KTU5

Ultrasonic level transmitter

825B130A

Technical Data

Housing material:	**PP**
Mechanical installation:	**2"GAS M (PP flange DN80 opt.)**
Protection degree:	**IP66 / IP68 (sensor)**
Electrical connection:	**Internal plug-in connectors**
Working temperature:	**-30÷+70°C; +80°C non-continuous**
Pressure:	**from 0,5 to 1,5 bar (absolute)**
Powersupply:	**12,24Vdc or 24,115,230Vac (specify at the order)**
Power consumption:	**2W**
Analog output:	**4÷20mA, max 750ohm**
Relays output:	**n°2 3A 230Vac (n.o.)**
Digital communication:	**MUDBUS RTU**
Max measure range:	**max 0.25÷5m** **max 0.4÷8m**
[In case of non perfectly reflecting surfaces, the maximu distance value will be reduced]	
Blind distance:	**0,25m (5m vers.) / 0,40m (8m vers.)**
Temperature compensation:	**digital from -30 to 80°C**
Accuracy:	**±0,5% (of the measured distance)** **not better than ±3mm**
Resolution:	**1mm**
Calibration:	**2 buttons, or via VL6011 or by MODBUS RTU**
Warm-up:	**5 minutes typical**
LCD Display:	**Plug-in VL6011 (opt.) display/ keyboard with 4 buttons and matrix LCD**

CE

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

Factory Test Certificate

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

KTU5..... Production and check date: .....

Serial n. .....

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

Quality Control Manager .....

The non intrusive system application is now preferred in the level measurements field. For this reason the **SGM-LEKTRA** developed the **KTU5** unity to best meet the "GENERAL-PURPOSE" application requests. The **KTU5** unit offers, together with its compact size, a complete versions range that makes the **KTU5** very versatile for the most varied applications, including areas chemically aggressive environments. **KTU5** is an ultrasonic level transmitter, temperature-compensated and suitable for connection with **MODBUS RTU** acquisition systems. **KTU5** is a compact unit which in addition to an analog output includes two freely addressable relay (only 4 wires vers.).

- ***Non-contact level measurements***
- ***Suitable for liquids and granulates level measurement***
- ***Integrated digital temperature sensor to compensate the measure***
- ***MODBUS RTU com. protocol***
- ***12,24Vdc o 24, 115, 230Vac power s.***
- ***Mechanical protection: IP66 / IP68 (sensor)***
- ***Output: 1 4÷20mA analog output***
  2 relays output (4-wires vers.)

1. SAFETY

1.1 Installation precaution

a) Installation shall only be performed by qualified personnel and in accordance with local governing regulations.

b) Make sure that the working temperature is between -30 and +70 ° C, +80 ° C non-continuous

c) Install the transmitter in a its physical characteristics and housing/sensor construction materials compatible environment.

d) The transmitter must be used safety warnings observance.

e) Improper transmitter use would cause serious damage to people, to the product and connected equipment.

2. INSTALLATION

2.1 MECHANICAL DIMENSIONS

The KTU5 transmitter has the 2 "GAS M threaded, equipped with n. 2 2" BSP/ PP fixing bolts.
DN80 PN6 UNI 1092-1/PP flange is available (optional accessory).

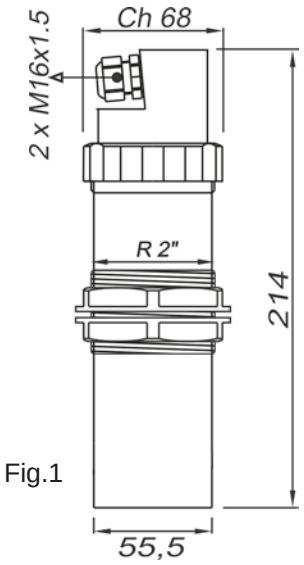


Fig.1

DN80 PN6 UNI 1092-1/PP flange
(optional accessory)

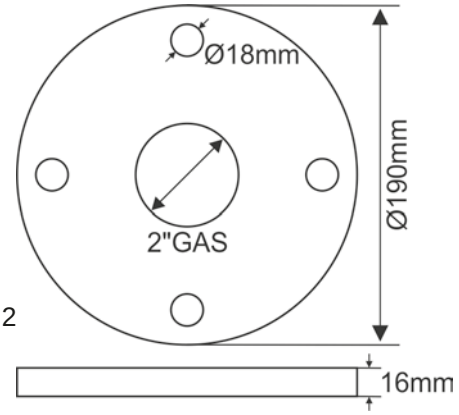


Fig.2

2.2 Mounting examples

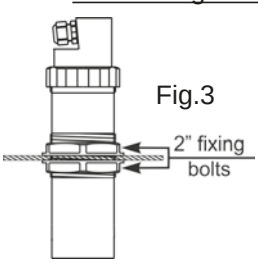


Fig.3

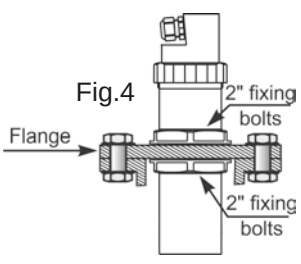


Fig.4

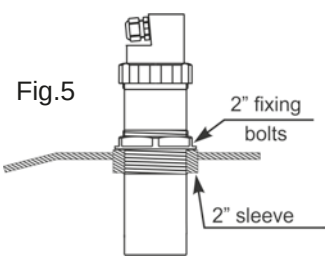


Fig.5

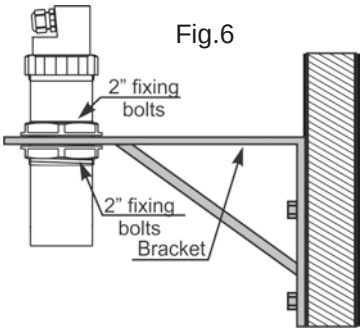
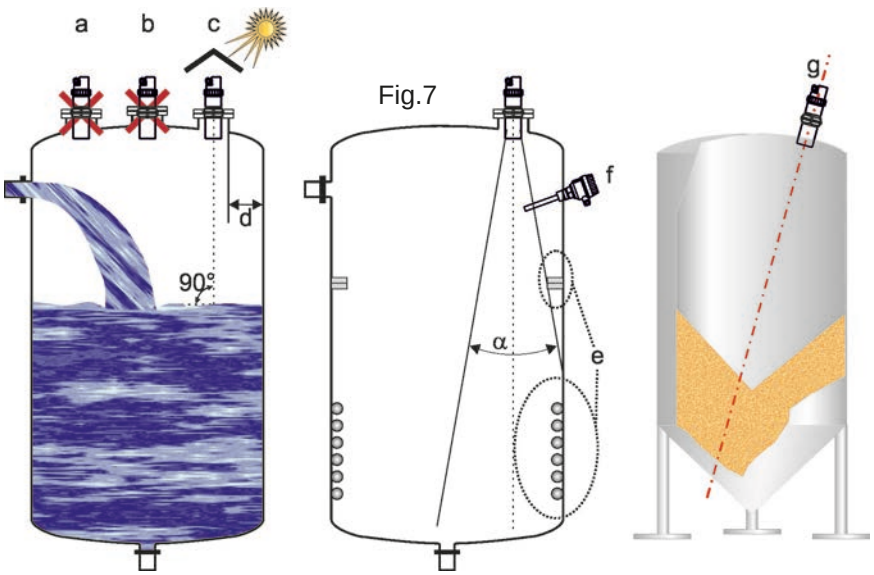


Fig.6

2.3 Mounting precautions

2.3.1 Mounting position **(Fig.7)**

- With cambered roof, Do not install the sensor in the tank center (b). Leave a 300mm minimum distance between the sensor and the tank smooth wall (d).
- Use a protective cover to protect the sensor from weather and direct sunlight (c).
- Do not install the sensor near the load zone (a).
- Make sure that in the sensor emission beam (lobe) there are no obstacles (f,s) that can be intercepted as level.
- Make sure that there is not foam presence on the product surface to be measured



Liquids

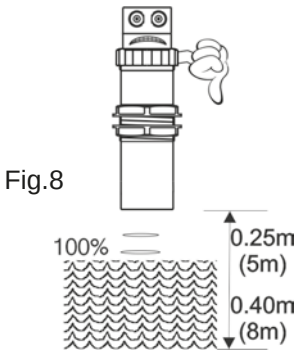
Bulk solids

	Lobe	L	r
KTU5 5m	10°	5m	0.5m (5m)
KTU5 8m	10°	8m	0.8m (8m)

Tab.1

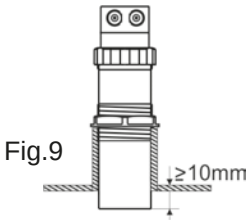
2.3.1 Blind distance

During installation is important to remember that in the sensor vicinity there is a blind zone (or **BLIND DISTANCE**) of 0.25m (for 5m max **KTU5** range) or 0.4m (for 8m max **KTU5** range) where the sensor can not measure.



2.3.2 Installation in nozzle

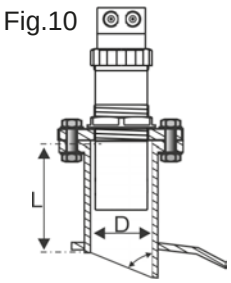
Installing the **KTU5** sensor in a nozzle (see fig.9), make sure the sensor bottom protrudes at least 10 mm from the bottom nozzle



KTU5 can be installed in an extension pipe (see Figure 10) to turn away the sensor from the maximum level point. The extension pipe must be flat and without joints (welds, etc..), also, the pipe terminal part must be cut at 45° and with the borders without burr.

KTU5 5m		KTU5 8m	
D (mm)	L max. (mm)	D (mm)	L max. (mm)
57	180	80	240
80	240	100	300
100	300		

Tab.2



2.3.4 Reference pipe installation

Disturbing factors that may influence the level measurement in liquids, as for example:

- foam presence on the product surface (Fig.11)
- internal structures presence in the tank (Fig.12)
- presence on the liquid surface of floating bodies (Fig.13)

can be avoided with the use of level measurement inside of pipes (by-pass pipe or calm pipe with 57mm min. diameter)
The pipe must have a length greater or equal than the empty distance, also, must have some of vent holes (Fig. 13-A) to allow the pipe regular filling and emptying.
In the programming menu, to the "**PRODUCT**" parameter, must select the "***LIQUID PIPE***" option (see page 9 or 15)

Fig.11

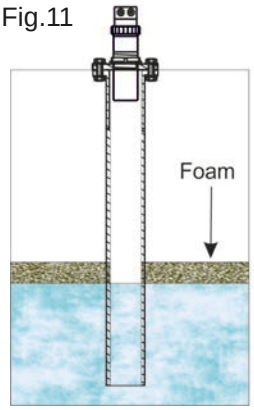


Fig.12

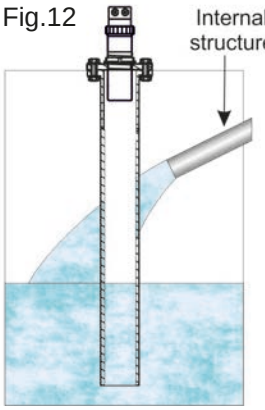


Fig.13

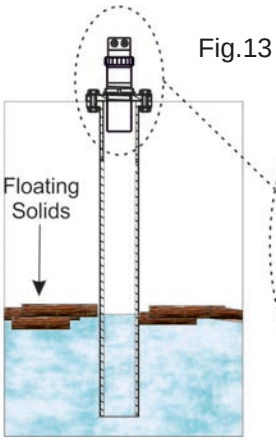
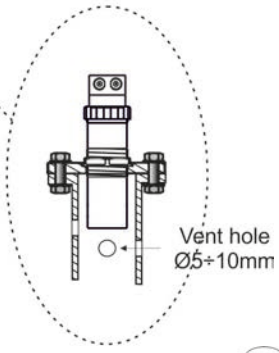


Fig.13A



2.3.5 Agitators presence

The level measurement is possible thanks to the **Auto-Tuned** statistical filter. Should rarely need to adjust the filter setting by editing 2 **KTU5** sensor programming parameters:

- **FILTER**; this parameter is present in the **Quick Setup** menu (page 9) and in the Advanced Configuration "**SETUP**" menu (page 16); increasing the parameter value, decreases the sensor sensitivity to the level measurement sudden variations.
- **F-WINDOW**; this parameter is present in the Advanced Configuration "**SERVICE**" menu (page 26); decreasing the parameter programmed value, increases the sensor immunity to false echoes.

Fig.14

2.3.6 Mechanical installation accessories

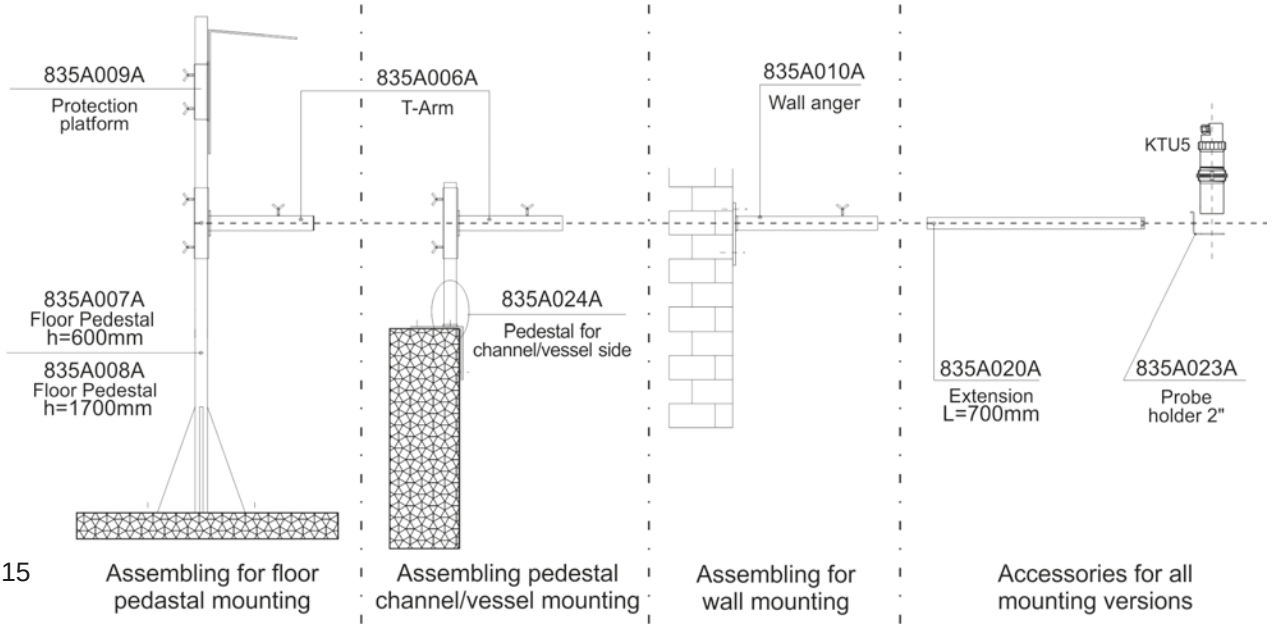


Fig.15

3. CONNECTIONS

3.1 Wiring

1) Separate the engine control cables or power cables from the **KTU5** connection cables..
2) Open the cap by unscrewing.
3) Lead the cables into the transmitter through the glands.
5) Close the cap and tighten the cable glands.

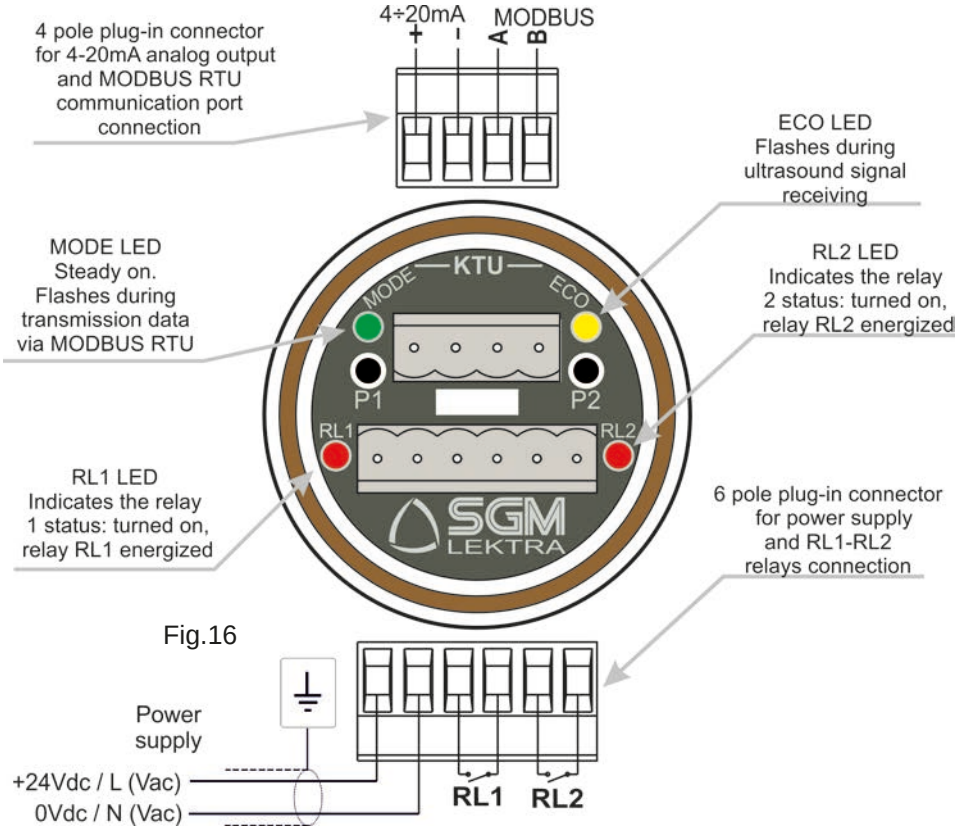


Fig.16

The immunity to electromagnetic interference complies with CE Directives

3.2 **Humidity infiltrations**

To avoid the humidity infiltration inside the housing is recommended:

- for electrical connections, use a cable with a 5÷10mm outer diameter and fully tighten the M16 cable gland
- fully tighten the cap
- position the cable so that it forms a downward curve at the M16 output (Fig. 17); in this way the condensation and/or rain water will tend to drip from the curve bottom

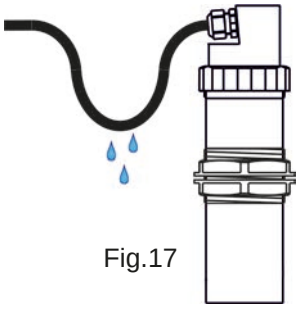


Fig.17

4. CONFIGURATION MODES

The **KTU5** have 3 configuration/calibration modes:
- via digital communication:
  via **MODBUS RTU**, by PC
- via 2 on board buttons
- via **VL611** programming module

4.1 Via MODBUS RTU

4.1.1MODBUS RTU PC connection (fig.21)

1) KTU5 with MODBUS RTU communication protocol
2) USB/RS485 interface module, cod.694A004A
3) MODBUS RTU communication S/W, cod.010F105A for KTU5 transmitter
   With this software is possible:
   - connect, by selecting the UID address, the KTU5 transmitters in MODBUS RTU network
   - read on your PC monitor all measures in reading and KTU5 operation data
   - programming all KTU5 configuration parameters
   - storing on files, data logger function; KTU5 measures in reading and operating states

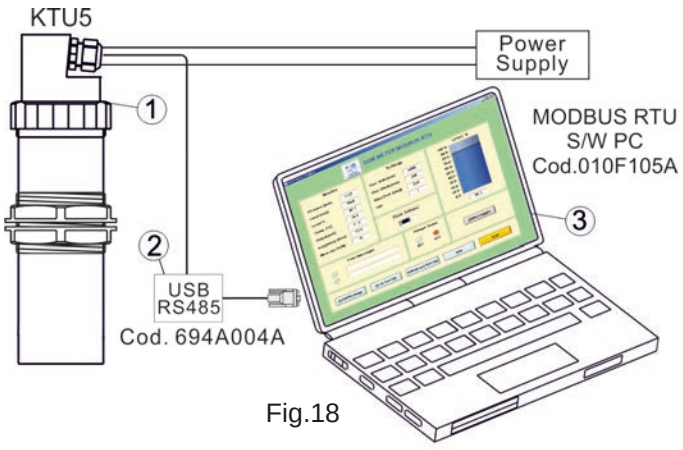


Fig.18

4.2 Via 2 BUTTONS calibrations

KTU5 has 2 buttons on board (fig.19), **P1** and **P2**, with which it is possible:

- to program the level measurement range via the **4mA** and **20mA** distances self-acquisition
- to program the **RL1** and **RL2** thresholds via the switching distances self-acquisition.

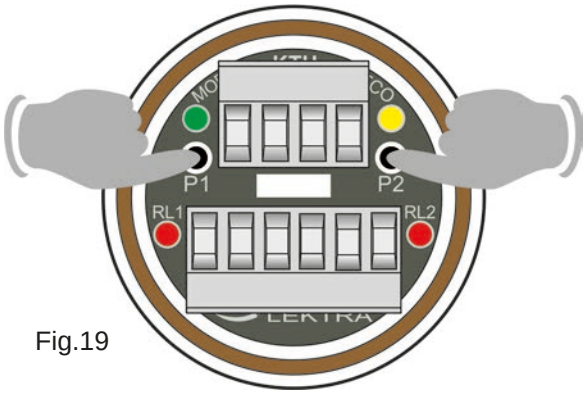


Fig.19

4.2.1 4mA DISTANCE (fig.20)

To set the **0%** level measurement (4mA) it is necessary that the real level is that corresponding to the "**4mA Dist.**"; alternatively it is possible to place a target orthogonally to the **KTU5** transmitter at a distance equivalent to the **0%** level. Wait until the **ECO** LED (fig.16) flashes for at least 30s, press simultaneously **P1** and **P2**, release them and verify that the **ECO** LED (fig.16) remains turned on. Press **P1** two times and wait for the **ECO** LED (fig.16) flashes. The distance has been saved and automatically associated with the **0%** level (4mA).

4.2.2 20mA DISTANCE (fig.20)

To set the **100%** level measurement (4mA) it is necessary that the real level is that corresponding to the "**20mA Dist.**"; alternatively it is possible to place a target orthogonally to the **KTU5** transmitter at a distance equivalent to the **100%** level. Wait until the **ECO** LED (fig.16) flashes for at least 30s, press simultaneously **P1** and **P2**, release them and verify that the **ECO** LED (fig.16) remains turned on. Press **P2** two times and wait for the **ECO** LED (fig.16) flashes. The distance has been saved and automatically associated with the **100%** level (4mA).

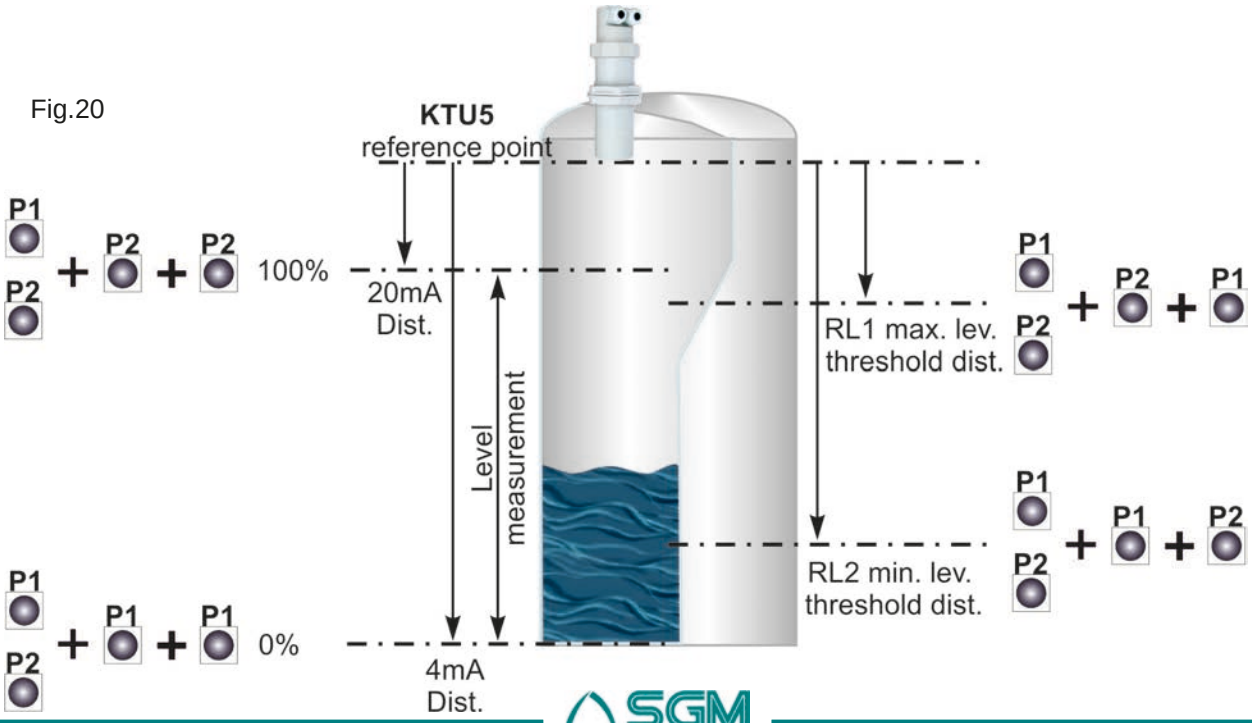
4.2.3 RL1 MAX LEVEL THRESHOLD DISTANCE (fig.20)

To set the **RL1** maximum level alarm threshold is necessary that the real level is that corresponding to the "**RL1 max. lev. threshold dist.**"; alternatively it is possible to place a target orthogonally to the **KTU5** transmitter at a distance equivalent. Wait until the **ECO** LED (fig.16) flashes for at least 30s, press simultaneously **P1** and **P2**, release them and verify that the **ECO** LED (fig.16) remains turned on. Press **P2** and then **P1** and wait for the **ECO** LED (fig.16) flashes. The distance has been saved and automatically associated with the **RL1** threshold (see default level alarm threshold settings on page 10)

4.2.4 RL2 MIN LEVEL THRESHOLD DISTANCE (fig.20)

To set the **RL2** maximum level alarm threshold is necessary that the real level is that corresponding to the "**RL2 min. lev. threshold dist.**"; alternatively it is possible to place a target orthogonally to the **KTU5** transmitter at a distance equivalent. Wait until the **ECO** LED (fig.16) flashes for at least 30s, press simultaneously **P1** and **P2**, release them and verify that the **ECO** LED (fig.16) remains turned on. Press **P1** and then **P2** and wait for the **ECO** LED (fig.16) flashes. The distance has been saved and automatically associated with the **RL2** threshold (see default level alarm threshold settings on page 11)

Fig.20



4.3 **via VL611 configuration**

The **VL611** programming module can be mounted and removed from the **KTU5** without affecting the unit operation. Unscrewing the cap, the **VL611** module can be connected or disconnected as shown in Fig.21. The **VL611** module is equipped with matrix LCD.

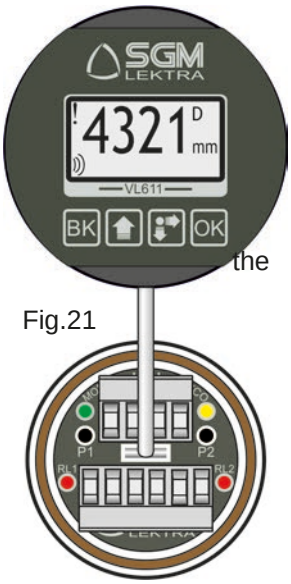


Fig.21

displayed at the bottom indicates the correct echo signal reception

displayed at the top alerts that there is a generic error; press to show the message that indicates the present error type.
The KTU5 returns automatically to RUN mode.

The **VL611** program module has 4 buttons (fig. 24) which allow to perform all operational, control and programming instrument functions.

In the configuration menus, is possible:

a) Submenus and parameters access; press to select and press to access.

b) Parameter options choice: Press to select the option and press to store the option.
Press to exit without storing

c) Configure the parameter values; in some parameters the configuration is done by setting a value (eg., in the **SET DISTANCE 4mA** parameter is possible to change the the corresponding distance value, in mm): press to select the digit to be modified (the digit is highlighted in **inverse**), press to change the highlighted digits number, press to save the set value and exit automatically. Press to exit without storing .

In the display top right, during the settings, there is always a number, eg. “1.2”. This number is the menu or parameter index that’s displayed. The menu structure is represented on page 8 and on pages 13÷14.

Fig.22

OK - Configuration access
- Options confirmation
- Parameters values confirmation

- Parameters values selection
- Parameters scroll

- Parameters values modification

BK - Exit configuration
- Back to previous menu
- Eco map (from RUN mode)

With the VL611 module is possible to access two configuration modes for the KTU5 setting:

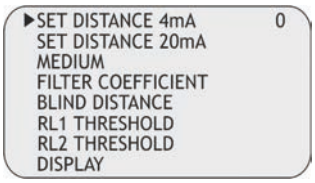
- QUICK START - Menu with easy access for quick basic parameters configuration.
  To access: from “RUN” mode press to the quick setup menu mode access, to exit
- ADVANCED CONFIGURATION - Full menu with access to all parameters, including functional parameters.
  It is recommended to carefully read the complete documentation before accessing.
  To access: from “RUN” mode, holding down , press to the advanced configuration mode access, to exit

WARNING! - The documentation provided with the KTU5 contain the most frequently used indications. If it's necessary refer to the full manual, it can be downloaded from our website www.sgm-lektra.com , in the products section.

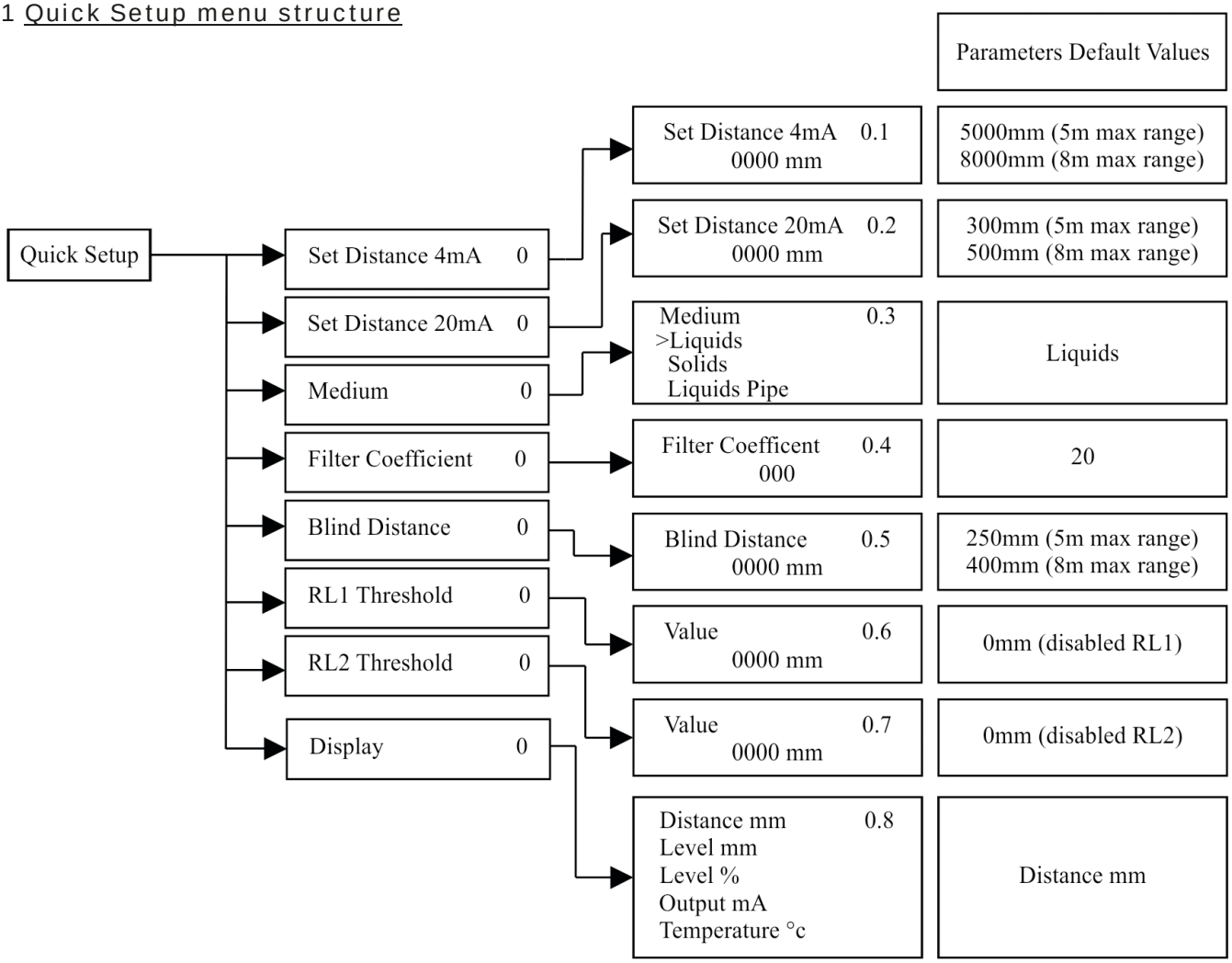
5. QUICK START MODE

From "RUN" mode press ENTER to access the Quick Setup menu

Select the parameters by moving the cursor with ↕, and confirm with ENTER; press ← to exit

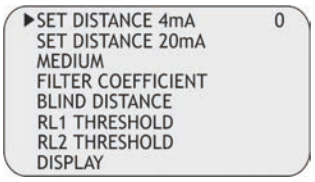


5.1 Quick Setup menu structure

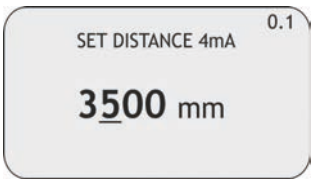


5.2.1 SET DISTANCE 4mA

Press ENTER to display the distance value associated with 4mA output.

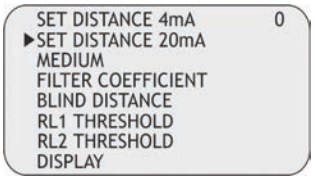


Use ▶ and ▲ to modify that value; in the Fig.25 example, the 4mA distance is 3500mm.
Press ENTER to confirm.



5.2.2 SET DISTANCE 20mA

Press ENTER to display the distance value associated with 20mA output.



Use ▶ and ▲ to modify that value; in the Fig.25 example, the 20mA distance is 500mm.
Press ENTER to confirm.

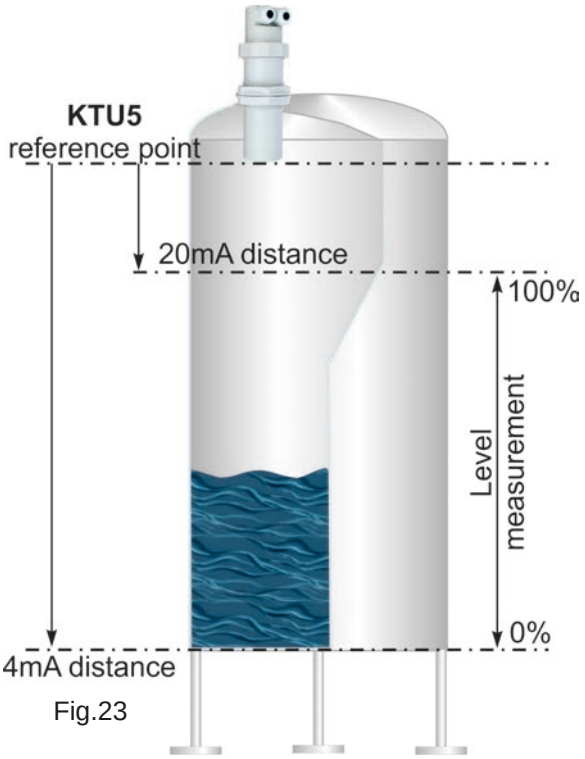
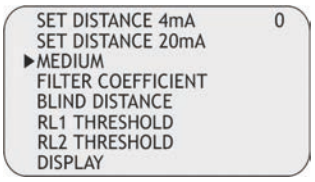


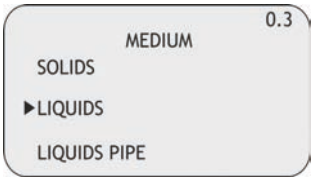
Fig.23

5.2.3 MEDIUM

Press ENTER to display the previous setting



Press ▶ to select the medium type.
Press ENTER to confirm.
In fig.26 product selection example.



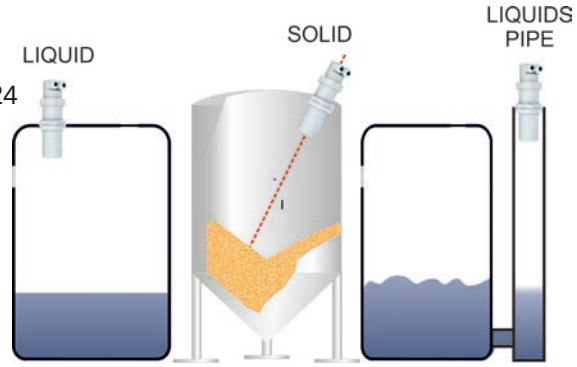
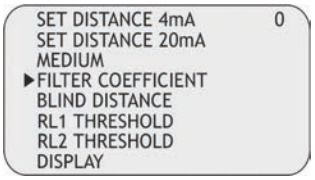


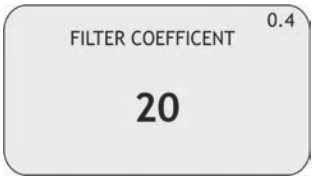
Fig.24

5.2.4 FILTER COEFFICIENT

Press ENTER. Increasing the value slows down the sensor response speed.



Use ▶ and ▲ to modify the value. Input a value from 1 to 99. Press ENTER to confirm.
In fig.27 value choice example.



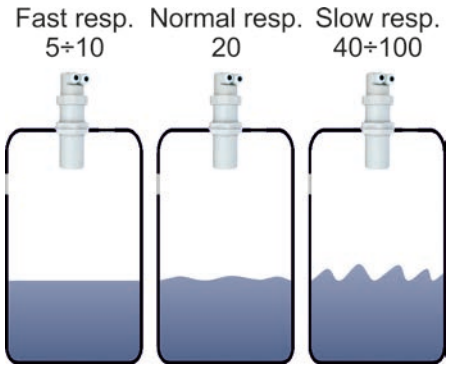
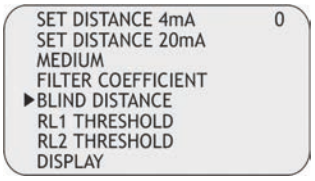


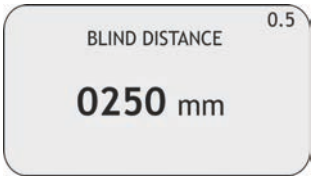
Fig.25

5.2.5 BLIND DISTANCE

Press ENTER. The **BLIND ZONE** is used to avoid undesired measures near to the transmitter



Use ▶ and ▲ to modify the value. Press ENTER to confirm. The minimum value is 250mm (5m max vers.) or 400mm (8m max vers.).



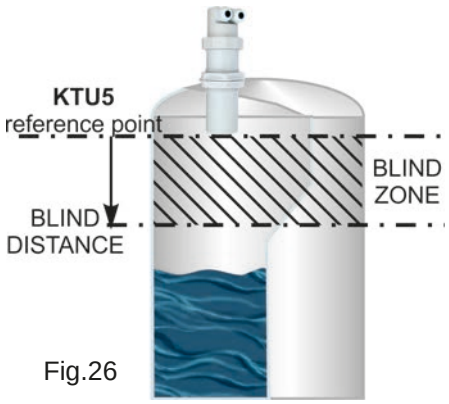
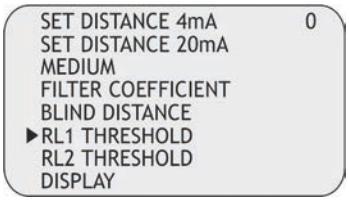


Fig.26

5.2.6 RL1 THRESHOLD

Press ENTER to display the previous setting. Set the distance from the sensor



Use ▶ and ▲ to modify the value; in the Fig.29 example the RL1 max. level threshold distance is 700mm.

Press ENTER to confirm.

NB-RL1 inactive with 0000mm

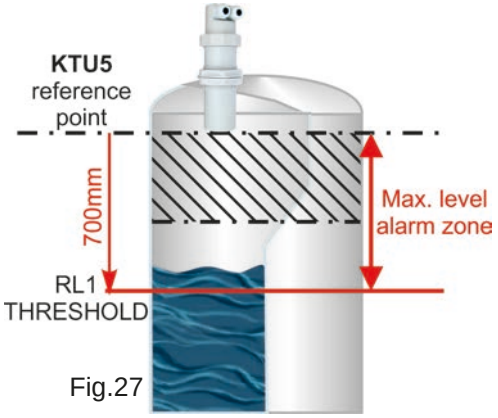


Fig.27

When confirming with the ENTER button the maximum level threshold value storage, in the example 700m (figures 29 and 30), the **KTU5** activates RL1 with the following default settings for level alarm threshold:

1) MIN / MAX = MAX; maximum level alarm
2) DELAY = 0 sec.; no switching delay
3) SECURITY = YES; relay de-energized, and contact open, during the maximum level alarm
4) ENABLE / DISABLE = ENABLE; alarm threshold function enabled

To change these relay settings is necessary to access the advanced setup menu (pag.16) and any subsequent changes to the RL1 threshold value not affect the relay custom settings.

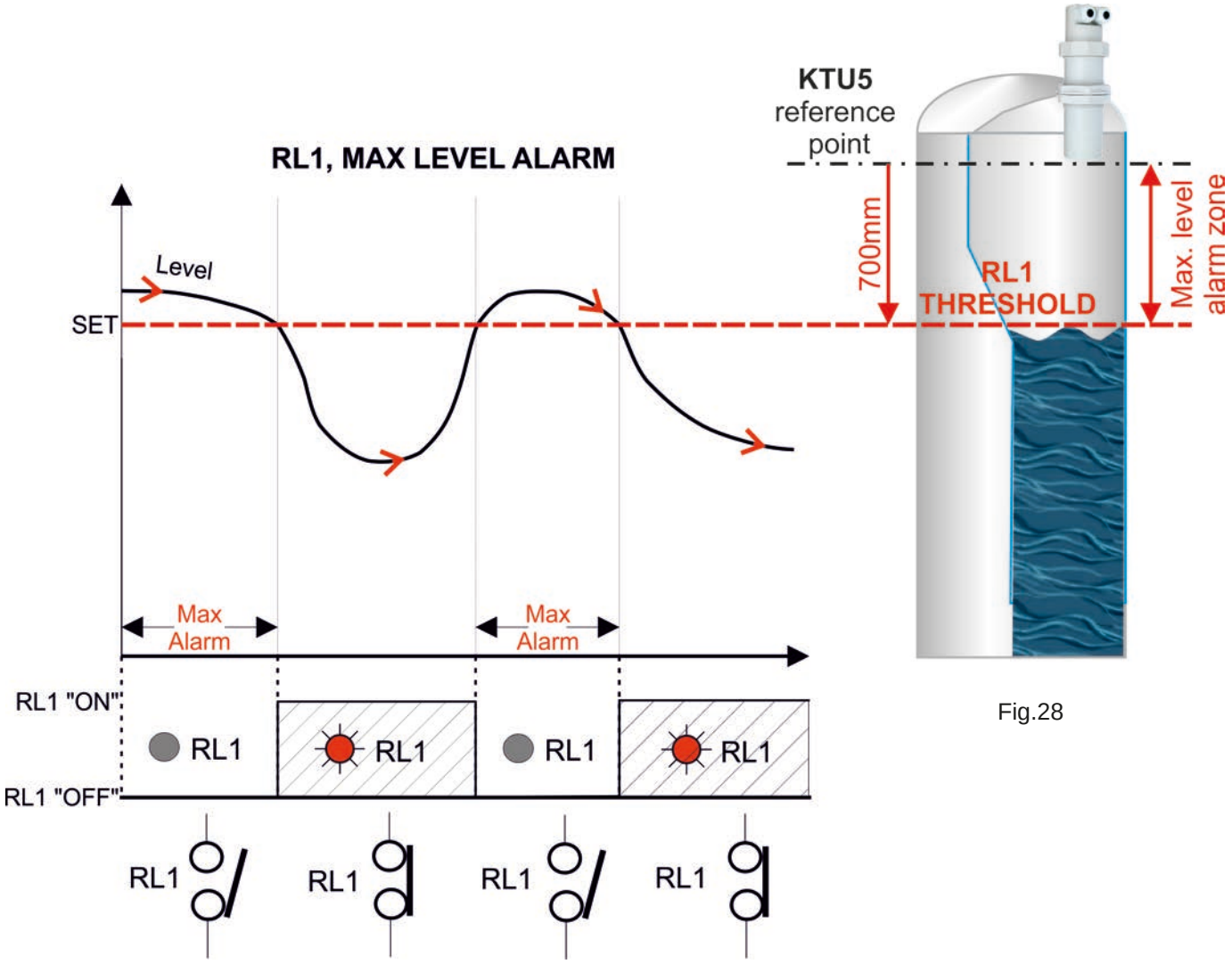
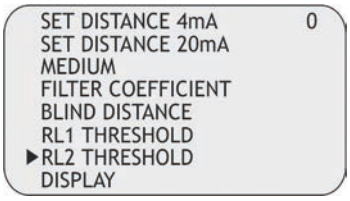


Fig.28

5.2.7 RL2 THRESHOLD

Press ENTER to display the previous setting. Set the distance from the sensor



Use ▲▼ and ↵ to modify the value; in the Fig.31 example the RL2 min. level threshold distance is 3000mm.

Press ENTER to confirm.

NB-RL2 inactive with 0000mm

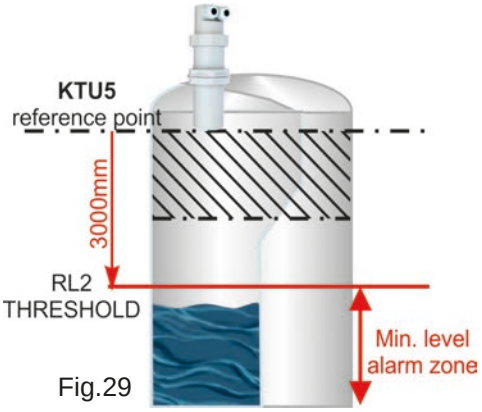


Fig.29

When confirming with the ENTER button the maximum level threshold value storage, in the example 3000mm (figures 31 and 32), the **KTU5** activates RL2 with the following default settings for level alarm threshold:

1) MIN / MAX = MIN; minimum level alarm
2) DELAY = 0 sec.; no switching delay
3) SECURITY = YES; relay de-energized, and contact open, during the maximum level alarm
4) ENABLE / DISABLE = ENABLE; alarm threshold function enabled

To change these relay settings is necessary to access the advanced setup menu (pag.16) and any subsequent changes to the RL2 threshold value not affect the relay custom settings.

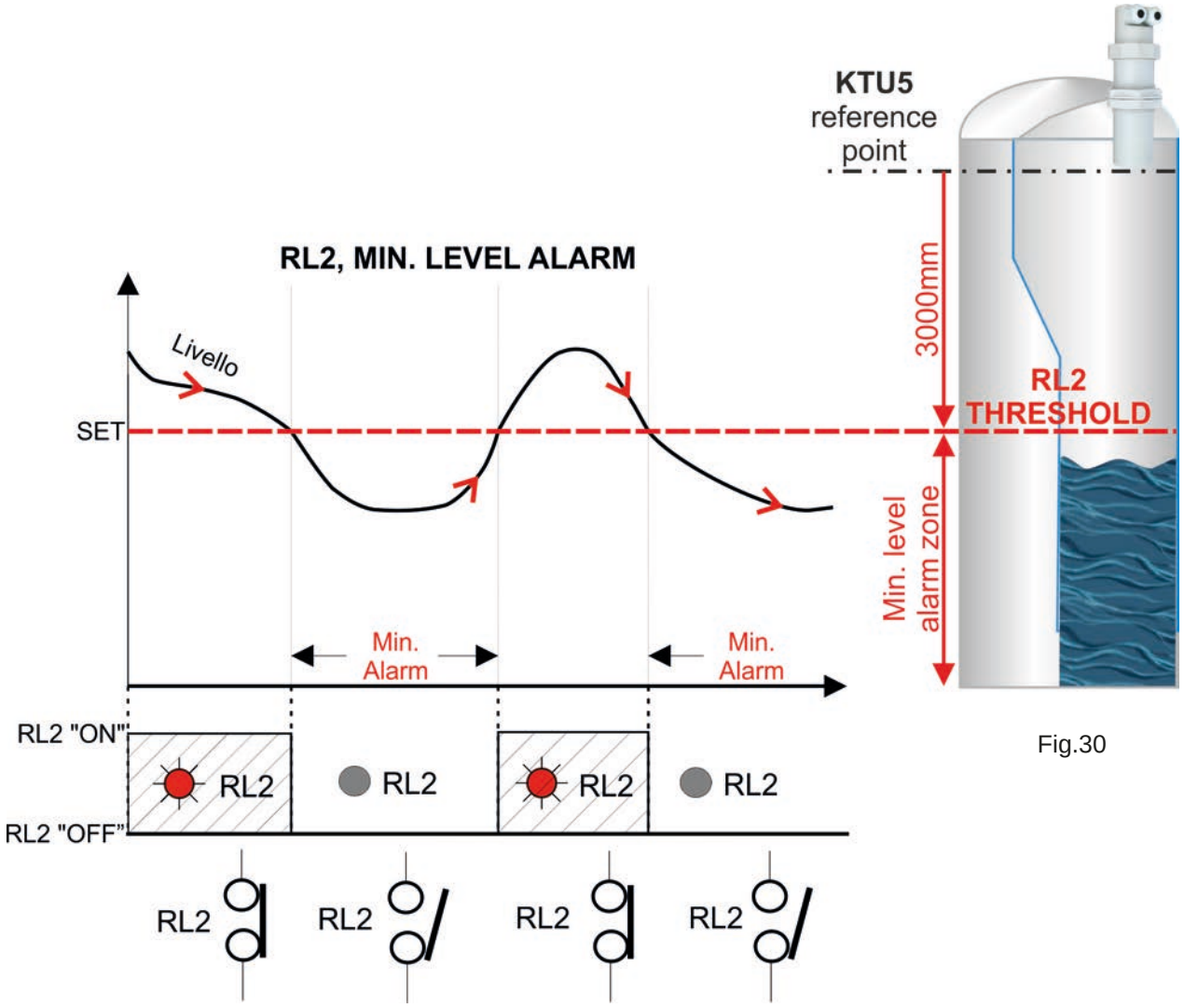
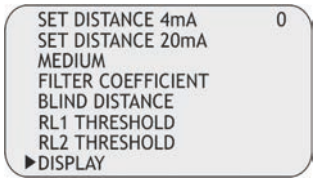


Fig.30

5.2.8 DISPLAY

Press ENTER to access the settings change.



With the button is possible to select the data to display

Press ENTER to confirm.

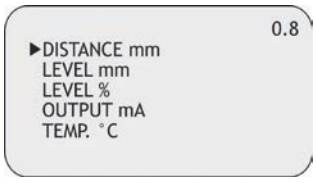


Fig.31

5.2 ECHO MAP

Pressing the **BK**, from RUN mode, to access directly to the echoes digital map display, which are in KTU5 receiving (Fig.34).
This function is useful for:

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

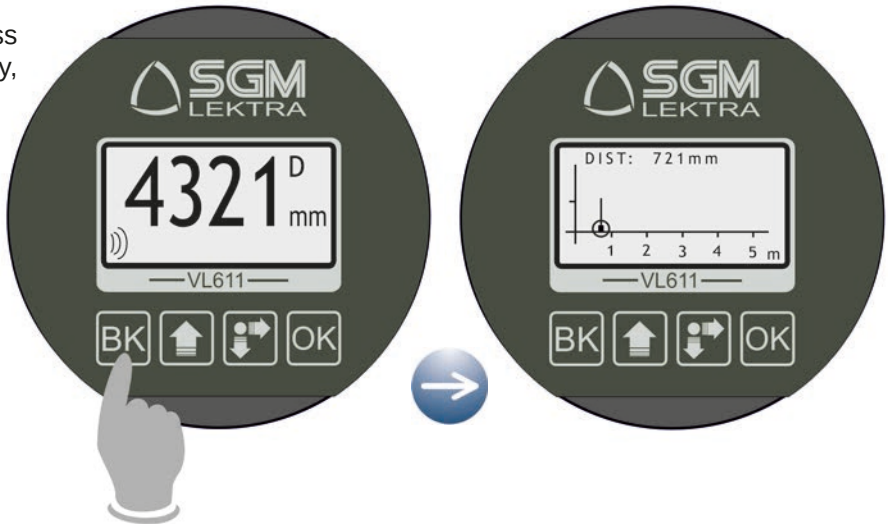
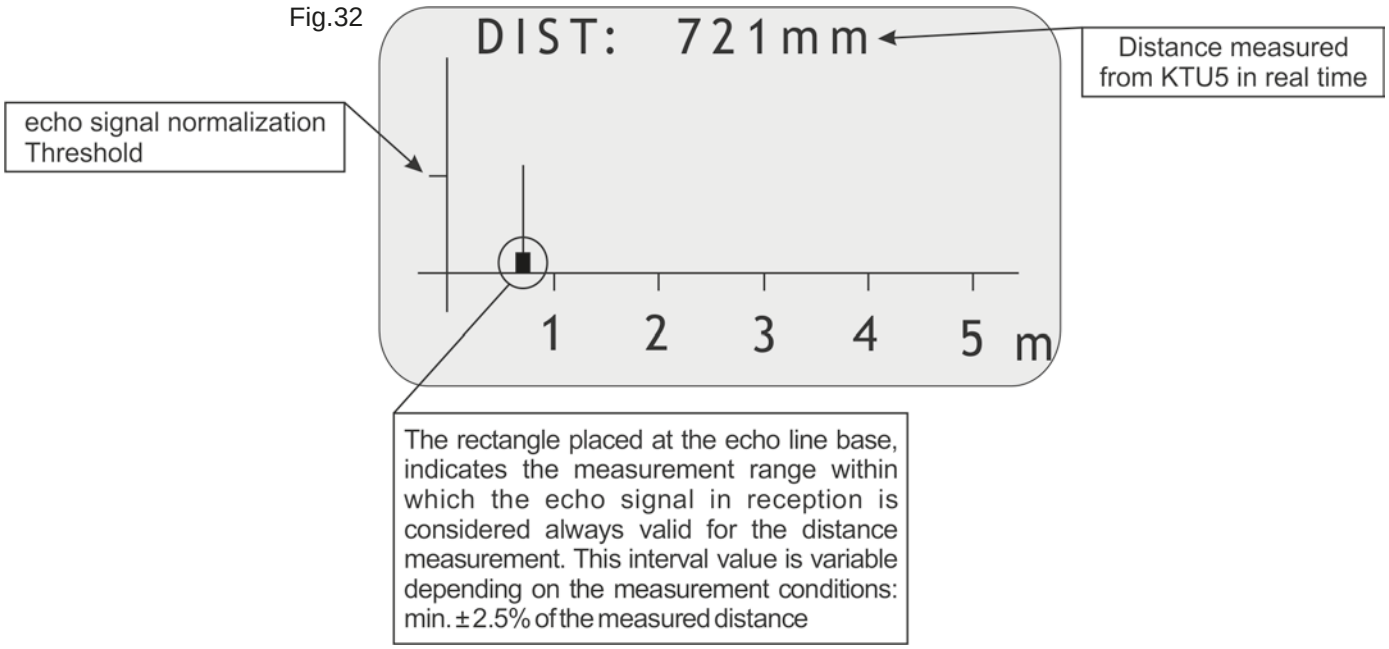


Fig.32



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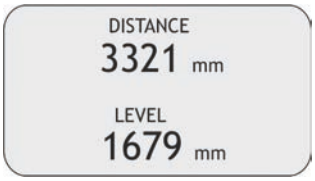
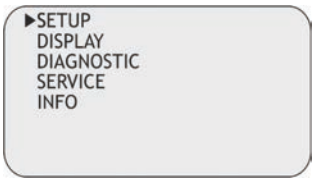
6. ADVANCED CONFIGURATION MODE

From “RUN” mode, holding down , press to the advanced configuration mode access

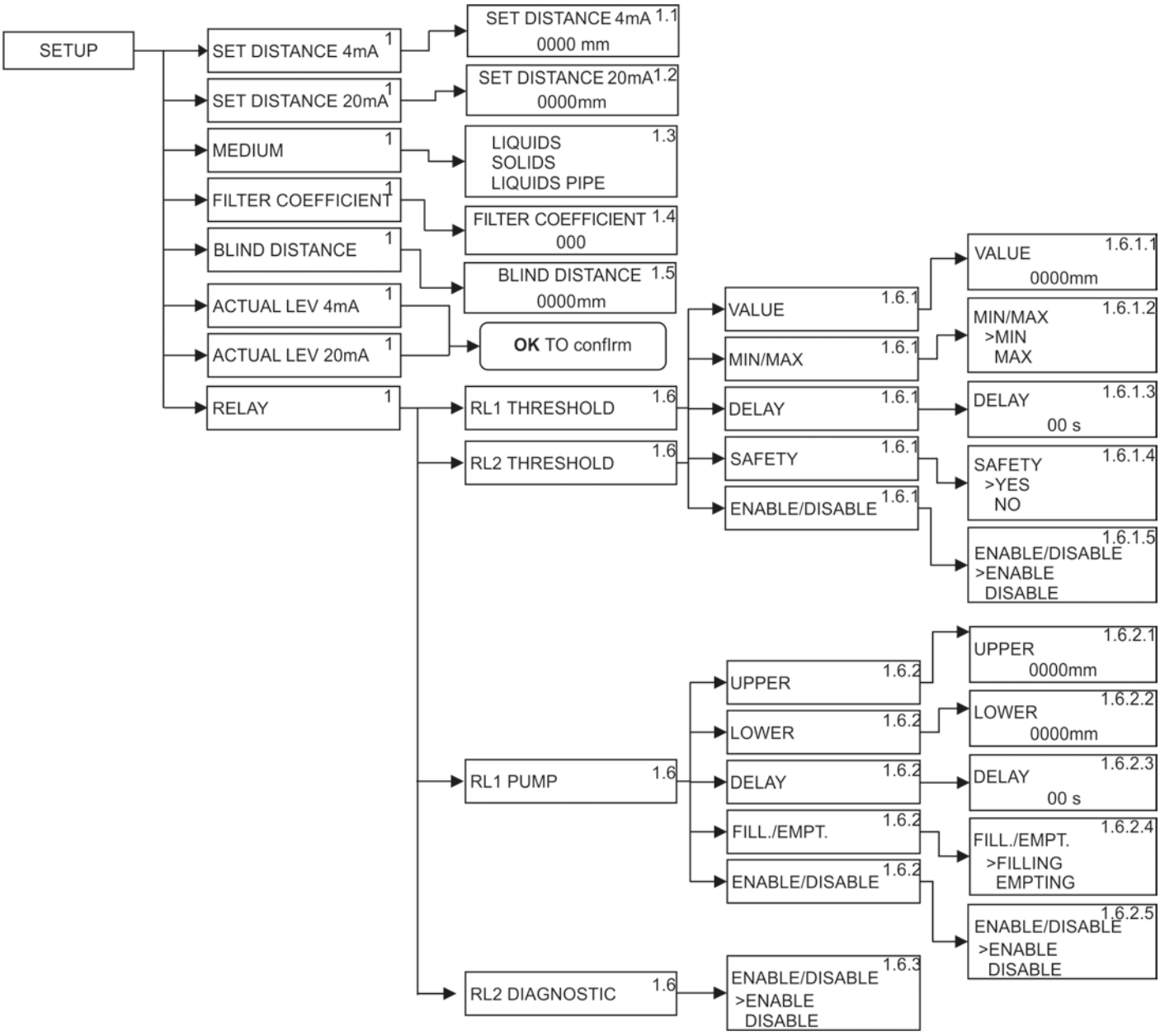


press to select the menu and press to access.
Press to exit

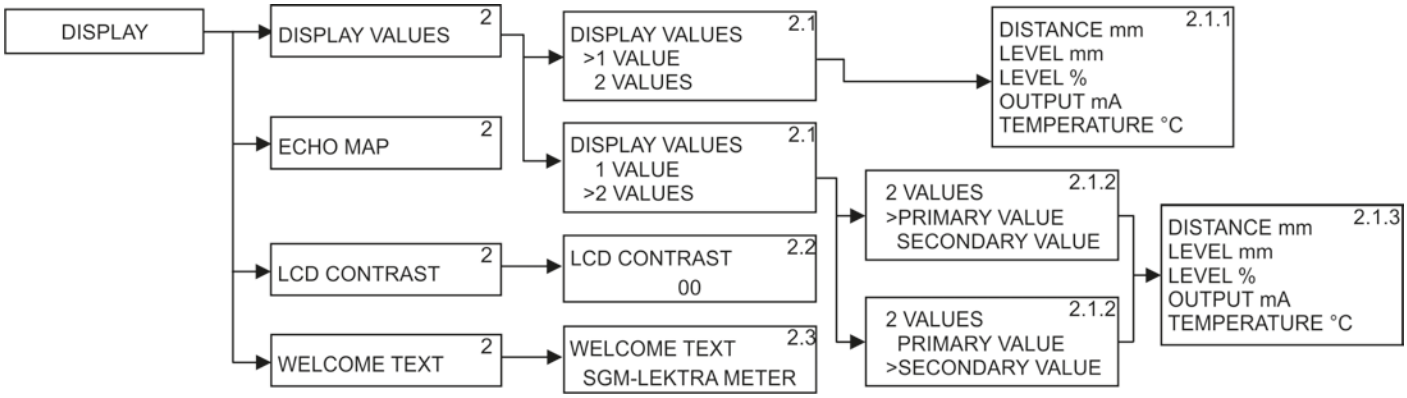


6.1 Advanced setup menu structure

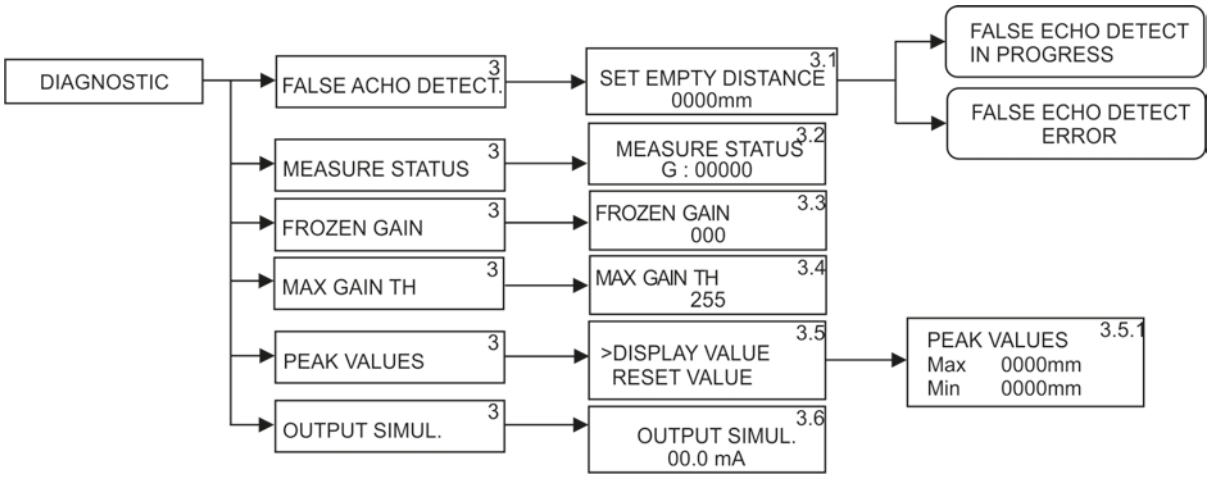
6.1.1 “SETUP” menu



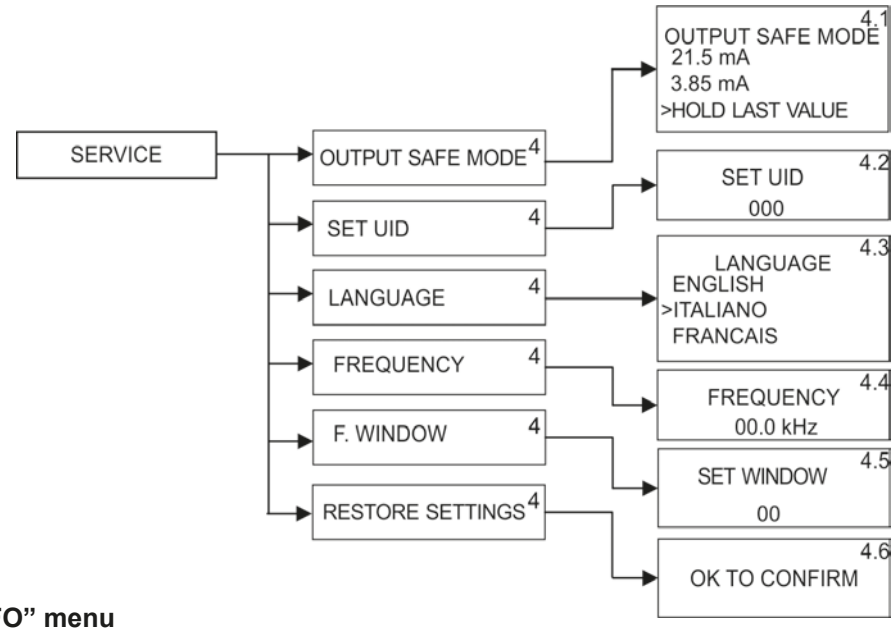
6.1.2 "DISPLAY" menu



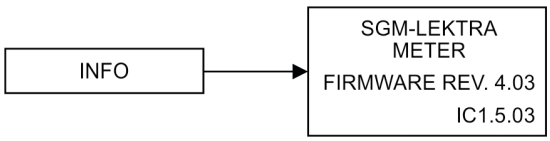
6.1.3 "DIAGNOSTIC" menu



6.1.4 "SERVICE" menu



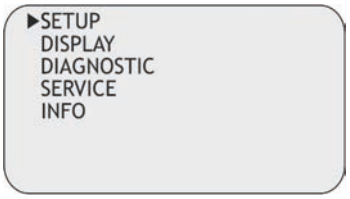
6.1.4 "INFO" menu



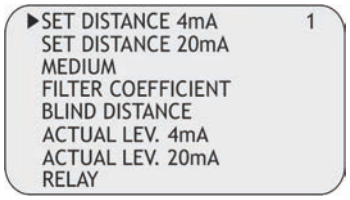
7. ADVANCED CONFIGURATION DETAIL

7.1 SETUP

From “RUN” mode, holding down , press to access

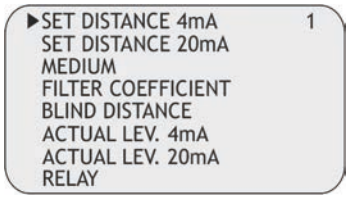


Select the parameters by moving the cursor with and confirm with



7.1.1 SET DISTANCE 4mA

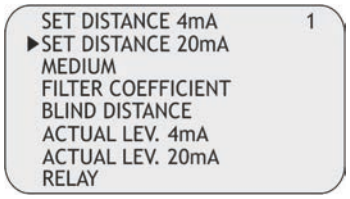
Position the ▶ cursor on DISTANCE 4mA, press to enter



Use and to modify the value.
Press to confirm. to exit without changes
Default value: 5000mm (range 5m) or 8000mm (range 8m)

7.1.2 SET DISTANCE 20mA

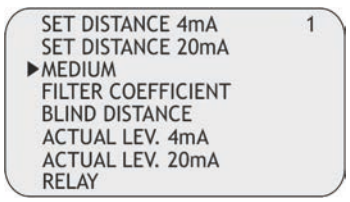
Position the ▶ cursor on SET DISTANCE 20mA, press to enter

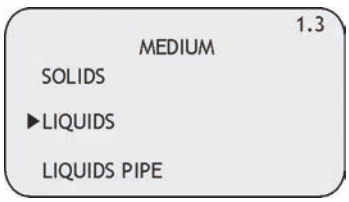


Use and to modify the value.
Press to confirm. to exit without changes
Default value: 300mm (range 5m) or 500mm (range 8m)

7.1.3 MEDIUM

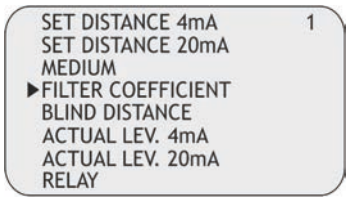
Position the ▶ cursor on MEDIUM, press to enter
3 configurations are possible:
SOLIDS - granular solids measurement
LIQUIDS - liquids measurement
LIQUIDS PIPE - liquids measurement in pipe reference
Press to select the product type.
Press to confirm. to exit without changes
Default value: LIQUIDS



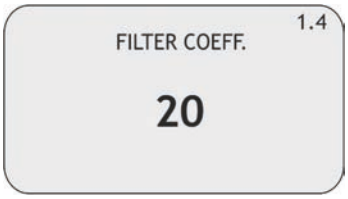


7.1.4 FILTER COEFFICIENT

Position the ▶ cursor on FILTER COEFFICIENT, press ENTER to enter

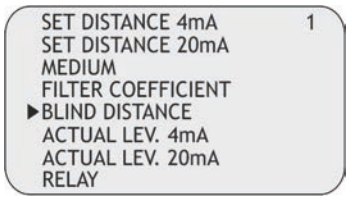


Enter a value from 1 to 99. 1 maximum speed, maximum 99 slowness.
0 excludes the filter making the immediate response
Use ▲ and ▼ to modify the value.
Press ENTER to confirm. ◀ to exit without changes
Default value: 20



7.1.5 BLIND DISTANCE

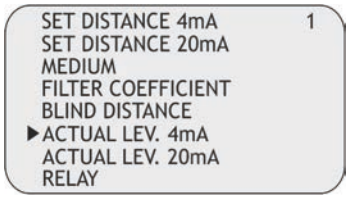
Position the ▶ cursor on BLIND DISTANCE, press ENTER to enter



Represent the “BLIND ZONE” of the sensor. Input the desired value in order to avoid measures near the surface of the sensor (if necessary).
The minimum value is 250mm (5m vers.) or 400mm (8m vers.)
Use ▲ and ▼ to modify the value.
Press ENTER to confirm. OK TO CONFIRM
Default values: 250mm (range 5m) or 400mm (range 8m)

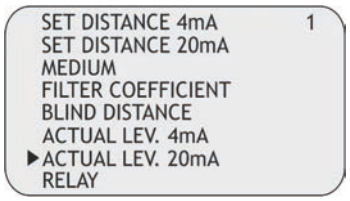
7.1.6 ACTUAL LEV. 4mA

Position the ▶ cursor on ACTUAL LEV. 4mA, press ENTER to enter
Self distance learning function that is associated with the 4mA (lower value). Make sure that the level corresponds to 0%,
ENTER to associate the actual measure with 4mA output value;
OK TO CONFIRM . **OK TO CONFIRM**



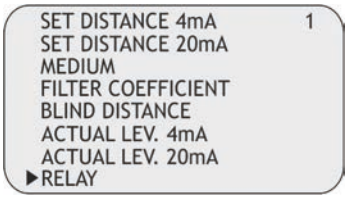
7.1.7 ACTUAL LEV. 20mA

Place the ▶ cursor on ACTUAL LEV. 20mA, press ENTER to enter
Self distance learning function that is associated with the 20mA (lower value). Make sure that the level corresponds to 100%,
ENTER to associate the actual measure with 20mA output value;
OK TO CONFIRM . **OK TO CONFIRM**

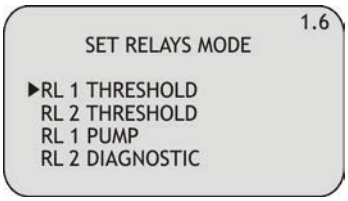


7.1.8 RELAY

Position the ▶ cursor on RELAY, press ENTER to enter

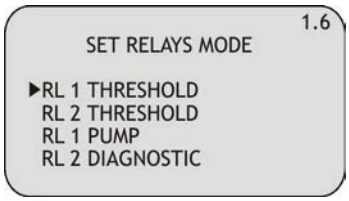


In this sub-menù it’s possible to setup onboard relays
RL1 can be set as threshold relay or pump-control relay;
RL2 can be set as threshold relay or diagnostic relay.
With the ▼ button you can select the operation mode,
then pressing ENTER to confirm the selection

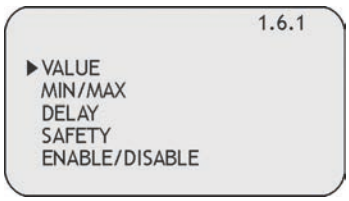


7.1.8.1 RL1 THRESHOLD (RL2 THRESHOLD equivalent)

Position the ▶ cursor on RL1 THRESHOLD, press ENTER to enter

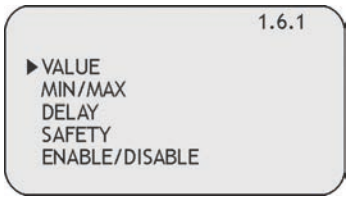


In this submenu you can set the set-point and the relay 1 and 2 action type (only 4-wires versions).
With the ⇨ button you can select the parameter to be programmed.
Press ENTER to confirm.



7.1.8.1.1 VALUE

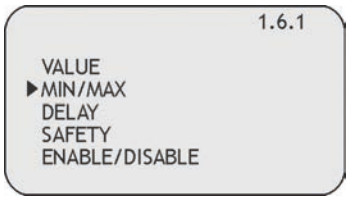
Position the ▶ cursor on VALUE, press ENTER to enter



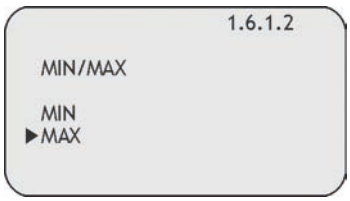
It's possible to input the threshold value that corresponds to the distance in mm from the sensor. Use ⇧ and ⇨ to modify the value.
Press ENTER to confirm. ⇦ to exit without changes
Default value: 0000mm
NB-RL1 inactive with 0000mm

7.1.8.1.2 MIN/MAX

Position the ▶ cursor on MIN/MAX, press ENTER to enter

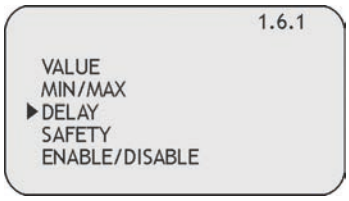


It's possible to select if the relay works as maximum level threshold or minimum level threshold.
With the ⇨ button you can select the operation mode.
Press ENTER to confirm. ⇦ to exit without changes
Default value: MAX for RL1; MIN for RL2

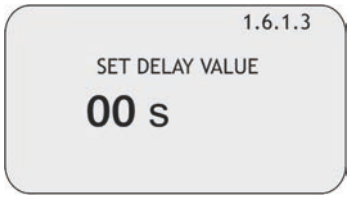


7.1.8.1.3 DELAY

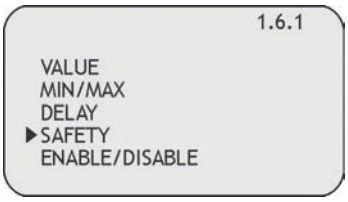
Position the ▶ cursor on DELAY, press ENTER to enter



It's possible to select the activation delay for the selected relay, from 0 to 99 sec.
Use ⇧ and ⇨ to modify the value.
Press ENTER to confirm. ⇦ to exit without changes
Default value: 00s

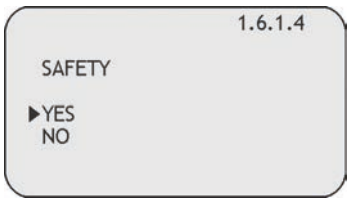


7.1.8.1.4 SAFETY

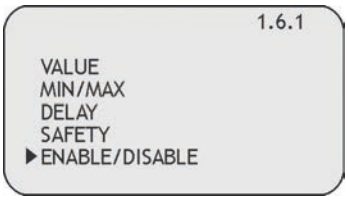


Position the ▶ cursor on SAFETY, press ENTER to enter
A “safety alarm” provides a “closed” contact with relay energized in normal condition (no alarm), the contact switches to “open”:
- Alarm condition (eg overcoming MAX);
- In power failure case.

With the button you can select the alarm mode.,
Press ENTER to confirm. to exit without changes
Default value: YES



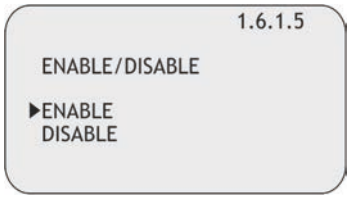
7.1.8.1.5 ABILITA/DISABILITA



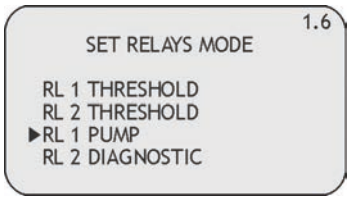
Position the ▶ cursor on ENABLE/DISABLE, press ENTER to enter

Select ENABLE to activate relay threshold.
Select DISABLE to not activate relay threshold.

With the button you can select the operation mode.
Press ENTER to confirm. to exit without changes
Default value: ENABLE



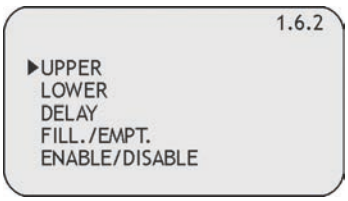
7.1.8.2 RL1 PUMP (solo per RL1)



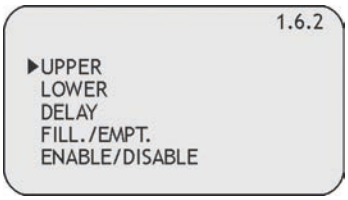
Position the ▶ cursor on PUMP, press ENTER to enter

A pump control functioning activation, with hysteresis, is possible
Two thresholds setting is required:
upper and lower threshold.

With the button you can select the parameter to be programmed,
Press ENTER to confirm.



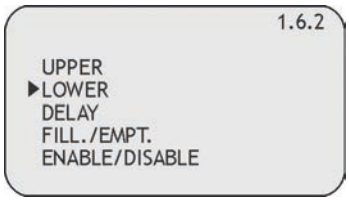
7.1.8.2.1 UPPER



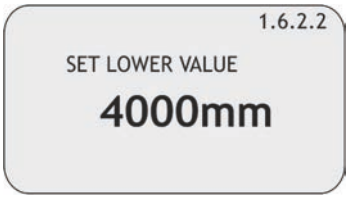
Position the ▶ cursor on UPPER, press ENTER to enter
The upper threshold (see fig.33) is expressed in mm distance from the sensor. Represents the pump starting point, EMPTY case, or pump stopping point, FILLING case.

Use and to modify the value.
Press ENTER to confirm. to exit without changes
Default value: 0000mm

7.1.8.2.2 LOWER

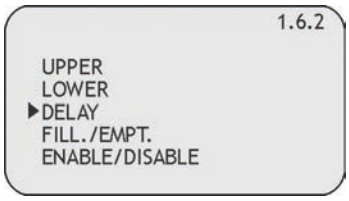


Position the ▶ cursor on LOWER, press ENTER to enter
The lower threshold (see fig.35) is expressed in mm distance from the sensor. Represents the pump stopping point, EMPTY case, or pump starting point, FILLING case.



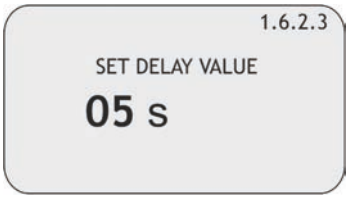
Use ▲ and ▼ to modify the value.
Press ENTER to confirm. ESC to exit without changes
Default value: 0000mm

7.1.8.2.3 DELAY

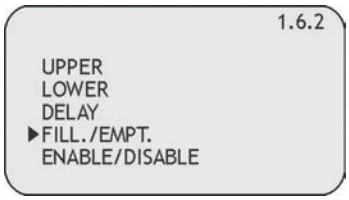


Position the ▶ cursor on DELAY, press ENTER to enter

Set the relay delay activation, from 0 to 99 sec.
Use ▲ and ▼ to modify the value.
Press ENTER to confirm. ESC to exit without changes
Default value: 00

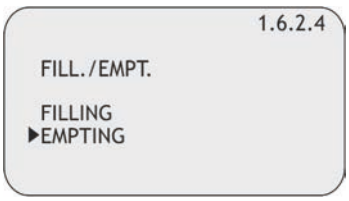


7.1.8.2.4 FILL./EMPT.



Position the ▶ cursor on FILL./EMPT., press ENTER to enter

it's possible to select the mode of pump control (FILLING or EMPTING).
With the ▼ button you can select the operation mode.
Press ENTER to confirm. ESC to exit without changes
Default value: EMPTING



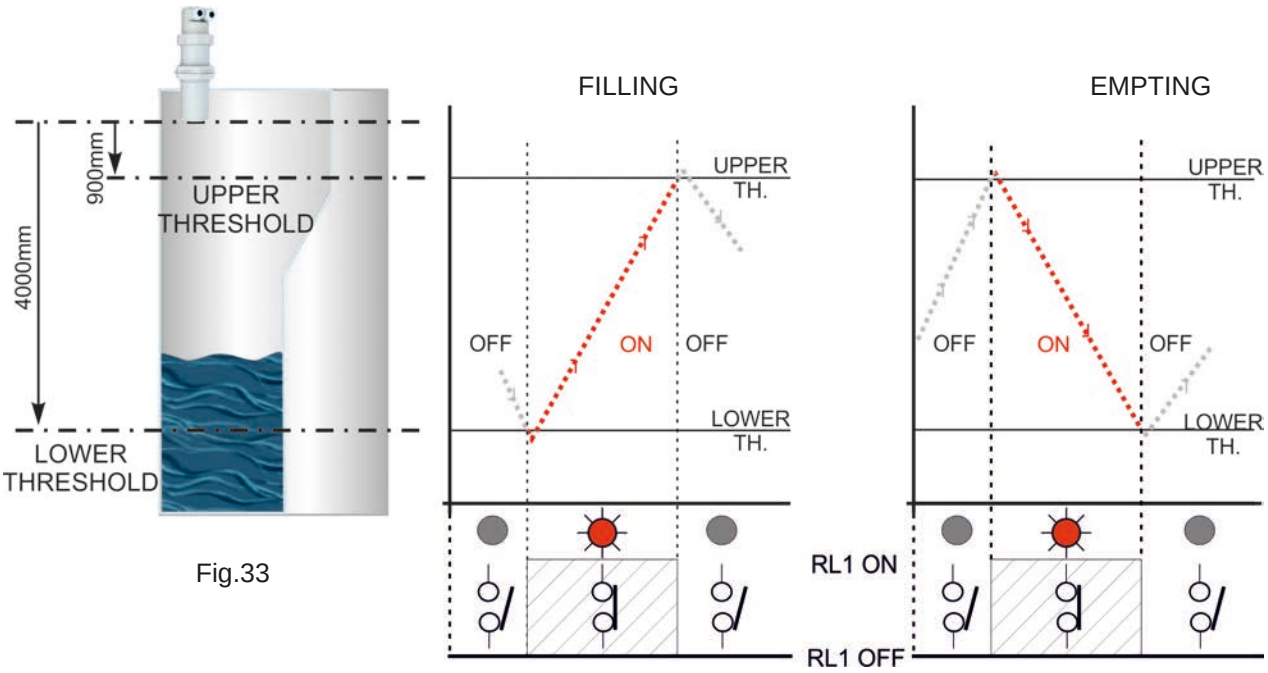
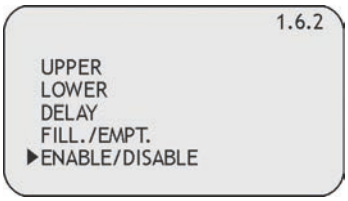


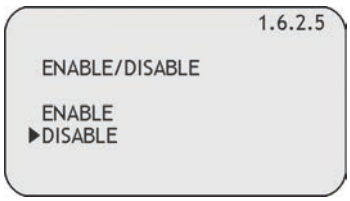
Fig.33

7.1.8.2.5 ENABLE/DISABLE

Position the ▶ cursor on ENABLE/DISABLE, press ENTER to enter



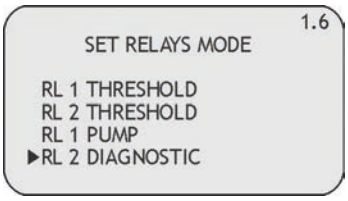
Select ENABLE to activate relay threshold.
Select DISABLE to not activate relay threshold.
With the ↕ button you can select the operation mode.
Press ENTER to confirm. ← to exit without changes
Default value: DISABLE

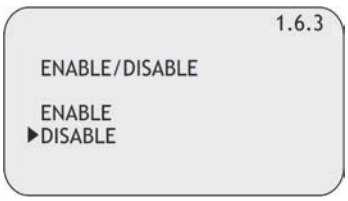


7.1.8.3 RL2 DIAGNOSTIC

Position the ▶ cursor on RL2 DIAGNOSTIC, press ENTER to enter
If it becomes necessary the KTU5 functional control, it's possible to enable the RL2 alarm output function. In this case, enabling the function, RL2 is energized in normal operation (RL2 LED on) and is de-energized (LED RL2 off, safety alarm) when at least one of the four conditions mentioned below, shall be verified:

- TEMP. : temperature out of range
- ECHO : no echo is detected
- GAIN : the sensor's gain exceed the value setted in Max Gain TH (3.4)
- DIST. : the measured distance exceed the 120% of the maximum distance in setup



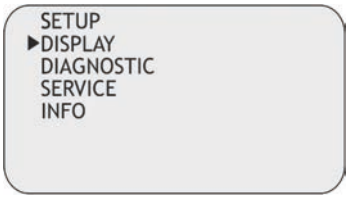


With the ↕ button you can select the operation mode.
Press ENTER to confirm. ← to exit without changes
Default value: DISABLE

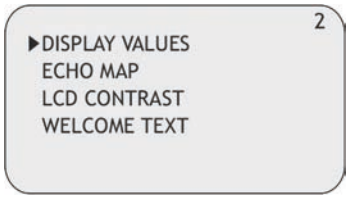
NOTE: when an error occurs, a "!" is flashing on the display: press ↕ to show a message that indicate what kind of error is present. The KTU5 automatically returns to RUN mode.

7.2 DISPLAY

From "RUN" mode, holding down ↑ , press ENTER to access
Position the ▶ cursor on DISPLAY, press ENTER to enter

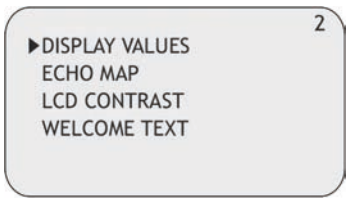


Select the parameters by moving the cursor with ↕ and confirm with ENTER



7.2.1 DISPLAY VALUES

Position the ▶ cursor on DISPLAY VALUES, press ENTER to enter

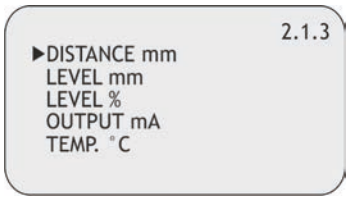


It's possible to select if one value with big digits or two values are shown on the display in "RUN" mode
With the ↕ button you can select the parameter to be programmed.
Press ENTER to confirm. ← to exit without changes

7.2.1.1 1 VALUE

Position the ▶ cursor on 1 VALUE, press ENTER to enter

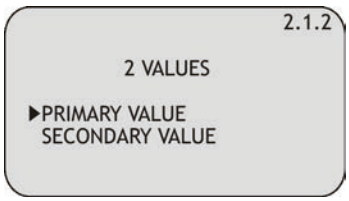
Only one value is displayed; it's possible to choose from 5 parameters.
With the ▶ button you can select data to display.
Press ENTER to confirm. ◀ to exit without changes

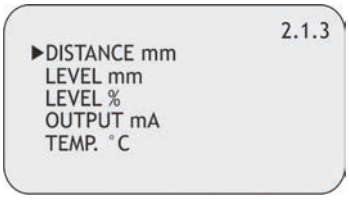


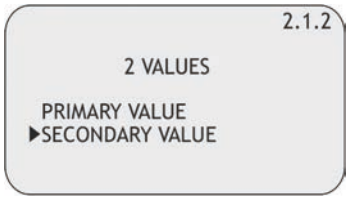
7.2.1.2 2 VALUES

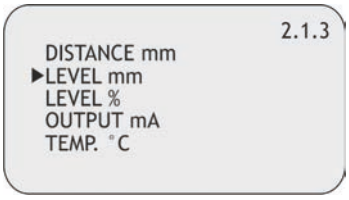
Position the ▶ cursor on 2 VALUES, press ENTER to enter

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



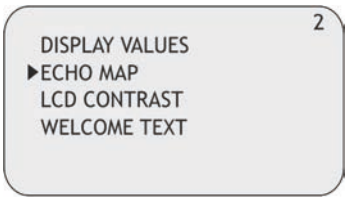






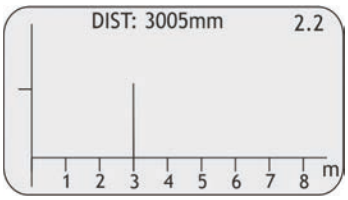
7.2.2 ECHO MAP

Position the ▶ cursor on ECHO MAP, press ENTER to enter



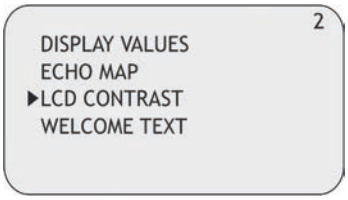
Detailed function description on page 13, figure 32

ESC to exit and return to the menu 2



7.2.3 LCD CONTRAST

Position the ▶ cursor on LCD CONTRAST, press ENTER to enter



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

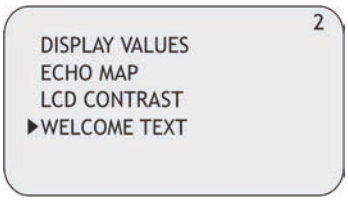
Use ▲ and ▼ to modify the value.

Press ENTER to confirm. ESC to exit without changes

Default value: 32

7.2.4 WELCOME TEXT

Position the ▶ cursor on WELCOME TEXT, press ENTER to enter



It's possible to edit or delete the message that is displayed by the KTU5 during the ignition phase.

Use ▲ (up scroll) and ▼ (down scroll) to change the digit; ENTER to move the digit to the right. To confirm press ENTER repeatedly until leave the parameter.

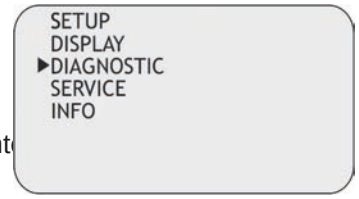
ESC to exit without changes

Default value: SGM-LEKTRA KTU5

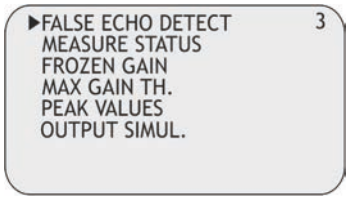
7.3 DIAGNOSTIC

From "RUN" mode, holding down ▲ , press ENTER to access

Position the ▶ cursor on DIAGNOSTIC, press ENTER to ent

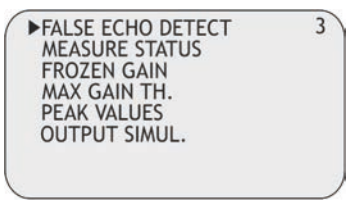


Select the parameters by moving the cursor with ▼ and confirm with ENTER



7.3.1 FALSE ECHO DETECT

Position the ▶ cursor on FALSE ECHO DETECT, press ENTER to enter



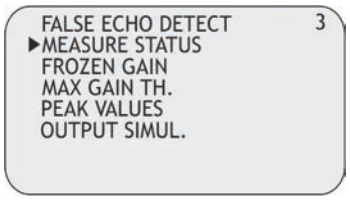
NB - To use this parameter the tank ***must strictly be empty***

It's necessary to input the empty distance (distance from the tank bottom)

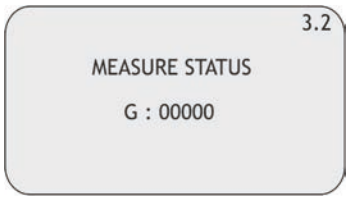
Use ▲ and ▼ to modify the value.
Press ENTER to confirm. ◄ to exit without changes
"KTU5" automatically stores all echoes detected and implemented an echo true and any eventual spurious echoes automatic selection. After this, the following message is displayed: **FALSE ECHO DETECT PROGRES**
After procedure completion, the following message is displayed:
FALSE ECHO DETECT DONE
If something is not correct (e.g. wrong empty distance value, obstacles that hides the bottom) the following message is displayed:
FALSE ECHO DETECT ERROR
Note: <u>False echo detect procedure is not recommended for pipe and stand-pipe applications</u>
<u>To delete this function, need to restore the default parameters (see par. 7.4.5)</u>

7.3.3 MEASURE STATUS

Position the ▶ cursor on MEASURE STATUS, press ENTER to enter

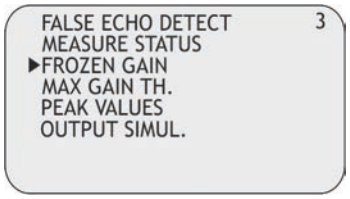


It's possible to display the gain of the system, with values from 0 to 255.
While displayed, the automatic gain control is not active
◄ to exit



7.3.4 FROZEN GAIN

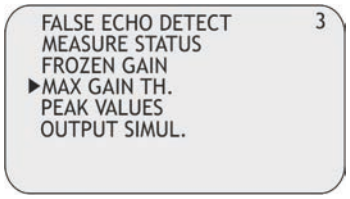
Position the ▶ cursor on FROZEN GAIN, press ENTER to enter



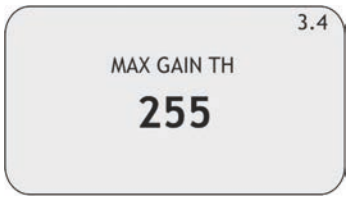
It's possible to fix a value of gain (from 1 to 255) and consequently disable the automatic gain control. Once the value is 000 the automatic gain control restarts
Use ▲ and ▼ to modify the value.
Press ENTER to confirm. ◄ to exit without changes
Default value: 000

7.3.5 MAX GAIN TH

Position the ▶ cursor on **MAX GAIN TH**, press ENTER to enter

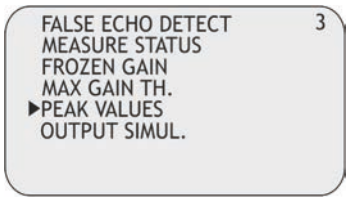


It's possible to input a value of gain that it should be not reached in normal operation. If the gain exceeds this value, the "GAIN" error code is activated.
Use ▲ and ▼ to modify the value.
Press ENTER to confirm. ◄ to exit without changes
Default value: 255 (Max gain)



7.3.6 PEAK VALUES

Position the ▶ cursor on PEAK VALUES, press ENTER to enter

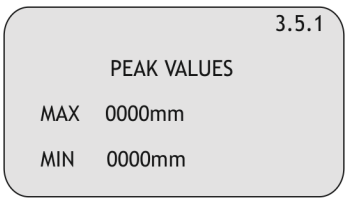


The system store the maximum distance and the minimum distance measured since the power is turned ON.
It's possible to see those values or reset the values
With the ↕ button you can select the function.
Press ENTER to confirm.

7.3.6.1 DISPLAY VALUES

Position the ▶ cursor on DISPLAY VALUES, press ENTER to enter

Displays the max. and min. distance measured from power on.
◀ to exit.
NB - The peak values stored are erased every time the KTU5 turns-off



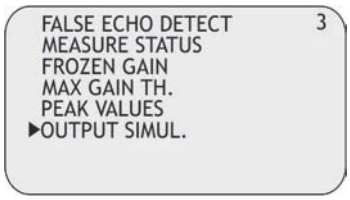
7.3.6.2 RESET VALUES

Position the ▶ cursor on RESET VALUES, press ENTER to reset
◀ to return to the previous menu.

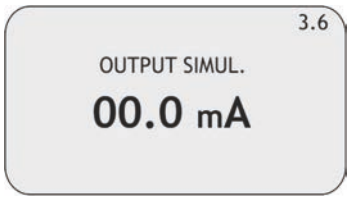
7.3.7 OUTPUT SIMULATION

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

Position the ▶ cursor on OUTPUT SIMULATION, press ENTER to enter .



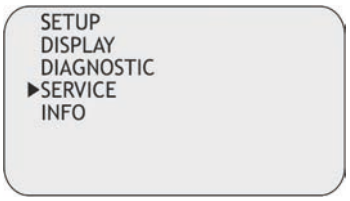
It's possible to force the analog output to a desired value.
Use ↑ and ↕ to modify the value.
Press ◀ to return to the previous menu.



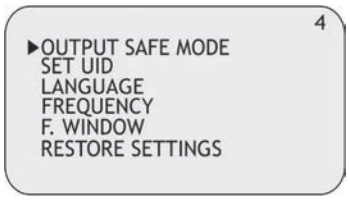
7.4 SERVICE

From “RUN” mode, holding down , press ENTER to access

Position the ▶ cursor on SERVICE, press ENTER to enter

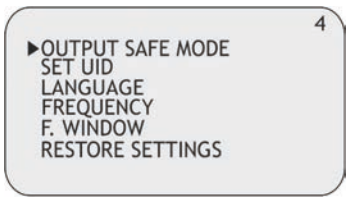


Select the parameters by moving the cursor with and confirm with ENTER

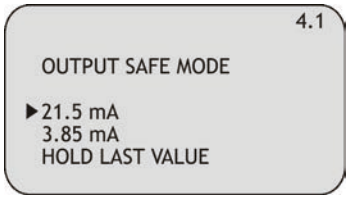


7.4.1 OUTPUT SAFE MODE

Position the ▶ cursor on OUTPUT SAFE MODE, press ENTER to enter

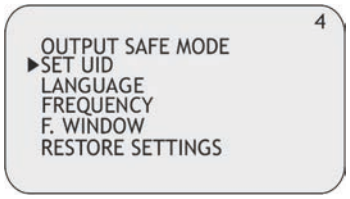


It’s possible to choose a analog output value durin diagnostic errors.
“***21.5 mA***” forces the current output to 21,5mA
“***3.85 mA***” forces the current output to 3,85mA
”***HOLD LAST VALUE***” maintains the output at the last valid value.
With the button you can select the operation mode.
Press ENTER to confirm. ESC to exit without changes
Default value: HOLD LAST VALUE



7.4.2 SET UID

Position the ▶ cursor on SET UID, press ENTER to enter
Can assign the address UID in this parameter, for a MUDBUS RTU network

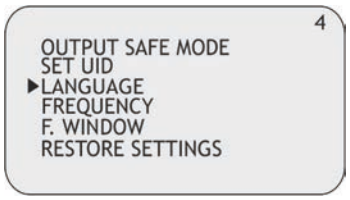


Use and to modify the value.
Press ENTER to confirm. ESC to exit without changes
Default value: 001

7.4.3 LANGUAGE

Position the ▶ cursor on LANGUAGE, press ENTER to enter

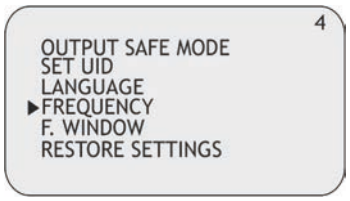
Sets the menu language: English, Italian, French



Press to select the menu language.
Press ENTER to confirm. ESC to exit without changes

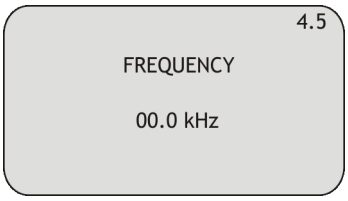
7.4.5 CHECK FREQUENCY

Position the ▶ cursor on CHECK FREQUENCY, press ENTER to enter



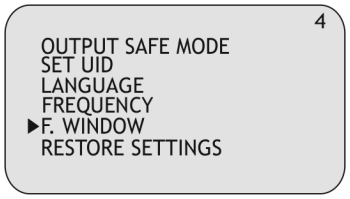
It's possible to check the computed sensor emission frequency

◀ to exit

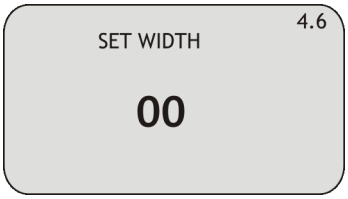


7.4.6 F. WINDOWS

Position the ▶ cursor on F. WINDOWS, press ENTER to enter



Refer to figure 32 on page 13 .The F.WINDOW is the sensitive area width around the true echo. All echoes detected inside the F.WINDOW are valid. F.WINDOW automatically centers itself in the most probable echo neighborhood and automatically adjusts its width (step). The step value of the window, expressed in cm, is represented by SET WIDTH; for example: parameter set to 5; the sensor is hooked to a 4m distant signal echo; suddenly the echo signal disappears and a echo signal is detected to 1m; KTU5 will start to open the search range with steps of 5cm at each echo signal emission, so to cover the 3 meters that separate the 4m distant signal echo by the new 1m distant echo, KTU5 will take 60 emissions to reach the new 1m distance eco. This parameter serves to filter false echo signals products, for example, by the agitator blades. Range: 00÷20

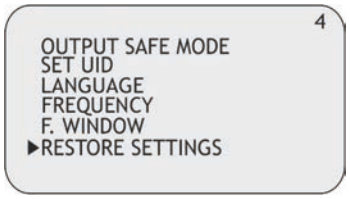


Press ENTER to confirm. ◀ to exit without changes

Default value: 05

7.4.5 RESTORE SETTING

Position the ▶ cursor on RESTORE SETTING, press ENTER to enter

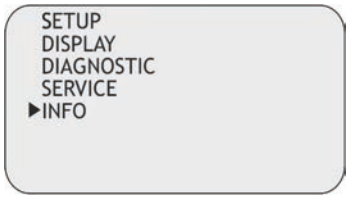


Press ENTER to restore the KTU5 default settings

◀ to exit without restored the KTU5 default settings.

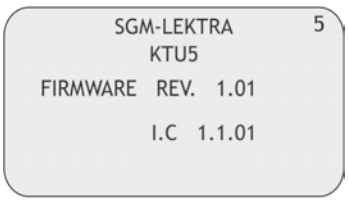
7.5 INFO

Position the ▶ cursor on INFO, press ENTER to enter



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

◀ to exit.



Note:

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