RWL

Guided wave level transmitters

825B103E

Features

- **Continuous level measurement for bulk solids and liquids**
- **Measurement not affected by temperature changes, powder or vapours**
- **Measure range for rope version: up to 30m**
- **Measure range for rod version: up to 3m**
- **Measure range for coax probe: up to 3m**
- **Process temperature: from a - 40 to +150°C**
- **Process pressure: from -1 to 40bar**
- **Easy on-site configuration via VL602 module display**
- **Easy on-site calibration without product handling. Empty and full distance setting via matrix display**
- **Two-wire and four-wire technology**
- **Analogic output 4÷20mA**
- **HART protocol**
- **Level measurement and echo signal curve visualisation on matrix display**
- **Storage and recognition system for false echo signals**

Principle

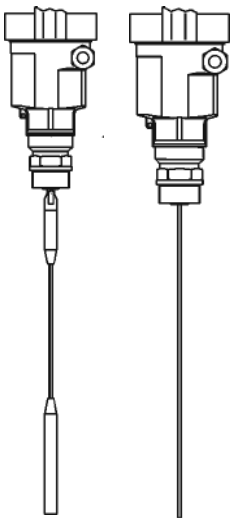
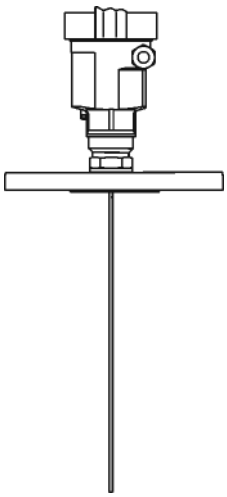
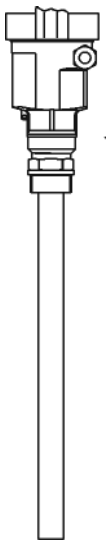
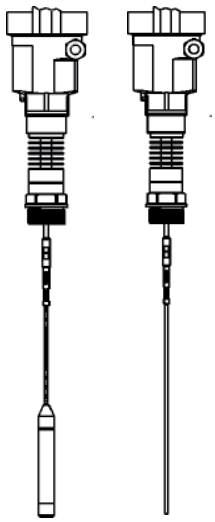
The high frequency pulses, emitted by the transmitter, travel along the detecting component (steel rope, probe or rod). They are reflected by the product surface, recorded by the electronic unit and converted in level data.

Characteristics

RWL transmitters are suitable for heavy process conditions because they are equipped with a modern processor and with the **EchoDiscovery** management software.
EchoDiscovery software permits the recognition and the filtering of false echo signals in order to obtain a correct level measurement.
RWL versatility allows the utilisation in heavy process conditions as high temperature, high pressure or low dielectric constant.
The low energy of the radar pulse avoids problems to process connection, to the environment and to operators.

1. Technical data

1.1 Selection option

Version	**RWL51**	**RWL52PA_**	**RWL53PA**	**RWL54**
Probe type	Ø4/6mm (rope) Ø10mm (rode	Ø10mm (rod)	Ø28mm (coax)	Ø4/6mm (rope) Ø10mm (rode
				
Applications	Level measurement for liquids/solids	Level measurement for liquids/solids	Level measurement for liquids with low dielectric constant	Level measurement for liquids/solids
Range	Rope:10m Ø4mm ; 30m Ø6mm / Rod: 3m	3m	3m	Rope:10m Ø4mm ; 30m Ø6mm / Rod: 3m
Accuracy	±010mm (see diagram)	±010mm (see diagram)	±010mm (see diagram)	±010mm (see diagram)
Process connection (AISI 316L)	1 1/2" G 1 1/ 2 " NPT 2" G	DN50 PN16 DN80 PN16 DN100 PN16 DN150 PN16	1 1/2" G 2" G	1 1/2" G 1 1/ 2 " NPT 2" G
Material	AISI 316L / PTFE	AISI 316L / PTFE	AISI 316L / PTFE	AISI 316L / PTFE
Process temperature	-40 .... +150°C	-40 .... +150°C	-40 .... +150°C	-40 .... +200°C
Process pressure	-1.... 40bar	-1.... 40bar	-1.... 40bar	-1.... 40bar
Max pulling force	(see diagram)	Unimportant	Unimportant	(see diagram)
Housing	Aluminum	Aluminum	Aluminum	Aluminum
Cover	Aluminum + Glass	Aluminum + Glass	Aluminum + Glass	Aluminum + Glass
Sealing material	Viton (-30 ÷ +150°C) Kalrez (-40 ÷ +150°C)	Viton (-30 ÷ +150°C) Kalrez (-40 ÷ +150°C)	Viton (-30 ÷ +150°C) Kalrez (-40 ÷ +150°C)	Viton (-30 ÷ +150°C) Kalrez (-40 ÷ +150°C)
Protection degree	IP67	IP67	IP67	IP67

1.2 Power supply

Two-wire version:

- input voltage: 15÷36Vdc
- consumption: max. 22.5mA 0.8W
- max ripple: <100Hz, Uss>1V; 100Hz÷100KHz, Uss<10mV

Four-wire version

- input voltage: 20 ÷ 72Vdc; 230Vac

2 chamber four-wire version

- input voltage: 24Vdc ±10%; 230Vac ±10%
- consumption: <1W

1.3 Output

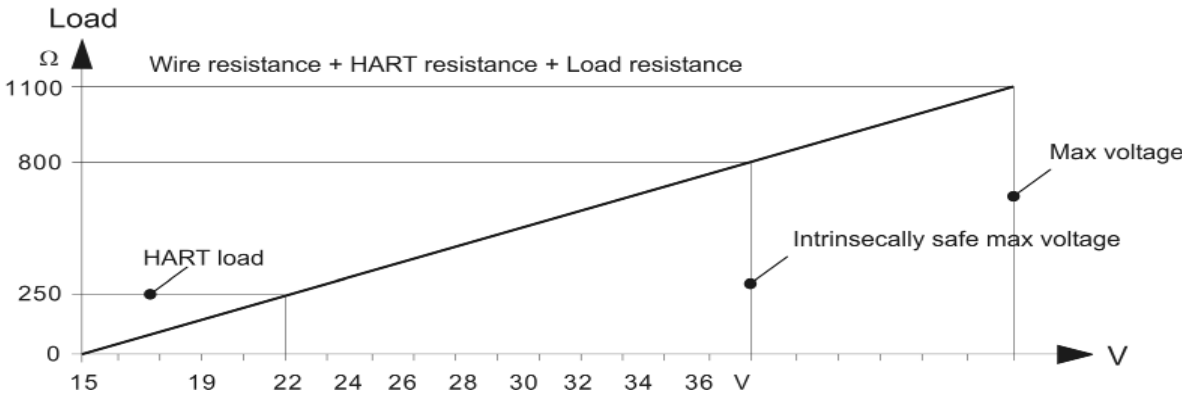
- output signal: 4÷20mA / HART
- resolution: 1,6microA
- fault fixed signal: 20.5mA; 22mA; 3.8mA

Load:

- two-wire version: see diagram
- four-wire version: max. 500ohm

Integration time: 0÷99s, programmabile

2 Wires load resistance diagram

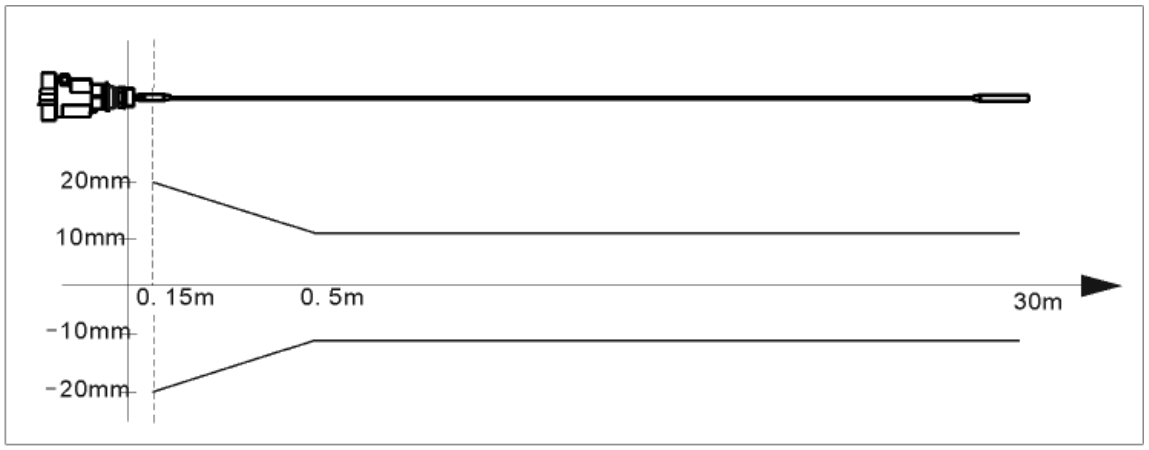


1.4 Cable connection

- cable input: 2 x M20x1.5
- connecting terminals: max. cable section 2.5mm^2

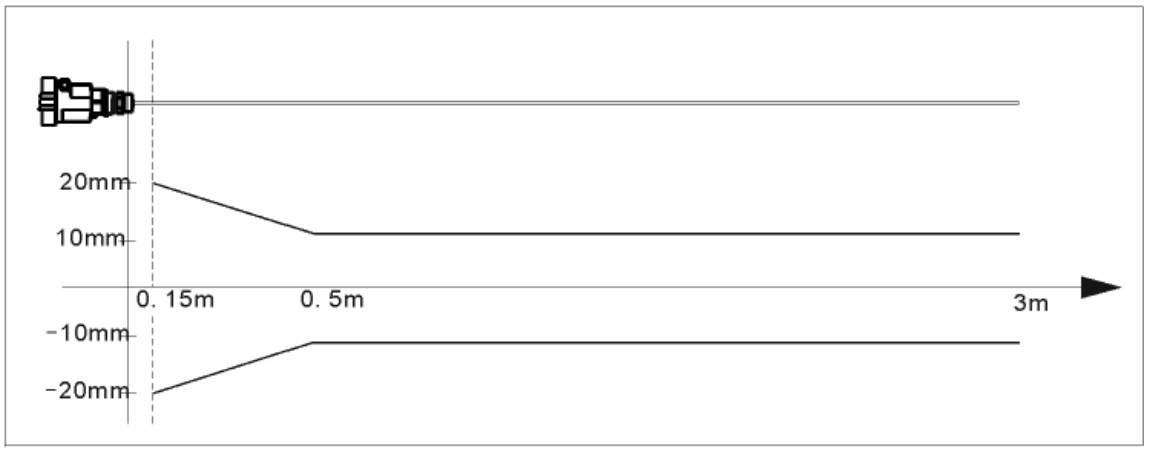
1.4 Accuracy

RWL51 / RWL54



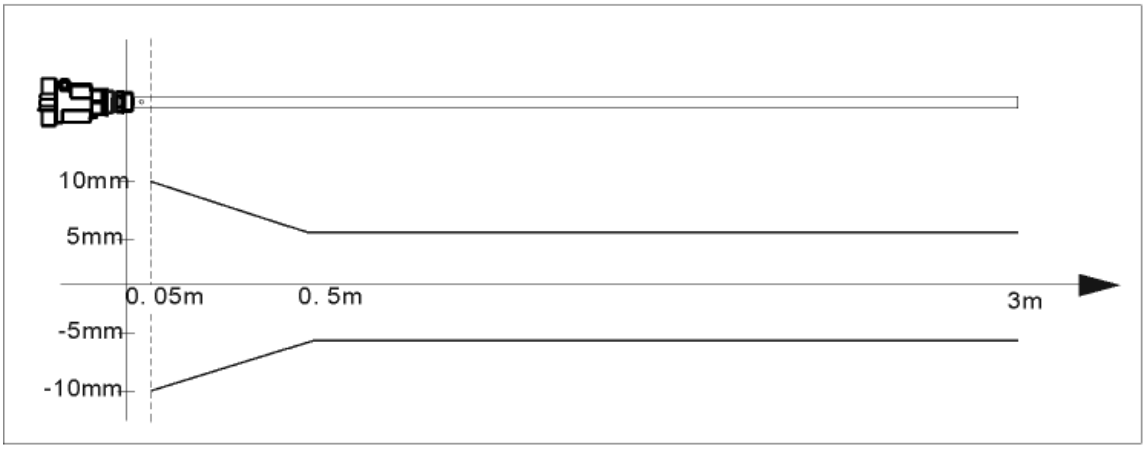
Rope

RWL51 / RWL52



Rod

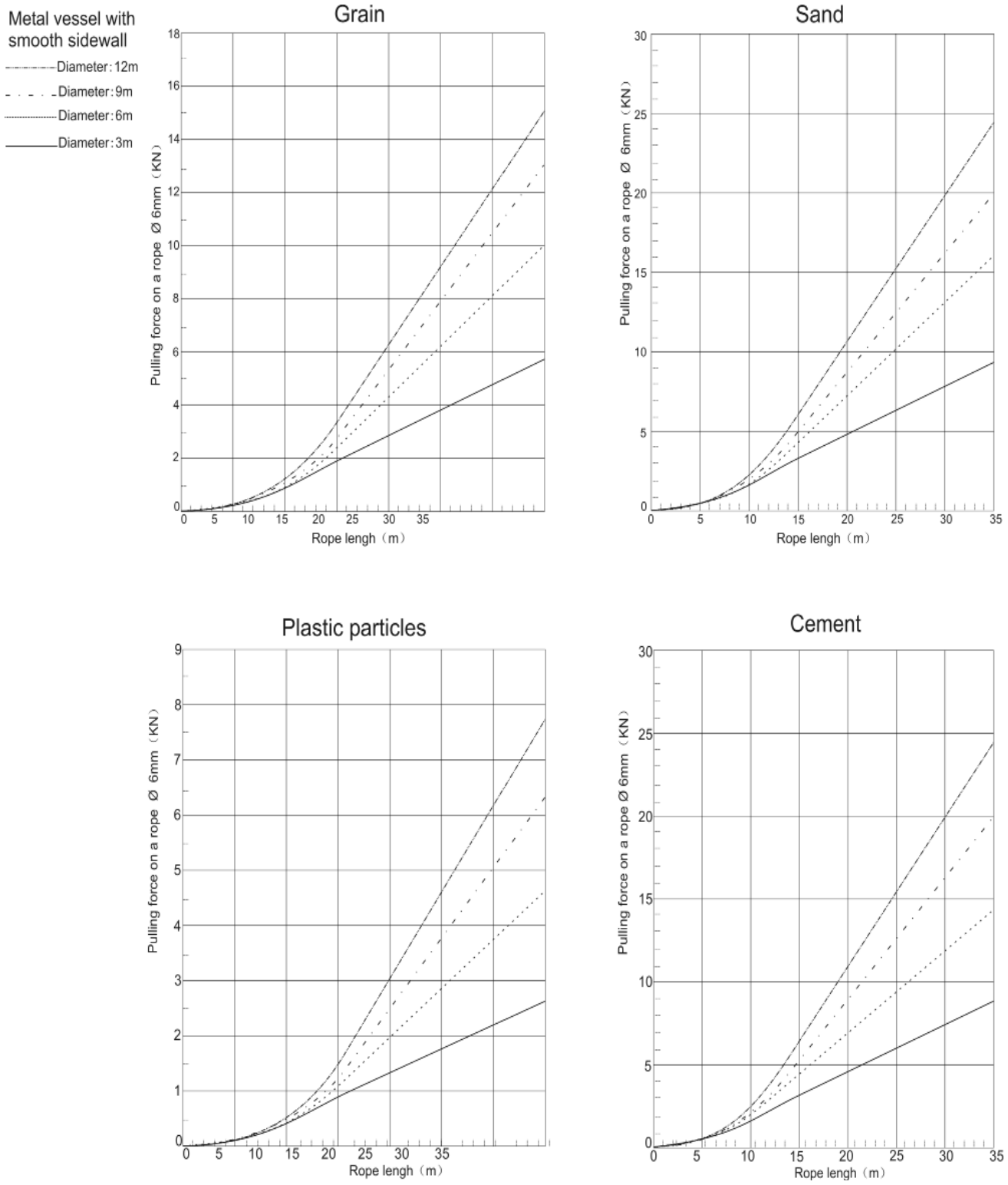
RWL53



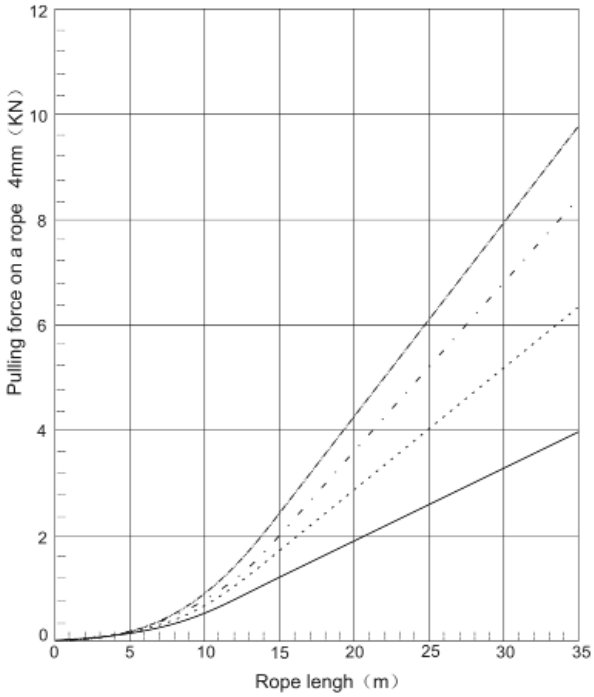
Coax

1.5 Pulling

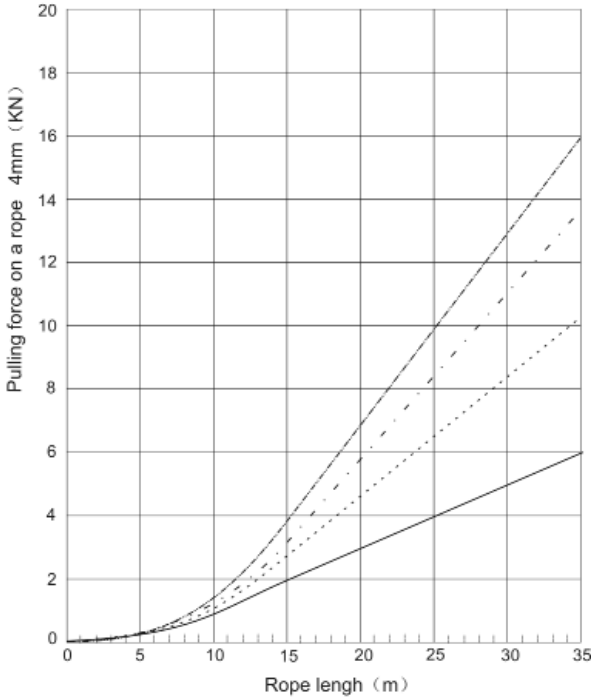
In solid measurement the pulling force is determined by the silo diameter and by product level.
See in the below diagrams some examples related to models **RWL51**



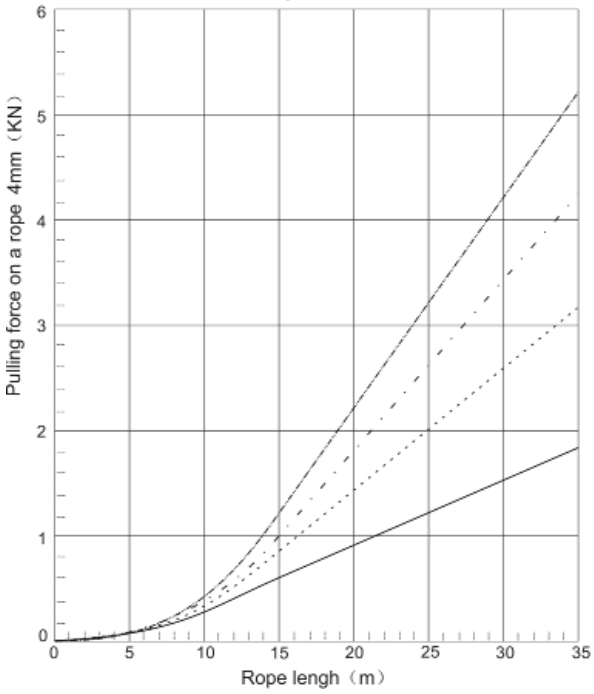
Grain



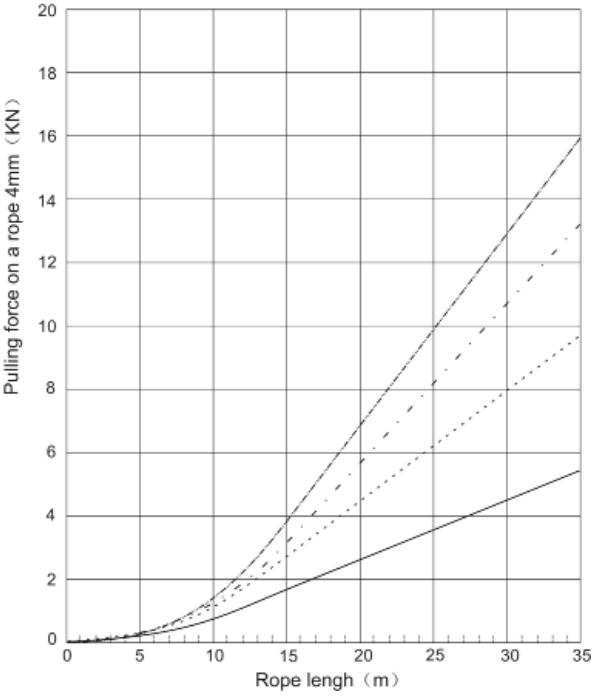
Sand



Plastic particles



Cement



2. Basic requirements

The **RWL** system measures the distance between the reference plane (lower edge of the flange) and the product surface.
The minimum distance between the reference plane and the maximum level is indicated as Top blanking zone (1) and the area around the end of the probe is indicated as Bottom blanking zone (4).
Inside both blanking zones is impossible to obtain a correct measurement.

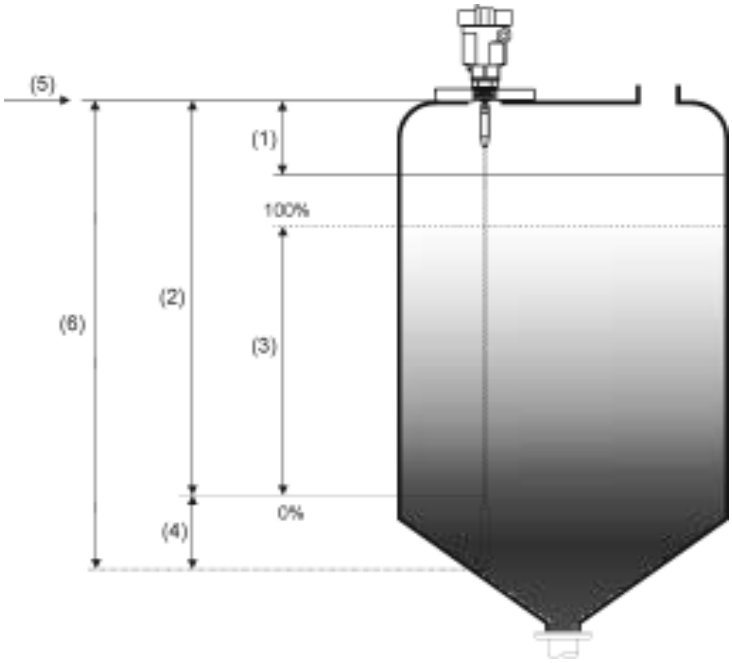


Fig.1

(1) Top blanking zone (2) Empty =0 (3) Measurement range (4) Bottom blanking zone
(5) Reference plane (6) Lengh of the probe
NB. Inside both blanking zones (1 ,2) is impossible to obtain a correct measurement.

WARNING - To avoid electronic equipment damage, mechanical removal the RWL transmitters before doing any arc welding in their vicinity.

The best mounting position in a conical vessel with flat top, is the middle of the vessel's top, as shown in fig 2.

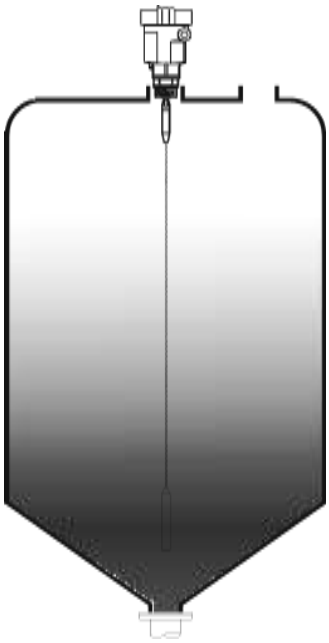


Fig.2

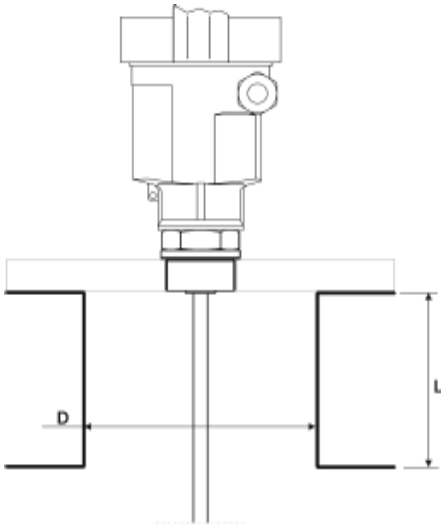


Fig.3

If possible, avoid installation with sockets; otherwise try to reduce the dimensions.
In case of long socket mounted on small vessels or in case of product with low dielectric constant, is recommended the use of RWL56 version.

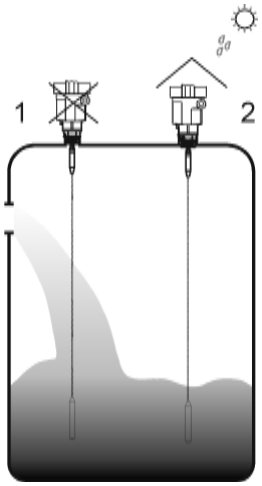


Fig.4

1) Wrong : The probe must not be positioned above the filling stream.
2) Correct: For outdoor mounting use a protection cover (for sun and rain)

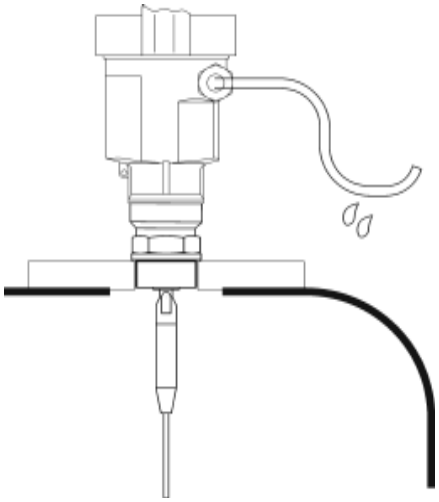


Fig.5

In order to avoid problems caused by humidity, the connecting cable must be positioned as indicated in fig 5.

3. Electrical connections

3.1 Standard conditions

The electric supply voltage can be different according to the transmitter model. Always check the correct value indicated on the transmitter label.
It is necessary to observe installation codes and safety operations for the site and the plant conditions.

3.2 Power supply

3.2.1 4÷20mA / HART, 2-wire

The same cable is used for both electrical supply and for 4÷20mA signal (fig.6). The correct values of the electrical supply are indicated on the product technical data sheet.

3.2.2 4÷20mA / HART, 4-wire

2 different cables are used for electrical supply and for 4÷20mA signal (fig.7).

3.3 Connecting cables

Use a 6÷11mm diameter cable to ensure the tightness on cable glands. Use shielded cables in order to avoid transient current on the shield.

3.3.1 4÷20mA / HART

For 2-wire model use a single cable (fig.6). For 4-wire model use two cables (fig.7).

3.4 Earthing of cable shield

The cable shield must be earthed at both ends. Insert a ceramic capacitor, 1nF 1500V type, in order to avoid transient currents on the shield.

3.5 Wiring diagrams

See the different versions in Fig.6/7

Fig.6

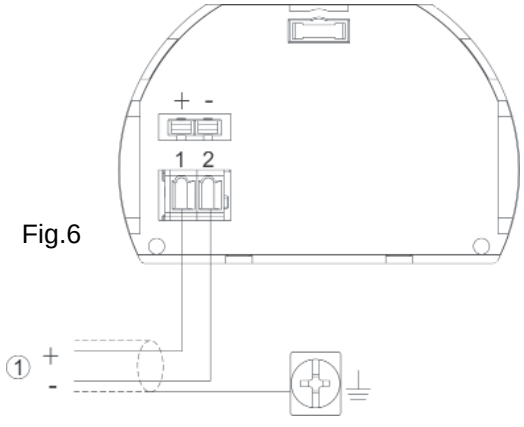
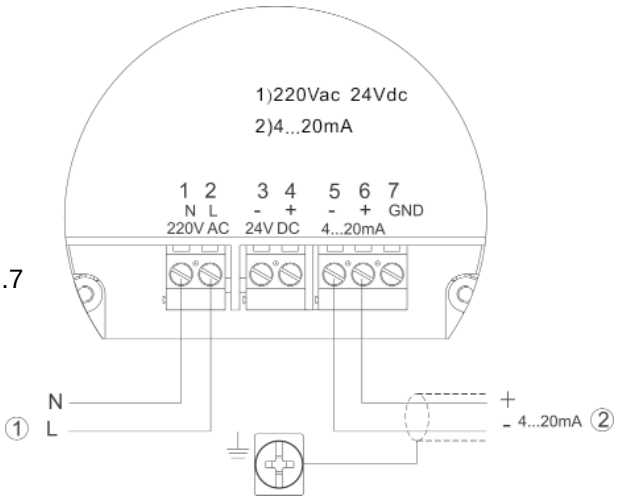


Fig.7



4. CONFIGURATION

4.1 Setting modalities

The **RWL** radar level transmitter has 3 configuration and setting modalities:

- by programming display
- by **SGMware** communication software
- by HART handheld

4.2 SGMware

4.2.1 Connection by HART line (fig.10)

1) RS232 cable connector
2) RPL5X with HART communication protocol
3) HART adapter used with COMWAY converter
4) Resistance 250ohm
5) COMWAY converter

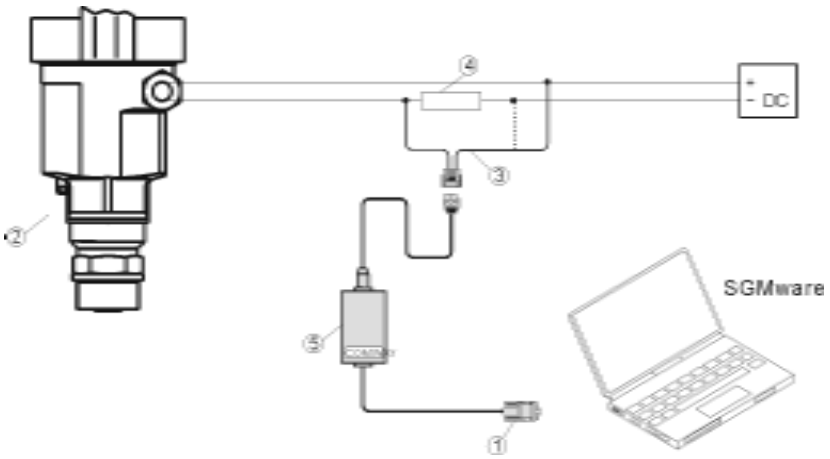


Fig.10

4.2.2 Connection by HART programmer (fig.11)

1) HART programmer
2) RPL5X with HART handheld
3) Resistance 250ohm

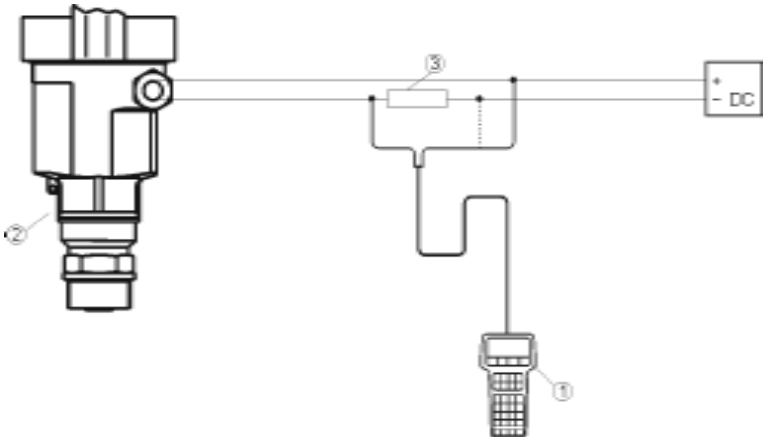


Fig.11

5. PROGRAMMING

5.1 Programming display

The **VL602** programming display (fig.13) has a large matrix LCD (fig.13), and can be easily connected to the unit (with a clockwise rotation) by sliding contacts. It can be mounted and removed while the instrument is working.. The multilingual programming guide allows an easy and fast start up through the keyboard (fig.23). The display also shows the distance and the instantaneous level during the operating conditions, through its transparent cover.

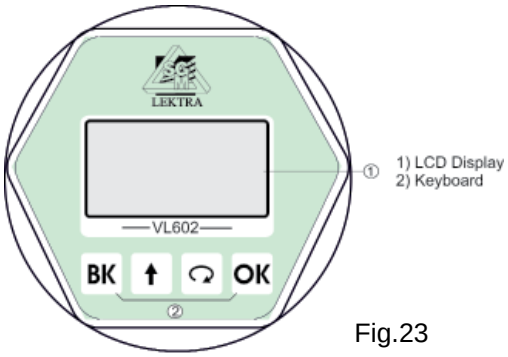


Fig.23

OK - Programmation access
- Option confirmation
- Parameters value cofirmation

- Value selection
- Scroll parameters

- Parameters value modification

BK - Exit programmation
- Back to previous menu
- **"RUN"** and **"ECHO WAVE"** access

5.2 Description

The Menu Structure is shown in the next paragraphs.
When the arrow ► is positioned on the right side of the writing, press OK to choose the parameter setting menu, or press to select the next parameter. When the arrow ► is positioned on the left side of the writing, press to select the next menu and press OK to confirm. To go back to previous menu press BK .

5.3 Programming menu

5.3.1 Basic settings
In this menu is possible to set the basic adjustments of the sensor.

5.3.2 Display
In this menu you can setup the sensor display and adjust the B/W contrast for LCD.

5.3.3 Diagnostic
In this menu you can check and test the sensor. You can view the measurement peak values, the measurement status and the Echo-curve.

5.3.4 Service
In this menu you can set the false Echo-curve, current output, language and HART mode.

5.3.5 Info
In this menu you can see the sensor information, including type, serial number, date of manufacture and software version.

5.4 Program mode

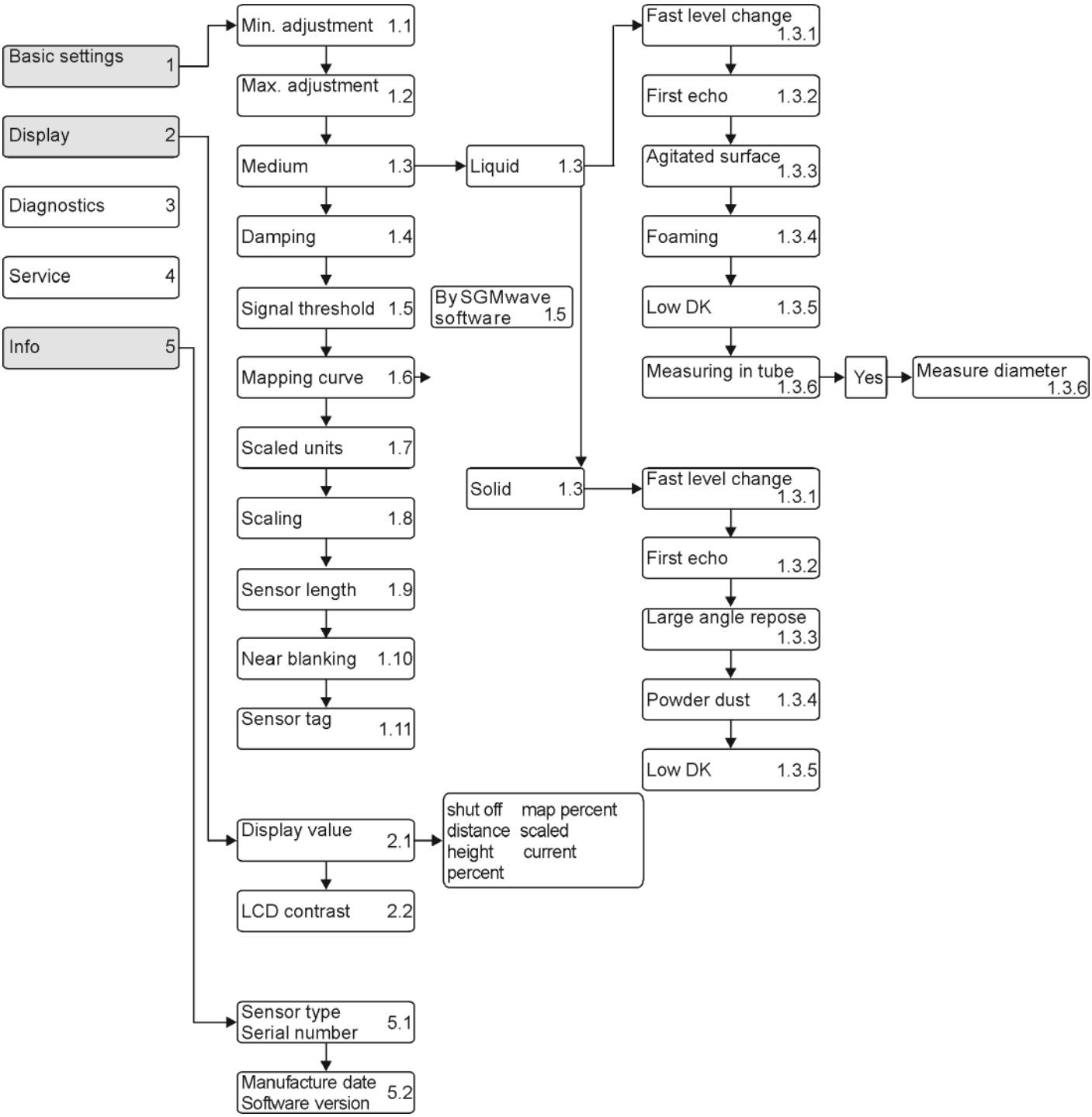
From "RUN" mode press OK to enter "PROGRAM" mode. Press BK to quit.

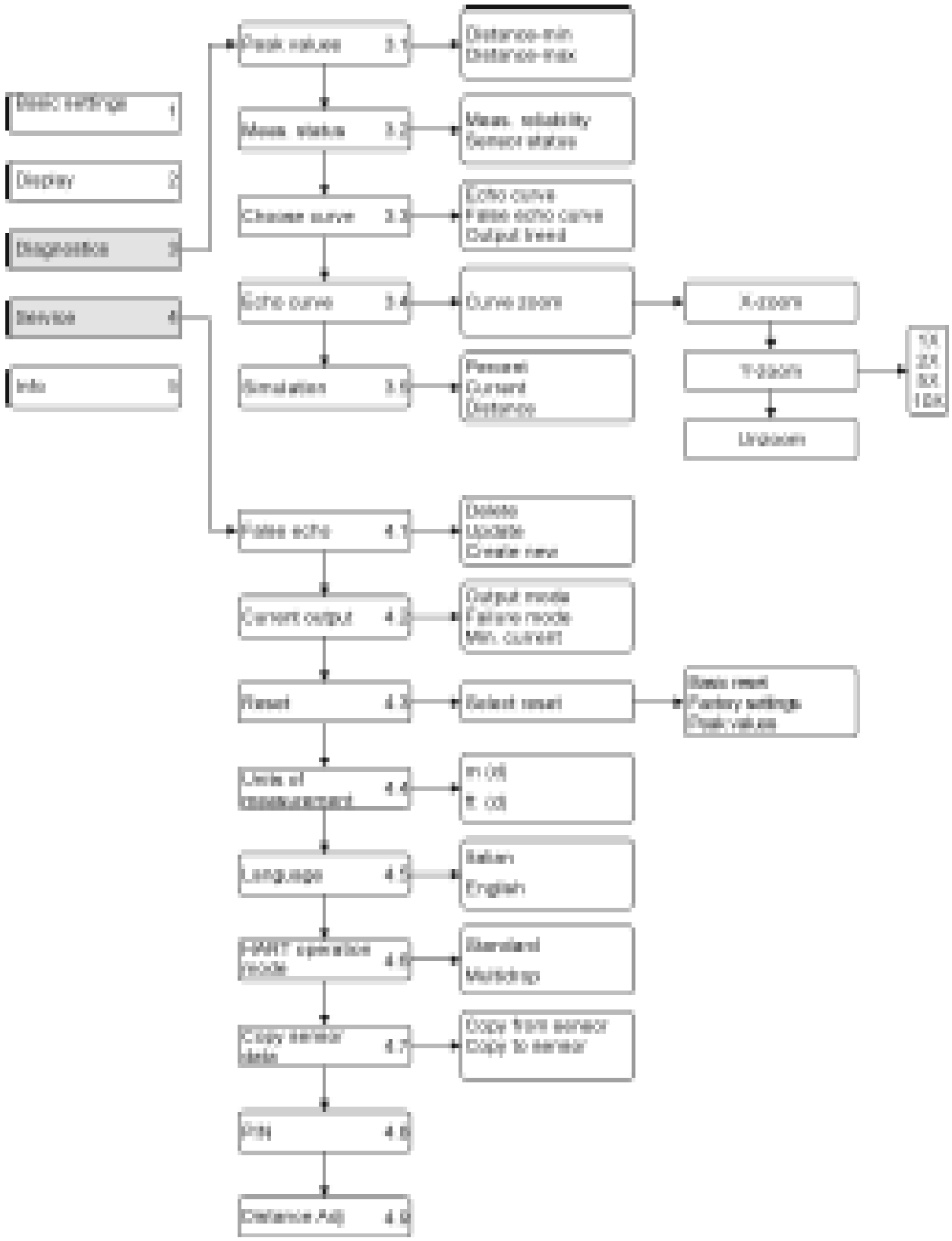
5.5 Parameter setting and changing

On entering Parameter Editing, the first digit of the edited parameter will be displayed in black background .
Press to modify the digit and press to edit the next digit.
At the end of the operations, press OK to confirm and to store the modifications
To select a parameter during the setting, press and confirm your choice with OK .

6. MENU STRUCTURE

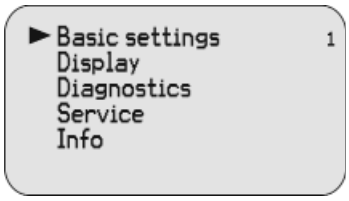
The following diagrams show the structure of the configuration menus:




Basic settings 1
Display 2
Diagnostics 3
Service 4
Info 5
Peak values 3.1
Distance-min
Distance-max
Meas. status 3.2
Meas. reliability
Sensor status
Choose curve 3.3
Echo curve
Filter echo curve
Output trend
Echo curve 3.4
Curve zoom
X-zoom
Y-zoom
Unzoom
1X
2X
5X
10X
Simulation 3.5
Present
Current
Distance
Filter echo 4.1
Delete
Update
Create new
Current output 4.2
Output mode
Failure mode
Min. current
Reset 4.3
Select reset
Basic reset
Factory settings
Peak values
Units of measurement 4.4
in (d)
ft. (d)
Language 4.5
Italian
English
HART operation mode 4.6
Standard
Multidrop
Copy sensor data 4.7
Copy from sensor
Copy to sensor
PIN 4.8
Distance Adj 4.9

7. BASIC SETTINGS (1)

From "RUN" mode press OK to enter the configuration menu. Press ↻ to select and OK to confirm. The menu item number is always displayed on the top right corner. By selecting and confirming "**Basic settings**" in menu **1**, the display will show in sequence:

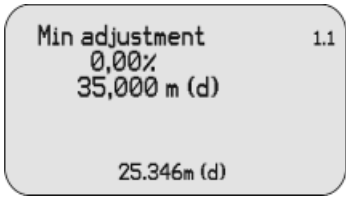


☞ ↻ Select menu
☞ OK Confirm

Note-The menu item number is displayed on the top right corner.

7.1 Min. adjustment (1.1)

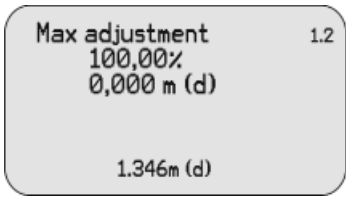
Press OK to modify the percentage value (see par. **2.4).**
Press OK again to confirm and to edit the corresponding distance value. After the setup press OK to confirm.
Press ↻ to enter menu **1.2** .
Note - The lower value **(d)** shows the measured instantaneous distance.



☞ OK Enter editing menu
☞ ↻ Select the value
☞ ↑ Modify the value
☞ OK Confirm
☞ ↻ Go to menu **1.2**

7.2 Max adjustment (1.2)

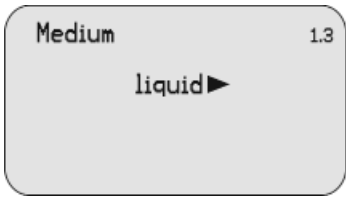
Press OK to modify the percentage value (see par. **2.4).**
Press OK again to confirm and to edit the corresponding distance value. After the setup press OK to confirm.
Press ↻ to enter menu **1.3**
Note - The lower value **(d)** shows the measured instantaneous distance.



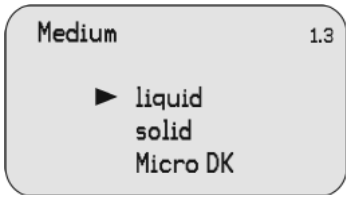
☞ OK Enter editing menu
☞ ↻ Select the value
☞ ↑ Modify the value
☞ OK Confirm
☞ ↻ Go to menu **1.3**

7.3 Medium (1.3)

Each medium has different reflective properties.
In this menu is possible to choose between liquid or solid medium.
Press OK to enter medium selection menu.
Press ↻ to select the medium and OK to confirm and to enter submenu **1.3.1**



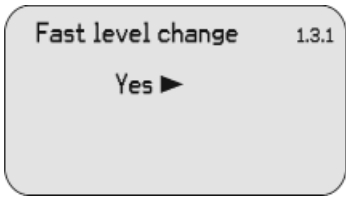
☞ OK Enter editing menu
☞ ↻ Go to menu **1.4**
☞ ↻ Select parameter
☞ OK Confirm and enter submenu **1.3.1**



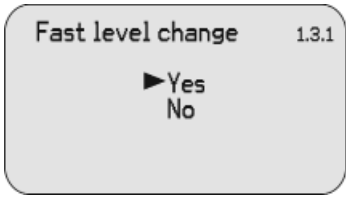
☞ OK Select the medium type
☞ ↻ Confirm the selection

7.3.1 Fast level change (1.3.1)

Setting it to "No", with a variation of size> 1 m, the system late 30s the new measure acquisition, after which updates the output signal according to the parameter "Damping" (1.4), with variations <1m output signal upgrade is a "Reading Retardation" parameter function (1.4). Default setting is **"Yes"**.
Press OK to enter parameter modification, press ↻ to enter the next menu **1.5**
With ↻ you can select the parameter setting, with OK you can confirm your selection and go back to previous submenu.



☞ OK Enter editing menu
☞ ↻ Go to submenu **1.5**

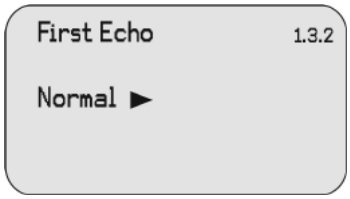


☞ ↻ Select parameter
☞ OK Confirm and go back to previous submenu

7.3.2 First echo (1.3.2)

This parameter sets the first valid echo signal acceptance .

Press OK to enter parameter modification, press ↻ to enter the next submenu **1.3.3** (par.3.3.c).

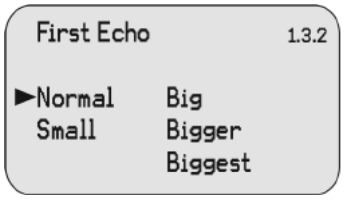


☞ OK Enter editing menu

☞ ↻ Go to next submenu **1.3.3**

With ↻ you select the parameter setting, with OK you confirm your selection and go back to previous submenu:

- Normal; automatic
- Small; decrease first echo by 10dB
- Big; increase first echo by 10dB
- Bigger; decrease first echo by 40dB
- Biggest; increase first echo by 40dB

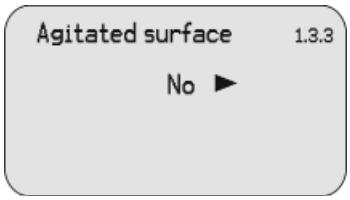


☞ ↻ Select parameter

☞ OK Confirm and go back to previous submenu

7.3.3 Agitated surface (1.3.3)
Large angle repose (1.3.3)

This submenu is related to the previous selection in menu **1.3**: by selecting "**Liquid**" in menu **1.3**, the display will now show "**Agitated surface**";
In both cases the default setting is "**No**".

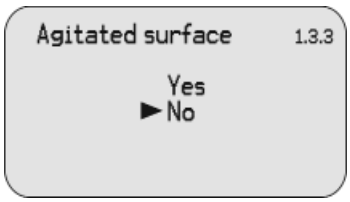


☞ OK Enter editing menu

☞ ↻ Go to next submenu **1.3.4**

Note - This window is displayed only in case of selected option "**Liquid**"in menu 1.3

Press OK to enter parameter modification, press ↻ to enter the next submenu.



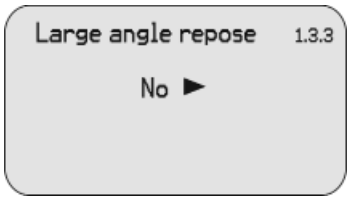
☞ OK Enter editing menu

☞ ↻ Go to next submenu **1.3.4**

Note - This window is diplayed only in case of selected option "**Liquid**"in menu 1.3

by selecting "**Solid**" in menu **1.3**, the display will now show "**Large angle repose**".

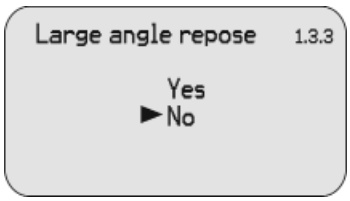
Press OK to enter parameter modification, press ↻ to enter the next submenu.



☞ OK Enter editing menu

☞ ↻ Go to next submenu **1.3.4**

Note - This window is diplayed only in case of selected option "**Solid**"in menu 1.3

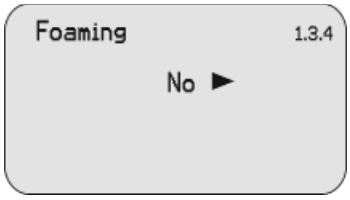


☞ ↻ Select parameter

☞ OK Confirm and go to next submenu

7.3.4 Foaming (1.3.4)
Powder dust (1.3.4)

This submenu is related to the previous selection in menu **1.3**: by selecting "**Liquid**" in menu **1.3**, the display will now show "**Foamimg**"
In both cases the default setting is "**No**".

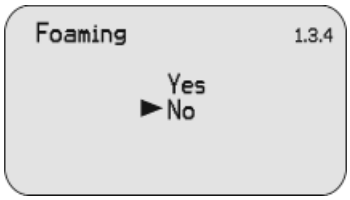


☞ OK Enter editing menu

☞ ↻ Go to next submenu **1.3.5**

Note -This window is n case of selected option **"Liquid"**in menu 1.3

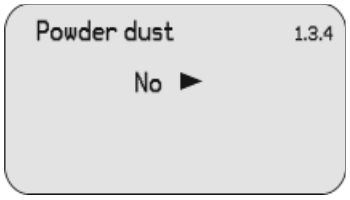
Press OK to enter editing menu and press ↻ to select the option. Then press OK again to confirm



☞ ↻ Select parameter

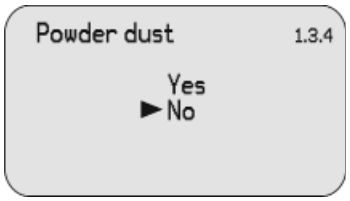
☞ OK Confirm and go to next submenu

by selecting "**Solid**" in menu **1.3**, the display will now show "**Powder dust**".



OK Enter editing menu
Go to next submenu **1.3.5**
Note -This window is displayed in case of selected option **"Solid"**in menu 1.3

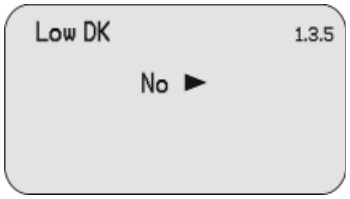
Press OK to enter editing menu and press ↻ to select the option. Then press OK again to confirm and to go



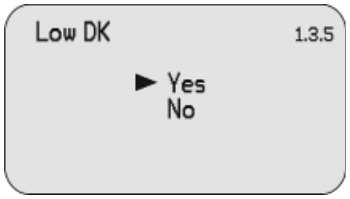
OK Enter editing menu
Go to next submenu

7.3.5 Low DK (1.3.5)

The Dielectric Constant is very important in order to obtain a correct measurement. In case of products with low dielectric constant (asbestos or non-conductive liquids), set the parameter on "**Yes**".
The default setting is "**No**".
Press OK to enter parameter modification and press ↻ to select the parameter.
Press OK again to confirm and to go back to previous submenu.



OK Enter editing menu
Go to next submenu
Note-This window is displayed only in case of selected option "**Liquid**"in menu 1.3



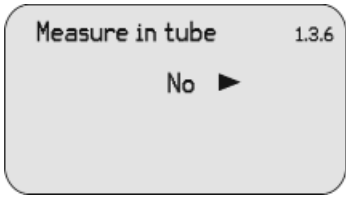
↻ Select parameter
OK Confirm

Selecting "Yes" must enter the height of empty vessel.
Press again OK and enter the Empty Span.
Press OK to confirm and ↻ to go back to previous submenu.

OK Enter editing menu
↻ Select the value
↑ Modify the value
OK Confirm
↻ Go to the next menu

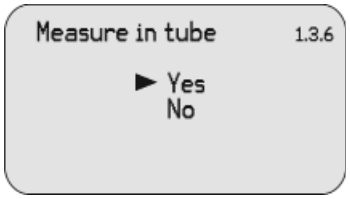
7.3.6 Measure in tube (1.3.6)

This window is displayed only by selecting "**Liquid**" in menu **1.3**.
If the transmitter is installed into a calm or bypass pipe it is necessary to set **"Yes"**.The default setting is "**No**".



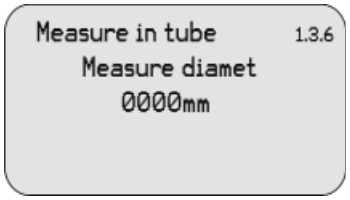
OK Enter editing menu
↻ Go to next submenu **1.3.1**
Note - This window is displayed only in case of selected option "**Liquid**"in menu 1.3

Press OK to enter parameter modification and press ↻ to make the selection. Confirm with OK and go next submemu "**Measure diameter**".



↻ Select parameter
OK Confirm and go to next submenu

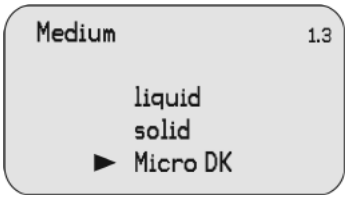
Press again OK and enter the diameter value, as specified in par. **2.4.** Press OK to confirm and ↻ to go back to previous submenu.



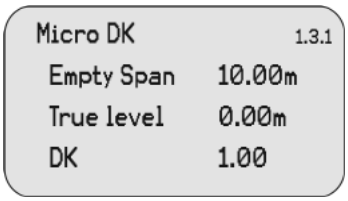
OK Enter editing menu
↻ Select the value
↑ Modify the value
OK Confirm

7.3.7 Micro DK (1.3.1)

Normally when electronic constant is smaller than 1.4, the direct echo from the medium is low and hard to detect. However by measuring the echo reflected from the base of the vessel, the height of the medium can be measured. Two parameters are needed to be entered here. 1. Height of empty vessel. 2. True medium height or medium electronic constant, these two parameters are related, entering either one is accepted. The precision of parameters will affect the precision of the measurement.



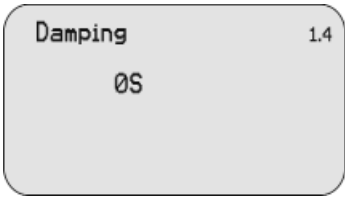
OK Enter editing menu
Go to next submenu



OK Enter editing menu
Select the value
Modify the value
OK Confirm

7.4 Damping (1.4)

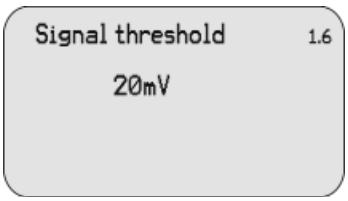
Press OK to enter parameter modification and set the value (in seconds) and confirm with OK .
Press to go to next menu **1.5**.



OK Enter editing menu
Select value
Modify the value
OK Confirm
Go to next menu **1.5**

7.5 Signal threshold (1.5)

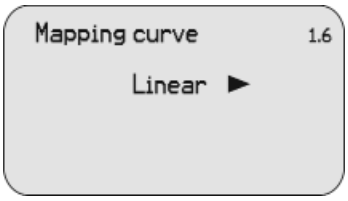
Press OK to enter parameter modification and set the value (in seconds) and confirm with OK .
Press to go to next menu **1.6**.



OK Enter editing menu
Select value
Modify the value
OK Confirm
Go to next menu **1.5**

7.6 Mapping curve (1.6)

The relationship between the measured value and the output signal 4÷20mA can be linear or non linear. In this menu you can set the output signal 4÷20mA: "**linear**" or "***non- linear***". The setting of "***non- linear***" mode must be done with **SGMware** software through PC.
Press OK to select the 4÷20mA output mode,
press to enter the next menu.

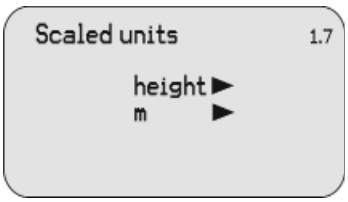


OK Enter editing menu
Go to next menu **1.7**

Note -The setting of a "non-linear" mapping curve must be done with **SGMsoftware** through

7.7 Scaled units (1.7)

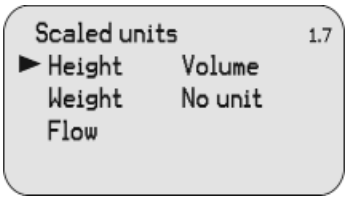
Press OK to enter parameter modification.
Press to go to next menu **1.8**.



OK Enter editing menu
Go to next menu **1.8**

The selectable options are:
- **Height**; m, ft, in, cm, mm
- **Massa**; Kg, t, lb
- **Flow**; m^3/s, m^3/h, ft^3/s, ft^3/m, gal/s, gal/min, gal/h, l/s, l/min, l/h
- **Volume**; m^3, l, hl, ft^3, in^3

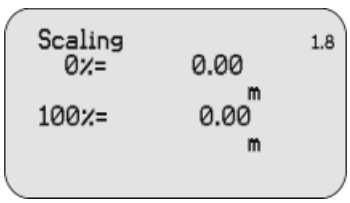
Press to make the selection and press OK to confirm



Select the parameter
OK Confirm and enter to relevant submenu

7.8 Scaling (1.8)

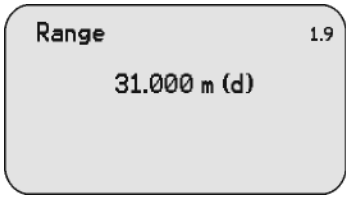
Press OK to modify the 0% value, press to enter the next menu. Set the value and confirm with OK .
Press OK again to modify the 100% value. Set the value and confirm. Press to enter the next menu. .



OK Enter editing menu
Select the value
Modify the value
OK Confirm
Go to next menu **1.9**

7.9 Range (1.9)

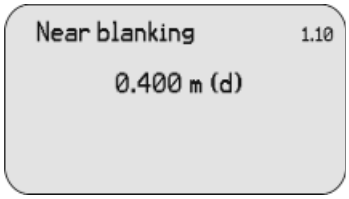
Press OK to modify the value expressed in meters, press ↻ to enter the next menu **1.10**
Set the value and confirm with OK .
Press ↻ to enter the next menu **1.10**.



OK Enter editing menu
↻ Select the value
↑ Modify the value
OK Confirm
↻ Go to next menu **1.10**

7.10 Near blanking (1.10)

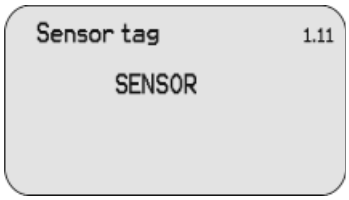
Press OK to modify the value expressed in meters, press ↻ to enter the next menu **1.11**
Set the value and confirm with OK .
Press ↻ to enter the next menu **1.11**.



OK Enter editing menu
↻ Select the value
↑ Modify the value
OK Confirm
↻ Go to next menu **1.11**

7.11 Sensor tag (1.11)

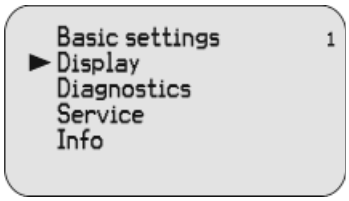
Press OK to modify the parameter, press ↻ to enter the starting menu **1.1**.
Set the value, as specified in par 2.4, and confirm with OK .
Press ↻ to enter the starting menu **1.1.** .



OK Enter editing menu
↻ Select the value
↑ Modify the value
OK Confirm
↻ Go back to starting menu **1.1**

8. DISPLAY (2)

From "RUN" mode press OK to enter the configuration menu: the following menu will be displayed (**1**). Press OK to select the item and press ↻ to confirm. The menu item number is always displayed on the top right corner.
By selecting and confirming **"Display**" in menu **2**, the display will show in sequence:

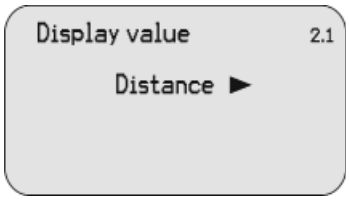


↻ Select menu
OK Confirm

Note-The menu item number is displayed on the top right corner.

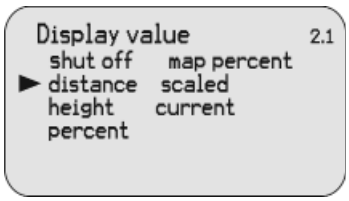
8.1 Display value (2.1)

Press to OK to enter parameter modification and press ↻ to enter next menu **2.2**.



OK Enter editing menu
↻ Go to next menu **2.2**

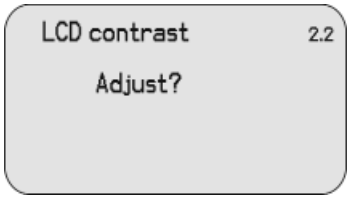
Select with ↻ the measured value you want to be displayed and press OK to confirm and to go back to previous menu.



↻ Select the parameter
OK Confirm and go back to menu **2.1**

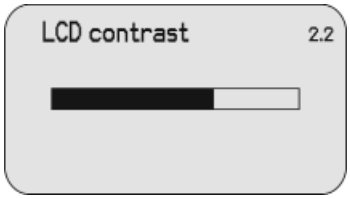
8.2 LCD contrast (2.2)

Press OK to enter parameter modification and press ↻ to enter next menu **2.1**.



OK Enter editing menu
↻ Go to menu **2.1**

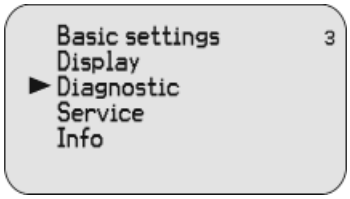
Press ↑ to increase the contrast and press ↻ to decrease. Press OK to confirm and to go back to previous menu.



↻ Decrease the contrast
↑ Increase the contrast
OK Confirm and go back to menu **2.2**

9. Diagnostic (3)

From "RUN" mode press OK to enter the configuration menu: the following menu will be displayed (**1**).
Press ↻ to select the item and press OK to confirm.
The menu item number is always displayed on the top right corner.
By selecting and confirming **"Diagnostic**" in menu **3**, the display will show in sequence:

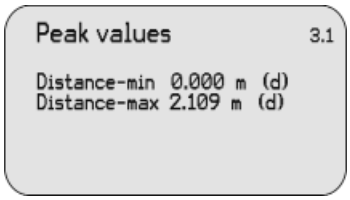


↻ Select programming menu
OK Confirm selection

Note-The menu item number is displayed on the top right corner.

9.1 Peak values (3.1)

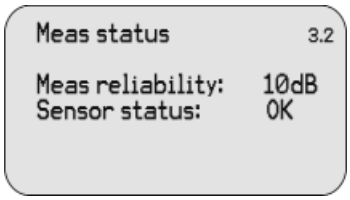
In this menu are recorded the min. and max. distance values. They can be cleared to zero in menu **4.3**.
Press ↻ to enter the next menu **3.2**.



↻ Go to next menu **3.2**

9.2 Measuremerent status (3.2)

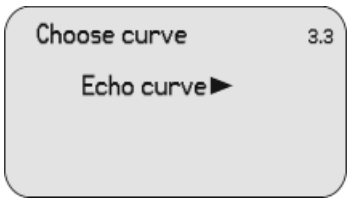
The display shows the level of the receiving signal and the general status of the sensor. Press ↻ to enter menu **3.3.**



↻ Go to next menu **3.3**

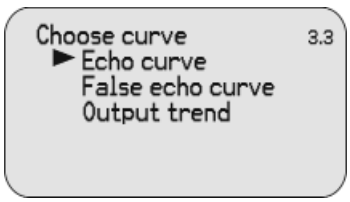
9.3 Choose curve (3.3)

Press OK to enter curve selection and press ↻ to enter menu **3.4.**



OK Enter editing menu
↻ Go to next menu **3.4**

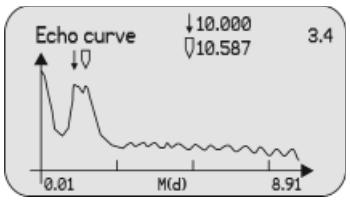
Press ↻ to select the curve and press OK to confirm and to enter menu **3.4**.



↻ Select curve
OK Confirm and go to next menu **3.4**

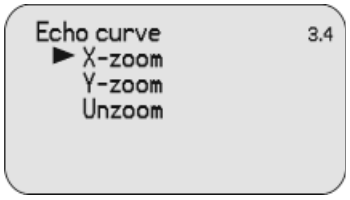
9.4 Echo curve (3.4)

Press OK to enter zoom submenu of the selected curve. Press ↷ to enter the next menu **3.5**.
The 2 echo curve indicators show:
↓ - actual measure
▯ - estimated measure
In normal operating conditions the indicators coincide in position and measure.



OK Enter Zoom sub-menu
↷ Go to next menu **3.5**

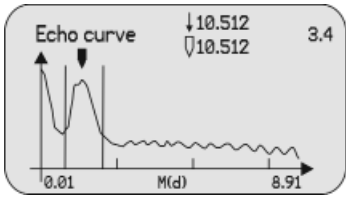
Press ↷ to select the zoom mode and press OK to confirm. The display will then show the curve.



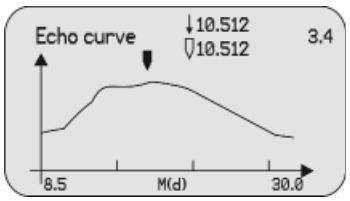
↷ Sel. zoom mode
OK Confirm and see the curve

In case of "**X-zoom**" selection, you must proceed in the following way:

- press ↑ to move right the first line (opening line) of the zoom window
- press OK to confirm the position and to edit the second opening line
- press ↑ to move right the second line (closing line) of the zoom window
- press OK to confirm the position and to visualize the zoom window of the curve



↑ Move the first zoom line
OK Confirm first line position
↑ Move the second zoom line
OK Confirm second line position and see the zoom window



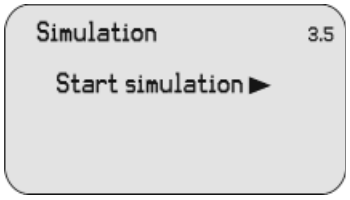
OK Go to submenu Zoom
BK Go back to menu **3.4**
↷ Go to next menu **3.5**

9.5 Simulation (3.5)

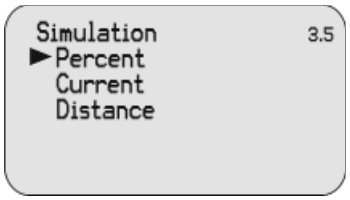
The "**Simulation**" menu is used to simulate the 4-20mA current output. There are three options:

- **Percent:** the output current is defined as a percent value (0% correspond to 4mA and 100% to 20mA)
- **Current:** the output current is defined as a current value
- **Distance:** the output current is defined by a distance value, in relation to Min adjustment (**1.1)**, Max adjustment (**1.2)** and Mapping (**1.6)**.

Press OK to select simulation mode, press ↷ to go back to menu **3.1**.



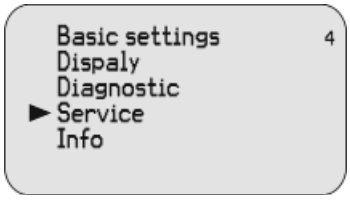
OK Enter the editing menu
↷ Go back to menu **3.1**



↷ Select simulation mode
OK Confirm

10. Service (4)

From"RUN" mode press OK to enter the configuration menu. The following menu will be displayed (**1**).
Press ↻ to select the item and press OK to confirm the selection. The menu item number is always displayed on the top right corner. By selecting and confirming "**Service**" in menu **4**, the display will show in sequence:

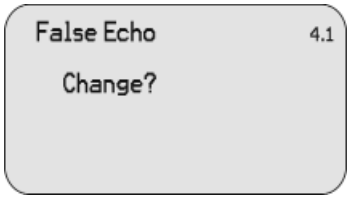


☞ ↻ Select programming menu
☞ OK Confirm selection

Note - The menu item number is displayed on the top right corner.

10.1 False echo (4.1)

This function gets rid of interfering signals caused by obstacles placed between the sensor and the product surface (i.e. brackets, agitators or pipes). Press OK to enter the False echo storing/modifying mode, press ↻ to enter the next menu **4.2**. Press ↻ to select the function, then press OK to confirm and to enter the next sub-menu in case of "**Update/Create new**". The 0% level condition is required to record the echo curve False.
Press OK to set the parameter and to confirm. After the confirmation the system goes back to menu **4.2**.

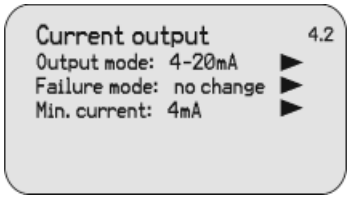


☞ OK Enter editing menu
☞ ↻ Go to next menu **4.2**

☞ ↻ Select function
☞ OK Confirm selection and go to next sub-menu in case of **update/create new**

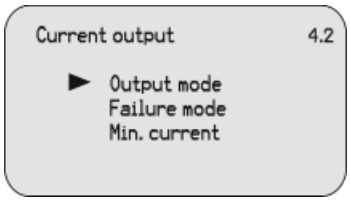
10.2 Current output (4.2)

Press OK to enter current output sub-menu, press ↻ to enter the next menu **4.3**



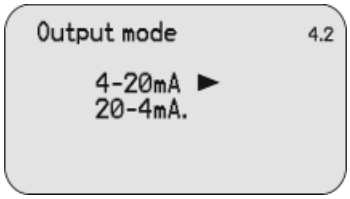
☞ OK Enter editing menu
☞ ↻ Go to next menu **4.3**

Press ↻ to select the current output function, press OK to confirm and enter the selected item, in sequence:



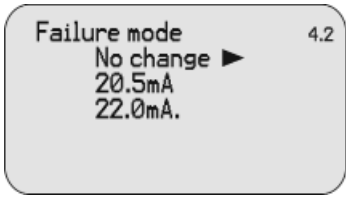
☞ ↻ Select mode
☞ OK Confirm and go to submenu

- **Output mode**; direct (4÷20mA) or indirect (20÷amA) output. Press ↻ to select the current output and then press OK to confirm and to go back to sub-menu **4.2**



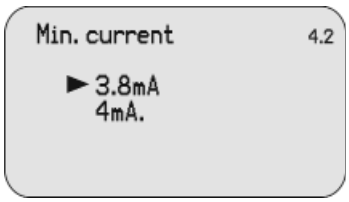
☞ ↻ Select parameter
☞ OK Confirm and go back to menu **4.2**

- **Failure mode**; output signal forcing in case of system failure (no change/, 20.5mA or 22.0mA)
Press to select the parameter and press OK to confirm and to go back to sub-menu **4.2**



Select parameter
OK Confirm and go back to menu **4.2**

- **Min. current**; min. value of the signal (3.8mA or 4mA).
Press to select the value and press OK to confirm and to go back to sub-menu **4.2**



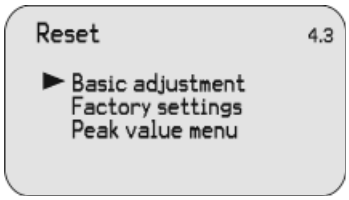
Select parameter
OK Confirm and go back to menu **4.2**

10.3 Reset (4.3)

Press OK to enter reset sub-menu, press to enter the next menu **4.4**

OK Enter editing menu
Go to next menu **4.4**

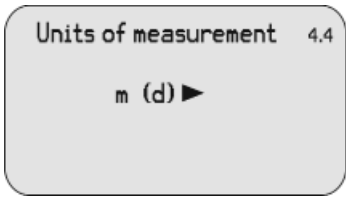
Press to select the resetting parameters and press OK to confirm. The system is now reconfigured with default values.



Select parameter
OK Confirm and reset

10.4 Units of measurement (4.4)

Press OK to enter the units of measurement menu: metric system (m) or British system (ft). Press to enter the next menu **4.5**.



OK Enter editing menu
Go to next menu **4.5**

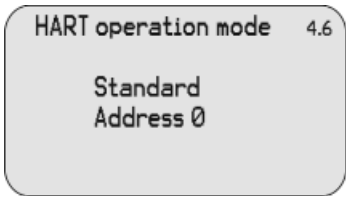
10.5 Language (4.5)

Press OK to enter the language selection menu: Italian or English. Press to enter the next menu **4.6**.

OK Enter editing menu
Go to next menu **4.6**

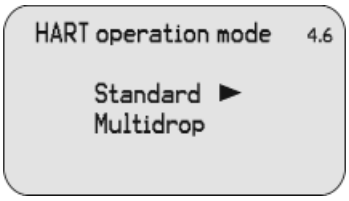
10.6 HART operation mode (4.6)

Press OK to enter the **HART** operation mode: standard or multidrop. Press to enter the next menu **4.7**.



OK Enter editing menu
Go to next menu **4.7**

Press ↻ to select **HART** communication mode: "**Standard**" (address 0) or "**Multidrop**" (you must input the address. On the same line there cannot be 2 or more units with the same address). Press OK to confirm: the system is now reconfigured with default values.



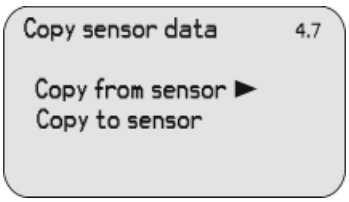
☞ ↻ Select parameter
☞ OK Confirm and reset

10.7 Copy sensor data (4.7)

Press OK to enter the copy sensor data menu: copy from sensor or copy to sensor. Press ↻ to enter the next menu **4.8**

☞ OK Enter editing menu
☞ ↻ Go to next menu **4.8**

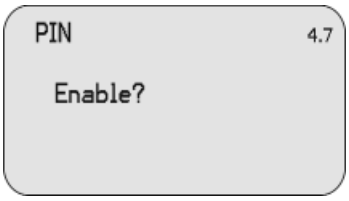
Press ↻ to select the operation: with "**Copy from sensor**", it is possible to save the sensor settings; with "**Copy to sensor**", all the previously saved sensor settings are restored. Press OK to confirm: the system is now reconfigured with default values.



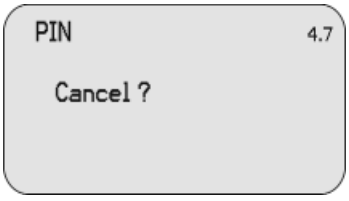
☞ ↻ Select option
☞ OK Confirm

10.8 PIN (4.8)

Press OK to enter PIN sub-menu: if the PIN is unactive the option will be "**Enable?**". Press OK to enter a 4 digit PIN code. If the PIN is active the option will be "**Cancel?**". Press ↻ to go back to menu **4.1**



☞ OK Enter editing menu
☞ ↻ Go back to menu **4.1**

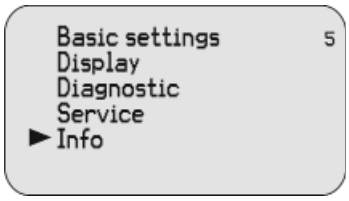


☞ OK Enter editing menu
☞ ↻ Go back to menu **4.1**

11. Info (5)

From "RUN" mode press OK to enter the configuration menu.
The following menu will be displayed (**1**).
Press ↻ to select the item and OK to confirm.
The menu item number is always displayed on the top right corner.

By selecting and confirming "**Info**" in menu **5**, the display will show in sequence:

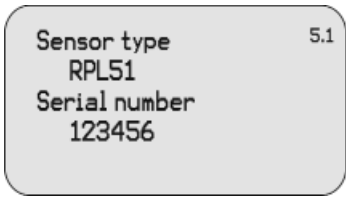


↻ Select programming menu
OK Confirm selection

Note - The menu item number is always displayed on the top right corner.

11.1 Sensor type / Serial number (5.1)

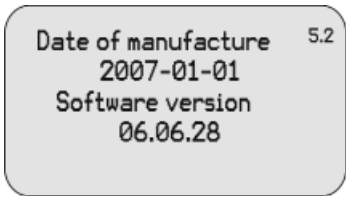
Press ↻ to go to next menu **5.2**.



↻ Go to next menu **5.2**

11.2 Date of manuf./ Software version (5.2)

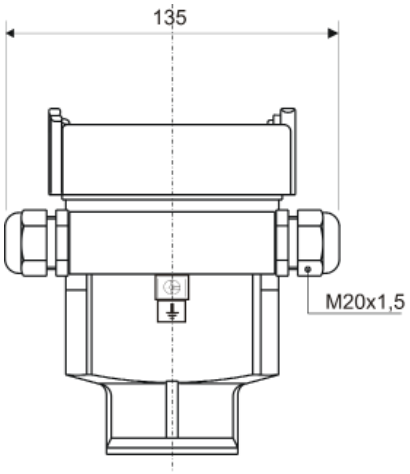
Press ↻ to go back to menu **5.1**



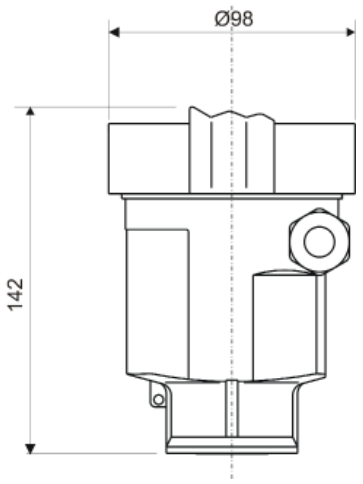
↻ Go back to menu **5.1**

12. Mechanical dimensions

12.1 Dimensions

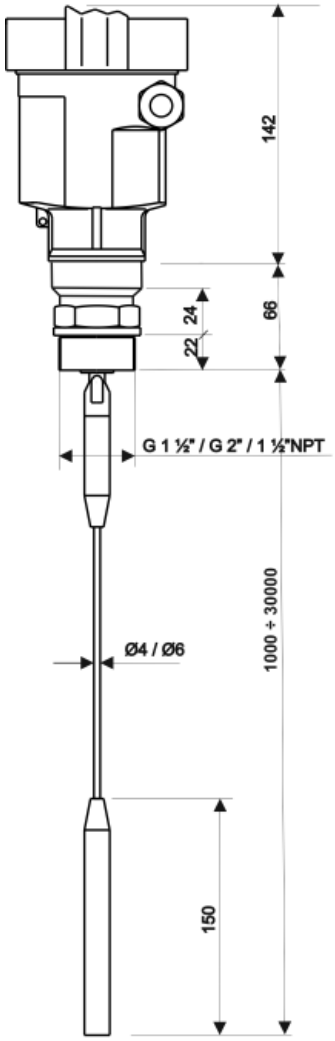


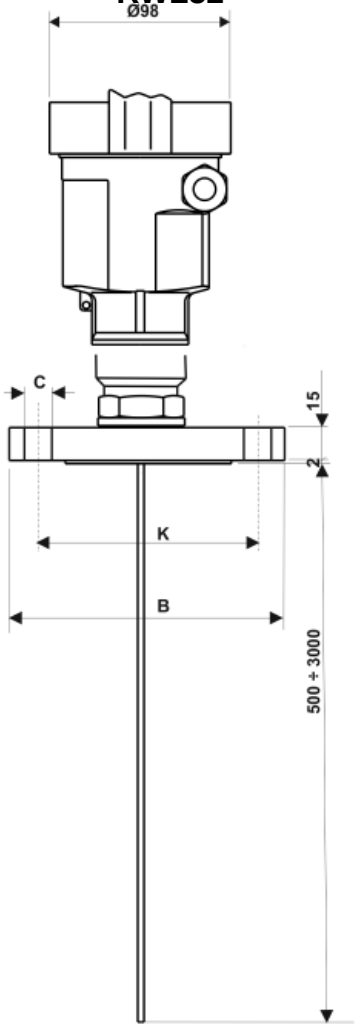
RWL51

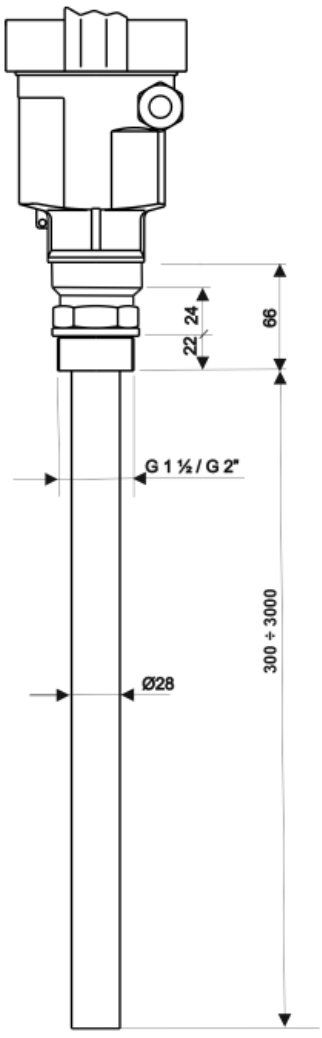


RWL53

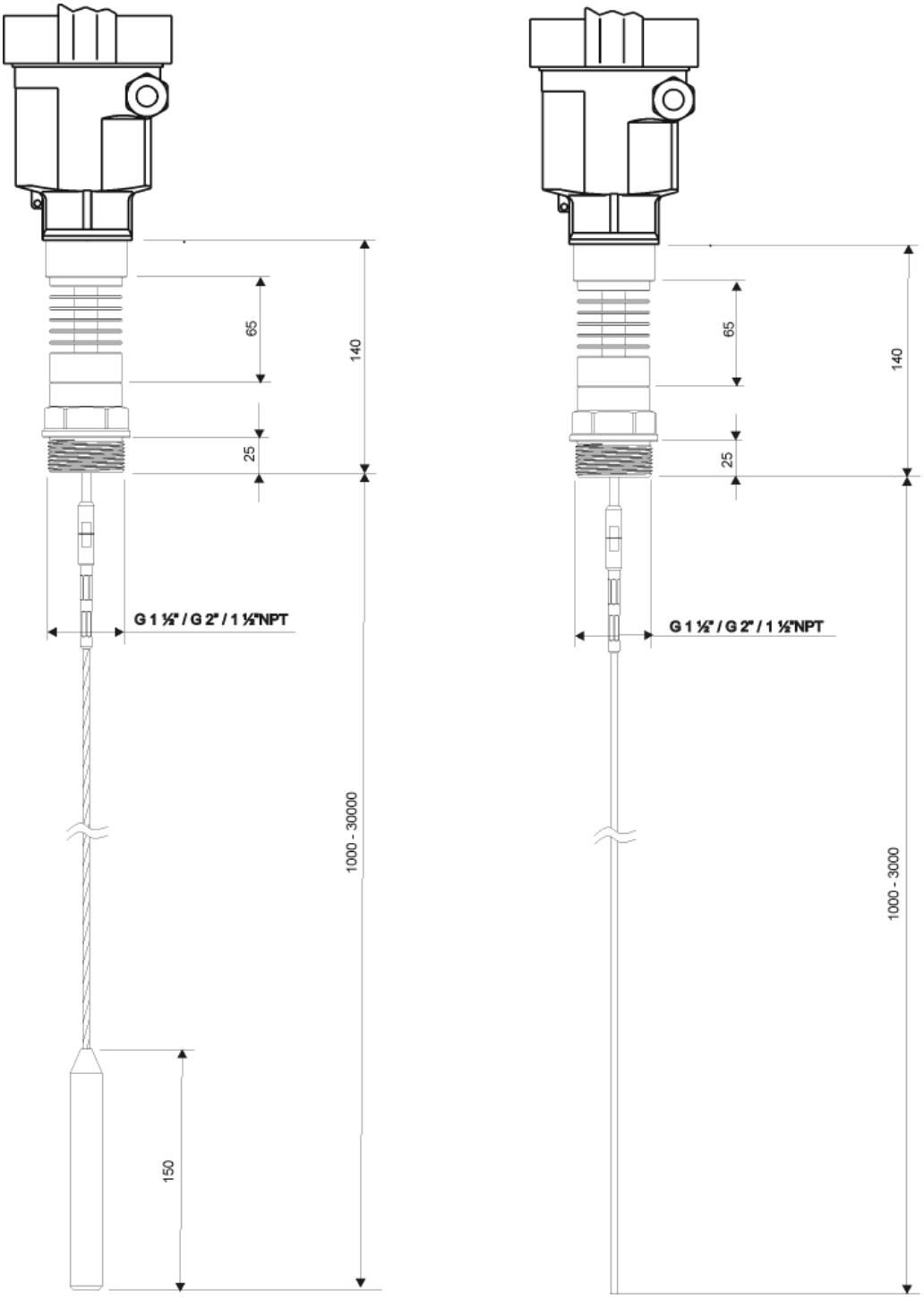
RWL52







	K	b	C
DN50	Ø125	Ø165	Ø16x4
DN80	Ø160	Ø200	Ø16x8
DN100	Ø180	Ø220	Ø16x8
DN150	Ø240	Ø285	Ø20x8


65
140
25
G 1 ½" / G 2" / 1 ½"NPT
1000 - 30000
150
65
140
25
G 1 ½" / G 2" / 1 ½"NPT
1000 - 3000

Notes:

RWL - 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.

RWL - Factory test certificate

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

RWL ..... part nb. .....

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

Quality Control Manager .....

Production and check date .....

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