EV3294

Controllers for refrigerated cabinets, counters and islands, with energy-saving strategies

EPoCA compatible

PLEASE READ CAREFULLY and save this document

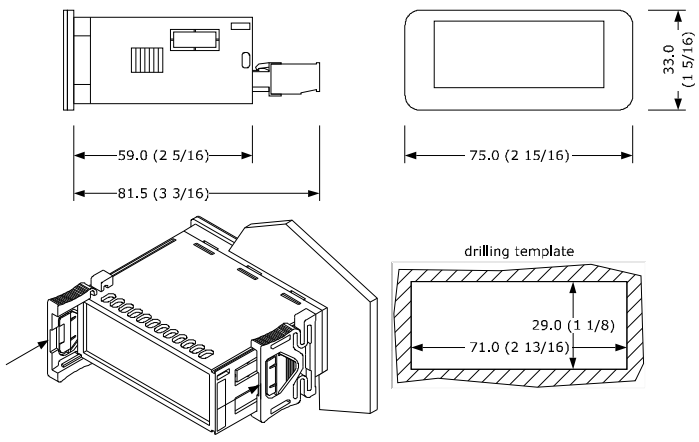
CONSIDER THE ENVIRONMENT

E ENGLISH

- Controllers for low temperature units.
- Power supply 115... 230 VAC or 12-24 VAC/DC (according to the model).
- Incorporated clock (according to the model).
- Cabinet probe and evaporator probe (PTC/NTC).
- Door switch input.
- Compressor relay 16 A res. @ 250 VAC.
- Alarm buzzer.
- Incorporated Bluetooth Low Energy sensor (according to the model).
- TTL MODBUS slave port or RS-485 MODBUS slave port (according to the model).
- Cooling or heating operation.

1 MEASUREMENTS AND INSTALLATION

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

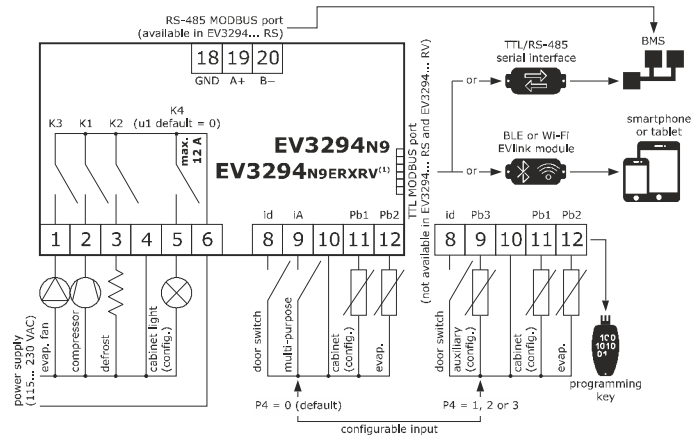


INSTALLATION PRECAUTIONS

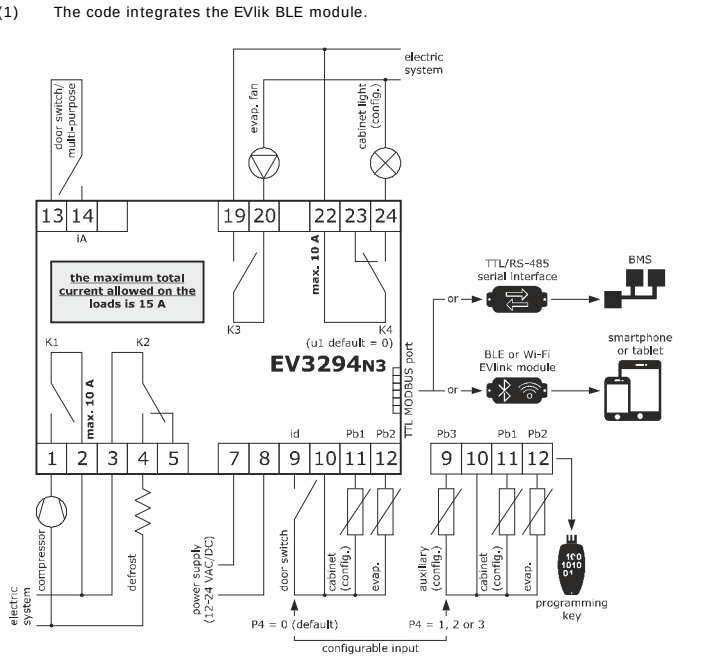
- The thickness of the panel must be between 0.8 and 2.0 mm (1/32 and 1/16 in)
- Ensure that the working conditions are within the limits stated in the *TECHNICAL SPECIFICATIONS* section.
- Do not install the device close to heat sources, equipment with a strong magnetic field, in places subject to direct 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.



(1) The code integrates the EVlik BLE module.



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*.

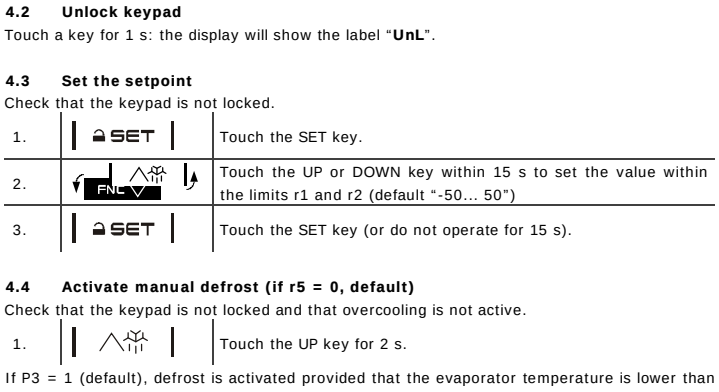
Recommended configuration parameters for first-time use.

PAR.	DEF.	PARAMETER	MIN... MAX.
SP	**0.0**	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

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. **If EVIF22TSX or EVIF23TSX is used, set parameter bLE to 0**.
7. 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 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 setting active
❄	defrost or pre-dripping active	-	- defrost delay active - dripping active
	evaporator fan on	evaporator fan off	evaporator fan stop active
HACCP	saved HACCP alarm in EVlink	-	-
	energy saving active	-	-
	request for compressor service	-	- settings active - access to additional functions active - operation with EVconnect APP active
°C/°F	view temperature	-	overcooling or overheating active
AUX	auxiliary load on	auxiliary load off	- auxiliary load on by digital input - auxiliary load delay active
	device off	device on	device on/off active

If Loc = 1 (default) and 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 Set the setpoint

Check that the keypad is not locked.

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

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 UP key for 2 s.

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 u1 = 0, default)

1. Touch the ON/STAND-BY key.

- if u1 = 1, the **demisting** switch on for the u6 duration.
- if u1 = 2 and the keypad is not locked, the **button-operated load** switches on/off.

4.6 Silence buzzer

Touch a key.

If u1 = 3 and u4 = 1, the alarm output switches off.

5 ADDITIONAL FUNCTIONS

5.1 Activate / deactivate overcooling, overheating and manual energy saving

Check that the keypad is not locked.

1. Touch the DOWN key.

FUNCTION	CONDITION	CONSEQUENCE
overcooling	r5 = 0, r8 = 1 and defrost not active	the setpoint becomes "setpoint - r6", for the r7 duration
overheating	r5 and r8 = 1	the setpoint becomes "setpoint + r6", for the r7 duration
energy saving	r5 = 0 and r8 = 2	the setpoint becomes "setpoint + r4", at maximum for HE2 duration

5.2 View / delete compressor functioning hours and view comp. start-up number

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
CH	view compressor functioning hours (hundreds)
rCH	delete compressor functioning hours
nS1	compressor start-up number (thousands)

3. Touch the SET key.
4. Touch the UP or DOWN key to set "**149**" (when label "**rCH**" is selected).
5. Touch the SET key.
6. Touch the ON/STAND-BY key (or do not operate for 60 s) to exit the procedure.

5.3 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	cabinet temperature (if P4 = 0, 1 or 2) inlet air temperature (if P4 = 3)
Pb2	evaporator temperature (if P3 = 1 or 2)
Pb3	auxiliary temperature (if P4 = 1, 2 or 3)
Pb4	calculated product temperature (CPT; if P4 = 3)

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

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 "**-19**").
4. Touch the SET key (or do not operate for 15 s): the display will show the label "**SP**".
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 Set the date, time and day of the week (available in EV3294... RS and EV3294... RV or if EVIF23TSX, EVIF25TWX or interface EVIF25TBX is connected)

N.B.
- Do not disconnect the device from the mains within two minutes since the setting of the time and day of the week.
- if the device communicates with the EVconnect app, the date, time and day of the week will be automatically set by the smartphone or tablet.

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 the label "**rtc**".
3. Touch the SET key: the display will show the label "**yy**" followed by the last two figures of the year.
4. Touch the UP or DOWN key within 15 s to set the year.
5. Repeat actions 3. and 4. to set the next labels.

LAB.	DESCRIPTION OF THE NUMBERS FOLLOWING THE LABEL
n	month (01... 12)
d	day (01... 31)
h	time (00... 23)
n	minute (00... 59)

6. Touch the SET key: the display will show the label for the day of the week.
7. Touch the UP or DOWN key within 15 s to set the day of the week.

LAB.	DESCRIPTION
Mon	Monday
tuE	Tuesday
UEd	Wednesday
thu	Thursday
Fri	Friday
Sat	Saturday
Sun	Sunday

8. Touch the SET key: the device will exit the procedure.
9. Touch the ON/STAND-BY key to exit the procedure beforehand.

7 CONFIGURATION PARAMETERS

N.	PAR.	DEF.	SETPOINT	MIN... MAX.
1	SP	**0.0**	setpoint	r1... r2
N.	**PAR.**	**DEF.**	**ANALOGUE INPUTS**	**MIN... MAX.**
2	CA1	**0.0**	cabinet probe offset	-25... 25 °C/°F if P4 = 3, air in probe offset
3	CA2	**0.0**	evaporator probe offset	-25... 25 °C/°F
4	CA3	**0.0**	auxiliary probe offset	-25... 25 °C/°F
5	P0	**1**	probe type	0 = PTC 1 = NTC
6	P1	**1**	enable °C decimal point	0 = no 1 = yes
7	P2	**0**	temperature unit of measurement	0 = °C 1 = °F
8	P3	**1**	evaporator probe function	0 = disabled 1 = defrost + fan 2 = fan
9	P4	**0**	configurable input function	0 = digital input 1 = condenser probe 2 = critical temperature probe 3 = air out probe if P4 = 3, regulation temperature = product temperature (CPT)
10	P5	**0**	value displayed	0 = regulation temperature 1 = setpoint 2 = evaporator temperature 3 = auxiliary temperature 4 = air in temperature
11	P7	**5**	air in weight for calculated product temperature (CPT)	0... 10 % x 10 CPT = {[(P7 x (air in)] + [(100 - P7) x (air out)] : 100}
12	P8	**5**	display refresh time	0... 250 s : 10
N.	**PAR.**	**DEF.**	**REGULATION**	**MIN... MAX.**
13	r0	**2.0**	setpoint differential	1... 15 °C/°F
14	r1	**-50**	minimum setpoint	-99 °C/°F... r2
15	r2	**50.0**	maximum setpoint	r1... 199 °C/°F
16	r4	**0.0**	setpoint offset in energy saving	0... 99 °C/°F
17	r5	**0**	cooling or heating operation	0 = cooling 1 = heating
18	r6	**0.0**	setpoint offset in overcooling/overheating	0... 99 °C/°F
19	r7	**30**	overcooling/overheating duration	0... 240 min
20	r8	**0**	DOWN key additional function	0 = disabled 1 = overcooling/overheating 2 = energy saving

21	r12	**0**	position of the r0 differential	0 = asymmetric 1 = symmetric

N.	PAR.	DEF.	COMPRESSOR	MIN... MAX.
22	C0	**0**	compressor on delay after power-on	0... 240 min
23	C2	**3**	compressor off minimum time	0... 240 min
24	C3	**0**	compressor on minimum time	0... 240 s
25	C4	**10**	compressor off time during cabinet probe alarm	0... 240 min
26	C5	**10**	compressor on time during cabinet probe alarm	0... 240 min
27	C6	**80.0**	threshold for high condensation warning	0... 199 °C/°F differential = 2 °C/4 °F
28	C7	**90.0**	threshold for high condensation alarm	0... 199 °C/°F
29	C8	**1**	high condensation alarm delay	0... 15 min
30	C10	**0**	compressor hours for service	0... 999 h x 100 0 = disabled
31	C11	**0**	second compressor switch-on delay (not available in EV3... N3)	0... 240 s
32	C13	**0**	number of start-ups for compressor rotation (not available in EV3... N3)	0... 10 0 = disabled

N.	PAR.	DEF.	DEFROST (if r5 = 0)	MIN... MAX.
33	d0	**8**	automatic defrost interval	0... 99 h 0 = only manual if d8 = 3, maximum interval
34	d1	**0**	defrost type	0 = electric 1 = hot gas 2 = compressor stopped
35	d2	**8.0**	threshold for defrost end	-99... 99 °C/°F
36	d3	**30**	defrost duration	0... 99 min se P3 = 1, maximum duration
37	d4	**0**	enable defrost at power-on	0 = no 1 = yes
38	d5	**0**	defrost dealy after power-on	0... 99 min
39	d6	**2**	value displayed during defrost	0 = regulation temperature 1 = display locked 2 = dEF label
40	d7	**2**	dripping time	0... 15 min
41	d8	**0**	defrost interval counting mode	0 = device on hours 1 = compressor on hours 2 = hours evaporator temperature < d9 3 = adaptive 4 = real time
42	d9	**0.0**	evaporation threshold for automatic defrost interval counting	-99... 99 °C/°F
43	d11	**0**	enable defrost timeout alarm	0 = no 1 = yes
44	d15	**0**	compressor on consecutive time for hot gas defrost	0... 99 min
45	d16	**0**	pre-dripping time for hot gas defrost	0... 99 min
46	d18	**40**	adaptive defrost interval	0... 999 min if compressor on + evaporator temperature < d22 0 = only manual
47	d19	**3.0**	threshold for adaptive defrost (relative to optimal evaporation temperature)	0... 40 °C/°F optimal evaporation temperature - d19
48	d20	**180**	compressor on consecutive time for defrost	0... 999 min 0 = disabled
49	d21	**200**	compressor on consecutive time for defrost after power-on and overcooling	0... 500 min if (regulation temperature - setpoint) > 10°C/20 °F 0 = disabled
50	d22	**-2.0**	evaporation threshold for adaptive defrost interval counting (relative to optimal evaporation temperature)	-10... 10 °C/°F optimal evaporation temperature + d22

N.	PAR.	DEF.	ALARMS	MIN... MAX.
51	AA	**0**	select value for high/low temperature alarms	0 = regulation temperature 1 = evaporator temperature 2 = auxiliary temperature
52	A1	**-10.0**	threshold for low temperature alarm	-99... 99 °C/°F
53	A2	**2**	low temperature alarm type	0 = disabled 1 = relative to setpoint 2 = absolute
54	A4	**10.0**	threshold for high temperature alarm	-99... 99 °C/°F
55	A5	**2**	high temperature alarm type	0 = disabled 1 = relative to setpoint 2 = absolute
56	A6	**12**	high temperature alarm delay after power-on	0... 99 min x 10
57	A7	**15**	high/low temperature alarms delay	0... 240 min
58	A8	**15**	high temperature alarm delay after defrost	0... 240 min
59	A9	**15**	high temperature alarm delay after door closing	0... 240 min
60	A10	**10**	power failure duration for alarm recording	0... 240 min
61	A11	**2.0**	high/low temperature alarms reset differential	1... 15 °C/°F

N.	PAR.	DEF.	FANS	MIN... MAX.
62	F0	**1**	evaporator fan mode during normal operation	0 = off 1 = on 2 = according to F15 and F16 if compressor off, on if compressor on 3 = thermoregulated (with F1) 4 = thermoregulated (with F1) if compressor on
63	F1	**-4.0**	threshold for evaporator fan operation	-99... 99 °C/°F differential = 1 °C/2 °F
64	F2	**0**	evaporator fan mode during defrost and dripping	0 = off 1 = on 2 = according to F0
65	F3	**2**	evaporator fan off maximum time	0... 15 min
66	F4	**0**	evaporator fan off time during energy saving	0... 240 s x 10
67	F5	**10**	evaporator fan on time during energy saving	0... 240 s x 10
68	F7	**5.0**	threshold for evaporator fan on after dripping (relative to setpoint)	-99... 99 °C/°F setpoint + F7
69	F9	**0**	evaporator fan off delay after compressor off	0... 240 s if F0 = 2
70	F11	**15.0**	threshold for condenser fan on	0... 99 °C/°F differential = 2 °C/4 °F
71	F12	**30**	condenser fan off delay after compressor off	0... 240 s if P4 ≠ 1
72	F15	**0**	evaporator fan off time with compressor off	0... 240 s if F0 = 2
73	F16	**1**	evaporator fan on time with compressor off	0... 240 s if F0 = 2

N.	PAR.	DEF.	DIGITAL INPUTS	MIN... MAX.
74	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
75	i1	**0**	door switch input activation	0 = with contact closed 1 = with contact open
76	i2	**30**	open door alarm delay	-1... 120 min -1 = disabled
77	i3	**15**	regulation inhibition maximum time with door open	-1... 120 min -1 = until the closing
78	i5	**2**	door switch/multi-purpose input function (options 7 and 8 not available in EV3... N9)	0 = disabled 1 = energy saving 2 = iA alarm 3 = button-operated load on 4 = device on/off 5 = Cth alarm 6 = th alarm 7 = compressor + evaporator fan off, cabinet light on 8 = evaporator fan off + cabinet light on
79	i6	**0**	door switch/multi-purpose input activation	0 = with contact closed 1 = with contact open
80	i7	**0**	multi-purpose input alarm delay	-1... 120 min -1 = disabled if i5 = 5 or 6, compressor on delay after alarm reset
81	i10	**0**	door closed consecutive time for energy saving	0... 999 min after regulation temperature < SP 0 = disabled
82	i13	**180**	number of door openings for defrost	0... 240 0 = disabled
83	i14	**32**	door open consecutive time for defrost	0... 240 min 0 = disabled

N.	PAR.	DEF.	DIGITAL OUTPUTS	MIN... MAX.
84	u1	**0**	auxiliary output configuration (option 8 not available in EV3... N3)	0 = cabinet light 1 = demisting 2 = button-operated load 3 = alarm 4 = door heaters 5 = heater for neutral zone 6 = condenser fan 7 = on/stand-by 8 = second compressor
85	u2	**0**	enable cabinet light and button-operated load in stand-by	0 = no 1 = yes manual
86	u4	**0**	enable alarm output off silencing the buzzer	0 = no 1 = yes
87	u5	**-1.0**	threshold for door heaters on	-99... 99 °C/°F differential = 2 °C/4 °F
88	u6	**5**	demisting on duration	1... 120 min
89	u7	**-5.0**	neutral zone threshold for heating (relative to setpoint)	-99... 99 °C/°F differential = 2 °C/4 °F setpoint + u7

N.	PAR.	DEF.	ENERGY SAVING (if r5 = 0)	MIN... MAX.
90	HE2	**0**	energy saving maximum duration	0... 999 min -1 = until the door opening

N.	PAR.	DEF.	REAL TIME ENERGY SAVING (if r5 = 0)	MIN... MAX.
91	H01	**0**	Monday energy saving time	0... 23 h
92	H02	**0**	Monday energy saving maximum duration	0... 24 h
93	H03	**0**	Tuesday energy saving time	0... 23 h
94	H04	**0**	Tuesday energy saving maximum duration	0... 24 h
95	H05	**0**	Wednesday energy saving time	0... 23 h
96	H06	**0**	Wednesday energy saving maximum duration	0... 24 h
97	H07	**0**	Thursday energy saving time	0... 23 h
98	H08	**0**	Thursday energy saving maximum duration	0... 24 h
99	H09	**0**	Friday energy saving time	0... 23 h
100	H10	**0**	Friday energy saving maximum duration	0... 24 h
101	H11	**0**	Saturday energy saving time	0... 23 h
102	H12	**0**	Saturday energy saving maximum duration	0... 24 h
103	H13	**0**	Sunday energy saving time	0... 23 h
104	H14	**0**	Sunday energy saving maximum duration	0... 24 h

N.	PAR.	DEF.	REAL TIME DEFROST (if d8 = 4)	MIN... MAX.
105	Hd1	**h-**	1st daily defrost time	h- = disabled
106	Hd2	**h-**	2nd daily defrost time	h- = disabled
107	Hd3	**h-**	3rd daily defrost time	h- = disabled
108	Hd4	**h-**	4th daily defrost time	h- = disabled
109	Hd5	**h-**	5th daily defrost time	h- = disabled
110	Hd6	**h-**	6th daily defrost time	h- = disabled

N.	PAR.	DEF.	SAFETIES	MIN... MAX.
111	POF	**0**	enable ON/STAND-BY key	0 = no 1 = yes
112	PAS	**-19**	password	-99... 999
113	PA1	**426**	level 1 password	-99... 999
114	PA2	**824**	level 2 password	-99... 999

N.	PAR.	DEF.	REAL TIME CLOCK	MIN... MAX.
115	Hr0	**0**	enable clock	0 = no 1 = yes

N.	PAR.	DEF.	DATA-LOGGING EVLINK	MIN... MAX.
116	bLE	**1**	serial port configuration for connectivity	0 = free 1 = forced for EVconnect or EPoCA 2-99 = EPoCA local network address
117	rE0	**15**	data-logger sampling interval	0... 240 min
118	rE1	**1**	recorded temperature	0 = none 1 = cabinet 2 = evaporator 3 = auxiliary 4 = cabinet and evaporator 5 = all

N.	PAR.	DEF.	MODBUS	MIN... MAX.
119	LA	**247**	MODBUS address	1... 247
120	Lb	**2**	MODBUS baud rate	0 = 2,400 baud 1 = 4,800 baud 2 = 9,600 baud 3 = 19,200 baud parity even

8 ALARMS

COD.	DESCRIPTION	RESET	REMEDIES
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 AA, A1 and A2
AH	high temperature alarm	automatic	check AA, A4 and A5
id	open door alarm	automatic	check i0 e 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
Cth	compressor thermal switch alarm	automatic	check i5 and i6
th	global thermal switch alarm	manual	- switch the device off and on - check i5 and i6
dFd	defrost timeout alarm	manual	- touch a key - check d2, d3 and d11

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 73.0 mm (2 15/16 x 1 5/16 x 2 7/8 in) in EV3... N3			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; 75.0 x 33.0 x 83.0 mm (2 15/16 x 1 5/16 x 3 1/4 in) in EV3... N3
75.0 x 33.0 x 74.0 mm (2 15/16 x 1 5/16 x 2 7/8 in) in EV3... RS			
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 mm²	Removable screw terminal blocks for wires up to 2,5 mm²; by request (default in EV3... RS)		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)
RS-485 MODBUS port: 1,000 m (3,280 ft)			
Operating temperature			From 0 to 55 °C (from 32 to 131 °F); from 0 to 50 °C (from 32 a 122 °F) in EV3... N3
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			
115... 230 VAC (+10% -15%), 50/60 Hz (±3 Hz), max. 3.2 VA insulated in EV3... N9			12-24 VAC/DC (+10% -15%), 50/60 Hz (±3 Hz), max. 4 VA/3 W in EV3... N3, provided by a SELV class 2 source
Earthing methods for the control device			None
Rated impulse-withstand voltage			2,5 KV (4 KV in EV3... N3).
Over-voltage category			II (III in EV3... N3).
Software class and structure			A
Clock			Incorporated secondary lithium battery (available in EV3... RS and EV3... RV)
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		ß3435 (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 (door switch/multi-purpose)
Dry contact	Contact type		5 VDC, 1.5 mA
	Power supply		None
	Protection		None
Other inputs			Input configurable for analogue input (auxiliary probe) or digital input (door switch/multi-purpose input)
Digital outputs			4 electro-mechanical relays (compressor, defrost, evaporator fan and auxiliary relay) **In EV3... N3 the maximum total current allowed on the loads is 15 A**
Compressor relay (K1)			SPST, 16 A res. @ 250 VAC
Defrost relay (K2)			SPST, 8 A res. @ 250 VAC; SPDT, 8 A res. @ 250 VAC in EV3... N3
Evaporator fan relay (K3)			SPST, 5 A res. @ 250 VAC; SPST, 2 A res. @ 250 VAC (30,000 cycles) in EV3... N3
Auxiliary relay (K4)			SPST, 5 A res. @ 250 VAC; SPDT, 16 A res. @ 250 VAC in EV3... N3
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
Alarm buzzer			Incorporated
Incorporated sensors:			Bluetooth Low Energy (available in EV3... RV).
Communication ports:			1 TTL MODBUS slave port for EVconnect app, EPoCA remote monitoring system or for BMS (not available in EV3... RS and EV3... RV) , 1 RS-485 MODBUS slave port for EPoCA remote monitoring system, EV3 200 Web or for BMS (available in EV3... RS)

For EV3... RV According to European R&TTE Declaration of Conformity this device can be used in the following Countries: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Norway, Poland Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, The Netherlands and The United Kingdom.

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

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