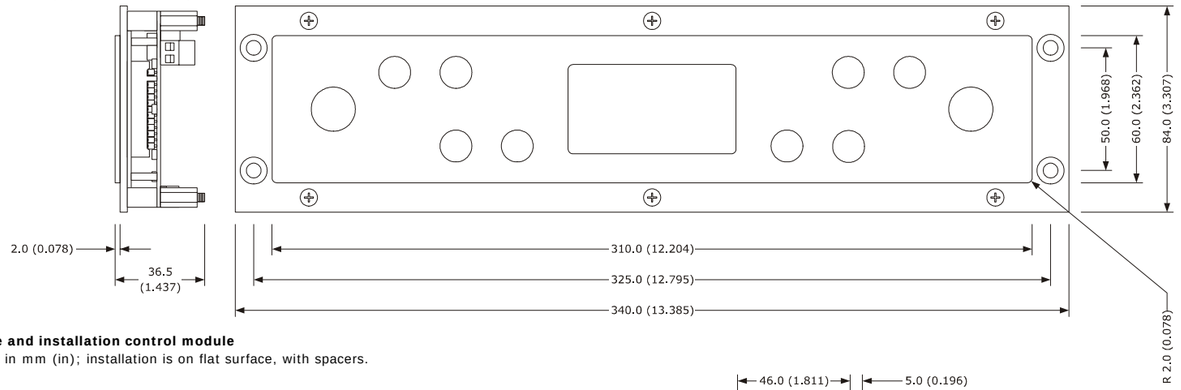
EVF818 - Split controller for blast chillers (which can be integrated into the unit and with user interface having capacitive push buttons)

SIZE AND INSTALLATION

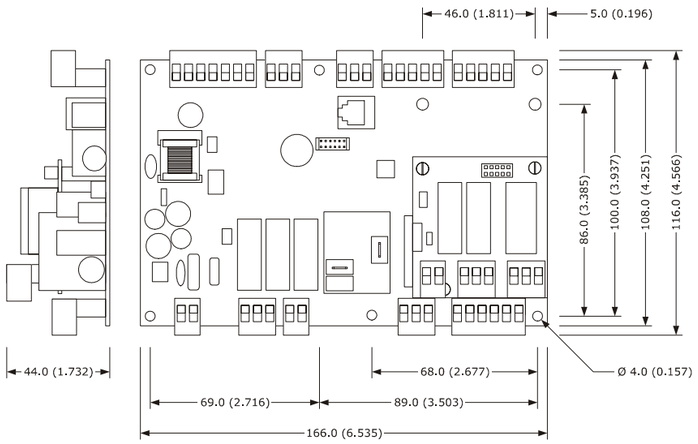
Size and installation user interface

Size in mm (in); installation is by back panel, with threaded studs.



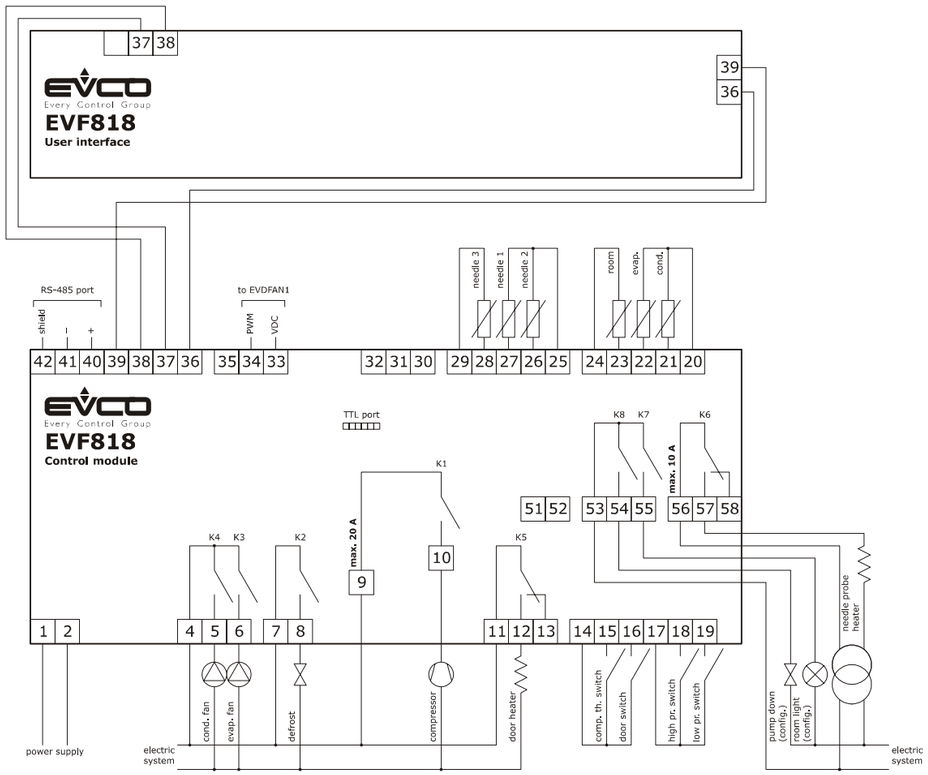
Size and installation control module

Size in mm (in); installation is on flat surface, with spacers.



ELECTRICAL CONNECTION

Electrical connection



GB ENGLISH

IMPORTANT

Read this document carefully before installing and using the device and follow all the additional information; keep this document close to the device for future consultations.
For further information consult the "Installer manual".

The device must be disposed according to the local legislation about the collection for electrical and electronic equipment.

1 SIZE AND INSTALLATION

1.1 Additional information for the installation

- make sure the working conditions of the device (operating temperature, operating humidity, etc.) are in the limits indicated; look at chapter "TECHNICAL DATA"
- do not install the device close to heating sources (heaters, hot air ducts, etc.), devices having big magnetos (big speakers, etc.), locations subject to direct sunlight, rain, humidity, dust, mechanical vibrations or bumps
- any metal parts in proximity of the control module must be at a distance such that they do not compromise the safety distances
- according to the safety legislation, the protection against possible contacts with the electrical parts must be ensured by a correct installation of the device; all the parts which ensure the protection must be fixed so that you can not remove them if not by using a tool.

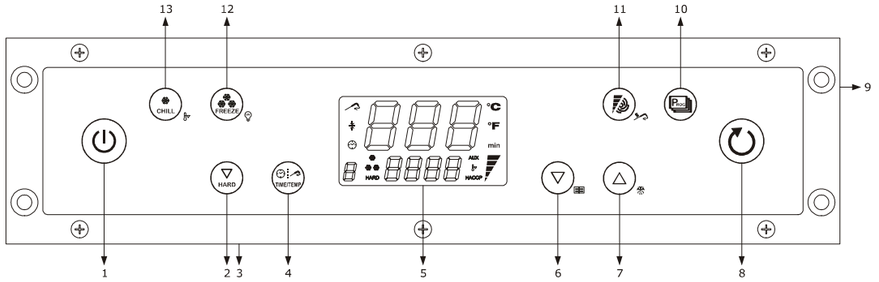
2 ELECTRICAL CONNECTION

2.1 Additional information for electrical connection

- do not operate on the terminal blocks of the device using electrical or pneumatic screwers
- if the device has been moved from a cold location to a warm one, the humidity could condense on the inside; wait about an hour before supplying it
- make sure the power supply voltage, the electrical frequency and the electrical power of the device correspond to those of the local power supply; look at chapter "TECHNICAL DATA"
- disconnect the power supply of the device before servicing it
- do not use the device as safety device
- for the repairs and for information about the device please contact the EVCO sales network.

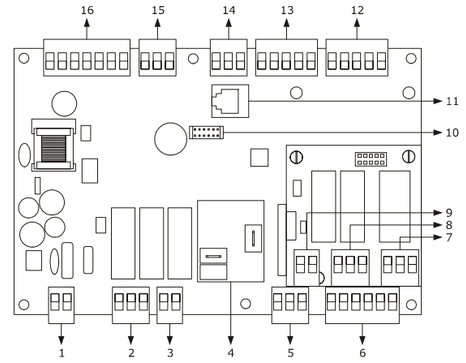
3 DESCRIPTION

3.1 Description user interface



Part	Meaning
1	button ON / STAND-BY
2	button HARD / SOFT
3	port to communicate with the control module (signal)
4	button TIME / TEMPERATURE
5	display
6	button DOWN
7	button UP
8	button START / STOP
9	port to communicate with the control module (power supply)
10	button PROGRAMS
11	button BLAST CHILLING INTENSITY
12	button BLAST FREEZING
13	button BLAST CHILLING

3.2 Description control module



Part	Meaning
1	power supply
2	digital outputs K3 and K4
3	digital output K2
4	digital output K1
5	digital output K5
6	digital inputs
7	digital output K6
8	digital outputs K7 and K8
9	reserved
10	TTL serial port
11	reserved
12	analog inputs (room probe, evaporator probe and condenser probe)
13	analog inputs (needle probe 1, needle probe 2 and needle probe 3)
14	reserved
15	PWM analog output
16	RS-485 serial port with MODBUS communication protocol and port to communicate with the user interface (signal and power supply)

4 USER INTERFACE

4.1 Preliminary information

There are the following operating status:

- status "off" (the device is not powered)
- status "stand-by" (the device is powered but it is switched off)
- status "on" (the device is powered, it is switched on and it is waiting an operating cycle is started)
- status "run" (the device is powered, it is switched on and an operating cycle is running).

Hereinafter, "switching on the device" means moving from status "stand-by" to status "on" and "switching off the device" means moving from status "on" to status "stand-by".

4.2 Switching on / off the device

Operate as follows:

1. Make sure the keyboard is not locked and no procedure is running.
2. Press and hold button ON / STAND-BY 2 s: button ON / STAND-BY will switch on / off.

4.3 The display

During status "off" and during status "stand-by" all the displays are switched off.
During status "on":

- the 1 digit display will be switched off
- the 3 digits display:
  - will show the blast chilling cutoff temperature if a temperature controlled blast chilling has been selected or the blast freezing cutoff temperature if a temperature controlled blast freezing has been selected
  - will show the blast chilling duration if a time controlled blast chilling has been selected or the blast freezing duration if a time controlled blast freezing has been selected
- the 4 digits display:
  - will show the blast chilling working setpoint if a temperature controlled blast chilling has been selected or the blast freezing working setpoint if a temperature controlled blast freezing has been selected
  - will be switched off if a time controlled blast chilling or a time controlled blast freezing has been selected.

During status "run":

- the 1 digit display will show the program number if one is running
- the 3 digits display:
  - will show the temperature read by the needle probe if a temperature controlled blast chilling or a temperature controlled blast freezing is running
  - will show the count down of the blast chilling duration if a time controlled blast chilling is running or the count down of the blast freezing duration if a time controlled blast freezing is running
- the 4 digits display will show the room temperature.

4.4 Showing the room temperature

Operate as follows:

1. Make sure the keyboard is not locked and no procedure is running.
2. Press and hold button DOWN 2 s: the 3 digits display will show the first available label.
3. Press and release button UP or button DOWN to select "**Pb1**".
4. Press and release button BLAST CHILLING: the 4 digits display will show the room temperature.

To quit the procedure operate as follows:

5. Press and release button BLAST CHILLING or do not operate 60 s: the 4 digits display will switch off.
6. Press and release button UP or button DOWN as long as the display shows the variable indicated in the paragraph "The display" or do not operate 60 s.

4.5 Showing the evaporator temperature

Operate as indicated in the paragraph “Showing the room temperature” to select “**Pb2**”.
If the evaporator probe is not enabled, the label “**Pb2**“ will not be shown.

4.6 Showing the condenser temperature

Operate as indicated in the paragraph “Showing the room temperature” to select “**Pb3**”.
If the condenser probe is not enabled, the label “**Pb3**“ will not be shown.

4.7 Showing the temperature read by needle probe 1, by needle probe 2 and by needle probe 3

Operate as indicated in the paragraph “Showing the room temperature” to select “**Pb4**” (needle probe 1), “**Pb5**” (needle probe 2) or “**Pb6**” (needle probe 3).
If needle probe 1 is not enabled, the label “**Pb4**“ will not be shown.
If needle probe 2 is not enabled, the label “**Pb5**“ will not be shown.
If needle probe 3 is not enabled, the label “**Pb6**“ will not be shown.

4.8 Activating the defrost by hand

Operate as follows:
1. Make sure the device is in status “on”, a precooling or a storing is running.
2. Make sure the keyboard is not locked and no procedure is running.
3. Press and hold button UP 4 s: the 3 digits display will show “**dEF**”.

If the evaporator probe is enabled and to the defrost activation the evaporator temperature is above the defrost cut off temperature, the defrost will not be activated.

4.9 Switching on / off the room light by hand

Operate as follows:
1. Make sure the function is enabled.
2. Make sure no procedure is running.
3. Press and release button BLAST FREEZING: LED **AUX** will switch on / off.

4.10 Locking / unlocking the keyboard

To lock the keyboard operate as follows:
1. Make sure no procedure is running.
2. Press and hold button DOWN and button ON / STAND-BY 2 s: the 3 digits display will show “**Loc**” 2 s.

To unlock the keyboard operate as follows:
3. Make sure no procedure is running.
4. Press and hold button DOWN and button ON / STAND-BY 2 s: the 3 digits display will show “**UnL**” 2 s.

4.11 Silencing the buzzer

Operate as follows:
1. Make sure no procedure is running.
2. Press and release a button.

5 OPERATION

5.1 Temperature controlled blast chilling and storing

To start the cycle operate as follows:
1. Make sure the device is in status “on”.
2. Make sure the keyboard is not locked and no procedure is running.
3. Press and release button BLAST CHILLING: LED and LED will flash.

4.1 According to the model, the 3 digits display will show the blast chilling cutoff temperature or the 4 digits display will show the blast chilling working setpoint.

4.2 Press and release button UP or button DOWN in 60 s to modify these values.

5. Press and release button START / STOP: LED and LED will firmly remain switched on and it will be started the test for the verification of the proper insertion of the needle probe.

5.1 If the test is successfully completed, the cycle will be started.

5.2 If the test is not successfully completed, the cycle will be started time controlled.

To stop the cycle operate as follows:
6. Press and hold button START / STOP 2 s.

5.2 Temperature controlled hard blast chilling and storing

To start the cycle operate as follows:
1. Make sure the device is in status “on”.
2. Make sure the keyboard is not locked and no procedure is running.
3. Press and release button BLAST CHILLING: LED and LED will flash.
4. Press and release button HARD / SOFT: LED **HARD** will flash.

5.1 According to the model, the 3 digits display will show the blast chilling cutoff temperature or the 4 digits display will show the blast chilling working setpoint.

5.2 Press and release button UP or button DOWN in 60 s to modify these values.

6. Press and release button START / STOP: LED , LED and LED **HARD** will firmly remain switched on and it will be started the test for the verification of the proper insertion of the needle probe.

6.1 If the test is successfully completed, the cycle will be started.

6.2 If the test is not successfully completed, the cycle will be started time controlled.

To stop the cycle operate as follows:
7. Press and release button START / STOP 2 s.

5.3 Time controlled blast chilling and storing

To start the cycle operate as follows:
1. Make sure the device is in status “on”.
2. Make sure the keyboard is not locked and no procedure is running.
3. Press and release button BLAST CHILLING: LED and LED will flash.
4. Press and release button TIME / TEMPERATURE: LED will flash and LED will switch off.

5.1 The 3 digits display will show the blast chilling duration.

5.2 Press and release button UP or button DOWN in 60 s to modify this value.

6. Press and release button START / STOP: LED and LED will firmly remain switched on and the cycle will be started.

To stop the cycle operate as follows:
7. Press and hold button START / STOP 2 s.

5.4 Time controlled hard blast chilling and storing

To start the cycle operate as follows:
1. Make sure the device is in status “on”.
2. Make sure the keyboard is not locked and no procedure is running.
3. Press and release button BLAST CHILLING: LED and LED will flash.
4. Press and release button HARD / SOFT: LED **HARD** will flash.
5. Press and release button TIME / TEMPERATURE again: LED will flash and LED will switch off.

6.1 The 3 digits display will show the blast chilling duration.

6.2 Press and release button UP or button DOWN in 60 s to modify this value.

7. Press and release button START / STOP: LED , LED and LED **HARD** will firmly remain switched on and the cycle will be started.

To stop the cycle operate as follows:
8. Press and release button START / STOP 2 s.

5.5 Continuous blast chilling

To start the cycle operate as follows:
1. Make sure the device is in status “on”.
2. Make sure the keyboard is not locked and no procedure is running.
3. Press and release button BLAST CHILLING: LED and LED will flash.
4. Press and release button TIME / TEMPERATURE: LED will flash and LED will switch off.
5. Press and release button TIME / TEMPERATURE again: the 3 digits display will show “**inF**”.
6. Press and release button START / STOP: LED and LED will firmly remain switched on and the cycle will be started.

To stop the cycle operate as follows:
7. Press and hold button START / STOP 2 s.

5.6 Temperature controlled blast freezing and storing

To start the cycle operate as follows:
1. Make sure the device is in status “on”.
2. Make sure the keyboard is not locked and no procedure is running.
3. Press and release button BLAST FREEZING: LED , LED , LED and LED **HARD** will flash.

4.1 According to the model, the 3 digits display will show the blast freezing cutoff temperature or the 4 digits display will show the blast freezing working setpoint.

4.2 Press and release button UP or button DOWN in 60 s to modify these values.

5. Press and release button START / STOP: LED , LED , LED and LED **HARD** will firmly remain switched on and it will be started the test for the verification of the proper insertion of the needle probe.

5.1 If the test is successfully completed, the cycle will be started.

5.2 If the test is not successfully completed, the cycle will be started time controlled.

To stop the cycle operate as follows:
6. Press and release button START / STOP 2 s.

5.7 Temperature controlled soft blast freezing and storing

To start the cycle operate as follows:
1. Make sure the device is in status “on”.
2. Make sure the keyboard is not locked and no procedure is running.
3. Press and release button BLAST FREEZING: LED , LED , LED and LED **HARD** will flash.
4. Press and release button HARD / SOFT: LED **HARD** will switch off.

5.1 According to the model, the 3 digits display will show the blast freezing cutoff temperature or the 4 digits display will show the blast freezing working setpoint.

5.2 Press and release button UP or button DOWN in 60 s to modify these values.

6. Press and release button START / STOP: LED , LED and LED will firmly remain switched on and it will be started the test for the verification of the proper insertion of the needle probe.

6.1 If the test is successfully completed, the cycle will be started.

6.2 If the test is not successfully completed, the cycle will be started time controlled.

To stop the cycle operate as follows:
7. Press and release button START / STOP 2 s.

5.8 Time controlled blast freezing and storing

To start the cycle operate as follows:
1. Make sure the device is in status “on”.
2. Make sure the keyboard is not locked and no procedure is running.
3. Press and release button BLAST FREEZING: LED , LED , LED and LED **HARD** will flash.
4. Press and release button TIME / TEMPERATURE: LED will flash and LED will switch off.

5.1 The 3 digits display will show the blast freezing duration.

5.2 Press and release button UP or button DOWN in 60 s to modify this value.

6. Press and release button START / STOP: LED , LED , LED and LED **HARD** will firmly remain switched on and the cycle will be started.

To stop the cycle operate as follows:
7. Press and release button START / STOP 2 s.

5.9 Time controlled soft blast freezing and storing

To start the cycle operate as follows:
1. Make sure the device is in status “on”.
2. Make sure the keyboard is not locked and no procedure is running.
3. Press and release button BLAST FREEZING: LED , LED , LED and LED **HARD** will flash.
4. Press and release button HARD / SOFT: LED **HARD** will switch off.
5. Press and release button TIME / TEMPERATURE: LED will flash and LED will switch off.

6.1 The 3 digits display will show the blast freezing duration.

6.2 Press and release button UP or button DOWN in 60 s to modify this value.

7. Press and release button START / STOP: LED , LED and LED will firmly remain switched on and the cycle will be started.

To stop the cycle operate as follows:
8. Press and release button START / STOP 2 s.

5.10 Continuous blast freezing

To start the cycle operate as follows:
1. Make sure the device is in status “on”.
2. Make sure the keyboard is not locked and no procedure is running.
3. Press and release button BLAST FREEZING: LED , LED , LED and LED **HARD** will flash.
4. Press and release button TIME / TEMPERATURE: LED will flash and LED will switch off.
5. Press and release button TIME / TEMPERATURE again: the 3 digits display will show “**inF**”.
6. Press and release button START / STOP: LED , LED , LED and LED **HARD** will firmly remain switched on and the cycle will be started.

To stop the cycle operate as follows:
7. Press and hold button START / STOP 2 s.

5.11 Blast chilling intensity

To select the evaporator fan speed operate as follows:
1. Make sure the function is enabled.
2. Press and release button BLAST CHILLING INTENSITY: the LED bars will provide information about the fan speed.

5.12 Starting the precooling

To start the precooling operate as follows:
1. Make sure the device is in status “on”.
2. Make sure no procedure is running.
3. Press and hold button BLAST CHILLING 2 s: LED will flash.

To stop the precooling operate as follows:
4. Press and hold button BLAST CHILLING 2 s or start an operating cycle.

5.13 Switching on the UV light for the cycle of sterilization

Operate as follows:
1. Make sure the function is enabled.
2. Make sure the device is in status “on” and the door is closed, or the door switch input is not active.
3. Make sure the keyboard is not locked and no procedure is running.
4. Press and hold button BLAST FREEZING 2 s: LED **AUX** will switch on.

5.14 Needle probe heating

Operate as follows:
1. Make sure the device is in status “on” or a storing is running and the door is open, or the door switch input is active.
2. Make sure the keyboard is not locked and no procedure is running.
3. Press and hold button BLAST CHILLING INTENSITY 2 s: LED will flash and LED **AUX** will switch on.

6 FUNCTION “PROGRAMS”

6.1 Storing a program

Operate as follows:
1. Make sure the keyboard is not locked and no procedure is running.
2. Press and hold button PROGRAMS 2 s before starting an operating cycle or during a storing: the 1 digit display will show the number of the first available program (if the display shows “**F**”, it will mean all the programs will already be used; in this case it will be necessary to overwrite an existing program).
3 Press and release button UP or button DOWN in 60 s to select the program number.
4. Press and release button PROGRAMS: the 1 digit display will switch off.

To quit the procedure operate as follows:
5. Do not operate 60 s (press and release button PROGRAMS if all the programs are already used).

6.2 Starting a program

Operate as follows:
1. Make sure the device is in status “on”.
2. Make sure the keyboard is not locked and no procedure is running.
3. Press and release button PROGRAMS: the 1 digit display will show the number of the first available program and the dedicated LED will flash (if the display remains switched off, it will mean no program will be available).
4. Press and release button UP or button DOWN in 60 s to select the program number.
5. Press and release button START / STOP: the dedicated LED will firmly remain switched on and the cycle will be started with the settings stored in the program.

7 SIGNALINGS AND INDICATIONS

7.1 Signalings

LED	Meaning
	LED blast chilling
	LED blast freezing
HARD	LED hard blast chilling / blast freezing
	LED temperature controlled blast chilling / temperature controlled blast freezing
	LED time controlled blast chilling / time controlled blast freezing
	LED storing
	LED bars blast chilling intensity
	LED precooling
AUX	LED auxiliary
HACCP	LED HACCP
°C	LED Celsius degree
°F	LED Fahrenheit degree
min	LED minutes

If button ON / STAND-BY is switched on, it will mean the device will be in status “stand-by”.

7.2 Indications

Code	Meaning
dEF	A defrost is running
Loc	The keyboard is locked; look at paragraph “Locking / unlocking the keyboard”
UnL	The keyboard has been unlocked; look at paragraph “Locking / unlocking the keyboard”

8 ALARMS

8.1 Alarms

Code	Meaning
tiM	Alarm temperature controlled blast chilling or temperature controlled blast freezing not concluded within the maximum duration (HACCP alarm)
AL	Low temperature alarm
AH	High temperature alarm (HACCP alarm)
id	Open door alarm
HP	High pressure alarm
LP	Low pressure alarm
CtH	Compressor thermal switch alarm
PF	Lack of power supply alarm (HACCP alarm)
COH	Overheated condenser alarm
CSd	Locked compressor alarm
ESt	Alarm download of the configuration parameters not successfully completed
CEr	Alarm firmwares of the configuration parameters contained in EVKEY not coinciding with that of the device
Erd	Alarm upload of the configuration parameters not successfully completed

9 Errors

9.1 Errors

Code	Meaning
Pr1	Room probe error
Pr2	Evaporator probe error
Pr3	Condenser probe error
Pr4	Needle probe 1 error
Pr5	Needle probe 2 error
Pr6	Needle probe 3 error
rtc	Real time clock error
ErC	Error compatibility user interface-control module
ErL	Error communication user interface-control module

10 TECHNICAL DATA

10.1 Technical data

Purpose of the devices: controller for blast chillers.
Execution:
- user interface: open frame board behind a sheet of methacrylate
- control module: open frame board.

Size:
- user interface: 340.0 x 84.0 x 36.5 mm (13.385 x 3.307 x 1.437 in; W x H x D)
- control module: 166.0 x 116.0 x 44.0 mm (6.535 x 4.566 x 1.732 in; W x H x D).

Installation:
- user interface: by back panel, with threaded studs
- control module: on flat surface, with spacers.

Index of protection:
- user interface: IP65
- control module: IP00.

Connections:
- user interface: fix screw terminal blocks (control module)
- control module: extractable screw terminal blocks (user interface, power supply, inputs, outputs, except the output for the compressor management and RS-485 serial port), faston 6.3 mm (0.248 in) wide (output for the compressor management), 6 poles connector (TTL serial port).

The maximum lengths of the connecting cables user interface-control module is 20 m (65.614 ft).
Operating temperature: from 0 to 55 °C (from 32 to 131 °F).
Storage temperature: from -25 to 60 °C (from -13 to 140 °F).
Operating humidity: from 10 to 90% of relative humidity not condensing.
Pollution situation: 2.
Power supply:
- user interface: supplied by the control module
- control module: 115... 230 VAC (±15%), 50 / 60 Hz, (±3 Hz), 10 VA max.

Overvoltage category: III.
Real time clock: incorporated (with capacitor).
Battery autonomy in the event of lack of power supply: 24 h with battery fully charged.
Battery charging time: 2 min (the battery is charged by the power supply of the device).
Signaling and alarm buzzer: incorporated.

Analog inputs: 6 inputs (room probe, evaporator probe, condenser probe and “multipoint” needle probe up to three sensors), which can be set via configuration parameter for PTC / NTC probes.

PTC analog inputs (990 Ω @ 25 °C, 77 °F)

Kind of sensor:	KTY 81-121.
Working range:	from -50 to 150 °C (from -58 to 302 °F).
Resolution:	1 °C (1 °F).
Protection:	none.

NTC analog inputs (10K Ω @ 25 °C, 77 °F)

Kind of sensor:	ß3435.
Working range:	from -40 to 105 °C (from -40 to 220 °F).
Resolution:	1 °C (1 °F).
Protection:	none.

Digital inputs: 4 inputs (door switch, high pressure switch, low pressure switch and compressor thermal switch), which can be set via configuration parameter for normally open / normally closed contact (free of voltage contact, 5 VDC, 2 mA).

Digital inputs

Power supply:	none.
Protection:	none.

Displays: 3 + 4 + 1 digits custom display, with function icons.
Analog outputs: 1 PWM output for evaporator fan management.
Digital outputs:

8 outputs (electromechanical relays)
- 1 SPST 30 res. A @ 250 VAC output (K1) for compressor management
- six 8 res. A @ 250 VAC outputs of which 5 SPST outputs for defrost management (K2), evaporator fan management (K3), condenser fan management (K4), room light or UV light management (K7), pump down or alarm output management (K8) and 1 SPDT output for door heater management (K5)
- 1 SPDT 16 res. A @ 250 VAC output (K6) for needle probe heater management.

The maximum current allowed on the loads is 20 A.
Type of actions and additional features: 1C.
Communication ports:

2 ports
- 1 TTL serial port
- 1 RS-485 serial port with MODBUS communication protocol.

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