



**CRAIND**<sup>®</sup>  
I M P I A N T I

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## MOD. KBC HEAD

## KONTAX BATCH CONTROLLER



THE INSTRUMENT DESCRIBED IN THIS MANUAL COMPLIES WITH STANDARDS  
EMC LIKE ESTABLISHED FROM DIRECTIVE THE EEC AND THE 89/336 DIRECTIVE LOW TENSION THE EEC 73/23

02/02/2007 VERSION 1.1


## INTRODUCTORY NOTES:

The word CRAIN D appears on the screen for 1 second when the instrument is switched on.

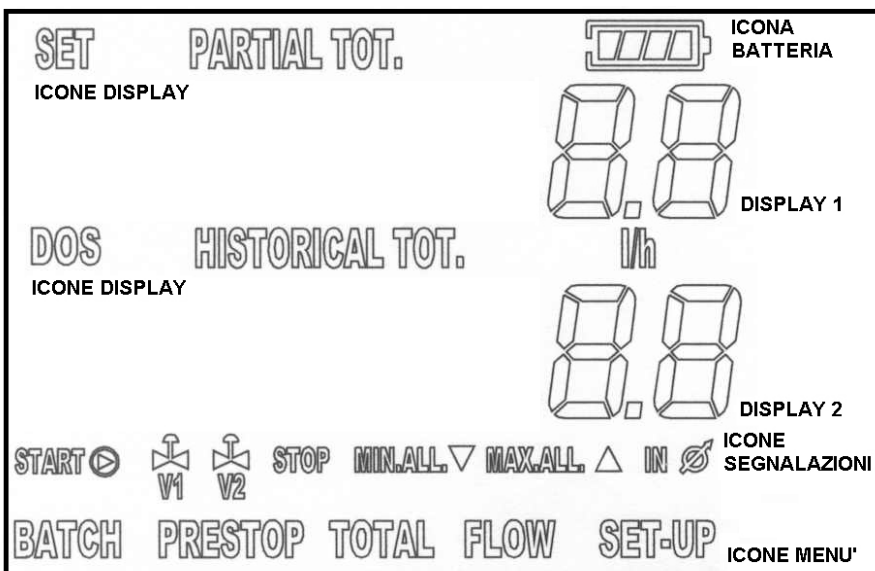
The values are only given as an example in the following descriptions

Powered via batteries and stand by:

The instrument display switches itself off when there have been no incoming pulses or actions on the keys for about 5 minutes. Press the **STOP** key to return to displaying data.

Replace the batteries with others of the same kind when the  icon flashes (note: if the instrument is powered by 24 Vca, the battery icon is not displayed)

## INSTRUMENT DISPLAY



## KEYBOARD:



STOP (display reinstate from stand by)



START



INCREASE BY ONE VALUE



DIGIT (OR MENU) CHANGE



ZERO SETTING OF A VALUE  
(OR OF THE PARTIAL TOTALISATOR)

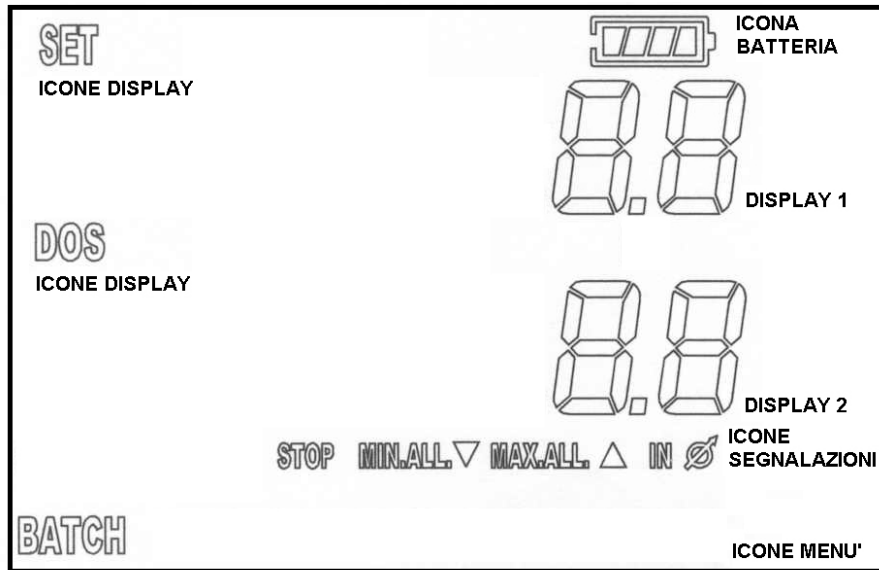


CONFIRM THE ENTERED VALUE

## FUNCTIONS MENU:

You can scroll through the menus by pressing the ◀▶ key. The **menu icon** relating to the selection made lights up.

## BATCH MENU





The display shows:

- the requested quantity (**SET**) display 1
- the metered quantity (**DOS**) display 2
- any alarm warnings (warnings icon)
- incoming count pulses (warnings icon)

## START METERING CYCLE

Set the required quantity (**SET**):

1. Press the **ENTER** key
2. The **SET** icon (in the left-hand corner of the display) and the parameter value flash
3. you can enter a value or modify it by using the ◀▶ and ▲ keys
4. if an error has been made, press the **CLEAR///** key
5. confirm the new value with the **ENTER** key

The metering cycle starts by pressing the green **START** key. During this phase the **STOP** icon is replaced by the icons: **START**, pump  and valve V1 

### MANUAL STOP OF METERING CYCLE

The cycle can be stopped at any time manually by pressing the red **STOP** button. Manual interruption of the cycle is indicated by the flashing of the **BATCH icon**

to complete the cycle press the green **START** button

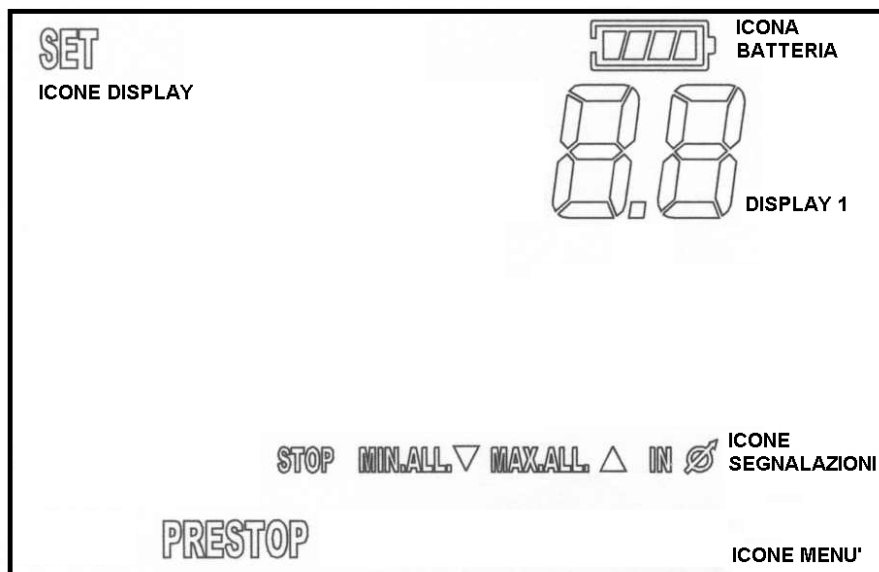
if you want to zeroise the cycle to carry out a new one, press the **CLEAR///** button

#### NOTES:

the **SET-UP** menu cannot be switched on during a manual interruption of the cycle. The cycle must be completed or it must be zeroised by pressing the **CLEAR** key.

The data available during a metering cycle are: instantaneous capacity, partial totalisator (resettable to zero only in the **STOP** phase). To display this information use the **◀▶** key. If you press it again you will return to the **BATCH** menu.

### PRESTOP MENU



The display shows:

the set PRESTOP value (**SET**) display 1

any alarm warnings (warnings icon)

incoming count pulses (warnings icon)

To enter or modify a PRESTOP value:

1. Press the **ENTER** key
2. the **SET** icon (in the top left-hand corner of the display) and the parameter value flash
3. using the keys ◀▶ and ▲ you can enter or modify a value
4. if an error has been made, press the **CLEAR///** key
5. confirm the new value with the **ENTER** key

## PRESTOP FUNCTION

to enable the function enter a value lower than the quantity requested during the metering phase.




### DESCRIPTION

when the metering cycle starts, valve V1 and valve V2 will open simultaneously. When the PRESTOP value is reached, valve V2 will close. When the SET value is reached valve V1 will close and the pump will stop.

### EXAMPLE:

quantity set in the BATCH menu = 100 litres

value set in the PRESTOP menu = 5 litres

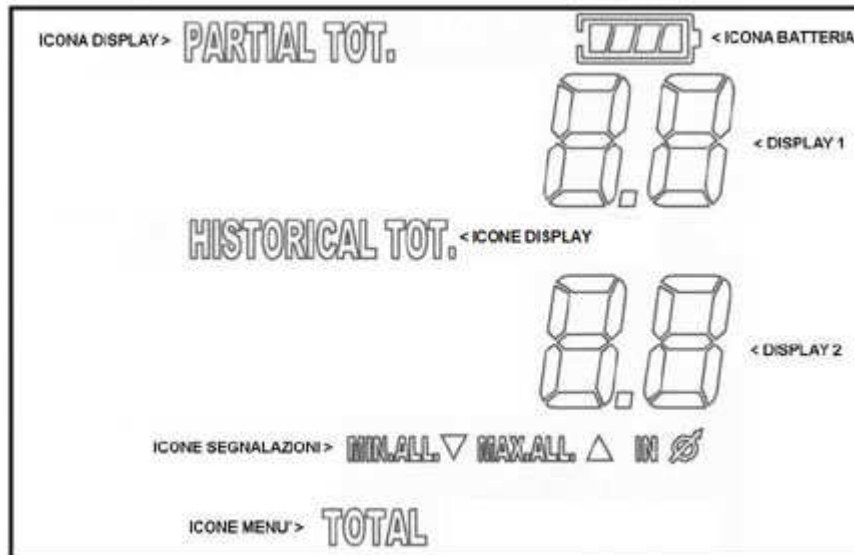
1. start of the metering cycle via the START button
2. valves V1-V2 are opened and the pump is put into action (icon on the display lit: )
3. 95 litres are metered and valve V2 closes (icon on the display lit: )
4. the last 5 litres are metered, valve V1 closes and the pump stops (the icons go out )

the metering cycle with prestop is finished

### NOTES:

if a PRESTOP value **higher** than the required quantity is entered, the metering cycle **cannot be started**.

## TOTAL MENU



The display shows:

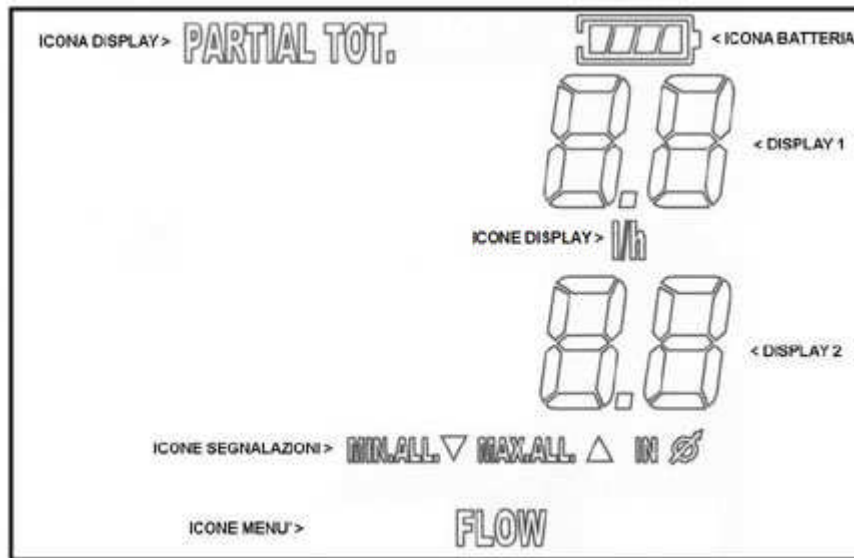
the partial totalisator that can be zeroised using the **CLEAR**/// (display 1) key

the historical totalisator that cannot be zeroised (display 2)

any alarm signals (warnings icon)

incoming count pulses (warnings icon)

## FLOW MENU



The display shows:

the partial totalisator that can be zeroised via the **CLEAR**/// (display 1) key

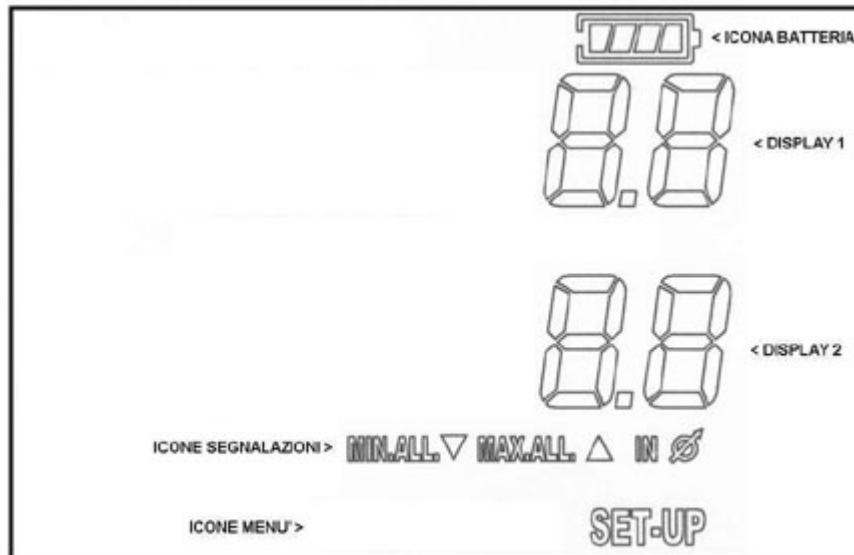
instantaneous capacity in litres / hour (display 2)

any alarm signals (warnings icon)

incoming count pulses (warnings icon)

Note: the instantaneous capacity value is updated about every 10 sec.

## SET-UP MENU



The display shows:

-- SETUP --

The SETUP menu is protected by a **PASSWORD** (that cannot be changed) = **2004**

Display 1 shows the abbreviated name of the parameter

Display 2 shows the parameter value

To go on to the next parameter use the ◀▶ key

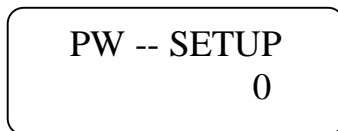
To exit from the SETUP menu, press **CLEAR///** and then the ◀▶ key

## INTRODUCTION AND MODIFICATION OF PARAMETERS

6. Press the **ENTER** key
7. the **SET** icon (in top left-hand corner of the display) and the parameter value flash
8. you can enter or change a value by using ◀▶ and ▲ keys
9. if an error has been made, press the **CLEAR///** key
10. confirm the new value with the **ENTER** key

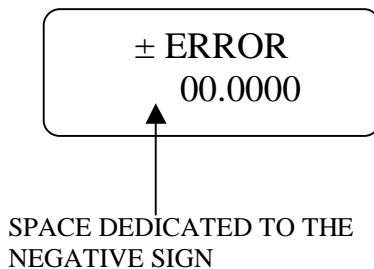
Press the **ENTER** key

The display shows:



Enter the password and confirm with the **ENTER** key  
To exit the **SETUP** menu press **ENTER** and then the ◀▶ key

The display shows the **ERROR PERCENTAGE COEFFICIENT**:



This parameter is used if a **repetitive error** is found in metering

Carry out at least 3 identical and consecutive metering tests (with full line)

Set the mean value of the error found following the “**INTRODUCTION AND MODIFICATION OF PARAMETERS**” procedure.

Go to the left of the value (display 2) and press the ▲ key to enter the negative sign  
If the negative sign is not entered the value is considered to be positive

**EXAMPLE:**

**fill the line**

| test n° | quantity displayed on the “totalisator” display | quantity found in the test container |
|---------|-------------------------------------------------|--------------------------------------|
| 1       | 100 litres                                      | 99.6 litres                          |
| 2       | 100 litres                                      | 99.4 litres                          |
| 3       | 100 litres                                      | 99.5 litres                          |

The mean quantity is 99.5 litres, enter the value: – **00.5000%** and confirm with **ENTER**

The display shows the COEFFICIENT K:

K -- FACTOR  
0.052236

Factorisation coefficient of the litre-meter: normally the value is entered in the CRAIND laboratories.  
If it should be necessary to reset the factory value:

1. copy the serial number of the litre-meter (mounted on the metering line)
2. contact CRAIND personnel. The original calibration value will be notified to you.

Press the **ENTER** key

The display shows the MINIMUM capacity alarm:

MIN F. AL  
200

The MINIMUM capacity alarm is expressed in litres/hour. If, during metering, the capacity goes **below** this value, the warning icon **MIN.ALL ▼** lights and the relative exit is activated. Cancellation of the alarm takes place automatically when the correct capacity is reinstated.

Press the **ENTER** key

The display shows the MAXIMUM capacity alarm:

MAX F. AL  
2200

The MAXIMUM capacity alarm is expressed in litres/hour. If, during metering, the capacity goes **above** this value, the warning icon **MAX.ALL ▼** lights and the relative exit is activated. Cancellation of the alarm takes place automatically when the correct capacity is reinstated.

Press the **ENTER** key

The display shows the DECIMALS number:

DECIMALS  
0

A decimal point can be enabled in totalisator displays according to the following order

- 0 = decimal point disabled
- 1 = 1 decimal digit enabled
- 2 = 2 decimal digits enabled
- 3 = 3 decimal digits enabled

(note: the instantaneous capacity is displayed without decimal point)

Press the **ENTER** key  
The display shows the COUNT TYPE:

UP / DOWN  
0

Select the pre-establisher with incremental and decremental count

0 = incremental count  
1 = decremental count  
(note: the type of totalisator count is only incremental)

Press the **ENTER** key  
The display shows the TOTALISATORS BLOCK:

T. BLOCK  
0

This parameter enables or disables totalisators functioning during the pre-establisher stop phase

0 = the totalisators also count during the stop phase  
1 = the totalisators do not count during the stop phase

Press the **ENTER** key  
The display shows the MONOSTABLE:

MONOSTAB  
0

Selection of the START/STOP function of the "EXTERNAL START BUTTON" input on the terminal board (expansion board)

0 = the input only functions as start  
1 = the input functions as start/stop each time the input closes  
(note: the "EXTERNAL START BUTTON" input on the terminal board always and only works as a stop irrespective of the setting of this parameter)

Press the **ENTER** key

The display shows the **FACTORISED PULSES OUTPUT**:

PULS. OUT  
0

By enabling this function it is possible to have a factorised pulses output corresponding to the quantity of product measured:

0 = disabled output

1 – 9999 (ms.) = enabled output, the entered value corresponds to the duration of the pulse expressed in ms.

Press the **ENTER** key

The display shows the **AUTOMATIC END OF CYCLE RESET**:

AUTO -- RES  
0

**AUTO RESET** function at the end of the metering cycle

0 = function disabled

1 – 999 (sec.) = function enabled: at the end of the metering cycle a timer is activated. Once the set time has elapsed the metered value is zeroised automatically and a new cycle can be started.

Press the **ENTER** key

The display shows the **OPERATOR PASSWORD**:

PW -- OPER.  
0

**OPERATOR PASSWORD**: a code can be entered (max 4 digits) to enable the operator for the metering cycle

setting 0000 the **PASSWORD** will be excluded and the metering cycle will still be usable

if a code is entered the metering operation will be subject to the entering of the same code in the **BATCH** menu

(note: after the operator has entered the correct code, he may carry out an unlimited number of metering cycles. To return the instrument to the **PASSWORD** request, you must exit and re-enter the **BATCH** menu using the ◀▶ key

Press the **ENTER** key

The display shows the 4-20 mA OUTPUT (start of scale calibration - 4 mA):

4MA --- L/H  
200

If the 4-20 mA output is used, enter a capacity value (in litres/hour) that corresponds to the value of 4mA.

E.g.: by setting 200 the output will regulate the current value at 4 mA when the capacity is 200 litres/hour

Press the **ENTER** key

The display shows the 4-20 mA OUTPUT (bottom of scale calibration - 20 mA):

20MA --- L/H  
2200

If the 4-20 mA output is used, enter a capacity value (in litres/hour) that corresponds to the value of 20mA.

E.g.: by setting 2200 the output will regulate the current value at 20 mA when the capacity is 2200 litres/hour

Press the **ENTER** key

The display shows the INITIAL TIMER:

INIT -- TIM  
0

0 = function disabled

9.,99 (sec. max) = function enabled

when this function is combined with the following one, it automatically stops the metering cycle due to lack or slowing down of incoming pulses.

The action may have various causes, for example:

- lack of product to be measured in the storage tank
- breakage of the product feed pipe
- one or more cut-off valves are closed
- pump fault
- interruption in the incoming pulse transmission cable
- blockage or breakage of the measuring instrument
- capacity below the acceptable minimum level

(to set the correct value also read the description of the next parameter)

Press the **ENTER** key  
The display shows the **STOP TIMER**:

STOP -- TIM  
0

0 = function disabled  
99.99 (sec. max) = function enabled

#### DESCRIPTION

the initial **INIT TIM** timer establishes the time that elapses between start up of the normal metering cycle and the start of the incoming pulses control

The **STOP TIM** timer controls if the time between one incoming pulse and the next exceeds the pre-established value

#### EXAMPLE:

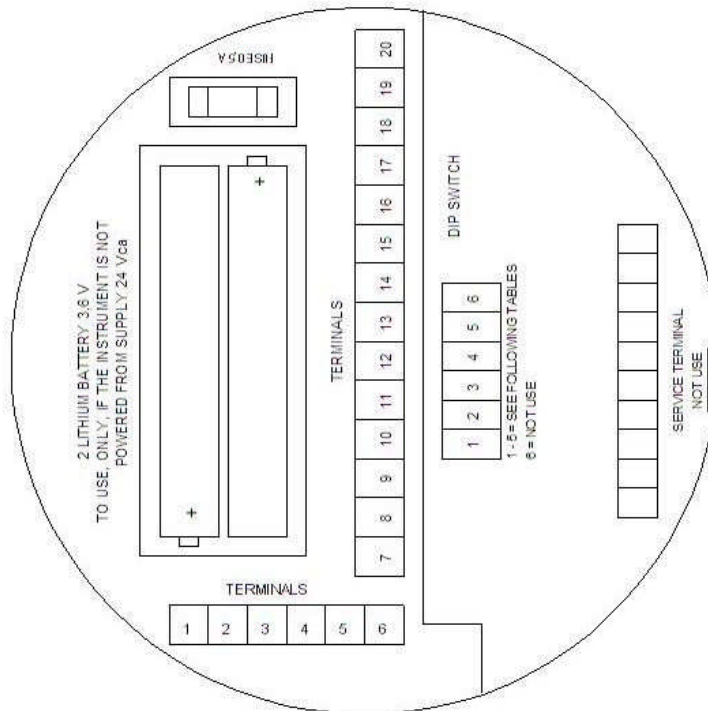
timer **INIT TIM** = 5.00 sec.  
timer **STOP TIM** = 0.10 sec.

1. the metering cycle starts by pressing the green **START** button in the **BATCH** menu
2. after 5 seconds (**INIT TIM**) the control of the incoming pulses is activated
3. if the pulses do not arrive, or the time between one pulse and the next is more than 0.1 sec. (**STOP TIM**), the system stops automatically
4. the control is repeated in the next cycle

To exit the **SETUP** menu press **CLEAR///** and then the **◀▶** key

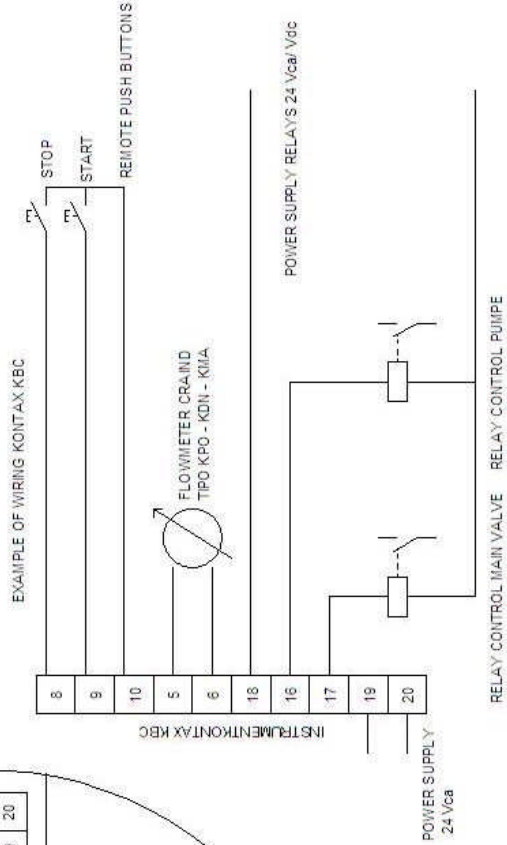
# TERMINAL BOARD CIRCUIT DIAGRAM

## TERMINAL BOARD INSTRUMENT KONTAX KBC



## TERMINAL BOARD:

- 1 = + (POSITIVE) 24 Vdc 100 mA ONLY ACTIVE SENSOR
- 2 = - (NEGATIVE 24 Vdc - GND)
- 3 = SCALED PULSE OUTPUT (MOSFET)
- 4 = SCALED PULSE OUTPUT (GND)
- 5 = SENSOR INPUT (PULSE FROM FLOWMETER)
- 6 = SENSOR INPUT (PULSE FROM FLOWMETER - GND)
- 7 = ANALOG OUTPUT 4 - 20 mA (MOSFET)
- 8 = INPUT PUSH BUTTON STOP N.A.
- 9 = INPUT PUSH BUTTON START N.A.
- 10 = COMMON OUTPUT/INPUT (GND)
- 11 = MIN. FLOW RATE ALARM OUTPUT (MOSFET)
- 12 = MAX. FLOW RATE ALARM OUTPUT (MOSFET)
- 13 = OUTPUT CONTROL MAIN VALVE (MOSFET)
- 14 = OUTPUT CONTROL PUMPE (MOSFET)
- 15 = OUTPUT CONTROL PRESTOP VALVE (MOSFET)
- 16 = OUTPUT RELAY CONTROL PUMPE
- 17 = OUTPUT RELAY CONTROL MAIN VALVE
- 18 = COMMON RELAYS OUTPUT
- 19 = POWER SUPPLY 24Vca
- 20 = POWER SUPPLY 24 Vca



## INPUT FREQUENCY AND SENSOR TYPE SETTINGS

The instrument is fitted with 5 micro-switches to calibrate the max. frequency of the incoming pulses and the sensor type. Wrong setting can be caused if the instrument does not function. The 5 micro-switches are on the stamped circuit inside the case.

| <b>LOW FREQUENCY SENSORS 0 - 200 Hz max.</b> |                 |           |            |            |            |
|----------------------------------------------|-----------------|-----------|------------|------------|------------|
| sensor type:                                 | micro-switches: |           |            |            |            |
|                                              | 1               | 2         | 3          | 4          | 5          |
| <b>NPN</b>                                   | <b>ON</b>       | <b>ON</b> | <b>OFF</b> | <b>ON</b>  | <b>OFF</b> |
| <b>PNP</b>                                   | <b>ON</b>       | <b>ON</b> | <b>OFF</b> | <b>OFF</b> | <b>ON</b>  |
| <b>electronic</b>                            | <b>ON</b>       | <b>ON</b> | <b>OFF</b> | <b>OFF</b> | <b>OFF</b> |

Table 1

| <b>HIGH FREQUENCY SENSORS 0 - 2000 Hz max.</b> |                 |            |            |            |            |
|------------------------------------------------|-----------------|------------|------------|------------|------------|
| sensor type:                                   | micro-switches: |            |            |            |            |
|                                                | 1               | 2          | 3          | 4          | 5          |
| <b>NPN</b>                                     | <b>OFF</b>      | <b>OFF</b> | <b>ON</b>  | <b>OFF</b> | <b>OFF</b> |
| <b>PNP</b>                                     | <b>OFF</b>      | <b>OFF</b> | <b>OFF</b> | <b>OFF</b> | <b>ON</b>  |
| <b>electronic</b>                              | <b>OFF</b>      | <b>OFF</b> | <b>OFF</b> | <b>OFF</b> | <b>OFF</b> |

Table 2

### Example:

**Input from mechanical REED sensor and max. frequency 10 Hz (low frequency)**  
**micro-switches 1-2-4 = ON 3-5 = OFF (Table 1)**

## TECHNICAL DATA

|                                        |                                                                                                                                       |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Display:                               | LCD 68 x 50 mm height of digits 10 mm – 18 symbols                                                                                    |
| Data settings:                         | n° 6 keys – keyboard in scratch-proof polycarbonate                                                                                   |
| Power supply:                          | n° 2 LITHIUM 3.6V – 2.1 Ah type AA batteries (minimum life 4 years not to be used to power the sensor) or 24 Vca                      |
| Count inputs:                          | non insulated – mechanical REED sensors – electronic NPN – PNP sensors                                                                |
| Remote stop and start inputs:          | non insulated - N.A. contacts without voltage (available on expansion board)                                                          |
| Max. and min. capacity alarms outputs: | non insulated – mosfet 24 Vdc 0.5 A max. (available on expansion board)                                                               |
| 4 – 20 mA output:                      | non insulated - mosfet 24 Vdc 0.5 A max. (available on expansion board)                                                               |
| Factorised pulses output:              | non insulated - mosfet 24 Vdc 0.5 A max. adjustable pulse duration (1 – 9999 ms.)                                                     |
| V1 valve and pump outlets:             | 1A 30 Vdc relay with common pole                                                                                                      |
| V2 prestop valve outlet                | 1A 30 Vdc relay (available on expansion board)                                                                                        |
| Instantaneous capacity sampling time   | approx. 1 0 sec.                                                                                                                      |
| Parameters storage:                    | via non-volatile EEPROM memory                                                                                                        |
| Version:                               | with PVC case measurements Ø 130 x 74 mm –IP 65 protection level – wall-mounted or mounted on pipes using the special accessories kit |