PTU50-51-56

Ultrasonic level transmitter

825B124C

Technical Data

Housing material:	**PP**
Mechanical installation:	**1"GAS M; (PP flange DN100 opt.)**
Protection degree:	**IP68**
Electrical connection:	**IP68 male connector**
	with 5/10/15/20m linking cable
Working temperature:	**-25° ÷ +75°C**
Pressure:	**da 0,5 a 1,5 bar (absolute)**
Power supply:	**24Vdc**
Power consumption:	**1,5W**
Analog output:	**4÷20mA max 750ohm**
Digital communication:	**MODBUS RTU**
Max measure range:	**PTU50 0.05÷1.5m; PTU51 0.3÷6m;**
	PTU56 0,5÷12m

[In case of non perfectly reflecting surfaces, the maximu distance value will be reduced]

Temperature compensation:	**digital in the working temperature**
Accuracy:	**±0,2% (of the measured distance)**
	not better than ±3mm (PTU50 ±1mm)
Resolution:	**1mm**
Calibration:	**VLW601 prog. module with 4 buttons**
	or by MODBUS RTU
Warm-up:	**30 minutes typical**
LCD Display:	**matrix LCD display on VLW601 module (opt.)**

PTU51

PTU50

PTU56

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 mantein 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 consequiential 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:

PTU...................   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   ....

SGM LEKTRA

Process Controll and Measurement

The non intrusive system application is now preferred in the level measurements field. For this reason the **SGM-LEKTRA** developed the **PTU50**, **PTU51** and **PTU56** unity to best meet the "**GENERAL-PURPOSE**" application requests. The **PTU50**, **PTU51** and **PTU56** units are compact sensors and have a via connector quick connection. The **IP68** protection makes them suitable for external applications with direct exposure to the weather, including areas with diving hazard (up to 1m). **PTU50**, **PTU51** and **PTU56** are ultrasonic level transmitter, temperature-compensated and suitable for connection with **MODBUS RTU**.

- ☐ *Non-contact level measurements*
- ☐ *Suitable for liquids and granulates level measurement*
- ☐ *Integrated digital temperature sensor to compensate the measure*
- ☐ *MODBUS RTU communication protocol*
- ☐ *24Vdc power supply*
- ☐ *Mechanical protection: IP68*
- ☐ *1 4÷20mA analog output*

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 -35° and +75°C

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.
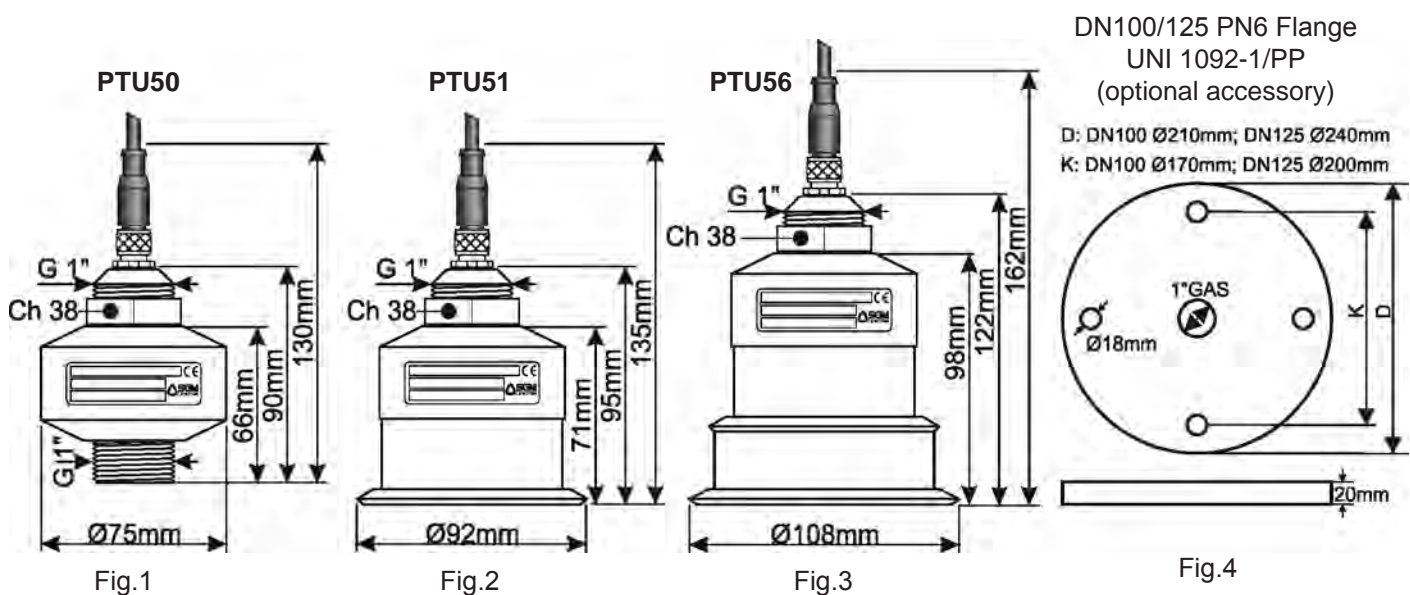
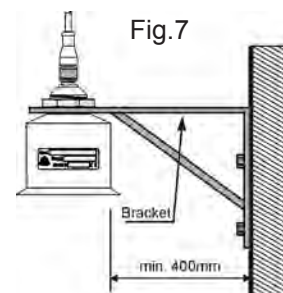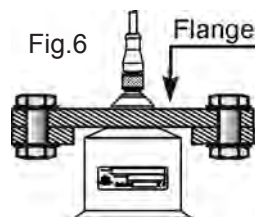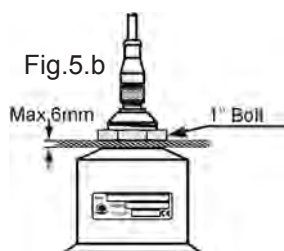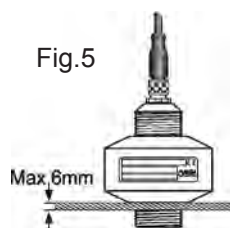## 2. INSTALLATION

2.1 Mechanical dimensions

The **PTU50**, **PTU51** and **PTU56** transmitter have the 1" GAS M threaded, equipped with 1" PP fixing bolt.
Also available with:
    PTU50-51 - DN100 PN6 UNI 1092-1/PP flange (optional accessory)
   **PTU56**   - DN120 PN6 UNI 1092-1/PP flange (optional accessory)

PTU50 — Fig.1

PTU51 — Fig.2

PTU56 — Fig.3

DN100/125 PN6 Flange UNI 1092-1/PP (optional accessory)
D: DN100 Ø210mm; DN125 Ø240mm
K: DN100 Ø170mm; DN125 Ø200mm
Fig.4

2.2 Mounting examples

Fig.5 Max.6mm

Fig.5.b Max.6mm 1" Boll

Fig.6 Flange

Fig.7 Bracket min. 400mm

2.3 Mounting precautions

2.3.1 Mounting position (Fig.8)

- 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 "α") 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

Fig.8

Liquids

Bulk solids
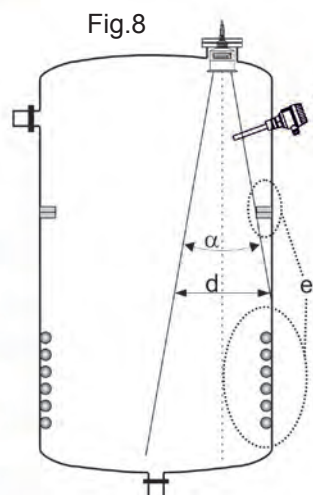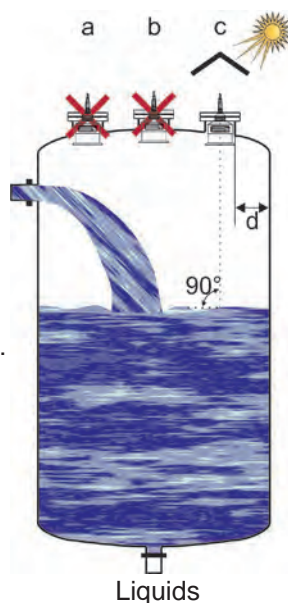
	Lobe α	L	d
PTU50 6m	10°	1.5m	02m(1.5m)
PTU51 6m	10°	6m	0.6m (6m)
PTU56 12m	10°	12m	1m (12m)

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 **0.05m** (for 1.5m max **PTU50** range), **0.3m** (for 6m max **PTU51** range) or **0.5m** (for 12m max **PTU56** range) where the sensor can not measure.
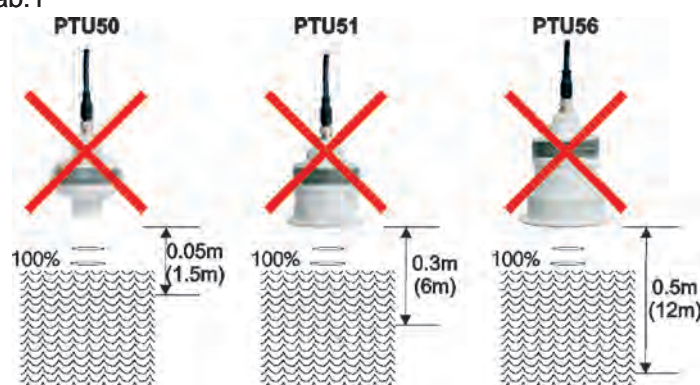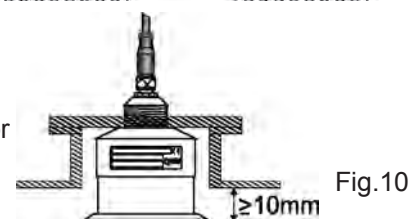
PTU50 100% 0.05m (1.5m)
PTU51 100% 0.3m (6m)
PTU56 100% 0.5m (12m)

Fig.9

2.3.2 IInstallation in nozzle

Installing the **PTU50-51-56** sensor in a nozzle (see fig.10), make sure the sensor bottom protrudes at least 10 mm from the bottom nozzle

Fig.10 ≥10mm

PTU50-51-56 can be installed in an extension pipe (see Figure 11) 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.

PTU50 1.5m - PTU51 6m		PTU56 12m	
D (mm)	Lmax(mm)	D (mm)	Lmax(mm)
100	80m	125	240
125	240	150	300
150	300		

Tab.2

Fig.11 45°

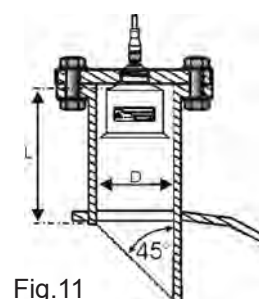### 2.3.4 Reference pipe installation

Disturbing factors that may influence the level measurement in liquids, as for example:
- foam presence on the product surface (Fig.12)
- internal structures presence in the tank (Fig.13)
- presence on the liquid surface of floating bodies (Fig.14)

can be avoided with the use of level measurement inside of pipes (by-pass pipe or calm pipe with 100mm min. diameter for PTU50-51, or 125mm min. diameter for PTU56)
The pipe must have a length greater or equal than the empty distance, also, must have some of vent holes (Fig. 14-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 7 or 11)
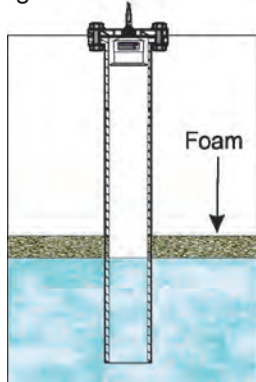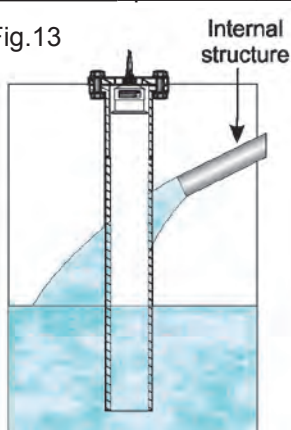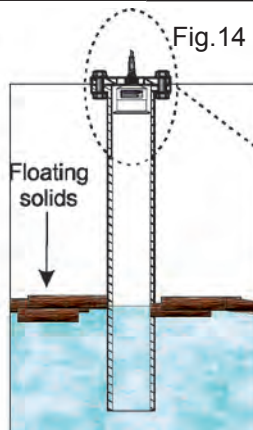
Fig.12   Fig.13   Fig.14   Fig.14-A
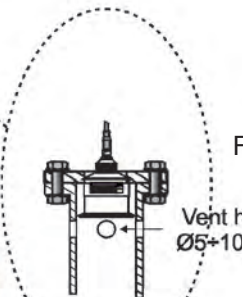
2.3.5 Agitators presence

The level measurement is possible thanks to the **Auto-Tuned** statistical filter.
Should rarely need to adjust the filter setting by editing 2 **PTU50-51-56** sensor programming parameters:

- **FILTER**; this parameter is present in the **Quick Setup** menu (page 8) and in the Advanced Configuration "**SETUP**" menu (page 11);
 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 18); decreasing the parameter programmed value, increases the sensor immunity to false echoes.

Fig.15

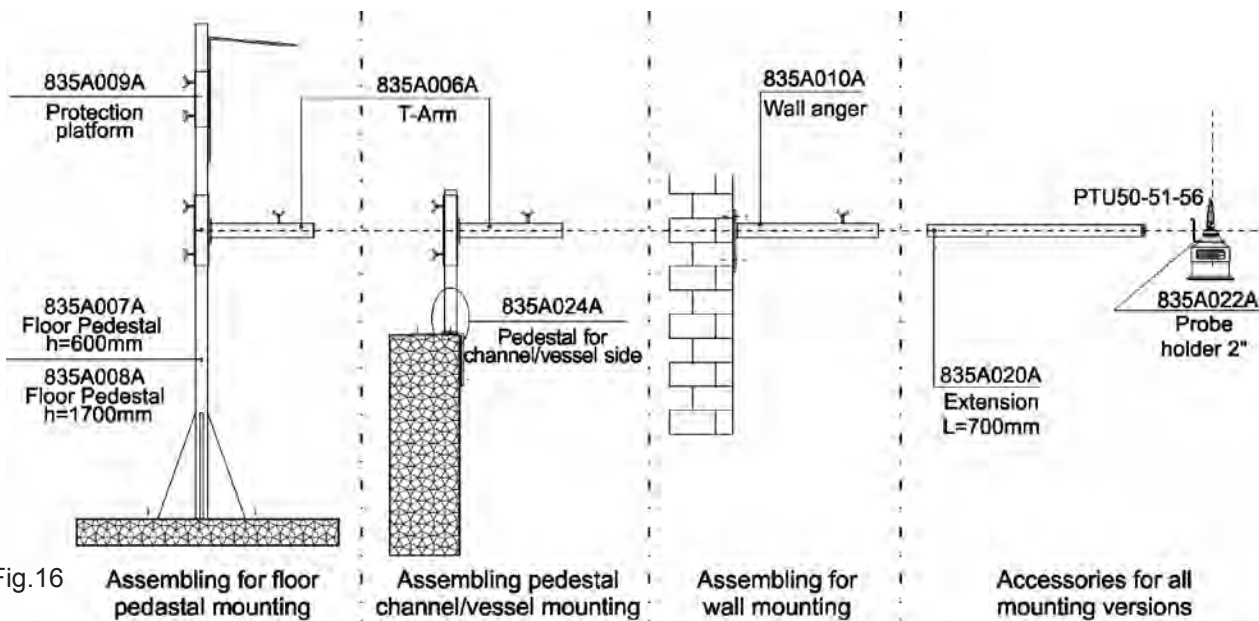### 2.3.6 Mechanical installation accessories

Fig.16   Assembling for floor pedastal mounting   Assembling pedestal channel/vessel mounting   Assembling for wall mounting   Accessories for all mounting versions

3. CONNECTIONS

3.1 Wiring

1) Separate the engine control cables or power cables from the **PTU5x** connection cables.
2) Isolate unused wires of the cable.
3) Fully tighten the connector ring nut

Brown	GND (0V)	Green	A (RS485)
Red	+24Vdc	Blue	B (RS485)
White	SDA Display	Pink	+3.3V Display
Yellow	+ 4÷20mA	Grey	SCL Display

Fig.17

The immunity to electromagnetic interference complies with CE Directives

3.2 Humidity infiltrations

To avoid the humidity infiltration inside the connector is recommended:

- Fully tighten the connector ring nut

- position the cable so that it forms a downward curve at the M20 output (Fig. 18); in this way the condensation and/or rain water will tend to drip from the curve bottom
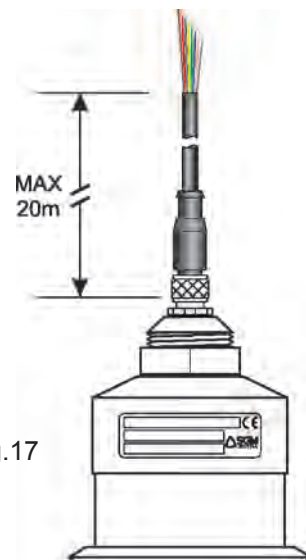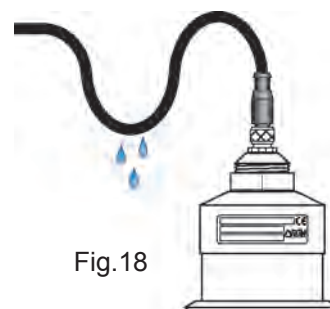
Fig.18

4. CONFIGURATION MODES

The **PTU50**, **PTU51** and **PTU56** have 2 configuration/calibration modes:
- via **MODBUS RTU**, by PC
- via **VLW601** programming module

4.1 Via MODBUS RTU

4.1.1 MODBUS RTU PC connection (fig.19)

1) **PTU50**, **PTU51** or **PTU56** with **MODBUS RTU** communication protocol
2) USB/RS485 interface module, cod.694A004A
3) **MODBUS RTU** communication S/W, cod.010F105A (3)
With this software is possible:
- connect, by selecting the **UID** address, the **PTU50**, **PTU51** or **PTU56** transmitters in **MODBUS RTU** network
- read on your PC monitor all measures in reading and **PTU50**, **PTU51** or **PTU56** operation data
- programming all **PTU50**, **PTU51** or **PTU56** configuration parameters
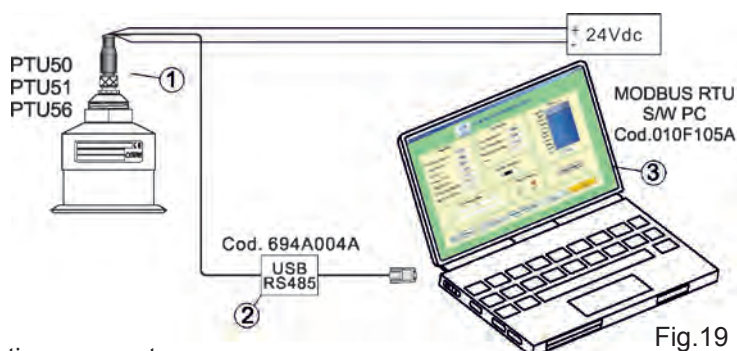- storing on files, data logger function; **PTU50**, **PTU51** or **PTU56** measures in reading and operating states

Fig.19

4.3 via VLW601 configuration

With the **VWL601** display module (Fig. 20) is possible to display the measured values and configure the **PTU50**, **PTU51** and **PTU56** sensors operating parameters. The **VWL601** module is equipped with matrix LCD.

))) 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.
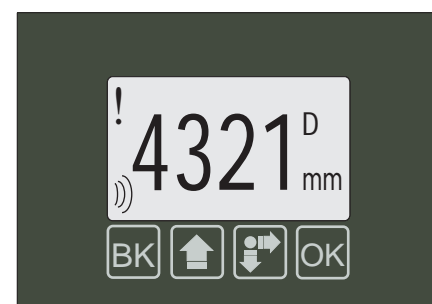The **PTU50**, **PTU51-56** returns automatically to RUN mode.

Fig.20

The **VLW601** program module has 4 buttons (fig. 21) 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 OK to access.

b) Parameter options choice: Press 🔽 to select the option and press OK to store the option.
Press BK 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 OK to save the set value and exit automatically. Press BK 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 7 and on pages 9÷10.
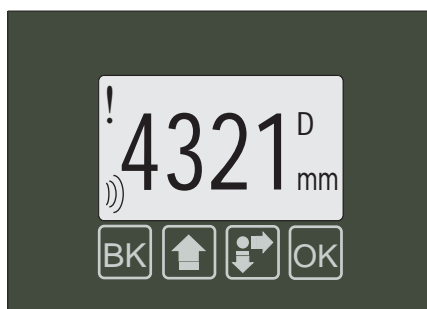

OK
- Configuration access
- Options confirmation
- Parameters values confirmation

🔽
- Parameters values selection
- Parameters scroll

⬆
- Parameters values modification

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

Fig.21

With the VLW601 module is possible to access two configuration modes for the PTU50-51-56 setting:

☐ **QUICK START** - Menu with easy access for quick basic parameters configuration.
To access: from "RUN" mode press OK to the quick setup menu mode access, BK 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, <u>holding down</u> ⬆ , press OK to the advanced configuration mode access, BK to exit

WARNING! - The documentation provided with the **PTU50-51-56** 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 OK to access the Quick Setup menu
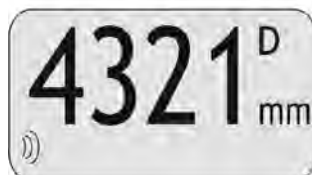
Select the parameters by moving the cursor with 🔽, and confirm with OK; press BK to exit
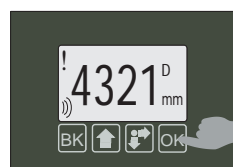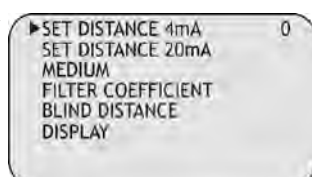
5.1 Struttura menù di configurazione rapida

	Parameters Default Values
Set Distance 4mA 0.1 0000 mm	1500mm (PTU50 1.5m max) 6000mm (PTU51 6m max) 12000mm (PTU56 8m max)
Set Distance 20mA 0.2 0000 mm	100mm (PTU50 1.5m max) 400mm (PTU51 6m max) 600mm (PTU56 8m max)
Prodotto 0.3 >Liquidi Solidi Liquidi Tubo	Liquids
Filtro 0.4 000	
Zona Cieca 0.5 0000 mm	050mm (PTU50 1.5m max) 300mm (PTU51 6m max) 500mm (PTU56 8m max)
Distance mm 0.8 Level mm Level % Output mA Temperature °c	Distance mm

Quick Setup →
- Set Distance 4mA   0
- Set Distance 20mA   0
- Medium   0
- Filter Coefficient   0
- Blind Distance   0
- Display   0

5.1.1 SET DISTANCE 4mA

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

▶SET DISTANCE 4mA   0
SET DISTANCE 20mA
MEDIUM
FILTER COEFFICIENT
BLIND DISTANCE
DISPLAY

Use and to modify that value; in the Fig.22 example, the 4mA distance is 3500mm. Press OK to confirm.

SET DISTANCE 4mA   0.1
3500 mm
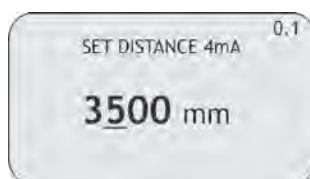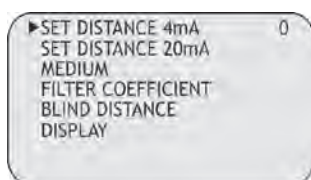
5.1.2 SET DISTANCE 20mA

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

SET DISTANCE 4mA   0
▶SET DISTANCE 20mA
MEDIUM
FILTER COEFFICIENT
BLIND DISTANCE
DISPLAY

Use and to modify that value; in the Fig.22 example, the 20mA distance is 500mm. Press OK to confirm.

SET DISTANCE 20mA   0.2
0500 mm

PTU50-51-56 referent point

20mA distance

100%

Level measurement

4mA distance   0%
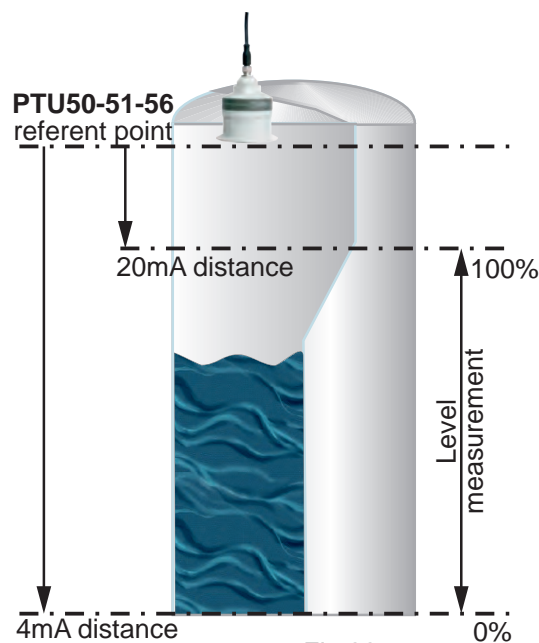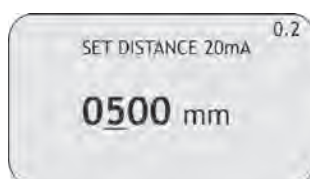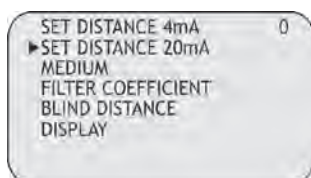
Fig.22

5.1.3 MEDIUM

Press OK to display the previous setting

SET DISTANCE 4mA   0
SET DISTANCE 20mA
▶MEDIUM
FILTER COEFFICIENT
BLIND DISTANCE
DISPLAY

Press to select the medium type.
Press OK to confirm.
In fig.23 product selection example.

MEDIUM   0.3
SOLIDS
▶LIQUIDS
LIQUIDS PIPE

LIQUIDS   SOLIDS   LIQUIDS PIPE

Fig.23

5.1.4 FILTER COEFFICIENT

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

Use 🔀 and ⬆ to modify the value. Input a value from 1 to 99. Press OK to confirm.
In fig.24 value choice example.

```
SET DISTANCE 4mA        0
SET DISTANCE 20mA
MEDIUM
▶FILTER COEFFICIENT
BLIND DISTANCE
DISPLAY
```

```
                        0.4
FILTER COEFFICENT

20
```

Fast resp.	Normal resp.	Slow resp.
5÷10	20	40÷100
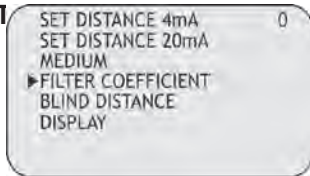
Fig.24
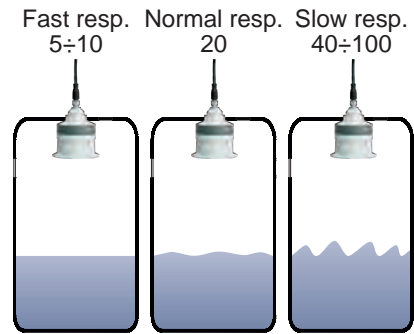
5.1.5 BLIND DISTANCE

Press OK. The **BLIND ZONE** is used to avoid undesired measures near to the transmitter
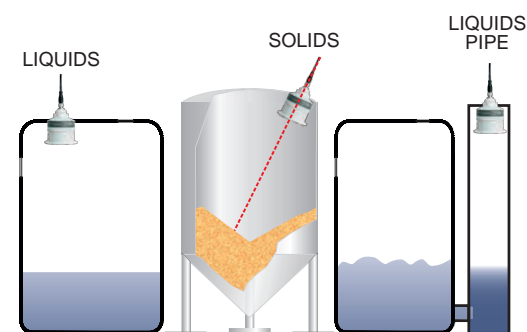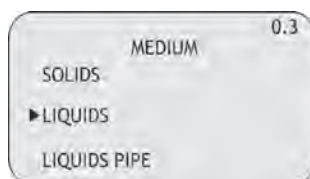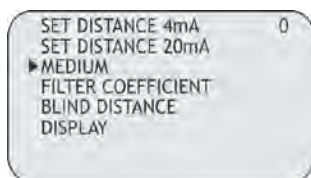Use 🔀 and ⬆ to modify the value. Press OK to confirm. The minimum value is 50mm (PTU50), or 300mm (PTU51) or 500mm (PTU56).

```
SET DISTANCE 4mA        0
SET DISTANCE 20mA
MEDIUM
FILTER COEFFICIENT
▶BLIND DISTANCE
DISPLAY
```

```
                        0.5
BLIND DISTANCE

0300 mm
```

PTU50-51-56
Refernt point

BLIND ZONE

BLIND DISTANCE
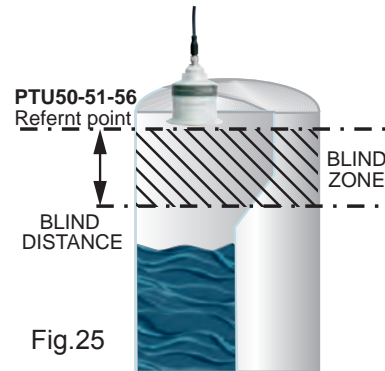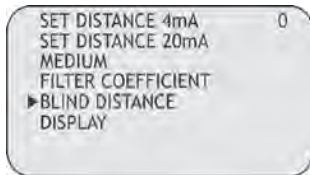
Fig.25

5.1.8 DISPLAY

Press OK to access the settings change.

```
SET DISTANCE 4mA        0
SET DISTANCE 20mA
MEDIUM
FILTER COEFFICIENT
BLIND DISTANCE
▶DISPLAY
```

➡

```
                        0.8
▶DISTANCE mm
LEVEL mm
LEVEL %
OUTPUT mA
TEMP. °C
```
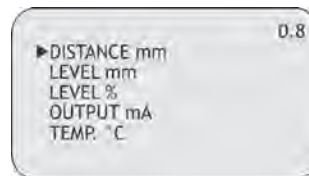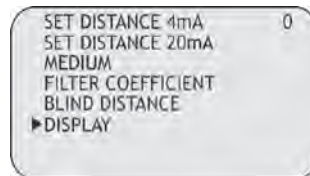
With the 🔀 button is possible to select the data to display
Press OK to confirm.

5.2 ECHO MAP

Pressing the **BK**, from RUN mode, to access directly to the echoes digital map display, which are in **PTU50-51-56** receiving (Fig.26).
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.
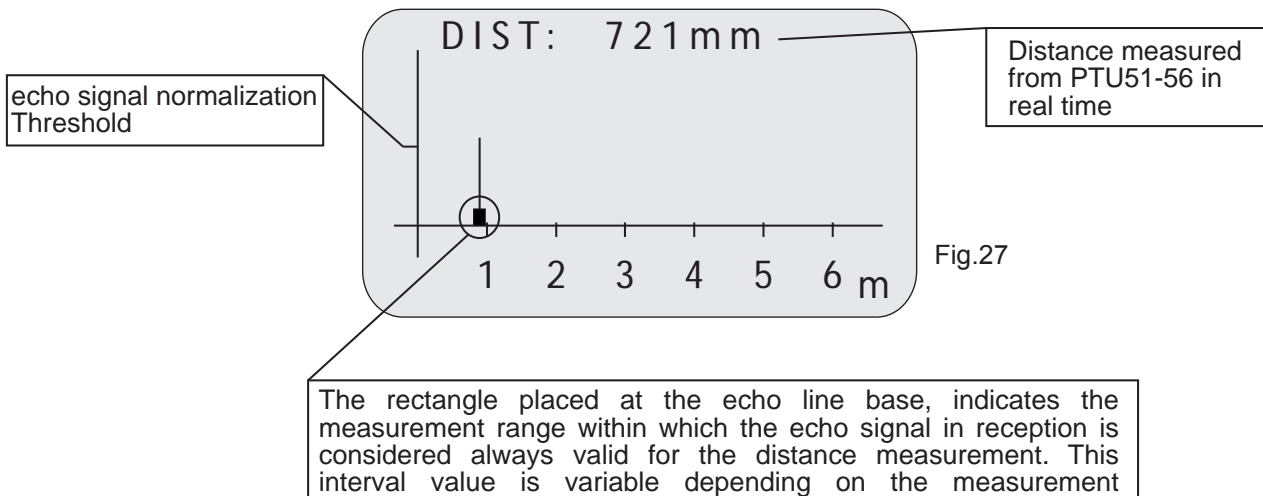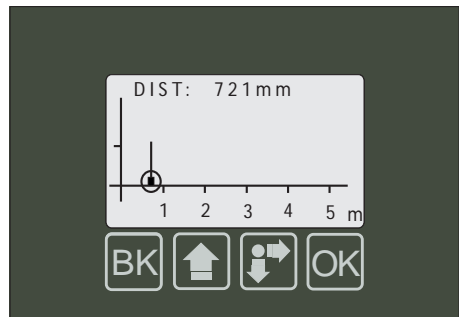
```
DIST:  721mm



    1   2   3   4   5 m
[BK] [⬆] [🔀] [OK]
```

Fig.26

```
DIST:   721mm
```

echo signal normalization Threshold

Distance measured from PTU51-56 in real time

1   2   3   4   5   6 m

Fig.27

The rectangle placed at the echo line base, indicates the measurement range within which the echo signal in reception is considered always valid for the distance measurement. This interval value is variable depending on the measurement

Documentation subject to technical change with no prior warning

6. ADVANCED CONFIGURATION MODE

From "RUN" mode, holding down ⬆ , press OK to the advanced configuration mode access

DISTANCE
3321 mm
LEVEL
1679 mm

press 📲 to select the menu and press OK to access.
Press BK to exit

▶SETUP
DISPLAY
DIAGNOSTIC
SERVICE
INFO
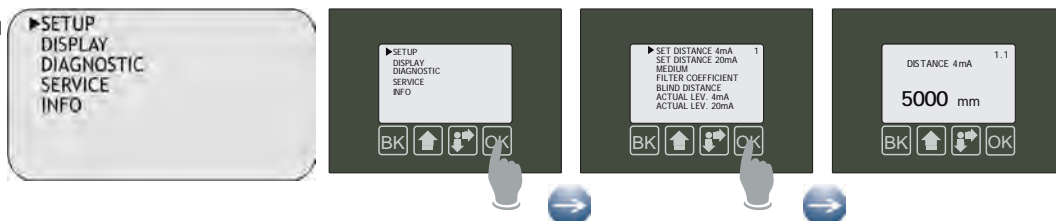
6.1 Advanced setup menu structure

6.1.1 "SETUP" menu
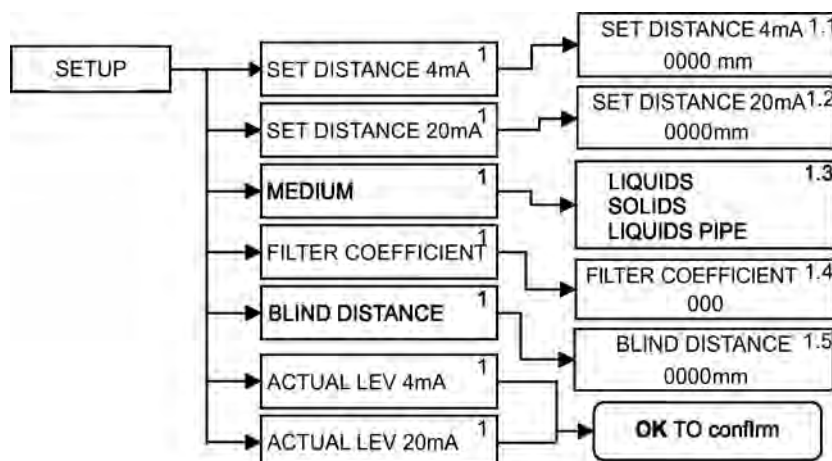
6.1.2 "DISPLAY" menu
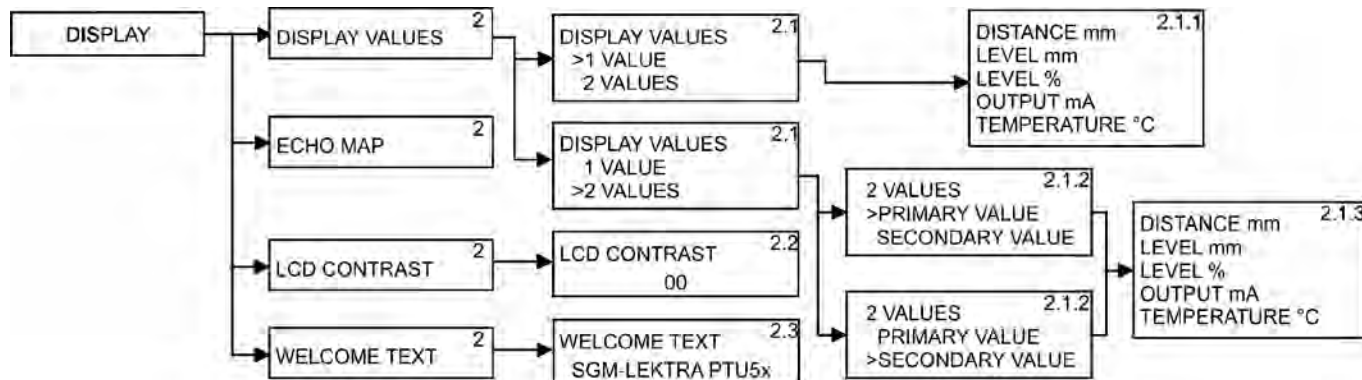
6.1.3 "DIAGNOSTIC" menu
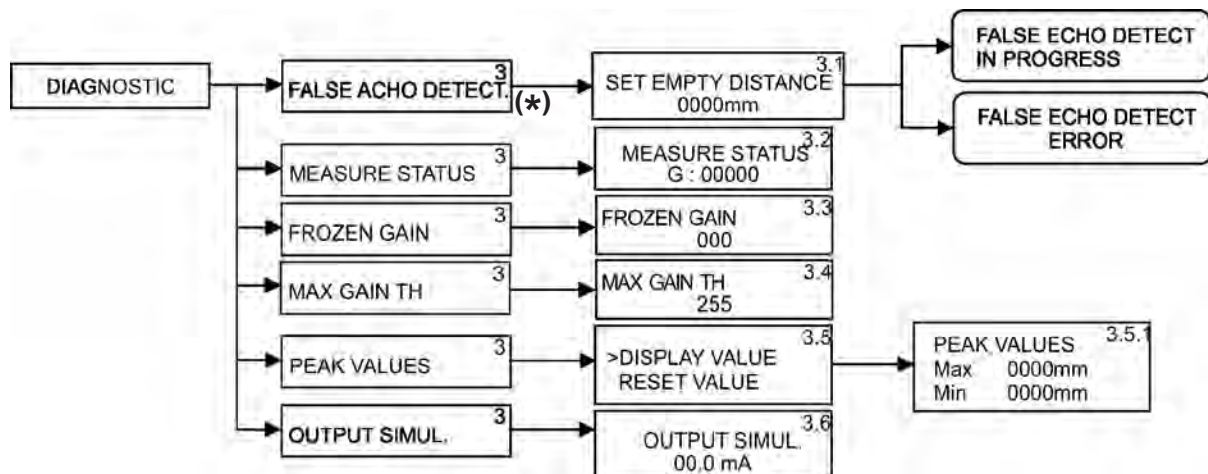
6.1.4 "SERVICE" menu
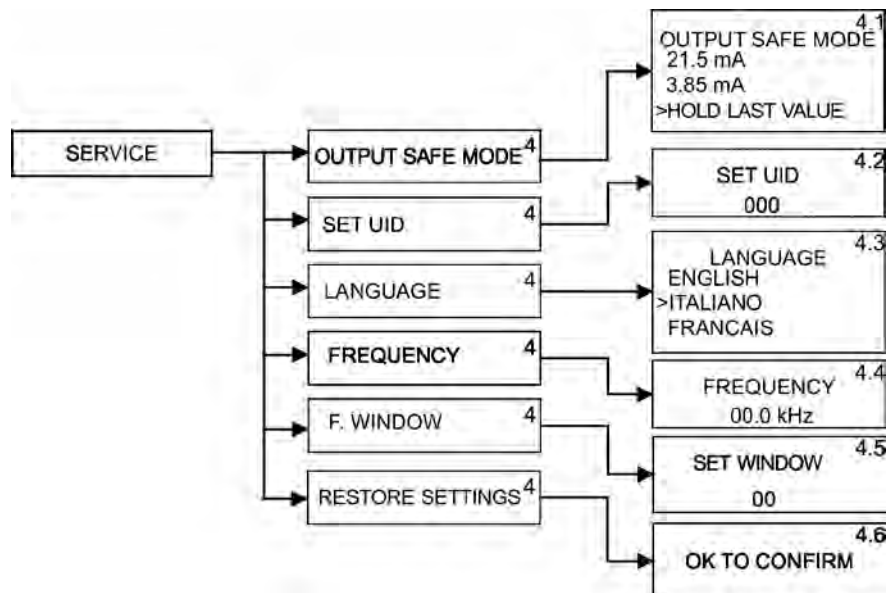
6.1.4 "INFO" menu
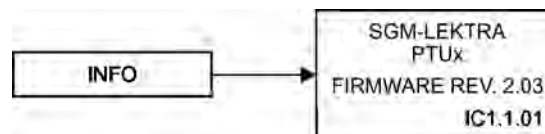
(∗)This function is only active for PTU51 and PTU56

7. ADVANCED CONFIGURATION DETAIL

7.1 SETUP

From "RUN" mode, holding down 🔼 , press OK to access

Select the parameters by moving the cursor with 📲 and confirm with OK

7.1.1 SET DISTANCE 4mA

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

```
▶SET DISTANCE 4mA        1
 SET DISTANCE 20mA
 MEDIUM
 FILTER COEFFICIENT
 BLIND DISTANCE
 ACTUAL LEV. 4mA
 ACTUAL LEV. 20mA
```

Use ⬆ and ⬇ to modify the value.

Press OK to confirm. BK to exit without changes

Default value: 1500mm (**PTU50** range 1.5m), or 6000mm (**PTU51** range 6m) or 12000mm (**PTU56** range 12m)

```
                    1.1
   SET DISTANCE 4mA

    5000 mm
```

7.1.2 SET DISTANCE 20mA

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

```
 SET DISTANCE 4mA        1
▶SET DISTANCE 20mA
 MEDIUM
 FILTER COEFFICIENT
 BLIND DISTANCE
 ACTUAL LEV. 4mA
 ACTUAL LEV. 20mA
```

Use ⬆ and ⬇ to modify the value.

Press OK to confirm. BK to exit without changes

Default value: 100mm (**PTU50** range 1.5m), or 400mm (**PTU51** range 6m) or 600mm (**PTU56** range 12m)

```
                    1.2
   SET DISTANCE 20mA

    0300 mm
```

7.1.3 MEDIUM

Position the ▶ cursor on MEDIUM, press OK to enter

Sono possibili 3 configurazioni:

SOLIDS - granular solids measurement

LIQUIDS - liquids measurement

LIQUIDS PIPE - liquids measurement in pipe reference

Press ⬇ to select the product type.

Press OK to confirm. BK to exit without changes

Default value: LIQUIDS

```
 SET DISTANCE 4mA        1
 SET DISTANCE 20mA
▶MEDIUM
 FILTER COEFFICIENT
 BLIND DISTANCE
 ACTUAL LEV. 4mA
 ACTUAL LEV. 20mA
```

```
                    1.3
        MEDIUM
   SOLIDS

 ▶LIQUIDS

   LIQUIDS PIPE
```

7.1.4 FILTER COEFFICIENT

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

```
 SET DISTANCE 4mA        1
 SET DISTANCE 20mA
 MEDIUM
▶FILTER COEFFICIENT
 BLIND DISTANCE
 ACTUAL LEV. 4mA
 ACTUAL LEV. 20mA
```

Immettere un valore da 1 a 99. 1 massima velocità, 99 massima lentezza. 0 esclude il filtro rendendo immmediata la risposta

Use ⬆ and ⬇ to modify the value.

Press OK to confirm. BK to exit without changes

Default value: 20

```
                    1.4
   FILTER COEFF.

      20
```

7.1.5 BLIND DISTANCE

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

```
SET DISTANCE 4mA        1
SET DISTANCE 20mA
MEDIUM
FILTER COEFFICIENT
▶BLIND DISTANCE
ACTUAL LEV. 4mA
ACTUAL LEV. 20mA
```

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 50mm (PTU50), or 300mm (PTU51) or 500mm (PTU56)
Use ⬆ and 🔀 to modify the value.
Press OK to confirm.
Default values: 50mm (PTU50), or 300mm (range 5m) or 500mm (PTU56)

```
                         1.4
BLIND DISTANCE

0600 mm
```

7.1.6 ACTUAL LEV. 4mA

Position the ▶ cursor on ACTUAL LEV. 4mA, press OK to enter
Self distance learning function that is associated with the 4mA (lower value). Make sure that the level corresponds to 0%,
OK to associate the actual measure with 4mA output value;
OK TO CONFIRM . BK to exit without change

```
SET DISTANCE 4mA        1
SET DISTANCE 20mA
MEDIUM
FILTER COEFFICIENT
BLIND DISTANCE
▶ACTUAL LEV. 4mA
ACTUAL LEV. 20mA
```

7.1.7 ACTUAL LEV. 20mA

Place the ▶ cursor on ACTUAL LEV. 20mA, press OK to enter
Self distance learning function that is associated with the 20mA (lower value). Make sure that the level corresponds to 100%,
OK to associate the actual measure with 20mA output value;
OK TO CONFIRM . BK to exit without change

```
SET DISTANCE 4mA        1
SET DISTANCE 20mA
MEDIUM
FILTER COEFFICIENT
BLIND DISTANCE
ACTUAL LEV. 4mA
▶ACTUAL LEV. 20mA
```

7.2 DISPLAY

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

```
SETUP
▶DISPLAY
DIAGNOSTIC
SERVICE
INFO
```

Select the parameters by moving the cursor with 🔀 and confirm with OK

```
                         2
▶DISPLAY VALUES
ECHO MAP
LCD CONTRAST
WELCOME TEXT
```

7.2.1 DISPLAY VALUES

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

```
                         2
▶DISPLAY VALUES
ECHO MAP
LCD CONTRAST
WELCOME TEXT
```

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 OK to confirm. BK to exit without changes

```
                         2.1
DISPLAY VALUES
▶1 VALUE
2 VALUES
```

SGM
LEKTRA

7.2.1.1   1 VALUE

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

```
                                          2.1
DISPLAY VALUES
▶1 VALUE
 2 VALUES
```

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

```
                                        2.1.1
▶DISTANCE mm
 LEVEL mm
 LEVEL %
 OUTPUT mA
 TEMP. °C
```

$$2013^D_{mm}$$
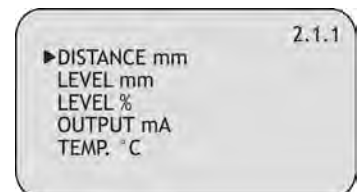
7.2.1.2   2 VALUES

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

```
                                          2.1
DISPLAY VALUES
 1 VALUE
▶2 VALUES
```

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] button you can select data to display
Press OK to confirm. BK to exit without changes

```
                                        2.1.2
            2 VALUES
▶PRIMARY VALUE
 SECONDARY VALUE
```

```
                                        2.1.3
▶DISTANCE mm
 LEVEL mm
 LEVEL %
 OUTPUT mA
 TEMP. °C
```

```
                                        2.1.2
            2 VALUES
 PRIMARY VALUE
▶SECONDARY VALUE
```

```
         DISTANCE
         3321 mm
          LEVEL
)))      1679 mm
 BK  ⬆  [button]  OK
```

```
                                        2.1.3
 DISTANCE mm
▶LEVEL mm
 LEVEL %
 OUTPUT mA
 TEMP. °C
```

BK ⬅ BK ⬅ BK ⬅ OK
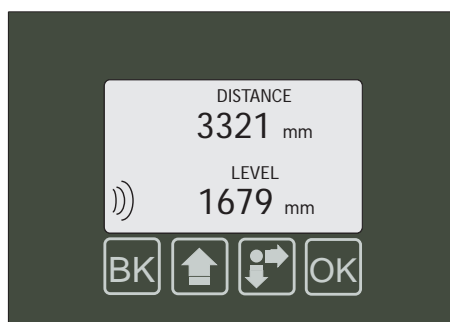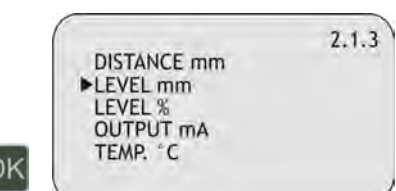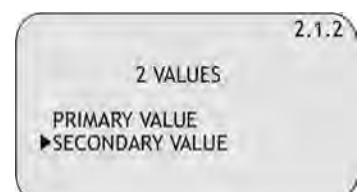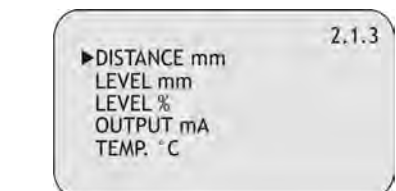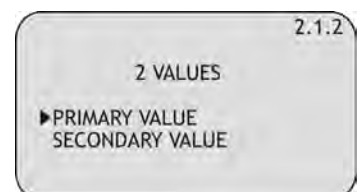
7.2.2 ECHO MAP

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

```
                                    DISPLAY VALUES         2
                                   ▶ECHO MAP
                                    LCD CONTRAST
                                    WELCOME TEXT
```

Detailed function description on page 13, figure 34
BK to exit and return to the menu 2

```
                              DIST: 3005mm        2.2


                                   1  2  3  4  5  6  7  8  m
```
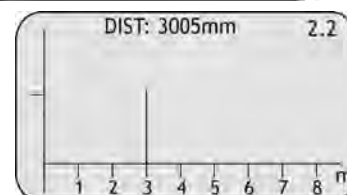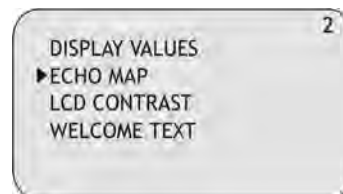
7.2.3 LCD CONTRAST

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

```
                                    DISPLAY VALUES         2
                                    ECHO MAP
                                   ▶LCD CONTRAST
                                    WELCOME TEXT
```

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 OK to confirm. BK to exit without changes
Default value: 32

```
                                    LCD CONTRAST       2.3

                                         32
```
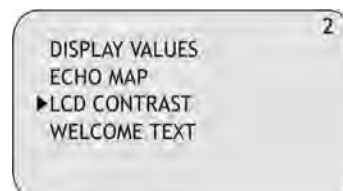
7.2.4 WELCOME TEXT

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

```
                                    DISPLAY VALUES         2
                                    ECHO MAP
                                    LCD CONTRAST
                                   ▶WELCOME TEXT
```

It's possible to edit or delete the message that is displayed by the PTU51-56 during the ignition phase.
Use ⬆ (up scroll) and ⬇ (down scroll) to change the digit; OK to move the digit to the right. To confirm press OK repeatedly until leave the parameter.
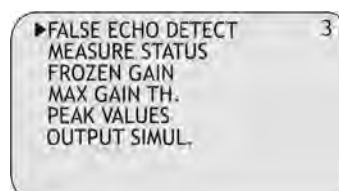BK to exit without changes
Default value: SGM-LEKTRA PTU5x

```
                                    WELCOME TEXT       2.4

                                     SGM-LEKTRA
                                        PTU5x
```
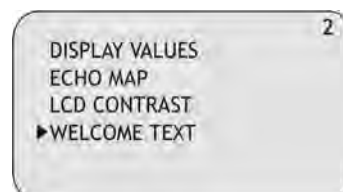
7.3 DIAGNOSTIC

From "RUN" mode, holding down ⬆ , press OK to access
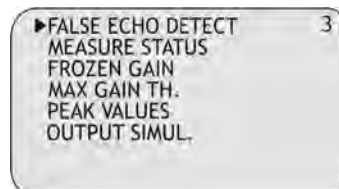Position the ▶ cursor on DIAGNOSTIC, press OK to enter

```
                              SETUP
                              DISPLAY
                             ▶DIAGNOSTIC
                              SERVICE
                              INFO
```

Select the parameters by moving the cursor with ⬇ and confirm with OK

```
                             ▶FALSE ECHO DETECT    3
                              MEASURE STATUS
                              FROZEN GAIN
                              MAX GAIN TH.
                              PEAK VALUES
                              OUTPUT SIMUL.
```

7.3.1 FALSE ECHO DETECT

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

NB - To use this parameter the tank *must strictly be empty*
This function is only active for PTU51 and PTU56

```
                             ▶FALSE ECHO DETECT    3
                              MEASURE STATUS
                              FROZEN GAIN
                              MAX GAIN TH.
                              PEAK VALUES
                              OUTPUT SIMUL.
```

It's necessary to imput the empty distance (distance from the tank bottom) Use ⬆ and ➡ to modify the value.

Press OK to confirm. BK to exit without changes

"PTU51-56" 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 PROGRESS** After procedure completion, the detected false echoes distances are displayed and automatically stored (up to 3 false echoes). Press OK to return to the "DIAGNOSTIC" menu If something's not corretct

(e.g wrong empty distance value, obstacles that hides the bottom) the following message is displayed: **FALSE ECHO DETECT ERROR**

Note: False echo detect procedure is not recommended for pipe and stand-pipe applications
To delete this function, need to restore the default parameters (see par. 7.4.5)

7.3.3 MEASURE STATUS

Position the ▶ cursor on MEASURE STATUS, press OK 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 BK to exit

7.3.4 FROZEN GAIN

Position the ▶ cursor on FROZEN GAIN, press OK 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 OK to confirm. BK to exit without changes

Default value: 000

7.3.5 MAX GAIN TH

Position the ▶ cursor on **MAX GAIN TH**, press OK 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 OK to confirm. BK to exit without changes

Default value: 255 (Max gain)

7.3.6 PEAK VALUES

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

```
FALSE ECHO DETECT     3
MEASURE STATUS
FROZEN GAIN
MAX GAIN TH.
▶PEAK VALUES
OUTPUT SIMUL.
```

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 OK to confirm.

```
                      3.5
▶DISPLAY VALUES

RESET VALUES
```

7.3.6.1 DISPLAY VALUES

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

```
                      3.5
▶DISPLAY VALUES

RESET VALUES
```

Displays the max. and min. distance measured from power on.
BK to exit.
NB - The peak values stored are erased every time the PTU51-56 turns-off

```
                      3.5.1
       PEAK VALUES

MAX   0000mm

MIN   0000mm
```

7.3.6.2 RESET VALUES

Position the ▶ cursor on RESET VALUES, press OK to reset
BK to return to the previous menu.

```
                      3.5
DISPLAY VALUES

▶RESET VALUES
```

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* OK *button 3 times (RUN mode)*

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

It'possible to force the analog output to a desired value.

Use 🔼 and 🔁 to modify the value.

Press BK to return to the previous menu.

```
FALSE ECHO DETECT     3
MEASURE STATUS
FROZEN GAIN
MAX GAIN TH.
PEAK VALUES
▶OUTPUT SIMUL.
```

```
                      3.6
     OUTPUT SIMUL.

     00.0 mA
```

7.4 SERVICE

From "RUN" mode, holding down ⬆ , press OK to access

Position the ▶ cursor on SERVICE, press OK to enter

```
SETUP
DISPLAY
DIAGNOSTIC
▶SERVICE
INFO
```

Select the parameters by moving the cursor with 🔁
and confirm with OK

```
                              4
▶OUTPUT SAFE MODE
 SET UID
 LANGUAGE
 FREQUENCY
 F. WINDOW
 RESTORE SETTINGS
```

7.4.1 OUTPUT SAFE MODE

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

```
                              4
▶OUTPUT SAFE MODE
 SET UID
 LANGUAGE
 FREQUENCY
 F. WINDOW
 RESTORE SETTINGS
```

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
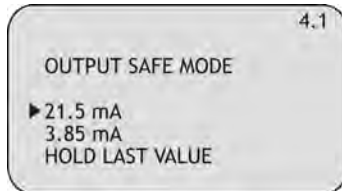"*HOLD LAST VALUE*" maintains the output at the last valid value.
With the 🔁 button you can select the operation mode.

Press OK to confirm. BK to exit without changes

Default value: HOLD LAST VALUE

```
                              4.1

   OUTPUT SAFE MODE

 ▶21.5 mA
  3.85 mA
  HOLD LAST VALUE
```

7.4.2 SET UID

Position the ▶ cursor on SET UID, press OK to enter

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

Use ⬆ and 🔁 to modify the value.

Press OK to confirm. BK to exit without changes

Default value: 001

```
                              4
 OUTPUT SAFE MODE
▶SET UID
 LANGUAGE
 FREQUENCY
 F. WINDOW
 RESTORE SETTINGS
```

```
                              4.2
        SET UID

         001
```

7.4.3 LANGUAGE

Position the ▶ cursor on LANGUAGE, press OK to enter

Sets the menu language: English, Italian, French

Press 🔁 to select the menu language.
Press OK to confirm. BK to exit without changes

```
                              4
 OUTPUT SAFE MODE
 SET UID
▶LANGUAGE
 FREQUENCY
 F. WINDOW
 RESTORE SETTINGS
```

```
        LANGUAGE       4.3

  ENGLISH
 ▶ITALIANO
  FRANCAIS
```

7.4.5 CHECK FREQUENCY

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

```
                                              4
OUTPUT SAFE MODE
SET UID
LANGUAGE
▶FREQUENCY
F. WINDOW
RESTORE SETTINGS
```

It's possible to check the computed sensor emission frequency
BK to exit

```
                                            4.5


          FREQUENCY

          00.0 kHz

```
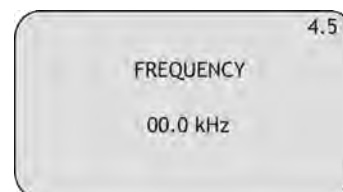
7.4.6 F. WINDOWS

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

Refer to figure 34 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; PTU51-56 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, PTU51-56 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 OK to confirm. BK to exit without changes

Default value: 05

```
                                              4
OUTPUT SAFE MODE
SET UID
LANGUAGE
FREQUENCY
▶F. WINDOW
RESTORE SETTINGS
```

```
                                            4.6
          SET WIDTH

          00

```

### 7.4.5 RESTORE SETTING

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

```
                                              4
OUTPUT SAFE MODE
SET UID
LANGUAGE
FREQUENCY
F. WINDOW
▶RESTORE SETTINGS
```

Press OK to restore the PTU51-56 default settings
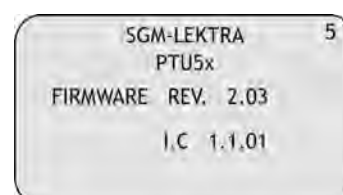BK to exit whitout restored the PTU51-56 default settings.

```
                                              4

          OK TO CONFIRM

```

## 7.5 INFO

Position the ▶ cursor on INFO, press OK to enter

```
SETUP
DISPLAY
DIAGNOSTIC
SERVICE
▶INFO
```

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

```
        SGM-LEKTRA   5
            PTU5x
  FIRMWARE REV. 2.03

          I.C 1.1.01

```

**Note:**

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_____

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SGM
LEKTRA

Documentation subject to technical change with no prior warning