



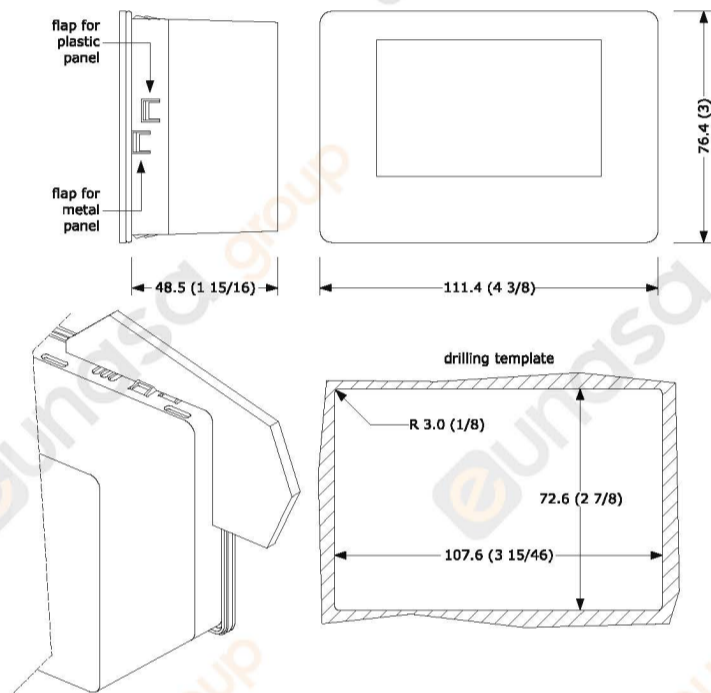
- EN ENGLISH**
- Controllers for low temperature units.
  - Power supply 12 VAC/DC.
  - Incorporated clock (according to the model).
  - Cabinet probe and evaporator probe (PTC/NTC).
  - Door switch input.
  - Compressor relay 16 A res. @ 250 VAC or 30 A res. @ 250 VAC (according to the model).
  - Alarm buzzer.
  - TTL MODBUS slave port for EVconnect app, EPoCA remote monitoring system or for BMS.
  - Port for SD card data-logger module EVBD05 (according to the model).
  - Models in plastic container or open-frame (according to the model).

**1 MEASUREMENTS AND INSTALLATION | Measurements in mm (inches)**

**1.1 Models in plastic container**

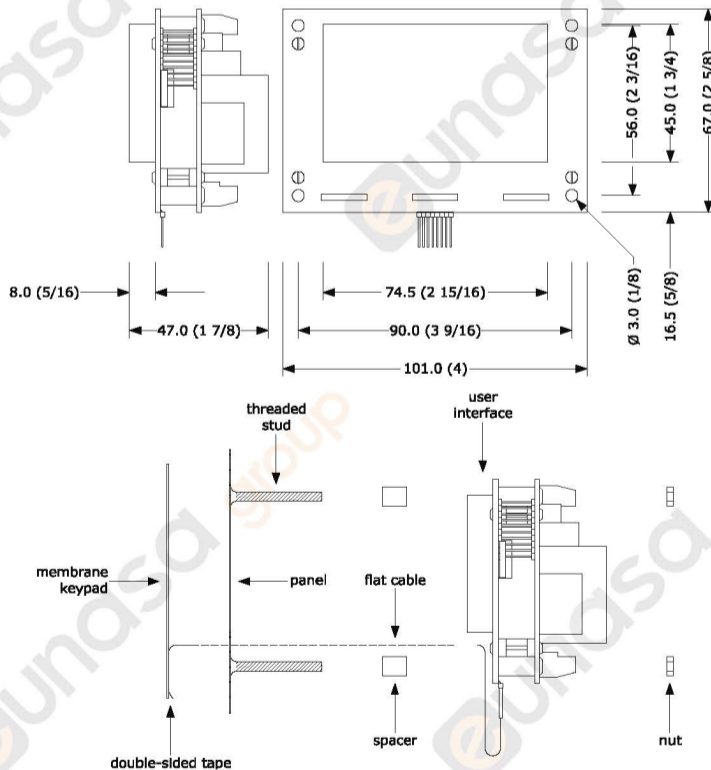
To be fitted to a panel, with elastic holding flaps.

N.B. The thickness of a metal panel must be between 0.8 and 1.5 mm (1/32 and 1/16 in), while that for a plastic panel must be between 0.8 and 3.4 mm (1/32 and 1/8 in).



**1.2 Open-frame models**

To be installed from behind, with threaded studs and membrane keypad.

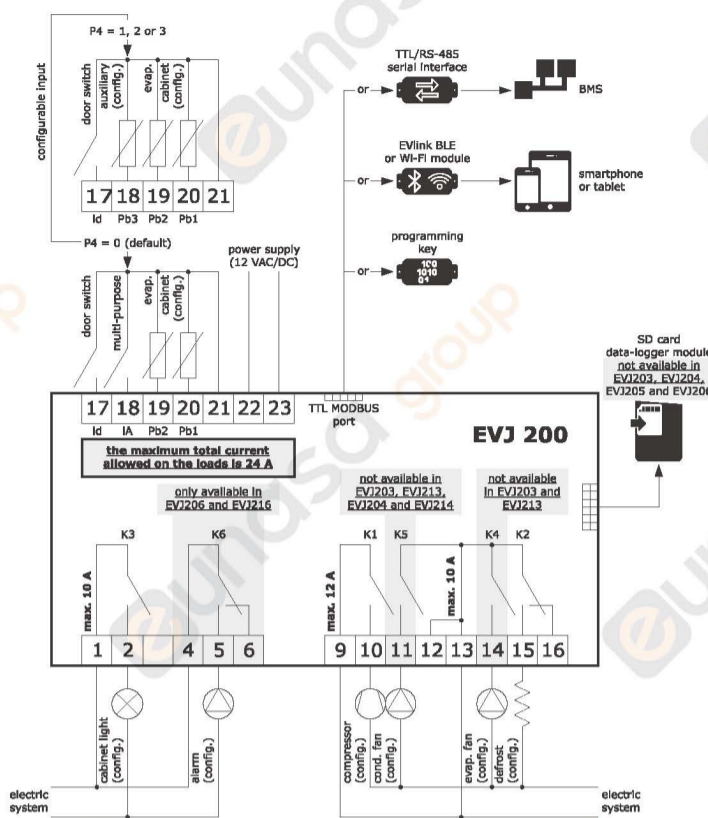


**INSTALLATION PRECAUTIONS**

- 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.

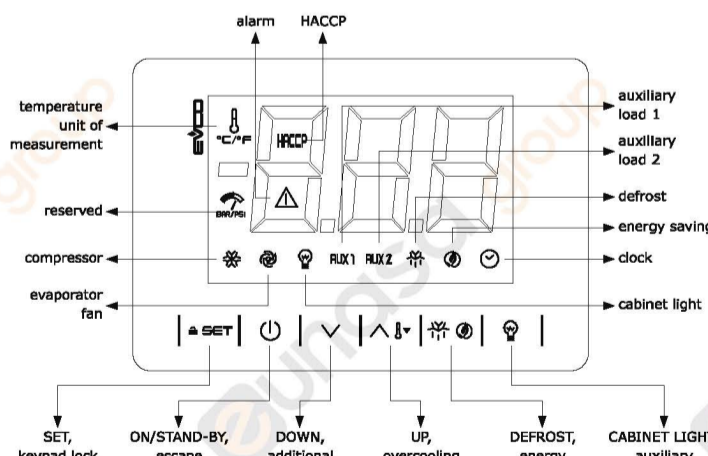
**3 FIRST-TIME USE**

1. Install following the instructions given in the section **MEASUREMENTS AND INSTALLATION**.
2. Power up the device 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	0.0	setpoint	r1... r2
P0	1	probe type	0 = PTC 1 = NTC
P2	0	temperature unit of measurement	0 = °C 1 = °F
d1	0	defrost type	0 = electric 1 = hot gas 2 = compressor stopped

4. Then check that the remaining settings are appropriate; see the section **CONFIGURATION PARAMETERS**.
5. Disconnect the device from the mains.
6. Make the electrical connection as shown in the section **ELECTRICAL CONNECTION** without powering up the device.
7. For the connection in an RS-485 network connect the interface EVIF22TSX or EVIF23TSX, to activate real time functions in EVJ203, EVJ204, EVJ205 and EVJ206 connect the module EVIF23TSX, for recording HACCP data in CSV format on SD card connect the module EVBD05, to use the device with the EPoCA remote monitoring system, connect the EVIF25TWX module, to use the device with the Android APP EVconnect connect the interface EVIF25TBX; see the relevant instruction sheets. **If EVIF22TSX or EVIF23TSX is used, set parameter BLE to 0.**
8. Power up the device.

**4 USER INTERFACE AND MAIN FUNCTIONS**



**4.1 Switching the device on and off**

1. If POF = 1 (default), touch the ON/STAND-BY key for 2s. If the device is switched on, the display will show the P5 value ("cabinet temperature" default); if the display shows an alarm code, see the section **ALARMS**.

LED	ON	OFF	FLASHING
	compressor on	compressor off	- compressor protection active - setpoint being set
	evaporator fan on	evaporator fan off	evaporator fan stop active
	cabinet light on	cabinet light off	cabinet light on by digital input
<b>AUX 1</b>	auxiliary function 1 on	auxiliary function 1 off	- auxiliary function 1 on by digital input - auxiliary function 1 delay active
<b>AUX 2</b>	auxiliary function 2 on	auxiliary function 2 off	- auxiliary function 2 on by digital input - auxiliary function 2 delay active
	defrost or pre-drip active	-	- defrost delay active - dripping active
	- energy saving active - low consumption active	-	-

Icon	Function	Condition	Consequence
	view time	-	set date, time and day of the current week
	view temperature	-	overcooling or overheating active
	saved HACCP alarm	-	new HACCP alarm saved
	alarm active	-	-

If Loc = 1 (default) and 30s 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 1s: the display will show the label "UnL".

**4.3 Set the setpoint (if r3 = 0, default)**

Check that the keypad is not locked.

1. Touch the SET key.
2. Touch the UP or DOWN key within 15s to set the value within the limits r1 and r2 (default "-40... 50").
3. Touch the SET key (or do not operate for 15s).

**4.4 Activate manual defrost (if r5 = 0, default)**

Check that the keypad is not locked and that overcooling is not active.

1. Touch the DEFROST key for 2s.

If P3 = 1 (default), defrost is activated provided that the evaporator temperature is lower than the d2 threshold.

**4.5 Cabinet light on/off (if u1c... u6c = 5)**

1. Touch the CABINET LIGHT key.

**4.6 Button-operated load on/off (if u1c... u6c = 10 or 11)**

1. Touch the CABINET LIGHT key (for 2s if u1c... u6c = 5).

If u1c... u6c = 6, the demisting switch on for the u6 duration.

**4.7 Silence buzzer (if u9 = 1, default)**

Touch a key.

If u1c... u6c = 11 and u4 = 1, the alarm output is deactivated.

**5 ADDITIONAL FUNCTIONS**

**5.1 Activate/deactivate overcooling and overheating**

Check that the keypad is not locked.

1. Touch the UP key for 2s.

FUNCTION	CONDITION	CONSEQUENCE
overcooling	r5 = 0 and defrost not active	the setpoint becomes "setpoint - r6", for the r7 duration
overheating	r5 = 1	the setpoint becomes "setpoint + r6", for the r7 duration

**5.2 Activate/deactivate energy saving in manual mode (if r5 = 0)**

Check that the keypad is not locked.

1. Touch the DEFROST key.

The setpoint becomes "setpoint + r4", at maximum for HE2 duration.

**5.3 Activate the high or low humidity functions (if F0 = 5)**

Check that the keypad is not locked.

1. Touch the DOWN key for 1s.
2. Touch the UP or DOWN key within 15s to select the label "rH".
3. Touch the SET key for 2s until the display shows the right label for the function (only touch the key to see the function activated).

LAB.	DESCRIPTION
rHl	low humidity function (evaporator fan with F17 and F18 if the compressor is off, on if the compressor is on)
rHh	high humidity function (evaporator fan on)

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

**5.4 View/delete HACCP alarm information (not available in EVJ203, EVJ204, EVJ205 and EVJ206)**

Check that the keypad is not locked.

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

LAB.	DESCRIPTION
LS	view HACCP alarm information
rLS	delete HACCP alarm information

3. Touch the SET key.

4. Touch the UP or DOWN key to select an alarm code (to select label "LS") or to set "149" (to select label "rLS").

COD.	DESCRIPTION
AL	low temperature alarm
AH	high temperature alarm
id	open door alarm (if i4 = 1)
PF	power failure alarm (available in EVJ213, EVJ214, EVJ215 and EVJ216 or in EVJ203, EVJ204, EVJ205 and EVJ206 with interface EVIF25TBX connected)

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

Example of alarm information (e.g. a high temperature alarm).

8.0	critical value (calculated cabinet/product temperature) was 8.0 °C/°F
Sta	(available in EVJ213, EVJ214, EVJ215 and EVJ216 or in EVJ203, EVJ204, EVJ205 and EVJ206 with interface EVIF25TBX connected)
y15	alarm signalled in 2015
n03	alarm signalled in March
d26	alarm signalled on 26 March 2015
h16	alarm signalled at 16:00
n30	alarm signalled at 16:30
dur	
h01	alarm lasted 1h
n15	alarm lasted 1h 15min

**5.5 View/delete compressor functioning hours**

Check that the keypad is not locked.

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

LAB.	DESCRIPTION
CH1	view compressor functioning hundreds of hours
CH2	view second compressor functioning hundreds of hours (if u1c... u6c = 1)



75	F10	1	condenser fan mode	0 = thermoregulated (with F11) 1 = thermoregulated (with F11) if compressor off, on if compressor on 2 = thermoregulated (with F11) if compressor off, on if compressor on, off during defrost, pre-dripping and dripping
76	F11	15.0	threshold for condenser fan on	0... 99 °C/°F differential = 2 °C/4 °F
77	F12	30	condenser fan off delay after compressor off	0... 240 s if P4 ≠ 1
78	F17	60	evaporator fan off time with low humidity	0... 240 s
79	F18	10	evaporator fan on time with low humidity	0... 240 s
N.	PAR.	DEF.	DIGITAL INPUTS	MIN... MAX.
80	i0	5	door switch input function	0 = disabled 1 = compressor + evaporator fan off 2 = evaporator fan off 3 = cabinet light on 4 = compressor + evaporator fan off, cabinet light on 5 = evaporator fan off + cabinet light on
81	i1	0	door switch input activation	0 = with contact closed 1 = with contact open
82	i2	30	open door alarm delay	-1... 120 min -1 = disabled
83	i3	15	regulation inhibition maximum time with door open	-1... 120 min -1 = until the closing
84	i4	0	enable open door alarm recording (not available in the models without clock)	0 = no 1 = yes if i2 ≠ -1 and after i2
85	i5	8	multi-purpose input function	0 = disabled 1 = energy saving 2 = iA alarm 3 = iSd alarm 4 = button-operated load 1 on 5 = button-operated load 2 on 6 = device on/off 7 = LP alarm 8 = C1t alarm 9 = C2t alarm
86	i6	0	multi-purpose input activation	0 = with contact closed 1 = with contact open
87	i7	0	multi-purpose input alarm delay	0... 120 min if i5 = 3, 8 or 9, compressor on delay after alarm reset
88	i8	0	number of multi-purpose input activations for high pressure alarm	0... 15 0 = disabled if i5 = 3
89	i9	240	reset counter time for high pressure alarm	1... 999 min
90	i10	0	door closed consecutive time for energy saving	0... 999 min after regulation temperature < SP 0 = disabled
91	i13	180	number of door openings for defrost	0... 240 0 = disabled
92	i14	32	door open consecutive time for defrost	0... 240 min 0 = disabled
N.	PAR.	DEF.	DIGITAL OUTPUTS	MIN... MAX.
93	u1c	0	relay K1 configuration	0 = first compressor 1 = second compressor 2 = evaporator fan 3 = condenser fan 4 = defrost 5 = cabinet light 6 = demisting 7 = door heaters 8 = heater for neutral zone 9 = dripping heater 10 = button-operated load 1 11 = button-operated load 2 12 = alarm 13 = on/stand-by
94	u2c	4	relay K2 configuration	0 = first compressor 1 = second compressor 2 = evaporator fan 3 = condenser fan 4 = defrost 5 = cabinet light 6 = demisting 7 = door heaters 8 = heater for neutral zone 9 = dripping heater 10 = button-operated load 1 11 = button-operated load 2 12 = alarm 13 = on/stand-by
95	u3c	5	relay K3 configuration	0 = first compressor 1 = second compressor 2 = evaporator fan 3 = condenser fan 4 = defrost 5 = cabinet light 6 = demisting 7 = door heaters 8 = heater for neutral zone 9 = dripping heater 10 = button-operated load 1 11 = button-operated load 2 12 = alarm 13 = on/stand-by
96	u4c	2	relay K4 configuration (not available in EVJ203 and EVJ213)	0 = first compressor 1 = second compressor 2 = evaporator fan 3 = condenser fan 4 = defrost 5 = cabinet light 6 = demisting 7 = door heaters 8 = heater for neutral zone 9 = dripping heater 10 = button-operated load 1 11 = button-operated load 2 12 = alarm 13 = on/stand-by

97	u5c	3	relay K5 configuration (not available in EVJ203, EVJ213, EVJ204 and EVJ214)	0 = first compressor 1 = second compressor 2 = evaporator fan 3 = condenser fan 4 = defrost 5 = cabinet light 6 = demisting 7 = door heaters 8 = heater for neutral zone 9 = dripping heater 10 = button-operated load 1 11 = button-operated load 2 12 = alarm 13 = on/stand-by
98	u6c	11	relay K6 configuration (only available in EVJ206 and EVJ216)	0 = first compressor 1 = second compressor 2 = evaporator fan 3 = condenser fan 4 = defrost 5 = cabinet light 6 = demisting 7 = door heaters 8 = heater for neutral zone 9 = dripping heater 10 = button-operated load 1 11 = button-operated load 2 12 = alarm 13 = on/stand-by
99	u2	0	enable cabinet light and button-operated load in stand-by	0 = no 1 = yes manual
100	u4	1	enable alarm output off silencing the buzzer	0 = no 1 = yes
101	u5	-1.0	threshold for door heaters on	-99... 99 °C/°F differential = 2 °C/4 °F
102	u6	5	demisting on duration	1... 120 min
103	u7	-5.0	neutral zone threshold for heating (relative to setpoint)	-99... 99 °C/°F differential = 2 °C/4 °F setpoint + u7
104	u9	1	enable alarm buzzer	0 = no 1 = yes
N.	PAR.	DEF.	REAL TIME CLOCK	MIN... MAX.
105	Hr0	0	enable clock (default 0 in EVJ203, EVJ204, EVJ205 and EVJ206)	0 = no 1 = yes
N.	PAR.	DEF.	ENERGY SAVING (if r5 = 0)	MIN... MAX.
106	HE2	0	energy saving maximum duration	0... 999 min
N.	PAR.	DEF.	REAL TIME ENERGY SAVING (if r5 = 0)	MIN... MAX.
107	H01	0	energy saving time	0... 23 h
108	H02	0	energy saving maximum duration	0... 24 h
N.	PAR.	DEF.	REAL TIME DEFROST (if d8 = 4)	MIN... MAX.
109	Hd1	h-	1st daily defrost time	h- = disabled
110	Hd2	h-	2nd daily defrost time	h- = disabled
111	Hd3	h-	3rd daily defrost time	h- = disabled
112	Hd4	h-	4th daily defrost time	h- = disabled
113	Hd5	h-	5th daily defrost time	h- = disabled
114	Hd6	h-	6th daily defrost time	h- = disabled
N.	PAR.	DEF.	DATA-LOGGING (not available in EVJ203, EVJ204, EVJ205 and EVJ206)	MIN... MAX.
115	Sd0	30	SD card writing interval in HACCP mode	1... 30 min
116	Sd1	1	SD card writing interval in service mode	1... 30 min
117	Sd2	60	service mode duration	1... 240 min
118	Sd3	0	enable critical temperature recording	0 = no 1 = yes
119	Sd4	0	enable cabinet temperature recording	0 = no 1 = yes
120	Sd5	1	decimal separator type	0 = comma 1 = point
N.	PAR.	DEF.	SAFETIES	MIN... MAX.
121	POF	1	enable ON/STAND-BY key	0 = no 1 = yes
122	Loc	1	enable keypad lock (default 0 in the models with open-frame user interface)	0 = no 1 = yes
123	PAS	-19	password	-99... 999
124	PA1	426	level 1 password	-99... 999
125	PA2	824	level 2 password	-99... 999
N.	PAR.	DEF.	DATA-LOGGING EVLINK	MIN... MAX.
126	rE0	60	data-logger sampling interval	0... 240 min
127	rE1	4	recorded temperature	0 = none 1 = cabinet 2 = evaporator 3 = auxiliary 4 = cabinet and evaporator 5 = all
N.	PAR.	DEF.	MODBUS	MIN... MAX.
128	LA	247	MODBUS address	1... 247
129	Lb	2	MODBUS baud rate	0 = 2,400 baud 1 = 4,800 baud 2 = 9,600 baud 3 = 19,200 baud
130	LP	2	parity	0 = none 1 = odd 2 = even
N.	PAR.	DEF.	BLUETOOTH	MIN... MAX.
131	blE	1	enable Bluetooth	0 = no 1 = yes

9 ALARMS			
COD.	DESCRIPTION	RESET	TO CORRECT
Pr1	cabinet probe alarm	automatic	- check P0
Pr2	evaporator probe alarm	automatic	- check probe integrity
Pr3	auxiliary probe alarm	automatic	- check electrical connection
rtc	clock alarm	manual	set date, time and day of the week
AL	low temperature alarm	automatic	check A0, A1 and A2
AH	high temperature alarm	automatic	check A4 and A5
id	open door alarm	automatic	check i0 and i1
PF	power failure alarm	manual	- touch a key - check electrical connection
COH	high condensation warning	automatic	check C6
CSd	high condensation alarm	manual	- switch the device off and on - check C7
iA	multi-purpose input alarm	automatic	check i5 and i6
iSd	high pressure alarm	manual	- switch the device off and on - check i5, i6, i8, i9
LP	low pressure alarm	automatic	check i5 and i6
C1t	compressor thermal switch alarm	automatic	check i5 and i6
C2t	second compressor thermal switch alarm	automatic	check i5 and i6
dFd	defrost timeout alarm	manual	- touch a key - check d2, d3 and d11
FUL	SD card full alarm	manual	free up space on the SD card or replace it
Sd	No SD card inserted alarm	manual	insert the SD card or replace it

10 TECHNICAL SPECIFICATIONS			
Purpose of the control device		Function controller	
Construction of the control device		Built-in electronic device	
Container	Models in plastic container	Black, self-extinguishing	
	Open-frame models	Open-frame board	

Category of heat and fire resistance		D	
Measurements	Models in plastic container	111.4 x 76.4 x 48.0 mm (4 3/8 x 3 x 1 15/16 in)	
	Open-frame models	101.0 x 67.0 x 47.0 mm (4 x 2 5/8 x 1 7/8 in)	
Mounting methods for the control device	Models in plastic container	To be fitted to a panel, with elastic holding flaps	
	Open-frame models	To be installed from behind, with threaded studs and membrane keypad (not provided)	
Degree of protection provided by the covering	Models in plastic container	IP65 (front), on condition the device is fitted to a metal panel with thickness 0.8 mm (1/32 in)	
	Open-frame models	IP00	
Connection method			
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)			
Pico-Blade connector		Micro-MaTch connector	
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 -5 to 55 °C (from 23 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			
12 VAC (+10% -15%), 50/60 Hz (±3 Hz), max. 4 VA insulated		12 VDC (+10% -15%), max. 3.5 W insulated	
Earthing methods for the control device			
None		4 KV	
Rated impulse-withstand voltage			
III		A	
Over-voltage category			
Software class and structure			
Clock		Incorporated secondary lithium battery (clock not available in EVJ203, EVJ204, EVJ205 and EVJ206)	
Clock drift		≤ 60 s/month at 25 °C (77 °F)	
Clock battery autonomy in the absence of a power supply		> 24 h at 25 °C (77 °F)	
Clock battery charging time		24 h (the battery is charged by the power supply of the device)	
Analogue inputs			
2 for PTC or NTC probes (cabinet probe and evaporator 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 KΩ @ 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 (door switch)			
Dry contact	Contact type	5 VDC, 2 mA	
	Power supply	None	
	Protection	None	
Other inputs			
Input configurable for analogue input (auxiliary probe) or digital input (multi-purpose input)			
Digital outputs			
6 (5 for EVJ205 and EVJ215, 4 for EVJ204 and EVJ214, 3 for EVJ203 and EVJ213) with electro-mechanical relay <b>The maximum total current allowed on the loads is 24 A</b>			
Relay K1		SPST, 16 A res. @ 250 VAC SPST, 30 A res. @ 250 VAC in EVJ275?271?37?? and EVJ276?272?37??	
Relay K2		SPDT, 8 A res. @ 250 VAC	
Relay K3		SPST, 16 A res. @ 250 VAC	
Relay K4 (not available in EVJ203 and EVJ213)		SPST, 8 A res. @ 250 VAC	
Relay K5 (not available in EVJ203, EVJ213, EVJ204 and EVJ214)		SPST, 3 A res. @ 250 VAC	
Relay K6 (only available in EVJ206 and EVJ216)		SPDT, 8 A res. @ 250 VAC	
The device guarantees double insulation between each digital output connector and the rest of the components of the device			
Type 1 or Type 2 Actions		Type 1	
Additional features of Type 1 or Type 2 actions			
Displays		Custom display, 3 digit, with function icons	
Alarm buzzer		Incorporated	
Communications ports			
1 TTL MODBUS slave port for EVconnect app, EPOCA remote monitoring system or for BMS		1 port for SD card data-logger module EVBD05 (not available in EVJ203, EVJ204, EVJ205 and EVJ206)	
N.B. The device must be disposed of according to local regulations governing the collection of electrical and electronic waste.			
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