DIMENSIONAL DATA

OVERALL DIMENSIONS AND PANEL CUTOUT

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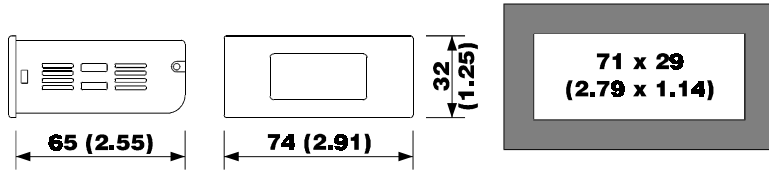

71 x 29
(2.79 x 1.14)

32 (1.25)

65 (2.55)   74 (2.91)

Fig. 3
ds3ve.wmf

INSTALLATION

WITH THE FIXING SYSTEMS SUGGESTED BY THE BUILDER

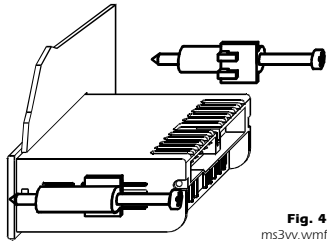Panel mounting, with the equipped screw (Fig. 4) or spring brackets (Fig. 5) (third-scale drawing).
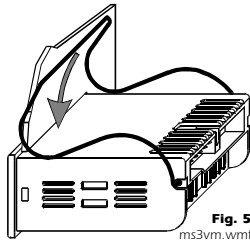

Fig. 4
ms3vv.wmf

Fig. 5
ms3vm.wmf

ELECTRICAL CONNECTION
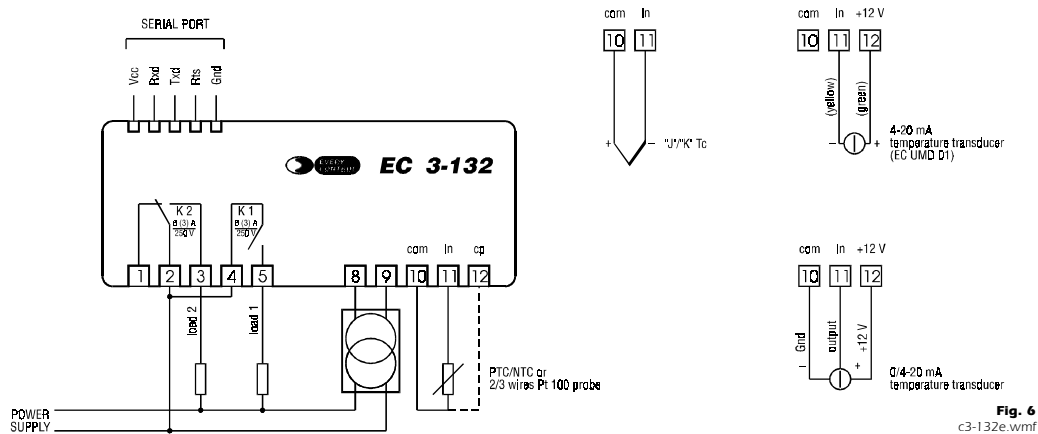
CONNECTIONS TO DERIVE

Instance of typical application.

SERIAL PORT

Vcc   Rxd   Txd   Rts   Gnd

EC 3-132

K 2
8 (3) A
250 V

K 1
8 (3) A
250 V

1 2 3 4 5   8 9 10 11 12

load 2   load 1

POWER
SUPPLY

PTC/NTC or
2/3 wires Pt 100 probe

com In
10 11

"J"/"K" Tc

com In +12 V
10 11 12

(yellow)   (green)

4-20 mA
temperature transducer
(EC UMD D1)

com In cp

com In +12 V
10 11 12

Gnd   output   +12 V

0/4-20 mA
temperature transducer

Fig. 6
c3-132e.wmf

BUILDER DATA

TO BE CAREFUL

EC 3-132

ON-OFF two outputs digital thermoregulator

Fig. 1
f3-132.wmf

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.

GENERAL INFORMATIONS

WHAT IS THE USE

EC 3-132 is an ON-OFF two outputs digital thermoregulator able to cover a temperature range from -99 to +999 °C (-99 to +999 °F).

In factory the instrument gets preset to accept at the measure input PTC/NTC probes or "J"/"K" thermocouples or 2/3 wires Pt 100 probes or 2 and 3 wires 0/4-20 mA temperature transducers (in this last case it is possible to set the reading scale).

This device can be set to execute one of the following kind of regulation: with an independent working setpoint and the second relative to the first, with two independent working setpoint (in these two cases each output can be set for "cooling" or "heating" functioning), with "neutral zone" functioning.

EC 3-132 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 3-132 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 3-132 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 outputs) and it is provided with one five poles single line male connector (for the connection to the CLONE configurer/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 8 and 9 are derived to the local power supply, even if the instrument is apparently turned off
- give the probe a protection able to insulate it 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 probe.
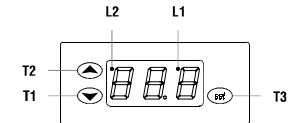

L2   L1

T2   T1   T3

Fig. 2
iu3132.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 3-132 is provided with two 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).

During the regulations with an independent working setpoint and the second relative to the first and with two independent working setpoint, the output K 1 is associated to the first working setpoint, the output K 2 is associated to the second working setpoint, they remain activated continuously as long as the temperature read by the probe reaches the working setpoint and when it rises above (if the outputs were set for "cooling" functioning) or it falls below (if the outputs were set for "heating" functioning) the respective working setpoint of the hysteresis value (differential) the outputs get reactivated.

During the regulation with "neutral zone" the output K 1 remains activated continuously as long as the temperature read by the probe reaches the working setpoint and when it rises above the working setpoint of the "neutral zone" value the output gets reactivated; likewise the output K 2 remains activated continuously as long as the temperature read by the probe reaches the working setpoint and when it falls below the working setpoint of the "neutral zone" value the output gets reactivated.

WORKING SETPOINT SETTING (WORKING TEMPERATURE)

To modify the first 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; for the two seconds following the release of the key **T3** the instrument displays the established value and the LED **L1** flashes quickly to indicate that a first working setpoint setting procedure is running (passed the two seconds from the release of the key **T3** without operated with the keys the instrument automatically turns out from the working setpoint setting procedure).

To modify the second working setpoint value release and keep pushed the key **T3** during the flashing of the LED **L1** (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 **L2** flashes quickly to indicate that a second 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
- if the parameter -/0 has value 3 the second working setpoint does not exist
- the first working setpoint is programmable within the limits established with the parameters rA1 and rA2

- *the second working setpoint is programmable within the limits established with the parameters rB1 and rB2*
- *if the parameter rA5 has value 1 the first working setpoint can not be modified as long as the parameter rA5 gets set to 0*
- *if the parameter rB5 has value 1 the second working setpoint can not be modified as long as the parameter rB5 gets set to 0*
- *the working setpoint values get stored in a non volatile memory even if a lack of power supply happens.*

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 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
rA1	rA2	°C	0		first working setpoint

If the parameter -/0 has value 1 or 2 it establishes the temperature associated to the output K 1, if the parameter -/0 has value 3 it establishes the temperature associated to the outputs K 1 and K2.

LABEL	MIN.	MAX.	U.M.	ST.	
rB1	rB2	°C	0		second working setpoint

It establishes the temperature associated to the output K 2.

CONFIGURATION PARAMETERS

LABEL	MIN.	MAX.	U.M.	ST.	PASSWORD
PA	-90	100	---	0	password (§)

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

LABEL	MIN.	MAX.	U.M.	ST.	KIND OF REGULATOR
-/0	1	3	---	2	kind of regulator

It establishes the kind of regulator, as indicated:
1 = first working setpoint independent and the second relative to the first
2 = first and second working setpoint independent
3 = "neutral zone".

LABEL	MIN.	MAX.	U.M.	ST.	MEASURE INPUT
/0	01	31	---	(*)	kind of probe

It establishes the kind of probe that the instrument must recognize to its measure input, as indicated:
01 = PTC probe 03 = NTC probe
10 = "J" thermocouple 11 = "K" thermocouple
20 = 3 wires Pt 100 probe 21 = 2 wires Pt 100 probe
30 = 2 and 3 wires 4-20 mA temperature transducer
31 = 2 and 3 wires 0-20 mA temperature transducer.

LABEL	MIN.	MAX.	U.M.	ST.	
/1	-9	+10	°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.	
/2	0	6	---	3	digital filter

It establishes a time constant to apply to the signal coming from the measure input, as indicated:
0 = 0 sec.   1 = 0.4 sec.
2 = 1.2 sec. 3 = 3.0 sec.
4 = 8.0 sec. 5 = 19.8 sec.

---

6 = 48.0 sec.

LABEL	MIN.	MAX.	U.M.	ST.	
/4	0	1	---	0	leading zeroes displaying

It establishes if to display the leading zeroes, as indicated:
0 = the leading zeroes get not displayed
1 = the leading zeroes get displayed.

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

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.

| /6 | -99 | +999 | points | -20 | lower end of scale for 0/4-20 mA input (it coincides with the minimum calibration value of the transducer) |

It establishes the lower end of scale for 0/4-20 mA input and it must coincide with the minimum calibration value of the transducer.

| /7 | -99 | +999 | points | +80 | upper end of scale for 0/4-20 mA input (it coincides with the maximum calibration value of the transducer) |

It establishes the upper end of scale for 0/4-20 mA input and it must coincide with the maximum calibration value of the transducer.

LABEL	MIN.	MAX.	U.M.	ST.	ON-OFF TEMPERATURE REGULATOR ASSOCIATED TO THE FIRST WORKING SETPOINT AND TO THE OUTPUT K 1
rA0	-99	+99	°C	(*)	hysteresis (differential) (§)

It establishes the hysteresis (differential) relative to the working setpoint.
It establishes with the value 3 the parameter rA0 establishes the "neutral zone" value.

| rA1 | -99 | +999 | °C | (*) | minimum working setpoint programmable |

It establishes the minimum working setpoint programmable; the instrument automatically verifies if the value established with the parameter rA1 is below the maximum working setpoint programmable established with the parameter rA2.

| rA2 | -99 | +999 | °C | (*) | maximum working setpoint programmable |

It establishes the maximum working setpoint programmable; the instrument automatically verifies if the value established with the parameter rA2 is above the minimum working setpoint programmable established with the parameter rA1.

| rA3 | 0 | 1 | --- | 1 | "cooling" or "heating" functioning |

It establishes the output functioning, as indicated:
0 = "cooling" functioning
1 = "heating" functioning.

| rA4 | 0 | 1 | --- | 0 | kind of hysteresis (kind of differential) |

It establishes the kind of hysteresis (kind of differential), as indicated:
0 = asymmetrical
1 = symmetrical.

| rA5 | 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 rA5 gets set to 0.

LABEL	MIN.	MAX.	U.M.	ST.	ON-OFF TEMPERATURE REGULATOR ASSOCIATED TO THE SECOND WORKING SETPOINT AND TO THE OUTPUT K 2
rB0	-99	+99	°C	(*)	hysteresis (differential) (§)

It has the same significance of the parameter rA0.

| rB1 | -99 | +999 | °C | (*) | minimum working setpoint programmable |

It has the same significance of the parameter rA1.

| rB2 | -99 | +999 | °C | (*) | maximum working setpoint programmable |

It has the same significance of the parameter rA2.

| rB3 | 0 | 1 | --- | 1 | "cooling" or "heating" functioning |

It has the same significance of the parameter rA3.

| rB4 | 0 | 1 | --- | 0 | kind of hysteresis (kind of differential) |

It has the same significance of the parameter rA4.

| rB5 | 0 | 1 | --- | 0 | locking of the working setpoint modification |

It has the same significance of the parameter rA5.

LABEL	MIN.	MAX.	U.M.	ST.	OUTPUT K 1 PROTECTION
CA0	0	999	sec.	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.

| CA1 | 0 | 999 | sec. | 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.

| CA2 | 0 | 999 | sec. | 0 | 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.

| CA3 | 0 | 1 | --- | 0 | output status during a probe failure alarm |

It establishes the status to which the output gets forced during a probe failure alarm, as indicated:
0 = during a probe failure alarm the output gets forced to the status OFF
1 = during a probe failure alarm the output gets forced to the status ON.

| CA4 | 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.

LABEL	MIN.	MAX.	U.M.	ST.	OUTPUT K 2 PROTECTION
CB0	0	999	sec.	0	disabling time to the output activation from the instrument start

It has the same significance of the parameter CA0.

| CB1 | 0 | 999 | sec. | 0 | disabling time to the output activation from the previous |

---

activation
It has the same significance of the parameter CB1.

CB2	0	999	sec.	0	disabling time to the output activation from the previous deactivation

It has the same significance of the parameter CB2.

| CB3 | 0 | 1 | --- | 0 | output status during a probe failure alarm |

It has the same significance of the parameter CB3.

| CB4 | 0 | 1 | --- | 0 | disabling time to the output activation and deactivation |

It has the same significance of the parameter CB4.

LABEL	MIN.	MAX.	U.M.	ST.	TEMPERATURE ALARM REGULATOR ASSOCIATED TO THE FIRST TEMPERATURE ALARM
AA0	(*)	+99	°C	(*)	hysteresis (differential)

It establishes the hysteresis (differential) relative to the parameter AA1.

| AA1 | -99 | +999 | °C | 0 | alarm setpoint |

It establishes the temperature to which the temperature alarm gets activated according with the modality established with the parameter AA4.

| AA3 | 0 | 999 | min. | 0 | disabling time to the alarm activation from the instrument start |

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

| AA4 | 1 | 7 | --- | 1 | kind of alarm |

It establishes the kind of temperature alarm that the instrument must manage, as indicated:
1 = the temperature alarm never gets activated
2 = absolute lower temperature alarm
3 = absolute upper temperature alarm
4 = lower temperature alarm relative to the first working setpoint
5 = upper temperature alarm relative to the first working setpoint
6 = lower temperature alarm relative to the first working setpoint with automatic recomputation and reenabling
7 = upper temperature alarm relative to the first working setpoint with automatic recomputation and reenabling.

LABEL	MIN.	MAX.	U.M.	ST.	TEMPERATURE ALARM REGULATOR ASSOCIATED TO THE SECOND TEMPERATURE ALARM
Ab0	(*)	+99	°C	(*)	hysteresis (differential)

It has the same significance of the parameter AA0.

| Ab1 | -99 | +999 | °C | 0 | alarm setpoint |

It has the same significance of the parameter AA1.

| Ab3 | 0 | 999 | min. | 0 | disabling time to the alarm activation from the instrument start |

It has the same significance of the parameter AA3.

| Ab4 | 1 | 7 | --- | 1 | kind of alarm |

It has the same significance of the parameter AA4.

LABEL	MIN.	MAX.	U.M.	ST.	CONNECTION IN A SERIAL NETWORK WITH EVCOBUS PROTOCOL COMMUNICATION
L1	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).

| L2 | 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).

ADDITIONAL INFORMATIONS

- *the symbol (§) indicates that the parameter is of the first level*
- *if the parameter -/0 has value 3 the parameters of the family rB do not exist*
- *the symbol (*) indicates that the value depends from the measure input presetting requested*
- *if the instrument is preset to accept at the measure input "J"/"K" thermocouples the parameter /5 does not exist*
- *if the instrument is not preset to accept at the measure input 2 and 3 wires 0/4-20 mA temperature transducers the parameters /6 and /7 do not exist.*

SIGNALS AND ALARMS

SIGNALS

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

If the LED **L2** is turned ON it means that the output K 3 is activated.

If the LED **L1** flashes it means that a count of a disabling time to the output K 1 activation is running (see the parameters CA0, CA1, CA2 and CA4).

If the LED **L2** flashes it means that a count of a disabling time to the output K 2 activation is running (see the parameters CB0, CB1, CB2 and CB4).

If the instrument displays the indication "≡≡≡" it means that the working setpoint can not be modified (see the parameters rA5 and rB5).

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 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 all outputs get forced to the status OFF.

If the instrument displays the indication "**E0**" flashing and the buzzer utters an intermittent beep (**probe failure alarm**) it means that: the kind of connected probe is not proper (see the parameter /0), the probe is faulty (verify the probe integrity), there is a mistake in the instrument-probe connection (verify the instrument-probe connection integrity), the temperature

---

read by the probe is outside the limits permitted by the probe in use (verify that the temperature near the probe be inside the limits permitted by the probe); during this alarm the output K 1 gets forced to the status established with the parameter CA3 and the output K 2 gets forced to the status established with the parameter CB3.

If the instrument displays the indication "**EOC**" flashing and the buzzer utters an intermittent beep (**cold junction/third wire failure alarm**) it means that, if the instrument is preset to accept at the measure input "J"/"K" thermocouples there is a mistake in the cold junction adjustment circuit (the instrument must be replaced), if the instrument is preset to accept at the measure input 2/3 wires Pt 100 probes and it is set to recognize to its measure input 3 wires Pt 100 probes the third wire of the probe is not connected (verify the instrument-probe connection integrity); during this alarm the output K 1 gets forced to the status established with the parameter CA3 and the output K 2 gets forced to the status established with the parameter CB3.

If the instrument displays the indication "**AL1**" flashing alternated to the temperature read by the probe and the buzzer utters an intermittent beep (**first temperature alarm**) it means that the temperature read by the probe is outside the limit established with the parameter AA1 (see the parameters AA0, AA1 and AA4); inactive.

If the instrument displays the indication "**AL2**" flashing alternated to the temperature read by the probe and the buzzer utters an intermittent beep (**second temperature alarm**) it means that the temperature read by the probe is outside the limit established with the parameter Ab1 (see the parameters Ab0, Ab1 and Ab4); inactive.

If the instrument displays the indication "**999**" flashing (**end of scale display**) it means that the temperature read by the probe is outside the working range permitted by the instrument (verify that the temperature near the probe be inside the limits permitted by the instrument); inactive.

ADDITIONAL INFORMATIONS

- *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 outputs) for cables up to 2.5 mm² (0.38 in.²), five poles single line male connector with pitch 5.08 mm (0.2 in., serial port).
Ambient temperature:	from to +60 °C (+32 to +140 °F, 10 ... 90 % of not condensing relative humidity).
Power supply:	12 Vac/dc or 12-24 Vac/dc, 50/60 Hz, 1.5 VA.
Insulation class:	II.
Alarm buzzer:	incorporated.
Measure inputs:	1 configurable, hardware depending, for PTC/NTC probes or "J"/"K" thermocouples or 2/3 wires Pt 100 probes or 2 and 3 wires 0/4-20 mA temperature transducers (Ri 56 Ohm); at terminal 12 +12 V (+30 %, -20 %) are available to supply the transducer.
Working range:	from -50 to +150 °C (-58 to +302 °F) for PTC probe, from -40 to +110 °C (-40 to +230 °F) for NTC probe, from -99 to +700 °C (-99 to +999 °F) for "J" thermocouple, from -99 to +999 °C (-99 to +999 °F) for "K" thermocouple, from -99 to +600 °C (-99 to +999 °F) for 2/3 wires Pt 100 probes, configurable for 2 and 3 wires 0/4-20 mA temperature transducers.
Setting range:	from -99 to +999 °C (-99 to +999 °F).
Resolution:	configurable for 0.1 (except the instruments preset to accept at the measure input "J"/"K" thermocouples) or 1 °C (1 °F).
Display:	3-digit display 12.5 mm (0.49 in.) high red LED display with automatic decimal point and minus sign, output status indicators.
Outputs:	two 6 (3) A @ 250 Vac relays (NO and change-over contact) for regulation loads management.
Serial port:	TTL with EVCOBUS protocol communication, for the connection to the CLONE configurer/cloner and RICS supervision systems.

HOW TO ORDER

CODING SYSTEM

Instrument name:	EC 3-132.
Desired measure input:	P (for PTC/NTC probes), J (for "J"/"K" thermocouples), C (for 2/3 wires Pt 100 probes), I (for 2 and 3 wires 0/4-20 mA temperature transducers).
Desired power supply:	012 (12 Vac/dc), 024 (12-24 Vac/dc).
Options:	custom configuration, temperature display in °F, SSR outputs.

Label	Min.	Max.	U.m.	Stand.	Connection in a serial network with EVCOBUS protocol communication
L1	1	15	—	1	instrument address
L2	0	7	—	0	instrument group

Additional informations:

- the symbol (§) indicates that the parameter is of the first level
- if the parameter -/0 has value 3 the parameters of the family rB do not exist
- the symbol (*) indicates that the value depends from the measure input presetting requested
- if the instrument is preset to accept at the measure input "J"/"K" thermocouples the parameter /5 does not exist
- if the instrument is not preset to accept at the measure input 2 and 3 wires 0/4-20 mA temperature transducers the parameters /6 and /7 do not exist.

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Quick reference

WORKING SETPOINT SETTING

If the parameter -/0 has value 3 the second working setpoint does not exist.

The first/second working setpoint is programmable within the limits established with the parameters **rA1**/**rb1** and **rA2**/**rb2**.

If the parameter **rA5**/**rb5** has value 1 the first/second working setpoint can not be modified as long as the parameter **rA5**/**rb5** gets set to 0.

To modify the first working setpoint value:

a) keep pushed the key (set)
- the instrument displays the actual value
- the out 1 flashes quickly

b) push and release the key (▲) or (▼) as long as the instrument displays the desired value
- the first working setpoint value gets increased or decreased

c) after the modify release the key (set) last
- the instrument displays the set value.

To modify the second working setpoint value:

a) release and keep pushed the key (set) during the flashing of the LED out 1
- the instrument displays the actual value
- the out 2 flashes quickly

b) push and release the key (▲) or (▼) as long as the instrument displays the desired value
- the second working setpoint value gets increased or decreased

c) after the modify release the key (set) last
- the instrument automatically turns out from the working setpoint setting procedure.

CONFIGURATION PARAMETERS SETTING

Configuration parameters are arranged on two levels.

To gain access to the first level:

a) keep pushed for four seconds at least the keys (▲) and (▼)
- passed four seconds the instrument displays the label **PA**

To select a parameter:

a) push and release the key (▲) or (▼) as long as the instrument displays the label of the desired parameter

To modify a parameter value:

a) keep pushed the key (set)
- the instrument displays the actual value

b) push and release the key (▲) or (▼) as long as the instrument displays the desired value
- the parameter value gets increased or decreased

c) after the modify release the key (set) last
- the instrument displays the label of the parameter again

To gain access to the second level:

a) enter inside the first level and select the label **PA**

b) keep pushed the key (set)
- the instrument displays the actual value

c) push and release the key (▲) or (▼) as long as the instrument displays **-19**
- the label value gets increased or decreased

d) after the modify release the key (set) last
- the instrument displays the label **PA** again

e) keep pushed for four seconds at least the keys (▲) and (▼)
- passed four seconds the instrument displays the first parameter of the second level

To turn out from the configuration parameters setting procedure:

a) keep pushed for four seconds at least the keys

⊛ and ⊛ or do not operate with the keys

for fifty seconds at least.

WORKING SETPOINT

Label	Min.	Max.	U.m.	Stand.	Working setpoint
	rA1	rA2	°C	0	first working setpoint
	rb1	rb2	°C	0	second working setpoint

CONFIGURATION PARAMETERS

Label	Min.	Max.	U.m.	Stand.	Password
PA	-90	100	—	0	password (§)

Label	Min.	Max.	U.m.	Stand.	Kind of regulator
-/0	1	3	—	2	kind of regulator

Label	Min.	Max.	U.m.	Stand.	Measure input
/0	01	31	—	(*)	kind of probe
/1	-9	+10	°C	0	calibration
/2	0	6	—	3	digital filter
/4	0	1	—	0	leading zeroes displaying
/5	0	1	—	1	decimal point
/6	-99	+999	points	-20	lower end of scale for 0/4-20 mA input (it coincides with the minimum calibration value of the transducer)
/7	-99	+999	points	+80	upper end of scale for 0/4-20 mA input (it coincides with the maximum calibration value of the transducer)

Label	Min.	Max.	U.m.	Stand.	ON-OFF temperature regulator associated to the first/second working setpoint and to the output K 1/K 2
rA0/rb0	-99	+99	°C	(*)	hysteresis (differential) (§)
rA1/rb1	-99	+999	°C	(*)	minimum working setpoint programmable
rA2/rb2	-99	+999	°C	(*)	maximum working setpoint programmable
rA3/rb3	0	1	—	1	"cooling" or "heating" functioning
rA4/rb4	0	1	—	0	kind of hysteresis (kind of differential)
rA5/rb5	0	1	—	0	locking of the working setpoint modification

Label	Min.	Max.	U.m.	Stand.	Output K 1/K 2 protection
CA0/Cb0	0	999	sec.	0	disabling time to the output activation from the instrument start
CA1/Cb1	0	999	sec.	0	disabling time to the output activation from the previous activation
CA2/Cb2	0	999	sec.	0	disabling time to the output activation from the previous deactivation
CA3/Cb3	0	1	—	0	output status during a probe failure alarm
CA4/Cb4	0	1	—	0	disabling time to the output activation and deactivation

Label	Min.	Max.	U.m.	Stand.	Temperature alarm regulator associated to the first/second temperature alarm
AA0/Ab0	(*)	+99	°C	(*)	hysteresis (differential)
AA1/Ab1	-99	+999	°C	0	alarm setpoint
AA3/Ab3	0	999	min.	0	disabling time to the alarm activation from the instrument start
AA4/Ab4	1	7	—	1	kind of alarm