直流电能表使用说明

DC Energy Meter Operating Instructions

一、概述 General

◆ SPA-96DE-4 直流电能表根据我国对电力设备运行和计算机智能化监控要求而设计，能够直接测量显示系统的用电量和历史用电量，具有 RS485 或 RS232 接口可选，与微机进行数据交换。适合蓄电池，太阳能电池板等直流信号设备电量测量和电能计量使用，亦可用于工矿企业，民用建筑，楼宇自动化等现代供配直流电系统。

SPA-96BDE-4 DC energy meter is able to directly measure the display system power consumption and electricity history. The RS485/RS232 port can exchange data with the microcomputer. It is suitable to be used for batteries, solar panels power DC signal measurement and energy metering equipment. Be used for industrial and mining enterprises, civil construction, building automation and other modern DC system for distribution.

SPA-96DE-4系列产品有多种不同型号，产品功能众多，可满足目前国内外不同场合的特殊要求。

SPA-96DE-4 series provides many different types of products which can meet domestic and international market specific requirements.

SPA-96DE-4 **可测量如下参数 Measure the following parameters:**

1 路电压、4 路独立电流、功率。4 路独立直流电能及总电能、4 路独立的过去 12 月每月独立累计电能、4 路总的过去 12 月每月独立累计电能、4 路独立的过去 360 天每天独立累计电能、4 路总的过去 360 天每天独立累计电能、4 路独立最大功率、最小功率及 4 路总的最大功率、最小功率等大量历史电量。

1-way voltage,4-way independent, current, power,4-way independent direct current and total power, 4-way independent and total cumulative energy of each day in the past 12 months monthly, 4-way independent and total cumulative energy of each day in the past 360 days. 4-way independent and total max power, min. power other max history power quantity.

二、主要技术指标 Technical indicators

◆ SPA-96DE-4 **外形 Externality**

✧ 主机尺寸(Host size)： 96± 0.5 mm 96±0.5 mm×98±0.5mm

✧ 显示类型 Display type： LCD 显示 display，8 位有效位数 8-bit effective number bits

输入电压 Input Voltage

✧ DC12V~800V 按用户要求订制 Customized

输入电流 Input Current

DC4~20mA (采集霍尔电流变送器输出值 Collect the output value of the Hall current transducer)

产品型号 model	产品参数 Parameter	精度等级 Accuracy
YPG-HTD-4	DC 0A～300A/ DC4~20mA/DC12V（输入量程可选 Optional）	1.0
YPG-HTD-7	DC 0A～1000A/ DC4~20mA/DC12V（输入量程可选 Optional）	
注：霍尔电流变送器辅助工作电源由直流电能表提供。 Note : The auxiliary power supply of the Hall current sensor is provided by the DC energy meter.		

霍尔变送器选配原则The principle for selecting Hall transducer：

0~300A电流范围时选取4型霍尔电流变送器、300A~1000A电流范围时选取7型霍尔电流变送器 Selecting the 4-type Hall current transducer when the current range is 0~300A. Selecting the 7-type Hall current transducer when the current range is 300A~1000A.

（产品出厂时按用户提供的电流大小进行选型配置 Configured the model according to the current offered by the user when it is out of factory)

功率 Power：0~9999.0000kW

时钟 Clock

✧ 参比条件下，日计时误差小于 0.5 秒 Under the reference conditions, the timing error is less than 0.5 seconds

✧ 具有广播对时功能 With broadcasting timing function

通讯 Communication

✧ 接口 Interface： RS485 或 RS232(可选 optional)

✧ 波特率 Baud rate： 1200/2400/4800/9600/19200

✧ 通讯协议：Modbus (RTU 格式)和 DL/T645-1997 双协议
Communication protocol: Modbus (RTU format) & DL/T645-1997 double protocol)

测量精度 Accuracy

✧ 电流 Current： 0.5%

✧ 电压 Voltage： 0.5%

✧ 功率 Power： 1.0%

✧ 电能 Energy： 1.0%

绝缘强度 Insulating Strength

✧ 输入电压/电源/外壳间: Among input voltage / Power / Frame :2.0kV/min • 2mA

✧ 通讯口/电源间：Between communication port / Power : 2.0kV/min • 2mA

工作条件 Working Conditions

✧ 工作温度 Operating-temperature range： -20℃~70℃

✧ 储存温度 Storage temperature range： -40℃~80℃

✧ 相对湿度 Relative humidity： 20~95%RH 无凝露(Without condensation)

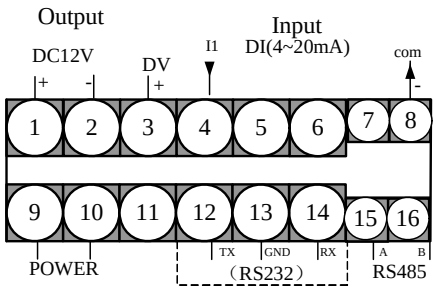
辅助电源 Auxiliary Power Supply： DC24V DC48V~90V AC220V 功耗 Power Consumption：≤5W

三、SPA-96DE-4 显示操作 Display Operating

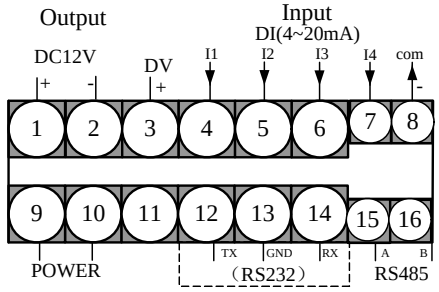
每次上电显示为日期画面，按↓键依次显示为：功率、电流、电压、电能、时间、日期；按↑键依次显示为：时间、电能、电压、电流、功率、日期。若没有按键操作，超过设定的延时模式切换时间则进入自动循环显示状态（轮显时间，出厂默认值：60s）,LCD 显示数据屏用户可以根据要求自己设定。

The screen shows the date when the power is on. Press ↓ Power to display: power, current, voltage, energy, time, date; Press ↑ key to display: time, energy, voltage, current, power, date. If there is no button operation and preset value is overtime, it will enter the cycle display statues (default value: 60s), the display data on the LCD can be requested by the customers.

四、端子接线图 Terminal Wiring Diagram:



SPA-96DE-1单回路接线图

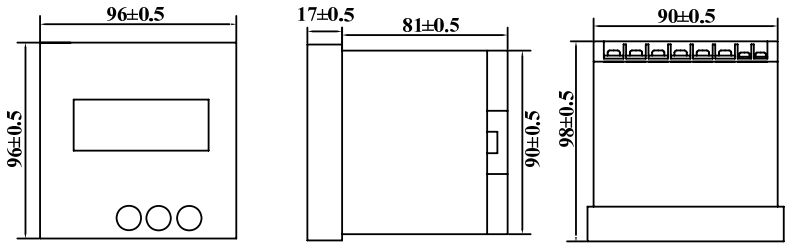


SPA-96DE-4四回路接线图

注：电流变送为 DC4～20mA 输入的，用 I1～I4 表示；电流变换为 DC0～75mV 输入的，用 S1～S4 表示。

五、外型尺寸图 External Dimension（单位 Unit：mm）

SPA-96DE-4 尺寸图 Dimension:



霍尔直流电流变送器

Hall DC Current Transducer

一、 概述 General

YPG-HTD-4--100Adc 霍尔电流变送器是针对霍尔效应变送器普遍存在温度漂移大的缺点，采用补偿电路进行控制，有效地减少了温漂对测量精度的影响，确保测量准确，具有精度高、安装方便、售价低的特点。

YPG-HTD-4--100Adc Hall Effect Current Transducer is equipped with supplementary circuit to reduce the temperature drift which is commonly among other hall-effect transducers. It has greatly improved the measuring accuracy and can be easily installed in cost-effective way

YPG-HTD-4--100Adc 霍尔效应变送器广泛应用于逆变装置、UPS 电源、通信电源、电焊机、电力机车、变电站、数控机床、电解电镀、微机监测、电网监控等需要隔离检测电流的设施中。

YPG-HTD-4--100Adc Hall-effect Transducer is widely applied in establishments where isolated current need to be examined, such as inversion equipment, UPS power supplier, communication power supplier, electric wielding machines, electric motor-vehicle, transformer substation, digital-controlled lathe, plating, micro-machine monitoring, electric-network monitoring, etc.

二、 主要技术指标 Main Technical Index

- ✧ 执行标准 Standard：QB/441600 17 113-2002
- ✧ 精度等级 Accuracy：±1.0%
- ✧ 输入电流 Input current：DC0 A～100A
- ✧ 输出参数 Output：DC4mA～20mA
- ✧ 输出负载 Output Load：≤270Ω
- ✧ 响应时间 Response time：＜400ms
- ✧ 工频耐压 Working frequency withstand voltage：AC 3kV/min.1mA
- ✧ 工作环境 Working condition：-10℃～50℃，20%RH～95%RH
- ✧ 工作电源 Power supply：DC12V±8%
- ✧ 电源耗电 Power consumption：＜1VA

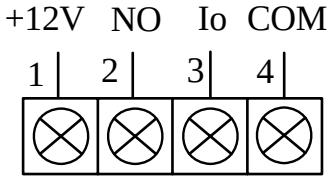
三、 接线图及输出曲线对应图 Connecting & Output Curve Diagram

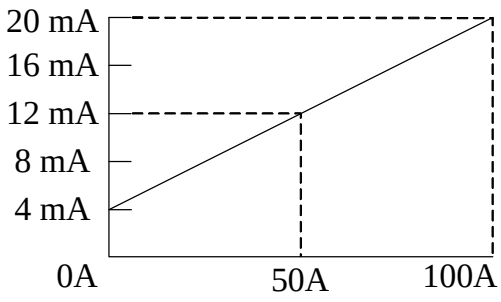
1.工作正电源端 Power supply anode

2.空脚 Null

3.测量输出端 Terminal for measuring output

4.电源（输出）公共端 Common terminal for power supplier(output)





四、注意事项 Notice

- ✧ 工作电源、输出端必须正确连接，不能错接；
- ✧ 对于两个电位器，请不要随意调整，若需调校，用小螺丝刀缓慢旋转至所需精度即可；
- ✧ 原边母线的温度不应超过 60℃；
- ✧ 当电流母线填满原边穿线孔时，获得最佳的测量精度；
- ✧ 使用环境应无导电尘埃和无腐蚀金属和破坏绝缘的气体存在，海拔高度小于 2500 米。
- ✧ Power supply and output terminals should be connected correctly;
- ✧ Avoid to adjust the two potentiometers; use small screwdriver to screw it slowly to the precision when necessary;
- ✧ The temperature of ary generatrix should not over 60℃;
- ✧ The best measuring precision is obtained when the ary hole is full of current generatrix.
- ✧ The operating environment allows no electric dust or gases that corrodes metal or destroys insulation. The altitude is less than 2500m.

五、安装 Installation

采用 DIN 导轨和螺钉两种安装方式，导轨宽度为 35mm，螺钉大小为 M5×12

Tow installation modes：DIN guide apparatus and setscrew，guide apparatus width 35mm，screw size M5×12

六、产品结构图 External Dimensions（单位 Units：mm）