



**MOD : MA&\$/B5-R2V**

**Production code : 6 ? &\$\$D6 7 B8 - +<**

**10/2025**



**PLEASE READ CAREFULLY**  
and save this document  
**CONSIDER THE ENVIRONMENT**

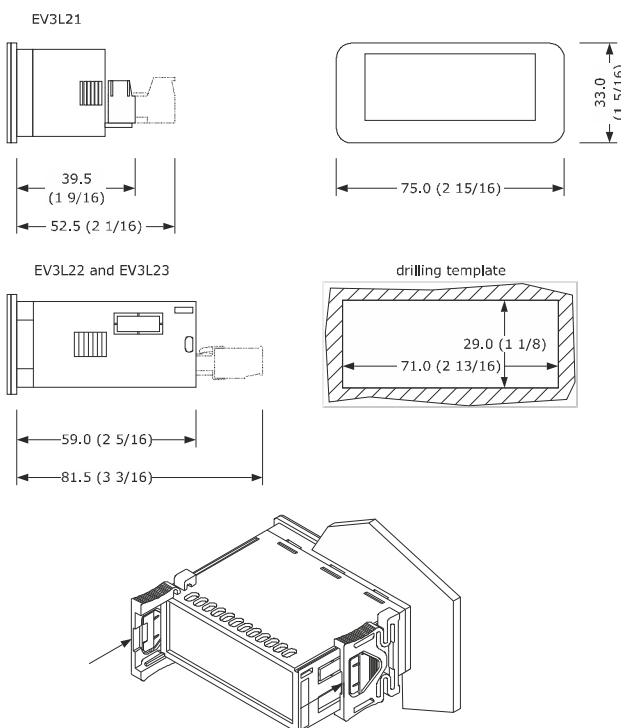
### E ENGLISH

- Controllers for normal and low temperature units.
- Power supply 115 or 230 VAC (according to the model).
- Cabinet probe and evaporator probe (NTC).
- Door switch input.
- Compressor relay 16 A res. @ 250 VAC.

| Purchasing code | Relays | Probes (NTC) | Power supply |
|-----------------|--------|--------------|--------------|
| EV3L21N5        | 1      | 1            | 115 VAC      |
| EV3L21N7        | 1      | 1            | 230 VAC      |
| EV3L22N5        | 2      | 2            | 115 VAC      |
| EV3L22N7        | 2      | 2            | 230 VAC      |
| EV3L23N5        | 3      | 2            | 115 VAC      |
| EV3L23N7        | 3      | 2            | 230 VAC      |

### 1 MEASUREMENTS AND INSTALLATION

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

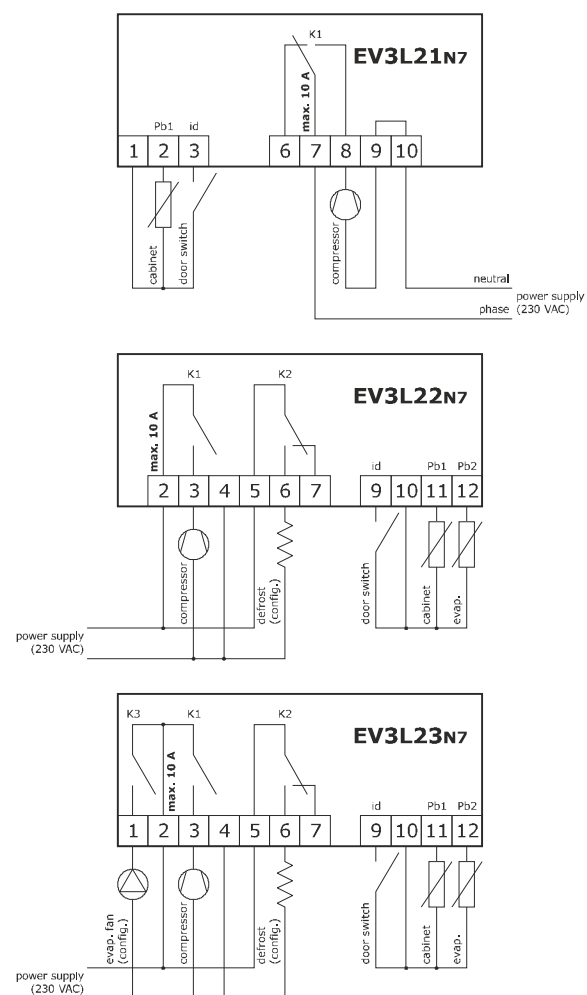


### INSTALLATION PRECAUTIONS

- 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

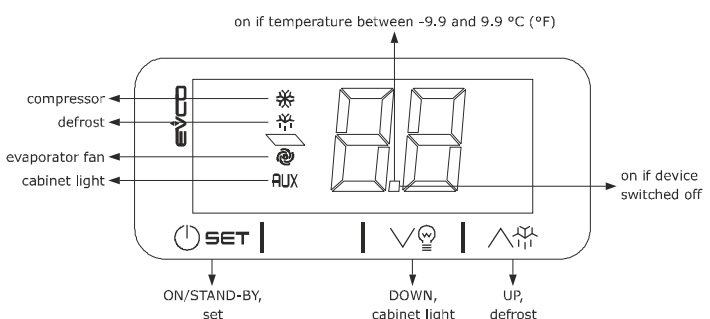
1. Install following the instructions given in the section *MEASUREMENTS AND INSTALLATION*.
2. Power up the device as shown in the section *ELECTRICAL CONNECTION* and an internal test will be run.  
The test normally takes a few seconds, when it is finished the display will switch off.
3. Configure the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

| PAR. | DEF. | PARAMETER                       | MIN... MAX.              |
|------|------|---------------------------------|--------------------------|
| SP   | 0    | setpoint                        | r1... r2                 |
| P2   | 0    | temperature unit of measurement | 0 = °C 1 = °F            |
| d1   | 0    | defrost type                    | 0 = electric 1 = hot gas |

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. Touch the ON/STAND-BY key for 3 s.

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

| LED | ON                   | OFF                | FLASHING  |
|-----|----------------------|--------------------|---|
|     | compressor on        | compressor off     | - compressor protection active<br>- setpoint setting active |
|     | defrost active       | -                  | - defrost delay active<br>- dripping active                 |
|     | evaporator fan on    | evaporator fan off | evaporator fan stop active                                  |
|     | AUX cabinet light on | cabinet light off  | cabinet light on by digital input                           |

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

#### 4.2 Unlock keypad

1. Touch a key for 3 s: the display will show the label "Un".

#### 4.3 Set the setpoint

Check that the keypad is not locked.

1. Touch the ON/STAND-BY key.
2. Touch the UP or DOWN key within 30 s to set the value within the limits r1 and r2 (default "-40... 50").
3. Touch the ON/STAND-BY key (or do not operate for 30 s).

#### 4.4 Activate manual defrost

Check that the keypad is not locked.

1. Touch the UP key for 3 s.

If P4 = 1 (default), defrost is activated provided that the evaporator temperature is lower than the d2 threshold.

#### 4.5 Cabinet light on/off (if u1 or u2 = 2)

1. Touch the DOWN key.

### 5 ADDITIONAL FUNCTIONS

#### 5.1 View the evaporator temperature

Check that the keypad is not locked.

1. Touch the DOWN key for 4 s.
2. Touch the ON/STAND-BY key (or do not operate for 30 s) to exit the procedure.

### 6 SETTINGS

#### 6.1 Setting configuration parameters

Check that the device is switched on and the keypad is not locked.

1. Touch the ON/STAND-BY key for 6 s: once 3 s have elapsed the display will switch off, once 6 s have elapsed the display will show the label "PA".
2. Touch the ON/STAND-BY key again.
3. Touch the UP or DOWN key within 30 s to set the PS value (default "-19").
4. Touch the ON/STAND-BY key: the display will show the label "SP".
5. Touch the UP or DOWN key to select a parameter.
6. Touch the ON/STAND-BY key.
7. Touch the UP or DOWN key within 30 s to set the value.
8. Touch the ON/STAND-BY key.
9. Touch the ON/STAND-BY key for 3 s (or do not operate for 30 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.

Check that the device is switched on and the keypad is not locked.

1. Touch the ON/STAND-BY key for 6 s: once 3 s have elapsed the display will switch off, once 6 s have elapsed the display will show the label "PA".
  2. Touch the ON/STAND-BY key again.
  3. Touch the UP or DOWN key within 30 s to set "49".
  4. Touch the ON/STAND-BY key again: the display will show the label "dF".
  5. Touch the ON/STAND-BY key again.
  6. Touch the UP or DOWN key within 30 s to set the value.
- | VAL. | DESCRIPTION                                     |
|------|---|
| 1    | value to restore the factory settings (default) |
| -2   | value to store customized settings as default   |
7. Touch the SET key: the device will exit the procedure.
  8. Touch the SET key 2 s before action 6. (or do not operate for 30 s) to exit the procedure beforehand.

### 7 CONFIGURATION PARAMETERS

| N. | PAR. | DEF. | SETPOINT  | MIN... MAX.   |
|----|------|------|---|---|
| 1  | SP   | 2    | setpoint  | r1... r2  |
| 2  | o1   | 0    | ANALOGUE INPUTS   | MIN... MAX.   |
| 3  | o2   | 0    | cabinet probe offset  | -99... 99 °C/°F   |
| 4  | P2   | 0    | evaporator probe offset   | -99... 99 °C/°F   |
| 5  | P4   | 1    | temperature unit of measurement   | 0 = °C 1 = °F   |
| 6  | P8   | 4    | enable evaporator probe   | 0 = no 1 = yes  |
| 7  | r0   | -2   | filter for cabinet temperature display  | 1... 10<br>1 = quick<br>4 = normal<br>7 = slow<br>10 = very slow  |
| 8  | r1   | -40  | REGULATION  | MIN... MAX.   |
| 9  | r2   | 50   | setpoint differential   | -99... 0 °C/°F symmetric<br>0... 99 °C/°F asymmetric  |
| 10 | C0   | 0    | minimum setpoint  | -99... 99 °C/°F   |
| 11 | C1   | 5    | maximum setpoint  | -99... 99 °C/°F   |
| 12 | C2   | 3    | COMPRESSOR  | MIN... MAX.   |
| 13 | C4   | 50   | compressor on delay after power-on  | 0... 99 s x 10  |
| 14 | d0   | 4    | delay between 2 compressor switch-ons   | 0... 99 min   |
| 15 | d1   | 0    | compressor off minimum time   | 0... 99 min   |
| 16 | d2   | 2    | percentage compressor on during cabinet probe alarm                           | referred to the average time compressor on<br>0... On<br>On = 100 %   |
| 17 | d3   | 25   | DEFROST   | MIN... MAX.   |
| 18 | d7   | 2    | automatic defrost interval  | -99... 1 min (for unit test)<br>1... 99 h   |
| 19 | d8   | 0    | defrost type  | 0 = electric 1 = hot gas  |
| 20 | d9   | 0    | threshold for defrost end   | -99... 99 °C/°F   |
| 21 | A1   | -99  | defrost duration  | 0... 99 min<br>if P4 = 1, maximum duration  |
| 22 | A4   | 99   | dripping time   | 0... 99 min   |
| 23 | A5   | -2   | defrost relay status during dripping  | 0 = not active<br>1 = active  |
| 24 | A7   | 2    | defrost relay status during dripping  | 0 = not active<br>1 = active  |
| 25 | F0   | 0    | compressor on consecutive time for hot gas defrost                            | 0... 99 min   |
| 26 | F1   | -1   | ALARMS  | MIN... MAX.   |
| 27 | F2   | 0    | threshold for low temperature alarm   | -99... 99 °C/°F   |
| 28 | F3   | 2    | threshold for high temperature alarm  | -99... 99 °C/°F   |
| 29 | F4   | 30   | high/low temperature alarms reset differential                                | -99... 0 °C/°F absolute alarms<br>0... 99 °C/°F alarms relative to setpoint   |
| 30 | F5   | 10   | high/low temperature alarms delay   | 0... 99 min x 10<br>1 h after defrost   |
| 31 | i0   | 0    | FANS not available in EV3L21  | MIN... MAX.   |
| 32 | i1   | 0    | evaporator fan mode during normal operation                                   | 0 = on<br>1 = on if compressor on<br>2 = thermoregulated (with F1)  |
| 33 | i2   | 30   | threshold for evaporator fan operation  | -99... 99 °C/°F<br>differential = 1 °C/2 °F   |
| 34 | u1   | 1    | evaporator fan mode during dripping   | 0 = off 1 = on  |
| 35 | u2   | 0    | evaporator fan off time   | 0... 99 min   |
| 36 | nS   | 0    | evaporator fan off time with compressor off                                   | 0... 99 s x 10  |
| 37 | PS   | -19  | evaporator fan on time with compressor off                                    | 0... 99 s x 10  |
| 38 | MP   | 1    | DIGITAL INPUTS  | MIN... MAX.   |
| 39 | i0   | 0    | door switch input function  | 0 = cabinet light on<br>1 = compressor + evaporator fan off, cabinet light on<br>2 = evaporator fan off, cabinet light on |
| 40 | i1   | 0    | door switch input activation  | 0 = with contact closed<br>1 = with contact open  |
| 41 | i2   | 30   | open door alarm delay; also regulation inhibition maximum time with door open | -1... 99 min<br>-1 = disabled   |
| 42 | u1   | 1    | DIGITAL OUTPUTS   | MIN... MAX.   |
| 43 | u2   | 0    | auxiliary output 1 configuration (relay K2)                                   | 0 = evaporator fan<br>1 = defrost<br>2 = cabinet light  |
| 44 | u2   | 0    | auxiliary output 2 configuration (relay K3)                                   | 0 = evaporator fan<br>1 = defrost<br>2 = cabinet light  |
| 45 | nS   | 0    | SAFETIES  | MIN... MAX.   |
| 46 | PS   | -19  | compressor start-up number  | 0... 99 x 10,000  |
| 47 | MP   | 1    | password  | -99... 99 min<br>0 = disabilitata   |
| 48 | MP   | 1    | parameters map identification   | 0... 9  |

**8 ALARMS**

| COD.      | DESCRIPTION            | RESET     | REMEDIES                      |
|-----------|------------------------|-----------|-------------------------------|
| <b>P1</b> | cabinet probe alarm    | automatic | - check probe integrity       |
| <b>P2</b> | evaporator probe alarm | automatic | - check electrical connection |
| <b>AL</b> | low temperature alarm  | automatic | check A1                      |
| <b>AH</b> | high temperature alarm | automatic | check A4                      |
| <b>id</b> | open door alarm        | automatic | check iO e i1                 |

**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  |
| <b>Measurements</b>   |                   |  |
| With fixed screw terminal blocks: 75.0 x 33.0 x 39.5 mm (2 15/16 x 1 5/16 x 1 9/16 in) for EV3L21, 75.0 x 33.0 x 59.0 mm (2 15/16 x 1 5/16 x 2 5/16 in) otherwise |                   | With removable screw terminal blocks: 75.0 x 33.0 x 52.5 mm (2 15/16 x 1 5/16 x 2 1/16 in) for EV3L21, 75.0 x 33.0 x 81.5 mm (2 15/16 x 1 5/16 x 3 3/16 in) otherwise    |
| 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)   |
| <b>Connection method</b>  |                   |  |
| Fixed screw terminal blocks for wires up to 2,5 mm <sup>2</sup>   |                   | Removable screw terminal blocks for wires up to 2,5 mm <sup>2</sup> ; by request   |
| <b>Maximum permitted length for connection cables</b>   |                   |  |
| 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  |
| <b>Conformity</b>   |                   |  |
| 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. 3 VA isolated  |
| 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 in EV3L21 (cabinet probe)<br>- 2 in EV3L22 and EV3L23 (cabinet probe and evaporator probe)<br>for NTC probes   |
| NTC probes  | Sensor type       | β3435 (10 KΩ @ 25 °C, 77 °F)   |
|   | Measurement field | From -40 to 90 °C (from -40 to 194 °F)   |
|   | Resolution        | - 0.1 °C (0.1 °F) between -9.9 and 9.9<br>- 1 °C (1 °F) otherwise  |
| Digital inputs  |                   | 1 dry contact (door switch)  |
| Dry contact   | Contact type      | 5 VDC, 1.5 mA  |
|   | Protection        | None   |
| Digital outputs   |                   | - 1 in EV3L21 (K1)<br>- 2 in EV3L22 (K1 and K2)<br>- 3 in EV3L23 (K1, K2 and K3)<br>electro-mechanical relays<br><b>The maximum current allowed on the loads is 10 A</b> |
| Relay K1 (compressor):  |                   | SPST, 16 A res. @ 250 VAC  |
| Relay K2 (auxiliary output 1, default defrost):   |                   | SPDT, 8 A res. @ 250 VAC   |
| Relay K3 (auxiliary output 2, default evaporator fan):  |                   | 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  |                   | 2 digits custom display 17 mm (11/16 in) high, 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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