EVY Cold BASIC

Controllers for refrigerated cabinets and display units

1 ENGLISH

- controllers for normal or low temperature units
- power supply 115... 230 Vac
- 3 analogue inputs for configurable PTC, NTC or Pt 1000 probes
- door switch digital input
- multi-purpose digital input
- management of variable capacity PWM compressors (Embraco, Secop and Tecumseh), rather than variable capacity compressors or 0-10 V modulating fans
- models with 3, 4 or 5 digital outputs (electro-mechanical relays)
- main relay 16 A res. @ 250 Vac or 30 A res. @ 250 Vac (according to the model)
- sealed relays compliant with the standard EN 60079-15
- alarm buzzer
- TTL MODBUS slave port for the EVconnect app or the EPoCA remote monitoring system
- hot or cold mode regulation

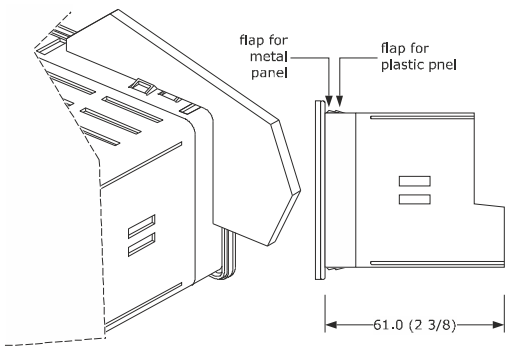
Models available

Purchasing code	Number of relays	Capacity of main relay	Manag. of remote indicator
EVYB13LN9	3	16 A res. @ 250 VAC	no
EVYB33LN9	3	30 A res. @ 250 VAC	no
EVYB14LN9	4	16 A res. @ 250 VAC	no
EVYB34LN9	4	30 A res. @ 250 VAC	no
EVYB15LN9	5	16 A res. @ 250 VAC	no
EVYB35LN9	5	30 A res. @ 250 VAC	no
EVYB35LN9VFT	5	30 A res. @ 250 VAC	yes

1 MEASUREMENTS AND INSTALLATION

Measurements are expressed in mm (inches). Front installation on a plastic or metal panel (with elastic holding flaps).

N.B.
The metal panel must be between 0.8 and 1.5 mm (1/32 and 1/16 in) thick, while the plastic panel must be between 0.8 and 3.4 mm (1/32 and 1/8 in)



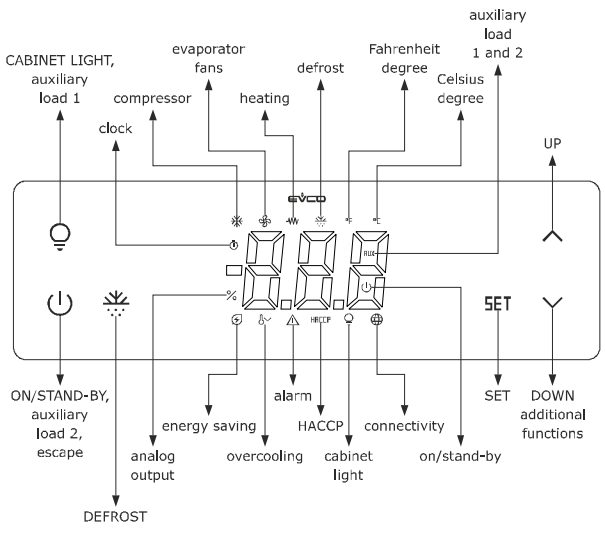
3 FIRST-TIME USE

1. Carry out the installation following the instructions given in the section *MEASUREMENTS AND INSTALLATION*.
2. Power up the device: 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.
SP	**0.0**	setpoint	r1... r2
P0	**1**	type of probe	0 = PTC 1 = NTC 2 = Pt 1000
P2	**0**	temperature measurement unit	0 = °C 1 = °F
d1	**0**	type of defrost	0 = electric 1 = hot gas 2 = compressor stopped

   Next 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 perform the configuration upload or download, connect the EVJKEY programming key.
   To activate real-time functions, connect the EVlinking RS-485 EVIF23TSX converter.
   To control the device using the EVconnect app, connect the EVlinking BLE EVIF25TBX module then synchronise it with the app.
   To control the device using the EPoCA monitoring system or a third-party MODBUS TCP system:
   - connect the EVlinking Wi-Fi EVIF25TWX module to the device and then to a local Wi-Fi network
   - connect the EVlinking RS-485 EVIF24TSX converter to the device then to an IoT EV3 Web gateway or EVD Web. Next connect this to a free Ethernet port of a router or an Ethernet hub connected to a local network.
7. Power up the device again.

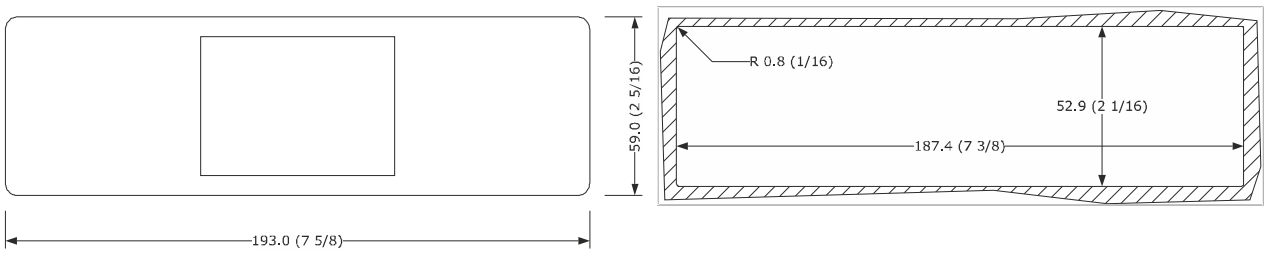
4 USER INTERFACE AND MAIN FUNCTIONS



4.1 Switching the device on/off

1. ⏻ — If POF = 1 (default), touch the ON/STAND-BY key for 4 s

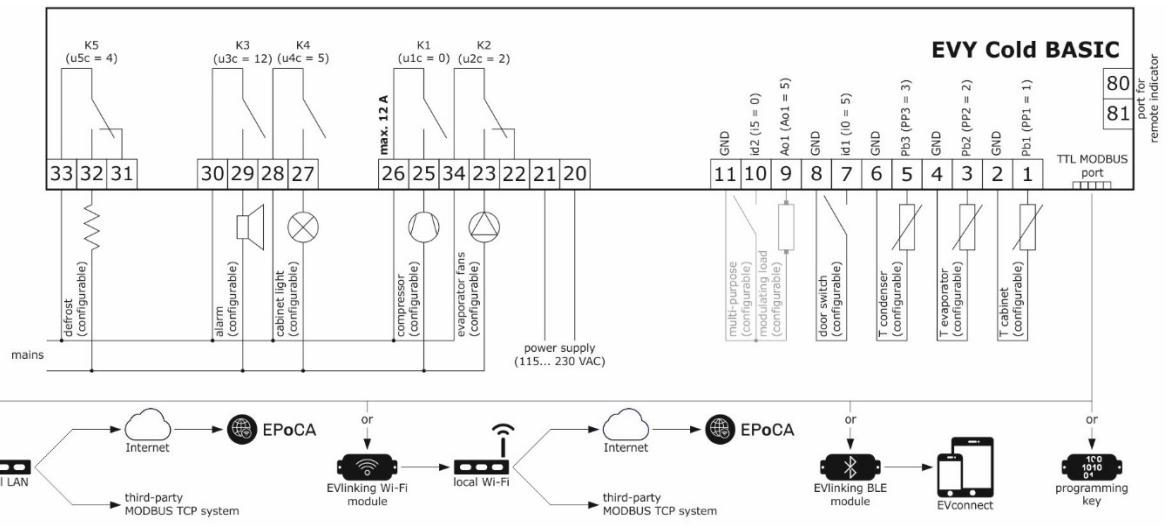
If the device is switched on, the display will show the P5 value (default "cabinet or product temperature"); if the display shows an alarm code, see the section *ALARMS*.



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
- the K3 and K4 relays are not available in models with 3 relays
- the K4 relay is not available in models with 4 relays
- port for remote indicator is only available in model EVYB35LN9VFT



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 further information, contact the EVCO sales network

LED	ON	OFF	FLASHING
❄	compressor on	compressor off	compressor protection active
🌀	evaporator fans on	evaporator fans off	evaporator fans off active
≈	heating active	heating not active	demisting on or door heaters on
❄	defrost or pre-drip active	defrost or pre-drip not active	- defrost delay active - dripping active
°F	temperature displayed in Fahrenheit	-	setpoint being set
°C	temperature displayed in Celsius	-	setpoint being set
⏱	clock active	clock not active	date, time and day of current week being set
AUX	auxiliary load 1 on	auxiliary loads 1 and 2 off	auxiliary load 2 on
%	percentage of power generated by analogue output displayed	-	- slow: low humidity function active - rapid: high humidity function active
⏻	device off	device on	device being switched on/off
⚡	energy saving active	energy saving not active	-
🌡	overcooling or overheating active	overcooling or overheating not active	-
⚠	alarm active	alarm not active	compressor maintenance request
HACCP	saved HACCP alarm not displayed	no HACCP alarm saved or no saved HACCP alarm not displayed	new HACCP alarm saved
💡	cabinet light on	cabinet light off	cabinet light on from digital input
🌐	connection with EVconnect app or EPoCA remote monitoring system	no connection	-

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 Unlocking the keypad

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

4.3 Setting the setpoint (if r3 = 0, default)

Check that the keypad is not locked.

1. SET — 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 "-40... 50")
3. SET — Touch the SET key (or take no action for 15 s)

4.4 Setting the 0-10 V evaporator fan speed for normal operation (percentage 0-10 V output; available if Ao1 = 3 and F30 = 0)

Check that the keypad is not locked.

1. SET SET — Touch the SET key twice
2. ∧ ∨ — Touch the UP or DOWN key within 15 s to set the value within the limits F31 and F32 (default "50... 100")
3. SET — Touch the SET key (or take no action for 15 s)

4.5 Activating 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 2 s

If P3 = 1 (default), defrost is activated provided that the evaporator temperature is lower than the d2 or d2b threshold.

4.6 Manually activating/deactivating the overcooling, overheating and energy-saving functions

Check that the keypad is not locked.

1. ∨ — Touch the DOWN key.

FUNCTION	CONDITION	CONSEQUENCE
overcooling	r5 = 0, r8 = 1 and defrost not activated	the setpoint becomes "setpoint - r6", for the r7 time
overheating	r5 and r8 = 1	the setpoint becomes "setpoint + r6", for the r7 time
energy saving	r5 = 0 and r8 = 2 (default)	the setpoint becomes "setpoint + r4", for the HE2 time at the most

If u1c... u5c = 16, the evaporator fans will operate at this speed during the energy-saving function.
If u1c... u5c = 18, the condenser fans will operate at this speed during the energy-saving function.

4.7 Manually switching the cabinet light on/off (if u1c... u5c = 5)

1. 💡 — Touch the CABINET LIGHT key

4.8 Switching the demisting function on (if u1c... u5c = 6)

1. 💡 — Touch the CABINET LIGHT key (for 2 s if u1c... u5c = 5)

The demisting function stays on for the duration of u6.

4.9 Switching auxiliary load 1 on/off (if u1c... u5c = 10)

1. 💡 — Touch the CABINET LIGHT key (for 2 s if u1c... u4c = 5)

If u1c... u5c = 6, it also switches the demisting function on.

4.10 Switching auxiliary load 2 on/off (if u1c... u5c = 11)

1. ⏻ — Touch the ON/STAND-BY key

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

Touch a key.
If u1c... u5c = 11 and u4 = 1, the alarm output is deactivated.

5 ADDITIONAL FUNCTIONS

5.1 Setting the date, time and day of the week (available when the EVlinking RS-485 EVIF23TSX converter, the EVlinking BLE EVIF25TBX module or the EVlinking Wi-Fi EVIF25TWX 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 automatically be set by the smartphone or tablet

Check that the keypad is not locked.

1. ∨ — Touch the DOWN key for 1 s
2. ∧ ∨ — Touch the UP or DOWN key within 15 s to select the label "**rtc**"
3. SET — Touch the SET key: the display will show the label "**y**" 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.	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 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.	SET	Touch the SET key: the device will exit the procedure
9.		Touch the ON/STAND-BY key to exit the procedure beforehand.

5.2 Activating the high or low humidity function (if F0 = 5)

Check that the keypad is not locked.

1.		Touch the DOWN key for 1 s
2.		Touch the UP or DOWN key within 15 s to select the label "**rH**"
3.	SET	Touch the SET key until the display shows the label of the desired function

LAB.	DESCRIPTION
rhL	low humidity function (evaporator fans with F17 and F18 if the compressor is off, on if the compressor is on)
rhH	high humidity function (evaporator fans on)

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

If u1c... u5c = 16, the evaporator fans will operate at this speed during low humidity function.

5.3 Viewing/deleting HACCP alarm information

Check that the keypad is not locked.

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

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

3.	SET	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**")

CODE	DESCRIPTION
AL	low temperature alarm
AH	high temperature alarm
id	door open alarm (if i4 = 1)
PF	power failure alarm (available when the EVlinking RS-485 EVIF23TSX converter, the EVlinking BLE EVIF25TBX module or the EVlinking Wi-Fi EVIF25TWX module is connected)

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

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

8.0	the critical value (cabinet or product temperature) was 8.0 °C/°F
Sta	(available when the EVlinking RS-485 EVIF23TSX converter, the EVlinking BLE EVIF25TBX module or the EVlinking Wi-Fi EVIF25TWX module is connected)
y24	alarm signalled in 2024
n07	alarm signalled in July
d03	alarm signalled on 3 July 2024
h16	alarm signalled at 16:00
n30	alarm signalled at 16:30
dur	
h01	alarm lasted 1 hour
n15	alarm lasted 1h 15min

5.4 Viewing the minimum and maximum temperatures saved in the last 72 hours

Check that the keypad is not locked.

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

LAB.	DESCRIPTION
Ht	maximum temperature saved in the last 72 hours
Lt	minimum temperature saved in the last 72 hours

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

The device saves the rEt value (default "temperature of the cabinet or the product, not during defrost, pre-drip or dripping and with the fans off").
When the device is switched on/off, these temperatures are deleted.

5.5 Viewing/deleting compressor operation days

Check that the keypad is not locked.

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

LAB.	DESCRIPTION
CH1	view compressor operation days
CH2	view compressor 2 operation days (visible if u1c... u5c = 1)
rCH	delete compressor operation days

3.	SET	Touch the SET key
4.		Touch the UP or DOWN key to set "**149**" (to select **rCH**)
5.	SET	Touch the SET key
6.		Touch the ON/STAND-BY key (or take no action for 60 s) to exit the procedure

5.6 Viewing the temperature detected by the probes

Check that the keypad is not locked.

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

LAB.	DESCRIPTION
Pb1	probe 1 temperature (default "cabinet temperature", visible if PP1 ≠ 0)
Pb2	probe 2 temperature (default "evaporator temperature", visible if PP2 ≠ 0)
Pb3	probe 3 temperature (default "condenser temperature", visible if PP3 ≠ 0)

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

5.7 Displaying the percentage of power generated by the analogue output

Check that the keypad is not locked.

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

LAB.	DESCRIPTION
AoE	evaporator fans (visible if Ao1 = 3)
AoC	condenser fans (visible if Ao1 = 2)
CoM	compressor (visible if Ao1 = 0 or 1)

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

5.8 Starting up the EVlinking Wi-Fi module again

Check that the keypad is not locked.

1.		Touch the DOWN key for 1 s
2.		Touch the UP or DOWN key within 15 s to select the label "**run**"
3.	SET	Touch the SET key until the device displays the P5 value

6 SETTINGS

6.1 Setting configuration parameters

1.	SET	Touch the SET key for 4 s: the display will show the label "**PA**"
2	SET	Touch the SET key
3.		Touch the UP or DOWN key within 15 s to set the PAS value (default "**-19**")
4.	SET	Touch the SET key (or take no action for 15 s): the display will show the label "**SP**"
5.		Touch the UP or DOWN key to select a parameter
6.	SET	Touch the SET key
7.		Touch the UP or DOWN key within 15 s to set the value
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 Restoring factory settings

N.B.
Check that the factory settings are appropriate; see the section *CONFIGURATION PARAMETERS*

1.	SET	Touch the SET key for 4 s: the display will show the label "**PA**"
2.	SET	Touch the SET key
3.		Touch the UP or DOWN key within 15 s to set "**149**"
4.	SET	Touch the SET key (or take no action for 15 s): the display will show the label "**dEF**"
5.	SET	Touch the SET key
6.		Touch the UP or DOWN key within 15 s to set "**1**"
7.	SET	Touch the SET key (or take no action for 15 s): the display will show "**dEF**" flashing 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	SP	**0.0**	setpoint	r1... r2
NO.	PAR.	DEF.	ANALOGUE INPUTS	MIN... MAX.
2	CA1	**0.0**	probe 1 offset	-25... 25 °C/°F
3	CA2	**0.0**	probe 2 offset	-25... 25 °C/°F
4	CA3	**0.0**	probe 3 offset	-25... 25 °C/°F
5	P0	**1**	type of probe	0 = PTC 1 = NTC 2 = Pt 1000
6	P1	**1**	enable decimal point °C	0 = no 1 = yes
7	P2	**0**	temperature measurement unit	0 = °C 1 = °F
8	P3	**1**	evaporator probe function	0 = disabled 1 = defrost + fans 2 = fans
9	P5	**0**	value displayed	0 = if PP1... PP3 = 5, product temperature (CPT), otherwise cabinet temperature 1 = setpoint 2 = evaporator temperature 3 = condenser temperature 4 = critical temperature 5 = incoming air temperature 6 = outgoing air temperature 7 = evaporator 2 temperature
10	P5r	**0**	value shown on remote display (when managed)	like P5
11	P7	**50**	incoming air effect to calculate product temperature (CPT)	0... 100 % CPT = {[(P7 x (incoming air)] + [(100 - P7) x (outgoing air)] : 100}
12	P8	**5**	display refresh time	0... 250 s: 10
13	P9	**5**	key and display brightness with keypad locked	1 = level 1 2 = level 2 3 = level 3 4 = level 4 5 = display level 4, keys level 1 6 = display level 4, keys off
14	PP1	**1**	probe 1 function	0 = disabled 1 = if PP1... PP3 = 5, incoming air temperature probe, otherwise cabinet temperature probe 2 = evaporator temperature probe 3 = condenser temperature probe 4 = critical temperature probe 5 = outgoing air temperature probe 6 = evaporator 2 temperature probe
15	PP2	**2**	probe 2 function	like PP1
16	PP3	**3**	probe 3 function	like PP1
NO.	PAR.	DEF.	MAIN REGULATOR	MIN... MAX.
17	r0	**2.0**	setpoint differential	1... 15 °C/°F if Ao1 = 0, compressor band
18	r1	**-40**	minimum setpoint	-99 °C/°F... r2
19	r2	**50.0**	maximum setpoint	r1... 199 °C/°F
20	r3	**0**	enable setpoint lock	0 = no 1 = yes
21	r4	**0.0**	setpoint offset in energy saving	0... 99 °C/°F
22	r5	**0**	hot or cold mode regulation	0 = cold mode 1 = hot mode
23	r6	**0.0**	setpoint offset in overcooling/overheating	0... 99 °C/°F
24	r7	**0**	duration overcooling/overheating	0... 240 min
25	r8	**2**	DOWN key additional function	0 = disabled 1 = overcooling/overheating 2 = energy saving
26	r12	**1**	differential position r0	0 = asymmetrical 1 = symmetrical
27	r13	**25.0**	proportional band with PWM compressor (relative to setpoint)	0... 99 °C/°F setpoint + r13
28	r14	**10**	integral action time with PWM compressor	0... 99 min
29	r15	**3**	type of PWM compressor	1 = Embraco VEM 2 = Embraco VEG 3 = Embraco VNEK and VNEU 4 = Secop VNL 50... 150 Hz (40 Hz when set to off) 5 = Secop 33... 133 Hz 6 = Tecumseh 85... 150 Hz 7 = Embraco VES 8 = Embraco FMX 9 = Embraco VESF
30	r16	**0**	percentage 0-10 V output for compressor with minimum capacity	0 %... r17
31	r17	**100**	percentage 0-10 V output for compressor with maximum capacity	r16... 100%
32	r18	**0**	maximum percentage 0-10 V output for compressor in energy-saving mode	0... 100% 0 = disabled
NO.	PAR.	DEF.	COMPRESSOR	MIN... MAX.
33	CP0	**0**	85 Hz PWM compressor time from power-on	0... 100 s x 10
34	CP1	**50**	percentage 0-10 V compressor from power-on	0... 100%
35	CP3	**100**	percentage 0-10 V compressor in cabinet probe alarm	0... 100%
36	CP4	**0**	maximum 0-10 V compressor-on time	0... 240 min
37	C0	**0**	compressor-on delay from power-on	0... 240 min
38	C1	**5**	delay between two compressor switch-ons	0... 240 min
39	C2	**3**	minimum compressor-off time	0... 240 min
40	C3	**0**	minimum compressor-on time	0... 240 s
41	C4	**10**	compressor-off time in cabinet probe alarm	0... 240 min
42	C5	**10**	compressor-on time (maximum capacity) in cabinet probe alarm	0... 240 min
43	C9	**5**	cabinet temperature consecutive time within proportional band to operate compressor at max. power	0... 99 h 0 = disabled until cabinet temperature < setpoint
44	C10	**0**	compressor days for maintenance	0... 999 days 0 = disabled
45	C11	**10**	compressor 2 on delay	0... 240 s if C14 = 0
46	C12	**2**	compressor hour value effect to balance hours and switch-ons (BHC)	0... 10 BHC = {[C12 x (compressor hours)] + [C13 x (compressor switch-ons)]} if C14 = 2
47	C13	**1**	compressor switch-ons value effect to balance hours and switch-ons (BHC)	0... 10 BHC = {[C12 x (compressor hours)] + [C13 x (compressor switch-ons)]} if C14 = 2
48	C14	**1**	constraint between compressor and compressor 2	0 = function of C11 1 = function of r0 2 = function of C12 and C13
NO.	PAR.	DEF.	DEFROST (if r5 = 0)	MIN... MAX.
49	d00	**0**	enable "b" mode parameters	0 = no 1 = yes
50	d01	**1.0**	setpoint threshold to activate "b" mode parameters	r1... r2 activated if setpoint > d01
51	d0	**8**	automatic defrost interval	0... 99 h 0 = manual only if d8 = 3, maximum interval
52	d0b	**6**	automatic defrost interval in "b" mode	like d0
53	d1	**0**	type of defrost	0 = electric 1 = hot gas (do not use with regulation with 2 compressors) 2 = compressor stopped
54	d1b	**2**	type of "b" mode defrost	like d1
55	d2	**2.0**	defrost end threshold	-99... 99 °C/°F
56	d2b	**4.0**	"b" mode defrost end threshold	like d2
57	d3	**30**	defrost duration	0... 99 min if P3 = 1, maximum duration
58	d3b	**20**	"b" mode defrost duration	like d3
59	d4	**0**	enable defrost at power-on	0 = no 1 = yes
60	d5	**0**	defrost delay from power-on	0... 99 min
61	d6	**1**	value displayed when defrosting	0 = cabinet or product temperature 1 = locked display 2 = label dEF
62	d7	**2**	drip duration	0... 15 min
63	d7b	**2**	"b" mode drip duration	like d7
64	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
65	d9	**0.0**	evaporator temperature threshold for automatic defrost interval count	-99... 99 °C/°F
66	d11	**0**	enable defrost timeout alarm	0 = no 1 = yes
67	d15	**0**	compressor-on consecutive time for hot gas defrost	-20... 99 min if values are negative, dripping heaters on time
68	d16	**0**	pre-drip duration for hot gas defrost	0... 99 min
69	d18	**40**	adaptive defrost interval	0... 999 min if compressor on + evaporator temperature < d22 0 = manual only
70	d19	**3.0**	adaptive defrost threshold (relative to optimal evaporator temperature)	0... 40 °C/°F optimal evaporator temperature - d19
71	d20	**180**	compressor-on consecutive time for defrost	0... 999 min 0 = disabled

72	d21	**200**	compressor-on consecutive time for defrost from power-on and from overcooling	0... 999 min if (cabinet or product temperature - setpoint) > 10°C/20 °F 0 = disabled
73	d22	**-2.0**	evaporator temperature threshold for adaptive defrost interval count (relative to optimal evaporator temperature)	-10... 10 °C/°F optimal evaporator temperature + d22
74	d25	**0**	enable outgoing air temperature probe for defrost in evaporator probe alarm	0 = no 1 = yes
75	d26	**6**	defrost interval in evaporator probe alarm	0... 99 h 0 = manual only if d25 = 1

NO.	PAR.	DEF.	TEMPERATURE ALARMS	MIN... MAX.
76	A0	**0**	select value for high/low temperature alarms	0 = cabinet or product temperature 1 = evaporator temperature 2 = critical temperature
77	A1	**0.0**	low temperature alarm threshold	-99... 99 °C/°F
78	A2	**0**	type of low temperature alarm	0 = disabled 1 = relative to setpoint (i.e. setpoint + A1) 2 = absolute (A1)
79	A4	**0.0**	high temperature alarm threshold	-99... 99 °C/°F
80	A5	**0**	type of high temperature alarm	0 = disabled 1 = relative to setpoint (i.e. setpoint + A4) 2 = absolute (A4)
81	A6	**120**	high temperature alarm delay from power-on	0... 240 min
82	A7	**15**	high/low temperature alarm delay	0... 240 min
83	A8	**15**	high temperature alarm delay after defrost	0... 240 min
84	A9	**15**	high temperature alarm delay from door closure	0... 240 min
85	A10	**10**	duration of power failure for saving alarm	0... 240 min 0 = disabled
86	A11	**2.0**	high/low temperature alarm threshold differential (A1 and A4)	1... 15 °C/°F
87	A12	**1**	enable power failure alarm signal	0 = no 1 = yes (label PF, if EVlinking RS-485EVIF23TSX, EVlinking BLEEVIF25TBX or EVlinking Wi-Fi EVIF25TWX is connected)
88	A13	**80**	high condensation signal threshold	0... 199 °C/°F differential = 2 °C/4 °F
89	A14	**90**	high condensation alarm threshold	0... 199 °C/°F
90	A15	**10**	high condensation alarm delay	0... 15 min
91	A16	**0**	enable viewing of high/low temperature alarms on remote display	0 = no 1 = yes

NO.	PAR.	DEF.	FANS	MIN... MAX.
92	F0	**1**	evaporator fan mode in normal operation	0 = off 1 = on 2 = on if compressor on 3 = thermostat controlled (with cabinet or product temperature + F1) 4 = thermostat controlled (with cabinet or product temperature + F1) if compressor on 5 = function of F6 6 = thermostat controlled (with evaporator temperature + F1) 7 = thermostat controlled (with evaporator temperature + F1) if compressor on
93	F0b	**1**	evaporator fan mode in normal "b" mode operation	like F0
94	F1	**-4.0**	evaporator fans regulation threshold	-99... 99 °C/°F
95	F2	**0**	evaporator fan mode in defrost and drip mode	0 = off 1 = on 2 = function of F0
96	F2b	**0**	evaporator fan mode in "b" mode defrost and drip	like F2
97	F3	**2**	maximum time evaporator fans off	0... 15 min
98	F3b	**2**	maximum time evaporator fans off in "b" mode	0... 15 min
99	F4	**30**	time evaporator fans off in energy saving	0... 240 s x 10 if F0 ≠ 5
100	F5	**30**	time evaporator fans on in energy saving	0... 240 s x 10 if F0 ≠ 5
101	F6	**0**	low or high humidity function	0 = for low humidity (with F17 and F18 if compressor off, on if compressor on) 1 = for high humidity (fans on)
102	F7	**5.0**	evaporator fans on threshold from dripping (relative to setpoint)	-99... 99 °C/°F setpoint + F7
103	F8	**2.0**	evaporator fans regulation threshold differential (F1)	1... 15 °C/°F
104	F9	**10**	evaporator fans off delay from compressor off	0... 240 s if F0 = 2 or 5
105	F10	**1**	condenser fan mode in normal operation	0 = thermostat controlled (with condenser temperature + F11) 1 = thermostat controlled (with condenser temperature + F11) if compressor off, on if compressor on 2 = thermostat controlled (with condenser temperature + F11) if compressor off, on if compressor on, off in defrost, pre-drip and dripping
106	F11	**15.0**	condenser fans on threshold	0... 99 °C/°F differential = 2 °C/4 °F
107	F12	**30**	condenser fans off delay from compressor off	0... 240 s if PP1... PP3 ≠ 3
108	F13	**2**	condenser fans on threshold differential (F11)	1... 25 °C/°F if Ao1 = 2, condenser fans proportional band (relative to F11, i.e. F11 + F13)
109	F14	**10**	100 % start-up time for 0-10 V condenser fans	0... 240 s
110	F15	**100**	maximum percentage 0-10 V condenser fans in energy saving	0... 100%
111	F17	**60**	time evaporator fans off in low humidity	0... 240 s
112	F18	**10**	time evaporator fans on in low humidity	0... 240 s
113	F19	**0**	reversible condenser fans on interval	0... 240 h
114	F20	**0**	reversible condenser fans on time	0... 240 min
115	F30	**0**	setting percentage 0-10 V evaporator fan speed in normal operation	0 = touch SET key twice 1 = with F33 2 = automatic with F1, F31, F32 and F36
116	F31	**50**	percentage 0-10 V evaporator fans with minimum capacity	0... 100% if F31>F32, F32 is relevant
117	F32	**100**	percentage 0-10 V evaporator fans with maximum capacity	0... 100% if F32<F31, F31 is relevant
118	F33	**100**	percentage 0-10 V evaporator fans in normal operation	F31... F32
119	F34	**10**	start-up time F35 0-10 V evaporator fans	0... 240 s
120	F35	**100**	percentage 0-10 V evaporator fans from power-on	0... 100%
121	F36	**10**	0-10 V evaporator fans proportional band (relative to setpoint)	1... 25 °C/°F setpoint+F36
122	F37	**0**	maximum percentage 0-10 V evaporator fans in energy saving	0... 100%
123	F38	**0**	evaporator fans on delay from door closed	0... 240 s

NO.	PAR.	DEF.	DIGITAL INPUTS	MIN... MAX.
124	i0	**5**	door switch input function	0 = disabled 1 = compressor + evaporator fans off 2 = evaporator fans off 3 = cabinet light on 4 = compressor + evaporator fans off, cabinet light on 5 = evaporator fans off, cabinet light on
125	i1	**0**	door switch input activation	0 = with contact closed 1 = with contact open
126	i2	**30**	door open alarm delay	-1... 120 min -1 = disabled
127	i3	**15**	maximum compressor and evaporator fan off time with door open	-1... 120 min -1 = until closed
128	i4	**0**	enable door open alarm saving	0 = no 1 = yes if i2 ≠ -1 and after i2
129	i5	**0**	multi-purpose input function	0 = disabled 1 = energy saving 2 = multi-purpose input alarm 3 = high pressure alarm 4 = auxiliary load 1 on 5 = auxiliary load 2 on 6 = switch device on/off 7 = low pressure alarm 8 = compressor thermal switch alarm 8 = compressor 2 thermal switch alarm
130	i6	**0**	multi-purpose input activation	0 = with contact closed 1 = with contact open
131	i7	**0**	multi-purpose input alarm delay	0... 120 min if i5 = 3 or 7, compressor on delay from alarm reset
132	i8	**0**	number of multi-purpose input activations for high pressure alarm	0... 15 0 = disabled
133	i9	**240**	consecutive time if there are no multi-purpose input activations to reset counter due to high pressure alarm	1... 999 min
134	i10	**0**	door closed consecutive time for energy saving	0... 999 min after cabinet or product temperature < SP 0 = disabled
135	i13	**180**	number of door openings for defrost	0... 240 0 = disabled
136	i14	**32**	door open consecutive time for defrost	0... 240 min 0 = disabled

NO.	PAR.	DEF.	DIGITAL OUTPUTS	MIN... MAX.
137	u1c	**0**	K1 relay configuration	0 = compressor 1 = compressor 2 2 = evaporator fans 3 = condenser fans 4 = defrost 5 = cabinet light 6 = demisting 7 = door heaters 8 = heaters for neutral zone 9 = dripping heaters 10= auxiliary load 1 11= auxiliary load 2 12= alarm 13= on/stand-by 14= evaporator fans 2 15= defrost 2 16= speed 2 evaporator fans 17= reversible condenser fans 18= speed 2 condenser fans
138	u2c	**2**	K2 relay configuration	like u1c
139	u3c	**12**	K3 relay configuration	like u1c
140	u4c	**5**	K4 relay configuration	like u1c
141	u5c	**4**	K5 relay configuration	like u1c
142	u2	**0**	enable cabinet light and auxiliary load 1 and 2 in stand-by	0 = no 1 = yes in manual mode
143	u3	**0**	alarm output activation	0 = with alarm not active 1 = with alarm active
144	u4	**1**	enable deactivation alarm output with silencing buzzer	0 = no 1 = yes
145	u5	**-1.0**	door heaters on threshold	-99... 99 °C/°F
146	u5d	**2.0**	door heaters on threshold differential (u5)	1... 25 °C/°F
147	u6	**5**	duration demisting on	1... 120 min 1 = manual switch on/off
148	u7	**-5.0**	neutral zone for heating threshold (relative to setpoint)	-99... 99 °C/°F differential = 2 °C/4 °F setpoint + u7
149	u9	**1**	enable alarm buzzer	0 = no 1 = yes

NO.	PAR.	DEF.	ANALOGUE OUTPUTS	MIN... MAX.
150	Ao1	**5**	analogue output configuration	0 = PWM compressor (r15) 1 = 0-10 V compressor 2 = 0-10 V condenser fans 3 = 0-10 V evaporator fans 4 = disabled 5 = disabled

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

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

NO.	PAR.	DEF.	ENERGY SAVING IN REAL TIME (if r5 = 0)	MIN... MAX.
153	H01	**0**	energy saving time	0... 23 h
154	H02	**0**	maximum duration energy saving	0... 24 h

NO.	PAR.	DEF.	SWITCH ON/OFF IN REAL TIME	MIN... MAX.
155	Hon	**h-**	time device switch-on	0... h h = disabled
156	HoF	**h-**	time device switch-off	like HoF
157	Hc1	**h-**	1st time reversible condenser fans on	0... h h = disabled for F20
158	Hc2	**h-**	2nd time reversible condenser fans on	like Hc1

NO.	PAR.	DEF.	REAL-TIME DEFROST	MIN... MAX.
159	Hd1	**h-**	1st daily defrost time	0... h h = disabled
160	Hd2	**h-**	2nd daily defrost time	like Hd1
161	Hd3	**h-**	3rd daily defrost time	like Hd1
162	Hd4	**h-**	4th daily defrost time	like Hd1
163	Hd5	**h-**	5th daily defrost time	like Hd1
164	Hd6	**h-**	6th daily defrost time	like Hd1

NO.	PAR.	DEF.	SECURITY	MIN... MAX.
165	POF	**1**	enable ON/STAND-BY key	0 = no 1 = yes
166	Loc	**1**	enable keypad lock	0 = no 1 = yes (after 30 s)
167	Sen	**80**	keypad sensitivity	40... 120 40= very sensitive
168	PAS	**-19**	password to access settings from keypad	-99... 999
169	PA1	**426**	level 1 password to access settings from EVconnect and EPoCA	-99... 999
170	PA2	**824**	level 2 password to access settings from EVconnect and EPoCA	-99... 999

NO.	PAR.	DEF.	DATA-LOGGING	MIN... MAX.
171	rE0	**15**	EVlinking data logger sampling interval	0... 240 min
172	rE1	**1**	select temperature for EVlinking data logger	0 = none 1 = cabinet 2 = evaporator 3 = condenser 4 = critical 5 = outgoing air 6 = evaporator 2 7 = product 8 = cabinet + evaporator + condenser 5 = all
173	rEt	**0**	select temperature for data logger device in last 72 hours	0 = cabinet or product (not during defrost, pre-dripping, dripping and fan stop) 1 = cabinet or product (also during defrost, pre-dripping, dripping and fan stop) 2 = critical (not during defrost, pre-dripping, dripping and fan stop) 3 = critical (also during defrost, pre-dripping, dripping and fan stop) 4 = cabinet or product (only during defrost, pre-dripping, dripping and fan stop)

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

NO.	PAR.	DEF.	MODBUS USE	MIN... MAX.
177	bLE	**1**	type of use of TTL MODBUS port	0 = for EVIF23TSX or third-party MODBUS TCP system (via EVIF24TSX) 1 = for EVconnect (via EVIF25TBX) or EPoCA (via EVIF25TWX) 2... 99 = for EPoCA (via EVIF24TSX and IoT EV3 Web gateway or EVD Web)

8 ALARMS

CODE	DESCRIPTION	RESET	TO CORRECT
Pr1	probe 1 alarm	automatic	- check P0 - check the integrity of the probe - check electrical connection
Pr2	probe 2 alarm	automatic	
Pr3	probe 3 alarm	automatic	
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
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 A13
CSd	high condensation alarm	manual	- switch the device off and on - check A14
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 and i9
LP	low pressure alarm	automatic	check i5 and i6
C1t	compressor thermal switch alarm	automatic	check i5 and i6
C2t	compressor 2 thermal switch alarm	automatic	check i5 and i6
dFd	defrost timeout alarm	manual	- touch a key - check d2, d2b, d3, d3b and d11

9 TECHNICAL SPECIFICATIONS

Purpose of the control device:	function controller
Construction of the control device:	built-in electronic device
Housing:	black, self-extinguishing
Category of heat and fire resistance:	D
Measurements:	193.0 x 59.0 x 61.0 mm (7 5/8 x 2 5/16 x 2 3/8 in)
Mounting methods for the control device:	front installation on a plastic or metal panel (with elastic holding flaps).
Degree of protection provided by the casing:	IP65 (front), provided that the device is installed on a metal panel 0.8 mm (1/32 in) thick

Connection method:			
fixed screw terminal blocks for wires up to 1.5 mm² (analogue inputs, digital inputs, analogue outputs, port for remote indicator) and wires up to 2.5 mm² (power supply and digital outputs)			
Pico-Blade connector (TTL MODBUS port)			
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)			analogue outputs: 3 m (9.84 ft)
digital outputs: 10 m (32.8 ft)			port for remote indicator: 3 m (9.84 ft)
Operating temperature:			from -5 to 60 °C (from 23 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			LVD 2014/35/EU
Power supply:			115...230 Vac (+10 % -15%), 50/60 Hz (±3 Hz), max. 11 VA, 6.4 W
Earthing methods for the control device:			none
Rated impulse withstand voltage:			2.5 kV
Overvoltage category:			II
Software class and structure:			A
Analogue inputs:			3 for configurable PTC, NTC or Pt 1000 probes
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)
Probes Pt 1000:	Type of sensor:		1 kΩ @ 0 °C, 32 °F
	Measurement field:		from -99 to 199 °C (from -146 to 390 °F)
	Resolution:		0.1 °C (1 °F)
Digital inputs:			2 voltage-free (door switch and multi-purpose)
Voltage-free:	Type of contact:		3.3 Vdc, 1 mA
	Power supply:		none
	Protection:		none
Analogue outputs:			1 configurable PWM or 0-10 V output
PWM output:	Output:		11 Vdc (±15%), 10 mA max
	Frequency:		0... 150 Hz
	Protection:		none
0-10 V output:	Minimum applicable impedance:		1 kΩ
	Resolution:		0.01 V
Digital outputs:			up to 5 with sealed electro-mechanical relays in compliance with the EN 60079-15 standard
K1 relay:			SPST, 16 A res. @ 250 Vac (30 A res. @ 250 Vac in models EVYB33LN9, EVYB34LN9 and EVYB35LN9)
K2 relay:			SPDT, 8 A res. @ 250 Vac
K3 relay:			SPST, 8 A res. @ 250 Vac (not available in models with 3 relays)
K4 relay:			SPST, 8 A res. @ 250 Vac (not available in models with 3 and 4 relays)
K5 relay:			SPDT, 8 A res. @ 250 Vac
The device guarantees reinforced insulation between the digital outputs (electro-mechanical relays) and the SELV (Safety Extra Low Voltage) circuits, as well as between the digital output groups			
Type 1 or Type 2 actions:			type 1
Additional features of Type 1 or Type 2 actions:			C
Displays:			custom display with 3 digits and function icons
Alarm buzzer:			built-in
Communications ports:			
1 x TTL MODBUS slave port for the EVconnect app or EPoCA remote monitoring system			1 x remote indicator (according to the model)

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