# EVCO

# EVRS 200 range

## Controllers in split execution for refrigerated display cases, ice-cream and sweet counters and plug ins.
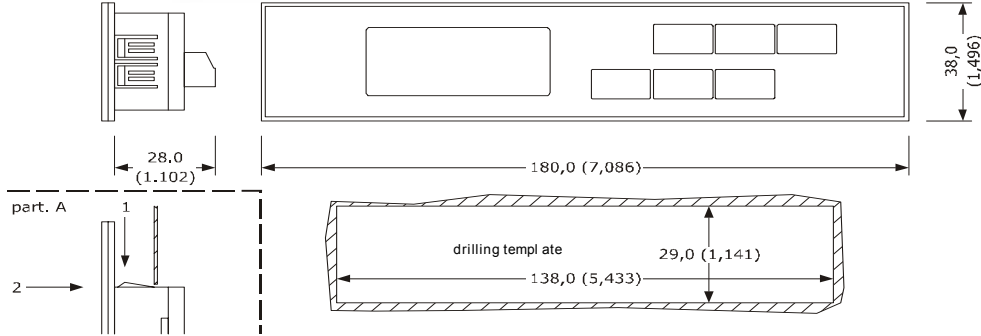
**EN   ENGLISH**
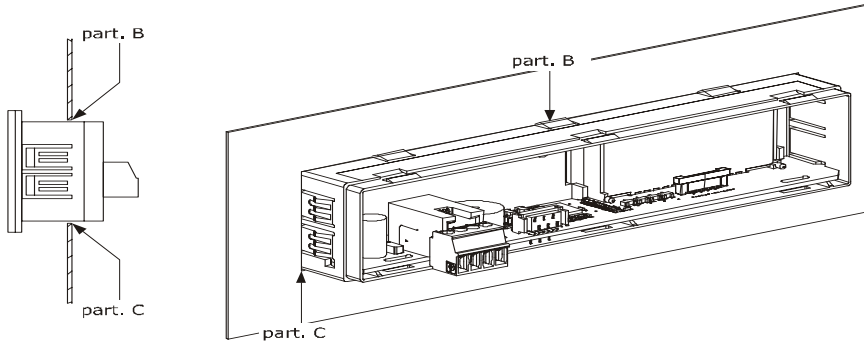


## DIMENSIONS AND INSTALLATION
### User interface dimensions and installation

The dimensions are expressed in mm (in); panel installation is envisioned, with elastic retainer wings (det. A).
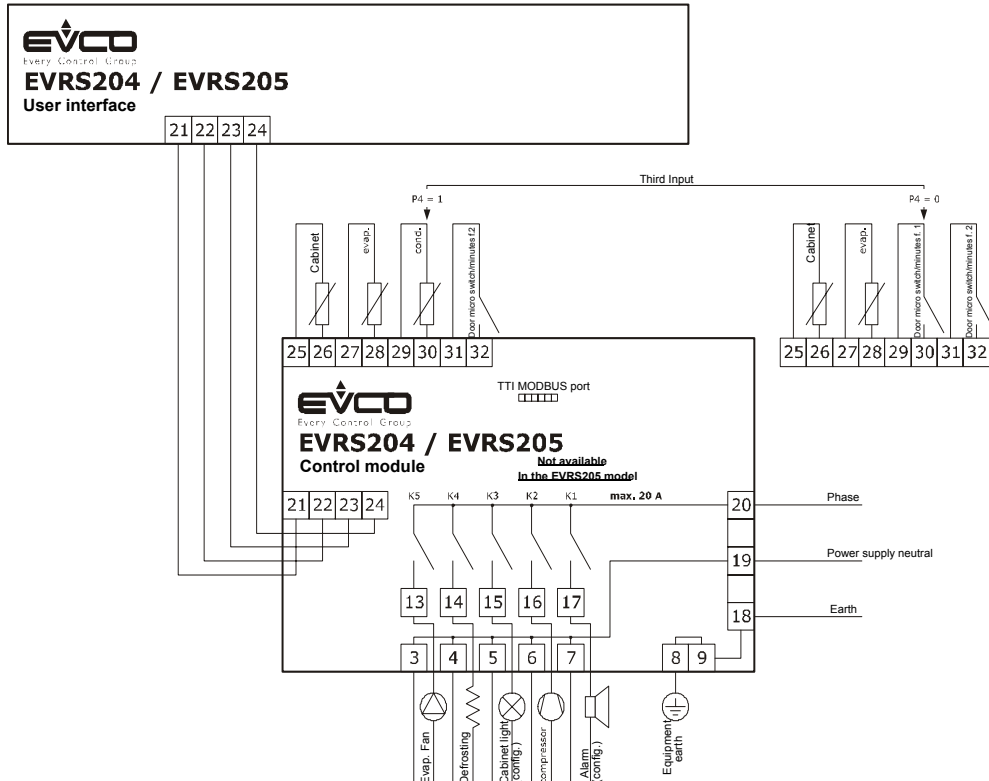For the dimensions and installation of the control module, see page 8.



part. A

38,0 (1,496)

28.0 (1.102)

180,0 (7,086)

drilling templ ate   29,0 (1,141)

138,0 (5,433)

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



part. B

part. B

part. C

part. C

## ELECTRIC CONNECTION
### Electric connection



EVCO
Every Control Group
**EVRS204 / EVRS205**
User interface

21 22 23 24

Third Input

P4 = 1          P4 = 0

Cabinet | evap. | cond. | Door micro switch/minutes t2

25 26 27 28 29 30 31 32

Cabinet | evap. | Door micro switch/minutes t 1 | Door micro switch/minutes t 2

25 26 27 28 29 30 31 32

TTI MODBUS port

EVCO
Every Control Group
**EVRS204 / EVRS205**
Control module
Not available
in the EVRS205 model

21 22 23 24

K5 K4 K3 K2 K1   max. 20 A

20   Phase

19   Power supply neutral

18   Earth

13 14 15 16 17

3 4 5 6 7      8 9

Evap. Fan | Defrosting | Cabinet light (config.) | compressor | Alarm (config.) | Equipment earth

## 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 cell 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 cell temperature, 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 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 [set].

To exit the procedure:

5. Press and release the [set] key or do not operate for 60 sec.
6.1 Press and release the △ or ▽ key until the display shows the cell temperature 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.

### 3.5 Condenser 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 "**Pb3**".
4. Press and release the [set] key.

To exit the procedure:

5. Press and release the [set] key or do not operate for 60 sec.
6.1 Press and release the △ or ▽ key until the display shows the cell temperature 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.

### 3.6 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 evaporator fan is off.
2. Hold the △ key down for 4 s: the Overcooling LED will light up.

During the "overcooling" function the working setpoint 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.

### 3.7 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.

### 3.8 Switch-on/off of the cell 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 cell 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.

### 3.9 Demister resistors 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 resistors will be switched on, both for the amount of time established with parameter u6.

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

### 3.10 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) 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.

### 3.11 Locking/unlocking the keyboard

To lock the keyboard:

1. Make sure no procedures are in progress
2. Hold the ▽ and [⏻] keys 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
- display of evaporator temperature (via the procedure explained in paragraph 3.4)
- display of the condenser temperature (via the procedure indicated in paragraph 3.5)
- activation/deactivation of "overcooling" function
- manual activation of defrosting
- manual switch on/off of the auxiliary output
- activation of operation for low of high percentage of relative humidity and learning the kind of operation
- see information regarding the HACCP alarms
- cancellation of HACCP alarm list
- display of compressor operation hours
- cancellation of compressor operation hours
- changing the working setpoint (with the procedure described in 9.1).

The operations cause the display of the label "**Loc**" per 1 sec.

To unlock the keyboard:

1. Hold the ▽ key and thee [⏻] key down for 1 s: the display will show the message "**UnL**" for 1 sec.

### 3.12 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 OPERATION DUE TO LOW OR HIGH RELATIVE HUMIDITY PERCENTAGE (ONLY IF PARAMETER F0 IS ISET AT 5)

### 4.1 Preliminary notes

During operation for low percentage of relative humidity, the evaporator ventilator will be switched on if the compressor is switched off (parameter F4 determines the amount of time it is switched off while parameter F5 determines the amount of time it is switched on).

During operation for a high percentage of relative humidity the evaporator fan is always on.

### 4.2 Activation of operation for low or high percentage relative humidity in manual mode.

1. Make sure that the keyboard is not locked and that no procedure is in progress.
2. Hold the [set] and △ keys down for 4 s: the display will show "**rhL**" (operation for low percentage of relative humidity) or "**rhH**" (operation for high percentage of relative humidity) for 10 sec.

To restore the normal display before the operation is complete:

3. Press a key.

Activation of the operation for a low or high percentage of relative humidity can be done using parameter F6.

If the parameter F0 is not set at 5, pressing the [set] and △ keys will cause the display of the "**- - - -**" indication for 1 s.

### 4.3 Learning the type of operation in progress

1. Make sure no procedures are in progress
2. Press and release the [set] and △ keys: the display will show "**rhL**" (operation for low percentage of relative humidity) or "**rhH**" (operation for high percentage of relative humidity) for 10 sec.

To restore the normal display before the operation is complete:

3. Press a key.

If parameter F0 is not set at 5, pressing the [set] and △ keys will cause:

- the display of the message "**- - - -**" for 1 sec if the keyboard is not locked
- display of the label "**Loc**" for 1 sec if the keyboard is locked..

## 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 cell temperature has reached the work set-point) the "energy saving" function is activated (until the input is activated again).

During function "Energy Saving" the working setpoint is increased of the temperature you have set with parameter r4 and the evaporator fan is turned on cyclically, on condition that parameter F0 has value 1 or 2 (parameter F13 sets the time the fan remains turned off and parameter F14 the time it remains turned on).

It is also possible to activate the "energy saving" function in remote mode through the digital inputs (with effect only on the compressor).

## 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**")

The device supplies the following information for every alarm:

- the critical value
- 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 temperature of the cell during any alarm of this type |
| AH | the maximum temperature of the cell during any alarm of this type |
| iD | the maximum cell temperature during any alarm of this type; see also parameter i4 |

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

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

The device 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 "**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 △ or ▽ key to select "**LS**".
4. Press and release the [set] key: the display will show one of the codes included in the table in paragraph 6.1.

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 △ or ▽ key (to select, for example, "**AH**").

To see information regarding the alarm:

6. Press and release the [set] key: the **HACCP** LED will stop flashing and remain on permanently and the display will show, for example, the following information in succession (for example):

| Inform. | Part |
|---------|------|
| 8.0 | the critical value is 8.0 °C/8 °F |
| 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 |
| AH | 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 (in the example "**AH**").

To exit the procedure:

8. Exit the information sequence.

9.1 Press and release the △ or ▽ key until the display shows the cell temperature 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 for 1 s: the display will show the first label available.
3. Press and release the △ or ▽ key to select "**rLS**".
4. Press and release the set key.
5. Press and release the △ or ▽ key within 15 s to set "**149**".
6. Press and release the set 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 9.990 compressor 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 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 set key.

To exit the procedure:

5. Press and release the set key or do not operate for 60 sec.
6.1 Press and release the △ or ▽ key until the display shows the cell temperature 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 for 1 s: the display will show the first label available.
3. Press and release the △ or ▽ key to select "**rCH**".
4. Press and release the set key.
5. Press and release the △ or ▽ key within 15 s to set "**149**".
6. Press and release the set 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 AND/OR PARAMETER i5 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 working setpoint

1. Make sure that the keyboard is not locked and that no procedure is in progress.
2. Press and release the set 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 set 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 working setpoint can also be set via parameter SP.

### 9.2 Setting the configuration parameters

To begin the procedure:

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

To select a parameter:

7. Press and release the △ or ▽ key.

To change a parameter:

8. Press and release the set key.
9. Press and release the △ or ▽ key within 15 sec.
10. Press and release the set 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 changing the parameters, suspend power supply flow to the device.

### 9.3 Restoring the Manufacturer's Settings

To begin the procedure:

1. Make sure no procedures are in progress
2. Hold the △ and ▽ keys down for 4 s: the display will show "**PA**".
3. Press and release the set key.
4. Press and release the △ or ▽ key within 15 s to set "**149**".
5. Press and release the set key or do not operate for 15 sec.
6. Hold the △ and ▽ keys down for 4 s: the display will show "**dEF**".
7. Press and release the set key.
8. Press and release the △ or ▽ key within 15 s to set "**1**".
9. Press and release the set 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 before the operation is complete:

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: |
| | - the working setpoint is in the process of being changed (via the procedure described in paragraph 9.1) |
| | - a compressor protection will be in progress; see parameters C0, C1, C2, C14, C15, C16 and i7 |
| ❅ | Defrost LED |
| | If it is on: |
| | - defrosting is in progress |
| | - predripping will be in progress; see parameter d16 |
| | if the LED is flashing: |
| | - 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: |
| | - the evaporator fan will be on |
| | if the LED is flashing: |
| | - evaporator fan standstill will be in progress; see parameter F3 |
| AUX | Auxiliary LED |
| | If it is on: |
| | - the cell light will have been switched on in manual mode (only if parameter u1 and/or parameter u11 is set at 0) |

---

| | |
|---|---|
| | - the demister resistors will be switched on (only if the parameter u1 and/or parameter u11 is set at 1) |
| | - 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 resistors will be switched on (only and provided parameter u1 and/or parameter u11 is set at 4) |
| | - the neutral area operating resistors 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: |
| | - the cell 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 1) |
| | - condenser fan switch-off delay will be in progress; see parameter F12 (only if parameter u1 and/or parameter u11 is set at 6) |
| **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 (with effect only on the compressor) |
| °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 (with effect only on the compressor) |
| ⏻ | 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 |
|---|---|
| **rhL** | operation for a low percentage of relative humidity in progress |
| **rhH** | operation for a high percentage of relative humidity in progress |
| **Loc** | the keyboard is blocked; see paragraph 3.11 |
| | the work setpoint 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: |
| | - check the temperature associated to the alarm; see parameters A0, A1 and A2 |
| | Main consequences: |
| | - 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: |
| | - check the cell temperature; see parameters A4 and A5 |
| | Main consequences: |
| | - 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:
- check the causes of the activation of the input; see parameters i0, i1, i5 and i6

Main consequences:
- 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)

**iA** | Multifunction input alarm
Solutions:
- check the causes of the activation of the input; see parameters i0, i1, i5 and i6

Main consequences:
- 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:
- 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:
- 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:
- check the condenser temperature; see parameter C6

Main consequences:
- 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** | Condenser overheated alarm.
Solutions:
- 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:
- 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:
- heck the integrity of the evaporator probe; see parameters d2, d3 and d11
- press a key to restore normal display

Main consequences:
- the device will continue to operate normally.

When the cause of the alarm disappears, the device restores normal operation, except for the following alarms:
- pressure switch alarm (code "**iSd**") which requires the switching off of the device or 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** | Cell probe error |

**Pr1** Solutions:
- check that the probe is the PTC or NTC type; see parameter P0
- check the device-probe connection
- check the cell temperature

Main consequences:
- 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 resistors will be switched off (only and provided parameter u1 and/or parameter u11 is set at 4)
- the neutral area operating resistors will be deactivated (only if parameter u1 and/or parameter u11 is set at 5)

**Pr2** | Evaporator probe error
Solutions:
- the same as the preceding case but with respect to the evaporator probe

Main consequences:
- 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 1and 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 error.
Solutions:
- the same as the preceding case but with respect to the condenser probe

Main consequences:
- condenser overheated alarm (code "**COH**") will not be activated
- the compressor blocked alarm ("**CSd**" code) 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)

**ErC** | User interface-control module compatibility error.
Solutions:
- check the compatibility of the user interface with the control module (check the data stated on the labels)

Main consequences:
- the control module will continue to operate regularly.

**ErL** | User interface-control module communication error.
Solutions:
- check user interface-control module control module

Main consequences:
- the control module will continue to operate regularly.

When the problem that caused the alarm disappears, the device is restored to normal operation.

## 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 (inputs), 6.3 m faston (0.248 in, power supply, 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.

**Analogue inputs:** 2 inputs (cabinet probe and evaporator probe), can be set via configuration parameter for PTC/NTC 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 ° (1 °F). |
| Protection: | none. |

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

| | |
|---|---|
| Type of sensor: | ß3435. |
| Measurement field: | from -50 to 105 ° (from -40 to 220 °). |
| Resolution: | 0.1 ° (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 input (door micro switch/multifunction 1), with the same technical features illustrated previously.

**Displays:** custom 3 digit display with function icon.

**Digital outputs:**

4 outputs (electro-mechanical relays) in the EVRS204 model, 5 outputs (electro-mechanical relays) in the EVRS205 model
- 1 x 30 A res. output @ 250 VAC SPST type (K2) for compressor management
- 1 x 16 A res. output @ 250 VAC type SPST (K4) for defrosting management
- 1 x 8 A res. output @ 250 VAC type SPST (K5) for management of the evaporator fan
- 1 x 16 A res. output @ 250 VAC type SPST (K3) for management of the cell light, demisting resistors, aux. output, alarm output, door resistors, neutral area operation resistors, condenser fan of compressor 2 fan.
- 1 x 30 A res. output @ 250 VAC type SPST (K1) for management of the cell light, demisting resistors, aux. output, alarm output, door resistors, neutral area operation resistors, 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:** 1 x TTL serial port with MODBUS communication protocol (for EVKEY programming key and other EVCO products).

**Signal buzzer and alarm:** on request.

## 14 WORKING SETPOINT AND CONFIGURATION PARAMETERS

### 14.1 Working set-point

| PARAM. | MIN. | MAX. | U.M. | EVRS204 | EVRS205 | 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. | EVRS204 | EVRS205 | WORKING SETPOINT |
|---|---|---|---|---|---|---|
| SP | r1 | r2 | °C/°F (1) | -18,0 | -18,0 | working set-point; see also r0 |

| PARAM. | MIN. | MAX. | U.M. | EVRS204 | EVRS205 | MEASUREMENT INPUTS |
|---|---|---|---|---|---|---|
| CA1 | -25 | 25,0 | °C/°F (1) | 0,0 | 0,0 | offset cell probe |
| 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 | offset condenser probe |
| P0 | 0 | 1 | - - - | 1 | 1 | probe type<br>0 = PTC<br>1 = NTC |
| P1 | 0 | 1 | - - - | 1 | 1 | degree Celsius decimal point (during normal operation)<br>1 = YES |
| P2 | 0 | 1 | - - - | 0 | 0 | temperature unit of measurement (2)<br>0 = °C<br>1 = °F |
| P3 | 0 | 2 | - - - | 1 | 1 | evaporator probe function<br>0 = probe absent<br>1 = defrosting probe and probe for evaporator fan thermostating<br>2 = probe for evaporator fan thermosatating |
| P4 | 0 | 1 | - - - | 1 | 1 | third input function<br>0 = digital input (micro switch/multi-function input 1)<br>1 = analogue input (condenser probe) |
| P8 | 0 | 250 | 0.1 s | 5 | 5 | delay displaying temperature variation detected by the probes |

| PARAM. | MIN. | MAX. | U.M. | EVRS204 | EVRS205 | 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 calibration (using the procedure described in paragraph 10.1)<br>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 and i10 |
| 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. | EVRS204 | EVRS205 | COMPRESSROR 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 cell probe error (code "**Pr1**"); see also C5 |
| C5 | 0 | 240 | min | 10 | 10 | duration of compressor switch on during cell 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.<br>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. | EVRS204 | EVRS205 | DEFROSTING |
|---|---|---|---|---|---|---|
| d0 | 0 | 99 | h | 8 | 8 | if d8 = 0, 1 or 2, defrosting interval (11)<br>0 = interval defrosting will never be activated<br>if d8 = 3, maximum defrost interval |
| d1 | 0 | 2 | - - - | 0 | 0 | type of defrosting<br>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<br>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<br>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<br>se P3 = 1, maximum defrosting duration; see also d2<br>0 = defrosting will not be activated |
| d4 | 0 | 1 | - - - | 0 | 0 | defrosting on device switch-on (4)<br>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)<br>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<br>0 = cell temperature |
| | | | | | | 1 = if at the time of defrosting activation, the cell temperature is lower than the "working set-point + r0", at most "working set- point + r0"; if at the time of defrosting activation, the cell temperature is higher than the "working set-point + r0", at most the cell temperature when defrosting is activated (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 | 3 | - - - | 0 | 0 | defrosting activation methods<br>0 = <u>AT INTERVALS</u> - defrosting will be activated once the device has altogether been running for time d0<br>1 = <u>AT INTERVALS - FOR COMPRESSOR SWITCH-ON</u> - defrosting will be activated once the compressor has altogether been switched on for time d0<br>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)<br>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) |
| 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**")<br>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) |

| PARAM. | MIN. | MAX. | U.M. | EVRS204 | EVRS205 | |
|---|---|---|---|---|---|---|
| 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)<br>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<br>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 and/or i5 = 6) |
| PARAM. | MIN. | MAX. | U.M. | EVRS204 | EVRS205 | TEMPERATURE ALARMS |
| A0 | 0 | 1 | - - - | 0 | 0 | temperature associated with the minimum temperature alarm (code "AL")<br>0 = cell temperature<br>1 = evaporator temperature (15) |
| 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")<br>0 = alarm absent<br>1 = relative to working set-point (that is "working set-point - A1"; consider A1 without sign)<br>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")<br>0 = alarm absent<br>1 = relative to working set-point (that is "working set-point + A4"; consider A1 without sign))<br>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 (16) |
| A9 | 0 | 240 | min | 15 | 15 | delay in maximum temperature alarm (code "AH") following the deactivation of the door micro switch input (17) |
| A11 | 0,1 (3) | 15,0 | °C/°F (1) | 2,0 | 2,0 | differential of parameters A1and A4 |
| PARAM. | MIN. | MAX. | U.M. | EVRS204 | EVRS205 | EVAPORATOR FAN AND CONDENSER FAN |
| F0 | 0 | 5 | - - - | 1 | 1 | evaporator fan activity during normal operation<br>0 = switched off<br>1 = switched on; see also F13, F14 and i10 (18)<br>2 = in parallel with the compressor; see also F9, F13, F14 and i10 (19)<br>3 = depending on F1; see also F9, F13 and F14 (20) (21)<br>4 = switched off if the compressor is switched off, dependent on F1 if the compressor is switched on; see also F9, F13 and F14 (20) (22)<br>5 = dependent on F6; see also F9 |
| 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<br>0 = switched off<br>1 = switched on (setting parameter d7 to 0 is recommended)<br>2 = dependent on F0 |
| F3 | 0 | 15 | min | 2 | 2 | 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) |
| F4 | 0 | 240 | s | 60 | 60 | time duration that evaporator fan is switched off during operation for a low percentage of relative humidity when the compressor is switched off; see also F5 (only if F0 = 5) |
| F5 | 0 | 240 | s | 10 | 10 | time duration that evaporator fan is switched on during operation for a low percentage of relative humidity when the compressor is switched off; see also F4 (only if F0 = 5) |
| F6 | 0 | 1 | - - - | 0 | 0 | operation for low or high percentage of relative humidity (only if F0 = 5) (23)<br>0 = LOW RELATIVE HUMIDITY - the evaporator fan will operate in parallel with the compressor; see also F4 and F5<br>1 = HIGH RELATIVE HUMIDITY - the evaporator fan will always be switched on |
| 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 setpoint, that is "working setpoint + 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) (24) (25) |
| 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 and u1 and/or u11= 6) |
| F13 | 0 | 240 | 10 s | 30 | 30 | time the evaporator fan remains turned off during function "energy saving"; see also F14 and i10 (only if F0 = 1, 2, 3 or 4) |
| F14 | 0 | 240 | 10 s | 30 | 30 | time the evaporator fan remains turned on during function "energy saving"; see also F13 and i10 (only if F0 = 1, 2, 3 or 4) |
| PARAM. | MIN. | MAX. | U.M. | EVRS204 | EVRS205 | DIGITAL INPUTS |
| i0 | 0 | 11 | - - - | 7 | 7 | effect caused by the activation of the door micro switch/multifunction 1 input; see also i4 (26)<br>0 = no effect<br>1 = DOOR MICROSWITCH - COMPRESSOR AND EVAPORATOR FAN SWITCH-OFF - the compressor and the evaporator fan will be switched off (at maximum for time i3 or until the input is deactivated) (27)<br>2 = DOOR MICROSWITCH - EVAPORATOR FAN SWITCH-OFF - the evaporator fan will be switched off (at maximum for time i3 or until the input is deactivated)<br>3 = DOOR MICROSWITCH - CELL LIGHT SWITCH-ON - the cell light will be switched on (only if u1 and/or u11 = 0, until the input will be deactivated)<br>4 = DOOR MICROSWITCH - SWITCH-OFF OF THE COMPRESSOR, EVAPORATOR FAN, SWITCH-ON OF CELL LIGHT - the compressor and the evaporator fan will be switched off (at maximum for time i3 or until the input is deactivated) and the cell light will be switched on (only if u1 = 0, until the input is deactivated) (27)<br>5 = DOOR MICROSWITCH - SWITCH-OFF OF THE EVAPORATOR FAN, SWITCH-ON OF CELL LIGHT - the evaporator fan will be switched off (at maximum for time i3 or until the input is deactivated) and the cell light will be switched on (only if u1 and/or u11 = 0, until the input is deactivated)<br>6 = MULTIFUNCTION - SYNCHRONISATION OF DEFROSTING PERIODS - 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<br>7 = MULTIFUNCTION - ACTIVATION OF "ENERGY SAVING" FUNCTION - 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<br>8 = MULTIFUNCTION - ACTIVATION OF MULTIFUNCTION INPUT ALARM - once time i7 has passed the display will show the flashing code "iA" and the buzzer will be activated (until the input is deactivated) |

| PARAM. | MIN. | MAX. | U.M. | EVRS204 | EVRS205 | |
|---|---|---|---|---|---|---|
| | | | | | | 9 = MULTIFUNCTION- ACTIVATION OF THE PRESSURE SWITCH ALARM - 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 <br> 10 = MULTIFUNCTION - SWTICHING ON THE AUXILIARY OUTPUT - the auxiliary output will be switched on (only if u1 and/or u11 = 2, until the input is deactivated) <br> 11 = MULTIFUNCTION - SWITCHING OFF THE DEVICE - 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 <br> 0 = normally open (active input with closed contact) <br> 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**") <br> -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 <br> -1 = the effect will last until the input is deactivated |
| i4 | 0 | 1 | - - - | 0 | 0 | storage of door micro switch input alarm (code "**id**") (28) <br> 1 = YES |
| i5 | 0 | 11 | - - - | 5 | 5 | effect caused by the activation of the door micro switch/multifunction 2 input; see also i4 (26) <br> 0 = no effect <br> 1 = DOOR MICROSWITCH - COMPRESSOR AND EVAPORATOR FAN SWITCH-OFF - the compressor and the evaporator fan will be switched off (at maximum for time i3 or until the input is deactivated) (27) <br> 2 = DOOR MICROSWITCH - EVAPORATOR FAN SWITCH-OFF - the evaporator fan will be switched off (at maximum for time i3 or until the input is deactivated) <br> 3 = DOOR MICROSWITCH - CELL LIGHT SWITCH-ON - the cell light will be switched on (only if u1 and/or u11 = 0, until the input will be deactivated) <br> 4 = DOOR MICROSWITCH - SWITCH-OFF OF THE COMPRESSOR, EVAPORATOR FAN, SWITCH-ON OF CELL LIGHT - the compressor and the evaporator fan will be switched off (at maximum for time i3 or until the input is deactivated) and the cell light will be switched on (only if u1 = 0, until the input is deactivated) (27) <br> 5 = DOOR MICROSWITCH - SWITCH-OFF OF THE EVAPORATOR FAN, SWITCH-ON OF CELL LIGHT - the evaporator fan will be switched off (at maximum for time i3 or until the input is deactivated) and the cell light will be switched on (only if u1 and/or u11 = 0, until the input is deactivated) <br> 6 = MULTIFUNCTION - SYNCHRONISATION OF DEFROSTING PERIODS - 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 <br> 7 = MULTIFUNCTION - ACTIVATION OF "ENERGY SAVING" FUNCTION - 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 <br> 8 = MULTIFUNCTION - ACTIVATION OF MULTIFUNCTION INPUT ALARM - once time i7 has passed the display will show the flashing code "**iA**" and the buzzer will be activated (until the input is deactivated) <br> 9 = MULTIFUNCTION- ACTIVATION OF THE PRESSURE SWITCH ALARM - 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 <br> 10 = MULTIFUNCTION - SWTICHING ON THE AUXILIARY OUTPUT - the auxiliary output will be switched on (only if u1 and/or u11 = 2, until the input is deactivated) <br> 11 = MULTIFUNCTION - SWITCHING OFF THE DEVICE - 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 <br> 0 = normally open (active input with closed contact) <br> 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**") <br> if i0 and/or i5 = 9, delay in compressor switching on after the deactivation of the multifunction input (29) |
| i8 | 0 | 15 | - - - | 0 | 0 | number of multifunction input alarms (code "**iA**") such to cause a pressure switch alarm (code "**iSd**") (only if i0 and/or i5 = 9) <br> 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 without activations of the door switch input (on condition that the cabinet temperature has reached the working setpoint) in order that function "energy saving" is activated (it has effect on the evaporator fan only if F0 = 1, 2, 3 or 4) <br> 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 <br> 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 <br> 0 = defrosting for this condition will never be activated |
| PARAM. | MIN. | MAX. | U.M. | EVRS204 | EVRS205 | DIGITAL OUTPUTS |
| u1 | 0 | 7 | - - - | 0 | 0 | operation controlled by fourth output (30) <br> 0 = CELL LIGHT - in this case the   key and parameters i0, i5 AND u2 will be activated <br> 1 = DEMISTER RESISTORS - in this case the   key and parameter u6 will be activated <br> 2 = AUXILIARY OUTPUT - in this case the   key and parameters i5 and u2 will be activated <br> 3 = ALARM OUTPUTS - in this case parameter u4 will be activated <br> 4 = DOOR RESISTORS - in this case parameter u5 will be activated <br> 5 = RESISTORS FOR NEUTRAL AREA OPERATION - in this case parameter u7 will be activated <br> 6 = CONDENSER FAN - in this case parameters P4, F11 and F12 will be activated <br> 7 = COMPRESSOR 2 - in this case, parameter C11 will assume significance of |
| u2 | 0 | 1 | - - - | 0 | 0 | enabling of manual switch on/switch off of the cell light or the auxiliary output when the device is switched off(only if u1 and/or u11= 0 or 2) (31) <br> 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) <br> 1 = YES |
| u5 | -99 | 99,0 | °C/°F (1) | -1,0 | -1,0 | temperature of the cell below which the door resistors 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 resistors (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) (32) |
| u8 | - - - | - - - | - - - | - - - | - - - | reserved |
| u9 | 0 | 1 | - - - | 1 | 1 | enabling the buzzer <br> 1 = YES |
| u11 | 0 | 7 | - - - | not avail. | 3 | operation controlled by fifth output (30) <br> 0 = CELL LIGHT - in this case the   key and parameters i0 and u2 will be activated <br> 1 = DEMISTER RESISTORS - in this case the   key and parameter u6 will be activated <br> 2 = AUXILIARY OUTPUT - in this case the   key and parameters i0 and u2 will be activated <br> 3 = ALARM OUTPUTS - in this case parameter u4 will be activated <br> 4 = DOOR RESISTORS - in this case parameter u5 will be activated |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | 5 | = | RESISTORS FOR NEUTRAL AREA OPERATION - in this case parameter u7 will be activated |
| | | | | 6 | = | CONDENSER FAN - in this case parameters P4, F11 and F12 will be activated |
| | | | | 7 | = | COMPRESSOR 2 - in this case, parameter C11 will assume significance of |
| PARAM. | MIN. | MAX. | U.M. | EVRS204 | EVRS205 | 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<br>0 = the function will last until the input is activated |
| PARAM. | MIN. | MAX. | U.M. | EVRS204 | EVRS205 | SERIAL NETWORK |
| LA | 1 | 247 | - - - | 247 | 247 | device address |
| Lb | 0 | 3 | - - - | 2 | 2 | baud rate<br>0 = 2.400 baud<br>1 = 4.800 baud<br>2 = 9.600 baud<br>3 = 19.200 baud |
| LP | 0 | 2 | - - - | 2 | 2 | parity<br>0 = none (no parity)<br>1 = odd<br>2 = even |

**Notes:**

(1) the unit of measurement depends on P2

(2) Properly set the parameters corresponding to the regulators after modifying 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 cell 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 °/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 modification 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 cell 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 P3 is set at 0, the device will function as if parameter A0 were set at 0 but it will not store the alarm

(16) 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

(17) during activation of the door micro switch input, the maximum temperature alarm is absent, provided the alarm was signalled after the activation of the input

(18) parameters F13 and F14 have effect when the compressor is off

(19) parameters F13 and F14 have effect when the compressor is on

(20) if parameter P3 is set at 0, the device will function as if parameter F0 were set at 2

(21) parameters F13 and F14 have effect when the evaporator temperature is below the temperature established with parameter F1

(22) 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

(23) the parameter can also be modified using the procedure described in paragraph 4.2

(24) if parameter P4 is set at 0, the condenser fan will function in parallel with the compressor

(25) 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

(26) 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)

(27) 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

(28) 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

(29) make sure that the time established with parameter i7 is less than that established with parameter i9

(30) to avoid damaging the unit connected to the instrument, change the parameter setting when the device is switched off

(31) if parameter u2 is set at 0, switching off the device may cause the cell 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 cell light or the auxiliary output to switch off (the next time the instrument is switched on the unit connected will remain switched on).

(32) the resistors are switched on when the temperature of the cell 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.