# EVK802 Digital controller for quick coolers management
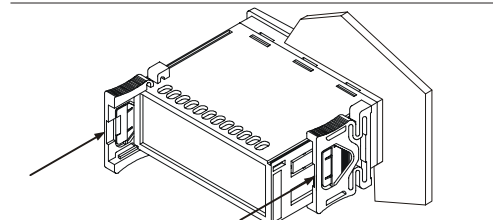
(E) ENGLISH

1 PREPARATIONS

1.1 Important

Please read these instructions carefully prior to installation and use, and follow all the precautions for installation and electrical connections; keep these instructions with the device for future consultation.

1.2 Installation

Per panel, using the snap-on brackets supplied; the dimensions are given in mm.
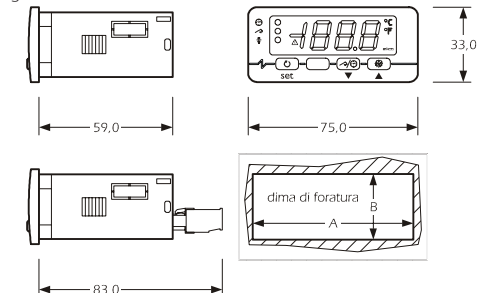

Recommendations for installation:
- the maximum depth with screw terminal blocks is 59.0
- the maximum depth with removable terminal blocks is 83.0
- the panel thickness must not exceed 8,0 mm
- ensure that the operating conditions (operating temperature, humidity, etc.) are within the limits indicated in the technical data sheets
- do not install the device near to any sources of heat (heating elements, hot air conduits, etc.), equipment containing powerful magnets (large diffusers, etc.), areas affected by direct sunlight, rain, humidity, excessive dust, mechanical vibration or shock
- in compliance with safety regulations, the device must be installed correctly, and in such a way as to protect against any contact with electrical parts; all safety devices must be fixed so that they cannot be removed without the use of tools.

1.3 Electrical connections

With reference to the electrical circuit diagram:
- the service controlled by relay K2 depends on parameter u0
- the serial port (available on request) is the port used for communicating with the monitoring system (by means of a serial interface, via TTL, using the MODBUS communication protocol) or with the programming key; the port must not be used for both purposes simultaneously:
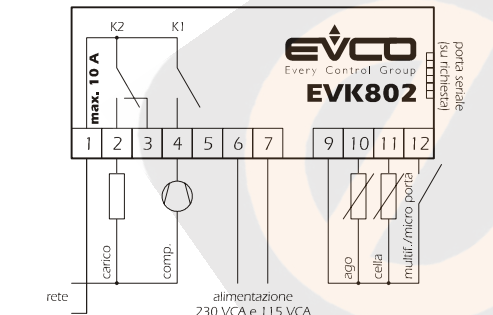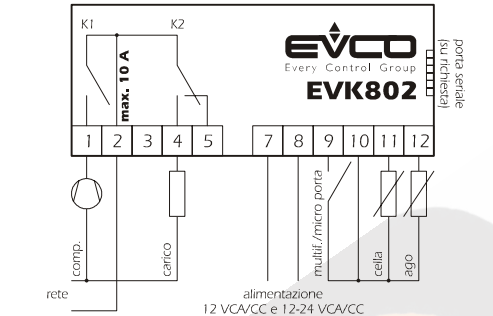
Points to note for connecting to the electricity supply
- do not use electric or pneumatic screw-wrenches on the terminal board
- if the device has been moved from a cold to a warm environment, condensation may have formed inside; please wait approx. one hour prior to switching on

- ensure that the voltage, frequency and operational power of the device are compatible with the local power supply
- disconnect the power prior to proceeding with any kind of maintenance operation
- do not use the device as a safety device
- for repairs and any information relating to the device, contact the Evco dealer network.

2 USER INTERFACE

2.1 Introductory information

The device has the following operational states:
- "on" (the device is switched on and an operating cycle is running)
- "stand-by" (the device is switched on but no operating cycle is running)
- "off" (the device is not switched on).

If power is interrupted during a timed blast chilling operation, when power is restored, chilling will continue from the time point at which the interruption occurred (with a maximum error of 10 minutes).
If power is interrupted during a set-temperature blast chilling operation, when power is restored, chilling will start again from the beginning.
If power is interrupted during a storage operation, when power is restored the storage operation will be reset.
If power is interrupted while in "stand-by" mode, when power is restored the device will be in the same state.

2.2 The display

In the "on" state, during normal operation, the display shows:
- the amount of time remaining for a timed blast chilling operation, if this is ongoing
- the temperature measured by the pin probe if a set-temperature chilling operation is ongoing
- the temperature of the cabinet, if storage is ongoing.

In "stand-by" mode, during normal operation, the display shows the temperature of the cabinet for ½ s every 3 s.

2.3 Defrosting and the evaporator fan

The service controlled by relay K2 depends on parameter u0:
- if u0 = 0, the service controlled by relay K2 will be defrosting (electrical defrosting; the evaporator fan is not controlled)
- if u0 = 1, the service controlled by relay K2 will be evaporator fan (defrost stopping the compressor):
- during blast chilling, operation of the evaporator fan depends on parameter F0
- during storage, operation of the evaporator fan depends on parameter F2
- the evaporator fan is started during defrosting.

In "stand-by" mode it is only possible to activate manual defrosting; if the service controlled by relay K2 is the evaporator fan (parameter u0 = 1), during defrosting the evaporator fan will be switched on, and during drip-draining, this will be switched off.
To start defrosting in manual mode:
- ensure no procedure is running
- press 🌊 for 4 s.
Defrosting is never activated during blast-chilling.
Defrosting occurs periodically during storage; it is possible to start defrosting manually.

2.4 Viewing the status of the compressor and the evaporator fan

To view the compressor status:
- ensure no procedure is running
- press ❄ : the display will show the first available label:
- if the display shows "C-1", the compressor will be switched-on
- if the display shows "C-0", the compressor will be switched off
- if the display shows "C-P", compressor protection will be ongoing (parameters C0, C1, C2 and i7).
To view the status of the evaporator fan:
- ensure no procedure is running
- press ❄ twice: the display will show the first available label:
- if the display shows "F-1", the evaporator fan will be switched on
- if the display shows "F-0", the evaporator fan will be switched off
- if the display shows "F-P", then evaporator fan deferred activation will be ongoing (parameter F8).
To exit the procedure:
- press ❄ until the display shows the ongoing status value (see paragraph 2.2), or leave for 15 s.

If the service controlled by relay K2 is defrosting (parameter u0 = 0), labels "F-1", "F-0" and "F-P" will not be displayed.

2.5 Buzzer mute

- ensure no procedure is running
- press any key (the first key press does not trigger the associated effect).

3 OPERATIONAL CYCLES

3.1 Introductory information

The device has the following operational cycles:
- timed positive chilling and storage
- timed negative chilling and storage
- set-temperature positive chilling and storage
- set-temperature negative chilling and storage.

Set-temperature cycles are preceded by a test step in order to check correct insertion of the pin probe (see paragraph 3.6).
To re-start using the same settings as the last cycle run:
- ensure that the device is in "stand-by" mode, that no procedures are running and that another cycle has not been selected
- press ❄ 2 s: the display will show the label of the last cycle run

- press 🌊 within 60 s: in the case of a timed cycle, the display will show the duration of the blast chilling step (in minutes) or in the case of a set-temperature cycle, the set target temperature
- press ❄ or ❄❄ within 15 s to change the value (the setting remains active until another cycle is selected, when the value r1, r2, r3 or r4 is restored)
- press 🌊 within 15 s: the cycle will be activated.

3.2 Timed positive blast chilling and storage cycle

To start the cycle:
- ensure the device is in "stand-by" mode and no procedures are running
- press ❄❄ to select "PoS" and ensure the LED ❄ is flashing
- press 🌊 within 15 s: the display will show the duration of the blast chilling step (in minutes)
- press ❄ or ❄❄ within 15 s to change the value (the setting remains active until another cycle is selected, when the value assigned by parameter r1 is restored)
- press 🌊 : the display will show the chilling operational setpoint (in °C/°F) and the LED ❄ will flash
- press ❄ or ❄❄ within 15 s to change the value (the setting remains active until another cycle is selected, when the value assigned by parameter r7 is restored)
- press 🌊 within 15 s: the cycle will be activated.
Also look at parameters rb and E0.
During chilling:
- the display shows the residual chilling time remaining
- the LED ❄ is on
- parameter r1 sets the chilling time duration
- parameter r7 sets the operational setpoint
- press ❄❄ several times to:
- display the message "PoS"
- display the cabinet temperature
- exit the procedure, or leave for 15 s.
Once the chilling period has elapsed:
- the device switches to storage mode
- the display shows the message "End"
- the buzzer will sound for the period of time set by parameter AA
- press any key to mute the buzzer; press once more to cancel the message "End".
During storage:
- the display shows the cabinet temperature
- the LEDs ❄ and ❄ are on
- the parameter r9 sets the operational setpoint
- press ❄❄ several times to:
- display the message "PoS"
- exit the procedure, or leave for 15 s.
To interrupt the cycle:
- press 🌊 for 2 s.

3.3 Timed negative chilling and storage cycle

To start the cycle:
- ensure the device is in "stand-by" mode and no procedures are running
- press ❄❄ to select "nEg" and ensure the LED ❄ is flashing
- press 🌊 within 15 s: the display will show the duration of the blast chilling step (in minutes)
- press ❄ or ❄❄ within 15 s to change the value (the setting remains active until another cycle is selected, when the value assigned by parameter r2 is restored)
- press 🌊 : the display will show the chilling operational setpoint (in °C/°F) and the LED ❄ will flash
- press ❄ or ❄❄ within 15 s to change the value (the setting remains active until another cycle is selected, when the value assigned by parameter r8 is restored)
- press 🌊 within 15 s: the cycle will be activated.
Also look at parameters rb and E0.
During chilling:
- the display shows the residual chilling time remaining
- the LED ❄ is on
- parameter r2 sets the chilling time duration
- parameter r8 sets the operational setpoint
- press ❄❄ several times to:
- display the message "nEg"
- display the cabinet temperature
- exit the procedure, or leave for 15 s.
Once the chilling period has elapsed:
- the device switches to storage mode
- the display shows the message "End"
- the buzzer sounds for the period of time set by parameter AA
- press any key to mute the buzzer; press once more to cancel the message "End".
During storage:
- the display shows the cabinet temperature
- the LEDs ❄ and ❄ are on
- the parameter rA sets the operational setpoint
- press ❄❄ several times to:
- display the message "nEg"
- exit the procedure, or leave for 15 s.
To interrupt the cycle:
- press 🌊 for 2 s.

3.4 Set-temperature positive blast chilling and storage cycle

To start the cycle:
- ensure the device is in "stand-by" mode and no procedures are running
- press ❄❄ to select "PoS" and ensure the LED ❄ is flashing
- press 🌊 within 15 s: the display will show the blast chilling endpoint temperature
- press ❄ or ❄❄ within 15 s to change the value (the setting remains active until another cycle is selected, when the value assigned by parameter r3 is reset)
- press 🌊 : the display will show the chilling operational setpoint (in °C/°F) and the LED ❄ will flash
- press ❄ or ❄❄ within 15 s to change the value (the setting remains active until another cycle is selected, when the value assigned by parameter r7 is restored)
- press 🌊 within 15 s: the cycle will be activated.
Also look at parameters rb and E0.
Prior to starting the cycle:
- the test is run in order to check correct pin probe insertion (see paragraph 3.6):
- if the outcome of the test is positive, the cycle will be started
- if the outcome of the test is negative, the cycle will be started in timed mode.
During chilling:
- the display shows the temperature measured by the pin probe
- the LED ❄ is on
- the parameter r3 sets the blast chilling endpoint temperature
- the parameter r5 sets the maximum chilling time duration
- the parameter r7 sets the operational setpoint
- press ❄❄ several times to:
- display the maximum residual chilling time remaining
- display the message "PoS"
- display the flashing cabinet temperature
- exit the procedure, or leave for 15 s.
If the temperature measured by the pin probe reaches the chilling endpoint temperature prior to expiry of the maximum chilling time duration:
- the device will switch to storage mode
- the buzzer will sound for the period of time set by parameter AA
- press any key to mute the buzzer; press once more to cancel the message "End".
If the temperature measured by the pin probe does not reach the chilling endpoint temperature prior to expiry of the maximum chilling time duration:
- chilling will continue
- the LED ❄ will flash and the LED ⚠ will be on
- the buzzer will sound
- press ❄❄ several times to:
- mute the buzzer
- display the time elapsed since the maximum chilling time expired
- display the cabinet temperature
- display the message "nEg"
- exit the procedure, or leave for 15 s
- when the temperature measured by the pin probe reaches the chilling endpoint temperature:
- the device will switch to storage mode
- the LED ❄ will continue to flash and the LED ⚠ will continue to stay on
- the display will show the message "End"
- the buzzer will sound for the period of time set by parameter AA
- press any key to mute the buzzer; press once more to cancel the message "End".
During storage:
- the display shows the cabinet temperature
- if chilling had a positive outcome, the LEDs ❄ and ❄ and will be on; if chilling had a negative outcome, the LEDs ❄ and ⚠ will be on and the LED ❄ will flash
- the parameter rA sets the operational setpoint
- press ❄❄ several times to:
- display the message "nEg"
- exit the procedure, or leave for 15 s.
To interrupt the cycle:
- press 🌊 for 2 s.

3.6 Test to check correct pin probe insertion

Set-temperature cycles are preceded by a test step in order to check correct pin probe insertion.
The test has two stages:
- if the outcome of the first stage is positive, the second will not be run
- if the outcome of the first stage is negative, the second will be run.
The outcome of the first stage is positive if "the temperature measured by the pin probe - the temperature of the cabinet" is greater than the value set by parameter rc at least 3 times out of 5 (the comparison is made every 10 s); if parameter rc is set to 0, neither the first nor second stages will be run.
The outcome of the second stage is positive if the difference "temperature measured by the pin probe - temperature of the cabinet" is greater by at least 1°C/1°F (with respect to the previous comparison) at least 6 times out of 8 (the comparison is made every "rd/8 s").
If the outcome of the test is positive:
- the cycle will be activated.
the cycle will be activated:
- the cycle will be started in timed mode
- the LED ❄ will flash.
If power is interrupted during the test, when power is restored, the test will start again from the beginning.

4 SETTINGS

4.1 Temporary setting of operational setpoint during storage

- ensure the device is in "stand-by" mode and no procedures are running
- press 🌊 : the LED ❄ will flash
- press ❄ or ❄❄ within15 s
- press 🌊 or leave for 15 s.
The setting remains active until another operational cycle is selected, when the value assigned by parameter r9 or ra is restored.

4.2 Setting the configuration parameters

The parameters are arranged on two levels.

To access the first level:
- ensure the device is in "stand-by" mode and no procedures are running
- press ❄ and ❄❄ for 4 s: the display will show "PA"
To access the second level:
- access the first level
- press ❄ or ❄❄ to select "PA"
- press 🌊
- press ❄ or ❄❄ within 15 s to set "-19"
- press 🌊 or leave for 15 s
- press ❄ and ❄❄ for4 s: the display will show "CA1".
To select a parameter:
- press ❄ or ❄❄.
To modify a parameter:
- press 🌊
- press ❄ or ❄❄ within 15 s
- press 🌊 or leave for 15 s.
To exit the procedure:
- press ❄ and ❄❄ for 4 s, or leave for 60 s.
Interrupt the device power supply after altering the parameters.

4.3 Resetting configuration parameter default values

- ensure the device is in "stand-by" mode and no procedures are running
- press ❄ and ❄❄ for 4 s: the display will show "PA"
- press 🌊
- press ❄ or ❄❄ within 15 s to set "743"
- press 🌊 or leave for 15 s
- press ❄ and ❄❄ per 4 s: the display will show "dEF"
- press 🌊
- press ❄ or ❄❄ within 15 s to set "149"
- press 🌊 or leave for 15 s: the display will flash "dEF" for 4 s, after which the device will exit the procedure
- interrupt the power to the device:
Ensure that the parameter default values are appropriate, particularly if the probes are NTC type.

5 SIGNALS

5.1 Signals

LED	MESSAGE
❄	timed chilling LED
	• if on and the LED ❄ is off, a timed chilling operation is ongoing
	• if on and the LED ❄ is also on, a post timed-chilling storage operation is ongoing
	• if flashing, a timed chilling and storage cycle will have been selected
❄	set-temperature chilling LED
	• if on and the LED ❄ is off, a set-temperature chilling operation is ongoing
	• if on and the LED ❄ is also on, a post set-temperature chilling storage operation will be ongoing
	• if flashing, a set-temperature chilling and storage cycle will have been selected
	• if it is on for ½ s every 3 s, the test to verify correct pin probe insertion will be ongoing
	• if flashing, and the LED ❄ is on, then the test to verify correct pin probe insertion will have had a negative outcome (parameters rc and rd) and the cycle will have been started in timed mode; see paragraph 3.6
	• if flashing, and the LED ❄ is on, the chilling stage will have had a negative outcome, and so this will continue
	• if flashing, and the LEDs ❄ and ❄ are on, the chilling stage will have had a negative outcome, the device will have switched to storage mode and this will be ongoing
❄	storage LED
	• if on, a storage operation will be ongoing
	• if flashing, then the operational setpoint will be being modified while a storage operation is ongoing (see paragraph 4.1)
⚠	alarm LED
	if on, an alarm is ongoing
°C	degree Celsius LED
	if on, the unit of measurement for temperature is degrees Celsius (parameter P2)
°F	degree Fahrenheit LED
	if on, the unit of measurement for temperature is degrees Fahrenheit (parameter P2)
decimal point	minute LED
	if flashing, the unit of measurement of magnitude displayed is the minute
CODE	MESSAGE
- d -	defrosting or drip draining is ongoing

3.5 Set-temperature negative chilling and storage cycle

To start the cycle:
- ensure the device is in "stand-by" mode and no procedures are running
- press ❄❄ to select "nEg" and ensure the LED ❄ is flashing
- press 🌊 within 15 s: the display will show the blast chilling endpoint temperature
- press ❄ or ❄❄ within 15 s to change the value (the setting remains active until another cycle is selected, when the value assigned by parameter r4 is restored)
- press 🌊 : the display will show the chilling operational setpoint (in °C/°F) and the LED ❄ will flash
- press ❄ or ❄❄ within 15 s to change the value (the setting remains active until another cycle is selected, when the value assigned by parameter r8 is restored)
- press 🌊 within 15 s: the cycle will be activated.
Also look at parameters rb and E0.

6 ALARMS

6.1 Alarms

CODE	MESSAGE
AL	Minimum temperature alarm
	Remedies:
	• check the cabinet temperature
	• check parameters A1 and A2
	Consequences:
	• the device will continue to function normally
AH	Maximum temperature alarm
	Remedies:
	• check the cabinet temperature
	• check parameters A3 and A4
	Consequences:
	• the device will continue to function normally
id	Micro-port input alarm (only in "stand-by" mode and if parameter i0 is set to 0 or 1)
	Remedies:
	• check the causes which activated the input
	• check parameters i0 and i1
	Consequences:
	• the outcome set by parameter i0
iA	Compressor protection input alarm (only if parameter i0 is set to 2)
	Remedies:
	• check the causes which activated the input
	• check parameters i0 and i1
	Consequences:
	• the compressor will be shut down

When the cause that triggered the alarm has been resolved, the device restores normal operation.

7 INTERNAL DIAGNOSTICS

7.1 Internal diagnostics

CODE	MESSAGE
Pr1	Cabinet probe error
	Remedies:
	• see P0 parameter
	• check probe integrity
	• check probe-device connection
	• check the cabinet temperature
	Consequences if the error occurs while in "stand-by" mode:
	• if parameter C11 is set to 0, it will not be possible to start any of the cycles
	• if parameter C11 is set to 1, the pin probe will function as the cabinet probe and only timed cycles will be allowed to start
	Consequences if the error occurs during a timed chilling operation:
	• if parameter C11 is set to 0, the cycle will be interrupted
	• if parameter C11 is set to 1, the pin probe will function as the cabinet probe and the chilling operation will continue
	Consequences if the error occurs during a set-temperature chilling operation:
	• if parameter C11 is set to 0, the cycle will be interrupted
	• if parameter C11 is set to 1, the pin probe will function as both the cabinet probe and pin probe and the chilling

operation will continue

Consequences if the error occurs during a storage operation:

• parameter C11 is set to 0, the compressor activity will depend on parameters C4, C5 and C6

• if parameter C11 is set to 1, the pin probe will function as the cabinet probe and the storage operation will continue

Pr2	Pin probe error
	Remedies:
	• the same as for the previous case, but in relation to the pin probe
	Consequences if the error occurs while in "stand-by" mode:
	• only timed operation cycles will be allowed to start
	Consequences if the error occurs during a timed chilling operation:
	• chilling will continue
	Consequences if the error occurs during a set-temperature chilling operation:
	• chilling will continue in timed mode
	Consequences if the error occurs during storage mode:
	• storage will continue

8 TECHNICAL DATA

8.1 Technical data

Case: grey self-extinguishing.

Front panel protection classification (use copper conductors only): IP 65.

Connections: Screw terminal blocks (power supply, inputs and outputs), 6 pin connector (serial port; available on request); extractable terminal block (power supply, inputs and outputs) available on request.

Operating temperature: from 0 to 55 °C (10 … 90% relative humidity, without condensation).

Power supply: 230 VAC, 50/60 Hz, 3 VA (nominal); 115 VAC or 12-24 VAC/DC or 12 VAC/DC by request.

Insulation class: 2.

Alarm buzzer: integrated.

Sensor inputs: 2 (cabinet probe and pin probe) for PTC/NTC probes.

Digital inputs: 1 (door switch/multifunction) for NA/NC contact (clean contact, 5 V 1 mA).

Sensor range: from -50.0 to 150.0 °C for PTC probes, from -40.0 to 105.0 °C for NTC probes.

Sensitivity: 0.1°C/1°C/1°F.

Digital outputs: 2 relays:
- **compressor relay**: 16 A res. @250 VAC, 5 FLA, 30 LRA (NA contact) versions with 12 VAC/DC and 12-24 VAC/DC; 8 A res. @ 250 VAC, 2 FLA, 12 LRA otherwise
- **defrosting/evaporator fan relay**: 8 A res. @250 VAC, 2 FLA, 12 LRA (exchange contacts).

The maximum permitted current on loads is 10 A

Serial port: port for communicating with the monitoring system (by means of a serial interface, via TTL, using the MODBUS communication protocol) or with the programming key; available on request.

9 CONFIGURATION PARAMETERS

9.1 First level configuration parameters

PARAM.	MIN.	MAX.	M.U.	DEF.	MAIN CONTROLLER
r0	0,1	15,0	°C/°F (1)	2,0	parameter r7, r8, r9 and Ra differential
r1	1	600	min	90	timed positive blast chilling duration
r2	1	600	min	240	timed negative blast chilling duration
r3	-99,0	99,0	°C/°F (1)	3,0	positive blast chill end-point temperature (temperature detected by the pin probe)
r4	-99,0	99,0	°C/°F (1)	-18,0	negative blast chill end-point temperature (temperature detected by the pin probe)
r5	1	600	min	90	set-temperature positive blast chilling maximum duration
r6	1	600	min	240	set-temperature negative blast chilling maximum duration
r7	-99,0	99,0	°C/°F (1)	0,0	positive blast chilling operational setpoint (cabinet temperature)
r8	-99,0	99,0	°C/°F (1)	-40,0	negative blast chilling operational setpoint (cabinet temperature)
r9	-99,0	99,0	°C/°F (1)	2,0	post positive blast chill storage operational setpoint (cabinet temperature)
rA	-99,0	99,0	°C/°F (1)	-20,0	post negative blast chill storage operational setpoint (cabinet temperature)

9.2 Second level configuration parameters

PARAM.	MIN.	MAX.	M.U.	DEF.	SENSOR INPUTS
CA1	-25,0	25,0	°C/°F (1)	0,0	cabinet probe offset
CA2	-25,0	25,0	°C/°F (1)	0,0	pin probe offset
P0	0	1	- - -	0	probe type
					0 = PTC
					1 = NTC
P1	0	1	- - -	1	degree Celsius decimal point (for the quantity displayed during normal operation)
					1 = YES
P2	0	1	- - -	0	unit of temperature measurement (2)
					0 = °C
					1 = °F
P3	0	1	- - -		pin probe enabling
					1 = YES

PARAM.	MIN.	MAX.	M.U.	DEF.	MAIN CONTROLLER
r0	0,1	15,0	°C/°F (1)	2,0	parameter r7, r8, r9 and Ra differential
r1	1	600	min	90	timed positive blast chilling duration
r2	1	600	min	240	timed negative blast chilling duration
r3	-99,0	99,0	°C/°F (1)	3,0	positive blast chill end-point temperature (temperature detected by the pin probe)
r4	-99,0	99,0	°C/°F (1)	-18,0	negative blast chill end-point temperature (temperature detected by the pin probe)
r5	1	600	min	90	set-temperature positive blast chilling maximum duration
r6	1	600	min	240	set-temperature negative blast chilling maximum duration
r7	-99,0	99,0	°C/°F (1)	0,0	positive blast chilling operational setpoint (cabinet temperature)
r8	-99,0	99,0	°C/°F (1)	-40,0	negative blast chilling operational setpoint (cabinet temperature)
r9	-99,0	99,0	°C/°F (1)	2,0	post positive blast chill storage operational setpoint (cabinet temperature)
rA	-99,0	99,0	°C/°F (1)	-20,0	post negative blast chill storage operational setpoint (cabinet temperature)
rb	0	2	- - -	1	kind of cycle enabled
					0 = positive chilling
					1 = positive chilling and negative chilling
					2 = negative chilling
rc	0,0	99,0	°C/°F (1)	5,0	"temperature detected by the pin probe - temperature of the cabinet" difference for the first stage of the test to check correct pin probe insertion (see paragraph 3.6)
					0 = test will not be performed (neither the first nor second stages)
rd	1	99	s	60	duration of the second stage of the test to check correct pin probe insertion (see paragraph 3.6)

PARAM.	MIN.	MAX.	M.U.	DEF.	COMPRESSOR PROTECTION
C0	0	240	min	0	operational cycle deferred compressor start-up; deferred compressor power restoration also following a power interruption during an operational cycle
C1	0	240	min	5	minimum elapsed time period between two consecutive compressor start-up operations
C2	0	240	min	3	minimum compressor shut-down time
C3	0	240	s	0	minimum compressor start-up time
C4	0	240	min	10	storage cabinet probe error compressor shut-down duration; see also C5 and C6 (only if C11 = 0)
C5	0	240	min	10	positive storage cabinet probe error compressor start-up duration; see also C4 (only if C11 = 0)
C6	0	240	min	20	negative storage cabinet probe error compressor start-up duration; see also C4 (only if C11 = 0)
C11	0	1	- - -	0	pin probe operation during cabinet probe error
					0 = pin probe
					IF THE ERROR OCCURS IN "STAND-BY" MODE - it will not be possible to start any of the cycles
					IF THE ERROR OCCURS DURING A TIMED OR SET TEMPERATURE BLAST CHILLING OPERATION - the cycle will be interrupted
					IF THE ERROR OCCURS DURING A STORAGE OPERATION - compressor activity will depend on parameters C4, C5 and C6
					1 = both pin probe and cabinet probe
					IF THE ERROR OCCURS WHILE IN "STAND-BY" MODE - the pin probe will operate as a cabinet probe and it will only be possible to start timed cycles
					IF THE ERROR OCCURS DURING TIMED BLAST CHILLING - the pin probe will operate as a cabinet probe and chilling will continue
					IF THE ERROR OCCURS DURING SET-TEMPERATURE BLAST CHILLING - the pin probe will operate as both a pin probe and as a cabinet probe and chilling will continue; **it is recommended to set the i0 parameter to 2 (COMPRESSOR PROTECTION)**
					IF THE ERROR OCCURS DURING A STORAGE OPERATION - the pin probe will operate as a cabinet probe and storage will continue

PARAM.	MIN.	MAX.	M.U.	DEF.	DEFROST
d0	0	99	h	8	defrost interval (3)
					0 = regular periodic defrosting will never be enabled
d3	0	99	min	30	defrost duration
					0 = defrosting will never be enabled
d7	0	15	min	2	drip-drain duration

PARAM.	MIN.	MAX.	M.U.	DEF.	TEMPERATURE ALARMS (4)
A1	0,0	99,0	°C/°F (1)	10,0	the temperature below which the minimum temperature alarm is activated; see also A2 (5)
A2	0	1	- - -	1	minimum temperature alarm type
					0 = no alarm
					1 = depending on parameters r9 and rA (or "r9 - A1" and "rA - A1")
A4	0,0	99,0	°C/°F (1)	10,0	the temperature above which the maximum temperature alarm is activated; see also A5 (5)
A5	0	1	- - -	1	maximum temperature alarm type
					0 = no alarm
					1 = depending on parameters r9 and rA (or "r9 + A4" and "rA + A4")
A6	0	240	min	15	storage operation start-up temperature alarm delay
A7	0	240	min	15	temperature alarm delay
A8	0	240	min	15	drip-drain end maximum temperature alarm delay (6)
A9	0	240	min	15	door switch input deactivation maximum temperature alarm delay (only if i0 = 0 or 1) (7)
AA	0	240	s	5	blast chill completion buzzer duration

PARAM.	MIN.	MAX.	M.U.	DEF.	EVAPORATOR FAN (only if u0 = 1)
F0	0	2	- - -	2	evaporator fan activity during chilling
					0 = off
					1 = on
					2 = in parallel with the compressor
F2	0	2	- - -	1	evaporator fan activity during storage
					0 = off
					1 = on
					2 = in parallel with the compressor
F8	0	99	min	0	evaporator fan start-up delay following defrost cycle start

PARAM.	MIN.	MAX.	M.U.	DEF.	DIGITAL INPUTS
i0	0	4	- - -	1	digital input operation
					0 = DOOR SWITCH INPUT - in this case parameters i1, i2 and i3 assume significance; enabling input will cause the evaporator fan to be shut down (at most for the period of time set by i3 or until input will be disabled) (8) (9)
					1 = DOOR SWITCH INPUT - in this case parameters i1, i2 and i3 assume significance; enabling input will cause the compressor and evaporator fan to be shut down (at most for the period of time set by i3 or until input will be disabled) (8) (9)
					2 = COMPRESSOR PROTECTION - in this case, parameters i1 and i7 assume significance; the compressor will be shut-down, the display will flash code "**iA**" and the buzzer will be activated (until the input will be deactivated)
					3 = DOOR SWITCH INPUT - in this case parameters i1, i2 and i3 assume significance; enabling input will cause the evaporator fan to be shut down (at most for the period of time set by i3 or until input will be disabled) (8)
					4 = DOOR SWITCH INPUT - in this case parameters i1, i2 and i3 assume significance; enabling input will cause the compressor and evaporator fan to be shut down (at most for the period of time set by i3 or until input will be disabled) (8) (10)
i1	0	2	- - -	2	digital input contact type
					0 = NA (input active with contact closed)
					1 = NC (input active with contact open)
					2 = no input

PARAM.	MIN.	MAX.	M.U.	DEF.	
i2	-1	120	min	30	door switch input alarm activation delay (solo se i0 = 0 o 1)
					-1 = the alarm will not sound
i3	-1	120	min	15	door switch input activation effect maximum duration (only if i0 = 0 or 1)
					-1 = the effect will last until the input will be disabled
i7	0	120	min	0	compressor protection deactivation compressor delay (only if i0 = 2)

PARAM.	MIN.	MAX.	M.U.	DEF.	DIGITAL OUTPUTS
u0	0	1	- - -	1	service controlled by relay K2 (see paragraph 2.3)
					0 = defrosting
					1 = evaporator fan

PARAM.	MIN.	MAX.	M.U.	DEF.	SERIAL NETWORK (MODBUS)
LA	1	247	- - -	247	device address
Lb	0	3	- - -	2	baud rate
					0 = 2.400 baud
					1 = 4.800 baud
					2 = 9.600 baud
					3 = 19.200 baud
LP	0	2	- - -	1	parity
					0 = none (no parity)
					1 = odd
					2 = even

PARAM.	MIN.	MAX.	M.U.	DEF.	ENABLING
E0	0	3	- - -	1	quantity modifiable quickly before starting the cycle
					0 = no quantity
					1 = if you have selected a timed chilling cycle, the chilling duration
					if you have selected a set-temperature chilling cycle, the chilling end-point temperature
					2 = if you have selected a timed chilling cycle, the chilling duration and the chilling operational setpoint
					if you have selected a set-temperature chilling cycle, the chilling operational setpoint
					3 = if you have selected a timed chilling cycle, the chilling duration and the chilling operational setpoint
					if you have selected a set-temperature chilling cycle, the chilling end-point temperature and the chilling operational setpoint
E9	0	1	- - -	1	reserved

(1) the unit of measurement depends on parameter P2

(2) **set the parameters relating to the controllers appropriately after altering parameter P2**

(3) the device stores the defrost interval count every 30 minutes; altering parameter d0 has effect of concluding the previous defrost interval or manual defrost activation

(4) the temperature alarm functions are only enabled during storage operations

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

(6) there are no temperature alarms during defrosting and drip draining, if they occur following defrost activation

(7) there is no maximum temperature alarm while door switch input is enabled, if occurring after input activation

(8) the evaporator fan will be shut down providing defrosting is not ongoing

(9) the compressor and/or ventilator fan are shut down 10 s after input activation

(10) the compressor is shut down 10 s after input activation.

The device must be disposed of in accordance with local regulations pertaining to the collection of electrical and electronic appliances.

EVCO
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