EV3S554

Basic and split version temperature-humidity controller

EPoCA compatible

PLEASE READ CAREFULLY and save this document

CONSIDER THE ENVIRONMENT

I ENGLISH

- power supply 115... 230 VAC
- cabinet temperature probe (PTC/NTC/EVHTP500) and cabinet humidity probe (EVHTP500)
- door switch input
- compressor relay 16 A res. @ 250 VAC
- sealed relays compliant with the standard EN 60079-15
- management of Embraco and Secop variable capacity compressors
- management of 0-10 V compressors and fans
- output 12 VDC, max. 30 mA
- alarm buzzer
- TTL MODBUS slave port for EVJKEY programming key, EVconnect app, EPoCA remote monitoring system or for BMS
- cold and hot mode and neutral zone regulation.

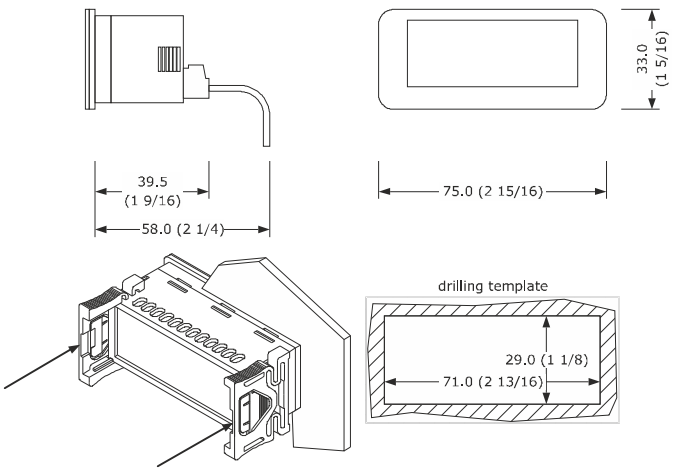
Purchasing code	Power supply
EV3S554N9	115... 230 VAC

1 MEASUREMENTS AND INSTALLATION | Measurements in mm (inches)

1.1 User interface

To be fitted to a panel, snap-in brackets provided.

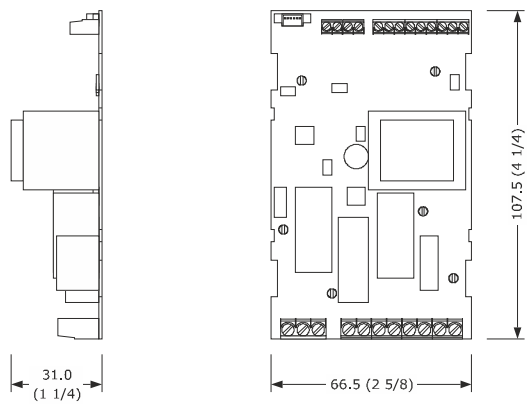
N.B.
The thickness of the panel must be between 0.8 and 2.0 mm (1/32 and 1/16 in).



1.2 Control module

To be installed on an electrical panel, on plastic spacers (not provided).

N.B.
Any metal parts must be far enough away so as not to compromise safety distances.

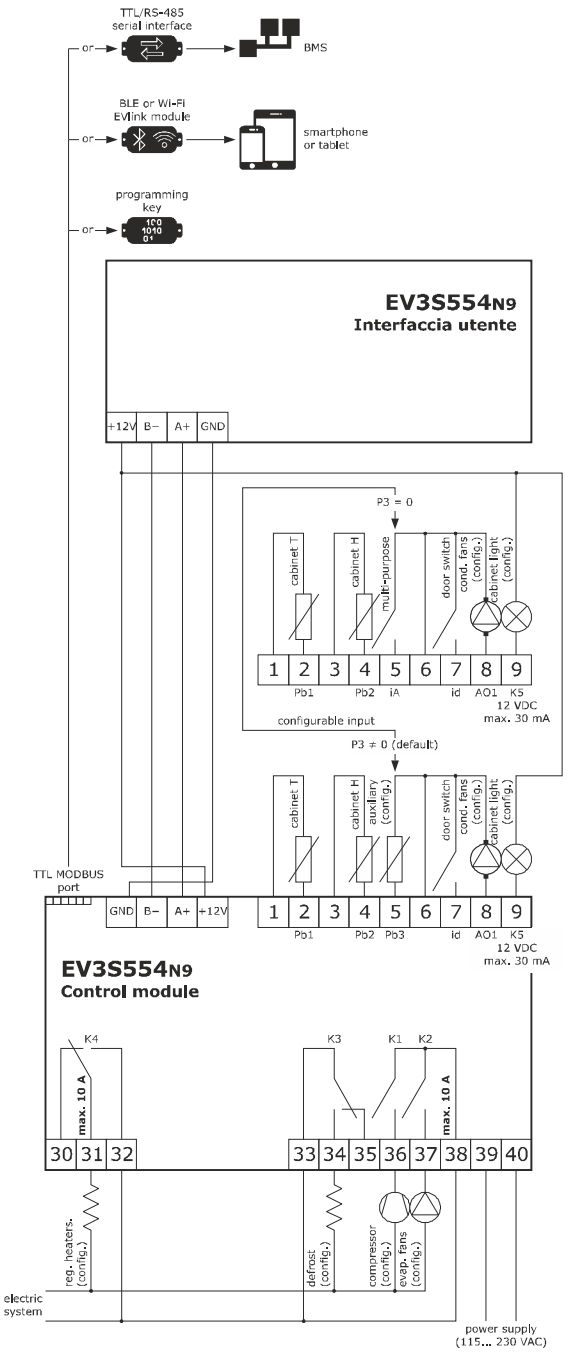


INSTALLATION PRECAUTIONS

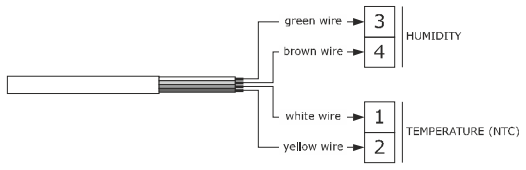
- ensure that the working conditions are within the limits stated in the *TECHNICAL SPECIFICATIONS* section
- do not install the device close to heat sources, equipment with a strong magnetic field, in places subject to direct sunlight, rain, damp, excessive dust, mechanical vibrations or shocks
- in 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, locate the power cables as far away as possible from the signal cables.



Electrical connection of humidity and temperature transducer EVHTP500.



PRECAUTIONS FOR ELECTRICAL CONNECTION

- if using an electrical or pneumatic screwdriver, adjust the tightening torque
- if the device is moved from a cold to a warm place, humidity may cause condensation to form inside. Wait for 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 carrying out any type of maintenance
- do not use the device as a safety device
- for repairs and for further information, contact the EVCO sales network.

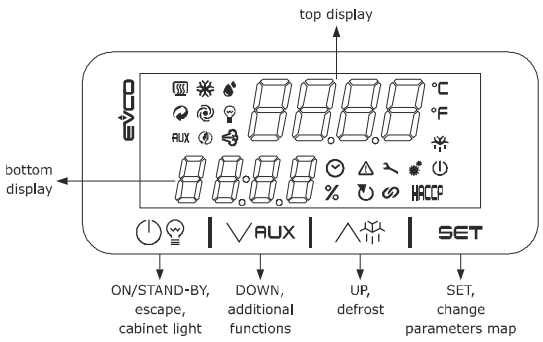
3 FIRST-TIME USE

1. Carry out the installation following the instructions given in the section *MEASUREMENTS AND INSTALLATION*.
2. Power up the device as set out in the section *ELECTRICAL CONNECTION*: an internal test will start up.
   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.
SPt	**2.0**	temperature setpoint	r1... r2
SPH	**50**	humidity setpoint	h1... h2
P0	**1**	type of temperature probe	0 = PTC 1 = NTC
P2	**0**	temperature measurement unit	0 = °C 1 = °F
Pr2	**1**	enable cabinet humidity probe	0 = no 1 = yes
d1	**0**	type of defrost	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. To use the device with the EVconnect app, connect the EVIF25TBX module. To use the device with the EPoCA remote monitoring system, connect the EVIF25TWX module. When connecting to an RS-485 network, connect the EVIF22TSX interface. To activate real-time functions, connect the EVIF23TSX module.
   If using EVIF22TSX or EVIF23TSX, set the bLE parameter to 0.
7. Power up the device again.

4 USER INTERFACE AND MAIN FUNCTIONS



4.1 Switching the device on / off

1. SET — If POF = 1 (default), touch the ON/STAND-BY key for 2 s.

If the device is switched on, the top display will show the P5 value ("cabinet temperature" default) and the bottom display the P6 value ("cabinet humidity" default); if the top display shows an alarm code, see the section *ALARMS*.

LED	ON	OFF	FLASHING
	regulation heaters switched on	-	-
	-	-	-
AUX	auxiliary output on	auxiliary output off	auxiliary output on from digital input
	compressor on	compressor off	compressor protection active
	evaporator fans on	evaporator fans off	- evaporator fan stop in progress - setting evaporator fan speed in progress
	energy saving active	-	-
	dehumidification active		dehumidification delay in progress
	cabinet light on	cabinet light off	cabinet light on from digital input
	humidification active	-	-
	time displayed	-	real time switching on/off and defrost programmed
%	percentage relative humidity displayed	-	humidity setpoint being set
	alarm active	-	manual alarm reset
	-	-	-
	compressor maintenance request	-	-
	-	-	BLE connection with EVconnect app active
	setting configuration parameters in progress	-	-
HACCP	HACCP alarm saved in EVIF25TBX or EVIF25TWX module	-	new HACCP alarm saved in EVIF25TBX or EVIF25TWX module
°C / °F	temperature displayed	-	temperature setpoint being set
	defrost or pre-drip active	-	- defrosting delay in progress - dripping active
	device switched off	device switched on	-

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

4.2 Unlocking the keypad

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

4.3 Setting the temperature setpoint, humidity setpoint and evaporator fan speed (percentage of maximum capacity; available if Ao1 = 3 and F30 = 0)

Check that the keypad is not locked.

1. SET — Touch the SET key.
2. AUX — Touch the UP or DOWN key within 15 s to select a label on the bottom display.

LAB.	DESCRIPTION
SPt	temperature setpoint
SPH	humidity setpoint
F33	evaporator fan speed (percentage of maximum capacity)

3. SET — Touch the SET key.
4. AUX — Touch the UP or DOWN keys within 15 s to set the value on the top display within the established limits.

LAB.	ESTABLISHED LIMITS (DEFAULT)
SPt	r1 and r2 (default "0... 50 °C/°F")
SPH	h1 and h2 (default "10... 95 %RH")
F33	F31 and F32 (default "50... 100 %")

5. SET — Touch the SET key (or take no action for 15 s).
6. Touch the ON/STAND-BY key (or take no action for 60 s) to exit the procedure.

4.4 Activating manual defrost (if r5 = 0 or 2, default)

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

1. Touch the UP key for 4 s.

If P3 = 3 (default), defrost is activated provided that the evaporator temperature is lower than the d2 threshold.

4.5 Switching the cabinet light on / off (if u1c... u5c = 4)

1. Touch the ON/STAND-BY key.

4.6 Manual switching on / off of the auxiliary output (if u1c... u5c = 9 and r8 = 2)

1. AUX — Touch the DOWN key.

If u1c... u5c = 5 and r8 = 3, the **demisting output** switches on for the u6 time.

4.7 Silencing the buzzer (if u9 = 1, default)

Touch a key.
If u1c... u5c = 10 and u4 = 1, the alarm output is deactivated.

5 ADDITIONAL FUNCTIONS

5.1 Viewing the active map / activating another map (if i5 ≠ 5)

Make sure the device is in stand-by.

1.	SET	Touch the SET key for 2 s to view the active map label on the top display.

LAB.	DESCRIPTION
MAP1	map 1
MAP2	map 2

2.	SET	Touch the SET key again for 2 s to activate another map: the device will reboot.
3.	ON/STAND-BY	Touch the ON/STAND-BY key to exit the procedure beforehand.

5.2 Viewing / deleting compressor operation days

Check that the keypad is not locked.

1.	AUX	Touch the DOWN key for 1 s.
2.	FNC UP/DOWN	Touch the UP or DOWN key within 15 s to select a label on the bottom display and view or set the value on the top display.

LAB.	DESCRIPTION
CH1	view compressor operation days
rCH	delete compressor operation days

3.	SET	Touch the SET key.
4.	FNC UP/DOWN	Touch the UP or DOWN key to set "**149**" (to select **rCH**).
5.	SET	Touch the SET key (or take no action for 15 s): the display will show "**- - -**" flashing for 4 s, after which the device will exit the procedure.

5.3 Viewing the temperature detected by the probes

Check that the keypad is not locked.

1.	AUX	Touch the DOWN key for 1 s.
2.	AUX UP/DOWN	Touch the UP or DOWN key within 15 s to select a label on the bottom display and view the value on the top display.

LAB.	DESCRIPTION
Pb1	cabinet temperature
Pb2	cabinet humidity (if Pr2 = 1)
Pb3	configurable probe temperature (if P3 = 1, 2 or 3)

3.	SET	Touch the SET key.
4.	ON/STAND-BY	Touch the ON/STAND-BY key (or take no action for 60 s) to exit the procedure.

6 SETTINGS

6.1 Setting configuration parameters

1.	SET	Touch the SET key for 4 s: the bottom display will show the label "**PA**".
2.	SET	Touch the SET key.
3.	AUX UP/DOWN	Touch the UP or DOWN key within 15 s to set the PAS value on the top display (default "**-19**").
4.	SET	Touch the SET key (or take no action for 15 s): the top display will show the label "**SPt**".
5.	AUX UP/DOWN	Touch the UP or DOWN key to select a parameter.
6.	SET	Touch the SET key.
7.	AUX UP/DOWN	Touch the UP or DOWN key within 15 s to set the value on the top display.
8.	SET	Touch the SET key (or take no action for 15 s).
9.	SET	Touch the SET key for 4 s (or take no action for 60 s) to exit the procedure.

6.2 Setting the date, time and day of the week (if the EVIF25TBX, EVIF25TWX or EVIF23TSX module is connected)

N.B.
- do not disconnect the device from the mains in the two minutes after setting the date, time and day of the week
- if the device communicates with the EVconnect app or the EPoCA remote monitoring system, 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.	AUX	Touch the DOWN key for 4 s.
2.	AUX UP/DOWN	Touch the UP or DOWN key within 15 s to select the label "**rtc**" on the bottom display.
3.	SET	Touch the SET key: the top display will show the label "**yy**" followed by the last two figures of the year.
4.	AUX UP/DOWN	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.	MEANING OF THE NUMBERS FOLLOWING THE LABEL
n	month (01... 12)
d	day (01... 31)
h	hour (00... 23)
n	minutes (00... 59)

6.	SET	Touch the SET key: the top display will show the label for the day of the week.
7.	AUX UP/DOWN	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.	SET	Touch the SET key: the device will exit the procedure.
9.	ON/STAND-BY	Touch the ON/STAND-BY key to exit the procedure beforehand.

6.3 Restoring factory (default) settings and saving customised settings

N.B.
- check that the factory settings are appropriate; see the section *CONFIGURATION PARAMETERS*.
- saving customised settings overwrites the factory settings.

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

VAL.	MEANING
149	value for restoring the factory information (default) of the active map
161	value for saving customised settings

4.	SET	Touch the SET key (or take no action for 15 s): the bottom display will show the label "**dEF**" (for setting the "**149**" value) or the label "**MAP**" (for setting the "**161**" value).
5.	SET	Touch the SET key.
6.	AUX UP/DOWN	Touch the UP or DOWN key within 15 s to set "**1**" on the top display.
7.	SET	Touch the SET key (or take no action for 15 s): the display will show the "**dEF**" flashing label for 4 s, after which the device will exit the procedure.
8.	Disconnect the device from the power supply.	
9.	SET	Touch the SET key for 2 s before action 6 to exit the procedure beforehand.

7 CONFIGURATION PARAMETERS

NO.	PAR.	DEF.	SETPOINT	MIN... MAX.
1	SPt	**2.0**	temperature setpoint	r1... r2
2	SPH	**50**	humidity setpoint	h1... h2

NO.	PAR.	DEF.	ANALOGUE INPUTS	MIN... MAX.
3	CA1	**0.0**	cabinet temperature probe offset	-25... 25 °C/°F
4	CA2	**0**	cabinet humidity probe offset	-25... 25 % %RH
5	CA3	**0.0**	probe 3 offset	-25... 25 °C/°F
6	P0	**1**	type of temperature probe	0 = PTC 1 = NTC
7	P1	**1**	enable decimal point °C	0 = no 1 = yes
8	P2	**0**	temperature measurement unit	0 = °C 1 = °F
9	Pr2	**1**	enable cabinet humidity probe	0 = no 1 = yes
10	P3	**3**	configurable input function	0 = digital input 1 = condenser probe 2 = auxiliary temp.probe 3 = evaporator probe
11	P5	**1**	value top display	0 = off 1 = cabinet temperature 2 = probe 3 temperature 3 = temperature setpoint
12	P6	**1**	value bottom display	0 = time 1 = cabinet humidity 2 = probe 3 temperature 3 = humidity setpoint
13	P8	**5**	refresh time top display	0... 250 s: 10
14	P9	**5**	refresh time bottom display	0... 250 s: 10
15	P10	**0**	time displayed on bottom display in stand-by	0 = no 1 = yes

NO.	PAR.	DEF.	TEMPERATURE REGULATION	MIN... MAX.
16	r0	**2.0**	setpoint differential in cold mode regulation	1... 25 °C/°F if r5 = 2, cold mode regulation differential for neutral zone
17	r1	**0.0**	minimum temperature setpoint	-99 °C/°F... r2
18	r2	**50.0**	maximum temperature setpoint	r1... 199 °C/°F
19	r3	**0**	enable temperature setpoint lock	0 = no 1 = yes
20	r4	**0.0**	temperature setpoint offset in energy saving	0... 99 °C/°F if r5 = 0
21	r5	**2**	type of temperature regulation	0 = cold mode 1 = hot mode 2 = neutral zone
22	r8	**1**	DOWN key additional function	0 = disabled 1 = energy saving 2 = auxiliary output on/off (if P3 ≠ 0 and 2) 3 = demisting output on
23	r11	**0.0**	neutral zone temperature regulation value	0... 10 °C/°F
24	r12	**2.0**	setpoint differential in hot mode regulation	1... 25 °C/°F if r5 = 2, hot mode regulation differential for neutral zone
25	r13	**25.0**	proportional band modulating temperature regulation (relative to setpoint)	0... 99 °C/°F setpoint + r13 for Ao1 = 0... 3 or u5c = 0
26	r14	**10**	integral action time modulating temperature regulation	0... 99 min
27	r15	**3**	type of PWM compressor	1 = Embraco VEM 2 = Embraco VEG 3 = Embraco VNEK and VNEU 4 = Secop VNL 5 = Secop 33... 133 Hz
28	r16	**0**	percentage 0-10 V output for compressor with minimum capacity	0 %... r17
29	r17	**100**	percentage 0-10 V output for compressor with maximum capacity	r6... 100 %
30	r18	**0**	maximum percentage modulating temperature regulation in energy saving	0... 100 % 0 = disabled not visible if r13 = 0
31	r19	**100**	percentage modulating regulation for dehumidification	0... 100 % not effective if modulating temperature regulation is required

NO.	PAR.	DEF.	HUMIDITY	MIN... MAX.
32	h1	10	minimum humidity setpoint	0... h2 %RH
33	h2	95	maximum humidity setpoint	h1... 100 %RH

NO.	PAR.	DEF.	REGULATING DEHUMIDIFICATION	MIN... MAX.
34	rd0	**3**	setpoint differential for dehumidification	1... 25 %RH relative to rd1 (rd1 + rd0)
35	rd1	**0**	neutral zone regulating dehumidification	0... 10 %RH
36	rd2	**60**	time evaporator fans on in dehumidification	0... 240 s if r5 = 2 and F0 = 0
37	rd3	**0**	time evaporator fans off in dehumidification	0... 240 s if r5 = 2 and F0 = 0
38	rd4	**1**	enable dehumidification	0 = no 1 = yes (if r5 = 2)
39	rd5	**0**	enable defrost relay as regulation heaters	0 = no 1 = yes if u1c... u5c = 3 ≠ 7
40	rd6	**0**	enable humidity setpoint lock	0 = no 1 = yes

NO.	PAR.	DEF.	REGULATING HUMIDIFICATION	MIN... MAX.
41	rh0	**3**	setpoint differential for humidification	1... 25 %RH relative to rh1 (rh1 - rh0)
42	rh1	**0**	neutral zone regulating humidification	0... 10 %RH

NO.	PAR.	DEF.	COMPRESSOR	MIN... MAX.
43	CP0	**0**	85 Hz PWM compressor time from power-on	0... 100 s x 10
44	CP1	**50**	percentage 0-10 V compressor from power-on	0... 100 %
45	CP3	**100**	percentage 0-10 V compressor in cabinet probe alarm	0... 100 %
46	CP4	**0**	maximum 0-10 V compressor-on time	0... 240 min
47	C0	**0**	compressor-on delay from power-on	0... 240 min
48	C1	**5**	delay between two compressor switch-ons	0... 240 min
49	C2	**3**	minimum compressor-off time	0... 240 min
50	C3	**0**	minimum compressor-on time	0... 240 s
51	C4	**10**	compressor-off time in cabinet probe alarm	0... 240 min
52	C5	**10**	compressor-on time in cabinet probe alarm	0... 240 min
53	C6	**80.0**	high condensation signal threshold	0... 199 °C/°F differential = 2 °C/4 °F
55	C8	**1**	high condensation alarm delay	0... 15 min
56	C9	**5**	cabinet temperature consecutive time within proportional band to operate compressor at max. power	0... 99 h 0 = disabled until cabinet temperature < setpoint
57	C10	**0**	compressor days for maintenance	0... 999 days 0 = disabled

NO.	PAR.	DEF.	DEFROSTING (if r5 = 0 or 2)	MIN... MAX.
58	d0	**8**	automatic defrost interval	0... 99 h 0 = manual only if d8 = 3, maximum interval
59	d1	**0**	type of defrost	0 = electric 1 = hot gas 2 = compressor stopped
60	d2	**2.0**	defrost end threshold	-99... 99 °C/°F
61	d3	**30**	defrost duration	0... 99 min if P3 = 3, maximum duration
62	d4	**0**	enable defrost at power-on	0 = no 1 = yes
63	d5	**0**	defrost delay from power-on	0... 99 min
64	d6	**1**	value displayed when defrosting	0 = cabinet temperature and humidity 1 = locked display
65	d7	**2**	dripping time	0... 15 min
66	d8	**0**	defrost interval count mode	0 = hours device on 1 = hours compressor on 2 = hours evaporator temperature < d9 3 = adaptive 4 = in real time
67	d9	**0.0**	evaporation threshold for automatic defrost interval count	-99... 99 °C/°F
68	d11	**0**	enable defrost timeout alarm	0 = no 1 = yes
69	d15	**0**	compressor-on consecutive time for hot gas defrost	-20... 99 min if values are negative, dripping heaters on time
70	d16	**0**	pre-dripping time for hot gas defrost	0... 99 min
71	d18	**40**	adaptive defrost interval	0... 999 min if compressor on + evaporator temperature < d22 0 = manual only
72	d19	**3.0**	adaptive defrost threshold (relative to optimal evaporation temperature)	0... 40 °C/°F optimal evaporation temperature - d19
73	d20	**180**	compressor-on consecutive time for defrost	0... 999 min 0 = disabled
74	d21	**200**	compressor-on consecutive time for defrost from power-on	0... 500 min if (cabinet temperature - setpoint) > 10°C/20 °F 0 = disabled
75	d22	**-2.0**	evaporation threshold for adaptive defrost interval count (relative to optimal evaporation temperature)	-10... 10 °C/°F optimal evaporation temperature + d22
76	d26	**6**	defrost interval in evaporator probe alarm	0... 99 h 0 = manual only

NO.	PAR.	DEF.	ALARMS	MIN... MAX.
77	A0	**0**	select value for high/low temperature alarms	0 = cabinet temperature 1 = evaporator temperature 2 = probe 3 temperature
78	A1	**0.0**	low temperature alarm threshold	-99... 99 °C/°F
79	A2	**0**	type of low temperature alarm	0 = disabled 1 = relative to setpoint (if A0 = 2, relative to u11) 2 = absolute
80	A4	**0.0**	high temperature alarm threshold	-99... 99 °C/°F
81	A5	**0**	type of high temperature alarm	0 = disabled 1 = relative to setpoint (if A0 = 2, relative to u11) 2 = absolute
82	A6	**120**	high/low temperature and high/low humidity alarm delay from power-on	0... 240 min
83	A7	**15**	high/low temperature alarm delay	0... 240 min
84	A8	**15**	high temperature alarm delay post-defrosting	0... 240 min
85	A9	**15**	high temperature alarm delay from door closure	0... 240 min
86	A10	**10**	duration of power failure for displaying and saving alarm	0... 240 min 0 = disabled
87	A11	**2.0**	high/low temperature alarm reset differential	1... 15 °C/°F
88	A12	**0**	type of power failure alarm signal	0 = disabled 1 = LED HACCP + label PF + buzzer (if duration > A10)
89	AH1	**30**	low temperature alarm threshold	0... 100 %RH 0 = disabled differential = 2 %RH
90	AH4	**90**	low temperature alarm threshold	0... 100 %RH 0 = disabled differential = 2 %RH
91	AH7	**30**	high/low humidity alarm and cabinet humidity probe alarm delay	0... 240 min

NO.	PAR.	DEF.	FANS	MIN... MAX.
92	F0	**1**	evaporator fan mode in normal function	0 = with F38 and F39 if r5 = 0, on if r5 = 1, with rd2 and rd3 if r5 = 2 1 = ON 2 = on if compressor or regulation heaters on 3 = if r5 = 0 or 1 thermoregulated (with cabinet temperature + F1), on if r5 = 2 4 = if r5 = 0 or 1 thermoregulated (with cabinet temperature + F1) if compressor or regulation heaters on, on if r5 = 2
93	F1	**0.0**	evaporator fans regulation threshold	-99... 99 °C/°F
94	F2	**0**	evaporator fan mode in defrost and drip mode	0 = off 1 = on 2 = function of F0
95	F3	**2**	maximum time evaporator fans off	0... 15 min
96	F4	**30**	time evaporator fans off in energy saving	0... 240 s x 10 if compressor off
97	F5	**30**	time evaporator fans on in energy saving	0... 240 s x 10 if compressor off
98	F7	**5.0**	evaporator fans on threshold from dripping (relative to setpoint)	-99... 99 °C/°F setpoint + F7
99	F8	**2.0**	evaporator fans regulation threshold differential	1... 15 °C/°F
100	F9	**10**	evaporator fans off delay from compressor off	0... 240 s if F0 = 2 or 5
101	F11	**15.0**	condenser fans on threshold	0... 99 °C/°F

102	F12	**30**	condenser fans off delay from compressor off	0... 240 s if P3 ≠ 1
103	F13	**2.0**	condenser fans regulation threshold differential	1... 25 °C/°F 0-10 V condenser fans proportional band if Ao1 = 2 (relative to F11, F11 + F13)
104	F14	**10**	100 % start-up time for 0-10 V condenser fans	0... 240 s
105	F15	**100**	maximum percentage 0-10 V condenser fans in energy saving	0... 100 %
106	F30	**0**	setting percentage 0-10 V evaporator fans in normal function mode	0 = touch SET key twice 1 = with F33 2 = automatic with F1, F31, F32 and F36
107	F31	**50**	percentage 0-10 V output for evaporator fans with minimum capacity	0... 100 % if F31>F32, F32 is relevant
108	F32	**100**	percentage 0-10 V output for evaporator fans with maximum capacity	0... 100 % if F32<F31, F31 is relevant
109	F33	**100**	percentage 0-10 V evaporator fans in normal function	F31... F32
110	F34	**10**	F35 start up time 0-10 V evaporator fans	0... 240 s
111	F35	**100**	percentage 0-10 V evaporator fans from power-on	0... 100 %
112	F36	**10**	0-10 V evaporator fans proportional band (relative to F1)	1... 50 °C/°F F1-F36
113	F37	**0**	maximum percentage 0-10 V evaporator fans in energy saving	0... 100 %
114	F38	**60**	time evaporator fans on with compressor off	0... 240 s if F0 = 0
115	F39	**0**	time evaporator fans off with compressor off	0... 240 s if F0 = 0

NO.	PAR.	DEF.	DIGITAL INPUTS	MIN... MAX.
116	i0	**5**	door switch input function	0 = disabled 1 = compressor or regulation heaters + evaporator fans off 2 = evaporator fans off 3 = cabinet light on 4 = compressor or regulation heaters + evaporator fans off, cabinet light on 5 = evaporator fans off, cabinet light on
117	i1	**0**	door switch input activation	0 = with contact closed 1 = with contact open
118	i2	**30**	door open alarm delay	-1... 120 min -1 = disabled
119	i3	**15**	maximum time for inhibiting regulation with door open	-1... 120 min -1 = until closed
120	i5	**0**	multi-purpose input function	0 = disabled 1 = energy saving 2 = alarm iA 3 = alarm iSd 4 = auxiliary output on 5 = map 1 if deactivated map 2 if active 6 = switches device on/off 7 = alarm LP 8 = alarm C1t
121	i6	**0**	multi-purpose input activation	0 = with contact closed 1 = with contact open
122	i7	**0**	multi-purpose input alarm delay	0... 120 min if i5 = 3 or 7, compressor on delay from alarm reset
123	i8	**0**	number of multi-purpose input activations for high pressure alarm	0... 15 0 = disabled if i5 = 3
124	i9	**240**	counter reset time for high pressure alarm	1... 999 min
125	i10	**0**	door closed consecutive time for energy saving	0... 999 min after cabinet temperature < SPt 0 = disabled
126	i13	**180**	number of door openings for defrost	0... 240 0 = disabled
127	i14	**32**	door open consecutive time for defrost	0... 240 min 0 = disabled

NO.	PAR.	DEF.	DIGITAL OUTPUTS	MIN... MAX.
128	u1c	**0**	K1 relay configuration	0 = compressor 1 = evaporator fans 2 = condenser fans 3 = defrosting 4 = cabinet light 5 = demisting 6 = door heaters 7 = regulation heaters 8 = dripping heaters 9 = auxiliary 10= alarm 11= on/stand-by 12= humidifier
129	u2c	**1**	K2 relay configuration	like u1c
130	u3c	**3**	K3 relay configuration	like u1c
131	u4c	**7**	K4 relay configuration	like u1c
132	u5c	**4**	K5 relay configuration	0 = PWM compressor 1... 11 like u1c
133	u2	**0**	enable cabinet light and auxiliary output in stand-by	0 = no 1 = yes in manual mode
134	u3	**0**	alarm relay activation	0 = with alarm not active 1 = with alarm active
135	u4	**1**	enable silencing alarm output	0 = no 1 = yes
136	u5	**-1.0**	door heaters on threshold	-99... 99 °C/°F
137	u5d	**2.0**	door heaters on threshold differential	1... 25 °C/°F
138	u6	**5**	duration demisting on	1... 120 min
139	u9	**1**	enable alarm buzzer	0 = no 1 = yes
140	u10	**0**	hot or cold mode regulation auxiliary output	0 = cold mode 1 = hot mode if P3= 2
141	u11	**0.0**	auxiliary temperature setpoint	-99... 99 °C/°F
142	u12	**1.0**	auxiliary temperature setpoint differential	1... 15 °C/°F

NO.	PAR.	DEF.	ANALOGUE OUTPUTS	MIN... MAX.
143	Ao1	**2**	analogue output configuration	0 = PWM compressor (r15) 1 = 0-10 V compressor 2 = 0-10 V condenser fans 3 = 0-10 V evaporator fans

NO.	PAR.	DEF.	CLOCK	MIN... MAX.
144	Hr0	**0**	enable clock	0 = no 1 = yes

NO.	PAR.	DEF.	ENERGY SAVING (if r5 = 0)	MIN... MAX.
145	HE2	**0**	maximum duration energy saving	0... 999 min 0 = until door opened

NO.	PAR.	DEF.	ENERGY SAVING IN REAL TIME (if r5 = 0; visible if Hr0=1)	MIN... MAX.
146	H01	**0**	energy saving time	0... 23 h
147	H02	**0**	maximum duration energy saving	0... 24 h

NO.	PAR.	DEF.	SWITCHING ON/OFF IN REAL TIME (visible if Hr0=1)	MIN... MAX.
148	Hon	**h-**	time device switch-on	0... h- h- = disabled
149	HoF	**h-**	time device switch-off	0... h- h- = disabled

NO.	PAR.	DEF.	DEFROSTING IN REAL TIME (if d8 = 4; visible if Hr0=1)	MIN... MAX.
150	Hd1	**h-**	1st daily defrosting time	0... h- h- = disabled
151	Hd2	**h-**	2nd daily defrosting time	0... h- h- = disabled
152	Hd3	**h-**	3rd daily defrosting time	0... h- h- = disabled
153	Hd4	**h-**	4th daily defrosting time	0... h- h- = disabled
154	Hd5	**h-**	5th daily defrosting time	0... h- h- = disabled
155	Hd6	**h-**	6th daily defrosting time	0... h- h- = disabled

NO.	PAR.	DEF.	SECURITY	MIN... MAX.
156	POF	**1**	enable ON/STAND-BY key	0 = no 1 = yes
157	Loc	**1**	enable keypad lock	0 = no 1 = yes
158	PAS	**-19**	password	-99... 999
159	PA1	**426**	1st level password	-99... 999
160	PA2	**824**	2nd level password	-99... 999
161	PnP	**1**	enable map 1 or map 2	1 = map 1 2 = map 2

NO.	PAR.	DEF.	EVLINK DATA-LOGGING (visible if Hr0=1)	MIN... MAX.
162	rE0	**15**	data logger sampling interval	0... 240 min
163	rE1	**4**	select temperature for data logger	0 = none 1 = cabinet temperature probe 2 = cabinet himidity probe 3 = probe 3 4 = cabinet temperature probe and cabine thumidity probe 5 = all

NO.	PAR.	DEF.	MODBUS	MIN... MAX.
164	LA	**247**	MODBUS address	1... 247
165	Lb	**2**	MODBUS baud rate	0 = 2,400 baud 1 = 4,800 baud 2 = 9,600 baud 3 = 19,200 baud
166	LP	**2**	MODBUS parity	0 = none 1 = odd 2 = even

NO.	PAR.	DEF.	EVLINK	MIN... MAX.
167	bLE	**1**	activate EVlink	0 = no 1 = yes > 1 = unused

8 ALARMS

CODE	DESCRIPTION	RESET	TO CORRECT
Pr1	cabinet probe alarm	automatic	- check P0
Pr2	humidity probe alarm	automatic	- check integrity of the probe
Pr3	probe 3 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 A0, A4 and A5
AL2	low humidity alarm	automatic	check AH1
AH2	high humidity alarm	automatic	check AH4
id	door open alarm	automatic	check i0 and i1
PF	power failure alarm	manual	- touch a key - check electrical connection
COH	high condensation signal	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
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.
Housing:		
user interface: black, self-extinguishing		control module: open frame board.
Category of heat and fire resistance:		D.
Measurements:		
user interface: 75.0 x 33.0 x 39.5 mm (2 15/16 x 1 5/16 x 1 9/16 in)		control module: 66.5 x 107.5 x 31.0 mm (2 5/8 x 4 1/4 x 1 1/4 in).
Mounting methods for the control device:		
user interface: to be fitted to a panel, snap-in brackets provided		control module: to be installed on an electrical panel, on plastic spacers (not provided).
Degree of protection provided by the casing:		
user interface: IP65 (front)		control module: IP00.
Connection method:		
user interface: plug-in screw terminal blocks for wires up to 2.5 mm²		control module: - fixed screw terminal blocks for wires up to 2.5 mm² - Pico-Blade connector.
Maximum permitted length for connection cables:		
user interface-control module: 10 m (32.8 ft)		power supply: 10 m (32.8 ft)
analogue inputs: 10 m (32.8 ft)		digital inputs: 10 m (32.8 ft)
analogue outputs: 3 m (9.84 ft)		digital outputs: 10 m (32.8 ft).
Operating temperature:		from 0 to 60 °C (from 32 to 140 °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.
Compliance:		
RoHS 2011/65/EC	WEEE 2012/19/EU	REACH (EC) Regulation no. 1907/2006
EMC 2014/30/EU		LVD 2014/35/EU.
Power supply:		
user interface: powered by the control module		control module: 115... 230 VAC (+10% -15%), 50/60 Hz (±3 Hz), max. 3.2 VA insulated.
Earthing methods for the control device:		none.
Rated impulse-withstand voltage:		2.5 KV.
Over-voltage category:		II.
Software class and structure:		A.
Analogue inputs:		- 1 for PTC or NTC probes or humidity and temperature transducer EVHTP500 (cabinet temperature probe) - 1 for humidity and temperature transducer EVHTP500 (cabinet humidity probe).
PTC probes:	Type of sensor:	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:	Type of sensor:	ß3435 (10 KΩ @ 25 °C, 77 °F)
	Measurement field:	from -40 to 105 °C (from -40 to 221 °F)
	Resolution:	0.1 °C (1 °F).
Humidity and temperature transducer EVHTP500:		- relative humidity without condensate from 5 to 95% - from -10 to 70 °C (from 14 to 158 °F).
Digital inputs:		1 dry contact (door switch).
Other inputs:		1 input can be configured for analogue input (probe 3, for PTC or NTC probes) or digital input (multi-purpose, dry contact).
Contact dry:	Type of contact:	5 VDC, 1.5 mA
	Power supply:	none
	Protection:	none.
Analogue outputs:		1 for PWM or 0-10 V signal
Other outputs:		1 for 12 VDC, max. 30 mA.
PWM signal:	Power supply:	12 VDC (+16% -25%), 20 mA max.
	Frequency:	0... 150 Hz
	Protection:	none.
0-10 V signal:	Minimum applicable impedance:	1 KΩ
	Resolution:	0.01 V.
Digital outputs:		4 with sealed electro-mechanical relay in compliance with the EN 60079-15 standard.
K1 relay:		SPST, 16 A res. @ 250 VAC.
K2 relay:		SPST, 5 A res. @ 250 VAC.
K3 relay:		SPDT, 8 A res. @ 250 VAC.
K4 relay:		SPDT, 16 A res. @ 250 VAC.
Type 1 or Type 2 actions:		type 1.
Additional features of Type 1 or Type 2 actions:		C.
Displays:		custom display, 3 digit, with function icons.
Alarm buzzer:		built-in.
Communications ports:		1 TTL MODBUS slave port for EVJKEY programming key, EVconnect app, EPoCA remote monitoring system or for BMS.

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

EVCO S.p.A.
Via Feltre 81, 32036 Sedico (BL) ITALY
Tel. +39 0437/8422 | **Fax** +39 0437/83648
email info@evco.it | **web** www.evco.it