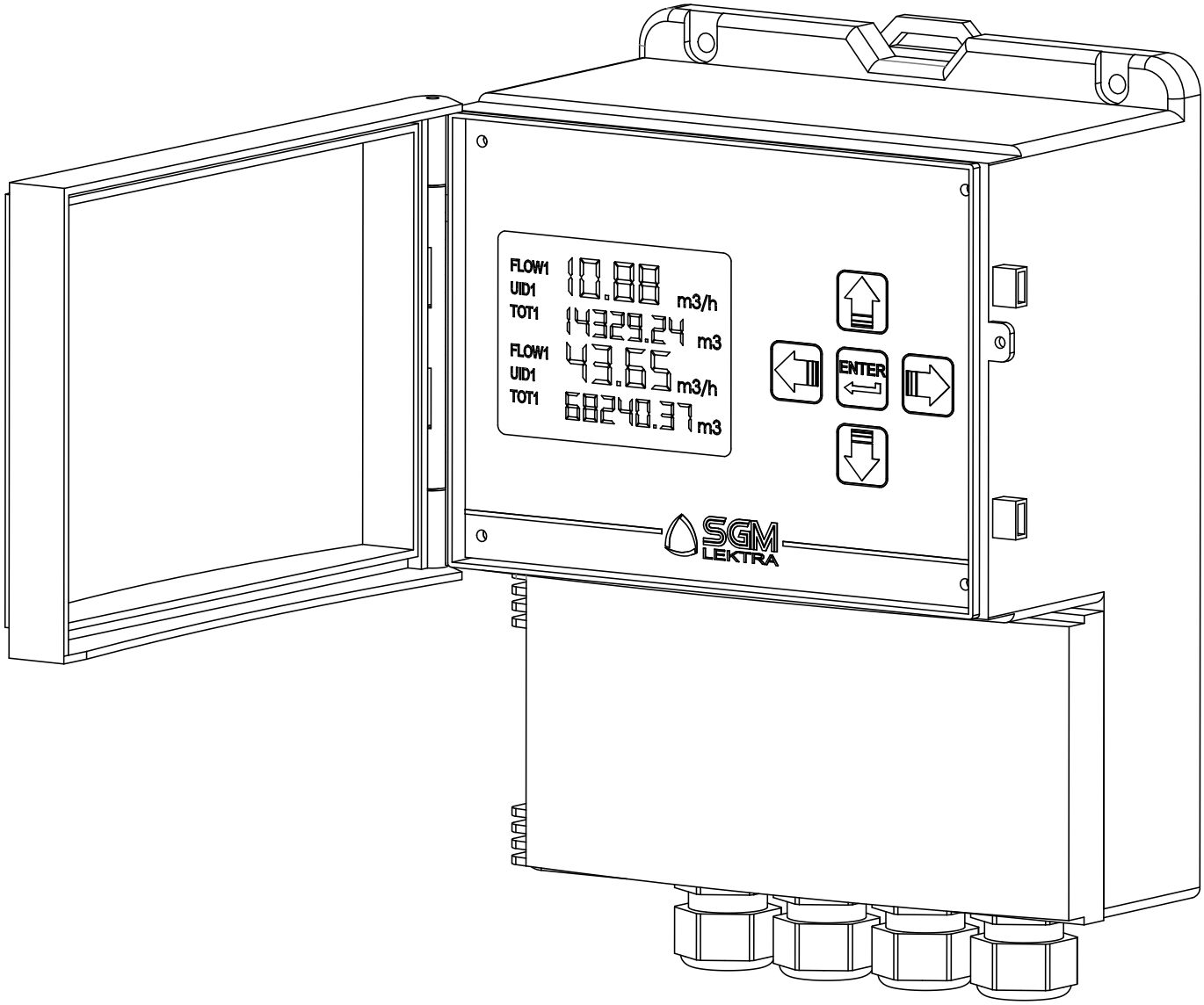
VLW90M

Tank Inventory, Differential Level, Open Channel Flow, Pumps Control



Technical documentation EN Rev. of 02/02/2023

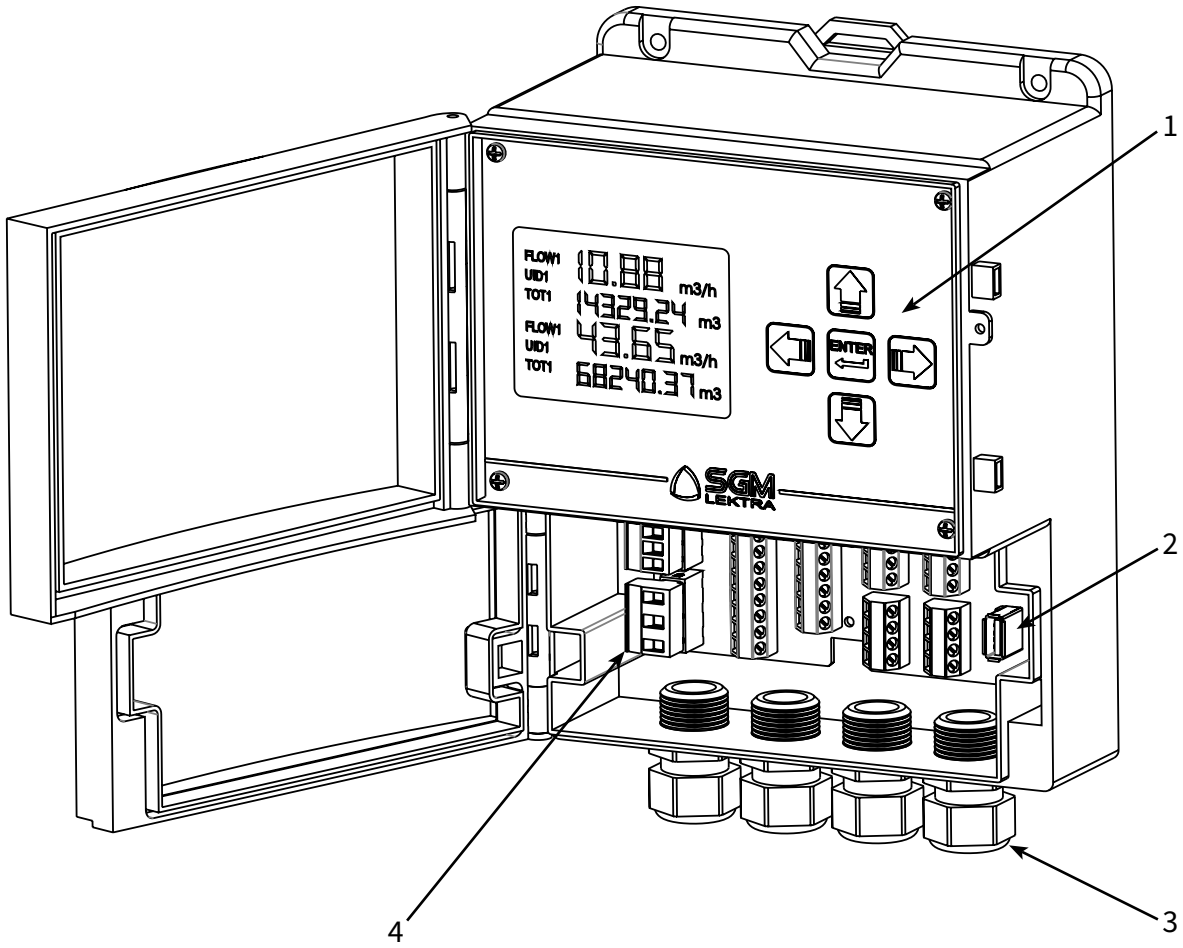
sgm lektra

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.

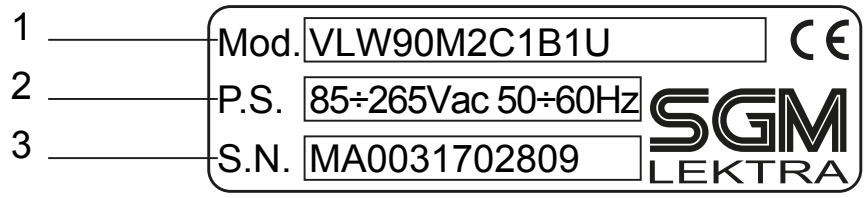
2-PRODUCT



1. Keyboard
2. Pen Drive USB for DATALOGGER (When available)
3. N°4 Skintop M20x1,5
4. Electrical terminal

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

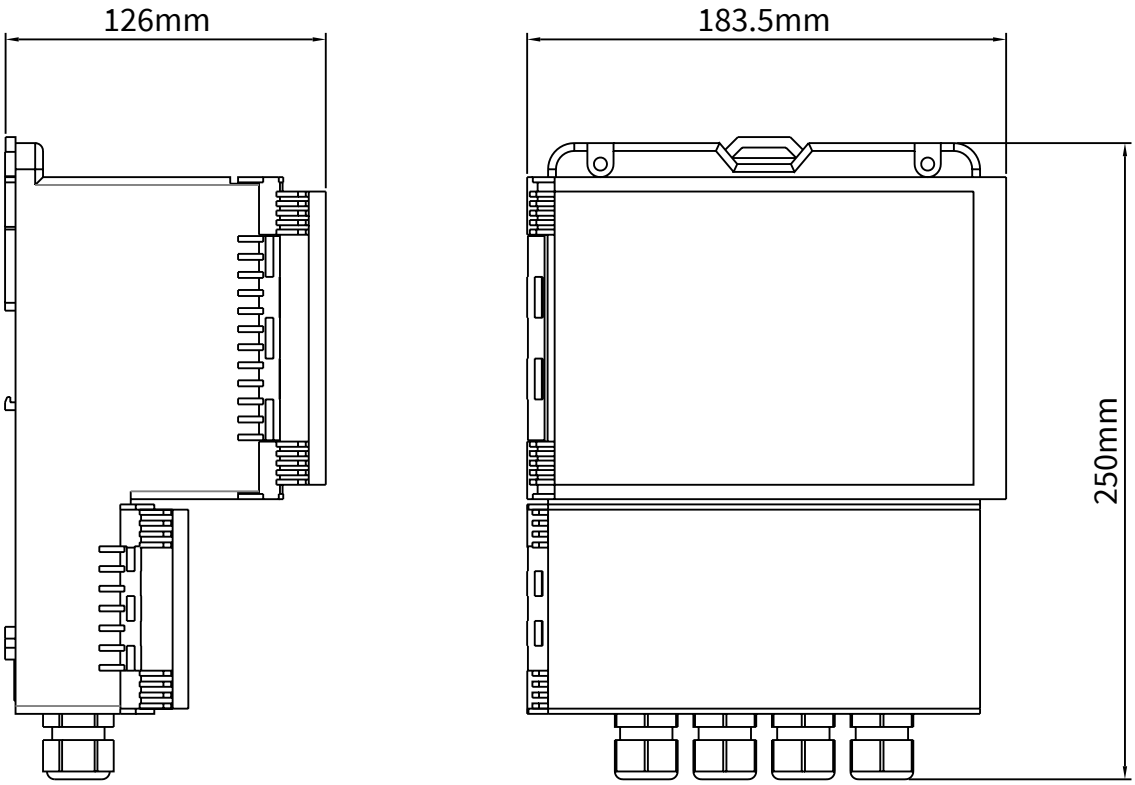
3-FEATURES

Housing material
ABS
Mechanical installation
Wall, pipe or DIN rail mounting
Protection degree
IP66
Keyboard
5 push buttons
Display
320x240 matrix color LCD with backlight
Electrical connection
Internal connectors
Working temperature
-20 ÷ +60°C
Power supply
85÷265Vac; 20÷30Vdc/Vac
Power consumption
Max. 10W
Analog output
n.2 configurable isolated 4÷20mA active, max load 750 Ω
Relays output
n.5 fully configurable relay (5A 250Vac with resistive load)
Digital output
n.2 open collector (max. 24Vdc 50mA), max 1 pulse/second
Analog input
n.2 4÷20mA
Digital input
n.2 (max. 24Vdc 10mA)
Digital communication
MODBUS RTU
Datalogger (when available)
on Pen Drive USB; max.32GB (FAT32)
Power supply for analog transmitters
24Vdc; 200mA max
Compsuntion:

	24Vdc
only instrument VLW90M	100mA
VLW90M 1 probe in MODBUS	150mA
VLW90M 2 probes in MODBUS	200mA
Relay excited	30mA each

4-DIMENSIONS

4.1 - MECHANICAL DIMENSIONS

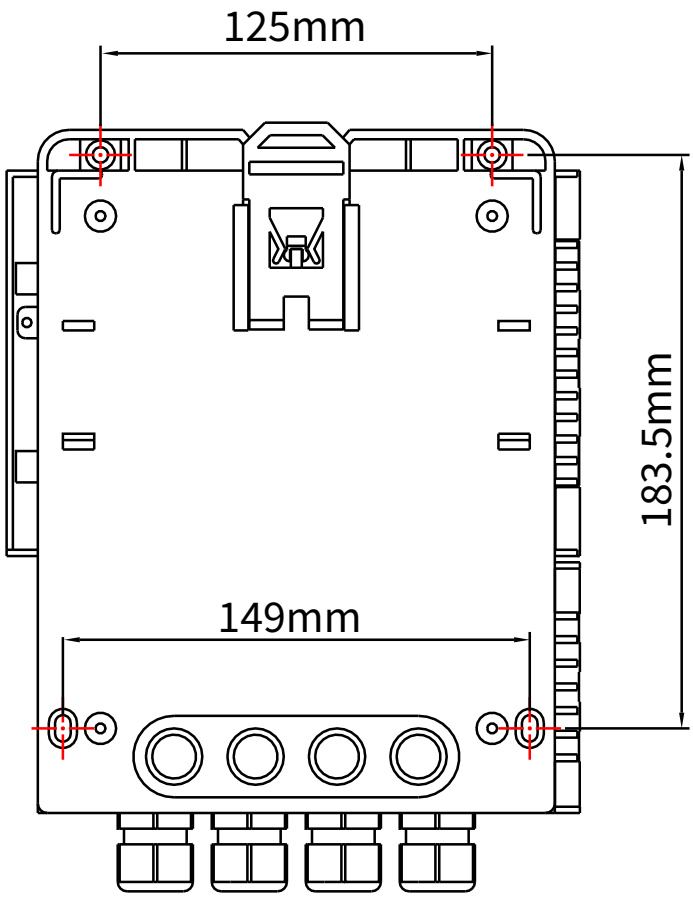


5-INSTALLATION

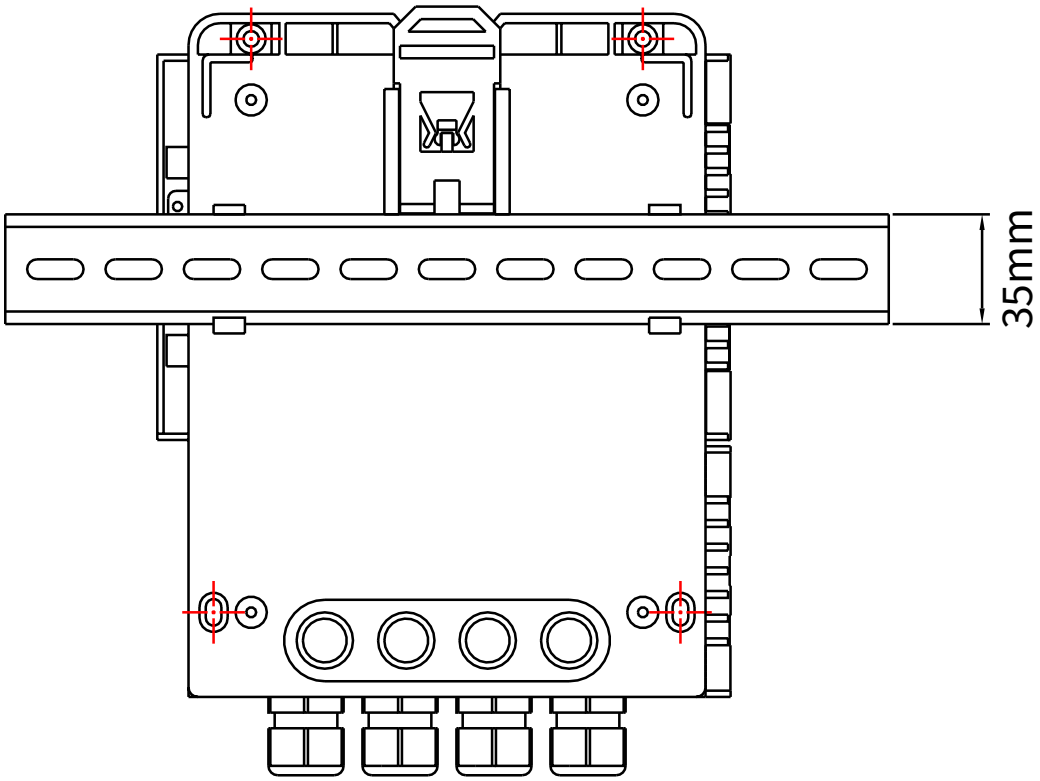
5.1 - INSTALLATION PRECAUTION

- Installation shall only be performed by qualified personnel and in accordance with local governing regulations.
- Make sure that the working temperature is between -20 and +60°C.
- Make sure that the housing material is compatible with environmental condition
- An improper use of the unit can cause serious injuries to operators and damages to the product and to the connected equipments.

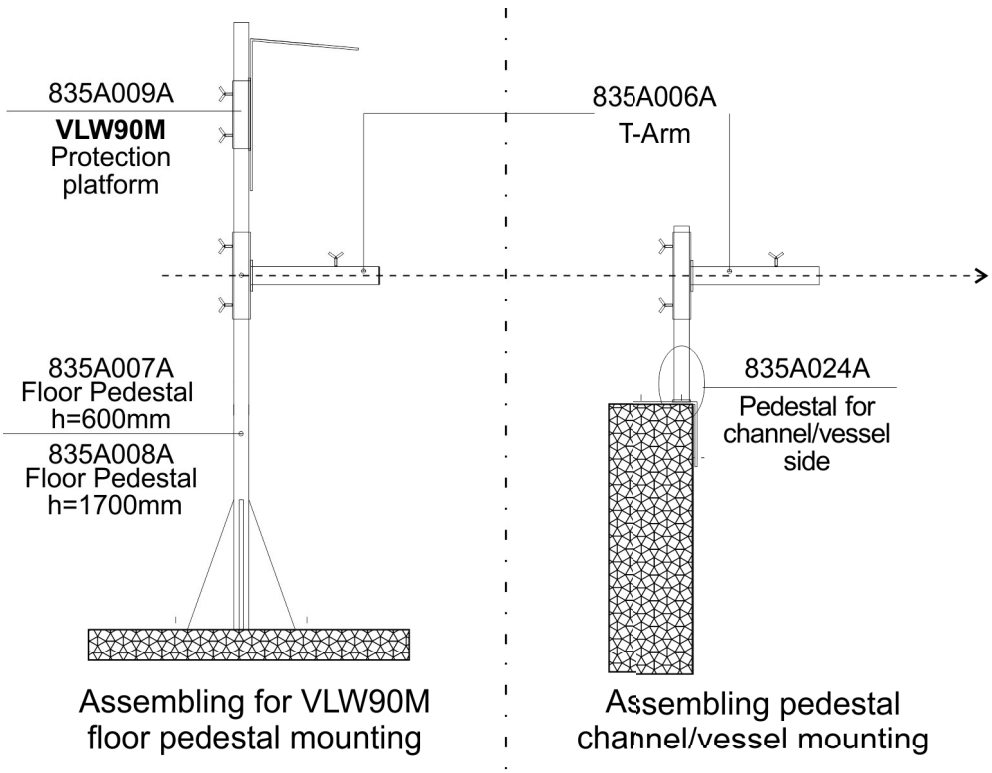
5.1.1 - Drilling template for wall mounting



5.1.2 - DIN rail mounting

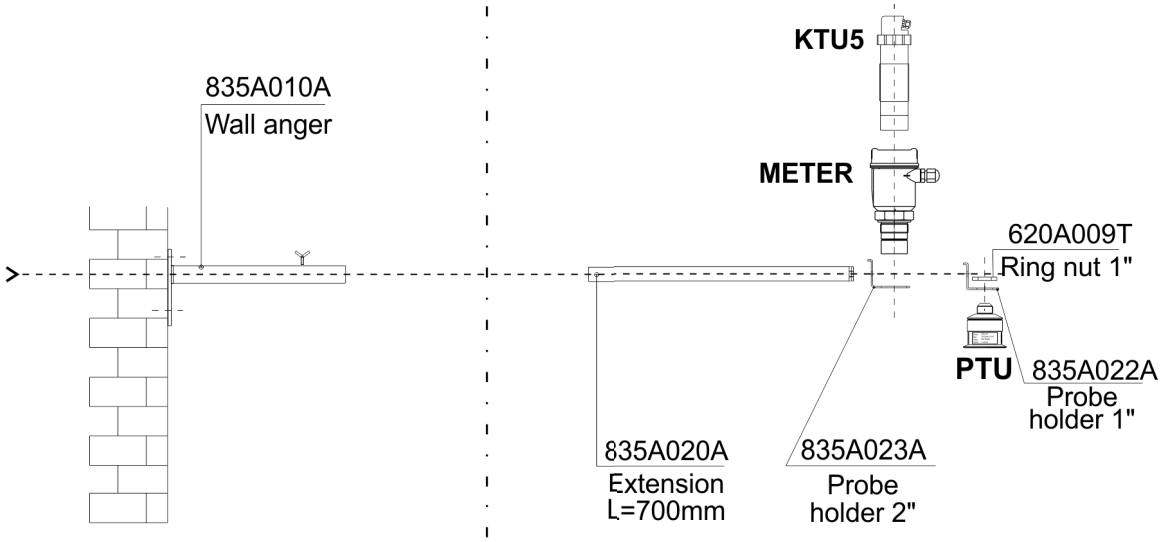


5.1.3 - Mechanical installation accessories



Assembling for VLW90M floor pedestal mounting

Assembling pedestal channel/vessel mounting



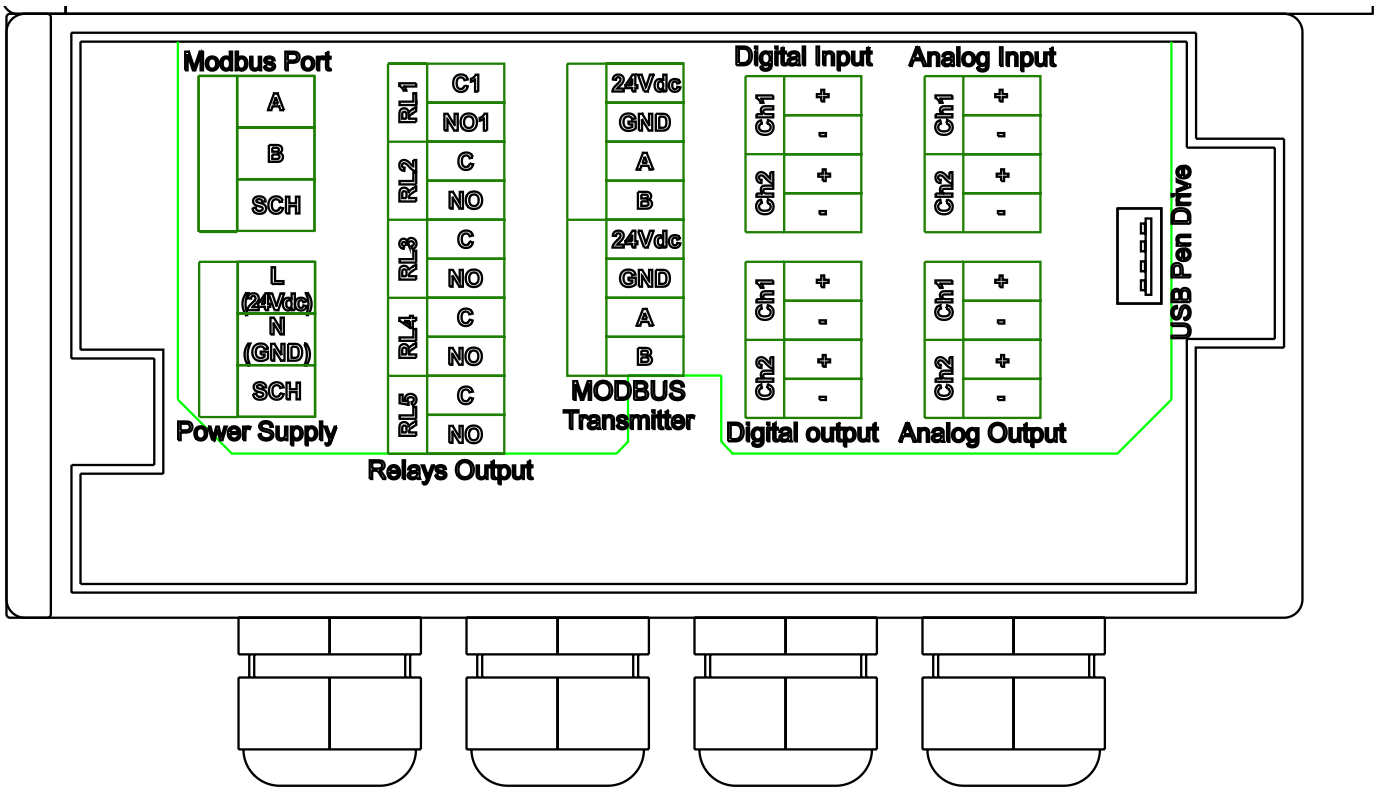
Assembling for wall mounting

Accessories for all mounting versions

6-ELECTRICAL CONNECTIONS

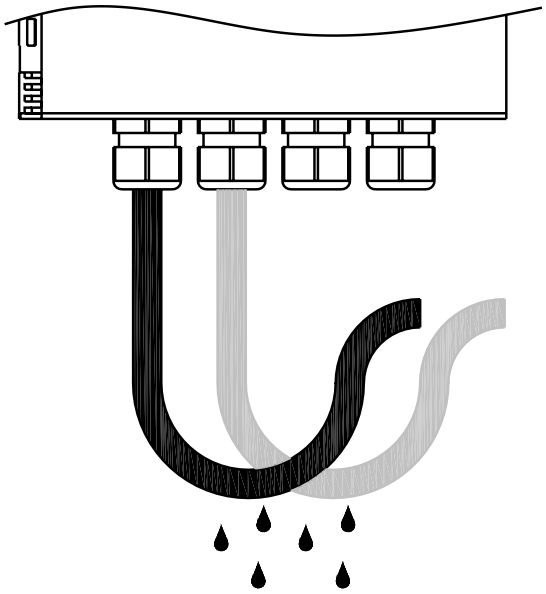
6.1 - CONNECTIONS

1) Separate the engine control cables or power cables from the VLW90M connection cables.
2) Remove the caps from the cable glands and open the cover by unscrewing the screws.
3) Lead the cables into the transmitter through the cable glands.
4) Close the cap and tighten the cable glands.



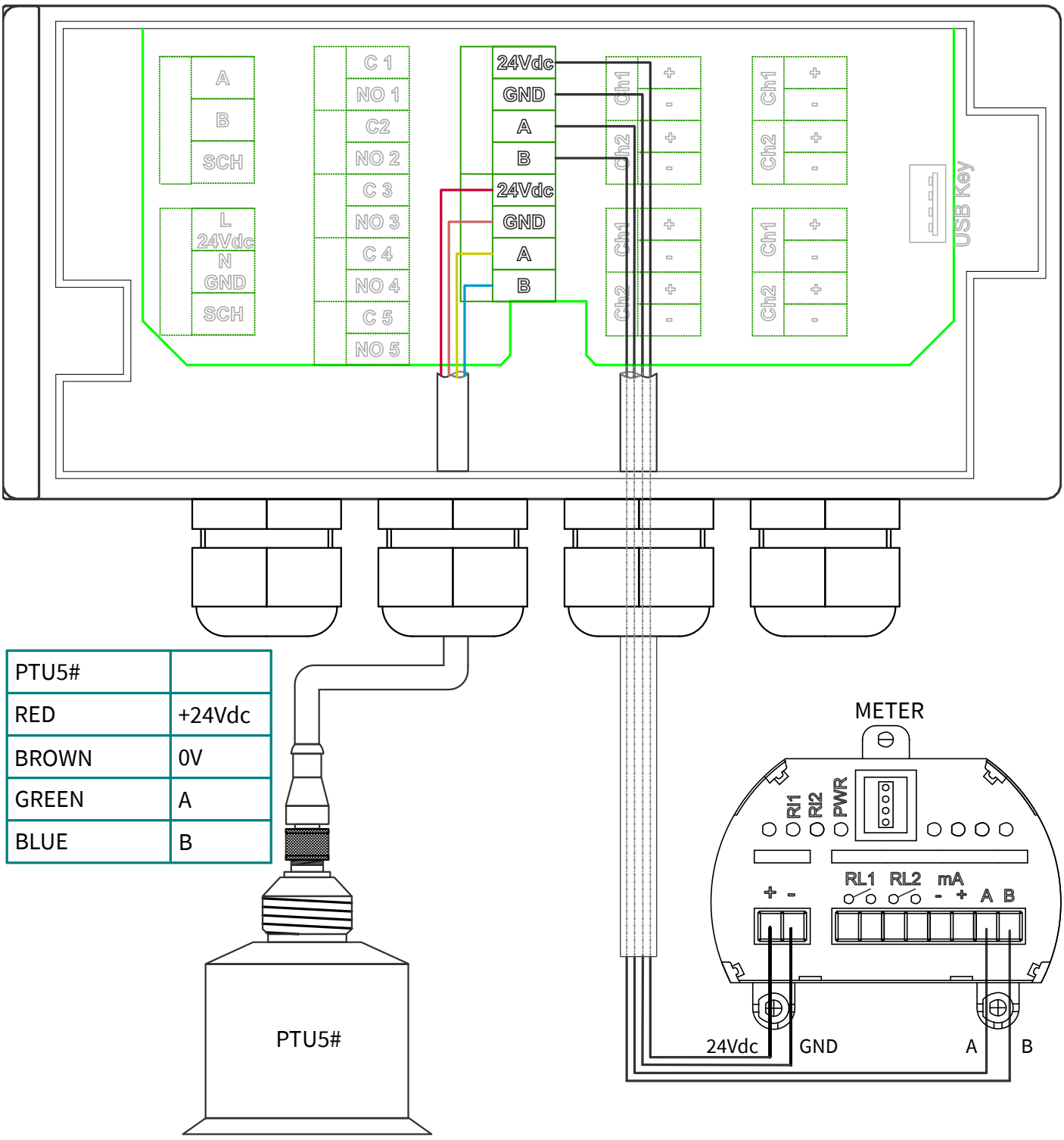
6.2 - RECOMMENDATIONS FOR EXTERNAL MOUNTING

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 M20x1.5 cable gland.
- Fighten 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 drop from the curve bottom.
- The two central cable glands are arranged for the PTU sensor connection cables.



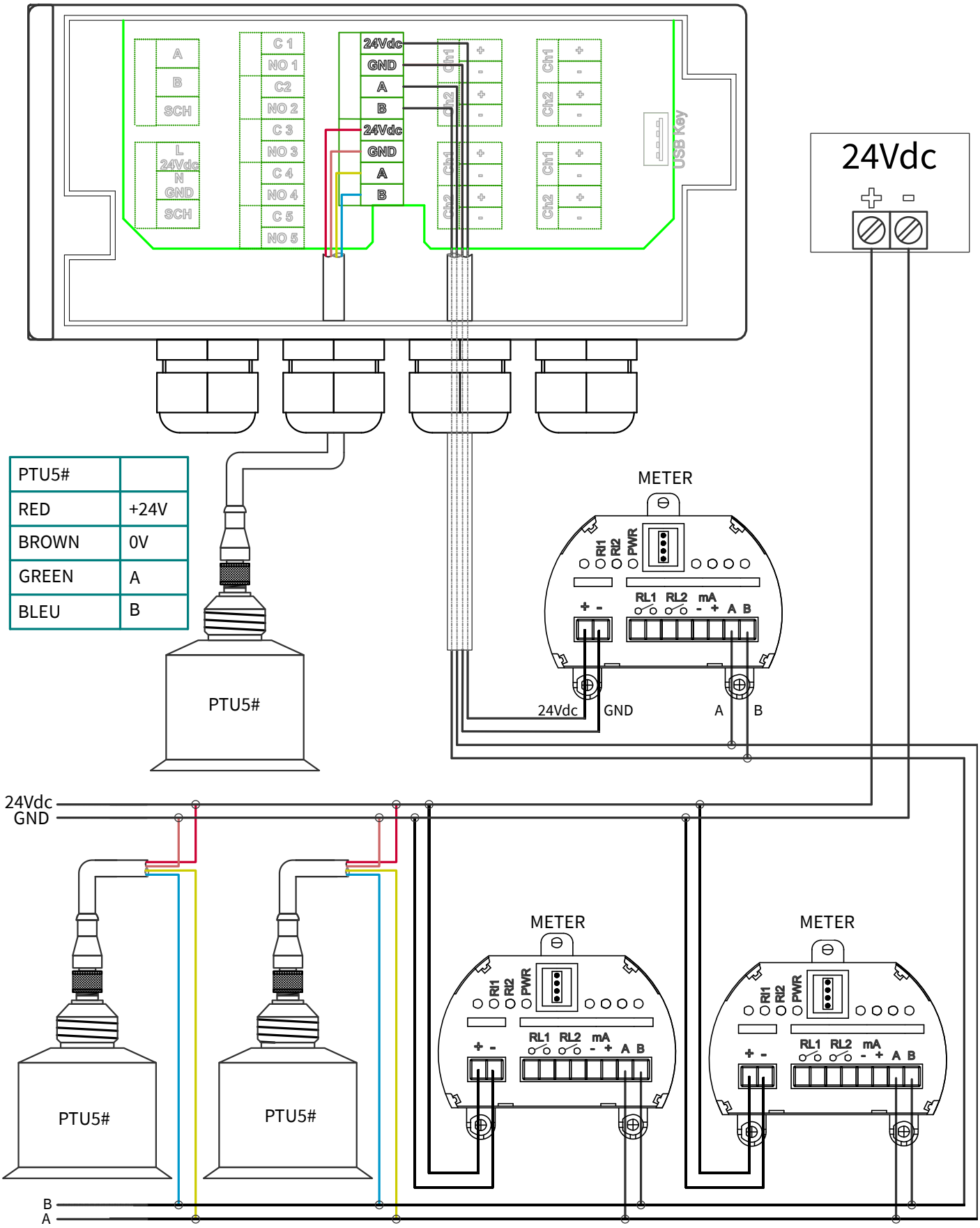
6.3 - SGM LEKTRA ULTRASONIC MODBUS LEVEL TRANSMITTERS CONNECTION

6.3.1 - Up to 2 SGM LEKTRA ultrasonic level transmitters can be directly powered by the VLW90M



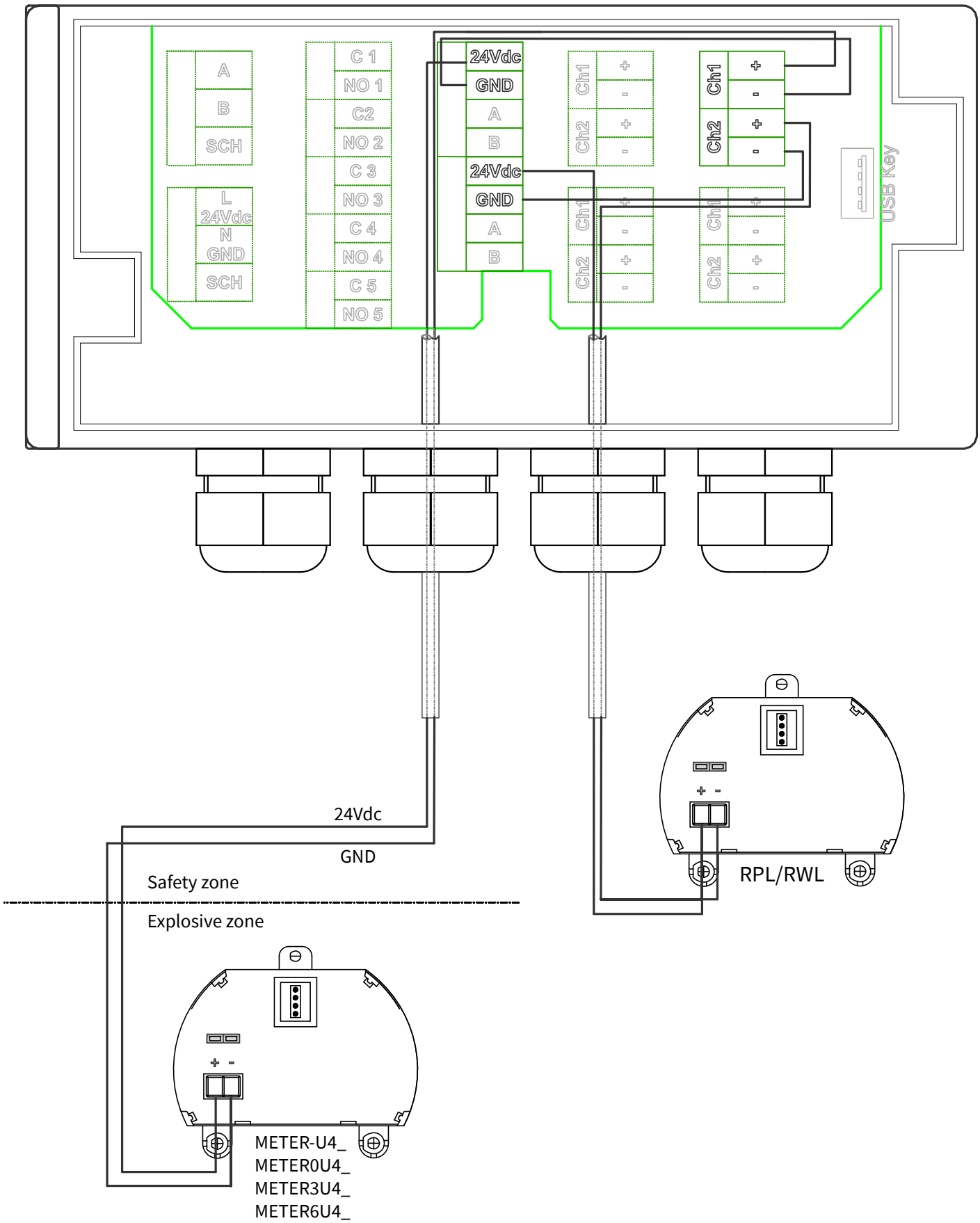
PTU5#	
RED	+24Vdc
BROWN	0V
GREEN	A
BLUE	B

6.3.2 - With more than two ultrasonic sensors SGM LEKTRA, 24Vdc additional power supply is needed

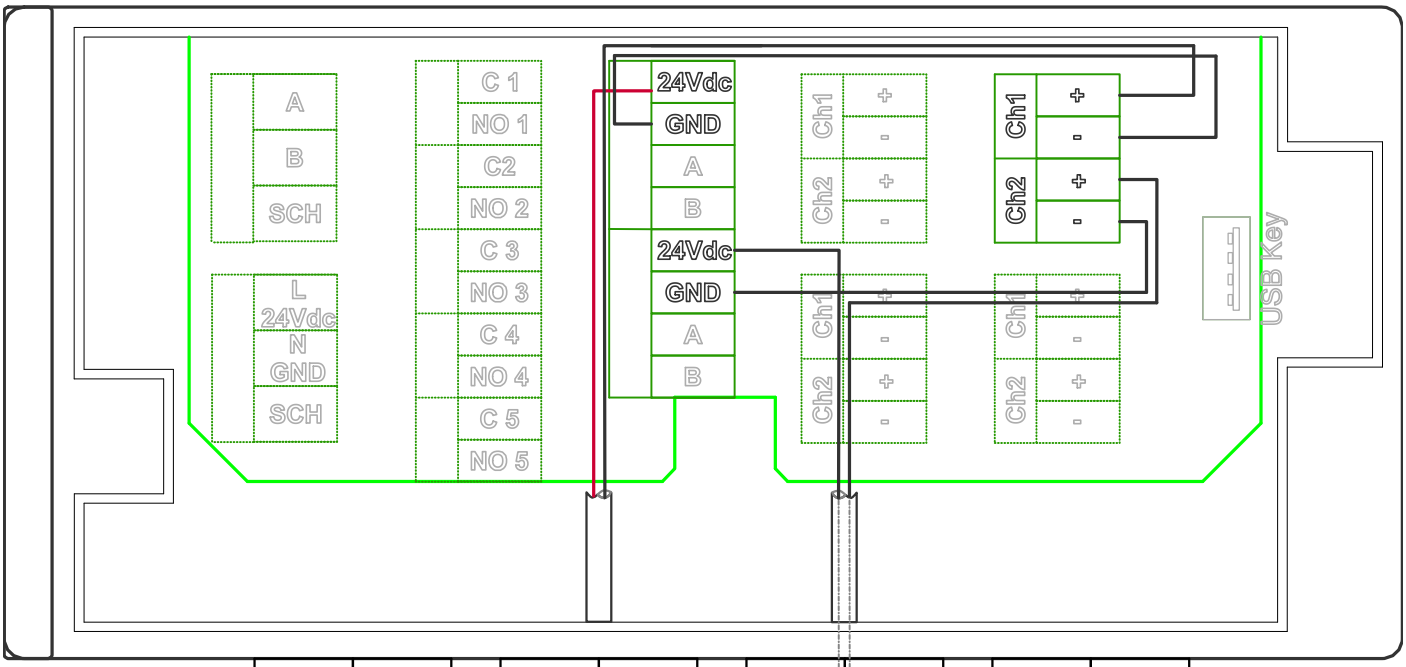


PTU5#	
RED	+24V
BROWN	0V
GREEN	A
BLEU	B

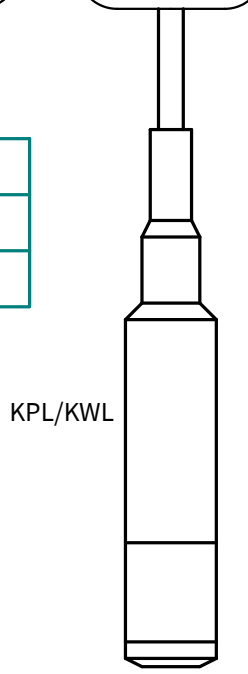
6.3.3 - ATEX certified METER or radar RPL / RWL level transmitters connection

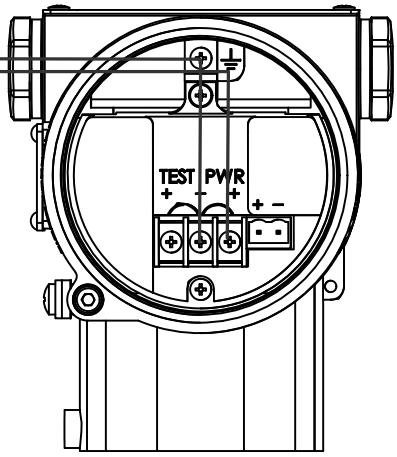


6.3.4 - SGM LEKTRA hydrostatic head level transmitters connection



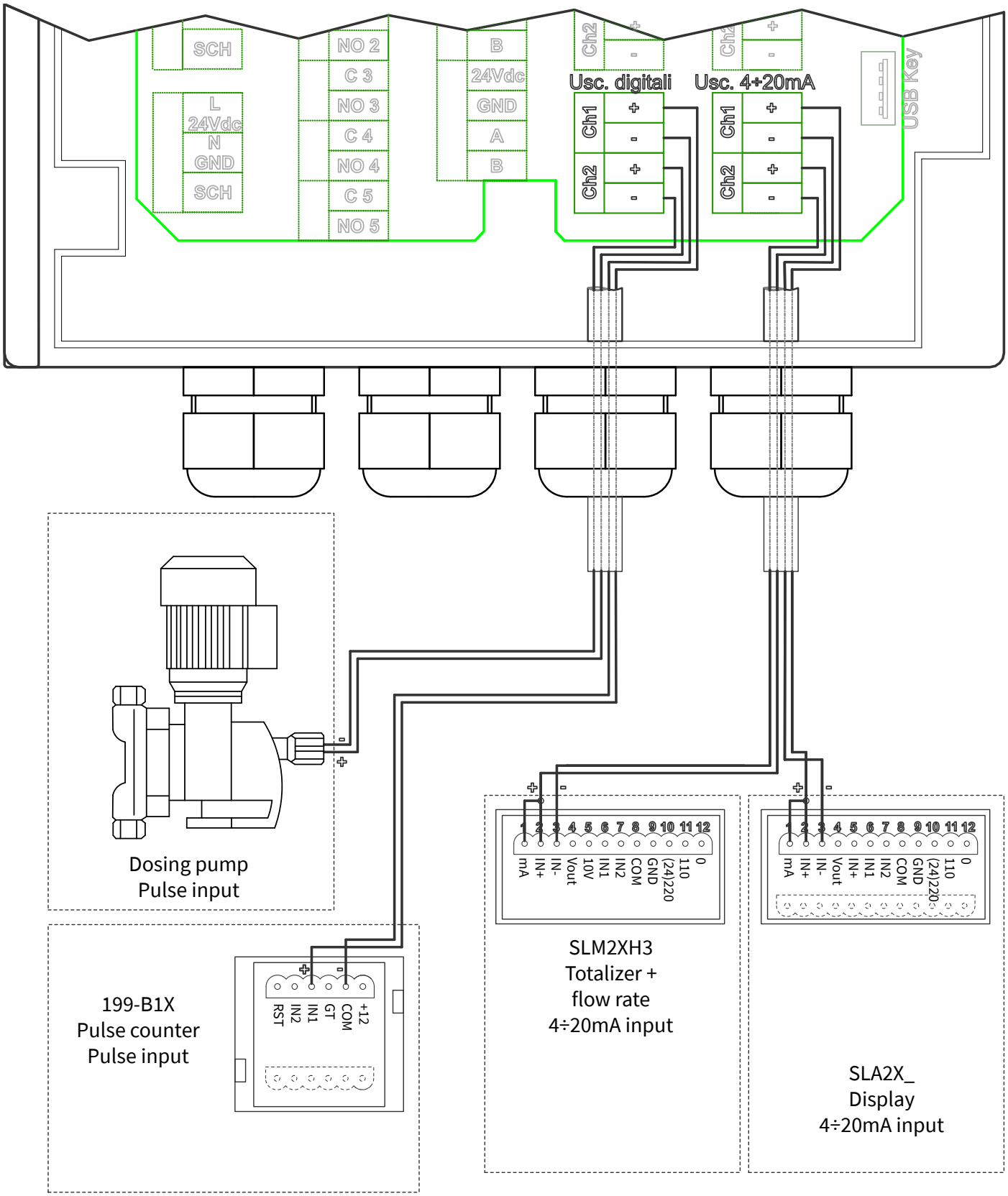
KPL/KWL	
RED	+24Vdc
BLACK	0V

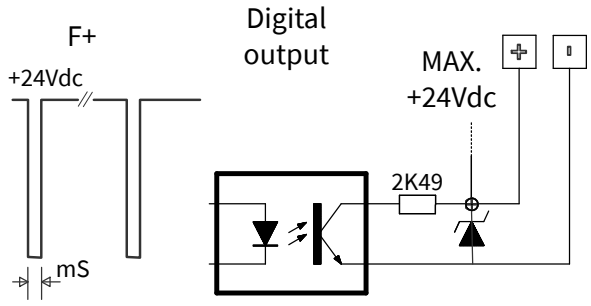




SPT/SDT

6.3.5 - Analog and digital outputs connection



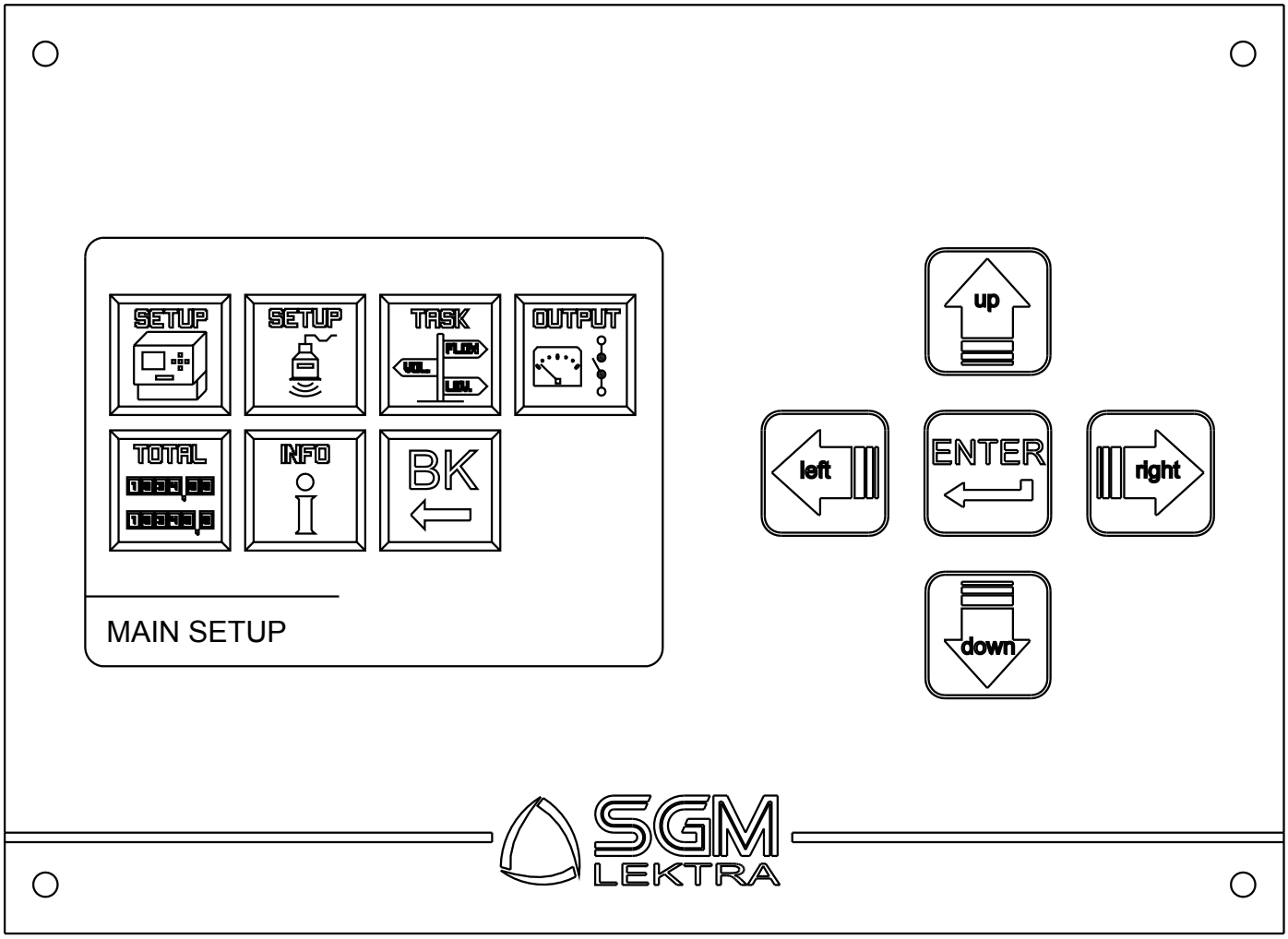


7-PROGRAMMING

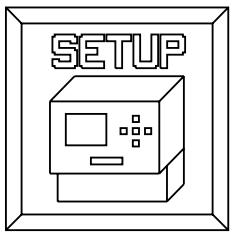
7.1 - KEYBOARD

Opening the display cover the 5 buttons for programming are accessible.
The key functions are always described when every single menu and program parameters page are displayed.
The VLW90M menu structure is simple and intuitive.

1. From “RUN” mode: Press  to access the main menu
2. To select a programming menu use the  /  /  /  arrow keys and confirm with  .
3. To return to the run mode, in the main menu select the  icon (DISPLAY MEASURE) with arrow keys, and confirm with  .

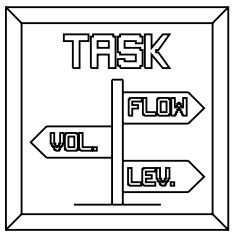


7.2 - CONFIGURATION MENU

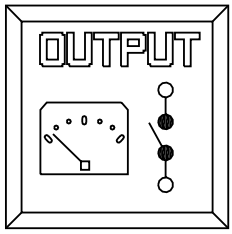


MAIN SETUP - Menu for the VLW90M general configuration.

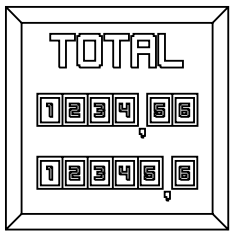
SENSOR SETUP - Menu for SGM LEKTRA ultrasonic sensors via MODBUS configuration.



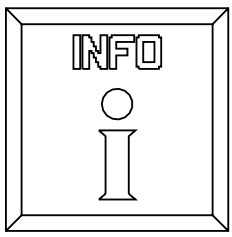
TASK - Menu to configure the VLW90M measurement functions (flow, level, etc.).



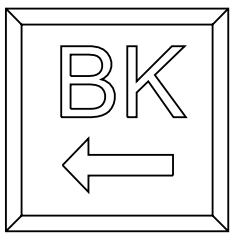
OUTPUT - Menu to configure the analog/digital outputs and the 5 threshold relay.



TOTALIZER - Menu for the flow totalizers management.



INFO - VLW90M info menu.



DISPLAY.

7.3 - VLW90M turning on and system initialization

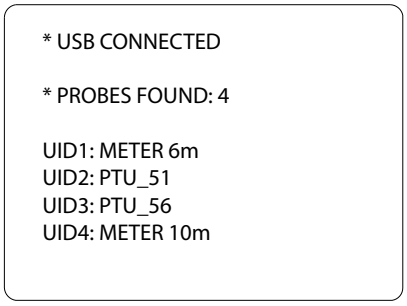
At power on, VLW90M start automatically the following system procedures:

1) Firmware loading for the VLW90M unit operating.
   A green bar is displayed to indicate the initialization procedure progress.

2) Searching for SGM LEKTRA ultrasonic sensors connected via MODBUS RTU communication port (RS485).
   The following information is displayed:

   a) ***** Probes Found: 4 ; shows the ultrasonic sensors number connected, with the properly configured UID address.

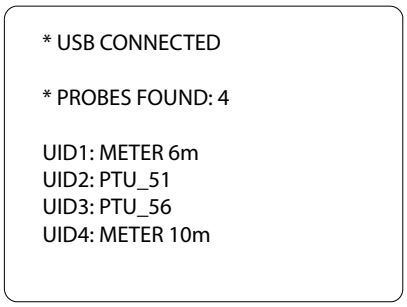
   b) UID1.....UID4 ; showing the measuring sensor model with its UID address. In the example shown, 4 sensors are identified with their model and UID address.

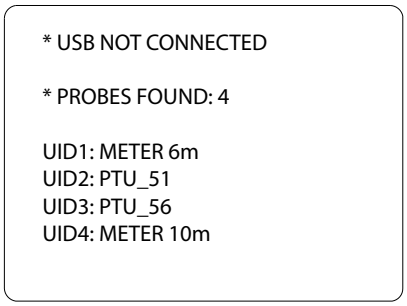


3) Searching for data logger Pen Drive connected to the USB port.
   The following information is displayed:

   a) ***** USB CONNECTED; shows that a FAT32 formatted Pen Drive is connected to the USB port and the datalogger function is automatically enabled.

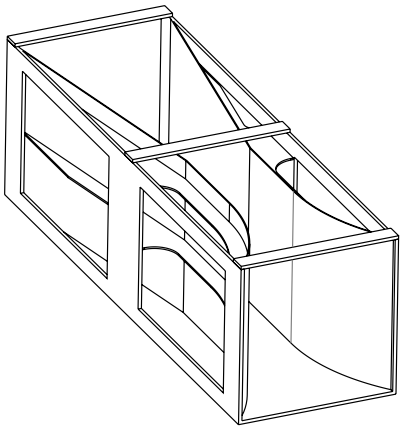
   b) ***** USB NOT CONNECTED; shows that no Pen Drive is connected to the USB port, or that the pen drive connected to the USB port is not FAT32 formatted; In this case, connect the Pen Drive to a PC or notebook, and format it by selecting the “FAT32” option in “File System”. After is possible to connect the Pen Drive following the procedure described in Chapter 15.





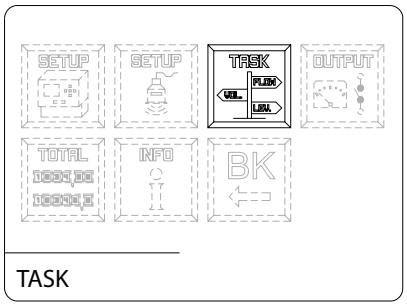
8-OPEN CHANNELS FLOW MEASUREMENT SET UP GUIDES

8.1 - SGM VENTURI STD prefabricated channels configuration

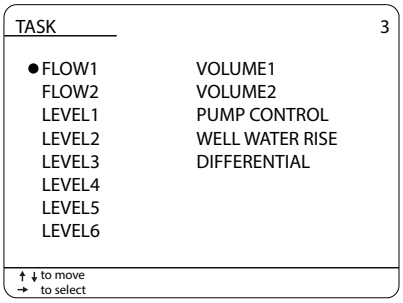


SGM-LEKTRA developed in collaboration with Pavia University Hydraulics Institute a venturi channels family called “SGM VENTURI STD”.
These primary device are Venturi channels with a flat bottom and they are suitable to be installed in pre-existing rectangular channels.
The SGM VENTURI STD are suitable for use in irrigation systems, water treatment, industrial wastewater, for sewage sludge and for any murky waters; the flat bottom without protrusions has a self-cleaning effect that makes it difficult to debris deposit.
SGM VENTURI STD can be easily incorporated into existing rectangular channels.
To configure the flow measurement with SGM VENTURI STD channels follow the procedure below:

With the arrow keys select the “TASK”  menu icon.
Confirm the selection by pressing “ENTER”.

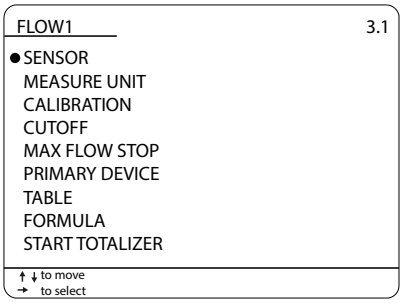


Press “RIGHT” to access the submenu “FLOW1” or “FLOW2”, is possible to configure up to 2 flow measurements.

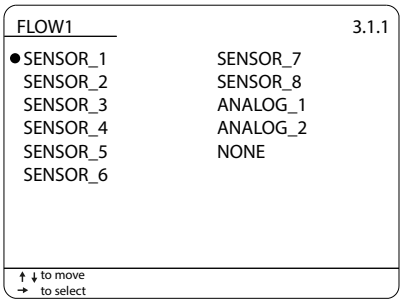


8.1.1 - SENSOR

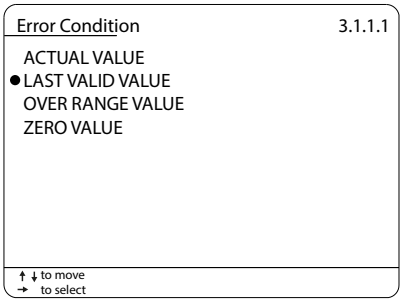
Press “RIGHT” to select “SENSOR”.



Select the SENSOR_x installed on channel with “UP” or “DOWN”.
The sensor UID address identifies the sensor number:
ex. sensor with UID 1 address = SENSOR_1, etc.
Press “RIGHT” to confirm.

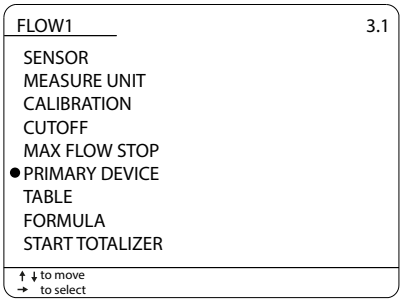


Press “DOWN” to select the measure condition in error state.
Press to “RIGHT” confirm.

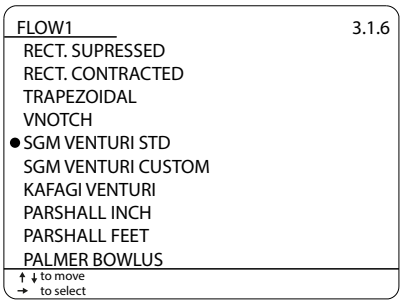


8.1.2 - PRIMARY DEVICE

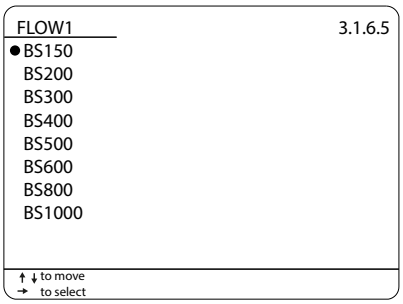
Press “DOWN” to select “PRIMARY DEVICE” and press “RIGHT” to confirm.



Press “DOWN” to select “SGM VENTURI STD” and press “RIGHT” to confirm.

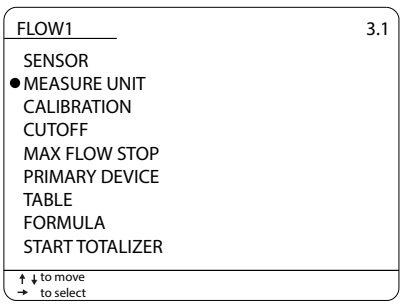


Use the “UP” or “DOWN” to select the model. Confirm selection with “RIGHT”.

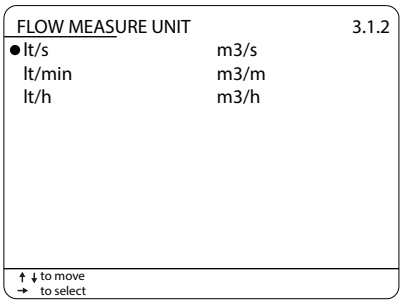


8.1.3 - MEASURE UNIT

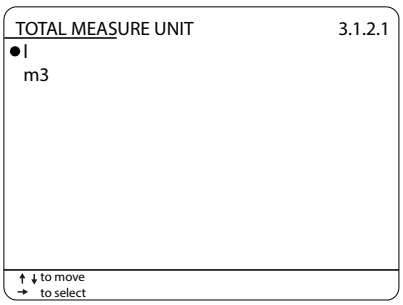
Press “DOWN” to select “MEASURE UNIT” and press “RIGHT” to confirm.



Press “UP” or “DOWN” to select the flow rate measure unit and press “RIGHT” to confirm.

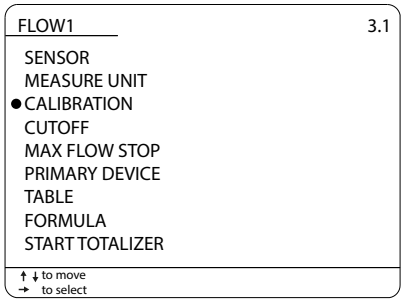


Press “UP” or “DOWN” to select the totalizer measure unit and press “RIGHT” to confirm.

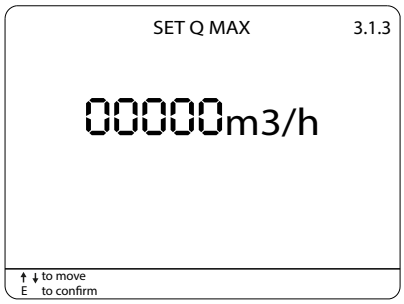


8.1.4 CALIBRATION

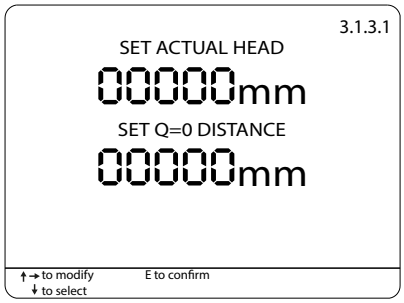
Press “DOWN” to select “CALIBRATION” and press “RIGHT” to confirm.



“MAX Q” is the threshold for Max flow beyond which the tot. does not increase.
Set the value and confirm with “ENTER”.
Disabled function with “0” threshold value.



Enter the actual head or the “Q=0”distance in mm .
Press “DOWN” to select the measure to be set.
Move the cursor with “RIGHT” and press “UP” to change the digit.
Confirm with “ENTER”.
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).
Alternatively, can directly be entered the “Q=0” empty distance.
In fig.1 the example to correctly detect the “ACTUAL HEAD” measure.
It is recommended to use the “ACTUAL HEAD” system with the zero flow condition (no flow: see fig.2), because in doing so the “ACTUAL HEAD” or “Q=0” manually measurement distance errors are avoided.
“ACTUAL HEAD” set to “0” is enough to ensure the correct calibration.



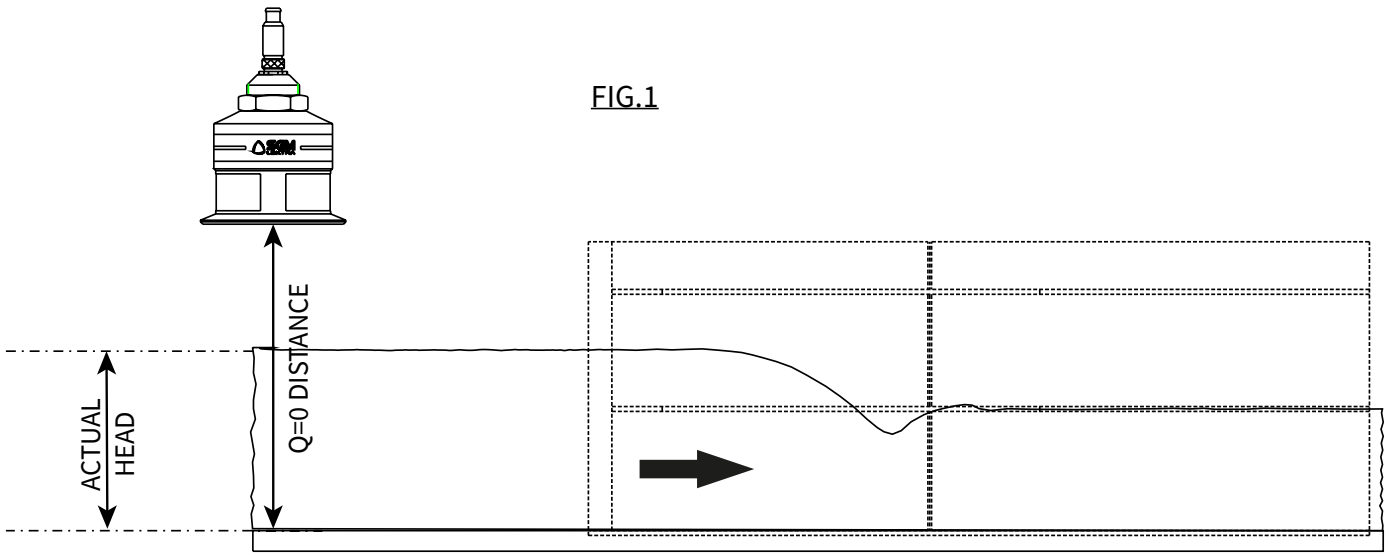


FIG.1

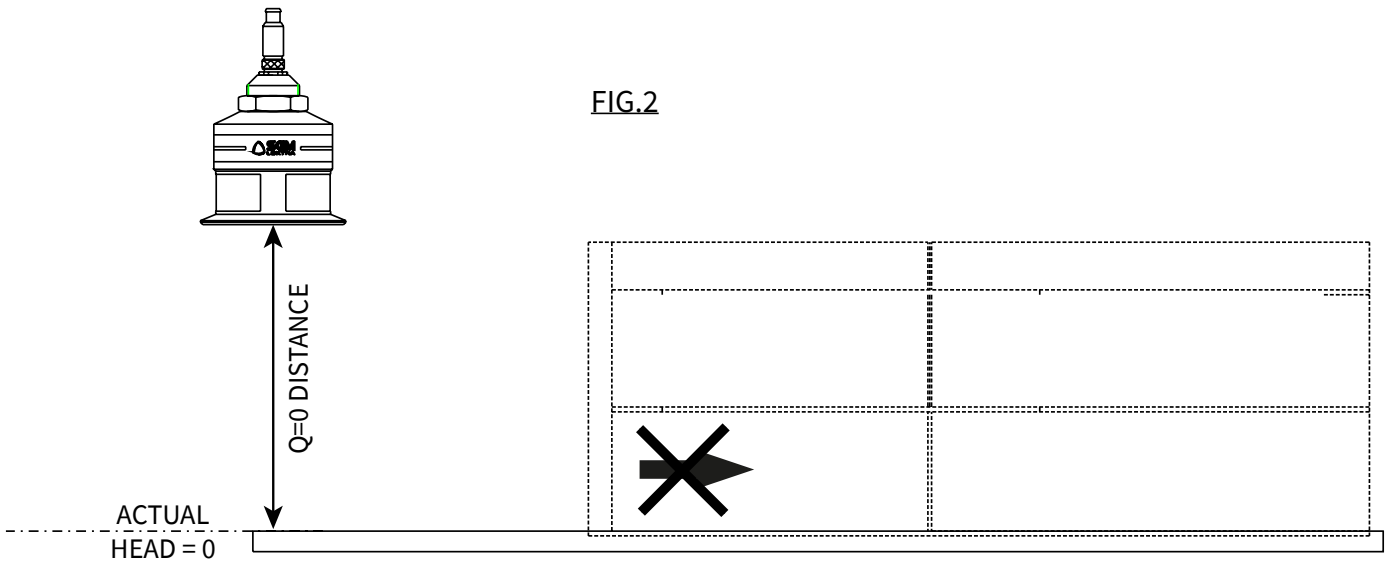
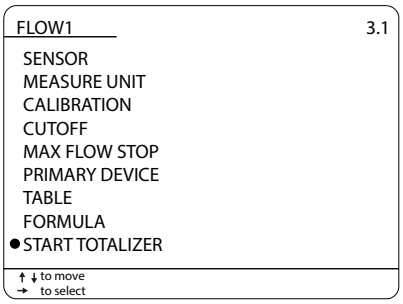


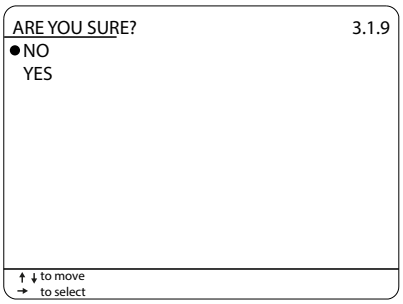
FIG.2

8.1.5 - START TOTALIZER

Press “DOWN” to select “START TOTALIZER” and confirm with “RIGHT”.
Takes to start the totalizer volume flow.



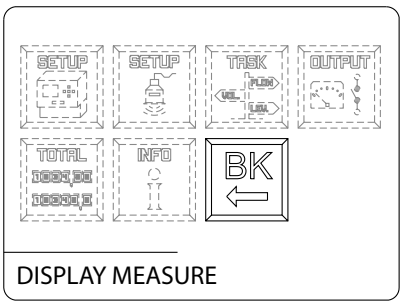
Start the flow totalizer only after have completed the flow measurement configuration, including head calibration, select “YES” and press “RIGHT” to start the flow totalizer.



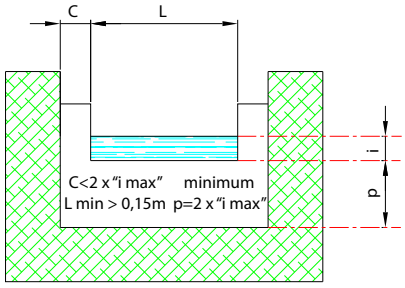
Press 2 times “LEFT” to return to the main menu.

Select 

and press “ENTER” to return to “RUN” mode.

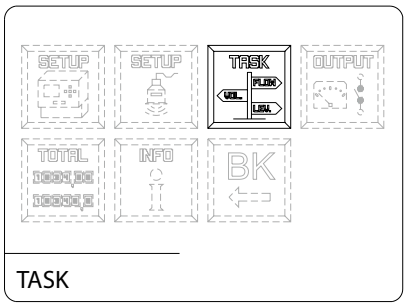


8.2 - Constriction rectangular weir (Francis) configuration

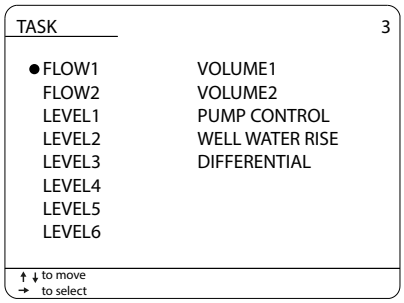


To configure the flow measurement with rectangular weir (Francis) follow the procedure below:

With the arrow keys select the "TASK" menu icon.
Confirm the selection by pressing "ENTER".

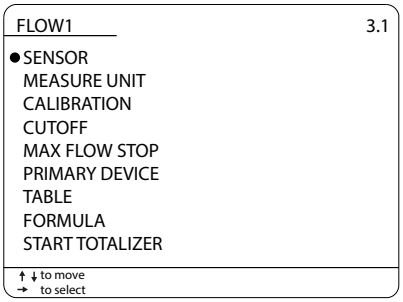


Press "RIGHT" to access the submenu "FLOW1" or "FLOW2", is possible to configure up to 2 flow measurements.

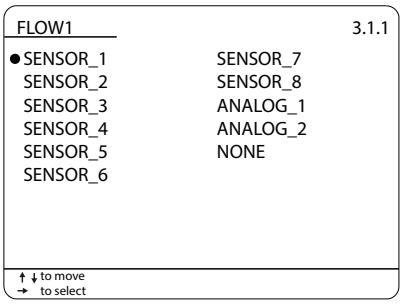


8.2.1 - SENSOR

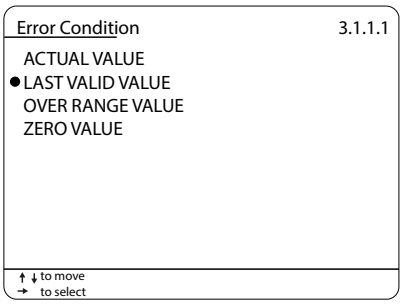
Press “RIGHT” to select “SENSOR”.



Select the SENSOR_x installed on channel with “UP” or “DOWN”.
The sensor UID address identifies the sensor number:
ex. sensor with UID 1 address = SENSOR_1, etc.
Press “RIGHT” to confirm.

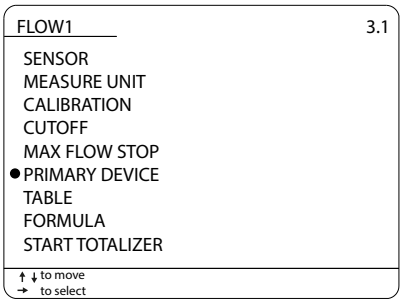


Press “DOWN” to select the measure condition in error state.
Press to “RIGHT” confirm.

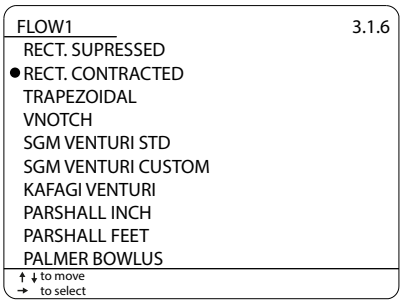


8.2.2 - PRIMARY DEVICE

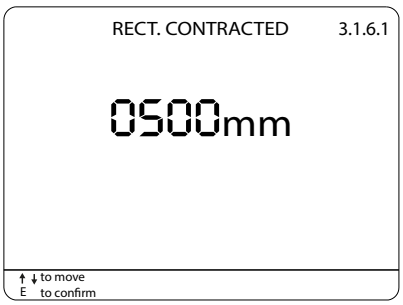
Press “DOWN” to select “PRIMARY DEVICE” and press “RIGHT” to confirm.



Press “DOWN” to select “RECT. CONTRACTED” and press “RIGHT” to confirm.

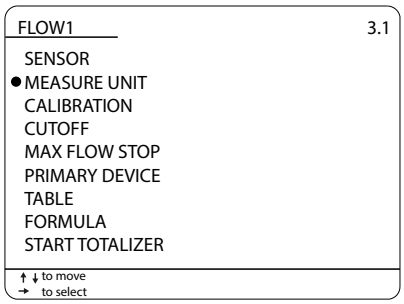


Enter the “L” dimension in mm. Move the cursor with “RIGHT”,
and press “UP” to change the digit.
Press “ENTER” to confirm.

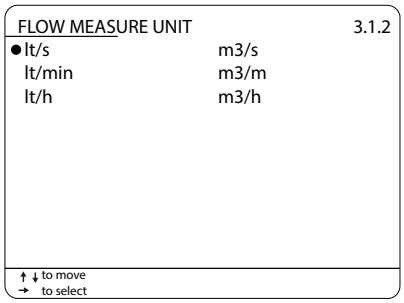


8.2.3 - MEASURE UNIT

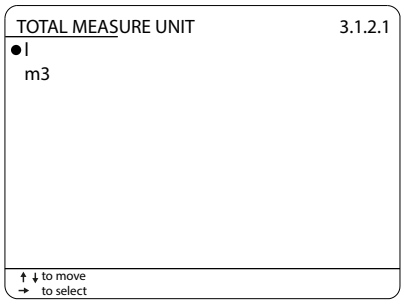
Press “DOWN” to select “MEASURE UNIT” and press “RIGHT” to confirm.



Press “UP” or “DOWN” to select the flow rate measure unit and press “RIGHT” to confirm.

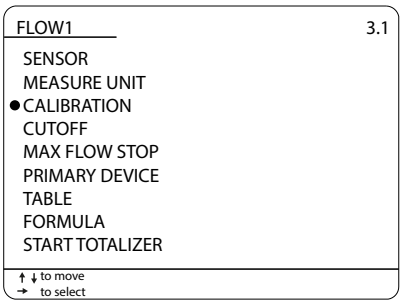


Press “UP” or “DOWN” to select the totalizer measure unit and press “RIGHT” to confirm.

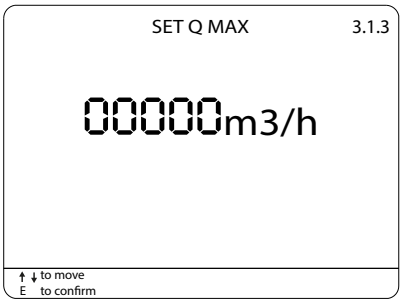


8.2.4 - CALIBRATION

Press “DOWN” to select “CALIBRATION” and press “RIGHT” to confirm.



“MAX Q” is the threshold for Max flow beyond which the tot. does not increase.
Set the value and confirm with “ENTER”.
Disabled function with “0” threshold value.



Enter the actual head or the “Q=0”distance in mm .
Press “DOWN” to select the measure to be set.
Move the cursor with “RIGHT” and press “UP” to change the digit.
Confirm with “ENTER”.
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).
Alternatively, can directly be entered the “Q=0” empty distance.
In fig.3 the example to correctly detect the “ACTUAL HEAD” measure.
It is recommended to use the “ACTUAL HEAD” system with the zero flow condition (no flow: see fig.4), because in doing so the “ACTUAL HEAD” or “Q=0” manually measurement distance errors are avoided.
“ACTUAL HEAD” set to “0” is enough to ensure the correct calibration.

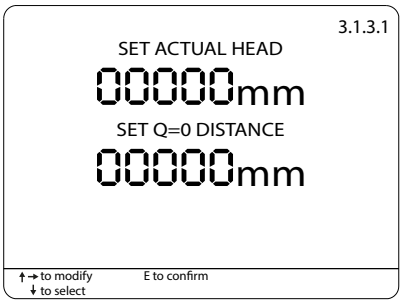


FIG.3

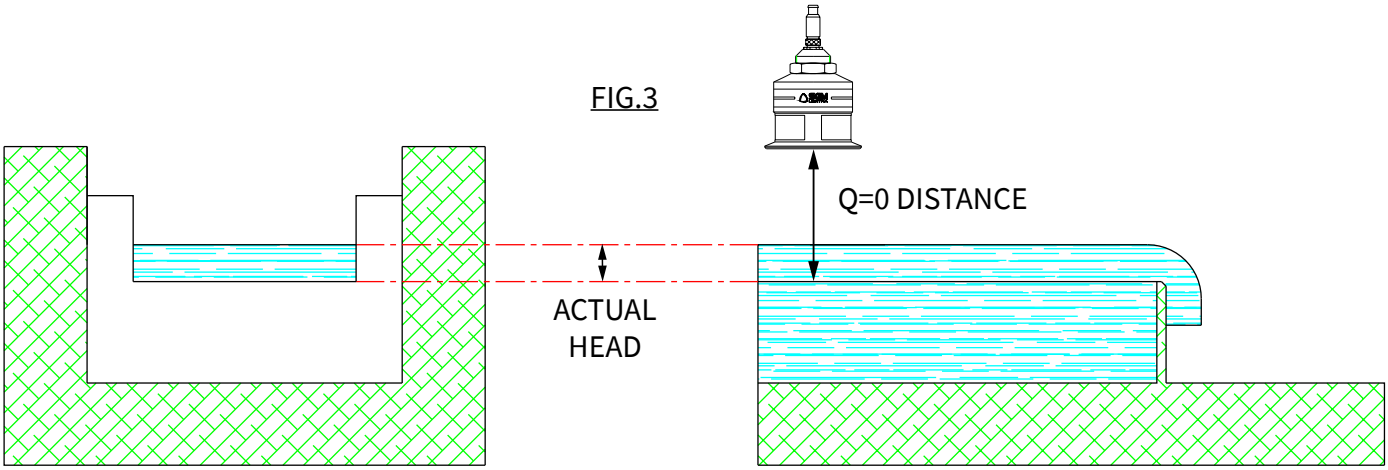
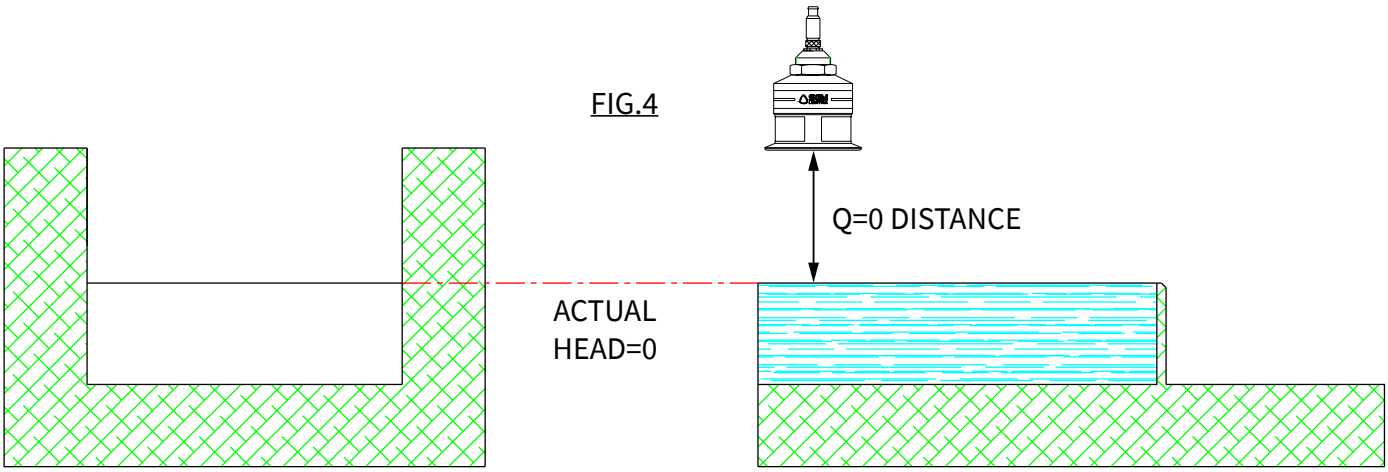
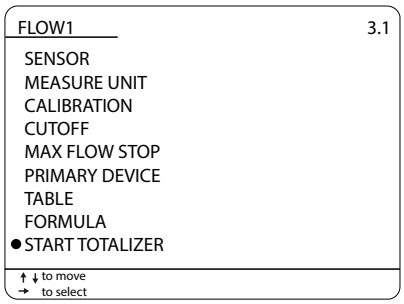


FIG.4

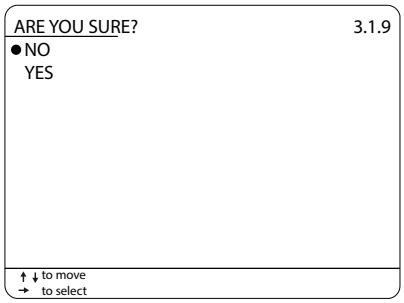


8.2.5 - START TOTALIZER

Press “DOWN” to select “START TOTALIZER” and confirm with “RIGHT”.
Takes to start the totalizer volume flow.



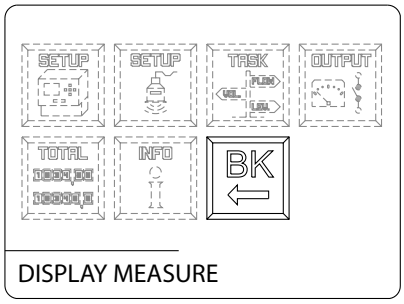
Start the flow totalizer only after have completed the flow measurement configuration, including head calibration, select “YES” and press “RIGHT” to start the flow totalizer.



Press 2 times “LEFT” to return to the main menu.

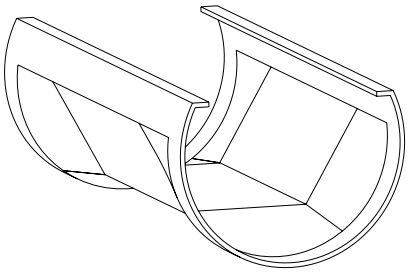
Select 

and press “ENTER” to return to “RUN” mode.

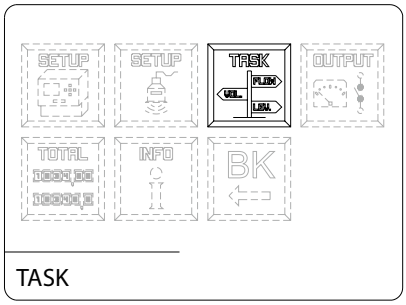


8.3 - SGM LEKTRA “PALMER BOWLUS” prefabricated channels configuration

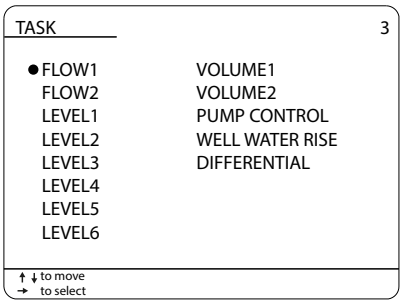
The Palmer Bowlus flume is usually used in underground pipes with manholes for inspection, even if its size made it interesting for flow monitoring in many kinds of channels.
To configure the flow measurement with SGM LEKTRA “PALMER BOWLUS” prefabricated channels follow the procedure below:



With the arrow keys select the “TASK”  menu icon.
Confirm the selection by pressing “ENTER”.

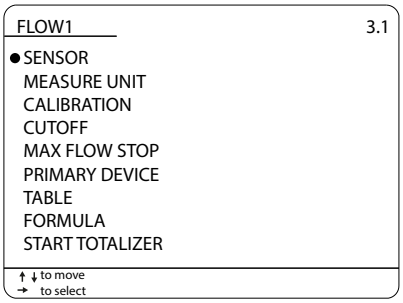


Press “RIGHT” to access the submenu “FLOW1” or “FLOW2”, is possible to configure up to 2 flow measurements.

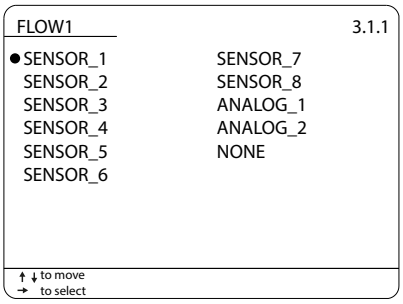


8.3.1 - SENSOR

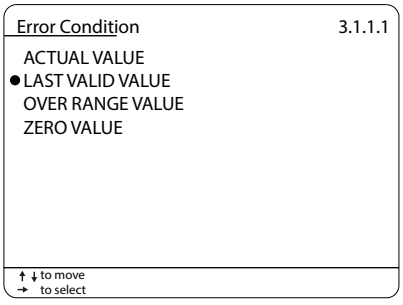
Press “RIGHT” to select “SENSOR”.



Select the SENSOR_x installed on channel with “UP” or “DOWN”.
The sensor UID address identifies the sensor number:
ex. sensor with UID 1 address = SENSOR_1, etc.
Press “RIGHT” to confirm.

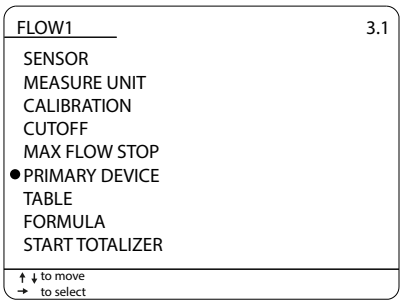


Press “DOWN” to select the measure condition in error state.
Press to “RIGHT” confirm.

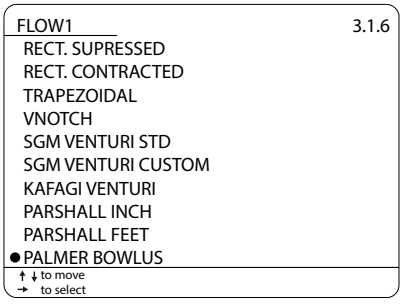


8.3.2 - PRIMARY DEVICE

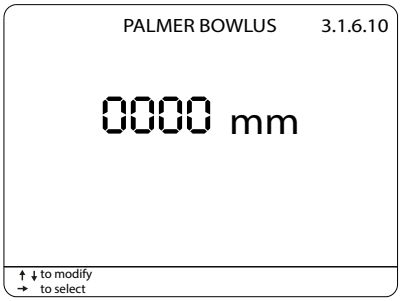
Press “DOWN” to select “PRIMARY DEVICE” and press “RIGHT” to confirm.



Press “DOWN” to select “PALMER BOWLUS” and press “RIGHT” to confirm.

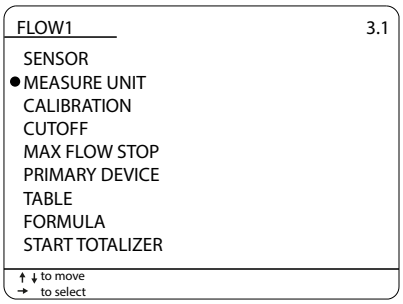


Enter the inner diameter of the pipe were the Palmer Bowlus is installed.
Move the cursor with “RIGHT”, and press “UP” to change the digit.
Press “ENTER” to confirm.

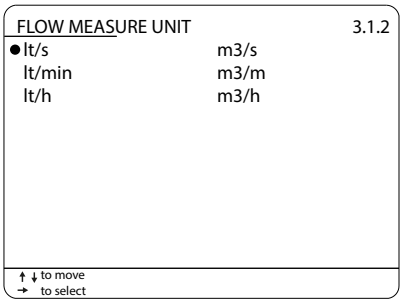


8.3.3 - MEASURE UNIT

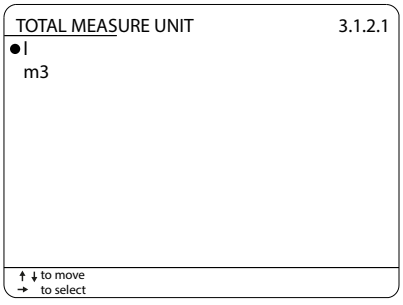
Press “DOWN” to select “MEASURE UNIT” and press “RIGHT” to confirm.



Press “UP” or “DOWN” to select the flow rate measure unit and press “RIGHT” to confirm.

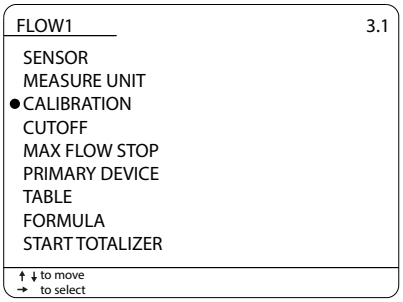


Press “UP” or “DOWN” to select the totalizer measure unit and press “RIGHT” to confirm.

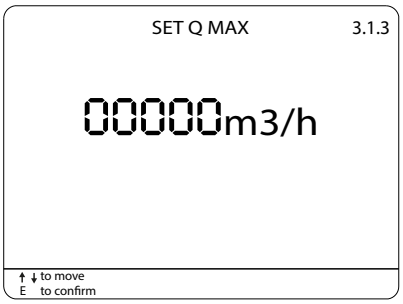


8.3.4 - CALIBRATION

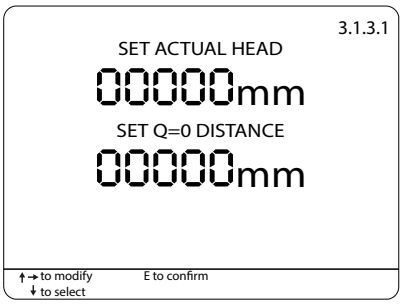
Press “DOWN” to select “CALIBRATION” and press “RIGHT” to confirm.



“MAX Q” is the threshold for Max flow beyond which the tot. does not increase.
Set the value and confirm with “ENTER”.
Disabled function with “0” threshold value.



Enter the actual head or the “Q=0”distance in mm .
Press “DOWN” to select the measure to be set.
Move the cursor with “RIGHT” and press “UP” to change the digit.
Confirm with “ENTER”.
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).
Alternatively, can directly be entered the “Q=0” empty distance.
In fig.5 the example to correctly detect the “ACTUAL HEAD” measure.
It is recommended to use the “ACTUAL HEAD” system with the zero flow condition (no flow: see fig.6), because in doing so the “ACTUAL HEAD” or “Q=0” manually measurement distance errors are avoided.
“ACTUAL HEAD” set to “0” is enough to ensure the correct calibration.



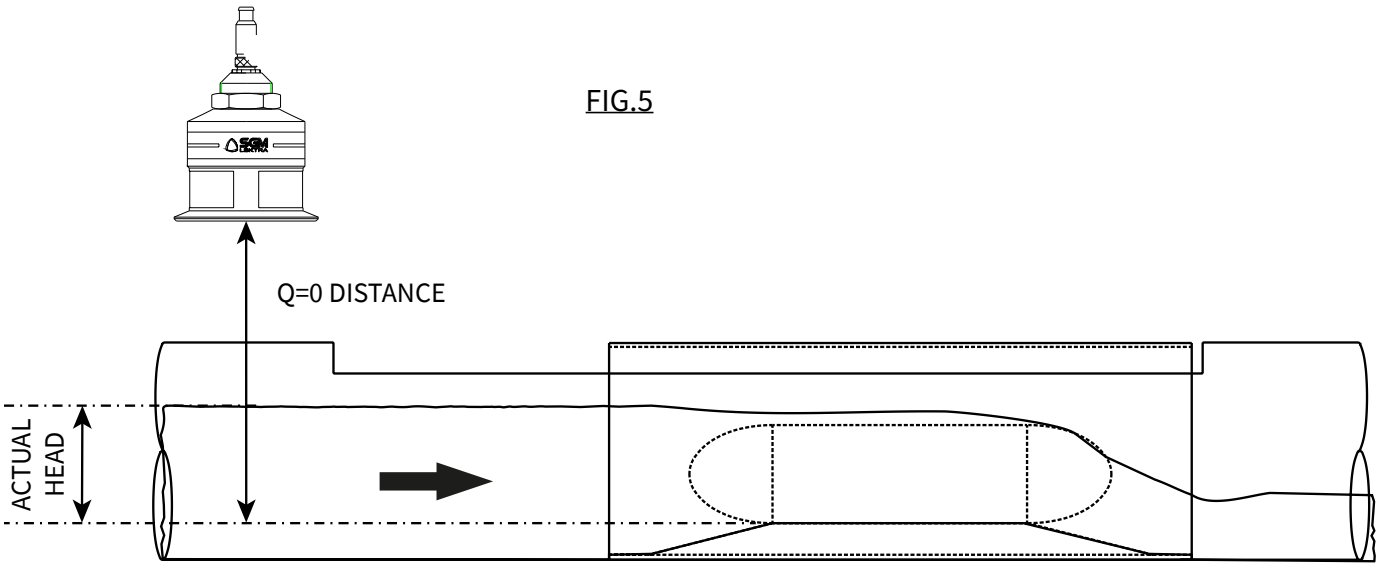


FIG.5

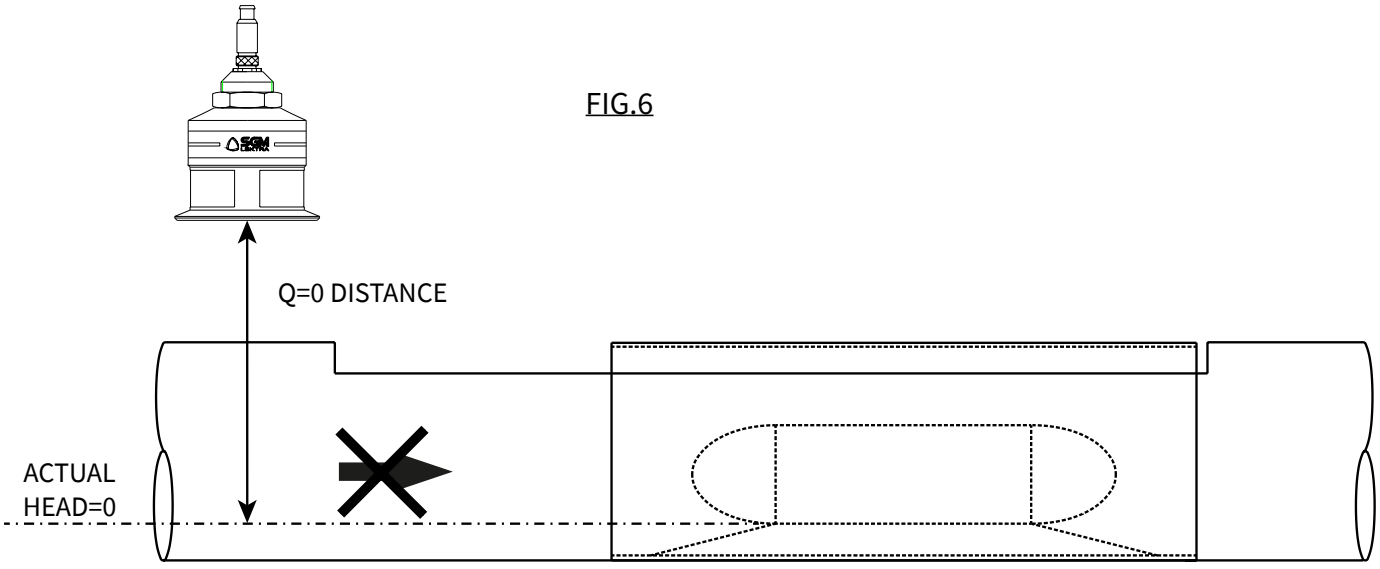
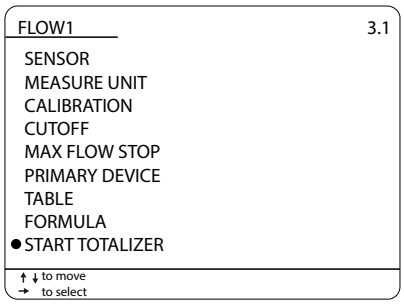


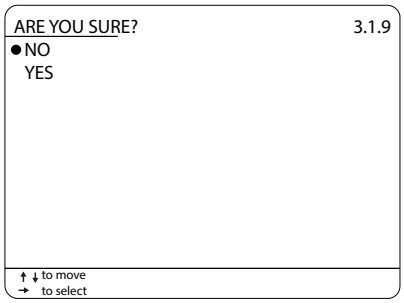
FIG.6

8.3.5 - START TOTALIZER

Press “DOWN” to select “START TOTALIZER” and confirm with “RIGHT”.
Takes to start the totalizer volume flow.



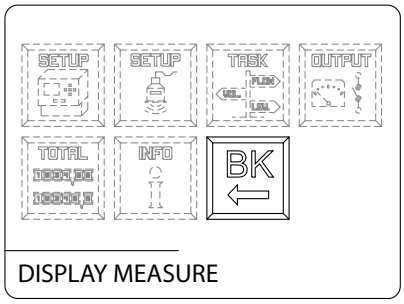
Start the flow totalizer only after have completed the flow measurement configuration, including head calibration, select “YES” and press “RIGHT” to start the flow totalizer.



Press 2 times “LEFT” to return to the main menu.

Select 

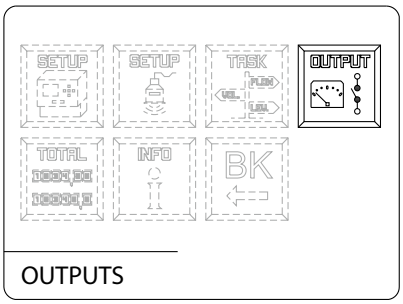
and press “ENTER” to return to “RUN” mode.



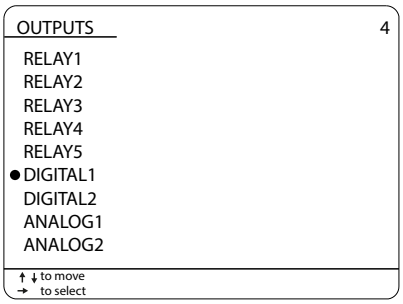
8.4 - Volume pulse repetition configuration for remote totalizer

The VLW90M has 2 configurable digital open collector outputs for flow totalizer pulse repetition.

With the arrow keys select the “OUTPUTS”  menu icon.
Confirm the selection by pressing “ENTER”.

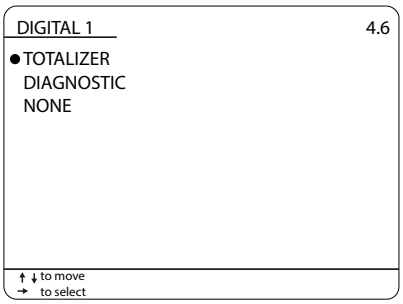


Press “UP” o “DOWN” to select “DIGITAL1” or “DIGITAL1”.
Press “RIGHT” to confirm.

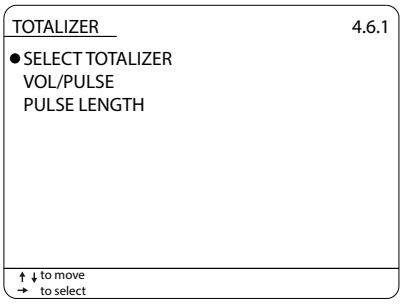


8.4.1 - TOTALIZER

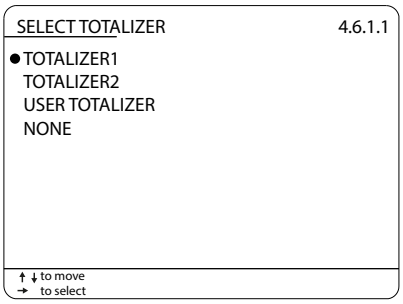
Press “RIGHT” to select “TOTALIZER”.



Press “RIGHT” to select “SELECT TOTALIZER”.

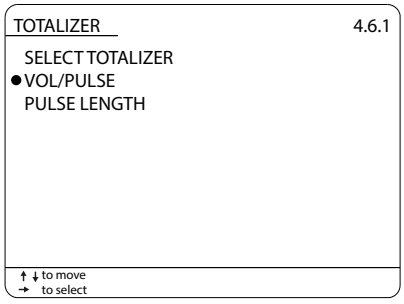


Select the totalizer to be associated with the digital output and confirm the selection with “RIGHT”.

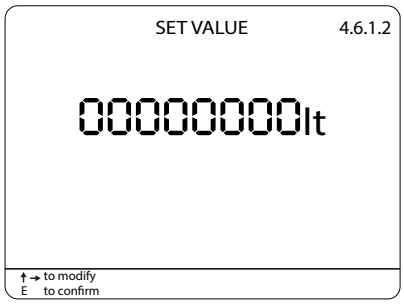


8.4.2 - VOLUME/PULSE

Select with “DOWN “VOLUME/PULSE”.
Press “RIGHT” to confirm.

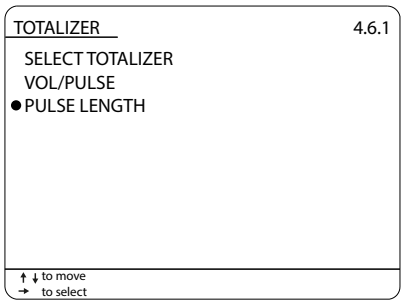


Set the single pulse value in liters. Move the cursor with “RIGHT” and “UP” to change the digit.
Confirm with “ENTER”.

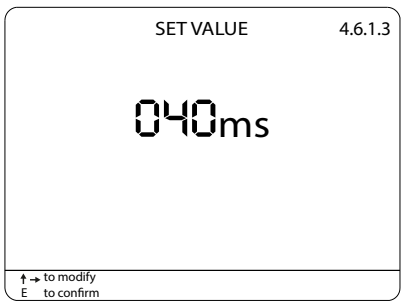


8.4.3 - PULSE LENGTH

Select with “DOWN” “PULSE LENGTH”.
Press “RIGHT” to confirm.



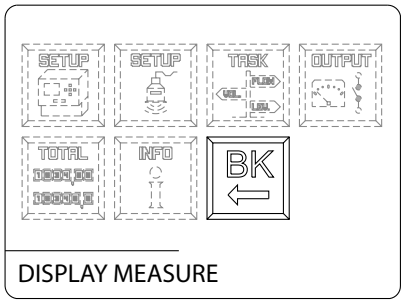
Set the pulse length value in ms.
Move the cursor with “RIGHT” and “UP” to change the digit.
Confirm with “ENTER”.



Press 2 times “LEFT” to return to the main menu.

Select 

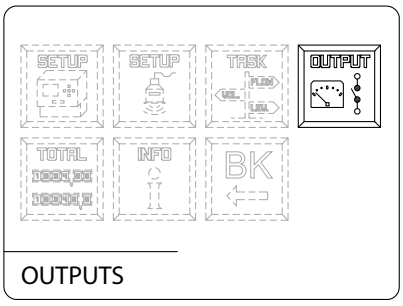
and press “ENTER” to return to “RUN” mode.



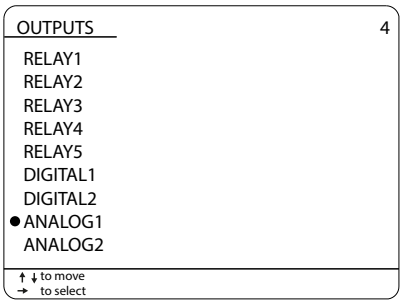
8.5 - 4÷20mA output configuration for flow rate transmission

The VLW90M has 2 configurable analog outputs 20mA for the flow measurement remote transmission..

With the arrow keys select the “OUTPUTS”  menu icon.
Confirm the selection by pressing “ENTER”.

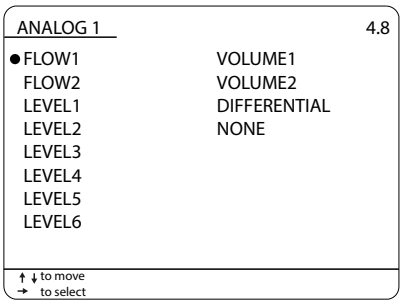


Press “UP” o “DOWN” to select “ANALOG1” or “ANALOG2”.
Press “RIGHT” to confirm.

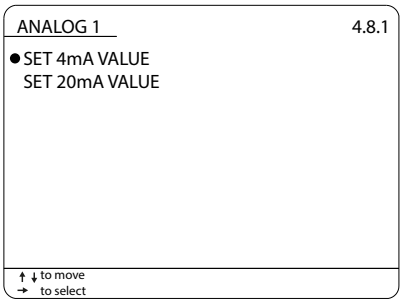


8.5.1 - FLOW

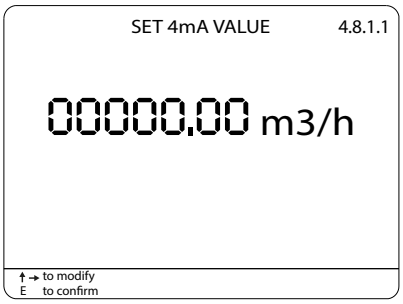
Press “UP” or “DOWN” to select “FLOW1” or “FLOW2”. Confirm with “RIGHT”.



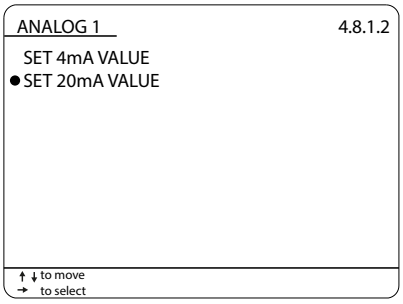
To set beginning of scale, press “RIGHT” to select “SET 4mA VALUE”.

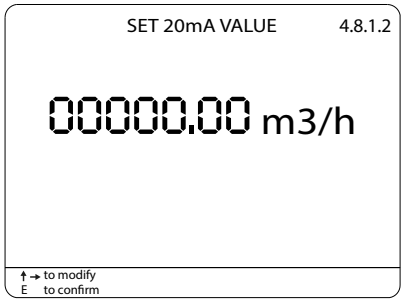


Set the flow rate value corresponding to the 4mA output.
Confirm with “ENTER”.
Measure unit is displayed according to the setting in par. 8.1.3, 8.2.3 o 8.3.3

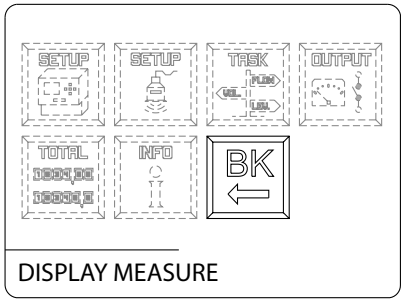


To set end of scale, press “DOWN” to select “SET 20mA VALUE”.
Confirm with “RIGHT”.





Set the flow rate value corresponding to the 20mA output.
Confirm with “ENTER”.
Measure unit is displayed according to the setting in par. 8.1.3, 8.2.3 o 8.3.3

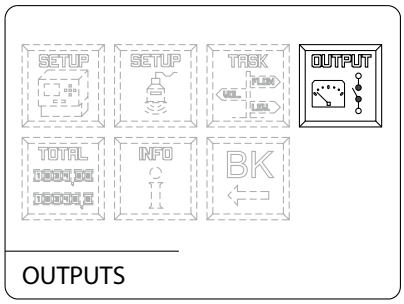


Press 2 times “LEFT” to return to the main menu.

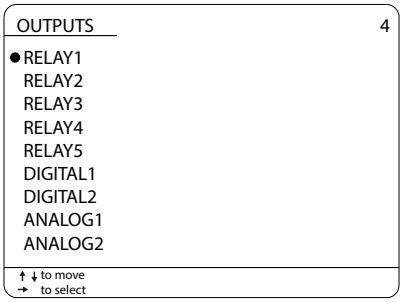
Select BK and press “ENTER” to return to “RUN” mode.

8.6 - Flow rate threshold relays configuration

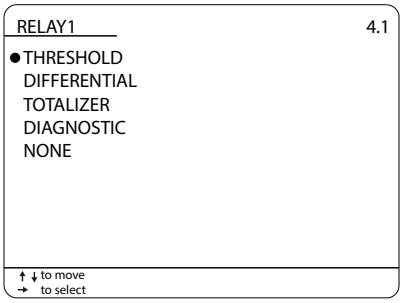
The VLW90M has 5 configurable relays for flow rate alarm thresholds.



With the arrow keys select the “OUTPUT” menu icon.
Confirm the selection by pressing “ENTER”.



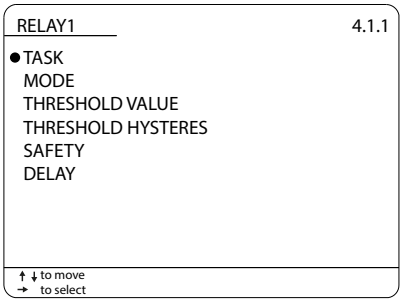
Press “UP” o “DOWN” to select “RELAY1”, or “RELAY2”, or “RELAY3”, or “RELAY4” or “RELAY5”.
Press “RIGHT” to confirm.



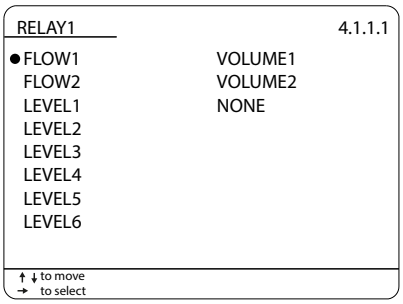
Press “RIGHT” to select “THRESHOLD”.

8.6.1 - TASK

Press “RIGHT” to select “TASK”.

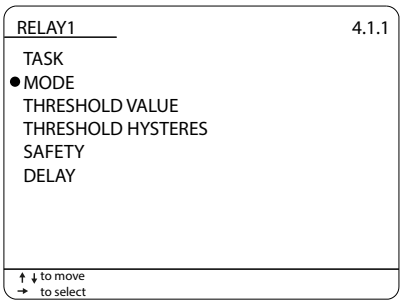


Select “FLOW1” or “FLOW2”.
Press “RIGHT” to confirm.

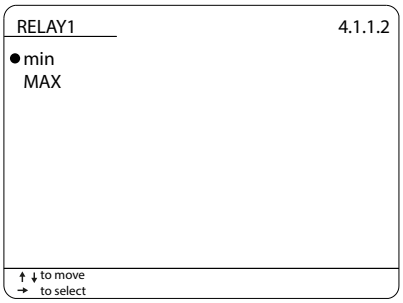


8.6.2 - MODE

Press “RIGHT” to select “MODE”.

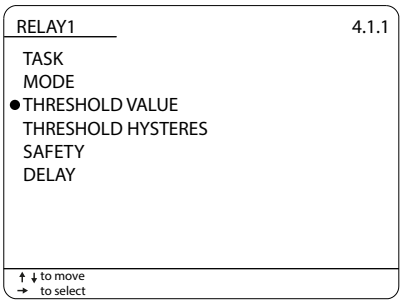


Select “min” for minimum flow alarm or “MAX” for maximum flow alarm.
Press “RIGHT” to confirm.

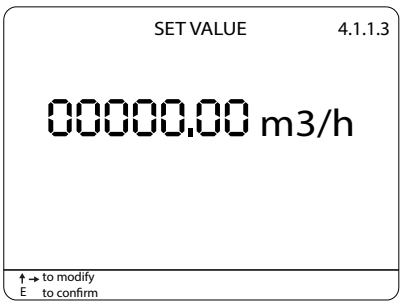


8.6.3 - THRESHOLD VALUE

Select “THRESHOLD VALUE” to set the relay switching point and press “RIGHT” to confirm.

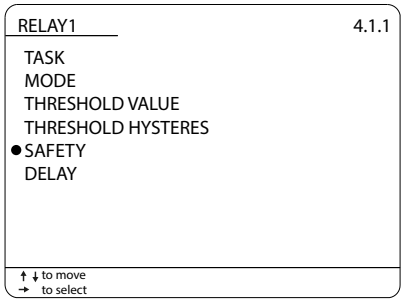


Set the flow threshold value. Move the cursor with “RIGHT” and “UP” to change the digit.
Confirm with “ENTER”.

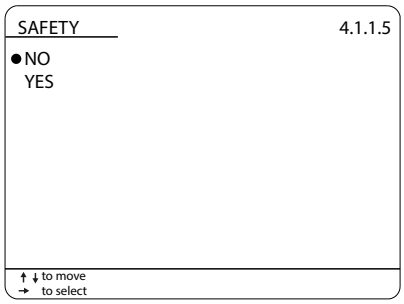


8.6.4 - SAFETY

To set the relay alarm condition status select “SAFETY” and confirm with “RIGHT”.



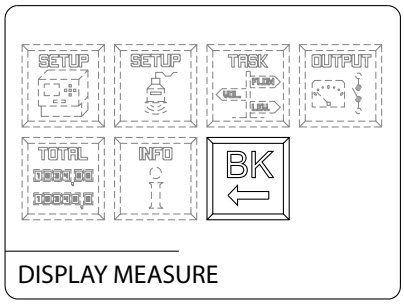
Select:
“YES” relay de-energized in alarm condition;
“NO” relay energized in alarm condition.
Press “RIGHT” to confirm.



Press 2 times “LEFT” to return to the main menu.

Select 

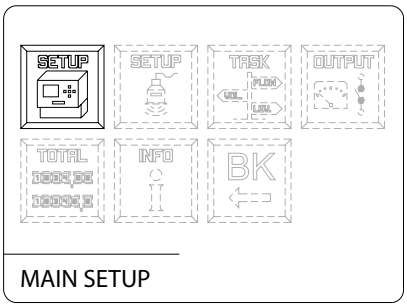
and press “ENTER” to return to “RUN” mode



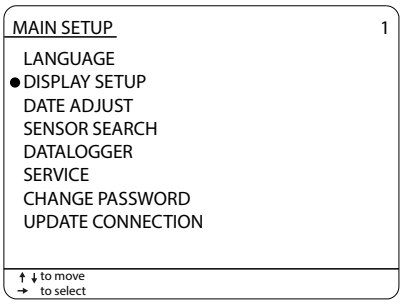
8.7 - Configuration of displayed measures

When the flow measurement function is activated the VLW90M automatically enables the display of the instantaneous flow rate, totalizer value, distance and head.
The flow values display deactivation or reactivation is possible in the “MAIN SETUP” menu.

With the arrow keys select the “MAIN SETUP”  menu icon.
Confirm the selection by pressing “ENTER” .

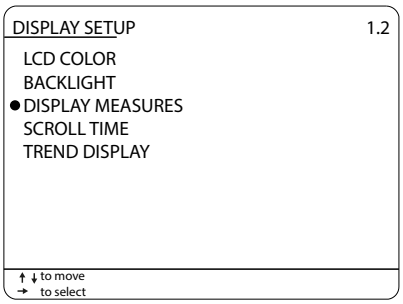


Press “UP” or “DOWN” to select “DISPLAY SETUP”.
Confirm with “RIGHT”.

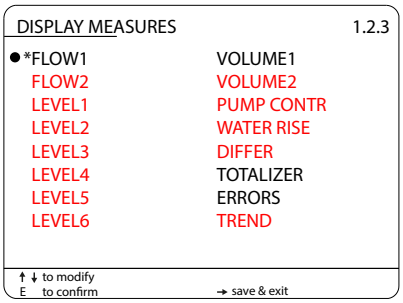


8.7.1 - DISPLAY MEASURES

Press “DOWN” to select “DISPLAY MEASURES” and confirm with “RIGHT”.

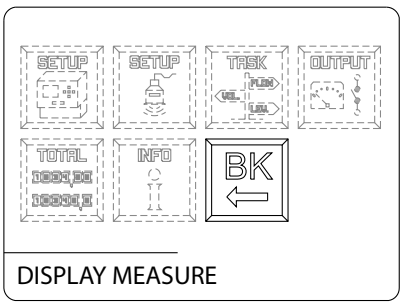


With the pointer to “FLOW1”, press “ENTER”, the ***** symbol will highlight the selection.
Press “RIGHT” to save and exit.
“FLOW2” is available only when active.



Press 2 times “LEFT” to return to the main menu.

Select  and press “ENTER” to return to “RUN” mode.



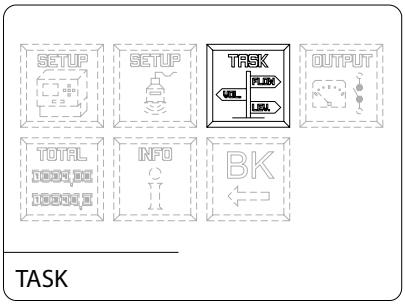
9-LEVEL MEASUREMENT SET UP GUIDES

9.1 - via MODBUS SGM LEKTRA ultrasonic transmitters configuration

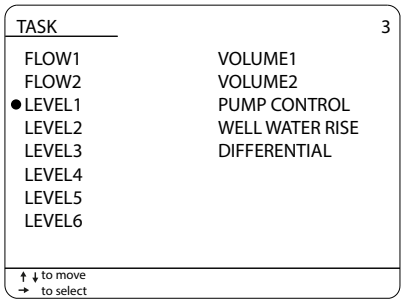
The use of SGM LEKTRA ultrasonic level transmitters, with MODBUS RTU communication protocol, allows the level measurement total control with the VLW90M unit.

To configure the level measurement with SGM LEKTRA ultrasonic transmitters follow the procedure below.

With the arrow keys select the “TASK”  menu icon.
Confirm the selection by pressing “ENTER”.

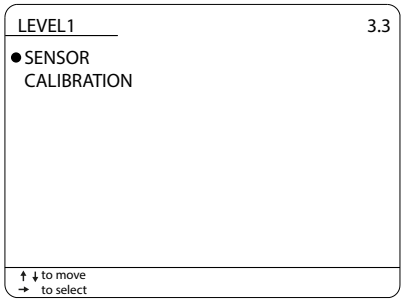


Press “RIGHT” to access the submenu “LEVEL1”, or “LEVEL2”, or “LEVEL3”, or “LEVEL4”, or “LEVEL5” or “LEVEL6”, is possible to configure up to 6 level measurements.

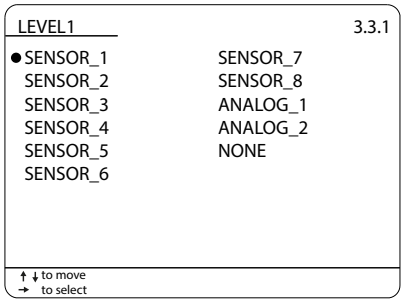


9.1.1 - SENSOR

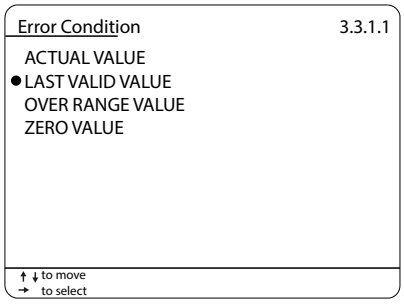
Press “RIGHT” to select “SENSOR”.



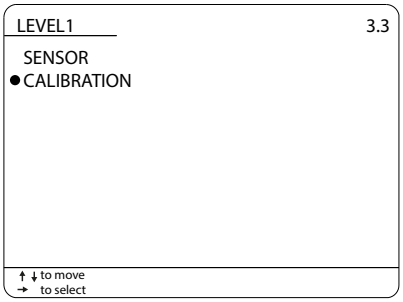
Select the SENSOR_x with “UP” or “DOWN”.
The sensor UID address identifies the sensor number:
ex. sensor with UID 1 address = SENSOR_1, etc.
Press “RIGHT” to confirm.



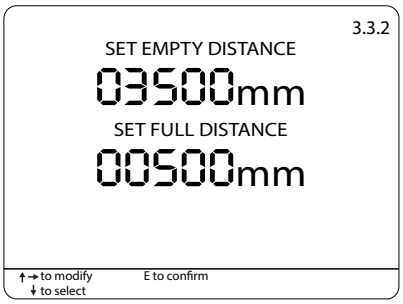
Press “DOWN” to select the measure condition in error state.
Press to “RIGHT” confirm.



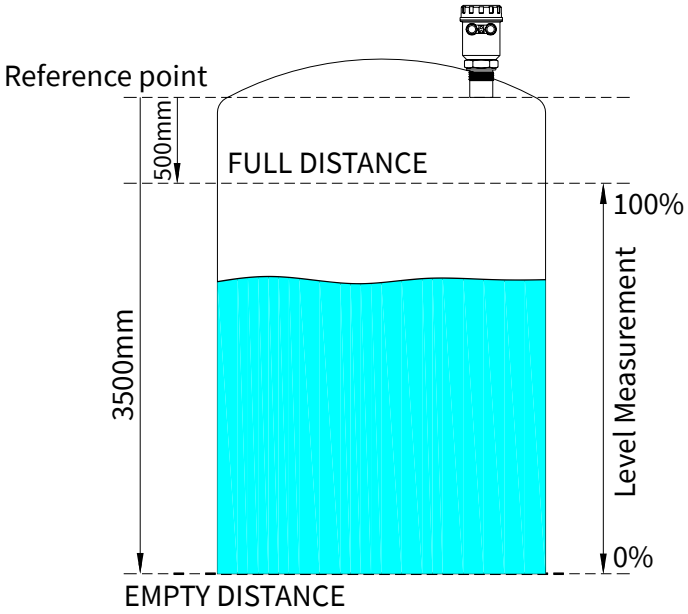
9.1.2 - CALIBRATION



Press “DOWN” to select “CALIBRATION” and press “RIGHT” to confirm.



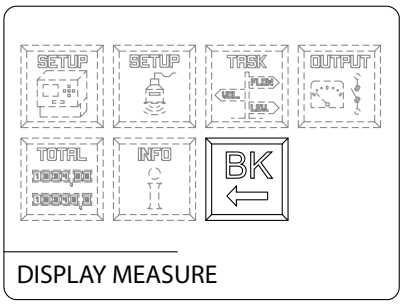
Enter the empty and full distance in mm.
Press “DOWN” to select the distance to be set.
Move the cursor with “RIGHT” and press “UP” to change the digit.
Confirm with “ENTER”.



Press 2 times “LEFT” to return to the main menu.

Select 

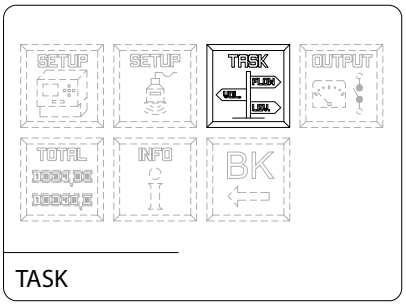
and press “ENTER” to return to “RUN” mode.



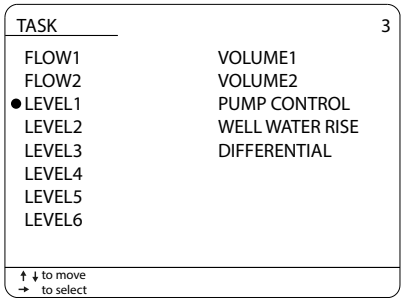
9.2 - 4÷20mA analog transmitter configuration

With the 2 VLW90M analog inputs is possible to control the measurement with any level sensor that transmits an 4÷20mA analog signal.
To configure the level measurement with 4÷20mA analog level transmitters follow the procedure below:

With the arrow keys select the “TASK” menu icon.
Confirm the selection by pressing “ENTER”.

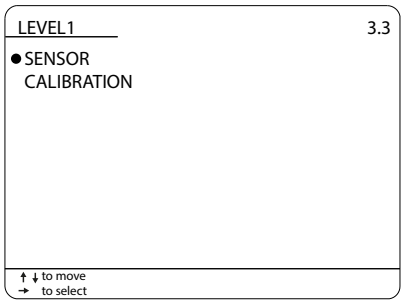


Press “RIGHT” to access the submenu “LEVEL1”, or “LEVEL2”, or “LEVEL3”, or “LEVEL4”, or “LEVEL5” or “LEVEL6”, is possible to configure up to 6 level measurements.

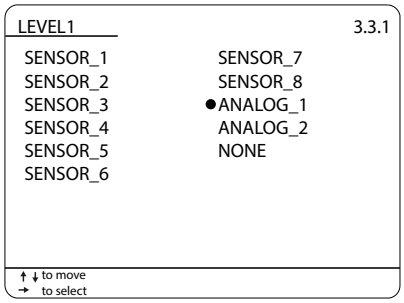


9.2.1 - SENSOR

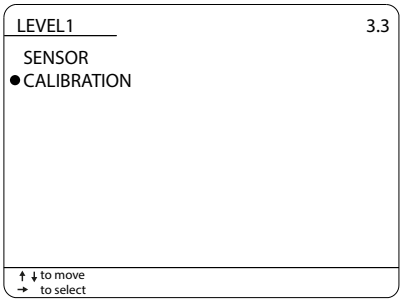
Press “RIGHT” to select “SENSOR”.



Select the ANALOG_x input with “UP” or “DOWN”.
ANALOG_1 is associated with the sensor connection to Analog Input Ch1 terminals; ANALOG_2 is associated with the sensor connection to Analog Input Ch2 terminals (see par.6.3.4/6.3.5).
Press “RIGHT” to confirm.

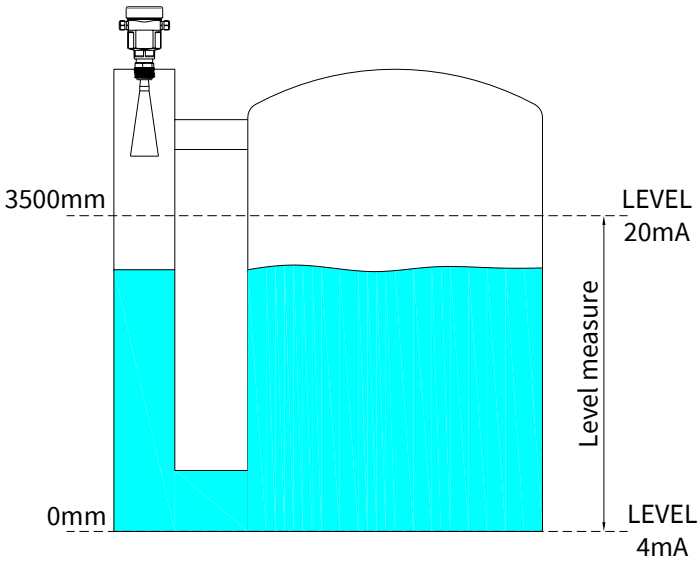


9.2.2 - CALIBRATION



Press “DOWN” to select “CALIBRATION” and press “RIGHT” to confirm.

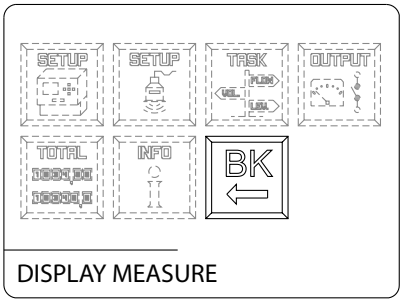
Enter the level value at 4mA and 20mA.
Press “DOWN” to select the distance to be set.
Move the cursor with “RIGHT” and press “UP” to change the digit.
Confirm with “ENTER”.



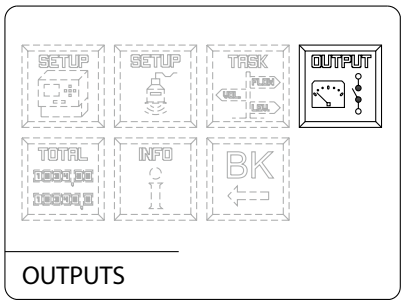
Press 2 times “LEFT” to return to the main menu.

Select 

and press “ENTER” to return to “RUN” mode.

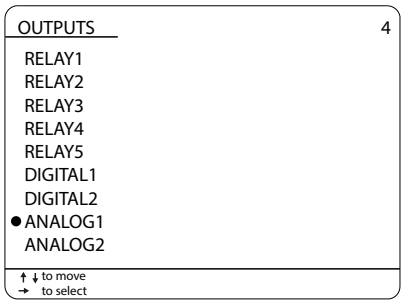


9.3 - 4÷20mA output config. for level measurement transmission to remote displays

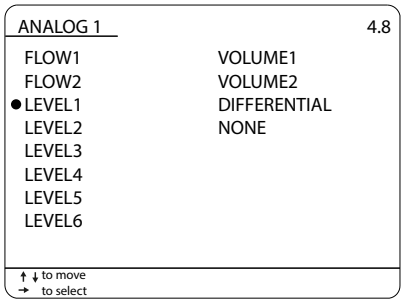


The VLW90M has 2 configurable 4÷20mA analog outputs for the level measurement remote transmission.

With the arrow keys select the “OUTPUTS” menu icon.
Confirm the selection by pressing “ENTER”.

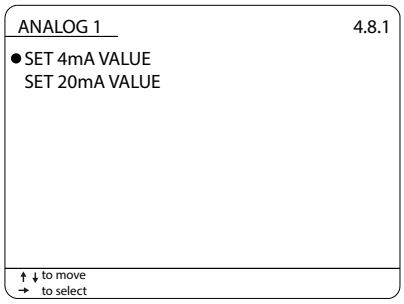


Press “UP” o “DOWN” to select “ANALOG1” or “ANALOG2”.
Press “RIGHT” to confirm.



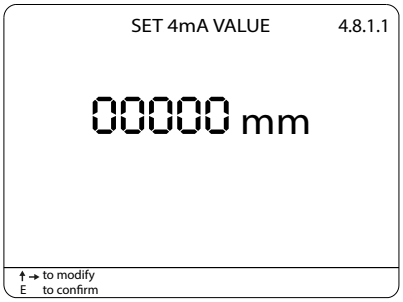
9.3.1 - LEVEL

Press “UP” or “DOWN” to select “LEVEL1”, or “LEVEL2”, or “LEVEL3”, or “LEVEL4”, or “LEVEL5” or “LEVEL6”.
Confirm with “RIGHT”.

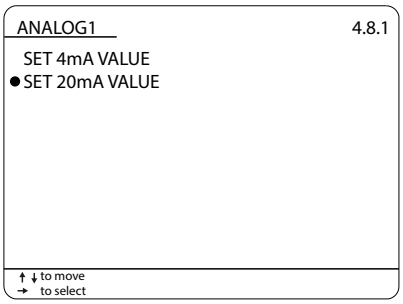


To set beginning of scale, press “RIGHT” to select “SET 4mA VALUE”.

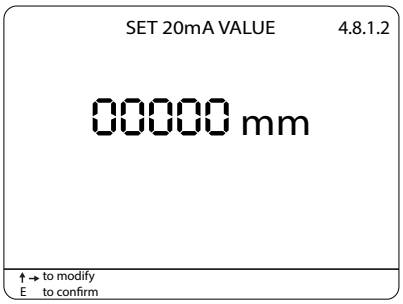
Set in mm the level value corresponding to the 4mA output.
Confirm with “ENTER”.



To set end of scale, press “DOWN” to select “SET 20mA VALUE”.
Confirm with “RIGHT”.

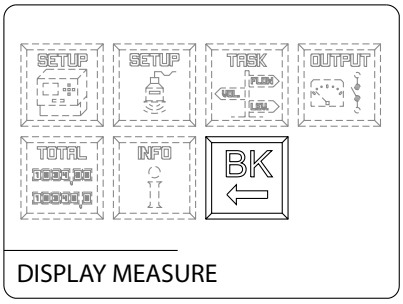


Set in mm the level value corresponding to the 20mA output.
Confirm with “ENTER”.



Press 2 times “LEFT” to return to the main menu.

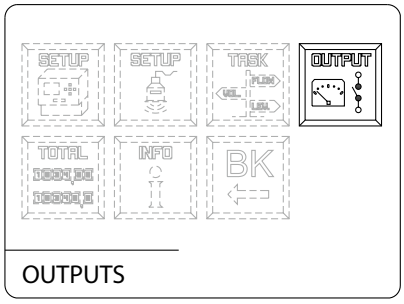
Select BK and press “ENTER” to return to “RUN” mode.



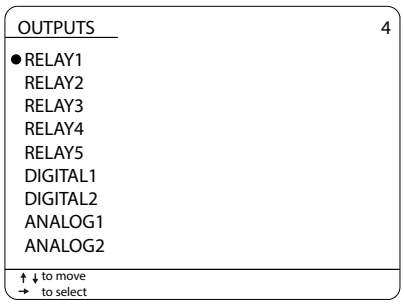
9.4 - Level threshold relays configuration

The VLW90M has 5 configurable relays for level alarm thresholds.

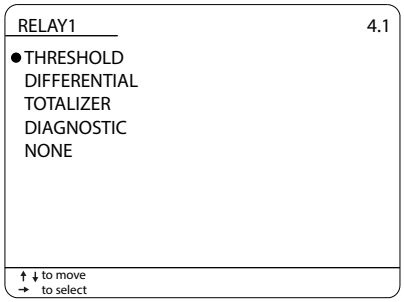
With the arrow keys select the “OUTPUTS”  menu icon.
Confirm the selection by pressing “ENTER”.



Press “UP” o “DOWN” to select “RELAY1”, or “RELAY2”, or “RELAY3”, or “RELAY4” or “RELAY5”.
Press “RIGHT” to confirm.

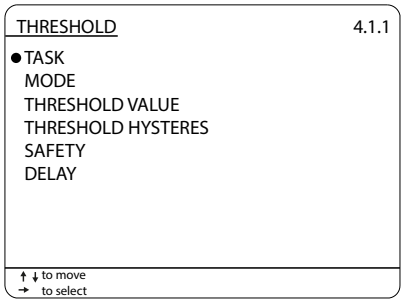


Press “RIGHT” to select “THRESHOLD”.

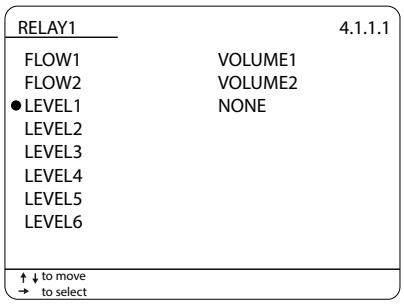


9.4.1 - TASK

Press “RIGHT” to select “TASK”.

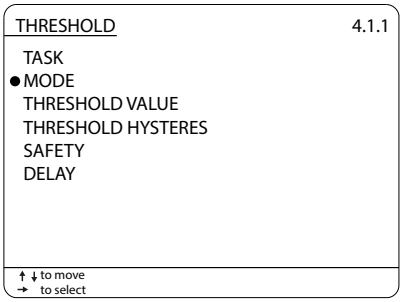


Select “LEVEL1”, or “LEVEL2”, or “LEVEL3”, or “LEVEL4”, or “LEVEL5” or “LEVEL6”.
Press “RIGHT” to confirm.

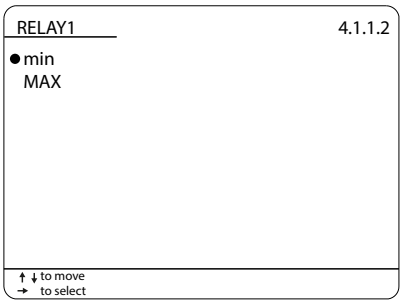


9.4.2 - MODE

Press “RIGHT” to select “MODE”.

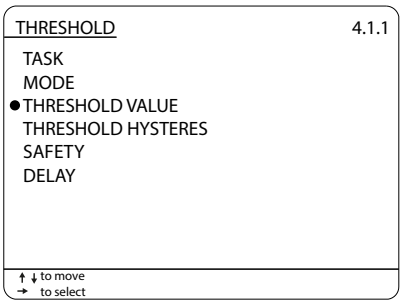


Select “min” for minimum level alarm or “MAX” for maximum level alarm.
Press “RIGHT” to confirm.

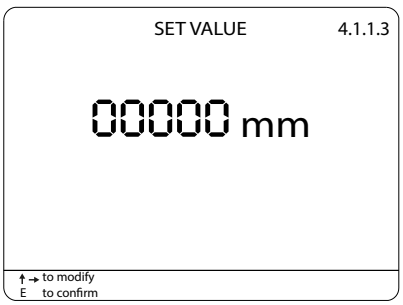


9.4.3 - THRESHOLD VALUE

Select “THRESHOLD VALUE” to set the relay switching point and press “RIGHT” to confirm.

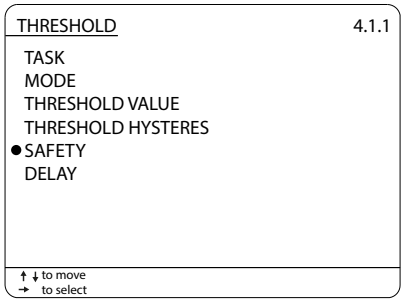


Set in mm the level threshold value. Move the cursor with “RIGHT” and “UP” to change the digit.
Confirm with “ENTER”.

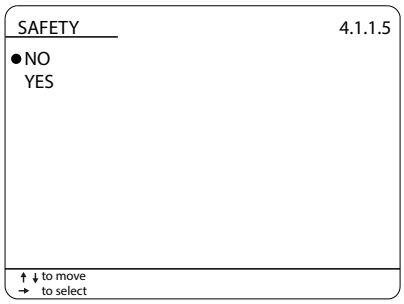


9.4.4 - SAFETY

To set the relay alarm condition status select “SAFETY” and confirm with “RIGHT”.



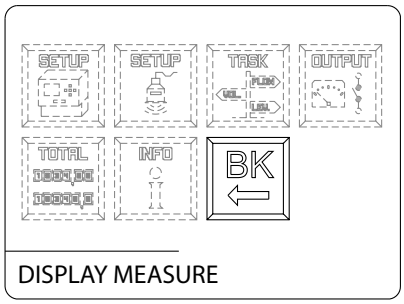
Select:
“YES” relay de-energized in alarm condition;
“NO” relay energized in alarm condition.
Press “RIGHT” to confirm.



Press 2 times “LEFT” to return to the main menu.

Select 

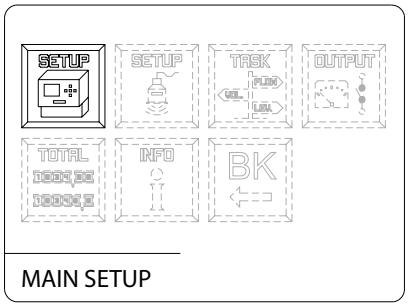
and press “ENTER” to return to “RUN” mode.



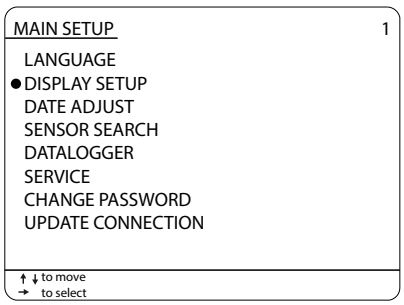
9.5 - Configuration of displayed measures

When the level measurement function is activated the VLW90M automatically enables the display of the measured level value.
The level values display deactivation or reactivation is possible in the “MAIN SETUP” menu.

With the arrow keys select the “MAIN SETUP”  menu icon.
Confirm the selection by pressing “ENTER” .

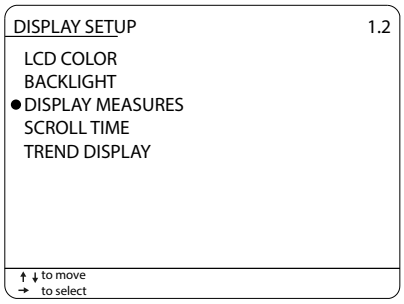


Press “UP” or “DOWN” to select “DISPLAY SETUP”.
Confirm with “RIGHT”.

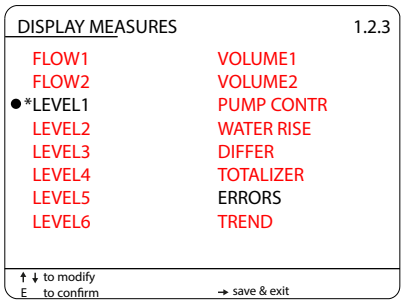


9.5.1 - DISPLAY MEASURES

Press “DOWN” to select “DISPLAY MEASURES” and confirm with “RIGHT”.

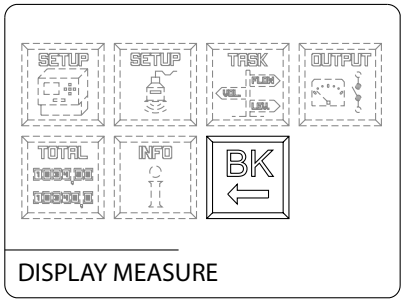


With the pointer to “LEVEL1”, press “ENTER”, the ***** symbol will highlight the selection.
Press “RIGHT” to save and exit.
“LEVEL2/3/4/5/6” are available only when active.



Press 2 times “LEFT” to return to the main menu.

Select  and press “ENTER” to return to “RUN” mode.



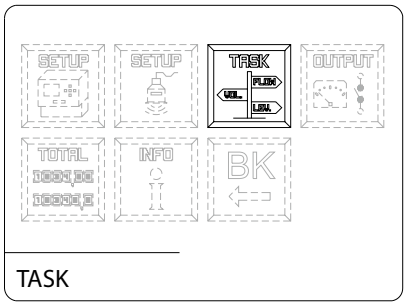
10-DIFFERENTIAL LEVEL MEASUREMENT SET UP GUIDES

10.1 - via MODBUS SGM LEKTRA ultrasonic transmitters configuration

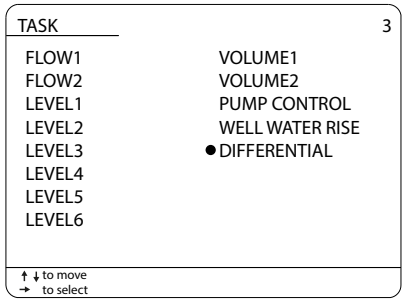
The use of SGM LEKTRA ultrasonic level transmitters, with MODBUS RTU communication protocol, allows the differential level measurement total control with the VLW90M unit.

To configure the differential level measurement with SGM LEKTRA ultrasonic transmitters follow the procedure below:

With the arrow keys select the “TASK”  menu icon.
Confirm the selection by pressing “ENTER”.



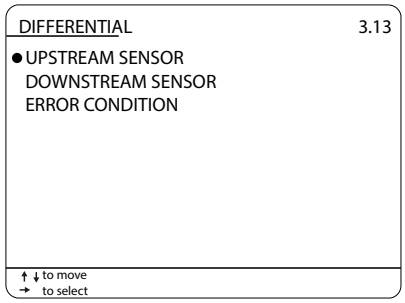
Press “RIGHT” to access the submenu “DIFFERENTIAL”.



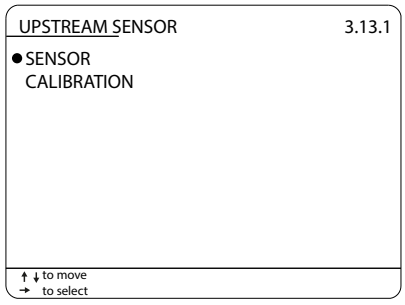
N.B. - Perform the steps described in 10.1.1 and 10.1.2 sections (CALIBRATION) during the “Level difference = 0” real condition, because this condition allows to enter the same “ACTUAL LEVEL” value, automatically obtain the correct 0 setting (UPSTREAM LEVEL - DOWNSTREAM LEVEL = 0)

10.1.1 - UPSTREAM SENSOR

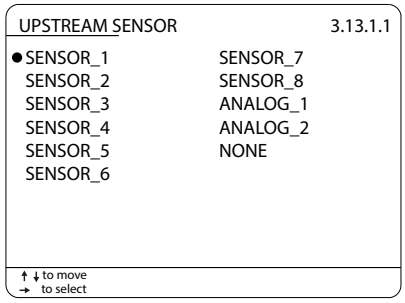
Press “RIGHT” to select “UPSTREAM SENSOR”.



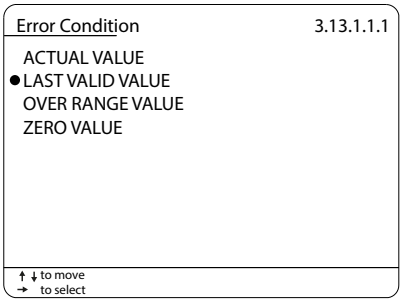
Press “RIGHT” to select “SENSOR”.



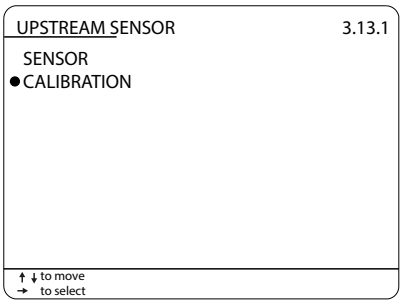
Select the UPSTREAM SENSOR_x with “DOWN”.
The sensor UID address identifies the sensor n.:
ex. sensor with UID 1 address = SENSOR_1, etc.
Confirm with “RIGHT”



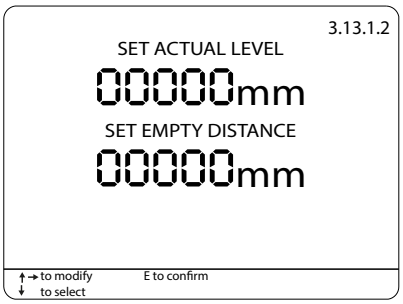
Press “DOWN” to select the measure condition in error state.
Press to “RIGHT” confirm.

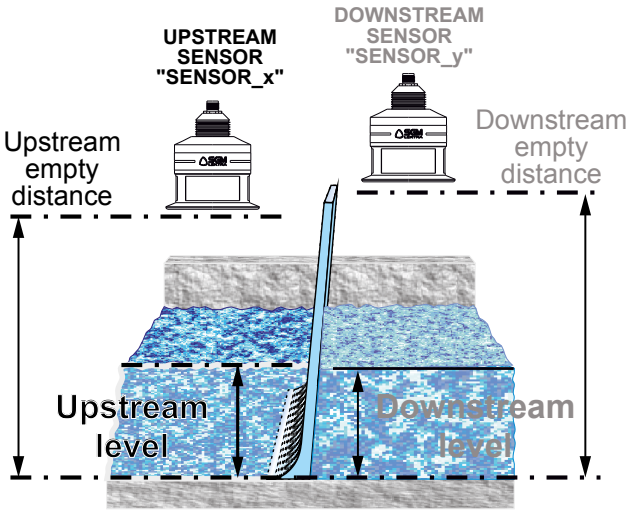


Select “CALIBRATION” with “DOWN” and press “RIGHT”.



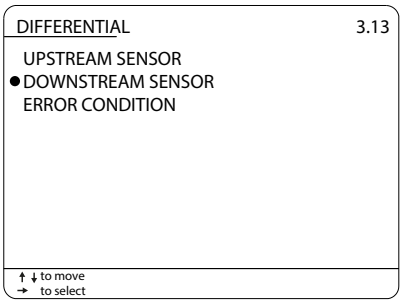
Enter in mm the ACTUAL LEVEL or EMPTY DISTANCE value.
Press “DOWN” to select the measure to be set.
Move the cursor with “RIGHT”.
Press “UP” to change the digit.
Confirm with “ENTER” and then press “LEFT”.



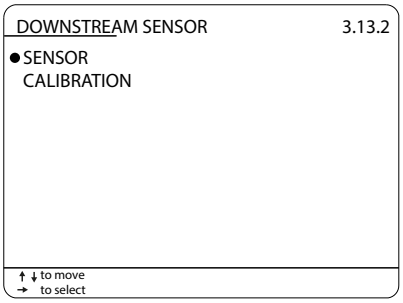


10.1.2 - DOWNSTREAM SENSOR

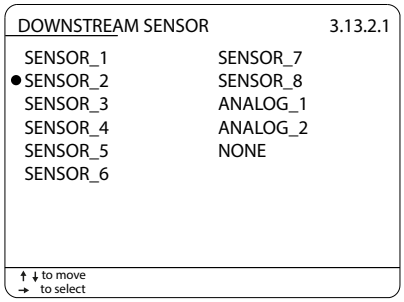
Press “RIGHT” to select “DOWNSTREAM SENSOR”.



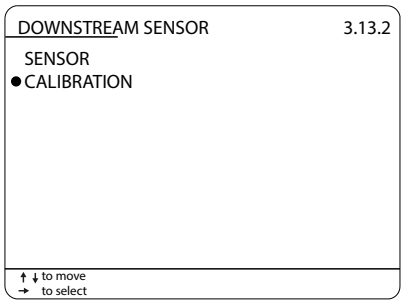
Press “RIGHT” to select “SENSOR”.



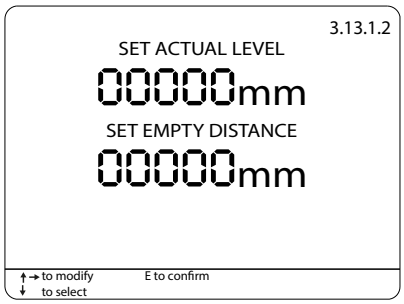
Select the UPSTREAM SENSOR_x with “DOWN”.
The sensor UID address identifies the sensor n.:
ex. sensor with UID 2 address = SENSOR_2, etc.
Confirm with “RIGHT”.

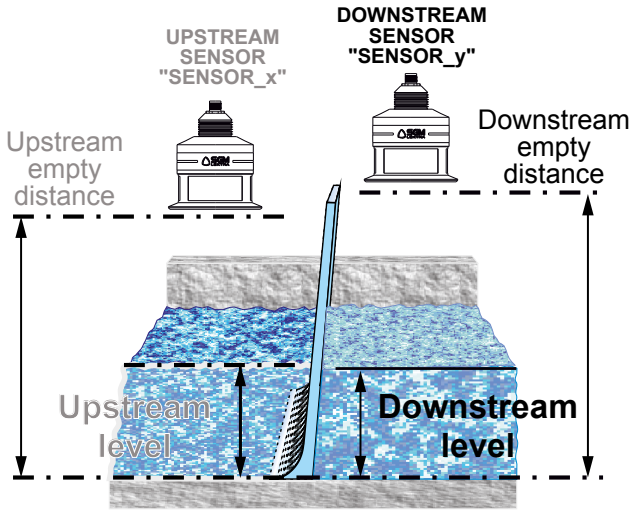


Select “CALIBRATION” with “DOWN” and press “RIGHT”.



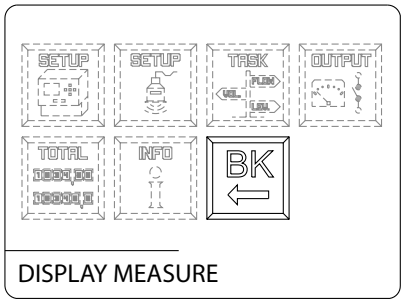
Enter in mm the ACTUAL LEVEL or EMPTY DISTANCE value.
Press “DOWN” to select the measure to be set. Move the cursor with “RIGHT”.
Press “UP” to change the digit.
Confirm with “ENTER” and then press “LEFT”.





Press 2 times “LEFT” to return to the main menu.

Select BK and press “ENTER” to return to “RUN” mode.

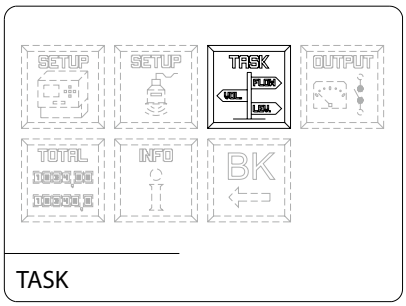


10.2 - 4÷20mA analog transmitter configuration

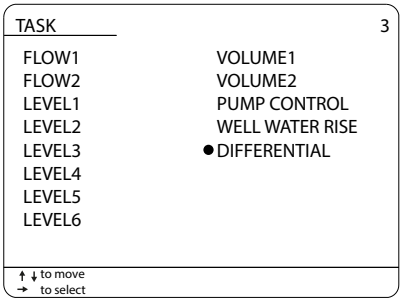
With the 2 VLW90M analog inputs is possible to control the measurement with any level sensor that transmits an 4÷20mA analog signal.

To configure the differential level measurement with 4÷20mA analog level transmitters follow the procedure below:

With the arrow keys select the “TASK”  menu icon.
Confirm the selection by pressing “ENTER”.

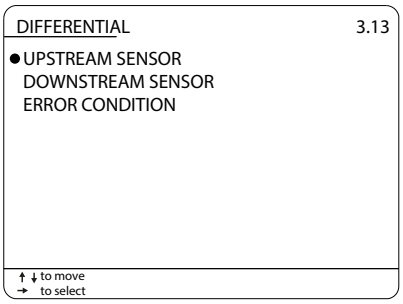


Press “RIGHT” to access the submenu “DIFFERENTIAL”.

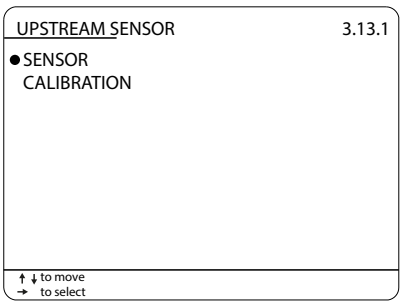


10.2.1 - UPSTREAM SENSOR

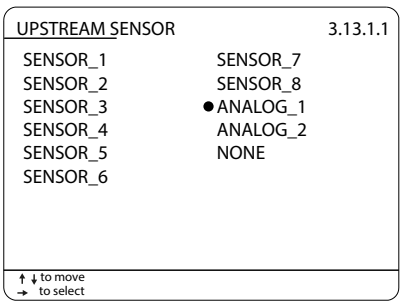
Press “RIGHT” to select “UPSTREAM SENSOR”.



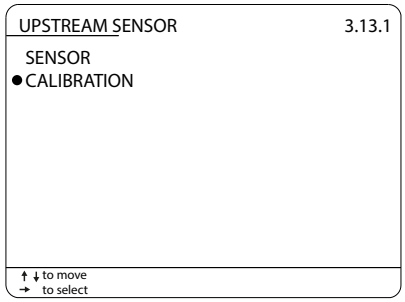
Press “RIGHT” to select “SENSOR”.



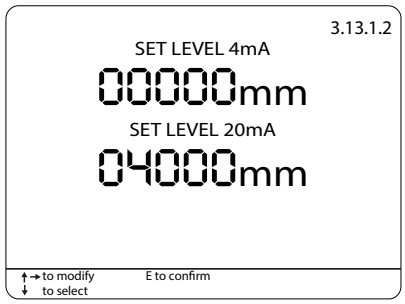
Select the ANALOG_x input with “UP” or “DOWN”. ANALOG_1 is associated with the sensor connection to Analog Input Ch1 terminals (see par.6.3.4/6.3.5.)
Press “RIGHT” to confirm.

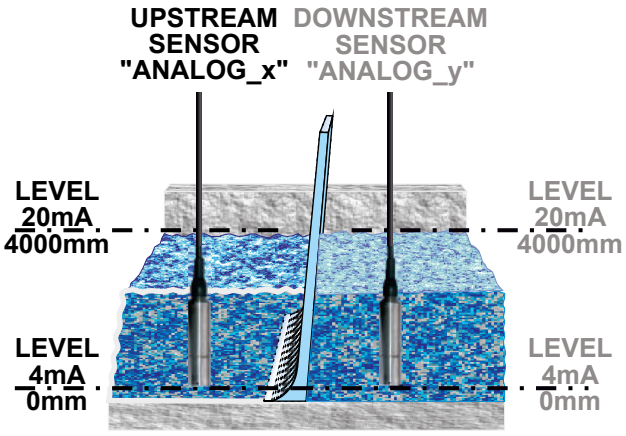


Select “CALIBRATION” with “DOWN” and press “RIGHT”.



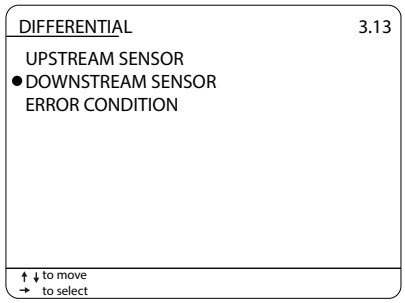
Enter the upstream sensor level value at 4mA and 20mA.
Press “DOWN” to select the measure to be set,
Move the cursor with “RIGHT” and press “UP” to change the digit.
Confirm with “ENTER”.



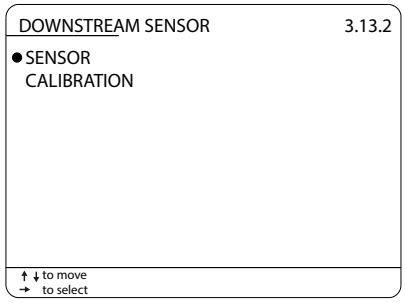


10.2.2 - DOWNSTREAM SENSOR

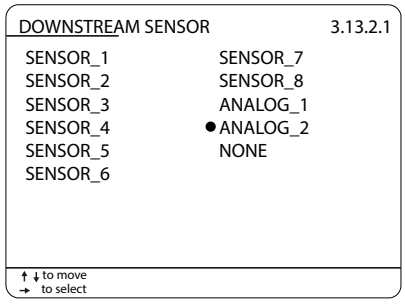
Press “RIGHT” to select “DOWNSTREAM SENSOR”.

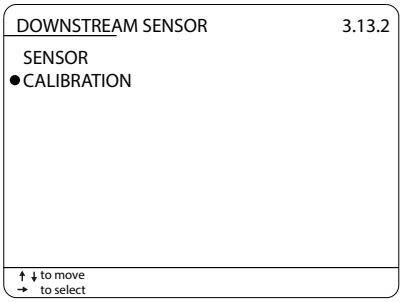


Press “RIGHT” to select “SENSOR”.

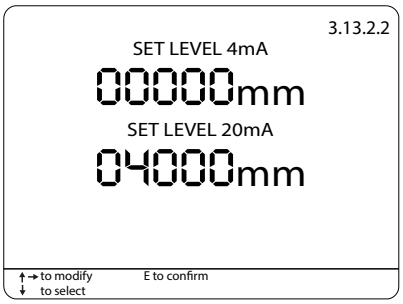


Select the ANALOG_x input with “UP” or “DOWN”.
ANALOG_2 is associated with the sensor connection to Analog Input Ch2 terminals (see par.6.3.4/6.3.5.).
Press “RIGHT” to confirm.

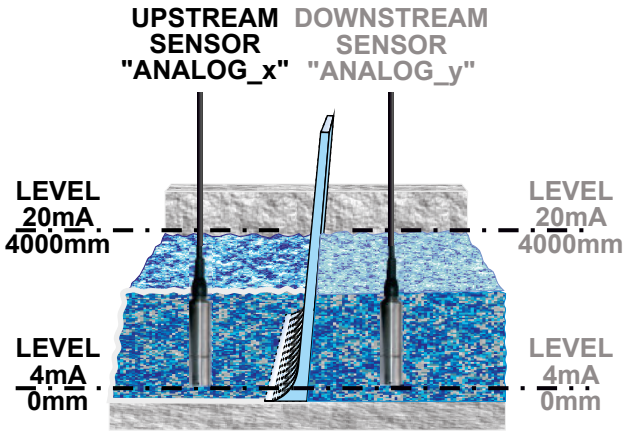




Select “CALIBRATION” with “DOWN” and press “RIGHT”.

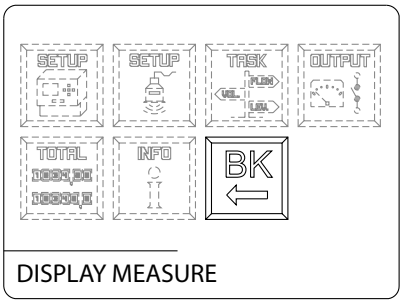


Enter the upstream sensor level value at 4mA and 20mA.
Press “DOWN” to select the measure to be set.
Move the cursor with “RIGHT” and press “UP” to change the digit.
Confirm with “ENTER”.



Press 2 times “LEFT” to return to the main menu.

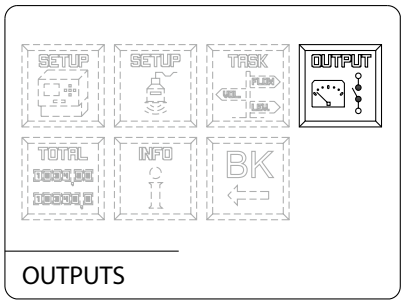
Select BK and press “ENTER” to return to “RUN” mode.



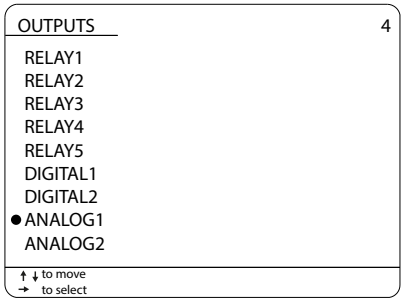
10.3 - 4÷20mA output config. for differential level transmission to remote displays

The VLW90M has 2 configurable 4÷ 20mA analog outputs for the differential level remote transmission.

With the arrow keys select the “OUTPUT”  menu icon.
Confirm the selection by pressing “ENTER”.

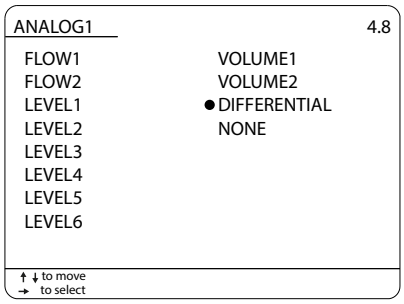


Press “UP” o “DOWN” to select “ANALOG1” or “ANALOG2”.
Press “RIGHT” to confirm.

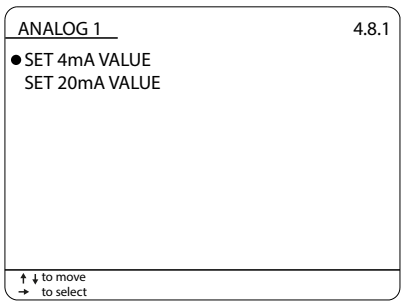


10.3.1 - DIFFERENTIAL

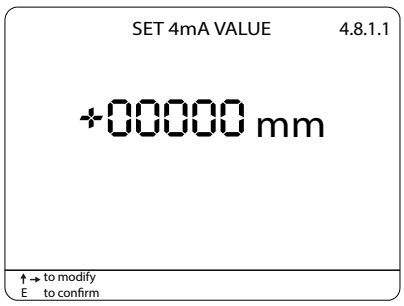
Press “UP” or “DOWN” to select “DIFFERENTIAL”.
Confirm with “RIGHT”.

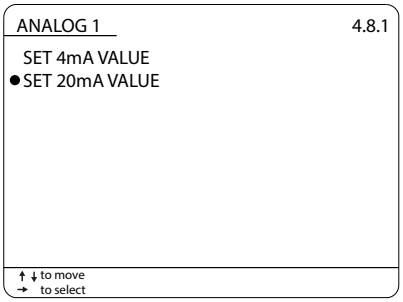


To set beginning of scale, press “RIGHT” to select “SET 4mA VALUE”.

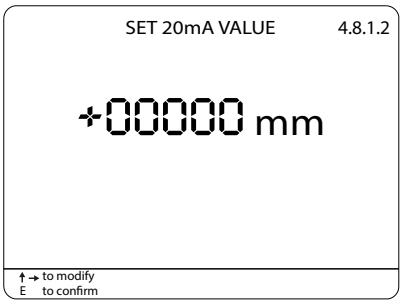


Set in mm the differential level value corresponding to the 4mA output.
Confirm with “ENTER”.

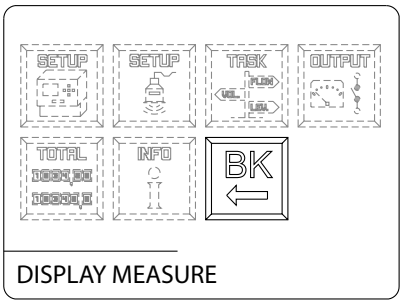




To set end of scale, press “DOWN” to select “SET 20mA VALUE”.
Confirm with “RIGHT”.



Set in mm the differential level value corresponding to the 20mA output.
Confirm with “ENTER”.



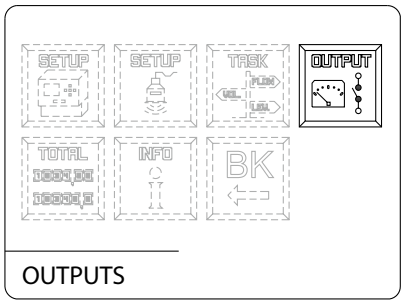
Press 2 times “LEFT” to return to the main menu.

Select BK and press “ENTER” to return to “RUN” mode.

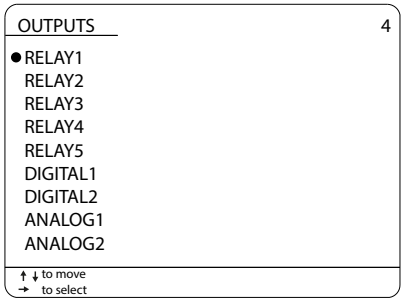
10.4 - Differential level threshold relays configuration

The VLW90M has 5 configurable relays for differential level alarm thresholds.

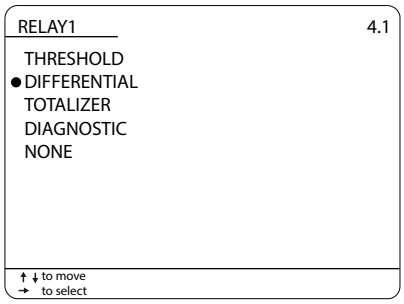
With the arrow keys select the “OUTPUTS”  menu icon.
Confirm the selection by pressing “ENTER”.



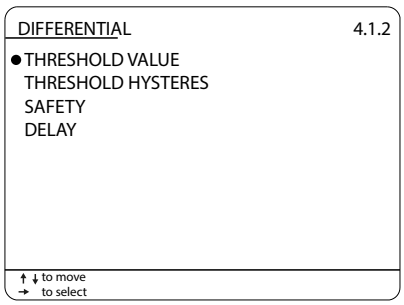
Press “UP” o “DOWN” to select “RELAY1”, or “RELAY2”, or “RELAY3”, or “RELAY4” or “RELAY5”.
Press “RIGHT” to confirm.



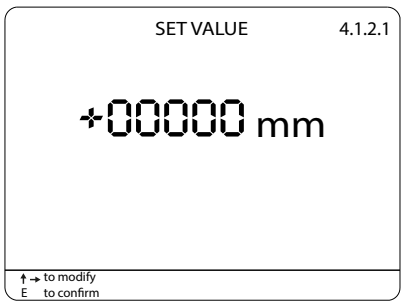
Press “DOWN” to select “DIFFERENTIAL” and confirm with “RIGHT”.



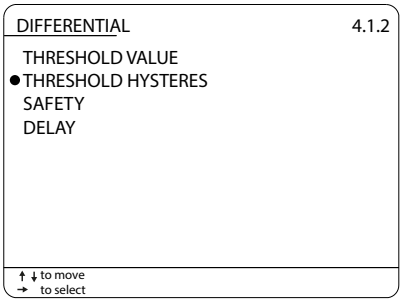
Press “RIGHT” to select “THRESHOLD VALUE” to set the relay switching point.



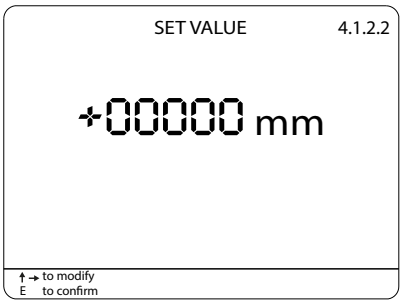
Set in mm the differential level threshold value.
Move the cursor with “RIGHT” and “UP” to change the digit.
Confirm with “ENTER”.



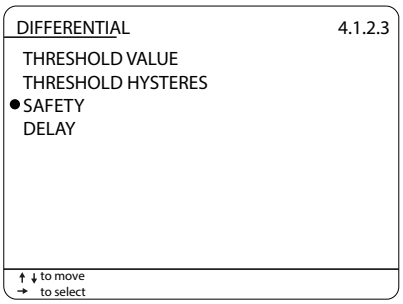
Press “DOWN” to select “THRESHOLD HYSTERES” to set the relay hysteresis and press “RIGHT” to confirm.



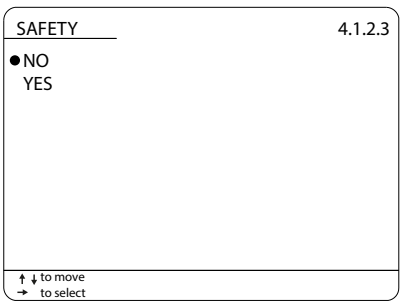
Set in mm the threshold hysteresis value.
Move the cursor with “RIGHT” and “UP” to change the digit.
Confirm with “ENTER”.



Press “DOWN” to select “SAFETY” to set the relay alarm condition status and press “RIGHT” to confirm.

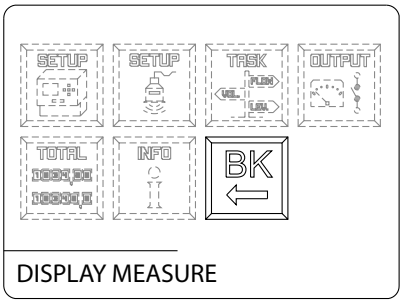


Select:
“YES” relay de-energized in alarm condition;
“NO” relay energized in alarm condition.
Press “RIGHT” to confirm.



Press 2 times “LEFT” to return to the main menu.

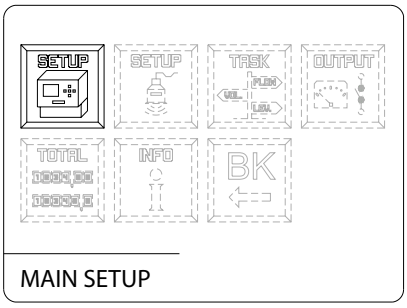
Select BK and press “ENTER” to return to “RUN” mode.



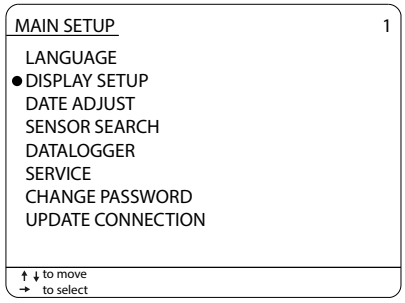
10.5 - Configuration of displayed measures

When the differential level measurement function is activated the VLW90M automatically enables the display of the level difference value between upstream and downstream.
The differential level values display deactivation or reactivation is possible in the “MAIN SETUP” menu.

With the arrow keys select the “MAIN SETUP”  menu icon.
Confirm the selection by pressing “ENTER” .

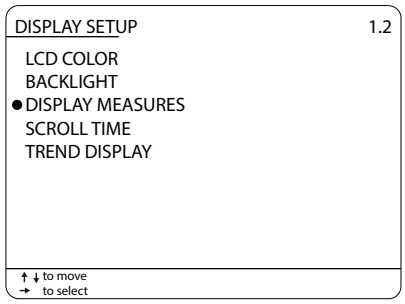


Press “UP” or “DOWN” to select “DISPLAY SETUP”.
Confirm with “RIGHT”.

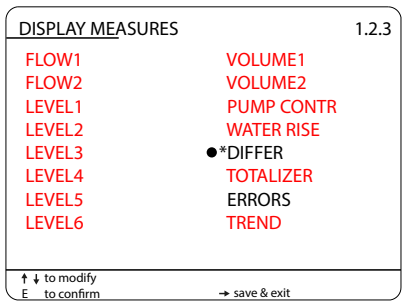


10.5.1 - DISPLAY MEASURES

Press “DOWN” to select “DISPLAY MEASURES” and confirm with “RIGHT”.

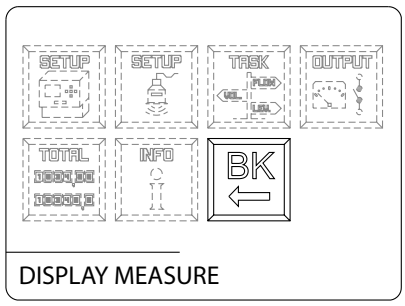


With the pointer to “DIFFER”, press “ENTER”, the * symbol will highlight the selection.
Press “RIGHT” to save and exit.
“LEVEL2/3/4/5/6” are available only when active



Press 2 times “LEFT” to return to the main menu.

Select  and press “ENTER” to return to “RUN” mode.



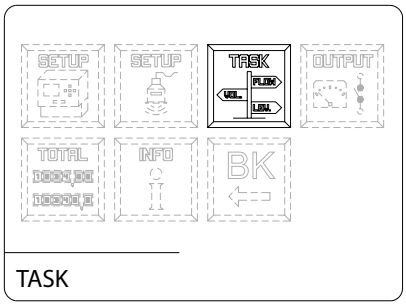
11-VOLUME MEASUREMENT SET UP GUIDES

11.1 - via MODBUS SGM LEKTRA ultrasonic transmitters configuration

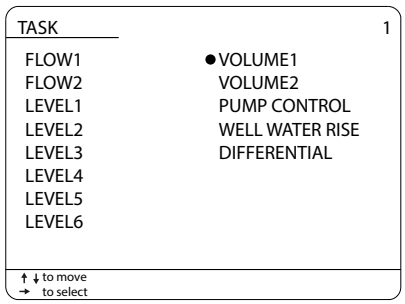
The use of SGM LEKTRA ultrasonic level transmitters, with MODBUS RTU communication protocol, allows the level measurement total control with the VLW90M unit.

To configure the volume measurement with SGM LEKTRA ultrasonic transmitters follow the procedure below:

With the arrow keys select the “TASK”  menu icon.
Confirm the selection by pressing “ENTER”.

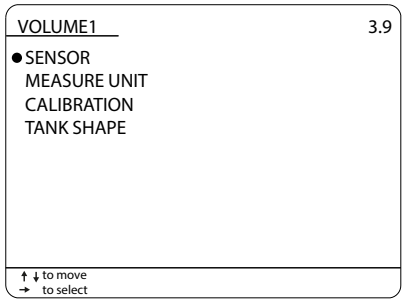


Press “RIGHT” to access the submenu “VOLUME1” or “VOLUME2”, is possible to configure up to 2 volume measurements.

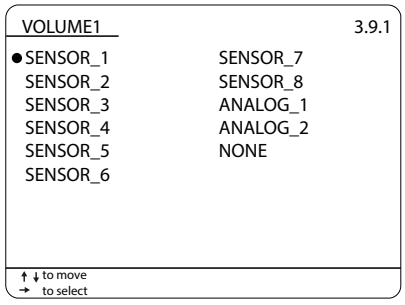


11.1.1 - SENSOR

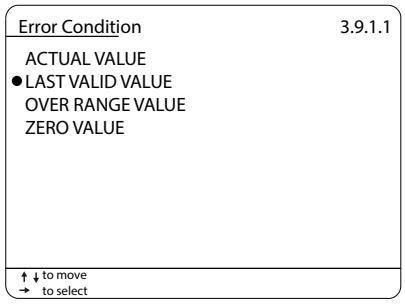
Press “RIGHT” to select “SENSOR”.



Select the SENSOR_x with “UP” or “DOWN.
The sensor UID address identifies the sensor number:
ex. sensor with UID 1 address = SENSOR_1, etc.
Press “RIGHT” to confirm.

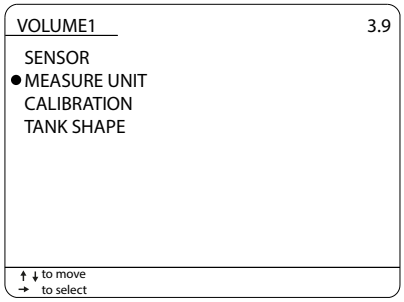


Press “DOWN” to select the measure condition in error state.
Press to “RIGHT” confirm.

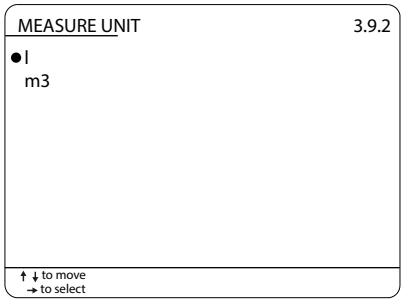


11.1.2 - MEASURE UNIT

Press “DOWN” to select “MEASURE UNIT” and press “RIGHT”.

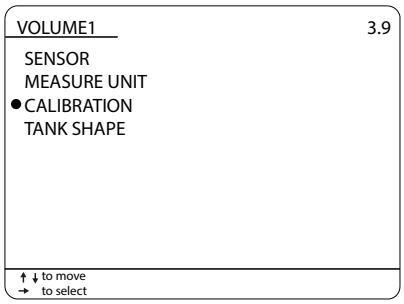


Press “UP” or “DOWN” to select the measure unit.
Confirm with “RIGHT”.

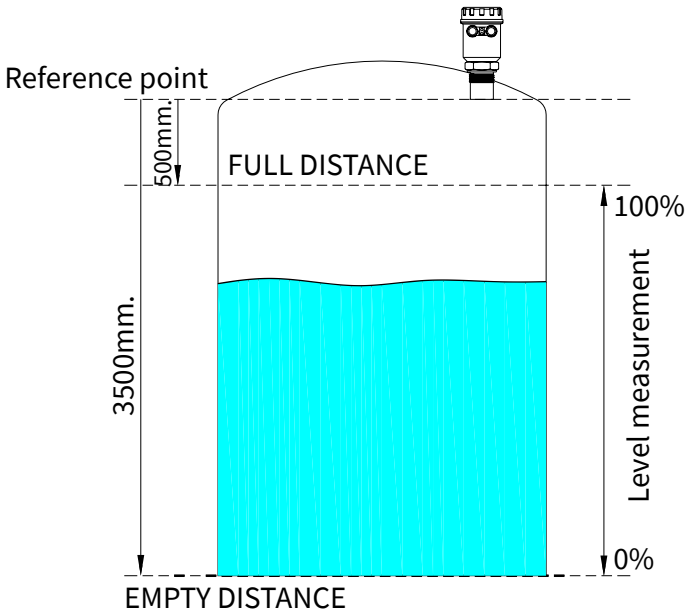


11.1.3 - CALIBRATION

Press “DOWN” to select “CALIBRATION” and press “RIGHT”.

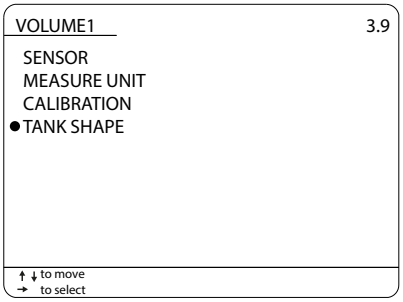


Enter the empty and full distance in mm.
Press “DOWN” to select the measure to be set.
Move the cursor with “RIGHT” and press “UP” to change the digit.
Confirm with “ENTER”.

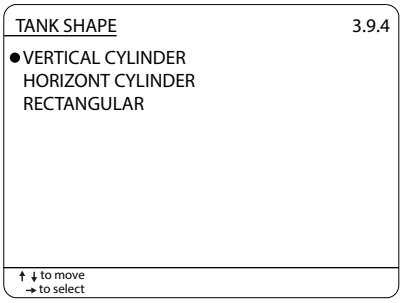


11.1.4 - TANK SHAPE

Press “DOWN” to select “TANK SHAPE” and confirm with “RIGHT”.

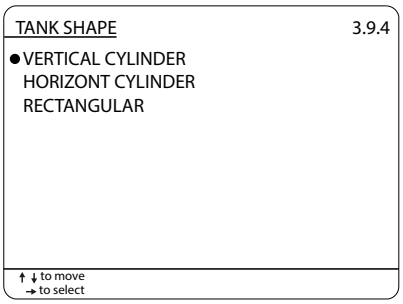


Press “UP” or “DOWN” to select the geometric shape.
To confirm the selection press “RIGHT”.

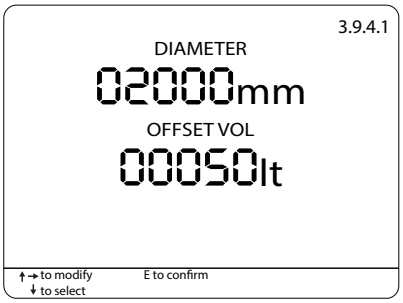


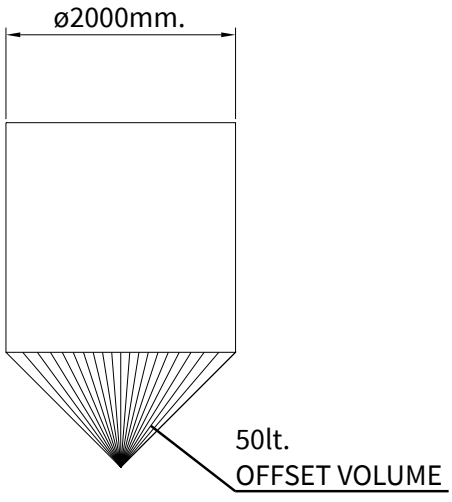
11.1.4.1 - VERTICAL CYLINDER

For tank or silo with vertical cylindrical section,
select “VERTICAL CYLINDER” and press “RIGHT”.



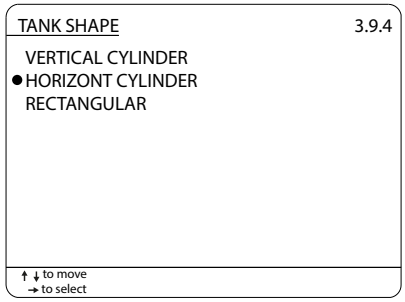
Enter the diameter in mm and, if necessary, the tank/silo conical part volume (OFFSET VOL).



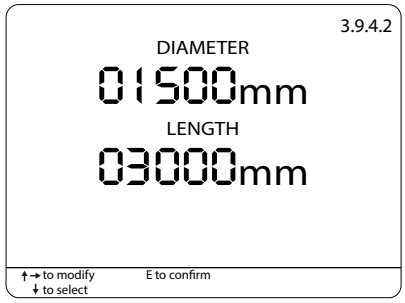


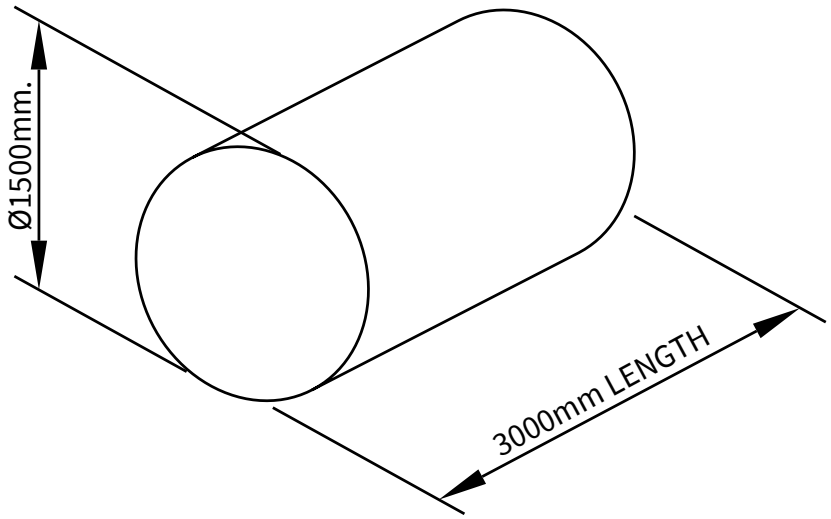
11.1.4.2 - HORIZONT CYLINDER

For tank with horizontal cylindrical section,
select “HORIZONT CYLINDER” and press “RIGHT”.



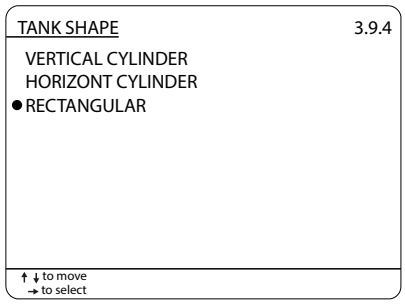
Enter the diameter and the length in mm.



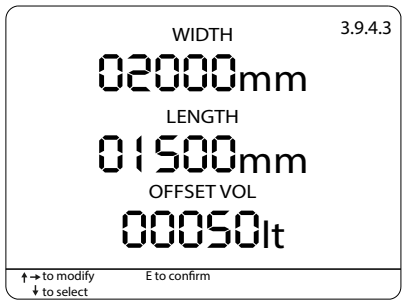


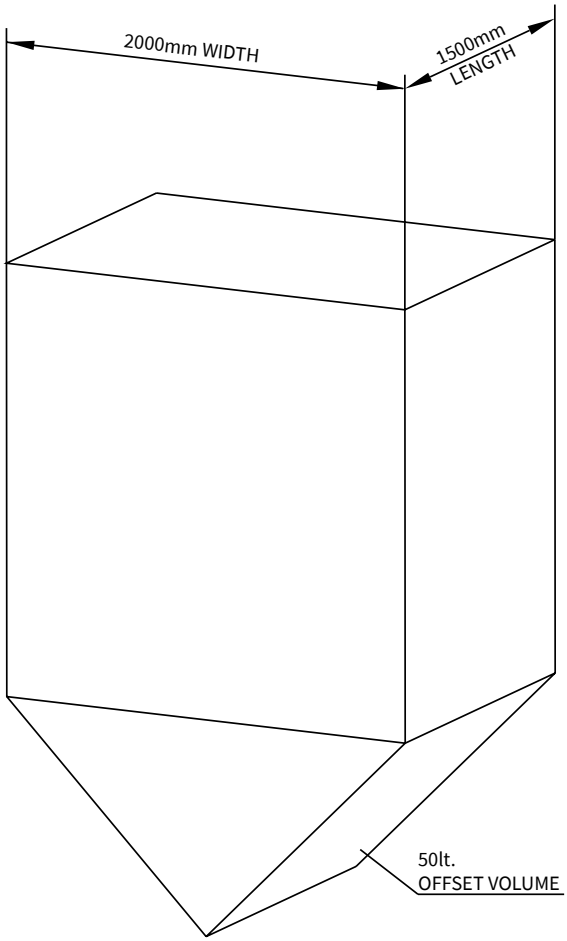
11.1.4.3 - RECTANGULAR.

For tank or silo with vertical rectangular section, select “RECTANGULAR” and press “RIGHT”.



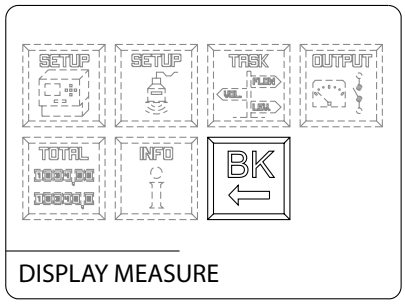
Enter the width and the length in mm and, if necessary, the tank/silo conical part volume (OFFSET VOL).





Press 2 times “LEFT” to return to the main menu.

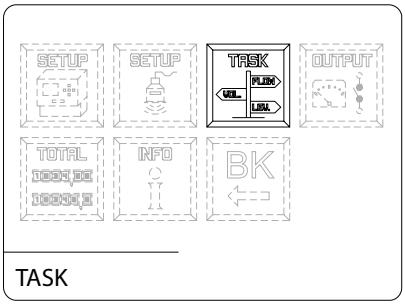
Select BK and press “ENTER” to return to “RUN” mode.



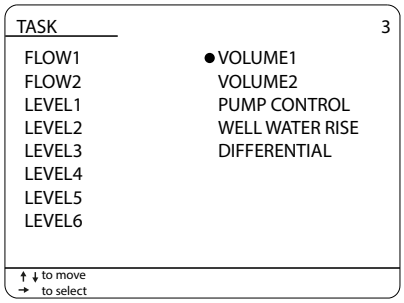
11.2 - 4÷20mA analog transmitter configuration

With the 2 VLW90M analog inputs is possible to control the measurement with any level sensor that transmits an 4÷20mA analog signal.
To configure the volume measurement with 4÷20mA analog level transmitters follow the procedure below.

With the arrow keys select the “TASK” menu icon.
Confirm the selection by pressing “ENTER”.

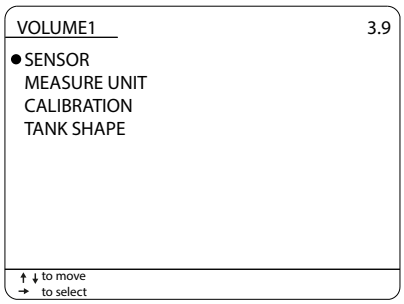


Press “RIGHT” to access the submenu “VOLUME1” or “VOLUME2”, is possible to configure up to 2 volume measurements.

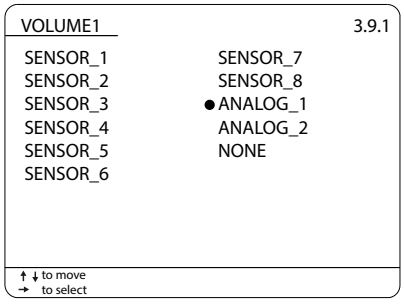


11.2.1 - SENSOR

Press “RIGHT” to select “SENSOR”.

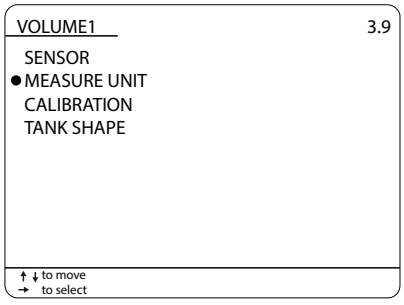


Select the ANALOG_x input with “UP” or “DOWN”.
ANALOG_1 is associated with the sensor connection to Analog Input Ch1 terminals;
ANALOG_2 is associated with the sensor connection to Analog Input Ch2 terminals (see par.6.3.4/6.3.5).
Press “RIGHT” to confirm.

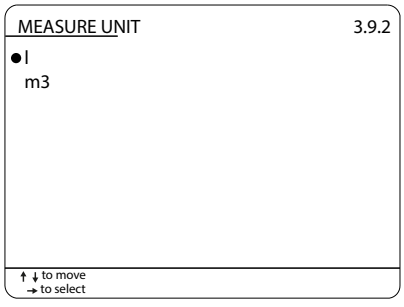


11.2.2 - MEASURE UNIT

Press “DOWN” to select “MEASURE UNIT” and press “RIGHT”.

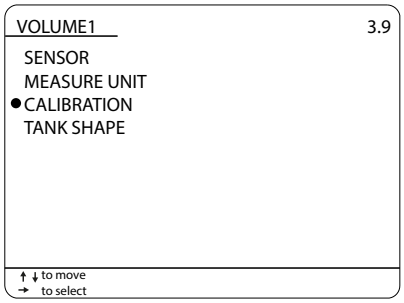


Press “UP” or “DOWN” to select the measure unit.
Confirm with “RIGHT”.

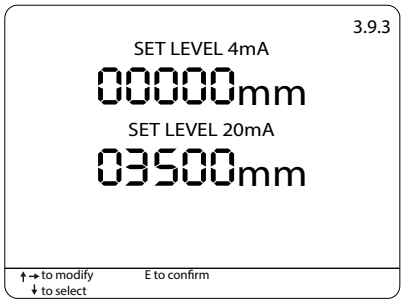


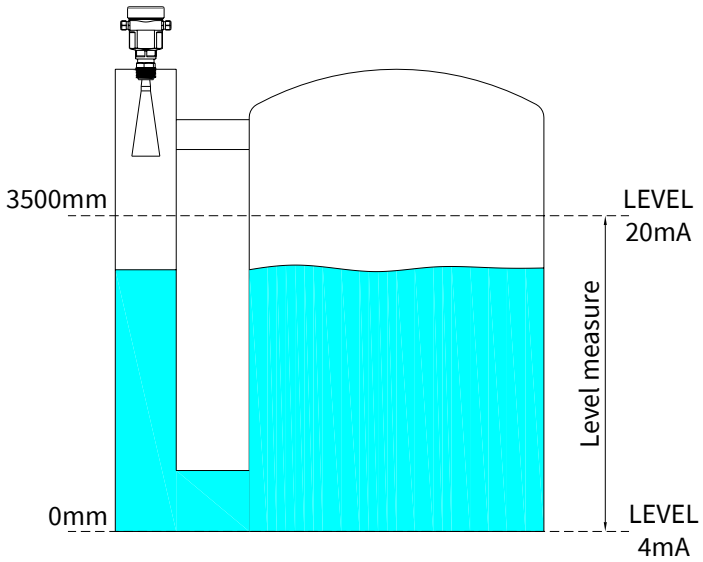
11.2.3 - CALIBRATION

Press “DOWN” to select “CALIBRATION” and press “RIGHT”.



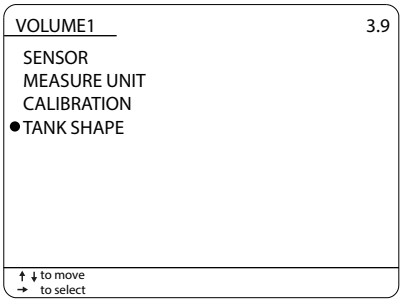
Enter the level value at 4mA and 20mA.
Press “DOWN” to select the measure to be set.
Move the cursor with “RIGHT” and press “UP” to change the digit.
Confirm with “ENTER”.





11.2.4 - TANK SHAPE

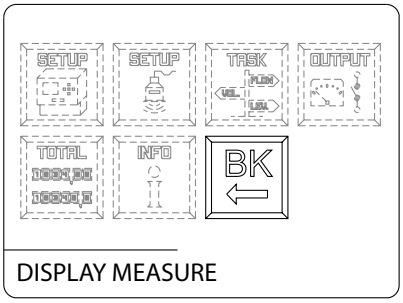
Press “DOWN” to select “TANK SHAPE” and confirm with “RIGHT”.
Follow the procedure described in paragraphs: 11.1.4.1, o 11.1.4.2 o 11.1.4.3.



Press 2 times “LEFT” to return to the main menu.

Select 

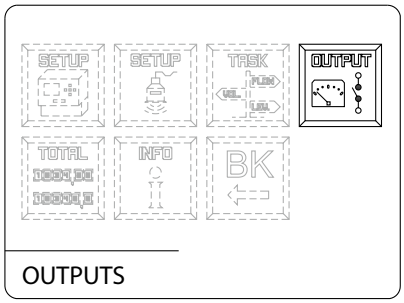
and press “ENTER” to return to “RUN” mode.



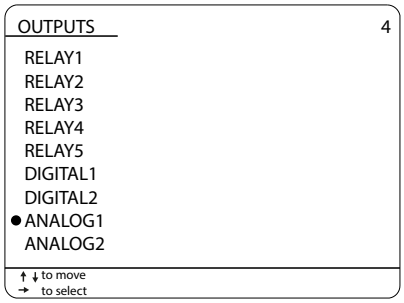
11.3 - 4÷20mA output configuration for volume measurement transmission to remote displays

The VLW90M has 2 configurable analog outputs 20mA for the volume measurement remote transmission.

With the arrow keys select the “OUTPUTS”  menu icon.
Confirm the selection by pressing “ENTER”.

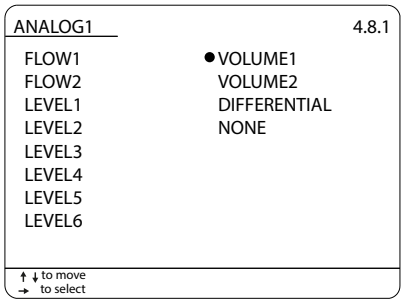


Press “UP” o “DOWN” to select “ANALOG1” or “ANALOG2”.
Press “RIGHT” to confirm.

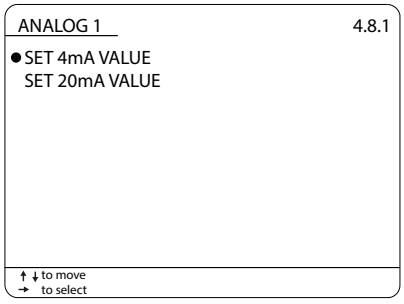


11.3.1 - VOLUME

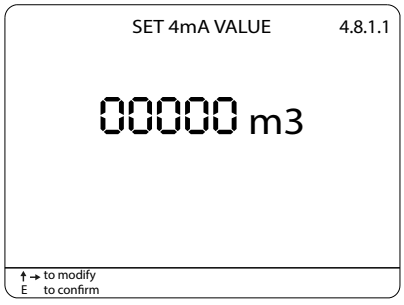
Press “UP” or “DOWN” to select “VOLUME1” or “VOLUME2”.
Confirm with “RIGHT”.



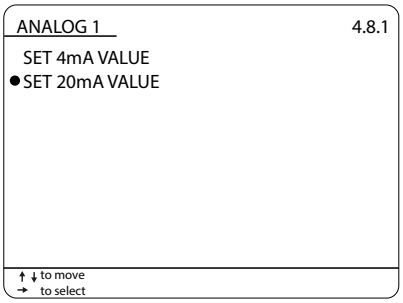
To set beginning of scale, press “RIGHT” to select “SET 4mA VALUE”.



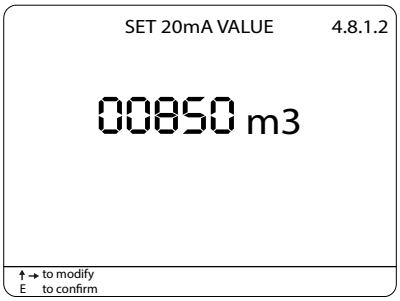
Set in mm the volume value corresponding to the 4mA output.
Confirm with “ENTER”.

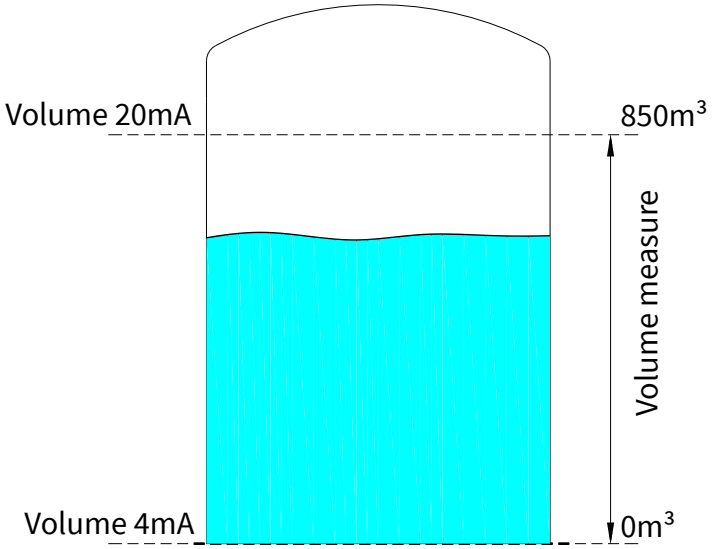


To set end of scale, press “DOWN” to select “SET 20mA VALUE”.
Confirm with “RIGHT”.



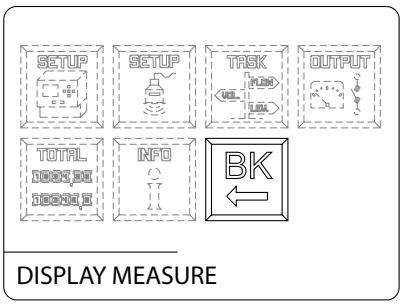
Set in mm the volume value corresponding to the 20mA output.
Confirm with “ENTER”.





Press 2 times “LEFT” to return to the main menu.

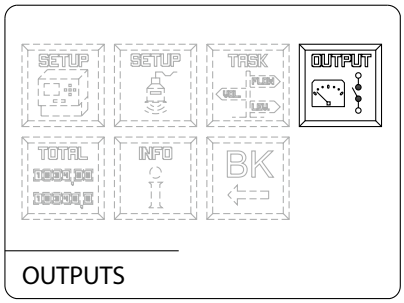
Select BK and press “ENTER” to return to “RUN” mode.



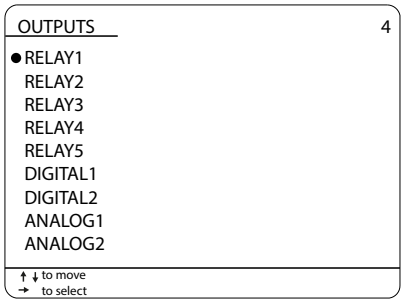
11.4 - Volume threshold relays configuration

The VLW90M has 5 configurable relays for volume alarm thresholds.

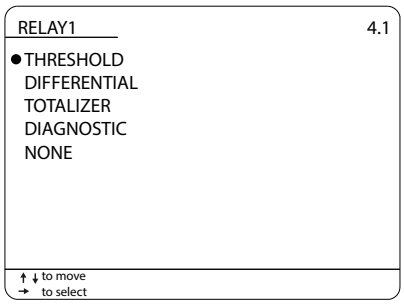
With the arrow keys select the “OUTPUTS”  menu icon.
Confirm the selection by pressing “ENTER”.



Press “UP” o “DOWN” to select “RELAY1”, or “RELAY2”, or “RELAY3”, or “RELAY4” or “RELAY5”.
Press “RIGHT” to confirm.

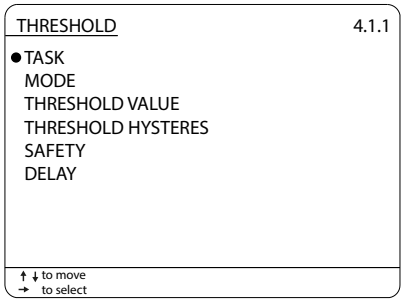


Press “RIGHT” to select “THRESHOLD”.

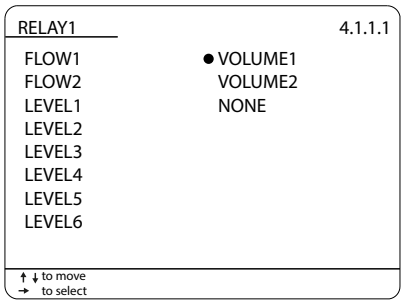


11.4.1 - TASK

Press “RIGHT” to select “TASK”.

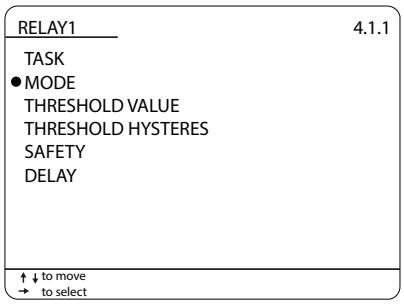


Select “VOLUME1”, or “VOLUME2”.
Press “RIGHT” to confirm.

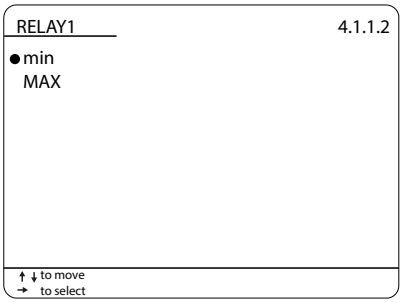


11.4.2 - MODE

Press “RIGHT” to select “MODE”.

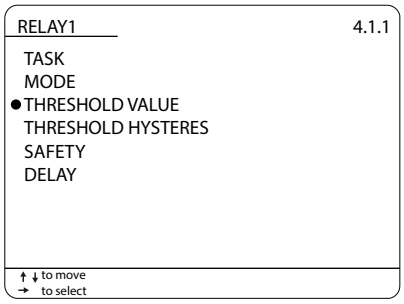


Select “min” for minimum level alarm or “MAX” for maximum level alarm.
Press “RIGHT” to confirm.

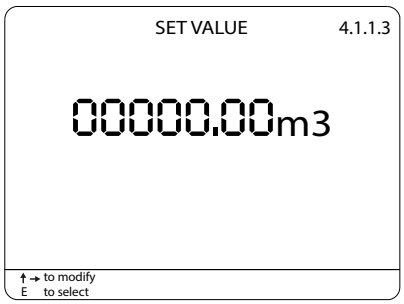


11.4.3 - THRESHOLD VALUE

Select “THRESHOLD VALUE” to set the relay switching point and
press “RIGHT” to confirm.

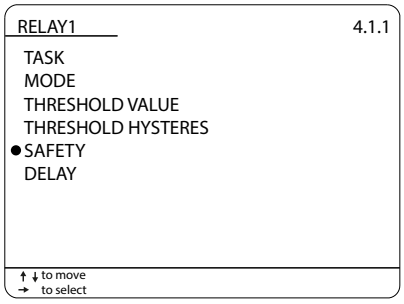


Set m3 or in l the volume threshold value.
Move the cursor with “RIGHT” and “UP” to change the digit.
Confirm with “ENTER”.

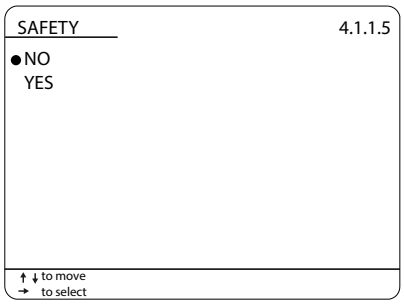


11.4.4 - SAFETY

To set the relay alarm condition status select “SAFETY” and confirm with “RIGHT”.



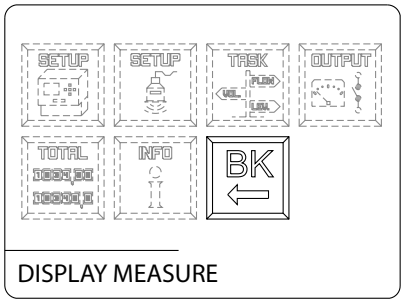
Select:
“YES” relay de-energized in alarm condition;
“NO” relay energized in alarm condition.
Press “RIGHT” to confirm.



Press 2 times “LEFT” to return to the main menu.

Select 

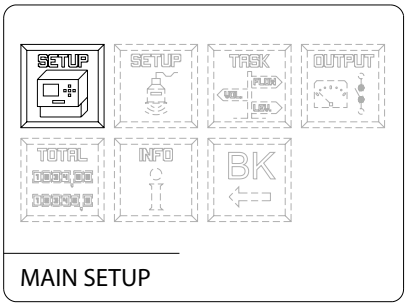
and press “ENTER” to return to “RUN” mode.



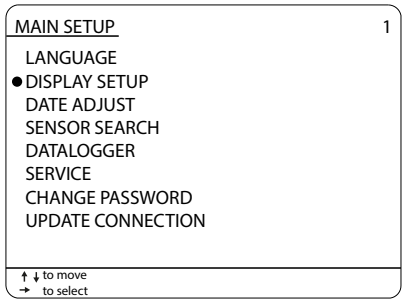
11.5 - Configuration of displayed measures

When the volume measurement function is activated the VLW90M automatically enables the display of the calculated volume value.
The volume value display deactivation or reactivation is possible in the “MAIN SETUP” menu.

With the arrow keys select the “MAIN SETUP”  menu icon.
Confirm the selection by pressing “ENTER”.

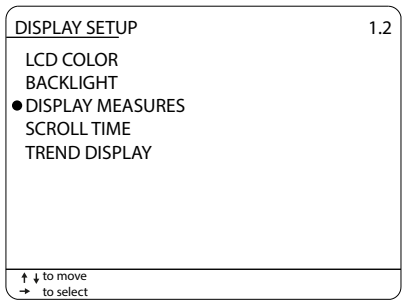


Press “UP” or “DOWN” to select “DISPLAY SETUP”.
Confirm with “RIGHT”.

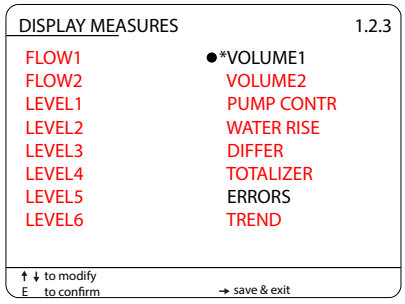


11.5.1 - DISPLAY MEASURES

Press “DOWN” to select “DISPLAY MEASURES” and confirm with “RIGHT”.

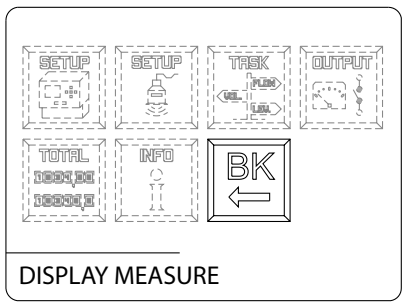


With the pointer to “VOLUME1”, press “ENTER, the ***** symbol will highlight the selection.
Press “RIGHT” to save and exit.
“VOLUME2” are available only when active.



Press 2 times “LEFT” to return to the main menu.

Select  and press “ENTER” to return to “RUN” mode.

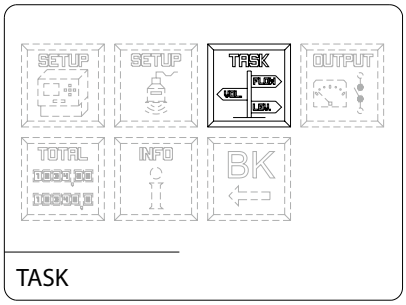


12-PUMP CONTROL SET UP GUIDES

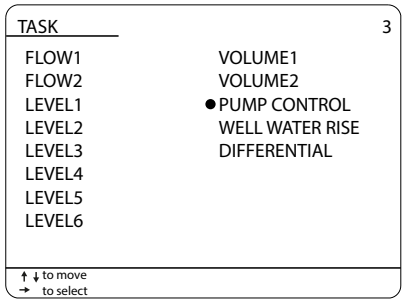
12.1 - via MODBUS SGM LEKTRA ultrasonic transmitters configuration

The use of SGM LEKTRA ultrasonic level transmitters, with MODBUS RTU communication protocol, allows the level measurement total control with the VLW90M unit.
To configure the pump control with SGM LEKTRA ultrasonic transmitters follow the procedure below:

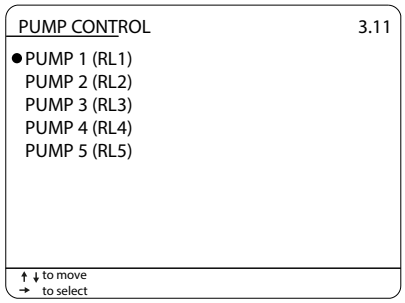
With the arrow keys select the “TASK”  menu icon.
Confirm the selection by pressing “ENTER”.



Select submenu “PUMP CONTROL” and press “RIGHT”.

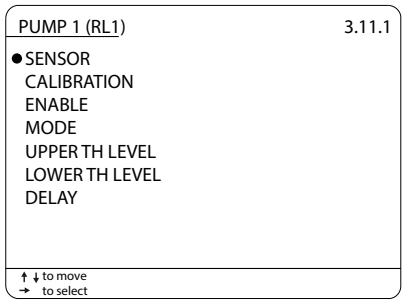


Select “PUMP 1”, or “PUMP 2”, or “PUMP 3” or “PUMP 4” or “PUMP 5” with “RIGHT”.

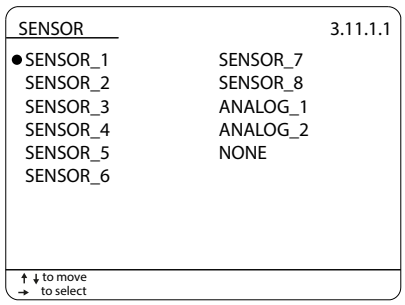


12.1.1 - SENSOR

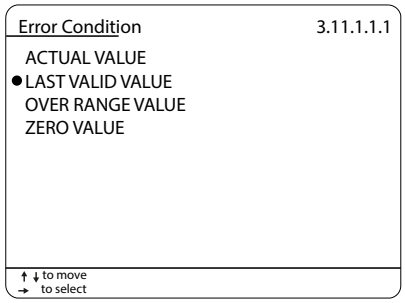
Press “RIGHT” to select “SENSOR”.



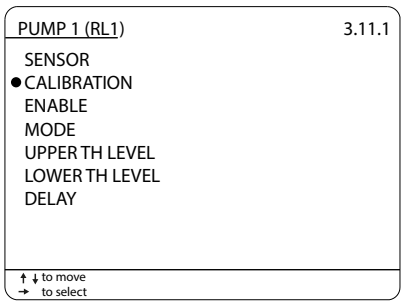
Select the SENSOR_x with “UP” or “DOWN”.
The sensor UID address identifies the sensor number:
ex. sensor with UID 1 address = SENSOR_1, etc.
Press “RIGHT” to confirm.



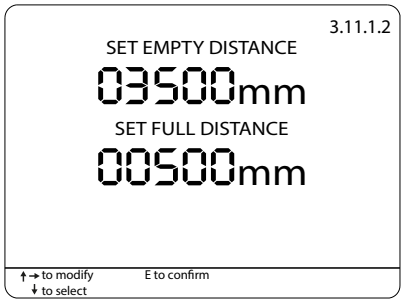
Press “DOWN” to select the measure condition in error state.
Press to “RIGHT” confirm.



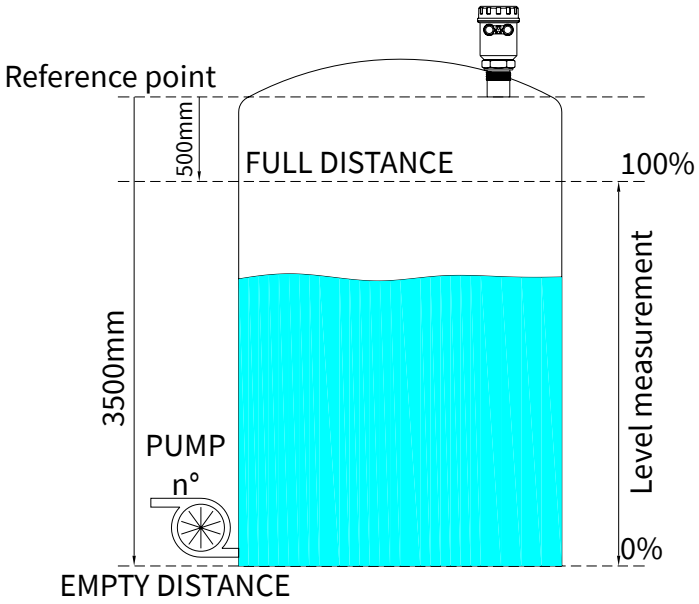
12.1.2 - CALIBRATION



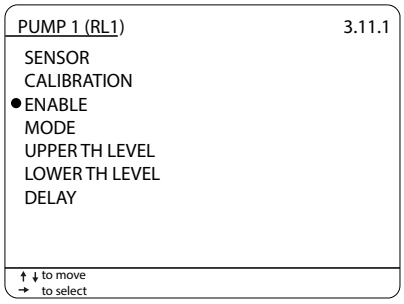
Press “DOWN” to select “CALIBRATION” and press “RIGHT”.



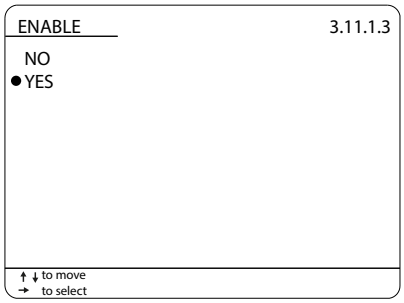
Enter the empty and full distance in mm.
Press “DOWN” to select the measure to be set.
Move the cursor with “RIGHT” and press “UP” to change the digit.
Confirm with “ENTER”.



12.1.3 - ENABLE



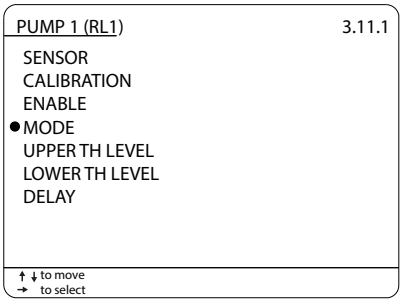
Press “DOWN” to select “ENABLE” and press “RIGHT”.



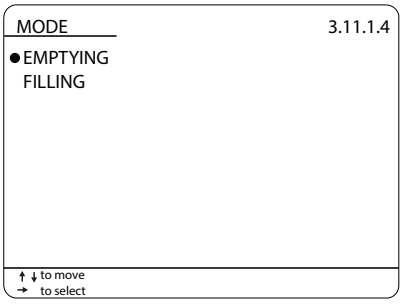
Press “UP” or “DOWN” to select “YES”.
Confirm with “RIGHT”.

12.1.4 - MODE

Press “DOWN” to select “MODE”.
Confirm with “RIGHT”.

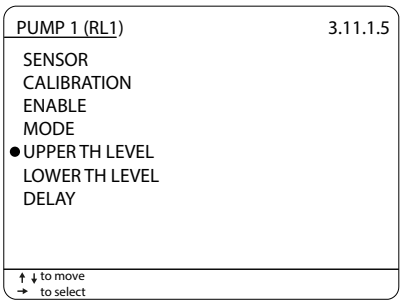


Press “UP” or “DOWN” to select “EMPTYNG” or “FILLING”.
Confirm with “RIGHT”.

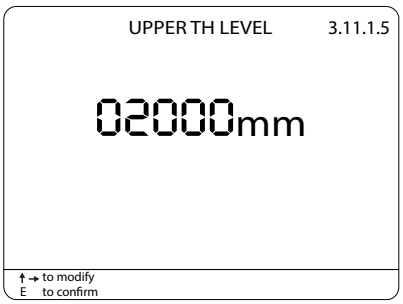


12.1.5 - UPPER TH LEVEL

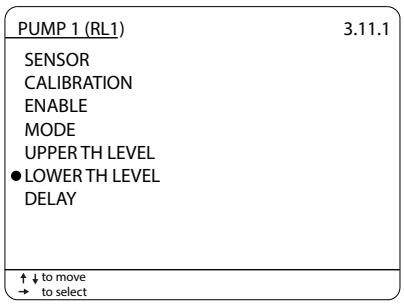
Press “DOWN” to select “UPPER TH LEVEL”. Confirm with RIGHT”.



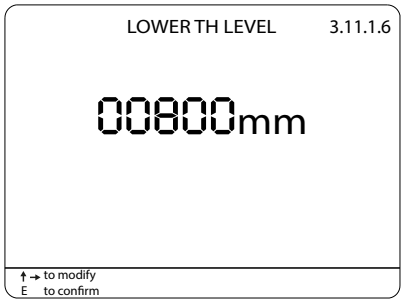
Set in mm the upper threshold level value (see fig. next page).
Move the cursor with “RIGHT” and “UP” to change the digit.
Confirm with “ENTER”.



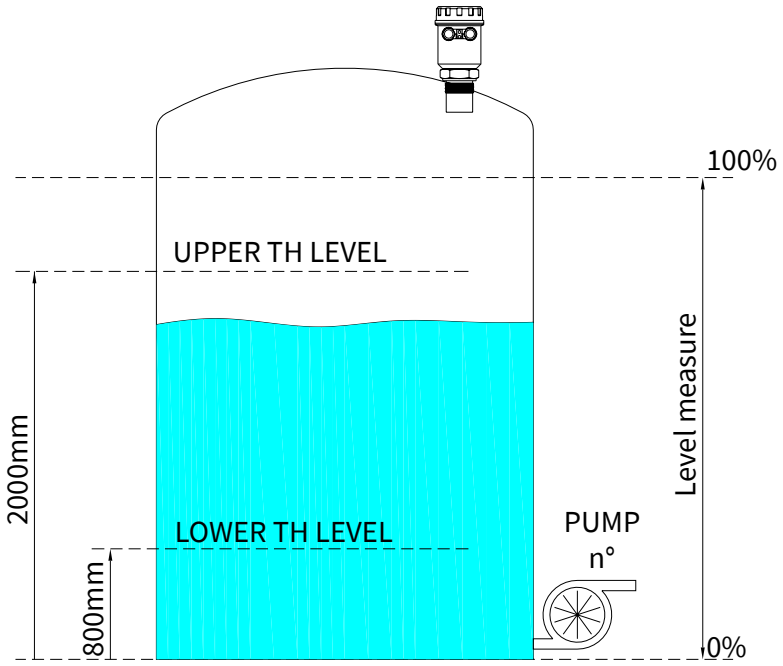
12.1.6 - LOWER TH LEVEL



Press “DOWN” to select “LOWER TH LEVEL”.
Confirm with “RIGHT”.

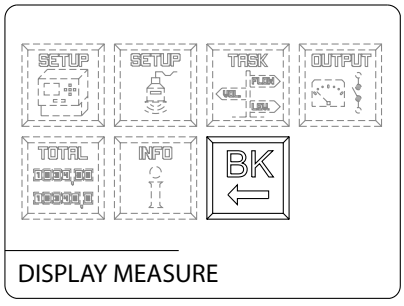


Set in mm the lower threshold level value.
Move the cursor with “RIGHT” and “UP” to change the digit.
Confirm with “ENTER”.



Press 2 times “LEFT” to return to the main menu.

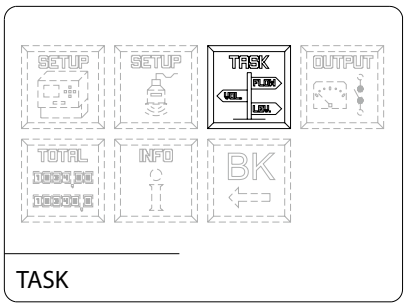
Select BK and press “ENTER” to return to “RUN” mode.



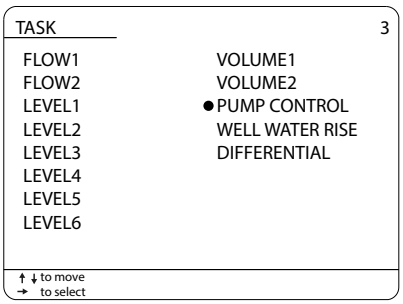
12.2 - 4÷20mA analog transmitter configuration

With the 2 VLW90M analog inputs is possible to control the measurement with any level sensor that transmits an 4÷20mA analog signal.
To configure the pump control with 4÷20mA analog level transmitters follow the procedure below:

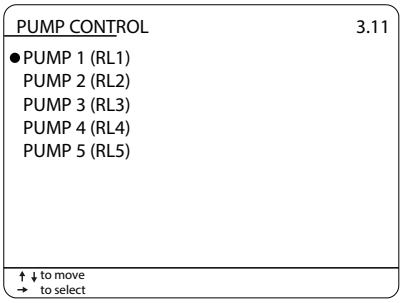
With the arrow keys select the “TASK”  menu icon.
Confirm the selection by pressing “ENTER”.



Select submenu “PUMP CONTROL” and press “RIGHT”.

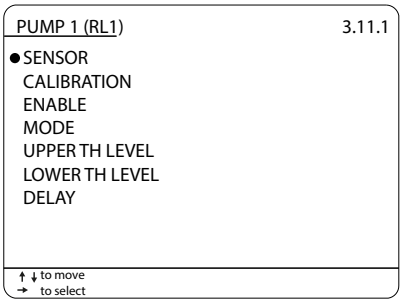


Select “PUMP 1”, or “PUMP 2”, or “PUMP 3” or “PUMP 4” or “PUMP 5” with “RIGHT”.

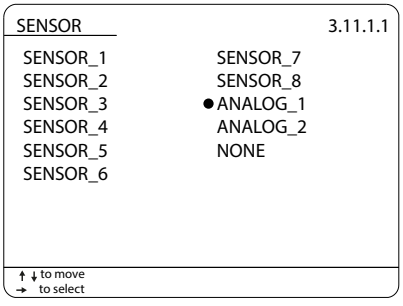


12.2.1 - SENSOR

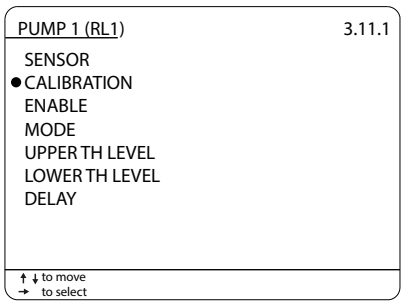
Press “RIGHT” to select “SENSOR”.



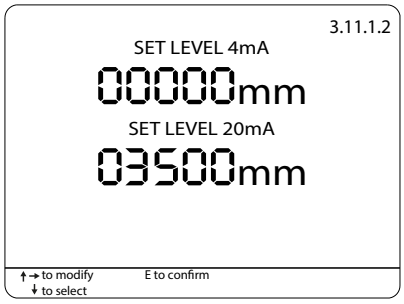
Select the ANALOG_x input with “UP” or “DOWN”.
ANALOG_1 is associated with the sensor connection to Analog Input Ch1 terminals;
ANALOG_2 is associated with the sensor connection to Analog Input Ch2 terminals (see par.6.3.4/6.3.5).
Press “RIGHT” to confirm.



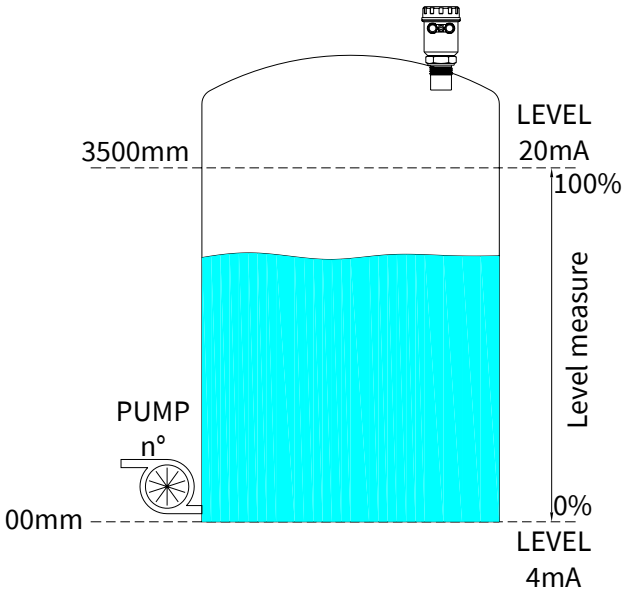
12.2.2 - CALIBRATION



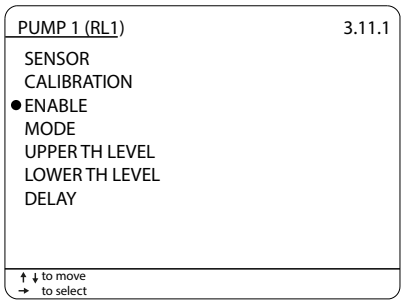
Press “DOWN” to select “CALIBRATION” and press “RIGHT”.



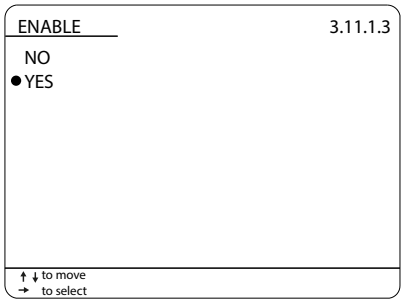
Enter the level value at 4mA and 20mA.
Press “DOWN” to select the measure to be set.
Move the cursor with “RIGHT” and press “UP” to change the digit.
Confirm with “ENTER”.



12.2.3 - ENABLE



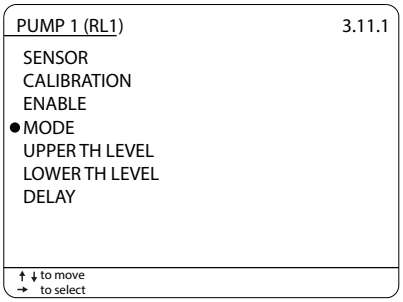
Press “DOWN” to select “ENABLE” and press “RIGHT”.



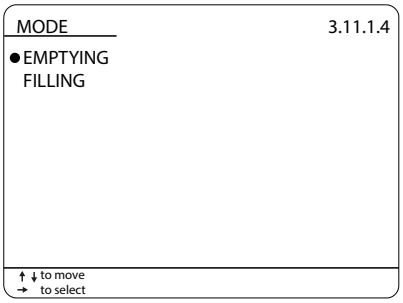
Press “UP” or “DOWN” to select “YES”.
Confirm with “RIGHT”.

12.2.4 - MODE

Press “DOWN” to select “MODE”. Confirm with “RIGHT”.

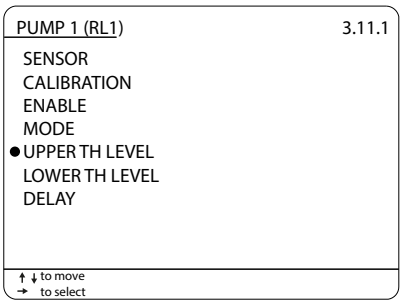


Press “UP” or “DOWN” to select “EMPTYNG” or “FILLING”.
Confirm with “RIGHT”.

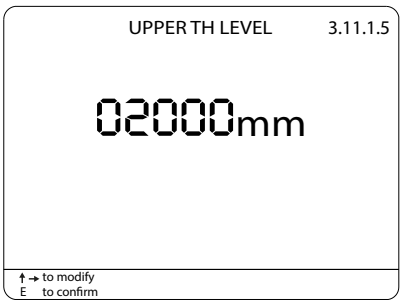


12.2.5 - UPPER TH LEVEL

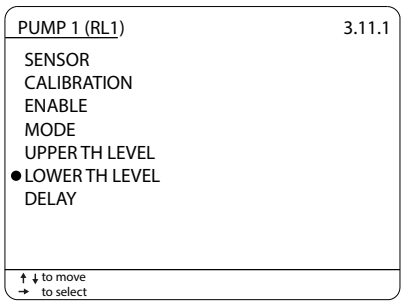
Press “DOWN” to select “UPPER TH LEVEL”.
Confirm with “RIGHT”.



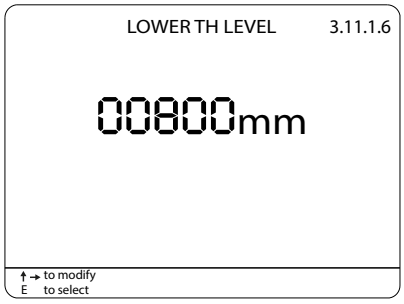
Set in mm the upper threshold level value (see fig.next page).
Move the cursor with “RIGHT” and “UP” to change the digit.
Confirm with “ENTER”.



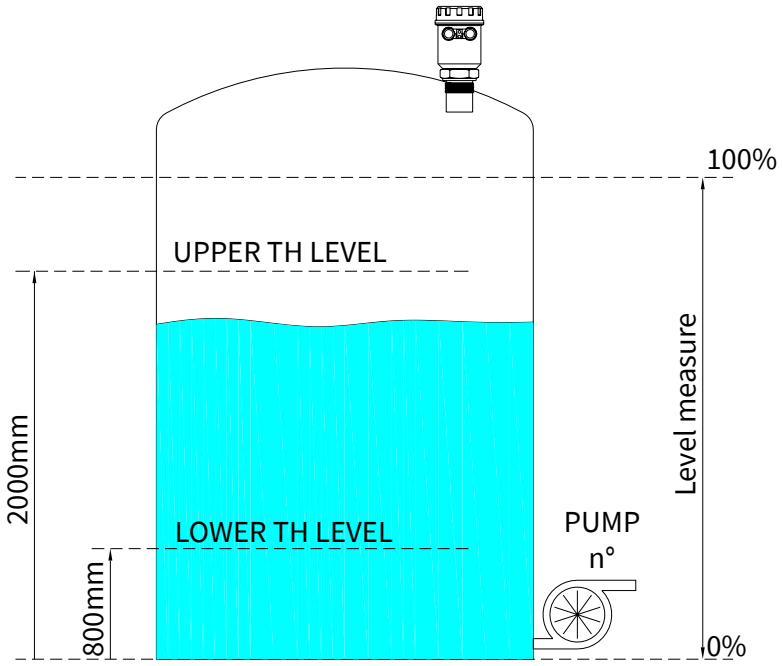
12.2.6 - LOWER TH LEVEL



Press “DOWN” to select “LOWER TH LEVEL”.
Confirm with “RIGHT”.

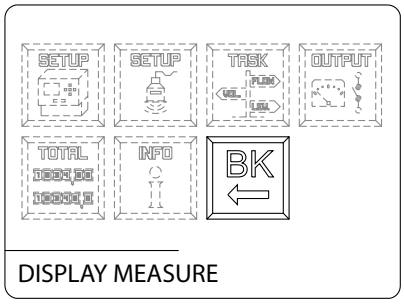


Set in mm the lower threshold level value.
Move the cursor with “RIGHT” and “UP” to change the digit.
Confirm with “ENTER”.



Press 2 times “LEFT” to return to the main menu.

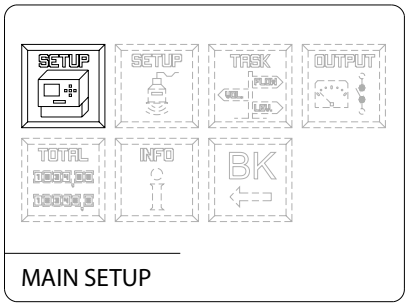
Select BK and press “ENTER” to return to “RUN” mode.



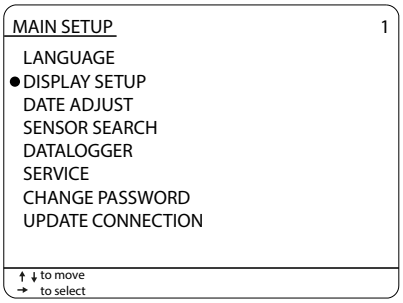
12.3 - Configuration of displayed measures

When the pump control function is activated the VLW90M automatically enables the display of the pump control state.
The pump control state display deactivation or reactivation is possible in the “MAIN SETUP” menu.

With the arrow keys select the “MAIN SETUP”  menu icon.
Confirm the selection by pressing “ENTER”.

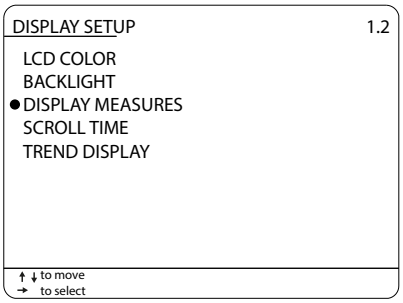


Press “UP” or “DOWN” to select “DISPLAY SETUP”.
Confirm with “RIGHT”.

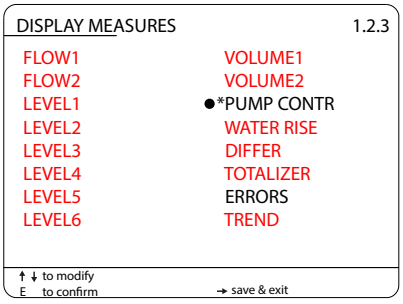


12.3.1 - DISPLAY MEASURES

Press “DOWN” to select “DISPLAY MEASURES” and confirm with “RIGHT”.

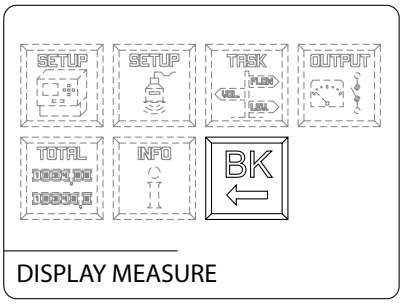


With the pointer to “PUMP CONTR”, press “ENTER” the * symbol will highlight the selection.
Press “RIGHT” to save and exit.



Press 2 times “LEFT” to return to the main menu.

Select  and press “ENTER” to return to “RUN” mode.

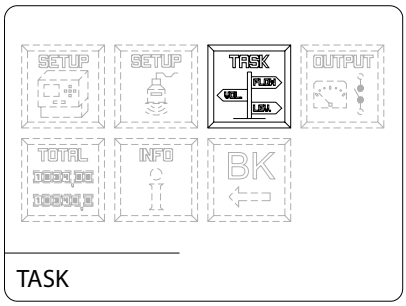


13-WELL WATER RISE SET UP GUIDES

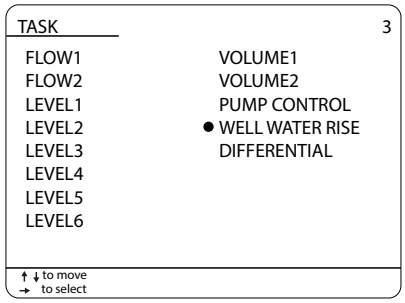
13.1 - via MODBUS SGM LEKTRA ultrasonic transmitters configuration

The use of SGM LEKTRA ultrasonic level transmitters, with MODBUS RTU communication protocol, allows the level measurement total control with the VLW90M unit.
To configure the well water rise with SGM LEKTRA ultrasonic transmitters follow the procedure below:

With the arrow keys select the “TASK”  menu icon.
Confirm the selection by pressing “ENTER”.

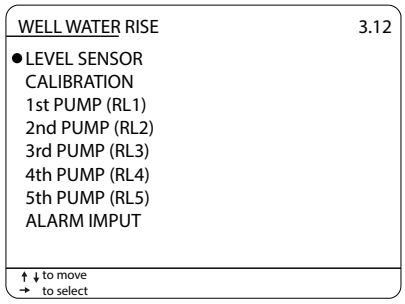


Select submenu “WELL WATER RISE” and press “RIGHT”.

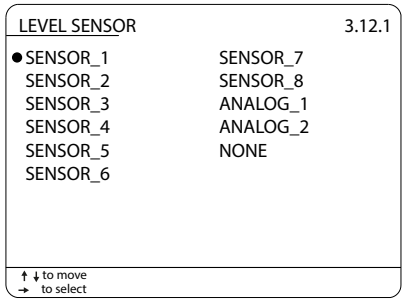


13.1.1 - LEVEL SENSOR

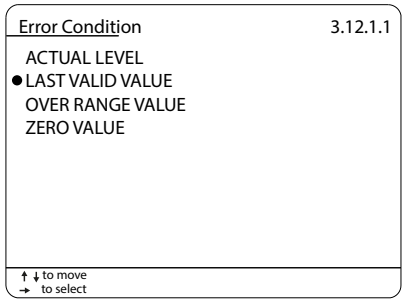
Press “RIGHT” to select “LEVEL SENSOR”.



Select the SENSOR_x with “UP” or “DOWN”.
The sensor UID address identifies the sensor number:
ex. sensor with UID 1 address = SENSOR_1, etc.
Press “RIGHT” to confirm.

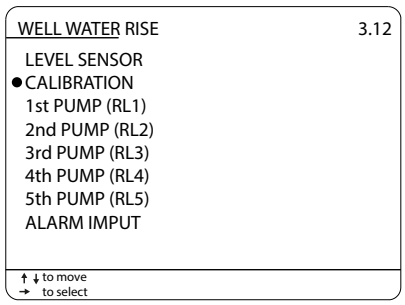


Press “DOWN” to select the measure condition in error state.
Press to “RIGHT” confirm.

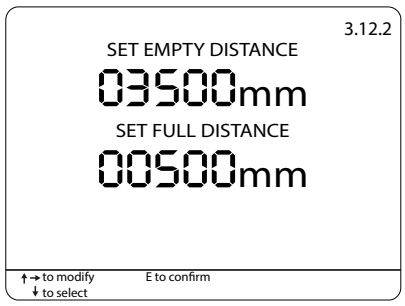


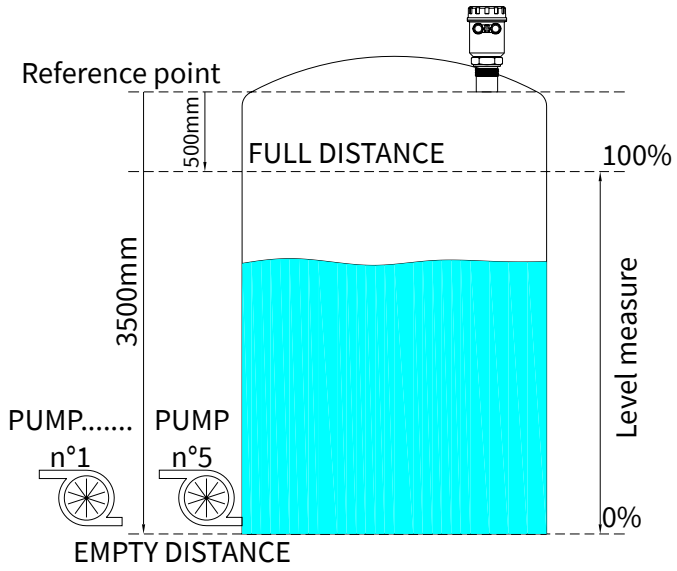
13.1.2 - CALIBRATION

Press “DOWN” to select “CALIBRATION” and press “RIGHT”.



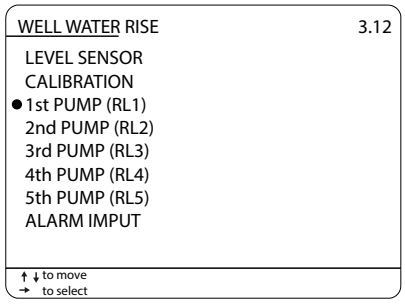
Enter the empty and full distance in mm.
Press “DOWN” to select the measure to be set.
Move the cursor with “RIGHT” and press “UP” to change the digit.
Confirm with “ENTER”.



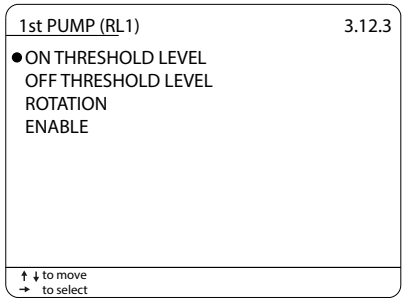


13.1.3 - PUMP

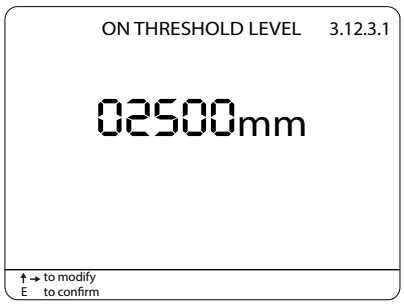
Press “DOWN” to select “1st PUMP”, or “2nd PUMP”, or “3rd PUMP”, or “4th PUMP” or “5th PUMP”.
Confirm with “RIGHT”.



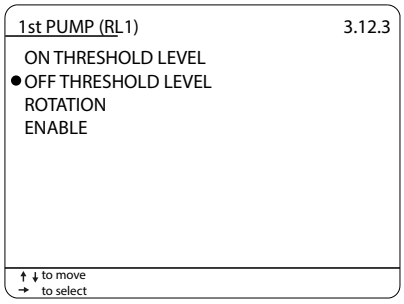
Press “DOWN” to select “ON THRESHOLD LEVEL” and press “RIGHT”.



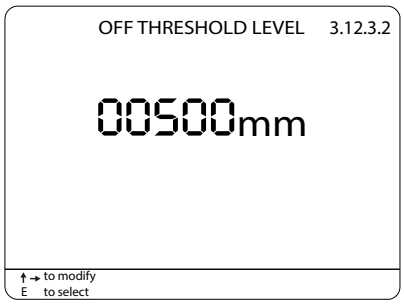
Set in mm the on threshold level value.
Move the cursor with “RIGHT” and “UP” to change the digit.
Confirm with “ENTER”.

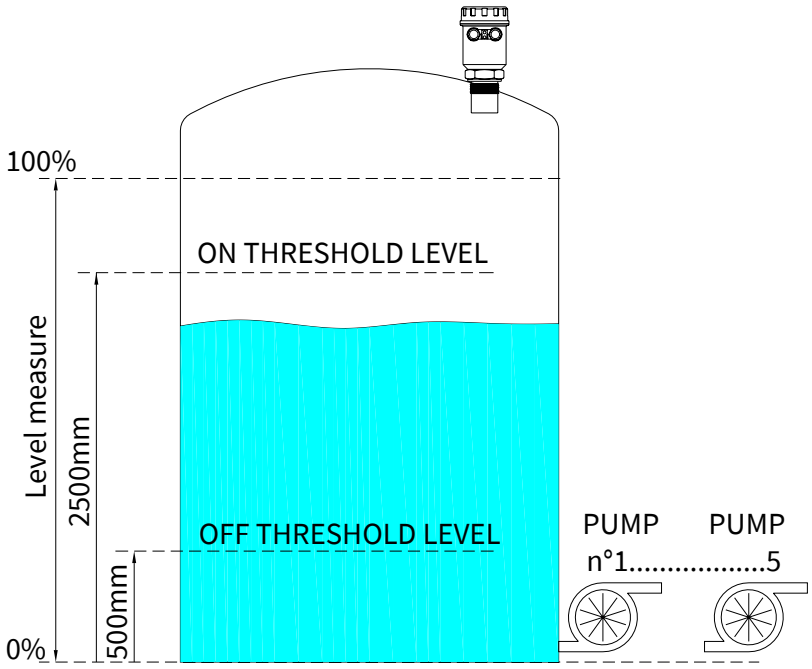


Press “DOWN” to select “OFF THRESHOLD LEVEL” and press “RIGHT”.

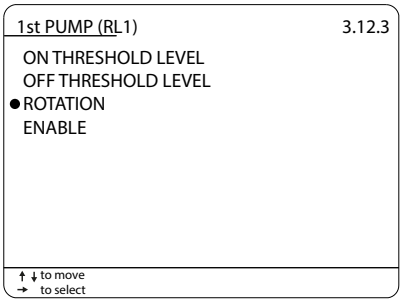


Set in mm the off threshold level value.
Move the cursor with “RIGHT” and “UP” to change the digit.
Confirm with “ENTER”.

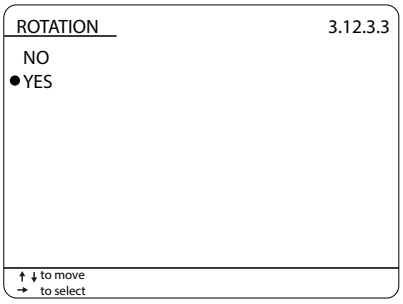




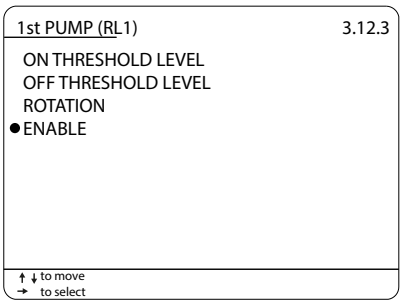
Press “DOWN” to select “ROTATION” and press “RIGHT”.



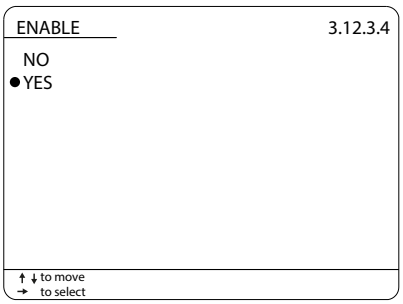
Select “YES” to enter the pump operating cycle in the working times table. The pump that has accumulated the lowest operation time will be turned on for the first.
Press “RIGHT” to confirm.



Press “DOWN” to select “ENABLE” and press “RIGHT”.



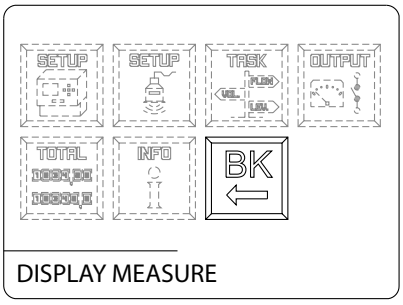
Press “UP” or “DOWN” to select “YES”. Confirm with “RIGHT”.



Press 2 times “LEFT” to return to the main menu.

Select 

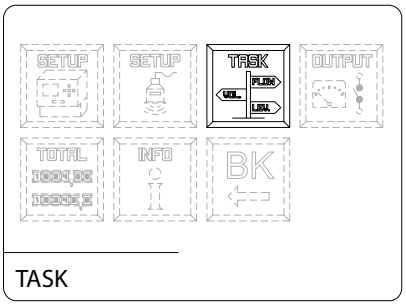
and press “ENTER” to return to “RUN” mode.



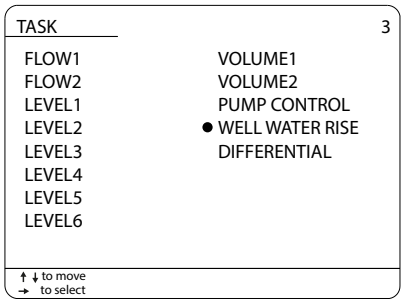
13.2 - 4÷20mA analog transmitter configuration

With the 2 VLW90M analog inputs is possible to control the measurement with any level sensor that transmits an 4÷20mA analog signal.
To configure the well water rise with 4÷20mA analog level transmitters follow the procedure below:

With the arrow keys select the “TASK”  menu icon.
Confirm the selection by pressing “ENTER”.

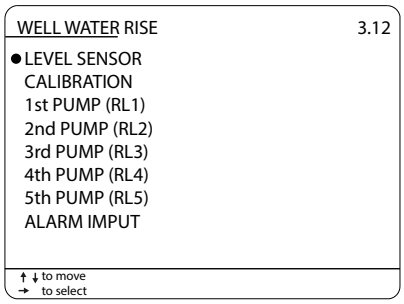


Select submenu “WELL WATER RISE” and press “RIGHT”.

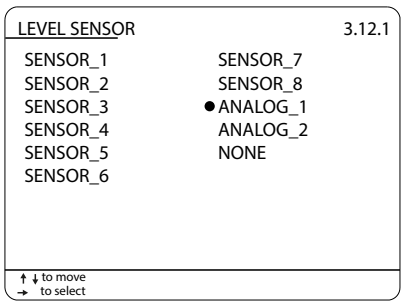


13.2.1 - LEVEL SENSOR

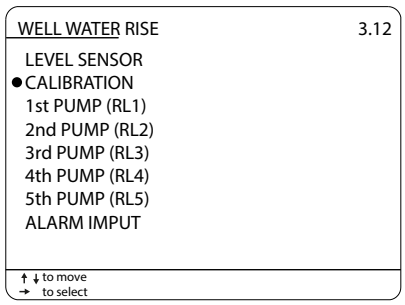
Press “RIGHT” to select “LEVEL SENSOR”.



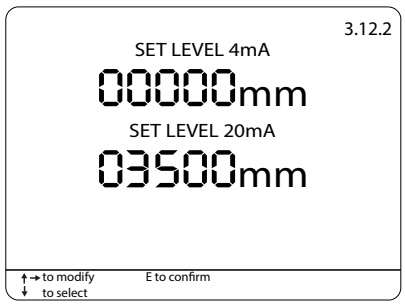
Select the ANALOG_x input with “UP” or “DOWN”.
ANALOG_1 is associated with the sensor connection to Analog Input Ch1 terminals;
ANALOG_2 is associated with the sensor connection to Analog Input Ch2 terminals (see par.6.3.4/6.3.5).
Press “RIGHT” to confirm.



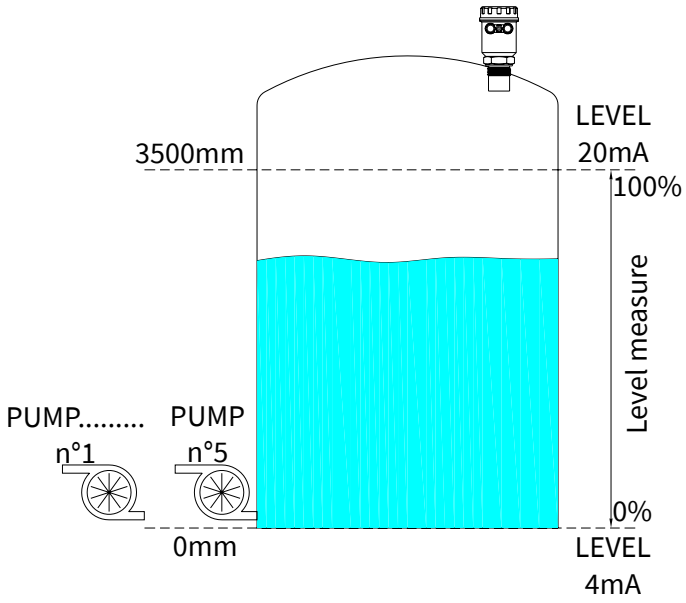
13.2.2 - CALIBRATION



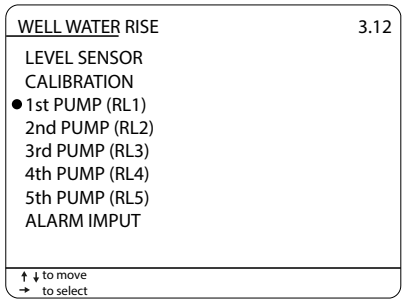
Press “DOWN” to select “CALIBRATION” and press “RIGHT”.



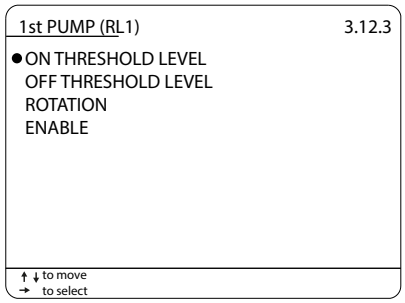
Enter the empty and full distance in mm.
Press “DOWNW to select the measure to be set.
Move the cursor with “RIGHT” and press “UP” to change the digit.
Confirm with “ENTER”.



13.2.3 - PUMP

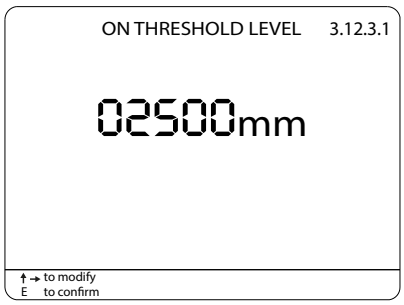


Press “DOWN” to select “1st PUMP”, or “2nd PUMP”, or “3rd PUMP”, or “4th PUMP” or “5th PUMP”.
Confirm with “RIGHT”.

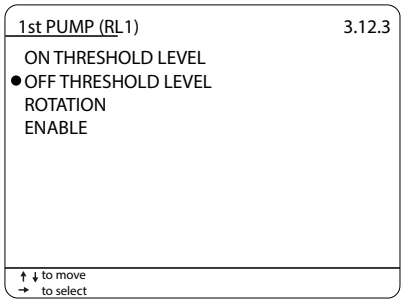


Press “DOWN” to select “ON THRESHOLD LEVEL” and press “RIGHT”.

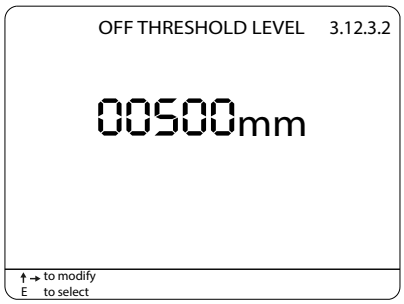
Set in mm the on threshold level value.
Move the cursor with “RIGHT” and “UP” to change the digit.
Confirm with “ENTER”.

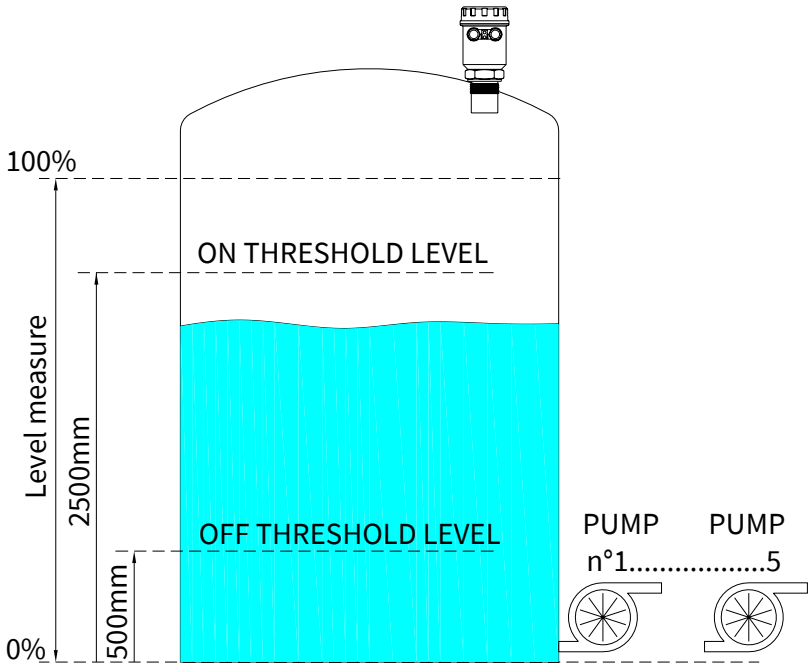


Press “DOWN” to select “OFF THRESHOLD LEVEL” and press “RIGHT”.

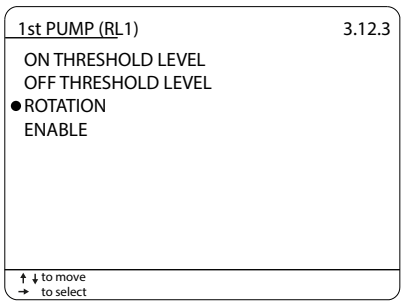


Set in mm the off threshold level value.
Move the cursor with “RIGHT” and “UP” to change the digit.
Confirm with “ENTER”.

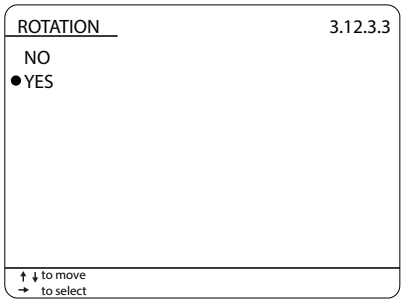




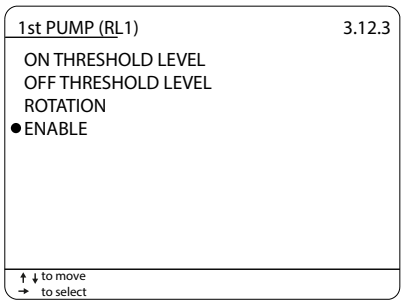
Press “DOWN” to select “ROTATION” and press “RIGHT”.



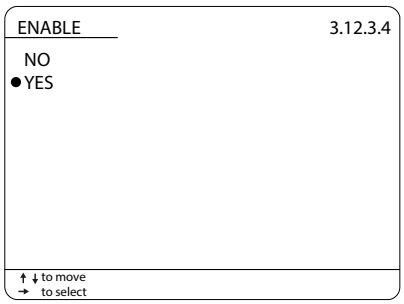
Select “YES” to enter the pump operating cycle in the working times table. The pump that has accumulated the lowest operation time will be turned on for the first.
Press “RIGHT” to confirm.



Press “DOWN” to select “ENABLE” and press “RIGHT”.



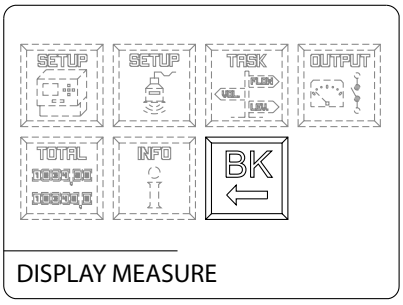
Press “UP” or “DOWN” to select “YES”.
Confirm with “RIGHT”.



Press 2 times “LEFT” to return to the main menu.

Select 

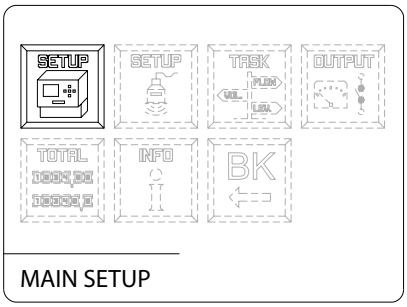
and press “ENTER” to return to “RUN” mode.



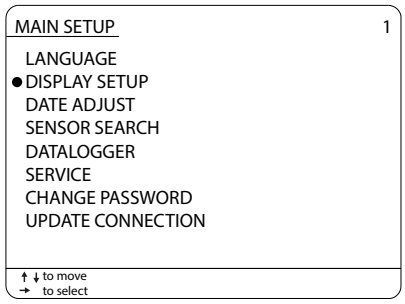
13.3 - Configuration of displayed measures

When the well water rise function is activated the VLW90M automatically enables the display of the pumps rotation state.
The pumps rotation state display deactivation or reactivation is possible in the “MAIN SETUP” menu

With the arrow keys select the “MAIN SETUP”  menu icon.
Confirm the selection by pressing “ENTER”.

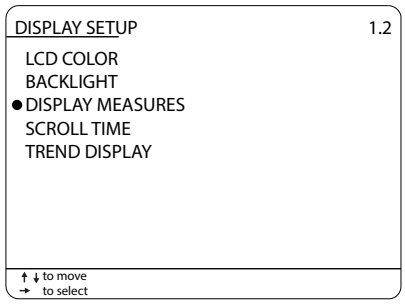


Press “UP” or “DOWN” to select “DISPLAY SETUP”.
Confirm with “RIGHT”.

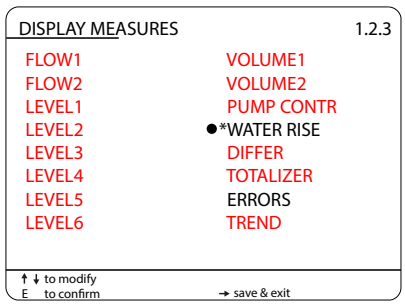


13.3.1 - DISPLAY MEASURES

Press “DOWN” to select “DISPLAY MEASURES” and confirm with “RIGHT”.

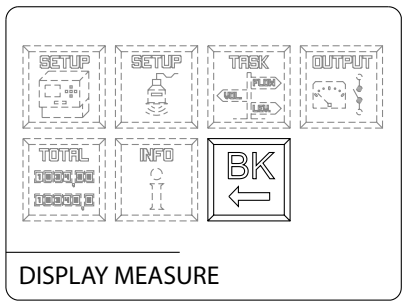


With the pointer to “WATER RISE”, press “ENTER” the ***** symbol will highlight the selection.
Press “RIGHT” to save and exit.



Press 2 times “LEFT” to return to the main menu.

Select  and press “ENTER” to return to “RUN” mode.



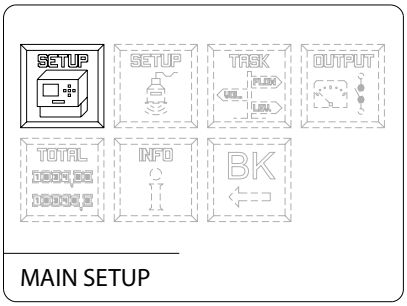
14 - PTU5x OR METER OR KTU5 SENSOR Via MODBUS NEW CONNECTION

14.1 - via MODBUS SGM LEKTRA ultrasonic transmitters configuration

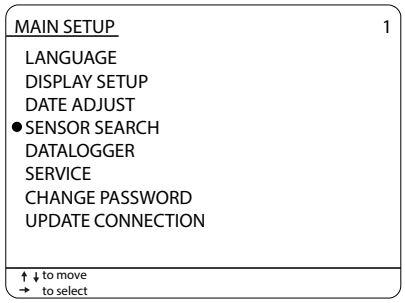
The use of SGM LEKTRA ultrasonic level transmitters, with MODBUS RTU communication protocol, allows the total sensor control with the VLW90M unit.

WARNING - Disconnect all PTU50/51/56 or METER or KTU5 transmitters and only connect the new PTU50/51/56 or METER or KTU5 transmitter to configure.

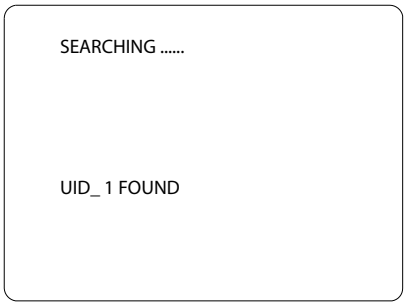
With the arrow keys select the “MAIN SETUP”  menu icon.
Confirm the selection by pressing “ENTER”.



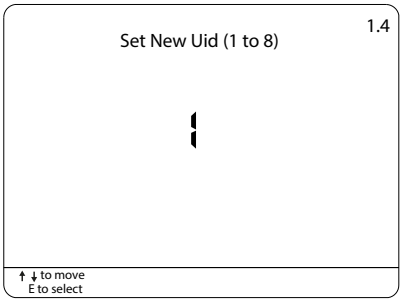
Press “UP” or “DOWN” to select “SENSOR SEARCH”.
Confirm with “RIGHT”.



The display will show the UID address of the new connected transmitter.
Normally the new transmitters have the UID 1 address.



Set the UID address of the new connected transmitter.
NB - The transmitters connected to the same VLW90M must have different UID addresses from each other.
Press “ENTER” to confirm.

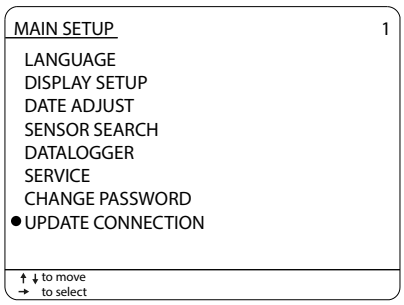


DISCONNECT THE TRASMITTER

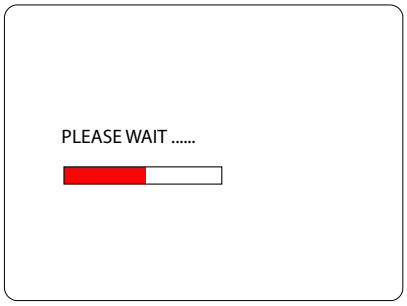
WARNING - Reconnect all PTU50/51/56 or METER or KTU5 transmitter

14.1.2 - UPDATE CONNECTION

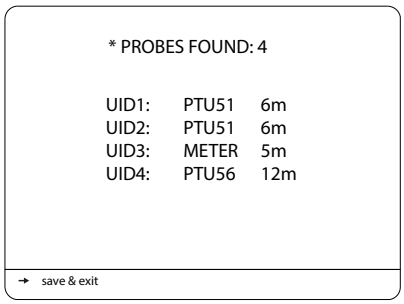
Press “DOWN” to select “UPDATE CONNECTION” and press “RIGHT”.



The display will show the search bar graph progress of the connected transmitters.



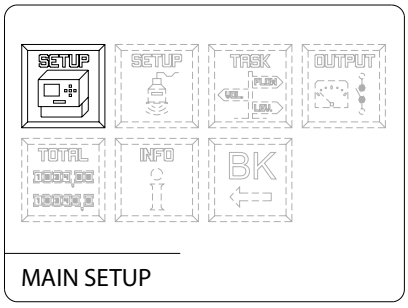
The display shows the connected sensors number, the model and the maximum measurement distance.
Press “RIGHT” to save and exit.



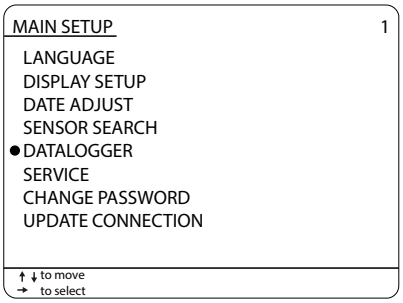
15-DATALOGGER (WHEN AVAILABLE)

15.1 - DATALOGGER on USB Pen Drive activation

With the arrow keys select the “MAIN SETUP”  menu icon.
Confirm the selection by pressing “ENTER”.

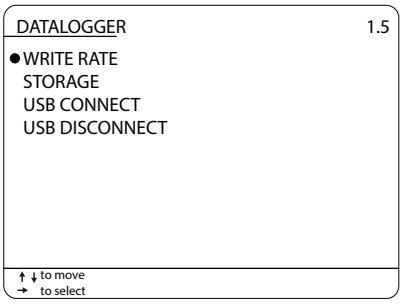


Press “UP” or “DOWN” to select “DATALOGGER”.
Confirm with “RIGHT”.

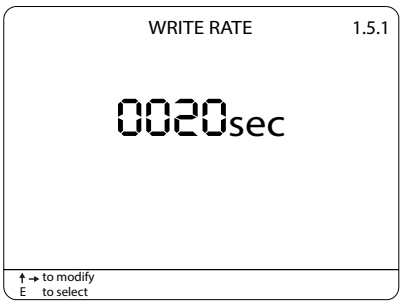


15.1.1 - WRITE RATE

Press “DOWN” to select “WRITE RATE” and press “RIGHT”.

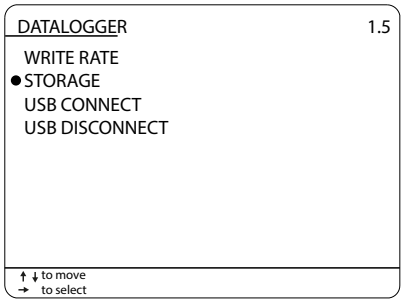


Enter the interval time, in sec., for data storage (min.10 sec., max. 3600 sec.).
Move the cursor with “RIGHT” and “UP” to change the digit.
Confirm with “ENTER”:

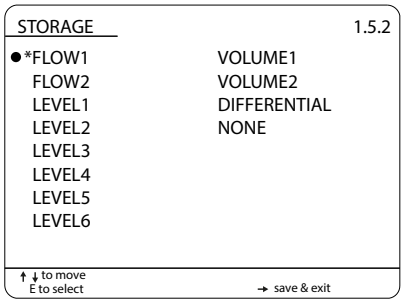


15.1.2 - STORAGE

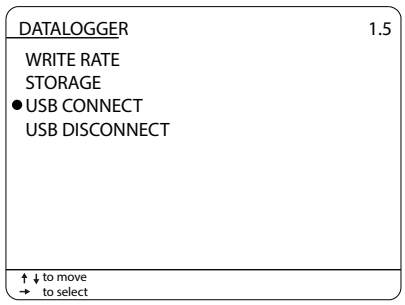
Press “DOWN” to select “STORAGE” and press “RIGHT”.



Position the pointer on the task to be stored.
Pressing “ENTER”, the * symbol will highlight the selection.
Press “RIGHT” to save and exit.
Only the activated functions are selectable.

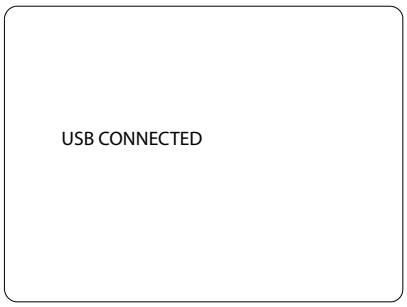


15.1.3 - USB CONNECT

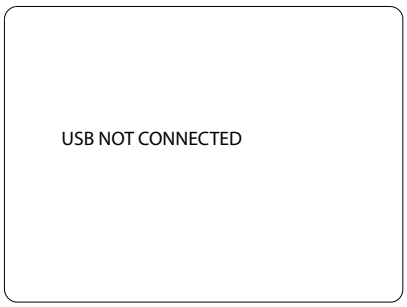


Only if the Pen Drive is inserted into the USB port after turning on the VLW90M, select “USB CONNECT” and confirm with “RIGHT”.

Wait until the system finds the connected pen drive to the VLW90M USB port.



The Pen Drive is connected to the system.
The “USB CONNECTED” message is displayed and the data logger is enabled to write data to the “LOG_FILE.TXT” file.



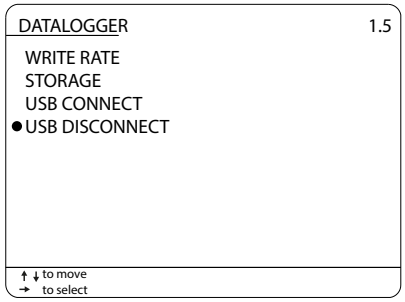
Connection failed. The message “USB NOT CONNECTED” is displayed. Check:

a) connection to the USB port.
b) that the Pen Drive formatting mode (File System) is “FAT32”.

15.2 - DATALOGGER on USB Pen Drive file reading

15.2.1 - USB DISCONNECT

Before removing the Pen Drive to read the file, select “USB DISCONNECT” with the “DOWN” and confirm with “RIGHT”.



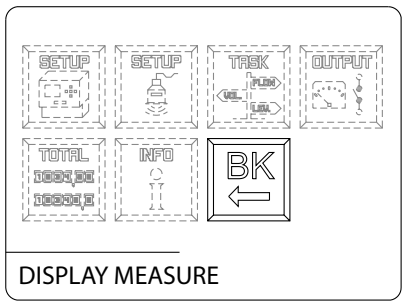
Wait until the system disconnects the Pen Drive from the VLW90M USB port.

The message “REMOVE USB DEVICE” is displayed. Is now possible to remove the pen drive.

Press 2 times “LEFT” to return to the main menu.

Select 

and press “ENTER” to return to “RUN” mode.



15.2.2 - READ THE STORED DATA

To read the stored data, simply insert the pen drive into a PC or a notebook USB port and open the “LOG_FILE.TXT” datalogger file directly with EXCEL® or CALC by OpenOffice.orgTM.
The following data are available in the table DATA LOGGER (columns):

- **DATE**
- **TIME**
- **TASK**
- **UID** (ultrasonic sensor UID address)
- **FLOW** (flow rate measure)
- **unit** (flow rate measure unit)
- **TOT** (flow totalizer volume)
- **unit** (flow totalizer measure unit)
- **LEV [mm]** (level measure)
- **VOL** (volume mesure)
- **unit** (volume measure unit)
- **DIFF[mm]** (differential level measure)
- **PUMP_LEV[mm]** (pump level measure)
- **RL1/2/3/4/5** (relay status; 0 = relay de-energized 1 = relay energized)
- **DIST_ERR** (ultrasonic sensor distance measurement error; 0 = normal condition, 1 = error condition)
- **MAXGAIN_ERR** (ultrasonic sensor max gain alarm; 0 = normal condition, 1 = alarm condition)
- **NOECHO_ERR** (ultrasonic sensor echo signal reception absence; 0 = normal condition, 1 = alarm condition)
- **TEMP_ERR** (ultrasonic sensor temperature measurement error; 0 = normal condition, 1 = alarm condition)

DATE	TIME	TASK	UID	FLOW	unit	TOT	unit	LEV(mm)	VOL	unit	DIFF(mm)	PUMP_LEV(mm)
22/05/2013	18:26:16	FLOW1	1	28513,68	l/m	2529,30	m3	0	0,00	--	0	0
22/05/2013	18:26:36	FLOW1	1	23816,33	l/m	2538,02	m3	0	0,00	--	0	0
22/05/2013	18:26:56	FLOW1	1	6636,55	l/m	2542,76	m3	0	0,00	--	0	0
22/05/2013	18:27:16	FLOW1	1	11376,47	l/m	2545,24	m3	0	0,00	--	0	0

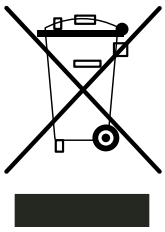
16-FACTORY TEST AND QUALITY CERTIFICATE

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

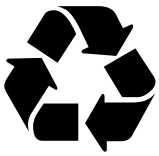
(Multifunction unit)

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: .....



This mark on the instrument indicates that the product and its electronic accessories must not be disposed of with other household waste at the end of their useful life.
To avoid possible damage to the environment or human health resulting from uncontrolled waste disposal, please return the equipment directly to a specialized recycling company, in compliance with local regulations.



NI - MH

This instrument is powered by a battery type 2,4V triple-A, 0.6Ah NiMH; at the end of the life of the battery or the instrument, do not disperse it in the environment. The battery must be disposed of in the appropriate collection centers.

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