

# FLOWMETER

ultrasonic flow transmitter



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# 1-WARRANTY

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Products supplied by SGM LEKTRA are guaranteed for a period of 12 (twelve) months from delivery date according to the conditions specified in our sale conditions document.

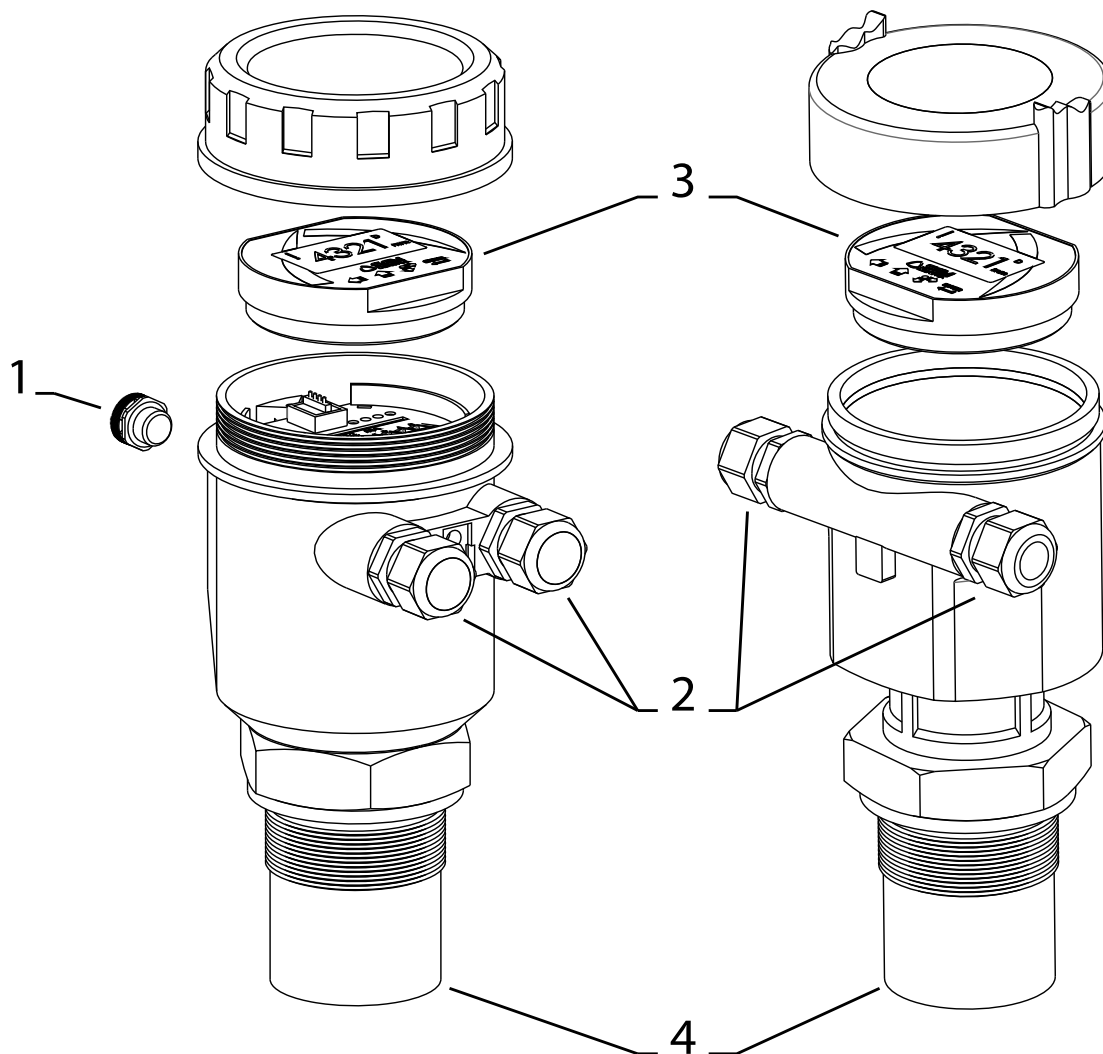
SGM LEKTRA can choose to repair or replace the Product.

If the Product is repaired it will maintain the original term of guarantee, whereas if the Product is replaced it will have 12 (twelve) months of guarantee.

The warranty will be null if the Client modifies, repair or uses the Products for other purposes than the normal conditions foreseen by instructions or Contract.

In no circumstances shall SGM LEKTRA be liable for direct, indirect or consequential or other loss or damage whether caused by negligence on the part of the company or its employees or otherwise howsoever arising out of defective goods

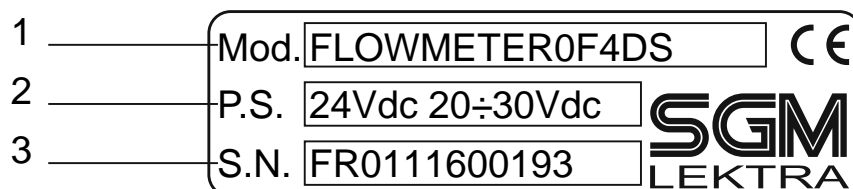
## 2- PRODUCT



- 1. Anticondensation filter
- 2. M20 skintop
- 3. VL601 (opt.)
- 4. Sensor

### 2.1 IDENTIFICATION

Each meter has an adhesive identification plate on which are the meter main data. The following picture describes the information and data on the identification plate.



1. Product code

2. Power supply

3. Serial number

## 3-FEATURES

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**Housing/sensor material**

PC or AI / PP or PVDF wetted part

**Mechanical installation**

2" GAS M (PP flange DN80 opt.)

**Protection degree**

IP67/IP68 (Sensor)

**Electrical connection**

Internal push connectors

**Working temperature**

-20 ÷ +60°C

**Pressure**

from 0,5 to 1,5 bar (absolute)

**Power supply**

12Vdc / 24Vdc

**Power consumption**

1,5W (4-wires)

**Analog output**

4...20mA, max 750ohm

**Relays output**

n°2 3A 230Vac (n.o.)

**Digital communication**

MUDBUS RTU

**Max measure range**

max 0.25 ÷ 5m

In case of non perfectly reflecting surfaces, the maximum distance value will be reduced

**Blind distance**

0,25m

**Temperature compensation**

digital from -30 to 80°C

**Accuracy**

±0,2% (of the measured distance) not better than ±3mm.

**Resolution**

1mm.

**Calibration**

4 buttons or via MODBUS RTU

**Warm-up**

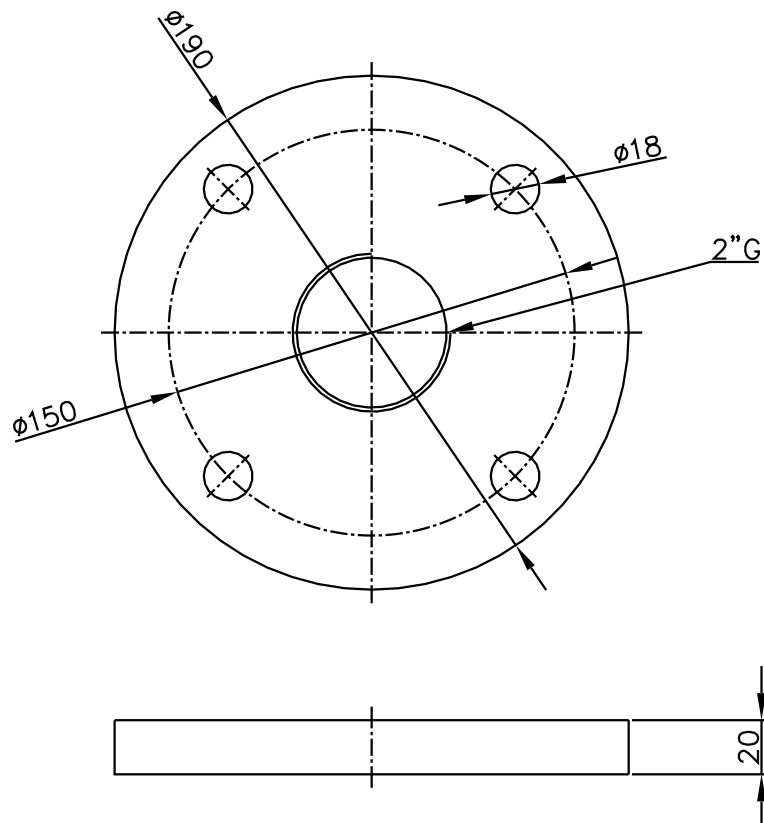
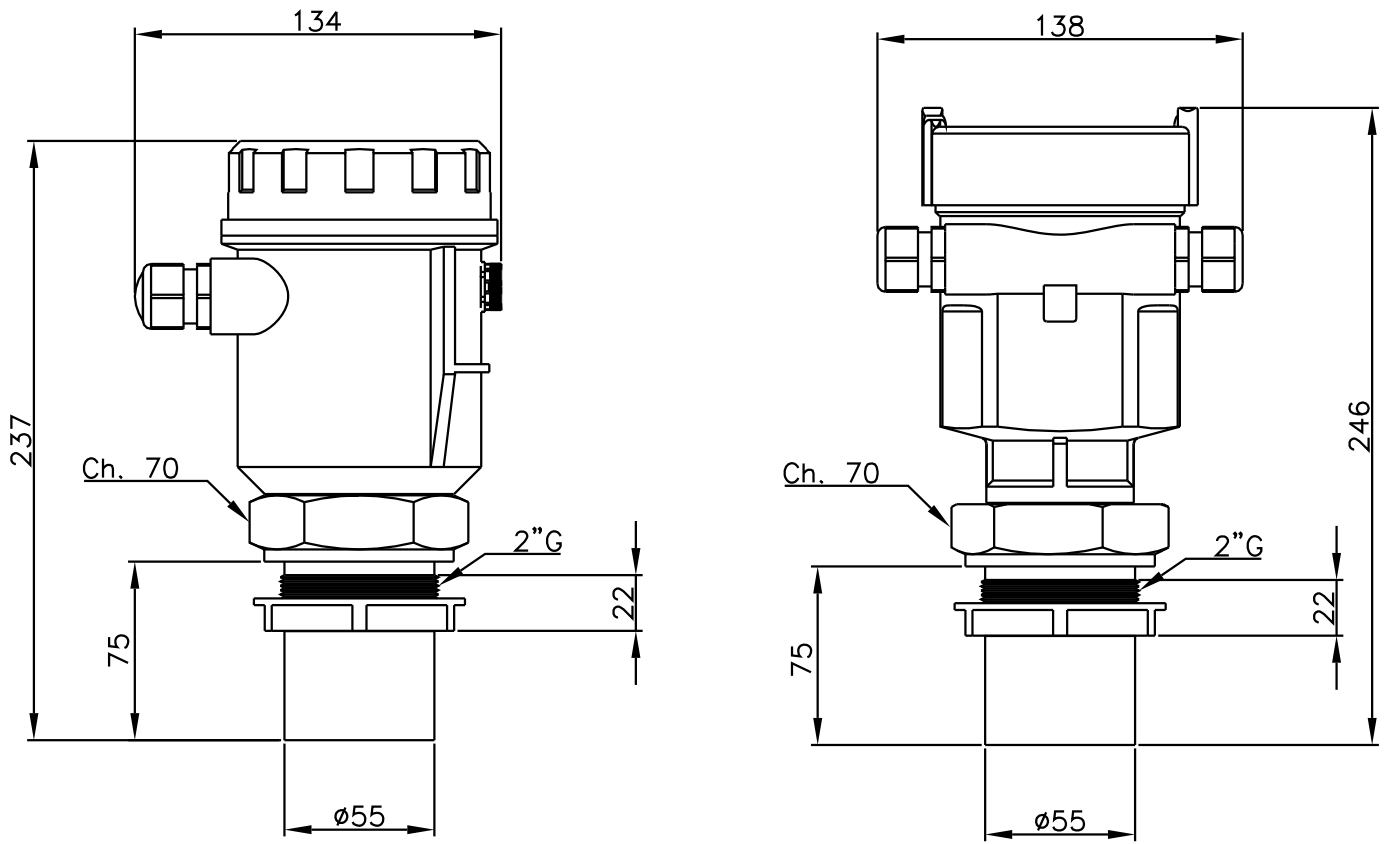
1 minutes typical

**LCD Display**

Plug-in display/keyboard 4 buttons matrix LCD

# 4-DIMENSIONS

## 4.1 MECHANICAL DIMENSIONS

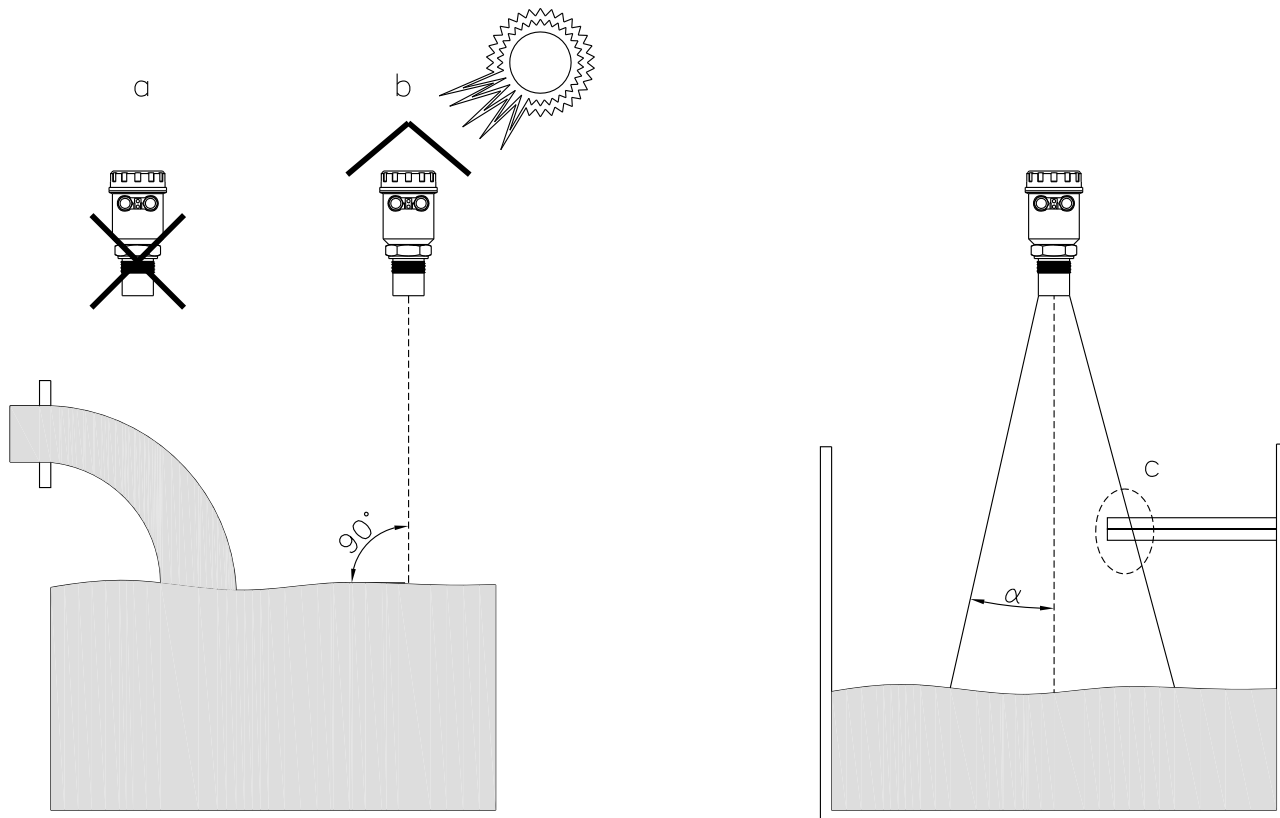


# 5-INSTALLATION

## 5.1 MOUNTING PRECAUTIONS

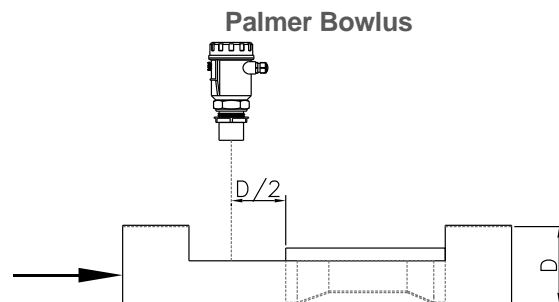
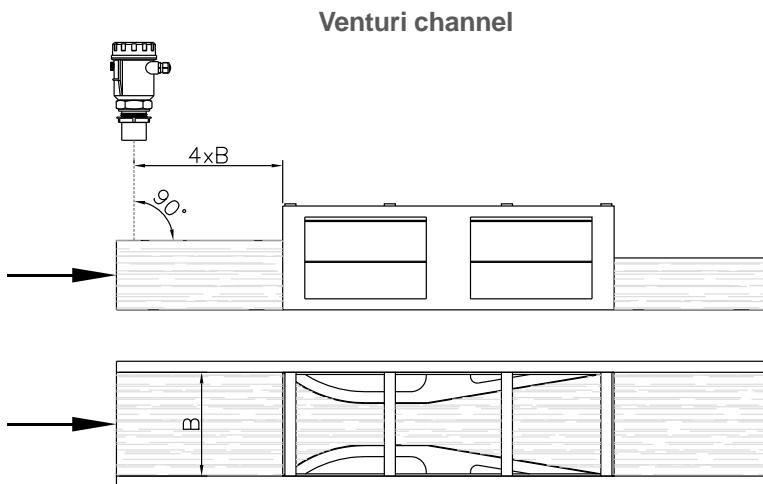
### 5.1.1 Mounting position

- Use a protective cover to protect the sensor from weather and direct sunlight (b).
- Do not install the sensor near the load zone (a).
- Make sure that in the sensor emission beam (lobe "α") there are no obstacles (c) that can be intercepted as level.
- Make sure that there is not foam presence on the product surface to be measured.



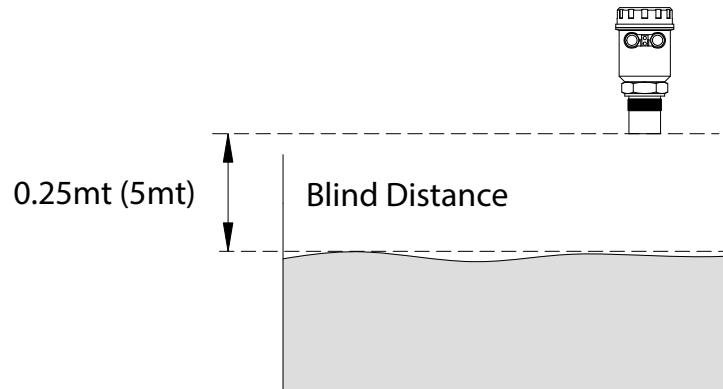
	<b>Lobo "α"</b>
<b>FLOWMETER 5mt</b>	10°

Make sure that the FLOWMETER distance from the weir channel point is equal or greater than to the minimum allowed distance. In the following figure, the example with a Venturi channel (min. dist. 4xb0) and a Palmer-Bowlus channel (min. dist. D/2) prefabricated (available in our catalog)..



### 5.1.2 Blind distance

During installation is important to remember that in the sensor vicinity there is a blind zone (or BLIND DISTANCE) of 0.25m where the sensor can not measure.

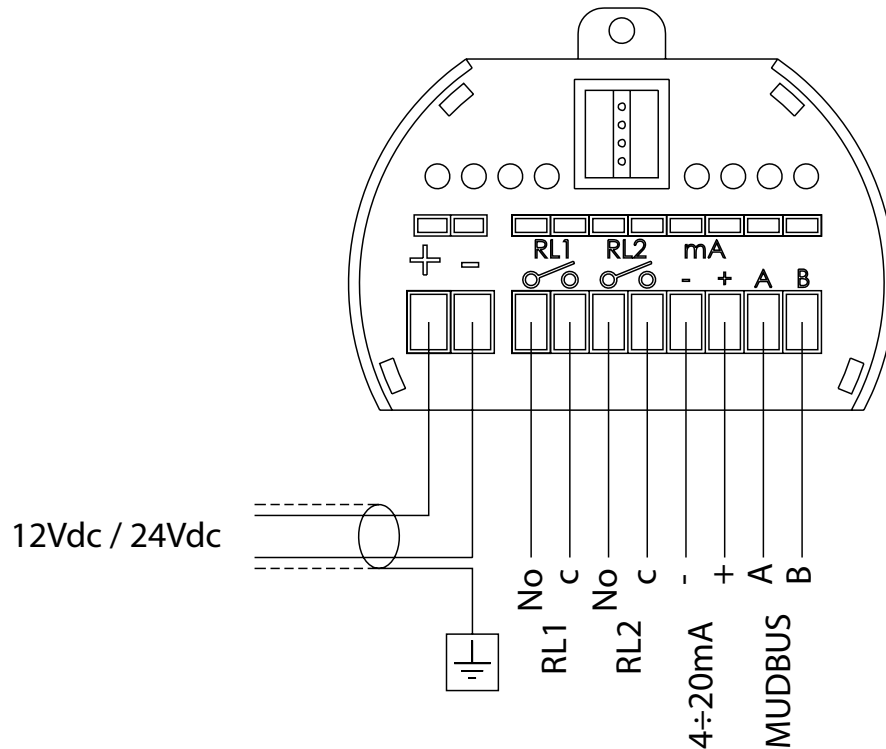




## 6-ELECTRICAL CONNECTIONS

### 6.1 WIRING

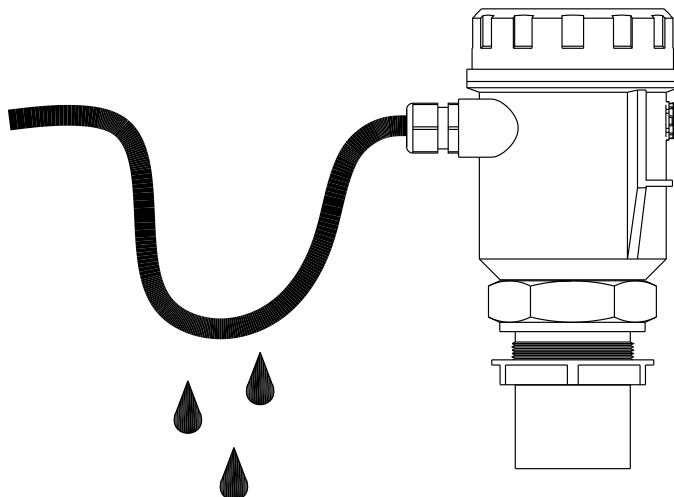
- 1) Separate the engine control cables or power cables from the FLOWMETER connection cables
- 2) Open the cap by unscrewing.
- 3) Lead the cables into the transmitter through the glands
- 4) Do not use sleeves terminals, because they might interfere with the VL601 module insertion
- 5) Close the cap and tighten the cable glands



### 6.2 HUMIDITY INFILTRATIONS

To avoid the humidity infiltration inside the housing is recommended:

- for electrical connections, use a cable with a 6÷12mm outer diameter and fully tighten the M20 cable gland
- fully tighten the cap
- position the cable so that it forms a downward curve at the M20 output; in this way the condensation and/or rain water will tend to drip from the curve bottom



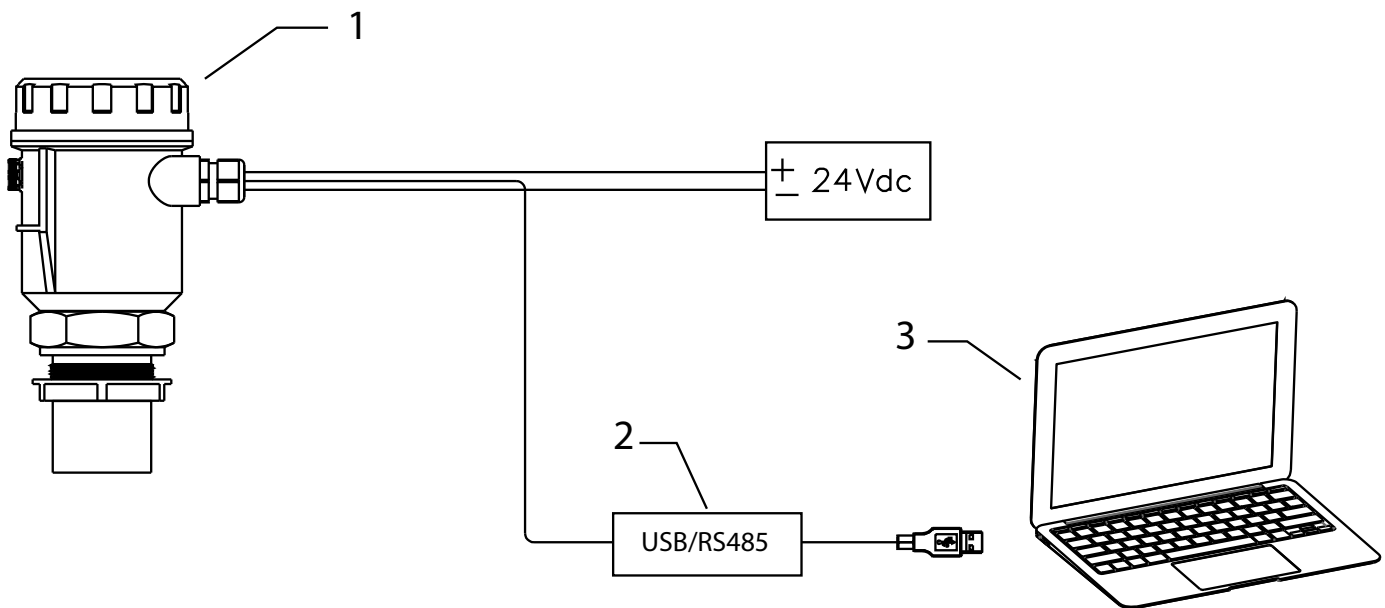
## 6.3 DIGITAL COMMUNICATIONS CONNECTION

## 7.3.1 MODBUS RTU PC connection

- 1) FLOWMETER with MODBUS RTU communication protocol
- 2) USB/RS485 interface module, cod.694A004A
- 3) MODBUS RTU communication S/W, cod.010F119A, for FLOWMETER transmitter

With this software is possible:

- connect, by selecting the UID address, the FLOWMETER transmitters in MODBUS RTU network
- read on your PC monitor all measures in reading and FLOWMETER operation data
- programming all FLOWMETER configuration parameters
- storing on files, data logger function; FLOWMETER measures in reading and operating states












## 7-LOCAL OPERATOR INTERFACE (LOI) - VL601

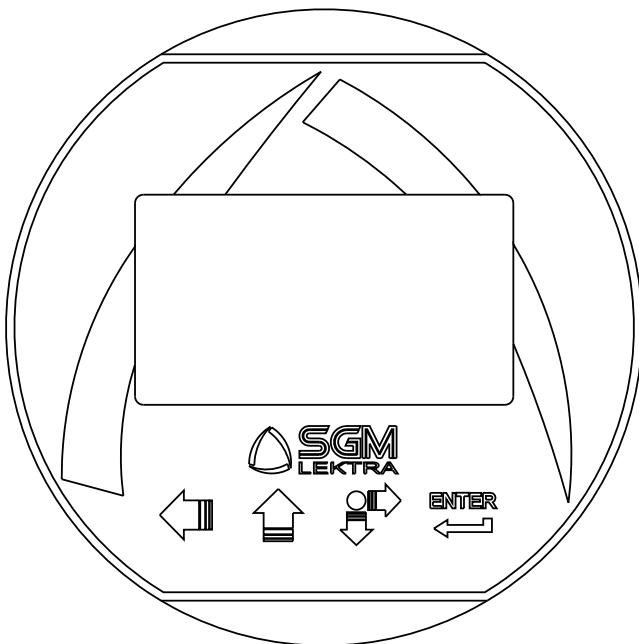
LOI is an operator communications center for the FLOWMETER. Through the LOI, the operator can access any transmitter function for changing configuration parameter settings or other functions.




### 7.1 VL601 FEATURES

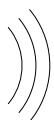
The VL601 program module has 4 buttons which allow to perform all operational, control and programming instrument functions.

In the configuration menus, is possible:

1. Submenus and parameters access; press  to select and press  to access.
2. Parameter options choice: Press  to select the option and press  to store the option.  
Press  to exit without storing.
3. Configure the parameter values; in some parameters the configuration is done by setting a value (eg., in the SET DISTANCE 4mA parameter is possible to change the the corresponding distance value, in mm):  
press  to select the digit to be modified (the digit is highlighted in inverse ), press  to change the high lighted digits number, press  to save the set value and exit automatically.  
Press  to exit without storing.



-  LEFT ARROW button:
  - Exit configuration
  - Back to previous menu
  - Echo map (from RUN mode)
-  UP ARROW button:
  - Parameter values modification
  - Parameter scroll
-  SCROLL button:
  - Cursor movement (to the right)
  - Parameter scroll
-  ENTER button:
  - Configuration access
  - Options confirmation
  - Parameters values confirmation



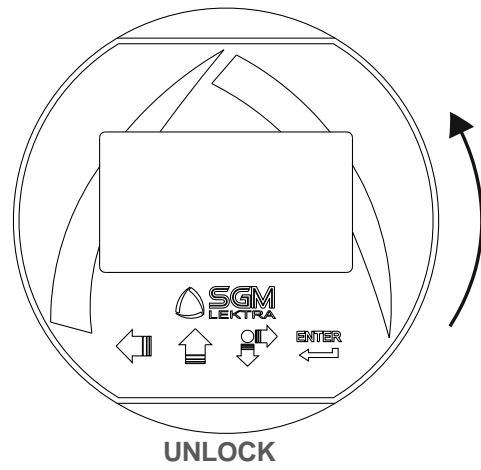
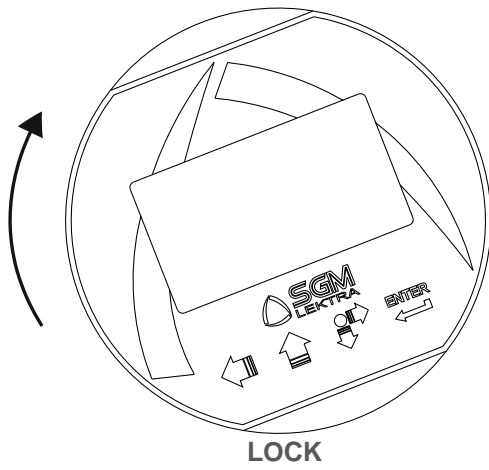
Displayed at the bottom indicates the correct echo signal reception



Displayed at the top alerts that there is a generic error; press SCROLL to show the message that indicates the present error type.

- The FLOWMETER returns automatically to RUN mode.

The VL601 programming module can be mounted and removed from the FLOWMETER without affecting the unit operation. Unscrewing the cap, the VL601 module can be mounted (by clockwise rotation until it clicks) or dismantled (by rotation counterclockwise) as shown in figure.

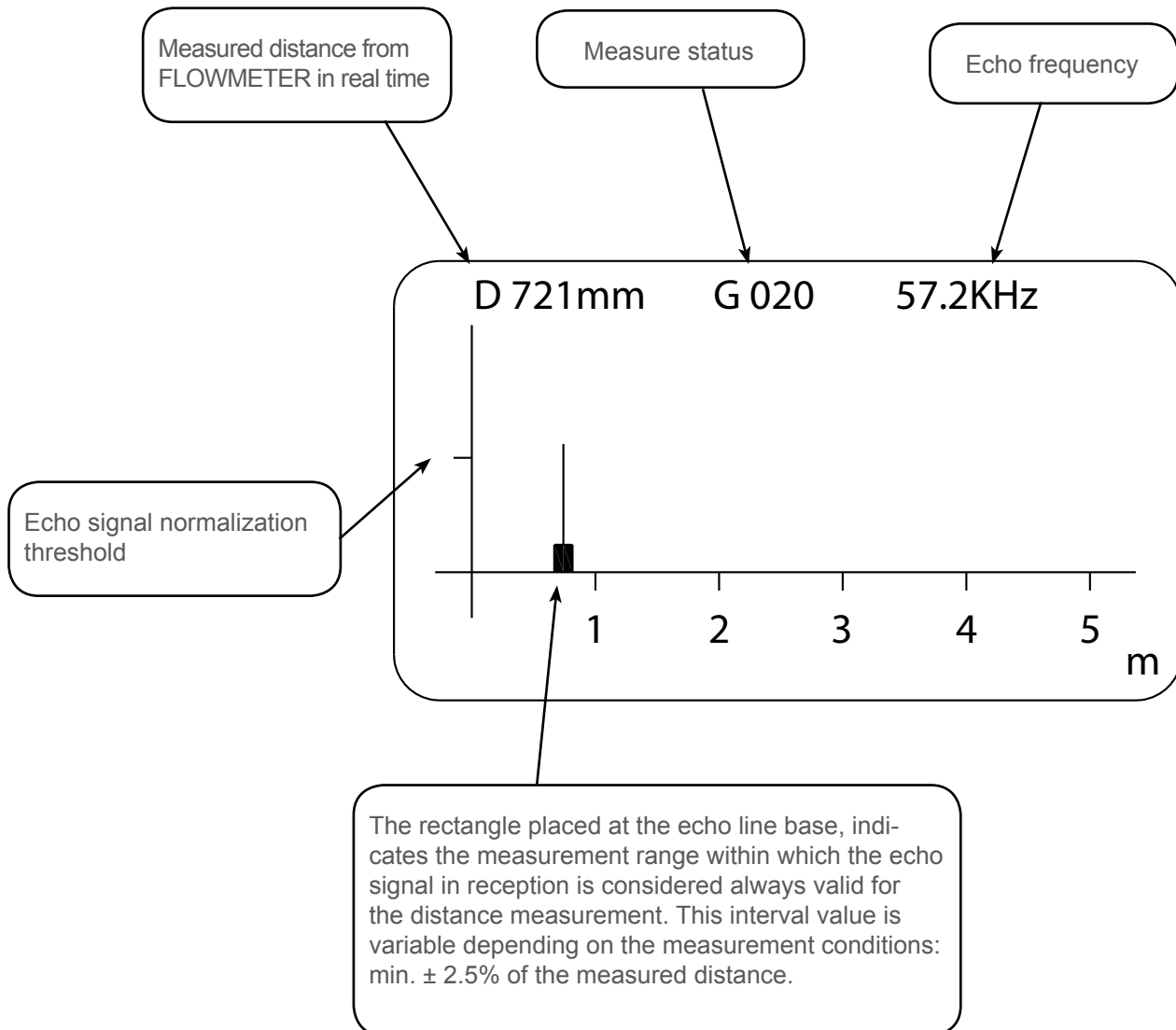


## 7.2 - ECHO MAP

Pressing LEFT ARROW, from RUN mode, to access directly to the echoes digital map display, which are in FLOWMETER receiving.

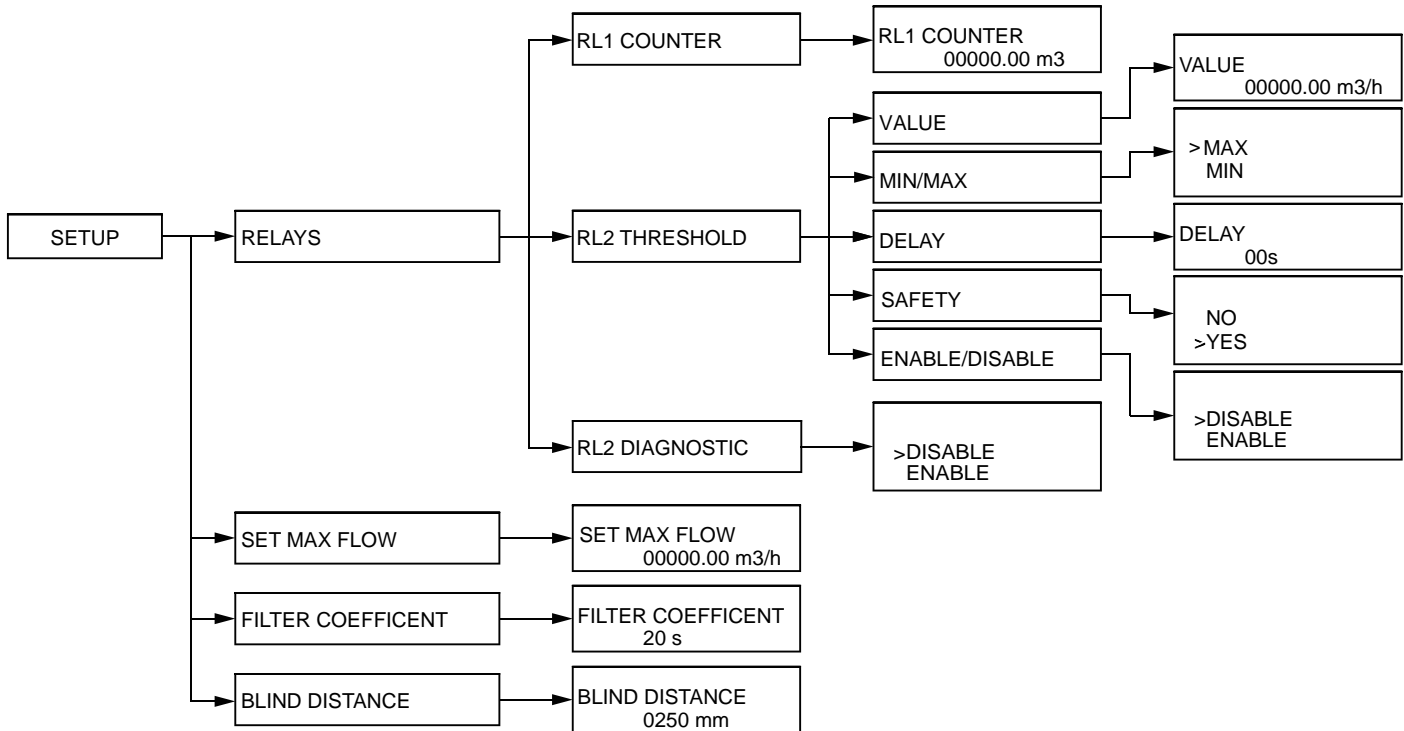
This function is useful for:

- properly orient the transducer pointing.
- verify the echoes in acquisition correctness.
- identify any false echo signals that may cause measurement errors.



# 8-CONFIGURATION

## 8.1 - "SETUP" menu



## 8.2 - SETUP

FLOW	m <sup>3</sup> /h
<b>137.54</b>	
TOTALIZER	m <sup>3</sup>
<b>18369</b>	

From "RUN" mode press ENTER to access the configuration mode

Press SCROLL to select the menu and press ENTER to access.  
Press LEFT ARROW to exit

▶ SETUP
DISPLAY
FLOW APPL.
SERVICE
INFO

▶ RELAYS
SET MAX FLOW
FILTER COEFFICIENT
BLIND DISTANCE

**8.2.1 - RELAY**

Position the cursor on RELAY, press ENTER to confirm

In this sub-menu it's possible to setup the on-board relays  
RL1 can be set as volume pulse output relay;  
RL2 can be set as instantaneous flow rate threshold relay  
or diagnostic relay.

Press SCROLL button to select the operation mode,  
then pressing ENTER to confirm the selection

► RELAYS  
SET MAX FLOW  
FILTER COEFFICIENT  
BLIND DISTANCE

► RL1 COUNTER  
RL2 THRESHOLD  
RL2 DIAGNOSTIC

**8.2.2 - RL1 COUNTER**

Position the cursor on RL1 COUNTER, press ENTER to confirm

Set the single pulse value, in m3

Use UP ARROW and SCROLL to modify the value.

Press ENTER to confirm. LEFT ARROW to exit without changes

Default value: 0

► RL1 COUNTER  
RL2 THRESHOLD  
RL2 DIAGNOSTIC

RL1 COUNTER

00000.00  
m<sup>3</sup>

**8.2.3 - RL2 THRESHOLD**

Position the cursor on RL2 THRESHOLD, press ENTER to confirm

In this submenu you can set the set-point and the RL2 action type.  
Press SCROLL button to select the parameter to be programmed.  
Press ENTER to confirm.

RL1 COUNTER  
► RL2 THRESHOLD  
RL2 DIAGNOSTIC

► VALUE  
MIN / MAX  
DELAY  
SAFETY  
ENABLE / DISABLE

**8.2.3.1 - VALUE**

Position the cursor on VALUE, press ENTER to confirm

It's possible to input the flow rate threshold value in m3/h.

Use UP ARROW and SCROLL to modify the value.

Press ENTER to confirm. LEFT ARROW to exit without changes

Default value: 00000.00

► VALUE  
MIN / MAX  
DELAY  
SAFETY  
ENABLE / DISABLE

VALUE

00000.00  
m<sup>3</sup>

**8.2.3.2 - MIN/MAX**

Position the cursor on MIN/MAX, press ENTER to confirm

It's possible to select if the relay works as minimum flow rate or maximum flow rate threshold.  
 Press SCROLL button to select the operation mode.  
 Press ENTER to confirm. LEFT ARROW to exit without changes

Default value: MAX

VALUE  
 ► MIN / MAX  
 DELAY  
 SAFETY  
 ENABLE / DISABLE

► MAX  
 MIN

**8.2.3.3 - DELAY**

Position the cursor on DELAY, press ENTER to confirm

It's possible to select the activation delay for the RL2, from 0 to 99 sec.  
 Use UP ARROW and SCROLL to modify the value.  
 Press ENTER to confirm. LEFT ARROW to exit without changes

Default value: 00s

VALUE  
 MIN / MAX  
 ► DELAY  
 SAFETY  
 ENABLE / DISABLE

DELAY  
  
 00 s

**8.2.3.3 - SAFETY**

Position the cursor on SAFETY, press ENTER to confirm

A "safety alarm" provides a "closed" contact with relay energized in normal condition (no alarm), the contact switches to "open":  
 - Alarm condition (eg overcoming MAX);  
 - In power failure case.  
 Press SCROLL button to select the alarm mode.,  
 Press ENTER to confirm. LEFT ARROW to exit without changes

Default value: YES

VALUE  
 MIN / MAX  
 DELAY  
 ► SAFETY  
 ENABLE / DISABLE

NO  
 ► YES

**8.2.3.4 - ENABLE/DISABLE**

Position the cursor on ENABLE/DISABLE, press ENTER to confirm

Select ENABLE to activate RL2 threshold.  
 Select DISABLE to not RL2 relay threshold.  
 Press SCROLL button to select the operation mode.  
 Press ENTER to confirm. LEFT ARROW to exit without changes

Default value: ENABLE

VALUE  
 MIN / MAX  
 DELAY  
 SAFETY  
 ► ENABLE / DISABLE

DISABLE  
 ► ENABLE



### 8.2.3.5 - RL2 DIAGNOSTIC

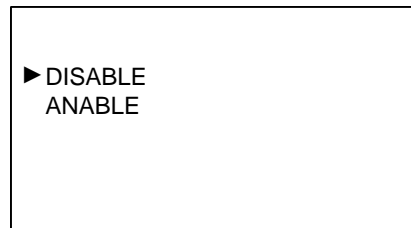
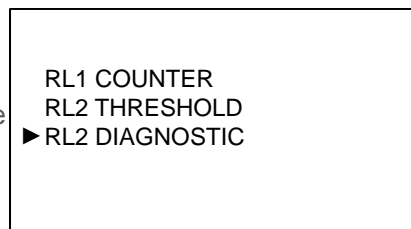
Position the cursor on RL2 DIAGNOSTIC, press ENTER to confirm  
 If it becomes necessary the FLOWMETER functional control, it's possible to enable the RL2 alarm output function. In this case, enabling the function, RL2 is energized in normal operation (RL2 LED on) and is de-energized (LED RL2 off, safety alarm) when at least one of the four conditions mentioned below, shall be verified:

- TEMP. : temperature out of range
- ECHO : no echo is detected
- GAIN : the sensor's gain exceed the value setted in Max Gain TH
- FLOW : the measured flow exceed the 120% of SET MAX FLOW in setup

Press SCROLL button to select the operation mode.  
 Press ENTER to confirm. LEFT ARROW to exit without changes

Default value: DISABLE

NOTE: when an error occurs, a "!" is flashing on the display: press SCROLL to show a message that indicate what kind of error is present. The METER automatically returns to RUN mode..

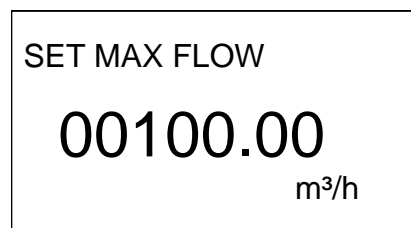
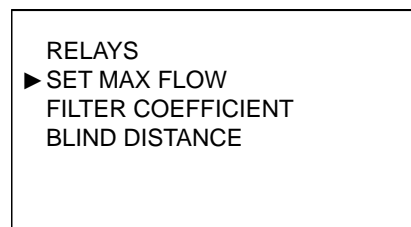


### 8.2.4 - SET MAX FLOW

Position the cursor on SET MAX FLOW, press ENTER to confirm

In this sub-menu it's possible to setup the MAX flow rate value associated with 20mA.  
 Use UP ARROW and SCROLL to modify the value.  
 Press ENTER to confirm. LEFT ARROW to exit without changes

Default value: 0

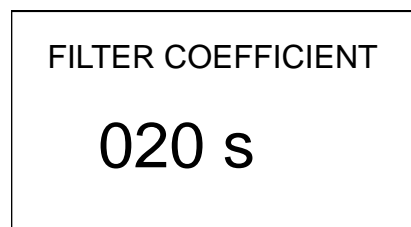
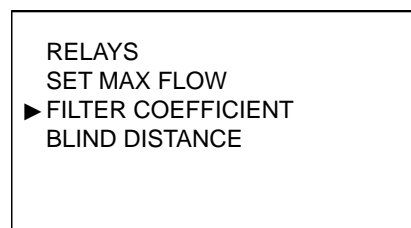


### 8.2.5 - FILTER COEFFICIENT

Position the cursor on FILTER COEFFICIENT, ENTER to confirm

Enter a value from 1 to 99: 1 = maximum speed, 99 = maximum slowness.  
 The function is deactivated with 0 (immediate response)  
 Use UP ARROW and SCROLL to modify the value.  
 Press ENTER to confirm. LEFT ARROW to exit without changes

Default value: 20



### 8.2.6 - BLIND DISTANCE

Position the cursor on BLIND DISTANCE, ENTER to confirm

Represent the "BLIND ZONE" of the sensor. Input the desired value in order to avoid measures near the surface of the sensor (if necessary).

The minimum value is 250mm

Use UP ARROW and SCROLL to modify the value.

Press ENTER to confirm. LEFT ARROW to exit without changes

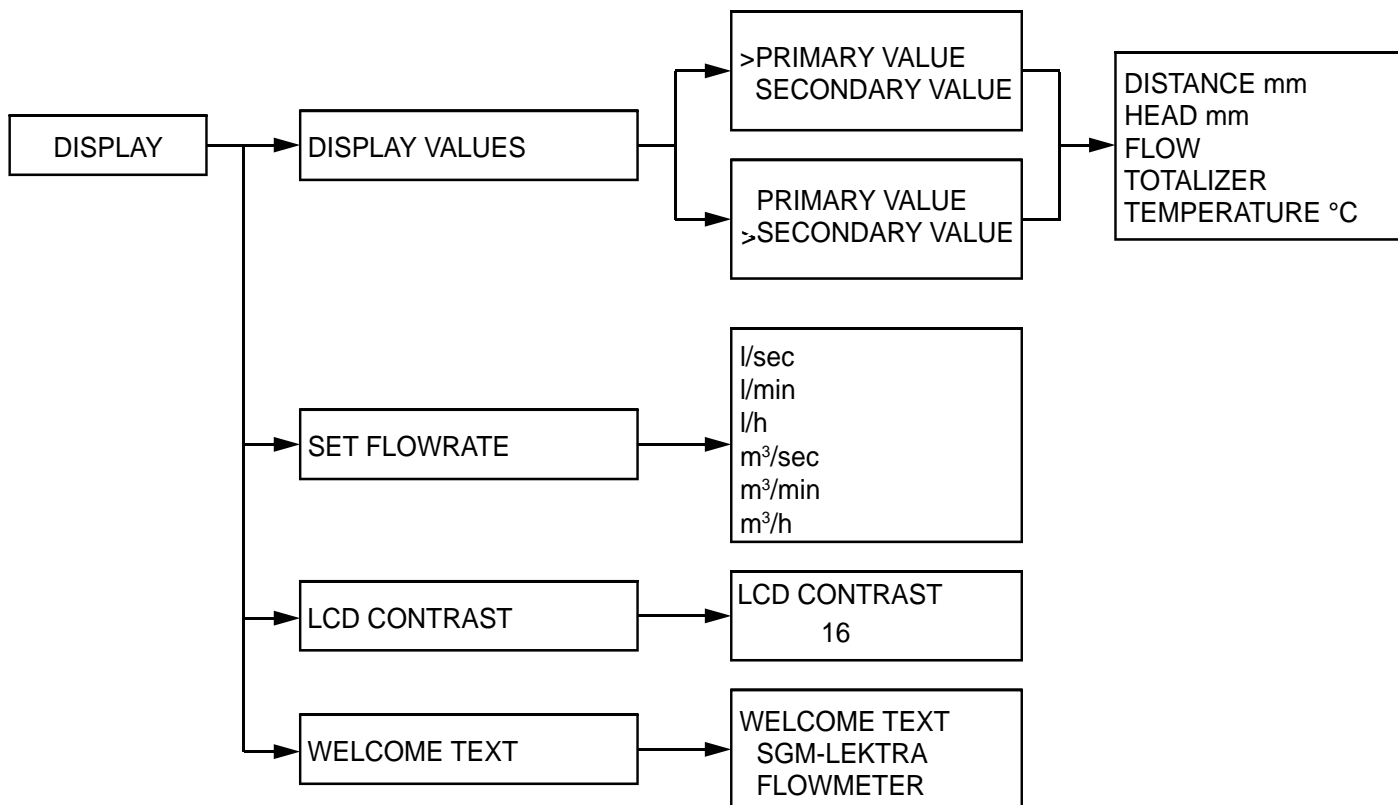
Default values: 250mm

RELAYS  
SET MAX FLOW  
FILTER COEFFICIENT  
▶ BLIND DISTANCE

BLIND DISTANCE

**0250 mm**

8.3 - DISPLAY MENU



8.4 - DISPLAY

Press SCROLL to select the menu and press ENTER to access.  
Press LEFT ARROW to exit.

8.4.1 - DISPLAY VALUES

Position the cursor on DISPLAY VALUES, press ENTER to access

It's possible to select the two values are shown on the display in "RUN" mode  
Press SCROLL button to select the parameter to be programmed.  
Press ENTER to confirm. LEFT ARROW to exit without changes.

8.4.1.1 - PRIMARY/SECONDARY VALUES

Position the cursor on primary/secondary VALUES,press ENTER to access

Two values are displayed; it's possible to choose which one is the primary and which is the secondary, each with a choice of 5 parameters  
Press SCROLL button to select data to display  
Press ENTER to confirm. LEFT ARROW to exit without changes

SETUP ► DISPLAY FLOW APPL. SERVICE INFO
► DISPLAY VALUES SET FLOWRATE LCD CONTRAST WELCOME TEXT
► PRIMARY VALUE SECONDARY VALUE
► PRIMARY VALUE SECONDARY VALUE
DISTANCE mm HEAD mm ► FLOW TOTALIZER TEMPERATURE °C

**8.4.2 - SET FLOWRATE**

Position the cursor on SET FLOWRATE, press ENTER to confirm

Press SCROLL button to select the instantaneous flow rate measure unit to be programmed.

Press ENTER to confirm. LEFT ARROW to exit without changes.

```

DISPLAY VALUES
▶ SET FLOWRATE
LCD CONTRAST
WELCOME TEXT
  
```

```

l/sec
l/min
l/h
m3/sec
m3/min
▶ m3/h
  
```

**8.4.3 - LCD CONTRAST**

Position the cursor on LCD CONTRAST, press ENTER to confirm

it's possible to adjust the contrast of LCD, simply increasing or decreasing the value of a parameter from 0 to 63.

Use UP ARROW and SCROLL to modify the value.

Press ENTER to confirm. LEFT ARROW to exit without changes

Default value: 16

```

DISPLAY VALUES
SET FLOWRATE
▶ LCD CONTRAST
WELCOME TEXT
  
```

```

LCD CONTRAST

32
  
```

**8.4.4 - WELCOME TEXT**

Position the cursor on WELCOME TEXT, press ENTER to confirm

It's possible to edit or delete the message that is displayed by the FLOWMETER during the ignition phase.

Use UP ARROW (up scroll) and SCROLL (down scroll) to change the digit; ENTER to move the digit to the right. To confirm press ENTER repeatedly until leave the parameter. LEFT ARROW to exit without changes

Default value: SGM-LEKTRA FLOWMETER

```

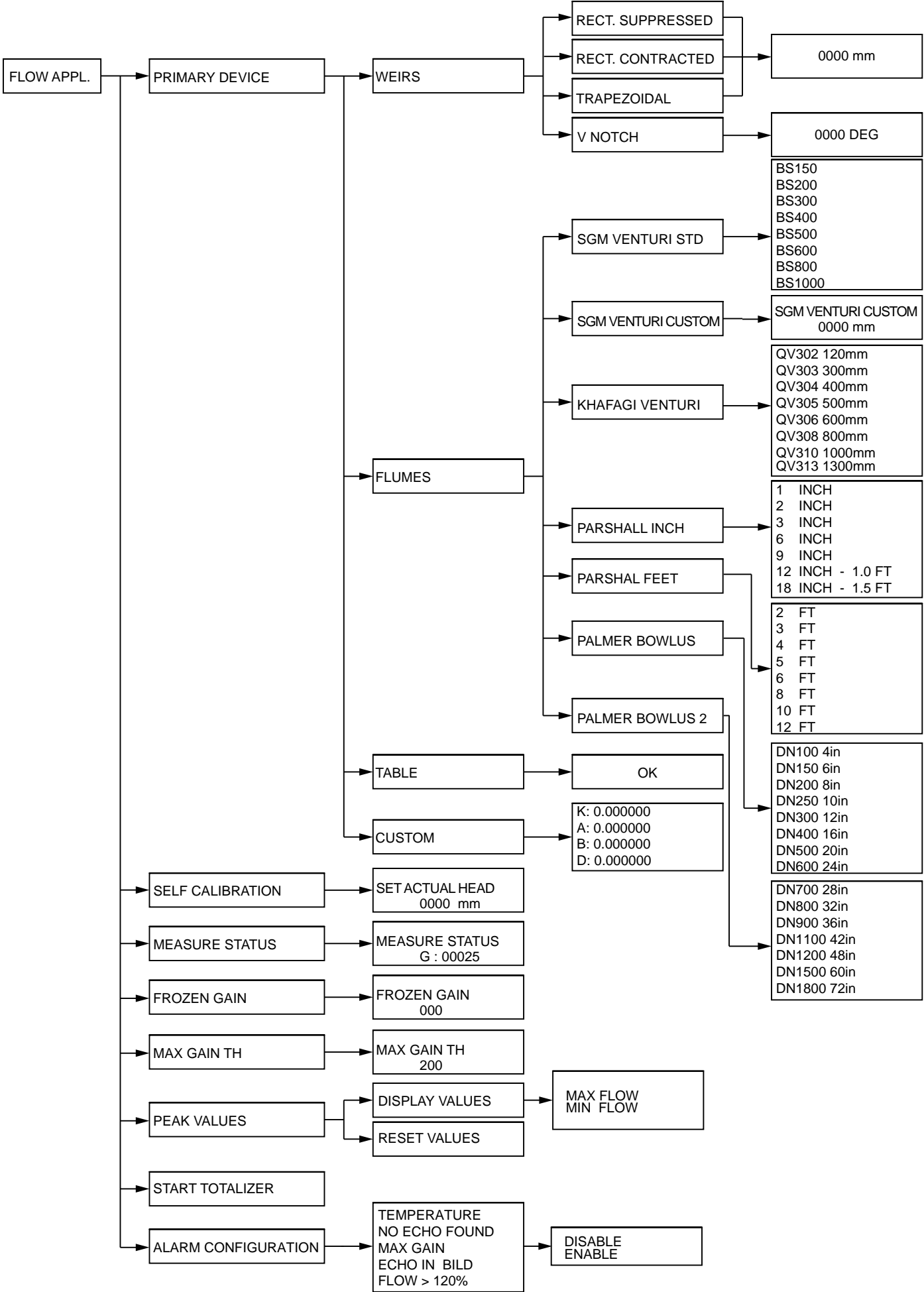
DISPLAY VALUES
SET FLOWRATE
LCD CONTRAST
▶ WELCOME TEXT
  
```

```

WELCOME TEXT

SGM-LEKTRA
FLOWMETER
  
```

8.5 FLOW APPL. menu



8.6 - FLOW APPL.

Press SCROLL to select the menu and press ENTER to access.  
Press LEFT ARROW to exit.

8.6.1 - PRIMARY DEVICE

Position the cursor on primary device, press ENTER to access.

In this sub-menu it's possible to select and set the primary device available in the channel  
Press SCROLL button to select the primary device to be setted.  
Press ENTER to confirm. LEFT ARROW to exit without changes

8.6.1.1 - WEIRS

Position the cursor on WEIRS, press ENTER to access

In this sub-menu it's possible to select and set the weir kind available in the channel  
Can be selected: Rectangular Suppressed, Rectangular Contracted, Trapezoidal and V Notch  
Press SCROLL button to select the weir kind to be setted.  
Press ENTER to confirm. LEFT ARROW to exit without changes

8.6.1.1.1 - RECT. SUPPRESSED

Position the cursor on RECT. SUPPRESSED (or no constriction rectangular), press ENTER to access

To set it, simply insert the "L" size  
Use UP ARROW and SCROLL to modify the value.  
Press ENTER to confirm. LEFT ARROW to exit without changes.

SETUP  
DISPLAY  
▶ FLOW APPL.  
SERVICE  
INFO

▶ PRIMARY DEVICE  
SELF CALIBRATION  
MEASURE STATUS  
FROZEN GAIN  
MAX GAIN TH  
PEAK VALUE  
START TOTALIZER  
ALARM CONFIGURATION

▶ WEIRS  
FLUMES  
TABLE  
CUSTOM

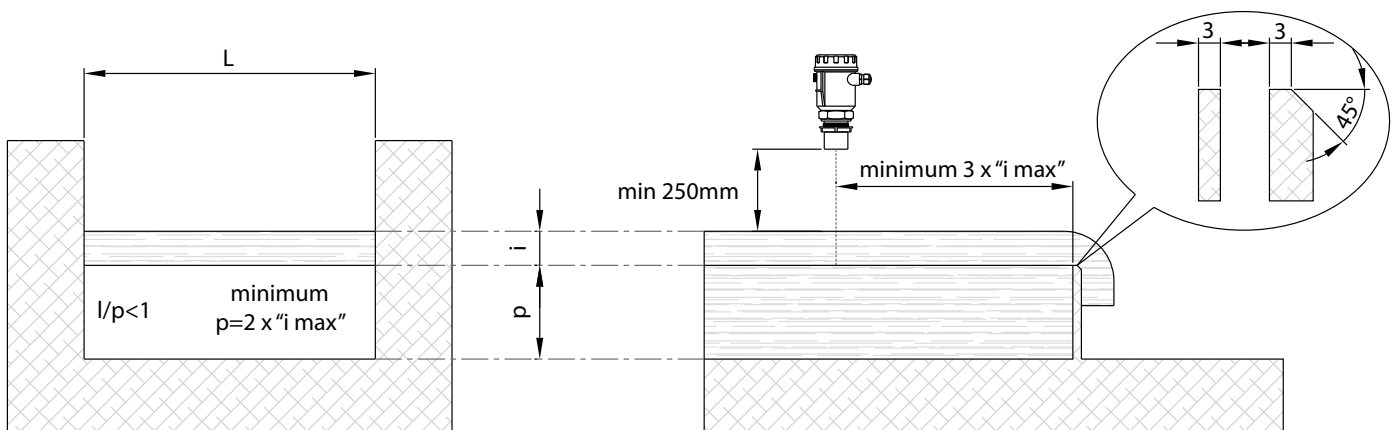
▶ WEIRS  
FLUMES  
TABLE  
CUSTOM

▶ RECT. SUPPRESSED  
RECT. CONTRACTED  
TRAPEZOIDAL  
V NOTCH

▶ RECT. SUPPRESSED  
RECT. CONTRACTED  
TRAPEZOIDAL  
V NOTCH

RECT. SUPPRESSED  
  
0000 mm

NO CONSTRICTION RECTANGULAR WEIR - "Bazin"



**8.6.1.1.2 - RECT. CONTRACTED**

Position the cursor on RECT. CONTRACTED (or constriction rectangular), ENTER to confirm

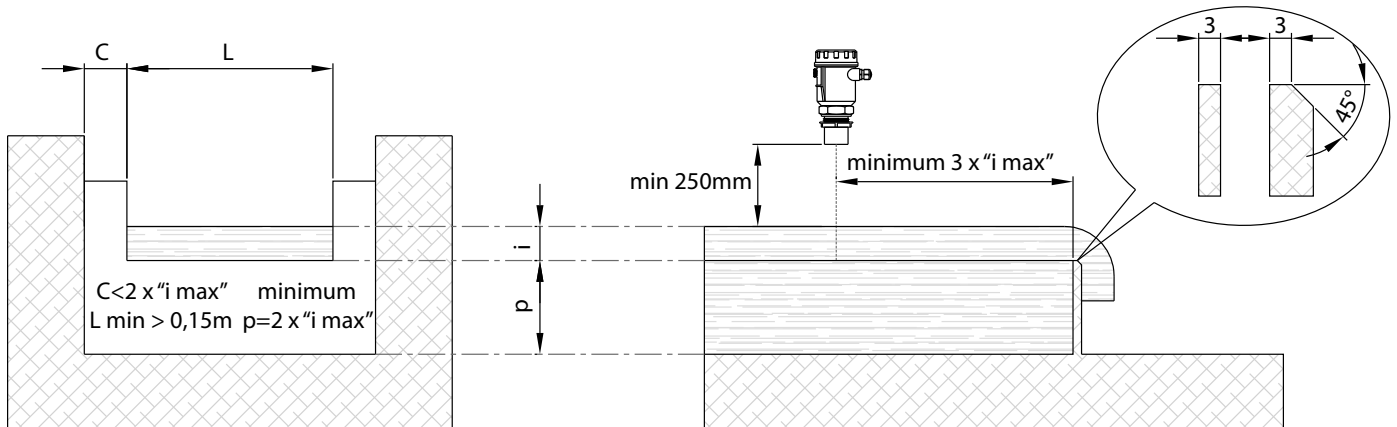
To set it, simply insert the "L" size.  
Use UP ARROW and SCROLL to modify the value.  
Press ENTER to confirm. LEFT ARROW to exit without changes

- RECT. SUPPRESSED
- ▶ RECT. CONTRACTED
- TRAPEZOIDAL
- V NOTCH

RECT. CONTRACTED

**0000 mm**

**CONSTRICTION RECTANGULAR WEIR - "Francis"**



**8.6.1.1.3 - TRAPEZOIDAL**

Position the cursor on TRAPEZOIDAL (or Cipoletti), ENTER to confirm

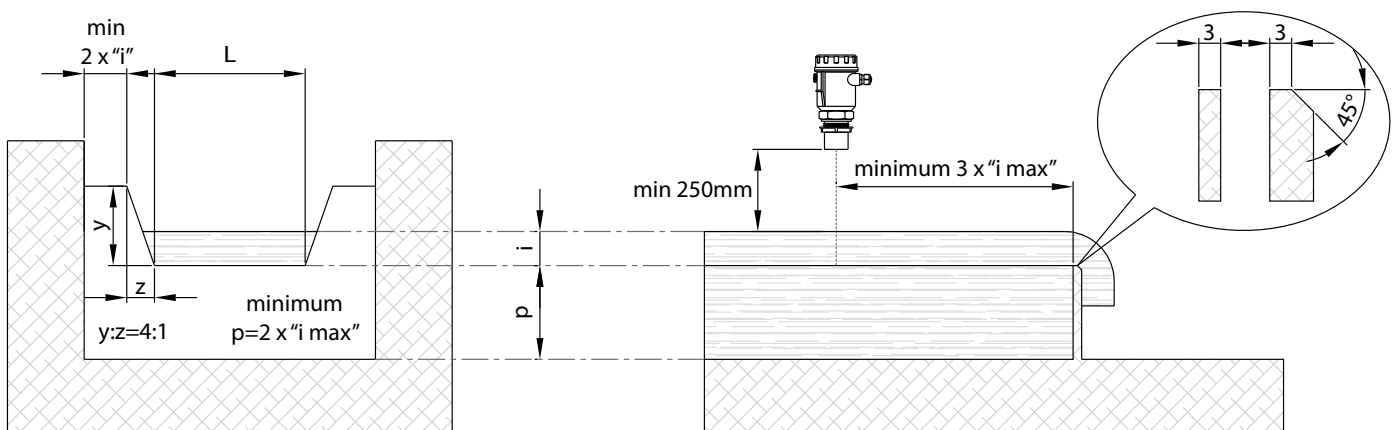
To set it, simply insert the "L" size.  
Use UP ARROW and SCROLL to modify the value.  
Press ENTER to confirm. LEFT ARROW to exit without changes

- RECT. SUPPRESSED
- RECT. CONTRACTED
- ▶ TRAPEZOIDAL
- V NOTCH

TRAPEZOIDAL

**0000 mm**

**TRAPEZOIDAL OR CIPOLETTI WEIR**



8.6.1.1.4 - V NOTCH

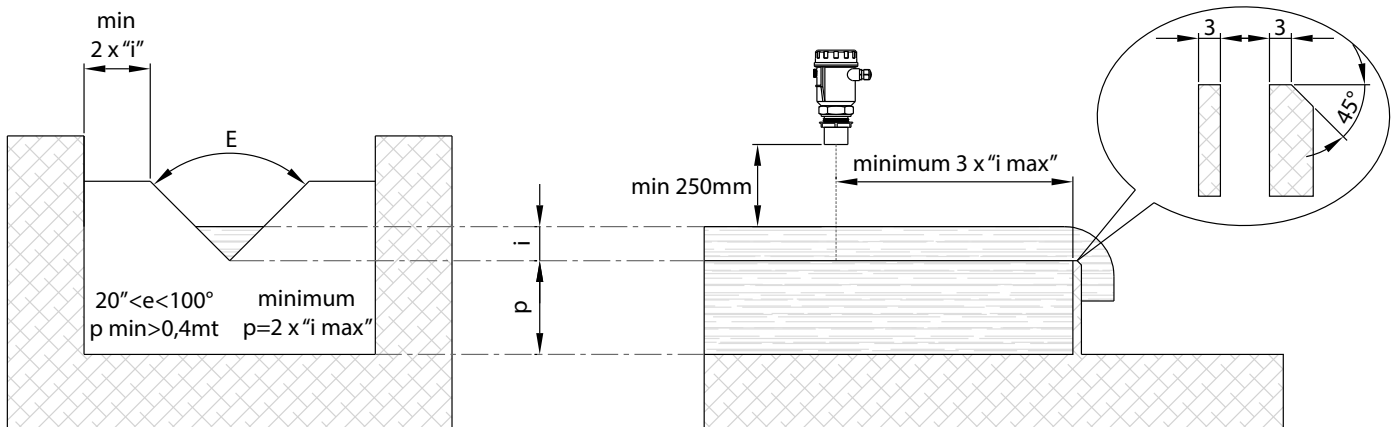
Position the cursor on V NOTCH (or triangular), ENTER to confirm

- RECT. SUPPRESSED
- RECT. CONTRACTED
- TRAPEZOIDAL
- ▶ V NOTCH

To set it, simply insert the "L" size.  
 Use UP ARROW and SCROLL to modify the value.  
 Press ENTER to confirm. Left arrow to exit without changes

V NOTCH  
 000.0

TRIANGULAR WEIR



8.6.1.2 - FLUMES

Position the cursor on flumes, press ENTER to confirm

- WEIRS
- ▶ FLUMES
- TABLE
- CUSTOM

In this sub-menu it's possible to select and set the flumes kind available in the channel.  
 Press SCROLL button to select the flumes kind to be setted.  
 Press ENTER to confirm. Left arrow to exit without changes

- ▶ SGM VENTURI STD
- SGM VENTURI CUSTOM
- KHAFAGI VENTURI
- PARSHALL INCH
- PARSHALL FEET
- PALMER BOWLUS
- PALMER BOWLUS 2



**8.6.1.2.1 - SGM VENTURI STD**

Position the cursor on SGM VENTURI STD, press ENTER to confirm. "SGM VENTURI STD" are prefabricated Venturi channels and are designed by SGM LEKTRA in collaboration with the Pavia University

To set it, simply select the Venturi channel model, identifiable with the "bo" size.

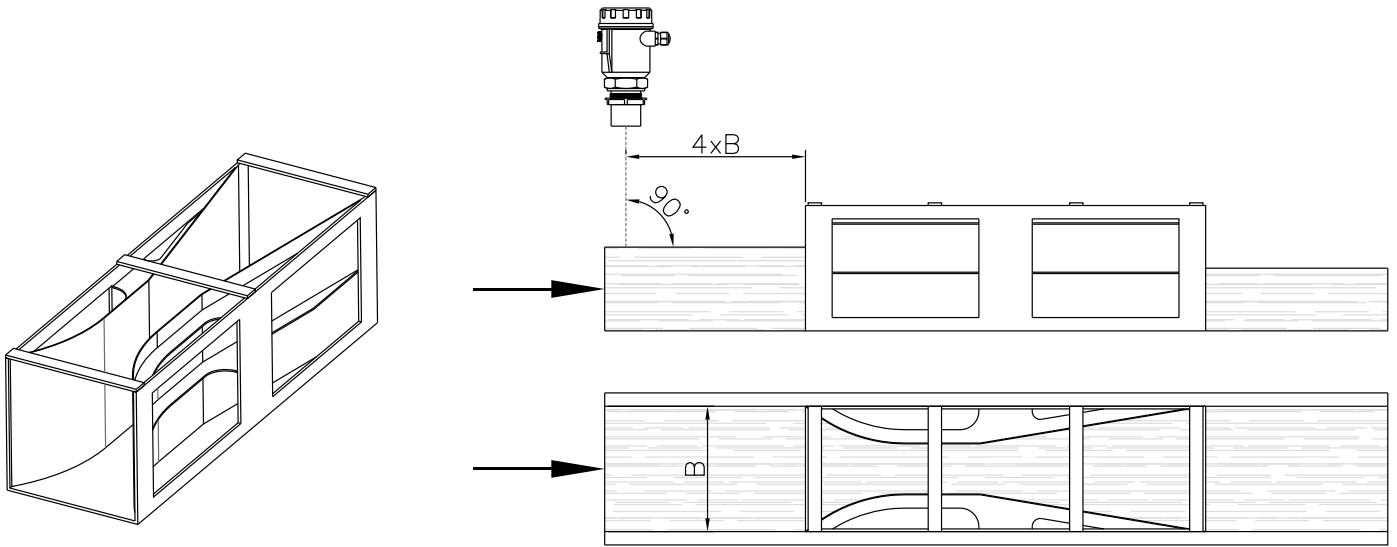
Ex.: B = 300mm; SGM VENTURI STD = BS 300

Press SCROLL button to select the SGM VENTURI STD kind to be set.

Press ENTER to confirm. LEFT ARROW to exit without changes.

- ▶ SGM VENTURI STD
- SGM VENTURI CUSTOM
- KHAFAGI VENTURI
- PARSHALL INCH
- PARSHALL FEET
- PALMER BOWLUS
- PALMER BOWLUS 2

- ▶ BS 150
- BS 200
- BS 300
- BS 400
- BS 500
- BS 600
- BS 800
- BS 1000



**8.6.1.2.2 - SGM VENTURI CUSTOM**

Position the cursor on SGM VENTURI CUSTOM, press ENTER to confirm. "SGM VENTURI" are custom Venturi channels and are designed by SGM LEKTRA in collaboration with the Pavia University

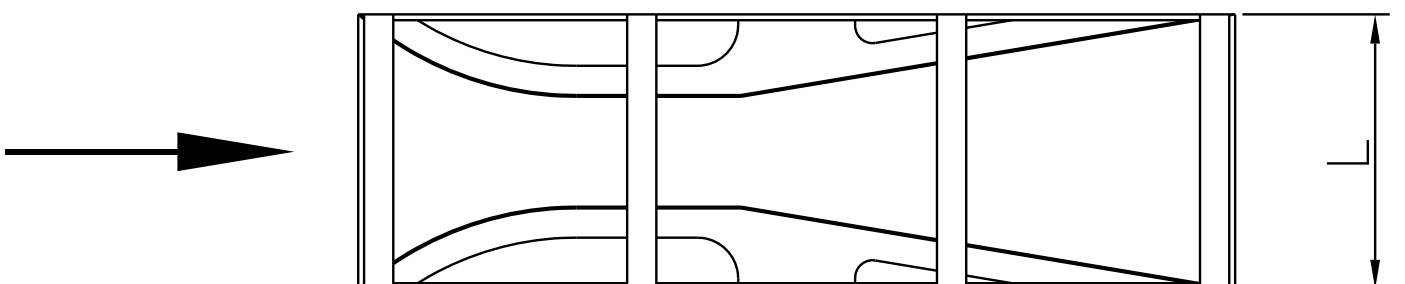
To set it, simply insert the "L" size.

Use UP ARROW and SCROLL to modify the value.

Press ENTER to confirm. LEFT ARROW to exit without changes

- SGM VENTURI STD
- ▶ SGM VENTURI CUSTOM
- KHAFAGI VENTURI
- PARSHALL INCH
- PARSHALL FEET
- PALMER BOWLUS
- PALMER BOWLUS 2

SGM VENTURI CUSTOM  
**0000 mm**



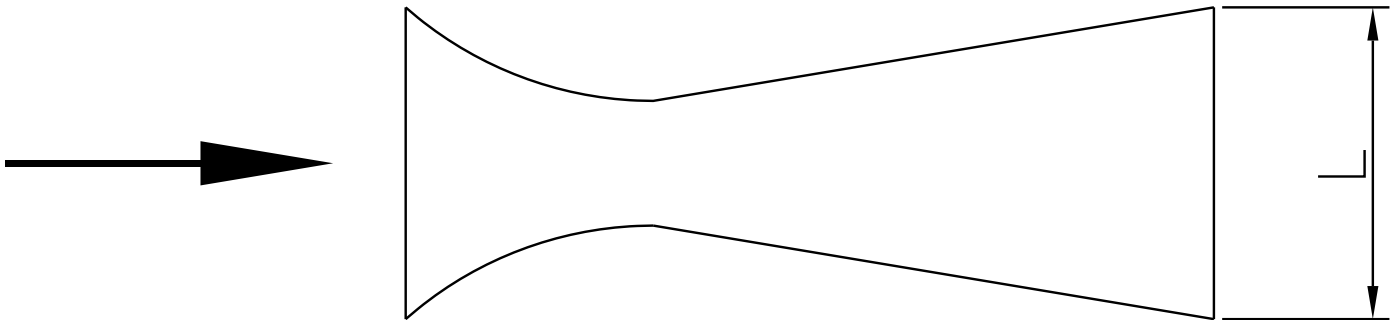
**8.6.1.2.3 - KHAFAGI VENTURI**

Position the cursor on KHAFAGI VENTURI, press ENTER to confirm

- SGM VENTURI STD
- SGM VENTURI CUSTOM
- ▶ KHAFAGI VENTURI
- PARSHALL INCH
- PARSHALL FEET
- PALMER BOWLUS
- PALMER BOWLUS 2

To set it, simply select the "L" size.  
 Use UP ARROW and SCROLL to select the value.  
 Press ENTER to confirm. LEFT ARROW to exit without changes.

- ▶ QV302 120mm
- QV303 300mm
- QV304 400mm
- QV305 500mm
- QV306 600mm
- QV308 800mm
- QV310 1000mm
- QV313 1300mm



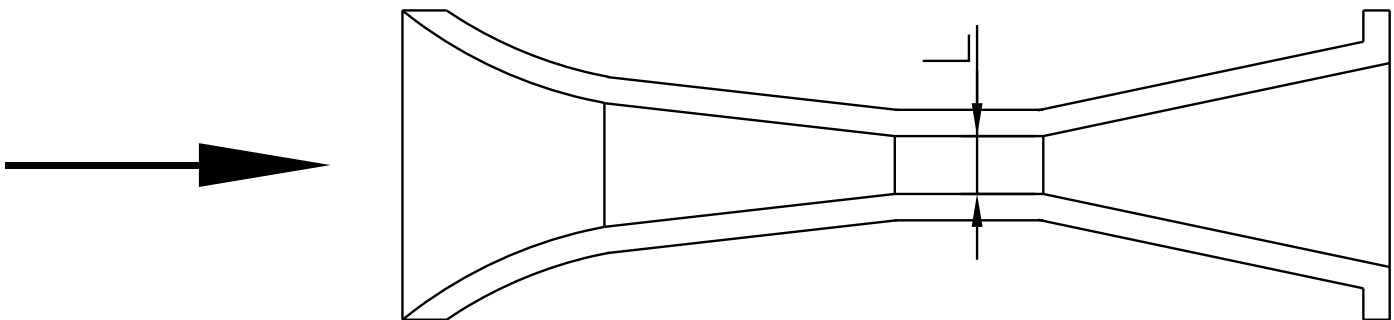
**8.6.1.2.4 - PARSHALL INCH**

Position the cursor on PARSHALL INCH, press ENTER to confirm.  
 PARSHALL INCH are the Parshall channels with the "L" dimension in inches.

- SGM VENTURI STD
- SGM VENTURI CUSTOM
- KHAFAGI VENTURI
- ▶ PARSHALL INCH
- PARSHALL FEET
- PALMER BOWLUS
- PALMER BOWLUS 2

To set it, simply select the "L" size.  
 Use UP ARROW and SCROLL to select the value.  
 Press ENTER to confirm. LEFT ARROW to exit without changes

- ▶ 1 inch
- 2 inch
- 3 inch
- 6 inch
- 9 inch
- 12 inch - 1.0 ft
- 18 inch - 1.5 ft

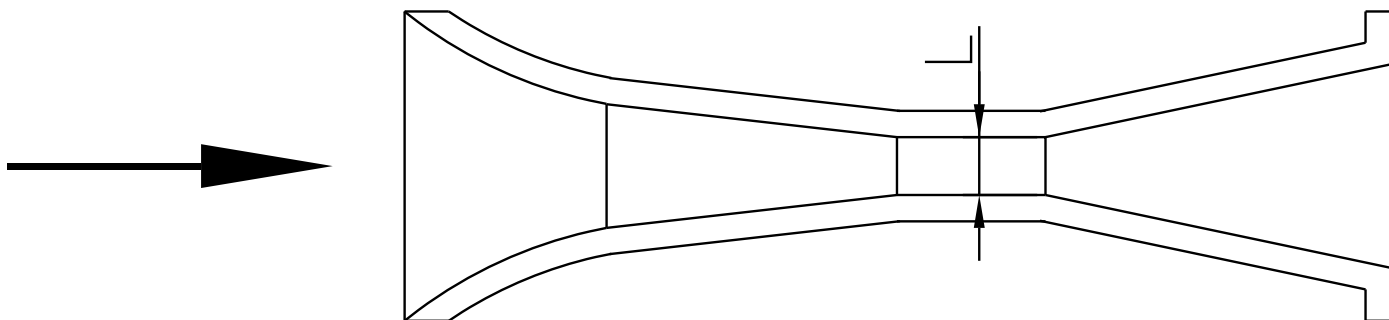


**8.6.1.2.5 - PARSHALL FEET**

Position the cursor on PARSHALL FEET, press ENTER to confirm. PARSHALL FEET are the Parshall channels with the "L" dimension in feet.

To set it, simply select the "L" size. Use SCROLL to select the value. Press ENTER to confirm. LEFT ARROW to exit without changes

- |  |
|--|
| SGM VENTURI STD<br>SGM VENTURI CUSTOM<br>KHAFAGI VENTURI<br>PARSHALL INCH<br>► PARSHALL FEET<br>PALMER BOWLUS<br>PALMER BOWLUS 2 |
| ► 2 ft<br>3 ft<br>4 ft<br>5 ft<br>6 ft<br>8 ft<br>10 ft<br>12 ft   |

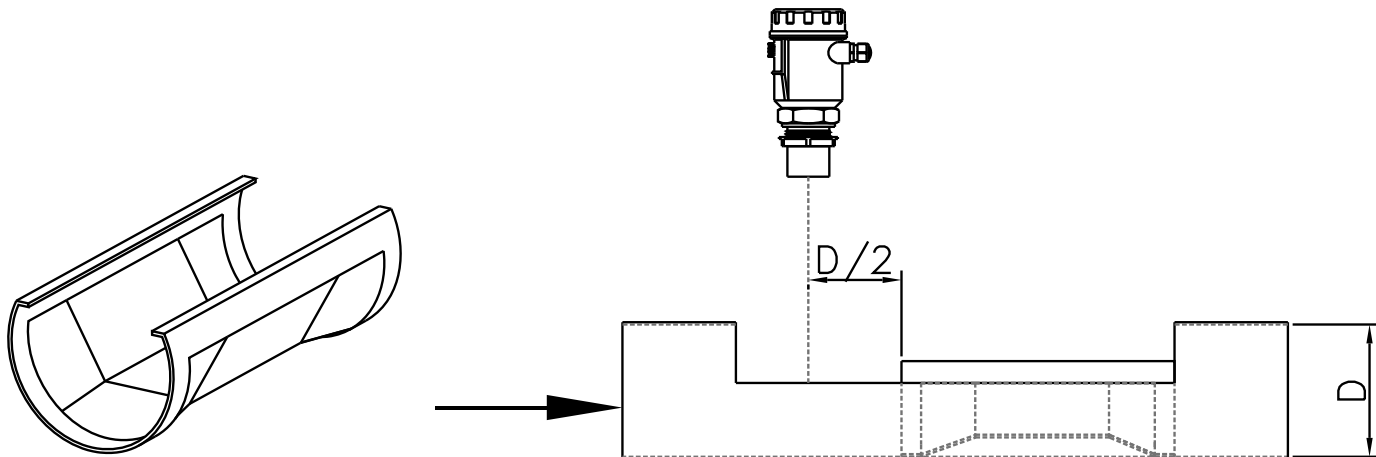


**8.6.1.2.6 - PALMER BOWLUS / PALMER BOWLUS 2**

Position the cursor on palmer bowlus or palmer bowlus 2, press ENTER to confirm. "PALMER BOWLUS" are prefabricated Palmer-Bowlus channels

To set it, simply select the Palmer bowlus channel model. Press SCROLL button to select the Palmer-Bowlus model to be setted. Press ENTER to confirm. LEFT ARROW to exit without changes

- |  |
|--|
| SGM VENTURI STD<br>SGM VENTURI CUSTOM<br>KHAFAGI VENTURI<br>PARSHALL INCH<br>PARSHALL FEET<br>► PALMER BOWLUS<br>PALMER BOWLUS 2 |
| ► DN100 4in<br>DN150 6in<br>DN200 8in<br>DN250 10in<br>DN300 12in<br>DN400 16in<br>DN500 20in<br>DN600 24in                      |
| ► DN700 28in<br>DN800 32in<br>DN900 36in<br>DN1100 42in<br>DN1200 48in<br>DN1500 60in<br>DN1800 72in                             |



**8.6.1.3 - TABLE**

Position the cursor on TABLE, press ENTER to confirm.  
The table setting is available only with the MUDBUS communication software (code 010F119A)

```
WEIRS
FLUMES
▶TABLE
CUSTOM
```

**8.6.1.4 - CUSTOM**

Position the cursor on Custom, press ENTER to confirm.

```
WEIRS
FLUMES
TABLE
▶CUSTOM
```

It's only possible to see those parameters.  
The parameters setting is available only with the MUDBUS communication program (code 010F119A)

```
▶K = 0.000000
A = 0.000000
B = 0.000000
D = 0.000000
```

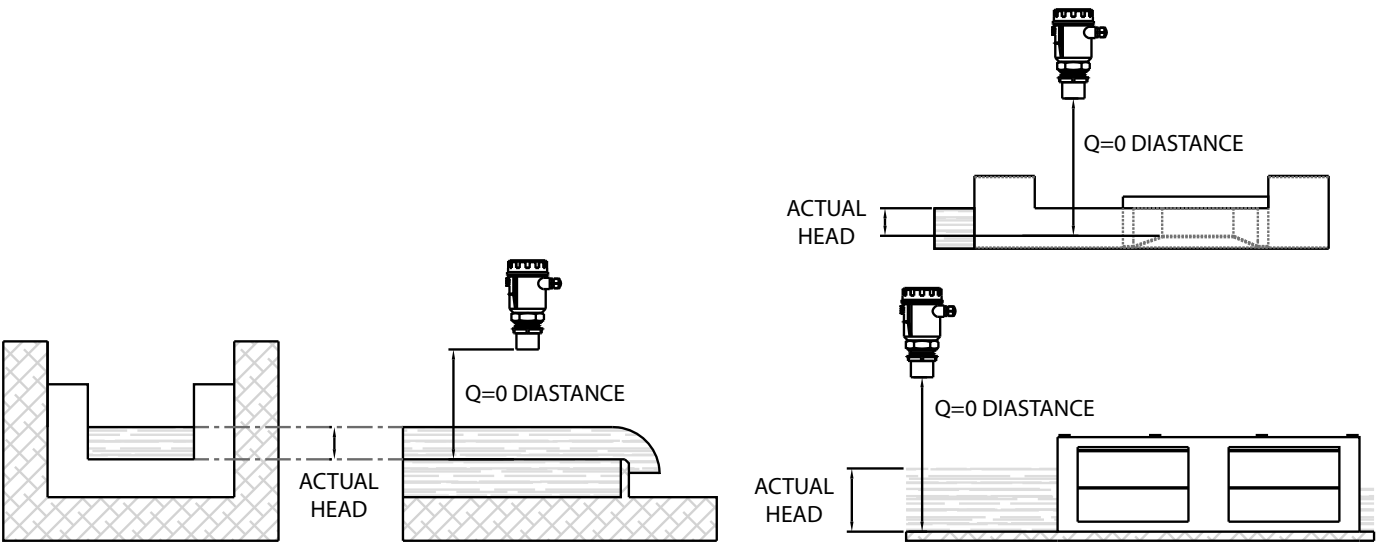
WARNING - Proper programming of this parameter is essential for correct flow measurement. Do not proceed without having carefully read the below described instructions

8.6.2 - SELF CALIBRATION

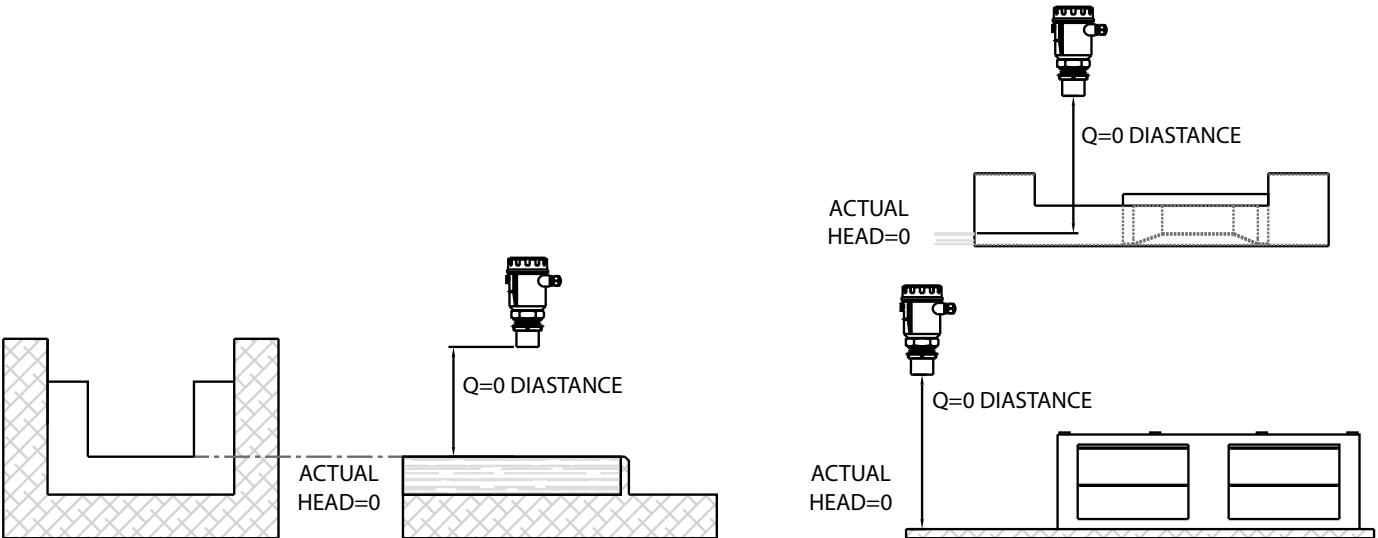
Position the cursor on self calibration, press ENTER to confirm.

Manually measure in mm the "ACTUAL HEAD" and insert the data, the unit will automatically calculate the fluid distance to the "Q=0" point (zero flow distance). Use UP ARROW and SCROLL to modify the value. Press ENTER to confirm. LEFT ARROW to exit without changes.

PRIMARY DEVICE ► SELF CALIBRATION MEASURE STATUS FROZEN GAIN MAX GAIN TH PEAK VALUE START TOTALIZER ALARM CONFIGURATION
SET ACTUAL HEAD  <h1>0120 mm</h1>



It is recommended to use the "SELF CALIBRATION" system with the zero flow condition, because in doing so the "ACTUAL HEAD" manually measurement distance errors are avoided.



**8.6.3 - MEASURE STATUS**

Position the cursor on MEASURE STATUS, press ENTER to confirm

It's possible to display the gain of the system, with values from 0 to 255. While displayed, the automatic gain control is not active. LEFT ARROW to exit

PRIMARY DEVICE  
 SELF CALIBRATION  
 ► MEASURE STATUS  
 FROZEN GAIN  
 MAX GAIN TH  
 PEAK VALUE  
 START TOTALIZER  
 ALARM CONFIGURATION

MEASURE STATUS  
  
**G: 00025**

**8.6.4 - FROZEN GAIN**

Position the cursor on FROZEN GAIN, press ENTER to confirm.

It's possible to fix a value of gain (from 1 to 255) and consequently disable the automatic gain control. Once the value is 000 the automatic gain control restarts.

Use UP ARROW and SCROLL to modify the value. Press ENTER to confirm. LEFT ARROW to exit without changes

Default value: 000

**8.6.5 - MAX GAIN TH**

Position the cursor on MAX GAIN TH, press ENTER to confirm.

It's possible to input a value of gain that it can be reached in normal operation. If the gain reaches this value, the "GAIN" error code is activated.

Use UP ARROW and SCROLL to modify the value. Press ENTER to confirm. LEFT ARROW to exit without changes

Default value: 200 (Max gain)

**8.6.6 - PEAK VALUES**

Position the cursor on PEAK VALUES, press ENTER to confirm

In this sub-menu it's possible to display or reset the flow rate peak values. Press SCROLL button to select. Press ENTER to confirm. LEFT ARROW to exit

PRIMARY DEVICE  
 SELF CALIBRATION  
 MEASURE STATUS  
 ► FROZEN GAIN  
 MAX GAIN TH  
 PEAK VALUE  
 START TOTALIZER  
 ALARM CONFIGURATION

FROZEN GAIN  
  
**000**

PRIMARY DEVICE  
 SELF CALIBRATION  
 MEASURE STATUS  
 FROZEN GAIN  
 ► MAX GAIN TH  
 PEAK VALUE  
 START TOTALIZER  
 ALARM CONFIGURATION

MAX GAIN TH  
  
**200**

PRIMARY DEVICE  
 SELF CALIBRATION  
 MEASURE STATUS  
 FROZEN GAIN  
 MAX GAIN TH  
 ► PEAK VALUE  
 START TOTALIZER  
 ALARM CONFIGURATION

► DISPLAY VALUE  
 RESET VALURE

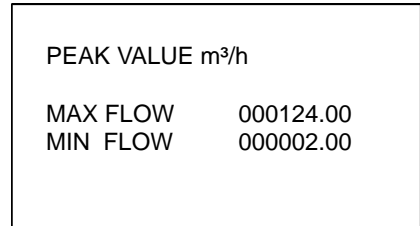
**8.6.6.1 - DISPLAY VALUES**

Position the cursor on DISPLAY VALUES, press ENTER to confirm



Displays the max. and min. distance measured from power on.  
LEFT ARROW to exit.

NB - The peak values stored are erased every time the FLOWMETER turns-off



**8.6.6.2 - RESET VALUES**

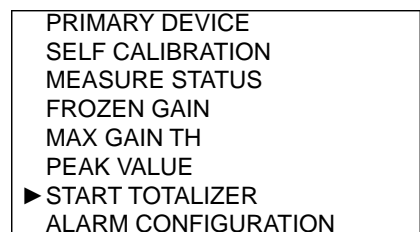
Position the cursor on RESET VALUES, press ENTER to confirm  
LEFT ARROW to return to the previous menu.



**8.6.7 - START TOTALIZER**

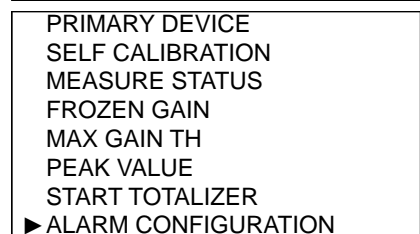
Position the cursor on RESET VALUES, press ENTER to start the the flow totalizer.

After starting the totalizer is not possible to stop the totalization.

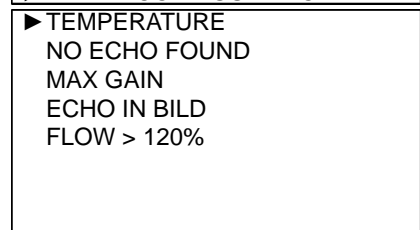


**8.6.8 - ALARM CONFIGURATION**

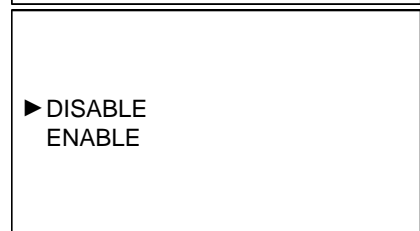
Position the cursor on ALARM CONFIGURATION, press ENTER to confirm



To enable or disable each diagnostic alarms:  
- with SCROLL chose the desired item and press

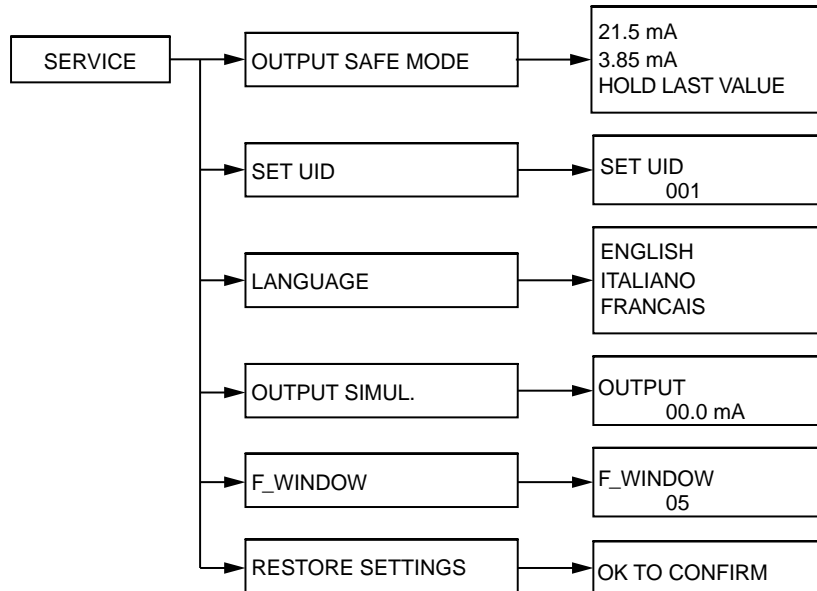


- with SCROLL enable or disable the alarm signal and press ENTER to confirm.



LEFT ARROW to exit.

8.7 SERVICE menu



8.8 - SERVICE

Press SCROLL to select the menu and press ENTER to access.  
Press LEFT ARROW to exit.

8.8.1 - OUTPUT SAFE MODE

Position the cursor on OUTPUT SAFE MODE, press ENTER to confirm  
It's possible to choose a analog output value during diagnostic errors.

“21.5 mA” forces the current output to 21,5mA  
 “3.85 mA” forces the current output to 3,85mA  
 ”HOLD LAST VALUE” maintains the output at the last valid value.  
 With the SCROLL button you can select the operation mode.  
 Press ENTER to confirm. LEFT ARROW to exit without changes

Default value: HOLD LAST VALUE

8.8.2 - SET UID

Position the cursor on SET UID, press ENTER to access.

Can assign the address UID in this parameter, for a MUDBUS RTU network.

Use UP ARROW and SCROLL to modify the value.  
Press ENTER to confirm.  
LEFT ARROW to exit without changes

Default value 001

SETUP  
DISPLAY  
FLOW APPL.  
▶ SERVICE  
INFO

▶ OUTPUT SAVE MODE  
SET UID  
LANGUAGE  
OUTPUT SIMULATION  
F. WINDOW  
RESTORE SETTING

21.5 mA  
3.85 mA  
▶ HOLD LAST VALUE

OUTPUT SAVE MODE  
▶ SET UID  
LANGUAGE  
OUTPUT SIMULATION  
F. WINDOW  
RESTORE SETTING

SET UID  
  
001



### 8.8.3 - LANGUAGE

Position the cursor on LANGUAGE, press ENTER to access.

Sets the menu language: English, Italian, French

Press SCROLL to select the menu language.  
 Press ENTER to confirm.  
 LEFT ARROW to exit without changes

```

OUTPUT SAVE MODE
SET UID
▶ LANGUAGE
OUTPUT SIMULATION
F. WINDOW
RESTORE SETTING
    
```

```

▶ ENGLISH
ITALIANO
FRANCAIS
    
```

### 8.8.4 - OUTPUT SIMULATION

WARNING - entering in the SIMULATION function, the current output is not in function of the level measurement. To restore the current as a measured level function, press the LEFT ARROW button 3 times (RUN mode)

Position the cursor on OUTPUT SIMULATION, press ENTER to access.

It's possible to force the analog output to a desired value, from 3,5 to 21mA.  
 Use UP ARROW and SCROLL to modify the value.  
 LEFT ARROW to return to the previous menu.

```

OUTPUT SAVE MODE
SET UID
LANGUAGE
▶ OUTPUT SIMULATION
F. WINDOW
RESTORE SETTING
    
```

```

OUTPUT SIMULATION

00.0 mA
    
```

### 8.8.5 - F\_ WINDOWS

Position the cursor on F\_WINDOWS, press ENTER to access.

It is the increase value (in cm), step to step, of the window width during the echo signal research phase.

The "F\_WINDOWS" is the area where the echo reception is active.

Normally it is positioned around the real echo signal and all echoes detected within the F\_WINDOW are deemed valid.

Example: F\_WINDOW parameter set to 5.

- The FLOWMETER detects an echo signal which is 4 meters from the sensor.
- Suddenly, the echo signal disappears and a new echo signal to 3.5 mt away from the sensor is detected.
- Each time the echo signal will be emitted, the FLOWMETER will enlarge "F\_WINDOW" with 5cm step, until covering the new eco detected area. Now the F\_WINDOW will start to tighten around the new echo signal and the new measurement of 3,5mt distance will be used to calculate the level measurement, alarm thresholds, etc..

F\_WINDOW serves to filter false echo signals products, for example, by the agitator blades

Range: 05+20

Use UP ARROW and SCROLL to modify the value.

Press ENTER to confirm.

LEFT ARROW to exit without changes

Default value: 05

```

OUTPUT SAVE MODE
SET UID
LANGUAGE
OUTPUT SIMULATION
▶ F. WINDOW
RESTORE SETTING
    
```

```

F_WINDOW

05
    
```

**8.8.6 - RESTORE SETTING**

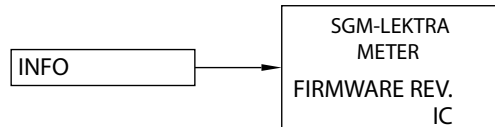
Position the cursor on SET UID, press ENTER to access.

OUTPUT SAVE MODE  
 SET UID  
 LANGUAGE  
 OUTPUT SIMULATION  
 F. WINDOW  
 ► RESTORE SETTING

Press ENTER to restore the FLOWMETER default settings  
 LEFT ARROW to exit without restored the FLOWMETER default settings

OK TO CONFIRM

**8.9 INFO MENU**



**8.10 - INFO**

Position the cursor on INFO, press ENTER to access.

SETUP  
 DISPLAY  
 FLOW APPL.  
 SERVICE  
 ► INFO

In addition to information about the manufacturer, are displayed the firmware revision and the configuration index

SGM-LEKTRA  
 FLOWMETER

FIRMWARE      REV.  
                          I.C.



# 9-FACTORY TEST AND QUALITY CERTIFICATE

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In conformity to the company and check procedures I certify that the equipment:



(Ultrasonic sensor)

is conform to the technical requirements on Technical Data and it is made in conformity to the procedure

Quality Control Manager: ..... Production and check date: .....