temperature, Too High | | | | | | |
| 78 | Integer | R | 0 | ~ | 65536 | Alarm, 5 |
| | | | | | | bit.0 = (84) Outside Humidity, Sensor |
| | | | | | | bit.1 = (23) Room Temperature, Too High |
| | | | | | | bit.2 = (24) Room Temperature, Too Low |
| | | | | | | bit.3 = (32) Room Humidity, Too Low |
| | | | | | | bit.4 = (33) Room Humidity, Too High |
| | | | | | | bit.5 = (21) Supply Temperature, Too High |
| | | | | | | bit.6 = (4) Blower, Filters, Dirty |
| | | | | | | bit.7 = (5) Blower, Filters, Missing |
| | | | | | | bit.8 = (89) Air Quality, Sensor |
| | | | | | | bit.9 = (29) Air Quality, Too High |
| | | | | | | bit.10 = (54) Recovery, Filters, Dirty |
| | | | | | | bit.11 = (31) Humidifier, Failure |
| | | | | | | bit.12 = |
| | | | | | | bit.13 = |
| | | | | | | bit.14 = (110) Circuit 1, Leak Refrigerant, Detected |
| bit.15 = (210) Circuit 2, Leak Refrigerant, Detected | | | | | | |

| @Address | | R/W | DESCRIPTION | MIN | Fact. | MAX |
|---|---------|-----|--|--------|-------|-------|
| 79 | Integer | R | Alarm, 6 | 0 | ~ | 65536 |
| | | | bit.0 = (119) Circuit 1, Low Condensing Temperature | | | |
| | | | bit.1 = (129) Circuit 1, High Condensing Temperature | | | |
| | | | bit.2 = (128) Circuit 1, LOP, Low Operating Pressure | | | |
| | | | bit.3 = (127) Circuit 1, MOP, Maximum Operating Pressure | | | |
| | | | bit.4 = (121) Circuit 1, Low Superheat | | | |
| | | | bit.5 = (122) Circuit 1, High Superheat | | | |
| | | | bit.6 = (123) Circuit 1, Low Subcooling | | | |
| | | | bit.7 = (124) Circuit 1, High Subcooling | | | |
| | | | bit.8 = (219) Circuit 2, Low Condensing Temperature | | | |
| | | | bit.9 = (229) Circuit 2, High Condensing Temperature | | | |
| | | | bit.10 = (228) Circuit 2, LOP, Low Operating Pressure | | | |
| | | | bit.11 = (227) Circuit 2, MOP, Maximum Operating Pressure | | | |
| | | | bit.12 = (221) Circuit 2, Low Superheat | | | |
| | | | bit.13 = (222) Circuit 2, High Superheat | | | |
| | | | bit.14 = (223) Circuit 2, Low Subcooling | | | |
| bit.15 = (224) Circuit 2, High Subcooling | | | | | | |
| 80 | Integer | R | alarm, 7 | -32768 | ~ | 32767 |
| | | | bit.0 = (341) circuit 3, high pressure, faulty sensor | | | |
| | | | bit.1 = (342) circuit 3, low presure, faulty sensor | | | |
| | | | bit.2 = (343) circuit 3, liquid temperature, faulty probe | | | |
| | | | bit.3 = (344) circuit 3, suction temperature, faulty probe | | | |
| | | | bit.4 = (314) circuit 3, compressor, electrical failure | | | |
| | | | bit.5 = (315) circuit 3, high pressure cut off | | | |
| | | | bit.6 = (316) circuit 3, reversing valve, blocked | | | |
| | | | bit.7 = (317) circuit 3, low pressure cut off | | | |
| | | | bit.8 = (319) circuit 3, low condensing temperature | | | |
| | | | bit.9 = (329) circuit 3, high condensing temperature | | | |
| | | | bit.10 = (328) circuit 3, lop low operating pressure | | | |
| | | | bit.11 = (327) circuit 3, mop, maximum operating pressure | | | |
| | | | bit.12 = (321) circuit 3, low superheat | | | |
| | | | bit.13 = (322) circuit 3, high superheat | | | |
| | | | bit.14 = (323) circuit 3, low subcooling | | | |
| bit.15 = (324) circuit 3, high subcooling | | | | | | |

| @Address | | R/W | DESCRIPTION | MIN | Fact. | MAX |
|----------|---------|-----|---|--------|-------|-------|
| 81 | | R | not used | -32768 | ~ | 32767 |
| 82 | | R | not used | -32768 | ~ | 32767 |
| 83 | | R | not used | -32768 | ~ | 32767 |
| 84 | Integer | R/W | unit, general on/off, start & stop, set point | 0 | 0 | 1 |
| 85 | Integer | R/W | unit, reset alarms, set point | 0 | 0 | 1 |
| 86 | Integer | R/W | blower, bms day, setpoint for activation operation | 0 | 1 | 1 |
| 87 | Integer | R/W | blower, bms day, setpoint for activation operation, in room control dead zone | 0 | 1 | 1 |
| 88 | Integer | R/W | blower, bms night, setpoint for activation operation | 0 | 1 | 1 |
| 89 | Integer | R/W | blower, bms night, setpoint for activation operation, in room control dead zone | 0 | 0 | 1 |
| 90 | Integer | R/W | bms, night mode forced by bms | 0 | 0 | 1 |
| 91 | Integer | R/W | economizer, bms day, setpoint for activation operation in free-cooling | 0 | 1 | 1 |
| 92 | Integer | R/W | economizer, bms night, setpoint for activation operation in free-cooling | 0 | 1 | 1 |
| 93 | Integer | R/W | economizer, bms day, setpoint for activation operation of air quality | 0 | 1 | 1 |
| 94 | Integer | R/W | economizer, bms night, setpoint for activation operation of air quality | 0 | 1 | 1 |
| 95 | Integer | R/W | circuit, bms day, setpoint for activation operation in cooling mode | 0 | 1 | 1 |
| 96 | Integer | R/W | circuit, bms day, setpoint for activation operation in heating mode | 0 | 1 | 1 |
| 97 | Integer | R/W | circuit, bms night, setpoint for activation operation in cooling mode | 0 | 1 | 1 |
| 98 | Integer | R/W | circuit, bms night, setpoint for activation operation in heating mode | 0 | 1 | 1 |
| 99 | Integer | R/W | 1st heaters, bms day, setpoint for activation operation | 0 | 1 | 1 |
| 100 | Integer | R/W | 1st heaters, bms night, setpoint for activation operation | 0 | 1 | 1 |
| 101 | Integer | R/W | control, bms day, setpoint for activation operation of humidity | 0 | 0 | 1 |
| 102 | Integer | R/W | control, bms night, setpoint for activation operation of humidity | 0 | 0 | 1 |
| 103 | Integer | R/W | circuit, unloaded 50% of compressors running by bms | 0 | 0 | 1 |
| 104 | Integer | R/W | clock, setting mode | 0 | 0 | 1 |
| 105 | Integer | R/W | remote control, activation of bm j14 no7 | 0 | 0 | 1 |
| 106 | Integer | R/W | remote control, activation of bm j15 no12 | 0 | 0 | 1 |
| 107 | Integer | R/W | remote control, activation of be-1 j5 no1 | 0 | 0 | 1 |

| @Address | | R/W | DESCRIPTION | MIN | Fact. | MAX |
|----------|---------|-----|--|-----|-------|-----|
| 108 | Integer | R/W | remote control, activation of be-1 j6 no2 | 0 | 0 | 1 |
| 109 | Integer | R/W | remote control, activation of be-1 j7 no3 | 0 | 0 | 1 |
| 110 | Integer | R/W | remote control, activation of be-1 j8 no4 | 0 | 0 | 1 |
| 111 | Integer | R/W | tcb, activation of feature | 0 | 0 | 1 |
| 112 | Integer | R/W | tcb, state of b signal | 0 | 0 | 1 |
| 113 | Integer | R/W | tcb, state of g signal | 0 | 0 | 1 |
| 114 | Integer | R/W | tcb, state of y1 signal | 0 | 0 | 1 |
| 115 | Integer | R/W | tcb, state of y2 signal | 0 | 0 | 1 |
| 116 | Integer | R/W | tcb, state of w1 signal | 0 | 0 | 1 |
| 117 | Integer | R/W | tcb, state of w2 signal | 0 | 0 | 1 |
| 118 | Integer | R/W | control, unloaded cooling mode by bms | 0 | 0 | 1 |
| 119 | Integer | R/W | control, unloaded heating mode by bms | 0 | 0 | 1 |
| 120 | Integer | R/W | blower, low speed forced by bms | 0 | 0 | 1 |
| 121 | Integer | R/W | blower, high speed forced by bms | 0 | 0 | 1 |
| 122 | Integer | R/W | economizer, opening to 0% forced by bms | 0 | 0 | 1 |
| 123 | Integer | R/W | economizer, opening to 100% forced by bms | 0 | 0 | 1 |
| 124 | Integer | R/W | economizer, unloaded air quality by bms | 0 | 0 | 1 |
| 125 | Integer | R/W | economizer, unloaded free-cooling by bms | 0 | 0 | 1 |
| 126 | Integer | R/W | economizer, unloaded free-heating by bms | 0 | 0 | 1 |
| 127 | Integer | R/W | circuit, unloaded 100% by bms | 0 | 0 | 1 |
| 128 | | R | circuit, unloaded 50% of compressors running by bms | 0 | 0 | 1 |
| 129 | Integer | R/W | circuit, unloaded heating mode by bms | 0 | 0 | 1 |
| 130 | Integer | R/W | circuit, defrost cycle delayed by bms | 0 | 0 | 1 |
| 131 | Integer | R/W | 1st heaters, unloaded 50% of heaters running by bms | 0 | 0 | 1 |
| 132 | Integer | R/W | 1st heaters, unloaded 100% by bms | 0 | 0 | 1 |
| 133 | Integer | R | alarm, state | 0 | ~ | 1 |
| 134 | Integer | R | unit, state of the general on/off | 0 | ~ | 1 |
| 135 | Integer | R | blower, state | 0 | ~ | 1 |
| 136 | Integer | R | exhaust, state | 0 | ~ | 1 |
| 137 | Integer | R | circuit 1 compressor 1, state | 0 | ~ | 1 |
| 138 | Integer | R | circuit 1 compressor 2, state | 0 | ~ | 1 |
| 139 | Integer | R | circuit 1, state of the reversing valve (heating mode) | 0 | ~ | 1 |
| 140 | Integer | R | circuit 2 compressor 1, state | 0 | ~ | 1 |
| 141 | Integer | R | circuit 2 compressor 2, state | 0 | ~ | 1 |
| 142 | Integer | R | circuit 2, state of the reversing valve (heating mode) | 0 | ~ | 1 |
| 143 | Integer | R | gas heaters, state of 1st burner | 0 | ~ | 1 |
| 144 | Integer | R | gas heaters, state of 2nd burner | 0 | ~ | 1 |
| 145 | Integer | R | gas heaters, state of the full power | 0 | ~ | 1 |
| 146 | Integer | R | electrical heaters, state of 1st stage | 0 | ~ | 1 |
| 147 | Integer | R | electrical heaters, state of 2nd stage | 0 | ~ | 1 |
| 148 | Integer | R | remote control, state of the dry contact, bm id4 | 0 | ~ | 1 |
| 149 | Integer | R | remote control, state of the dry contact, bm id7 | 0 | ~ | 1 |
| 150 | Integer | R | remote control, state of the dry contact, be-1 id1 | 0 | ~ | 1 |
| 151 | Integer | R | remote control, state of the dry contact, be-1 id2 | 0 | ~ | 1 |

| @Address | | R/W | DESCRIPTION | MIN | Fact. | MAX |
|----------|---------|-----|---|-------|-------|-------|
| 152 | Integer | R | remote control, state of the dry contact, be-1 id3 | 0 | ~ | 1 |
| 153 | Integer | R | remote control, state of the dry contact, be-1 id4 | 0 | ~ | 1 |
| 154 | Integer | R | control, state of cooling mode | 0 | ~ | 1 |
| 155 | Integer | R | control, state of dead zone | 0 | ~ | 1 |
| 156 | Integer | R | control, state of heating mode | 0 | ~ | 1 |
| 157 | Analog | R/W | economizer, temperature threshold for activation night refreshment function | 8,0 | 22,0 | 35,0 |
| 158 | Analog | R/W | control, low supply limit threshold in cooling mode | 3,0 | 12,0 | 68,0 |
| 159 | Analog | R/W | control, high supply limit threshold in heating mode | 30,0 | 38,0 | 68,0 |
| 160 | Analog | R/W | control, room temperature threshold for unloading cooling mode | 0,0 | 26,0 | 30,0 |
| 161 | Analog | R/W | control, room temperature threshold for unloading heating mode | 0,0 | 19,0 | 30,0 |
| 162 | Analog | R/W | economizer, outside lower temperature threshold for unloading free-cooling | -20,0 | -20,0 | 50,0 |
| 163 | Analog | R/W | economizer, outside upper temperature threshold for unloading free-cooling | -20,0 | 26,0 | 50,0 |
| 164 | Analog | R/W | circuit, outside temperature threshold for unloading 50% in cooling mode | -10,0 | 20,0 | 50,0 |
| 165 | Analog | R/W | circuit, outside temperature threshold for unloading 100% in cooling mode | -10,0 | 12,0 | 50,0 |
| 166 | Analog | R/W | circuit, outside temperature threshold for unloading 50% in heating mode | -20,0 | -20,0 | 50,0 |
| 167 | Analog | R/W | circuit, outside temperature threshold for unloading 100% in heating mode | -20,0 | -20,0 | 50,0 |
| 168 | Analog | R/W | heaters, outside temperature threshold for unloading | -20,0 | 10,0 | 50,0 |
| 169 | Integer | R/W | 1st heaters, bms night, set point for priority inversion starting | 0 | 0 | 3 |
| 170 | Integer | R/W | 1st heaters, bms day, set point for priority inversion starting | 0 | 0 | 3 |
| 171 | Analog | R/W | 1st heaters, outside temperature threshold for inversion starting | -20,0 | 10,0 | 50,0 |
| 172 | Integer | R/W | 2nd heaters, bms night, set point for priority inversion starting | 0 | 0 | 1 |
| 173 | Integer | R/W | 2nd heaters, bms day, set point for priority inversion starting | 0 | 0 | 1 |
| 174 | Analog | R/W | power meter, current threshold for unloaded 50% of compressors running | 0,0 | 999,9 | 999,9 |
| 175 | Integer | R | circuit 3 compressor 1, state | 0,0 | ~ | 1,0 |
| 176 | Integer | R | circuit 3, state of the reversing valve (heating mode) | 0,0 | ~ | 1,0 |
| 177 | Integer | R | clock, state of the schedule (zone.mode) | 0,0 | ~ | 6,5 |
| 178 | Integer | R | 2nd heaters, power percentage calculated for the triac | 0,0 | ~ | 100,0 |
| 179 | Integer | R | hot water recovery, opening percentage calculated for the valve | 0,0 | ~ | 100,0 |
| 180 | Integer | R/W | master/slaves, setting the sub-bus | 1 | 1 | 24 |
| 181 | Analog | R | blower, speed percentage calculated for the inverter | 0,0 | ~ | 100,0 |
| 182 | Integer | R | control, count value (weight low) of operating time in cooling mode | 0 | ~ | 65536 |
| 183 | Integer | R | control, count value (weight high) of operating time in cooling mode | 0 | ~ | 65536 |
| 184 | Integer | R | control, count value (weight low) of operating time in heating mode | 0 | ~ | 65536 |
| 185 | Integer | R | control, count value (weight high) of operating time in heating mode | 0 | ~ | 65536 |
| 186 | Integer | R | cold water coil, opening percentage calculated for the valve | 0,0 | ~ | 100,0 |
| 187 | Integer | R/W | economizer, minimum threshold for air quality control | 0 | 1000 | 2000 |
| 188 | Integer | R/W | economizer, maximum threshold for air quality control | 0 | 1500 | 2000 |

APPENDIX 2

Lonworks

| NV_Name | DESCRIPTION | MIN | FACT. | MAX |
|-------------------|---|-------|-------|-------|
| nvi_Watchdog | bms, watchdog counter | 0 | 0 | 32767 |
| nvo_Watchdog | | | | |
| nvo_Alarm_Codes | alarm, codes | 0 | ~ | 999 |
| nvo_Blower_Qv | blower, calculated value of air flow | 0 | ~ | 32767 |
| nvo_Blower_dP | blower, value of differential pressure sensor on air flow | 0 | ~ | 1000 |
| nvo_Room_Temp | control, value of the room temperature | -99.9 | ~ | 99.9 |
| nvo_Outside_Temp | control, value of the outside temperature | -99.9 | ~ | 99.9 |
| nvo_Supply_Temp | control, value of the supply temperature | -99.9 | ~ | 99.9 |
| nvo_Room_Hr | control, value of the room humidity | 0.0 | ~ | 100.0 |
| nvo_Outside_Hr | control, value of the outside humidity | 0.0 | ~ | 100.0 |
| nvo_CO2 | economizer, value of air quality sensor | 0 | ~ | 2000 |
| nvi_Control_Temp | control, customer (DC/DM) set point | 8.0 | 20.5 | 35.0 |
| nvo_Control_Temp | | | | |
| nvo_Control_Cool | control, set value of cooling mode | 8.0 | ~ | 35.0 |
| nvo_Control_Heat | control, set value of heating mode | 8.0 | ~ | 35.0 |
| nvi_Cool_BMS | control, bms day, set point of cooling mode | 8.0 | 22.0 | 35.0 |
| nvo_Cool_BMS | | | | |
| nvi_Heat_BMS | control, bms day, set point of heating mode | 8.0 | 19.0 | 35.0 |
| nvo_Heat_BMS | | | | |
| nvi_Cool_D | control, bms night, set point of cooling mode | 8.0 | 35.0 | 35.0 |
| nvo_Cool_D | | | | |
| nvi_Heat_D | control, bms night, set point of heating mode | 8.0 | 15.0 | 35.0 |
| nvo_Heat_D | | | | |
| nvi_Air_Mini_BMS | economizer, bms day, set point of minimum fresh air | 0.0 | 20.0 | 100.0 |
| nvo_Air_Mini_BMS" | | | | |
| nvi_Sends_Room_T | emulation, value of the room temperature send by bms | -99.9 | -99.9 | 99.9 |
| nvi_Sends_Out_T | emulation, value of the outside temperature send by bms | -99.9 | -99.9 | 99.9 |
| nvi_Sends_Room_H | emulation, value of the room humidity send by bms | 0 | 0 | 100 |
| nvi_Sends_Out_H | emulation, value of the outside humidity send by bms | 0 | 0 | 100 |
| nvi_Sends_CO2 | emulation, value of the air quality send by bms | 0 | 0 | 2000 |
| nvi_Sends_Speed | emulation, value of the speed blower send by bms | 0.0 | 0.0 | 100.0 |
| nvo_PM_kW | power meter, value of the active power | 0 | ~ | 65536 |
| nvo_PM_kVA | power meter, value of the reactive power | 0 | ~ | 65536 |
| nvo_PM_Pw_Factor | power meter, value of the power factor | 0 | ~ | 65536 |
| nvo_PM_kWh_LSB | power meter, value (weight low) of the active energy | 0 | ~ | 65536 |
| nvo_PM_kWh_MSB | power meter, value (weight high) of the real energy | 0 | ~ | 65536 |
| nvo_PM_kVAh_LSB | power meter, value (weight low) of the reactive energy | 0 | ~ | 65536 |
| nvo_PM_kVAh_MSB | power meter, value (weight high) of the reactive energy | 0 | ~ | 65536 |
| nvi_PM_Reset | power meter, value for reset memory | 0 | 0 | 65536 |
| nvo_Fresh_Air | economizer, opening percentage send to the actuator | 0.0 | ~ | 100.0 |
| nvo_Compressor | circuit, power percentage calculated | 0.0 | ~ | 100.0 |
| nvo_Heaters_1 | 1st heaters, power percentage calculated | 0.0 | ~ | 100.0 |
| nvo_Heaters_2 | 2nd heaters, power percentage calculated | 0.0 | ~ | 100.0 |
| nvo_Custom_T_1 | remote control, value of the signal, be-1 b1, temperature | -99.9 | ~ | 99.9 |
| nvo_Custom_T_2 | remote control, value of the signal, be-1 b2, temperature | -99.9 | ~ | 99.9 |
| nvo_Custom_T_3 | remote control, value of the signal, be-1 b3, temperature | -99.9 | ~ | 99.9 |
| nvo_Custom_T_4 | remote control, value of the signal, be-1 b4, temperature | -99.9 | ~ | 99.9 |

| NV_Name | DESCRIPTION | MIN | FACT. | MAX |
|---|---|-----|-------|-------|
| nvo_Error_Bits_1 | alarm, 2 | 0 | ~ | 65536 |
| | bit.0 = (74) exhaust, inverter, communication bus | | | |
| | bit.1 = (93) exhaust, fan | | | |
| | bit.2 = (94) exhaust, inverter | | | |
| | bit.3 = | | | |
| | bit.4 = (59) recovery, outlet temperature, probe | | | |
| | bit.5 = (56) recovery, air flow, sensor | | | |
| | bit.6 = (51) recovery, motor | | | |
| | bit.7 = (52) recovery, wheel | | | |
| | bit.8 = | | | |
| | bit.9 = (13) hot water, risk of frosting | | | |
| | bit.10 = (41) pump 1, electrical | | | |
| | bit.11 = (11) electrical heaters, overheating | | | |
| | bit.12 = (12) fresh air, electrical heater, overheating | | | |
| | bit.13 = (14) gas burner 1 | | | |
| | bit.14 = (15) gas burner 2 | | | |
| bit.15 = (16) gas burner, overheating | | | | |
| nvo_Error_Bits_2 | alarm, 3 | 0 | ~ | 65536 |
| | bit.0 = (141) circuit 1, high pressure, sensor | | | |
| | bit.1 = (142) circuit 1, low pressure, sensor | | | |
| | bit.2 = (143) circuit 1, liquid temperature, probe | | | |
| | bit.3 = (144) circuit 1, suction temperature, probe | | | |
| | bit.4 = (114) circuit 1, compressor, electrical | | | |
| | bit.5 = (115) circuit 1, high pressure cut off | | | |
| | bit.6 = (116) circuit 1, reversing valve, blocked | | | |
| | bit.7 = (117) circuit 1, low pressure cut off | | | |
| | bit.8 = (118) circuit 1, risk of frosting | | | |
| | bit.9 = (132) circuit 1, expansion valve, motor | | | |
| | bit.10 = (75) circuit 1, condenser fan, inverter, communication bus | | | |
| | bit.11 = (102) circuit 1, condenser fan | | | |
| | bit.12 = (103) circuit 1, condenser fan, inverter | | | |
| | bit.13 = (86) water condenser, inlet, probe | | | |
| | bit.14 = (87) water condenser, outlet, probe | | | |
| bit.15 = (101) evd, communication bus | | | | |
| nvo_Error_Bits_3 | alarm, 4 | 0 | ~ | 65536 |
| | bit.0 = (241) circuit 2, high pressure, sensor | | | |
| | bit.1 = (242) circuit 2, low pressure, sensor | | | |
| | bit.2 = (243) circuit 2, liquid temperature, probe | | | |
| | bit.3 = (244) circuit 2, suction temperature, probe | | | |
| | bit.4 = (214) circuit 2, compressor, electrical | | | |
| | bit.5 = (215) circuit 2, high pressure cut off | | | |
| | bit.6 = (216) circuit 2, reversing valve, blocked | | | |
| | bit.7 = (217) circuit 2, low pressure cut off | | | |
| | bit.8 = (218) circuit 2, risk of frosting | | | |
| | bit.9 = (232) circuit 2, expansion valve, motor | | | |
| | bit.10 = (76) circuit 2, condenser fan, inverter, communication bus | | | |
| | bit.11 = (202) circuit 2, condenser fan | | | |
| | bit.12 = (203) circuit 2, condenser fan, inverter | | | |
| | bit.13 = (2) water condenser, flow switch cut off | | | |
| | bit.14 = (25) water condenser temperature, too low | | | |
| bit.15 = (26) water condenser temperature, too high | | | | |

| NV_Name | DESCRIPTION | MIN | FACT. | MAX |
|--|---|-----|-------|-------|
| nvo_Error_Bits_4 | alarm, 5 | 0 | ~ | 65536 |
| | bit.0 = (84) outside humidity, sensor | | | |
| | bit.1 = (23) room temperature, too high | | | |
| | bit.2 = (24) room temperature, too low | | | |
| | bit.3 = (32) room humidity, too low | | | |
| | bit.4 = (33) room humidity, too high | | | |
| | bit.5 = (21) supply temperature, too high | | | |
| | bit.6 = (4) blower, filters, dirty | | | |
| | bit.7 = (5) blower, filters, missing | | | |
| | bit.8 = (89) air quality, sensor | | | |
| | bit.9 = (29) air quality, too high | | | |
| | bit.10 = (54) recovery, filters, dirty | | | |
| | bit.11 = (31) humidifier, failure | | | |
| | bit.12 = | | | |
| | bit.13 = | | | |
| | bit.14 = (110) circuit 1, leak refrigerant, detected | | | |
| bit.15 = (210) circuit 2, leak refrigerant, detected | | | | |
| nvo_Error_Bits_5 | alarm, 6 | 0 | ~ | 65536 |
| | bit.0 = (119) circuit 1, low condensing temperature | | | |
| | bit.1 = (129) circuit 1, high condensing temperature | | | |
| | bit.2 = (128) circuit 1, lop, low operating pressure | | | |
| | bit.3 = (127) circuit 1, mop, maximum operating pressure | | | |
| | bit.4 = (121) circuit 1, low superheat | | | |
| | bit.5 = (122) circuit 1, high superheat | | | |
| | bit.6 = (123) circuit 1, low subcooling | | | |
| | bit.7 = (124) circuit 1, high subcooling | | | |
| | bit.8 = (219) circuit 2, low condensing temperature | | | |
| | bit.9 = (229) circuit 2, high condensing temperature | | | |
| | bit.10 = (228) circuit 2, lop, low operating pressure | | | |
| | bit.11 = (227) circuit 2, mop, maximum operating pressure | | | |
| | bit.12 = (221) circuit 2, low superheat | | | |
| | bit.13 = (222) circuit 2, high superheat | | | |
| | bit.14 = (223) circuit 2, low subcooling | | | |
| bit.15 = (224) circuit 2, high subcooling | | | | |

| NV_Name | DESCRIPTION | MIN | FACT. | MAX |
|--|---|-----|-------|-------|
| nvo_Error_Bits_6 | alarm, 7 | 0 | ~ | 65536 |
| | bit.0 = (341) circuit 3, high pressure, faulty sensor | | | |
| | bit.1 = (342) circuit 3, low pressure, faulty sensor | | | |
| | bit.2 = (343) circuit 3, liquid temperature, faulty probe | | | |
| | bit.3 = (344) circuit 3, suction temperature, faulty probe | | | |
| | bit.4 = (314) circuit 3, compressor, electrical failure | | | |
| | bit.5 = (315) circuit 3, high pressure cut off | | | |
| | bit.6 = (316) circuit 3, reversing valve, blocked | | | |
| | bit.7 = (317) circuit 3, low pressure cut off | | | |
| | bit.8 = (319) circuit 3, low condensing temperature | | | |
| | bit.9 = (329) circuit 3, high condensing temperature | | | |
| | bit.10 = (328) circuit 3, low low operating pressure | | | |
| | bit.11 = (327) circuit 3, mop, maximum operating pressure | | | |
| | bit.12 = (321) circuit 3, low superheat | | | |
| | bit.13 = (322) circuit 3, high superheat | | | |
| bit.14 = (323) circuit 3, low subcooling | | | | |
| bit.15 = (324) circuit 3, high subcooling | | | | |
| nvi_Bool_Bits_1 nvo_Bool_Bits_1 | digital, 1 | 0 | ~ | 65536 |
| | bit.0 = unit, general on/off, start & stop, set point | | | |
| | bit.1 = unit, reset alarms, set point | | | |
| | bit.2 = bms, night mode forced by bms | | | |
| | bit.3 = blower, bms day, setpoint for activation operation, in room control dead zone | | | |
| | bit.4 = | | | |
| | bit.5 = | | | |
| | bit.6 = | | | |
| | bit.7 = | | | |
| | bit.8 = | | | |
| | bit.9 = | | | |
| | bit.10 = remote control, activation of bm j14 no7 | | | |
| | bit.11 = remote control, activation of bm j15 no12 | | | |
| | bit.12 = remote control, activation of be-1 j5 no1 | | | |
| | bit.13 = remote control, activation of be-1 j6 no2 | | | |
| | bit.14 = remote control, activation of be-1 j7 no3 | | | |
| bit.15 = remote control, activation of be-1 j8 no4 | | | | |

| NV_Name | DESCRIPTION | MIN | FACT. | MAX |
|---|--|-----|-------|-------|
| nvi_Bool_Bits_2 nvo_Bool_Bits_2 | digital, 2 | | 0 | |
| | bit.0 = control, unloaded cooling mode by bms | | 0 | |
| | bit.1 = control, unloaded heating mode by bms | | 0 | |
| | bit.2 = blower, low speed forced by bms | | 0 | |
| | bit.3 = blower, high speed forced by bms | | 0 | |
| | bit.4 = economizer, unloaded air quality by bms | | 0 | |
| | bit.5 = economizer, opening to 0% forced by bms | | 0 | |
| | bit.6 = economizer, opening to 100% forced by bms | | 0 | |
| | bit.7 = economizer, unloaded free-cooling by bms | | 0 | |
| | bit.8 = economizer, unloaded free-heating by bms | | 0 | |
| | bit.9 = circuit, unloaded 50% of compressors running by bms | | 0 | |
| | bit.10 = circuit, unloaded 100% by bms | | 0 | |
| | bit.11 = circuit, unloaded heating mode by bms | | 0 | |
| | bit.12 = circuit, defrost cycle delayed by bms | | 0 | |
| | bit.13 = 1st heaters, unloaded 50% of heaters running by bms | | 0 | |
| | bit.14 = 1st heaters, unloaded 100% by bms | | | |
| bit.15 = | | | ~ | |
| nvi_Bool_Bits_3 nvo_Bool_Bits_3 | digital, 3 | | | |
| | bit.0 = alarm, state | | | |
| | bit.1 = blower, state | | | |
| | bit.2 = exhaust, state | | | |
| | bit.3 = circuit 1 compressor 1, state | | | |
| | bit.4 = circuit 1 compressor 2, state | | | |
| | bit.5 = circuit 1, state of the reversing valve (heating mode) | | | |
| | bit.6 = circuit 2 compressor 1, state | | | |
| | bit.7 = circuit 2 compressor 2, state | 0 | ~ | 65536 |
| | bit.8 = circuit 2, state of the reversing valve (heating mode) | | | |
| | bit.9 = gas heaters, status 1ste brander | | | |
| | bit.10 = gas heaters, state of 2nd burner | | | |
| | bit.11 = gas heaters, state of the full power | | | |
| | bit.12 = electrical heaters, status 1ste brander | | | |
| | bit.13 = electrical heaters, state of 2nd burner | | | |
| | bit.14 = circuit 3 compressor 1, state | | | |
| bit.15 = circuit 3, state of the reversing valve (heating mode) | | | | |

| NV_Name | DESCRIPTION | MIN | FACT. | MAX |
|--|---|-----|-------|-------|
| nvi_Bool_Bits_4 nvo_Bool_Bits_4 | digital, 4 | 0 | ~ | 65536 |
| | bit.0 = unit, status algemene aan/uit | | | |
| | bit.1 = control, state of cooling mode | | | |
| | bit.2 = control, state of dead zone | | | |
| | bit.3 = control, status verwarmingsmodus | | | |
| | bit.4 = | | | |
| | bit.5 = | | | |
| | bit.6 = | | | |
| | bit.7 = | | | |
| | bit.8 = | | | |
| | bit.9 = | | | |
| | bit.10 = remote control, state of the dry contact, bm id4 | | | |
| | bit.11 = remote control, state of the dry contact, bm id7 | | | |
| | bit.12 = remote control, state of the dry contact, be-1 id1 | | | |
| | bit.13 = remote control, state of the dry contact, be-1 id2 | | | |
| | bit.14 = remote control, state of the dry contact, be-1 id3 | | | |
| bit.15 = remote control, state of the dry contact, be-1 id4" | | | | |

APPENDIX 3
Digital inputs

| | Small | Medium |
|---------------|-------|---|
| | | Gas, Valve 1, Status |
| BM60:J4.ID1 | | [ELHS][ELHH] Electrical Heaters, Status |
| | | [HWCH] Hot/Water Coil, Antifreeze Sensor |
| BM60:J4.ID2 | | Circuit 1, Compressors, Status |
| | | Circuit 1, Condenser Fan, Status |
| BM60:J4.ID3 | | Water Condenser, Flow switch |
| | | [ELPS][ELPH] Electrical Heaters, Fresh Air, Status |
| BM60:J4.ID4 | | Remote control : Custom |
| BM60:J4.ID5 | | [DADS] Fire/Smoke Detector |
| BM60:J4.ID6 | | Blower, Status |
| | | [HRMO] Static Recovery, Switch Air |
| BM60:J4.ID7 | | Remote control : Custom |
| BM60:J16.ID8 | X | Gas, Valve 2, Status or Hot/Water Pump, Status |
| BM60:J16.ID9 | X | Circuit 2, Compressors, Status |
| BM60:J16.ID10 | X | Circuit 2, Condenser Fan, Status |
| BE60.1:J4.ID1 | | [DCBO] Remote control : Custom |
| BE60.1:J4.ID2 | | [DCBO] Remote control : Custom |
| BE60.1:J4.ID3 | | [DCBO] Remote control : Custom |
| BE60.1:J4.ID4 | | [DCBO] Humidifier, Status or Remote control : Custom |
| BE60.2:J4.ID1 | | |
| BE60.2:J4.ID2 | | |
| BE60.2:J4.ID3 | | Wheel Recovery, Motor Status |
| BE60.2:J4.ID4 | | |

APPENDIX 4
Digital outputs

| | Small | Medium |
|---------------|--|--|
| BM60:J12.NO1 | Circuit 1, Compressor 1 | |
| BM60:J12.NO2 | Circuit 1, Compressor 2 | |
| BM60:J12.NO3 | Circuit 1, Condenser Fan | |
| BM60:J13.NO4 | Circuit 1, Reversing Valve | Circuit 2, Compressor 1 |
| BM60:J13.NO5 | Blower | Circuit 2, Compressor 2 |
| BM60:J13.NO6 | Gas, Valve 1 or [ELHS][ELHH] Electrical Heaters, 1 | Circuit 2, Condenser Fan |
| BM60:J14.NO7 | Gas, Valve 2 or [ELHS][ELHH] Electrical Heaters, 2 or Reversing Hot/Water <> Cold/Water or Remote control : Custom | |
| BM60:J14.NC7 | | |
| BM60:J15.NO8 | | Gas, Valve 1 [ELHS][ELHH] Electrical Heaters, 1 or Hot/Water Pump |
| BM60:J15.NO9 | | Circuit 1, Reversing Valve |
| BM60:J15.NO10 | | Circuit 2, Reversing Valve |
| BM60:J15.NO11 | | Blower |
| BM60:J15.NO12 | | Remote control : Custom |
| BE60.1:J5.NO1 | [PEFA] Exhaust Fan 1 or [DCBO] Remote control : Custom | |
| BE60.1:J5.NC1 | | |
| BE60.1:J6.NO2 | [LAKI] Circuit 1, Condenser Fan Low Speed or Exhaust Fan 2 or [DCBO] Remote control : Custom | |
| BE60.1:J6.NC2 | | |
| BE60.1:J7.NO3 | [LAKI] Circuit 2, Condenser Fan Low Speed or Exhaust Fan 3 or [DCBO] Remote control : Custom | |
| BE60.1:J7.NC3 | | |
| BE60.1:J8.NO4 | [DCBO] Humidifier or [DCBO] Remote control : Custom | |
| BE60.1:J8.NC4 | | |
| BE60.2:J5.NO1 | | |
| BE60.2:J5.NC1 | | |
| BE60.2:J6.NO2 | | |
| BE60.2:J6.NC2 | Wheel Recovery, Motor | |
| BE60.2:J7.NO3 | | |
| BE60.2:J7.NC3 | | |
| BE60.2:J8.NO4 | | |
| BE60.2:J8.NC4 | | |

APPENDIX 5
Analogic inputs

| | Small | Medium |
|--------------------------|-----------------------------|---|
| BM60:J3.B1 (NTC) | Return or Room (NTC) | Return (NTC) |
| BM60:J3.B2 (NTC) | | Outside (NTC) |
| BM60:J3.B3 (NTC) | | Supply (NTC) |
| BM60:J3.B4 (NTC) | | Circuit 1, Suction (NTC) |
| BM60:J3.B5 (NTC, 4-20) | | Circuit 1, Condensing -1~45b (4~20mA) |
| BM60:J3.B6 (NTC, 0-5) | | Circuit 1, Evaporating -1~20b (0~5V) |
| BM60:J3.B7 (NTC, 0-5) | | Filters/Fan 0~500 Pa (0~5V) or Room (NTC) |
| BM60:J18.B8 (NTC) | X | [RLKD] Circuit 2, Liquid (NTC) |
| BM60:J18.B9 (NTC) | X | Circuit 2, Suction (NTC) |
| BM60:J18.B10 (NTC, 4-20) | X | Circuit 2, Condensing -1~45b (4~20mA) |
| BM60:J18.B11 (NTC, 0-5) | X | Circuit 2, Evaporating -1~120b (0~5V) |
| BM60:J18.B12 (NTC, 0-5) | X | Room (NTC) |
| DC60 Modbus | | [DC60] Room, Temperature |
| Hr Modbus | | [ADCP] Room, Temperature |
| Hr Modbus | | [ADCP] Room, Humidity |
| BE60.1:J9.B1 | | [CO2S] Indoor, Air Quality CO₂ (4~20mA) or [DCBO] Remote control: Custom |
| BE60.1:J9.B2 | | [ADCP] Outside, Humidity (4~20mA) or [DCBO] Remote control: Custom |
| BE60.1:J10.B3 | | [RLKD] Circuit 1, Liquid (NTC) or Water Condenser, Inlet (NTC) or [DCBO] Remote control : Custom |
| BE60.1:J10.B4 | | Water Condenser, Outlet (NTC) or [DCBO] Remote control : Custom |
| BE60.2:J9.B1 | | Wheel Recovery, Pressure (0~5V) |
| BE60.2:J9.B2 | | |
| BE60.2:J10.B3 | | Outside (NTC) |
| BE60.2:J10.B4 | | |

APPENDIX 6
Analogic outputs

| | Small | Medium |
|--------------|-------|---|
| BM60:J5.Y1 | | Economizer (0~10V) or Cold/Water Coil, Valve (0~10V) |
| BM60:J5.Y2 | | [HWCH] Hot/Water Coil, Valve (0~10V) or Cold/Water Coil, Valve (0~10V) or [ELHH] Electrical Heaters (Triac 0~5V) or [MOGB] Gas Modulation (0~10V) |
| BM60:J5.Y3 | | [ELPS][ELPH] Electric Heaters Fresh Air (Triac 0~5V) or [ENRE] Hot/Water Recovery, Valve (0~10V) or [HRMO] Static Recovery, By-Pass (0~10V) |
| BM60:J5.Y4 | X | Circuit 1, Compressor Digital (0-5V) |
| BE60.1:J2.Y1 | | Water Condenser, Valve (0~10V) or [DCBO] Humidifier (0~10V) |
| BE60.2:J2.Y1 | | Recovery, Damper (0~10V) |

APPENDIX 7
Serial port

| SERIAL PORT | | | |
|-------------|--------|------|-----------------------|
| J6 | Option | Unit | BMS Customer Bus |
| J7 | | Unit | DS60 Terminal Display |
| J8 | | Unit | CL60 external Bus |
| J9 | | | |
| J10 | | Unit | CL60 internal Bus |

| Menu | Description | 4th digit | 3rd digit | 2nd digit | 1st digit | R/W/Z | Min | Std | Max |
|------|--|-----------|-----------|---------------|------------|-------|---------------|---------|-------|
| 1111 | alarm historic | Alarm | *** | *** | Historical | | | | |
| 2111 | general on/off, start & stop unit, set point | User | Unit | General | On/Off | R/W | 0 | 0 | 1 |
| 2112 | start & stop unit, state of customized dry contact | | | | On/Off iD | R | 0 | 0 | 1 |
| 2113 | reset alarms, state of customized dry contact | | | | Reset iD | R | 0 | 0 | 1 |
| 2121 | hour clock setting | User | Unit | Clock | Hour | R/W | 0 | 0 | 23 |
| 2122 | minute clock setting | | | | Minute | R/W | 0 | 0 | 59 |
| 2123 | day clock setting | | | | Day | R/W | 1 | 1 | 31 |
| 2124 | month clock setting | | | | Month | R/W | 1 | 1 | 12 |
| 2125 | year clock setting | | | | Year | R/W | 0 | 0 | 99 |
| 2126 | automatic change of summer/winter hour | | | | Win/Sum | R/W | 0 | 0 | 1 |
| 2131 | Status of this function | User | Unit | Schedule | Status | R | 23 | 23 | 62 |
| 2132 | Actual Zone | | | | Zone | R | 0 | 0 | 6 |
| 2133 | Actual Mode | | | | Mode | R | 0 | 0 | 6 |
| 2134 | setting of the number of zone | | | | Nbr Zone | R | 0 | 3 | 6 |
| 2135 | setting of the number of mode | | | | Nbr Mode | R | 0 | 2 | 6 |
| 2136 | night' mode forced by BMS | | | | Bms Night | R/W | 0 | 0 | 1 |
| 2137 | BMS' mode activated | | | | Bms Mode | R/W | 0 | 0 | 1 |
| 2141 | start time for zone 0, always 00h00 | User | Unit | Schedule Time | Time Z0 | R/Z | 0 | 0 | 0 |
| 2142 | start time for zone 1, set point | | | | Time Z1 | R/W/Z | 0 | 6 | 24 |
| 2143 | start time for zone 2, set point | | | | Time Z2 | R/W/Z | 0 | 22 | 24 |
| 2144 | start time for zone 3, set point | | | | Time Z3 | R/W/Z | 0 | 24 | 24 |
| 2145 | start time for zone 4, set point | | | | Time Z4 | R/W/Z | 0 | 24 | 24 |
| 2146 | start time for zone 5, set point | | | | Time Z5 | R/W/Z | 0 | 24 | 24 |
| 2147 | start time for zone 6, set point | | | | Time Z6 | R/W/Z | 0 | 24 | 24 |
| 2151 | mode for zone 0, set point | | | | User | Unit | Schedule Mode | Mode Z0 | R/W/Z |
| 2152 | mode for zone 1, set point | Mode Z1 | R/W/Z | 1 | | | | 3 | 4 |
| 2153 | mode for zone 2, set point | Mode Z2 | R/W/Z | 1 | | | | 4 | 4 |
| 2154 | mode for zone 3, set point | Mode Z3 | R/W/Z | 1 | | | | 4 | 4 |
| 2155 | mode for zone 4, set point | Mode Z4 | R/W/Z | 1 | | | | 4 | 4 |
| 2156 | mode for zone 5, set point | Mode Z5 | R/W/Z | 1 | | | | 4 | 4 |
| 2157 | mode for zone 6, set point | Mode Z6 | R/W/Z | 1 | | | | 4 | 4 |
| 2161 | outside air temperature threshold to activate function | User | Unit | Anticipation | | | | Onset | R/W |
| 2162 | gradient (slope) | | | | Slope | R/W | 0 | 0 | 100 |
| 2171 | state of the relay, bm n7 | User | Unit | Cust. Relay | Bm-N7 | R | 0 | 0 | 1 |
| 2172 | state of the relay, bm n12 | | | | Bm-N12 | R | 0 | 0 | 1 |
| 2173 | state of the relay, be-1 n1 | | | | Be.1-N1 | R | 0 | 0 | 1 |
| 2174 | state of the relay, be-1 n2 | | | | Be.1-N2 | R | 0 | 0 | 1 |
| 2175 | state of the relay, be-1 n3 | | | | Be.1-N3 | R | 0 | 0 | 1 |
| 2176 | state of the relay, be-1 n4 | | | | Be.1-N4 | R | 0 | 0 | 1 |
| 2181 | state of the dry contact, bm id4 | | | | User | Unit | Cust. Switch | Bm-iD4 | R |
| 2182 | state of the dry contact, bm id7 | Bm-iD7 | R | 0 | | | | 0 | 1 |
| 2183 | state of the dry contact, be-1 id1 | Be.1-iD1 | R | 0 | | | | 0 | 1 |
| 2184 | state of the dry contact, be-1 id2 | Be.1-iD2 | R | 0 | | | | 0 | 1 |
| 2185 | state of the dry contact, be-1 id3 | Be.1-iD3 | R | 0 | | | | 0 | 1 |
| 2186 | state of the dry contact, be-1 id4 | Be.1-iD4 | R | 0 | | | | 0 | 1 |
| 2191 | value of the signal, be-1 b1 | User | Unit | Cust. Signal | Be.1-B1 | R | -5 | 0 | 5 |
| 2192 | value of the signal, be-1 b2 | | | | Be.1-B2 | R | -5 | 0 | 5 |
| 2193 | value of the signal, be-1 b3 | | | | Be.1-B3 | R | -5 | 0 | 5 |
| 2194 | value of the signal, be-1 b4 | | | | Be.1-B4 | R | -5 | 0 | 5 |

| Menu | Description | 4th digit | 3rd digit | 2nd digit | 1st digit | R/W/Z | Min | Std | Max |
|------|--|-----------|-----------|-------------|-----------|---------|-------------|----------|-------|
| 2211 | value of the outside temperature | User | Control | Temperature | Outside | R | -99,9 | 0 | 99,9 |
| 2212 | Origin of the Value (BM, BE, BUS, Mast/Slav or BMS) | | | | From | R | 23 | 23 | 62 |
| 2213 | value of the room temperature | | | | Room | R | -99,9 | 0 | 99,9 |
| 2214 | Origin of the Value (BM, BE, BUS, Mast/Slav or BMS) | | | | From | R | 23 | 23 | 62 |
| 2215 | value of the supply temperature | | | | Supply | R | -99,9 | 0 | 99,9 |
| 2216 | value of the return temperature | | | | Return | R | -99,9 | 0 | 99,9 |
| 2221 | value of the room temperature | User | Control | Room | Temp. | R | -99,9 | 0 | 99,9 |
| 2222 | customer (dc/dm) set point | | | | Sp Cust. | R/W | 8 | 20,5 | 35 |
| 2223 | set value of cooling mode | | | | Set Cool. | R | 8 | 19 | 35 |
| 2224 | set value of heating mode | | | | Set Heat. | R | 8 | 22 | 35 |
| 2225 | states of cooling mode | | | | State.C | R | 23 | 23 | 62 |
| 2226 | states of heating mode | | | | State.H | R | 23 | 23 | 62 |
| 2227 | power factor of cooling mode | | | | Pf.Cool. | R | 0 | 0 | 100 |
| 2228 | power factor of heating mode | | | | Pf.Heat. | R | 0 | 0 | 100 |
| 2231 | value of the supply temperature | | | | Temp. | R | -99,9 | 0 | 99,9 |
| 2232 | Blowing air temperature set point | | | | Setting | R | 1 | 20,5 | 70 |
| 2233 | activation of the smoothing function of temperature | User | Control | Supply | Smooth | R/Z | 0 | 0 | 1 |
| 2234 | count value of cooling operating time | | | | Time.Cool | R | 0 | 0 | 9999 |
| 2235 | count value of heating operating time | | | | Time.Heat | R | 0 | 0 | 9999 |
| 2241 | Dynamic set point (cooling setpoint offset according to outside temperature) | User | Control | Room Sp | Sp.Dyna. | R/W/Z | 0 | 20 | 20 |
| 2242 | set point of cooling mode | | | | Sp.Cool. | R/W/Z | 8 | 19 | 35 |
| 2243 | set point of heating mode | | | | Sp.Heat. | R/W/Z | 8 | 22 | 35 |
| 2244 | outdoor temperature low threshold for room temperature setpoint slope | | | | Out.Low | R/W | -20 | 0 | 50 |
| 2245 | room temp setpoint offset according to low outdoor air temp | | | | Coef.Low | R/W | -50 | 0 | 50 |
| 2246 | outdoor temperature high threshold for slope on the room temperature setpoint | | | | Out.High | R/W | -20 | 30 | 50 |
| 2247 | room temp setpoint offset according to high outdoor air temp | | | | Coef.High | R/W | -50 | 0 | 50 |
| 2248 | room temperature threshold for unloading cooling mode | | | | Limit C. | R/W | 0 | 0 | 40 |
| 2249 | room temperature threshold for unloading heating mode | | | | Limit H. | R/W | 0 | 40 | 40 |
| 2251 | low limit threshold in cooling mode | | | | User | Control | Supply Sp | Lim.Cool | R/W |
| 2252 | high limit threshold in heating mode | Lim.Heat | R/W | 4 | | | | 38 | 38 |
| 2253 | offset for high limit threshold in cooling mode | Adj.Cool | R/W | -5 | | | | 0 | 5 |
| 2254 | offset for low limit threshold in heating mode | Adj.Heat | R/W | -5 | | | | 0 | 5 |
| 2255 | outdoor temperature low threshold for slope on the supply temperature setpoint | Out.Low | R/W | -20 | | | | 0 | 50 |
| 2256 | coefficient of the low outside temperature for the slope of the supply temperature setpoint | Coef.Low | R/W | -50 | | | | 0 | 50 |
| 2257 | outdoor temperature high threshold for slope on the supply temperature setpoint | Out.High | R/W | -20 | | | | 30 | 50 |
| 2258 | coefficient of the high outside temperature for the slope of the supply temperature setpoint | Coef.High | R/W | -50 | | | | 0 | 50 |
| 2261 | value of the outside humidity | User | Control | Humidity | Outside | R | 0 | 0 | 100 |
| 2262 | calculated value of the outside absolute humidity | | | | Absol. | R | 0 | 0 | 99,9 |
| 2263 | from the value | | | | From | R | 23 | 23 | 62 |
| 2264 | value of the room humidity | | | | Room | R | 0 | 0 | 100 |
| 2265 | calculated value of the room absolute humidity | | | | Absol. | R | 0 | 0 | 99,9 |
| 2266 | from the value | | | | From | R | 23 | 23 | 62 |
| 2267 | power factor of dehumidification function | | | | Pf.DeH. | R | 0 | 0 | 100 |
| 2268 | power factor of humidification | | | | Pf.Hum. | R | 0 | 0 | 100 |
| 2269 | state of enthalpy control | | | | Enthalpy | R | 0 | 0 | 1 |
| 2271 | set point of dehumidification | | | | User | Control | Humidity Sp | Sp. Deh. | R/W/Z |
| 2272 | set point of humidification | Sp. Hum. | R/W/Z | 0 | | | | 0 | 100 |

| Menu | Description | 4th digit | 3rd digit | 2nd digit | 1st digit | R/W/Z | Min | Std | Max |
|------|---|-----------|------------|---------------|-----------|------------|---------------|---------|-------|
| 2281 | activation of tcb feature | User | Control | Tcb | Mode | R/W | 0 | 0 | 1 |
| 2282 | state of 'g' signal | | | | - G | R | 0 | 0 | 1 |
| 2283 | state of 'b' signal | | | | - B | R | 0 | 0 | 1 |
| 2284 | state of 'y1' signal | | | | - Y1 | R | 0 | 0 | 1 |
| 2285 | state of 'y2' signal | | | | - Y2 | R | 0 | 0 | 1 |
| 2286 | state of 'w1' signal | | | | - W1 | R | 0 | 0 | 1 |
| 2287 | state of 'w2' signal | | | | - W2 | R | 0 | 0 | 1 |
| 2311 | state of configuration | User | Blower | Fan | Config. | R | 0 | 0 | 21 |
| 2312 | states of management | | | | Status | R | 23 | 23 | 62 |
| 2313 | state of the auxiliary contact | | | | State iD | R | 0 | 0 | 1 |
| 2314 | state of the relay | | | | Relay | R | 0 | 0 | 1 |
| 2315 | count value of operating time | | | | Run Time | R | 0 | 0 | 9999 |
| 2316 | setpoint for activation operation of component | | | | Enabled | R/W/Z | 0 | 1 | 1 |
| 2317 | setpoint for activation operation in room control dead zone | | | | Dead Z. | R/W/Z | 0 | 1 | 1 |
| 2318 | temperature threshold for activation night refreshment function | | | | Night Eco | R/W | 8 | 22 | 35 |
| 2321 | state of configuration | User | Blower | Speed | Config. | R | 0 | 0 | 21 |
| 2322 | states of management | | | | Status | R | 23 | 23 | 62 |
| 2323 | state of the safety contact of inverter | | | | State iD | R | 0 | 0 | 1 |
| 2324 | speed percentage calculated for the inverter | | | | Inverter | R | 0 | 0 | 100 |
| 2325 | speed percentage send to the inverter | | | | Output | R | 0 | 0 | 24000 |
| 2326 | calculated value of air flow or evaporator flow switch | | | | Flow | R | 0 | 0 | 24000 |
| 2327 | choice of speed function | | | | Function | R/W | 0 | 0 | 2 |
| 2328 | nominal threshold for air flow control | | | | Flow H. | R/W | 0 | 85 | 100 |
| 2329 | low threshold for air flow control | | | | Flow L. | R/W | 0 | 33 | 100 |
| 2331 | state of configuration | User | Blower | Air Flow | Config. | R | 0 | 0 | 21 |
| 2332 | value of differential pressure sensor on air flow | | | | Delta dP | R | 0 | 0 | 1000 |
| 2333 | air flow threshold alarm | | | | Air Flow | R/W | 0 | 25 | 1000 |
| 2334 | filters missing threshold alarm | | | | Missing | R/W | 0 | 50 | 1000 |
| 2335 | dirty filters threshold alarm | | | | Dirty | R/W | 50 | 250 | 1000 |
| 2341 | state of smoke detection contact | User | Blower | Safety | Fire iD | R | 0 | 0 | 1 |
| 2411 | state of configuration | User | Compressor | Circuit 1 | Config. | R | 0 | 0 | 21 |
| 2412 | value of the evaporating pressure or temperature | | | | Evap. | R | -1 | -1 | 20 |
| 2413 | value of the suction temperature | | | | Suction | R | -99,9 | 0 | 99,9 |
| 2414 | value of the condensing pressure or temperature | | | | Cond. | R | -1 | -1 | 45 |
| 2415 | value of the liquid temperature | | | | Liquid | R | -99,9 | 0 | 99,9 |
| 2416 | low pressure, state of the safety | | | | Low P. | R | 0 | 0 | 1 |
| 2417 | state of the reversing valve | | | | R.Valve | R | 0 | 0 | 1 |
| 2418 | speed percentage calculated for the inverter | | | | Inverter | R | 0 | 0 | 100 |
| 2419 | speed percentage send to the inverter | | | | Output | R | 0 | 0 | 1 |
| 2421 | state of configuration | | | | User | Compressor | Circ.1 Comp.1 | Config. | R |
| 2422 | states of management | Status | R | 23 | | | | 23 | 62 |
| 2423 | state of the auxiliary contact | State iD | R | 0 | | | | 0 | 1 |
| 2424 | state of the relay | Relay | R | 0 | | | | 0 | 1 |
| 2425 | count value of operating time | Run Time | R | 0 | | | | 0 | 9999 |
| 2431 | state of configuration | User | Compressor | Circ.1 Comp.2 | Config. | R | 0 | 0 | 21 |
| 2432 | states of management | | | | Status | R | 23 | 23 | 62 |
| 2433 | state of the auxiliary contact | | | | State iD | R | 0 | 0 | 1 |
| 2434 | state of the relay | | | | Relay | R | 0 | 0 | 1 |
| 2435 | count value of operating time | | | | Run Time | R | 0 | 0 | 9999 |

| Menu | Description | 4th digit | 3rd digit | 2nd digit | 1st digit | R/W/Z | Min | Std | Max |
|------|---|-----------|------------|---------------|-----------|-------|-------|-----|------|
| 2441 | state of configuration | User | Compressor | Circuit 2 | Config. | R | 0 | 0 | 21 |
| 2442 | value of the evaporating pressure or temperature | | | | Evap. | R | -1 | -1 | 20 |
| 2443 | value of the suction temperature | | | | Suction | R | -99,9 | 0 | 99,9 |
| 2444 | value of the condensing pressure or temperature | | | | Cond. | R | -1 | -1 | 45 |
| 2445 | value of the liquid temperature | | | | Liquid | R | -99,9 | 0 | 99,9 |
| 2446 | low pressure, state of the safety | | | | Low P. | R | 0 | 0 | 1 |
| 2447 | state of the reversing valve | | | | R.Valve | R | 0 | 0 | 1 |
| 2451 | state of configuration | User | Compressor | Circ.2 Comp.1 | Config. | R | 0 | 0 | 21 |
| 2452 | states of management | | | | Status | R | 23 | 23 | 62 |
| 2453 | state of the auxiliary contact | | | | State iD | R | 0 | 0 | 1 |
| 2454 | state of the relay | | | | Relay | R | 0 | 0 | 1 |
| 2455 | count value of operating time | | | | Run Time | R | 0 | 0 | 9999 |
| 2461 | state of configuration | User | Compressor | Circ.2 Comp.2 | Config. | R | 0 | 0 | 21 |
| 2462 | states of management | | | | Status | R | 23 | 23 | 62 |
| 2463 | state of the auxiliary contact | | | | State iD | R | 0 | 0 | 1 |
| 2464 | state of the relay | | | | Relay | R | 0 | 0 | 1 |
| 2465 | count value of operating time | | | | Run Time | R | 0 | 0 | 9999 |
| 2471 | setpoint for activation operation of all compressor, cooling/heating mode | User | Compressor | Mode | Enabled | R/W/Z | 0 | 1 | 1 |
| 2472 | enable circuit 1, separate comp.1 or/and comp.2 | | | | Enable.1 | R/W | 0 | 3 | 3 |
| 2473 | enable circuit 2, separate comp.1 or/and comp.2 | | | | Enable.2 | R/W | 0 | 3 | 3 |
| 2481 | setpoint for activation operation in cooling mode | User | Compressor | Cooling | Enabled | R/W/Z | 0 | 1 | 1 |
| 2482 | outside air temperature threshold, unload 50% of compressors | | | | Low L50% | R/W | -10 | 20 | 50 |
| 2483 | outside air temperature threshold, unload 100% of compressors | | | | Low L. | R/W | -10 | 12 | 50 |
| 2491 | setpoint for activation operation in heating mode | User | Compressor | Heating | Enabled | R/W/Z | 0 | 1 | 1 |
| 2492 | outside air temperature threshold, unload 50% of compressors | | | | Low L50% | R/W | -20 | -20 | 50 |
| 2493 | outside air temperature threshold, unload 100% of compressors | | | | Low L. | R/W | -20 | -20 | 50 |
| 2511 | state of configuration | User | Condenser | Circuit 1 | Config. | R | 0 | 0 | 21 |
| 2512 | value of the condensing temperature | | | | Cond. | R | -99,9 | 0 | 99,9 |
| 2513 | condensing temperature set point | | | | Setting | R | 25 | 30 | 45 |
| 2514 | states of management | | | | Status | R | 23 | 23 | 62 |
| 2515 | state of the auxiliary contact | | | | State iD | R | 0 | 0 | 1 |
| 2516 | state of the relay | | | | Relay | R | 0 | 0 | 1 |
| 2517 | speed percentage calculated for the inverter | | | | Inverter | R | 0 | 0 | 100 |
| 2521 | state of configuration | User | Condenser | Circuit 2 | Config. | R | 0 | 0 | 21 |
| 2522 | value of the condensing temperature | | | | Cond. | R | -99,9 | 0 | 99,9 |
| 2523 | condensing temperature set point | | | | Setting | R | 25 | 30 | 45 |
| 2524 | states of management | | | | Status | R | 23 | 23 | 62 |
| 2525 | state of the auxiliary contact | | | | State iD | R | 0 | 0 | 1 |
| 2526 | state of the relay | | | | Relay | R | 0 | 0 | 1 |
| 2527 | speed percentage calculated for the inverter | | | | Inverter | R | 0 | 0 | 100 |
| 2531 | value of the inlet temperature | User | Condenser | Loop | Inlet | R | -99,9 | 0 | 99,9 |
| 2532 | value of the outlet temperature | | | | Outlet | R | -99,9 | 0 | 99,9 |
| 2533 | state of the flow switch contact | | | | Flow iD | R | 0 | 0 | 1 |
| 2541 | state of configuration | User | Condenser | Valve | Config. | R | 0 | 0 | 21 |
| 2542 | states of management | | | | Status | R | 23 | 23 | 62 |
| 2543 | circuit 1, value of the condensing temperature | | | | Cond. 1 | R | -99,9 | 0 | 99,9 |
| 2544 | circuit 2, value of the condensing temperature | | | | Cond. 2 | R | -99,9 | 0 | 99,9 |
| 2545 | condensing temperature set point | | | | Setting | R | 25 | 30 | 45 |
| 2546 | opening percentage calculated for the valve | | | | Opening | R | 0 | 0 | 100 |

| Menu | Description | 4th digit | 3rd digit | 2nd digit | 1st digit | R/W/Z | Min | Std | Max |
|------|---|-----------|-----------------|-----------------|-----------|-------|-------|-----|------|
| 2611 | state of configuration | User | Expansion Valve | SuperHeat C1 | Config. | R | 0 | 0 | 21 |
| 2612 | states of management | | | | Status | R | 23 | 23 | 62 |
| 2613 | value of the evaporating temperature | | | | Evap. | R | -99,9 | 0 | 99,9 |
| 2614 | value of the suction temperature | | | | Suction | R | -99,9 | 0 | 99,9 |
| 2615 | set point of superheat | | | | Setting | R | -72 | 7 | 324 |
| 2616 | value of superheat | | | | S.Heat | R | -99,9 | 0 | 99,9 |
| 2617 | opening percentage calculated for the valve | | | | Opening | R | 0 | 0 | 100 |
| 2621 | value of the condensing temperature | User | Expansion Valve | SubCooling C1 | Cond. | R | -99,9 | 0 | 99,9 |
| 2622 | value of the liquid temperature | | | | Liquid | R | -99,9 | 0 | 99,9 |
| 2623 | value of subcooling | | | | S.Cool | R | -99,9 | 0 | 99,9 |
| 2631 | state of configuration | User | Expansion Valve | SuperHeat C2 | Config. | R | 0 | 0 | 21 |
| 2632 | states of management | | | | Status | R | 23 | 23 | 62 |
| 2633 | value of the evaporating temperature | | | | Evap. | R | -99,9 | 0 | 99,9 |
| 2634 | value of the suction temperature | | | | Suction | R | -99,9 | 0 | 99,9 |
| 2635 | set point of superheat | | | | Setting | R | -72 | 7 | 324 |
| 2636 | value of superheat | | | | S.Heat | R | -99,9 | 0 | 99,9 |
| 2637 | opening percentage calculated for the valve | | | | Opening | R | 0 | 0 | 100 |
| 2641 | value of the condensing temperature | User | Expansion Valve | SubCooling C2 | Cond. | R | -99,9 | 0 | 99,9 |
| 2642 | value of the liquid temperature | | | | Liquid | R | -99,9 | 0 | 99,9 |
| 2643 | value of subcooling | | | | S.Cool | R | -99,9 | 0 | 99,9 |
| 2711 | state of configuration | User | Heater | Gas | Config. | R | 0 | 0 | 21 |
| 2712 | states of management | | | | Status | R | 23 | 23 | 62 |
| 2713 | burner 1, state of the safety contact | | | | Sta.1 iD | R | 0 | 0 | 1 |
| 2714 | burner 1, state of the relay | | | | Relay 1 | R | 0 | 0 | 1 |
| 2715 | state of the full power relay | | | | High Pow. | R | 0 | 0 | 1 |
| 2716 | burner 2, state of the safety contact | | | | Sta.2 iD | R | 0 | 0 | 1 |
| 2717 | burner 2, state of the relay | | | | Relay 2 | R | 0 | 0 | 1 |
| 2718 | opening percentage calculated for the valve | | | | Modul. | R | 0 | 0 | 100 |
| 2721 | state of configuration | User | Heater | Electrical | Config. | R | 0 | 0 | 21 |
| 2722 | states of management | | | | Status | R | 23 | 23 | 62 |
| 2723 | state of the auxiliary contact | | | | State iD | R | 0 | 0 | 1 |
| 2724 | 1st stage, state of the relay | | | | Relay 1 | R | 0 | 0 | 1 |
| 2725 | 2nd stage, state of the relay | | | | Relay 2 | R | 0 | 0 | 1 |
| 2726 | power percentage calculated for the triac | | | | Modul. | R | 0 | 0 | 100 |
| 2727 | power percentage send to the triac | | | | Output | R | 0 | 0 | 100 |
| 2731 | state of configuration | User | Heater | Hot Water | Config. | R | 0 | 0 | 21 |
| 2732 | states of management | | | | Status | R | 23 | 23 | 62 |
| 2733 | state of the safety freeze contact | | | | Freeze iD | R | 0 | 0 | 1 |
| 2734 | opening percentage calculated for the valve | | | | Modul. | R | 0 | 0 | 100 |
| 2741 | state of configuration | User | Heater | Pump | Config. | R | 0 | 0 | 21 |
| 2742 | states of management | | | | Status | R | 23 | 23 | 62 |
| 2743 | setting of functionality | | | | Mode | R | 0 | 0 | 3 |
| 2744 | state of the auxiliary contact | | | | State iD | R | 0 | 0 | 1 |
| 2745 | state of the relay | | | | Relay | R | 0 | 0 | 1 |
| 2751 | state of configuration | User | Heater | Hot Water Reco. | Config. | R | 0 | 0 | 21 |
| 2752 | states of management | | | | Status | R | 23 | 23 | 62 |
| 2753 | opening percentage calculated for the valve | | | | Modul. | R | 0 | 0 | 100 |
| 2761 | 1st heaters, setpoint for activation operation of componen' | User | Heater | Mode | Enable 1 | R/W/Z | 0 | 1 | 1 |
| 2762 | 2nd heaters, setpoint for activation operation of componen' | | | | Enable 2 | R/W/Z | 0 | 1 | 1 |

| Menu | Description | 4th digit | 3rd digit | 2nd digit | 1st digit | R/W/Z | Min | Std | Max |
|------|--|-----------|------------|--------------|-----------|-------|-------|------|------|
| 2771 | 1st heaters, set point for priority inversion starting | User | Heater | Control | Swap 1 | R/W/Z | 0 | 0 | 3 |
| 2772 | 1st heaters, outside air temperature threshold for swap contro | | | | Swap 1 | R/W | -20 | 10 | 50 |
| 2773 | outside air temperature threshold for unloac | | | | Low L. 1 | R/W | -20 | 10 | 50 |
| 2774 | 2nd heaters, set point for priority inversion starting | | | | Swap 2 | R/W/Z | 0 | 0 | 1 |
| 2811 | state of configuration | User | Economizer | Damper | Config. | R | 0 | 0 | 21 |
| 2812 | states of management | | | | Status | R | 23 | 23 | 62 |
| 2813 | minimum opening setting | | | | Minimum | R | 0 | 0 | 100 |
| 2814 | opening percentage calculated for the actuator | | | | Opening | R | 0 | 0 | 100 |
| 2815 | maximum opening setting | | | | Maximum | R | 0 | 100 | 100 |
| 2816 | opening percentage send to the actuator | | | | Output | R | 0 | 0 | 100 |
| 2821 | states of management | User | Economizer | Minimum | Status | R | 23 | 23 | 62 |
| 2822 | value of the supply temperature | | | | Supply | R | -99,9 | 0 | 99,9 |
| 2823 | set point of minimum fresh air | | | | Minimum | R/W/Z | 0 | 0 | 100 |
| 2824 | set value of minimum fresh air in % | | | | Sp Cust. | R | 0 | 0 | 100 |
| 2825 | set value of minimum fresh air in °c | | | | Setting | R | 1 | 20 | 70 |
| 2826 | opening percentage calculated | | | | Request | R | 0 | 0 | 100 |
| 2827 | Damper opening value after calibration | | | | Calib. | R | 0 | 0 | 100 |
| 2828 | value of the external signal set point | | | | 4-20mA | R | 0 | 0 | 100 |
| 2831 | status of freecooling | User | Economizer | Free-Cooling | Status | R | 23 | 23 | 62 |
| 2832 | value of the supply temperature | | | | Supply | R | -99,9 | 0 | 99,9 |
| 2833 | temperature threshold for freecooling functior | | | | Setting | R | 0 | 0 | 100 |
| 2834 | power factor for freecooling functior | | | | Power.F | R | 0 | 0 | 100 |
| 2841 | status of freeheating | User | Economizer | Free-Heating | Status | R | 23 | 23 | 62 |
| 2842 | value of the supply temperature | | | | Supply | R | -99,9 | 0 | 99,9 |
| 2843 | temperature threshold for freeheating functior | | | | Setting | R | 0 | 0 | 100 |
| 2844 | power factor for freeheating functior | | | | Power.F | R | 0 | 0 | 100 |
| 2851 | state of configuration | User | Economizer | Air Quality | Config. | R | 0 | 0 | 21 |
| 2852 | states of management | | | | Status | R | 23 | 23 | 62 |
| 2853 | value of air quality sensor | | | | Value | R | 0 | 0 | 2000 |
| 2854 | from the value | | | | From | R | 24 | 29 | 29 |
| 2855 | setting of functionality | | | | Mode | R | 0 | 0 | 1 |
| 2856 | minimum threshold for control | | | | Minimum | R | 0 | 1000 | 2000 |
| 2857 | maximum threshold for control | | | | Maximum | R | 0 | 1500 | 2000 |
| 2858 | opening percentage calculated | | | | Request | R | 0 | 0 | 100 |
| 2861 | state of configuration | User | Economizer | Exhaust | Config. | R | 0 | 0 | 21 |
| 2862 | states of management | | | | Status | R | 23 | 23 | 62 |
| 2863 | 1st level, state of the relay | | | | Relay 1 | R | 0 | 0 | 1 |
| 2864 | 2nd level, state of the relay | | | | Relay 2 | R | 0 | 0 | 1 |
| 2865 | 3rd level, state of the relay | | | | Relay 3 | R | 0 | 0 | 1 |
| 2866 | speed percentage calculated for the invertei | | | | Inverter | R | 0 | 0 | 100 |
| 2871 | state of configuration | User | Economizer | Recovery | Config. | R | 0 | 0 | 21 |
| 2872 | states of management | | | | Status | R | 23 | 23 | 62 |
| 2873 | value of the outside temperature | | | | Outside | R | -99,9 | 0 | 99,9 |
| 2874 | value of the return temperature | | | | Return | R | -99,9 | 0 | 99,9 |
| 2875 | value of the outlet temperature | | | | Outlet | R | -99,9 | 0 | 99,9 |
| 2876 | value of the differential pressure sensor | | | | Delta.P | R | 0 | 0 | 1000 |
| 2877 | opening percentage calculated for the by-pass damper | | | | By-pass | R | 0 | 0 | 100 |
| 2878 | motor for wheel module, state of the auxiliary contac | | | | Wheel S. | R | 0 | 0 | 1 |
| 2879 | motor for wheel module, state of the relay | | | | Wheel R. | R | 0 | 0 | 1 |

| Menu | Description | 4th digit | 3rd digit | 2nd digit | 1st digit | R/W/Z | Min | Std | Max |
|------|--|-----------|------------|---------------|-----------|-------|--------|-----|--------|
| 2881 | state of configuration | User | Economizer | Heater | Config. | R | 0 | 0 | 21 |
| 2882 | states of management | | | | Status | R | 23 | 23 | 62 |
| 2883 | calculated value of the mixing temperature | | | | Mixing | R | -99,9 | 0 | 99,9 |
| 2884 | value of the supply temperature | | | | Supply | R | -99,9 | 0 | 99,9 |
| 2885 | set point | | | | Setting | R | 20 | 30 | 50 |
| 2886 | state of the auxiliary contact | | | | State iD | R | 0 | 0 | 1 |
| 2887 | state of the relay | | | | Relay | R | 0 | 0 | 1 |
| 2888 | power percentage calculated for the triac | | | | Pwm | R | 0 | 0 | 100 |
| 2889 | power percentage send to the triac | | | | Output | R | 0 | 0 | 100 |
| 2911 | state of configuration | User | Other | Chilled Water | Config. | R | 0 | 0 | 21 |
| 2912 | states of management | | | | Status | R | 23 | 23 | 62 |
| 2913 | opening percentage calculated for the valve | | | | Opening | R | 0 | 0 | 100 |
| 2921 | state of configuration | User | Other | Humifier | Config. | R | 0 | 0 | 21 |
| 2922 | states of management | | | | Status | R | 23 | 23 | 62 |
| 2923 | state of the external safety contact | | | | State iD | R | 0 | 0 | 1 |
| 2924 | state of the relay | | | | Relay | R | 0 | 0 | 1 |
| 2925 | power percentage calculated for the proportional signa | | | | Opening | R | 0 | 0 | 100 |
| 2931 | online status | User | Other | Power Meter | OnLine | R | 0 | 0 | 1 |
| 2932 | value of the real power | | | | Real Pw | R | 0 | 0 | 3276,7 |
| 2933 | value of the reactive power | | | | Reac.Pw | R | 0 | 0 | 3276,7 |
| 2934 | value of the power factor | | | | P-Factor | R | -32768 | 0 | 32767 |
| 2935 | value of the current, phase a | | | | Cur. P.1 | R | 0 | 0 | 999,9 |
| 2936 | value of the current, phase b | | | | Cur. P.2 | R | 0 | 0 | 999,9 |
| 2937 | value of the current, phase c | | | | Cur. P.3 | R | 0 | 0 | 999,9 |

| Menu | Description | 4th digit | 3rd digit | 2nd digit | 1st digit | R/W/Z | Min | Std | Max |
|------|---|-----------|-----------|---------------|-----------|-------|-------|-----|------|
| 3111 | unit range configuration | Expert | Unit | Configuration | Range | R/W | 0 | 0 | 20 |
| 3112 | unit size configuration | | | | Size | R/W | 0 | 0 | 168 |
| 3113 | option set point, quick start after power on | | | | Quick On | R/W | 0 | 0 | 1 |
| 3114 | option set point, special fire/smoke safety | | | | Public | R/W | 0 | 0 | 1 |
| 3121 | setting of functionality for relay bm n7 | Expert | Unit | Cust. Relay | Bm-N7 | R/W | 30 | 30 | 57 |
| 3122 | setting of functionality for relay bm n12 | | | | Bm-N12 | R/W | 30 | 30 | 57 |
| 3123 | setting of functionality for relay be-1 n1 | | | | Be.1-N1 | R/W | 30 | 30 | 57 |
| 3124 | setting of functionality for relay be-1 n2 | | | | Be.1-N2 | R/W | 30 | 30 | 57 |
| 3125 | setting of functionality for relay be-1 n3 | | | | Be.1-N3 | R/W | 30 | 30 | 57 |
| 3126 | setting of functionality for relay be-1 n4 | Be.1-N4 | R/W | 30 | 30 | 57 | | | |
| 3131 | setting of functionality for digital input bm id4 | Expert | Unit | Cust. Switch | Bm-iD4 | R/W | 30 | 30 | 66 |
| 3132 | setting of functionality for digital input bm id7 | | | | Bm-iD7 | R/W | 30 | 30 | 66 |
| 3133 | setting of functionality for digital input be-1 id1 | | | | Be.1-iD1 | R/W | 30 | 30 | 66 |
| 3134 | setting of functionality for digital input be-1 id2 | | | | Be.1-iD2 | R/W | 30 | 30 | 66 |
| 3135 | setting of functionality for digital input be-1 id3 | | | | Be.1-iD3 | R/W | 30 | 30 | 66 |
| 3136 | setting of functionality for digital input be-1 id4 | | | | Be.1-iD4 | R/W | 30 | 30 | 66 |
| 3141 | setting of functionality for analog input be-1 b1 | Expert | Unit | Cust. Signal | Be.1-B1 | R/W | 30 | 30 | 39 |
| 3142 | setting of functionality for analog input be-1 b2 | | | | Be.1-B2 | R/W | 30 | 30 | 39 |
| 3143 | setting of functionality for analog input be-1 b3 | | | | Be.1-B3 | R/W | 30 | 30 | 39 |
| 3144 | setting of functionality for analog input be-1 b4 | | | | Be.1-B4 | R/W | 30 | 30 | 39 |
| 3145 | threshold temperature for 4ma external sensor | | | | T. 4mA | R/W | -99,9 | -40 | 99,9 |
| 3146 | threshold temperature for 20ma external sensor | | | | T. 20mA | R/W | -99,9 | 80 | 99,9 |
| 3151 | DC60/ DM60 Configuration | Expert | Unit | Dc-Dm | Remote | R/W | 0 | 0 | 1 |
| 3152 | selecting the display mode for set point (k or °c) | | | | Sp Cust. | R/W | 0 | 0 | 1 |
| 3153 | lower threshold temperature for set point customer | | | | Low Sp | R/W | 8 | 17 | 35 |
| 3154 | upper threshold temperature for set point customer | | | | High Sp | R/W | 8 | 27 | 35 |
| 3155 | activation of the authorization to use old display or standard care | | | | DS Lennox | R/W | 0 | 0 | 1 |
| 3171 | address of the unit (bus id) | Expert | Unit | Master/Slaves | Address | R | 1 | 1 | 24 |
| 3172 | setting the sub-bus | | | | Bus | R/W | 1 | 1 | 24 |
| 3173 | setting the master of the bus | | | | Master | R/W | 0 | 0 | 24 |
| 3174 | number of compressors for token function or number of units | | | | Number | R/W | 0 | 0 | 96 |
| 3175 | setting of functionality | | | | Function | R/W | 0 | 0 | 4 |
| 3176 | activation of the function slaves works like master | | | | Together | R/W | 0 | 0 | 1 |
| 3177 | choice of outside temperature management | | | | Outside | R/W | 0 | 0 | 2 |
| 3178 | choice of room temperature management | | | | Room | R/W | 0 | 0 | 2 |
| 3179 | choice of air quality management | | | | Air Q. | R/W | 0 | 0 | 2 |
| 3181 | address of the unit (bus id) | | | | Address | R/W | 1 | 1 | 207 |
| 3182 | setting of the protocol type | Type | R/W | 0 | 2 | 6 | | | |
| 3183 | configuration of communication bus speed | Baud | R/W | 0 | 3 | 4 | | | |
| 3184 | watchdog timer | Watchdog | R/W | 0 | 0 | 32767 | | | |
| 3191 | management of set points | Expert | Unit | Lennox | Restore | R/W | 0 | 0 | 5 |
| 3192 | reserved for technicians lennox | | | | Tests | R/W | 7 | 7 | 48 |
| 3211 | choice of the control (room temperature or supply) | Expert | Control | Configuration | Mode | R/W | 0 | 0 | 1 |
| 3212 | advanced control pack configuration | | | | Humidity | R/W | 0 | 0 | 1 |
| 3213 | choice of the room sensor temperature | | | | Room T. | R/W | 1 | 2 | 511 |
| 3214 | choice of the outside sensor temperature | | | | Out. T. | R/W | 1 | 1 | 63 |
| 3215 | choice of the room sensor humidity | | | | Room Hr. | R/W | 1 | 1 | 511 |
| 3216 | choice of the outside sensor humidity | | | | Out. Hr. | R/W | 1 | 1 | 63 |
| 3217 | choice of the supply air temperature sensor | | | | Supply | R/W | 1 | 1 | 3 |

| Menu | Description | 4th digit | 3rd digit | 2nd digit | 1st digit | R/W/Z | Min | Std | Max |
|------|--|-----------|-----------|---------------|-----------|---------|--------|----------|-------|
| 3221 | offset for room temperature value | Expert | Control | Room | Offset | R/W | -5 | 0 | 5 |
| 3222 | room temperature threshold for unloading cooling mode | | | | Limit C. | R/W | 0 | 0 | 40 |
| 3223 | room temperature threshold for unloading heating mode | | | | Limit H. | R/W | 0 | 40 | 40 |
| 3224 | external value of set point for control temperature | | | | 4-20mA | R | -5 | 0 | 5 |
| 3225 | Dynamic set point (cooling setpoint offset according to outside temperature) | | | | Sp.Dyna. | R/W/Z | 0 | 20 | 20 |
| 3226 | set point of cooling mode | | | | Sp.Cool. | R/W/Z | 8 | 22 | 35 |
| 3227 | set point of heating mode | | | | Sp.Heat. | R/W/Z | 8 | 19 | 35 |
| 3228 | integral time control for cooling mode | | | | Ti.Cool. | R/W | 10 | 60 | 120 |
| 3229 | integral time control for heating mode | | | | Ti.Heat. | R/W | 10 | 60 | 120 |
| 3231 | activation of the smoothing function of temperature | | | | Expert | Control | Supply | Smooth | R/W/Z |
| 3232 | low limit threshold in cooling mode | Lim.Cool | R/W | 4 | | | | 4 | 58 |
| 3233 | high limit threshold in heating mode | Lim.Heat | R/W | 4 | | | | 38 | 58 |
| 3234 | offset for high limit threshold in cooling mode | Adj.Cool | R/W | -5 | | | | 0 | 5 |
| 3235 | offset for low limit threshold in heating mode | Adj.Heat | R/W | -5 | | | | 0 | 5 |
| 3236 | outdoor temperature low threshold for slope on the supply temperature setpoint | Out.Low | R/W | -20 | | | | 0 | 50 |
| 3237 | coefficient of the low outside temperature for the slope of the supply temperature setpoint | Coef.Low | R/W | -50 | | | | 0 | 50 |
| 3238 | outdoor temperature high threshold for slope on the supply temperature setpoint | Out.High | R/W | -20 | | | | 30 | 50 |
| 3239 | coefficient of the high outside temperature for the slope of the supply temperature setpoint | Coef.High | R/W | -50 | | | | 0 | 50 |
| 3241 | setpoint for activation operation of contro | Expert | Control | Humidity | | | | Enable | R/W/Z |
| 3242 | set point of dehumidification | | | | Sp. Deh. | R/W/Z | 0 | 100 | 100 |
| 3243 | set point of humidification | | | | Sp. Hum. | R/W/Z | 0 | 0 | 100 |
| 3244 | integral time control for dehumidification | | | | Ti. Deh. | R/W | 10 | 60 | 120 |
| 3245 | integral time control for humidification | | | | Ti. Hum. | R/W | 10 | 60 | 120 |
| 3251 | lower supply temperature threshold, 1st level of alarm | Expert | Control | Safety | Sup Lo.1 | R/W | 5 | 6 | 19 |
| 3252 | lower supply temperature threshold, 2nd level of alarm | | | | Sup Lo.2 | R/W | 1 | 2 | 17 |
| 3253 | upper supply temperature threshold, 1st level of alarm | | | | Sup Hi.1 | R/W | 20 | 40 | 70 |
| 3254 | upper supply temperature threshold, 2nd level of alarm | | | | Sup Hi.2 | R/W | 20 | 60 | 70 |
| 3255 | lower room temperature threshold of alarm | | | | Room Lo. | R/W | 5 | 5 | 40 |
| 3256 | upper room temperature threshold of alarm | | | | Room Hi. | R/W | 5 | 40 | 40 |
| 3257 | dew point control | | | | DewPoint | R/W | 0 | 0 | 1 |
| 3258 | lower room humidity threshold of alarm | | | | Room Lo. | R/W | 0 | 0 | 100 |
| 3259 | upper room humidity threshold of alarm | | | | Room Hi. | R/W | 0 | 100 | 100 |
| 3261 | state of unload cooling mode by BMS | | | | Expert | Control | Bms | Cool.Mod | R/W |
| 3262 | state of unload cooling mode by BMS | Heat.Mod | R/W | 0 | | | | 0 | 1 |
| 3263 | value of the outside temperature send by BMS | Out. T. | R/W | -99,9 | | | | -99,9 | 99,9 |
| 3264 | value of the room temperature send by BMS | Room T. | R/W | -99,9 | | | | -99,9 | 99,9 |
| 3265 | value of the outside humidity send by BMS | Out. Hr. | R/W | 0 | | | | 0 | 100 |
| 3266 | value of the room humidity send by BMS | Room Hr. | R/W | 0 | | | | 0 | 100 |
| 3311 | choice of air flow sensor | Expert | Blower | Configuration | | | | AirFlow | R/W |
| 3312 | choice of inverter | | | | Modul. | R/W | 0 | 0 | 2 |
| 3313 | choice of kit | | | | Kit | R/W | 0 | 0 | 5 |
| 3314 | choice of motor size | | | | Motor | R/W | 0 | 0 | 10 |
| 3315 | choice of fan type | | | | Fan | R/W | 0 | 0 | 4 |
| 3321 | setpoint for activation operation of component | Expert | Blower | Mode | Enable | R/W/Z | 0 | 1 | 1 |
| 3322 | setpoint for activation operation in room control dead zone | | | | Dead Z. | R/W/Z | 0 | 0 | 2 |
| 3323 | temperature threshold for activation night refreshment functior | | | | Night Eco | R/W | 8 | 22 | 35 |
| 3324 | time, cyclic dead zone function, fan on | | | | Time On | R/W | 0 | 300 | 32400 |
| 3325 | time, cyclic dead zone function, fan off | | | | Time Off | R/W | 0 | 3300 | 32400 |

| Menu | Description | 4th digit | 3rd digit | 2nd digit | 1st digit | R/W/Z | Min | Std | Max |
|------|---|-----------|-----------------|---------------|-----------|-------|------|-----|------|
| 3331 | setting of functionality | Expert | Blower | Speed | Function | R/W/Z | 0 | 0 | 2 |
| 3332 | choice of mode (% or qv) | | | | Mode | R/W | 0 | 0 | 1 |
| 3333 | nominal threshold for air flow contro | | | | Flow H. | R/W/Z | 0 | ~ | 100 |
| 3334 | low threshold for air flow control | | | | Flow L. | R/W/Z | 0 | ~ | 100 |
| 3335 | coefficient for compensation of losses of the air damper | | | | Coef. | R/W | -100 | 0 | 100 |
| 3336 | minimum threshold for air flow control | | | | Minimum | R/W | 0 | ~ | 100 |
| 3337 | maximum threshold for air flow control | | | | Maximum | R/W | 0 | ~ | 100 |
| 3341 | choice of air flow sensor | Expert | Blower | Safety | Config. | R | 0 | 0 | 2 |
| 3342 | value of the air flow sensor | | | | Delta.P | R | 0 | 0 | 1000 |
| 3343 | air flow threshold alarm | | | | Air Flow | R/W | 0 | 25 | 1000 |
| 3344 | filters missing threshold alarm | | | | Missing | R/W | 0 | 50 | 1000 |
| 3345 | dirty filters threshold alarm | | | | Dirty | R/W | 50 | 250 | 1000 |
| 3351 | low speed forced by BMS | Expert | Blower | Bms | Bms Low | R/W | 0 | 0 | 1 |
| 3352 | high speed forced by BMS | | | | Bms High | R/W | 0 | 0 | 1 |
| 3353 | value of the speed send by BMS | | | | Bms Val. | R/W | 0 | 0 | 100 |
| 3411 | choice of modulated compressor | Expert | Compressor | Configuration | Modul. | R/W | 0 | 0 | 2 |
| 3412 | configuration of leak detection management | | | | Leak Det. | R/W | 0 | 0 | 1 |
| 3413 | configuration of sensors installed on the circuits | | | | Sensor | R/W | 0 | 4 | 4 |
| 3421 | setpoint for activation operation of all compressor, cooling/heating mode | Expert | Compressor | Mode | Enabled | R/W/Z | 0 | 1 | 1 |
| 3422 | enable circuit 1, separate comp.1 or/and comp.2 | | | | Enable.1 | R/W | 0 | 0 | 3 |
| 3423 | enable circuit 2, separate comp.1 or/and comp.2 | | | | Enable.2 | R/W | 0 | 0 | 3 |
| 3424 | state of unload 50% by BMS | | | | Bms 50% | R/W | 0 | 0 | 1 |
| 3425 | state of unload 100% by BMS | | | | Bms Unl. | R/W | 0 | 0 | 1 |
| 3426 | state of unload heatpump by BMS | | | | Bms HPum | R/W | 0 | 0 | 1 |
| 3431 | setpoint for activation operation in cooling mode | Expert | Compressor | Cooling | Enabled | R/W/Z | 0 | 1 | 1 |
| 3432 | outside air temperature threshold, unload 50% of compressors | | | | Low L50% | R/W | -10 | 20 | 50 |
| 3433 | outside air temperature threshold, unload 100% of compressors | | | | Low L. | R/W | -10 | 12 | 50 |
| 3434 | delta-t of one compressor | | | | Delta T. | R/W | 1 | 8 | 20 |
| 3435 | integral time control, compressor in cooling mode | | | | Ti. | R/W | 5 | 30 | 120 |
| 3441 | setpoint for activation operation in heating mode | Expert | Compressor | Heating | Enabled | R/W/Z | 0 | 1 | 1 |
| 3442 | outside air temperature threshold, unload 50% of compressors | | | | Low L50% | R/W | -20 | -20 | 50 |
| 3443 | outside air temperature threshold, unload 100% of compressors | | | | Low L. | R/W | -20 | -20 | 50 |
| 3444 | delta-t of one compressor | | | | Delta T. | R/W | 1 | 8 | 20 |
| 3445 | integral time control, compressor in heating mode | | | | Ti. | R/W | 5 | 30 | 120 |
| 3511 | set point of configuration | Expert | Condenser | Configuration | Type | R/W | 0 | 0 | 1 |
| 3512 | choice of modulation mode | | | | Modul. | R/W | 0 | 0 | 4 |
| 3521 | choice of control mode | Expert | Condenser | Control | Mode | R/W/Z | 0 | 0 | 3 |
| 3522 | set point of the condensing temperature | | | | Cond. | R/W | 25 | 30 | 45 |
| 3523 | speed percentage for reduced mode | | | | Reduced | R/W | 70 | 70 | 100 |
| 3524 | ti set point for pid control | | | | Ti. | R/W | 70 | 70 | 100 |
| 3531 | lower water temperature threshold | Expert | Condenser | Savety | Low L. | R/W | 4 | 5 | 20 |
| 3532 | upper water temperature threshold | | | | High L. | R/W | 20 | 45 | 50 |
| 3533 | opening percentage valve for freeze protection | | | | Leak | R/W | 0 | 0 | 50 |
| 3534 | outside air temperature threshold to activate function | | | | Onset | R/W | -20 | -20 | 50 |
| 3541 | outside air temperature threshold to activate function | Expert | Condenser | Defrost | Onset | R/W | 8 | 16 | 22 |
| 3542 | ratio for dynamic management | | | | Ratio | R/W | 0 | 1,4 | 2 |
| 3543 | minimum time between two defrost | | | | Timeout | R/W | 30 | 45 | 90 |
| 3544 | number restart of fans for the end of cycle | | | | Restart | R/W | 1 | 3 | 5 |
| 3545 | choice of one compressor by tandem during defrost | | | | 1/2 Tand | R/W | 0 | 0 | 1 |
| 3546 | state of defrost cycle delayed by BMS | | | | Bms Wait | R/W | 0 | 0 | 1 |
| 3611 | set point of configuration | Expert | Expansion Valve | Configuration | Option | R/W | 0 | 0 | 1 |

| Menu | Description | 4th digit | 3rd digit | 2nd digit | 1st digit | R/W/Z | Min | Std | Max |
|------|--|-----------|-----------------|-----------------|-----------|-------|-----|-----|-----|
| 3621 | set point of superheat | Expert | Expansion Valve | Circuit 1 | S.Heat | R/W | 3 | 5 | 10 |
| 3622 | kp set point for pid control | | | | Kp | R/W | 0 | 7 | 30 |
| 3623 | ti set point for pid control | | | | Ti | R/W | 0 | 60 | 360 |
| 3624 | td set point for pid control | | | | Td | R/W | 0 | 2 | 9 |
| 3625 | offset for pressure sensor | | | | Offset | R/W | -5 | 0 | 5 |
| 3626 | offset for temperature probe | | | | Offset | R/W | -5 | 0 | 5 |
| 3627 | choice of manual mode | | | | Manual | R/W | 0 | 0 | 1 |
| 3628 | value of number of steps for manual mode | | | | Steps | R/W | 0 | 0 | 480 |
| 3631 | set point of superheat | Expert | Expansion Valve | Circuit 2 | S.Heat | R/W | 3 | 5 | 10 |
| 3632 | kp set point for pid control | | | | Kp | R/W | 0 | 7 | 30 |
| 3633 | ti set point for pid control | | | | Ti | R/W | 0 | 60 | 360 |
| 3634 | td set point for pid control | | | | Td | R/W | 0 | 2 | 9 |
| 3635 | offset for pressure sensor | | | | Offset | R/W | -5 | 0 | 5 |
| 3636 | offset for temperature probe | | | | Offset | R/W | -5 | 0 | 5 |
| 3637 | choice of manual mode | | | | Manual | R/W | 0 | 0 | 1 |
| 3638 | value of number of steps for manual mode | | | | Steps | R/W | 0 | 0 | 480 |
| 3711 | 1st heaters, set point of configuration | Expert | Heater | Configuration | Main | R/W | 0 | 0 | 7 |
| 3712 | 2nd heaters, set point of configuration | | | | 2nd | R/W | 0 | 0 | 2 |
| 3713 | Hot water pump, set point of configuration | | | | Pump | R/W | 0 | 0 | 1 |
| 3721 | 1st heaters, setpoint for activation operation of componen | Expert | Heater | Mode | Enable.1 | R/W/Z | 0 | 1 | 1 |
| 3722 | 1st heaters, state of unload 50% by BMS | | | | Bms 50% | R/W | 0 | 0 | 1 |
| 3723 | 1st heaters, state of unload 100% by BMS | | | | Bms Unl. | R/W | 0 | 0 | 1 |
| 3724 | 2nd heaters, setpoint for activation operation of componen | | | | Enable.2 | R/W/Z | 0 | 1 | 1 |
| 3731 | 1st heaters, set point for priority inversion startin | Expert | Heater | Control | Swap 1 | R/W/Z | 0 | 0 | 3 |
| 3732 | 1st heaters, outside air temperature threshold for swap contro | | | | Swap 1 | R/W | -20 | 10 | 50 |
| 3733 | 1st heaters, outside air temperature threshold for unloac | | | | Low L. 1 | R/W | -20 | 10 | 50 |
| 3734 | 1st heaters, delta-t of one stage | | | | DeltaT.1 | R/W | 1 | 8 | 20 |
| 3735 | 1st heaters, integral time control | | | | Ti. 1 | R/W | 5 | 30 | 120 |
| 3736 | 2nd heaters, set point for priority inversion startin | | | | Swap 2 | R/W/Z | 0 | 0 | 1 |
| 3737 | 2nd heaters, delta-t of one compressor | | | | DeltaT.2 | R/W | 1 | 8 | 20 |
| 3738 | 2nd heaters, integral time control | | | | Ti. 2 | R/W | 5 | 30 | 120 |
| 3751 | set point of limit maximum power | Expert | Heater | Electrical | TriacMax | R/W | 0 | 100 | 100 |
| 3761 | opening percentage valve for freeze protection | Expert | Heater | Hot Water | Leak | R/W | 0 | 0 | 50 |
| 3762 | outside air temperature threshold to activate funcnior | | | | Onset | R/W | -20 | -20 | 50 |
| 3763 | choice to close or open valve in case of freezing alarm | | | | Freeze | R/W | 0 | 0 | 1 |
| 3771 | setting of functionality | Expert | Heater | Pump | Mode | R/W | 0 | 0 | 3 |
| 3781 | opening percentage valve for freeze protection | Expert | Heater | Hot Water Reco. | Leak | R/W | 0 | 0 | 50 |
| 3782 | outside air temperature threshold to activate funcnior | | | | Onset | R/W | -20 | -20 | 50 |
| 3811 | configuration of fresh air damper | Expert | Economizer | Configuration | Damper | R/W | 0 | 0 | 2 |
| 3812 | configuration of air quality sensor | | | | Co2 | R/W | 0 | 0 | 2 |
| 3813 | choice of recovery module | | | | Recov. | R/W | 0 | 0 | 4 |
| 3814 | configuration of fresh air electrical heaters | | | | Heater | R/W | 0 | 0 | 2 |
| 3815 | choice of exhaust fan | | | | Exhaust | R | 0 | 0 | 2 |
| 3816 | choice of kit | | | | Kit | R/W | 0 | 0 | 5 |
| 3817 | choice of motor size | | | | Motor | R/W | 0 | 0 | 10 |
| 3818 | choice of fan type | | | | Fan | R/W | 0 | 0 | 4 |
| 3819 | choice of inverter for exhaust fan | | | | Inverter | R/W | 0 | 0 | 5 |

| Menu | Description | 4th digit | 3rd digit | 2nd digit | 1st digit | R/W/Z | Min | Std | Max |
|------|--|-----------|------------|---------------|-----------|------------|----------|---------|-------|
| 3821 | set point of minimum fresh air | Expert | Economizer | Control | Minimum | R/W/Z | 0 | 0 | 100 |
| 3822 | set point of maximum fresh air | | | | Maximum | R/W | 0 | 100 | 100 |
| 3823 | integral time control fresh air damper | | | | Ti. | R/W | 5 | 10 | 120 |
| 3824 | state of enthalpy function | | | | Enthalpy | R/W | 5 | 10 | 120 |
| 3825 | state of calibration function | | | | Calib. | R/W | 0 | 0 | 1 |
| 3826 | state of opening to 0% by BMS | | | | Bms 0% | R/W | 0 | 0 | 1 |
| 3827 | state of opening to 100% by BMS | | | | Bms 100% | R/W | 0 | 0 | 1 |
| 3828 | Minimum Fresh Air, Choice of the functionality | | | | Mode | R/W/Z | 0 | 0 | 1 |
| 3829 | Set point of Minimum Fresh Air (second level) | | | | Mini.2nd | R/W/Z | 0 | 0 | 100 |
| 3831 | setpoint for activation operation of functior | Expert | Economizer | Free-Cooling | Enabled | R/W/Z | 0 | 1 | 1 |
| 3832 | outside lower temperature threshold, unloac | | | | Low L. | R/W | -20 | -20 | 50 |
| 3833 | outside upper temperature threshold, unload | | | | High L. | R/W | -20 | 26 | 50 |
| 3834 | state of unload by BMS | | | | Bms Unl. | R/W | 0 | 0 | 1 |
| 3841 | setpoint for activation operation of functior | Expert | Economizer | Free-Heating | Enabled | R/W/Z | 0 | 1 | 1 |
| 3842 | outside lower temperature threshold, unloac | | | | Low L. | R/W | -20 | 14 | 50 |
| 3843 | outside upper temperature threshold, unload | | | | High L. | R/W | -20 | 40 | 50 |
| 3844 | state of unload by BMS | | | | Bms Unl. | R/W | 0 | 0 | 1 |
| 3851 | setpoint for activation operation of functior | Expert | Economizer | Air Quality | Enabled | R/W/Z | 0 | 1 | 1 |
| 3852 | setting of functionality | | | | Mode | R/W | 0 | 0 | 1 |
| 3853 | minimum threshold for control | | | | Minimum | R/W | 0 | 1000 | 2000 |
| 3854 | maximum threshold for control | | | | Maximum | R/W | 0 | 1500 | 2000 |
| 3855 | upper air quality threshold of alarm | | | | Limit | R/W | 0 | 1500 | 2000 |
| 3856 | state of unload by BMS | | | | Bms Unl. | R/W | 0 | 0 | 1 |
| 3857 | value of the air quality send by BMS | | | | Bms Val. | R/W | 0 | 0 | 2000 |
| 3861 | opening percentage threshold of actuator for 1st far | Expert | Economizer | Exhaust | Step 1 | R/W | 0 | 33 | 100 |
| 3862 | opening percentage threshold of actuator for 2nd far | | | | Step 2 | R/W | 0 | 50 | 100 |
| 3863 | opening percentage threshold of actuator for 3rd far | | | | Step 3 | R/W | 0 | 66 | 100 |
| 3864 | nominal threshold for air flow contro | | | | Flow H. | R/W | 0~ | | 100 |
| 3865 | low threshold for air flow control | | | | Flow L. | R/W | 0~ | | 100 |
| 3866 | coefficient for compensation of losses of the air damper | | | | Coef. | R/W | -100 | 0 | 100 |
| 3871 | setpoint for activation operation of component | | | | Expert | Economizer | Recovery | Enabled | R/W/Z |
| 3872 | setpoint of delta-t (outside/return) for starting wheel motoi | Delta.T | R/W | 1 | | | | 4 | 10 |
| 3873 | outside air temperature threshold to activate defrost functior | Defrost | R/W | -20 | | | | 5 | 20 |
| 3874 | delta-t threshold (outside/outlet) for alarm | Safety | R/W | 0 | | | | 2 | 5 |
| 3875 | dirty filters threshold alarm | Filters | R/W | 50 | | | | 250 | 500 |
| 3881 | setpoint for activation operation of component | Expert | Economizer | Heater | Enabled | R/W/Z | 0 | 1 | 1 |
| 3882 | set point of condensing control | | | | Sp Temp. | R/W | 20 | 30 | 50 |
| 3883 | delta-t of full capacity | | | | Delta T. | R/W | 1 | 8 | 20 |
| 3884 | Opening threshold of the fresh air damper for activator | | | | Opening | R/W | 0 | 0 | 100 |
| 3911 | set point of configuration | Expert | Other | Chilled Water | Config. | R/W | 0 | 0 | 1 |
| 3912 | setpoint for activation operation of component | | | | Enabled | R/W/Z | 0 | 1 | 1 |
| 3913 | integral time control | | | | Ti. | R/W | 5 | 30 | 120 |
| 3921 | set point of configuration | Expert | Other | Humidifier | Config. | R/W | 0 | 0 | 2 |
| 3922 | integral time control | | | | Ti. | R/W | 10 | 60 | 120 |

| Menu | Description | 4th digit | 3rd digit | 2nd digit | 1st digit | R/W/Z | Min | Std | Max |
|------|---|-----------|-----------|-------------|-----------|-------|--------|-------|-------|
| 3931 | power meter configuration | Expert | Other | Power Meter | Config. | R/W | 0 | 0 | 1 |
| 3932 | address of the power meter in the rs485 bus | | | | Address | R | 21 | 21 | 21 |
| 3933 | speed of the rs485 bus | | | | Baud | R | 19200 | 19200 | 19200 |
| 3934 | parity of the rs485 bus | | | | Parity | R | 0 | 0 | 0 |
| 3935 | communication on rs485 is correct | | | | OnLine | R | 0 | 0 | 1 |
| 3936 | value of the current, instantaneous | | | | Current | R | 0 | 0 | 999,9 |
| 3937 | current threshold for unloaded 50% of compressors | | | | Max.Cur. | R/W | 0 | 0 | 999,9 |
| 3938 | value for reset power meter memory | | | | Code | R/W | -32768 | 0 | 32767 |



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