ASCON TECNOLOGIC

TLJ29 M

DIGITAL ELECTRONIC CONTROLLER FOR MILK CONSERVATION REFRIGERATION UNITS

OPERATING INSTRUCTIONS

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FOREWARD

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.

ASCONT ECNOLOGIC 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.

ASCON TECNOLOGIC 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 TLJ 29 M is a digital controller with microprocessor for milk conservation applications that have temperature control with ON/OFF regulation and agitator control.

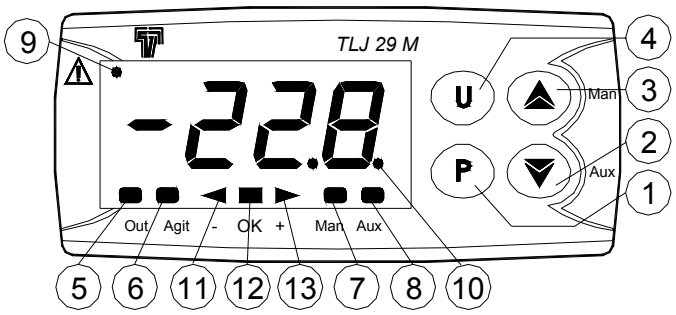
The instrument has up to 3 relay outputs, one input for PTC or NTC temperature probes and a digital input.

The 3 outputs can be used for controlling the compressor or the temperature control device (OUT), the agitator (AGIT), and an auxiliary device (AUX) or an alarm (AL).

The instrument is equipped with 4 programming keys, a 4-digit display and 9 LED signals, in addition may be equipped with an internal buzzer for the acoustic alarms signaling.

Other important characteristics of the instrument are: program parameters protection using personalised password, switching on and off (stand-by) of the instrument using the front keys or the digital input, configuration of parameters via the A01 device, memorising of two sets of temperature regulations that can be switched and the possibility of power supply in the range 100 ... 240 VAC.

1.2 - FRONT PANEL DESCRIPTION



1 - Key P : Used for setting the Set point and for programming the function parameters
2 - Key DOWN/Aux : Used for decreasing the values to be set and for selecting the parameters. It can also be programmed via the parameter "Fbd" to carry out other functions such as activating the Aux output, starting up the continuous cycle, selecting the active set point or turning on and off (stand-by) the device (see par. 4.11).
3 - Key UP/MAN : Used for increasing the value to be set, for selecting the parameters and for activating manual cycles.
4 - Key U : Can be programmed via the parameter "USrb" to carry out other functions, just like the key **DOWN/AUX** (see par. 4.11).
5 – Led OUT : Indicates the compressor output status (or the temperature control device) on (on), off (off) or inhibited (flashing)
6 - Led AGIT : Indicates the Agitator status
7 - Led MAN : Indicates the manual cycle in progress
8 - Led AUX : Indicates AUX output status
9 - Led AL : Indicates the alarm status (on), off (off) and silenced or memorized (flashing)
10 - Led SET : Indicates the input in programming mode and the programming level of the parameters. It also serves to indicate the Stand-by status.
11 - Led - : Indicates that a low temperature alarm is in progress (on) or that a low temperature alarm has been memorised (flashing).
12 - Led OK : Indicates that no alarms are in progress
13 - Led + : Indicates that a high temperature alarm is in progress (lit) or that a high temperature alarm has been memorised (flashing).

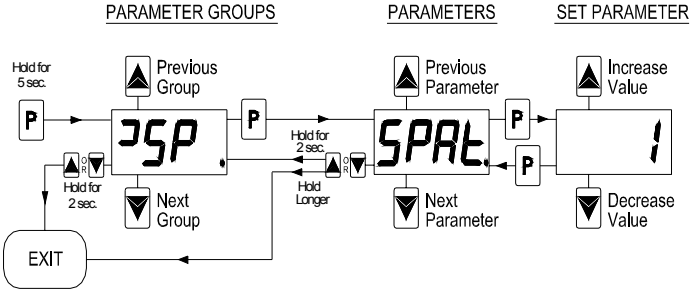
2 - PROGRAMMING

2.1 - PROGRAMMING OF THE SET POINT

Press the key **P** then release it and the display will show **SP 1** (or **SP 2** if the second set is active at that time) alternating with the set value (see selection of the active set point).
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 buttons are 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 valued to be reached rapidly.
Exiting the Set mode is achieved by pressing the **P** key or automatically if no key is pressed for 15 seconds. After that time the display returns to the normal function mode.

2.2 - PARAMETERS PROGRAMMING

To access the instrument's function parameters, press the key **P** and keep it pressed for about 5 seconds, after which the LED SET will light up, the display will visualised the code that identifies the first group of parameters ("[]**SP** ") and the group of parameters that are to be edited are selected by pressing the **UP** and **DOWN** keys.
Once the group of parameters has been selected, press the **P** and the code that identifies the first parameter in the selected group will be visualised.
Again 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 abbreviation of the selected parameter.
Pressing the **UP** and **DOWN** keys, it is possible to select another parameter (if present) and change it as described.
To return to select another group of parameters, keep the **UP** or the **DOWN** key pressed for about 1 second, after which the display will return to showing the code of the parameter group.
Release the pressed key and using the **UP** and **DOWN** keys it will be possible to select another group (if present).
To exit the programming mode, do not press any key for about 20 seconds, or keep the **UP** or **DOWN** key pressed 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 **"PASS"** parameter in the **"[]PAn"** set**.**
If one wishes to have this protection, set the password number desired in the parameter **"PASS"**.
When the protection is working, press the **P** key to access the parameters and keep it press for about 5 seconds, after which the LED SET will flash and the display will show "0" .
At this point, 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 group of parameters("[]**SP** ") 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 **"PASS"** = OFF.

2.4 - PARAMETERS PROGRAMMING LEVELS

The instrument has two parameter programming levels.
The first level ("visible" parameters) is accessed according to the procedure described above (with or without password request) while the second level ("hidden" parameters) can be accessed according to the following procedure.
Remove the power supply to the instrument, press the key **P** and return power to the instrument, keeping the key pressed.
After about 5 sec. the LED SET will light up, the display will show the code that identifies the first group of parameters("[]**SP** ") and it will be possible to set the parameters of the instrument using the same programming procedure described previously.
Once the parameter has been selected and the LED SET is on, it means that the parameter can be programmed even on the first level ("visible").
If the LED SET is off it means that the parameter can only be programmed on this level (i.e. "hidden").
To change the visibility of the parameter, press the key **U**: the LED SET will change status, indicating the accessibility level of the parameter (on = parameter "visible"; off = parameter "hidden").
The access procedure for "hidden" parameters allows the **"PASS"** parameter to be checked and changed, and is useful therefore if the password set has been forgotten.

2.5 - ACTIVE SET POINT SELECTION

The instrument allows up to 2 different regulation Set points to be pre-set (**"SP 1"** and **"SP 2"**) and then to choose which one to make active.

This function can be used if it is necessary to switch two different function temperatures (e.g. day and night or positive and negative etc).
The active set point can be selected:
- Using the parameter "**SPAt**"
- using the key **U** if the parameter "**USrb**" = 3.
- Using the key **DOWN/AUX** if the parameter "**Fbd**" = 3.
- Using the digital input if the parameter. "**diF**" = 8
(see par. 4.9 e 4.11)
The Set points "SP1" and "SP2" can be set with a value between the programmed value in parameter. **"SPLL"** and the programmed value in parameter **"SPHL".**
Nota: *in the examples that follow, the Set point is generally indicated as "SP", how when operating the instrument will work according to the Set point selected as active.*

2.6 - 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 green SET led.
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 "**USrb**" = 4.
- Using the key **DOWN/AUX** if the parameter "**Fbd**" = 4.
- using the digital input if the parameter "**diF**" = 10
(see par. 4.9 e 4.11)

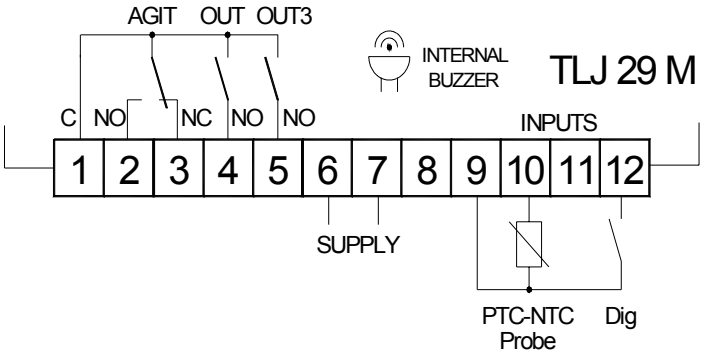
3 - INFORMATION ON INSTALLATION AND USE

3.1 - PERMITTED USE
The instrument has been projected and manufactured as a measuring and control device to be used according to EN61010-1 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 bracket.
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 to use cables with proper insulation, according to the working voltages and temperatures.
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 12 V version it's recommended to use an external transformer TCTR, or with equivalent features, 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
OUT: 16A-AC1(6A-AC3) / 250 VAC
AGIT: 8A-AC1(3A-AC3) / 250 VAC
OUT3: 5A-AC1(2A-AC3) / 250 VAC



4 - FUNCTIONS

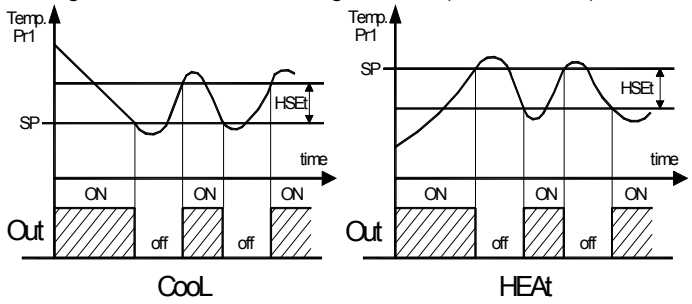
4.1 - MEASURING AND VISUALIZATION
All the parameters concerning measuring are contained in the group **"[]InP".**
Via the parameter **"SEnS"** it is possible to select the type of probe that one wishes to use and which can be: thermistores PTC KTY81-121 (Ptc) or NTC 103AT-2 (ntc).
Once the type of probe used has been selected, through the parameter **"Unit",** it is possible to select the temperature unit of measurement (°C or °F) and, through the parameter **"dP"**, the resolution of the desired measurement (OFF=1°; On =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 **"OFS1".**
Using the parameter **"FiL",** 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).

4.2 - OUTPUTS CONFIGURATION
The instrument outputs are already configured to control the compressor, or however, the temperature control device (OUT) and for the agitator control (AGIT).
If the OUT3 is present , this output may be configured with the parameter **"Out3"** in the group **"[]Out"** with the following functions:
= AuS - to control the auxiliary device (see par. 4.10)
= ALt - to control a silenceable alarm device through a contact that is normally open, and then closed when the alarm sounds
= AL - to control an alarm that cannot be silenced through a contact that is normally open and closed when the alarm sounds.

= ALL - to control an alarm with a memory function through a contact that is normally open and closed when the alarm sounds.
= -ALt - to control a silenceable alarm device through a contact that is normally closed, and then open when the alarm sounds.
= -AL - control an alarm that cannot be silenced through a contact that is normally closed and open when the alarm sounds.
= -ALL - to control an alarm with a memory function through a contact that is normally closed and open when the alarm sounds (see alarm memory).
= Out - to control the compressor, or however, the temperature control device.
= AGit - to control the agitator
= OFF - Disabled output

4.3 - TEMPERATURE CONTROL

All the parameters concerning temperature regulation are contained in the group **"]rEG".**
The regulation of the instrument is ON/OFF and acts on the output configured as "Out" depending on the measuring of probe Pr1, of the active Set Point **"SP"** (1 or 2), the intervention differential **"HSEt"** and the function mode **"Func"** .
Depending on the function mode programmed on the parameter "Func" the differential is automatically considered by the regulator with positive values for a Refrigeration control ("Func"=CooL) or with negative values for a heating control ("Func"=HEAt).



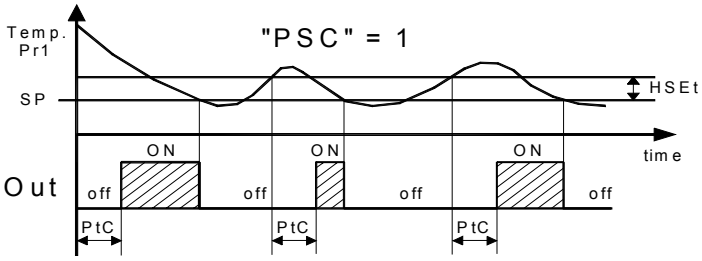
In the event of probe error (Pr1), it is possible to set the instrument so that that the output "Out" continues to work in cycles according to the times programmed in the parameter **"tonE"** (activation time) and **"toFE"** (deactivation time).
If an error occurs on the probe Pr1 the instrument activates the output for the time "**tonE**", then deactivates it for the time "**toFE**" and so on whilst the error remains.
Programming "**tonE**" = OFF lthe output in probe error condition will remain switched off.
Programming instead "**tonE**" to any value and "**toFE**" = OFF the output in probe error condition will remain switched on.
Remember that the temperature regulation function can be conditioned by the "Continuous Cycle", "Compressor Protection", "Minimum compressor function time" functions described below.

4.4 - CONTINUOUS CYCLE FUNCTION

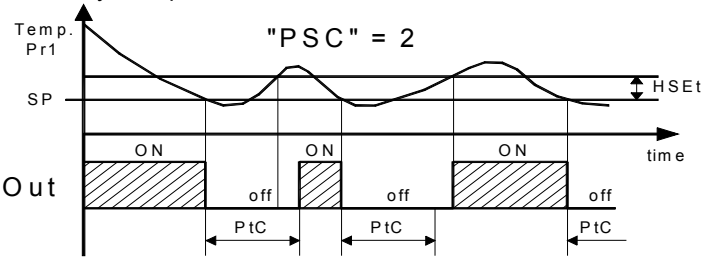
The instrument has a continuous cycle function by which it is possible to maintain the configured output configured as "Out" always active for the time set in parameter **"tCC"** (in the group **"]rEG"**) regardless of the temperature control command.
The function can be used for example, when rapid lowering of the product temperature is required after the refrigerator loading phase.
During the continuous cycle, the temperature alarms are disabled during the entire cycle and also later for the time set in parameter **"dALc"** (see par. 4.8).
Starting up a continuous cycle can only be done by a manual command using the **U** or **DOWN/AUX** ("**UrSb**" or "**Fbd**" = 2) keys or via the digital input ("**diF**"=3) if suitably programmed (see par. 4.9 and 4.11).
The continuous cycle in progress is shown on the display with the indication **CC** and can be stopped by a further action on the key or digital input (as for activation).
The continuous cycle function cannot be activated with "**tCC**" = OFF.

4.5 - COMPRESSOR PROTECTION FUNCTION AND DELAY AT POWER-ON

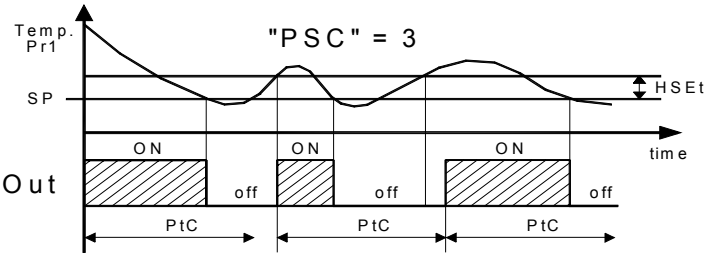
All the parameters concerning the compressor protection functions and the delay at power on are contained in the group **"]PrC".**
The function "Compressor Protection" carried out by the machine aims to avoid close start ups of the compressor controlled by the instrument in cooling applications.
This function foresees a time control on the switching on of the "Out" output associated with the temperature regulation request.
The protection consists of preventing the output being switched on during the time set in the parameter **"PtC"** and counted depending on what has been programmed in the parameter **"PSC"**, and therefore that any activation occurs only after the "**PtC**" time has finished.
If during the power on delay phase, the regulator request should disappear, due to an inhibition caused by the compressor protection function, the foreseen start up of the output is naturally cancelled.
Using the parameter "**PSC**", it is possible to set the type of compressor protection and therefore from when the inhibition time "**PtC**" must start.
The parameter "**PSC**" can be set as:
= 1 : Power on delay



= 2 : Delay after power off



= 3 : Delay between power on phases.



The function is disabled by programming "**PtC**" = 0.
Through the parameter **"LCt"** it is also possible to set the minimum activation time of the output to avoid switching on of the compressor that is too short.
During the power on delay phases of the OUT output by inhibiting the function "Compressor Protection" or delay of power off caused by the minimum function time "**LCt**", the LED OUT flashes.
It is also possible to prevent activation of all the outputs after the instrument is turned on, for the time set in the parameter **"od"**.
The function is disabled by "**od**" = OFF.
During the power on delay phase, the display shows the indication **od,** alternating with the normal programmed visualisation.

4.6 - AGITATOR CONTROL

All the parameters concerning the agitator control are container in the group **"]AGi".**
When the output OUT is on, the output AGIT is always active.

On the opposite, when the output OUT is off, the output AGIT is activated and dectivated cyclically according to the set times in the parameters:
"AGon" Activation time with compressor off
"AGoF" Deactivation time with compressor off.
In this way, when the Out output is deactivated, the output "AGIT" stay on for the time set in **"AGon"**, then stay off for the time set in **"AGoF",** is set on for the time set in **"AGon"**, and so on, until the output OUT is activated, according to the temperature control, forcing the activation of the AGIT output indipendently from the parameters **"AGon"**and **"AGoF"** and simultaneously to the output OUT.

4.7 - MANUAL AGITATOR CYCLES

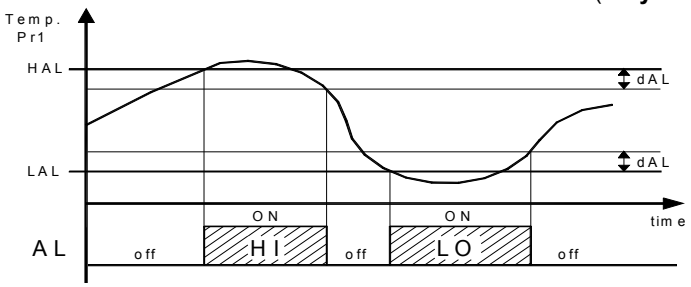
The manual agitator cycle may be started by pressing for 2 seconds the key **UP/MAN** or by the digital input, if properly programmed, only when the output OUT is off.
The manual cylcles may be executed in two ways, according to the parameter "**tCC**" (in the group **"]rEG"**) that allows the continuous cycle function described above.
With "**tCC**" = OFF the manual cycle is simply a restart of the agitator cycle similarly to the switch off of OUT output.
The duration of the manual cycle, indicated with the on status of LED MAN, is meant as the first Agitator activation for the time **"AGon",**
With "**tCC**" programmed with a desired time, the manual cycle is realised with the forced activation of OUT output (similarly to a continous cycle) for the set time , after that time the OUT output is deactivated and the cycle restart as in the previus case. In such case the manual duration, indicated by the LED MAN, is calculated by the time "**tCC**"+ **"AGon"**.
In both cases, whenever (within the manual cycle) the output OUT will be activated from the temperature controller, the manual cycle will be interrupted and the normal agitator functioning will be restored.

4.8 - ALARM FUNCTIONS

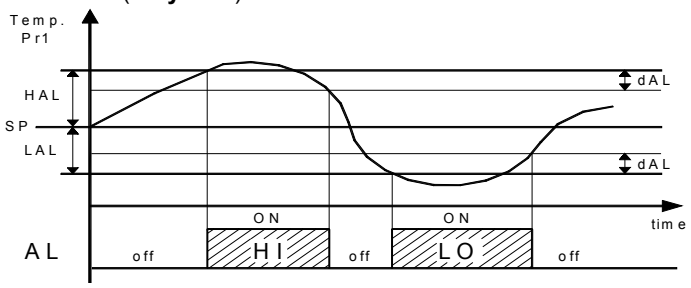
All the parameters concerning the alarm functions are contained in group **"]AL".**
The alarm functions of the instrument work on the internal buzzer, if present, and on the output OUT3 if properly configured in the parameter "**Out3**".
The buzzer (if present) may be silenced manually by pressing any button on the instrument.
The possible selections of these parameters for the alarm signalling function are:
= ALt - when one wants the buzzer or output to be activated in alarm and can be disabled (alarm silencing) manually by pressing any key of the instrument (typical application for sound signal).
= AL - when one wants the buzzer or output to be activated in alarm status but cannot be disabled manually and are therefore only disabled when the alarm status ceases (typical application for a light signal).
= ALL - when one wants the buzzer or output to be activated in alarm status and that they remain activated even when the alarm has ceased (see par.4.8.3) Disablement (recognition of memorised alarm) can only be carried out manually by pressing any key when the alarm has ended (typical application for light signal).
= -ALt - when one wants the function described as ALt but with an inverse function (buzzer or output activated in normal condition and disabled in alarm status).
= -AL - when one wants the function described as AL but with inverse logic (buzzer or output activated in normal conditions and disabled in alarm status).
= -ALL - when one wants the function described as ALL but with inverse working logic (buzzer or output activated in normal conditions and disabled in alarm status).
When no alarms are present, the green LED OK is on.
Any active alarm is shown on the instrument display with the lighting up of the LED AL and the switching off of the LED OK.
Any silenced or memorised alarm status is shown by the LED AL flashing .
The alarm conditions of the instrument are:
- Probe errors "E1", "-E1"
- temperature alarms "HI" and "LO"
- External alarms "AL"

4.8.1 -TEMPERATURE ALARMS

The temperature alarms work according to the probe Pr1 measurements, the type of alarm set in the parameter **"Aty"** the alarm thresholds set in parameters **"HAL"** (maximum alarm) and **"LAL"** (minimum alarm) and the relative differential **"dAL".**Through the parameter **"Aty"** it is possible to set the alarm thresholds **"HAL"** and **"LAL"** which must be considered as absolute (**"Aty"**=Ab) or relative to the active Set Point (**"Aty"**=dE).
Using some parameters it is also possible to delay the enablement and the intervention of these alarms.
These parameters are:
"PAL" - is the temperature alarm exclusion time on switching on the instrument if the instrument is in alarm status when it is switched on.
"dALc" - is the temperature alarm exclusion time at the end of a continuous cycle.
"ALd" - is the temperature alarm delay activation time
The temperature alarm is enabled at the end of exclusion time and is enabled after the **"ALd"** time when the temperature measured by the probe Pr1 exceeds or goes below the respective maximum and minimum alarm thresholds.
The alarm **"HAL"** and **"LAL"** if the alarms are absolute (**"Aty"**=Ab)



Or will be the values ["SP"+**"HAL"**] and ["SP"-**"LAL"**] if the alarms are relative (**"Aty"**=dE).



The maximum and minimum temperature alarms can be disabled by setting the relative parameters **"HAL"** and **"LAL"** = OFF.
At the same time as the signalling of the configured alarm (buzzer and/or output Out3), the instrument signals the alarm by turning on the LED AL, switching off the LED OK, turning on the LED - in case of minimum alarm or the LED + for maximum alarm, and visualises on the display:
- Alternately **HI** and the temperature value for maximum alarm
- Alternately **LO** and the temperature value for the minimum alarm.

4.8.2 - EXTERNAL ALARM

The instrument can signal an external alarm by activating the digital input with the function programmed as **"diF"** = 4 or 9 (see par. 4.9).
At the same time as the signalling of the configured alarm (buzzer and/or output), the instrument signals the alarm by turning on the LED AL, turning off the LED OK and visualising **AL** and the temperature value alternately on the display.

4.8.3 -ALARM MEMORY

The instrument offers the possibility of arranging the alarm memory function via the parameter **"tAL".**
If **"tAL"** = no, the instrument cancels the alarm signal when the alarm status ends, if instead it is programmed as "yES" , the LED AL flashes even when the alarm status has ended to indicate that there has been an alarm.

If the memorised alarm is for temperature, it also keeps the LED - flashing to show a minimum alarm and LED + to show a maximum alarm.
To cancel the alarm memory signal, press any key.
It must be remembered that if an output function is desired (or the buzzer) with an alarm memory (=ALL or =-ALL) it is necessary to set the parameter "tAL" = yES.

4.9 - DIGITAL INPUT

All the parameters concerning the digital input functions are contained in the group **"]din".**
The digital input present on the instrument accepts contacts free of voltage, the function carried out is defined by the parameter **"diF"** and the action can be delayed for the time set in parameter **"did".**
The parameter **"diF"** can be configured for the following functions:
= 0 - Digital input not active
= 1 - Manual agitator cycle start with contact normally open: on closing the input (and after the **"did"** time) a manual agitator cycle is activated.
With the input mantained closed the instrument executes anyway only one manual agitator cycle. To execute another cycle it is required to open and close again the contact.
= 2 - Manual agitator cycle stop with contact normally open: on closing the input (and after the **"did"** time) a Manual agitator cycle is ended if in progress or is inhibited.
= 3 - continuous cycle activation command with contact normally open: on closing the input (and after the **"did"** time) a continuous cycle is started up as described in the paragraph on the continuous cycle function.
= 4 - External alarm signal with contact normally open: on closing the input (and after the **"did"** time) the alarm is activated and the instrument visualises **AL** and the measured temperature.
= 5 - Agitator disable with contact normally open: on closing the input (and after the **"did"** time) the agitator is stopped and the instrument visualises **AP** and the measured temperature.
= 6 – Compresso and agitator disable with contact normally open: similar to "diF" = 5 but with Agitator and compressor block.
= 7 - Remote control of auxiliary output AUX with contact normally open: on closing the input (and after the **"did"** time) the auxiliary output is activated as described in the "**FOA**" = 2 function mode of the auxiliary output.
= 8 - Selecting the active set point with contact normally open: on closing the input (and after the **"did"** time) the temperature regulation set point "SP 2" is activated. When instead the input is open the set point "SP 1" is active (see selecting active set point)
= 9 - Signalling of external alarm with disablement of all the control outputs with contact normally open: on closing the input (and after the **"did"** time) all the control outputs are disabled, the alarm is activated and the instrument visualises **AL** and the mesured temperature.
= 10 - Switching on/switching off (Stand-by) of instrument with contact normally open: on closing the input (and after the "**"did"** time) the instrument is switched on while it is placed in Stand-by when opened.
= -1, -2, -3 ..... -10 - similar to the above but with function logic reversed.

4.10 - AUXILIARY OUTPUT

All the parameters concerning the auxiliary output functions are contained in the group **"]AuS".** The auxiliary output can be configured to operate on the output OUT3 by programming the parameter of the desired output = AuS. The function carried out is defined by the parameter **"FOA"** and the function is conditioned by the time set in parameter **"tuA".** The parameter **"FOA"** can be configured for the following functions:
= 0 - Auxiliary output not active
= 1 - Regulation output delayed with contact normally open: the auxiliary output is activated with delay that can be set on the parameter **"tuA"** compared to the output configured as Out. The output is then turned off at the same time as the OUT output is disabled. This function mode can be used as a command for a second compressor or for all other working utilities according to the same OUT output conditions, but which must be delayed after the start up of the compressor to avoid excess electricity absorption.
= 2 - Activation by front key (**U** or **DOWN/AUX**) or by digital input with contact normally open: the output is activated by pressing the keys **U** or **DOWN/AUX** properly configured ("**USrb**" or "**Fbd**" = 1) or via activation of the digital input if suitably configured ("**diF**"=7). These commands have a bi-stable function, Which means that when first pressed, the output key is activated while the second is disabled. In this mode, the AUX output can be turned off automatically after a certain time that can be set on the parameter **"tuA"**. With **"tuA"** = OFF the output is activated and deactivated only manually, using the front key (**U** or **DOWN/AUX**) or via the digital input. Differently, the output, once activated, is turned off automatically after the set time. This function can be used, for example, as a cell light command, for non-misting resistance or other utilities .

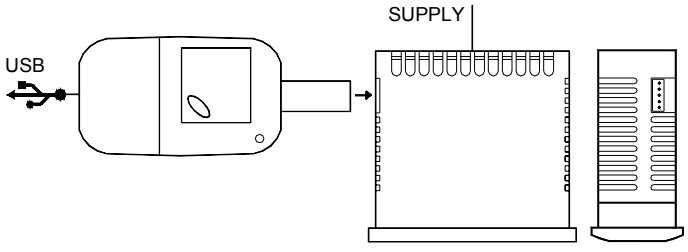
4.11 - FUNCTIONING OF KEYS "U" AND "DOWN/AUX"

Two of the instrument keys, in addition to their normal functions, can be configured to operate other commands.
The **U** key function can be defined by the parameter **"USrb"** while the **DOWN/AUX** key function can be defined by the parameter **"Fbd"** both contained in the group **"]PAn".**
Both the parameters have the same possibilities and can be configured for the following functions:
= 0 - The key carries out no function.
= 1 - Pressing the key for at least 1 second, it is possible to enable/disable the auxiliary output if configured (**"FOA"**=2).
= 2 - Pressing the key for at least 1 second, it is possible to enable/disable a continuous cycle (see continuous cycle function).
= 3 - Pressing the key for at least 1 second, it is possible to select one of the 2 memorised set point in rotation. Once selection has been made, the display will flash the active set point code for about 1 sec. (SP 1or SP 2).
= 4 - Pressing the key for at least 1 second, it is possible to switch the instrument from the ON status to Stand-by status and vice versa.

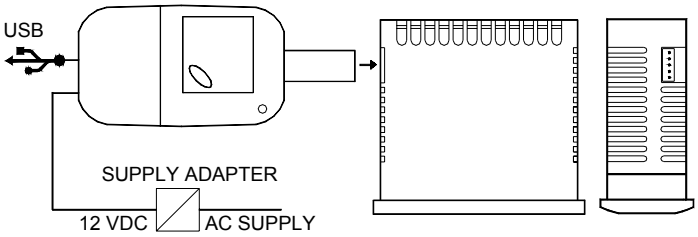
4.12 - PARAMETERS CONFIGURATION BY "A01"

The instrument is equipped with a connector that allows the transfer from and toward the instrument of the functioning parameters through the device **ASCON TECNOLOGIC A01** with **5 poles** connector. This device it's mainly used 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 allows the connection (with USB port) to a PC , by using this PC and the dedicated software "Tecnologic Universal config"is possible to configure the parameters. To use the device A01 is possible to power the device or just the instrument.

Instrument supplied and device not supplied



Instrument supplied from the device



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

5 - PROGRAMMABLE PARAMETERS TABLE

Here below is a description of all the parameters available on the instrument. Some of them may not be present, either due to the fact they depend on the type of instrument or because they are automatically disabled as unnecessary.

Group]SP (parameters relative to Set Point)

Par.		Description	Range	Def.	Note
1	**SPAt**	Active Set point	1 ÷ 2	1	
2	**SP1**	Set Point 1	SPLL ÷ SPHL	0.0	
3	**SP2**	Set Point 2	SPLL ÷ SPHL	0.0	
4	**SPLL**	Minimum Set Point	-58 ÷ SPHL	-50.0	
5	**SPHL**	Maximum Set Point	SPLL ÷ 302	100.0	

Group]InP (parameters relative to measuring inputs)

Par.		Description	Range	Def.	Note
6	**SEnS**	Probe Type	Ptc - ntc	Ptc	
7	**OFS1**	Probe Calibration	-30 ÷ 30 °C/°F	0.0	
8	**Unit**	Unit of measurement	°C - °F	°C	
9	**dP**	Decimal point	On - OFF	On	
10	**FiL**	Measurement filter	OFF ÷ 20.0 sec	2.0	

Group]rEG (parameters relative to temperature control)

Par.		Description	Range	Def.	Note
11	**HSEt**	Differential	0 ÷ 30 °C/°F	2.0	
12	**tonE**	Activation time output OUT for probe broken	OFF ÷ 99.59 min.sec	OFF	
13	**toFE**	Deactivation time output OUT for probe broken	OFF ÷ 99.59 min.sec	OFF	
14	**Func**	Function mode output OUT	HEAt - CooL	CooL	
15	**tCC**	Continuous cycle Time	OFF ÷ 99.59 hrs.min	OFF	

Group]AGi (parameters relative to agitator control)

Par.		Description	Range	Def.	Note
16	**AGon**	Agitator Activation time with compressor off	OFF ÷ 99.59 min.sec	10.00	
17	**AGoF**	Agitator de-activation time with compressor off	0.01 ÷ 99.59 min.sec	10.00	

Group]PrC (parameters relative to compressor protection and power on delay)

Par.		Description	Range	Def.	Note
18	**PSC**	Type of compressor protection: 1= delay at switch on 2= delay after switch off 3= delay between starts	1 - 2 - 3	1	
19	**PtC**	Compressor protection time	OFF ÷ 99.59 min.sec	OFF	
20	**LtC**	Minimum compressor function time	OFF ÷ 99.59 min.sec	OFF	
21	**od**	Delay at power on	OFF ÷ 99.59 min.sec	OFF	

Group]AL (parameters relative to alarms)

Par.		Description	Range	Def.	Note
22	**Aty**	Temperature alarms Type: Ab = Absolute dE =Relative to Set	Ab - dE	Ab	
23	**HAL**	High temperature Alarm threshold	OFF / - 58 ÷ 302 °C/°F	OFF	
24	**LAL**	Low temperature Alarm threshold	OFF / - 58 ÷ 302 °C/°F	OFF	
25	**dAL**	Temperature Alarms Differential	0 ÷ 30 °C/°F	2.0	
26	**ALd**	Temperature Alarms delay	OFF ÷ 99.59 min.sec	OFF	
27	**tAL**	Alarm memory	no - yES	no	
28	**PAL**	Temperature Alarms delay at power on	OFF ÷ 99.59 hrs.min	2.00	
29	**dALc**	Temperature alarms delay after continuous cycle	OFF ÷ 99.59 hrs.min	OFF	

Group]din (parameters relative to digital input)

Par.		Description	Range	Def.	Note
30	**diF**	Function and function logic of digital input: 0 = No function 1= Start manual cycle 2= Stop manual cycle 3= Continuous cycle 4= External alarm 5= Agitator block 6= Agitator and compressor block 7= Auxiliary output command 8= Selection of active Set Point 9= External alarm with deactivation of control outputs 10= Switch on/Switch off (Stand-by)	-10 / -9 / -8 / -7 / -6 / -5 / -4 / -3 / -2 / -1 / 0 / 1 / 2 / 3 / 4 / 5 / 6 / 7 / 8 / 9 / 10	0	
31	**did**	Delay in acquiring digital input	OFF ÷ 99.59 min.sec	OFF	

Group]AuS (parameters relative to auxiliary output)

Par.		Description	Range	Def.	Note
32	**FOA**	Function mode auxiliary output: 0= No Function 1= regulation output delayed 2= manual activation by key or digital input.	0 / 1 / 2	0	
33	**tuA**	Time relative to auxiliary output	OFF ÷ 99.59 min.sec	OFF	

Group]Out (parameters relative to configuration of outputs)

Par.		Description	Range	Def.	Note
34	**Out3**	Configuration of output function OUT3: OFF= No function Out= Temperature control (compressor) AGit= Agitator AuS= Auxiliary ALt= Silenceable alarm AL= Alarm not silenceable ALL= memorised alarm	OFF/Out/AGit /AuS/ALt/ AL/ALL/ -ALt/ -AL/ -ALL	ALt	

Group]PAn (parameters relative to configuration of the keyboard)

Par.		Description	Range	Def.	Note
35	**Fbd**	Function mode key DOWN/AUX: OFF= No function 1= Auxiliary output command 2= Continuous cycle command 3= Selection of active Set Point 4= Switch on/Switch off (Stand-by)	OFF / 1 / 2 / 3 / 4	OFF	
36	**USrb**	Function mode key U: see “Fbd”	OFF / 1 / 2 / 3 / 4	OFF	
37	**PASS**	Access Password to parameter functions	OFF ÷ 9999	OFF	

6 - PROBLEMS, MAINTENANCE AND GUARANTEE

6.1 - SIGNALLING

Error Signalling:

Error	Reason	Action
E1 **-E1**	The probe Pr1 may be interrupted or in short circuit, 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
EEPr	Internal memory error	Check and if necessary reprogramme the parameters function.

In probe error status, the output OUT behaves as set by the parameters "tonE" and "toFE".

Other Signalling:

Message	Reason
od	Delay in switching on in progress
CC	Continuous cycle in progress
HI	Maximum temperature alarm in progress
LO	Minimum temperature alarm in progress
AL	Digital input alarm in progress
AP	Door open

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 ASCON TECNOLOGIC with a detailed description of the faults found, without any fees or charge for ASCON TECNOLOGIC, except in the event of alternative agreements.

7 - TECHNICAL DATA

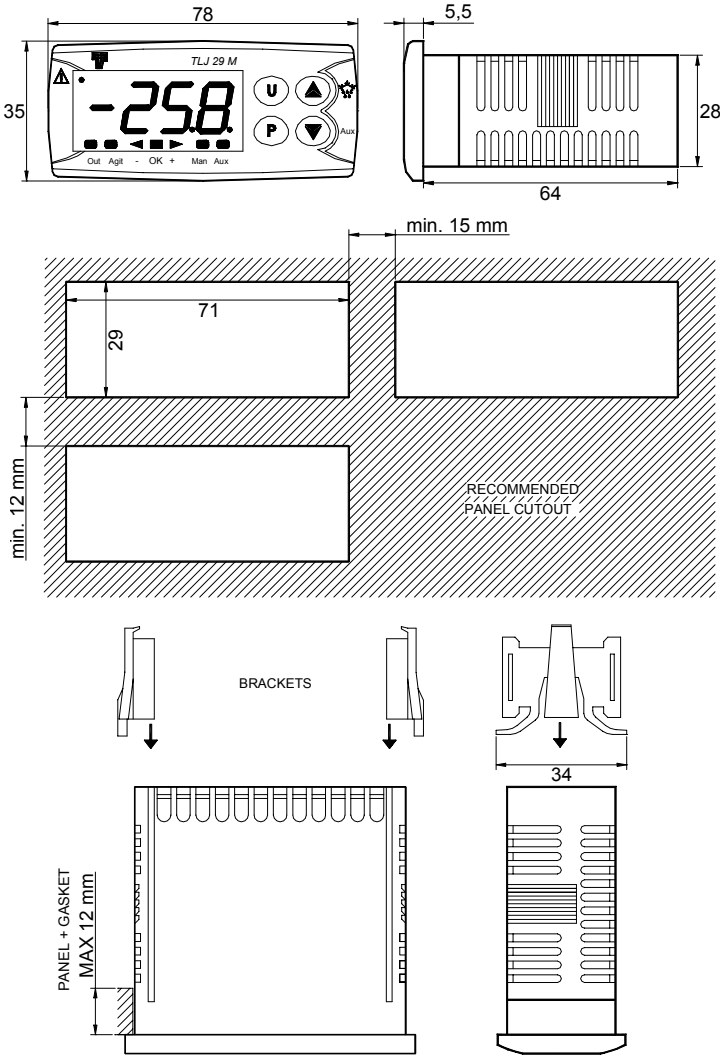
7.1 - ELECTRICAL DATA

Power supply: 12 VAC/VDC, 24 VAC/VDC, 100..240 VAC +/- 10%
Frequency AC: 50/60 Hz
Power consumption: 4 VA approx.
Input/s: 1 inputs for temperature probes: PTC (KTY 81-121, 990 Ω @ 25 °C) or NTC (103AT-2, 10KΩ @ 25 °C); 1 digital input for free voltage contacts
Output/s: up to 3 relay outputs: OUT1 SPST-NO (16A-AC1, 6A-AC3 250 VAC), AGIT SPDT (8A-AC1, 3A-AC3 250 VAC), and OUT3 SPST-NO (5A-AC1, 2A-AC3 250 VAC). 16 A Max. for common (pin. 1)
Electrical life for relay outputs: 100000 operat. (VDE om.)
Installation category: II
Measurement category: I
Protection class against electric shock: Class II for Front panel
Insulation: Reinforced insulation between the low voltage part (supply H type and relay outputs) and front panel; Reinforced insulation between the low voltage section (supply type H and relay outputs) and the extra low voltage section (inputs); Reinforced between supply and relay outputs; No insulation between supply F type and inputs.

7.2 - MECHANICAL DATA

Housing: Self-extinguishing plastic, UL 94 V0
Dimensions: 78 x 35 mm, depth 64 mm
Weight: 115 g approx.
Mounting: Flush in panel in 71 x 29 mm hole
Connections: 2,5 mm^2 screw terminals block
Degree of front panel protection : IP 65 mounted in panel with gasket
Pollution situation: 2
Operating temperature: 0 ... 50 °C
Operating humidity: 30 ... 95 RH% without condensation
Storage temperature: -10 ... +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 or at programmed times (Real Time Clock Defrosting) by Electric Heating or hot-gas / reverse cycle
Measurement range: PTC: -50...150 °C / -58 ... 302 °F;
NTC: -50...109 °C / -58...228 °F
Display resolution: 1 ° or 0,1°
Overall accuracy: +/- 0,5 % fs
Sampling rate: 130 ms.
Display: 4 Digit Red h 12 mm
Endurance time of the internal clock without power supply: 4 hours approx. by internal condenser
Compliance: ECC directive EMC 2004/108/CE (EN 61326), ECC directive LV 2006/95/CE (EN 61010-1)

7.5 - INSTRUMENT ORDERING CODE

TLJ 29 a b c d e ff M

a : POWER SUPPLY
H = 100...240 VAC
L = 24 VAC/VDC
F = 12 VAC/VDC

b : AGIT OUTPUT
R = RELAY

b : OUT3 OUTPUT
R = RELAY
- = No

d : BUZZER
B = BUZZER
- = No

e : Not available code
ff : Special codes