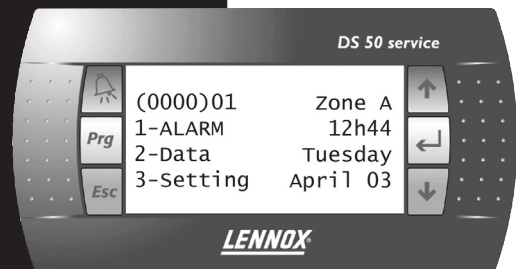
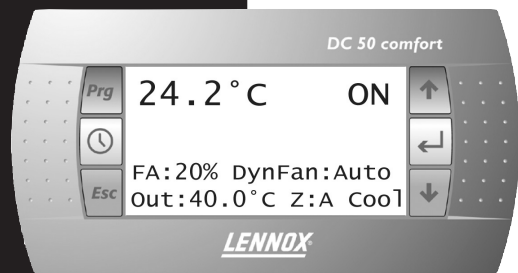


# CLIMATIC™ 50

## USER MANUAL



PROVIDING GLOBAL SYSTEM SOLUTIONS

**CHILLERS**



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## **INTRODUCTION**

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### **CLIMATIC™50**

The new generation of microprocessor based control, CLIMATIC™ 50 may be fitted to the Lennox chiller range. It inherits 15 years of technology and field operating experience from its predecessors the CLIMATIC™1 and CLIMATIC™ 2.

LENNOX has found the latest hardware technology available on the market place and developed a software specifically designed for water chiller applications, maximising the LENNOX units efficiency and performance.

# WIRING CONNECTIONS AND COMMUNICATIONS

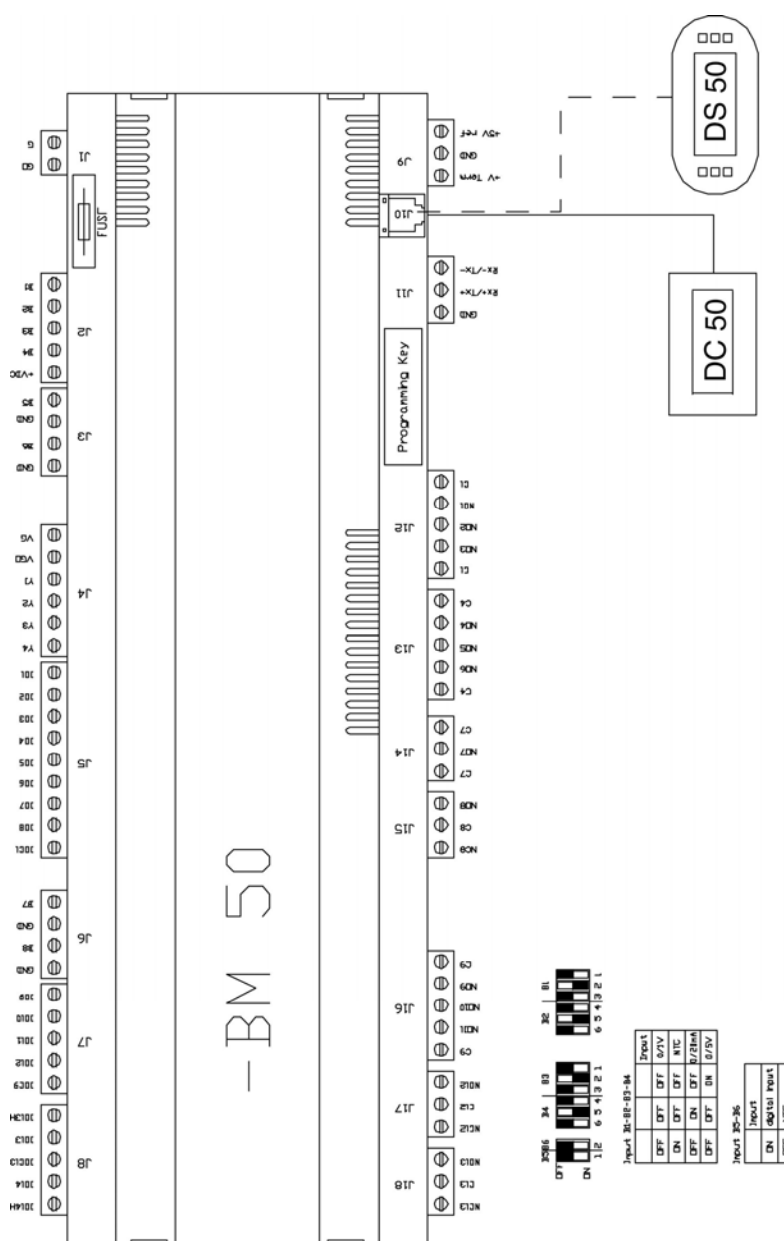
## IMPORTANT WARNING

Any wiring modification on the CLIMATIC 50 must be done by Lennox technician or employees having valid electrical qualification and authorisation.

For any modification of wiring on the 24V supply or on 4-20mA sensor, check the polarity prior to apply the power. Wrong polarity may cause serious damage and destroy the Plan network. Lennox will not accept liability for damage caused by wrong power connection or any wiring modification done by people without valid training and qualifications.

## CONNECTION DIAGRAM

### CLIMATIC™ 50 CONTROLLER

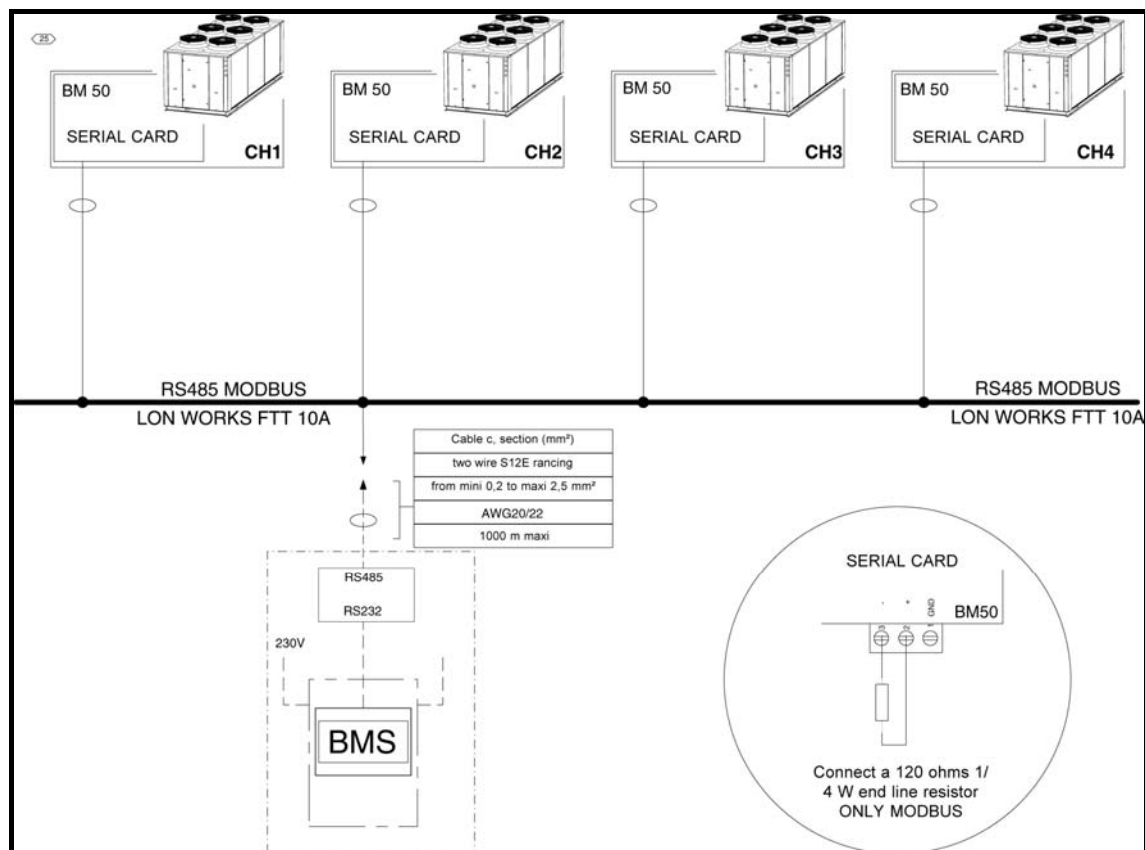




# WIRING CONNECTIONS AND COMMUNICATIONS

## COMMUNICATION

### BMS



## Function

This is used to link a Climatic to a BMS network for remote control of the unit.

## Description

The Climatic 50 can communicate according to various protocols:

1. Climatic protocol for connection with KP06 (see specific KP06 manual) or other Lennox communication products (3932 = Climatic)
2. MODBUS Protocol (3932 = Modbus)
3. LONWORKS system (3932 = LonWorks)

MODBUS and LONWORKS address table are given at the end of this manual.

The identification number of each unit can be set (3931) and the communication speed is adjustable between 1200Bds and 19200Bds (3933).

### MODBUS protocol

For this option the BM50 must be equipped with the board, PCO1004850

This card is used to interface BM50 to an RS485 network.

The card guarantees the optical isolation of the controller from the RS485 serial network.

On the Climatic, set point 3932 = ModBus

Transmission Mode = RTU  
 Baud Rate = set point 3933 (1200 / 2400 / 4800 / 9600 / 19200)  
 Word Length = 8  
 Parity = NONE  
 Stop Bits = 2

Device Id = set point 3931 (1 to 200)

### **LONWORKS protocol**

For this option the BM50 must be equipped with the board, *PCO10000F0*  
 This card is used to interface BM50 to a LonWorks® network, by FTT-10A 78 kbs (TP/FT-10).

On the Climatic, set point 3932 = LonWorks

Baud Rate = set point 3933 (4800)

Device Id = set point 3931 (1 to 200)

## **Application**

Normally the Climatic work on its calendar zones of operation (Zone A, B, C, Unoccupied).

**Warning:** The points in writing received from the BMS are taken into account by Climatic only if mode BMS is activated ("Watchdog", address 3934)

The BMS mode is activated if the watchdog is different from zero (DS50 address 3934, Modbus analogical item1, Lonworks address I\_Sp\_BMS\_Dog).

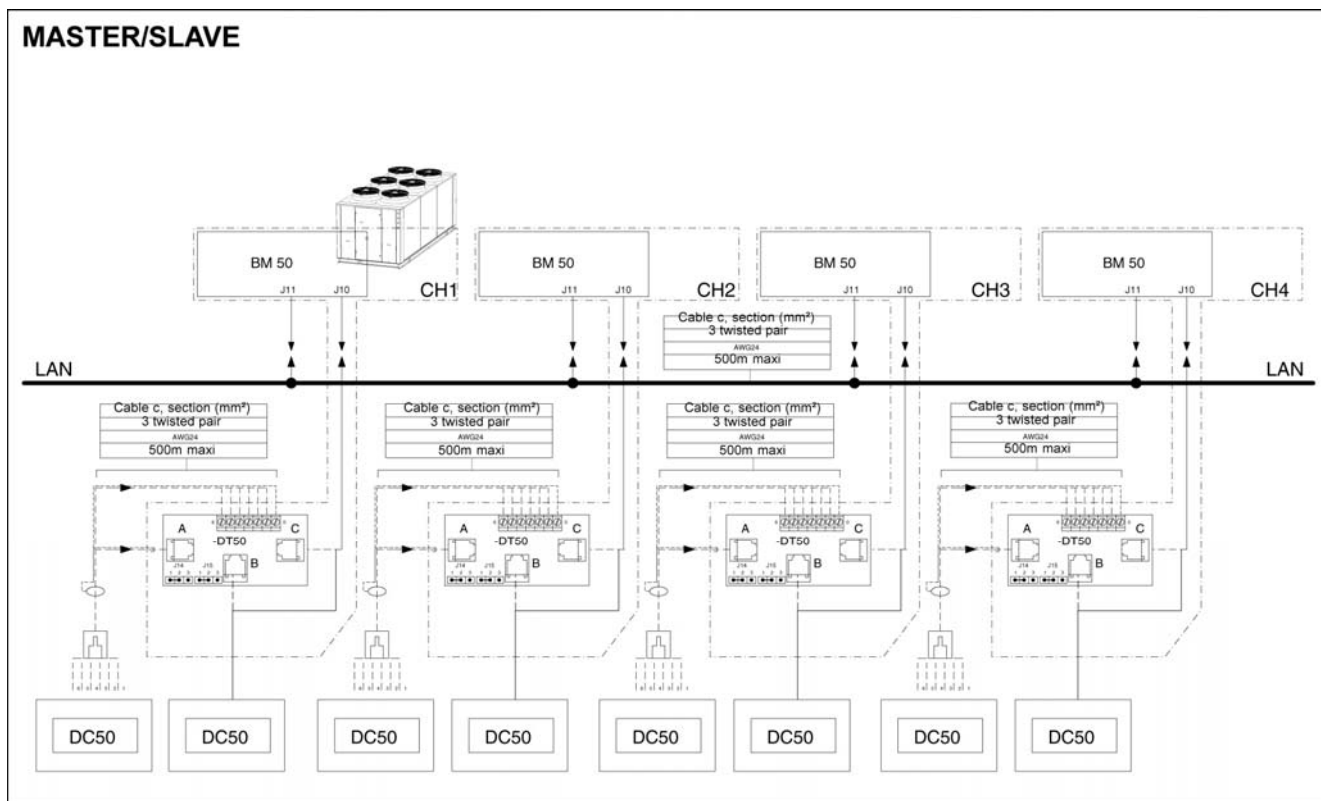
Every second, the Climatic 50 decreases the value of this address by 1. If this address reaches zero, then the Climatic 50 works as a stand alone unit in order to check continuously the communication with BMS. Normally, the BMS has to send a value to this address regularly (example 255 every 4 mn).



# WIRING CONNECTIONS AND COMMUNICATIONS

## COMMUNICATION

### MASTER/SLAVE



### Function

Link several units in order to allow a “Master/Slave” relationship in between each units

### Description

Two modes are available and can be set up using following set points:

- 3922 → number of units linked (maximum 4)
- 3923 → Operation mode (see hereunder)

- Back-up mode

One unit is the back-up unit and will operate if any of the other units has a failure.

- Rolling Back-up mode

Same as above, except the "back-up" unit will be different each Tuesday.

For both modes, the outlet water temperature (set point 3924) and the outside air temperature (set point 3925) used for regulation can be set by using following calculation:

- Not used → Each unit regulate with its own sensors
- M/S Temp → Slaves units are using Master sensor for regulation
- M/S Aver → All units connected are using the sensors average values for regulation

In every mode, for the management of safety, each unit remains independents.

## LAN configuration

On the LAN network, each unit needs to be addressed:

- Unit n°1 → Master unit
- Unit n°2 to 4 → Slave units

For the configuration of each unit address on the LAN network, refer to DS50 Service display chapter. Page 53 and above

Each DC 50 has to be addressed to its correspondent unit. In order to do so, please refer to DC50 Comfort Display page 43 and above.

Both operations must be done without network connection (connector J11 on BM50).

If a unit has electronic expansion valves, the driver address must be corrected as explained in the correspondent chapter page 20 and above.

## SCHEDULING

### Function

Controlling operation of the unit according to the time and day

### Description

CLIMATIC™ 50 can handle 4 time zones over the 7 days of the week:

- Zone unoccupied
- Zone A
- Zone B
- Zone C

Starting time (hours and minutes) of each of these zones for each days of the week, can be set using menus 3211 to 3214, (press PROG key to change day).

3211 → Starting time Unoccupied Zone (hour,minute)

3212 → Starting time Zone A (hour,minute)

3213 → Starting time Zone B (hour,minute)

3214 → Starting time Zone C (hour,minute)

|           | 8h00       | 12h00 | 14h00 | 20h00 |            |
|-----------|------------|-------|-------|-------|------------|
| Monday    | Unoccupied | ZA    | ZB    | ZC    | Unoccupied |
| Tuesday   |            |       |       |       |            |
| Wednesday |            |       |       |       |            |
| Thursday  |            |       |       |       |            |
| Friday    |            |       |       |       |            |
| Saturday  |            |       |       |       |            |
| Sunday    |            |       |       |       |            |

For each time zone the following set points can be adjusted:

1. Pump control type. Set point 3112, (refer to the “pump control” pages for more details).
2. Change Over rules for heat pump units. Set point 3311 must be set for each time zone
3. Heating and cooling temperature set points. Set point 3321 to 3325 for cooling and 3331 to 3335 for heating (refer to the control set point pages for more details)
4. Compressor operation. Set point 3411 (refer to the compressor operation pages for more detailed information)

With DS50, for each set point, press PROG key to change time zone and validate the right set point in the right zone

**Note:** “Monday” is the first day of the week for the scheduling on CLIMATIC™ 50

*As a factory setting, only Zone A is activated 24hours a day, 7 days a week*

## **ANTICIPATION – Heat pump mode only**

### **Function**

This allows an anticipated start-up in the morning depending on the outdoor temperature.

### **Description**

This function only works for zone A, and allow the machine to move from unoccupied zone to zone A earlier if the outdoor temperature is under a certain value.

This will allow the unit to anticipate a cool day.

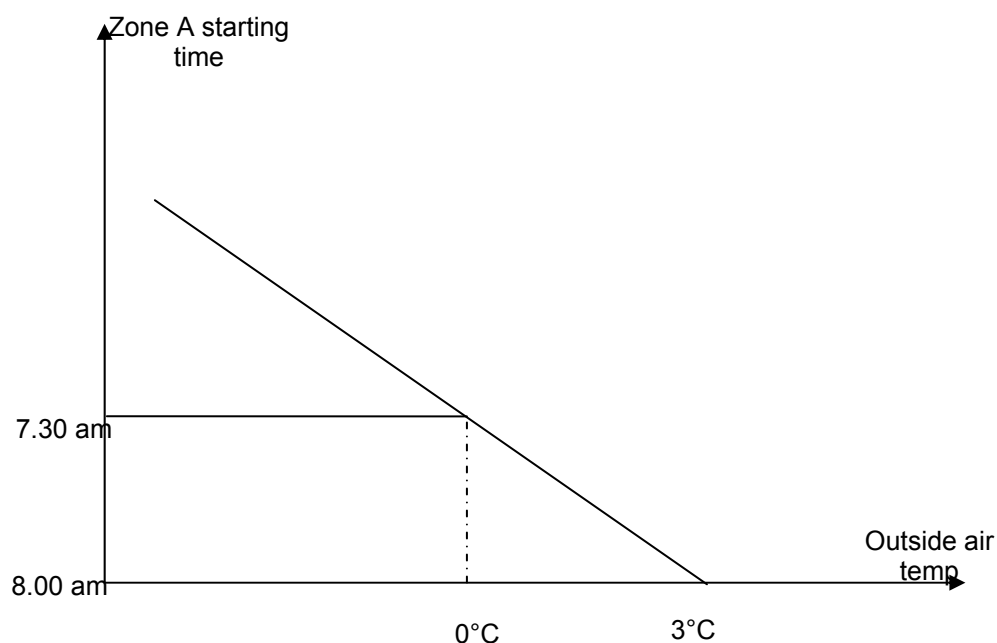
This can be adjusted with set point 3221 and 3222.

3221 → bottom of the slope (°C), Anticipation starting point .

3222 → Slope in Minutes of anticipation per degrees

Example:  
 WA chiller with Zone A  
 starting at 8.00 am  
 3221 set at 3°C  
 3222 set at 10mn/°C

If outside temperature is  
 0°C, the zone A will start  
 at 7.30 am



## CHANGE OVER – REVERSIBLE UNITS

### Function

For Reversible units only. This allows the reversible units to change automatically from winter to summer operation.

### Description

This function will change the unit from production of hot water to production of chilled water automatically and can be set up with following set points:

3311 → Change over mode according to following values

Cool. Only → cooling only

Heat. Only → heating only

Auto. → Automatic change over - pumps are running in dead zone

Auto. Stop → Automatic change over – pumps are stopped in dead zone

3312 → Change over winter setting

The set point 3312 is the outside air temperature under which the unit will operate as a heat pump.

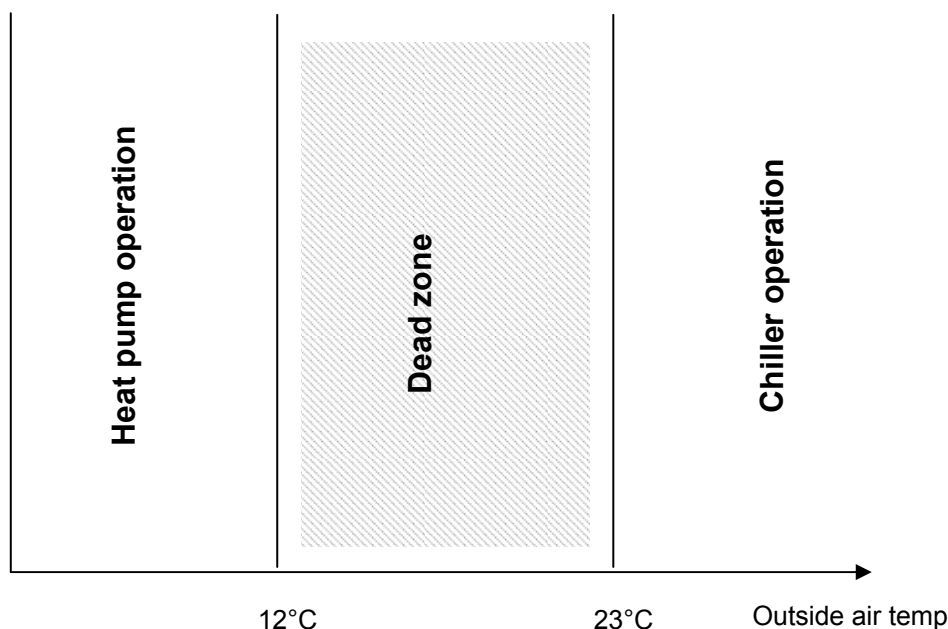
3313 → Change over summer setting

The set point 3313 is the outside air temperature over which the unit will operate as a chiller.

Example:

3312 = 12°C

3313 = 23°C



## **EVAPORATOR PUMP(S) CONTROL**

### **Function**

Ensure the presence of a flow rate of heat transfer fluid in the evaporator heat exchanger.

### **Description**

Seven types of control rules can be set. They are defined using the menu 3112 on the DS50 Service Display.

- If 3112 = Started .....CLIMATIC™ 50 does not control the pumps
- If 3112 = Stopped, .....Pumps are stopped.
- If 3112 = P1 Only .....CLIMATIC™ 50 Control only runs pump n°1.
- If 3112 = P2 Only .....CLIMATIC™ 50 Control only runs pump n°2.
- If 3112 P1N P2R .....CLIMATIC™ 50 Control handles both pumps with N°1 as standard and N° 2 as backup.
- If 3112 = P2N P1R .....CLIMATIC™ 50 Control handles both pumps with N°2 as standard and N° 1 as backup.
- If 3112 – Clock .....CLIMATIC™ 50 control handles both pumps equalizing running times and switching from one pump to the other every Tuesday at 18h00.

This

Pump N°1 is running if all of the following conditions are met:

- ⇒ At least one ON/OFF of circuit “n” is ON
- ⇒ Unit remote ON/OFF is ON \*
- ⇒ NOT in the unoccupied zone\*
- ⇒ Set point 3112 is not set to “Stopped”
- ⇒ Configuration 3841 is not set to “No”
- ⇒ Pump has been stopped for 1 minute or is already running.
- ⇒ There is no electrical fault on the pump
- ⇒ There is to « flow rate » fault

\* These conditions are ignored if the outdoor temperature is below set point 3341 + 1°C and if the outlet water temperature is below set point +1°C, in order to prevent the water from freezing.

A pump can be controlled by the CLIMATIC™50 even if electrically the network pump is not handled by the refrigeration unit.

In the case where the customer is handling the control of his own pump, the following procedure must be followed:

- Start the pump at least 1 minute before validating the remote ON/OFF switch operation.
- Switch off the pump 2 minutes at least after the remote ON/OFF switch has gone to 0.

### In the case of double pumps

The pump N°k is running if all of the following conditions are met:

- ⇒ The conditions detailed above for the single pump must be met for the pump k
- ⇒ In the case of forced operation, pump N°k is running (set point 3112 is set to “P1 Only” for pump N°1 and “P2 Only” for Pump N°2)
- ⇒ When running « Standard/Backup » Operation, pump N°k has priority (Set point 3112 set to “P1NP2S” for Pump N°1 and “P2NP1S” for pump N°2).
- ⇒ In the case of “equalized run time” operation the running time of pump N°k is the smallest

In case of a fault on a pump when the set point 3112 is set to « P1NP2S », « P2NP1S » or « Clock », the second pump, if available, will automatically start.

**NOTE:** CLIMATIC™ 50 control only stops the pumps 2 minutes at least after the request to switch the whole unit OFF has been given, in order to prevent any risks of freezing the evaporator heat exchanger.

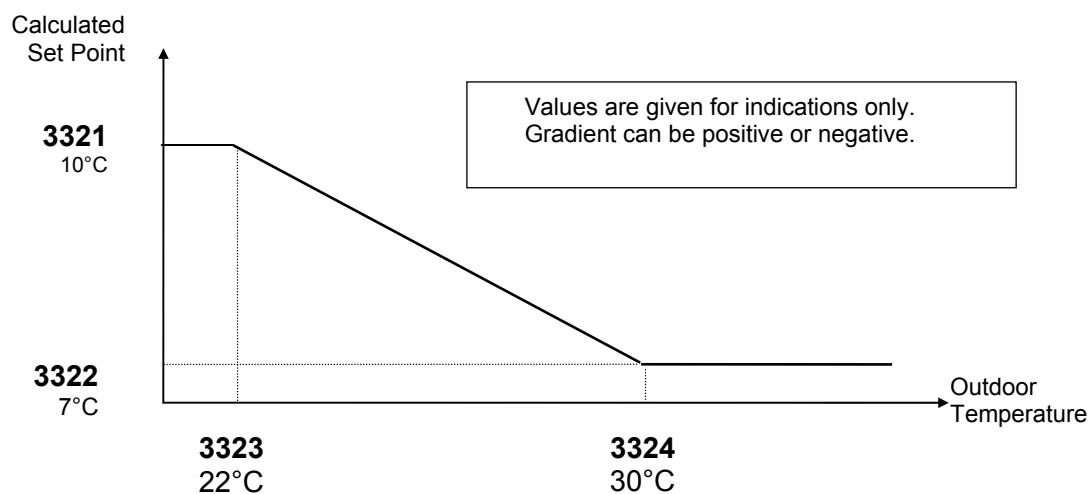
## THERMOSTAT – Set point calculation

### Function

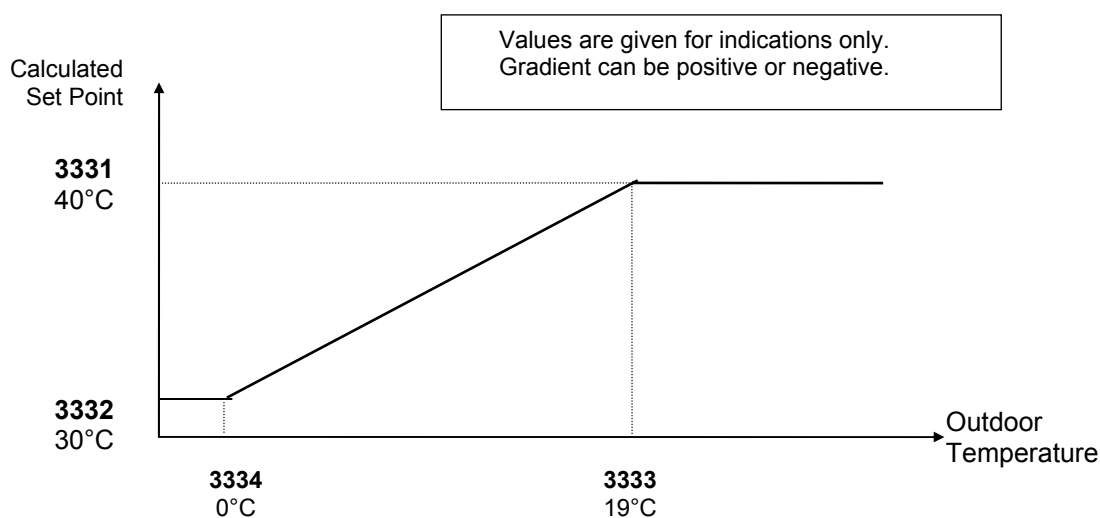
Set the chilled or hot water circuit temperature, depending on the outdoor conditions in order to optimise the energy consumption.

### Description

#### Calculation of the chilled water set point :



#### Calculation of the chilled water set point:





## THERMOSTAT - Control principle

### Function

Adjust and hold the fluid outlet temperature as close as possible to the set point, by controlling the number of compressor stages depending on the thermal load on the system.

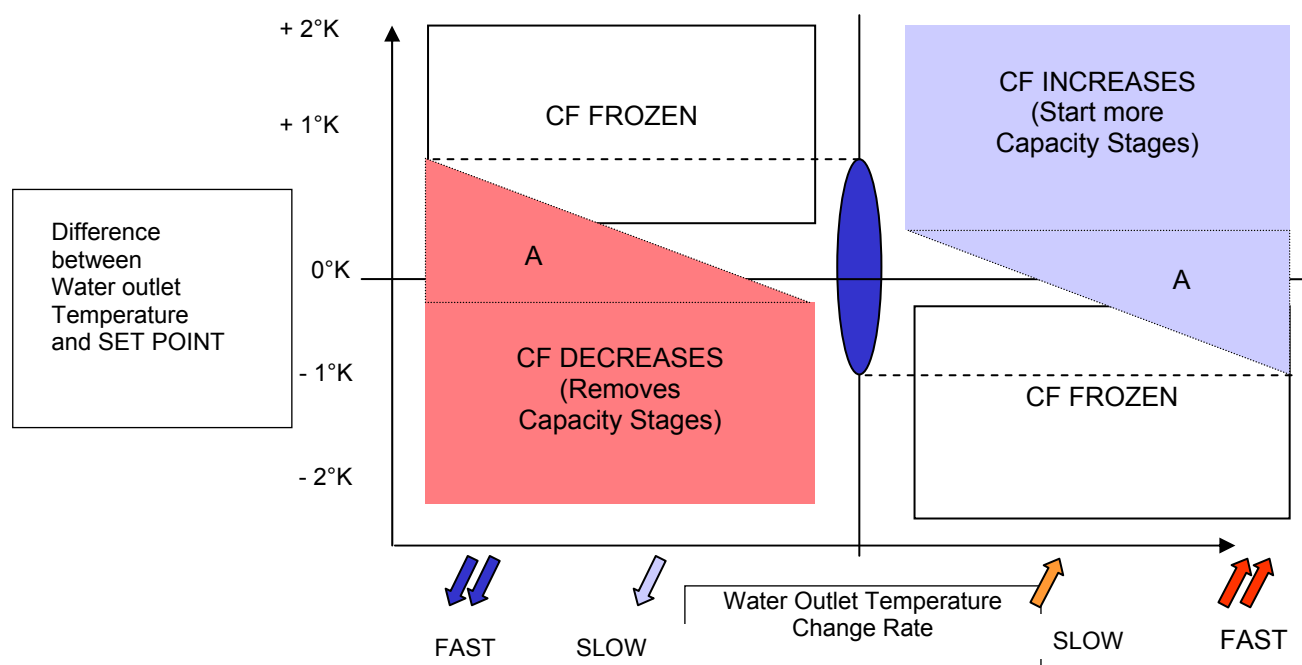
### Description

CLIMATIC™50 control 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.

i.e.: For ecologic WA 230D K STD with 6 control stages, the CF will start and stop a stage at the following values: **0-17-33-50-67-83-100**

It then evolves following the principles detailed in the diagram below (This applies to a chiller):



In any Cases, for a chiller, if the Low Water temperature limit is reached, Compressors are stopped.

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

The rate of change of the Capacity Factor (CF) is determined by another parameter called “REACTIVITY” and which value is in:

$$\% \text{ of CF} / ^\circ\text{C (Diff vs Set point)} / \text{min}$$

REACTIVITY for Cooling Mode can be adjusted in menu 3325

REACTIVITY for Heating Mode can be adjusted in menu 3335

---

## COMPRESSOR CONTROL

---

### Function

Compressor stages are started and stopped in a pre-determined order which minimized the effect of the « anti- short cycle protection and equalized running time.

### Description

#### *☞ Compressor Starting and Stopping Sequences*

This Sequence is determined by the calculated compressor running time. This control also includes the automatic and instantaneous back up of a compressor by another one if it becomes unavailable.

#### *☞ Starting and Stopping Compressors*

Compressor XXX starts if all the following conditions are met :

- ⇒ *The water circulation pump has been running for at least 1 minute.*
- ⇒ *Remote ON/OFF switch for the complete unit is ON*
- ⇒ *The ON/OFF control for the considered circuit is ON*
- ⇒ *The unit, the compressor and the circuit do not have any "Majors Alarm" ON*
- ⇒ *The control requires the start-up of a compressor.*
- ⇒ *XXX is the compressor with the lowest run time amongst the stopped compressor. To see the run times for each compressor refer to menu: 2419, 2429....2469*
- ⇒ *Compressor XXX was not started for at least 6 minutes. The state of each compressor can be checked in the following menu: 2412, 2422, 2432...., 2462*

---

## **HIGH PRESSURE UNLOADING**

---

### **Function**

Reduce the capacity of a refrigeration circuit before the HP cut out is reached

### **Description**

High Pressure Unloading consists in reducing the variable capacity on a screw compressor, or to stop one compressor on units fitted with tandems or trios.

#### *☞ Activation of High Pressure Unloading*

If High Pressure is over 22 bars and carries on increasing as all the fans are running full speed, one compressor is stopped, or one stage of capacity reduction is activated on the affected circuit. High Pressure Unloading is controlled as an additional virtual ventilation stage while the HP is over 22 bars. See explanation in the fan control section.

---

## **DEFROST – Heat Pump**

---

### **Function**

Avoid the ice on the Evaporator while the reversible unit works in winter operation

### **Description**

To avoid the icing of the external air exchanger in winter operation, it is necessary to reverse the refrigerant cycle on a regular basis to de-ice by heating the exchanger.

The defrost is activated when the air temperature is under a set point (3432) and the LP is lower than a set point (3433)

While defrost is demanded, the defrost cycle is as following:

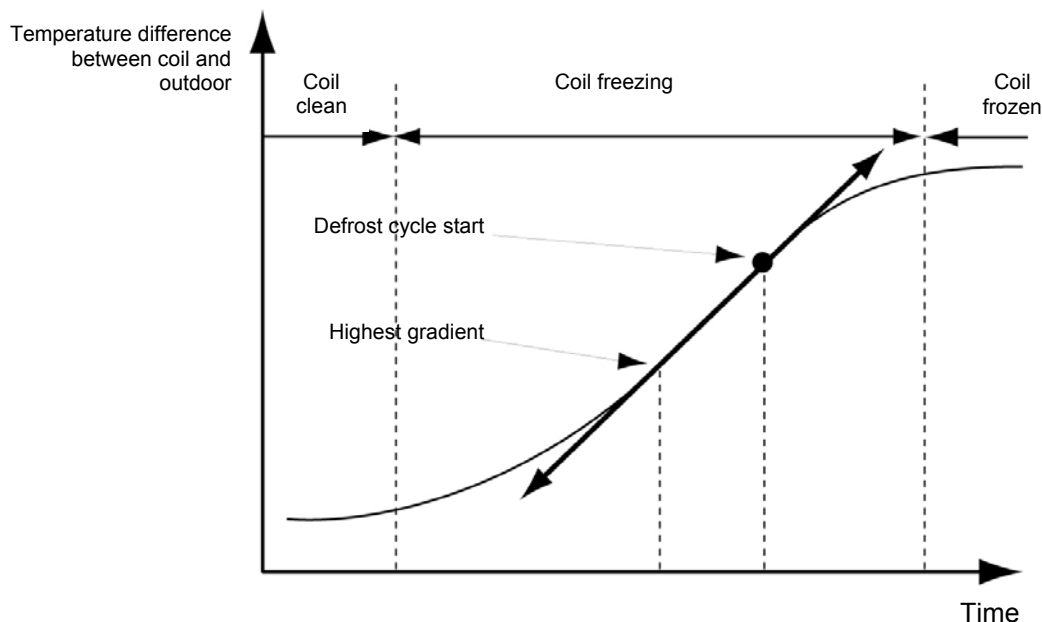
1. Stop compressor and fans
2. wait 5s
3. reverse 4 way valve
4. wait 5s
5. start compressor
6. When HP reach 22b or compressor are running for more than 4 minutes, stop compressor
7. wait 5s
8. reverse 4way valve
9. start fans at full speed in order to dry the exchanger for a period that can be adjusted with set point 3435.
10. end of defrost

Two different type of Defrost demand are possible:

- Dynamic defrost (set point 3431 = Dynamic)
- Cycling defrost (set point 3431 = Cyclic)

## Dynamic defrost

This allows the unit to start the defrost cycle only when required. This is achieved through the measurement of the temperature difference between the coil and the outdoor. The defrost will be initiated shortly after the Climatic50 has located the largest gradient in the curve.



## Cycling defrost

The unit will start a defrost cycle with a regular time period (set point 3434)

### **Defrost parameters summary:**

- 3431 → Defrost mode: dynamic – cyclic
- 3432 → Outside air temperature under which the defrost cycle is activated
- 3433 → LP temperature under which the defrost cycle is activated.
- 3434 → For the dynamic defrost the unit will run this minimum amount of time. For cycling defrost, this is the time delay to start the defrost once the temperature conditions are met
- 3435 → Fan running time after the defrost cycle in order to dry the exchanger.

## DRIVING THE ELECTRONIC EXPANSION VALVE

### Function

Control the adequate filling of the evaporator heat exchanger with refrigerant, in order to get the best efficiency, while allowing a good protection of the compressor against liquid slugging

### Description

The electronic expansion valves used on units fitted with CLIMATIC™ 50 are controlled using the EVD200 Driver



This driver is design to communicate with the CLIMATIC™ 50 main control board through a “pLan” BUS.

The driver can be set up using the following DS50 menus:

- 3511, 3521, 3531, 3541 → Superheat circuit 1, 2, 3, 4
- 3512, 3522, 3532, 3542 → Anticipation circuit 1, 2, 3, 4
- 3513, 3523, 3533, 3543 → Proportional Factor circuit 1, 2, 3, 4
- 3514, 3524, 3534, 3544 → Integral Factor circuit 1, 2, 3, 4
- 3515, 3525, 3535, 3545 → Derivative Factor circuit 1, 2, 3, 4

**It is highly recomended NOT TO CHANGE the factory setting of the EVD Driver**

The Anticipation factor allow the pre-opening of the EEV during circuit start-up and is calculated according to the capacity at start up.

Futhermore the EVD Driver is fitted with Leds indicating its status:

- |                      |  |
|----------------------|--|
| <b>Power</b> (Green) | → Shows the power is ON  |
| <b>Open</b> (Green)  | → Flashes during the expansion valve Opening –<br>Stays ON when the expansion valve is Fully Open.                             |
| <b>Close</b> (Green) | → Flashes during the expansion valve Closing –<br>Stays ON when the expansion valve is Fully Closed.                           |
| <b>Error</b> (Red)   | → Stays ON when Alarm is ON (Refer to Faults and Alarms section)   |
| <b>pLan</b> (Green)  | → Stays ON when the communication is established with CLIMATIC™ 50 –<br>Flashes when the communication is disturbed or broken. |

## Connexion with BM50

The address of each expansion valve driver must be set-up in order to ensure a good communication between the Climatic 50 and the diver.

The address can be changed by using the dip switches that are under the Driver cover.

Addresses must follow the rules hereunder:

| Ecologic n° | BM50 address | Driver circuit n°1 address | Driver circuit n°2 address |
|-------------|--------------|----------------------------|----------------------------|
| 1           | 1            | 5                          | 6                          |
| 2           | 2            | 7                          | 8                          |
| 3           | 3            | 9                          | 10                         |
| 4           | 4            | 11                         | 12                         |

| Ecomax n° | BM50 address | Driver circuit n°1 address | Driver circuit n°2 address | Driver circuit n°3 address | Driver circuit n°4 address |
|-----------|--------------|----------------------------|----------------------------|----------------------------|----------------------------|
| 1         | 1<br>2       | 5                          | 6                          | 7                          | 8                          |
| 2         | 3<br>4       | 9                          | 10                         | 11                         | 12                         |

The dip switches have to be positioned according to the following table:



| Address\Weight | SW1 | SW2 | SW3 | SW4 | SW5 |
|----------------|-----|-----|-----|-----|-----|
|                | 1   | 2   | 4   | 8   | 16  |
| 5              | ON  | OFF | ON  | OFF | OFF |
| 6              | OFF | ON  | ON  | OFF | OFF |
| 7              | ON  | ON  | ON  | OFF | OFF |
| 8              | OFF | OFF | OFF | ON  | OFF |
| 9              | ON  | OFF | OFF | ON  | OFF |
| 10             | OFF | ON  | OFF | ON  | OFF |
| 11             | ON  | ON  | OFF | ON  | OFF |
| 12             | OFF | OFF | ON  | ON  | OFF |

## CONDENSING FANS CONTROL

### Function

Maintain the condensing pressure as stable and as low as possible in order to increase the unit performances, while avoiding excessive cycling.

### Description

Identical to the complete machine control logic, the CLIMATIC™ 50's aim is to reach and hold the high pressure set point. However the fan control includes a dead zone ensuring a greater stability to the High Pressure and avoiding starting and stopping the fans too frequently.

Can be adjusted using menus

3611 = High pressure control set point in bars (relative pressure)

3612 = Reactivity

### Operation

On a unit with N fans per circuit, the number of stages follows the table hereunder:

| Model               | Number of Stages |     |     |
|---------------------|------------------|-----|-----|
|                     | PV with PWM      | PV  | GV  |
| WA/RA<br>STD/HE/SLN | 1                | 0   | N-1 |
| WA LN               | 1                | N-1 | 0   |

Where: PV: Low speed Fan Operation  
 GV: High Speed Fan Operation  
 PWM: Pulse Width modulation (only on PV)

#### CASE 1 Unit without PV or PWM

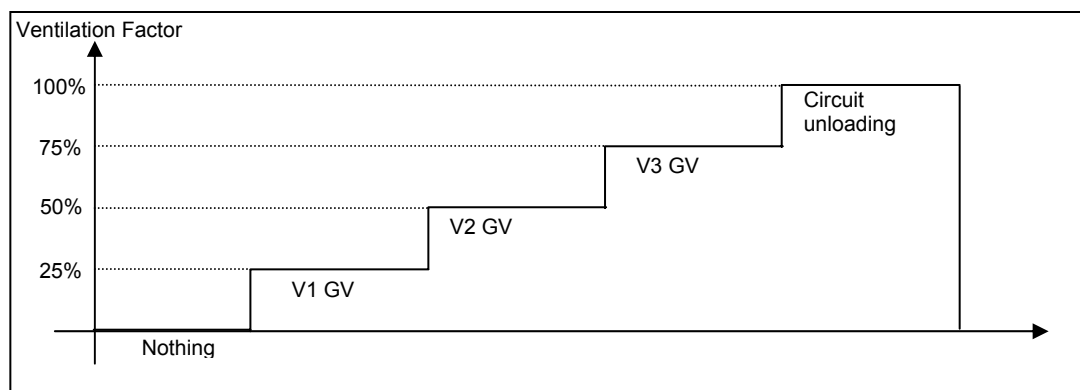
The **Ventilation Factor "V.F."** is calculated using the evolution of High Pressure (measured using the HP sensor) and the rate at which it is moving away or towards the High Pressure Set Point (3611). See diagram page 12.

It also includes a dead zone of 5 bars (4 bars if the unit has glycol and water set point <0°C) and a sampling time constant of 15 seconds.

As for capacity control, the **reactivity** will fasten or slow down the **VF** evolution

Example: Unit with 3 fans, one circuit and HP set point 3611 is set to 15 bars

- Pressure > 15 bars → **V.F.** increasing
- 10 bars < Pressure < 15 bars → **V.F.** unchanged
- Pressure < 10 bars → **V.F.** decreasing





## CASE 2 Unit with PV or PWM

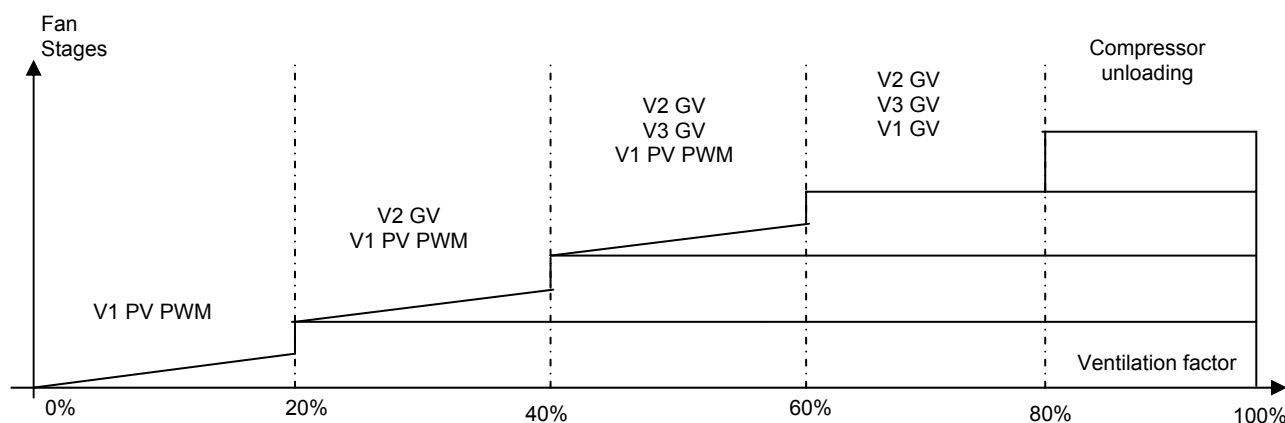
The **Ventilation Factor "V.F."** is calculated using the High Pressure measured using the HP sensor and the rate at which it is moving away or towards the High Pressure Set Point (3611). It also includes a dead zone of 3.5 bars and a sampling time constant of 15 seconds.

If menu set point 3611 is set to 15 bars

- Pressure > 17 bars → **V.F.** increasing
- 12 bars < Pressure < 17 bars → **V.F.** unchanged
- Pressure < 12 bars → **V.F.** decreasing

**Ventilation Factor "V.F."** can be seen in menu 2222 to 2225 on the DS50

For example on a unit with 3 Fans

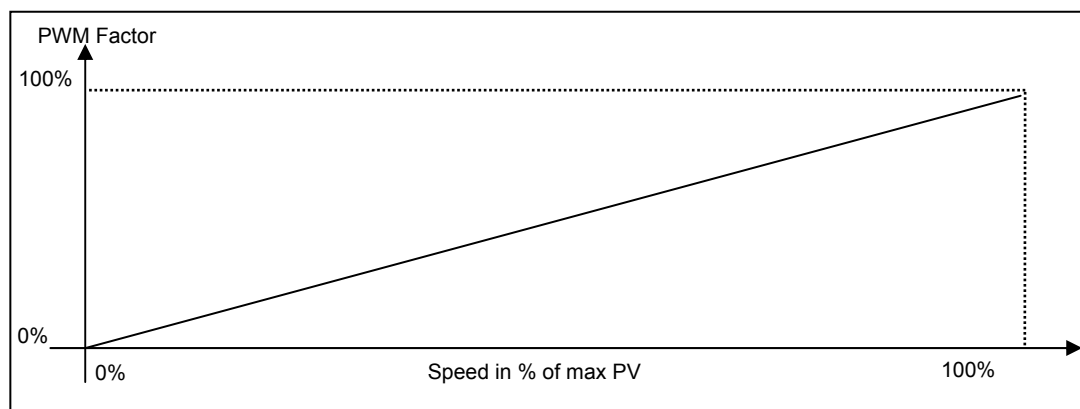


The "**PWM factor**" which is used to adjust the speed of the fan when it is running in PWM

This **PWM Factor "PWM.F"** is calculated using the High Pressure measured using the HP sensor and the rate at which it is moving away or towards the High Pressure Set Point (3611). The sampling time constant is 5 seconds.

If menu set point 3611 is set to 15 bars

- Pressure > 15 bars → **PWM.F.** increasing
- 14 bars < Pressure < 15 bars → **PWM.F.** unchanged
- Pressure < 14 bars → **PWM.F.** decreasing



Value for **PWM.F** can be seen on menu 2619, 2629, 2639 and 2649 on a DS50

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## **REMOTE WATER TEMPERATURE SET POINT**

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### **Function**

Remote modification of the chilled water temperature using a 4-20mA signal  
This signal has to be connected to an extension board BE50 which is supply as an option.

### **Description**

The 4-20mA signal sent to the unit is converted linearly using a -5K to +5K range of temperature set point.  
This 4-20mA signal has to be connected to one of the custom analogical input on the extension board. Once it is connected the analogical input must be activated by selecting "S.P Offset" with DS50 menu 3871 to 3874.  
The menu 3871 refers to the input n°1, 3872 to n°2, 3873 to n°3 and 3874 to n°4.

### **For example :**

For a unit set point of 7°C supply temperature, a 20mA signal will give a 12°C return temperature set point.

In any case, with a unit running with clear water, the chilled water supply temperature set point CAN NOT be adjusted to a value below 6°C.

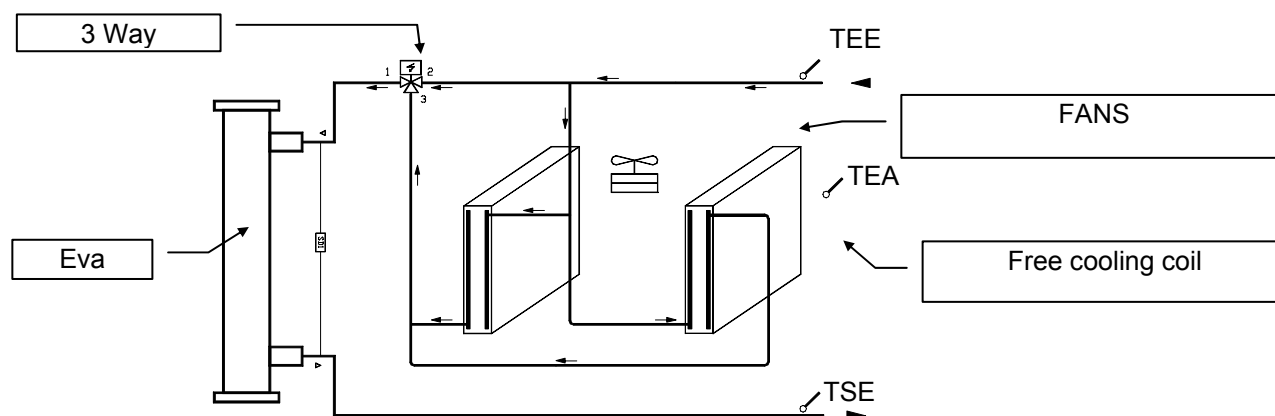
## FREE-COOLING

### Function

Ensure optimum cooling capacity through the use of free cooling, therefore reducing electrical consumption.

### Description

#### Free-cooling principle



TEE ⇔ Inlet water temperature (°C)  
 TSE ⇔ Outlet water temperature (°C)  
 TEA ⇔ Outdoor air Temperature (°C)

#### Control of the free-cooling 3 way valve

3 way valve is activated if the following conditions are met.

- ⇒ The unit is running
- ⇒ TEA is below the TEE.
- ⇒ Chilled water circulation pump has been running for at least 30 seconds

#### Control of the free-cooling fans

In the case where the free cooling fans are the same as the main refrigeration circuit fans, (which is the most popular mode for Lennox units), they are constantly running if the compressors are stooped and if the chilled water outlet temperature is above the set point defined in menu 3321 and 3322. When a compressor starts, the fans run as without free-cooling.

In the case where the free cooling fans are independent from the main refrigeration circuit fans, they are running for as long as the chilled water outlet temperature has not been reaching the set point defined in menu 3321 and 3322.

#### Compressor Operation

For the compressor control, if the outside temperature is lower than the water entry temperature, the free-cooling is considered as an additional first compressor stage by the regulation.



# FAULT CODES

## **CHILLED WATER TEMPERATURE, OUT OF RANGE**

Fault Code: **012, 013, 022, 023**

### **Description**

Water Inlet or Outlet Temperature measured by the temperature sensor is outside the authorised range, this range can vary depending on the presence or not of glycol with the chilled water (factory setting)

TE < set point 3341 (chilled water min set point) or TE > set point 3342 (Hot water max set point)  
 TS < set point 3341 (chilled water min set point) or TS > set point 3342 (Hot water max set point)

#### Where:

|      |   |  |
|------|---|--|
| TE   | ⇔ | Water inlet Temperature (°C)                         |
| TS   | ⇔ | Water outlet Temperature (°C)                        |
| 3341 | ⇔ | Minimum chilled water Temperature at evaporator (°C) |
| 3342 | ⇔ | Maximum chilled water Temperature at evaporator (°C) |

### **Action**

- ☞ Compressor immediate shutdown
- ☞ A fault signal is shown on the display.
  - 012, Outlet water T° too high
  - 013, Intlet water T° too low
  - 022, Outlet water T° too low
  - 023, Intlet water T° too high
- ☞ The remote fault signal is delayed by 6 minutes

### **Reset**

Automatic reset of the fault signal as soon as the chilled water temperatures comes back in the authorized operating range with a safety offset of 2°C on the chilled water and 5°C on the hot water.

#### Water

Set point 3341+2°C < TE < set point 3342 -5°C  
 Set point 3341+2°C < TS < set point 3342 -5°C

| <b>Possible causes</b>                                  | <b>Solving the problem</b>   |
|---|------------------------------|
| Faulty Chilled water inlet or outlet temperature probes | Replace the probe.           |
| Wiring problem with the probes, disconnect the sensor.  | Check the probe connections. |

## **INSUFFICIENT WATER FLOW RATE**

Fault Code: **001**

### **Description**

The flow switch FSE is detecting a low water flow rate in the evaporator heat exchanger for more than 3 seconds

### **Action**

- ☞ Immediate shutdown of the whole unit.
- ☞ A fault signal is shown on the display.
- ☞ The remote fault signal is delayed by 6 minutes

### **Reset**

The unit restarts **automatically, 20 seconds** after the flow switch detects a flow rate.

| <b>Possible causes</b>                | <b>Solving the problem</b>        |
|---------------------------------------|-----------------------------------|
| Problem with the pump control wiring. | Check the pump connections        |
| Problem with the flow switch wiring   | Check the flow switch connections |
| Dirty or clogged water filter.        | Clean the water filter.           |
| Wrong setting of the flow switch.     | Check the flow switch settings.   |

## **COMMUNICATION WITH THE EXTENSION BOARD**

Fault Code: **071**

### **Description**

The communication between the BM50 and the BE50 is down.

### **Action**

Alarm signal is ON  
The unit carries on running

### **Reset**

The fault signal disappears **automatically as soon as the communication is back on line.**

| <b>Possible causes</b>                                 | <b>Solving the problem</b>              |
|--|---|
| Damaged BM50 or BE50                                   | Replace the defective component         |
| Bios mal function                                      | Update Bios up V3A.57 or 3.64 and above |
| Wrong wiring or loose connection between BM50 and BE50 | Check connections and wiring.           |



## LOW PRESSURE CUT OUT

Fault Code: **1n7**

### Description

The low pressure cut out limit depends on the type of refrigerant which is inside the circuit and is defined as following:

R407C ⇒ 1,5 bar abs. (Or  $-28^{\circ}\text{C}$  Vapour Saturated Temperature).

One compressor on circuit n does not work for 2 minutes and in the case of a unit with low ambient kit and Thermostatic Expansion Valve, the TXV bypass valve has been closed for 1 minute, but the low pressure is too low.

**NOTE:** Only units with thermostatic expansion valves and Low ambient kit options are fitted with TXV bypass.

### Action

- ☞ If the Low Pressure of a circuit is below the safety limit for more than an hour, then the considered circuit is not allowed to start again.
- ☞ This circuit is shut down immediately.
- ☞ A fault signal is shown on the display.
- ☞ The remote fault signal is delayed by 6 minutes.

### Reset

Automatic reset of the fault signal as soon as the low pressure moves above the "CUT IN" limit

If the low pressure fault is activated more than three times during the same day, the fault signal is locked out and must be reset manually.

The auto reset limits are detailed below

R407C ⇒ 2.5 bars abs. (or  $-16^{\circ}\text{C}$  saturated vapour temperature).

**Note:** Fault counter is cleared and reset every day at 10 am, as long as the maximum number of faults has not been reached.

| Possible causes                        | Solving the problem                            |
|--|--|
| Not enough refrigerant in the circuit. | Adjust the refrigerant charge                  |
| Faulty expansion valve.                | Check the good working of the expansion valve. |
| Dirty filter drier.                    | Change the filter drier                        |
| Faulty low pressure sensor.            | Replace the low pressure sensor.               |

## EVAPORATOR FREEZING PROTECTION

Fault Code: **1n8**

### Description

This fault signal is activated on units chilling water without frost protection additives (Water without Glycol or Brine)

In the case of a *Plate heat exchanger*.

One compressor from the considered circuit n has been running for at least 2 minutes and the saturated temperature  $TBP_n < \text{set point } 3421$  for more than 5 seconds (for units filled with R407c)

This safety feature is disabled for 2 minutes after start-up or shut down of a compressor and for 30 seconds after the start up or the shut down of a fan on the considered circuit.

Where:

$TBP_n$             ⇔    Evaporating Temperature of circuit n - dew point (°C)  
 3421             ⇔    Minimum Evaporating Temperature (°C)

### Action

- ☞ Immediate shutdown of circuit n
- ☞ Fault signal sent to the control display.
- ☞ The remote fault signal is delayed by 6 minutes

### Reset :

In Case of: After the first fault signal the reset is automatically activated after 30 minutes if the evaporating temperature has moved back above the set point  $3421 + 3^\circ\text{C}$

After 30 minutes the circuit n can only be started after **manual reset**

### Note:

Fault counter is cleared and **reset every day at 10 am**, as long as the maximum number of faults has not been reached.

| Possible causes                                 | Solving the problem                                  |
|---|--|
| Faulty LP pressure sensor                       | Replace the pressure sensor.                         |
| Faulty wiring or loose sensor connection.       | Check pressure sensor connections and wiring.        |
| Insufficient water flow rate in the evaporator. | Check flow rate and adjust flow switch if necessary. |
| Clogged evaporator                              | Clean evaporator.                                    |
| Check set points                                | Replace pressure sensor.                             |

## FAULTY PROBES AND SENSORS

Fault Code: **081, 083, 086, 087, 089, 1n1, 1n2, 2n6**

### Description

One or more temperature probes or pressure sensors located on circuit n or elsewhere are short circuited, cut or disconnected.

#### **Probe or sensor affected by the problem**

Water inlet temperature probe → code 081

Water outlet temperature probe → code 085

Air temperature probe → 083

Heat recovery exchanger inlet temperature probe → code 086

Heat recovery exchanger outlet temperature probe → code 087

High Pressure Sensor → Code 1n1

Unit without EEV

Low Pressure Sensor → Code 1n2

Unit with EEV

Low Pressure Sensor or suction probe → Code 2n6

### Action

- ☞ Immediate shut down of circuit n for faulty sensors.
- ☞ Immediate shut down of ALL circuits for faulty water outlet temperature and air temperature probes.
- ☞ No shut down for the other faults.
- ☞ Fault signal shown on the display.
- ☞ The remote fault signal is delayed by 6 minutes.

### Reset

The unit returns to normal operation after the signal from the faulty probes or sensors is re-established.

| Possible causes                                       | Solving the problem                              |
|---|--|
| Damaged probes or sensors                             | Replace probe or sensor                          |
| Wrong wiring or loose connection on a probe or sensor | Check probes and sensors connections and wiring. |

## COMPRESSOR ELECTRICAL PROTECTION

Fault Code: **1n4**

### Description

During start up or operation of a compressor m:

- The thermal magnetic trip breaker or the compressor internal protection from circuit n is tripped
- The phase rotation protection has detected an incorrect connection (standard on screw compressor and available as a special request on other units)
- The discharge line thermostat is tripped out (screw compressors only)

### Action

- ☞ Immediate shut down of compressors m from circuit n.
- ☞ Fault signal shown on the display.
- ☞ The remote fault signal is delayed by 6 minutes.

### Reset

If the fault signal comes from the internal compressor protection, it can be automatically reset. In this case, Climatic 50 will restart the concerned circuits 30 minutes after shutdown.

After three **automatic** reset of the compressor fault signal, the circuit n can only be restarted by a **manual reset** of the fault signal.

**Important:** For manual reset of ZR 380 internal protection cut off; if the problem comes from a high discharge temperature, wait for 30 mn prior to any manual reset to allow the scroll temperature to decrease sufficiently. If the temperature is still too high, the compressor will trip again just after starting.

### Notes:

Fault counter is cleared and **reset every day at 10 am**, as long as the maximum number of faults has not been reached.

The fault signal is reset automatically with each powering of the unit

| Possible causes                                | Solving the problem  |
|--|--|
| Wrong wiring or tightening of the connections. | Control all connections  |
| Wrong setting on the circuit breaker           | Set circuit breaker according with compressor normal running current |

## ***HIGH PRESSURE TOO HIGH***

Fault Code: **1n5**

### **Description**

High pressure switch from circuit n has tripped.

### **Action**

- ☞ Immediate shut down of circuit n.
- ☞ Fault signal shown on the display.
- ☞ The remote fault signal is delayed by 6 minutes

### **Reset**

The first 3 faults are **automatically** reset  
 After three faults the circuit n can only be restarted by a **manual reset**

### **Notes:**

Fault counter is cleared and **reset every day at 10 am**, as long as the maximum number of faults has not been reached.

| <b>Possible causes</b>   | <b>Solving the problem</b>                         |
|--|--|
| Dirty condenser.   | Clean the condenser.                               |
| Wrong setting on the condenser control.                              | Check the settings of the controller.              |
| Wrong operation of the liquid line solenoid valve                    | Check the operation of the solenoid valve.         |
| Fan out of order   | Change the fan                                     |
| Wrong wiring or wrong setting of the high pressure, pressure switch. | Check the wiring and the setting of the HP switch. |
| Dirty Filter Drier   | Change the filter drier.                           |

## **INSUFFICIENT FLOW RATE PROVIDED BY THE PUMP**

Fault Code: **001 040**

### **Description**

Pump k supplying flow rate to the evaporator has been ordered to start for **20 seconds**.  
The flow switch FSE is detecting insufficient flow rate in the heat exchanger for more than **25 seconds**.

### **Action**

#### **Case 1 :**

The unit only handles **ONE pump**

- ☞ Immediate shut down of compressors and pump k.
- ☞ Fault signal 001 is shown on the display.
- ☞ The remote fault signal is delayed by 6 minutes

#### **Case 2 :**

The unit handles **TWO pumps** and the “Normal/ Safety” mode or “Clock” has been activated.

- ☞ Immediate shut down of pump k.
- ☞ Start up of the 2<sup>nd</sup> pump (refer to “EVAPORATOR PUMP(S) CONTROL” section for more details)
- ☞ If the FSE is detecting a flow rate, then the fault 040 is shown on the display, the unit is then running normally
- ☞ If the FSE does not detect any flow rate the fault 040 is shown on the display, the unit is then shut down
- ☞ The remote fault signal is delayed by 6 minutes

### **Reset**

In all cases implying a shut down of the unit, 3 start up attempts are made then after these three faults per day the unit can only be restarted by a manual reset

### **Notes:**

Fault counter is cleared and **reset every day at 10 am**, as long as the maximum number of faults has not been reached.

| <b>Possible causes</b>              | <b>Solving the problem</b>            |
|-------------------------------------|---------------------------------------|
| Problem in the pump control wiring. | Check the pump connections            |
| Problem with flow switch wiring.    | Check the flow switch connection      |
| Dirty water filter                  | Clean the water filter                |
| Wrong setting of the flow switch    | Adjust the setting of the flow switch |

**FAN(S) CIRCUIT BREAKER(S) OPEN**Fault Code: **90, 92, 93, 94, 95****Description**

One or more thermal magnetic trip circuit breaker protecting the condenser fans are tripped

Ecologic unit → Fault code 90  
 Ecomax unit circuit 1 → code 92  
 Ecomax unit circuit 2 → code 93  
*Ecomax unit circuit 3 → code 94*  
 Ecomax unit circuit 4 → code 95

**Reset**

The fault is cleared automatically as soon as the fans circuit breakers are closed

| Possible causes                                | Solving the problem  |
|--|--|
| Wrong wiring or tightening of the connections. | Control all connections  |
| Wrong setting on the circuit breaker           | Set circuit breaker according with compressor normal running current |

## **PUMP(S) CIRCUIT BREAKER(S) OPEN**

Fault Code: **041, 042**

### **Description**

The thermal magnetic trip circuit breaker protecting the pump k has tripped

### **Action**

#### **Case 1 :**

The unit only handles **ONE pump**

- ☞ Immediate shut down of pump k.
- ☞ Immediate shut down of the unit.
- ☞ Fault signal shown on the display.
- ☞ The remote fault signal is delayed by 6 minutes

#### **Case 2 :** The unit handles **TWO pumps**.

- ☞ Immediate shut down of pump k.
- ☞ Start up of the 2<sup>nd</sup> pump (refer to “EVAPORATOR PUMP(S) CONTROL” section for more details)
- ☞ Fault signal **041** is shown on the display for Pump 1 and **042** for Pump 2
- ☞ The remote fault signal is delayed by 6 minutes

### **Reset**

The fault **is automatically** reset as soon as the pump circuit breaker is closed.

If the unit was stopped (case 1), the unit will restart automatically **20 seconds** after the fault signal has disappeared and the climatic 50 has restarted the pump.

| <b>Possible causes</b>                         | <b>Solving the problem</b>   |
|--|--|
| Wrong wiring or tightening of the connections. | Control all connections  |
| Wrong setting on the circuit breaker           | Set circuit breaker according with compressor normal running current |



# CLIMATIC™ 50 Mapping

## Ecologic 'WA'

### BM50 – Base Board

| Digital Input                    | Digital Output  | Analogic Input                   | Analogic Output   |
|----------------------------------|---|----------------------------------|---|
| -J5.ID1: C1 – Comp. –Fault       | -J12.NO1: C1 – Compressor 1   | -J2.B1: C1 – HP (4~20ma -1~29b)  | -J4.Y1: C1 – Ventilation 2, 3, 4<br>-J4.Y1: C1 – Ventilation 1, 2, 3 if two speed |
| -J5.ID2: C1 – HP                 | -J12.NO2: C1 – Compressor 2<br>-J12.NO2: C1 – MCC/MCW Valve Cp1   | -J2.B2: C1 – BP (4~20ma -1~6b) * | -J4.Y2: C2 – Ventilation 2, 3, 4<br>-J4.Y2: C2 – Ventilation 1, 2, 3 if two speed |
| -J5.ID3: C1/C2 – Ventil. –Fault  | -J12.NO3: C1 – WA Compressor 3<br>-J12.NO3: C1 – MCC/ If two speed, fan 3   | -J2.B3: C2 – HP (4~20ma -1~29b)  | -J4.Y3: C1 – Ventilation 1 – PWM  |
| -J5.ID4: C2 – Comp. –Fault       | -J13.NO4: C2 – Compressor 1   | -J2.B4: C2 – BP (4~20ma -1~6b) * | -J4.Y4: C2- Ventilation 1 – PWM   |
| -J5.ID5: C2 – HP                 | -J13.NO5: C2 – WA Compressor 2<br>-J13.NO5: C2 - MCC/MCW Valve Cp1  | -J3.B5: Water – Outlet (NTC)     |   |
| -J5.ID6: Water – Flow            | -J13.NO6: C2 – Compressor 3<br>-J13.NO6: C2 - MCC/ If two speed, fan 3  | -J3.B6: Water – Inlet (NTC)      |   |
| -J5.ID7: ON/OFF / Remote Control | -J14.NO7: Water – Pump 1  | -J6.B7: MCW Water T cond Outlet  |   |
| -J5.ID8: Reset / Remote Control  | -J15.NO8: C1 – Ventilation 1<br>-J15.NO8: C1 – Ventilation 1 – High.Speed<br>-J15.NC8: C1 – Ventilation 1 – Low.Speed | -J6.B8: Outdoor Air (NTC)        |   |
| -J7.ID9: Safety Elec Pump 1&2    | -J16.NO9: C1 – Bypass Valve<br>-J16.NO9: C1 – 4 Way Valve   |                                  |   |
| -J7.ID10: Step 1 (RA)            | -J16.NO10: C2 – Bypass Valve<br>-J16.NO10: C2 – 4 Way Valve   |                                  |   |
| -J7.ID11: Step 2 (RA)            | -J16.NO11: Water – Pump 2   |                                  |   |
| -J7.ID12: Step 3 (RA)            | -J17.NO12: C2 – Ventilation 1<br>-J17.NO12: C2 – Ventilation 1–High.Speed<br>-J17.NC12: C2 – Ventilation 1–Low.Speed  |                                  |   |
| -J8.ID13: Step 4 (RA)            | -J18.NO13: General Alarm  |                                  |   |
| -J8.ID14: Step 5 (RA)            |   |                                  |   |

\* If No Electronic Exp Valve

### BE50 – Extension Board

|   |  |   |         |
|---|--|---|---------|
| -J4.ID1: Energy recovery Unit or Custom 1 | -J5.NO1: MCC C1 - Fan 2<br>-J5.NO1: MCC C1 – Fan 1 if two speeds<br>-J5.NO1: Custom BE50.1                     | -J9.B1: WAH C1 - Discharge T° Comp1 (NTC150°C)<br>-J9.B1: WA - Energy recovery Inlet (NTC)<br>-J9.B1: Custom BE50.1 | -J2.Y1: |
| -J4.ID2: Custom 2 – BE50.1                | -J6.NO2: MCC C1 - Fan 3<br>-J6.NO2: MCC C1 – Fan 2 if two speeds<br>-J6.NO2: Custom BE50.2                     | -J9.B2: WAH C1 - Discharge T° Comp2 (NTC150°C)<br>-J9.B2: WA - Energy recovery Onlet (NTC)<br>-J9.B2: Custom BE50.2 |         |
| -J4.ID3: Custom 3 – BE50.2                | -J7.NO3: MCC C2 - Fan 2<br>-J7.NO3: MCC C2 – Fan 1 if two speeds<br>-J7.NO3: Custom BE50.3                     | -J10.B3: WAH C2 - Discharge T° Comp1 (NTC150°C)<br>-J10.B3: Custom BE50.3   |         |
| -J4.ID4: Custom 4 – BE50.3                | -J8.NO4: Starter<br>-J8.NO4: MCC C2 - Fan 3<br>-J8.NO4: MCC C2 – Fan 2 if two speeds<br>-J8.NO4: Custom BE50.4 | -J10.B4: WAH C2 - Discharge T° Comp2 (NTC150°C)<br>-J10.B4: Custom BE50.4   |         |

# Ecomax 'LC'

## BM50 - Master Board

| Digital Input                    | Digital Output   | Analogic Input                   | Analogic Output   |
|----------------------------------|--|----------------------------------|---|
| -J5.ID1: C1 – Comp. –Fault       | -J12.NO1: C1 – (Screw) Reset Int. Comp.<br>-J12.NO1: C1 – (Piston) 1st Valve Comp., 1<br>-J12.NO1: C1 – (322) 2nd Valve Comp., 1 | -J2.B1: C1 – HP (4~20ma -1~29b)  | -J4.Y1: C1 – Ventilation 2, 3, 4, 5<br>-J4.Y1: C1 – Ventilation 1, 2, 3, 4 if two speed |
| -J5.ID2: C1 – HP                 | -J12.NO2: C1 – (Screw) Valve 50% Comp<br>-J12.NO2: C1 – (Piston) Comp., 2  | -J2.B2: C1 – BP (4~20ma -1~6b) * | -J4.Y2: C2 – Ventilation 2, 3, 4, 5<br>-J4.Y2: C2 – Ventilation 1, 2, 3, 4 if two speed |
| -J5.ID3: C1 – Ventil. –Fault     | -J12.NO3: C1 – (Screw) Valve 75% Comp.<br>-J12.NO3: C1 – (Piston) 1st Valve Comp., 2<br>-J12.NO3: C1 – (322) 1st Valve Comp., 1  | -J2.B3: C2 – HP (4~20ma -1~29b)  | -J4.Y3: C1 – Ventilation 1 – PWM  |
| -J5.ID4: C2 – Comp. –Fault       | -J13.NO4: C2 – (Screw) Reset Int. Comp.<br>-J13.NO4: C2 – (Piston) 1st Valve Comp., 1<br>-J13.NO4: C2 – (322) 2nd Valve Comp., 1 | -J2.B4: C2 – BP (4~20ma -1~6b) * | -J4.Y4: C2- Ventilation 1 – PWM   |
| -J5.ID5: C2 – HP                 | -J13.NO5: C2 – (Screw) Valve 50% Comp<br>-J13.NO5: C2 – (Piston) Comp., 2  | -J3.B5: Water – Outlet (NTC)     |   |
| -J5.ID6: C2 – Ventil. –Fault     | -J13.NO6: C2 – (Screw) Valve 75% Comp.<br>-J13.NO6: C2 – (Piston) 1st Valve Comp., 2<br>-J13.NO6: C2 – (322) 1st Valve Comp., 1  | -J3.B6: Water – Inlet (NTC)      |   |
| -J5.ID7: ON/OFF / Remote Control | -J14.NO7: C1 - (Screw) Comp.<br>-J14.NO7: C1 - (Piston) Comp., 1   | -J6.B7: LCW Water T cond Outlet  |   |
| -J5.ID8: Reset / Remote Control  | -J15.NO8: C1 – Ventilation 1<br>-J15.NO8: C1 – Ventilation 1 – High.Speed<br>-J15.NC8: C1 – Ventilation 1 – Low.Speed            | -J6.B8: Outdoor Air (NTC)        |   |
| -J7.ID9: Water – Flow            | -J16.NO9: C1 – Liquid Valve  |                                  |   |
| -J7.ID10:                        | -J16.NO10: C2 – Liquid Valve   |                                  |   |
| -J7.ID11:                        | -J16.NO11: C2 – (Screw) Comp.<br>-J16.NO11: C2 – (Piston) Comp., 2   |                                  |   |
| -J7.ID12:                        | -J17.NO12: C2 – Ventilation 1<br>-J17.NO12: C2 – Ventilation 1–High.Speed<br>-J17.NC12: C2 – Ventilation 1–L.Speed               |                                  |   |
| -J8.ID13:                        | -J18.NO13: General Alarm   |                                  |   |
| -J8.ID14:                        |  |                                  |   |

\* If No Electronic Exp Valve

### BM50 - Slave Board

| Digital Input                | Digital Output                            | Analogic Input                   | Analogic Output                                  |
|------------------------------|---|----------------------------------|--|
| -J5.ID1: C3 – Comp. –Fault   | -J12.NO1: C3 – (Screw) Reset Int. Comp.   | -J2.B1: C3 – HP (4~20ma -1~29b)  | -J4.Y1: C3 – Ventilation 2, 3, 4, 5              |
| -J5.ID2: C3 – HP             | -J12.NO2: C3 – (Screw) Valve 50% Comp     | -J2.B2: C3 – BP (4~20ma -1~6b) * | -J4.Y1: C3 – Ventilation 1, 2, 3, 4 if two speed |
| -J5.ID3: C3 – Ventil. –Fault | -J12.NO3: C3 – (Screw) Valve 75% Comp.    | -J2.B3: C4 – HP (4~20ma -1~29b)  | -J4.Y2: C4 – Ventilation 2, 3, 4, 5              |
| -J5.ID4: C4 – Comp. –Fault   | -J13.NO4: C4 – (Screw) Reset Int. Comp.   | -J2.B4: C4 – BP (4~20ma -1~6b) * | -J4.Y2: C4 – Ventilation 1, 2, 3, 4 if two speed |
| -J5.ID5: C4 – HP             | -J13.NO5: C4 – (Screw) Valve 50% Comp     |                                  | -J4.Y3: C3 – Ventilation 1 – PWM                 |
| -J5.ID6: C4 – Ventil. –Fault | -J13.NO6: C4 – (Screw) Valve 75% Comp.    |                                  | -J4.Y4: C4- Ventilation 1 – PWM                  |
| -J5.ID7:                     | -J14.NO7: C3 - (Screw) Comp.              |                                  |  |
| -J5.ID8:                     | -J15.NO8: C3 – Ventilation 1              |                                  |  |
| -J7.ID9:                     | -J15.NO8: C3 – Ventilation 1 – High.Speed |                                  |  |
| -J7.ID10:                    | -J15.NC8: C3 – Ventilation 1 – Low.Speed  |                                  |  |
| -J7.ID11:                    | -J16.NO9: C3 – Liquid Valve               |                                  |  |
| -J7.ID12:                    | -J16.NO10: C4 – Liquid Valve              |                                  |  |
| -J8.ID13:                    | -J16.NO11: C4 – (Screw) Comp.             |                                  |  |
| -J8.ID14:                    | -J17.NO12: C4 – Ventilation 1             |                                  |  |
|                              | -J17.NO12: C4 – Ventilation 1–High.Speed  |                                  |  |
|                              | -J17.NC12: C4 – Ventilation 1–Low.Speed   |                                  |  |
|                              | -J18.NO13: General Alarm                  |                                  |  |

\* If No Electronic Exp Valve

### BE50 - Extension Board

|                               |                            |                        |         |
|-------------------------------|----------------------------|------------------------|---------|
| -J4.ID1: Safety Elec Pump 1&2 | -J5.NO1: Water - Pump, 1   | -J9.B1: Custom BE50.1  | -J2.Y1: |
| -J4.ID1: Custom 1 – BE50.1    | -J5.NO1: Custom 1 – BE50.1 |                        |         |
| -J4.ID2: Energy recovery Unit | -J6.NO2: Water - Pump, 2   | -J9.B2: Custom BE50.2  |         |
| -J4.ID2: Custom 2 – BE50.2    | -J6.NO2: Custom 2 – BE50.2 |                        |         |
| -J4.ID3: Custom 3 – BE50.3    | -J7.NO3: Custom BE50.3     | -J10.B3: Custom BE50.3 |         |
| -J4.ID4: Custom 4 – BE50.4    | -J8.NO4: Custom BE50.4     | -J10.B4: Custom BE50.4 |         |

## **Display Connections and Dip Switches Configuration**

See page 4 : "Connection diagram : CLIMATIC™ 50 controller – option DC50 remote connection"

## DC50 COMFORT DISPLAY

This display is mounted on the panel of the unit and can be also used as a remote controller; this display is designed for non-technician user. This display gives information such as flow or pump status, set point and outside air temperature. It does not allow access to detailed operating data.

It can be used to set or change the scheduling of the different time zones, the temperature set point for each zone.

It also has the capacity to set a 3 hours override and to force the unoccupied mode or any of the different time zones for a period of up to 7 days. It displays the real time clock and different faults signals.

### Display

Type FSTN graphic

Back light: Green LEDs

**Resolution 120x32 pixels**

**Power Supply**

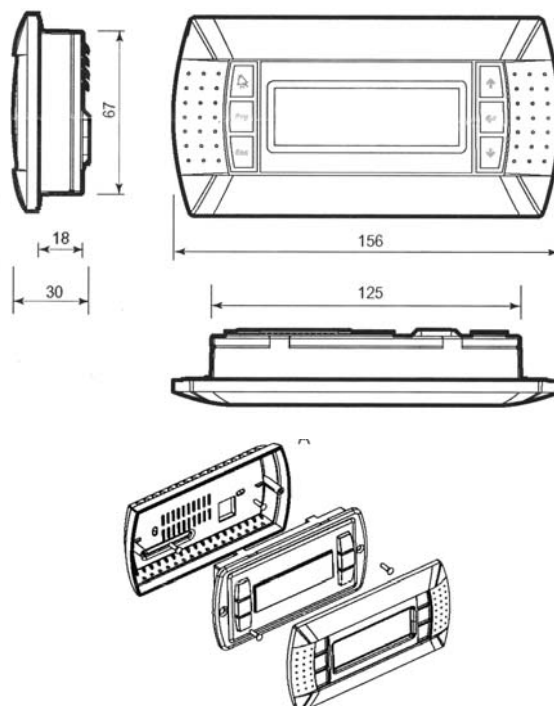
Voltage from main Climatic board

Max power: 0.8W

### Remote Installation

The optional DC50 is designed to be mounted on the wall.

- Fit the cable from the DT50 board through the back piece
- Fasten the back piece to the wall using the rounded head screws supplied in the packaging
- Connect the cable from the main board on the **RJ12** plug on the back of the DC50 display
- Fasten the front panel on the back piece using the flush head screws supplied
- Finally fit the click-on frame



## Terminal connection board installation guide DT 50

The board is fitted with three "telephone" RJ12 plugs. Ensure the board is correctly connected.  
Standard connection is:

- Climatic on connector C
- Remote DC50 on connector A or connector SC
- Unit DC50 on connector B

### Jumpers:

"Displays" are supplied directly by the Climatic board with 30Vdc. Take particular care at the path this 30V is taking when several boards are being used.

J14 and J15 can switch on or off the direct current from the power supply:

#### **J14 and J15 set between1-2**

Connectors A, B, C and screw connector SC are in parallel. Power supply available to all connectors.

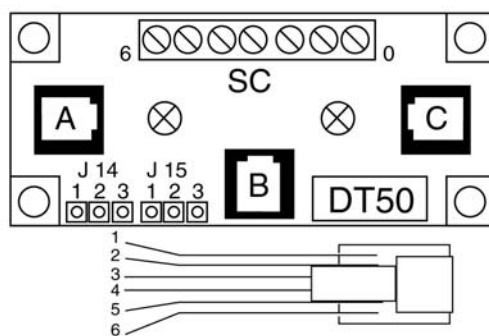
#### **J14 and J15 set between2-3**

Connectors B and C are in parallel but line 1 and 6 don't reach connector A and screw connector SC.  
"Displays" connected to these ports will not be powered.

If J14 and J15 are set in different positions the "terminal connection board" DT50 DOES NOT WORK.

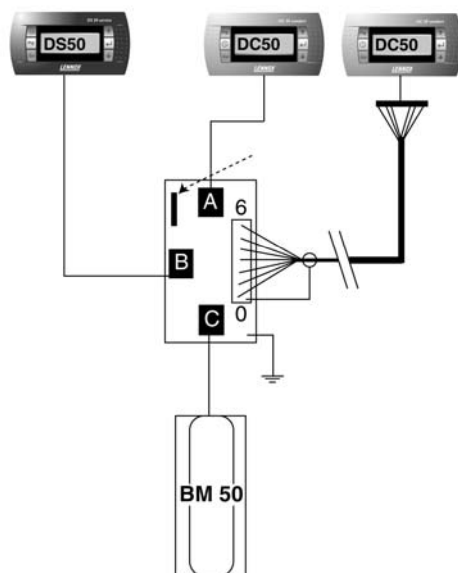
#### **NOTE:**

When a shielded wire is used the metallic case of the "Terminal connection box" DT50 must be earthed.



**RJ12 PIN connection**

| SC Terminals | RJ12 Pin conn | Description    |
|--------------|---------------|----------------|
| 0            | +             | shield / earth |
| 1            | 1             | +VRL=30V       |
| 2            | 2             | GND            |
| 3            | 3             | Rx- / Tx-      |
| 4            | 4             | Rx+ / Tx+      |
| 5            | 5             | GND            |
| 6            | 6             | +VRL=30V       |



### Terminal display address configuration

The address of the terminal must be checked after having powered the board.

- To access the configuration mode, press  $\uparrow\downarrow\leftarrow$  together and hold them for at least 5 seconds.
- The screen shown below will be displayed with the cursor flashing in the top left hand corner.
- To change the address of the terminal display press the  $\leftarrow$  key once.
- Use the  $\uparrow\downarrow$  keys to select the desired value and confirm by pressing  $\leftarrow$ .



- If the address was changed it will display the below screen.



!

## Assigning Terminal displays to control boards.

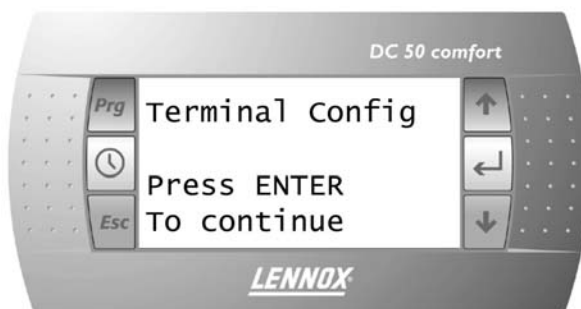
- Access the configuration mode by pressing ↑↓← for at least 5 seconds.

**NOTE:** To access the board address menu you must go directly to the bottom of the first screen (shown in below screen) without changing the terminal address as explained above.

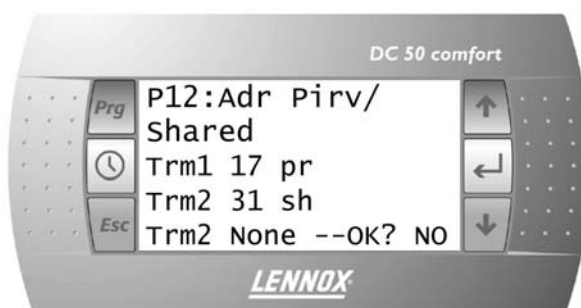
- Press the ← key until the cursor moves to the field "I/O Board address :XX" (below screen)
- Use the ↑↓key to select the correct Climatic board.(N° of Unit)



- Pressing ← again will display the screen shown below :

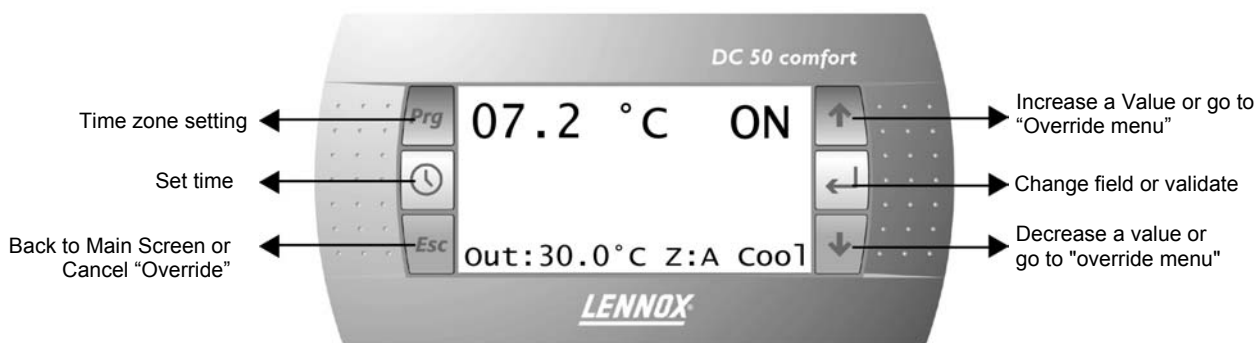


- Pressing ← again will display the screen shown below.
- The field "P:XX " shows the address of the selected board. In the example the value "12" has been selected.
- The field under the "Adr" column represents the addresses of the terminal displays associated with the board that has the address "12", while the column under "Priv/Shared " indicate the type of terminal selected.
- Ph: Private
- Sh :Shared
- Sp : Shared Printer (N/A)
- To exit the configuration procedure and save the data, select the field "OK?NO", choose "Yes" using the ↑↓ keys and confirm by pressing ← .
- If the terminal remains inactive (no button is pressed) for 30 seconds, the configuration procedure is aborted automatically.

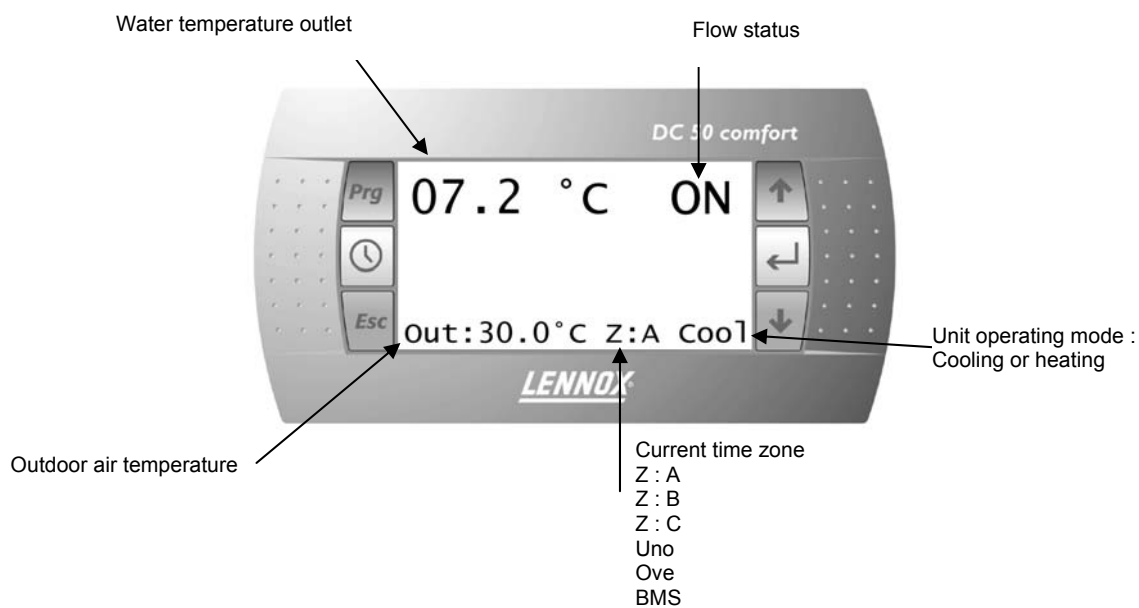




**Keys**



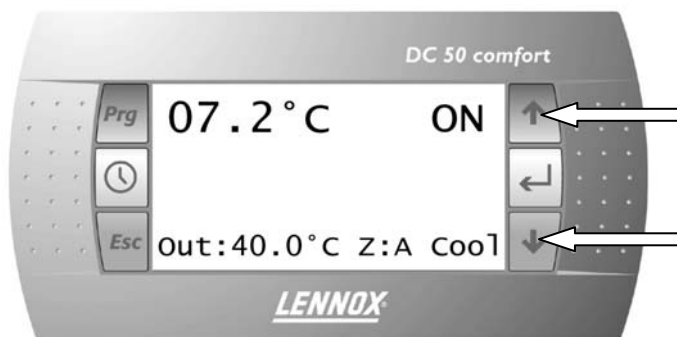
**Main Screen**



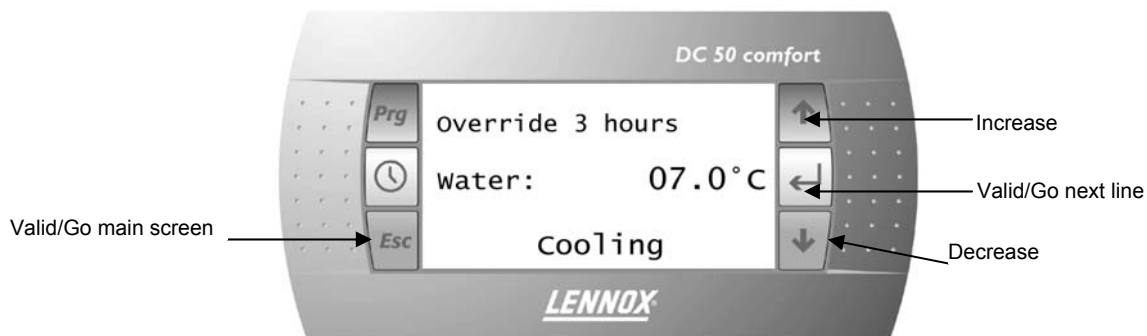
## Override 3 hours

From main screen press any of the two arrow keys as shown bellow:

### **Main screen**



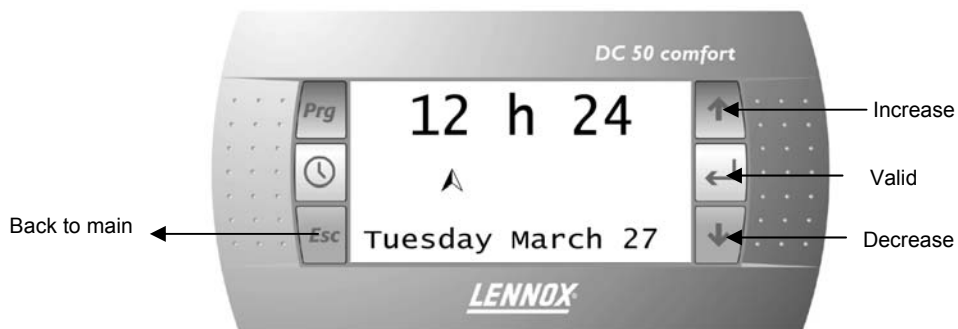
### **Override menu**



It will revert back to main screen after 15 seconds, if no activity

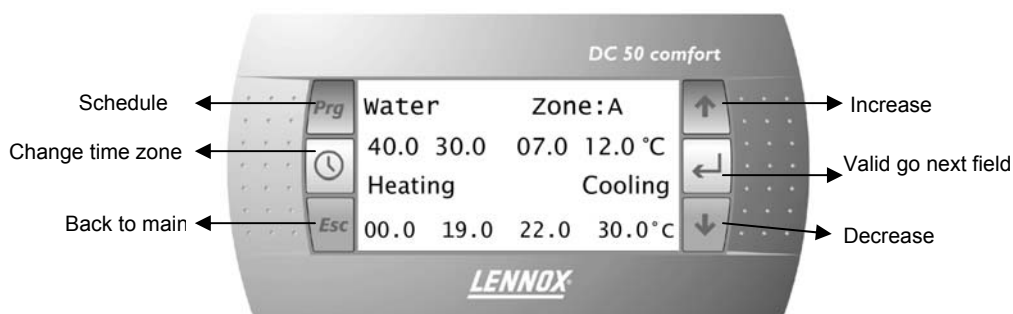
## Clock Menu

From main screen press the clock key, the following menu appears:

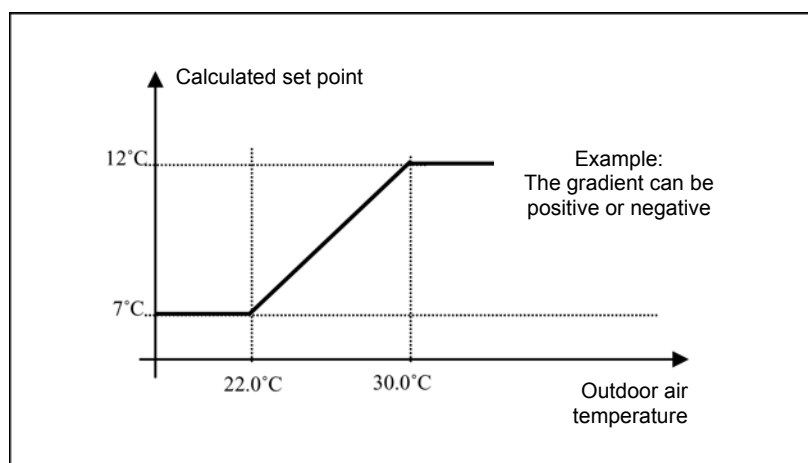
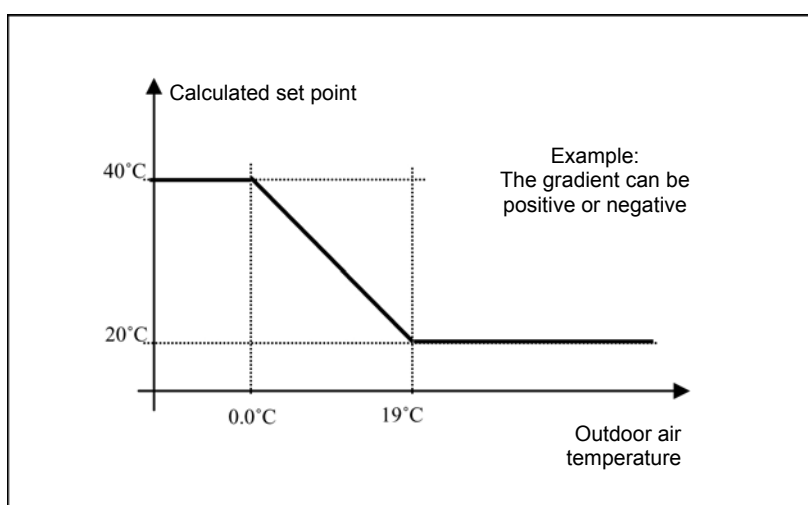


## “Time Zone” Menu

From main screen press the “Prg” key, the following menu appears:



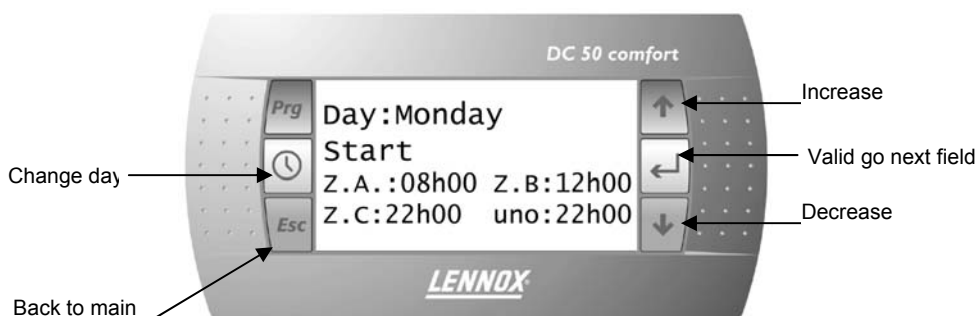
This page allows you to select the set point for cooling and heating for each time zone.



It will revert back to main screen after 15 seconds if no activity.

## “Scheduling” Menu

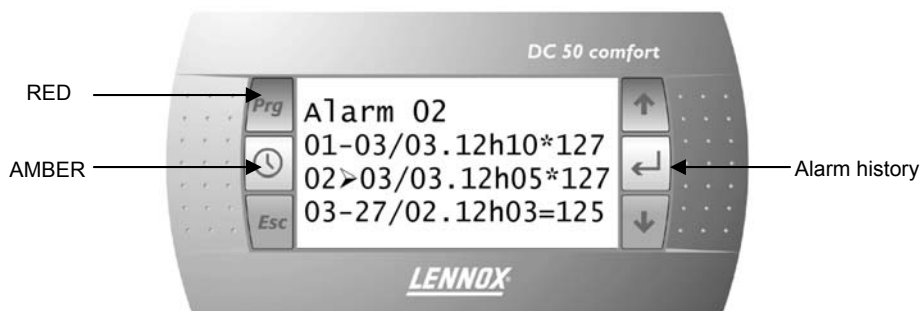
The scheduling menu can be accessed from the “time zone” menu by pressing “Prg” again



## Alarm screen



## Alarm History Menu



You can scroll down this menu using the arrow keys and select one of the alarm messages by pressing the return key.

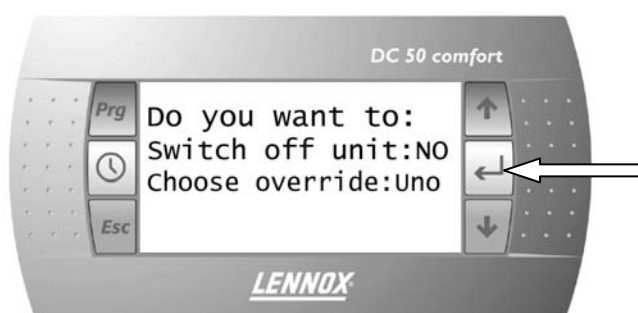
## Alarm details

This menu allows you to view details on the selected fault as shown below:



## Switching ON or OFF the unit or Forcing a selected time zones for a period of up to 7 days

Pressing the return key on the main screen will display the following message:



Pressing the return KEY validates the choice and move to the next field  
Up and down arrows gives you the choice between different things

If you choose "YES" to the first question the unit is **SWITCHED OFF** and you can not access the override menu.

### **WARNING: Switching Off the unit disable all safety Protections**

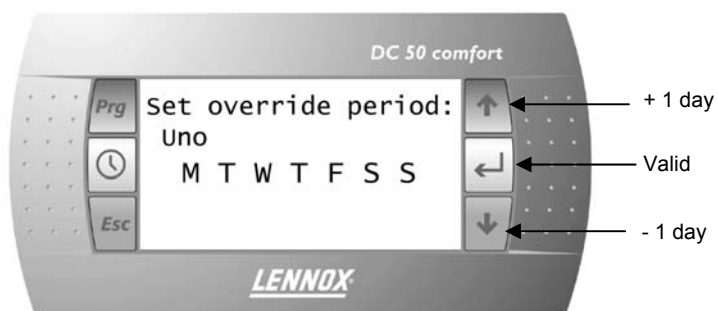
If you choose to stop the Unit in the previous screen the following screen will then appear.



The unit can then be switched back **ON** by pressing the return key once more.

If the first choice is "NO" then the override screen can be accessed a particular time zone can be forced for up to 7 days starting from the day "TODAY".

In this menu you can choose the number of days you want the selected time zone to override. Increase the number of days by pressing the Up or down keys.



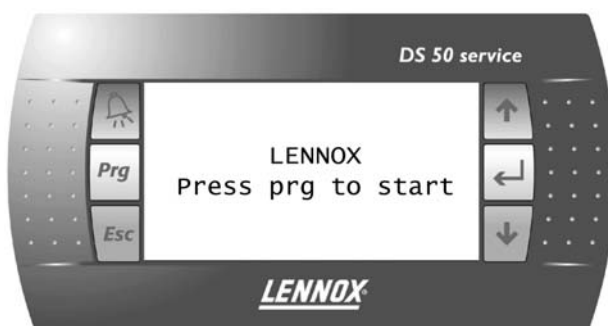
## DS50 SERVICE DISPLAY

This display is usually a plug and play feature designed for technician people.

### Keys



### Start up screen or Screen (1)



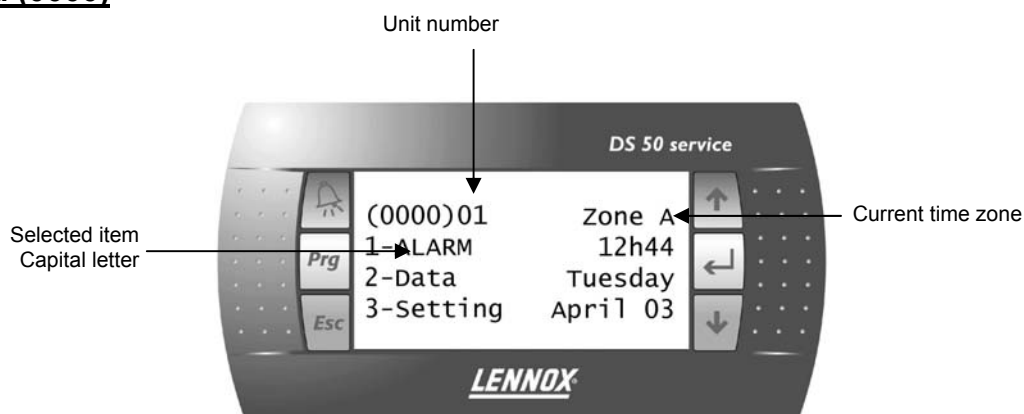
### Screen (2) language selection



Five languages are available in addition to English. The required language must be specified at the time of order. It can be modified on site by Lennox technicians.

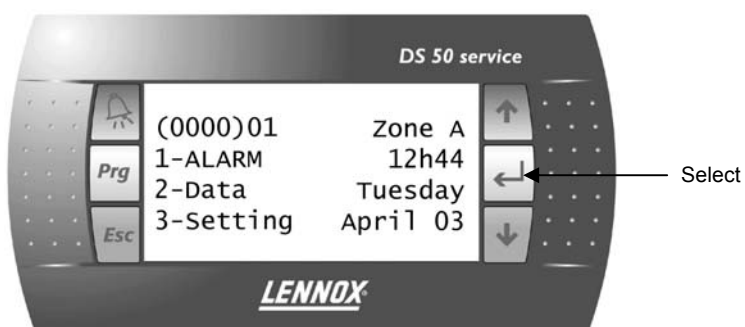
In this menu the specified language can be selected using the up and down keys. The "prg" key validates the choice and start the controller

## Main menu (0000)



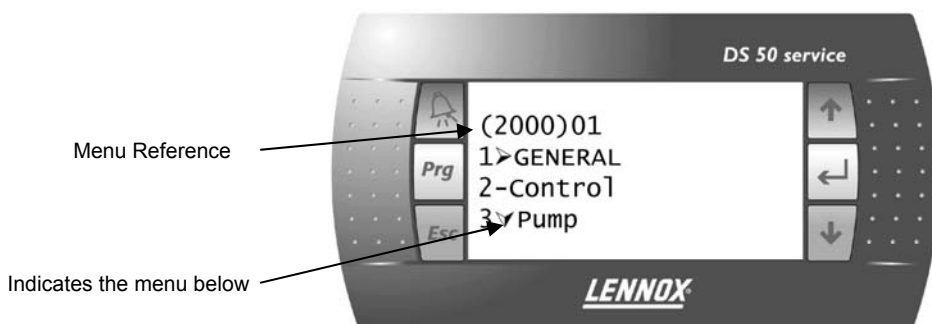
## Moving down the menus

Pressing the arrow keys allows you to move up and down the menu tree. The selected item changes to CAPITAL letter. It can then be selected by pressing the "return" or "select" key

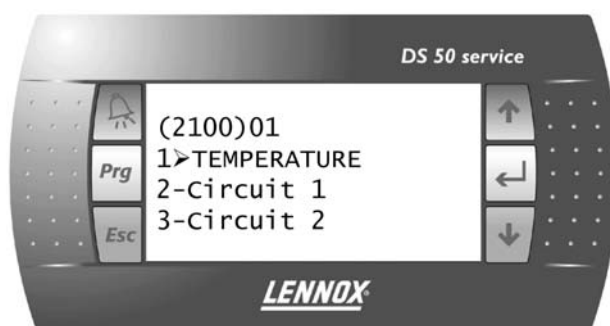




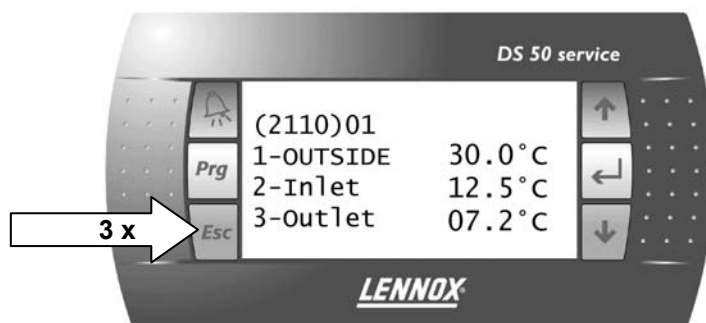
## Sub-menu Data (2000)



If the menu “GENERAL” is selected, the controller then displays a second level sub-menu.

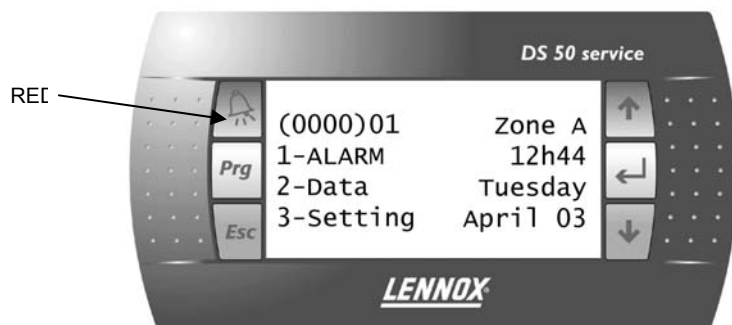


By selecting the item TEMPERATURE and pressing return, a third level page is displayed as shown below:

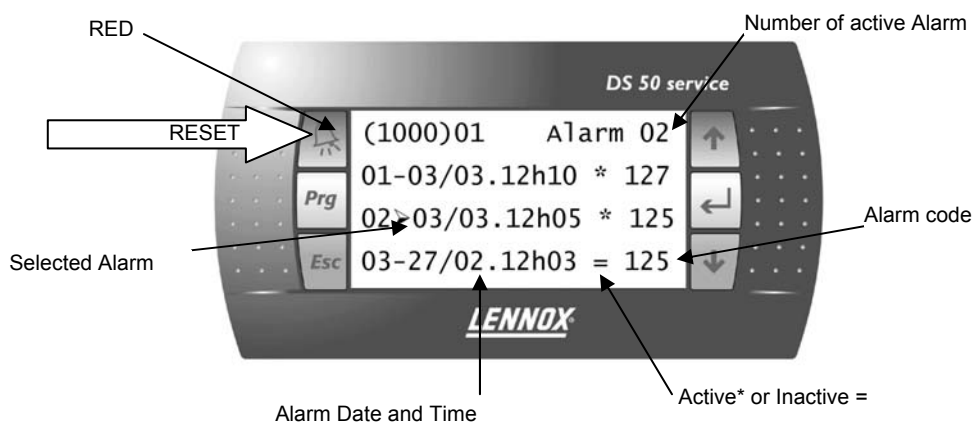


Pressing “ESC” at any time sends you back one level up the menu tree. In the example shown above “ESC” must be pressed 3 times to go back to the main menu (0000)  
 Pressing “ESC” will invalidate any changes made to a value in a setting page.

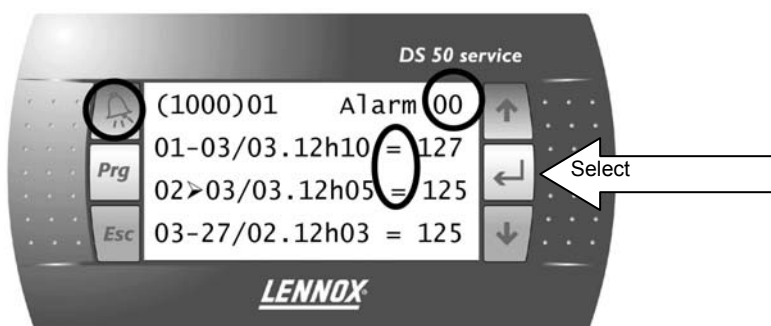
**Alarms**



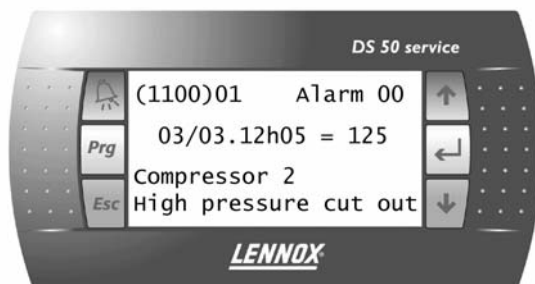
Select the alarm menu using the arrow keys and press return.  
The faults history is then displayed in the page (1000):



Pressing the "ALARM" key resets all the alarms  
The number of active alarms goes to 0, no active alarm shown in the menu, the "bell" key is switched off.

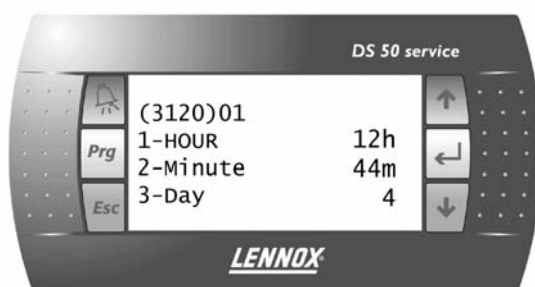


Pressing the “return” key will display details of the selected alarm

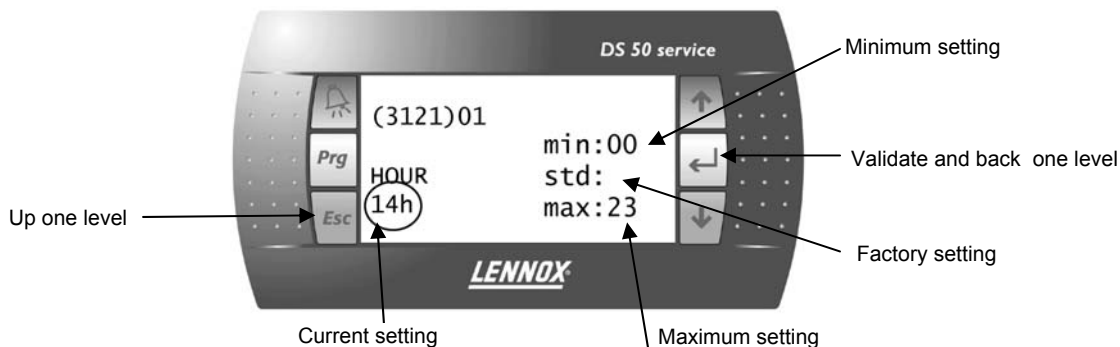


### Clock settings

The clock setting menu can be accessed from the main menu by selecting the menu “SETTING” and then navigating down through the sub-menus until page (3120).

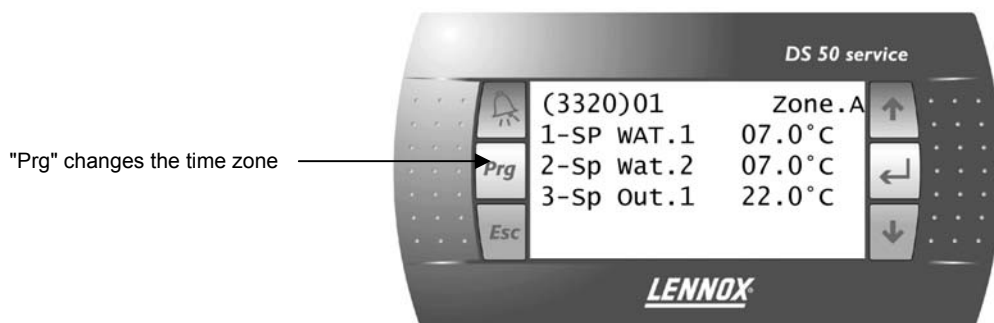


Selecting the HOUR for displays the page 3121 shown below:

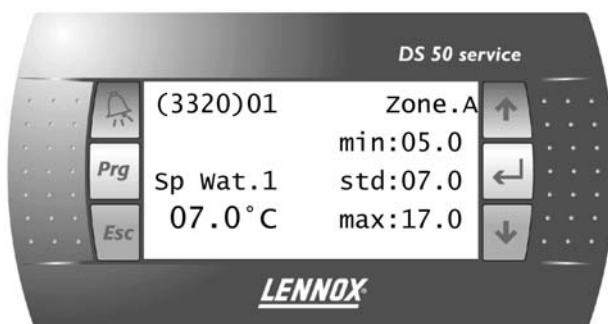


## Zone Settings

From Main menu (0000) navigate down to sub-menu "SETTINGS", zone settings (3320).



In this particular page, pressing the "prg" key, changes the time zone. If "SP WAT.1" is selected, this displays the Minimum Water Outlet Temperature Set Point for the specific time zone shown in the top corner.



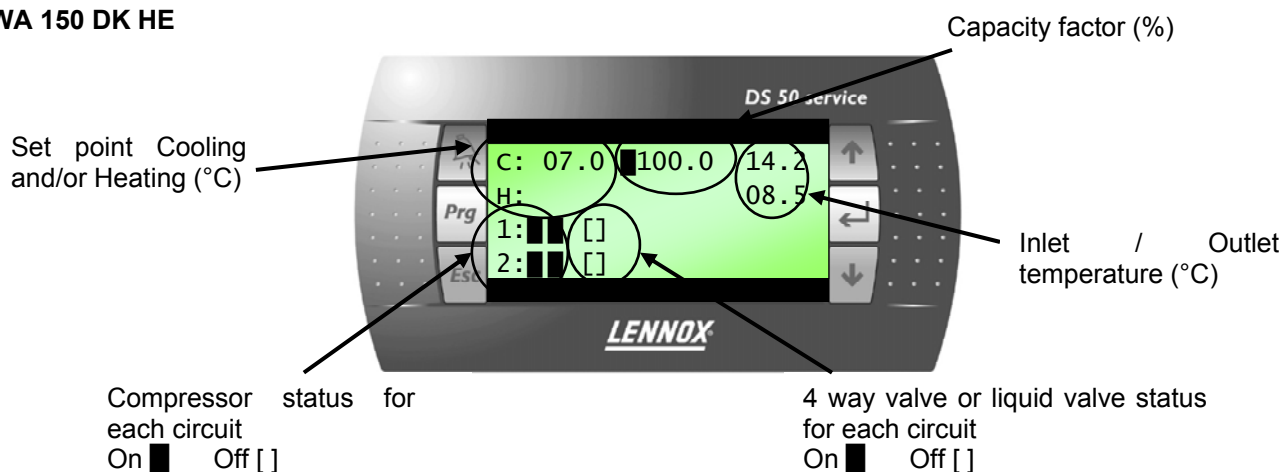
Pressing the "prg" validates any changes made, and moves to the next time zone. "ESC" does not validate the changes and move back one step in the menu tree.

## Special screens for diagnostic

For unit operation diagnostic, it is helpful to use the special following screen which can be reached by pressing the Prg key while being on the screen 2400:

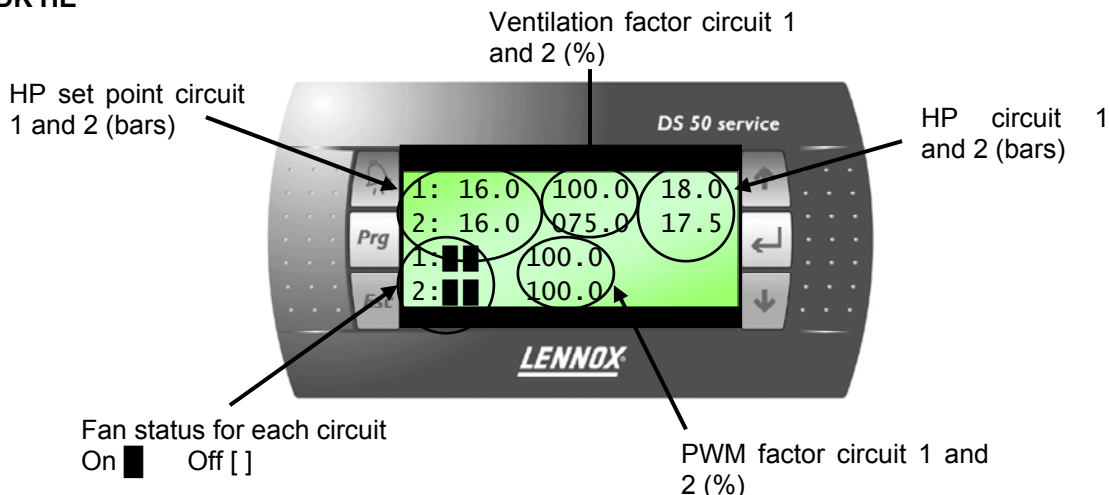
1. Main unit operation (water temperature vs set point , compressor operation, capacity factor)

### WA 150 DK HE



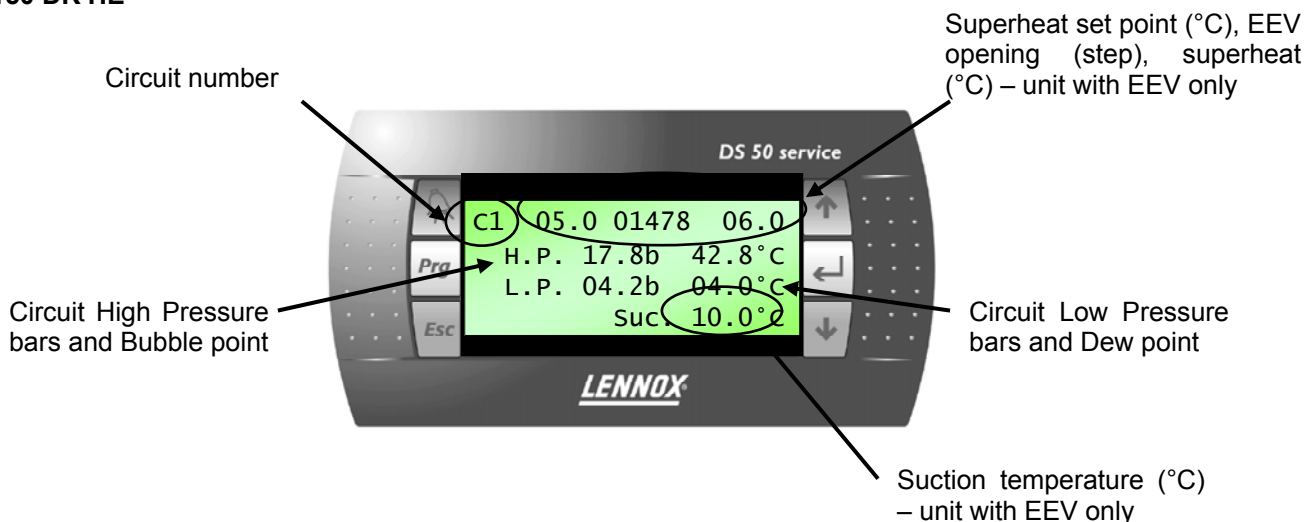
2. Fans operation (HP vs set point, fan operation, Capacity factor)

WA 150 DK HE



3. Circuit 1 to 4 operation (HP, LP, superheat vs set point)

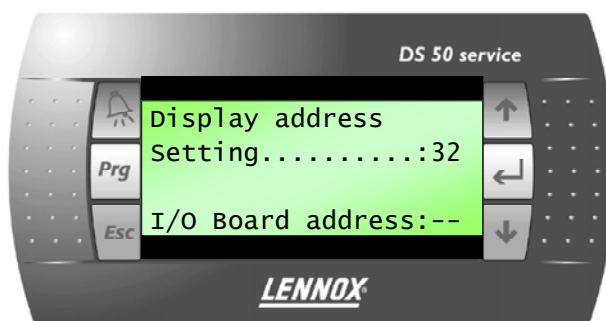
WA 150 DK HE



**BM 50 address configuration with DS50**

It may be necessary to change BM50 addresses - mainly in case of Master / Slave installation. Follow the procedure hereunder to do so:

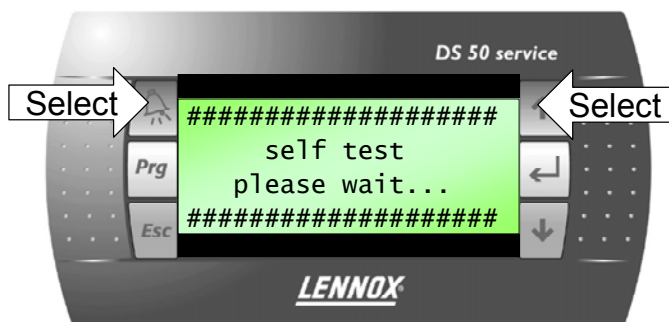
1. Change the DS50 address to 0
- Access the configuration mode by pressing ↑↓← for at least 5 seconds until you reach the following screen:



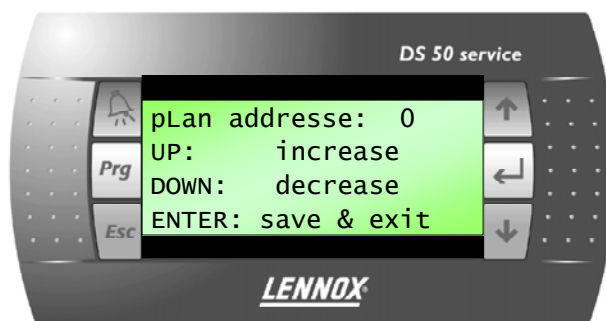
By using ↑ ↓ keys Change the Display addresses setting to 0 (instead of 32 as standard value) and validate with ↵ key.

2. Change the BM50 address

Shut off the power on the BM50 and then turn it on again after 5 seconds, then press alarm and ↑keys in order to get the following screen



Then you will get:



By using ↑ ↓ keys Change the pLan address to the correct value (1 to 4) and validate with ↵ key.

3. Change the DS50 address

Set back the DS 50 address to its normal address (32) with the relevant procedure.

## DS50 MENU TREE – ECOLOGIC/ECOMAX RANGE

| Main screen | Code | Description     | Code | Description   | Code | Description       | Code | Unit   |
|-------------|------|-----------------|------|---------------|------|-------------------|------|--------|
| 1-Alarm     | 1000 | 1-(date).(time) |      |               |      |                   |      |        |
|             |      | 2-(date).(time) |      |               |      |                   |      |        |
|             |      | 3-(date).(time) |      |               |      |                   |      |        |
| 2-Data      | 2000 | 1-General       | 2100 | 1-Temperature | 2110 | 1-Outside         | 2111 | °C     |
|             |      |                 |      |               |      | 2-Inlet           | 2112 | °C     |
|             |      |                 |      |               |      | 3-Outlet          | 2113 | °C     |
|             |      |                 |      |               |      | 4-Wat/Cond        | 2114 | °C     |
|             |      |                 |      | 2-Circuit 1   | 2120 | 1-SuperHeat       | 2121 | °C     |
|             |      |                 |      |               |      | 2-T°. Condensing  | 2122 | °C     |
|             |      |                 |      |               |      | 3-T°- Saturated   | 2123 | °C     |
|             |      |                 |      |               |      | 4-T°. Suction     | 2124 | °C     |
|             |      |                 |      |               |      | 5-P. Condensing   | 2125 | b      |
|             |      |                 |      |               |      | 6-P. Saturated    | 2126 | b      |
|             |      |                 |      | 3-Circuit 2   | 2130 | 1-SuperHeat       | 2131 | °C     |
|             |      |                 |      |               |      | 2- T°.Condensing  | 2132 | °C     |
|             |      |                 |      |               |      | 3- T°- Saturated. | 2133 | °C     |
|             |      |                 |      |               |      | 4- T°. Suction.   | 2134 | °C     |
|             |      |                 |      |               |      | 5- P. Condensing  | 2135 | b      |
|             |      |                 |      |               |      | 6- P. Saturated   | 2136 | b      |
|             |      |                 |      | 4-Circuit 3   | 2140 | 1-SuperHeat       | 2141 | °C     |
|             |      |                 |      |               |      | 2-T°. Condensing  | 2142 | °C     |
|             |      |                 |      |               |      | 3-T°- Saturated   | 2143 | °C     |
|             |      |                 |      |               |      | 4-T°. Suction     | 2144 | °C     |
|             |      |                 |      |               |      | 5-P. Condensing   | 2145 | b      |
|             |      |                 |      |               |      | 6-P. Saturated    | 2146 | b      |
|             |      |                 |      | 5-Circuit 4   | 2150 | 1-SuperHeat       | 2151 | °C     |
|             |      |                 |      |               |      | 2- T°.Condensing  | 2152 | °C     |
|             |      |                 |      |               |      | 3- T°- Saturated. | 2153 | °C     |
|             |      |                 |      |               |      | 4- T°. Suction.   | 2154 | °C     |
|             |      |                 |      |               |      | 5- P. Condensing  | 2155 | b      |
|             |      |                 |      |               |      | 6- P. Saturated   | 2156 | b      |
|             |      |                 |      | 6-Other       | 2160 | 1-Sw On/Off       | 2161 | On/Off |
|             |      |                 |      |               |      | 2-Sw Flow         | 2162 | On/Off |

| Main screen    | Code | Description | Code | Description    | Code | Description    | Code | Unit       |      |  |
|----------------|------|-------------|------|----------------|------|----------------|------|------------|------|--|
|                |      |             |      |                |      | 3-Sw Reset     | 2163 | On/Off     |      |  |
|                |      |             |      |                |      | 4-Sw Unoc.     | 2164 | On/Off     |      |  |
|                |      |             |      |                |      | 5-Sw Dis. C1   | 2165 | On/Off     |      |  |
|                |      |             |      |                |      | 6-Sw Dis. C2   | 2166 | On/Off     |      |  |
|                |      |             |      |                |      | 7- Sw Dis. C3  | 2167 | On/Off     |      |  |
|                |      |             |      |                |      | 8- Sw Dis. C4. | 2168 | On/Off     |      |  |
|                |      |             |      | 7-Out. Custom. | 2170 | 1-Relay 1      | 2171 | On/Off     |      |  |
|                |      |             |      |                |      | 2-Relay 2      | 2172 | On/Off     |      |  |
|                |      |             |      |                |      | 3-Relay 3      | 2173 | On/Off     |      |  |
|                |      |             |      |                |      | 4-Relay 4      | 2174 | On/Off     |      |  |
|                |      |             |      | 8-In. Custom.  | 2180 | 1-Switch 1     | 2181 | On/Off     |      |  |
|                |      |             |      |                |      | 2-Switch 2     | 2182 | On/Off     |      |  |
|                |      |             |      |                |      | 3-Switch 3     | 2183 | On/Off     |      |  |
|                |      |             |      |                |      | 4-Switch 4     | 2184 | On/Off     |      |  |
|                |      |             |      | 9-In. % Custom | 2190 | 1-Temp. 1      | 2191 | °C         |      |  |
|                |      |             |      |                |      | 2-Temp. 2      | 2192 | °C         |      |  |
|                |      |             |      |                |      | 3-Temp. 3      | 2193 | °C         |      |  |
|                |      |             |      |                |      | 4-Temp. 4      | 2194 | °C         |      |  |
|                |      |             |      | 2-Control      | 2200 | 1-Water        | 2210 | 1-Sp Cool  | 2211 | °C   |
|                |      |             |      |                |      |                |      | 2-Sp Heat  | 2212 | °C   |
|                |      |             |      |                |      |                |      | 3-Cap.Cool | 2213 | %  |
|                |      |             |      |                |      |                |      | 4-Cap.Heat | 2214 | %  |
|                |      |             |      |                |      |                |      | 5-Sw 2°Sp  | 2215 | On/Off   |
|                |      |             |      |                |      |                |      | 6-Offset   | 2216 | °C   |
|                |      |             |      |                |      | 2-Ventilation  | 2220 | 1-SetPoint | 2221 | b  |
|                |      |             |      |                |      |                |      | 2-Capa. V1 | 2222 | %  |
|                |      |             |      |                |      |                |      | 3-Capa. V2 | 2223 | %  |
|                |      |             |      |                |      |                |      | 4-Capa. V3 | 2224 | %  |
|                |      |             |      |                |      |                |      | 5-Capa. V4 | 2225 | %  |
|                |      |             |      |                |      | 3-Pump         |      | 1-Config.  | 2311 | Liste: NO / Single / Double  |
|                |      |             |      |                |      |                |      | 2-State    | 2312 | Liste : Stopped / Started1 / Started2 / Schedule / Fault(1) / Fault(2) |
|                |      |             |      |                |      |                |      | 3-Sw Flow  | 2313 | On/Off   |
|                |      |             |      |                |      |                |      | 4-Sw State | 2314 | On/Off   |
| 5-Relay 1      | 2315 | On/Off      |      |                |      |                |      |            |      |  |
| 6-Running T. 1 | 2316 | h           |      |                |      |                |      |            |      |  |
| 7-Relay 2      | 2317 | On/Off      |      |                |      |                |      |            |      |  |



| Main screen | Code | Description  | Code         | Description   | Code   | Description    | Code   | Unit   |                              |
|-------------|------|--------------|--------------|---------------|--|----------------|--|--|------------------------------|
|             |      |              |              |               |  | 8-Running T. 2 | 2318   | h  |                              |
|             |      | 4-Compressor | 2400         | 1-Comp.1 – C1 | 2410   | 1-Config.      | 2411   | Liste : No / C.Only / H.Pump   |                              |
|             |      |              |              |               |  | 2-State        | 2412   | Liste : Stopped / StartHeat / Started / Start.0.5 / Started1 / Defrost / Wait.Flow / Wait.CH / Ant-Sho-Cy / Schedule / Switch / Fault(1) |                              |
|             |      |              |              |               |  | 3-Sw State     | 2413   | On/Off   |                              |
|             |      |              |              |               |  | 4-Sw High P.   | 2414   | On/Off   |                              |
|             |      |              |              |               |  | 5-Sw Low P.    | 2415   | On/Off   |                              |
|             |      |              |              |               |  | 6-Relay        | 2416   | On/Off   |                              |
|             |      |              |              |               |  | 7-H.Pump       | 2417   | On/Off   |                              |
|             |      |              |              |               |  | 8-Valve        | 2418   | On/Off   |                              |
|             |      |              |              |               |  | 9-Run Time     | 2419   | h  |                              |
|             |      |              |              | 2420          | 2-Comp.2 - C1  | 2420           | 1-Config.  | 2421   | Liste : No / C.Only / H.Pump |
|             |      |              | 2-State      |               |  |                | 2422   | Liste : Stopped / StartHeat / Started / Start.0.5 / Started1 / Defrost / Wait.Flow / Wait.CH / Ant-Sho-Cy / Schedule / Switch / Fault(1) |                              |
|             |      |              | 3-Sw State   |               |  |                | 2423   | On/Off   |                              |
|             |      |              | 4-Sw High P. |               |  |                | 2424   | On/Off   |                              |
|             |      |              | 5-Sw Low P.  |               |  |                | 2425   | On/Off   |                              |
|             |      |              | 6-Relay      |               |  |                | 2426   | On/Off   |                              |
|             |      |              | 7-H.Pump     |               |  |                | 2427   | On/Off   |                              |
|             |      |              | 8-Valve      |               |  |                | 2428   | On/Off   |                              |
|             |      |              | 9-Run Time   |               |  |                | 2429   | h  |                              |
|             |      |              |              | 2430          | 3- Comp.3 – C1<br>(Ecologic)<br>Comp.1 – C2<br>(Ecomax)  | 2430           | 1-Config.  | 2431   | Liste : No / C.Only / H.Pump |
|             |      |              | 2-State      |               |  |                | 2432   | Liste : Stopped / StartHeat / Started / Start.0.5 / Started1 / Defrost / Wait.Flow / Wait.CH / Ant-Sho-Cy / Schedule / Switch / Fault(1) |                              |
|             |      |              | 3-Sw State   |               |  |                | 2433   | On/Off   |                              |
|             |      |              | 4-Sw High P. |               |  |                | 2434   | On/Off   |                              |
|             |      |              | 5-Sw Low P.  |               |  |                | 2435   | On/Off   |                              |
|             |      |              | 6-Relay      |               |  |                | 2436   | On/Off   |                              |
|             |      |              | 7-H.Pump     |               |  |                | 2437   | On/Off   |                              |
|             |      |              | 8-Valve      |               |  |                | 2438   | On/Off   |                              |
|             |      |              | 9-Run Time   |               |  |                | 2439   | h  |                              |
|             |      |              |              | 2440          | 4- Comp. 1 – C2<br>(Ecologic)<br>Comp.2 – C2<br>(Ecomax) | 2440           | 1-Config.  | 2441   | Liste : No / C.Only / H.Pump |
|             |      | 2-State      | 2442         |               |  |                | Liste : Stopped / StartHeat / Started / Start.0.5 / Started1 / Defrost / Wait.Flow / Wait.CH / Ant-Sho-Cy / Schedule / Switch / Fault(1) |  |                              |
|             |      | 3-Sw State   | 2443         |               |  |                | On/Off   |  |                              |

| Main screen | Code | Description | Code   | Description | Code         | Description  | Code   | Unit         |  |  |
|-------------|------|-------------|--|-------------|--------------|--|--|--------------|--|--|
|             |      |             |  |             |              | 4-Sw High P.   | 2444   | On/Off       |  |  |
|             |      |             |  |             |              | 5-Sw Low P.  | 2445   | On/Off       |  |  |
|             |      |             |  |             |              | 6-Relay  | 2446   | On/Off       |  |  |
|             |      |             |  |             |              | 7-H.Pump   | 2447   | On/Off       |  |  |
|             |      |             |  |             |              | 8-Valve  | 2448   | On/Off       |  |  |
|             |      |             |  |             |              | 9-Run Time   | 2449   | H            |  |  |
|             |      |             |  |             |              | 5- Comp. 2 – C2<br>(Ecologic)<br>Comp.1 – C3<br>(Ecomax)                       | 2450   | 1-Config.    | 2451   | Liste : No / C.Only / H.Pump   |
|             |      |             |  |             |              |  |  | 2-State      | 2452   | Liste : Stopped / StartHeat / Started / Start.0.5 / Started1 / Defrost / Wait.Flow / Wait.CH / Ant-Sho-Cy / Schedule / Switch / Fault(1) |
|             |      |             |  |             |              |  |  | 3-Sw State   | 2453   | On/Off   |
|             |      |             |  |             |              |  |  | 4-Sw High P. | 2454   | On/Off   |
|             |      |             |  |             |              |  |  | 5-Sw Low P.  | 2455   | On/Off   |
|             |      |             |  |             |              |  |  | 6-Relay      | 2456   | On/Off   |
|             |      |             |  |             |              |  |  | 7-H.Pump     | 2457   | On/Off   |
|             |      |             |  |             |              |  |  | 8-Valve      | 2458   | On/Off   |
|             |      |             |  |             |              | 9-Run Time   | 2459   | H            |  |  |
|             |      |             | 5- Comp. 3 – C2<br>(Ecologic)<br>Comp.1 – C4<br>(Ecomax) | 2460        | 1-Config.    | 2461   | Liste : No / C.Only / H.Pump   |              |  |  |
|             |      |             |  |             | 2-State      | 2462   | Liste : Stopped / StartHeat / Started / Start.0.5 / Started1 / Defrost / Wait.Flow / Wait.CH / Ant-Sho-Cy / Schedule / Switch / Fault(1) |              |  |  |
|             |      |             |  |             | 3-Sw State   | 2463   | On/Off   |              |  |  |
|             |      |             |  |             | 4-Sw High P. | 2464   | On/Off   |              |  |  |
|             |      |             |  |             | 5-Sw Low P.  | 2465   | On/Off   |              |  |  |
|             |      |             |  |             | 6-Relay      | 2466   | On/Off   |              |  |  |
|             |      |             |  |             | 7-H.Pump     | 2457   | On/Off   |              |  |  |
|             |      |             |  |             | 8-Valve      | 2458   | On/Off   |              |  |  |
|             |      |             | 9-Run Time   | 2459        | H            |  |  |              |  |  |
|             |      |             | 5-EEV  | 2500        | 1-Circuit 1  | 2510   | 1-Config.  | 2511         | Liste : No / Yes   |  |
|             |      |             |  |             |              |  | 2-State  | 2512         | Liste : Stopped / Started / Wait.Flow / Wait.CH / Schedule / Switch / Fault(1) |  |
|             |      |             |  |             |              |  | 3-Position   | 2513         | ~  |  |
|             |      |             |  |             | 2-Circuit 2  | 2520   | 1-Config.  | 2521         | Liste : No / Yes   |  |
|             |      |             |  |             |              |  | 2-State  | 2522         | Liste : Stopped / Started / Wait.Flow / Wait.CH / Schedule / Switch / Fault(1) |  |
|             |      |             |  |             |              |  | 3-Position   | 2523         | ~  |  |
| 3-Circuit 3 | 2530 | 1-Config.   |  |             | 2531         | Liste : No / Yes   |  |              |  |  |
|             |      | 2-State     |  |             | 2532         | Liste : Stopped / Started / Wait.Flow / Wait.CH / Schedule / Switch / Fault(1) |  |              |  |  |

| Main screen | Code | Description   | Code | Description         | Code | Description | Code | Unit   |
|-------------|------|---------------|------|---------------------|------|-------------|------|--|
|             |      |               |      |                     |      | 3-Position  | 2533 | ~  |
|             |      |               |      | 4-Circuit 4         | 2540 | 1-Config.   | 2541 | Liste : No / Yes   |
|             |      |               |      |                     |      | 2-State     | 2542 | Liste : Stopped / Started / Wait.Flow / Wait.CH / Schedule / Switch / Fault(1)   |
|             |      |               |      |                     |      | 3-Position  | 2543 | ~  |
|             |      | 6-Ventilation | 2600 | 1-Fan - Circuit 1   | 2610 | 1-Config.   | 2611 | Liste : No / 1.Yes / 2.Yes / 3.Yes / 4.Yes / 5.Yes / 1.Modulat. / 2.Modulat. / 3.Modulat. / 4.Modulat. / 5.Modulat. / 1.LowSpeed / 2.LowSpeed / 3.LowSpeed / 4.LowSpeed / 5.LowSpeed |
|             |      |               |      |                     |      | 2-State     | 2612 | Liste : Stopped / Start.0.5 / Started1 / Start.1.5 / Started2 / Start.2.5 / Started3 / Start.3.5 / Started4 / Start.4.5 / Started5 / Wait.Flow / Wait.CH / Fault(1)                  |
|             |      |               |      |                     |      | 3-Sw State  | 2613 | On/Off   |
|             |      |               |      |                     |      | 4-Relay 1   | 2614 | On/Off   |
|             |      |               |      |                     |      | 5-Relay 2.  | 2615 | On/Off   |
|             |      |               |      |                     |      | 6-Relay 3   | 2616 | On/Off   |
|             |      |               |      |                     |      | 7-Relay 4   | 2617 | On/Off   |
|             |      |               |      |                     |      | 8-Relay 5   | 2618 | On/Off   |
|             |      |               |      |                     |      | 9-Modulat.  | 2619 | %  |
|             |      |               |      | 1-Fan - Circuit 2   | 2620 | 1-Config.   | 2621 | Liste : No / 1.Yes / 2.Yes / 3.Yes / 4.Yes / 5.Yes / 1.Modulat. / 2.Modulat. / 3.Modulat. / 4.Modulat. / 5.Modulat. / 1.LowSpeed / 2.LowSpeed / 3.LowSpeed / 4.LowSpeed / 5.LowSpeed |
|             |      |               |      |                     |      | 2-State     | 2622 | Liste : Stopped / Start.0.5 / Started1 / Start.1.5 / Started2 / Start.2.5 / Started3 / Start.3.5 / Started4 / Start.4.5 / Started5 / Wait.Flow / Wait.CH / Fault(1)                  |
|             |      |               |      |                     |      | 3-Sw State  | 2623 | On/Off   |
|             |      |               |      |                     |      | 4-Relay 1   | 2624 | On/Off   |
|             |      |               |      |                     |      | 5-Relay 2.  | 2625 | On/Off   |
|             |      |               |      |                     |      | 6-Relay 3   | 2626 | On/Off   |
|             |      |               |      |                     |      | 7-Relay 4   | 2627 | On/Off   |
|             |      |               |      |                     |      | 8-Relay 5   | 2628 | On/Off   |
|             |      |               |      |                     |      | 9-Modulat.  | 2629 | %  |
|             |      |               |      | 2-Fan 2 - Circuit 3 | 2630 | 1-Config.   | 2631 | Liste : No / 1.Yes / 2.Yes / 3.Yes / 4.Yes / 5.Yes / 1.Modulat. / 2.Modulat. / 3.Modulat. / 4.Modulat. / 5.Modulat. / 1.LowSpeed / 2.LowSpeed / 3.LowSpeed / 4.LowSpeed / 5.LowSpeed |
|             |      |               |      |                     |      | 2-State     | 2632 | Liste : Stopped / Start.0.5 / Started1 / Start.1.5 / Started2 / Start.2.5 / Started3 / Start.3.5 / Started4 / Start.4.5 / Started5 / Wait.Flow / Wait.CH / Fault(1)                  |
|             |      |               |      |                     |      | 3-Sw State  | 2633 | On/Off   |
|             |      |               |      |                     |      | 4-Relay 1   | 2634 | On/Off   |
|             |      |               |      |                     |      | 5-Relay 2.  | 2635 | On/Off   |
|             |      |               |      |                     |      | 6-Relay 3   | 2636 | On/Off   |
|             |      |               |      |                     |      | 7-Relay 4   | 2637 | On/Off   |
|             |      |               |      |                     |      | 8-Relay 5   | 2638 | On/Off   |

| Main screen | Code | Description | Code | Description       | Code | Description | Code | Unit   |
|-------------|------|-------------|------|-------------------|------|-------------|------|--|
|             |      |             |      |                   |      | 9-Modulat.  | 2639 | %  |
|             |      |             |      | 1-Fan - Circuit 4 | 2640 | 1-Config.   | 2641 | Liste : No / 1.Yes / 2.Yes / 3.Yes / 4.Yes / 5.Yes / 1.Modulat. / 2.Modulat. / 3.Modulat. / 4.Modulat. / 5.Modulat. / 1.LowSpeed / 2.LowSpeed / 3.LowSpeed / 4.LowSpeed / 5.LowSpeed |
|             |      |             |      |                   |      | 2-State     | 2642 | Liste : Stopped / Start.0.5 / Started1 / Start.1.5 / Started2 / Start.2.5 / Started3 / Start.3.5 / Started4 / Start.4.5 / Started5 / Wait.Flow / Wait.CH / Fault(1)                  |
|             |      |             |      |                   |      | 3-Sw State  | 2643 | On/Off   |
|             |      |             |      |                   |      | 4-Relay 1   | 2644 | On/Off   |
|             |      |             |      |                   |      | 5-Relay 2.  | 2645 | On/Off   |
|             |      |             |      |                   |      | 6-Relay 3   | 2646 | On/Off   |
|             |      |             |      |                   |      | 7-Relay 4   | 2647 | On/Off   |
|             |      |             |      |                   |      | 8-Relay 5   | 2648 | On/Off   |
|             |      |             |      |                   |      | 9-Modulat.  | 2649 | %  |
|             |      | 7-Option    | 2700 | 1-Free Cooling    | 2710 | 1- Config.  | 2711 | Liste : No / Yes   |
|             |      |             |      | 2-Heat Recovery   | 2720 | 2- State    | 2712 | Liste : Stopped / Started / Wait.Flow / Wait.CH  |
|             |      |             |      |                   |      | 1-Config.   | 2721 | Liste : No / Yes   |
|             |      |             |      |                   |      | 2- State    | 2722 | Liste : Stopped / Started / Wait.Flow / Wait.CH  |
|             |      |             |      |                   |      | 3- Inlet    | 2723 | °C   |
|             |      |             |      |                   |      | 4- Outlet   | 2724 | °C   |
|             |      |             |      |                   |      | 5-Sw State  | 2725 | On/Off   |

| Main screen | Code | Description   | Code | Description    | Code       | Description | Code          | Unit  | Min      | Factory   | Max  | Comments  |  |    |   |
|-------------|------|---------------|------|----------------|------------|-------------|---------------|---|----------|---|--|---|--|----|---|
| 3-Setting   | 3000 | 1-General     | 3100 | 1-Order        | 3110       | 1-On/Off    | 3111          | On/Off  | ~        | Off   | ~  | *[On / Off] Unit  |  |    |   |
|             |      |               |      |                |            | 2-Pompe     | 3112          | Liste : Started / Stopped / P1 Only / P2 Only / P1-N P2-R / P2-N P1-R / Clock | 0        | 0   | 6  | pump operation mode set up (see Pump operation description page 11 – IOM Climatic 50)           |  |    |   |
|             |      |               |      |                |            | 3-Reset Al. | 3113          | Yes/No  | ~        | Off   | ~  | *[Reset] Discharges the safety measures of the unit   |  |    |   |
|             |      |               |      |                |            | 4-Resume    | 3114          | Yes/No  | ~        | Off   | ~  | *[Override] Cancel any override action set with the DC50  |  |    |   |
|             |      |               |      |                |            | 5-Test      | 3115          | Liste : . / Quickly / Defrost / 24/24 7/7                                     | 0        | 0   | 3  | Lennox set point  |  |    |   |
|             |      |               |      | 2-Clock        |            | 3120        | 1-Hour        | 3121  | H        | 0   | ~  | 23  | *[Clock] Clock setting "Hour"  |    |   |
|             |      |               |      |                |            |             | 2-Minute      | 3122  | m        | 0   | ~  | 59  | *[Clock] Clock setting "minute"  |    |   |
|             |      |               |      |                |            |             | 3-Day         | 3123  | ~        | 1   | ~  | 31  | *[Clock] Clock setting "Day"   |    |   |
|             |      |               |      |                |            |             | 4-Month       | 3124  | ~        | 1   | ~  | 12  | *[Clock] Clock setting "Month"   |    |   |
|             |      |               |      |                |            |             | 5-Year        | 3125  | ~        | 2   | ~  | 99  | *[Clock] Clock setting "Year"  |    |   |
|             |      | 6-Win/Sum     | 3126 |                | Yes/No     |             | ~             | Yes   | ~        | *[Clock] automatic switch summer time / winter time |  |   |  |    |   |
|             |      | 2-Schedule    | 3200 | 1-Time         | 3210       | 1-Start Uno | 3211          | h   | 0        | 24  | 24   | *[Zone Setting] Starting time "Hour" for "Unocupied" zone – set 6.3 to get 6h30mn – modulo 10mn |  |    |   |
|             |      |               |      |                |            | 2-Start z.A | 3212          | h   | 0        | 0   | 24   | *[Zone Setting] Starting time for "Zone A" – set 6.3 to get 6h30mn – modulo 10mn                |  |    |   |
|             |      |               |      |                |            | 3-Start z.B | 3213          | h   | 0        | 24  | 24   | *[Zone Setting] Starting time for "Zone B" – set 6.3 to get 6h30mn – modulo 10mn                |  |    |   |
|             |      |               |      |                |            | 4-Start z.C | 3214          | h   | 0        | 24  | 24   | *[Zone Setting] Starting time for "Zone C" – set 6.3 to get 6h30mn – modulo 10mn                |  |    |   |
|             |      |               |      | 2-Anticipation |            | 3220        | 1-Foot        | 3221  | °C       | -10   | 10   | 20  | *[Anticipation Function] Bottom of the slope in °C. Limit of activation of the function. This allows an anticipated startup in the morning depending on the outdoor temperature. Only for the "Zone-A" |    |   |
|             |      |               |      |                |            |             | 2-Gradient    | 3222  | mn/°C    | 0   | 0  | 100   | *[Anticipation Function] Slope in "Minutes of anticipation per degrees".   |    |   |
|             |      |               |      | 3-Control      |            | 3300        | 1-Change over | 3310  | 1-Mode   | 3311  | Liste : Cool. Only / Heat. Only / Auto. / Auto.Stop. | 0   | 0  | 3  | *[Change over] Change over mode for heat pump units, 0: chiller only, 1: HP only, 2: automatic with pump, 3:automatic without pump operation. |
|             |      |               |      |                |            |             |               |   | 2-Winter | 3312  | °C   | -10   | 19   | 50 | *[Change over] Change over winter setting   |
|             |      | 3-Summer      | 3313 |                | °C         |             |               |   | -10      | 22  | 50   | *[Change over] Change over summer setting   |  |    |   |
|             |      | 2 -Water Cool |      |                | 1-Sp Wat.1 |             | 3321          |   | °C       | 5 / -10   | 7  | 17  | *[Water SP] Outlet chilled water temperature set point (see page 11 – IOM Climatic 50) – <i>minimum with Glycol according to %</i>   |    |   |

| Main screen | Code | Description  | Code | Description  | Code | Description  | Code | Unit   | Min     | Factory  | Max    | Comments   |
|-------------|------|--------------|------|--------------|------|--------------|------|--|---------|----------|--------|--|
|             |      |              |      |              |      | 2-Sp Wat.2   | 3322 | °C   | 5 / -10 | 7        | 17     | *[Water SP] Outlet chilled water temperature set point (see page 11 – IOM Climatic 50) – <i>minimum with Glycol according to %</i> |
|             |      |              |      |              |      | 3-Sp Out.1   | 3323 | °C   | -10     | 22       | 50     | *[Water SP] Ambient air temperature set point (see page 13 – IOM Climatic 50)  |
|             |      |              |      |              |      | 4-Sp Out.2   | 3324 | °C   | -10     | 30       | 50     | *[Water SP] Ambient air temperature set point (see page 13 – IOM Climatic 50)  |
|             |      |              |      |              |      | 5-Reactiv.   | 3325 | %/°C   | 1       | 5        | 50     | *[Capacity Factor] Reactivity factor for cooling mode  |
|             |      |              |      | 3-Water Heat | 3330 | 1-Sp Wat.1   | 3331 | °C   | 17      | 40       | 50     | *[Water SP] Outlet hot water temperature set point (see page 13 – IOM Climatic 50)   |
|             |      |              |      |              |      | 2-Sp Wat.2   | 3332 | °C   | 17      | 40       | 50     | *[Water SP] Outlet hot water temperature set point (see page 13 – IOM Climatic 50)   |
|             |      |              |      |              |      | 3-Sp Out.1   | 3333 | °C   | -10     | 19       | 50     | *[Water SP] Ambient air temperature set point (see page 13 – IOM Climatic 50)  |
|             |      |              |      |              |      | 4-Sp Out.2   | 3334 | °C   | -10     | 0        | 50     | *[Water SP] Ambient air temperature set point (see page 13 – IOM Climatic 50)  |
|             |      |              |      |              |      | 5-Reactiv.   | 3335 | %/°C   | 1       | 5        | 50     | *[Capacity Factor] Reactivity factor for heating mode  |
|             |      |              |      | 2-Safety     | 3340 | 1-Wat. Low   | 3341 | °C   | 3 / -10 | 5 / -10  | 12     | *[Safety limit] Chilled water outlet temperature limit – <i>minimum with Glycol according to %</i>                                 |
| 2-Wat. high | 3342 | °C           | 22   |              |      | 53           | 53   | *[Safety limit] Hot water outlet temperature limit   |         |          |        |  |
|             |      | 4-Compressor | 3400 | 1-Circuit    | 3410 | 1-Enable     | 3411 | Liste : C1_ / C_2_ / C12_ / C_3_ / C1_3_ / C_23_ / C123_ / C_4_ / C1_4_ / C_2_4_ / C12_4_ / C_34_ / C1_34 / C_234_ / C1234 | 1       | 3 / 15   | 3 / 15 | *[Circ enable] Circuit operation management – Circuit authorize to operate   |
|             |      |              |      |              |      | 2-Rotat.     | 3412 | Liste : Auto. / C.1 / C.2 / C.3 / C.4  | 1       | 15       | 15     | *[Comp priority] Circuit priority management   |
|             |      |              |      | 2-Safety     | 3420 | 1-Frost      | 3421 | °C   | -1/-20  | -1 / -20 | 5      | *[Safety limit] Freezing safety limit – <i>minimum with Glycol according to %</i>  |
|             |      |              |      |              |      | 2-Time limit | 3422 | s  | 1       | 30       | 360    | *[Safety limit] Lennox setting   |
|             |      |              |      |              |      | 3- T.Disch   | 3423 | °C   | 90      | 110      | 120    | *[Temp. SP] Ambient air temperature set point (see page 13 – IOM Climatic 50)  |
|             |      |              |      |              |      | 4- W/Cd Mini | 3424 | °C   | 5       | 25       | 33     | *[Safety limit] Condensing water outlet temperature limit  |
|             |      |              |      |              |      | 5- W/Cd Maxi | 3425 | °C   | 20      | 55       | 66     | *[Safety limit] Condensing water outlet temperature limit  |
|             |      |              |      | 3-Defrost    | 3430 | 1-Mode       | 3431 | Liste : Dynamic / Cyclic   | 0       | 0        | 2      | *[ Function Defrost ] Choice of defrost: 1 = "cycling" or 0 ="dynamic"   |
|             |      |              |      |              |      | 2-Outside    | 3432 | °C   | 8       | 10       | 20     | *[ Function Defrost ] Authorization of defrost - Threshold of outside temperature (in °c)  |
|             |      |              |      |              |      | 3-Coil       | 3433 | °C   | 1/-10   | 2        | 3 / 10 | *[ Function Defrost ] Authorization of defrost - Threshold of coil temperature (in °c)   |

| Main screen | Code          | Description | Code        | Description | Code           | Description  | Code  | Unit | Min   | Factory | Max   | Comments   |
|-------------|---------------|-------------|-------------|-------------|----------------|--------------|-------|------|-------|---------|-------|--|
|             |               |             |             |             |                | 4-Time Limit | 3434  | mn   | 1     | 30      | 360   | *[ Function Defrost ] Time limit for icing (in minute) -For the dynamic defrost the unit will run this minimum amount of time. If cycling defrost this is the time delay to start the defrost once the temperature conditions are met. |
|             |               |             |             |             |                | 5-Time Fc    | 3435  | s    | 5     | 60      | 300   | *[ Function Defrost ] Running time of fans after defrost cycle in order to dry the outside coil.   |
|             | 5-EEV         | 3500        | 1-Circuit 1 | 3510        | 1-SuperHeat    | 3511         | °C    |      | 5 / 7 | 5 / 7   | 15    | *[ EEV] Superheat set point – <i>With Glycol</i>   |
|             |               |             |             |             | 2-Anticipation | 3512         | %     |      | 0     | Calc    | 50    | *[ EEV] Lennox set point – EEV opening at 1st stage start  |
|             |               |             |             |             | 3-P            | 3513         | °C    |      | 0     | Calc    | 30    | *[ EEV] Lennox set point – Proportional factor   |
|             |               |             |             |             | 4-I            | 3514         | s     |      | 0     | 30      | 999   | *[ EEV] Lennox set point – Integral factor   |
|             |               |             |             |             | 5-D            | 3515         | s     |      | 0     | 1       | 999   | *[ EEV] Lennox set point – Derivate factor   |
|             |               |             | 2-Circuit 2 | 3520        | 1-SuperHeat    | 3521         | °C    |      | 5 / 7 | 5 / 7   | 15    | *[ EEV] Superheat set point – <i>With Glycol</i>   |
|             |               |             |             |             | 2-Anticipation | 3522         | %     |      | 0     | Calc    | 50    | *[ EEV] Lennox set point – EEV opening at 1st stage start  |
|             |               |             |             |             | 3-P            | 3523         | °C    |      | 0     | Calc    | 30    | *[ EEV] Lennox set point – Proportional factor   |
|             |               |             |             |             | 4-I            | 3524         | s     |      | 0     | 30      | 999   | *[ EEV] Lennox set point – Integral factor   |
|             |               |             |             |             | 5-D            | 3525         | s     |      | 0     | 1       | 999   | *[ EEV] Lennox set point – Derivate factor   |
|             |               |             | 3-Circuit 3 | 3530        | 1-SuperHeat    | 3531         | °C    |      | 5 / 7 | 5 / 7   | 15    | *[ EEV] Superheat set point – <i>With Glycol</i>   |
|             |               |             |             |             | 2-Anticipation | 3532         | %     |      | 0     | Calc    | 50    | *[ EEV] Lennox set point – EEV opening at 1st stage start  |
|             |               |             |             |             | 3-P            | 3533         | °C    |      | 0     | Calc    | 30    | *[ EEV] Lennox set point – Proportional factor   |
|             |               |             |             |             | 4-I            | 3534         | s     |      | 0     | 30      | 999   | *[ EEV] Lennox set point – Integral factor   |
|             |               |             |             |             | 5-D            | 3535         | s     |      | 0     | 1       | 999   | *[ EEV] Lennox set point – Derivate factor   |
|             |               |             | 4-Circuit 4 | 3540        | 1-SuperHeat    | 3541         | °C    |      | 5 / 7 | 5 / 7   | 15    | *[ EEV] Superheat set point – <i>With Glycol</i>   |
|             |               |             |             |             | 2-Anticipation | 3542         | %     |      | 0     | Calc    | 50    | *[ EEV] Lennox set point – EEV opening at 1st stage start  |
|             |               |             |             |             | 3-P            | 3543         | °C    |      | 0     | Calc    | 30    | *[ EEV] Lennox set point – Proportional factor   |
|             |               |             |             |             | 4-I            | 3544         | s     |      | 0     | 30      | 999   | *[ EEV] Lennox set point – Integral factor   |
|             |               |             |             |             | 5-D            | 3545         | s     |      | 0     | 1       | 999   | *[ EEV] Lennox set point – Derivate factor   |
|             | 6-Ventilation | 3600        |             |             | 1-Sp Cond.     | 3611         | b     |      | 11    | 16 / 11 | 21    | *[ HP SP] High pressure set point – <i>for R134a unit</i>  |
|             |               |             |             |             | 2-Reactiv.     | 3612         | %/°C  |      | 1     | 10      | 50    | *[ HP Factor] Reactivity set point for fan operation   |
|             | 7-Option      | 3700        |             |             |                |              |       |      |       |         |       |  |
|             | 8-Config.     | 3800        | 1-Unit      | 3810        | 1-Range        | 3811         | Liste |      | 0     | ~       | 8 / 3 | *[ Configuration ] Unit model  |
|             |               |             |             |             | 2-Size         | 3812         | Liste |      | 0     | ~       | 61    | *[ Configuration ] Type of unit  |

| Main screen | Code | Description | Code          | Description | Code | Description | Code        | Unit   | Min    | Factory                                      | Max | Comments   |   |  |
|-------------|------|-------------|---------------|-------------|------|-------------|-------------|--|--------|--|-----|--|---|--|
|             |      |             |               |             |      | 3- gaz      | 3813        | Liste : R407c / R22 / R134a                  | 0      | ~  | 1   | *[ Configuration ] Type of refrigerant   |   |  |
|             |      |             | 2-Compressor  |             | 3820 | 1-EEV       | 3821        | Yes/No                                       | ~      | ~  | ~   | *[ Configuration ] Electronic expansion valve  |   |  |
|             |      |             |               |             |      | 3820        | 2-LAK       | 3822   | Yes/No | ~  | ~   | ~  | *[ Configuration ] All season control   |  |
|             |      |             |               |             |      | 3820        | 3-Stages +. | 3823   | Yes/No | ~  | ~   | ~  | *[ Configuration ] For units with reciprocating compressor extra capacity reduction |  |
|             |      |             |               |             |      | 3820        | 4-Starter   | 3824   | Yes/No | ~  | ~   | ~  | *[ Configuration ] For units with compressor soft starter                           |  |
|             |      |             | 3-Ventilation |             | 3830 | 1-Circuit 1 | 3831        | Liste : No / Stages / Modulation / Low Speed | 0      | 0  | 3   | *[ Configuration ] Fan configuration<br>No = No fans<br>Stages + = Single speed stage fans<br>Modulation = 1 fan with speed control, others with single speed<br>Low Speed = 1 fan with 2 speed others with single speed |   |  |
|             |      |             |               |             |      |             | 3830        | 2-Circuit 2                                  | 3832   | Liste : No / Stages / Modulation / Low Speed | 0   | 0  | 3   | *[ Configuration ] Fan configuration<br>No = No fans<br>Stages + = Single speed stage fans<br>Modulation = 1 fan with speed control, others with single speed<br>Low Speed = 1 fan with 2 speed others with single speed |
|             |      |             |               |             |      |             | 3830        | 3-Circuit 3                                  | 3833   | Liste : No / Stages / Modulation / Low Speed | 0   | 0  | 3   | *[ Configuration ] Fan configuration<br>No = No fans<br>Stages + = Single speed stage fans<br>Modulation = 1 fan with speed control, others with single speed<br>Low Speed = 1 fan with 2 speed others with single speed |
|             |      |             |               |             |      |             | 3830        | 4-Circuit 4                                  | 3834   | Liste : No / Stages / Modulation / Low Speed | 0   | 0  | 3   | *[ Configuration ] Fan configuration<br>No = No fans<br>Stages + = Single speed stage fans<br>Modulation = 1 fan with speed control, others with single speed<br>Low Speed = 1 fan with 2 speed others with single speed |
|             |      |             | 4-Option.     |             | 3840 | 1-Pump      | 3841        | Liste : No / Simple / Double                 | 0      | ~  | 2   | *[ Configuration ] Pump configuration  |   |  |
|             |      |             |               |             |      |             | 3840        | 2-Glycol                                     | 3842   | %  | 0   | ~  | 50  | *[ Configuration ] Glycol percentage   |
|             |      |             |               |             |      |             | 3840        | 3-Recovery                                   | 3843   | Yes/No                                       | ~   | ~  | ~   | *[ Configuration ] Heat recovery option  |



| Main screen | Code | Description    | Code          | Description | Code     | Description  | Code | Unit   | Min | Factory   | Max   | Comments  |
|-------------|------|----------------|---------------|-------------|----------|--|------|--|-----|---|-------|---|
|             |      | 5-Out. Custom. | 3850          | 1-BE50.1    | 3851     | Liste : Not Used / C.1 Alarm / C.2 Alarm / C.3 Alarm / C.4 Alarm / Fans Al. / Pump Al. / Heat. Mode / C.1 100% / C.2 100% / C.3 100% / C.4 100% / U. 100% / U. On / Z:A / Z:B / Z:C / Uno / Bms / Free | 0    | 0  | 6   | *[Configuration] Free output to be customised (First output of the extension board BE50)  |       |   |
|             |      |                |               | 2-BE50.2    | 3852     |  | 0    | 0  | 6   | *[Configuration] Free output to be customised (Second output of the extension board BE50) |       |   |
|             |      |                |               | 3-BE50.3    | 3853     |  | 0    | 0  | 6   | *[Configuration] Free output to be customised (Third output of the extension board BE50)  |       |   |
|             |      |                |               | 4-BE50.4    | 3854     |  | 0    | 0  | 6   | *[Configuration] Free output to be customised (Fourth output of the extension board BE50) |       |   |
|             |      |                | 6-In. Custom. | 3860        | 1-BE50.1 |  | 3861 | Liste : Not Used / Sw Setpoint / Sw Cool. / Sw Heat. / C1 Disable / C2 Disable / C3 Disable / C4 Disable / Sw Unoc. / Free | 0   | 0   | 5     | *[Configuration] Free input to be customised (input of the extension board BE50)  |
|             |      |                |               |             | 2-BE50.2 |  | 3862 |  | 0   | 0   | 5     | *[Configuration] Free input to be customised (input of the extension board BE50)  |
|             |      |                |               |             | 3-BE50.3 |  | 3863 |  | 0   | 0   | 5     | *[Configuration] Free input to be customised (input of the extension board BE50)  |
|             |      |                |               |             | 4-BE50.4 |  | 3864 |  | 0   | 0   | 5     | *[Configuration] Free input to be customised (input of the extension board BE50)  |
|             |      | 7-In.% Custom. | 3870          | 1-BE50.1    | 3871     | Liste : Not Used / S.P Offset / Free NTC   | 0    | 0  | 2   | *[Configuration] Free input to be customised (input of the extension board BE50)          |       |   |
|             |      |                |               | 2-BE50.2    | 3872     |  | 0    | 0  | 2   | *[Configuration] Free input to be customised (input of the extension board BE50)          |       |   |
|             |      |                |               | 3-BE50.3    | 3873     |  | 0    | 0  | 2   | *[Configuration] Free input to be customised (input of the extension board BE50)          |       |   |
|             |      |                |               | 4-BE50.4    | 3874     |  | 0    | 0  | 2   | *[Configuration] Free input to be customised (input of the extension board BE50)          |       |   |
|             |      | 9-Com.         | 3900          | 1-Display   | 3910     | 1-Standard Sp  | 3911 | Yes/No   | ~   | Off   | ~     | *Allows a reset of ALL set point to standard factory settings (when available).No possible for configurations. and clock as there is no factory settings for these. |
|             |      |                |               | 2-Link      | 3920     | 1-ID   | 3921 | ~  | 1   | ~   | 4 / 2 | *[ Configuration ] Identification address for the unit from 1 to 4 for master slave operation.  |
|             |      |                |               |             |          | 2-Number   | 3922 | ~  | 1   | 1   | 4 / 2 | *[ Configuration ] Number of units on the BUS. Unit with address N°1 is always the master   |

| Main screen | Code | Description | Code  | Description | Code | Description | Code | Unit                                      | Min | Factory | Max  | Comments   |
|-------------|------|-------------|-------|-------------|------|-------------|------|---|-----|---------|------|--|
|             |      |             |       |             |      | 3-Type      | 3923 | Liste : Not Used / Backup / Rol.Backup    | 0   | 0       | 2    | *Master / Slave relationship: refer to page 7 for details  |
|             |      |             |       |             |      | 4-Outlet    | 3924 | Liste : Not Used / M/S Temp. / M/S Aver.  | 0   | 0       | 2    | *Master / Slave relationship: refer to page 7 for details  |
|             |      |             |       |             |      | 5-Outside   | 3925 | Liste : Not Used / M/S Temp. / M/S Aver.  | 0   | 0       | 2    | *Master / Slave relationship: refer to page 7 for details  |
|             |      |             | 3-BMS |             | 3930 | 1-ID        | 3931 | ~   | 1   | 1       | 200  | *[ Configuration ] Identification number on the 485 Bus  |
|             |      |             |       |             |      | 2-Type      | 3932 | Liste : Climatic / ModBus / LonWorks/ Web | 0   | 0       | 2    | *[ Configuration ] Type of BMS 0 Mode Lennox Climatic; 1 MODBUS; 2 LONWORKS  |
|             |      |             |       |             |      | 3-Baud      | 3933 | Liste : 1200 / 2400 / 4800 / 9600 / 19200 | 0   | 3       | 4    | BMS communication speed between 1200BDS and 19800  |
|             |      |             |       |             |      | 4-Watchdog  | 3934 | ~   | 0   | 0       | 1000 | *[ BMS ] Activation of the control by a computer or an automat<br>- mode BMS is activated if this value is different from zero, This value is decreased every second |
|             |      |             |       |             |      | 5-BMS Unoc. | 3935 | On/Off                                    | ~   | Off     | ~    | *[BMS] Cancel the override unoccupied mode   |

## FAULTS CODES

|     |                                  |                          |                  |
|-----|----------------------------------|--------------------------|------------------|
| 1   | Water Flow                       | Flow switch cut off      | See page 28 & 35 |
| 4   | Filters                          | Dirty                    |                  |
| 5   | Filters                          | Missing                  |                  |
| 11  | Electrical Heater                | Faulty                   |                  |
| 12  | Outlet water T° or Supply air T° | Too high T°              | See page 27      |
| 13  | Intlet water T° or Room air T°   | Too Low T°               | See page 27      |
| 14  | Gas Burner, 1                    | Faulty                   |                  |
| 15  | Gas Burner, 2                    | Faulty                   |                  |
| 22  | Outlet water T° or Supply air T° | Too Low T°               | See page 27      |
| 23  | Intlet water T° or Room air T°   | Too high T°              | See page 27      |
| 31  | Humidifier                       | Faulty                   |                  |
| 32  | Room Humidity                    | Humidity Too Low         |                  |
| 33  | Room Humidity                    | Humidity Too High        |                  |
| 40  | Flow, Pump                       | Failure                  | See page 35      |
| 41  | Pump, 1                          | Electric failure         | See page 37      |
| 42  | Pump, 2                          | Electric failure         | See page 37      |
| 70  | Real Time Clock                  | Faulty                   |                  |
| 71  | BE50, 1                          | Faulty communication     | See page 29      |
| 72  | BE50, 2                          | Faulty                   |                  |
| 73  | BE50, 3                          | Faulty                   |                  |
| 74  | BE50, 4                          | Faulty                   |                  |
| 75  | BE50, 5                          | Faulty                   |                  |
| 76  | BM50, Slave                      | Faulty                   |                  |
| 80  | Remote S.Point                   | Faulty                   |                  |
| 81  | Intlet water T° or Room air T°   | Faulty Sensor            | See page 32      |
| 82  | Room Humidity                    | Faulty Sensor            |                  |
| 83  | Outside air Temperature          | Faulty Sensor            | See page 32      |
| 84  | Outside Humidity                 | Faulty Sensor            |                  |
| 85  | Outlet or Supply T.              | Faulty Sensor            |                  |
| 86  | Inlet, Heat Recovery             | Faulty Sensor            | See page 32      |
| 87  | Outlet, Heat Recovery            | Faulty Sensor            | See page 32      |
| 88  | Return or Mixing T.              | Faulty Sensor            |                  |
| 90  | Air, Condenser fan               | Faulty                   | See page 36      |
| 91  | Blower, Fan                      | Faulty                   |                  |
| 92  | Air, Condenser fan               | Faulty, System 1         | See page 36      |
| 93  | Air, Condenser fan               | Faulty, System 2         | See page 36      |
| 94  | Air, Condenser fan               | Faulty, System 3         | See page 36      |
| 95  | Air, Condenser fan               | Faulty, System 4         | See page 36      |
| 96  | Water, Condenser                 | Temp. Too low            |                  |
| 97  | Water, Condenser                 | Temp. Too High           |                  |
| 98  | Water, Condenser                 | Faulty, Flow             |                  |
| 99  | Fire / Smoke                     | Faulty                   |                  |
| 111 | High Pressure                    | Faulty Sensor, 1         | See page 32      |
| 112 | Low pressure                     | Faulty Sensor, 1         |                  |
| 114 | Circuit 1                        | Compressor elec. failure | See page 33      |
| 115 | Circuit 1                        | High Pressure cut        | See page 34      |
| 117 | Circuit 1                        | Low Pressure cut         | See page 30      |
| 118 | Circuit 1                        | Risk of Frosting         | See page 31      |
| 121 | High Pressure                    | Faulty Sensor, 2         | See page 32      |
| 122 | Low pressure                     | Faulty Sensor, 2         |                  |
| 124 | Circuit 2                        | Compressor elec. failure | See page 33      |
| 125 | Circuit 2                        | High Pressure cut        | See page 34      |

|            |                            |                          |             |
|------------|----------------------------|--------------------------|-------------|
| <b>127</b> | Circuit 2                  | Low Pressure Cut         | See page 30 |
| <b>128</b> | Circuit 2                  | Risk of Frosting         | See page 31 |
| <b>131</b> | High Pressure              | Faulty Sensor, 3         | See page 32 |
| <b>132</b> | Low pressure               | Faulty Sensor, 3         | See page 32 |
| <b>134</b> | Circuit 3                  | Compressor elec. failure | See page 33 |
| <b>135</b> | Circuit 3                  | High Pressure cut        | See page 34 |
| <b>137</b> | Circuit 3                  | Low Pressure Cut         | See page 30 |
| <b>138</b> | Circuit 3                  | Risk of Frosting         | See page 31 |
| <b>141</b> | High Pressure              | Faulty Sensor, 4         | See page 32 |
| <b>142</b> | Low pressure               | Faulty Sensor, 4         | See page 32 |
| <b>144</b> | Circuit 4                  | Compressor elec. failure | See page 33 |
| <b>145</b> | Circuit 4                  | High Pressure cut        | See page 34 |
| <b>147</b> | Circuit 4                  | Low Pressure Cut         | See page 30 |
| <b>148</b> | Circuit 4                  | Risk of Frosting         | See page 31 |
| <b>2n0</b> | Circuit n                  | EEV n, Wrong addressing  | See page 20 |
| <b>2n1</b> | Low Superheat              | EEV n, Error             |             |
| <b>2n2</b> | High Suction T.            | EEV n, Error             |             |
| <b>2n3</b> | MOP                        | EEV n, Error             |             |
| <b>2n4</b> | LOP                        | EEV n, Error             |             |
| <b>2n5</b> | Valve Not Closed           | EEV n, Error             |             |
| <b>2n6</b> | LP sensor or suction probe | EEV n, Error             | See page 32 |
| <b>2n7</b> | Motor                      | EEV n, Error             |             |
| <b>2n8</b> | EEPROM                     | EEV n, Error             |             |
| <b>2n9</b> | Battery                    | EEV n, Error             |             |

## BMS Points

### ModBus

#### Analogical

| @ (hexa) | @ (deci) |     |            |  | WA | LC | DS50        |
|----------|----------|-----|------------|--|----|----|-------------|
| 01H      | 1        | R/W | 1 = 1 s    | [ BMS ] Activation of the control by a computer or an automat - mode BMS is activated if this value is different from zero, This value is decreased every second | √  | √  | 3934        |
| 02H      | 2        | R/W | 1 = 1      | [Unit] without pump: 0=Started; 1=Stopped<br>[Unit] with pump: 1=Stopped; 2:P1 Only; 3=P2 Only; 4=P1-N P2-S; 5=P2-N P1-S; 6=P1/P2 by clock                       | √  | √  | 3112<br>BMS |
| 03H      | 3        | R/W | 1 = 1      | [Unit] Change-over: 0=Cool. Only; 1=Heat. Only; 2=Auto. Pump; 3=Auto. No Pump  | √  |    | 3311<br>BMS |
| 04H      | 4        | R/W | 1 = 1      | [Unit] Activation of the circuits: bit.0=C1; bit.1=C2; bit.2=C3; bit.3=C4  | √  | √  | 3411<br>BMS |
| 05H      | 5        | R/W | 10 = 1.0°C | [Occupation][Water SP] Required maximum water temperature in °C. Cooling set point   | √  | √  | 3321<br>BMS |
| 06H      | 6        | R/W | 10 = 1.0°C | [Occupation][Water SP] Required minimum water temperature in °C. Heating set point   | √  |    | 3331<br>BMS |
| 07H      | 7        | R/W | 10 = 1.0°C | [Inoccupation][Water SP] Required maximum water temperature in °C. Cooling set point   | √  | √  | 3321<br>Uno |
| 08H      | 8        | R/W | 10 = 1.0°C | [Inoccupation][Water SP] Required minimum water temperature in °C. Heating set point   | √  |    | 3331<br>Uno |
| 09H      | 9        | R/W |            | <i>not used</i>  |    |    |             |
| 0AH      | 10       | R/W |            | <i>not used</i>  |    |    |             |
| 0BH      | 11       | R/W |            | <i>not used</i>  |    |    |             |
| 0CH      | 12       | R/W | 1 = 1h     | [Clock] Hour   | √  | √  | 3121        |
| 0DH      | 13       | R/W | 1 = 1m     | [Clock] Minute   | √  | √  | 3122        |
| 0EH      | 14       | R/W | 1 = 1      | [Clock] Day of the month   | √  | √  | 3123        |
| 0FH      | 15       | R/W | 1 = 1      | [Clock] Month  | √  | √  | 3124        |
| 10H      | 16       | R/W | 1 = 2001   | [Clock] Year   | √  | √  | 3125        |
| 11H      | 17       | R/W |            | <i>not used</i>  |    |    |             |
| 12H      | 18       | R/W |            | <i>not used</i>  |    |    |             |
| 13H      | 19       | R/W | 10 = 1.0°C | [BMS] Outdoor temperature coming from the BMS  | √  | √  | ...         |
| 14H      | 20       | R/W |            | <i>not used</i>  |    |    |             |
| 15H      | 21       | R/W |            | <i>not used</i>  |    |    |             |
| 16H      | 22       | R/W |            | <i>not used</i>  |    |    |             |
| 17H      | 23       | R/W |            | <i>not used</i>  |    |    |             |
| 18H      | 24       | R/W |            | <i>not used</i>  |    |    |             |
| 19H      | 25       | R/W |            | <i>not used</i>  |    |    |             |
| 1AH      | 26       | R/W |            | <i>not used</i>  |    |    |             |
| 1BH      | 27       | R/W |            | <i>not used</i>  |    |    |             |
| 1CH      | 28       | R/W |            | <i>not used</i>  |    |    |             |
| 1DH      | 29       | R/W |            | <i>not used</i>  |    |    |             |
| 1EH      | 30       | R/W |            | <i>not used</i>  |    |    |             |
| 1FH      | 31       | R/W |            | <i>not used</i>  |    |    |             |
| 20H      | 32       | R/W |            | <i>not used</i>  |    |    |             |

|            |           |   |            |  |   |   |             |
|------------|-----------|---|------------|--|---|---|-------------|
| <b>21H</b> | <b>33</b> | R | 1 = 1      | [Alarm] Code Error                                 | √ | √ | <b>1000</b> |
| <b>22H</b> | <b>34</b> | R | 10 = 1.0°C | [Temperature] Inlet, Water                         | √ | √ | <b>2112</b> |
| <b>23H</b> | <b>35</b> | R | 10 = 1.0°C | [Temperature] Outdoor, Air                         | √ | √ | <b>2111</b> |
| <b>24H</b> | <b>36</b> | R | 10 = 1.0°C | [Temperature] Outlet, Water                        | √ | √ | <b>2113</b> |
| <b>25H</b> | <b>37</b> | R | 10 = 1.0b  | [Pressure] High, Circuit 1                         | √ | √ | <b>2125</b> |
| <b>26H</b> | <b>38</b> | R | 10 = 1.0b  | [Pressure] Low, Circuit 1                          | √ | √ | <b>2126</b> |
| <b>27H</b> | <b>39</b> | R | 10 = 1.0b  | [Pressure] High, Circuit 2                         | √ | √ | <b>2135</b> |
| <b>28H</b> | <b>40</b> | R | 10 = 1.0b  | [Pressure] Low, Circuit 2                          | √ | √ | <b>2136</b> |
| <b>29H</b> | <b>41</b> | R | 10 = 1.0b  | [Pressure] High, Circuit 3                         |   | √ | <b>2145</b> |
| <b>2AH</b> | <b>42</b> | R | 10 = 1.0b  | [Pressure] Low, Circuit 3                          |   | √ | <b>2146</b> |
| <b>2BH</b> | <b>43</b> | R | 10 = 1.0b  | [Pressure] High, Circuit 4                         |   | √ | <b>2155</b> |
| <b>2CH</b> | <b>44</b> | R | 10 = 1.0b  | [Pressure] Low, Circuit 4                          |   | √ | <b>2156</b> |
| <b>2DH</b> | <b>45</b> | R | 1 = 1%     | [% of opening] Fan, Modulation, Circuit 1          | √ | √ | <b>2619</b> |
| <b>2EH</b> | <b>46</b> | R | 1 = 1%     | [% of opening] Fan, Modulation, Circuit 2          | √ | √ | <b>2629</b> |
| <b>2FH</b> | <b>47</b> | R | 1 = 1%     | [% of opening] Fan, Modulation, Circuit 3          |   | √ | <b>2639</b> |
| <b>30H</b> | <b>48</b> | R | 1 = 1%     | [% of opening] Fan, Modulation, Circuit 4          |   | √ | <b>2649</b> |
| <b>31H</b> | <b>49</b> | R | 10 = 1.0°C | [Dry contact] Temperature, Free 1, BE50-J9-B1      | √ | √ | <b>2191</b> |
| <b>32H</b> | <b>50</b> | R | 10 = 1.0°C | [Dry contact] Temperature, Free 2, BE50-J9-B2      | √ | √ | <b>2192</b> |
| <b>33H</b> | <b>51</b> | R | 10 = 1.0°C | [Dry contact] Temperature, Free 3, BE50-J10-B3     | √ | √ | <b>2193</b> |
| <b>34H</b> | <b>52</b> | R | 10 = 1.0°C | [Dry contact] Temperature, Free 4, BE50-J10-B4     | √ | √ | <b>2194</b> |
| <b>35H</b> | <b>53</b> | R | 1 = 1      | [Fan] Numbers which run, Circuit 1                 | √ | √ | ...         |
| <b>36H</b> | <b>54</b> | R | 1 = 1      | [Fan] Numbers which run, Circuit 2                 | √ | √ | ...         |
| <b>37H</b> | <b>55</b> | R | 1 = 1      | [Fan] Numbers which run, Circuit 3                 |   | √ | ...         |
| <b>38H</b> | <b>56</b> | R | 1 = 1      | [Fan] Numbers which run, Circuit 4                 |   | √ | ...         |
| <b>39H</b> | <b>57</b> | R | 10 = 1.0°C | [EEV] Current superheating value, Circuit 1        | √ | √ | <b>2121</b> |
| <b>3AH</b> | <b>58</b> | R | 10 = 1.0°C | [EEV] Current superheating value, Circuit 2        | √ | √ | <b>2131</b> |
| <b>3BH</b> | <b>59</b> | R | 10 = 1.0°C | [EEV] Current superheating value, Circuit 3        |   | √ | <b>2141</b> |
| <b>3CH</b> | <b>60</b> | R | 10 = 1.0°C | [EEV] Current superheating value, Circuit 4        |   | √ | <b>2151</b> |
| <b>3DH</b> | <b>61</b> | R | 10 = 1.0°C | [EEV] Saturated evaporation temperature, Circuit 1 | √ | √ | <b>2124</b> |
| <b>3EH</b> | <b>62</b> | R | 10 = 1.0°C | [EEV] Saturated evaporation temperature, Circuit 2 | √ | √ | <b>2134</b> |
| <b>3FH</b> | <b>63</b> | R | 10 = 1.0°C | [EEV] Saturated evaporation temperature, Circuit 3 |   | √ | <b>2144</b> |
| <b>40H</b> | <b>64</b> | R | 10 = 1.0°C | [EEV] Saturated evaporation temperature, Circuit 4 |   | √ | <b>2154</b> |

## Logical

| @ (hexa) | @ (deci) |     |   |  | WA | LC | DS50 |
|----------|----------|-----|---|--|----|----|------|
| 01H      | 1        | R/W | L | [On/Off] Unit  | √  | √  | 3111 |
| 02H      | 2        | R/W | L | [Reset] Discharges the safety measures of the unit                                       | √  | √  | 3113 |
| 03H      | 3        | R/W | L | <i>not used</i>  |    |    |      |
| 04H      | 4        | R/W | L | <i>not used</i>  |    |    |      |
| 05H      | 5        | R/W | L | [BMS] Activation of the Inoccupation mode [Off] occupation mode - [On] inoccupation mode | √  | √  | 3935 |
| 06H      | 6        | R/W | L | <i>not used</i>  |    |    |      |
| 07H      | 7        | R/W | L | <i>not used</i>  |    |    |      |
| 08H      | 8        | R/W | L | <i>not used</i>  |    |    |      |
| 09H      | 9        | R/W | L | <i>not used</i>  |    |    |      |
| 0AH      | 10       | R/W | L | <i>not used</i>  |    |    |      |
| 0BH      | 11       | R/W | L | <i>not used</i>  |    |    |      |
| 0CH      | 12       | R/W | L | <i>not used</i>  |    |    |      |
| 0DH      | 13       | R/W | L | <i>not used</i>  |    |    |      |
| 0EH      | 14       | R/W | L | <i>not used</i>  |    |    |      |
| 0FH      | 15       | R/W | L | <i>not used</i>  |    |    |      |
| 10H      | 16       | R/W | L | [Clock] [OFF] read hour & minute [ON] write hour & minute                                | √  | √  | ...  |
| 11H      | 17       | R/W | L | <i>not used</i>  |    |    |      |
| 12H      | 18       | R/W | L | [Dry contact] Digital Output, Free 2, BE50-J5-NO1  | √  | √  | 2171 |
| 13H      | 19       | R/W | L | [Dry contact] Digital Output, Free 3, BE50-J6-NO2  | √  | √  | 2172 |
| 14H      | 20       | R/W | L | [Dry contact] Digital Output, Free 4, BE50-J7-NO3  | √  | √  | 2173 |
| 15H      | 21       | R/W | L | [Dry contact] Digital Output, Free 5, BE50-J8-NO4  | √  | √  | 2174 |
| 16H      | 22       | R/W | L | <i>not used</i>  |    |    |      |
| 17H      | 23       | R/W | L | <i>not used</i>  |    |    |      |
| 18H      | 24       | R/W | L | <i>not used</i>  |    |    |      |
| 19H      | 25       | R/W | L | <i>not used</i>  |    |    |      |
| 1AH      | 26       | R/W | L | <i>not used</i>  |    |    |      |
| 1BH      | 27       | R/W | L | <i>not used</i>  |    |    |      |
| 1CH      | 28       | R/W | L | <i>not used</i>  |    |    |      |
| 1DH      | 29       | R/W | L | <i>not used</i>  |    |    |      |
| 1EH      | 30       | R/W | L | <i>not used</i>  |    |    |      |
| 1FH      | 31       | R/W | L | <i>not used</i>  |    |    |      |
| 20H      | 32       | R/W | L | <i>not used</i>  |    |    |      |

|     |    |   |   |   |   |   |      |
|-----|----|---|---|---|---|---|------|
| 21H | 33 | R | L | [Alarm] General   | √ | √ | 1000 |
| 22H | 34 | R | L | [On/Off] Pump, 1  | √ | √ | 2315 |
| 23H | 35 | R | L | [On/Off] Pump, 2  | √ | √ | 2317 |
| 24H | 36 | R | L | [On/Off] Compressor 1, Circuit 1                                      | √ | √ | 2416 |
| 25H | 37 | R | L | [On/Off] Compressor 2, Circuit 1                                      | √ | √ | 2426 |
| 26H | 38 | R | L | [On/Off] Compressor 3, Circuit 1 (WA) or Compressor 1, Circuit 3 (LC) | √ | √ | 2436 |
| 27H | 39 | R | L | [On/Off] Compressor, Heat pump, Circuit 1                             | √ |   | 2417 |
| 28H | 40 | R | L | [On/Off] Compressor 1, Circuit 2                                      | √ | √ | 2446 |
| 29H | 41 | R | L | [On/Off] Compressor 2, Circuit 2                                      | √ | √ | 2456 |
| 2AH | 42 | R | L | [On/Off] Compressor 3, Circuit 2 (WA) or Compressor 1, Circuit 4 (LC) | √ | √ | 2466 |

|            |           |   |   |  |   |   |             |
|------------|-----------|---|---|--|---|---|-------------|
| <b>2BH</b> | <b>43</b> | R | L | [On/Off] Compressor, Heat pump, Circuit 2        | √ |   | <b>2437</b> |
| <b>2CH</b> | <b>44</b> | R | L | <i>not used</i>                                  |   |   |             |
| <b>2DH</b> | <b>45</b> | R | L | <i>not used</i>                                  |   |   |             |
| <b>2EH</b> | <b>46</b> | R | L | <i>not used</i>                                  |   |   |             |
| <b>2FH</b> | <b>47</b> | R | L | <i>not used</i>                                  |   |   |             |
| <b>30H</b> | <b>48</b> | R | L | <i>not used</i>                                  |   |   |             |
| <b>31H</b> | <b>49</b> | R | L | <i>not used</i>                                  |   |   |             |
| <b>32H</b> | <b>50</b> | R | L | <i>not used</i>                                  |   |   |             |
| <b>33H</b> | <b>51</b> | R | L | [Dry contact] Digital Input, Free 3, BE50-J4-ID1 | √ | √ | <b>2181</b> |
| <b>34H</b> | <b>52</b> | R | L | [Dry contact] Digital Input, Free 4, BE50-J4-ID2 | √ | √ | <b>2182</b> |
| <b>35H</b> | <b>53</b> | R | L | [Dry contact] Digital Input, Free 5, BE50-J4-ID3 | √ | √ | <b>2183</b> |
| <b>36H</b> | <b>54</b> | R | L | [Dry contact] Digital Input, Free 6, BE50-J4-ID4 | √ | √ | <b>2184</b> |
| <b>37H</b> | <b>55</b> | R | L | [On/Off] Fan 1, High speed, Circuit 1            | √ | √ | <b>2614</b> |
| <b>38H</b> | <b>56</b> | R | L | [On/Off] Fan 2, Circuit 1                        | √ | √ | <b>2615</b> |
| <b>39H</b> | <b>57</b> | R | L | [On/Off] Fan 3, Circuit 1                        | √ | √ | <b>2616</b> |
| <b>3AH</b> | <b>58</b> | R | L | [On/Off] Fan 4, Circuit 1                        | √ | √ | <b>2617</b> |
| <b>3BH</b> | <b>59</b> | R | L | [On/Off] Fan 5, Circuit 1                        |   | √ | <b>2618</b> |
| <b>3CH</b> | <b>60</b> | R | L | [On/Off] Fan 1, High speed, Circuit 2            | √ | √ | <b>2624</b> |
| <b>3DH</b> | <b>61</b> | R | L | [On/Off] Fan 2, Circuit 2                        | √ | √ | <b>2625</b> |
| <b>3EH</b> | <b>62</b> | R | L | [On/Off] Fan 3, Circuit 2                        | √ | √ | <b>2626</b> |
| <b>3FH</b> | <b>63</b> | R | L | [On/Off] Fan 4, Circuit 2                        | √ | √ | <b>2627</b> |
| <b>40H</b> | <b>64</b> | R | L | [On/Off] Fan 5, Circuit 2                        |   | √ | <b>2628</b> |

## LonWorks

| Type |    | Name NV          | Type NV | Direction | Index |  | WA | LC | DS50              |
|------|----|------------------|---------|-----------|-------|--|----|----|-------------------|
| ANL  | 1  | I_Sp_WCool_1_BMS | 105     | input     | 1     | [Occupation][Water SP] Required maximum water temperature in °C. Cooling set point   | √  | √  | <b>3321 (BMS)</b> |
| ANL  | 1  | O_Sp_WCool_1_BMS | 105     | output    | 1     |  |    |    |                   |
| ANL  | 2  | I_Sp_WHeat_1_BMS | 105     | input     | 2     | [Occupation][Water SP] Required minimum water temperature in °C. Heating set point   | √  |    | <b>3331 BMS</b>   |
| ANL  | 2  | O_Sp_WHeat_1_BMS | 105     | output    | 2     |  |    |    |                   |
| ANL  | 3  | I_Sp_WCool_1_Uno | 105     | input     | 3     | [Inoccupation][Water SP] Required maximum water temperature in °C. Cooling set point | √  | √  | <b>3321 (Uno)</b> |
| ANL  | 3  | O_Sp_WCool_1_Uno | 105     | output    | 3     |  |    |    |                   |
| ANL  | 4  | I_Sp_WHeat_1_Uno | 105     | input     | 4     | [Inoccupation][Water SP] Required minimum water temperature in °C. Heating set point | √  |    | <b>3331 Uno</b>   |
| ANL  | 4  | O_Sp_WHeat_1_Uno | 105     | output    | 4     |  |    |    |                   |
| ANL  | 17 | O_la_TEEG        | 105     | output    | 17    | [Temperature] Inlet, Water   | √  | √  | <b>2112</b>       |
| ANL  | 18 | O_T_Outside      | 105     | output    | 18    | [Temperature] Outdoor, Air   | √  | √  | <b>2111</b>       |
| ANL  | 19 | O_la_TSEG        | 105     | output    | 19    | [Temperature] Outlet, Water  | √  | √  | <b>2113</b>       |
| ANL  | 20 | O_la_P_HP_1      | 105     | output    | 20    | [Pressure] High, Circuit 1 (Bar)   | √  | √  | <b>2125</b>       |
| ANL  | 21 | O_la_P_BP_1      | 105     | output    | 21    | [Pressure] Low, Circuit 1 (Bar)  | √  | √  | <b>2126</b>       |
| ANL  | 22 | O_la_P_HP_2      | 105     | output    | 22    | [Pressure] High, Circuit 2 (Bar)   | √  | √  | <b>2135</b>       |
| ANL  | 23 | O_la_P_BP_2      | 105     | output    | 23    | [Pressure] Low, Circuit 2 (Bar)  | √  | √  | <b>2136</b>       |
| ANL  | 24 | O_la_P_HP_3      | 105     | output    | 24    | [Pressure] High, Circuit 3 (Bar)   |    | √  | <b>2145</b>       |
| ANL  | 25 | O_la_P_BP_3      | 105     | output    | 25    | [Pressure] Low, Circuit 3 (Bar)  |    | √  | <b>2146</b>       |
| ANL  | 26 | O_la_P_HP_4      | 105     | output    | 26    | [Pressure] High, Circuit 4 (Bar)   |    | √  | <b>2155</b>       |
| ANL  | 27 | O_la_P_BP_4      | 105     | output    | 27    | [Pressure] Low, Circuit 4 (Bar)  |    | √  | <b>2156</b>       |



| Type | Index | Name NV          | Type NV | Direction | Index |
|------|-------|------------------|---------|-----------|-------|
| INT  | 1     | I_Sp_BMS_Dog     | 8       | input     | 208   |
| INT  | 1     | O_Sp_BMS_Dog     | 8       | output    | 208   |
| INT  | 2     | I_Sp_RunUnit_BMS | 8       | input     | 209   |
| INT  | 2     | O_Sp_RunUnit_BMS | 8       | output    | 209   |
| INT  | 3     | I_Sp_ChOver_BMS  | 8       | input     | 210   |
| INT  | 3     | O_Sp_ChOver_BMS  | 8       | output    | 210   |
| INT  | 4     | I_Sp_Rotat_BMS   | 8       | input     | 211   |
| INT  | 4     | O_Sp_Rotat_BMS   | 8       | output    | 211   |
| INT  | 17    | O_Error_Codes    | 8       | output    | 224   |
| INT  | 18    | O_R_FCoil_PWM_1  | 81      | output    | 225   |
| INT  | 19    | O_R_FCoil_PWM_2  | 81      | output    | 226   |
| INT  | 20    | O_R_FCoil_PWM_3  | 81      | output    | 227   |
| INT  | 21    | O_R_FCoil_PWM_4  | 81      | output    | 228   |

|  | WA | LC | DS50       |
|--|----|----|------------|
| [ BMS ] Activation of the control by a computer or an automat - mode BMS is activated if this value is different from zero, This value is decreased every second | √  | √  | 3934       |
| [Unit] without pump: 0=Started; 1=Stopped<br>[Unit] with pump: 1=Stopped; 2=P1 Only; 3=P2 Only; 4=P1-N P2-S; 5=P2-N P1-S; 6=P1/P2 by clock                       | √  | √  | 3112 (BMS) |
| [Unit] Change-over: 0=Cool. Only; 1=Heat. Only; 2=Auto. Pump; 3=Auto. No Pump  | √  |    | 3311 BMS   |
| [Unit] Activation of the circuits: (WA) 0=C1 Only; 1=C2 Only; 2=C1/C2 by clock<br>(LC) bit.0=C1; bit.1=C2; bit.2=C3; bit.3=C4                                    | √  | √  | 3411 (BMS) |
| [Alarm] Code Error   | √  | √  | 1000       |
| [% of opening] Fan, Modulation, Circuit 1  | √  | √  | 2619       |
| [% of opening] Fan, Modulation, Circuit 2  | √  | √  | 2629       |
| [% of opening] Fan, Modulation, Circuit 3  |    | √  | 2639       |
| [% of opening] Fan, Modulation, Circuit 4  |    | √  | 2649       |

| Type | Index | Name NV          | Type NV | Direction | Index |
|------|-------|------------------|---------|-----------|-------|
| DGT  | 1     | I_Sp_On_Unit     | 95      | input     | 415   |
| DGT  | 1     | O_Sp_On_Unit     | 95      | output    | 415   |
| DGT  | 2     | I_Sp_Reset       | 95      | input     | 416   |
| DGT  | 2     | O_Sp_Reset       | 95      | output    | 416   |
| DGT  | 3     | I_Sp_Unoc        | 95      | input     | 417   |
| DGT  | 3     | O_Sp_Unoc        | 95      | output    | 417   |
| DGT  | 17    | O_Od_Alarm       | 95      | output    | 431   |
| DGT  | 18    | O_Od_Pump_1      | 95      | output    | 432   |
| DGT  | 19    | O_Od_Pump_2      | 95      | output    | 433   |
| DGT  | 20    | O_Od_Comp_11     | 95      | output    | 434   |
| DGT  | 21    | O_Od_Comp_21     | 95      | output    | 435   |
| DGT  | 22    | O_Od_Comp_31_3   | 95      | output    | 436   |
| DGT  | 23    | O_Od_CompHPump_1 | 95      | output    | 437   |
| DGT  | 24    | O_Od_Comp_12     | 95      | output    | 438   |
| DGT  | 25    | O_Od_Comp_22     | 95      | output    | 439   |
| DGT  | 26    | O_Od_Comp_32_4   | 95      | output    | 440   |
| DGT  | 27    | O_Od_CompHPump_2 | 95      | output    | 441   |
| DGT  | 28    | O_Od_FCoil_1     | 95      | output    | 442   |
| DGT  | 29    | O_Od_FCoil_2     | 95      | output    | 443   |
| DGT  | 30    | O_Od_FCoil_3     | 95      | output    | 444   |
| DGT  | 31    | O_Od_FCoil_4     | 95      | output    | 445   |

|  | WA | LC | DS50 |
|--|----|----|------|
| [On / Off] Unit  | √  | √  | 3111 |
| [Reset] Discharges the safety measures of the unit                                       | √  | √  | 3112 |
| [BMS] Activation of the Inoccupation mode [Off] occupation mode - [On] inoccupation mode | √  | √  | 3935 |
| [Alarm] General  | √  | √  | 1000 |
| [On/Off] Pump, 1   | √  | √  | 2315 |
| [On/Off] Pump, 2   | √  | √  | 2317 |
| [On/Off] Compressor 1, Circuit 1   | √  | √  | 2416 |
| [On/Off] Compressor 2, Circuit 1   | √  | √  | 2426 |
| [On/Off] Compressor 3, Circuit 1 (WA) or Compressor 1, Circuit 3 (LC)                    | √  | √  | 2456 |
| [On/Off] Compressor, Heat pump, Circuit 1  | √  |    | 2417 |
| [On/Off] Compressor 1, Circuit 2   | √  | √  | 2436 |
| [On/Off] Compressor 2, Circuit 2   | √  | √  | 2446 |
| [On/Off] Compressor 3, Circuit 2 (WA) or Compressor 1, Circuit 4 (LC)                    | √  | √  | 2466 |
| [On/Off] Compressor, Heat pump, Circuit 2  | √  |    | 2447 |
| [On/Off] Fans, Circuit 1   | √  | √  | 2614 |
| [On/Off] Fans, Circuit 2   | √  | √  | 2624 |
| [On/Off] Fans, Circuit 3   |    | √  | 2634 |
| [On/Off] Fans, Circuit 4   |    | √  | 2644 |







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