EVJ506N2 — Temperature and Humidity controller for Seasoning, 2.8" display with touch keys

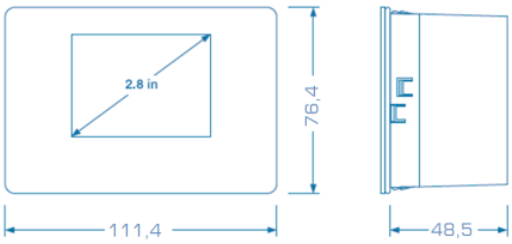
PLEASE READ CAREFULLY and save this document
CONSIDER THE ENVIRONMENT

1. ENGLISH

- Temperature and humidity controller
- Suitable for Humidity and temperature EVCO EVHTP500 probe;
- 12Vac/dc power supply
- Option Real time clock RTC and memory for data logging and BLE for communication with APP EVconnect (Android).
- Door switch or configurable digital input
- 6 configurable relay outputs, 16 or 30 A res. @ 250 VAC compressor relay
- Alarm Buzzer
- TTL communication port for optional RS485 and RTC external interface or EVLINK / BLE (Cap. First Handling).

2. DIMENSION AND INSTALLING

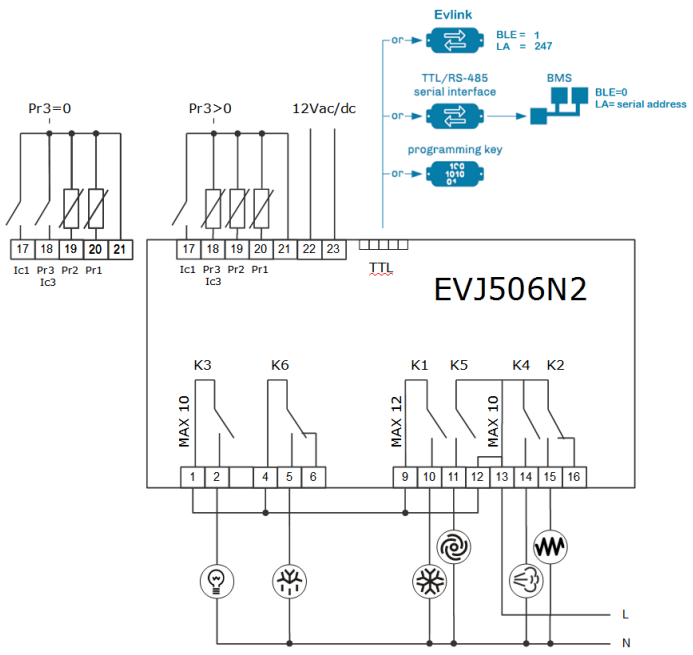
Dimensions in 11,4 x 76,4 x4 8,5mm (4 1/4 x 2 7/8 in); Front Panel mounting,



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.

3. ELECTRICAL CONNECTION

BE AWARE
- 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.
- Use TVHTP500 probe, the unit does no support 4..20mA o 0.10V humidity probes.



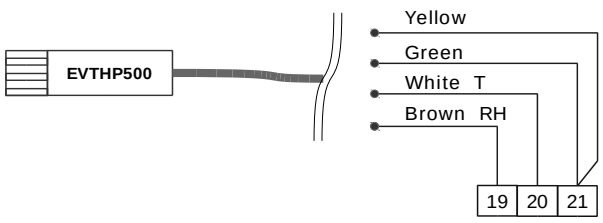
Default values

K1 = 30A or 16= compressor
k2 = 8A= Heating
K3 = 16A= Light
K4 = 8A= Humidify
K5 = 5A= Evaporator Fan
K6 = 8A= Defrost

Pr1= Cabinet probe
Pr2= Humidity EVCO probe EVHTP500
Pr3 / ic3 = Evaporator / Configurable / Digital input
ic1= Door switch or configurable

EVCO transformer model ECTSFB001 230V/12vac 5,6VA (non included)

EVHTP500 PROBE CONNECTION

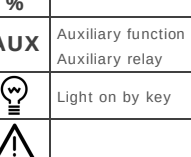


PRECAUTIONS FOR ELECTRICAL CONNECTION
- If using an electrical or pneumatic screwdriver, adjust the tightening torque.
- Moving the device from cold to warm places, there may be internal condensing. Wait about an hour before switching on the power.
- Make sure that the supply voltage, electrical frequency 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.

4. FIRST HANDLING

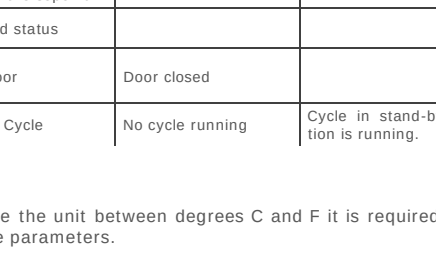
1. Install following the instructions given in the section *DIMENSION AND INSTALLING*.
2. Power up the device as shown in the section *ELECTRICAL CONNECTION*.
3. Configure the device output with relay parameters uc1..uc6, input parameters Pr2 Pr3 e ic1 and uc3;
4. Then check if the remaining settings are appropriate;
5. Disconnect the device from the mains supply.
6. Make the electrical connection as shown in the section ELECTRICAL CONNECTION without powering up the device.
7. To connect the unit to an RS-485 network connect the interface **EVIF22TSX** or **EVIF23TSX** (With RTC). A network communication is alternative to local transmission and data recording, set BLE=0.
8. Power up the device.

Device ON / OFF



Touch the ON-OFF key for 2", the device alternatively turns On or Off.
When the device is off, the display shows the off icon for some seconds. Then it turns to black for energy saving.

5. USER INTERFACE AND MAIN KEY FUNCTIONS



LED	ON	OFF	BLINKING
	Cooling request De-humidify request	compressor Off	- Protection delay time
	Defrost	-	- Defrost delay time - Dripping
	Evaporator fans on	Evaporator fan off	Evaporator fan delay time
	Humidify request Humidify relay		
	De-Humidify request de-Humidify relay		Delay when de-humidify with compressor.
	Heating request Heating relay De-Humidify request Compressor+heating		
HACCP	HACCP Alarm loggged	-	New alarm logged
	Energy saving	-	-
	Maintenance	-	Collegamento remoto
C/F/%	Unit of measurement	-	
AUX	Auxiliary function Auxiliary relay	Auxiliary not active	
	Light on by key	Light off	Light on by door open
			Active alarm
	Probe value above the or under the sepoint.		
	Keyboard status		
	Open Door	Door closed	
	Running Cycle	No cycle running	Cycle in stand-by, another function is running.

To change the unit between degrees C and F it is required to re-program the temperature parameters.

6. KEY COMMANDS

Key command functions can be direct or delayed:

LED	Direct	Delayed: press 2 seconds
MENU		To access the MENU functions - Language - Parameters - Probe Value .....
	Backward from a Menu	Turns On or Off instantaneously the unit regulation, display turns to black after a minute.
V	Reduce a value or move down the prompt in a list of elements.	
AUX	Increase a value or move up the prompt in a list of elements. To access the AUX functions	
	Turn On or Off manually the light output relay.	
SET	To change or confirm the setpoint, Select or confirm the element or a value.	

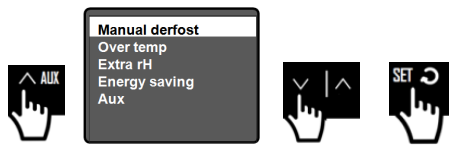
LOCK UNLOCK THE KEYBOARD

After a minute without operating the keyboard is automatically locked.

Push any keys for two seconds to unlock the keyboard.

7. AUX FUNCTIONS

User auxiliary manual commands are available touching the **AUX** key:



CONFIRM: Select an item with up and down keys, press **SET** to confirm or to abort:

Some functions can be disabled by repeating the same procedure (Manual Energy Saving). Other functions will proceed following their process until the end of the function (manual defrost).
Some functions may not be visible if the unit status is not running or the model does not support the function itself.

Manual defrost: It executes a defrost if the evaporator probe is present "Pr3=5" and the evaporator condition allows it. If no evaporator probe is configured the defrost is time based.
Over temp: it changes the SET temperature to "SET+/-r6" value for the time "r7". With r7=0 the function is disabled. A defrost can be postponed with d4.
Extra rH: it changes the humidity SET2 into "h4" value for the time set in "h5". With "h5=0" the function is disabled.
Energy Saving: Enabling the energy saving function changes the SET1 into "SET1 + r4 differential". Repeat the operation to disable the function.
Aux: available if the auxiliary output is configured as manual control "u6".

LIGHT COMMAND KEY

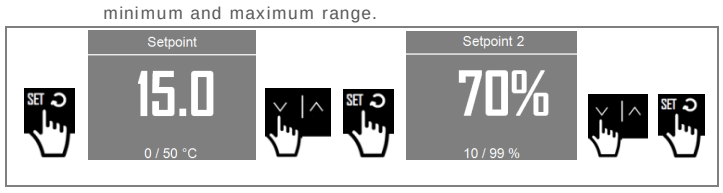
Touch once the light command to turn ON or OFF the light.

The light output turns on by opening the door if ic1=7/8/9.

8. CHANGING THE SETPOINTS

It is possible to change the temperature and humidity setpoint values as follow:

1. Push **SET** key, the temperature setpoint appears with the available minimum and maximum range.



2. Push up or down arrows to change the value and then **SET** to confirm;
3. The humidity SET2 appears;
4. Push up or down arrows to change the value and then **SET** to confirm to exit.

INTERMEDIATE EXIT: wait 5 seconds or push to exit and abort the changed value on the display.

9. ALARMS

All the alarm events are displayed by rotation of the alarm messages on the bottom line of the display.

SILENCING TE BUZZER Alarm sounding can be reset touching **MENU / SET** keys.

Faulty Sensor alarms: a faulty probe or wrong probe connection is showed by "--.-". The alarm icon and an alarm message is available on the bottom line.

RTC alarm and **Power failure**
If enabled with "Hr0=1" the RTC alarm appears at the power on after a minute.
The black out alarm is recorded when longer than > A10.

LIST OF THE ACTIVE ALARMS

All the active alarms are also listed into MENU_SERVICE_ALARMS.

LIST OF HACCP ALARMS LOG

All the Haccp alarm are listed into the MENU_SERVICE_HACCP log.
RESET To reset the blinking alarm icon enter the **MENU_SERVICE: Reset data memory**.

10. MENU - CONFIGURATION

Touch the MENU 2" key for 2 seconds to enter the configuration.

Language Select the interface language.
Service To show configuration Parameters, Alarms, Alarm Reset and Statistics.
Real time Clock To set the Clock if enabled. Available only if the clock option is availabe.

LANGUAGE To select the operative language. Basic languages I-GB other depending on version updates (N.A.).

MENU_SERVICE to configure the I/O, reading values and maintenance.

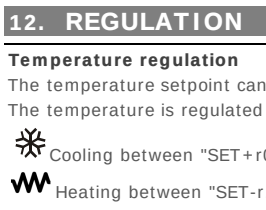
SERVICE MENU ITEMS

Parameters	To access and configure parameters
Internal value	To show I/O values.
Alarms	To show the list of active alarms
Reset data memory	Alarm Reset (**code 149**)
Parameters Restore	Re-load original parameter map. BE AWARE (*)
Haccp	Show the HACCP Log from last Alarm Reset.

(*) custom configuration can be different from default values. By re-loading the original values, the loads connected to relay outputs can be damaged or wrongly perform if not corresponding.

REAL TIME CLOCK

Real time clock functions are available if provided on board or connected with external interfaces EVIF23TSX or EVIF25TBX (Evlink), Enter this menu to set the clock. Function related to Clock:

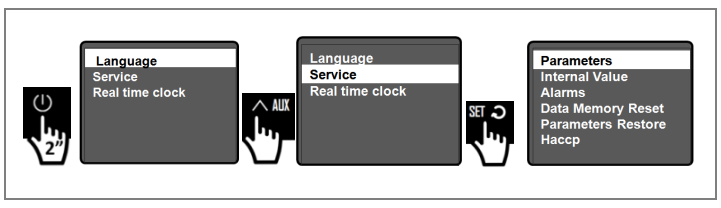


Enter the Clock menu and:
push SET and change year value YY;
push SET and change month value MM;
push SET and change day value DD;
push SET and change hour value;
push SET and change minutes value;
EXIT the menu with

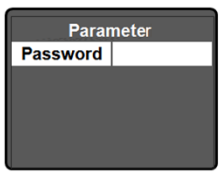
Regulation functions available with the clock function:
- **daily defrost**: Hd1..Hd6.
- **daily Energy Saving:** H01..H02

11. PARAMETERS AND PASSWORDS

ENTER: Push MENU key for 2 seconds;



PASSWORD



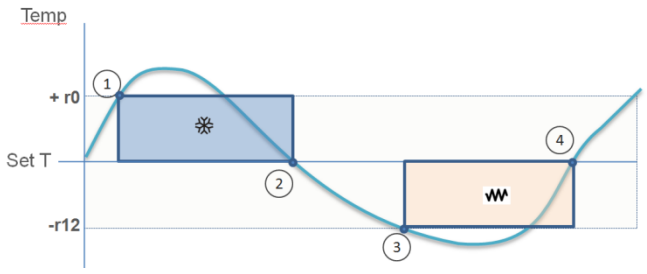
Enter the password using directly the up or down arrows, the pass background color turns to green, push SET to confirm:
password value corresponding to "**PS1=1**" to enter level 1 parameters.
password value corresponding to "**PAS=-19**" to enter all the parameters.

12. REGULATION

Temperature regulation

The temperature setpoint can be set between the limits min "**r1**" and max "**r2**".
The temperature is regulated with the following outputs:

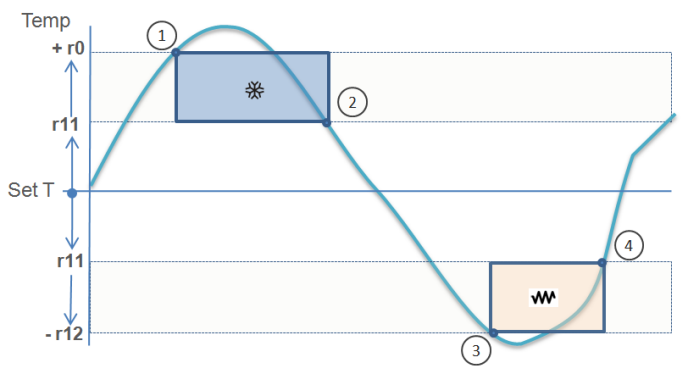
Cooling between "SET+r0= on" (1) and "SET=off" (2).
Heating between "SET-r12= on" (3) and "SET=Off" (4).



TEMPERATURE REGULATION WITH NEUTRAL ZONE

Available by setting "r11<>0" the value is inserted between the SET and the differential:

Cooling regulation "SET+r11+r0= on" (1) and "SET+r11=off" (2).
Heating regulation "SET-r11-r12" = on (3) and "SET-r11" = OFF (2).



if "r11<0" the neutral zone is available only for heating side 3-4.

TEMPERATURE REGULATION and DE-HUMIDIFY WITH COMPRESSOR

By setting "**rd4=1**" the de-humidify function with compressor is enabled, while setting "**rd4=2**" the same function is performed by turning on also the Heating output on with the Compressor.

TEMPERATURE PRIORITY OVER DE-HUMIDIFY with compressor if "rd4>0".
The "**r14**" parameter can be configured as the following priority:
0 = Temperature and humidity are independent and follow their requests.
1 = Heat: if the temperature drifts up, the de-humidify is suspended.
2 = Heat-Cool: if the temperature drifts up or down, the de-humidify is suspended.
3 = Cool: if the temperature drifts-down, the de-humidify is suspended.

HEATING MODULATION

The heating output can be modulated with "**r13**" by setting a duty cycle interval between 10 and 60". The "r13=60" value (default) means that the heating relay is always on when the request of heating is active.
Be aware that **increasing the switching frequency** of the relay may introduce long term contact duration concerning.
For **safety reasons** the fan stop temperature "F1" must be set very high to avoid stopping the fan during the heating.

OPEN DOOR

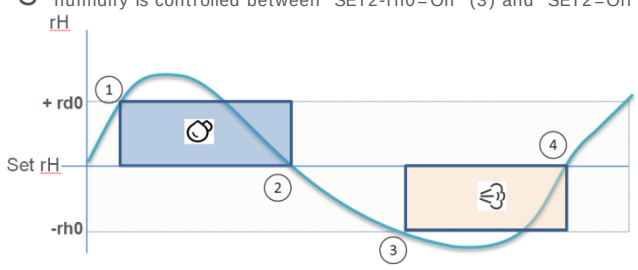
The regulation can be suspended depending on "**ic1**" digital input function.
Regulation can be restarted by forcing the timer setting "**i3**".

Humidity regulation SEt2

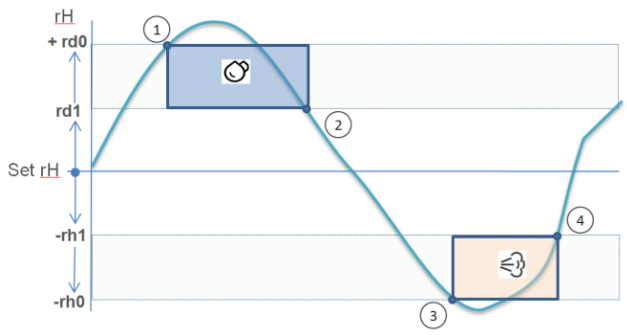
The Humidity is basically controlled by the following algorithms:

de-humidify is controlled between "SET2+rd0=On" (1) and "SET2=Off" (2).

humidify is controlled between "SET2-rh0=On" (3) and "SET2=Off" (4).



A **NEUTRAL ZONE** is available by setting "**rh1**" for the humidify process and "**rd1**" for the de-humidify process.



OPEN DOOR regulation is suspended depending on "ic1" digital input function. Cooling regulation can be restarted by forcing the time parameter "i3".

DE-HUMIDIFY WITH COMPRESSOR (defult rd4=1)

Setting "rd4=0" the function is disabled, while setting the following values:
"**rd4=1**" to use the compressor in de-humidify function.
"**rd4=2**" to use the compressor+heating in de-humidify function.

13. EVAPORATING FAN

Evaporating fan follows the "F0" parameter. default=1

FAN STATUS

Parameter "**F0**" allows the following behaviors:
0= "Fans on with regulation on" (intended as compressor, heating, humidify, de-umidify). F0=0 also allows to control fan cycles (*);
1= Always ON, (default),
2= ON with regulation ON,
3= With temperature threshold F1, if the evaporator probe is enabled "**Pr3=5**".
4= ON with regulation On and threshold F1, if the evaporator probe is enabled "**Pr3=5**".

It is advised to use "F0= 3 or 4" values only without heating elements. For safety reason the fan stop temperature "F1" must be wisely set to avoid stopping the fan during the heating function.

OTHER SETTINGS

FAN TEMPERATURE THRESHOLD "F1" to lock for high temperature if "Pr3=5" Working with heating elements F1 must be set at high values to avoid turning the fan off.
DEFROST with "F2" fan mode to determine the fan status.
DRIPPING with "F3" to determine the fan stop time after the defrost.

The uc()=14 as "evaporator fan 2" function it is not available on this model.

14. FAN CYCLES F0=0 (*)

By using "F0=0" the evaporators fan can follows on-off cycles depending on the active function:
1) when there are **no temperature or humidity requests**: F11_on e F12_off;
2) when there is a **de-humidity request** with compressor and the De-humidify relay is not configured: rd2_On time - rd3_Off time;
3) when there is a **humidity request** and there is no Humidify relay configured: rh2_On time - rh3_Off time;

DEFAULT VALUES: the following values allows to operate the normal function, Fan_on values must be >0 and Fan_Off values must be equal to 0:
"F11, rd2 and rh2 = 60"
"F12, rd3 and rh3 = 0"
when there is a regulation request the fans turns or remains on.
TO ACTIVATE A CYCLE: By setting "F12, rd3 and rh3>0" the fan cycling function is activated when requested.

TO STOP THE FUN DURING A FUNCTION

Setting "F11 =0, rd2 =0 or rh2 =0" the fan output is disabled for the duration of the requested function. The function is not appropriate with heating elements on.

BE AWARE that the increasing number of the fan **relay switching** may cause a long term relay contact concern. It is advised to balance the load (heating-cooling) and the switching timing to preserve the relay.

15. OTHER REGULATION

COMPRESSOR PROTECTION (default value: C2=3 minutes)

Power on: the first compressor start can be delayed with "**C0**" minutes.
PROTECTION: during normal regulation "**C2**" keeps the compressor off for the time set in minutes, while "**C3**" keeps the compressor on for a minimum time in seconds.

"C3" minimum compressor on time function overrides the thermoregulation even outside the temperature or humidity band until it is expired.
PROBE SAFETY: if a faulty or wrong probe connection events happen, the display shows "--.-". The compressor follows the "**C4**" (off) & "**C5**" (on) time in minutes.

CONDENSING and CONDENSING FAN (default: to be configured)

Condensing fan follow the compressor on status if no condensing probe is configured. By enabling the condensing probe Pr3=1 the following controls are available:
"**Fc1+Fc2**" Temperature threshold to turn on the condenser fan;
"**Fc1**" condenser fan off temperature threshold;
"**Fc3"** condenser fan off time after compressor off;

CONDENSER ALARM

"**C6**" threshold for high condensing when dangerous for the compressor;
"**C7**" threshold for high condensing alarm that stop the compressor after "**C8**" time delay in minutes. A manual reset of the power supply is requested to restart the controls.

DEFROST

The defrost control is performed after the "**d0**" interval if>0 and can be selected among the following mode "**d1**": 0=electric heater, 1= hot gas, 2=stop compressor.
TEMPERATURE THRESHOLD is determined by "**d2**" and is available only if the evaporator probe is enabled "**Pr3=5**".
MAXIMUM DURATION determined by the time interval "**d3**" in minutes.
DEFROST AT POWER ON determined by the parameter "**d4**": 0 = no , 1 = post overcooling, 2=power-on & post-overcooling.
DEFROST DELAY: "**d5**" in minutes following the "**d4**" selection.
DISPLAY LOCKED in DEFROST using "**d11**": 0=not locked, 1= locked.
COMPRESSOR STATUS PRE DEFROST time to keep the compressor on before hot gas defrost: 0=no enabled, **d15**>0 enabled.

RTC DEFROST When the clock function is available, the user can set 6 daily defrosts that start at "**hd1..hd6** > 0" parameters. The function is independent from any other timer based functions of the unit. Te defrost reset the "d0" counting.

DEFROST OUTPUT AS HEATER / DE-HUMIDIFY FUNCTION
Setting "**rd5=1**" it is possible to use the defrost output also as alternative heating element the heating relay if not available.

AUXILIARY RELAY (default value: to be configured)
When configured with "uc ()=15" the auxiliary relay works as follow:
- on-off relay based on the **cabinet probe reading** if no auxiliary probe configured;
- on-off relay based on the the **auxiliary probe reading** if Pr3=4;
- Manual On-Off via AUX key.

After setting the output relay, configure the regulation as follow:
"u6" Heating regulation (0), cooling regulation (1), manual via AUX key (2).
"u7" Setpoint temperature to turn off the output if "u6=0 or 1".
"u8" Temperature differential of "u7" to turn on the output if "u6=0 or 1".

For probe error the relay is open.

AUX MANUAL FUNCTION

By setting "u6=2" the auxiliary relay can be turned on or off entering the **AUX** menu and selecting **AUX** function.

16. DIGITAL INPUT 1 CONFIGURATION

The digital input 1 can be configured in **"ic1"** parameter, default door switch (7)**:**
0= Disabled,
1= **Energy Saving**;
2= **Alarm Multifunction**; Only signaling
3= Reserved;
4= **Remote Onoff**; Turns Off and On the unit.
5= **Thermal switch**; "i8" events , interval "i7". if "i8"=0 auto reset
6= Reserved;
7= **Door open 1** : Compressor and Fan off, Light on;
8= **Door open 2** : Compressor off, Fan and Light on;
9= **Door open 3** : Light on;

Input polarity is determined by "iP1":
0= active function with closed contact ; 1= active function with open contact.

OPEN DOOR (default value: ic1=7)
Regulation is suspended while the compressor can follow "i3" settings:
"i3=-1" the compressor follows its regulation;
"i3=0" compressor goes off;
"i3>0" the compressor goes off, it will restart after this delay in minutes.

17. CONFIGURATION INPUT 3

By selecting the parameter "Pr3" the following functions are available:

0 = Digital input	(configuration via ic3)
1 = Condenser probe	(condenser fan and alarms)
2 = Core probe	(only display)
3 = External air probe	(only display)
4 = Auxiliary probe	(regulation u6,u7,u8)
5= Defrost probe 2	(defrost control)

PRESSURE SWITCH CONFIGURATION

By selecting the parameter "**Pr3**=0" it is possible to configure also the function of the digital input via "**iC3**" parameter: 0 disabled e 1=pressure switch (see alarms).

18. RELAY OUTPUT CONFIGURATION

EXPERT USER ONLY
Relay functions are configurable through uc1..6 parameters that corresponds to the K1..K6 outputs. The default configuration:

0 = Unused	
1 = Umidify (rh)	K4
2 = De-Umidify (drh)	(the function is performed by the compressor)
3 = Alarm	
4 = Compressor	K1
5 = Heating	K2
6 = Condenser fan	
7 = Device status on or off,	
8 = Air change	
9 = Light	K3
10 = Compressor 2	
11 = Evaporator fan	K5

12 = Defrost K6
13 = Reserved
14 = Evaporator fan 2 (Low speed fan)
15 = AUX (Auxiliary u6,7,8)

The reloading procedure of a default map is available only for the default configuration in "MENU_SERVICE_ Parameters Restore" and it must be done disconnecting the loads. Be aware to accurately verify the functions related to the relay outputs, configuration errors may activate unwanted loads.

19. ALARMS

Alarms are displayed on the bottom line of the display

PROBE FAILURE: typical problems: open or short circuited sensor, wrong sensor type or bad connection.
"Probe 1 failure" Regulation probe failure, heating regulation is suspended, cooling regulation follows the on-off cycles C4-C5 in minutes.
"Probe 2 failure" Humidity probe failure, humidity and de-humidity regulations are suspended. A time delay to override it can be set using "**AH7**".
"Probe 3 failure" 3d probe failure. If working as evaporator defrost is performed by time "**d3**", if working as condenser probe the condenser fan follows the compressor, if working as auxiliary the AUX relay turns off.

TEMPERATURE ALARMS
"**LOW TEMPERATURE**" setting the "A1" threshold.
To configure the alarm: "A2" 0= disabled, 1=relative to SET, 3=absolute value.

"**HIGH TEMPERATURE** " setting the "A4" threshold.
To configure the alarm: "A5" 0= disabled, 1=relative to SET, 3=absolute value.

TEMPERATURE ALARM DELAY
After a power-on with "A6" minutes.
During normal regulation with A7 in minutes.
After a defrost with "A8" in minutes.
After closing the door with "A9" in minutes.

HUMIDITY ALARMS
"**LOW HUMIDITY ALARM**" setting the AH1 relative to SET2.
"**HIGH HUMIDIY ALARM**" setting the AH1 relative to SET2.

Humidity alarm delay "**AH7"** in minutes and after a power-on with "A6" minutes.

POWER FAILURE -
It is signaled after a power failure longer than "A10" in minutes.

RTC CLOCK FAILURE
It appears If the clock is enabled "Hr0=1" and the external modules EVIF23TSX or EVLINK are removed or in case of low battery or battery failure.

DOOR OPEN ALARM
It occurs when the digital input "ic1 = 7/8/9" is active after the "i2" delay in minutes. With "iP1=0" active when contact closed, "iP1=1" active when contact is open. Setting "i2=-1" the alarm is disabled, and "i2=0" the alarm starts when the door is open.

MULTIFUNCTION ALARM
It occurs when the digital input is set as "iC1=2" is active. With "iP1=0" active when contact closed, "iP1=1" active when contact is open.
Regulation is not modified.

THERMAL SWITCH 1 ALARM
It occurs when the digital input "iC1=5" is active. With "iP1=0" active when contact closed, "iP1=1" active when contact is open.
The regulation is suspended and restarts when the alarm disappears. Starting from the very first event, the unit counts the alarm events "i8" during the "i7" interval. When the number of events is reached the alarm must be manually reset. Setting "i8=0 the alarm is always automatic, with "i8=1" the alarm is always manual.

PRESSURE SWITCH ALARM
IF "Ip3=0", it occurs when the digital input is set as "iC3=1" is active. With "iP3=0" active when contact closed, "iP1=3" active when contact is open.
The regulation is suspended and restarts when the alarm disappears. Starting from the very first event, the unit counts the number of alarm events "i8" during the "i6" interval. When the number of events is reached the alarm must be manually reset. Setting "i8=0 the alarm is always automatic, with "i8=1" the alarm is always manual. If the alarm duration is equal to "i6" the alarm counter does not increase.

CONDENSER OVERHEATED
Setting the condenser probe "Pr3=1" and the temperature threshold "**C6"** the unit shows the condenser alarm as soon as the temperature rises above "C6".

COMPRESSOR BLOCKED for high condensing
Setting the condenser probe "Pr3=1" and the temperature threshold "**C7"** the unit shows the condenser alarm when the temperature rises above "C7" for the time "C8". Compressor regulation is locked. Manual reset is necessary by turning off and the on the unit.

20. EVCONNECT EVLINK and MODBUS via RS485

Communication functions are in mutual exclusion: the presence of embedded or remote EVLINK (eg EVIF25TBX) prevents the user to connect a RS485 serial interface EVIF22TSX o EVIF23TSX and vice versa.
Parameters involved:
Hr0 enables the clock function 0=no 1=Yes. Connecting an EVLINK "Hr0" is automatically enabled and the "rtc" alarm appears. If the EVLINK is removed or fails the RTC alarm appears.
Inserting a EVIF23TSX the Hr0 parameter must be manually set.
BLE= enable EVLINK. BLE=1 and LA=247 the EVLINK communication is enabled while modbus communication is disabled. BLE=0 the serial interfaces EVIF22/23TSX for RS485 and MODBUS communication can operate.
PA1= 824 service password access from EVCONNECT APP.
PA2= 642 user password access from EVCONNECT APP. It allows the use of EVCONNECT APP in user mode, the parameter change via APP is not available.

21. LOCAL PARAMETER PASSWORD

To access the parameters with local password via keyboard:
PAS=-19 service password for all the parameters;
PS1= 1 password to access level 1 parameter.

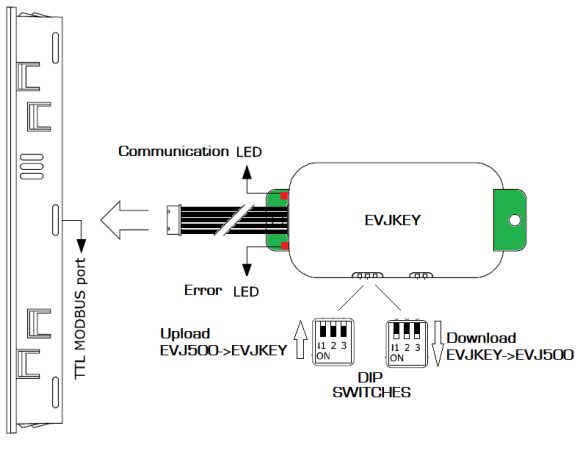
22. TECHNICAL DATA

Purpose of the control device:	function controller.
Construction of the controller device:	build-in electronic device.
Case:	Plastic Self extinguish or Open frame.
Category of heat and fire resistance:	D.
Dimensions:	
111,4 x 76,4 x 48,0 mm (4 3/8 x 3 x 1 15/16in)	
Mounting methods:	panel with elastic mounting flaps or backpanel with double stick tape
Front Panel degree of protection:	IP65
Connections:	
screw connector for wires up to 2,5 mm².	Removable terminals by request 2,5 mm²; TTL Picoblade.
Maximum lenght for connection cable:	
power supply: 10 m (32,8 ft)	analog inputs: 10 m (32,8 ft)
digita inputs: 10 m (32,8 ft)	digital outputs: 10 m (32,8 ft).
Operating temperature:	-5 .. 55 °C (32..131 °F).
Storage temperature:	-10 .. 70 °C (-13 .. 158 °F).
Operating humidity:	from 10 to 90 % not condensing.
Pollution status of the control device:	2.
Conformity:	
RoHS 2011/65/CE	WEEE 2012/19/EU; REACH (CE) n. 1907/2006
EN 60730-1	IEC 60730-1
Power supply:	12vac/dc (±10%), 50/60Hz(±3 Hz), 10 VA max
Earthing methos for the control device	None.
rated impulse-withstand voltage:	4 KV.
Over-voltage category:	III
Sftware class structure:	A.
Real time clock:	Incorporated lithium battery
Clock drift:	≤ 60 s/month a 25 °C (77 °F).
Clock battery autonomy in blackout:	> 6 months 25 °C (77 °F).
Clock battery charging time:	24 h (supplied from the device).
Analogue inputs:	2 for PTC or NTC sensor (cabinet and auxiliary probe*). 1 humidity Evco probe EVHTP500
Digital inputs:	1 configurable
Other inputs:	* configurable auxiliary probe or pressure switch.
Digital output:	6 configurable electromechanical relays:
(K1) Compressor:	SPST 30 A res. @ 250 VAC
(K2) Heating:	SPDT 8 A res. @ 250 VAC;
(K3) Light:	SPST 16A res. @ 250 VAC
(K4) Huidify:	SPST 8 A res. @ 250 VAC;
(K5) Evaporator fan	SPST 5 A res. @ 250 VAC;
(K6) defrost	SPDT 8 A res. @ 250 VAC;
Type1 or type 2 action	Type 1.
Additiona fetures for Type1 or type 2 action	C.
Display:	TFT 2,8 inches, 16 colors, 320 x 240 pixel.
Buzzer:	on board.
Communication port:	TTL picoblade for parameter key or RS485 MODBUS converter (alternative to BLE)

23. PARAMETERS KEY

Using the EVJKEY key follow these steps:
1. Power Supply is off;
2. **UPLOAD** from **REGULATOR to EVJKEY**: insert the cable to TTL and the EVJKEY dip-switches 1-2-3 set to OFF.
   or
   DOWNLOAD from **EVJKEY to REGULATOR**: insert the cable to TTL and the EVJKEY dip-switches 1-2-3 set to ON.
3. TURN THE POWER ON

for some seconds the two leds blink together, during the data transfer the "communication led" is blinking:
DATA TRANSFER OK "communication led" is on.
DATA TRANSFER OK "error led" is on.



24. PARAMETERS

LEVEL 1 PARAMETERS password PS1=1

CA1	0.0	Probe 1 calibration
CA2	0.0	Probe 2 calibration
r0	2.0	Heating differential
r12	-2.0	Cooling differential
rd0	3.0	De-humidify differential
rh0	-3.0	Humidify differential
d0	0 hours	defrost interval
d2	8	End defrost temperature
d3	30 min	Defrost duration
PLi	1	Light key configuration in stand-by
Pbu	2	Buzzer enabled for alarm and keys

SETPOINT LIST (FROM KEYBOARD)

N.	PAR.	DEF.	SETPOINT	MIN... MAX. (°c)
	SET	**10**	temperature setpoint	r1..r2
	SET2	**70**	humidity setpoint	h1..h2

PARAMETERS LIST

N.	PAR.	DEF.	ANALOG INPUTS	MIN... MAX.
1	**CA1**	**0**	Ambient probe offset	-25..+25 ° C/F
2	**CA2**	**0**	Humidity Probe Offset	-25..+25 %rH
3	**CA3**	**0**	Auxiliary Probe Offset	-25..+25 °C/F
4	**P0**	**1**	Probe Type	0=ptc 1=ntc
5	**P1**	**1**	Enable °C Decimal Point	0=no 1=yes
6	**P2**	**0**	Temperature Unit Of Measurement	0 = Celsius 1 = Fahrenheit
7	**Pr3**	**5**	Probe 3 configuration	0 = Digital input 1 = Condenser Probe 2 = Core Probe 3 = External Air 4 = Auxiliary Probe 5 = Defrost 2 Probe
8	**P5**	**1**	Value Displayed (left side) Setting to 0 the display is off.	0 = None 1 = Input 1 2 = Input 2 3 = Input 3 4 = Setpoint 1 (T) 5 = Setpoint 2 (rH)
9	**P6**	**2**	Value Displayed 2 (right side). Setting to 0 the display is off	
10	**P8**	**5**	Display Refresh Time to increase/decrease a digit.	0..255 1/10 dec s
11	**P9**	**5**	Display 2 Refresh Time to increase/decrease a digit.	0..255 1/10 dec s
N.	**PAR.**	**DEF.**	**TEMPERATURE**	**MIN... MAX.**
12	**r0**	**2**	Setpoint cooling Differential. (SET+r0) (SET+r11+r0 if neutral zone)	0,1..15 °C/F
13	**r1**	**0**	Minimum Setpoint Temp	-30.. r2 °C/F
14	**r2**	**50**	Maximum Setpoint Temp	r1.. +99 °C/F
15	**r4**	**0**	Setpoint Offset in Energy Saving	0..99 °C/F
16	**r5**	**0**	Disable Hymidity regulation during Over Temp	0=no 1 =Yes
17	**r6**	**0**	Define the value of the temperature sepoint "SET +/- r6" in Over Temp	-40..+99 °C/F
18	**r7**	**0**	OverTemp time duration	0..240 min
19	**r11**	**0**	Neutral Zone Value. With r11>0 the value is active for heating or cooling. With r11<0 the value is active only for heating function.	-10..+10 ° C/F
20	**r12**	**-2**	Setpoint Heating Differential (SET-r12) (SET-r11-r12 if neutral zone).	-25..-0,1 ° C/F
21	**r13**	**60**	Heating Duty Cycle. "r13=60" = always on, 0= Off.	0..60" s
22	**r14**	**2**	Temperature Priority control: if >0 the unit stops de-humidify (with compressor) to adjust temperature first.	0 = Disabled 1 = Heating (if T° rises) 2 = Heat/Cool 3 = Cooling (if T° drops)
N.	**PAR.**	**DEF.**	**HUMIDITY**	**MIN... MAX.**
23	**h1**	**10**	Minimum setpoint 2	0..h2 %rH
24	**h2**	**95**	Maximum setpoint 2	h1..100 %rH
25	**h4**	**0**	Setpoint of Extra Humidity using AUX key manual function. The value of "h4" replace SET2 for the time set in "h5".	0..100 %rH
26	**h5**	**0**	Extra humidity duration. 0= function not enabled.	0..240 min
N.	**PAR.**	**DEF.**	**DE-HUMIDIFY REGULATION**	**MIN... MAX.**
27	**rd0**	**3**	De-Humidity differential. (SET2+rd0) (SET2+rd1+rd0 if neutral Zone)	1..25 %rH
28	**rd1**	**0**	De-Humidify Neutral Zone	0..10 %rH
28	**rd2**	**60**	Fan On Time in De_humidify. 0= fan off.	0..240 " s
30	**rd3**	**0**	Fan Off Time In De-Humidify. 0=normal function.	0..240 " s
31	**rd4**	**1**	De-Humidify with Compressor or compressor and heater. 0= temperature and de-humidity outputs are indedependent.	0 = Disabled 1 = Compressor 1 2 = Compressor and Heat
32	**rd5**	**0**	Heating and de-Humidify functions executed with Defrost output if no heating output is available.	0=no 1=Yes
N.	**PAR.**	**DEF.**	**HUMIDIFY REGULATION**	**MIN... MAX.**
33	**rh0**	**-3**	Humidify Differential (SET2-rh0) (SET2-rh1-rh0 if neutral zone)	-25..-1 %rH
34	**rh1**	**0**	Humidify Neutral Zone	0..10 % %rH
35	**rh2**	**60**	Humidify Output On Time (or Fan if no rH output configured). 0= Humidify output off.	0..240 " s
36	**rh3**	**0**	Humidify Output Off Time (or Fan if no rH output configured). 0= Humidify output normal.	0..240 " s
N.	**PAR.**	**DEF.**	**COMPRESSOR**	**MIN... MAX.**
37	**C0**	**0**	Compressor ON Delay After Power-on	0..240 min
38	**C2**	**3**	Compressor OFF Minimum Time	0..240 min
39	**C3**	**0**	Compressor ON Minimum Time	0..240 " s
40	**C4**	**10**	Compressor OFF Time during Cabinet Probe Alarm	0..240 min
41	**C5**	**10**	Compressor ON Time during Cabinet Probe Alarm	0..240 min
42	**C6**	**80**	Threshold for High Condensation Warning	0..199 ° C/F
43	**C7**	**90**	Threshold for High Condensation Alarm	0..199 ° C/F
44	**C8**	**0**	Compressor Shutdown Alarm Delay for high condensing.	0..15 min
45	**C10**	**0**	Compressor run time for Service	days
46	**C11**	**10**	Compressor 2 On Delay after Compressor 1	0..240 " s
N.	**PAR.**	**DEF.**	**DEFROST**	**MIN... MAX.**
47	**d0**	**8**	Defrost interval time	0..99 h
48	**d1**	**0**	Type of Defrost	0 = Electric

				1 = Hot gas 2 = Compressor Stop
49	**d2**	**8**	Threshold for Defrost End	-99..+99 ° C/F
50	**d3**	**30**	Defrost Duration	0..99 min
51	**d4**	**0**	Enable Defrost at Power-on	0=no 1=power on 2= post overcooling 3= power on and post overcooling
52	**d5**	**0**	Defrost Delay after Power-on	0..99 min
53	**d6**	**1**	Value Displayed during Defrost	0 = Regulation Value 1 = Display Locked 2 = reserved
55	**d7**	**0**	Dripping Time	0..15 min
56	**d11**	**0**	Enable Defrost Time-Out Alarm	0=NO 1=YES
57	**d15**	**0**	Compressor ON Consecutive Time for Hot Gas Defrost	0..99 min
N.	**PAR.**	**DEF.**	**ALARMS**	**MIN... MAX.**
58	**A1**	**0**	Threshold for Low Temperature Alarm	-99..+99 ° ° C/F
59	**A2**	**2**	Low Temperature Alarm Type	0 = Disabled 1 = Relative to Setpoint 2 = Absolute
60	**A4**	**50**	Threshold for High Temperature Alarm	-99..+99 ° C/F
61	**A5**	**2**	HighTemperature Alarm Type	0 = Disabled 1 = Relative to Setpoint 2 = Absolute
62	**A6**	**120**	High Temperature Alarm Delay after Power-on	0..240 min
63	**A7**	**15**	Temperature alarm delay	0..240 min
64	**A8**	**15**	High Temperature Alarm Delay After Defrost	0..240 min
65	**A9**	**15**	High Temperature Alarm Delay after Door Closing	0..240 min
66	**A10**	**15**	Power Failure Duration for PF Alarm Recording	0..240 min
67	**A11**	**1**	High/Low Temperature Alarm Reset Differential	0,1..15 ° C/F
68	**AH1**	**50**	Low Humidity Alarm relative to SET2	0..100 %rH
69	**AH4**	**50**	High Humidity Alarm relative to SET2	0..100 %rH
70	**AH7**	**30**	Humidity Alarm Delay and sensor error.	0..240 min
N.	**PAR.**	**DEF.**	**EVAPORATOR FAN**	**MIN... MAX.**
71	**F0**	**1**	Evaporator Fan Mode during Normal Operation. With F0=0 parameters F11-F12, rd2-rd3, rh2-rh3 can enable a fan cycling regulation. For safety reason (use of heating elements and cycles) check the fan control chapter.	0 = ON + Fan Cycling. 1 = ON (default) 2 = ON if regulation ON 3 = Thermoregulated (with F1 relative to Regulation Temperature) 4 = Thermoregulated if Compressor ON (with F1 relative to Regulation Temperature)
72	**F1**	**99**	Threshold for Evaporator Fan Operation with F0=3 or 4. The fan starts under F1 and stops at "F1+F8".	-99..+99 °C/F
73	**F2**	**0**	Evaporator Fan Mode during Defrost	0 = OFF 1 = ON 2 = According to F0
74	**F3**	**0**	Evaporator Fan OFF Maximum Time after Dripping	0..15 min
75	**F7**	**99**	Threshold for Evaporator Fan ON after Dripping (relative to Setpoint)	-99..+99 ° C/F
76	**F8**	**2**	Evaporator Setpoint Differential	0,1..15 ° C/F
77	**F9**	**5**	Evaporator Fan OFF Delay after Compressor OFF	0..240 "
78	**F11**	**60**	Fan On Time with no regulation. To be used with F0=0.	0..240 "
79	**F12**	**0**	Fan Off Time with no Regulation. To be used with F0=0.	0..240 "
N.	**PAR.**	**DEF.**	**CONDENSER FAN**	**MIN... MAX.**
80	**Fc1**	**25**	Threshold for Condenser Fan ON	0..99 ° C/F
81	**Fc2**	**5**	Condenser Fan Differential	0,1..15 ° C/F
82	**Fc3**	**5**	Condenser Fan Off delay	0..240 " s
N.	**PAR.**	**DEF.**	**DIGITAL INPUTS FUNC**	**MIN... MAX.**
83	**i1**	**0**	Lock Display with Open Door	0..240 min
84	**i2**	**15**	Open Door Alarm Delay. -1=disabled 0= immediate	-1..120 min
85	**i3**	**15**	Cooling Inhibition Max Time with Open Door -1=disabled 0= immediate without restarting.	-1..120 min
86	**i5**	**0**	Multi-purpose Input Alarm Delay	0..120 min
87	**i6**	**60**	High Pressure Events Counting Interval	0..120 min
88	**i7**	**60**	Multi-purpose Input Alarm Delay	0..120 min
89	**i8**	**1**	Digital Input Event Counting For Pressure or Thermal Alarm. 0= always automatic, 1= always manual.	0..15
N.	**PAR.**	**DEF.**	**UAXILIARY RELAY**	**MIN... MAX.**
90	**u6**	**0**	Auxiliary output configuration. The manual control is operated via AUX key.	0= Heating 1= Cooling 2= Manual
91	**u7**	**0.0**	Auxiliary Setpoint if "u6=1 or 2".	-99..+99 ° C/F
92	**u8**	**1.0**	Auxiliary differential for "u7" if "u6=1 or 2"	0,1..15 ° C/F
N.	**PAR.**	**DEF.**	**DIGITAL INPUT CONF.**	**MIN... MAX.**
93	**iC1**	**7**	Multi-purpose Input Function, Door switch: 7,8 or 9.	0 = Disabled 1= Multifunction alarm 2= reserved 3= = reserved 4 = Stand-by 5 = Thermal Switch 1 5 = Thermal Switch 2 7 = Compressor + Evaporator Fan OFF, Light ON 8 = Evaporator Fan OFF, Light ON 9 = Compressor + Evaporator Fan OFF, Light ON
94	**iP1**	**0**	Multi-purpose Input 1 Activation. 0= function active for contact closed.	0=closed 1=open
95	**iC3**	**0**	Digital Input 3 configuration Pr3=0.	0= disabled 1= high pressure switch
96	**iP3**	**0**	Multi-purpose Input 3 Activation. 0= function active for contact closed.	0=closed 1=open
N.	**PAR.**	**DEF.**	**DIGITAL OUTPUTS CONF.**	**MIN... MAX.**
97	**uc1**	**4**	K1 Output Configuration (C)	0 = Disabled 1 = Humidity 2 = de-Humidfy 3 = Alarm 4 = Compressor 1 5 = Heating 6 = Condenser Fans 7 = ON / STAND-BY 8 = Air Change 9 = Light 10 = Compressor 2 11 = Evaporator Fans 12 = Defrost 13 = Reserved 14 = Evaporator Fan 2 15 = Auxiliary Relay
98	**uc2**	**5**	K2 Output Configuration (Ht)	
99	**uc3**	**9**	K3 Output Configuration (L)	
100	**uc4**	**1**	K4 Output Configuration (rH)	
101	**uc5**	**11**	K5 Output Configuration (EF)	
102	**uc6**	**12**	K6 Output Configuration (Def)	
N.	**PAR.**	**DEF.**	**TOUCH KEYS**	**MIN... MAX.**
103	**POF**	**1**	Enable ON/Stand-by Key	0 = no 1 = yes
104	**PLi**	**1**	Light button in stand-by	0 = no 1 = yes
105	**PSr**	**1**	Disable Alarm Output by Silencing the Buzzer	0 = no 1 = yes
106	**Pbu**	**2**	Enable key and Buzzer Function	0 = no 1 = only alarm, no keys 2 = alarm and keys
N.	**PAR.**	**DEF.**	**PASSWORD**	**MIN... MAX.**
107	**PAS**	**-19**	Password for all parameters	-99... 999
108	**PS1**	**1**	Level 1 service	-99... 999
109	**PA1**	**426**	Evlink user password	-99... 999
110	**PS2**	**824**	Evlink service password	-99... 999
N.	**PAR.**	**DEF.**	**CLOCK**	**MIN... MAX.**
111	**Hr0**	**0 / 1**	Enable clock function. 1= for models provided with rtc or EVLINK on board.	0 = no 1 = yes
N.	**PAR.**	**DEF.**	**DATALOGGER**	**MIN... MAX.**
112	**BLE**	**1**	"1"= EVLINK presence leaving LA, Lb and LP to default. To enable modbus communication via EVIF22/23TSX modules set to "0".	0 = no (Modbus active) 1 = Yes (EVLINK active)
113	**rE0**	**15**	Recording interval	0..240 min
114	**rE1**	**4**	Select Probes for Data-logger Recording	0=none 1=probe 1; 2= probe 2 3= probe 3; 4= probe 1 e probe 2; 5= all probes
N.	**PAR.**	**DEF.**	**REAL TIME DEFROST Hr0=1**	**MIN... MAX.**
115	**Hd1**	**- - -**	1st Daily Defrost Time	0..24 h
116	**Hd2**	**- - -**	2nd Daily Defrost Time	0..24 h
117	**Hd3**	**- - -**	3d Daily Defrost Time	0..24 h
118	**Hd4**	**- - -**	4th Daily Defrost Time	0..24 h
119	**Hd5**	**- - -**	5th Daily Defrost Time	0..24 h
120	**Hd6**	**- - -**	6th Daily Defrost Time	0..24 h
N.	**PAR.**	**DEF.**	**MODBUS**	**MIN... MAX.**
121	**LA**	**247**	MODBUS address if BLE=0	1... 247
122	**Lb**	**3**	MODBUS Baud Rate if BLE=0.	0= 2400; 1= 4800 2= 9600; 3= 19200
123	**LP**	**2**	Modbus Parity if BLE=0.	0= None; 1= Odd; 2= Even
N.	**PAR.**	**DEF.**	**ENERGY SAVING**	**MIN... MAX.**
124	**HE2**	**0**	Energy Saving Max Duration in manual mode	0..990 min
125	**H01**	**0**	Energy Saving Start Time with rtc Hr0=1	0..23h
126	**H02**	**0**	Energy Saving Duration	0..24h

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

EVCO S.p.A.
Via Feltre 81, 32036 Sedico (BL) ITALIA
telefono 0437 8422 | **fax** 0437 83648
email info@evco.it | **web** www.evco.it