WD-UDE智能电容式液位计

WD-UDE INTELLIGENT CAPACITIVE LIQUID LEVEL GAUGE

概述 Introduction

UDE智能电容式液位计是一种可用于液体、油类、固体、界面和测量的液位（物位）变送器。无可动部件，可靠性大的提高，它不受水蒸汽，灰尘或冷凝的影响，具有长期运行稳定可靠，灵敏度高，线性度好，耐高温、耐高压等优点。

UDE智能液位计为两线制（回路供电）4-20mA测量信号，易于调校。采用LCD12864点阵显示，中文操作菜单。可广泛用于石油、化工、冶金、电力、造纸、制药等各个领域。

UDE Intelligent capacitive liquid level meter is used for liquid, oil, solid, interface measurement .Without moving parts, improve reliability, it is not affected by water vapor, dust or condensation, with long-term stable operation, high sensitivity, good linearity, high temperature-resistant, high pressure-resistance, etc.

UDE Two wire system 4-20 mA signal is easy to set-up. Used LCD12864 dot matrix display, Chinese operation menu . Be widely used in petroleum, chemical industry, metallurgy, electric power, papermaking, pharmaceutical and other fields.

工作原理Principle

电容液位计是采用测量电容的变化来测量液面的高低的。它是一根金属棒插入盛液容器内，金属棒作为电容的一个极，容器壁作为电容的另一极。两电极间的介质即为液体及其上面的气体。由于液体的介电常数ε1和液面上的介电常数ε3不同，比如：ε1>ε2，则当液位升高时，两电极间总的介电常数值随之加大因而电容量增大。反之当液位下降，ε值减小，电容量也减小。

所以，可通过两电极间的电容量的变化来测量液位的高低。电容液位计的灵敏度主要取决于两种介电常数的差值，而且，只有ε1和ε2的恒定才能保证液位测量准确，因被测介质具有导电性，所以金属棒电极都有绝缘层覆盖。电容液位计体积小，容易实现远传和调节，适用于具有腐蚀性和高压的介质的液位测量。

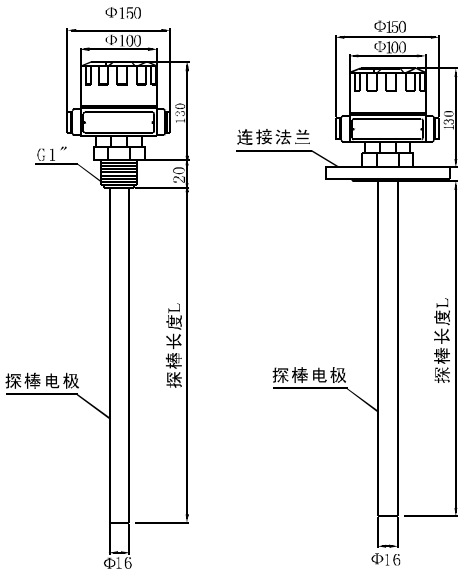
Capacitance level meter measure the liquid level through the variation of the measured capacitance . A metal rod is inserted into the fluid container, as one electrode of the capacitance , another electrode is vessel wall. The medium between the two electrodes is the liquid and gas above of the liquid. Due to the dielectric constant of the liquid ε1 is different from ε2 above the liquid,such as: ε1 > ε2, when the liquid level increases, the overall dielectric constant value between the two electrodes increases , capacitance increases consequently. Conversely when the liquid level drops, ε decreases, and capacitance is reduced.

So, the gauge can measure the liquid level through the change of capacitance between the two electrodes . Sensitivity mainly depends on the difference between two kinds of dielectric constant, and only constant ε1 and ε2 can guarantee the accuracy of the measurement, due to electrical conductivity of the measured medium, metal electrodes are insulation covered . Capacitive liquid level gauge is small in size, easy to realize far transimission and adjustment, suitable for corrosive and high pressure level measurement.

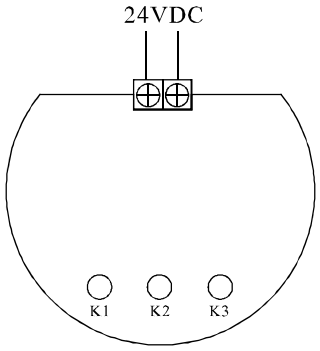
技术参数 Technical Parameters

- 测量范围: 0.1～20m
  Measuring range：0.1～20m
- 感应棒材质Rod material：钢索、不锈钢或不锈钢外覆PP、PTFE
  Rod material：SS or SS coated with PP、PTFE
- 接线盒材质junction box：铝合金IP65
  Junction box：aluminum alloy Ip65
- 探杆操作温度范围：-80℃～+200℃
  Rod operation temperature:-80℃～+200℃
- 环境温度：-40℃～+85℃
  Ambient temperature:-40℃～+85℃
- 储存温度：-55℃～+125℃
  Storage temperature:-55℃～+125℃
- 输出信号：4～20mA
  Output signal:4～20mA
- 供电电压：+24VDC（二级制）
  Power supply:+24VDC（two-wire）
- 带负载能力：0～600Ω
  Loading capacity:0～600Ω
- 精度等级：0.5级
  Precision : 0.5
- 防护等级：IP65
  Protection grade:IP65
- 防爆等级：隔爆型：ExdIICT4-T6
  本安型：ExiaIICT4-T6
  Explosion-proof grade：Explosion proof：ExdIICT4-T6
  Intrinsically safe：ExiaIICT4-T6

外形尺寸图 Outline dimensional



外形尺寸图 Outline dimensional



仪表的设置与校准 Set & Ajustment

1、按键功能说明Key function

K1键：功能键 Function key

- 在测量显示界面，可按此键进入操作菜单。
  In the measure display interface, press this button to enter operation menu.
- 在菜单操作界面，可实现小数点移位，数据、参数确认
  In the menu operation interface, to realize the decimal point shift, data, parameter comfirm

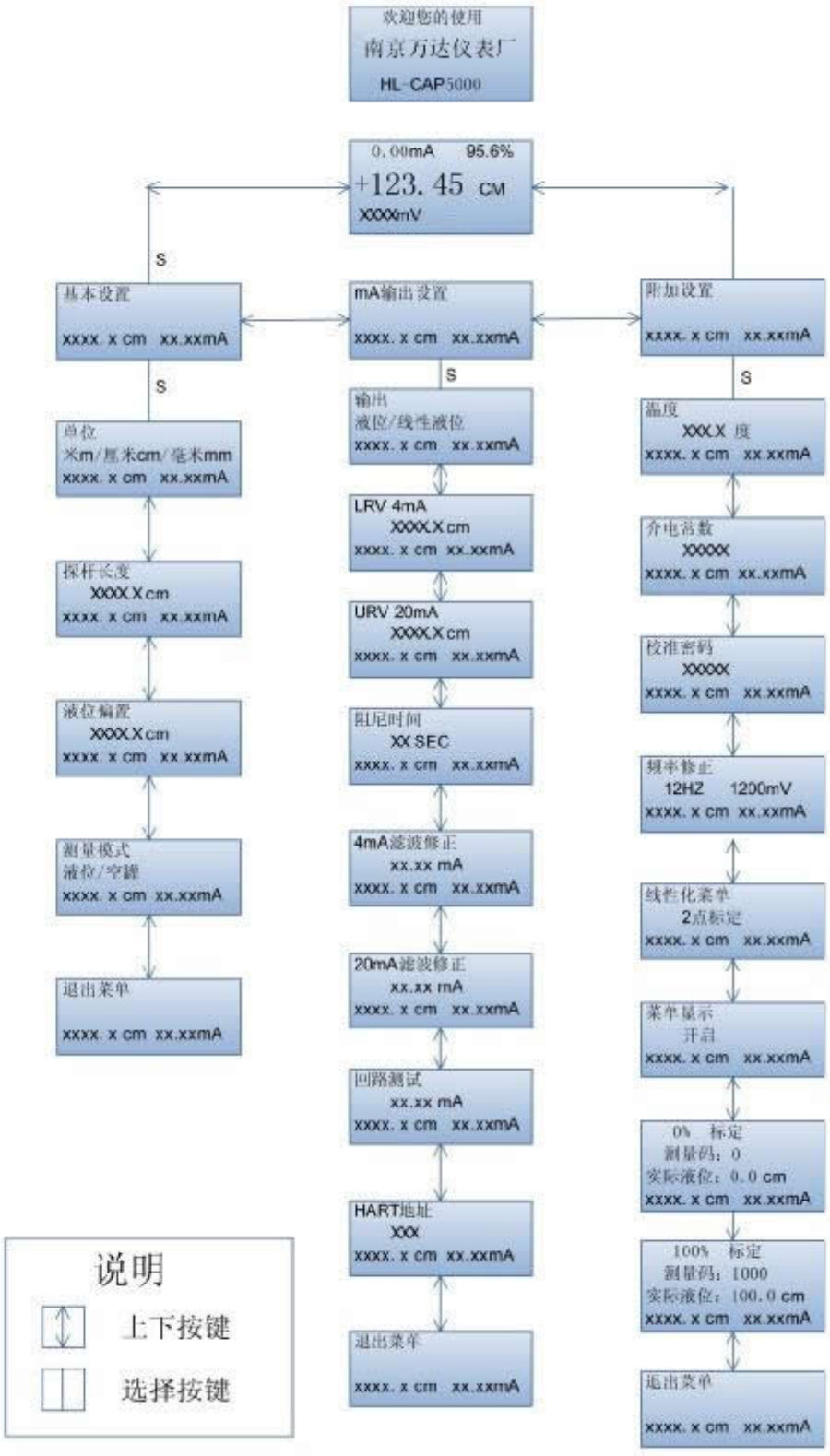
K2键：减键Minus key

- 在测量显示界面，液位在探杆零位时，长按此键8秒以上，可以对仪表零位校准。
  In the measurement display, liquid level is in zero of rod, press this button more than 8 seconds, to realize zero calibration
- 在菜单操作界面，可实现数据减操作、菜单后退
  In the menu operation interface, to realize data minus operation、menu return

K3键： 加键add key

- 在测量显示界面，液位在探杆满位时，长按此键8秒以上，可以对仪表满度校准。
  In the measurement display, liquid level is in full of rod, press this button more than 8 seconds, to realize full calibration
- 在菜单操作界面，可实现数据加操作、菜单前进
  In the menu operation interface, to realize data add operation、menu go forward

2、完整菜单显示图 Display menu



3、菜单进入方法与操作Menu enter & operation

在仪表测量状态下，短按K1键，进入菜单设置，可根据需要短按加（K3）、减（K2）键选择相应的菜单选项，后短按K1键，可进入其子菜单中。

In the condition of measurement, short press K1 key, enter the setting menu, short press K3、K2 as needed to select the corresponding menu option, after short press K1, enter its menu

4、基本设置Basic setting

基本设置用来将变送器的内部各设置调整为适用于特定应用的菜单。为了设备的正常运行，要求在某些场合下输入菜单中的某些项。在设置变送器时，有些项并不需要输入，只要列出备用户选用。在运行CAP5000时至少要输入的基本设置菜单项。这些项包括单位、探杆长度。

在主显示上按下“K1”按键，即可访问基本设置菜单中的各项。

Basic Settings is used to set the transmitter inside the adjustment for apply to specific application menu. For the normal operation of the equipment, in some cases the input menu of certain items. When set the transmitter, some items do not need to enter, as long as the list for the user to choose. When running CAP5000 to enter at least the basic setup of a menu item. These items include units, sheath maerial of length.

On the main display presses the button, "K1" to access the items in the basic setup menu.

a、单位Unit

这一功能是让用户选择测量单位，它是所有功能的基础。这些可选择的工程单位包括：米、厘米、毫米。

按如下步骤选择所需的测量单位：

1、按下“K1”按键，字体反白显示，前景反黑。

2、用“K2”、“K3”按键选择所需的测量单位

3、按下“K1”键确认设置新的单位，字体恢复

4、用“K2”、“K3”按键可选择进入上级或下级菜单。

This function is for user to select measuring unit, it is the base of all functions. These alternative project list : m, cm, mm.

According to the following steps to select the unit of measure:

1、 press K1, fonts white show, foreground black.

2、 press K2 、k3 to select the desired measurement unit

3、 press K1 to confirm setting of the new unit, font resumed

4、 press K2、K3 to choose to enter the upper or the lower menu

b、探杆长Length of the rod

探杆长度也称为插入长度，定义如下：从腔体连接器的第一道螺纹（或法兰面）起至探杆底部的测量距离。在输入探杆长度时候，需要输入与过程变量相同的单位（出厂时根据实际长度，都已经设置好，如要重新校准，才需重新设置探杆长度）。

按如下步骤设置探杆长度：

1、按下“K1”按键，最高位数字反白显示，背景反黑。

2、用“K2”、“K3”按键增加或者减小数字量至所需要值。

3、按下“K1”键确认数值，并按顺序移动至下一位数字。

4、在设置好最后一个数字后，按下“K1”按键以设置新的数值。

5、用“K2”、“K3”按键可选择进入上级或下级菜单。

The length of the rod is also called insert length, defined as follows: from the first line of the thread or flange surface to the bottom of the rod is measured range. When input the length of the rod, unit need to the same as the process variable (we have set the actual length before delivery . If need to recalibrate, to reset the length).

According to the following steps to set the length of the rod:

1、 press K1, the highest number white show, black background.

2、 press K2、K3 to increase or decrease the digital to the required value.

3、 press K1 to confirm, and move to the next digit in sequence.

4、 finished last digit set, press K1 to set the new data.

5、press K2, K3 to choose to enter the upper or the lower menu.

c、液位偏置liquid level offset

偏移量是一个工程单位值，它的作用是对于低于探杆的不可测量区域进行补偿，或用其它设备对CAP5000测量值进行校准时用到的变量。所输入的偏移量将从显示的值中加上或者减去。

输入的液位偏置的步骤如下：

1、按下“K1”按键，最高位数字反白显示，背景反黑。

2、用“K2”、“K3”按键增加或者减小数字量至所需要值。

3、按下“K1”键确认数值，并按顺序移动至下一位数字。

4、在设置好最后一个数字后，按下“K1”按键以设置新的数值。

5、用“K2”、“K3”按键可选择进入上级或下级菜单。

Offset value is an engineering unit, it can compensate for the area which can't be measured below the rod. The offset input can plus or minus the displayed value.

offset set as follows:

1、 press K1, the highest number white show, black background.

2、press K2 K3 to increase or decrease the digital to the required value.

3、 press K1 to confirm, and move to the next digit in sequence.

4、 finishing set the last digit, press K1 to set the new data.

5、 press K2、K3 to choose to enter the upper or the lower menu.

d、测量模式measure mode

可用CAP5000型变送器来测量介质液位或容罐的空余量。液位指的是从探杆末端至介质表面的测量值。这就是所测容罐内的介质总量。容罐空余量指的是从腔体连接器表面至介质表面的测量值。这就是所测容罐的空余量。测量模式的出厂设置为介质液位。

输入的液位偏置的步骤如下：

1、按下“K1”按键，字体反白显示，前景反黑。

2、用“K2”、“K3”按键选择所需的测量模式

3、按下“K1”键确认设置新的单位，字体恢复

4、用“K2”、“K3”按键可选择进入上级或下级菜单。

CAP5000 can measure the liquid level of the medium or the spare capacity of the tank.Liquid level refers to the distance from the end of the rod to the surface of the medium. This is the amount of dielectric capacitors inside the tank. The spare capacity of the tank is the diatance from the surface of the medium to the the tank connection surface. This is the amount of spare capacity tank.The measurement mode is set to the medium level before delivery.

Offset set as follows:

1、 press K1, font white show, foreground black.

2、 press K2,K3 to select the desired measurement mode

3、 press K1 to confirm setting new unit, font resumed

4、 press K2,K3 to choose to enter the upper or the lower menu.

5、快速标定fast calibration

在输入基本菜单上的各项之后，CAP5000变送器即可运行。将变送器的4mA输出点设置为零测量点，将变送器的20mA输出点设置为最高测量值。4mA点和20mA点的位置将由测量模式来确定。

After setting all kinds of basic data in the menu,CAP5000 transmitter can be run. The transmitter of the 4 mA is set to the zero of the measured, 20 mA is set to the highest measured values. measuring mode determine the positong of 4 mA and 20 mA

在仪表出厂前，都已标定好。如果变送器测量出来数值与实际相差较大，可以以实际液位为基准进行快速标定。

Before delivery,the data have been calibrated. If exist big difference between measured by the transmitter and the actual, can be fast calibrated based on the practical level.

注：在附加设置里面，如果“线性化菜单”中设置不为“两点标定”，则需要直接进行菜单中进行详细标定。

Note: in the additional settings, if not setting "two point calibration" in "linear menu", need to do detail calibration in the menu.

步骤steps：

• 零位标定Zero calibration：

a、提升或者降低料位至所期望的零点位置，默认零位为探杆的末端，液位刚好接触探杆为零位状态。
Raise or down level to the desired zero position, the default zero is the end of the rod, the point which liquid level just contact rod is zero.

b、长按(>10S)变送器的K2按键,直到显示屏右下方的“宏浪仪表”转变成“零位校准”，大概1S左右，“零位校准”会重新转变为“宏浪仪表”，零位标定结束。
Long press (> 10 s) K2, until the display from "honglang instrument" to "zero calibration", maybe 1 s, the "zero calibration" will return into "honglang instrument," zero calibration over.

• 满度标定Full calibration:

a、提升或者降低料位至所期望的满度位置，满度位置按生产需要实际所能达到的最高液位。
Raise or down level to the desired full position, the highest level production needed is the full position.

b、长按(>10S)变送器的K3按键,直到显示屏右下方的“宏浪仪表”转变成“满位校准”，大概1S左右，“满位校准”会重新转变为“宏浪仪表”，满位标定结束。
Long press (> 10 s) K3, until the display from "honglang instrument" to "full calibration", maybe 1 s, the "full calibration" will return into "honglang instrument," full calibration over.

注：零位和满度之间，标定无先后顺序，且零位，满度各无牵连，不会相互影响。
Note: without order between zero and full calibration, zero and full no involvement and no influence each other

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6、mA输出设置Output set

“mA输出设置”是用来控制CAP5000输出信号的各项参数的菜单。在此菜单内有4mA点、20mA点，阻尼及其它与输出相关项的各项参数。

"mA output settings" is used to control the various parameters of CAP5000 output. Parameters in this menu are: 4 mA、20 mA、 damping and other related to the output.

如果探杆可以精确测量介质的料位，但是不能返回期望的电流值，可以进入mA输出设置LRV 4mA ,URV 20mA 项，根据需要设置。（比如要和测量杆长度一致，可把LRV 4mA 设置为0，URV 20mA 设置与探杆长度一致）。

If rod can measure accurately the level, but can't return the desired current value,you can enter the “mA output settings” to set LRV 4 mA and URV 20 mA, according to the need to set up. (if same length as the rod, set the LRV 4 mA to 0, 20 mA URV is set to same length of the rod).

a、输出output

用户利用这一功能来决定输出基于“mA输出”的变量。可选项包括“液位”各“线性液位”。“液位”是指CAP5000根据其配置获得的实际线性测量值，而“线性液位”是用“线性化菜单”过滤后的测量值。

Users to use this function to determine the output based on variables of "mA output". Options include "level" & "linear level". "Level" refers to the actual linear measured value by CAP5000 according to its configuration, “ linear level” is a filtered value by "linear menu".

按如下步骤选择所需的输出方式Following steps to select the output：

1、按下“K1”按键，字体反白显示，前景反黑。
2、用“K2”、“K3”按键选择所需的测量单位
3、按下“K1”键确认设置新的单位，字体恢复
4、用“K2”、“K3”按键可选择进入上级或下级菜单。
1、 press K1, fonts white show, foreground black.
2、 press K2, K3 to select the desired measurement unit
3、 press K1 to confirm setting new unit, font resumed
4、 press K2,K3 to choose to enter the upper or the lower menu.

b、LRV 4mA

采用工程单位的LRV 4mA 值是用来确定CAP5000生成4.00mA输出时的测量值。在一般情况下，此点被认为是零点，出厂默认设置为0.0cm.

LRV 4 mA is used to determine the measured data which 4.00 mA is generated by CAP5000. In general, this point is considered to zero, default setting is 0.0 cm.

输入LRV 4mA的步骤如下Set steps as follow：

1、按下“K1”按键，最高位数字反白显示，背景反黑。

2、用“K2”、“K3”按键增加或者减小数字量至所需要值。

3、按下“K1”键确认数值，并按顺序移动至下一位数字。

4、在设置好最后一个数字后，按下“K1”按键以设置新的数值。

5、用“K2”、“K3”按键可选择进入上级或下级菜单。

1、press K1,the highest digital white show,background back

2、press K2 K3 to plus or minus digital to the required

3、press K1 to confirm,move to next digital according to the order

4、finishing set the last digital,press K1 to set new data

5、press K2 K3 to enter the upper or lower manu

c、LRV 20mA

采用工程单位的LRV 20mA值是用来确定CAP5000生成20.00mA输出时的测量值。在一般情况下，此点被认为是满量程点，出厂默认设置为“探杆长度”。

LRV 20 mA is used to determine the measured data which 20.00 mA is generated by CAP5000. In general, this point is considered to full, default setting is “rod length”.

输入LRV 20mA的步骤如下Set steps as follow：

1、按下“K1”按键，最高位数字反白显示，背景反黑。

2、用“K2”、“K3”按键增加或者减小数字量至所需要值。

3、按下“K1”键确认数值，并按顺序移动至下一位数字。

4、在设置好最后一个数字后，按下“K1”按键以设置新的数值。

5、用“K2”、“K3”按键可选择进入上级或下级菜单。

1、press K1,the highest digital white show,background back

2、press K2 K3 to plus or minus digital to the required

3、press K1 to confirm,move to next digital according to the order

4、finishing set the last digital,press K1 to set new data

5、press K2 K3 to enter the upper or lower manu

d、阻尼时间damping time

阻尼时间是用来延迟mA输出对所测料位改变响应时间的设置值。其设置单位为秒，增幅为1秒。如果过程介质波动较大，或当进料时，物料紧紧的压在一起，则要求采用较高的阻尼值。如果过程介质变化迅速，则要求较低的阻尼值，以增加对料位改变的响应速度。容许最高的阻尼值为36秒。

Damping is used to delay the response time due to the material changiing. The unit is set to second, the growth rate for 1 second. If the medium volatile or material is together tightly when feeding, be required to use high damping value. If medium change rapidly ,to use lower damping value to increase the response speed. Allowed the highest damping value is 36 seconds.

1、按下“K1”按键，最高位数字反白显示，背景反黑。

2、用“K2”、“K3”按键增加或者减小数字量至所需要值。

3、按下“K1”键确认数值，并按顺序移动至下一位数字。

4、在设置好最后一个数字后，按下“K1”按键以设置新的数值。

5、用“K2”、“K3”按键可选择进入上级或下级菜单。

1、press K1,the highest digital white show,background back

2、press K2 K3 to plus or minus digital to the required

3、press K1 to confirm,move to next digital according to the order

4、finishing set the last digital,press K1 to set new data

5、press K2 K3 to enter the upper or lower manu

e、4mA滤波修正Filtering correction

CAP5000为二线制回路供电装置。它在4mA至20mA范围内产生一个“mA输出”。如发现输出不准，可在二线制回路中串联一标准万用表，其输出值应该按照校准过的万用表的数值设置。

CAP5000 is two -wire loop. It produce a "mA output" within 4 mA to 20 mA. If output is not accurate, a a standard multimeter can be connected in series in two wire loop, the output should be set in according to the calibrated multimeter.

调节“4mA滤波修正“步骤如下 "4 mA filtering correction" ajusted as follows：

1、测量电流输出的方式必须建立在控制回路中。在选择这一菜单的同时，输出将变为变送器所认为的4mA.

2、按下“K1”按键，最高位数字反白显示，背景反黑。

3、用“K2”、“K3”按键增加或者减小数字量至标准万用表显示的电流值（单位为mA）。

4、按下“K1”键确认数值，并按顺序移动至下一位数字。

5、在设置好最后一个数字后，按下“K1”按键以设置新的数值。“mA输出”将准确的调节至4mA.

6、用“K2”、“K3”按键可选择进入上级或下级菜单。

1、 measuring the output current must be established in the control loop. choosing this menu ,at the same time, the output will be 4 mA.

2、 press K1, the highest digit white display, background black.

3、 press K2 K3 to plus or minus digital to reach the current of the multimeter (mA).

4、 press K1 to confirm, and move to the next digit in sequence.

5、 finishing set the last digital, press K1 to set the new data. "mA output" will be accurately adjusted to 4 mA.

6、press K2, K3 for choose to enter the upper or the lower menu.

f、20mA滤波修正filtering correction

调节“20mA滤波修正“步骤如下 "20 mA filtering correction" ajusted as follows：

1、测量电流输出的方式必须建立在控制回路中。在选择这一菜单的同时，输出将变为变送器所认为的20mA.

2、按下“K1”按键，最高位数字反白显示，背景反黑。

3、用“K2”、“K3”按键增加或者减小数字量至标准万用表显示的电流值（单位为mA）。

4、按下“K1”键确认数值，并按顺序移动至下一位数字。

5、在设置好最后一个数字后，按下“K1”按键以设置新的数值。“mA输出”将准确的调节至20mA.

6、用“K2”、“K3”按键可选择进入上级或下级菜单。

1、 measuring the output current must be established in the control loop. choosing this menu ,at the same time, the output will be 20 mA.

2、 press K1, the highest digit white display, background black.

3、 press K2 K3 to plus or minus digital to reach the current of the multimeter (mA).

4、 press K1 to confirm, and move to the next digit in sequence.

5、 finishing set the last digital, press K1 to set the new data. "mA output" will be accurately adjusted to 20 mA.

6、press K2, K3 for choose to enter the upper or the lower menu.

g、回路测试loop test

回路测试是用来从其它地方模拟变送器对各种料位的输出，确认位于不同位置处的读数。对4.00mA至20.00mA之间的任何输出，均可进行回路测试。

Loop tests are used to simulate material output, corresponding to different level.Within 4.00 mA and 20.00 mA, all data can be loop tested.

1、按下“K1”按键，最高位数字反白显示，背景反黑。

2、用“K2”、“K3”按键增加或者减小数字量至所需要值。

3、按下“K1”键确认数值，并按顺序移动至下一位数字。

4、在设置好最后一个数字后，按下“K1”按键后，mA输出将变为所期望的料位（可重复1-4，选择另一个mA输出）。

5、用“K2”、“K3”按键可选择进入上级或下级菜单。

1、 press K1, the highest digit white display, background black.

2、 press K2 K3 to plus or minus digital to the required .

3、 press K1 to confirm, and move to the next digit in sequence.

4、 finishing set the last digital, press K1 ,mA output will reach to the desired level.(repeat1-4,select another mA output)

5、press K2 K3 to enter the upper or the lower menu.

h、HART地址address

HART地址选项允许用户给CAP5000指定一个数字地址。对于有地址的CAP5000，当它被安装在一系列变送器当中时，可根据地址对它进行选择。设置HART地址的数字可从0到15。其默认为0.这时CAP5000能正常的运行。如果将CAP5000设置为不为0的其它值，则变送器的输出将保持在4.00mA,其料位测量将继续正常运行。

HART address allows to specify a numeric address for CAP5000. If CAP5000 have one address already, we can choose it according to the address when it is installed in a series of transmitter. the HART's address can be set from 0 to 15, defaults to 0. Then CAP5000 can normal operate. If the CAP5000 is set to other values, not zero, the output of the transmitter will remain 4.00 mA, the material level measuring will continue to run normally.

输入HART地址的步骤如下 HART address set as follow:

1、按下“K1”按键，最高位数字反白显示，背景反黑。
2、用“K2”、“K3”按键增加或者减小数字量至所需要值。
3、按下“K1”键确认数值，并按顺序移动至下一位数字。
4、在设置好最后一个数字后，按下“K1”按键以设置新的数值。
5、用“K2”、“K3”按键可选择进入上级或下级菜单。
1、 press K1, the highest digit white display, background black.
2、 press K2 K3 to plus or minus digital to the required .
3、 press K1 to confirm, and move to the next digit in sequence.
4、 finishing set the last digital, press K1 to set new data
5、press K2 K3 to enter the upper or the lower menu.

7、附加设置additional settings

附加设置包括对CAP5000进行微调的各项参数。这一菜单包括“频率修正”和线性化菜单。

Additional settings include various of parameters for adjusting CAP5000.Includes "frequency correction" and linear manu.

a、温度介电常数temperature of dielectric constant

在附加设置菜单中的温度指示是电子模块内部的温度指示。不能用它来进行温度补偿。

介电常数可不用输入，此菜单对测量值没有影响。

The temperature indicator in this menu is the one inside of electronic module. Can't use it for temperature compensation.

Dielectric constant need not input, the menu has no effect on measured value.

b、校准密码 calibration password

如需要查看或修改“频率修正”菜单，可在此输入正确的密码，密码为“2540”。

If need to view or modify the frequency correction menu, pls enter the correct password, the password is "2540"

输入校准密码的步骤如下 Enter calibration password as follows:

1、按下“K1”按键，最高位数字反白显示，背景反黑。
2、用“K2”、“K3”按键增加或者减小数字量至所需要值。
3、按下“K1”键确认数值，并按顺序移动至下一位数字。
4、在设置好最后一个数字后，按下“K1”按键以设置新的数值。
5、按“K3”按键可选择进入下级“频率修正”菜单。
1、 press K1, the highest digit white display, background black.
2、 press K2 K3 to plus or minus digital to the required .
3、 press K1 to confirm, and move to the next digit in sequence.
4、 finishing set the last digital, press K1 to set new data
5、 press K3 to enter the next manu of “frequency correction”

c、频率修正frequency correction

CAP5000需要在介电常数相差很大的介质中调换的时候，需要调整频率修正。

注意：频率修正后，变送器需要重新标定。

CAP5000 need to adjust the frequency when used in the other site which dielectric constants change vary widely .

Note: finishing adjust the frequency, transmitter need to calibrate

频率修正的调整步骤如下 Adjusting step as follows:

1、必须先把液位上升到最高液位。

2、按下“K1”按键，最高位数字反白显示，背景反黑。

3、先用“K3”按键增加频率值（比如增加到30，频率的范围是1-40）至右边mV显示逐渐减小，然后慢慢的把频率值减小，注意观察mV值，是否在依次增大，直到mV值增加到1200到1400之间，停止减小频率值。

4、按下“K1”按键以设置新的频率值，频率修正完毕。

5、用“K2”、“K3”按键可选择进入上级或下级菜单。

1、 raise the level to the highest level first

2、 press K1, the highest digit white display, background black.

3、 press K3 to increase frequency value until mV display reduce gradually ,then reduce frequency gradually,to observe mV value if it increase in turn, stop increaing the frequency until mV is increased between 1200 and 1400.

4、 press K1 to set new frequency,correction over.

5、press K2 K3 to enter the upper or the lower menu.

d、线性化菜单Linearization menu

CAP5000是根据圆筒电容原理进行测量的，如果待测容器是不规则或者要求精度很高的情况下，可适当选择多点标定，默认方式是“2点标定”。线性化菜单决定CAP5000的标定方式，包括“2点标定”，“3点标定”，“5点标定”，“10点标定”。

CAP5000 is based on the principle of cylindrical capacitance , if the container is irregular or demand for high precision, can be appropriately choosen multi-point calibration, the default mode is "2 point calibration". Linearization menu decide CAP5000 method, including "2 point calibration", "three point calibration", "five point calibration", "10 point calibration"

注意：线性化菜单改变后，变送器需要重新标定。

Note: once linearization menu changed, transmitter need to calibrated.

设置线性化菜单步骤如下： linearization menu set as follows

1、按下“K1”按键，字体反白显示，前景反黑。

2、用“K2”、“K3”按键选择所需的标定方式

3、按下“K1”键确认设置新的标定方式，字体恢复

4、用“K2”、“K3”按键可选择进入上级或下级菜单。

1、Press K1，fonts white show,foreground back

2、Press K2 K3 to select the calibration mode needed

3、Press K1 to confirm to set new calibration mode,fonts resumed

4、Press K2 K3 to enter the upper or the lower menu

e、菜单显示menu display

菜单显示包括两种方式：“开启”可以查看线性化菜单每点的数值，“关闭”无法查看。

Menu includes two ways: "turn on" can view the each point of linear menu, “turn off" can't see anything

f、0%标定 50%标定 100%标定0% 100% 50% calibration

在选择线性化菜单方式后，如果菜单显示模式为开启状态，可在后续菜单中查看和修改各个标定点的值，进行非线性标定。标定点的显示内容为，“测量码”是指电容量转变为电压的值，此值不需要输入。“实际液位”是指测量探杆所实际测量的范围，要根据需要输入。

After choose linear menu mode, if the menu display mode is open, can view and modify all the point in the subsequent menu to do nonlinear calibration. The content of the calibration point: "measuring code" refers to the value which capacitance change to voltage, not need to input. "Actual liquid level" refers to the actual measured range of the rod, input it according to the need .

例如：线性化菜单设置为3点标定,那么根据测量探杆的长度（1100mm），但是实际液位最大只能到达1000mm，则把1000分成三点，0%，50%，100%，0%对应探杆的0mm，50%对应探杆的500mm，100%对应探杆的1000mm。

For example, the menu is set to 3 point calibration, the length of the measured rod is 1100 mm, but the actual level can only reach 1000 mm , 1000 were divided into three, 0%, 50%, 100%, 0% for rod 0 mm, 50% for rod 500 mm, 100% for rod 1000mm.

1、把液位上升或下降到探杆的0mm位置。进入0%标定点，把实际液位输入0mm，按”K1”按键确认后，CAP5000变送器所测量的实际电压值会自动的赋值给“测量码”，0%点标定完毕。

2、把液位上升或下降到探杆的500mm位置。进入50%标定点，把实际液位输入500mm，按”K1”按键确认后，CAP5000变送器所测量的实际电压值会自动的赋值给“测量码”，50%点标定完毕。

3、把液位上升或下降到探杆的1000mm位置。进入100%标定点，把实际液位输入1000mm，按”K1”按键确认后，CAP5000变送器所测量的实际电压值会自动的赋值给“测量码”，100%点标定完毕。

1、Liquid level up or down to rod 0 mm . Enter 0% point, input the actual level 0 mm, press K1 to confirm, the actual voltage measured by CAP5000 is automatically assigned to the "measuring code", 0% point calibration is completed.

2、Liquid level up or down to rod 500 mm . Enter 50% point, input the actual 500 mm , press K1 to confirm, the actual voltage measured by CAP5000 is automatically assigned to the "measuring code", 50% point calibration is completed.

3、Liquid level up or down to rod 1000 mm . Ener 100% point, input the actual 1000 mm, press K1 to confirm, the actual voltage measured by CAP5000 is automatically assigned to the "measuring code", 100% point calibration is completed.

注：其它的线性化方式，可按照上面的方法类推。两点标定方式，除了可用上述方法外也可以直接用快速标定的方法进行标定。

Note: other linearization method, can operate according to the above methods. Two calibration methods, also use fast calibration method directly in addition to the above methods .

g、退出菜单exit menu

每级子菜单里面，最后一项菜单都会有退出菜单项，在到达退出菜单项，按“K1”按键，CAP5000退出菜单设置状态，进入测量模式。

Per level submenu, the last item on the menu can exit, reach the exit menu item, press K1, CAP5000 exit menu settings, enter the measuring mode.

型号规格表 Model & Spec

WD-UDE		电容式物位计Capacitance Level Meter
	1	介质：粉末、颗粒medium:power、 kernel
	2	介质：液体medium:liquid
	A	安装方式：顶装式installing:top-install
	1	液位计材质：304或1Grl8Ni9Ti material of meter:304 or 1Grl8Ni9Ti
	2	液位计材质：316 material of meter:316
	3	液位计材质：316L material of meter:316L
	4	液位计材质：不锈钢外套聚丙烯 material of meter: SS covered by PP
	5	液位计材质：不锈钢外套聚四氟乙烯 material of meter:SS covered by PTFE
	□	连接方式：DN50 PN1.6（法兰标准HG20592-97）或用户指定flange size
	P	无防爆等级no explosive-proof classification
	D	隔爆型explosion isolation
	B	本安型intrinsically safe
	□	测量范围（mm)measuring range(mm)
	D	常温（-40℃～+85℃)normal temp
	G	高温型（+85℃～+200℃）high temp
	D	常压normal pressure
	□	实际工作压力值（MPa）actual pressure
WD-UDE	□-	□- □- □- □- □- □- □