
SKLD 型电磁流量计

SKLD Type Electromagnetic Flowmeter

使用说明书

OPERATING MANUAL



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目 录

Catalog

| | | |
|------|--|--------|
| 1 | 执行标准、正常工作条件 executive standard、normal operating conditions | - 4 - |
| 1.1 | 执行标准 executive standard: JB/T9248-1999 | - 4 - |
| 1.2 | 正常工作条件 normal operating conditions: | - 4 - |
| 2 | 工作原理 Operating principle | - 4 - |
| 2.1 | 传感器基本原理 sensor basic theory | - 5 - |
| 2.2 | 转换器基本电路 converter fundamental circuit | - 6 - |
| 3 | 整机性能参数 engine performance | - 7 - |
| 3.1 | 公称通径系列 inside nominal diameter series DN(mm) | - 7 - |
| 3.2 | 流动方向 flow direction: | - 7 - |
| 3.3 | 精度等级 Accuracy class: | - 7 - |
| 3.4 | 被测介质温度 temperature of measured medium: | - 7 - |
| 3.5 | 额定工作压力 rated working pressure: | - 8 - |
| 3.6 | 流量测量范围 flow measurement range: | - 8 - |
| 3.7 | 电导率范围 Conductivity range: | - 8 - |
| 3.8 | 电流输出及负载电阻 Current Output & load resistance: | - 8 - |
| 3.9 | 频率输出 frequency output: | - 8 - |
| 3.10 | 脉冲输出 pulse output: | - 8 - |
| 3.11 | 流向指示输出 current direction indicator output: | - 9 - |
| 3.12 | 电极材料 electrode material: | - 9 - |
| 3.13 | 防护等级 protection grade: | - 9 - |
| 3.14 | 供电电源 power supply: | - 9 - |
| 3.15 | 直管段长度 the length of straight pipe: | - 9 - |
| 3.16 | 连接方式 Connection Type: | - 9 - |
| 3.17 | 防爆标志 Ex-mark: | - 10 - |
| 4 | 变送器接线及参数设置 convertor wiring & parameter setting | - 10 - |
| 4.1 | 四键操作键盘定义与液晶显 Four key operation keyboard definition and LCD display: | - 10 - |
| 4.2 | 端子接线图 Terminal wiring diagram: | - 11 - |
| 4.3 | 信号线处理 Signal line processing: | - 13 - |
| 4.4 | 按键功能 Key function: | - 13 - |
| 4.5 | 仪表详细参数说明 Detail specification for instrument | - 14 - |
| 5 | 安装方式与方法及尺寸 installation & size | - 19 - |
| 6 | 自诊断信息与故障处理 self-diagnostic & fault handing | - 22 - |
| 6.1 | 故障处理 fault handing: | - 22 - |
| 6.2 | 保养、维修 maintenance: | - 23 - |
| 6.3 | 运输、贮存 Storage & transportation: | - 23 - |
| 6.4 | 开箱及检查 unpack & inspection appendix: | - 24 - |
| 附录 | appendix 1: | - 24 - |
| 附录 | appendix 2: | - 25 - |
| 附录 | appendix 3: | - 26 - |

SKLD 型电磁流量计是我公司采用国内外先进技术研发的全智能型电磁流量计，中英文菜单电磁转换器内核采用高速中央处理器，计算速度快、精度高、测量性能可靠。传感器采用非均匀磁场技术及特殊的磁路结构，磁场稳定可靠，而且大大缩小了体积，及时有效的反映了流量的时时变化，稳定测量水、污水、泥浆、矿浆、酸、碱、盐液体及食品浆液等。在石油化工、冶金、煤炭、水利工程给排水、污水处理等行业中广泛应用。本公司生产的电磁流量计有两种：一体型和分体型。

SKLD type electromagnetic flowmeter is the intelligent electromagnetic with research and development, which adopts domestic and foreign advanced technology. Electromagnetic transducer with high-speed central processing unit (CPU) and the features of rapid computing speed and high precision, reliable performance measurement are in both Chinese and English menu.

Sensor uses non-uniform magnetic field technology and special magnetic circuit structure. Magnetic field is stable and reliable, and the circuit structure reduces the volume, The sensor can reflect the traffic change timely and effectively, and have a stable value of measuring water, sewage, slurry, pulp, acid, alkali, salt slurry liquid and food, etc. There are lots of wide applications in the petroleum chemical industry, metallurgy, coal, water conservancy project of water supply and drainage, sewage treatment etc. The electromagnetic flowmeter has two types: the compact and the sensor for remote transmitter<split type>.

产品特点:

▲测量管内无阻流部件，测量中几乎无压损，直管段要求低；

In-line unimpeded flow components, measurement of almost no loss of pressure, low straight pipe requirements

▲测量结果与流速分布，流体压力，温度、密度、粘度等物理参数无关；

Measurement results and the velocity distribution, fluid pressure, temperature, density, viscosity and other physical parameters

▲无需附加电极的空管测量功能，连续测量，定值报警；

Blank-pipe measurement function without additional electrode, continuous measurement, the fixed value alarm

▲流速测量范围：0.1—15米/秒，流速分辨率：0.5毫米/秒；

Velocity measuring range: 0.1-15 m/s, velocity resolution: 0.5 mm/SEC

▲低频方波励磁，励磁频率：1/16工频、1/20工频、1/25工频；

Low frequency square wave excitation and excitation frequency: 1/16, 1/20, 1/25 power frequency power frequency power frequency

▲高频方波励磁，励磁频率：1/2工频（适用于浆液测量）（选配）；

High frequency square wave excitation and excitation frequency: 1/2 power frequency (applicable to size measurement) (optional)

▲交流高频开关电源，电压适用范围：85VAC—250VAC；

Scope: high frequency switching power supply, ac voltage 85 vac - 250 vac

▲直流24V开关电源，电压适用范围：20VDC—36VDC；

Scope of application: 24 v switching power supply, dc voltage 20 VDC - 36 VDC

▲高清晰度背光LCD显示，中文、英文显示方式，（可定制其它语言）；

High definition backlit LCD display, Chinese, English display mode, (other languages can be customized)

▲内部有三个积算器总量，可分别记录：正向总量、反向总量、差值总量；

Inside there are three total integrator, respectively record: forward, reverse total, total difference amount

▲可选RS485、RS232、HART、MODBUS和PROFIBUS（选配）等数字通讯信号输出；

Optional RS485 and RS232, HART and PROFIBUS and MODBUS (optional), and other digital

communication signal output

▲电极及内衬材料耐腐蚀性和耐磨性好，可按用户特殊工况定制非标产品；

Electrode and lining material good corrosion resistance and abrasion resistance, can be customized

according to user's special conditions of non-standard products

▲仪表的耐冲击、耐振性良好；

Instrument of impact resistance, good resistance to vibration

▲红外手持操作键盘，远距离非接触操作转换器所有功能；

Handheld keyboard operation, infrared non-contact operation converter all function over a long distance

▲防爆型仪表可用于相应的防爆场合。

Explosion-proof instrument can be used for the corresponding explosion-proof occasions

1 执行标准、正常工作条件

Execution standard, normal working conditions

1.1 执行标准： JB/T9248-1999

Execution standard: JB/T9248-1999

1.2 正常工作条件：

normal working conditions

额定功率：小于 20W（连接传感器配后）

供电电源：85~265AC 或 18~36VDC

环境温度：-20℃~+55℃

相对湿度：5%~90%

Rated power: less than 20 w (sensors connected after the match)

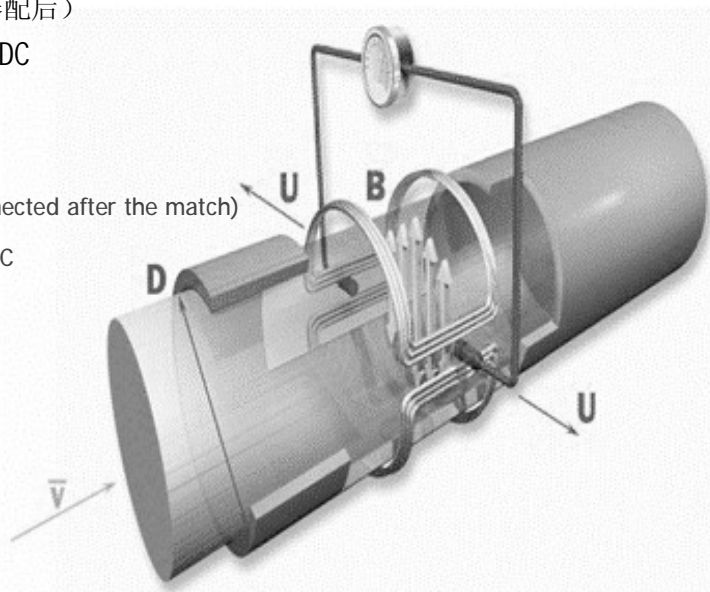
Power supply: ac 85 ~ 265, or 18 to 36 VDC

Ambient temperature: - 20 °C ~ + 55 °C

Relative humidity: 5% ~ 90%

2 工作原理

operating principle



2.1 传感器基本原理

Sensor basic theory

电磁流量计测量原理是基于法拉第电磁感应定律。流量计的测量管是一内衬绝缘材料的非导磁合金短管。两只电极沿管径方向穿通管壁固定在测量管上。其电极头与衬里内表面基本齐平。励磁线圈由双方波脉冲励磁时，将在与测量管轴线垂直的方向上产生一磁通量密度为B的工作磁场。此时，如果具有一定电导率的流体流经测量管。将切割磁力线感应出电动势E。电动势E正比于磁通量密度B，测量管内径d与平均流速v的乘积。电动势E（流量信号）由电极检出并通过电缆送至转换器。转换器将流量信号放大处理后，可显示流体流量，并能输出脉冲，模拟电流等信号，用于流量的控制和调节。

Electromagnetic flowmeter measurement principle is based on Faraday's law of electromagnetic induction. Flowmeter measurement tube is a lining insulation of permeability alloys short tube. Two electrodes along diameter direction are through the wall on the measuring tube. The electrode head and the inner surface are approximately flush. Excitation coil pulse of both parties will be in a direction perpendicular to the measuring tube axis to produce a magnetic field of magnetic flux density B. At the same time, if a certain electrical conductivity of the fluid is flowing through the measuring tube, it will cut magnetic induction electromotive force E. Electromotive force E is proportional to the magnetic flux density B, sounding pipe diameter d and the average flow v. Electromotive force E (traffic signal) is detected by electrode and conveyed from the cable to the converter. Converter can display the fluid flow, output pulse and analog signals by flow signal amplification processing. It is used for flow control and regulation.

$$E=KBDV \quad (1)$$

式中：E--感应电动势（V）； K--仪表常数； B--磁通密度（T）； D--测量管直径（m）； V--平均流速（m/s）。

Type: E - induced electromotive force (V); K - meter constant; B - magnetic flux density (T); D - sounding pipe diameter (m);

式中 K、D 为常数，由于励磁电流是恒流的，故 B 也是常数，则由 E= KBDV 可知，通过测量管横截面上的瞬时体积流量 Q 与流速 V 之间的关系为：

Type as the constant, K, D in due to the exciting current is constant current, therefore, B is constant, by E = KBDV, by measuring the instantaneous volume flow rate Q on the tube cross section and the relationship between the velocity V as follows:

$$Q = \frac{\rho D^2}{4} \cdot V \quad (2)$$

将式(1)代入式(2)得：

Type (1) substitute into type (2)

$$Q = \frac{\rho D}{4KB} \cdot E \quad (3)$$

将信号电压输入转换器，经处理后输出与流量成正比的 4~20mA 电流信号、脉冲（或频率）信号，可对流量进行记录、调节等。因此，只要测量出 E 就可确定流量 Q，这是电磁流量计的基本工作原理。

Signal voltage is input to converter. The processed output is proportional to the flow rate of 4 ~ 20 ma current signal and pulse (or frequency) signal, which can be adjusted to record etc. Therefore, that the measured E can determine the flow Q is the basic working principle of electromagnetic flowmeter.

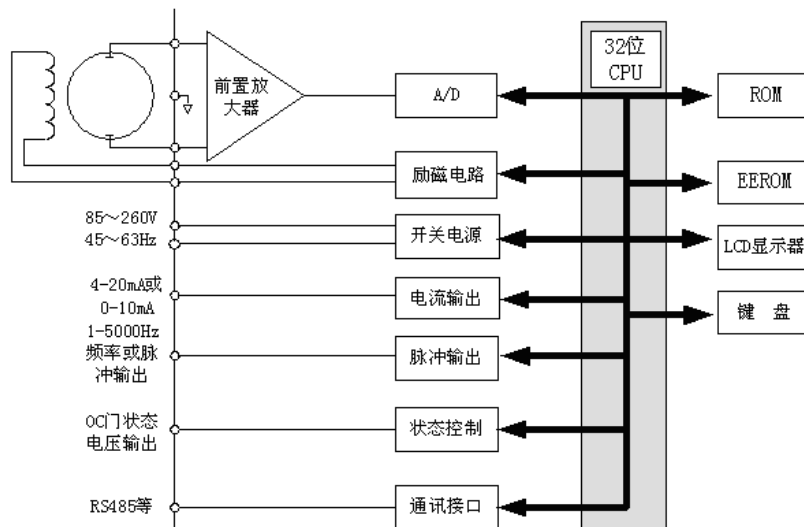
由 $E=KBDV$ 可知，被测流量体介质的温度、密度、压力、电导率、液固两相流体介质的液固成分比等参数不会影响测量结果。至于流动状态只要符合轴对称流动（如层流或者紊流）就不会影响测量结果的。因此说电磁流量计是一中真正的体积流量计。对于制造商和用户来说，只要用普通的水实际标定后就可以测量其他任何导电流体介质的体积流量，而不需要任何修正。这是电磁流量计的一突出优点，是其他任何流量计所没有的。测量管内无活动及阻流部件，因此几乎没有压力损失，并且有分高的可靠性。

By $E = KBDV$ shows that the medium of the measured flow temperature, density, pressure, conductivity, liquid solid two phase fluid parameters such as composition of liquid-solid ratio does not affect the measurement result. As for flow state, as long as in accordance with axisymmetric flow (e.g., laminar or turbulent) will not affect the measurement result. Therefore electromagnetic flowmeter is a real volume flowmeter. For manufacturers and users, electromagnetic flowmeter with an actual calibration with ordinary water can be measured by other volume flow of conductive fluid without any correction. This is a prominent advantages of electromagnetic flowmeter, any other flowmeter have not. The measuring tube without activity, chokes components and pressure loss has high reliability

2.2 转换器基本电路

The basic circuit of converter

电磁流量计转换器向电磁流量传感器励磁线圈提供稳定的励磁电流，前置放大器将传感器



感应的电动势放大、转换成标准的电流信号或频率信号，便于流量的显示、控制与调节。

It can provide stable excitation current from electromagnetic flowmeter converter to excitation coil of electromagnetic flowmeter sensor. The preamplifier will make a amplification of electromotive force of sensor induction, which is converted into a standard current signal or frequency signal. It facilitates the flow of the display, control and adjustment.

3 整机性能参数

Performance Parameters

3.1 公称通径系列 DN(mm)

The series of nominal diameter DN (mm)

管道式四氟衬里:

PTFE lining pipeline

10, 15, 20, 25, 32, 40, 50, 65, 80, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500, 600

管道式橡胶衬里:

Rubber lining pipeline

40, 50, 65, 80, 100, 125, 150, 200, 300, 350, 400, 500, 600, 800, 1000, 1200, 1400, 1500, 1600, 1800, 2000, 2200.

注：特殊规格可以定制（陶瓷衬里、高温型、高压型等）。

Note: special specifications can be customized (ceramic lining, high temperature, high pressure, etc.).

3.2 流动方向:

The flow direction

正, 反, 净流量

量程比: 150: 1

重复性误差: 测量值的 $\pm 0.1\%$

Net flows of forward and reverse direction

Range: 150:1

Repeatability error: measurement of $\pm 0.1\%$

3.3 精度等级:

Accuracy level

管道式: 0.3 级, 0.5 级, 1.0 级

Pipeline: 0.3, 0.5, and 1.0

3.4 被测介质温度:

the temperature measured medium

普通橡胶衬里: $-0\sim+70^{\circ}\text{C}$

高温橡胶衬里: $-0\sim+95^{\circ}\text{C}$

聚四氟乙烯衬里: $-20\sim+100^{\circ}\text{C}$

高温型乙烯衬里: $-20\sim+150^{\circ}\text{C}$



Ordinary rubber lining
High temperature rubber lining
PTFE lining
High temperature type vinyl liner

3.5 额定工作压力:

The rated working pressure

管道式: DN10—DN150: $\leq 4.0\text{MPa}$;

Piping Type DN200—DN600: $\leq 1.6\text{MPa}$;

DN200—DN1200: $\leq 1.0\text{MPa}$

其他规格和标准可按用户要求生产。

Other specifications and standards according to users' requirement

3.6 流量测量范围:

The flow measurement range

流量测量范围对流速度范围是 0.3—15m/s

The flow measurement range (convection velocity range) is 0.3-15 m/s

3.7 电导率范围:

Conductivity range

被测流体电导率 $k \geq 5 \mu\text{S/cm}$

Conductivity of measured fluid

大多数以水为成份的介质,其电导率在 200-800 $\mu\text{s/cm}$ 范围内,均可选用电磁流量。

That most of the ingredients in water medium and its conductivity is within 200-800 $\mu\text{s/cm}$ can choose electromagnetic flowmeter.

3.8 电流输出及负载电阻:

Current output and load resistance

双向两路, 0~10mA/4~20mA 全隔离, 负载电阻 $R < 1500\Omega/750\Omega$,

Two-way two road, 0 ~ 10 ma / 4 ~ 20 mA full isolation, load resistance $R < 1500 \Omega / 750 \Omega$

3.9 频率输出:

The frequency output

正向和反向流量输出,输出频率上限可在 1-5000HZ 范围内设定。带光电隔离的晶体管集电极双向输出。外接电源不大于 35V, 导通时集电极最大电流为 250 mA。

the output frequency of the forward and reverse flow output, can be set within the range 1-5000 hz with photoelectric spring from the transistor collector bidirectional output.(when external power is not more than 35 v, conducting collector maximum current of 250 mA)

3.10 脉冲输出:

Pulse output

正向和反向流量输出, 输出脉冲上限可达 5000cp/s。脉冲当量为 0.001L-1.0m³/cP。脉冲宽度自动设置为 20ms 或方波。带光电隔离的晶体管集电极开路输出。外接电源不大于 35V, 导通时集电极最大电流为 25mA。

The output pulse limit of the forward and reverse flow output can be up to 5000 cp/s. Pulse equivalent is 0.001 L - 1.0 m³ / cP. The pulse width is automatically set to 20 ms or square wave with photoelectric isolation transistor open collector output when external power is not more than 35 v, and conducting collector maximum current is 25 mA.

3.11 流向指示输出:

The output of indication

本流量计可测正反方向的流体流动流量。并可以判断出流体流动的方向。规定显示正向流量时输出+10V 高电平, 反向流体流动输出 0V 的低电平。

Forward and reverse direction of fluid flow of traffic can be measured. And the direction of fluid flow is also. It is stipulated according to flow when the forward flow output high level is + 10 v and the reverse flow output low level is 0 v.

3.12 电极材料:

Electrode materials

含钼不锈钢、哈氏合金 (HC)、铂 (Pt)、钛 (Ti)、钽 (Ta) 或其他特殊材料

Molybdenum stainless steel, hartz alloy (HC), platinum (Pt), titanium (Ti), tantalum (Ta) or other special materials

3.13 防护等级:

Protection grade

潜水型 submerged type: IP68

标准型 standard type : IP65

3.14 供电电源:

Power supply

85~265VAC, 45~63Hz, 消耗总功率 Overall consumed power <20W

11~40VDC

3.15 直管段长度:

Straight pipe length

管道式 Piping Type: 上游 upstream $\geq 5DN$, 下游 downstream $\geq 2DN$

3.16 连接方式:

Connection method

流量计与配管之间均采用法兰连接, 法兰连接尺寸应符合 GB/T9119-2000 的规定。

Flow meter and piping are made between the flange connection, flange connection size should comply with the provisions of GB/T9119-2000

3.17 防爆标志:

Explosion-proof sign

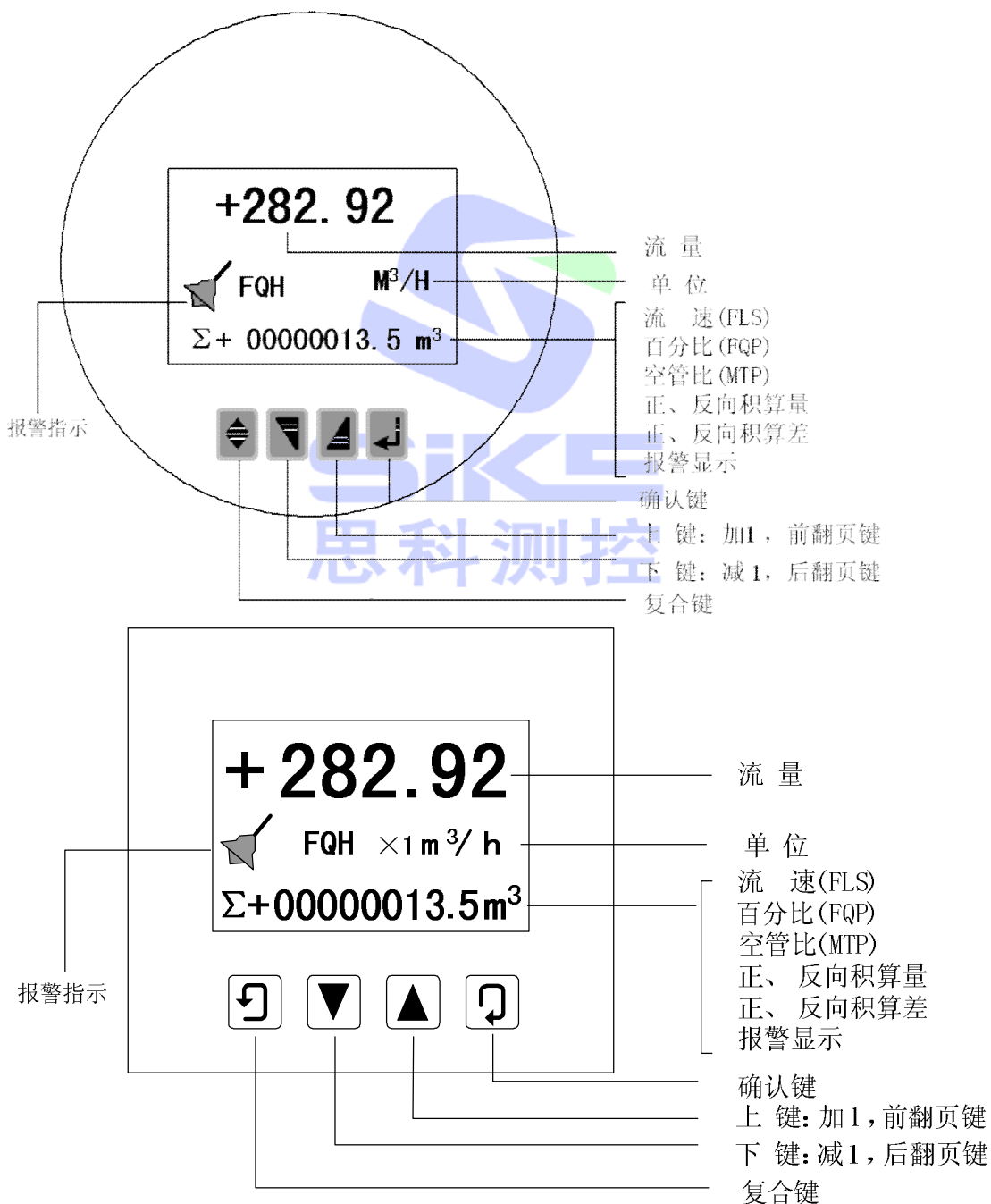
Exdm II CT4 (不含乙炔) acetylene except

4 变送器接线及参数设置

Transmitter connection and parameter Settings

4.1 四键操作键盘定义与液晶显示:

Four key operational definition and liquid crystal display keyboard

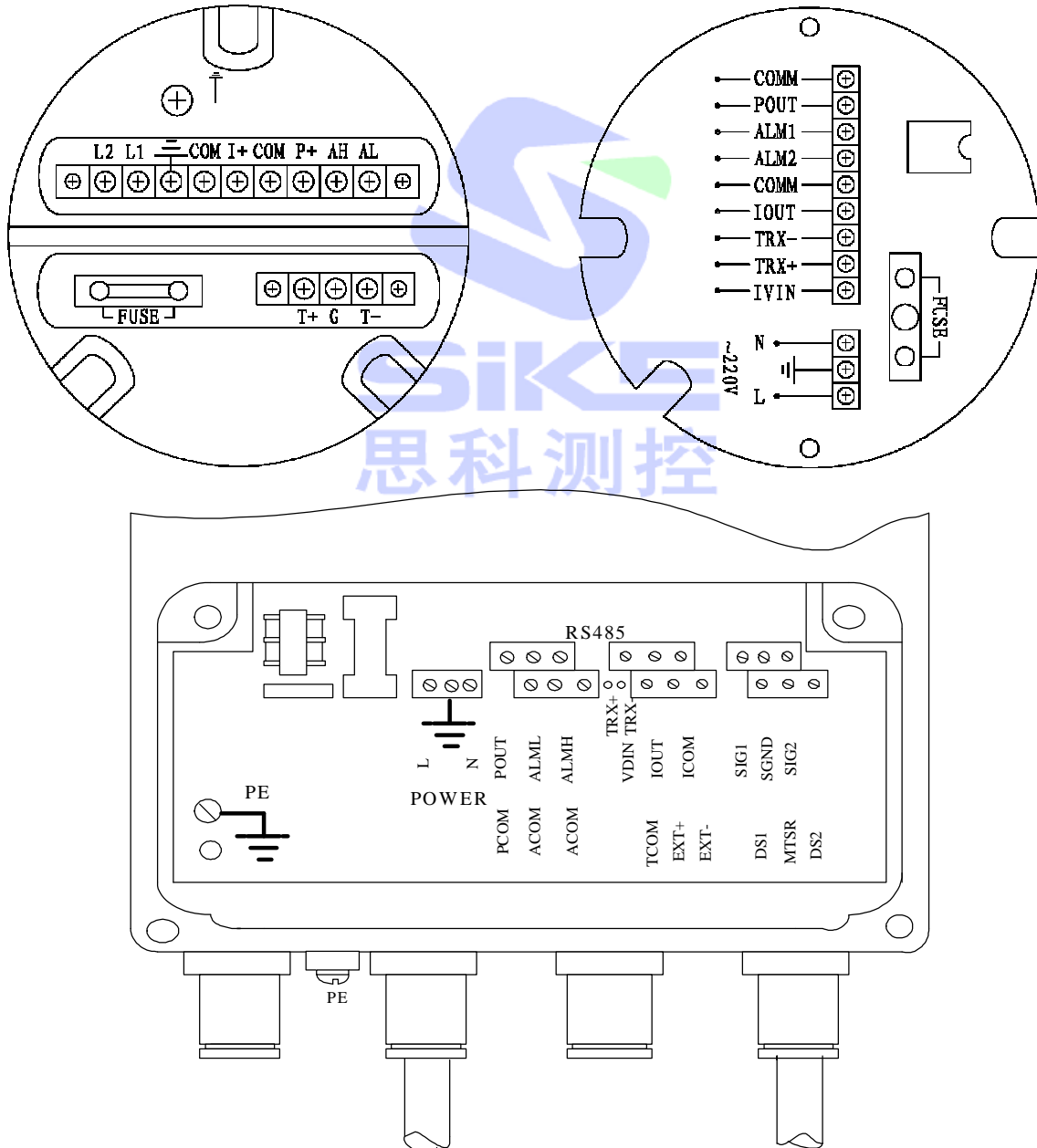


说明：在测量状态下，按“复合键 + 确认键”，出现转换器功能选择画面“参数设置”，按一下确认键，仪表出现输入密码状态，根据保密级别，按本厂提供的密码对应修改。再按“复合键 + 确认键”后，则进入需要的参数设置状态。如果想返回运行状态，请按住确认键数秒。

Explanation: the measurement mode, press the "composite keys + confirm key"-à a translator feature selection screen "parameter Settings"àclick on the confirm buttonàinput password (according to the password of different levels of confidentiality provided by factory) àPress "composite keys + confirm key" againàentering a state need parameter Settings. If you want to return to the running state, please confirm button and hold for a few seconds

4.2 端子接线图：

terminal connection diagram



圆表各接线端子含义:

Round table each terminal blocks

| | | |
|-------|--------|--|
| I+ | (IOUT) | 流量电流输出 (两线制电流输出) Flow current output(Two wire current output) |
| COM | (COMM) | 电流输出地 current output ground |
| P+ | (POUT) | 双向流量频率 (脉冲) 输出 Two-way flow frequency (pulse) outputs |
| COM | (COMM) | 频率、(脉冲) 输出地 frequency (pulse) outputs ground |
| AL | (ALM2) | 下限报警输出 The lower limit alarm output |
| AH | (ALM1) | 上限报警输出 The Upper limit alarm output |
| COM | | 报警输出地 alarm output ground |
| FUSE | | 输入电源保险丝 Input power fuse |
| T+ | (TRX+) | 通讯输入 communication input (RS485-A) |
| T- | (TRX-) | 通讯输入 communication input (RS485-B) |
| G | | RS232 地 communication ground |
| L1 | | 电源输入 power supply input 220V (+24V) |
| L2 | | 电源输入 power supply input 220V (24V) |
| | (IVIN) | 两线制 24V 电压输入 Two wire 24 v voltage input |
| FUSE: | | 输入电源保险丝 Input power fuse |

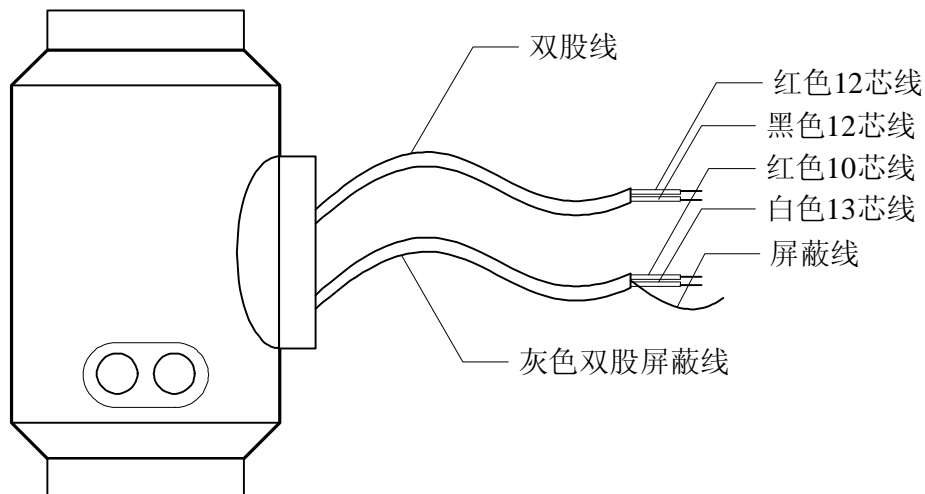
方表各接线端子标示含义:

Meanings of each terminal in square table respectively

| | | |
|-------|----------------|-----------|
| SIG 1 | 信号 1 | } 接分体型传感器 |
| SGND | 信号地 | |
| SIG 2 | 信号 2 | |
| DS 1 | 激励屏蔽 1 | |
| DS 2 | 激励屏蔽 2 | |
| EXT + | 励磁电流 + | |
| EXT - | 励磁电流 - | } 模拟电流输出 |
| VDIN | 电流两线制 24V 接点 | |
| IOUT | 模拟电流输出 | |
| ICOM | 模拟电流输出地 | } 频率或脉冲输出 |
| POUT | 流量频率 (脉冲) 输出 | |
| PCOM | 频率 (脉冲) 输出地 | } 两路报警输出 |
| ALMH | 上限报警输出 | |
| ALML | 下限报警输出 | |
| ACOM | 报警输出地 | } 通讯输入 |
| TRX + | 通讯输入 (RS485-A) | |
| TRX - | 通讯输入 (RS485-B) | |
| TCOM | 232 通讯地 | |

4.3 信号线处理:

Signal processing



信号线标示如下:

Signal lines labeled as following

双股线（接励磁电流）：红色 12 芯线；黑色 12 芯线

Twin line (connect excitation current) : red 12 core; Black 12 core

灰色双股屏蔽线：红色 10 芯线接“信号 1”；白色 13 芯线接“信号 2”；屏蔽线接“信号地”。

Gray twin shielded wire: red 10 core "1" signal; White 13 core 2 "signal"; Shielding wire connect "signal ground"

4.4 按键功能:

Keys function

4.4.1 自动测量状态下键功能

Key function in automatic measurement condition

上 键： 循环选择屏幕下行显示内容；

Up key select screen display content circularly

复合键 + 确认键：进入参数设置状态；

Composite key + conform key set parameter

确认键： 返回自动测量状态。

Conform key Return to automatic measurement state

在测量状态下，LCD 显示器对比度的调节方法，通过“复合键 + 上键”或“复合键 + 下键”来调节合适的对比度。

The method of adjusting LCD contrast method in measuring state: press the "composite key + up key" or "composite key + down key".

4.4.2 参数设置状态下各键功能

Functions of each key in setting parameter state

下 键： 光标处数字减 1；

Down key The cursor number minus 1

上 键： 光标处数字加 1；

| | |
|--------------------------|--|
| Up key | The cursor number add 1 |
| 复合键 +下键: | 光标左移; |
| Composite key + down key | cursor left |
| 复合键 +上键: | 光标右移; |
| Composite key + up key | cursor right |
| 确认键: | 进入/退出子菜单; |
| Conform key | Entry/exit submenu |
| 确认键: | 在任意状态, 连续按下两秒钟, 返回自动测量状态。 |
| Conform key | Pressing two seconds consecutively in any state, it will return to the automatic measurement state |

注: (1) 使用“复合键”时, 应先按下复合键再同时按住“上键”或“下键”。

Press the composite key and meanwhile hold down the "up key" or "down key" in using composite key

(2) 在参数设置状态下, 3 分钟内没有按键操作, 仪表自动返回测量状态。

It will return to measurement status automatically without key stroking in 3 minutes in the condition of parameter Settings

(3) 流量零点修正的流向选择, 可将光标移至最左面的“+”或“-”下, 用“上键”或“下键”切换使之与实际流向相反。

Flow direction of correcting zero point: move the cursor to the left of the "+" or "-" and use "up key" or "down key" to switch to the contrary direction of actual flow.

4.5 仪表详细参数说明

Instrument parameters in detail

4.5.1 语言 language

L_Mag511 电磁转换器具有中、英文两种语言, 用户可自行选择操作。

L Mag511 electromagnetic transducer in Chinese and English two languages, the user can choose it by oneself.

4.5.2 仪表通讯地址

Instrument connecting address

指多机通讯时, 本表的通讯地址, 可选范围: 01 ~ 99 号地址, 0 号地址保留。

The optional scope of address in multicomputer communication: 01 ~ 99 addresses, 0 address retention

4.5.3 仪表通讯速度

Instrument communication speed

仪表通讯波特率选择范围: 300、600、1200、2400、4800、9600、19200、38400。

Baud rate range of instrument communication

4.5.4 流量单位

Flow unit

在参数中选择流量显示单位, 仪表流量显示单位有: L/s、L/m、L/h、m³/s、m³/m、m³/h 用户可根据工艺要求和使用习惯选定一个合适的流量显示单位。

Flow meter display units are: L/m/s, L, L/h, m³ / s, m³ / m, m³ / h The user can select a suitable flow display unit according to the technological requirements by oneself.

4.5.5 仪表量程设置

Instrument range Settings

仪表量程设置是指确定上限流量值, 仪表的下限流量值自动设置为“0”。

Instrument range setting: when determining the maximum flow rate value, the lower limit of instrument flow value is automatically set to "0"

因此，仪表量程设置确定了仪表量程范围，也就确定了仪表百分比显示、仪表频率输出、仪表电流输出与流量的对应关系：

Therefore, the instrument range setting determines the full scale range, It will determine the relations of the percentage display output, instrument frequency output and instrument current output in corresponding to flow.

仪表百分比显示值 = (流量值测量值 / 仪表量程范围) * 100 %;

Instrument display value = percentage (flow value measurement/full scale range) * 100%

仪表频率输出值 = (流量值测量值 / 仪表量程范围) * 频率满程值;

Instrument frequency output value = flow value measurement/full scale * full range frequency values

仪表电流输出值 = (流量值测量值 / 仪表量程范围) * 电流满程值 + 基点; 仪表脉冲输出值不受仪表量程设置的影响;

Instrument output current value = flow value measurement/full scale * current full range value + basis points; Instrument pulse output values are not affected by instrument range settings

4.5.6 测量阻尼时间

Damping measurement of time

长的测量滤波时间能提高仪表流量显示稳定性及输出信号的稳定性，适于总量累计的脉动流量测量。短的测量滤波时间表现为快地测量响应速度，适于生产过程控制中。测量滤波时间的设置采用选择方式。

Measurement filtering for a long time can improve the stability of display and the output signal, It suits for the cumulative total of pulsating flow measurement. Measurement filtering for a shot time meets for fast response speed, which is suitable for process control in production. Measure set in using filtering time is optional.

4.5.7 流量方向择项

Choose a flow direction

如果用户认为调试时的流体方向与设计不一致，用户不必改变励磁线或信号线接法，而用流量方向设定参数改动即可。

If the users consider the inconformity of fluid flow direction in design and debugging, they will not have to change excitation line or line connection in stead of setting parameters change with flow direction

4.5.8 流量零点修正

Zero point correction

零点修正时应确保传感器管内充满流体，且流体处于静止状态。流量零点是用流速表示的，单位为 $m m / s$ 。

Zero point correction should ensure that the sensor tube is filled with fluid in the stationary state. Zero flow is expressed with velocity and the unit is mm/s

转换器流量零点修正显示如下：

Converter flow zero point correction shown below

| |
|------------|
| FS = ○○○○○ |
| ± ○○○○○ |

上行小字显示：FS 代表仪表零点测量值；

Uplink small print shows that: the FS is on behalf of zero point measurements

下行大字显示：流速零点修正值；

Downward big print shows that velocity of zero

当 FS 显示不为“0”时，应调修正值使 $FS = 0$ 。注意：若改变下行修正值，FS 值增加，需要改变下行数值的正、负号，使 FS 能够修正为零。

When the FS display is not to "0", it should be revised to make the $FS = 0$. Note: if you change the downward revisions, FS value will increase. To change the positive and negative downward numerical is needed. FS can be revised to zero

流量零点的修正值是传感器的配套常数值，应记入传感器的记录单和传感器标牌。记入时传感器零点值是以 mm/s 为单位的流速值，其符号与修正值的符号相反。

Revised flow zero is the constant value of forming a complete set of the transducer It should be recorded in the record sheet and sign sensor at the sensor zero value in units of mm/s velocity value Its symbols and revised symbols are adverse.

4.5.9 小信号切除点

small signal excision

小信号切除点设置是用量程的百分比流量表示的。小信号切除时，用户可以选择同时切除流量、流速及百分比的显示与信号输出；也可选择仅切除电流输出信号和频率（脉冲）输出信号，保持流量、流速及百分比的显示。

Small signal resection point set is expressed in the percentage flow rate range. When the small signal is cut off, the user can select to cut off the signals of flow, flow rate and percentage of display and signal output at the same time; It is available that the displays of current output signal, the frequency output signal (pulse), maintain flow, flow velocity and the percentage are cut off only.

4.5.10 流量积算单位

Integrating 4.5.10 flow unit

转换器显示器为 9 位计数器，最大允许计数值为 999999999。

Converter displays for nine counters, maximum allowable count is to 999999999

使用积算单位为 L、 m^3 （升、立方米）。

Integrating unit is L, m^3 (liters, cubic meters)

流量积算当量为：0.001L、 0.010L、 0.100L、 1.000L
0.001 m^3 、 0.010 m^3 、 0.100 m^3 、 1.000 m^3 ；

Flow integrating equivalent

4.5.11 反向输出允许功能

Reverse output functions

当反向输出允许参数设在“允许”状态时，只要流体流动，转换器就按流量值输出脉冲和电流。当反向输出允许参数设在“禁止”时，若流体反向流动，转换器输出脉冲为“0”，电流输出为信号“0”（4mA 或 0mA）。

When reverse output parameters is located in the "allow" state, as long as the fluid flows, the converter

output will be set to the value of pulse and current according to the flow rate value. When reverse output parameter is located in the "no", if the fluid flows reversely, the converter output pulse is "0" and also for signal output current (4 mA or 0)

4.5.12 电流输出类型

Current output type

用户可在电流输出类型中选择 0~10mA 或 4~20 mA 电流输出。

The user can choose in the current output type 0 ~ 10 mA, or 4 ~ 20 mA.

4.5.13 脉冲输出方式

Pulse output mode

脉冲输出方式有频率输出和脉冲输出两种供选择：

Two options of pulse output mode are output frequency and pulse output

频率输出方式：频率输出为连续方波，频率值与流量百分比相对应。

Continuous square wave frequency output way, frequency, frequency values correspond to flow percentage

频率输出值 = (流量值测量值 / 仪表量程范围) * 频率满程值；

Frequency output value = (range), flow value measurement/full scale * full range frequency values

脉冲输出方式：脉冲输出为矩形波脉冲串，每个脉冲表示管道流过一个流量当量，脉冲当量由下面的“脉冲当量单位”参数选择。脉冲输出方式多用于总量累计，一般同积算仪表相连接。

Pulse output mode:

Pulse output the rectangular wave pulse sequence.

An equivalent flow corresponds to a pulse which is selected by pulse equivalent parameter.

Output mode are used in accumulative total and connected to the integrating instrument.

4.5.14 脉冲当量单位

Pulse equivalent units

脉冲单位当量指一个脉冲所代表的流量值，仪表脉冲当量选择范围为：

Pulse equivalent unit refers to a flow value, pulse represents instrument

Pulse equivalent t range of choice

| 脉冲当量 Pulse equivalent | 流量值 flow value | 脉冲当量 | 流量值 |
|--------------------------|-------------------|------|------------|
| 1 | 0.001L/cp | 5 | 0.001m3/cp |
| 2 | 0.01L/cp | 6 | 0.01m3/cp |
| 3 | 0.1L/cp | 7 | 0.1m3/cp |
| 4 | 1.0L/cp | 8 | 1.0m3/cp |

在同样的流量下，脉冲当量小，则输出脉冲的频率高，累计流量误差小。

At the same flow rate, pulse equivalent is small, the output pulse frequency is high, the cumulative flow error is small

4.5.15 频率输出范围

Output frequency range

仪表频率输出范围对应于流量测量上限，即百分比流量的 100%。频率输出上

限值可在 1~5000Hz 范围内任意设置。

Instrument output frequency range is the percentage of 100% of the traffic corresponding to the upper limit of the flow measurement. The upper limit frequency output can be set up within the scope of 1 ~ 5000 HZ and arbitrarily

4.5.16 空管报警允许

Blank-pipe alarm allowance

具有空管检测功能，且无需附加电极。若用户选择允许空管报警，则当管道中流体低于测量电极时，仪表能检测出一个空管状态。在检出空管状态后，仪表模拟输出、数字输出置为信号零，同时仪表流量显示为零。

It has blank-pipe detection function without additional electrodes. Blank-pipe alarm if allowed users to choose, when it's below the measuring electrode of fluid, instrument can detect a blank-pipe. After check out the blank pipe state, analog output, digital output for signal is zero, and flow meter to zero

4.5.17 空管报警阈值

Blank-pipe alarm threshold

在流体满管的情况下（有无流速均可），对空管报警设置进行了修改，用户使用更加方便，空管报警阈值参数的上行显示实测电导率，下行设置空管报警阈值，在进行空管报警阈值设定时，可根据实测电导率进行设定，设为实测电导率的 3~5 倍即可。

In the condition of the fluid filled pipe (presence of velocity can be), the blank-pipe alarm Settings were modified, and users to use more convenient. Blank-pipe alarm threshold parameter upward shows the measured conductivity, descending set blank-pipe alarm threshold. When making blank-pipe alarm threshold setting, it can be set according to the measured conductivity, is set to 3 ~ 5 times of the measured conductivity.

4.5.18 上、下限报警允许

Upper and the lower limit alarm

用户选择允许或禁止。

Users choose to allow or not

4.5.19 上限报警数值

Upper limit alarm value

上、下限报警值以量程百分比计算，该参数采用数值设置方式，用户在 0%~199.9%之间设置一个数值。仪表运行中满足报警条件，仪表将输出报警信号。

Upper and the lower limit alarm value are based on a percentage with the parameters of the numerical method. The users set a value between 0% ~ 199.9%. The instrument will be output alarm signal if it meets requirements of alarm condition.

4.5.20 励磁报警

Excitation alarm

选择允许，带励磁报警功能，选择禁止，取消励磁报警功能。

Excitation alarm function if allowed, vice versa

4.5.21 总量清零密码

Total reset password

用户使用第三级别以上密码可以设置该密码，然后在总量清零内设置该密码。

Users can use the third level of password or above to set and then set it up within the total reset

4.5.22 励磁方式选择

Excitation mode selection

L_Mag511 电磁转换器提供三种励磁频率选择：即 1/16 工频（方式 1）、1/20 工频（方式 2）、1/25 工频（方式 3）。小口径的传感器励磁系统电感量小，应选择 1/16 工频。大口径的传感器励磁系统电感量大，用户只能选择 1/20 工频或 1/25 工频。使用中，先选励磁方式 1，若仪表流速零点过高，再依次选方式 2 或方式 3。注意：在哪种励磁方式下标定，就必须在哪种励磁方式下工作。

L Mag511 electromagnetic transducer provides three kinds of excitation frequency selection: namely 1/16 power frequency way (1), 1/20 power frequency way (2), 1/25 power frequency way (3)

Small inductance with little nductance value of sensor excitation system is corresponding to 1/16 power frequency. Large amount inductance with huge nductance value of sensor excitation system is corresponding to 1/20 or 1/25 power frequency.

Step: excitation mode 1, if zero meter flow is too high to work-à mode 2 or 3.

Note: working in the specific excitation mode calibrated

4.5.23 正、反向总量高位、低位

Total highs and lows of positive and reverse

总量高低位设置能改变正向累计总量、反向累计总量的数值，主要用于仪表维护和仪表更换。

Hi-lo setting can change the value of positive cumulative total amount and reverse cumulative amount, It is mainly used for maintain and replacement of instrument.

用户使用 5 级密码进入，可修改正、反向累积量（ $\Sigma+$ 、 $\Sigma-$ ），一般设的累积量不能超过计数器所计的最大数值（999999999）。

Users can modify the positive and reverse cumulants ($\Sigma+$, $\Sigma-$) with 5 level password when entering. The general set of cumulants can't exceed the counter meter by the maximum value (999999999)

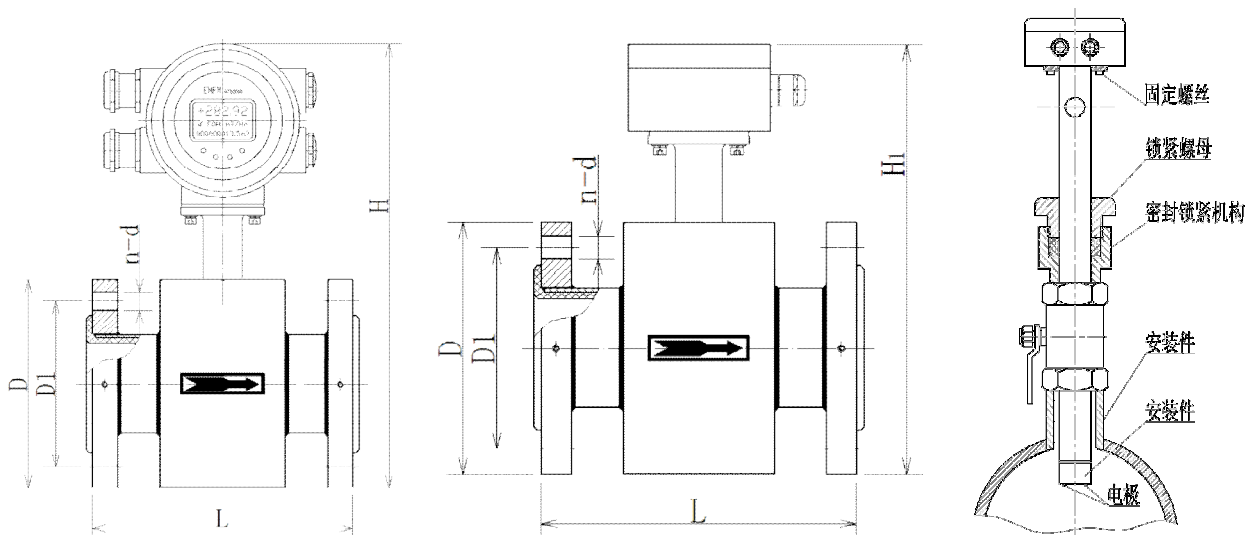
5 安装方式与方法及尺寸

Installation method and size

SKLD 系列电磁流量计的安装方式根据传感器的不同有以下几种安装方式：法兰式安装方式，对夹式安装方式，插入式安装方式。

The installation way of SKLD series electromagnetic flowmeter depends on sorts of the sensor. As following shown: flange installation, wafer installation, plug-in installation

法兰连接一体式电磁流量计和分体式电磁流量计的结构及安装尺寸，见下图：
Flange connection: the structure and installation dimensions of two types of flowmeters (the compact and the sensor for remote transmitter<split type>). As following



一体式法兰连接电磁流量计安装图

Compact type schematic diagram

分体式法兰连接传感器安装图

Split type schematic diagram

插入式安装示意图

Plug-in installation schematic diagram

为了正确地测量，在选择管道上位置时应注意以下几点要求：

In order to measure correctly, please pay attention to the following points when choosing line position

- (1) 传感器既可在垂直管道上安装，也可在水平或者倾斜管道上安装，但要求二电极的中心连线处于水平状态。

Sensor can be installed in vertical and horizontal or inclined pipe, and the position of two electrodes at the central connection in horizontality is required.

- (2) 介质在安装位置应该保证满管流动，避免不满管及气体附着在电极上。

The medium in the installation position should be ensured in the case of full pipe flowing. Avoid not-full-piping and gas attached to the electrode

- (3) 对于液固两相流体，最好采用垂直安装，使被传感器衬里磨损均匀，延长使用寿命。

In order to gain uniform attrition of sensor lining and a life prolongation, vertical installation for liquid-solid two-phase fluid is required.

- (4) 流量计安装位置介质不满管时，可采取抬

高流量管后端管路的方法，使其满管，严禁

在管道最高点和出水口安装流量计（如图）

In the case of not-full-piping, you can raise backend line of the flow tube to congest. The installation at the highest point in pipe and the outlet is prohibited. (as shown in figure)

- (5) 修改管道的安装方法：

The installation method of modifying pipeline

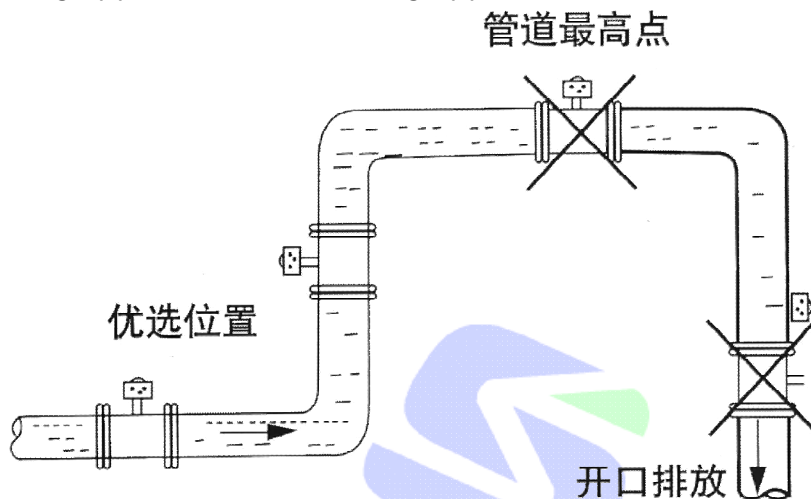
当介质流速达不到要求时，应当选用小口径的流量计，这时应使用异径锥形

管或修改部分管道，使其与传感器同口径，但前后直管段至少须满足：前直管段 $\geq 5DN$ ，后直管段 $\geq 3DN$ （DN 为管径）

When the velocity of the medium can not meet the requirements, you shall choose small diameter flowmeter. Then you should use different diameter taper pipe or modify part of the pipeline to make the same caliber with sensors. And the least requirement of forward-straight-pipe and backward-straight-pipe is: forward-straight-pipe $\geq 5DN$, backward-straight-pipe $\geq 3DN$ (DN stands for pipe diameter)

(6) 前后直管段长度为流量计前 $\geq 5DN$ ，后端 $\geq 3DN$

forward-straight-pipe $\geq 5DN$, backward-straight-pipe $\geq 3DN$



法兰连接式传感器外形尺寸图

Overall dimensions of flange-connection-type sensor

| 口径 (mm) Caliber | 公称压力 (MPa) Nominal pressure | 外形尺寸 (mm) dimensions | | | | |
|-----------------------|-----------------------------------|-------------------------|-----|-----|-----|--------|
| | | H | L | D | D1 | n-d |
| 10 | 1.6—4.0 | 290 | 200 | 90 | 60 | 4--Φ14 |
| 15 | 1.6—4.0 | 290 | 200 | 95 | 65 | 4--Φ14 |
| 25 | 1.6—4.0 | 290 | 200 | 115 | 85 | 4--Φ14 |
| 32 | 1.6—4.0 | 305 | 200 | 140 | 100 | 4--Φ18 |
| 40 | 1.6—4.0 | 305 | 200 | 150 | 110 | 4--Φ18 |
| 50 | 1.6—4.0 | 315 | 200 | 165 | 125 | 4--Φ18 |
| 65 | 1.0—1.6 | 330 | 200 | 185 | 145 | 4--Φ18 |
| | 2.5—4.0 | | | 185 | 145 | 8--Φ18 |
| 80 | 1.0—1.6 | 330 | 200 | 200 | 160 | 8--Φ18 |
| | 2.5—4.0 | | | 200 | 160 | 8--Φ18 |
| 100 | 1.0—1.6 | 345 | 250 | 220 | 180 | 8--Φ18 |

| | | | | | | |
|------|---------|------|------|------|------|--------|
| | 2.5—4.0 | | | 235 | 190 | 8—Φ22 |
| 125 | 1.0—1.6 | 345 | 250 | 250 | 210 | 8—Φ18 |
| | 2.5—4.0 | | | 270 | 220 | 8—Φ26 |
| 150 | 1.0—1.6 | 355 | 300 | 285 | 240 | 8—Φ22 |
| | 2.5—4.0 | | | 300 | 250 | 8—Φ26 |
| 200 | 1.6 | 380 | 350 | 340 | 295 | 12—Φ22 |
| | 2.5 | | | 360 | 310 | 12—Φ26 |
| 250 | 1.6 | 405 | 450 | 405 | 355 | 12—Φ26 |
| | 2.5 | | | 425 | 370 | 12—Φ30 |
| 300 | 1.0 | 435 | 500 | 445 | 400 | 12—Φ22 |
| 350 | | 620 | 550 | 505 | 460 | 16—Φ22 |
| 400 | 1.0 | 675 | 600 | 565 | 515 | 16—Φ26 |
| 450 | | 727 | | 615 | 565 | 20—Φ26 |
| 500 | | 782 | | 670 | 620 | 20—Φ26 |
| 600 | | 850 | | 780 | 725 | 20—Φ30 |
| 700 | | 915 | 700 | 860 | 810 | 24—Φ30 |
| 800 | | 980 | 800 | 975 | 920 | 24—Φ30 |
| 900 | | 1046 | 900 | 1075 | 1020 | 24—Φ30 |
| 1000 | | 1112 | 1000 | 1175 | 1120 | 28—Φ30 |
| 1200 | | 1167 | 1200 | 1405 | 1340 | 32—Φ33 |

6 自诊断信息与故障处理

Self-diagnosis and troubleshooting

电磁流量转换器具有自诊断功能。除了电源和硬件电路故障外，一般应用中出现的故障均能正确给出报警信息。这些信息在显示器右下方给出相应提示。

Electromagnetic flow converter has the self-diagnosis function. It can offer fault alarm information correctly except the faults of power supply and hardware circuit. These informations are given in the lower right display.

6.1 故障处理: troubleshooting

6.1.1 仪表无显示

Non-display

- 检查电源是否接通； check whether the power supply is switched on
- 检查电源保险丝是否完好； check whether the power fuse is intact
- 检查供电电压是否符合要求； check whether the power supply voltage is in accordance with the requirements

如果上述都正常，请将转换器交生产厂维修。

If the above works well, please deliver the converter to maintenance department.

6.1.2 励磁报警

Excitation alarm

- a) 励磁接线 X 和 Y 是否开路； check whether the excitation wiring X and Y are open.
- b) 检查励磁线圈电阻值正常，则转换器有故障。

Check whether the resistance of excitation coil is normal. If yes, the converter has fault.

6.1.3 空管报警

Blank-pipe alarm

- a) 测量流体是否充满传感器测量管；

Check whether Fluid is full of sensor measurement tube

- b) 用导线将转换器信号输入端子 A、B 和 C 三点短路，此时如果“空管报警”提示撤消，说明转换器正常，有可能是被测流体电导率低或空管阈值及空管量程设置错误；

Input converter signal to terminal A, B and C with cable. If the blank-pipe alarm removes, converter is normal. (Low conductivity, blank-pipe threshold value or setup error)

- c) 检查信号连线是否正确；

Check whether the signal connection is correct

- d) 检查传感器电极是否正常。

Check whether the sensor electrode is normal

6.1.4 测量的流量不准确 flow value is not accurate

- a) 流体是否充满传感器测量管； Whether sensor tube is filled with fluid
- b) 信号线连接是否正常； Whether Signal connection is normal
- c) 检查传感器系数、传感器零点是否按传感器标牌或出厂校验单设置正常；

Check whether sensor coefficient and sensor zero are properly set according to the sensor sign or factory check list

6.2 保养、维修：

Maintenance

6.2.1 传感器安装场所应符合第四节的要求，并要保持外罩整洁

Sensor installation site should be in accord with the requirement of the fourth quarter, and maintain a clean and tidy outer cover.

6.2.2 变送器需放置在整洁、通风、干燥的地方。

Transmitter shall be placed in a clean, ventilated, dry place.

6.2.3 每两年需检检定一次，对精度要求较高的用户，需送检。

Need to check verification once every two years. High accuracy requirement needs test.

6.3 运输、贮存：

Transportation and storage

6.3.1 运输前必须将仪表装箱，运输过程中要小心轻放，不得野蛮装卸。

Pack before transportation & Transportation process with care & Rough handling forbidden

6.3.2 贮存场所必须干燥、通风，避免腐蚀气体侵蚀，环境温度不要过低或过高。

Storage areas must be dry and ventilated & avoid erasing of corrosion gas & environment temperature is suitable.

6.3.3 贮存期限最好不要超过三年。

Storage time within 3 years is better.

6.4 开箱及检查:

Unpacking and inspection

6.4.1 开箱时不得重力捶击包装箱，应注意不要损坏仪表。

Thumping package case before open is forbidden. Don't damage instrument.

6.4.2 检查内容，按装箱单所注事项逐一检查。

Check the content one by one according to the items on the packing list.

附录 Appendix 1:

1m/s 流速对应流量

Velocity VS Flow

| | | | | | |
|---|------------|------------|------------|-------------|-------------|
| 公称通径 (mm) Nominal diameter | 10 | 15 | 25 | 32 | 40 |
| 1m/s 流速对应流量 (m ³ /h) Velocity VS Flow | 0.283 | 0.637 | 1.77 | 2.90 | 4.52 |
| 公称通径 (mm) | 50 | 80 | 100 | 150 | 200 |
| 1m/s 流速对应流量 (m ³ /h) | 7.08 | 18.1 | 28.3 | 63.7 | 113 |
| 公称通径 (mm) | 250 | 300 | 350 | 400 | 500 |
| 1m/s 流速对应流量 (m ³ /h) | 177 | 255 | 347 | 453 | 708 |
| 公称通径 (mm) | 600 | 700 | 800 | 1000 | 1200 |
| 1m/s 流速对应流量 (m ³ /h) | 1019 | 1387 | 1811 | 2830 | 4075 |

附录 Appendix 2:

推荐用户选用范围

Scope recommended

| 公称直径 Nominal diameter | 推荐用户选用 流量范围 (m ³ /h) Scope recommended | 仪表最大可测量 流量范围 (m ³ /h) Flow range max available | 压力范围 Pressure range |
|--------------------------|---|---|--|
| DN10 | 0.06-2.3 | 0.028-2.83 | ≅ 4.0MPa |
| DN15 | 0.15-5.1 | 0.064-6.37 | |
| DN25 | 0.4-14 | 0.177-17.7 | |
| DN32 | 0.7-23 | 0.29-29 | |
| DN40 | 1-36 | 0.452-45.2 | |
| DN50 | 1.7-57 | 0.708-70.8 | |
| DN80 | 4-145 | 1.81-181 | ≅ 1.0MPa 高压可按特殊要求订 货 Order according to special requirements if high pressure |
| DN100 | 7-226 | 2.83-283 | |
| DN150 | 15-510 | 6.37-637 | |
| DN200 | 27-904 | 11.3-1130 | |
| DN250 | 42-1416 | 17.7-1770 | |
| DN300 | 61-2040 | 25.5-2550 | |
| DN350 | 83-2776 | 34.7-3470 | |
| DN400 | 109-3624 | 45.3-4530 | |
| DN500 | 170-5664 | 70.8-7080 | |
| DN600 | 245-8152 | 101.9-10190 | |
| DN700 | 333-11096 | 138.7-13870 | |
| DN800 | 435-14488 | 181.1-18110 | |
| DN1000 | 679-22640 | 283-28300 | |
| DN1200 | 978-35600 | 407.8-40750 | |

附录 Appendix 3:

SKLD 型电磁流量计选型编码

SKLD Type electromagnetic flowmeter model selection

SKLD -

*

A

B

C

D

E

F

G

H

I

J

*空白处加 C 为插入式

*Add C to the blank for insertion

A. 公称口径 Nominal diameter (mm)

| 编码 Code | 口径 DIA | 编码 Code | 口径 DIA | 编码 Code | 口径 DIA |
|------------|-----------|------------|-----------|------------|-----------|
| 015 | 15 | 100 | 100 | 450 | 450 |
| 020 | 20 | 125 | 125 | 500 | 500 |
| 025 | 25 | 150 | 150 | 600 | 600 |
| 032 | 32 | 200 | 200 | 700 | 700 |
| 040 | 40 | 250 | 250 | 800 | 800 |
| 050 | 50 | 300 | 300 | 900 | 900 |
| 065 | 65 | 350 | 350 | 10H | 1000 |
| 080 | 80 | 400 | 400 | 12H | 1200 |

B. 公称压力 Nominal pressure (MPa)

06 0.6 (DN700-DN3000)
 10 1.0 (DN200-DN1000)
 16 1.6 (DN15-DN600)
 40 4.0 (DN3-DN150)
 XX 特殊订货 Special orders

C. 衬里材料 lining material

1 聚四氟乙烯 (F4) (DN3-DN1000)
 2 聚氯丁橡胶 (DN65-DN3000)
 3 聚氨酯 (DN15-DN600)
 4 聚全氟乙丙烯 (F46) (DN15-DN300)
 5 加网 PFA (DN15-DN250)

D. 电极材料 electrode material

1 不锈钢 0Cr18Ni12Mo2Ti (DN3-DN3000)
 2 哈氏合金 B (DN3-DN600)
 3 哈氏合金 C (DN3-DN1600)
 4 钛 (DN3-DN600)
 5 铂铱合金 (DN3-DN600)
 6 钽 (DN3-DN600)
 7 不锈钢涂覆碳化钨 (DN15-DN1600)

E. 壳体防护 protecting housing

1 IP65
 2 IP68+IP65 (传感器 IP68+转换器 IP65, 其中传感器为氯丁橡胶或聚氨酯衬里的非防爆分离型可选)
 3 IP68+IP67 (传感器 IP68+转换器 IP67, 其余同上。)

F. 防爆标志 Ex-mark

0 无
 1 Exdm II CT4(不含乙炔)
 (一体型、IP65、磁键或无显示、DN15-DN600)
 2 Exdm II CT4(不含乙炔)
 (分体型、IP65、磁键或无显示、DN15-DN1600)
 3 Exdm II T4
 (分体型、IP65、转换器在安全区、DN15-DN1600)

G. 附件 Accessory

0 无
 1 接地电极 (DN25-DN3000)
 2 接地法兰 (DN15-DN3000)
 3 进口保护法兰 (DN65-DN600)
 4 电极刮刀机构 (DN300-DN3000)

H. 结构 Structure

ER 分体型, 中英文菜单 (DN3-DN3000)
 EH 一体型, 中英文菜单 (DN15-DN600)
 *分体型随表专用电缆 10m, 如不够另订货, 一般不超过 100m。

I. 电源 Power Supply

1 85~260VAC 45~400Hz
 2 11~40VDC
 3 电池供电 battery powered

J. 转换器形式 Converter form

MA: 按键、双行显示、标准输出
 MB: 按键、双行显示、标准输出、RS485
 LA: 按键、双行显示、标准输出
 LB: 按键、双行显示、标准输出、RS485、HART
 AA: 按键、英文菜单、双行显示、标准输出、RS232
 MAG: 西门子转换器

C. 衬里材料 lining material

- 1 聚四氟乙烯 (F4) (DN3-DN1000) PTFE
- 2 聚氯丁橡胶 (DN65-DN3000) Neoprene
- 3 聚氨酯 (DN15-DN600) polyurethane (PU)
- 4 聚全氟乙丙烯 (F46) (DN15-DN300) FEP
- 5 加网 PFA (DN15-DN250) PFA with net setting

D. 电极材料 electrode material

- 1 不锈钢 0Cr18Ni12Mo2Ti (DN3-DN3000) Stainless steel
- 2 哈氏合金 B (DN3-DN600) Hastelloy B
- 3 哈氏合金 C (DN3-DN1600) Hastalloy C
- 4 钛 (DN3-DN600) Titanium
- 5 铂铱合金 (DN3-DN600) platinum iridium alloy
- 6 钽 (DN3-DN600) Tantalum
- 7 不锈钢涂覆碳化钨 (DN15-DN1600) Stainless steel coated with tungsten carbide

E. 壳体防护 protecting housing

- 1 IP65
- 2 IP68+IP65 (传感器 IP68+转换器 IP65, 其中传感器为聚氯丁橡胶或聚氨酯衬里的非防爆分离型可选)

Sensor IP68 + converter IP65. Neoprene or polyurethane (PU) lining of sensor (non-explosion-proof and split-type flowmeter) could be selectable.

F. 防爆标志 Ex-mark

- 0 无 none
- 1 Exdm II CT4(不含乙炔)(acetylene excluded)
(一体型、IP65、磁键或无显示、DN15-DN600) (compact type、IP65、Magnetic key or no display)
- 2 Exdm II CT4(不含乙炔)(acetylene excluded)
(分体型、IP65、磁键或无显示、DN15-DN1600) (split type、IP65、Magnetic key or no display)
- 3 Exdm II T4
(分体型、IP65、转换器在安全区、DN15-DN1600) split type、IP65、Converter in the safety zone

G. 附件 Accessory

- 0 无 none
- 1 接地电极 (DN25-DN3000) grounding electrode
- 2 接地法兰 (DN15-DN3000) grounding flange
- 3 进口保护法兰 (DN65-DN600) import protection flange
- 4 电极刮刀机构 (DN300-DN3000) Electrode scraper mechanism

H. 结构 Structure

ER 分体型, 中英文菜单 (DN3-DN3000) split type Chinese & English menu

EH 一体型, 中英文菜单 (DN15-DN600) compact type Chinese & English menu

*分体型随表专用电缆 10m, 如不够另订货, 一般不超过 100m

Split type with dedicated cable 10m. Order cables if not enough, usually within 100m

J. 转换器形式 Converter form

MA: 按键、双行显示、标准输出 key & Double row shows & standard output

MB: 按键、双行显示、标准输出、RS485

LA: 按键、双行显示、标准输出

LB: 按键、双行显示、标准输出、RS485、HART

AA: 按键、英文菜单、双行显示、标准输出、RS232

MAG: 西门子转换器 Siemens converter



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