235

DJSF1352-RN 导轨式直流电能表

DJSF1352-RN rail-mounted DC power meter

安装使用说明书 V2.5

Installation and Operation Instruction V2.5

安科瑞电气股份有限公司

Acrel Co., Ltd.

电子说明书

申　　明

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1. 概述 Overview

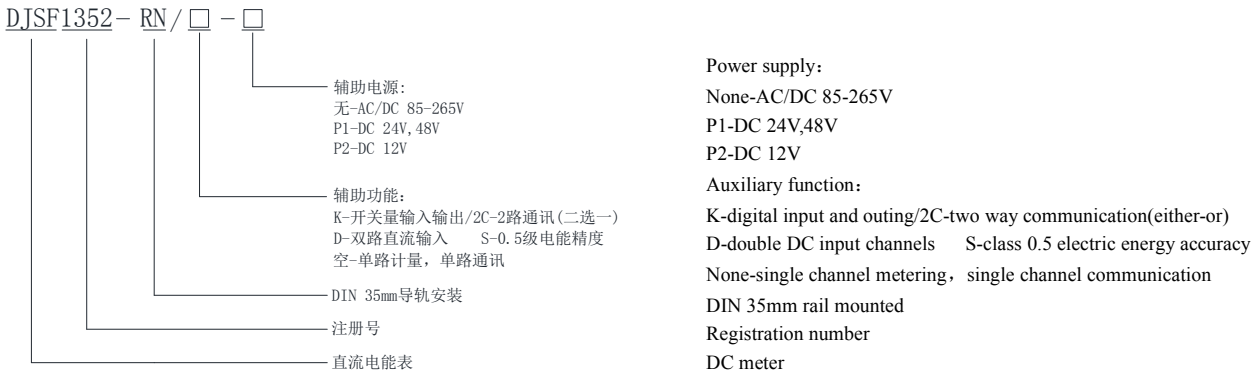
DJSF1352-RN导轨式直流电能表带有双路直流输入，主要针对电信基站、直流充电桩、太阳能光伏等应用场合而设计，该系列仪表可测量直流系统中的电压、电流、功率以及正反向电能等。在实际使用现场，即可计量总电能，又可计量规定时间段内的电能。检测的结果既可用于本地显示，又能与工控设备、计算机连接，组成测控系统。

DJSF1352-RN rail-mounted DC power meter with double DC input channels, designed for telecommunications base stations, DC charging piles, solar photovoltaic and other applications, this series of meters can measure the voltage, current, power and forward and reverse energy and so on in the DC system.The actual use of the site, you can measure the total power, but also measure the energy within a specified period of time. The test results can be used for local display, but also with industrial control equipment, computers to form a measurement and control system.

仪表可具有RS-485通讯接口，同时支持Modbus-RTU协议和DLT645-07协议；可带继电器报警输出和开关量输入功能；根据不同要求，通过仪表面板按键，对变比、报警、通讯进行设置；具有开关量事件记录（Modbus协议）、编程和事件设置记录（645协议）、数据瞬时和定时冻结功能（645协议）、电压电流功率最大值、最小值记录功能。

The meter can have RS-485 communication interface, and supports Modbus-RTU protocol and DLT645- 07protocol at the same time.The meter can have relay alarm output and digital input function;You can set the ratio, alarm, and communication through the meter panel keys according to different requirements.The meter can have event recording of switch (Modbus protocol), programming and event setting records (645 protocol), instantaneous and timing freeze function of data (645 protocol), maximum and minimum value recording function of voltage and current power.

2. 产品规格 Product specification



注：1、选配双路直流输入（D）功能时，如果电流通道均采用的是霍尔电流传感器输入，则需外配一个电源模块给第二路的霍尔传感器供电；如果未带 D 功能，则可使用电表内置电源。

2、选配0.5级精度（S）功能时，电流仅支持75mV输入，S和K功能不能同时共选。

3、电源选配P2时，电流仅支持75mV输入，S和P2不能同时共选。

Note：1、when dual DC input（D）function is selected，if Hall current sensor input is used in current channel,a power supply module shall be provided to supply power to the second Hall sensor;if D function is not provided,the built-in power supply of elecctric meter can be used.

2、when level 0.5(S) precision function is selected,the current only supports 75mV input ,and S and K functions cannot be selected at the same time.

3、When P2 is selected for power supply,the current only supports 75mV input,and s and P2 can not be selected at the same time.

3. 技术参数 Technical parameters

<table>
<tr><td colspan="2">技术参数
Technical parameters</td><td colspan="2">指标
Index</td></tr>
<tr><td rowspan="3">输入
Input</td><td rowspan="2">标称值
Nominal value</td><td>电压输入范围
Voltage input range</td><td>电流输入
Current input</td></tr>
<tr><td>DC 0-1000V
参见实物接线图
DC 0-1000V
See the physical wiring diagram</td><td>分流器：0-75mV；
霍尔传感器：0-5V,100mA 等
Shunt：0-75mV；
Hall sensor：0-5V,100mA and so on.</td></tr>
<tr><td>过载
Overload</td><td colspan="2">1.2 倍可持续正常工作，2 倍持续 1 秒
1.2 times rated (continuous); 2 times rated/1 second;</td></tr>
<tr><td colspan="2">功耗
Power consumption</td><td colspan="2">电压：≤0.2VA，电流≤0.1VA
Voltage: ≤0.2VA, current ≤0.1VA</td></tr>
<tr><td colspan="2">精度等级
Accuracy class</td><td colspan="2">1 级或 0.5 级
Class 1 or Class 0.5</td></tr>
<tr><td rowspan="6">功能
Function</td><td>显示
Display</td><td colspan="2">8 位段码式液晶屏（LCD）
8-bit segment LCD screen (LCD)</td></tr>
<tr><td>通讯接口
Communication Interface</td><td colspan="2">RS485(可选两路)
RS485（two options）</td></tr>
<tr><td>通讯协议
Communication protocol</td><td colspan="2">Modbus-RTU，DL/T 645-2007，DLT698</td></tr>
<tr><td rowspan="2">开关量
Switch</td><td>开关量输出
Switch output</td><td>2 路继电器输出，2A/30VDC 或 2A/250VAC
2 Relay outputs, 2A/30VDC or 2A/250VAC</td></tr>
<tr><td>开关量输入
Switch input</td><td>2 路干接点输入
2 dry contact inputs</td></tr>
<tr><td rowspan="2">脉冲输出
Pulse output</td><td colspan="2">一路秒脉冲输出，一路电能脉冲输出
A second pulse output, a energy pulse output</td></tr>
<tr><td colspan="2">见仪表菜单设置中 SYS->PLUS 中显示，例：显示 100，即为 100imp/kWH
See the SYS->PLUS display in the meter menu settings. For example: The meter displays 100, which is 100imp/kWH</td></tr>
<tr><td rowspan="2">工作电源
Power Supply</td><td>电压范围
Voltage range</td><td colspan="2">AC/DC 85-265VDC 或 DC12V(±10%)或 DC24V(±10%)或 DC48V(±10%)
AC/DC 85-265V or DC12V(±10%)or DC24V(±10%) or DC48V(±10%)</td></tr>
<tr><td>功耗
Power consumption</td><td colspan="2">≤ 3W</td></tr>
<tr><td colspan="2">工频耐压
Power frequency withstand voltage</td><td colspan="2">电源//信号输入//其他回路 3.5KV/1min ；
除电源和信号输入外其他互不相连回路 2KV/1min
Power supply // Signal input / / Other circuits 3.5kV/1min
Other circuits not connected to each other except power supply and signal input 2kV/1min</td></tr>
<tr><td colspan="2">冲击耐压
Impulse withstand voltage</td><td colspan="2">±6.5KV</td></tr>
<tr><td colspan="2">绝缘电阻
Insulation resistance</td><td colspan="2">≥ 40M Ω</td></tr>
<tr><td colspan="2">平均无障碍工作时间
Average barrier-free working hours</td><td colspan="2">≥50000h</td></tr>
</table>

环境 Environment	温度 Temperature	正常工作温度：-25℃～+65℃；极限工作温度：-40℃～+70℃； 贮存温度：-40℃～+80℃ Normal operating temperature: -25 °C ~ +65 °C; Limit working temperature: -40 °C ~ +70 °C; Storage temperature: -40℃～+80℃
	湿度 Humidity	≤93%RH，不结露，不含腐蚀性气体 ≤93%RH, no condensation, no corrosive gas
	海拔 Altitude	≤2500m

脉冲常数：Pulse constant:

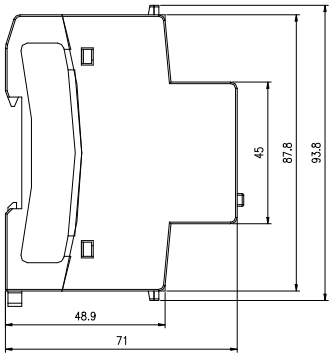
最大功率<= Maximum power	999.9W	10000	imp/kWh
	9.999kW	1000	imp/kWh
	99.99kW	100	imp/kWh
	999.9kW	10	imp/kWh
	9999kW	1	imp/kWh

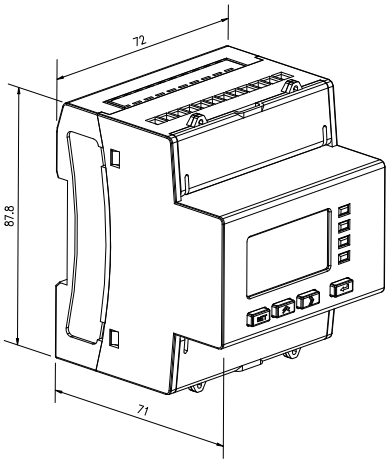
最大功率=额定电压*电压比值*电流比值*1.2

Maximum power = rated voltage * voltage ratio * current ratio * 1.2

4. 安装指南 Installation guide

4.1 外形及安装尺寸 Shape and installation dimensions



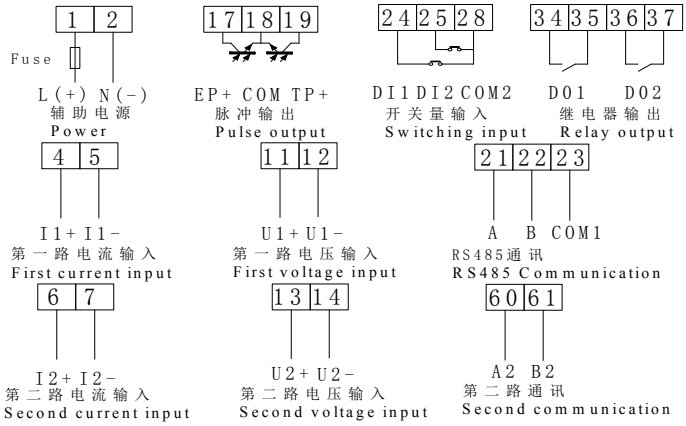


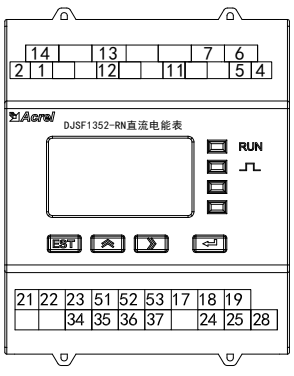
4.1.1 产品安装 Product installation

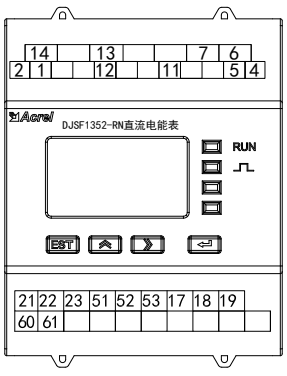
采用标准的 DIN35mm 导轨式安装

The meter is designed by standard DIN35mm rail mounted.

4.2 端子及接线 Terminals and wiring







注：第二路直流输入以及DI、DO功能均为选配功能。

Note: The second DC input channel and DI and DO functions are optional.

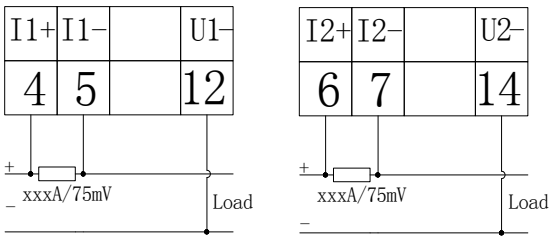
当电流输入方式为分流器输入时：

When the current input mode is current shunt input:

1级三线制接法Class 1 Three-wire connection

正极电流分流器输入

Current shunt connected to the positive

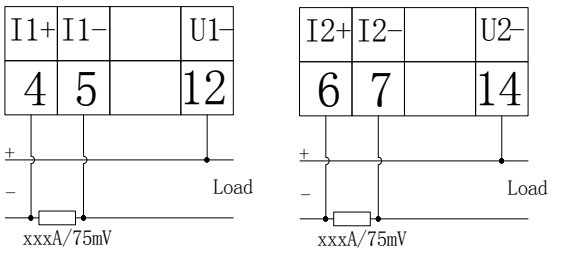


第一路 第二路

First channel Second channel

负极电流分流器输入

Current shunt connected to the negative



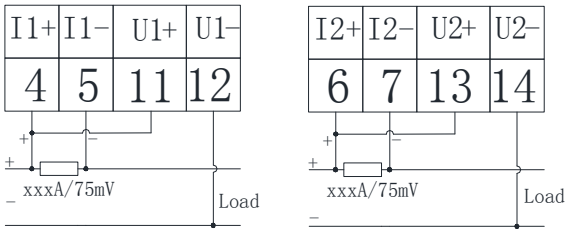
第一路 第二路

First channel Second channel

0.5级三线制接法Class 0.5 Three-wire connection

正极电流分流器输入

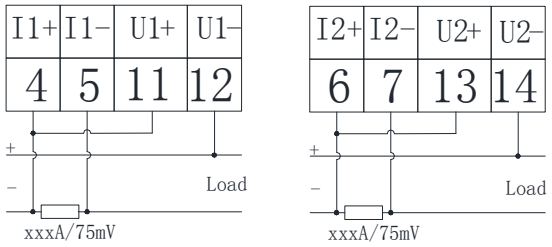
Current shunt connected to the positive



First channel Second channel

负极电流分流器输入

Current shunt connected to the negative

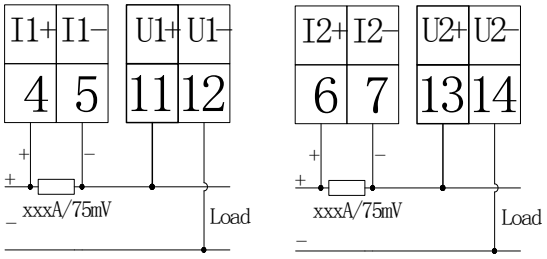


First channel Second channel

0.5级或1级四线制接法Class 0.5 or 1 Four-wire connection

正极电流分流器输入

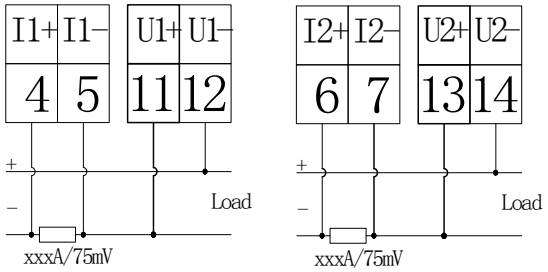
Current shunt connected to the positive



First channel Second channel

负极电流分流器输入

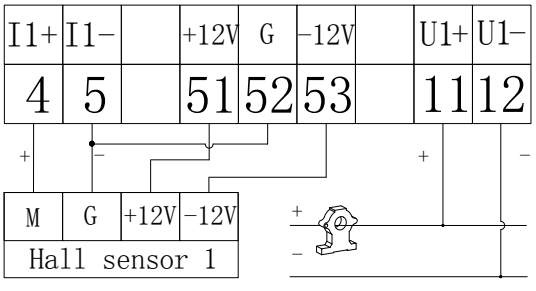
Current shunt connected to the negative



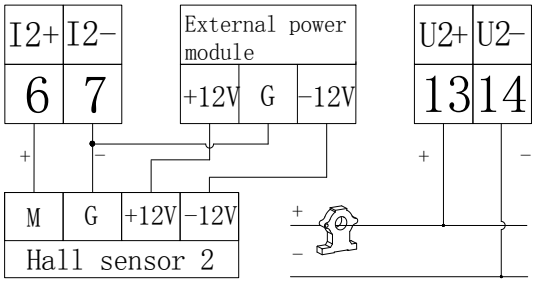
First channel Second channel

When the current input mode is Hall sensor input:

(1)双电源霍尔Dual power Hall（0-5V output）：

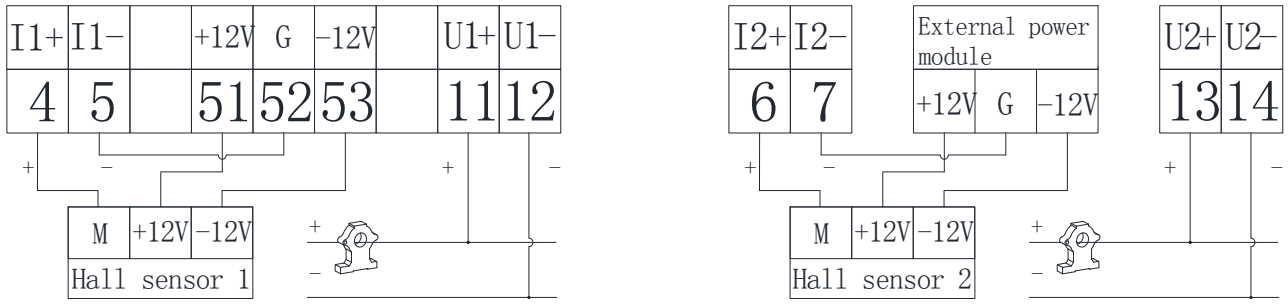


First channel



Second channel

(2)双电源霍尔Dual power Hall（0-100mA output）：



First channel　　Second channel

注：1. 负极电流分流器输入时，需在仪表菜单将 nEgt 选项设置为on，详见第6节菜单编程界面。

2. 当两路电流输入均采用霍尔电流传感器输入时，第二路霍尔电流传感器的电源不能使用电表内置电源，需外配电源模块。

3. 电流采用分流器输入，四线制接法所测量的电压值会有额外千分之一左右的误差。

4. 电流信号线推荐使用0. 75㎜^{2}或1㎜^{2}屏蔽双绞线，且屏蔽层需要接大地。

Note：1、When current shunt is connected to the negative, set the nEgt option to on in the meter menu, see section 6 menu programming interface for details.

2.、When the two current inputs are input by the Hall current sensor, the power supply of the second Hall current sensor cannot be used with the built-in power supply of the meter, and the power module needs to be externally connected.

3、 When the current is input by the shunt, the voltage value measured by the four-wire method has an error of about one thousandth.

4. It is recommended to use a 0.75mm2 or 1mm2 shielded twisted pair for the current signal line, and the shield layer needs to be connected to the ground.

4.3 注意事项 Precautions

4.3.1 电压信号输入 Voltage input

输入电压不得高于产品的额定输入电压的 120%，在电压输入端须安装 1A 保险丝。

The input voltage must not exceed 120% of the rated input voltage of the product. A 1A fuse must be installed on the voltage input.

4.3.2 电流信号输入 Current input

电流输入应使用外部分流器或霍尔电流传感器。

An external shunt or Hall current sensor should be used for current input.

4.3.3 通讯接口接线 Communication interface wiring

该仪表提供异步半双工 RS485 通讯接口，采用 MODBUS-RTU 协议，各种数据信息均可在通讯线路上传送。理论上在一条线路上可以同时连接多达 128 个仪表，每个仪表均可设定其通讯地址（Addr）、通讯速率（baud）也可通过设置选择。

The meter provides asynchronous half-duplex RS485 communication interface using MODBUS-RTU protocol, a variety of data information can be transmitted on the communication line.Theoretically, up to 128 meters can be connected simultaneously on a single line. Each meter can be set with its address (Addr), baud rate, or setting selection.

通讯连接建议使用三芯屏蔽线，每芯截面不小于 0.5mm^2，分别接 A、B，屏蔽层接大地，布线时应使通讯线远离强电电缆或其他强电场环境。

The communication connection is recommended to use three-core shielded cable, Cross-sectional area of each core is not less than 0.5mm2, is connected to A、 B respectively, shielding layer is connected to the earth. The wiring should be kept away from strong cables or other strong electric field environment.

建议起始端和最末端仪表的 A、B 之间均加匹配电阻，阻值范围为 20Ω～10kΩ。

It is recommended to add matching resistors between A and B of the meters at the beginning and end. The resistance range is 20Ω to 10kΩ.

4.3.4 端子螺丝扭力 terminal screw torque

5 使用指南 0peration guide

5.1 按键 Key

Set	测量模式下，按该键进入编程模式，仪表提示输入密码 PASS，输入正确密码后，可对仪表进行编程设置；编程模式下，用于返回上一级菜单 In the measurement mode, press this key to enter the programming mode. The meter prompts you to enter the password PASS. After you enter the correct password, you can program the instrument; in the programming mode, it returns to the previous menu.
≪	测量模式下，用于切换显示项目，查看各项电量，具体见显示菜单； 编程模式下，用于切换同级菜单或个位数的减小。 In the measurement mode, it is used to switch the display item and view the electrical parameters, see the display menu for details; In the programming mode, it is used to switch the menu of the same level or reduce the number of ones place.
≫	测量模式下，可查看相关参数，查看各项电量，具体见显示菜单； 编程模式下，用于切换同级菜单或个位数的增加。 In the measurement mode, it is used to switch the display item and view the electrical parameters, see the display menu for details; In the programming mode, it is used to switch the menu of the same level or add the number of ones place.
↵	编程模式下，用于菜单项目的选择确认和参数的修改确认。 In the programming mode, it is used to confirm the selection of menu items and modify the parameters.
≪+↵	编程模式下，该组合键用于百位数的减小 In the programming mode, this key combination is used to reduce the number of hundreds place.
≫+↵	编程模式下，该组合键用于百位数的增加 In the programming mode, this key combination is used to add the number of hundreds place.

5.2 仪表开机瞬间显示为仪表版本信息 Meter displays the version information for the meter instantly when starts up.

5.3 测量参数 Measurement parameters

5.3.1 电力参数 Electrical parameters

上、右键循环切换显示 如下图所示：按上、右键可如下图切换显示其它界面：电流←→电压←→功率←→当前正向有功电能←→历史反向有功电能←→当前日期时间←→温度。

Press the up and right key to switch display circularly ,as is shown in the following figure: Press the up or right key to switch display the other interface as follows: Current ← → Voltage ← → Power ← → Current positive active energy ← → History reverse active energy ← → Current date time ← → Temperature← →Table number high order← →Table number low order.

注：1、L1、L2 分别表示第一路、第二路直流输入，当未选配第二路直流输入时，L2 参数界面不显示；

2、当功率为负值时，屏幕闪烁；

3、费率电度只有在仪表带此功能时显示。

4、当电流输入为 4-20mA 型号时，电流界面显示“rupt”表示电流断线。

Note: 1. L1 and L2 represent the first and second DC input respectively. When the second DC input is not selected, the L2 parameter interface is not displayed.

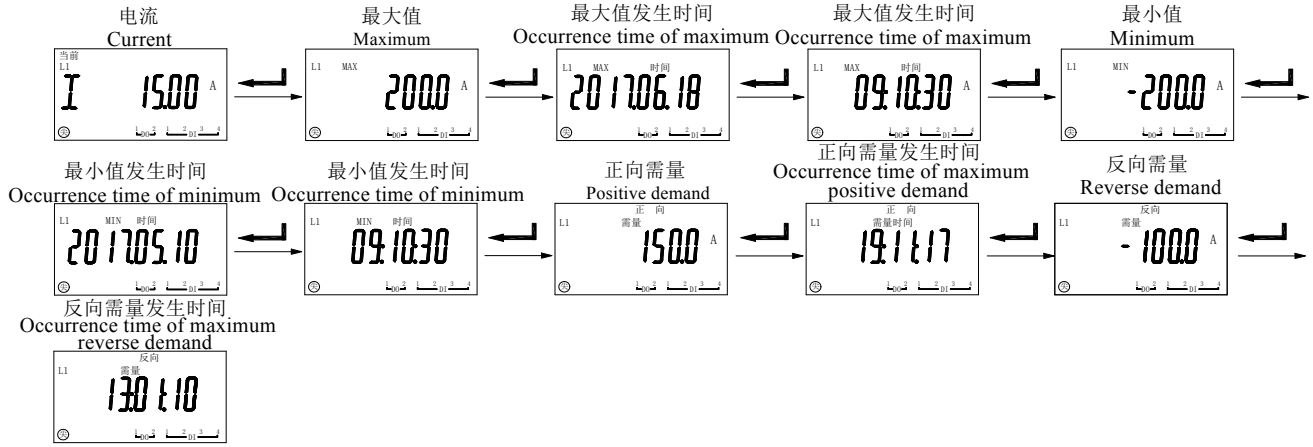
2.When the power is negative, the screen flickers;

3.Multi-rate energy is only displayed when the instrument with this function.

4.When the current input is model 4-20mA,the current interface displays ‘rupt’,indicating that the current is disconnected.

仪表上电后显示电流显示界面后，按回车键键切换显示：电流最大值→电流最大值发生时间（年、月、日）→电流最大值发生时间（时、分、秒）→电流最小值→电流最小值发生时间（年、月、日）→电流最小值发生时间（时、分、秒）→正向最大需量→正向最大需量发生时间（月、日、时、分）→反向最大需量→反向最大需量发生时间（月、日、时、分）。

The current display interface is displayed after the meter is powered on, press the enter key to switch the display: Maximum current → Occurrence time of maximum current (year, month, day) → Occurrence time of maximum current (hour, minute, second) →Minimum Current → Occurrence time of minimum current (year, month, day) → Occurrence time of minimum current (hour, minute, second) → Maximum positive demand → Occurrence time of maximum positive demand (month, day, hour, minute) → Reverse maximum demand → Occurrence time of reverse maximum demand (month, day, hour, minute).



仪表上电后在电流显示界面，按右键切换到电压显示界面后，按回车键切换显示：电压最大值→电压最大值发生日期（年、月、日）→电压最大值发生时间（时、分、秒）→电压最小值→电压最小值发生日期（年、月、日）→电压最小值发生时间（时、分、秒）。

The current display interface is displayed after the meter is powered on, press the right key to switch to the voltage display interface, press the enter key to switch the display: Maximum voltage → Occurrence time of maximum voltage (year, month, day) → Occurrence time of maximum voltage (hour, minute, second) → Minimum voltage → Occurrence time of minimum voltage (year, month, day) → Occurrence time of minimum voltage (hour, minute, second).

仪表上电后显示电流显示界面，按左右键切换到功率显示界面后，按回车键切换显示：功率最大值→功率最大值发生日期（年、月、日）→功率最大值发生时间（时、分、秒）→功率最小值→功率最小值发生日期（年、月、日）→功率最小值发生
时间（时、分、秒）→正向最大需量→正向最大需量发生时间（月、日、时、分）→反向最大需量→反向最大需量发生时间（月、日、时、分）。

The current display interface is displayed after the meter is powered on, press the left or right key to switch the power display interface. Press the enter key to switch the display: Maximum power → Occurrence time of maximum power (year, month, date) → Occurrence time of maximum power (hour , minutes, seconds) → Minimum power → Occurrence time of minimum power occurrence date (year, month, day) → power minimum occurrence time (hour, minute, second) → positive maximum demand → positive maximum demand occurrence time (month, day, hour, minute) → Reverse Maximum Demand → Reverse Maximum Demand Occurrence Time (month, day, hour, minute)

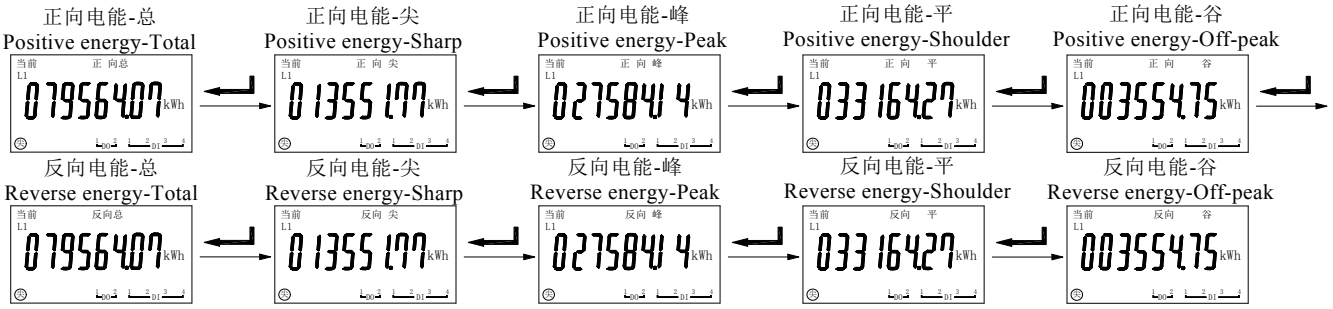
注：电压、功率需量显示界面均与电流需量显示界面相同。

Note: The voltage and power demand display interfaces are the same as the current demand display interface.

5.3.2 费率电度 Multi-rate

仪表开机后显示电流显示界面时，按右键切换到总正向有功电能显示界面后，按回车键切换显示：总正向有功电能→总正向有功电能（尖）→总正向有功电能（峰）→总正向有功电能（平）→总正向有功电能（谷）→总反向有功电能（尖）→总反向有功电能（峰）→总反向有功电能（平）→总反向有功电能（谷）。

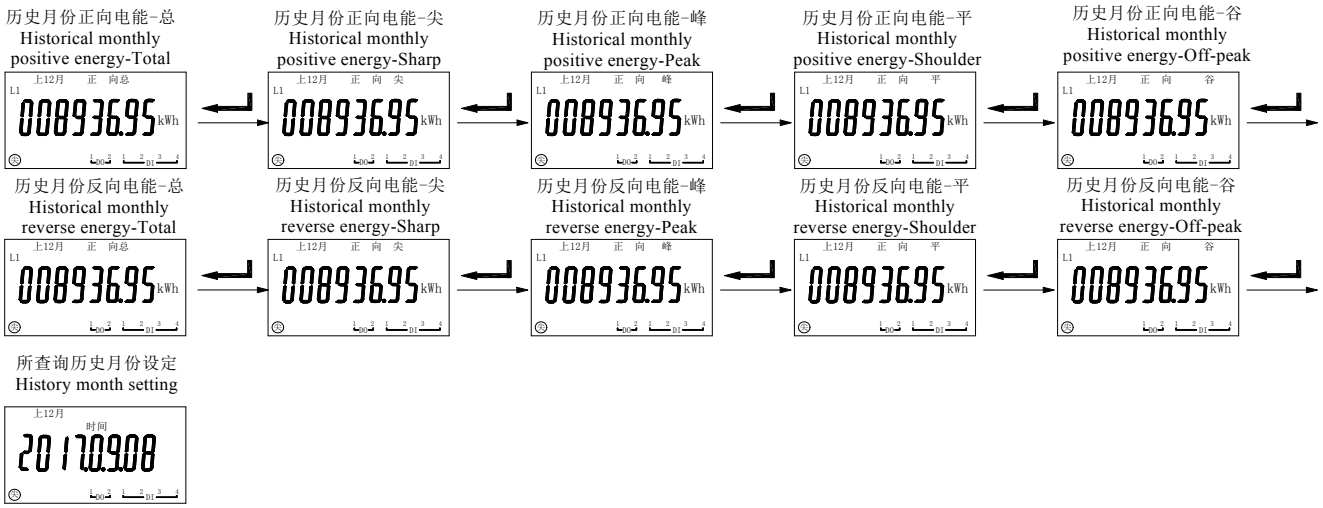
When the meter displays the current display interface after powering on, press the right key to switch to the total positive active energy display interface, press the enter key to switch the display: Total positive active energy → Total positive active energy (sharp) → Total positive active energy (Peak) → Total positive active energy (shoulder) → Total positive active energy (off—peak) → Total reverse active energy (sharp) → Total reverse active energy (peak) → Total reverse active energy (shoulder) → Total reverse active energy (off—peak).



仪表开机后显示电流显示界面时，按右键切换到历史月电能查询显示界面后，按回车键切换显示：所查月正向有功电能（尖）→所查月正向有功电能（峰）→所查月正向有功电能（平）→所查月正向有功电能（谷）→所查月反向有功电能（总）→所查月反向有功电能（尖）→所查月反向有功电能（峰）→所查月反向有功电能（平）→所查月反向有功电能（谷）→查询电能的日期设置（年、月）。

When the meter displays the current display interface after powering on, press the right key to switch to the query display interface of historical energy for month, press the enter key to switch the display interface: the searched positive active energy for month (sharp) → the searched positive active energy for month (peak) → the searched positive active energy for month (shoulder)→ the searched positive active energy for month (off—peak) → the searched reverse active energy for month (total) → the searched reverse

active energy for month (sharp) → the searched reverse active energy for month (peak) → the searched reverse active energy for month (shoulder) → the searched reverse active energy for month (off—peak) → Date setting of the query of the energy (year, month).



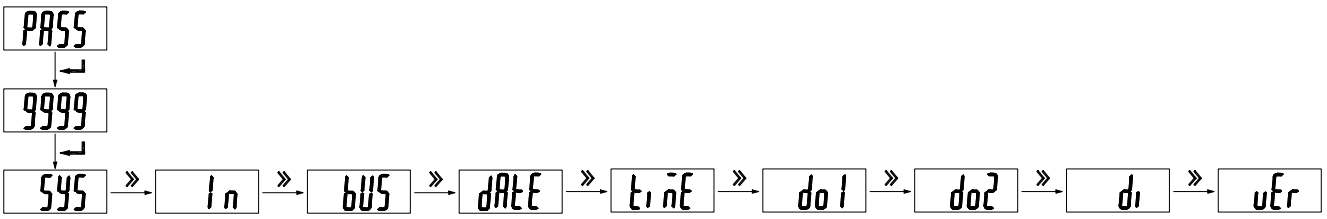
注：在“历史月份设定”界面按右键可设置所要查询的历史月份

Note: Right click on the “History month setting” interface to set the historical month to be queried.

6 菜单符号及意义 Menu symbol and meaning

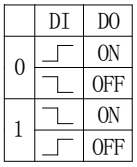
仪表开机后显示电流显示界面，按 SET 键切换到 PASS（按右键更改密码为 0001）进入菜单编程界面，按左右键依次显示如下：

After the meter is turned on, the current display interface is displayed. Press the SET key to switch to PASS (press the right key to change the password to 0001) to enter the menu programming interface. Press the left and right keys to display the following:



第一级菜单 First level menu	第二级菜单 Second level menu	第三级菜单 Third level menu	说明 Instructions
SYS	diSP	0001	开机显示画面选择，为零自动翻页 Selection of boot display, zero means turning automatically
	bLCd	0 -255 （可设）	设置为 0 时，背光常亮；设置为 1-255 时，背光在 1-255 秒后熄灭，单位：1 秒 When set to 0, the backlight is always on; when set to 1–255, the backlight is off after 1–255 seconds. Unit: 1 second
	CodE	0000-9999	密码设置（初始密码 0001） Password setting (initial password is 0001)

	ALSt	0000H	当前报警状态，十六进制显示，低位为 do1,高位为 do2,从 bit0-bit7,依次为过电压、欠电压、过流、欠载、过功率、欠功率、DI1、DI2 The current alarm status, hexadecimal display, low bits for do1, high bits for do2, from bit0-bit7, followed by overvoltage, undervoltage, overcurrent, underload, overpower, underpower, DI1, DI2
	CLrEP	000-9999 (输入9996后确认清除) 000-9999 (Enter 9996 to confirm clear)	清除电能 Clear energy
	CLrdn		清除需量 Clear demand
	CLrmin		清除最值 Clear extremum
	CLrdIo		清除开关量动作事件记录 Clear event records of switch action
	CLrFr2		清除冻结电能 Clear frozen energy
	CLrSoE		清除时间和变成设置事件记录 Clear time and programming event logs
	PLUS	1，10，100，1000，10000	脉冲常数（imp/kWh） Pulse constant (imp/kWh)
	PULSCH	L1、L2	脉冲输出回路选择，L1 表示第一路，L2 表示第一路 Pulse output circuit selection,L1 represents the first route,L2 represents the second route
	FLASH	0=no，1=U，2=I，3=IU，4=P，5=PU，6=PI，7=PIU	控制输入为负时闪烁显示，U 表示电压，I 表示电流,P 表示功率 Flicker when the input is negative, U means voltage, I means current, P means power
	EPdot	2,3	电能小数点位置设置:显示小数点后 2 位,3 位 Energy decimal point position setting: 2 digits or 3 digits after decimal point are displayed
	LESS U	0-5.0	电压零点屏蔽值设定，最大±5% Masking value setting of voltage zero point, maximum to ±5%
	LESS I	0-5.0	电流零点屏蔽值设定，最大±5% Masking value setting of current zero point, maximum to ±5%
In	InPU	0001-9999	第一路电压变比 First Voltage transformation ratio
	InPI	0001-9999	第一路电流变比（一次电流值） First current transformation ratio（Primary rated current）
	In2PI	0001-9999	第二路电流变比（一次电流值） Second current transformation ratio（Primary rated current）
	NEGt	on,off	on:负极电流分流器输入 on:Current shunt connected to the negative off:正极电流分流器输入 off:Current shunt connected to the positive
bUS	Addr	1-247	485 通讯地址 485 address
	bAUd	4800,9600,19200	485，645 通讯波特率 485,645 Communication baud rate

	nodE	None,2bit,odd,even	485，645 通信模式 (无校验,2 位停止位,奇校验,偶校验) 485,645 Communication Mode (No parity, 2 stop bits, odd parity, even parity)
	645Adr	000000H(12 位地址高位) 000000H (high 12-bit of address) 000001L(12 位地址低位) 000000L (low 12-bit of address)	645 表号，H 表示高 6 位表号 BCD，L 表示低 6 位表号（面板上只能读取，需用上位机软件设置） 645 meter number, H represents the high 6-digit meter number BCD, L represents the low 6-digit meter number (can only be read on the panel, need to be set by the upper computer software)
	bAUd2	1200,2400,4800,9600	第二路通讯波特率 The second communication baud rate
	nodE2	None,2bit,odd,even	红外通信模式 (无校验,2 位停止位,奇校验,偶校验) The second communication mode (No parity, 2 stop bits, odd parity, even parity)
	dLt.4FE	add0，add4	回送 645 报文增加前导符 FE：0 个,4 个 Add the FE headers of sent back 645 message to: 0, 4
dAtE	17.11.22 15.07.18		年月日，数字闪烁即表示被选中可设置 Year, month, day, when the number is flashing, it means that it is selected and can be set
tiME			时分秒，数字闪烁即表示被选中可设置 Hour, minute, second, when the number is flashing, it means that it is selected and can be set
do1 do2	开关量输出设置（详见 6.1） Switch output setting (See 6.1 for details)		
di	tYPE	00，01，10，11	 十位表示 DI1，个位表示 DI2。 0 为常闭，1 为常开 （带 DI 联动报警时有效，详见 6.1） Tens place indicates DI1 and ones place indicates DI2. 0 is normally closed and 1 is normally open (effective with DI linkage alarm. See 6.1 for details)
uEr	u 1.01		软件版本 Software version

注：事件记录菜单中无法查询，只能通过通讯读取。

Note: The query cannot be queried in the event log by menu. It can only be read via communication.

6.1 开关量输出设置 Switch output setting

仪表开关量输出采用继电器输出，有两种控制方式：1、报警方式（“SEL”选择不为零）；2、总线控制方式（“SEL”选择为“0. do”,此时“dLy”设置为 0 为电平输出方式，设置非零为脉冲方式动作后延时设置的时间自动断开）

“SEL”中设置 DO 输出类型，“0. do”表示为通信控制（此时如果 DLY 设置为 0 输出为电平方式，否则为脉冲方式，如果 DLY 设置为 2，吸合后 0.02 秒自动断开），其他为报警控制（见下表）

“dLy”为报警延时（报警用时推荐不设置为 0 防止干扰误动。）

“bAnd”为不动作带设置

The switch output of the meter adopts relay output. There are two control modes: 1. Alarm mode ("SEL" selection is not zero); 2. Bus control mode ("SEL" is selected as "0. do". When “dLy” is set to 0, it is the level output mode. Setting non-zero as the pulse mode will automatically disconnect the delay setting time.

“SEL” sets the DO output type. “0. do” means communication control. (If DLY is set to 0, the output is in level mode , otherwise it is in pulse mode. If DLY is set to 2, automatic shutdown will take 0.02 seconds after pull in. Open), same as alarm control (see the following table)

"dLy" is the alarm delay time (it is not recommended to set to 0 during the alarm to prevent interference error.)

"BAnd" is set for the non action band

do1	第一路继电器输出 First relay output	
SEL	0. do	由通信控制的 DO 输出模式，此时“dLy”为 0 则为电平控制。设置其他值为自动返回模式。DO 动作后延时“dLy”（单位为 0.01 秒）后自动断开 The DO output mode controlled by the communication, when "dLy" is 0, it is the level control. Set the other value to auto return mode. DO disconnect automatically after delay “dLy” (in 0.01 seconds) after action.
	1. AL	第一路直流电参量报警 Alarm of the first DC parameter
	2. di.AL	第一路直流电参量、联动开关量报警，逻辑为或 Alarm of the first DC parameter and linkage switch, logic is or
	3. di 1	联动 DI1 报警 Linkage alarm DI1
	4. di 2	联动 DI2 报警 Linkage alarm DI2
	5. di.12	联动 DI1、DI2 报警，逻辑状态为或 Linkage alarm DI1、DI2,logic is or
	6. AL	第二路直流电参量报警 Alarm of the second DC parameter
	7. di.AL	第二路直流电参量带开关量报警 Alarm of the second DC parameter with switch
H-rES	on	手动复归开启（在主界面按回车键使继电器触点断开，主要用于消音） Manual reset is turned on (Press the enter key on the main interface to make the relay contact open, mainly used for silence)
	oFF	手动复归关闭 Manual reset is turned off
dLY	输出延时时间：如果为 DO 输出方式，设置为 0 时，为电平控制方式，非 0 时为脉冲控制方式，延时设置的时间后断开，延时设置范围 1－255 时，单位：0.01 秒；如果为报警输出方式，延时设置范围 1－9999 时，单位：1 秒； Output delay time: If it is DO output mode, when it is set to 0, it is the level control mode; when it is not 0, it is the pulse control mode, and is disconnected after the setted delay time,	

	the delay setting range is 1-255, unit: 0.01 seconds; if it is alarm output mode, delay setting range is 1-9999, unit: 1 second;	
bAnd	不动作带区间 Non action band	
H-U	电压高报警，按百分比进行设置 High voltage alarm, set by percentage	
L-U	电压低报警，按百分比进行设置 Low voltage alarm, set by percentage	
H-I	电流高报警，按百分比进行设置 High current alarm, set by percentage	
L-I	电流低报警，按百分比进行设置 Low current alarm, set by percentage	
H-P	功率高报警，按百分比进行设置 High power alarm, set by percentage	
L-P	功率低报警，按百分比进行设置 Low power alarm, set by percentage	
0-AL	IAL	零值报警使能 Zero alarm enable
	0oFF	零值报警关闭（低报警） Zero alarm is disabled(Low alarm)

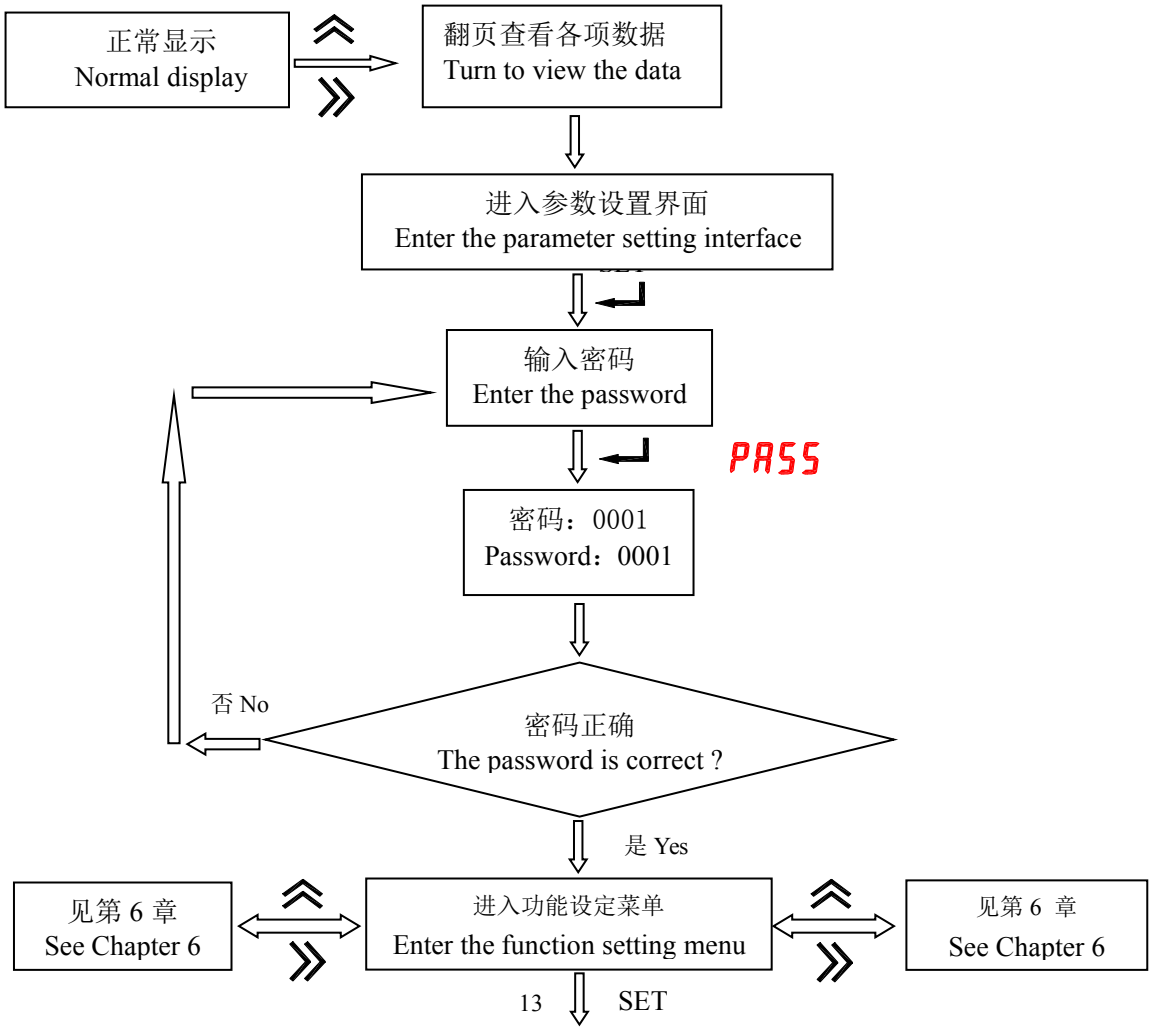
注：do2 设置同 do1。

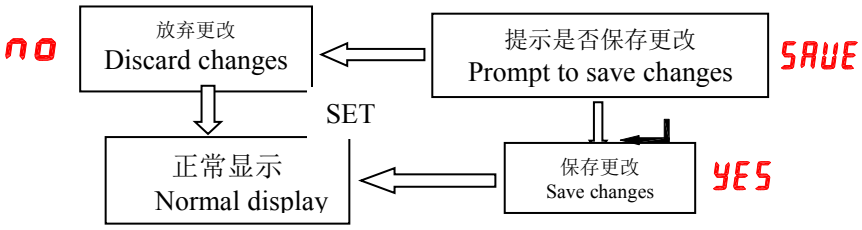
Note: do2 setting is the same as do1.

6.2 编程流程 Programming process

仪表菜单结构

Meter menu structure





6.3 功能设置与使用 Function setting and use

6.3.1 倍率更改设置 Magnification change settings

电压以当前额定电压为基准，电流变比是以 1A 为基准，出厂时根据用户的量程要求，确定合适的仪表量程，在外部输入此量程的信号，若电流变比都为“100”，则仪表显示 100.0A，在设定了对应的变比后，仪表将显示对应的数据。用户不得自行改变信号的输入大小。如用户定了 100A/75mV 仪表，到了工作现场发现电压变送器为 500A/75mV，电流变比由 100 改为 500，但需确定直流变送器的输出信号不得发生改变，此例中为 75mV。

The voltage is based on the current rated voltage, and the current transformation ratio is based on 1A. According to the user's measurement range, the appropriate meter range is determined at the factory, and the signal of this range is input externally. If the current change ratio is “100”, then the meter displays 100.0A. After the corresponding ratio is set, the meter will display the corresponding data.Users are not allowed to change the input size of the signal by themselves. If the user has set a 100A/75mV meter and found the voltage transmitter at the work site to be 500A/75mV, the current transformation ratio is changed from 100 to 500, but it must be confirmed that the output signal of the DC transmitter cannot be changed, in this case it is 75mV .

6.3.2 通讯功能及参数设置 Communication function and parameter setting

Modbus-RTU 协议：默认为“9600，8，n，1”。

Modbus-RTU protocol: The default is "9600,8,n,1".

6.3.3 报警功能及参数设置 Alarm function and parameter setting

正常测量时，有报警产生，并且会在继电器输出上产生一个输出（需加配，继电器常开结点闭合），对应 DO 显示位相应显示。

报警状态可通讯读取，参量地址见通讯参量地址表

报警功能默认为关闭状态，除非客户要求。

当输入信号为零时，仪表可通过设置关闭或打开低报警功能。

In the normal measurement, an alarm is generated and an output is generated on the relay output (need to be added, normally open relay contact is closed), the corresponding display of the DO displays.

The alarm status can be read by communication. See the communication parameter address table for the parameter address.

The alarm function is turned off by default unless requested by the customer.

When the input signal is zero, the meter can be set to turn off or on the low alarm function.