

EV3B33N7VXR04

Controller for refrigerator cycle dryer for compressed air



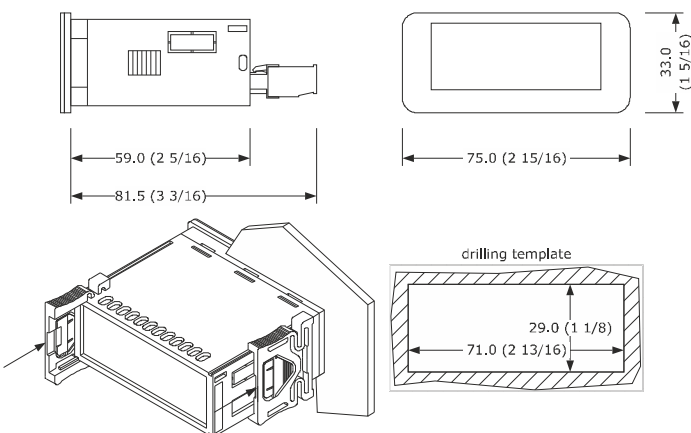
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CONSIDER THE ENVIRONMENT

E ENGLISH

- Power supply 230 VAC or 115 VAC (according to the model).
- Exchanger probe (PTC/NTC).
- Multi-purpose input.
- Compressor relay 30 A res. @ 250 VAC.
- Cooling or heating operation.

1 MEASUREMENTS AND INSTALLATION

Measurements in mm (inches). To be fitted to a panel, snap-in brackets provided.

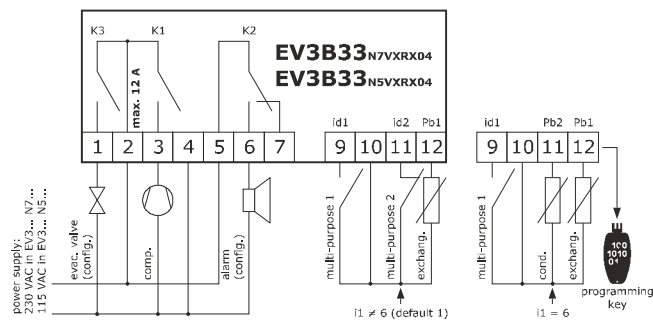


INSTALLATION PRECAUTIONS

- The thickness of the panel must be between 0.8 and 2.0 mm (1/32 and 1/16 in)
- Ensure that the working conditions are within the limits stated in the *TECHNICAL SPECIFICATIONS* section.
- Do not install the device close to heat sources, equipment with a strong magnetic field, in places subject to direct sunlight, rain, damp, excessive dust, mechanical vibrations or shocks.
- In compliance with safety regulations, the device must be installed properly to ensure adequate protection from contact with electrical parts. All protective parts must be fixed in such a way as to need the aid of a tool to remove them.

2 ELECTRICAL CONNECTION

- N.B.**
- Use cables of an adequate section for the current running through them.
 - To reduce any electromagnetic interference connect the power cables as far away as possible from the signal cables.



PRECAUTIONS FOR ELECTRICAL CONNECTION

- If using an electrical or pneumatic screwdriver, adjust the tightening torque.
- If the device has been moved from a cold to a warm place, the humidity may have caused condensation to form inside. Wait about an hour before switching on the power.
- Make sure that the supply voltage, electrical frequency and power are within the set limits. See the section *TECHNICAL SPECIFICATIONS*.
- Disconnect the power supply before doing any type of maintenance.
- Do not use the device as safety device.
- For repairs and for further information, contact the EVCO sales network.

3 FIRST-TIME

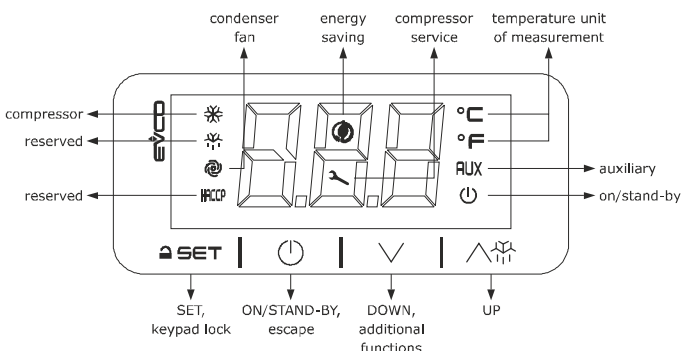
1. Install following the instructions given in the section *MEASUREMENTS AND INSTALLATION*.
2. Power up the device as shown in the section *ELECTRICAL CONNECTION* and an internal test will be run. The test normally takes a few seconds, when it is finished the display will switch off.
3. Configure the device as shown in the section *Setting configuration parameters*. Recommended configuration parameters for first-time use.

| PAR. | DEF. | PARAMETER | MIN... MAX. |
|------|------|---|----------------------------|
| P0 | 1 | probe type | 0 = PTC 1 = NTC |
| P2 | 0 | temperature unit of measurement | 0 = °C 1 = °F |
| r1 | 1.0 | setpoint compressor off (after time r3) | -99 °C/°F... r2 |
| r2 | 8.0 | setpoint compressor on | r1... 99 °C/°F |
| r3 | 10 | consecutive time exchanger temperature lower than r1 for compressor off | 0... 90 min |
| r4 | 0 | hot or cold mode regulation | 0 = cold mode 1 = hot mode |

Then check that the remaining settings are appropriate; see the section *CONFIGURATION PARAMETERS*.

4. Disconnect the device from the mains.
5. Make the electrical connection as shown in the section *ELECTRICAL CONNECTION* without powering up the device.
6. Power up the device.

4 USER INTERFACE AND MAIN FUNCTIONS



4.1 Switching the device on/off

1. If POF = 1, touch the ON/STAND-BY key for 4 s.

If the device is switched on, the display will show the exchanger temperature; if the display shows an alarm code, see the section *ALARMS*.

| LED | ON | OFF | FLASHING |
|-----|--------------------------------|-------------------|------------------------------|
| | compressor on | compressor off | compressor protection active |
| | reserved | - | - |
| | condenser fan on | condenser fan off | - |
| | reserved | - | - |
| | low consumption active | - | - |
| | compressor off | - | - |
| | request for compressor service | - | - |
| | request for device service | - | - |
| | view temperature | - | - |
| | water pump on | water pump off | - |
| | device off | device on | device on/off active |

If 30 s have elapsed without the keys being pressed, the display will show the "Loc" label and the keypad will lock automatically.

4.2 Unlock keypad

Touch a key for 1 s: the display will show the label "UnL".

4.3 Switching off the alarm output (if u0 or u1 = 2 and A7 = 1)

Touch a key.

5 ADDITIONAL FUNCTIONS

5.1 View/delete compressor and device functioning hours

Check that the keypad is not locked.

1. Touch the DOWN key for 4 s.
2. Touch the UP or DOWN key within 15 s to select a label.

| LAB. | DESCRIPTION |
|------|-------------------------------------|
| hSE | view compressor functioning hours |
| rhS | delete compressor functioning hours |
| hFI | view device functioning hours |
| rhF | delete device functioning hours |
| rFI | reset clogged filter alarm |

3. Touch the SET key.
4. Touch the UP or DOWN key to set "149" (for selection rhF and rFI) or "171" (for selection rhS).
5. Touch the SET key.
6. Touch the ON/STAND-BY key (or do not operate for 60 s) to exit the procedure.

5.2 View the temperature detected by the probes

Check that the keypad is not locked.

1. Touch the DOWN key for 4 s.
2. Touch the UP or DOWN key within 15 s to select a label.

| LAB. | DESCRIPTION |
|------|-----------------------|
| Pb1 | exchanger temperature |
| Pb2 | condenser temperature |

3. Touch the SET key.
4. Touch the ON/STAND-BY key (or do not operate for 60 s) to exit the procedure.

5.3 Evacuation valve test

Check that the keypad is not locked.

1. Touch the UP key for 4 s: the valve will be switched on till the key release, then it will cyclically work again.

6 SETTINGS

6.1 Setting configuration parameters

1. Touch the SET key for 4 s: the display will show the label "PA".
2. Touch the SET key.
3. Touch the UP or DOWN key within 15 s to set the PAS value (default "10").
4. Touch the SET key (or do not operate for 15 s): the display will show the label "CA1".
5. Touch the UP or DOWN key to select a parameter.
6. Touch the SET key.
7. Touch the UP or DOWN key within 15 s to set the value.
8. Touch the SET key (or do not operate for 15 s).
9. Touch the SET key for 4 s (or do not operate for 60 s) to exit the procedure.

6.2 Restore the factory settings (default) and store customized settings as default

- N.B.**
- Check that the factory settings are appropriate; see the section *CONFIGURATION PARAMETERS*.
 - the storing of customized settings overwrites the default.

1. Touch the SET key for 4 s: the display will show the label "PA".
2. Touch the SET key.
3. Touch the UP or DOWN key within 15 s to set the value.

| VAL. | DESCRIPTION |
|------|---|
| 149 | value to restore the factory settings (default) |
| 161 | value to store customized settings as default |

4. Touch the SET key (or do not operate for 15 s): the display will show the label "DEF" (when value "149" is set) or the label "MAP" (when value "161" is set).
5. Touch the SET key.
6. Touch the UP or DOWN key within 15 s to set "4".
7. Touch the SET key (or do not operate for 15 s): the display will show for 4 s "--" flashing, then the device will exit the procedure.
8. Interrupt the power supply to the device.
9. Touch the SET key 2 s before action 6. to exit the procedure beforehand.

7 CONFIGURATION PARAMETERS

| N. | PAR. | DEF. | ANALOGUE INPUTS | MIN... MAX. |
|----|------|------|---|---|
| 1 | CA1 | 0.0 | exchanger probe offset | -25... 25 °C/°F |
| 2 | CA2 | 0.0 | condenser probe offset | -25... 25 °C/°F |
| 3 | P0 | 1 | probe type | 0 = PTC 1 = NTC |
| 4 | P1 | 0 | enable °C decimal point | 0 = no 1 = yes |
| 5 | P2 | 0 | temperature unit of measurement | 0 = °C 1 = °F |
| 6 | P3 | 0 | input Pb1 function | 0 = exchanger probe 1 = exchanger probe + high pressure input (in series, activation with contact open) |
| 7 | P4 | 5 | display refresh time | 0... 250 s : 10 |
| N. | PAR. | DEF. | REGULATION | MIN... MAX. |
| 8 | r1 | 1.0 | setpoint compressor off (after time r3) | -99 °C/°F... r2 if r4 = 1, setpoint compressor on |
| 9 | r2 | 8.0 | setpoint compressor on | r1... 199 °C/°F if r4 = 1, setpoint compressor off (after time r3) |
| 10 | r3 | 10 | consecutive time exchanger temperature lower than r1 for compressor off | 0... 90 min if r4 = 1, consecutive time exchanger temperature over than r2 for compressor ofm |
| 11 | r4 | 0 | cooling or heating operation | 0 = cooling 1 = heating |
| 12 | r5 | 0.0 | threshold for low temperature display lock | -99... r6 °C/°F |
| 13 | r6 | 5.0 | threshold for high temperature display lock | r5... 99 °C/°F |
| 14 | r7 | 1 | enable display lock | 0 = no 1 = yes |
| N. | PAR. | DEF. | COMPRESSOR | MIN... MAX. |
| 15 | C1 | 1 | compressor on delay after power-on | 0... 240 min |
| 16 | C2 | 0 | compressor off minimum time | 0... 240 min |
| 17 | C3 | 0 | compressor on minimum time | 0... 240 s |
| 18 | C4 | 0 | compressor off time during exchanger probe alarm | 0... 240 min |
| 19 | C5 | 10 | compressor on time during exchanger probe alarm | 0... 240 min |
| 20 | C6 | 80.0 | threshold for high condensation warning | 0... 199 °C/°F differential A0 |
| 21 | C7 | 90.0 | threshold for high condensation alarm | 0... 199 °C/°F |
| 22 | C8 | 1 | high condensation alarm delay | 0... 15 min |
| 23 | C9 | 0 | count mode | 0 = device hours 1 = compressor hours |
| 24 | C10 | 200 | compressor hours for service | 0... 999 h x 100 0 = disabled |
| 25 | C11 | 20 | suction temperature alarm delay | 0... 60 min |
| N. | PAR. | DEF. | ALARMS | MIN... MAX. |
| 26 | A0 | 1.0 | A1, A3, C6 and F1 reset differential | 0.1... 15 °C/°F |
| 27 | A1 | 0.0 | threshold for low temperature alarm | -99... A3 °C/°F |
| 28 | A2 | 1 | enable low temperature alarm | 0 = no 1 = yes |
| 29 | A3 | 15.0 | threshold for high temperature alarm | A1... 99 °C/°F |
| 30 | A4 | 1 | enable low temperature alarm | 0 = no 1 = yes |
| 31 | A5 | 1 | high/low temperature alarms delay | 0... 240 min |
| 32 | A6 | 2 | high/low temperature alarm delay after power-on | 0... 99 min x 10 |
| 33 | A7 | 0 | alarm output mode | 0 = with alarm active 1 = with alarm active and inactive touching a key |
| 34 | A8 | 0 | count mode | 0 = device hours 1 = compressor hours |
| 35 | A9 | 200 | compressor hours for service | 0... 999 h x 100 0 = disabled |
| N. | PAR. | DEF. | FANS | MIN... MAX. |
| 36 | F0 | 15.0 | threshold for condenser fan on | 0... 99 °C/°F differential A0 |
| 37 | F1 | 30 | condenser fan off delay after compressor off for suction temperature alarm | 0... 240 s |
| N. | PAR. | DEF. | DIGITAL INPUTS | MIN... MAX. |
| 38 | i0 | 1 | multi-purpose 2 input activation | 0 = with contact closed 1 = with contact open |
| 39 | i1 | 1 | funzione ingresso configurabile | 0 = disabled 1 = HP/HPr alarm 2 = FIL alarm 3 = condenser fan on 4 = tSH alarm 5 = device off 6 = condenser probe |
| 40 | i2 | 0 | multi-purpose 2 input activation | 0 = with contact closed 1 = with contact open |
| 41 | i3 | 0 | funzione ingresso multi-purpose 1 | 0 = disabled 1 = HP/HPr alarm 2 = FIL alarm 3 = condenser fan on 4 = tSH alarm 5 = device off |
| 42 | i4 | 0 | high pressure alarm delay | 0... 240 s |
| 43 | i5 | 0 | clogged filter alarm delay | 0... 999 min |
| 44 | i6 | 0 | condenser fan on delay from digital input | 0... 240 s |
| 45 | i7 | 30 | clogged filter alarm delay after power-on | 0... 999 s |
| N. | PAR. | DEF. | DIGITAL OUTPUTS | MIN... MAX. |
| 46 | u0 | 2 | configuration auxiliary output 1 | 0 = disabled 1 = evacuation valve 2 = alarm 3 = condenser fan 4 = water pump |
| 47 | u1 | 1 | configuration auxiliary output 2 | 0 = disabled 1 = evacuation valve 2 = alarm 3 = condenser fan 4 = water pump |
| 48 | u2 | 5 | time evacuation valve on | 0... 240 s |
| 49 | u3 | 4 | time evacuation valve off | 0... 240 s |
| N. | PAR. | DEF. | ENERGY SAVING (if r4 = 0) | MIN... MAX. |
| 50 | HE1 | 0 | consecutive time without operating on keys for low consumption | 0 = disabled |
| 51 | HE2 | 3 | configuration energy saving LED (options 0 and 1) and compressor mode during normal operation (options 2 and 3) | 0 = LED energy saving on in low consumption 1 = LED energy saving on if compressor off 2 = compressor on, off in HP, tAL and tAH alarm 3 = compressor on, off in HP alarm |


| N. | PAR. | DEF. | SAFETIES | MIN... MAX. |
|----|------|------|-----------------------------------|--|
| 52 | POF | 1 | enable ON/STAND-BY key | 0 = no 1 = yes |
| 53 | PAS | 10 | password | -99... 999 |
| 54 | PL3 | 1 | user interface LEDs configuration | 0 = condenser fan LED for condenser fan and auxiliary LED for water pump 1 = condenser fan LED for water pump and auxiliary LED for condenser fan |

8 ALARMS

| COD. | DESCRIPTION | RESET | REMEDIES |
|------------|---------------------------|-----------|---|
| Pr1 | exchanger probe alarm | automatic | - check P0 |
| Pr2 | condenser probe alarm | automatic | - check probe integrity - check electrical connection |
| tAL | low temperature alarm | automatic | check A1 and A2 |
| tAH | high temperature alarm | automatic | check A3 and A4 |
| COH | high condensation warning | automatic | check C6 |
| CSd | high condensation alarm | manual | - switch the device off and on - check C7 |
| HP | high pressure alarm | automatic | check i0, i1, i2 and i3 |
| HPr | high pressure alarm | automatic | check P3, i0, i1, i2 and i3 |
| FI | clogged filter alarm | manual | - check i0, i1, i2 and i3 - reset the alarm |
| tSH | suction temperature alarm | automatic | check i0, i1, i2 and i3 |
| SEr | compressor service alarm | manual | - check C9 and C10 - delete the compressor functioning hours |
| FIL | device service alarm | manual | - check C9 and C10 - delete the device functioning hours |

9 TECHNICAL SPECIFICATIONS

| | | | |
|--|---|---|--|
| Purpose of the control device | Function controller | | |
| Construction of the control device | Built-in electronic device | | |
| Container | Black, self-extinguishing | | |
| Category of heat and fire resistance | D | | |
| Measurements | | | |
| 75.0 x 33.0 x 59.0 mm (2 15/16 x 1 5/16 x 2 5/16 in) with fixed screw terminal blocks | 75.0 x 33.0 x 81.5 mm (2 15/16 x 1 5/16 x 3 3/16 in) with removable screw terminal blocks | | |
| Mounting methods for the control device | To be fitted to a panel, snap-in brackets provided | | |
| Degree of protection provided by the covering | IP65 (front) | | |
| Connection method | | | |
| Fixed screw terminal blocks for wires up to 2,5 mm ² | Removable screw terminal blocks for wires up to 2,5 mm ² ; by request | | |
| Maximum permitted length for connection cables | | | |
| Power supply: 10 m (32.8 ft) | Analogue 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) | | |
| Operating humidity | Relative humidity without condensate from 10 to 90% | | |
| Pollution status of the control device | 2 | | |
| Conformity | | | |
| RoHS 2011/65/CE | WEEE 2012/19/EU | REACH (EC) Regulation 1907/2006 | |
| EMC 2014/30/UE | LVD 2014/35/UE | | |
| Power supply | | | |
| 230 VAC (+10% -15%), 50/60 Hz (±3 Hz), max. 2 VA insulated in EV3... N7... | 115 VAC (+10% -15%), 50/60 Hz (±3 Hz), max. 2 VA insulated in EV3... N5... | | |
| Earthing methods for the control device | | | |
| None | | | |
| Rated impulse-withstand voltage | | | |
| 4 KV | | | |
| Over-voltage category | | | |
| III | | | |
| Software class and structure | | | |
| A | | | |
| Analogue inputs | | | |
| 1 for PTC or NTC probes (exchanger probe) | | | |
| PTC probes | Sensor type | KTY 81-121 (990 Ω @ 25 °C, 77 °F) | |
| | Measurement field | From -50 to 150 °C (from -58 to 302 °F) | |
| | Resolution | 0.1 °C (1 °F) | |
| NTC probes | Sensor type | B3435 (10 K Ω @ 25 °C, 77 °F) | |
| | Measurement field | From -40 to 105 °C (from -40 to 221 °F) | |
| | Resolution | 0.1 °C (1 °F) | |
| Digital inputs | | | |
| 1 dry contact (multi-purpose 1) | | | |
| Dry contact | Contact type | 5 VDC, 1.5 mA | |
| | Power supply | None | |
| | Protection | None | |
| Other inputs | | | |
| Input configurable for analogue input (condenser probe) or digital input (multi-purpose 2 input) | | | |
| Digital outputs | | | |
| 3 electro-mechanical relays (compressor, auxiliary relay 1 and auxiliary relay 2) | | | |
| Compressor relay (K1): | | | |
| SPDT, 30 A res. @ 250 VAC | | | |
| Auxiliary relay 1 (K2): | | | |
| SPDT, 8 A res. @ 250 VAC | | | |
| Auxiliary relay 2 (K3): | | | |
| SPST, 5 A res. @ 250 VAC | | | |
| Type 1 or Type 2 Actions | | | |
| Type 1 | | | |
| Additional features of Type 1 or Type 2 actions | | | |
| C | | | |
| Displays | | | |
| 3 digits custom display, with function icons | | | |

 N.B.
The device must be disposed of according to local regulations governing the collection of electrical and electronic waste.

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