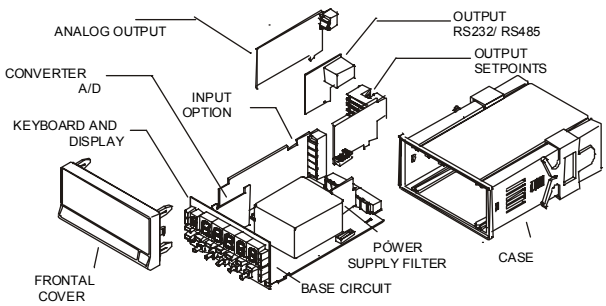
BETA-D

DESCRIPTION

BETA-D is designed for **counting** and **totalising** applications or as **tachometer with totalizer** which accepts pulse signals generated by a wide range of sensors in the market.
With a 6 digits display you can visualize up to 3 partial counters and a 8 digits display where it is visualized simultaneously one of the three totals.
In the tachometer-totalizer case it is possible to measure the velocity in programmable units (Flow) and the accumulated total at the same time (Cost).
Outstanding characteristics:

- Bi-directional counter with fase squaring X1, X2, X4.
- Independent multiplying factor per each channel.
- 2 physical inputs and 1 virtual input.
- Independent programming of unit/batch on each channel.
- Arithmetic operations between channels (+, -, x, / y %)
- Up to 3 totalizers.
- Tachometer with spinning direction indication.
- Setpoint programming direct access.
- 27 logical functions user programmable.
- Latch or Pulse relay function.
- ModBus RTU protocol.
- Batch counter per each channel.
- Slow-Down function.
- Track-auto function.
- Programming lockout by software (13 levels).

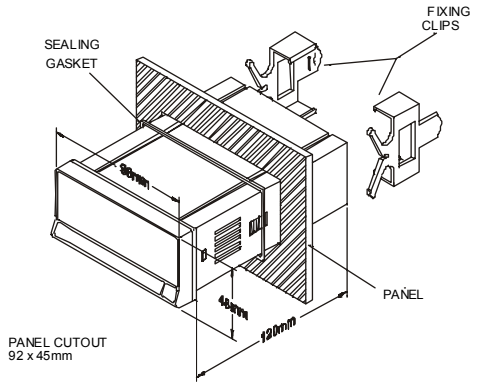
STRUCTURE



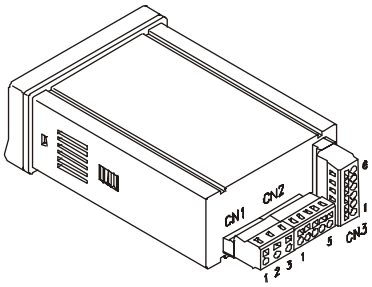
STANDARD

- Case 1/8 DIN 96 x 48 x 120 mm
- Electronics assembly:
  - Base circuit
  - Multiple input circuit
  - Keyboard and display
- Single-part clips for panel mounting
- Front panel sealing gasket.
- Plug-in terminal block connectors.

DIMENSIONS AND MOUNTING



CONNECTIONS



CN1	POWER SUPPLY
PIN	
1	AC FASE
2	GND (GROUND)
3	AC NEUTRO
CN2	**LOGICAL FUNCTIONS**
1	VARIABLE VISUALIZATION
2	DISPLAY HOLD
3	COMMON
4	PARCIAL COUNTER RESET
5	TOTALIZER RESET
CN3	**INPUT SIGNAL**
1	NOT CONNECTED
2	POSITIVE INPUTA
3	POSITIVE INPUT B
4	NEGAIVE INPUT (COMMON)
5	+EXCITATION 8V
6	+EXCITATION 24V

BETA-D

OPTIONS

The BETA model can accept a variety of output options which are installed in the meter's main assembly by means of plug-in connectors:

• 2 SPDT Relays rating 8A @ 250V AC / 150V DC
Ref **2RE**

• 4 SPST Relays rating 0.2A @ 250V AC / 50V DC
Ref **4RE**

• 4 NPN Outputs rating 50mA @ max.50V DC
Ref **4OP**

• 4 PNP Outputs rating 50mA @ max.50V DC
Ref **4OPP**

The setpoints are independently programmable for HI or LO action and time delay or hysteresis operation. They can also be made to track one another by a programmable or automatic offset.

• RS232C communication output, 1200 to 19200 baud
Ref **RS2**

• RS485 communication output, 1200 to 19200 baud
Ref **RS4**

Serial communication protocols: standard, ISO1745, Modbus

• Isolated analog output 0-10V / 4-20mA
Ref .....**ANA**

The analog outputs can be used to drive remote displays or for proportional control purposes.

STANDARD FUNCTIONS

• OFFSET

The offset function is done by pressing the OFFSET key in the front panel or applying a "logical 0" signal in the corresponding logical input in the CN2 connector (Function N 15).
The reset of OFFSET memory is done pressing simultaneously the keys RESET and OFFSET (as well as through CN2 connector. Function Nº16).

• HOLD

The HOLD function is only accessible on CN2 connector. The HOLD condition remains active as long as the input pin on CN2 is a logical "0" (Function Nº2).

• LOAD FUNCTION

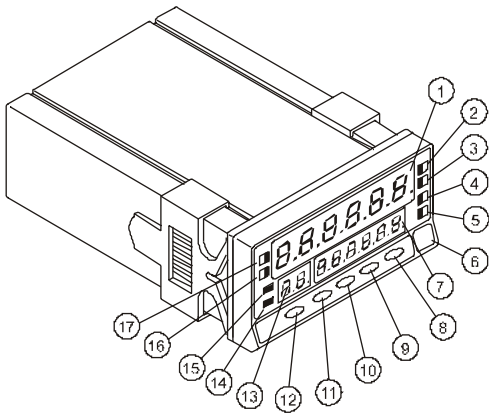
The LOAD function allows to introduce by key an initial counting value into anyone display. This value is loaded as an actual counting value and it's not stored for future uses.

During the VISUAL routine, when the variable we would like to modify is on display, press "ENTER" key during 3 seconds, at the end of this 3 seconds, the first left digit or the sign led go to blink. The programming of the value is done in an standard way and at the end, a press on "ENTER" key allows to exit from this programming step, following the VISUAL routine to the next step. The programmed value is loaded into the selected variable when press "ENTER" key, beginning the counting from this point.

• VISUAL key + ENTER key

If during the indication of main variable indication press "ENTER" key, the VISUAL routine will show the total values on secondary display.
(Pressing "ENTER", the actual variable on main display will remain like default variable).

FRONT PANEL FUNCTIONS



MODE		RUN	PROG
Main display	1	Shows the main variable selected	Shows the variable value to be programmed or the selected parameter
LED 1	2	Relay 1 / Opto1 status	-
LED 2	3	Relay 2 / Opto2 status	-
LED 3	4	Relay 3 / Opto3 status	-
LED 4	5	Relay 4 / Opto4 status	-
Label	6	measured unit	
Secondary display	7	Shows the variable TOTAL selected	Shows the actual programming parameter
ENTER key	8	Enter in PROG mode Display data.	Accepts data and goes to next programming step
VISUAL key	9	Shows total, batch o proc.	shift to right
LIMIT key	10	Display the setpoint values	Increases the blinking digit value
RESET key	11	Reset total, batch, proc. variables	ESCAPE function
OFFSET key	12	Takes the display value as offset	-
Auxiliar display	13	Shows complementary information on total value	Show programming step
LED TARE	14	Show offset memory	-
LED HOLD	15	Show display hold	-
LED MIN	16	Indicates counter sign or rotary direction of tachometer.	-
LED MAX	17	Indicates counter sign or rotary direction of tachometer.	-

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Programmable logical functions (CN2)

The rear connector CN2 provides 4 user programmable optocoupled inputs that can be operated from external contacts or logic levels supplied by an electronic system. Four different functions may be then added to the functions available from the front-panel keys. Each function is associated to one of the CN2 connector pins (PIN 1, PIN 2, PIN 4 and PIN 5) and is activated by applying a falling edge or a low level pulse to the corresponding pin with respect to common (PIN 3). Each pin can be assigned one of the 27 functions listed on the following pages.

(+) Factory default

Nº	FUNCTION	DESCRIPTION	ACTION
0	Deactivated	None	-
1	VISUAL	Cyclical visualization of process variables, batch and total of every channel with their corresponding annunciator. It's similar to the function "VISUAL" by key except for not use of "ENTER" key to go to visualize the totals that follow the rest of variables.	Pulsation
2	HOLD1	Hold main and secondary display.	Level
3	HOLD2	Hold the main and secondary display, analog output and the display values that in this moment could be sent through serial channel.	Level
4	HOLD1 + RESET1	Reset to the preset value the variables programmed YES on group 1 holding the display value until a new hold1 + reset1 (all internal functions of the counter will follow working).	Pulsation
5	HOLD2 + RESET1	Reset to the preset value the variables programmed YES on group 1 holding the display value, analog output and RS output hold until a new hold2 + reset1 (counting and setpoints functions will follow internally working).	Pulsation
6	RESET1	Reset to the preset value the variables programmed YES on group 1	Pulsation
7	RESET2	Reset to the preset value the variables programmed YES on group 2	Pulsation
8	STOP + RESET1	Stop all counters while the function is active, and upon deactivate the function resets to the preset value the variables programmed YES on group 1 following counting from this value.	Level
9	STOP + RESET 2	Idem function 8 but resets the variables of group 2.	Level
10	RESET TOTAL	Resets all variables TO ZERO and deactivates all setpoints included LATCH-2 except for which on zero condition should be actives.	Pulsation
11	INHIBIT A	Inhibits input A as long as the function is activated.	Level
12	INHIBIT B	Inhibits input B as long as the function is activated.	Level
13	INHIBIT BATCH A	Inhibits the function BATCH RESET of channel A, that is to say, doesn't increase the variable BATCH A on a reset of PROCESS value.	Level
14	INHIBIT BATCH B	Inhibits the function BATCH RESET of channel B, that is to say, doesn't increase the variable BATCH A on a reset of PROCESS value.	Level
15	OFFSET	Takes the value of process A or process B (if this is showed on main display) as value of preset A or preset B)	Pulsation
16	RESET OFFSET	Resets the value of preset A or preset B (if the process A or process B respectively are on main display)	Pulsation
17	PRINT 1	Print the variables and total programmed "YES" on group 1	Pulsation
18	PRINT 2	Print the variables programmed "YES" on group 2	Pulsation
19	PRINT SET1	Print setpoint 1 and its state	Pulsation
20	PRINT SET2	Print setpoint 2 and its state	Pulsation
21	PRINT SET3	Print setpoint 3 and its state	Pulsation
22	PRINT SET4	Print setpoint 4 and its state	Pulsation
23	ZERO ANA	Takes the analog output to zero condition (0V or 4mA according type)	Level
24	RESET LATCH	Unlock outputs of setpoint latch-2 and, if the alarm condition disappeared they are deactivated.	Pulsation
25	HOLD SETPOINTS	Inhibits comparison with setpoints while the function is active.	Level
26	FALSE SETPOINTS	Allows programming and use of 4 setpoints when there is no output card plugged in, as long as the function is active.	Level
27	TURN OFF AUX. DSP.	Switch off the auxiliary display	Level

BETA-D

INPUT (each Channel)

ANTI-DEBOUNCE FILTER (Counter)

- Fc ..... 100 Hz
- Pulse min. width ..... 10 ms

MAGNETIC PICKUP

- Sensibility ..... Vin (AC) >120 mVeff

NAMUR SENSOR

- Rc ..... 1 KΩ (incorporated)
- Ion ..... < 1 mA DC
- Ioff ..... > 3 mA DC

TTL/24V DC (ENCODER)

- Logic levels ..... "0" < 2.4 V DC, "1" > 2.6 V DC

NPN / PNP SENSOR TYPE

- Rc ..... 1 KΩ (incorporated)
- Logic levels ..... "0" < 2.4 V DC, "1" > 2.6 V DC

CONTACT CLOSURE (SWITCH)

- Vc ..... 5 V
- Rc ..... 3.9 KΩ
- Fc ..... 100 Hz

- Frequency max. (Tach.) ..... 12 KHz
- Frequency min. (Tach.) ..... 0.02 Hz

Max. counting speed

- UP or DOWN ..... 13 KHz
- Bi-directional ..... 6 KHz
- Phase x1, x2 ..... 8 kHz
- Phase x4 ..... 4 kHz

Sensors excitation ..... 8V/ 24 V @ 30 mA

ORDER REFERENCE

- 115/ 230V AC ..... BETA-D
- 24/ 48V AC BETA-D2

ACCURACY

- Max. error (Tach.)± (0.01% of the reading + 1 digit)
- Temperature coefficient ..... 100 ppm/ºC
- Warm-up time ..... 10 minutes

DISPLAY

- Principal ..... 6 red digits, 14 mm LED
- Auxiliar ..... 8 green digits , 8 mm LED
- LEDs ..... 8, functions and output status
- Display rate 100/s

ENVIRONMENTAL

- Working temperature ..... -10 ºC to +60 ºC (0ºC to 50ºC) s/UL
- Storage temperature ..... -25 ºC to 80 ºC
- Relative humidity ..... <95% at 40ºC

MECHANICAL

- Dimensions ..... 96 x 48 x 120 mm
- Weight ..... 600 g
- Case material ..... UL 94 V-0 poly carbonate
- Max. Altitude ..... 2000 m
- Sealed front panel ..... IP65 (indoor use)

POWER SUPPLY

- Voltage AC 115/ 230V 24/ 48V 50/ 60Hz (±10%)
- Consumption ..... 5 W without options, 10 W max

FUSES (DIN 41661) (Recommended)

- BETA-D (115/ 230 V AC) ..... F 0.2 A/ 250 V
- BETA-D2 (24/ 48 V AC) ..... F 0.5 A/ 250 V