LENNOX

CLIMATIC™ 60
User manual

ECOLEAN™
NEOSYS™

Air cooled chiller

9 - 1000 kW

CLIMATIC™ 60

AIR COOLED CHILLER

CONTROL MANUAL

Ref : CL60-AC CHILLER-IOM-1011-E

CLIMATIC™ 60 CONTROLLER

The new generation of microprocessor based control, CLIMATIC™ 60 may be fitted to the LENNOX chiller or heat pump 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 chiller and heat pump applications, maximising the LENNOX unit's efficiency and performance.

COMPATIBILITY

This documentation is compatible with the chiller and heat pump range's programs from software version <u>CH060 STD - Vers. 01.0 - Rev 00.1</u>:
 • ECOLEAN™,
 • NEOSYS™.
 •
 •
 •

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.

OVERVIEW

pLan bus   Fieldbus bus

BMS bus
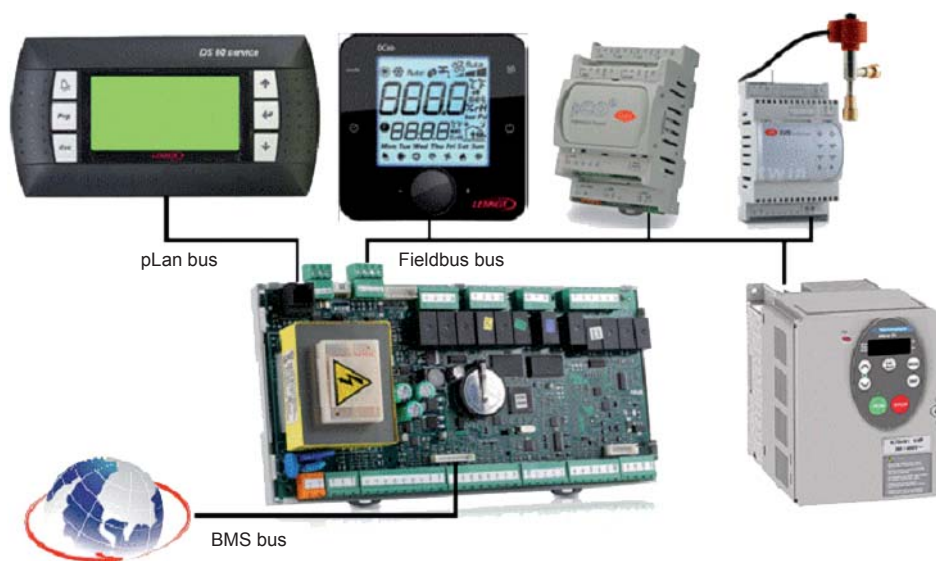
COMPRESSOR

Function
The CLIMATIC™ 60 manages the compressor(s) according to the outlet temperature demand and engages the number of compressor calculated to reach the water set point.

Description
The CLIMATIC™ 60 offers possibilities to disable some compressor(s) on the circuit. Note this opportunity can also be done by dry contact (Refer to the "Free input/output" paragraph).

Setting (**3421**)	Compressor on circuit (case od 2 circuits)
NO	1 2 3
1, ., .	1 2 3
., 2, .	1 2 3
1, 2, .	1 2 3
., ., 3	1 2 3
1, ., 3	1 2 3
., 2, 3	1 2 3
1, 2, 3	1 2 3

The compressors allowed to run can be pre-specified according to the scheduling and can take different values for each schedule mode (A, B, C, D, and BMS).
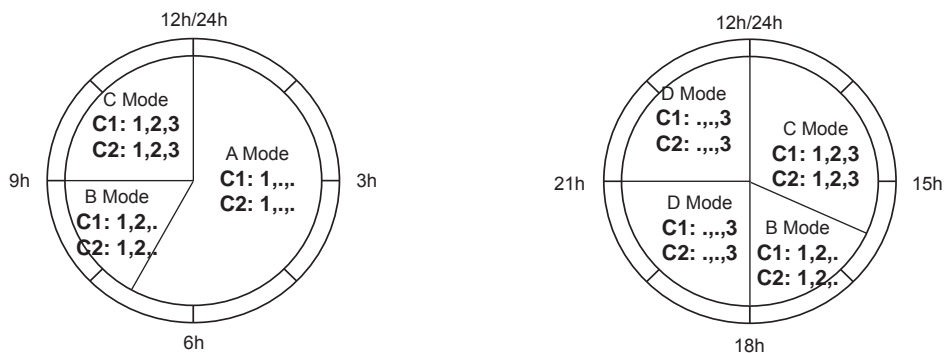
Moreover, the circuit priority can be specified (for units with 2 circuits)

"Auto":
The CLIMATIC™ 60 decides the priority of the circuit which starts first. Note that the priority is swapped when all the compressors are stopped in order to optimise the operating hours of the two circuits.

"Priority C1":
The priority is fixed to circuit 1, which means circuit 1 starts first and stops the last.

"Priority C2":
The priority is fixed to circuit 2, which means circuit 2 starts first and stops the last.

The compressor is subject to various operating time in order to prevent from damage operating.
• The minimum ON time of the compressor is fixed to 1 minute,
• The minimum OFF time of the compressor is fixed to 1 minute,
• The minimum between 2 starts of the same compressor is fixed to 5 minutes.
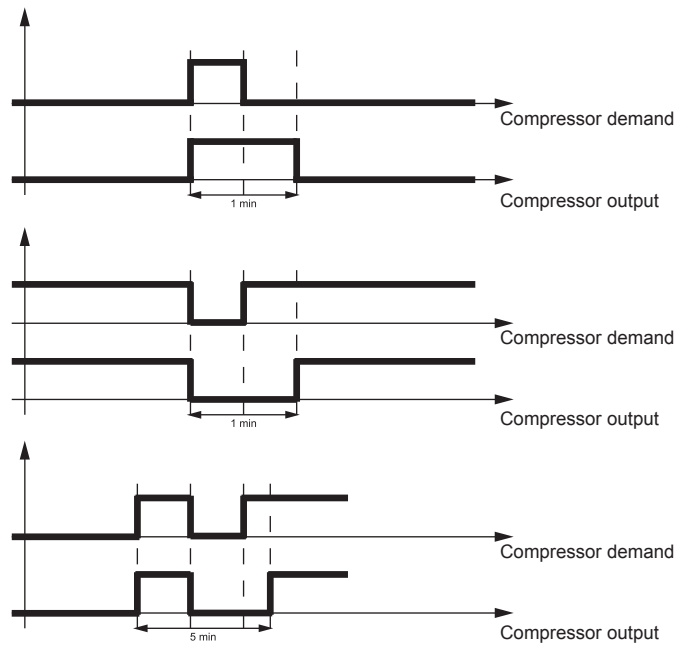
Settings
The different settings to configure the compressors are available in the menu:

(**3331**):	Enable of the compressor(s) on circuit 1
(**3332**):	Enable of the compressor(s) on circuit 2
(**3335**):	Priority of the circuit rotation.

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 has 2 different fan managements according to the type of unit:

ECOLEAN™ (without fan speed inverter)
The CLIMATIC™ 60 manages 2 speeds on the fan (low and high speed).
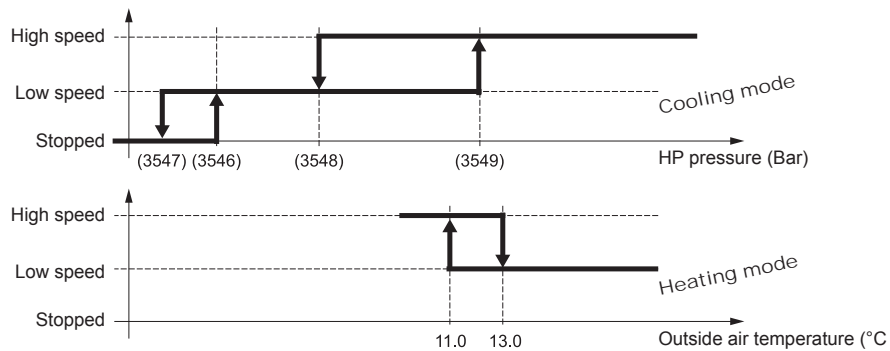
NEOSYS™ standard unit (standard version without fan speed inverter)
The condensing temperature is reached according to the set point selected in the menu (**3546**). The fans are managed individually except for the fans which are common for the two circuits.
In order to optimise the reactivity of the system at the startup of the circuit, an anticipation of the fan(s) is forced during the first 30s according to the outside air temperature.
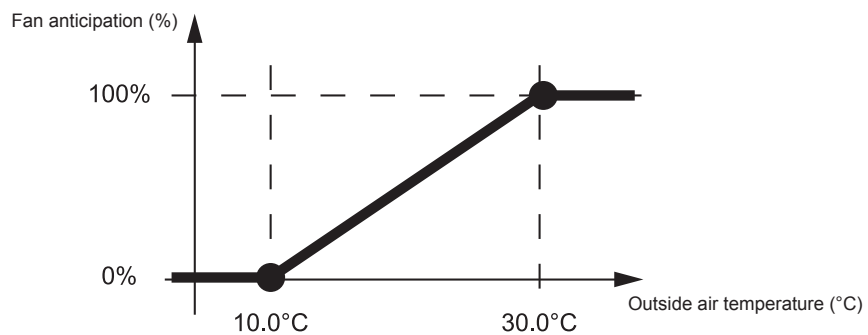
Example: Case of unit with 4 condenser fans.
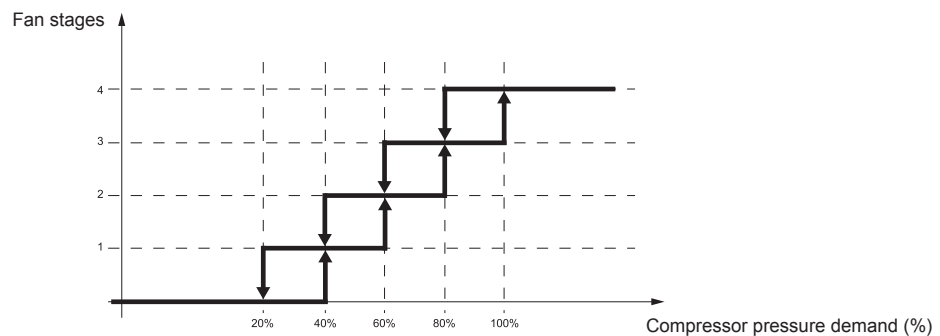
NEOSYS™ (with fan speed inverter)

A fan inverter controlled by a PID algorithm is used to adjust the fans speed variation. Fan's startup anticipation is forced as for the NEOSYS™ standard unit.
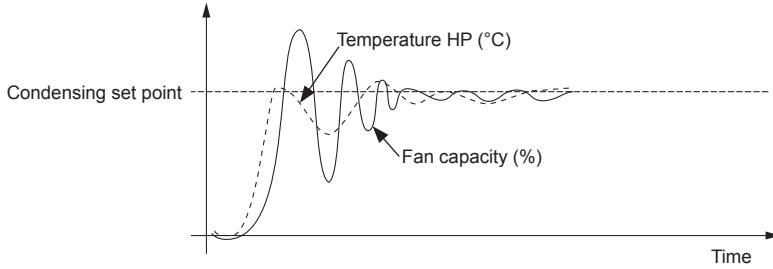
In order to optimise the performance of the unit, the condensing temperature is set according to outside air temperature and tries to maintain a delta of 12°C (only for unit with electrionic expansion valve).
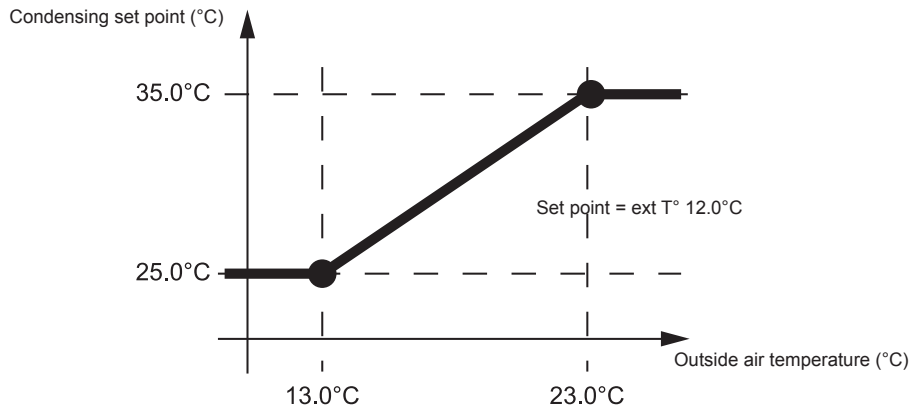
Note: this functionality can be disabled if the selected setting (**3546**) is different from the factory value. In this case the condensing set point is the new selected value.

Settings

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

(**3546**):   Condensing set point temperature.

FAN SMART ACOUSTIC SYSTEM™

Function

The CLIMATIC™ 60 controls the fan speed limited by the Smart Acoustic System™ which allows progressive adaptation of the unit to the building load while respecting the noise level constraints and the operating limits.

Description

The maximum sound level and the fan strategies can be adjusted according to the schedule mode in order to benefit from the different modes "High performance", "Quiet" and "Quiet++" operation as well as in heating or cooling mode.
The acoustic mode offers 2 possibilities to manage the condenser fan:

Quiet"

In this mode, the fan capacity is limited according to the desired sound level. For fan using low / high speed, the high speed is locked. In case of condensing temperature too high, the CLIMATIC™ 60 unlocks the limit or the high speed to prevent from unloading compressor.
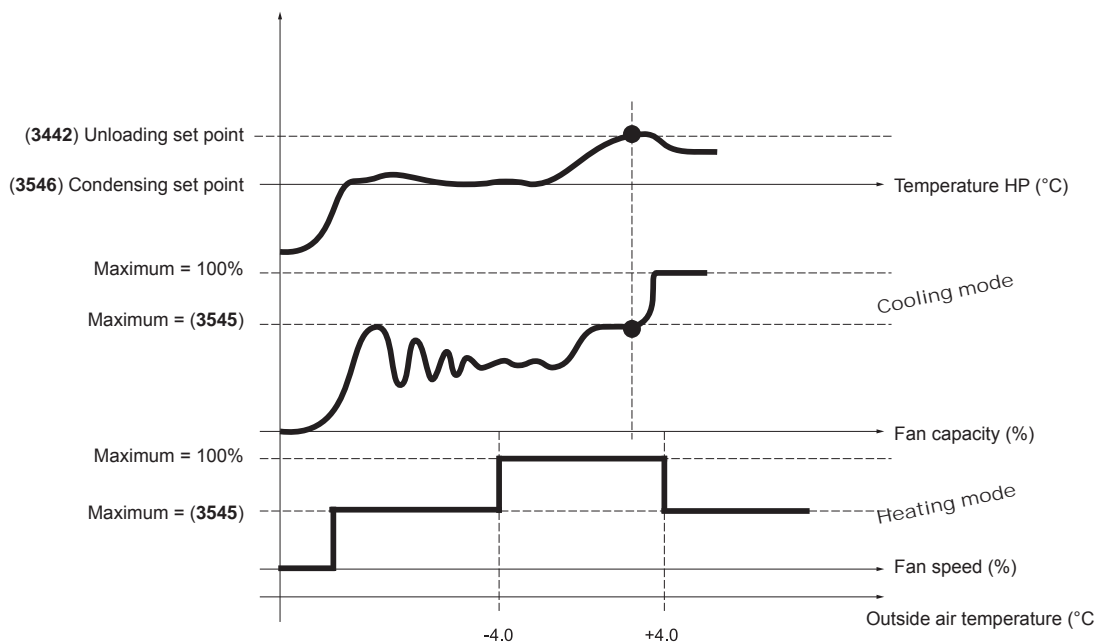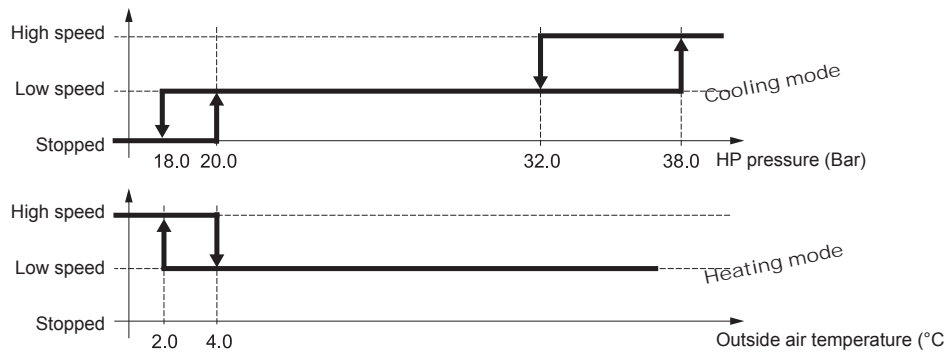
"Quiet++"

This mode is similar to the "Quiet" mode except that the fan speed limit or the high speed is never unlocked. In case of condensing temperature too high, the CLIMATIC™ 60 will unload a compressor to prevent from high pressure security.
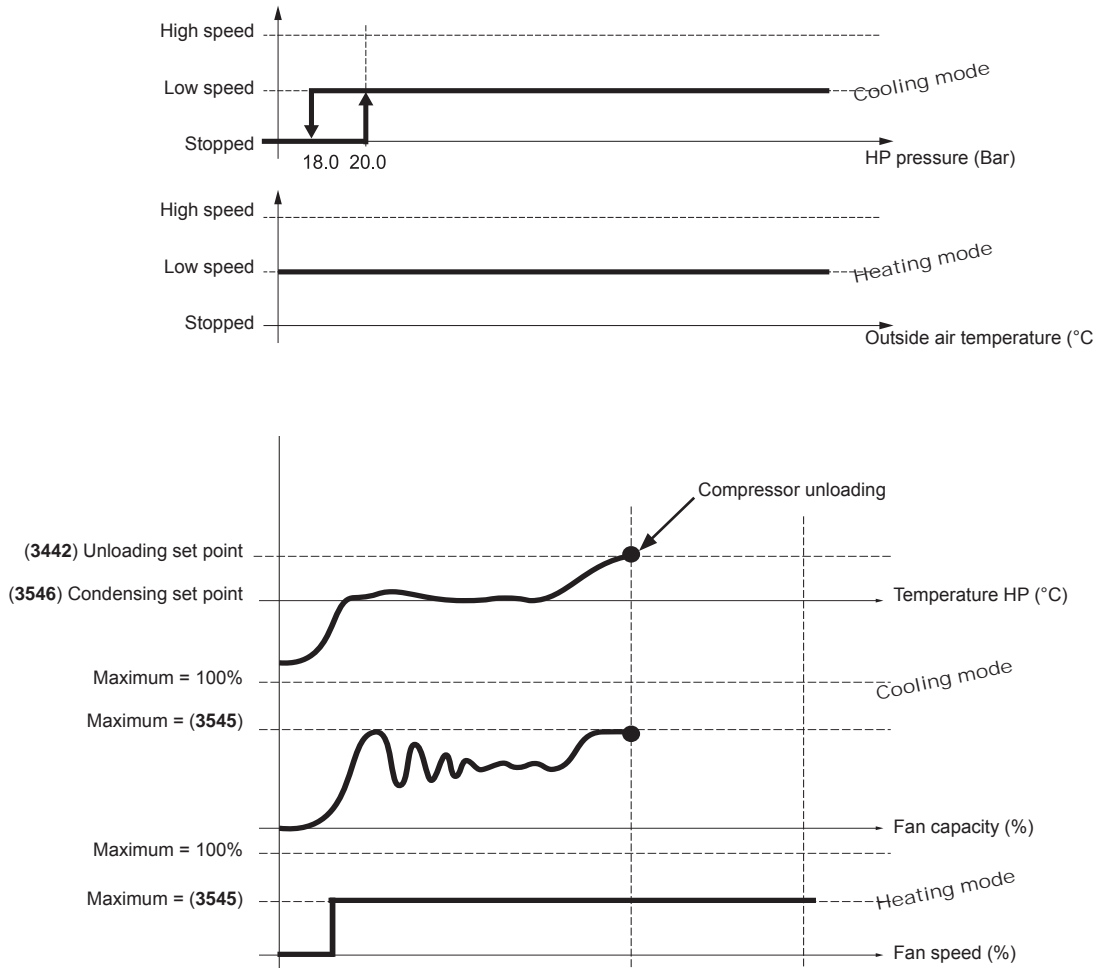
The Smart Acoustic System™ can be adjusted according to the scheduling and can take different values for each schedule mode (A, B, C, D, and BMS).
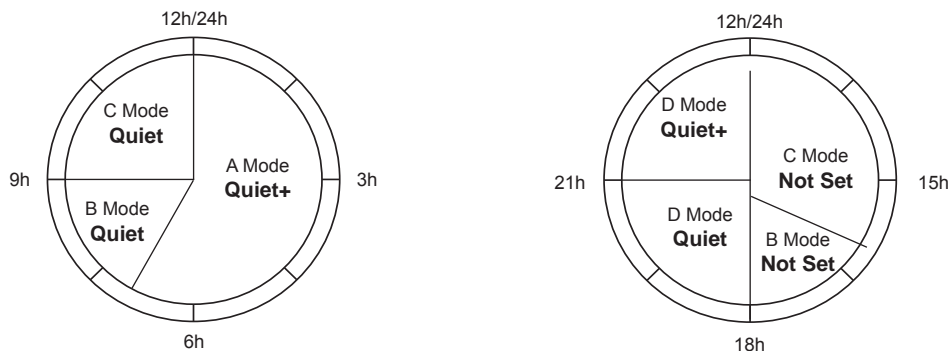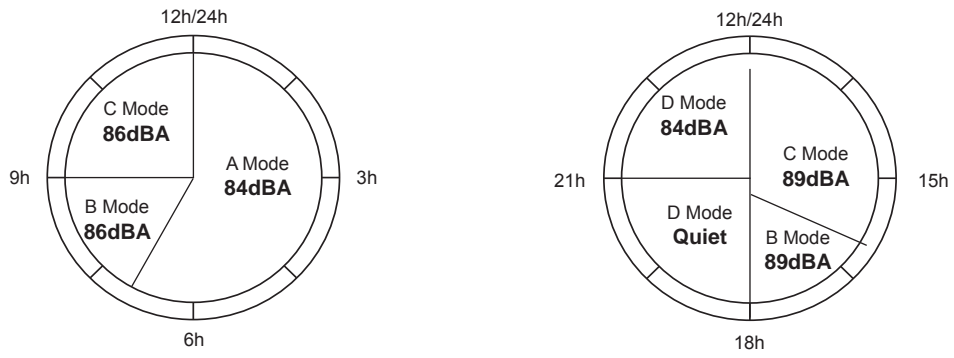
Settings
The different settings to adjust the acoustic mode are available in the menu:

(**3544**):	Acoustic mode
(**3545**):	Maximum sound level noise (except for fan with low / high speed)

WATER EVAPORATOR

Function
The CLIMATIC™ 60 controls the chilled or heat temperature according to the specifed set point. The desired set point can be set by different solutions.

Description
The CLIMATIC™ 60 offers various possibilities to specify the water evaporator set point.

Dynamic value
The CLIMATIC™ 60 determines the appropriate water set point according to the outside temperature in order to optimise the energy consumption. This method requires to pre-define 2 different water set points corresponding to 2 outside temperatures.
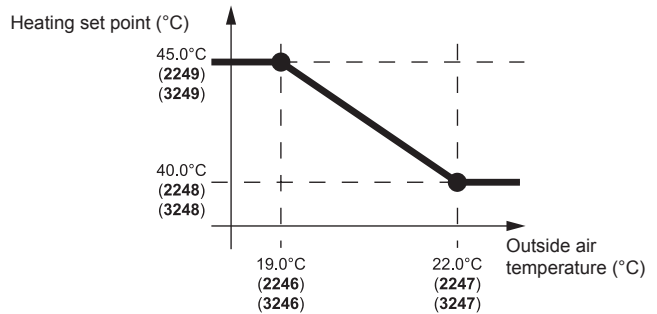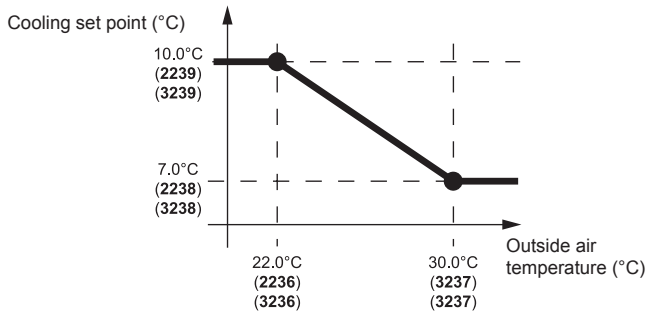
Fix value
In this case the outside temperature has no effect on the water set point and the two set points must be set at the same value.
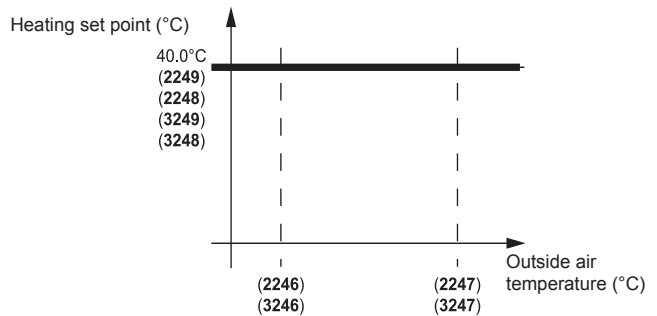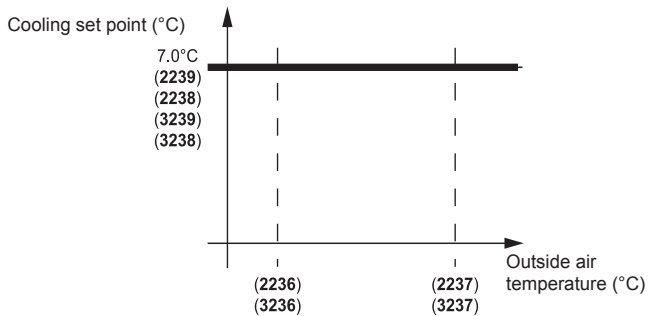
The cooling and heating set points can be pre-specified according to the scheduling and can take different mode for each schedule mode (Night, Day, Day A, Day B, and BMS)
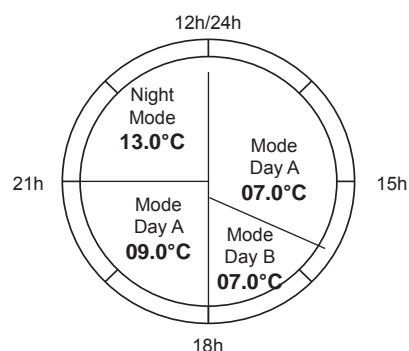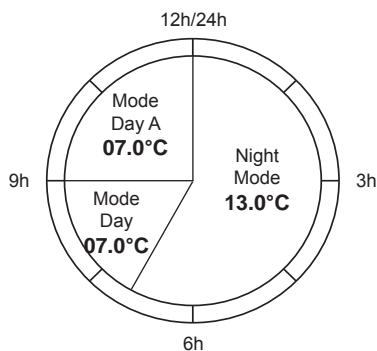
External current 4/20mA signal
In this case the actual set point is calculated according to the analog input current. The set points specify the corresponding set point for 4mA and for 20mA.
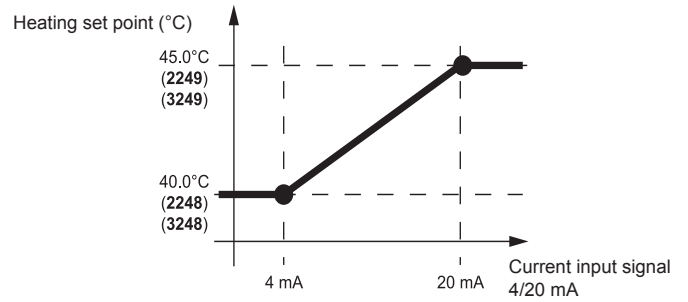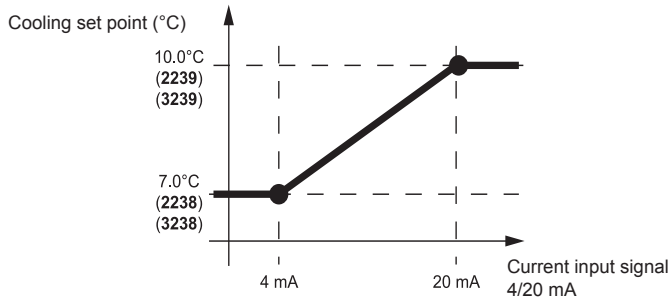
Second external set point
In this case the actual set point is specifed by one of the two set points. The final set point depends on the status of the digital dry contact allocated to this function.
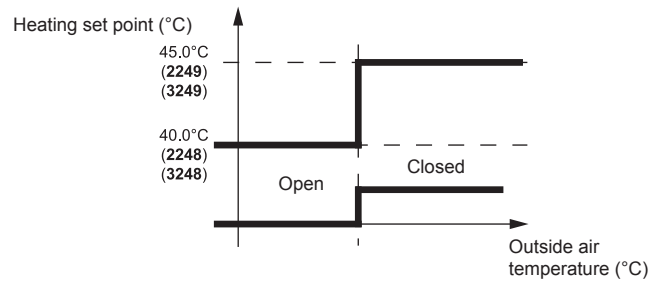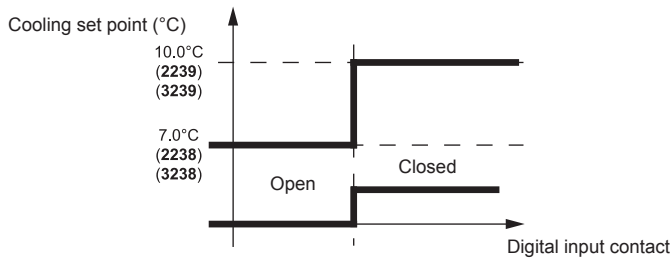
External current 4/20 mA offset
In this case the set point is set by one of the previous solution and can be adjusted with an offset of +/- 1.0°C.
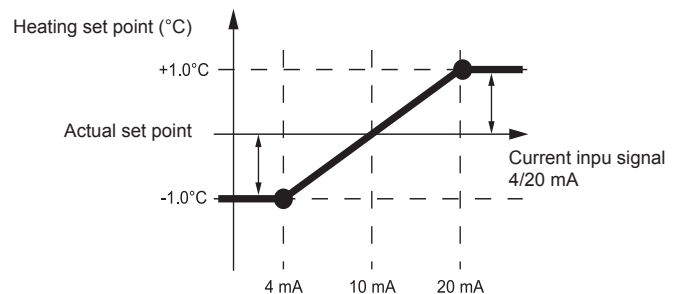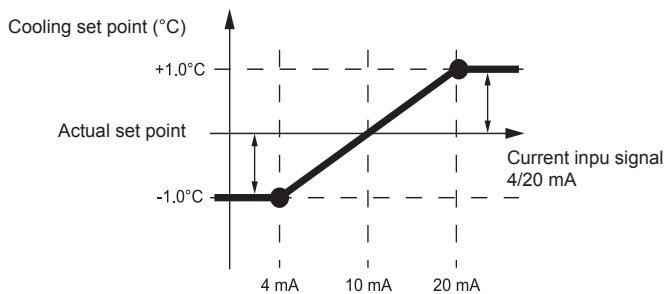
DC60 terminal

The water set point is adjustable directly by the DC60. If the read set point is different from the one calculated by the BM60, the new set point is set by the DC60 during the actual zone. Each time the zone is changing, the DC60 set point is overwriten by the CLIMATICTM60 set point.

BMS value

The CLIMATIC™ 60 receives the water set point from the BMS. Refers to the "BMS" paragraph for more details.

Settings

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

Cooling mode

- (**2236**) or (**3236**): minimum outside air temperature corresponding to the water evaporator set point (**3238**) (used only for dynamic set point),
- (**2237**) or (**3237**): maximum outside air temperature corresponding to the water evaporator set point (**3239**) (used only for dynamic set point),
- (**2238**) or (**3238**):
  - * *Dynamic set point:* desired water evaporator temperature set point corresponding to outside air temperature (**2236**) or (**3236**),
  - * *Fix set point:* desired water evaporator temperature set point.
  - * *External current 4/20 mA signal:* water evaporator temperature set point corresponding to a current signal of 4 mA.
  - * *Second external set point:* first water evaporator temperature set point corresponding to an opened dry contact.
- (**2239**) or (**3239**):
  - * *Dynamic set point:* desired water evaporator temperature set point corresponding to outside air temperature (**2237**) or (**3237**),
  - * *Fix set point:* desired water evaporator temperature set point.
  - * *External current 4/20 mA signal:* water evaporator temperature set point corresponding to a current signal of 20 mA.
  - * *Second external set point:* second water evaporator temperature set point corresponding to a closed dry contact.

Heating mode

- (**2246**) or(**3246**): minimum outside air temperature corresponding to the water evaporator set point (**3248**) (used only for dynamic set point),
- (**2247**) or (**3247**): maximum outside air temperature corresponding to the water evaporator set point (**3249**) (used only for dynamic set point),
- (**2248**) or (**3248**):
  - * *Dynamic set point:* desired water evaporator temperature set point corresponding to outside air temperature (**2246**) or (**3246**),
  - * *Fix set point:* desired water evaporator temperature set point.
  - * *External current 4/20mA signal:* water evaporator temperature set point corresponding to a current signal of 4 mA.
  - * *First external set point:* first water evaporator temperature set point corresponding to an opened dry contact.
- (**2249**) or (**3249**):
  - * *Dynamic set point:* desired water evaporator temperature set point corresponding to outside air temperature (**2247**) or (**3247**),
  - * *Fix set point:* desired water evaporator temperature set point.
  - * *External current 4/20mA signal:* water evaporator temperature set point corresponding to a current signal of 20 mA.
  - * *Second external set point:* second water evaporator temperature set point corresponding to a closed dry contact.

Control

The CLIMATIC™ 60 adjusts and holds the fluid outlet 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%. 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%. It then evolves following the principles detailed in the diagram.
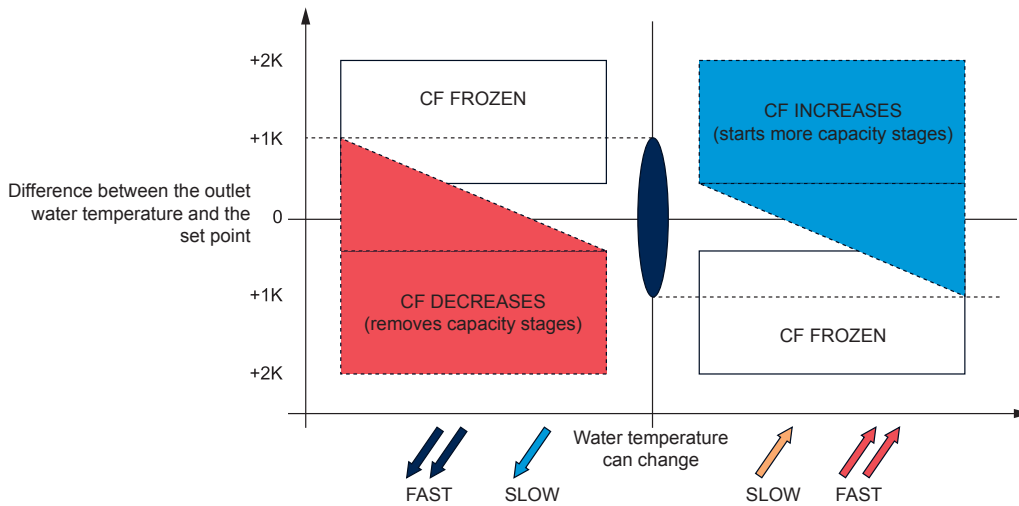
In order to anticipate, the reference point is recalculated each time the difference between air temperature and set point reaches a minimum or a maximum.
Moreover the inlet temperature is used to limit the capacity factor to prevent from too slow reactivity of outlet capacity factor of the unit.

Example:
 • Unit EAC 2104: cooling capacity: 210KW with:
   * C1.Cp1 = 19.2%,
   * C1.Cp2 = 30.8%,
   * C2.Cp1 = 19.2%,
   * C2.Cp2 = 30.8%.

 • Maximum delta T° (inlet - outlet) at full load: setting (**3261**) = 5.0°C.
 • Outlet water evaporator temperature set point: setting (**3238**) = (**3239**) = 7.0°C.

Stage	Minimum inlet temp. (°C)	Maximum capacity factor (%)	Expression	Compressor ON circuit 1	Compressor ON circuit 2
0	0	0	0	1 2	1 2
1	8.54	30.8	7.0 + 30.8*5.0/100	1 **2**	1 2
2	10.80	61.6	7.0 + 2*30.8*5.0/100	1 **2**	1 **2**
3	11.04	80.8	7.0 + (19.2+2*30.8)*5.0/100	**1** **2**	1 **2**
4	12.00	100.0	7.0 + 2*(19.2+30.8)*5.0/100	**1** **2**	**1** **2**

CHANGEOVER HEATING/COOLING MODE

Function
The CLIMATIC™ 60 controls the changeover mode (for reversible units only) to specify the appropriate demand on heat or chilled water production.

Description
The changeover can also be pre-specified according to the scheduling and can take different mode for each schedule mode (A, B, C, D, and BMS).
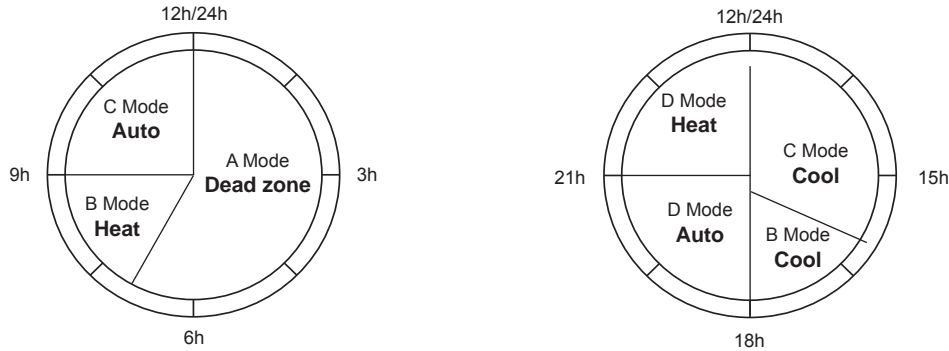
The changeover mode can be set by different solutions:

Automatically:
The CLIMATIC™ 60 determines the appropriate production of water according to the outside temperature and moves automatically the unit from cooling to heating mode and heating to cooling mode.
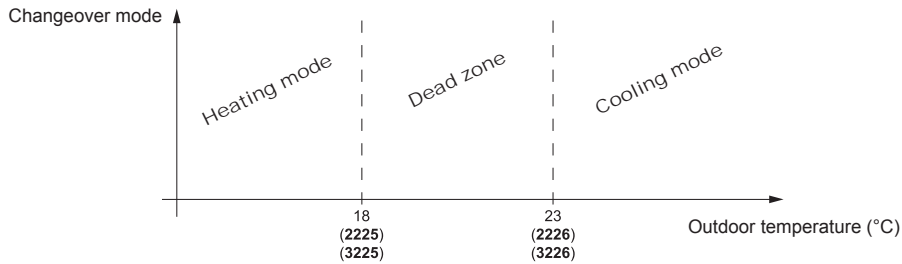
If the outside temperature is below the setting value (**2225**) or (**3225**), the unit will operate as a heat pump.
If the outside temperature is over the setting value (**2226**) or (**3226**), the unit will operate as a chiller.

Manually:
The changeover mode is forced for each schedule mode. The various modes available are "Cool" mode, "Heat" mode or "Dead zone". In this case the outside temperature has not effect on the changeover mode.

Remotely:
The changeover mode is set according to a remote dry contact connect on a free custom digital input. In this case the unit swaps in cooling or heating mode according to the status of the digital input. Please refer to the paragraph "Free Input / Output" for more details.

Terminal DC60:

The changeover mode (cool / heat) can be modified by the terminal DC60 by pressing the "mode" button.

| | Heat → | | Cool → | Auto | Auto → | | Dead zone |

When the "Auto" mode is selected, the icon "Cool" or "Heat" is displayed to signal the actual operating mode. Due to communication delay, after pressing the "mode" button it is advised to wait few seconds, the time to refresh of the icon on the display.

Settings

The different settings to adjust the changeover mode are available in the menu:
- (**2224**) or (**3224**): changeover mode (Cool, Heat, Auto, Dead zone) for each schedule mode (Night, Day, Day A, Day B, and BMS).
- (**2225**) or (**3225**): minimum outside temperature to swap to heating mode. (only if (**2224**) or (**3224**)="Auto").
- (**2226**) or (**3226**): maximum outside temperature to swap to cooling mode. (only if (**2224**) or (**3224**)="Auto").

COIL DEFROST

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

Description
To avoid the icing of the external air exchanger during winter operating, it's necessary to reverse the refrigerant cycle. There are 2 defrost mode:
- cyclic mode,
- dynamic mode (not available in the software CH060 vers.01-rev.0.1).

The defrost procedure is activated if the following conditions are met during 1 minute:
- the outside air temperature is ≤ (**3562**),
- one of the compressor(s) on the circuit has been running for a time ≥ (**3564**) since the last defrost,
- the saturation temperature is ≤ (**3563**).

The defrost procedure is characterized by the following steps:
1. stop the compressors on the concerned circuit,
2. wait for 30 s to equalise the pressure in the circuit,
3. start all compressors on the circuit (if the outlet T° is not too low),
4. reverse the reversing valve when ΔP>2 bars,
5. start all condenser fans when the HP ≥ 55.0°C in order to dry the coil,
6. stop all condenser fans when the HP ≤ 40.0°C,
7. repeat the steps 4. to 5. 3 times,
8. stop the compressors on the concerning circuit,
9. wait for 1 min to equalise the pressure in the circuit,
10. end of procedure; restart the unit in heating mode.
11. reverse the reversing valve when ΔP>2bar.

Note
- In case of alarm on the circuit during the defrost procedure, the defrosting is cancelled.
- If the HP pressure doesn't reach 55°C after 6 min, during the step 6, the defrost procedure is cancelled.
- During the step 4 the compressor(s) could not start in order to not decrease too much the water temperature of the system.
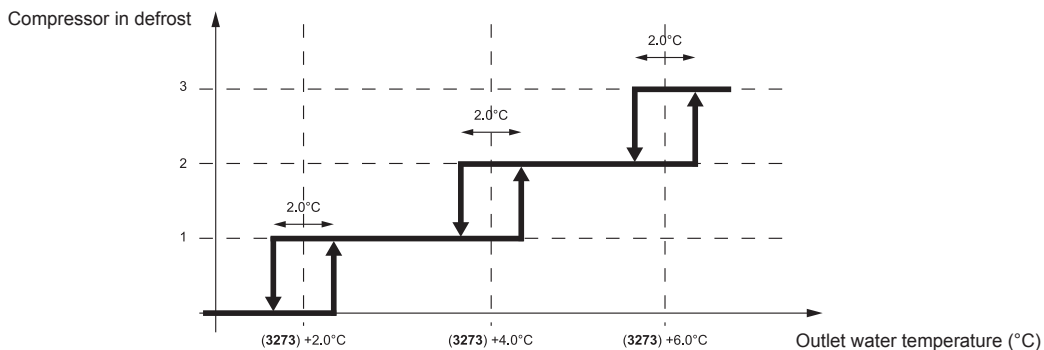
Settings
The different settings to adjust the defrosting procedure are available in the menu:
- (**3561**): defrost mode (cyclic, dynamic),
- (**3562**): minimum of outside air temperature to enable defrost procedure,
- (**3563**): critical saturation temperature to enable defrost procedure
- (**3564**): minimum of interval time to enable defrost procedure.

FREE COOLING

Function
The freecooling option ensures to reduce the electrical consumption using the outside air temperature to produce cool water.

Description
The freecooling uses water coil with helicoids fans controled by the CLIMATIC™ 60. The freecooling has a higher priority face to the compressors. Once the freecooling capacity is over 95% for 2 min, the compressors can be engaged if necessary in order to reach the cooling set point. If the freecooling capacity decreases below 90%, the capacity factor of the compressor(s) capacity is locked to give the priority to the freecooling.

The freecooling is enabled if the following conditions are met:
• the unit is ready (On/Off, water flow, none alarm, etc..),
• the freecooling fan driver is operating (none alarm)
• outside temperature < (Inlet temperature − 3°C).

Settings
The setting to configure the freecooling option is available in the menu:

(**3164**):   Configuration of the freecooling option.

ELECTRONIC EXPANSION VALVE

Function
The electronic expansion valve (EEV) option offers higher efficient control of the superheating temperature.

Description
The electronic expansion valve is driven by an external board (Electronic Valve Driver - EVD) which includes a PID algorithm to control the superheating. The EVD is linked to the CLIMATIC™ 60 to send data like capacity, step, pressure, temperature.

Settings
The setting to adjust superheat temperature option is available in the menu:

    (**2224**):   Superheat set point.

Note: the modification of the superheating set point is taken in account at the next startup of the circuit.

ELECTRICAL HEATER

Function
The electrical heater option is an additional heating capacity to help the heat pump to reach the set point during hard winter period.

Description
The electrical heater option has 2 uses:

Antifreeze heater
In this case, the heater is used to prevent the evaporator water from antifreeze. The heater is activated when the low alarm temperature appears in cooling mode or when the safety low temperature is reached in heating mode.

Auxiliary heater
The heater is activated when the water temperature is far from the set point and the compressor(s) are fully running. In this case, the heater is used to help the compressors to reach the heating set point.
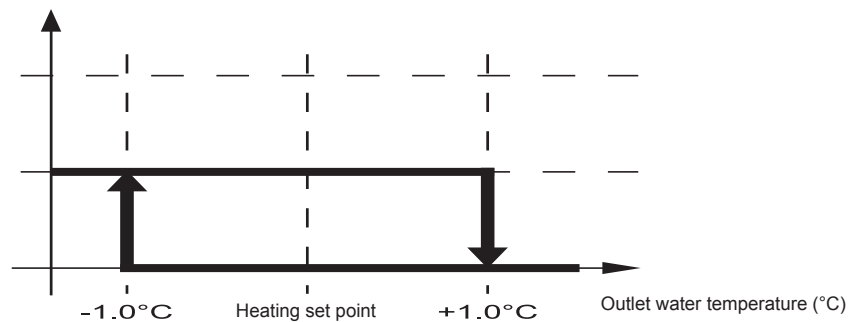
Settings

The setting to configure the electrical heater is available in the menu:

(**3164**):   Configuration of the electrical heater.

POWER FACTOR CORRECTOR

Function
The power factor correction is an additional capacitor bank to compensate the apparent power energy.

Description
The CLIMATIC™ 60 controls the status of the circuit breaker to inform (generate an alarm) in case of short circuit in the capacitor bank.

Settings
The setting to configure the power factor correction is available in the menu:

    (**3163**):   Configuration of the power factor correction..

PUMP EVAPORATOR MANAGEMENT

Function
The CLIMATIC™ 60 offers in option a solution to manage a single or double evaporator pump(s).

Description
In case of double pumps, the CLIMATIC™ 60 can manage various possibilities of pumps operating.

Priority to pump 1
The CLIMATIC™ 60 specifies the priority to pump 1 to start first. Pump 2 is used only as a backup pump and will start only if pump 1 is in alarm. Pump 1 is kept ON as soon as the machine is enabled.

Auto priority to pump 1
Same configuration as case 1, except that the pump will be stopped in case of dead zone changeover (winter / summer).

Priority to pump 2
The CLIMATIC™ 60 specifies the priority to pump 2 to start first. Pump 1 is used only as backup pump and will start only if pump 2 is in alarm. Pump 2 is kept ON as soon as the machine is enabled.

Auto priority to pump 2
Same configuration as case 3, except that the pump will be stopped in case of dead zone changeover (winter / summer).

No priority
The CLIMATIC™ 60 specifies automatically the priority of the pump according to the operating hour counter. The first pump to start will be the one which has the less number of hours of operation. In order to equalize the number of hours the unit is stopped every tuesday at 02 am to re-specify the priority.
Note: the total operating hour are displayed on the DC60 Advanced on 2 numbers in the menus (**2314**) and (**2315**) (pump n°1).

Example:
(**2314**) = 0123,
(**2315**) = 4567,
Total Hour = (**2314**)*10000 + (**2315**) = 01234567 hours.

No auto priority
Same configuration as case 5, except that the pump will be stopped in case of dead zone changeover (winter / summer).

Settings
The different settings to adjust the pump mode are available in the menu:

    (**3341**):   Pump(s) rotation type

PUMP EVAPORATOR FLOW CONTROL

Function
The CLIMATIC™ 60 offers the possibility to have a flow control in option.

Description
There are up to 4 modes to manage the evaporator water flow.

Fix speed
The CLIMATIC™ 60 maintains a fix flow according to the maximum desired speed. The flow is set to the minimum desired flow only when no compressor is running.
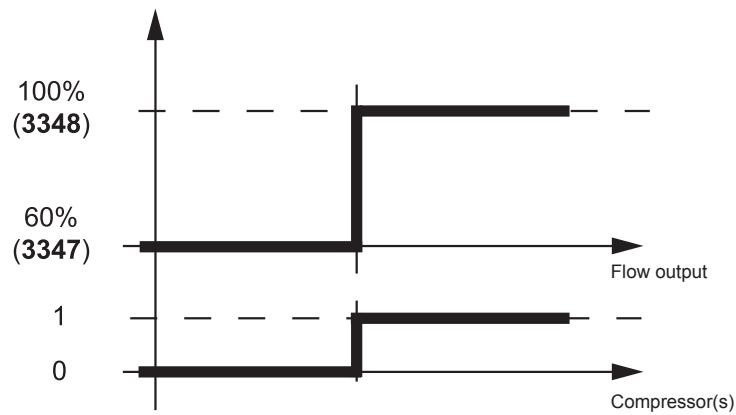
Fix delta of temperature
The CLIMATIC™ 60 maintains a fix delta of temperature according to inlet and outlet temperature probe on the evaporator. The desired delta of temperature is customized in the menu (**3344**).
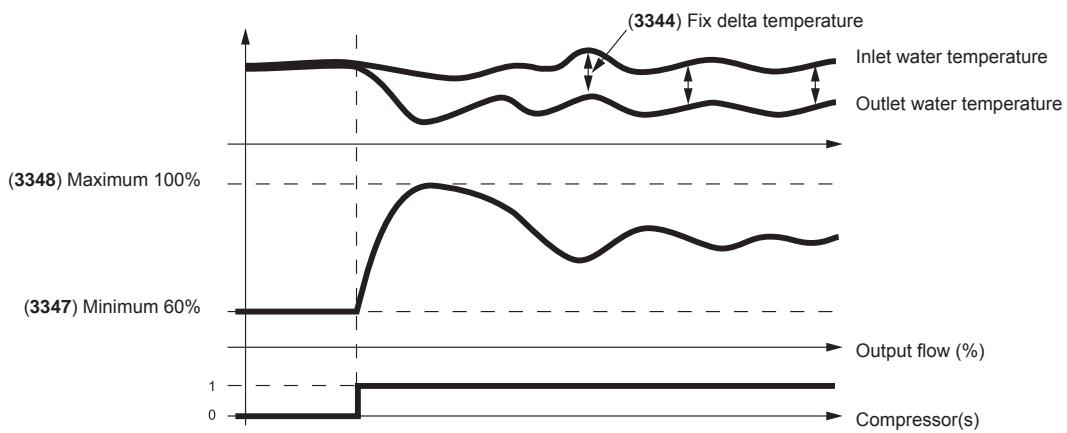
Fix delta of pressure

The CLIMATIC™ 60 maintains a fix delta of pressure according to the transducers (in and out) on the pump. The desired delta of pressure is customized in the menu (**3345**).
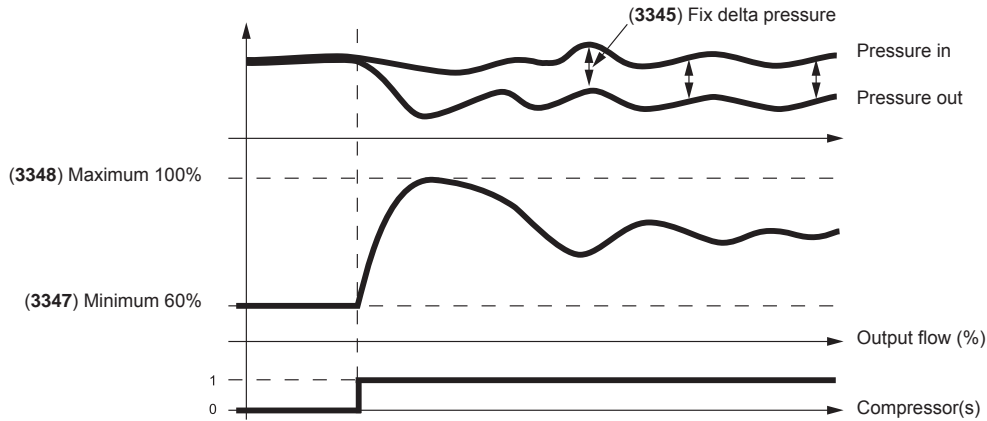
Fix output pressure

The CLIMATIC™ 60 maintains a fix output pressure according to the output transducer on the pump. The desired output pressure is customized in the menu (**3346**).
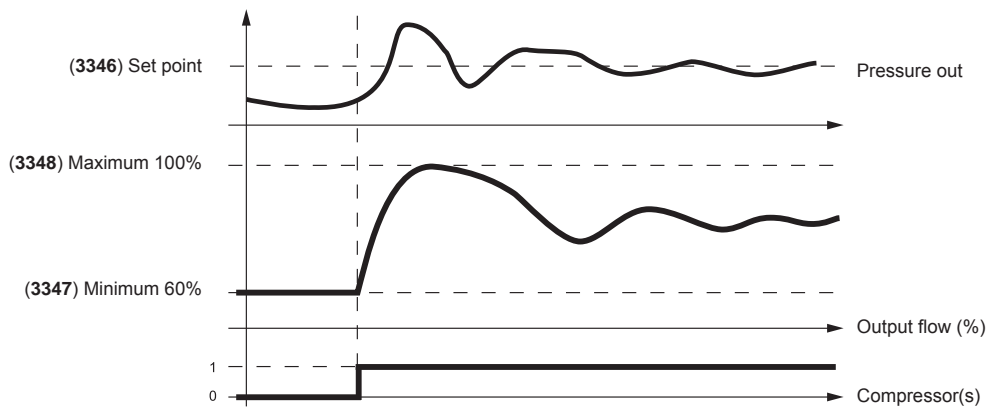
Settings

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

(3342):	Type of flow control
(3344):	Desired delta of temperature on the water evaporator (outlet - inlet)
(3345):	Desired delta of pressure on the water pump (outlet - inlet)
(3346):	Desired output pressure on the water pump (Out),
(3347):	Minimum flow on the water evaporator
(3348):	Maximum flow on the water evaporator

PUMP CONDENSER MANAGEMENT

Function

The CLIMATIC™ 60 offers in option a solution to manage a single or double condenser pump(s).

Description

In case of double pumps the CLIMATIC™ 60 can manage various possibilities of operating of the pumps.

Priority to pump 1

The CLIMATIC™ 60 specifies the priority to pump 1 to start first. Pump 2 is used only as backup pump and will start only if pump 1 is in alarm. Pump 1 is kept ON as soon as the unit is enabled.

Auto priority to pump 1

Same configuration as case 1, except that the pump will be stopped in case of dead zone changeover (winter / summer).

Priority to pump 2

The CLIMATIC™ 60 specifies the priority to pump 2 to start first. Pump 1 is used only as backup pump and will start only if pump 2 is in alarm. Pump 2 is kept as soon as the unit is enabled.

Auto priority to pump 2

Same configuration as case 3, except that the pump will be stopped in case of dead zone changeover (winter / summer).

No priority

The CLIMATIC™ 60 specifies automatically the priority of the pump according the operating hour counter. The first pump to start will be the one which has the less number of hours of operation. In order to equalize the number of hours the unit is stopped every tuesday at 02 am to re-specify the priority.

Note: The total operating hour are displayed on the DC60 Advanced on 2 numbers in the menus (**2344**) and (**2345**) (Pump N°1).

Example:
(**2344**) = 0123,
(**2345**) = 4567,
Total hour = (**2344**)*10000 + (**2345**) = 01234567 hours.

No auto priority

Same configuration as case 5, except that the pump will be stopped in case of dead zone changeover (winter / summer).

Settings

The different settings to adjust the pump mode are available in the menu:

(**3381**):   Pump(s) type of rotation

PUMP CONDENSER FLOW CONTROL

Function

The CLIMATIC™ 60 offers the possibility to have flow control in option.

Description

Fix flow

The CLIMATIC™ 60 maintains a fix flow according to the maximum desired speed. The flow is set to the minimum desired flow only when no compressor is running.
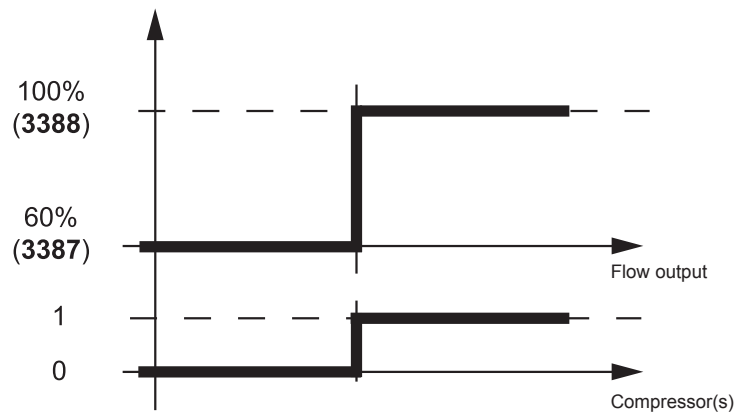
Fix delta of temperature

The CLIMATIC™ 60 maintains a fix delta of temperature according to the inlet and outlet temperature probe on the condenser. The desired delta of temperature is customized in the menu (**3384**).
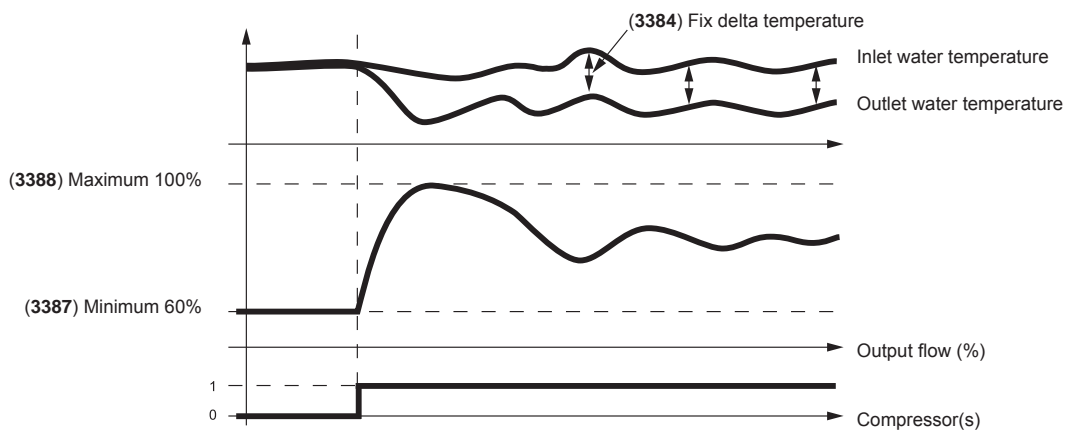
Fix delta of pressure

The CLIMATIC™ 60 maintains a fix delta of pressure according to the transducers (in and out) on the pump. The desired delta of pressure is customized in the menu (**3385**).
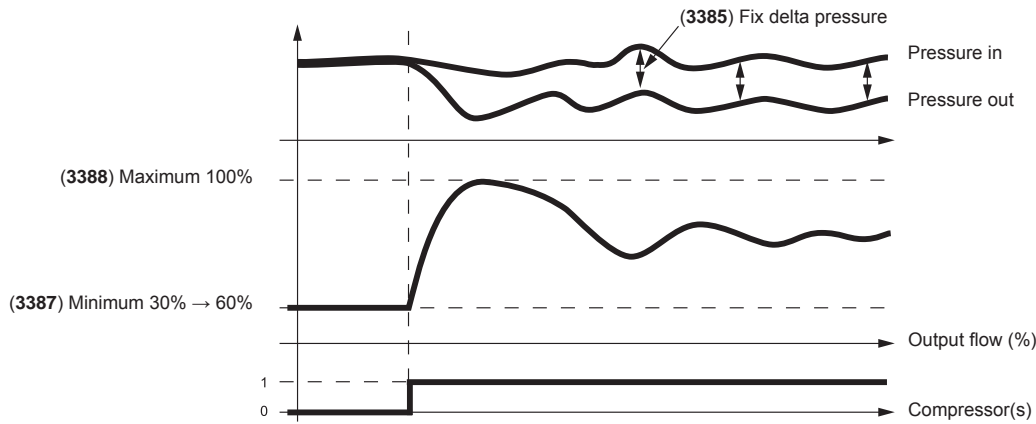
Fix output pressure

The CLIMATIC™ 60 maintains a fix output pressure according to the output transducer on the pump. The desired output pressure is customized in the menu (**3386**).
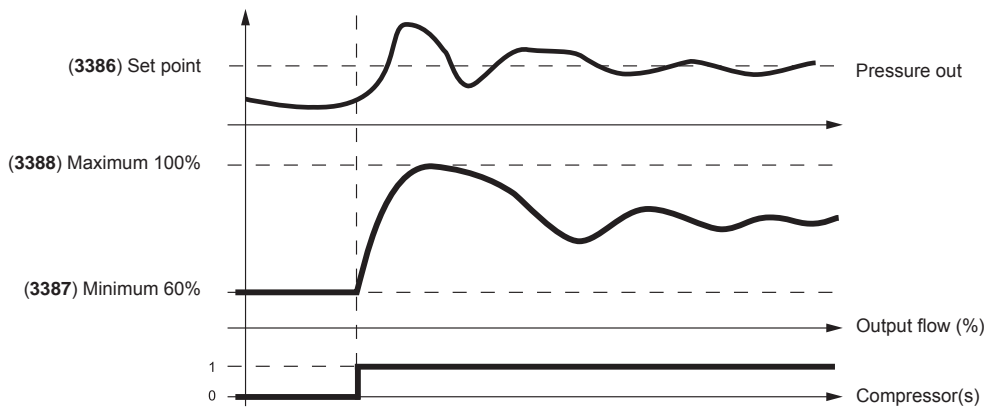
Fix condensing temperature

The CLIMATIC™ 60 maintains a fix condensing temperature according to the outlet probe on the condenser. The condensing set point is customized in the menu (**3546**).
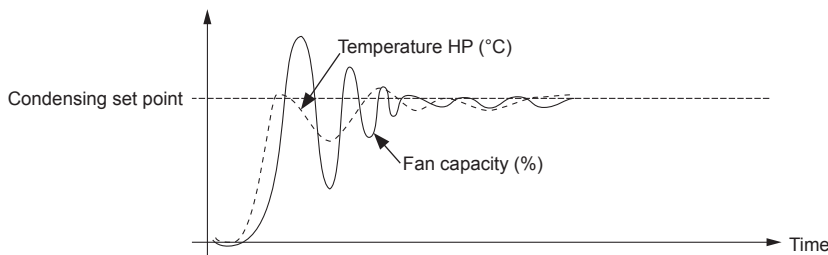
Settings

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

(3382):	Type of flow control
(3384):	Desired delta of temperature on the water evaporator (outlet - inlet)
(3385):	Desired delta of pressure on the water pump (outlet - inlet)
(3386):	Desired output pressure on the water pump (outlet),
(3387):	Minimum flow on the water condenser
(3388):	Maximum flow on the water condenser

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 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.

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.
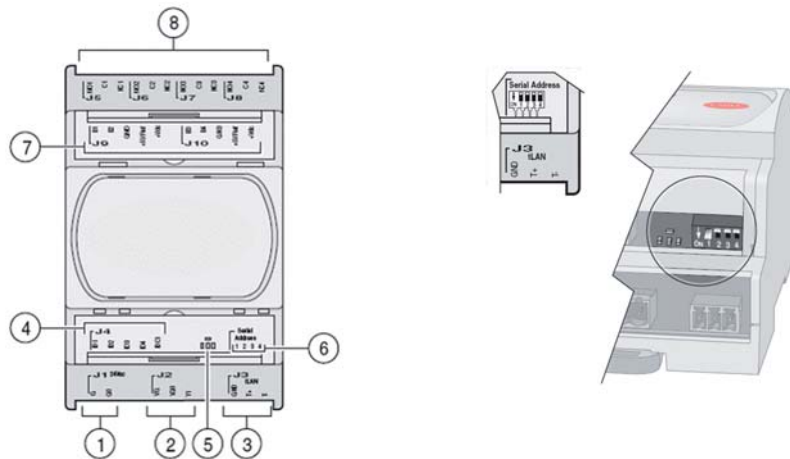
Power supply

The expansion board BE60 is powered in 24Vac, +/-15%, 50-60Hz, Pmax=6W.
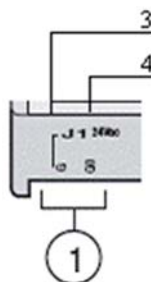
Analog input
The 4 analog inputs can be used as NTC probe (-50T90 °C; R/T 10 KΩ at 25 °C) or 4/20mA (Impedance = 100Ω) current signal. They are configurable by pair B1-B2 and B3-B4. The configuration of the type of the input is automatically set by the CLIMATIC™ 60.

The analog input can be configured to be used as one of these items:
0. not set,
1. desired water set point,
2. desired offset set point,
3. free NTC probe.
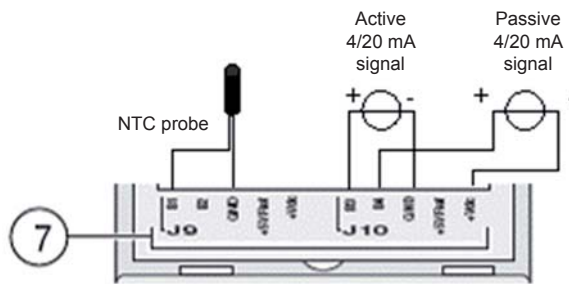
Digital input
The 4 digital inputs must be used with dry contacts according to the following example. The digital input can be configured to be used as one of these items:
0. not set,
1. remote On/Off,
2. remote reset alarm,
3. swap to second water set point,
4. force the cooling mode,
5. force the heating mode,
6. force the dead zone mode,
7. force the defrost delay (10 min),
8. disable circuit 1 (all compressors),
9. disable circuit 2 (all compressors),
10. disable circuit 1(compressor 1),
11. disable circuit 1 (compressor 2),
12. disable circuit 1 (compressor 3),
13. disable circuit 2 (compressor 1),
14. ddisable circuit 2 (compressor 2),
15. ddisable circuit 2 (compressor 3),
16. force A mode,
17. force B mode,
18. force C mode,
19. force D mode,
20. force BMS mode,
21. electrical heaters status,
22. free digital input.

LENNOX
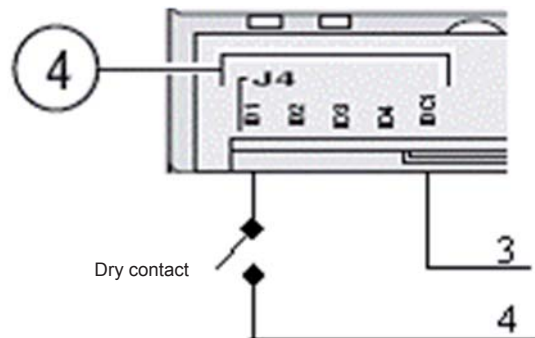
Digital output

The 4 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:

0. not set,
1. general alarm (alarm minor),
2. general fault (alarm major),
3. general alarm on circuit 1,
4. general alarm on circuit 2,
5. general alarm on condenser,
6. general alarm on evaporator pump(s),
7. flow evaporator alarm,
8. unit enable,
9. unit available (ready to start),
10. unit running (one compressor ON),
11. unit running 100% (all compressor(s) ON),
12. unit operating in cooling mode,
13. unit operating in heating mode,
14. unit operating in dead zone mode,
15. unit operating in zone 0
16. unit operating in zone 1,
17. unit operating in zone 2,
18. unit operating in zone 3,
19. unit operating in zone 4,
20. unit operating in zone 5,
21. unit operating in zone 6,
22. unit operating in mode A,
23. unit operating in mode B,
24. unit operating in mode B,
25. unit operating in mode D,
26. unit operating in mode BMS,
27. output for additional electrical heater 1,
28. output for additional electrical heater 2,
29. output for additional electrical heater 3,
30. output for additional electrical heater 4,
31. free digital output.

Dry contact
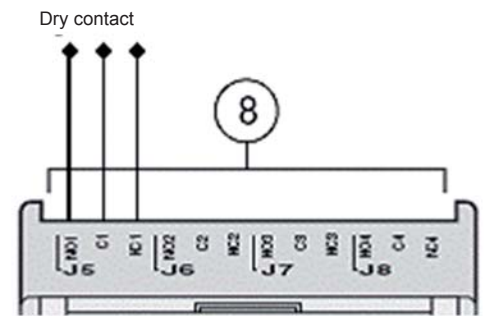
Settings

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

(**3131**):   setting for the digital output on the connector BM60-J14-NO7,

(**3132**):   setting for the digital output on the connector BE60-J5-NO1,

(**3133**):   setting for the digital output on the connector BE60-J6-NO2,

(**3134**):   setting for the digital output on the connector BE60-J7-NO3,

(**3135**):   setting for the digital output on the connector BE60-J8-NO4.

(**3141**):   setting for the digital input on the connector BM60-J4-ID4,

(**3142**):   setting for the digital input on the connector BM60-J4-ID7,

(**3143**):   setting for the digital input on the connector BE60-J4-ID1,

(**3144**):   setting for the digital input on the connector BE60-J4-ID2,

(**3145**):   setting for the digital input on the connector BE60-J4-ID3,

(**3146**):   setting for the digital input on the connector BE60-J4-ID4.

(**3151**):   setting for the analog input on the connector BE60-J9-B1,

(**3152**):   setting for the analog input on the connector BE60-J9-B2,

(**3153**):   setting for the analog input on the connector BE60-J10-B3,

(**3154**):   setting for the analog input on the connector BE60-J10-B4.

Note: in case of communication loss beetween BE60 and BM60, the expansion board inputs / outputs keeps the previous status before this communication loss.

ON / OFF CONTROL

Function
There are various ways to start up the unit: manually or automatically.

Description
There are up to 4 ways to start / stop the unit with the CLIMATIC™ 60:
- The unit can be turned ON or OFF manually by the terminals DC60 Advanced or DS60 in the menu (**2111**) or (**3111**) or DC60.
- A remote contact can also be connected directly to the electrical box to switch the unit ON or OFF. The switch status is displayed in the menu (**2112**) or (**3112**).
- The startup of the unit can be configured according to a scheduling in the menu (**2113**) or (**3113**).
- The BMS can write directly in the general ON/OFF to start / stop the unit.

Note: the unit is considered as "ON" if only all settings (**2111**), (**2113**), (**2113**) are set to ON.

Settings
The different settings to start up are available in the menu:

(**2111**), (**3111**):	General ON /OFF,
(**2112**), (**3112**):	Remote ON /OFF,
(**2113**), (**3113**):	Schedule ON /OFF.

REAL TIME LOCK

Function
The CLIMATIC™ 60 board includes a real time clock which permits a schedule programmation and alarm events recording.

Description
The clock is updated by terminal DC60 Advanced or DC60 or DS60 or BMS. Moreover, the time change is automatically updated for winter (last Sunday of October at 3h00) and summer (last Sunday of March at 2h00). This functionality can be disabled in menu (**2126**).

To update the clock by BMS, a flag must be set to 1 before sending the new date.

Note: if the DS60 is connected, the clock can't be updated by the DC60.

Settings
The different settings to start up are available in the menu:

(**2121**):	Clock hour,
(**2122**):	Clock minute,
(**2123**):	Clock day (of the month),
(**2124**):	Clock month,
(**2125**):	Clock year,
(**2126**):	Automatic clock update.

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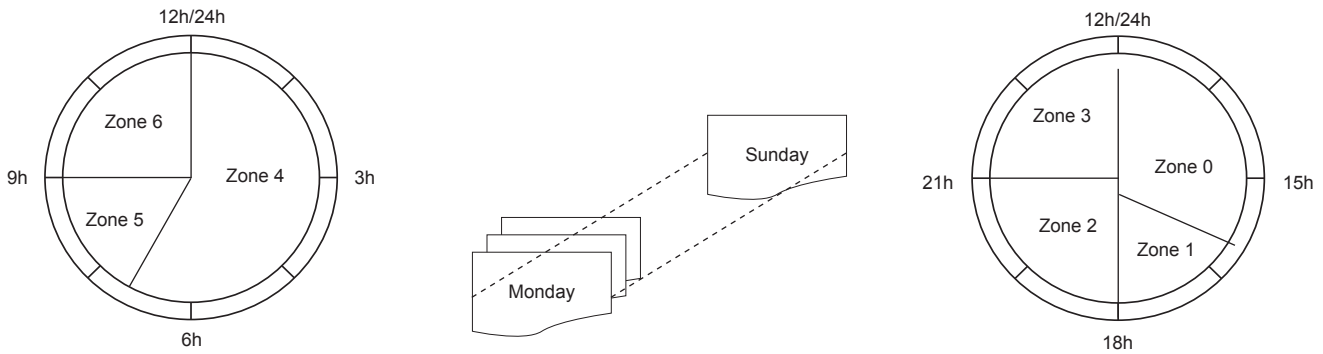
Settings
The different settings to adjust the scheduling zone are available in the menu:

(**2131**):	Number of zone desired,
(**2141**):	Starts time of zone 0 from monday to sunday
(**2142**):	Starts time of zone 1 from monday to sunday
(**2143**):	Starts time of zone 2 from monday to sunday
(**2144**):	Starts time of zone 3 from monday to sunday
(**2145**):	Starts time of zone 4 from monday to sunday
(**2146**):	Starts time of zone 5 from monday to sunday
(**2147**):	Starts time of zone 6 from monday to sunday

Note: start time can take different values from monday tosunday. Start time of zone 0 must be set to 00h00.
the visibility of the settings (**2141**) to (**2147**) depend on the settings (**2131**). The zones not used are hidden.

SCHEDULING MODE

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

Description
The CLIMATIC™ 60 can manage up to 4 different modes.
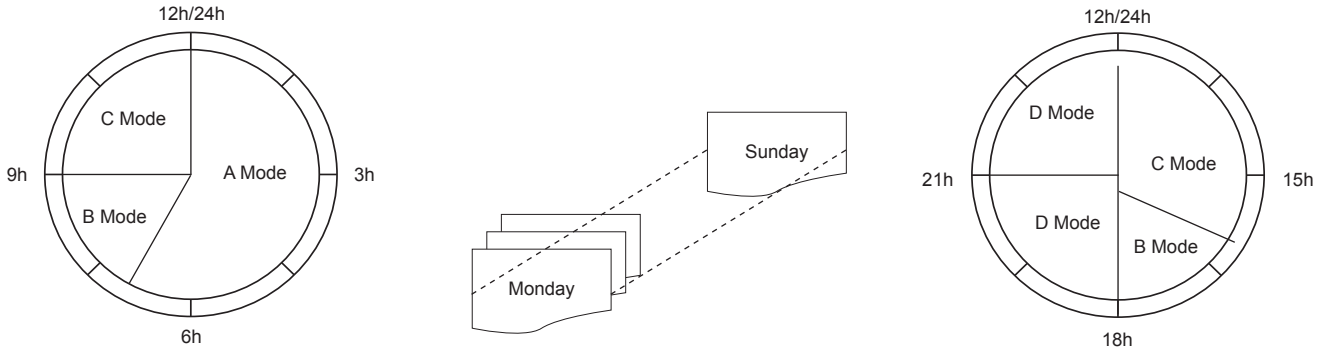
Settings
The different settings to adjust the scheduling mode are available in the menu:

(**2132**):	Number of mode desired
(**2151**):	Mode used during the period of zone 0 from monday to sunday
(**2152**):	Mode used during the period of zone 1 from monday to sunday
(**2153**):	Mode used during the period of zone 2 from monday to sunday
(**2154**):	Mode used during the period of zone 3 from monday to sunday
(**2155**):	Mode used during the period of zone 4 from monday to sunday
(**2156**):	Mode used during the period of zone 5 from monday to sunday
(**2157**):	Mode used during the period of zone 6 from monday to sunday

Note: the mode used can take different values from monday to sunday.
        the visibility of the settings (**2151**) to (**2157**) depend on the settings (**2132**). The modes not used are hidden.

SCHEDULE ANTICIPATION START-UP

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 during zone 0 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.
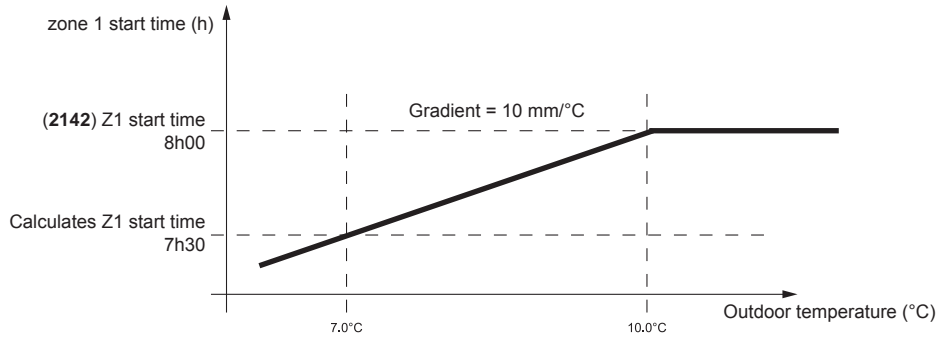
Example:
*   (**2142**): zone 1 start time: 8h00,
*   (**2161**): foot anticipation: 10.0°C,
*   (**2162**): gradient anticipation: 10 mm/°C.

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 x 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**):	Foot anticipation
(**2162**):	radient anticipation

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.
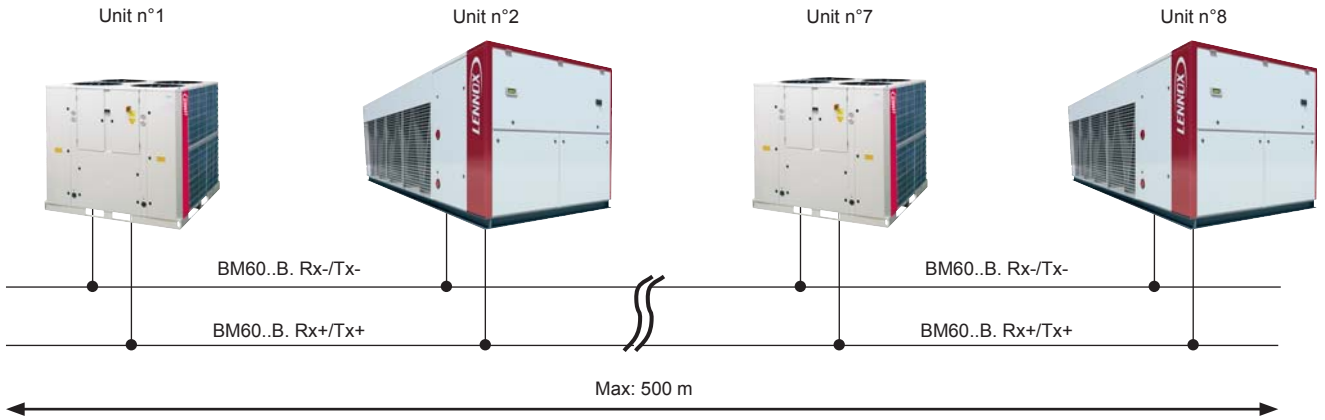
The pLAN bus is connected to CLIMATIC™ 60 on the J8 connector of board BM60. A star connection is not recommended. For an optimum operation it is advised to connect a maximum of two cables per unit.
The cable length should not exceed 500 m and you must use a 2 pairs with general shield like LiYCY-P (0.34 mm²).

Description
There are 2 different modes to manage the units ("Cascade" & "Backup")

The cascade mode:
The cascade mode is used to engage additional cooling / heating capacity in order to reach the water set point. This master/slave operating includes 2 modes:
• Twin mode: the units work simultaneously in order to equalize the number of compressors stages to perform the capacity of the unit. The control manages only the capacity increase. The stage(s) decrease is controlled individually by each unit. The power factor capacity power is also controlled individually on each unit according to its demand.
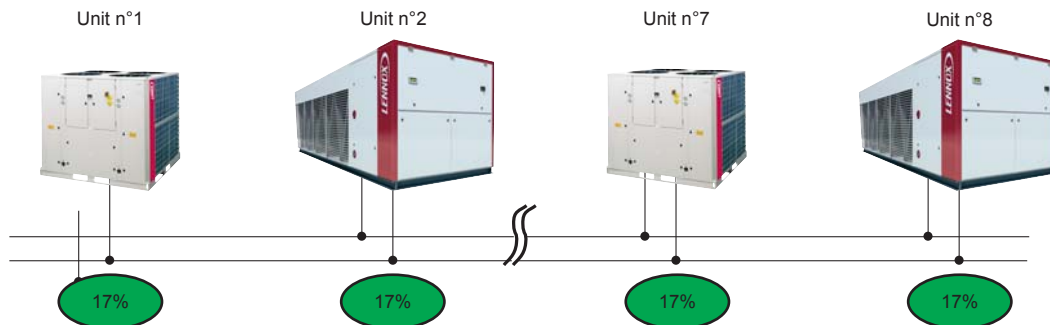
• **Chain mode**: the units starts one after the other in serial sequence. In case of evaporator pump(s) in the unit, the pump(s) is engaged according to the demand of the system.
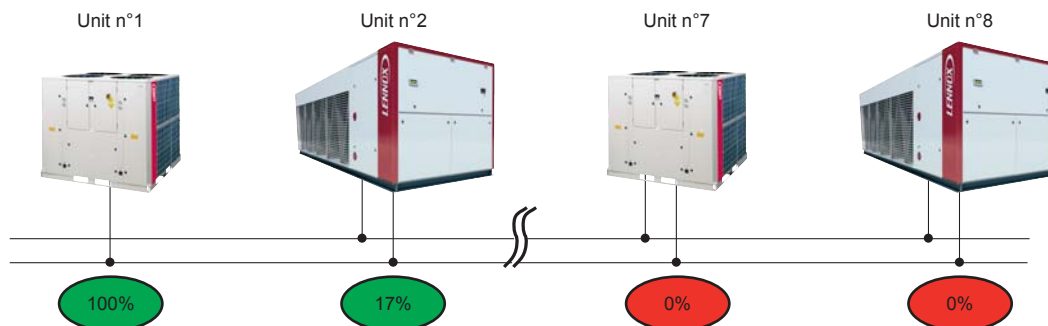
The backup mode

Used to help the system in case of alarm(s) on the unit running. The unit in standby will start only if one of the other unit(s) running is in alarm. In this case the unit in alarm will be stopped and replace by the one which was in standby.
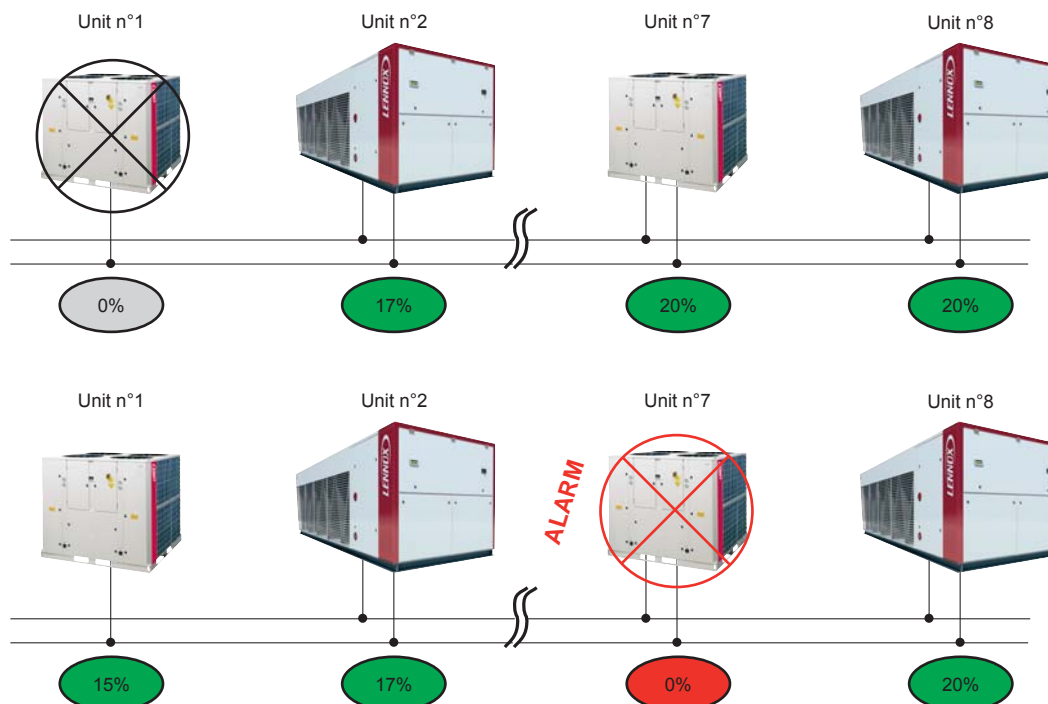
The CLIMATIC™ 60 manages also the rotation between the declared units . In "Cascade" mode, that means that the first unit to start will change every week. In "Rol.Backup" mode, the unit in "Backup" is swapped every week.

Example:
In case of 4 units, the rotation is as follow:

Week	Example	Unit rotation
Week (n modulo 5)	Week 1	….U1 → U2 → U3 → U4 →….
Week (n+1 modulo 5)	Week 2	….U4 → U1 → U2 → U3 →….
Week (n+2 modulo 5)	Week 3	….U3 → U4 → U1 → U2 →….
Week (n+3 modulo 5)	Week 4	….U2 → U4 → U3 → U1 →….

The selectd unit in standby is the one which has the higher critical(s) alarm(s). In case of disconnection of the slave(s) unit(s) (@pLAN = 2 → 8) from the master unit (@pLAN = 1) on the pLAN bus, the disconnected unit will operate alone.

DC60 DISPLAY

Function
The DC60 display is customized for the user to show a global operating overview of the unit and allow access to some settings. In case of remote display, the cable length should not exceed 30 m.

Description
The DC60 terminal displays various status of the unit and offers the possibility to override the initial operating of the unit. Use the wheel button to display the data desired in the big area. The small area specifies the type of the data displayed.
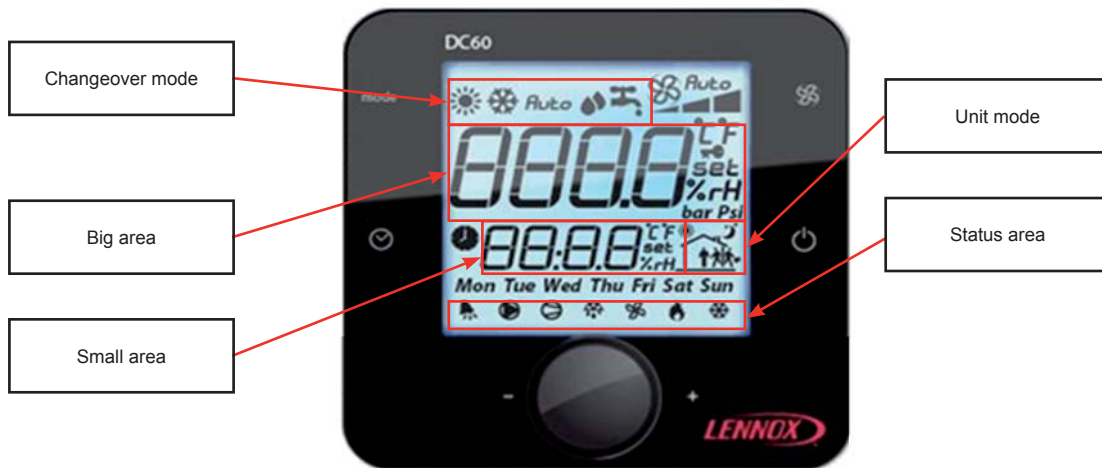
Set point "SET":
Specify the evaporator water set point calculated by CLIMATIC™ 60. The set point can be modified directly by the DC60. Note that the selected value will automatically be overwritten by CLIMATIC™ 60 when the actual zone will change (Z0 → Z6) if a scheduling has been defined.

Unit number "UNIT":
Specify the evaporator water outlet temperature.

Outlet temperature "OUT":
Specify the evaporator water outlet temperature.

Inlet temperature "IN"
Specify the water evaporator inlet temperature.

Outside temperature "Air"
Specify the outside air temperature.

Alarm code "AL-"
Specify the active alarm(s) code(s).

Low pressure "LP-1"
Specify the low pressure of circuit 1.

High pressure "HP-1"
Specify the high pressure of circuit 1.

Low pressure "LP-2"
Specify the low pressure of circuit 2.

High pressure "HP-2"
Specify the high pressure of circuit 2.

Schedule zone
specify the schedule operating zone.

 Night mode, Day mode, Day A mode, Day B mode, GTC mode
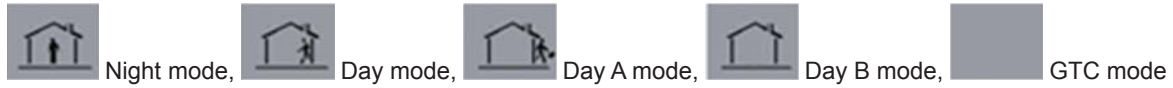
The DC60 terminal also displays the status of the main component of the unit in the status area. The icons can take different appearance according to the status of the component.

General alarm		Defrost
Evaporator pump(s)		Compressors

 Pump OFF (icons hidden)

 Pump ON (icons visible)

 Pump alarm (icons blinking)
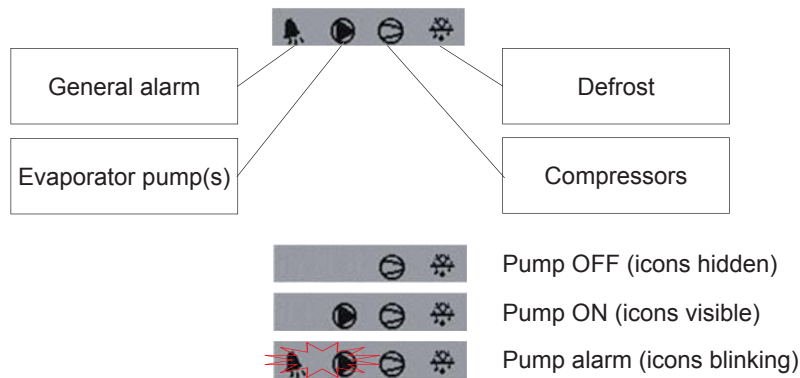
Settings
The CLIMATIC™ 60 offers possibilities of override operations.

On/Off
When the "power" button is pressed during few seconds, the unit is ordered to start or stop. When the unit is "OFF", the clock is displayed.

Changeover mode
The changeover mode (cool / heat) can be modified through the DC60 terminal by pressing the "mode" button.

 Heat → Cool → Auto

When the "Auto" mode is selected, the icon "Cool" or "Heat" is displayed to signal the actual operating mode of the unit. Due to communication delay, after pressing the "mode" button, it is well advised to wait few seconds, the time to refresh of th icon on the display.

Clock: there is two way to modify the clock hour:

• Press the "clock" button during few seconds. When the hour is blinking, turn the wheel button to select the desired hour and validate by pressing the wheel button. Once the hour is validated, repeat the procedure for the minute and the weekday.

• Press the "On/off" and "Fan" buttons simultaneously during few seconds. When the terminal displays "CODE", select the password "22" and validate by pressing the wheel button. Then select the item to modify ("year" → Year, "mont → Month, "nday" → day of the month, "uday" → weekday, "hour" → Hour, "mins" →Minute).

DC60 ADVANCED DISPLAY OR DS60 DISPLAY

Function

The DC60 Advanced or DS60 terminals are plug and play displays, to configure the unit.
- the DC60 Advanced is the display installed on the front panel of NEOSYS™ units.
- the DS60 is designed for maintenance and expert service people who want to access to advanced functionalities.
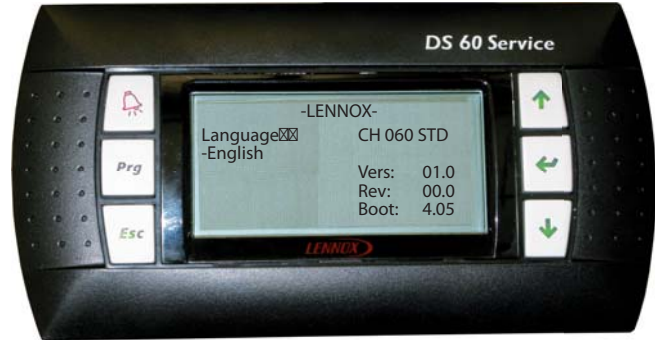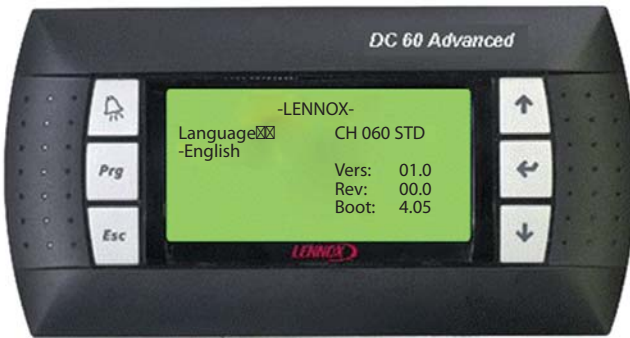
Description

The terminal address is automatically set by the CLIMATIC™ 60 when connected. The address can yet be assigned manually to establish the communication with the CLIMATIC™ 60. The procedure to configure the DC60 Advanced / 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 "11 → 18" for the DC60 Advanced, "32" for the DS60 (or DS50) and confirm with the "←" key (the cursor go directly to the next data).
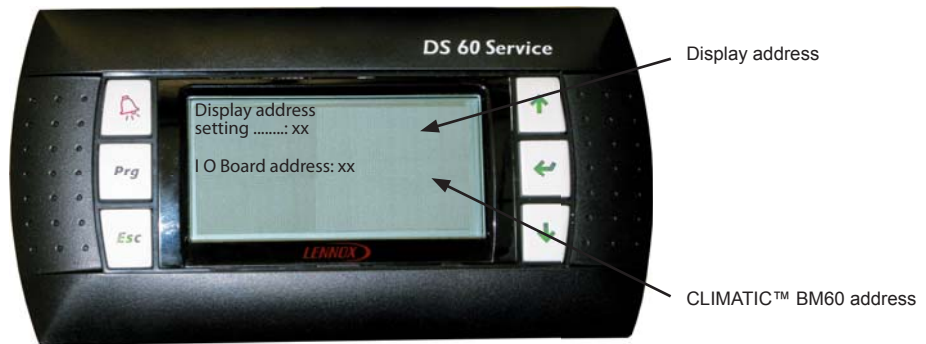
UNIT NUMBER	DC60 ADVANCED ADDRESS
1	11
2	12
3	13
4	14
5	15
6	16
7	17
8	18

4. If the address has been modified, the next screen is displayed. In that case restart step 1.
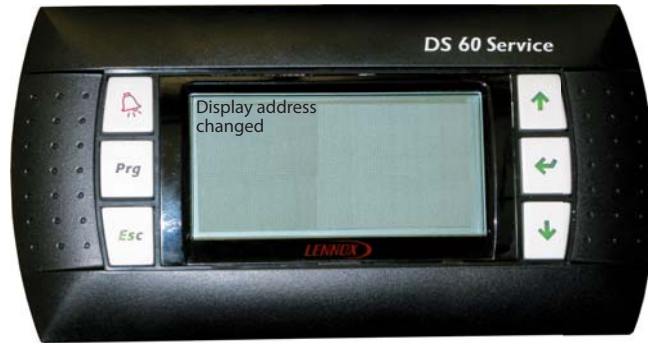
5. Use the "↓", "↑" keys to select the desired address of CLIMATIC™ 60. CLIMATIC™ 60 address must be at the address "1" except if there is several units linked. The next screen is displayed.

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.

Display address — Private display
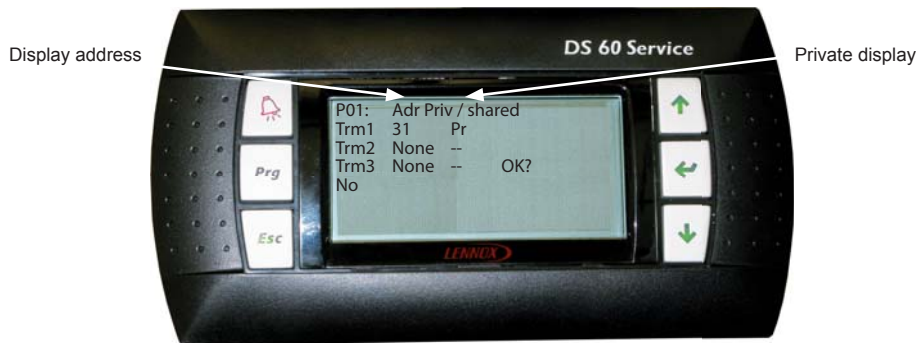
After a star up, the first screen contains the main information about the CLIMATIC™ 60's software.

The DC60 Advanced / DS60 is organised in 3 menus:
- (**1000**): alarms history,
- (**2000**): user menus for maintenance people,
- (**3000**): (Only for DS60) Expert menus for service people (restricted area). To access to the "EXPERT" level, push the "PRG" button during few seconds when the first screen (Language) is shown.

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.
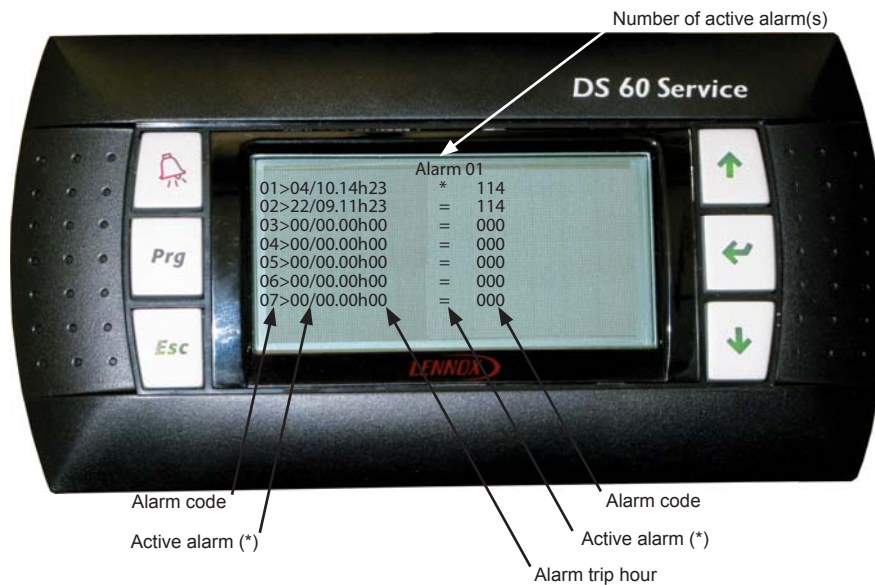
The menu is organised in arborescence tree with submenus. The actual menu is identified by the number in parentheses in the top left corner of the screen.
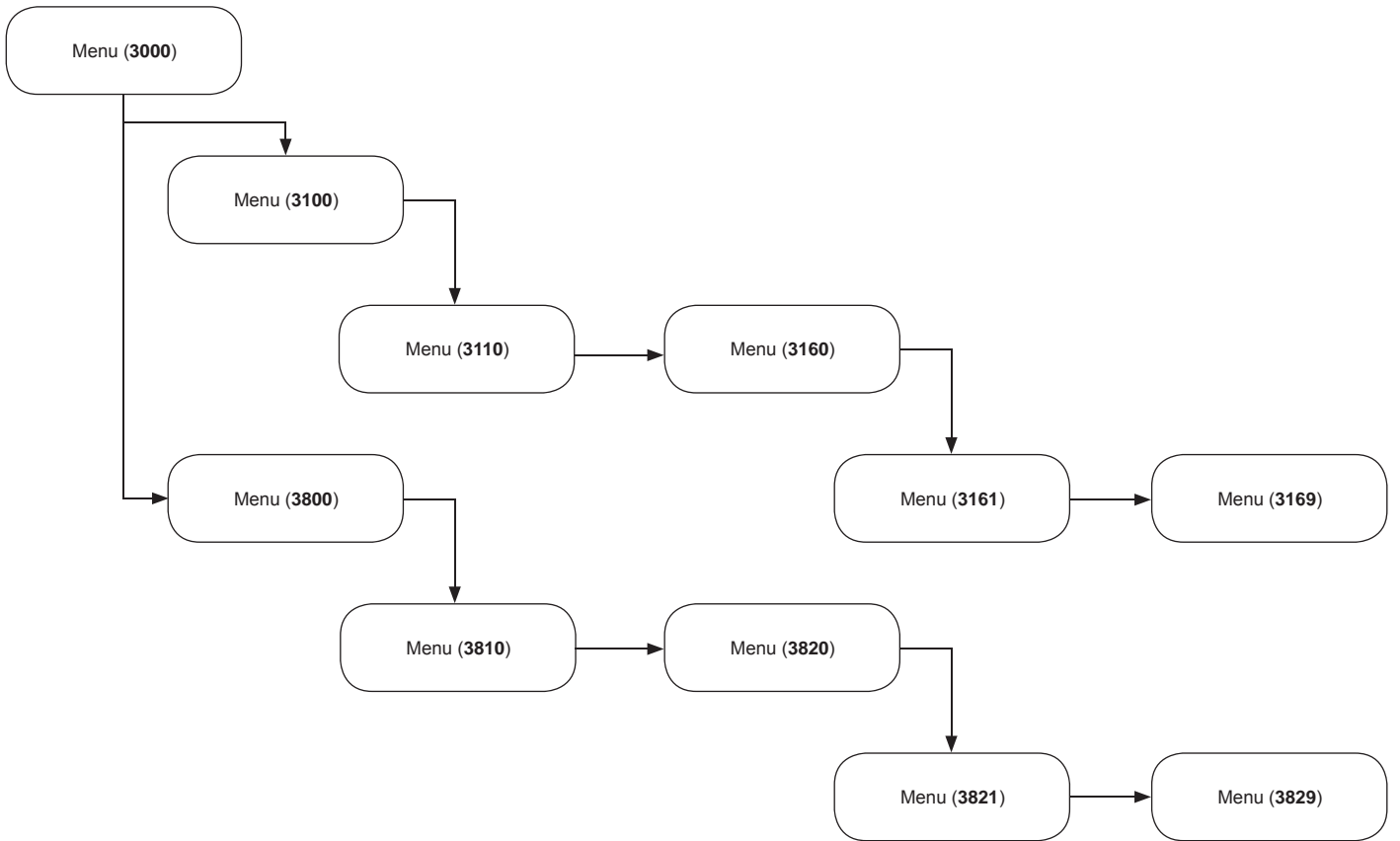
The "↓" and "↑" keys are used to move the cursor on the desired item. Then use the "←" key to enter in the selected submenu. To escape a menu use "ESC" the key.

Actual set point

Customizable setting for different mode
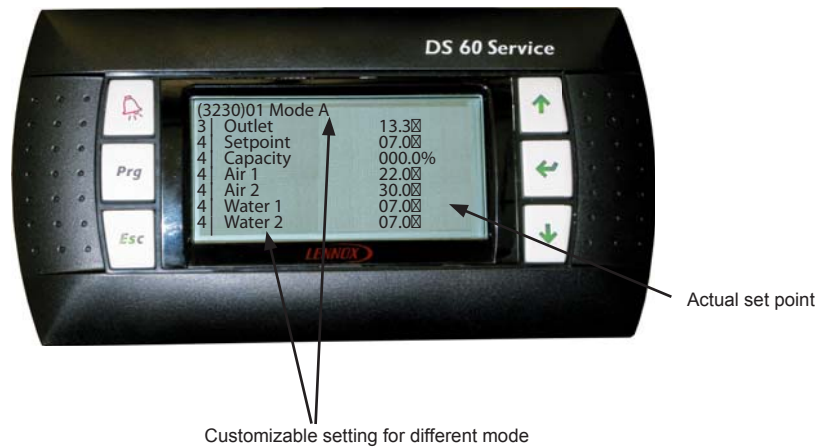
The submenus contains 2 types of data: the read only data (like a temperature probe for example) and the read/write setpoints (like the cooling water setpoint for example). The data are identified by a cursor symbol ">" whereas the setpoint are identify by a symbol ">>".

Cursor symbol for data

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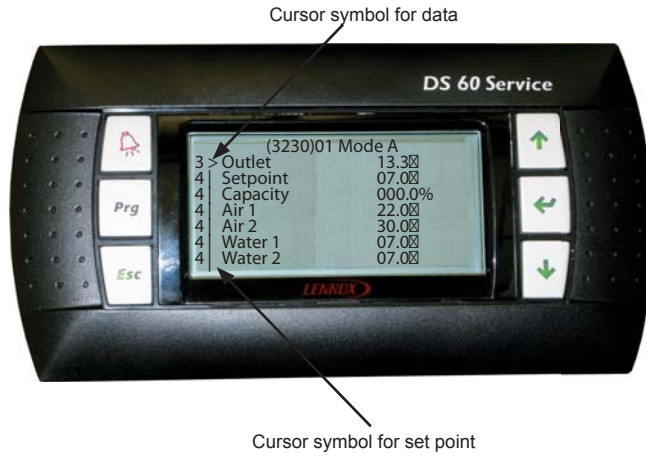
To modify a setting, move the cursor on the desired item and press the "←" key. A new screen displays information concerning this set point. To modify it, use the "↓" and "↑" keys and validate by pressing the "←" key. If the setting is customizable according to the schedule mode, press the "PRG" key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

Maximum value

Factory value

Minimum value

User save value

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

COMMUNICATION

DS60 LIST

Description	Menu	4th digit	3rd digit	2nd digit	1st digit	R/W/Z	Unit	Min	Std	Max	Comments
Alarm historic	1111	Alarm	***	***	Historic						
General On/Off	2111	User	Unit	General	On/Off	R/W	*	0	*	1	
Remote On/Off	2112				On/Off Input	R	*	0	*	1	
Schedule On/Off	2113				On/Off Mode	R/W/Z	*	0	1	1	
Reset the active alarm(s)	2114				Reset Alarm	R/W	*	0	0	1	
Electrical box temperature	2115				Box Tß	R	°C	-50	*	105	
General status of the unit	2116				Status	R	*	List	*	*	
Hour clock setting	2121			Clock	Hour	R/W	HH	0	*	23	
Minute clock setting	2122				Minute	R/W	mm	0	*	59	
Day clock setting	2123				Day	R/W	DD	1	*	31	
Month clock setting	2124				Month	R/W	MM	1	*	12	
Year clock setting	2125				Year	R/W	yy	1	*	99	
Automatic update for winter/summer time	2126				Win/Sum	R/W	*	0	1	1	
Number of zone	2131			General schedule	Nbr Zone	R/W	NN	1	3	6	
Number of mode	2132				Nbr Mode	R/W	NN	1	1	4	
Actual day of the week	2133				Weekday	R	D	1	*	7	
Actual day of the month	2134				Day	R	DD	1	*	31	
Actual year	2135				Year	R	YY	1	*	99	
Actual hour	2136				Hour	R	HH	0	*	23	
Actual minute	2137				Minute	R	mm	1	*	59	
Actual schedule zone	2138				Zone	R	*	0	*	6	
Actual schedule mode	2139				Mode	R	*	1	*	5	
Start time of zone 0	2141			Time schedule	Time Z0	R/W	HH	0	24	24	
Start time of zone 1	2142				Time Z1	R/W	HH	0	24	24	
Start time of zone 2	2143				Time Z2	R/W	HH	0	24	24	
Start time of zone 3	2144				Time Z3	R/W	HH	0	24	24	
Start time of zone 4	2145				Time Z4	R/W	HH	0	24	24	
Start time of zone 5	2146				Time Z5	R/W	HH	0	24	24	
Start time of zone 6	2147				Time Z6	R/W	HH	0	24	24	

Unit Unit   **Min** Minimum   **Std** Standard   **Max** Maximum

COMMUNICATION

Description	Menu	4th digit	3rd digit	2nd digit	1st digit	R/W/Z	Unit	Min	Std	Max	Comments
Mode during zone 0	2151	User	Unit	Schedule Mode	Mode Z0	R/W	*	1	1	5	
Mode during zone 1	2152				Mode Z1	R/W	*	1	1	5	
Mode during zone 2	2153				Mode Z2	R/W	*	1	1	5	
Mode during zone 3	2154				Mode Z3	R/W	*	1	1	5	
Mode during zone 4	2155				Mode Z4	R/W	*	1	1	5	
Mode during zone 5	2156				Mode Z5	R/W	*	1	1	5	
Mode during zone 6	2157				Mode Z6	R/W	*	1	1	5	
Bottom of the slope	2161			Anticipation	Foot	R/W	°C	-10	10	20	
Slope value in minute per degrees	2162				Gradient	R/W	m/°C	0	0	100	
Configuration of the free output BM.NO7	2171			Custom relay	BM.NO7	R	*				
Configuration of the free output BE.NO1	2172				BE.NO1	R	*				
Configuration of the free output BE.NO2	2173				BE.NO2	R	*				
Configuration of the free output BE.NO3	2174				BE.NO3	R	*				
Configuration of the free output BE.NO4	2175				BE.NO4	R	*				
Configuration of the free input BM.Id4	2181			Custom switch	BM.Id4	R	*				
Configuration of the free input BM.Id7	2182				BM.Id7	R	*				
Configuration of the free input BE.Id1	2183				BE.Id1	R	*				
Configuration of the free input BE.Id2	2184				BE.Id2	R	*				
Configuration of the free input BE.Id3	2185				BE.Id3	R	*				
Configuration of the free input BE.Id4	2186				BE.Id4	R	*				
Configuration of the free input BE.B1	2191			Custom signal	BE.B1	R	*				
Configuration of the free input BE.B2	2192				BE.B2	R	*				
Configuration of the free input BE.B3	2193				BE.B3	R	*				
Configuration of the free input BE.B4	2194				BE.B4	R	*				

Description	Menu	4th digit	3rd digit	2nd digit	1st digit	R/W/Z	Unit	Min	Std	Max	Comments
Evaporator inlet probe T°	2211	User	Water	General	Inlet	R	°C	-50	*	105	
Evaporator inlet reference T°	2212				Inlet Ref.	R	°C	-50	*	105	
Evaporator outlet probe T°	2213				Outlet	R	°C	-50	*	105	
Evaporator outlet reference T°	2214				Outlet Ref.	R	°C	-50	*	105	
Evaporator delta T° (Inlet-Outlet)	2215				Delta Tß	R	°C	0	*	105	
Evaporator set point	2216				Setpoint	R	°C	-10	*	50	
Evaporator capacity	2217				Capacity	R	%	0	*	100	
Evaporator flow switch	2218				Flow	R	*	0	*	1	
Changeover status	2221			Changeover	Status	R	*	*	*	*	
Outside air probe T°	2222				Outside	R	°C	-50	*	105	
Outside air reference T°	2223				Outside Ref.	R	°C	-50	*	105	
Changeover mode	2224				Mode	R/W	*	0	0	4	0=Not Used, 1=Cool, 2=Heat, 3=Auto, 4=Dead zone.
Winter Air T° to swap in heating mode	2225				AirTßWinter	R/W	°C	-10	18	30	
Summer Air T° to swap in cooling mode	2226				AirTßSummer	R/W	°C	19	23	30	
Evaporator status	2231			Cooling	Status	R	*	*	*	*	
Evaporator inlet reference T°	2232				Inlet	R	°C	-50	*	105	
Evaporator outlet reference T°	2233				Outlet	R	°C	-50	*	105	
Evaporator set point	2234				Setpoint	R	°C	-10	*	50	
Evaporator cooling capacity	2235				Capacity	R	°C	0	*	100	
Outside air set point X1 in cool	2236				Air Slope 1	R/W/Z	°C	-11	22	50	
Outside air set point X2 in cool	2237				Air Slope 2	R/W/Z	°C	-11	30	50	
Evaporator set point Y1 in cool	2238				Water 1	R/W/Z	°C	19	7	20	
Evaporator set point Y2 in cool	2239				Water 2	R/W/Z	°C	19	7	20	
Evaporator status	2241			Heating	Status	R	*	*	*	*	
Evaporator inlet reference T°	2242				Inlet	R	°C	-50	*	105	
Evaporator outlet reference T°	2243				Outlet	R	°C	-50	*	105	
Evaporator set point	2244				Setpoint	R	°C	-10	*	50	
Evaporator cooling capacity	2245				Capacity	R	°C	0	*	100	
Outside air set point X1 in heat	2246				Air Slope 1	R/W/Z	°C	-11	22	50	
Outside air set point X2 in heat	2247				Air Slope 2	R/W/Z	°C	-11	30	50	

Description	Menu	4th digit	3rd digit	2nd digit	1st digit	R/W/Z	Unit	Min	Std	Max	Comments
Evaporator set point Y1 in heat	2248	User	Water	Heating	Water 1	R/W/Z	°C	40	45	50	
Evaporator set point Y2 in heat	2249	User	Water	Heating	Water 2	R/W/Z	°C	40	45	50	
External evaporator set point	2251	User	Water	Custom	Sp 4/20mA	R	°C	4	*	20	
External offset evaporator set point	2252	User	Water	Custom	Sp +/-1ßC	R	°C	-1	*	1	
Second set point switch status	2253	User	Water	Custom	Sp Nß2	R	*	0	*	1	
Evaporator pump 1 status	2311	User	Pump	Evaporator P1	Status	R	*	List	*	*	
Evaporator pump 1 input	2312	User	Pump	Evaporator P1	Sw State	R	*	0	*	1	
Evaporator pump 1 output	2313	User	Pump	Evaporator P1	Output	R	*	0	*	1	
Evaporator pump 1 output	2314	User	Pump	Evaporator P1	Hour H	R	HH	0	*	9999	
Evaporator pump 1 output	2315	User	Pump	Evaporator P1	Hour L	R	HH	0	*	9999	
Evaporator flow switch	2316	User	Pump	Evaporator P1	Flow	R	*	0	*	1	
Evaporator pump 2 status	2321	User	Pump	Evaporator P2	Status	R	*	List	*	*	
Evaporator pump 2 input	2322	User	Pump	Evaporator P2	Sw State	R	*	0	*	1	
Evaporator pump 2 output	2323	User	Pump	Evaporator P2	Output	R	*	0	*	1	
Evaporator pump 1 output	2324	User	Pump	Evaporator P2	Hour H	R	HH	0	*	9999	
Evaporator pump 1 output	2325	User	Pump	Evaporator P2	Hour L	R	HH	0	*	9999	
Evaporator flow switch	2326	User	Pump	Evaporator Flow	Flow	R	*	0	*	1	
Evaporator T° inlet	2331	User	Pump	Evaporator Flow	T.In	R	°C	-50	*	105	
Evaporator T° outlet	2332	User	Pump	Evaporator Flow	T.Out	R	°C	-50	*	105	
Evaporator pressure in	2333	User	Pump	Evaporator Flow	P.In	R	Bar	0	*	6	
Evaporator pressure out	2334	User	Pump	Evaporator Flow	P.Out	R	Bar	0	*	6	
Evaporator delta T°	2335	User	Pump	Evaporator Flow	Delta dT	R	°C	0	*	20	
Evaporator delta pressure	2336	User	Pump	Evaporator Flow	Delta dP	R	Bar	0	*	6	
Evaporator flow capacity	2337	User	Pump	Evaporator Flow	Capacity	R	%	0	*	100	
Evaporator flow meter	2338	User	Pump	Evaporator Flow	Flow	R	m3	0	*	100	
Evaporator flow switch	2339	User	Pump	Evaporator Flow	Flow	R	*	0	*	1	
Condenser pump 1 status	2341	User	Pump	Condenser P1	Status	R	*	List	*	*	
Condenser pump 1 input	2342	User	Pump	Condenser P1	Sw State	R	*	0	*	1	
Condenser pump 1 output	2343	User	Pump	Condenser P1	Output	R	*	0	*	1	
Condenser pump 1 output	2344	User	Pump	Condenser P1	Hour H	R	HH	0	*	9999	
Condenser pump 1 output	2345	User	Pump	Condenser P1	Hour L	R	HH	0	*	9999	
Condenser flow switch	2346	User	Pump	Condenser P1	Flow	R	*	0	*	100	
Condenser pump 2 status	2351	User	Pump	Condenser P2	Status	R	*	List	*	*	
Condenser pump 2 input	2352	User	Pump	Condenser P2	Sw State	R	*	0	*	1	

COMMUNICATION

Description	Menu	4th digit	3rd digit	2nd digit	1st digit	R/W/Z	Unit	Min	Std	Max	Comments
Condenser pump 2 output	2353	User	Pump	Condenser P2	Output	R	*	0	*	1	
Condenser pump 1 output	2354	User	Pump		Hour H	R	HH	0	*	9999	
Condenser pump 1 output	2355	User	Pump		Hour L	R	HH	0	*	9999	
Condenser flow switch	2356	User	Pump	Condenser Flow	Flow	R	*	0	*	100	
Condenser T° inlet	2361	User	Pump		T.In	R	°C	-50	*	105	
Condenser T° outlet	2362	User	Pump		T.Out	R	°C	-50	*	105	
Condenser pressure in	2363	User	Pump		P.In	R	Bar	0	*	6	
Condenser pressure out	2364	User	Pump		P.Out	R	Bar	0	*	6	
Condenser delta T°	2365	User	Pump		Delta dT	R	°C	0	*	105	
Condenser delta pressure	2366	User	Pump		Delta dP	R	Bar	0	*	6	
Condenser flow capacity	2367	User	Pump		Capacity	R	%	0	*	100	
Condenser flow meter	2368	User	Pump		Flow	R	m3	0	*	100	
Condenser flow switch	2369	User	Pump		Flow	R	*	0	*	1	
Condensing pressure circuit 1	2411	User	Compressor	Circuit 1	P.HP	R	Bar	-50	*	105	
Condensing T° circuit 1	2412	User	Compressor	Circuit 1	T.HP	R	°C	-50	*	105	
Saturated pressure circuit 1	2413	User	Compressor	Circuit 1	T.Liquid	R	Bar	-50	*	105	
Saturated T° circuit 1	2414	User	Compressor	Circuit 1	P.LP	R	°C	-50	*	105	
Liquid T° circuit 1	2415	User	Compressor	Circuit 1	T.LP	R	°C	-50	*	105	
Suction T° circuit 1	2416	User	Compressor	Circuit 1	T.Suction	R	°C	-50	*	105	
Discharge T° 1 circuit 1	2417	User	Compressor	Circuit 1	Discharge 1	R	°C	-50	*	150	
Discharge T° 2 circuit 1	2418	User	Compressor	Circuit 1	Discharge 2	R	°C	-50	*	150	
Configuration compressor 1 circuit 1	2421	User	Compressor	Cir.1 Comp.1	Config	R	*	*	*	*	
Status compressor 1 circuit 1	2422	User	Compressor	Cir.1 Comp.1	Status	R	*	List	*	*	
Input compressor 1 circuit 1	2423	User	Compressor	Cir.1 Comp.1	Sw State	R	*	0	*	1	
Output compressor 1 circuit 1	2424	User	Compressor	Cir.1 Comp.1	Output	R	*	0	*	1	
Hour counter compressor 1 circuit 1 LSB	2425	User	Compressor	Cir.1 Comp.1	Time H	R	HH	0	*	9999	
Hour counter compressor 1 circuit 1 MSB	2426	User	Compressor	Cir.1 Comp.1	Time L	R	HH	0	*	9999	
Start counter high compressor 1 circuit 1 LSB (example : 123)	2427	User	Compressor	Cir.1 Comp.1	Start H	R	*	0	*	9999	
Start counter low compressor 1 circuit 1 MSB (example 456)	2428	User	Compressor	Cir.1 Comp.1	Start L	R	*	0	*	9999	
Configuration compressor 2 circuit 1	2431	User	Compressor	Cir.1 Comp.2	Config	R	*	*	*	*	
Status compressor 2 circuit 1	2432	User	Compressor	Cir.1 Comp.2	Status	R	*	List	*	*	

COMMUNICATION

Description	Menu	4th digit	3rd digit	2nd digit	1st digit	R/W/Z	Unit	Min	Std	Max	Comments
Input compressor 2 circuit 1	2433				Sw State	R	*	0	*	1	
Output compressor 2 circuit 1	2434				Output	R	*	0	*	1	
Hour counter compressor 2 circuit 1 LSB	2435			Cir.1 Comp.2	Time H	R	HH	0	*	9999	
Hour counter compressor 2 circuit 1 MSB	2436				Time L	R	HH	0	*	9999	
Start counter high compressor 2 circuit 1 LSB (example : 123)	2437				Start H	R	*	0	*	9999	
Start counter low compressor 2 circuit 1 MSB (example 456)	2438				Start L	R	*	0	*	9999	
Configuration compressor 3 circuit 1	2441				Config	R	*	*	*	*	
Status compressor 3 circuit 1	2442				Status	R	*	List	*	*	
Input compressor 3 circuit 1	2443			Cir.1 Comp.3	Sw State	R	*	0	*	1	
Output compressor 3 circuit 1	2444				Output	R	*	0	*	1	
Hour counter compressor 3 circuit 1 LSB	2445				Time H	R	HH	0	*	9999	
Hour counter compressor 3 circuit 1 MSB	2446		Compressor		Time L	R	HH	0	*	9999	
Start counter high compressor 3 circuit 1 LSB (example : 123)	2447	User		Circuit 2	Start H	R	*	0	*	9999	
Start counter low compressor 3 circuit 1 MSB (example 456)	2448				Start L	R	*	0	*	9999	
Condensing pressure circuit 2	2451				P.HP	R	Bar	-50	*	105	
Condensing T° circuit 2	2452				T.HP	R	°C	-50	*	105	
Saturated pressure circuit 2	2453				T.Liquid	R	Bar	-50	*	105	
Saturated T° circuit 2	2454				P.LP	R	°C	-50	*	105	
Liquid T° circuit 2	2455				T.LP	R	°C	-50	*	105	
Suction T° circuit 2	2456				T.Suction	R	°C	-50	*	105	
Discharge T° 1 circuit 2	2457				Discharge 1	R	°C	-50	*	150	
Discharge T° 2 circuit 2	2458				Discharge 2	R	°C	-50	*	150	
Configuration compressor 1 circuit 2	2461			Cir.2 Comp.1	Config	R	*	*	*	*	
Status compressor 1 circuit 2	2462				Status	R	*	List	*	*	
Input compressor 1 circuit 2	2463				Sw State	R	*	0	*	1	
Output compressor 1 circuit 2	2464				Output	R	*	0	*	1	
Hour counter compressor 1 circuit 2 LSB	2465				Time H	R	HH	0	*	9999	

Min Minimum | Std Standard | Max Maximum | Unit Unit

CL60-AC CHILLER-IOM-1011-E • 49 •

Description	Menu	4th digit	3rd digit	2nd digit	1st digit	R/W/Z	Unit	Min	Std	Max	Comments
Hour counter compressor 1 circuit 2 MSB	2466	User	Compressor	Cir.2 Comp.1	Time L	R	HH	0	*	9999	
Start counter high compressor 1 circuit 2 LSB (example : 123)	2467				Start H	R	*	0	*	9999	
Start counter low compressor 1 circuit 2 MSB (example 456)	2468				Start L	R	*	0	*	9999	
Configuration compressor 2 circuit 2	2471			Cir.2 Comp.2	Config	R	*	*	*	*	
Status compressor 2 circuit 2	2472				Status	R	*	List	*	*	
Input compressor 2 circuit 2	2473				Sw State	R	*	0	*	1	
Output compressor 2 circuit 2	2474				Output	R	*	0	*	1	
Hour counter compressor 2 circuit 2 LSB	2475				Time H	R	HH	0	*	9999	
Hour counter compressor 2 circuit 2 MSB	2476				Time L	R	HH	0	*	9999	
Start counter high compressor 2 circuit 2 LSB (example : 123)	2477				Start H	R	*	0	*	9999	
Start counter low compressor 2 circuit 2 MSB (example 456)	2478				Start L	R	*	0	*	9999	
Configuration compressor 3 circuit 2	2481			Cir.2 Comp.3	Config	R	*	*	*	*	
Status compressor 3 circuit 2	2482				Status	R	*	List	*	*	
Input compressor 3 circuit 2	2483				Sw State	R	*	0	*	1	
Output compressor 3 circuit 2	2484				Output	R	*	0	*	1	
Hour counter compressor 3 circuit 2 LSB	2485				Time H	R	HH	0	*	9999	
Hour counter compressor 3 circuit 2 MSB	2486				Time L	R	HH	0	*	9999	
Start counter high compressor 3 circuit 2 LSB (example : 123)	2487				Start H	R	*	0	*	9999	
Start counter low compressor 3 circuit 2 MSB (example 456)	2488				Start L	R	*	0	*	9999	
Safety high pressure switch circuit 1	2491			Other	Sw HP C1	R	*	0	*	1	
Safety high pressure switch circuit 2	2492				Sw HP C2	R	*	0	*	1	
Reversing valve circuit 1	2493				V4V C1	R	*	0	*	1	
Reversing valve circuit 2	2494				V4V C2	R	*	0	*	1	
Configuration condenser circuit 1	2511		Condenser	Circuit 1	Config	R	*	*	*	*	

COMMUNICATION

Description	Menu	4th digit	3rd digit	2nd digit	1st digit	R/W/Z	Unit	Min	Std	Max	Comments
Status condenser circuit 1	2512	User	Condenser	Circuit 1	Status	R	*	List	*	*	
Input condenser circuit 1	2513				Sw State	R	*	0	*	1	
Condensing T° circuit 1	2514				Condensing	R	°C	-50	*	67	
Condensing T° set point	2515				Setpoint	R	°C	25	*	45	
Condensing fan capacity circuit 1	2516				Capacity	R	%	0	*	100	
Condensing fan low speed circuit 1	2517				Speed Low	R	*	0	*	1	
Condensing fan high speed circuit 1	2518				Speed High	R	*	0	*	1	
Configuration condenser circuit 2	2521			Circuit 2	Config	R	*	*	*	*	
Status condenser circuit 2	2522				Status	R	*	List	*	*	
Input condenser circuit 2	2523				Sw State	R	*	0	*	1	
Condensing T° circuit 2	2524				Condensing	R	°C	-50	*	67	
Condensing T° set point	2525				Setpoint	R	°C	25	*	45	
Condensing fan capacity circuit 2	2526				Capacity	R	%	0	*	100	
Condensing fan low speed circuit 2	2527				Speed Low	R	*	0	*	1	
Condensing fan high speed circuit 2	2528				Speed High	R	*	0	*	1	
Configuration condenser circuit 1&2	2531			Circuit 1/2	Config	R	*	*	*	*	
Status condenser circuit 1&2	2532				Status	R	*	List	*	*	
Input condenser circuit 1&2	2533				Sw State	R	*	0	*	1	
Condensing capacity circuit 1&2	2534				Capacity	R	%	0	*	100	
Outside air T°	2541			Fan	Outside	R	°C	-50	*	105	
Condenser fan capacity maximum	2542				Capacity Max	R	%	0	*	100	
Condenser unloading T°	2543				Unloading	R/W	°C	50	*	65	
Condenser fan accoustic mode	2544				Mode	R/WZ	*	0	0	2	0=Not Set, 1=Quiet, 2=Quiet++.
Condenser fan accoustic noise	2545				Noise	R/WZ	dBa	82	*	94	
Condenser inlet T° circuit 1	2551			Water	Inlet C1	R	*	-50	*	105	
Condenser outlet T° circuit 1	2552				Outlet C1	R	*	-50	*	105	
Condenser inlet T° circuit 2	2553				Inlet C2	R	*	-50	*	105	
Condenser outlet T° circuit 2	2554				Outlet C2	R	*	-50	*	105	

Description	Menu	4th digit	3rd digit	2nd digit	1st digit	R/W/Z	Unit	Min	Std	Max	Comments
*	2611	User	Expansion Valve	Circuit 1	Config	R	*	*	*	*	
*	2612				Status	R	*	List	*	*	
*	2613				Saturated	R	Bar	0	*	20	
*	2614				Saturated	R	°C	-4	*	35	
*	2615				Suction	R	°C	-50	*	105	
*	2616				Superheat	R	°C	0	*	105	
*	2617				Setpoint	R	°C	5	*	15	
*	2618				Capacity	R	%	0	*	100	
*	2619				Step	R	*	0	*	ETS50 = 2625 ETS100 = 3630	
*	2621			Circuit 2	Config	R	*	*	*	*	
*	2622				Status	R	*	List	*	*	
*	2623				Saturated	R	Bar	0	*	20	
*	2624				Saturated	R	°C	-4	*	35	
*	2625				Suction	R	°C	-50	*	105	
*	2626				Superheat	R	°C	0	*	105	
*	2627				Setpoint	R	°C	5	*	15	
*	2628				Capacity	R	%	0	*	100	
*	2629				Step	R	*	0	*	ETS50 = 2625 ETS100 = 3630	
Configuration of the freecooling	2711		Option	Freecooling	Config	R	*	*	*	*	
Status of the freecooling	2712				Status	R	*	List	*	*	
Input of the freecooling	2713				Sw State	R	*	0	*	1	
Freecooling valve	2714				Valve	R	*	0	*	1	
Outside air T°	2715				Outside	R	°C	-50	*	105	
Inlet coil water T°	2716				Inlet	R	°C	-50	*	105	
Outlet coil water T°	2717				Outlet	R	°C	-50	*	105	
Freecooling fan capacity	2718				Capacity	R	%	0	*	100	
Configuration of the power factor correction	2721			FP Correct	Config	R	*	*	*	*	
Status of the power factor correction	2722				Status	R	*	List	*	*	
Input of the power factor correction	2723				Sw State	R	*	0	*	1	

Description	Menu	4th digit	3rd digit	2nd digit	1st digit	R/W/Z	Unit	Min	Std	Max	Comments
Configuration of the electrical heater	2731			Electrical heater	Config	R	*	*	*	*	
Status of the electrical heater	2732			Electrical heater	Status	R	*	List	*	*	
Evaporator outler T°	2733		Option	Electrical heater	Outlet	R	°C	-50	*	105	
Electrical heater capacity	2734				Capacity	R	%	0	*	100	
Electrical heater input	2735				Sw State	R	*	0	*	1	
Electrical heater output 1	2736				Output 1	R	*	0	*	1	
Electrical heater output 2	2737				Output 2	R	*	0	*	1	
Electrical heater output 3	2738				Output 3	R	*	0	*	1	
Electrical heater output 4	2739				Output 4	R	*	0	*	1	
Configuration of the master/slave link	2811	User	Link	Master/Slave	Config	R	*	*	*	*	
Status of the master/slave link	2812				Status	R	*	List	*	*	
Identification number of the BM60 board	2813				Id	R	*	1	*	8	
Outside air reference T°	2814				Outside	R	°C	-50	*	105	
Evaporator inlet reference T°	2815				Inlet	R	°C	-50	*	105	
Evaporator outlet reference T°	2816				Outlet	R	°C	-50	*	105	
Unit number priority to start	2817				Priority	R	*	1	*	8	
Unit number in standby	2818				Standby	R	*	1	*	8	
Unit number to start next	2819				Next Start	R	*	1	*	8	
Status of the master/slave link	2821			BMS	Status	R	*	List	*	*	
Outside air reference T°	2822				Outside	R	°C	-50	*	105	
Evaporator inlet reference T°	2823				Inlet	R	°C	-50	*	105	
Evaporator outlet reference T°	2824				Outlet	R	°C	-50	*	105	
Address of the board	2825				Adress	R/W	*	1	*	8	
Number of units linked	2826				Number	R/W	*	1	*	8	
Master/slave configuration	2827				Type	R/W	*	0	0	7	0=Not Set, 1=Not Used, 2=CascadTwins, 3=CascadChain, 4=BackupTwins, 5=BackupChain, 6=RolBackupTwins, 7=RolBackupChain.

COMMUNICATION

Description	Menu	4th digit	3rd digit	2nd digit	1st digit	R/W/Z	Unit	Min	Std	Max	Comments
Outside air T° configuration	2828	User	Link	BMS	TßAir	R/W	*	0	0	2	0=Not Used, 1=Master, 2=Average.
Evaporator water T° configuration	2829				TßWater	R/W	*	0	0	2	
General On/Off	3111	Expert	Unit	General	On/Off	R/W	0	0	0	1	
Remote On/Off	3112				On/Off Input	R/W	0	0	*	1	
Enable	3113				On/Off Mode	R/W/Z	*	0	1	1	
Test	3114				Test	R/W	*	0	0	10	0=Not set, 1=Quickly, 2=Wizard, 3=Daily Task, 4=Weekly Task, 5=Defrost C1, 6=Defrost C2, 7=Defrost C1&2, 8=HP C1, 9=HP C2, 10=HP C1&2.
Reset the active alarm(s)	3115				Reset Alarm	R/W	*	0	0	1	
Clear the historic of alarm(s)	3116				Clear Alarm	R/W	*	0	0	1	
Electrical box T°	3117				Box Tß	R	°C	-50	*	105	
General status	3118				Status	R	*	List	*	*	
Unit range configuration	3121			Configuration	Range	R/W	*	0	0	8	0=Not set, 1=EAC, 2=EAR, 3=NAC, 4=NAH, 5=MWC, 6=NWC, 8=MRC.
Unit size configuration	3122				Size	R/W	*	List	*	*	
Unit capacity configuration	3123				Capacity	R/W	*	0	*	100	
Glycol rate configuration	3124				Glycol	R/W	%	0	0	50	
Restore the settings parameters	3125				Restore	R/W	*	0	0	5	0=Not set, 1=DC+Bms, 2=Schedule, 3=Factory, 4=Store User, 5=Restore User.
Configuration of the free output BM.NO7	3131			Custom relay	BM.NO7	R/W	*				
Configuration of the free output BE.NO1	3132				BE.NO1	R/W	*				
Configuration of the free output BE.NO2	3133				BE.NO2	R/W	*				

Description	Menu	4th digit	3rd digit	2nd digit	1st digit	R/W/Z	Unit	Min	Std	Max	Comments
Configuration of the free output BE.NO3	3134	Expert	Unit	Custom relay	BE.NO3	R/W	*				
Configuration of the free output BE.NO4	3135				BE.NO4	R/W	*				
Configuration of the free input BM.Id4	3141			Custom switch	BM.Id4	R/W	*				
Configuration of the free input BM.Id7	3142				BM.Id7	R/W	*				
Configuration of the free input BE.Id1	3143				BE.Id1	R/W	*				
Configuration of the free input BE.Id2	3144				BE.Id2	R/W	*				
Configuration of the free input BE.Id3	3145				BE.Id3	R/W	*				
Configuration of the free input BE.Id4	3146				BE.Id4	R/W	*				
Configuration of the free input BE.B1	3151			Custom signal	BE.B1	R/W	*				
Configuration of the free input BE.B2	3152				BE.B2	R/W	*				
Configuration of the free input BE.B3	3153				BE.B3	R/W	*				
Configuration of the free input BE.B4	3154				BE.B4	R/W	*				
Evaporator pump(s) configuration	3161			Option	Pump Evap.	R/W	*	0	*	*	0=Not Set, 1=Single=, 2=Single%, 3=Double=, 4=Double%.
Condenser pump(s) configuration	3162				Pump Cond.	R/W	*	0	*	*	
DC60 display(s) configuration	3163				Display DC	R/W	*	0	0	3	0=Not Set, 1=1,···, 2=.,2,·, 3=1,2.
Electronic expansion valve cconfiguration	3164				EEV Driver	R/W	*	0	0	1	
Power meter configuration	3165				Heater Elec	R/W	*	0	0	1	0=No, 1=Yes.
Electrical heater configuration	3166				Freecooling	R/W	*	0	0	1	
Inverter for condenser fan configuration	3167				Fan %	R/W	*	0	0	1	
Power factor correction configuration	3168				Power Factor	R/W	*	0	0	1	
Power meter configuration	3169				Power meter	R/W	*	0	0	1	

Description	Menu	4th digit	3rd digit	2nd digit	1st digit	R/W/Z	Unit	Min	Std	Max	Comments
*	3171	Expert	Unit	Startup	Day	R	*	*	*	*	
*	3172				Month	R	*	*	*	*	
*	3173				Year	R	*	*	*	*	
Evaporator inlet probe T°	3211		Water	Temperature	Inlet	R	°C	-50	*	105	
Evaporator inlet reference T°	3212				Inlet Ref.	R	°C	-50	*	105	
Evaporator outlet probe T°	3213				Outlet	R	°C	-50	*	105	
Evaporator outlet reference T°	3214				Outlet Ref.	R	°C	-50	*	105	
Evaporator delta T° (Inlet-Outlet)	3215				Delta Tß	R	°C	0	*	105	
Evaporator set point	3216				Setpoint	R	°C	-10	*	50	
Evaporator capacity	3217				Capacity	R	%	0	*	100	
Evaporator flow switch	3218				Flow	R	*	0	*	1	
Changeover status	3221			Changeover	Status	R	*	List	*	*	
Outside air probe T°	3222				Outside	R	°C	-50	*	105	
Outside air reference T°	3223				Outside Ref.	R	°C	-50	*	105	
Changeover mode	3224				Mode	R/W/Z	*				See menu 2224
Winter T° to swap in heating mode	3225				AirTßWinter	R/W	°C	-10	18	30	
Summer T° to swap in cooling mode	3226				AirTßSummer	R/W	°C	19	23	30	
Evaporator status	3231			Cooling	Status	R	*	List	*	*	
Evaporator inlet reference T°	3232				Inlet	R	°C	-50	*	105	
Evaporator outlet reference T°	3233				Outlet	R/W/Z	°C	-50	*	105	
Evaporator set point	3234				Setpoint	R	°C	-10	*	50	
Evaporator cooling capacity	3235				Capacity	R	%	0	*	100	
Outside air set point X1 in cool	3236				Air Slope 1	R/W/Z	°C	-11	22	50	
Outside air set point X2 in cool	3237				Air Slope 2	R/W/Z	°C	-11	30	50	
Evaporator set point Y1 in cool	3238				Water 1	R/W/Z	°C	19	7	20	
Evaporator set point Y2 in cool	3239				Water 2	R/W/Z	°C	19	7	20	
Evaporator status	3241			Heating	Status	R	*	List	*	*	
Evaporator inlet reference T°	3242				Inlet	R	°C	-50	*	105	
Evaporator outlet reference T°	3243				Outlet	R	°C	-50	*	105	
Evaporator set point	3244				Setpoint	R	°C	-10	*	50	
Evaporator cooling capacity	3245				Capacity	R	%	0	*	100	

COMMUNICATION

Description	Menu	4th digit	3rd digit	2nd digit	1st digit	R/W/Z	Unit	Min	Std	Max	Comments
Outside air set point X1 in heat	3246	Expert	Water	Heating	Air Slope 1	R/W/Z	°C	-11	22	50	
Outside air set point X2 in heat	3247				Air Slope 2	R/W/Z	°C	-11	30	50	
Evaporator set point Y1 in heat	3248				Water 1	R/W/Z	°C	40	45	50	
Evaporator set point Y2 in heat	3249				Water 2	R/W/Z	°C	40	45	50	
External evaporator set point	3251			Custom	Sp 4/20mA	R	°C	4	*	20	
External offset evaporator set point	3252				Sp +/-1ßC	R	°C	-1	*	1	
Second set point switch status	3253				Sp Nß2	R	*	0	*	1	
Evaporator cooling delta T°	3261			Control	Cool dTß	R/W	°C	1	5	20	
Evaporator heating delta T°	3262				Heat dTß	R/W	°C	1	5	20	
Evaporator water reactivity	3263				Reactivity	R/W	*	1	15	120	
Evaporator cooling low safety T°	3271			Safety	Cool Low	R/W	°C	3	5	55	
Evaporator cooling high safety T°	3272				Cool High	R/W	°C	19	55	55	
Evaporator heating low safety T°	3273				Heat Low	R/W	°C	3	5	55	
Evaporator heating high safety T°	3274				Heat High	R/W	°C	19	55	55	
Evaporator pump 1 status	3311		Pump	Evaporator P1	Status	R	*	List	*	*	
Evaporator pump 1 input	3312				Sw State	R	*	0	*	1	
Evaporator pump 1 output	3313				Output	R	*	0	*	1	
Evaporator pump 1 output	3314				Hour H	R	HH	0	*	9999	
Evaporator pump 1 output	3315				Hour L	R	HH	0	*	9999	
Evaporator flow switch	3316				Flow	R	*	0	*	1	
Evaporator pump 2 status	3321			Evaporator P2	Status	R	*	List	*	*	
Evaporator pump 2 input	3322				Sw State	R	*	0	*	1	
Evaporator pump 2 output	3323				Output	R	*	0	*	1	
Evaporator pump 1 output	3324				Hour H	R	HH	0	*	9999	
Evaporator pump 1 output	3325				Hour L	R	HH	0	*	9999	
Evaporator flow switch	3326				Flow	R	*	0	*	1	
Evaporator T° inlet	3331			Evaporator flow	T.In	R	°C	-50	*	105	
Evaporator T° outlet	3332				T.Out	R	°C	-50	*	105	
Evaporator pressure in	3333				P.In	R	Bar	0	*	6	
Evaporator pressure out	3334				P.Out	R	Bar	0	*	6	
Evaporator delta T°	3335				Delta dT	R	°C	0	*	105	

COMMUNICATION

Description	Menu	4th digit	3rd digit	2nd digit	1st digit	R/W/Z	Unit	Min	Std	Max	Comments
Evaporator delta pressure	3336			Evaporator flow	Delta dP	R	Bar	0	*	6	
Evaporator flow capacity	3337				Capacity	R	%	0	*	100	
Evaporator flow meter	3338				Flow	R	m3	0	*	100	
Evaporator flow switch	3339				Flow	R	*	0	*	1	
Evaporator pump(s) enable	3341	Expert	Pump	Evaporator control	Priority	R/W/Z	*	0	0	7	0=Not Set, 1=Not Used, 2=Prio.P1On, 3=Prio.P1Auto, 4=Prio.P2On, 5=Prio.P2Auto, 6=No Prio.On, 7=No Prio.Auto.
Evaporator pump(s) reset counter	3342				Reset	R/W	*	0	0	2	0=Not Set, 1=1,..., 2=.,2.,
Evaporator pump(s) operating mode	3343				Mode	R/W	*	0	0	4	0=Not Used, 1=Fix Speed, 2=Fix dT, 3=Fix dP, 4=Fix P.Out.
Evaporator variable flow delta T°	3344				Delta dT	R/W	°C	2	*	10	
Evaporator variable flow delta pressure	3345				Delta dP	R/W	Bar	1	1	6	
Evaporator variable flow output pressure	3346				P.Out	R/W	Bar	0,5	1	6	
Evaporator variable flow minimum	3347				Flow Min	R/W	%	60	60	100	
Evaporator variable flow maximum	3348				Flow Max	R/W	%	60	100	100	
Condenser pump 1 status	3351			Condenser P1	Status	R	*	List	*	*	
Condenser pump 1 input	3352				Sw State	R	*	0	*	1	
Condenser pump 1 output	3353				Output	R	*	0	*	1	
Condenser pump 1 output	3354				Hour H	R	HH	0	*	9999	
Condenser pump 1 output	3355				Hour L	R	HH	0	*	9999	
Condenser flow switch	3356				Flow	R	*	0	*	100	
Condenser pump 2 status	3361			Condenser P2	Status	R	*	List	*	*	
Condenser pump 2 input	3362				Sw State	R	*	0	*	1	
Condenser pump 2 output	3363				Output	R	*	0	*	1	
Condenser pump 1 output	3364				Hour H	R	HH	0	*	9999	

COMMUNICATION

Description	Menu	4th digit	3rd digit	2nd digit	1st digit	R/W/Z	Unit	Min	Std	Max	Comments
Condenser pump 1 output	3365			Condenser P2	Hour L	R	HH	0	*	9999	
Condenser flow switch	3366				Flow	R	*	0	*	100	
Condenser T° inlet	3371			Condenser flow	T.In	R	°C	-50	*	105	
Condenser T° outlet	3372				T.Out	R	°C	-50	*	105	
Condenser pressure in	3373				P.In	R	Bar	0	*	6	
Condenser pressure out	3374				P.Out	R	Bar	0	*	6	
Condenser delta T°	3375		Pump		Delta dT	R	°C	0	*	105	
Condenser delta pressure	3376				Delta dP	R	Bar	0	*	6	
Condenser flow capacity	3377				Capacity	R	%	0	*	100	
Condenser flow meter	3378	Expert			Flow	R	m3	0	*	100	
Condenser flow switch	3379				Flow	R	*	0	*	1	
Condenser pump(s) enable	3381				Priority	R/W/Z	*	0	0	7	See menu 3341
Condenser pump(s) reset counter	3382			Condenser Control	Reset	R/W	*	0	0	2	See menu 3342
Condenser pump(s) operating mode	3383				Mode	R/W	*	0	0	4	See menu 3343
Condenser variable flow delta T°	3384				Delta dT	R/W	°C	2	*	10	
Condenser variable flow delta pressure	3385				Delta dP	R/W	Bar	1	1	6	
Condenser variable flow output pressure	3386				P.Out	R/W	Bar	0,5	1	6	
Condenser variable flow minimum	3387				Flow Min	R/W	%	60	60	100	
Condenser variable flow maximum	3388				Flow Max	R/W	%	60	100	100	
Condensing pressure circuit 1	3411			Circuit 1	P.HP	R	Bar	-50	*	105	
Condensing T° circuit 1	3412				T.HP	R	°C	-50	*	105	
Saturated pressure circuit 1	3413				T.Liquid	R	Bar	-50	*	105	
Saturated T° circuit 1	3414		Compressor		P.LP	R	°C	-50	*	105	
Liquid T° circuit 1	3415				T.LP	R	°C	-50	*	105	
Suction T° circuit 1	3416				T.Suction	R	°C	-50	*	105	
Discharge T° 1 circuit 1	3417				Discharge 1	R	°C	-50	*	150	
Discharge T° 2 circuit 1	3418				Discharge 2	R	°C	-50	*	150	
Condensing pressure circuit 2	3421			Circuit 2	P.HP	R	Bar	-50	*	105	
Condensing T° circuit 2	3422				T.HP	R	°C	-50	*	105	
Saturated pressure circuit 2	3423				T.Liquid	R	Bar	-50	*	105	
Saturated T° circuit 2	3424				P.LP	R	°C	-50	*	105	

LENNOX

Description	Menu	4th digit	3rd digit	2nd digit	1st digit	R/W/Z	Unit	Min	Std	Max	Comments
Liquid T° circuit 2	3425				T.LP	R	°C	-50	*	105	
Suction T° circuit 2	3426			Circuit 2	T.Suction	R	°C	-50	*	105	
Discharge T° 1 circuit 2	3427				Discharge 1	R	°C	-50	*	150	
Discharge T° 2 circuit 2	3428				Discharge 2	R	°C	-50	*	150	
Compressor(s) enable circuit 1	3431				Enable C1	R/W/Z	*	0	0	7	0=Not Set, 1=1,.., 2=.,2,.. 3=1,2,.. 4=..,3, 5=1,.,3, 6=.,2,3, 7=1,2,3.
Compressor(s) enable circuit 2	3432		Compressor	Enable	Enable C2	R/W/Z	*	0	0	7	
Compressor(s) reset counter circuit 1	3433				Clear C1	R/W	*	0	0	7	
Compressor(s) reset counter circuit 2	3434				Clear C2	R/W	*	0	0	7	
Compressor(s) circuit priority	3435				Priority	R/W	*	0	0	3	0=Not Used, 1=Prio.C1, 2=Prio.C2, 3=Auto.
Evaporator saturation safety T°	3441			Safety	Saturation	R/W	°C	-6	-6	5	
Condenser unloading safety T°	3442				Unloading	R/W	°C	50	63	65	
Compressor discharge safety T°	3443				Discharge	R/W	°C	90	120	150	
Configuration condenser circuit 1	3511				Config	R	*	*	*	*	
Status condenser circuit 1	3512	Expert			Status	R	*	List	*	*	
Input condenser circuit 1	3513			Circuit 1	Sw State	R	*	0	*	1	
Condensing T° circuit 1	3514				Condensing	R	°C	-50	*	67	
Condensing T° set point	3515				Setpoint	R	°C	25	*	45	
Condensing fan capacity circuit 1	3516		Condenser		Capacity	R	%	0	*	100	
Condensing fan low speed circuit 1	3517				Speed Low	R	*	0	*	1	
Condensing fan high speed circuit 1	3518				Speed High	R	*	0	*	1	
Configuration condenser circuit 2	3521				Config	R	*	*	*	*	
Status condenser circuit 2	3522				Status	R	*	List	*	*	
Input condenser circuit 2	3523			Circuit 2	Sw State	R	*	0	*	1	
Condensing T° circuit 2	3524				Condensing	R	°C	-50	*	67	
Condensing T° set point	3525				Setpoint	R	°C	25	*	45	
Condensing fan capacity circuit 2	3526				Capacity	R	%	0	*	100	
Condensing fan low speed circuit 2	3527				Speed Low	R	*	0	*	1	
Condensing fan high speed circuit 2	3528				Speed High	R	*	0	*	1	
Configuration condenser circuit 1&2	3531			Circuit 1/2	Config	R	*	*	*	*	
Status condenser circuit 1&2	3532				Status	R	*	List	*	*	

CL60-AC CHILLER-IOM-1011-E

Description	Menu	4th digit	3rd digit	2nd digit	1st digit	R/W/Z	Unit	Min	Std	Max	Comments
Input condenser circuit 1&2	3533	Expert	Condenser	Circuit 1/2	Sw State	R	*	0	*	1	
Condensing capacity circuit 1&2	3534				Capacity	R	%	0	*	100	
Condenser fan capacity maximum	3541				Capacity Max	R	%	0	*	100	
Condenser unloading T°	3542				Unloading	R	°C	50	*	65	
Condenser fan accoustic mode	3543				Mode	R/W	*	0	0	2	0=Auto, 1=AutoQuiet, 2=Quiet.
Condenser fan accoustic noise	3544			Fan	Noise	R/W	dBa	82	*	94	
Condenser fan set point	3545				Setpoint	R/W	°C	35	40	45	
Condenser fan set point low speed ON	3546				Speed L.On	R/W	°C	30	46	60	
Condenser fan set point low speed OFF	3547				Speed L.Off	R/W	°C	30	38	60	
Condenser fan set point high speed ON	3548				Speed H.On	R/W	°C	30	58	60	
Condenser fan set point high speed OFF	3549				Speed H.Off	R/W	°C	30	49	60	
Condenser inlet T° circuit 1	3551			Water	Inlet C1	R	°C	-50	*	105	
Condenser outlet T° circuit 1	3552				Outlet C1	R	°C	-50	*	105	
Condenser inlet T° circuit 2	3553				Inlet C2	R	°C	-50	*	105	
Condenser outlet T° circuit 2	3554				Outlet C2	R	°C	-50	*	105	
Defrost mode	3561			Defrost	Mode	R	*	0	0	1	0=Cyclic, 1=Dynamic.
Outside air defrost T°	3562				Outside	R	°C	8	16	22	
Evaporator saturation defrost T°	3563				Saturation	R	°C	-10	1,7	10	
Defrost frequency delay	3564				Freq	R	mm	30	45	90	
*	3565				dLP C1	R/W	°C	-50	*	105	
*	3566				dLP C2	R/W	°C	-50	*	105	
*	3567				Counter C1	R/W	*	30	*	90	
*	3568				Counter C2	R/W	*	30	*	90	
condenser cooling low safety T°	3571			Safety	Cool Low	R/W	°C	3	5	55	
condenser cooling high safety T°	3572				Cool High	R/W	°C	19	55	55	
condenser heating low safety T°	3573				Heat Low	R/W	°C	3	5	55	
condenser heating high safety T°	3574				Heat High	R/W	°C	19	55	55	
*	3611		Expansion valve	Circuit 1	Config	R	*	*	*	*	
*	3612				Status	R	*	List	*	*	

COMMUNICATION

Description	Menu	4th digit	3rd digit	2nd digit	1st digit	R/W/Z	Unit	Min	Std	Max	Comments
*	3613	Expert	Expansion valve	Circuit 1	Saturated	R	Bar	0	*	20	
*	3614				Saturated	R	°C	-4	*	35	
*	3615				Suction	R	°C	-50	*	105	
*	3616				Superheat	R	°C	0	*	105	
*	3617				Setpoint	R	°C	5	*	15	
*	3618				Capacity	R	%	0	*	100	
*	3619				Step	R	*	0	*	ETS50 = 2625 ETS100 = 3630	
*	3621			Circuit 2	Config	R	*	*	*	*	
*	3622				Status	R	*	List	*	*	
*	3623				Saturated	R	Bar	0	*	20	
*	3624				Saturated	R	°C	-4	*	35	
*	3625				Suction	R	°C	-50	*	105	
*	3626				Superheat	R	°C	0	*	105	
*	3627				Setpoint	R	°C	5	*	15	
*	3628				Capacity	R	%	0	*	100	
*	3629				Step	R	*	0	*	ETS50 = 2625 ETS100 = 3630	
*	3631			Control	Superheat	R/W	°C	5	*	15	
Configuration of the freecooling	3711		Option	Freecooling	Config	R	*	*	*	*	
Status of the freecooling	3712				Status	R	*	List	*	*	
Input of the freecooling	3713				Sw State	R	*	0	*	1	
Freecooling valve	3714				Valve	R	*	0	*	1	
Outside air T°	3715				Outside	R	°C	-50	*	105	
Inlet coil water T°	3716				Inlet	R	°C	-50	*	105	
Outlet coil water T°	3717				Outlet	R	°C	-50	*	105	
Freecooling fan capacity	3718				Capacity	R	%	0	*	100	
Configuration of the power factor correction	3721			FP Correct	Config	R	*	*	*	*	
Status of the power factor correction	3722				Status	R	*	List	*	*	

Description	Menu	4th digit	3rd digit	2nd digit	1st digit	R/W/Z	Unit	Min	Std	Max	Comments
Input of the power factor correction	3723			FP Correct	Sw State	R	*	0	*	1	
Configuration of the electrical heater	3731			Electrical heater	Config	R	*	*	*	*	
Status of the electrical heater	3732				Status	R	*	List	*	*	
Evaporator outler T°	3733		Option		Outlet	R	°C	-50	*	105	
Electrical heater capacity	3734	Expert			Capacity	R	%	0	*	100	
Electrical heater input	3735				Sw State	R	*	0	*	1	
Electrical heater output 1	3736				Output 1	R	*	0	*	1	
Electrical heater output 2	3737				Output 2	R	*	0	*	1	
Electrical heater output 3	3738				Output 3	R	*	0	*	1	
Electrical heater output 4	3739				Output 4	R	*	0	*	1	
Configuration of the power meter	3741			Power Meter	Config	R	*	*	*	*	
Active power	3742				Power P	R	KW	0	*	99999	
Reactive power	3743				Power Q	R	Kvar	0	*	99999	
Power Factor	3744				Power Factor	R	*	0	*	99999	
Active energy MSB	3745				Energy P H	R	KWh	0	*	99999	
Active energy LSB	3746				Energy P L	R	KWh	0	*	99999	
Reactive energy MSB	3747				Energy Q H	R	KVarh	0	*	99999	
Reactive energy LSB	3748				Energy Q L	R	KVarh	0	*	99999	
Reset all counter	3749				Clear Counter	R/W	*	0	0	1	
Status of the master/slave link	3811			Master/Slave	Status	R	*	List	*	*	
Outside air reference T°	3812		Link		Outside	R	°C	-50	*	105	
Evaporator inlet reference T°	3813				Inlet	R	°C	-50	*	105	
Evaporator outlet reference T°	3814				Outlet	R	°C	-50	*	105	
Address of the board	3815				Adress	R/W	*	1	*	8	
Number of units linked	3816				Number	R/W	*	1	*	8	
Master/slave configuration	3817				Type	R/W	*	0	0	7	See menu 2827
Outside air T° configuration	3818				TßAir	R/W	*	0	0	2	See menu 2828
Evaporator water T° configuration	3819				TßWater	R/W	*	0	0	2	See menu 2828
Status of the BMS	3821			BMS	Status	R	*	List	*	*	
Outside air BMS T°	3822				Outside	R	°C	-50	*	105	

COMMUNICATION

Description	Menu	4th digit	3rd digit	2nd digit	1st digit	R/W/Z	Unit	Min	Std	Max	Comments
Evaporator inlet BMS T°	3823				Inlet	R	°C	-50	*	105	
Evaporator outlet BMS T°	3824				Outlet	R	°C	-50	*	105	
Watchdog timer	3825				Watchdog	R/W	*	0	*	32000	
Identification number configuration	3826				Id	R/W	*	1	*	199	
BMS protocol configuration	3827	Expert	Link	BMS	Protocol	R/W	*	0	0	6	0=Adalink, 1=Lnx Vision, 2=Modbus, 3=Trend, 4=Carel, 5=Bacnet, 6=Lon works.
BMS bauderate configuration	3828				Bauderate	R/W	*	0	0	4	0=1200, 1=2400, 2=4800, 3=9600, 4=19200.

**Min** Minimum **Std** Standard **Max** Maximum **Unit** Unit

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 detection, 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 -.

Connect a 120Ω 1/4W end line resistor (only for Modbus)

SERAIL CARD CND (+) (-)
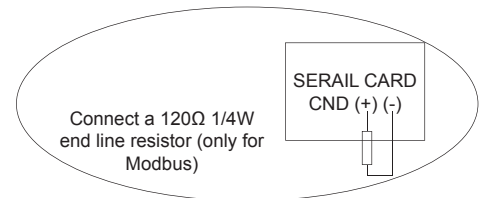
⚠ The connection must be carried out by the following cable: length up to 1000 m: LiYCY-P (0.34 mm ²), 2 pairs with general shield.

Max = 1000 m
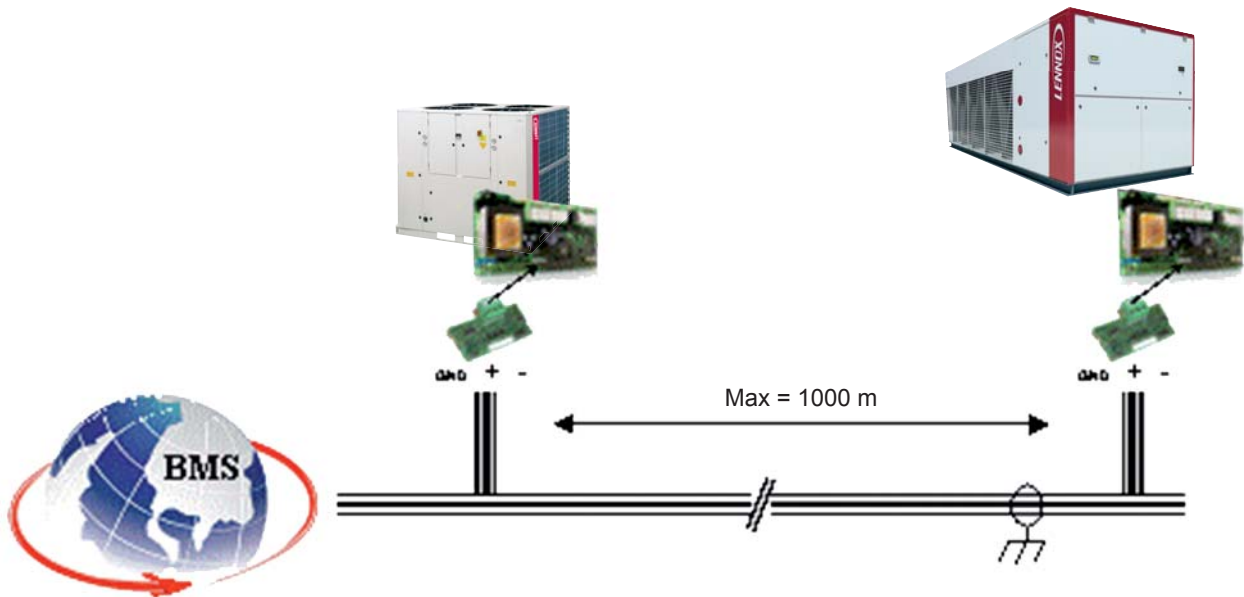
The CLIMATIC™ 60 offers different possibilities of BMS protocol:
• Modbus RTU,
• Trend,
• Bacnet,
• Lon Works.

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	1 bit

The BMS mode is activated by the iinitialisation of the watchdog value. The watchdog is automatically decreasing every second. It's therefore necessary to frequently overwrite the watchdog value not to let it fall to 0. If the watchdog reaches 0, the BMS mode is disabled and the unit comes back to the schedule mode.

Settings

The different settings to configure the BMS are available in the menu:
- (**3826**): unit identification number on the BMS network,
- (**3827**): protocol communication with the BMS,
- (**3828**): Baudrate with the BMS.

ALARMS

CODE	DESCRIPTION
1	Water Evaporator,Flow Switch,Cut Off
2	Water Condenser,Flow Switch,Cut Off
7	Buffer Tank,Water Level,Low
8	Buffer Tank,Water Level,High
9	Unit,Power Supply,Electrical Failure
10	Unit,Electrical Heater,Electrical Failure
21	Water Evaporator,Water T°,Outlet Too High
22	Water Evaporator,Water T°,Outlet Too Low
23	Water Evaporator,Water T°,Inlet Too High
24	Water Evaporator,Water T°,Inlet Too Low
25	Water Condenser,Water T°,Outlet Too High
26	Water Condenser,Water T°,Outlet Too Low
27	Water Condenser,Water T°,Inlet Too High
28	Water Condenser,Water T°,Inlet Too Low
34	Electrical Box T°,Air T°,Too High
40	Pump Evaporator,Flow Switch,Cut Off
41	Pump Evaporator,Pump N° 1,Electrical Failure
42	Pump Evaporator,Pump N° 2,Electrical Failure
43	Pump Condenser,Pump N° 1,Electrical Failure
44	Pump Condenser,Pump N° 2,Electrical Failure
45	Pump Evaporator,In Pressure ,Faulty Sensor
46	Pump Evaporator,OUT Pressure ,Faulty Sensor
47	Pump Condenser,In Pressure ,Faulty Sensor
48	Pump Condenser,OUT Pressure ,Faulty Sensor
49	Pump Evaporator,Inverter,Electrical Failure
50	Pump Condenser,Inverter,Electrical Failure
54	Freecooling Fan,Inverter,Electrical Failure
58	Recovery,Water Inlet T°,Faulty Probe
59	Recovery,Water Outlet T°,Faulty Probe
61	Master/Slave,BM Master,Failure Link
62	Master/Slave,BM Slave 2,Failure Link
63	Master/Slave,BM Slave 3,Failure Link
64	Master/Slave,BM Slave 4,Failure Link
65	Master/Slave,BM Slave 5,Failure Link
66	Master/Slave,BM Slave 6,Failure Link
67	Master/Slave,BM Slave 7,Failure Link
68	Master/Slave,BM Slave 8,Failure Link
70	BM board,Real Time Clock,Failure
71	BE Board,BE N°1,Failure Link
72	BE Board,BE N°2,Failure Link
73	Pump Evaporator,Inverter,Failure Link
74	Pump Condenser,Inverter,Failure Link
75	Condenser Fan,Inverter Circuit 1,Failure Link
76	Condenser Fan,Inverter Circuit 2,Failure Link
77	Condenser Fan,Inverter Circuit 1/2,Failure Link
78	Freecooling Fan,Inverter,Failure Link
79	DC Display,DC60 N°1,Failure Link
80	DC Display,DC60 N°2,Failure Link
81	Water Evaporator,Water Inlet T°,Faulty Probe
83	Outside,Air T°,Faulty Probe

CODE	DESCRIPTION
85	Water Evaporator,Water Outlet T°,Faulty Probe
89	Electrical Box T°,Air T°,Faulty Probe
90	Water Freecooling,Inlet T°,Faulty Probe
102	Circuit 1,Fan Condenser Motor,Electrical Failure
103	Circuit 1,Fan Condenser Inverter,Electrical Failure
104	Circuit 1/2,Fan Condenser Motor,Electrical Failure
105	Circuit 1/2,Fan Condenser Inverter,Electrical Failure
108	Unit,Power Factor CosPhi,Electrical Failure
110	Circuit 1,Leak Refrigerant,Detection
111	Circuit 1 Compressor 1,Discharge T°,Overheating
112	Circuit 1,Discharge T° Compressor 2,Overheating
113	Circuit 1,Discharge T° Compressor 3,Overheating
114	Circuit 1,Compressor(s),Electrical Failure
115	Circuit 1,Safety High Pressure,Cut Off
116	Circuit 1,Reversing Valve,Blocked
117	Circuit 1, Safety Low Pressure,Cut Off
118	Circuit 1,Water Evaporator,Risk Of Frosting
121	Circuit 1,Evaporator Superheat,Too High
122	Circuit 1,Evaporator Superheat,Too Low
123	Circuit 1,Condenser Subcooling,Too High
124	Circuit 1,Condenser Subcooling,Too Low
127	Circuit 1,MOP,Maximum Operating Pressure
128	Circuit 1,LOP,Low Operating Pressure
129	Circuit 1,Condenser T°,Too High
131	Circuit 1,EEV Valve,Not Closed
132	Circuit 1,EEV Motor,Failure
141	Circuit 1,High Pressure,Faulty Sensor
142	Circuit 1,Low Presure,Faulty Sensor
143	Circuit 1,Liquid T°,Faulty Probe
144	Circuit 1,Suction T°,Faulty Probe
145	Circuit 1,Discharge T° Compressor 1,Faulty Probe
146	Circuit 1,Discharge T° Compressor 2,Faulty Probe
147	Circuit 1,Discharge T° Compressor 3,Faulty Probe
148	Circuit 1,Water Condenser Inlet T°,Faulty Probe
149	Circuit 1,Water Condenser Outlet T°,Faulty Probe
202	Circuit 2,Condenser Fan Electrical Failure
203	Circuit 2,Condenser Inverter Electrical Failure
210	Circuit 2,Leak Refrigerant Detected
211	Circuit 2,Discharge T° Compressor 2, Overheating
212	Circuit 2,Discharge T° Compressor 2, Overheating
213	Circuit 2,Discharge T° Compressor 3, Overheating
214	Circuit 2,Compressor, Electrical Failure
215	Circuit 2,High Pressure Cut Off
216	Circuit 2,Reversing Valve, Blocked
217	Circuit 2, Safety Low Pressure,Cut Off
218	Circuit 2,Evaporator, Risk Of Frosting
219	Circuit 2,Low Condensing T°
221	Circuit 2,Evaporator Superheat Too High
222	Circuit 2,Evaporator Superheat Too Low
223	Circuit 2,Condenser Subcooling Too High
224	Circuit 2,Condenser Subcooling Too Low

CODE	DESCRIPTION
227	Circuit 2,MOP, Maximum Operating Pressure
228	Circuit 2,LOP,Low Operating Pressure
229	Circuit 2,High Condensing T°
231	Circuit 2,EEV, Valve Not Closed
232	Circuit 2,EEV, Motor
241	Circuit 2,High Pressure, Faulty Sensor
242	Circuit 2,Low Presure, Faulty Sensor
243	Circuit 2,Liquid T°, Faulty Probe
244	Circuit 2,Suction T°, Faulty Probe
245	Circuit 2,Discharge T°, Compressor 2, Faulty Probe
246	Circuit 2,Discharge T°, Compressor 2, Faulty Probe
247	Circuit 2,Discharge T°, Compressor 3, Faulty Probe
248	Circuit 2,Water Condensing Inlet T°, Faulty Probe
249	Circuit 2,Water Condensing Outlet T°, Faulty Probe

ALARM 001:
WATER EVAPORATOR, FLOW SWITCH CUT OFF

Description
The flow switch has detected a low water flow rate in the evaporator heat exchanger for more than 5 seconds whereas the unit was enable.

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 except if a trip is still present during 1 hour, and are automatically reset every day at 6 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(s) connections,
• Check the flow switch connections,
• Clean the water filter,
• Check the flow switch 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 5 seconds whereas the unit was enabling.

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 except if a trip is still present during 1 hour, and are automatically reset every day at 6 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 021, 022, 023, 024:
WATER EVAPORATOR, OUT OF RANGE

Description

The water evaporator temperature (inlet or outlet) measured by the probe is outside of the permitted range. This operating range can vary according to the presence or not of glycol with the chilled water.
• Alarm 021: the outlet water temperature is higher than the safety limit setting (**3274**) in heating mode,
• Alarm 022: the outlet water temperature is lower than the safety limit setting (**3271**) in cooling mode,
• Alarm 023: the inlet water temperature is higher than the safety limit setting (**3272**) in cooling mode,
• Alarm 024: the inlet water temperature is lower than the safety limit setting (**3273**) in heating mode.

Action

Immediate shut down of the complete unit. The alarm is signalling 5 min after if the water evaporator temperature is still out of the permitted range.

Reset

The alarm is automatically deleted once the temperature has reached the permitted operating range for 2 min. After a change over mode (cool / heat), these alarms are disabled during 15 min.

Possible cause(s)
• Temperature probe failed
• Problem with wiring of probe.

Remedies
• Replace probe
• Check the connections of the probe.

ALARM 025, 026, 027, 028:
WATER CONDENSER, OUT OF RANGE

Description

The water condenser temperature (Inlet or Outlet) measured by the probe is outside of the permitted range.
• Alarm 025: the outlet water temperature is higher than the safety limit setting (**3574**) in heating mode,
• Alarm 026: the outlet water temperature is lower than the safety limit setting (**3571**) in cooling mode,
• Alarm 027: the inlet water temperature is higher than the safety limit setting (**3572**) in cooling mode,
• Alarm 028: the inlet water temperature is lower than the safety limit setting (**3573**) in heating mode.

Action

Immediate shut down of the complete unit. The alarm is signalling 5 min after if the condenser temperature is still out of range.

Reset

The alarm is automatically deleted once the temperature has reached the permitted operating range for 2 min. After a change over mode, these alarms are reset during 15 min.

Possible cause(s)
• Problem with wiring of probe,
• Temperature probe failed.

Remedies
• Check the connections of the probe,
• Replace probe.

ALARM 034:
**ELECTRICAL BOX, AIR TEMPERATURE TOO HIGH**

Description
The air temperature measured by the probe placed in the electrical box is too high. This alarm is managed only on NEOSYS™ units.

Action
If the inside temperature is higher than 62.0°C for at least 5 min, one circuit is stopped.
If the inside temperature is higher than 65.0°C, for at least 5 min, the two circuits are stopped.
The alarm is signalling if one of the two limits is reached.
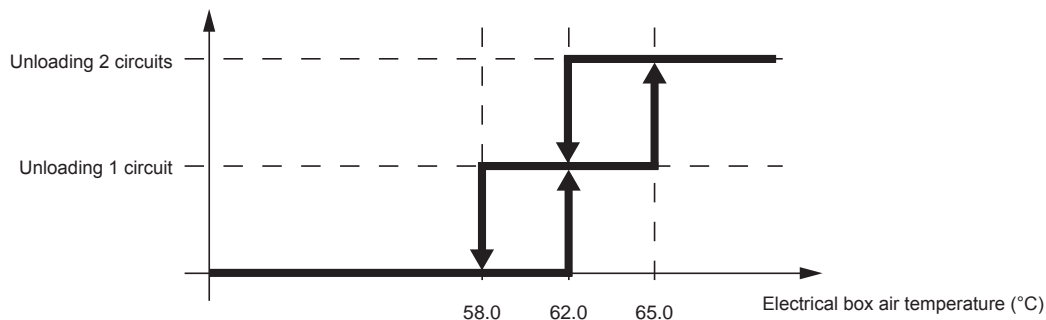
Reset
The trip is automatically cleared once the temperature has reached the permitted operating range for 2 min (58.0°C).

Possible cause(s)
• Temperature probe failed,
• Problem with wiring of probe,
• Inside air fan blower not operating,
• Inside air fan thermostat not operating or wrong adjusted.

Remedies
• Replace probe,
• Check the connections of the probe,
• Check the air fan blower,
• Check the air fan thermostat.

ALARM 041, 042:
PUMP EVAPORATOR, ELECTRICAL FAILURE

Description
The thermal magnetic circuit breaker protection of the evaporator pump 1 or 2 has tripped for 5 s, whereas the pump was in demand for at least 5 s.
• Alarm 41: thermal magnetic circuit breaker protection of the pump 1,
• Alarm 42: thermal magnetic circuit breaker protection of the pump 2.

Action
Case of single pump:
• Immediate shut down of the pump and the unit.
• The alarm is signalling.

Case of double pump:
• Immediate shut down of the current pump and the compressor(s).
• Time delay of 30 s,
• Start the second pump if possible (refers to the "PUMP EVAPORATOR MANAGEMENT" paragraph)
• The alarm is signalling.

Reset
These alarms are manually reset.

Possible cause(s)
• Problem with wiring connection,
• Circuit breaker wrong adjusted.

Remedies
• Check the pump(s) connections,
• Adjust the circuit breaker.

ALARM 043, 044:
PUMP CONDENSER, ELECTRICAL FAILURE

Description
The thermal magnetic circuit breaker protection of the condenser pump 1 or 2 has tripped for 5 s, whereas the pump was in demand for at least 5 s.
• Alarm 43: thermal magnetic circuit breaker protection of the pump 1,
• Alarm 44: thermal magnetic circuit breaker protection of the pump 2.

Action
Case of single pump:
• Immediate shut down of the pump and the unit.
• The alarm is signalling.

Case of double pump:
• Immediate shut down of the current pump and the compressor(s).
• Time delay of 30 s,
• Start the second pump if possible (refers to the "PUMP CONDENSER MANAGEMENT" paragraph)
• The alarm is signalling.

Reset
These alarms are manually reset.

Possible cause(s)
• Problem with wiring connection,
• Circuit breaker wrong adjusted.

Remedies
• Check the pump(s) connections,
• Adjust the circuit breaker.

ALARM 045, 046:
PUMP EVAPORATOR, FAULTY PRESSURE SENSOR

Description
The evaporator water pressure (in or out) measured by the sensor is outside of the permitted range. This alarm is managed only if the "evaporator variable flow" option is selected.
• Alarm 45: water evaporator pressure sensor IN faulty,
• Alarm 46: water evaporator pressure sensor OUT faulty.

Action
• Immediate shut down of the pump and the unit.
• The alarm is signalling.

Reset
Once the CLIMATIC™ 60 has read correct pressure values 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 during 1 hour, and are automatically reset every day at 6 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 047, 048:
PUMP CONDENSER, FAULTY PRESSURE SENSOR

Description
The water pressure of the condenser pump (in or out) measured by the sensor is outside of the permitted range. This alarm is managed only when the condenser variable flow option is selected.
• Alarm 47: water condenser pressure sensor IN faulty,
• Alarm 48: water condenser pressure sensor OUT faulty.

Action
• Immediate shut down of the pump and the unit.
• The alarm is signalling.

Reset
Once the CLIMATIC™ 60 has read correct pressure values 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 during 1 hour, and are automatically reset every day at 6 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 061, 062, 063, 064, 065, 066, 067, 068:
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 → 68: slave CLIMATIC™ 60 board n°2 → 8 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 except if a trip is still present during 1 hour, and are automatically 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 if out of order or wrongly placed.
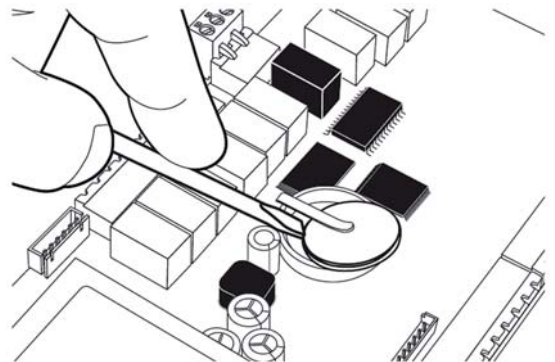
Action
The alarm is signalling.

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. 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 except if a trip is still present during 1 hour, and are automatically 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,
• 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, 077, 078:
INVERTER LINK, FAILURE

Description
The link between the inverter and the CLIMATIC™ 60 has been disconnected for 5 s.
• Alarm 073: the evaporator pump inverter is disconnected from the CLIMATIC™ 60,
• Alarm 074: the condenser pump 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,
• Alarm 077: the condenser fan inverter of circuit 1/2 is disconnected from the CLIMATIC™ 60,
• Alarm 078: the condenser fan inverter of the freecooling 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 ircuit 2. The alarm is signalling,
• Alarm 077: doesn't stop circuit 1 or 2. The alarm is signalling,
• Alarm 078: doesn't stop the unit. The alarm is signalling.

Reset
Once the communication is re-established for 2 minutes, 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 except if a trip is still present during 1 hour, and are automatically 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,
• Wrong inverter address,
• Inverter damaged.

Remedies
• Check the wiring connections,
• Check the inverter address,
• Replace the inverter.

ALARM 081, 083, 085, 089, 090, 141, 142, 143, 144, 145, 146, 148, 149, 241, 242, 243, 244, 245, 246, 248, 249: 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 5 s.

- Alarm 081: the inlet water evaporator temperature probe value is incorrect,
- Alarm 083: the outside air temperature probe value is incorrect,
- Alarm 085: the outlet water evaporator temperature probe value is incorrect,
- Alarm 089: the inside electrical box air temperature probe value is incorrect,
- Alarm 090: the inlet freecooling water temperature probe value is incorrect,
- Alarm 141: the high pressure sensor value on circuit 1 is incorrect,
- Alarm 142: the low pressure sensor value on circuit 1 is incorrect,
- Alarm 143: the liquid temperature probe value on circuit 1 is incorrect,
- Alarm 144: the suction temperature probe value on circuit 1 is incorrect,
- Alarm 145: the discharge temperature probe value on circuit 1 – compressor 1 is incorrect,
- Alarm 146: the discharge temperature probe value on circuit 1 – compressor 2 is incorrect,
- Alarm 148: the inlet water condenser temperature probe value on circuit 1 is incorrect,
- Alarm 149: the outlet water condenser temperature probe value on circuit 1 is incorrect,
- Alarm 241: the high pressure sensor value on circuit 2 is incorrect,
- Alarm 242: the low pressure sensor value on circuit 2 is incorrect,
- Alarm 243: the liquid temperature probe value on circuit 2 is incorrect,
- Alarm 244: the suction temperature probe value on circuit 2 is incorrect,
- Alarm 245: the discharge temperature probe value on circuit 2 – compressor 1 is incorrect,
- Alarm 246: the discharge temperature probe value on circuit 2 – compressor 2 is incorrect,
- Alarm 248: the inlet water condenser temperature probe value on circuit 2 is incorrect,
- Alarm 249: the outlet water condenser temperature probe value on circuit 2 is incorrect.

Action

- Alarm 081: immediate shut down of the complete unit. The alarm is signalling,
- Alarm 083: immediate shut down of the complete unit. The alarm is signalling,
- Alarm 085: immediate shut down of the complete unit. The alarm is signalling,
- Alarm 089: doesn't stop the unit. The alarm is signalling,
- Alarm 090: doesn't stop the unit. The alarm is signalling.
- Alarm 141: immediate shut down of circuit 1. The alarm is signalling,
- Alarm 142: immediate shut down of circuit 1. The alarm is signalling,
- Alarm 143: immediate shut down of circuit 1. The alarm is signalling,
- Alarm 144: immediate shut down of circuit 1. The alarm is signalling,
- Alarm 145: immediate shut down of circuit 1. The alarm is signalling,
- Alarm 146: immediate shut down of circuit 1. The alarm is signalling,
- Alarm 148: immediate shut down of circuits 1 and 2, only if there is one condenser for both circuits,
- Alarm 149: immediate shut down of circuits 1 and 2, only if there is one condenser for both circuits,
- Alarm 241: immediate shut down of circuit 2. The alarm is signalling,
- Alarm 242: immediate shut down of circuit 2. The alarm is signalling,
- Alarm 243: immediate shut down of circuit 2. The alarm is signalling,
- Alarm 244: immediate shut down of circuit 2. The alarm is signalling,
- Alarm 245: immediate shut down of circuit 2. The alarm is signalling,
- Alarm 246: immediate shut down of circuit 2. The alarm is signalling,
- Alarm 248: immediate shut down of circuit 2. The alarm is signalling,
- Alarm 249: immediate shut down of circuit 2. 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 except if a trip is still present during 1 hour, and are automatically reset every day at 6 am. The third trip activates the fault report and must be manually reset.

Possible cause(s)

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

Remedies

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

ALARM 102, 104, 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 104: thermal motor protection of the condenser fan on circuit 1/2,
• Alarm 202: thermal motor protection of the condenser fan on circuit 2.

Action

• Alarm 102: immediate shut down of the circuit 1. The alarm is signalling,
• Alarm 104: immediate shut down of the common fans of the circuits 1 & 2. The two circuits still running with the rest of the fans available. The alarm is signalling,
• Alarm 202: immediate shut down of the circuit 2. The alarm is signalling.

Reset

Once the data read is coherent for 2 minutes, 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 except if a trip is still present during 1 hour, and are automatically reset every day at 6 am. The sixth 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 049, 050, 054, 103, 105, 203:
PUMP OR FAN INVERTER, FAILURE

Description
The CLIMATIC™ 60 has detected an alarm on the pump inverter or the fan inverter.
• Alarm 049: inverter failure of the evaporator pump,
• Alarm 050: inverter failure of the condenser pump,
• Alarm 054: inverter failure of the freecooling fan,
• Alarm 103: inverter failure of the condenser fan on circuit 1,
• Alarm 105: inverter failure of the condenser fan on circuit 1/2,
• Alarm 203: inverter failure of the condenser fan on circuit 2.

Action
• Alarm 049: immediate shut down of the complete unit. The alarm is signalling,
• Alarm 050: immediate shut down of the complete unit. The alarm is signalling,
• Alarm 054: immediate shut down of the freecooling fan. The alarm is signalling,
• Alarm 103: immediate shut down of circuit 1. The alarm is signalling,
• Alarm 105: immediate shut down of circuits 1/2. The alarm is signalling,
• Alarm 203: immediate shut down of circuit 2. The alarm is signalling.

Reset
The alarm is 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 108:
POWER FACTOR CORRECTION, ELECTRICAL FAILURE

Description
The thermal magnetic circuit breaker protection of the capacitors (cos phi) has tripped for 5 s.

Action
The alarm is signalling.

Reset
The alarm is manually reset.

Possible cause(s)
• Problem with wiring connection,
• Circuit breaker wrongly adjusted.

Remedies
• Check the capacitor connection,
• Adjust the circuit breaker.

ALARM 111, 112, 211, 212:
DISCHARGE TEMPERATURE COMPRESSOR, OVERHEATING

Description
The CLIMATIC™ 60 has detected an overheating discharge temperature on the compressor.
- Alarm 111: overheating discharge temperature on circuit 1 – compressor 1,
- Alarm 112: overheating discharge temperature on circuit 1 – compressor 2,
- Alarm 211: overheating discharge temperature on circuit 2 – compressor 1,
- Alarm 212: overheating discharge temperature on circuit 2 – compressor 2.

Action
Immediate shut down of the compressor. The alarm is signalling.

Reset
Once the discharge temperature has reached a permitted operating range for 2 minutes, 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 except if a trip is still present during 1 hour, and are automatically reset every day at 6 am. The sixth trip activates the fault report and must be manually reset.

Possible cause(s)
- Problem of refrigerant capacity,
- Compressor damage.

Remedies
- Check the frigorific operating,
- Replace the compressor.

ALARM 114, 214:
COMPRESSOR, ELECTRICAL FAILURE

Description
The thermal magnetic circuit breaker protection or the thermal motor protection of the compressor has tripped.
- Alarm 114: thermal magnetic circuit breaker open on circuit 1,
- Alarm 214: thermal magnetic circuit breaker open on circuit 2.

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

Reset
The alarm is manually reset.

Possible cause(s)
- Problem with wiring connection,
- Circuit breaker wrongly adjusted,
- Compressor damage.

Remedies
- Check the wiring connection,
- Adjust the circuit breaker,
- Replace the compressor.

<div style="background:#ddd">

ALARM 115, 215:
HIGH PRESSURE, CUT OFF

</div>

Description
The high pressure switch has trip for 5 s while a compressor was running for 10 s.
*   Alarm 115: high pressure cut off on circuit 1,
*   Alarm 215: high pressure cut off on circuit 2.

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 except if a trip is still present during 1 hour, and are automatically reset every day at 6 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.

<div style="background:#ddd">

ALARM 116, 216:
REVERSING VALVE, BLOCKED

</div>

Description
The CLIMATIC™ 60 hasn't measured a difference of pressure of 1 bars for 5 s, while a compressor was running for 60 s.
*   Alarm 116: reversing valve blocked on circuit 1,
*   Alarm 216: reversing valve blocked on circuit 2.

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 during 1 hour, and are automatically reset every day at 6 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:
LOW PRESSURE, CUT OFF

Description
The suction temperature calculated by the LP pressure sensor is lower than the permitted threshold. The temperature has reached -27.0°C (1 minute delayed in heating mode) while a compressor was running for 30 s. The alarm is disable during 1 minute if the defrost procedure is running. In any case if the LP temperature reaches -37.0°C, the circuit is stopped immediately without time delay.
• Alarm 117: suction temperature too low on circuit 1,
• Alarm 217: suction temperature too low on circuit 2.

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 during 1 hour, and are automatically 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.

Remedies
• Check the frigorific operating.

ALARM 118, 218:
WATER EVAPORATOR, RISK OF FROSTING

Description
The suction pressure measured by the LP sensor is too low and may pose a risk for the water evaporator. These alarms are disabled if the unit has electronic expansion valve (EEV) or if the glycol rate is greater than 45%. The LP pressure has reached the limit specified in the setting (**3441**) 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 the setting (**3441**) 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 during 1 hour, and are automatically 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 operating,
• Replace the expansion valve.

ALARM 121, 122, 221, 222:
EVAPORATOR, TEMPERATURE SUPERHEAT OUT OF RANGE

Description

The CLIMATIC™ 60 has detected anormal superheating temperature on the circuit.
- Alarm 121: superheat temperature too high on circuit 1,
- Alarm 122: superheat temperature too low on circuit 1,
- Alarm 221: superheat temperature too high on circuit 2,
- Alarm 222: superheat temperature too low on tcircuit 2.

Action

The circuit is still running. The alarm is signalling.

Reset

The alarm is manually reset.

Possible cause(s)
- Problem of refrigerant capacity
- Problem with the expansion valve.

Remedies
- Check the frigorific operating,
- Replace the expansion valve.

ALARM 123, 124, 223, 224:
CONDENSER, TEMPERATURE SUBCOOLING OUT OF RANGE

Description

The CLIMATIC™ 60 has detected anormal subcooling temperature on the circuit.
- Alarm 123: subcooling temperature too high on circuit 1,
- Alarm 124: subcooling temperature too low on circuit 1,
- Alarm 223: subcooling temperature too high on circuit 2,
- Alarm 224: subcooling temperature too low on circuit 2.

Action

The circuit is still running. The alarm is signalling.

Reset

The alarm is manually reset.

Possible cause(s)
- Problem of refrigerant capacity
- Problem with the expansion valve.

Remedies
- Check the frigorific operating,
- Replace the expansion valve.

ALARM 127, 227:
MOP OPERARTING PRESSURE, FAULTY

Description
The suction pressure measured by the electronic expansion valve driver (EVD) is outside a permitted range.
• Alarm 127: most operating pressure on circuit 1,
• Alarm 227: most operating pressure on circuit 2.

Action
The circuit is still running. The alarm is signalling.

Reset
The alarm is automatically reset.

Possible cause(s)
• Problem of refrigerant capacity

Remedies
• Check the frigorific operating,

ALARM 128, 228:
LOP - LOW OPERARTING PRESSURE, FAULTY

Description
The suction pressure measured by the electronic expansion valve driver (EVD) is outside a permitted range.
• Alarm 128: low operating pressure on circuit 1,
• Alarm 228: low operating pressure on circuit 2.

Action
The circuit is still running. The alarm is signalling.

Reset
The alarm is automatically reset.

Possible cause(s)
• Problem of refrigerant capacity.

Remedies
• Check the frigorific operating.

ALARM 129, 229:
CONDENSING TEMPERATURE, TOO HIGH

Description
The condensing temperature measured by the CLIMATIC™ 60 is too high.
• Alarm 129: high condensing temperature on circuit 1,
• Alarm 229: high condensing temperature on circuit 2.

Action
Immediate shut down of one of the compressor on the circuit (the small one in uneven circuit, or the one which has the higher counter time for even circuit). The alarm is signalling.

Reset
Once the condensing temperature has been enough decrease for 2 minutes, the alarm is automatically reset.

Possible cause(s)
• Problem with wiring connection,
• Coil condenser dirty,
• Fan condenser not operating,
• Outside air temperature too high.

Remedies
• Check the wiring connection,
• Clean the coil condenser,
• Check the fan operating.

CLIMATIC™ 60

AIR COOLED CHILLER

APPENDIX

Ref : CL60-AC CHILLER-IOM-1011-E

APPENDIX 1

Modbus, BACnet, Trend, Carel

@ddress	FORMAT	R/W	DESCRIPTION	MIN	MAX
1	Integer	R/W	Counter enable BMS mode (watchdog)	0	32000
2	Integer	R/W	Setpoint general on/off	0	1
3	Integer	R/W	Setpoint reset alarm / fault	0	1
4	Integer	R/W	Setpoint update clock	0	1
5	Integer	R/W	Setpoint hour	0	23
6	Integer	R/W	Setpoint minute	0	60
7	Integer	R/W	Setpoint day	1	31
8	Integer	R/W	Setpoint month	1	12
9	Integer	R/W	Setpoint year	1	99
10	Integer	R/W	Setpoint reset power meter counter	0	1
11	Integer	R/W	Setpoint override evaporator water setpoint	0	20
12	Integer	R/W	Setpoint override cooling mode	7	20
13	Integer	R/W	Setpoint override heating mode	20	50
14	Integer	R/W	Setpoint override dead zone mode	0	1
15	Integer	R/W	Setpoint override mode BMS	0	1
16	Integer	R/W	Setpoint override mode D	0	1
17	Integer	R/W	Setpoint disable compressor(s) circuit 1	0	1
18	Integer	R/W	Setpoint disable circuit 1 compressor 1	0	1
19	Integer	R/W	Setpoint disable circuit 1 compressor 2	0	1
20	Integer	R/W	Setpoint disable circuit 1 compressor 3	0	1
21	Integer	R/W	Setpoint disable compressor(s) circuit 2	0	1
22	Integer	R/W	Setpoint disable circuit 2 compressor 1	0	1
23	Integer	R/W	Setpoint disable circuit 2 compressor 2	0	1
24	Integer	R/W	Setpoint disable circuit 2 compressor 3	0	1
25	Integer	R/W	Setpoint free relay BM-NO7	0	1
26	Integer	R/W	Setpoint free relay BE-NO1	0	1
27	Integer	R/W	Setpoint free relay BE-NO2	0	1
28	Integer	R/W	Setpoint free relay BE-NO3	0	1
29	Integer	R/W	Setpoint free relay BE-NO4	0	1
30	Integer	R/W	[BMS] Emulation water evaporator T°inlet	-40	80
31	Integer	R/W	[BMS] Emulation water evaporator T°outlet	-40	80
32	Integer	R/W	[BMS] Emulation outside air T°	-40	80
33	Integer	R/W	[BMS] Setpoint water evaporator cool	7	20
34	Integer	R/W	[BMS] Setpoint water evaporator heat	20	50

@ddress	FORMAT	R/W	DESCRIPTION	MIN	MAX
35	Integer	R/W	[BMS] Setpoint changover cool / heat	1	4
36	Integer	R/W	[D] Setpoint changover cool / heat	1	4
37	Integer	R/W	[D] Cooling dynamic setpoint outside air T°1	-10	30
38	Integer	R/W	[D] Cooling dynamic setpoint outside air T°2	-10	30
39	Integer	R/W	[D] Cooling dynamic setpoint water evaporator T°1	7	20
40	Integer	R/W	[D] Cooling dynamic setpoint water evaporator T°2	7	20
41	Integer	R/W	[D] Heating dynamic setpoint outside air T°1	-10	30
42	Integer	R/W	[D] Heating dynamic setpoint outside air T°2	-10	30
43	Integer	R/W	[D] Heating dynamic setpoint water evaporator T°1	20	50
44	Integer	R/W	[D] Heating dynamic setpoint water evaporator T°2	20	50
45	Integer	R/W	[BMS] Setpoint enable compressor(s) circuit 1	0	8
46	Integer	R/W	[BMS] Setpoint enable compressor(s) circuit 2	0	8
47	Integer	R/W	[D] Setpoint enable compressor(s) circuit 1	0	8
48	Integer	R/W	[D] Setpoint enable compressor(s) circuit 2	0	8
49	Integer	R/W	[BMS] Setpoint water evaporator pump(s) mode	0	7
50	Integer	R/W	[D] Setpoint water evaporator pump(s) mode	0	7
51	Integer	R/W	[BMS] Setpoint water condenser pump(s) mode	0	7
52	Integer	R/W	[D] Setpoint water condenser pump(s) mode	0	7
53	Integer	R/W	[BMS] Setpoint fan condenser mode	0	2
54	Integer	R/W	[D] Setpoint fan condenser mode	0	2
55	Integer	R/W	[BMS] Setpoint accoustic noise level	***	***
56	Integer	R/W	[D] Setpoint accoustic noise level	***	***
100	Integer	R	Rolling alarm code	0	32767
101	Integer	R	Alarm code 01 Bit00: Alarm code 61, Bit01: Alarm code 62, Bit02: Alarm code 63, Bit03: Alarm code 64, Bit04: Alarm code 65, Bit05: Alarm code 66, Bit06: Alarm code 67, Bit07: Alarm code 68, Bit08: Alarm code 70, Bit09: Alarm code 71, Bit10: Alarm code 72, Bit11: Alarm code 79, Bit12: Alarm code 80, Bit13: Alarm code 60, Bit14: Alarm code 69, Bit15: Not used.	0	32767

@ddress	FORMAT	R/W	DESCRIPTION	MIN	MAX
102	Integer	R	Alarm code 02 Bit00: Alarm code 98 Bit01: Alarm code 97 Bit02: Alarm code 89 Bit03: Alarm code 34 Bit04: Alarm code 83 Bit05: Not used Bit06: Not used Bit07: Not used Bit08: Not used Bit09: Not used Bit10: Not used Bit11: Not used Bit12: Not used Bit13: Not used Bit14: Not used Bit15: Not used	0	32767
103	Integer	R	Alarm code 03 Bit00: Alarm code 81 Bit01: Alarm code 85 Bit02: Alarm code 23 Bit03: Alarm code 24 Bit04: Alarm code 21 Bit05: Alarm code 22 Bit06: Alarm code 40 Bit07: Alarm code 40 Bit08: Alarm code 1 Bit09: Not used Bit10: Not used Bit11: Not used Bit12: Not used Bit13: Not used Bit14: Not used Bit15: Not used	0	32767
104	Integer	R	Not used	0	32767
105	Integer	R	Alarm code 05 Bit00: Alarm code 41 Bit01: Alarm code 42 Bit02: Alarm code 45 Bit03: Alarm code 46 Bit04: Alarm code 49 Bit05: Alarm code 73 Bit06: Not Used Bit07: Not Used Bit08: Alarm code 43 Bit09: Alarm code 44 Bit10: Alarm code 47 Bit11: Alarm code 48 Bit12: Alarm code 50 Bit13: Alarm code 74 Bit14: Not used Bit15: Not used	0	32767
106	Integer	R	Alarm code 06 Bit00: Alarm code 108 Bit01: Alarm code 90 Bit02: Alarm code 54 Bit03: Alarm code 78 Bit04: Alarm code 10 Bit05: Not Used Bit06: Not Used Bit07: Not Used Bit08: Not Used Bit09: Not Used Bit10: Not Used Bit11: Not Used Bit12: Not Used Bit13: Not Used Bit14: Not used Bit15: Not used	0	32767

@ddress	FORMAT	R/W	DESCRIPTION	MIN	MAX
107	Integer	R	Alarm code 07 Bit00: Alarm code 141, Bit01: Alarm code 142, Bit02: Alarm code 143, Bit03: Alarm code 144, Bit04: Alarm code 145, Bit05: Alarm code 146, Bit06: Alarm code 115, Bit07: Alarm code 117, Bit08: Alarm code 117, Bit09: Alarm code 118, Bit10: Alarm code 110, Bit11: Alarm code 123, Bit12: Alarm code 124, Bit13: Alarm code 121, Bit14: Alarm code 122, Bit15: Alarm code 111/112/113.	0	32767
108	Integer	R	Alarm code 08 Bit00: Alarm code 116, Bit01: Alarm code 114, Bit02: Alarm code 129, Bit03: Alarm code 102, Bit04: Alarm code 103, Bit05: Alarm code 104, Bit06: Alarm code 75, Bit07: Alarm code 132, Bit08: Alarm code 131, Bit09: Alarm code 117, Bit10: Alarm code 127, Bit11: Alarm general circuit 1, Bit12: Not Used, Bit13: Not Used, Bit14: Not used, Bit15: Not used.	0	32767
109	Integer	R	Alarm code 09 Bit00: Alarm code 241, Bit01: Alarm code 242, Bit02: Alarm code 243, Bit03: Alarm code 244, Bit04: Alarm code 245, Bit05: Alarm code 246, Bit06: Alarm code 215, Bit07: Alarm code 217, Bit08: Alarm code 217, Bit09: Alarm code 218, Bit10: Alarm code 210, Bit11: Alarm code 223, Bit12: Alarm code 224, Bit13: Alarm code 221, Bit14: Alarm code 222, Bit15: Alarm code 211/112/113.	0	32767
110	Integer	R	Alarm code 10 Bit00: Alarm code 216, Bit01: Alarm code 214, Bit02: Alarm code 229, Bit03: Alarm code 202, Bit04: Alarm code 203, Bit05: Alarm code 204, Bit06: Alarm code 75, Bit07: Alarm code 232, Bit08: Alarm code 231, Bit09: Alarm code 217, Bit10: Alarm code 227, Bit11: Alarm general circuit 2, Bit12: Not Used, Bit13: Not Used, Bit14: Not used, Bit15: Not used.	0	32767

@ddress	FORMAT	R/W	DESCRIPTION	MIN	MAX
111	Integer	R	Alarm code 11 Bit00: Alarm code 105 Bit01: Alarm code 106 Bit02: Alarm code 107 Bit03: Alarm code 77 Bit04: Not Used Bit05: Not Used Bit06: Not Used Bit07: Not Used Bit08: Not Used Bit09: Not Used Bit10: Not Used Bit11: Not Used Bit12: Not Used Bit13: Not Used Bit14: Not used Bit15: Not used	0	32767
112	Integer	R	Power meter, power active	0	32767
113	Integer	R	Power meter, power reactive	0	32767
114	Integer	R	Power meter, power factor	0	32767
115	Integer	R	Power meter, energy active (LSB)	0	32767
116	Integer	R	Power meter, energy active (MSB)	0	32767
117	Integer	R	Power meter, energy reactive (LSB)	0	32767
118	Integer	R	Power meter, energy reactive (MSB)	0	32767
119	Integer	R	Free NTC T°BE-BE1	-99,9	99,9
120	Integer	R	Free NTC T°BE-BE2	-99,9	99,9
121	Integer	R	Free NTC T°BE-BE3	-99,9	99,9
122	Integer	R	Free NTC T°BE-BE4	-99,9	99,9
123	Integer	R	Outside air T°	-99,9	99,9
124	Integer	R	Water evaporator T°inlet	-99,9	99,9
125	Integer	R	Water evaporator T°outlet	-99,9	99,9
126	Integer	R	Water evaporator setpoint applied in cooling	-99,9	99,9
127	Integer	R	Water evaporator setpoint applied in heating	-99,9	99,9
128	Integer	R	Output alarm / fault	0	1
129	Integer	R	Output evaporator pump 1	0	1
130	Integer	R	Output evaporator pump 2	0	1
131	Integer	R	Output condenser pump 1	0	1
132	Integer	R	Output condenser pump 2	0	1
133	Integer	R	Output circuit 1 compresseur 1	0	1
134	Integer	R	Output circuit 1 compresseur 2	0	1
135	Integer	R	Output circuit 1 compresseur 3	0	1
136	Integer	R	Output circuit 2 compresseur 1	0	1
137	Integer	R	Output circuit 2 compresseur 2	0	1

@ddress	FORMAT	R/W	DESCRIPTION	MIN	MAX
138	Integer	R	Output circuit 2 compresseur 3	0	1
139	Integer	R	Output reversing valve 1	0	1
140	Integer	R	Output reversing valve 2	0	1
141	Integer	R	Status condenser fan circuit 1	0	1
142	Integer	R	Status condenser fan circuit 2	0	1
143	Integer	R	Output electrical heater	0	1
144	Integer	R	Output electrical heater 1	0	1
145	Integer	R	Output electrical heater 2	0	1
146	Integer	R	Output electrical heater 3	0	1
147	Integer	R	Output electrical heater 4	0	1
148	Integer	R	Free input BM-ID4	0	1
149	Integer	R	Free input BM-ID7	0	1
150	Integer	R	Free input BE-ID1	0	1
151	Integer	R	Free input BE-ID2	0	1
152	Integer	R	Free input BE-ID3	0	1
153	Integer	R	Free input BE-ID4	0	1
154	Integer	R	Status unit in mode cooling	0	1
155	Integer	R	Status unit in mode heating	0	1
156	Integer	R	Status unit in mode dead zone	0	1
157	Integer	R	Status unit enable	0	1
158	Integer	R	Status unit available	0	1
159	Integer	R	Status unit running (compressor(s) ON)	0	1
160	Integer	R	Status unit full running (100%)	0	1
161	Integer	R	Water evaporator actual flow meter	0	32767
162	Integer	R	Hour counter evaporator pump 1 (LSB)	0	9999
163	Integer	R	Hour counter evaporator pump 1 (MSB)	0	9999
164	Integer	R	Hour counter evaporator pump 2 (LSB)	0	9999
165	Integer	R	Hour counter evaporator pump 2 (MSB)	0	9999
166	Integer	R	Hour counter condenser pump 1 (LSB)	0	9999
167	Integer	R	Hour counter condenser pump 1 (MSB)	0	9999
168	Integer	R	Hour counter condenser pump 2 (LSB)	0	9999
169	Integer	R	Hour counter condenser pump 2 (MSB)	0	9999
170	Integer	R	Hour counter circuit 1 compressor 1 (LSB)	0	9999
171	Integer	R	Hour counter circuit 1 compressor 1 (MSB)	0	9999

@ddress	FORMAT	R/W	DESCRIPTION	MIN	MAX
172	Integer	R	Hour counter circuit 1 compressor 2 (LSB)	0	9999
173	Integer	R	Hour counter circuit 1 compressor 2 (MSB)	0	9999
174	Integer	R	Hour counter circuit 1 compressor 3 (LSB)	0	9999
175	Integer	R	Hour counter circuit 1 compressor 3 (MSB)	0	9999
176	Integer	R	Hour counter circuit 2 compressor 1 (LSB)	0	9999
177	Integer	R	Hour counter circuit 2 compressor 1 (MSB)	0	9999
178	Integer	R	Hour counter circuit 2 compressor 2 (LSB)	0	9999
179	Integer	R	Hour counter circuit 2 compressor 2 (MSB)	0	9999
180	Integer	R	Hour counter circuit 2 compressor 3 (LSB)	0	9999
181	Integer	R	Hour counter circuit 2 compressor 3 (MSB)	0	9999

Min	Minimum value		**Max**	Maximum

APPENDIX 2
BMS lonworks table

DESCRIPTION	R/W	INDEX	NV-NAME	NV-TYPE	NV-CODE	FORMAT	MIN	MAX	DEFAULT
Counter enable BMS mode (watchdog)	R/W	1	Sp_Bms_Watchd	SNVT_Count	8	Integer	0	32000	0
Setpoint general on/off	R/W	2	Sp_Unit_OnOff	SNVT_Count	8	Integer	0	1	0
Setpoint reset alarm / fault	R/W	3	Sp_Unit_Alarm	SNVT_Count	8	Integer	0	1	0
Setpoint reset power meter counter	R/W	4	Sp_PMC_Cnt_Cl	SNVT_Count	8	Integer	0	1	0
Setpoint override evaporator water setpoint	R/W	5	Sp_Bms_Water_	SNVT_temp_p	105	Integer	7	20	7
Setpoint override cooling mode	R/W	6	Sp_Bms_ChOv_C	SNVT_Count	8	Integer	0	1	7
Setpoint override heating mode	R/W	7	Sp_Bms_ChOv_H	SNVT_Count	8	Integer	0	1	45
Setpoint override dead zone mode	R/W	8	Sp_Bms_ChOv_D	SNVT_Count	8	Integer	0	1	0
Setpoint override mode BMS	R/W	9	Sp_Bms_SchBms	SNVT_Count	8	Integer	0	1	0
Setpoint override mode D	R/W	10	Sp_Bms_SchD	SNVT_Count	8	Integer	0	1	0
[BMS] Setpoint water evaporator cool	R/W	11	Sp_EWCB_1	SNVT_temp_p	105	Integer	7	20	0
[BMS] Setpoint water evaporator heat	R/W	12	Sp_EWHB_1	SNVT_temp_p	105	Integer	20	50	0
[BMS] Setpoint fan condenser mode	R/W	13	Sp_CFAMB	SNVT_Count	8	Integer	0	2	0
[D] Setpoint fan condenser mode	R/W	14	Sp_CFAMD	SNVT_Count	8	Integer	0	2	0
[BMS] Setpoint accoustic noise level	R/W	15	Sp_CFANB	SNVT_Count	8	Integer	***	***	0
[D] Setpoint accoustic noise level	R/W	16	Sp_CFAND	SNVT_Count	8	Integer	***	***	0

DESCRIPTION	R/W	INDEX	NV-NAME	NV-TYPE	NV-CODE	FORMAT	MIN	MAX	DEFAULT
Rolling alarm code	R	17	Alm_Rol_Code	SNVT_Count	8	Integer	0	32767	0
Alarm code 1	R	18	BMS_AC01	SNVT_Count	8	Integer	0	32767	0
Alarm code 2	R	19	BMS_AC02	SNVT_Count	8	Integer	0	32767	0
Alarm code 3	R	20	BMS_AC03	SNVT_Count	8	Integer	0	32767	0
Alarm code 4	R	21	BMS_AC04	SNVT_Count	8	Integer	0	32767	0
Alarm code 5	R	22	BMS_AC05	SNVT_Count	8	Integer	0	32767	0
Alarm code 6	R	23	BMS_AC06	SNVT_Count	8	Integer	0	32767	0
Alarm code 7	R	24	BMS_AC07	SNVT_Count	8	Integer	0	32767	0
Alarm code 8	R	25	BMS_AC08	SNVT_Count	8	Integer	0	32767	0
Alarm code 9	R	26	BMS_AC09	SNVT_Count	8	Integer	0	32767	0
Alarm code 10	R	27	BMS_AC10	SNVT_Count	8	Integer	0	32767	0
Alarm code 11	R	28	BMS_AC11	SNVT_Count	8	Integer	0	32767	0
Power meter, power active	R	29	PMC_PP	SNVT_Count	8	Integer	0	32767	0
Power meter, power reactive	R	30	PMC_PQ	SNVT_Count	8	Integer	0	32767	0
Power meter, power factor	R	31	PMC_FP	SNVT_Count	8	Integer	0	32767	0
Power meter, energy active (LSB)	R	32	PMC_EPL	SNVT_Count	8	Integer	0	32767	0
Power meter, energy active (MSB)	R	33	PMC_EPH	SNVT_Count	8	Integer	0	32767	0
Power meter, energy reactive (LSB)	R	34	PMC_EQL	SNVT_Count	8	Integer	0	32767	0
Power meter, energy reactive (MSB)	R	35	PMC_EQH	SNVT_Count	8	Integer	0	32767	0
Outside air T°	R	36	Air_T_Outside	SNVT_temp_p	105	Integer	-99,9	99,9	0
Water evaporator T°inlet	R	37	Evap_T_Inlet	SNVT_temp_p	105	Integer	-99,9	99,9	0
Water evaporator T°outlet	R	38	Evap_T_Outlet	SNVT_temp_p	105	Integer	-99,9	99,9	0
Water evaporator setpoint applied in cooling	R	39	Evap_T_WSC	SNVT_temp_p	105	Integer	7	20	0
Water evaporator setpoint applied in heating	R	40	Evap_T_WSH	SNVT_temp_p	105	Integer	20	50	0

www.lennoxeurope.com

SALES OFFICES :

BELGIUM AND LUXEMBOURG
☎   + 32 3 633 3045

FRANCE
☎   +33 1 64 76 23 23

GERMANY
☎   +49 (0) 6071 3915919

ITALY
☎   + 39 02 495 26 200

NETHERLANDS
☎   + 31 332 471 800

POLAND
☎   +48 22 58 48 610

PORTUGAL
☎   +351 229 066 050

RUSSIA
☎   +7 495 626 56 53

SPAIN
☎   +34 902 533 920

UKRAINE
☎   +380 44 461 87 79

UNITED KINGDOM AND IRELAND
☎   +44 1604 669 100

OTHER COUNTRIES :

LENNOX DISTRIBUTION
☎   +33 4 72 23 20 00