

DIMENSIONAL DATA

OVERALL DIMENSIONS AND PANEL CUTOUT

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

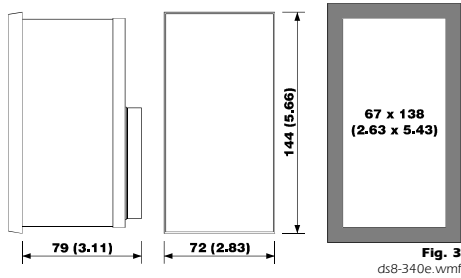


Fig. 3
ds8-340e.wmf

INSTALLATION

WITH THE FIXING SYSTEM SUGGESTED BY THE BUILDER

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

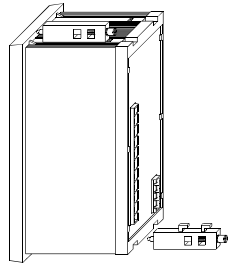


Fig. 4
ms8-356.wmf

ELECTRICAL CONNECTION

CONNECTIONS TO DERIVE

Instance of typical application.

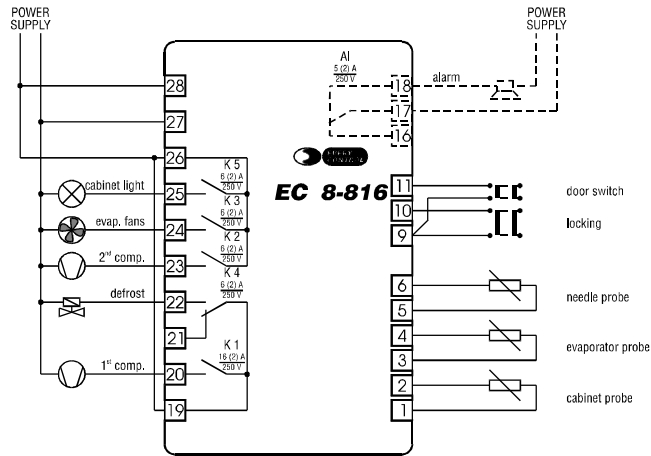


Fig. 5
c8-816e.wmf

BUILDER DATA

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EC 8-816

ON-OFF digital controller for quick cooler management

Operating instructions

Release 1/00 of April the tenth 1999

Code EC 8-816 DOC E001

File 8816e.p65

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
f8-816.wmf

GENERAL INFORMATIONS

WHAT IS THE USE

EC 8-816 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 four cycles of functioning, the two compressors management (of which one 1½ HP compressor), 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.

EC 8-816 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

EC 8-816 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

EC 8-816 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).

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 Every Control (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.

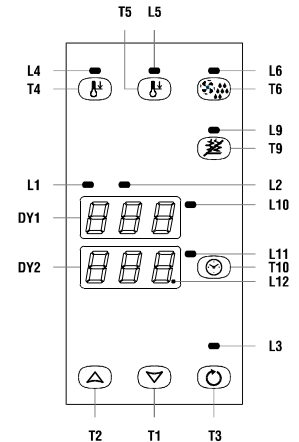


Fig. 2
iu8816.wmf

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.

EC 8-816 is provided with four 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 AND COLD STORING 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 and 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 **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 phase 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 first 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 second compressor and it gets forced to the same status of the output K 1 with a disabling time to the output activation from the moment of the output K 1 activation of 20 sec.

The output K 3 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 4 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 3 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 3 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 3 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 3 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 3 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 3 activation gets disabled, if the instrument was set to manage air defrost (open door) during an evaporator fans stoppage the output K 3 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 phase ends and the successful quick cooling/freezing for temperature signal gets activated.

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.

Ended the quick cooling for temperature phase the instrument automatically moves to the cold storing phase; 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 phase the display **DY1** displays the temperature read by the cabinet probe.

The output K 1 is associated to the first 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 second compressor and it gets forced to the status OFF.

The output K 3 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 phase 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 4 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 3 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 3 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 3 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 3 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 3 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 3 activation gets disabled, if the instrument was set to manage air defrost (open door) during an evaporator

fans stoppage the output K 3 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 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*
- *during a quick cooling for temperature phase the instrument never automatically presents a request of a defrost cycle, except what established with the parameter d4.*

QUICK COOLING FOR TIME AND COLD STORING 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 and 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 **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 phase 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, K 3 and K 4 get activated with the same functioning saw in the case of quick cooling for temperature phase.

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 phase ends and the quick cooling/freezing for time ended signal gets activated.

Ended the quick cooling for time phase the instrument automatically moves to the cold storing phase; 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 phase the display **DY1** displays the temperature read by the cabinet probe.

The outputs K 1, K 2, K 3 and K 4 get activated with the same functioning saw in the case of cold storing phase.

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 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*
- *during a quick cooling for time phase the instrument never automatically presents a request of a defrost cycle, except what established with the parameter d4.*

QUICK FREEZING FOR TEMPERATURE AND VERY COLD STORING 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 and 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 **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 phase 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 first 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 indication "0" flashing and the buzzer utters an intermittent beep (**unsuccessful quick cooling/freezing**) it means that a quick cooling/freezing phase is unsuccessful (see the parameters c1 and c2 or c4 and c5); inactive.

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

TECHNICAL DATA

Case:	plastic black (PP0), self-extinguishing.
Size:	72 x 144 x 79 mm (2.83 x 5.66 x 3.11 in.), with terminal blocks.
Installation:	panel mounting, panel cutout 67 x 138 mm (2.63 x 5.43 in.), with the equipped screw brackets.
Type of protection:	IP 54.
Connections:	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 mm ² (0.38 in. ²).
Ambient temperature:	from 0 to +60 °C (+32 to +140 °F, 10 ... 90 % of not condensing relative humidity).
Power supply:	230 Vac or 115 Vac or 24 Vac or 12-24 Vac/dc or 12 Vac/dc, 50/60 Hz, 4 VA.
Insulation class:	II.
Alarm buzzer:	incorporated.
Measure inputs:	3 (cabinet, evaporator and needle probe) for PTC probes.
Digital inputs:	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.
Working range:	from -50 a +150 °C.
Setting range:	from -55 to +99 °C.
Timer setting range:	from 1 to 400 min. for the quick cooling/freezing for temperature, from 0 to 999 min. for the quick cooling/freezing for time.

Resolution:	1 °C.
Display:	two 3-digit display 12.5 mm (0.49 in.) high red LED display with automatic minus sign, functioning status indicators, programming status indicators.
Outputs:	five relays of which one 16 (2) A @ 250 Vac relay for one 1½ HP @ 250 Vac compressor (NO contact) management and four 6 (2) A @ 250 Vac relays for one ½ HP @ 250 Vac compressor (NO contact), evaporator fans (NO contact), defrost system (change-over contact) management and for cabinet light (NO contact) control.
Kind of defrost managed:	to resistances (electrical), to hot gas (reversal of cycle), and to air (open door) automatic and manual.
Defrost management:	for interval, stopping temperature and maximum length.

HOW TO ORDER

CODING SYSTEM

Instrument name:	EC 8-816.
Desired measure input:	P (for PTC probes).
Desired power supply:	220 (230 Vac) 115 (115 Vac) A24 (24 Vac) 024 (12-24 Vac/dc) 012 (12 Vac/dc).

Options:	custom configuration ,green LED display, output for alarms management, serial port.
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The outputs K 2, K 3 and K 4 get activated with the same functioning saw in the case of quick cooling for temperature phase.

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 phase ends and the successful quick cooling/freezing for temperature signal gets activated.

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.

Ended the quick freezing for temperature phase the instrument automatically moves to the very cold storing phase; 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 phase the display **DY1** displays the temperature read by the cabinet probe.

The output K 1 is associated to the first 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, K 3 and K 4 get activated with the same functioning saw in the case of cold storing phase.

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 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*
- *during a quick freezing for temperature phase the instrument never automatically presents a request of a defrost cycle, except what established with the parameter d4.*

QUICK FREEZING FOR TIME AND VERY COLD STORING 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 and 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 **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 phase 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, K 3 and K 4 get activated with the same functioning saw in the case of quick freezing for temperature phase.

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 phase ends and the quick cooling/freezing for time ended signal gets activated.

Ended the quick freezing for time phase the instrument automatically moves to the very cold storing phase; 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 phase the display **DY1** displays the temperature read by the cabinet probe.

The outputs K 1, K 2, K 3 and K 4 get activated with the same functioning saw in the case of very cold storing phase.

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 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*

- *during a quick freezing for time phase the instrument never automatically presents a request of a defrost cycle, except what established with the parameter d4.*

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 and cold storing/very cold storing cycle, if the temperature read by the needle probe is above the needle probe proper insertion verify stopping setpoint the instrument automatically moves to the quick cooling/freezing for temperature and cold storing/very cold storing cycle, if the temperature read by the needle probe is below the needle probe proper insertion verify stopping setpoint the unsuccessful needle probe proper insertion verify alarm gets activated.

ADDITIONAL INFORMATIONS

- *the needle probe proper insertion verify has significance exclusively if a quick cooling/freezing for temperature and cold storing/very cold storing cycle is selected.*

MANUAL DEFROST

Pushing and releasing the key **T6** during the status STAND-BY the presentation of a request of a defrost cycle gets selected or unselected, except during the configuration parameters setting procedure; the LED **L6** is associated to the defrost cycle, during the status ON it is turned ON when the cycle is running and it is turned OFF when the cycle is not running and during the status STAND-BY it flashes when the presentation of a request of a defrost cycle is selected.

If the conditions permit it (the temperature read by the evaporator probe must be below the defrost stopping setpoint) pushing and releasing the key **T3** the instrument presents a request of a defrost cycle.

During a storing phase, if the conditions permit it (the temperature read by the evaporator probe must be below the defrost stopping setpoint) keeping pushed the key **T6** for four seconds at least the instrument presents a request of a defrost cycle.

During a defrost cycle keeping pushed the key **T6** for four seconds at least the defrost cycle ends.

MANUAL VENTILATION

Keeping pushed the key **T6** for four seconds at least during the status STAND-BY the output K 3 gets activated or deactivated, except during the configuration parameters setting procedure; the LED **L6** is associated to the output status, during the status STAND-BY it is turned ON when the output is activated and it is turned OFF when the output is deactivated.

ADDITIONAL INFORMATIONS

- *for the whole period of a corrupted memory data alarm the output K 3 activation is refused*
- *for the whole period of a locking digital input alarm the output K 3 activation is refused.*

CONFIGURATION PARAMETERS SETTING

Configuration parameters are arranged on two levels, to protect the most tricky settings against undesirable violations and they are arranged in families that can be recognized through the initial letter of the label.

To gain access to the first level keep pushed at the same time for four seconds at least the keys **T1** and **T2** during the status STAND-BY (passed four seconds the display **DY1** displays the label **PA**).

To select a parameter of the first level push and release over and over the key **T1** or **T2** as long as the display **DY1** displays the label of the desired parameter.

To modify the parameter value keep pushed the key **T3** (the display **DY1** displays the actual value) and at the same time push and release over and over the key **T1** or **T2** as long as the display **DY1** displays the desired value (keeping pushed the key **T1** or **T2** the value gets decreased or increased more quickly); after the modification release the key **T3** last (to the release of the key **T3** the display **DY1** displays the label of the parameter again).

To gain access to the second level enter inside the first level and select the label **PA**.

Keep pushed the key **T3** (the display **DY1** displays the actual value) and at the same time push and release over and over the key **T1** or **T2** as long as the display **DY1** displays -19 (keeping pushed the key **T1** or **T2** the value gets decreased or increased more quickly); after the modification release the key **T3** last (to the release of the key **T3** the display **DY1** displays the label **PA** again); keep pushed at the same time for four seconds at least the keys **T1** and **T2** (passed four seconds the display **DY1** displays the first parameter of the second level).

To select a parameter of the second level push and release over and over the key **T1** or **T2** as long as the display **DY1** displays the label of the desired parameter.

To modify the parameter value keep pushed the key **T3** (the display **DY1** displays the actual value) and at the same time push and release over and over the key **T1** or **T2** as long as the display **DY1** displays the desired value (keeping pushed the key **T1** or **T2** the value gets decreased or increased more quickly); after the modification release the key **T3** last (to the release of the key **T3** the display **DY1** displays the label of the parameter again).

To turn out from the configuration parameters setting procedure keep pushed at the same time for four seconds at least the keys **T1** and **T2** or do not operate with the keys for fifty seconds at least (time-out exit).

ADDITIONAL INFORMATIONS

- *for the whole period of a corrupted memory data alarm the access to the configuration parameters setting procedure is refused*
- *the modification of a parameter value which unit of measure is the hour or the minute or the second has not immediate effect; to obtain this effect it must not be executed during the course of the value*
- *the configuration parameters values get stored in a non volatile memory even if a lack of power supply happens.*

CONFIGURABILITY

QUICK COOLING FOR TIME				
LABEL	MIN.	MAX.	U. M.	ST. QUICK COOLING FOR TIME
	0	999	min.	90 quick cooling/freezing for time length

It establishes the quick cooling/freezing for time phase length.

CONFIGURATION PARAMETERS				
LABEL	MIN.	MAX.	U. M.	ST. MEASURE INPUTS
/1	-10	+10	°C	0 calibration (\$)

It establishes a threshold to add algebraically to the signal coming from the cabinet probe (for instance to correct the signal).

LABEL	MIN.	MAX.	U. M.	ST. QUICK COOLING AND STORING REGULATOR
c0	+1	+15	°C	+2 hysteresis (differential) (\$) It establishes the hysteresis (differential) relative to the parameters c3, c6, cb and cC.
c1	1	400	min.	90 quick cooling for temperature maximum length (\$) It establishes the quick cooling for temperature phase maximum length.

c2	-55	+99	°C	+10 quick cooling for temperature stopping setpoint (\$) It establishes the temperature to which a quick cooling for temperature phase gets stopped and it is referred to the needle probe.
c3	-55	+99	°C	+3 cold storing setpoint (\$) It establishes the temperature associated to the output K 1 during a cold storing phase.
c4	1	400	min.	270 quick freezing for temperature maximum length (\$) It establishes the quick freezing for temperature phase maximum length.

c5	-55	+99	°C	-18 quick freezing for temperature stopping setpoint (\$) It establishes the temperature to which a quick freezing for temperature phase gets stopped and it is referred to the needle probe.
c6	-55	+99	°C	-25 very cold storing setpoint (\$) It establishes the temperature associated to the output K 1 during a very cold storing phase.
c7	0	+99	°C	+30 needle probe proper insertion verify stopping setpoint It establishes the temperature to which a needle probe proper insertion verify gets stopped and it is referred to the needle probe.
c8	-55	+99	°C	+65 quick cooling/freezing for temperature enabling setpoint (\$) It establishes the temperature below which it is possible to decrease the times established with the parameters c1 and c4 and it is referred to the needle probe.

c9	0	99	sec.	3 buzzer activation length at the quick cooling/freezing end It establishes the buzzer activation length at the successful quick cooling/freezing for temperature phase end and at the quick cooling/freezing for time phase end.
cA	---	---	°C	--- needle probe reading (\$) It permits to display the temperature read by the needle probe.
cb	-55	+99	°C	-10 quick cooling setpoint (\$) It establishes the temperature associated to the output K 1 during a quick cooling phase.
cC	-55	+99	°C	-55 quick freezing setpoint (\$) It establishes the temperature associated to the output K 1 during a quick freezing phase.
cE	1	99	sec.	35 needle probe proper insertion verify length It establishes the needle probe proper insertion verify length.

c1	0	99	min.	0 disabling time to the output activation from the previous activation It establishes the time that disables the output activation from the moment of the previous output activation.
C2	0	99	min.	0 disabling time to the output activation from the previous output deactivation It establishes the time that disables the output activation from the moment of the previous output deactivation.
C5	0	99	min.	10 cycle time for the output activation during the storing during a cabinet probe failure alarm It establishes the cycle time for the output activation due to the contribution established with the parameters C6 and C7 during a storing phase during a cabinet probe failure alarm.

C6	0	99	min.	3 output activation length in the course of the cycle time during the cold storing during a cabinet probe failure alarm It establishes the output activation length in the course of the cycle time established with the parameter C5 during a cold storing phase during a cabinet probe failure alarm, except what established with the disabling times to the output K 1 activation.
C7	0	99	min.	8 output activation length in the course of the cycle time during the very cold storing during a cabinet probe It establishes if to force the output K 5 to the status ON during the door switch digital input activation, as indicated:

C6	0	99	min.	3 output activation length in the course of the cycle time during the cold storing during a cabinet probe failure alarm It establishes the output activation length in the course of the cycle time established with the parameter C5 during a cold storing phase during a cabinet probe failure alarm, except what established with the disabling times to the output K 1 activation.
C7	0	99	min.	8 output activation length in the course of the cycle time during the very cold storing during a cabinet probe It establishes if to force the output K 5 to the status ON during the door switch digital input activation, as indicated:

failure alarm				
LABEL	MIN.	MAX.	U. M.	ST. DEFROST REGULATOR
d0	0	99	(*)	8 defrost interval It establishes the time interval that pass from the moment in which the instrument activates a storing phase or from the moment in which the instrument presents a request of a defrost cycle to the moment in which the instrument automatically presents the following request of a defrost cycle.

d1	0	2	---	1 kind of defrost It establishes the kind of defrost that the instrument must manage, as indicated:
d2	-55	+99	°C	+2 defrost stopping setpoint It establishes the temperature to which a defrost gets stopped and it is referred to the evaporator probe.
d3	1	99	(*)	30 defrost maximum length It establishes the defrost maximum length.

d4	0	1	---	0 defrost cycle at the cycle activation It establishes if the instrument automatically must present a request of a defrost cycle in the moment in which the instrument activates a cycle, as indicated:
d7	0	99	(*)	2 dripping length It establishes the dripping length.
d9	0	1	---	0 disabling times to the output K 1 activation override It is significant exclusively if the parameter d1 has value 1, it establishes if to clear the disabling times to the output K 1 activation in the moment in which the instrument presents a request of a defrost cycle, as indicated:

dA	---	---	°C	--- evaporator probe reading (\$) It permits to display the temperature read by the evaporator probe.
dB	0	1	---	0 times base for the parameters d0, d3, d7 and F5 It establishes the unit of measure of the parameters d0, d3, d7 and F5, as indicated:
dE	---	---	°C	--- evaporator probe reading (\$) It permits to display the temperature read by the evaporator probe.
dF	0	1	---	0 output functioning It is significant exclusively during a storing phase and during a defrost if the parameter d1 has value 0 or 1, it establishes the output functioning, as indicated:

LABEL	MIN.	MAX.	U. M.	ST. EVAPORATOR FANS REGULATOR ASSOCIATED TO THE OUTPUT K 3
F0	0	1	---	0 output functioning It is significant exclusively during a storing phase and during a defrost if the parameter d1 has value 0 or 1, it establishes the output functioning, as indicated:
F1	-55	+99	°C	-1 output deactivation setpoint It is significant exclusively if the parameter F0 has value 0, it establishes the temperature to which the output gets deactivated and it is referred to the evaporator probe.
F2	+1	+15	°C	+1 hysteresis (differential) It is significant exclusively if the parameter F0 has value 0, it establishes the hysteresis (differential) relative to the parameter F1.
F3	0	1	---	0 output typology It is significant exclusively during a storing phase, it establishes a bond with the output K 1 status, as indicated:

F4	0	1	---	1 output forced to the status OFF during the defrost It is significant exclusively if the parameter d1 has value 0 or 1, it establishes if to force the output to the status OFF during a defrost, as indicated:
F5	0	99	(*)	3 evaporator fans stoppage length It establishes the evaporator fans stoppage length.

LABEL	MIN.	MAX.	U. M.	ST. DIGITAL INPUTS
u0	0	1	---	1 output K 5 forced to the status ON during the door switch digital input activation It establishes if to force the output K 5 to the status ON during the door switch digital input activation, as indicated:

LABEL	MIN.	MAX.	U. M.	ST. TEMPERATURE ALARM REGULATOR
u1	0	1	---	1 output K 3 forced to the status OFF during the door switch digital input activation It establishes if to force the output K 3 to the status OFF during the door switch digital input activation, as indicated:
u2	0	1	---	0 kind of contact of the door switch digital input It establishes the kind of contact of the door switch digital input, as indicated:
u3	0	1	---	0 kind of contact of the locking digital input It establishes the kind of contact of the locking digital input, as indicated:
u4	0	999	sec.	5 disabling time to the locking digital input alarm activation It establishes the time that disables the locking digital input alarm activation from the moment in which the locking digital input alarm happens.

A0	+1	+15	°C	+2 hysteresis (differential) It establishes the hysteresis (differential) relative to the parameters A1, A2, A3 and A4.
A1	-99	0	°C	0 lower alarm set relative to the cold storing setpoint It establishes a threshold to add algebraically to the setpoint established with the parameter c3; the value so obtained establishes the temperature below which the lower temperature alarm gets activated during a cold storing phase and it is referred to the cabinet probe.
A2	0	+99	°C	0 upper alarm set relative to the cold storing setpoint It establishes a threshold to add algebraically to the setpoint established with the parameter c3; the value so obtained establishes the temperature above which the upper temperature alarm gets activated during a cold storing phase and it is referred to the cabinet probe.
A3	-99	0	°C	0 lower alarm set relative to the very cold storing setpoint It establishes a threshold to add algebraically to the setpoint established with the parameter c6; the value so obtained establishes the temperature below which the lower temperature alarm gets activated during a very cold storing phase and it is referred to the cabinet probe.
A4	0	+99	°C	0 upper alarm set relative to the very cold storing setpoint It establishes a threshold to add algebraically to the setpoint established with the parameter c6; the value so obtained establishes the temperature above which the upper temperature alarm gets activated during a very cold storing phase and it is referred to the cabinet probe.

A5	0	255	min.	30 disabling time to the alarm activation from the storing activation It establishes the time that disables the temperature alarm activation from the moment in which the instrument activates a storing phase.
A6	0	255	min.	0 disabling time to the alarm activation It establishes the time that disables the temperature alarm activation from the moment in which the temperature alarm happens.
L1	---	---	---	--- reserved Reserved.
L2	---	---	---	--- reserved Reserved.
L3	---	---	---	--- reserved Reserved.
L4	---	---	---	--- reserved Reserved.

L1	---	---	---	--- reserved Reserved.
L2	---	---	---	--- reserved Reserved.
L3	---	---	---	--- reserved Reserved.
L4	---	---	---	--- reserved Reserved.

ADDITIONAL INFORMATIONS				
-	<i>the symbol (§) indicates that the parameter is of the first level</i>			
-	<i>the symbol (*) indicates that the unit of measure depends from the parameter dB</i>			
-	<i>the symbol " " manual ventilation" function the parameters u1 and u2 has not significance.</i>			

SIGNALS AND ALARMS				
u1	0	1	---	1 output K 3 forced to the status OFF during the door switch digital input activation It establishes if to force the output K 3 to the status OFF during the door switch digital input activation, as indicated:
u2	0	1	---	0 kind of contact of the door switch digital input It establishes the kind of contact of the door switch digital input, as indicated:
u3	0	1	---	0 kind of contact of the locking digital input It establishes the kind of contact of the locking digital input, as indicated:
u4	0	999	sec.	5 disabling time to the locking digital input alarm activation It establishes the time that disables the locking digital input alarm activation from the moment in which the locking digital input alarm happens.

L5	---	---	---	--- reserved Reserved.
L6	---	---	---	--- reserved Reserved.
L7	---	---	---	--- reserved Reserved.
L8	---	---	---	--- reserved Reserved.
L9	---	---	---	--- reserved Reserved.
L10	---	---	---	--- reserved Reserved.
L11	---	---	---	--- reserved Reserved.
L12	---	---	---	--- reserved Reserved.
L13	---	---	---	--- reserved Reserved.
L14	---	---	---	--- reserved Reserved.

AD	---	---	---	--- reserved Reserved.
AE	---	---	---	--- reserved Reserved.
AF	---	---	---	--- reserved Reserved.
AG	---	---	---	--- reserved Reserved.
AH	---	---	---	--- reserved Reserved.

ALARMS				
DY1	0	999	sec.	5 disabling time to the locking digital input alarm activation It establishes the time that disables the locking digital input alarm activation from the moment in which the locking digital input alarm happens.
DY2	0	999	sec.	5 disabling time to the locking digital input alarm activation It establishes the time that disables the locking digital input alarm activation from the moment in which the locking digital input alarm happens.

AL1	---	---	---	--- reserved Reserved.
AL2	---	---	---	--- reserved Reserved.
AL3	---	---	---	--- reserved Reserved.
AL4	---	---	---	--- reserved Reserved.

AL5	---	---	---	--- reserved Reserved.
AL6	---	---	---	--- reserved Reserved.
AL7	---	---	---	--- reserved Reserved.
AL8	---	---	---	--- reserved Reserved.
AL9	---	---	---	--- reserved Reserved.
AL10	---	---	---	--- reserved Reserved.
AL11	---	---	---	--- reserved Reserved.

AL12	---	---	---	--- reserved Reserved.
AL13	---	---	---	--- reserved Reserved.
AL14	---	---	---	--- reserved Reserved.
AL15	---	---	---	--- reserved Reserved.
AL16	---	---	---	--- reserved Reserved.
AL17	---	---	---	--- reserved Reserved.
AL18	---	---	---	--- reserved Reserved.
AL19	---	---	---	--- reserved Reserved.
AL20	---	---	---	--- reserved Reserved.

AL21	---	---	---	--- reserved Reserved.
AL22	---	---	---	--- reserved Reserved.
AL23	---	---	---	--- reserved Reserved.
AL24	---	---	---	--- reserved Reserved.
AL25	---	---	---	--- reserved Reserved.