## **JSY1054**

## 4-channel Metering and Relay Control Module

# User Manual



## Shenzhen Jiansiyan Technologies Co., Ltd.

## 

#### 1.1、 Introduction

4-channel metering and relay control module independently developed and designed by our company . This product is developed using advanced technologies such as digital sampling and processing technology and SMT technology. It has completely independent intellectual property rights and can accurately measure the voltage, current, power, power factor, energy and other electrical parameters in the AC power grid with a rated frequency of 50Hz or 60Hz . The module has a built- in RS485 communication interface and uses the MODBUS-RTU communication protocol . It can be easily connected to various AMR systems and has the characteristics of good reliability, small size, light weight, beautiful appearance and easy installation.

JSY1054 can be widely used in energy-saving transformation, electricity, ccommunications, railchannels, transportation, environmental protection, petrochemicals, steel and other industries to monitor the current and power consumption of AC equipment.

#### 1.2、 Features

- 1.2.1. Collect 4-channel AC power parameters, including voltage, current, power, factor, frequency, electric energy and other electrical parameters.
- 1.2.2. Adopting special measurement chip and effective value measurement method, the measurement accuracy is high.
- 1.2.3. With 1 RS -485 communication interface and ESD protection circuit.
- 1.2.4. Electric energy data is a 4- byte unsigned number, which is saved when the power is off .
- 1.2.5. The communication protocol adopts standard Modbus-RTU, which has good compatibility and is convenient for programming.
- 1.2.6. DC12V power supply with anti-reverse connection protection function. Reverse connection of power supply will not damage the module but it will not work.
- 1.2.7. High isolation voltage, withstand voltage up to AC3000V.
- 1.3、 Technical Parameters
  - 1.3.1 AC Input
  - 1) Voltage range: 80V~300V.

- 2) 8 A each .
- 3) Signal processing: using dedicated measurement chip, 24-bit AD sampling.
- 4) Overload capacity: 1.2 times the range is sustainable. instantaneous (<20mS) current 5 times, voltage 1.5 times the range is not damaged.
- 5) Input impedance: voltage channel >1 k  $\Omega$  / V.
- 1.3.2 Communication interface
- 1) Interface type: Provides 1 RS-485 interface.
- 2) Communication protocol: MODBUS-RTU protocol.
- 3) Data format: software-settable, "n,8,1", "e,8,1", "o,8,1", "n,8,2".
- 4) Communication rate: The baud rate can be set to 1200, 2400, 4800, 9600Bps. the baud rate defaults to 9600bps.
- 1.3.3 Measurement output data

4-channel voltage, current, power, electric energy, power factor, frequency and other electrical parameters

1.3.4 Measurement accuracy

Voltage , current , power: less than  $\pm$  1.0 % . active power level 1.

- 1.3.5 Power supply
- 1) When powered by DC12V , the peak voltage shall not exceed + 15V . Typical power consumption:  $\leqslant$  1W .
- 1.3.6 Work Environment
- 1) Working temperature: -20 $\sim$ +60 $^{\circ}$ C . Storage temperature: -40 $\sim$ +85 $^{\circ}$ C .
- 2) Relative humidity: 5-95%, no condensation (at 40 °C).
- 3) Altitude: 0-3000m.
- Environment: A place without explosive, corrosive gas and conductive dust, and without significant shaking, vibration and impact.
- 1.3.7 Module size : 125\*52.3mm
- 1.4. Output control unit

1.5.1 Control the closing and opening of a single relay, or control multiple relays simultaneously.

1.5.2 Sequential delay power-on. (When two or more channels are controlled continuously, after the previous channel is completed, it takes 1 second for the next channel to start operating.)



1.5、 DIP switch function introduction

健思研科

1. 5.1 The module is equipped with a dip switch , which allows users to quickly modify the device address .

1. 5.2 When all four DIP switches are turned on, the address is "15" .

1. 5.3 When all four DIP switches are turned off, the address is "0" .



## 2. Application

2.1. Appearance and installation

**Product** appearance





#### Figure 2.1 Dimensions (Unit: mm)

#### Product appearance 3D image



Figure 2.2 PCB Dimensions (Unit: mm)

## 2.2、 Terminal Definition

2.2.1 Pin Description

Serial	Terminals	illustrate	Remark
number			
1	N-IN1	Noutral wire input port	
2	N-IN2		
3	L-IN1	Eiro wiro input port	
4	L-IN2		
5	L-OUT1	1st channel output control port	
6	L-OUT2	2nd channel output control port	
7	L-OUT3	3rd channel output control port	
8	L-OUT4	4th channel output control port	
9	LD2	Power indicator light, Always on when	
		powered on (red)	
10	LD1	Communication indicator light, flashing	



during communication (green)

## 2.3 Indicator lamp definition

2.3.1 JSY 1084 LED light board description

Serial number	Indicator Lights	Indicator Color	Warning information	Remark
1		Off	Output off	The power supply is
				normal
2		green	Output on	The power supply is
	Panel indicator			normal
3	light LD1~LD4	red	Output off,	The power supply is
			fault alarm	not connected
4		yellow	Output on,	The power supply is
			fault alarm	not connected

## 2.4 Application Notes

Please connect correctly according to the product specifications and models and refer to the above diagrams. Make sure to disconnect all signal sources before wiring to avoid danger and damage to the equipment. After checking and confirming that the wiring is correct, turn on the power supply for testing.

After the power is turned on, the "power " indicator light is alchannels on, and during communication, the "indicator light" flashes synchronously when the communication data is transmitted.

When the product leaves the factory, it is set to the default configuration: address 1, baud rate 9600bps, data format "n,8,1", data update rate 1000ms, ratio 1.

#### 2.5、 RS-485 network connection

The host usually has only RS-232 interface. In this case, it can be connected to 485 network through RS-232/RS-485 converter . It is recommended to use isolated 485 converter to improve system reliability.

A+ and B- terminals of all devices on a bus are connected in parallel , and they cannot

#### JSY1054 4-channel Relay Metering control module product manual V 2 . 1

be connected in reverse. Up to 15 instruments can be connected to a line at the same time ( the maximum address of the DIP switch is 15). Each instrument can set its communication address. The communication connection should use shielded twisted pair cables. When wiring, keep the communication line achannel from strong electric cables or other strong electric field environments.

The RS-485 communication line should use shielded twisted pair cable. the communication distance of 485 can reach 1200 meters. When there are many RS485 devices connected to a bus , or a higher baud rate is used, the communication distance will be shortened accordingly. At this time, a 485 repeater can be used for expansion.

RS-485 networking has a variety of topological structures, generally using linear connection, that is, starting from the upper host, multiple devices are connected to the network one by one from near to far. At the farthest end, a 120 ~ 300  $\Omega$  / 0.25 watt terminal matching resistor can be connected (depending on the specific communication quality, that is, it does not need to be installed when the communication is very good).

### 3. Notes

健思研科技

- Pay attention to the auxiliary power information on the product label. The auxiliary power level and polarity of the product must not be connected incorrectly, otherwise the product may be damaged.
- 2) Please connect correctly according to the product specifications and models and refer to the diagram. Before connecting, make sure to disconnect all signal sources and power to avoid danger and damage to the equipment. After checking and confirming that the wiring is correct, turn on the power for testing.
- 3) The voltage circuit or the secondary circuit of the PT cannot be short-circuited.
- 4) When there is current on the primary side of the CT, it is strictly forbidden to open the secondary circuit of the CT. it is strictly forbidden to connect wires or unplug terminals when there is current on the primary side of the CT.
- 5) When the product is used in an environment with strong electromagnetic interference, please pay attention to the shielding of the input and output signal lines.
- 6) When installing centrally, the minimum installation interval should not be less than

10mm.

- 7) This series of products does not have a lightning protection circuit inside. When the input and output feeder lines of the module are exposed to harsh outdoor weather environments, lightning protection measures should be taken.
- 8) Please do not damage or modify the product labels or logos, and do not disassemble or modify the product. Otherwise, our company will no longer provide the "three guarantees" (exchange, refund, and repair) service for this product.

Manufacturer: Shenzhen Jiansiyan Technologies Co., Ltd.

Online Technical Support Staff:

+86 18675534520(Mr.Jahleel)

+86 18665924579(Mr.Jimmy)

E-mail: jsy-mk@jsypowmeter.com

Web: www.jsypowermeter.com

Address: 901, Building 1, Taijiale Technology Industrial Park, Tongguan Road, Tianliao Community, Yutang Street, Guangming District, Shenzhen, Guangdong, 518132, China.

