

## DIMENSIONAL DATA

### OVERALL DIMENSIONS AND PANEL CUTOUT

The dimensions are expressed in millimetres and inches (fifth-scale drawing).

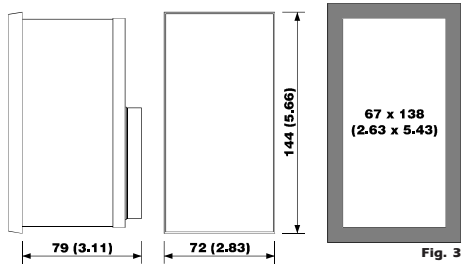


Fig. 3

## INSTALLATION

### WITH THE FIXING SYSTEM SUGGESTED BY THE BUILDER

Panel mounting, with the equipped screw brackets (fifth-scale drawing).

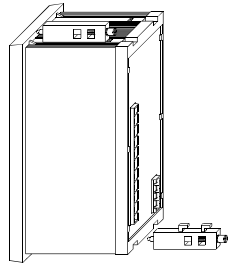


Fig. 4

## ELECTRICAL CONNECTION

### CONNECTIONS TO DERIVE

Instance of typical application.

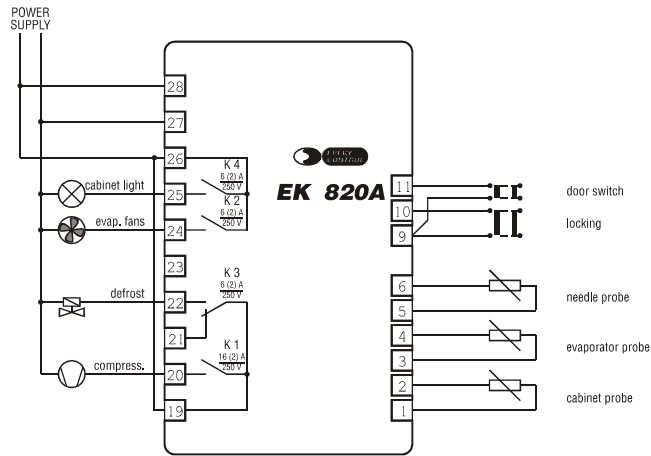


Fig. 5

## BUILDER DATA

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# EK 820A

## ON-OFF digital controller for quick cooler management

Operating instructions

Version 1.01 of 30th September 2004

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PT

### IMPORTANT:

The use of this new instrument is easy; but for safety reasons, it is important read these instructions carefully before the installation or before the use and follow all additional informations.

It is very important keep these instructions with the instrument for future consultations.



Fig. 1

## GENERAL INFORMATIONS

### WHAT IS THE USE

EK 820A is an ON-OFF digital controller studied for quick cooler management (of foods at ambient temperature or pre-cooked) which basic characteristics are the management of ten cycles of functioning, the one 1½ HP compressor management, the quick cooling modality selection (for temperature or time), the needle probe proper insertion verify, the "manual defrost and ventilation"; besides, the instrument is provided with one door switch digital input configurable to interact on the outputs activity and with one locking digital input configurable to interact on the instrument status.

In factory the instrument gets preset to accept at the measure inputs PTC probes used in refrigeration field at the moment.

EK 820A is available in the 72 x 144 mm (2.83 x 5.66 in.) case and it is studied for panel mounting with the equipped screw brackets.

### GETTING STARTED

#### INSTALLATION

EK 820A was studied for panel mounting, panel cutout 67 x 138 mm (2.63 x 5.43 in.), with the equipped screw brackets (the overall dimensions and the panel cutout are related in Fig. 3, the fixing system suggested by the builder is related in Fig. 4).

#### ADDITIONAL INFORMATIONS

- the panel thickness must be included from 1 to 5 mm (0.04 to 0.19 in.)
- verify if the using conditions (ambient temperature, humidity, etc.) are within the limits indicated by the builder (see the chapter TECHNICAL DATA)
- install the instrument in a location with a suitable ventilation, to avoid the internal overheating of the instrument
- do not install the instrument near surfaces that can obstruct the air-grating (carpets, covers, etc.), heating sources (radiators, hot air ducts, etc.), locations subject to direct sunlight, rain, humidity, excessive dust, mechanical vibrations or bumps, devices with strong magnetos (microwave ovens, big speakers, etc.)
- according with the safety norms, the protection against possible contacts with electrical parts and parts protected with functional insulation only must be ensured through a correct installation procedure of the instrument; all parts that ensure the protection must be fixed so that they can not be removed if not with a tool.

#### ELECTRICAL CONNECTION

EK 820A is provided with two extractable screw terminal blocks for cables up to 2.5 mm<sup>2</sup> (0.38in.<sup>2</sup>), for the connection to the power supply, inputs and outputs) located on the instrument back panel (the connections to derive are related in Fig. 5 and they are checkable on the polyester label stuck on the instrument case).

#### ADDITIONAL INFORMATIONS

- if the instrument is brought from a cold to a warm location, the humidity may condense inside the instrument; wait about an hour before supply the instrument
- verify if the operating power supply voltage, electrical frequency and power of the instrument correspond to the local power supply (see the chapter TECHNICAL DATA)
- do not supply more instruments with the same transformer
- if the instrument is installed on a vehicle, its power supply must be derived directly from the battery of the vehicle
- give the instrument a protection able to limit the current absorbed in case of failure
- the instrument remains connected to the local power supply as long as the terminals 27 and 28 are derived to the local power supply, even if the instrument is apparently turned off
- if the instrument is supplied from low voltage use low voltage loads
- give the probes a protection able to insulate them against possible contacts with metal parts or use insulated probes
- give the outputs a protection able to protect them against short circuit and overload
- do not try to repair the instrument; for the repairs apply to highly qualified staff

- if you have any questions or problems concerning the instrument please consult Evco (see the chapter BUILDER DATA).

## USE

### PRELIMINARY INFORMATIONS

After derived the connections related in Fig. 5, the instrument reposes the last settings stored; if a lack of power supply happens during the count of a time, when the power supply recovers the count gets reposed from the beginning.

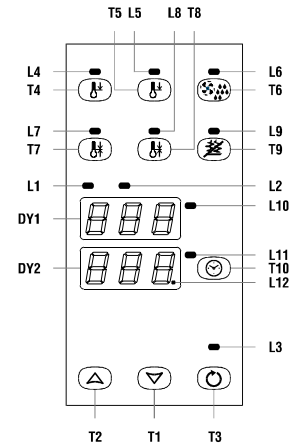


Fig. 2

Pushing and releasing the key T3 the instrument turning ON (status ON) or turning OFF (status STAND-BY), except during the configuration parameters setting procedure; the LED L3 is associated to the instrument status, it is turned ON during the status ON and it is turned OFF during the status STAND-BY.

If an alarm should be active the display DY1 displays the alarm code flashing and the buzzer utters an intermittent beep as long as the cause that has given it does not disappear (see the chapter SIGNALS AND ALARMS); pressure on a key during an alarm permits to silence the buzzer.

During the status STAND-BY the display DY1 displays the temperature read by the cabinet probe and all outputs are forced to the status OFF.

EK 820A is provided with ten cycles of functioning and with some configuration parameters that get stored in a non volatile memory and that permit to set the instrument according with one's requirements (see the chapter CONFIGURABILITY).

### QUICK COOLING FOR TEMPERATURE CYCLE

Pushing and releasing the key T4 during the status STAND-BY the cycle gets selected, except during the configuration parameters setting procedure; the LED L4 is associated to the quick cooling cycle, it is turned ON when the cycle is selected and it is turned OFF when the cycle is not selected.

Pushing and releasing the key T10 the quick cooling for temperature modality gets selected; the LED L10 is associated to the quick cooling for temperature modality, it is turned ON when the modality is selected and it is turned OFF when the modality is not selected.

Pushing and releasing the key T3 the cycle gets activated; the LED L1 is associated to the quick cooling/freezing, it is turned ON when the quick cooling/freezing is running and it is turned OFF when the quick cooling/freezing is not running.

During this cycle the display **DY1** displays the temperature read by the needle probe, if the conditions permit it (the temperature read by the needle probe must be below the quick cooling/freezing for temperature enabling setpoint) the display **DY2** displays the decrease of the quick cooling for temperature maximum length and the LED **L12** flashes to indicate that the count of the time is running; keeping pushed the key **T10** the display **DY2** displays the fraction of time passed from the moment in which the instrument activates the cycle.

The output K 1 is associated to the compressor and to the quick cooling setpoint, it remains activated continuously as long as the temperature read by the cabinet probe reaches the quick cooling setpoint and when it rises above the quick cooling setpoint of the hysteresis value (differential) the output gets reactivated, except during a defrost and a dripping.

The output K 2 is associated to the evaporator fans and it is forced to the status ON, except during a defrost cycle.

A defrost cycle provides three phases (defrost, dripping and evaporator fans stoppage) connected in cascade since the end of one automatically determines the passage to the following one.

The output K 3 is associated to the defrost and it remains continuously activated during the defrost as long as the temperature read by the evaporator probe reaches the defrost stopping setpoint when the defrost ends and the instrument automatically moves to the dripping; if the instrument was set to manage defrost to resistances (electrical) during a defrost the output K 1 gets forced to the status OFF and the output K 2 functioning gets established with the parameters of the family F, if the instrument was set to manage hot gas defrost (reversal of cycle) during a defrost the output K 1 remains continuously activated and the output K 2 functioning gets established with the parameters of the family F, if the instrument was set to manage air defrost (open door) during a defrost the output K 1 gets forced to the status OFF and the output K 2 gets forced to the status ON.

Passed the dripping length from the moment of the defrost end the instrument automatically moves to the evaporator fans stoppage; if the instrument was set to manage defrost to resistances (electrical) or hot gas defrost (reversal of cycle) during a dripping the outputs K 1 and K 2 get forced to the status OFF; if the instrument was set to manage air defrost (open door) during a dripping the output K 1 gets forced to the status OFF and the output K 2 gets forced to the status ON.

Passed the evaporator fans stoppage length from the moment of the dripping end the defrost cycle ends; if the instrument was set to manage defrost to resistances (electrical) or hot gas defrost (reversal of cycle) during an evaporator fans stoppage the output K 2 activation gets disabled, if the instrument was set to manage air defrost (open door) during an evaporator fans stoppage the output K 2 gets forced to the status ON.

Activating the door switch digital input the instrument interacts on the outputs activity according what established with the parameters of the family u.

Activating the locking digital input the locking digital input alarm gets activated.

When the temperature read by the needle probe falls below the quick cooling for temperature stopping setpoint the cycle ends and the successful quick cooling/freezing for temperature signal gets activated; keeping pushed the key **T10** the display **DY1** displays the temperature read by the cabinet probe.

Passed the quick cooling for temperature maximum length, if the temperature read by the needle probe is above the quick cooling for temperature stopping setpoint the unsuccessful quick cooling/freezing alarm gets activated; keeping pushed the key **T10** the display **DY2** displays the fraction of time passed from the moment of the quick cooling for temperature maximum length end.

#### **ADDITIONAL INFORMATIONS**

- for the whole period of a corrupted memory data alarm the quick cooling for temperature cycle activation is refused
- for the whole period of a locking digital input alarm the quick cooling for temperature cycle activation is refused
- for the whole period of a needle probe failure alarm the quick cooling for temperature cycle activation is refused
- for the whole period of a cabinet probe failure alarm the quick cooling for temperature cycle activation is refused
- for the whole period of a door switch digital input alarm the quick cooling for temperature cycle activation is refused
- during a quick cooling for temperature cycle the instrument never automatically presents a request of a defrost cycle, except what established with the parameter d4.

#### **QUICK COOLING FOR TIME CYCLE**

Pushing and releasing the key **T4** during the status STAND-BY the cycle gets selected, except during the configuration parameters setting procedure; the LED **L4** is associated to the quick cooling cycle, it is turned ON when the cycle is selected and it is turned OFF when the cycle is not selected.

Pushing and releasing the key **T10** the quick cooling for time modality gets selected; the LED **L11** is associated to the quick cooling for time modality, it is turned ON when the modality is selected and it is turned OFF when the modality is not selected.

To modify the quick cooling for time length push and release over and over the key **T1** or **T2** as long as the display **DY2** displays the desired value (keeping pushed the key **T1** or **T2** the value gets decreased or increased more quickly).

Pushing and releasing the key **T3** the cycle gets activated; the LED **L1** is associated to the quick cooling/freezing, it is turned ON when the quick cooling/freezing is running and it is turned OFF when the quick cooling/freezing is not running.

During this cycle the display **DY1** displays the temperature read by the cabinet probe, the display **DY2** displays the decrease of the quick cooling for time length and the LED **L12** flashes to indicate that the count of the time is running; keeping pushed the key **T10** the display **DY2** displays the fraction of time passed from the moment in which the instrument activates the cycle.

The outputs K 1, K 2 and K 3 get activated with the same functioning saw in the case of quick cooling for temperature cycle.

Activating the door switch digital input the instrument interacts on the outputs activity according what established with the parameters of the family u.

Activating the locking digital input the locking digital input alarm gets activated.

Passed the quick cooling for time length the cycle ends and the quick cooling/freezing for time ended signal gets activated.

#### **ADDITIONAL INFORMATIONS**

- for the whole period of a corrupted memory data alarm the quick cooling for time cycle activation is refused
- for the whole period of a locking digital input alarm the quick cooling for time cycle activation is refused
- for the whole period of a cabinet probe failure alarm the quick cooling for time cycle activation is refused
- for the whole period of a door switch digital input alarm the quick cooling for time cycle activation is refused
- during a quick cooling for time cycle the instrument never automatically presents a request of a defrost cycle, except what established with the parameter d4.

#### **QUICK FREEZING FOR TEMPERATURE CYCLE**

Pushing and releasing the key **T5** during the status STAND-BY the cycle gets selected, except during the configuration parameters setting procedure; the LED **L5** is associated to the quick freezing cycle, it is turned ON when the cycle is selected and it is turned OFF when the cycle is not selected.

Pushing and releasing the key **T10** the quick freezing for temperature modality gets selected; the LED **L10** is associated to the quick freezing for temperature modality, it is turned ON when the modality is selected and it is turned OFF when the modality is not selected.

Pushing and releasing the key **T3** the cycle gets activated; the LED **L1** is associated to the quick cooling/freezing, it is turned ON when the quick cooling/freezing is running and it is turned OFF when the quick cooling/freezing is not running.

During this cycle the display **DY1** displays the temperature read by the needle probe, if the conditions permit it (the temperature read by the needle probe must be below the quick cooling/freezing for temperature enabling setpoint) the display **DY2** displays the decrease of the quick freezing for temperature maximum length and the LED **L12** flashes to indicate that the count of the time is running; keeping pushed the key **T10** the display **DY2** displays the fraction of time passed from the moment in which the instrument activates the cycle.

The output K 1 is associated to the compressor and to the quick freezing setpoint, it remains activated continuously as long as the temperature read by the cabinet probe reaches the quick freezing setpoint and when it rises above the quick freezing setpoint of the hysteresis value (differential) the output gets reactivated, except during a defrost and a dripping.

The outputs K 2 and K 3 get activated with the same functioning saw in the case of quick cooling for temperature cycle.

Activating the door switch digital input the instrument interacts on the outputs activity according what established with the parameters of the family u.

Activating the locking digital input the locking digital input alarm gets activated.

When the temperature read by the needle probe falls below the quick freezing for temperature stopping setpoint the cycle ends and the successful quick cooling/freezing for temperature signal gets activated; keeping pushed the key **T10** the display **DY1** displays the temperature read by the cabinet probe.

Passed the quick freezing for temperature maximum length, if the temperature read by the needle probe is above the quick freezing for temperature stopping setpoint the unsuccessful quick cooling/freezing alarm gets activated; keeping pushed the key **T10** the display **DY2** displays the fraction of time passed from the moment of the quick freezing for temperature maximum length end.

#### **ADDITIONAL INFORMATIONS**

- for the whole period of a corrupted memory data alarm the quick freezing for temperature cycle activation is refused
- for the whole period of a locking digital input alarm the quick freezing for temperature cycle activation is refused
- for the whole period of a needle probe failure alarm the quick freezing for temperature cycle activation is refused
- for the whole period of a cabinet probe failure alarm the quick freezing for temperature cycle activation is refused
- for the whole period of a door switch digital input alarm the quick freezing for temperature cycle activation is refused
- during a quick freezing for temperature cycle the instrument never automatically presents a request of a defrost cycle, except what established with the parameter d4.

#### **QUICK FREEZING FOR TIME CYCLE**

Pushing and releasing the key **T5** during the status STAND-BY the cycle gets selected, except during the configuration parameters setting procedure; the LED **L5** is associated to the quick freezing cycle, it is turned ON when the cycle is selected and it is turned OFF when the cycle is not selected.

Pushing and releasing the key **T10** the quick freezing for time modality gets selected; the LED **L11** is associated to the quick freezing for time modality, it is turned ON when the modality is selected and it is turned OFF when the modality is not selected.

To modify the quick freezing for time length push and release over and over the key **T1** or **T2** as long as the display **DY2** displays the desired value (keeping pushed the key **T1** or **T2** the value gets decreased or increased more quickly).

Pushing and releasing the key **T3** the cycle gets activated; the LED **L1** is associated to the quick cooling/freezing, it is turned ON when the quick cooling/freezing is running and it is turned OFF when the quick cooling/freezing is not running.

During this cycle the display **DY1** displays the temperature read by the cabinet probe, the display **DY2** displays the decrease of the quick freezing for time length and the LED **L12** flashes to indicate that the count of the time is running; keeping pushed the key **T10** the display **DY2** displays the fraction of time passed from the moment in which the instrument activates the cycle.

The outputs K 1, K 2 and K 3 get activated with the same functioning saw in the case of quick freezing for temperature cycle.

Activating the door switch digital input the instrument interacts on the outputs activity according what established with the parameters of the family u.

Activating the locking digital input the locking digital input alarm gets activated.

Passed the quick freezing for time length the cycle ends and the quick cooling/freezing for time ended signal gets activated.

If the LED **L9** flashes it means that the needle probe proper insertion verify is running.

If the LED **L12** flashes it means that the count of a time is running.

If the display **DY1** displays the indication "**DEF**" and the LED **L6** is turned ON it means that a defrost cycle is running.

If the display **DY1** displays the indication "**DEF**" flashing and the LED **L6** is turned ON it means that a count of a delay time to a defrost cycle activation is running (see the parameters C0, C1 and C2).

If the display **DY1** displays the indication "**End**" flashing and the buzzer utters an intermittent beep for some seconds (**successful quick cooling/freezing for temperature**) it means that a quick cooling/freezing for temperature cycle/phase positively is successful; the outputs K 1, K 2 and K 3 gets forced to the status OFF.

If the display **DY1** displays the indication "**End**" flashing, the display **DY2** displays the indication "**0**" and the buzzer utters an intermittent beep for some seconds (**quick cooling/freezing for time ended**) it means that a quick cooling/freezing for time cycle/phase ended; the outputs K 1, K 2 and K 3 gets forced to the status OFF.

## ALARMS

If the display **DY1** displays the indication "**E2**" flashing and the buzzer utters an intermittent beep (**corrupted memory data alarm**) it means that there is a corruption of the configuration data in the memory (turn OFF and turn ON again the instrument; if to the turning ON again the alarm does not disappear the instrument must be replaced); during this alarm a cycle activation is refused, if a cycle is running the cycle ends, the access to the configuration parameters setting procedure is refused and all outputs get forced to the status OFF.

If the display **DY1** displays the indication "**E4**" flashing alternated to the temperature read by the cabinet/needle probe and the buzzer utters an intermittent beep (**locking digital input alarm**) it means that the locking digital input is active (deactivate the locking digital input and turn OFF and turn ON again the instrument, see the parameter u3); during this alarm a cycle activation is refused and all outputs get forced to the status OFF.

If the display **DY1** displays the indication "**E0**" flashing and the buzzer utters an intermittent beep (**cabinet probe failure alarm**) it means that: the kind of connected cabinet probe is not proper (verify the kind of connected cabinet probe), the cabinet probe is faulty (verify the cabinet probe integrity), there is a mistake in the instrument-cabinet probe connection (verify the instrument-cabinet probe connection integrity), the temperature read by the cabinet probe is outside the limits permitted by the cabinet probe in use (verify that the temperature near the cabinet probe be inside the limits permitted by the cabinet probe); during this alarm a quick cooling/freezing cycle/phase activation is refused, if a quick cooling/freezing cycle/phase is running the quick cooling/freezing cycle/phase ends, if a storing cycle/phase is running the output K 1 functioning gets established with the parameters C5, C6 and C7, if a defrost cycle is running the defrost cycle ends and the instrument never activates a defrost cycle.

If the display **DY1** displays the indication "**E3**" flashing alternated to the temperature read by the cabinet probe and the buzzer utters an intermittent beep (**needle probe failure alarm**) it means that there is one of the faults saw in the previous case but referred to the needle probe; during this alarm a quick cooling/freezing for temperature cycle/phase activation is refused.

If the display **DY1** displays the indication "**E1**" flashing alternated to the temperature read by the cabinet/needle probe and the buzzer utters an intermittent beep (**evaporator probe failure alarm**) it means that there is one of the faults saw in the previous case but referred to the evaporator probe; during this alarm if a storing cycle/phase is running and the parameter F0 has value 0 the output K 2 gets forced to the status OFF, if a defrost is running the defrost ends and the instrument never activates a defrost cycle.

If the display **DY1** displays the indication "I-" flashing alternated to the temperature read by the cabinet probe (**door switch digital input alarm**) it means that the door switch digital input is active (deactivate the door switch digital input, see the parameters u0 and u2); during this alarm a cycle activation is refused and gets given the action established with the parameter u0.

If the display **DY1** displays the indication "J-]" flashing alternated to the temperature read by the cabinet/needle probe and the buzzer utters an intermittent beep (**door switch digital input alarm**) it means that the door switch digital input is active (deactivate the door switch digital input, see the parameters u0, u1 and u2); during this alarm gets given the action established with the parameters u0 and u1.

If the display **DY1** displays the indication "**dEF**" alternated to the indication "H-" and the buzzer utters an intermittent beep (**door switch digital input alarm during a defrost cycle**) it means that the door switch digital input is active during a defrost cycle and that the instrument was set to manage defrost to resistances (electrical) or hot gas defrost (reversal of cycle) (deactivate the door switch digital input, see the parameters u0, u1 and u2); during this alarm gets given the action established with the parameters u0 and u1.

If the display **DY1** displays the indication "**dEF**" alternated to the indication "H-" (**door switch digital input alarm during a defrost cycle**) it means that the door switch digital input is active during a defrost cycle and that the instrument was set to manage air defrost (open door) (deactivate the door switch digital input, see the parameters u0 and u2); during this alarm gets given the action established with the parameter u0.

If the display **DY1** displays the indication "o--" flashing and the buzzer utters an intermittent beep (**unsuccessful needle probe proper insertion verify**) it means that the needle probe proper insertion verify is unsuccessful (turn OFF and turn ON again the instrument, see the parameters c7 and CE); during this alarm the outputs K 1, K 2 and K 3 get forced to the status OFF.

If the display **DY1** displays the temperature read by the needle probe, the display **DY2** displays the indication "0" flashing and the buzzer utters an intermittent beep (**unsuccessful quick cooling/freezing**) it means that a quick cooling/freezing cycle/phase is unsuccessful (see the parameters c1 and c2 or c4 and c5); inactive.

If the display **DY1** displays the indication "**End**" flashing, the display **DY2** displays the indication "---" flashing and the buzzer utters an intermittent beep (**quick cooling/freezing ended but unsuccessful**) it means that a quick cooling/freezing cycle/phase is ended but it is unsuccessful (see the parameters c1 and c2 or c4 and c5); during this alarm the outputs K 1, K 2 and K 3 gets forced to the status OFF.

If the display **DY1** displays the temperature read by the cabinet probe, the display **DY2** displays the indication "---" flashing and the buzzer utters an intermittent beep (**quick cooling/freezing ended but unsuccessful and storing activated**) it means that a quick cooling/freezing phase is ended but it is unsuccessful and that the instrument automatically moved to the storing phase (see the parameters c1 and c2 or c4 and c5); inactive.

If the display **DY1** displays the indication "**AL**" alternated to the temperature read by the cabinet probe and the buzzer utters an intermittent beep (**temperature alarm**) it means that the

temperature read by the cabinet probe is outside the limit established with the parameter A1 or A2 or A3 or A4 (see the parameters A0, A1, A2, A3 and A4); inactive.

## ADDITIONAL INFORMATIONS

- *the alarm codes are related in order of precedence.*

## TECHNICAL DATA

<b>TECHNICAL DATA</b>	
<b>Case:</b>	plastic black (PPO), self-extinguishing.
<b>Size:</b>	72 x 144 x 79 mm (2.83 x 5.66 x 3.11 in.), with terminal blocks.
<b>Installation:</b>	panel mounting, panel cutout 67 x 138 mm (2.63 x 5.43 in.), with the equipped screw brackets.
<b>Type of protection:</b>	IP 54.
<b>Connections:</b>	extractable screw terminal blocks with pitch 7.5 mm (0.29 in., power supply and outputs) and with pitch 5 mm (0.19 in., inputs) for cables up to 2.5 mm² (0.38 in.²).
<b>Ambient temperature:</b>	from 0 to +60 °C (+32 to +140 °F, 10 ... 90 % of not condensing relative humidity).
<b>Power supply:</b>	230 Vac, 50/60 Hz, 4 VA.
<b>Insulation class:</b>	II.
<b>Alarm buzzer:</b>	incorporated.
<b>Measure inputs:</b>	3 (cabinet, evaporator and needle probe) for PTC probes.
<b>Digital inputs:</b>	2 (5 V, 1 mA) of which one door switch configurable to interact on the outputs activity and for NO or NC contact and one locking configurable to interact on the instrument status and for NO or NC contact.
<b>Working range:</b>	from -50 a +150 °C.
<b>Setting range:</b>	from -55 to +99 °C.
<b>Timer setting range:</b>	from 1 to 400 min. for the quick cooling/freezing for temperature, from 0 to 999 min. for the quick cooling/freezing for time.
<b>Resolution:</b>	1 °C.
<b>Display:</b>	two 3-digit display 12.5 mm (0.49 in.) high red LED display with automatic minus sign, functioning status indicators, programming status indicators.
<b>Outputs:</b>	four relays of which one 16 (2) A @ 250 Vac relay for one 1½ HP @ 250 Vac compressor (NO contact) management and three 6 (2) A @ 250 Vac relays for evaporator fans (NO contact), defrost system (change-over contact) management and for cabinet light (NO contact) control.
<b>Kind of defrost managed:</b>	to resistances (electrical), to hot gas (reversal of cycle), and to air (open door) automatic and manual.
<b>Defrost management:</b>	for interval, stopping temperature and maximum length.

## HOW TO ORDER

### CODING SYSTEM

<b>Instrument name:</b>	EK 820A.
<b>Desired measure input:</b>	P (for PTC probes).
<b>Desired power supply:</b>	220 (230 Vac).

### ADDITIONAL INFORMATIONS

- *for the whole period of a corrupted memory data alarm the quick freezing for time cycle activation is refused*
- *for the whole period of a locking digital input alarm the quick freezing for time cycle activation is refused*
- *for the whole period of a cabinet probe failure alarm the quick freezing for time cycle activation is refused*
- *for the whole period of a door switch digital input alarm the quick freezing for time cycle activation is refused*
- *during a quick freezing for time cycle the instrument never automatically presents a request of a defrost cycle, except what established with the parameter d4.*

### COLD STORING CYCLE

Pushing and releasing the key **T7** during the status STAND-BY the cycle gets selected, except during the configuration parameters setting procedure; the LED **L7** is associated to the cold storing cycle, it is turned ON when the cycle is selected and it is turned OFF when the cycle is not selected.

Pushing and releasing the key **T3** the cycle gets activated; the LED **L2** is associated to the storing, it is turned ON when the storing is running and it is turned OFF when the storing is not running.

During this cycle the display **DY1** displays the temperature read by the cabinet probe.

The output K 1 is associated to the compressor and to the cold storing setpoint, it remains activated continuously as long as the temperature read by the cabinet probe reaches the cold storing setpoint and when it rises above the cold storing setpoint of the hysteresis value (differential) the output gets reactivated, except during a defrost and a dripping.

The output K 2 is associated to the evaporator fans and to the output deactivation setpoint, it remains continuously activated as long as the temperature read by the evaporator probe reaches the output deactivation setpoint and when it falls below the output deactivation setpoint of the hysteresis value (differential) the output gets reactivated, except during a defrost cycle.

Passed the defrost interval from the moment in which the instrument activates the cycle or from the moment in which the instrument presents a request of a defrost cycle, if the conditions permit it (the temperature read by the evaporator probe must be below the defrost stopping setpoint) the instrument automatically presents the following request of a defrost cycle. A defrost cycle provides three phases (defrost, dripping and evaporator fans stoppage) connected in cascade since the end of one automatically determines the passage to the following one.

The output K 3 is associated to the defrost and it remains continuously activated during the defrost as long as the temperature read by the evaporator probe reaches the defrost stopping setpoint when the defrost ends and the instrument automatically moves to the dripping; if the instrument was set to manage defrost to resistances (electrical) during a defrost the output K 1 gets forced to the status OFF and the output K 2 functioning gets established with the parameters of the family F, if the instrument was set to manage hot gas defrost (reversal of cycle) during a defrost the output K 1 remains continuously activated and the output K 2 functioning gets established with the parameters of the family F, if the instrument was set to manage air defrost (open door) during a defrost the output K 1 gets forced to the status OFF and the output K 2 gets forced to the status ON.

Passed the dripping length from the moment of the defrost end the instrument automatically moves to the evaporator fans stoppage; if the instrument was set to manage defrost to resistances (electrical) or hot gas defrost (reversal of cycle) during a dripping the outputs K 1 and K 2 get forced to the status OFF, if the instrument was set to manage air defrost (open door) during a dripping the output K 1 gets forced to the status OFF and the output K 2 gets forced to the status ON.

Passed the evaporator fans stoppage length from the moment of the dripping end the defrost cycle ends; if the instrument was set to manage defrost to resistances (electrical) or hot gas defrost (reversal of cycle) during an evaporator fans stoppage the output K 2 activation gets disabled, if the instrument was set to manage air defrost (open door) during an evaporator fans stoppage the output K 2 gets forced to the status ON.

Activating the door switch digital input the instrument interacts on the outputs activity according what established with the parameters of the family u.

Activating the locking digital input the locking digital input alarm gets activated.

### ADDITIONAL INFORMATIONS

- *for the whole period of a corrupted memory data alarm the cold storing cycle activation is refused*
- *for the whole period of a locking digital input alarm the cold storing cycle activation is refused*
- *for the whole period of a door switch digital input alarm the cold storing cycle activation is refused.*

### VERY COLD STORING CYCLE

Pushing and releasing the key **T8** during the status STAND-BY the cycle gets selected, except during the configuration parameters setting procedure; the LED **L8** is associated to the very cold storing cycle, it is turned ON when the cycle is selected and it is turned OFF when the cycle is not selected.

Pushing and releasing the key **T3** the cycle gets activated; the LED **L2** is associated to the storing, it is turned ON when the storing is running and it is turned OFF when the storing is not running.

During this cycle the display **DY1** displays the temperature read by the cabinet probe.

The output K 1 is associated to the compressor and to the very cold storing setpoint, it remains activated continuously as long as the temperature read by the cabinet probe reaches the very cold storing setpoint and when it rises above the very cold storing setpoint of the hysteresis value (differential) the output gets reactivated, except during a defrost and a dripping. The outputs K 2 and K 3 get activated with the same functioning saw in the case of cold storing cycle.

Activating the door switch digital input the instrument interacts on the outputs activity according what established with the parameters of the family u.

Activating the locking digital input the locking digital input alarm gets activated.

### ADDITIONAL INFORMATIONS

- *for the whole period of a corrupted memory data alarm the very cold storing cycle*

*activation is refused*

- *for the whole period of a locking digital input alarm the very cold storing cycle activation is refused*
- *for the whole period of a door switch digital input alarm the very cold storing cycle activation is refused.*

### QUICK COOLING FOR TEMPERATURE AND COLD STORING CYCLE

Pushing and releasing the keys **T4** and **T7** during the status STAND-BY the cycle gets selected, except during the configuration parameters setting procedure; the LED **L4** and **L7** are associated to the quick cooling and cold storing cycle, they are turned ON when the cycle is selected and they are turned OFF when the cycle is not selected.

Ended the quick cooling for temperature phase the instrument automatically moves to the cold storing phase.

### ADDITIONAL INFORMATIONS

- *for the whole period of a corrupted memory data alarm the quick cooling for temperature and cold storing cycle activation is refused*
- *for the whole period of a locking digital input alarm the quick cooling for temperature and cold storing cycle activation is refused*
- *for the whole period of a needle probe failure alarm the quick cooling for temperature and cold storing cycle activation is refused*
- *for the whole period of a cabinet probe failure alarm the quick cooling for temperature and cold storing cycle activation is refused*
- *for the whole period of a door switch digital input alarm the quick cooling for temperature and cold storing cycle activation is refused.*

### QUICK COOLING FOR TIME AND COLD STORING CYCLE

Pushing and releasing the keys **T4** and **T7** during the status STAND-BY the cycle gets selected, except during the configuration parameters setting procedure; the LED **L4** and **L7** are associated to the quick cooling and cold storing cycle, they are turned ON when the cycle is selected and they are turned OFF when the cycle is not selected.

Ended the quick cooling for time phase the instrument automatically moves to the cold storing phase.

### ADDITIONAL INFORMATIONS

- *for the whole period of a corrupted memory data alarm the quick cooling for time and cold storing cycle activation is refused*
- *for the whole period of a locking digital input alarm the quick cooling for time and cold storing cycle activation is refused*
- *for the whole period of a cabinet probe failure alarm the quick cooling for time and cold storing cycle activation is refused*
- *for the whole period of a door switch digital input alarm the quick cooling for time and cold storing cycle activation is refused.*

### QUICK FREEZING FOR TEMPERATURE AND VERY COLD STORING CYCLE

Pushing and releasing the keys **T5** and **T8** during the status STAND-BY the cycle gets selected, except during the configuration parameters setting procedure; the LED **L5** and **L8** are associated to the quick freezing and very cold storing cycle, they are turned ON when the cycle is selected and they are turned OFF when the cycle is not selected.

Ended the quick freezing for temperature phase the instrument automatically moves to the very cold storing phase.

### ADDITIONAL INFORMATIONS

- *for the whole period of a corrupted memory data alarm the quick freezing for temperature and very cold storing cycle activation is refused*
- *for the whole period of a locking digital input alarm the quick freezing for temperature and very cold storing cycle activation is refused*
- *for the whole period of a needle probe failure alarm the quick freezing for temperature and very cold storing cycle activation is refused*
- *for the whole period of a cabinet probe failure alarm the quick freezing for temperature and very cold storing cycle activation is refused*
- *for the whole period of a door switch digital input alarm the quick freezing for temperature and very cold storing cycle activation is refused.*

### QUICK FREEZING FOR TIME AND VERY COLD STORING CYCLE

Pushing and releasing the keys **T5** and **T8** during the status STAND-BY the cycle gets selected, except during the configuration parameters setting procedure; the LED **L5** and **L8** are associated to the quick freezing and very cold storing cycle, they are turned ON when the cycle is selected and they are turned OFF when the cycle is not selected.

Ended the quick freezing for time phase the instrument automatically moves to the very cold storing phase.

### ADDITIONAL INFORMATIONS

- *for the whole period of a corrupted memory data alarm the quick freezing for time and very cold storing cycle activation is refused*
- *for the whole period of a locking digital input alarm the quick freezing for time and very cold storing cycle activation is refused*
- *for the whole period of a cabinet probe failure alarm the quick freezing for time and very cold storing cycle activation is refused*
- *for the whole period of a door switch digital input alarm the quick freezing for time and very cold storing cycle activation is refused.*

### NEEDLE PROBE PROPER INSERTION VERIFY

Pushing and releasing the key **T9** during the status STAND-BY the needle probe proper insertion verify gets selected or unselected, except during the configuration parameters setting procedure; the LED **L9** is associated to the needle probe proper insertion verify, it is turned ON when the verify is not selected, it is turned OFF when the verify is selected and it flashes when the verify is running.

Pushing and releasing the key **T3** the verify gets activated.

Passed the needle probe proper insertion verify length from the moment in which the instrument activates a quick cooling/freezing for temperature cycle/phase, if the temperature read by the needle probe is above the needle probe proper insertion verify stopping setpoint the

