UNIFLAIR
Instruction Manual

CONTROL PROGRAMME

FOR BCWC 320 - 1250 UNIT

UNIFLAIR™

EN

Release: 1.1   **Date**: May 2008

UNIFLAIR SpA policy is one of continuous technological innovation. The Company therefore reserves the right to amend any data herein without prior notice.

Disposal: the product is made up of metal parts and plastic parts.
In reference to European Union directive 2002/96/EC issued on 27th January 2003 and the related national legislation, please note that:
- The unit cannot be disposed of as municipal waste and must be collected and disposed of separately;
- The public or private waste collection systems defined by local legislation must be used. In addition, the equipment can be returned to the distributor at the end of its working life when buying new equipment.
- The equipment may contain hazardous substances: the improper use or incorrect disposal of such may have negative effects on human health and on the environment;
- The symbol (crossed-out wheeled bin) shown on the product or on the packaging and on the instruction sheet indicates that the equipment was introduced onto the market after 13th August 2005 and that it must be disposed of separately;
- In the event of illegal disposal of electrical waste, the penalties are specified by local disposal legislation.

READ AND SAVE
THESE INSTRUCTIONS

CONTENTS

GENERAL DESCRIPTION

The microprocessor controller manages the unit's operation autonomously.

The controller basically consists of:

- microprocessor control board to which all input and output devices are connected (sensors, detection and alarm instruments, contactors, solenoid valves etc.);
- user interface.

All control algorithms are resident in the microprocessor control card, and all operating parameters, which can be viewed and set via the user terminal, are stored there.

The control system provides the following functions:

- control of delivery water temperature based on a settable setpoint;
- complete alarm detection system with visual and audible indicators, and messages regarding measures to be taken;
- logging of all alarm events;
- alarm warning contacts divided up by type;
- remote unit switch on/off;
- control of all compressor operating time settings, compressor operation rotation, to assure their efficiency and reliability;
- management of pumps;
- password on 2 programming levels (setting, hardware and software configuration);
- possibility of communicating with a supervision system by means of a the following types of protocol: Netvisor, Modbus, Bacnet, Lon, Metasys, SNMP (TCP/IP) and Trend;
- clock/calendar management (clock card optional);
- counter totalling hours of operation of the most important components
- display of operating status of all unit components and display of all values detected by sensors connected to the control card;
- override facility via which operation of main components can be controlled manually without disabling the remote control, where operating;

LANGUAGE OPTION

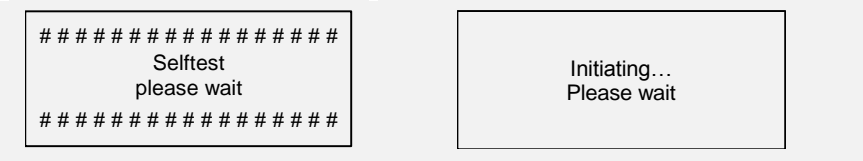You have the option of selecting one of the available languages at any time by pressing the key combination
ESC and $\leftarrow$ ..
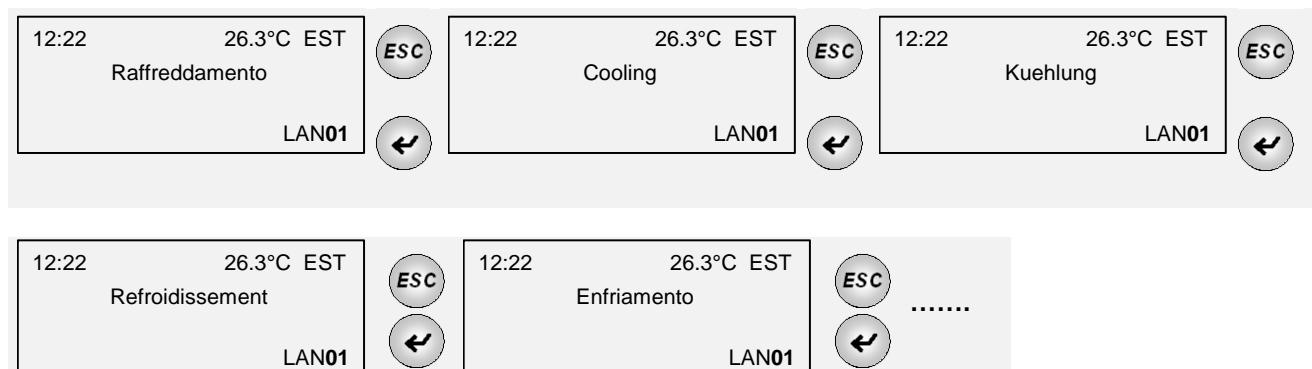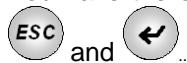
NOTE: The only exceptions to this rule are the screens for service engineers ("Hardware Configurations"), which always appear in English.

INFORMATION DISPLAYED WITH THE UNIT IDLE

As soon as power is supplied to the control, the following screens appear:

```
# # # # # # # # # # # # # # # #
        Selftest
       please wait
# # # # # # # # # # # # # # # #
```

```
      Initiating…
      Please wait
```

When the unit is **powered but not running**, 3 fields are active on the user terminal display:

A
B
C
D

12:30   LU   23/10/07
Water OUT:**°C 7.0**
☞ ↵ ⇒ ⓞⓝ
◁))
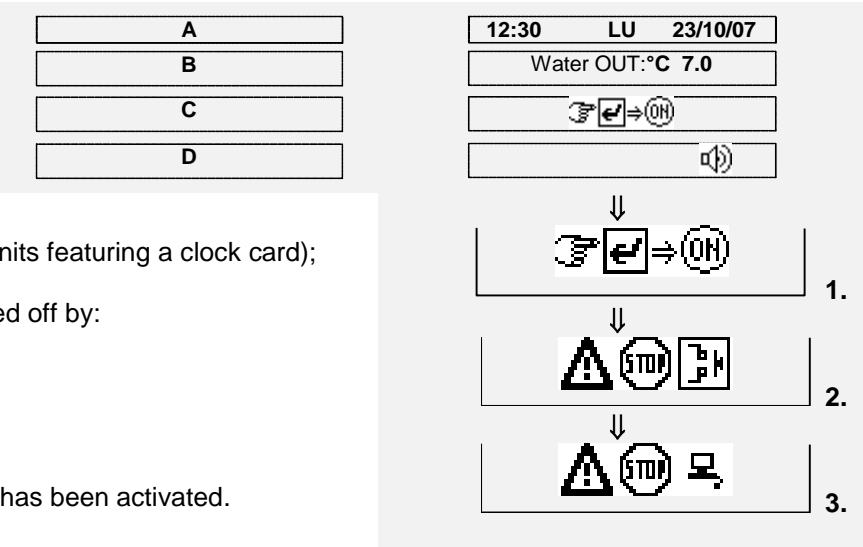
A. Time and current date (only in units featuring a clock card);
B. Outlet water temperature.
C. Indication that the unit is switched off by:

     1. ON/OFF button;
     2. Remote control
     3. Supervision system;

D. Field D indicates that an alarm has been activated.
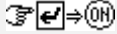
VIEWING UNIT STATUS

The unit's operating parameters (temperatures, humidity…) can be consulted by scrolling through the screens

with the ⬆ and ⬇ keys. When the consultation cycle ends, the initial STATUS SCREEN returns.

Press the ᴱˢᶜ key to go directly to the STATUS SCREEN.

When it comes to the compressors, the alarm warning may be the result of one of the three events below:
- high pressure alarm
- low pressure alarm
- contact of compressor's thermal cut-out opened

For water circulation pumps, on the other hand, the alarm warning is generated when the contact of the pump's thermal cut-out opens.

From the main screen press the ↓ key and a sequence of data will appear on the screen.

```
12:00   LU  23/10/07
Water Out T.°C  7.0

      ☞↵⇒(ON)
```

↑/↓
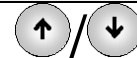
Screen displaying readings for the cold water evaporator inlet and outlet temperatures.

```
Water IN Temp.  °C 00.0
Water OUT Tem.  °C 00.0
```

↑/↓

Screen displaying the readings the data of compressor 1/2/3/4:
- % Power demand
- % Inlet guide vane
- Shaft Speed
- Minimum speed of rotation
- Maximun speed of rotation

```
   Compressor 1 Data
Power Demand      % 000
Inlet Guide Vane  % 000
Shaft Speed    rpm 00000
Min.Speed      rpm 00000
Max.Speed      rpm 00000
```

↑/↓

Screen displaying the readings the temperature of compressor 1/2/3/4:
- SRC temperature
- Shaft/Cavity temperature
- PCB temperature control
- Back-Plane temperature
- Inverter temperature
- Discharge temperature

```
   Compressor 1 Temp.
SCR Temp.        °C 00.0
Shaft/Cavity T. °C 00.0
Controll.PCB T. °C 00.0
Back-Plane T.    °C 00.0
Inverter T.      °C 00.0
Discharge T.     °C000.0
```

↑/↓

Screen displaying the readings of:
- Electronic expansion valve % opening
- Numberg valves opening
- Freon percentage level
- Set point for Freon level
- Proportional band
- Integral time
- Derivative time

```
   Expansion Valve
Valve % Opening   000.0
Op. Valves:  1  2  3  4
Liquid level    % 00.0
Lev.Set Point   %   00
Proport.Band    %   00
Integral Time   s   00
Deriv.Time      s    0
```

↑/↓
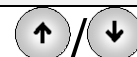
Screen displaying the readings the data of compressor 1/2/3/4:
- Evaporation temperature
- Condensation temperature
- Superheating temperature
- Compressor discharge temperature
- Compressor cycle number
- Compressor relationship
- Absorbed power required
- Absorbed power supplied
- Capacity percentage required
- Operating percentage of the guide valve of the Freon inlet
- Suction pressure
- Discharge pressure

```
Compr. 1 Data -- GC --
Te °C 0.0     Tc°C  0.0
SSH°C 00.0 Tdscg.°C 000
Rpm      0   CR:  0.000
kWr:  0.0  kWt:    0.0
Cap.req.%   0 IGV %   0
Suction P. kPa      0.0
DischargeP.kPa      0.0
```

ACCESS TO THE READINGS MENU

The readings menu can be accessed by the user terminal by carrying out the following procedure:

From the main screen press the ⬆ key which will display a screen with a list of items which can be chosen according to what needs to be checked.

Press the ⬆ or ⬇ keys to select the desired item and then press the ↵ key to confirm.

```
 12:00   LU  23/10/07
Water Out T.°C  7.0

        ☞↵⇒(ON)
```

```
_SWITCH ON UNIT
 INPUT/OUTPUT
 SETPOINTS
 ALARM HISTORY
 SOFTWARE INFO
```

Screen 1: **SWITCHING THE UNIT ON/OFF** : Screen for switching the unit on or off. A symbol will be shown indicating the process to be carried out.

Press the ↵ key to switch the unit on.

```
        ☞↵⇒(ON)
```

Press the ↵ key to switch the unit off.

```
        ☞↵⇒(OFF)
```

Screen 2: **INPUT/OUTPUT** : These screens display the readings of the digital and analogue inputs and outputs and the reading of the sensors connected to the control.

Press the ⬆ or ⬇ keys to see the other screens.

```
B1 Condens.P. kPa    000
B2 Evap.Level 1   % 000
B3 Evap.Level 2   % 000
B4 Liquid R.T. °C  00.0
B5 Ev.Water In °C  00.0
B6 Ev.WaterOUT °C  00.0
B7 Cnd WaterIn °C  00.0
B8 Cnd WaterOut°C  00.0
```

Screen 3: **SETPOINT** : Screen for the reading of the regulation set point.

Press the ⬆ or ⬇ keys to see the other screens.

```
   Water OUT Regulat.

Active SetP.   °C  00.0
```

Screen 4: **ALARM HISTORY** : Screen for the reading of the alarms activated. If there is a clock card, the time and date of the alarm will also be shown.

Press the ⬆ or ⬇ keys to see the other screens.

```
   NO ALARM RECORDED
```

Screen 5: **INFO SOFTWARE** : Screen for the reading of the regulation programme version, the bios and the board boot.
This information is essential when contacting a service centre, it is important to quote the version of the control programme contained in the Flash EPROM accurately.

```
           ⑦

SW: BRW1TT 2.2 26-10-07
  BCWC 1 Turbocor
BIOS:  401
BOOT:  403
```

CONSULTING INPUT AND OUTPUT STATES

This part of the programme allows the state of the card inputs and outputs to be checked.
The codes given on the display are the same ones used to identify components in the unit and in the relevant literature (wiring diagrams …).

1. **Analogue inputs (B1 - B8)**
   B1 Condens. P. = Condensing pressure transducer
   B2 Evap. Level 1 = sensor 1 level freon
   B3 Evap. Level 2 = sensor 2 level freon
   B4 Liquid T.R. = Liquid receiver temperature sensor
   B5 Evap. water In = Evaporator water IN temperature sensor
   B6 Evap. water Out = Evaporator water OUT temperature sensor
   B7 Cnd water In = Condenser water IN temperature sensor
   B8 Cnd water Out = Condenser water OUT temperature sensor

```
B1 Condens.P. kPa   000
B2 Evap.Level 1   % 000
B3 Evap.Level 2   % 000
B4 Liquid R.T. °C  00.0
B5 Ev.Water In °C  00.0
B6 Ev.WaterOUT °C  00.0
B7 Cnd WaterIn °C  00.0
B8 Cnd WaterOut°C  00.0
```

⬆/⬇
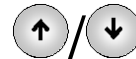
2. **Digital inputs (ID1 – ID13)**
   ID1 Remote On/Off = external command for the On / Off unit
   ID2 FS Evap. = Water flow-switch evaporator
   ID3 FS Cond. = Water flow-switch condenser
   ID4 CC1 = High pressure switch compressor 1
   ID5 CC2= High pressure switch compressor 2
   ID6 CC3= High pressure switch compressor 3
   ID7 CC4= High pressure switch compressor 4
   ID8 BP1 = Low pressure switch compressor 1
   ID9 BP2 = Low pressure switch compressor 2
   ID10 BP3 = Low pressure switch compressor 3
   ID11 BP4 = Low pressure switch compressor 4
   ID12 not used
   ID13 SETP. Chgover = command external exchange for set point adjustment

```
ID1 Remote On/Off
ID2 FS Evap.
ID3 FS Cond.
ID4 CC1
ID5 CC2
ID6 CC3
ID7 CC4
ID8 BP1
```

⬆/⬇

   Interlocking of compressor 1/2/3/4 = contact derived from the card's internal compressor

```
Interlocking of
   compressor 1
Interlocking of
   compressor 2
Interlocking of
   compressor 3
Interlocking of
   compressor 4
```

3. **Digital outputs (C1 – C13)**
   C1 C.1 RUN Enabl. = Confirmation of compressor 1 activation
   C2 C.2 RUN Enabl. = Confirmation of compressor 2 activation
   C3 C.3 RUN Enabl. = Confirmation of compressor 3 activation
   C4 HG1 Bypass S.V. = By-pass valve 1 activation command
   C5 HG2 Bypass S.V. = By-pass valve 2 activation command
   C6 HG3 Bypass S.V. = By-pass valve 3 activation command
   C7 C.4 RUN Enabl. = Confirmation of compressor 4 activation
   C8 Type "A" Alarm = contact warning alarm type A
   C9 HG4 Bypass S.V. = By-pass valve 3 activation command
   C10 not used
   C11 Warning = contact pre-alarm
   C12 Pump Enable. = pump contacts
   C13 Type "B" Alarm = contact warning alarm type B

```
C1 C.1 RUN Enabl.
C2 C.2 RUN Enabl.
C3 C.3 RUN Enabl.
C4 HG1 Bypass S.V.
C5 HG2 Bypass S.V.
C6 HG3 Bypass S.V.
C7 C.4 RUN Enabl.
```

⬆/⬇

The COMPRESSOR DATA READINGS on the following pages are a continuation of the INPUT/OUTPUT menu and refer to the data transmitted by the compressors and sent to the UPCO3m control board by means of a RS485 serial card.

COMPRESSOR DATA READINGS

- Soft Start Compressor 1/2/3/4 data:
  kWr = absorbed power required
  Vac = alternated line voltage
  Amp = absorbed line current
  Vdc = direct current voltage
  Vdc Bus = direct current voltage to the inverter

```
  C.1 Soft Start Data
kWr: 000.0     Vac: 000
Amp: 000       Vdc: 000
Vdc BUS: 000
   Compr.1 Motor Data
RPM: 00000
Amp: 000.0   kWt: 000.0
PE Amp: 000.0
```

↑ / ↓

- Compressor 1/2/3/4 data:
  RPM = compressor rotation per minute
  Amp. = absorbed current
  kWt = transmitted absorbed current
 *PE Amp* = dispersion current
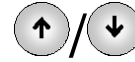
- Compressor 1/2/3/4 motor current
  SCR = temp. of the auto-regulated rectifier
  BMC = temp. of the magnetic bearings control
  STP = temp. of the step/step motor control of the electronic valve
  DcDc = temp. of the direct current converter
  PWM = temp. of the PWM regulator of the magnetic bearings
  Liq. = temp. of the liquid refrigerant
  CAV = temp. of the cooling gas of the compressor motor shaft
  BP1 = temp. of the back plane
  Dsg = temp. of the discharge compressor flange

```
  Compr.1 Motor Temp.
SCR 000.0     CAV 000.0
BMC 000.0     BP1 000.0
STP 000.0     Dsg 000.0
DcDc 000.0
PWM: 000.0
Liq: 000.0
```

↑ / ↓
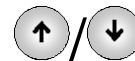
- Compressor 1/2/3/4 speed
  Act. rpm = cycle number of the actual compressor
  Surge rpm = minimum number of cycle rotations (Surge conditions of the pump group)
  Choke rpm = maximum number of rotation cycles

```
Compressor 1 Speed
      Act.  rpm: 00000
      Surge rpm: 00000
      Choke rpm: 00000
```
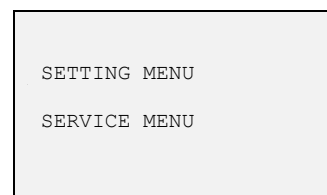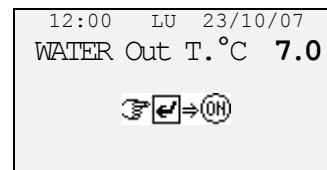
ACCESS TO CONFIGURATION DATA

The configuration data can be accessed by using the keys on the user terminal and carrying out the following procedure:

From the main screen press the `Prg` key and a screen will be displayed which shows two menus which can be chosen depending on what needs to be checked/changed.

Press the ↑ or ↓ keys to select the desired item and then press the ↵ key to confirm.

```
12:00   LU  23/10/07
WATER Out T.°C  7.0

      ☞↵⇒ⓄⓃ
```

↑

- To access the Parameter menus it is necessary to have the *Settings Password*.

- To access the Service Menu it is necessary to have the *Service Password.*

```
SETTING MENU

SERVICE MENU
```

The passwords can be found inside a closed envelope attached to this manual and addressed to the maintenance manager.

Changes made to the settings and/or configuration of a subroutine (set point, differential…), can be made as follows:

1. access the screens in programming mode;

2. use the ↑ or ↓ keys to select the screen which contains; the parameter; and the cursor (_) will flashe in the top left hand corner;

3. press the ↵ key to move the cursor to the parameter which needs to be changed;

4. check the value of the parameter – both numerical and Boolean (YES/NO) – with the ↑ or ↓ key (the values can only be changed within the limits set by the control);

5. press the ↵ key to confirm.

- <u>To return to the main screen</u> press the `ESC` key. In the hardware configuration of the unit, press the `ESC` key once to return to the start menu;

- <u>To change the parameters of other screens</u> press the ↵ key until the cursor is placed on the first line; press the ↑ or ↓ keys to move the cursor to the screen required.

SETTINGS MENU

From the main screen press the (Prg) key, use the (↑) or (↓) key tp

select "Parameters Menu" and then press the (↵) key to confirm.

- To access the Parameters menu it is necessary to have the *Settings password*.

The passwords can be found inside a closed envelope attached to this manual and addressed to the maintenance manager.

Press the (↑) or (↓) keys to insert the password and then press the (↵) key to confirm.

Press the (↑) or (↓) keys to select the item required and then press the (↵) key to confirm.

```
_SETTING MENU

 SERVICE MENU
```

```
      ↵
```

```

    🔑     00000

```

```
Working Parameters
Hourcounter Param.
Serial Communic.
Modbus Comm. State
Clock Settings
Alarm Address.
Unit Interconn.
```

WORKING PARAMETERS

ACTIVE COOLING SET POINT
This mask displays the active cooling set point.

```
_   Water OUT Regulat.

Active SetP.   °C  0.0

        Modo:
    Opt. Set Point
```

SET POINT COOLING
This mask allows the standard and optional cooling setpoints to be set based on the reading of the temperature probe placed on the discharge.

```
   Water OUT Regulat.

 Std.SetPoint °C  7.0
->Opz.SetPoint °C 10.0
```

SET POINT ALARM THRESHOLD
This mask allows the discharge water temperature minimum and maximum alarm thresholds to be set.

```
    Water IN Temp.
   Alarm Thresholds

Min. Value     °C  5.0
Max. Value     °C 18.0
```

SET BACK CYCLE
This mask allows the parameters of the following to be set:
- Activation of the set back cycle
- Set back cycle activation set point
- Activation of 120s pump cycle

Cycle intervention time for pump start up

```
    Setback Mode
Enabling:         No

Watch Setpoint  °C 12.0

Cyclical Start of
    Pump (s120):  No
 Cycle Time    min 30
```

HOUR COUNTER SETTINGS

This part of the programme is used to determine service intervals for the unit's components: when the device in question exceeds the hours of operation threshold indicated, the microprocessor reports the service request by

activating the alarm condition and displaying the ⚒ icon on the main screen.
The screens give the number of hours accumulated and operation thresholds. To edit limits and/or reset the hour-meter, the subroutine in programming mode must be called up.

For each component, it is possible to:

- read the accumulated number of hours of duty;
- set operation thresholds - **setting the threshold to 0 inhibits the SERVICE request warning**;
- reset the hour-meter (RESET = "**OK**"), e.g. once the component has been serviced and/or replaced.

```
Compressor 1:
 Working Hours    00000
 Threshold      h 00000
 Reset            --
```

Parameters can only be edited within the permissible setting ranges.

SERIAL COMMUNICATION

A supervision system exchanges data via a serial cable with the unit's master card, which is controlled and monitored from a remote location. An optional *Serial Card* is available for this purpose, used to enable opto-isolated interfacing with an RS-485 network for data transfer (see manuals for Supervision Systems).

This screen allows the basic parameters to be set (first three lines) for switching via supervision, i.e.

1. serial address of the unit connected to the serial supervision network (must match serial address set in supervision programme);
2. data transfer rate (Baudrate): 1200, 2400, 4800, 9600 and 19200 for RS-485.
3. protocol type (standard or Modbus).

```
    Serial Port 1
   RS485 Connection
  To Supervision/BMS
Serial Addr.:   001
Baudrate:      19200
Protocol:      Standard
```

MODBUS COMMUNICATION STATE

This screen monitors the operating state of the MODBUS connection between the Upco3 control card and the compressor.

```
ModBus Master
Result: Errore ModBus
Trigger (set)        No
Flag UART:           0
Gen. Command Trigger
End Read Alarm       No
Trigger Status       No
Comunic.Attivata     No
```

↑ / ↓

```
Unit 1   Sublist 1
    Read Flag:       0
    Trigger:         0
    MB res.code:    00
Unit 1   Sublist 2
    Read Flag:       0
    Trigger:         0
    MB res.code:    00
```

↑ / ↓

```
Unit 1   Sublist 3
    Read Flag:       0
    Trigger:         0
    MB res.code:    00
```

↑ / ↓

```
ModBus Counters
Mess.Totali:   n  00000
Err.Totali:    n  00000
Counter Reset:      No
```

↑ / ↓

```
ModBus Counters
U1 List1 Err. n:  00000
U1 List2 Err. n:  00000
U1 List3 Err. n:  00000

U2 List1 Err. n:  00000
U2 List2 Err. n:  00000
U2 List3 Err. n:  00000
```

↑ / ↓
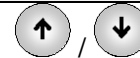
```
ModBus Counters
U3 List1 Err. n:  00000
U3 List2 Err. n:  00000
U3 List3 Err. n:  00000

U4 List1 Err. n:  00000
U4 List2 Err. n:  00000
U4 List3 Err. n:  00000
```

↑ / ↓

```
ModBus Master
Result: Errore Modbus
GLB Comm. En.:       No
MDB Comm.Delay  s   120
Msg ok: No    3 ok: No
Comm. Reset          No
Cycle1  No    Cycle2 No
Soft Version      00000
```

CLOCK - CALENDAR

If the microprocessor features the optional clock card, the STATUS Screen displays the date, current time and day of the week.
The following actions can also be associated with a particular time:
● unit starting and stopping based on a timer programme;
● logging of alarm events.

Current time and date are set and time bands programmed by means of the following screens:

CLOCK-CALENDAR SETUP
This screen allows the following to be set:
• time of day (hours, minutes);
• date (day, month, year);
• the day of the week

SETTING TIME BANDS
Using this device, you can set times (time bands) for automatic unit starting and stopping, achieving:
• up to 3 on-off cycles a day, each with a start and stop time;
• a weekly cycle with different daily cycles split into weekdays **N** (default setting from Monday to Friday), Saturdays **P** (default setting for Saturday, though it can be used for half-days etc.), and Sundays and holidays **F** (default setting for Sunday).

CLASSIFICATION OF DAYS OF THE WEEK
This is automatic, though it can be edited starting from Screen;
The current day is identified - for the purpose of time band programming - as:
- **N**: normal or week day;
- **P**: Saturday or half-day;
- **F**: Sunday or holiday;

If you need to change this classification, press the ↵ key to call up the

sub-mask, or press the ↓ key.

Entering **Yes** activates the time band device.
By using Screens you can programme time cycles - featuring a start time (ON) and a stop time (OFF) - for normal days (**N**), Saturdays and pre-holidays (**P**), and Sundays and holidays (**H**).
When the unit is not running, the following icons appear on the display 🛑 🕓 .
If you enter 00:00 in both the ON and OFF fields, the cycle is disregarded.

```
Clock/Calendar Set

Hours/Minuts      12:00
DD/MM/YY       01/01/07
Weekday             Mo
```

↑ / ↓

```
Unit On-Off Cycle
(Max 3 On-Off Daily
      Cycles)
Enable:            No
```

↑ / ↓

```
Programmed Cycle:

⊟ To Change Cycle

⬇ To Change Program
```

↑ / ↓

```
Regulard Day
On: 00:00    Off 00:00
On: 00:00    Off 00:00
On: 00:00    Off 00:00
```

↑ / ↓

```
Saturday/Pre-Holiday
On: 00:00    Off 00:00
On: 00:00    Off 00:00
On: 00:00    Off 00:00
```

↑ / ↓

```
Sunday and Holiday
On: 00:00    Off 00:00
On: 00:00    Off 00:00
On: 00:00    Off 00:00
```

WEEKDAY PROGRAMME OVERRIDE

Unless otherwise programmed, days are classified in the microprocessor's memory as follows:

- Weekdays (**N**) all days during the week from Monday to Friday;
- Saturdays or pre-holidays (**P**);

Sundays and holidays (**H**) for Sunday

The mask shown here (called up from the Screen "PROGRAMMED

CYCLE" by pressing the ↵) allows the classification of the coming seven days, which will appear on the first line, today included to be changed.

The stored classification (**N** or **P** or **H**) appears under each day and can be

edited by pressing key ↑ or ↓ until you reach the desired

classification. Pressing the ↵ key then confirms the classification entered and you are moved on to the next day. If classification differs from the standard setting (override), the **>** symbol automatically appears in front of it. Time bands adopted when overriding will be the same as the ones for days with that classification.

The override condition is cancelled automatically once the day for which it was activated is over.

To exit screens regarding the clock-calendar and time bands, press the **ESC** key.

```
  Programmed Cycle:

↵ To Change Cycle

⬇ To Change Program
```

```
PROGRAM.   LU 01/01/08
 MO TU WE TH FR SA SU
  N  N  N  N  N  P  H
```
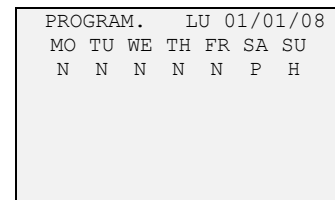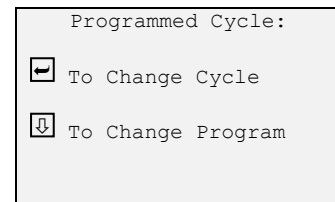
ADDRESSING ALARMS

Via the screens in this section, you can assign a "type" to each of the alarms listed, i.e.:
- **type A**: alarm is featured on the relay of digital output 8;
- **type AR**: alarm is featured on the relay of digital output 8 and causes the standby unit to take over;
- **type B**: alarm is featured on the relay of digital output 13;
- **type BR**: alarm is featured on the relay of digital output 13 and causes the standby unit to take over.

CONTACT STATE
This mask allows the state of the 2 alarm output contacts shown in the list to be set.

```
    ALARM OUTPUTS
     CONTACT MODE
Alarm A Output:    N.C.
Alarm B Output:    N.C.


Legenda:
N.O.: Normally Open
N.C.: Normally Close
```

ADDRESSING ALARMS
This mask shows the type of alarm attributed to each output contact.

```
   ALARM ADDRESSING

Legenda:
--=no action
A=Relay 8 Activation
AR=Relay 8 + Rotation
B=Relay 13 Activation
BR=Realy 13 + Rotation
```

ALARM LIST
This mask and the following masks show the alarm list with the associated output contact.

```
   ALARM ADDRESSING
Evap.Water Flow      AR
Cond.Water Flow      AR
Low Pressure         AR
High Pressure        AR
AP/Aux. Voltage      AR
DC-Bus Low Voltage   AR
Compr.Overcurrent    AR
```

LAN PARAMETERS

The screens concerns parameters for **automatic rotation between running units and standby units**. Via said screen, the following can be determined:

- the number of units connected to the LAN
- activation of automatic exchange
- automatic cycle time between one inversion and the next ('CYCLE TIME')
  - if it has the value zero (" 0 "), the controller runs a test, rotating units at two-minute intervals.
- the number of units on standby ('Num. UNIT STAND-BY').

```
  UNIT INTERCONNECTION
LAN: Unit No.    no Lan
```

Automatic rotation can be executed:
- on a time basis (based on the above-mentioned cycle-time);
- after a level-2 alarm, i.e. after an alarm for which AR or BR has been set in the alarm addressing screens (see relevant section).

The screen, which is only displayed if the local area network is configured, allows the unit operation to be managed with the **mean temperature value** measured in the room or with the "**local**" value measured just by the sensor inside the unit:

```
    LAN SETTINGS
 Usage of Water T.Value
Mode: Local value
```

- Mode: Local Unit control is based on temperature and humidity values detected by sensors on the actual air-conditioner.
- Mode: Mean Unit control is based on mean temperature and humidity values detected by sensors on active units connected in the local area network.If the difference between the mean value and its own sensor reading exceeds the "MEAN/LOC.DIFF." value (default setting 2°C), the controller automatically switches from "MEAN" mode to "LOCAL" mode.

SERVICE MENU

From the main screen press the (Prg) key, then use the (↑) or (↓) keys

to select "Service menu" and then press the (↵) key to confirm.

- To access the Parameters menu, it is necessary to have the *Service password*.

The password can be found inside a closed envelope attached to this manual and addressed to the maintenance manager.

Press the (↑) or (↓) keys to enter the password and then press the (↵) key to confirm.

Press the (↑) or (↓) keys to select the desired item and then press the (↵) key to confirm.

```
SETTING MENU

_SERVICE MENU
```

```
🔑      00000
```

```
Hardware Settings
Software Settings
Sensor Calibration
Memory Operations
Manual Control
```
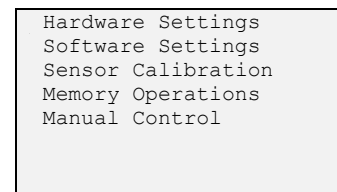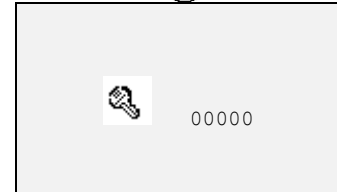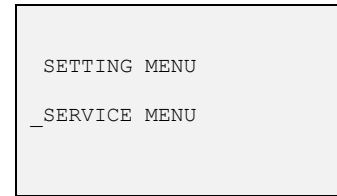
HARDWARE SETTINGS

The unit control programme needs to be "configured", i.e. adapted to the unit it is installed in. During this stage, all of the unit elements which the microprocessor will be required to control must be defined. This operation is generally only required when the controller is installed actually on the unit, in which case it is carried out at the factory during final testing. Nonetheless, configuration may be required as a result of later changes made to the unit.

Consequently, screens concerning configuration appear in English and are intended for use **by service engineers only**.

READING RANGE REGULATION
This screen allows the reading range of the high pressure transducer to be set.

```
Common Discharge
Pressure Sensor
Range Begin.  kPa  0000
Range Ending  kPa  3447
Read value:   kPa  0000
```

BUZZER ACTIVATION TIME
This screen activates the maximum activation time of the buzzer when an alarm is to be set

```
    Alarm Buzzer Conf.
Activat. Time  min  000
   (0=never; 99= ever)
```

START-UP / SHUT-DOWN MODE
This mask allows the start-up/shut-down of the unit to be set via a digital contact or a serial line.
It also allows the following to be set:
  ● Water shut off valve
  ● Control mode via stop limit or timing
  ● Alarm activation delay

```
      ON/OFF MODE:
Via Input Contact      N
Via Serial Port        N

Isolating Valve        N
CtrlMode:   LimitSwitch
Alarm Delay      s 100
```

UNIT CONFIGURATION
This mask allows the number of compressors installed within the unit to be set

```
   Unit Configuration

  No.of Compressors:  4
```

SOFTWARE SETTINGS

COOLING SETPOINT LIMITS
This screen allows the minimum and maximum setpoint limits to be set.

```
Cool.SetPoint Limits
Min Value      °C 00.0
Max Value      °c 00.0
```

↑ / ↓

COOLING P.I.D. REGULATION
This screen allows to be set:
- proportional band
- integral time
- transient integral time
- derivative time
- timed On/OFF

```
  Cooling PID Regul.
Prop.Band      °C 00.0
Int.Time        s   00
Trans.Int.Time  s  000
Der.Time        s   00
Timed On      min   00
Timed Off     min   00
```

↑ / ↓

EXPANSION VALVE
This screen allows to be set:
- level opening setpoint
- proportional band
- integral time
- derivative time
- pre-opening %
- transient time
- minimum and maximum opening %
- K factory

```
    Expansion Valve
Opening        %  00.0
Lev.Set Point  %  0000
Prop.Band      %  0000
Integral Time  s  0000
Deriv. Time    s  0000
```

↑ / ↓

```
    Expansion Valve
Preopening      %   00
Trans Time      s  000
Min. Opening    %   00
Max. Opening    %   00
K factor  00   En. Y
EXV reg ramp       000
EXV reg.R.damp.    000
```

↑ / ↓

ANTIFREEZE SETPOINT
This screen allows two antifreeze setpoints to be set:
- Alarm Value: antifreeze alarm activation setpoint – signal only;
- Trip Value: antifreeze alarm activation setpoint to stop the compressors.

```
  Antifreeze SetPoint
Alarm Value    °C 00.0
   (Signall.only)
Trip Value     °C 00.0
  (Stop Compressors)
```

↑ / ↓
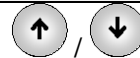
DELAY SETTINGS
This screen allows the activation delay to be set based on the alarm given by the water flow meter and the low pressure alarm:
- Power ON Delay: length of delay before the unit restarts after a power cut
- FS Start Delay: activation delay alarm for the start-up of the unit;
- FS Run Delay: activation delay alarm during normal operation;
- Start. Transient: length of time between the unit switching on and control starting
- LowP-Start Delay: activation delay alarm for low pressure during start up of the unit;
- Temp. Al.Delay: delay - from when the unit starts - before environmental condition alarms are reported

```
    Delay Settings
Power ON Delay  s    0
FS Start Delay  s   00
FS Run Delay    s   00
Start.Transient s   00
LowP-Stat Delay s  000
Temp.Al.Delay  min  00
```

SENSOR CALIBRATION

SENSOR ADJUSTMENT
This screen and the following screens allow the temperature sensors which can be found in the unit to be adjusted ("read value"), when there is a difference between the value measured by the sensor and the actual temperature, measured by a precision instrument.

```
  Water Inlet T.Sensor

Read Value      °C 00.0
Adjustment      °C 00.0
```

↑ / ↓

```
 Water Outlet T.Sensor

Read Value      °C 00.0
Adjustment      °C 00.0
```

↑ / ↓

```
 Condenser Cool. Water
    Inlet T.Sensor
Read Value      °C 00.0
Adjustment      °C 00.0
```

↑ / ↓

```
 Condenser Cool. Water
   Outlet T.Sensor
Read Value      °C 00.0
Adjustment      °C 00.0
```

↑ / ↓

```
   Condenser Outlet
   Liquid T.Sensor
Read Value      °C 00.0
Adjustment      °C 00.0
```

MEMORY OPERATIONS

This screen allows the data contained in the microprocessor's EEPROM to be altered.

PROGRAMME SETUP. This operation is performed automatically if the programme is replaced. It may prove useful if you find data (setpoints, configurations etc.) are "contaminated" as it allows you to **clear the memory** (including data concerning the unit's HARDWARE configuration): **all setpoints are automatically restored** to their respective factory settings (see section entitled "DEFAULT VALUES").
Following this operation, the controller must be reconfigured and you will need to adjust any setpoints that are to have a value other than the default value.
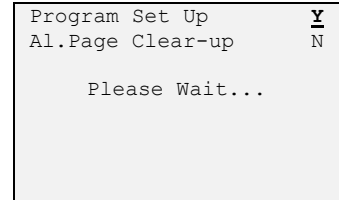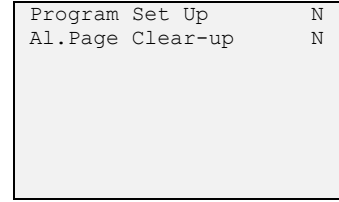
AL. PAGE CLEAR-UP. By clearing the alarm log, you erase the all alarm events stored in the memory.

```
Program Set Up        N
Al.Page Clear-up      N
```

```
Program Set Up        Y
Al.Page Clear-up      N

    Please Wait...
```

↑ / ↓

SETTING THE ACCESS PASSWORD
This screen allows the access password to be set:
- at the **Settings** ("SETTINGS" password);
- at the **Service** ("CONFIGURATIONS" password or "SERVICE" password).

Since access to the HARDWARE menu is denied if the correct password is not entered, *it is advisable to make a note of the new password* before changing the old one.

```
 Set-Up Of Passwords
  For Accessing To:
 - Settings   xxxxx
 - Service    xxxxx
```
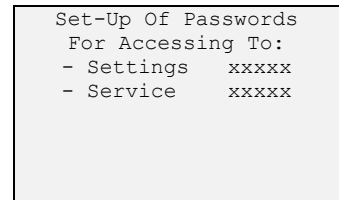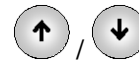
MANUAL CONTROL

During regular operation, all components the unit is fitted with are managed automatically. Nonetheless, to make maintenance and adjusting work easier, or if there is an emergency, individual components can be switched on using the **manual override feature**, regardless of the control process.

The safety devices are also activated during manual operation

AUTOMATIC / MANUAL OPERATING MODE
This screen allows the manual activation of the compressor 1/2/3/4 by modulating the demand in percentages.
It also manually activates the electronic expansion valve and the opening percentage.

```
   Manual Override
Compr.1 Start-Up  AUTO
Cool.Demand %:     0.0
Read Value  %:     0.0

Liquid level 1    AUTO
EXV Position  %:   0.0
Read Position %:   0.0
```
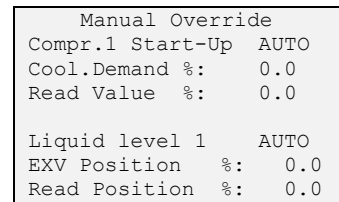
When you use manual override to start one or more components, field D on the STATUS screen the 🖐 icon.

```
 12:00  01/01/07
OUT°C    7.0
IN °C  12.0
C1:
✿        🖐
```
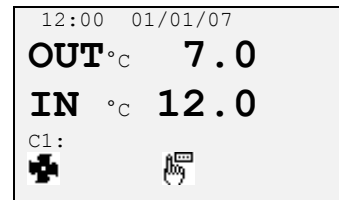
ACTIVE ALARMS

Pressing the ⌓ key silences the alarm buzzer and the description of the alarm is shown on the display.

If the cause of the alarm has been eliminated, the last alarm message can be reset **by holding down the** ⌓ **key for a few seconds.** If the cause of the alarm has not been eliminated, the audible buzzer warning is switched on again.

ALARM LOG SEQUENCE
To be able to reconstruct the sequence in which alarms occurred, the microprocessor keeps the last 100 events in its memory. All of the alarms which are memorized can be read in order by entering the HISTORICAL ALARMS" menu (see paragraph **ACCESS TO THE READINGS MENU**).

Events where the hour-meter threshold is exceeded ("**SERV.**") are not logged and hence not displayed.
In the sequence, the first event displayed is actually the last alarm encountered.
In control circuits featuring a clock card (optional extra), the data and time the alarm occurred are associated with each alarm event logged.

ESCRIPTION OF ALARM EVENTS

All possible alarm messages that can be displayed on the user terminal are given below.
General information for solving the problem is given on the last two lines of the display for *alarms that are still active only* (i.e. not for alarms that have been logged).

<table>
<tr><td>This alarm is activated when the water flow meter contact which is placed on the evaporator is activated. Check the volume of water in the circuit and for any bubbles which may be trapped inside.</td><td>

⚠
EVAPORATOR:
Loss of Water Flow
Check hydraulic circ.
</td></tr>
<tr><td>This alarm is activated when the water flow meter contact which is placed on the condenser is activated. Check the volume of water in the circuit and for any bubbles which may be trapped inside.</td><td>

⚠
CONDENSER:
Loss of Water Flow
Check hydraulic circ.
</td></tr>
<tr><td>This alarm is activated by the reading from the low pressure transducer of the compressor 1/2/3/4.
Check the refrigerant circuit, the refrigerant load and any electrical connections.</td><td>

⚠
Compr.1 Low Pressure
Check Fridge Circuit
/Refrigerant Charge
Codes Motor   Bearings
Err.: 0x0000   0x0000
All.: 0x0000   0x0000
</td></tr>
<tr><td>This alarm is activated by the reading from the high pressure transducer of the compressor 1/2/3/4.
Check the refrigerant circuit, the refrigerant load and any electrical connections or the condensing unit.</td><td>

⚠
Compr.1 High Pressure
Check Fridge Circuit
and/or Condenser
Codes Motor   Bearings
Err.: 0x0000   0x0000
All.: 0x0000   0x0000
</td></tr>
</table>

This alarm is activated by the temperature sensor on the compressor inverter 1/2/3/4
Check the refrigerant flow.

```
          ⚠
C.1 Inverter High Temp
Check Compress.Cooling
Refrig.Flow/Subcooling
Codes  Motor    Bearings
Err.:  0x0000    0x0000
All.:  0x0000    0x0000
```

This alarm is activated by the temperature sensor on the compressor discharge 1/2/3/4
Check the refrigerant load.

```
          ⚠
     Compressor 1
 High Discharge Temp.
  Check Refrig.Charge
Codes  Motor    Bearings
Err.:  0x0000    0x0000
All.:  0x0000    0x0000
```

This alarm is activated by an excessive electrical overload due to low pressure, excessive amounts of liquid which exceed operating limits compressor 1/2/3/4.
Check the power supply and the refrigerant liquid

```
          ⚠
  Compr.1 Overcurrent
  Check Power Supply/
   Superheat too Low
Codes  Motor    Bearings
Err.:  0x0000    0x0000
All.:  0x0000    0x0000
```

This alarm is activated by the temperature sensor of the compressor rotor 1/2/3/4
Check the refrigerant flow.

```
          ⚠
 C.1 High Cavity Temp.
Check Compress.Cooling
Refrig.Flow/Subcooling
Codes  Motor    Bearings
Err.:  0x0000    0x0000
All.:  0x0000    0x0000
```

This alarm is activated when the operating limits or the high condensation temperature are exceeded compressor 1/2/3/4.
Check the evaporator and/or the condenser.

```
          ⚠
 C.1 Compression Ratio
      too High
 Check Condens./Evapor.
Codes  Motor    Bearings
Err.:  0x0000    0x0000
All.:  0x0000    0x0000
```

This alarm is activated when the operating limits are exceeded or there is a rapid change in load compressor 1/2/3/4.

```
          ⚠
  C.1 Rotor Bearing
 Compensation Failure

Codes  Motor    Bearings
Err.:  0x0000    0x0000
All.:  0x0000    0x0000
```

This alarm is activated by the temperature sensor on the auto-regulated rectifier compressor 1/2/3/4.
Check the refrigerant flow.

```
          ⚠
 Compr.1 High SCR Temp.
 Check Compress.Cooling
 Refrig.Flow/Subcooling
Codes  Motor    Bearings
Err.:  0x0000    0x0000
All.:  0x0000    0x0000
```

This alarm is activated when the operating hours of compressor 1/2/3/4 are exceeded. (see paragraph *HOUR COUNTER PARAMETERS*).

```
          ⚠

  Compressor 1 has
 Exceeded 00000 Hours
     of Working
```

This alarm is activated when there is a lack of communication between the compressor 1/2/3/4 and the UpCO3m control board via the RS485 serial line.
Check the electrical serial line connections.
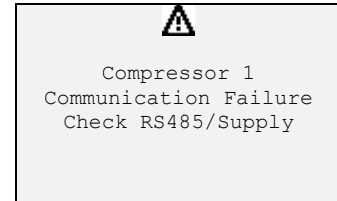
```
           ⚠
      Compressor 1
Communication Failure
  Check RS485/Supply
```

This alarm is activated by the cold outlet water temperature sensor when the minimum antifreeze value set is exceeded.
Signal only. (see paragraph *Software Settings* screen *Antifreeze Setpoint*)
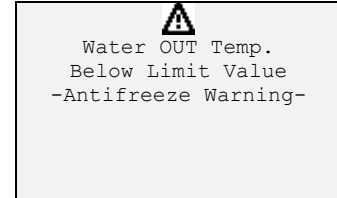
```
           ⚠
    Water OUT Temp.
   Below Limit Value
 -Antifreeze Warning-
```

This alarm is activated by the cold outlet water temperature sensor when the minimum antifreeze value set is exceeded.
Stops the compressor. (see paragraph *Software Settings* screen *Antifreeze Setpoint*)

```
           ⚠
    Water OUT Temp.
   Below Limit Value
  -Antifreeze Alarm-
```
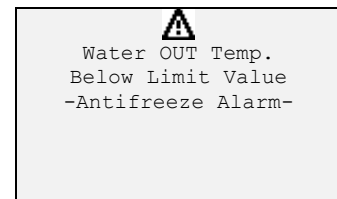
This alarm is activated when the return cold water temperature sensor malfunctions.
Check the state of the sensor and/or electrical connections.

```
           ⚠
      Evaporator
Water IN Temp. Sensor
 Failed/Disconnected:
 Check Sensor/Connect
```
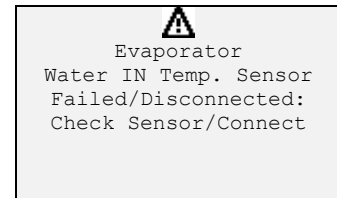
This alarm is activated when the output cold water temperature sensor malfunctions.
Check the state of the sensor and/or electrical connections.

```
           ⚠
      Evaporator
Water OUT Temp. Sensor
 Failed/Disconnected:
 Check Sensor/Connect
```
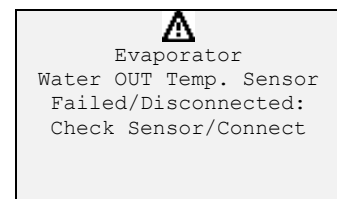
This alarm is activated when the return condenser temperature sensor malfunctions.
Check the state of the sensor and/or electrical connections.

```
           ⚠
      CONDENSER
Water IN Temp. Sensor
 Failed/Disconnected:
 Check Sensor/Connect
```
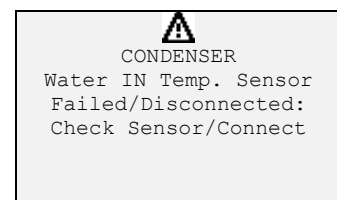
This alarm is activated when the condenser pression sensor (Liquid) of the compressor malfunctions.
Check the state of the sensor and/or electrical connections

```
           ⚠
 Subcooling Pressure
      Transducer
 Failed/Disconnected:
 Check Sensor/Connect
```
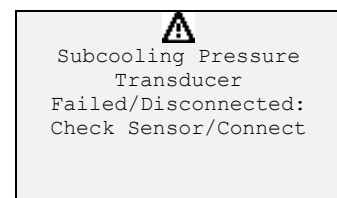
This alarm is activated when the access password is entered wrongly three times.

Carry out the following procedure to reset the alarm:

- Press the `Prg` key and select the Service menu and press the ↵ key to confirm;

- Insert the *Service Password* and press the ↵ key to confirm;

- Press the 🔔 key to see the alarm;

- Press the 🔔 key again for 2 seconds until the red light switches off.

```
      ⚠
 Attempt to Access
 With Wrong Password
 (Min. 3 Occurences)
```

This alarm is activated when there is a lack of power supply to the inverter compressor 1/2/3/4.

```
      ⚠
 C.1 DC-BUS Voltage
  Below Acceptable
   Minimum Value
```

This alarm is activated when the output condenser water temperature sensor malfunctions.
Check the state of the sensor and/or electrical connections

```
      ⚠
    CONDENSER
 Water OUT Temp. Sensor
 Failed/Disconnected:
 Check Sensor/Connect
```

This alarm is activated when the temperature sensor of the sub cooling malfunctions.
Check the state of the sensor and/or electrical connections

```
      ⚠
 Subcooling Temp.Sensor
  Failed/Disconnected:
  Check Sensor/Connect
```

This alarm is activated when the high pressure inverter opens compressor 1/2/3/4.
Check the electrical connections, refrigerant load or a lack of 230V power supply for the auxiliaries.

```
      ⚠
 AP1 High Pressure-stat
   Trip or Loss of
 230V Ausiliary Voltage
```

This alarm is activated when the low pressure switch inverter opens compressor 1/2/3/4.
Check the electrical connections, the refrigerant load and the refrigerant circuit.

```
      ⚠
 BP1 Low Pressure-stat
       Trip
 Check Fridge Circuit
 /Refrigerant Charge
```

This alarm is activated when the time set for the closure of the contact at the limit stop of the water shut off valve is exceeded.

```
      ⚠
 Isolating Valve Not
 (Fully) Open: Check
  Valve/LimitSwitch
```
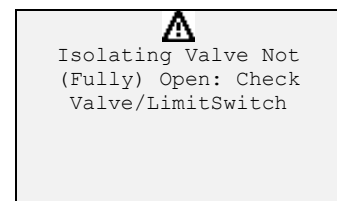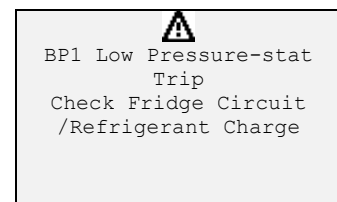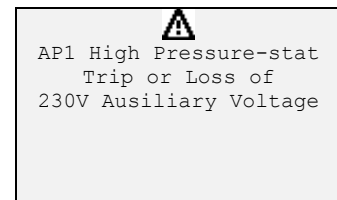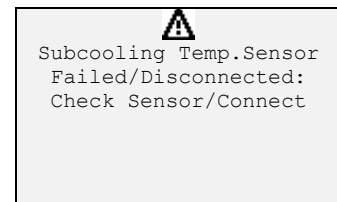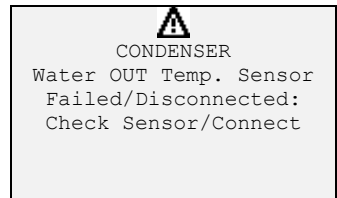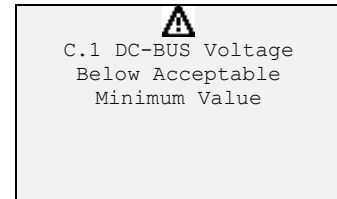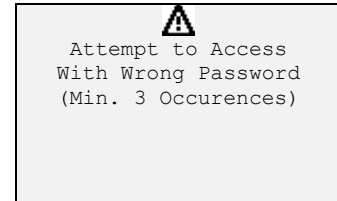
This alarm is activated when there is an interruption in the LAN network.

⚠

LAN Interrupted

Units not connected:
1 2 3 4 5 6 7 8 9 10
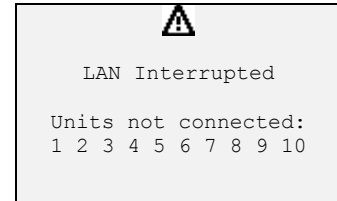
This alarm is activated when the reading of the inlet cold water temperature sensor exceeds the minimum value set.
Signal only.

⚠

Water Inlet Temp.
Below Min.Threshold
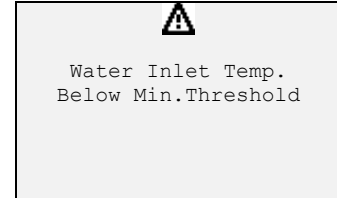
This alarm is activated when the reading of the inlet cold water temperature exceeds the maximum value set.
Signal only.

⚠

Water Inlet Temp.
Over Max.Threshold
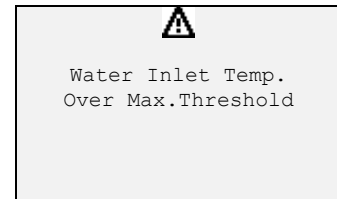
This alarm is activated when the level 1 evaporator refrigerant probe malfunctions.
Check the status of the probe and/or the electrical connections.

⚠

Evaporator Level 1
Transducer
Failed/Disconnected:
Check Sensor/Connect
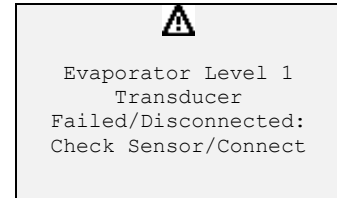
The alarm is activated when the level 2 evaporator refrigerant probe malfunctions.
Check the status of the probe and/or the electrical connections.

⚠

Evaporator Level 2
Transducer
Failed/Disconnected:
Check Sensor/Connect
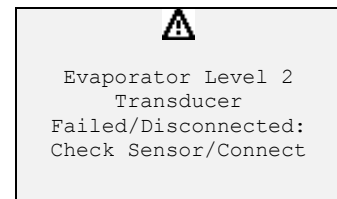
DEFAULT VALUES

CONFIGURATION	
Parameters	**Def.**
Modes	
Set back mode	N
Starting cyclical pump	N
Remote On/Off	N
Remote serial On/Off	N
Valve Interception	N
K Factory	Yes
Indirizzamento allarmi	
Evap. Water Flow	AR
Cond. Water Flow	AR
Low pressure	AR
High pressure	AR
AP/Aux. Voltage	AR
DC-Bus Low Voltage	AR
Compressor Overcurrent	AR
High Compressor Temp.	AR
High Compressor Ratio	AR
Magnetic Bearing	AR
Liquid Press. Sensor	AR
Liquid Temp. Sensor	A
Evap. Water Out Sensor	AR
Evap. Water In Sensor	B
Water cond. Sensor	B
Low Evap. Water Out Temp.	B
Evapor. Antifreeze	AR
High Ev. Water In Temp.	B
Low Ev. Water In Temp.	B
Eeprom error	B
Wrong Password	B
Compressor Hourmeter	B
Compressor TX/RX Data	A
Serial Comunication	
Address serial	1
Serial speed	19200
Protocol	standard

NUMERICAL PARAMETERS				
Settings values	**Flag**	**Def**	**Min**	**Max**
Set-points				
Set point water OUT STD	°C	7	6	13
Set point water OUT OPZ	°C	10	6	13
Valore minimo setpoint estivo	°C	6	-12	6
Valore massimo setpoint estivo	°C	13	8	22
Temp. Min. water IN	°C	5	-15.0	25.0
Temp. Max. water IN	°C	18	-15.0	35.0
Set-point set back mode	°C	12	6.0	13.0
Cooling PID Regulation				
Prop.Band	°C	35.0	5.0	99.9
Integral Time	s	30	0	99
Transitory Integral time	s	120	0	999
Derivative time	s	3	0	99
Timed On	min	5	1	20
Timed Off	min	3	1	20
Expansion Valve				
Level SetPoint	%	35	5	75
Prop. Band	%	70	5	99
Integral time	s	50	0	999
Derivative time	s	5	0	99
Preopening	%	45	0	100
Transitory time	s	240	1	999
Min. opening	%	20	5	50
Max. opening	%	75	30	99
K factor		40	0	300
Antifreeze Setpoint				
Alarm value (solo segnalazione)	°C	3.0	- 18.0	6.0
Trip value (stop compressor)	°C	1.0	- 20.0	6.0
Delay Settings				
Power On delay	s	0	0	300
FS Start delay	s	10	5	20
FS Run delay	s	3	0	10
Starting transient	s	20	15	200
LowP-Stat dealy	s	0	0	300
Temp.Al.Delay	min	15	0	99
Common Discharge Pressure Sensor				
Range Begin	kPa	0	-50	1000
Range Ending	kPa	3447	3000	4500
Alarm Buzzer Configuration				
Activaction time	min	5	0	99
Unit Configuration				
Compressor numbers	n°	1	1	4

PART II:
LOCAL NETWORK

GENERAL INFORMATION AND DEFINITIONS

1. Several air conditioners installed in the same room or several liquid chillers connected in parallel in the same system can be managed by connecting them to a local network.
2. The number of connected units depends on the programme managing the network, stored in the Flash Eprom memory.
3. Units in a network can be connected at a max. **500 metres**.
4. All the units connected to the network must have the **same programme version** on the Flash Memory on the board.
5. A terminal can be configured as "private" or "shared".
   ➢ a **private terminal** shows the status of the single unit connected to it by a telephone cable;
   ➢ a **shared terminal** shows the status of all the units connected to the network.
6. Each board can "talk" to 3 terminals at the most; there are usually no more than two in normal operating conditions: one fitted in the unit and one possibly in a remote location.
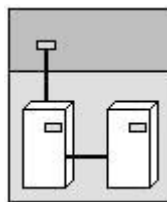
Fig. 1.

Alarm signals always have priority over the terminal, even if the parameters of another unit are being viewed when the alarm is triggered.
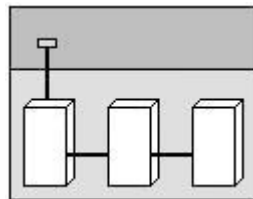
Fig. 2.

7. To communicate on the local network, the units must be "configured" so that each of them can convey the information necessary to operate properly.
   To achieve this, the separate units must first be numbered progressively (1,2,3,...10) and then the various terminals and LAN boards correctly addressed to them. The electrical connections must also be made, step by step, as described below.

MOST COMMON pLAN NETWORK CONFIGURATIONS

1. Up to 10 units connected to the network with a single terminal.
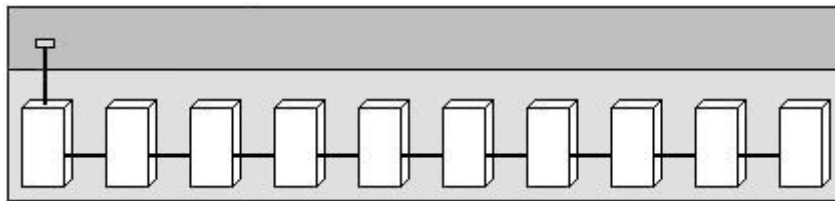
Fig. 3.

In this configuration, should power fail in the first unit, the terminal would close down. It would therefore not be possible to read any information regarding the units in the network. However, the other units in the network would continue to operate normally.

2. Up to 10 units each with its own terminal.
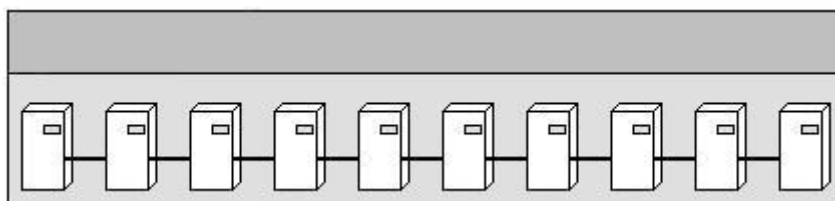
Fig. 4.

3. Up to 10 units with a single shared remote terminal.
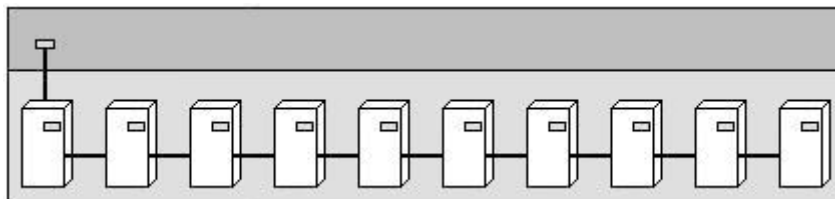
Fig. 5.

pLAN CONNECTION BETWEEN UpCO3 BOARDS

In figure 6, a simple parallel connection is shown for more than one UpCO3 boards of the pLAN network, using a shielded cable with two twisted pairs and an internal screen. The cable is connected to all of the boards through the J11 terminal respecting the indicated polarity.
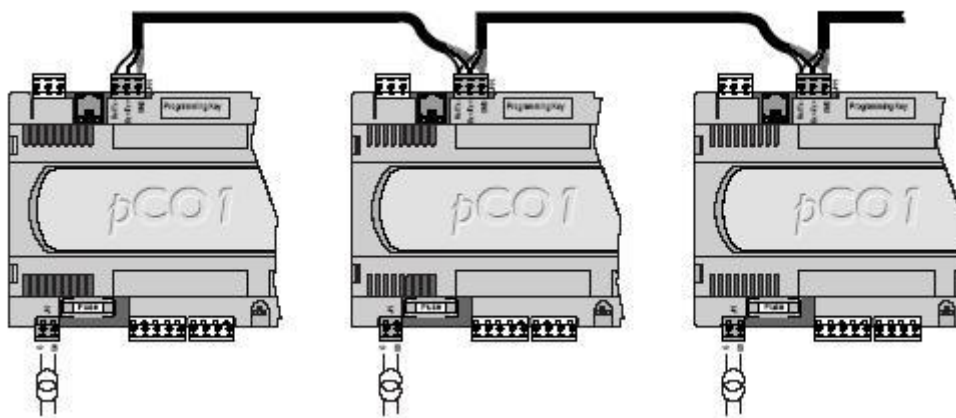
Fig. 6

WARNING: Network polarity must be respected: the RX/TX+ of one board must be connected to the RX/TX+ of the other boards; the same applies to RX/TX- and the GND.

Board Terminal	Cable Connection
GND	First couple (both wires)
Rx+ / Tx+	Second couple
Rx- / Tx-	Second couple

The screen should be connected to the earth on the first unit at a metal point using a screw and a washer and the length of the screen should be as short as possible.
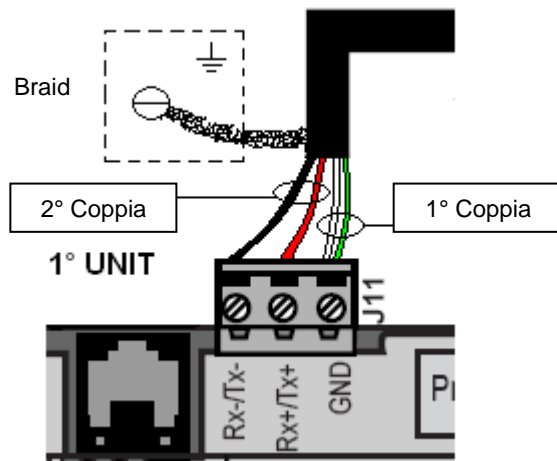
Fig. 7

REMOTE TERMINAL CONNECTIONS

IMPORTANT WARNINGS

Electrical connections must be carried out when the unit is switched off and unplugged.
The network can be configured differently depending on the maximum distance of the board and remote terminal connections; it may be necessary to use a 'T' shunt TCONN6J (as shown in Fig. 8) to connect the remote terminal to the main board.
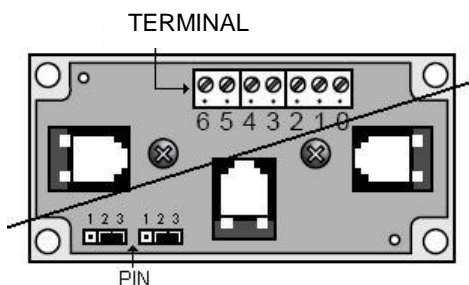
Fig. 8

Cable AWG24 3x2		
Terminal	**Cable operation**	**Connections**
0	Earth (screen)	shielded
1	+ VRL (≈ 30 Vcc)	1° twin A
2	Gnd	2° twin A
3	Rx/Tx-	3° twin A
4	Rx/Tx+	3° twin B
5	Gnd	2° twin B
6	+ VRL (≈ 30 Vcc)	1° twin B

If both of the pin-strip jumpers are between 2 and 3, the passage of the current is interrupted between the connectors which are separated by a dashed line. If power is needed to be supplied to all of the connectors, both of the jumpers must be between 1 and 2.

The 0 terminal is support terminal which can be used to connect the screen to the earth of the shielded cable; the "T" derivative may however be connected to a metallic part of the unit, already connected to the earth.

MAXIMUM DISTANCES BETWEEN THE TERMINAL AND THE BOARD

1. For local terminals the connection with the base board is already made with a 3 pair cable with a 6 way telephone connector. The length of this cable should not be longer than 3 metres.
2. The remote terminals should be connected to the base board with a telephone cable such as that which has been described in point 1 for a distance of up to 50 metres. For connections of up to 6 metres the cable can be supplied, on request, by UNIFLAIR SpA.

Cable length	Uniflair code
m 1,5	Meco 110X1A
m 3,0	Meco 130X1A
m 6,0	Meco 140X1A

3. For longer distances, up to a maximum of 200 metres, a screened cable must be used (a twisted pair cable with a screen AWG24, resistance < 80ohm/M). The cable can be a three or two twisted pair depending on if it has to transfer power to the terminals.

CABLE FOR LAN AND SUPERVISION CONNECTION

For connection to both LAN and supervision networks, it is advisable to use a cable which has the following specifications:

Multi-coupled cables with internal flexible conductors made from tin plated copper (AWG 22/7), insulated with polypropylene, singularly coupled, screened with aluminium/polyester tape + continuity wire in tin plated copper (AWG 24/7) connected on a common axis to reduce the diameter and protected by an external sheath in PVC.

Technical features

Article	Ø external om.	Conduct. resist. max.	Impedence	Capacity (pF/m)		Operating voltage	Operating temp.
	(mm)	(ohm/km)	(ohm)	C1	C2	(V)	(°C)
Y08723 2x2xAWG22/7	4,50	54,8	50	108	198	300	-10/+60
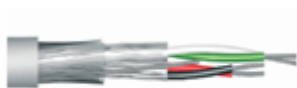
EXAMPLE OF A CONNECTION TO THE REMOTE TERMINAL FROM THE BOARD

In this configuration it is necessary to:

1. use the two TCONN6J 'T' joints: one installed on the unit and one near the remote terminal;
2. use a three pair screened cable for two, so that the remote terminal is also supplied by the board of unit 1 to which it is connected by the TCONN6J;
3. place the ferrite near the terminal in order to reduce the possibility of electromagnetic disturbances.
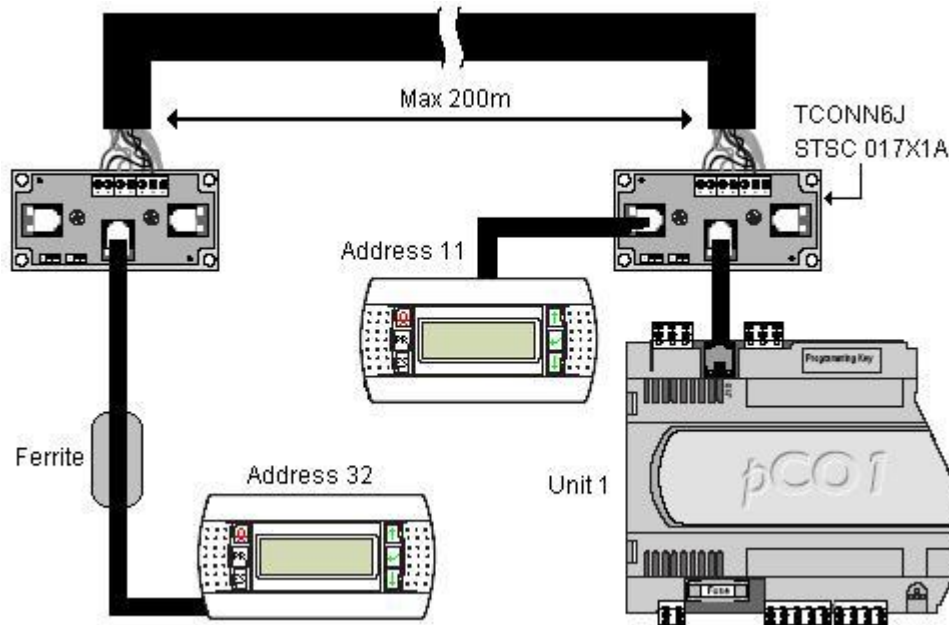
Fig.9

Ferrite Cod.: MEFL 030X1A

Fig. 10

CONFIGURATION OF THE TERMINAL AND THE UpCO3 BOARD

Before carrying out the configuration of the addresses, it is advised that the LAN connection between the boards should be checked as well as the connection with the remote or shared terminal and the electric supply connections of the unit.
It is possible to configure the address of the terminal only after having connected it to the power supply by using the RJ11 telephone connector. To enter in configuration mode press the **UP**, **ENTER** and **DOWN** keys at the same time for at least 5 seconds (these keys are present on all versions); the mask shown in Fig. 11 will be displayed with a flashing curser in the left hand top corner:

➢ To modify the address of the terminal (display address settings) press the **ENTER** key once and the curser will move to the address field (nn).
➢ By using the **UP** and **DOWN** keys, select the desired value and press **ENTER** to confirm. If the selected value is different from that previously memorized in the mask in fig.12 will appear and the new value will be memorized in the permanent memory of the display.

If 0 is entered as a value in the nn field, the terminal will communicate with the UpCO3 board using the "point-point" protocol (not pLAN) and the field XX will disappear since it has no meaning.

```
Display address
settings…………..: nn



I/O Board
address:xx
```
Fig. 11

```
Display address
changed
```
Fig. 12

UpCO3: assigning the list of private and shared terminals

If it is necessary at this point to modify the list of terminals associate to each single UpCO3 board, the following procedure should be carried out:
• enter in the configuration mode using the **UP ENTER** and **DOWN** keys as described in the previous paragraph;
• press the **ENTER** key until the curser is positioned in the XX field (I/O board address) Fig. 11;
• Use the **UP** and **DOWN** keys to choose the address of the desired UpCO3 board. The values which can be selected will be only those of the UpCO3 boards which are effectively on line. If the pLAN network is not working correctly, or if there are no UpCO3 boards connected, it will not be possible to modify the field and only "—" will be shown;
• Pressing the key again will display the sequence of masks as shown in Fig. 13;
• The **ENTER** key moves the cursor from one field to another and the **UP** and **DOWN** keys change the value of the chosen field.
The Pxx field: this shows the address of the selected board; in the example in fig. 13, P01 has been selected.
To exit from the configuration procedure and memorize the data, select the "OK ?" field and set it to YES and then press **ENTER** to confirm.
The fields in the "Adr" column represent the addresses of the terminals associated with the UpCO3 board, address 11 for the local terminal and 32 for the shared terminal, while the column Priv/Shared indicates the type of terminal.
Warning: the terminals of the PGD1 line cannot be configured as "Sp" (shared printer) as they do not have a printer output.
If the terminal remains inactive for more than 30 seconds (no key has been pressed) it exits automatically from the configuration procedure without memorizing any eventual changes.

Assigning the list of private and shared terminals

```
   Terminal Config
     Press ENTER
     to continue
```

```
P01: Adr
Priv/Shared
Trm1 11      Ph
Trm2 32      Sh
Trm3 None    --
OK?NO
```
Fig. 13

LAN ADDRESS OF THE UpCO3 BOARD

The address of the board is selected as illustrated below:
1. Disconnect the power supply to the UPCO3 board;
2. Disconnect the J11 terminal clamps (Rx/Tx-, Rx/Tx+, GND);
3. Connect a user terminal with the address = 0 to the board of unit 1; (see paragraph Configuration of the Terminal);
4. Reconnect the power supply and press the **ALARM** and **UP** keys at the same time until the following mask appears:

```
####################
    Self Testing
    Please Wait
####################
```
Fig. 14

and then:

```
pLAN address:1
up: increase
down: decrease
Enter: save & exit
```
Fig. 15

5. Press the **ENTER** key to accept the value of the address of the proposed board on the display or the **UP** and **DOWN** keys to modify it: set the "pLAN address: 1" on unit n. 1.
   (NOTE: if a key is not pressed within 15 seconds the mask will disappear from the display and it will be necessary to repeat the procedure described in point 1.).
6. Press **ENTER** to confirm;
7. Disconnect the power supply;
8. Repeat the procedure set out in points 1 to 6 on unit n. 2 and for the other units in the network;

```
pLAN address:2
up: increase
down: decrease
Enter: save & exit
```
Fig. 16

9. Reposition the J11 terminal clamps (Rx/Tx-, Rx/Tx+, GND) on the board.

Table for UpCO3 board addresses

Unit	Address
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10

Table for terminal and UpCO3 board addresses

Terminal Address	UpCO3 Board Address	Terminal Address	UpCO3 Board Address
11	1	16	6
12	2	17	7
13	3	18	8
14	4	19	9
15	5	20	10

Terminal Address	UpCO3 Board Address
32	All addresses

In Fig. 17 a network of 4 units each with its own local user terminal and a shared 32 remote user terminal displaying the information of unit 1.

To move from showing the display of unit 1 to that of unit 2, press the (ESC) + (↓) keys at the same time and in succession for the other units.
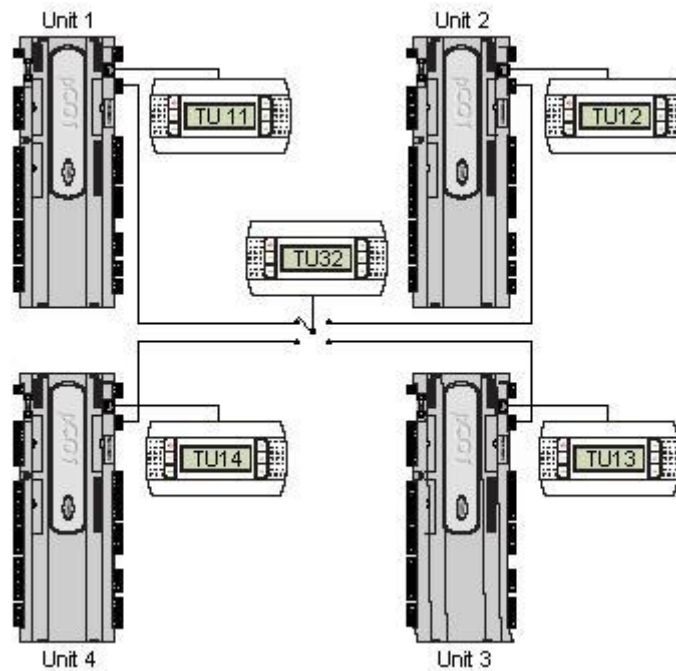

Fig. 17

LAN PARAMETER CONFIGURATION

After having carried out the configuration of the remote and shared user terminals, the operating parameters of the LAN network must be set. This must only be carried out on the unit with the address LAN1, because the information will automatically be passed on to the other units which are connected.
The parameters which need to be set are inside the connected units mask; some of the settings which need to be carried out are described below.

1. Set the number of units connected to the Lan network;
2. Activate the automatic exchange of the unit in stand-by;
3. Set the cycle time to carry out the rotation of the units; if the hour is set at 000, a simple test will be carried out putting the units in rotation with an interval of 2 minutes;
4. Set the number of units in stand-by (max 2):
5. If the last line is set to YES, it enables the stand-by unit to be switched on in the event of an alarm.

```
     LAN SETTINGS
LAN Units Num.:       2
Automatic Switch-Over
of Stand-by Unit:     S
Cycle Time:       h 168
No.of Std-By Units:   1
Stand-By Unit Starting
Only On Alarm:        N
```

NOTE: All of these settings are automatically passed on to the other units which are connected.

The mask shown here is shown only if the local network has been configured, allowing management of the unit operation with the average temperature value measured from the active units connected in the local network or with the local value measured by the sensor present inside the unit.

➢ *Method: Local Value*: control of the unit is entrusted to the temperature values read by the sensor present on the air conditioner;

➢ *Method: Average Value*: control of the unit is entrusted to the average temperature read by the sensor present on the active units connected in the local network. If the difference between the average value and the reading of the sensor itself is more than the "AVERAGE/LOC.DIFF." value, the control will automatically move from "AVERAGE" to "LOCAL".

```
     LAN SETTINGS
  Temp./Hum.Control
Mode:     Local Values
```

O

```
     LAN SETTINGS
  Temp./Hum.Control
Mode:      Meas Values
Mean/Local  Changeover
When Delta T.>  °C 2.0
```

NOTE: This setting is not passed on to the other units, so it needs to be set individually on each unit..

VISUALIZATION OF THE NETWORK FROM THE TERMINAL

From any terminal in the network, the mask << NetSTAT >> will appear when the **UP + ENTER + DOWN** keys are pressed at the same time for at least 10 seconds (see Fig. 18).
The NetSTAT mask indicates all of the UpCO3 boards with a LAN address and all of the terminals present in the network, including the remote shared terminal, and its relative addresses.


```
NetStat:   1 ▉▉▉----- 8
T:11       9 -▢▢▢--- 16
Enter     17 -------- 24
To Exit 25 -------▢ 32
```

Fig. 18
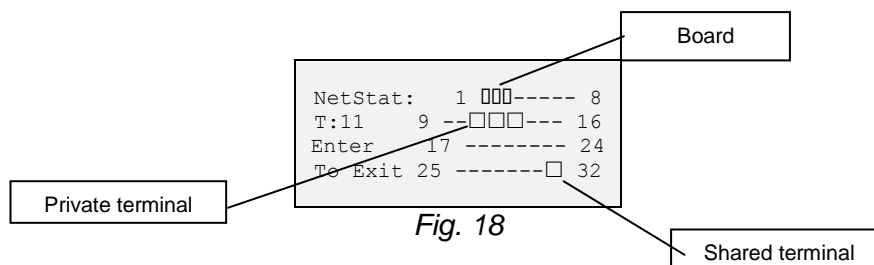
▉ = board

▢ = terminal

In the example the result is that the network is composed of 3 LAN boards with the address 1,2,3 and of 4 user terminals with the address 11,12,13 and 32.

NOTE:

NOTE:

UNIFLAIR™

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