DIMENSIONAL DATA

OVERALL DIMENSIONS AND PANEL CUTOUT

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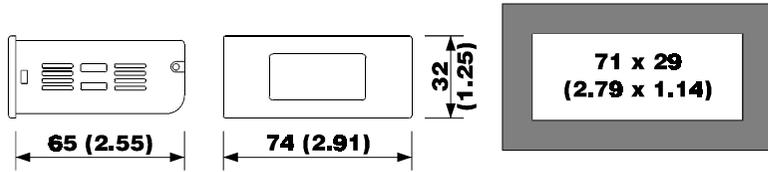

Fig. 3
ds3ve.wmf

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).
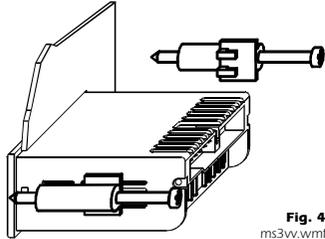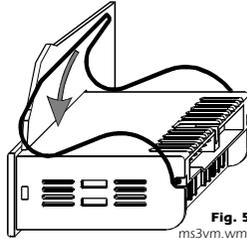

Fig. 4
ms3vv.wmf

Fig. 5
ms3vm.wmf

ELECTRICAL CONNECTION

CONNECTIONS TO DERIVE
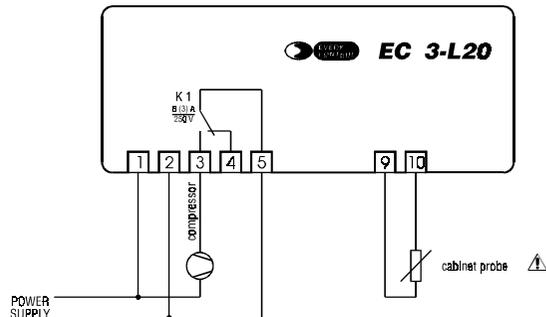
Instance of typical application.

Fig. 6
c3-l20e.wmf

BUILDER DATA

EVERY CONTROL S.r.l.

Via Mezzaterra 6, 32036 Sedico Belluno ITALY

Phone 0039/0437852468 (a.r.) Fax 0039/043783648

Internet addresses

e-mail: every@worknet.it

http://www.everycontrol.it

TO BE CAREFUL

This publication exclusively belongs to EVERY CONTROL and shall not be reproduced and distributed if not expressly authorized by the same EVERY CONTROL.

EVERY CONTROL does not assume any responsibility in order to the characteristics, to the technical data and to the possible mistakes related herein or deriving from the use of the same.

EVERY CONTROL can not be considered responsible for damages caused from the inobservance of the additional informations.

EVERY CONTROL reserves the right to make any modification without prior notice and at any time without prejudice the basic functioning and safety characteristics.

EC 3-L20

ON-OFF digital thermostat for compressor and defrost (by stopping compressor) management supplied from main voltage

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-l20.wmf

GENERAL INFORMATIONS

WHAT IS THE USE

EC 3-L20 is an ON-OFF digital thermostat studied for refrigerating systems management through the compressor and defrost (by stopping compressor) management; the instrument can be supplied from main voltage (230 Vac).

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

Some parameters permit to set the thermostat to protect the compressor against overloads due to several starts repeated in a short time, to manage the defrost according with one's requirements.

EC 3-L20 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-L20 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-L20 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, measure input and output), 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 1 and 2 are derived to the local power supply, even if the instrument is apparently turned off*
- *the probe is connected to a main voltage terminal; use double insulation probes*
- *give the output a protection able to protect it 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.
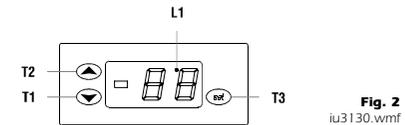

Fig. 2
iu3l30.wmf

If an alarm should be active the instrument displays the alarm code flashing as long as the cause that has given it does not disappear (see the chapter SIGNALS AND ALARMS).

EC 3-L20 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.

Passed the defrost interval from the moment of the instrument start or from the moment in which the instrument activates a defrost the instrument automatically activates the following defrost.

Passed the defrost length from the moment in which the instrument activates a defrost the defrost ends; during a defrost the output K 1 gets forced to the status OFF.

Keeping pushed the key **T2** for four seconds at least the instrument activates a defrost.

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 r1 and r2*
- *the working setpoint value gets stored in a non volatile memory even if a lack of power supply happens.*

CONFIGURATION PARAMETERS SETTING

Keep pushed at the same time for four seconds at least the keys **T1** and **T2** (passed four seconds the instrument displays the label **/1**).

To select a parameter 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).

- *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

WORKING SETPOINT

LABEL	MIN.	MAX.	U.M.	ST.	WORKING SETPOINT
	r1	r2	°C	0	**working setpoint**

It establishes the temperature associated to the output K 1.

CONFIGURATION PARAMETERS

LABEL	MIN.	MAX.	U.M.	ST.	MEASURE INPUT
/1	-15	+15	°C	0	**calibration**

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

LABEL	MIN.	MAX.	U.M.	ST.	ON-OFF TEMPERATURE REGULATOR ASSOCIATED TO THE WORKING SETPOINT AND TO THE OUTPUT K 1
r0	+1	+15	°C	+2	**hysteresis (differential)**

It establishes the hysteresis (differential) relative to the working setpoint.

r1	-40	+99	°C	-40	**minimum working setpoint programmable**

It establishes the minimum working setpoint programmable; the instrument automatically verifies if the value established with the parameter r1 is below the maximum working setpoint programmable established with the parameter r2.

r2	-40	+99	°C	+99	**maximum working setpoint programmable**

It establishes the maximum working setpoint programmable; the instrument automatically verifies if the value established with the parameter r2 is above the minimum working setpoint programmable established with the parameter r1.

LABEL	MIN.	MAX.	U.M.	ST.	OUTPUT K 1 PROTECTION
C0	0	15	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.

C2	0	15	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.

LABEL	MIN.	MAX.	U.M.	ST.	DEFROST REGULATOR
d0	0	99	(*)	8	**defrost interval**

It establishes the time interval that pass from the moment of the instrument start or from the moment in which the instrument activates a defrost to the moment in which the instrument automatically activates the following defrost.

If the parameter d0 has value 0 the instrument never automatically activates a defrost, except what established with the parameter d4.

d3	1	99	(*)	30	**defrost length**

It establishes the defrost length.

d4	0	1	---	0	**defrost at the instrument start**

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

0 = inactive
1 = the instrument automatically activates a defrost at the moment of the instrument start.

d5	0	99	(*)	0	**delay to a defrost activation from the instrument start**

If the parameter d4 has value 0 it establishes a time interval to add to the interval established with the parameter d0; 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 activates the following defrost.

If the parameter d4 has value 1 it establishes the delay with which the instrument automatically activates a defrost from the moment of the instrument start.

A manual activation of a defrost during the count of the delay established with the parameter d5 clears the delay.

d6	0	1	---	1	**locking of the displayed temperature from a defrost activation**

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

0 = inactive
1 = during a defrost and as long as the temperature read by the cabinet probe reaches the working setpoint, the instrument displays the temperature read by the cabinet probe in the moment in which the instrument activates a defrost.

db	0	1	---	0	**times base for the parameters d0, d3 and d5**

It establishes the unit of measure of the parameters d0, d3 and d5, as indicated:

0 = the unit of measure of the parameter d0 is the hour and the unit of measure of the parameters d3 and d5 is the minute
1 = the unit of measure of the parameter d0 is the minute and the unit of measure of the parameters d3 and d5 is the second.

- *the symbol (*) indicates that the unit of measure depends from the parameter db.*

SIGNALS AND ALARMS

SIGNALS

If the LED **L1** is turned ON it means that the output K 1 is activated.

If the LED **L1** flashes it means that a defrost is running.

ALARMS

If the instrument displays the indication "**E2**" flashing (**corrupted memory data alarm**) it means that there is a corruption of the configuration data in the memory (turn OFF and turn ON again the instrument: if to the turning ON again the alarm does not disappear the instrument must be replaced); during this alarm the access to the working setpoint setting and the configuration parameters setting procedures is refused and the output K 1 gets forced to the status OFF.

If the instrument displays the indication "**E0**" flashing (**cabinet probe failure alarm**) it means that: the kind of connected cabinet probe is not proper (verify the kind of connected cabinet probe), the cabinet probe is faulty (verify the cabinet probe integrity), there is a mistake in the instrument-cabinet probe connection (verify the instrument-cabinet probe connection integrity), the temperature read by the cabinet probe is outside the limits permitted by the cabinet probe in use (verify that the temperature near the cabinet probe be inside the limits permitted by the cabinet probe); during this alarm the output K 1 gets forced to the status OFF, if a defrost is running the defrost ends and the instrument never activates a defrost.

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

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.
Connections:	screw terminal blocks with pitch 5 mm (0.19 in., power supply, measure input and output) for cables up to 2.5 mm² (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, 50/60 Hz.
Measure inputs:	1 for NTC probes.
Working range:	from -40 a +99 °C.
Setting range:	from -40 a +99 °C
Resolution:	1 °C.
Display:	2-digit display 12.5 mm (0.49 in.) high red LED display with automatic minus sign, output status indicator, defrost status indicator.
Outputs:	one change-over contact 8 (3) A @ 250 Vac relay for one ½ HP @ 250 Vac compressor management.
Kind of defrost managed:	by stopping compressor, automatic and manual.
Defrost management:	for interval and length.

HOW TO ORDER

CODING SYSTEM

Instrument name:	EC 3-L20.
Desired measure input:	N (for NTC probes).
Desired power supply:	220 (230 Vac).