CONTENTS

CHAPTER Ⅰ Introduction

Thank you for using DS475 Field Communicator, Communicator for the HART Communication protocol smart transmitter operation, and HART275, HART375,HART475 compatible with excellent compatibility, communication 1151,3051,EJA, ABB and flow aspects of the HART protocol imported instruments. Completely and yung made a variety of smart transmitters.

The manual describes the basic use of field communication device, connection and operation in Content as well as troubleshooting and in the course should pay attention.

Field Communicator using the DS475, please read the manual, In order to better play to the best performance of the product in use or maintenance of the product Before understanding of the appropriate content.

Should the equipment needs repair, please contact our company. We will do our best to for you.

The device is equipped with:
a manual operator
Battery a
Pack a
A charger
A communication cable
Manual a
A 250 ohm resistor

CHAPTER Ⅱ Basic use

2.1 Field communicator basic performance and functions

Field Communicator

2.2 Power Considerations

In turn, ensure the following:

* The Field Communicator is no mechanical damage
* Battery is fully charged.
* The Field Communicator to connect to the circuit (Figure 2-2)
* String loop resistance of 250 ohms

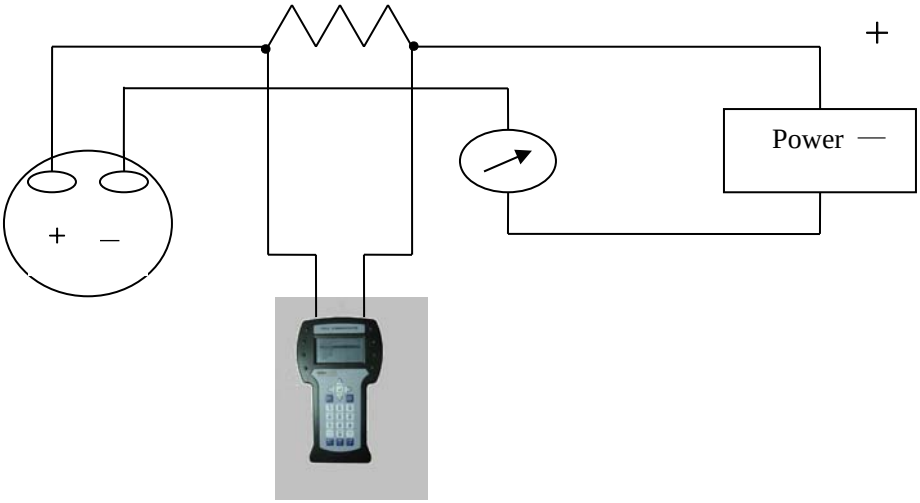


Figure 2-2

Start Field Communicator

Before starting to ensure that the device is fully charged. Start holding down the power key until To the bright LCD screen, a successful boot.

Close

Such as to close the Field Communicator, hold the key to open up their show off, shutdown complete.

2.3 Key areas of use and instructions

Open key 

The key is used to enable or disable the Field Communicator.

Arrow navigation keys

Four navigation arrow keys provide menu options.

Press  the right arrow navigation key to enter a menu of specific options. Press  Left navigation key to return to the previous menu,   up and down navigation keys can be cut down in the menu Change. In the character input mode digital  down navigation keys can be used as a backspace key.

Enter 

After entering the menu, you can modify the contents of the LCD's bottom Line will automatically display the "Edit" to modify the words For you press the Enter key, the change was successful.

Alphanumeric keyboard

Character numeric keypad to enter characters, numbers and other symbols, numbers, and he has Characters in both input modes, field communication device according to the need to select the appropriate input mode.To enter numbers, press the number directly to where the keys to enter characters, according to the word Character position on the keyboard, first press    A key, then press the character key is located. For example, to enter the character "A", the first

Press  the left selection key, then press the number 1 character keyboard. 

PV key

Monitoring real-time variable shortcuts, view real-time pressure, current, percentage, Temperature, frequency and other real-time variable. Digital input mode, the character, the key is invalid.

CHAPTER Ⅲ menu online operation

3.1 Detection menu

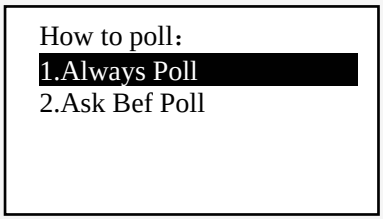


Figure 3-1

3.1.1 Polling Detection

Select the menu, Field Communicator polling numbers from the polling numbers from 0 to 15 followed by detection equipment, if detected, the device will automatically detect the transmitter and the station number(Figure 3-1-1), press the right navigation key to enter the device type selection menu (Figure

3-1-2); if not Have detected the device does not detect the transmitter will appear warning.

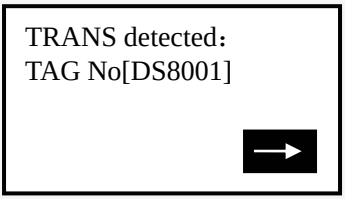


Figure 3-1-1

3.1.2 Detection by poll numbers

Specified number of polling devices to detect, according to the up and down navigation keys Choose between 0 to 15 polling numbers, then press the right navigation key to start the test (test results If the same as Figure 3-1-1).

3.1.3 Select Device Type

1. Pressure Transmitter
2 electromagnetic flowmeter
3. Vortex Flowmeter
4. Target Flowmeter / float level gauge
5. Turn meter gold
6 General menu

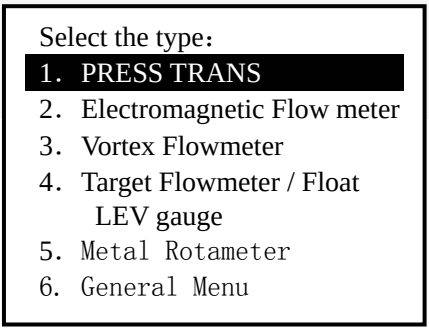


Figure 3-1-2

When choosing the type of equipment must be selected according to the type of field device into a specific menu, if you select the type does not match the actual type, will cause an error. If the site becomes non-pressure equipment, electromagnetic, vortex, target-style, gold transfer device is connected into the general menu. Press  the down navigation key to select the device type, then press  the right navigation key to enter the selected device type detection, and enter the corresponding menu, if you select the type does not match with the test will be prompted.

3.2 Pressure Transmitter Main Menu

Submenu

1 Process Variable
2 Configuration and testing
3 Characterization
4 Calibration
5 Display Modes
6 common format

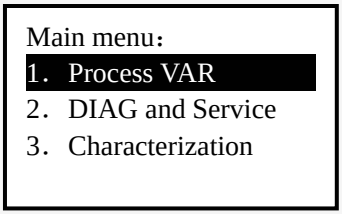


Figure 3-2-1

3.2.1 Process Variable

Real-time display of pressure transmitter, the percentage of current, temperature and other parameters (Figure 3-2-2). Press the left navigation button for 3 seconds before the bounce out of real-time variable monitoring model.

PRESS	–0.258	Kpa
AO	4.820	mA
PC	5.127	%
TEMP	19.570	℃

Figure 3-2-2

3.2.2 Configuration and Testing

Submenu:
1. Equipment Testing
2. Loop test
3. Basic Settings
4. User range

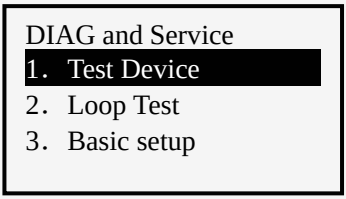


Figure 3-2-3

3.2.2.1 Test equipment

Testing equipment status, if everything is normal, liquid crystal display "device normal", if wrong, will be a warning.

3.2.2.2 Loop Test

Detection of the D / A current output. First, a series ammeter in the circuit, and then type a 4-20mA current between the values into the transmitter, the transmitter will automatically output the current value type, if the type of value and ammeter display values are not equal, current fine-tuning to be done.

3.2.2.3 Basic Settings

Submenu:
1. Unit
2. Write Protect
3. Damp
4. Output
5. Device Information
6. Polling numbers

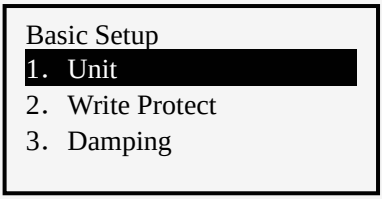


Figure 3-2-4

Unit

Change the primary variable units and display units. Provide MPa, Kpa, Pa, InH2O, InHg, psi, g / cm ², kg / cm ², FtH2O, torr,

ATM, mmH2O, mmHg, Bar, mBar these 15 units. When the unit of measure on behalf of the Not recognize the number will automatically display "No" means that the unit "unknow". Repair Change methods, see the menu tree.

Write Protect

Read-write device protection status, when the write-protected, the transmitter can not change the internal data.

Damp

Read-write device damping coefficient (rounded to three decimal places). Seconds.

Output

Read-write device output. Divided into linear, square root, and the unknown. The default is linear.

Device Information

Read and write tag number, date, descriptor, message, final assembly number

Polling numbers

3.2.2.4 User range

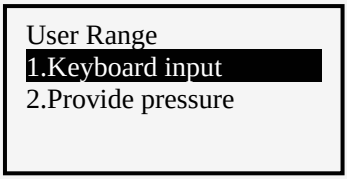


Figure 3-2-5

Keyboard input

Select this menu, the first prompt sensor range, then enter

the range of the setup menu, press the down navigation key to select zero or range, then enter the user needs to set the value (rounded to three decimal places), then press the right navigation key into the transmitter.

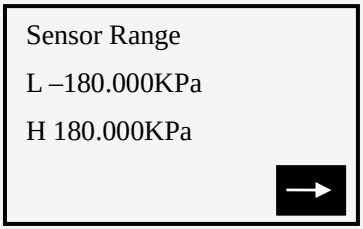


Figure 3-2-6

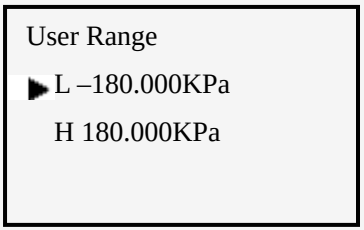


Figure 3-2-7

Provide pressure values

Pressure on the current value with the transmitter zero and span settings, press the up and down navigation keys, press the right navigation key to confirm.

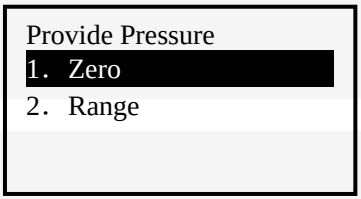


Figure 3-2-8

3.2.3 Characterization

Submenu:

1 .Sensor trim
2. Sensor measuring range
3 user range
4.K coefficient
5 Formatting
6 small-signal removal
7 Device Address
8. Data Backup

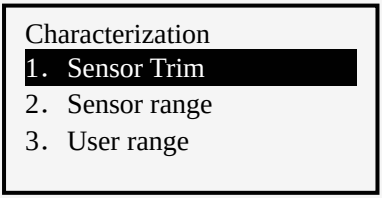


Figure 3-2-9

9. Data Recovery

The menu will seriously affect the operation of the transmitter to work and accuracy, so enter this menu, you need to enter the authentication password (Figure 3-2-10).

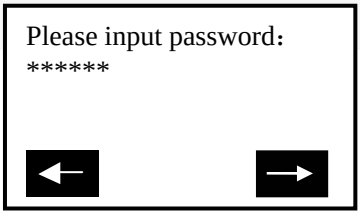


Figure 3-2-10

The default password is: 666666

3.2.3.1 Sensor trim

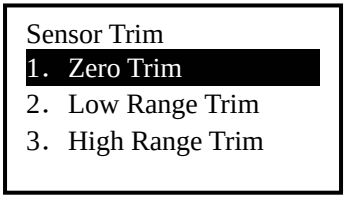


Figure 3-2-11

Zero trim

After the pressure transmitter with 0 to select this operation, the transmitter automatically adjust zero.

Low fine-tuning

To increase low-pressure transmitter (in KPa), type the applied pressure values (rounded to three decimal places), the transmitter automatically corrected, so that the output value of the applied pressure.

High-end fine-tuning

To the transmitter plus high pressure (in KPa), type the applied pressure values (rounded to three decimal places), the transmitter automatically corrected, so that the output value of the applied pressure.

3.2.3.2 Sensor Range

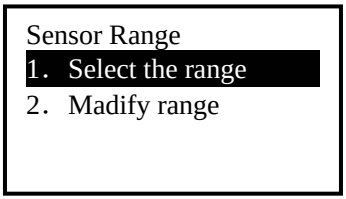


Figure 3-2-12

Select the range

First select the type of sensor, and then select the range of the sensor code, then press the Enter key into the transmitter. (Figure 3-2-13,3-2-14)

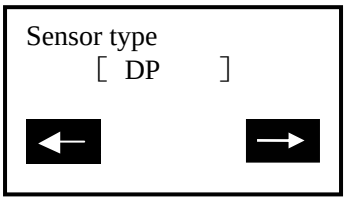


Figure 3-2-13

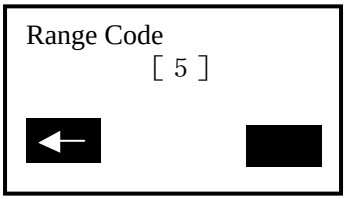


Figure 3-2-14

Modify Range

First select the range sensor code, then enter the code in the range of the scale. Note: The input pressure is measured in Pa, can only enter a positive integer. Change and then select the sensor range.

3.2.3.3 User range

Keyboard input

Select this menu, the first prompt sensor range, then enter the range of the setup menu, press the up and down navigation key to select zero or range, then enter the user needs to set the value (rounded to three decimal places), enter and press the right navigation key to send into the transmitter.

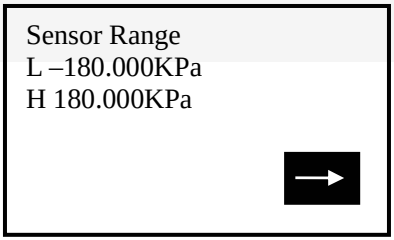


Figure 3-2-15

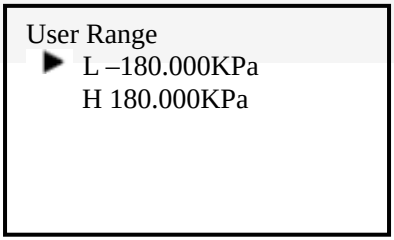


Figure 3-2-16

Provide pressure values

Pressure on the current value with the transmitter zero and span settings, press the up and down navigation keys, press the right navigation key to confirm.

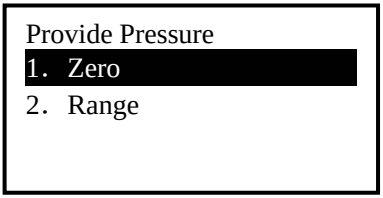


Figure3-2-17

3.2.3.4 K factor

Low-end need to be done, do high-end.

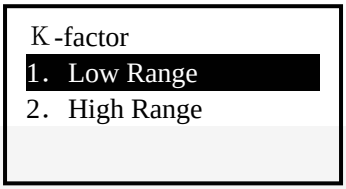


Figure 3-2-18

Low Range

Add 0 to the pressure transmitter, type 0 in the increase of pressure, press the right navigation key into the transmitter, the transmitter automatically adjust the k-factor low.

High Range

Added to the positive terminal of a pressure transmitter (close to or equal to the physical range), the pressure increases the pressure must be greater than 0, type in the increase of pressure values (rounded to three decimal places, units KPa), press the right navigation key into the transmitter device, the transmitter automatically adjusts the k-factor high.
Note: K factors must be operated in positive pressure conditions, and the input unit KPa.

3.2.3.5 Format

Full-scale format

Note: This action will seriously affect the accuracy of the transmitter, the user is best not to make their own format.

How-to: give added pressure transmitter (pressure points must be positive from the negative pressure up to maximum pressure), then enter the applied pressure (Figure 3-2-19, note: do the negative pressure side formatting , the input pressure to a minus sign in front.), then press » the right navigation key to format it, after a successful return to the next point format, an

unsuccessful return warning.

Figure 3-2-19

Interpolation

After the ultra-poor calibration point format.

Note: This action will seriously affect the accuracy of the transmitter, the user is best not to make their own format.

How-to: give added pressure transmitter, and then enter the increase of pressure. (Note: do the formatting in the negative pressure side, the input pressure to a minus sign in front). Press the right navigation key, the interpolation done at this time point measured the pressure should be basically equal to the applied pressure.

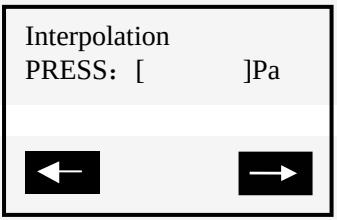


Figure 3-2-20

3.2.3.6 Small-signal removal

This function is to eliminate the zero drift. Enter the number of users than the extreme range.

3.2.3.7 Device address

View a device's address. Device address is the unique identification number the smart board.

3.2.3.8 Data Backup

Data backup: the value of the current user scale and format all the data back to FLASH the database, this function is to facilitate data recovery after a mistake. Click the menu "Backup" button

3.2.3.9 Data Recovery

Data Recovery: The instrument factory, manufacturers have the formatting operation on the instrument, and the correct data formatted to do a backup, misuse of the instrument when the user does not work, you can use the "Data Recovery" function of its error Content removal operation, and re-manufacturers will re-initialize the backup data is written instrument, easy instrument to restore the original data. Click the menu "Data Recovery" button.

3.2.4 Calibration

Submenu
1 Sensor trim
2 Output Trim

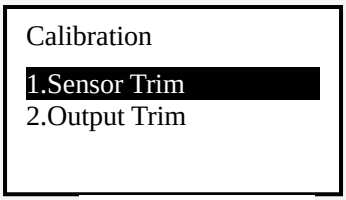


Figure 3-2-21

3.2.4.1 Sensor trim

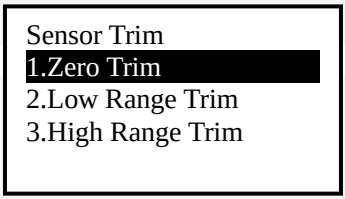


Figure 3-2-22

Zero trim

After the pressure transmitter with ∪ to select this operation, the transmitter automatically adjust zero.

Low fine-tuning

To increase low-pressure transmitter (in KPa), type the applied pressure values (rounded to three decimal places), the transmitter automatically corrected, so that the output value of the applied pressure.

High-end fine-tuning

To the transmitter plus high pressure (in KPa), type the applied pressure values (rounded to three decimal places), the transmitter automatically corrected, so that the output value of the applied pressure.

3.2.4.2 Output Trim

Output fine-tuning needs to be a precision ammeter in series to the circuit, into the fine-tuning, the LCD will prompt access ammeter, the current fine-tuning exit, the LCD will prompt recovery circuit.

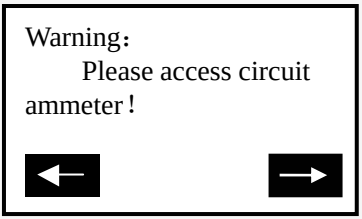


Figure 3-2-23

4mA current fine-tuning

Choose 4mA current fine-tuning, the output should be 4.000mA, if the ammeter shows the value is not equal to 4.000mA, select "No", an input box, type the ammeter shows the input box value (rounded to three decimal places), then press right navigation key to enter the current value into the transmitter, the transmitter will automatically calibrate the current output, the output of 4.000mA, if a less than satisfactory results, repeat this operation.(Note: The meter accuracy should be higher than the output precision of the table)

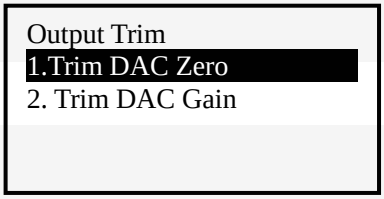


Figure 3-2-24

20mA current fine-tuning

4mA current methods of operation and fine-tuning the same.

3.2.5 Display Mode

1.%

Select this mode, the transmitter displays the percentage.

2.USER SET

Select this mode, the transmitter displays the user settings.

3.USER SET &%

Select this mode, the transmitter displays the percentage of user settings and are displayed alternately every 4S.

4.INPUT PRESS

Select this mode, the transmitter only the input pressure.

5.INPUT PRESS &%

Select this mode, the transmitter displays the percentage of input pressure and alternating every 4S.

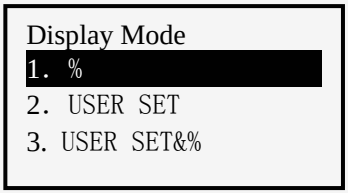


Figure 3-2-25

3.2.6 General Formatting
General Format: (known as three, five-point format)

This menu requires a password to enter the default password is 666666.

(1) Select the instrument type and range of code to determine the instrument's physical range.

(2) in the common format into the format, the original plate for 1151 current 22mA, the order of the physical range of 0%, 60%, 100% three-point format, or 0%, 60%, 100%, -60%, 100% five-point format. Communication device according to the first line shows the calculation of the percentage range of physical pressure, the pressure and the input Fill pressure (in Pa), right-click until the pressure stabilized first sent.

(3) operation is successful, display the percentage of the next point, to continue or exit.
Operation failed (such as the pressure increases the pressure and display the corresponding percentage difference too large to return to this point redo. Done 100% in three-point format according to exit after completion of five-point format at 100% done automatically exit. withdrawal of current from 22mA into a measurement of current.

3.3 Electromagnetic Flowmeter Main Menu
See photos

3.4 Vortex Flowmeter
See photos

3.5 Target Flowmeter / float level gauge
See photos

3.6 meter gold transfer
See photos

3.7 Common main menu

See photos

Remarks:

The handheld contains vortex flowmeter, the target flowmeter, flow meter gold turn, Common menu and menu operation is similar to the electromagnetic flow meter, this is not setting them in, with Please refer to the distribution of body attached page menu menu tree operation.

CHAPTER Ⅳ Troubleshooting

4.1 Introduction and troubleshooting faults

It does not really start

If in the course can not be switched, that can not start the Field Communicator, First check the battery. Should the battery power is still not start, there may be on-site Communication device to open the key is damaged. (Note: Please do not use the process of firm Hard thing to touch the buttons Field Communicator film to avoid damage.)

Communication or communications are not interrupted

If there is no communication on the first check HART field device loop and voltage. Almost all field devices have at least 4mA and 12VDC to Victoria maintain normal operation.

Check the loop impedance, to see whether the access loop 250 ohm external Impedance. Access to 250 ohm resistors, will lead 250 ohm resistor at both ends of the access. And then view the communication is normal.

Check the terminal and HART communications cable is damaged.

HART communication by the control system interference. At this point stop control system HART communication, recognition and communication between the field device communication.

4.2 Tips interface

Low battery warning

When the battery voltage is low, top right of the LCD display will flash a battery-shaped pattern.

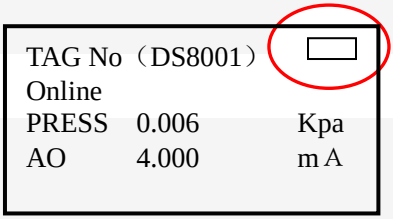


Figure 4-2-1

Communication Failure Warning

When the Field Communicator to the transmitter with the communication failure warning (Figure 4-2-2).

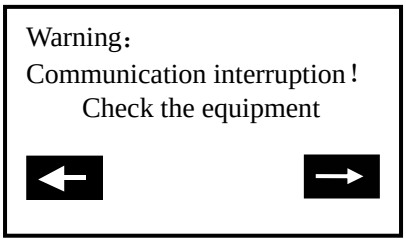


Figure 4-2-2

Date Input Error

Allows you to enter a date range January 1, 1900 to December 31, 2155, when the input is not in the range of dates, enter the error message will appear (Figure 4-2-3), note the date input format xxxx xx xx day in May.

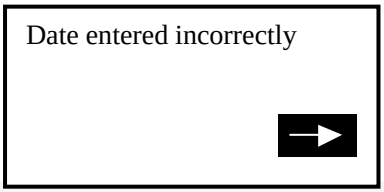


Figure 4-2-3

Data entry errors

When the input parameter is incorrect when the prompt appears, such as the removal of only a small signal input is an integer, if you enter a negative number, an error message will appear (Figure 4-2-4).

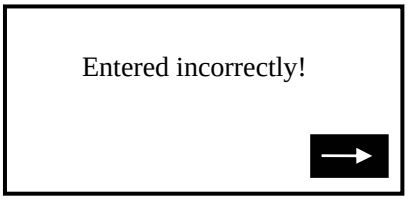


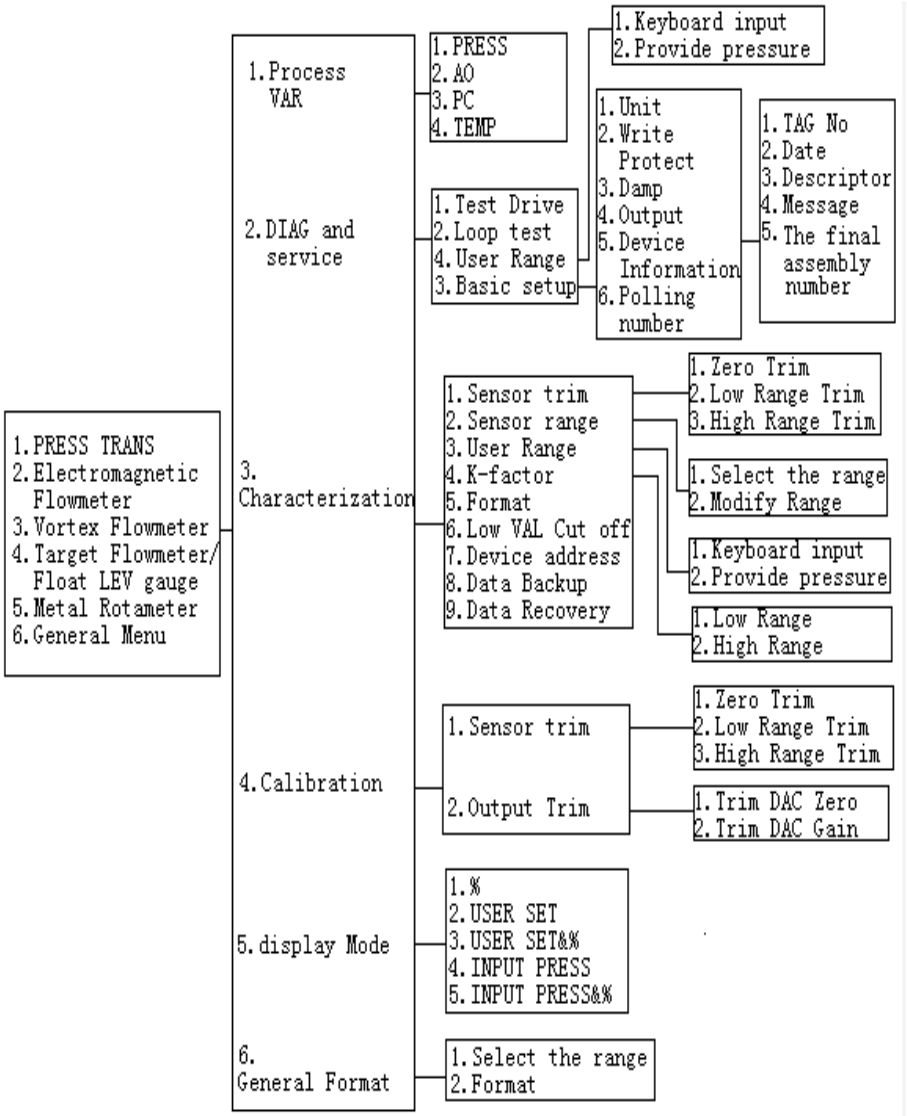
Figure 4-2-4

Appendix I: General menu list of unit types

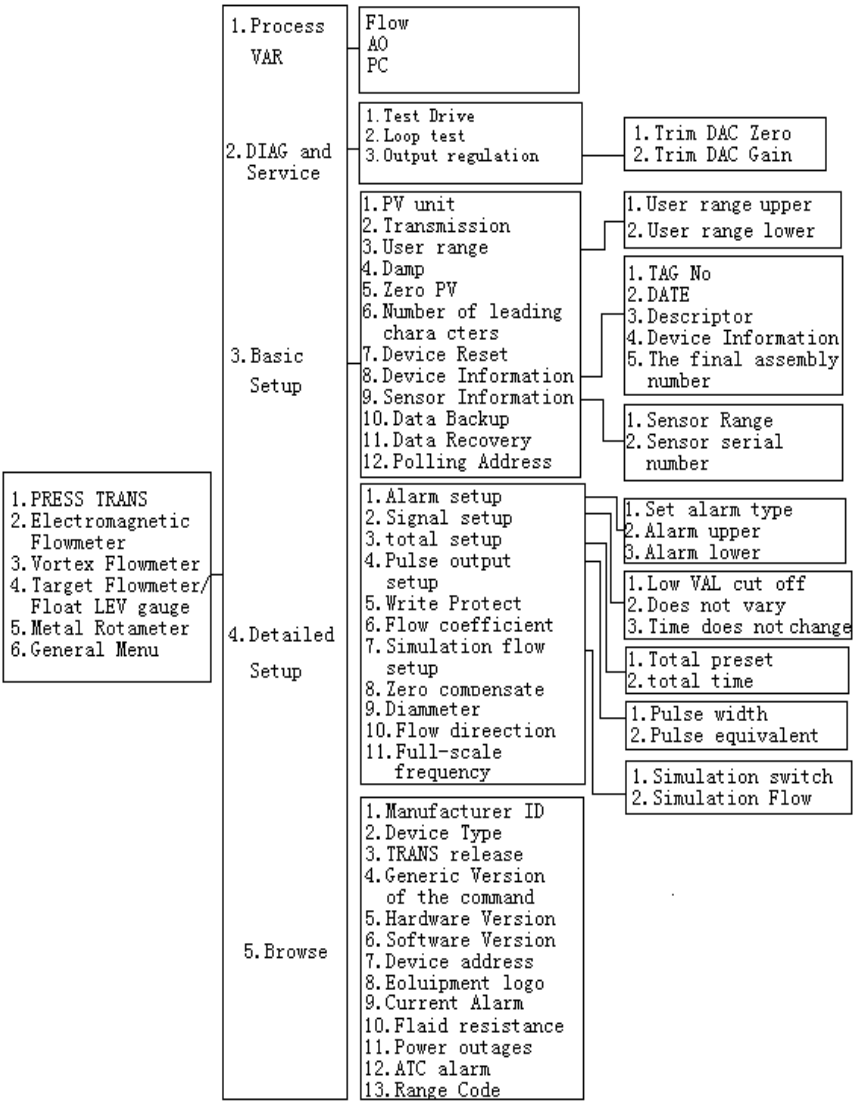
No.	Unit	No.	Unit	No.	Unit	No.	Unit
1	InH2O	2	InHg	3	mmH2O	4	mmHg
5	psi	6	bar	7	mbar	8	g/cm2
9	kg/cm2	10	Pa	11	kPa	12	torr
13	ATM	14	L/min	15	m3/h	16	m/s
17	L/S	18	m3/s	19	℃	20	mv
21	Ω	22	Hz	23	mA	24	L
25	m3	26	m	27	cm	28	mm
29	min	30	s	31	h	32	%
33	v	34	pH	35	kg	36	MT
37	lb	38	ST	39	LT	40	g/s
41	g/min	42	g/h	43	kg/s	44	kg/min
45	kg/h	46	MT/min	47	MT/h	48	lb/s
49	lb/min	50	lb/ h	51	ST/min	52	ST/h
53	LT/h	54	g/cm3	55	kg/m3	56	g/ml
57	kg/l	58	g/l	59	m/h	60	m3/min
61	L/h	62	Nm3/h	63	Nm3/min	64	KJ/h
65	KJ	66	MJ/h	67	MJ	68	GJ/h
69	GJ	70	MPa	71	None	72	No

Appendix II: various types of equipment menu tree

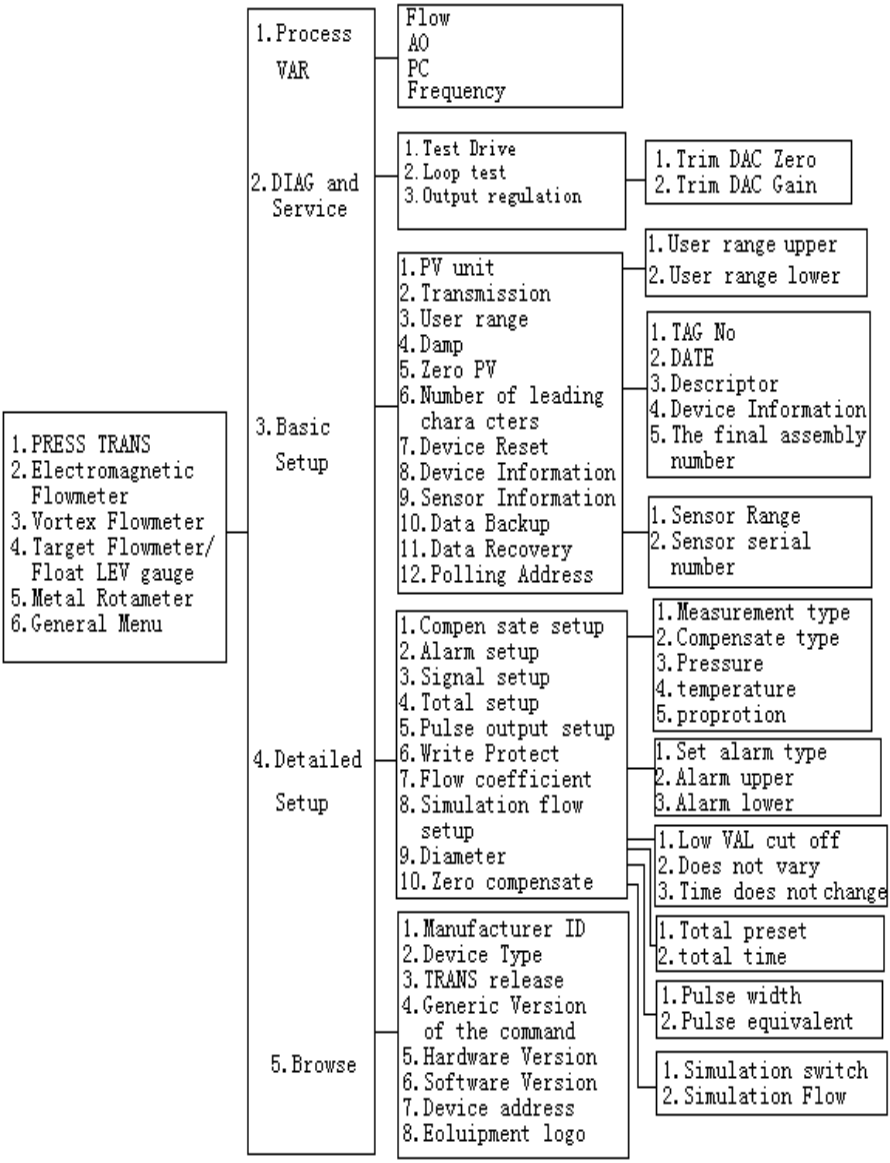
Pressure Transmitter menu tree:



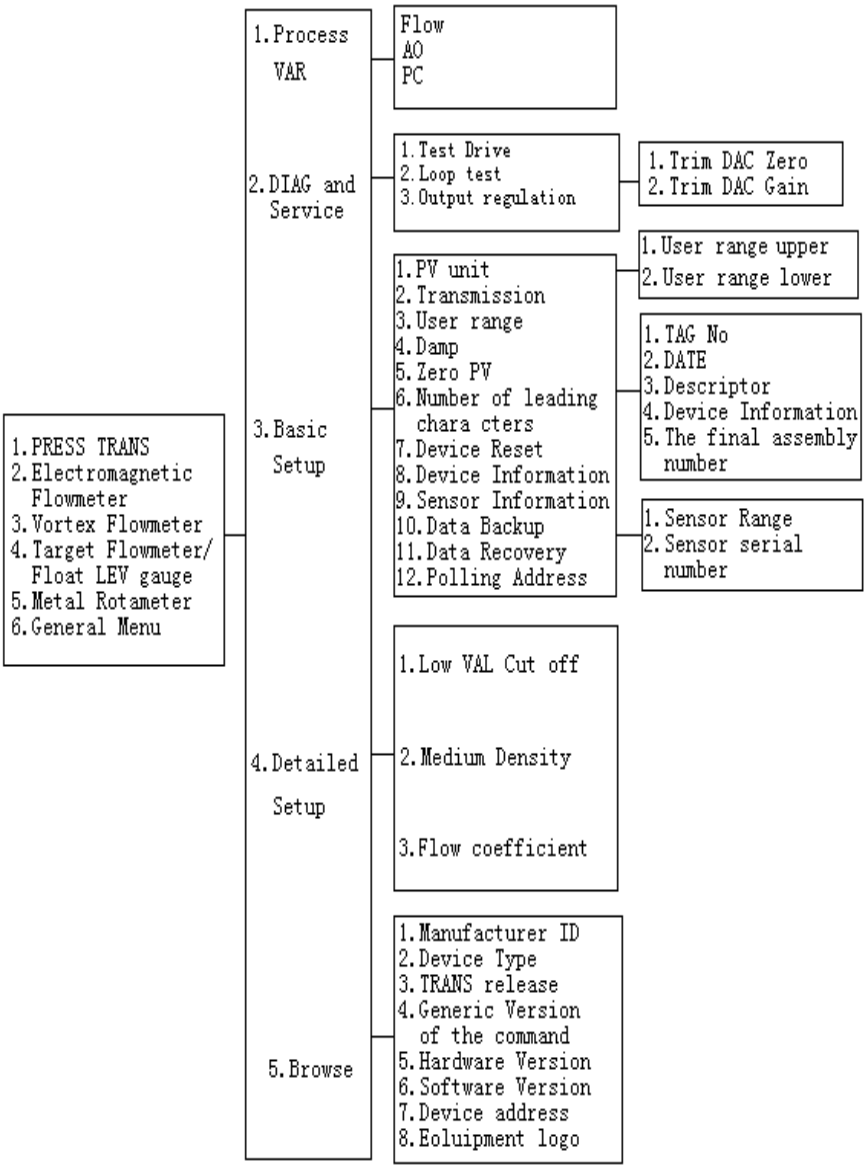
Electromagnetic Flowmeter menu tree:



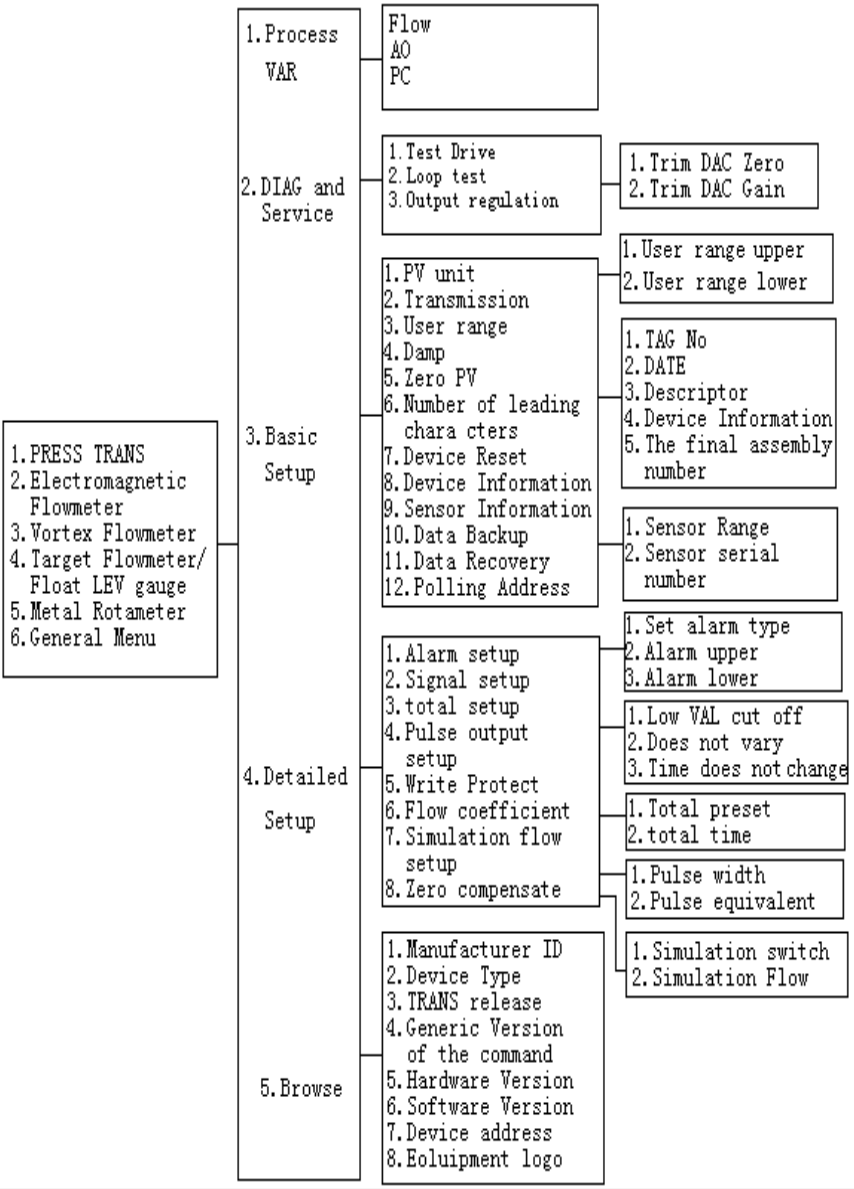
Vortex Flowmeter menu tree:



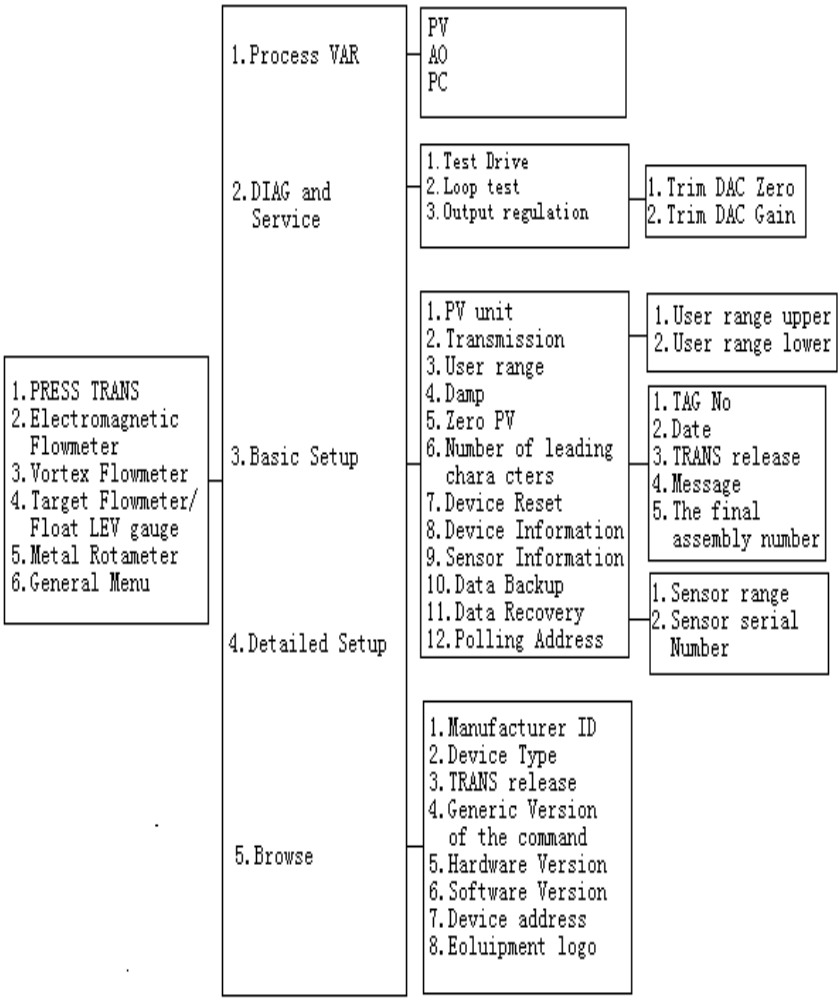
Target Flowmeter / float level gauge menu tree:



Gold transfer meter menu tree:



Common menu tree:


1. PRESS TRANS
2. Electromagnetic Flowmeter
3. Vortex Flowmeter
4. Target Flowmeter/ Float LEV gauge
5. Metal Rotameter
6. General Menu
1. Process VAR
PV
AO
PC
2. DIAG and Service
1. Test Drive
2. Loop test
3. Output regulation
1. Trim DAC Zero
2. Trim DAC Gain
3. Basic Setup
1. PV unit
2. Transmission
3. User range
4. Damp
5. Zero PV
6. Number of leading chara cters
7. Device Reset
8. Device Information
9. Sensor Information
10. Data Backup
11. Data Recovery
12. Polling Address
1. User range upper
2. User range lower
1. TAG No
2. Date
3. TRANS release
4. Message
5. The final assembly number
1. Sensor range
2. Sensor serial Number
4. Detailed Setup
5. Browse
1. Manufacturer ID
2. Device Type
3. TRANS release
4. Generic Version of the command
5. Hardware Version
6. Software Version
7. Device address
8. Eoluipment logo

Appendix 3: Glossary

Alphanumeric

Alphanumeric character set, often including other character sets, such as punctuation marks.

Device configuration
Define the physical properties and operating characteristics of the device parameters. Does not include dynamic data.

Device Description
Written in the HART Foundation fieldbus devices instruction set, the device description language of the host application and the HART or FOUNDATION fieldbus device communication parameters, and methods of instruction are defined.

Field Equipment
In addition to HART digital communication signal, the field device can generate or receive analog signals.

HART devices
Using the HART protocol for information communication equipment.

HART Loop
One communication network, the master and slave devices are HART smart or HART compatible devices.

HART protocol
Addressing a high-speed remote communications protocol converter. One for the digital add-type 4-20mA communications and intelligent field devices, industry-standard protocols.

Poll
One kind of query the network in order to determine the method

that the device online.