1. USER INTERFACE

1.1 Switching on/off the device in manual mode

1. Make sure the keyboard is not locked and no procedure is in progress.
2. Press the key 1 s.

1.2 The display

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

1.3 Switching in manual mode detected by a probe

1. Make sure the keyboard is not locked and no procedure is in progress.
2. Press the key 1 s: the display will show the first key.
3. Press and release the key or key to select: - "Pb1" if n = 0, 1, or 2 of 3, room temperature, if n = 4, inlet air temperature - "Pb2" evaporator temperature - "Pb3" auxiliary temperature - "Pb4" evaporating temperature - "Pb5" evaporating pressure - "Pb6" CPT temperature ("Pb6" in EVB1204, EVB1214, EVB1226, EVB1216, EVB1226 and EVB1226)
- "Pb7" auxiliary 2 temperature
- "Pb8" auxiliary 3 temperature.
4. Press and release the key.

To exit the procedure:
5. Press and release the key or do not operate 60 s.
6. Press and release the key.

1.4 Activating/deactivating the "overcooling" function

1. Make sure the device is switched on, the keyboard is not locked, no procedure is in progress, the defrost, the predripping, the dripper or the evaporator fan standstill are not in progress.
2. Press the key 4 s: the display will flash; see also r5 and r6 parameters.

1.5 Activating the defrost in manual mode

1. Make sure the device is switched on, the keyboard is not locked, no procedure is in progress and the "overcooling" function is not in progress.
2. Press the key 4 s.
3. If the defrost activation the evaporator temperature is above that set with d2 parameter, the defrost will not be executed.

1.6 Switching on/off the room light in manual mode

1. Make sure no procedure is in progress.
2. Press and release the key: the LED will switch on/off; see also u2 parameter.

1.7 Switching on the demisting heater

1. Make sure the device is switched on, the keyboard is not locked and no procedure is in progress.
2. Press the key 1 s: the LED "AUX1" or "AUX2" will switch on; see also u6 parameter.

1.8 Switching on/off the auxiliary output in manual mode

1. Make sure the keyboard is not locked and no procedure is in progress.
2. Press the key 1 s: the LED "AUX1" or "AUX2" will switch on/off; see also u2 parameter.

1.9 Showing some instant magnitudes relative to the electronic expansion valve (only available in EVB1246 and EVB1256)

1. Make sure the keyboard is not locked and no procedure is in progress.
2. Press the key 1 s: the display will show the first available label.
3. Press and release the key or key to select: - "SH" instant superheating - "POS" demanded percentage the valve must be opened - "POR" instant percentage the valve is opened.
4. Press and release the key.

To exit the procedure:
5. Press and release the key or do not operate 60 s.
6. Press and release the key.

2. LOW OR HIGH PERCENTAGE OF RELATIVE HUMIDITY OPERATION (only if f0 parameter has value 5)

2.1 Activating the low or high percentage of relative humidity operation

1. Make sure the device is switched on, the keyboard is not locked and no procedure is in progress.
2. Press the key and keys 4 s: the display will show "rhl" (low percentage of relative humidity operation) or "rhh" (high percentage of relative humidity operation) 10 s.
3. To restore the normal display in advance:
   3.1 Press a key.

2.2 Learning the operation type in progress

1. Make sure the device is switched on, the keyboard is not locked and no procedure is in progress.
2. Press and release the key: the display will show "rhl" (low percentage of relative humidity operation) or "rhh" (high percentage of relative humidity operation) 10 s.
3. To restore the normal display in advance:
   3.1 Press a key.

3. "HACCP" FUNCTION

3.1 Showing the information relative to the HACCP alarms

1. Make sure the keyboard is not locked and no procedure is in progress.
2. Press the key 1 s: the display will show the first available label.
3. Press and release the key or do not operate 60 s.
4. Press and release the key.

3.2 Activating/deactivating the "HACCP" function

1. Make sure the keyboard is not locked and no procedure is in progress.
2. Press the key 1 s: the display will show the first available label.
3. Press and release the key or do not operate 60 s.

3.3 Showing the information relative to the "HACCP" alarms

1. Make sure the keyboard is not locked and no procedure is in progress.
2. Press the key 1 s:
   2.1 Press and release the key or do not operate 60 s.
   2.2 Press and release the key.
   2.3 Press and release the key or do not operate 60 s.
   2.4 Press and release the key.

4. DATA LOGGING FOR EN 12830 STANDARD COMPLIANCE (if present)

4.1 Activating the "HACCP" writing mode

The mode is always in progress.

4.2 Activating the "service" writing mode

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

4.3 Showing the errors relative to the data logging

1. Make sure the keyboard is not locked and no procedure is in progress.
2. Press the key 1 s: the display will show the first available label.
3. Press and release the key or key to select "Err".
4. Press and release the key.
5. Press and release the key or do not operate 60 s.

5. COMPRESSOR OPERATION HOURS COUNT

5.1 Showing the compressor operation hours

1. Make sure the keyboard is not locked and no procedure is in progress.
2. Press the key 1 s: the display will show the first available label.
3. Press and release the key or key to select:
   - "CH1" compressor operation hours
   - "CH2" compressor 2 operation hours.
4. Press and release the key.

To exit the procedure:
5. Press and release the key or do not operate 60 s.
6. Press and release the key.

5.2 Resetting the compressor operation hours

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

6 SETTINGS

6.1 Setting the data, the time and the day of the week (only available in EVB1214, EVB1216, EVB1216 and EVB1216)

To access the procedure:
1. Make sure the keyboard is not locked and no procedure is in progress.
2. Press the key 1 s: the display will show the first available label.
3. Press and release the key or key to select "rtc".

To set the year:
1. Press and release the key: the display will show "yy" followed by the first 2 numbers of the year and the LED will flash.
2. Press and release the key or key within 15 s.
3. Press and release the key while setting the year: the display will show "d" followed by the day number (01...31).
4. Press and release the key or key within 15 s.

To set the hour:
1. Press and release the key while setting the day: the display will show "hh" followed by the hour number (00...23).
2. Press and release the key or key within 15 s.
To set the minute:
12. Press and release the \( \text{key while setting the minute: the display will show } n \). Followed by the minute number (00... 59).
13. Press and release the \( \text{or } \text{key within 15 s}.
14. Press and release the \( \text{key while setting the minute: the display will show the first available label}.
15. Press and release the \( \text{or } \text{key within 15 s to select:}

- "Mon" Monday
- "Tue" Tuesday
- "Wed" Wednesday
- "Thu" Thursday
- "Fri" Friday
- "Sat" Saturday
- "Sun" Sunday.

16. Press and release the \( \text{key: the LED } \text{will switch off, after which the device will exit the procedure}.

To exit the procedure in advance:
- Press and release the \( \text{key while setting the minute: the display will show } n \). Followed by the minute number (00... 59).


7.2 Indications

<table>
<thead>
<tr>
<th>Code</th>
<th>Meaning</th>
</tr>
</thead>
</table>
| L0C | the keyboard and/or the working setpoint are locked (00... 99).
| - - - | the operation is not available
| DEF | the deficit is in progress

7.3 Indications relative to the SD card

<table>
<thead>
<tr>
<th>SCard slotLED</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>green</td>
<td>firmly, no writing is in progress and the data logger battery is charged; it is possible to remove the SD card</td>
</tr>
<tr>
<td>red</td>
<td>firmly, a writing in progress; it is not possible to remove the SD card</td>
</tr>
</tbody>
</table>

8 ALARMS

8.1 ALARMS

<table>
<thead>
<tr>
<th>Code</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>AL</td>
<td>minimum temperature alarm</td>
</tr>
<tr>
<td>AH</td>
<td>maximum temperature alarm</td>
</tr>
<tr>
<td>D1</td>
<td>door switch input alarm</td>
</tr>
<tr>
<td>PP</td>
<td>power supply interruption alarm</td>
</tr>
<tr>
<td>IA</td>
<td>multiple input alarm</td>
</tr>
<tr>
<td>iS5</td>
<td>high pressure switch alarm</td>
</tr>
<tr>
<td>iS6</td>
<td>high pressure switch alarm</td>
</tr>
<tr>
<td>LP</td>
<td>low pressure switch alarm</td>
</tr>
<tr>
<td>iA</td>
<td>multipurpose input alarm</td>
</tr>
<tr>
<td>CSd</td>
<td>compressor thermal switch alarm</td>
</tr>
<tr>
<td>CS1</td>
<td>compressor thermal switch alarm</td>
</tr>
<tr>
<td>HSH</td>
<td>high superheating alarm</td>
</tr>
<tr>
<td>HSH</td>
<td>high superheating alarm</td>
</tr>
<tr>
<td>LP</td>
<td>low pressure switch alarm</td>
</tr>
<tr>
<td>LP</td>
<td>low pressure switch alarm</td>
</tr>
<tr>
<td>COH</td>
<td>overheated condenser alarm</td>
</tr>
<tr>
<td>CSd</td>
<td>compressor switch off alarm</td>
</tr>
<tr>
<td>dFS</td>
<td>alarm pump down by digital input finished for maximum duration</td>
</tr>
<tr>
<td>P2</td>
<td>alarm pump down by digital input finished for maximum duration</td>
</tr>
</tbody>
</table>

9 ERRORS

9.1 ERRORS

<table>
<thead>
<tr>
<th>Code</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>if ( P4 = 0 ), ( P2 ) or ( P3 ), room temperature probe error</td>
</tr>
<tr>
<td>P2</td>
<td>if ( P4 = 1 ), ( P2 ) or ( P3 ), room temperature probe error</td>
</tr>
<tr>
<td>P3</td>
<td>auxiliary temperature probe error</td>
</tr>
<tr>
<td>P4</td>
<td>evaporating temperature probe error</td>
</tr>
<tr>
<td>P5</td>
<td>evaporating pressure probe error</td>
</tr>
<tr>
<td>P7</td>
<td>auxiliary 2 temperature probe error</td>
</tr>
<tr>
<td>P8</td>
<td>auxiliary 3 temperature probe error</td>
</tr>
<tr>
<td>FUL</td>
<td>space on SD card run out</td>
</tr>
<tr>
<td>Sd</td>
<td>SD card not inserted or not recognized</td>
</tr>
<tr>
<td>FEC</td>
<td>data logger battery error</td>
</tr>
</tbody>
</table>

10 TECHNICAL DATA

10.1 Technical data

Purpose of control: operating control device.
Construction of control: incorporated electronic device.
Box: self-extinguishing grey.
Heat and fire resistance category: D.
Dimensions: 262.0 x 179.0 x 95.6 mm (10.314 x 7.047 x 3.763 in; W x H x D).
Method of mounting control: wall mounting, with screw anchors and fixing screws.
Degree of protection: IP65.
Connections:
- fixed screw connection terminal blocks with pitch 6.35 mm (0.25 in) for conductors up to 4.0 mm² (0.0062 in²): power supply and digital outputs
- fixed screw connection terminal blocks with pitch 5.0 mm (0.196 in) for conductors up to 2.5 mm² (0.0038 in²): analog inputs, digital inputs and communication ports
- only male removable screw connection terminal block with pitch 3.5 mm (0.137 in) for conductors up to 1.5 mm² (0.0028 in²): NTC or Pt 1000 probes (room temperature and evaporator temperature) |
- only male removable screw connection terminal block with pitch 2.5 mm (0.098 in): uniplier stepper electronic expansion valves driver (only available in EVB1246 and EVB1256) |
- 6 poles only male JST connector with pitch 2.5 mm (0.098 in): uniplier stepper electronic expansion valves driver (only available in EVB1246 and EVB1256).

The maximum lengths allowed for the connecting cables are:
- power supply: 100 m (328 ft)
- analog inputs: 100 m (328 ft)
- power supply 4-20 mA transducers: 100 m (328 ft)
- digital inputs: 100 m (328 ft)
- digital outputs: 100 m (328 ft)
- communication ports: 1,000 m (3,280 ft); also look at MODBUS specifications and implementation guides manual available on http://www.modbus.org/specs.php
- uniplier stepper electronic expansion valves driver: 3 m (9.842 ft).

Uso cabling has a section suitable to the current running through them.
In case of use the device to the maximum operating temperature and to full load, use cables having maximum operating temperature 90 °C (194 °F).

Operating temperature: from 0 to 45 °C (from 32 to 113 °F) the models with mag thermic circuit breaker, with mag thermic circuit breaker and residual current device and with contactor for three-phase defrost heaters management from 0 to 50 °C (from 32 to 122 °F) otherwise.

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

Operating humidity: from 10 to 90 % of relative humidity not condensate.

Control pollution situation: 2.

Environmental conformity:
- RoHS 2011/65/CE
- WEEE 2012/19/EU

EMC conformity:
- EN 60730-1
- IEC 60730-1.

Power supply: 110... 230 VAC (+10 %, -15 %), 50... 60 Hz (±3 Hz), 35 VA max., supplied by a class 2 circuit.

The maximum current allowed for the phase is 16 A.

Mag thermic circuit breaker: 230 VAC, In 16 A, Icn 4,500 A, unipolar + neutral, for conductors up to 2.5 mm² (0.0038 in²); by request.

Mag thermic circuit breaker and residual current device: 230 VAC, In 16 A, Icn 4,500 A, Ie 300 mA, unipolar + neutral, for conductors up to 2.5 mm² (0.0038 in²); by request.

Contactor for three-phase defrost heaters management: 230 VAC, In 9 A, Ue 690 V, Uimp 6 KV, Ith 20 A, 2.2 kW in AC3 @ 230 VAC with ta = 55 °C (131 °F), for conductors up to 2.5 mm² (0.0038 in²); only available in models EVB1226 and EVB1236.

Method of providing earthing of control: with earthing terminal block.

Rated impulse voltage: 4 KV.

Overvoltage category: III.

Class and structure of software: A.

Real time clock: incorporated (with lithium secondary battery; only available in models EVB1214, EVB1216, EVB1236 and EVB1256).

Battery range in absence of power supply: 6 months.

Battery charging time: 24 h (the battery is charged by the power supply of the device).

Drift: ± 30 m/s@25 °C (77 °F).

Data logger battery: incorporated (nickel-metal hydride secondary battery; only available in the models with data logging for EN 12830 standard compliance).

Battery range in absence of power supply: more than 72 h.

Battery charging time: 24 h (the battery is charged by the power supply of the device).

Analog inputs up to 7 inputs:
- 2 which can be set via configuration parameter for PTC, NTC or Pt 1000 probes (room temperature and evaporator temperature) |
- 1 which can be set via configuration parameter for PTC, NTC or Pt 1000 probes (which can be set via configuration parameter for condenser temperature, critical temperature, evaporator 2 temperature or CFP temperature)
- 1 which can be set via configuration parameter for PTC, NTC or Pt 1000 probes (which can be set via configuration parameter for condenser temperature, critical temperature, evaporator 2 temperature or CFP temperature)

Power supply 4-20 mA transducers: 12 V DDC (+10 %), 30 mA max.

PTC analog inputs (990 °C):
- 7 which can be set via configuration parameter for PTC, NTC or Pt 1000 probes (room temperature and evaporator temperature) |
- 1 which can be set via configuration parameter for PTC, NTC or Pt 1000 probes (which can be set via configuration parameter for condenser temperature, critical temperature, evaporator 2 temperature or CFP temperature)

Kind of sensor: KTY 81-121.
Working range: from -50 to 150 °C (from -58 to 302 °F).
Accuracy: ±0.5 % of the full scale.

Resolution: 0.1 °C (1 °F).

Protection: none.
NTC analog inputs (10 KΩ @ 25 °C, 77 °F)

Kind of sensor: B3435.
Working range: from -50 to 120 °C (from -58 to 248 °F).
Accuracy: ±0.5 % of the full scale.
Resolution: 0.1 °C (1 °F).
Protection: none.

Pt 1000 analog inputs (1 KΩ @ 0 °C, 32 °F)

Working range: from -99 to 150 °C (from -99 to 300 °F).
Accuracy: ±0.5 % of the full scale.
Resolution: 0.1 °C (1 °F).
Protection: none.

4-20 mA analog inputs

Input resistance: ≤ 200 Ω.
Accuracy: ±0.5 % of the full scale.
Resolution: 0.01 mA.
Protection: none; the maximum current allowed for the input is 25 mA.

Digital inputs:

3 inputs which can be set via configuration parameter for normally open or normally closed contact (door switch, multipurpose and multipurpose 2).

5 VDC, 2 mA digital inputs (free of voltage)

Power supply: none
Protection: none.

Digital outputs:

up to 6 outputs:
- two 30 res. A @ 250 VAC SPST electromechanical relays (compressor and evaporator fan)
- one 16 res. A @ 250 VAC SPST electromechanical relay (defrost)
- one 16 res. A @ 250 VAC SPST electromechanical relay (room light; not available in EVB1204 and EVB1214)
- one 8 res. A @ 250 VAC SPST electromechanical relay (which can be set via configuration parameter for room light, demisting heater, auxiliary output, alarm output, door heater, neutral zone operation heater, condenser fan, compressor 2, defrost 2, evaporator fan 2, pump down valve, on/stand-by or man in room; only available in EVB1204 and EVB1214)
- one 8 res. A @ 250 VAC SPST electromechanical relay (which can be set via configuration parameter for demisting heater, auxiliary output, alarm output, door heater, neutral zone operation heater, condenser fan, compressor 2, defrost 2, evaporator fan 2, pump down valve, on/stand-by or man in room; not available in EVB1204 and EVB1214)
- one 8 res. A @ 250 VAC SPDT electromechanical relay (which can be set via configuration parameter for demisting heater, auxiliary output, alarm output, door heater, neutral zone operation heater, condenser fan, compressor 2, defrost 2, evaporator fan 2, pump down valve, on/stand-by or man in room; not available in EVB1204 and EVB1214).

The device ensures a reinforced insulation among each connector of the digital outputs and the remaining parts of the device.

Unipolar stepper electronic expansion valves driver:

12 VDC, 260 mA max.

Type 1 or type 2 actions:
- type 1.

Additional features of type 1 or type 2 action:
- C.

Displays:
- 3 digits custom display, with decimal point and function icons.

Communication ports:
- 1 MODBUS RS-485 port (with MODBUS slave communication protocol).

Signal and alarm buzzer:
- incorporated.
### 11.1 WORKING SETPOINT AND CONFIGURATION PARAMETERS

<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>C0</td>
<td>0</td>
<td>240</td>
<td>min</td>
<td>0</td>
<td>delay in switching on the compressor after the device is switched on</td>
</tr>
<tr>
<td>C1</td>
<td>0</td>
<td>240</td>
<td>min</td>
<td>0</td>
<td>delay in switching on the compressor after the device is switched on</td>
</tr>
<tr>
<td>C2</td>
<td>0</td>
<td>240</td>
<td>min</td>
<td>0</td>
<td>minimum time the compressor is switched off</td>
</tr>
<tr>
<td>C3</td>
<td>0</td>
<td>240</td>
<td>s</td>
<td>0</td>
<td>minimum time the compressor is switched on</td>
</tr>
<tr>
<td>C4</td>
<td>0</td>
<td>240</td>
<td>min</td>
<td>0</td>
<td>time the compressor is switched on during the room-/inlet air- temperature probe error (code &quot;PrF1&quot;); see also C5</td>
</tr>
<tr>
<td>C5</td>
<td>0</td>
<td>240</td>
<td>min</td>
<td>0</td>
<td>time the compressor is switched on during the room-/inlet air- temperature probe error (code &quot;PrF1&quot;); see also C4</td>
</tr>
<tr>
<td>C6</td>
<td>0</td>
<td>240</td>
<td>s</td>
<td>0</td>
<td>minimum time between two consecutive compressors is switched on</td>
</tr>
<tr>
<td>C7</td>
<td>0</td>
<td>240</td>
<td>s</td>
<td>0</td>
<td>minimum time between two consecutive compressors is switched on</td>
</tr>
<tr>
<td>C8</td>
<td>0</td>
<td>240</td>
<td>s</td>
<td>0</td>
<td>minimum time between two consecutive compressors is switched on</td>
</tr>
<tr>
<td>C9</td>
<td>0</td>
<td>240</td>
<td>s</td>
<td>0</td>
<td>minimum time between two consecutive compressors is switched on</td>
</tr>
<tr>
<td>C10</td>
<td>0</td>
<td>240</td>
<td>s</td>
<td>0</td>
<td>minimum time between two consecutive compressors is switched on</td>
</tr>
<tr>
<td>C11</td>
<td>0</td>
<td>240</td>
<td>s</td>
<td>3</td>
<td>minimum time between two different compressors are switched on</td>
</tr>
<tr>
<td>C12</td>
<td>0</td>
<td>10</td>
<td>-</td>
<td>-</td>
<td>incidence of the number of times the compressor is switched on/off when attempting to balance the number of operation hours and that of times it is switched on, between compressors; see also C13</td>
</tr>
<tr>
<td>C13</td>
<td>0</td>
<td>10</td>
<td>-</td>
<td>-</td>
<td>incidence of the number of times the compressor is switched on/off when attempting to balance the number of operation hours and that of times it is switched on, between compressors; see also C12</td>
</tr>
<tr>
<td>C14</td>
<td>0</td>
<td>2</td>
<td>-</td>
<td>2</td>
<td>pump down type (0 = by time; 1 = by digital input; see also C3; 2 = by evaporating pressure; see also h10 and u3, only available in EVB1246 and EVB1256)</td>
</tr>
<tr>
<td>C00</td>
<td>0</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>working setpoint; see also r0 and r12</td>
</tr>
<tr>
<td>P5</td>
<td>0</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>0 magnitude detected by the auxiliary temperature probe (0 = absent; 1 = condenser temperature; 2 = critical temperature; 3 = evaporator temperature; 4 = outlet air temperature)</td>
</tr>
<tr>
<td>P7</td>
<td>0</td>
<td>100</td>
<td>%</td>
<td>50</td>
<td>percentage of the inlet air temperature for the calculation of the CPI temperature (only if P4 = 4)</td>
</tr>
<tr>
<td>P8</td>
<td>0</td>
<td>250</td>
<td>s</td>
<td>10</td>
<td>delay in displaying the temperature variation</td>
</tr>
<tr>
<td>P9</td>
<td>-99.9</td>
<td>-99.9</td>
<td>s</td>
<td>0.5</td>
<td>pressure transducer maximum setting (only available in EVB1246 and EVB1256)</td>
</tr>
<tr>
<td>P10</td>
<td>-99.9</td>
<td>-99.9</td>
<td>s</td>
<td>2.0</td>
<td>pressure transducer maximum setting (only available in EVB1246 and EVB1256)</td>
</tr>
<tr>
<td>P11</td>
<td>0</td>
<td>1.0</td>
<td>°C</td>
<td>1.0</td>
<td>evaporating temperature below which the low pressure modality is activated (6)</td>
</tr>
<tr>
<td>P12</td>
<td>-0.5</td>
<td>45.0</td>
<td>°C</td>
<td>-0.5</td>
<td>evaporating pressure below which the low pressure switch alarm (code &quot;LP&quot;) is activated</td>
</tr>
<tr>
<td>P13</td>
<td>1</td>
<td>50.0</td>
<td>°C</td>
<td>1.0</td>
<td>evaporating pressure below which the compressor is switched off during the pump down; see also u3</td>
</tr>
<tr>
<td>P14</td>
<td>0</td>
<td>5.0</td>
<td>°C</td>
<td>0.0</td>
<td>refrigerant gas type (0 = R-22; 1 = R-404A; 2 = R-507A; 3 = R-744; 4 = R-290; 5 = R-717; 6 = R1270; 7 = R-407F)</td>
</tr>
<tr>
<td>P15</td>
<td>1</td>
<td>7</td>
<td>°C</td>
<td>0.0</td>
<td>evaporator temperature offset</td>
</tr>
<tr>
<td>P16</td>
<td>0</td>
<td>99</td>
<td>min</td>
<td>0</td>
<td>minimum time the compressor is switched on when the defrost is activated in order that it can be executed (only if d1 = 1)</td>
</tr>
<tr>
<td>P17</td>
<td>0</td>
<td>900</td>
<td>°C</td>
<td>0.0</td>
<td>condenser temperature above which the compressor is switched off when attempting to balance the number of operation hours and that of times it is switched on, between compressors; see also C13</td>
</tr>
<tr>
<td>P18</td>
<td>0</td>
<td>10</td>
<td>-</td>
<td>-</td>
<td>evaporator temperature probe error (code &quot;PrEF&quot;)</td>
</tr>
<tr>
<td>P19</td>
<td>0</td>
<td>10</td>
<td>°C</td>
<td>0.0</td>
<td>evaporating temperature below which the defrost is finished (only if P3 = 1); see also d2</td>
</tr>
</tbody>
</table>
### EVAPORATOR FAN AND CONDENSER FAN

<table>
<thead>
<tr>
<th>PART CODE</th>
<th>MIN.</th>
<th>MAX.</th>
<th>U.M.</th>
<th>DEF.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>F1</strong></td>
<td>-99.0</td>
<td>99.0</td>
<td>°C/°F</td>
<td>10.0</td>
</tr>
<tr>
<td><strong>F2</strong></td>
<td>-99.0</td>
<td>99.0</td>
<td>°C/°F</td>
<td>-1.0</td>
</tr>
<tr>
<td><strong>F3</strong></td>
<td>0</td>
<td>15</td>
<td>min</td>
<td></td>
</tr>
<tr>
<td><strong>F4</strong></td>
<td>0</td>
<td>240</td>
<td>s</td>
<td>0</td>
</tr>
<tr>
<td><strong>F5</strong></td>
<td>0</td>
<td>240</td>
<td>s</td>
<td>0</td>
</tr>
<tr>
<td><strong>F6</strong></td>
<td>-99.0</td>
<td>99.0</td>
<td>°C/°F</td>
<td>5.0</td>
</tr>
<tr>
<td><strong>F7</strong></td>
<td>-99.0</td>
<td>99.0</td>
<td>°C/°F</td>
<td>0</td>
</tr>
</tbody>
</table>

### TEMPERATURE ALARMS

<table>
<thead>
<tr>
<th>PART CODE</th>
<th>MIN.</th>
<th>MAX.</th>
<th>U.M.</th>
<th>DEF.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A1</strong></td>
<td>-99.0</td>
<td>99.0</td>
<td>°C/°F</td>
<td>10.0</td>
</tr>
<tr>
<td><strong>A2</strong></td>
<td>-99.0</td>
<td>99.0</td>
<td>°C/°F</td>
<td>10.0</td>
</tr>
<tr>
<td><strong>A3</strong></td>
<td>-99.0</td>
<td>99.0</td>
<td>°C/°F</td>
<td>10.0</td>
</tr>
<tr>
<td><strong>A4</strong></td>
<td>-99.0</td>
<td>99.0</td>
<td>°C/°F</td>
<td>10.0</td>
</tr>
</tbody>
</table>

### DIGITAL INPUTS

<table>
<thead>
<tr>
<th>PART CODE</th>
<th>MIN.</th>
<th>MAX.</th>
<th>U.M.</th>
<th>DEF.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>i0</strong></td>
<td>0</td>
<td>5</td>
<td>min</td>
<td>3</td>
</tr>
<tr>
<td><strong>i1</strong></td>
<td>0</td>
<td>1</td>
<td>min</td>
<td></td>
</tr>
<tr>
<td><strong>i2</strong></td>
<td>-120</td>
<td>min</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>i3</strong></td>
<td>-120</td>
<td>min</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>i4</strong></td>
<td>0</td>
<td>1</td>
<td>min</td>
<td></td>
</tr>
<tr>
<td><strong>i5</strong></td>
<td>0</td>
<td>1</td>
<td>min</td>
<td></td>
</tr>
<tr>
<td><strong>i6</strong></td>
<td>0</td>
<td>1</td>
<td>min</td>
<td></td>
</tr>
<tr>
<td><strong>i7</strong></td>
<td>0</td>
<td>120</td>
<td>min</td>
<td></td>
</tr>
<tr>
<td><strong>i8</strong></td>
<td>0</td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>i9</strong></td>
<td>0</td>
<td>999</td>
<td>min</td>
<td></td>
</tr>
<tr>
<td><strong>i10</strong></td>
<td>0</td>
<td>999</td>
<td>min</td>
<td></td>
</tr>
<tr>
<td><strong>i11</strong></td>
<td>0</td>
<td>120</td>
<td>min</td>
<td></td>
</tr>
<tr>
<td><strong>i12</strong></td>
<td>0</td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>i13</strong></td>
<td>0</td>
<td>999</td>
<td>min</td>
<td></td>
</tr>
<tr>
<td><strong>i14</strong></td>
<td>0</td>
<td>240</td>
<td>s</td>
<td></td>
</tr>
<tr>
<td><strong>i15</strong></td>
<td>0</td>
<td>999</td>
<td>min</td>
<td></td>
</tr>
<tr>
<td><strong>i16</strong></td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>i17</strong></td>
<td>0</td>
<td>30</td>
<td>min</td>
<td></td>
</tr>
<tr>
<td><strong>i18</strong></td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>i19</strong></td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>i20</strong></td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>i21</strong></td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>i22</strong></td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>i23</strong></td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>i24</strong></td>
<td>0</td>
<td>1</td>
<td></td>
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</tr>
</tbody>
</table>

### LOADS

<table>
<thead>
<tr>
<th>PART CODE</th>
<th>MIN.</th>
<th>MAX.</th>
<th>U.M.</th>
<th>DEF.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>u1</strong></td>
<td>0</td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>u2</strong></td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>u3</strong></td>
<td>0</td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>u4</strong></td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Notes:**

1. The unit of measurement depends on P2 parameter.
2. The unit of measurement depends on P9 and P10 parameters.
3. Properly set the parameters relative to the regulators after setting P2 parameter.
4. The formula for the calculation of the CPT temperature is the following one:
   \[
   \text{CPT temperature} = \frac{([P7 \text{ parameter}] \times \text{inlet air temperature}) + ([100 - P7 \text{ parameter}] \times \text{outlet air temperature})}{100}
   \]
5. The value depends on P2 parameter (0.1 °C or 1 °C).
6. The differential of h02 and h03 parameters is 2.0 °C/4 °F.
7. The differential of h02 and h03 parameters is 2.0 bar/PSI.
8. F13 and F14 parameters have effect when the compressor is switched off.
9. F13 and F14 parameters have effect when the compressor is switched on.
10. F13 and F14 parameters have effect when the evaporator temperature is below the temperature set with F1 parameter.
11. F13 and F14 parameters have effect when the compressor is switched on and the evaporator temperature is below the temperature set with F1 parameter.
12 DIMENSIONS AND INSTALLATION

12.1 Dimensions
Dimensions are in mm (in).

12.2 Additional information for the installation
- make sure the working conditions of the device (operating temperature, operating humidity, etc.) are in the limits indicated; see chapter TECHNICAL DATA of the installation manual
- do not install the device close to heating sources (heaters, hot air ducts, etc.), devices having big magnetos (big speakers, etc.), locations subject to direct sunlight, rain, humidity, dust, mechanical vibrations or bumps
- according to the safety legislation, the protection against possible contacts with the electrical parts must be ensured by a correct installation of the device; all the parts which ensure the protection must be fixed so that you can not remove them if not by using a tool.

13 ELECTRICAL CONNECTION

13.1 Electrical connection
Electrical connection for models without direct loads connection (for example EVB1256N9D).

13.2 Additional information for electrical connection
- do not operate on the terminal blocks of the device using electrical or pneumatic screwers
- if the device has been moved from a cold location to a warm one, the humidity could condense on the inside; wait about an hour before supplying it
- make sure the power supply voltage, the electrical frequency and the electrical power of the device correspond to those of the local power supply; see chapter TECHNICAL DATA of the installation manual
- disconnect the power supply of the device before servicing it
- connect the device to a MODBUS RS-485 network using a twisted pair
- position the power cables as far away as possible from the signal cables
- for the repairs and for information about the device please contact the EVCO sales network.
Electrical connection for models without direct loads connection (for example EVB1256N9DXC).

Electrical connection for models with data logging for EN 12830 standard compliance (for example EVB1214N9XLC).