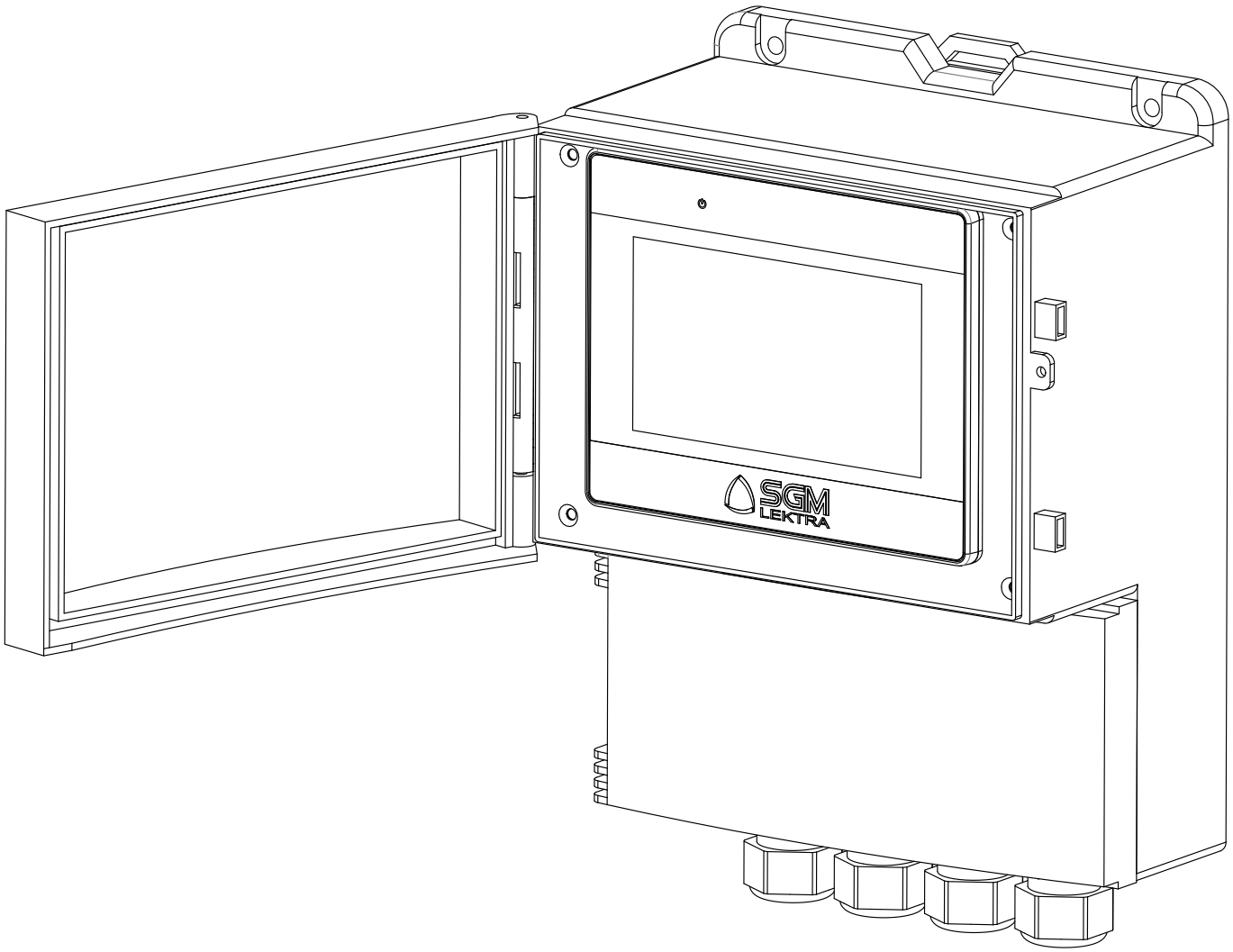
VLW60T

Manual display unit and configuration for MODBUS level meters.



technical documentation ENG Rev. of 22/03/2023

sgm lektra

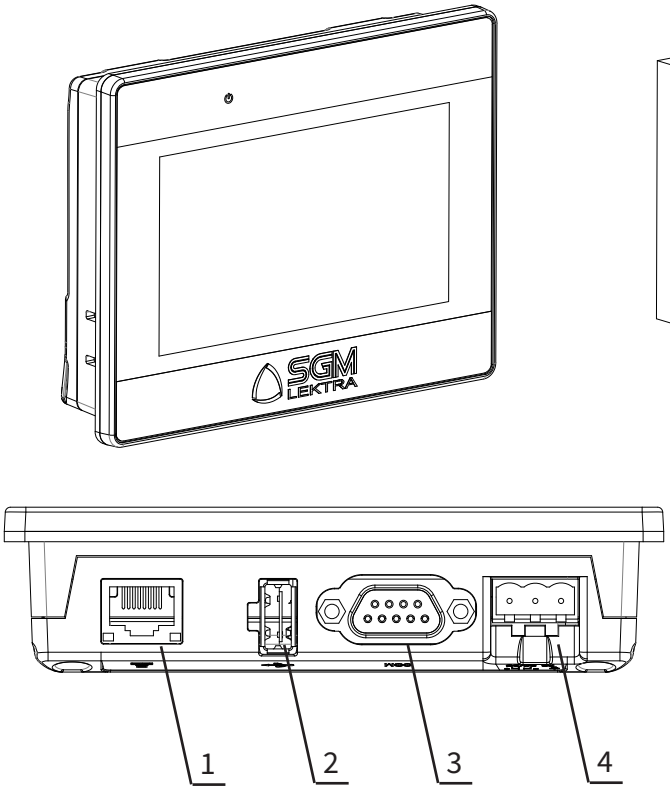
INDEX

1-WARRANTY

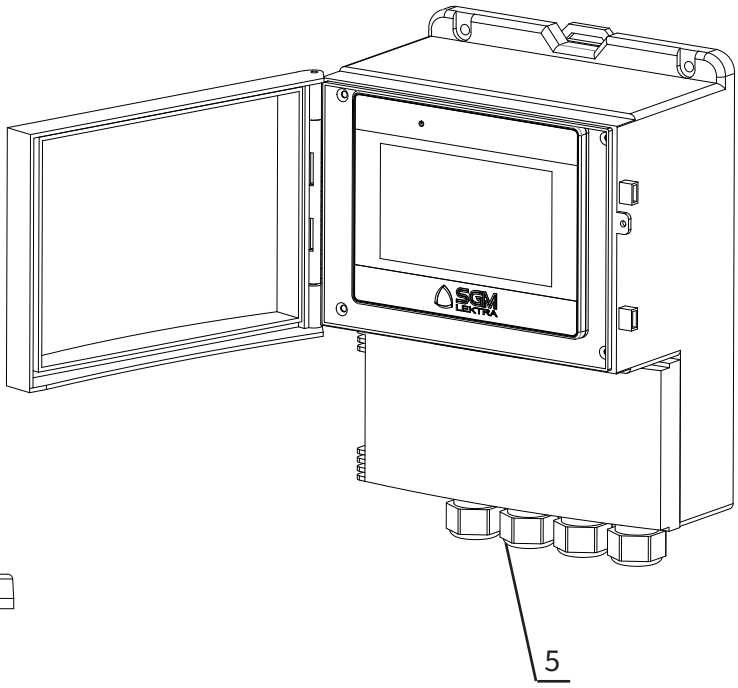
Products supplied by SGM LEKTRA are guaranteed for a period of 12 (twelve) months from delivery date according to the conditions specified in our sale conditions document.
SGM LEKTRA can choose to repair or replace the Product.
If the Product is repaired it will maintain the original warranty terms, whereas if the Product is replaced it will have 12 (twelve) months of warranty. The warranty will be null if the Client modifies, repairs 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

VERSION “A”



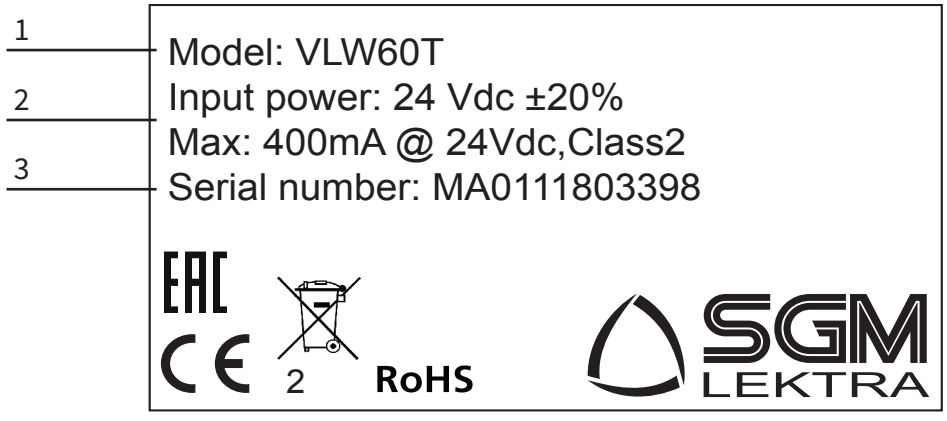
VERSION “B”



1. Ethernet
2. USB Host
3. COM1 RS-232, RS-485 2W/4W COM3 RS-485 2W
4. Power Connector - Morsetto estraibile
5. Skintop M20x1.5

2.1 IDENTIFICATION

Each instrument has an adhesive identification plate on which the main instrument data are reported.
The following image describes the information and data on the plate.



1. Model
2. Power supply
3. Serial number

3-TECHNICAL FEATURES

Display
4.3 “TFT colour resistive touch LCD, 480 x 272 resolution, LED backlight (Life Time> 30000h)

Digital ports
COM Ports: COM1 RS485 (A, B)

RTC Battery
Integrated

Power supply
Version “A” 24Vdc ±20%
Version “B” 85-265Vac (50/60Hz) / 24Vdc

Consumption
Max 15W

Casing material
Version “A” Plastic
Version “B” ABS - Polycarbonate

Dimensions l x h x d (mm)
Version “A” 128x102x32
Version “B” 183.5x250x126

Recess dimensions (mm)
119x93

Assembly
Version “A” panel-type
Version “B” wall mounted, on pole or on DIN bar, with ABS enclosure and clear cover

Front protection
Version “A” IP65 / NEMA4
Version “B” IP66

Storage temperature
-20°÷60°C

Operating temperature
0÷50°C

Relative humidity
10÷90% (not condensing)

Certified
CE

Power supply for optional relay module
20.4÷28.8Vdc

Power consumption for optional relay module
2.5W

Mounting for optional relay module
DIN rail

Optional relay module output
< 250Vac, 30Vdc - 2A for single contact

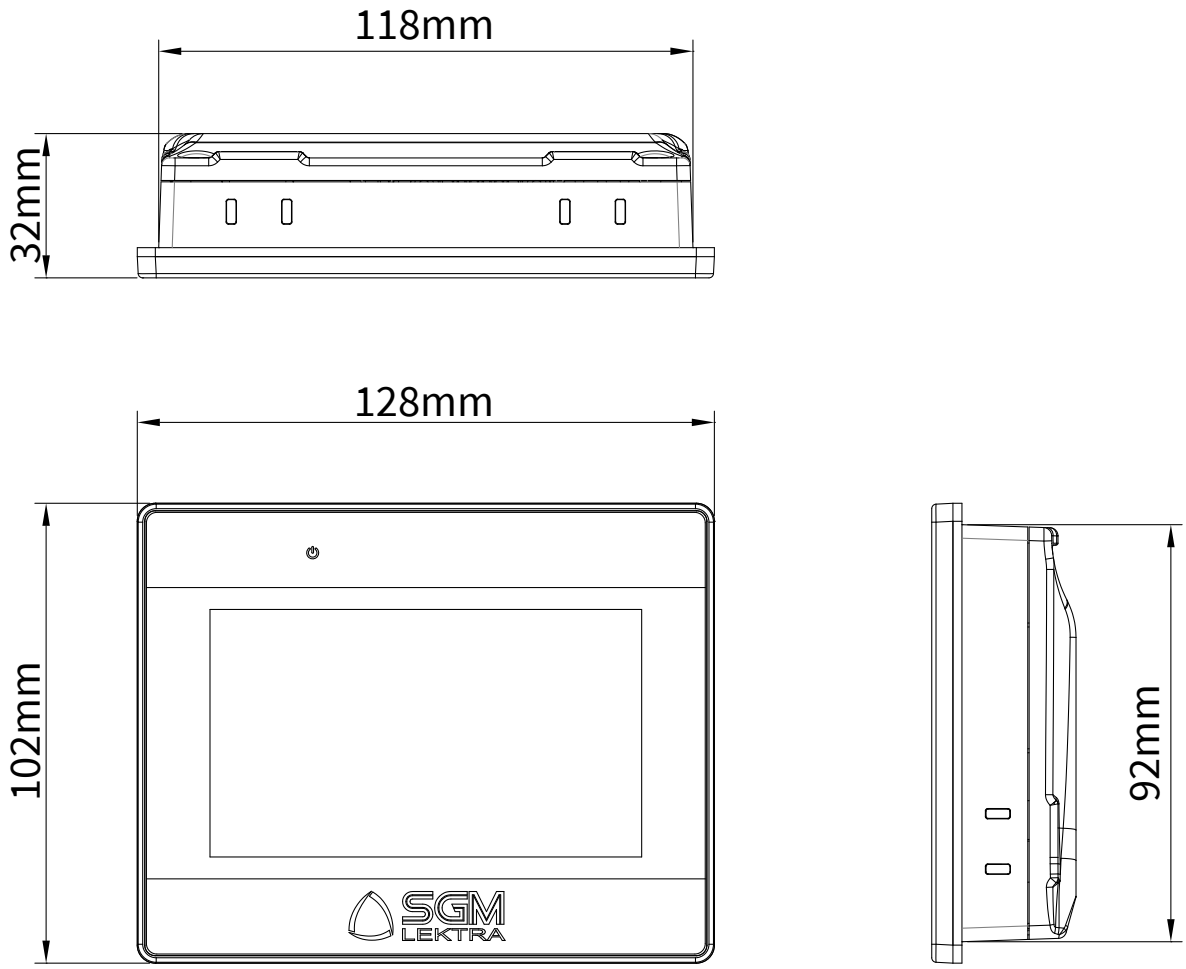
Optional relay module storage temperature
-25°÷+70°C

Optional relay module working temperature
5÷55°C

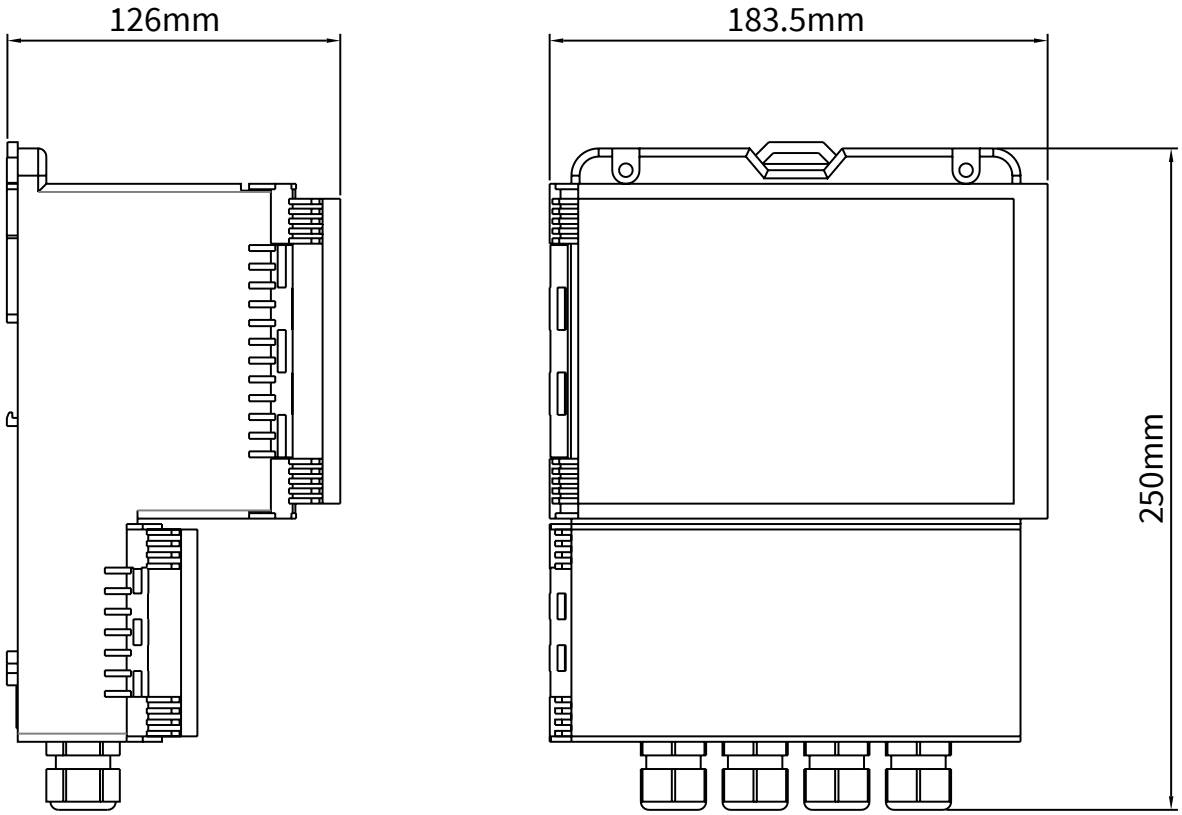
Optional relay module Relative humidity
5÷95% (not condensing)

4-DIMENSIONS

4.1 MECHANICAL DIMENSIONS VERSION "A"



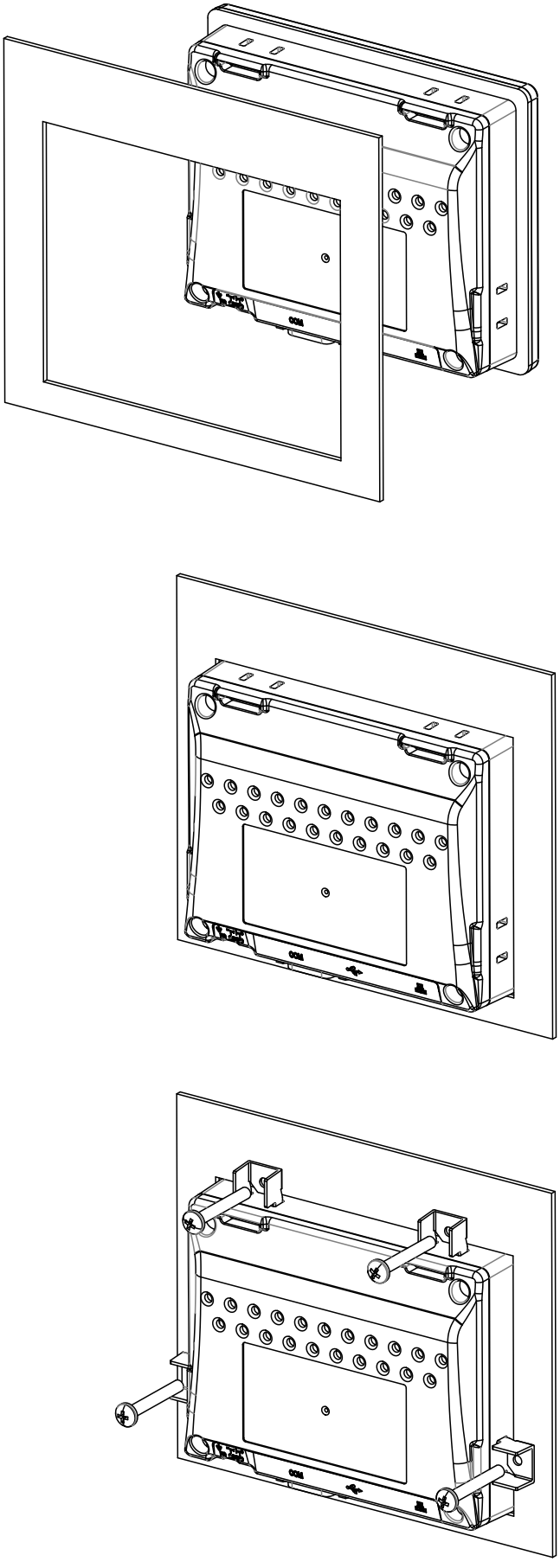
4.2 MECHANICAL DIMENSIONS VERSION "B"



5-INSTALLATION

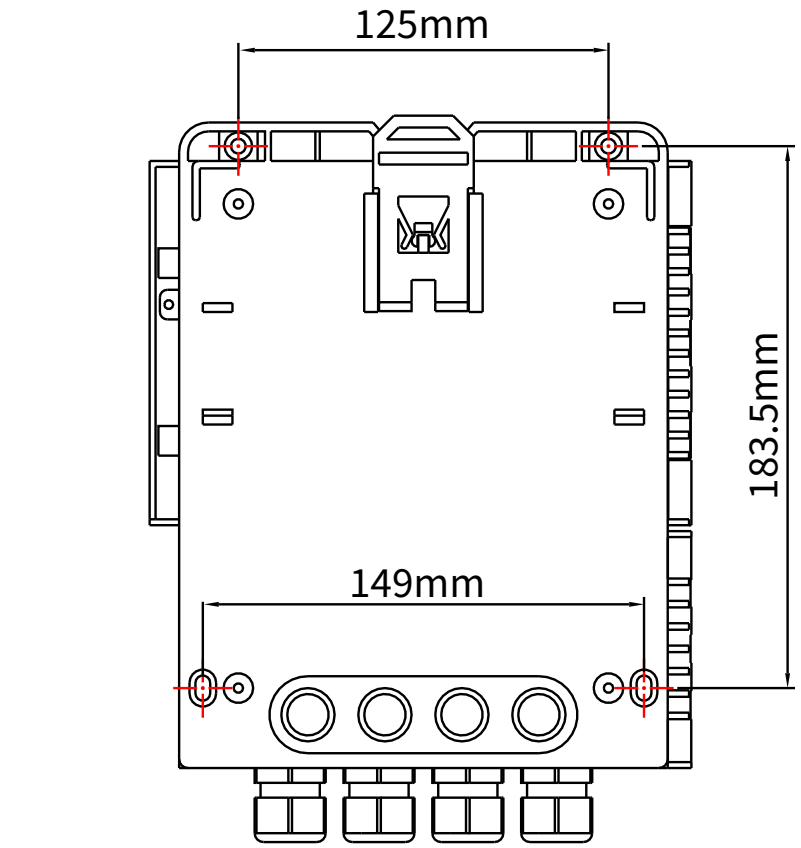
5.1 ASSEMBLY OF PANEL FRONT VERSION “A”

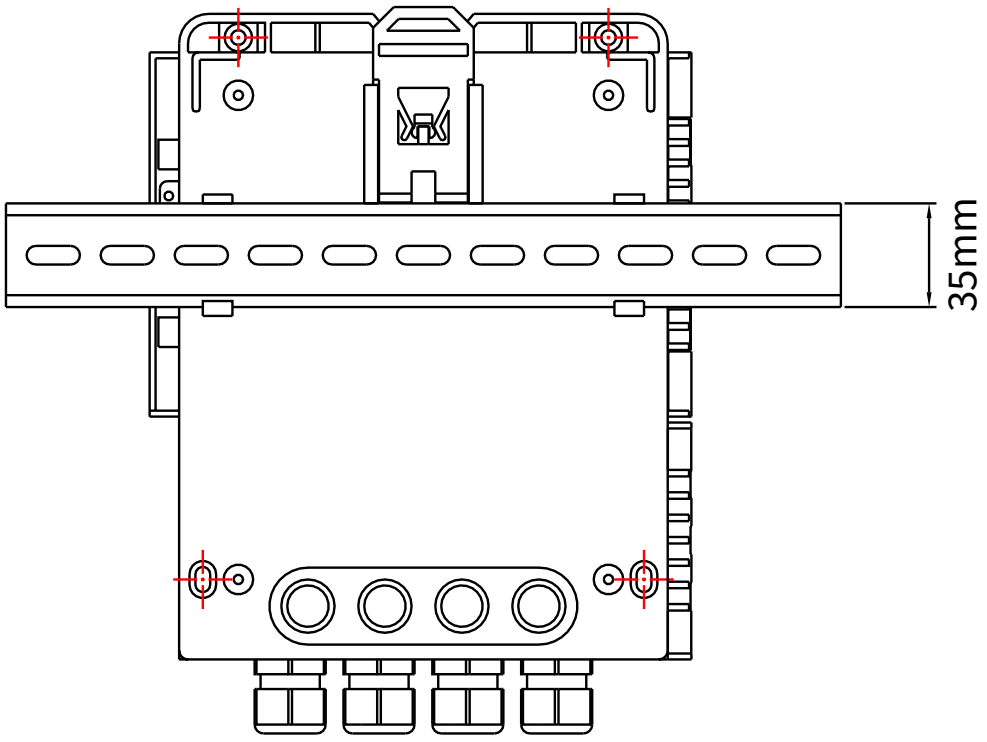
Place the instrument in the prepared slot (119x93mm) and fasten the fixing supports.
(tightening torque: 0.3÷0.45 Nm to guarantee the seal of the gasket without deforming the panel).



5.2 WALL MOUNTING OR ON DIN BAR VERSION “B”

- Installation must only be performed by qualified personnel and in compliance with current regulations.
- Install the unit in an environment compatible with the physical characteristics and construction materials of the enclosure; for outdoor installations, protect the unit from rain and sun with a protective roof.
- Incorrect use of the device could cause serious damage to persons, the product and the equipment connected to it.

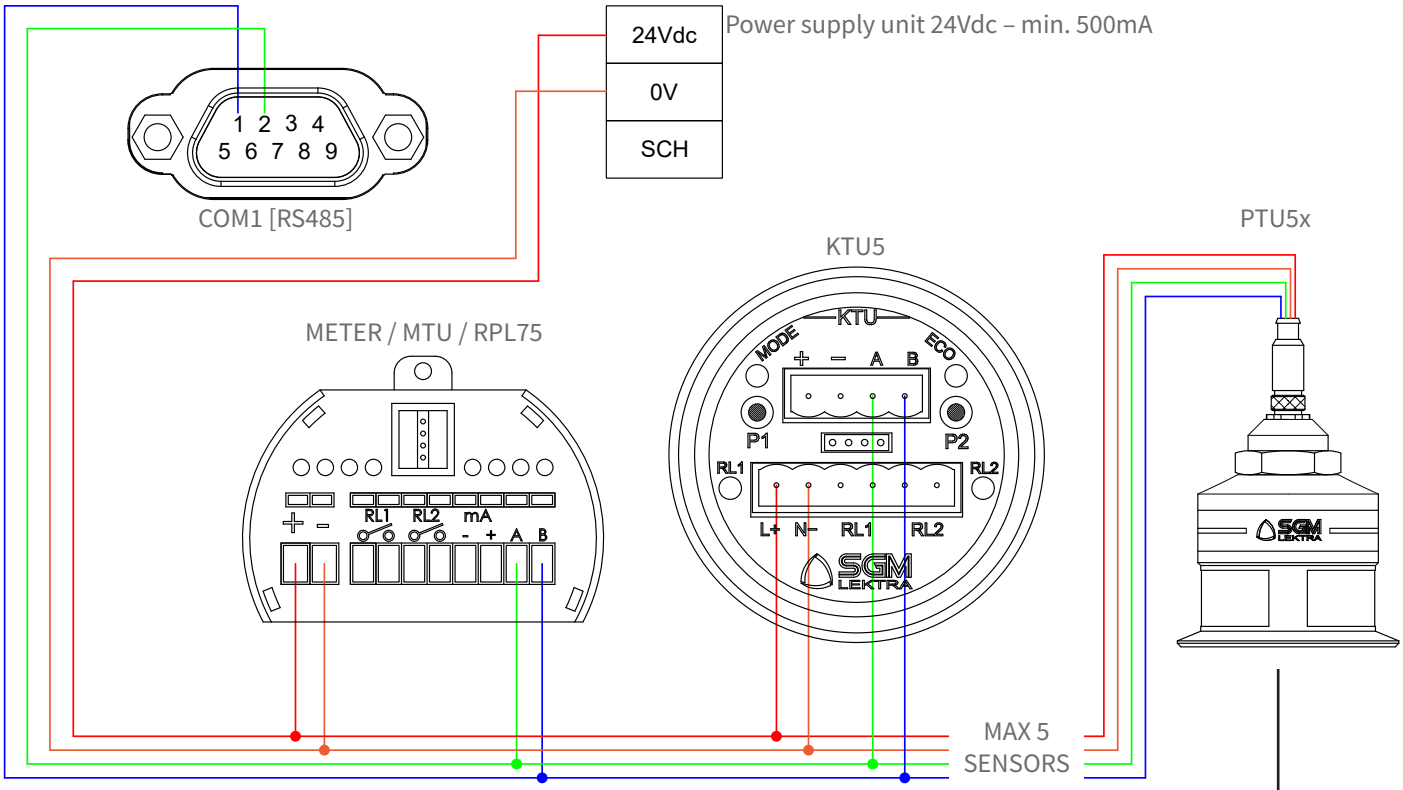




6-ELECTRICAL CONNECTIONS

6.1 ELECTRICAL CONNECTIONS VERSION "A" (FRONT PANEL ASSEMBLY)

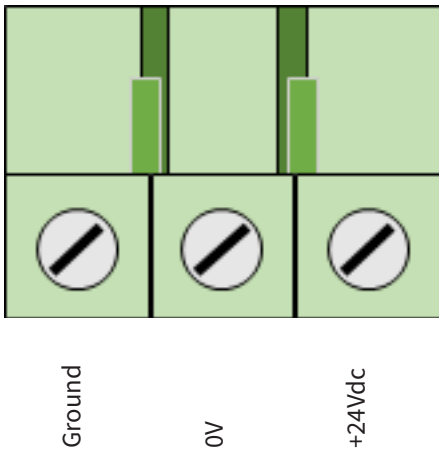
MODBUS PORT CONNECTION TO THE METER PROBES/KTU5/MTU/PTU/RPL75
The MODBUS connection for connection to the probes must be made to the COM1 [RS485] with 2 wires:
• Pin 1 > B
• Pin 2 > A



PIN 1	BLUE
PIN 2	GREEN
24Vdc	RED
0V	BROWN

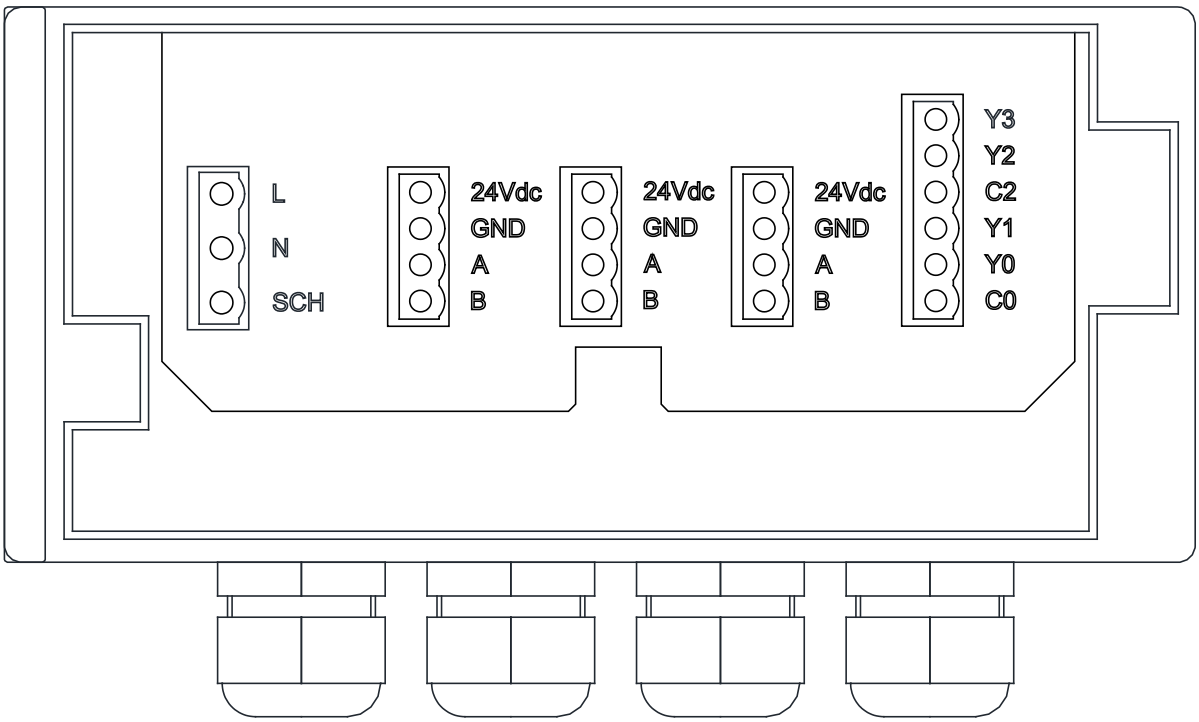
6.2 POWER SUPPLY VOLTAGE CONNECTION 24VDC

The supply voltage must be connected to the removable terminal.



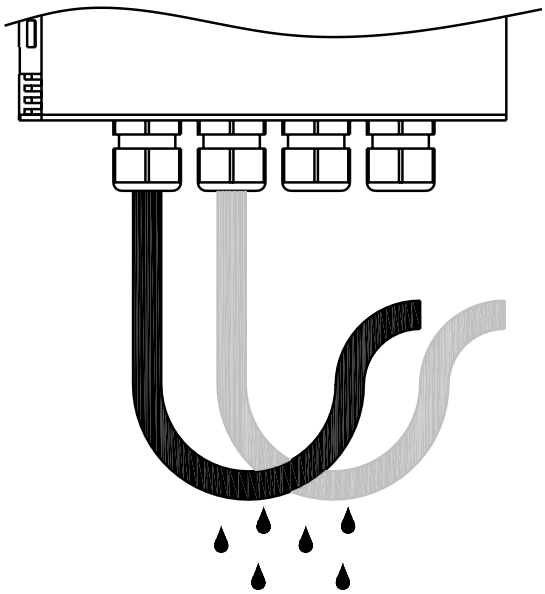
6.3 CONNECTION TERMINALS VERSION "B"

1) Separate the motor or power control cables from the VLW60T connection cables
2) Remove the caps from the cable glands and open the cover by loosening the appropriate screws.
3) Insert the cables into the transmitter through the cable glands.
4) Close the cover and tighten the cable glands.



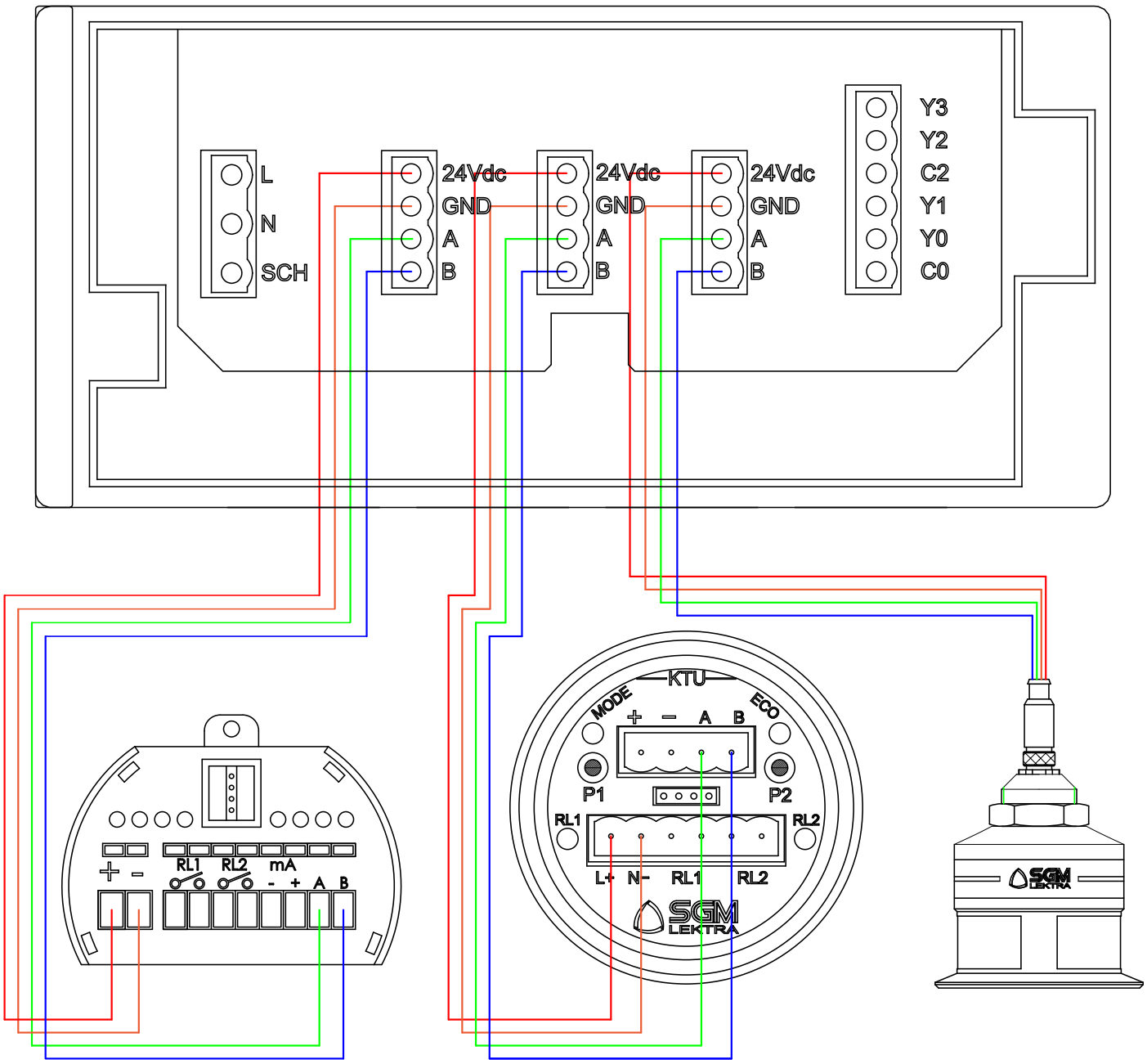
6.4 INFILTRATIONS OF HUMIDITY

To avoid moisture infiltration inside the enclosure, the following are recommended:
- For the electrical connections use a cable with an external diameter of 6÷12mm and fully tighten the M20 cable gland.
- Close the lid tightly.
- Position the cable in such a way as to form a downward curve in the output of the M20 cable gland; in this way condensation and/or rainwater will tend to drip from the bottom of the curve.



6.5 ELECTRICAL CONNECTIONS VERSION B (WALL MOUNT)

Connect the ultrasonic level transmitters, as shown in the following diagram.

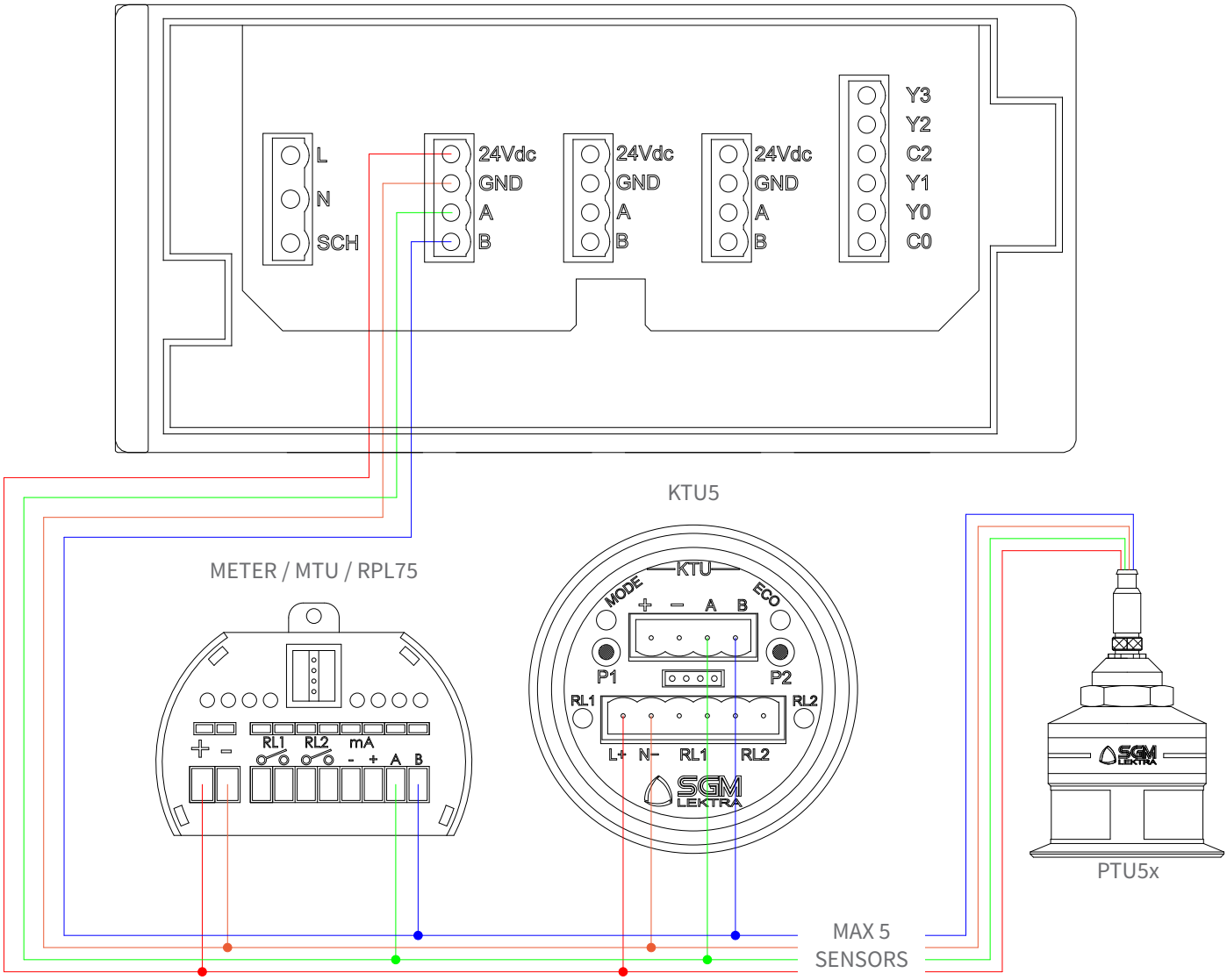


METER / MTU / RPL75 KTU5 PTU5x

24Vdc	RED
GND	BROWN
A	GREEN
B	BLUE

6.6 ELECTRICAL CONNECTIONS VERSION B MAX 5 SENSORS (WALL MOUNT)

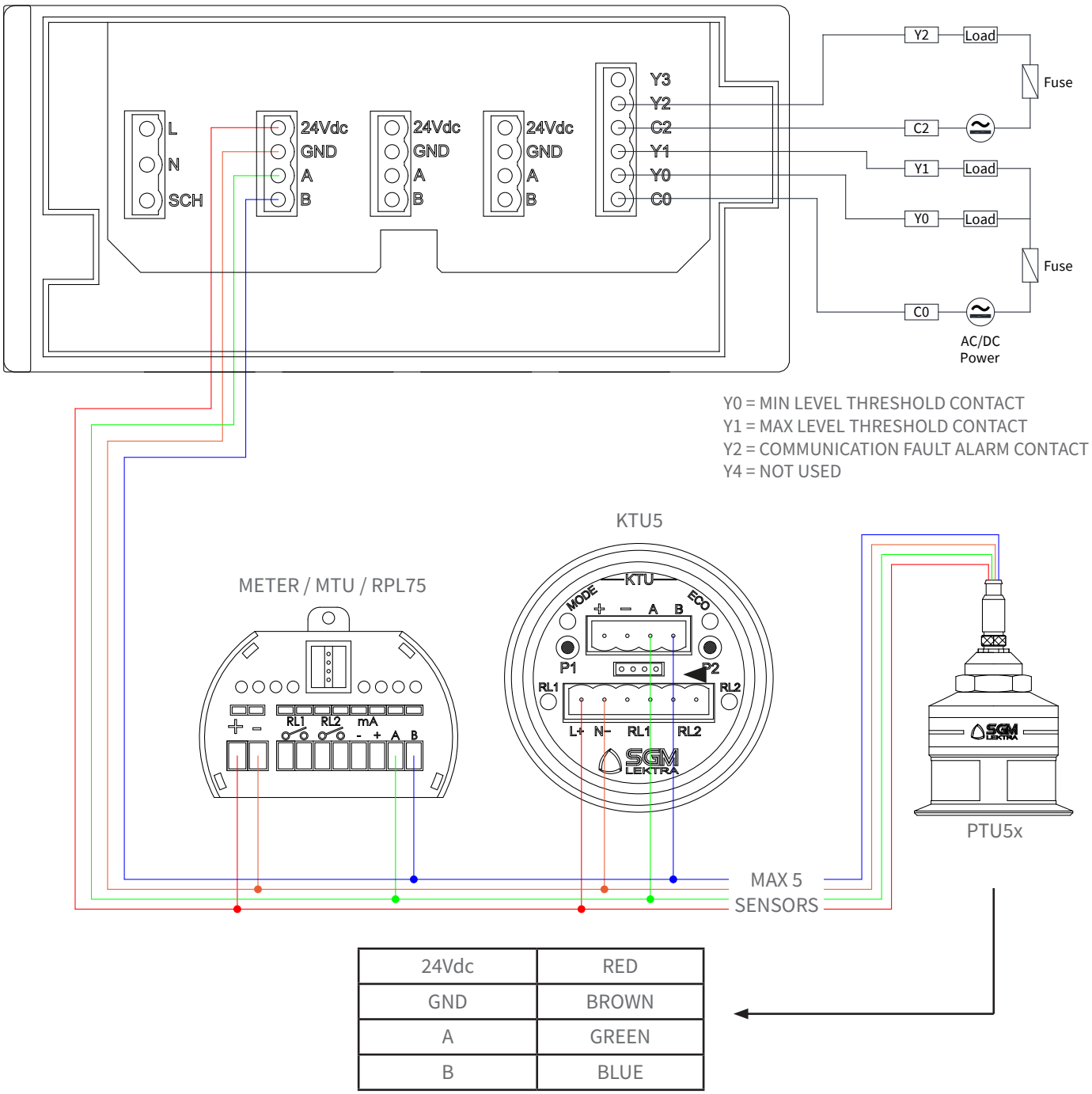
Connect the ultrasonic level transmitters, as shown in the following diagram.



24Vdc	RED
GND	BROWN
A	GREEN
B	BLUE

6.7 ELECTRICAL CONNECTIONS VERSION D MAX 5 SENSORS (WALL MOUNT) WITH EXTERNAL OPTIONAL RELAY MPDULE

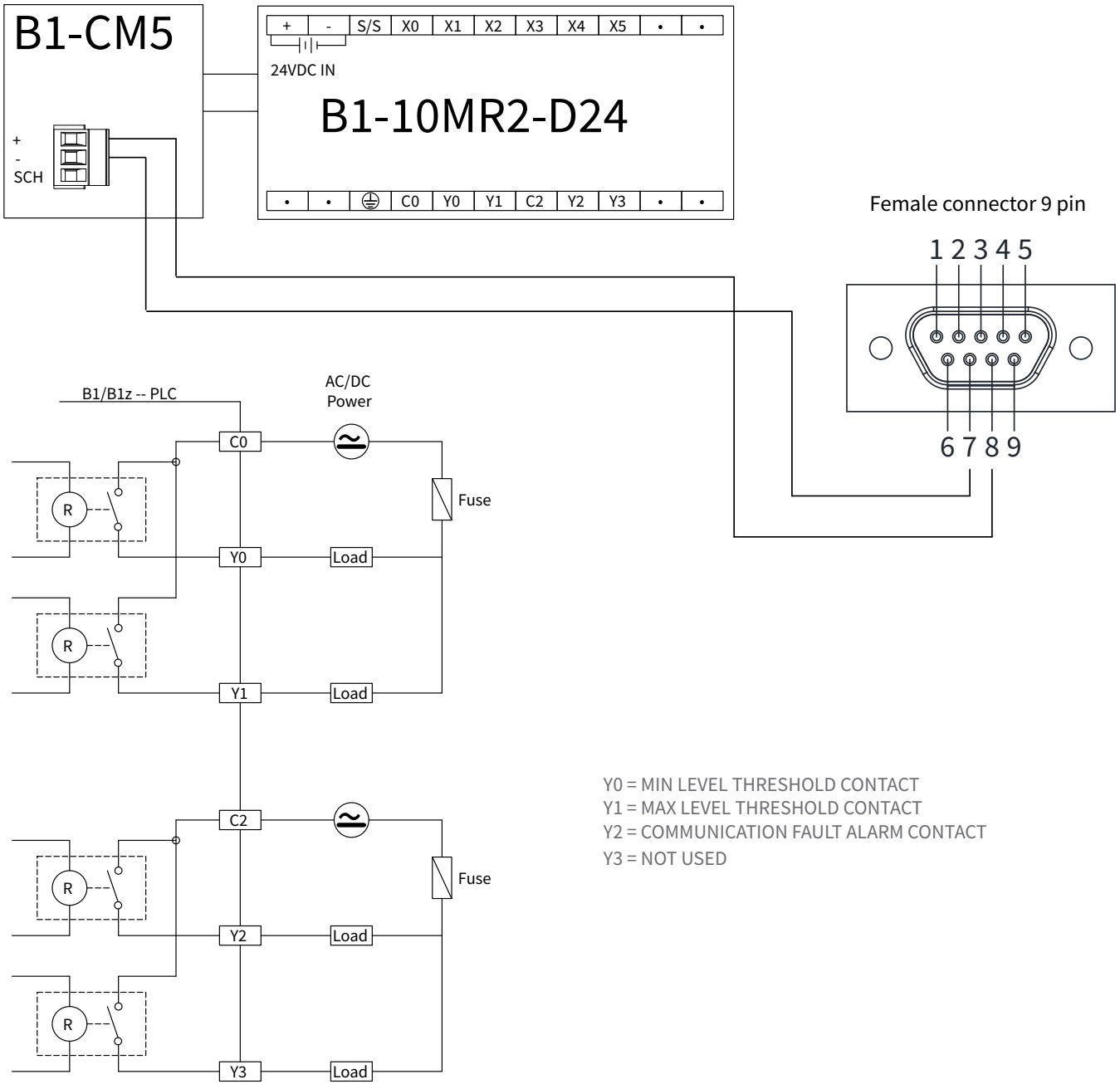
Connect the ultrasonic level transmitters, as shown in the following diagram.



24Vdc	RED
GND	BROWN
A	GREEN
B	BLUE

6.7 ELECTRICAL CONNECTIONS FOR PANEL MOUNT ("C" VERSION) WITH EXTERNAL OPTIONAL RELAY MODULE

B1-10MR2-D24 external relay module must be connected to COM3 port with connection interface B1-CM5 as shown below.



Y0 = MIN LEVEL THRESHOLD CONTACT
Y1 = MAX LEVEL THRESHOLD CONTACT
Y2 = COMMUNICATION FAULT ALARM CONTACT
Y3 = NOT USED

7-DISPLAY

7.1 LEGEND OF KEYS


ARROW UP


ARROW DOWN


ARROW LEFT

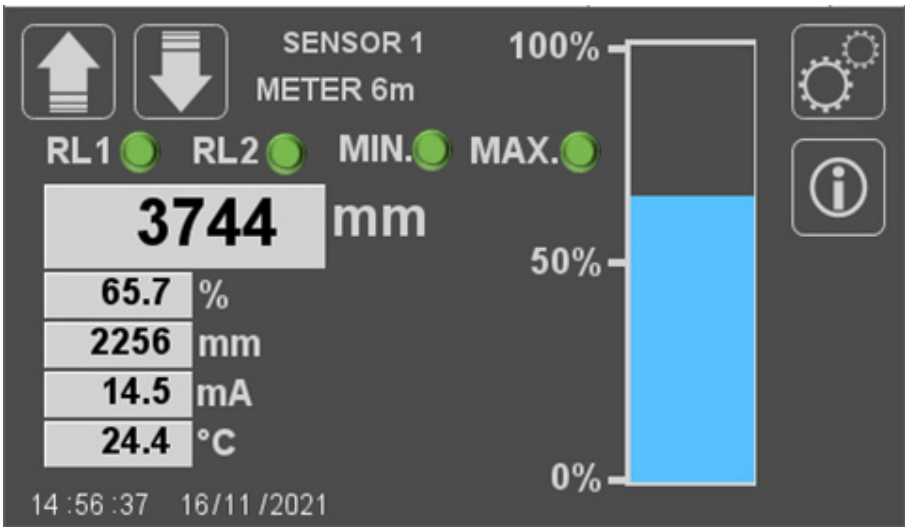

SETUP


INFO

ENTER

7.2 LEVELS DISPLAY

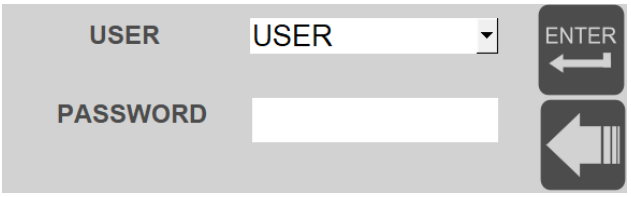
VLW60T constantly scans the levels of each individual sensor and automatically updates the probe display pages every 20 seconds.



By pressing the up or down arrow keys, it is possible to select the next or previous sensor without waiting for the automatic scroll.
The status display of the RL1 and RL2 relays is only active when the page displays the measurements transmitted by METER level transmitters (4 wires), KTU5, MTU5 and RPL75.
The status display of the MIN. and MAX. relays is only active when VLW60T is equipped with the optional relay module and the sensor displayed has been enabled the alarm function to the relay module.
Press the INFO key to open the system info pop-up window.

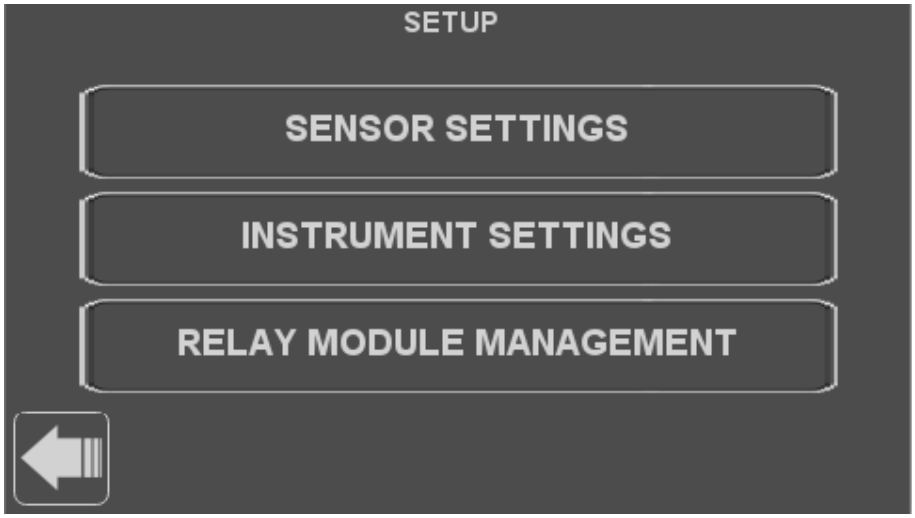
8-CONFIGURATIONS

By pressing the SETUP key it is possible to access the configurations with 2 authorisation levels:
User USER – password 12345; authorisation to settings only in the “QUICK SETTINGS” menu of the level transmitters.
User SUPERVISOR – password 12345678; authorisation to the settings of the system parameters, in the order “ENABLE SYSTEM” and “DISPLAY”, and of the “ADVANCED SETTINGS” of the level transmitters.



Password entry:
Press on ▼ to select the user Pressing the “password” box opens the input keypad. Enter the password and press “Enter” to confirm.
N.B. - Entering an incorrect password activates the protection, hiding all the access keys to the system programming and level transmitters.

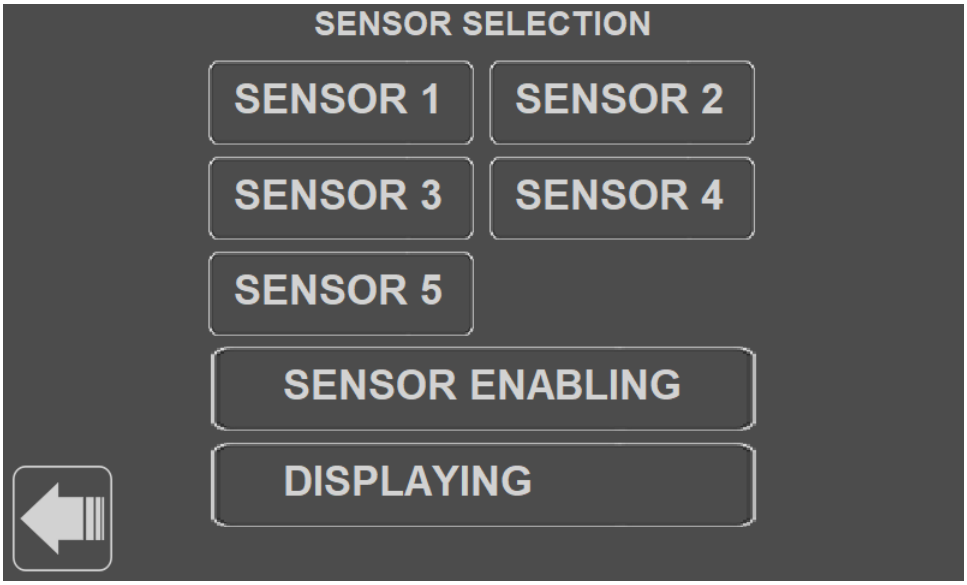
8.1 SETUP



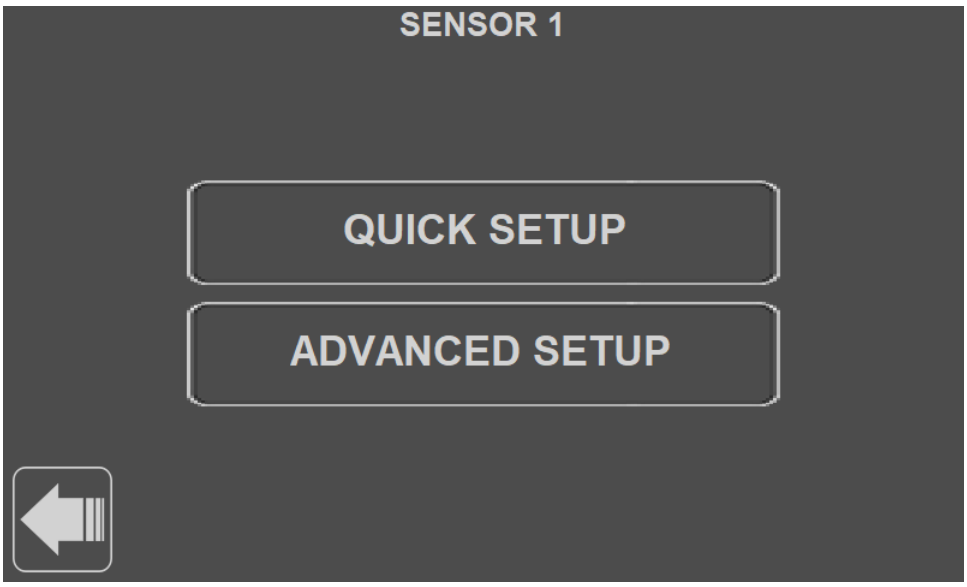
N.B. - the “RELAY MODULE MANAGEMENT” button is only active when VLW60T is equipped with the optional relais module.

8.2 SENSOR SETTINGS

Press the “SENSOR1/2/3/4/5” key to access the level transmitter configuration with UID 1, UID 2, UID 3, UID4 or UID5 address.
The “ENABLE SENSOR” and “DISPLAY” keys can only be accessed by accessing the programming as a user SUPERVISOR.



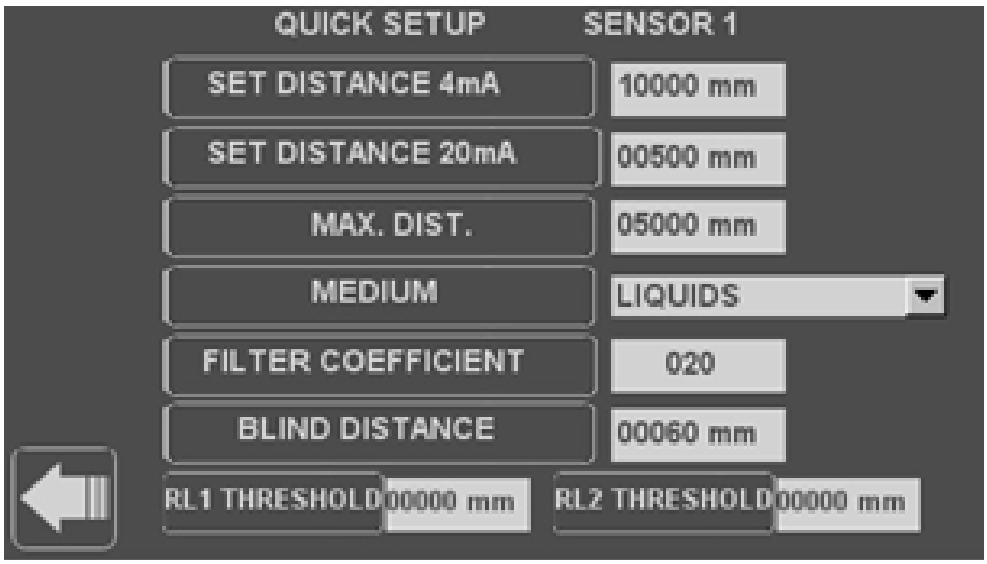
8.2.1 SENSOR 1/2/3/4/5



From this page it is possible to access the QUICK SETTINGS or the ADVANCED SETTINGS (only SUPERVISOR user)

8.2.2 QUICK SETTINGS

Press the “QUICK SETTINGS” key to access the quick configuration of the previously selected level transmitter.

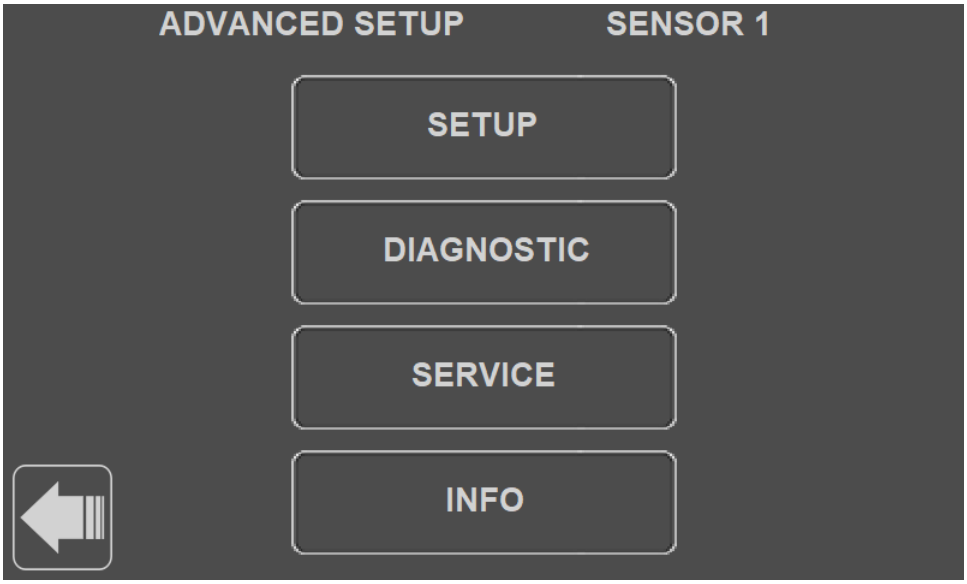


On the “QUICK SETTINGS” page it is possible to program the following parameters:

- DISTANCE 4mA - Pressing on the distance value opens the keypad to enter the new 4mA distance value; enter the new value and press “Enter” to confirm.
- DISTANCE 20mA - Pressing on the distance value opens the keypad to enter the new 20mA distance value; enter the new value and press “Enter” to confirm.
- MAX. DIST (active only with level transmitters RPL75 and RPL81) - Pressing the value opens the keypad to enter the new maximum distance value; enter the new value and press “Enter” to confirm.
- PRODUCT (active only with level transmitters METER, KTU and PTU5x) - Press ▼ to select the product type.
- FILTER - Pressing on the filter value opens the keypad to enter the new value; enter the new value and press “Enter” to confirm.
- BLIND ZONE - Pressing the value opens the keypad to enter the new blind zone value; enter the new value and press “Enter” to confirm.
- RL1 THRESHOLD (active only with level transmitters METER, KTU, RPL75 and RPL81) - Pressing the value opens the keypad to enter the new threshold value (maximum level) of RL1; enter the new value and press “Enter” to confirm.
- RL2 THRESHOLD (active only with level transmitters METER, KTU, RPL75 and RPL81) - Pressing the value opens the keypad to enter the new threshold value (minimum level) of RL2; enter the new value and press on “Enter” to confirm.

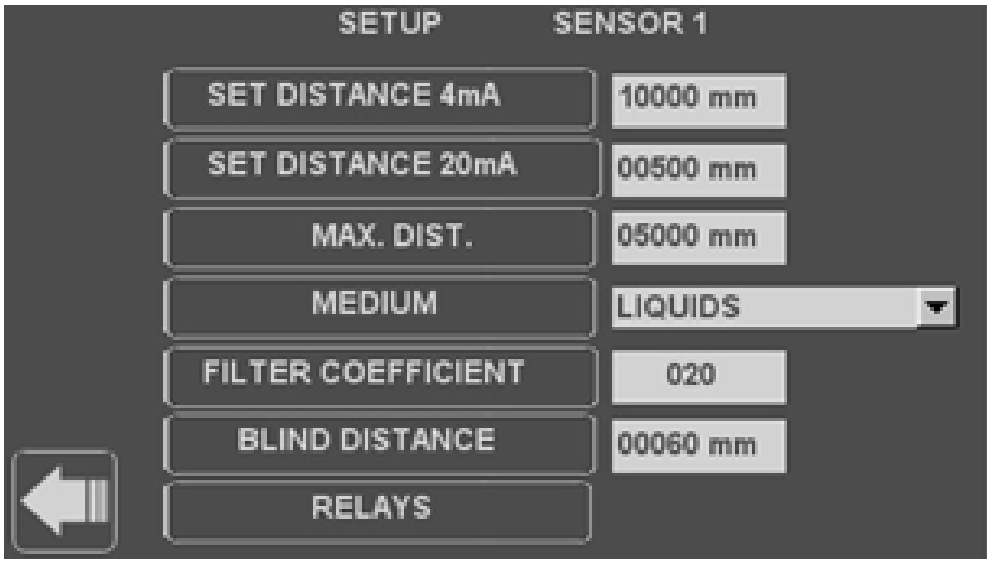
8.2.3 ADVANCED SETTINGS

Press the “ADVANCED SETTINGS” key to access the advanced configuration of the previously selected level transmitter.



On the “SETTINGS” page it is possible to program the following parameters:

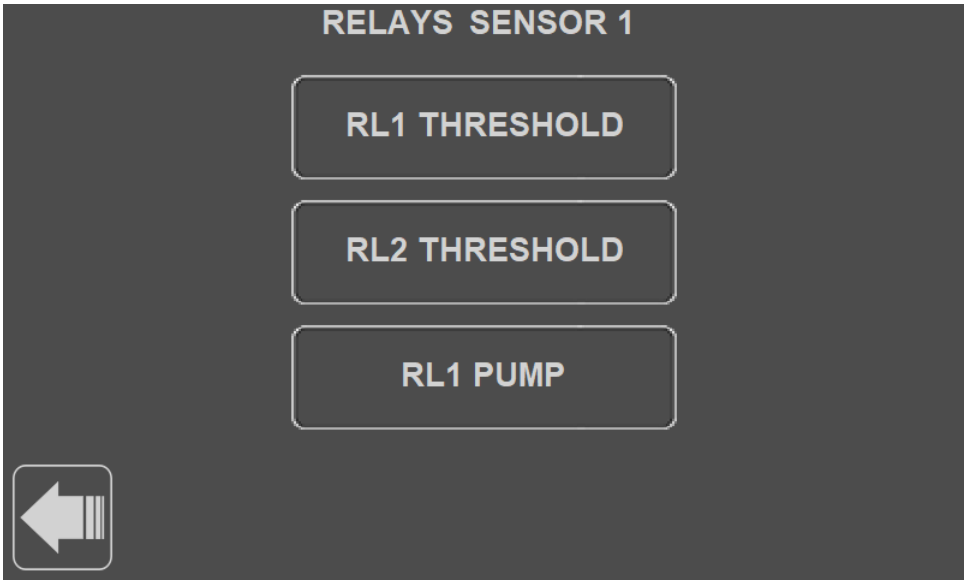
- DISTANCE 4mA - Pressing on the distance value opens the keypad to enter the new 4mA distance value; enter the new value and press “Enter” to confirm.
- DISTANCE 20mA - Pressing on the distance value opens the keypad to enter the new 20mA distance value; enter the new value and press “Enter” to confirm.
- MAX. DIST (active only with level transmitters RPL75 and RPL81) - Pressing the value opens the keypad to enter the new maximum distance value; enter the new value and press “Enter” to confirm.
- PRODUCT (active only with level transmitters METER, KTU and PTU5x) - Press ▼ to select the product type.
- FILTER - Pressing on the filter value opens the keypad to enter the new value; enter the new value and press “Enter” to confirm.
- BLIND ZONE - Pressing the value opens the keypad to enter the new blind zone value; enter the new value and press “Enter” to confirm.
- RELAY (active only with level transmitters METER, KTU, RPL75 and RPL81) - Pressing the value opens the keypad to enter the new threshold value (maximum level) of RL1; enter the new value and press “Enter” o confirm.



Pressing the left arrow will return to the previous page.

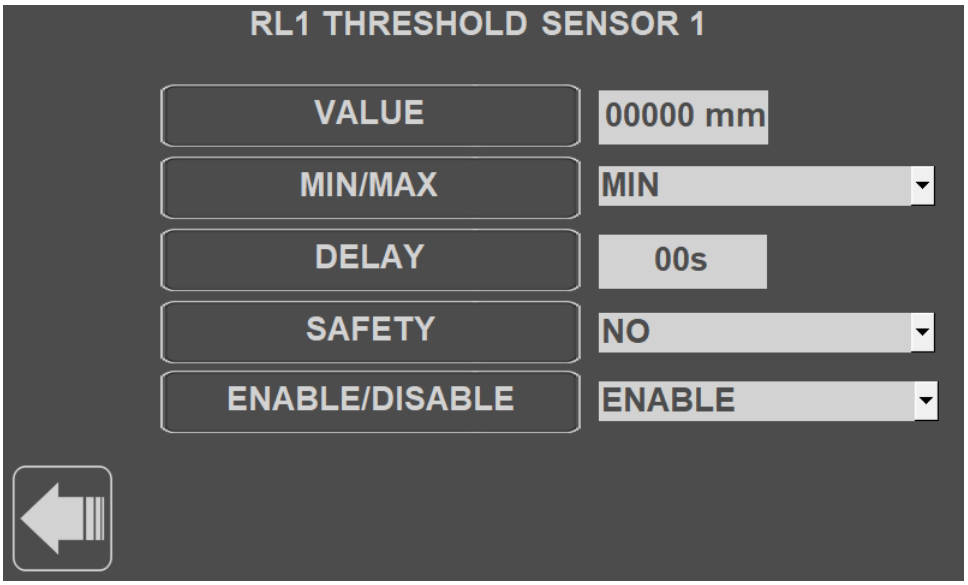
8.2.3.1 RL1/RL2 THRESHOLD

PRESS THE “RL1 THRESHOLD” or ”RL2 THRESHOLD” key.



On the “RL1 THRESHOLD” page it is possible to program the following parameters:

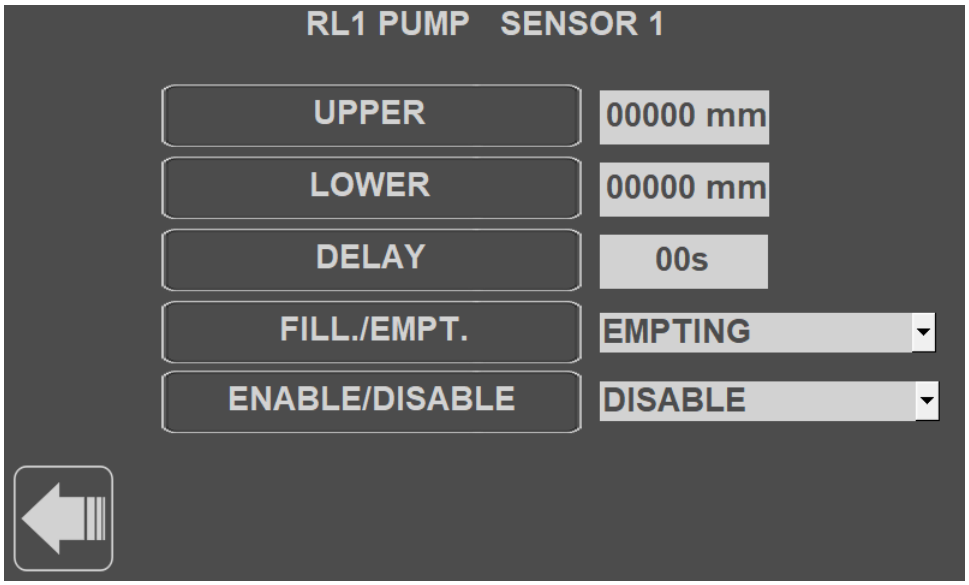
- VALUE - Pressing the value opens the keypad to enter the new value in terms of distance in mm from the sensor; enter the new value and press “Enter” to confirm.
- MIN/MAX - Press ▼ to select the relay operation mode: maximum or minimum.
- DELAY - Pressing the value opens the keypad to enter the new value for the relay activation delay, from 0 to 99 sec; enter the new value and press “Enter” to confirm.
- SAFETY - Press ▼ to select YES or NO for the relay safe alarm mode; with the alarm in safety (select SI/YES) there is then a “closed” contact with relay energised in normal (non-alarm) conditions, and the contact switches to open in the following cases:
  - presence of alarm condition (example exceeding MAX).
  - no voltage.
- ENABLE/DISABLE - Press ▼ to select ENABLE or DISABLE to activate or deactivate the relay threshold function.



Pressing the left arrow will return to the previous page.

8.2.3.2 RL1 PUMPS

On the “RL1 PUMPS” page it is possible to program the following parameters:
- UPPER THRESHOLD - Pressing the value opens the keypad to enter the new value in terms of distance in mm from the sensor; enter the new value and press “Enter” to confirm.
- LOWER THRESHOLD - Pressing the value opens the keypad to enter the new value in terms of distance in mm from the sensor; enter the new value and press “Enter” to confirm.
- DELAY - Pressing the value opens the keypad to enter the new value for the relay activation delay, from 0 to 99 sec; enter the new value and press “Enter” to confirm.
- MODE - Press ▼ to select the pump control operating mode: FILLING or EMPTYING.
- ENABLE/DISABLE - Press ▼ to select ENABLE or DISABLE to activate or deactivate the pump control function of RL1.

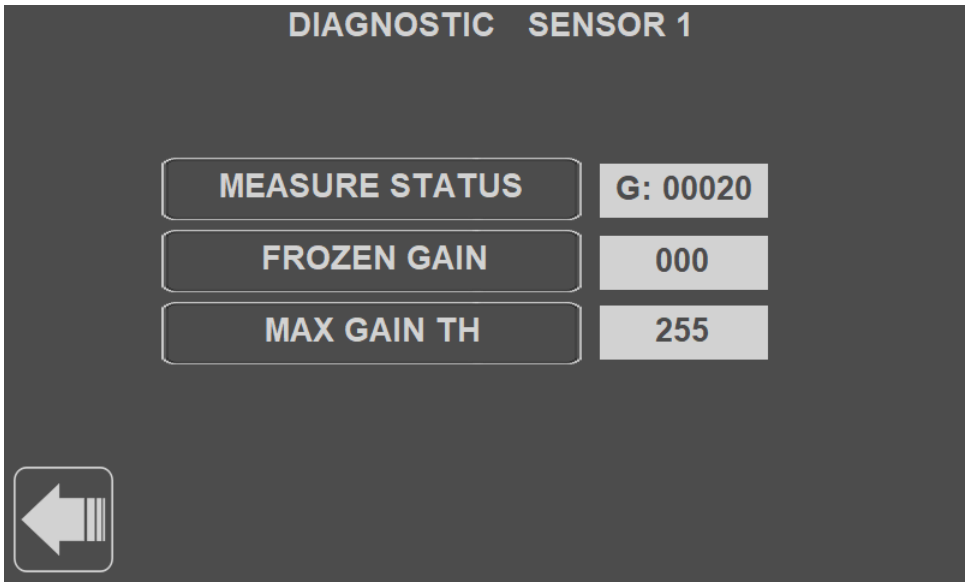


Pressing the left arrow will return to the previous page.

8.2.4 DIAGNOSTICS

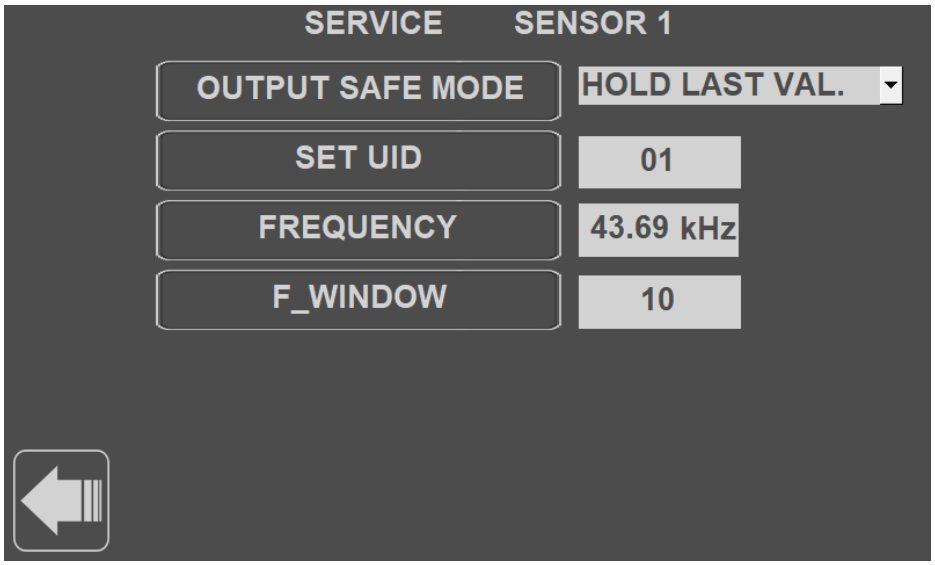
Press the “DIAGNOSTICS” key to access the previously selected level transmitter menu.

On the “DIAGNOSTICS” page it is possible to program the following parameters:
- MEASUREMENT STATUS - It displays the system gain level.
- GAIN LOCK - It is possible to set a gain value (from 1 to 255) and, consequently, to deactivate the automatic gain control. Entering the value 000 restores operation of the automatic gain control. Pressing on the value opens the keypad to enter the new value; enter the new value and press “Enter” to confirm.
- MAX GAIN THRESHOLD - It is possible to change the maximum gain value of the received echo signal. If the gain reaches this value, the “GAIN” error code is activated. Pressing the value opens the keypad to enter the new value; enter the new value and press “Enter” to confirm.



8.2.5 SERVICE

Press the “SERVICE” key to access the previously selected level transmitter menu.



8.2.5.1 SAFETY

It is possible to choose an analog output condition during diagnostic errors:

- “21.5 mA” forces the current output to 21.5mA
- “3.85 mA” forces the current output to 3.85mA
- “HOLD LAST VALUE” keeps the output at the last valid value.

8.2.5.2 SET UID

In this parameter it is possible to modify the UID address for data communication in a MODBUS RTU network (it is necessary to switch the ultrasonic transmitter off and back on to make the change operational);
it is advisable to perform this operation with only one transmitter connected at a time.

8.2.5.3 FREQUENCY

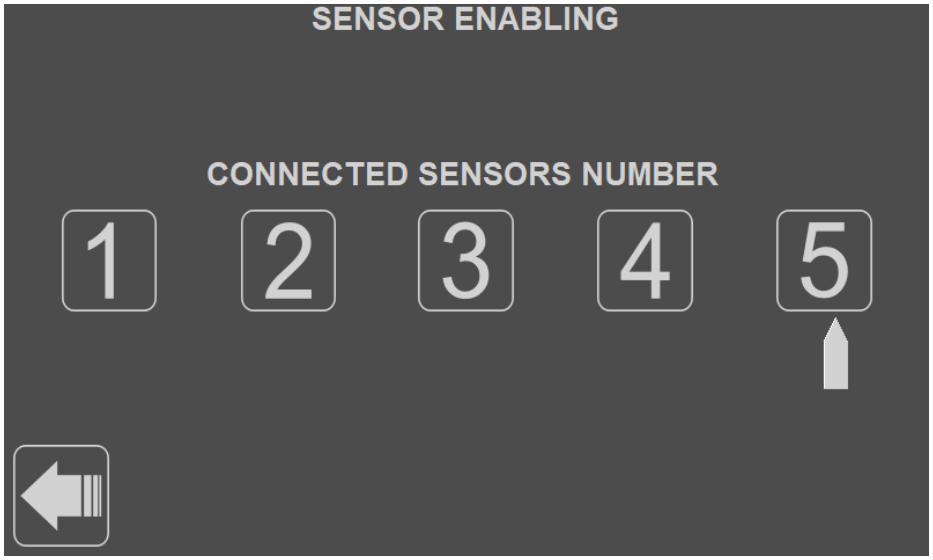
It is possible to view the sensor’s output frequency.

8.2.5.4 WINDOW

The increment value (expressed in cm), step by step, of the window width during the echo signal search phase is set.

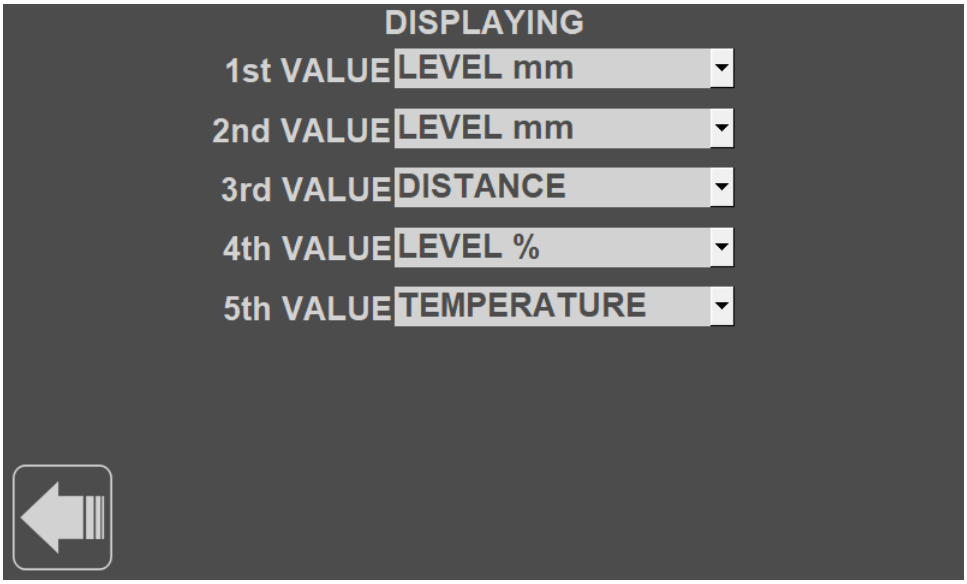
8.2.5.5 ENABLE SENSOR

Press the “ENABLE SENSOR” key to access the number of connected level transmitters.
Pressing on 1, 2, 3, 4 or 5 sets the number of ultrasonic level transmitters connected to VLW60T.
The VLW60T automatically activates the measurement display and sensor configuration pages.



8.2.5.6 DISPLAYING

Press the “DISPLAYING” key to access the measurement setting to be displayed.



On the “DISPLAYING” page it is possible to set the following parameters:

- 1st VALUE – it is the first box from the top, larger than the remaining ones, to display the main measurement of all the sensors; press the ▼ key to select:

  LEVEL mm / DISTANCE / LEVEL% / 4 ÷ 20Ma / TEMPERATURE (active only for ultrasonic sensors).

- 2nd VALUE - this is the second box from the top to display the 2nd selected size of all the sensors; by pressing the ▼ key it is possible to select:

  NOT ACTIVE / LEVEL mm / DISTANCE / LEVEL% / 4 ÷ 20mA
  TEMPERATURE (active only for ultrasonic sensors)

- 3rd VALUE – it is the third box from the top to display the 3rd selected size of all the sensors; by pressing the ▼ key it is possible to select:

  NOT ACTIVE / LEVEL mm / DISTANCE / LEVEL% / 4 ÷ 20mA
  TEMPERATURE (active only for ultrasonic sensors)

- 4th VALUE – it is the fourth box from the top to display the 4th selected size of all the sensors; by pressing the ▼ key it is possible to select:

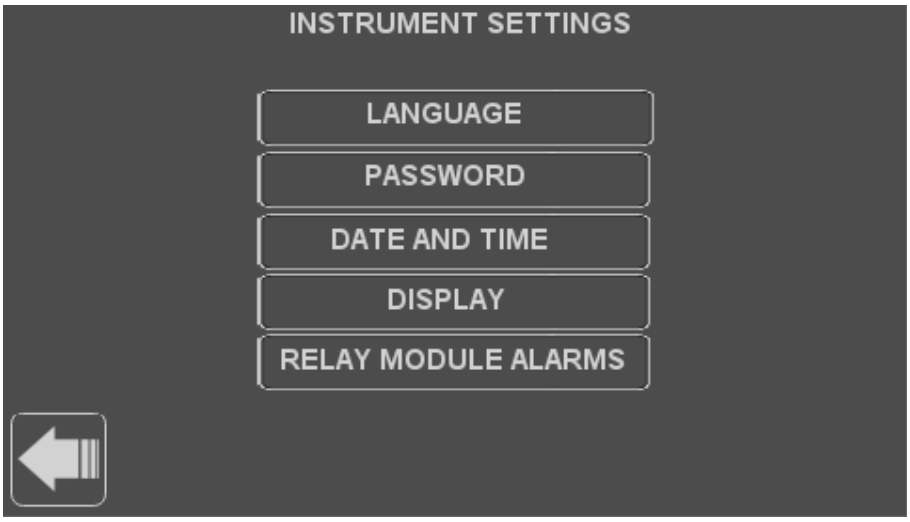
  NOT ACTIVE / LEVEL mm / DISTANCE / LEVEL% / 4 ÷ 20mA
  TEMPERATURE (active only for ultrasonic sensors)

- 5th VALUE – this is the fifth box from the top to display the 5th selected size of all the sensors; by pressing the ▼ key it is possible to select:

  NOT ACTIVE / LEVEL mm / DISTANCE / LEVEL% / 4 ÷ 20mA
  TEMPERATURE (active only for ultrasonic sensors)

8.3 INSTRUMENT SETTING

Press the “INSTRUMENT SETTING” key to access the VLW60T setting, only available with “SUPERVISOR” user password.



N.B. - the “RELAY MODULE ALARMS” button is only active when VLW60T is equipped with the optional relais module.

8.3.1 LANGUAGE

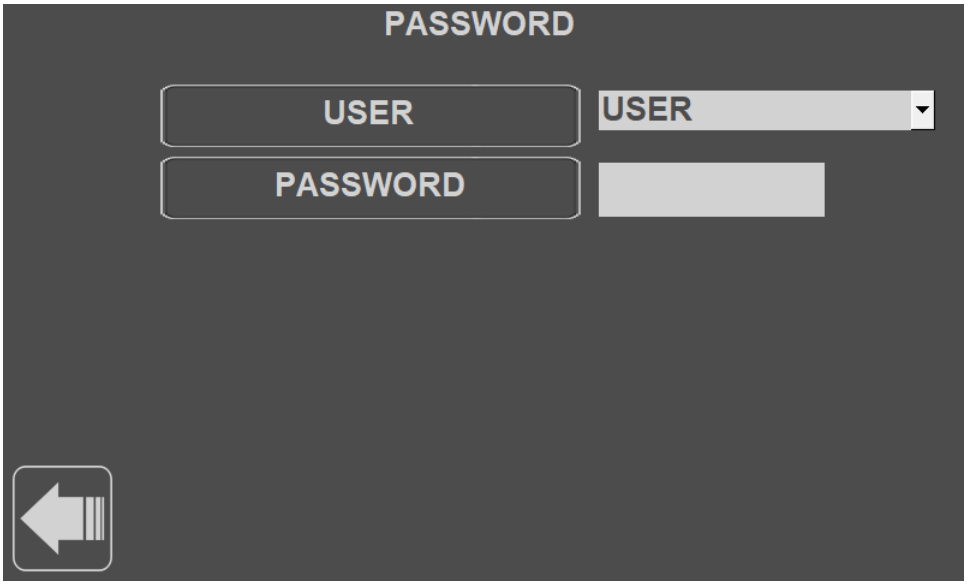
In this window it is possible to select the system language.
Pressing the corresponding flag sets the system language. The languages available are:

- Italian
- English
- French
- Spanish
- German
- Portuguese
- Russian
- Chinese

Pressing the left arrow will return to the previous page.

8.3.2 PASSWORD

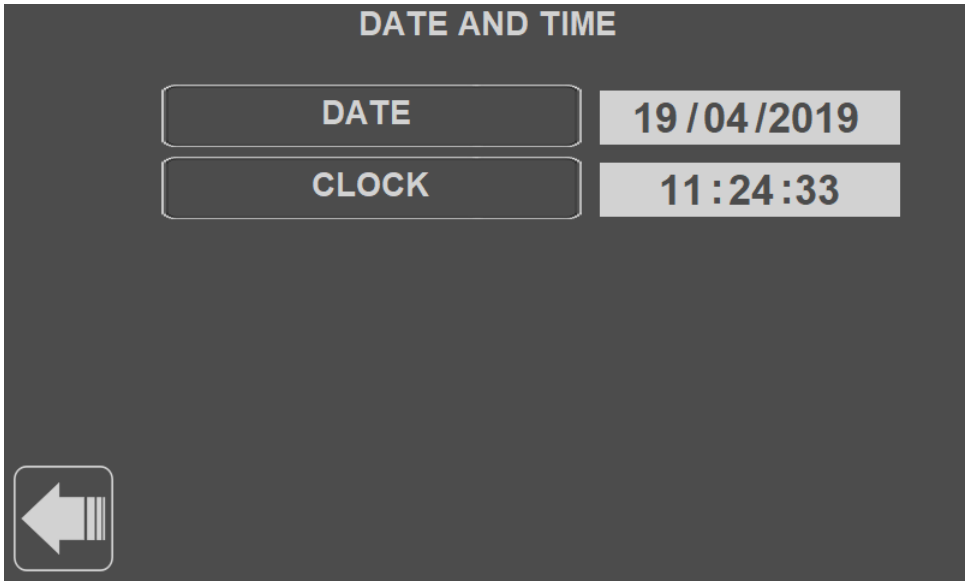
Press the “PASSWORD” key to access the change.
Select the USER by pressing the ▼ key, then pressing the empty box of the password opens the keypad to enter the new value.
Enter the new value and press “Enter” to confirm, then press “Enter” again to save the new password.



Pressing the left arrow will return to the previous page.

8.3.3 DATE AND TIME

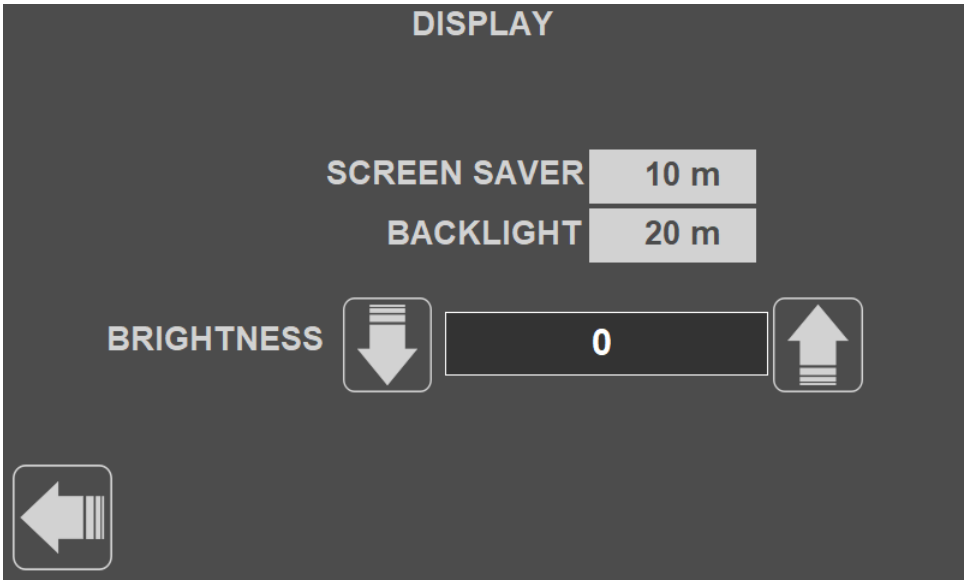
Press the “DATE AND TIME” key to access the change.
Pressing on the day, month or year opens the keypad to enter the new value. Enter the new value and press “Enter” to confirm.
Pressing on hour, minutes or seconds opens the keypad to enter the new value. Enter the new value and press “Enter” to confirm.



8.3.4 DISPLAY

Premere sul tasto “DISPLAY” per accedere alla modifica.

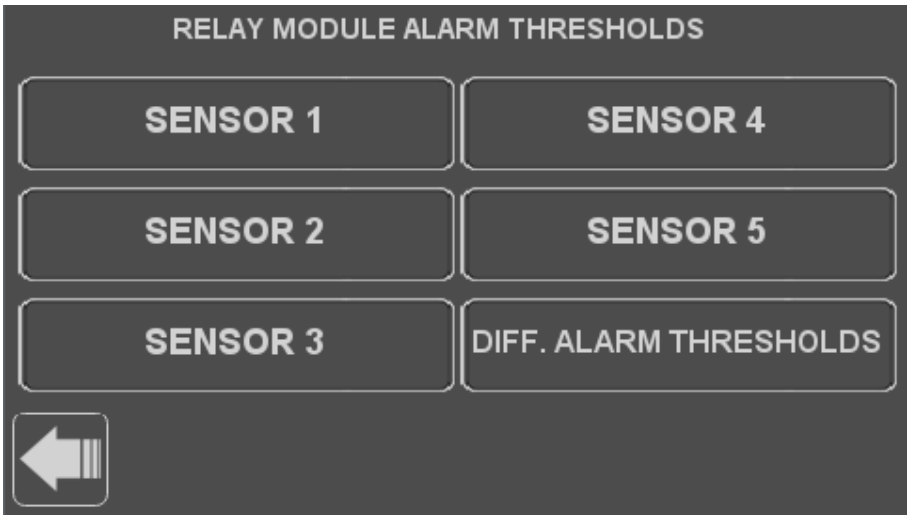
- SCREEN SAVER – the value (expressed in minutes) of the screen saver start time is set; function dasabled with a value of 0.
- BACKLIGHT - set the value (expressed in minutes) of the backlight off time; function disabled with a value of 0.
- BRIGHTNESS - increase or degrease the screen brightness using “up arrow” key and “down arrow” key.



Pressing the left arrow will return to the previous page.

8.3.5 RELAY MODULE ALARMS

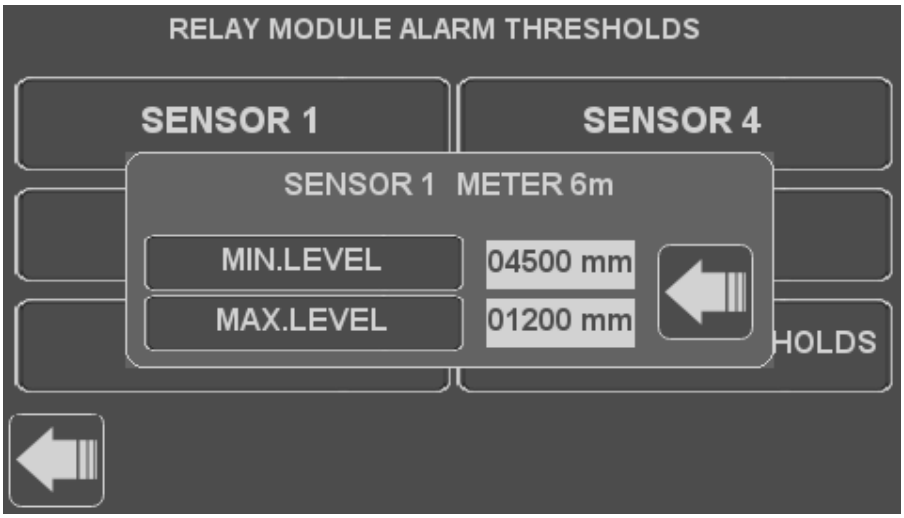
Press the “SENSOR 1/2/3/4/5” or “DIFF. ALARM THRESHOLDS “to access the modification of the alarm thresholds and alarm threshold differentials.
The keys are only visible if the sensor has been enabled for the alarm outputs of the optional relay module.



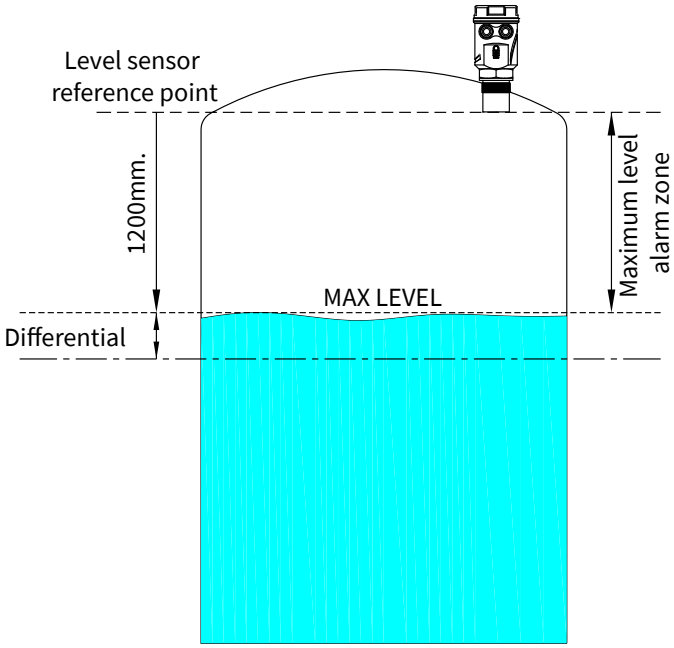
Pressing the left arrow will return to the previous page.

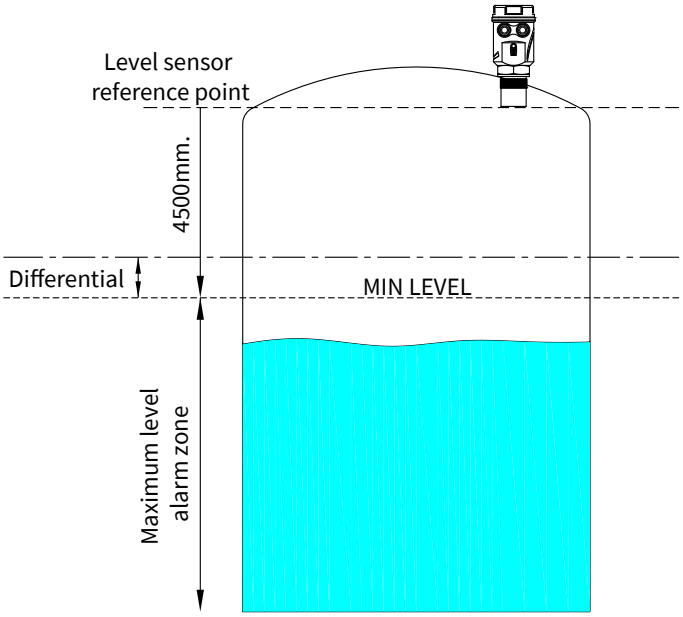
8.3.5.1 SENSOR 1/2/3/4/5

Pressing the “SENSOR 1/2/3/4/5” key opens the pop up window for setting the minimum and maximum level threshold.
Pressing on the minimum or maximum level threshold value opens the keyboard for entering the new value;
enter the new value and press “Enter” to confirm.



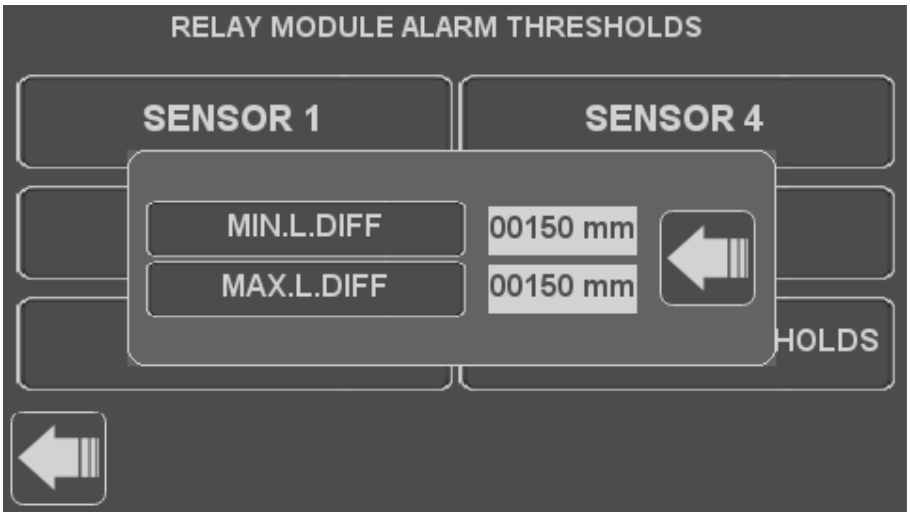
Pressing on the left arrow closes the pop up window.
The threshold value indicates the distance of the product from the sensor as the example shown in the following figures:





8.3.5.2 DIFF. ALARM THRESHOLD

Pressing the “DIFF. ALARM THRESHOLDS “opens the pup up window for setting the differential for the minimum and maximum level thresholds. Pressing on the minimum or maximum level differential value, the keyboard for entering the new value opens; enter the new value and press “Enter” to confirm.



The values of the minimum and maximum level differentials are common to the thresholds of all sensors enabled for the alarm outputs of the optional relay module.
Pressing on the left arrow closes the pop up window.

8.4 RELAY MODULE MANAGEMENT

Press the “RELAY MODULE MANAGEMENT” key to access the management of the relay module (optional) accessible only by accessing programming as a SUPERVISOR user.
To activate / deactivate the alarm management with the relay module (optional) of the single sensor, press the toggle switch positioned under the sensor number:

- Lever in up position: disabled sensor
- Lever in low position: enabled sensor

Pressing the “ALARM SILENCE” key forces the relay module to deactivate the alarm signal, which will in any case remain visible on the display on the sensor page.
Pressing the left arrow will return to the previous page.

9-FACTORY TEST AND QUALITY CERTIFICATE

CE

With reference to the equipment:

(Display unit)

I certify that materials, dimensions, and product performance are in compliance with our production and inspection specifications.

Quality Control: ..... Date of production and test: .....

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