

NO: S23120068-05

**三相四线电子式单/多回路多功能电能表**

**Three Phase Four wire Single / Multi-loop Multi-function  
Electric Energy Meter**

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## 1、用途和适用范围 Application and Range

三相电子式单/多回路多功能电能表系列产品博采国际上众家之长，结合本公司在我国多功能电能表行业多年的设计开发及大量的现场运行经验，采用现代先进微电子技术、计算机技术、电测量技术及高精度计量芯片，数据通信技术以及先进的制造工艺研制而成，是本公司符合国家电网公司 1 级三相智能电能表技术规范的一代电能计量装置。我们对该型号表进行了大量的可靠性冗余设计。各项技术指标符合《GB/T 17215.323—2008》、《GB/T 17215.321—2008》、《JJG 596—2012》、《DL/T 614—2007》、《DL/T 645—2007》等国家标准以及行业标准。具有测量精度高、性能稳定可靠、长寿命、体积小、重量轻、功耗低、操作简便、易于实现管理功能的扩展、一表多用等

特点。可广泛应用于电力行业的电能测量及用电自动化管理领域。

Three-phase electronic single / multi-loop multi-function watt-hour meter series of products on the international community, with the Company in China's multi-functional energy meter industry for many years of design and development and a lot of field operation experience, the use of modern advanced microelectronics , Computer technology, electrical measurement technology and high-precision measurement chip, data communication technology and advanced manufacturing technology developed from the company in line with the State Grid Corporation of a three-phase intelligent energy meter technical specifications of a new generation of energy metering devices. We have a lot of



reliability redundancy design for this model table. It has the advantage with High accuracy, good stability, reasonable layout, advanced technology, practical, strong function, easy to operate and other characteristics. It can be accurately and quickly to measure all kinds of electrical parameters. Various technical standards comply with 《GB/T 17215.323—2008》、《GB/T 17215.321—2008》、《JJG 596—2012》、《DL/T 614—2007》、《DL/T 645—2007》 and other national standards and industry standards.

## 该电能表具有如下主要功能 Main functions:

- ✧ 计量各回路组合有功电能、组合无功电能，各回路四象限无功电能；  
Measuring combination active power, reactive power composition of each circuit, four quadrant reactive power of each circuit;
- ✧ 自动轮显和按键显示；  
Recycle display and Key display;
- ✧ 带负荷记录，每小时可记录一条各参量的负荷记录；  
with load record, can record a record of the load of each parameter;
- ✧ 多种冻结方式，定时冻结、瞬时冻结、约定冻结、整点冻结和日冻结；

With many kinds of electric quantity freezing: the integral point freezing, fixed time freezing, instantaneous freezing, agreement freezing and date electric quantity freezing;

- ✧ 电压、频率和各回路各种电参数瞬时量的测量（电流/有功功率/无功功率/功率因数等）；

Measuring voltage, frequency and instantaneous values of each electric parameters in each loop(current/voltage/active power/reactive power/power factor etc) ;

- ✧ 存储 12 个结算日电量数据；

Storage 12 clearing day energy data;

- ✧ 对电量、参变量均进行带 CRC 校验的多重备份；

Multiple backup with CRC for power, parameters;

- ✧ 通讯兼容 DL/T645-2007、Modbus-RTU 规约；

Communication compatible with DL/T645-2007、Modbus-RTU protocol;

- ✧ 本系列产品规格有 1 回路~4 回路可供选择。

This series of product specifications have 1 loop~4 loop to choose from.

**注 Note:**

- 1. 标称最大电流大于 100A，电表取消负荷记录、冻结数据等功能。**

**Nominal maximum current greater than 100A, the meter to cancel the load record, freeze data and other functions.**

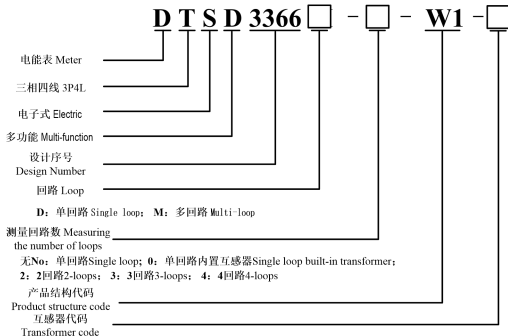
**如：50(200)A、100(400)A 电流规格。**

**Such as: 50 (200) A, 100 (400) A current specifications.**

- 2. Modbus-RTU 规约不能全部读取所有功能的数据，详见产品通讯协议内容。**

**Modbus-RTU protocol can not read all the data of all functions, see the contents of the product communication protocol.**

## 型号定义 Model definition



**2、主要技术参数 Main technical index (具体以产品面板参数为准  
subject to the products' panel parameters)**

|                               |                                               |
|-------------------------------|-----------------------------------------------|
| 项目<br>Item                    | 技术要求<br>Technical requirements                |
| 准确度等级<br>Accuracy             | 有功 1 级 Active 1class, 无功 2 级 Reactive 2 class |
| 参比温度<br>Reference temperature | 23°C±2°C                                      |
| 参比电压<br>Reference voltage     | 3×220V/380V                                   |
| 参比湿度<br>Reference humidity    | 40%~60%RH                                     |

|                                                                             |                                                                                            |
|-----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| 电压正常测量范围<br>The normal measuring<br>range of voltage                        | 0.8~1.1Un                                                                                  |
| 工作温度<br>Working temperature                                                 | -10℃~50℃                                                                                   |
| 功率消耗(参比条件下)<br>Power consumption<br>(Lower than the<br>reference condition) | 每相电压回路 Each phase voltage circuit: ≤1.5W、<br>2VA;<br>每相电流回路 Each phase current loop: ≤1VA; |
| 极限工作温度 Limit<br>working temperature                                         | -40℃~70℃                                                                                   |



|                                                    |                                                                                                                                                                                                      |
|----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 运输及储存温度<br>Temperature of transport<br>and storage | -40℃~70℃                                                                                                                                                                                             |
| 电流测量范围<br>Measuring range of<br>current            | 3×1.5(6)A、3×10(40)A、3×20(100)A、3×50(200)A、<br>3×100(400)A 等 Wait <b>(与专用互感器配套使用，可根据客户要求定制 With a dedicated transformer supporting the use, can be customized according to customer requirements)</b> |
| 相对湿度<br>Relative humidity                          | 年平均湿度 Annual average humidity: ≤75%RH<br>30d (一年内以自然方式分布 distribution in a natural manner in one year): ≤95%RH<br>在其他天偶然出现 Occasional appearing in other days: 85%RH                                 |

|                             |                                                                                                                                         |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| 参比频率<br>Reference frequency | 50Hz                                                                                                                                    |
| 海拔<br>Altitude              | 低于 Less than 4000m                                                                                                                      |
| 辅助电源<br>Power supply        | ①DC20~60V; ②AC85V~265V or DC85V~330V;<br>③AC40V~265V or DC40V~330V (可选, 以实际产品<br>标示为准 Optional, subject to actual product<br>markings)  |
| 计时准确度<br>Timing accuracy    | 日计时误差 The timing error of day $\leq 0.5$ s/d (23°C),<br>随温度变化的改变量优于 with the amount of<br>temperature changing better than 0.1 s/(d•°C) |

|                        |                                                                                                                                                                         |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 脉冲常数<br>Pulse constant | 请参照标牌 Please refer to the sign                                                                                                                                          |
| 潜动<br>Creeping         | 电压回路加额定电压的 115%，电流线路无电流，仪表测试输出不产生多于一个脉冲<br>Voltage circuit with 115% of rated voltage, current line current instrument test output does not produce more than one pulse |
| 外形尺寸<br>Dimensions     | $76.5 \pm 0.5 \text{mm} \times 72 \pm 0.5 \text{mm} \times 63.5 \pm 0.5 \text{mm}$                                                                                      |
| 主机重量<br>Host weight    | 约 About 0.2kg                                                                                                                                                           |

### 3、通讯接口 Communication port

本仪表配置有一个 RS485 通讯接口。RS485 通讯波特率为 1200bps、2400bps、4800bps、9600bps、19200bps 可设，出厂默认：2400bps。通过 RS485 接口，可与 PC 机完成编程参数设置和抄读数据。

This meter is with one RS485 communication port.The baud rate is 1200bps、2400bps、4800bps、9600bps、19200bps ,can be set,The default factory setting is 2400bps,It can finish the setting of programmable parameters and reading data by RS485 communication port.

## 4、显示操作 Display

“▲”键：显示数据向上翻页或数值加 1；“▼”键：显示数据向下翻页或光标左移；“SET”键：进入编程页面，密码 3366。

“▲”button:The display data is page up or the value is incremented,“▼”button:The display data scrolls down or the cursor moves left,“SET”button:Enter the programming page, password 3366.

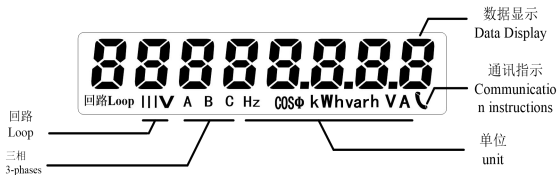


图 1 LCD 显示界面参考图

Figure 1 LCD display interface refer to figure



图2 第1回路B相电流 Figure2 1<sup>st</sup> loop B phase current



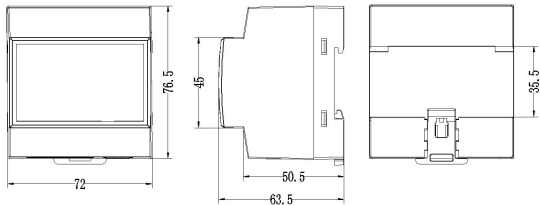
图3 第4回路有功电能 Figure 3 4<sup>th</sup> circuit active energy

## 5、外形尺寸及接线图 Dimension and Wiring diagram

### 5.1 外形及尺寸 Dimension and Wiring diagram





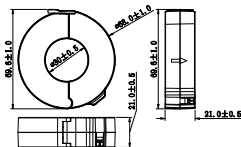


单位 Units: mm

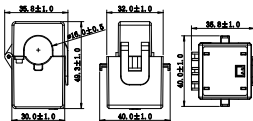
公差 Tolerance:  $\pm 0.5$

## 5.2 配套互感器 Transformer (单位 Units: mm)

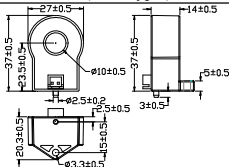
SCT30L 互感器尺寸 (开环) Dimension for transformer(split-type transformer)



CTF16T 互感器尺寸 (开环) Dimension for transformer(split-type transformer)

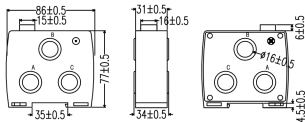


# CT10 互感器（闭环） Dimension for transformer(close-type )



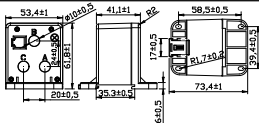
## CT20 互感器尺寸（三路组合闭环互感器）

### Dimension transformer(three-phase combined close-type transformer)



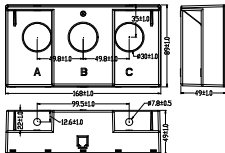
# CTY10AN 互感器尺寸（三路组合闭环互感器）

Dimension transformer(three-phase combined close-type transformer)



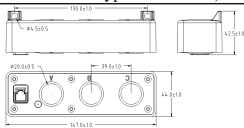
# CT27 互感器尺寸（三路组合闭环互感器）

Dimension transformer ( three-phase combined close-type transformer)



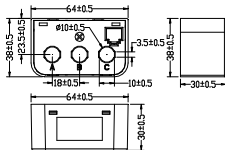
## CT29 互感器尺寸（三路组合闭环互感器）

### Dimension transformer(three-phase combined close-type transformer)



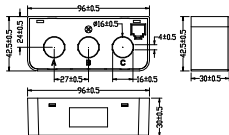
## CTY10 互感器尺寸（三路组合闭环互感器）

### Dimension transformer(three-phase combined close-type transformer)

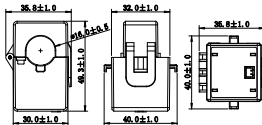


# CTY16 互感器尺寸（三路组合闭环互感器）

Dimension transformer(three-phase combined close-type transformer)



# CTF16L 互感器尺寸（开环） Dimension for transformer(split-type transformer)



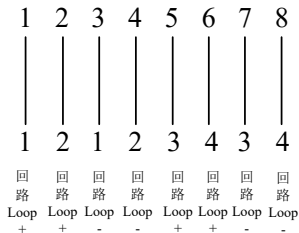
### 5.3 实物端子图 Physical terminal diagram





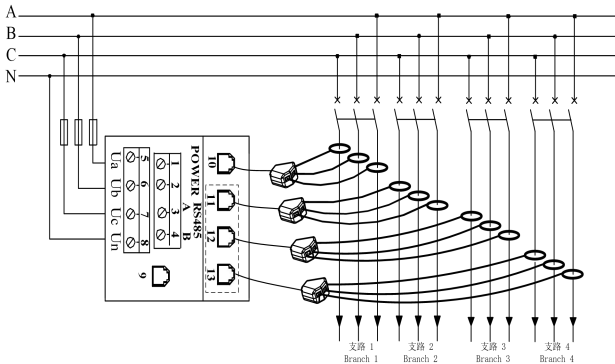


5.4 有功脉冲通道接线 Active pulse channel wiring (由左往右排序 sorted from left to right) (端子脚位 9 terminal pin 9)

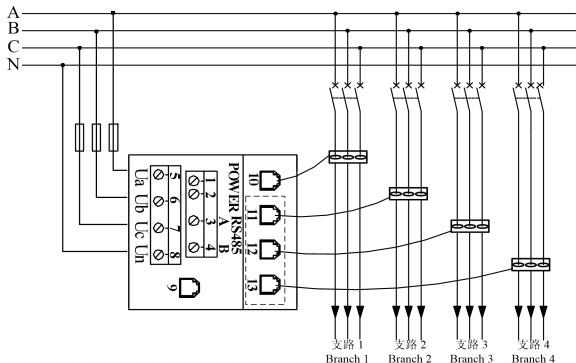


5.5 接线示意图 Wiring diagram (对应测量回路数和互感器以实际购买的产品为准 corresponding to the number of measurement circuits and the actual purchase of the product subject)

单路互感器接线示意图 Wiring diagram of single-phase transformer



三路组合互感器接线示意图 Wiring diagram of three-phase combined transformer



**注意：应注意电流互感器的方向， $\otimes$ 表示电流流入方向， $\odot$ 表示电流流出方向。用箭头表示电流方向的互感器箭头方向要与负载方向一致。**

**Note: should pay attention to the direction of the current transformer,  $\otimes$  said current flow direction,  $\odot$  that the current outflow direction. Use the arrows to indicate the current direction of the transformer arrow direction to be consistent with the load direction.**

端子定义 Definition for terminal:

|             |                                                                                                    |
|-------------|----------------------------------------------------------------------------------------------------|
| 1、2         | 工作电源 Working power supply                                                                          |
| 3、4         | RS485                                                                                              |
| 5           | A 相电压 A phase voltage                                                                              |
| 6           | B 相电压 B phase voltage                                                                              |
| 7           | C 相电压 C phase voltage                                                                              |
| 8           | 电压零线 Voltage zero line                                                                             |
| 9           | 四回路有功脉冲通道 Four-way active pulse channel                                                            |
| 10、11、12、13 | 第 1、2、3、4 回路电流互感器接口（1~4 回路可选）<br>1, 2, 3, 4 loop current transformer interface (1~4 loop optional) |

## 6、储运注意事项 Transport and Storage

- 产品在运输与拆封时不应受剧烈冲击，并根据国家标准 GB/T13384-2008《机电产品包装通用技术条件》的规定运输贮存。

The products should not be subject to server impact during transportation or taking down the seal, and should follow GB/T13384-2008"General Instrument packaging technology," to transport and store.

- 本产品属电子器件，故搬运、取放时应尽量避免重物撞击和磕碰。

This product is an electronic device, so the handling, pick and place should try to avoid heavy objects impact and bump.

- 保存环境温度应为-40℃~70℃，相对湿度不超过 95%且在空气中不含腐蚀性的有害物质。

The ambient temperature should be -40℃~70℃ for storage, the relative humidity should be no more than 95% and the air should not contain harmful substances which will cause corrosion.

- 电能表应在原包装的条件下放在仓库保存，叠放高度不超过 5 箱。拆箱后的电表，如发现外观损伤，请不要对电表安装、加电；单表叠放高度不超过 5 块，拆包的电表不宜贮存。

The meter should lay under the conditions of the package, a high degree of no more than 5 stacked layers. If the damage of appearance found when unpacking,



the meter should not be installed or power-on. Meter should not be stored after the package is taken down. Superposition of single block meter should not be more than five high.

## **7、保证期限 Warranty and Service**

电表自出厂日起 18 个月内，如用户发现不符合上述特性及技术要求，且在由有关电力计量部门证明又完全按照本说明书中所规定的要求操作的情况下，我公司负责免费修理。

Consignment within 18 months，on the conditions that users have followed the specified requirements of instructions and the sealed mark has been remained in good

condition, or with the relevant certificates provided by power Metering Sector , our company will be in charge for free repair.

**注：以上图片仅供参考，产品以实物为准。**

**Note: The above pictures are for reference only, the products are subject to the actual product.**



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