

智能 PDU 表头
PDU Smart Meter Head
说明书
Instructions



危险和警告 Danger and warning

在进行安装、操作或者维护此设备之前，请仔细阅读本手册，拿到它并逐步熟悉设备。本文件不是一本适用于未受训者的操作手册，在其正常使用范围之内之外所引起的问题，本公司概不负责。

Before installing, operating or maintaining the equipment, please read this manual carefully, get it and gradually get familiar with the equipment. This document is not an operating manual for non-trainees, and our company are not responsible for any problems arising out of its normal use.



触电、燃烧或者爆炸的危险 Risk of electric shock, fire or explosion

- 本设备部分存在电力危险，请严格按照规范进行作业。

There is a power hazard in some parts of this equipment. Please operate in strict accordance with the specifications.

- 在维护和检修之前，设备必须断电并接地。

Before maintenance and overhaul, the equipment must be powered off and grounded.

- 在设备通电前，应将所有的机械部件，门和盖子等恢复原位。

All mechanical parts, doors and covers should be returned to their original position before the equipment is energized.

- 设备维护和安装工作只能由有资质的人员执行。

Equipment maintenance and installation work can only be performed by qualified personnel.

若不注意这些预防措施可能会引起严重伤害。

If you do not pay attention to these precautions, it may cause serious injure

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第一章 产品介绍 Chapter I Introduction

1.1 概述 General

智能PDU表头是一款能够完成电能采集、测量及数据传输交流电参数测量产品，能准确测量单相交流电压、电流、功率、功率因数、频率、电量等电参数，提供1路RS-485通讯接口，可单独提供电源，MODBUS-RTU 规约，具有极优的性价比。

Smart PDU meter head is a product that can complete power collection, measurement and data transmission AC parameter measurement products, can accurately measure single-phase AC voltage, current, power, power factor, frequency, electricity and other electrical parameters, provide 1 RS-485 communication interface, can provide a separate power supply, MODBUS-RTU protocol, with excellent cost performance.

主要应用于IDC机房，支持热拔插使用，安装于PDU插座。

It mainly applies to the IDC, supports hot swap, and is installed in PDU sockets.



1.2 主要特点 Main feature

- ◇ LCD 显示或运行、告警指示。
LCD Displays or running and alarm information
- ◇ 具有 RS485 接口，采用标准 MODBUS 协议，便于远程监控系统集成。
It has RS485 interface and adopts standard MODBUS protocol to facilitate remote monitoring system integration.
- ◇ 外接端口具有抗电磁干扰设计，可靠性高。
External port with anti-electromagnetic interference design, high reliability.
- ◇ 支持热拔插安装、维护方便，可根据客户要求更改和定制。
Support hot swap installation, easy maintenance, it can be changed and customized according to customer requirements.

1.3 功能介绍 Function Description

1.3.1 电能计量 Electricity metering

- ◇ 总有功电能的计量及存储，正反电能计量。
Measurement and storage of total electrical energy.
- ◇ 掉电电能数据永久保存。
Permanently store power loss data.
- ◇ 电能清零功能，电能范围 0.00kWh~42949672.95kWh。
Power clearing function, power range 0.00kWh~42949672.95kWh.

1.3.2 显示功能 Display function

- ◇ 显示分为自动循环显示和按键显示两种方式，可按键翻页显示，自动循环显示周期固定为：3s，当不操作按键 1min 退出进入循环显示
The display is divided into two ways: automatic loop display and key switch display. The automatic loop display period is fixed to 3s, and when the button is not operated 1 min, it exits into the loop display;
- ◇ 显示背光功能，上电初始，点亮背光，当无按键操作时，延时 60 秒（当设置为 60 秒），关闭背光；当有效操作按键时，背光将点亮，在无操作时，延时 60 秒后，关闭背光；当背光延时设置为 0，则背光常亮。

Display backlight function, power on initial, light backlight, when no key operation, delay 60 seconds (when set to 60 seconds), turn off backlight; when effective operation button, backlight will light, in no operation, delay 60 seconds, turn off backlight; When backlight delay is set to 0, backlight is always bright;

- ◇ 显示项目内容: 电压、电流、功率、功率因数、频率、电能;

Display content: voltage, current, power, power factor, frequency, electric energy.

1.3.3 瞬时测量 Instantaneous measurement

- ◇ 交流输入电压、电流、有功功率、功率因数、频率测量。

Measure AC input voltage, current, power, power factor, frequency.

1.3.4 通信功能 (RS485 型) Communication functions(RS485 type)

- ◇ 具有两个 RJ45 接口, 配置有一个 RS485 通讯接口, 通信接口与电能表内部电路实行电气隔离。RS485 通讯波特率为 1200bps、2400bps、4800bps、9600bps 可设。初始默认 9600bps。

- ◇ There are two RJ45 interfaces, which are the same RS485 communication interface, and the communication interface is electrically isolated from the internal circuit of the table head. RS485 communication baud rate is 1200bps、2400bps、4800bps、9600bps, initial default is 9600bps.

1.3.5 本地设置功能 Local settings function

- ◇ 仪表配有一个按键, 可进行翻页、设置操作功能, 可按键进行显示参数翻页查看, 可本地设置参数, 包括地址、波特率、电压低、电压高、电流高、功率高报警值。

The meter has a key, which can be used to turn the page and set the operation function, and can be used to display the parameters and turn the page, Local setting parameters, including address, baud rate, low voltage, high voltage, high current, and high power alarm value.

1.3.6 告警输出功能 Alarm output function

- ◇ 具有输入电压高、电压低、电流高、功率高告警功能。

With input voltage over the upper limit threshold, voltage below the lower limit threshold, current over the upper limit threshold, power over the upper limit threshold alarm function.

- ◇ 上电初始时, 告警指示灯亮 3S 关闭, 蜂鸣器常响 3S 关闭。

When the power is on, the alarm indicator lights turn off after 3 seconds and the buzzer closes after 3 seconds.

- ◇ 当发生告警时声光同时输出, 告警指示灯常亮, 蜂鸣器响 (频率 1Hz), 背光常亮。

When an alarm occurs, both sound and light are output. The alarm indicator is always on, the buzzer is always on (frequency: 1Hz), and the backlight is always on.

1.4 型号选型 Model specification

选型型号 Model	型号说明 Function
YDPDU-DM40-RY	电压、电流、功率等电量测量, 有功电能计量 RS485 通讯, LCD 显示, 告警指示。 Voltage, current, power and other power measurement, active power measurement RS485 communication, LCD display, alarm indication.
YDPDU-DM40-Y	电压、电流、功率等电量测量, 有功电能计量 LCD 显示, 告警指示。 Voltage, current, power and other power measurement, active power measurement LCD display, alarm indicator.

第二章 安装 Chapter II Installation

2.1 安装信息 Installation Information

2.1.1 结构尺寸 Dimensions

实物视图 Physical view



外形尺寸：长*宽*厚 (105±0.5)mm*(42.5±0.5)mm*(59±0.5)mm

Dimensions: L*W*H (105±0.5)mm*(42.5±0.5)mm*(59±0.5)mm

重量：约 135g

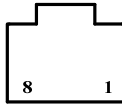
Weight: About 135g

2.1.2 安装结构 Installing structure



2.2 端子定义 Terminal definition

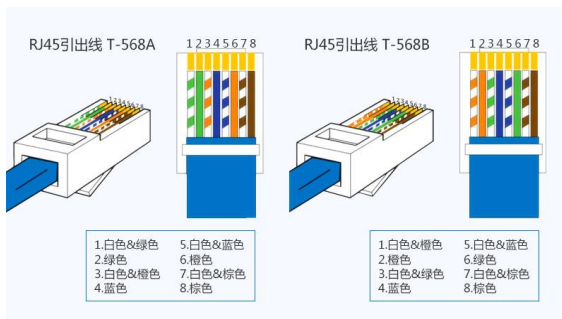
1) RJ45 端口定义 RJ45 interfaces definition



8	7	6	5	4	3	2	1
A	B	/	/	/	/	/	/

端子号 Terminal number	端子定义 Terminal definition	注释 Note	端子号 Terminal number	端子定义 Terminal definition	注释 Note
8	A	RS485 通讯 A RS485 communication A	1~6	NC	空 Empty
7	B	RS485 通讯 B RS485 communication B			

2) RJ45 引出线 T-568A 和 T-568B RJ45 outgoing line T-568A and T-568B



RJ45 引出线 T-568A	RJ45 outgoing line T-568A	RJ45 引出线 T-568B	RJ45 outgoing line T-568B
白色	White	蓝色	Blue
绿色	Green	棕色	Orange
棕色	Brown		

2.3 接线说明 Wiring instructions



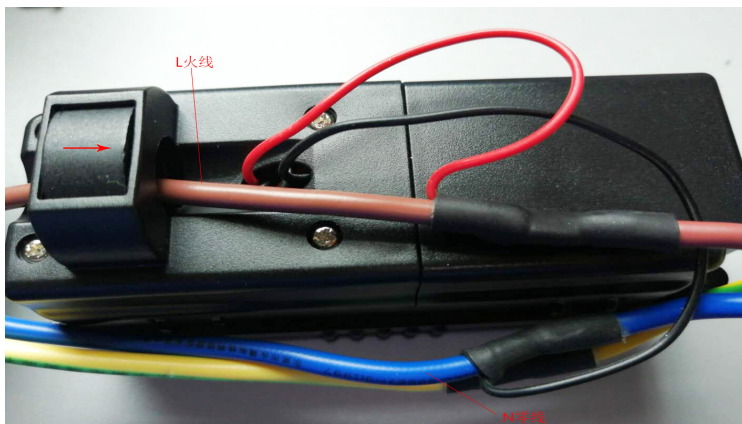
- 1) 连接网线可采用普通网线，带屏蔽层为最好。

Ordinary network cable can be used to connect the network cable, with shielding layer is the best.

- 2) 穿过电流互感器线缆，选择相适应规格线缆。

Route cables through the current transformer and select cables with appropriate specifications.

2.3.1 电源与测量接线 Power supply and measurement wire



L火线	L live line
N零线	N zero line

2.3.2 通讯 Communication

端子标记为A、B，分别对应RS485接口A、B。

Terminals A and B correspond to RS485 ports A and B respectively.

RS-485 通信方式允许一条总线上最多接 32 台仪表，通过一个 RS-485 转换器与上位机连接。

The RS-485 communication mode allows up to 32 instruments on a bus to be connected to the upper computer through an RS-485 converter.

第三章 显示与操作 Chapter III Display and Operation

3.1 显示界面 Display description

3.1.1 显示说明 Display description

具有 LCD 显示, 可显示电压、电流、功率、功率因数、频率、电能, 具体如下:

With LCD display, it can display voltage, current, power, power factor, frequency, electric energy, as follows:



3.1.2 指示灯说明 Indicator light description

具有两个指示灯, 如下:

Two indicator lights, as follow:

- RUN (运行) (绿色): 正常工作时, 间隔 1S 闪烁一次。
RUN(running)(green): when working normally ,blink once at a 1s interval.
- ALARM (告警) (红色): 告警时常亮, 平时灭。
ALARM (alarm)(red): alarm is always bright, usually extinguished.









3.2 操作说明 Operating instructions

配有一个按键, 可进行翻页、设置操作功能, 可按键进行显示参数翻页查看, 可本地设置参数, 包括地址、波特率、电压高报警值、电压低告警值、电流高报警值、功率高报警值、电能清零。

The meter with a key for page turning and setting operation functions, and can be used to display parameters for page turning view. Parameters can be set locally, including address, baud rate, high voltage alarm value, low voltage alarm value, high current alarm value, high power alarm value, and electric power zeroing.

按键功能 Key function	操作 Operation
显示翻页 Show page turn	常规测量参数显示界面, 按键可进行向上一界面查看, 可依次循环查看。 Conventional measurement parameters display interface, button can be viewed on the previous interface, can be viewed in turn.
按键消音 Keying silence	按键消音功能, 当发生告警时, 按键一次消音, 当再次发生其他告警时, 蜂鸣器会重新响起, 可再次进行消音操作。 When an alarm is generated, the key muffles the sound once. When another alarm is generated, the buzzer will sound again and you can mute the sound again.
本地设置 local settings	<ol style="list-style-type: none"> 1. 测量画面, 长按 3 秒, 进入设置功能界面; On the measurement screen, press and hold for 3 seconds to enter the setting function interface 2. 点击按键向上一设置参数界面翻页; Click the button to turn the page on the previous setting parameter interface; 3. 在退出界面, 长按 3S 退出; On the exit screen, hold down 3S to exit; 4. 在设置菜单界面 (光标不闪烁情况下) 点击则当前设置菜单向上翻页; 在某个参数项长按 3 秒则进入当前参数项编辑界面 (即当前参数处于编辑状态) 且光标在可编辑参数的左边首位闪烁, 点按, 闪烁位数值递增 1; 长按 3 秒移位; 当光标移动第一行, 且在第 1 行闪烁的情况, 点击, 保存当前修改的配置, 且光标停止闪烁。 Click in the Settings menu interface (without the cursor blinking) to set the current dish One-way page up; Press and hold a parameter for 3 seconds to enter the current parameter list The interface (that is, the current parameter is in the editing state) and the cursor is in the editable parameter.

参数设置功能如下 Parameter setting:

序号 No	菜单画面 Menu screen	含义 Meaning	可设范围 Setting rang	出厂默认 Factory default
1		通信地址 Communication address	001~247	001
2		波特率、校验位 Baud rate,Check digit	1200 2400 4800 9600 None Odd even	9600 none
3		电压高报警阈值 High voltage alarm threshold	000.0~300.0	设置为 0，关闭该报警,出厂默认: 265.00 Set to 0, Turn off the alarm,Factory default: 265.00
4		电压低报警阈值 Low voltage alarm threshold	000.0~300.0	设置为 0，关闭该报警,出厂默认: 175.00 Set to 0, Turn off the alarm,Factory default: 175.00
5		电流高报警阈值 High current alarm threshold	000.0~075.0	设置为 0，关闭该报警，出厂默认: 0 Set to 0, Turn off the alarm,Factory default: 0
6		功率高报警阈值 High power alarm threshold		设置为 0，关闭该报警，出厂默认: 0 Set to 0, Turn off the alarm,Factory default: 0
7		电能清零 Energy reset	固定 3366 Fixed 3366	默认 0000 Default 0000
8		返回/退出界面 Return/exit the interface	长按 3S 返回/退出 Press 3s to return/exit	

进入编程界面且不操作按键 60 秒，退出编程界面返回测量界面第一屏，且关闭背光。

Enter the programming interface and do not operate the button for 60 seconds, automatically exit the programming interface and return to the first screen of the measurement interface, while turning off the backlight.

第四章 技术指标 Chapter IV Technical indicators

4.1 测量精度 Measurement accuracy

参数 Parameter	精度 Accuracy	测量范围 Measuring range
电流 current	0.5 级 0.5 class	0.1Ib~Imax
电压 voltage	0.5 级 0.5class	0.7Un~1.2Un
频率 frequency	±0.02Hz	45Hz~60Hz
功率 power	1 级 1class	0~20kW
功率因数 power factor	±0.02	0~±1.0
电能 energy	1 级 1class	

4.2 规格参数 Specification and parameters

参比电压 (Un) reference voltage (Un)	220V	
参比电流 reference current	5(30)A	5(60)A
脉冲常数 pulse constant	1600imp/kWh	800imp/kWh
准确度等级 (电能) accuracy class(energy)	1 级 1class	

4.3 环境条件和电源 Environmental conditions and power supply

环境条件 Environmental conditions	
储藏温度: -40℃~70℃ Storage temperature: -40℃~70℃	工作温度: -10℃~55℃ Operating temperature: -10℃~55℃
湿度: 5%RH~95%RH Humidity: 5%RH~95%RH	
工作电源 power supply	
输入范围: AC154V~AC264V Input range: AC154V~AC264V	整机功耗: ≤1.5W, 6VA overall power consumption: ≤1.5W, 6VA

4.4 功耗 Power dissipation

输入回路 input loop	功耗 power dissipation
电压回路 voltage loop	≤1.5W、6VA (每相) ≤1.5W、6VA (each phase)
电流回路 current loop	≤1VA

备注: 超过产品额定范围的电压/电流值会造成仪表损坏。长时间满量程应用也会对您的设备造成损坏。我公司对于超量程导致的精度变化不予负责。

Note: Voltage / current value beyond the rating range of the product will cause instrument damage. Long time full range application. Can also cause damage to your equipment. Our company is not responsible for the accuracy change caused by over-range.

4.5 通讯 Communication

通讯参数 Communication parameters	
通讯端口：RS485 2 线 半双工 Communication interface: RS485, 2-wire half-duplex	通讯波特率：9600bps Communication baud rate:9600bps
通讯地址：1~250 Communication address:1~250	通讯协议：Modbus-RTU Communication protocol Modbus-RTU
校验位：无校验 Parity: No parity	数据位：8bits，停止位：1bits Data bits:8bits, stop bits:1bits

第五章 质量保证 Chapter V Quality Assurance

5.1 质量保证 Quality Assurance

所有售给用户的新仪表，在通电运行后 12 个月或收到货后 18 个月内，对其因设计、材料和工艺引起的故障实行免费质量保证，如经认定产品符合上述质保条件，我公司负责免费维修。

For all new instruments sold to users, within 12 months after power-on operation or within 18 months after receipt of the goods, free quality assurance will be implemented for failures caused by design, materials, and craftsmanship. If it is determined that the product meets the above warranty conditions, Our company is responsible for free maintenance.

5.2 质量限制 Quality limit

以下装置的问题不属免费质保范围：

The problems of the following devices are not covered by the free warranty:

- 由于不正确的安装、使用、存储引起的损坏。
Damage caused by incorrect installation, use, and storage.
- 超出产品规定的非正常操作和应用条件。
Abnormal operation and application conditions beyond the product specifications.
- 由非本公司授权的机构或人修理了的仪表。
The instrument has been repaired by an organization or person not authorized by the company.
- 超出免费质保年限了的仪表。
Meters that have exceeded the free warranty period.

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