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.

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 Dimensions**

Dimensions are expressed in mm (in).

- 59.0 (2.322) is the depth with fixed screw connection terminal blocks; 81.5 (3.208) is the depth with removable screw connection terminal blocks.

**1.2 Installation**

Panel installation with snap-in brackets.

**1.3 Installation warnings**

- The thickness of the panel on which the devise 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 8.
- Do not install the device near to any heat sources (heating elements, hot air ducts, etc.), equipment containing powerful magnets (large differgators, etc.), areas affected by direct sunlight, rain, humidity, excessive dust, mechanical vibrations or shocks.
- 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 Electric connection**

- 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" status (the device is powered and is on); utilities may be on.
- "stand-by" status (the device is powered but is switched off via software); utilities are off.
- "off" status: the device is not powered; utilities are off.

Hereafter, if the POF parameter is set to 0, with the word "switch-on" means the passage from "off" status to "on" status; the word "switch-off" means the passage from "on" status to "off" status.

If the POF parameter is set to 1, with the word "switch-on" means the passage from "stand-by" status to "on" status; the word "switch-off" 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 Manual switch on/off of the device**

If the POF parameter is set to 0:
1. Connect/disconnect the device power supply.
2. Make sure that the keyboard is not locked and that no procedure is in progress.
3. Touch the key for 4 s: the LED will flash, after which it will turn off/on.

**3.3 The display**

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

If the device is switched off ("stand-by" status), the display will be switched off; the LED shall be on.

If the device is in "low consumption" mode, the display will be switched off and the LED shall be on.

**3.4 Temperature display as detected by the probes**

1. Make sure that the keyboard is not locked and that no procedure is in progress.
2. Touch the key for 4 s: the display will show the first label available.
3. Touch the key to select a label.
4. Touch the key to display the temperature.

The following table shows the correspondence between the labels and the temperature displayed.

<table>
<thead>
<tr>
<th>Label</th>
<th>Displayed temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pb1</td>
<td>If the P4 parameter is set to 0, 1 or 2, room temperature</td>
</tr>
<tr>
<td>Pb2</td>
<td>If the P4 parameter is set to 3, incoming air temperature</td>
</tr>
<tr>
<td>Pb3</td>
<td>If the P4 parameter is set to 1, condenser temperature</td>
</tr>
<tr>
<td>Pb4</td>
<td>If the P4 parameter is set to 2, critical temperature</td>
</tr>
<tr>
<td></td>
<td>If the P4 parameter is set to 3, outgoing air temperature</td>
</tr>
<tr>
<td></td>
<td>OPT temperature</td>
</tr>
</tbody>
</table>

To exit the procedure:
5. Touch the key or do not operate for 60 s.
6. Touch the key.

If the evaporator probe is absent (that is to say, if the P3 parameter is set to 0), the "P2b" label shall not be displayed.

If the fourth input function is a multifunction input (that is to say, if the P4 parameter is set to 0) the "P3b" label shall not be displayed.

If the fourth input function is not to be an outgoing air probe (that is to say, if the P4 parameter is not set to 3) the "P4b" label shall not be displayed.

**3.5 Compressor operation hours**

To show the compressor operation hours:
1. Make sure that the keyboard is not locked and that no procedure is in progress.
2. Touch the key for 4 s: the display will show the first label available.
3. Touch the key to select "CH".
4. Touch the key.

To exit the procedure:
5. Touch the key or do not operate for 60 s.
6. Touch the key.

To cancel the compressor operation hours:
7. From step 3, touch the key.
8. Touch the key.
9. Touch the key within 15 s to set "149".
10. Touch the key or do not operate for 15 s: the display will show a flashing "- - - -" for 4 s, after which the device will exit the procedure.

**3.6 "Rapid cooling" function enabling/disabling**

1. Make sure that the keyboard is not locked and that no procedure is in progress, that the "rapid cooling" function is not in progress, that there are no defrosting, dripping or vaporator fan stop operations in progress, that the r5 and r8 parameters are set to 0.

2. Touch the key: the LED will flash/stop flashing; see also r6 and r7 parameters.

**3.7 "Rapid heating" function enabling/disabling**

1. Make sure that the keyboard is not locked and that no procedure is in progress, that the r5 and r8 parameters are set to 1.

2. Touch the key: the LED will flash/stop flashing; see also r6 and r7 parameters.

**3.8 "Energy saving" function enabling/disabling in manual mode**

1. Make sure that the keyboard is not locked and that no procedure is in progress, that the r5 parameter is set to 0 and that the r8 parameter is set to 2.

2. Touch the key: the LED will turn on/off; see also r4, r5, r6 and r7 parameters.

**3.9 Defrost manual activation**

1. Make sure that the keyboard is not locked and that no procedure is in progress, that the "rapid cooling" function is not in progress.

2. Touch the key for 4 s.

If the evaporator probe functions as a defrost probe (that is to say, if the P3 parameter is set to 1) and when the defrost starts the evaporator temperature exceeds the value set with the d2 parameter, the defrost shall not be activated.

**3.10 Room light switch-on/off in manual mode**

1. Make sure that no procedure is in progress and that the P1 parameter is set to 0; see also u2 parameter.

2. Touch the key for 4 s: the "AUX" LED will turn on/off.

**3.11 Demister heating elements activation**

1. Make sure that no procedure is in progress and that the P1 parameter is set to 1.

2. Touch the key: the "AUX" LED will turn on/off.

**3.12 Turning on/off the auxiliary output in manual mode**

1. Make sure that the keyboard is not locked, that no procedure is in progress and that the P1 parameter is set to 1.

2. Touch the key for 4 s: the "AUX" LED will turn on/off.

**3.13 Keyboard locking/unlocking**

To lock the keyboard proceed as follows:
1. Make sure that no procedure is in progress.
2. Do not operate for 30 s: the display will show the message "Loc" for 1 s and the keyboard shall lock automatically.

To unlock the keyboard:
3. Touch a key for 1 s: the display will show the message "UnL" for 1 s.
4 SETTINGS

4.1 Setting the working setpoint
1. Make sure that the keyboard is not locked and that no procedure is in progress.
2. Touch the [ ] key: the LED will flash.
3. Touch the [ ] or [ ] key within 15 s; see also r1 and r2 parameters.
4. Touch the [ ] or [ ] key or do not operate for 15 s: the LED will switch off after which, the device will exit the procedure.
To exit the procedure before the operation is complete:
5. Touch the [ ] key (any changes will not be saved).
The working setpoint can also be set via SP parameter.

4.2 Setting the configuration parameters
To access the procedure:
1. Make sure no procedure is in progress.
2. Touch the [ ] ey for 4 s: the display will show “PA”.
3. Touch the [ ] key.
4. Touch the [ ] or [ ] key; the value determined with the “PAS” parameter (the parameter is set at “-19” by default).
5. Touch the [ ] or [ ] key do not operate for 15 s: the display will show “SP”.
To select a parameter:
6. Touch the [ ] or [ ] key.
7. Touch the [ ] or [ ] key.
8. Touch the [ ] or [ ] key.
To exit the procedure:
9. Touch the [ ] key for 4 s or do not operate for 60 s (any changes will be saved).

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

4.3 Manufacturer’s settings
To access the procedure:
1. Make sure no procedure is in progress.
2. Touch the [ ] key for 4 s: the display will show “149”.
3. Touch the [ ] key.
To restore the manufacturer’s settings:
4. Touch the [ ] or [ ] key within 15 s to set “149”.
5. Touch the [ ] key or do not operate for 15 s: the display will show “DEF”.
6. Touch the [ ] key.
7. Touch the [ ] or [ ] key within 15 s to set “4”.
8. Touch the [ ] key or do not operate for 15 s: the display will show a message “+ or -” for 4 s, after which the device will exit the procedure.
9. Cut the device power supply off.
Make sure that the manufacturer’s settings are appropriate; see chapter 5.

To store the authorized settings as manufacturer’s:
10. Set the configuration parameters (with the procedure described in paragraph 4.2).
11. From step 4, touch the [ ] key to set “149”.
12. Touch the [ ] key or do not operate for 15 s: the display will show “MAP”.
13. Repeat steps 6. 7. 8. and 9.
To exit the procedure in advance:
14. Touch the [ ] key for 4 s during the procedure (i.e. before setting “4”: Restore will not be performed).

5 WARNING LIGHTS AND DIRECTIONS

5.1 Signals

<table>
<thead>
<tr>
<th>LED</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compressor LED</td>
<td>If the LED is on, the compressor is on. If the LED is flashing, the working setpoint is in the process of being set (see the procedure described in paragraph 4.1).</td>
</tr>
</tbody>
</table>
| Defrost LED | - If the LED is on, defrost is in progress
- Pre-dripping is in progress
- If the LED is flashing, defrost will be requested but a compressor protection will be in progress |
| Evaporator fan LED | Te the LED is on, the evaporator fan will be on |
| Auxiliary LED | - The room light will be on in manual mode
- The demister heating elements will be on |

Cth Compressor thermal protection alarm

- checks the causes of the activation of the multifunction input; see i5 and i6 parameters
Main consequences:
- the compressor will be switched off
- the alarm output will be switched on

Th Global thermal protection alarm

- checks the causes of the activation of the multifunction input; see i5 and i6 parameters
- checks that the cause that triggered the alarm has been eliminated and switch the device off and back on again or sidisconnect the power supply
Main consequences:
- all utilities will be switched off
- the alarm output will be switched on

dFd Defrost alarm switched off because maximum time has been reached

- checks the integrity of the evaporator probe; see c5 and c6 parameters
- touch a key to restore normal display
Main consequences:
- the device will continue operation normally

When the cause of the alarm disappears, the device restores normal operation, except for the following alarms:
- the compressor blocked alarm (code “C5d”) and the global thermal protection alarm (code “th”), both of which need to be reset by turning the device off or switching off the power supply.
- defrost alarm switched off because maximum time has been reached (code “dFd”) which requires the turning of a key.

7 ERRORS

7.1 Errors

<table>
<thead>
<tr>
<th>Code</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>E01</td>
<td>The keyboard is blocked; see paragraph 3.13</td>
</tr>
</tbody>
</table>

- the auxiliary output will have been turned on |
- the alarm output will be active |
- the door heating elements will be on |
- the neutral area operation heating elements will be on |
- the condenser fan will be on |
- the condenser output will be active |
- the device will switch off |

Cth Compressor thermal protection alarm

- checks the causes of the activation of the multifunction input; see c5 and c6 parameters
Main consequences:
- the compressor will be switched off
- the alarm output will be switched on

Th Global thermal protection alarm

- checks the causes of the activation of the multifunction input; see i5 and i6 parameters
- checks that the cause that triggered the alarm has been eliminated and switch the device off and back on again or sidisconnect the power supply
Main consequences:
- all utilities will be switched off
- the alarm output will be switched on

dFd Defrost alarm switched off because maximum time has been reached

- checks the integrity of the evaporator probe; see c5 and c6 parameters
- touch a key to restore normal display
Main consequences:
- the device will continue operation normally

Pr1 Room temperature probe or inlet air probe error

- check that the probe is the PTC or NTC type; see P0 parameter
- check the device-probe connection
- check room temperature/CPT temperature
Main consequences:
- compressor activity will depend on C4 and C5 parameters
- if P4 parameter is set at 3, the temperature associated with the regulation and the temperature alarms shall be the outgoing air temperature

Pr2 Evaporator probe error

- the same as in the previous example, but with regard to the evaporator probe
Main consequences:
- if P3 parameter is set at 1, the defrost interval will last for the amount of time set with d3 parameter
- if P3 parameter is set at 1 and d8 parameter is set at 2 or 3, the device will operate as if d8 parameter were set at 0
- if P3 parameter is set at 1 or 2 and P0 parameter is set at 3 to 4, the device will operate as if parameter were set at 2

Pr3 Condenser probe error, critical temperature probe or outflowing air probe

- the same as in the previous example, but with regard to the condenser probe, the critical temperature probe or the outflowing air probe
Main consequences:
- if P4 parameter is set at 1, the condenser shutdown alarm (code “C5d”) will never be activated
- if P4 parameter is set at 1, the compressor shut down alarm (code “C5d”) will never be activated
- if P4 parameter is set at 1, the condenser fan shall work in parallel with the separator
- if P4 parameter is set at 1, the condenser fan shall work in parallel with the separator
- if the compressor or the condenser fan is set at 1, the temperature associated with the temperature alarms shall be the inflowing air temperature
- the alarm output will be switched on
The when the error disappears, the device restores normal operation.

**8 TECHNICAL DATA**

### 8.1 Technical data

**Purpose of the command device:** operating command device.

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

**Container:** grey self-extinguishing.

**Heat and fire protection class:** D.

**Dimensions:** according to model:
- 75,0 x 33,0 x 81,5 mm (2,952 x 1,299 x 3,208 in; L x H x P) with removable screw connection terminal blocks.
- 75,0 x 33,0 x 59,0 mm (2,952 x 1,299 x 2,322 in; L x H x P) with fixed screw connection terminal blocks.

**Connection method:** according to model:
- fixed screw connection terminal blocks for wires up to 2.5 mm² (0.0038 in²): power supply, analog inputs, digital inputs and digital outputs.
- removable screw connection terminal blocks for wires up to 2.5 mm² (0.0038 in²): power supply, analog inputs, digital inputs and digital outputs.

The maximum lengths of the connection cables are:
- power supply: 10 m (32.8 ft).
- analog inputs: 10 m (32.8 ft).
- digital inputs: 10 m (32.8 ft).
- digital outputs: 10 m (32.8 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.

**Environmental standards:**
- RoHS 2011/65/CE.
- WEEE 2012/19/EU.

**EMC standards:**
- EN 60730-1.
- EN 60730-1.

**Power supply:** 115...230 VAC (+10 % -15 %), 50...60 Hz (±3 Hz), 3.2 VA max.

**Control device grounding method:** none.

**Rated impulse voltage:** 2.5 KV.

**Oversupply category:** II.

**Class and structure of software:** A.

**Analog inputs:** 2 inputs (room temperature probe or inlet air probe and evaporator probe) configurable via configuration parameter for PTC or NTC probes.

---

**Analog inputs:**

<table>
<thead>
<tr>
<th>PARAM.</th>
<th>MIN.</th>
<th>MAX.</th>
<th>U.M.</th>
<th>DEF</th>
<th>WORKING SETPOINT</th>
</tr>
</thead>
<tbody>
<tr>
<td>P0</td>
<td>0</td>
<td>1</td>
<td></td>
<td>-</td>
<td>-120 °C (±1 °F)</td>
</tr>
<tr>
<td>P1</td>
<td>0</td>
<td>1</td>
<td></td>
<td>-</td>
<td>50 °C (±1 °F)</td>
</tr>
<tr>
<td>P2</td>
<td>0</td>
<td>1</td>
<td></td>
<td>-</td>
<td>100 °F (±1 °F)</td>
</tr>
<tr>
<td>P3</td>
<td>0</td>
<td>2</td>
<td></td>
<td>-</td>
<td>200 °F (±1 °F)</td>
</tr>
<tr>
<td>P4</td>
<td>0</td>
<td>3</td>
<td></td>
<td>-</td>
<td>300 °F (±1 °F)</td>
</tr>
<tr>
<td>P5</td>
<td>0</td>
<td>4</td>
<td></td>
<td>-</td>
<td>400 °F (±1 °F)</td>
</tr>
</tbody>
</table>

**Digital outputs:**

- 1 output (SPST electromechanical relay with 16 A res. @ 250 VAC) for compressor management.
- 1 output (SPST electromechanical relay with 8 A res. @ 250 VAC) for defrost management.
- 1 output (SPST electromechanical relay with 5 A res. @ 250 VAC) for evaporator fan management.
- 1 output (SPST electromechanical relay with 5 A res. @ 250 VAC) for the management of room lighting, demister heating elements, auxiliary output, alarm output, door heating elements, neutral area operation heating elements, condenser fan or the on/stand-by output.

**Environmental standards:**

- 25 °C, 77 °F).
- 25 °C, 77 °F).
- 25 °C, 77 °F).
- 25 °C, 77 °F).
- 25 °C, 77 °F).

**Digital inputs:**

- 1 input (door switch input).
- 1 input (SPST electromechanical relay with 5 A res. @ 250 VAC) for the management of room lighting, demister heating elements, auxiliary output, alarm output, door heating elements, neutral area operation heating elements, condenser fan or the on/stand-by output.

**Command device pollution situation:** 2.

**Environmental standards:**

- 1907/2006.
- EN 60730-1.
- EN 60730-1.

**Power supply:** 115...230 VAC (+10 % -15 %), 50...60 Hz (±3 Hz), 3.2 VA max.

**Control device grounding method:** none.

**Rated impulse voltage:** 2.5 KV.

**Oversupply category:** II.

**Class and structure of software:** A.

**Analog inputs:** 2 inputs (room temperature probe or inlet air probe and evaporator probe) configurable via configuration parameter for PTC or NTC probes.

---

**Analog inputs:**

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<th>PARAM.</th>
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</thead>
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<tr>
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</tr>
<tr>
<td>P1</td>
<td>0</td>
<td>1</td>
<td></td>
<td>-</td>
<td>50 °C (±1 °F)</td>
</tr>
<tr>
<td>P2</td>
<td>0</td>
<td>1</td>
<td></td>
<td>-</td>
<td>100 °F (±1 °F)</td>
</tr>
<tr>
<td>P3</td>
<td>0</td>
<td>2</td>
<td></td>
<td>-</td>
<td>200 °F (±1 °F)</td>
</tr>
<tr>
<td>P4</td>
<td>0</td>
<td>3</td>
<td></td>
<td>-</td>
<td>300 °F (±1 °F)</td>
</tr>
<tr>
<td>P5</td>
<td>0</td>
<td>4</td>
<td></td>
<td>-</td>
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**Command device pollution situation:** 2.

**Environmental standards:**

- 1907/2006.
- EN 60730-1.
- EN 60730-1.

**Power supply:** 115...230 VAC (+10 % -15 %), 50...60 Hz (±3 Hz), 3.2 VA max.

**Control device grounding method:** none.

**Rated impulse voltage:** 2.5 KV.

**Oversupply category:** II.

**Class and structure of software:** A.

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<td>0</td>
<td>2</td>
<td></td>
<td>-</td>
<td>200 °F (±1 °F)</td>
</tr>
<tr>
<td>P4</td>
<td>0</td>
<td>3</td>
<td></td>
<td>-</td>
<td>300 °F (±1 °F)</td>
</tr>
<tr>
<td>P5</td>
<td>0</td>
<td>4</td>
<td></td>
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**Command device pollution situation:** 2.

**Environmental standards:**

- 1907/2006.
- EN 60730-1.
- EN 60730-1.

**Power supply:** 115...230 VAC (+10 % -15 %), 50...60 Hz (±3 Hz), 3.2 VA max.

**Control device grounding method:** none.

**Rated impulse voltage:** 2.5 KV.

**Oversupply category:** II.

**Class and structure of software:** A.

**Analog inputs:** 2 inputs (room temperature probe or inlet air probe and evaporator probe) configurable via configuration parameter for PTC or NTC probes.
ELECTRIC - during defrost the compressor will remain off and the defrost output will be activated; evaporator fan activity will depend on F2 parameter; if d16 = 0, the evaporator fan shall remain deactivated; evaporator fan activity will depend on F2 parameter.

PARAM. MIN. MAX. U.M. DEF:

MAIN REGULATOR

r0 0,1 15,0 °C/°F (1) 2,0 working setpoint differential; see also r12
r1 -99 72 °C/°F (1) 40 minimum working setpoint
r2 31,0 °C/°F (1) 30,0 maximum working setpoint
r4 0,0 99,0 °C/°F (1) 0,0 working setpoint increase during the "energy saving" function; see also r5, i10 and HE2
r5 0 1 - - - 0 cooling or heating operation (4)
  0 = cooling
  1 = heating
r6 0,0 99,0 °C/°F (1) 0,0 if r5 = 0, working setpoint decrease during the "rapid cooling" function (only if r8 = 1); see also r7
  if r5 = 1, working setpoint increase during the "rapid heating" function (only if r8 = 1); see also r7
r7 0 240 min 30 if r5 = 0, "rapid cooling" function duration (only if r8 = 1); see also r6
  if r5 = 1, "rapid heating" function duration (only if r8 = 1); see also r6
r8 0 2 - - - 0 this function can be enabled/disabled with the key "off"
  0 = none
  1 = if r5 = 0, "Rapid cooling" function
  2 = "energy saving" function (only if r5 = 0)

PARAM. MIN. MAX. U.M. DEF:

COMPRRESSOR PROTECTION SYSTEM

C0 0 240 min 0 delay in switching on of compressor after the device switches on (5)
C2 0 240 min 3 minimum compressor switch-off duration (6)
C3 0 240 s 0 minimum duration of compressor switch on time
C4 0,0 240 min 10 duration of compressor switch off time during a room temperature probe error or inlet air probe error (code "Pr1"); see also C5
C5 0,0 240 min 10 duration of compressor switch on time during a room temperature probe error or inlet air probe error (code "Pr1"); see also C4
C6 0,0 199 °C/°F (1) 80,0 condenser temperature is higher than that at which the condenser overheating alarm is activated (code "CON") (17)
C7 0,0 199 °C/°F (1) 90,0 condenser temperature above which the compressor shut down alarm is activated (code "CSD")
C8 0 15 min 1 compressor shut down alarm delay (code "CSD") (8)
C10 0 999 10 h 0 number of compressor operation hours above which the request for maintenance is triggered
  0 = the request shall never be triggered

PARAM. MIN. MAX. U.M. DEF:

DEFROST

d0 0 99 h 8 if d8 = 0, 1 or 2, defrost interval
  0 = interval defrost will never be activated
  1 = maximum defrost interval
  2 = "energy saving" function (only if d8 = 2)
d1 0 2 - - - 0 type of defrost
  0 = ELECTRIC - during defrost the compressor will remain off and the defrost output will be activated; evaporator fan activity will depend on F2 parameter
  1 = BY HOT GAS - during defrost the compressor will be switched on and the defrost output will be activated; evaporator fan activity will depend on F2 parameter
  2 = VIA STOPPING OF COMPRESSOR - during defrost the compressor will remain switched off and the defrost output will remain deactivated; evaporator fan activity will depend on F2 parameter
d2 -99 99,0 °C/°F (1) 2,0 evaporator temperature at end of defrost; see also d3

d3 0 99 min 30 if P3 = 0 or 2, defrost duration
  0 = maximum defrost duration; see also d2
  1 = defrost will not be activated
d4 0 1 - - - 0 defrost when device is switched on (X)
  0 = YES
  1 = YES
d5 0 99 min 0 if d4 = 0, minimum time between switching on of device and activation of defrost (5)
  0 = defrost interval
  1 = minimum defrost interval
d6 0 2 - - - 1 magnitude displayed during defrost (only if P9 = 0)
  0 = room temperature or CPT temperature
  1 = if on activation of defrost, the room temperature or CPT temperature is below the "work setpoint + ∆t", at maximum "work setpoint + ∆t"; if on activation of defrost, the room temperature or CPT temperature is above "work setpoint + ∆t"; at maximum "room temperature or CPT temperature on activation of defrost" (9) (10)
  2 = label "DEf"
d7 0 15 min 2 dripping duration (during dripping the compressor will remain switched off and the defrost output will remain deactivated; if d16 = 0, evaporator fan activity will depend on F2 parameter); if d16 = 0, the evaporator fan shall remain off

d8 0 3 - - - 0 defrost activation methods
  0 = AT INTERVALS - FOR TIME - defrost will be activated once the device has altogether been running for time d0
  1 = AT INTERVALS - FOR COMPRESSOR SWITCH-ON - defrost will be activated once the compressor has altogether been switched on for time d0
  2 = AT INTERVALS - FOR COMPRESSOR TEMPERATURE - defrost will be activated when the evaporator temperature that has remained below the temperature d9 for a total time of d0 (11)
  3 = ADAPTIVE - defrost will be activated at intervals, whose duration will each time depend on the duration of compressor switch on intervals, the evaporator temperature and the door switch input activation; see also d18, d19, d20, d22, i13 and i14 (11)
d9 -99 99,0 °C/°F (1) 0,0 evaporator temperature is higher than that at which the defrost interval counter is suspended (only if d8 = 2)
d11 0 1 - - - 0 defrost alarm switches off once maximum time limit has been reached (code "GFd"); only if P3 = 1 and in absence of evaporator probe error (code "Pr2")
d12 0 99 min 0 pre-drying duration (during dripping the compressor will remain switched off, the defrost output will be activated and the evaporator fan shall remain off)
d18 0 999 min 40 "energy saving" (defrost will be activated when the compressor has been on totally, with the evaporator temperature below that of d22, for time d18; only if d8 = 3)
  0 = defrost will never be activated due to the effect of this condition
d19 0,0 40,0 °C/°F (1) 3,0 evaporator temperature below which the defrost is activated (relative to the evaporator temperatures average, or "evaporator temperatures average - d19"; 0= normal defrost) (12)
d20 0 999 min 180 minimum consecutive time the compressor must be switched on such as to provoke the defrost activation
  0 = defrost will never be activated due to the effect of this condition
d21 0 500 min 200 minimum duration of compressor continuous operation from the switching on of the device (provided that the "cell temperature - working setpoint" or "CPT temperature - working setpoint" difference exceeds 10 °C/20 °F) and from the activation of the "rapid cooling" function so as to start the defrost
  0 = defrost shall never be activated as a consequence of this condition
### Param. MIN. MAX. U.M. DEF. DIGITAL OUTPUTS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>MIN.</th>
<th>MAX.</th>
<th>U.M.</th>
<th>DEF.</th>
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<tr>
<td>A14</td>
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### Param. MIN. MAX. U.M. DEF. DIGITAL INPUTS

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<th>U.M.</th>
<th>DEF.</th>
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</table>

### Notes
- **EVAPORATOR FAN SWITCH-OFF**: The evaporator fan shall be switched off (for the duration of the i3 time max. or until 5s after input deactivation).
- **DEMISTER HEATING ELEMENTS**: See parameter u6.
- **DEVICE SWITCH-OFF**: The device shall be switched off ("stand-by" mode, until the input is deactivated).
- **ALARM OUTPUT**: The alarm output will be deactivated.
- **EVAPORATOR FAN SWITCH-OFF AND ROOM LIGHTING SWITCH-ON**: The evaporator fan will be switched off (for the duration of the i3 time max. or until the input is deactivated; in the latter case the evaporator fan shall be turned on 5 s after input deactivation).
- **AUXILIARY OUTPUT SWITCH-ON**: The auxiliary output shall be switched on (until the input is deactivated).
- **ALARM OUTPUT SWITCH-ON**: The alarm output will be switched on after the deactivation of the door switch input.
### NEUTRAL AREA OPERATION HEATING ELEMENTS - see parameter u7

- **u2**: Room lighting switch on/off and auxiliary output enabling in manual mode when the device is switched off ("stand-by" mode)
- **u4**: Reserved
- **u5**: Room temperature or CPT temperature below which the neutral area operation heating elements are switched on (7)

### CONDENSER FAN - see parameters P4, F11 and F12

- **u6**: Duration of demister heating elements operation

### ON/STAND-BY OUTPUT - see parameter POF

- **u7**: Room temperature or CPT temperature below which the neutral area operation heating elements are switched on (with regard to the working setpoint, that is to say, "working setpoint + u7") (7)

### Table: NEUTRAL AREA OPERATION HEATING ELEMENTS

<table>
<thead>
<tr>
<th>PARAM.</th>
<th>MIN.</th>
<th>MAX.</th>
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</tr>
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<td>HE3</td>
<td>0</td>
<td>240</td>
<td>min</td>
<td>0</td>
</tr>
</tbody>
</table>

**Notes:**

1. The unit of measurement depends on P2
2. Properly set the parameters corresponding to the regulators after setting P2 parameter
3. The temperature associated with regulation and the temperature alarms is the CPT temperature; the formula to calculate the CPT temperature is as follows: 
   
4. If r5 parameter is set at 1, the "energy saving" function and the defrost management will be switched off; see also F1 parameter
5. The parameter has effect even after an interruption in the power supply that occurs while the device is switched on
6. The time set by parameter C2 is counted also when the device is off ("stand-by" status)
7. The differential of parameter is 2.0°C/4°F
8. If when the device is switched on, the condenser temperature is already above that established in C7 parameter, then C8 parameter will not have effect
9. The value depends on r12 parameter (r0 if r12 = 0, r0/2 if r12 = 1)
10. The display restores normal operation when, at the end of the dripping phase, room temperature or CPT temperature falls below the value that locked the display (or if a temperature alarm is triggered)
11. If P3 parameter is set at 0 or 2, the device will function as if d8 parameter were set at 0
12. If when defrost is activated, the operating duration of the compressor is less than the time established with d15 parameter, the compressor will remain on for the amount of time necessary to complete defrost, then the defrost shall be activated
13. During defrost, dripping and evaporator fan standstill, the maximum temperature alarm is absent, provided that it was triggered after defrost activation.
14. During activation of the door switch input, the maximum temperature alarm is absent, provided the alarm was signalled after the activation of the input
15. F4 and F5 parameters have effect when the compressor is off
16. F4 and F5 parameters have effect when the compressor is on
17. If P3 parameter is set at 0, the device will function as if F0 parameter were set at 2
18. F4 and F5 parameters have effect when the evaporator temperature is below the temperature established with F1 parameter
19. F4 and F5 parameters have effect when the compressor is on and the temperature of the evaporator is below the temperature established with F1 parameter
20. If the P4 parameter is set at 0, 2 or 3, the condenser fan shall work in parallel with the compressor.
21. The condenser fan is switched on provided that the condenser temperature falls below the value set with parameter F11 provided that the compressor is switched off
22. The compressor is switched off 10 s after the activation of the input; if the input is activated during defrost or when the evaporator fan is deactivated, the activation will not have any effect on the compressor
23. To avoid damaging the connected load, set the parameter when the device is switched off ("stand-by" status).