KOSMOS SERIE

CODE: 30727126 EDITION: 05-09-2006

INSTRUCTIONS MANUAL
COUNTER – TOTALIZER
TACHOMETER - TOTALIZER
PART 2 / 2

MODEL BETA-D

PROTOCOL MODBUS-RTU COMPATIBLE

APPENDIX - INDEX

The output options are supplied in a separate way with its own instructions manual describing installation card, wiring and electrical characteristics and the general instructions for programming.

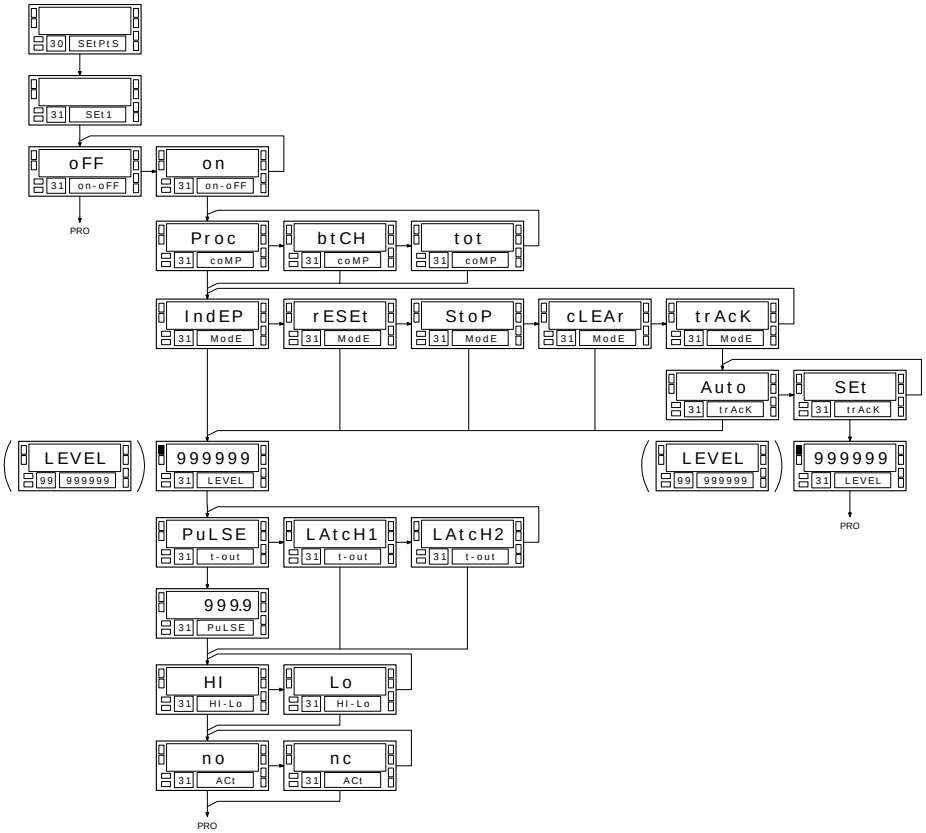
When the Tachometer option is active, this one will be the PROCESS variable (or in 3 channels case, the PROCESS variable), this is to say, the measurement of the speed

APPENDIX A. SETPOINTS

Index

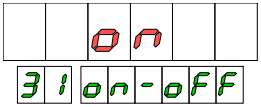
Programming and setpoints setup depends on if they are referred to the variable "pulse counter or tachometer".
When the tachometer function is activated, this last will be the variable Process(or in three channel case, the variable Process-A), this is to say the momentary speed.

A.1. Programming SETPOINT 1 referred to a counter (valid for the rest of setpoints)

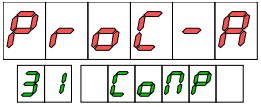


A.2. Ways of working

SELECTION ON-OFF



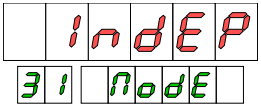
COMPARISON



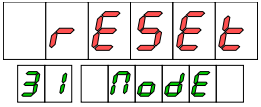
The setpoints can be referred to the PROCESS, BATCH or TOTAL variables of any channel.
When are referred to any variable of C channel, the comparison is done at the refreshing rate of this variable, this is to say, every 10ms.

FUNCTIONS
At the setpoint activation, in addition to change the output state, a specific action is done over the process that is independently programmable for every setpoint.
The action is only done on the activation edge of the output, never when the alarm condition is already established

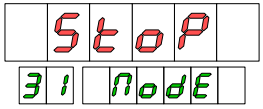
FUNCTIONS



INDEP. No action is done

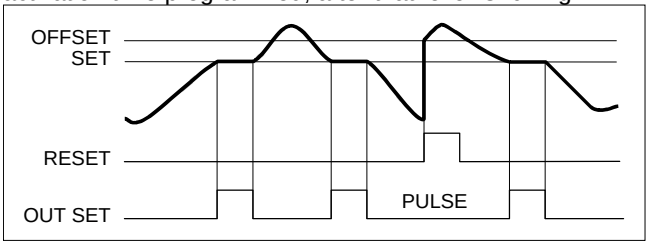


RESET. Puts to zero the variable referred by the setpoint or, if it's the PROCESS value , to the preset value. (BATCH y TOTAL have no preset, always are reset to zero).
1. In PULSE configuration the reset action is done in a cyclic way, this is to say , the relay is activated on setpoint value reseting the counter and deactivating at the end of programmed time. The operation is done again at every reached of setpoint value as long as the activation time of relay doesn't be longer than the time to pass again through the setpoint.
2. In LATCH1 or LATCH2 configuration the relay activation time should be minimum putting the counter to zero and deactivating the relay immediately, this should be taken into account when using this configurations.

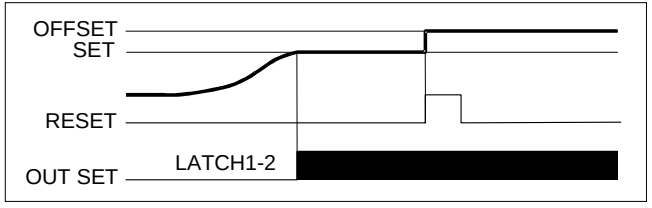


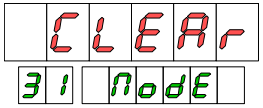
STOP. Stops the counter. All counter variables are hold , not only what is related to the setpoint.

1. In PULSE mode the counts stops only during the activation time programmed, after that follows runing.



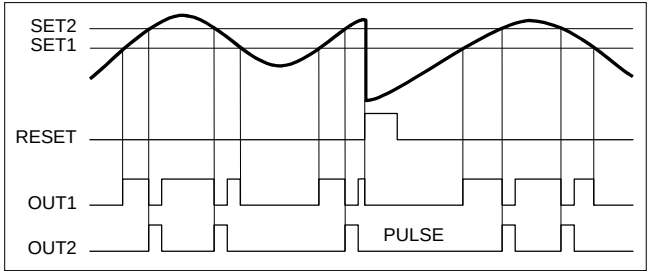
2. In LATCH1 y LATCH2 mode se para el contador definitivamente y sólo reanuda la marcha cuando se realiza un reset del contador. El contador arranca en el valor cero o de offset.



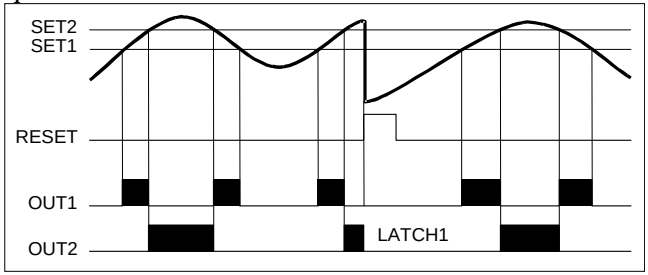


CLEAR. Deactivates the previous relay if is active at the moment of this action. The previous setpoint for number 1 is number 4.
If the previous setpoint is not active when occurs the action, this will activate in a normal way when reach the condition.

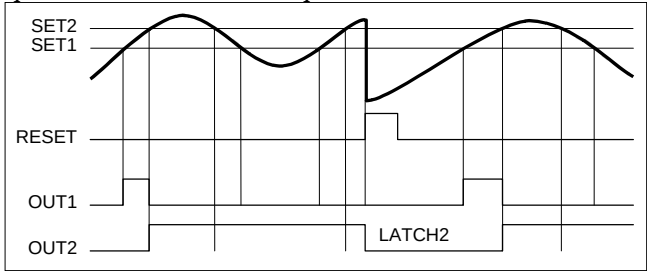
1. In PULSE configuration the deactivated relay comes back to be active, if it's corresponding, once the programmed activation time for this relay has finished

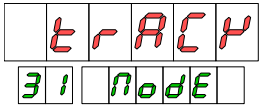


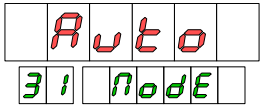
2. En la configuración LATCH1 el relé desactivado vuelve a activarse, si corresponde, cuando cesa la condición de activación del relé que efectúa la acción.



3. En la configuración LATCH2 el relé desactivado queda permanentemente en este estado. Sólo podrá volver a activarse, si corresponde, en un reset que desenclave el relé que efectúa la acción.



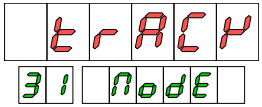


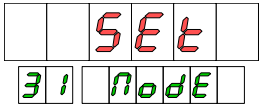


TRACK AUTO. There is used to fit of automatic form the quantity that, in a system of dosing, is programmed as limit to give the order of cutting the flow of material. It is necessary reset the display in every measurement (if the setpoint is programmed in mode pulse) the reset will do of automatic form). The accumulated whole is indicated in the auxiliary display and, if is selected the function BATCH RESET, the number of realized measurements will be accumulated in the variable BATCH.

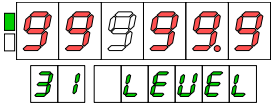
1. To programme the setpoint in way PULSE allows to realize this action of automatic form calculating the approximate time that is late in the display to be established since the setpoint is reached until stops the process. This time, or slightly large, will be programmed as time of activation of the relay impulsional.

2. Programming the setpoint in way LATCH the action is realized manually by the operator providing a reset as soon as the display has become stable. In mode PULSE, it is necessary to have the precaution of the setpoint programmes in way "LO" in order that the relay is activated, instead of be deactivating, after the time of programmed impulse since the function is realized in the activation.





TRACK SET. It is used as pre-alarm of the setpoint that precedes in number. The setpoint that precedes the number 1 is the number 4.
The value of setpoint that is programmed in this case is the distance in points with regard to the value of setpoint precedent.

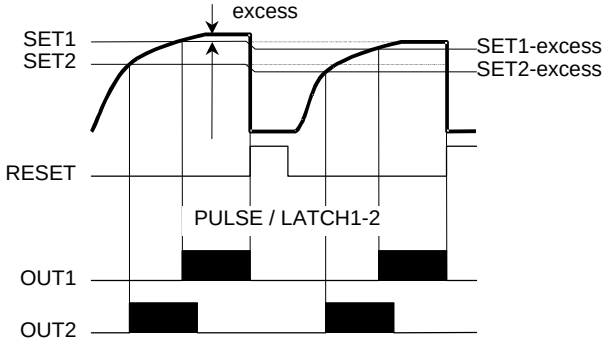


The value of display in which the output will be activated is the value of the previous setpoint minus the programmed value like track set. If it was negative, the output would be activated in the value of the previous setpoint added with the track set.
The parameters of functioning will be those of the main setpoint.
We suppose that one machine that wraps reels of thread, have to cut and seal the reels every 100.0 meters of thread and that before, in order that these operations can be realized, is necessary to reduce the speed of the rollers, for example when a 5.0 meters lack to complete the process. This application might be realized programming the setpoint 1 of value 100.0 and the setpoint 2 with function TRACK SET of value 5.0.

The output of the setpoint will take charge of the maneuver of speed reduction of the machine (being activated when the display coming to 95.0) and the output of the setpoint will take charge of the maneuver of cuuting and sealing when the display to come to 100.0.
SET1 = 100.0 (with function TRACK AUTO and way PULSE, the reset would be automatic on having come to 100.0).

SETPOINT VALUE

The setpoint value are programmed on the whole range of display, with polarity and with the decimal point on the same position that the variable are referred.
When is referred to a PROCESS variable or BATCH, its value is programmed with 6 digits on main display.

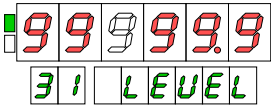


SET1 = 100.0 (with function TRACK AUTO and way PULSE, the reset would be automatic on having come to 100.0)

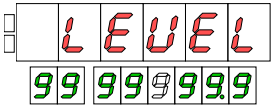
SETPOI NT'S VALUE

The values of setpoint are programmed in the whole range of display, with sign and with the decimal point in the position of the variable to which they refer.

When is referred to the PROCESS or BATCH , its value is programmed with 6 digits in the main display.



When it is referring to a TOTAL variable, its value is programmed with 8 digits in the secondary display. The first digit can be a number of 0 to 9 or one negative sign.



A.3. Output configuration

A.3.1. Configurations Pulse, Latch, HI-LO, NO-NC

ACTIVATION TIME

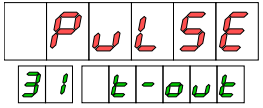
The activation of an alarm of setpoint takes place in the moment in which the display reaches the programmed value.

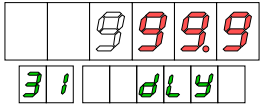
The state of alert disappears, according to programming, of three different ways;

PULSE(deactivation after a programmed time),

LATCH1 (deactivation when stops the condition of alarm) and

LATCH2 (deactivation when a reset is done)





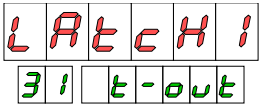
PULSE

Activation when the display reaches the value of setpoint already is in ascending (rising) or descending sense.

The relay is not activated when in the connection of the device or after a special action (reset, load) the display takes the value of the setpoint.

Deactivation after the time of programmed impulse.

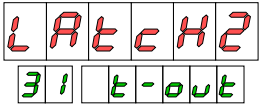
(Programmable from 0.1 to 999.9 seconds).



LATCH1

Activation when the display is in a value that overcomes the value of setpoint.

Deactivation when the display goes on to a value below the value of setpoint.



LATCH2

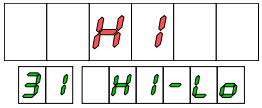
Activation when the display is in a value that overcomes the value of setpoint.

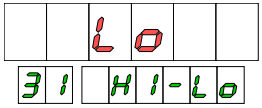
Interlock in the flank of activation of the relay, NOT when the condition of alarm is established, in which case is activated but it is not latched.

De-interlock. Once activated and latched it will not be deactivated when the condition of alarm stops but yes from a reset of the variable to which it is referred providing that the new value of display is not in condition of alarm, in which case will be deactivated neither the relay nor unlatch.

Deactivation. The form of de-interlocking a relay without reset the counter is to use the logical function n º 24 (reset relays latch), that de-interlock all the relays and deactivates those who are not in condition of alarm.

MODE HI-LO

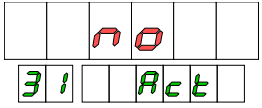


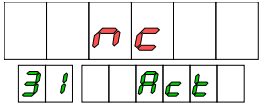


In mode **HI** the output is activated when the display is equal or greater than the value of setpoint and is deactivated when it is less.

In mode **LO** the output is deactivated when the display is equal or greater than the value of setpoint and is activated when it is less.

MODE NO-NC

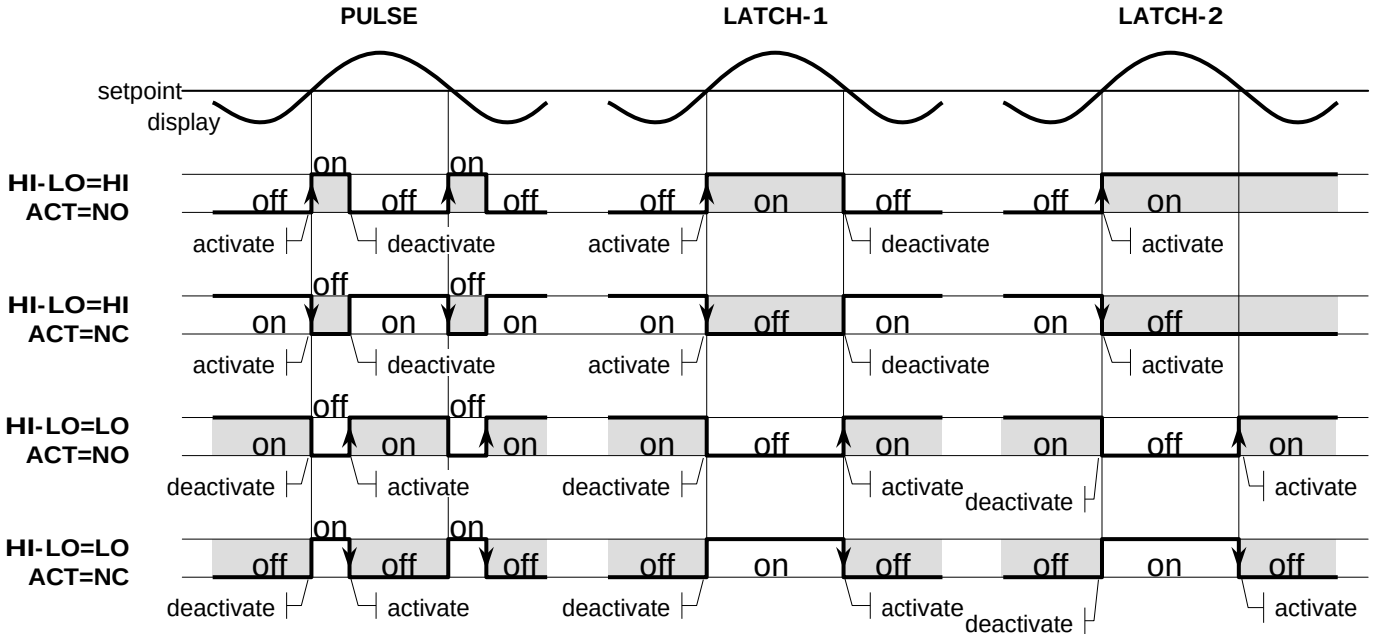




NOT (normally open) it means that the output of setpoint will be deactivated in normal condition and activated in of alarm's condition.

NC (normally closed) means that the output of setpoint will be activated in normal condition and will be deactivated when it reaches the condition of alarm.

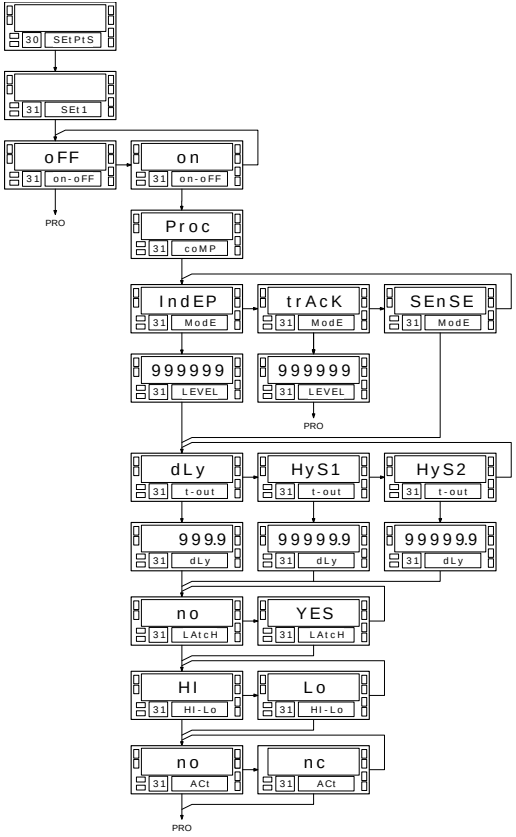
A.3.2. Summary diagram of ways of working



: Activation edge of alarm where are done the setpoint functions (RESET, STOP, etc...) and where the relays make LATCH2
: Alarm zone

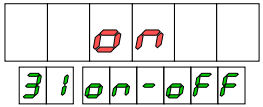
ON : Relay and LED activated. **OFF** : Relay and LED deactivated.

A.4. Programming setpoint 1 referred to the tachometer (rest of setpoints the same)

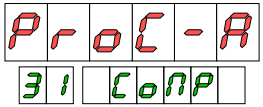


A.5. Working ways

SELECTION ON-OFF



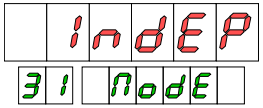
COMPARISON



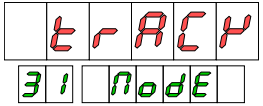
If is wanted to refer one o more setpoints to the instantaneous speed, the variable of comparison will have to be PROCESS or, in case of 3 channels PROCESS-A.

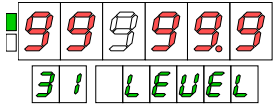
SPECIAL FUNCTIONS

The setpoint referred to speed can have three specific functions on the process such as control of value limit (INDEP), pre-alarm or safety alarm (TRACK) and indication of sense of rotation (SENSE).

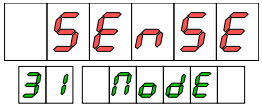


INDEP. In independent way, a value is programmed of display above or below which the alarm will be activated.
The value of setpoint corresponds to an instantaneous speed and does not have sign.





TRACK. It is used as pre-alarm or safety alarm of the setpoint that precedes in number. The setpoint that precedes the number 1 is the number 4.
The value to programming is the distance in points with regard to the value of setpoint precedent.
The value of display in which the output will be activated is the value of the previous setpoint fewer value programmed like track.
If it was negative, the output would be activated in the value of the previous setpoint more of track set.
The parameters of functioning are not programmed but they take directly of those of the main setpoint.



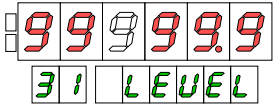
SENSE. In mode SENSE, the setpoint is not referred to the speed but to the sense of rotation. **The condition of alarm takes place when the sense is negative**. That the output is activated or not will come determined by the parameters HI-LO and NO-NC.

The sense of rotation determines the direction of count of the totalizer associated with the channel A, for that only the configurations in which the channel A can count and discount can indicate variation of sense.

These they are: 1 channel, modes 'up-do', 'dir', 'PH1', 'PH2' and 'PH4'.

SETPOINT VALUE

The values of setpoint for tachometer are referred to the variable PROCESS A and are programmed without sign and with the same decimal point that has this variable.



Depending on the setpoint function previously selected, the programming of this value will be done of the following ways:

IndEP: is programmed the value of display where the alarm must be activated.

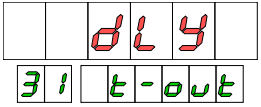
TrACk: is programmed of the number of points of display for below or over the previous setpoint in which there is activated the alarm used as pre-alarm or safety alarm.

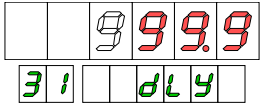
SenSE: no value is programmed.

A.6.1. Output mode definition (delay-hysteresis, latch, hi-lo, no-nc)

RANGE OF ACTIVATION

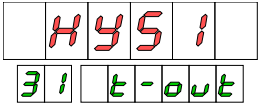
There are three ways of activating the setpoint output:

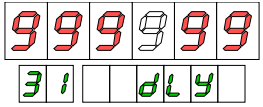




DLY. In way 'dly' delay, the output is activated with a programmable delay when the condition of alarm having taken place and maintained, is deactivated with the same delay on having eliminated the condition of alarm.

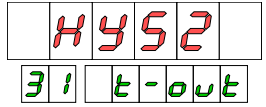
The time of delay is programmable of 0.1s to 999.9s

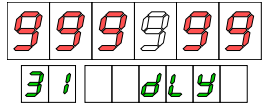




HYS1. In way 'hys1' (hysteresis asymmetric) the output is activated in the value of setpoint and a programmable number of points is deactivated below the setpoint.

The level of hysteteris is programmable in the whole range of the display (0 to 999999) with the decimal point in the position of the display.



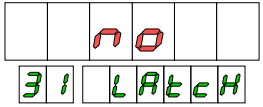


HYS2. In way 'hys2' (hysteresis symmetrical), the output is activated a programmable number of points below the setpoint and the same number of points is deactivated over the setpoint.

The number of points is programmable of 0 to 999999 with the decimal point in the position of the display. The value to programming will be the half of the total margin of hysteresis, that is to say, supposing that the value of setpoint was 1000 and the value programmed of hysteresis-2 was 100, the range of display in that the alarm would be activated between 900 and 1100.

LATCH

The function latch is applied when it is necessary to keep an alarm activated still when the condition of activation has disappeared. For example to know if, at the conclusion of a cycle of measurement, the process has exceeded in some moment a value limit.



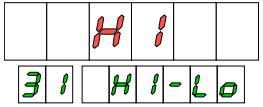
no does't latch the output
YES Latch the output on the activation edge

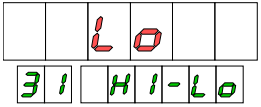
When there is selected the option 'YES', the output of setpoint is activated when the display reaches the programmed value and it will not be deactivated any more than in a disconnection of the device or by means of the logical function 26 (in rear conector).

The output is activated but it is not latched if on having connected the instrument, the display has a value that is in condition of alarm. The latch takes place only in the edge of activation of the output in a step along the setpoint.

MODE HI-LO

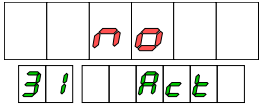
In way **HI** the output is activated when the display is equal or greater than the value of setpoint and is deactivated when it is less.
In way LO the output is deactivated when the display is equal or greater than the value of setpoint and is activated when it is less.

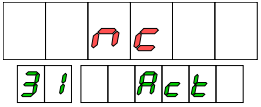




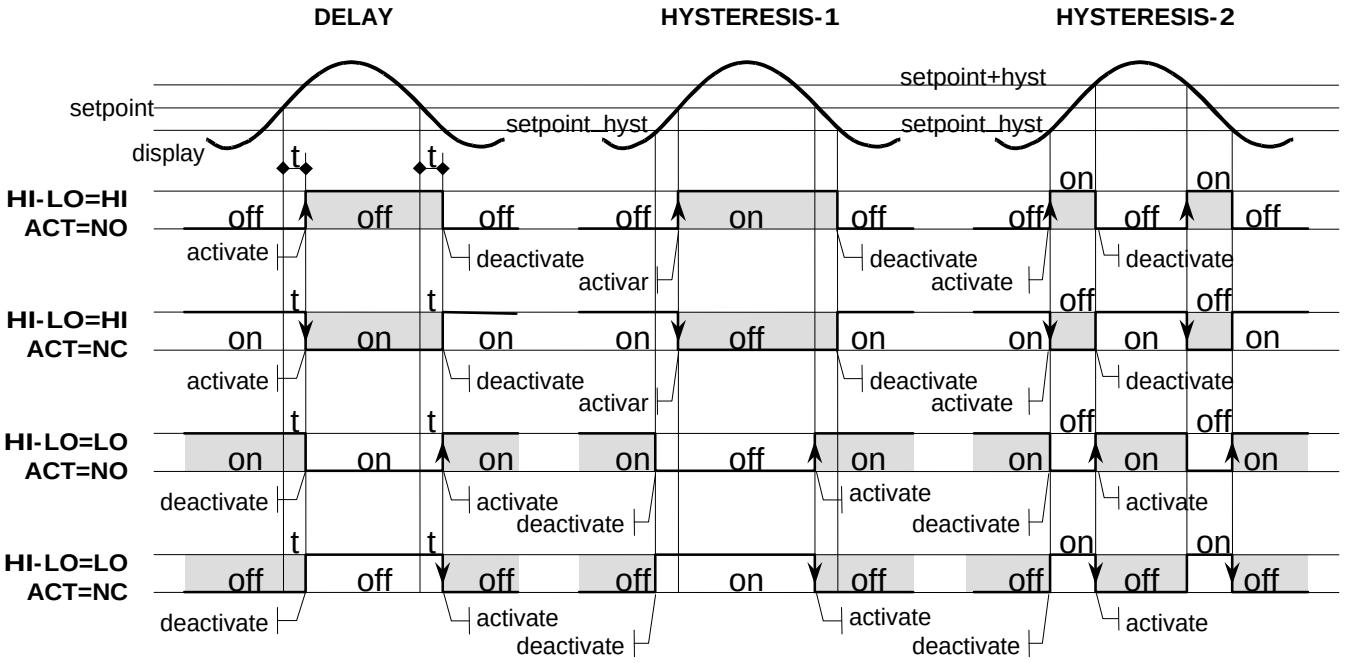
MODE NO-NC

NOT (normally open) it means that the output of setpoint will be deactivated in rest and activated in condition of alarm.
NC (normally closed) means that the output of setpoint will be activated in rest and will be deactivated when it reaches the condition of alarm.





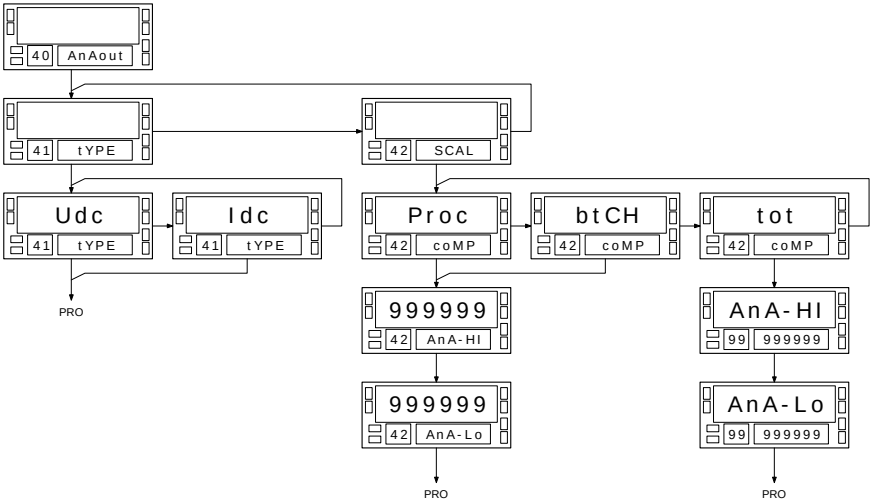
A.6.2. Summary diagram of ways of working



▲ : Activation edge of alarm where are done the setpoint functions (RESET, STOP, etc...) and where the relays make LATCH2
▭ : Alarm zone

ON : Relay and LED activated. **OFF** : Relay and LED deactivated.

APPENDIX B. ANALOG OUTPUT



The analogical exit is updated every 10ms.
The range of the output signal is programmed for any range of display, being able to be selected like display the PROCESS (counter or tachometer), the TOTAL or the BATCH of anyone of the channels (providing that above mentioned variable is enabled).

Respect of the instructions of programming that are given in the manual of the option, the menu has been eliminated 'FILTER' and the programming of the scale has been modified so that the output range to programming can refer to any variable that the instrument has enabled.
If the variable is TOTAL, the range is programmed in the secondary display.

APPENDIX C. SERIAL OUTPUT RS232C or RS485

PROTOCOLS

It is three protocols of communication represented by the indication 'Prot-1', 'Prot-2' and 'Prot-3' that correspond to the protocols DITEL, ISO 1745 and MODBUS respectively.

AVAILABLE COMMANDS

The list of commands that is given in the manual of the option RS232C ó RS485 must be replaced by the following one:

Commands in protocol **1** **2** **3**

hold+reset1	'h'	'0h'	'h'
reset relés latch	'n'	'0n'	'n'
reset de offset	'r'	'0r'	'r'
set offset	't'	'0t'	't'
reset1	'z'	'0z'	'z'

Data request in protocol **1** **2**

vallue of main display	'D'	'0D'
value of auxiliary display	'T'	'0T'

Data request and modification in protocol **2**

send setpoint # value	'L#'
modify setpoint # value	'M#'

Request and modification of information in protocol **3**

All the information contained in the memory of the instrument can be read and, if they are in a zone of allowed writing, modified in blocks of up to 250 bytes. The writing is limited to the area of information of programming of the instrument. The reading does not have limitation.

SENDING INFORMATION TO A PRINTER

Through the RS232C ó RS485 output also it is possible to realize a selective transmission of information of the instrument to a printer or a PC.

The logical functions of printing allow to realize transmissions from the instrument.

The **format of transmission** consists in:

- a character of beginning of message followed by the direction of the device,
- a line in blank,
- one or several lines containing the information according to logical programmed function
  And, if it has been selected to print date and hour
- two lines in blank,
- a line with date and hour
  To finish
- a line in blank

The functions of printing and how to programme them they are in the manual present in the section ' 5.2. Logical programmable functions in connector ', pages. 43 to 46.

The instruments are warranted against defective materials and workmanship for a period of three years from date of delivery.

If a product appears to have a defect or fails during the normal use within the warranty period, please contact the distributor from which you purchased the product.

This warranty does not apply to defects resulting from action of the buyer such as mishandling or improper interfacing.

The liability under this warranty shall extend only to the repair of the instrument. No responsibility is assumed by the manufacturer for any damage which may result from its use.

All the DITEL products benefit from an unlimited and unconditional warranty of THREE (3) years from the date of their purchase. Now you can extend this period of warranty up to FIVE (5) years from the product commissioning, only by fulfilling a form.

Fill out the form in our website:
http://www.ditel.es/warranty

INSTRUCTIONS FOR THE RECYCLING

This electronic instrument is covered by the **2002/96/CE** European Directive so, it is properly marked with the crossed-out wheeled bin symbol that makes reference to the selective collection for electrical and electronic equipment which indicates that at the end of its lifetime, the final user cannot dispose of it as unsorted municipal waste.

In order to protect the environment and in agreement with the European legislation regarding waste of electrical and electronic equipments from products put on the market after 13 August 2005, the user can give it back, without any cost, to the place where it was acquired to proceed to its controlled treatment and recycling.

DISEÑOS Y TECNOLOGIA, S.A.
Polígono Industrial Les Guixeres
C/ Xarol 8 C
08915 BADALONA-SPAIN
Tel : +34 - 93 339 47 58
Fax : +34 - 93 490 31 45
E-mail : dtl@ditel.es

www.ditel.es