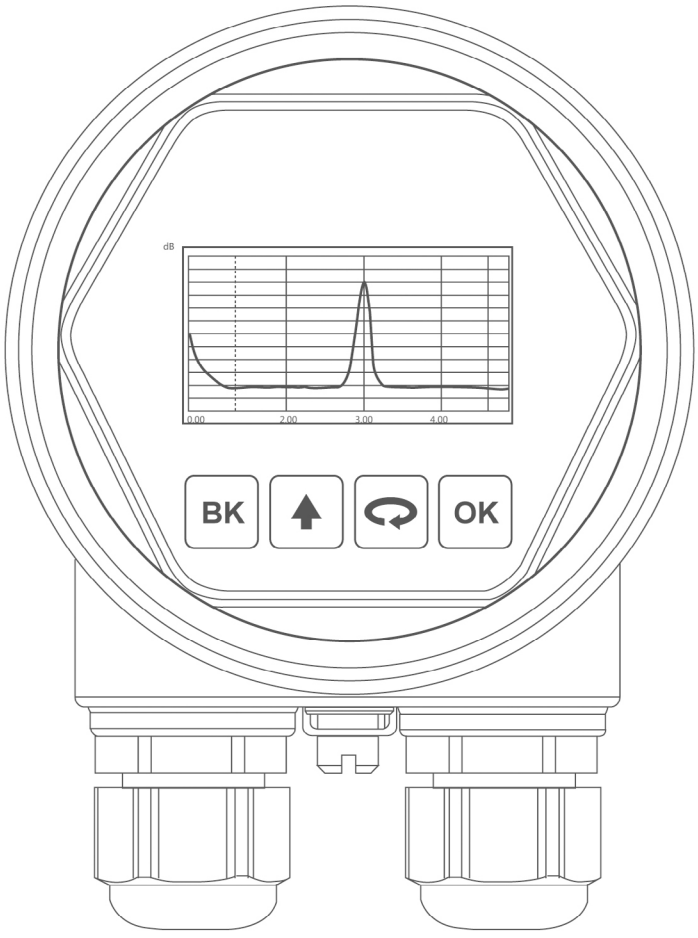
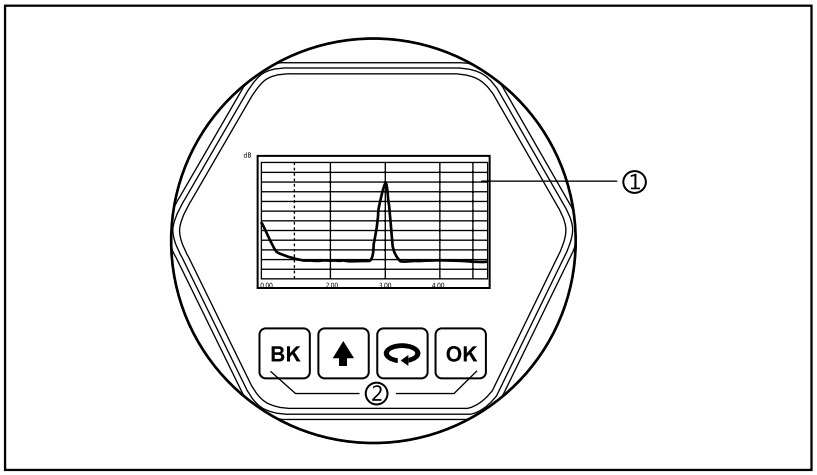
80G FM Radar Level Meter

Commissioning instructions



Key function description:

There are 4 buttons on the instrument panel, through which the instrument can be debugged. The language of the debugging menu is optional. After debugging, the LCD screen displays the measured value, and the measured value can be clearly read through the glass window.



1. LCD display 2. Buttons

Key Functions:

[OK] key

-Enter programming state;
-Confirm programming items;
-Confirm parameter modification.

[▲] key

-Select programming items;
-Modify the parameter value;
-Air-to-air/material-high switching during operation;

[↻] key

-Select programming items;
-Select edit parameter bit;
-Content display of parameter items;

[BK] key

-Exit programming state;
-Return to the previous menu;
-During operation, the measured value/echo waveform is switched.

Programming instructions

We can use the four buttons on the panel to realize the parameter setting, debugging and testing functions of the instrument.

Programming menu structure

The menu structure can be found in the final table. In the figure, the transition to the right horizontal arrow is realized by the [OK] key; the downward arrow transition is realized by the [↻] key; the upward arrow transition is realized by the [▲] key; and the [BK] key realizes the horizontal arrow to the left.

Programming submenu

basic settings	The basic settings include the basic parameters of the instrument: high and low adjustment, range, blind range, material properties, range offset ,current output and track setting.
Display	The display is to set the language, curve range and unit of the instrument.
Advanced settings	Advanced settings includes more specialized content of meter, clutter update, no target set、damp time、 damp coeff.
Service	Services include password, current emulation, current bias, factory Settings restoration, firmware updates.
Information	The information includes the factory date, serial number, and version number of the instrument.

Programming method

When the meter is in the running state, press [OK] to enter the programming state and display the programming main menu. After editing each parameter, you need to confirm with [OK], otherwise the editing is invalid. After finishing editing, press the [BK] to exit the programming state and return to the running state. At any time during programming, you can press [BK] to abandon programming and exit the parameter item programming state.

Optional parameter programming

Character/number parameter programming

When the menu enters the character/number programming state, the first digit of the edited parameter is reversed to black. At this time, you can press [▲] to change the character/number until the desired character/number, press [↻] , the character bit/number Anti-black, you can program other bits. After programming, press **OK** to confirm programming.

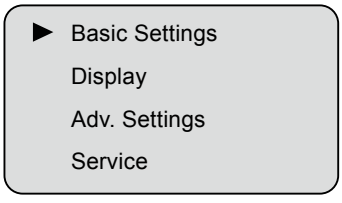
Optional parameter programming

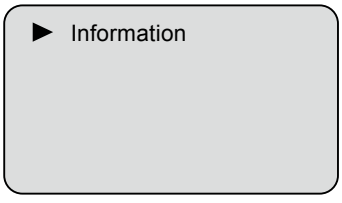
Optional parameters means that there are several selected parameter items for the user to choose. Use the [↻] or [▲] to point the arrow to the desired parameter item, and press the [OK] to confirm the programming.

Programming menu description

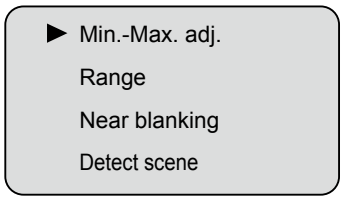
The basic settings include the settings of the main instrument parameters, such as high and low adjustment, range, material properties, blind range, etc. In the running state, press the [OK] button to enter the programming state, the LCD displays the main menu

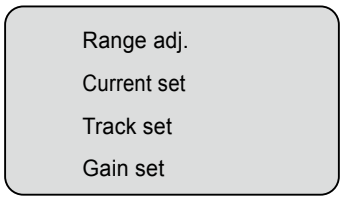
1 Basic Settings





When the arrow points to the basic settings, press [OK] to enter the basic settings submenu

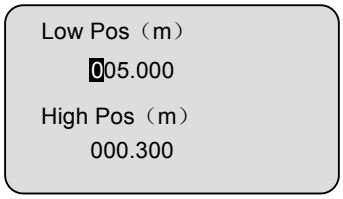




1.1 Min.-Max. adj.

Min -Max adj is used to set the range, which together determine the ratio of the linear correspondence between current outputs.

In the sub-menu of basic settings, when the arrow points to high-low adjustment, press OK key to enter the corresponding value of Min adjustment, the LCD display

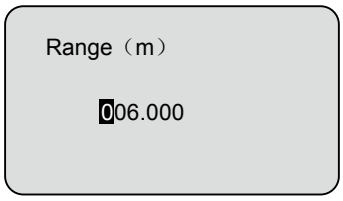


1.2 Range

Refer to the character/digit parameter programming method in the preceding parameter editing method, edit the distance value corresponding to the low level adjustment and the distance value corresponding to the high level adjustment, press OK key to confirm the modification after editing, and press BK key to abandon the programming.

For accurate measurement, it is necessary to set the measuring range.

When the arrow points to high-low adjustment, press ↻ to move to range, press OK to enter range setting menu, the LCD displays

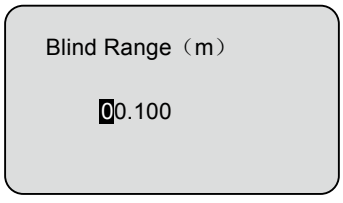


At this time, the cursor is on the first digit field of the parameter, press ↻ key to move the cursor position, press ↑ key to modify the parameter value, press OK key to confirm the modification, press BK key to abandon the programming

1.3 Near blanking

When there is a fixed obstacle near the surface of the sensor that interferes with the measurement, and the maximum material height will not reach the obstacle, the setting function of the near blanking range can be used to avoid measurement errors.

When the arrow points to range, press ↻ to move to blind range, press OK to enter the setting menu, the LCD displays

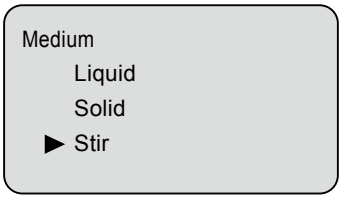


At this time, the cursor is on the first digit field of the parameter, press ↻ key to move the cursor position, press ↑ key to modify the parameter value, press OK key to confirm the modification, press BK key to abandon the programming

1.4 Detect scene

Detect scene menu is used to select solid or liquid or stir, so as to further determine other properties of the material that affect the measurement.

When the arrow points to blind range, press [↻] to move to material properties(cuurent set), press [OK] to enter the setting menu, the LCD displays

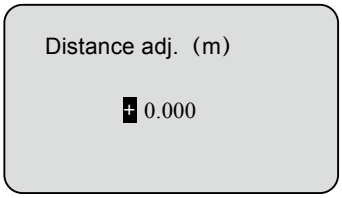


use [↻] and [↑] keys to select the material property as liquid, solid or stir, After editing, press [OK] to confirm.

1.5 Range adj.

Range adj is used to modify the measurement error, and its value is the difference between the actual air height value and the displayed air height value.

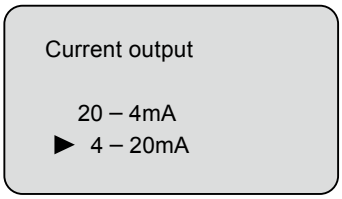
When the arrow points to material properties(Cuurent Set), press [↻] to move to distance offset, press [OK] to enter the setting menu, the LCD displays



At this time, the cursor is on the first digit field of the parameter, press [↻] key to move the cursor position, press [↑] key to modify the parameter value, press [OK] key to confirm the modification, press [BK] key to abandon the programming

1.6 Current set

When the arrow points to range adj, press [↻] to move to Current set, press [OK] to enter current output menu setting, the LCD display

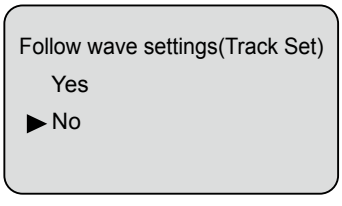


use the [↻] to select, press the [OK] to confirm.

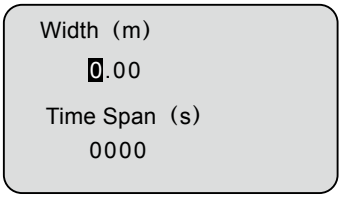
1.7 Track set

Track set is to control the echo tracking by setting the tracking width and holding time. It can be kept for a period of time within the setting range to prevent sudden changes when the radar collects values.

When the arrow points to current output(Detect Secene), press [↻] to move to follow wave settings(Track Set), press [OK] to enter the menu , the LCD display



Press [↻] or [↑] to select Yes or No. When yes, press [OK] to enter tracking width and holding time setting menu, LCD display

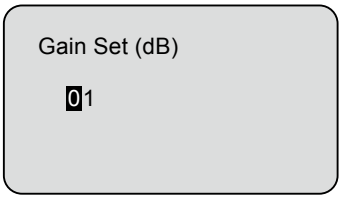


At this time, the cursor is on the first digit field of the parameter, press [↻] key to move the cursor position, press [↑] key to modify the parameter value, press [OK] key to confirm the modification, press [BK] key to abandon the programming

1.8 Gain set

Changing the gain value will change the size of the echo signal, but also the size of the noise. Choose different gain values according to different working conditions to achieve the most stable measurement.gain modification ranges from 1 to 15dB

When the arrow points to the follow wave setting, press [↻] to move the arrow to the gain setting, press [OK] to enter the gain set menu setting, the LCD display

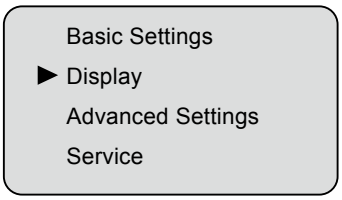


At this time, the cursor is on the first digit field of the parameter, press [↻] key to move the cursor position, press [↑] key to modify the parameter value, press [OK] key to confirm the modification, press [BK] key to abandon the programming

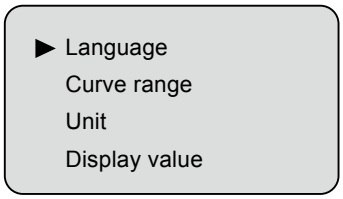
2 Display

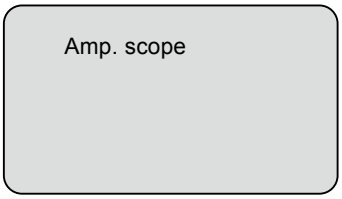
This function is used to program the display mode.

When the LCD displays the main menu, press the [↻] or [↑] to move the arrow to the display options, the LCD displays



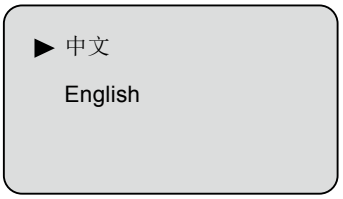
Press [OK] to enter the display menu, LCD display





2.1 Language

This item is used to control the language of the LCD display. When the arrow points to the language, press [OK] to enter the language menu, the LCD display

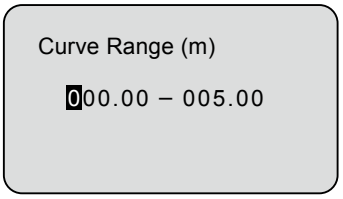


Press [↩] to select the language type, and press [OK] to confirm.

2.2 Curve Range

Curve range is to display the echo curve within the specified range.

When the arrow points to language, press the [↩] to move to curve range, press [OK] to enter the setting menu, the LCD displays



At this time, the cursor is on the first digit field of the parameter, press [↩] key to move the cursor position, press [↑] key to modify the parameter value, press [OK] key to confirm the modification, press [BK] key to abandon the programming

2.3 Unit

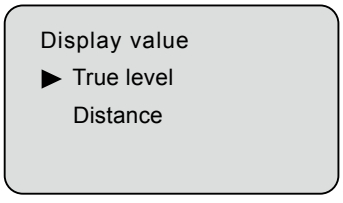
Units are units of distance and bit height. When the arrow points to curve range, press [↩] to move to unit, press [OK] to enter the menu setting, the LCD display

use the [↩] or [↑] to select, press the [OK] to confirm,Press [BK] to give up

2.4 Display value

The display content refers to the distance value or true level value measured by the meter.

When the arrow points to the unit, press the [↩] key to move the arrow to the display content, press the [OK] key to enter the display content menu, the LCD display

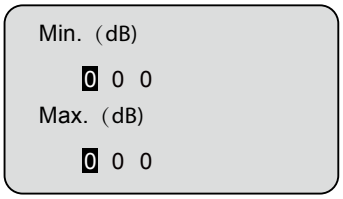


use the [↩] or [↑] to select, press the [OK] to confirm,Press [BK] to give up

2.5 Amp. scope

The advanced Settings menu contains more specialized functions.

When the arrow points to the display content, press the [↪] key to move the arrow to the amplitude range, press the [OK] key to enter the amplitude range menu, and the LCD display

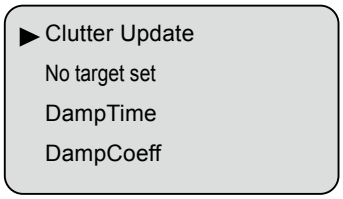


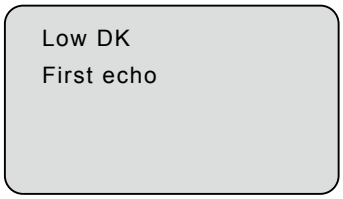
At this time, the cursor is on the first digit field of the parameter, press [↪] key to move the cursor position, press [↑] key to modify the parameter value, press [OK] key to confirm the modification, press [BK] key to abandon the programming

3 Adv. settings

The adv. settings menu contains more professional functions.

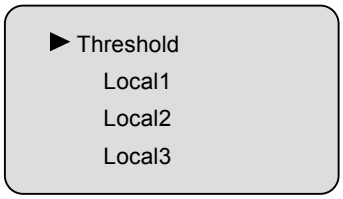
When the LCD displays the main menu, press [↑] or [↪] to move the arrow to adv. settings , press [OK] to enter the advanced setting, the LCD displays





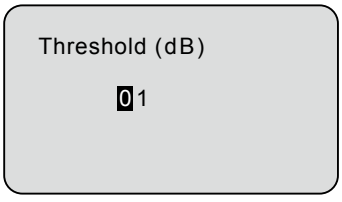
3.1 Clutter Update

When the arrow points to clutter update, Press [↪] to move to clutter update, press [OK] to enter the menu, LCD display



3.1.1 Threshold Setting

Threshold setting is a uniform setting of the detection threshold within the measurement range. When the arrow points to the threshold setting, press [OK] to enter the threshold setting, the LCD display

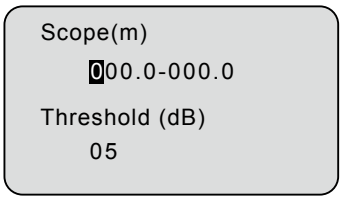


At this time, the cursor is on the first digit field of the parameter, press [↪] key to move the cursor position, press [↑] key to modify the parameter value, press [OK] key to confirm the modification, press [BK] key to abandon the programming

3.1.2 Local Setting

The local setting is to learn the false echoes in the container containing known obstacles within the specified range to eliminate the influence of fixed obstacles on the measurement. A total of three intervals can be set.

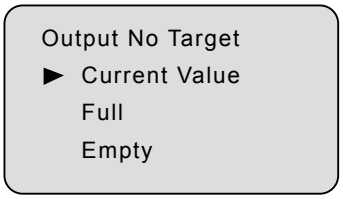
When the arrow points to global reset, press [↻] to select local setting 1, local setting 2, local setting 3, press [OK] to enter the local setting menu, the LCD displays



At this time, the cursor is on the first digit field of the parameter, press [↻] key to move the cursor position, press [↑] key to modify the parameter value, press [OK] key to confirm the modification, press [BK] key to abandon the programming

3.2 No target set

No target setting is the setting of the radar output signal when there is no echo signal. When the arrow points to clutter update, press [↻] to move to no signal output(No Target Set), press [OK] to enter the menu, the LCD display

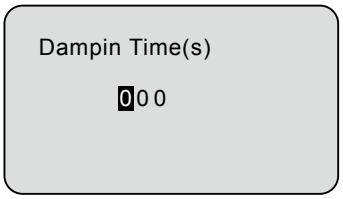


Use the [↻] key or the [↑] key to select no target output value, press the [OK] key to confirm the selection, and press the [BK] key to abort the programming.

3.3 Damping Time

Damping time is set to the speed at which the radar display value and output signal change, ranging from 0-999.

When the arrow points to no targer set , press [↻] to point to damping time, press [OK] to enter the damping time menu, LCD display

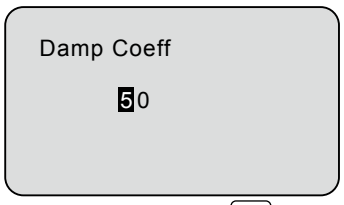


At this time, the cursor is on the first digit field of the parameter, press [↻] key to move the cursor position, press [↑] key to modify the parameter value, press [OK] key to confirm the modification, press [BK] key to abandon the programming

3.4 Damping Coeff

The damping coeff is is used to set the refresh speed of radar echo curve, which can be set in the range of 0-99

When the arrow points to damping time use [↻] points to damping coeff, press [OK] to enter the menu, the LCD display

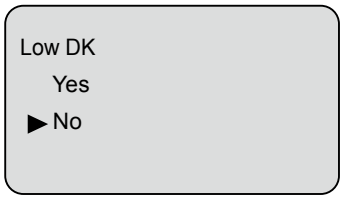


At this time, the cursor is on the first digit field of the parameter, press [↻] key to move the cursor position, press [↑] key to modify the parameter value, press [OK] key to confirm the modification, press [BK] key to abandon the programming

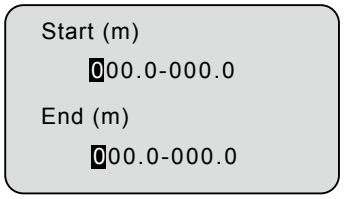
3.5 Low DK

Low DK is aimed at the working condition where the dielectric constant of the tested medium is relatively small. The starting and ending values are set to suppress the tank bottom signal generated by radar penetration within this range.

When the arrow points to damping coeff use [↻] points to low DK, press [OK] to enter the menu, the LCD display



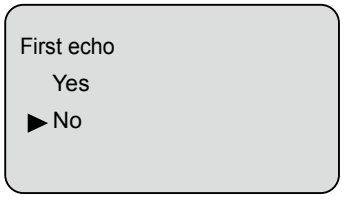
You can use the [↻] key or [↑] key to select whether to set low DK. If yes, press [OK] to enter the start value and end value Settings. The LCD displays



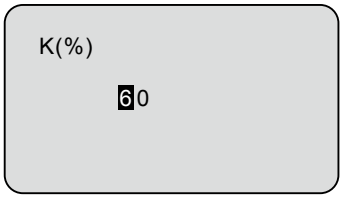
At this time, the cursor is on the first digit field of the parameter, press [↻] key to move the cursor position, press [↑] key to modify the parameter value, press [OK] key to confirm the modification, press [BK] key to abandon the programming

3.6 First Echo

First echo is used to collect front-end signals more stablly by setting K% value. It is generally used in conditions that are easy to generate multiple echoes. When the arrow points to low DK, press [↻] key. Arrow moves to first echo, press [OK] key to enter first echo menu, LCD display



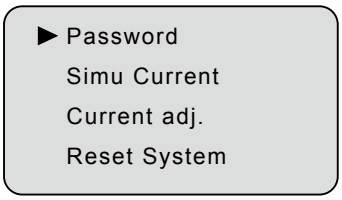
You can use the [↻] key or [▲] key to select whether to set first echo. If yes, press [OK] to enter the K(%) Settings. The LCD displays

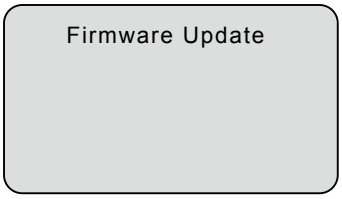


At this time, the cursor is on the first digit field of the parameter, press [↻] key to move the cursor position, press [▲] key to modify the parameter value, press [OK] key to confirm the modification, press [BK] key to abandon the programming

4 Service

The service menu contains five options: password, current simulation, current bias, factory setting restoration, and firmware update. When the LCD displays the main menu, press [↻] or [▲] to move to service, press [OK] to enter the menu, the LCD displays

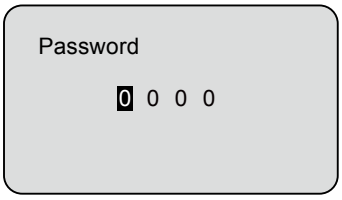




4.1 Password

When modifying the current bias or firmware update, you need to enter the correct password to enter.

When the arrow points to password, press [OK] to enter the password menu, the LCD displays

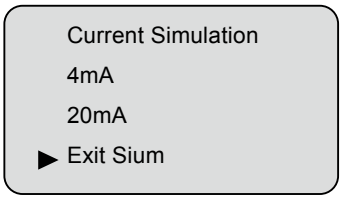


At this time, the cursor is on the first digit field of the parameter, press [↻] key to move the cursor position, press [▲] key to modify the parameter value, press [OK] key to confirm the modification, press [BK] key to abandon the programming

4.2 Current Simulation

Current simulation is the simulation output of 4mA and 20mA, which is used to verify whether the current output function of the instrument is normal, and can also be used for system debugging. When the radar works normally, the current simulation option is no.

When the arrow points to current simulation, press [OK] to enter the menu, the LCD displays

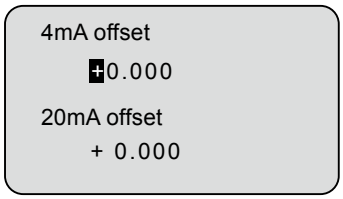


Use the [↻] key or the [▲] key to select the current value to be simulated, press the [OK] key to confirm the selection, and press the [BK] key to abandon the programming.

4.3 Current Offset

The current offset is to set the bias for the output current of 4mA and 20mA. This function requires the verification password.

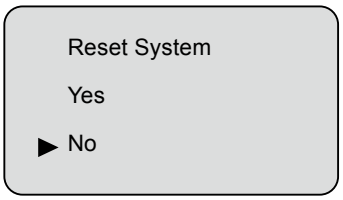
When the arrow points to current simulation, select current bias with [↻] , enter the correct password, and press [OK] to enter the current offset menu, you can modify the output 4mA and 20mA current.



4.4 Reset System

To restore factory Settings is to reset all contents in basic Settings, display units and amplitude ranges, and all contents in advanced Settings

When arrow points to the current offset, press [↻] to move to reset system, press [OK] to enter the menu, the LCD display



Press [↻] or [▲] to select whether to restore the factory settings, and press [OK] to confirm.

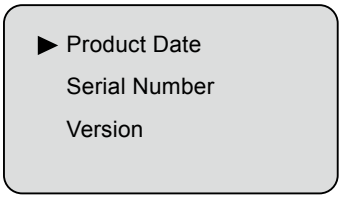
4.5 Firmware Update

Firmware update is used for professional engineers to update the firmware of the radar, which can be ignored in normal use.

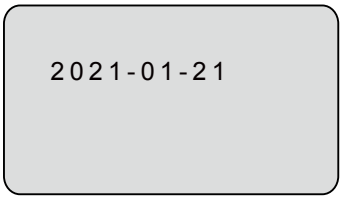
5 Information

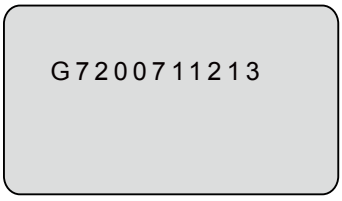
The information is to check some basic information of the radar when it leaves the factory, including the factory date, serial number and version number.

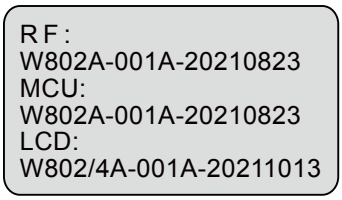
When the LCD displays the main menu, use ↑ and ↻ to select information item, and press OK to enter tne menu, LCD display



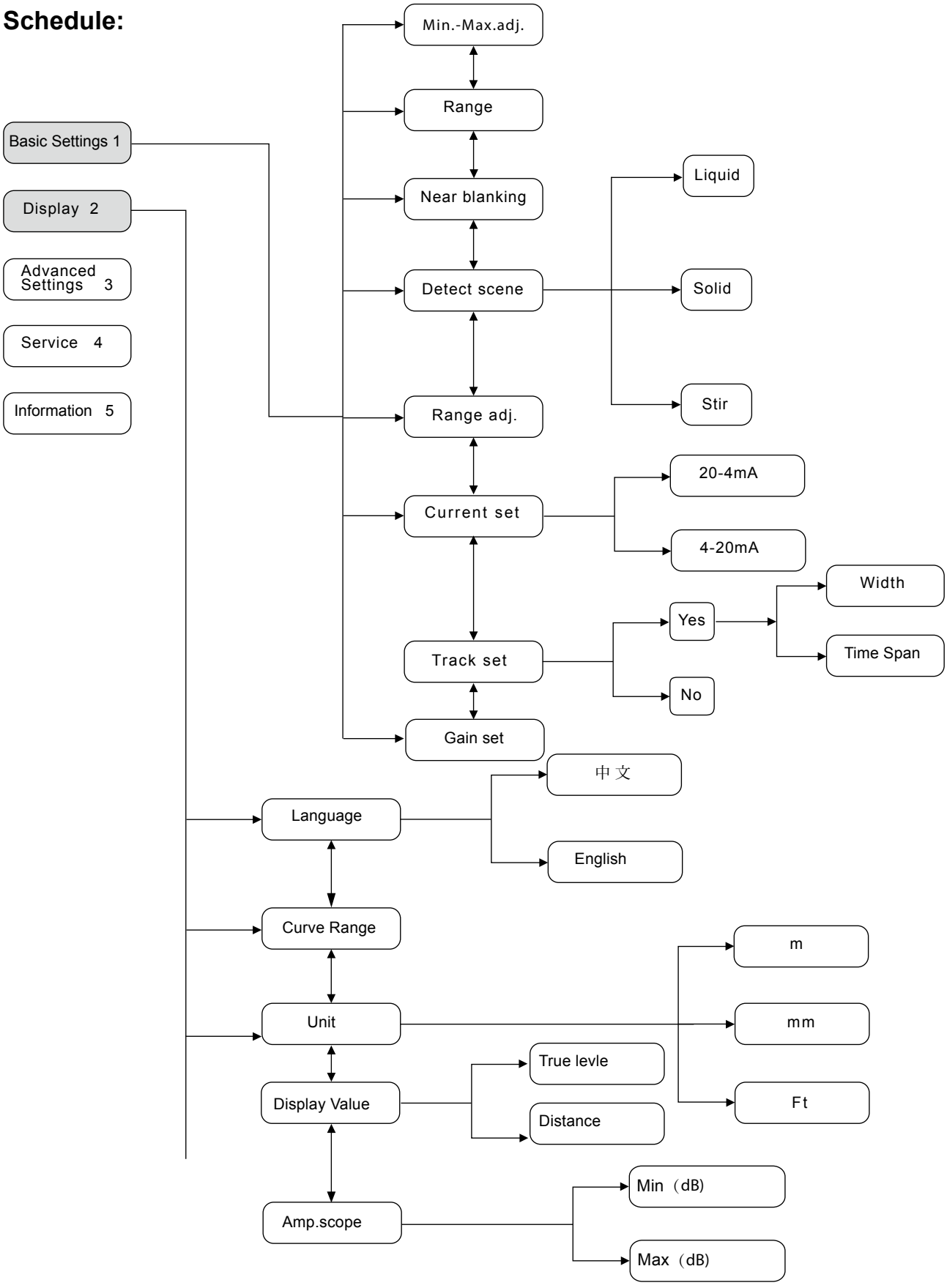
Use ↻ to move the arrow to product date, serial number, and version , and then press OK to view.

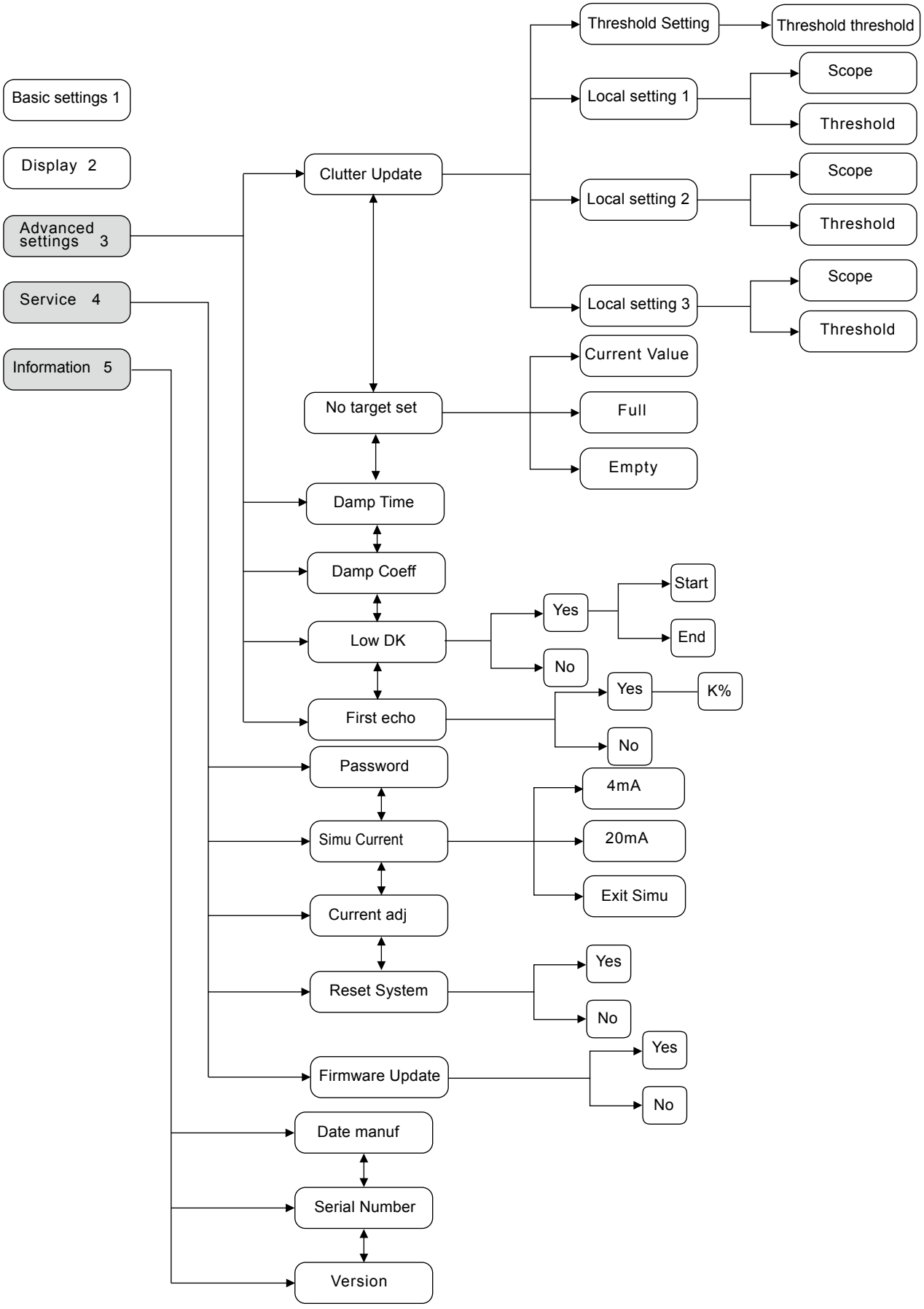


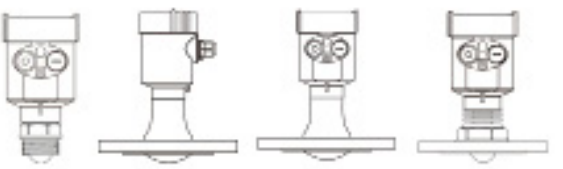




Schedule:


Basic Settings 1
Display 2
Advanced Settings 3
Service 4
Information 5
Min.-Max.adj.
Range
Near blanking
Detect scene
Range adj.
Current set
Track set
Gain set
Liquid
Solid
Stir
20-4mA
4-20mA
Yes
No
Width
Time Span
Language
中文
English
Curve Range
Unit
m
mm
Ft
Display Value
True levle
Distance
Amp.scope
Min（dB)
Max（dB)


Basic settings 1
Display 2
Advanced settings 3
Service 4
Information 5
Clutter Update
No target set
Damp Time
Damp Coeff
Low DK
First echo
Password
Simu Current
Current adj
Reset System
Firmware Update
Date manuf
Serial Number
Version
Threshold Setting
Threshold threshold
Local setting 1
Scope
Threshold
Local setting 2
Scope
Threshold
Local setting 3
Scope
Threshold
Current Value
Full
Empty
Yes
Start
End
No
Yes
K%
No
4mA
20mA
Exit Simu
Yes
No
Yes
No



80G FM Radar Level Meter
Commissioning Instructions