KAPPA-M

DESCRIPTION

KAPPA-M instrument designed to measure and totalize (weight, load, preasure, length, or DC current with external shunt) accepts transmitters like Load-Cell, Preasure transmitters, Potentiometers, Shunts, etc.

Specialy useful to measure Rate and total Flow or in Galvanic industry to control the quantity of Amperes giving a value related to the added matherial applied on metals

Functions most significant:
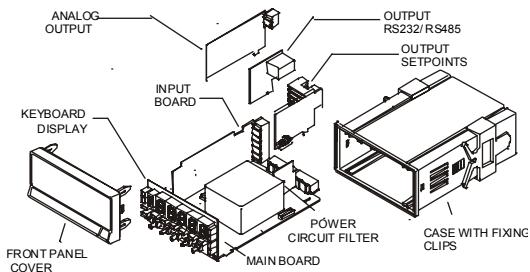
- ±9999 display points –9999999 to 99999999 Total
- High acquisition rate **100 samples / seg.**
- Setpoints by Net1, Net2, Total or Mathematic value.
- Direct access to setpoints programming.
- 26 Programmable logical functions.
- Arithmetical operations between inputs (+, -, x, /).
- Lineal or square root function on every physical channel..
- Up to 15 linearization points on every input.
- Integration time base on Second, Minutes, Hours or Days.
- Tare function by key or remote.
- Peak and valley detection included math channel **10ms min**.
- Function Hold.
- Two bright level of display.
- ModBus RTU protocol.

Two scaling ways, manual or teach, level of filters selectable by key as well as the last digit resolution makes easy to adapt this instrument to the different kind of input signals.

Up to four independent Setpoints with possibility of Latch, Delay, High or Low, Hystéresis, normally open or normally closed and can be related to Net1, Net2, Math or Total.
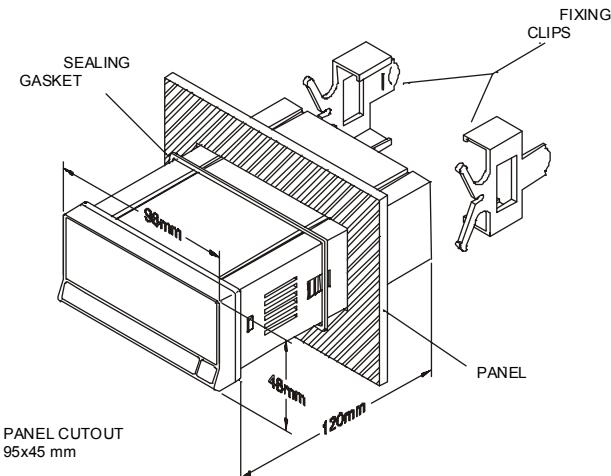
STRUCTURE
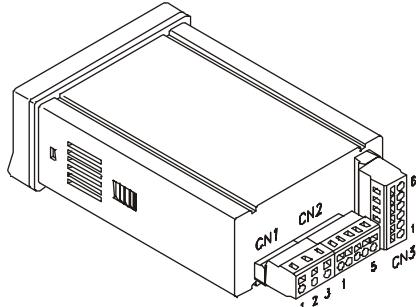
STANDARD

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

DIMENSIONS AND MOUNTING

PANEL CUTOUT
95x45 mm

CONNECTIONS

CN1	POWER SUPPLY
PIN	
1	AC HI
2	GND (GROUND)
3	AC LO
CN2	**LOGIC FUNCTIONS**
1	RESET
2	HOLD
3	COMMONN
4	TARE
5	PEAK / VALLEY
CN3	**INPUT SIGNAL**
1	+ mV
2	+ V
3	- mV, -V, - mA
4	+mA
5	+EXCITATION
6	- EXCITATION

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OPTIONS

The KAPPA 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**

Setpoints are independent programmable to work HI / LOW, NO / NC with delay hysteresis or Latch.
Can work related to Net1, Net2, Mathematic o Total value.

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

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

Serial communication protocols: Standard , ISO1745 and ModBus RTU.

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

STANDARD FUNCTIONS

• TARE

The tare operation is accomplished by a push of the TARE key on the front panel or by applying a low level signal to the corresponding logic input at the CN2 connector.

The tare memory is cleared to zero by a combination of the RESET and TARE keys (also at the CN2 connector).

• PEAK and VALLEY

The instrument detects and memorizes the max and min values reached for the variable after the last reset (peak and valley).

To display the peak value, press the MAX/MIN key. The second push calls up the valley value. The third push makes the display show the tare value.

A falling edge at the corresponding logic inputs of the CN2 connector causes the same effects.

• RESET PEAK and VALLEY MEMORY

The peak and valley memories can be reset back to their default values by simultaneously pressing the RESET and MAX/MIN keys.
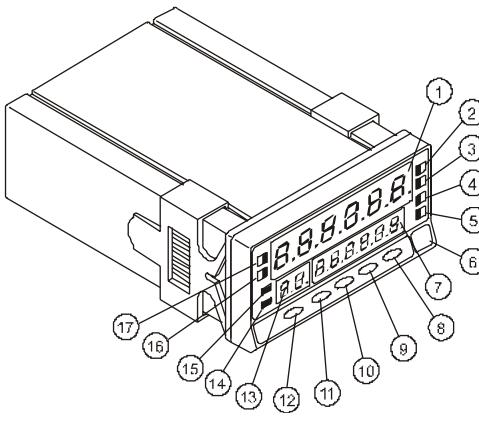
The same function is available at the CN2 connector.

• HOLD

The hold function is only accessible from the CN2 connector.

The hold condition (display frozen) is maintained as long as the corresponding logic input is kept at "0" level.

FRONT PANEL FUNCTIONS

MODE		RUN	PROG
Main display	1	Show measured variable	Show programming parameters
LED 1	2	Relay1 / Opto1 status	-
LED 2	3	Relay2 / Opto2 status	-
LED 3	4	Relay3 / Opto3 status	-
LED 4	5	Relay4 / Opto4 status	-
Label	6	Measurement unit	
Auxiliar display	7	Total indication	Display programming
ENTER Key	8	Enters in PROG mode. Displays data	Accepts data. Advances program
MAX/MIN Key	9	Calls up peak and valley values	Moves to right
LIMIT Key	10	Calls up the setpoint values	Increments the value of the
RESET key	11	Reset peak and valley memories.	ESCAPE function
TARE key	12	Take on the display values as tare	-
LED TARE	14	Indicates tare memory	-
LED HOLD	15	Indicates display hold	-
LED MIN	16	–	-
LED MAX	17	–	-

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Programmable logical functions (CN2)

The rear connector CN2 provides 4 user programmable optocoupled inputs NPN or PNP 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 (PIN1, PIN2, PIN4 and PIN 5) referred to PIN 3. Each PIN can be assigned one of the 26 functions listed on the following table.

(*) Factory default

Nº	FUNCTION	DESCRIPTION	ACTION
0	Deactivated	None	-
1*	TARE	Adds the current display value to the tare memory. The display goes to zero. This function over the channel active on display and never over math. channel.	Pulse
2	RESET TARE	Adds the tare memory contents to the display value and clears the tare memory. This function over the channel active on display and never over math. channel.	Pulse
3	RESET TOTAL	The totalizer goes to zero.	Pulse
4	STOP TOTAL	Stop the totalizer while the function is activated.	Fixed level
5	VISUAL	Display / Change the channel shown in the main display.	Pulse
6*	DISPLAY PEAK/ VALLEY	Display at each press, peak and valley value of the channel in use.	Pulse
7*	COMBINED RESET	Combined with function 1 reset tare memory. Combined with function 6 reset the value shown on secondary display (peak, valley or total)	Pulse
8	HOLD1	Freeze the display although allows to view other channels (all of them freezed at this moment.	Fixed level
9*	HOLD2	Same as HOLD1 but freeze the analog output and the display or total values asked for from RS.	Fixed level
10	DISPLAY INPUT	Replace the value of total on secondary display by the actual input value of in use channel whenever not be the math.	Pulse
11	DISPLAY GROSS	Replace the total on secondary display by the gross indication (net + tare) of channel in use whenever not be the math.	Pulse
12	DISPLAY TARE	Replace the total on secondary display by the tare indication of channel in use whenever not be the math.	Pulse
13	ANA GROSS	Makes the analog output follow the gross value (measured value + tare) but if the assignation is over math. channel or total.	Fixed level
14	ANA ZERO	Put the output in low level (0 V or 4 mA)	Fixed level
15	DELETE AUX.	Turn off the auxiliary display if it is displaying total value.	Pulse
16	PRINT TOTAL	Print total value.	Pulse
17	PRINT NET1	Print channel1 display value.	Pulse
18	PRINT NET2	Print channel2 display value.	Pulse
19	PRINT MATH	Print math channel display value.	Pulse
20	PRINT SET1	Print setpoint1 value and state.	Pulse
21	PRINT SET2	Print setpoint2 value and state.	Pulse
22	PRINT SET3	Print setpoint3 value and state.	Pulse
23	PRINT SET4	Print setpoint4 value and state.	Pulse
24	SETS FALSE	Grant access to the use and to program of the setpoints when the board is not installed.	Fixed level
25	RESET LATCH	Deactivates all relays in latch condition that be out of alarm condition.	Pulse
26	ROUND RS	Send through serial channel the values without passing by filters or rounding.	Fixed level

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INPUT SIGNAL
Process input

- Voltage input (pin 2 versus 3) ....±(0-5/ 0-10) V
- Input impedance ....1 MΩ
- Voltage input (pin 1 versus 3) .... ± 0-1 V
- Input impedance .... 100 MΩ
- Current input (pin 3 versus 4) ....±0-20 mA
- Input impedance 11,8Ω

Load cell or mV input

- Input voltage ....±30,±60,±120,±300,±500 mV
  4-wires, unipolar or bipolar
  Input impedance .... 100 MΩ

Potentiometer input

- Min. resistance...120Ω
- Excitation voltage .... 2.2 V
- Input impedance (pin 1 versus 3).............>10 MΩ

Current input (second input)
(deactivated mV input)

- Current input (pin 1 versus 3) ....±0-20 mA
- Input impedance 11,8Ω

Excitation

2,2 V @ 30 mA
24 V @ 30 mA non stabilized.
5 V±100 mV@120 mA fine adjust (50 ppm/ºC)
10 V±100 mV@120 mA fine adjust (50 ppm/ºC)

DISPLAY

- Main display......................................-9999/9999
  5, 7 segments, red display
- Auxiliar display................................8 green digits
- Decimal point............................... Programmable
- LED's...........................8 (Functions and outputs)
- Display rate..................................... 10/s
- Integrator display rate 100/s
- Positive over flow ....OVFLO
- Negative over flow .... - OVFLO

A/D CONVERSION

- Technical ....$\Sigma\Delta$
- Resolution... ± 15 bits
- Rate (per channel) 100/s
- Resolution Peak measure .... ±15 bits

ACCURACY @ 23ºC ±5ºC
- Max error......................±(0.1% reading + 2 digits)
- Temperature coefficient.......................50 ppm/ºC
- Warm-up time................................... 10 minutes

TOTALIZER TIME BASE
Programmable .... s / m / h / day
TOTALIZATION FACTOR
Programmable ....from 0,00001 to 9999
Decimal point .... programmable
Low cut-out ....all range programmable

POWER SUPPLY
- KAPPA-M............................. 230/115 V 50/60 Hz
- KAPPA-M2.................................24/48 V 50/60 Hz

  Consumption 5 W (without options), 10 W (MAX.)

FUSES (DIN 41661) Recommended

230/115 V AC .... F 0.2 A/250 V
24/48 V AC .... F 0.5 A/250 V

ENVIRONMENTAL
- Working temperature.............-10 ºC to +60 ºC (0ºC to 50ºC) s/UL
- Storage temperature......................... -25 ºC to 80 ºC
- Relative humidity ....<95% at 40 ºC
- Max. Altitude .... 2000 m
- Sealed front panel ....IP65 (indoor use)

MECHANICAL
- Dimensions .... 1/8 DIN case, depth 120 mm
- Weight...600g
- Case material ....UL 94 V-0 polycarbonate

ORDERING REFERENCES
- 115/230V AC 50/60Hz powered..................KAPPA-M
- 24/48V AC 50/60Hz powered KAPPA-M2