

# VISION SC600



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Use and maintenance manual

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**ENGLISH**

**READ AND KEEP**

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ENG

ELECTRICAL BOARDS FOR REFRIGERATING INSTALLATIONS

Refrigeration  
**Pego**



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# CHAPTER 1: INTRODUCTION

## 1.1

### GENERALITY

The **VISION SC600** system allows users to control the machine room of a refrigeration plant in which there is more than one compressor. It guarantees uniform operation and proper distribution of operating times among individual machines. All functions are performed in complete safety and the VISION SC600 Control Console (LCD DISPLAY) can be installed anywhere, independently of where the power cabinet is located.

#### **APPLICATIONS:**

- Compressor and condenser fan control of a refrigeration plant

#### **MAIN FEATURES:**

- Configurable for control of compressors (up to a maximum of 10) and condenser fans (up to a maximum of 10). It's possible to configure the outputs by setting the number of compressors and fans to control, so that their sum is less than or equal to 10.
- Configurable for compressor partition valves control.
- 0-10V Analog output for compressor inverter control.
- 0-10V Analog output for the adjustment of fan speed in alternative to digital outputs control of the condenser fans.
- Display of the pressure probe measure in Bar or in °C (conversion based on the type of refrigerant gas selected).
- Rotation of compressors / fans according to the time of operation.
- Management compressors of different or the same powers.
- Side band regulation.
- Night / day management (energy saving).
- Back-lit LCD display.
- Clock and calendar.
- Password for keys lock.
- RS485 Serial connection (Modbus-RTU or Telenet protocol).
- Pego programming philosophy that guarantees an immediate start-up.

PRODUCT IDENTIFICATION CODES

1.2

VISION SC600

Compressor and condenser fan control of a refrigeration plant.

OVERALL CLEARANCES

1.3

Dimensions in mm:

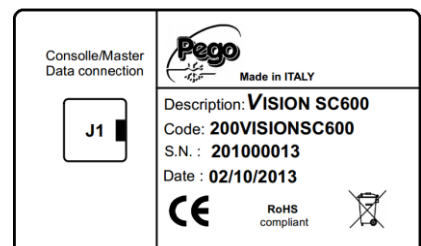
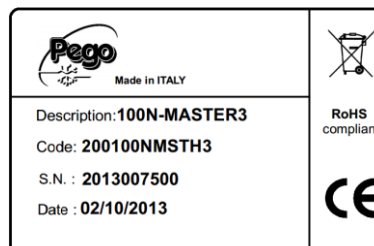


IDENTIFICATION DATA

1.4

The equipment described in this manual is provided with an identification data plate of the same placed on one side:

- Name of Manufacturer
- Equipment code
- Serial number
- Power supply voltage



## CHAPTER 2: INSTALLATION

### 2.1

#### MAIN WARNINGS FOR THE INSTALLER

1. Install the equipment in places complying with the protection degree and keep the box as intact as possible when making holes to house the cable glands and/or conduit glands.
2. Avoid using multicore cables with conductors connected to inductive and power loads and signal conductors which probes and digital inputs.
3. Avoid housing power supply cables with signal cables (probes and digital inputs) in the same conduit.
4. Reduce the lengths of the connection cables as much as possible, avoiding the wiring assuming the spiral shape, damaging for possible inductive effects on the electronics.
5. All conductors used in the wiring must be suitably proportioned to support the load to be powered.
6. Provide a main protection fuse upstream of the electronic control.
7. If required to extend the probes, use conductors with suitable section and not below 1mm<sup>2</sup>. The extending or shortening of the probes may alter the factory calibration; use an external thermometer to check and calibrate.

### 2.2

#### STANDARD EQUIPMENT FOR ASSEMBLY AND USE

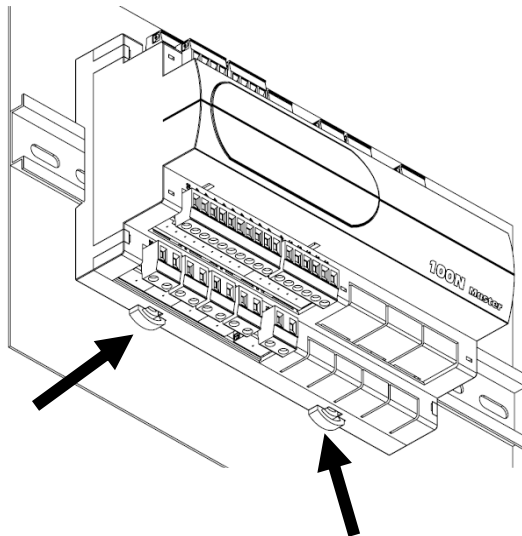
For assembly and use, the electronic controller **VISION SC600**, is equipped with:

- Nr 1 telephone plug cable;
- Nr 1 use manual;
- Nr 1 console VISION SC600 (200VISIONSC600);
- Nr 1 100N MASTER3 (200100NMSTH3);

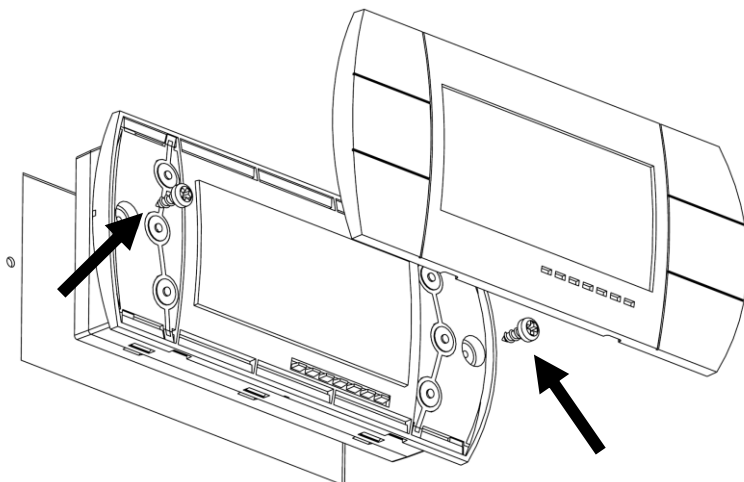
## INSTALLATION

2.3

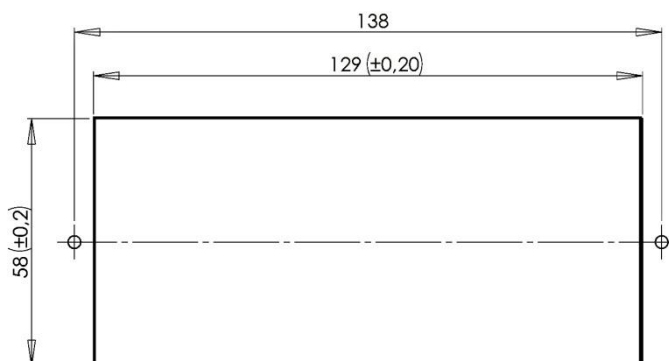
**Fig. 1:** Position the module 100N MASTER3 on the DIN guide and close the 2 lower hooks to lock it on the same.



**Fig. 2:** Fix the **VISION SC600** console using the two screws to be inserted in the slots underneath the keys frame.



**Fig. 3:** **VISION SC600** console perforation template.



## CHAPTER 3: FUNCTIONALITY

### 3.1

#### FUNCTIONS MANAGED BY VISION SC600

- Compressor control of a refrigeration plant, up to a maximum of 10.
- Condenser fan control of a refrigeration plant, up to a maximum of 10.
- It's possible to configure the outputs by setting the number of compressors and fans to control, so that their sum is less than or equal to 10.
- Compressor partition valves control. Each compressor output is associated to another output to control the corresponding partition valve (NC or NO).
- Sideband compressors and fans regulation.
- Analog output 0-10V for compressor inverter management. Compressor relay outputs are still controlled.
- 0-10V Analog output for the adjustment of fan speed in alternative to digital outputs control of the condenser fans.
- Rotation of compressors / fans according to the time of operation.
- Management compressors of different or the same powers.
- Clock and calendar.
- RS485 Serial connection (Modbus-RTU or Telenet protocol).
- Alarm history management. You can view the last highest priority alarm occurred, or the list of the last 40 alarms with their time or date of activation.
- Alarm relay.
- Remote Stand-by digital input.
- Night / day management (energy saving).



## CHAPTER 4: TECHNICAL FEATURES

### TECHNICAL FEATURES

4.1

<b>Power supply</b>			
Voltage	230 V~ ± 10% 50/60Hz		
Max. absorbed power (electronic control only)	~ 8 VA		
<b>Climatic Conditions</b>			
Work temperature	-5 ÷ +50 °C		
Storage temperature	-10 ÷ +70 °C		
Ambient relative humidity	Below 90% Hr		
<b>Main Features</b>			
Type of connectable probes (pressure)	4 – 20mA		
<b>Output features</b>			
Description	Installed relay	Board output features	Notes
OUT 1 (output 3-4)	(Relay 30A AC1)	30A 240V~ (AC1) 10A 240V~ (AC3) (2HP) (100000 cycles)	All outputs are clean contacts without voltage
Nr 9 outputs from 5 to 26	(Relay 16A AC1)	16A 240V~ (AC1) 3A 240V~ (AC3)	
<b>Dimensional features</b>			
100N MASTER 3 Dimensions	121.50mm x 71mm x 175mm (HxDxL)		
VISION SC 600 Dimensions (fitted)	70mm x 32mm x 158mm (HxDxL)		
<b>Mechanical and insulation features</b>			
Display protection degree	IP65		
Box material	Self-extinguishing ABS		

## 4.2

## WARRANTY CONDITIONS

The **VISION SC600** series products are covered by a 24-months warranty against all manufacturing defects as from the date indicated on the product ID code.

In case of defect the product must be appropriately packaged and sent to our production plant or to any authorized Service Center with the prior request of the Return Authorization Number.

Customers are entitled to have defective products repaired, spare parts and labour included. The costs and the risks of transport are at the total charge of the Customer.

Any warranty action does not extend or renew its expiration.

The Warranty does not cover:

- Damages resulting from tampering, impact or improper installation of the product and its accessories.
- Installation, use or maintenance that does not comply with the instructions provided with the product.
- Repair work carried out by unauthorized personnel.
- Damage due to natural phenomena such as lightning, natural disasters, etc...

In all these cases the costs for repair will be charged to the customer.

The intervention service in warranty can be refused when the equipment is modified or transformed.

Under no circumstances **Pego S.r.l.** will be liable for any loss of data and information, costs of goods or substitute services, damage to property, people or animals, loss of sales or earnings, business interruption, any direct, indirect, incidental, consequential, damaging, punitive, special or consequential damages, in any way whatsoever caused, whether they are contractual, extra contractual or due to negligence or other liability arising from the use of the product or its installation.

Malfunction caused by tampering, bumps, and inadequate installation automatically declines the warranty. It is compulsory to observe all the instructions in this manual and the operating conditions of the product.

**Pego S.r.l.** disclaims any liability for possible inaccuracies contained in this manual if due to errors in printing or transcription.

**Pego S.r.l.** reserves the right to make changes to its products which it deems necessary or useful without affecting its essential characteristics.

Each new release of the Pego product user manual replaces all the previous ones.

As far as not expressly indicated, is applicable the Law and in particular the art. 1512 C.C. (Italian Civil Code).

For any controversy is elected and recognized by the parties the jurisdiction of the Court of Rovigo.

# CHAPTER 5: DATA PROGRAMMING

## CONTROL PANEL

5.1



State led

## FRONT KEYBOARD

5.2

1



### FANS SET

Allows you to set the fans set point when pressed in combination with the Up or Down button. Reset the alarm sound if any.

2



### COMPRESSORS SET

Allows you to set the compressors set point when pressed in combination with the Up or Down button. Restore the alarm sound if any.

3





**STAND BY** (plant ON/OFF)

4



### DOWN

Decreases the values / Scroll down the parameters

- 5**  **MUTE ALARM**  
Reset sound alarm if any. If pressed more than 3 seconds displays the alarm history.
- 6**  **UP**  
Increases the values / Scroll up the parameters

## 5.3

## KEYS COMBINATIONS

**EXIT PROGRAMMING**

If pressed simultaneously for more than 3 seconds within any programming menu or the historical alarm allow you to exit the menu.

Exit from menu generates a confirmation beep.

**1st LEVEL PROGRAMMING**

If pressed simultaneously for more than 3 seconds allow access to the first level programming menu (if you are not in programming). Exit from this menu takes place automatically after 30 seconds of keyboard inactivity or by pressing up arrow + down arrow (confirmation beep output).

**2nd LEVEL PROGRAMMING**

If pressed simultaneously for more than 3 seconds allow access to the second level programming menu.

At the entrance of the menu a confirmation beep is generated.

**3rd LEVEL PROGRAMMING**

If pressed simultaneously for more than 3 seconds allow access to the third level programming menu.

At the entrance of the menu a confirmation beep is generated.

**OUTPUT HOUR COUNTER / ALARM HISTORY RESET**

While viewing the working time of an output within the read-only Hr1, Hr2, Hr3, Hr4, Hr5, Hr6, Hr7, Hr8, Hr9, Hr0 parameters while pressing the SET\_COMP key and pressing the "SET\_VENT" for at least 10 seconds, the hour counter will be reset.

Similarly while viewing the alarm history while pressing the SET\_COMP key and pressing the "SET\_VENT" for at least 10 seconds, the alarm history will be reset.



**SWITCHING FROM Bar to °C**

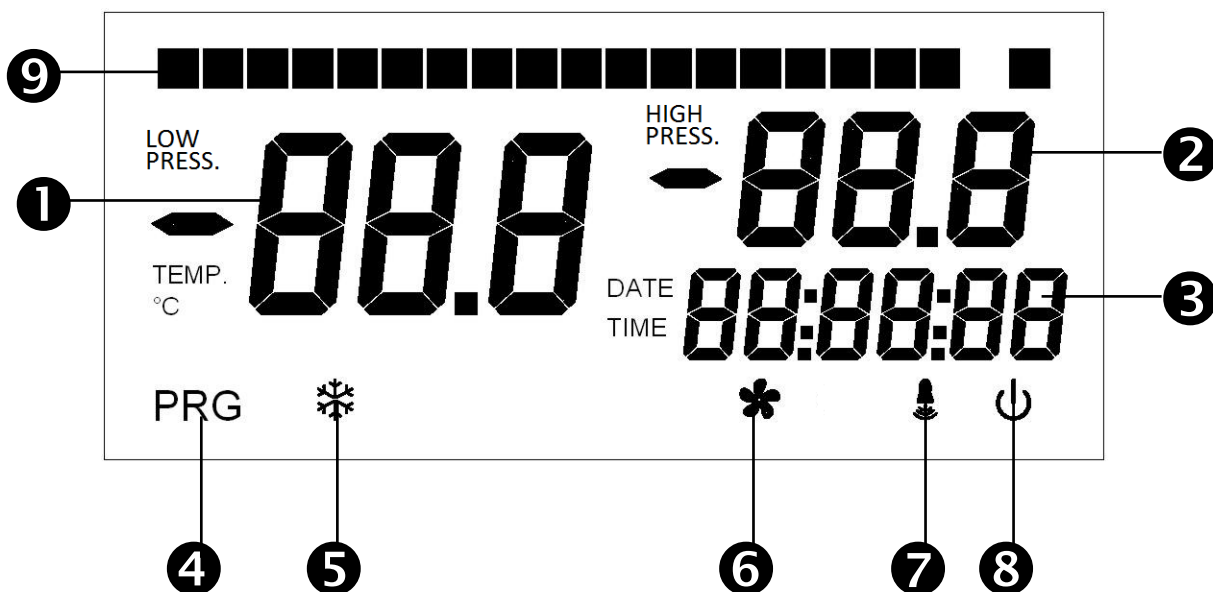
While viewing several variables in Bar, pressing the stand-by key and Set together switches the view from Bar to °C according to the table of the gas type selected until the keys are released.




The variables involved with this kind of view are:

- Setpoint compressors, r0C, LSC, HSC.
- Setpoint fans, r0V, LSU, HSU.

LCD DISPLAY

5.4



- |    |   |   |
|----|---|---|
| 1. |   | <b>Intake sensor reading (low pressure) / parameters</b><br>At night operation decimal point flashes. |
| 2. |   | <b>Delivery sensor reading (high pressure) / parameters values / Error code</b>                       |
| 3. |   | <b>Time / time parameters value</b>   |
| 4. | <b>PRG</b>  | <b>Programming mode</b> (the control is in the programming phase)                                     |
| 5. |  | <b>Compressors call</b> (compressor call signaling)   |
| 6. |  | <b>Fans call</b> (fans call signaling)  |
| 7. |  | <b>Alarm</b>  |

8.



**Stand-by** (flashing in stand-by. Outputs are disabled)


### Outputs status display

**(compressors – compressors capacity – fans).**

(flashing if waiting t1c/u, t2 c/u, t3 c/u, t4 c/u time)

9.

Each output is displayed with a couple of squares to indicate whether the output X is in "Compressor ON", "Fan ON" or "Compressor partition-ON". During configuration, the compressors are always associated to the first exit, then there are partitions and finally the fans (left to right).

 Compressor partition X ON

 Fan X ON

 Compressor X ON

**LOW  
PRESS.**

Intake sensor reading (low pressure) in Bar.

**TEMP.  
°C**

Intake sensor reading (low pressure) in °C.

**HIGH  
PRESS.**

On = delivery sensor reading (high pressure) in Bar.

**HIGH  
PRESS**

Off = delivery sensor reading (high pressure) in °C.

## 5.5



### GENERALITY

For the operator's safety and practicality, **VISION SC600 system** envisions three programming levels; the first for configuration of the frequently amendable **SET POINT** parameters only, the second for programming and setting the main parameters relating to the various board functioning modes, and the third for programming input/output of the board. It is not possible to directly access the second or third level from the first level programming, exit current programming first.

## SYMBOLS

5.6

For practicality we will use the following symbols:

- (▲) the UP key  that performs value increase functions;
- (▼) the DOWN key  that performs value decrease functions.

## SET POINT SETTING AND DISPLAYING

5.7

1. Press the SET COMPRESSOR key to display the current SET POINT in Bar.
2. Keeping the SET COMPRESSOR key pressed and pressing one of the (▲) or (▼) keys, the SET POINT value can be amended. Release the SET key to return to displaying the regulation probe value; memorising of the made amendments will automatically happen.

**NOTE:** Similarly for the setting of the setpoint related to fans repeat the above steps using the SET FANS key instead of the SET COMPRESSORS key. While viewing the SET POINT value in Bar (SET button pressed), if you press the standby key at the same time, you will view the value changed to °C depending on the type of Gas set. While viewing the value in °C, it will not be possible to change the set through the arrows.

## FIRST LEVEL PROGRAMMING (User level)

5.8

To access the first level configuration:

1. Keep the keys (▲) and (▼) pressed simultaneously for a few seconds until the first programming variable appears on the display.
2. Release the keys (▲) and (▼).
3. Using the (▲) key or (▼) key, select the variable to be amended.
4. After having selected the wanted variable, it will be possible to amend its setting by keeping the SET COMPR (or SET FANS) key pressed and by pressing one of the (▲) or (▼) keys.

To exit the menu once the configuration values are set, simultaneously keep the (▲) and (▼) keys pressed for a few seconds, until the pressure measure value appears again.

5. Memorisation of the amendments made to the variables will happen automatically when exiting the configuration menu.

## 5.9

## FIRST LEVEL VARIABLES LIST (User Level)

LABEL	MEANING	VALUES	DEFAULT
r0C	<b>SET differential (of the pressure) compressors</b> (interlocked with nC)	0.2 ÷ 30 bar Step 0.2 Bar	0,6
t1C	<b>The minimum time that must elapse between the insertion of a compressor step and the next one (SECONDS)</b> This time avoids breakaways caused by simultaneous start-ups.	2 ÷ 500 step 2 sec	20
t2C	<b>The minimum time that must elapse between two different compressor step deactivations. (SECONDS)</b>	2 ÷ 500 step 2 sec	10
t3C	<b>The minimum time that must elapse between two successive insertions of the same compressor step. (SECONDS)</b>	2 ÷ 500 step 2 sec	320
t4C	<b>The minimum time that must elapse between one shutdown and the next insertion of the same compressor step. (SECONDS)</b>	2 ÷ 500 step 2 sec	2
r0U	<b>SET differential (of the pressure) fans.</b> (interlocked with iOu but only if iEn=2 or iEn=3, otherwise interlocked with nU)	0.6 ÷ 5 bar Step 0.2 Bar	2,0
t1U	<b>The minimum time that must elapse between the insertion of a fan step and the next one. (SECONDS)</b> This time avoids breakaways caused by simultaneous start-ups.	2 ÷ 500 step 2 sec	2
t2U	<b>The minimum time that must elapse between two different fan step deactivations. (SECONDS)</b>	2 ÷ 500 step 2 sec	2
t3U	<b>The minimum time that must elapse between two successive insertions of the same fan step. (SECONDS)</b>	2 ÷ 500 step 2 sec	10
t4U	<b>The minimum time that must elapse between one shutdown and the next insertion of the same fan step. (SECONDS)</b>	2 ÷ 500 step 2 sec	2
Fty	<b>Type of refrigerant GAS in use.</b> The wrong configuration of this parameter does not affect operation.	0 = 404    4 = 410 1 = 134    5 = 507 2 = R22    6=CO2 3 = 407    7=R407F	1
UM	<b>View unit of measurement</b>	0 = °C    1 = Bar	1
AOC	<b>Display of the 0-10V analogue output for compressor inverter</b>	0,0 – 10,0V with iEn=0 or 2 displays - - -	Read only
AOU	<b>Display of the 0-10V analogue output for condenser fans inverter</b>	0,0 – 10,0V with iEn=0 or 1 displays - - -	Read only



ALL	View of the last alarm triggered	Alarm code	Read only
A1C	<p><b>Minimum compressor pressure alarm</b> The absolute pressure referring to the Intake probe below which, once the Ald delay time is activated, the LOW pressure alarm is triggered showing <b>ELc</b> alternating with the pressure on the display and the flashing of the alarm icon. When the alarm turns off, the "alarm presence" icon will remain lit to indicate which operation has occurred until the alarm button is pressed.</p>	-0,6 ÷ (A2C-0,2) Bar, step 0,2 Bar	-0,6 bar
A2C	<p><b>Maximum compressor pressure alarm</b> The absolute pressure referring to the Intake probe above which, once the Ald delay time is activated, the HIGH pressure alarm is triggered showing <b>EHc</b> alternating with the pressure on the display and the flashing of the alarm icon. When the alarm turns off, the "alarm presence" icon will remain lit to indicate which operation has occurred until the alarm button is pressed.</p>	(A1C+0,2) ÷ +30,0 Bar, step 0,2 Bar	+30,0 bar
A1U	<p><b>Minimum fan pressure alarm</b> The absolute pressure referring to the delivery probe below which, once the Ald delay time is activated, the LOW pressure alarm is triggered showing <b>ELu</b> alternating with the pressure on the display and the flashing of the alarm icon. When the alarm turns off, the "alarm presence" icon will remain lit to indicate which operation has occurred until the alarm button is pressed.</p>	-0,6 ÷ (A2U-0,2) Bar, step 0,2 Bar	-0,6 bar
A2U	<p><b>Maximum fan pressure alarm</b> The absolute pressure referring to the delivery probe above which, once the Ald delay time is activated, the HIGH pressure alarm is triggered showing <b>EHu</b> alternating with the pressure on the display and the flashing of the alarm icon. When the alarm turns off, the "alarm presence" icon will remain lit to indicate which operation has occurred until the alarm button is pressed.</p>	(A1U+0,2) ÷ +30,0 Bar, step 0,2 Bar	+30,0 bar
tdS	<b>Day start time programming</b> (ignored if dnE=0 or there is a night digital input)	00:00 ÷ 23:59	06:00
tdE	<b>Day end time programming</b> (ignored if dnE=0 or there is a night digital input)	00:00 ÷ 23:59	22:00

## 5.10

## LEVEL 2 PROGRAMMING (Installer level)

In order to access the 2<sup>nd</sup> programming Level, press and hold the UP key (▲), the DOWN key (▼) and the STAND-BY key for over 3 seconds.

When the first programming variable appears:

1. Select the variable you want to change with the key (▲) or with the key (▼). After selecting the required variable, it is possible to edit configuration by pressing and holding the SET key and pressing either the (▲) or (▼) key.
2. After setting the configuration values, press and hold both the (▲) key and the (▼) key for a few seconds until the pressure value appears and exit the menu.
3. Any changes made to the variables are saved automatically when the system closes the configuration menu.
4. Press the STAND-BY key to enable the control.

## 5.11

## LIST OF LEVEL 2 VARIABLES (Installer Level)

LABEL	MEANING	VALUES	DEFAULT
SEq	Logical selection of the digital outputs activation	0 = With rotation 1 = Without rotation	1
Man	Max. number (hours x 10) of operating hours for a compressor after which a request for maintenance will be signaled. (if = 0, the request for maintenance will not be signaled)	0 ÷ 510 step 2	300
rA	Setting general alarm output	1 = alarm relay(17-18) energized in alarm. 0 = alarm relay (17-18) disabled. -1 = alarm relay (17-18) de-energized when in alarm.	1
PU4	Pressure (bar) corresponding to 4mA Referred to the high pressure probe.	-1,0 ÷ (PV2 - 0,1)	0,0
PU2	Pressure (bar) corresponding to 20mA Referred to the high pressure probe.	(PV4 + 0,1) ÷ 50,0	30,0
PC4	Pressure (bar) corresponding to 4mA Referred to the low pressure probe.	-1,0 ÷ (PC2 - 0,1)	0,0
PC2	Pressure (bar) corresponding to 20mA Referred to the low pressure probe.	(PC4 + 0,1) ÷ 50,0	12,0
niP	Time (hours) in which the activation of the manual central alarm is triggered 5 times (E7 alarm). At the 5th activation, it remains in alarm (E8 alarm).	0 ÷ 240 hours 0 = Alarm E8 on the first activation of the digital input	0

rLo	Time (min.) with which the freon/oil pre-alarm (Ep) becomes alarm (EF). Once this time has passed, all outputs are disabled.	0 ÷ 240 min	30 min
iOu	Offset Inverter fans (of pressure) Value always less than (r0V) value	0,5 ÷ 2,5 bar always < r0U	0,5
iMu	Inverter fans: minimum 0-10V output value setting	0 ÷ 100 %	30 %
bOu	Boost fans: Time for which the 0-10V output of the fans is pushed to 100%. This is used to win the breakaway at their start. (SECONDS)	0 ÷ 240 sec	2 sec
iMc	Inverter compressors: minimum 0-10V output value setting	0 ÷ 100 %	30 %
itS	Minimum time to change analog output inverter compressor to go from 0 to 10V or 10 to 0V during activation or deactivation of compressors steps. (SECONDS)	0 ÷ 240	60
LSC	Minimum value that can be attributed to the Compressors set point	-0,5 ÷ (HSC-1)	0,2
HSC	Maximum value that can be attributed to the Compressors set point	(LSC+1) ÷ 10,0	5,0
LSU	Minimum value that can be attributed to the Fans set point	0,0 ÷ (HSU-1)	10,0
HSU	Maximum value that can be attributed to the Fans set point	(LSU+1) ÷ 30,0	25,0
dnE	Night mode enable (energy saving) At night operation decimal point flashes.	0 = disabled 1 = enabled	0
nSC	Correction for the compressor SET during night operation (energy saving) During night operation the Compressor set is: <i>Compressor Set = Set comp. + nSC</i>	-5,0 ÷ 5,0 Bar	0,0
nSU	Correction for the fans SET during night operation (energy saving) During night operation the fans set is: <i>Fans Set = Set fans + nSU</i>	-10,0 ÷ 10,0 Bar	0,0
Ald	Minimum or maximum pressure alarm signaling and display delay time.	0 ÷ 240 min	120 min
CLC	Adjustment compressors sensor calibration (low pressure)	-10,0 ÷ +10,0 step 0,1 bar	0,0
CLV	Adjustment fans sensor calibration (high pressure)	-10,0 ÷ +10,0 step 0,1 bar	0,0
BEE	Buzzer enable	0 = disabled 1 = enabled	1

<b>Ad</b>	<b>Network address</b> for connection to the TeleNET or Modbus supervision system (see chap. 6.1)	0 ÷ 31 (con SEr=0) 1 ÷ 247 (con SEr=1)	1
<b>SEr</b>	<b>RS-485 communication protocol</b>	0 = TeleNET protocol 1 = Modbus-RTU protocol	0
<b>bdr</b>	<b>Modbus baudrate.</b>	0 = 300 baud 1 = 600 baud 2 = 1200 baud 3 = 2400 baud 4 = 4800 baud 5 = 9600 baud 6 = 14400 baud 7 = 19200 baud 8 = 38400 baud	5
<b>Prt</b>	<b>Modbus parity checking</b>	0 = no parity bit 1 = even parity bit 2 = odd parity bit	0
<b>P1</b>	<b>Password: kind of protection</b> (active when PA is not 0)	0 = shows only the set point and permits deactivation of the alarms.  1 = disables access to levels 1, 2 and 3 programming and disables access to alarm history (access permitted to all other functions)  2 = disables access to levels 2 and 3 programming (access permitted to all other functions).  3 = disables access to level 3 programming (access permitted to all other functions).	3
<b>PA</b>	<b>Password</b> (see P1 for the type of protection)	0 ÷ 999 0 = function disabled	0
<b>hMS</b>	<b>Time setting</b>	00:00 ÷ 23:59	0
<b>dY</b>	<b>Day setting</b>	01 ÷ 31	01
<b>Mo</b>	<b>Month setting</b>	01 ÷ 12	01
<b>Yr</b>	<b>Year setting</b>	00 ÷ 99	13
<b>dEF</b>	<b>Reserved parameter</b>	- - -	Read only
<b>reL</b>	<b>Software release</b>		Read only

To access Level 3 programming, press and hold the UP key (▲), DOWN key (▼), STAND-BY key and SET FANS key for over 3 seconds.

When the first programming variable appears:

1. Select the variable you want to change with the key (▲) or with the key (▼). After selecting the required variable, it is possible to edit configuration by pressing and holding the SET key and pressing either the (▲) or (▼) key.
2. After setting the configuration values, press and hold both the (▲) and the (▼) keys for a few seconds, until the pressure value appears and exit the menu.
3. Any changes made to the variables are saved automatically when the system closes the configuration menu.
4. Press STAND-BY key to enable the control.

LIST OF LEVEL 3 VARIABLES (Installer Level)

LABEL	MEANING	VALUES	DEFAULT
iEn	<p><b>Inverter enable:</b></p> <p><b>0 = Management inverter disabled</b></p> <p><b>1 = Compressor 1 inverter management</b> (fan outputs and other compressors outputs are handled as digital outputs)</p> <p><b>2 = Fan inverter management</b> (all compressors are handled as digital outputs. All fans are parallel connected to the inverter )</p> <p><b>3 = compressor 1 inverter management + fans inverter</b></p>	<p>0 ÷ 3</p> <p><i>Note: if iEn = 1 or iEn = 3 the parameter nPC is forced to 0 (compressors capacity disabled)</i></p>	0
nC	<p><b>Selecting number of compressor outputs. (nC+nU ≤ 10)</b></p>	0 ÷ 10-NU if NPC=0	5
		0 ÷ 5 – [nU/2] if NPC=1 o -1	
nU	<p><b>Selecting number of fan outputs. (nC+nU ≤ 10)</b></p>	0 ÷ 10 – nC if NPC=0	5
		0 ÷ 10–(nC*2) if NPC=1 o -1	
nPC	<p><b>Compressor capacity-enabled (50%)</b> (if inverter compressor disabled)</p>	<p>-1 = valve N.C. 0 = disabled 1 = valve N.O.</p>	0

H1	Digital output 1 hour counter (resettable)*	0 ÷ 999 tens of hours	Read only
H2	Digital output 2 hour counter (resettable)*	0 ÷ 999 tens of hours	Read only
H3	Digital output 3 hour counter (resettable)*	0 ÷ 999 tens of hours	Read only
H4	Digital output 4 hour counter (resettable)*	0 ÷ 999 tens of hours	Read only
H5	Digital output 5 hour counter (resettable)*	0 ÷ 999 tens of hours	Read only
H6	Digital output 6 hour counter (resettable)*	0 ÷ 999 tens of hours	Read only
H7	Digital output 7 hour counter (resettable)*	0 ÷ 999 tens of hours	Read only
H8	Digital output 8 hour counter (resettable)*	0 ÷ 999 tens of hours	Read only
H9	Digital output 9 hour counter (resettable)*	0 ÷ 999 tens of hours	Read only
H10	Digital output 10 hour counter (resettable)*	0 ÷ 999 tens of hours	Read only
I1	Setting of digital input n.1	28 = Night mode digital input (energy saving) (N.O.) 27 = Remote Stand-by (N.O.) 26 = General low pressure alarm EL (N.O.) 25 = General high pressure alarm EH (N.O.) 24 = Freon level alarm (N.O.) 23 = Central alarm in manual mode (N.O.) 22 = Alarm display only - fans (con N.O.) 21 = Alarm display only - compress. (N.O.) 20 = Fan alarm n.10 (N.O.) 19 = Fan alarm n.9 (N.O.) 18 = Fan alarm n.8 (N.O.) 17 = Fan alarm n.7 (N.O.) 16 = Fan alarm n.6 (N.O.) 15 = Fan alarm n.5 (N.O.) 14 = Fan alarm n.4 (N.O.) 13 = Fan alarm n.3 (N.O.) 12 = Fan alarm n.2 (N.O.) 11 = Fan alarm n.1 (N.O.) 10 = Compressor alarm n.10 (N.O.) 9 = Compressor alarm n.9 (N.O.) 8 = Compressor alarm n.8 (N.O.) 7 = Compressor alarm n.7 (N.O.) 6 = Compressor alarm n.6 (N.O.) 5 = Compressor alarm n.5 (N.O.) 4 = Compressor alarm n.4 (N.O.) 3 = Compressor alarm n.3 (N.O.) 2 = Compressor alarm n.2 (N.O.) 1 = Compressor alarm n.1 (N.O.) 0 = Disabled -1 = Compressor alarm n.1 (N.C.) -2 = Compressor alarm n.2 (N.C.) -3 = Compressor alarm n.3 (N.C.) -4 = Compressor alarm n.4 (N.C.) -5 = Compressor alarm n.5 (N.C.) -6 = Compressor alarm n.6 (N.C.) -7 = Compressor alarm n.7 (N.C.) -8 = Compressor alarm n.8 (N.C.) -9 = Compressor alarm n.9 (N.C.) -10 = Compressor alarm n.10 (N.C.) -11 = Fan alarm n.1 (N.C.) -12 = Fan alarm n.2 (N.C.) -13 = Fan alarm n.3 (N.C.) -14 = Fan alarm n.4 (N.C.) -15 = Fan alarm n.5 (N.C.) -16 = Fan alarm n.6 (N.C.) -17 = Fan alarm n.7 (N.C.) -18 = Fan alarm n.8 (N.C.) -19 = Fan alarm n.9 (N.C.) -20 = Fan alarm n.10 (N.C.) -21 = Alarm display only - compress. (N.C.) -22 = Alarm display only - fans (N.C.) -23 = Central alarm in manual mode (N.C.) -24 = Freon level alarm (N.C.) -25 = General high pressure alarm EH (N.C.) -26 = General low pressure alarm EL (N.C.) -27 = Remote Stand-by (N.C.) -28 = Night mode digital input (energy saving) (N.C.)	1

I2	Setting of digital input n.2	as I1	2
I3	Setting of digital input n.3	as I1	3
I4	Setting of digital input n.4	as I1	4
I5	Setting of digital input n.5	as I1	5
I6	Setting of digital input n.6	as I1	11
I7	Setting of digital input n.7	as I1	12
I8	Setting of digital input n.8	as I1	13
I9	Setting of digital input n.9	as I1	14
I10	Setting of digital input n.10	as I1	15
I11	Setting of digital input n.11	as I1	23
I12	Setting of digital input n.12	as I1	24
I13	Setting of digital input n.13	as I1	25
I14	Setting of digital input n.14	as I1	26
I15	Setting of digital input n.15	as I1	27

(\*)Resetting the compressor working times by displaying the desired hour counter (Hr1, Hr2, etc.) and simultaneously pressing the two SET (compressors and fans) keys for at least 10 seconds. After this time the control emits a beep of confirmation of completed operation.

## ACTIVATION SEQUENCE AND DELAYS

**5.14**

The activation logic of the digital outputs is selected by parameter Seq (for both compressors and fans).

*NB c / u indicates compressors / fans parameter, i.e. t1c / U indicates both parameters T1c and t1U.*

With **Seq=1**, the activation of digital outputs always follows the 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 sequence and the 10, 9, 8, 7, 6, 5, 4, 3, 2, 1 disabling one complying with the **t1C/U**, **t2C/U**, **t3C/U**, **t4C/U** times. If an output is not available because an alarm occurs, it will be temporarily excluded from the sequence.

With **SEq=0** the activation/deactivation of the digital outputs is a time-based operation, and in particular:

- The output that has the least number of operating hours in times **t1C/U**, **t2C/U**, **t3C/U** and **t4C/U**, and that is available at that time (therefore not in alarm).
- The output that has the largest number of operating hours in times **t1C/U**, **t2C/U**, **t3C/U**, **t4C/U** is deactivated.

### Delays on the activations of the outputs

“**t1C/U**” determines the minimum time that must elapse between the insertion of a step and the next one. This parameter avoids breakaways caused by simultaneous start-ups.

“**t2C/U**” determines the minimum time that must elapse between the deactivation of two different steps.

“**t3C/U**” determines the minimum time that must elapse between two subsequent insertions of the same step. This parameter allows you to limit the number of start-ups per hour if the controlled motors require this.

“**t4C/U**” determines the minimum time that must elapse between one shutdown and the next insertion of the same compressor step.

On the LCD display the icons bar relative to fans and compressors (see par 5.4 ) will flash when its output is pending ON or OFF due to these times.



## INPUTS AND OUTPUTS CONFIGURATION

## 5.15

The configuration of the outputs of the 100N MASTER unit can be set via the nC, nU and NPC parameters. Each output can be associated with the relative protection via the I1, I2, ... , I15 digital inputs.

The nC, nU and NPC parameters are closely associated with each other. The maximum number of compressors depends on the number of fans set and if there is any capacity control. The sum of the fans + compressors must not be greater than 10 if there is no capacity control (NPC=0). If the capacity control is activated (NPC=1 or -1), each compressor is associated with an additional output to check the relative splitting valve. Therefore, the sum of twice the compressors plus the fans must be less than or equal to 10 (maximum number of outputs). Recap:

	Maximum number of compressors	Maximum number of Fans
<b>Active capacity control (NPC=1 or -1)</b>	$5 - [(number\ of\ fans\ nU)/2]$	$10 - (number\ of\ compressors\ nC*2)$
<b>Disabled capacity control (NPC=0)</b>	$10 - (number\ of\ fans\ nU)$	$10 - (number\ of\ compressors\ nC)$

Compressors and fans have a sliding-based management: the first outputs are considered as “Compressor outputs”, followed by the “Capacity control outputs” and finally the “Fan outputs”. If, for instance, you set NPC=1, nC=3, nU=3 then:

- digital outputs 0, 1, 2 are “Compressor outputs”;
- outputs 3, 4, 5 are associated with the capacity control of the compressors;
- outputs 6, 7, 8 are the digital outputs that control the fans.

If a compressor is eliminated, i.e. changed from nC=3 to nC=2, then:

- outputs 0, 1 = compressor outputs;
- outputs 2, 3 = capacity outputs;
- outputs 4, 5, 6 = fan outputs.

The operating mode is selected via the iEn parameter.

***iEn = 0: inverter management deactivated***

If iEn = 0 both the fans and the compressors are managed with digital outputs and side-band control.

*- For the compressors:*

Based on the value of the "SET COMPRESSORS", "r0C" and "nC" parameters, the controller calculates the various areas where there is a request to enable and disable the compressor outputs (steps) by positioning the various switch-ons and switch-offs in the r0C differential range. Each step has a r0C/nC differential (where nC is the number of compressors). The combination of the outputs to the steps depends on the setting of the Seq. variable. If, for instance, we consider Seq=1, for Compressor output no.2 the enabling will occur at  $SET\_COMPR+(r0C/nC)*2$  (constant 2 refers to step 2) and the disablings will occur at  $SET\_COMPR +(r0C/nC)*1$  (see graph no.1 or graph no.2 ).

The number of enabled compressors depends on the deviation between the value measured by the adjustment pressure sensor (located at the intake) and the set intake Set point.

*- For the fans:*

Based on the value of the "SET FANS", "r0U" and "nU" parameters, the controller calculates the various areas where there is a request to enable and disable the fan outputs (steps) by positioning the various switch-ons and switch-offs in the r0U differential range. Each step has a r0U/nU differential (where nU is the number of fans). The combination of the outputs to the steps depends on the setting of the Seq. variable.

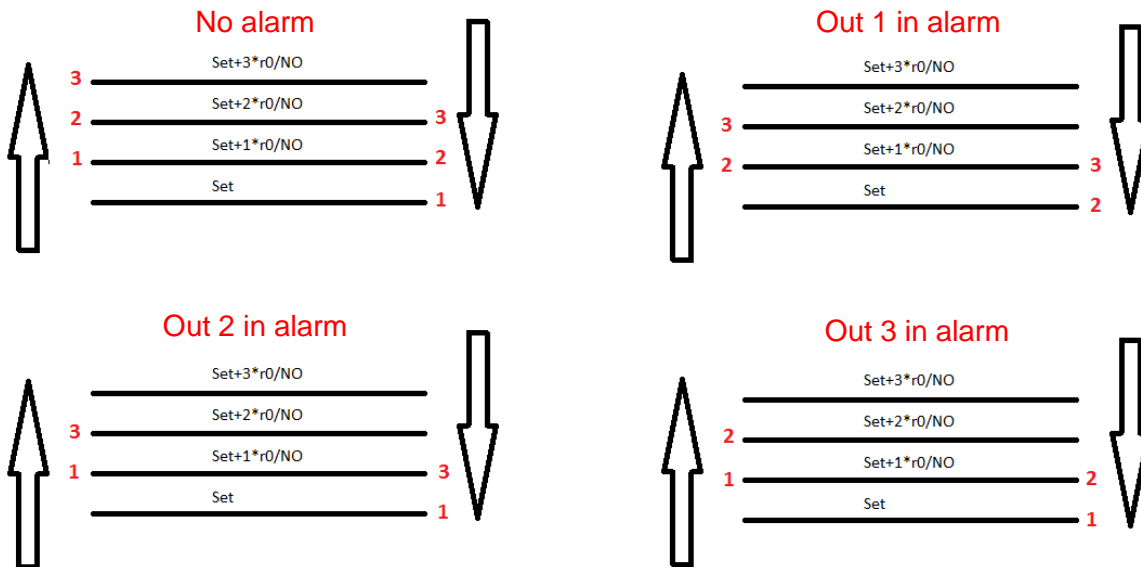
If, for instance, we consider Seq=1, for Fan output no.2 the enabling will occur at  $SET\_VENT+(r0U/nU)*2$  (constant 2 refers to step 2) and the disabling will occur at  $SET\_VENT +(r0U/nU)*1$  (see graph n0.3).

The number of fans enabled depends on the deviation between the value measured by the adjustment pressure sensor (on the supply line) and the set supply Set point.

**CONTROL IN THE EVENT OF ALARMS**

With the presence of alarms (alarm outputs 1...nC or 1...nU alarm inputs enabled), operation is maintained equal but the output relating to the alarm in the sequence and the relative alarm is shown on the display (EC1...ECn or EU1...EUn).

CASE SEq=1

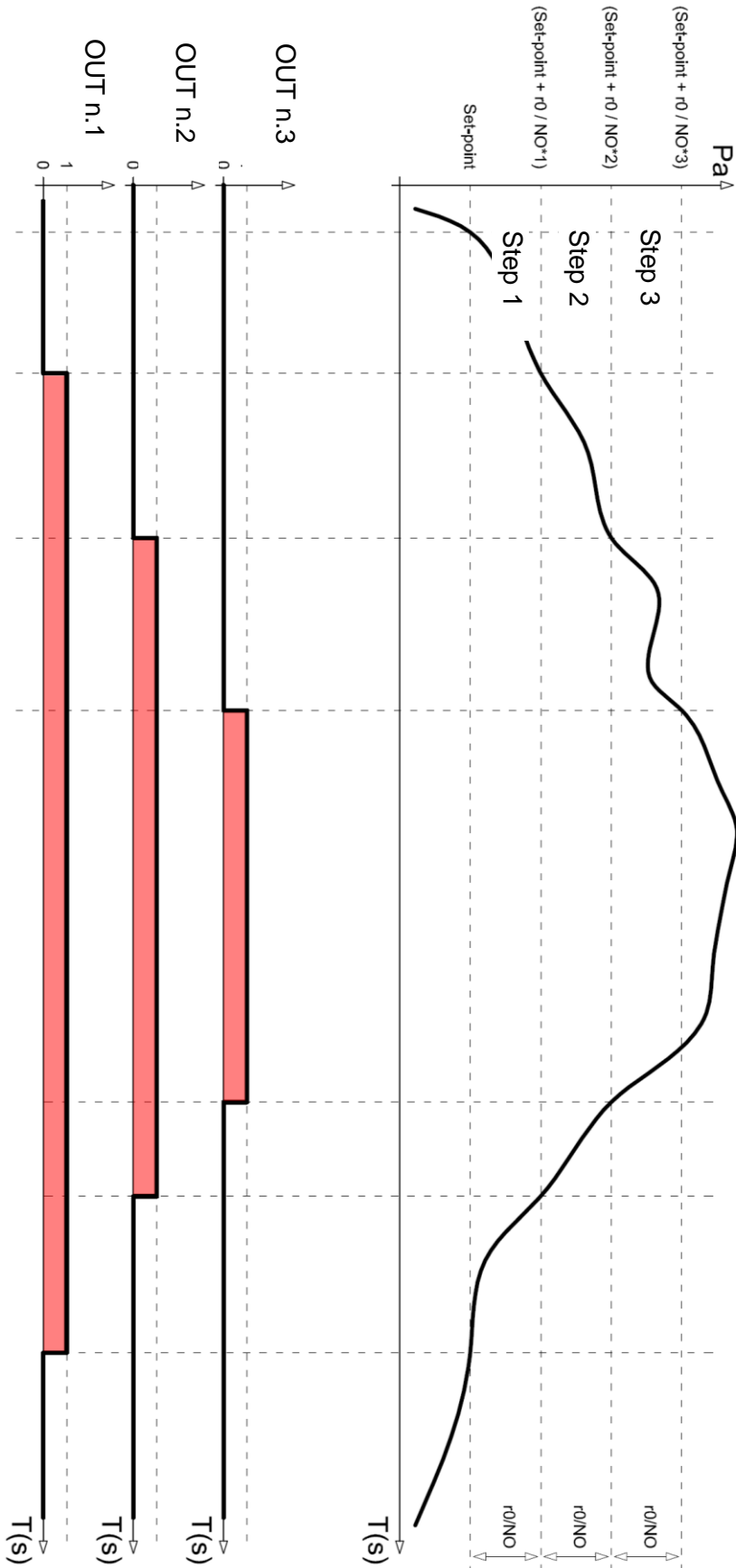


Set = Set point compressors / fans  
 r0 = diff. compressors r0C / diff. fans r0U  
 NO = compressors number nC / fans number nU

An output in alarm is rehabilitated at the end of the alarm, but is not activated if it is already in operation a number of compressors / fans equal to the number of steps required.

On his return from the state of Stand-by the outputs turn on time t1c/u and t3c/u between ignition and the next.

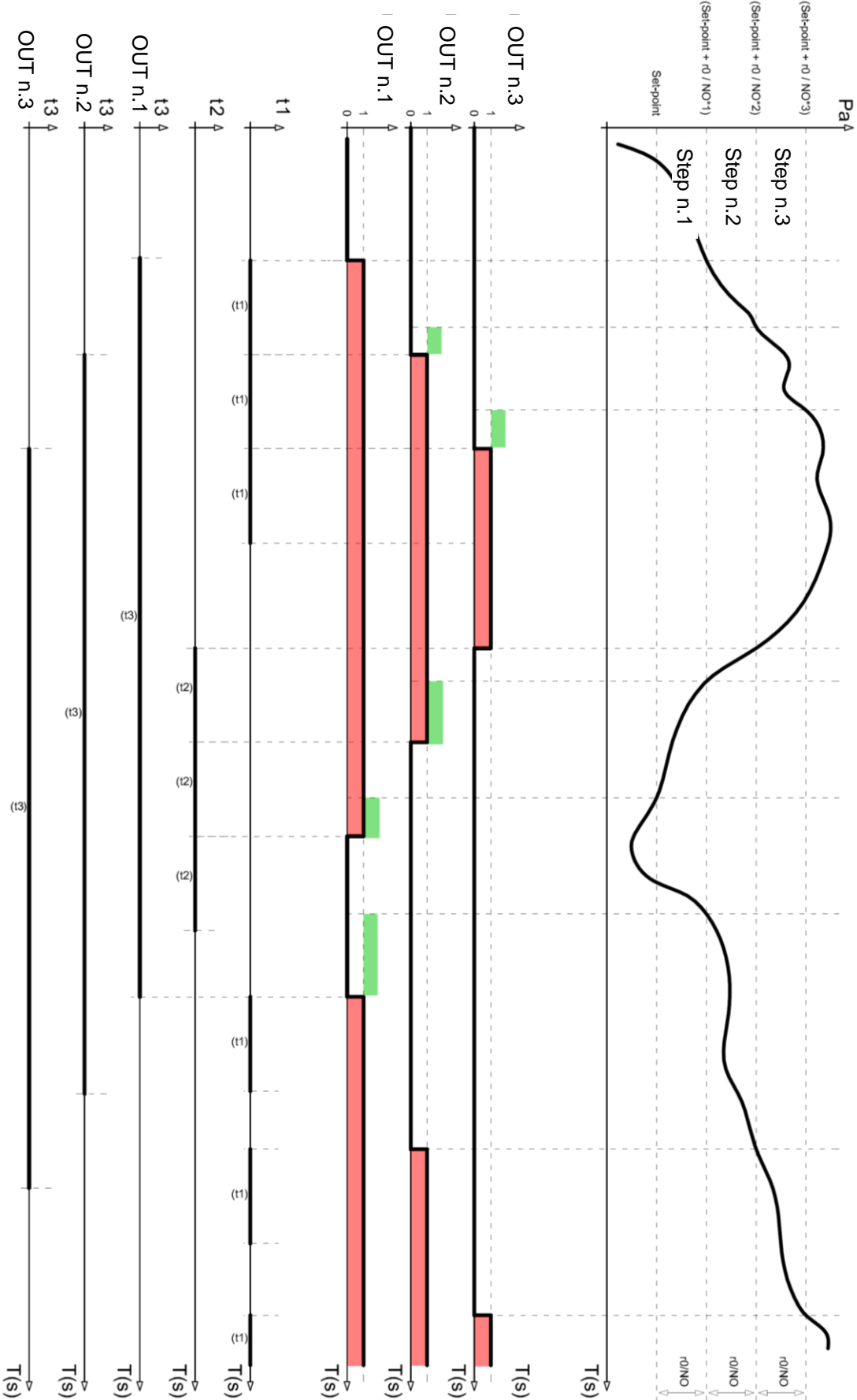
Graph n.1  
Example with sEq=1 and nC=3



Example of sideband insertion, no rotation, 3 compressors  
without t1, t2, t3 delays

Graph n.2  
 Example with  $sEq=1$ ,  $NC=3$  and the intervention of the times  $t1c$ ,  $t2c$ ,  $t3c$ .

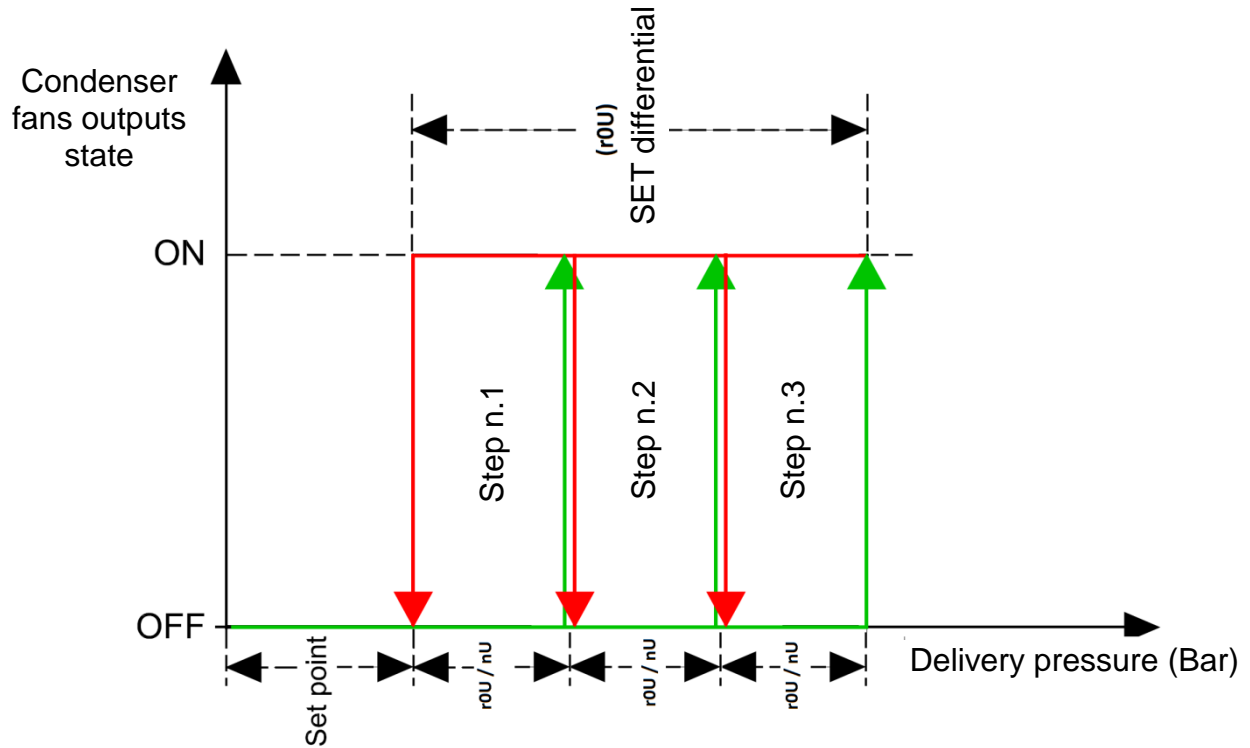
Example of sideband insertion, no rotation, 3 compressors and the intervention of  $t1$ ,  $t2$ ,  $t3$  delays



Graph n.3

Legend

Condens. Fan State	Condenser fan state (on / off)
Delivery pressure	Delivery pressure (Bar) for the activation of condenser fans
Fans Set point	SET POINT (Bar) set by the operator to enable condenser fans.
r0u	FAN SET differential. (First level parameter)
Step n.1,2,3	Insertion steps that are paired with the outputs based on the variable Seq
nU	no. of condenser fan managed (Third level parameter)



***iEn = 1: compressor inverter management activated***

If  $iEn=1$ , compressor 1 is managed with the 0-10V output and a side-band control. The compressor 1 digital output is used to enable the inverter, the other digital outputs control the remaining compressors with a side-band control.

The adjustment of the inverter is based on the operation shown in Graph no.4 as the intake pressure varies:

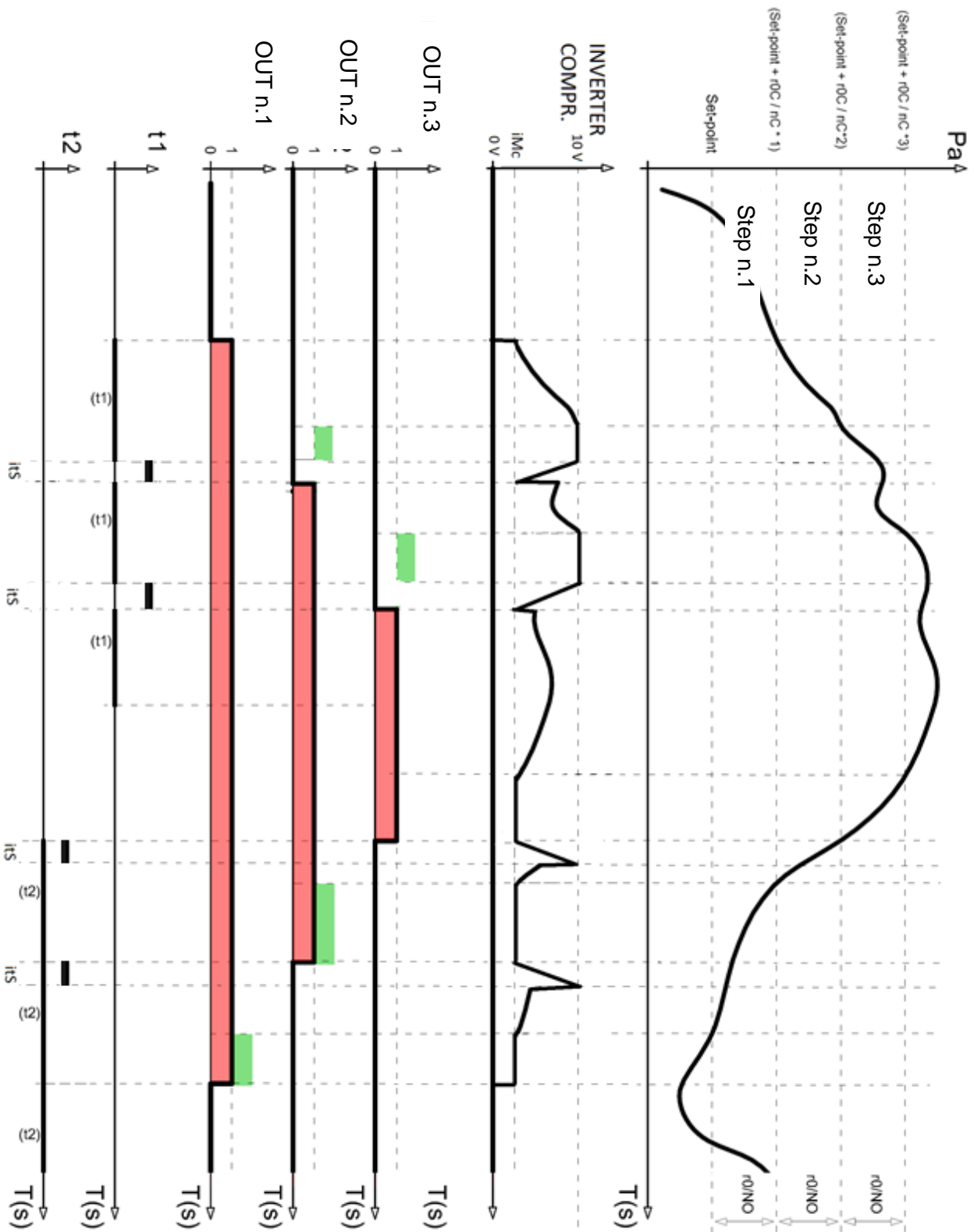
- When the first compressor step is activated, the inverter output is set to the minimum  $iMc$  value.
- Afterwards, the inverter output varies in proportion with the value read by the intake sensor (within a 0-10V range) and the other compressor outputs are controlled on a side-band basis;
- When there is a request to enable the second compressor stage and after the  $t1C$  time, the inverter output is gradually reduced down to the  $iMc$  value. Compressor output 2 is then activated and the inverter varies in proportion with the value read by the intake sensor;
- When a compressor step is disabled, the inverter output is gradually increased until it reaches the maximum value in the  $itS$  time. It then varies in proportion with the value read by the intake sensor.

**CONTROL IN THE EVENT OF ALARMS**

With the compressor output no.1 alarm input activated, the analogue input will be immediately brought to 0V and the digital output no.1 will be opened after (inverter-enabling is removed).

The relative alarm (EC1) will also be shown on the display.

Graph n. 4 - Example inverter compressor operation.  
Seq=1, nC=3 and the intervention of times t1c e t2c





***iEn = 2: fan inverter management enable***

With iEn=2 you will have the Condenser fan control with 0-10V analogue output and of sideband-type adjustment. Digital Output "Fan 1" represents "the condenser fans inverter activation"; the other fans digital outputs are disabled (all fans are controlled by the inverter). The compressors are controlled by digital outputs and sideband-type adjustment. The adjustment follows the operation of graph no.5 with the increase of the output pressure and the decrease of graph no.6.

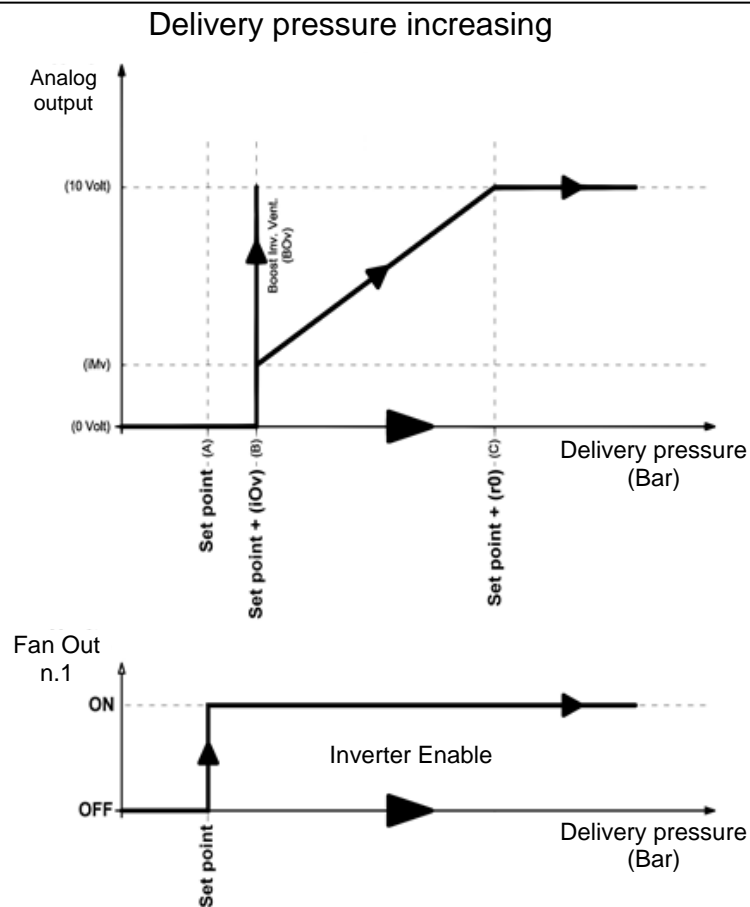
**Output pressure INCREASE (Graph n.5):**

The analogue output of the adjuster will be 0V for output pressure probe less or equal to point (B) representing the "SET point + iOv offset" value.

If the output pressure probe value is higher than point (B), you will have the analogue output at 10V for the maximum BOv time. BOv is the Fans Boost times for which the adjuster output is increased by 100% in order to help the start-up of the fans.

Between points (B) and (C), the analogue output will have a value proportional to the value of the output pressure probe starting from the minimum value of the parameter (iMv) up to the maximum value of 10V. With output pressure probe values equal or higher than point (C), you will have a 10V analogue output. Digital output no.1 represents "the condenser fans inverter activation" and is ON for pressure values higher than or equal to the set point and OFF for lower values.

Graph n.5

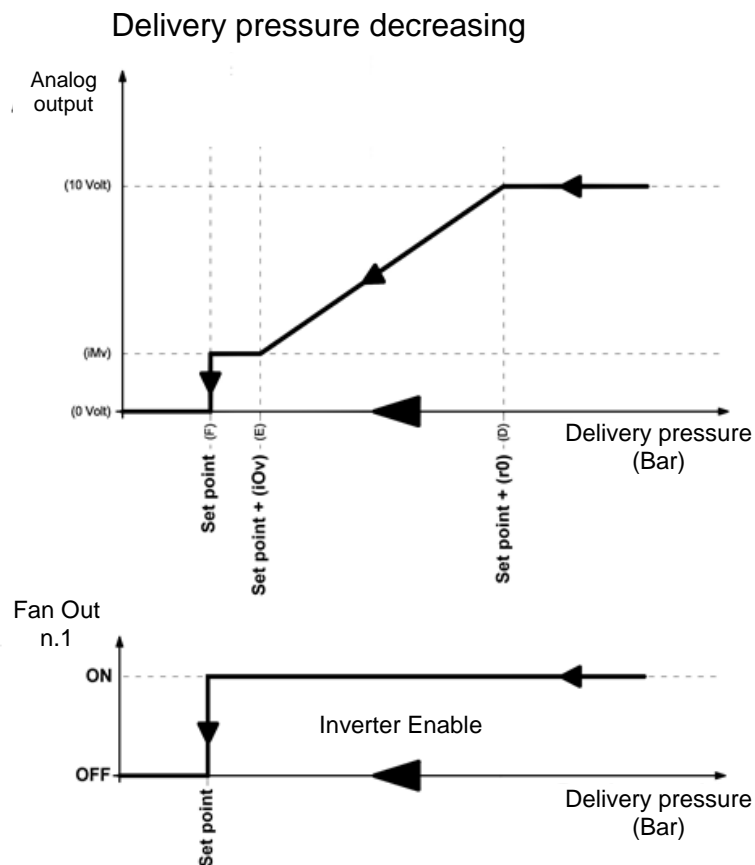


Output pressure DECREASING (Graph. n.6):

With output pressure probe values equal or higher than point (D), you will have a 10V analogue output.

Between points (D) and (E), the analogue output will have a value proportional to the value of the output pressure probe starting from the maximum value of 10V up to the minimum value of the (iMv) parameter. With values of the output pressure probe lower than point (E) and higher than point (F), you will have an analogue output equal to the minimum value of the (iMv) parameter. The analogue output of the adjuster will be 0V for output pressure probe less or equal to point (F) representing the "SET point" value. Digital output no.1 represents "the condenser fans inverter activation" and is ON for pressure values higher than or equal to the set point and OFF for lower values.

Graph n.6



### CONTROL IN THE EVENT OF ALARMS

With the fan output no.1 alarm input activated, the analogue input will be immediately brought to 0V and the digital output no.1 will be opened after (inverter-enabling is removed).

The relative alarm (EU1) will also be shown on the display.

### ***iEn = 3: fan and compressor inverter management enable***

With  $iEn=3$  compressor 1 and fans inverter are enabled. All fans outputs (except the fan output 1 which serves as an inverter activation) are disabled. The operation of the inverter compressor and fan is described above in cases  $iEn=1$  e  $iEn=2$ . The remaining compressor outputs are controlled with digital outputs sideband.

## 5.17 OPERATING MODE – COMPRESSORS CAPACITY MANAGEMENT

With the NPC parameter =  $\pm 1$ , the operation of the compressors is selected and the digital outputs are controlled on a side-band basis and the CAPACITY CONTROL is set to 50%. Then there are two possible variants based on the status of the SEq variable designed for the logical selection to activate the compressors.

### - SEq parameter = 1 (without rotation)

Based on the value of the "SET COMPRESSORS", "r0C" and "nC" parameters, the controller calculates the various areas where there is a request to enable and disable the compressor outputs (steps) by positioning the various switch-ons and switch-offs in the r0C differential range. Each step has a diC/nC/2 differential (where nC is the number of compressors).

Therefore, the number of steps is twice the number of the compressors (given the presence of the capacity control).

For instance, for compressor no.1 the enabling will occur at:

$$SET_{COMPR} + \left( \frac{r0C}{nC} \right) / 2 * 1 \quad (\text{constant 1 indicates step 1})$$

and the disabling will occur at:

$$SET_{COMPR} + \left( \frac{r0C}{nC} \right) / 2 * 0.$$

The enabling of the capacity control of compressor no.1 will occur at:

$$SET_{COMPR} + \left( \frac{r0C}{nC} \right) / 2 * 2$$

and the disabling will occur at:

$$SET_{COMPR} + \left( \frac{r0C}{nC} \right) / 2 * 1$$

(without considering the intervention of times t1C and t2C).

In general, if SEq=1 the activation of the compressors and the capacity control (if one does not consider the presence of the fans) follows this sequence: C1, PC1, C2, PC2, C3, PC3, C4, PC4, C5, PC5, C6, PC6, C7, PC7, C8, PC8, C9, PC9, C10, PC10. The

deactivation is based on this sequence: PC10, C10, PC9, C9, PC8, C8, PC7, C7, PC6, C6, PC5, C5, PC4, C4, PC3, C3, PC2, C2, PC1, C1.

The number of compressors enabled depends on the deviation between the value measured by the adjustment pressure sensor (positioned at the intake) and the set intake Set point, as well as the t1C e t2C times. Namely, the “t1C” time determines the minimum stay time of a step that has just been enabled, and the “t2C” time the minimum stay time of a step that has just been disabled. These two times prevent considerable temporary pressure changes from causing the compressors to switch on and off.

Note: on the LCD display, the capacity control is indicated by the fact that the corresponding pair of LEDs turns on. If a compressor or capacity control is waiting for the t1C or t2C time, the corresponding LEDs on the display start to flash.

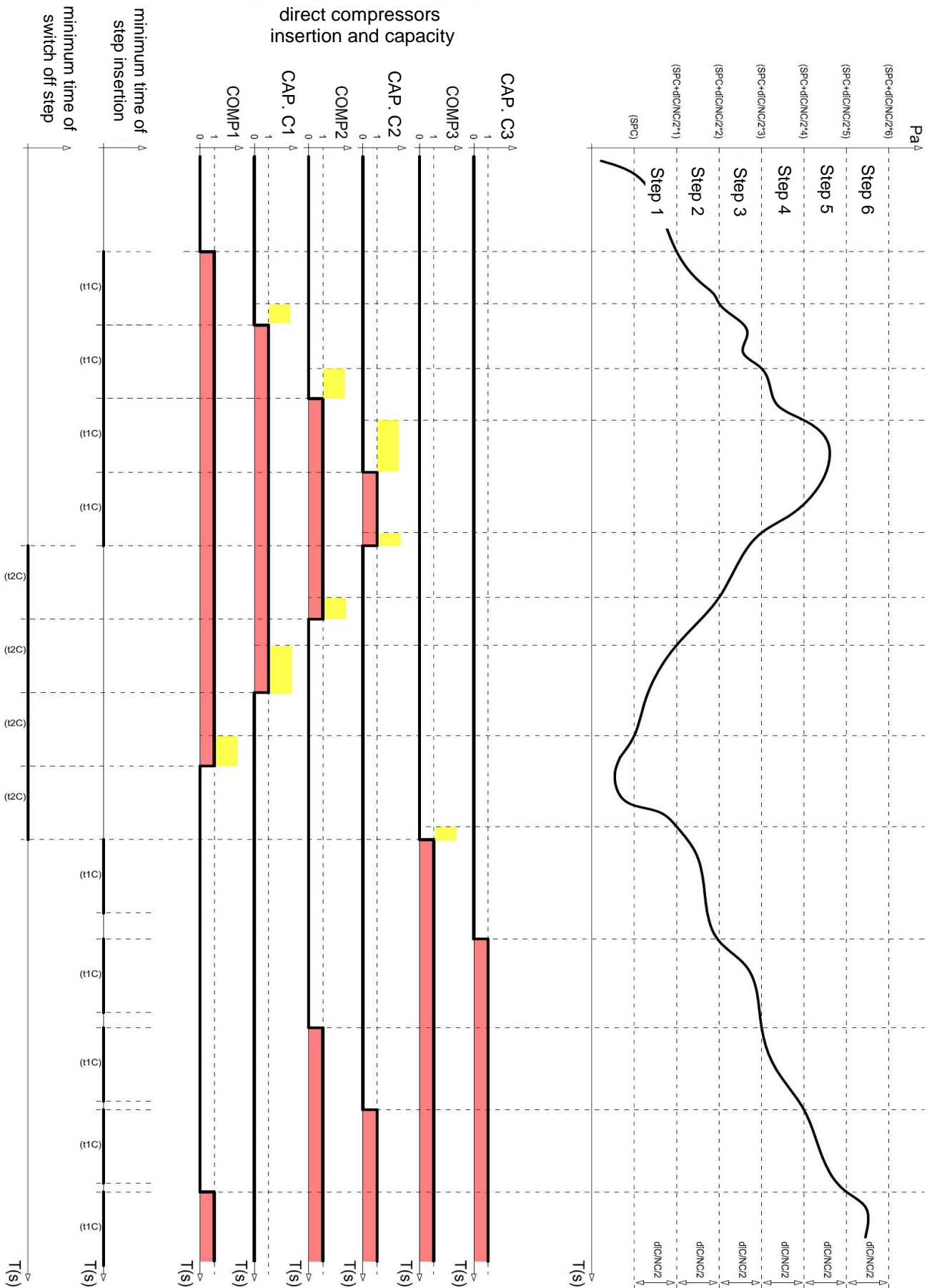
- parameter SEq = 0 (with rotation)

If SEq=0 the compressors are activated based on their operating time. When there is a request to activate a step, a compressor with a shorter operating time is activated, provided it is not in stand-by and that there is no alarm associated with it. Upon a subsequent request to enable a step, the capacity control of the last compressor enabled will be activated. The compressor and relative capacity control are always activated and deactivated in pairs: if the step is disabled, first the capacity control will be disabled and then the relative compressor.

*Note: if the Compressor inverters management is active (parameter iEn=1 or iEn=3), the capacity control cannot be used.*

*For further information on how the Capacity Control is managed, see Graph 7.*

Graph n.7



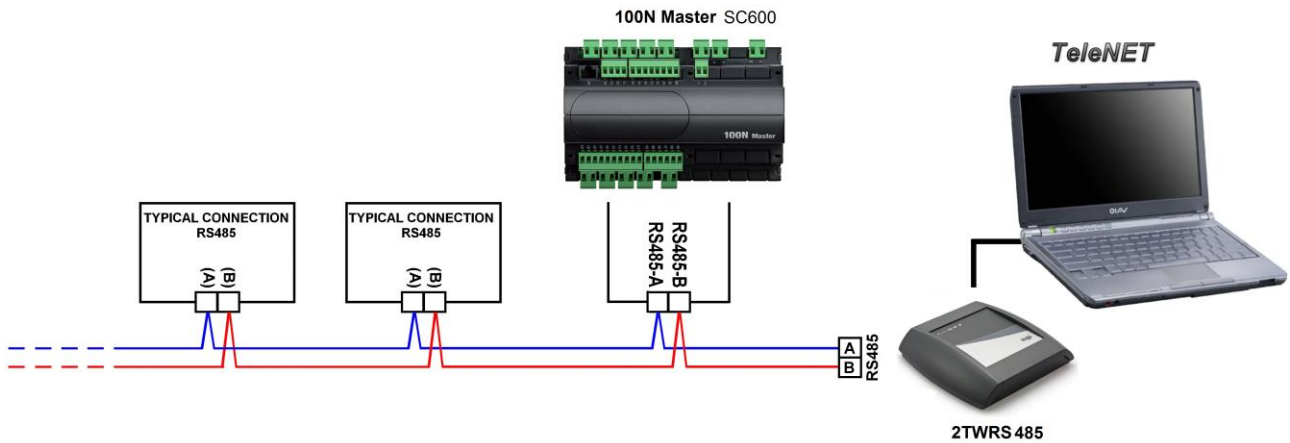
# CHAPTER 6: OPTIONS

## TELENET MONITORING/SUPERVISION SYSTEM

6.1

In order to connect the board to the **TeleNET** network, follow the diagram below. Configure the instrument with reference to the **TeleNET** manual.

**IMPORTANT:** During configuration of the “Module”, select "TWMP instrument".



**Note:**


The instrument VISION SC600 if questioned as “TWMP instrument” answers with the low pressure probe measurement (intake) to the address set in the parameter Ad, while answers with the high pressure probe measurement (delivery) to the address (Ad+1). If the VISION SC600 is questioned as a "tool TWMP", it is therefore not possible to set other instruments at Ad +1.

# CHAPTER 7: DIAGNOSTICS

## 7.1

### DIAGNOSTICS


In case of anomalies, the **VISION SC600** controller warns the operator using alarm codes shown by the display and an acoustic signal emitted by a buzzer inside the Operational console.


When there is an alarm, the  icon starts flashing on the display, the alarm relay is activated, as well as the internal buzzer and one of the alarm codes is displayed (the code is alternated with the page normally displayed).

The internal buzzer can be silenced at any time by pressing the "Sound off" key. Press the SET key (compressors or fans) to reset the audio signal. If an alarm has been silenced and another kind of alarm is tripped (a different one from the one currently reported), the audio signal goes off again and the error code will be shown based on the display priority.

There can be two kinds of alarm based on how serious they are:

- Automatic set (the alarm is automatically reset when the problem is cleared);
- Manual reset from the keyboard (the alarm is reset once it has been acquired by the operator via the "Sound off" key).

When the alarm is cleared, the  icon stops flashing and becomes steady to tell the operator that an alarm with an automatic reset was tripped and is no longer activated. The display goes back to showing the normal page and the alarm code is no longer shown.

When the "Sound off" key is pressed, the steady  icon turns off. The alarm code with the top priority tripped is saved and can be displayed (read-only) in the first-level ALL variable.

The view of this variable at the first commissioning (with empty memory) will display - - -.

The alarms are displayed in the following order of priority: E0, E0n, E1, E2, EH, EL, EHc, ELc, EHu, ELu, E8, EF, EC1....EC0, EU1....EU0, EC, Eu, EO5, E7, EP, En, E6.



**ALARM CODE TABLE:**

<b>COD.</b>	<b>POSSIBLE CAUSE / DESCRIPION</b>	<b>ACTION TO BE TAKEN</b>	<b>RESET</b>
<b>OFF</b>	Remote stand-by active (digital input)	Plant stops and display flashes "OFF" and pressure value.	automatic
<b>E0</b>	EEPROM ALARM An error was found in the EEPROM memory. (The outputs are all disabled apart from the alarm outputs)	<ul style="list-style-type: none"> <li>• Switch the appliance off and back on.</li> <li>• If the problem persists, replace the Control Circuit Board.</li> </ul>	manual requires shut-down
<b>E0n</b>	EEPROM 100N MASTER ALARM An error was found in the EEPROM memory of the 100N MASTER3. (The outputs are all disabled apart from the alarm outputs)	<ul style="list-style-type: none"> <li>• Switch the appliance off and back on.</li> <li>• If the problem persists, replace the Control Circuit Board.</li> </ul>	manual requires shut-down
<b>E1</b>	Operation anomalies of the intake pressure probe (compressor outputs disabled)	<ul style="list-style-type: none"> <li>• Check the probe status.</li> </ul>	automatic
<b>E2</b>	Operation anomalies of the delivery pressure probe (fan outputs disabled)	<ul style="list-style-type: none"> <li>• Check the probe status.</li> </ul>	automatic
<b>EH</b>	Maximum pressure general alarm, from digital input (compressor outputs are disabled, fan outputs remain unchanged)	<ul style="list-style-type: none"> <li>• Check the refrigerant circuit.</li> <li>• If the problem persists contact the technical assistance service.</li> </ul>	automatic
<b>EL</b>	Minimum pressure general alarm, from digital input (all outputs are disabled)	<ul style="list-style-type: none"> <li>• Check the refrigerant circuit.</li> <li>• If the problem persists contact the technical assistance service.</li> </ul>	automatic
<b>EHc</b>	Maximum intake pressure alarm (compressors outputs remain unchanged)	<ul style="list-style-type: none"> <li>• Check the refrigerant circuit.</li> <li>• If the problem persists contact the technical assistance service.</li> </ul>	automatic
<b>ELc</b>	Minimum intake pressure alarm (compressors outputs disabled)	<ul style="list-style-type: none"> <li>• Check the refrigerant circuit.</li> <li>• If the problem persists contact the technical assistance service.</li> </ul>	automatic
<b>EHu</b>	Maximum delivery pressure alarm (compressor outputs are disabled, fan outputs remain unchanged)	<ul style="list-style-type: none"> <li>• Check the refrigerant circuit.</li> <li>• If the problem persists contact the technical assistance service.</li> </ul>	automatic
<b>ELu</b>	Minimum delivery pressure alarm (fans outputs disabled)	<ul style="list-style-type: none"> <li>• Check the refrigerant circuit</li> <li>• If the problem persists contact the technical assistance service.</li> </ul>	automatic
<b>E7</b>	Central pre-alarm in manual mode. This alarm does not change the status of the outputs. It is activated upon activation of the digital input configured as "central alarm in manual".	<ul style="list-style-type: none"> <li>• Check the configuration of the parameters.</li> <li>• Check the status of the inlet of the "central alarm in manual mode".</li> </ul>	automatic
<b>E8</b>	Central alarm in manual mode. It is triggered after 5 interventions in the (niP) time of its digital input ("central alarm in manual mode"). If niP = 0 it is activated at the first activation of the digital input. (The outputs are all disabled apart from the alarm outputs)	<ul style="list-style-type: none"> <li>• Check the configuration of the parameters.</li> <li>• Check the status of the inlet of the "central alarm in manual mode".</li> </ul>	manual

<b>EC1</b> <b>EC2</b> <b>EC3</b> ... <b>EC8</b> <b>EC9</b> <b>EC0</b>	Protection of one or more compressor outputs (e.g. Thermal protection or max. pressure switch.) (The output of the relative COMPRESSOR is deactivated)	<ul style="list-style-type: none"> <li>• Check the status of the compressor(s).</li> <li>• Check the absorption of the compressor(s).</li> <li>• Check the status of the "outlet no.# alarm" inlet.</li> </ul>	automatic
<b>Eu1</b> <b>Eu2</b> <b>Eu3</b> ... <b>Eu8</b> <b>Eu9</b> <b>Eu0</b>	Protection of one or more condenser fans (e.g. Thermal protection or max. pressure switch.) (The output of the relative FAN is deactivated)	<ul style="list-style-type: none"> <li>• Check the status of the fan(s).</li> <li>• Check the absorption of the fan(s).</li> <li>• Check the status of the "outlet no.# alarm" inlet.</li> </ul>	automatic
<b>EC</b>	Display of the alarm in read-only of one or more compressor outputs (no output is deactivated)	<ul style="list-style-type: none"> <li>• Check the status of the compressor(s).</li> <li>• Check the absorption of the compressor(s).</li> <li>• Check the status of the "only-read alarm".</li> </ul>	automatic
<b>Eu</b>	Display of the alarm in read-only of one or more fan outputs (no output is deactivated)	<ul style="list-style-type: none"> <li>• Check the status of the fans.</li> <li>• Check the absorption of the fans.</li> <li>• Check the status of the "only-read alarm".</li> </ul>	automatic
<b>EO5</b>	One or more compressors have reached a number of operating hours beyond which maintenance is required. This alarm does not change the status of the outputs.	Perform maintenance and reset the hour meter of its compressors.	manual
<b>EP</b>	Freon/oil level pre-alarm This alarm indicates that the "freon level alarm" remained high for a time lower than "rLo". This alarm does not change the status of the outputs.	<ul style="list-style-type: none"> <li>• Check the device connected to the System that signaled the alarm condition.</li> <li>• Check the status of the "freon/oil level alarm" inlet.</li> </ul>	automatic
<b>EF</b>	Freon/oil level alarm This alarm indicates that the "freon level alarm" remained high for a time longer than "rLo". This alarm deactivates the compressor outputs.	<ul style="list-style-type: none"> <li>• Check the device connected to the System that signaled the alarm condition.</li> <li>• Check the status of the "freon/oil level alarm" inlet.</li> </ul>	automatic
<b>En</b>	<i>No connection between Console and MASTER board.</i>	<ul style="list-style-type: none"> <li>• Check connection between the two units.</li> <li>• If the problem persists contact the technical assistance service.</li> </ul>	manual requires shut-down
<b>E6</b>	<i>Discharged battery alarm; control function for at least another 20 days, then if there is not power to the time setting will be lost.</i>	<ul style="list-style-type: none"> <li>• Replace the Console lithium battery (CR2032 type).</li> </ul>	manual

The VISION SC600 system can log up to 40 alarm events. To display the codes of the logged alarms, press the ALARM OFF key for at least 3 seconds.

Sector 1 of the LCD display (see par. 5.4) will indicate when the alarms occurred, from the most recent (0) to the oldest one (39). Sector 2 on the LCD display will indicate the alarm code, while sector 3 displays the date on which it was saved or the time if occurring on the same day. The UP and DOWN keys are used to scroll through the logged data, starting from the most recent one. To reset the logged data, press the SET COMPRESSORS and SET FANS keys together for 10 seconds during the display stage. After 10 seconds, the instrument will emit an audio signal and exit the page displayed. If there are no alarms saved in the memory, the system does not provide access to the display.

To exit the page displayed, press the UP and DOWN keys together for at least 3 seconds. The instrument exits automatically if no keys are pressed for 30 seconds.

When the instrument is turned on, the "On" code is logged with the relative time of the event.

# ATTACHMENTS

## A.1

### UE DECLARATION OF CONFORMITY

LA PRESENTE DICHIARAZIONE DI CONFORMITA' E' RILASCIATA SOTTO LA RESPONSABILITA' ESCLUSIVA DEL FABBRICANTE:  
**THIS DECLARATION OF CONFORMITY IS ISSUED UNDER THE EXCLUSIVE RESPONSIBILITY OF THE MANUFACTURER:**



PEGO S.r.l. Via Piacentina 6/b, 45030 Occhiobello (RO) – Italy –

### DENOMINAZIONE DEL PRODOTTO IN OGGETTO / DENOMINATION OF THE PRODUCT IN OBJECT

MOD.: VISION SC600

IL PRODOTTO DI CUI SOPRA E' CONFORME ALLA PERTINENTE NORMATIVA DI ARMONIZZAZIONE DELL'UNIONE EUROPEA:  
**THE PRODUCT IS IN CONFORMITY WITH THE RELEVANT EUROPEAN HARMONIZATION LEGISLATION:**

Direttiva Bassa Tensione (LVD): **2014/35/UE**  
*Low voltage directive (LVD): 2014/35/EU*

Direttiva EMC: **2014/30/CE**  
*Electromagnetic compatibility (EMC): 2014/30/EU*

LA CONFORMITA' PRESCRITTA DALLA DIRETTIVA E' GARANTITA DALL'ADEMPIMENTO A TUTTI GLI EFFETTI DELLE SEGUENTI NORME:  
**THE CONFORMITY REQUIRED BY THE DIRECTIVE IS GUARANTEED BY THE FULFILLMENT TO THE FOLLOWING STANDARDS:**

Norme armonizzate: **EN 61010-1:2010, EN 61326-1:2013**  
*European standards: EN 61010-1:2010, EN 61326-1:2013*

IL PRODOTTO E' COSTITUITO PER ESSERE INCORPORATO IN UNA MACCHINA O PER ESSERE ASSEMBLATO CON ALTRI MACCHINARI PER COSTITUIRE UNA MACCHINA CONSIDERATE DALLA DIRETTIVA: 2006/42/CE "Direttiva Macchine".  
**THE PRODUCT HAS BEEN MANUFACTURED TO BE INCLUDED IN A MACHINE OR TO BE ASSEMBLED TOGETHER WITH OTHER MACHINERY TO COMPLETE A MACHINE ACCORDING TO DIRECTIVE: EC/2006/42 "Machinery Directive".**

Firmato per nome e per conto di:  
 Signed for and on behalf of:

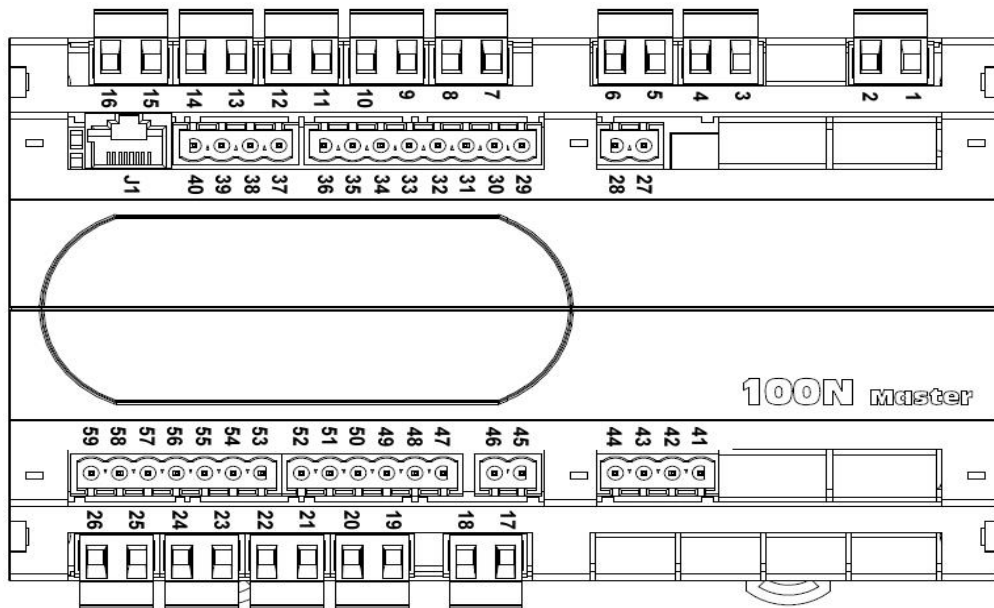
Pego S.r.l.  
 Lisa Zampini  
 Procuratore Generale

Luogo e Data del rilascio:  
 Place and Date of Release:

Occhiobello (RO), 08/01/2018

100N MASTER3 CONNECTION LAYOUT

A.2



Power supply

PIN TERMINAL	DESCRIPTION
1 – 2	N – L Power supply 115÷230Vac ±10% 50/60Hz      Consumption: 20 VA max.
45	Connect ground to terminal 45 of the console (functional earth). This connection helps to limit the effects of electromagnetic noise on the control system. The ground connection must be made in a manner consistent with applicable regulations.

Digital outputs

PIN TERMINAL	RELAY OUTPUTS FEATURES (Voltage free contacts)	DESCRIPTION
3 – 4	Relay 30A 240V~ (AC1) 10A 240V~ (AC3) (2HP)	Compr. 1 / Partition 1 / Fan 1
5 – 6	Relay 16A 240V~ (AC1) 3A 240V~ (AC3)	Compr. 2 / Partition 2 / Fan 2
7 – 8	Relay 16A 240V~ (AC1) 3A 240V~ (AC3)	Compr. 3 / Partition 3 / Fan 3
9 – 10	Relay 16A 240V~ (AC1) 3A 240V~ (AC3)	Compr. 4 / Partition 4 / Fan 4
11 – 12	Relay 16A 240V~ (AC1) 3A 240V~ (AC3)	Compr. 5 / Partition 5 / Fan 5
13 – 14	Relay 16A 240V~ (AC1) 3A 240V~ (AC3)	Compr. 6 / Partition 6 / Fan 6
15 - 16	Relay 16A 240V~ (AC1) 3A 240V~ (AC3)	Compr. 7 / Partition 7 / Fan 7
17 – 18	Relay 16A 240V~ (AC1) 3A 240V~ (AC3)	Alarm relay
19 – 20	Relay 16A 240V~ (AC1) 3A 240V~ (AC3)	Not used
21 – 22	Relay 16A 240V~ (AC1) 3A 240V~ (AC3)	Compr. 10 / Partition 10 / Fan 10

<b>23 – 24</b>	Relay 16A 240V~ (AC1) 3A 240V~ (AC3)	Compr. 9 / Partition 9 / Fan 9
<b>25 - 26</b>	Relay 16A 240V~ (AC1) 3A 240V~ (AC3)	Compr. 8 / Partition 8 / Fan 8

**Analog/digital inputs**

PIN TERMINAL	PROBE TYPE	DESCRIPTION
<b>27 (RH) – 28 (V+)</b>	4–20 mA	Low pressure probe (set jumper)
<b>29 (RH) – 30 (V+)</b>	4-20 mA	High pressure probe (set jumper)
<b>31 – 32</b>	digital	Digital input DI13
<b>33 – 34</b>	digital	Digital input DI14
<b>35 – 36</b>	digital	Digital input DI15

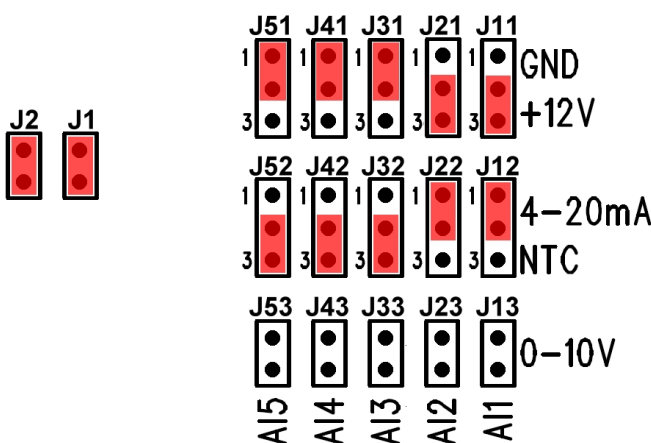
PIN TERMINAL	DESCRIPTION
<b>44 – 42</b>	Output 0-10V inverter fans
<b>44 – 41</b>	Output 0-10V inverter compressor

**Digital inputs**

PIN TERMINAL	DESCRIPTION
<b>59 – 47</b>	Digital input DI1
<b>59 – 48</b>	Digital input DI2
<b>59 – 49</b>	Digital input DI3
<b>59 – 50</b>	Digital input DI4
<b>59 – 51</b>	Digital input DI5
<b>59 – 52</b>	Digital input DI6
<b>59 – 53</b>	Digital input DI7
<b>59 – 54</b>	Digital input DI8
<b>59 – 55</b>	Digital input DI9
<b>59 – 56</b>	Digital input DI10
<b>59 – 57</b>	Digital input DI11
<b>59 - 58</b>	Digital input DI12

**TeleNET**

PIN TERMINAL	DESCRIPTION
<b>39</b>	line A o terminal 3 of TWRS485
<b>40</b>	line B o terminal 4 of TWRS485



To ensure correct reading by the pressure probes you need the right hardware jumpers' configuration on the 100N MASTER3 under the removable front cover (see picture). In particular the factory configuration is the following:

- J11=2-3, J12=1-2, J13=open
- J21=2-3, J22=1-2, J23=open
- J31=1-2, J32=2-3, J33=open
- J41=1-2, J42=2-3, J43=open
- J51=1-2, J52=2-3, J53=open





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Distributor: