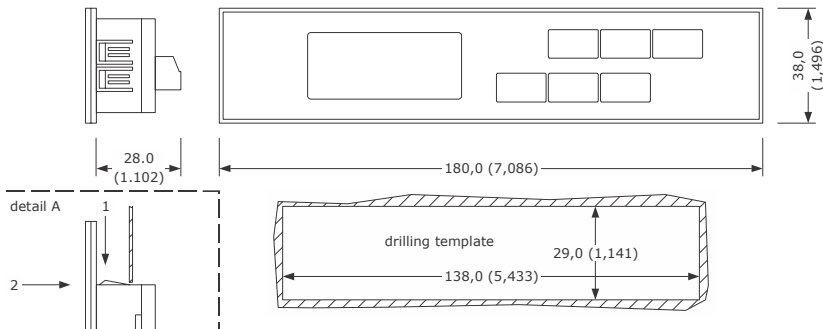




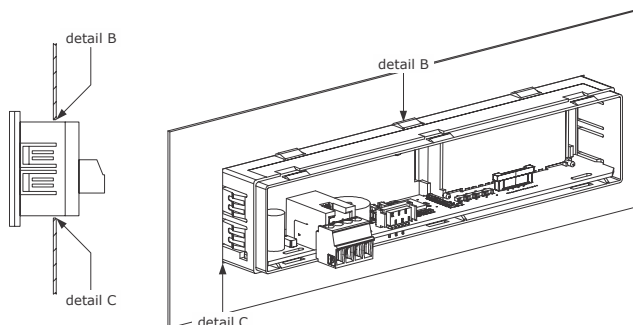
DIMENSIONS AND INSTALLATION

User interface dimensions and installation

The dimensions are expressed in mm (in); panel installation is envisioned, with elastic retainer wings (det. A).
For the dimensions and installation of the control module, see page 10.

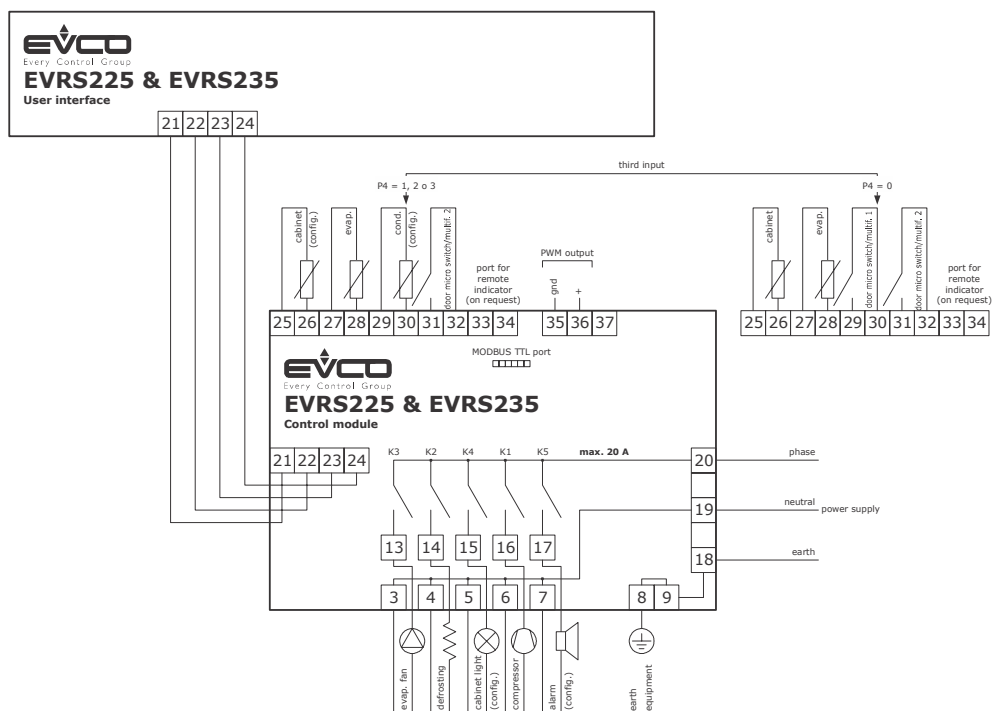


To facilitate removal of the user interface, slightly smooth the internal longitudinal edges of the drilling template before installation (det. B and C).



ELECTRIC CONNECTION

Electric connection



IMPORTANT

Read this document thoroughly before installation and before use of the device and follow all recommendations; keep this document with the device for future consultation. Only use the device in the way described in this document; do not use the same as a safety device.



The device must be disposed of in compliance with local standards regarding the collection of electric and electronic equipment.

1 DIMENSIONS AND INSTALLATION

1.1 Installation warnings

- the thickness of the panel on which the user interface is to be installed must be between 0.8 and 2.0 mm (0.031 and 0.078 in)
- make sure that the device work conditions (temperature of use, humidity, etc.) lie within the limits indicated; see chapter 13
- do not install the device near to any heat sources (heating elements, hot air ducts etc.), equipment containing powerful magnets (large diffusers, etc.), areas affected by direct sunlight, rain, humidity, excessive dust, mechanical vibrations or shocks.
- any metal parts in proximity of the control module must be at a distance such that they do not compromise the safety distances.
- in compliance with Safety Standards, the device must be installed correctly and in a way to protect against any contact with electric parts; all parts that ensure protection must be fixed in a way that they cannot be removed without the use of tools.

2 ELECTRIC CONNECTION

2.1 Warnings for the electric connection

- do not use electric or pneumatic screwdrivers on the device terminal board
- if the device has been taken from a cold to hot place, humidity could condense inside; wait about 1 hour before powering it
- make sure that the power supply voltage, the frequency and the operational electric power of the device, correspond with those of the local power supply; see chapter 13
- disconnect the device power supply before proceeding with any type of maintenance
- position the power cables as far away as possible from the signal cables
- for repairs and information regarding the device, contact the EVCO sales network.

3 USER INTERFACE

3.1 Preliminary notes

Operating Statuses:

- "on" state (the device is powered and is on: the regulators can be switched on)
- "stand-by" status (the device is powered but is switched off via software: the regulators are switched off; the possibility to manually switch on/switch off the cabinet light or auxiliary output depends on parameter u2)
- the "off" status (the device is not powered).

Hereafter, with the word "start-up" means the passage from "stand-by" status to "on" status; the word "shutdown" means the passage from "on" status to "stand-by" status.

When the power is switched back on, the device displays the status that it was in at the time it was disconnected.

3.2 Device switch-on/off in manual mode

Operating Statuses:

1. Make sure that the keyboard is not locked and that no procedure is in progress.
2. Hold the key down for 2 s: the LED will switch off/on.

Using the digital inputs it is also possible to remotely switch on/off the device.





3.3 The display

If the device is switched on, during normal operation, the display will show the magnitude established with P5, except during defrosting, when the device will show the temperature established with parameter d6.

If the device is switched off, the display will be switched off.

3.4 Cabinet temperature display (if parameter P4 is set at 0, 1 or 2) or the temperature detected by the inlet air probe (if parameter P4 is set at 3)








1. Make sure that the keyboard is not locked and that no procedure is in progress.
2. Hold the key down for 1 s: the display will show the first label available.
3. Press and release the key or the key to select "Pb1".

4. Press and release the  key.
To exit the procedure:
5. Press and release the  key or do not operate for 60 sec.
- 6.1 Press and release the  or  key until the display shows the magnitude established with parameter P5 or do not operate for 60 sec.

Alternatively:

- 6.2 Press and release the  key.

3.5 Evaporator temperature display








1. Make sure that the keyboard is not locked and that no procedure is in progress.
2. Hold the  key down for 1 s: the display will show the first label available.
3. Press and release the  key or the  key to select “Pb2”.
4. Press and release the  key.
To exit the procedure:
5. Press and release the  key or do not operate for 60 sec.
- 6.1 Press and release the  or  key until the display shows the magnitude established with parameter P5 or do not operate for 60 sec.

Alternatively:

- 6.2 Press and release the  key.

If the evaporator probe is absent (parameter P3 = 0), the label “Pb2” will not be displayed.

3.6 Display of the condenser temperature (if parameter P4 is set at 1), of the temperature detected by the display probe (if parameter P4 is set at 2) or of the temperature detected by the outlet air probe (if the parameter P4 is set at 3)








1. Make sure that the keyboard is not locked and that no procedure is in progress.
2. Hold the  key down for 1 s: the display will show the first label available.
3. Press and release the  key or the  key to select “Pb3”.
4. Press and release the  key.
To exit the procedure:
5. Press and release the  key or do not operate for 60 sec.
- 6.1 Press and release the  or  key until the display shows the magnitude established with parameter P5 or do not operate for 60 sec.

Alternatively:

- 6.2 Press and release the  key.

If the third input function is that of the digital input (parameter P4 = 0), the label “Pb3” will not be displayed.

3.7 Display of CPT temperature


1. Make sure that the keyboard is not locked and that no procedure is in progress.
2. Hold the  key down for 1 s: the display will show the first label available.
3. Press and release the  key or the  key to select “Pb4”.
4. Press and release the  key.
To exit the procedure:
5. Press and release the  key or do not operate for 60 sec.
- 6.1 Press and release the  or  key until the display shows the magnitude established with parameter P5 or do not operate for 60 sec.

Alternatively:

- 6.2 Press and release the  key.

If the “multideck” function is not active (parameter P4 = 0, 1 or 2), la label “Pb4” will not be displayed.


3.8 Activation/deactivation of “overcooling” function

1. Make sure that the keyboard is not locked and that no other operation is in progress, that defrosting and/or dripping is not in progress and that the evap. fan is off.
2. Hold the  key down for 4 s: the Overcooling LED will light up.

During the “overcooling” function the working set point is reduced by the temperature established with parameter r5; the operation lasts for the amount of time established with parameter r6.


During “overcooling” defrosting is never activated; if the defrosting interval expires when the function is in progress, defrosting will be activated at the end of the function.

3.9 Defrosting activation in manual mode


1. Make sure that the keyboard is not locked and that no other operation is in progress; ensure that the “overcooling” function is not in progress
2. Hold the  key down for 4 s.

If the evaporator probe function is that of the defrosting probe (parameter P3=1) and upon activation of defrosting, the temperature of the evaporator is higher than that established with parameter d2, the defrosting function will not be activated.


3.10 Switch-on/off of the cabinet light in manual mode (only if parameter u1 and/or parameter u11 is set at 0)

1. Make sure no procedures are in progress
2. Press and release the  key: the “AUX” LED will switch on/off.

Using the door digital inputs it is also possible to switch on/off the cabinet light by remote; see also parameter u2.


If parameter u1 is set at 0 (i.e. the utility managed by the fourth output is the cabinet light) and parameter u11 is set at 2 (i.e. the utility managed by the fifth output is the auxiliary output), holding the  key down for 2 s will cause the switch-on/off of the “AUX” LED and of the auxiliary output.

3.11 Demister heating elements switch-on (only if the parameter u1 and/or parameter u11 is set at 1)


1. Ensure that the device is switched on and that no other procedure is in progress.
2. Hold the  key down for 2 s: the “AUX” LED will light up and the heating elements will be switched on, both for the amount of time established with parameter u6.

Manually switching off the demisting heating elements is not permitted (that is, before the time established with parameter u6 expires).

3.12 Switch-on/off of the auxiliary output in manual mode (only if parameter u1 and/or parameter u11 is set at 2)



1. Make sure that the keyboard is not locked and that no procedure is in progress.
2. Press and release the  key: the “AUX” LED will switch on/off.

Using the digital inputs it is also possible to remotely switch on/off the auxiliary output.

If parameter u1 is set at 2 (i.e. the utility managed by the fourth output is the auxiliary output) and parameter u11 is set at 0 (i.e. the utility managed by the fifth output is the cabinet light), holding the  key down for 2 s will cause the switch-on/off of the “AUX” LED and of the cabinet light. If the auxiliary output has been switched on manually, then it can also be switched off manually (similarly, if the auxiliary output has been remotely switched on, then it can only be switched off in the same manner); see also parameter u2.

3.13 Locking/unlocking the keyboard

To lock the keyboard:



1. Make sure no procedures are in progress
2. Hold the  key and the  key down for 1 s: the display will show “Loc”.

If the keyboard is locked, the following are not permitted:

- device switch-on/off in manual mode
- displays the cabinet temperature of the temperature detected by the inlet air probe (with the procedure indicated in paragraph 3.4)
- display of evaporator temperature (via the procedure explained in paragraph 3.5)
- to display the condenser temperature, the temperature detected by the display probe or the temperature detected by the outlet air probe (with the procedure indicated in paragraph 3.6)
- display of the CPT temperature (via the procedure indicated in paragraph 3.7)
- activation/deactivation of “overcooling” function
- manual activation of defrosting
- manual switch on/off of the auxiliary output
- see information regarding the HACCP alarms
- cancellation of HACCP alarm list
- display of compressor operation hours
- cancellation of compressor operation hours
- set the working set point (with the procedure described in 9.2).
- set the evaporator fan speed (via the procedure explained in paragraph 9.3)

The operations cause the display of the label “Loc” per 1 sec.

To unlock the keyboard:

1. Hold the  key and the  key down for 1 s: the display will show the message “UnL” for 1 sec.

3.14 Silencing the buzzer

To lock the keyboard:

1. Make sure no procedures are in progress
2. Press a key (the first pressing of the key will not cause the effect associated with that key).

If the parameter u1 and/or the parameter u11 is set at 3 (i.e. the utility managed by the fourth output and/or the utility managed by the fifth output is the alarm output) and parameter u4 is set at 1, pressing the key will also cause the deactivation of the output.

If parameter u9 is set at 0, the buzzer will not be activated.

4 MULTIDECK

4.1 Preliminary notes

If parameter P4 is set at 3, the temperature associated to the regulation will mainly depend on the temperature detected by the inlet air probe and that detected by the air outlet probe, herein called CPT temperature (Calculated Product Temperature).

The formula for the calculation of the CPT temperature is: CPT temperature= [(value established with parameter P7) x (temperature detected by the inlet air probe)] + [(100 - value established with parameter P7) x (temperature detected by the outlet air probe)] : 100}.

5 ENERGY SAVING

5.1 Preliminary notes

Once the time you have set with parameter i10 has passed, without activations of the door micro switch input (after the cabinet temperature or CPT temperature has reached the work set-point) the “energy saving” function is activated (until the input is activated again).

During the “energy saving” function, the work set point is increased by the temperature established with parameter r4.

In case of analogue management, the evaporator fan is switched on (if required) at the speed established with parameter F21; in case of digital management, the evaporator fan is switched on in cyclic mode (parameter F13 establishes the duration of fan switch off and parameter F14 that of switch on).

It is also possible to activate the “energy saving” function in remote mode through the digital inputs (with effect only on the compressor), through parameters H01... H14 it is finally possible to activate the “energy saving” function in real time (EVRS235 model only).

6 “HACCP” FUNCTION

6.1 Preliminary notes

The device can memorise the following HACCP alarms:

- minimum temperature alarm (code “AL”)
- maximum temperature alarm (code “AH”)
- door micro switch input alarm (code “id”)
- power supply cut-off alarm (“PF code”; in EVRS235 model only).

EVRS225 can memorise up to 3 alarms (one per type); EVRS235 can memorise up to 9 alarms, after which the oldest alarm is overwritten.

The device supplies the following information for every alarm:

- the critical value
- the date and time at which the alarm occurs (EVRS235 model only)
- the duration of the alarm (from 1 min to 99 hours and 59 min, partial if the alarm is in progress).

Code	Critical value
AL	the minimum cabinet temperature or the minimum CPT temperature during the alarm
AH	the maximum cabinet temperature or the maximum CPT temperature during the alarm
iD	the maximum cabinet temperature or maximum CPT temperature during any alarm of this type; see also parameter i4
PF	the cabinet temperature or the CPT temperature when power supply is restored; see also parameters A10 and A12

EVRS225 updates the information regarding the the alarms provided the critical value of the new alarm is more critical than that stored or provided the information has already been displayed.





The device stored the minimum temperature alarm on condition that the temperature associated to the alarm is that of the cabinet or CPT (parameter A0 = 0).

if the device is switched off, no alarms will be stored.

The “HACCP” LED provides information regarding the storage status of the alarms; see paragraph 10.1.




6.2 Display of HACCP alarm information

To begin the procedure:

1. Make sure that the keyboard is not locked and that no procedure is in progress.
2. Hold the  key down for 1 s: the display will show the first label available.
3. Press and release the  key or the  key to select “LS”.
4. Press and release the  key:
- in the EVRS225 model, the display will show one of the codes included in the table in paragraph 6.1.
 - in the EVRS235 model, the display will show one of the codes stated in the table in paragraph 6.1 followed by a number the higher the number the older the alarm.

If the device does not have any alarms stored, the label “LS” will not be displayed.

To select an alarm:

- 5. Press and release the  key or the  key.
- To see information regarding the alarm:
- 6. Press and release the  key: the **HACCP** LED will stop flashing and remain on permanently and the display will show, for example, the following information in succession:



Inform.	Part
8.0	the critical value is 8.0 °C/8 °F
StA	the display is about to show the date and time at which the alarm occurs (EVRs235 model only)
y14	the alarm occurred in 2014 (continue...)
n03	the alarm occurred in the month of March (continue...)
d26	the alarm occurred on 26 March 2014 (continue...)
h16	the alarm occurred at 16:00 (continue...)
n30	the alarm occurred at 16:30
dur	the display is about to show the alarm duration
h01	the alarm lasted for 1 hour (other data continues)
n15	the alarm lasted 1 hour and 15 min
code	the alarm selected

the displays each piece of information for 1 s.

To exit the information sequence:

- 7. Press and release the  key: the display will show the alarm selected.








To exit the procedure:

- 8. Exit the information sequence.
- 9.1 Press and release the  or  key until the display shows the magnitude established with parameter P5 or do not operate for 60 sec.

Alternatively:

- 9.2 Press and release the  key.

6.3 Cancelling the HACCP alarm list

- 1. Make sure that the keyboard is not locked and that no procedure is in progress.
- 2. Hold the  key down for 1 s: the display will show the first label available.
- 3. Press and release the  key or  the key to select **"rLS"**.
- 4. Press and release the  key.
- 5. Press and release the  key or the  key within 15 s to set **"149"**.
- 6. Press and release the  key or do not operate for 15 sec: the display will show a flashing **"- - - -"** for 4 sec and the **"HACCP"** LED switches off, after which the device will exit the procedure.








If the device does not have any alarms stored, the label **"rLS"** will not be displayed.

7 COMPRESSOR OPERATING HOURS COUNT

7.1 Preliminary notes

The device can memorise up to 999 comp. operating hours. The parameter C10 establishes the number of operating hours is higher than the limit at which the need for maintenance is signalled.








7.2 Display of Compressor Operation Hours

- 1. Make sure that the keyboard is not locked and that no procedure is in progress.
- 2. Hold the  key down for 1 s: the display will show the first label available.
- 3. Press and release the  key or the  key to select **"CH"**.
- 4. Press and release the  key.
- To exit the procedure:
- 5. Press and release the  key or do not operate for 60 sec.
- 6.1 Press and release the  or  key until the display shows the magnitude established with parameter P5 or do not operate for 60 sec.

Alternatively:

- 6.2 Press and release the  key.

7.3 Cancelling the HACCP alarm list

- 1. Make sure that the keyboard is not locked and that no procedure is in progress.
- 2. Hold the  key down for 1 s: the display will show the first label available.
- 3. Press and release the  key or the  key to select **"rCH"**.
- 4. Press and release the  key.
- 5. Press and release the  key or the  key within 15 s to set **"149"**.
- 6. Press and release the  key or do not operate for 15 sec: the display will show **"- - -"** flashing for 4 sec, after which the device will exit the procedure.

8 SYNCHRONISATION OF DEFROSTING PERIODS (ONLY IF PARAMETER i0 IS SET AT 6)

8.1 Preliminary notes

The activation of defrosting causes the activation of the digital input (at maximum for the time established with parameter d24 or until the conclusion of predripping).







If the digital input is connected in parallel to the digital input of other devices configured in the same way, the activation of the input caused the activation of defrosting in the other devices. The devices start dripping simultaneously with the conclusion of the predripping of the last device to end the same.

9 SETTINGS




9.1 Setting the date, time and day of the week (EVRs235 model only)

The date can be set in the day-month-year format; the time in the hours-minutes format (24 h).




To access the procedure:

- 1. Make sure that the keyboard is not locked and that no procedure is in progress.
- 2. Hold the  key down for 1 s: the display will show the first label available.
- 3. Press and release the  key or the  key to select **"rtc"**.
- To set the year:
- 4. Press and release the  key: the display will show **"y"** followed by the last two numbers of the year.
- 5. Press and release the  key or the  key within 15 sec.




To set the month:

- 6. Press and release the  key when setting the year: the display will show **"n"** followed by the number of the month
- 7. Press and release the  key or the  key within 15 sec.




To set the day:

- 8. Press and release the  key when setting the month: the display will show **"d"** followed by the number of the day.
- 9. Press and release the  key or the  key within 15 sec.





To set the hour:

- 10. Press and release the  key when setting the day: the display will show **"h"** followed by the number of the hour.
- 11. Press and release the  key or the  key within 15 sec.

To set the minute:

- 12. Press and release the  key when setting the hour: the display will show **"n"** followed by the number of the minute.
- 13. Press and release the  key or the  key within 15 sec.







To set the day of the week:

- 14. Press and release the  key when setting the minute: the display will show the first label available.
- 15. Press and release the  key or the  key within 15 sec to set:
 - **"Mon"** (Monday)
 - **"tuE"** (Tuesday)
 - **"UEd"** (Wednesday)
 - **"thu"** (Thursday)
 - **"Fri"** (Friday)
 - **"SAT"** (Saturday)
 - **"Sun"** (Sunday).
- 16. Press and release the  key: the device will exit the procedure.

To exit the procedure before the operation is complete:

- 17. Do not operate for 60 sec (any changes will be saved).







9.2 Setting the working set point

- 1. Make sure that the keyboard is not locked and that no procedure is in progress.
- 2. Press and release the  key: the  LED will flash.
- 3. Press and release the  or  key within 15 sec; see also parameters r1, r2 and r3
- 4. Press and release the  key or do not operate for 15 sec: the  LED will switch off after which:
 - if the parameter F0 is set at 0, 1, 2, 3 or 4, the device will exit the procedure
 - if parameter F0 is set at 5, the device will access the procedure to set the evaporator fan speed; see paragraph 9.3

To exit the procedure before the operation is complete:

- 5. Do not operate for 15 sec (any changes will be saved). The working set point can also be set via parameter SP.

9.3 Setting evaporator fan speed (intended as percentage of max. speed and in case of analogue management)









- 1. Press and release the  key while setting the work set point: the  LED will flash.
- 2. Press and release the  or  key within 15 sec; see also parameters F15 and F16.
- 3. Press and release the  key or do not operate for 15 sec: the  LED will switch off and then the device will exit the procedure.

To exit the procedure before the operation is complete:

- 5. Do not operate for 15 sec (any changes will be saved). The evaporator fan speed can also be set through parameter F17.

9.4 Setting the configuration parameters





To begin the procedure:

- 1. Make sure no procedures are in progress
- 2. Hold the  key and the  key down for 4 s: the display will show **"PA"**.
- 3. Press and release the  key.
- 4. Press and release the  key or the  key within 15 s to set **"-19"**.
- 5. Press and release the  key or do not operate for 15 sec.
- 6. Hold the  key and the  key down for 4 s: the display will show **"SP"**.



To select a parameter:

- 7. Press and release the  key or the  key.

To set a parameter:

- 8. Press and release the  key.
- 9. Press and release the  key or the  key within 15 sec.
- 10. Press and release the  key or do not operate for 15 sec.













To exit the procedure:

- 11. Hold down the  and  keys for 4 sec and do not operate for 60 sec (any changes will be saved).



After setting the parameters, suspend power supply flow to the device.

9.5 Restoring the Manufacturer's Settings

To begin the procedure:

- 1. Make sure no procedures are in progress
- 2. Hold the  key and the  key down for 4 s: the display will show **"PA"**.
- 3. Press and release the  key.
- 4. Press and release the  key or the  key within 15 s to set **"149"**.
- 5. Press and release the  key or do not operate for 15 sec.
- 6. Hold the  key and the  key down for 4 s: the display will show **"dEF"**.
- 7. Press and release the  key.
- 8. Press and release the  key or the  key within 15 s to set **"1"**.
- 9. Press and release the  key or do not operate for 15 sec: the display will show **"dEF"** flashing for 4 sec, after which the device will exit the procedure.
- 10. Cut the device power supply off.




To exit the procedure in advance:




- 11. Hold the  and  key down for 4 s during the procedure (i.e. before setting **"1"**: Restore will not be performed).

Make sure that the manufacturer's settings are appropriate (see chapter 14).

10 WARNING LIGHTS AND DIRECTIONS

10.1 Signals

LED	Part
	compressor LED light if the LED is on, then the compressor is on if the LED is flashing: <ul style="list-style-type: none">- the working set point is in the process of being set (via the procedure described in paragraph 9.2)- a compressor protection will be in progress; see parameters C0, C1, C2, C14, C15, C16 and i7
	Defrost LED If it is on: <ul style="list-style-type: none">- defrosting is in progress- predripping will be in progress; see parameter d16 if the LED is flashing: <ul style="list-style-type: none">- defrosting will be requested but a compressor protection will be in progress; see the parameters C0, C1 and C2- dripping will be in progress; see parameter d7- the refrigerant fluid heating will be in progress; see parameter d15
	Evaporator fan LED light If it is on: <ul style="list-style-type: none">- setting the evaporator fan speed will be in progress (via the procedure explained in paragraph 9.3)- the evaporator fan will be on if the LED is flashing: <ul style="list-style-type: none">- evaporator fan standstill will be in progress; see parameter F3
AUX	auxiliary LED If it is on: <ul style="list-style-type: none">- the cabinet light will have been switched on in manual mode (only if parameter u1 and/or parameter u11 is set at 0)- the demister heating elements will be switched on (only if the parameter u1 and/or parameter u11 is set at 1)

	<ul style="list-style-type: none">- the auxiliary output will have been switched on in manual mode (only if parameter u1 and/or parameter u11 is set at 2)- the door heating elements will be switched on (only and provided parameter u1 and/or parameter u11 is set at 4)- the neutral area operating heating elements will be activated (only if parameter u1 and/or parameter u11 is set at 5)- the condenser fan will be on (only if parameter u1 and/or parameter u11 is set at 6) if the LED is flashing: <ul style="list-style-type: none">- the cabinet light will have been switched on in remote mode; see parameters i0 and i5 (only if parameter u1 and/or parameter u11 is set at 0)- the auxiliary output will have been switched on in remote mode; see parameters i0 and i5 (only if parameter u1 and/or parameter u11 is set at 2)
HACCP	HACCP LED if it is on, all information regarding HACCP alarms has not been displayed if it is flashing, the device has stored at least one new HACCP alarm if it is off, all information regarding the HACCP alarms has been displayed or the list of alarms has been cancelled
	maintenance LED if on, compressor maintenance will be requested; see parameter C10
	"overcooling" LED if it is on, the "overcooling" function will be in function; see parameters r5 and r6
°C	degree Celsius LED if on, the temperatures will be displayed using the degree Celsius grade unit of measurement; see parameter P2 if flashing, the "energy saving" function is in progress
°F	degree Fahrenheit LED if on, the temperatures will be displayed using the degree Fahrenheit grade unit of measurement; see parameter P2 if flashing, the "energy saving" function is in progress
	On/stand-by LED if it is on, the device will be off ("stand-by" state) if it is off, the device will be on ("on" state)

10.2 Signal Descriptions/Explanations

Code	Part
Loc	the keyboard is blocked; see paragraph 3.13 the work set point is blocked; see parameter r3
- - -	the operation requested is not available

11 ALARMS

11.1 Alarms

Code	Part
AL	Minimum alarm temperatures (HACCP alarms) Solutions: <ul style="list-style-type: none">- check the temperature associated to the alarm; see parameters A0, A1 and A2 Main consequences: <ul style="list-style-type: none">- if parameter A0 is set at 0, the device will store the alarm- the alarm output will be activated (provided that parameter u1 and/or parameter u11 is set at 3)
AH	Maximum temperature alarm (HACCP alarms) Solutions: <ul style="list-style-type: none">- check the cabinet temperature or CPT temperature; see parameters A4 and A5 Main consequences: <ul style="list-style-type: none">- the device will memorise the alarm- the alarm output will be activated (provided that parameter u1 and/or parameter u11 is set at 3)
id	Door micro switch input alarm (HACCP alarms) Solutions: <ul style="list-style-type: none">- check the causes of the activation of the input; see parameters i0, i1, i5 and i6 Main consequences: <ul style="list-style-type: none">- the effect established with the parameters i0 and i5- if parameter is set at 1, the device will store the alarm, provided parameter i2 is not set at -1- the alarm output will be activated (provided that parameter u1 and/or parameter u11 is set at 3)

PF	Power supply cut-off alarm (HACCP). Solutions: <ul style="list-style-type: none">- check the causes triggering the power supply cut-off; see parameters A10 and A12- press a key to restore normal display Main consequences: <ul style="list-style-type: none">- if the interruption lasts longer than the time established with parameter A10, the device will store the alarm- the alarm output will be activated (provided that parameter u1 and/or parameter u11 is set at 3)
iA	Multifunction input alarm Solutions: <ul style="list-style-type: none">- check the causes of the activation of the input; see parameters i0, i1, i5 and i6 Main consequences: <ul style="list-style-type: none">- the effect established with the parameters i0 and i5- the alarm output will be activated (provided that parameter u1 and/or parameter u11 is set at 3)
iSd	Pressure switch alarm Solutions: <ul style="list-style-type: none">- check the causes of the activation of the input; see parameters i0, i1, i5, i6, i7, i8 and i9- switch off and re-start the device or suspend the power supply Main consequences: <ul style="list-style-type: none">- the regulators will switch off- the alarm output will be activated (provided that parameter u1 and/or parameter u11 is set at 3)
COH	Condenser overheated alarm. Solutions: <ul style="list-style-type: none">- check the condenser temperature; see parameter C6 Main consequences: <ul style="list-style-type: none">- the alarm output will be activated (provided that parameter u1 and/or parameter u11 is set at 3)- the condenser fan will be on (only if parameter u1 and/or parameter u11 is set at 6)
CSd	Compressor shut down alarm. Solutions: <ul style="list-style-type: none">- check the condenser temperature; see parameter C7- switch the device off and back on again: if when the device is switched back on, the temperature of the condenser is still higher than that established in parameter C7, disconnect the power supply and clean the condenser Main consequences: <ul style="list-style-type: none">- the compressor and the evaporator fan will be switched off- the alarm output will be activated (provided that parameter u1 and/or parameter u11 is set at 3)- the condenser fan will be on (only if parameter u1 and/or parameter u11 is set at 6)
dFd	Defrosting alarm switched off because maximum time has been reached Solutions: <ul style="list-style-type: none">- check the integrity of the evaporator probe; see parameters d2, d3 and d11- press a key to restore normal display Main consequences: <ul style="list-style-type: none">- the device will continue to operate normally.

When the cause of the alarm disappears, the device restores normal operation, except for the following alarms:

- the power supply interruption alarm (code "**PF**") which requires the pressing of a key
- pressure switch alarm (code "**iSd**") which requires the switching off of the device or the temporary suspension of the power supply
- compressor blocked by condenser temperature alarm (code "**CSd**") which requires the switching off of the device or the temporary suspension of the power supply
- Defrosting alarm switched off because maximum time has been reached (code "**dFd**") which requires the pressing of a key.

12 ERRORS

12.1 Errors

Code	Part
Pr1	Cabinet probe/air inlet probe error Solutions: <ul style="list-style-type: none">- check that the probe is the PTC or NTC or Pt 1000 type; see parameter P0

	<ul style="list-style-type: none">- check the device-probe connection- check the cabinet temperature or the CPT temperature Main consequences: <ul style="list-style-type: none">- compressor activity will depend on parameters C4 and C5- the defroster will not be activated- the alarm output will be activated (provided that parameter u1 and/or parameter u11 is set at 3)- the door heating elements will be switched off (only and provided parameter u1 and/or parameter u11 is set at 4)- the neutral area operating heating elements will be deactivated (only if parameter u1 and/or parameter u11 is set at 5)- if parameter P4 is set at 3, the temperature associated to regulation will be that detected by the outlet air probe
Pr2	Evaporator probe error Solutions: <ul style="list-style-type: none">- the same as the preceding case but with respect to the evaporator probe Main consequences: <ul style="list-style-type: none">- if parameter P3 is set at 1, the defrosting period will last for the amount of time set with parameter 3- if parameter P3 is set at 1 and parameter d8 is set at 2 or to 3, the device will operate as if parameter d8 were set at 0- if parameter F0 is set at 3 or 4, the device will operate as if the parameter were set at 2- the alarm output will be activated (provided that parameter u1 and/or parameter u11 is set at 3)
Pr3	Condenser probe/display probe/outlet air probe error Solutions: <ul style="list-style-type: none">- the same as previous case but relative to the condenser probe/display probe/ outlet air probe Main consequences: <ul style="list-style-type: none">- condenser overheated alarm (code "COH") will not be activated- the compressor blocked alarm ("CSd") will never be activated- the alarm output will be activated (provided that parameter u1 and/or parameter u11 is set at 3)- the condenser fan will operate parallel to the compressor (only if parameter u1 and/or parameter u11 is set at 6)- if parameter P4 is set at 3, the temperature associated to regulation will be that detected by the inlet air probe
rtc	Clock error Solutions: <ul style="list-style-type: none">- set the date, time and day of the week Main consequences: <ul style="list-style-type: none">- if parameter d8 is set at 4, the device will operate as if it were set at 0.- the "HACCP" function will not provide information regarding the date and hour in which the alarm was signalled- the Energy Saving in real time function will not be activated in real time- the alarm output will be activated (provided that parameter u1 and/or parameter u11 is set at 3)
ErC	User interface-control module compatibility error. Solutions: <ul style="list-style-type: none">- check the compatibility of the user interface with the control module (check the data stated on the labels) Main consequences: <ul style="list-style-type: none">- the control module will continue to operate regularly.
ErL	User interface-control module communication error. Solutions: <ul style="list-style-type: none">- check user interface-control module control module Main consequences: <ul style="list-style-type: none">- the control module will continue to operate regularly.

When the cause of the error disappears, the device restores normal operation, except for clock error ("**rtc**" code), which requires the date, time and day of the week set.

13 TECHNICAL DATA

13.1 Technical data

Purpose of the command device: operating command device.

Construction of the command device: built-in electronic device.

User interface container:

- user interface: grey self-extinguishing
- control module: without cover.

User interface dimensions:

- user interface: 180.0 x 38.0 x 28.0 mm (7.086 x 1.496 x 1.102 in; L x H x D)
- control module: 134,0 x 108.0 x 24.0 mm (5.275 x 4.251 x 0.944 in; L x H x D).

Method of mounting the command device:

- user interface: panel, with elastic retaining wings
- control module: on flat surface, with spacers.

Protection rating:

- user interface: IP55
- control module: IP00.

Connections:

- user interface: removable screw terminal board (control module).
- control module: fixed screw terminal board (power supply, inputs, analogue output and port for remote indicator), 6.3 m faston (0.248 in, equipment earth and outputs), removable screw terminal board (user interface) 6 pole connector (serial port).

The maximum length of the analogue inputs and digital outputs connection cables must be less than 10 m (32,808 ft).

The maximum length of the user interface-control module connection cables must be less than 20 m (65,616 ft).

Operating temperature: from 0 to 55 °C (from 32 to 131 °F).

Storage temperature:from -25 to 70 °C (from -13 to 158 °F).

Humidity for use: from 10% to 90% relative humidity without condensate.

Command device pollution situation: 2.

Power supply: 115... 230 VAC (+10% -15%), 50/60 Hz, 5.5 VA max.

Rated impulse voltage: 4K V.

Overvoltage category: II.

Class and structure of software: A.

Clock: incorporated (EVRS235 model only).

Clock autonomy with power-cut: 24 h with battery fully charged.

Clock battery charging time: 2 min (the battery is charged by the device power supply).

Analogue inputs: 2 inputs (cabinet probe/inlet air probe and evaporator probe), can be set via configuration parameter for PTC/NTC/Pt 1000 probes

PTC type analogue inputs (990 Ω @ 25°C, 77°F)

Type of sensor: KTY 81-121.
Measurement field: from -50 to 150 °C (from -58 to 302°F).
Resolution: 0.1 °C (1 °F).
Protection: none.

NTC type analogue inputs NTC (10K Ω @ 25°C, 77°F)

Type of sensor: B3435.
Measurement field: from -50 to 105 °C (from -40 to 220 °F).
Resolution: 0.1 °C (1 °F).
Protection: none.

Pt 1000 type analogue inputs

Measurement field: from -99 to 150 °C (from -99 to 300°F).
Resolution: 0.1 °C (1 °F).
Protection: none.

Digital inputs: 1 input (door micro/multi-function 2 switch), which can be set via configuration parameter due to normally open contact/normally closed contact (free of voltage contact, 5 VDC, 2 mA)

Digital inputs

Power: none.
Protection: none.

Other inputs: 1 input that can be set via configuration parameter for analogue input (condenser probe/digital probe/ input/inlet air probe (door micro switch/multifunction 1), with the same technical features illustrated previously.

Displays: custom 3 digit display with function icon.

Analogue outputs: 1 PWM output for management of the evaporator fan.

Digital outputs:

5 outputs (electromechanical relays)

- 1 x 30 A res. output @ 250 VAC SPST type (K1) for compressor management
- 1 x 16 A res. output @ 250 VAC type SPST (K2) for defrosting management
- 1 x 8 A res. output @ 250 VAC type SPST (K3) for management of the evaporator fan

- 1 x 16 A res. output @ 250 VAC type SPST (K4) for management of the cabinet light, demisting heating elements, aux. output, alarm output, door heating elements, neutral area operation heating elements, condenser fan of compressor 2 fan.
- 1 x 30 A res. output @ 250 VAC type SPST (K5) for management of the cabinet light, demisting heating elements, aux. output, alarm output, door heating elements, neutral area operation heating elements, condenser fan of compressor 2 fan.

The maximum load current allowed is 20 A.

Type 1 or Type 2 actions: Type 1.

Complementary features of Type 1 or Type 2 actions: C.

Communication port:

2 ports:

- 1 x TTL serial port with MODBUS communication protocol (for EVKEY programming key and other EVCO products).
- 1 port for EVT100 remote indicator.

Signal buzzer and alarm: incorporated.

14 WORKING SETPOINT AND CONFIGURATION PARAMETERS

14.1 Working set-point

PARAM.	MIN.	MAX.	U.M.	EVRS225	EVRS235	WORKING SETPOINT
	r1	r2	°C/°F (1)	-18,0	-18,0	working set-point; see also r0

14.2 Configuration parameters

PARAM.	MIN.	MAX.	U.M.	EVRS225	EVRS235	WORKING SETPOINT
SP	r1	r2	°C/°F (1)	-18,0	-18,0	working set-point; see also r0
PARAM.	MIN.	MAX.	U.M.	EVRS225	EVRS235	MEASUREMENT INPUTS
CA1	-25	25,0	°C/°F (1)	0,0	0,0	if P4 = 0, 1 or 2, cabinet probe offset if P4 = 3, inlet air probe offset
CA2	-25	25,0	°C/°F (1)	0,0	0,0	offset evaporator probe
CA3	-25	25,0	°C/°F (1)	0,0	0,0	if P4 = 1, condenser probe offset if P4 = 2, display probe offset if P4 = 3,outlet air probe offset
P0	0	2	- - -	1	1	probe type 0 = PTC 1 = NTC 2 = Pt 1000
P1	0	1	- - -	1	1	degree Celsius decimal point (during normal operation) 1 = YES
P2	0	1	- - -	0	0	temperature unit of measurement (2) 0 = °C 1 = °F
P3	0	2	- - -	1	1	evaporator probe function 0 = probe absent 1 = defrosting probe and probe for evaporator fan thermostating 2 = probe for evaporator fan thermostating
P4	0	3	- - -	3	3	third input function 0 = digital input (micro switch/multi-function input 1) 1 = analogue input (condenser probe) 2 = analogue input (display probe) 3 = analogue input (output air probe)
P5	0	4	- - -	0	0	magnitude displayed during normal operation 0 = if P4 = 0, 1 or 2, cabinet temperature if P4 = 3, CPT temperature 1 = work set-point 2 = evaporator temperature 3 = if P4 = 1, condenser temperature if P4 = 2, temperature detected by the display probe if P4 = 3, temperature detected by the outlet air probe 4 = if P4 = 3, temperature detected by the inlet air probe
P6	0	5	- - -	5	5	magnitude displayed by the remote indicator 0 = if P4 = 0, 1 or 2, cabinet temperature if P4 = 3, CPT temperature 1 = work set-point 2 = evaporator temperature 3 = if P4 = 1, condenser temperature if P4 = 2, temperature detected by the display probe if P4 = 3, temperature detected by the outlet air probe 4 = if P4 = 3, temperature detected by the inlet air probe 5 = the remote indicator will not be enabled
P7	0	100	%	50	50	percentage of the temperature detected by the inlet air probe for the calculation of the CPT temperature (only if P4=3)
P8	0	250	0.1 s	5	5	delay displaying temperature variation detected by the probes
PARAM.	MIN.	MAX.	U.M.	EVRS225	EVRS235	MAIN REGULATOR
r0	0,1 (3)	15,0	°C/°F (1)	2,0	2,0	working set-point differential
r1	-99	r2	°C/°F (1)	-50	-50	minimum working set-point
r2	r1	99,0	°C/°F (1)	50,0	50,0	maximum working set-point
r3	0	1	- - -	0	0	locking of working set-point setting (using the procedure described in paragraph 9.2) 1 = YES
r4	0,0	99,0	°C/°F (1)	0,0	0,0	increase in temperature during “energy saving” function; see also i0, i5, i10, H01... H14
r5	0,0	99,0	°C/°F (1)	0,0	0,0	decrease in temperature during “overcooling” function; see also r6
r6	0	240	min	30	30	duration of “overcooling” function; see also r5
PARAM.	MIN.	MAX.	U.M.	EVRS225	EVRS235	COMPRESSOR PROTECTION SYSTEM
C0	0	240	min	0	0	delay in switching on of compressor after the device switches on (4)
C1	0	240	min	5	5	minimum time between two consecutive compressor start-ups; also delay in compressor start-up after conclusion of cell probe error (code “Pr1”) (5) (6)
C2	0	240	min	3	3	minimum compressor switch-off duration; see also C18 (5) (7)
C3	0	240	s	0	0	minimum duration of compressor switch on time
C4	0	240	min	10	10	duration of compressor switch off during cabinet probe/inlet air probe error (code “Pr1”); see also C5
C5	0	240	min	10	10	duration of compressor switch on during cabinet probe/inlet air probe error (code “Pr1”); see also C4
C6	0,0	199	°C/°F (1)	80,0	80,0	condenser temperature is higher than that at which the condenser overheating alarm is activated (code “COH”) (8)
C7	0,0	199	°C/°F (1)	90,0	90,0	condenser temperature above which the blocked compressor alarm is activated (“CSd” code)
C8	0	15	min	1	1	blocked compressor alarm delay (“CSd” code) (9)
C10	0	999	10 h	0	0	number of operating hours is higher than the limit at which the need for maintenance is signalled. 0 = function absent
C11	0	240	s	3	3	compressor 2 switch-on delay from compressor 1 switch-on (only if u1 and/or u11 = 7) (10)
PARAM.	MIN.	MAX.	U.M.	EVRS225	EVRS235	DEFROSTING
d0	0	99	h	8	8	if d8 = 0, 1 or 2, defrosting interval (11) 0 = interval defrosting will never be activated if d8 = 3, maximum defrost interval
d1	0	2	- - -	0	0	type of defrosting 0 = <u>ELECTRIC</u> - during defrosting the compressor will remain off and the defrosting output will be activated; evaporator fan activity will depend on parameter F2 1 = <u>BY HOT GAS</u> - during defrosting the compressor will be switched on and the defrosting output will be activated; evaporator fan activity will depend on parameter F2 2 = <u>VIA STOPPING OF COMPRESSOR</u> - during defrosting the compressor will remain switched off and the defrosting output will remain deactivated; evaporator fan activity will depend on parameter F2
d2	-99	99,0	°C/°F (1)	2,0	2,0	temperature at end of defrosting (only if P3 = 1); see also d3
d3	0	99	min	30	30	se P3 = 0 or 2, defrosting duration se P3 = 1, maximum defrosting duration; see also d2 0 = defrosting will not be activated

d4	0	1	- - -	0	0	defrosting when device is switched on (only if d8 = 0, 1, 2 or 3) (4) 1 = YES
d5	0	99	min	0	0	if d4 = 0, minimum time between switching on of device and activation of defrosting; see also i0 and i5 (4) if d4 = 1, delay in activation of defrosting after device is switched on ; see also i0 and i5 (4)
d6	0	1	- - -	1	1	temperature displayed during defrosting (only if P5 = 0) 0 = cabinet temperature or CPT temperature 1 = if on activation of defrosting, the cabinet temperature or the CPT temperature is below the "work set point + r0", at maximum " work set point + r0"; if on activation of defrosting, the cabinet temperature or the CPT temperature is above "work set point + r0", at maximum the cabinet temperature or CPT temperature on activation of defrosting (12)
d7	0	15	min	2	2	dripping duration (during dripping the compressor will remain switched off and the defrosting output will remain deactivated; if d16 = 0, evaporator fan activity will depend on parameter F2; if d16 ≠ 0, the evaporator fan will remain switched off)
d8	0	4	- - -	0	0	defrosting activation methods 0 = <u>AT INTERVALS</u> - defrosting will be activated once the device has altogether been running for time d0 1 = <u>AT INTERVALS - FOR COMPRESSOR SWITCH-ON</u> - defrosting will be activated once the compressor has altogether been switched on for time d0 2 = <u>AT INTERVALS - FOR EVAPORATOR TEMPERATUREE</u> - defrosting will be activated when the evaporator temperature has remained below the temperature d9 for a total time of d0 (13) 3 = <u>ADAPTABLE</u> - defrosting will be activated at intervals, whose duration will each time depend on the duration of compressor switch-ons and the evaporator temperature; see also d18, d19 and d22 (13) 4 = <u>IN REAL TIME - (can be set only in EVRS235 model)</u> defrosting will be activated at the times established in parameters Hd1 ... Hd6
d9	-99	99,0	°C/°F (1)	0,0	0,0	evaporator temperature is higher than that at which the defrost interval counter is suspended (only if d8 = 2)
d11	0	1	- - -	0	0	defrosting alarm switches off once maximum time limit has been reached (code " dFd "; only if P3 = 1 and in absence of an evaporator probe (code " Pr2 ") 1 = YES
d15	0	99	min	0	0	minimum time that the compressor must be switched on before defrosting can be activated (only if d1 = 1) (14)
d16	0	99	min	0	0	predripping duration (during predripping the compressor will remain switched off, the defrosting output will be activated and the evaporator fan will remain switched off)
d18	0	999	min	40	40	defrosting interval (only if d8 = 3; defrosting will be activated when the compressor has been on totally, with the evaporator temperature below that of d22, for time d18) 0 = defrosting will never be activated due to the effect of this condition
d19	0,0	40,0	°C/°F (1)	3,0	3,0	evaporator temperature above which the defrost is activated (relative to the evaporator temperatures average, or "evaporator temperatures average - d19") (only if d8 = 3)
d20	0	500	min	180	180	minimum consecutive time the compressor must be switched on such as to provoke the defrost activation 0 = defrosting will never be activated due to the effect of this condition
d22	0,0	10,0	°C/°F (1)	2,0	2,0	evaporator temperature above which the defrosting interval is suspended (relative to the evaporator temperatures average, or "evaporator temperatures average + d22") (only if d8 = 3); also look at d18
d24	0	999	min	30	30	maximum duration of activation of the defrosting synchronisation input due to activation of defrosting (only if i0 = 6)
d25	0	1	- - -	0	0	enabling of the outlet air probe as defrosting probe during the evaporator probe error (code " Pr2 "; only if P4 = 3); see also d26 (15) 1 = YES
d26	0	99	h	6	6	defrosting interval for effect of enabling of outlet air probe like defrosting probe during evaporator probe error (" Pr2 " code; only if d25 = 1) (11) 0 = interval defrosting will never be activated
PARAM.	MIN.	MAX.	U.M.	EVRS225	EVRS235	TEMPERATURE ALARMS
A0	0	1	- - -	0	0	temperature associated with the minimum temperature alarm (code " AL ") 0 = cabinet temperature or CPT temperature 1 = evaporator temperature (16)
A1	-99	99,0	°C/°F (1)	-10,0	-10,0	temperature below that at which the minimum temperature alarm is activated (code " AL "; see also A0, A2 and A11)
A2	0	2	- - -	1	1	type of minimum temperature alarm (code " AL ") 0 = alarm absent 1 = relative to working set-point (that is "working set-point - A1"; consider A1 without sign) 2 = absolute (that is A1)
A4	-99	99,0	°C/°F (1)	10,0	10,0	temperature higher than that at which the maximum temperature alarm is activated (code " AH "; see also A5 and A11)
A5	0	2	- - -	1	1	type of maximum temperature alarm (code " AH ") 0 = alarm absent 1 = relative to working set-point (that is "working set-point + A4"; consider A1 without sign)) 2 = absolute (that is A4)
A6	0	240	min	120	120	delay in maximum temperature alarm (code " AH ") after the device is switched on (4)
A7	0	240	min	15	15	temperature alarm delay(" AL " code and " AH " code)
A8	0	240	min	15	15	delay in maximum temperature alarm (code " AH ") from the conclusion of evaporator fan standstill (17)
A9	0	240	min	15	15	delay in maximum temperature alarm (code " AH ") following the deactivation of the door micro switch input (18)
A10	0	240	min	not avail.	1	duration of a power cut such to cause the power cut alarm to be memorised (" PF " code)
A11	0,1 (3)	15,0	°C/°F (1)	2,0	2,0	differential of parameters A1and A4
A12	0	2	- - -	not avail.	1	type of power supply cut-off alarm signal (" PF " code); 0 = alarm will be signalled by the " HACCP " LED 1 = alarm will be signalled by the " PF " code, the buzzer and the " HACCP " LED 2 = alarm will be signalled by the " PF " code, buzzer (as long as cut-off duration exceeds time A10) and by the " HACCP " LED
PARAM.	MIN.	MAX.	U.M.	EVRS225	EVRS235	EVAPORATOR FAN AND CONDENSER FAN
F0	0	5	- - -	1	1	evaporator fan activity during normal operation 0 = switched off 1 = switched on; see also F13, F14 and i10 (19) 2 = in parallel with the compressor; see also F9, F13, F14 and i10 (20) 3 = depending on F1; see also F9, F13 and F14 (22) (23) 4 = switched off if the compressor is switched off, dependent on F1 if the compressor is switched on; see also F9, F13 and F14 (21) (23) 5 = with proportional band, see also F20 (it is recommended to set parameter F0 at 5 in case of
F1	-99	99,0	°C/°F (1)	-1,0	-1,0	evaporator temperature above the limit at which the evaporator fan is switched off (only if F0 = 3 or 4); see also F8
F2	0	2	- - -	0	0	evaporator fan activity during defrosting and dripping 0 = switched off 1 = switched on (setting parameter d7 to 0 is recommended) 2 = in case of analogue management, as if F0 = 5 in case of digital management, depending on F0
F3	0	15	min	0	0	maximum duration of evaporator fan deactivation; see also F7 (during evaporator fan deactivation the compressor can be switched on, the defrosting output will remain deactivated and the evaporator fan will remain switched off)
F7	-99	99,0	°C/°F (1)	5,0	5,0	evaporator temperature below limit at which the evaporator fan is deactivated (relative to working set point, that is "working set point + F7"); see also F3
F8	0,1 (3)	15,0	°C/°F (1)	2,0	2,0	parameter F1differential
F9	0	240	s	0	0	delay in the switching off of evaporator fan following the switching off of the compressor (only if F0 = 2, 3, 4 and 5)
F11	0,0	99,0	°C/°F (1)	15,0	15,0	temperature of the condenser above which the condenser fan is switched on ("F11 + 2,0 °C/4 °F, only if u1 and/or u11 = 6) (25) (26)

F12	0	240	s	30	30	delay in the switching off of condenser fan following the switching off of the compressor (only if P4 = 0, 2 or 3 and u1 and/or u11 = 6)
F13	0	240	10 s	30	30	duration of evaporator fan switch off during "energy saving" function, see also F14, i10, H01... H14 (only if F0 = 1, 2, 3 or 4)
F14	0	240	10 s	30	30	duration of evaporator fan switch on during "energy saving" function, see also F13, i10, H01... H14 (only if F0 = 1, 2, 3 or 4)
F15	0	F16	%	30	30	evaporator fan minimum speed (intended as percentage of max. speed and in case of analogue management)
F16	F15	100	%	100	100	evaporator fan maximum speed (intended as percentage of max. speed and in case of analogue management)
F17	F15	F16	%	100	100	evaporator fan speed (intended as percentage of max. speed, in case of analogue management, except during "energy saving" function); see also F21
F18	0	240	s	5	5	duration of the evaporator fan peak (in case of analogue type management): see also F19
F19	0	100	%	100	100	evaporator fan speed during peak (intended as percentage of max. speed and in case of analogue management); see also F18
F20	0,0	25,0	°C/°F (1)	10,0	10,0	value of the proportional band for evaporator fan activity (relative to the work set point, i.e. work set point + F20 and in case of analogue management; only if F0 = 5) (27)
F21	0	100	%	50	50	evaporator fan speed during "energy saving" function (intended as percentage of max. speed and in case of analogue management; only if F0 = 0, 1, 2, 3 or 4)
PARAM.	MIN.	MAX.	U.M.	EVRS225	EVRS235	DIGITAL INPUTS
i0	0	11	- - -	7	7	effect caused by the activation of the door micro switch/multifunction 1 input; see also i4 (28) 0 = no effect 1 = <u>DOOR MICROSWITCH - COMPRESSOR AND EVAPORATOR FAN SWITCH-OFF</u> - the compressor and the evaporator fan will be switched off (at maximum for time i3 or until the input is deactivated) (29) 2 = <u>DOOR MICROSWITCH - EVAPORATOR FAN SWITCH-OFF</u> - the evaporator fan will be switched off (at maximum for time i3 or until the input is deactivated) 3 = <u>DOOR MICROSWITCH - CABINET LIGHT SWITCH-ON</u> - the cabinet light will be switched on (only if u1 and/or u11 = 0, until the input will be deactivated) 4 = <u>DOOR MICROSWITCH - SWITCH-OFF OF THE COMPRESSOR, EVAPORATOR FAN, SWITCH-ON OF CABINET LIGHT</u> - the compressor and the evaporator fan will be switched off (at maximum for time i3 or until the input is deactivated) and the cabinet light will be switched on (only if u1 = 0, until the input is deactivated) (29) 5 = <u>DOOR MICROSWITCH - SWITCH-OFF OF THE EVAPORATOR FAN, SWITCH-ON OF CABINET LIGHT</u> - the evaporator fan will be switched off (at maximum for time i3 or until the input is deactivated) and the cabinet light will be switched on (only if u1 and/or u11 = 0, until the input is deactivated) 6 = <u>RESERVED</u> 7 = <u>MULTIFUNCTION - ACTIVATION OF "ENERGY SAVING" FUNCTION</u> - the "energy saving" function will be activated (just with effect on the compressor, until the input is deactivated), provided the "overcooling" function is not running; see also r4 8 = <u>MULTIFUNCTION - ACTIVATION OF MULTIFUNCTION INPUT ALARM</u> - once time i7 has passed the display will show the flashing code "iA" and the buzzer will be activated (until the input is deactivated) 9 = <u>MULTIFUNCTION- ACTIVATION OF THE PRESSURE SWITCH ALARM</u> - the compressor will be switched off, if u1 and/or u11 = 6 the condenser fan will be switched on, the display will show the flashing code iA" and the buzzer will be activated (until the input is deactivated): when the input has been activated the number of times established with parameter i8 the regulators will be switched off, if u1 and/or u11 = 6 the condenser fan will be switched on, the display will show the flashing code "iSd" and the buzzer will be activated (until the input is deactivated and the device is switched off and re-started or until the power supply is interrupted); see also i7 and i9 10 = <u>MULTIFUNCTION - SWITCHING ON THE AUXILIARY OUTPUT</u> - the auxiliary output will be switched on (only if u1 and/or u11 = 2, until the input is deactivated) 11 = <u>MULTIFUNCTION - SWITCHING OFF THE DEVICE</u> - the device will be switched off (until the input is deactivated)
i1	0	1	- - -	0	0	type of door micro switch/multifunction 1 input contact 0 = normally open (active input with closed contact) 1 = normally closed (active input with open contact)
i2	-1	120	min	30	30	delay in signalling of door micro switch input alarm (code "id") -1 = the alarm will not be signalled
i3	-1	120	min	15	15	maximum duration of the effect caused by the activation of the door micro switch input on the compressor and the evaporator -1 = the effect will last until the input is deactivated
i4	0	1	- - -	0	0	storage of door micro switch input alarm (code "id") (30) 1 = YES
i5	0	11	- - -	5	5	effect caused by the activation of the door micro switch/multifunction 2 input; see also i4 (28) 0 = no effect 1 = <u>DOOR MICROSWITCH - COMPRESSOR AND EVAPORATOR FAN SWITCH-OFF</u> - the compressor and the evaporator fan will be switched off (at maximum for time i3 or until the input is deactivated) (29) 2 = <u>DOOR MICROSWITCH - EVAPORATOR FAN SWITCH-OFF</u> - the evaporator fan will be switched off (at maximum for time i3 or until the input is deactivated) 3 = <u>DOOR MICROSWITCH - CABINET LIGHT SWITCH-ON</u> - the cabinet light will be switched on (only if u1 and/or u11 = 0, until the input will be deactivated) 4 = <u>DOOR MICROSWITCH - SWITCH-OFF OF THE COMPRESSOR, EVAPORATOR FAN, SWITCH-ON OF CABINET LIGHT</u> - the compressor and the evaporator fan will be switched off (at maximum for time i3 or until the input is deactivated) and the cabinet light will be switched on (only if u1 = 0, until the input is deactivated) (29) 5 = <u>DOOR MICROSWITCH - SWITCH-OFF OF THE EVAPORATOR FAN, SWITCH-ON OF CABINET LIGHT</u> - the evaporator fan will be switched off (at maximum for time i3 or until the input is deactivated) and the cabinet light will be switched on (only if u1 and/or u11 = 0, until the input is deactivated) 6 = <u>MULTIFUNCTION - SYNCHRONISATION OF DEFROSTING PERIODS</u> - the activation of defrosting will cause activation of the input (at maximum for time d24 or until the conclusion of predripping): if the input is connected in parallel to the input of other devices configured in the same way, the activation of the input will cause activation of defrosting in the other devices. The devices will start dripping simultaneously on conclusion of predripping of the last device to conclude the same 7 = <u>MULTIFUNCTION - ACTIVATION OF "ENERGY SAVING" FUNCTION</u> - the "energy saving" function will be activated (just with effect on the compressor, until the input is deactivated), provided the "overcooling" function is not running; see also r4 8 = <u>MULTIFUNCTION - ACTIVATION OF MULTIFUNCTION INPUT ALARM</u> - once time i7 has passed the display will show the flashing code "iA" and the buzzer will be activated (until the input is deactivated) 9 = <u>MULTIFUNCTION- ACTIVATION OF THE PRESSURE SWITCH ALARM</u> - the compressor will be switched off, if u1 and/or u11 = 6 the condenser fan will be switched on, the display will show the flashing code iA" and the buzzer will be activated (until the input is deactivated): when the input has been activated the number of times established with parameter i8 the regulators will be switched off, if u1 and/or u11 = 6 the condenser fan will be switched on, the display will show the flashing code "iSd" and the buzzer will be activated (until the input is deactivated and the device is switched off and re-started or until the power supply is interrupted); see also i7 and i9 10 = <u>MULTIFUNCTION - SWITCHING ON THE AUXILIARY OUTPUT</u> - the auxiliary output will be switched on (only if u1 and/or u11 = 2, until the input is deactivated) 11 = <u>MULTIFUNCTION - SWITCHING OFF THE DEVICE</u> - the device will be switched off (until the input is deactivated)
i6	0	1	- - -	0	0	type of door micro switch/multifunction 2 input contact 0 = normally open (active input with closed contact) 1 = normally closed (active input with open contact)
i7	0	120	min	0	0	if i0 and/or i5 = 8, multifunction input alarm delay (code "iA")
i8	0	15	- - -	0	0	if i0 and/or i5 = 9, delay in compressor switching on after the deactivation of the multifunction input (31) number of multifunction input alarms (code "iA") such to cause a pressure switch alarm (code "iSd") (only if i0 and/or i5 = 9) 0 = alarm absent
i9	1	999	min	240	240	time that must pass in absence of multifunction output alarms (code "iA") so that the alarm counter is reset (only if i0 and/or i5 = 9)

i10	0	999	min	0	0	time that must pass in absence of door micro switch input activations (after the cabinet temperature or the CPT temperature has reached the work set point) for the “energy saving” function to be activated; see also r4, H01... H14 0 = the function will never be activated due to the effect of this condition
i13	0	240	- - -	180	180	number of door switch input activations such as to provoke the defrost activation 0 = defrosting will never be activated due to the effect of this condition
i14	0	240	min	32	32	minimum duration of the door switch input activation such as to provoke the defrost activation 0 = defrosting for this condition will never be activated
PARAM.	MIN.	MAX.	U.M.	EVRS225	EVRS235	DIGITAL OUTPUTS
u1	0	7	- - -	0	0	operation controlled by fourth output (32) 0 = <u>CABINET LIGHT</u> - in this case the key and parameters i0, i5 AND u2 will be activated 1 = <u>DEMISTER HEATING ELEMENTS</u> - in this case the key and parameter u6 will be activated 2 = <u>AUXILIARY OUTPUT</u> - in this case the key and parameters i5 and u2 will be activated 3 = <u>ALARM OUTPUTS</u> - in this case parameter u4 will be activated 4 = <u>DOOR HEATING ELEMENTS</u> - in this case parameter u5 will be activated 5 = <u>HEATING ELEMENTS FOR NEUTRAL AREA OPERATION</u> - in this case parameter u7 will be activated 6 = <u>CONDENSER FAN</u> - in this case parameters P4, F11 and F12 will be activated 7 = <u>COMPRESSOR 2</u> - in this case, parameter C11 will assume significance of
u2	0	1	- - -	0	0	enabling of manual switch on/switch off of the cabinet light or the auxiliary output when the device is switched off(only if u1 and/or u11= 0 or 2) (33) 1 = YES
u4	0	1	- - -	1	1	enabling of alarm output deactivation with the silencing of the buzzer (only if u1 and/or u11 = 3) 1 = YES
u5	-99	99,0	°C/°F (1)	-1,0	-1,0	temperature of the cabinet or CPT temperature below which the door heating elements are switched on (“u5 - 2,0 °C/4 °F, only if u1 and/or u11 = 4) (8)
u6	1	120	min	5	5	operating time of demister heating elements (only if u1 and/or u11 = 1)
u7	-99	99,0	°C/°F (1)	-5,0	-5,0	neutral area value (relative to the work set-point, i.e. “work set-point + u7) (only if u1 and/or u11 = 5) (34)
u8	- - -	- - -	- - -	- - -	- - -	reserved
u9	0	1	- - -	1	1	enabling the buzzer 1 = YES
u11	0	7	- - -	3	3	operation controlled by fifth output (32) 0 = <u>CABINET LIGHT</u> - in this case the key and parameters i0 and u2 will be activated 1 = <u>DEMISTER HEATING ELEMENTS</u> - in this case the key and parameter u6 will be activated 2 = <u>AUXILIARY OUTPUT</u> - in this case the key and parameters i0 and u2 will be activated 3 = <u>ALARM OUTPUTS</u> - in this case parameter u4 will be activated 4 = <u>DOOR HEATING ELEMENTS</u> - in this case parameter u5 will be activated 5 = <u>HEATING ELEMENTS FOR NEUTRAL AREA OPERATION</u> - in this case parameter u7 will be activated 6 = <u>CONDENSER FAN</u> - in this case parameters P4, F11 and F12 will be activated 7 = <u>COMPRESSOR 2</u> - in this case, parameter C11 will assume significance of
PARAM.	MIN.	MAX.	U.M.	EVRS225	EVRS235	ENERGY SAVING
HE2	0	999	min	0	0	maximum duration of the “energy saving” function activated due to the effect of absence of door micro switch input activation 0 = the function will last until the input is activated
H01	0	23	h	not avail.	0	activation time of the “energy saving” function every Monday; see also r4, F13, F14 and H02
H02	0	24	h	not avail.	0	duration of the “energy saving” function every Monday; see also H01
H03	0	23	h	not avail.	0	activation time of the “energy saving” function every Tuesday; see also r4, F13, F14 and H04
H04	0	24	h	not avail.	0	duration of the “energy saving” function every Tuesday; see also H03
H05	0	23	h	not avail.	0	activation time of the “energy saving” function every Wednesday; see also r4, F13, F14 and H06
H06	0	24	h	not avail.	0	duration of the “energy saving” function every Wednesday; see also H05
H07	0	23	h	not avail.	0	activation time of the “energy saving” function every Thursday; see also r4, F13, F14 and H08
H08	0	24	h	not avail.	0	duration of the “energy saving” function every Thursday; see also H07
H09	0	23	h	not avail.	0	activation time of the “energy saving” function every Friday; see also r4, F13, F14 and H10
H10	0	24	h	not avail.	0	duration of the “energy saving” function every Friday; see also H09
H11	0	23	h	not avail.	0	activation time of the “energy saving” function every Saturday; see also r4, F13, F14 and H12
H12	0	24	h	not avail.	0	duration of the “energy saving” function every Saturday; see also H11
H13	0	23	h	not avail.	0	activation time of the “energy saving” function every Sunday; see also r4, F13, F14 and H14
H14	0	24	h	not avail.	0	duration of the “energy saving” function every Sunday; see also H13
PARAM.	MIN.	MAX.	U.M.	EVRS225	EVRS235	DEFROSTING IN REAL TIME
Hd1	h0	h - -	h	not avail.	h - -	time of activation of first daily defrosting (only if d8 = 4) h - -= the first defrosting will not be activated
Hd2	h0	h - -	h	not avail.	h - -	time of activation of second daily defrosting (only if d8 = 4) h - -= the second defrosting will not be activated
Hd3	h0	h - -	h	not avail.	h - -	time of activation of third daily defrosting (only if d8 = 4) h - -= the third defrosting will not be activated
Hd4	h0	h - -	h	not avail.	h - -	time of activation of fourth daily defrosting (only if d8 = 4) h - -= the fourth defrosting will not be activated
Hd5	h0	h - -	h	not avail.	h - -	time of activation of fifth daily defrosting (only if d8 = 4) h - -= the fifth defrosting will not be activated
Hd6	h0	h - -	h	not avail.	h - -	time of activation of sixth daily defrosting (only if d8 = 4) h - -= the sixth defrosting will not be activated
PARAM.	MIN.	MAX.	U.M.	EVRS225	EVRS235	SERIAL NETWORK
LA	1	247	- - -	247	247	device address
Lb	0	3	- - -	2	2	baud rate 0 = 2.400 baud 1 = 4.800 baud 2 = 9.600 baud 3 = 19.200 baud
LP	0	2	- - -	2	2	parity 0 = none (no parity) 1 = odd 2 = even

Notes:

- (1) the unit of measurement depends on P2
- (2) Properly set the parameters corresponding to the regulators after setting parameter P2
- (3) the value depends on parameter P2 (0.1 °C or 1 °F)
- (4) the parameter has effect even after an interruption in the power supply that occurs while the device is switched on
- (5) the time established with the parameter is counted even when the device is switched off
- (6) if parameter C1 is set at 0, the delay after the end of the cabinet probe error will be 2 min
- (7) if parameter C2 is set at 0, the device will function as if parameter C18 were set at 0
- (8) The parameter differential is 2.0 °C/4 °F
- (9) if when the device is switched on, the condenser temperature is already above that established in parameter C7, then parameter C8 will not have effect
- (10) compressor 2 is switched off when compressor 1 is switched off

- (11) the device memorises the defrosting interval count every 30 minutes; the setting of parameter d0 has effect from the conclusion of the previous defrosting interval (or the activation of defrosting in manual mode)
- (12) the display restores normal operation when, on conclusion of evaporator fan standstill, the cabinet temperature or CPT temperature drops below that which has blocked the display (or if a temperature alarm occurs)
- (13) if parameter P3 is set at 0 or 2, the device will function as if parameter d8 were set at 0
- (14) if when defrosting is activated, the operating duration of the compressor is less than the time established with parameter d5, the compressor will remain on for the amount of time necessary to complete defrosting.
- (15) if parameter d8 is set at 3, the device will operate as if the parameter as been set at 0 and defrosting will be activated when the device has been on totally for the time established with parameter d26
- (16) if parameter P3 is set at 0, the device will function as if parameter A0 were set at 0 but it will not store the alarm
- (17) during defrosting and dripping and when the evaporator fan is stopped, the temperature alarms are absent, provided that these were signalled after the activation of defrosting
- (18) during activation of the door microswitch input, the maximum temperature alarm is absent, provided the alarm was signaled after the activation of the input
- (19) parameters F13 and F14 have effect when the compressor is off
- (20) parameters F13 and F14 have effect when the compressor is on
- (21) if parameter P3 is set at 0, the device will function as if parameter F0 were set at 2
- (22) parameters F13 and F14 have effect when the evaporator temperature is below the temperature established with parameter F1
- (23) parameters F13 and F14 have effect when the compressor is on and the temperature of the evaporator is below the temperature established with parameter F1
- (24) evaporator fan activity is the following:
 - if the temperature of the cabinet of the temperature detected by the inlet air probe is below the work set point, the fan will be switched off
 - if the temperature of the cabinet or the temperature detected by the inlet air probe is between the work set point and " work set point + F20", the fan will be switched on at a speed proportional to "cabinet temperature or the temperature detected by the inlet air probe - work set point"; the speed calculation formula is the following: $Speed = \{[(cabinet\ temperature\ or\ temperature\ detected\ by\ the\ inlet\ air\ probe) - (work\ set\ point)] : F20\} \times 100$
 - if the temperature of the cabinet of the temperature detected by the inlet air probe is above the "work set point + F20", the fan will be switched on at max. speed
- (25) if parameter P4 is set at 0, 2 or 3 the condenser fan will function in parallel with the compressor
- (26) the condenser fan is off when the temperature of the condenser drops below the temperature established with parameter F11 on condition that the compressor is off
- (27) the minimum variation of the evaporator fan speed is 10% of the maximum speed
- (28) if the parameter i0 and parameter i5 are set at the same value, the effect will be caused by the activation of at least one of the inputs (until both inputs are deactivated)
- (29) the compressor is switched off 10 sec after the activation of the input; if the input is activated during defrosting or when the evaporator fan is deactivated, the activation will not have any effect on the compressor
- (30) the device stores the alarm once the time established in parameter i2 has expired; if parameter i2 is set at -1, the device will not store the alarm
- (31) make sure that the time established with parameter i7 is less than that established with parameter i9
- (32) to avoid damaging the unit connected to the instrument, set the parameter setting when the device is switched off
- (33) if parameter u2 is set at 0, switching off the device may cause the cabinet light and/or the auxiliary output to switch off (the next time the instrument is switched on the unit connected will remain switched off); if parameter u2 is set at 1, switching off the device will not cause the cabinet light or the auxiliary output to switch off (the next time the instrument is switched on the unit connected will remain switched on).
- (34) the heating elements are switched on when the temperature of the cabinet or the CPY temperature drops below the "work set-point + u7" and are switched off when the temperature rises above the "work set-point + u7 + 2 °C/°F".

DIMENSIONS AND INSTALLATION

Control module dimensions and installation

The dimensions are expressed in mm (in); installation is envisioned on a flat surface, with shims.

