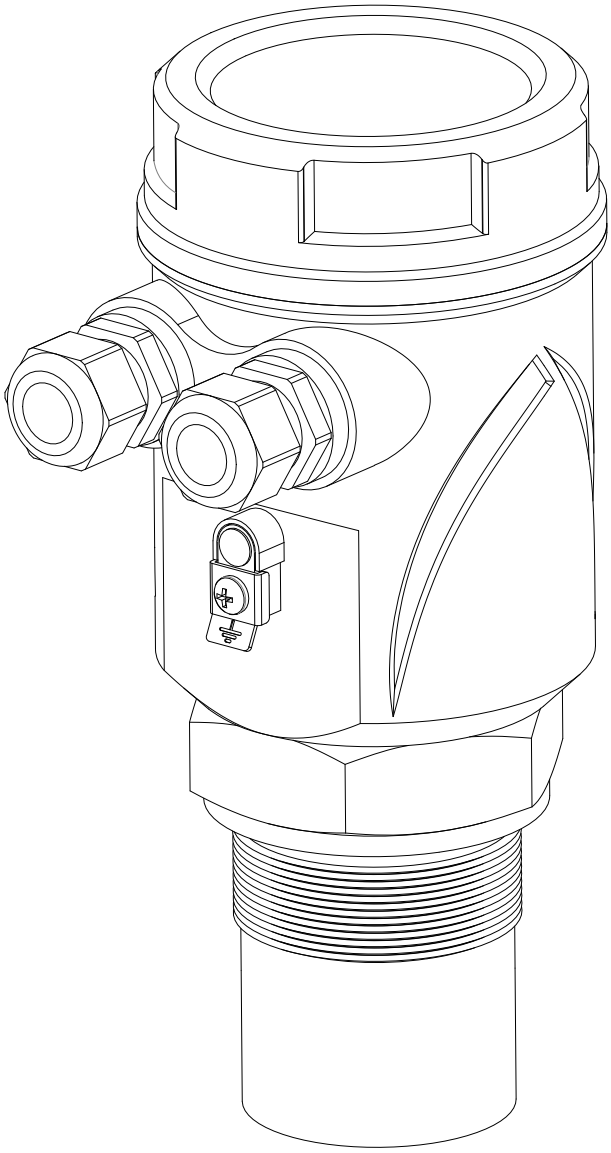
FLOWMETER

ultrasonic flow transmitter



technical documentation EN Rev. of 15/12/2023

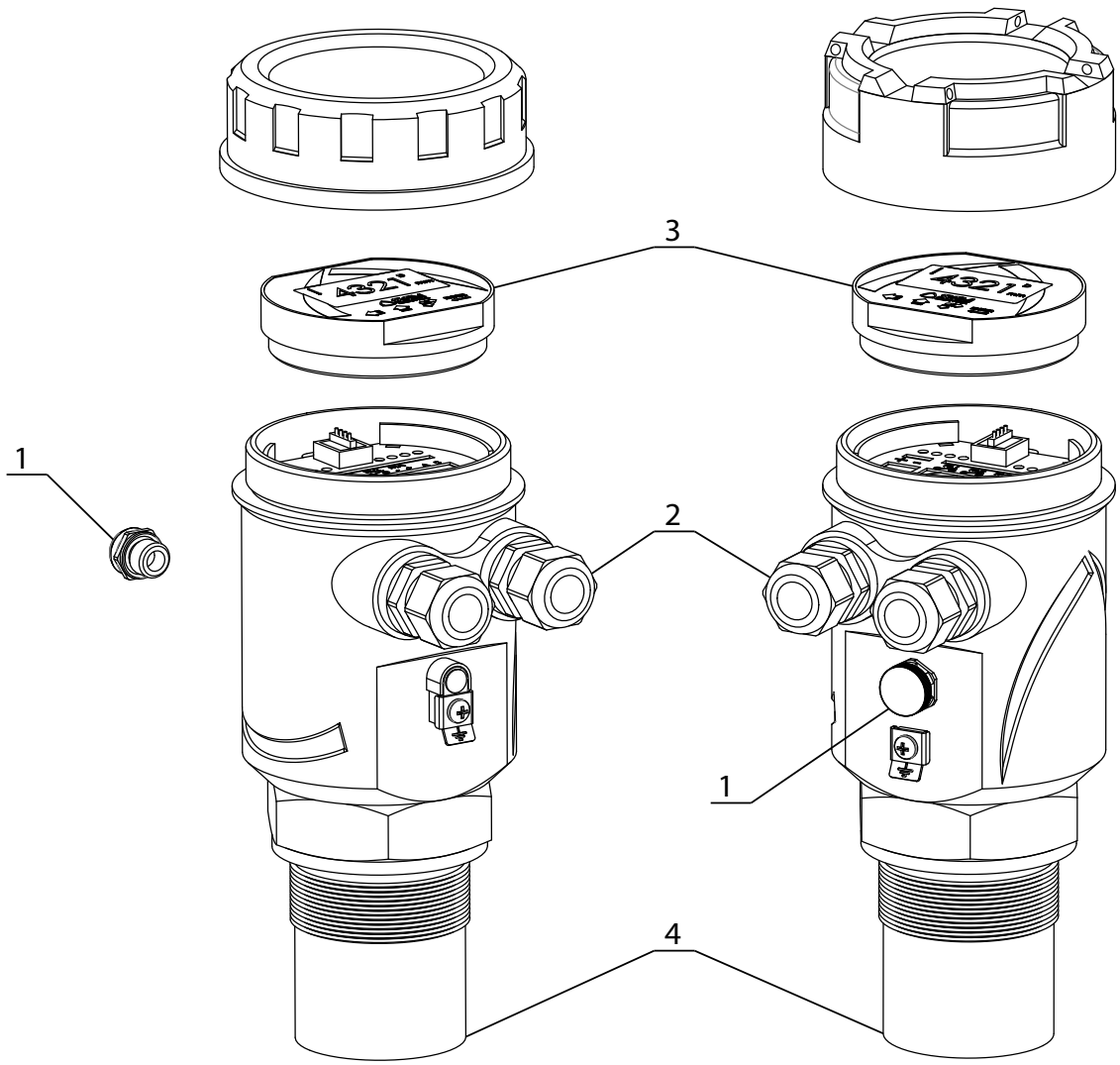
sgm lektra

CONTENTS

1-WARRANTY

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

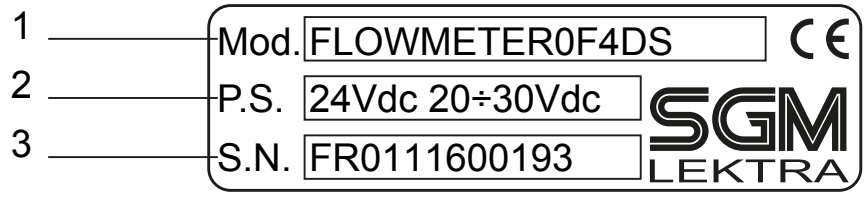
2- PRODUCT



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

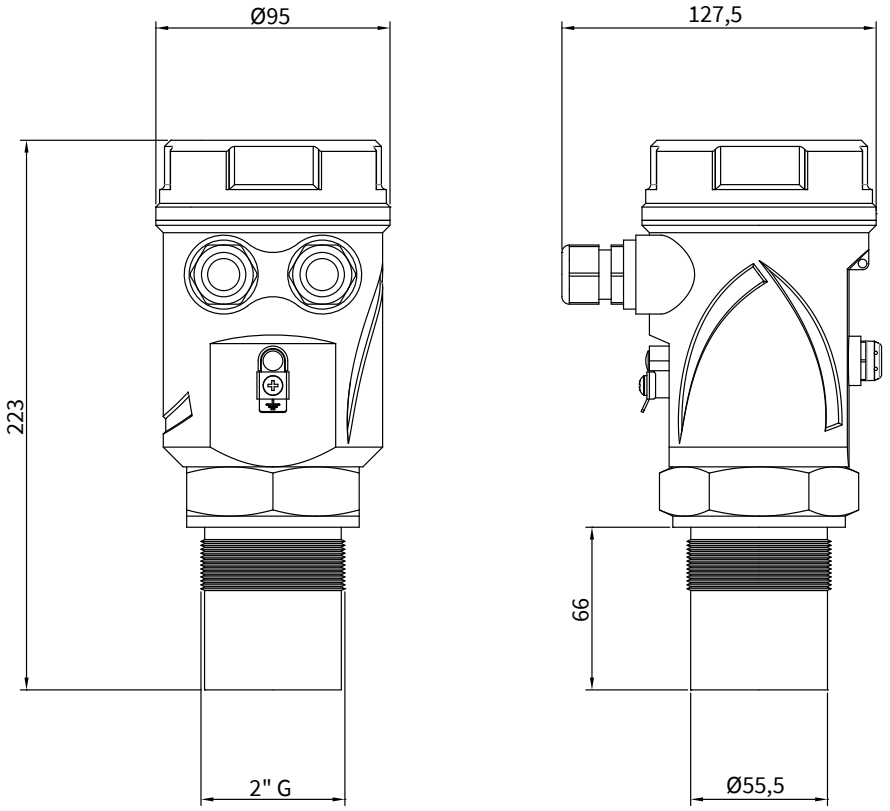
3-FEATURES

Housing/sensor material
PC or Al / 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
11Vdc÷14Vdc / 20÷30Vdc
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

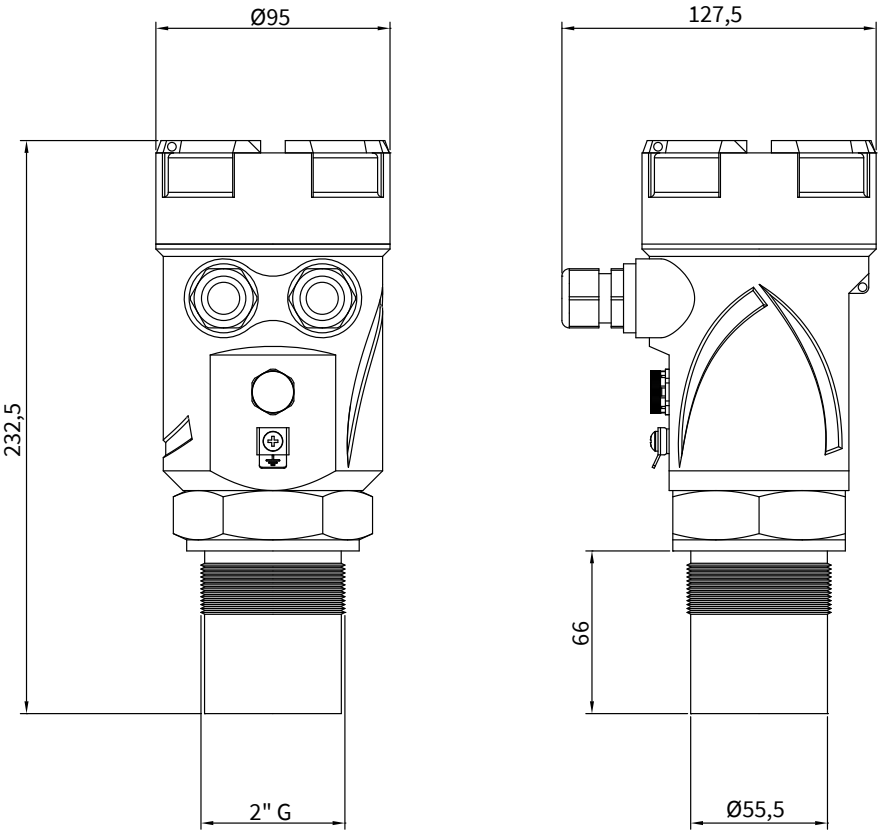
4-DIMENSIONS

4.1 MECHANICAL DIMENSIONS

PP HOUSING



ALUMINIUM HOUSING

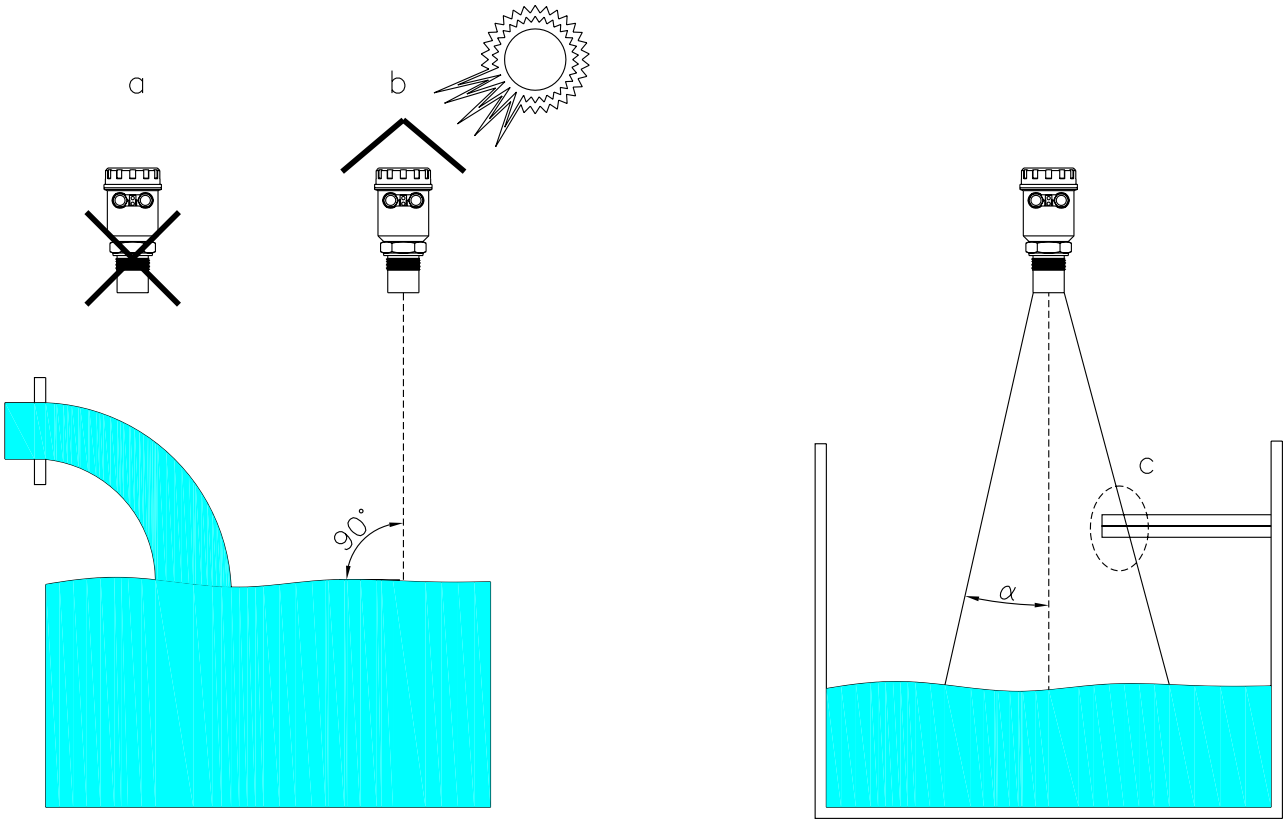


5-INSTALLATION

5.1 MOUNTING PRECAUTIONS

5.1.1 Mounting position

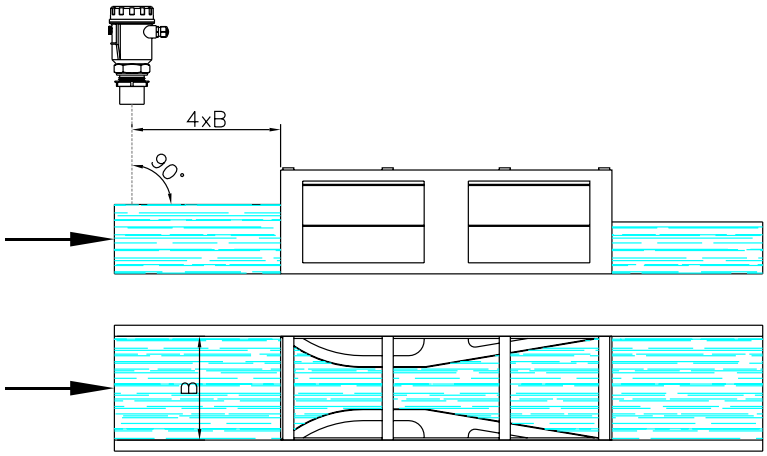
- Use a protective cover to protect the sensor from weather and direct sunlight (b).
- Do not install the sensor near the load zone (a).
- Make sure that in the sensor emission beam (lobe "α") there are no obstacles (c) that can be intercepted as level.
- Make sure that there is not foam presence on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



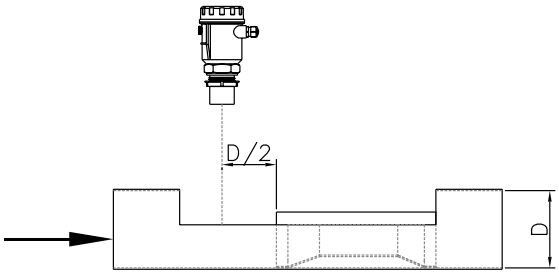
	Lobo "α"
FLOWMETER 5mt	10°

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)..

Venturi channel

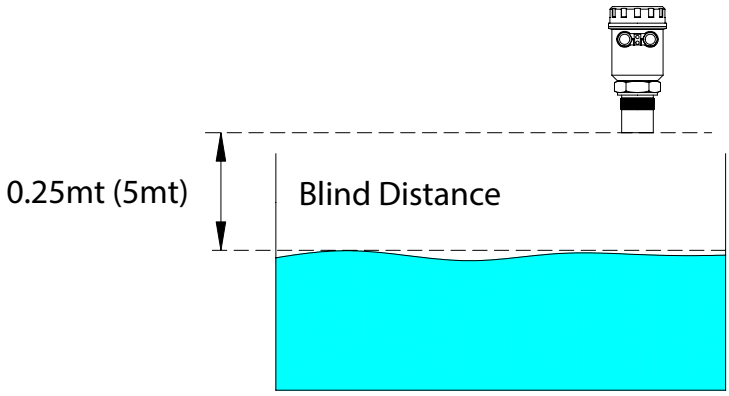


Palmer Bowlus



5.1.2 Blind distance

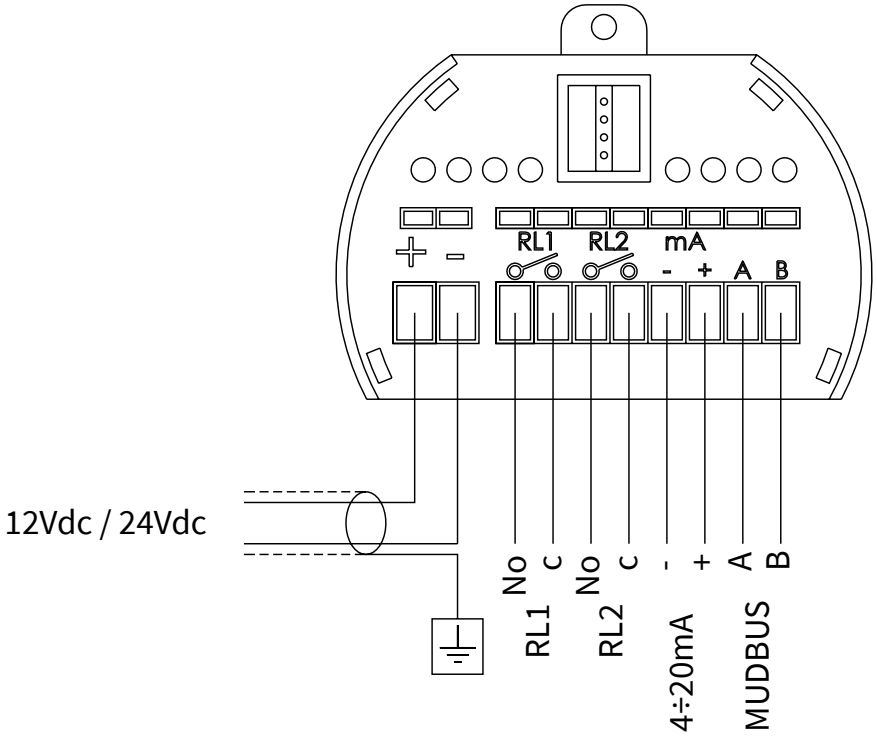
During installation is important to remember that in the sensor vicinity there is a blind zone (or BLIND DISTANCE) of 0.25m where the sensor can not measure.



6-ELECTRICAL CONNECTIONS

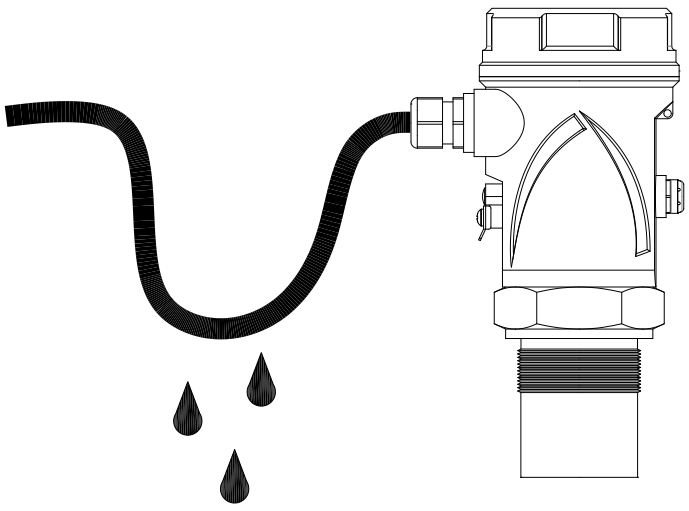
6.1 WIRING

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

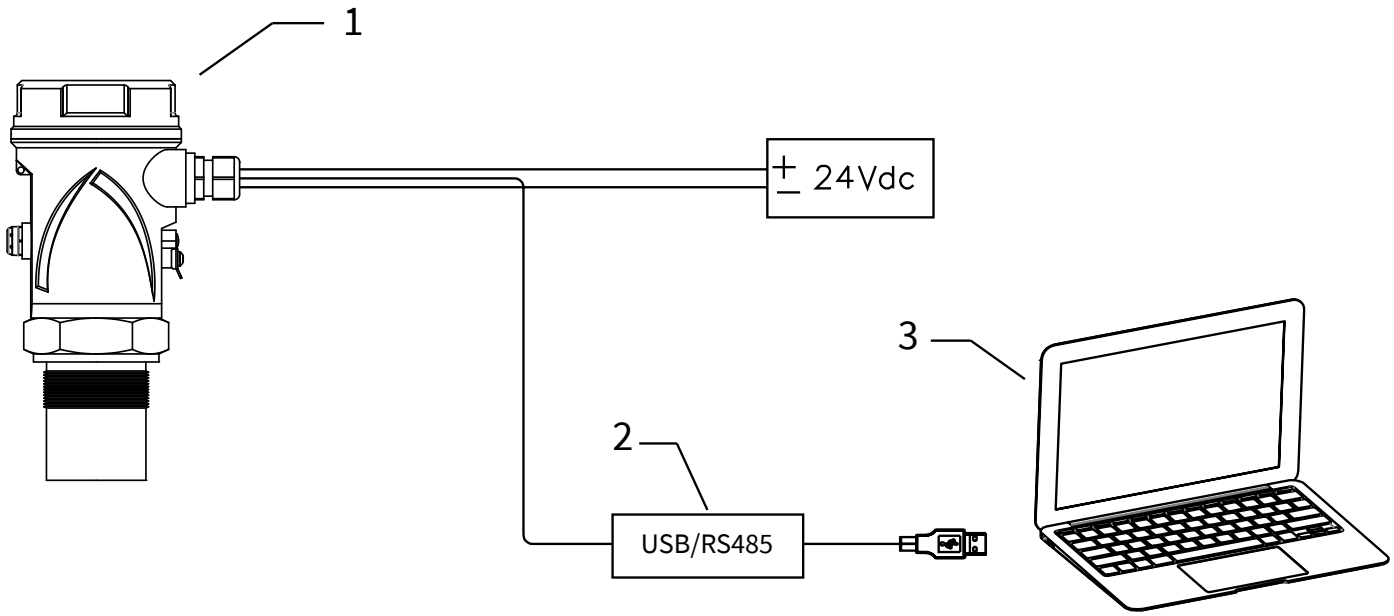
To avoid the humidity infiltration inside the housing is recommended:
- for electrical connections, use a cable with a 6÷12mm outer diameter and fully tighten the M20 cable gland
- fully tighten the cap
- position the cable so that it forms a downward curve at the M20 output; in this way the condensation 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**

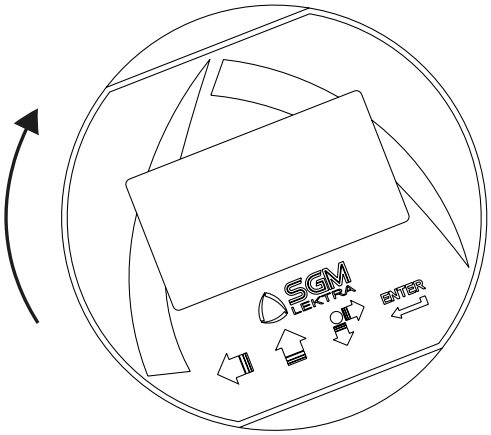
SCROLL button:
- **Cursor movement (to the right)**
- **Parameter scroll**

ENTER button:
- **Configuration access**
- **Options confirmation**
- **Parameters values confirmation**

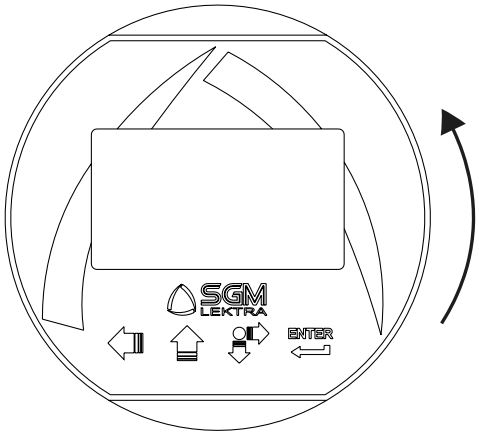
Displayed at the bottom indicates the correct echo signal reception

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 dismounted (by rotation counterclockwise) as shown in figure.



LOCK

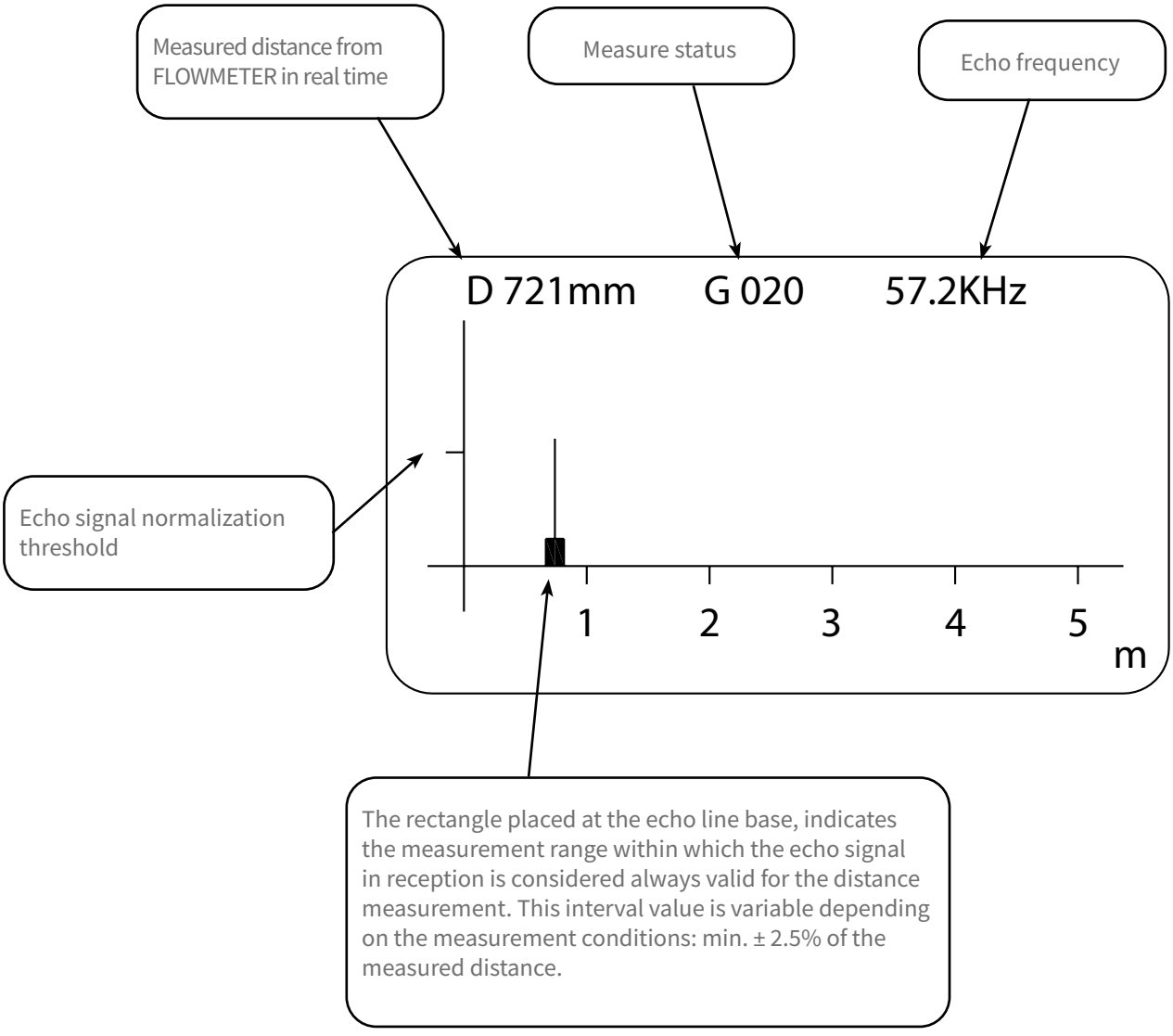


UNLOCK

7.2 - ECHO MAP

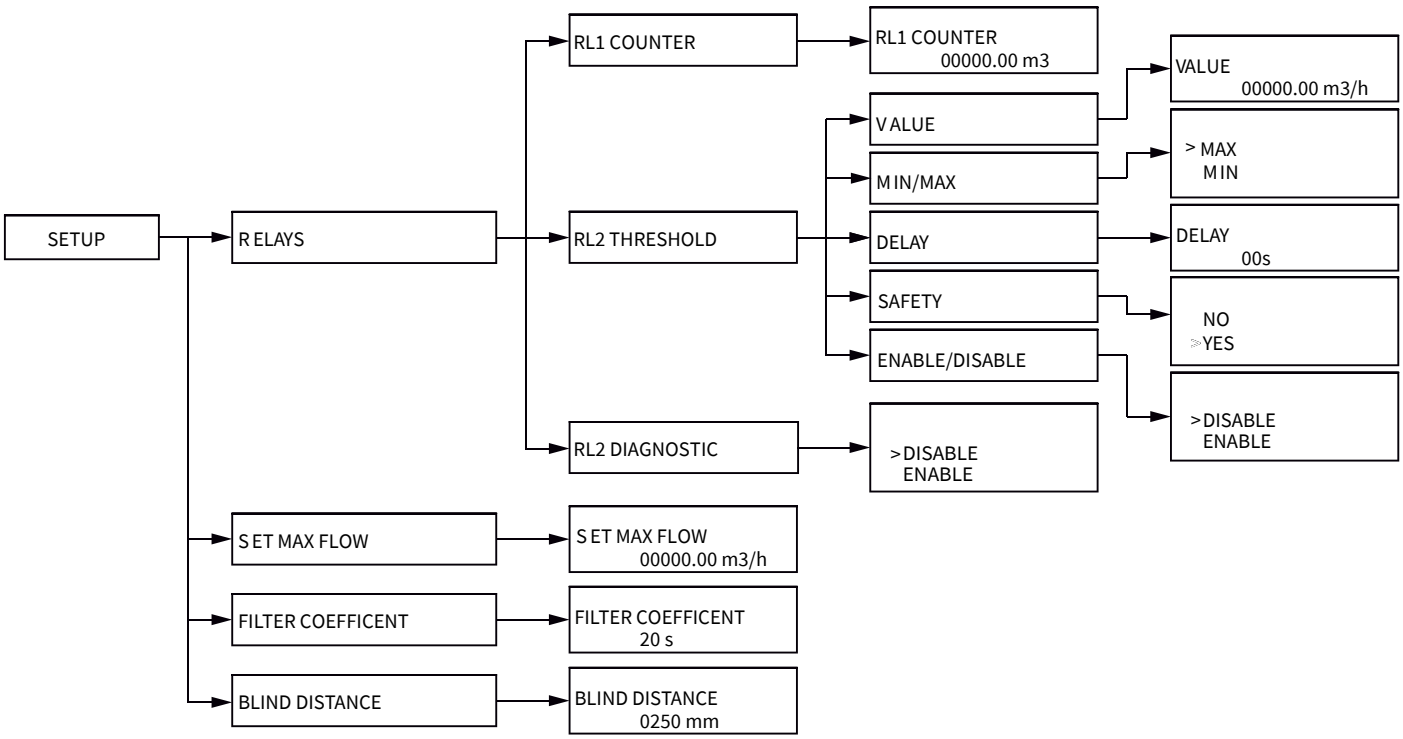
Pressing LEFT ARROW, from RUN mode, to access directly to the echoes digital map display, which are in FLOWMETER receiving.
This function is useful for:

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

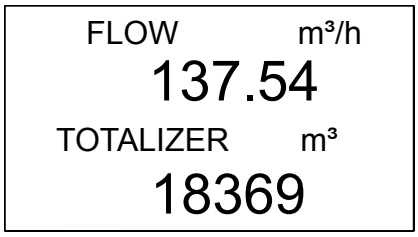


8-CONFIGURATION

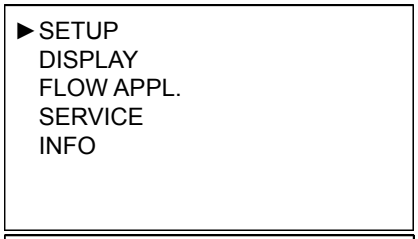
8.1 - "SETUP" menu



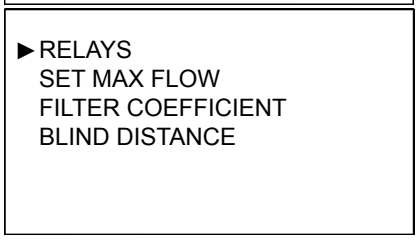
8.2 - SETUP



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

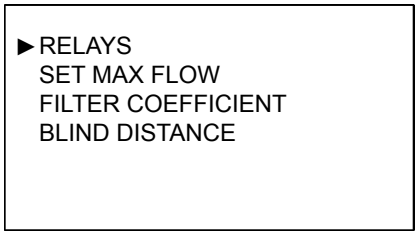


Press SCROLL to select the menu and press ENTER to access.
Press LEFT ARROW to exit.

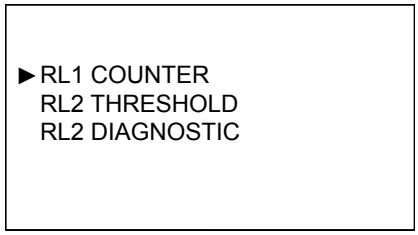


8.2.1 - RELAY

Position the cursor on RELAY, press ENTER to confirm.

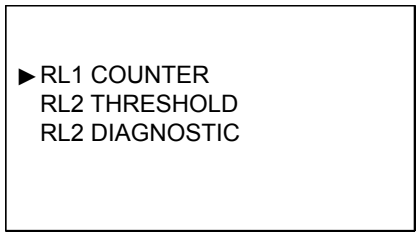


In this sub-menu it's possible to setup the on-board relays
RL1 can be set as volume pulse output relay;
RL2 can be set as instantaneous flow rate threshold relay or diagnostic relay.
Press SCROLL button to select the operation mode,
then pressing ENTER to confirm the selection.



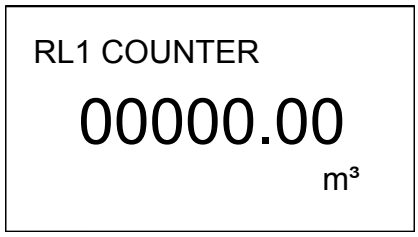
8.2.2 - RL1 COUNTER

Position the cursor on RL1 COUNTER, press ENTER to confirm.



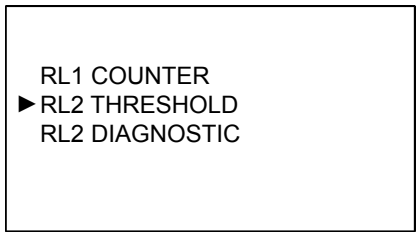
Set the single pulse value, in m3
Use UP ARROW and SCROLL to modify the value.
Press ENTER to confirm. LEFT ARROW to exit without changes.

Default value: 0

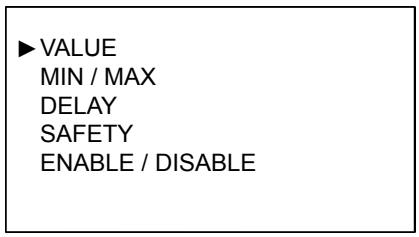


8.2.3 - RL2 THRESHOLD

Position the cursor on RL2 THRESHOLD, press ENTER to confirm.

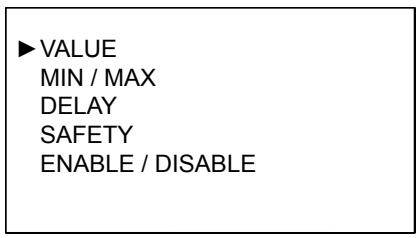


In this submenu you can set the set-point and the RL2 action type.
Press SCROLL button to select the parameter to be programmed.
Press ENTER to confirm.



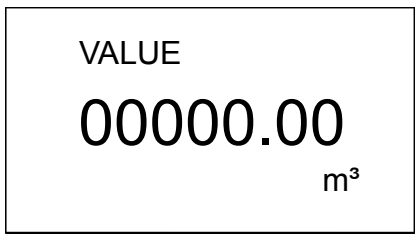
8.2.3.1 - VALUE

Position the cursor on VALUE, press ENTER to confirm.



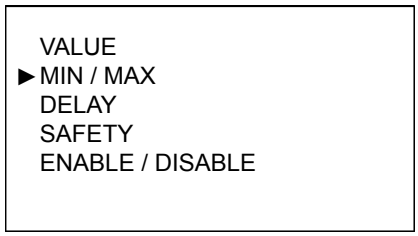
It's possible to input the flow rate threshold value in m3/h.
Use UP ARROW and SCROLL to modify the value.
Press ENTER to confirm. LEFT ARROW to exit without changes.

Default value: 00000.00



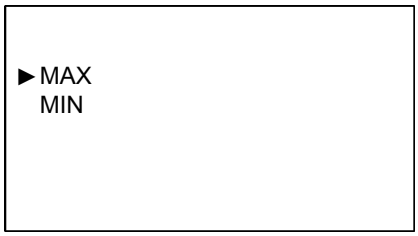
8.2.3.2 - MIN/MAX

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



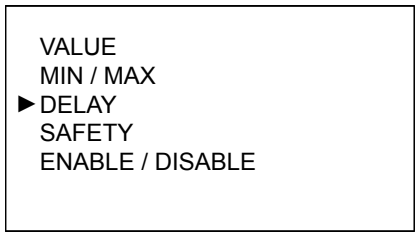
It's possible to select if the relay works as minimum flow rate or maximum flow rate threshold.
Press SCROLL button to select the operation mode.
Press ENTER to confirm. LEFT ARROW to exit without changes.

Default value: MAX



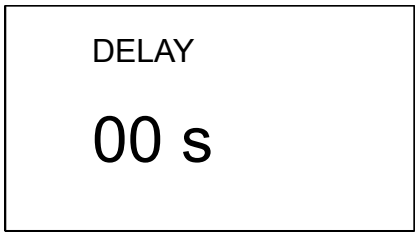
8.2.3.3 - DELAY

Position the cursor on DELAY, press ENTER to confirm.



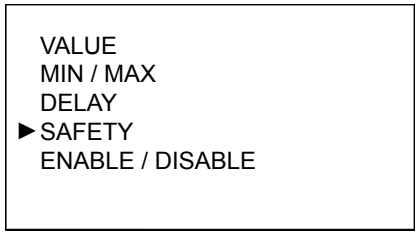
It's possible to select the activation delay for the RL2, from 0 to 99 sec.
Use UP ARROW and SCROLL to modify the value.
Press ENTER to confirm. LEFT ARROW to exit without changes.

Default value: 00s



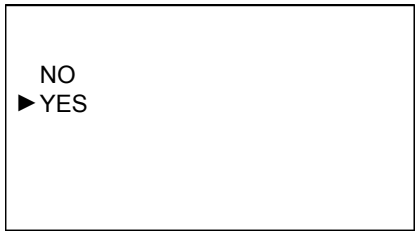
8.2.3.3 - SAFETY

Position the cursor on SAFETY, press ENTER to confirm.



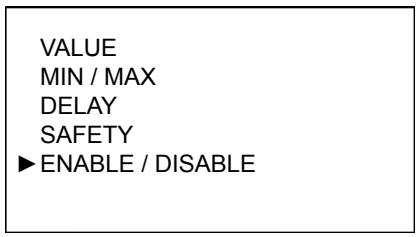
A "safety alarm" provides a "closed" contact with relay energized in normal condition (no alarm), the contact switches to "open":
- Alarm condition (eg overcoming MAX);
- In power failure case.
Press SCROLL button to select the alarm mode.,
Press ENTER to confirm. LEFT ARROW to exit without changes.

Default value: YES



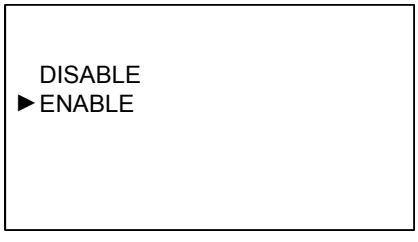
8.2.3.4 - ENABLE/DISABLE

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

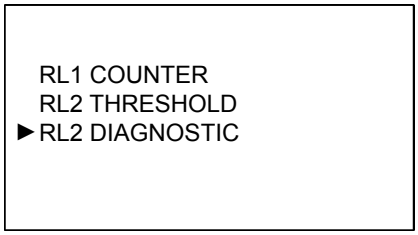


Select ENABLE to activate RL2 threshold.
Select DISABLE to not RL2 relay threshold.
Press SCROLL button to select the operation mode.
Press ENTER to confirm. LEFT ARROW to exit without changes.

Default value: ENABLE

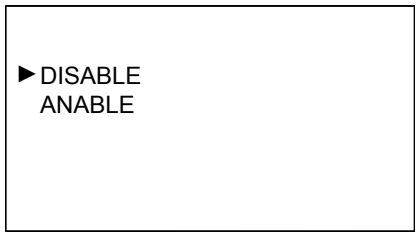


8.2.3.5 - RL2 DIAGNOSTIC



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

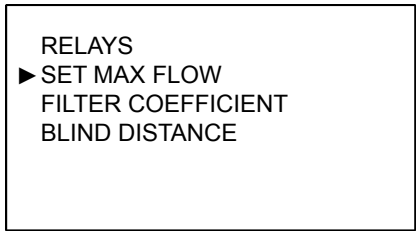
Press SCROLL button to select the operation mode.
Press ENTER to confirm. LEFT ARROW to exit without changes.



Default value: DISABLE

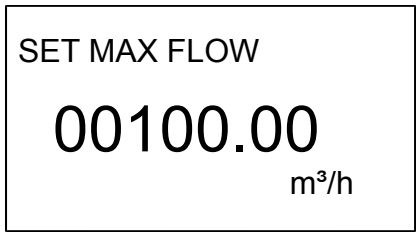
NOTE: when an error occurs, a "!" is flashing on the display:
press SCROLL to show a message that indicate what kind of error is present.
The METER automatically returns to RUN mode..

8.2.4 - SET MAX FLOW



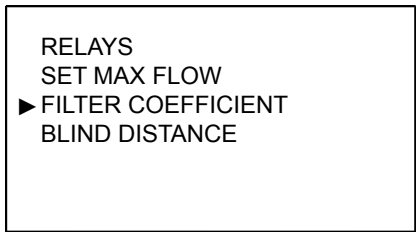
Position the cursor on SET MAX FLOW, press ENTER to confirm.

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.



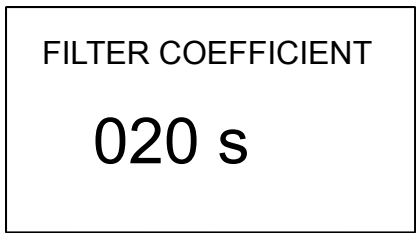
Default value: 0

8.2.5 - FILTER COEFFICIENT



Position the cursor on FILTER COEFFICIENT, ENTER to confirm.

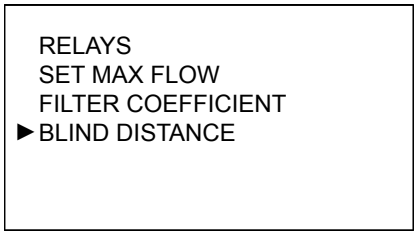
Enter a value from 1 to 99: 1 = maximum speed, 99 = maximum slowness.
The function is deactivated with 0 (immediate response).
Use UP ARROW and SCROLL to modify the value.
Press ENTER to confirm. LEFT ARROW to exit without changes.



Default value: 20

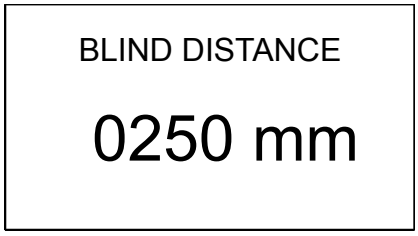
8.2.6 - BLIND DISTANCE

Position the cursor on BLIND DISTANCE, ENTER to confirm.

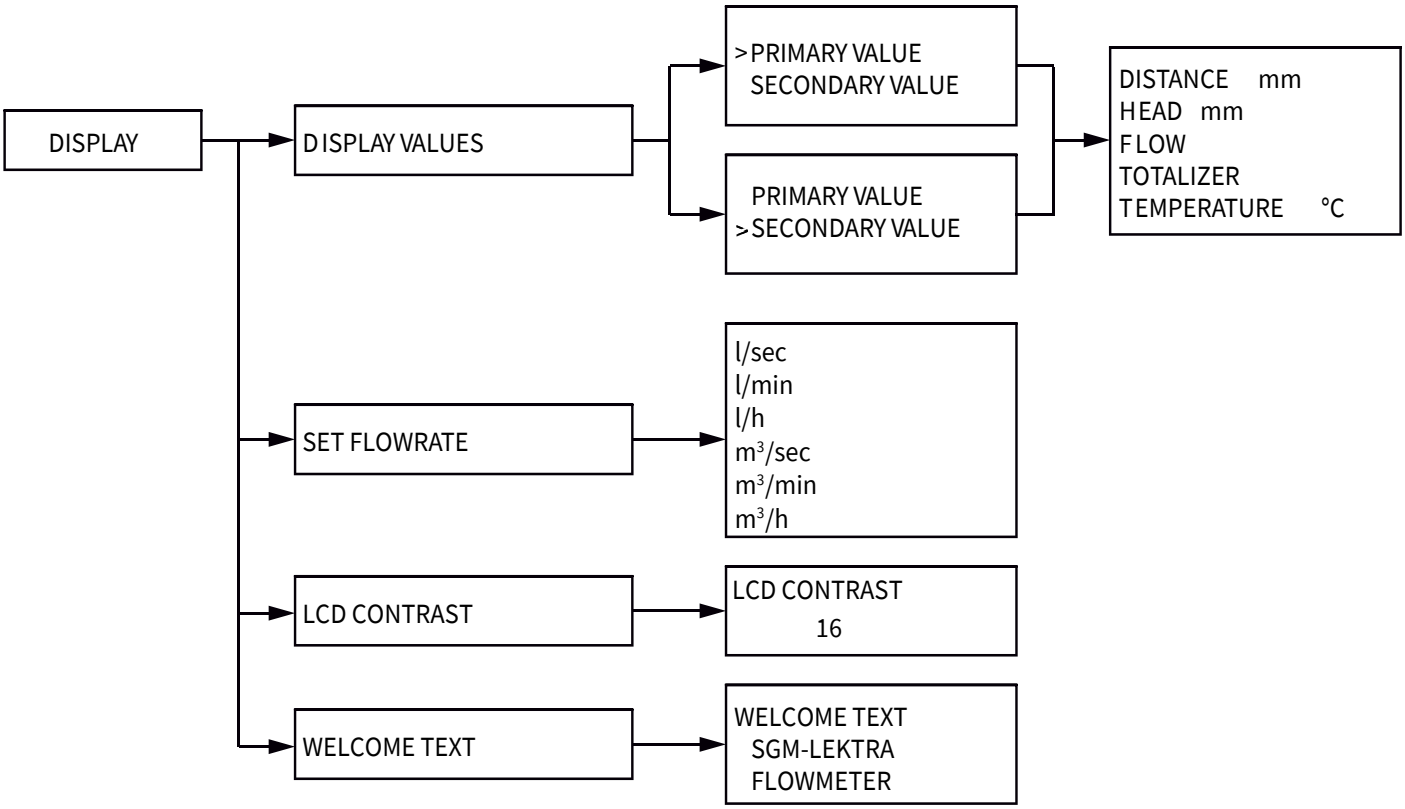


Represent the “BLIND ZONE” of the sensor. Input the desired value in order to avoid measures near the surface of the sensor (if necessary).
The minimum value is 250mm
Use UP ARROW and SCROLL to modify the value.
Press ENTER to confirm. LEFT ARROW to exit without changes.

Default values: 250mm



8.3 - DISPLAY MENU



8.4 - DISPLAY

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

```
  SETUP
► DISPLAY
  FLOW APPL.
  SERVICE
  INFO
```

8.4.1 - DISPLAY VALUES

Position the cursor on DISPLAY VALUES, press ENTER to access.

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

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.

```
► PRIMARY VALUE

  SECONDARY VALUE
```

8.4.1.1 - PRIMARY/SECONDARY VALUES

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

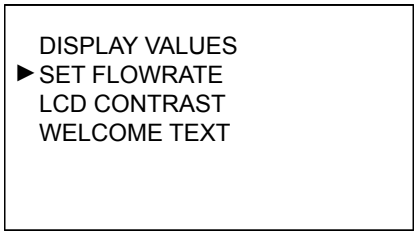
```
► PRIMARY VALUE

  SECONDARY VALUE
```

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.

```
  DISTANCE mm
  HEAD mm
► FLOW
  TOTALIZER
  TEMPERATURE °C
```

8.4.2 - SET FLOWRATE

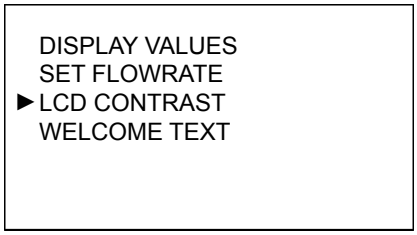
Position the cursor on SET FLOWRATE, press ENTER to confirm.



Press SCROLL button to select the instantaneous flow rate measure unit to be programmed.
Press ENTER to confirm. LEFT ARROW to exit without changes.

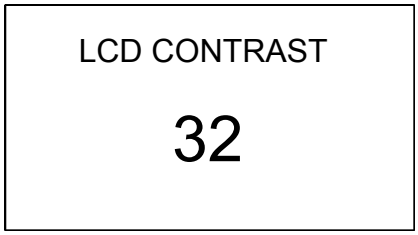
8.4.3 - LCD CONTRAST

Position the cursor on LCD CONTRAST, press ENTER to confirm.



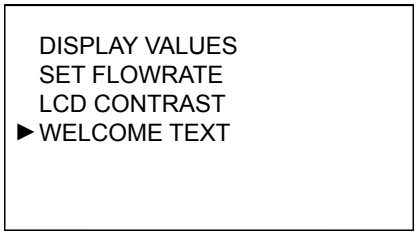
it's possible to adjust the contrast of LCD, simply increasing or decreasing the value of a parameter from 0 to 63.
Use UP ARROW and SCROLL to modify the value.
Press ENTER to confirm. LEFT ARROW to exit without changes.

Default value: 16



8.4.4 - WELCOME TEXT

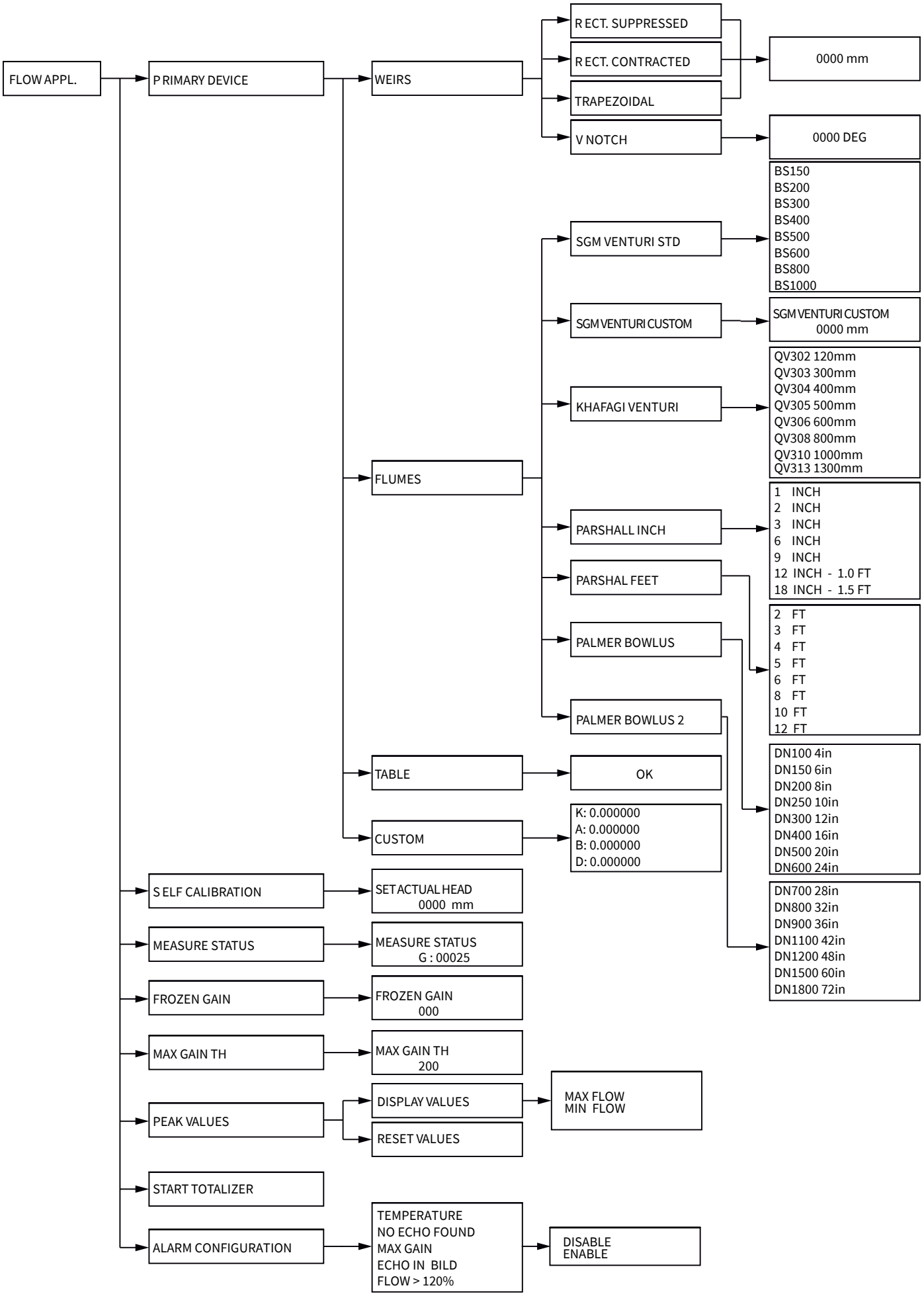
Position the cursor on WELCOME TEXT, press ENTER to confirm.



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

8.5 FLOW APPL. menu



8.6 - FLOW APPL.

```
  SETUP
  DISPLAY
▶ FLOW APPL.
  SERVICE
  INFO
```

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

8.6.1 - PRIMARY DEVICE

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

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.

```
▶ WEIRS
  FLUMES
  TABLE
  CUSTOM
```

8.6.1.1 - WEIRS

```
▶ WEIRS
  FLUMES
  TABLE
  CUSTOM
```

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.

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

8.6.1.1.1 - RECT. SUPPRESSED

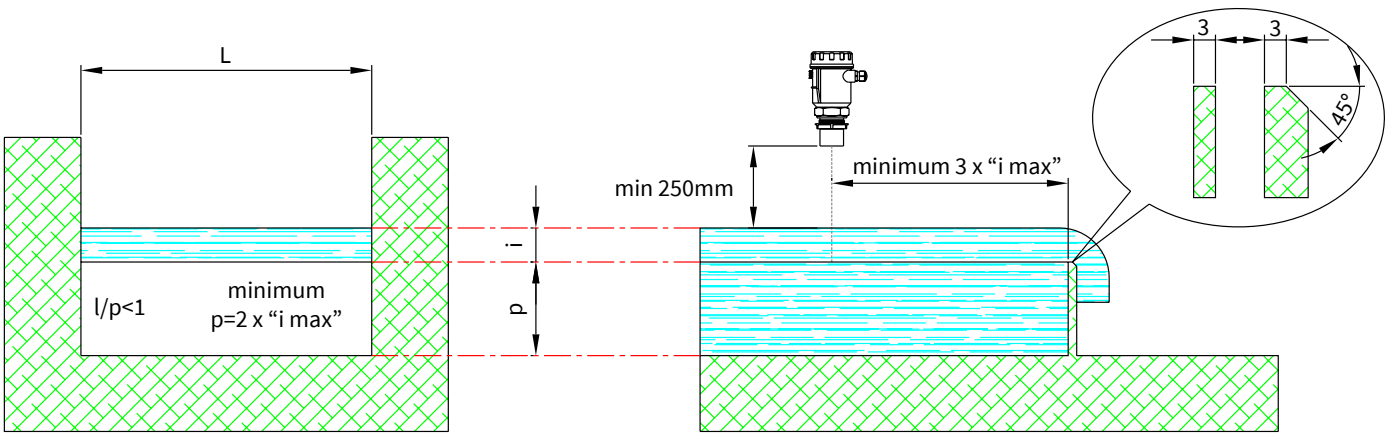
```
▶ RECT. SUPPRESSED
  RECT. CONTRACTED
  TRAPEZOIDAL
  V NOTCH
```

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.

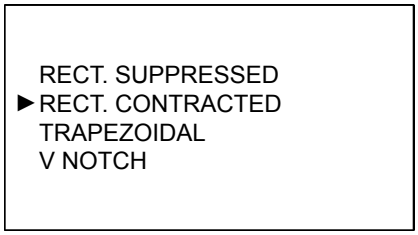
```
RECT. SUPPRESSED

0000 mm
```

NO CONSTRICTION RECTANGULAR WEIR - "Bazin"

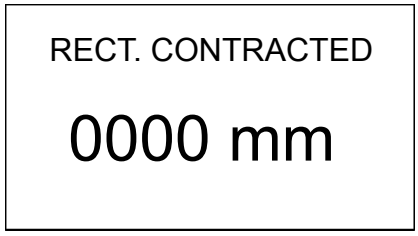


8.6.1.1.2 - RECT. CONTRACTED

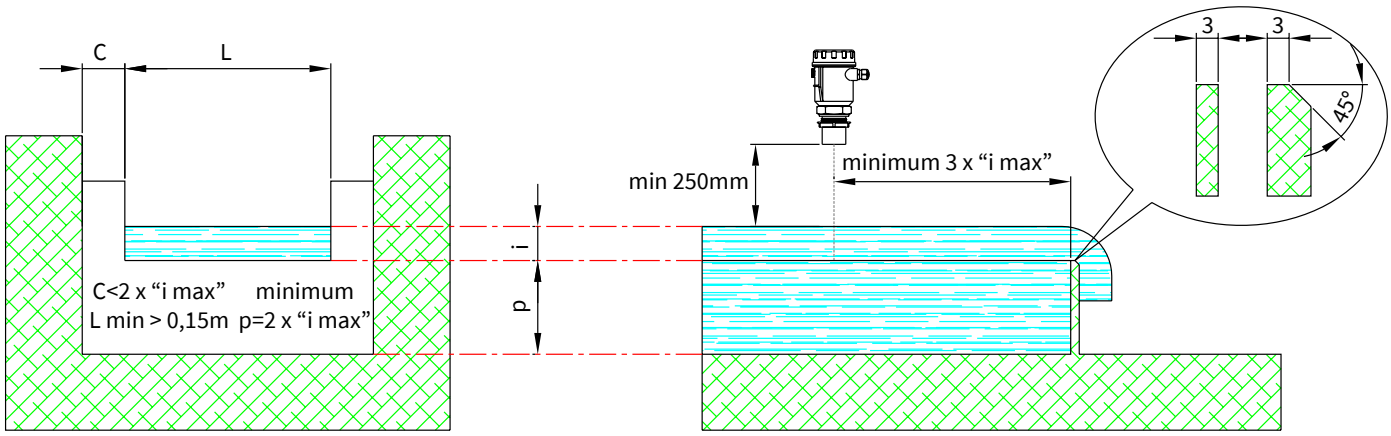
Position the cursor on RECT. CONTRACTED (or constriction rectangular), ENTER to confirm.



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.

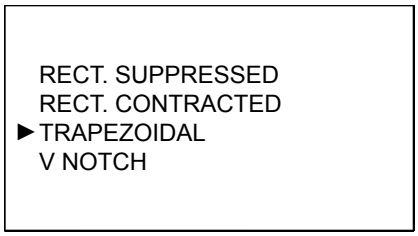


CONSTRICTION RECTANGULAR WEIR - “Francis”



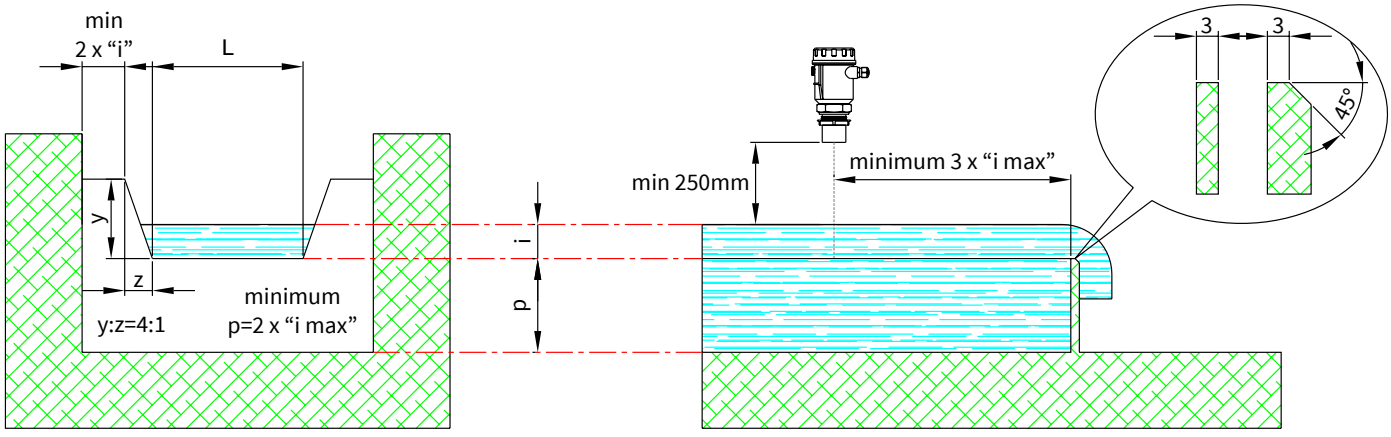
8.6.1.1.3 - TRAPEZOIDAL

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.

TRAPEZOIDAL OR CIPOLETTI WEIR



8.6.1.1.4 - V NOTCH

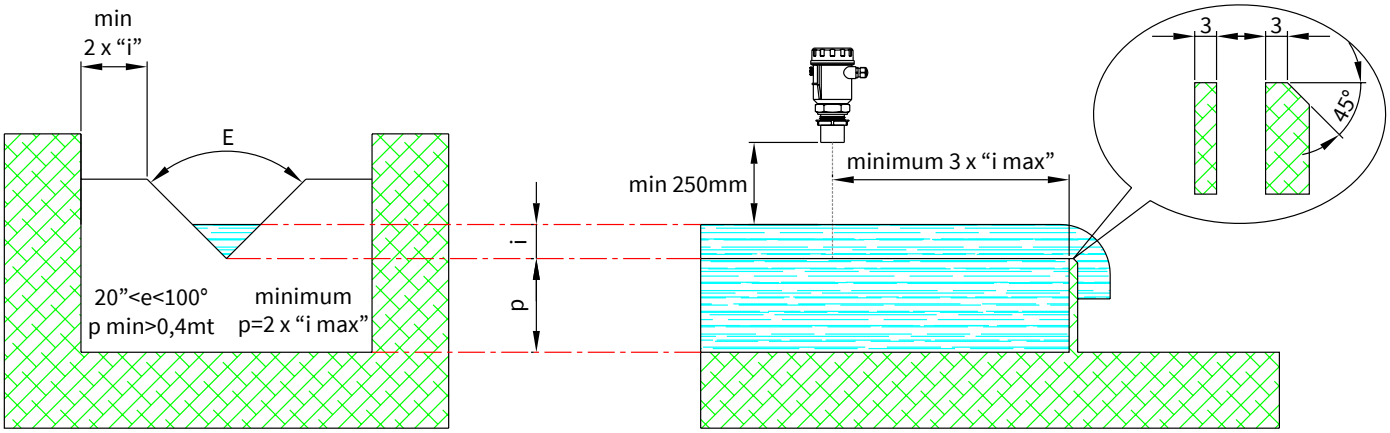
Position the cursor on V NOTCH (or triangular), ENTER to confirm.

```
  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
```

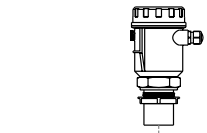
In this sub-menu it’s possible to select and set the flumes kind available in the channel.
Press SCROLL button to select the flumes kind to be setted.
Press ENTER to confirm. Left arrow to exit without changes.

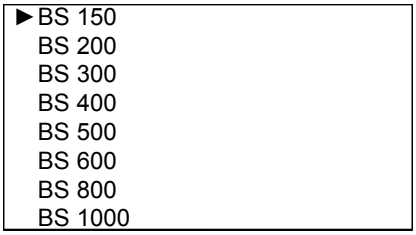
```
▶ SGM VENTURI STD
  SGM VENTURI CUSTOM
  KHAFAGI VENTURI
  PARSHALL INCH
  PARSHALL FEET
  PALMER BOWLUS
  PALMER BOWLUS 2
```

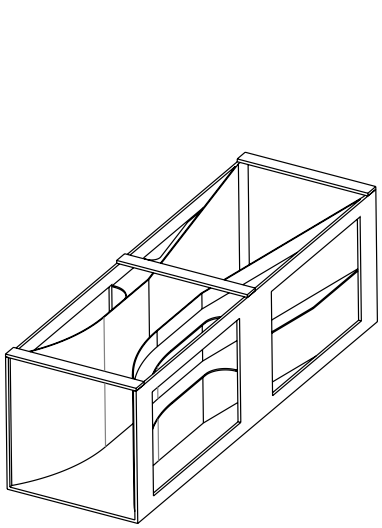
8.6.1.2.1 - SGM VENTURI STD

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



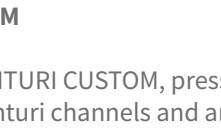


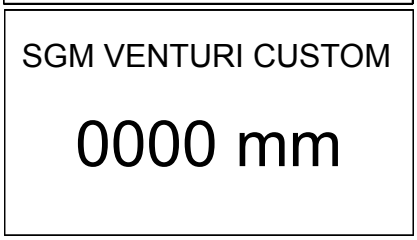


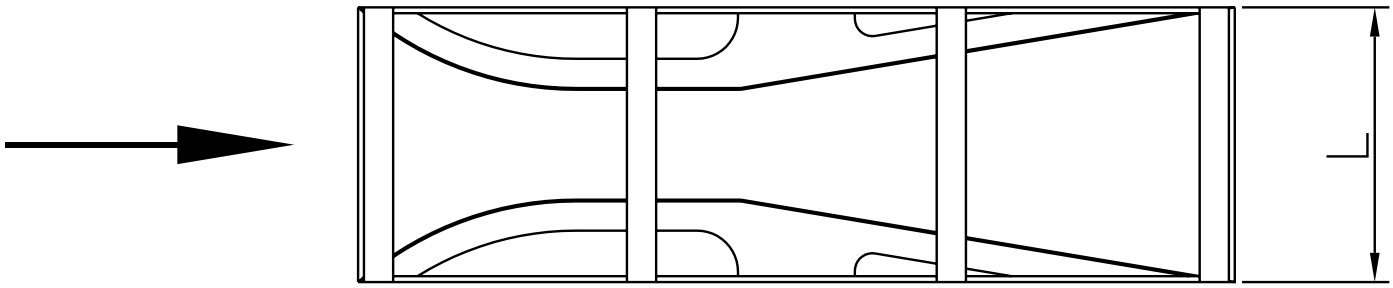
8.6.1.2.2 - SGM VENTURI CUSTOM

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.







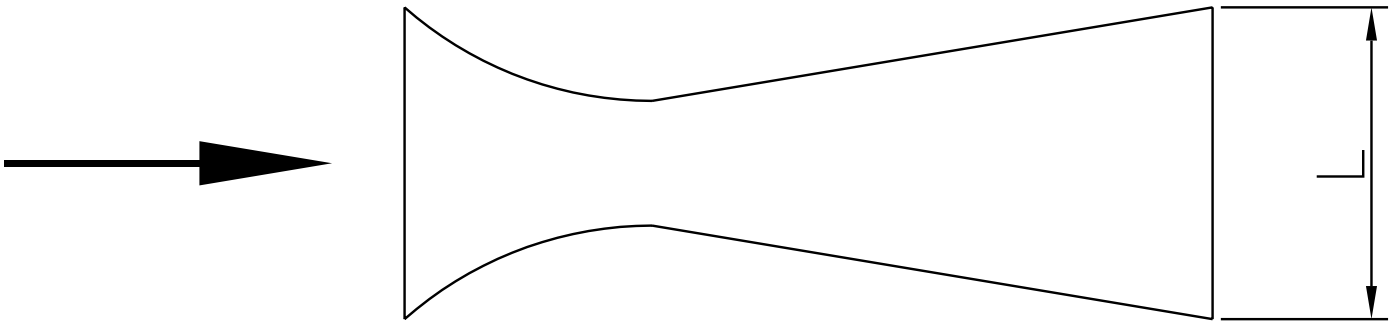
8.6.1.2.3 - KHAFAGI VENTURI

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
```



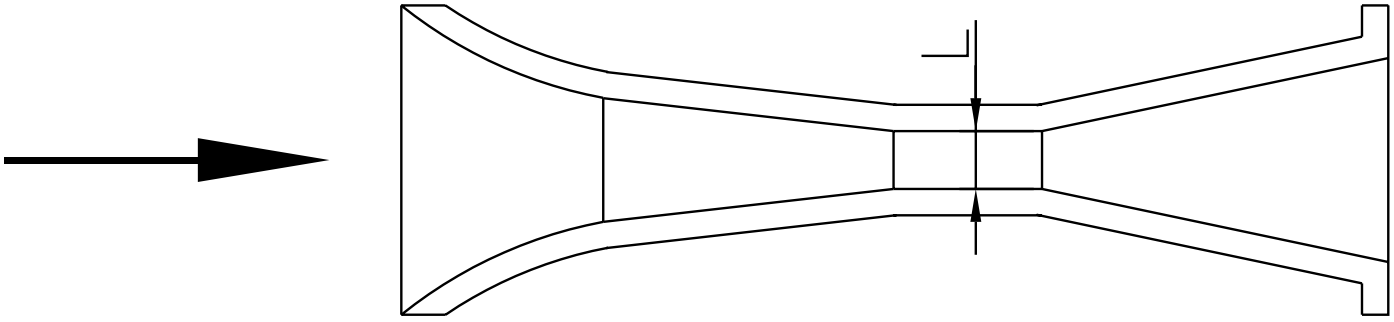
8.6.1.2.4 - PARSHALL INCH

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
```



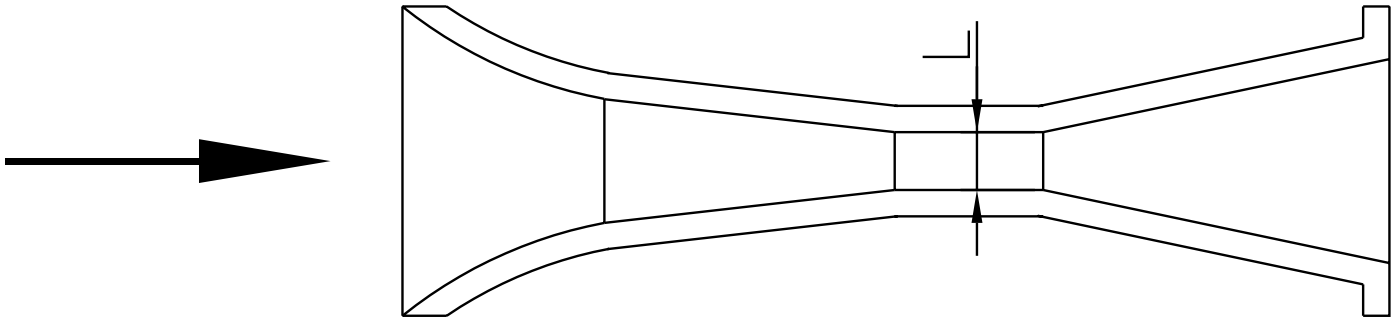
8.6.1.2.5 - PARSHALL FEET

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

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

► 2 ft
3 ft
4 ft
5 ft
6 ft
8 ft
10 ft
12 ft



8.6.1.2.6 - PALMER BOWLUS / PALMER BOWLUS 2

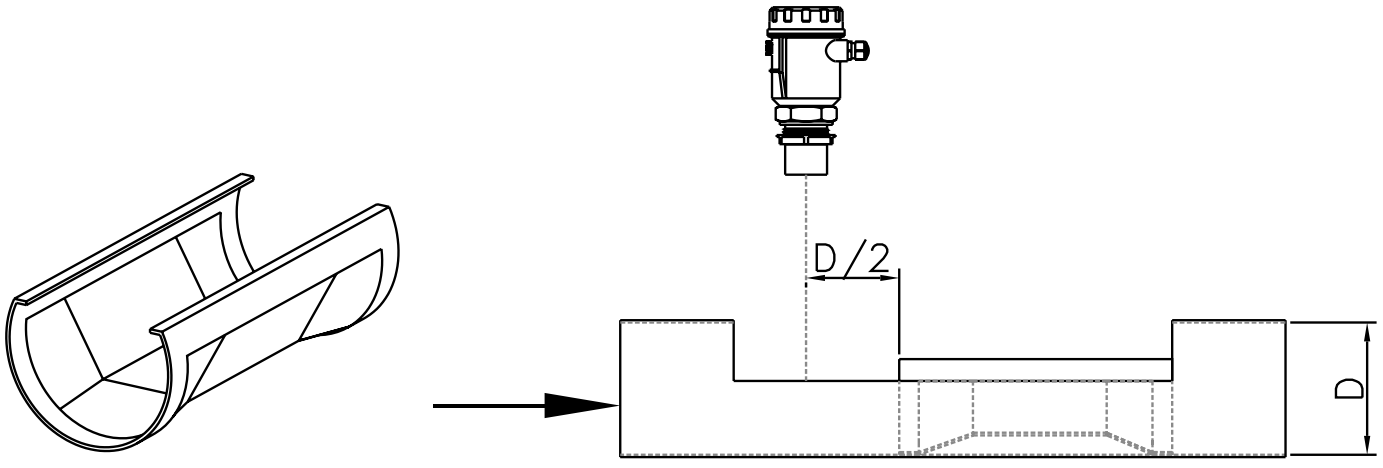
Position the cursor on palmer bowlus or palmer bowlus 2,
press ENTER to confirm.
“PALMER BOWLUS” are prefabricated Palmer-Bowlus channels.

SGM VENTURI STD
SGM VENTURI CUSTOM
KHAFAGI VENTURI
PARSHALL INCH
PARSHALL FEET
► PALMER BOWLUS
PALMER BOWLUS 2

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.

► DN100 4in
DN150 6in
DN200 8in
DN250 10in
DN300 12in
DN400 16in
DN500 20in
DN600 24in

► DN700 28in
DN800 32in
DN900 36in
DN1100 42in
DN1200 48in
DN1500 60in
DN1800 72in



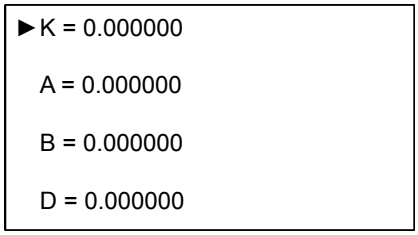
8.6.1.3 - TABLE

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

8.6.1.4 - CUSTOM

Position the cursor on Custom, press ENTER to confirm.

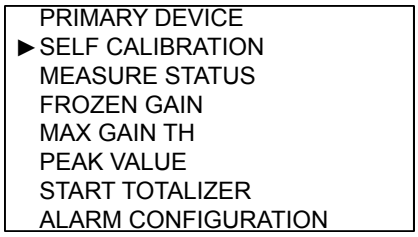
It's only possible to see those parameters.
The parameters setting is available only with the MUDBUS communication program (code 010F119A).



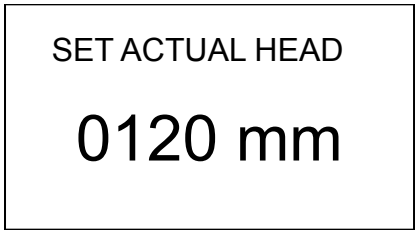
WARNING - Proper programming of this parameter is essential for correct flow measurement.
Do not proceed without having carefully read the below described instructions

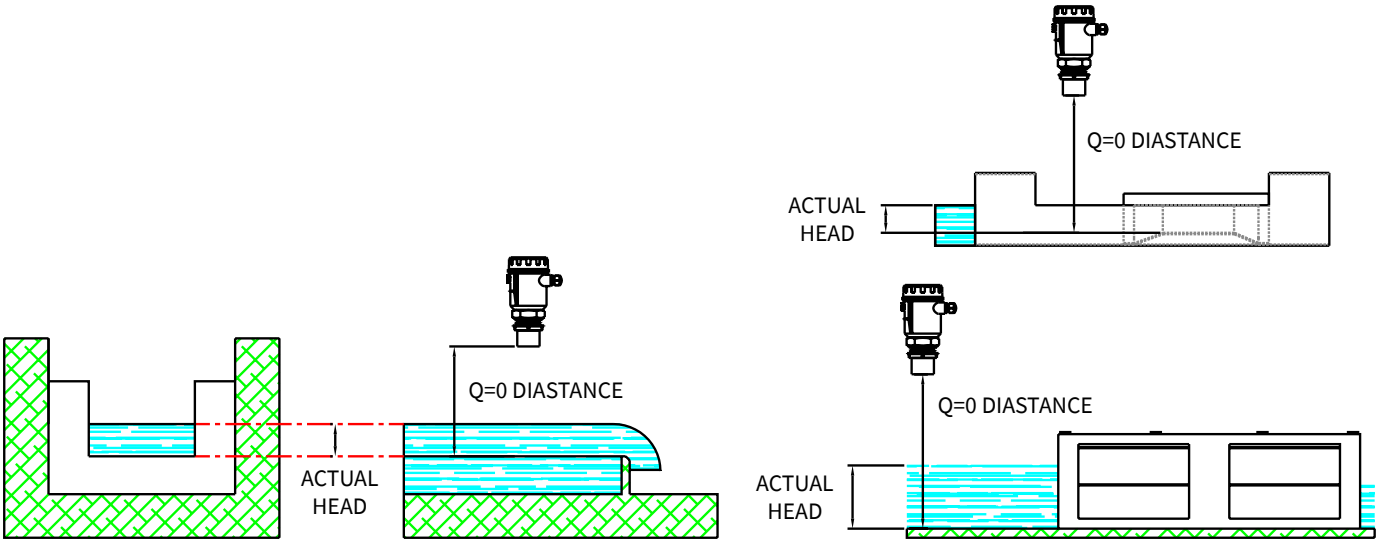
8.6.2 - SELF CALIBRATION

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

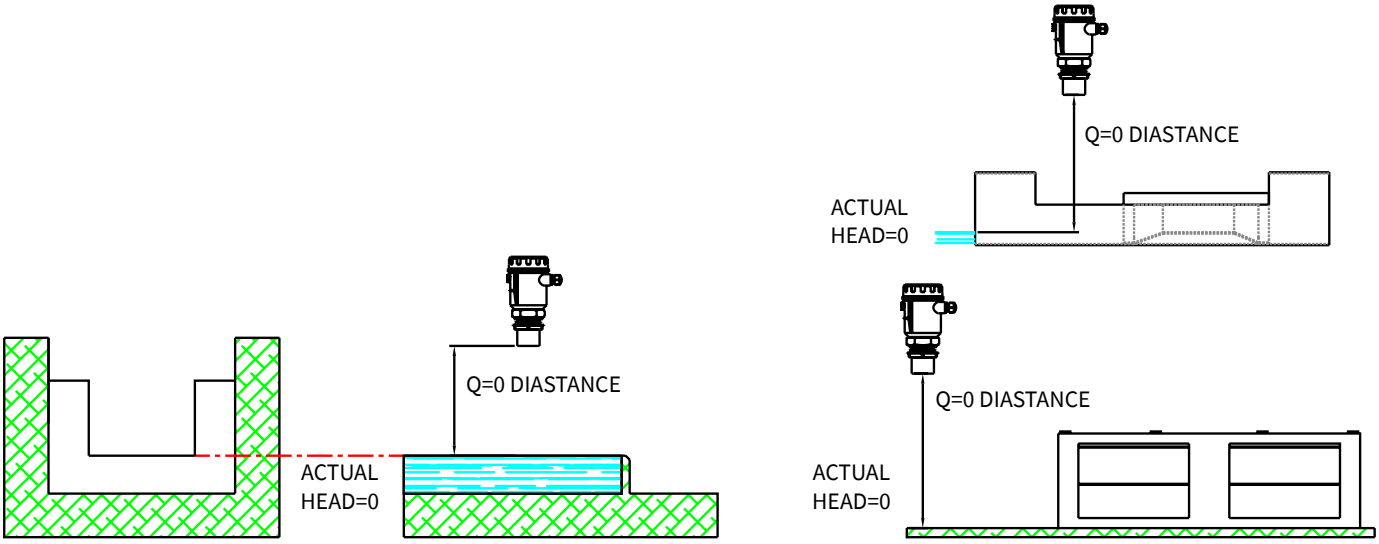


Manually measure in mm the “ACTUAL HEAD” and insert the data, the unit will automatically calculate the fluid distance to the “Q=0” point (zero flow distance).
Use UP ARROW and SCROLL to modify the value.
Press ENTER to confirm. LEFT ARROW to exit without changes.



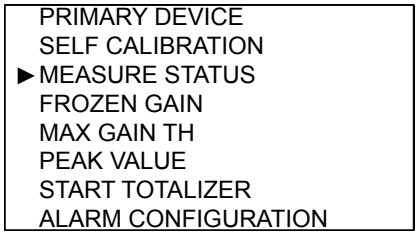


It is recommended to use the “SELF CALIBRATION” system with the zero flow condition, because in doing so the “ACTUAL HEAD” manually measurement distance errors are avoided.

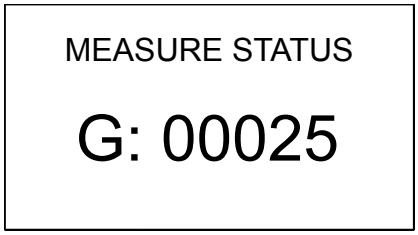


8.6.3 - MEASURE STATUS

Position the cursor on MEASURE STATUS, press ENTER to confirm.

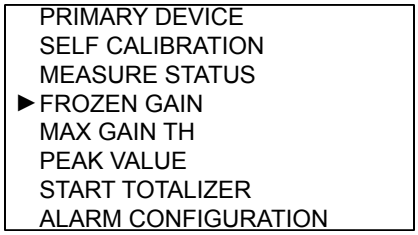


It's possible to display the gain of the system, with values from 0 to 255.
While displayed, the automatic gain control is not active.
LEFT ARROW to exit.



8.6.4 - FROZEN GAIN

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

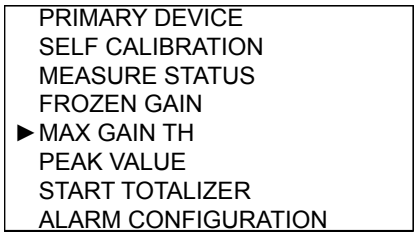


It's possible to fix a value of gain (from 1 to 255) and consequently disable the automatic gain control. Once the value is 000 the automatic gain control restarts.
Use UP ARROW and SCROLL to modify the value.
Press ENTER to confirm. LEFT ARROW to exit without changes.

Default value: 000

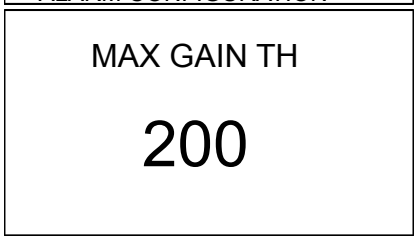
8.6.5 - MAX GAIN TH

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



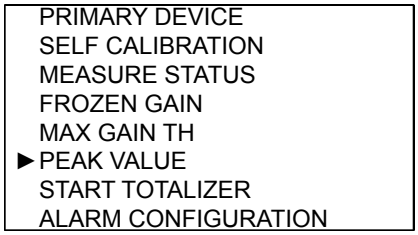
It's possible to input a value of gain that it can be reached in normal operation.
If the gain reaches this value, the "GAIN" error code is activated.
Use UP ARROW and SCROLL to modify the value.
Press ENTER to confirm. LEFT ARROW to exit without changes.

Default value: 200 (Max gain)



8.6.6 - PEAK VALUES

Position the cursor on PEAK VALUES, press ENTER to confirm.

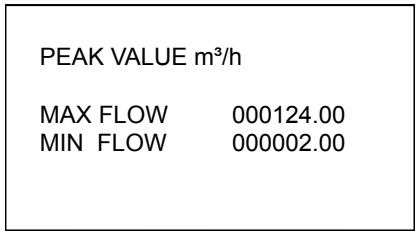


In this sub-menu it's possible to display or reset the flow rate peak values.
Press SCROLL button to select.
Press ENTER to confirm.
LEFT ARROW to exit.

8.6.6.1 - DISPLAY VALUES

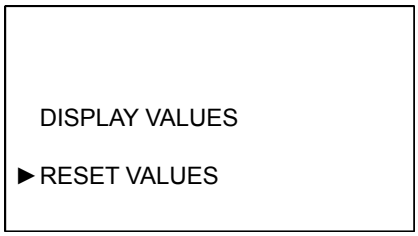
Position the cursor on DISPLAY VALUES, press ENTER to confirm.

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.



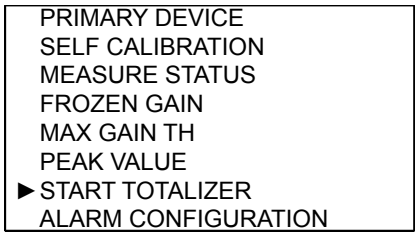
8.6.6.2 - RESET VALUES

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



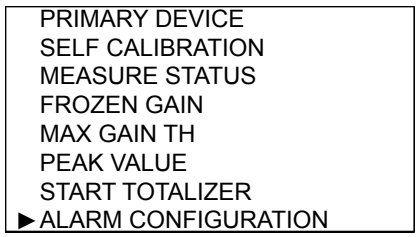
8.6.7 - START TOTALIZER

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.

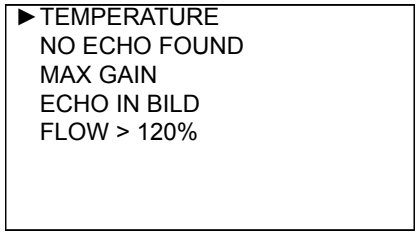


8.6.8 - ALARM CONFIGURATION

Position the cursor on ALARM CONFIGURATION, press ENTER to confirm.

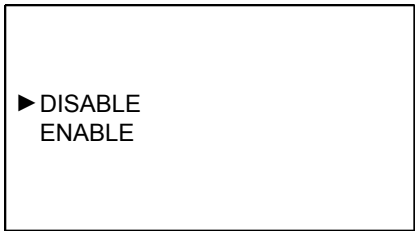


To enable or disable each diagnostic alarms:
- with SCROLL chose the desired item and press

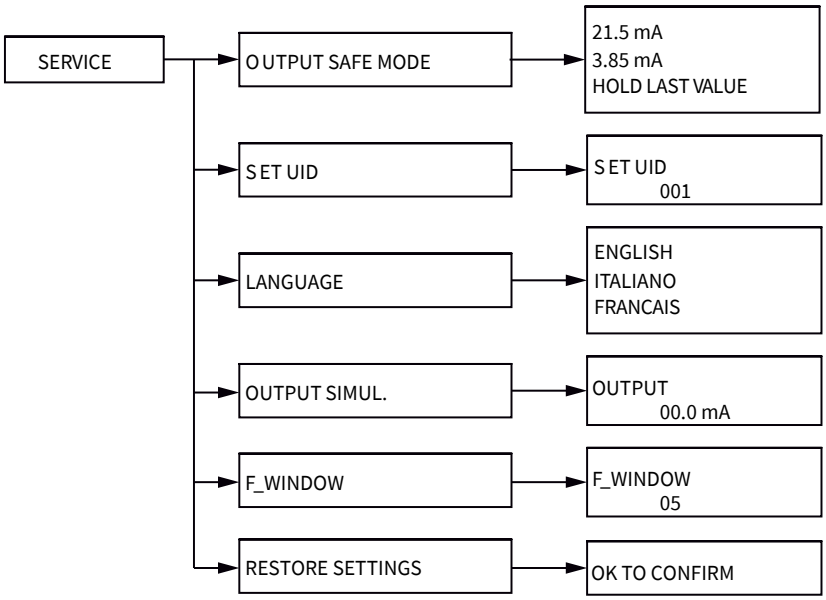


- with SCROLL enable or disable the alarm signal and press ENTER to confirm.

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.

SETUP
DISPLAY
FLOW APPL.
▶SERVICE
INFO

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.

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

"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

21.5 mA

3.85 mA

▶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.

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

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

Default value 001

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

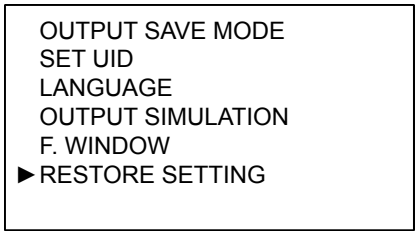
OUTPUT SAVE MODE
SET UID
LANGUAGE
OUTPUT SIMULATION
►F. WINDOW
RESTORE SETTING

F_WINDOW

05

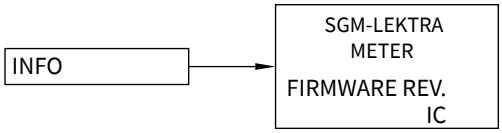
8.8.6 - RESTORE SETTING

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



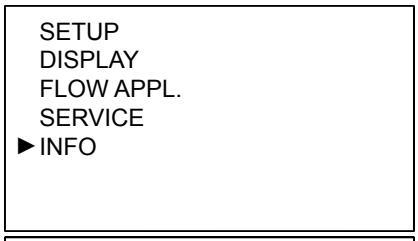
Press ENTER to restore the FLOWMETER default settings.
LEFT ARROW to exit without restored the FLOWMETER default settings.

8.9 INFO MENU

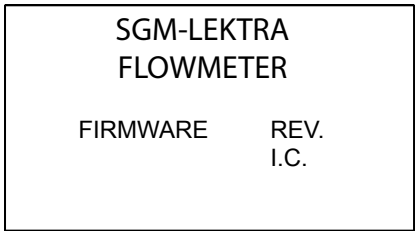


8.10 - INFO

Position the cursor on INFO, press ENTER to access.



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



9-FACTORY TEST AND QUALITY CERTIFICATE

CE

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: .....

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