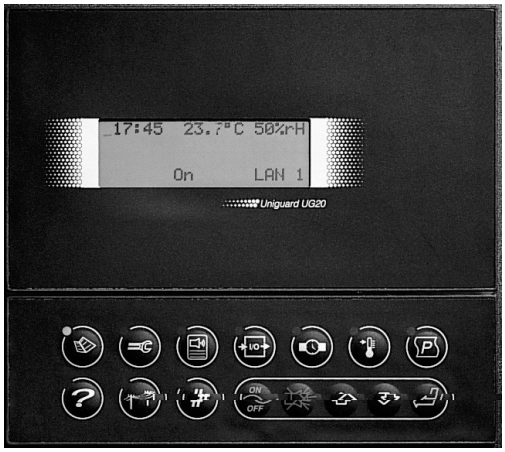
REGULATION PROGRAM FOR PRECISION AIR CONDITIONING UNITS

- CHILLED WATER (CW)
- DIRECT EXPANSION (DX/DX-S)
- TWIN COOL (TC)
- ENERGY SAVING (ES)

Uniguard 'advanced' AND Uniguard 'HIGH TECH' CONTROL WITH UG20 TERMINAL AND mP20 CONTROL WITH TERMINAL mP20 II°



INSTRUCTION MANUAL

GB

Some characteristics of special-order units may be different from those described in this manual.

UNIFLAIR ITALIA S.p.A.
Via dell'Industria, 10
35020 BRUGINE (Padova) Italy
Tel. +39 (0)49 9713211
Fax. +39 (0)49 5806906
Internet: www.UNIFLAIR.com
E-Mail: info@UNIFLAIR.com

Release: 1.5	Date: 23 - 09 - 2002
Checked by: Technical Director	

CONTENTS

PROGRAM IDENTIFICATION

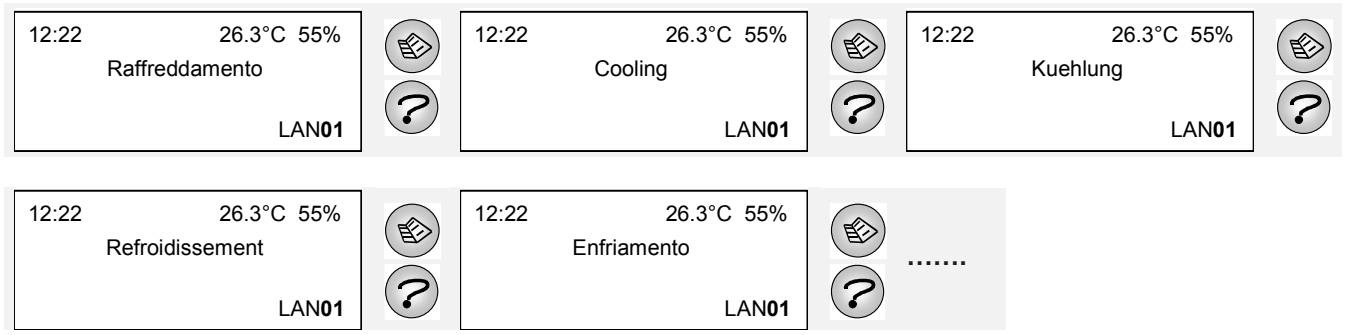
This manual describes the standard regulation characteristics for air conditioning units. Some characteristics of special-order units may be different from those described in this manual.

Family	Release	Language	Update	LAN Version
UNCDZ	v 2.7	EN	2002	LAN

LANGUAGE OPTION

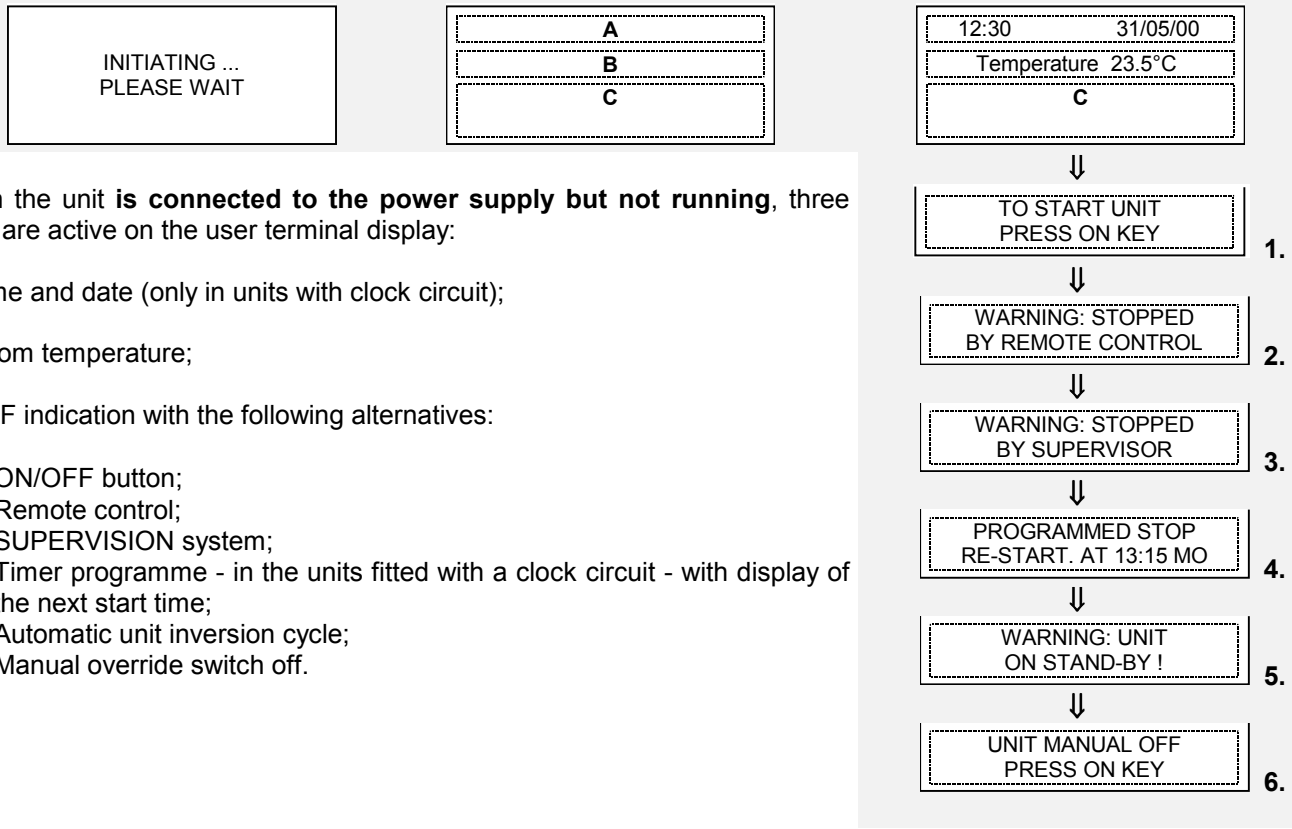
(with Uniguard 'HIGH TECH' controller only)

In units with **Uniguard** '**ADVANCED**' or **mP20** controller, messages on the display appear in the language defined by the contents setting programme in the EPROM: IT = Italian, EN = English, DE = German, FR = French, SP = Spanish.
In units with **Uniguard** '**HIGH TECH**' controller, on the other hand, you have the option of selecting the language at any time by pressing the key combination and .



NOTE: The only exceptions to this rule are the forms for service engineers ("Hardware Configurations"), which always appear in English.

DISPLAY INFORMATION WITH UNIT OFF



When the unit **is connected to the power supply but not running**, three fields are active on the user terminal display:

A. Time and date (only in units with clock circuit);

B. Room temperature;

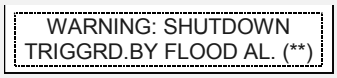
C. OFF indication with the following alternatives:

1. ON/OFF button;
2. Remote control;
3. SUPERVISION system;
4. Timer programme - in the units fitted with a clock circuit - with display of the next start time;
5. Automatic unit inversion cycle;
6. Manual override switch off.

If the unit is programmed in the setback mode the following message appears at regular intervals in field C:

If the unit is switched off subsequent to one of the fire-smoke sensors (SFF) tripping, connected on input ID11, the following message comes up on the display:

If the unit is switched off subsequent to the flood sensor (on LEONARDO units only) or the condensate drain pump alarm contact tripping, connected in series on input ID10, the following message comes up on the display:



(**) only if selected as one of the second-level alarms

UNIT START UP CONDITIONS

In order that the unit can be switched on it is necessary that there are no active alarms and that one of the following conditions is verified:

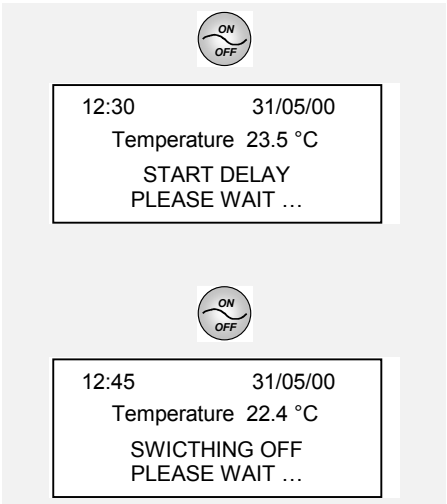
- Check that the yellow light of key is lighted (control powered up);
- The operator must have pressed key so that the green light on the key is lighted;
- In the event of remote control command (see screens **130a** or **130b**), the digital input **ID1** must be in the closed contact position;
- the unit must be switched on by the supervisor in the event that it is connected to the unit and the unit is set (see screens **130a** or **130b**);
- in the event of daily or weekly time bands, they must enable control switching on.
- Check if the red light of key is OFF (no alarm activated);

The display and the green light on the "ON/OFF" button inform the user of the system state.

START UP AND SHUT DOWN OF THE UNIT

The unit can be started in one of the following modes:

LOCALLY: the unit is controlled by the button (on pressing the button once the unit starts up, on pressing the button a second time the unit switches off). Pressure placed on the ON/OFF button is confirmed by an acoustic signal.
In direct expansion units the control commands the start up of the compressor in such a way that continuous start up cycles and unit shut down is not possible (a maximum of 6 start's each hour). Start up of the compressor therefore can be delayed after the ON/OFF button push.
The assumed unit state is memorised; on regaining power the unit assumes the previous state before power loss, the unit will restart if it was already operating. Re-starting the unit can be delayed by a period of time equal to the *"power on delay"* value (see screen **80**).
Shut down of the unit fans is delayed by 10 seconds after the ON/OFF button push.



Automatic MODE: the control is set in such a way that the unit switches on and shuts down due to the following:
1. a remote ON/OFF contact (see screens **130a** or **130b**);
2. a supervision system (only possible in units provided with **serial board**);
3. automatically programmed time bands (not only unit equipped with a **clock circuit**);
4. automatic inversion cycle of the base unit.

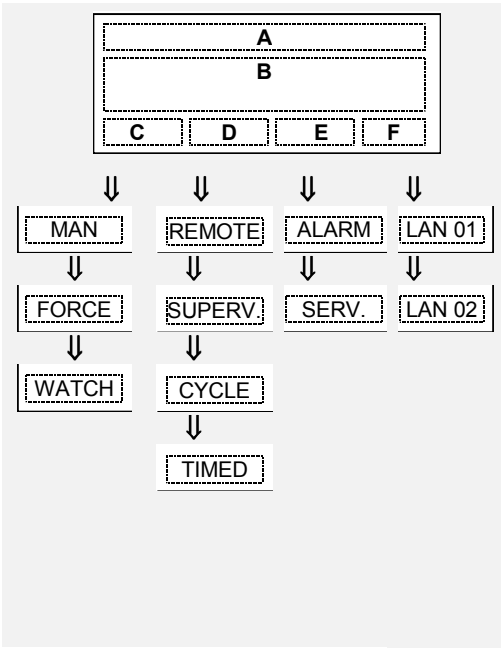
If programmed in the set back function, the unit switches on automatically also when the set thermo-hygrometric limits are exceeded.

PLEASE NOTE: in the automatic functioning mode the button can be used only by forcing the switch on or shut down through inserting the password "SETTINGS" (see paragraph "MANUAL START-UP /SHUT DOWN ").

DISPLAY INFORMATION WITH UNIT ON

THE STATUS SCREEN

When the unit is **in operation**, the STATUS screen appears on the display, and has 5 active fields:



A. The time (only in the units equipped with a clock circuit), room temperature, room humidity (only with humidity sensors);

B. Current operation: according to the working conditions, the following indications are provided:
- "COOLING"/"HEATING"/"DEHUMIDIFICATION";
- "REHEATING"/"HUMIDIFICATION"

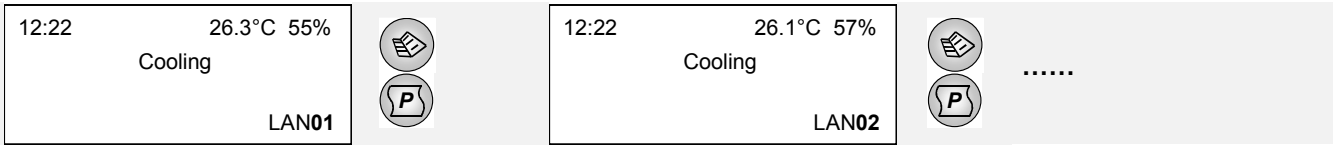
C. Manual override with regard to the automatic cycle:
- "**MAN**" in the operating mode with manual commands;
- "**FORCE**" if the unit is turned on by manual override;
- "**WATCH**" when the unit enters the "setback mode" to maintain the thermohygrometric parameters within the established limits.

D. Indication of the slave status of the unit which may be:
- "**REMOTE**": to a remote control;
- "**SUPERV.**": to a supervision system;
- "**CYCLE**": automatic inversion cycle between the base unit and the stand-by unit;
- "**TIMED**": to a timer programme.

E. Indication of fault, which may be:
- "**ALARM**": if there is an alarm;
- "**SERV**": if the run hours counter threshold is exceeded.

F. Indication of the unit, identified by "LAN 01", "LAN 02", …. with more than one connected unit connected in LAN that are shown as a shared terminal.

In this case by pressing the  and  buttons **at the same time** it is possible to move from one unit to the next, following the order with which they were addressed.



MANUAL OVERRIDE OF SWITCHING ON / SWITCHING OFF

It is possible to stop or start the unit manually using one of the automatic operation devices:

- Contact ON/OFF remote;
- Supervision system;
- Automatic inversion of unit in stand-by;
- Automatic time band function.

By pressing the ON/OFF button, the display automatically shows screen **201** with any manual overrides of the automatic function mode.
To access the subroutine, enter the SETTING password found in the envelope attached to this manual and press the ↵ button.

IMPORTANT: On entering three incorrect key words the alarm state is activated and memorised (see paragraph "**ALARM READINGS**").

ON/OFF

SWITCH ON/OFF
MANUAL OVERRIDE
PLEASE TYPE IN
PASSWORD: _ **00000**

(screen 201)

.....

MANUAL OVERRIDE PROCEDURE
If the unit is commanded by one of the automatic devices, screen **202** is shown.
If the unit has been stopped by one of the automatic devices, screen **203** is shown.

On the second line (∗) description of the device through which the unit is managed appears:

- REMOTE CONTROL;
- SUPERVISION SYSTEM;
- AUTOMATIC INVERSION OF UNIT IN STAND-BY;
- AUTOMATIC TIME BAND FUNCTION.

To override the unit and turn it off or on, press the ON/OFF button again; in this case:

- if the unit is overridden and turned off, in field C of the display appears the message " UNIT TURNED OFF - PRESS THE ON/OFF KEY ";
- if the unit is overridden and turned on, in field C of the STATUS SCREEN appears the message "**FORCE**".

.....

↵

UNIT SWITCHED ON BY
(∗)
TO STOP MANUALLY
PRESS ON/OFF KEY

(screen 202)

UNIT SWITCHED OFF BY
(∗)
TO START MANUALLY
PRESS ON/OFF KEY

(screen 203)

ON/OFF

.....

↵

UNIT MANUALLY OFF
TO GO BACK TO
(∗)
PRESS ON/OFF KEY

(screen 204)

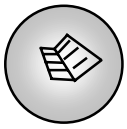
UNIT MANUALLY ON
TO GO BACK TO
(∗)
PRESS ON/OFF KEY

(screen 205)

ON/OFF

EXITING MANUAL OVERRIDE
To exit from manual override, shown in field C of the STATUS SCREEN with the message "**FORCE**", press the ON/OFF button and enter the SETTING password.
If the unit is turned off, screen **204** appears.
If the unit is turned on, screen **205** appears.
The line with the asterisk (∗) shows the system commanding the unit.

Having exited from manual override, the message "FORCE" disappears from field C of the STATUS SCREEN.



VISUALISTAION OF THE UNIT STATE

The functioning parameters of the unit (temperature, humidity, …) are readable by pressing the button and scrolling the screens using the and buttons. At the end of the reading cycle the STATUS SCREEN appears.

By pressing the button the STATUS SCREEN appears.

Information on the display is shown in the SCREEN FLOW CHART in the appendix; however it is to be noted that only the information or data relative to the chosen configuration appears:
- time and date appear only in the controls with base circuit supplied with clock circuits;
- temperature sensors which are not present are shown as "**NC**" in the place of the corresponding reading.

ACCESS TO THE DATA READING OR PROGRAMMING

Access to the consultation and programming of the control parameters is direct using the user terminal buttons:

1. ACCESS TO THE CONSULTATION **(READ ONLY)**: possibility to consult data yet without the possibility to perform any modifications;

2. ACCESS TO PROGRAMME MODE **(READING AND WRITING)** possibility to vary memorised data and requires:

   2.a. **pressure on the button** for one second (until hearing the acoustic signal);

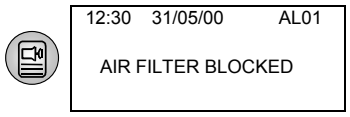
   2.b. **immediate pressure** on one of the following buttons: , , , , , ;

   2.c. **entry of the PASSWORD** found in the sealed envelope attached to this manual and addressed to the maintenance manager (see paragraph "ACCESS LEVELS").

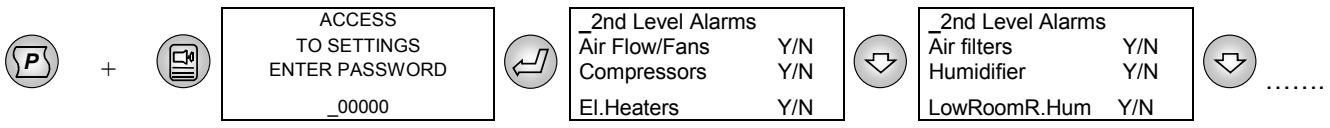
The yellow LED associated to each button has the following function:
- **LED on**: access to the screens for reading only ;
- **LED flashing**: access to the screens for programming (by pushing the selected button immediately after the “P” button)

	CONSULTATION MODE *(LED on)*		**PROGRAMMING METHOD** *(Flashing LED)*
	Consultation of the unit hourmeter and its devices and screens connected to operations of ordinary **maintenance**.	P +	Access to screens to **reset** the hourmeter and to modify threshold value; access to screens connected to ordinary maintenance operations (draining of the humidifier cylinder for cleaning or substitution).
	Sequential reading of the last 40 **alarm** events.	P +	Access to screens for the setting of **2nd level alarms**.
I/O	Consultation of the **input** and **output** board states.	P + I/O	Access to the unit **configuration** and manual commands.
	Consultation of clock/date and time bands (*only if the optional clock circuit is present*).	P +	Access to screens containing operations connected to the clock circuit: setting of time bands for unit switch on and shut down.
	Consultation of the **set point**.	P +	**Access to screens to modify set point.**
	Consultation of remote command settings.	P +	Access to screens to set remote commands (by remote control or by the supervisor), of the stand by unit and LAN.

Example: read only access



Example: reading and writing access



A hyphen (_) indicates the screen field during programming.

To move from one screen to another press one of the vertical scrolling buttons or ; any direction (up or down) you may choose, you will return to the first screen of the SUBROUTINE. To move the cursor to the wanted line press the button.

From any consultation or programming screen it is possible to return to the unit STATE field by pressing the button

IMPORTANT: entry an incorrect password is pointed out by a brief acoustic signal. After entering three incorrect passwords, the alarm state is activated (see paragraph "**ALARMS READING**").

ACCESS LEVELS

In the APPENDIX "SCREEN FLOW CHART" is shown with reference and programming screens.
Screens which are displayed directly refer to the chosen configuration (ex.: screens relative to the timer operations of the electric heaters do not appear if the unit is not provided with this feature).
User interaction with the microprocessor is developed on 3 levels:

1. **CONSULTATION METHOD: visualisation of the parameters** and **reading** of the following data:
   - Time and date (if the system is equipped with the clock circuit);
   - Environmental conditions;
   - Measured values of the sensors connected to the system;
   - set point of functional parameters;
   - memorised and past alarms (with past time and dates only if the system is equipped with the clock circuit).

2. **PROGRAMMING METHOD** of the **OPERATIVE PARAMETERS :** to modify the set values of:
   -  : the working hours threshold of each component to signal the maintenance intervention request;
   -  : addressing of alarms of the second level;
   -  : clock/calendar and time bands;
   -  : set point of the functional parameters;
   -

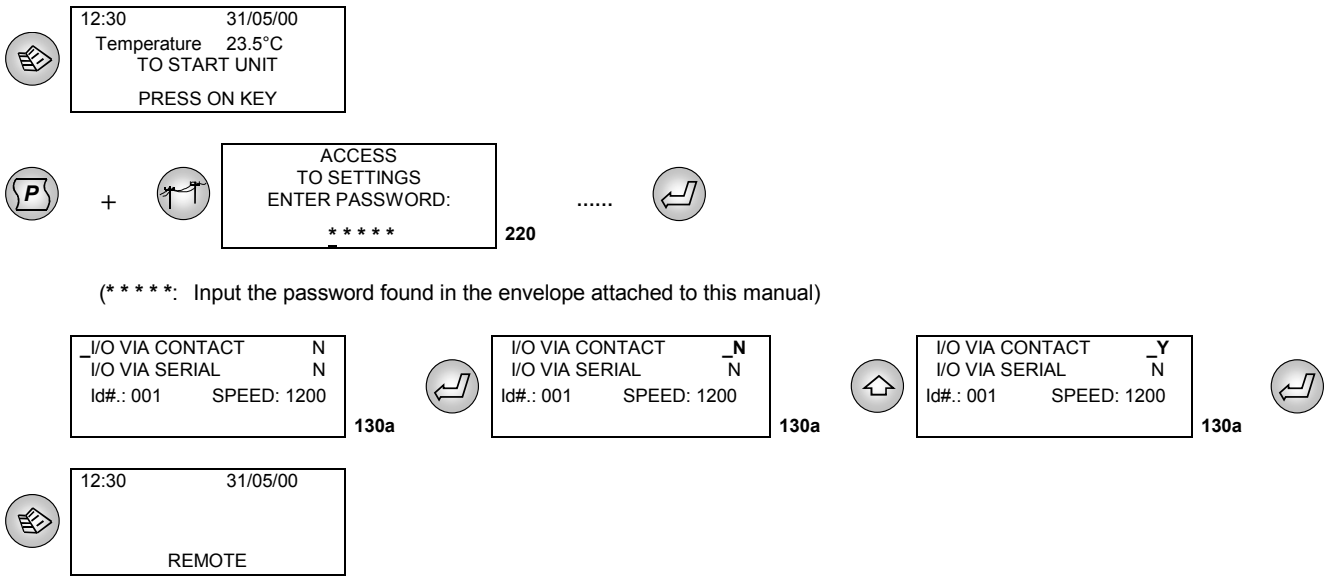
VARIATION OF PARAMETERS

Modification of set parameters and/or configuration in a subroutine (set point, differential…), is as follows:

1. **proceed to screens in the programming method**;
2. select with the ⇧ or ⇩ buttons the screen that shows the parameter (see "SCREEN FLOW CHART"); the cursor (_) flashes in the top left corner;
3. press the ↵ button to move the cursor to the parameter to be modified;
4. to vary the parameter value – this may be numerical or Boolean (YES/NO) – with the ⇧ or ⇩ button (numeric values can be varied only within the set control limits);
5. **finally press the ↵ button to confirm the value**.

- To return to the STATUS screen press the 📖 button. In the unit hardware configuration, pressing the 📖 button however returns to the initial "Hardware Configuration" (screen **50**);
- To modify parameters in other screens press the ↵ button until the cursor is at the start of the first line; press the ⇧ or ⇩ button to move to the desired screen.

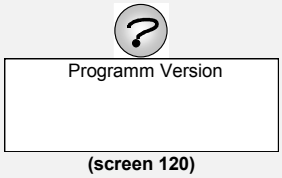
Example: Unit settings for start up and/or shut down by remote.



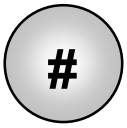
PROGRAM FOR AIR CONDITIONING

PROGRAM VERSION

Using the  button it is possible to visualise the regulation program version contained in the Eprom.
This information is extremely important if it is necessary to add a new unit to a group of connected units in the local LAN network, in that all the Eprom of the controls must have the **same** program **version**.
When referring to a help centre it is important to precisely indicate regulation program version contained in the Eprom.



(screen 120)



SPECIAL FUNCTIONS

In a few program versions, by pressing the  button it is possible to visualise a few special functions, personalised on the clients request.
Possible special functions are illustrated in the APPENDIX.

HOURMETER READING AND PROGRAMMING

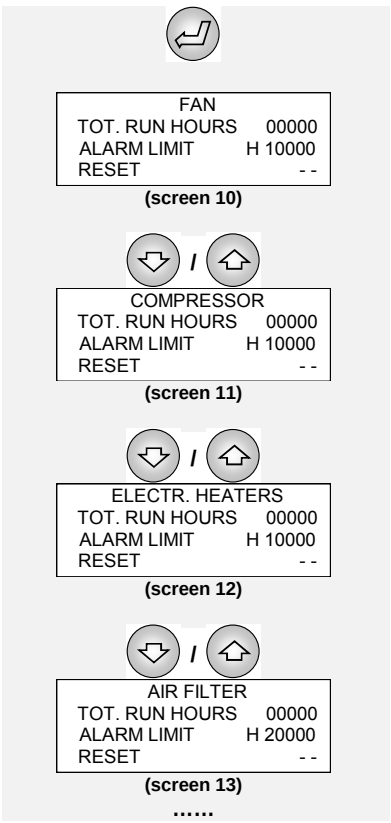
This part of the programme enables the setting of maintenance intervals for the components of the unit, establishing a threshold for operation hours. When the device concerned reaches that limit, the microprocessor signals the maintenance request , activating an alarm and displaying the message "**SERV**" on the STATUS SCREEN.
The number of hours cumulated and the intervention threshold can be read in the screens. To modify the limits and/or reset the hourmeter it is necessary to enter into the subroutine in programming mode.

(screen 210)

TIMER SETTING (SCREENS **10-18**)
Screens **10** to **18** relate to the following unit components:
1. Air filters;
2. Compressors;
3. Heating (1st and 2nd stage);
4. Humidifier;
5. Unit.

and enables, for each of them:
- reading of the cumulative number of service hours;
- setting of the SERVICE intervention threshold for maintenance; **setting the threshold at 0 inhibits the signalling of the SERVICE request**;
- zeroing of the timer ("RESET" = **OK**), e.g. after the service intervention or the replacement of the component.

Values can be changed only in the context of permitted setting fields.



(screen 10)

(screen 11)

(screen 12)

(screen 13)

……

DRAINING OF THE HUMIDIFIER CILINDER
(only in programming mode)

The steam cylinder needs to be periodically cleaned of the build up of lime; before removing the cylinder for cleaning or substitution it is necessary to drain completely the water from the boiler.
To complete this operation it is necessary access to the hourmeter screen in programming mode:

- the cursor will appear on the third row of the display (---);

- press the (or) button to visualise the command "**_SWITCH OFF AND EMPTY**" or press the button to exit;

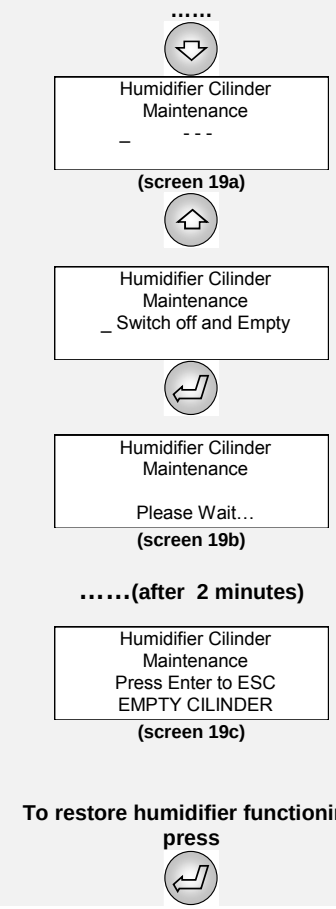
- press the button; the command "SWITCH OFF AND EMPTY" will be confirmed by a brief acoustic signal and the message "**Please wait…**" will appear on the display;

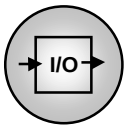
- wait about 2 minutes;

- a brief acoustic signal confirms that the draining process is complete and the message "**EMPTY CILINDER**" appears on the display;

- open the humidifier magnetothermal switch and complete cylinder cleaning/replacement;

- only after all the maintenance operations on the cylinder have been carried out press the button to restore normal functioning of the humidifier.





INPUTS AND OUTPUTS STATUS READING

This part of the program is directly accessible by pressing the 

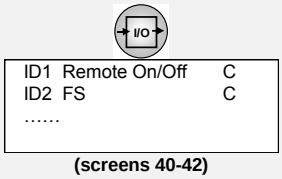
button. It is possible to verify the the state of the input and output boards.
The initials visualised in the display are the same used to identify components within the unit and in the relative documentation (electrical diagrams, …).

1. **Digital Inputs (ID1 - ID12)**
   FS = air pressostat
   PSF = dirty filter pressostat / RSF = phase sequence relay
   BP1/ BP2 = cooling circuit 1 / 2 low pressure pressostat;
   FL = water flow gauge (only CW units)
   AP1 / AP2 = cooling circuit 1 / 2 high pressure;
   TSR = Electric heaters security thermostat;
   Level SBU = cylinder high level signal from the humidifier interface board
   SAS = flood detector / condensate drain pump
   SFF = fire/smoke detector
   ATA-BTA-AUA-BUA = high/low temperature/humidity external sensors alarm
   A = input open
   C = input closed

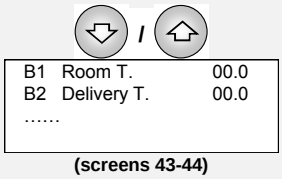
2. **Analogue Inputs (B1 - B8)**
   Provides the reading of the temperature and humidity sensor connected to the board.

3. **Digital Outputs (C1 - C13)****
   CV1 (CV) = Fan contactor
   CC1, CC2 = compressor contactor
   CC3, CC4 = compressor contactors (with 'HIGH TECH' control);
   CR1, CR2 = electric heater contactor
   CU = humidifier contactor
   EVC = humidifier fill solenoid valve
   EVS = humidifier drain solenoid valve
   EVD = dehumidification solenoid valve
   *** C12-C13 with 'HIGH TECH' control only*

4. **Analogue outputs (Y0 -Y1) with 'ADVANCED' control**
   Analog outputs (Y1-Y2) with 'HIGH TECH' control
   VAF = cold water valve
   VAC/RAD = external radiators / hot water valve



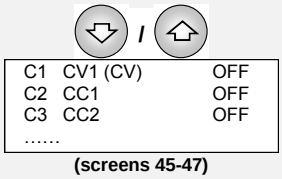
(screens 40-42)



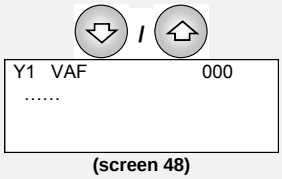
(screens 43-44)

……

……



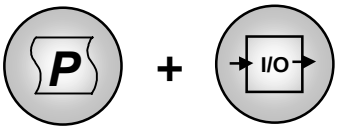
(screens 45-47)



(screen 48)

When a sensor is added or an optional sensor connected to the board is added, it is necessary to carry out the "**HARDWARE SET-UP**" command or to set the optional sensors in screen **70**, so that the boards registers the inputs and outputs. Serial boards RS485 or RS422 and the clock circuit are exceptions.

PROGRAM FOR AIR CONDITIONING



HARDWARE CONFIGURATION

Access to the unit configuration is possible by pressing the P programming button until hearing a brief signal and by then pressing the I/O button.
After introducing the password (screen **220**) screen **50** is shown containing three options: move the cursor vertically to the chosen line with the button and move to the screens pressing the button.

.....

_ Hardware Config.
Delay Settings
Manual Control

(screen 50)

HARDWARE CONFIGURATION
The unit regulation program needs to be “configured”, that is adapted to the unit in which it is installed; in this phase it is necessary to define all the elements of the unit and that the microprocessor must control.
As a rule this intervention is only required when the control is installed inside the unit and therefore is carried out in the factory during final inspections; it can however be necessary to intervene due to further unit modifications.
The screens that refer to configuration are in the English language and are **reserved for technicians**.

** * * * *: Introduce the password "SERVICE" ("**CONFIGURATION PASSWORD**") found in the envelope attached to this manual.*

SCREENS **60a / 60b – UNIT DEVICES**
Possibility to:
- Set the unit type:
  - Direct expansion (**DX** for air conditioning units of the 'LEONARDO' series and 'B' or **DX-S** for 'AMICO' units);
  - with energy saving (ES);
  - twin cool (TC);
  - chilled water (CW);
- select the COMPRESSOR number, the number of cooling circuits and the number of ELECTRIC HEATER stages.

.....

UNIT TYPE	DX
COMPRESSOR	No. 2
REFR. CIRC.	No. 1
ELECTRIC REHEAT	3

(screen 60a) - DX, TC, ES

UNIT TYPE	DX/S
COMPRESSOR	No. 1
REFR. CIRC.	No. 1
ELECTRIC REHEAT	1

(screen 60b) - DXS

UNIT TYPE	CW
ELECTRIC REHEAT	3

(screen 60b) - CW

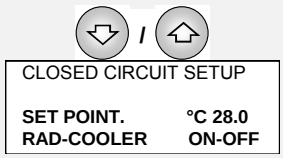
Depending on the type of unit (CW, DX, ES, TC) only a few of the screens from **61a** to **63** are shown.

SCREENS **61a** –**61b**: **RAD COOLER CONTROL**

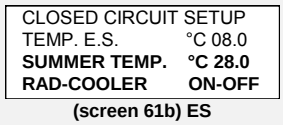
Using screens **61a** and **61b** is it possible to set the water cooled circuit:

- in **direct expansion** units;
- in **twin cool** or **energy saving** units during the mechanical cooling phase (with operating compressors only).

The control maintains the closed circuit water temperature at a value sufficient for condensation, included between the set point ("SET POINT" in screen **61a** or "SUMMER TEMP." in screen **61b**) and the set point + a differential fixed at 6°C.

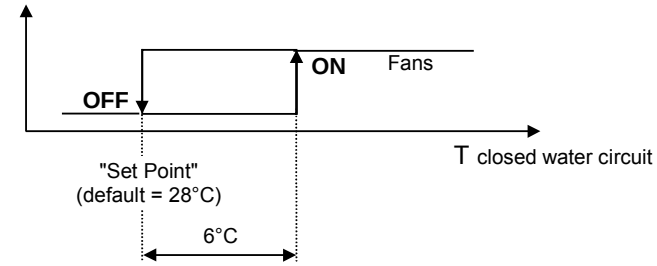


(screen 61a) DX-DX/S-TC

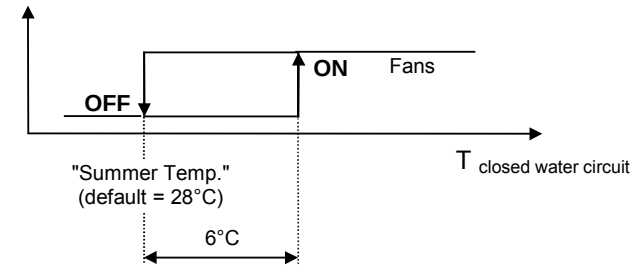


(screen 61b) ES

RAD COOLER ON/OFF - Unità DX, DX/S, TC.



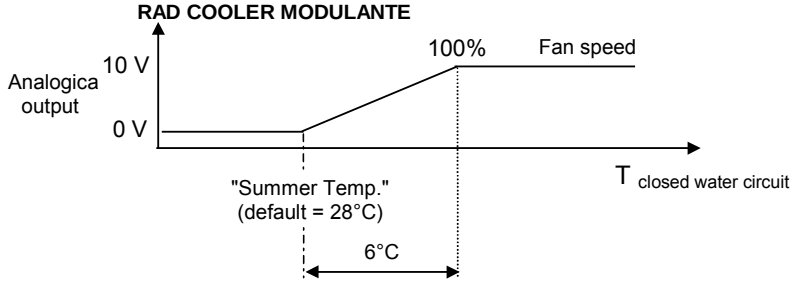
RAD COOLER ON/OFF - Unità ES.



The temperature is controlled by the remote radiator fans ("Rad-Cooler") connected to the internal unit; this may be:

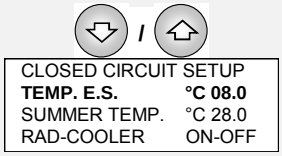
- "**On-Off**" type: the start up and switch off of the radiator fans is controlled;
- modulating type ("**Modul**"): the 0-10 V signal is managed from the analogic output Y1 towards the radiator speed regulator.

RAD COOLER MODULANTE



PROGRAM FOR AIR CONDITIONING

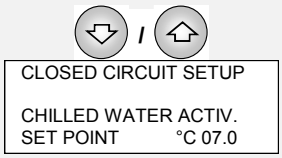
SCREEN **61b** -**RAD COOLER WINTER CONTROL**



(screen 61b) ES

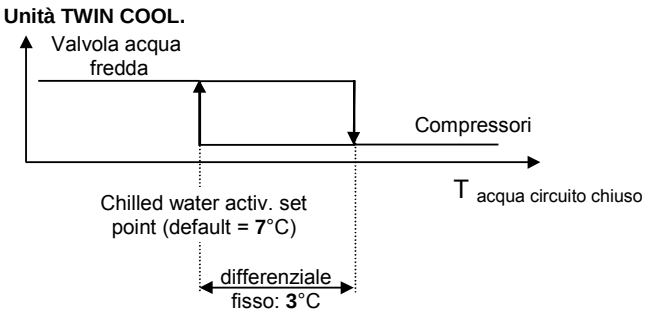
Screen **61b** appears only in the energy saving versions and permits the setting of the control parameters of the summer rad cooler (as described in the previous paragraph), and the winter rad cooler, or the water set point ("Temp. E.S.") during the energy recovery phase.
Switching between the two set point "Summer Temp." and "Temp. E.S." occurs automatically on the basis of the **external air temperature**.
In the winter control the water temperature in the closed circuit is maintained sufficiently cold to power the energy saving coils: the value is between the set "Temp. E.S." (default value equal to 8°C) and "Temp. E.S." + a differential fixed at 2°C.
The three way valve that regulates the energy saving operation is controlled however on the basis of the **temperature difference between the conditioned environment and the closed circuit water**.

SCREENS **62** - **TWIN-COOL CIRCUIT SETTING**



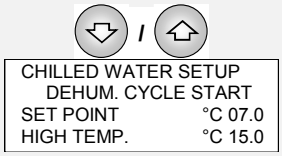
(screen 62) TC

Appears only in the Twin-cool version and provides the possibility to carry out the necessary settings to activate the change from mechanical cooling function to the chilled water function.



To avoid continually alternating between the two functioning modes a minimum interval of **30 minutes** exists between two consecutive activation's of the cold water valve.
If the Room High Temperature limit is exceeded (default: 30°C) the unit **automatically** passes from the 'CW' function to the 'DX' function signalling the "Cold water high temperature or broken valve " alarm.

SCREEN **63** – CHILLED WATER DEHUMIDIFICATION CYCLE AND HIGH TEMPERATURE ALARM SETUP



(screen 63) CW

(only if a water temperature sensor is installed)

During the dehumidification phase a specific control is activated that reacts as follows:

- the control sends to the chilled water production group a request for water at a lower temperature to dehumidify; this command immediately activates the digital output **DO2**;
- this is read by the temperature sensor on the chilled water input;
- when the read value reaches the "**SET POINT**" set in screen **63** the valve is forced open to a maximum;
- if vice-versa the "SET POINT" is not reached, after 15 minutes an alarm state is signalled ("*Water too warm to get Dehumidification"*).

The chilled water temperature sensor allows the control to activate the alarm "*High chilled-water temperature*" when the '**HIGH TEMP** is exceeded' set in screen **63**, signals a possible anomaly of the chilled water production group.

SCREENS **64a-64b-65** SETTING OF HOT WATER OR HOT GAS RE-HEATING AND EXTERNAL DEVICES FOR HUMIFICATION/DEHUMIDIFICATION

In screens **64a / 64b** it is possible to select:

- the presence of the hot water re-heat coil device.
- the presence hot gas re-heat coil device (excluding CW units);
- use of an external dehumidifier managed by the output **DO9**, that substitutes the dehumidification carried out with the resources of the unit;
- use of an external humidifier -ON/OFF- managed from the relay output **DO6**, to substitute the integrated unit humidifier.

In screen **65** it is possible to set integrated humidifier model, the nominal tension, the number of phases, current transformer model (TAM) and the steam production capacity ('Steam Cap.'). It is also possible to see the nominal current absorbed ("Nom. Curr.A").

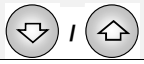
HOT WATER REHEAT N
HOT GAS COIL N
EXTERNAL DEHUMID. N
EXTERNAL HUMIDIF. N

(screen 64a)

HOT WATER REHEAT N

EXTERNAL DEHUMID. N
EXTERNAL HUMIDIF. N

(screen 64b)



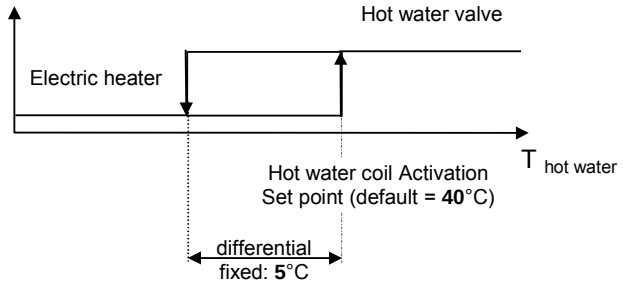
HUMIDIFIER MOD.: ----
V: ---- Ph.: ---- TAM: ----
STEAM CAP. Kg/h.: ----
Nom. Curr. A: 00.00

(screen 65)

SCREEN **64c – HOT WATER COIL**

This screen is only visualised if the unit is fitted with electric heaters ('ELECTRIC REHEAT' > 0) or a hot water coil ('HOT WATER REHEAT yes).

Possibility to set the set point that activates the switch between two heating systems.



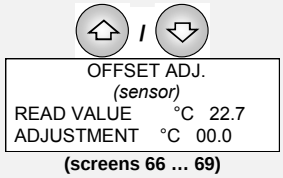
HOT WATER COIL
ACTIVATION SET
WATER TEMP. °C 00

(screen 64c)

SETTING OF THE SENSORS OFFSET

By using screens **67**, **68**, **69**, **70** it is possible to correct the reading of the **temperature sensors** ("ROOM TEMP.", "OUTDOOR TEMP.", "DELIVERY TEMP.", "CLOSED CIRC.") in case a difference between the measured value of the sensor and the effective value is detected, measured with a precision instrument.
The adjustments can be done at intervals of 0.1 °C and the maximum adjustment possible is between -9.9°C and +9.9 °C.

The adjustment ("**Adjustment**") is the quantity that needs to be added or subtracted to obtain the correct value, measured with a precision instrument.
The **Read value** is the measurement transmitted by the sensor already corrected.

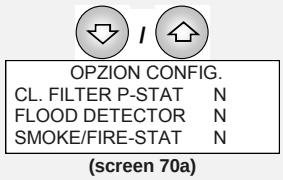


(screens 66 ... 69)

OPTIONAL SENSORS

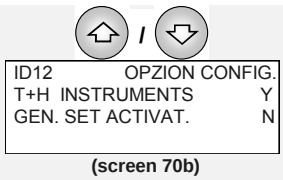
At the first start of the board, during the configuration phase carried out in the factory, the control automatically researches all the devices and sensors connected to the terminals, through analysis of the analogue and digital inputs.
Whatever is inserted – by the installer – an ***optional sensor*** (dirty filer pressostat, flood detector or condensate drain pump, fire/smoke detector) it is necessary to specify this in screen **70a**. (see also screen **72a** – command "HARDWARE SET UP")

NOTE: the digital and analogue inputs for connection of the optional sensors are specified in the unit **electrical diagram**.



(screen 70a)

ID12 is configurable: it is either used for optional high/low ambient T/RH sensors or for triggering by an independent generator set. In the latter case, if normally closed, the machine is in emergency condition, the generator set is operating, and heating elements and the humidifier are switched off; if normally open, the machine is operating normally.

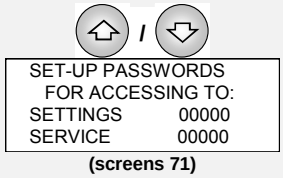


(screen 70b)

SET-UP PASSWORD

Screen **71** permits the possibility to change the password for access:
- to the **settings** ("SETTINGS" password). See paragraph "ACCESS LEVELS", point **2.**;
- to the **configuration** ("CONFIGURATIONS" password or "SERVICE" password). See paragraph " ACCESS LEVELS ", point **3.**

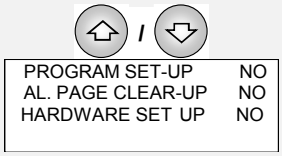
Since access to the HARDWARE menu is denied if the correct password is not introduced, it is advised *to note down the new password* before changing the old password.



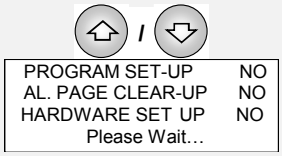
(screens 71)

MANAGEMENT OF THE DATA IN THE MEMORY

Screen **72a** manages the data contained in the microprocessor EEPROM.



(screens 72a)



(screen 72b)

PROGRAM SETUP. This is an operation that is carried out automatically in the event of EPROM substitution. It can be useful if data is 'damaged' (set-point, configurations, etc.) as it is possible to **clean the memory** (including data relative to the unit HARDWARE configuration**);** where **all the set point** values reset **automatically** (see paragraph "DEFAULT VALUES").
After this operation it is necessary to re-configure the control and to proceed to the setting of the set-point when different from those of the default.

IMPORTANT: when modified also if only a parameter of the configuration (and therefore also for EPROM substitution) it is necessary to empty also the RAM memory by cutting off the power to the control for a few seconds.

AL. PAGE CLEAR-UP. La historical alarms cleaning permits to cancel the last 30 alarm event saved in the memory.

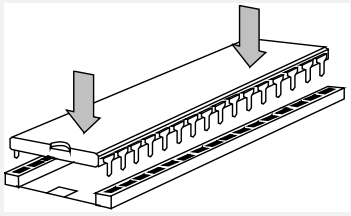
HARDWARE SET-UP. Possibility to carry out an automatic identification of the devices connected to the control. This operation is useful in case of need to add an option to the board, substitute a sensor or when the display shows "NC" as the reading of the temperature sensor.

To carry out default factory settings and other memory data (with the exception of "Hardware Configuration" parameters) press both the P and ↵ buttons at the same time for at least 5 seconds.
A brief signal sounding will confirm that the operation has been carried out correctly.

EPROM SUBTITUTION.
In the event of EPROM substitution control automatically performs all the operations listed above: **memory clear-up**, **re-setting of the factory defaults**, **cleaning of the historical alarms**, re-reading of the devices:

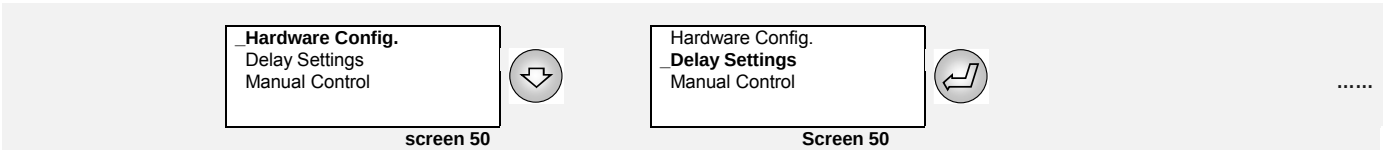
- proceed to the configuration and setting of parameters different to that of the default.;
- **cut off power to the control** for a few seconds;
- restore power to the control;.

In the event of problems, carry out manually the command **program set-up** and repeat the sequence of operations.



DELAY SETTINGS

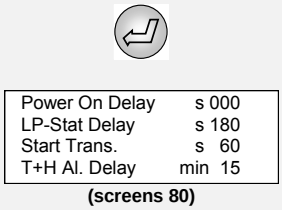
* * * * *: ***Insert the key word*** *"SERVICE" (***"CONFIGURATION PASSWORD"***) that youm find in the envelope attached to this manual.*



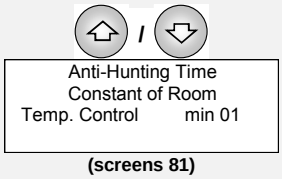
Screen **80** manages the behaviour in the initial transitori and the possibilty to set:

- units re-start delay after power loss ('POWER ON DELAY'); serve to prevent simultaneous starting in multiple installations;
  In the units in LAN there is the automatic progressive re-start sequence (unit 1, unit 2, …) with intervals of 5 seconds between one unit and the next.
- (*only **DX**, **TC**, **ES** units*) the initial period – from the start of the compressor - during which there is no reading of the low pressure pressostat ('LP-STAT DELAY'); permits the start up of the compressor also at tough temperatures
- The period of time that between the start up of the unit and the start of regulation ('START TRANS.'); is the starting period deemed necessary to obtain control system stability.
  In this period also the reading of the air fluxostat FS is ignored; this permits – mostly in units with a motorised damper – start-up of the unit without an alarm signal "*Loss of air flow*".
- The signal of ambient alarms delay since the unit first starting ('T+H AL. DELAY').

In the next screen **81** there is the setting of the 'ANTI HUNTING CONSTAT OF ROOM TEMP. CONTROL' to avoid excessive thermal excursion. The value has to be as high as bigger is the thermal inertia in the conditioned room.



(screens 80)



(screens 81)

MANUAL CONTROL

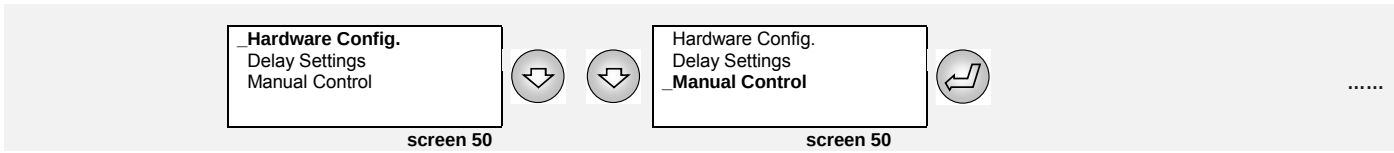
During normal operation all unit components are controlled automatically, however the simplify maintenance and regulation operations or in emergency conditions it is possible to force **manually**– and independent to the reguklation process the start up of each component.

- Unit fans (*Unit start-Up*);
- *Compressor 1/2*;
- (CW units) analogue output 0/1 (*Y0/Y1Ramp %*);
- Dehumidification;
- Reheating 1 ;
- Reheating 2;
- Forces the analogic output 0/1 in DX, TC, ES units(*Y0/Y1Ramp*);

The security devices are active also during manual functioning.

To modify the parameter values it is necessary to access to the subroutine "**MANUAL CONTROL**" from the **"HARDWARE"** menu until reaching screen **220** where the password is requested password.

** * * * *: Introduce the password "SERVICE" ("**CONFIGURATION PASSWORD**") found in the envelope attached to this maunual.*

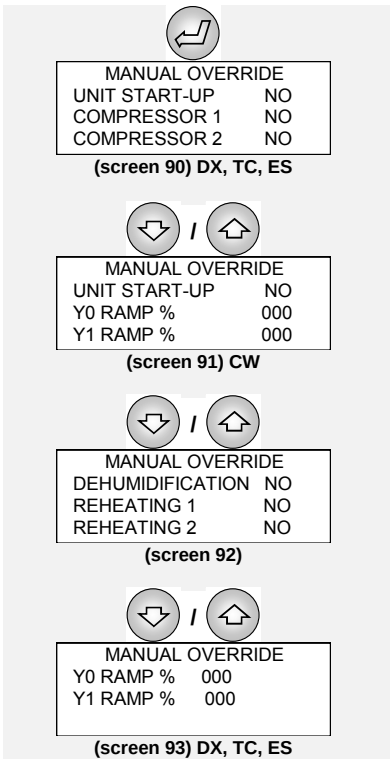


AUTOMATIC/MANUAL FUNCTIONING MODES (SCREENS **90-93**)

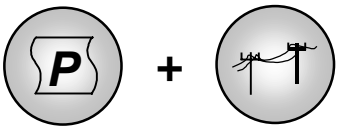
To vary the functioning mode of a component it is sufficient to move the cursor in corresponding line, press the or button to change from automatic ("**No**") to manual ("**Yes**") or vice versa and confirm by pressing the button.

In screen **93** it is also possible to set in % the opening grade of the devices connected to the analogic output Y0 o Y1.

By forcing in operation one or more components, in D field of the STATUS screen appears "**MAN**".



PROGRAM FOR AIR CONDITIONING



REMOTE CONTROL OF THE UNIT

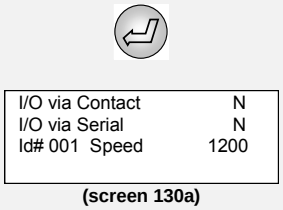
The start up and the stop of the unit can be carried out alternatively through:
1. a remote contact (or "remote control");
2. a "supervision system" connected to the microprocessor with serial cable.
The control of the unit devices is made in any case by the microprocessor.

ON/OFF FROM REMOTE: unit start up is managed by the closure of a remote contact N.O. without tension connected to the board (see electrical diagram). For units with standard regulation program the digital input is: **ID1**.

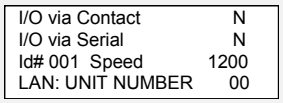
SUPERVISION SYSTEM
A supervision system exchanges data via a serial cable with the board of the unit that is commanded and controlled from remote: for this purpose an optional ***Serial card*** is available which permits the interface to a net RS422/RS485 for the transmission of data (see Supervision System manual).

(screen 210)

Screens **130a**/**130b** determine if the unit is managed by remote by tele control and you can set:
- remote start-up/shut down from free contact ('I/O via Contact');
- remote start-up/shut down by a supervision system – via serial RS422 or RS485 - ('I/O via Serial'); if "I/O via Serial YES" is set the possibility to select "I/O via Contact" is excluded automatically;
- the serial address of the unit connected to the supervision serial network (must be the same as the serial address set in the supervision program); the speed of data transmission ('Speed.'): 1200, 2400, 4800 for RS422 or 1200, 2400, 4800, 9600 and 19200 for RS485.

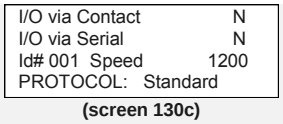


(screen 130a)



(screen 130b)

SELECTING TRANSMISSION PROTOCOL FOR SUPERVISION
(with Uniguard 'HIGH TECH' controller only)
In units with Uniguard 'high tech' controller, supervision parameters include the following user-selectable protocol options:
- standard;
- BusMod.



(screen 130c)

TWO UNITS MANAGEMENT

The microprocessor automatically control of **two** units, of which one is functioning **(*base*)** and one is in reserve (*in **stand-by***).
This is possible without the need to create a local network (LAN): it is sufficient to connect the digital output **DO10** of the **2° livel alarms** of the base board (addressable alarm) of the first unit to the remote control terminals of the other and vice-versa.

By selecting 'AUTOM.SWITCH-OVER OF STD-BY UNIT: **Yes**' in screen 131b it is possible to verify the following functioning modes:

- one functioning unit; second unit in stand-by;
- **Start-up of the reserve unit in the event of the break down of the first unit**; the alarm states that activate this function are those defined in the paragraph "ADDRESSING OF 2ND LEVEL ALARM", including the loss of tension in the working unit
  If in screen **131b** "1 UNIT ON LIMIT: **No**' is set, following an alarm situation on the functioning unit the reserve unit is started and both unit continue to work until the operator intervenes. Only by pressing the button for 5 seconds the alarm is reset and the unit is disactivated.
- **Rotation on a temporary basis** between the two units; this operation allows the division of the work load onto two units at intervals of time which are pre-set (see screen **131b** "CYCLE TIME");
- It is possible to start-up the stand-by unit as a *substitute* of the already working unit or *in addition*. The additional unit may be useful, for example, in the event of an alarm caused by a high room temperature due to thermal overloading, however if the available electrical power is sufficient for only one unit it is possible limit the operation to just one unit.

SCREEN 131b

It does not appear in units not suitable for the LAN connection.
Provides the possibility to control two units of which one is functioning and one is in stand-by by selecting:

- The possibility of this management (Yes/No);
- the length of the automatic cycle between one inversion and the next ('Cycle Time'), within 1 and 999 hours;
- the possibility to have only one working unit ('1 Unit ON Limit'), for example with the intention to avoid overloading on a supply line unable to support both units (eg. UPS).

.....

Autom. Switch-Over		
Base / Std-by Pair		Y
Cycle Time	h	000
1 Unit On Limit		N

(screen 131b)

As an alternative to the control of two units as described above it is possible to manage a local network at the condition that the board is provided with LAN card and EPROM able to manage the LAN (*see next paragraph*).
Management of more than two units always requires connection to a local network (see specific instruction manual).

UNITS IN LOCAL AREA NETWORK

Units with EPROM equipped with LAN and equipped with relevant optional card, in the **130b** screen the number of units in the local network has to be set ('LAN: Unit Number').
It is however possible to work one unit on a temporary basis if the board address is equal to 1 and if the "LAN: Unit Number" is set equal to 1.

.....

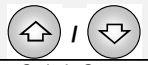
I/O via Contact	N
I/O via Serial	N
Id# 001 Speed	1200
LAN: UNIT NUMBER	00

(screen 130b)

Screen **132** regards the parameters for **automatic rotation between working units and the stand-by unit** and provides the possibility to set:

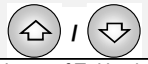
- the presence of this feature (Yes/No); when automatic rotation is set, on a unit with an address lower then the network it is necessary to press the ON/OFF button.
- the automatic cycle time between one inversion and the next ('CYCLE TIME'); if it has the value zero (" 0 "), the controller tuns a test, rotating units at two-minute intervals.
- The number of units in stand-by ('N. STAND-BY UNITS').

Automatic rotation occurs with the same modes described in the previous paragraph: **on a temporary basis** or **following a second level alarm**; in the second hypothesis start up of the stand-by unit causes the shut down of the first unit.



Autom. Switch-Over of Std-By Unit		N
Cycle Time	h	000
N° Stand-by units		0

(screen 132) LAN



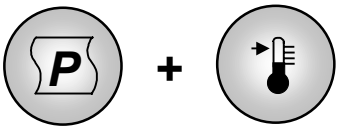
Usage of T+H values	
Mode:	Local / Mean
Aut.Changeover	
Mean/Loc.Diff.°C	2.0

(screen 133)

Screen **133**, displayed only if the local network is is set, gives the possibility to control unit operation **with a mean temperature** measured in the room or with the "**local**" value measured the sensor inside the unit:

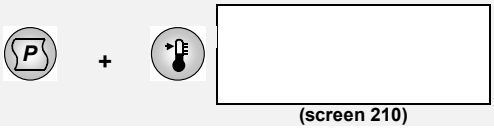
- Mode: Local Unit control is made by the temperature and humidity values read by the sensors in the unit.

- Mode: Mean Unit control is managed by the mean temperature and humidity values read by the sensors in the active connected units in the local network.
Whatever the difference between the mean value and the sensor reading exceeds the value "MEAN/LOC.DIFF." (default equal to 2°C), the control automatically exchanges from the "MEAN" mode to the "LOCAL" mode.



TEMPERATURE AND HUMIDITY SET POINT

210



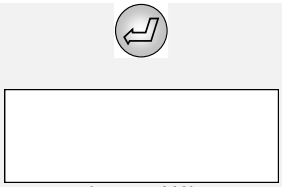
(screen 210)

110 119

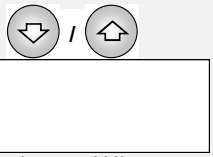
COOLING SET POINT 110

-
-
-
-

_____



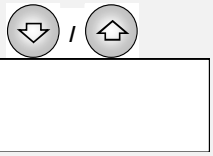
(screen 110)



(screen 111)

HEATING SET POINT 111

-
-
-



(screen 112)

TEMPERATURE ALARMS 112

-
-
-
-

PROGRAM FOR AIR CONDITIONING

DEHUMIDIFICATION CONTROL 113a-113b

-
-
-

HUMIDIFIER SET POINT 114

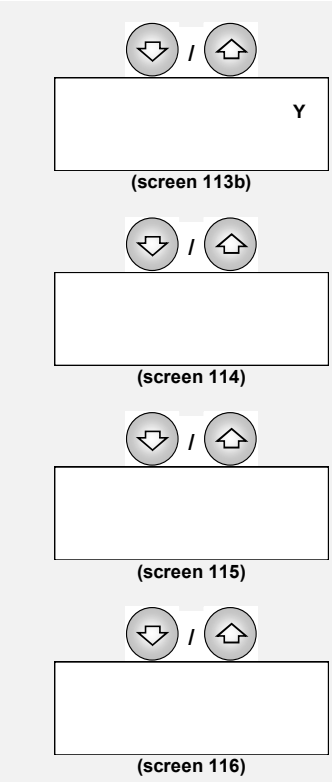
-
-

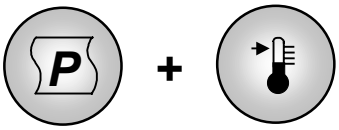
HUMIDIFIER SETTING 115

-

HUMIDITY ALARMS 116

-
-
-
-





SET BACK FUNCTION

yet powered

-
-
-
-

It is possible to program that during the set back function the fan runs in cycles to allow that the temperature sensor is blown by the air within the room.

not

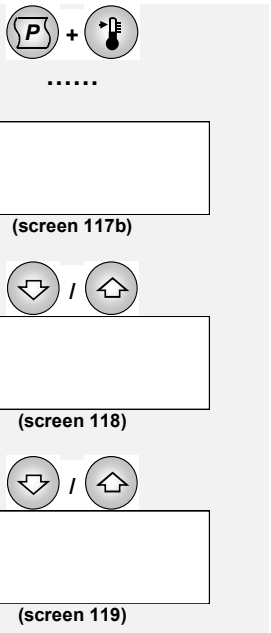
VARIOUS CONTROL PARAMETERS **117a 117b 118-119**

-
-
-
-
-

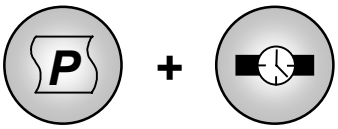
Yes

WATCH

MIN. TEMP. + 2°C **MAX. TEMP. - 2°C**

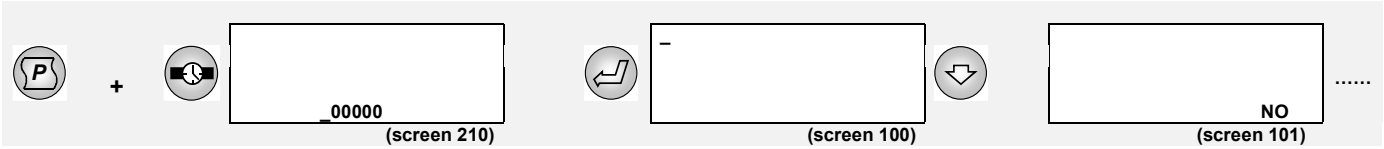


PROGRAM FOR AIR CONDITIONING



CLOCK - CALENDAR – TIME BANDS *(only with optional clock circuit)*

-
-



SETTING OF THE CLOCK - CALENDAR

100

-
-
-

SETTING OF THE TIME BANDS **101 106**

-
- **N**

P **F**

YES **101**

104 105 106

N

P **F**

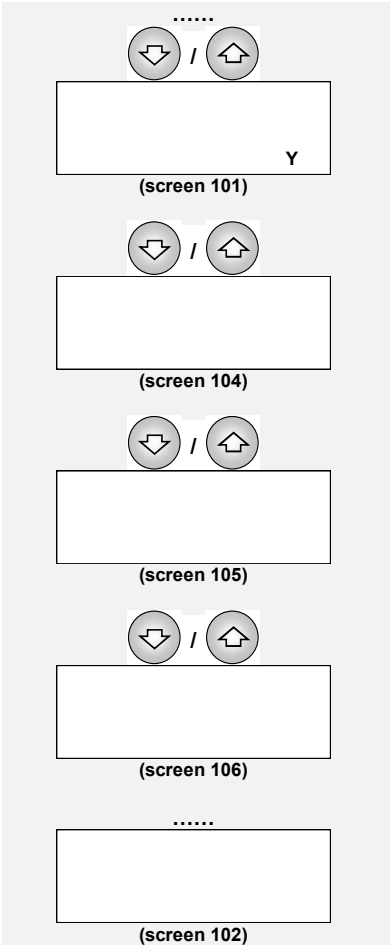
CLASSIFICATION OF THE WEEKDAYS **102**

102

101 **YES**

N
P
F

103



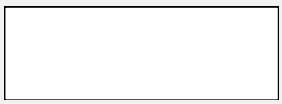
WEEKLY PROGRAM 103

- **N**
- **P**
- **F**

103 **102**

N P F

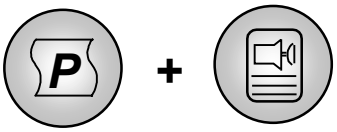
>



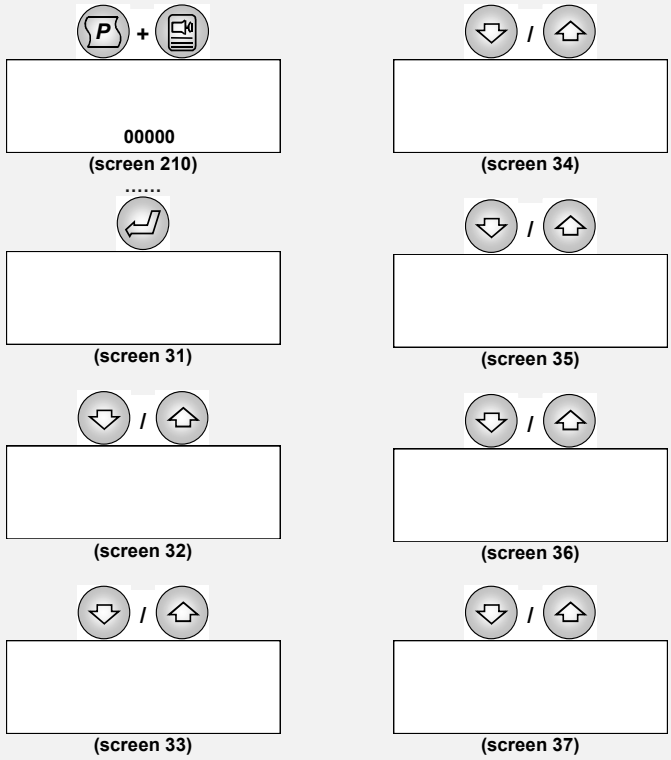
(screen 102)

(screen 103)

PROGRAM FOR AIR CONDITIONING



ADDRESSING OF 2nd LEVEL ALARMS



31 37

the 2nd-level alarm switches on the standby unit, which takes over from the unit currently operating.

DO10

In all cases

- **automatically**

once the alarm is reset

ALARM READINGS

ACTIVE ALARMS

holding the  **button down for a few seconds**

HISTORICAL ALLARM SEQUENCE

SERV

In the sequence the first event shown corresponds to the last alarm

DESCRIPTION OF ALARM EVENTS

For those alarms that are still active

WRONG PHASE SEQUENCE ALARM

I

POWER RESTORED MESSAGE

(10:30 04/07/01)

PROGRAM FOR AIR CONDITIONING

HIGH TEMPERATURE OR HUMIDITY VALUES.

112 116

OPTIONAL SENSOR ALARMS

only

not

always

UNIT FUNCTIONING ALARMS

TC

for

the first time

CW

CW

63

CW

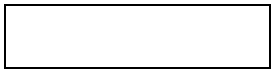
63

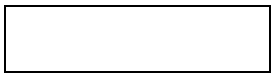
DX ES TC

DX ES TC

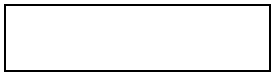
HUMIDIFIER ALARMS

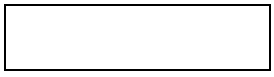
SENSOR ALARMS



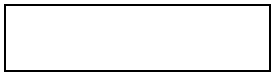


ES





ES



PROGRAM FOR AIR CONDITIONING

SERVICE NOTES

DISCONNECTED 'LAN' ALARM

SYSTEM ALARMS

ACCESS ALARMS

To reset the alarm proceed as follows

-
- **AL. PAGE CLEAR-UP** **72a**
-
- **Keep the button pressed for 5 seconds**

REMOTE ALARM SIGNALLING

see electrical diagrams

DO10.

DO11.

DEFAULT VALUES

CONFIGURATION

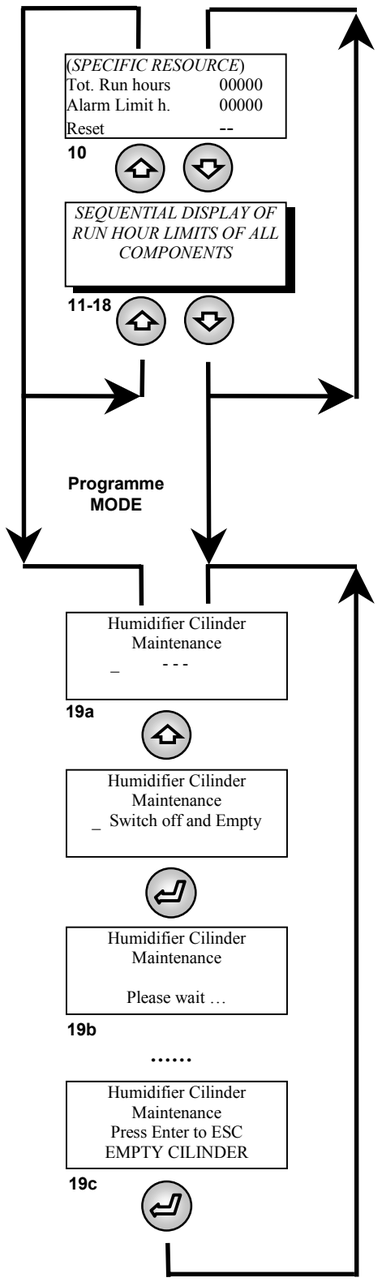
	PARAMETERS	
	Humidity Control	
	Addressing for 2° level alarm:	
	Remote Control, superv. system, autom. switch-over	
	÷	
	Manual override - DX	
	Manual override - CW	

NUMERICAL PARAMETRES

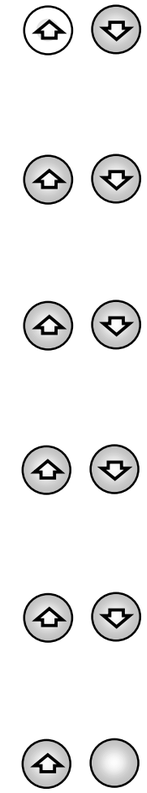
	SET VALUES				
	Cooling set point				
	Heating set point				
	Dehum. set point				
	Hum. set point				
	Setback mode control				
	Changing the password				
*					
	Counter threshold				
	Rad Cooler settings				
	Twin-cool circuit settings				
	Dehumidif. and alarm settings				
	Setting delay times				

APPENDIX – Screens Flow Charts

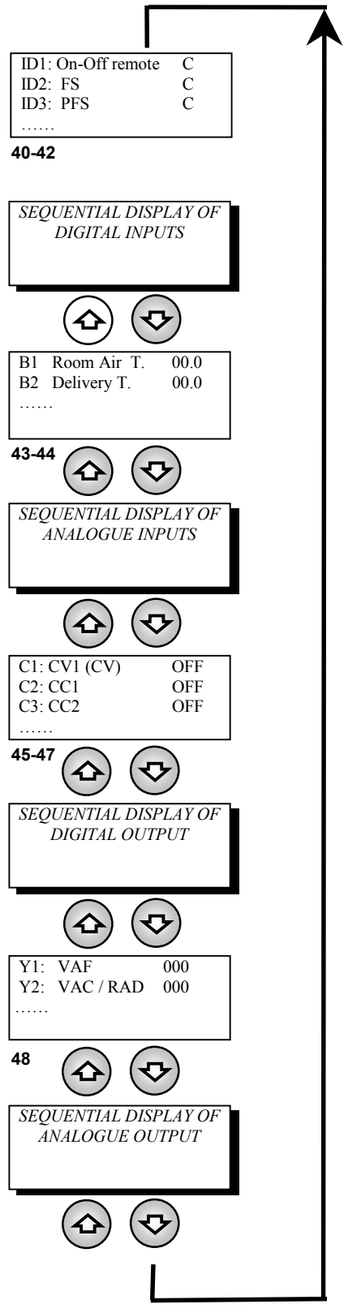
"SETTINGS" PASSWORD

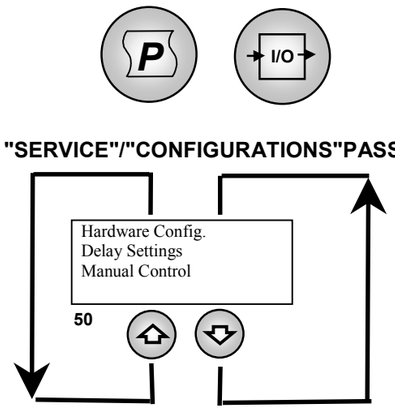


"SETTINGS" PASSWORD



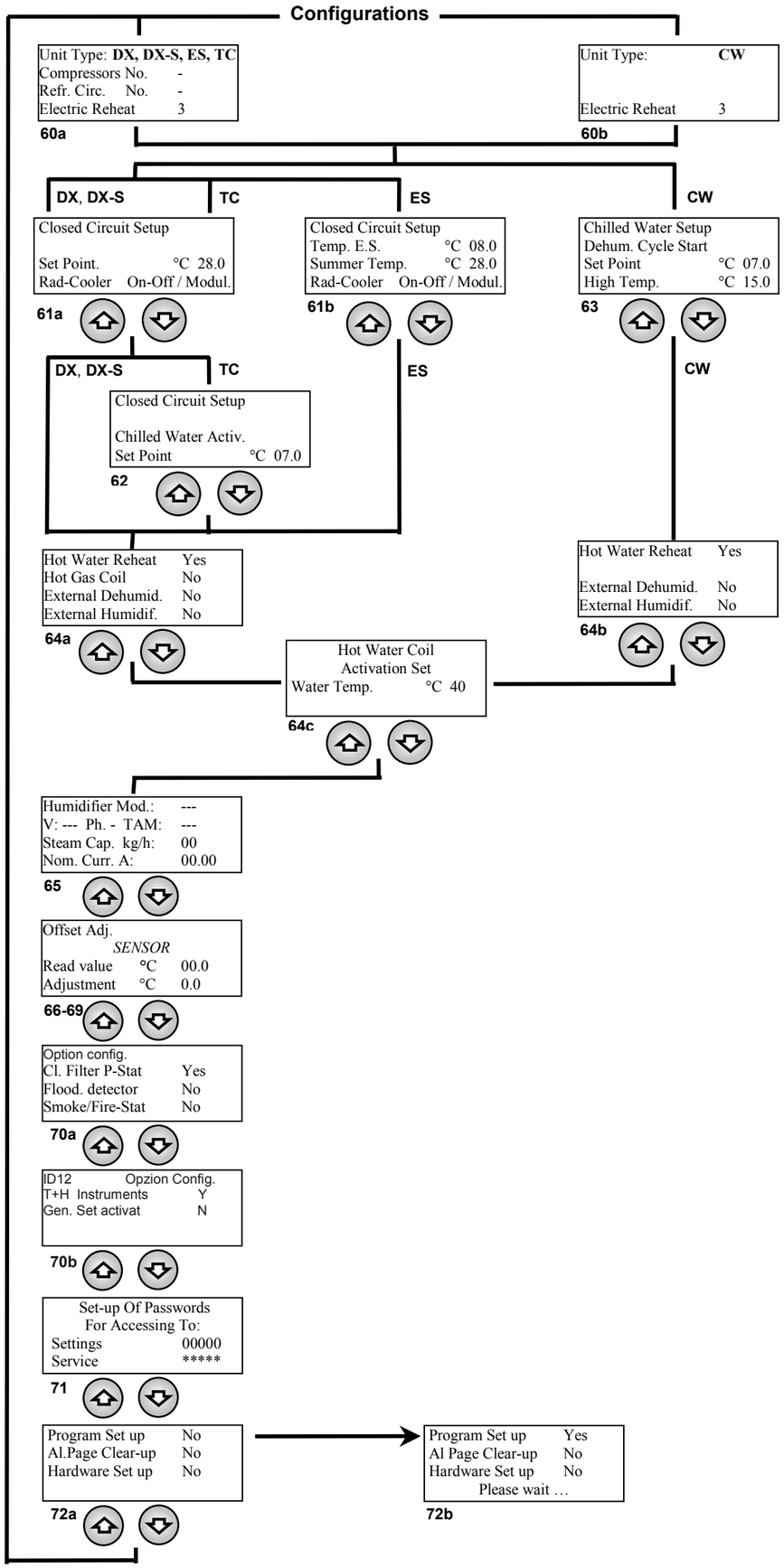
"SERVICE"/"CONFIGURATIONS" PASSWORD



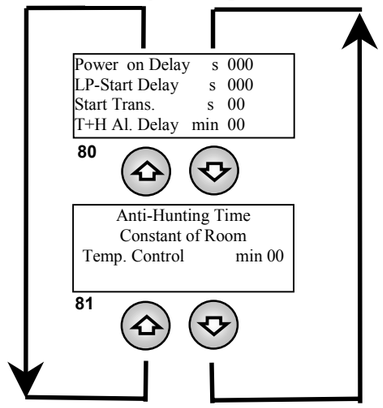


"SERVICE"/"CONFIGURATIONS"PASSWORD

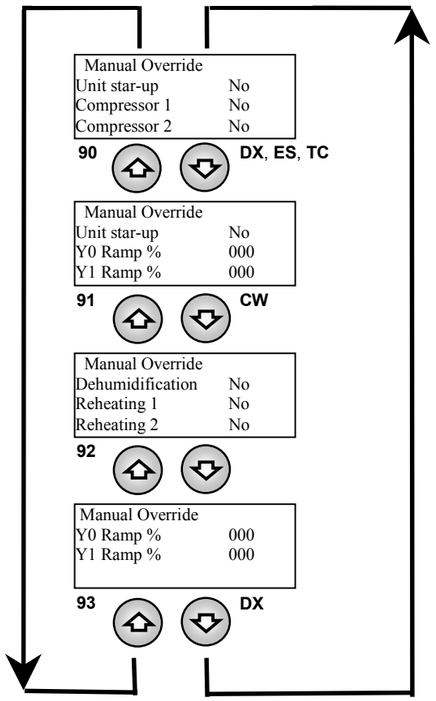
Configurations

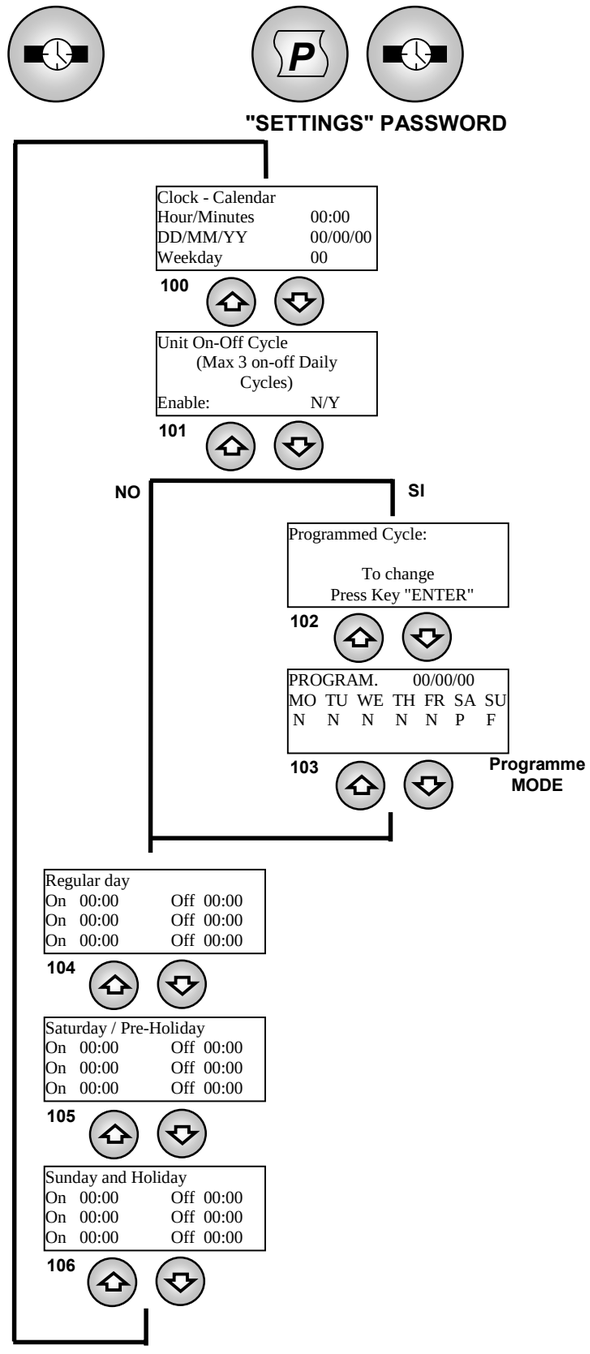


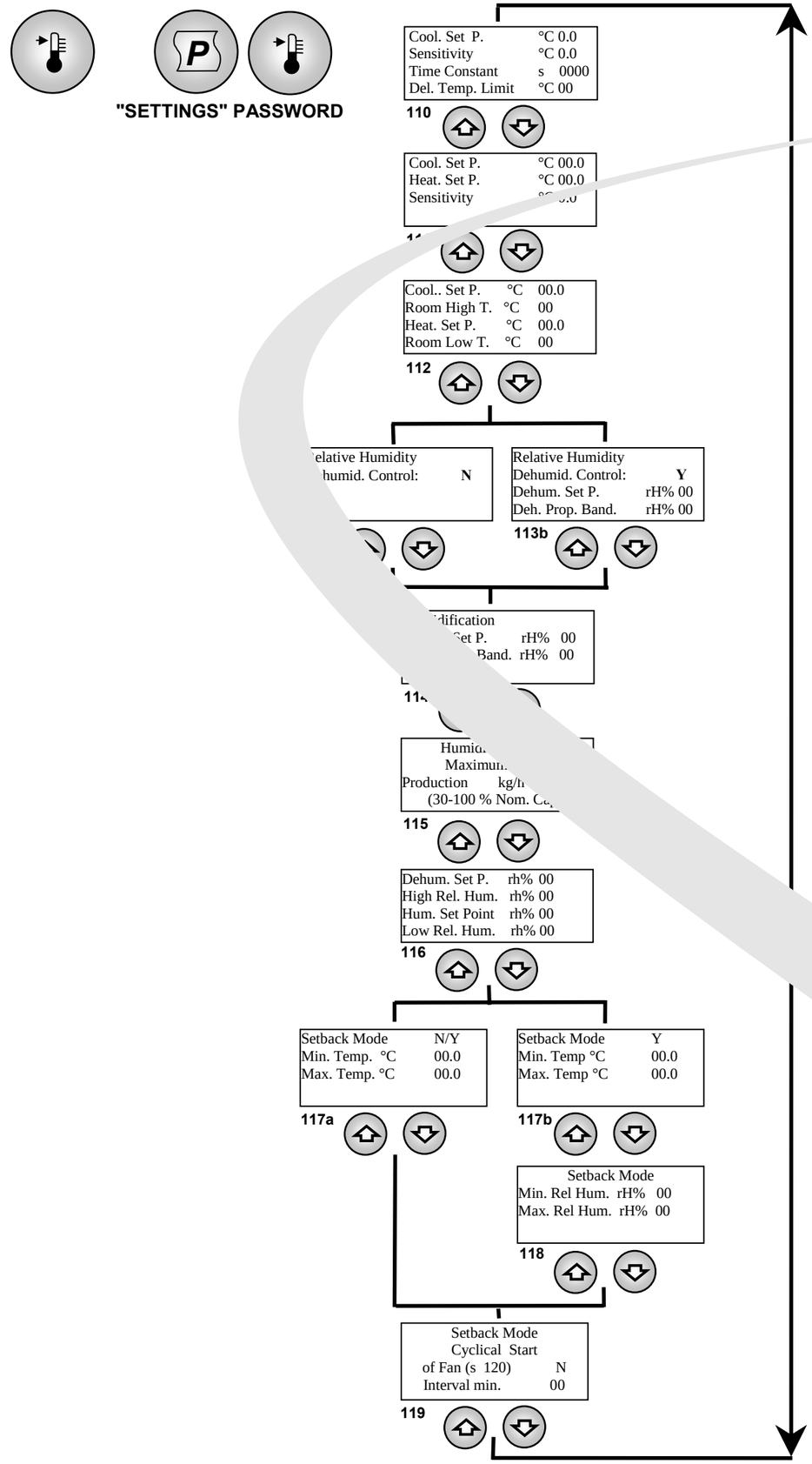
Delay Settings

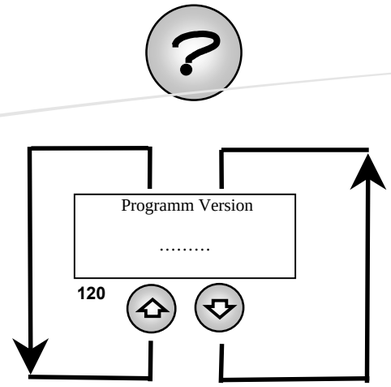


Manual Control




"SETTINGS" PASSWORD
Clock - Calendar
Hour/Minutes 00:00
DD/MM/YY 00/00/00
Weekday 00
100
Unit On-Off Cycle
(Max 3 on-off Daily Cycles)
Enable: N/Y
101
NO
SI
Programmed Cycle:
To change
Press Key "ENTER"
102
PROGRAM. 00/00/00
MO TU WE TH FR SA SU
N N N N N P F
103
Programme MODE
Regular day
On 00:00 Off 00:00
On 00:00 Off 00:00
On 00:00 Off 00:00
104
Saturday / Pre-Holiday
On 00:00 Off 00:00
On 00:00 Off 00:00
On 00:00 Off 00:00
105
Sunday and Holiday
On 00:00 Off 00:00
On 00:00 Off 00:00
On 00:00 Off 00:00
106


"SETTINGS" PASSWORD
Cool. Set P. °C 0.0
Sensitivity °C 0.0
Time Constant s 0000
Del. Temp. Limit °C 00
110
Cool. Set P. °C 00.0
Heat. Set P. °C 00.0
Sensitivity
Cool.. Set P. °C 00.0
Room High T. °C 00
Heat. Set P. °C 00.0
Room Low T. °C 00
112
Relative Humidity
humid. Control: N
Relative Humidity
Dehumid. Control: Y
Dehum. Set P. rH% 00
Deh. Prop. Band. rH% 00
113b
Humidification
Set P. rH% 00
Band. rH% 00
Humid.
Maximum
Production kg/h
(30-100 % Nom. Cap.
115
Dehum. Set P. rh% 00
High Rel. Hum. rh% 00
Hum. Set Point rh% 00
Low Rel. Hum. rh% 00
116
Setback Mode N/Y
Min. Temp. °C 00.0
Max. Temp. °C 00.0
117a
Setback Mode Y
Min. Temp °C 00.0
Max. Temp °C 00.0
117b
Setback Mode
Min. Rel Hum. rH% 00
Max. Rel Hum. rH% 00
118
Setback Mode
Cyclical Start
of Fan (s 120) N
Interval min. 00
119


Programm Version
.....
120

"SETTINGS" PASSWORD
I/O via Contact N
I/O via Serial N
Id# 001 Speed 1200
130a
I/O via Contact N
I/O via Serial N
Id# 001 Speed 1200
LAN: UNIT NUMBER 00
130b
LAN
N
131a
Autom. Switch-Over
of Std-By Unit N
Cycle Time h 000
N° Stand-by units 0
LAN
Autom. Switch-Over
Base / Std-by Pair Y
Cycle Time h 000
1 Unit On Limit N
131b
Usage of T+H values
Mode: Local / Mean
Aut.Changeover
Mean/Loc.Diff.°C 2.0
133
LAN

PROGRAM FOR AIR CONDITIONING

UNIFLAIR™

ISO 9001 - Cert. n° 0341

CE

UNIFLAIR ITALIA S.p.A.

06MC028 @ 00B0150