

使用说明

一、概述

本仪表是一种集可编程、自动化测量、LCD 显示、电能累加、数字通讯等功能为一体的智能三相综合电力监测仪表，可测量如下参数：

- 各相电流；
- 各相电压；
- 各相有功功率；
- 各相无功功率；
- 各相视在功率；
- 各相功率因数；
- 电网频率；
- 正、反向有功电能；
- 正、反向无功电能；



二、技术指标

外形

- ◇ 主机尺寸：96±0.5mm×96±0.5mm×67±0.5mm
- ◇ 开孔尺寸：92±0.5mm×92±0.5mm
- ◇ 净重量：约 0.313kg
- ◇ 显示类型：LCD
- ◇ 测量：适用于 3 相 4 线，3 相 3 线，单相电网

电压(真有效值)

- ◇ 测量范围：30~600V(线电压) 20~400V(相电压)
- ◇ PT 变比：1~9999
- ◇ 输入功耗：≤0.25(220V) ≤0.60VA(600V)
- ◇ 连续过载：800V

电流(真有效值)

- ◇ 测量范围：0~6A
- ◇ 最小可测量电流：5mA
- ◇ CT 变比：1~9999
- ◇ 输入功耗：0.2VA
- ◇ 连续过载：10A
- ◇ 冲击过载：100A/1s

功率

- ◇ 单相功率：0~2400W/var/VA
- ◇ 总功率：0~7200W/var/VA

频率

- ◇ 测量范围：50/60Hz

功率因数

- ◇ 测量范围：-1~1

辅助电源：

- ①AC85~265V or DC85~330V
- ②DC20~60V (可选)

电磁兼容

- ◇ 1.2/50-8/20us 浪涌：电源：4kV I/O：2kV
- ◇ 静电放电：接触放电：6kV 气隙放电：8 kV
- ◇ 快速瞬变脉冲串：电源：4kV,5kHz I/O：2kV,5kHz

测量精度

- ◇ 电流：0.5%(0.5~6A)
- ◇ 相电压：0.5%(20~400V)
- ◇ 线电压：1.0%(30~600V)
- ◇ 功率：1.0%
- ◇ 功率因数：1.0%
- ◇ 频率：0.1%(50/60Hz)
- ◇ 电能：1.0%(0.5L/0.5C)

绝缘强度

- ◇ 电压/电流/电源/外壳间：2.0kV/min-2mA
- ◇ 输出/电源间：2.0kV/min-2mA

工作条件

- ◇ 工作温度：-10℃~50℃
- ◇ 储存温度：-25℃~75℃
- ◇ 相对湿度：20%RH~95%RH 无凝露

通讯

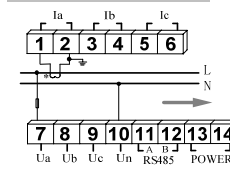
- ◇ 接口：RS-485
- ◇ 地址：1~247
- ◇ 波特率：1200/2400/4800/9600/19200
- ◇ 校验位：奇/偶/无
- ◇ 数据位：8bits
- ◇ 停止位：1 或 2bits
- ◇ 通讯协议：Modbus RTU

三、实物端子图

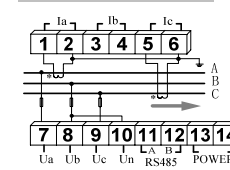


四、接线与安装

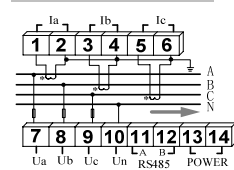
三相四线平衡/一相两线



三相三线



三相四线



安装时电压输入回路和辅助电源必须接入大小约 0.5A 的保险丝。

◇ 安装现场

仪表在初次安装时应作好以下工作，以保证维护尽可能方便。

1. 电压输入回路和辅助电源必须接入合适的保险丝。
2. 应提供一个 CT 短接盒，这样使仪表的电流输入不连接时，不会使 CT 开路。
3. 仪表必须牢固安装，以防止震动导致电气安全事故。
4. 电气连接线要求：电流输入线用 2.5 mm² 多股阻燃铜线，电压输入线、电源线用 1.5 mm² 多股阻燃铜线，RS-485 通讯用 1.0 mm² 屏蔽双绞线。

◇ 安装环境

1. 仪表应尽量安装在干燥、通风良好并远离热源和强电(磁)场的地方。
2. 环境温度为：-10℃~50℃。湿度：20%RH~95%RH。

五、操作

◇ 本仪表 4 个按键定义

	电流显示画面按键,返回选择菜单的上一级菜单层面,并记录保存所选定的内容。
	电压/频率显示页面。设置菜单中移至选择菜单相邻的另一个项目或键入数值时作为递增的功能。
	功率/功率因素显示页面。设置菜单层中向下移至选择菜单相邻的另一个项目或键入数值时作为递减的功能。
	进入/退出设置菜单,进入下一级菜单或键入数值时作为移动光标位置的功能。

六、如何显示测量数据

- ◇ 按“”键将显示三相电流值
- ◇ 按“”键多次，将分别在相电压、线电压，频率功率因素显示画面之间切换；
- ◇ 按“”键多次，将分别在各相及总的有功功率、无功功率、视在功率、功率因素画面之间切换；
- ◇ 按“”键，四象限电能之间切换。

- ◇ 长按“”键，将进入设置菜单。在设置菜单界面中长按则将退出菜单。

七、可编程参数设置

显示字符	对应定义	数值范围
Pt	电压变比	1~9999
Ct	电流变比	1~9999
Id	本机地址	1~247
bPS	波特率	1200,2400,4800,9600,19200
SYSt	接线方式	3P4L, 3P4L (BAL), 3P3L, 3P3L (BAL), 1P2L, 1P3L
light	背光亮度	0(最暗), 1, 2, 3, 4, 5, 6, 7(最亮)
rEU	软件版本号	

八、运输与存储

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。

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。

运输存储环境温度应为-25℃~+75℃，相对湿度不超过 95%且在空气中不含腐蚀性的有害物质。

仪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。拆箱后的仪表，如发现外观损伤，请不要对仪表安装、加电；仪表叠放高度不超过 5 块，拆包的仪表不宜贮存。

九、保证期限

产品自出厂日起 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，我公司负责免费维修。

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Operating Instruction

I. General

This meter is a power monitor for three-phase electric network with functions of programmable, automatic measurement, LCD display, energy accumulated, and digital communication. Measured parameters are as follow:

- ◇ Current(Ph-Ph);
- ◇ Voltage (Ph-Ph/Ph-N);
- ◇ Active Power(Ph-Ph);
- ◇ Reactive Power(Ph-Ph);
- ◇ Apparent Power(Ph-Ph);
- ◇ Power factor (Ph-Ph);
- ◇ Frequency;
- ◇ Forward/Reverse active power energy;
- ◇ Forward/Reverse reactive power energy;



II. Specifications

Appearance

- ◇ Dimension : 96±0.5mm×96±0.5mm×67±0.5mm
- ◇ Panel Mounting: 92±0.5mm×92±0.5mm
- ◇ Net weight: about0.313kg
- ◇ Display: LCD
- ◇ Measuring System: 3P4L/3P3L/ Single-phase network

Voltage(True RMS value)

- ◇ Measurement range: 30~600V(line voltage)
20~400V(phase voltage)
- ◇ PT Ratio: 1~9999
- ◇ Absorbed Power: ≤0.25(220V) ≤0.60VA(600V)
- ◇ Overload Capacity: 800V

Current(True RMS value)

- ◇ Measurement range: 0~6A
- ◇ Minimum current: 5mA
- ◇ CT Ratio: 1~9999
- ◇ Absorbed Power: 0.2VA
- ◇ Overload capacity: 10A
- ◇ Surge overload: 100A/1s

Power

- ◇ Single phase power: 0~2400W/var/VA
- ◇ Total Power: 0~7200W/var/VA

Frequency

- ◇ Measurement range: 50/60Hz

Power factor

- ◇ Measurement range: -1~1

Power supply:

- ①AC85~265V or DC85~330V
- ②DC20~60V(Optional)

Electromagnetic Compatibility

- ◇ 1.2/50-8/20us Surge: Power supply: 4kV I/O: 2kV
- ◇ Quick transient pulse series: Power supply :4kV, 5kHz I/O: 2kV, 5kHz
- ◇ Static discharge: Contact discharge: 6kV;Air discharge: 8kV

Accuracy

- ◇ Current: 0.5%(0.5~6A)
- ◇ Phase voltage: 0.5%(20~400V)
- ◇ Line voltage: 1.0%(30~600V)
- ◇ Power: 1.0%
- ◇ Power factor: 1.0%
- ◇ Frequency: 0.1%(50/60Hz)
- ◇ Energy: 1.0%(0.5L/0.5C)

Insulation strength

- ◇ Voltage/current/power supply/other: 2.0kV/min-2mA
- ◇ Output/power supply: 2.0kV/min-2mA

Working conditions

- ◇ Working temperature: -10℃~50℃
- ◇ Storage temperature: -25℃~75℃
- ◇ Relative humidity: 20%RH~95%RH (without condensation)

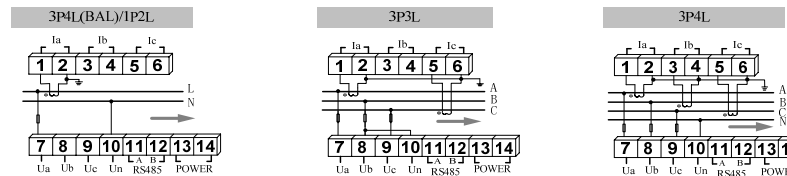
Communication

- ◇ Serial port: RS-485
- ◇ Address: 1~247
- ◇ Baud rate: 1200/2400/4800/9600/19200
- ◇ Parity bit: odd/even/no
- ◇ Data bit: 8bits
- ◇ Stop bit: 1 or 2 bits
- ◇ Protocol: Modbus RTU

III.terminal figure



IV. Connecting Diagram and Installation



When installing, input voltage loop and POWER should be connect into the 0.5A fuse.

◇ On-site installation

When the meter is first installed, several rules have to be complied with for convenience sake:

1. An adequate fuse has to be equipped with the input circuit and auxiliary power .
2. Please introduce a CT switch box to prevent open circuit when the input current of the meter is not connected.
3. The meter should be firmly installed to prevent accident due to electrical vibration.
4. 2.5 sq.mm stranded fire-resistant copper core wire should be adopted for current input; 1.5 sq.mm stranded fire-resistant copper core wire should be adopted for voltage input and power supply; 1.0 sq.mm STP (Shielded Twisted Pair) should be adopted for RS-485 communication

◇ Operating environment

1. The environment for installation should be dry, well-ventilated and away from heat and intense electric (magnetic) field.
2. Working temperature: -10℃~50℃ and Relative humidity: 20%RH~95%RH.

V. Button definitions

◇ There are 4 buttons as follows

	Current display button. Quit the displaying menu and return to the Real-Time Digit Display
	Voltage/Frequency display button. In Real-time Digit Display, move upward to the option next to the current item, or increase the input value in the Parameter Setting Menu
	Power/Power factor display. In Real-time Digit Display, move downward to the option next to the current item, or decrease the input value in the Parameter Setting Menu.
	Move to the menu at the next lower level, or move the cursor for data input

VI. How to display the measured data

- ◇ Press “”once to display phase current.
- ◇ Press “” to display phase voltage, line voltage and frequency.
- ◇ Press “” to display phase and total active/reactive/

apparent power and power factor.

- ◇ Press “”button,between four quadrant power switch.
- ◇ Press “” and hold for 3 seconds to enter the setting menu while press and hold it for 3 seconds to exit.

VII. Parameter setting

Characters	Definition	Range
Pt	PT	1~9999
Ct	CT	1~9999
Id	Address	1~247
bPS	Baud rate	1200,2400,4800,9600,19200
SYSt	Connection type	3P4L, 3P4L (BAL), 3P3L, 3P3L (BAL), 1P2L, 1P3L
LIght	Light intensity	0(The darkest), 1, 2, 3, 4, 5, 6, 7(The brightest)
rEU	Software version	

VIII. Transport and Storage

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

This product belongs to the electronic device, the handling, take put should try to avoid heavy impact and collision.

The ambient temperature should be-25℃~+75℃ for storage, relative humidity no more than 95%, and the air should not contain harmful substances which will cause corrosion.

The meter should lay under the conditions of the package, a high degree of no more than 5 stacked layers.Please don't install and power the meter when there are evident broken .Unpacking instrument should not be stored.

IX.Warranty and service

The meter within 18months after delivery , if the users do the operating complete following up the instruction and got the proved of relevant electric measurement departments, found the meters are not to conform to the above characteristics and technical requirements, Our company will be responsible for free repair.

Note: The above picture is for reference only, subject to the actual shipment, Copyright, all rights reserved. Specification subject to change without prior notice.