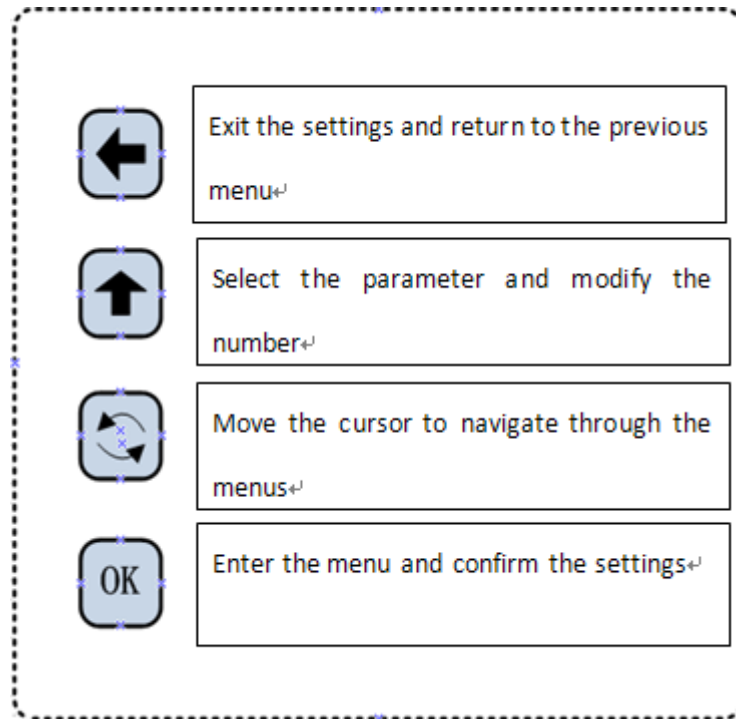# CDRadar

26GHz pulse radar level meter

Instruction manual
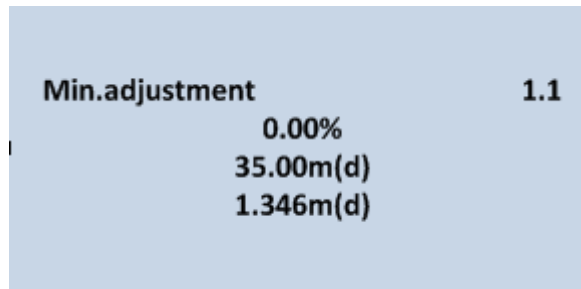
1. Interface button instructions

2. Operation instructions

1.1 Low level adjustment

Low adjustment for range setting.

It determines the current output linear corresponding relationship with the high level. In the main menu, when the menu number is 1, press OK key, enter the basic set sub menu, LCD display

Press OK key to enter the programming low percentage, see the above-mentioned parameter editing method in character / digital parameter programming method edit percentage value and distance value. After editing, press OK key to confirm, press BK key to give up programming.

1.2 high adjustment

High level adjustment for the range setting. It determines the current output linear corresponding relationship with the low position. When the liquid crystal display menu number is 1.1, press ➜button to enter the high adjustment, liquid crystal display
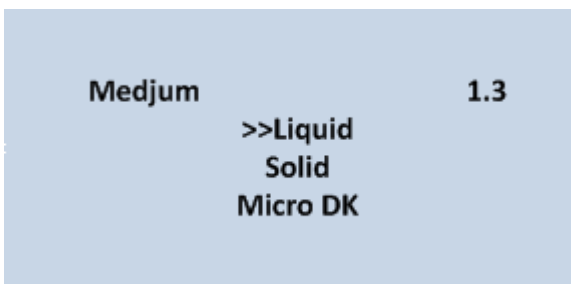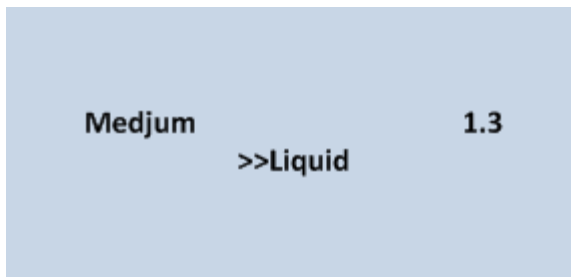
```
Max.adjustment                    1.2
              100.00%
              0.000m(d)
              1.409m(d)
```
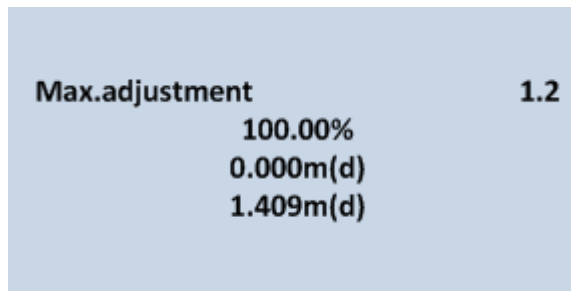
At this point, press the OK button to adjust the high to edit.

1.3 Material properties

When the liquid crystal display menu number 1.3, press➔button to enter the material nature of programming, liquid crystal display.。

The material properties menu is used to select solids, liquids, or micro DK, from the surface to further determine the nature of some of the other effects of the material.

```
Medjum                           1.3
              >>Liquid
```

```
Medjum                           1.3
              >>Liquid
               Solid
               Micro DK
```
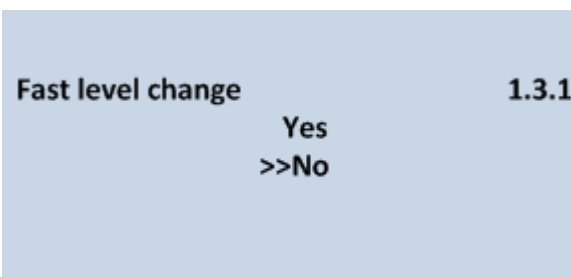
1.3.1 Change of object position

When the material nature of the choice of liquid or solid, press the OK key to enter the fast change goods menu, liquid crystal display
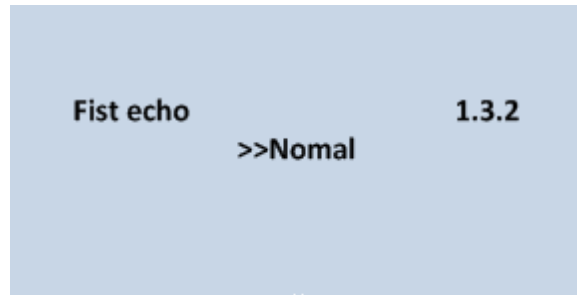
```
Fast level change                1.3.1
              >>Yes
```
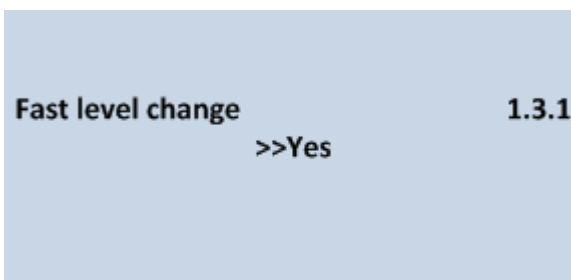
Press the OK key to enter the quick change menu, the liquid crystal display.

```
Fast level change                1.3.1
               Yes
              >>No
```

1.3.2 first wave selection

When the material nature of the selection of liquid or solid, liquid crystal display menu for 1.3.1 ➔key to select the next menu to enter the first wave selection menu, LCD display

```
Fist echo                    1.3.2
            >>Nomal
```

Press OK button to enter the first wave selection menu, LCD display

```
Fist echo                    1.3.2
         Nomal   Big
         Small   Bigger
                 Biggest
```

Press (key to select the processing of the first wave. There are 5 kinds of methods:

Normal: the amplitude of the first wave is not processed (the default value)

Weakening: the first wave amplitude decreased by 10dB

Slightly: the amplitude of first wave enhanced 10dB

Strong: the first wave amplitude enhancement 20dB

Strongest: first wave amplitude enhanced 40dB

1.3.3   (liquid) surface wave

When the material properties for liquid, liquid crystal display menu for 1.3.2, with the➔key to select the next menu to enter the surface fluctuation menu, liquid crystal display

```
Agitated surface             1.3.3
            >>No
```
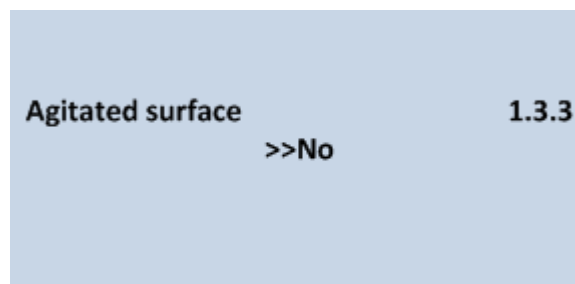
Press the OK key to enter the surface wave selection menu, liquid crystal display

```
Agitated surface             1.3.3
              Yes
            >>No
```
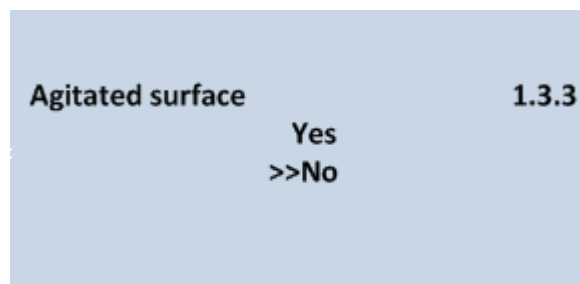
1.3.3 (solid) pile angle

When the material is solid, when the liquid crystal display menu for 1.3.2, with the ➔ key to select the

next menu to enter the heap angle large menu, liquid crystal display

```
Large angle repose                    1.3.3
                  >>No
```
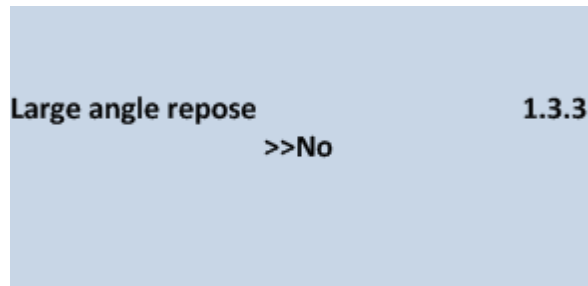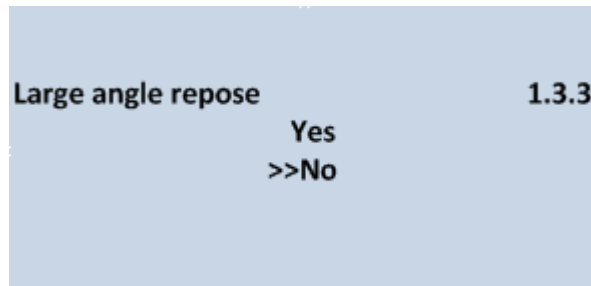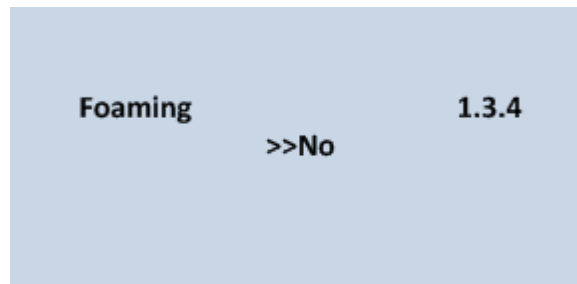
Then press OK key to enter the heap angle large selection menu, LCD display

```
Large angle repose                    1.3.3
                  Yes
                >>No
```
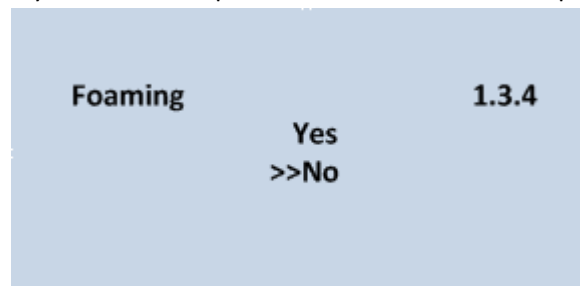
1.3.4 (liquid) foam

When the liquid crystal display menu is 1.3.3➔key to select the next menu into the liquid level bubble menu, liquid crystal display

```
Foaming                               1.3.4
                 >>No
```
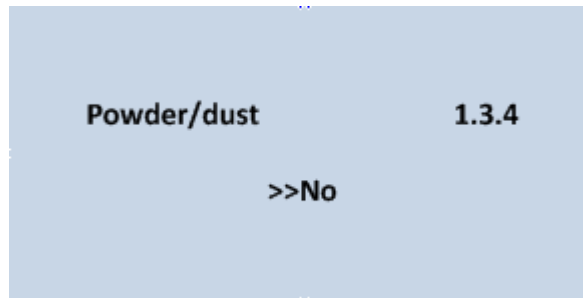
Press the OK key to enter the liquid bubble selection menu, liquid crystal display

```
Foaming                               1.3.4
                  Yes
                >>No
```
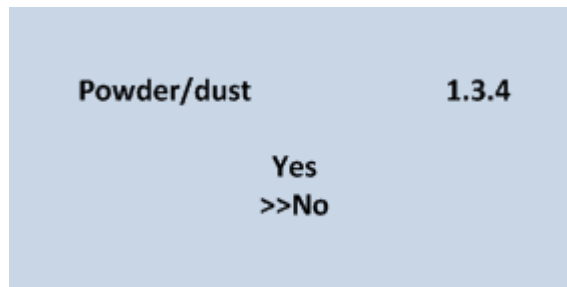
1.3.4 (solid) dust strong

When the liquid crystal display menu is 1.3.3➔key to select the next menu to enter the dust strong selection menu, LCD display
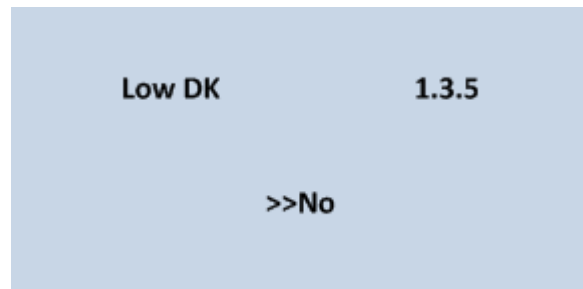
```
Powder/dust                1.3.4


        >>No
```

Press OK key to enter the dust strong selection menu, liquid crystal display

```
Powder/dust                1.3.4


        Yes
        >>No
```
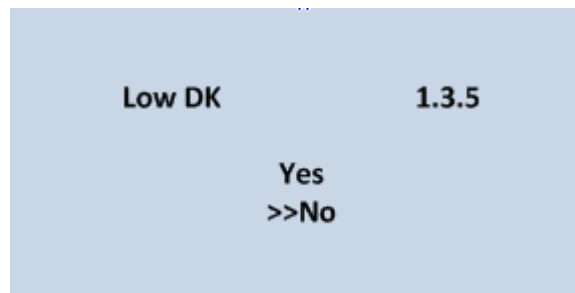
1.3.5 DK value is small

When the liquid crystal display 1.3.4, press the OK key to enter the DK value to adjust the setting menu, the liquid crystal display

```
Low DK                1.3.5



        >>No
```

Press the OK key to enter the DK value to adjust the menu, the liquid crystal display

```
Low DK                1.3.5


        Yes
        >>No
```

Press➔key to select "yes", for DK hours of measurement setting, liquid crystal display is as follows, when the need to manually enter a high value of the empty tank, the value of the location of the bottom of the tank to reduce the bottom of the reflection

```
Low DK                1.3.5


        >>Yes
    Empty Span 3.00mm
```
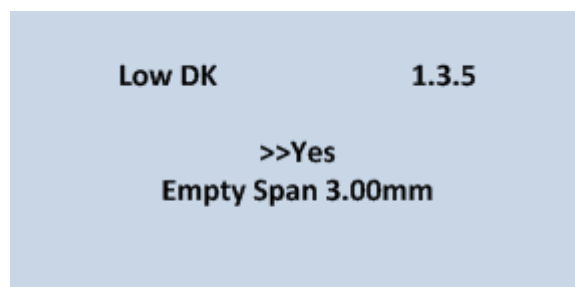
1.3.6 (liquid) guided wave tube setting

When the liquid crystal display menu is 1.3.5, press the OK key to enter the guide wave tube setting menu.

```
Measure in tube                    1.3.6


                    >>No


```
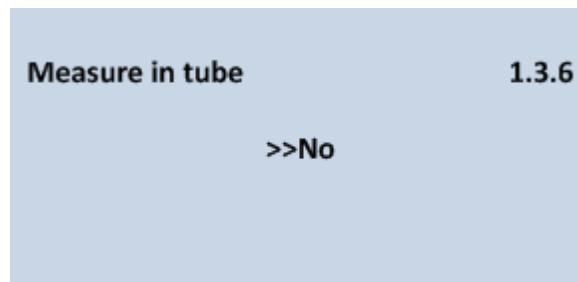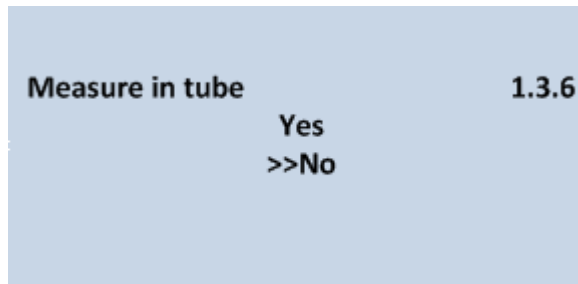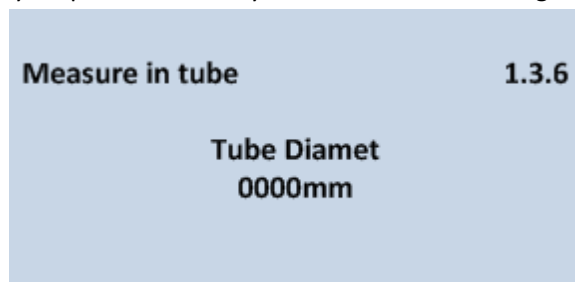
Press the OK key to enter the guide wave tube to measure the choice menu, the liquid crystal display

```
Measure in tube                    1.3.6
                    Yes
                    >>No


```

According to➔select "yes" press the OK key to enter into the wave guide pipe diameter setting menu,

```
Measure in tube                    1.3.6


                Tube Diamet
                 0000mm


```
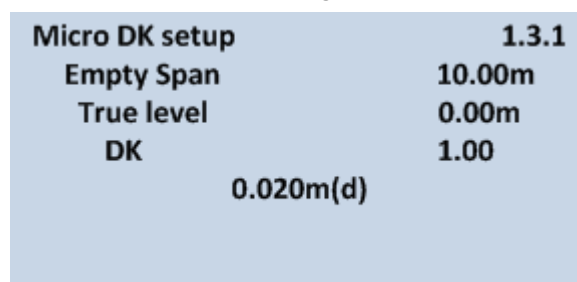
LCD display

      Note: the guide wave tube setting must be guided wave tube in the presence of the case can be set effectively.

1.3.1 micro DK

Select the material properties for micro DK, press the OK key to enter the liquid crystal display of the micro DK settings

```
Micro DK setup              1.3.1
Empty Span                10.00m
True level                 0.00m
DK                          1.00
            0.020m(d)


```

      When straight. Two material properties for micro DK, generally used for dielectric constant less than 1.4 when the dielectric surface direct wave is very weak, or can not be measured, and the pot bottom reflection method can be measured material height, then need to enter the following parameters: 1. Empty cans, empty cans or empty containers empty high value materials, high or tested material dielectric constant, the two parameter correlation, enter one. The above parameters precision directly affects the measurement results of the precision value note: Micro DK "choice carefully, most of the measurement is not appropriate," micro DK "selection, the system according to the echo to determine the direct Echo or bottom reflection method is used to get the result of the measurement.

1.4 damping time

When the LCD menu number is 1.3, press➜button, enter the damping time set menu, liquid crystal display

Damping	1.4
2s	
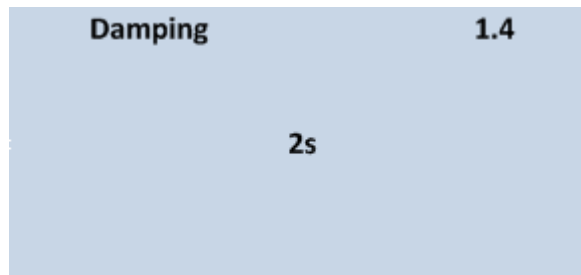
Press OK key to enter the parameter edit state, with the [⬆] key settings number,Select Edit number bits with➜ keys, edit the OK key to confirm.

1.5 input mapping

The output mapping is used to select between the nonlinear output mapping and the linear mapping which have been set by the host computer. When the liquid crystal display menu number is 1.4, press ➜button, enter the output map Edit menu, LCD display.

Mapping curve	1.5
Linear >>	
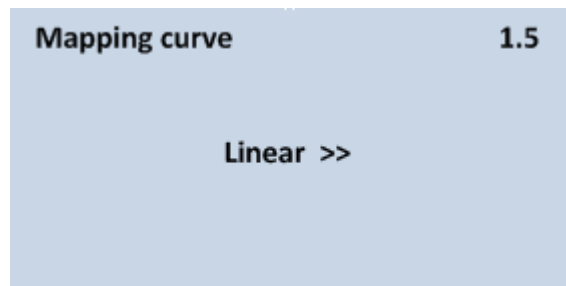
Press OK key to enter the parameter selection state, use the key➜ to select the linear or other optional mapping methods, such as linear, etc., after the completion of the editing by the OK key to confirm.

When the linear output map is selected, it is used to select different display units.

1.6 scalar units

When the liquid crystal display menu number is 1.5, press➜button, enter the set menu, liquid crystal display

Scaled units	1.6
Height >>	
M >>	

| Scaled units	1.6
Height Volume	
Mass No units	
Flow	
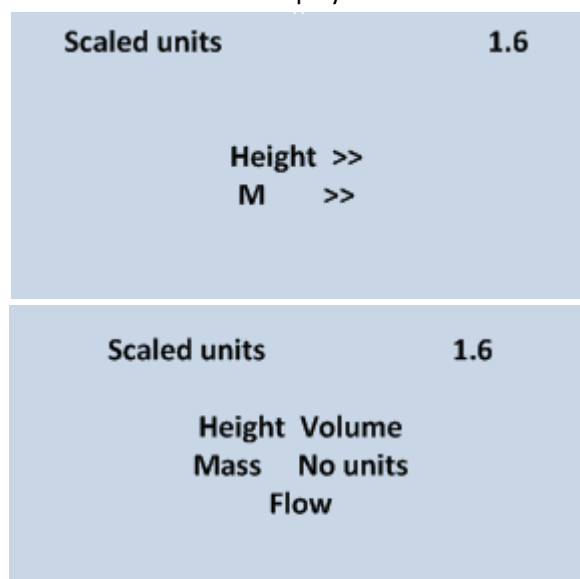
Press OK key to enter the parameter selection state, with the➜key to select different dimension, press

OK key to confirm, and further select the corresponding display unit, and then OK key to confirm. After selecting the linear output mapping, used to specify the specific mapping relationship.

1.7 calibration

When the LCD menu number is 1.6, press ➜button, enter the calibration set menu, liquid crystal display

Press OK key, the parameter domain anti black, with [↑] key to set the decimal point position, with the OK key to confirm, 0% corresponding parameter domain anti black, with [↑] key and ➜key setting parameters, press the OK key to confirm, with the same method set 100% corresponding

```
Scaling              1.7

      0%=0.00mm
      100%=0.000mm
```
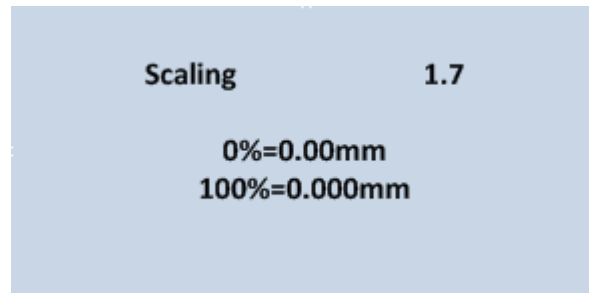
value.

1.8 Range setting

In order to get the correct measurement results, it is necessary to set the scale range of the instrument, when the menu number is displayed as 1.7 (button to enter the range setting menu, liquid crystal display.

```
Range                1.8
         00.000m(d)
```
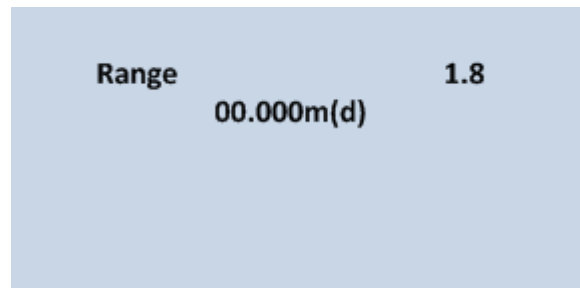
Press the OK button, the corresponding parameter + anti -, with [↑] key and key ➜parameter settings, press OK to confirm.

1.9 blind area

When in the distance on the surface of the sensor is near a fixed obstacles that interfere with the measurement and the aniseed high does not reach the obstacle, the available blind range setting function to avoid measurement errors.
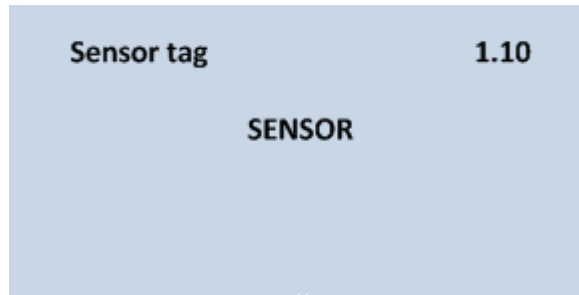
When the liquid crystal display menu number is 1.8, press➜button to enter the range of the blind zone set menu, liquid crystal display.
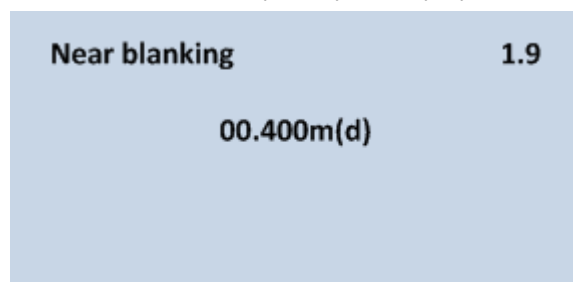
```
Near blanking            1.9

         00.400m(d)
```

Press the OK key to enter the parameter edit state, press the OK key to confirm when the editor is finished.

1.10 sensor tag

When the liquid crystal display menu number is 1.9, press➡button to move the menu to the sensor tag display, LCD display

```
Sensor tag                    1.10

            SENSOR
```
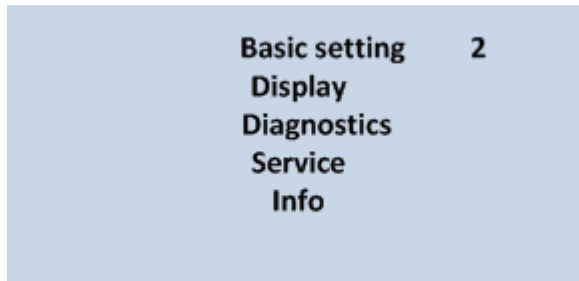
Press the OK key to enter the parameter edit state, press the OK key to confirm when the editor is finished.

2   display

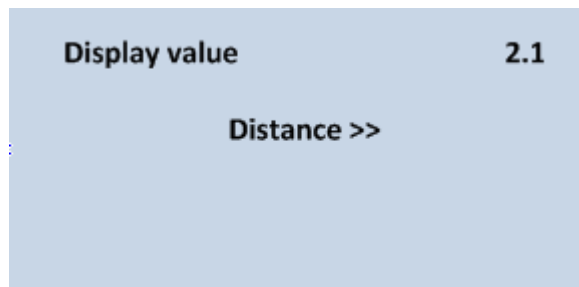This feature is used to display the way programming

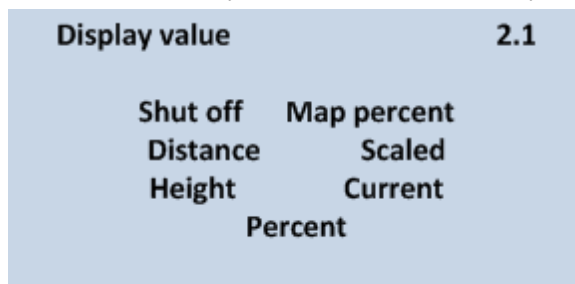When the liquid crystal display main menu, press ➡button to move the arrow to the display, LCD display

```
        Basic setting    2
           Display
          Diagnostics
            Service
             Info
```

Press OK button to enter the display mode programming.

2.1 show contents

Enter display mode programming, liquid crystal display

```
Display value                 2.1

            Distance >>
```

Indicates the parameter of the current display content is high, that is, the high value of the instrument display measurement. Press the OK key to enter the edit state, liquid crystal display.

```
Display value                 2.1

    Shut off    Map percent
      Distance        Scaled
      Height          Current
            Percent
```
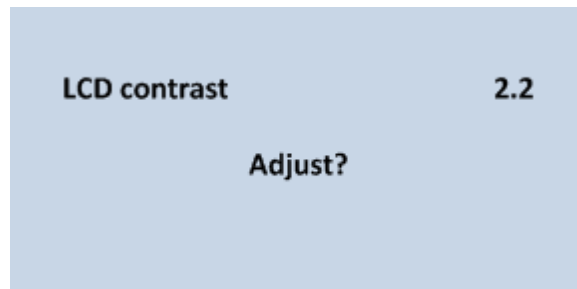
➡Keys to move the arrow to the desired parameter and press the OK key to confirm.

When you are done editing, show by BK key to exit programming and return to the previous menu.

2.2LCD contrast adjustment

2.1, when the LCD display menu, press ➡keys, enter the LCD contrast adjustment menu, display
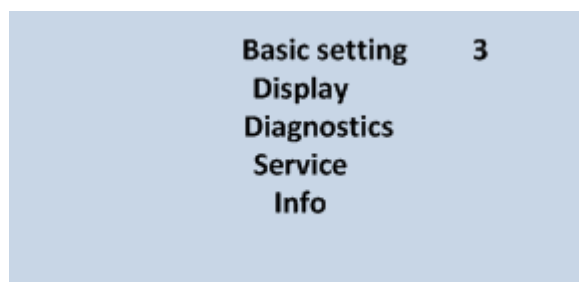
<div align="center">

LCD contrast   2.2

Adjust?

</div>

Press OK button to enter the adjusting status

<div align="center">

LCD contrast   2.2

</div>
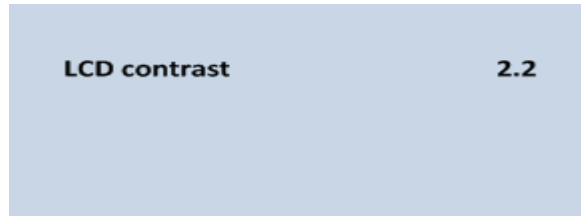
[↑] Key [➜]key to increase or decrease the contrast, then confirm with the OK button adjust and save the results.

3 Diagnose

<div align="center">

Basic setting   3
Display
Diagnostics
Service
Info

</div>

Diagnostic functions used for the testing and commissioning of its components work.

Press the OK key to access the diagnostic function, LCD display

<div align="center">

Peak Values   3.1
Distance min   0.000m(d)
Distance max   2.109m(d)

</div>
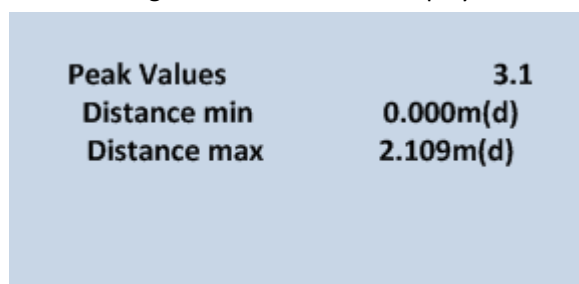
3.1 Measured peak

Peak shows the peak value measurement this parameter in the menu of available services 4.4 Reset clears. When the LCD display to the main menu, press the ➜button, move the arrow to diagnosis, the liquid crystal display
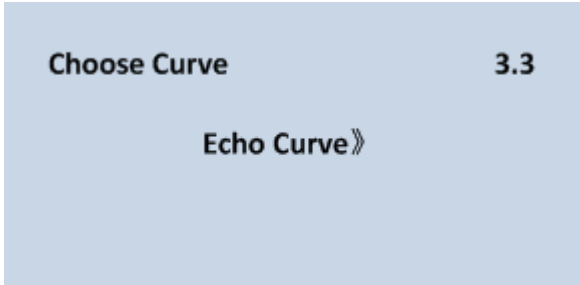
3.2 Measurement state

3.1, when the LCD display menu, press the➜button, move on to the next diagnostic measurements, display the sensor status
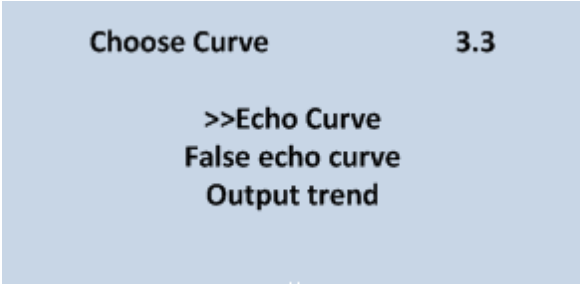
```
Meas,status                        3.2
       Meas reliability: 10dm
          Sensor status:0K
```
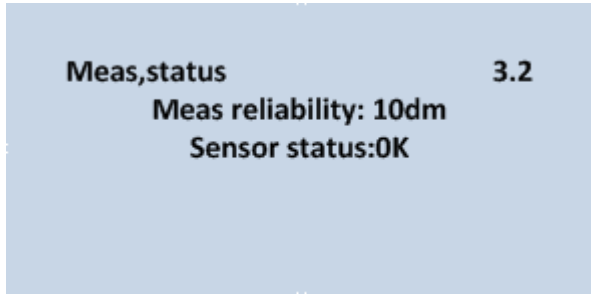
3.3 Selection curve

3.2, when the LCD display menu, press ➜keys, enter the display function of wave shape, liquid crystal display

```
Choose Curve                       3.3


          Echo Curve》
```

If you need to select a different curve, press the OK key, enter the Select menu, LCD display

```
Choose Curve                      3.3

          >>Echo Curve
          False echo curve
          Output trend
```

➜Key to move the arrow to the curve to be displayed, press the OK key to confirm your choice.

3.4 Echo Profile

3.3, when the LCD display menu, press ➜keys, LCD displays the selected curves.

Curve scaling function

Curve scales used to zoom in on the timeline and curves, so that more clearly.

When in the liquid crystal display, press the OK key, enter the curve scales the editing menu.
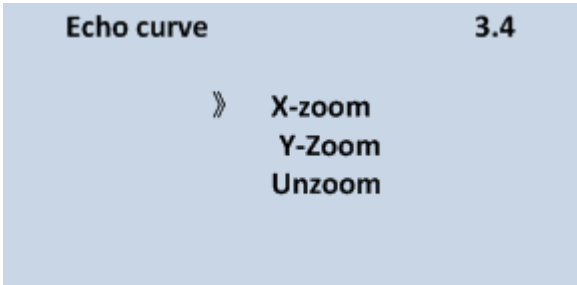
```
Echo curve                        3.4

        》    X-zoom
              Y-Zoom
              Unzoom
```
Display

➜Key to move the arrow, choose Zoom or zoom, press the OK key to confirm and LCD display

When you select the x axis scale dry, press the [↑]keys to move the starting point to the desired location, press the OK key to confirm: press[↑] keys to move the end point to the desired location, press the OK key to confirm, at which point curves for the selected area is enlarged to full screen. By BK key exit display.
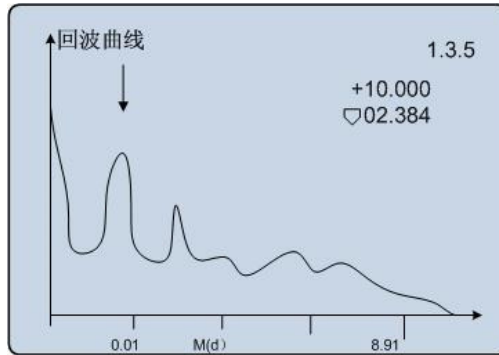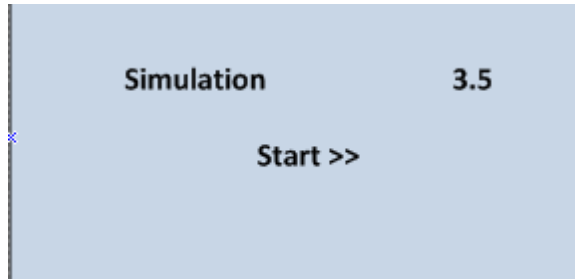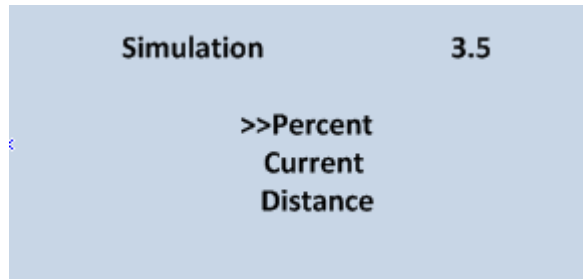
3.5 Simulation

Simulation features are 4 ... Simulation of 20mA current output. Used to check instrument current output is normal. Meanwhile, also can be used to debug the system. 3.4, when the LCD display menu, press ➜keys, enter the simulation State, liquid crystal display

Press OK key to confirm the simulation function, LCD display

➜Key to select the output current mapping mode, press the OK key to confirm and enter the settings menu, numerical setting, press the OK key to confirm, at this time, set the current output value corresponding to the current value.

Note: the three options menu item description

Percentage: output current value by the given percentage. 100% output 20mA,0% output 4mA.

Current: at a given value of current output current. 16.6mA corresponds to 16.6mA.

Ceiling height: output current of high value at a given time. (The value corresponding to the current value of 1.1 low adjustment, high adjustment of 1.2 and 1.5 output of the decision)

4   Service

Service menu including more specialized functions, for use by trained personnel. Mainly false echoes, time-varying gain control, reset, and instrument parameters can be saved and so on. When the LCD display to the main menu, press the ➜button, move the arrow to the service item to display

```
Basic setting      4
    Display
  Diagnostics
    Service
     Info
```
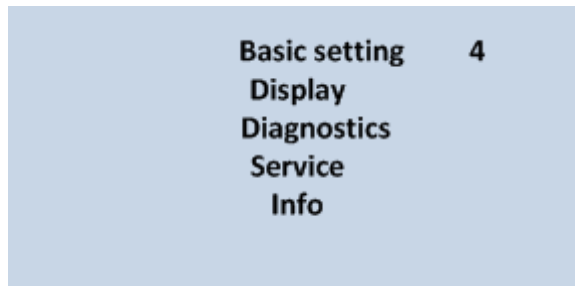
4.1 False echo

When measuring range has a fixed obstruction interference measurements, false echo function can be used to overcome its effects. At 4 o'clock, when the LCD display the main menu, press the OK key, enter the services menu, display
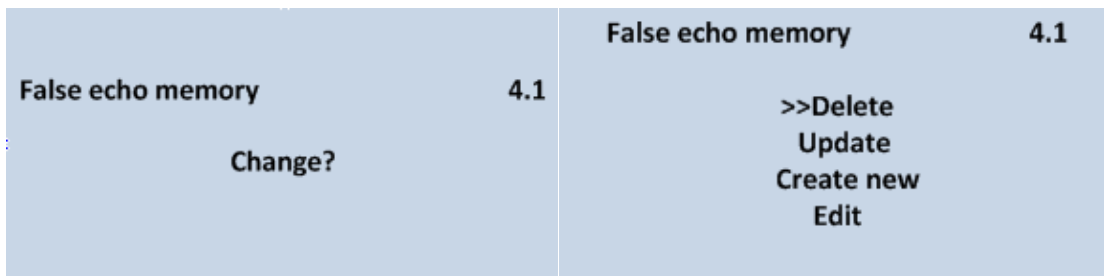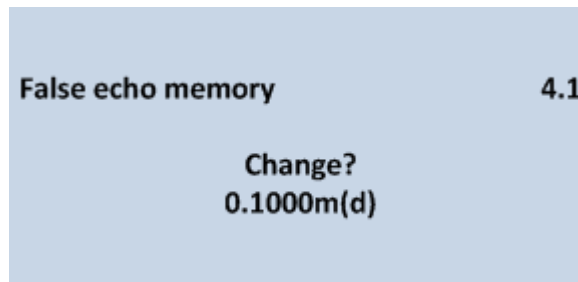
```
                              False echo memory          4.1

False echo memory          4.1
                                    >>Delete
                                     Update
        Change?                    Create new
                                      Edit
```

To update/create a new false echo curve ➔keys, move the arrow to the desired article, press the OK key to confirm, display

```
False echo memory                  4.1


              Change?
             0.1000m(d)
```

Prompts for a real echo distance value, enter a distance value, press OK key to confirm and LCD display please wait, false echoes the instrument learning, completed back to false echo menu.

Note: update false echo curve and creates false echo curve differences: new false echo curve in the real false echo curve to zero after the ECHO, after you update the false echo curve in a real echo of false echo curve remains the same.

To edit the false echo curve ➔keys, move the arrow to the desired article, press the OK key to confirm, this established false echoes may be edited or adapted to meet the requirements of special working conditions, entering false echo after the interface is as follows: (Note: this requires professionals to operate the menu)

```
False echo memory          4.1

             >>Delete
              Update
            Create new
               Edit
```
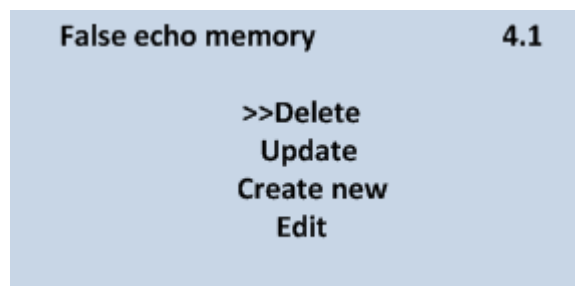
```
False echo memory edit                4.1

            Start 1.0 Amp 1300
            End 2.0 Amp1500
                 M(d)
```

Curve edit each two points, began points and end for to edit curve location coordinates, subsequently corresponds to of range numerical is to modified of numerical (Note: Dang distance coordinates entered or modified Hou, subsequently corresponds to of range will automatically according to current save of data update, to as range modified of reference); two on coordinates modified completed Hou, by OK key confirmed the modified; instrument will according to entered of two points automatically even into line generated new of false echo curve, alternative original curve; by OK key confirmed Hou, This modify the interface will display false echo curve for reference when BK returns the above Editor to continue editing, when false echo editor has reached the working conditions, but I then BK switch out of false echoes the Edit menu, the interface appears as follows:


```
False echo memory edit                4.1

                 SAVE?
```

Press the OK key to save the above changes by BK key to discard the current changes.

4.2 Current output

This setting is used to set the current output mode

Number 4.1 when the LCD displays the main menu, press the ➡button, LCD display


```
Current   out put              4.2

          Output mode:4-20mA>>
          Failure mode:no change>>
          Min current:4mA>>
```

Press OK key


```
Current   out put              4.2

             >>Output mode
               Failure mode
               Min current
```
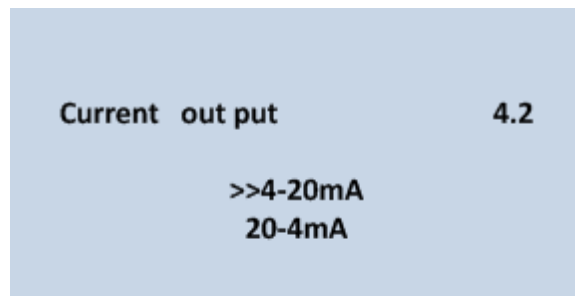
Output mode

Output mode is used to select 4-20mA or 20-4mA output mode. 4-20mA low level corresponds to 4mA,

high level corresponds to 20mA;20-4mA low level corresponds to 20mA, high level corresponds to 4mA. Select menu 4.2 LCD display the current output, press the ➜button, move the arrow to output mode, press the OK key to confirm, display

```
Current  out put              4.2

            >>4-20mA
             20-4mA
```

Failure mode

Press the ➜button, select the desired setting, press the OK key to confirm your choice.

Failure mode is used to select when there is a fault alarm, the output current can not be changed, 20.5mA, 22 <3.8 mA or mA. Select menu 4.2 LCD display the current output, press the ➜button, move the arrow to the mode of failure, press the OK key to confirm, LCD shows

```
Current  out put              4.2

            >>No change
             20.5mA
             22.0mA
             4.0mA
```
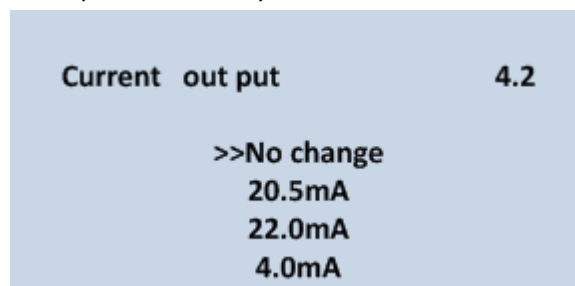
Press the ➜button, select the desired setting, press the OK key to confirm your choice.

Minimum current

Minimum current is used to select the output minimum 4mA or 3.8 mA. Select menu 4.2 LCD display the current output, press the ➜button, move the arrow to minimize the current Office, press OK key to confirm, LCD shows

```
Min Current                   4.2

            >>3.9mA
             4.0mA
```
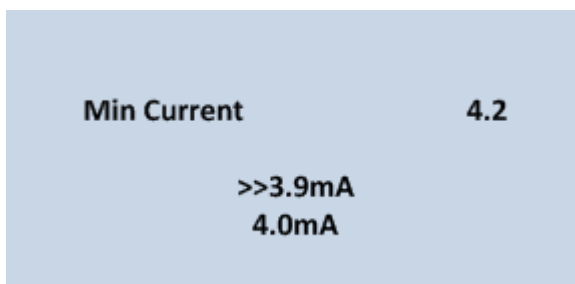
Press the➜button, select the desired setting, press the OK key to confirm your choice.

4.3 Reset

Reset functions far into the instrument parameters reset. There are four reset function: basic settings, factory settings, peak and cumulative flow measurement. Basic settings is the instrument in the basic settings of the parameters to the factory default settings; all factory set the instruments parameters to the factory default settings; diagnosis of measuring peak reduction is zero out of measuring peak total flow reduction is when the meter for open channel flowmeter, zero cumulative flow. When displaying the current output (4.2, menu), press the ➜button, enter the reset function,

```
Reset                          4.3

        Select reset>>
```
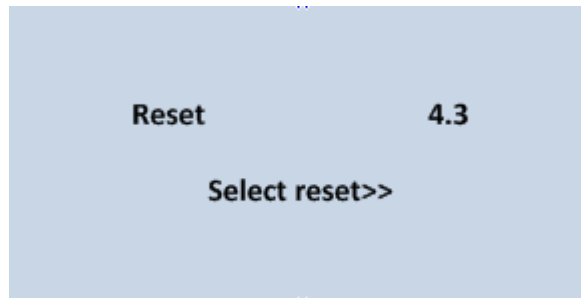
Press the OK key, enter the reset selection menu, you need to select the appropriate reset function reset.
Unit of measurement

4.4 Units of measure available to users using metric or imperial measurement selection. When the LCD display reset menu (menu number 4.3), press the ➜button, enter measurement units settings menu displays

```
Units of measurement                4.4

              M(d)>>
```

Press the OK key, enter the measuring unit selection menu, you need to select the appropriate units of measurement.

4.5 Language

Language available to users in Chinese, English, French, Italy, four language options. When the liquid crystal display measuring unit (4.5, menu), press the ➜button, enter the language settings, display
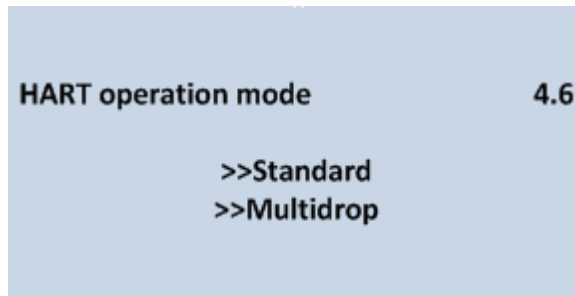
```
Language                    4.5

          English>>
```
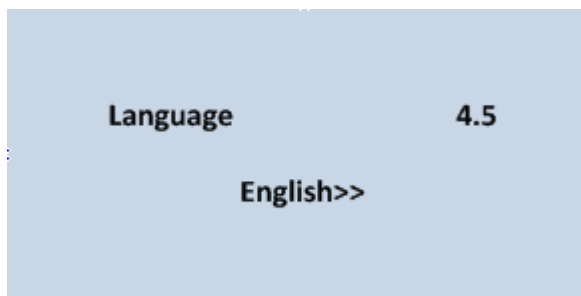
Press the OK key, enter the language selection menu, select the language you want.

4.6 HART working mode

When two or more instruments with HART communication interface to connect to the host computer when needed this feature sets the instrument to multipoint mode. When the liquid crystal display measuring unit (4.5, menu), press the ➜button, enter the HART mode menu, display

```
HART operation mode             4.6

              Standard
              Address o
```
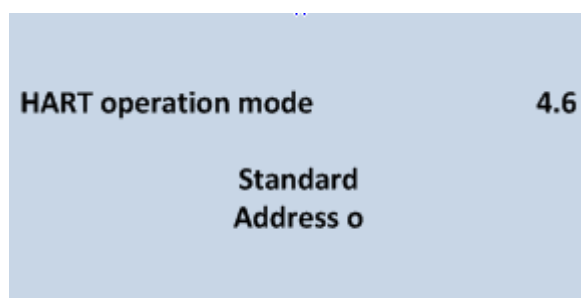
Press the OK key, enter the HART mode Setup interface, LCD display

```
HART operation mode            4.6


            >>Standard
            >>Multidrop
```
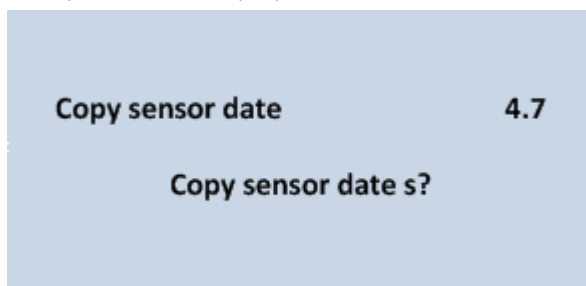
➜Key selection criteria or point mode. When you select the standard mode, this address was specified as 0. when HART mode selected more displays as follows:
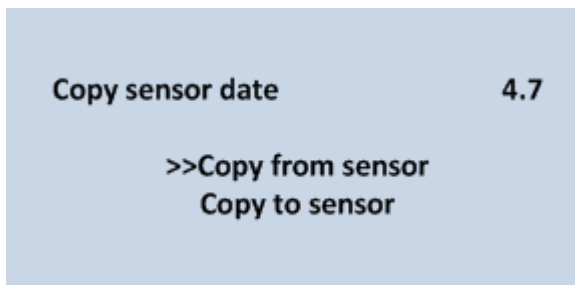
```
HART operation mode            4.6


            Address 0  1
            Current 4mA
```
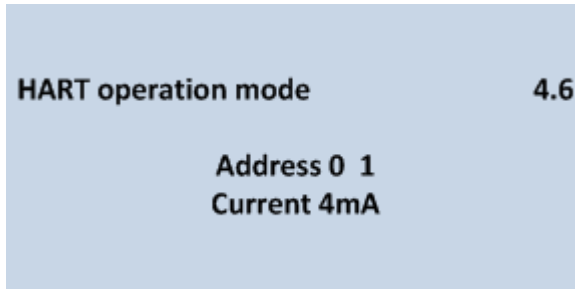
Address changed to 1~15; working current of 4mA and 8mA option, press OK key to confirm

4.7 Copy sensor data

Copy sensor data, there are two submenus: replication and replication from the sensor to the sensor. This feature is used for protection of the instrument parameters. When the technician after instrument parameters are set according to the working environment conditions, you can use the copy function from the sensor to save the parameters established by Save, once the instrument parameters are accidentally modified, copy available to the sensor to recover. When the LCD shows HART mode menu (menu number 4.6), press the ➜button, enter copy sensor data capabilities to display

```
Copy sensor date               4.7


        Copy sensor date s?
```

Press OK key

```
Copy sensor date               4.7


        >>Copy from sensor
        Copy to sensor
```

➜Keys, select the desired menu and press OK to confirm the selection and implementation of the function.

4.8 Password

Passwords used to protect instrument parameters, password feature is enabled, any instrument parameters are entered in the change password once you enter the correct password, password protection feature are limited to cancellation, the instrument parameters can be modified. When the LCD displaying copy sensor data menu, press ➜key, enter the password, display

```
PIN                4.8

       Enables ?
```
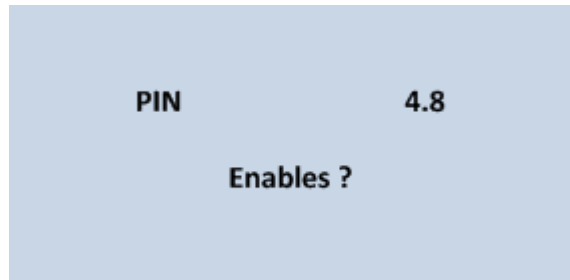
Press OK to enable the password feature and setting the password or no password function

4.9 Distance offset

Distance offset setting is used to modify instrument measurement errors for the actual ceiling height value and display the difference between when the LCD display at 4.8, number menu, press the➜button, enter the distance offset menu settings, display

```
Distance adj          4.9

       +0.000m(d)
```
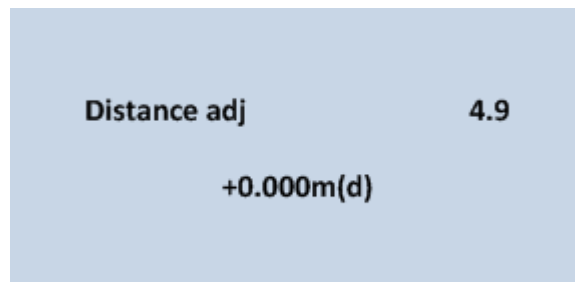
(Note: this requires professionals to operate the menu)

4.10 Threshold setting

Size effective echo threshold, threshold greater requirements effective echo amplitude is stronger, more conducive to eliminating small signal noise interference; but note: If you modify threshold value is greater than the effective return rate, can cause a misunderstanding of the results. The menu includes the echo amplitude threshold and envelope, which echo thresholds the default range for 60mV, default values for the envelope of 10mV.

```
Threshold           4.10

     Echo threshold 60
     Envelope leve 10
```
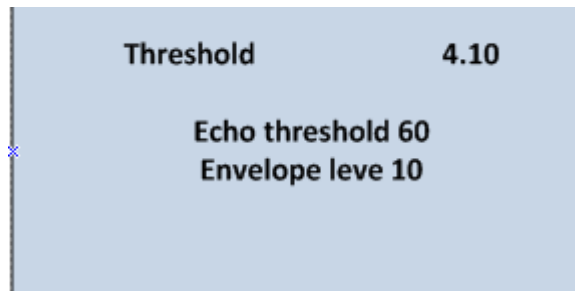
5 Information

Information menu including basic instruments relating to production information such as product serial number, production date, software version, etc. When the LCD display to the main menu, press the ➜button, move the arrow to information, liquid crystal display

```
        Basic setting    5
        Display
        Diagnostics
        Service
        Info
```
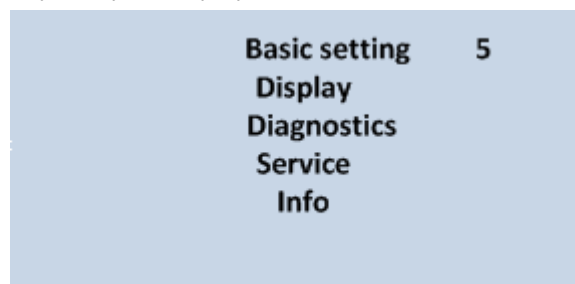
Press OK button to enter the information display, LCD display

Appendix – menu tree (English)