# **EVF205** Digital controller for refrigerated cabinets, made up from user interface with capacitive touch keys (integrated into the unit) and a control module



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If the function of the evaporator probe is that of defrosting probe (parameter P3 = 1) and on activation of defrosting the temperature of the evaporator is above that established with parameter d2, defrosting will not be activated

## Functioning due to low or high relative humidity 4.8 percentage (only if parameter F0 is set at 5)

During functioning due to low relative humidity percentage, the evaporator fan will be switched-on if the compressor is on and is switched-on cyclically if the compressor is off (parameter F4 establishes the duration of evaporator fan switch-off and parameter F5 that regarding switch-on).

During functioning due to the high relative humidity percentage, the evaporator fan is always on

## 4.8.1 Activation of the functioning due to low or high relative humidity percentage (only if parameter FO is set at 5)

• make sure that the keyboard is not locked and that no procedure is in progress

 press and hold the and k key for 4 s: the display will show "rhL" (functioning due to low relative humidity percentage) or "rhH"(functioning due to high relative humidity percentage) for 10 s.

To restore normal display in advance:

## press a key.

It is also possible to activate functioning due to low or high relative humidity percentage using parameter F6.

If parameter F0 is not set at 5, pressing the  $\textcircled{(1)}{and} (\clubsuit)$  key will cause the "---" indication to be displayed for 1 s

## 4.8.2 Learning of the type of functioning in progress (due to low or high relative humidity percentage only if parameter F0 is set at 5)

• make sure no procedure is in progress

 $\bullet$  press and release the (a) key and the  $(\overbrace{a}^{b})$  key: the display will show "rhL" (functioning due to low relative humidity percentage) or "rhH"

(functioning due to high relative humidity percentage) for 10 s. To restore normal display in advance:

press a key.

If parameter F0 is not set at 5, pressing the (a) and (b) key will cause: • the display of the "----" indication for 1 s if the keyboard is not locked

• the display of the "Loc" label for 1 s if the keyboard is locked. Switch-on/off of the cabinet light in manual mode 4.9

(only if parameter u1 and/or parameter u11 is set at 0)

make sure no procedure is in progress

• press and release the key: the light LED will switch-on/off. Using the door micro switch input, the cabinet light can also be switched-on/off in remote mode; see also parameter u2.

If parameter u1 is set at 0 (i.e. the utility managed by the fourth output is the cabinet light) and parameter u11 is set at 2 (i.e. the utility managed by the fifth output is the auxiliary output), holding the () key down for 2 s will cause the switch-on/off of the multipurpose LED and of the auxiliary output.

## Switch-on of the demisting heaters (only if 4.10 parameter u1 and/or parameter u11 is set at 1)

• make sure that the instrument is on and that no procedure is in proaress

 hold the key down for 2 s: the multipurpose LED will switch-on and the heaters will be switched on, both for the time established with parameter u6.

The demisting heaters cannot be switched off in manual mode (i.e. before the time established with parameter u6 has passed).

## 4.11 Switch-on/off of the auxiliary output in manual mode (only if parameter u1 and/or parameter u11 is set at 2)

 make sure that the keyboard is not locked and that no procedure is in progress

press and release the () key.

The multipurpose input can also be used to switch the auxiliary output on/off in remote mode.

If parameter u1 is set at 2 (i.e. the utility managed by the fourth output is the auxiliary output) and parameter u11 is set at 0 (i.e. the utility managed by the fifth output is the cabinet light), holding the (a) key down for 2 s will cause the switch-on/off of the cabinet light LED and of the cabinet light.

If the auxiliary output has been switched on in manual mode, sit can only be switched off in the same way (also, if the auxiliary output has been switched off in remote mode, it can only be switched off in the same way); see also parameter u2.

#### 4.12 Energy Saving

During the Energy Saving function, the work set-point is increased of the temperature established with parameter r4 and the evaporator fan is switched on cyclically, on condition that the parameter F0 is set at 1 or 2 (parameter F13 establishes the duration of fan switch-off and parameter F14 that regarding switch-on).

When the time established with parameter i10 has passed without activation of the door micro switch (after the cabinet temperature has reached the work set-point) the Energy Saving function is activated automatically (until the input is activated again).

## Activation/deactivation of the Energy Saving 4.12.1 function with effect only on the compressor

The multipurpose input can also be used to switch the Energy Saving function on/off in remote mode

#### 4.13 Lock/unlock of the keyboard

To lock the keyboard:

make sure no procedure is in progress

• press and hold the 🛞 and 🔘 key for 1 s: the display will show "Loc" for 1 s.

CODE ALARM TYPE (CRITICAL VALUE)

mation has already been displayed.

restored to normal operation.

storage status; see paragraph 8.1.

alarms

To start the procedure:

is in progress

To select an alarm:

INFO. MEANING

(in the example "AH")

To exit the procedure:

8.0

dur

h01

n15

AH

Alternatively:

not be displayed.

in progress

available

be displayed.

in progress

available

Alternatively:

in progress

available

7.3

7

7.1

7.2

6.3

available

ture during any alarm of this type)

ture during any alarm of this type)

minimum temperature alarm (the minium cell tempera-

maximum temperature alarm (the maximum cell tempera-

door microswitch input alarm (the maximum cell tempera-

ture during any alarm of this type; see also parameter i4

• the codes are displayed in the order shown in the table

• the instrument stores the minimum and maximum tem-

with the alarm is that of the cell (parameter A0 = 0) • the instrument updates the information regarding the

perature alarms provided the temperature associated

the alarm provided the critical value of the new alarm is

more critical than that stored alarm or provided the infor-

• if the instrument is switched off, no alarms will be stored.

When the problem that caused the alarm disappears, the display is

The HACCP LED provides information regarding the HACCP alarm

• ensure that the keyboard is not locked and that no other procedure

■ hold down the () key for 1 sec: the display will show the first label

 $\bullet$  press and release the  $\widecheck{\textcircled{\ensuremath{\mathfrak{B}}}}$  key: the display will show one of the codes

press and release the () or () key (to select, for example, "AH").

• press and release the key: the HACCP LED will stop flashing and

remain permanently on and the display will show the following

the display is about to show the duration of the alarm

the alarm has been going off for 1 hour (data continues ...)

press and release the () or (●) key to select "LS"

included in the table in paragraph 6.1.

To view the information about the alarm:

sequence of information (for example)

the alarm selected

To exit the sequence of information:

exit the sequence of information

 exit the sequence of information. • press and release the 🔘 key.

press and release the key

HOURS

• press and release the 👰 key.

• press and release the () key.

To exit the procedure

The display shows each message for 1 sec

the critical value is 8.0 °C/8 °I

temperature and then do not operate for 60 sec.

the alarm lasted for 1 hour and 15 min

 $\bullet$  press and release the 0 key: the display will show the alarm selected

 $\bullet$  press and release the  $\textcircled{\Bbbk}$  or B key until the display shows the cell

If the instrument does not have any alarms stored, the label "LS" will

Deletion of the list of HACCP alarms

. make sure that the keyboard is not locked and that no procedure is

 $\bullet$  hold the  $({\ensuremath{\textcircled{}}})$  key down for 1 s: the display will show the first label

• press and release the  $\widetilde{\binom{k}{k}}$  key or the  $(\widehat{\mathbb{B}})$  key within 15 s. to set "**149**" press and release the key or do not operate for 15 s the display

will show flashing "----" for 4 s. and the HACCP LED will switch-off,

If the instrument has no alarm in the memory, the "rLS" label will not

The instrument can memorise up to 9.999 compressor functioning

make sure that the keyboard is not locked and that no procedure is

• hold the  $(\overline{e})$  key down for 1 s: the display will show the first label

■ press and release the () key or the () key until the display shows the

• make sure that the keyboard is not locked and that no procedure is

 $\bullet$  hold the B key down for 1 s: the display will show the first label

• press and release the  $(\mathbf{F})$  key or the  $(\mathbf{F})$  key to select "**rCH**"

Deletion of the compressor functioning hours

press and release the () key or the () key to select "CH"

 $\bullet$  press and release the  $\textcircled{\textcircled{\sc e}}$  key or do not operate for 60 s

cabinet temperature or do not operate for 60 s.

Display of the compressor functioning hours

COUNTING THE COMPRESSOR FUNCTIONING

• press and release the  $(\underline{\mathfrak{F}})$  key or the  $(\underline{\mathfrak{F}})$  key to select "**rLS**"

after which the instrument will exit the procedure.

Preliminary considerations

hours, after which the number "9999" flashes

Display of the information regarding the HACCP

AL

AH

id

6.2

Important Notes:

- If the keyboard is locked, the following is not allowed:
- to switch the instrument on/off in manual mode
- to display the evaporator temperature (with the procedure indicated in paragraph 4.4)
- to display the condenser temperature (with the procedure indicated in paragraph 4.5)
- activated/deactivate the Overcooling function
- activate defrosting in manual mode
- to activate functioning due to high or low relative humidity percentage and to learn the type of functioning
- to switch the auxiliary output on/off in manual mode
- to display the information regarding the HACCP alarms
- to delete the list of HACCP alarms • to modify the work set-point (with the procedure indicated in
- paragraph 5.1)
- . to display the compressor functioning hours
- to cancel the compressor functioning hours.
- These operations cause the "Loc" label to be displayed for 1 s.
- To unlock the keyboard: press and hold the (⊕) and () key for 1 s: the display will show "UnL" for 1 s.

## 4.14 Silencing the buzzer

- make sure no procedure is in progress
- press a key (the first time the key is pressed does not cause the associated effect).
- If parameter u1 and/or parameter u11 is set at 3 and parameter u4 is set at 1, pressing the key will also cause the alarm output to be deactivated.
- If parameter u9 is set at 0, the buzzer will not be enabled.
- SETTINGS 5.1

5

# Setting the work set-point

 make sure that the keyboard is not locked and that no procedure is in progress

- press and release the () key: the compressor LED will flash
- press and release the  $\bar{k}$  key or the  $\bar{k}$  key within 15 s; see also parameters r1, r2 and r3
- press and release the (a) key or do not operate for 15 s the compressor LED will switch-off, after which the instrument will exit the procedure. To exit the procedure in advance:
- do not operate for 15 s (any modifications will be saved).
- It is also possible to set the work set-point via parameter SP.

#### Setting the configuration parameters 5.2

To access the procedure:

- make sure no procedure is in progress
- $\bullet$  press and hold the  $\underline{\Bbbk}$  and  $\underline{\textcircled{B}}$  key for 4 s: the display will show "PA" press and release the key
- press and release the  $(\widetilde{\textcircled{R})}$  key or the  $(\widetilde{\textcircled{R})}$  key within 15 s. to set "-19"
- press and release the express and release the express and release the expression of the release the r press and hold the () and () key for 4 s: the display will show "SP".
- To select a parameter
- press and release the  $(\underline{\mathbb{F}})$  key and the  $(\underline{\mathbb{F}})$  key.
- To modify a parameter
- press and release the key
   press and release the key or the () key within 15 s.
- press and release the key or do not operate for 15 s.
- To exit the procedure:
- $\bullet$  press and hold the  $(\underline{\Bbbk})$  key and the  $(\underline{\textcircled{B}})$  key for 4 s or do not operate for 60 s (any modifications will be saved).

## Cut off the power supply to the instrument after modification of the parameters.

### 5.3 Restoring factory settings

- To access the procedure: • make sure no procedure is in progress
- press and hold the  $(\underline{\mathfrak{b}})$  and  $(\underline{\mathfrak{b}})$  key for 4 s: the display will show "**PA**"
- press and release the (2) key • press and release the  $\overline{\binom{k}{h}}$  key or the  $\overline{(\textcircled{B})}$  key within 15 s. to set "**149**"
- press and release the e key or do not operate for 15 s • press and hold the  $(k_{A})$  and (m) key for 4 s: the display will show "**dEF**"
- press and release the () key
- press and release the key or the key within 15 s. to set "1" • press and release the 🖉 key or do not operate for 15 s the display will show flashing "dEF" for 4 s, after which the instrument will exit
- the procedure
- cut the instrument power supply off.
- To exit the procedure in advance:  $\bullet$  press and hold the  $(\widehat{I}_{\Delta})$  key and the  $(\widehat{I}_{\nabla})$  key for 4 s during the procedure
- (i.e. before setting "1": restore will not be performed).

• the alarm duration (from 1 min to 99 hours and 59 min, partial if the

Check that the factory settings are appropriate (see chapter 12).

#### HACCP FUNCTION 6

the critical value

alarm is in progress)

Preliminary considerations 6.1 The instrument is able to store up to 3 HACCP alarms.

The instrument provides the following inoformation:

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## • press and release the key press and release the key or the key within 15 s. to set "149" press and release the key or do not operate for 15 s the display will show flashing "----" for 4 s, after which the instrument will exit the procedure. SIGNALS AND INDICATIONS 8 8.1 Signals LED MEANING compressor LED \* if on, the compressor will be on if flashina: the work set-point modification will be in progress (with the procedure indicated in paragraph 5.1) a compressor protection will be in progress parameters C0, C1, C2 parameter i7 defrosting LED 40 if it is on: · defrosting will be in progress pre-dripping will be in progress parameter d16 if flashing: defrosting will be requested but a compressor protection will be in progress: parameters C0, C1 and C2 dripping will be in progress: parameter d7 refrigerant fluid heating will be in progress: parameter d15 evaporator fan LED ക if on, the evaporator fan will be on if it flashes, the evaporator fan standstill is in progress parameter F3 cabinet light LED 0 if on, the cabinet light will have been switched-on in manual mode (only if parameter u1 and/or parameter u11 is set at 0) if flashing, the cabinet light will have been switched on in remote mode parameter i0 (only if parameter u1 and/or parameter u11 is set at 0) multipurpose LED **(**₹⁄) if it is on: • the demisting heaters will be on (only if parameter u1 and/or parameter u11 is set at 1) the auxiliary output will have been switched-on in manual mode (only if parameter u1 and/or parameter u11 is set at 2) • the door heaters will be on (only if parameter u1 and/or parameter u11 is set at 4) the evaporator valve will be activated (only if parameter u1 and/or parameter u11 is set at 5) • the condenser fan will be on (only if parameter u1 and/or parameter u11 is set at 6) if flashing: • the auxiliary output will have been switched-on in remote mode parameter i5 (only if parameter u1 and/or parameter u11 is set at 2) the condenser fan switch-off delay will be in progress: parameter F12 (only if parameter u1 and/or parameter u11 is set at 6) HACCP LED (only if parameter A13 is set at 1) НАССР id it is on, all of the information regarding the HACCP alarms has not been displayed if it flashes, the instrument will have memorised at least one new HACCP alarm if it is off, all of the information regarding the HACCP alarms will have been displayed or the list of HACCP alarms will have been deleted Energy Saving LED Ô if on, the Energy Saving function will be in progress: parameters r4, F13, F14, i5 and i10 maintenance LED if on, compressor maintenance will be requested: parameter C10 Overcooling LED 8if on, the Overcooling function will be in progress parameters r5 and r6 alarm LED Δ if it is on, an alarm or an error is in progress °C degree Celsius LED if it is on, the unit of measurement of the temperatures will be the degree Celsius: parameter P2 degree Fahrenheit LED if it is on, the unit of measurement of the temperatures will be the degree Fahrenheit: parameter P2 on/stand-by LED (I) if it is on, the instrument is in the stand-by status

# 8.2 Indications

CODE	
rhL	functioning due to low relative humidity percentage is in
	progress
rhH	functioning due to high relative humidity percentage is in
	progress
Loc	the keyboard is locked:
	- see paragraph 4.13
	the work set point is blocked:
	- parameter r3
	the functioning requested is not available
9	ALARMS
9.1	Alarms
CODE	MEANING
AL	Minimum temperature alarm (HACCP alarm)
	Solutions:
	check the temperature associated to the alarm
	see parameters A0 A1 and A2
	Main consequences.
	• the instrument memorises the alarm, on condition that
	parameter A0 is set at 0
	• the alarm output will be activated (only if parameter u1
	and/or parameter u11 is set at 3)
AH	Maximum temperature alarm (HACCP alarm)
	Solutions:
	<ul> <li>verify the temperature of the cabinet</li> </ul>
	• see:
	parameters A4 and AF
	Main consequences:
	- the instrument memorises the alarm
	• the alarm output will be activated (only if parameter u)
	and/or parameter u11 is set at 3)
id	Door micro switch input alarm (HACCP alarm)
	Solutions:
	• check the causes that brought about the activation of the
	input
	see parameters i0, i1 and i4
	Main consequences:
	the effect established with parameter i0
	• if parameter i4 is set at 1, the instrument memorises the
	alarm on condition that parameter i2 is not set at -1
	• the alarm output will be activated (only if parameter u)
	and/or parameter ull lis set at 2)
: 4	
IA	
	Solutions.
	check the causes that brought about the activation of the
	input
	<ul> <li>see parameters i5 and i6</li> </ul>
	Main consequences:
	the effect established with parameter i5
	• the alarm output will be activated (only if parameter u1
	and/or parameter u11 is set at 3)
iSd	Pressure switch alarm
	Solutions:
	<ul> <li>check the causes that brought about the activation of the</li> </ul>
	input
	• see parameters is, io, i7, i8 and i9
	switch the instrument off and back on again or cut the
	power supply off
	Main consequences:
	the regulators will be switched off
	• the alarm output will be activated (only if parameter u1
	and/or parameter u11 is set at 3)
сон	Overheated condenser alarm
	Solutions:
	<ul> <li>verify the temperature of the condenser</li> </ul>
	• see parameter C6
	Main consequences:
	• the alarm output will be activated (only if parameter u)
	and/or parameter u11 is set at 31
	if parameter u1 and/or parameter u11 is set at 6 the
	condenser fan will be on
<b>CCCCCCCCCCCCC</b>	
csa	Policieu compressor allarm
	• verify the temperature of the condenser
	• see parameter C7
	• switch the instrument off and back on again: when the
	instrument is switched back on, if the condenser
	temperature is still above that established with parameter
	C7, the power supply must be disconnected and the
	condenser cleaned.
	Main consequences:
	the evaporator compressor and fan will be switched off
	the alarm output will be activated (only if earometer will
	- the alarm output will be activated (only if parameter u)
	and/or parameter ull is set at 3)
dFd	Detrosting concluded due to maximum duration alarm
	Solutions:
	<ul> <li>check the integrity of the evaporator probe</li> </ul>
	see parameters d2, d3 and d11
	<ul> <li>press a key to restore normal display</li> </ul>
	Main consequences:

• the instrument continues to function regularly

When the cause of the alarm has disappeared, the instrument will go back to normal functioning, except for the following alarms:

- the pressure switch alarm ("ISd" code), which requires the instrument to be switched off or the power supply to be cut-off
- the compressor blocked due to condenser temperature alarm ("CSd" code), which requires the instrument to be switched off or the power supply to be cut-off
- the defrosting concluded due to maximum duration alarm ("dFd" code), which requires a key to be pressed

0.1	Errors
CODE	MEANING
Pr1	Cabinet probe error
	Solutions:
	<ul> <li>check that the probe is the NTC type</li> </ul>
	<ul> <li>check the integrity of the probe</li> </ul>
	cneck the instrument-probe connection
	Main consequences:
	<ul> <li>the activity of the compressor will depend on parameter</li> </ul>
	C4 and C5
	<ul> <li>defrosting will never be activated</li> </ul>
	• the alarm output will be activated (only if parameter u
	and/or parameter u11 is set at 3)
	<ul> <li>the door heaters will be switched-off (only if parameter u</li> </ul>
	and/or parameter u11 is set at 4)
	• the evaporator valve will be deactivated (only i
D-2	parameter ul and/or parameter ul l is set at 5)
PTZ.	Solutions:
	the same as the previous case but relative to the evaporato
	probe
	Main consequences:
	• if parameter P3 is set at 1, defrosting will last for the time
	established with parameter d3
	• if parameter P3 is set at 1 and parameter d8 is set at 2 or 3
	the instrument will function as if parameter d8 is set at 0
	<ul> <li>if parameter F0 is set at 3 or 4, the instrument will function</li> </ul>
	as if parameter is set at 2
	• the alarm output will be activated (only if parameter u
D-2	and/or parameter UTT is set at 3)
PTS	Solutions:
	<ul> <li>the same as the previous case but relative to the condense</li> </ul>
	probe
	Main consequences:
	• the overheated condenser alarm ("COH" code) wi
	never be activated
	• the compressor blocked due to condenser temperatur
	alarm ("CSd" code) will never be activated
	• the alarm output will be activated (only if parameter u
	and/or parameter u11 is set at 3)
	If parameter u1 and/or parameter u11 is set at 6, th
FrC	Error of compatibility user interface-control module
	Solutions:
	<ul> <li>check the compatibility user interface-control modul</li> </ul>
	(check the data related in the labels)
	Main consequences:
	• the control module will keep working correctly
ErL	Error of communication user interface-control module
	Solutions:
	• check the connection user interface-control module
	Main consequences:
(//= = -= ·!	the control module will keep working correctly
unctionic	cause or the alarm disappears, the instrument restores norma na
1	
1.1	Technical data
lser inte	rface container: open frame board behind a methacrylat
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heet. ontrol i Jser inter control i Jser inter hodule). he user inter he user inter b5.614 ft control i upply and upply and puts), 6- empera elative hu Jser inter ontrol m	module container: open frame board. erface protection rating (front): IP 65. module protection rating: IP 00. erface connects to the control module via a 4-way cable num length allowed for the connection cable is 20 r ; the cable is not supplied with the instrument). module connections: 6.3 mm faston (0.248 in, powe d outputs), screw terminal board (to the user interface an pole connector (serial port). ture of use: from 0 to 55 °C (from 32 to 131 °F, 10 909 imidity without condensate). rface power supply: the user interface is powered by th odule.
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open/normally closed contact (potential free contact, 5 V 1 mA). Range of measurement: from -40 to 105 °C (from 40 to 220 °F).

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## Resolution: 0.1 °C/1 °C/1 °F.

- Digital outputs: 5 relays:
  - compressor relay: 30 A res. @ 250 VCA (NO contact)
  - **defrosting relay:** 16 A res. @ 250 VCA (contact in exchange)
  - evaporator fan relay: 8 A res. @ 250 VCA (NO contact)
  - fourth output relay: 16 A res. @ 250 VCA (NO contact)
  - fifth output relay: 8 A res. @ 250 VCA (contact in exchange).

# The maximum current allowed on the loads is 20 A.

**Serial port:** port for communication with the Parameters Manager set-up software system or to the monitoring and supervision system of RICS plants (via TTL, with MODBUS communication protocol) or with the EVKEY programming key.

12	WORK SET-POINT AND CONFIGURATION PARAMETERS					
12.1	Wo	rk set-p	oint	0.55		
	MIN.	MAX.	U. M.	DEF.	WORK SE FPOINT	
12.2		figura	tion parar	neters	Twoix sectoring sectoring	
DEE	MIN	MAX	ш м	PAR	WORK SETPOINT	
SP	r1	r2	°C/°F(1)	-18.0	work set-point, see also r0	
DEF.	MIN.	MAX.	U. M.	PAR.	MEASUREMENT INPUTS	
CA1	-25.0	25.0	°C/°F (1)	0.0	cabinet probe offset	
CA2	-25.0	25.0	°C/°F(1)	0.0	evaporator probe offset	
CA3	-25.0	25.0	°C/°F (1)	0.0	condenser probe offset	
P1	0	1		1	degree Celsius decimal point (for the sizes displayed during normal functioning) 1 – YES	
P2	0	1		0	temperature unit of measurement (2) 0 = °C	
P3	0	2		1	1 = °F evaporator probe function	
					0 = no probe 1 = defrosting probe and probe for the temperature control system of the evaporator fan 2 = probe for the temperature control system of the evaporator fan	
P4	0	1		1	enabling of the condenser probe 1 = YES	
P8	0	250	ds	5	display delay of the temperature variation detected by the probes	
P9	0	2		1	type of backlight 0 = off during the on status and active keys with low light intensity 1 = with low light intensity during the on state and active keys with high light intensity	
					2 = with high line intensity during the on-state and all keys with high light intensity	
DEF.	IVIIN.	115.0	0. M.	PAR.		
r1	-99.0	15.0 r2	°C/°E(1)	-50.0	work serpoint oinerentai	
r2	r1	99.0	°C/°E (1)	50.0	maximum work septont	
r3	0	1		0	block of work set-point modification (with the procedure indicated in paragraph 5.1)	
			0.0.00		I = YES	
r4	0.0	99.0	°C/°F (1)	0.0	temperature increases during Energy Saving function; see also i5 and i10	
r6	0.0	240	UF(I)	3.0	Lemperature decrease during Overcooms function, see also ro	
r7	0.0	240	°C/°F (1)	10.0	auration or the overcooling function, see also 15 million and the second state of the	
.,	0.0	,,,,,	0.11	10.0	used for the calculation of the relative average (for the activation of defrosting; only if $d8 = 3$ ); see also d17 (3)	
DEF.	MIN.	MAX.	U. M.	PAR.	COMPRESSOR PROTECTIONS	
С0	0	240	min	0	compressor switch-on delay from instrument switch-on (3)	
C1	0	240	min	5	minimum time between two consecutive switch-ons of the compressor; also pressure switch-on delay from the conclusion of the cabinet probe error ( <b>Pr1</b> code) [4] (5]	
C2	0	240	min	3	minimum duration of compressor switch-off (4)	
C3	0	240	S	0	minimum duration of compressor switch-on	
<u>C4</u>	0	240	min	10	compressor switch on dration during cabinet probe error ( <b>Pr</b> ) code), see also CS	
<u></u>	0.0	199.0	°C/°E/1)	80.0	compressors without not unarray calorine prove error (PT) code; see also C+ condenses temperature over which the overcheaded condenser alarm is activated ("COH" code) (6)	
C7	0.0	199.0	°C/°E (1)	90.0	Condenser temperature over which the compressor blocked alarm is activated [CCC] code] [0]	
C8	0	15	min	1	compressor blocked alarm delay ("CSd" code) [7]	
C10	0	9999	h	0	number of compressor functioning hours above which a maintenance request is signalled 0 = no function	
DEF.	MIN.	MAX.	U. M.	PAR.	DEFROSTING	
d0	0	99	n	8	If d8 = 0, 1 or 2, derosting interval (8) 0 = defrosting at intervals will never be activated if d8 = 3, maximum defrosting interval	
d I	0	2		0	type of defrosting $0 = \underline{\text{ELECTRIC}}$ - during defrosting the compressor will remain off and the defrosting output will be activated; the evaporator fan activity will depend on parameter F2 $1 = \underline{\text{WITH HOT GAS}}$ - during defrosting the compressor will be switched-on and the defrosting output will be activated; the evaporator fan activity will depend on parameter F2 $1 = \underline{\text{WITH HOT GAS}}$ - during defrosting the compressor will be switched-on and the defrosting output will be activated; the evaporator fan activity will depend on parameter F2	
					12 = DUE TO COMPRESSOR STOPPING - during defrosting the compressor will remain off and the defrosting output will be deactivated; the evaporator fan activity will depend	
					on parameter F2	
d2	-99.0	99.0	°C/°F (1)	2.0	temperature of defrosting end (only if P3 = 1); see also d3	
d3	0	99	min	30	if P3 = 0 or 2, duration of defrosting	
					if P3 = 1, maximum duration of defrosting; see also d2	
d 4	0	1		0	0 = defrosting will never be activated	
u+	0	1		0	1 = YES	
d5	0	99	min	0	if d4 = 0, minimum time between switch-on of the instrument and the activation of defrosting; see also i5 (3)	
d6	0	1		1	temperature displayed during defrosting	
					0 = cabinet temperature 1 = if, on activation of defrosting, the cabinet temperature is below "work set-point + r0", at maximum "work set-point + r0"; if, on activation of defrosting, the cabinet	
					temperature is above "work set-point + r0", at maximum the temperature of the cabinet on activation of defrosting (9)	
d7	0	15	min	2	during dripping (during dripping the compressor will remain off and the defrosting output will remain deactivated. If d16 = 0, the evaporator fan activity will depend on	
d8	0	3		0	parameter F2; if d16 ≠ 0, the evaporator fan Will remain off) defrosting activation method	
					0 = AT INTERVALS - defrosting will be activated when the instrument has remained on completely for time d0 1 = AT INTERVALS - defrosting will be activated when the compressor has been left on completely for time d0 2 = AT INTERVALS - defrosting will be activated when the evaporator temperature as remained below temperature d9 completely for time d0 (10) 3 = ADAPTIVE - defrosting will be activated when one of the following conditions occurs; see also d0: (10) - condition 1: the evaporator temperature will be below temperature d22 and the compressor will have remained on totally for time d18	
40	_00 0	90 0	°C/°E /11	0.0	- conductor 2, the evaporator temperature will drop below temperature d19 temperature of the evaporator over which the defrosting interval count is suscended (only if d0 = 2).	
d11	-77.0	77.0		0.0	remperators of the defrosting alarm concluded due to maximum duration (" <b>dFd</b> " code: only if $P3 = 1$ and without evaporator probe error (" <b>Pr2</b> " code)	
ωιI		[		0	1 = YES	
d15	0	99	min	0	minimum duration of the compressor switch-on on activation of defrosting so that this can be activated (only if d1 = 1) (11)	
d16	0	99	min	0	duration of pre-dripping (during pre-dripping the compressor will remain off, the defrosting output will be activated and the evaporator fan will remain off)	
d17	1	10		1	number of evaporator temperature values used to calculate the relative average (for the activation of defrosting; only if d8 = 3); see also r7, i11 and i12	
d18	0	3,000	min	40	defrosting interval (only if d8 = 3 and for condition 1)	
d19	0.0	40.0	°C/°E/11	3.0	U = detrosting due to condition 1 will never be activated temperature of the evaporator below which defrosting is activated trelative to the average temperatures of the evaporator i.e. "average of the evaporator temperatures of	
			S (1)	5.0	d19 (only if $d8 = 3$ and due to condition 2); see also $d17$	
d20	0	500	min	180	minimum consecutive duration of the compressor, such to cause activation of defrosting 0 = defrosting will never be activated due to the effect of compressor switch-on	

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d21	0	500	min	200	minimum consecutive duration of compressor switch-on from instrument switch-on (on condition that the "cabinet temperature - work set-point" difference is over
					temperature r/) and from the activation of the Overcooling function, such to cause activation of defrosting
d22	0.0	10.0	°C/°E/1)	2.0	0 = derosting will never be actuated due to the effect of compressor source of the suspended trelative to the average temperatures of the evaporator. If the evaporator is a supersonal trends to the derosting interval count will be suspended trelative to the average temperatures of the evaporator is "average of the
022	0.0	10.0		2.0	evaporator temperatures of the evaporator and the standing interval control construction of the standing terms of the evaporator temperatures of the evaporator temperatures $+ d22^{\circ}$ (only if d8 = 3 and due to condition 1); see also d17
d23	0.0	10.0	°C/°F(1)	1.0	increase of the average evaporator temperatures during the Energy Saving function (for activation of defrosting; only if d8 = 3); see also d17
DEF.	MIN.	MAX.	U. M.	PAR.	TEMPERATURE ALARMS
A0	0	1		0	temperature associated to the minimum temperature alarm ("AL" code)
					0 = cabinet temperature
					1 = evaporator temperature (12)
A1	-99.0	99.0	°C/°F (1)	-10.0	temperature below which the minimum temperature alarm is activated ("AL" code); see also A0, A2 and A11
AZ	0	2		I.	type or minimum temperature alarm (AL code)
					U = no alarm to the work set eaint (i.e. "work set eaint A1", sensider A1 without sign)
					1 - relative to the work section r. (i.e. work section r. > Ar , consider Ar without sign) 2 = absolute (i.e. A1)
A4	-99.0	99.0	°C/°F(1)	10.0	temperature above which the maximum temperature alarm is activated ( <b>'AH</b> ' code); see also A5 and A11
A5	0	2		1	type of maximum temperature alarm ("AH" code)
					0 = no alarm
					1 = relative to the work set-point (i.e. "work set-point + A4"; consider A4 without sign)
					2 = absolute (i.e. A4)
A6	0	240	min	120	maximum temperature alarm delay ("AH" code) from instrument switch-on (3)
A7	0	240	min	15	temperature alarm delay ("AL" code and "AH" code)
A8 40	0	240	min	15	maximum temperature alarm delay (AH code) from conclusion of the dear micro witch input (14)
A11	0.1	15.0	°C/°E/1)	2.0	maximum temperature alarm deay ( An code) non deactivation of the door micro switch impact (14)
A13	0	1		0	enabling of the HACCP LED
					1 = YES
DEF.	MIN.	MAX.	U. M.	PAR.	EVAPORATOR FAN
F0	0	5		1	evaporator fan activity during normal functioning
					0 = off
					1 = on; se also F13, F14 and i10
					2 = parallel to the compressor; se also F9, F13, F14 and i10
					3 = depending on F1 (15)
					4 = off if the compressor is off, depending on F i if the compressor is on; see also Fy (15)
F1	-99.0	99.0	°C/°E/1)	-1.0	$S = \alpha \rho \rho r r r r r r r r r r r r r r r r r$
F2	0	2		0	expension the evaporator fan during defosting and dripping
					0 = off
					1 = on (it is recommended to set parameter d7 at 0)
					2 = depending on F0
F3	0	15	min	2	maximum duration of the evaporator fan standstill; see also F7 (during evaporator fan standstill, the compressor may be on, the defrosting output will remain deactivated
					and the evaporator fan will remain off)
F4	0	240	S	60	duration of evaporator fan switch-off during functioning due to low relative humidity percentage when the compressor is off; see also FS (only if F0 = 5)
F5	0	240	S	10	duration of evaporator tan switch-on during functioning due to low relative humidity percentage when the compressor is off; see also F4 (only if F0 = 5) $F_{\rm evantioning}$ due to low use high evaluative humidity percentage of the formation of the second set of
го	0	1		0	numeron ing due to low of high relative number precentage (only in $PO = 3$ ) [10] D = 1 OW PELATIVE HIMDITY - the evaporation fam will foruration in parallel to the compressor: see also E4 and E5
					= 1 + 100 HUMIDITY - the evaluator familiar laterator of a set of the compression set and the set of the se
F7	-99.0	99.0	°C/°F (1)	5.0	evaporator temperature below which the evaporator fan standstill is concluded (relative to the work set-point, i.e. "work set-point + F7"); see also F3
F8	0.1	15.0	°C/°F(1)	2.0	parameter F1 differential
F9	0	240	S	0	evaporator fan switch-off delay from switch-off of the compressor (only if F0 = 2, 4 and 5)
F11	0.0	99.0	°C/°F(1)	15.0	condenser temperature over which the condenser fan will be switched-on ("F11 + 2,0 °C/4 °F, only if u1 and/or u11 = 6 and on condition that the compressor is on); see
					also F12 (17)
F12	0	240	S .	30	condenser fan switch-oft delay from switch-oft of the compressor [only if u] and/or u11 = $6$ ]; see also F11
F13	0	240	min	5	auration or evaporator fan switch-or during the Energy Saving function; see also F14 and F10 [only IF F0 = 1 or 2] duration of evaporator fan switch-or during the Energy Saving function; see also F14 and F10 [only IF F0 = 1 or 2]
DEE	MIN	MAX	LL M	PAR	Guidator of evaporator fait switch of during the chergy saving function, see also instanting for prior 2 in the
i0	0	5		3	effect caused by the activation of the door micro switch input: see also i4
		-		_	0 = no effect
					1 = the compressor and the evaporator fan will be switched-off (at maximum for time i3 or until when the input is deactivated) (18)
					2 = the evaporator fan will be switched-off (at maximum for time i3 or until when the input is deactivated)
					3 = the cabinet light will be switched on (only if u1 and/or u11 = 0, until the input is deactivated)
					4 = the compressor and the evaporator fan will be switched-off (at maximum for time i3 or until the input is deactivated) and the cabinet light will be switched on (only
					if u1 and/or u11 = 0, until the input is deactivated) (18)
					S = the evaporator fan will be switched-off (at maximum for time i3 or until the input is deactivated) and the cabinet light will be switched on (only if u1 and/or u11 = 0, with the input is deactivated).
i 1	0	1		0	
		[		0	0 = normally open (active input with closed contact)
					I = normally closed linuit open with contact open)
i2	-1	120	min	30	door micro switch input alarm signalling delay ("id" code)
					-1= the alarm will not be signalled
i3	- 1	120	min	15	maximum duration of the effect caused by activation of the door micro switch input on the compressor and on the evaporator fan
					-1= the effect will last until the input is deactivated
i4	0	1		0	door micro switch input alarm memorisation (" <b>id</b> " code) (19)
	-				1 = YES
15	0	6		2	effect caused by the activation of the multipurpose input
					U = nu elieu L = SWACHERNIKATION OF DEFERSTING - on evolut of time d5 defrosting will be activated
					$1 = 3 \frac{1}{2} = 3 \frac{1}{2} $
					is not in progress; see also r4
					3 = ACTIVATION OF THE MUTIPURPOSE INPUT ALARM - when time i7 has expired, the display will show "IA" flashing and the buzzer will be activated (up to when the input
					is deactivated)
					4 = ACTIVATION OF THE PRESSURE SWITCH ALARM - the compressor will be off, if u1 and/or u11 = 6 the condenser fan will be on, the display will show the flashing "iA"
					code and the buzzer will be activated (until the input is deactivated): when the input has been activated the number of times established by parameter i8 the regulators
					will be switched off, if u1 and/or u11 = 6 the condenser fan will be switched on, the display will show the flashing " <b>15d</b> " code and the buzzer will be activated (until
					the input is deactivated and the instrument is switched off and back on again or the power supply is cut-off); see also i7 and i9
					p = and a more a constraint of the input is deactivated)  6 = INSTREMENT SWITCH-OFF - the instrument will be switched off (until the input is deactivated)
i6	0	1		0	
	ľ	. 		Ŭ	0 = normally open (active input with closed contact)
					1 = normally closed (input open with contact open)
i7	0	120	min	0	if i5 = 3, multipurpose input alarm signal delay (" <b>iA</b> " code)
	1	1	1	1	15 IF A server so the second state set in the second

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i8	0	15		0	number of multipurpose input alarms (" <b>iA</b> " code) such to cause the pressure switch alarm (" <b>iSd</b> " code) (only if i5 = 4)
					0 = no alarm
i9	1	999	min	240	time that must pass in absence of multipurpose input alarms ( <b>1A</b> <sup>2</sup> code) so that the alarms contactor is reset (only if i5 = 4)
110	0	999	min	0	time that must pass without activation of the door micro switch input (after the cabinet temperature has reached the work set-point) so that the Energy Saving function is
					activated automatically (it affects the evaporator fan only if F0 = 1 or 2)
	0	240		1.5	0 = the function will never be activated automatically
111	0	240	S	15	minimum duration of door micro switch activation such to cause the exclusion of the consequent evaporator temperature value from those used for the calculation of the
1.2	0	240		( 0	relative average (for the activation of defrosting; only if $d\theta = 3$ ); see also $d1/d\theta = 1$
112	0	240	S	60	minimum total duration of door micro switch activation such to cause the exclusion of the consequent evaporator temperature value from those used for the calculation
		2.4.0		1.0.0	of the relative average (for the activation of defrosting; only if d8 = 3); see also d1/
113	0	240		180	number of door micro switch input activations such to cause the activation of detrosting
1.4	0	240		2.2	U = derrosting will hever be activated due to the effect of door micro switch input activation
114	0	240	Imin	32	minimum duration of door micro switch input activations such to cause the activation of derrosting
DEE	A 415 J			DAD	0 = detrosting will never be activated due to the effect of door micro switch input activation
DEF.	MIN.	MAX.	U. M.	PAR.	
uı	0	6		0	utility managed by the fourth output [21]
					0 = <u>CASINEL LIGH</u> - in this case the (9) key, parameters i0 and u2 will have meaning
					I = <u>DEMISING HEATERS</u> - in this case the (i) key and parameter u6 will have meaning
					2 = AUXILIARY OUTPUT - in this case the () key, parameters i5 and u2 will have meaning
					3 = <u>ALARM OUTPUT</u> - in this case, parameter u4 will have meaning
					4 = <u>DOOR HEATERS</u> - in this case, parameter u5 will have meaning
					5 = <u>EVAPORATOR VALVE</u> - in this case, parameters u7 and u8 will have meaning
					6 = <u>CONDENSER FAN</u> - in this case, parameters P4, F11 and F12 will have meaning
u2	0	1		0	enabling of cabinet light or auxiliary output switch-on/off in manual mode when the instrument is off (only if u1 and/or u11 = 0 or 2) (22)
					1 = YES
u4	0	1		1	enabling deactivation of the alarm output with silencing of the buzzer (only if u1 and/or u11 = 3)
					1 = YES
u5	-99.0	99.0	°C/°F (1)	-1.0	cabinet temperature below which the door heaters are switched-on ("u5 - 2.0 °C/4 °F, only if u1 and/or u11 = 4) (6)
u6	1	120	min	5	duration of demisting heaters switch-on (only if u1 and/or u11 = 1)
u7	0.0	99.0	°C/°F(1)	2.0	cabinet temperature below which the evaporator valve is disabled (relative to the work set-point, i.e. "work set-point + u7") (only if u1 and/or u11 = 5) (6)
u8	0	1		0	type of evaporator valve contact (only if u1 and/or u11 = 5)
					0 = normally open (active valve with closed contact)
					1 = normally closed (active valve with open contact)
u9	0	1		1	enabling of the buzzer
					1 = YES
u11	0	6		3	utility managed by the fifth output (21)
					0 = CABINET LIGHT - in this case the (n) key, parameters i0 and u2 will have meaning
					1 = DEMISTING HEATERS - in this case the @ key and parameter u6 will have meaning
					2 = AUXII JARY OUTPUT - in this case the (a) key parameters is and u.2 will have meaning
					3 = ALARM OLITIPLIT - in this case, parameter u4 will have meaning
					4 = DOOR HEATERS - in this case, parameter US will have meaning
					5 = EVAPORATOR VALVE - in this case, parameters 1/2 and 1/8 will have meaning
					6 - CONDENSER FAN, in this case, parameters P4. F11 and F12 will have meaning
DEE	MIN	MAX	LL M	PAR	
	1	247	0. 101.	247	John Erner work (model)
	0	2 7 7		2 + 7	baud rate
LD	ľ			2	
	-	-			3 = 19,200 baud
LP	0	2		2	parity
					U = none (no parity)
					1 = odd
					2 = even
PARAN	/ MIN.	MAX.	U.O.M.	DEF.	RESERVED
E9	0	1		1	reserved

(1) the unit of measurement depends on parameter P2

(2) appropriately set the parameters relative to the regulators after modification of parameter P2

(3) the parameter only has effect after a power cut that occurs when the instrument is on

(4) the time established with the parameter is counted also when the instrument is off

(5) if parameter C1 is set at 0, the delay from the conclusion of the cabinet probe error will be 2 min

(6) the parameter differential is 2.0 °C/4 °F

(7) on instrument switch-on, the temperature of the condenser is already above that established with parameter C7, parameter C8 will have no effect

(8) the instrument memorises the defrosting interval count every 30 min. The modification of parameter d0 has effect from the conclusion of the previous defrosting interval or from the activation of defrosting in manual mode

(9) the display restores normal functioning when, on conclusion of evaporator fan standstill, the cabinet temperature drops below that which has blocked the display (or if a temperature alarm occurs)

(10) if parameter P3 is set at 0 or 2, the instrument will function as if parameter d8 is set at 0

(11) if, on activation of defrosting, the switch-on duration of the compressor is less than the time established with parameter d15, the compressor will remain on for the fraction of time required to complete it

(12) if parameter P3 is set at 0, the instrument will function as if parameter A0 is set at 0 but will not memorise the alarm

(13) during defrosting, dripping and evaporator fan standstill, the temperature alarms are not present as long as these have occurred after activation of defrosting

(14) during the activation of the door micro switch input, the maximum temperature alarm is absent on the condition that these occur after activation of the input

(15) if parameter P3 is set at 0, the instrument will function as if parameter F0 is set at 2

(16) the parameter is also modified by operating with the procedure given in paragraph 4.8.1

(17) if parameter P4 is set at 0, the condenser fan will function in parallel to the compressor

(18) the compressor is switched-off after 10 s from activation of the input. If the input is activated during defrosting or standstill of the evaporator fan, the activation will not have any effect on the compressor

(19) the instrument memorises the alarm on expiry of the time established with parameter i2. If parameter i2 is set at -1, the instrument does not memorise the alarm

(20) make sure that the time established with parameter i7 is lower than that established with parameter i9  $\,$ 

(21) to prevent damage to the utility connected, modify the parameter when the instrument is off

(22) if parameter u2 is set at 0, instrument switch-off will cause the cabinet light and/or auxiliary output to switch off (on successive switch-on of the instrument, the utility will remain off); if the parameter u2 is set at 1, instrument switch-off will not cause the cabinet light and/or auxiliary output to switch off (on successive switch-on of the instrument, the utility will remain on).

## 13 ELECTRIC CONNECTION

## 13.1 Preliminary considerations

With reference to the wiring diagram:

• the utility managed by the fourth output will depend on parameter u1

• the utility managed by the fifth output will depend on parameter u11

• the serial is the port for communication with the Parameters Manager set-up software system or to the monitoring and supervision system of RICS plants (through a serial interface, via TTL, with MODBUS communication protocol) or with the EVKEY programming key. The port must not be used simultaneously for three purposes.

#### 13.2 Electric connection



### 13.3 **Recommendations for the electric connection**

• do not operate on the terminal boards using electric or pneumatic screwdrivers

- if the instrument has been taken from a old place to a hot one, the humidity could condense inside. Wait about one hour before applying power
- make sure that the power supply voltage, frequency and operational electric power correspond to those of the local power supply
- disconnect the power supply before performing any type of maintenance
- do not use the instrument as a safety device
- for repairs and information regarding the instrument, contact the Evco sales network.

