



***pCO<sup>2</sup>***

**MICROPROCESSOR REGULATION**

**TECHNICAL MANUAL**

**THIS MANUAL REFERS TO THE FOLLOWING UNITS:  
AIR CONDITIONERS FOR SURGICAL ROOM AND LABORATORIES OH SERIES**



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## 1 PURPOSE OF THIS MANUAL

This handbook introduces you to the use of the pCO<sup>2</sup> microprocessor regulation software dedicated to the OH units series.

In the following chapter we will explain some points of extreme importance so to allow you to use this unit in the best way. Therefore Tecnaïr LB suggests you to take a deepened reading of this handbook.

Some of the arguments refer to operation modality, components and accessories of the unit that are not described in this handbook. For these Tecnaïr LB suggests to read the **INSTALLATION, USE and MAINTENANCE** handbook, placed in the unit.

Tecnaïr LB carries out the programming and the configuration of all the parameters of the unit during the factory testing.

If, after the reading of this handbook, you still find yourselves in a situation of difficulty do not hesitate to contact our aftersales service:

**After sales office**

**Tel. +39029699111/Fax +390296781570**

Thanking you for having chosen Tecnaïr LB, we stay at your disposal.

## 2 pCO<sup>2</sup> INPUT AND OUTPUT

In the OH series air conditioners motherboard is installed a Large pCO<sup>2</sup>. For the version with the heat recovery system, the steam valve and the HEPA filter alarm (pressostat not included) is also installed an I/O expansion.

In the attached table the different inputs and outputs signal are shown.

### ANALOGIC INPUT

| U4 BOARD  |                                |
|-----------|--------------------------------|
| AIN       | DESCRIPTION                    |
| <u>B1</u> | Room humidity                  |
| <u>B2</u> | Room temperature               |
| <u>B3</u> | Supply air pressostat          |
| <u>B5</u> | Supply air temperature (limit) |
| <u>B7</u> | Antifreeze temperature         |
| <u>B8</u> | Room pressostat                |
| <u>B9</u> | External air temperature       |

Table 1.1: analogic input.

### DIGITAL INPUT

| U4 BOARD    |                                    |
|-------------|------------------------------------|
| DIN         | DESCRIPTION                        |
| <u>ID1</u>  | Humidifier water level sensor      |
| <u>ID2</u>  | General alarm supply fan           |
| <u>ID3</u>  | General alarm expulsion fan        |
| <u>ID4</u>  | Low pressure compressor 1          |
| <u>ID5</u>  | Low pressure compressor 2          |
| <u>ID6</u>  | High pressure / thermal compr. 1   |
| <u>ID7</u>  | High pressure / thermal compr. 2   |
| <u>ID8</u>  | Electric heater safety thermostat  |
| <u>ID9</u>  | Electric post-heater safety therm. |
| <u>ID10</u> | Fire/Smoke alarm                   |
| <u>ID11</u> | Flooding alarm                     |
| <u>ID12</u> | Safety UPS working mode            |
| <u>ID13</u> | External air filter alarm          |
| <u>ID14</u> | Supply air filter alarm            |
| <u>ID15</u> | Expulsion air filter alarm         |
| <u>ID16</u> | Remote ON-OFF                      |
| <u>ID17</u> | Motorized damper status (na)       |
| <u>ID18</u> | Low oxygen alarm                   |

Table 1.2: digital input.

### I/O EXPANSION DIGITAL INPUT

| U5 EXPANSION |                          |
|--------------|--------------------------|
| DIN          | DESCRIPTION              |
| <u>ID1</u>   | Supply humidistat alarm  |
| <u>ID2</u>   | Heat recovery pump alarm |
| <u>ID3</u>   | HEPA filter alarm        |
| <u>ID4</u>   |                          |

Table 1.3: I/O expansion digital input.

**DIGITAL OUTPUT**

| <b>U4 BOARD</b> |                           |
|-----------------|---------------------------|
| <b>DOUT</b>     | <b>DESCRIPTION</b>        |
| 1C/10           | Supply fan                |
| 2C/20           | Expulsion fan             |
| 3C/30           | Damper                    |
| 4C/40           | Humidifier (power)        |
| 5C/50           | Humidifier fill valve     |
| 6C/60           | Humidifier drain valve    |
| 7C/70           | Compressor 1              |
| 8C/80           | Compressor 2              |
| 9C/90           | Expulsion damper          |
| 10C/100         | Heat recovery system pump |
| 11C/110         |                           |
| 12C/120         | Dirty filter alarm        |
| 13C/130         | Soft alarm                |
| 14C/140         | Serius alarm              |
| 15C/150         | Unit status               |

**ANALOGIC OUTPUT**

| <b>U4 BOARD</b> |                                     |
|-----------------|-------------------------------------|
| <b>AOUT</b>     | <b>DESCRIPTION</b>                  |
| Y1              | Hot gas by pass/chilled water valve |
| Y2              | Heating                             |
| Y3              | Supply fan inverter                 |
| Y4              | Expulsion fan inverter/damper       |
| Y5              | Recirculation damper                |
| Y6              | Post-heating                        |

**Table 1.5:** analogic output**Table 1.4:** digital output.**I/O EXPANSION ANALOGIC OUTPUT**

| <b>U5 EXPANSION</b> |                    |
|---------------------|--------------------|
| <b>N°</b>           | <b>DESCRIPTION</b> |
| Y1                  | Steam valve        |

**Table 1.6:** I/O expansion analogic output.**3 USER TERMINAL AND REMOTE TERMINAL**

- 1) Semigrafic display 8×22 rows 12 key for unit panel mountig or remote display (accessory) for the remoting of all the function (es: installation on the control room):

---

## DISPLAY FEATURES

LCD semigrafic display:

- Number of rows: 4.
- Number of columns: 20..
- Font height: variable

- 2) Semigrafic display 8x22 rows 6 key for wall mounting (accessory) for the temperature end humidity value end set point display (es: room intallation):



## DISPLAY FEATURES

LCD semigrafic display:

- Number of rows: 4.
- Number of columns: 20..
- Font height: variable

- It is possible to regulate the contrast of every display model.

On models with the semigrafic 8x22 LCD display contrast regulation is possible.

Press together the keys  +  as well as  to increase and  to decrease.

### 3.1 TYPICAL USE OF THE BUTTONS IN STANDARD APPLICATIONS

| BUTTON  | NAME               | FUNCTION   |
|---|--------------------|--|
|  | Menu button        | displays the values measured by the feelers  |
|  | Maintenance button | displays the values relating to the maintenance of the devices (working hours and operating hour counter reset); |

|   |                         |  |
|---|-------------------------|--|
|  | Sterilization button    | accesses the group of screens for the sterilization management (where included);     |
|  | I/O button              | displays the status of inputs and outputs (both digital and analogue);               |
|  | Clock button            | allows the display/programming of the clock (if present);                            |
|  | Set button              | allows the Set-Point setting.  |
|  | Programming button      | allows the various operating parameters to be set (safety parameters, thresholds)    |
|  | Programming+menu button | by pressing simultaneously these buttons you access the unit configuration           |
|  | Info button             | displays the version of the application program and information Help-on-line system. |
|  | Orange button           | allow to skip to another board which shared terminal.                                |

The LED next to each button are illuminated when the relative function is active

| BUTTON  | NAME                      | FUNCTION  |
|---|---------------------------|---|
|  | On-off button             | switches the unit on or off. The green LED that lights up in the button shows if the machine is turned on;  |
|  | Alarm button              | used for displaying or manually resetting the alarms and resilencing the buzzer. If the button lights up (red), at least one alarm has been detected; |
|  | Up/downwards arrow button | allows to manage the currently displayed screen and to set the values of the control parameters   |
|  | Enter button              | to confirm the set data. The button is constantly back-lit (yellow) indicating the presence of mains power..  |

The remote display foresees on the façade a small tray that opens with a maximum inclination of 150°. With a closed small tray only the keys on-off, alarm, arrow up/down and enter are accesible. To access the remaining keys the small tray must be opened. When the small tray is close only the three retroilluminated LEDs are visible for the keys on-off, alarm and enter. The other LEDs are only visible to open the small tray.

#### 4 ADDRESSING OF THE UNITS

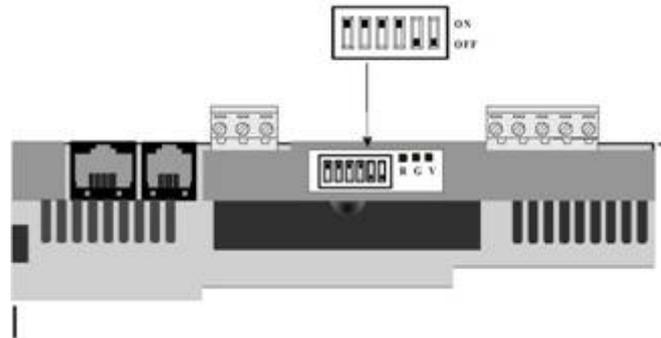
This procedure is made directly by TECNAIR LB during the first configuration.

Is necessary check made the addressing only if you change the board or the number of terminals.

## 4.1 pCO<sup>2</sup> MOTHERBOARD HARWARE ADDRESSING

For the good addressing of the pCO<sup>2</sup> motherboard end of the I/O expansion is necessary follow these instruction:

- 1) Put the **dip-switch n° 2** of the pCO<sup>2</sup> motherboard on the position **ON**.
- 2) Put the **dip-switch n° 1** of the I/O expansion on the position **ON**.



Dip-switches on pCO<sup>2</sup> card.

## 4.2 SOFTWARE ADDRESSING

After having done the hardware addressing of the card and the terminal, it is also necessary to do the software addressing of the the local network components. The software configuration of the components of a local pLAN network must be done:

- During the first configuration of the pLAN local network
- At every variation of the pLAN local network components

The software addressing procedure can be executed from a single terminal, as long as all the others have previously been connected and addressed.

Each pCO<sup>2</sup> board, connected to the network, can manage more than one terminal (max 3). Each terminal associated to a specific board can be private or shared:

- o A terminal is considered private if it alone displays the output of just one I/O board.
- o A terminal is considered shared if it can be switched between a number of control boards.

### Configuration procedure:

On the private terminal press simultaneously the arrow up, arrow down and enter keys or the keys menù, maintenance and printer for at least 5 seconds up to when on the display a mask appears.



---

### local networks configuration keys

|                |    |
|----------------|----|
| Terminal Adr:  | 3  |
| I/O Board Adr: | __ |

#### First software mask for local network configuration

Terminal Adr this is the network address of the terminal set previously by the dip-switches installed on the back of the same terminal. This value cannot be changed via software.  
I/O Board Adr if the network address to which the terminal is connected

With the arrow up/down keys set the address of the card and press the enter key to confirm the just effected formulation . Following this on the display this mask appears:

|   |
|---|
| Terminal config<br>Press ENTER<br>To continue |
|---|

#### Second software mask configuration for local network

Pressing once again the enter key you can go to the next mask:

|      |      |             |
|------|------|-------------|
| P:02 | Adr  | Priv/Shared |
| Trm1 | 03   | Pr          |
| Trm2 | None | __          |
| Trm3 | None | __ OK?No    |

#### Third software mask configuration for local network

In this mask it is possibile to set:

- The address (Adr) of each one of the 3 terminals which can be connected to the pCO<sup>2</sup> base card.
- The terminal type; tried (Pr) or Shared (Sh).

The last field, allows finally to confirm, (OK?Yes) or to annul (OK?No) the effected formulations.

To modify the value of every field is enough to press down the keys arrow up/down.

To move from a field to the next itis enough to press the enter Key.

To go out of the software configuration procedure without varying the formulations previously memorized is enough to wait 30 seconds without pressing any key.

Once abandoned the software configuration, on the terminal the principal mask of the management program of the card will be visualized, from which it is possible to read the values measured by the existing feelers.

### 4.3 MONITORING OF THE NETWORK STATUS

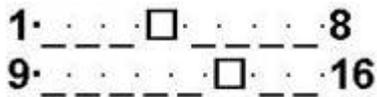
During the operation it is possible to underline the status of the local network, that is the number and the typology of the connected units. To fulfill this purpose it is necessary to symultanuesly press the keys arrow on, arrow down and enter or the keys menù, maintenance and printer on a user terminal for at least 10 seconds up to when the following mask appears on the display:

|         |    |       |    |
|---------|----|-------|----|
| NetSTAT | 1  | _____ | 8  |
| T: xx   | 9  | _____ | 16 |
| Enter   | 17 | _____ | 24 |
| To EXIT | 25 | _____ | 32 |

T: XX indicates the address of the active terminals.  
To exit the mask press the enter key (Enter to Exit).

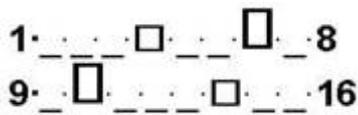
The symbols \_ represent the addresses of the units connected in local network. The base pCO cards are represented by the symbol  and the terminals by the symbol .

The states of the local network pLAN are indicated.



In this example two terminals with addresses 4 and 14 are connected in pLAN.

**Example of pLAN local network status.**



In this example two terminals are connected in local network, with addresses 4 and 14, and two pCO base cards with addresses 7 and 10.

**Example status of the pLAN local network**

#### 4.4 DIAGNOSIS OF THE ANOMALYS OF THE pLAN LOCAL NETWORK

| ANOMALIES  | SOLUTIONS  |                               |
|--|--|-------------------------------|
| The alarm signal of the terminal turns on without any reason. Resetting the allarm the display is empty. | Same address on more terminal and/or pCO2 basic cards. | <b>verify the addressing.</b> |
|  | One or more terminals have address 0 (zero).           | <b>verify the addressing.</b> |

|  |   |   |
|--|---|---|
|  | The network is not well wired, cables could exist that short-circuit or that are connected to earth.  | <b>verify the wiring.</b>                               |
|  | A basic card could be broken or have the eprom not correctly installed                                | <b>verify state of the leds on the addressing cards</b> |
|  | Jumper J8 of the basic card is not in position 2-3.   | <b>verify position</b>                                  |
| <b>The display of some terminals is empty</b>                  | Enter the software configuration procedure of the network and verify the addressing of all the units. | <b>Verify addressing software.</b>                      |
| <b>The message "NO LINK" appears on the display</b>            | The terminal receives no network signal   | <b>Verify cables</b>                                    |
| <b>The message "I/O board no fault" appears on the display</b> | The base card with address nn doesn't work properly   | <b>Verify the base card nn.</b>                         |
| <b>Green led on addressing card turned off</b>                 | The mother card receives no signal.   | <b>Verify cables.</b>                                   |

**Table 5:** diagnosis of local network anomalies.

## 5 STRUCTURE OF THE MASKS OF THE REGULATION PROGRAM

On the display of the user terminal are visualized all the necessary information for a complete and precise regulation. The visualization of all the parameters, both reading and writing, is organized in masks.

Every mask has the following characteristic:

- It is made up of 4 lines and 20 columns.
- In the angle up on the right the identification of the mask is present. Subsequently this angle will be identified with the wording position **home**.
- In the first line it is anticipated the space for the name of the same mask and for the visualization of the time and the date (main mask).

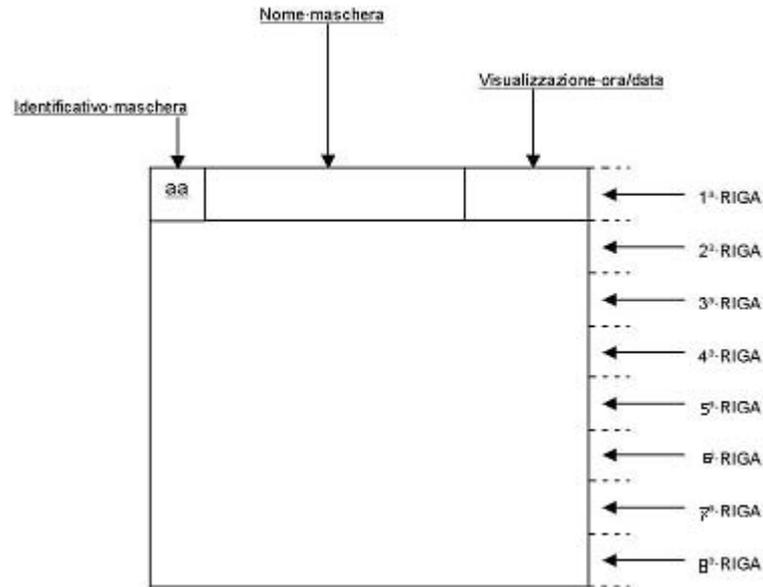


It is possible to flow down the masks with the keys arrow up/down

The cursor is normally positioned under the **home** position of the mask. If in the same mask there is some

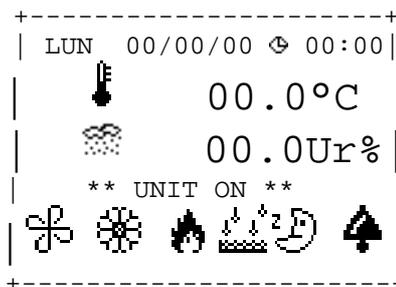


modifiable fields (to es. password, set-point,) pushing the enter key ( ) you moves the cursor from the home position to the first available field. Using the arrow keys down/up it is possible to modify the field. To memorize the value just inserted it is enough to press the enter key. Following this the cursor automatically moves itself on the following available field. Instead, if in the mask they are no other modifiable fields present, the cursor returns in the **home** position.



**Structure of the mask**

The masks of the regulation program are separated in groups. Every group of masks is accessible pressing a precise key or a combination of keys.



**Main mask of the regulation program**

## 5.1 MEANING AND USE OF THE KEYS OF THE USER TERMINAL

To access the masks for the regulation program it is necessary to use the keyboard on the user terminal. The keyboard of the terminal is figured.



---

## User terminal keyboard

The keyboard is made up of 15 keys which can be divided in three groups:

### 5.1.1 FIRST GROUP

Made by five keys: ON/OFF, Alarm, Up arrow, Down arrow and Enter:



Fisth group of keys

#### 5.1.1.1 ON/OFF KEY



It allows the machine turning ON and OFF. If the unit is Off push one time this key permit to start the unit. If the unit is already running pushing this key for more seconds permit to shut down the unit.

The status of the unit is shown in the main mask and also by the ON/OFF key led status.

**Procedure to be followed:**

press the **On/Off** key once.

**Result of procedure:**

-the **On/Off** key led turns ON.  
-the **On/Off** key turns OFF.

#### 5.1.1.2 ALARM KEY



It allows the **silencing** of the buzzer which has been activated in case of alarm and the **resetting** of alarms after the reasons that caused them had disappeared.

**Procedure to be followed:**

- press the **Alarm** key once.

**Result of procedure:**

- if, before following this procedure, there are no active alarms (**Alarm** key OFF, buzzer OFF, no alarm messages on display), the display will show a mask informing about the absence of any alarms. The mask will disappear if another key is pressed.

- if, before following this procedure, there is at least one active alarm (**Alarm** key ON, buzzer ON, alarm message on display), the pressing

of the **Alarm** key silences the buzzer and on display appears the exact message of the alarm which can be the only one or the first of a series. Now you can check if there are more than one active alarms and in that case which kind of alarms has been activated. It is enough to press the **Up** or the **Down** keys. In this case if there are more than one active alarms a list of alarm messages will be displayed.

- if, before following this procedure, the buzzer has been **silenced** and the display shows an alarm mask, you have two possibilities: if the reasons which caused the alarms have disappeared, the Alarm key will turn OFF and the programme will automatically return to the menu mask (this function is called **Clear**); if the reasons which caused the alarms have not disappeared, the buzzer will be reactivated.

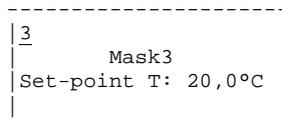
-if before following this procedure the buzzer has been **silenced** and the display shows any masks (except an alarm mask), the programme will automatically enter the alarm branch where you can select the **Clear** function.

### 5.1.1.3 UP/DOWN KEYS AND ENTER KEY

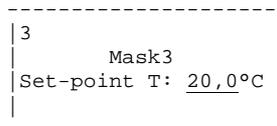
These three key have twice function:

- They permit to show all the mask of the loop
- They permit to change the parameter shown in the mask (set-point, etc.)

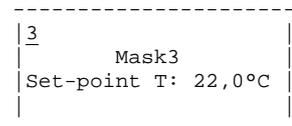
To modify the parameter is necessary press the enter key (a). The cursor skip under the parameter. With the up and down key you can change the value (b). Press on more time the key enter to save the new parameter (c).



(a)



(b)



(c)

Es. modification of the values of the temperature set-point:

- (a) Cursor in the home position;
- (b) Cursor in the position of the set-point following the press of the enter key. Use of the increase/decrease keys to modify the value of the set point.
- (c) Cursor in the home position after having pressed the enter key to memorize the new value of the set point.

### 5.1.2 SECOND GROUP

This group has nine keys: Menù, Maintenance, Printing, Input/output, Clock, Set, Prog, Info and Orange Key



---

## Second group of keys

They allow the user to perform any kind of procedures starting from the programming to the parameters simple display.

Their function is **to select** the required loop. The above mentioned 5 rubber keys are used for programming and for parameters display. Once completed the procedures in a loop, which has been selected by pressing a key, the user only has to press another key to go at once to another mask loop.

The keys share the following peculiar features :

- 1) A green **led** next to each key turns on when the key is pressed. The led remains ON as long as the loop of masks is being used. The led is important if the user does not remember which mask loop has been selected. It is important to point out that only one of the 8 grey keys can be ON, therefore activation of one automatically deactivates the others. Moreover, the user must remember that the leds will never be all OFF, because the mask menu is always on display; therefore, the led next to the menu key is ON even if no procedure is being performed or after a RESET due to a blackout:
- 2) In the programme itself there is an automatic function which brings back to display the menu mask and the led next to the menu key will be turned ON again. If, for example, the last procedure has been the setting of the printer parameters, for some minutes the last selected mask will remain on display and the led next to the printer key will remain ON: Once the selected time has elapsed, the led next to the printer key will be turned OFF, the one next to the menu key will be turned ON and the temperature and humidity values will be displayed.
- 3) Each loop of masks follows an order. This means that by pressing a key the **first** mask of the corresponding loop will be displayed. If the user then moves to other masks of the loop and by chance presses again the same key, the first mask will be displayed again.

## 5.2 6 KEY REMOTE TERMINAL

This display is an accessory and has limited menu access possibilities. Only 6 keys can be found on the display:

- **ALARM KEY**
- **PROG KEY**
- **ESC KEY (It is the key MENU of the panel display)**
- **UP & DOWN KEY**
- **ENTER KEY**

This display has the possibility of being wall mounted and is useful for applications where it may be necessary to show only information about the probe readings or for changing the set-point. This display gives the possibility of seeing the following loops:

- **MENU LOOP**
- **SET-POINT LOOP + USER LOOP (only with the password)**
- **ALARM CHECKING**

**Pay attention!**

**With this display it is impossible to switch the unit ON/OFF or to enter in the night stand-by and sterilization menu.**

## 6 SPECIFIC SOFTWARE FUNCTION

In this chapter it is explained the specific function of the regulation program of the OH series.

For any other information about this function please see the Installation, use and maintenance handbook.

### 6.1 NIGHT STAND-BY

This function is enabled by its loop (see description before) and permits to reduce the unit working point with a good energy saving. The control of the daily night stand-by work with settable starting and ending hours.

In emergency case it is possible to come back to the normal function only with the disabling of the stand-by.

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---

During the night stand-by of the unit work with this parameter:

|   |   |
|---|---|
| <b>TEMPERATURE CONTROL</b>                  | It is made by two set point (Min. end Max.) to permit a reduction of the cooling and heating without have problem of low and high temperature on the room |
| <b>HUMIDITY CONTROL</b>                     | It is made at the same way of the temperature   |
| <b>SUPPLY AIR AND ROOM PRESSURE CONTROL</b> | Are reduced to the possibile minimum whith two set-point.   |
| <b>PRESSURE CONTROL ON THE DUCT</b>         | It is made at the same way of the supply air.   |
| <b>TEMPERATURE/HUMIDITY ALARM</b>           | There are new threshold for the alarm.  |

## 6.2 UPS WORKING MODE

If the unit is connected to the UPS emergency sistem is possibile, after power shutdown, reduce the power consumption by opening the dedicated terminal (see wiring diagram).

During the UPS working mode the component whith the bigger power consumption:

- COMPRESSORS**
- INTERNAL HUMIDIFIER WHITH IMMERSSED ELECRODES**
- HEATING END POST-HEATING ELECTRIC HEATER**

**The component not present in the previus list works normally.**

## 6.3 HEAT RECOVERY SYSTEM (HR)

The heat recovery sistem work whith the difference beetween the external air temperature and the room temperature. If this temperature is bigger or lower then the setted delta (see mask below) the unit start the recovery system.

During the recovery working the unit control the state of cooling and heating to don't have problem of not necessary recovery (es: during cooling is not necessary recovery heat).

## 6.4 SUPPLY AIR CONTROL (LIMIT)

The high and low supply air temperature problem is solved by many type of working mode.

---

---

High temperature control:

- **ONLY ALARM:** after a delay the unit give an alarm.
- **STOP HOT:** when the temperature is over the threshold the unit stop the heating component and if, after a delay, the temperature is already over the unit give the alarm.
- **HEATING + COOLING:** when the temperature is over the threshold the unit start modulating the cooling component and if, after a delay, the temperature is already over the unit give the alarm.

Low temperature control:

- **ONLY ALARM:** after a delay the unit give an alarm.
- **STOP COOLING:** when the temperature is over the threshold the unit stop the cooling component and if, after a delay, the temperature is already over the unit give the alarm.
- **COOLING + HEATING:** when the temperature is over the threshold the unit start modulating the heating component and if, after a delay, the temperature is already over the unit give the alarm.
- **COOLING + POST:** when the temperature is over the threshold the unit start modulating the post-heating component and if, after a delay, the temperature is already over the unit give the alarm.

## 6.5 ANTIFREEZE SYSTEM

This system work only if the probe and the heating component is installed. This system is used to reduce the freezing problem on the water coil and work in two different way:

**NORMAL WORKING:** If the atifreeze temperature is below 6°C, durino normal working mode, the system open the heating at 100%. And if, after a dealy, the temperature is already out of the range the fan was stopped and appear a signal on the main mask. If the temperature come beck to the normal status the unit restart whit the normal working.

**ATTENTION!**  
**THERE ARE NOT ALARM SIGNALLING!**

**NIGHT:** If durino the night the unt is OFF end the antifreeze temperature is below 6°C the unit open the hot water coil at 50% to reduce the possibility of freezing coil.

**ATTENTION!**  
**THE SYSTEM IS ACTIVATED ONLY WHITH THE HOT WATER COIL!**

## 6.6 STERILIZATION CYCLE

This function, activable by dedicated menù, gives the possibility to sterilize the room, the duct end the unit whit specific gasses like Glutaraldeide. The cycle is splitted in three phases:

- 1) **STERILIZING GAS DITRIBUTION:** The expulsion fan is stopped and the unit work whit 100% recirculation. In this way is possible the saturation off all the component of the aeraulic circuit end the room. (Default 1 hour)
- 2) **UNIT STOP:** the unit is copleately stopped to permit at the sterilizing gas to act. (Default 1 hour)
- 3) **WASHING:** all the fans going to the 100% to wash the aeraulic circuit whit fresh air. (Default 1 h)
- 4) **ENDING:** Finished the cycle the unit come back to the noermal working.

**ATTENTION!**  
**THE CYCLE IS POSSIBLE ONLY WHITH THE RECIRCULATION DAMPER!**

---

## **7 UNIT CONFIGURATION: MEANING AND USE OF THE MASKS**

### **7.1 MANUFACTURER LOOP: MASKS FOR THE COMPONENTS CONFIGURATION**

This operation is made by Tecnaïr during the test of the unit and must be repeated by skilled technicians only in case of microprocessor substitution or anyway by Tecnaïr LB authorized personnel. Through the configuration we inform the microprocessor of the components installed inside the unit, so that it can handle them and display the eventual alarms.

The information relative to the components installed in the unit (number of compressors, fans, dampers, humidifier dimensions etc) are all retrievable in the unit's technical specifications (provided with the order confirmation) and in the electric diagram provided with the unit.

The unit configuration is protected by a password: 0694

ALL SET VALUES ARE STORED WITHIN A PERMANENT MEMORY TO AVOID THEIR LOSS AT THE LOSS OF FEEDING TO THE UNIT.



To enter in the unit configuration press the button

togheder.

Fa Password  
Insert the access  
password for the  
manufacturer menu:  
 0000

Mask to enter into the manufacturer masks branch through password (0694)

Fb Configuration  
Language selection  
Sprache Deutsch  
  
Order confirmation N°:  
000000A

Mask to set the available language end the nuber of the oerder confirmation

Fc Configuration  
Room: NTC  
Probe setting:  
Range: 000.0- 000.0  
Calibration: 00.0  
 Room: NTC  
Range: 000.0- 000.0  
Calibration: 00.0  


Mask to set the parameter of the temperature end humidity probe.

Fd Configuration  
Supply air: NO  
Probe setting:  
Calibration: 00.0  
 External air: NO  
Calibration: 00.0  
 Antifreeze: NO  
Calibration: 00.0  


Mask to set the presence end the parameter of the :  
SUPPLY AIR TEMPERATURE PROBE  
EXTERNAL AIR TEMPERATURE PROBE  
ATIFREEZE AIR TEMPERATURE PROBE

Fe Configuration  
Supply air pressostat  
Range:  
0000 - 0000  
 Calibration:  
00.0

Mask to set the parameter of the supply air pressostat

Ff Configuration  
Expulsion pressostat  
Range:  
0000 - 0000  
Presence:  
00.0  


Mask to set the presence end the parameter of the expulsion/room pressostat

Fg Configuration  
Function setting  
Costant air flow  
N  
Costant pressure on  
the duct

Mask to set the type of air flow control:  
COSTANT AIR FLOW  
CONSTANT PRESSURE ON THE DUCT

N

Fh Configuration  
Pressure control  
Modulating damper: N  
Expulsion fan  
 N  
Modulating damper:  


Mask to set the type of expulsion/room pressure control

Fi Configuration  
Recirculation  
damper: N  
Heat recovery  
system: N  
  


Mask to set the presence of the recirculation damper end the heat recovery system

Fj Configuration  
Cooling control:  
Direct expansion  
N  
Chilled water  
N  
Post-cooling  
N

Set Unit working mode:  
DIRECT EXPANSION  
CHILLED WATER  
POST-COOLING

Fk Configuration  
Heating control:  
Heating: N  
Electric: N  
Post-heating: N  
Electric: N

Set Unit working mode:  
Presence end type of heating end post-heating component.

Fk Configuration  
Humidification:  
Internal humidifier  
N  
Steam valve  
N

Set the type of humidifier:  
INTERNAL HUMIDIFIER  
STEAM VALVE

Fi Configuration  
Accessories:  
External supervisor  
N  
2° Room terminal  
N

Accessories setting:  
EXTERNAL SUPERVISOR  
2° ROOM TERMINAL

Fm Configuration  
 Temperature control  
 Room temperature  
 N  
 Supply air temperature  
 N

Mask to set the type of temperature control:

ROOM TEMPERATURE CONTROL (SUCTION)  
 or  
 SUPPLY AIR TEMPERATURE CONTROL

Fn Configuration  
 Dead zone  
 Temperature:  
 000%  
 Humidity:  
 000%  
 of the proportional  
 band

Mask which allows for the setting of the temperature control dead zone. Within this zone the micro does not activate the components.

Fo Configuration  
 Direct expansion  
 Insert the compressors  
 number:  
  
 Enable rotation:  
 N

Mask which allows to set the presence of the number of compressors installed in the unit. Maximum number allowed is 2. Introduction of compressors rotation, if two compressors have been selected. Introduction of compressors rotation: The compressor activation cycle will be: 1 / 2 / 1 / 1 / 2 / 1 / (the underlined number means that this is the first compressor to activate). This mask is normally present only if two compressors are installed.

Fp Configuration  
 Direct expansion  
 Enable hot gas by-pass  
 N  
 Range of function  
 000 - 000%  
 Dehumidification range  
 000 - 000%

Mask to enable the hot gas by-pass and its range of work

Fq Configuration  
 Direct expansion  
 Compressor  
  
 Position:  
 000%  
 Hysteresis:  
 000%

Setting of the position and hysteresis of the 1<sup>st</sup> compressor  
 Suggested parameters: 50-50 if only 1 compressor is installed,  
 25-25 if 2 compressors are installed.

Fs Configuration  
 Direct expansion  
 Compressor timing  
 Minimum ON: 000s  
 Minimum OFF: 000s  
 Low pressure alarm  
 delay:  
 000s

Introduction of the minimum delay time between de-activation and re-activation of the same compressor to limit the number of starting up within an hour.

Setting of delay time for the revealing of the low pressure alarm.

**NOTE** The default introductions of the compressor parameters limit to 10 the turning on and off of each compressor for each working hour of the compressor itself.

Ft Configuration  
 Cooling valve



Start position:  
 000%

End position:  
 000%

Mask to set the post-cooling modulating valve range of work

Fu Configuration



Supply air fan  
 Nicotra  
 Plug-Fan  
 Coefficient:  
 000

Air flow value:  
 Normal

Mask to set the supply fan coefficient end the type of air flow reading (double= 2f ans)

Fv Configuration  
 Fan modulating speed

Supply air: 0s  
 Expulsion: 0s

Dead zone  
 Supply air: 000m<sup>3</sup>/h  
 Expulsion: 000Pa

Mask to set the fan modulating speed end dead zone.

Fw Configuration  
 Internal humidifier

Type of humidifier:  
 1.5 Kg/h 200 V 1-ph.

Type of control board:  
 PCOUMID200

Drain without tension  
 N

Introduction of the steam production, nominal power and number of phases for the humidifiers.

Introduction of the type of board installed

Enable the drain without tension.

Fx Configuration  
 Dehumidification

Dehumidification  
 enabled: N

Partial  
 dehumidification: N  
 (Disable the  
 compressor 2)

Enable the dehumidification control or the partial dehumidification.  
 (Disable the compressor 2 end the automatic rotation)

Fy Configuration  
 Low supply air  
 temperature control:  
 ONLY ALARM

Low temperature alarm  
 delay: 000s

Mask which allows for the setting of the low temperature supply air alarm mode.  
 This mask is visualized only if the temperature feeler is installed on the fresh air to the room.  
 See previous chapter for more information

Fz Configuration  
 High supply air

Mask which allows for the setting of the high temperature supply air alarm mode.\*  
 This mask is visualized only if the temperature feeler is installed on the fresh air to the room.

---

temperautre control:  
ONLY ALARM

Low temperature alarm  
delay: 000s

See previus chapter for more information

F1 Configuration  
Antifreeze system  
Set-point: 00.0°C  
Delay: 000s  
Night function  
Threshold: 00.0°C  
Heating opening: 000%

Mask to set the parameter of the antifreeze system  
See previus chapter for more information

F2 Configuration  
Working time  
High/low alarm  
delay:  
000s  
Start-up delay:  
000s

Mask to set the delay of the high and low alarm.  
Mask to set the delay time for the start-up

F3 Configuration  
Enable the remote  
ON-OFF:  
N  
Automatic return to  
the menu loop delay  
000s

Enable the remote ON/OFF. If ON/OFF is activated the air conditioner switches ON if the 24 Vac digital ID16 clamping is present and switches OFF if the tension between the two clamps is null.  
Setting of the automatic return time to the main menu

F4 Configuration  
Supervisor parameter  
Speed: 1200 baud  
Protocol: RS485  
Lonworks: N  
Identity number  
(ID) N°: 00

Mask to configure the trasmission protocol, the trasmission speed and the unit identification number.

F5 Configuration  
Insert the new  
access password:  
  
0000

Mask for the modification of the manufacturer password  
If changed the default one is not more valid!

---

|   |
|---|
| F6 Configuration<br>Factory default<br>value installation:<br>N |
|---|

Mask to install the default value of the unit

**NOTE:** During the factory test Tecair LB proceed to configure all the parameter for a right working mode of the unit. These parameters are saved into the permanent memory of the pCO<sup>2</sup>. If during the life of the unit the parameters will be changed in the wrong way you can come back to the right configuration with the mask F6.

## 7.2 LOOP MENU: READING OF VALUES SIGNALLED BY THE FEELERS

You access this loop of masks after having pressed the Menu key. In this loop of masks the values are visualized and read by the existing feelers. To this intention we remember that the temperature feeler for the environment is the only feeler to be always present.

Pressing once the key



ignites the corresponding led and on the display the mask that points out: - the value of the temperature environment; is visualized.

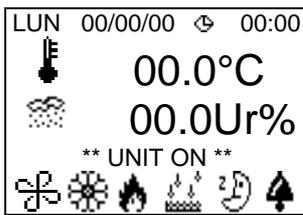
- the value of the damp environment (the indication of damp is different only from zero if the probe of damp is present);
- the time and the actual date (if it foresees the card clock);
- the state of the unit (ON-OFF).

By Pressing the keys

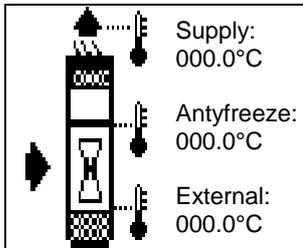


it is possible to flow through the loop of masks of menu.

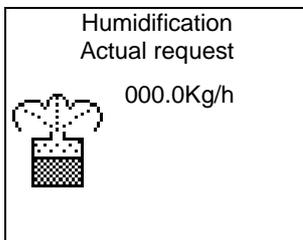
Following this the loop of the masks of menù is brought.



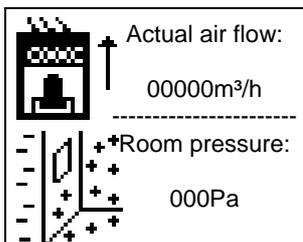
Текущее время и дата  
Температура и влажность  
Статус установки



Температура приточного воздуха (если датчик представлен)  
Температура оттайки (если датчик представлен)  
Наружная температура воздуха (если датчик представлен)



Производство пара или величина открытия парового клапана



Текущий расход воздуха и давление в помещении если установлен прессостат.  
Данная экранная маска может быть изменена в случае если осуществляется контроль давления

### 7.3 MANTAINANCE LOOP: READING WORKING HOURS AND ALARM LOGGING

You access this loop of masks after having pressed the key

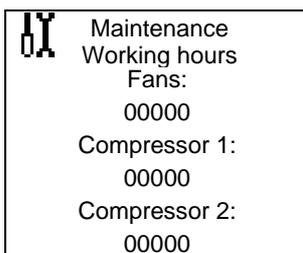


In this loop of masks the functioning hours are visualised for the main components of the air conditioner (fans, compressors) and the alarm logging mask.

By Pressing the keys



it is possible to flow through the loop of masks of menu.



It display the functioning hours of the unit (by referring to the main fan) and of the compressor(s).  
Данный дисплей отображает часы наработки

 Maintenance  
 Humidifier  
 Enable cylinder  
 washing:  
 NO  
 Enable total drain:  
 NO  
 (Minimum time 120s)

Mask to enable the manual drain of the water. (minimum 120 sec.) end the cylinder prewash.


  
 Press the ALARM key  
 to enter on the  
 alarm logging menu

Whith the key Alarm is possible to enter in the alarm logging.


  
 Enable erasing of  
 the alarm logging?  
  
 N

Mask to erase the alarm logging.

### 7.3.1 ALARM LOGGING

You access this mask by the mask Ab.

In this mask is possible to see the complete alarm logging ordered by date and hour. Is already displayed if the alarm has stoped the unit.

By Pressing the keys  it is possible to flow through the loop of masks of menu.

Alarm logging  
  
 Alarm number: 000  
 RESET ALARM  
 LOGGING  
  
 00:00 00/00/00

Example of alarm logging mask

---

## 7.4 LOOP STERILIZATION: SET OF THE STERILIZATION CYCLE PARAMETER

You access this loop of masks after having pressed the key



Pressing one time the sterilization key you can see the mask to insert the access password (0123). In this loop of masks is possible set the parameter and enable the sterilization cycle.

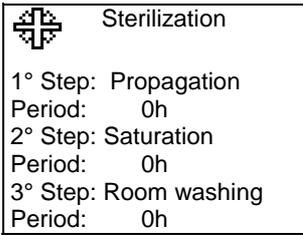
By Pressing the keys



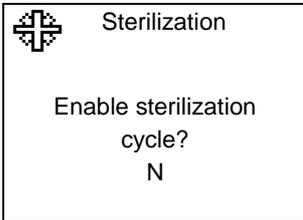
it is possible to flow through the loop of masks of menu.



Mask to insert the access password (0123).

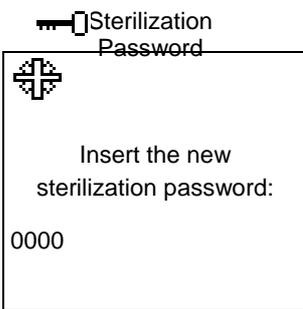


Insert the step period for the sterilization cycle. (min. 1 hour)

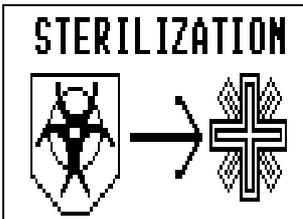


Enable the sterilization cycle

**ATTENTION! TO STOP THE CYCLE YOU HAVE TO SWITCH OFF THE UNIT!**



Mask for the modification of the password  
If changed the default one is not more valid!



Mask how appear durino the sterilization cycle.

## 7.5 I/O LOOP: INPUT/OUTPUT: READING OF STATUS OF THE COMPONENTS

You access this loop of masks after having pressed the



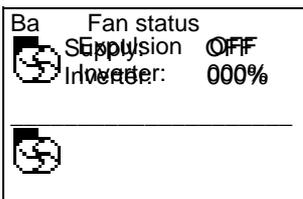
In this loop of masks it is possible to visualize the state of the principal components of the air conditioners.



By pressing the key it is possible to flow the loop of the masks of control of the entries

and the exits. Following the loop of the input/output masks is brought.

If a component is active the writing ON appears, otherwise the writing OFF appears.



Supply end expulsion fan status.

Bb Damper status  
 Regulation  
 opening: 000%  
 Heat recovery: OFF

Dampers status.  
 Heat recovery system status.

Bc Cold comp. status  
 Hot gas by pass: 000%  
 Compressor 1: OFF  
 Compressor 2: OFF

Cooling component status:  
 Cooling valve or hot gas by-pass opening  
 Compressors status

Bd Heating  
 Actual request:  
 000%  
 Post-Heating  


Heating and post-heating component status

Be Humidifier  
 Power: OFF  
 Fill valve: OFF  
 Drain valve: OFF  
 State: Cylinder Off  
 Modus: Off  
 Water level: Normal  
 Cylinder: Normal

Humidifier component status  
 Humidifier status\*  
 Humidifier working mode\*  
 Water level sensor status  
 Cylinder status

Bf Humidifier  
 Conductivity: 0000uS/Cm  
 Cylinder current  
 Nominal: 000.0A  
 Actual: 000.0A  
 Nominal value  
 Production: 000.0Kg/h  
 Tension: 200V 1-Ph

Water conductivity value ( $\mu\text{S/cm}$ )  
 Humidifier power and current nominal end actual value.

Bg GSM Modem  
 GSM Modem status:  
 Modem stand-by.  
 Signal field:  
 000%

GSM Modem status\*\*  
 Field status

\*Humidifier status:

Cylinder OFF for no request, humidifier serious alarm or external disable  
 Water filling  
 Evaporation  
 Water draining  
 Water draining  
 Water draining  
 Water draining  
 Cylinder OFF for humidifier serious alarm  
 Inactivity draining  
 Cylinder washing

---

Manual draining  
Cylinder OFF for humidifier serious alarm  
Water filling checking  
Draining for high conductivity

\*Humidifier working mode:  
Cylinder OFF  
Softstart  
Softstart  
Normal Production  
Reduced production  
Complete washing (Anti-foam)

\*\* GSM Modem status:  
Modem stand-by  
Initialization  
Research GSM field  
Modem stand-by  
Modem in alarm  
Initialization error  
Enabled PIN error  
GSM filed absent  
SMS saturation  
Sending SMS...  
Modem connected...  
Modem calling...

## 7.6 LOOP CLOCK: SETTING OF THE CLOCK END NIGHT STAND-BY

You access this loop of masks after having pressed the key



In this loop of masks it is possible to visualize and to plan the current time and the current date.

Pressing once the key clock ignites the corresponding led and on the display the mask is visualized for the visualization of the date and the current time.

By pressing the



key it is possible to flow through the loop of the masks related to the clock.

What follows is the loop of the masks of the clock.

|        |                    |
|--------|--------------------|
| Ca     | Clock              |
|        | Date/hours setting |
| Hours: | 00:00              |
| Date:  | 00/00/00           |

Setting of the date  
Setting of the time

Day: Monday

Cb Password

Insert the access  
password for the  
night stand-by:



0000

Mask to insert the password to access to the night stand-by configuration.  
(password 0123)

Cc Night stand-by

Enable? N

End - Starts

Mon: 00:00 00:00

Tue: 00:00 00:00

Wed: 00:00 00:00

Mask to enable the night stand-by and set the daily time zone.

Cd Night stand-by

End - Starts

Thu: 00:00 00:00

Fri: 00:00 00:00

Sat: 00:00 00:00

Sun: 00:00 00:00

Mask to set the daily time zone.

Ce Night stand-by

Temperature

Lower set: 00.0°C

Higher set: 00.0°C

Alarm threshold

High temp.: 00.0°C

Low temp.: 00.0°C

Set the minimum and maximum set-point for the temperature.  
Set the temperature alarm threshold.

Cf Night stand-by

Humidity

Lower set: 00.0Ur%

Higher set: 00.0Ur%

Alarm threshold

High humid.: 00.0Ur%

Low humid.: 00.0Ur%

Set the minimum and maximum set-point for the humidity.  
Set the humidity alarm threshold.

Cg Night stand-by

Alarm threshold

High supply air  
temperature: 00.0°C

Low supply air  
temperature: 00.0°C

Set the supply temperature alarm threshold.

Ch Night stand-by

Ventilation setting

Air flow:

Set the air flow, room pressure and recirculation set-point.

These mask change for the pressure control.

00000m³/h  
 Room pressure:  
 00Pa  
 Recirculation:  
 000%

Cj Night stand-by  
 Insert the new  
 night stand-by  
 access password:  
 0000

Mask for the modification of the password  
 If changed the default one is not more valid!

## 7.7 LOOP SET: SET-POINTS REGULATION

You access this loop of masks after having pressed the key



In this loop of masks it is possible to plan the set-point for the regulation of the temperature and humidity in the environment, brought air.

Pressing once the set key Set ignites the corresponding led and on the display the mask is visualized for the formulation of the set-point of temperature.

By pressing the



keys it is possible to flow through the loops of the set masks.

Da Set-point  
 Temperature  
 Set-point setting  
 00.0°C  
  
 Humidity  
 00.0Ur%  


Mask for set the temperature end the humidity set-point

---

If is installed the 2° remote terminal whith only 6 key is possibile see this mask oalso in the user loop  
(PRG key)

## 7.8 LOOP PROGRAMMATION: OPERATION PROGRAM SETTING

You access this loop of masks after having pressed the key



This loop of masks allows the user to personalize the regulation in upon his own demands.

Pressing once the Prog key appear the insertion of the password for the access to the user planning masks. After having inserted the correct password for the user (0123 is the default) it is possible to flow the loop of the user planning masks by pressing the increase and decrease keys.

The following is the loop of the masks for the user planning.

|    |   |
|----|---|
| Ea | Password<br>Insert the access<br>password for the<br>User menu:<br> 0000 |
|----|---|

Mask to insert the password to acces to the user configuration.  
(password 0123)

|    |   |
|----|---|
| Eb | Setting<br>Set-point setting<br>Air flow:<br>00000m <sup>3</sup> /h<br>Room pressure: |
|----|---|

Set the sir flow, room pressure en recirculation set-point.

These mask change for the pressure control.

00Pa  
Recirculation:  
000%

Ec     Setting  
      Temperature  
Proportional band:  
      000.0°C  
Integration time:  
      000S  
Derivative time:  
      000S

Mask to configure the temperature proportional band and to set the time for P+I or PID management.

Set 0 to have only proportional management.

Ed     Setting  
      Temperature  
Alarm threshold:  
High temperature  
      00.0°C  
  
Low temperature  
      00.0°C

Mask to determinate of the alarm thresholds for low and high room temperature

Ee     Setting  
      Supply air temperature  
Alarm threshold  
High temperature  
      00.0°C  
  
Low temperature  
      00.0°C

Mask to set the limit for lowest supply air temperature alarm.  
Mask to set the limit for highest supply air temperature alarm.

Ef     Setting  
      Room humidity  
Proportional band:  
      00.0Rh%  
Enable the  
Humidification?     N  
Production:         000%

Mask to enable the umidifier  
Mask to set the proportional bnd for the humidity  
Mask to set the production of the humidifier

Eg     Setting  
      Room humidity  
Alarm threshold  
High humidity  
      00.0Rh%  
  
Low humidity  
      00.0Rh%

Mask to set the alarm values (tied up to the minimum and maximum value admitted of humidity) of high and low humidity.

Eh     Setting  
      Internal humidifier  
Enable force drain  
For inactivity:     N  
Inactivity time:    00D  
  
Periodic:         N  
Period:            000h

Mask to enable the draining for inactivity and the inactivity time.  
Mask to enable the periodic draining and the periode.

**Inactivity drain:** The cylinder is totally drained if the Humidifier don't make steam for a period like the inactivity time.

**Periodic drain:** The cylinder is totally drained if the Humidifier make steam for a period like the inactivity time.

Ei     Setting  
      Enable simultaneous  
      cold plus  
      humidification?  
      NO  
  


Mask which allows the abilitation to the symulatneous use of the functions of humiditification and chilling.

Ej      Setting  
 0000  
 Set the temperature  
 delta for the heat  
 recovery system:



Set the difference (delta) between the room temperature and the external temperature for the heat recovery system start.

Ek      Setting  
 GSM modem  
 Select the type of  
 alarm signaling:  
 SMS sending  
 N  
 Supervisor calling  
 N

Select the type of modem management.

Ei      Setting  
 GSM Modem  
 Telephone number:  
  
 GSM Modem password:  
 0000

Mask to set the mobile phone number and the modem password.

**Tecnair LB can not receive the alarm SMS.**

Em      Setting  
  
 Insert maintenance  
 ID code:  
 0000000000

Unit serial number introduction (useful to program an ordinary or extraordinary maintenance)

En      Setting  
 Insert the new  
 access password:  
  
 0000

Mask for the modification of the password  
 If changed the default one is not more valid!

### 7.8.1 TECNAIR LB SERVICE POINT

This service made by Tecnair LB under request, give a periodic control of all parameters and, in case of problem or abnormal working of the unit, Tecnair LB can changes the configuration parameters directly through a modem connection. In this way Tecnair can guarantee a proper working mode of all its unit.

**NOTE: Tecnair LB can control and modify only the parameter of the microprocessor.**

### 7.8.2 ALARM SMS SENDING

With the new accessory, the modem GSM, it is possible to send an SMS to a mobile phone automatically in case of alarm situation.

The phone number is set on the mask Em and guarantee the immediate information about any problem to the maintenance service, also in not attended installation. The unit in alarm is recognizable by the ID code settable by the customer.

```

TECH LINE
-- TECNAIR LB --
0000000000
Unit in allarm:
Supply fan thermal
protection
** UNIT OFF **
00:00      00/00/00

```

Alarm SMS:  
Unit recognize end type of alarm

## 7.9 LOOP INFO: RELEASE OF THE REGULATION PROGRAM AND HELP-ON-LINE

This mask is accessed after having pressed key



When you are in the MENU' loop this mask contains information on the regulation software version.

Pressing once the info key the corresponding led on the display switches on and visualises the information mask on the regulation program.

The following is the loop of the masks for the info planning.

```

 CLEANLINE 
Order conf.: 050000A
Maintenance ID number:
0000000000
--
-TEL. +0039-029699111-
Ver 1.0 del 01/01/2005

```

Order confirmation and maintenace identification number.  
Program version.

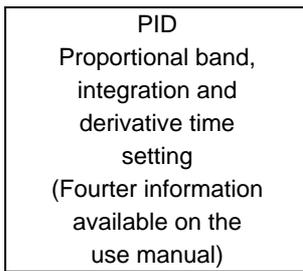
### 7.9.1 HELP-ON-LINE SYSTEM

When you are in any other loop, (i.e. the set-point loop) the mask contains the same explanation as this manual about the mask. When for the explanation we need more then one mask we use the arrow simbol to indicate more masks.

---

Once you have finished to consult the **HELP-ON-LINE** mask you can press the **ENTER** key to return into the previous mask.

The following is the loop of the masks for the help-on-line planning.



Example of a HELP-ON-LINE mask

## 8 ALARM MASKS MEANING

Each alarm situation is signaled by:

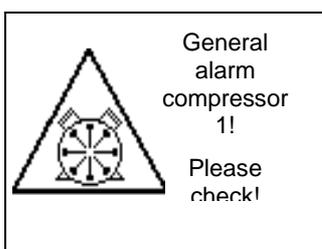
- Activation of the buzzer incorporated in the user terminal;
- Lightening of the red led on the front of the user terminal;
- Visualization of the words "AL" on the right hand side angle of the display.

Each alarm mask is identified with a code of two characters situated in the higher left hand side angle of the display, so to ease the recognition of the mask itself.

Pressing the alarm key the message corresponding to the last activated alarm s visualised. With the increase and decrease keys it is possible to scroll through all the alarm signals memorized. Pressing once more the alarm key the memorized alarm signals are cancelled.

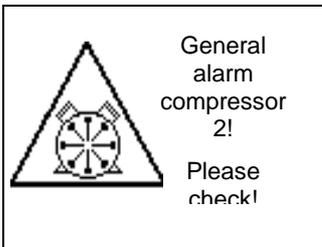
If the alarm signals are cancelled without having removed the alarm causes, the alarm signal will immediately reactivate itself.

All alarms are delayed by one minute at the activation of the unit, with the exception of the high/low temperature and humidity alarms and also the broken feeler alarm are delayed by the user for a settable time.

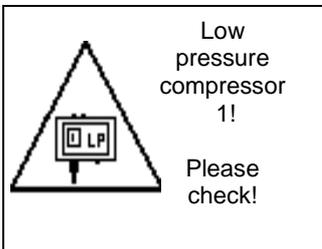


Alarm for Compressor 1 high pressure threshold reaching.

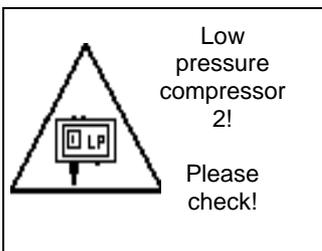
This is just an indication alarm. It does not compromise the units good operation. To re-activate the compressor manually the cause must be individuated



Alarm for Compressor 2 high pressure threshold reaching.  
This is just an indication alarm. It does not compromise the units good operation.  
To re-activate the compressor manually the cause must be individuated



Alarm for Compressor 1 low pressure threshold reaching.  
This is just an indication alarm. It does not compromise the units good operation.  
To re-activate the compressor manually the cause must be individuated



Alarm for Compressor 2 low pressure threshold reaching.  
This is just an indication alarm. It does not compromise the units good operation.  
To re-activate the compressor manually the cause must be individuated



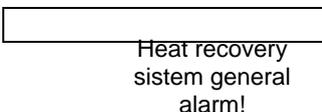
Safety thermostat electric heater intervention alarm. The thermostat intervenes at 115°C and is with manual re-arm. The unit continues working.



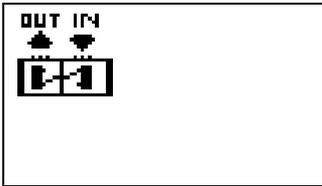
Safety thermostat electric heater intervention alarm. The thermostat intervenes at 115°C and is with manual re-arm. The unit continues working.



Alarm of presence of water on the unit.



Heath recovery system pump thermal protection alarm



  
Maximum humidity  
sensor alarm!  
  
Please check the  
steam valve!

Maximum humidity sensor alarm. Is possible a leakage on the steam valve.  
Please check!

**\*\* SERIUS ALARM \*\***  
  
Espulsion fan  
general alarm!  
  
Please  
check!  
**\*\* UNIT OFF \*\***

Alarm for fans overload or for missing air flow.

**This is a serious alarm that stop the unit only wen the unit work in depression**

  
External air filter  
alarm!  
  
Please  
check and change!

Clogged filter alarm. Needs to be changed

  
Supply air filter  
alarm!  
  
Please  
check and change!

Clogged filter alarm. Needs to be changed

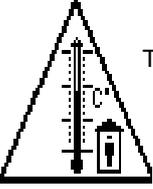
  
Expulsion air filter  
alarm!  
  
Please  
check and change!

Clogged filter alarm. Needs to be changed

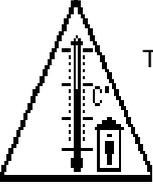


Clogged filter alarm. Needs to be changed.

Terminal air filter  
alarm!  
  
Please  
check and change!

 High room  
Temperature  
alarm!  
  
Please  
check !

Alarm for high room temperature. (see user mask loop).  
Does not shut down the unit.

 Low room  
Temperature  
alarm!  
  
Please  
check !

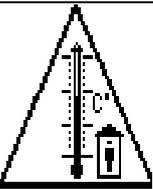
Alarm for low room temperature. (see set mask branch).  
Does not shut down the unit.

 High room humidity  
alarm!  
  
Please  
check!

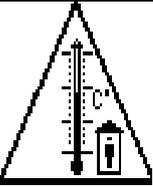
High humidity environment alarm. The unit continues working. (see set mask branch).

 Low room humidity  
alarm!  
  
Please  
check!

Low humidity environment alarm. The unit continues working. (see set mask branch).

 High supply  
Temperature  
alarm!  
  
Please  
check !

Alarm for low high temperature. (see set mask branch).  
Does not shut down the unit.

 Low supply  
Temperature  
alarm!  
  
Please  
check !

Alarm for low supply temperature. (see set mask branch).  
Does not shut down the unit.

 Room humidity probe

Room humidity probe alarm broken or disconnected.

---

broken or disconnected  
alarm!

Please  
check!

  
Room temperature probe  
broken or disconnected  
alarm!

Please  
check!

Room temperature probe broken or disconnected

  
Supply air pressostat  
broken or disconnected  
alarm!

Please  
check!

Supply air pressostat broken or disconnected.

  
Supply temperature  
probe  
broken or disconnected

Please  
check!

Supply air temperature probe broken or disconnected.

  
Antifreeze probe  
broken or disconnected  
alarm!

Please  
check!

Antifreeze temperature probe broken or disconnected.

  
Room/expulsion  
pressostat  
broken or disconnected

Please  
check!

Supply air pressostat broken or disconnected.  
If you control the room pressure this pressostat is installed in the room.



External air temperature probe broken or disconnected.

---

External air  
temperature probe  
broken or disconnected

Please  
check!

 Internal  
humidifier  
cylinder  
alarm!

High conductivity!

Please check the  
inlet water value!

High conductivity humidifier alarm.  
Please check the inlet water value!

 Internal  
humidifier  
cylinder  
alarm!

High current!

Please check the  
inlet water parameter!

High current humidifier alarm.  
Please check the inlet water value!

 Internal  
humidifier  
cylinder  
alarm!

Low current!

Please check the  
inlet water parameter!

Low current humidifier alarm.  
Please check the inlet water value!

 Internal  
humidifier  
cylinder  
alarm!

Empty cylinder!

Please check the  
fill valve!

Empty cylinder alarm!  
Please check the fill valve!

 Internal  
humidifier  
cylinder  
alarm!

Low production!

Please check the  
humidifier parameter!

Low production alarm!  
Please check the humidifier parameter!

 Internal  
humidifier  
cylinder  
alarm!

Foced drain alarm!  
Please check the humidifier parameter!

Drain alarm!  
Please check the humidifier parameter!

 Internal humidifier cylinder alarm!  
Cylinder full of water  
Please check the fill valve!

Cylinder full of water alarm!  
Please check the fill valve!

 Internal humidifier cylinder alarm!  
Exhaust cylinder pre-alarm!  
Proceed with the maintenance!

Exhaust cylinder pre-alarm!  
Proceed with the maintenance!

 Internal humidifier cylinder alarm!  
Foam alarm!  
Please check the water hardness and conductivity!

Humidifier cylinder foam alarm!  
Please check the water hardness and conductivity!

 Internal humidifier cylinder alarm!  
Exhaust cylinder!  
Proceed with the washing or change it!

Exhaust cylinder alarm!  
Proceed with the washing or change it!

 \*\* SERIOUS ALARM \*\*  
General alarm supply fan!  
Please check!  
\*\* UNIT OFF \*\*

Alarm for fans overload or for missing air flow.  
**This is a serious alarm that stop the unit!**

 \*\* SERIOUS ALARM \*\*  
Fire/Smoke presence!  
Please check!

Fire/Smoke presence!  
**This is a serious alarm that stop the unit!**

---

\*\* UNITA' OFF \*\*



\*\* SERIUS ALARM \*\*

Damper status!

Please check!

\*\* UNITA' OFF \*\*

Damper status alarm. One or all the dampers are closed.

**This is a serious alarm that stop the unit!**



GSM modem alarm!

Please check!

GSM modem general alarm. Please check the modem status.



The microprocessor  
memory has been erased

The unit must be  
reconfigured!

This mask appear when you enable the procedure to cancel the memory of the unit.

No active alarm!

No active alarms

This amsk appears by pressing the alarm key when no alarm is active.

---

## 9 pCO<sub>2</sub> TROUBLESHOOTING

### 9.1 THE UNIT DOESN'T SWITCH ON

The LED on the main board signalling network presence is off, the LCD is off, other LEDs are off

Check:

- 1) the presence of mains power;
- 2) that the output voltage of the power transformer is 24Vac/Vdc;
- 3) that the 24Vac/Vdc power connector is correctly inserted;
- 4) that the overload fuse is in tact;
- 5) that the telephone-type cable connecting the terminal (if present)
- 6) and the main board is correctly connected.

### 9.2 ON SWITCHING ON ONE OF THESE SITUATIONS OCCURS

- the alarm LED is on;
- the LCD is blank or displays random characters;
- the buzzer is on.

Check:

- 1) that the is EPROM correctly inserted
- 2) that the pins of the EPROM were not bent when it was inserted;
- 3) that the microprocessor chip has not been tampered with:
- 4) if so, call the service department.

### 9.3 ERRONEUS READING OF THE INPUTS SIGNAL

Check:

- 1) the calibration of the inputs (from the program);
- 2) the correct power to the main board and the feelers;
- 3) that the power to the digital inputs and power to the pCO<sub>2</sub> are separated. A 24Vac/24Vac, 12VA transformer can be used.
- 4) that the connection to the wires from the feelers is as per the instructions;
- 5) that the probe cables are located far enough away from possible sources of electromagnetic disturbance (power cables, contactors, high-voltage cables or cables connected to devices with high peak absorption);

- 
- 6) that there is not a high degree of heat resistance between the sensor and the probe cap (if present). If necessary introduce conductive paste or oil into the caps to ensure good temperature transfer;
  - 7) if there is a probe error or pCO<sup>2</sup> conversion error, the checks to be carried out vary according to the type of probe.

#### **9.4 UNUSUAL ALARM SIGNAL FROM THE DIGITAL INPUTS**

Check:

- 1) If the alarm signal is present at the input, measure the voltage between the common terminal "C" and digital input terminal which indicates the alarm, "Cn":
- 2) if voltage is present (24Vac or Vdc depending on the power used for the digital inputs) the contact of the connected alarm device is closed;
- 3) if the voltage is 0Vac or 0Vdc (see above) the contact is open.
- 4) If not expressly stated otherwise, the control creates an alarm when it detects open contacts.

#### **9.5 THE PCO CONTINUES TO REPEATEDLY GO INTO WATCH-DOG MODE**

**That is switches off and on again as if there were a temporary power cut, or randomly activates some outputs (digital and/or analogue)**

Check:

- 1) that the power cables do not pass near the microprocessors on the main board;
- 2) that the ratings of the power transformer are correct.
- 3) that the metal turrets supplied have been used for mounting the main board in the electrical panel.

#### **9.6 THE SERIAL CONNECTION TO THE LOCAL SUPERVISOR DOESN'T WORK**

Check:

- 1) the presence and the correct connection of the serial card RS485 or RS232;
- 2) that the pCO<sup>2</sup> unit's identification number has been set correctly (see manual on the application programs);
- 3) the codes of the serial cables used;
- 4) that the serial cables have been connected correctly as per the CAREL diagram provided in the documentation on the supervisor network;
- 5) that the serial cables are not disconnected.

#### **9.7 THE CONNECTION TO THE REMOTE SUPERVISOR DOESN'T WORK**

Check:

- 1) that there is power to the Gateway (if present) and the modems;
- 2) that the Gateway (if present) has been programmed correctly;
- 3) that the modem used is compatible with that used.

#### **9.8 THE USER TERMINAL IS LOCKED-OUT**

**Does not respond to the pressing of the buttons**

Check that the terminal has not been non disconnected and then reconnected to main board without waiting 2÷3 seconds. In this case turn the pCO<sup>2</sup> off and on again with the terminal connected.





