

DIMENSIONAL DATA

OVERALL DIMENSIONS AND PANEL CUTOUT

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

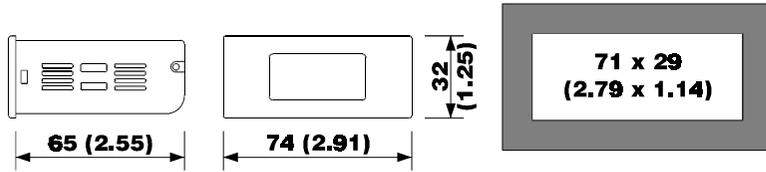


Fig. 3
ds3ve.wmf

INSTALLATION

WITH THE FIXING SYSTEMS SUGGESTED BY THE BUILDER

Panel mounting, with the equipped screw (Fig. 4) or spring brackets (Fig. 5) (third-scale drawing).

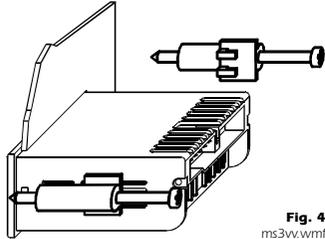


Fig. 4
ms3vv.wmf

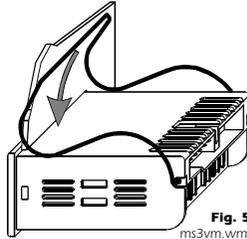


Fig. 5
ms3vm.wmf

ELECTRICAL CONNECTION

CONNECTIONS TO DERIVE

Instance of typical application.

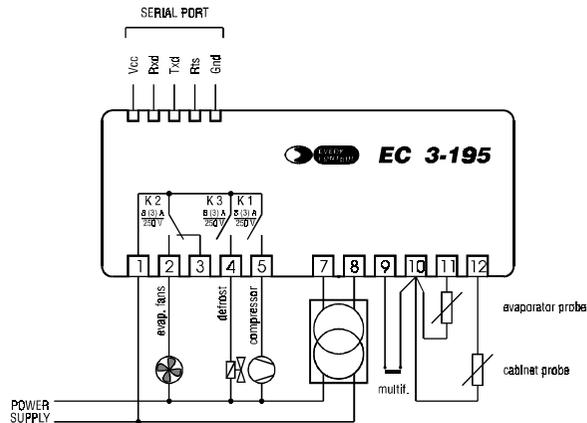


Fig. 6
c3-195e.wmf

BUILDER DATA

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EC 3-195

ON-OFF digital thermostat for compressor, evaporator fans and defrost (for temperature-time) management with "Real Time Clock" function

Operating instructions

Release 2/00 of July the twenty-first 2000

Code EC 3-195 DOC E002

File 3195e.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
f3-195.wmf

GENERAL INFORMATIONS

WHAT IS THE USE

EC 3-195 is an ON-OFF digital thermostat studied for refrigerating systems management through the compressor, evaporator fans and defrost (for temperature-time) management; besides, the instrument is provided with one multifunction digital input configurable to interact on the outputs activity (it presents a request of a defrost cycle, it forces the compressor output to the status ON, etc.) and with the "Real Time Clock" function (it is studied to establish the real hour and minute of the day) that can be used to plan up to six daily defrost cycles and to program working temperature changes (Energy Saving cycle).

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

EC 3-195 is available in the 74 x 32 mm (2.91 x 1.25 in.) case and it is studied for panel mounting with the equipped screw or spring brackets.

GETTING STARTED

INSTALLATION

EC 3-195 was studied for panel mounting, panel cutout 71 x 29 mm (2.79 x 1.14 in.), with the equipped screw or spring brackets (the overall dimensions and the panel cutout are related in Fig. 3, the fixing systems suggested by the builder are related respectively in Fig. 4 and in Fig. 5).

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 to 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
- if not differently specified at the time of order, the instrument will be equipped with screw brackets.

ELECTRICAL CONNECTION

EC 3-195 is provided with two screw terminal blocks for cables up to 2.5 mm² (0.38 in.², for the connection to the power supply, inputs and outputs) and it is provided with one five poles single line male connector (for the connection to the CLONE configurator/cloner and RICS supervision systems), located on the instrument back panel (the connections to derive are related in Fig. 6 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 7 and 8 are derived to the local power supply, even if the instrument is apparently turned off
- 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. 6, during the normal functioning the instrument displays the temperature read by the cabinet probe.

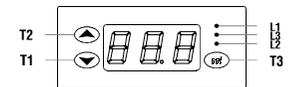


Fig. 2
iu3195.wmf

If an alarm should be active the instrument 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 the key T1 during an alarm permits to silence the buzzer.

EC 3-195 is provided with one working setpoint 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).

The output K 1 is associated to the compressor and to the working setpoint, it remains activated continuously as long as the temperature read by the cabinet probe reaches the working setpoint and when it rises above the working 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 what established with the parameters of the family F.

If the instrument was set to manage defrost interval count passed the defrost interval, if the conditions permit it (the temperature read by the evaporator probe must be below the defrost stopping setpoint) the instrument automatically presents a request of a defrost cycle, if the instrument was set to manage real time defrost the instrument automatically presents a request of a defrost cycle at every time established with the parameters of the family Hd, according with the real hour and minute established with the label rtc.

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 compressor output gets forced to the status OFF, if the instrument was set to manage hot gas defrost (reversal of cycle) during a defrost the compressor output remains continuously activated.

Passed the dripping length from the moment of the defrost end the instrument automatically moves to the evaporator fans stoppage; during a dripping the compressor output gets forced to the status OFF.

Passed the evaporator fans stoppage length from the moment of the dripping end the defrost cycle ends; during an evaporator fans stoppage the evaporator fans output activation gets disabled.

If the conditions permit it (the temperature read by the evaporator probe must be below the defrost stopping setpoint) keeping pushed the key T2 for four seconds at least the instrument presents a request of a defrost cycle.

To the time established with the parameters of the family Hr, according with the real hour and minute established with the label rtc, the instrument activates an Energy Saving cycle; during an Energy Saving cycle the compressor output is associated to the auxiliary setpoint, it remains activated continuously as long as the temperature read by the cabinet probe reaches the auxiliary setpoint and when it rises above the auxiliary setpoint of the hysteresis value (differential) the output gets reactivated, except during a defrost and a dripping.

Activating the multifunction digital input the instrument interacts on the outputs activity according what established with the parameters of the family i.

WORKING SETPOINT

WORKING SETPOINT SETTING (WORKING TEMPERATURE)

To modify the working setpoint value keep pushed the key **T3** (the instrument displays the actual value) and at the same time push and release over and over the key **T1** or **T2** as long as the instrument 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; during the pressure of the key **T3** the LED **L1** flashes quickly to indicate that a working setpoint setting procedure is running (to the release of the key **T3** the instrument automatically turns out from the working setpoint setting procedure).

ADDITIONAL INFORMATIONS

- for the whole period of a corrupted memory data alarm the access to the working setpoint setting procedure is refused
- the working setpoint is programmable within the limits established with the parameters *r 1* and *r 2*
- if the parameter *r 5* has value 1 the working setpoint can not be modified as long as the parameter *r 5* gets set to 0
- the working setpoint value gets stored in a non volatile memory even if a lack of power supply happens.

WORKING SETPOINT

LABEL MIN.	MAX.	U.M.	ST.	WORKING SETPOINT
r 1	r 2 (*)	0.0		working setpoint

It establishes the temperature associated to the compressor output.

CONFIGURATION PARAMETERS

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** (passed four seconds the instrument 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 instrument displays the label of the desired parameter.

To modify the parameter value keep pushed the key **T3** (the instrument displays the actual value) and at the same time push and release over and over the key **T1** or **T2** as long as the instrument 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 instrument 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 instrument displays the actual value) and at the same time push and release over and over the key **T1** or **T2** as long as the instrument 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 instrument 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 instrument 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 instrument displays the label of the desired parameter.

To modify the parameter value keep pushed the key **T3** (the instrument displays the actual value) and at the same time push and release over and over the key **T1** or **T2** as long as the instrument 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 instrument 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 the parameter /Ab value has not immediate effect; to obtain this effect, after the modification turn OFF and turn ON again the instrument
- 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.

CONFIGURATION PARAMETERS

LABEL MIN.	MAX.	U.M.	ST.	PASSWORD
PA	-55 99	---	0	password (\$)

It is the password that permits to gain access to the second level.

LABEL MIN.	MAX.	U.M.	ST.	MEASURE INPUTS
/0	1 3	---	1	kind of probe

It establishes the kind of probe that the instrument must recognize to its measure inputs, as indicated:

1 = PTC probe 3 = NTC probe.

/1A	-10	+10.0 (*)	0.0	cabinet probe calibration (\$)
-----	-----	-----------	-----	--------------------------------

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

/1b	-10	+10.0 (*)	0.0	evaporator probe calibration (\$)
-----	-----	-----------	-----	-----------------------------------

It is significant exclusively if the parameter /Ab has value 1, it establishes a threshold to add algebraically to the signal coming from the evaporator probe (for instance to correct the signal).

To display the temperature read by the evaporator probe see the chapter ADDITIONAL FUNCTIONS.

/5	0	1	---	1	decimal point
----	---	---	-----	---	---------------

It is significant exclusively if the parameter / 8 has value 1, it establishes the resolution with which the temperature gets displayed, as indicated:

0 = the temperature gets displayed with the resolution of the unit of measure
1 = the temperature gets displayed with the resolution of 1/10 of the unit of measure.

/8	0	1	---	1	unit of measure
----	---	---	-----	---	-----------------

It establishes the unit of measure with which the temperature gets displayed, as indicated:

0 = the unit of measure is the Fahrenheit degree
1 = the unit of measure is the Celsius degree.

/Ab	0	1	---	1	evaporator probe enabling
-----	---	---	-----	---	---------------------------

It establishes if to enable the evaporator probe, as indicated:

0 = the evaporator probe is disabled
1 = the evaporator probe is enabled.

LABEL MIN.	MAX.	U.M.	ST.	ON-OFF TEMPERATURE REGULATOR ASSOCIATED TO THE WORKING SETPOINT AND TO THE COMPRESSOR OUTPUT
------------	------	------	-----	--

r 0	+0.1	+15.0 (*)	+2.0	hysteresis (differential) (\$)
-----	------	-----------	------	--------------------------------

It establishes the hysteresis (differential) relative to the working setpoint and to the setpoint established with the parameter *r 8*.

r 1	-99	+99.9 (*)	-50	minimum working setpoint programmable
-----	-----	-----------	-----	---------------------------------------

It establishes the minimum working setpoint programmable; the instrument automatically verifies if the value established with the parameter *r 1* is below the maximum working setpoint programmable established with the parameter *r 2*.

r 2	-99	+99.9 (*)	+50.0	maximum working setpoint programmable
-----	-----	-----------	-------	---------------------------------------

It establishes the maximum working setpoint programmable; the instrument automatically verifies if the value established with the parameter *r 2* is above the minimum working setpoint programmable established with the parameter *r 1*.

r 5	0	1	---	0	locking of the working setpoint modification
-----	---	---	-----	---	--

It establishes if to prevent the modification of the working setpoint, as indicated:

0 = the working setpoint can be modified
1 = the working setpoint can not be modified as long as the parameter *r 5* gets set to 0.

r 8	-99	+99.9 (*)	0.0	auxiliary working setpoint
-----	-----	-----------	-----	----------------------------

It is significant exclusively if the parameter *i 0* has value 6 or 7 or if the parameter *Hr2* has values different to 0.0, it establishes the temperature associated to the compressor output during a multifunction digital input activation and during an Energy Saving cycle.

LABEL MIN.	MAX.	U.M.	ST.	COMPRESSOR OUTPUT PROTECTION
------------	------	------	-----	------------------------------

C 0	0	240	min.	0	disabling time to the output activation from the instrument start
-----	---	-----	------	---	---

It establishes the time that disables the output activation from the moment of the instrument start.

C 1	0	240	min.	5	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.

C 2	0	240	min.	3	disabling time to the output activation from the previous deactivation
-----	---	-----	------	---	--

It establishes the time that disables the output activation from the moment of the previous output deactivation.

C 4	0	1	---	0	disabling time to the output activation and deactivation
-----	---	---	-----	---	--

It establishes if to disable the output activation and deactivation for a fixed time, as indicated:
0 = inactive
1 = the output activation and deactivation get disabled for 3 sec.

C 5	1	240	min.	10	cycle time for the output activation during a cabinet probe failure alarm
-----	---	-----	------	----	---

It establishes the cycle time for the output activation due to the contribution of the percentage established with the parameter *C 6* during a cabinet probe failure alarm.

C 6	0	100	%	50	percentage of the cycle time during which the output gets activated during a cabinet probe failure alarm
-----	---	-----	---	----	--

It establishes the percentage of the cycle time established with the parameter *C 5* during which the output must remain continuously activated in the course of the cycle time during a cabinet probe failure alarm, except what established with the disabling times to the compressor output activation.

LABEL MIN.	MAX.	U.M.	ST.	DEFROST REGULATOR
d 0	0 99	hours	8	defrost interval

It is significant exclusively if the parameter *d E* has values different to 3.

If the parameter *d E* has value 0 it establishes the time interval that pass from the moment of the instrument start 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.

If the parameter *d E* has value 1 it establishes for which time interval the compressor output must be remained activated from the moment of the instrument start or from the moment in which the instrument activates a defrost cycle in order that the instrument can automatically activate the following defrost cycle.

If the parameter *d E* has value 2 it establishes for which time interval the temperature read by the evaporator probe must be remained below the setpoint established with the parameter *d F* from the moment of the instrument start or from the moment of a defrost cycle end in order that the instrument can automatically present the following request of a defrost cycle.

If the parameter *d 0* has value 0 the instrument never automatically presents a request of a defrost cycle, except what established with the parameter *d 4*.

d 1	0	1	---	1	kind of defrost
-----	---	---	-----	---	-----------------

It establishes the kind of defrost that the instrument must manage, as indicated:

0 = to resistances (electrical)
1 = to hot gas (reversal of cycle).

automatic, manual and remote.

Defrost management: for interval, stopping temperature, maximum length and interval kind of count.

Serial port: TTL with EVCOBUS protocol communication, for the connection to the CLONE configurator/cloner and RICS supervision systems.

HOW TO ORDER

CODING SYSTEM

Instrument name: EC 3-195.

Desired measure input: P (for PTC/NTC probes).

Desired power supply: 012 (12 Vac/dc).

Options: custom configuration, presetting to accept at the measure inputs Pt 1000 probes.

d 2 -99 +99.9 (*) +2.0 defrost stopping setpoint

It is significant exclusively if the parameter /Ab has value 1, it establishes the temperature to which a defrost gets stopped and it is referred to the evaporator probe.

d 3 0 99 min. 30 defrost maximum length

It establishes the defrost maximum length.

Passed the defrost maximum length from the moment in which the instrument activates a defrost cycle, if the temperature read by the evaporator probe is below the setpoint established with the parameter d 2 the defrost ends.

If the parameter d 3 has value 0 the instrument never presents a request of a defrost cycle.

d 4 0 1 --- 0 defrost cycle at the instrument start

It establishes if the instrument automatically must present a request of a defrost cycle at the moment of the instrument start, as indicated:

0 = inactive

1 = the instrument automatically presents a request of a defrost cycle at the moment of the instrument start.

d 5 0 99 min. 0 delay to a defrost cycle activation from the instrument start

If the parameter d 4 has value 0 and if the parameter d E has value 0, it establishes a time interval to add to the interval established with the parameter d 0; the value so obtained establishes the time interval that pass from the moment of the instrument start to the moment in which the instrument automatically presents the following request of a defrost cycle.

If the parameter d 4 has value 0 and if the parameter d E has value 1, it establishes a time interval to add to the interval established with the parameter d 0; the value so obtained establishes for which time interval the compressor output must be remained activated from the moment of the instrument start in order that the instrument can automatically activate the following defrost cycle.

If the parameter d 4 has value 0 and if the parameter d E has value 2, it establishes a time interval to add to the interval established with the parameter d 0; the value so obtained establishes for which time interval the temperature read by the evaporator probe must be remained below the setpoint established with the parameter d F from the moment of the instrument start in order that the instrument can automatically present the following request of a defrost cycle.

If the parameter i 0 has value 1 it establishes the delay with which the instrument presents a request of a defrost cycle from the moment of the multifunction digital input activation.

If the parameter d 4 has value 1 it establishes the delay with which the instrument automatically presents a request of a defrost cycle from the moment of the instrument start.

A manual presentation of a request of a defrost cycle during the count of the delay established with the parameter d 5 clears the delay.

d 6 0 1 --- 1 locking of the displayed temperature from a defrost cycle activation

It establishes if to lock the displayed temperature from the moment in which the instrument activates a defrost cycle, as indicated:

0 = inactive

1 = if in the moment in which the instrument activates a defrost cycle the temperature read by the cabinet probe is below the value obtained adding the working setpoint to the hysteresis (differential) established with the parameter r 0 the value so obtained establishes the temperature above which the locking of the displayed temperature gets activated, if in the moment in which the instrument activates a defrost cycle the temperature read by the cabinet probe is above the value obtained adding the working setpoint to the hysteresis (differential) established with the parameter r 0 every value to which the temperature read by the cabinet probe increases establishes the temperature above which the locking of the displayed temperature gets activated, except if the increasing happens below the value obtained adding the working setpoint to the hysteresis (differential) established with the parameter r 0 when it is worth what saw in the previous case; the unlocking of the displayed temperature happens from the moment of a defrost cycle end when the temperature read by the cabinet probe falls below the temperature above which the locking of the displayed temperature gets activated (if during a defrost cycle the working setpoint gets modified it is worth what saw in the previous cases except that the unlocking of the displayed temperature happens from the moment of a defrost cycle end).

A temperature alarm activation that happens during a locking of the displayed temperature gives the unlocking of the displayed temperature.

d 7 0 15 min. 2 dripping length

It establishes the dripping length.

d 9 0 1 --- 0 disabling times to the compressor output activation override

It is significant exclusively if the parameter d 1 has value 1, it establishes if to clear the disabling times to the compressor output activation in the moment in which the instrument presents a request of a defrost cycle, as indicated:

0 = inactive

1 = in the moment in which the instrument presents a request of a defrost cycle the disabling times to the compressor output activation get cleared.

d E 0 3 --- 0 defrost interval kind of count

It establishes the defrost interval kind of count that the instrument must manage, as indicated: 0 = periodic (the defrost interval establishes the time interval that pass from the moment of the instrument start 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)

1 = for sum of the lengths of the compressor output activation (the defrost interval establishes for which time interval the compressor output must be remained activated from the moment of the instrument start or from the moment in which the instrument activates a defrost cycle in order that the instrument can automatically activate the following defrost cycle)

2 = for sum of the lengths of the persistence of the temperature read by the evaporator probe below the setpoint established with the parameter d F (the defrost interval establishes for which time interval the temperature read by the evaporator probe must be remained below the setpoint established with the parameter d F from the moment of the instrument start or from the moment of a defrost cycle end in order that the instrument can automatically present the following request of a defrost cycle

2 = real time (the instrument automatically presents a request of a defrost cycle at every

time established with the parameters Hd1, Hd2, Hd3, Hd4, Hd5 and Hd6, according with the real hour and minute established with the label rtc, see the chapter REAL HOUR AND MINUTE).

d F -99 +99.9 (*) 0.0 defrost interval count enabling setpoint

It is significant exclusively if the parameter d E has value 2, it establishes the temperature above which the defrost interval count gets disabled and it is referred to the evaporator probe.

LABEL MIN. MAX. U.M. ST. ALARM REGULATOR

A 0 +0.1 +15.0 (*) +2.0 hysteresis (differential)

It establishes the hysteresis (differential) relative to the parameters A1A and A1b.

A1A -99 +99.9 (*) -10 lower temperature alarm setpoint

If the parameter A2A has value 1 it establishes a threshold to add algebraically to the working setpoint and to the setpoint established with the parameter r 8; the value so obtained establishes the temperature below which the lower temperature alarm gets activated and it is referred to the cabinet probe.

If the parameter A2A has value 2 it establishes the temperature below which the lower temperature alarm gets activated and it is referred to the cabinet probe.

If the parameter A2A has value 0 the lower temperature alarm never gets activated.

A2A 0 2 --- 1 kind of lower temperature alarm

It establishes the kind of lower temperature alarm that the instrument must manage, as indicated:

0 = the lower temperature alarm never gets activated

1 = lower temperature alarm relative to the working setpoint and to the setpoint established with the parameter r 8

2 = absolute lower temperature alarm.

A1b -99 +99.9 (*) +10.0 upper temperature alarm setpoint

If the parameter A2b has value 1 it establishes a threshold to add algebraically to the working setpoint and to the setpoint established with the parameter r 8; the value so obtained establishes the temperature above which the upper temperature alarm gets activated and it is referred to the cabinet probe.

If the parameter A2b has value 2 it establishes the temperature above which the upper temperature alarm gets activated and it is referred to the cabinet probe.

If the parameter A2b has value 0 the upper temperature alarm never gets activated.

A2b 0 2 --- 1 kind of upper temperature alarm

It establishes the kind of upper temperature alarm that the instrument must manage, as indicated:

0 = the upper temperature alarm never gets activated

1 = upper temperature alarm relative to the working setpoint and to the setpoint established with the parameter r 8

2 = absolute upper temperature alarm.

A 3 0 240 min. 120 disabling time to the upper alarm activation from the instrument start

It establishes the time that disables the upper temperature alarm activation from the moment of the instrument start.

A lower temperature alarm activation that happens during the count of the time established with the parameter A 3 clears the time.

A 5 -1 120 min. 30 disabling time to the buzzer activation for the multifunction digital input alarm indication

It is significant exclusively if the parameter i 0 has values different to 0, it establishes the time that disables the buzzer activation for the multifunction digital input alarm indication from the moment in which the multifunction digital input alarm happens.

If the parameter A 5 has value -1 during a multifunction digital input alarm the buzzer gets not activated.

A 6 0 240 min. 5 disabling time to the temperature alarm activation

It establishes the time that disables the temperature alarm activation from the moment in which the temperature alarm happens.

A 7 0 240 min. 15 disabling time to the upper temperature alarm activation from the defrost cycle end

It establishes the time that disables the upper temperature alarm activation from the moment of the defrost cycle end.

A lower temperature alarm activation that happens during the count of the time established with the parameter A 7 clears the time.

A 8 0 3 --- 0 kind of temperature alarm to store

It establishes during which temperature alarm the instrument must store the temperature read by the cabinet probe, as indicated:

0 = the instrument never store the temperature read by the cabinet probe

1 = the instrument store the temperature read by the cabinet probe during a lower temperature alarm

2 = the instrument store the temperature read by the cabinet probe during an upper temperature alarm

3 = the instrument store the temperature read by the cabinet probe during a lower temperature alarm and during an upper temperature alarm.

If the parameter A 8 has value 0 to the following getting out to the configuration parameters setting procedure the temperature read by the cabinet probe stored during a temperature alarm gets erased.

If the parameter A 8 has value 1 to the following getting out to the configuration parameters setting procedure the temperature read by the cabinet probe stored during an upper temperature alarm gets erased.

If the parameter A 8 has value 2 to the following getting out to the configuration parameters setting procedure the temperature read by the cabinet probe stored during a lower temperature alarm gets erased.

To display and to erase the temperature read by the cabinet probe stored during a temperature alarm see the chapter ADDITIONAL FUNCTIONS.

A 9 1 15 sec. 1 storing interval

It is significant exclusively if the parameter A 8 has values different to 0, it establishes the time interval that pass from the moment in which the temperature alarm happens or from the moment in which the instrument store the temperature read by the cabinet probe during a tem-

perature alarm to the moment in which the instrument store the following temperature read by the cabinet probe during a temperature alarm.

During a lower temperature alarm, the stored temperature gets refused if it is higher the previous value.

During an upper temperature alarm, the stored temperature gets refused if it is lower the previous value.

A A	0	240	min.	0	disabling time to the temperature alarm activation from the multifunction digital input activation/deactivation and from the Energy Saving cycle activation/end
------------	----------	------------	-------------	----------	--

It is significant exclusively if the parameter i 0 has value 6 or 7 or if the parameter Hr2 has values different to 0,0, it establishes the time that disables the lower/upper temperature alarm relative to the working setpoint and to the setpoint established with the parameter r 8 activation from the moment of the multifunction digital input activation/deactivation, from the moment in which the instrument activates an Energy Saving cycle and from the moment of the Energy Saving cycle end.

A b	0	1	---	1	disabling times typology
------------	----------	----------	------------	----------	---------------------------------

It establishes a bond between the times established with the parameters A 5 and A 6, as indicated:

0 = inactive

1 = a temperature alarm activation that happens during a multifunction digital input alarm gets disabled for the time established with the parameter A 6 from the moment in which the multifunction digital input alarm disappears and a temperature alarm activation that happens during a multifunction digital input alarm that does not disappear at the end of the time established with the parameter A 5 gets further disabled for the time established with the parameter A 6.

LABELMIN.	MAX.	U.M.	ST.	EVAPORATOR FANS REGULATOR ASSOCIATED TO THE EVAPORATOR FANS OUTPUT
------------------	-------------	-------------	------------	---

F 1	-99	+99.9 (*)	-1.0	output deactivation setpoint
------------	------------	------------------	-------------	-------------------------------------

It is significant exclusively if the parameter /Ab has value 1 and if the parameter F 7 has value 3 or 4, according with the modality established with the parameter F 6, it establishes the temperature to which the output gets deactivated and it is referred to the evaporator probe.

F 2	+0.1	+15.0 (*)	+2.0	hysteresis (differential)
------------	-------------	------------------	-------------	----------------------------------

It is significant exclusively if the parameter /Ab has value 1 and if the parameter F 7 has value 3 or 4, it establishes the hysteresis (differential) relative to the parameter F 1.

F 4	0	2	---	0	output functioning during the defrost and the dripping
------------	----------	----------	------------	----------	---

It establishes the output functioning during a defrost and a dripping, as indicated:

0 = during a defrost and a dripping the output gets forced to the status OFF

1 = during a defrost and a dripping the output gets forced to the status ON

2 = the output functioning during a defrost and a dripping gets established with the parameter F 7.

F 5	0	15	min.	2	evaporator fans stoppage length
------------	----------	-----------	-------------	----------	--

It establishes the evaporator fans stoppage length.

F 6	0	1	---	0	kind of output deactivation setpoint
------------	----------	----------	------------	----------	---

It is significant exclusively if the parameter /Ab has value 1 and if the parameter F 7 has value 3 or 4, it establishes the kind of output deactivation setpoint that the instrument must manage, as indicated:

0 = absolute (the output deactivation setpoint establishes the temperature to which the output gets deactivated)

1 = relative to the temperature read by the cabinet probe (the value obtained subtracting the absolute value of the output deactivation setpoint to the temperature read by the cabinet probe establishes the temperature to which the output gets deactivated).

F 7	0	4	---	1	output functioning during the normal functioning
------------	----------	----------	------------	----------	---

It establishes the output functioning during the normal functioning, as indicated:

0 = during the normal functioning the output gets forced to the status OFF

1 = during the normal functioning the output gets forced to the status ON

2 = during the normal functioning the output gets forced to the status ON and during the status OFF of the compressor output the output gets forced to the status OFF

3 = during the normal functioning the output is associated to the setpoint established with the parameter F 1, it remains continuously activated as long as the temperature read by the evaporator probe reaches the setpoint established with the parameter F 1 and when it falls below the setpoint established with the parameter F 1 of the hysteresis value (differential) established with the parameter F 2 the output gets reactivated

4 = during the normal functioning the output is associated to the setpoint established with the parameter F 1, it remains continuously activated as long as the temperature read by the evaporator probe reaches the setpoint established with the parameter F 1, when it falls below the setpoint established with the parameter F 1 of the hysteresis value (differential) established with the parameter F 2 the output gets reactivated and during the status OFF of the compressor output the output gets forced to the status OFF

LABELMIN.	MAX.	U.M.	ST.	DIGITAL INPUTS
------------------	-------------	-------------	------------	-----------------------

i 0	0	7	---	4	action given during the multifunction digital input activation
------------	----------	----------	------------	----------	---

It establishes the action given during the multifunction digital input activation, as indicated:

0 = inactive

1 = if the conditions permit it (the temperature read by the evaporator probe must be below the setpoint established with the parameter d 2) activating the multifunction digital input the instrument presents a request of a defrost cycle

2 = during the multifunction digital input activation, if one output is associated to the cabinet light the cabinet light output gets forced to the status ON

3 = during the multifunction digital input activation the compressor output, except what established with the disabling times to the compressor output activation gets forced to the status ON and if one output is associated to the cabinet light the cabinet light output gets forced to the status ON

4 = during the multifunction digital input activation the compressor and evaporator fans outputs get forced to the status OFF and if one output is associated to the cabinet light the cabinet light output gets forced to the status ON

5 = during the multifunction digital input activation the evaporator fans output gets forced to the status OFF and if one output is associated to the cabinet light the cabinet light output gets forced to the status ON

6 = during the multifunction digital input activation the setpoint established with the

parameter r 8 establishes the temperature associated to the compressor output during the multifunction digital input activation the setpoint established with the parameter r 8 establishes the temperature associated to the compressor output and if one output is associated to the cabinet light the cabinet light output gets forced to the status OFF.

If the parameter i 0 has value 3 or 4 the multifunction digital input alarm activation that happens during a defrost cycle interacts on the compressor output status from the moment of the defrost cycle end.

i 1	0	1	---	0	kind of contact of the multifunction digital input
------------	----------	----------	------------	----------	---

It establishes the kind of contact of the multifunction digital input, as indicated:

0 = NO contact

1 = NC contact.

i 6	0	1	---	1	displaying of the indication "Ain" flashing during a multifunction digital input alarm
------------	----------	----------	------------	----------	---

It is significant exclusively if the parameter i 0 has values different to 0, it establishes if the instrument must display must display the indication "Ain" flashing during a multifunction digital input alarm, as indicated:

0 = inactive

1 = during a multifunction digital input alarm the instrument displays the indication "Ain" flashing.

LABELMIN.	MAX.	U.M.	ST.	CONNECTION IN A SERIAL NETWORK WITH EVCOBUS PROTOCOL COMMUNICATION
------------------	-------------	-------------	------------	---

L 1	1	15	---	1	instrument address
------------	----------	-----------	------------	----------	---------------------------

It establishes the address to which the instrument (slave) answers when it is connected to a serial network with EVCOBUS protocol communication managed from a master (for instance a Personal Computer).

L 2	0	7	---	0	instrument group
------------	----------	----------	------------	----------	-------------------------

It establishes the group to which the instrument (slave) answers when it is connected to a serial network with EVCOBUS protocol communication managed from a master (for instance a Personal Computer).

L 4	0	3	---	1	baud rate
------------	----------	----------	------------	----------	------------------

It establishes the speed with which the data get transmitted in a serial network with EVCOBUS protocol communication, as indicated:

0 = 1,200 baud

1 = 2,400 baud

2 = 4,800 baud

3 = 9,600 baud.

LABELMIN.	MAX.	U.M.	ST.	ENERGY SAVING CYCLE MANAGER
------------------	-------------	-------------	------------	------------------------------------

Hr1	0.0	23.5	hours	0.0	Energy Saving cycle activation time (\$)
------------	------------	-------------	--------------	------------	---

It establishes the time in which the instrument activates an Energy Saving cycle, according with the real hour and minute established with the label **rtc** (see the chapter REAL HOUR AND MINUTE, for instance in order that the instrument activate the Energy Saving cycle at 16.30 set the parameter Hr1 to 16.3).

Hr2	0.0	23.5	hours	0.0	Energy Saving cycle length (\$)
------------	------------	-------------	--------------	------------	--

It establishes the Energy Saving cycle length (for instance in order that the Energy Saving cycle length be of 2 hours and 30 minutes set the parameter Hr2 to 2.3).

LABELMIN.	MAX.	U.M.	ST.	REAL TIME DEFROST
------------------	-------------	-------------	------------	--------------------------

Hd1	0.0	23.5	hours	---	first defrost cycle request presentation time (\$)
------------	------------	-------------	--------------	------------	---

It is significant exclusively if the parameter d E has value 3, it establishes the time in which the instrument automatically presents the request of the first defrost cycle, according with the real hour and minute established with the label **rtc** (see the chapter REAL HOUR AND MINUTE, for instance in order that the instrument automatically present the request of the first defrost cycle at 10.30 set the parameter Hd1 to 10.3).

If the parameter Hd1 has value --- the instrument never automatically presents the request of the first defrost cycle.

Hd2	0.0	23.5	hours	---	second defrost cycle request presentation time (\$)
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Hd3	0.0	23.5	hours	---	third defrost cycle request presentation time (\$)
------------	------------	-------------	--------------	------------	---

Hd4	0.0	23.5	hours	---	fourth defrost cycle request presentation time (\$)
------------	------------	-------------	--------------	------------	--

Hd5	0.0	23.5	hours	---	fifth defrost cycle request presentation time (\$)
------------	------------	-------------	--------------	------------	---

Hd6	0.0	23.5	hours	---	sixth defrost cycle request presentation time (\$)
------------	------------	-------------	--------------	------------	---

LABELMIN.	MAX.	U.M.	ST.	ADDITIONAL INFORMATIONS
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- *the symbol (\$)* indicates that the parameter is of the first level
- *the symbol (*)* indicates that the unit of measure depends from the parameter / 8
- *a temperature alarm activation that does not disappear at the end of the time established with the parameter A 3 gets further disabled for the time established with the parameter A 6*
- *a temperature alarm activation that happens before that the instrument activate a defrost cycle gets disabled for the time established with the parameter A 6 but it does not interact on the defrost cycle*
- *a temperature alarm activation that happens during or at the end of a defrost cycle and that does not disappear at the end of the time established with the parameter A 7 gets further disabled for the time established with the parameter A 6*
- *a temperature alarm activation that does not disappear at the end of the time established with the parameter A A gets further disabled for the time established with the parameter A 6*

ADDITIONAL FUNCTIONS

ADDITIONAL FUNCTIONS USE

To gain access to the additional functions keep pushed for two seconds at least the key **T1**

(passed two seconds the instrument displays the label of the first additional function).

To select a label push and release over and over the key **T1** or **T2** as long as the instrument displays the label of the desired additional function.

To display the label **Pr2**, **AL** and **AH** value keep pushed the key **T3**.

To erase the label **AL** and **AH** value keep pushed for four seconds at least the key **T3** (passed four seconds the instrument displays ---).

To modify the label **rtc** value see the chapter REAL HOUR AND MINUTE.

To turn out from the additional functions using procedure push and release over and over the key **T1** or **T2** as long as the instrument displays the temperature read by the cabinet probe (pushing and releasing the key **T1** or **T2** during the two seconds following the release of the key **T1** or **T2** the instrument gain accesses to the additional functions again) or do not operate with the keys for thirty seconds at least (time-out exit).

ADDITIONAL INFORMATIONS

- *for the whole period of a corrupted memory data alarm the access to the additional functions using procedure is refused.*

ADDITIONAL FUNCTIONS				
LABELMIN.	MAX.	U.M.	ST.	PROBES READING
Pr2	---	---	(*)	evaporator probe reading

It permits to display the temperature read by the evaporator probe.

LABELMIN.	MAX.	U.M.	ST.	STORED TEMPERATURES DURING A TEMPERATURE ALARM
------------------	-------------	-------------	------------	---

AL	---	---	(*)	---	stored temperature during a lower temperature alarm
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It permits to display and to erase the temperature read by the cabinet probe stored during a lower temperature alarm.

AH	---	---	(*)	---	stored temperature during an upper temperature alarm
-----------	------------	------------	------------	------------	---

It permits to display and to erase the temperature read by the cabinet probe stored during an upper temperature alarm.

ADDITIONAL INFORMATIONS

- *if the parameter /Ab has value 0 the label Pr2 does not exist*
- *the symbol (*) indicates that the unit of measure depends from the parameter / 8*
- *if the parameter A 8 has value 0 or 2 the label AL does not exist*
- *if the parameter A 8 has value 0 or 1 the label AH does not exist.*

REAL HOUR AND MINUTE

REAL HOUR AND MINUTE SETTING

To modify the real hour and minute value gain access to the additional functions and select the label **rtc** (see the chapter ADDITIONAL FUNCTIONS).

To modify the real hour value keep pushed the key **T3** (the instrument displays the actual value) and at the same time push and release over and over the key **T1** or **T2** as long as the instrument 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 (passed the two seconds from the release of the key **T3** without operated with the keys the instrument automatically turns out from the real hour setting procedure).

To modify the real minute value release and keep pushed the key **T3** during the real hour displaying (the instrument displays the actual value) and at the same time push and release over and over the key **T1** or **T2** as long as the instrument 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 instrument automatically turns out from the real hour and minute setting procedure).

ADDITIONAL INFORMATIONS

- *for the whole period of a corrupted memory data alarm the access to the real hour and minute setting procedure is refused*
- *the real hour or minute value modify clears the seconds*
- *if a lack of power supply happens the real hour and minute value gets held for 24 hours, after a loading interval of 2 min. at least.*

REAL HOUR AND MINUTE					
LABELMIN.	MAX.	U.M.	ST.	REAL HOUR AND MINUTE	
rtc	0:0	23:59	h:m	0:0	real hour and minute

It establishes the real hour and minute.

SIGNALS AND ALARMS

SIGNALS

- If the LED **L1** is turned ON it means that the compressor output is activated.
- If the LED **L2** is turned ON it means that the defrost output is activated.
- If the LED **L3** is turned ON it means that the evaporator fans output is activated.
- If the LED **L1** flashes it means that a count of a disabling time to the compressor output activation is running (see the parameters C 0, C 1, C 2 and C 4).
- If the LED **L2** flashes it means that a count of a delay time to a defrost cycle activation is running (see the parameters C 0, C 1, C 2 and C 4), that a dripping is running (see the parameter d 7).
- If the LED **L3** flashes it means that an evaporator fans stoppage is running (see the parameter F 5).

ALARMS

If the instrument 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 by the turning ON again the alarm does not disappear the instrument must be replaced); during this alarm the access to the setting and using procedures is refused, all outputs get forced to the status OFF.

If the instrument displays the indication "E0" flashing alternated to the indication "---" and the buzzer utters an intermittent beep (**cabinet probe failure alarm**) it means that the kind of connected cabinet probe is not proper (see the parameter / 0), 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 the compressor output functioning gets established with the parameters C 5 and C 6, if a defrost cycle is running the defrost cycle ends and the instrument never activates a defrost cycle.

If the instrument displays the indication "E1" flashing alternated to the temperature read by the cabinet 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 the parameter F 7 has value 3 or 4 the evaporator fans output gets forced to the same status of the compressor output, except what established with the parameters F 4 and F 5 and the defrost ends passed the defrost maximum length.

If the instrument displays the indication "Ain" flashing alternated to the temperature read by the cabinet probe and the buzzer utters an intermittent beep (**multifunction digital input alarm**) it means that the multifunction digital input is active (deactivate the multifunction digital input, see the parameters i 0 and i 1); during this alarm gets given the action established with the parameter i 0.

If the instrument displays the temperature read by the cabinet probe and the buzzer utters an intermittent beep (**multifunction digital input alarm**), it means that the multifunction digital input is active (deactivate the multifunction digital input, see the parameters i 0 and i 1); during this alarm gets given the action established with the parameter i 0.

If the instrument displays the indication "AH" flashing alternated to the temperature read by the cabinet probe and the buzzer utters an intermittent beep (**upper temperature alarm**) it means that the temperature read by the cabinet probe is outside the limit established with the parameter Ab1 (see the parameters A 0, A1b and A2b); inactive.

If the instrument displays the indication "AH" flashing, the temperature read by the cabinet probe flashing every three seconds and the buzzer utters an intermittent beep (**stored temperature during an upper temperature alarm**) it means that there was an upper temperature alarm (see the parameters A 0, A1b, A2A, A 8 and A 9); inactive, to display and to erase the temperature read by the cabinet probe stored during an upper temperature alarm see the chapter ADDITIONAL FUNCTIONS.

If the instrument displays the indication "AL" flashing alternated to the temperature read by the cabinet probe and the buzzer utters an intermittent beep (**lower temperature alarm**) it means that the temperature read by the cabinet probe is outside the limit established with the parameter AbA (see the parameters A 0, A1A and A2A); inactive.

If the instrument displays the indication "AL" flashing, the temperature read by the cabinet probe flashing every three seconds and the buzzer utters an intermittent beep (**stored temperature during a lower temperature alarm**) it means that there was a lower temperature alarm (see the parameters A 0, A1A, A2A, A 8 and A 9); inactive, to display and to erase the temperature read by the cabinet probe stored during a lower temperature alarm see the chapter ADDITIONAL FUNCTIONS.

If the instrument displays the indication "rtc" flashing and the buzzer utters an intermittent beep ("Real Time Clock" failure) it means that there is a corruption of the instrument clock data (set the real hour and minute again; if the turning ON again the alarm does not disappear the instrument must be replaced); during this alarm, if the parameter d E has value 3 the instrument manages periodicals defrost interval and the instrument never activates an Energy Saving cycle.

ADDITIONAL INFORMATIONS

- *if more alarms should be active the instrument displays the alarm codes flashing and the buzzer utters an intermittent beep, except for the corrupted memory data alarm.*

TECHNICAL DATA

TECHNICAL DATA	
Case:	plastic black (PC-ABS), self-extinguishing.
Size:	74 x 32 x 65 mm (2,91 x 1,25 x 2,55 in.).
Installation:	panel mounting, panel cutout 71 x 29 mm (2,79 x 1,14 in.), with the equipped screw or spring brackets.

Type of protection:	IP 54.
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Connections:	screw terminal blocks with pitch 5 mm (0,19 in., power supply, inputs and outputs) for cables up to 2,5 mm ² (0,38 in. ²), five poles single line male connector with pitch 5,08 mm (0,2 in., serial port).
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Ambient temperature:	from 0 to +60 °C (+32 to +140 °F, 10 ... 90 % of not condensing relative humidity).
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Power supply:	12 Vac/dc, 50/60 Hz, 1,5 VA.
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"Real Time Clock" data holding without power supply:	24 hours, after a loading interval of 2 min. at least.
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Insulation class:	II.
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Alarm buzzer:	incorporated.
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Measure inputs:	2 (cabinet and evaporator probe) configurable for PTC/NTC probes.
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Digital inputs:	1 multifunction (5 V, 1 mA) configurable to interact on the outputs activity and for NO or NC contact.
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Working range:	from -50 to +150 °C (-58 to +199 °F) for PTC probe, from -40 to +110 °C (-40 to +199 °F) for NTC probe.
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Setting range:	from -99 to +99,9 °C (-99 to +99 °F).
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Resolution:	1 °F with unit of measure in Fahrenheit, configurable for 0,1 or 1 °C with unit of measure in Celsius.
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Display:	3-digit display 12,5 mm (0,49 in.) high red LED display with automatic decimal point and minus sign, output status indicators.
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Outputs:	three 8 (3) A @ 250 Vac relays for one ½ HP @ 250 Vac compressor (NO contact), evaporator fans (change-over contact) and defrost system (NO contact) management.
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Kind of defrost managed:	to resistances (electrical) and to hot gas (reversal of cycle),
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