



ECP 200 BASE 2 / 4



USE AND MAINTENANCE MANUAL

REV. 01-09

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ECP200 BASE 2/4

CHAPTER 1: INTRODUCTION

1.1

GENERAL

The electronic controllers of the *ECP200 BASE* series have been designed to control static or ventilated cold rooms.

The *ECP200 BASE 4* electronic board allows the user to control all the components on a refrigeration unit such as compressor, evaporator fans, defrosting elements and cold room light.

The applications are:

- single-phase static or ventilated refrigeration systems up to 2 HP, with off-cycle or electrical defrosting
- out of room unit to be connected to power board for compressor, defrosting and fan start.
- single-phase evaporator control unit with cold solenoid consensus or remote condensing unit consensus

The *ECP200 BASE 2* electronic board allows the user to control the compressor and room light.

The applications are:

- single-phase refrigeration systems up to 2 HP with off-cycle defrosting.
- out of room unit to be connected to power board for compressor start.

The ABS controller box is simple to install and can easily be wall-mounted as the **ECP200 BASE** is extremely compact and features an IP65 protection rating.

1.2	PRODUCT ID CODES
ECP200 BASE 2	controls and manages compressor and room light.
ECP200 BASE 2 A	controls and manages compressor and room light. Alarms relay.
ECP200 BASE 4	controls and manages compressor, defrosting elements, evaporator fans and room light.
ECP200 BASE 4 A	controls and manages compressor, defrosting elements, evaporator fans and room light, Alarms relay,



CHAP. 1 - Introduction

OVERALL DIMENSIONS





IDENTIFICATION DATA

1.4

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

- Name of Manufacturer
- · Code and model of unit electrical board
- Serial number
- IP protection rating
- Power supply





CHAPTER 2: INSTALLATION

2.1

IMPORTANT INFORMATION FOR THE INSTALLER

1. Install the device in places where the protection rating is observed and try not to damage the box when drilling holes for wire/pipe seats.

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. Fit a general protection fuse upstream from the electronic controller.

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 1 mm^2 .

2.2

STANDARD ASSEMBLY KIT

For the purposes of assembly and use, the electronic *ECP200 BASE* control unit comes with:

• N° 3 seals, to be fitted between the fixing screws and the box back panel

• N° 1 user's manual.



INSTALLING THE UNIT

Fig. 1: Undo the 4 screws on the front of the panel.

CHAP. 2 - Installation

Fig. 2: Use the three existing holes to fix the box back panel to the wall: use three screws of a length suitable for the thickness of the wall to which the panel will be attached. Fit a rubber washer (supplied) between each screw and the box backing.

Make all the electrical connections as illustrated in the diagram for the corresponding model (see relative table in APPENDICES).

To effect correct electrical connection and maintain the protection rating, use appropriate wire/raceway grips to ensure a good seal.

Route the wiring inside the unit in as tidy a fashion as possible: be especially careful to keep power wires away from signal wires. Use clips to hold wires in place.

Fig. 3: close the front panel, making sure that all the wires are inside the box and that the box seal sits in its seat properly. Tighten the front panel using the 4 screws, making sure the O-rings

on the head of each screw are used. Power up the panel and carry out thorough reading/programming of all the parameters.

Be careful not to over-tighten the closure screws as this could warp the box and compromise proper operation of the membrane-type keypad.

Install short-circuit overload safety devices on all the power cables connected to the ECP200 controller so as to prevent damage to the device. Work and/or maintenance must ONLX be carried out on the unit after disconnecting the papel from the power

must ONLY be carried out on the unit after disconnecting the panel from the power supply and from any inductive/power loads: doing so allows the worker to do his job safely.







2.3







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3.1

CHAPTER 3: FUNCTIONS

ECP200 BASE PANEL FUNCTIONS

- Display and adjustment of cold room temperature accurate to 0.1 °C.
- Display of evaporator temperature from parameter
- System control activation/deactivation
- System warnings (probe/sensor errors, minimum and maximum temperature warnings, compressor shutdown)
- Evaporator fans control
- Automatic and manual defrost (static, heating element, cycle inversion)
- Direct control of compressor unit up to 2 HP
- Room light, via panel key or door switch
- Alarms/auxiliary relay



CHAPTER 4: TECHNICAL CHARACTERISTICS

TECHNICAL CHARACTERISTICS

4.1

Power supply		
Voltage	230 V~ ± 10% 50/60 Hz	
Max power	~ 7 VA	
Cold room conditions		
Working temperature	-5 - 60°C	
Storage temperature	-10 - 70°C	
Relative humidity	Less than 90%	
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+45	
ECP200 BASE 4 - Output characteristics - max applicable load (230 V AC)		
Compressor	1500 W (AC3)	
Elements	3000 W (AC1)	
Fans	500 W (AC3)	
Room light	800 W (AC1)	
Alarm contact (non-powered contact)	100 W (BASE 4 A version only)	
ECP200 BASE 2 - Output characteristics - max applicable load (230 V AC)		
Compressor (non-powered contact)	1500W (AC3)	
Room light (non-powered contact)	800W (AC1)	
Alarm contact	100W (BASE 2 A version only)	
Dimensional characteristics		
Dimensions	19.3 cm x 7.9 cm x 20.3 cm (HxDxL)	
Insulation / mechanical characteristics		
Box protection rating	IP65	
Box material	Self-extinguishing ABS	
Type of insulation	Class II	

4.2

WARRANTY

The electronic controllers in the **ECP200 BASE series** are covered by a 24-month warranty against all manufacturing defects, valid from date of delivery. If the system malfunctions as a result of tampering, impact or improper installation the warranty will automatically be rendered null and void. It is strongly recommended that you observe all instructions/information regarding the technical characteristics of the device.



WARNING !

Any modifications made to wiring and/or internal components or any work carried out in a way that fails to comply with the information/instructions in this manual shall render the warranty null and void immediately. Modifications/improper work may cause malfunctions, irreparable damage, serious injury or put persons/objects in danger.

PEGO S.r.I. cannot be held liable for possible errors or inaccuracies written in this manual as a result of printing or transcription errors.
 PEGO S.r.I. reserves the right to modify its products as it deems necessary without altering its main characteristics. Each new release of a *PEGO* user manual replaces previous ones.



CHAPTER 5: PARAMETER PROGRAMMING



- 1. **key:** AUXILIARY RELAY CONTROL (on the version with alarm relay controls the relay manual if parameter AU=1)
- 2. **Key: UP / MUTE WARNING BUZZER**
- 3. **Wey: STAND BY** (if the system shuts down the LED flashes)
- 4. **key:** room temperature **SETTING**
- 5. * key: DOWN / MANUAL DEFROST
- 6. 🥙 key: ROOM LIGHT

LED DISPLAY

5.3



- 1. Cold room temperature / parameters
- 2. Stand-by (flashes on stand-by. Outputs are deactivated)
- 3. Room light (flashes if door switch activated)
- 4. Cold (indicates activation of compressor)
- 5. Fans
- 6. Defrosting
- 7. Auxiliary
- 8. Alarm/warning

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5.4

GENERAL

To enhance safety and simplify the operator's work, the *ECP200 BASE system* 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 is not possible to access the Level 2 programming directly from Level 1: you must exit the programming mode first.

5.5

KEY TO SYMBOLS

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.



SETTING AND DISPLAYING THE SET POINTS

- 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.

Release the **SET key** to return to cold room temperature display: the new setting will be saved automatically.

LEVEL 1 PROGRAMMING (User level)

To gain access to the Level 1 configuration menu proceed as follows:

1. Press the (▲) and (▼) keys simultaneously and keep them pressed for a few seconds

until the first programming variable appears on the display.

2. Release the ($^{\bigstar}$) and ($^{\blacktriangledown}$) keys.

3. Select the variable to be modified using the ($^{\wedge}$) or ($^{\checkmark}$) key.

4. When the variable has been selected it is possible:

• to display the setting by pressing SET key

• to modify the setting by pressing the SET key together with the (^) or (~) key.

When configuration values have been set you can exit the menu by pressing the (^) and

(>) keys simultaneously for a few seconds until the cold room temperature reappears.

5. The new settings are saved automatically when you exit the configuration menu.



5.7



LIST OF LEVEL 1 VARIABLES (User level)

VARIABLES	MEANING	VALUE	DEFAULT
r0	Temperature difference compared to main SETPOINT	0.2 - 10 °C	2°C
d0	Defrost interval (hours)	0 - 24 hours	4 hours
d2	End-of-defrost setpoint. Defrost is not executed if the temperature read by the defrost sensor is greater than <i>d2</i> (If the sensor is faulty defrosting is timed)	-35 - 45 °C	15°C
d3	Max defrost duration (minutes)	1 - 60 min	25 min
d7	Drip duration (minutes) At the end of defrost the compressor and fans remain at standstill for time <i>d7</i> , 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 <i>F5</i> 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 <i>A1</i> an alarm trips: the alarm LED flashes, displayed temperature flashes and the buzzer sounds to indicate the problem.	_	-45°C
A2	Maximum temperature alarm Allows user to define a maximum temperature for the room being refrigerated. Above value <i>A2</i> an alarm trips: the alarm LED flashes, displayed temperature flashes and the buzzer sounds to indicate the problem.	-	+45°C
tEu	Evaporator sensor temperature display	Displays evaporator temperature (displays nothing if dE =1)	read only



5.9

LEVEL 2 PROGRAMMING (Installer level)

To access the second programming level press the UP ($^{\wedge}$) and DOWN ($^{\checkmark}$) keys and the LIGHT key simultaneously for a few seconds.

When the first programming variable appears the system automatically goes to stand-by.

1. Select the variable to be modified by pressing the UP (^) and DOWN (~) keys.

When the parameter has been selected it is possible to:

2. View the setting by pressing the SET key.

3. Modify the setting by holding the SET key down and pressing the (▲) or (▼) key.

4. When configuration settings have been completed you can exit the menu by pressing

the (▲) and (▼) keys simultaneously and keeping them pressed until the room temperature reappears.

5. Changes are saved automatically when you exit the configuration menu.

6. Press the STAND-BY key to enable electronic control.

LIST	OF LEVEL 2 VARIABLES (Installer	level)	5.10
VARIABLES	MEANING	VALUES	DEFAULT
AC	Door switch status	0= normally open 1= normally closed	0
F3	Fan status with compressor off	0 = Fans run continuously 1 = Fans only run when compressor is working	1
F4	Fan pause during defrost	0 = Fans run during defrost 1 = Fans do not run during defrost	1
dE	Sensor presence If the evaporator sensor is disabled defrosts are carried out cyclically with period <i>d0:</i> defrosting ends when an external device trips and closes the remote defrost contact or when time <i>d3</i> expires.	0 = evaporator sensor present 1 = no evaporator sensor	0
d1	Defrost type , cycle inversion (hot gas) or with heater elements	1= hot gas 0= element	0
Ad	Network address for connection to the TeleNET supervision system	0 - 31	0
Ald	Minimum and maximum temperature signalling and alarm display delay	1240 min	120 min
C1	Minimum time between shutdown and subsequent switching on of the compressor.	015 min	0 min
CAL	Cold room sensor value correction	-10+10	0
Рс	Compressor protection contact status	0 = NO 1 = NC	0 = NO
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CHAP. 5 - Data programming

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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.	05 minutes	0
Fst	FAN shutdown TEMPERATURE The fans will stop if the temperature value read by the evaporator sensor is higher than this value.	-45+45°C	+45°C
Fd	Fst differential	0+10°C	2°C
tA	NO – NC alarm relay switching	0=activates when alarm is on 1=deactivates when alarm is on	1
AU	Auxiliary/alarm relay control (only on version with relay fitted)	0=alarm relay 1=manual auxiliary relay controlled via AUX key 2= automatic auxiliary relay managed by StA temp. setting with 2°C differential 3= relay disabled / TeleNET function 4= pump down function (see 5.15) 5= free voltage contact for condensing unit (AUX relay and compressor relay in parallel)	0
StA	Temp. setting for aux. relay	-45+45°C	0
In1	Man in cold room alarm Select input INP1 on the board as <i>compressor protection alarm</i> or as <i>man in</i> <i>cold room alarm</i> (contact NC).	0 = compressor protection 1 = man in room alarm	0
P1	Password type of protection (active when PA is not equal 0)	0 = only display set point 1= display set point, AUX, light access 2= access in programming not permitted 3= access in second level programming not permitted	3
PA	Password (see P1 for the type of protection)	0999 0 = not active	0
reL	Software release	indicates software version	Read only



5.11 SWITCHING ON THE ECP200 BASE ELECTRONIC CONTROLLER

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

COMPRESSOR ACTIVATION/DEACTIVATION CONDITIONS

The *ECP200 BASE* 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.

5.13

5.12

MANUAL DEFROSTING

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.



5.14

5.15

5.16

HOT GAS DEFROSTING

Set parameter d1 =1 to defrost in cycle inversion mode.

The compressor relay and defrost relay are activated throughout the defrost phase.

To ensure proper control of the system the installer must use the defrost output: this must allow opening of the cycle inversion solenoid valve and closure of the liquid solenoid valve. For capillary systems (without thermostat valve) it is only necessary to control the cycle inversion solenoid valve via the defrost relay control.

PUMP DOWN FUNCTION

Pump down function is activated when parameter AU=4 (only for version with AUX/Alarm relay).

Connect pump down pressostat on the digital input 1-3. The compressor is directly controlled by pressostat.

Connect evaporator solenoid valve on the AUX relay. The solenoid is controlled directly by thermostat.

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: OPTIONAL KITS

6.1

TeleNET MONITORING/SUPERVISION SYSTEM

For connections regarding the **TeleNET** monitoring/supervision system see APPENDIX A.10 (page 32) of this manual and, for the ECP200 BASE4A and ECP200 BASE2A models, jumper JP2 as described in 6.2 on page 21.





ALARM RELAY / TeleNET SWITCHING

Fig. 1: Undo the 4 closure screws on the front panel.

Fig. 3: Undo the 6 CPU board fixing screws and remove the board from the frontal section of the box in ABS.

Fig. 4: Remove the jumper from JUMPER JP2.

- Fig. 5: Insert the jumper in JUMPER JP2 in position 2-1 to select Alarm relay Or position 3-2 to select TeleNET.
 - AUX. ALARM RELAY

GLI











TeleNET





6.2



ECP200 BASE 2/4

CHAPTER 7: TROUBLESHOOTING

7.1

TROUBLESHOOTING

In the event of any anomalies the ECP200 system warns the operator by displaying alarm codes and sounding the warning buzzer inside the control panel. If an alarm is tripped the display will show one of the following messages.

ALARM CODE	POSSIBLE CAUSE	SOLUTION
EO	Cold room temperature sensor not working properly	 Check that cold room temperature sensor is working properly If the problem persists replace the sensor
E1	Defrost sensor not working properly (In this case defrosts will last time d3)	 Check that defrost sensor is working properly If the problems persists replace the sensor
E2	<i>Eeprom alarm</i> An EEPROM memory alarm has been detected (All outputs except the alarm one are deactivated)	Switch unit off and back on
E8	Man in cold room alarm	• Reset the alarm input inside the cold room
Ec	Compressor protection tripped (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
Temperature shown on display is flashing	<i>Minimum or maximum temperature alarm.</i> The temperature inside the cold room has exceeded the min. or max. temperature alarm setting (see variables <i>A1</i> and <i>A2</i> , user programming level)	 Check that the compressor is working properly. Sensor not reading temperature properly or compressor start/stop control not working.



ALLEGATI / APPENDICES

A.1

DICHIARAZIONE DI CONFORMITA' CE

COSTRUTTORE / MANUFACTURER

PEGO SRL Via Piacentina,6b 45030 Occhiobello (RO) - ITALY -

DENOMINAZIONE DEL PRODOTTO / NAME OF THE PRODUCT

MOD.: ECP200 BASE 2 - ECP200 BASE 2 A - ECP200 BASE 4 - ECP200 BASE 4 A

IL PRODOTTO E' CONFORME ALLE SEGUENTI DIRETTIVE CE/THE PRODUCT IS IN CONFORMITY WITH THE REQUIREMENTS OF THE FOLLOWING EUROPEAN DIRECTIVES:

- 2006/95/CE Direttiva del Consiglio per l'unificazione delle normative dei Paesi CEE relativa al materiale elettrico destinato ad essere utilizzato entro certi limiti di tensione e successive modificazioni
- **2006/95/EC** EC Directive on unification of laws of the Member States relating to electrical equipment employed within certain voltage limits and subsequent amendments
- 89/336 CEE Direttiva del Consiglio per l'unificazione delle normative dei Paesi CEE relativa alla compatibilità elettromagnetica e successive modificazioni
- 89/336 EEC EC Directive on unification of the laws of the Member States relating to electro-magnetic compatibility and subsequent amendments
- 93/68 CEE Direttiva del consiglio per la marcatura CE del materiale elettrico destinato ad essere utilizzato entro talunni limiti di tensione.

LA CONFORMITA' PRESCRITTA DALLE DIRETTIVE E' GARANTITA DALL' ADEMPIMENTO A TUTTI GLI EFFETTI DELLE SEGUENTI NORME: CONFORMITY WITH THE REQUIREMENTS OF THIS DIRECTIVE IS TESTIFIED BY COMPLETE ADHERENCE TO THE FOLLOWING STANDARDS:

NORME ARMONIZZATE / HARMONIZED EUROPEAN STANDARDS

EN 61000-6-1 EN 61000-6-3 EN 60335 - 1



1320

ECP200 BASE4 WIRING DIAGRAM





Allegati / Appendices

ECP200 BASE 2/4



ECP200 BASE4A WIRING DIAGRAM



132.0



ECP200 BASE2 WIRING DIAGRAM





Allegati / Appendices

A.5

ECP200 BASE2A WIRING DIAGRAM



CONNECTION EXAMPLE (1) - ECP200 BASE4 /BASE4A

Connection with outputs powered for direct control of functions.





CONNECTION EXAMPLE (2) - ECP200 BASE4 /BASE4A

<u>Mixed</u> connection with <u>on/off contact to enable towards condensing unit power</u> <u>board</u> and <u>fan</u>, <u>light and defrost outputs powered</u> for direct control.



CONNECTION EXAMPLE (3) - ECP200 BASE2 /BASE2A

Connection with outputs powered for direct control of functions.





CONNECTION EXAMPLE (4) - ECP200 BASE2 /BASE2A

Mixed connection with <u>on/off contact powered to enable towards room power board</u> and <u>light output powered</u> for direct control.



TeleNET NETWORK CONNECTION WIRING DIAGRAM

BEFORE CONNECTING UP COMMUTATE THE DATAPRINTER PLUS (PRINTER) / **TeleNET** FUNCTION VIA DIP-SWITCH AS INDICATED IN CHAP. 6, PAGE 23.



Interfaccia RS-485 Interface RS-485



SCHINT230 OPTIONAL KIT

With the optional SCHINT230 KIT is possible a simple connection with outputs powered for <u>direct control of functions</u>.



Connect the ECP BASE terminal block to the SCHINT230 terminal block with the wire kit . The connections must be realized PIN to PIN respecting the wire numbers.



SCHINT230 OPTIONAL KIT WIRING DIAGRAM





	ECP200 BASE 2/4
NOTE	

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