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



© UNIFLAIR 2002

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:		

CONTENTS

	Page
Program Identification Language option	4 4
Display information with unit OFF	5
Unit start up conditions Start up and Shut down of Unit	6 6
Display information with unit ON	6 7
Manual override of switching on / switching off	8 9
Visualisation of the Unit state.	
Access to consultation or programming data Access Levels	9 11
Variation of parameters	12
Program Versions	13
Special Functions	13
Be Hourmeter reading and Programming	14
Draining of the humidifier cylinder	15
Reading of Inputs and Outputs States	16
Unit configuration devices: "Hardware Configurations"	17
Calibration of probe offsets Optional Sensors	21 21
Changing the Password	21
Memory data operations	22
Operations to follow in the event of EPROM substitution	22
Delay Settings Manual Commands ("Manual Control")	23 24
	25
Unit remote control Management of two units	26
Local Network Unit (LAN)	27
Temperature and Humidity Set point	28
Setback mode	30
Clock / Calendar – Time Bands	31
Addressing of 2 nd level alarm	33
Alarm Readings	34
Default Values	38
Appendix - Screen flow chart	39

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

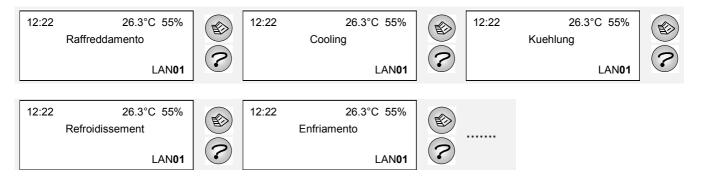
LANGUAGE OPTION

(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 and 📿 (🔊

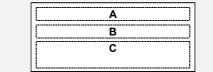
any time by pressing the key combination



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

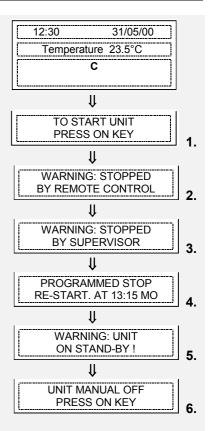
DISPLAY INFORMATION WITH UNIT OFF

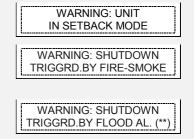




When the unit **is connected to the power supply but not running**, three fields are active on the user terminal display:

- 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;
 - 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.





(**) only if selected as one of the secondlevel alarms

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:

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 lighter
 - is lighted (control powered up);
- The operator must have pressed key we 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

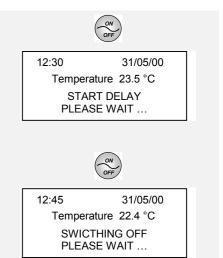
The unit can be started in one of the following modes:

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:

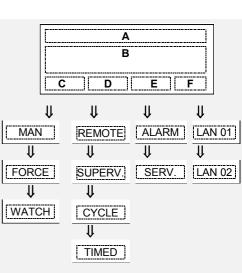
- **A.** The time (only in the units equipped with a clock circuit), room temperature, room humidity (only with humidity sensors);
- **B.**Current operation: according to the working conditions, the following indications are provided:
 - "COOLING"/"HEATING"/"DEHUMIDIFICATION";
 - "REHEATING"/"HUMIDIFICATION"

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 *interview* and *interview* 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 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.

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

MANUAL OVERRIDE PROCEDURE

If the unit is <u>commanded</u> by one of the automatic devices, screen **202** is shown. If the unit has been <u>stopped</u> 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 very 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".

EXITING MANUAL OVERRIDE

To exit from manual override, shown in field C of the STATUS SCREEN with the

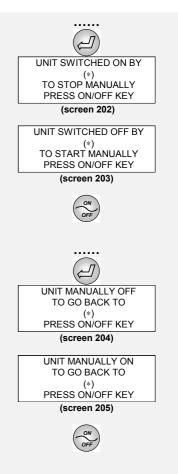
message "**FORCE**", press the *if* button and enter the SETTING password. If the unit is turned off, screen **204** appears.

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 ¹ 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:

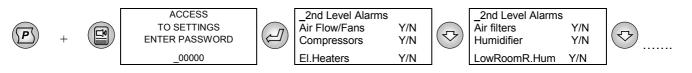
- LED on: access to the screens for reading only;
- LED flashing: access to the screens for programming (by pushing the selected button immediately after the "P" button)

	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) + =c	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 + P	Access to screens for the setting of 2 nd level alarms .
+vo+	Consultation of the input and output board states.	P + 10	Access to the unit configuration and manual commands.
	Consultation of clock/date and time bands (only if the optional clock circuit is present).	1	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 + 1	Access to screens to modify set point.
T	Consultation of remote command settings.	P + 1	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 \bigcirc or \bigcirc ; 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:

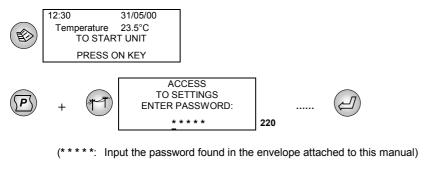
- = c: the working hours threshold of each component to signal the maintenance intervention request;
- 🗎 : addressing of alarms of the second level;
- : clock/calendar and time bands;
- • : set point of the functional parameters;
- •

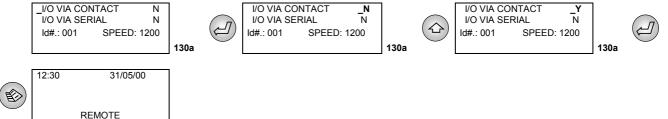
VARIATION OF PARAMETERS

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 O 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 $\stackrel{{}_{\scriptstyle\smile}}{\smile}$ button to confirm the value.
 - <u>To return to the STATUS screen</u> press the ^b button. In the unit hardware configuration, pressing the ^b button however returns to the initial "Hardware Configuration" (screen **50**);
 - <u>To modify parameters in other screens</u> 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 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.





SPECIAL FUNCTIONS

In a few program versions, by pressing the *#* button it is possible to visualise a

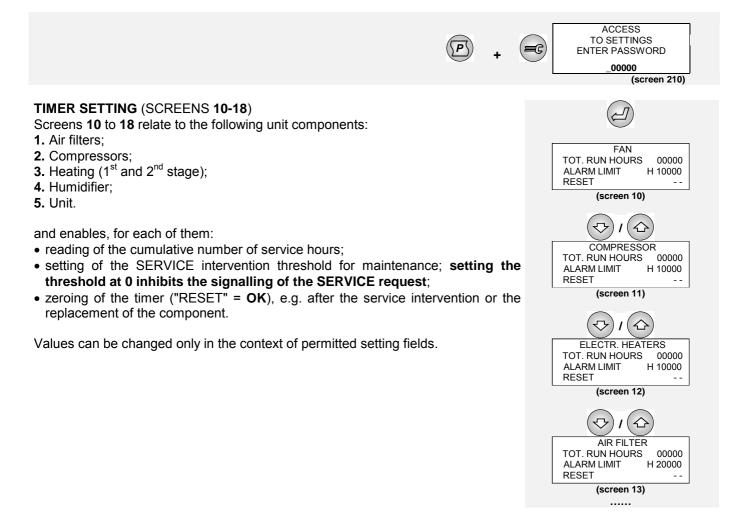
few special functions, personalised on the clients request. Possible special functions are illustrated in the APPENDIX.



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.



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;

button; the command "SWITCH OFF AND EMPTY" will be - press the 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.

<
Humidifier Cilinder Maintenance
(screen 19a)
Humidifier Cilinder
Maintenance
_ Switch off and Empty
Humidifier Cilinder
Maintenance
Please Wait
(screen 19b)
(after 2 minutes)
Humidifier Cilinder
Maintenance
Press Enter to ESC EMPTY CILINDER
(screen 19c)
restore humidifier functioning

То



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

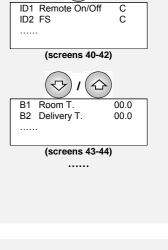
2. Analogue Inputs (B1 - B8)

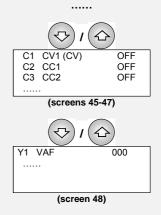
Provides the reading of the temperature and humidity sensor connected to the board.

3. Digital Outputs (C1 - C13)**

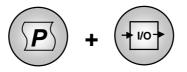
CV1 (CV) = Fan contactor CC1, CC2 = compressor contactor CC3, CC4 = compressor contactors (with 'HIGH TECH' control); CR1, CR2 = electric heater contactor CU = humidifier contactor EVC = humidifier fill solenoid valve EVS = humidifier drain solenoid valve EVD = dehumidification solenoid valve ** C12-C13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





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.



HARDWARE CONFIGURATION

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	5
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.

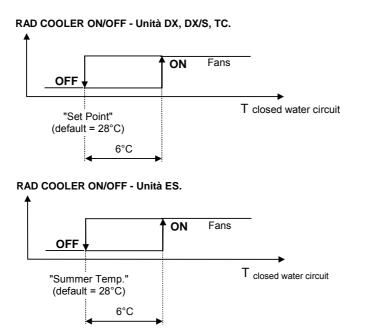
SCREENS 61a -61b: RAD COOLER CONTROL

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

- in direct expansion units;

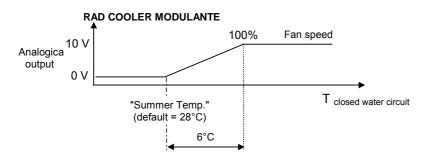
- in **twin cool** or **energy saving** units during the mechanical cooling phase (with operating compressors only).

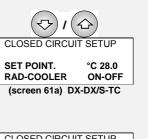
The control maintains the closed circuit water temperature at a value sufficient for condensation, included between the set point ("SET POINT" in screen **61a** or "SUMMER TEMP." in screen **61b**) and the set point + a differential fixed at 6° C.



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.





CLOSED CIRCUIT	SETUP
TEMP. E.S.	°C 08.0
SUMMER TEMP.	°C 28.0
RAD-COOLER	ON-OFF
(screen 61b) ES	

mP20 II° - UG20 - Rev. 1.5 - Date: 23-09-2002 EN

SCREEN 61b -RAD COOLER WINTER CONTROL

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.

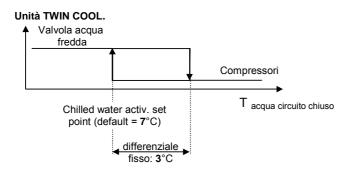
Switching between the two set point "Summer Temp." and "Temp. E.S." occurs automatically on the basis of the **external air temperature**.

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

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.

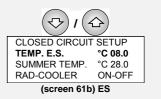
SCREEN **63** – CHILLED WATER DEHUMIDIFICATION CYCLE AND HIGH TEMPERATURE ALARM SETUP

(only if a water temperature sensor is installed)

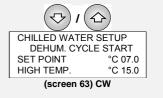
During the dehumidification phase a specific control is activated that reacts as follows:

- 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:

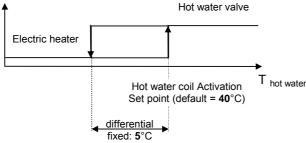
- the presence of the hot water re-heat coil device.
- the presence hot gas re-heat coil device (excluding CW units);
- use of an external dehumidifier managed by the output **DO9**, that substitutes the dehumidification carried out with the resources of the unit;
- use of an external humidifier -ON/OFF-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

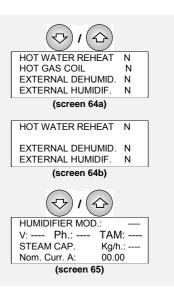
In screen **65** it is possible to set integrated humidifier model, the nominal tension, the number of phases, current transformer model (TAM) and the steam production capacity ('Steam Cap.'). It is also possible to see the nominal current absorbed ("Nom. Curr.A").



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.





UNIFLAIR



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 $^\circ C$ and the maximum adjustment possible is between -9.9 $^\circ C$ and +9.9 $^\circ C.$

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 <u>already corrected</u>.

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**.

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.

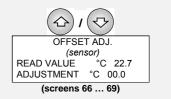
SET-UP PASSWORD

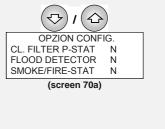
Screen **71** permits the possibility to change the password for access:

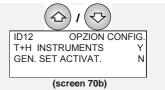
- to the **settings** ("SETTINGS" password). See paragraph "ACCESS LEVELS", point **2**.;

- 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 <u>to note down the new password</u> before changing the old password.









MANAGEMENT OF THE DATA IN THE MEMORY

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

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.

<u>IMPORTANT</u>: 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 <u>"Hardware Configuration"</u>

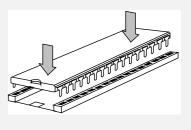
parameters) press both the and buttons at the same time for at least 5 seconds. A brief signal sounding will confirm that the operation has been carried out correctly.

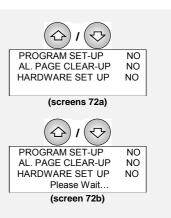
EPROM SUBTITUTION.

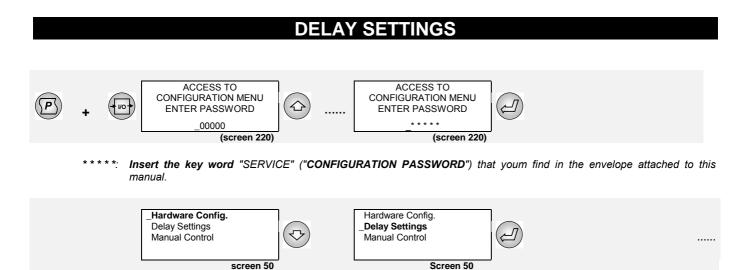
In the event of EPROM substitution control automatically performs all the operations listed above: **memory clear-up**, **re-setting of the factory defaults**, **cleaning of the historical alarms**, re-reading of the devices:

- 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.







Screen **80** manages the behaviour in the initial transitori and the possibility 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.

(L))	
Power On Delay	s 000	
LP-Stat Delay	s 180	
Start Trans.	s 60	
T+H Al. Delay	min 15	
(screens	80)	
	$\overline{\mathbf{v}}$	
Anti-Hunting	g Time	
Constant of	Room	
Temp. Control	min 01	
(screens	81)	

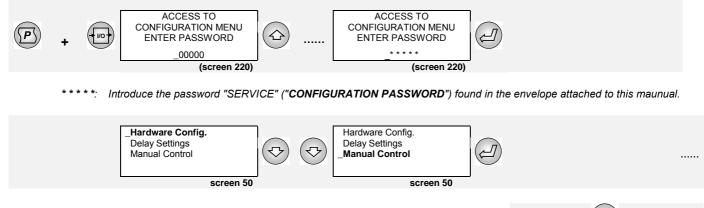
MANUAL CONTROL

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 regulation 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.



AUTOMATIC/MANUAL FUNCTIONING MODES (SCREENS 90-93)

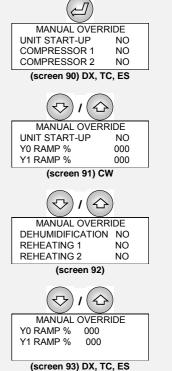
To vary the functioning mode of a component it is sufficient to move the cursor in

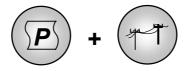
corresponding line, press the result or button to change from automatic ("**No**")

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**".





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).

Screens **130a**/**130b** determine if the unit is managed by remote by tele control and you can set:

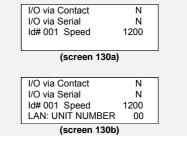
- remote start-up/shut down from free contact ('I/O via Contact');
- remote start-up/shut down by a supervision system via serial RS422 or RS485
 ('I/O via Serial'); if "I/O via Serial YES" is set the possibility to select "I/O via Contact" is excluded automatically;
- the serial address of the unit 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.

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.



ACCESS TO CONFIGURATION MENU ENTER PASSWORD 00000

(screen 210)



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.

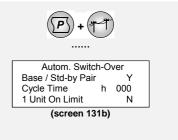
- Rotation on a temporary basis between the two units; this operation allows the division of the work load onto two units at intervals of time which are pre-set (see screen 131b "CYCLE TIME");
- It is possible to start-up the stand-by unit as a *substitute* of the already working unit or <u>in addition</u>. 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).



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.

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 ver 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 <u>causes the shut down of the first unit</u>.

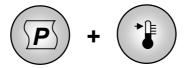
Screen **133**, displayed only if the local network is is set, gives the possibility to control unit operation **with a mean temperature** measured in the room or with the **"local"** value measured the sensor inside the unit:

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

- <u>Mode: Mean</u> 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.

(P) + (7-T)
I/O via Contact N
I/O via Serial N
Id# 001 Speed 1200
LAN: UNIT NUMBER 00
(screen 130b)
\sim
(Δ)
Autom. Switch-Over
of Std-By Unit N
Cycle Time h 000
N° Stand-by units 0
(screen 132) LAN
\sim
Usage of T+H values
Mode: Local / Mean
Aut.Changeover Mean/Loc.Diff.°C 2.0
(screen 133)



TEMPERATURE AND HUMIDITY SET POINT

All variables are pre-set in the factory so that the control functions correctly, maintaining standard conditions in the room.

The set points and other set parameters can be read by pressing the U button (it is not possible however to vary the parameters).

To modify the values it is necessary to access the programming mode and insert the password "SETTINGS" (screen **210**).

By using screens 110 to 119 it is possible to set the regulation parameters.

COOLING SET POINT (SCREEN 110)

- COOL. SET P.: cooling set point;
- SENSITIVITY.: cooling proportional band;
- TIME CONSTANT integration time of P+I (s), only for close control mode;
- DEL. TEMP. LIMIT: minimum air delivery temperature (°C), appears only if there is the optional temperature sensor.

<u>Warning</u>: to lower the cooling set point it may be necessary to lower the heating set point to avoid the superimposition/overlapping of the heating proportional band with that of the heating proportional band.

HEATING SET POINT (SCREEN 111)

- COOL. SET P.: cooling set point (reference only);
- HEAT. SET P. (°C): heating set point;
- SENSITIVITY (°C): heating proportional band.

TEMPERATURE ALARMS (SCREEN 112)

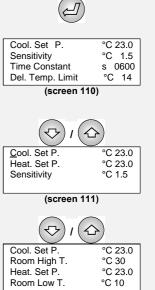
Setting of the minimum and maximum room temperatures, when reached a specific alarm signal is switched on (from an internal sensor).

- COOL. SET P. (°C): cooling set point (reference only);
- ROOM HIGH T. (°C): threshold of high room temperature limit alarm;
- HEAT. SET P. (°C): heating set point (reference only);
- ROOM LOW T. (°C): threshold of low room temperature limit alarm.

N.B. the last two lines only appear if the unit is provided with at least one dedicated heating device.



ACCESSO TO



(screen 112)

DEHUMIDIFICATION CONTROL (SCREEN 113a-113b)

- DEHUMID. CONTROL: enables/disables the dehumidification function;
- DEHUM. SET P. (rH%): dehumidification set point;
- DEH. PROP. BAND. (rH%): de-humidification hysteresis effect

HUMIDIFIER SET POINT (SCREEN 114)

- HUMID. SET P. (rH%) .: humidification set point;
- HUM. PROP. BAND. (rH%): humidification proportional band.

HUMIDIFIER SETTING (SCREEN 115)

Regards the setting of the steam production capacity from the integrated humidifier.

• MAXIMUM STEAM PRODUCTION: maximum steam production in kg/h.

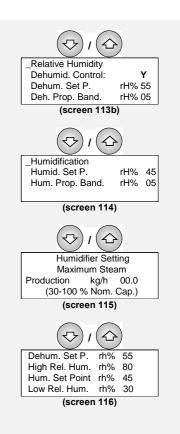
N.B. By reducing the steam production capacity as closest as possible to the room necessities, it is possible to optimise the humidifier function and to prolong the life of the steam cylinder.

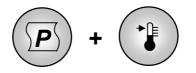
HUMIDITY ALARMS (SCREEN 116)

Setting of the minimum and maximum relative humidity limits, when reached, a specific alarm signal is switched on (from an internal sensor).

- DEHUM. SET P. (rH%): dehumidification set point (reference only);
- HIGH REL. HUM. (rH%): threshold alarm due to high relative humidity.;
- HUM. SET POINT (rH%): humidification set point (reference only);
- LOW REL. HUM. (rH%): threshold alarm due to low relative humidity.

N.B. the options shown relate to the units available resources.





SET BACK FUNCTION

The set back function, which can be either activated or de-activated by using the control panel, consists of an automatic start-up of the stand-by unit – **yet powered** – to exceed the following programmable limits for at least 30 seconds:

- Minimum temperature;
- Maximum temperature;
- Minimum relative humidity (only with optional humidity sensor and humidifier);
- Maximum relative humidity (only with optional humidity sensor);

Intervention of the set back function, must control the room conditions – although with larger tolerances – even if the whole system is in stand-by; it's intervention therefore is independent and not conditioned by signals from remote systems.

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.

Intervention of the set back function is **not** considered as an alarm situation.

VARIOUS CONTROL PARAMETERS (SCREENS 117a-117b-118-119)

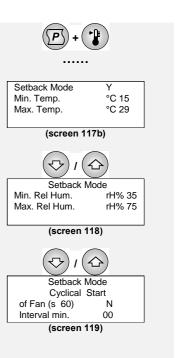
 SETBACK MODE: enables/disables the 'set back function'; if the function is selected, the message "WARNING: UNIT IN SETBACK MODE" appears in the STATUS screen;

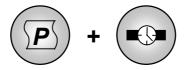
- MIN. TEMP.: minimum temperature threshold for the intervention of the set back mode (heating set during the set back mode);
- MAX. TEMP.: maximum temperature threshold for the intervention of the set back mode (cooling set during the set back mode);
- MIN. REL. HUM. (rH%): set point for starting of the humidifier during the set back mode;
- MAX. REL. HUM. (rH%): maximum relative humidity before intervention of the set back mode (dehumidification function);
- CYCLICAL START OF FAN: defines the fan operation during the set back function; if "**Yes**" is set the fan is started in cycles to guarantee stable room conditions.

When the unit is in the set back mode, "WATCH" is displayed in the STATUS SCREEN.

Normal operation conditions are re-stared automatically when the temperature returns within the set values [MIN. TEMP. + 2°C] and [MAX. TEMP. - 2°C].

There is however a minimum time period of 15 minutes before which the unit does not exit from the set back mode; this means that conditions may be stabilised.





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

If the microprocessor is fitted with the optional clock circuit the date, time and weekday is shown in the STATUS screen. It is possible the time with:

• start up and shut down of the unit according to timed program;

• memorisation of the alarm events.

Setting of the time and date and the programming of the time bands is possible by using the following screens:



SETTING OF THE CLOCK - CALENDAR

In screen 100, it is possible to set:

- time of day (hours, minutes);
- date (day, month, year);
- weekday classification.

SETTING OF THE TIME BANDS (SCREENS 101-106)

Using this device it is possible to set the automatic start up and shut down of the unit on a temporary basis (time bands) to obtain:

• up to 3 on-off daily cycles, each with start-up and stop time;

 a weekly cycle distinguishing the daily cycles divided into regular days N (default is from Monday to Friday), pre-holiday P (default is on Saturday), holidays F (default is on Sunday).

By setting "**YES**" in screen **101** the time bands device is activated; in field D of the STATUS screen "TIMED" appears.

Screens 104, 105, 106 it is possible to program the time cycles - characterised by a start time (ON) and a stop time (OFF) – of the regular days (N), pre-holidays (P), holidays (F).

A stopped unit, "PROGRAMMED STOP - RE-START. AT ..." appears in the display with the time and weekday that is programmed for the next start-up. By setting 00:00 in the ON or OFF the cycle is ignored.

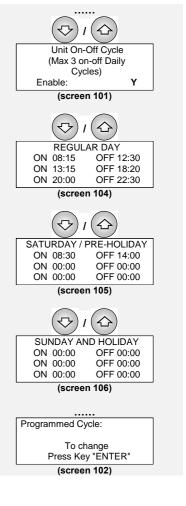
CLASSIFICATION OF THE WEEKDAYS (SCREEN 102)

This is automatic, however it can be modified using screen **102**; the screen appears when the time bands device is activated (screen **101** - "ENABLE:" **YES**). The present day is shown – at the end of the programming of the time bands:

- N: regular day or holiday;
- P: pre-holiday;
- F: holiday.

Whenever it is necessary to change the classifications, press the button to

move to screen **103**, otherwise press the button.



WEEKLY PROGRAM (SCREEN 103)

Unless it is different set, in the microprocessor memory are classified:

- regular days (N) all week days from Monday to Friday;
- pre-holidays (P) Saturday;
- holiday (F) Sunday.

By using screen **103** (moving from screen **102** by pressing the ^C button) it is possible to change the classification of the seven days to come, including the actual day that is shown on the first line of the screen.

Under each day there is a memorised classification (N or P or F) that can be

modified by pressing the or button until finding the wanted classification;

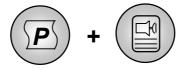
by pressing the \smile button the set classification is confirmed and the next day is selected. If the classification differs from the standard the symbol > appears automatically before the classification.

The selected time bands will be the same as days of same classification.

Programmed Cycle:
To shange
To change
Press Key "ENTER"
(screen 102)
PROGRAM. LU 13/10/97
MO TU WE TH FR SA SU
N N >F N >P >F F
(screen 103)

The selection of the time bands is cancelled automatically once the day for which it was activated has passed.

To exit from the time-calendar and time bands screens press the ^bbutton.



ADDRESSING O

This paragraph ("ALARM READINGS ") explains the possible alarm events that can be detected by the control, specifying each action carried out by the control.

In the more serious cases (for instance, when the alarm comes from a safety device), the controller can have some of the unit's components switched off. In other cases, when an alarm is encountered, the only result is usually just a message sent up on the terminal's display.

Screens 31.... 37 give the possibility to select between a list of 2nd level alarms.

In the event of an alarm addressable alarm relay is powered (or 2nd level alarms):

- if two or more units are connected, one of which in standby mode, the 2nd-level alarm switches on the standby unit, which takes over from the unit currently operating. The only alarms not to produce this effect are: "Low Room R.Hum.", "High Room Temp.", "Low Room Temp.", "High Room R.Hum.", "Ext. Room Sensor", "Flooding" and "Smoke/Fire".

- in the event of remoting the selected alarms cause a generic signal of alarm units (digital output board: DO10).

In all cases, the 'SMOKE/FIRE' alarm causes the unit to be switched off. Via form 34, you can determine whether operation must be resumed manually or automatically.

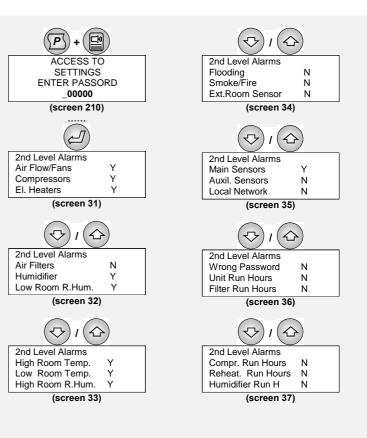
When the cause of the alarm disappears and the contact (input ID11) closes again, the unit restarts:

automatically if the alarm is NOT selected as a 2nd-level alarm;



once the alarm is reset with key if the alarm is selected as a 2nd-level alarm.

In "LEONARDO" air-conditioners featuring the condensate drain pump, the relevant alarm contact is hardwired in series with the flood alarm on input ID10, and is set by default as a 2nd-level alarm (form 34 "flood yes") When there is a "FLOOD" alarm, the operating unit is switched off whilst the standby unit is not started.





ALARM READINGS

ACTIVE ALARMS

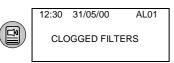
By pressing the button the alarm buzzer is silenced and a description of the alarm is shown in the display.

If the cause of the alarm has been eliminated, the last alarm message can be reset by **holding the button down for a few seconds**; by doing this the red light on the button switches off immediately. If the cause of the alarm has not been eliminated, the buzzer is activated again.

HISTORICAL ALLARM SEQUENCE

To reconstruct the historical alarm sequence, the microprocessor maintains the last 40 events in the memory.

All the memorised alarms can be read in order by pressing the button starting from the STATUS MEMORY.



Service time limits overcoming are not memorised and therefore can not be read ("**SERV**."). *In the sequence the first event shown corresponds to the last alarm.*

In microprocessor fitted with clock circuits (optional) during each alarm event the date and ime is shown.

DESCRIPTION OF ALARM EVENTS

All the possible alarm messages that can be shown on the user terminal display are recalled.

For those alarms that are still active (and therefore which are not memorised in the historic sequence) indications to resolve the problem are found on the last two lines of the display.

Alarms selected from the 2nd level alarms can cause the unit to shut down (see paragraph "ADDRESSING 2nd LEVEL ALARMS").

WRONG PHASE SEQUENCE ALARM

The SCROLL compressor must turn in a specific direction of rotation unless efficiency loss.

Only in units with a three phase power supply it is possible that the phase sequence of the power supply causes a rotation to the direction opposite of what has been set. In this such event, as soon as the unit is powered the microprocessor immediately enters into an alarm state to prevents any other manoeuvres.

In these circumstances cut off the unit power supply and reverse two of the power phases.

POWER RESTORED MESSAGE

After a power outage, the controller logs the form alongside in the alarm log when power is restored.

(10:30 04/07/01) POWER BACK AFTER FAILURE



HIGH TEMPERATURE OR HUMIDITY VALUES.

These are alarms connected with the high thermo-hygrometric limits (see paragraph "TEMPERATURE AND HUMIDITY SET POINT ": screens 112 and 116).



Signal only. Can be delayed during the unit start-up phase (15 minute default delay).

ALARM ROOM TEMPERATURE BELOW MIN. LIMIT

ALARM ROOM REL. HUMIDITY ABOVE MAX. LIMIT

ROOM REL. HUMIDITY BELOW MIN. LIMIT

Signal only. Can be delayed during unit start-up phase (15 minutes default delay).

Signal only. Can be delayed during unit start-up phase (15 minutes default delay).

ALARM

Signal only. Can be delayed during unit start-up phase (15 minutes default delay).

OPTIONAL SENSOR ALARMS



Detected by the flood control module or condensate drain pump alarm contact; it causes the unit to be switched off only if selected as one of the second-level alarms, but does not start the standby unit.

Detected by fire/smoke sensors, it **always** causes the unit to be switched off.



ALARM ROOM LIMIT EXCEEDED (BY EXT. SENSORS)

Signal only.

UNIT FUNCTIONING ALARMS

Alarms relative to the air conditioning unit components and that are caused by the intervention of a protection device.

ALARM CW VALVE FAILURE OR WATER FLOW TOO LOW	Only TC units: causes the switching from chilled water (CW) functioning to direct expansion (DX) stage. Shown also when room temperature sensor detects exceeds for the first time the set limits.
ALARM FLOOD ALARM CHECK WATER CONNECTIONS	Only CW units. When the water flow gauge signals a flow loss in the chilled water circuit.
ALARM WATER TOO WARM TO GET DEHUMIDIFICATION CHECK CHILLER GROUP	CW units (Signal only). Detected by the chilled water temperature sensor when the "Set Point" value set in screen 63 is not reached within 15 minutes after the dehumidification call.
ALARM HIGH CHILLED WATER TEMPERATURE: CHECK CHILLER GROUP	Only CW units. Detected by the chilled water temperature sensors when it exceeds the limit "High Temp." set in screen 63 .
ALARM LOSS OF AIR FLOW CHECK FAN/SWITCH	Fan alarms: Detected by the air flow differential pressostat. Causes the shut down of all devices (compressors, electric heaters, humidifier, fans).

ALARM CLOGGED FILTERS CLEAN OR REPLACE FILTER ELEMENT

ALARM COMPR 1 HIGH PRESS CHECK REFRIG. CIRCUIT AND/OR CONDENSER

ALARM COMPR 1 LOW PRESSURE CHECK REFRIG. CIRCUIT /REFRIGERANT CHARGE

ALARM HEATERS OVERHEATING CHECK AIR FLOW AND/OR SAFETY SWITCH

HUMIDIFIER ALARMS

ALARM LAN 1 HUMIDIFIER: HIGH CURRENT: CHECK CYLINDER / DRAINING

Humidifier alarm. Disables the humidification function.

ALARM LAN ' HUMIDIFIER: LOSS OF WATER: CHECK WATER SUPPLY

Humidifier alarm. Disables the humidification function.

ALARM LAN 1 HUMIDIFIER: LOSS OF POWER: CHECK ELECTRICAL CIRCUIT

Humidifier alarm. Disables the humidification function.

SENSOR ALARMS

Relative to the malfunction or the incorrect connection of the sensors to the basic board. Whenever one of these alarms is activated, verify the accuracy of the set configuration, the presence of the sensor, the exact connection of the sensor, the functional characteristics of the sensor.

ALARM Disable a unit function according to the sensor signalling * * * * * ' SENSOR FAILED/DISCONNECTED (****) Causes the shut down of the compressors and the electric heaters keeping only the fans ROOM TEMP running. Disables the free-cooling function control (only ES units). OUTDOOR TEMP. Disables the electrical heaters DELIVERY TEMP. Disables the humidification and dehumidification functions. ROOM REL. HUM. Disables the free-cooling function control (only ES units) and forces the RAD COOLER WATER IN T.SENSOR to work at 100%. Disables the hot water re-heat process (optional). HOT WATER TEMP.

replaced.

Only DX, ES, TC units. Causes the displayed circuit compressors (1 or 2) to shut down.

Detected by the dirty filter differential pressostat (PFS), causes a single alarm signal,

without affecting the unit functioning. Indicates that the air filter must be cleaned or

Only DX, ES, TC units. Causes the shut down of the displayed circuit compressors (1 o 2).

Alarm detected by the safety thermostat, causes the electric heaters to shut down.

SERVICE NOTES

These report the set service time limits overcoming of the described component refer to signal (cfr. HOURMETER OPERATION).

As already mentionned, this type of alarms continues until the hourmeter is reset, however it is not memorised in the historical series of alarms.

SERVICE ALARM (* * * * *) EXCEEDED XXXXX RUN HOURS

Signal only. Can refer to: "UNIT", "Air FILTER", "COMPRESSOR 1", "COMPRESSOR 2", "COMPRESSOR 3", "COMPRESSOR 4", "EL. HEATER 1", "EL. HEATER 2", "HUMIDIFIER".

To reset the alarm it is necessary to reset the hourmeter (see paragraph "HOURMETER READING AND PROGRAMMING").

DISCONNECTED 'LAN' ALARM

ALARM LAN INTERRUPTED, DISCONNECTED UNITS Indicates communication problems between the LAN unit and specifies which units are not connected. Can be due to a power loss, a malfunction of the serial circuits or an interruption in the electrical connections.

The alarm appears on the units which bear the lowest LAN address both just before and after the disconnection.

SYSTEM ALARMS

ALARM EEPROM FAILURE: REPLACE CONTROL BOARD Indicates errors in the EEPROM memory, probably due to the exceeding erasing / writing cycles. It is necessary to replace the control board.

ACCESS ALARMS

ALARM ATTEMPT TO ACCESS WITH WRONG (MIN. 3 OC-CURRENCES) PASSWORD Refers to an attempt to access the setting screen or configuration with the wrong password three times in a row.

To reset the alarm proceed as follows:

- Enter into the "Hardware Config." Menu and insert the correct password;
- Use the "AL. PAGE CLEAR-UP" command (screen 72a) to cancel the alarms in the memory;
- Exit from the subroutine using the 🕑 button;
- Keep the Wbutton pressed for 5 seconds until the red light switches off.

REMOTE ALARM SIGNALLING

Remote signalling of the alarm states the following are available in the microprocessor control board potential free contacts (*see electrical diagrams*):

- DO10. Addressable second level alarm;
- DO11. generic alarm;

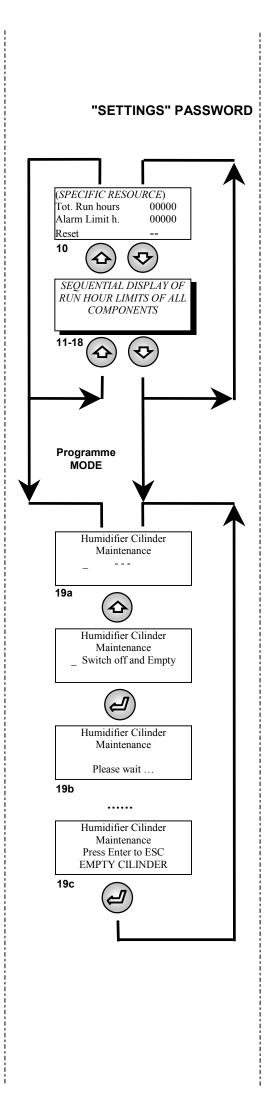
In the event that there are more than one air conditioning units, the cabling of the clean contacts must be provided for each unit independently.

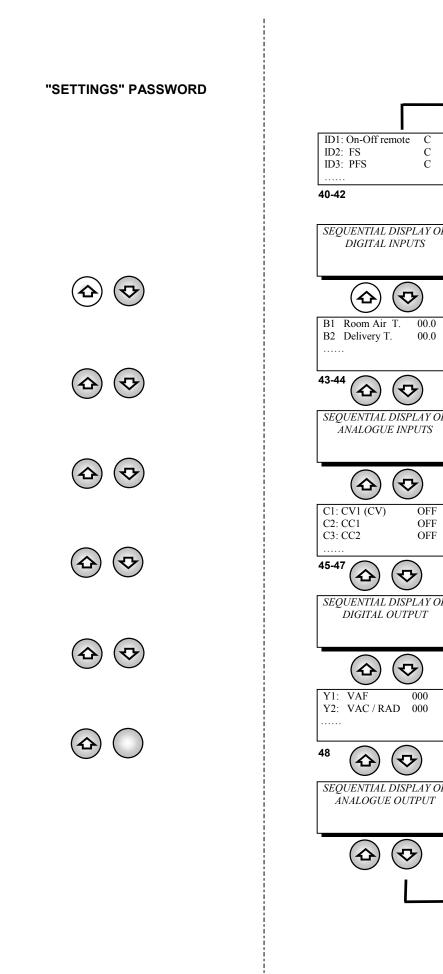
DEFAULT VALUES

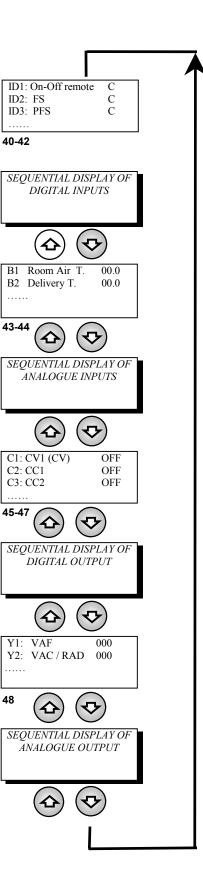
CONFIGURATION				NUMERICAL PARAMETRES					
Screen	PARAMETERS	DEFAULT	Screen	SET VALUES		PRE-SET	MIN	MAX.	
	Humidity Control		110	Cooling set point	°C	23,0	18,0	32,0	
113a-113b	Dehumidification	NO	110	Cooling sensitivity	°C	1,5	0,5	9,9	
65	Humidification	NO	110	Time constant	sec	0600			
117	Setback mode	NO	110	Delivery Temp. limit	°C	14	10	25	
		112	High room temp. alarm threshold	°C	30	20	45		
	Addressing for 2° level alarm:		111	Heating set point	°C	23,0	5,0	25,0	
31	Airflow / fan	YES	111	Heating sensitivity	°C	1,5	0,5	9,0	
31	Compressors	YES	112	Low room temp. alarm threshold.	°C	10	25	25	
31	Electrical Heaters	YES	44.01		DL IO/				
32	Air filter	NO		Dehum. set point	RH%	55	40	90	
32 32	Humidifier Low Room R.Hum.	YES YES	1130	Dehum. prop. band. High room rH alarm threshold	RH% RH%	05 80	03 40	15 99	
32	High Room Temp.	YES	116	Hum. set point	RH%	45	20	99 80	
33	Low Room Temp.	YES		Hum. prop. band.	RH%	45	03	20	
33	High Room R.Hum.	YES	114	Low room rH alarm threshold	RH%	30	05	65	
34	Flooding (*)	NO			1.1.70				
34	Smoke/fire	NO		Setback mode control					
34	External Room sensor	NO	117	Min. Temp.	°C	16,0	5.0	24	
35	Main sensor	YES		Max. Temp.	°C	28,0	20,0	35,0	
35	Auxiliary Sensor	NO	118	Min. Rel. Hum.	RH%	35	20	60	
35	Local Network	NO	118	Max. Rel. Hum.	RH%	75	50	90	
36	Wrong password	NO							
36	Unit Run Hours	NO	131b-132	Cycle Time	h	168	1	999	
36	Filter Run Hours	NO	130b	No. of Unit					
37	Compr.Run Hours	NO		Changing the password		-			
37	Reheat.Run Hours	NO	71	Password for settings		00000		32000	
37	Humidifier Run Hours	NO	71	Password for service		*	00000	32000	
				words contained in sealed envelope atta	ached to t				
Remo	te Control, superv. system, autom.		60a	Compressor Number		1	1	4	
	I/O via Contact	NO	60a	Circuit Number	-		1	2	
	I/O via Serial Speed (1200÷19600)	NO 1200		Electrical Heaters		(DX/S) 3 (DX)	0	3	
	Units Switch-Over	NO	60a-60b	Electrical Heaters	3		0	3	
	1 Unit On Limit			Counter threshold					
	Hot gas coil	NO NO	10	Filter counter threshold	h	1000	0	32000	
	External Dehumidifier	NO	10	Humidifier	h	500	0	32000	
	External Humidifier	NO		All other devices	h	0	0	32000	
010 010	Manual override - DX					ů		02000	
90	Unit start-up	NO		Rad Cooler settings					
90	Compressor n.1	NO	61b	Temp. E.S.	°C	8,0	5	24	
90	Compressor n.2	NO	61b	Summer Temp.	°C	28,0	15	40	
	Manual override - CW			Twin-cool circuit settings					
91	Unit start-up	NO	62	Chilled Water Activ set point	°C	7,0	7	25	
91	Y0 Ramp %	NO		Dehumidif. and alarm settings					
91	Y1 Ramp %	NO	63	Chill. water set-up - Dehum. cycle start		7,0	5	20	
92	Dehumidification	NO	63	Chilled Water set-up - High Temp.	°C	15,0	5	20	
92	Reheating n.1	NO	00.05						
92	Reheating n.2	NO	66-69	Offset sensors - Adjustment	°C	0	-9,9	+9,9	
19 93	Humidifier - drain valve Y0 Ramp %	NO 000	80	Setting delay times Power On Delay	600	0	0	300	
93	Y1 Ramp %	000	80	Low pressure delay	sec sec	180	0	300	
35		000	80	Start Transitory	sec	60	15	- 300 - 99	
L			80	T+H Alarm Delay	min	15	0	99	
			00			10	Ŭ	55	
			81	Anti-Hunting time constant of room	min	1	0	30	

(*) For LEONARDO units with condensate drain pump, the default setting is "YES"

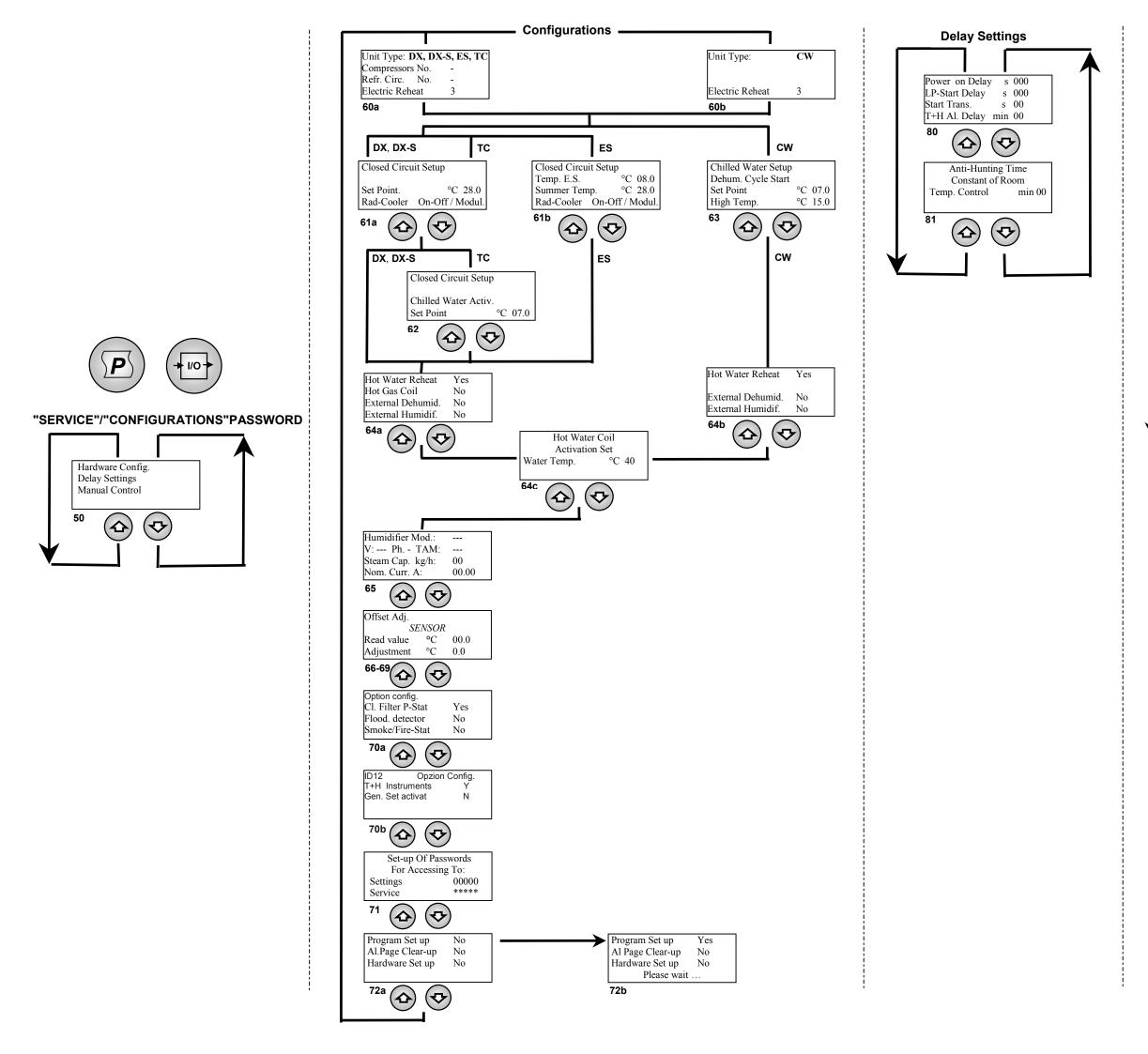
APPENDIX – Screens Flow Charts

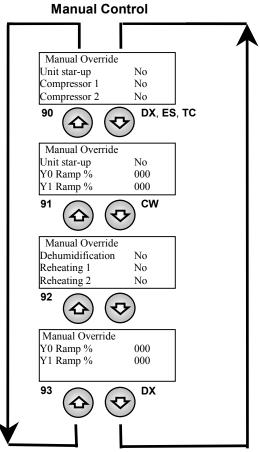


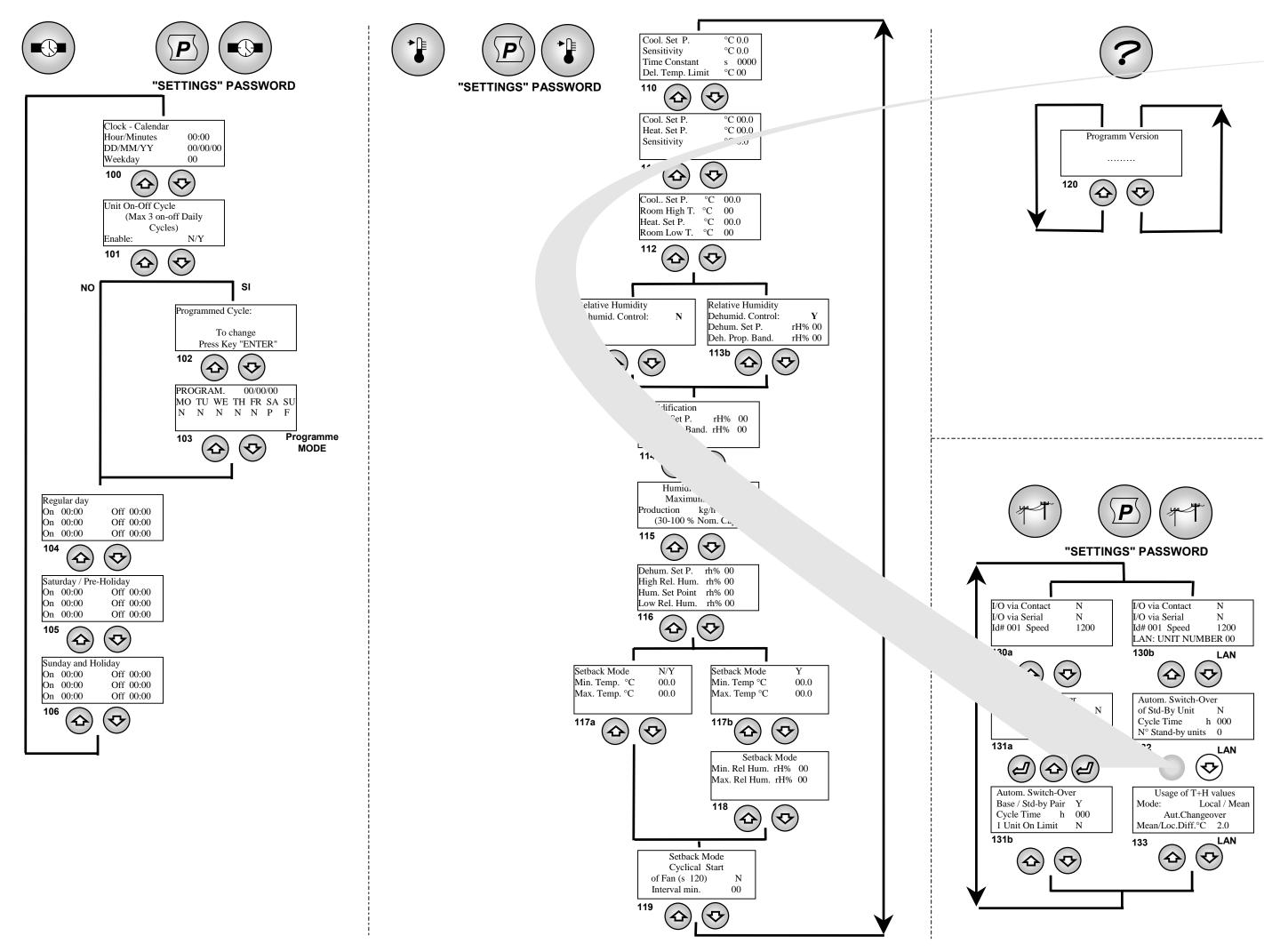


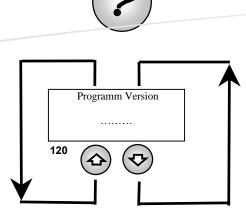


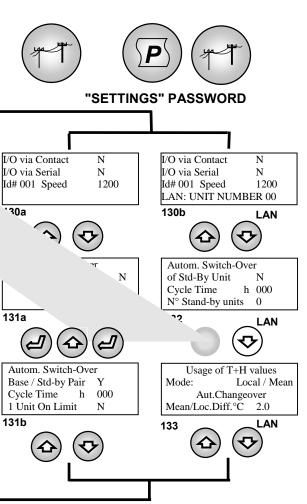
"SERVICE"/"CONFIGURATIONS" PASSWORD













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