ECP202 EXPERT D7.5

Use and maintenance manual

READ AND KEEP

Rel. Software: 27

REV. 03-25
ENG

ELECTRICAL BOARDS FOR REFRIGERATING INSTALLATIONS

Pego

CONTENTS

CHAPTER 1: INTRODUCTION

GENERAL INFORMATIONS 1.1

DESCRIPTION:

The **ECP202 EXPERT D7.5** is a new control panel for cold rooms with a single-phase compressor up to 2 HP and three-phase+N electrical defrost up to 7500W (2500W x 3).
It allows the user to control all the components on a refrigerating system: compressor, evaporator fans, defrosting elements, room light and thermostat-holder demisting element.

APPLICATIONS:

- Complete management of single-phase static or ventilated refrigeration systems up to 2 HP, with off-cycle or electrical defrosting [up to 7500W (2500W x 3)] and with direct or pump-down compressor stop.
- Control of evaporator unit only with three-phase+N electrical defrost up to 7500W (2500W x 3), with freon solenoid enabling or remote condensing unit enabling.

MAIN CHARACTERISTICS:

- Cold room temperature displaying and regulation with decimal point.
- Evaporator temperature with decimal point displaying from parameter.
- Plant control activation/deactivation.
- Plant alarms signaling (probe error, minimum and maximum temperature alarm, compressor protection, door alarm).
- LED indicators and large display illustrate system status.
- User-friendly keypad.
- Evaporator fans management.
- Manual and automatic defrost (static, through heaters, through heaters with temperature control, through cycle reversal).
- Three-phase+N electrical defrost up to 7500W (2500W x 3).
- Direct or pump-down management and control of condensing unit up to 2HP.
- Cold room light activation through key on the panel or through door-switch.
- Direct control of compressor, defrosting elements, evaporator fans, room light with outputs directly connectable to the various units.
- Air recirculation management.
- Two auxiliary relays with parameter-configured.
- RS485 to connect to a TeleNET supervision system or a MODBUS-RTU network.
- Emergency operation in the event of a faulty ambient probe.
- Defrost activation from button or digital input.
- Smart defrost (energy saving).
- Reduced set (night set) from digital input.
- Can be configured for hot or cold applications.
- Configurable digital inputs.
- Automatic parameter configuration.

1.2 PRODUCT ID CODES

200202EXPD7.5CS	Controls and manages compressor, defrosting elements, evaporator fans and room light. Two Aux/Alarms relay. Probes included. Three-phase+N electrical defrost up to 7500W (2500W x 3).

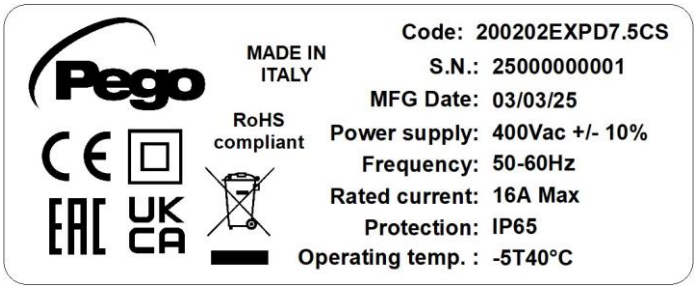
1.3 OVERALL DIMENSIONS

Dimensions (mm)

1.4 IDENTIFICATION DATA

The unit described in this manual has an ID plate on the side showing all the relevant identification data:

- Name of Manufacturer
- Code of electrical board
- Serial number
- Date
- Power supply
- Rated current
- IP protection rating



CHAPTER 2: INSTALLATION

GENERAL WARNINGS FOR THE INSTALLER 2.1

1. Install the panel in places that comply with the degree of protection and make sure to keep the box as intact as possible when drilling holes to house the cable glands and/or pipe glands.

2. Do not use multi-polar cables in which there are wires connected to inductive/power loads or signalling wires (e.g. probes/sensors and digital inputs).

3. Do not fit power supply wiring and signal wiring (probes/sensors and digital inputs) in the same raceways or ducts.

4. Minimise the length of connector wires so that wiring does not twist into a spiral shape as this could have negative effects on the electronics.

5. Install a general protection fuse upstream of the electronic control.

6. All wiring must be of a cross-section suitable for relevant power levels.

7. When it is necessary to make a probe/sensor extension, the wires must have a cross-section of at least 1mm^2. Probes extension or shortening could alter their factory calibration; therefore, to check and calibrate the probes through an external thermometer.

8. Tighten the 4 closing screws of the electrical panel with a torque not exceeding 1 newton meter.

STANDARD EQUIPMENT INCLUDED FOR INSTALLATION AND OPERATION 2.2

The electronic controller **ECP202 EXPERT D7.5** is equipped with the following for installation and operation:

- Nr 3 sealing gaskets, to place between the fastening screws and the base of the box;
- Nr 1 user's manual.

2.3 INSTALLING THE ELECTRICAL PANEL

Fig. 1: Lift the transparent door and remove the cover for the screws on the right side.

Fig. 2: Remove the 4 fastening screws from the front panel of the box.

Fig. 3: Close the transparent door that protects the differential magneto thermal circuit breaker.

Fig. 4: Open the front panel of the box by lifting it and sliding the two hinges until they reach the end stop.

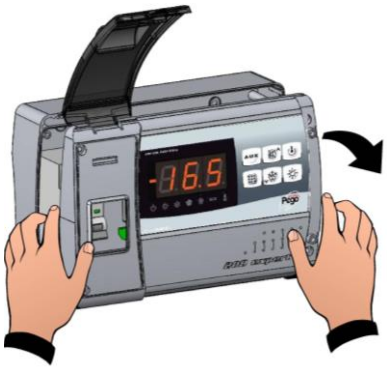


Fig. 5: Press on the sides of each hinge to unlodge it and completely remove the front panel.

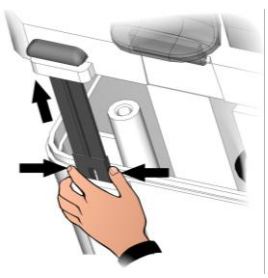


Fig. 6: Use the three pre-existing holes to fasten the base of the box with three adequately long screws based on the thickness of the wall that the panel will be installed on. Place a rubber washer (included) between each fastening screw and the base of the box.

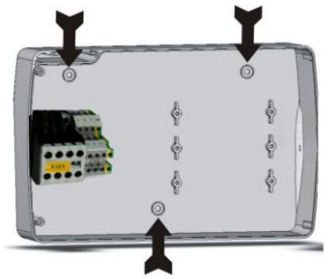
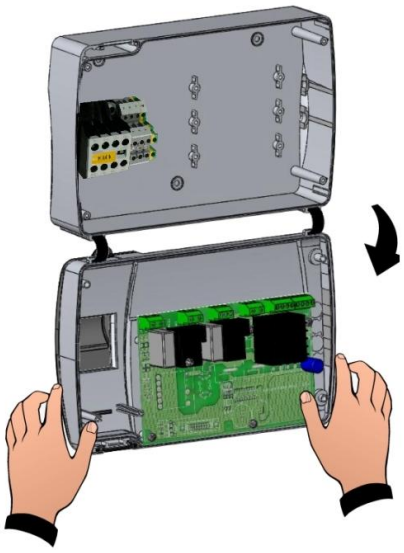


Fig. 7: Hook the front panel back on to the base of the box by re-inserting the hinges into their slots and making them bend.
Rotate the panel downwards by 180° to access the PCB.



Make all the electrical connections as illustrated in the diagram for the corresponding model (see relative table in APPENDICES). To carry out the electrical connections reliably and maintain the degree of protection of the box, we recommend using suitable cable glands and / or pipe clamps to tightly seal all the wiring.
It is advisable to distribute the cables within the panel as neatly as possible. In particular, keep the power cables away from the signal cables. Use any sealing strips.

Fig. 8: Close the front panel again, paying attention that the cables are inside the box and that the gasket for the box is correctly lodged into place. Fasten the front panel with the 4 screws with a torque not exceeding 1 newton meter.
Power the panel and perform a thorough reading/programming of all of the set parameters.

Be sure not to tighten the closing screws excessively as this could cause the box to become deformed and jeopardise its correct functioning and tactile effect of the keyboard on the panel; do not exceed 1 newton meter of torque. Install protection devices against power surges for short-circuits, in order to avoid damage to the device on all of the loads connected to the electronic controller ECP202 EXPERT D7.5. Every time repair and/or maintenance is performed the panel must be disconnected from the power supply and from all possible inductive and power loads that it may be connected to; this is to guarantee the maximum safety conditions for the operator.

CHAPTER 3: TECHNICAL FEATURES

3.1 TECHNICAL FEATURES

Power supply		
Voltage		400 V~ three phases + neutral ±10% 50-60Hz
Max power (only electronics)		~ 7 VA
Rated current (with all loads connected)		Magnetothermic quadripolar differential 16A Curve D (it has to be added by installer)
Climatic conditions		
Working temperature		-5T40°C <90% R.H. non condensing
Storage temperature		-10T70°C <90% R.H. non condensing
General characteristics		
Type of sensors that can be connected		NTC 10K 1%
Resolution		0,1°C
Sensor read precision		± 0,5°C
Read range		-45 ÷ +99 °C
Output characteristics		
Compressor	(Relay 30A AC1) on the electronic board	10A 250V~ (AC3) (2HP) (100000 cycles)
Defrost	Contactor (20A AC1)	7500W (2500W 230V x 3) (AC1) Three-phase+ Neutral
Fans	(Relay 16A AC1) on the electronic board	2,7A 250V~ (AC3)
Room light	(Relay 16A AC1) on the electronic board	16A 250V~ (AC1)
Aux 1 (free voltage contact)	(Relay 5A AC1) on the electronic board	5(3)A 250V~
Aux 2 (free voltage contact)	(Relay 5A AC1) on the electronic board	5(3)A 250V~
Insulation between relay outputs: 1500V		
Dimensional characteristics		
Dimensions		18.0cm x 9.6cm x 26.3cm (HxPxL)
Insulation and mechanical characteristics		
Box protection rating		IP65
Box material		ABS self-extinguishing
PTI of insulation materials		Printed circuits 175
Type of insulation		Class II
Type of action and disconnection		Relay contacts 1B (micro disconnection)
Environmental pollution		2, normal situation
Ball pressure test temperature		75°C for the plastic cover and 100°C for the plastic components that carry electricity.

CHAPTER 4: WARRANTY TERMS

WARRANTY TERMS 4.1

ECP202 EXPERT D7.5 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 labor 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, 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.

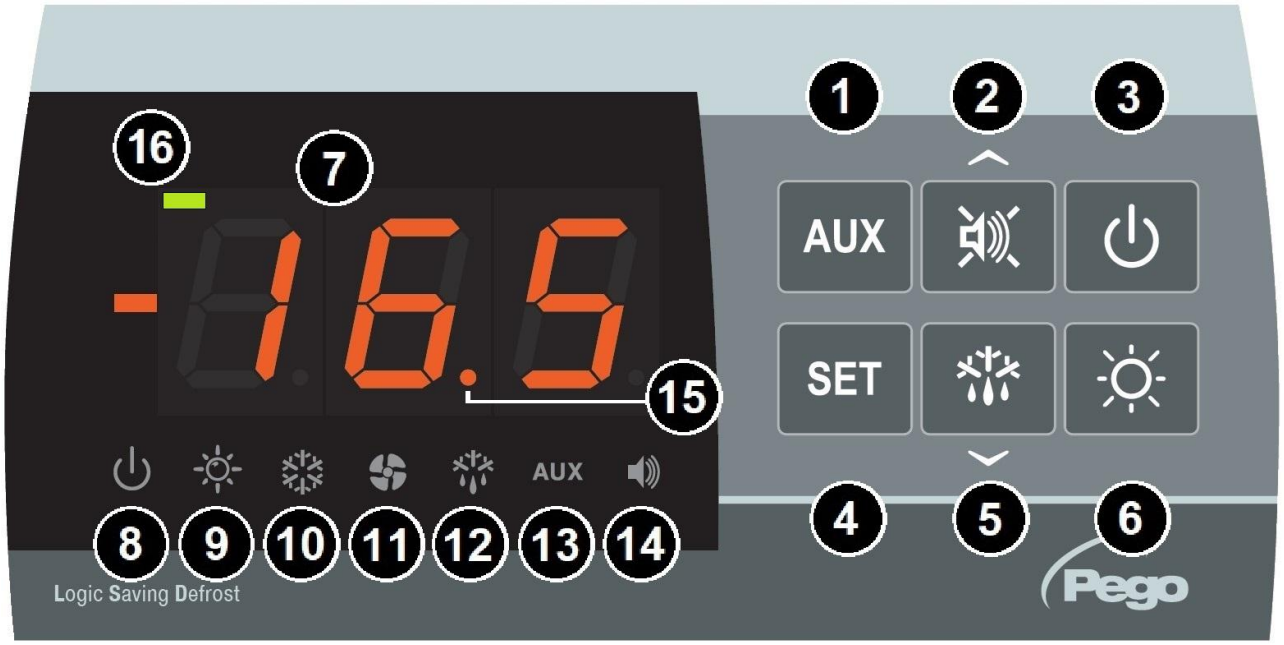
Pego S.r.l. reserves the right to make changes to its products which it deems necessary or useful without affecting its essential characteristics.

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

As far as not expressly indicated, is applicable the Law.

CHAPTER 5: PARAMETER PROGRAMMING

5.1 CONTROL PANEL



5.2 FRONT KEYPAD

1 

AUXILIARY RELAY CONTROL
(it controls the relays manual if parameter AU1/AU2 = 2/-2)

2 
UP / MUTE BUZZER ALARM

3 
STAND BY (if the system shuts down, the LED flashes)

4 

Cold room temperature **SETTING**

5 
DOWN / MANUAL DEFROST

6 
COLD ROOM LIGHT

LED DISPLAY 5.3

❼  **Cold room temperature / parameters**

❽  **Stand-by (flashes on stand-by. Outputs are deactivated)**

❾  **Cold room light (flashes if door switch activated)**

❿  **Cold**
(compressor activation signal, flashing if waiting for delay – parameter C1)

⓫  **Fans**

⓬  **Defrosting**

⓭ 

Auxiliary (indicates AUX relay calling if AU1/AU2=+/-2 or +/-3)

⓮  **Alarm/warning**

⓯  **Decimal point (flashing in night mode)**

⓰  **Hot mode (resistance call signaling)**

5.4 GENERAL

To enhance safety and simplify the operator's work, the **ECP202 EXPERT D7.5** has two programming levels; the first level (Level 1) is used to configure the frequently-modified **SETPOINT** parameters. The second programming level (Level 2) is for general parameter programming of the various controller work modes.

It's not possible to access the Level 2 programming directly from Level 1: you must exit the programming mode first.

5.5 SYMBOLOGY

For purposes of practicality the following symbols are used:

- **(▲)** the UP key  is used to increase values and mute the alarm.
- **(▼)** the DOWN key  is used to decrease values and force defrosting.

5.6 SETTING AND DISPLAYING THE SETPOINT

1. Press the **SET key** to display the current **SETPOINT** (temperature).
2. Hold down the **SET key** and press the **(▲)** or **(▼)** keys to modify the **SETPOINT**.
3. Release the **SET key** to return to cold room temperature display: the new setting will be saved automatically.

FIRST LEVEL PROGRAMMING (User level) 5.7

To access the first level configuration menu you need to:

1. Press the **(▲)** and **(▼)** buttons simultaneously and hold them down for a few seconds until the first programming parameter appears on the display.
2. Release the **(▲)** and **(▼)** keys.
3. Select the parameter to be modified using the **(▲)** or **(▼)**.key.
4. After selecting the desired parameter it will be possible to:
   - View its setting by pressing the SET key.
   - Change its setting by holding down the SET button and pressing one of the **(▲)** or **(▼)** key.
5. Once the configuration values have been set, to exit the menu, press the **(▲)** or **(▼)** key simultaneously and hold them down for a few seconds until the cold room temperature value reappears.

The changes made to the parameters will be saved automatically when exiting the configuration menu.

LIST OF FIRST LEVEL PARAMETERS (User level) 5.8

PAR	MEANING		VALUE	DEFAULT
r0	**Temperature difference** compared to main SETPOINT		0,2 ÷ 10,0 °C	2,0 °C
d0	If dSE=0	**Defrost interval** (hours) If d0 = 0 cyclic defrosts are disabled	0 ÷ 80 hours	4 hours
	If dSE=1	**Energy saving defrosts - Safety defrost interval** (tens of hours) If d0 = 0 cyclic defrosts are disabled	0 ÷ 80 tens of hours	4 tens of hours
d2	**End-of-defrost setpoint**. Defrost is not executed if the temperature read by the defrost sensor is greater than d2. (If the sensor is faulty defrosting is timed)		-35 ÷ 45 °C	15°C
d3	**Max defrost duration** (minutes)		1 ÷ 240 min	25 min
d7	**Drip duration** (minutes) At the end of defrost the compressor and fans remain at standstill for time d7, the defrost LED on the front panel flashes.		0 ÷ 10 min	0 min
F5	**Fan pause** after defrost (minutes) Allows fans to be kept at standstill for a time F5 after dripping. This time begins at the end of dripping. If no dripping has been set the fan pause starts directly at the end of defrost.		0 ÷ 10 min	0 min
A1	**Minimum temperature alarm** Allows user to define a minimum temperature for the room being refrigerated. Below value A1 an alarm trips: the alarm LED flashes, displayed temperature flashes and the buzzer sounds to indicate the problem.		-45 ÷ (A2-1) °C	-45°C
A2	**Maximum temperature alarm** Allows user to define a maximum temperature for the room being refrigerated. Above value A2 an alarm trips: the alarm LED flashes, displayed temperature flashes and the buzzer sounds to indicate the problem.		(A1+1) ÷ 99 °C	+99°C
Ar	**Temperature alarms related to Setpoint.**		0 = absolute alarms 1 = related alarms	0
tEu	**Evaporator sensor temperature display.** (It displays nothing if dE =1)		evaporator temperature	read only

5.9 SECOND LEVEL PROGRAMMING (Installer level)

1. To access the second programming level, press and hold the UP (▲), DOWN (▼) and LIGHT buttons for a few seconds.
2. When the first programming parameter appears, the system automatically goes into stand-by.
3. Select the parameter to be modified using the (▲) or (▼) button. After selecting the desired parameter, it will be possible to:
   - View its setting by pressing the SET key.
   - Change its setting by holding down the SET button and pressing one of the **(▲)** or **(▼)** key.
4. Once the configuration values have been set, to exit the menu, press the **(▲)** or **(▼)** key simultaneously and hold them down for a few seconds until the cold room temperature value reappears.

The changes made to the parameters will be saved automatically when exiting the configuration menu.

Press the STAND-BY key to enable electronic control.

5.10 LIST OF SECOND LEVEL PARAMETERS (Installer level)

PAR.	MEANING	VALUES	DEF.
F3	**Fan status with compressor off**	0 = Fans run continuously 1 = Fans only run when compressor is working 2 = Fans disabled	1
F4	**Fan pause during defrost**	0 = Fans run during defrost 1 = Fans do not run during defrost	1
F6	**Evaporator fans activation for air recirculation.** The fans activate for a time defined by F7 if they have not started working for the F6 time. If activation time coincides with the defrosting time, end of defrosting is awaited.	0 ÷ 240 min 0 = (function not activated)	0 min
F7	**Evaporator fans duration for air recirculation.** Fans working time for F6	0 ÷ 240 sec.	10 sec
dE	**Sensor presence** If the evaporator sensor is disabled defrosts are carried out cyclically with period d0: defrosting ends when an external device trips and closes the remote defrost contact or when time d3 expires.	0 = evaporator sensor present 1 = no evaporator sensor	0
d1	**Defrost type**, cycle inversion (hot gas) or with heater elements	0 = heating element 1 = hot gas 2 = heater with temperature control	0
dPo	**Defrost at Power On**	0 = disabled 1 = defrost at power-on (if possible)	0
dSE	**Smart defrost**	0 = disabled 1 = enabled	0
dSS	**Energy saving defrost interval (if dSE=1)** See chap. 5.17	1 ÷ 999 min	30 min
dFd	**Display viewing during defrost**	0 = current temperature 1 = temperature at the start of the defrost 2 = “DEF”	1

PAR.	MEANING	VALUES	DEF.
Ad	**Net address** for connection to TeleNET supervision system or Modbus	0 ÷ 31 (with SEr=0) 1 ÷ 247 (with SEr=1)	0
SEr	**RS-485 communication protocol**	0 = TeleNET protocol 1 = Modbus-RTU protocol	0
Bdr	**Modbus baudrate**	0 = 300 baud 3 = 2400 baud 6 = 14400 baud 1 = 600 baud 4 = 4800 baud 7 = 19200 baud 2 = 1200 baud 5 = 9600 baud 8 = 38400 baud	5
Prt	**Modbus parity check**	0 = none 1 = even 2 = odd	0
Ald	**Minimum and maximum temperature** signalling and alarm display delay.	0 ÷ 240 min	120 min
AtE	**Enabling the temperature alarm.**	0 = always enabled. 1 = disabled in stand-by. 2 = disabled if door switch active. 3 = disabled if stand-by or door switch active.	0
C1	Minimum time between shutdown and **subsequent switching on of the compressor**.	0 ÷ 15 min	0 min
CAL	**Cold room sensor value correction**	-10,0 ÷ +10,0 °C	0,0 °C
CE1	**Duration of compressor ON time in the case of faulty ambient probe** (emergency mode). If CE1=0 the emergency mode in the presence of error E0 remains disabled, the compressor remains off and defrosting is prevented to conserve the remaining cold.	0 ÷ 240 min 0 = disabled	0 min
CE2	**Duration of compressor OFF time in the case of faulty ambient probe** (emergency mode).	5 ÷ 240 min	5 min
doC	**Compressor safety time for door switch:** when the door is opened, the evaporator fans shut down and the compressor will continue working for time **doC**, after which it will shut down.	0 ÷ 5 min	0 min
tdo	**Compressor restart time after door opening:** when the door is opened and after tdo time, it's setted back the normal functioning giving door open alarm (Ed). With tdo=0 the parameter is disabled.	0 ÷ 240 min 0 = disabled	0 min
tlo	**Delay time for signaling and displaying the cold room light alarm.** After switching on the light with the LIGHT button, after the tLo time has elapsed, the **E9** alarm is activated. If it's silenced and the light is not switched off, when the tLo time expires again, the E9 alarm is reactivated.	0 ÷ 240 min 0 = disabled	0
Fst	**FAN shutdown TEMPERATURE** The fans will stop if the temperature value read by the **evaporator** sensor is higher than this value.	-45 ÷ +99 °C	+99 °C
Fd	**Fst differential**	1 ÷ +10 °C	2 °C
LSE	**Minimum value attributable to setpoint.**	-45 ÷ (HSE-1) °C	-45 °C

PAR.	MEANING	VALUES	DEF.
HSE	**Maximum value attributable to setpoint.**	(LSE+1) ÷ +99°C	+99 °C
AU1	**Auxiliary Relay 1 setting**	-9 (NC) = Hot output (neutral zone). -8 (NC) = Relay open in night mode. -7(NC) = Liquid solenoid (for hot gas defrost management). -6 (NC) = relay de-energised during stand-by. -5 (NC) = Contact for casing element control (AUX relay closed with compressor output inactive). -4 (NC) = pump down function (see CHAP 5.18). -3 (NC) = automatic auxiliary relay managed by StA temp. setting with 2°C differential (NC). -2 (NC) = manual auxiliary relay controlled via AUX key (NC). -1 (NC) = alarm relay (NC). 0 = relay deactivated. 1 (NO) = alarm relay (NO). 2 (NO) =manual auxiliary relay controlled via AUX key (NO). 3 (NO) = automatic auxiliary relay managed by StA temp. setting with 2°C differential (NO). 4 (NO) = pump down function (see CHAP 5.18). 5 (NO) = free voltage contact for condensing unit (AUX relay and compressor relay in parallel). 6 (NO) = relay excited during stand-by. 7 (NO) = Liquid solenoid (for hot gas defrost management). 8 (NO) = Relay energized in night mode. 9 (NO) = Hot output (neutral zone).	-1
AU2	**Auxiliary Relay 2 setting**	-9 (NC) = Hot output (neutral zone). -8 (NC) = Relay open in night mode. -7(NC) = Liquid solenoid (for hot gas defrost management). -6 (NC) = relay de-energised during stand-by. -5 (NC) = Contact for casing element control (AUX relay closed with compressor output inactive). -4 (NC) = pump down function (see CHAP 5.18). -3 (NC) = automatic auxiliary relay managed by StA temp. setting with 2°C differential (NC). -2 (NC) = manual auxiliary relay controlled via AUX key (NC). -1 (NC) = alarm relay (NC). 0 = relay deactivated. 1 (NO) = alarm relay (NO). 2 (NO) =manual auxiliary relay controlled via AUX key (NO). 3 (NO) = automatic auxiliary relay managed by StA temp. setting with 2°C differential (NO). 4 (NO) = pump down function (see CHAP 5.18). 5 (NO) = free voltage contact for condensing unit (AUX relay and compressor relay in parallel). 6 (NO) = relay excited during stand-by. 7 (NO) = Liquid solenoid (for hot gas defrost management). 8 (NO) = Relay energized in night mode. 9 (NO) = Hot output (neutral zone).	5
StA	**Temperature setting for auxiliary relay**	-45 ÷ +99 °C	0 °C
nSC	**Correction factor for the SET button during night operation** (energy saving, (with In1 or In2 = 8 or -8) During night operation the control set is: Set Control = Set + nSC In night mode decimal point flashes.	-20,0 ÷ +20,0 °C	0,0 °C

PAR.	MEANING	VALUES	DEF.
In1	**Digital Input 1 Setting (INP-1)**	9 = Fan alarm – signaling only (N.O.). 8 = Night mode digital input (energy saving, N.O.). 7 = Stop defrosting remotely (N.O.) (reads rising edge of impulse). 6 = Start defrosting remotely (N.O.) (reads rising edge of impulse). 5 = Stand-by remotely (N.O.) (In order to indicate Stand-By mode, the display shows 'In5' alternating with the current view) 4 = Pump-down pressure switch (N.O.) (see CHAP 5.18). 3 = Man-in-room alarm (N.O.). 2 = Compressor protection (N.O.). 1 = Door switch (N.O.). 0 = disabled. -1 = Door switch (N.C.). -2 = Compressor protection (N.C.). -3 = Man-in-room alarm (N.C.). -4 = Pump-down pressure switch (N.C.) (see CHAP 5.18). -5 = Stand-by remotely (N.C.) (In order to indicate Stand-By mode, the display shows 'In5' alternating with the current view). -6 = Start defrosting remotely (N.C.) (reads falling edge of impulse). -7 = Stop defrosting remotely (N.C.) (reads falling edge of impulse). -8 = Night mode digital input (energy saving, N.C.). -9 = Fan alarm – signaling only (N.C.).	2
In2	**Digital Input 2 Setting (INP-2)**	9 = Fan alarm – signaling only (N.O.). 8 = Night mode digital input (energy saving, N.O.). 7 = Stop defrosting remotely (N.O.) (reads rising edge of impulse). 6 = Start defrosting remotely (N.O.) (reads rising edge of impulse). 5 = Stand-by remotely (N.O.) (In order to indicate Stand-By mode, the display shows 'In5' alternating with the current view) 4 = Pump-down pressure switch (N.O.) (see CHAP 5.18). 3 = Man-in-room alarm (N.O.). 2 = Compressor protection (N.O.). 1 = Door switch (N.O.). 0 = disabled. -1 = Door switch (N.C.). -2 = Compressor protection (N.C.). -3 = Man-in-room alarm (N.C.). -4 = Pump-down pressure switch (N.C.) (see CHAP 5.18). -5 = Stand-by remotely (N.C.) (In order to indicate Stand-By mode, the display shows 'In5' alternating with the current view). -6 = Start defrosting remotely (N.C.) (reads falling edge of impulse). -7 = Stop defrosting remotely (N.C.) (reads falling edge of impulse). -8 = Night mode digital input (energy saving, N.C.). -9 = Fan alarm – signaling only (N.C.).	1
bEE	**Buzzer enable**	0 = disabled 1 = enabled	1
mOd	**Thermostat functioning mode**	0 = Cold function 1 = Hot function (in this mode, defrosting and fan disable Fst are excluded)	0
P1	**Password type of protection** (active when PA is not equal 0)	0 = only display set point 1 = show: set point, AUX, light access 2 = access in all programming level is not permitted 3 = access in second level programming is not permitted	3
PA	**Password** (see P1 for the type of protection)	0...999 0 = not active	0
dEF	**Resetting parameters to default values:** position on the **dEF** parameter and hold down all the keys simultaneously for 30 seconds to restore the default parameters.		
reL	**release software**	indicates software version	(read only)

AUTOMATIC CONFIGURATION OF PARAMETERS 5.11

1- INITIALIZING THE CONFIGURATION

- Press the UP (▲) + DOWN (▼) + AUX keys simultaneously until the word "**ini**" appears on the display. The display will show "ini" and the system enters automatic configuration mode.

2- SELECTING THE OPERATING MODE

- Pressing the SET key will display the options:
  - **" P "** (Setpoint= 3°C) – positive temperature cold room.
  - **" n "** (Setpoint= -20°C) – negative temperature cold room.

Use the UP (▲) and DOWN (▼) buttons to select between **P** and **n**. Press the **SET** button to confirm.

- The display shows "000" with the first digit flashing; each digit represents a different parameter setting. Change the value of the single digit with the UP (▲) or DOWN (▼) keys, then press the **SET** key to confirm and move on to modifying the next digit.

▪ **First digit (Cold management)**

Value	*Meaning*	*Changed Parameters*
0	Solenoid management	AU2=5; In1=2
1	Solenoid + compressor management	AU2=5; In1=2
2	Compressor management in pump-down N.O.	AU2=4; In1=-4

▪ **Second digit (Defrost management)**

Value	*Meaning*	*Changed Parameters*
0	Electric defrost	d1=0; d3=15
1	Off Cycle defrost	d1=0; d3=25
2	Hot Gas defrost	d1=1; d3=10

▪ **Third digit (Fan management)**

Value	*Meaning*	*Changed Parameters*
0	Active with compressor active, not active during defrosting	F3=1; F4=1
1	Active with compressor active, active during defrosting	F3=1; F4=0
2	Always active	F3=0; F4=0

▪ **Light icon (Door switch management)**

Value	*Meaning*	*Changed Parameters*
Flashing	Door switch N.O.	In2=1
Permanently on	Door switch N.C.	In2=-1
Off	Door switch not present	In2=0

Press the SET button again to exit the automatic configuration procedure; the control signals the modification of the parameters with an acoustic signal.

Note. Depending on the selected mode ("P" or "n"), the parameters will be set by default as in the following table:

Parameter	DEFAULT VALUES	
	P	n
Set	3,0	-20,0
A1	-1	-25
A2	10	-15
d0	8	6
LSE	0	-23
HSE	7	-17

SWITCHING ON THE ECP202 EXPERT D7.5 ELECTRONIC CONTROLLER 5.12

After wiring the electronic controller correctly, power up at 230VAC; the display panel will immediately emit a beep and all the LEDs will come on simultaneously for a few seconds.

COLD/HOT ACTIVATION/DEACTIVATION CONDITIONS 5.13

In cold mode (mOd=0), the **ECP202 EXPERT D7.5** controller activates the compressor when cold room temperature exceeds setting + differential (r0); it deactivates the compressor when cold room temperature is lower than the setting.
If Pump-Down function is selected (Parameter AU1/AU2 = 4/-4), see chapter 5.18 for compressor activation/deactivation conditions.
It's possible to configure AU1/AU2 as a hot output for management in the neutral zone (Parameter AU1/AU2=9/-9). The output activates when the room temperature is lower than SET POINT-r0, it deactivates when the temperature is higher than the SET POINT.
In hot mode (mOd=1), the **ECP202 EXPERT D7.5** controller activates the heat output (COMPR output) when cold room temperature drops below setting-differential (r0); it deactivates the heat output (COMPR output) when cold room temperature is higher than the setting.

MANUAL DEFROSTING ACTIVATION/DEACTIVATION 5.14

To defrost just press the dedicated key (see section 5.2) to activate the elements relay. Defrosting will not take place if the end-of-defrost temperature setting (d2) is lower than the temperature detected by the evaporator sensor. Defrosting ends when the end-of-defrost temperature (d2) or maximum defrost time (d3) is reached, or due to forced manual defrost termination (end of defrost button or digital input).

DEFROST WITH HEATER AND TEMPERATURE CONTROL 5.15

Set the parameter d1=2 for the management of heater defrost by time with temperature control. During the defrost the output is activated when the evaporator's temperatures are lower than d2. Defrost stops after d3 minutes. It allows energy saving and a better defrost process.

5.16 HOT GAS DEFROSTING

Set parameter d1=1 to manage the reverse cycle defrost (hot gas).

The compressor relay and the defrost relay are activated throughout the defrost phase. For correct management of the system, connect the hot gas defrost solenoid valve to the defrost output and the liquid solenoid valve to the auxiliary output configured as "Liquid solenoid (for hot gas defrost management)" (AU1/AU2=7/-7).

By doing so, during the defrost phase, the liquid solenoid valve will be closed and the hot gas defrost cycle will be activated.

5.17 ENERGY-SAVING DEFROSTING

Set parameter dSE=1 to activate energy-saving defrosts. In this case, the time interval between individual defrosts is calculated automatically so as to defrost only when the evaporator is actually frozen. This results in a reduction in the number of defrost events during the day, with consequent energy savings.

Description of operation

- *Initial phase:* after each defrost or restart, a test phase is carried out to obtain the initial conditions of the evaporator, assuming that the evaporator is clean and free of ice.
- *Normal operating phase:* at any moment the state of the evaporator is compared with the conditions obtained during the initial phase; when the evaporator is frozen for a time longer than the dSS parameter, a defrost is launched. Increasing the value of the dSS parameter allows the frequency of defrosts to be reduced, but a greater presence of ice in the evaporator must be tolerated.

Note. For safety reasons, defrosting is also started when a time interval d0 (in tens of hours) has elapsed since the last defrost. With energy saving defrosts activated, it is recommended to enable defrosts at start-up (parameter dPo=1) to ensure correct cleaning of the evaporator before the initial calibration phase.

5.18 PUMP DOWN FUNCTION

Pump down function is activated when parameter AU1/AU2 = 4 / -4.
Connect pump down pressostat on the digital input configured as pump down (In1 or In2 = 4 / -4). The compressor is directly controlled by pressostat. Connect evaporator solenoid valve on the AUX1 (or AUX2) relay. The solenoid is controlled directly by thermostat.

5.19 PASSWORD FUNCTION

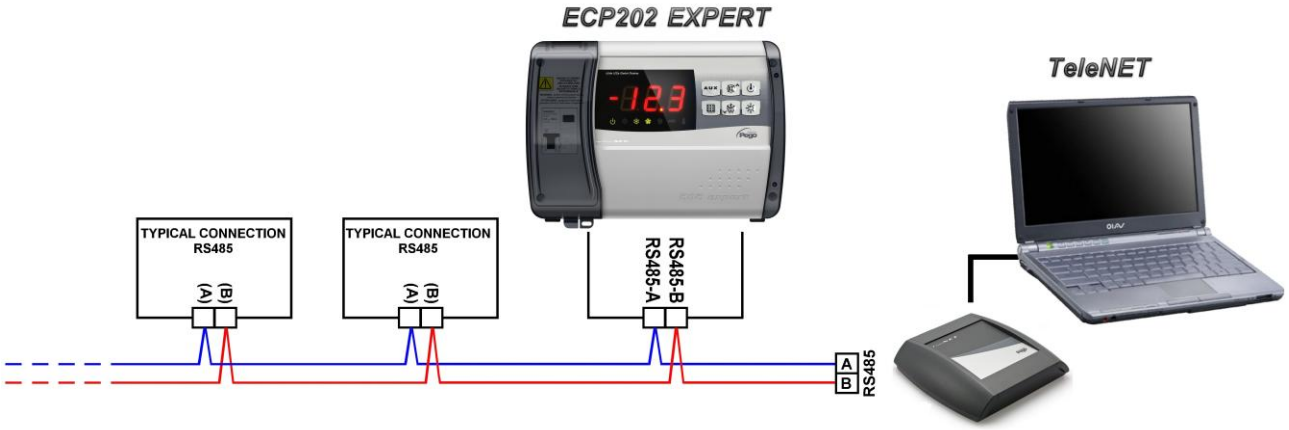
When parameter PA is setting with value different to 0 the protection function is activated.
See parameter P1 for the different protection.
When PA is setting the protection start after two minutes of inactivity. On display appear 000.
With up/down modify the number, with set key confirm it.
Use universal number 100 if you don’t remember the password.

CHAPTER 6: OPTIONS

TeleNET MONITORING/SUPERVISION SYSTEM 6.1

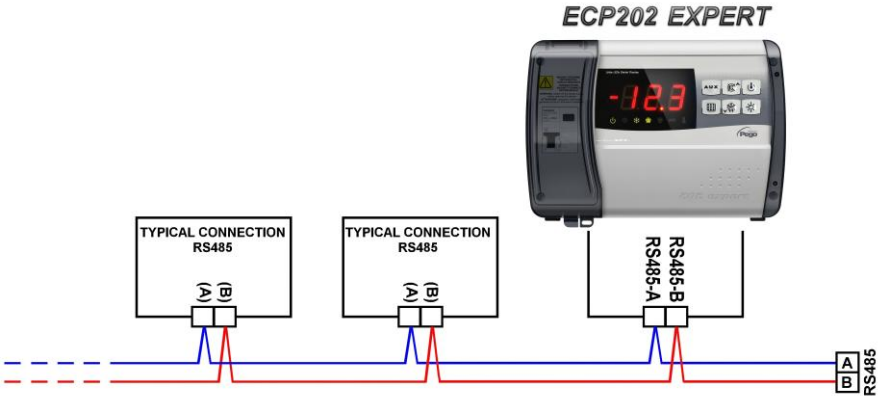
For **TeleNET** connections follow the scheme below. Refer to **TeleNET** user manual for instrument configuration.

WARNING: During configuration, at entry “Module” to select the entry "Instrument ECP Base Series / ECP Expert Series rel. 25 or higher".



NET CONFIGURATION WITH MODBUS-RTU PROTOCOL 6.2

For **RS485** connections with **Modbus-RTU** protocol follow the scheme below.
Refer to MODBUS-RTU_ECP202EXP user manual for MODBUS-RTU communication protocol specification.



CHAPTER 7: TROUBLESHOOTING

7.1 TROUBLESHOOTING

In the event of any anomalies the **ECP202 EXPERT D7.5** notifies the operator by means of the alarm codes displayed on the display and an audible signal emitted by a buzzer inside the control panel. The EL and EH temperature alarms remain visible even after their return (alarm icon lights on) until their acquisition (by pressing the key tacit).
If an alarm condition occurs, one of the following messages will be displayed on the display:

ALARM CODE	POSSIBLE CAUSE	SOLUTION
E0	**Functional anomaly of the cold room probe.**	• Check that cold room temperature sensor is working properly. • If the problem persists, replace the sensor.
E1	**Functional anomaly of the defrost probe.** In this case any defrosting will last for the duration of time d3.	• Check that defrost sensor is working properly. • If the problems persists, replace the sensor.
E2	**Eeprom alarm** An EEPROM memory alarm has been detected. All outputs, except the alarm ones, are deactivated.	• Switch unit off and back on.
E8	**Person in cold room alarm**	• Reset the alarm pushbutton inside the cold room.
Ec	**Compressor protection intervention** (e.g. thermal protection or max pressure switch). All outputs except the alarm one – where applicable – are deactivated.	• Check that compressor is working properly. • Check compressor absorption. • If the problem persists, contact the technical assistance service.
Ed	**Open door Alarm.** When the door is opened and after tdo time, it's setted back the normal functioning giving door open alarm (Ed)	• Check door switch status. • Check door switch connections. • If the problem persists, contact the technical assistance service.
E9	**Cold room light alarm.** The light of the cold room has been on for a time greater than tdo.	• Turn off the light.
EH	**Maximum temperature alarm.** The temperature inside the cold room has exceeded the max. temperature alarm setting (see variables A2, user programming level)	• Check that the compressor is working properly. • Sensor not reading temperature properly or compressor start/stop control not working.
EL	**Minimum temperature alarm.** The temperature inside the cold room has exceeded the min. temperature alarm setting (see variables A1, user programming level)	• Check that the compressor is working properly. • Sensor not reading temperature properly or compressor start/stop control not working.
EF	**Fan alarm.** The fan alarm digital input has been activated. The status of the outputs remains unchanged.	• Check the status of the fans. • Check the fan absorption. • If the problem persists, contact the technical assistance service.

APPENDICES

EU DECLARATION OF CONFORMITY A.1

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 –
Società soggetta all'attività di direzione e coordinamento di Castel S.r.l.

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

MOD.: **ECP202 EXPERT D7.5**

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/UE**
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 60730-1:2016, EN 60730-2-9:2010, EN 61000-6–1:2007, EN 61000-6–3:2007**
European standards: ***EN 60730-1:2016, EN 60730-2-9:2010, EN 61000-6–1:2007, EN 61000-6–3:2007***

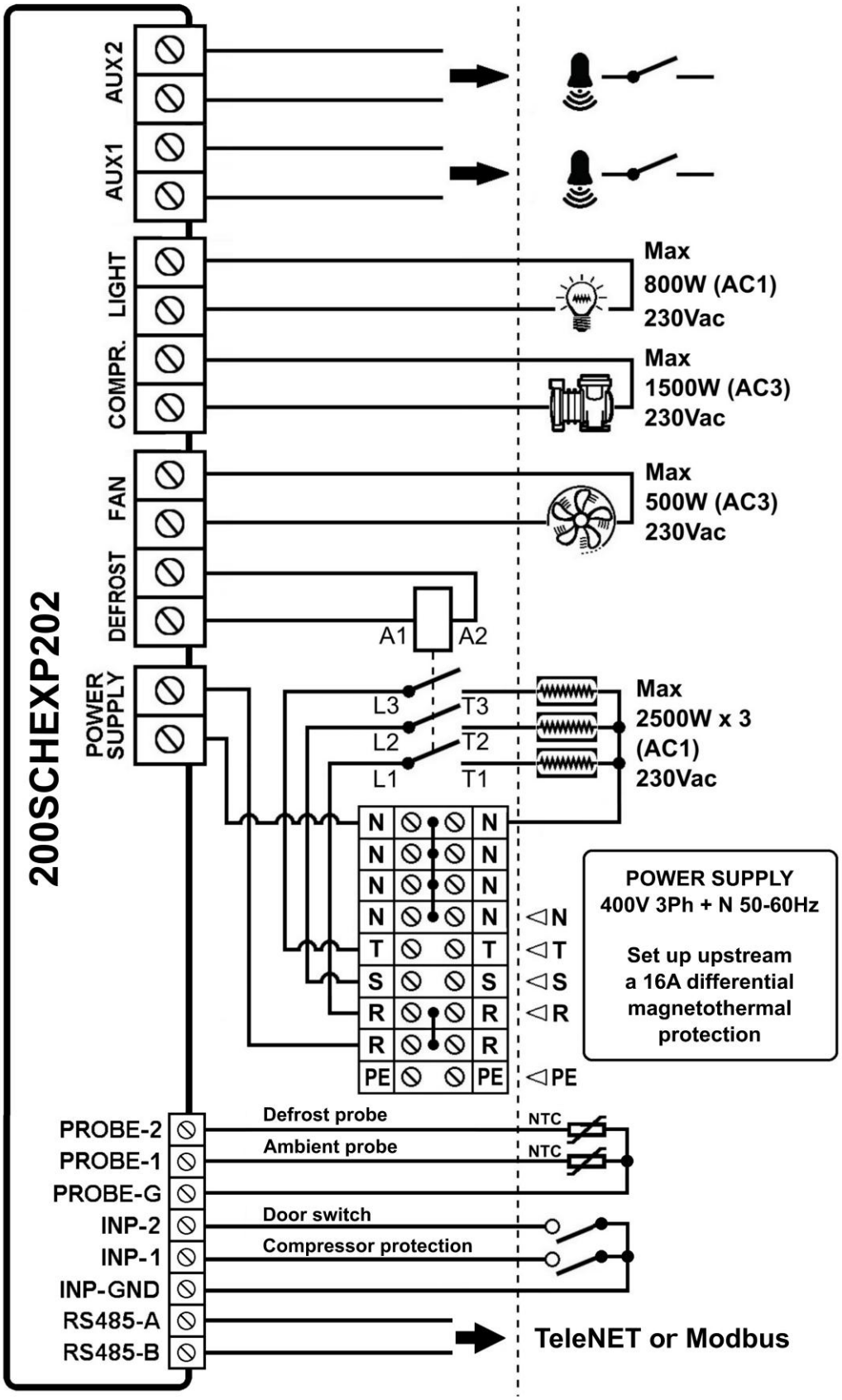
Firmato per nome e per conto di:
Signed for and on behalf of:

Pego S.r.l.
Martino Villa
Presidente

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

Occhiobello (RO), 01/01/2022

A.2 ECP202 EXPERT D7.5 WIRING DIAGRAM



INSTRUCTIONS FOR CORRECT DISPOSAL

Introduction:

This product is an Electrical and Electronic Equipment. When its disposal becomes necessary, it's classified as **Waste Electrical** and **Electronic Equipment** (**WEEE**).
This waste contains components that can be harmful to the environment and human health if not disposed of correctly. It's therefore essential to follow local and international regulations to ensure that its disposal occurs in a safe and responsible manner.

Responsible Disposal:

1. **Do not dispose of the product in municipal waste.**
   These devices may contain hazardous materials, such as heavy metals and chemicals, which could contaminate soil and water resources if not treated properly. Their disposal must occur through specific channels.

2. **Locate a WEEE collection center.**
   In many countries there are collection points dedicated to WEEE, such as recycling centers and ecological islands. These centers are equipped to safely treat and recycle electronic components. It's important to rely on these centers to ensure that the product is treated correctly.

3. **Check local disposal regulations.**
   Regulations for the treatment of WEEE may vary from country to country. It's essential to find out about local provisions regarding the recovery and recycling of Waste Electrical and Electronic Equipment. In many countries, there are specific regulations that require mandatory recycling or treatment of such waste in authorized facilities.

4. **Do not attempt to dismantle the electrical panel without proper preparation.**
   Although it may seem convenient to remove components for recovery, unauthorized dismantling operations may expose you to the risk of injury or improper handling of hazardous materials. Always rely on certified professionals to handle these operations.

5. **Electronic component and battery.**
   Some electrical panels with electronics may contain batteries or other components that require separate treatment. Batteries must be disposed of in accordance with specific directives for waste containing heavy metals and hazardous chemicals.

6. **Recycling and reuse.**
   The materials contained in electrical panels, such as metals, plastics and circuits, can be recycled and reused in new products. Correct disposal ensures that these resources are recovered, reducing their environmental impact and promoting the circular economy.

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