

# RS485 (VK-MPDU-DM40-RY) Manual



## Hazards and Warnings

Before installing, operating, or maintaining the equipment, read this manual carefully, get it, and gradually become familiar with the equipment. This document is not an operation manual for the untrained person, the company is not responsible for the problems caused outside the normal scope of use.



## Risk of electric shock, burning or explosion

- There is a power hazard in this equipment part, please operate in strict accordance with the specifications.
- Before maintenance and overhaul, the equipment must be powered off and grounded.
- Before the equipment is powered on, all mechanical parts, doors and covers, etc. should be restored to their original positions.
- Equipment maintenance and installation can only be performed by qualified personnel.

Failure to pay attention to these precautions may cause serious injury.

## 1.Product Description

Smart PDU meter is a product that can complete the measurement of electrical energy measurement and data transmission AC parameters. It can accurately measure single-phase AC voltage, current, power, power factor, frequency, power and other electrical parameters. It provides 1 RS-485 communication. Interface, can provide power separately, MODBUS-RTU protocol, with excellent cost performance.

Mainly used in IDC computer room, support hot-swappable use, installed in PDU socket.



## 2.Main Feature

- LCD display or operation, alarm indication.
- With RS485 interface and standard MODBUS protocol, it is convenient for remote monitoring system integration.
- The external port has an anti-electromagnetic interference design with high reliability.
- Support hot-swappable installation and convenient maintenance, which can be changed and customized according to customer requirements.

## 3. Function introduction

### 3.1. Electric energy measurement

- Total active energy measurement and storage, positive and negative energy measurement.
- The power data of power failure is stored permanently.
- Electric energy clear function, the electric energy range is 0.00kWh~42949672.95kWh.

### 3.2. Display function

- The display is divided into two modes: automatic cycle display and key display. The key can be used to turn the page display, and the automatic cycle display period is fixed. Set as: 3s, when the button is not operated for 1min, exit and enter the loop display.
- Display backlight function, at the beginning of power-on, the backlight is turned on, when there is no key operation, the delay is 60 seconds (when set to 60 seconds), Turn off the backlight.

when the key is operated effectively, the backlight will light up, when there is no operation, after a delay of 60 seconds, the backlight will be turned off.

When the backlight delay is set to 0, the backlight is always on.

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

### 3.3. Instantaneous measurement

AC input voltage, current, active power, power factor, frequency measurement.

### 3.4 Communication function (RS485 type)

It has two RJ45 interfaces and is equipped with an RS485 communication interface.

The communication interface and the internal circuit of the electric energy meter are gas isolation.

RS485 communication baud rate can be set to 1200bps, 2400bps, 4800bps, 9600bps.

Initial default 9600bps.

### 3.5 Local Setting Function

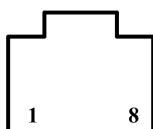
The instrument is equipped with a button, which can be used to turn pages and set operating functions.

Local setting parameters, including address, baud rate, low voltage, high voltage, high current, high power alarm value.

### 3.6 Alarm output function

- It has the alarm function of high input voltage, low voltage, high current and high power.
- At the initial power-on, the alarm indicator will turn on for 3 seconds and turn off, and the buzzer will be on for 3 seconds and turn off.
- When an alarm occurs, sound and light are output at the same time, the alarm indicator is always on, the buzzer sounds (frequency 1Hz), and the backlight is always on.

### 3.7 RJ45 port definition



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

No	Definition	Annotation	No	Definition	Annotation
1	A	RS485 communication A	3~8	NC	null
2	B	RS485 communication B			

### 3.8 Communication

The terminals are marked as A and B, which correspond to RS485 ports A and B respectively.

The RS-485 communication mode allows up to 32 instruments to be connected to a bus, which is connected to the host computer through an RS-485 converter.

## 4. Display and operation

### 4.1 Display description

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



#### 4.2 Indicator light description

There are two indicator lights, as follows:









- RUN (green): During normal operation, it flashes once every 1S.
- ALARM (alarm) (red): The alarm is always on, and usually off.

#### 4.3 Operating instructions

Equipped with a button, which can be used for page turning and setting operation functions, the button can be used to turn the display parameters to view, and the 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, electric energy cleared.

Button function	Operate
Show page turning	Conventional measurement parameter display interface, press the key to view the previous interface, which can be viewed in a cycle.
Button mute	Button mute function, when an alarm occurs, press a key once to mute, when another alarm occurs again, the buzzer will sound again, and the mute operation can be performed again.
Local settings	1、 Measuring screen, long press for 3 seconds to enter the setting function interface. 2、 Click the button to turn up the page of the parameter setting interface. 3、 On the exit interface, long press 3S to exit. 4、 Click on the setting menu interface (when the cursor is not flashing), the current setting menu will page up. Long press on a parameter item for 3 seconds to enter the current parameter item editing interface (that is, the current parameter is in the editing state) and the cursor flashes at the first digit to the left of the editable parameter. Click and the value of the flashing digit increases by 1. Long press for 3 seconds to shift. When the cursor moves to the first line and blinks in the first line, click to save the currently modified configuration and the cursor stops blinking.

The parameter setting functions are as follows:

NO	Menu display	Meaning	Settable range	Factory default
1		Communication address	001~247	001
2		Baud rate, parity bit	1200 2400 4800 9600	9600
			none Odd even	none
3		High voltage alarm threshold	000.0~300.0	Set to 0, turn off the alarm, Factory default: 265.00
4		Low voltage alarm threshold	000.0~300.0	Set to 0, turn off the alarm, Factory default: 175.00
5		High current alarm threshold	000.0~075.0	Set to 0, turn off the alarm, Factory default: 0
6		High power alarm threshold		Set to 0, turn off the alarm, Factory default: 0
7		Power zero	Fixed 3366	Factory default 0000
8		Return/exit interface	Long press 3S to return/exit	

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

## 5. Technical index

### 5.1 Measurement accuracy

Parameter	Precision	Measuring range
Current	0.5 Level	0.1Ib~Imax
Voltage	0.5 Level	0.7Un~1.2Un
Frequency	±0.02Hz	45Hz~60Hz
Power	1 Level	0~20kW
Power factor	±0.02	0~±1.0
Electricity	1 Level	

## 5.2 Specification parameter

Reference voltage (Un)	220V	
Reference current	5(30)A	5(60)A
Pulse constant	1600imp/kWh	800imp/kWh
Accuracy level (electricity)	1 Level	

## 5.3 Environmental conditions and power supply

Environmental conditions	
Stored temperature: -40°C~70°C	Operating temperature: -10°C~55°C
Humidity: 5%RH~95%RH	
Power supply	
Input range: AC154V~AC264V	Whole machine power consumption: ≤1.5W, 6VA

## 5.4 Power consumption

Input circuit	Power consumption
Voltage loop	≤1.5W、6VA (Each phase)
Current loop	≤1VA

## 5.5 Communication

Communication parameters	
Communication port: RS485 2-wire half-duplex	Communication baud rate:9600bps
Communication address:1~250	Protocol: Modbus-RTU
Check Digit: No Check	Data bits: 8bits, Stop bit:1bits

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