



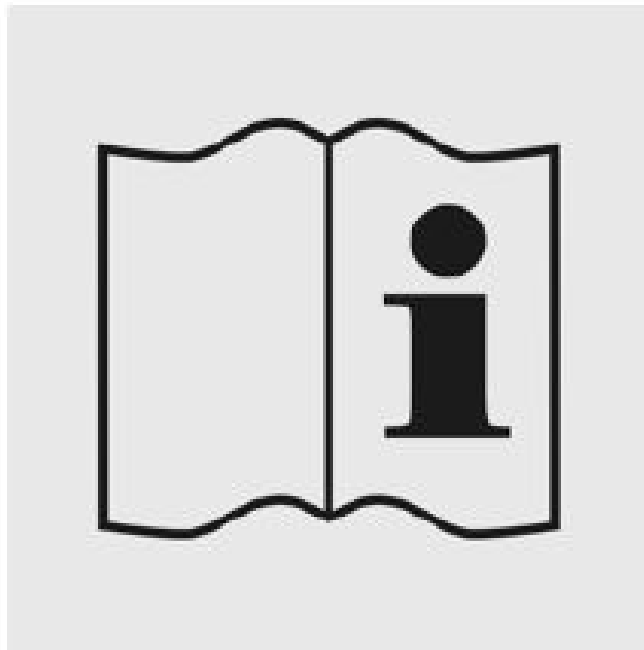
MULTI-C Beverage Cooler

Instruction Manual



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ISTRUZIONI PER L'USO
GENERAL INSTRUCTIONS
MODE D'EMPLOI
ALLGEMEINE GEBRAUCHSANWEISUNGEN
ISTRUCCIONES DE UTILIZACION
INSTRUÇÕES DE UTILIZAÇÃO
ИНСТРУКЦИЯ ПОЛЬЗОВАТЕЛЯ



CE

Code. 26.23.073
15-06-2009
Rev. 07



DICHIARAZIONE DI CONFORMITA'
CONFORMITY DECLARATION
DECLARATION DE CONFORMITE'
ÜBEREINSTIMMUNGSERKLÄRUNG
DECLARACION DE CONFORMIDAD

Il prodotto:
the product:
le produit:
die produkte
el producto:

Contrassegnato sulla targa matricolare:
Marked on the serial plate:
Qui sont marqués sur la plaquette technique:
Die auf dem Geräteschild gekennzeichnet sind:
Que están escretos la tarjeta tecnica:

è conforme alle seguenti direttive:
is in conformity with the following directives:
est conforme aux suivantes directives:
übereinstimmt mit den folgenden Grundsätzen:
cumple las siguientes directivas:

2006/42/CE
2006/95/CE
2004/108/CE
97/23/CE

e succ. mod. ed integrazioni.
And following modifications.
et suivantes modifications.
und folgende Anderengen.
y sucesivos modificatiões.

E' inoltre conforme alle seguenti norme tecniche armonizzate:
Is moreover in conformity with following technical harmonized standards:
Il est en outre conforme aux suivantes normes techniques harmonisées:
Außerdem gemäß den folgenden technischen und abgestimmten Grundsätzen ist:
Està además conforme a las siguientes normas tecnicas:

UNI EN 292-1	Edit. 1991
UNI EN 292-2	Edit. 1991
CEI EN 50106	Edit. 1997
CEI EN 55014-1	Edit. 1998
CEI EN 55014-2	Edit. 1998
CEI EN 50081-1	Edit. 1993
CEI EN 61000-3-2	Edit. 1993
CEI EN 61000-3-3	Edit. 1994
CEI EN 60335-1	Edit. 2004
CEI EN 60335-2-89	Edit. 2004
EN 50366	Edit. 2003

ENGLISH

Thank you for having chosen one of our products. You certainly have made a good investment and we are sure that our appliance will prove this to you. Our appliances have been carefully designed to give the best possible performances under the best safe and economic conditions. Many strict controls have been carried out during production process.

IN ORDER TO AVOID RISKS TO THE USER, DAMAGES TO THE CABINETS OR JEOPARDY OF THE PERFORMANCE, FOLLOW CAREFULLY THE INSTRUCTIONS HERE BELOW.

OUR COMPANY DECLINES ANY RESPONSIBILITY IN CASE THE ORIGINAL PERFORMANCE OF THE DEVICE MAY BE ALTERED BY ANY KIND OF MODIFICATION (ADDITION OR REMOVAL OF EITHER ELECTRICAL OR MECHANICAL PARTS) OR BY NON-COMPLIANCE OF THE INSTRUCTIONS OF THIS MANUAL.

INSTALLATION and WARNING NOTES



CAUTION
THIS SYMBOL INDICATES THAT ONLY AUTHORISED AND TRAINED TECHNICIANS SHALL CARRY OUT THE OPERATION:

Trained and skilled operator, aware of risks involved and responsible of adopting all measures necessary to minimise any possible damage to himself and other people.

1. Remove the packaging from the equipment. The packaging material (plastic bags, parts in polystyrene, etc.) must be kept out of reach of children, as it is potential source of hazard.
2. Check that the equipment has not been damaged during the transport.
3. Clean up the equipment (inside/outside) as specified in PERIODIC MAINTENANCE.
4. Do not place the equipment outdoor and exposed to bad weather conditions: the external environmental conditions for proper equipment operations are specified in the TECHNICAL DATA plate situated in the equipment rear side.
5. Put the equipment on a flat surface; for proper operation, the equipment shall be perfectly levelled: for this purpose, use the adjustable feet.
6. Put the equipment in a ventilated place, far from heating sources (heaters, kitchens) and protected from sun beams. For the installation area lighting, the use of fluorescent lights is recommended.
7. The equipment as to lean against the wall; check if inside the equipment there are the proper supports to place on the back of the equipment. If you have to move the equipment unplug it before moving it,
8. Do not leave objects on the equipment, such as containers, plants, etc. and leave at least 50 cm of free space above the equipment.
9. The equipment can be equipped with a lock for the door closing (optional). In this latest case, keep the lock keys out of reach of children.
10. Do not touch the operating equipment with bare feet or wet hands.
11. The use of this equipment by children or people with physical, sensorial, mental or motion disability, or people who do not have the necessary knowledge and experience, could lead to dangerous situations. The people responsible for their safety should give them explicit instructions or check the use of this equipment;
12. Make sure that children do not play with the equipment.



CAUTION
DO NOT MOISTEN ANY PART OF THE BOX CONTAINING ELECTRIC ELEMENTS.
DO NOT FORCE ANY PART CONTAINING COMPONENTS OF THE REFRIGERATING CIRCUIT.
DO NOT INSTALL THE EQUIPMENT IN ATMOSPHERES SUBJECT TO RISK OF FIRE OR EXPLOSION, OR RAYS.

DO NOT TOUCH THE OPERATING EQUIPMENT WITH BARE FEET OR WET ENDS



CONNECTION TO THE ELECTRIC MAINS

Check that the real mains voltage corresponds to the one specified in the technical data plate.
The power supply line/input for the refrigerator connection shall be properly protected and connected to the main earthing system, according to the regulations in force (e.g. high-sensitivity magneto-thermal differential switch $I_n = 16 A$, $I_d = 30 mA$).

THE EQUIPMENT EARTHING SYSTEM IS A SAFETY STANDARD REQUESTED BY LAW. OUR COMPANY HAS ARRANGED THIS CONNECTION, ACCORDING TO THE REGULATIONS IN FORCE; THEREFORE, THE COMPANY CAN NOT BE HELD LIABLE IN CASE OF DAMAGE TO PEOPLE AND PROPERTY.

Do not use reducing devices, multiple plugs or cable extensions; ensure that the electric installation and power supply plug capacity comply with the regulations in force and they are indicated for the equipment power, according to the data specified in the plate. In case of doubt, for the purpose of periodic check of general safety of equipment and users, contact only qualified and professional technicians.

ENVIRONMENTAL CONDITIONS

In order to keep the ambient climate in the installation place within the limits established in the technical data plate it can be necessary to install an air conditioning system. Such system should control the relative humidity, as excessive humidity affects the good equipment operation.

The position of the box should limit or avoid the air flows.

Do not install the box close to doors or areas exposed to strong air flows, such as, for example, conditioning system, ventilation or heating openings.

STARTING UP

Before connecting the machine to the power supply plug, leave the machine in stop position for at least 1 hour. In case the machine has been transported in horizontal position, leave it in stop position for at least 24 hours.

After connection, operate the equipment empty for at least two hours with lights switched off, then proceed and load the products, paying attention not to put them beyond the shelf edges, as beyond the front part of the shelf, the temperature is not sufficient for proper conservation, while on the rear part, the products obstruct the good circulation of the cooled air.



THE PRODUCT POSITION INSIDE THE EQUIPMENT SHALL NEVER EXCEED THE MAX LOADING LEVEL OF THE TANK (RED LINES).

DO NOT STORE MEDICAMENTS OR DRUGS OR SIMILAR PRODUCTS.

DO NOT STORE IN THE EQUIPMENT SMOKED PRODUCTS OR PRODUCTS CONTAINING VINEGAR OR HOT PEPPERS, AS THEY CAN DAMAGE THE EVAPORATOR COPPER PARTS.

PUT THE PRODUCT IN THE EQUIPMENT ALREADY AT STORAGE TEMPERATURE;
FROZEN PRODUCTS SHALL BE PUT IN THE EQUIPMENT AT A STORAGE TEMPERATURE NOT HIGHER THAN -18°C,
EXCEPT FOR SHORT ADMITTED PERIODS AT -15°C;

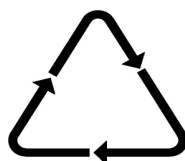
ACCESSORIES

Use exclusively the accessories supplied with the box. Any other "self-service" added equipment can affect the regular air circulation and cause improper operation of the equipment.

SUGGESTIONS FOR THE ENVIRONMENTAL PROTECTION

Packaging

The packaging material is 100% recyclable and is marked with the symbol of recycling. For disposal, follow the local regulations. The packaging material (plastic bags, parts in polystyrene, etc.) must be kept out of reach of children, as it is potential source of hazard.



Product

This equipment is marked in compliance with the European Directive 2002/96/EC, Waste Electrical and Electronic Equipment (WEEE). Make sure that this product is properly disposed, in order to give your contribution to prevention of any possible negative consequences for the atmosphere and the health. The symbol on the product or the documentation indicates that this product does not have to be disposed like domestic waste, but it must be delivered to the suitable collection point for recycling of electronic and electric equipment. For further information on disposal, recovery and recycling of this product, contact the suitable local office, the city waste collection service or the distributor from which the product has been purchased or obtained.

PERIODIC MAINTENANCE

Before any maintenance work, the user has to disconnect the power supply plug. The refrigerator mechanical parts do not need any periodic maintenance, but for a long-lasting life of the equipment, periodic cleaning is fundamental:

Una volta l'anno pulire le guarnizioni della porta con l'aiuto di sapone neutro ed acqua calda. Risciacquare ed asciugare; un leggero strato di vaselina dovrebbe poi essere applicato al fine di mantenere le guarnizioni della porta morbida e flessibile.

In questa operazione non usare assolutamente oggetti appuntiti che potrebbero danneggiare la guarnizione.

- **EXTERNAL BOX:** just clean it up with a dry soft cloth, in case of resistant spots, use lukewarm water and neutral detergents, then rinse well and dry.
- **PARTS IN STEEL:** wash with lukewarm water and neutral soaps, dry with a soft cloth, do not use steel wool, as it can damage the surface.
- **PARTS IN PLASTICS:** wash with water and neutral soaps. Rinse well and dry with a soft cloth, do not use alcohol, acetone and other solvents, as they can damage the surface permanently.
- **PARTS IN GLASS:** use only specific products, do not use water, as it can build limestone on the glass surface.

For the tank cleaning, proceed as follows:

1. **Switch off the equipment and disconnect the plug from power supply.**
2. **Take the products and the shelf out of the tank.**
3. **Leave the door open and wait until the tank temperature corresponds to the outside temperature.**
4. **Wash and dry the internal tank with a cloth and neutral detergent.**
5. **Do not use water jets for cleaning, as they can damage the electric parts.**

Then, put the shelves back to their position and connect the equipment; after one hour of operation with lights switched off, load the products.

Once per year, clean up the door gaskets with neutral soap and warm water. Rinse and dry; a light layer of Vaseline should be applied in order to keep the gaskets soft and flexible.

For this operation, do not use sharp and pointed objects that could damage the gaskets.

MANUAL DEFROSTING

Condense and moist present in the air, inside the refrigerators can create some frost which reduce the unit refrigerating performances.

To avoid this you have to take the frost off, using a plastic scraper. When the frost is more than 4/5 mm thick you have to defrost the refrigerator following the steps here below:

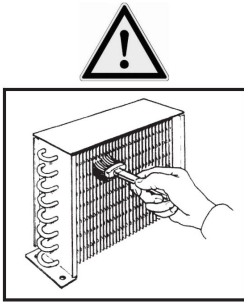
- Disconnect the plug from power supply.
- depending on the model:
 - Negative static cool: remove the T shaped plastic tap placed on the front lower part of the equipment and insert it in the right way to eliminate water, then place a recipient underneath to collect the water
 - Roll bond: the drainer is placed in the lower back part.
- Move the products to another equipment, if possible; otherwise, put the products into a box and wrap the box with a blanket, to accelerate the defrosting operation
- Accelerate the water evacuation with a plastic scraper or a sponge moistened with warm water
- Dry well the tank with a cloth
- Plug on, and wait until the equipment has reached its operating temperature before putting the products back to the refrigerator.



WINGED CONDENSER CLEANING (EVERY MONTH)

Caution: only specialised technicians shall carry out the operation described below.

Periodically clean the winged condenser (if present) from dust and refuses that can lay on the wing and front surface, which prevent a good air cycle. A dirty condenser reduces the equipment performances and cause energy waste.
To clean use a common vacuum cleaner or a bristles brush



PROBLEMS and REMEDIES

The equipment does not work:

- Check that power is properly supplied through the plug;
- Check that the plug is properly inserted in the socket;

Internal temperature is not cold enough, check that:

- The products or other objects do not obstruct the proper door closing;
- The equipment is not close to any heating source;
- The equipment leans on the wall and the front grid is free;
- The door is well closed;
- The thermostat is properly into position;
- The condenser is not obstructed or clogged; for cleaning, use a bristle brush or a vacuum cleaner;

The equipment is noisy, check that:

- All screws and nuts are properly tightened;
- Any pipe or blade is not in contact with one part of the equipment;
- The equipment is well levelled;

Condensation forms in the refrigerator:

- This is normal when humidity is high;
- Part of this humidity is normal in the areas where products are not wrapped in paper or contained in open containers;
- Frequent or prolonged opening of the doors is the cause of condensation in the refrigerator; Check that doors are properly closed.

IN CASE OF PERSISTENT PROBLEMS, CONTACT THE AFTER-SALES SERVICE NEAREST TO YOU



IN CASE THE SUPPLY CABLE IS DAMAGED, ONLY THE MANUFACTURER OR THE AFTER-SALES SERVICE, OR QUALIFIED TECHNICIAN SHALL REPLACE IT, IN ORDER TO PREVENT ANY POSSIBLE RISK.

THE LAMP REPAIR AND REPLACEMENT SHALL BE CARRIED OUT BY QUALIFIED TECHNICIANS, WITH POWER SUPPLY DISCONNECTED. REPLACE WITH IDENTICAL LAMPS.

ONLY QUALIFIED TECHNICIANS SHALL CARRY OUT THE EXTRAORDINARY MAINTENANCE INTERVENTIONS

CONTROLS

1. **Temperature gauge:** the temperature inside the cabinet in different models can be indicated by a thermometer, or an electronic thermostat that also allows its adjustment. In the last case please follow specific instructions included in thermostat instruction booklet.
2. **Inner ventilation switch** (if present): connects or disconnects the fan inside the tank. For a proper functioning of the cabinet, keep the fan always working except in case of too long door opening (i.e. in case of products storage).
3. **Thermostat knob** (if present): it is foreseen if there isn't an electronic thermostat. To achieve an optimum conservation, it must be set in a medium position. To achieve a warmer temperature, turn the thermostat knob anticlockwise, that is toward the lower numbers, while to obtain a colder temperature turn it toward the higher numbers
4. **Electronic thermostat (digital)** (if present): please consult the papers (thermostat instruction booklet) you'll find inside the cabinet.
5. **Light switch** (if present): it allows to switch the lights on and off, with the symbol (II) it switches on the lights in the cabinet, with the symbol (I) it switches on the lights in the bin.



Z31- Z31S

DIGITAL ELECTRONIC THERMO-CONTROLLER WITH DEFROSTING FUNCTION



OPERATING INSTRUCTIONS

Vr. 01 (ENG) - 07/09 - cod.: ISTR-MZ31-ENG1

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FOREWORD



This manual contains the information necessary for the product to be installed correctly and also instructions for its maintenance and use; we therefore recommend that the utmost attention is paid

to the following instructions and to save it.

This document is the exclusive property of TECNOLOGIC S.p.A. which forbids any reproduction and divulgation, even in part, of the document, unless expressly authorized.

TECNOLOGIC S.p.A. reserves the right to make any formal or functional changes at any moment and without any notice.

Whenever a failure or a malfunction of the device may cause dangerous situations for persons, thing or animals, please remember that the plant has to be equipped with additional devices which will guarantee safety.

Tecnologic S.p.A. and its legal representatives do not assume any responsibility for any damage to people, things or animals deriving from violation, wrong or improper use or in any case not in compliance with the instrument's features.

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1 - INSTRUMENT DESCRIPTION

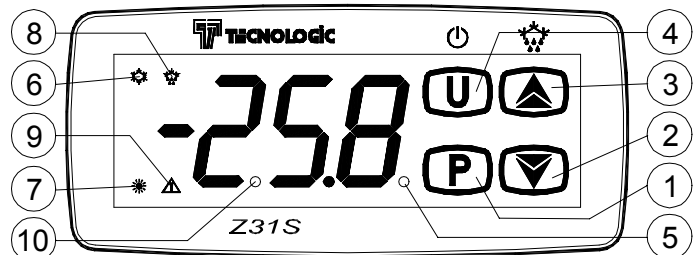
1.1 - GENERAL DESCRIPTION

The model Z31 is a digital electronic thermocontroller that is typically used in cooling applications that have temperature control with ON/OFF mode and defrosting control with intervals time by stopping compressor.

The instrument has one relay output and one input for PTC or NTC temperature probes, in addition can be equipped with an internal buzzer that is the sound system for alarms.

The model Z31S have the "S-touch" capacitive sensor keyboard system.

1.2 - FRONT PANEL DESCRIPTION



1 - Key P : Used for setting the Set point (press and release) and for programming the function parameters (hold pressed for 5 sec.) In programming mode is used to enter in parameters edit mode and confirm the values.

In programming mode it can be used together with the UP key to change the programming level of the parameters.

When the keyboard is locked it can be used together with the UP (hold pressed for 5 sec.) key to unlock the keyboard.

2 - Key DOWN : In programming mode is used for decreasing the values to be set and for selecting the parameters.

3 - Key UP/DEFROST : In normal mode can be used to start/stop manual defrosting (hold pressed for 5 sec.).

In programming mode is used for increasing the values to be set and for selecting the parameters.

In programming mode can be used together with key P to change parameters level.

Pressed together with the key P for 5 sec. allow the keyboard unlock

4 - Key U : Used (press and release) for visualising the instrument variables (measured temperatures etc.) .

In programming mode can be used to come back in normal mode (hold for 2 sec.).

It can also be programmed via the parameter "t.UF"

In normal mode and if par. "t.UF" = 4 it can be used to turning on and off (stand-by) the device (hold pressed for 1 sec.)

5 - Led SET : In normal mode it serves to indicate when a key is pressed.

In programming mode indicates the programming level of the parameters.

6 - Led OUT - COOL : Indicates the output status (compressor or temperature control device) when the instrument is programmed for cooling operation; on (on), off (off) or inhibited (flashing).

7 - Led OUT - HEAT : Indicates the output status (compressor or temperature control device) when the instrument is programmed for heating operation; on (on), off (off) or inhibited (flashing).

8 - Led DEFROST : Indicates defrosting in progress (on)

9 - Led ALARM : Indicates the alarm status (on), off (off) and silenced (flashing)

10 - Led Stand-By: Indicate the Stand-by status.

2 - PROGRAMMING

2.1 - FAST PROGRAMMING OF SET POINT

Press the key P then release it and the display will show "SP" alternating with the set value.

To change it press the UP key to increase the value or DOWN to decrease it.

These keys increase or decrease the value one digit at a time, but if the button is pressed for more than one second the value increase or decreases rapidly, and after two seconds pressed, the speed increases even more to all the desired value to be reached rapidly.

When the desired value is set press the key P to exit from Set Point programming mode.

Exiting the Set mode is achieved by pressing the P key or automatically if no key is pressed for 10 seconds. After that time the display returns to the normal function mode.

2.2 - STANDARD MODE PARAMETERS PROGRAMMING

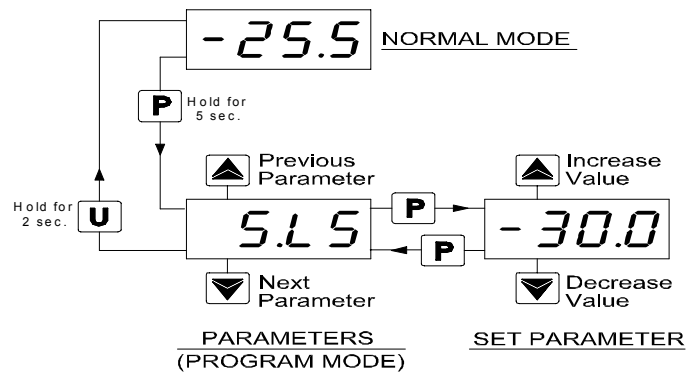
To access the instrument's function parameters when password protection is disable, press the key P and keep it pressed for about 5 seconds, after which the display will visualised the code that identifies the first parameter.

Using the UP and DOWN keys, the desired parameter can be selected and pressing the P key, the display will alternately show the parameter code and its setting that can be changed with the UP and DOWN keys.

Once the desired value has been set, press the key P again: the new value will be memorised and the display will show only the code of the selected parameter.

Pressing the UP and DOWN keys, it is possible to select another parameter and change it as described.

To exit the programming mode, do not press any key for about 30 seconds, or keep the U key pressed for 2 sec. until it exits the programming mode.



2.3 - PARAMETER PROTECTION USING THE PASSWORD

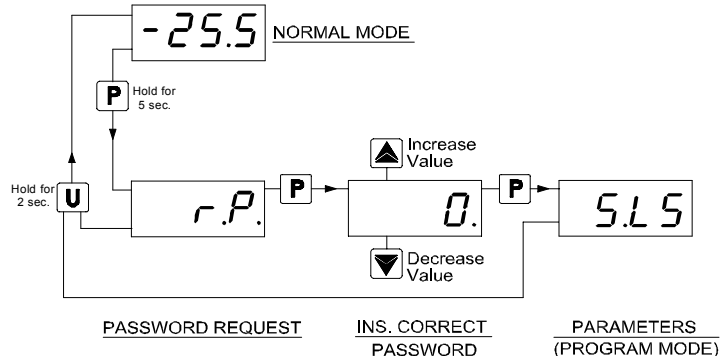
The instrument has a parameter protection function using a password that can be personalised, through the "t.PP" parameter. If one wishes to have this protection, set the password number desired in the parameter "t.PP".

When the protection is activate, press the P key to access the parameters and keep it press for about 5 seconds, after which the display will show "r.P".

At this point press P, the display show "0", using the UP and DOWN keys, set the password number programmed and press the key P.

If the password is correct, the display will visualise the code that identifies the first parameter and it will be possible to program the instrument in the same ways described in the previous section.

Protection using a password can be disabled by setting the parameter "t.PP" = oF.



Note: If the Password gets lost, just swith off and on the instrument supply, push P key during the initial test and keeping the key pressed for 5 seconds.

In this way it's possible to have access to all the parameters, verify and modify the par. "t.PP".

2.4 - CUSTOMIZED MODE PARAMETER PROGRAMMING (PARAMETERS PROGRAMMING LEVEL)

The password protection hides all the configuration parameters behind a factory set password to avoid unwanted changes being made to the programming of the controller.

To make a parameter accessible without having to enter the password when "t.PP" password protection is activate follows this procedure.

Enter the programming using the Password "t.PP" and select the parameter which is desired to be accessible with no password protection.

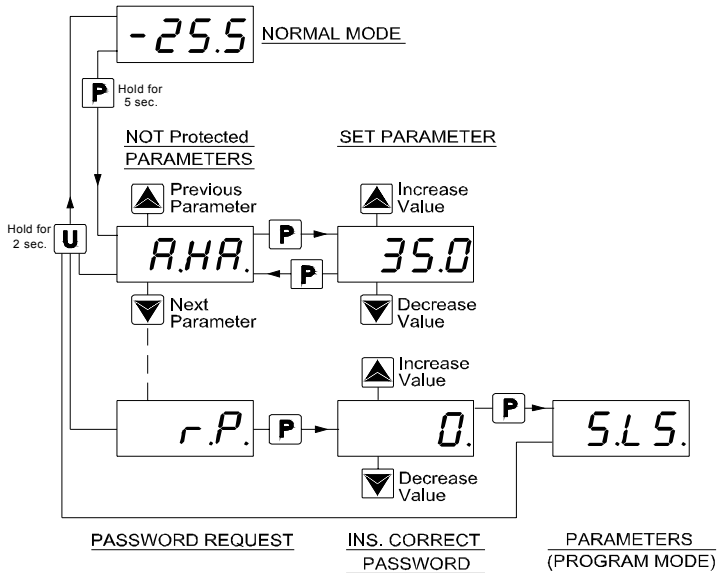
Once the parameter has been selected, if the SET led is blinking, this means that the parameter is programmable by entering the password (it's then "protected") if it's instead on, this means the parameter is programmable without password (not protected).

If you want to change the accessibility of the parameter push P key, keep it pressed and press together also the key UP.

The led SET will change its state indicating the new access level of the parameter (on = not protected; blinking = protected by password).

In case some parameters are not protected, when one tries to have access at the programming, the display will show all the

parameters not protected and the par. "r.P" (through which will be possible to have access to the "protected" parameters.)



2.5 - RESET PARAMETERS TO DEFAULT VALUE/LEVEL

The instrument allows the reset of the parameters to values programmed in factory as default.

To restore to the values of default the parameters set the value -48 to "r.P" password request.

Once confirmed the password with the key P the display it shows "---" for 2 sec. therefore the instrument effects the parameters reset

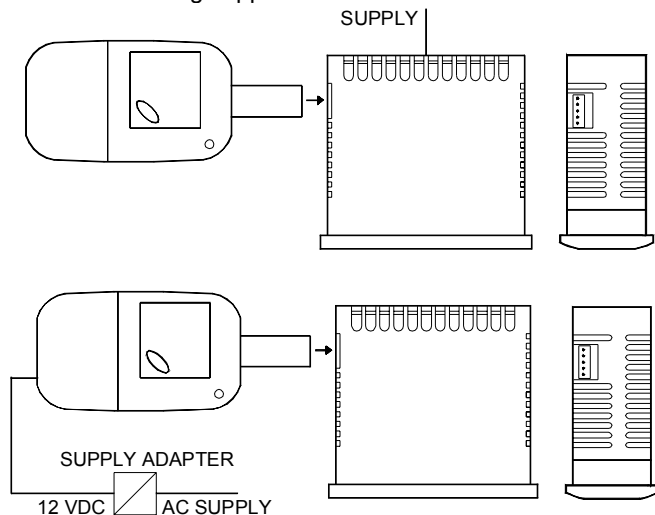
2.6 - PARAMETERS CONFIGURATION BY "A01"

The instrument is equipped with a connector that allows the transfer from and toward the instrument of the functioning parameters through the device **TECNOLOGIC A01** with 5 poles connector.

This device it's mainly useable for the serial programming of the instruments which need to have the same parameters configuration or to keep a copy of the programming of an instrument and allow its rapid retransmission.

The same device A01 allows the USB connection to a PC and through the "TECNOLOGIC UniversalConf" configuration software it is possible to program all the instrument parameters.

To use the device or A01 it's necessary that the device or instrument are being supplied.



For additional info, please have a look at the A01 instruction manual.

2.7 - KEYBOARD LOCK FUNCTION

On the instrument it's possible to lock completely the keyboard.

This function is particularly useful when the regulator is reachable by the users and it's desired to avoid any modification.

To activate the keyboard lock it's enough program the par. "t.Lo" to a different value to oF.

The value program to this parameter it is the time of inactivity of the keys after which the keyboard will be locked.

Insofar not pressing any key for the time "t.Lo" the instrument automatically disable the normal functions of the keys.

When the keyboard is lock, if any of the key is pushed, on the display will appear "Ln" to indicate the active lock.

To unlock the keyboard it's enough to contemporarily push key P and UP and keep them pushed for 5 sec., after which the label "LF" will appear on the display and all the keys functions will be available again.

3 - INFORMATION ON INSTALLATION AND USE



3.1 - PERMITTED USE

The instrument has been projected and manufactured as a measuring and control device to be used according to EN60730-1 for the altitudes operation until 2000 ms. The use of the instrument for applications not expressly permitted by the above mentioned rule must adopt all the necessary protective measures. The instrument CANNOT be used in dangerous environments (flammable or explosive) without adequate protection. The installer must ensure that EMC rules are respected, also after the instrument installation, if necessary using proper filters. Whenever a failure or a malfunction of the device may cause dangerous situations for persons, thing or animals, please remember that the plant has to be equipped with additional devices which will guarantee safety.

3.2 - MECHANICAL MOUNTING

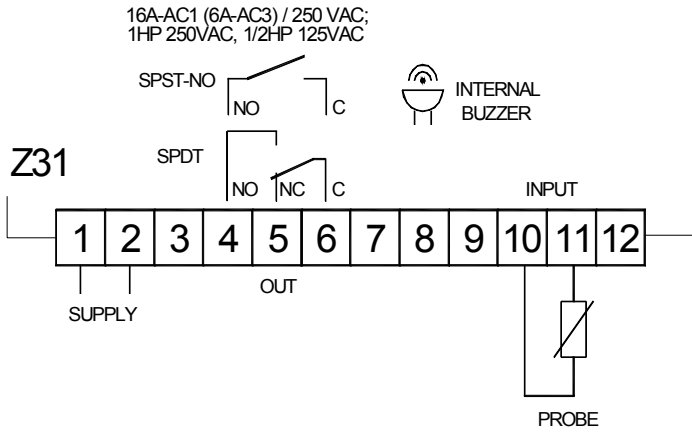
The instrument, in case 78 x 35 mm, is designed for flush-in panel mounting. Make a hole 71 x 29 mm and insert the instrument, fixing it with the provided special brackets. We recommend that the gasket is mounted in order to obtain the front protection degree as declared. Avoid placing the instrument in environments with very high humidity levels or dirt that may create condensation or introduction of conductive substances into the instrument. Ensure adequate ventilation to the instrument and avoid installation in containers that house devices which may overheat or which may cause the instrument to function at a higher temperature than the one permitted and declared. Connect the instrument as far away as possible from sources of electromagnetic disturbances such as motors, power relays, relays, solenoid valves, etc.

3.3 - ELECTRICAL CONNECTION

Carry out the electrical wiring by connecting only one wire to each terminal, according to the following diagram, checking that the power supply is the same as that indicated on the instrument and that the load current absorption is no higher than the maximum electricity current permitted. As the instrument is built-in equipment with permanent connection inside housing, it is not equipped with either switches or internal devices to protect against overload of current: the installation will include an overload protection and a two-phase circuit-breaker, placed as near as possible to the instrument, and located in a position that can easily be reached by the user and marked as instrument disconnecting device which interrupts the power supply to the equipment. It is also recommended that the supply of all the electrical circuits connected to the instrument must be protect properly, using devices (ex. fuses) proportionate to the circulating currents. It is strongly recommended that cables with proper insulation, according to the working voltages and temperatures, be used. Furthermore, the input cable of the probe has to be kept separate from line voltage wiring. If the input cable of the probe is screened, it has to be connected to the ground with only one side. Whether the instrument is F o G (12 / 24 V) supply version it's recommended to use an external transformer TCTR, or with equivalent features (Class II insulation), and to use only one transformer for each instrument because there is no insulation between supply and input. We recommend that a check should be made that the parameters are those desired and that the application functions correctly before connecting the outputs to the actuators so as to

avoid malfunctioning that may cause irregularities in the plant that could cause damage to people, things or animals.

3.4 - ELECTRICAL WIRING DIAGRAM



4 - FUNCTIONS

4.1 - ON / STAND-BY FUNCTION

The instrument, once powered up, can assume 2 different conditions:

- ON : means that the controller uses the control functions.
 - STAND-BY : means that the controller does not use any control function and the display is turned off except for the led Stand-by.
- If there is no power, and then power returns, the system always sets itself in the condition it was in before the black-out.

The ON/Stand-by function can be selected using the key U if the parameter "**t.UF**" = 4.

Pressing the key U for at least 1 sec., it is possible to switch the instrument from the ON status to Stand-by status and vice versa.

4.2 - MEASURING AND VISUALIZATION

Via the parameter "**i.SE**" it is possible to select the type of probes that one wishes to use and which can be: thermistores PTC KTY81-121 (**Pt**) or NTC 103AT-2 (**nt**).

Via the parameter "**i.uP**", it is possible to select the temperature unit of measurement the desired measurement resolution (**C0**=°C / 1° ; **C1**=°C / 0.1° ; **F0**= °F / 1° ; **F1**= °F / 0.1°).

The instrument allows the measuring to be calibrated, that can be used for re-calibrating the instrument according to application needs, through the parameters "**i.C1**".

Using the parameter "**i.Ft**", it is possible to set the time constant for the software filter for measuring the input values to be able to reduce the sensitivity to measurement disturbances (increasing the time).

The normal visualisation on the display is the measured temperature but it is possible to visualise the highest and lowest peak measurement values; by quickly pressing and releasing key U.

The display will alternately show:

- "**Lt**" and the lowest peak temperature
- "**Ht**" and the highest peak temperature
- "**Pr1**" and the instant measured temperature

When the instrument is switched off, such values are always re-set. However, it is also possible to reset these values if the instrument is switched on by using the DOWN key hold for 3 sec. during peak visualization.

The display will show "..." and peaks memory will be reset.

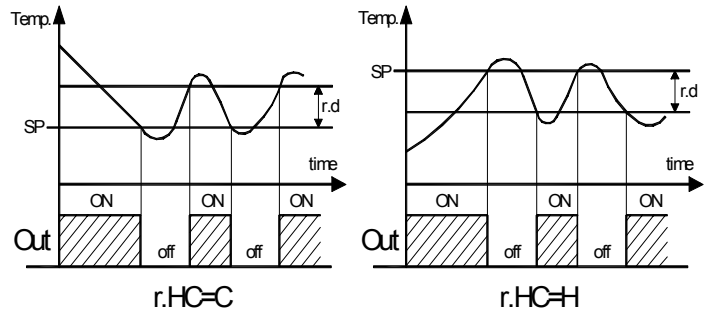
The exit of this visualisation mode occurs automatically 15 seconds after the last pressing on the key U.

Please remember that visualisation of the probe can be changed by the defrosting display lock function, by using the parameter "**d.dL**" (see defrost function).

4.3 - TEMPERATURE CONTROL

The regulation of the instrument is ON/OFF and acts on the output depending on the measuring of probe, of the Set Point "**SP**", the intervention differential "**r.d**" and the function mode "**r.HC**".

Depending on the function mode programmed on the parameter "**r.HC**" the differential is automatically considered by the regulator with positive values for a Refrigeration control ("**r.HC**"=C) or with negative values for a heating control ("**r.HC**"=H).



In the event of probe error, it is possible to set the instrument so that the output continues to work in cycles according to the times programmed in the parameter "**r.t1**" (activation time) and "**r.t2**" (deactivation time).

If an error occurs on the probe the instrument activates the output for the time "**r.t1**", then deactivates it for the time "**r.t2**" and so on whilst the error remains.

Programming "**r.t1**" = 0F the output in probe error condition will remain switched off.

Programming instead "**r.t1**" to any value and "**r.t2**" = 0F the output in probe error condition will remain switched on.

Remember that the temperature regulation function can be conditioned by the "Compressor Protections", "Delay at power on" and "Desfrost" functions.

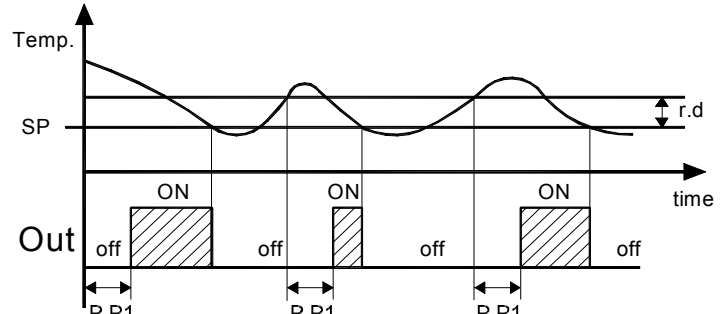
4.4 - COMPRESSOR PROTECTION FUNCTION AND DELAY AT POWER-ON

The function "Compressor Protection" aims to avoid close start ups of the compressor controlled by the instrument in cooling applications.

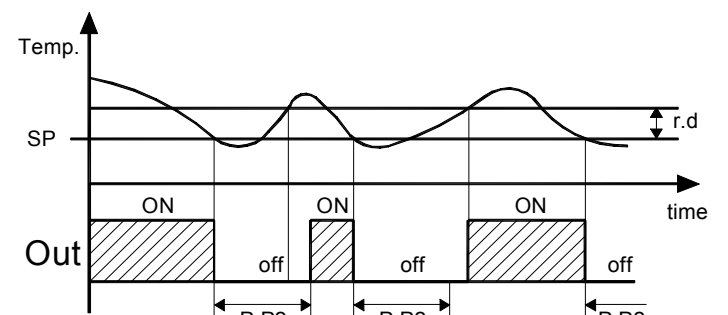
This function foresees 3 time controls on the switching on of the output associated with the temperature regulation request.

The protection consists of preventing the output being switched on during the times set in the parameters "**P.P1**", "**P.P2**" and "**P.P3**" and therefore that any activation occurs only after all the times has finished.

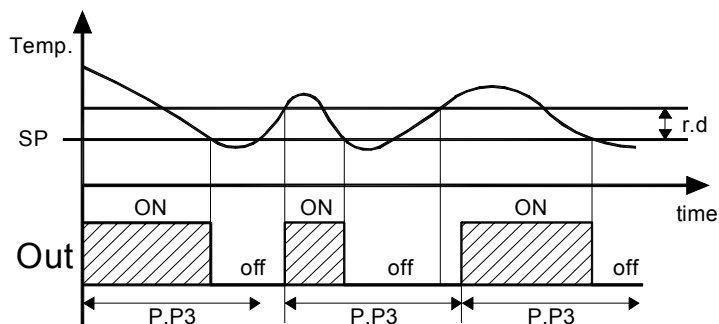
First control (par. "**P.P1**") foresees a delay to the output activation (switching-on delay).



Second control (par. "**P.P2**") foresees an inhibition to the activation of the output by a time delay that starts when the output is turning off (delay after switching-off).



Third control (par. "**P.P3**") foresees an inhibition to the activation of the output "Out" by a time delay that starts when the output was turning on last time (delay between switching-on).



During the output inhibition the led OUT (Cool o Heat) blinking. It is also possible to prevent activation of the output after the instrument is turned on, for the time set in the parameter "P.od". During the power on delay phase, the display shows the indication **od**, alternating with the normal visualisation. All the functions are disabled by relative parameters = oF.

4.5 - DEFROST CONTROL

The automatic control of defrost, that is by stopping compressor, occurs by interval times. The automatic defrost function is activate when at the parameter "d.di" is set the defrost interval time. The first defrost after swiching on can be set by par. "d.Sd". This allows to perform the first defrost to a different interval from "d.di." time. If it is desired that to every instrument power on a defrost cycle is realized program the par. "d.Sd" = oF. Instead if is desired all defrost to the same interval program "d.Sd" = "d.di."

Automatic defrost function is disable when "d.di" = oF.

The instrument provides to switch off the output for the time "d.dE" each "d.di" time (of "d.Sd" in case of first defrost after power on)

4.5.1 - MANUAL DEFROST

To start up a manual defrosting cycle, press the key UP/DEFROST when it is not in programming mode and keep it pressed for about 5 seconds after which, if the conditions are correct, the led Defrost will light up and the instrument will carry out a defrosting cycle.

To stop a defrosting cycle, press the key UP/DEFROST during the defrost and keep it pressed for about 5 seconds.

4.5.2 - DEFROST DISPLAY LOCK

Through par. "d.dL" and "A.dA" it's possible to define the display behaviour during defrost.

The "d.dL" parameter permits the display visualization lock on the last temperature reading (dL = on) during all the defrost cycle until, at the end of defrost, the temperature has not reached the lock value or the value ["SP" + "r.d"] or is elapsed the time setted on par. "A.dA".

Or it permits only the visualization of label "dEF" ("dL" = Lb) during the defrost cycle and, after the defrost, of label "PdF" until, at the end of defrost, the temperature has not reached the lock value or the value ["SP" + "r.d"] or is elapsed the time setted on par. "A.dA".

The display will otherwise ("dL" = oF) continue to visualize the temperature measured by the probe during the defrost cycle.

4.6 - ALARM FUNCTIONS

The alarm conditions of the instrument are:

- Probe errors "E1", "-E1"
- temperature alarms "Hi" and "Lo"

The alarm functions of the instrument work on the led ALARM and on the internal buzzer, if present and configured via the parameter "o.bu",

The possible selections of the parameter "o.bu" are:

- = oF - Buzzer always disable
- = 1 - Buzzer signal active alarms only
- = 2 - Buzzer signal key pressed only (no alarm)
- = 3 - Buzzer signal active alarms and key pressed

Any active alarm is shown on the instrument display with the lighting up of the ALARM led, the silenced alarm status is shown by the ALARM led flashing .

The buzzer (if "o.bu" = 1 or 3) is activated in alarm and can be disabled (alarm silencing) manually by pressing any key of the instrument .

4.6.1 - TEMPERATURE ALARMS

The temperature alarms work according to the probe measurement, the type of alarm set in the parameter "A.Ay" the alarm thresholds set in parameters "A.HA" (maximum alarm) and "A.LA" (minimum alarm) and the relative differential "A.Ad".

Through the parameter "A.Ay" it is possible to set the alarm thresholds "A.HA" and "A.LA" which must be considered as absolute ("A.Ay"=1) or relative to the Set Point ("A.Ay"=2).

Using some parameters it is also possible to delay the enablement and the intervention of these alarms.

These parameters are:

"A.PA" - is the temperature alarm exclusion time on switching on the instrument if the instrument is in alarm status when it is switched on.

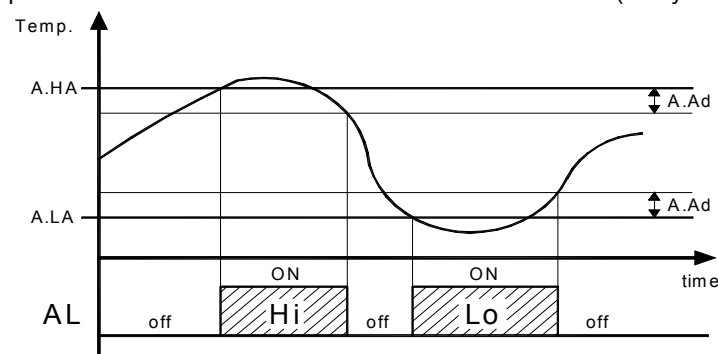
If the instrument is not in alarm status when it is switched on the time "A.PA" it is not considered.

"A.dA" - is the temperature alarm exclusion time at the end of defrosting

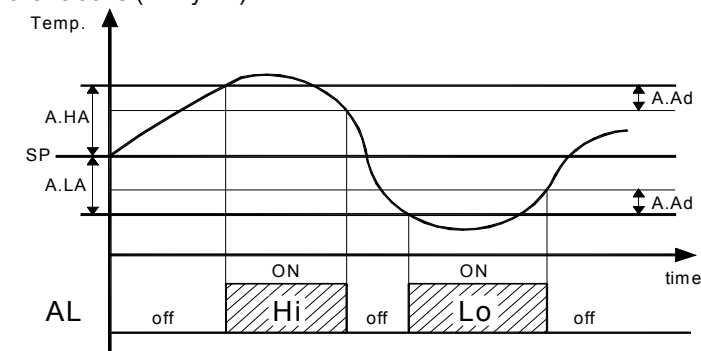
"A.At" - is the temperature alarm delay activation time

The temperature alarm is enabled at the end of exclusion time and is enabled after the "A.At" time when the temperature measured by the probe exceeds or goes below the respective maximum and minimum alarm thresholds.

The alarm thresholds will be the same as those set on the parameters "A.HA" and "A.LA" if the alarms are absolute ("A.Ay"=1)



or will be the values ["SP"+"A.HA"] and ["SP"+"A.LA"] if the alarms are relative ("A.Ay"=2).



The maximum and minimum temperature alarms can be disabled by setting the relative parameters "A.HA" and "A.LA" = oF.

5 - PROGRAMMABLE PARAMETERS TABLE

Here below is a description of all the parameters available on the instrument. Some of them may not be present because depend on the model/type of instrument.

Par.	Description	Range	Def.	Note
S. - parameters relative to Set Point				
1	S.LS	Minimum Set Point	-99.9 ÷ HS	-50.0
2	S.HS	Maximum Set Point	LS ÷ 999	99.9
3	SP	Set Point	LS ÷ HS	0.0

i. -parameters relative to inputs				
4	i.SE	Probes Type	Pt / nt	nt
5	i.uP	Unit of measurement and resolution (decimal point) C0 = °C with 1° res. F0 = °F with 1° res. C1 = °C with 0,1° res. F1 = °F with 0,1° res.	C0 / F0 / C1 / F1	C1
6	i.Ft	Measurement filter	oF ÷ 20.0 sec	2.0
7	i.C1	Probe Calibration	-30.0 ÷ 30.0 °C/°F	0.0
r. - parameters relative to temperature control				
8	r.d	Differential (Hysteresis)	0.0 ÷ 30.0 °C/°F	2.0
9	r.t1	Output activation time for probe error	oF/ 0.01 ÷ 9.59 (min.sec.) ÷ 99.5 (min.sec.x10)	oF
10	r.t2	Output deactivation time for probe error	oF/ 0.01 ÷ 9.59 (min.sec.) ÷ 99.5 (min.sec.x10)	oF
11	r.HC	Output operating mode H= Heating C= Cooling	H - C	C
d. - parameters relative to defrosting control				
12	d.di	Defrosting interval	oF/ 0.01 ÷ 9.59 (hrs.min.) ÷ 99.5 (hrs.min.x10)	oF
13	d.Sd	Delay first defrost after power-on (oF = Defrost at power-on)	oF/ 0.01 ÷ 9.59 (min.sec.) ÷ 99.5 (min.sec.x10)	oF
14	d.dE	Length of defrost cycle	oF/ 0.01 ÷ 9.59 (min.sec.) ÷ 99.5 (min.sec.x10)	oF
15	d.dL	Defrost display Lock oF= display free on= Lock on temperature Pr1 before defrost Lb= Lock on label "dEF" (during defrosting) and "PdF" (during post-defrosting)	oF - on - Lb	oF
P. parameters relative to compressor protection and power on delay				
16	P.P1	Out delay at switch on	oF/ 0.01 ÷ 9.59 (min.sec.) ÷ 99.5 (min.sec.x10)	oF
17	P.P2	Out delay after switch off	oF/ 0.01 ÷ 9.59 (min.sec.) ÷ 99.5 (min.sec.x10)	oF
18	P.P3	Out delay between switching-on	oF/ 0.01 ÷ 9.59 (min.sec.) ÷ 99.5 (min.sec.x10)	oF
19	P.od	Delay at power on	oF/ 0.01 ÷ 9.59 (min.sec.) ÷ 99.5 (min.sec.x10)	oF
A. - parameters relative to alarms				
20	A.Ay	Temperature alarms Type: 1 = Absolute 2 =Relative to Set	1 / 2 (/ 3 / 4 / 5 / 6 / 7 / 8 = don't use)	1

21	A.HA	High temperature Alarm threshold	oF / -99.9 ÷ 999 °C/°F	oF
22	A.LA	Low temperature Alarm threshold	oF / -99.9 ÷ 999 °C/°F	oF
23	A.Ad	Temperature Alarms Differential	0.0 ÷ 30.0 °C/°F	1.0
24	A.At	Temperature Alarms delay	oF/ 0.01 ÷ 9.59 (min.sec.) ÷ 99.5 (min.sec.x10)	oF
25	A.PA	Temperature Alarms delay at power on	oF/ 0.01 ÷ 9.59 (hrs.min.) ÷ 99.5 (hrs.min.x10)	2.00
26	A.dA	Temperature Alarms delay and unlock display delay after defrost	oF/ 0.01 ÷ 9.59 (hrs.min.) ÷ 99.5 (hrs.min.x10)	1.00
o. -parameters relative to buzzer				
27	o.bu	Buzzer function mode oF = disable 1 = active alarms only 2 = key pressed only 3 = active alarms and key pressed	oF / 1 / 2 / 3	3
t. - parameters relative to configuration of the keyboard				
28	t.UF	Function mode key U oF= No function 4= Switch on/Switch off (Stand-by)	oF / 4 (1 / 2 / 3 = don't use)	oF
29	t.Lo	Keyboard lock function delay	oF/ 0.01 ÷ 9.59 (min.sec.) ÷ 30.0 (min.sec.x10)	oF
30	t.PP	Access Password to parameter functions	oF ÷ 999	oF

6 - PROBLEMS, MAINTENANCE AND GUARANTEE

6.1 - SIGNALLING

Error	Reason	Action
E1 -E1	The probe may be interrupted (E) or in short circuit (-E), or may measure a value outside the range allowed	Check the correct connection of the probe with the instrument and check the probe works correctly
EPr	Internal EEPROM memory error	Press key P

Other Signalling:

Message	Reason
od	Delay at power-on in progress
Ln	Keyboard lock
dEF	Defrosting in progress with "d.dL"=Lb
PdF	Post-defrosting in progress with "d.dL"=Lb
Hi	Maximum temperature alarm in progress
Lo	Minimum temperature alarm in progress

6.2 - CLEANING

We recommend cleaning of the instrument only with a slightly wet cloth using water and not abrasive cleaners or solvents.

6.3 - GUARANTEE AND REPAIRS

The instrument is under warranty against manufacturing flaws or faulty material, that are found within 12 months from delivery date.

The guarantee is limited to repairs or to the replacement of the instrument.

The eventual opening of the housing, the violation of the instrument or the improper use and installation of the product will bring about the immediate withdrawal of the warranty's effects.

In the event of a faulty instrument, either within the period of warranty, or further to its expiry, please contact our sales

department to obtain authorisation for sending the instrument to our company.

The faulty product must be shipped to TECNOLOGIC with a detailed description of the faults found, without any fees or charge for TecnoLogic, except in the event of alternative agreements.

7 - TECHNICAL DATA

7.1 - ELECTRICAL DATA

Power supply: 12 VAC/VDC, 12...24 VAC/VDC, 100...240 VAC +/- 10%

Frequency AC: 50/60 Hz

Power consumption: 4 VA approx.

Input/s: 1 input for temperature probes: PTC (KTY 81-121, 990 Ω @ 25 °C) or NTC (103AT-2, 10KΩ @ 25 °C).

Output/s: 1 relay output SPST-NO (16A-AC1, 6A-AC3 250 VAC, 1HP 250VAC, 1/2HP 125 VAC) or SPDT 16A-AC1, 6A-AC3 250 VAC, 1HP 250VAC, 1/2HP 125 VAC); 12 A Max. for extractable terminal block model

Electrical life for relay outputs: SPST-NO: 100000 op. ; SPDT: 50000 op. (om. VDE)

Action type: type 1.B (EN 60730-1)

Overtoltage category: II

Protection class : Class II

Insulation: Reinforced insulation between the low voltage part (supply H type and relay output) and front panel; Reinforced insulation between the low voltage section (supply H type and relay output) and the extra low voltage section (inputs); Reinforced between supply and relay output; No insulation between supply F or G type and inputs.

7.2 - MECHANICAL DATA

Housing: Self-extinguishing plastic, UL 94 V0

Heat and fire resistance category : D

Dimensions: 78 x 35 mm, depth 64 mm

Weight: 120 g approx.

Mounting: Flush in panel (thickness max. 12 mm) in 71 x 29 mm hole

Connections: 2,5 mm² screw terminals block or 2,5 mm² extractable screw terminals block

Degree of front panel protection : IP 65 (NEMA 3S) mounted in panel with gasket

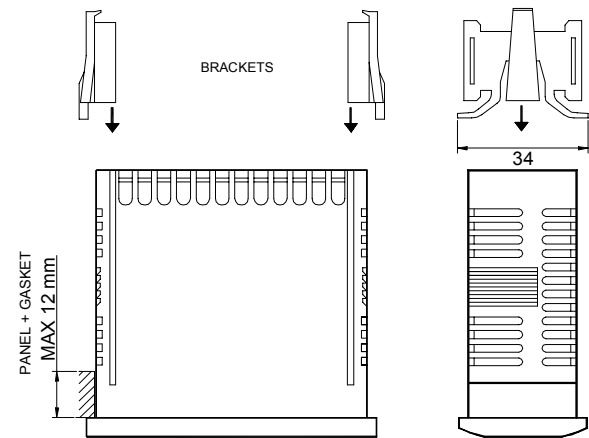
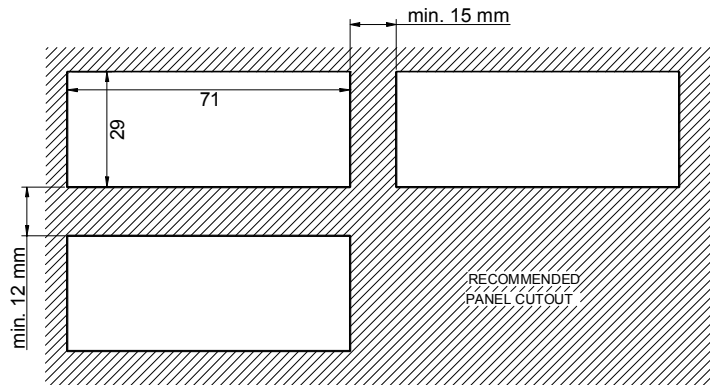
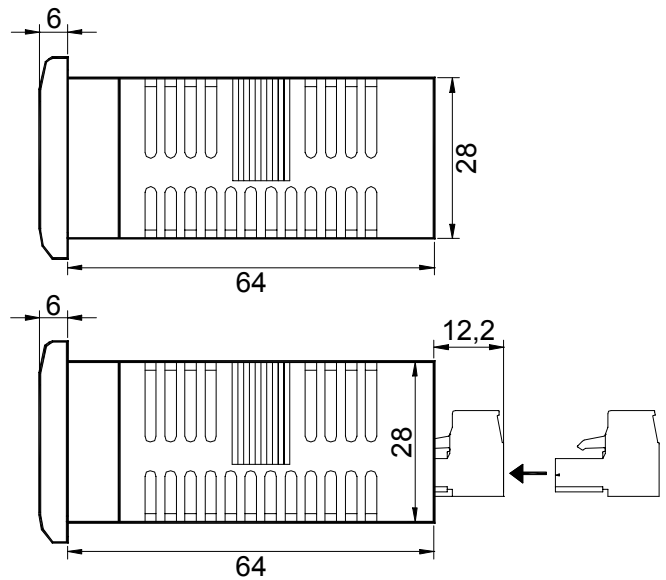
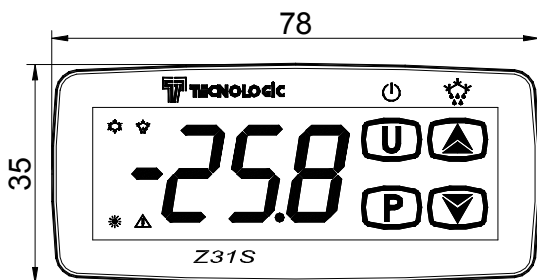
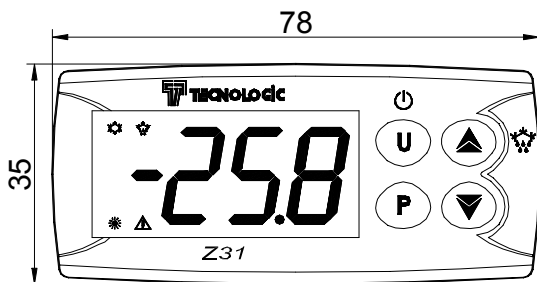
Pollution situation: 2

Operating temperature: 0 T 50 °C

Operating humidity: < 95 RH% without condensation

Storage temperature: -25 T +60 °C

7.3 - MECHANICAL DIMENSIONS, PANEL CUT-OUT AND MOUNTING [mm]



7.4 - FUNCTIONAL FEATURES

Temperature Control: ON/OFF mode

Defrost control: interval cycles by stopping compressor

Measurement range: NTC: -50...109 °C / -58...228 °F; PTC: -50...150 °C / -58 ... 302 °F

Display resolution: 1 ° or 0,1° (range -99.9 ...99.9 °)

Overall accuracy: +/- (0,5 % fs + 1 digit)

Sampling rate: 130 ms.

Display: 3 Digit Red (or Blue as option) h 15,5 mm

Software class and structure : Class A

Compliance: ECC directive 2004/108/CE (EN55022: class B; EN61000-4-2: 8KV air, 4KV cont.; EN61000-4-3: 10V/m; EN61000-4-4: 2KV supply, inputs, outputs; EN61000-4-5: supply 2KV com. mode, 1 KV diff. mode; EN61000-4-6: 3V), 2006/95/CE (EN 60730-1, EN 60730-2-7, EN 60730-2-9)

7.5 - INSTRUMENT ORDERING CODE

Z31- (instrument with mechanical keyboard)

Z31S (instrument with Sensitive Touch keyboard)

a b c d e f g h ii jj

a : POWER SUPPLY

H = Supply 100..240 VAC

G = Supply 12..24 VAC/VDC

F = Supply 12 VAC/VDC

b : OUT

R = Out Relay SPST-NO 16A-AC1

S = Out Relay SPDT 16A-AC1

c : BUZZER

- = (No)

B = Buzzer

d : TERMINAL BLOCK

- = (Standard)

E = Extractable

e : DISPLAY

- = Red

B = Blue

f, g, h : INTERNAL CODES

ii, jj : SPECIAL CODES