**GENERAL INFORMATION**

**What is the Use**

EK 820A is an ON-OFF digital controller studied for quick cooler management (of foods at ambient temperature or pre-cooled) whose 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 "quick cooling for temperature" selection, 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 provided with two extractable screw terminal blocks for cables up to 2.5 mm² (0.38in.², 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).

**Electrical Connection**

EK 820A is provided with two extractable screw terminal blocks for cables up to 2.5 mm² (0.38in.², 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).

**Electrical Connection**

EK 820A was studied for panel mounting, panel cutout 67 x 138 mm (2.63 x 5.43 in.).

**Getting Started**

**Installation**

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

**Use**

**Preliminary Information**

After derived the connections related in Fig. 5, the instrument reproduces 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 reproduced from the beginning.

Pushing and releasing the key T1 the instrument turning ON (status ON) or turning OFF (status STAND-BY); except during the configuration parameters setting procedures: the LED L4 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 emits 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 put the instrument according with user's requests (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 procedures: the LED L4 is associated to the quick cooling/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 T12 the cycle gets activated; the LED L12 is associated to the quick cooling/cooling cycle and it is turned OFF when the quick cooling/cooling 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 L10 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 continuously activated during the whole duration of time passed from the moment in which the instrument activates the cycle. The output K 2 is associated to the evaporator fans stoppage, it is forced to the status OFF during a defrost cycle, except what established with the parameter d4.

A defrost cycle provides three phases (defrost, dripping and evaporator fans stoppage) converted 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 renews to the defrosting if the instrument was set to maintain defrost to resistances (electrical) or not gas defrost (reversal of cycle) 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 defrosting length from the moment of the defrost and the instrument automatically renews to the evaporator fans stoppage, if the instrument was set to manage defrost to resistances (electrical) or not gas defrost (reversal of cycle) during a defrost the output K 1 activation gets disabled, if the instrument was set to manage air defrost (open door) during a defrosting 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 accordingly what established with the parameters of the family U.

To modify the quick freezing for time length push and release over and over the key T10 or T 12 as long as the display DY2 displays the desired value (keeping pushed the key T10 or T 12 the value gets increased or decreased more quickly).

During this cycle the display T3 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 T5 displays the decrease of the quick freezing for temperature maximum length and the LED L9 flashes to indicate that the count of the time is running; keeping pushed the key T10 the display T5 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 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.

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 freezing/freezing alarm gets activated; keeping pushed the key T10 the display T5 displays the fraction of time passed from the moment of the quick freezing for temperature maximum length end.

- 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 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 a4.

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
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ADDITIONAL INFORMATIONS

- for the whole period of a corrupted memory data alarm the quick freezing for temperature cycle activation is refused
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- 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 a4.
If the LED L6 flashes it means that the needle probe proper insertion verify is running. If the LED L2 flashes it means that the needle probe proper insertion verify is not running.

If the display D1 displays the indication "ALERT" and the LED L4 is turned ON it means that the display cycle is refused. If the display D1 displays the indication "ALERT" the flashing of the LED L4 is turned ON it means a pause of a defrost cycle activation is running (see the parameters C0 and C1). If the display D1 displays the indication "ALERT and the flashing of the LED L4 is turned ON it means that a quick cooling/freezing cycle activation is refused. If the display D1 displays the indication "ALERT and the flashing of the LED L4 is turned ON it means that a quick cooling/freezing cycle activation is refused and all outputs get forced to the status OFF.

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instrument automatically moves to the quick-freezing/freezing for temperature cycle, if the temperature so obtained is established with the parameter F1, it is referred to the needle probe.

It establishes the temperature associated to the output K1 during a very cold storing cycle/phase. °

The LED +65 is turned ON it means that the output is associated to the setpoint established with the parameter F1, it remains associated during a very cold storing cycle/phase and during a defrost if the parameter F0 has value 0, it is referred to the needle probe.

If the LED +65 is turned ON it means that a very cold storing cycle/phase is selected.

If the LED +65 is turned ON it means that a quick freezing cycle/phase is selected.

If the LED +65 is turned ON it means that the output K2 is acti-

If the LED +65 is turned ON it means that the quick cooling/freezing for temperature modality is selected.

If the LED +65 is turned ON it means that the needle probe proper insertion verify alarm gets activated.

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It is significant exclusively if the parameter F0 has value 0, it establishes the hysteresis (difference) associated to the parameter F1, it establishes the temperature to which a defrost gets stopped and it is referred to the evaporator.

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If the LED +65 is turned ON it means that the output K2 is acti-

It establishes the temperature associated to the output K1 during a quick freezing cycle/phase.

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It establishes the temperature associated to the output K1 during a quick cooling cycle/phase.

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