



SERIE KOSMOS

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TEACH FUNCTION

On all of the KOSMOS series instruments used for measuring analogue signals, especially process signals, load cells and potentiometers, etc. There are two methods of programming the measurement scale, depending on the input signal.

The first allows for the correspondence values between the input signal and the required display to be entered using the instrument's keyboard.

The second, known in our manuals as **Teach**, allows for the values corresponding to the real input signal provided by the sensor to be entered when the physical size to be measured is applied. Where known physical sizes are available, the Teach method provides overall calibration of the sensor-instrument unit and, if the instrument used includes linearisation by sections, a calibration can be made that hugely improves measurement precision.

APPLICABLE TO:

ALL MODELS FOR
PROCESS SIGNALS,
LOAD CELLS AND
POTENTIOMETERS

TEACH FUNCTION

Example: Indicator for ALPHA-C load cell, load cell with its platform.

With all the mechanical system fitted but without any material on the platform, the programming is started using the **Teach** method. The instrument will read the signal generating the load cell as a result of weighing the mechanical parts forming the platform and will display the corresponding mV. Once the reading is stable, it will be validated and the keyboard will be used to indicate that it corresponds to display value zero. A calibrated weight is then placed on the platform, which will generate a new mV signal that is validated, finally assigning the display value to said calibrated weight to leave the system completely calibrated.

This system allows for the dispersions of the theoretical values of the sensors to be absorbed, adapting automatically to it.

APPLICABLE TO:

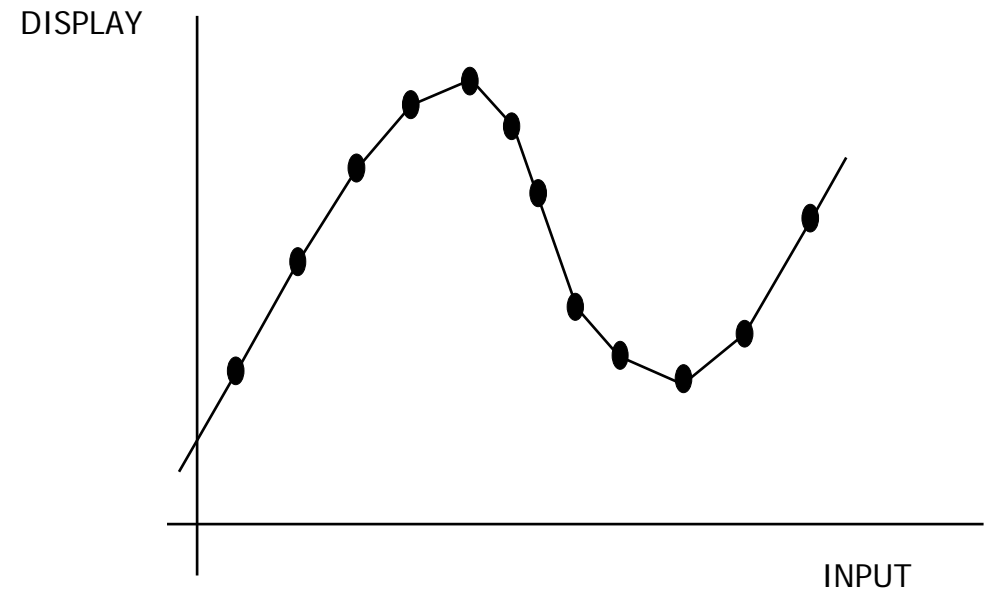
ALL MODELS FOR
PROCESS SIGNALS,
LOAD CELLS AND
POTENTIOMETERS

LINEARISATION BY SECTIONS

In non-linear processes it is possible to program up to 30 input-display points (depending on the model). Every two points are joined by a straight stretch and the whole is a curve that represents the ratio between the input value and the display value. The more points programmed and the closer they are, the greater the precision obtained in the measurements.

The input values must always be programmed in either increasing or decreasing order, avoiding the assigning of two different display values to the same two input values.

The display values can be entered in any order and the same values can even be assigned to different inputs. The ratio established between the first two points on the scale is followed below the first programmed point. The ratio established between the last two points on the scale is followed above the first programmed point.





KOSMOS SERIES PANEL INSTRUMENTATION

LINEARISATION BY SECTIONS

Most notable applications of linearisation by sections

	Maximum no. of points	APPLICABLE TO:
Irregularly-shaped tanks (Volume depending on the pressure)	15	PICA 100-P
Sensors with reduced linearity This allows for the linearity of the instrument/ sensor unit to be increased, providing better measurement results at a lower cost than that of applying a more expensive sensor. (Applicable to pressure sensors, movement collectors, stress sensors, etc.)	11	MICRA-M
	30	{ ALPHA-C, ALPHA-P, BETA-M GAMMA-M
	15 per input	KAPPA-M

VOLUME CALCULATION

Display Volume Depending on the Pressure

There are different ways of calculating the volume of a liquid inside a curved or irregular-shaped tank.

The height of the liquid in relation to the base of the tank can be known at all times by fitting a pressure sensor to the bottom of the tank, appropriately scaling the input.

APPLICABLE TO:

The instrument has several options to display volume:

1. Scale the input to indicate the volume directly using the **teach** method and linearisation by sections.

The method consists of filling the tank with known volumes at different heights. A **teach** is made of the input signal at each height and the known value of the total entered is programmed as the display corresponding to that signal. The more points programmed the more precise the measurement.

ALPHA-P

BETA-M

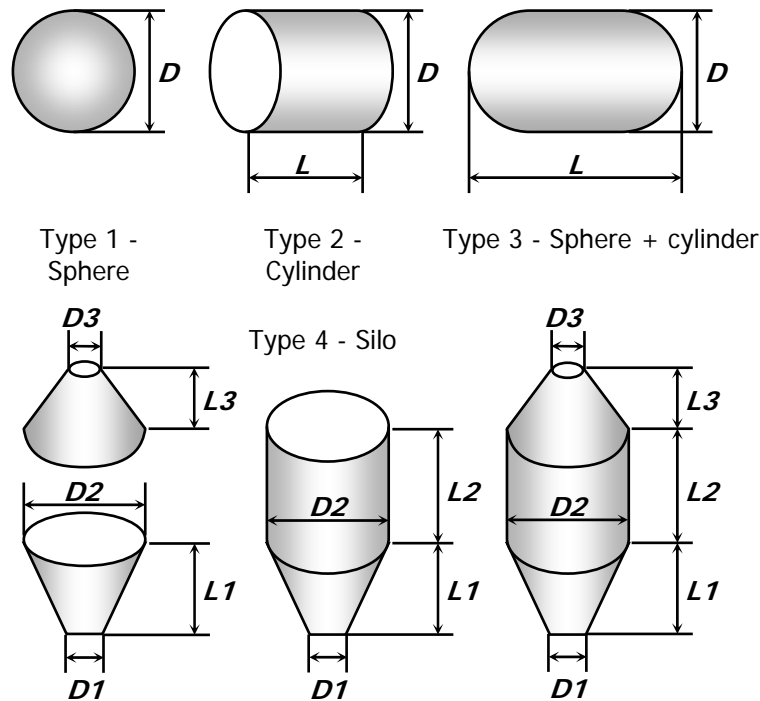
2. If the tank is a regular shape and the mathematic ratio between the input signal and the volume to be indicated is known, simply scale the display with the pressure-volume ratio in mind. For example, in the case of a cylindrical tank positioned vertically, the volume is the result of the area of the base multiplied by the height of the liquid.

3. A third method to indicate volume is to allow the instrument to make the calculations automatically depending on the input signal. This method can be used provided that the shape of the tank is among the four represented in the following figures.

AUTOMATIC VOLUME CALCULATION

Automatic Volume Calculation

The instrument automatically calculates the volume in spherical, cylindrical, combined cylindrical and spherical and silo tanks. Users simply enter the measurements of the tank as requested by the programme.



APPLICABLE TO:

ALPHA-P

BETA-M



KOSMOS SERIES PANEL INSTRUMENTATION

PROGRAMMABLE LOGIC FUNCTIONS

The programmable functions, up to 4 simultaneous of 36 depending on the instrument type, allow for the application possibilities of the equipment to be increased immensely.

There are 3 or 4 inlets on the specific connector located behind the instrument that allows for buttons or PLC outlets to be connected to enable the previously programmed function when required.

Some notable functions are:

TARE, reset de TARE

HOLD

PRINT

RESET LATCH SETPOINTS

FALSE SETPOINTS

INHIBIT SETPOINTS

TOTAL DISPLAY, DISPLAY BATCHES

SEND DIFFERENT VALUES TO PRINTER (NET, GROSS, TARE, ETC)

SPECIFIC FUNCTIONS DEPENDING ON INSTRUMENT

APPLICABLE TO:

No. of functions

13

36

19

36

34

26

MICRA-M

ALPHA-C, ALPHA-P

ALPHA-T

BETA-M

GAMMA-M

KAPPA-M



KOSMOS SERIES PANEL INSTRUMENTATION

SPECIAL LOGIC FUNCTIONS

INPUT Shows the real value of the input on the selected input unit. (not in MICRA-M or KAPPA-M)

TARE Shows the absorbed tare value (not in MICRA-M, KAPPA-M)

FALSE SETPOINTS The instrument acts as if it had an option of 4 relays, allowing for the front leds to signal the enabling of the relays that may be used to quickly see the value of the measurement in relation to certain prefixed limits.

APPLICABLE TO:

MICRA-M

ALPHA-C

ALPHA-P

BETA-M

GAMMA-M

KAPPA-M

ANALOGUE INTEGRATOR/TOTALISER

The instruments with this function allow for analogue signals to be integrated in time or totalised to a total of 8 figures or 7 with a sign (-)

Selectable time base of: seconds, minutes, hours or days.

Multiplying factor, decimal point and limit value below the dynamic **Low-cut** value programmable.

The main application of this function would be to measure instant flow and accumulated wear. On certain pieces of equipment the presentation may be simultaneous thanks to the double display in **BETA-M and KAPPA-M**, whereas in others with just one display, such as in **ALPHA-C, ALPHA-P**, it is requested using the keyboard or programmable logic function, presenting the total alternatively in two parts.

If the instrument includes a relay output option, the setpoints can be programmed so that they are related to the total.

Low-cut: Dynamic signal value (Process) below which the totaliser does not accumulate.

APPLICABLE TO:

ALPHA-C

ALPHA-P

BETA-M

KAPPA-M

TARE FUNCTION

The instruments especially related to load cell and/or process signals have a function (normally keyboard-based) that allows for the value presented on the display to be absorbed as the tare value, allow for a net value to be measured without taking the container into account.

The value is retained on memory and even saved if the power to the equipment is disconnected.

All of the models will display a lit indication when they have a tare value on memory (no equipment must be calibrated with a tare value on memory).

The state-of-the-art MICRA-M equipment, as well as the classic Tare function, is fitted with the possibility of entering this value by keyboard or by a function that allows for the net content value of a receptacle to be entered and, on placing said receptacle over the sensor (normally load cell), it calculates the tare value and shows the net value, working towards unloading until the real contents are zero.

APPLICABLE TO:

PICA100-P
JUNIOR /JUNIOR 20 LCC
MICRA-M
ALPHA-C, ALPHA-P
BETA-M
GAMMA-M
KAPPA-M

PROGRAMMABLE BRIGHTNESS LEVEL

On some models of the KOSMOS range it is possible to programme different levels of display brightness to adapt it to the surroundings where they are installed.

Depending on the model, brightness is changed by programming or using a logic function:

PICA100-P	4 levels by programming
MICRA-M	2 levels by programming and logic function
BETA-M	2 levels by programming
KAPPA-M	2 levels by programming

APPLICABLE TO:

PICA100-P

MICRA-M

MICRA-D

MICRA-E

BETA-M

KAPPA-M

PROGRAMMABLE DISPLAY COLOUR

The new MICRA-M group of instruments includes a pioneering feature in the panel indicator market:

the programmable multi-colour LED display

By programming, it is possible to assign one of the three possible colours, **red**, **amber** or **green** to the programming display, the normal display or the alarm display.

APPLICABLE TO:

MICRA-M

MICRA-D

MICRA-E

SPECIAL SETPOINT FUNCTIONS

Direct access to setpoint value programming

This provides very fast access to setpoint value programming without having to go through all the programming steps.

Delay Triggering Programming / Hysteresis 1 or Hysteresis 2

Delay: Time that the condition must be maintained for the relay to be triggered.

Hysteresis 1: Asymmetric hysteresis

Hysteresis 2: Symmetric hysteresis that allows for the 2 or 4 outputs to be used to provision 2 or 4 different products.

APPLICABLE TO:

ALL MODELS
THAT CAN
INCLUDE
THE
SETPOINT
OPTION

ALPHA-C, ALPHA-P
BETA-M
GAMMA-M
KAPPA-M

SPECIAL SETPOINT FUNCTIONS

Example of applying Hysteresis 2 (symmetrical)

Provisioning of 4 products, each with different quantities

Using any of the instruments indicated as applicable and a **4RE** or **4OP/4OPP** option

Provisioning of 1st 10 kg, 2nd 20 kg, 3rd 40 kg and 4th 100 kg

Setpoint value 5, hysteresis 5

Setpoint value 20, hysteresis 10

Setpoint value 50, hysteresis 20

Setpoint value 120, hysteresis 50

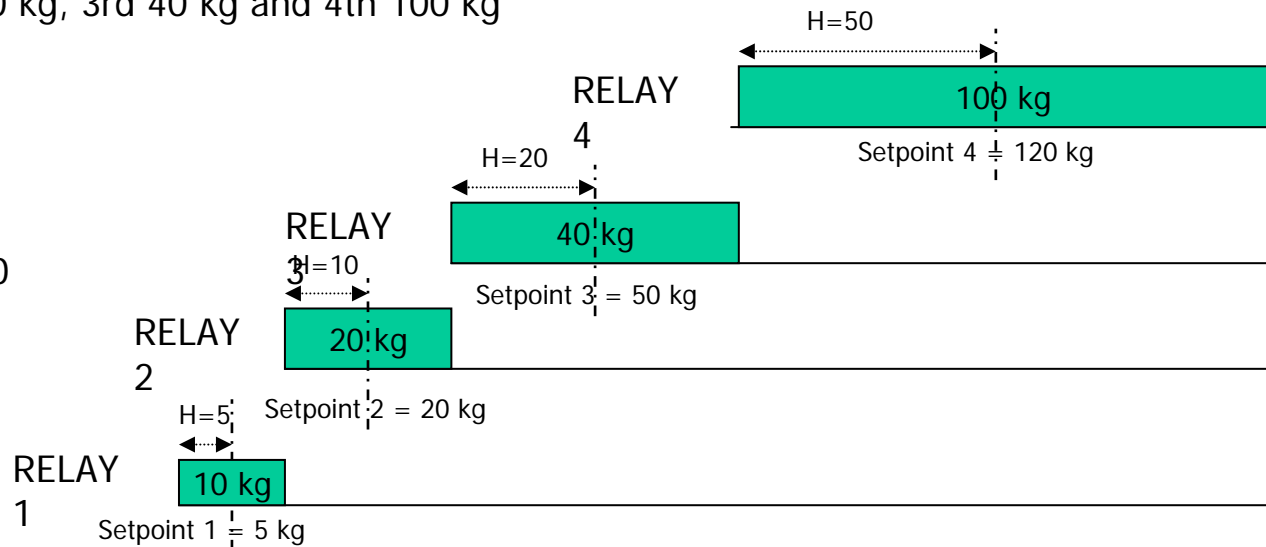
APPLICABLE TO:

ALPHA-C, ALPHA-P

BETA-M

GAMMA-M

KAPPA-M



SPECIAL SETPOINT FUNCTIONS

APPLICABLE TO:

Blinking display on reaching the setpoint value

With this option is it possible to make the entire display flash on reaching the value measured to the programmed setpoint value, maintaining this situation while the condition remains. This makes it easy to remotely detect any problems or whether a certain condition has been reached.

ALPHA-C

ALPHA-P

BETA-M

KAPPA-M

Output latch

With this option is it possible, when an output is enabled, to keep it enabled whatever the display indication. It can only be disabled using the corresponding logic function.

A possible application is detecting whether the programmed value has been exceeded at any time, without having to keep a permanent eye on the instrument indication.

ALPHA-C

ALPHA-P

BETA-M

GAMMA-M

KAPPA-M



SPECIAL SETPOINT FUNCTIONS

Enabling / Disabling from the RS2 or RS4 series channel

This function allows for any of the programmed relays to be enabled or disabled by sending a specific command through a series communications channel, independent to the function being used by the instrument.

This would enable a PC or PLC to enable or disable a part related - or not - to the instrument where the relay option resides.

Action of the setpoints depending on different variables

The setpoints can work with different variables by which the equipment is measured:

Net value, **gross** value, **peak** value, **valley** value, **total** value

APPLICABLE TO:

ALPHA-C

ALPHA-P

BETA-M

GAMMA-M

ALPHA-C

ALPHA-P

BETA-M

GAMMA-M

SPECIAL SETPOINT FUNCTIONS

Detection and automatic enabling of setpoint 2 with the peak value

The 'MAX' option is to detect peaks without filtering, the 'MAX-F' option is for filtered peak values.

In this case, all the options programmed for the setpoint are taken into account (Latch, HI-LO, RET-HYS, Blink).

The value to be programmed in the setpoint value parameter will be the display value from which the peak is assessed. Below this value it is not enabled.

The value to be programmed in the delay / hysteresis value parameter will be the time during which the relay / opto is to remain enabled once the peak has been reached (except if it is latch).

The output is enabled when the display value stops increasing (once the setpoint 2 value has been exceeded) during a number of user-programmable readings from 0 to 99.

Programming of the number of readings is displayed after programming the setpoint 2 mode when this option is selected.

APPLICABLE TO:

ALPHA-C

ALPHA-P

BETA-M

SPECIAL SETPOINT FUNCTIONS

Track-set and Track-auto Function (automatic Residue compensation)

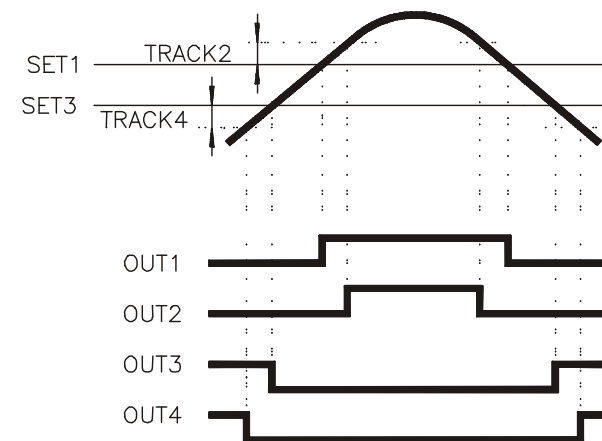
APPLICABLE TO:

ALPHA-C
ALPHA-P
BETA-M

TRACK ALARMS

The setpoints SET2 and SET4 can be programmed as SET1 and SET3 "track alarms", respectively. This type of alarm is not triggered in comparison with its pre-programmed display value but in comparison with the trigger value of the main alarms.

When programming these alarms, the main setpoint value (e.g. SET1=200) is determined and an offset assigned between it and the second alarm (e.g. TRACK2=50). Although SET1 value changes, alarm 2 (if not changed) will always be triggered 50 points above SET1. Should a negative drag value be programmed (-50), alarm 2 is triggered 50 points below SET1. Figure 2 shows an example of positive (TRACK2) and negative (TRACK4) track.





KOSMOS SERIES PANEL INSTRUMENTATION

SPECIAL SETPOINT FUNCTIONS

Track-set and Track-auto Function (automatic Residue compensation)

3./ RESIDUAL MEASUREMENT CORRECTION

On certain measurements and, more particularly, in weighing and dispensing operations, mechanical systems and installation architecture make it impossible to cause the immediate stoppage of the operation at the set point (response times, residue, etc.).

An example of residual measurement is the effect known as "residue".

Residue is produced on package filling systems in which, on reaching the programmed value, a setpoint causes the material flow valve to close until the package is removed. However, the contents of the piping or the material in the air when the valve is closed is deposited in the package, exceeding the required measurement.

The "automatic track" function (AUTO TRAC) is especially designed for correcting measurement residue. This function is based on controlling the amount by which the programmed measurement is exceeded to trigger the interruption signal so that, using the residual material, it is possible to obtain the final measurement required.

APPLICABLE TO:

- ALPHA-C
- ALPHA-P
- BETA-M



SPECIAL SETPOINT FUNCTIONS

Track-set and Track-auto Function (automatic Residue compensation)

Only the SET2 alarm has the automatic track function, with SET1 being the main alarm.

To implement the "AUTO TRAC" function, the setpoint value required is programmed in SET1.

SET2 will be programmed as the automatic track alarm (it initially takes the same value as SET1).

SET1 = Required setpoint value

SET2 = TRAC AUTO

When the SET1 value is reached, output 1 interrupts the operation but the measurement continues to increase until a value recorded as the maximum value is reached.

The maximum value detected is compared with the setpoint value and the difference between the two is memorised as the "TRAC" value, subtracting it from SET2. The SET2 value is now slightly below SET1 and, in the next measurement, SET2 will be the alarm responsible for interrupting the operation so that the final amount poured is close to the value programmed in SET1.

The adjustment process will be updated in successive measurements.

APPLICABLE TO:

ALPHA-C

ALPHA-P

BETA-M

OVERLOAD FUNCTION

One exclusive application of the GAMMA-M model allows for the sensor to be protected when working with values way outside the scale range of the display or the input signal.

Example:

Sensor: 10 kN, 1.5 mV/V, → maximum load applicable = 10.00 kN

Gamma-M Programming: $U_{excitation} = 5\text{ V}$, $U_e = 30\text{ mV}$

Signal provided by the sensor at maximum load $5\text{ V} * 1.5\text{ mV/V} = 7.5\text{ mV}$

APPLICABLE TO:

GAMMA-M

Given that the Gamma-M will give no excess scale indication until the display reaches 99.99 kN or the input signal exceeds 30 mV, at this point the sensor would be overloaded by 400 %, which could lead to its breakage or definitive malformation ($30 / 7.5 = 4$). This menu can be used to programme an excess scale indication in both directions. In the example, a value of 11.00 would give a signal when the sensor overload is only 10 %, indicating – H I- on the display. If the number 4 or 5 is enabled in digit 1 of menu 3B of the relay programme Page 51, this situation will be notified.

Solution: Using Menu 7, it can be limited to 11.00 kN. Over 11.00 (10% overload), the indication –HI- is displayed. Hence, Digit 1 can be programmed in Menu 3B to generate an alarm (see page 51).

PEAK, VALLEY AND PEAK-PEAK FUNCTION

The instruments related to the right include the maximum (peak) and minimum (valley) value detection function or, in the case of the GAMMA-M, peak-peak.

To do so, and at the rhythm of conversion of each model, every reading is analyzed and checked to see whether it is greater than the last maximum saved or less than the last minimum saved, saving it where applicable.

These values can be displayed sequentially on request by keyboard or using a logic function and are recognized through series communications.

Depending on the model, they may be permanently on display to allow for their progress to be controlled.

They can be reset to zero on request using the keyboard, logic function or series communications.

Depending on the model, they can be enable the setpoint outputs accordingly or programmed the analogue output proportional to them.

These values are saved to memory even when the power supply to the instrument is removed.

They can be printed using the logic functions.

APPLICABLE TO:

PICA100-P

MICRA's

ALPHA's

BETA-M

GAMMA-M

KAPPA-M



KOSMOS SERIES PANEL INSTRUMENTATION

KAPPA-M DESCRIPTION

The KAPPA-M model is an instrument designed to measure analogue signals and integrate them in time using simultaneous information, e.g.: (Flow and Output)

It also admits two simultaneous analogue inputs and can carry out arithmetic operations between them.

Each input can be scaled lineally, as a square root (to two decimal points where the multiplying coefficient and offset can be included) or by segments to a total of 15 per active channel, not mathematical.

Each input can also be scaled using the Teach method, which consists of applying a real signal to the input instead of entering the value using the keyboard.

The integration is done on channel 1 at a rate of 100 readings per second, i.e. all readings are accumulated.

The time base of the integrator can be by seconds, minutes, hours or days. The accumulated value can be scaled by a factor of between 0.0001 and 9999. The place of the decimal point is independent to that of the channel 1 measurement.

It is also possible to program a limit display value (Low-cut) below which the readings are not added to the integrator.

General features:

It admits input signals such as:

Load cell, pressure transducers, flow meters (instant **FLOW** measurement L and accumulated **OUTPUT**), Shunt AC measurements (ideal for galvanoplasty)

It has 26 Programmable Logic Functions

Instant display ± 9999 points and totaliser display from 9999999 to 99999999 points.

Possibility of relating the Setpoints to the Net1, Net2, Total or Mathematic value.

Two display brightness levels.

RTU ModBus communications protocol.

Selectable excitation voltages of 10, 5, 2.2 V and 24 V

Admits output options 2RE,4RE, 4OP,4OPP, ANA, RS2 and RS4.

All output options that can be included respond to 100 readings / second.

If the two inputs are used, the main display indicates the net values of the measurement of input 1, input 2 and the mathematic channel as selected by VISUAL keyboard. The auxiliary display indicates the total accumulate of input 1, whatever the channel in use.



KOSMOS SERIES PANEL INSTRUMENTATION

CERTAIN KAPPA-M APPLICATIONS

Some clients use KAPPA-M in an application where, using two Pt100 temperature sensors and two converters, they apply each 4-20 mA signal to the KAPPA-M inputs and use a third mathematical channel to see the difference in temperature between the input and the output of a pipe, triggering the corresponding relay output depending on this difference or a heat or cold generating device using the analogue output.

SERIES OUTPUT FUNCTIONS

All of the instruments with the series output option can obtain information on the measurements and parameters of the instruments and modify parameters or carry out specific orders such as resetting the tare to zero, disabling the latch of a relay or resetting the total to zero, etc.

Using the RS 485 options it is possible to place up to 32 in parallel with only 2 lines and interact with all of them using the appropriate software.

Using a series of logic functions through the RS 485 output it is possible to send different types of data accompanied by the date and the time (programmable on request) to a PRINTK180 model panel printer.

Communications between an external PC, PLC or other equipment is possible using one of the three different protocols: the ASCII - the most simple -, the ISO1745 - which provides greatest communications security as it uses check-sum - and finally the MODBUS-RTU - which is universally used.

The instruments can be fully programmed using software developed by DITEL, which is available free of charge from our website www.ditel.es.

APPLICABLE TO:

ALL MODELS
WITH SERIES
OUTPUT



KOSMOS SERIES PANEL INSTRUMENTATION

DESCRIPTION OF ALPHA-D FUNCTIONS

The ALPHA-D model is an instrument with five digits and two inputs configurable for different pulse collectors and generators that is able to carry out the following functions:

PARTIAL COUNTER

UP counter, **DOWN** counter and two-way **UP/DOWN** counter

Front panel or remote reset

Display with decimals

Display offset (counting start value)

programmable or by keyboard

Multiplying factor from 0.00001 to 99999

20 Hz debounce filter (programmable)

RESET and OFFSET keyboard lock

TOTALISER

Optional totaliser with decimal point and multiplying factor independent to the partial counter

Counting range from 99999999 to -99999999 (8 digits or 7 with minus sign)

The decimal point with 4 selectable positions

The number of inputs, mode and counting direction can be selected for the partial counter

- Alternating presentation of the high and low part of the total figure with the indication "L" or "H"
- The totaliser does not include OFFSET.
- 20 Hz debounce filter (programmable)
- RESET keyboard lock
- Front panel or remote reset
- Display with decimals
- Multiplying factor from 0.00001 to 99999, independent to the partial counter factor



KOSMOS SERIES PANEL INSTRUMENTATION

DESCRIPTION OF ALPHA-D FUNCTIONS

BATCH COUNTER

- Optional batch counter without decimal point or multiplying factor, increasing by one every time the partial counter reaches or exceeds a programmable amount between 1 and 99999.

CHRONOMETER / TIMER

- Five scales from one hundredth of a second to 9999.9 hours

- Front panel or remote reset
- Display offset (counting start value) programmable or by keyboard
- 20 Hz debounce filter (programmable)
- RESET and OFFSET keyboard lock
- Forwards or backwards counting.

FREQUENCY METER / TACHOMETER

To measure frequency, rpm, speed, flow, time.

- Fast, easy programming
- Display with decimals
- Multiplying factor from 0.0001 to 9999
- Display refresh time programmable from 0.1 to 9.9s
- Possibility of configuring measurement time to adapt the instrument to any type of signal
- Maximum and minimum values recorded.

TACHOMETER WITH TURNING DIRECTION INDICATION

- As well as the functions indicated, as a tachometer the ALPHA-D can detect the turning direction, indicating as such on the display using the LEDs A and B, available when working in **UP/DOWN**, **PHASE** or **DIREC** mode.
- The setpoints can be related to positive or negative speeds. (e.g. Application to detect whether a motor turns in the correct direction on starting)

DESCRIPTION OF ALPHA-D FUNCTIONS

TACHOMETER WITH TOTALISER

- the totaliser has the same features as the counter, providing two simultaneous pieces of information on the same signal.

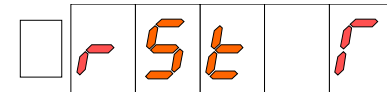
e.g. Flow and output indication, typical case in the measurement of fluid speed and consumption

All configurations also have 29 LOGIC FUNCTIONS PROGRAMMABLE through the rear connector and that provide the equipment with additional, remote-controlled functions.

36 commands are also available through the series channel, allowing for the setpoint values to be controlled and modified and the value of the counters to be read and reset, etc.

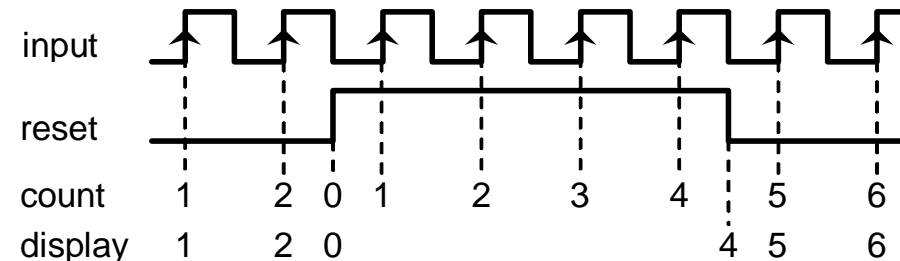
It allows for the total or partial blocking of access to programming using a numeric 4-figure code and return to factory configuration.

There are two ways of **resetting** using the front keyboard



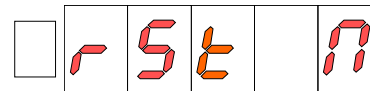
PRESS reset:

Resetting occurs on pressing the RESET button but without stopping the counter. On releasing the key, the value that would have been internally reached is shown on the display.

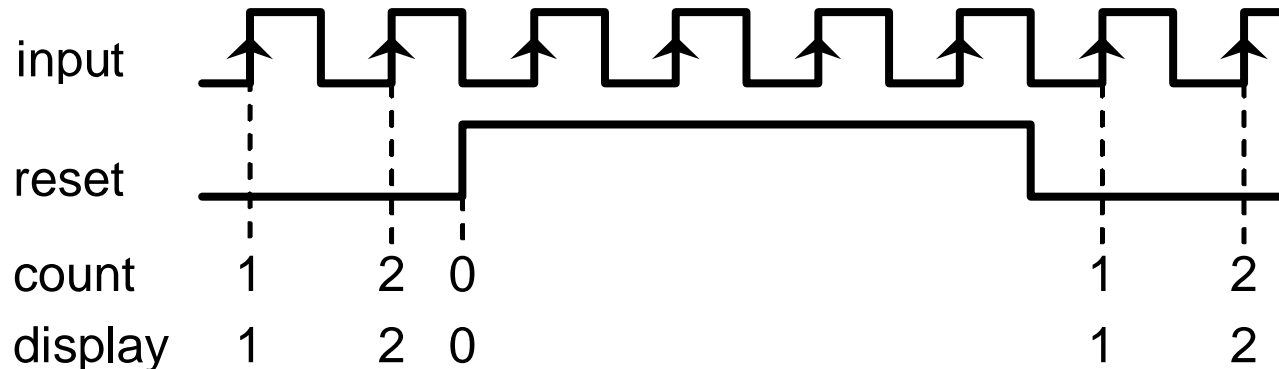


DESCRIPTION OF ALPHA-D FUNCTIONS

MAINTAINED reset:



Resetting occurs on pressing the RESET button and the counter stops while the key is pressed down. On releasing the key, counting restarts from zero.



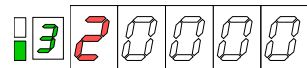
DESCRIPTION OF ALPHA-D FUNCTIONS

Certain details on the actions of relays in counter-chronometer mode

DIGIT 1 ON-OFF SELECTION

0=disabled

Is not enabled



1=pulse

The output is enabled at the setpoint value and is disabled after a programmable time from 0000.1 to 9999.9 s

2=latch

The output is enabled at the setpoint and remains enabled until the indicator exits the alarm zone

3=rscm

The output is only enabled or disabled by order received by the series channel.

DIGIT 2 HI-LO SELECTION

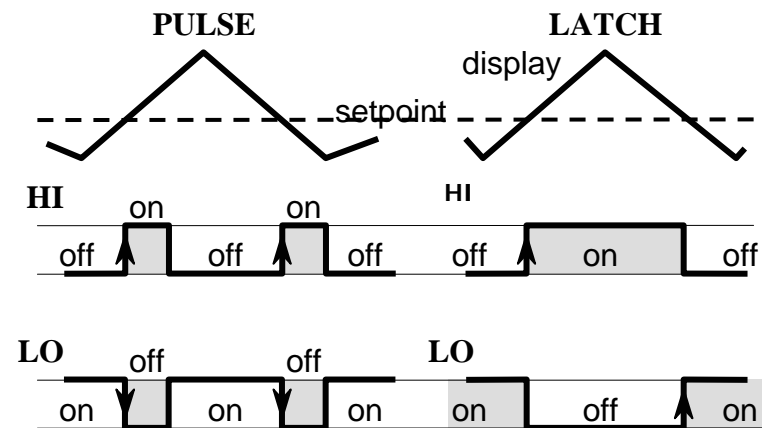
0=HI

The output is enabled above the setpoint value

1=LO

The output is enabled below the setpoint value

SUMMARY OF ON-OFF/ HI-LO MODES



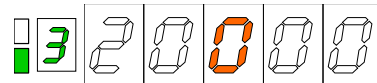
(▲: alarm triggering slope where the reset, stop or clear functions are carried out)

DESCRIPTION OF ALPHA-D FUNCTIONS

Certain details on the actions of relays in counter-chronometer mode

DIGIT 3 FUNCTION

0=no No function



1=reset

The value of the variable to which the setpoint is related is reset to zero (or to the offset value) on enabling the output.

(When this function is selected, digit 1 cannot be programmed for latch mode –option 2-)

2=stop

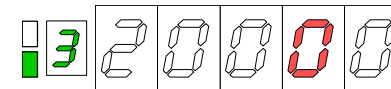
All process, batch and total counters, where applicable, will stop during the output enabling time. Where the output is pulse, the counters will restart once the enabling time is complete. If the output is latch, the counters will restart when the counter to which the setpoint is related is reset

3=clear

On enabling the output, that of the previous setpoint is disabled, if it had been enabled.

(The setpoint prior to 1 is 4)

DIGIT 4 COMPARISON VARIABLE



0=process

Setpoint related to the process variable, i.e. to the main counter in the counter configuration or the only main variable in the case of the chronometer

1=batch

Setpoint relating to the batch variable. It is not possible to select this option if the batch counter is not enabled or if the instrument is in chronometer mode

2=total

Setpoint relating to the total variable. It is not possible to select this option if the totaliser is not enabled or if the instrument is in chronometer mode

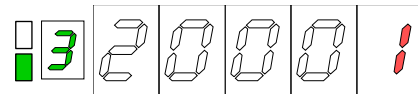
3=batches

Batch indicator setpoint. The output is enabled every time a batch is completed, i.e. every time the batch variable increases by one. It is not possible to select this option if the batch counter is not enabled or if the instrument is in chronometer mode

DESCRIPTION OF ALPHA-D FUNCTIONS

Certain details on the actions of relays in counter-chronometer mode

DIGIT 5 ALARM INDICATION



0=LED

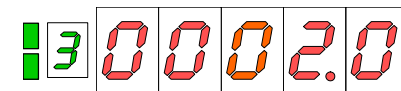
The triggering of an alarm is represented on the display by the LED indicator on the right corresponding to the setpoint number associated to that alarm.

1=LED+BLINK

The triggering of an alarm lights up the corresponding LED indicator and also makes all digits on the display blink. This option is appropriate when, due to installation conditions, the LED indicator is not sufficiently visible.

Pulse Output Time Programming

If, in the previous "Operating Mode" section, the "pulse" output is selected (digit 1, option 1), the duration of the output pulse is programmed in seconds in the "**3AB ModE**" Menu.



The fixed decimal point at the fourth digit indicates that the last digit are second decimals (the programming is shown for 2s in the figure).

If this parameter is left at zero, the length of the pulse is not guaranteed and may vary by very few milliseconds to approximately 20ms.

DESCRIPTION OF BETA-D FUNCTIONS

The BETA-D model has two configurable digital inputs that accept most pulse collectors and generators such as magnetic pickup, NAMUR, free contact, PNP, NPN or encoder (TTL/24V).

The basic configuration may be in the form of a **1-channel counter**, where one input is used as the main pulse counter input and the other as the active input or the countering direction or inhibition, or a **3-channel counter**, where the pulses in each input are counted separately, generating two independent counters that can be combined by an arithmetic operation.

In both cases, each counter has an associated totaliser that is present with the partial reading thanks to the two displays on the instrument.

It is always possible to change the main counter for a **tachometer** by simply selecting this option using the software.

The tachometer has a totaliser to display instant speed and output at the same time.

Where the totaliser associated to the tachometer is two-way, it also has a turning direction indication.

General features:

Treatment of **quadrature phase signals x1, x2 and x4.**

Multiplying factor programmable from 0.0001 to 9999

100Hz selectable **Input filter**

Selection of **upwards or downwards slope counting** or only upwards slope

Batch counter with automatic cycle (increase of one batch and automatic reset every time the main variable exceeds the programmed level) **or manual** (increase of one batch every time the partial counter is reset)

Programmable or memorised display **offset**

Re-load function (manual entering of the initial variable values)

Inhibition of the keyboard functions offset, reset, load and visual

Display refresh every 10ms

Safeguarding of process, batch and total values in the event of power disconnection

4 logic inputs with programmable functions:

Printing of setpoints and their status

Selective printing of variables

Selective reset of variables, pulse and with counter hold or stop

Display, setpoint and output hold

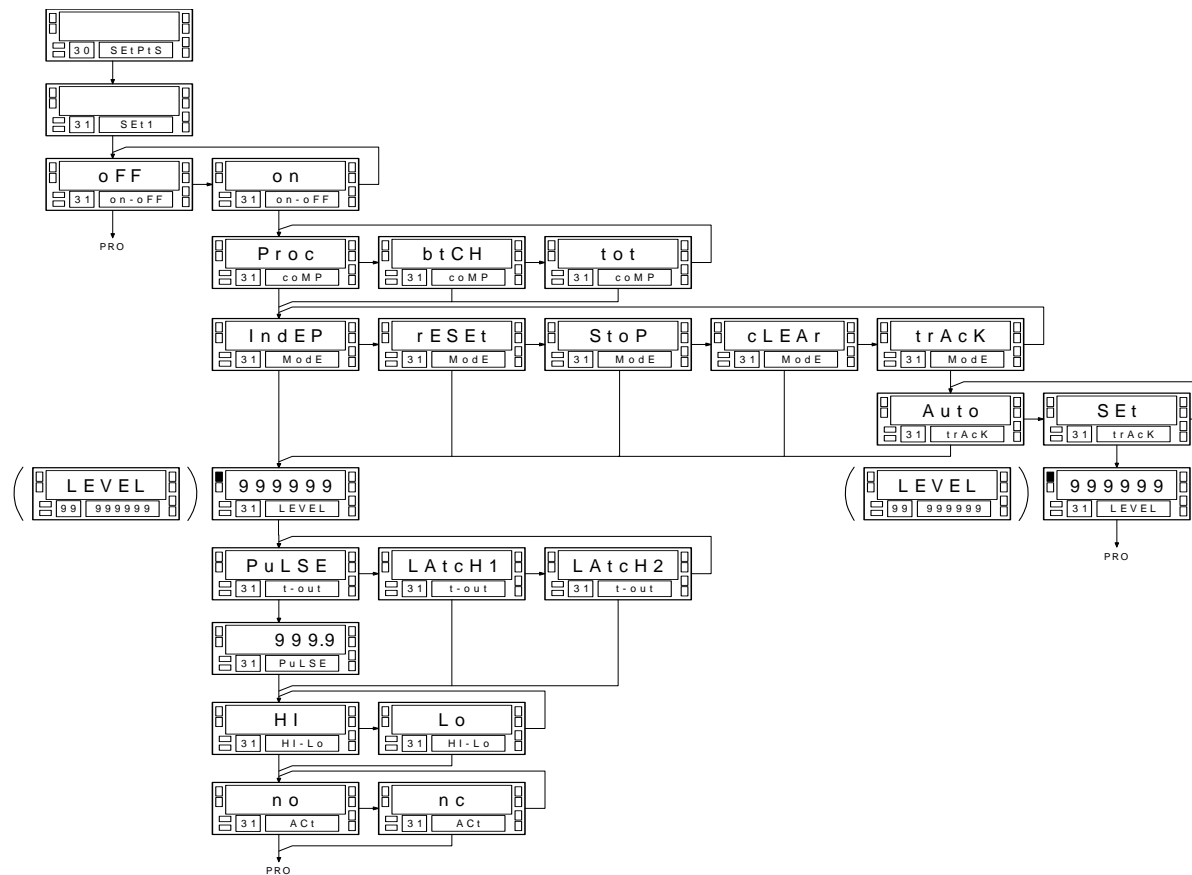
Input inhibition



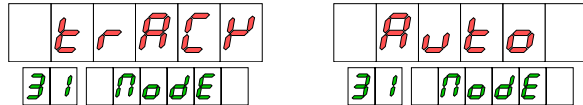
KOSMOS SERIES PANEL INSTRUMENTATION

DESCRIPTION OF BETA-D FUNCTIONS

Programming of setpoint 1 related to counter (remaining setpoints the same)



DESCRIPTION OF BETA-D FUNCTIONS



TRACK AUTO. This is used to automatically adjust the amount that, in a dispensing system, is programmed as the limit to give the order to cut off the flow of material. The display must be reset for each measurement (if the setpoint is programmed in pulse mode, the reset will be automatic). The accumulated total is indicated on the auxiliary display and, if the BATCH RESET function is selected, the number of measurements made will be accumulated in the BATCH variable.

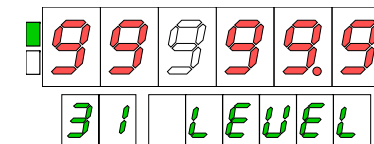
1. Programming the setpoint in PULSE mode allows for this action to be carried out automatically, calculating the approximate time taken to establish the display from when the setpoint is reached until the process is stopped. This time, or a longer time, will be programmed as triggering time of the pulse relay.

2. Programming the setpoint in LATCH mode, the action is carried out manually by the operator, resetting once the display is established.

In PULSE mode, care must be taken to programme the setpoint in LO mode so that the relay is enabled instead of disabled after the programmed pulse time, as the function is triggered on enabling.



TRACK SET. This is used as a pre-alarm for the previous setpoint. The setpoint prior to number 1 is number 4. The setpoint value programmed in this case is the distance in points in relation to the previous setpoint value.



The display value in which the output is enabled is the value of the previous setpoint less the value programmed as track set. Should this be negative, the output is enabled at the value of the previous setpoint plus that of the track set. The operating parameters will be those of the main setpoint.



KOSMOS SERIES PANEL INSTRUMENTATION

DESCRIPTION OF BETA-D FUNCTIONS

Example:

Suppose that a machine winding spools of yarn is to cut and seal the spools every 100.0 metres of yarn and that previously, so that this operation is possible, the speed of the rollers must be reduced, e.g. 5.0 metres before completing the process.

This application may be carried out by programming setpoint 1 to value 100.0 and setpoint 2 with TRACK SET function to value 5.0. The setpoint 2 output will be responsible for reducing the speed of the machine (enabled when the display reaches 95.0) and the setpoint 1 output will be responsible for cutting and sealing once the display reaches 100.0.

SET1 = 100.0 (with TRACK AUTO function and PULSE mode, resetting will be automatic on reaching 100.0).

SET2 = 95.0, TRACK SET



KOSMOS SERIES PANEL INSTRUMENTATION

FACTORY CONFIGURATION RETURN FUNCTION

BY PRESSING ENTER > 3 S + CODE 74

BY PRESSING THE [ENTER + RESET] KEYS
AT THE SAME TIME > 5 s

APPLICABLE TO:

- { PICA 100-P
- { MICRA-M
- { ALPHA-C, ALPHA-P,
ALPHA-T, ALPHA-D
- { BETA-M, BETA-D
- { GAMMA-M
- { KAPPA-M



PROGRAMMING LOCK by SOFTWARE

Total lock or:
locking of:

- Setpoint 1
- Setpoint 2
- Setpoint 3
- Setpoint 4
- Input
- Scale
- Filters
- Series output
- Analogue output
- Logic functions
- Setpoint values (direct programming)
- Tare key

USING A 4-FIGURE CODE

APPLICABLE TO:

PICA 100-P

MICRA-M

ALPHA-C, ALPHA-P,
ALPHA-T, ALPHA-D

BETA-M, BETA-D

GAMMA-M

KAPPA-M