

OMEGA POWER SYSTEM

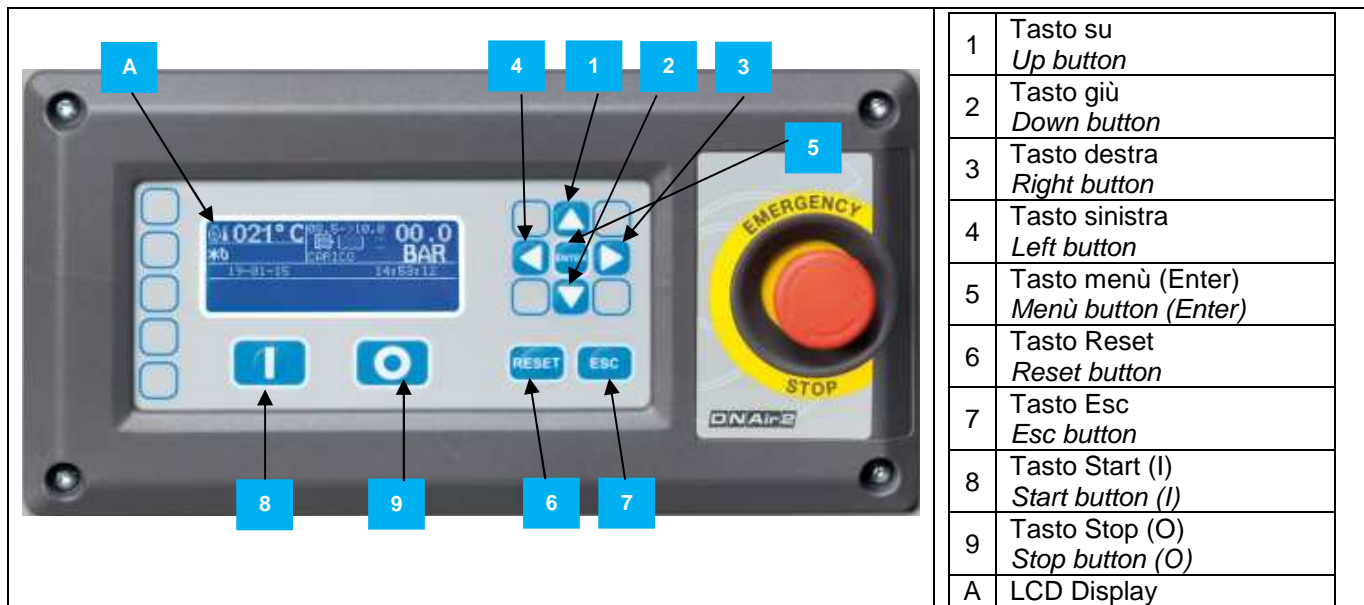
For us, it's not just business. It's personal.

Rotary Screw Controller Instruction & Maintenance Manual



Model: DNAIR 2

Please ensure to read this manual before installation and refer back to manual when performing maintenance. If you require assistance or have any questions regarding the installation or maintenance of your Omega Compressor please do not hesitate to contact our Customer Service department at 1-800-668-8448.



Main technical features:

| | |
|--|--|
| <p>Power supply:</p> <p>Power Consumption:</p> <p>Operating temperature:</p> <p>Storage temperature:</p> <p>Inputs:</p> <p>Relay outputs:</p> <p>Analog outputs:</p> <p>Communication:</p> <p>Container:</p> <p>Maximum dimensions:</p> <p>Container protection rating:</p> <p>Container fastening:</p> <p>Connectors:</p> <p>User Interface:</p> <p>Hardware Features:</p> <p>Set-up:</p> | <p>24V_{AC} ± 20% 50/60 Hz</p> <p>8VA_{max}</p> <p>-10°C ÷ +60°C with max 90% UR (non condensing).</p> <p>-20°C ÷ +70°C</p> <p>1 analog input pressure switch Resolution 12 bit. 2 Temperature sensor inputs Resolution 10 bit.. 9 digital inputs with 1 common (9-way connector).</p> <p>10: NO relay outputs max 4A (9 outputs with 1 common+ 1 separate output "10-way connector").</p> <p>1: analog output 4-20mA resolution 10 bit (i.e. for inverter).</p> <p>One RS-485 serial port pre-set for SMS device or multi-compressor connection</p> <p>ABS self extinguishing.</p> <p>24x13x5cm</p> <p>Front panel IP64, the inner side should be assembled in a watertight compartment.</p> <p>4 plastic brackets with self-tapping screws.</p> <p>Removable, screw locking system pitch 5mm.</p> <p>Graphic Display 192x64 backlit display area (98x34mm). 9-key keyboard with metallic dome. Buzzer for acoustic warnings.</p> <p>Flash Memory for firmware equal to 128Kbyte. Eeprom memory for parameters equal to 1024byte. Real time clock calendar (dd/mm/yyyy hh:mm:ss) powered by 2032 battery (replaceable).</p> <p>One RS-232 serial port for future communication implementation or connection to a device or other controllers.</p> |
|--|--|

Description of general operation

DNAIR2 is a device designed to control the operation of rotary screw air compressors.

This control unit, based on a microprocessor architecture, is able to control/verify the entire cycle of compressed air production without the aid of other external devices.

Characterised by an essential and clear interface and by maximum flexibility, it is suitable for various compressor typologies.

Pre-set for hosting expansion boards, is not precluded from being able to meet even unpredicted requirements.

In addition to controlling the compressed air production cycle, the board is capable of controlling a dryer and the condensate drain

Compressor Functioning

Start-up procedure:

Press the START (I) button. If no alarms are on, the start-up cycle activates:

- ✓ **-Start-up stand-by:** the controller waits for the following conditions to be met until starting the compressor:
 - If the machine was switched off or a previous stoppage was carried out, the control unit waits 15 seconds before starting the compressor.
 - The control unit waits for the pressure to fall below the value set in the "**Load pressure**" parameter before starting on the compressor; status "**STAND-BY**" gets displayed.
- ✓ **-Star compressor start-up:** the line and star contactor switch gets powered for a time defined by parameter "**Star starting timing**"; status "**IDLE**" gets displayed.
- ✓ **-Switching from star to delta:** the line contactor switch remains energized while the star contactor switch is disabled; this phase lasts for a fixed time of 20 [ms]; status "**IDLE**" gets displayed.
- ✓ **-Compressor operational start-up:** the line relay is maintained energized and the delta relay is energized as well; this phase lasts for the time set in the "**Load delay**" parameter; status "**IDLE**" gets displayed.
- ✓ **-Compressor load phase :** the load solenoid valve relay is energized. This phase lasts as long as the pressure measured will not reach the value set in the "**Idle pressure**" parameter; status "**LOAD**" gets displayed.
- ✓ **-Compressor idle phase:** the load solenoid valve relay is de-energized; this phase lasts as long as set in the parameter "**Idling time**". After this, the cycle re-starts from the **Start-up stand-by** phase; status "**IDLE**" gets displayed.

Stoppage procedure:

Press the STOP button (O) to activate the shutdown procedure. The load solenoid valve gets de-energized and the idle cycle starts for a time defined in the "**Stopping time**" parameter; the "**IDLE**" status gets displayed, followed by the "**STATE OFF**".

Compressor Functioning with an Inverter

Start-up procedure:

Press the START (I) button. If no alarms are on, the start-up cycle activates:

- ✓ **-Start-up stand-by:** the controller waits for the following conditions to be met before starting the compressor:
 - If the machine was switched off or a previous stoppage was carried out, the control unit waits 15 seconds before starting the compressor.
 - The control unit waits for the pressure to fall below value: "**Working pressure – (Delta working pressure / 2)**" before starting the compressor on; status "**STAND-BY**" gets displayed.

- ✓ **Compressor start-up:** the line contactor switch is powered.
- ✓ **-Compressor operational start-up:** the line relay is maintained energized and the inverter enabling relay is energized as well; this phase lasts for the time set in the “**Load delay**” parameter; status “**IDLE**” gets displayed.
- ✓ **-Compressor load phase :** the load solenoid valve relay is energized. This phase lasts as long as the pressure measured reaches the value set in the parameter “**Working pressure + (Delta working pressure / 2)**”; status “**LOAD**” gets displayed.
- ✓ **-Compressor idle phase:** the load solenoid valve relay is deactivated; this phase lasts as long as set in the parameter “**idling time**”. After this, the cycle re-starts from the **Start-up stand-by** phase; status “**IDLE**” gets displayed.

In this mode the control unit processes a control algorithm to keep the pressure as close as possible to the working pressure by adapting the motor speed to the air consumption.

Dryer Functioning

For machines supplied with a dryer, the control unit can control the drying cycle.

Using the “Dryer Enabled” parameter, its functioning is enabled, which can be continuous or linked to compressor motor functioning, by setting the parameter “Operation mode”.

The dryer motor is activated if the temperature exceeds the sum of temperatures defined in parameters “Temperature OFF” and “Temp range” and gets de-activated if lower than parameter “Temperature OFF” .

If the temperature remains outside the aforementioned limits for a time over that set in the parameter “Delay dryer alarms”, an alarm is triggered (see the section ALARMS and WARNINGS)

To avoid damaging the motor due to over-frequent start-ups, the re-starts can be inhibited for the time defined in the “Dryer OFF minimum time” parameter. (for further details see DRYER MENU section).

Condensate Drainage Functioning

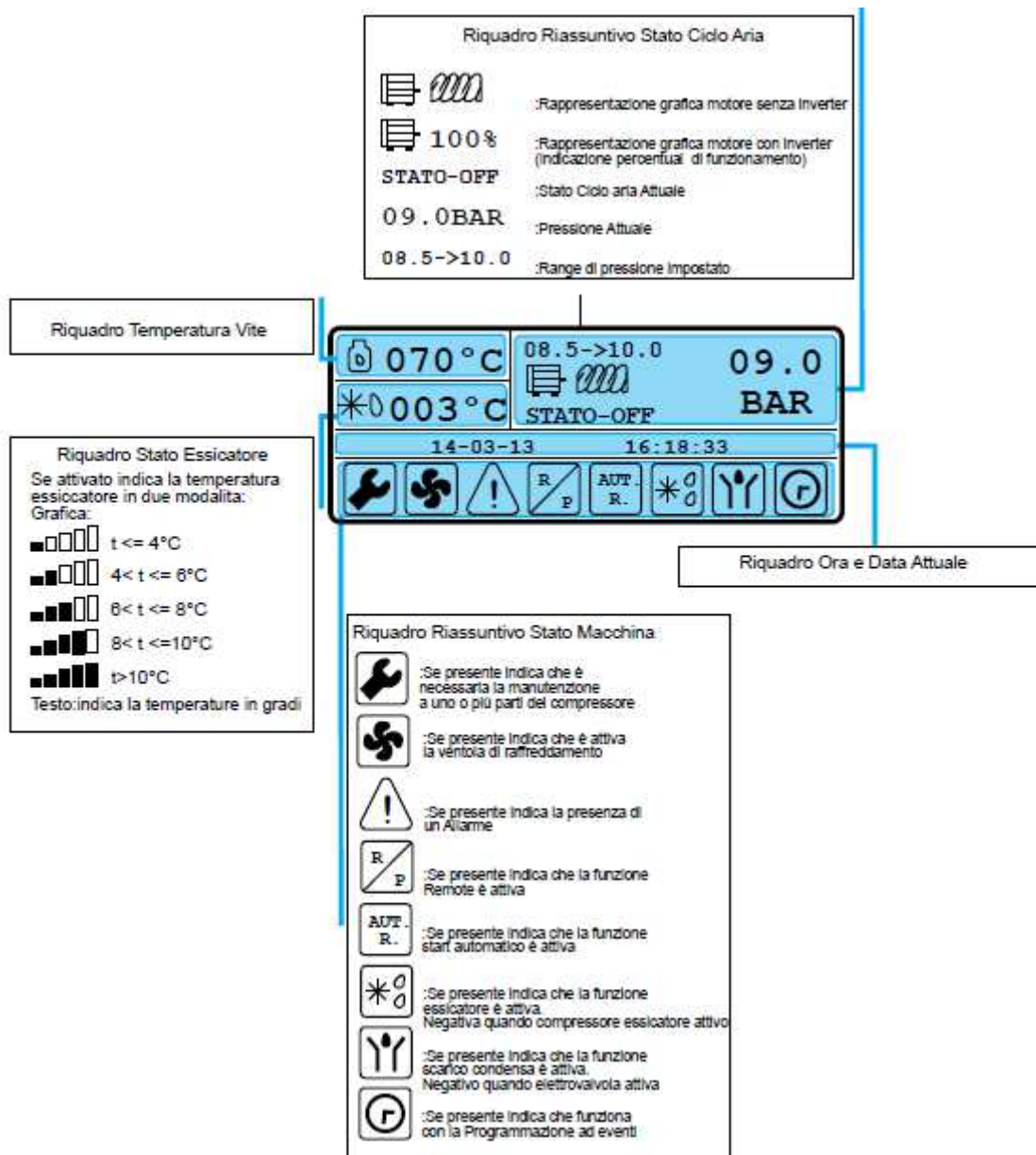
For machines requiring the condensate drainage function, using the “Enable Condensate drain” parameter, the function can be enabled, which can be continuous or linked to the motor operation, defined by setting the “Operation mode” parameter.

The drainage solenoid valve remains active for a time defined in the “Drain SV time ON” parameter and remains deactivated for a time defined in parameter “Drain SV time OFF”.

For a better understanding of the functionalities, see paragraph MENU – CONDENSATE DRAIN.

Main Screen

The main screen summarises the current status of the machine



Current Air Cycle Status (1):

- STAND-BY: state active but with the motor turned off.
- STATE-OFF: the motor is OFF and the load solenoid valve is disabled.
- IDLE: the motor is on but the load solenoid valve is disabled.
- LOAD: the motor is on and the load solenoid valve is enabled.
- REMOTE-OFF: Remote program enabled, compressor in stand-by waiting for the start remote command.
- TIME-OFF: Start-up program enabled, compressor in stand-by waiting for the for start time.

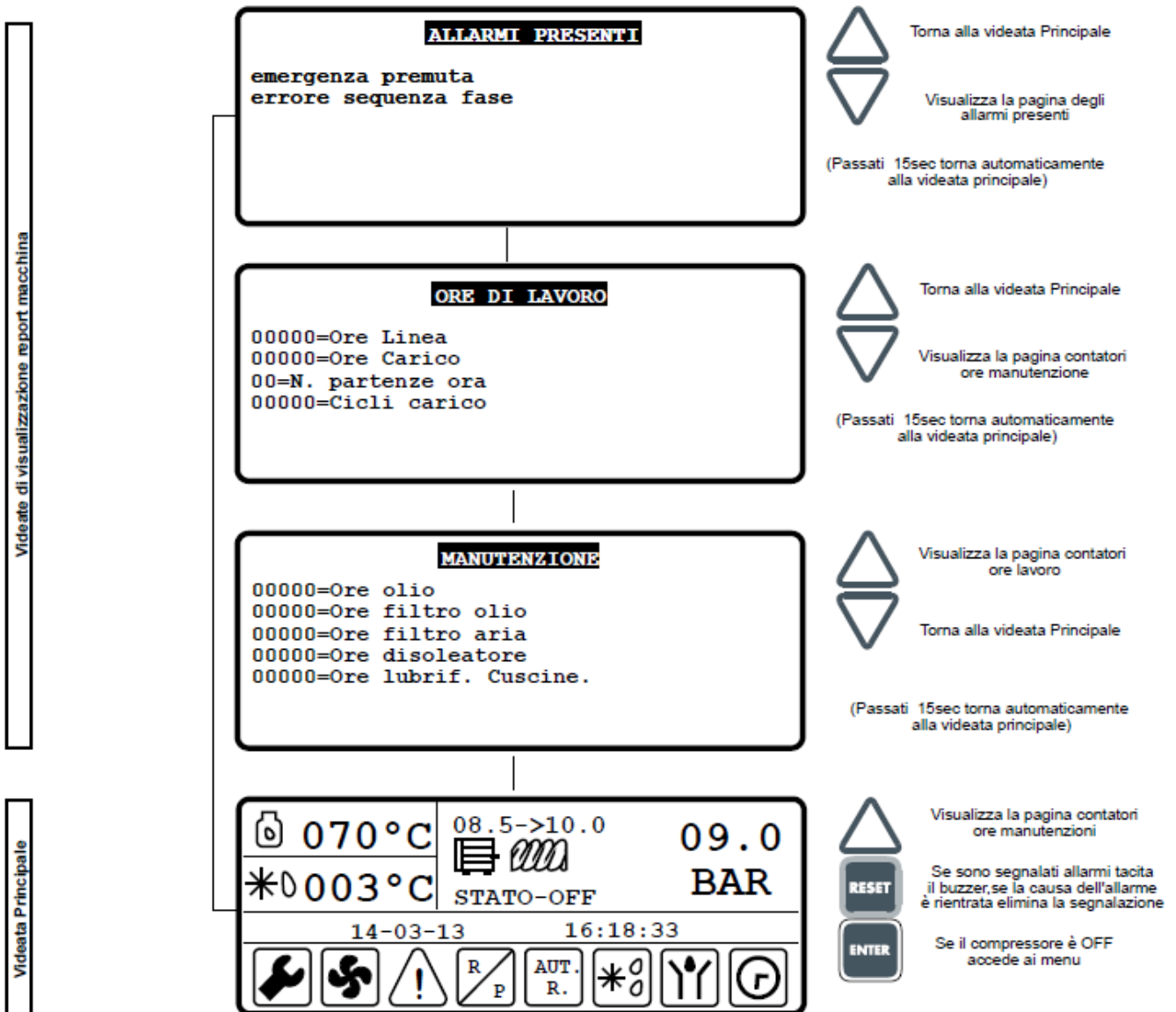
Menus and Parameters

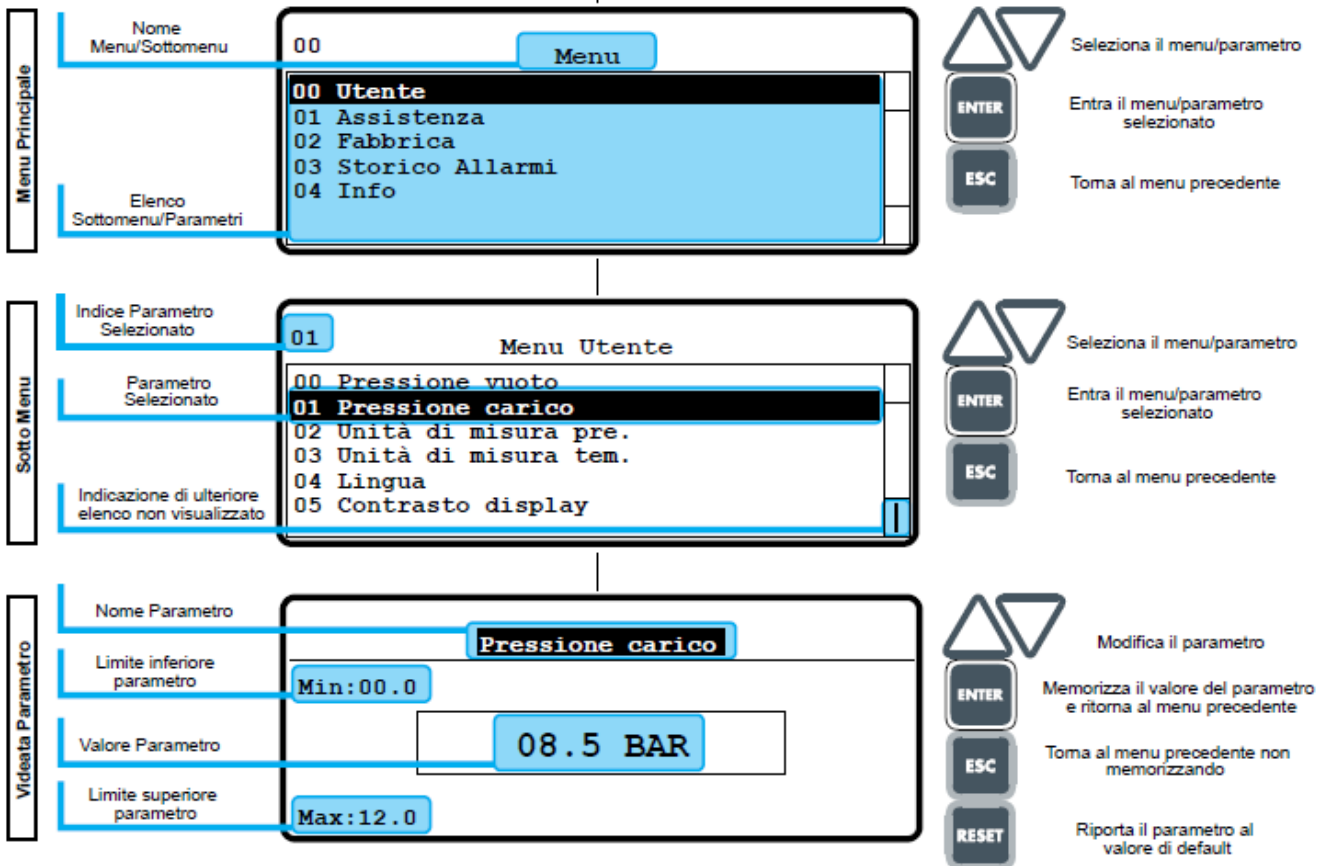
The menus are structured as vertical drop-down menus: the title is on top and is followed by the list of parameters or sub-menus available. If the menu contains more items than the LCD display can show, two arrows (Up and Down) appear on the right to indicate that more items are present.

Use the "Arrow up" and "Arrow down" keys to find the parameter or sub-menu and highlight it to then open it by pressing the "Enter" key; go back by pressing the "Esc" key.

If you go to a parameter screen you can change its value using the "Arrow up" and "Arrow down" keys or you can set back the default value using the "Reset" key. By pressing the "Enter" key, you exit the menu, saving the parameter value. Press the "Esc" key to return to the previous menu only.

Some menus contain exceptions in relation to parameter entries, which will be dealt with individually in the following paragraphs.

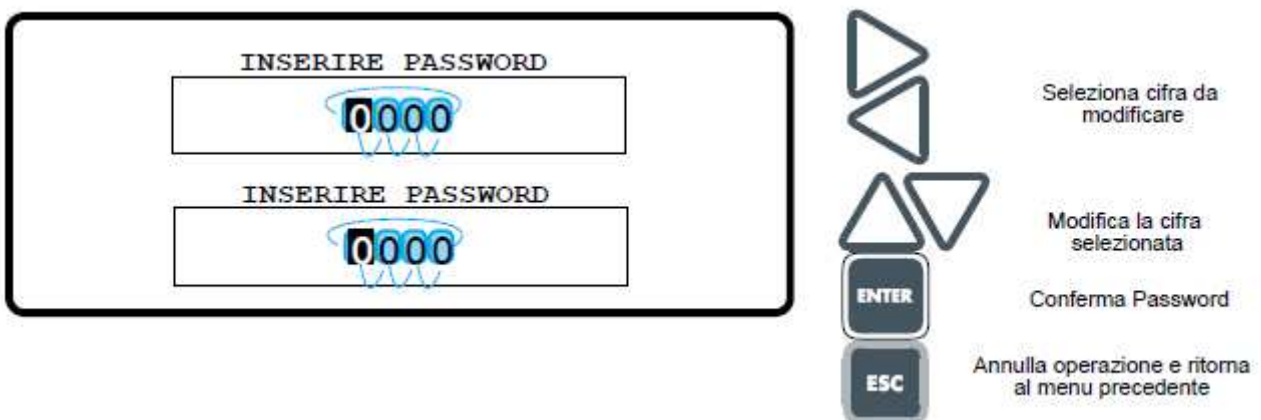




Password

Certain menus are password protected. The password is requested when an attempt is made to access the reserved areas.

Removal of the menu protection persists until the main screen is accessed again.



Main Menu

User: Menu containing the User parameters (see USER MENU paragraph).

Service: Menu containing the Support parameters (see SERVICE MENU paragraph).
Password protected **2954**.

Factory: Menu containing the Factory parameters (see FACTORY MENU paragraph).
Password protected, **this password CANNOT be divulged**.

Fault list: List of last 100 alarms. By pressing “ENTER” on the alarm displayed, besides the type of alarm, the date, time, pressure and the oil temperature present at the time when the alarm got triggered, will also be displayed.

The whole alarm historical file can be deleted by keeping the “RESET” button pressed for approx. 5 seconds and inputting the Service password.

Information: The system displays information regarding the software version, the type of machine and the FSN e-mail info for technical support.

User Menu

Idle pressure: It defines the pressure at which the compressor must stop, the maximum settable value is defined in parameter “*Max pressure*” in the factory sub-menu, which therefore cannot be modified.

Load pressure: Defines the residual pressure necessary to get the compressor restarted. The set default value is set to 1.5 bar lower than the value of parameter “*Idle pressure*” and its minimum value is 5 bar. It is suggested that said value be set at no less than 1 bar lower than the “*Idle pressure*” value.

Working Pressure: It defines the objective pressure in case of variable speed compressors (with inverter)

Delta Working Pressure: Defines the interval of the objective pressure within which the inverter modulates the motor speed. Maximum settable value: 2 bar. It is suggested that this value be set at no less than 1 bar.

Pressure measurem. unit: Defines the pressure unit of measure.

Temperat. Measurem. unit: Defines the temperature unit of measure.

Language: Set the menu language.

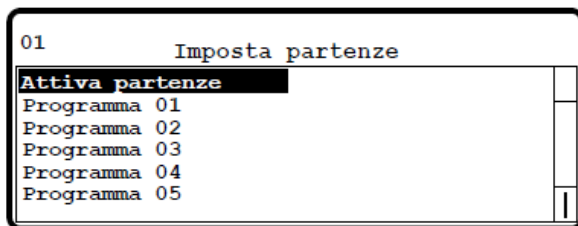
Display contrast: Defines the LCD display contrast.




Display brightness: Defines the LCD display backlight brightness.

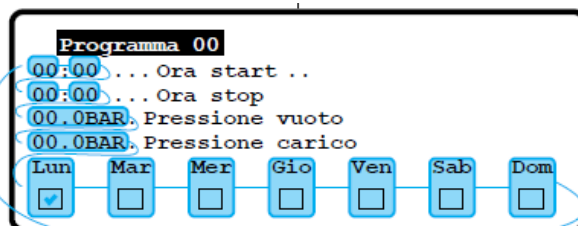
Time/Date setting: Sets the date and time. Data is entered according to specific steps; the system prompts the user to enter/confirm the year, the month, the day, the hours, the minutes and the seconds. Once the entire procedure is completed, the parameters settings will be saved.


Weekly programming: Sub-menu in which it is possible to define 10 independent compressor operation programs (from 0 to 9).

For every program the following can be set: switch ON and OFF times, the days of the week in which the compressor must operate and the relative pressure range.



-  Seleziona il programma desiderato
-  Entra nel programma selezionato
-  Torna al menu precedente



-  Seleziona il parametro da modificare
-  Modifica il parametro
-  Memorizza il programma e torna al menu precedente
-  Torna al menu precedente non memorizzando

In the case of a system with multiple compressors, both with fixed and variable speed, the weekly programming can be set in order to create a **Virtual Network of Compressors**: the operation of the machines gets rotated in order to operate the compressors in a balanced way, but these will operate all together should the demand of air not be satisfiable by a single compressor.

Also should a compressor go into alarm mode, the other compressor will remain active and will try to satisfy the plant's air demand (compatibly with the relevant capacity).



If the weekly programming is active, the display will show the following icon:

The following is an example concerning 2 compressors, with fixed speed and same power:

COMPRESSOR 1

Program 1

start time: 00:00
 stop time: 24:00
 Idle pressure: 10.0
 Load pressure: 8.5
 Working days: Monday – Wednesday – Friday – (and Sunday, should the client be working)

Program 2

start time: 00:00
 stop time: 24:00
 Idle pressure: 10.0
 Load pressure: 8.0
 Working days: Tuesday – Thursday – (and Saturday should the client be working)

COMPRESSOR 2

Program 1

start time: 00:00
 stop time: 24:00
 Idle pressure: 10.0
 Load pressure: 8.0
 Working days: Monday – Wednesday – Friday – (and Sunday, should the client be working)

Program 2

start time: 00:00
 stop time: 24:00
 Idle pressure: 10.0
 Load pressure: 8.5
 Working days: Tuesday – Thursday – (and Saturday should the client be working)

Service Menu

Oil change: Indicates the number of hours left before having to change the oil; the parameter can have negative values if the time since the last maintenance overpass the set value. The value can be changed.

Oil filter change: Indicates the number of hours left before having to change the oil filter; the parameter can have negative values if the time since the last maintenance overpass the set value. The value can be changed.

Air filter change: Indicates the number of hours left before having to change the air filter; the parameter can have negative values if the time since the last maintenance overpass the set value. The value can be changed.

Oil separ. Filter change: Indicates the number of hours left before having to change the oil separator filter; the parameter can have negative values if the time since the last maintenance overpass the set value. The value can be changed.

Motor bearing re-grease: Indicates the residual hours to the deadline on which a message is displayed inviting to verify the maintenance of the electrical motor bearings. Refer to the electrical motor manual (included into the compressor documentation) and/or to the motor data plate (affixed to the motor casing), to verify the type of bearings, the maintenance interval, the type and quantity of grease to be used.

Cooling Fan temperature: Defines the fan operating temperature. The threshold set has an hysteresis of 10°C; this value can be modified. For example, if the operating temperature is set at 80°C, the fan will activate at 80°C and stop at 70°C (screw unit oil delivery temperature). When the fan is in operation, the display shows the



following icon:

Idling time: Defines the main motor stoppage time from the moment the load solenoid valve was deactivated because the desired pressure was reached.

Stopping time: Defines the delay of the compressor switch OFF from the moment stoppage is requested through the STOP (O) button. The solenoid valve gets deactivated immediately.

Automatic restart: If activated, the compressor restarts automatically after any electrical power interruption, whether planned or unforeseen. After said parameter is enabled, icon "Aut.R" will be displayed and the first



compressor start-up will be allowed only by pressing the START (I) button on the control panel.

Starts per hour: Defines the maximum number of starts within one hour timespan. If this gets exceeded, the compressor will remain active both with load or no-load, dependent on the pressure, until the hour lapses, calculated from first switch-on, to then return to normal operation. Should the status be "Idle", the second counter before the switch-off will start from 999" seconds, instead of the value set in the specific menu.

If value "Starts per hour" is set at zero, this function is disabled.

Remote press. enabling: Enables the "Remote Pressure" input (terminal 3 of connector CN2), with which the compressor operation can be controlled through an external pressure switch. In this configuration, the controller will monitor the remote input as external pressure switch, and also controls that it acts within the set range (set load, set idle). Should the set pressure be exceeded owing to an anomaly of the external pressure switch, the control unit will take up control of the compressor working with internally set values, and signalling alarm "**Remote pressure fault**".

If the anomaly gets solved, the compressor control gets returned again to the external pressure switch. This parameter is not used to enable the remote on/off.



Enabling of the "Remote Pressure" gets signalled on display through icon "R/P".

Cooling Fan extra time: Defines the time in which the fan remains active after the compressor has been switched off (having pressed button "O") to allow the temperature to be reduced more rapidly. When the fan is in



operation, the display shows the following icon:

Solenoid valve cycles: Solenoid valve cycles counter. Indicates the number of times the compressor has switched to the load phase. This parameter can be zeroed (in case of solenoid valve replacement).

Fan hysteresis: Defines the temperature variation within which the electric fan must operate.

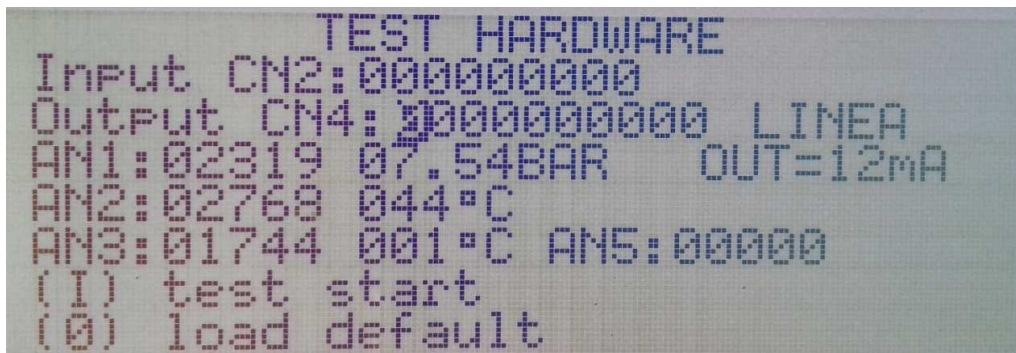
Days OFF counter: it's a counter that gets set by default to 30 days. If during this time the compressor remains un-powered, the "ADD OIL SCREW" alarm gets activated, which blocks the compressor; this is resettable through the RESET button.

If the "Days OFF counter" value is set to zero, this function is disabled.

Diagnostic: Through the Diagnostic menu, the control unit's inputs and outputs can be controlled:

Input: the status of the 9 digital inputs can be controlled

Output: using the right and left keys, one can move to the relay output to be controlled; through the up and down buttons the output can be activated/deactivated.



List of outputs:

- Line relay
- Star relay
- Delta relay/inverter enable
- Load solenoid valve relay
- Fan relay
- Dryer relay
- Condensate drain relay
- Programmable relay 1
- Programmable relay 2
- Remote alarm

Furthermore, the following indications are present:

AN1: Indicates the pressure in bar with centesimal precision

AN2: Indicates the temperature in °C of the air-end temperature probe

AN3: Indicates the temperature in °C of the dryer Probe

OUT: Indicates the inverter output, signal 4-20mA

By keeping **button "I"** Pressed, a motor start test can be carried out.

By pressing **button "O"** the type of compressor can be selected. Several types of compressors are identified by the following codes:

- "VS" -> Variable Speed (inverter-controlled variable speed compressors)
- "ES" -> Compressors with integrated dryer, directly managed by control unit DNAIR2 (dryer WITHOUT own control unit)
- CX -> Direct drive (coaxial) compressors
- BL -> Belt drive compressors

After having selected the type of compressor, the control unit allows to input total hours and load hours applicable to the compressor. Confirm with 0 if the compressor is new. Input the hours indicated in the previous control unit if the compressor has already operated.

By pressing the **RESET button**, calibration of the pressure transducer can be done (the Factory password is required)

Analog Output setting: the control unit allows use of 2 programmable outputs, CN4-8 and CN4-9 (free potential contacts), that can be associated to one of the following functions:

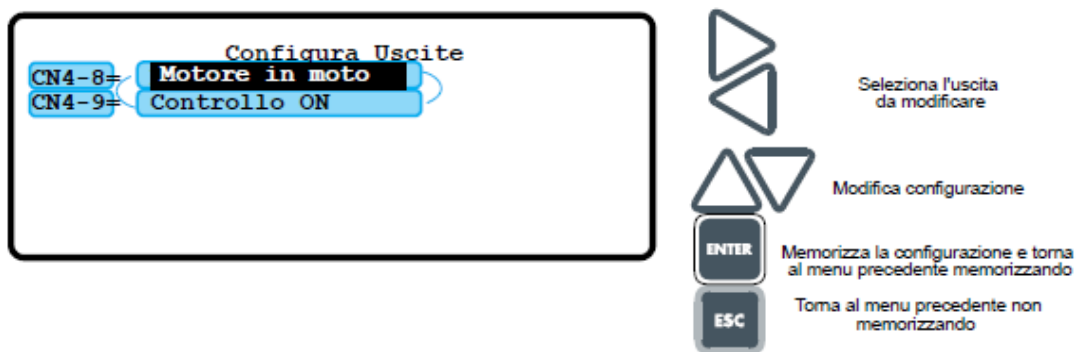
“Warning”: signals that the oil temperature has exceeded the first threshold limit value

“Power ON”: signals that the control unit is powered

“Compressor ON”: signals that the compressor is running

“motor running”: signals that the motor is in operation

“Idle/Load state”: signals the Idle/Load status of the compressor



Compressor rotation management: Sub-menu for the configuration and activation of the multi-compressor operation (see paragraph COMPRESSOR ROTATION MANAGEMENT MENU).

Dryer: Sub-menu for dryer configuration (see DRYER MENU paragraph).

Condensate drain: Sub-menu for the configuration of the condensate drain solenoid valve (see paragraph CONDENSATE DRAIN MENU).

Inverter: Sub-menu for inverter configuration (see INVERTER MENU paragraph).

Service Password Change: Sub-menu that enables the user to change the Service password; the system prompts you to enter the new code twice.

Dryer Menu

Dryer Enabled: Dryer Enabling. When the dryer is active, the following icon is displayed:



Dryer OFF minimum time: Defines the minimum time that the dryer is deactivated. Has the function of protecting the compressor of the dryer refrigerator from too frequent start-ups: the timer activates whenever the dryer output gets deactivated; it gets activated even after a restart of the control unit due to a power interruption.

Temperature OFF: Defines the value of the temperature at which the dryer compressor is deactivated.

Temp. range: Defines the temperature delta between the OFF temperature and the reactivation temperature.

Offset Temperature: Defines the difference between the measured temperature and the value displayed. If different from 0, it allows calibration of the dryer temperature sensor.

Operation mode: Defines the functioning mode of the dryer:

- **Automatic:** the dryer starts and stops based on the compressor main motor's operation.
- **Continuous:** the dryer starts as soon as the compressor is switched on and will only stop when it is switched off.

Delay Dryer Alarms: Defines the delay with which the dryer alarms are displayed.






Type of alarm: Defines the effects of the alarm on the compressor:

- **Dryer Blocked:** blocks the compressor.
- **Alarm :** warning without blocking the compressor.

Extra run dryer: Defines the time through which the dryer must continue to operate even after the compressor motor has stopped, if the operating mode is set to automatic.

Dryer filter: Indicates the number of hours left before having to change the filters; the parameter can have negative values if the time since the last maintenance overpass the set value. The value can be changed.


When the dryer is active, the display shows its status bar, which provides an indication of its internal temperature:

| Dryer status frame | |
|---|---|
| If activated, indicates the dryer temperature in two modes: | |
|  | $T \leq 4^{\circ}\text{C}$ |
|  | $4^{\circ}\text{C} < T \leq 6^{\circ}\text{C}$ |
|  | $6^{\circ}\text{C} < T \leq 8^{\circ}\text{C}$ |
|  | $8^{\circ}\text{C} < T \leq 10^{\circ}\text{C}$ |
|  | $T > 10^{\circ}\text{C}$ |
| Text: indicates the temperature in Celsius degrees | |

Pressing the two RH and LH arrows simultaneously, the temperature will be displayed in numeric value for several seconds.

Condensate Drain Menu

Enable Condensate drain: Condensate drain enabling. When the "Condensate Drain" function is active, the

following icon is displayed 

Drain SV Time OFF: Defines the time in which the condensate drain solenoid valve is deactivated

Drain SV Time ON: Defines the time of activation of the condensate drain solenoid valve .

Operation mode: Defines the functioning mode of condensate drain:

- **Automatic:** the condensate drain is activated only when the compressor is on and in load mode.
- **Continuous:** condensate drain is always on.

Inverter Menu

Inverter enabled: Inverter enabling.

Min. % working: Defines the minimum operating speed (and therefore the frequency) of an inverter compressor, expressed in % in relation to the maximum speed. By default it is set at 50%. It is suggested that the FSN After-sales Service be contacted before modifying this value, for which the factory password is required in any case.

PID - Integral: Defines the integral part on the PID calculation of the inverter percentage. It is recommended that this value not be modified. For further info, contact the FSN After-sales Service

PID - Proportional: Defines the proportional part on the PID calculation of the inverter percentage. It is recommended that this value not be modified. For further info, contact the FSN After-sales Service

PID - Derivative: Defines the differential part on the PID calculation of the inverter percentage. It is recommended that this value not be modified. For further info, contact the FSN After-sales Service

Pressure @ 100%: is the pressure up to which the inverter operates at 100% of the speed. It is suggested that this value be set at 0.5 bar lower than value "*Working pressure*"

Pressure @ minimum %: it is the pressure at which the inverter must work at the set % Min operating percentage. It is suggested that this parameter not be modified.

Remote ON/OFF

Through "Remote ON/OFF" input present on terminal 2 of connector CN2 of the control unit (see electrical diagram on last page), the compressor start can be controlled via a remote ON/OFF contact/switch. Once the Start (I) button has been pressed from the central unit panel, the compressor can be switched on/off through the remote contact (if no alarm is present).


No software enabling is necessary in the control unit.

The remote command has a lesser priority than the Start (I) and Stop (O) buttons on the panel.

Consult the compressor manual and electrical diagram for further info.

Alarms and Warnings


All alarms triggered are displayed on the home page in the "Alarms and Warnings Field", in "Machinery State

Summary Report" (see the Home Page section) and acoustically by a buzzer. The icon  shown on display indicates the presence of an alarm.

The alarm buzzer can be silenced immediately by pressing the "RESET" key, while the alarm indication on the LCD display will disappear only if the cause that generated it was cancelled.

The last 100 alarms can be found in the "Fault list" (see Main menu paragraph) where you can check their chronological order, the pressure and temperature in the instant in which they occurred.

The alarm signalling can be set in remote mode through a free potential contact on terminals 11-12 of the CN4 terminal block. This contact closes whenever any alarm is present on the control unit

The icon  on display indicates the expiry of maintenance hours for one or more machine components

The possible alarms are as follows:

| ALARM | CAUSE | SOLUTION |
|------------------------------------|--|---|
| Min. oil temp. alarm | The oil temperature is lower than the minimum threshold limit value: the compressor cannot be started | Check the compressor's minimum operating environment temperature and, should the alarm persist, try to heat the inside of the compressor |
| Max. oil temp. alarm | The oil temperature has exceeded the maximum threshold value: the compressor stops in order to avoid further damage | Check the oil level and quality. If the alarm persists, let the compressor cool off. |
| Oil temp. warning | The oil temperature has exceeded the first threshold value. The alarm doesn't block the compressor but signals the anomaly | Check the oil level and quality. If the alarm persists, let the compressor cool off. |
| Temperature sensor Fault | The temperature sensor is faulty (sensor short-circuited or open) | Replace the sensor. If the alarm persists, contact the FSN After-sales service. |
| Motor thermal overload | Anomalous overheating of the electrical motor | Investigate the causes of the anomaly (mechanical problem, over-temperature, under-voltage, etc.) and let the motor cool off |
| Fan thermal overload | Anomalous overheating of the cooling fan motor | Investigate the causes of the anomaly and cool off the motor |
| Max. pressure alarm | The pressure has exceeded the maximum permissible value | Investigate the causes of the anomaly (blocked suction regulator, blocked solenoid valve, etc.) and return the pressure below the threshold value |
| Pressure sensor fault | The pressure sensor is faulty (sensor short-circuited or open) | Replace the sensor. If the alarm persists, contact the FSN After-sales service. |
| Phase sequence fault | The electrical motor rotates in the wrong direction | Swap two of the power supply phases at the input of the compressor electrical panel. |
| Emergency stop pressed | signals that the emergency button has been pressed | Release the emergency button |
| Air Filter change | Signals the expiry of the air filter service hours | Replace the air filter and reset the counter |
| Oil separator filter change | Signals the expiry of the oil separator filter service hours | Replace the oil separator filter and reset the counter |
| Inverter fault | Signals an error of the inverter | Open the electrical panel and check the type of error on the inverter display. Consult the inverter manual. If the alarm persists, contact the FSN After-sales service. |
| Remote Pressure fault | The pressure has exceeded the maximum value set on the control unit despite the "remote pressure" contact continuing to be closed | Check the incongruity: external pressure switch faulty or maximum value set on the control unit lower than the maximum value of the external pressure switch |
| High dew point | The dryer temperature has remained above the sum of the temperatures defined in parameters "" "Temperature OFF" and " Delta Temperature" +20° C for a time exceeding the value set in the "Alarms delay" parameter | Refer to the dryer manual |
| Ice | The dryer temperature has remained below the temperature defined in the "Temperature OFF" parameter for a time exceeding what was set in the "Alarms delay" parameter. Generally this is due to a too low external temperature | Refer to the dryer manual |

| ALARM | CAUSE | SOLUTION |
|---------------------------------|--|---|
| Dryer Sensor Fault | Anomaly on the dryer temperature sensor (sensor short circuited or open). If the "alarm type" parameter is set as "Alarm" (see the Dryer Menu paragraph), the alarm BLOCKS the compressor, otherwise the compressor continues to operate | Replace the sensor. If the alarm persists, contact the FSN After-sales service. |
| Motor bearings re-grease | Notifies the user to check the maintenance interval for the electrical motor bearings | Refer to the electrical motor manual for the details on its maintenance. Once the re-lubrication has been carried out, reset the counter |
| Oil thermal drift | The oil temperature has increased by more than 10°C in less than 1 second | Check that the screw unit hasn't seized. Check that the oil level is correct. In the first instance, replace the temperature probe. If the problem persists, replace the control unit |

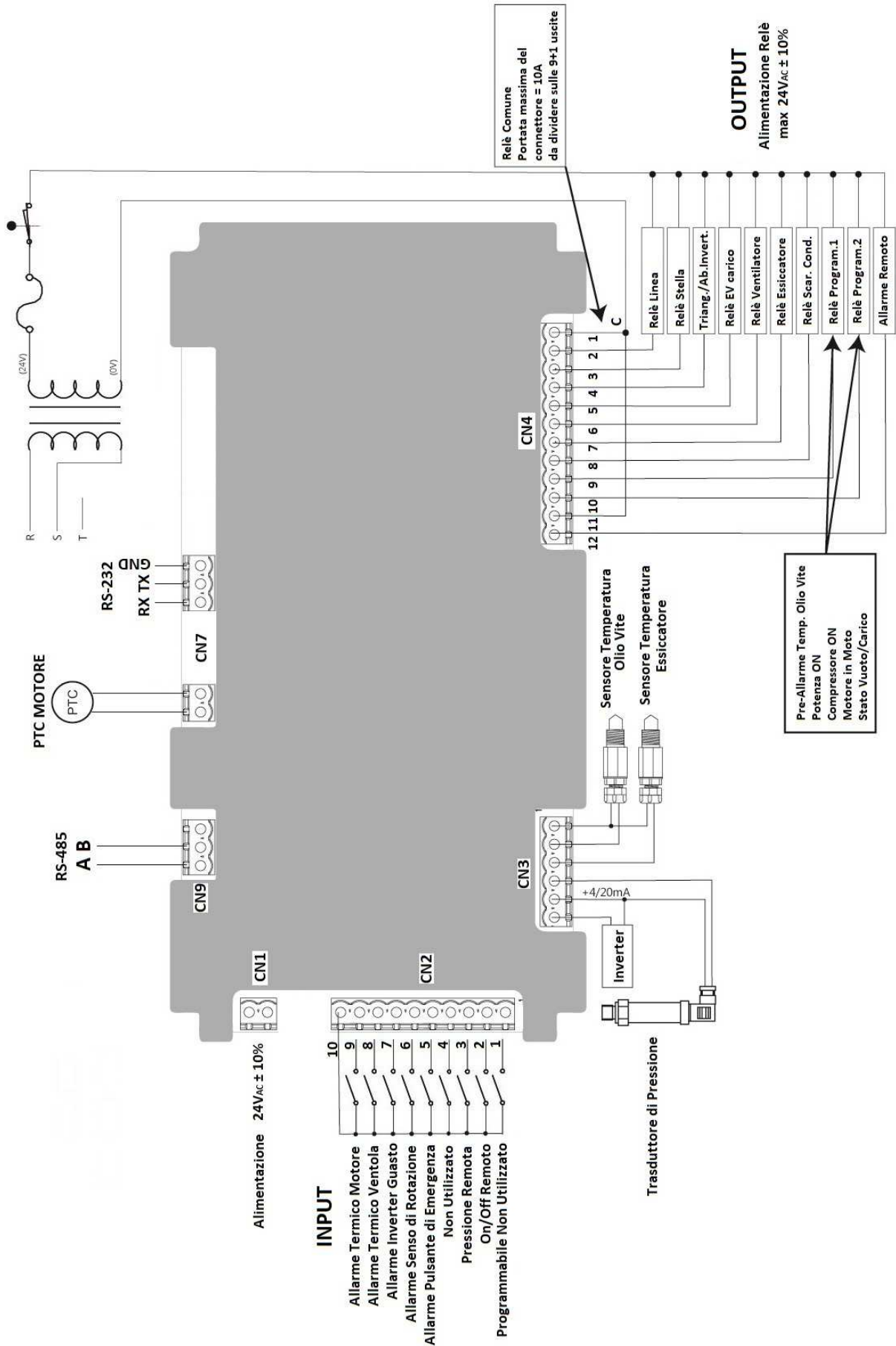
Menu structure

| ID | Description | MIN | MAX | TYP | Measuring unit | Password level | Notes |
|------------|---|--------|-------|---------|----------------|----------------|---|
| 0.0 | User Menu | | | | | | - |
| 0.0 | Idle pressure (Y/Δ) / Working Pressure. (inverter) | - | - | * | - | User | * depends on the compressor family selected |
| 0.1 | load pressure (Y/Δ) / Delta working pressure (inverter) | - | - | * | - | User | * depends on the compressor family selected |
| 0.2 | Pressure measurem. Unit | - | - | BAR | BAR PSI Kpa | User | - |
| 0.3 | Temperature measurem. Unit | - | - | °C | °C °F | User | - |
| 0.4 | Language | 0 | 20 | ITALIAN | - | User | - |
| 0.5 | Display contrast | 0 | 50 | 25 | - | User | - |
| 0.6 | Display brightness | 0 | 30 | 20 | - | User | - |
| 0.7 | Time/date setting | - | - | - | - | User | - |
| 0.8 | Weekly program | - | - | - | - | User | - |
| 1.0 | Service Menu | | | | | | - |
| 1.0 | Oil change | -30000 | 30000 | * | Hours | Service | * depends on the compressor family selected |
| 1.1 | Oil filter change | -30000 | 30000 | * | Hours | Service | * depends on the compressor family selected |
| 1.2 | Air filter change | -30000 | 30000 | * | Hours | Service | * depends on the compressor family selected |
| 1.3 | Oil separ. filter change | -30000 | 30000 | * | Hours | Service | * depends on the compressor family selected |
| 1.4 | Motor bearing re-grease | -30000 | 30000 | * | Hours | Service | * depends on the compressor family selected |
| 1.5 | Cooling Fan temperature | -15 | 120 | 75 | °C | Service | - |
| 1.6 | Idling time | 1 | 900 | 75 | Seconds | Service | - |
| 1.7 | Stopping time | 1 | 900 | 60 | Seconds | Service | - |
| 1.8 | Automatic Restart | NO | YES | NO | - | Service | - |
| 1.9 | Starts per hour | 0 | 50 | 30 | cycles | Service | - |
| 1.10 | Remote pressure enabling | NO | YES | NO | - | Service | - |
| 1.11 | Cooling Fan extra time | 1 | 250 | 60 | Seconds | Service | - |
| 1.12 | Solenoid valve cycles | 0 | 65000 | 0 | cycles | Service | - |

| ID | Description | MIN | MAX | TYP | Measuring unit | Password level | Notes | |
|-------------|---------------------------------------|-----------|------------|-----------|----------------|----------------|---|---|
| 1.13 | Fan hysteresis | 5 | 15 | 10 | °C | Service | - | |
| 1.14 | Day OFF counter | - | - | - | - | Service | - | |
| 1.15 | Diagnostic | - | - | - | - | Service | - | |
| 1.16 | Analog output setting | - | - | - | - | Service | - | |
| 1.17 | Compressor rotation management | See below | | | | Service | - | |
| 1.18 | Dryer | See below | | | | Service | - | |
| 1.19 | Condensate drain | See below | | | | Service | - | |
| 1.20 | Inverter | See below | | | | Service | - | |
| 1.21 | Service password change | - | - | - | - | Service | - | |
| 2.0 | Factory Menu | | | | | | | - |
| 2.0 | Oil temperature warning | 1 | 30 | 5 | °C | Factory | - | |
| 2.1 | Max oil temp. alarm | -15 | 135 | 110 | °C | Factory | - | |
| 2.2 | Min oil temp. alarm | -15 | 135 | 7 | °C | Factory | - | |
| 2.3 | Oil thermal drift | 0 | 20 | 10 | °C | Factory | - | |
| 2.4 | Max. press alarm | 0 | 16.0 | 13.0 | - | Factory | - | |
| 2.5 | Max. pressure | 0 | 16.0 | 10.0 | - | Factory | - | |
| 2.6 | Total hours | 0 | 65000 | 0 | Hours | Factory | - | |
| 2.7 | Load hours | 0 | 65000 | 0 | Hours | Factory | - | |
| 2.8 | Star starting time | 1 | 100 | 4 | Seconds | Factory | - | |
| 2.9 | Load delay | 1 | 100 | 4 | Seconds | Factory | - | |
| 2.10 | Min. load temperature | 0 | 30 | 15 | °C | Factory | - | |
| 2.11 | Stand-by time | 10 | 60 | 20 | Seconds | Factory | - | |
| 2.12 | Analog inputs setting | - | - | - | - | Factory | - | |
| 2.12 | Factory password change | - | - | - | - | Service | It is suggested that this password must not be modified | |
| 1.17 | Compressor Rotation Management | | | | | | | - |
| 1.17.0 | Rotation enabling | NO | YES | NO | - | - | - | |
| 1.17.1 | Compressor ID | 0 | 4 | 0 | - | - | - | |
| 1.17.2 | Rotation hour | 0 | 100 | 0 | - | - | - | |
| 1.18 | Dryer | ** | | | | | ** The values listed hereunder depend on the compressor family selected | |
| 1.18.0 | Dryer enabled | NO | YES | NO | - | Service | - | |
| 1.18.1 | Dryer OFF minimum time | 0 | 250 | 60 | Seconds | Service | - | |
| 1.18.2 | Temperature OFF | -15 | 120 | 0 | - | Service | - | |
| 1.18.3 | Temp. range | 0 | 20 | 6 | - | Service | - | |
| 1.18.4 | Offset Temperature | -10 | 10 | 0 | - | Service | - | |
| 1.18.5 | Operation mode | automatic | continuous | automatic | - | Service | - | |
| 1.18.6 | Delay Dryer alarms | 1 | 99 | 15 | Minutes | Service | - | |
| 1.18.7 | Type of alarm | alarm | blocked | alarm | - | Service | - | |
| 1.18.8 | Extra run dryer | - | - | 5 | minutes | Service | - | |

| 1.18.9 | Dryer filter | -30000 | 30000 | * | Hours | Service | * depends on the compressor family selected | |
|-------------|-------------------------|-----------|------------|-----------|----------------|----------------|---|--|
| ID | Description | MIN | MAX | TYP | Measuring unit | Password level | Notes | |
| 1.19 | Condensate Drain | | | | | | - | |
| 1.19.0 | Enable Condensate drain | NO | YES | NO | - | - | - | |
| 1.19.1 | Drain SV time OFF | - | - | 1 | minutes | - | - | |
| 1.19.2 | Drain SV time ON | - | - | 3 | Seconds | - | - | |
| 1.19.3 | Operation mode | automatic | continuous | automatic | - | - | - | |
| 1.20 | Inverter | ** | | | | | ** The values listed hereunder depend on the compressor family selected | |
| 1.20.0 | Inverter enabled | NO | YES | NO | - | Service | - | |
| 1.20.1 | Min. % working | 30 | 99 | 50 | % | Factory | - | |
| 1.20.2 | PID – integral | 0 | 10000 | 0 | - | Service | - | |
| 1.20.3 | PID – proportional | 0 | 10000 | 10 | - | Service | - | |
| 1.20.4 | PID – derivative | 0 | 10000 | 25 | - | Service | - | |
| 1.20.4 | Pressure @ 100% | 0 | 13.0 | 8.0 | - | Service | - | |
| 1.20.5 | Pressure @ minimum % | 0 | 13.0 | 10.0 | - | Service | - | |

Wiring diagram



INDICE DI REVISIONE (R)
INDEX OF REVISIONS (R)

B

| N | DESCRIZIONE MODIFICA | MODIFY DESCRIPTION | Data/Date |
|---|---|---|------------|
| - | Creazione (tutte le pagine) | <i>Creation (all pages)</i> | 27/08/2015 |
| A | Aggiunta tabella di tutti i parametri menù, aggiunta tabella errori, modificato schema elettrico, spiegato il funzionamento delle uscite configurabili, modificata spiegazione programmazione settimanale, aggiunta dettagli sulla selezione delle famiglie dei compressori | <i>Menu table insered, fault list insered, wiring diagram modified, programmable output accurate description, weekly program accurate description, compressor family description detailed</i> | 02/05/2018 |
| B | Modifica descrizioni e stringhe Menu in accordo a revisione software V.P.0.71 | <i>Description and parameter menus modified according to V.P.0.71 software version</i> | 20/05/2019 |

Questa pubblicazione annulla e sostituisce ogni precedente edizione o revisione. La **FINI NUAIR** si riserva il diritto di apportare modifiche senza preavviso. E' vietata la riproduzione anche parziale senza specifica autorizzazione.

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