Modbus Gateway Operation Manual

Applicable models：CE-CCM-18A/N

Thank you very much for purchasing our product.
Before using your unit, please read this manual carefully and keep it for future reference.

Contents

1. Safety precautions

The following contents are stated on the product and the operation
manual, including usage, precautions against personal harm and
property loss, and the methods of using the product correctly and safely.
After fully understanding the following contents (identifiers and icons),
read the text body and observe the following rules.

■   Identifier description

Identifier	Meaning
⚠ Warning	Means improper handling may lead to personal death or severe injury.
⚠ Caution	Means improper handling may lead to personal injury or property loss.
[Note]: 1. "Harm" means injury, burn and electric shock which need long-term treatment but need no hospitalization	
2. "Property loss" means loss of properties and materials.	

■   Icon description

Icon	Meaning
🚫	It indicates forbidding. The forbidden subject-matter is indicated in the icon or by images or characters aside.
❗	It indicates compulsory implementation. The compulsory subject-matter is indicated in the icon or by images or characters aside.

Warning

⚠ Warning	Delegate installation	Please entrust the distributor or professionals to install the unit. The installers must have the relevant know-how. Improper installation performed by the user without permission may cause fire, electric,shock, personal injury or water leakage.

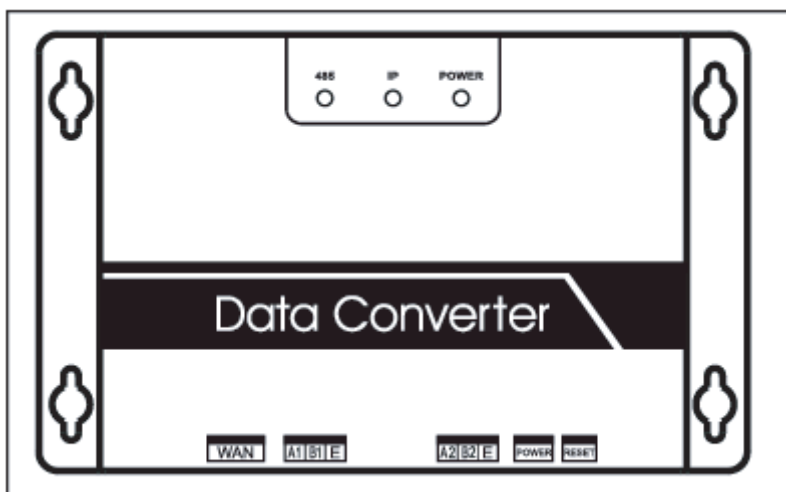| 🚫 Usage Warning	Forbid	Do not spray flammable aerosol to it directly. Otherwise, fire may occur.
	Forbid	Do not operate with wet hands or let water enter it . Otherwise, electric shock may occur.

2 Overview

2.1 Instruction

WAN terminal： Connect to the switche by 5 kinds of network cables to ensure that PC can access to the web page of it.

A1B1E terminal： Connect to the indoor/outdoor unit

A2B2E terminal： Connect to the terminal serial port.

2.2 System Architecture Description

It supports two kinds of outdoor unit with baud rates of 600 and 4800. (For detailed information, please contect our technical support). The addresses of accessed indoor/outdoor units can't repeat.

1)When the baud rate of the outdoor unit is 600, 64 indoor units and 4 outdoor units can connect to it at most.

2) When the baud rate of the outdoor unit is 4800, 60 indoor (with the address from 4—63) units and 4 outdoor units can connect to it at most.

The upper computer system with Modbus protocol access to terminal A2B2E by RTU or by TCP to connect to modbus gateway. See the connection figure between modbus gateway and air-conditioner system below:

Connection through Modbus TCP:

Note:XYE port and K1K2E port connect hand in hand,and then access to A1B1E port.

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485   IP   POWER

Data Converter

WAN   IT B1 E   W1B2 E   POWER RESET

XYE

Modbus TCP

K1K2E

Modbus system

K1K2E   Outdoor

PQE

Indoor

Connection through Modbus RTU:

Fig.2.2

485   IP   POWER

Data Converter

WAN   IT B1 E   W1B2 E   POWER RESET

Modbus RTU   Modbus system

XYE

K1K2E

K1K2E   Outdoor

PQE

Indoor

3
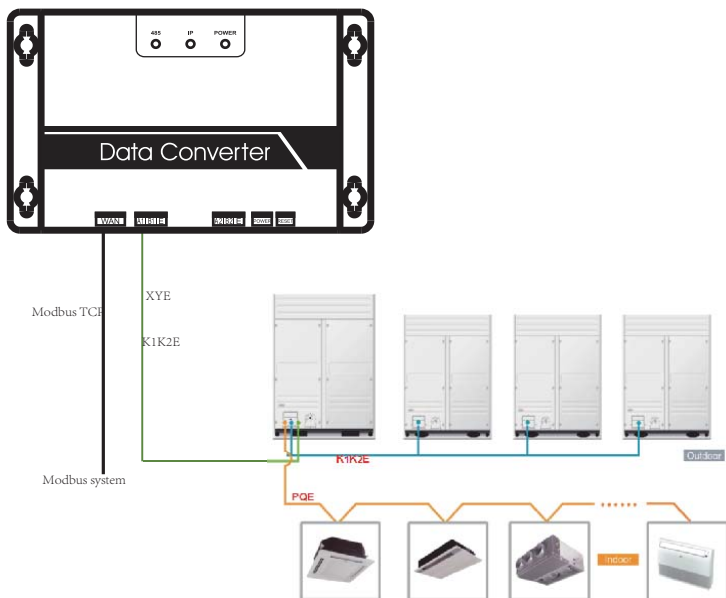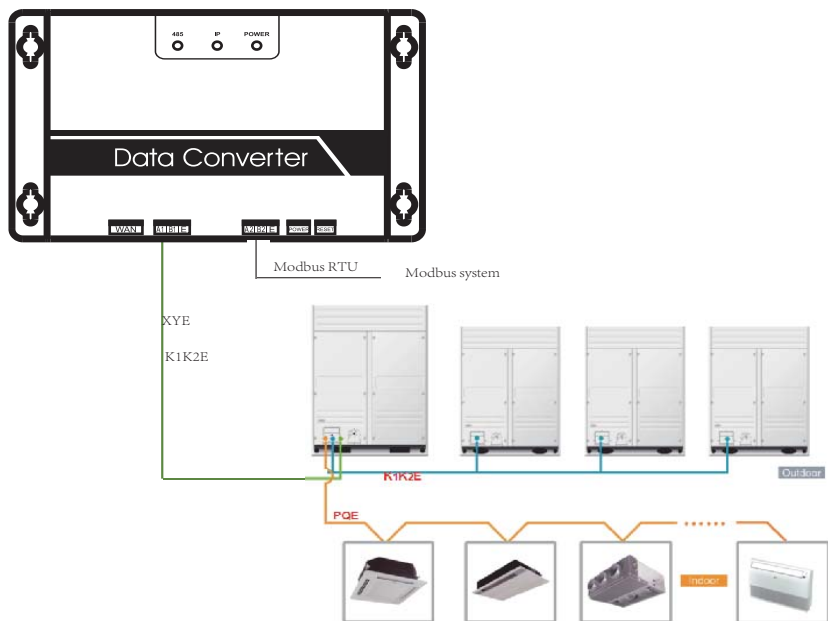
Fig.2.3

2.3 Function Code

Function code	Function name	Function
0x01	Read Coils	Read
0x04	Read Input Register	Read
0x10	Write Holding Register	Write

2.4 Abnormal Reply

The master unit sends requests and waits for reply from the slave.When there's no error occurs, the slave will reply normally, but when there's data checking error, the slave won't answer. When the master unit sends wrong data (except for checking error), the slave will answer abnormally.

Code	Name	Meaning
0x 01	Illegal function code	Function code received by the slave can't be executed.
0x02	Illegal data address	The received data address is not allowed.
0x03	Illegal data	Value in query data field is not allowed by the slave
0x06	Slave busy	The slave is busy with a long-time program command. Ask the master to send messages when the slave is free.

3 Usage Introduction

3.1 IP Configuration

The default IP address is 192.168.1.200 when modbus gateway leaves the factory. The PC used for visiting websites must be in the same subnet segment with modbus gateway, which means it should be 192.168.1.xx (xx is from 2 to 254). There are 2 ways to configure IP: static configuration and multi-IP addition

3.1.1 Single IP Configuration

Open protocol dialog, configure the IP address and subnet mask, for example: IP: 192.168.1.211, subnet mask 255.255.255.0
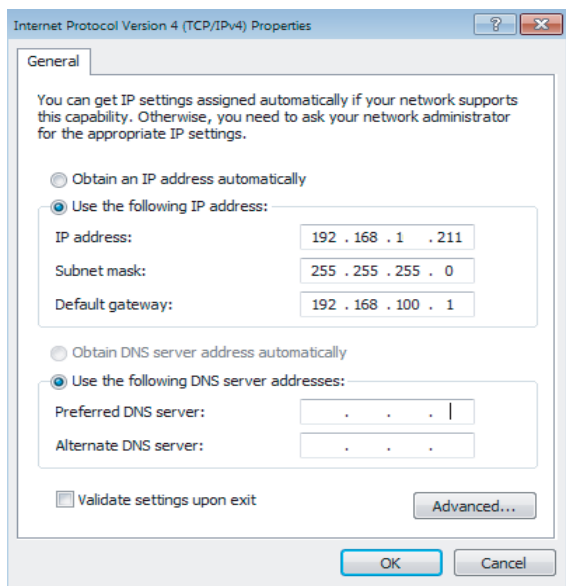
Fig.3.1

After setting, click "OK" button.

3.1.2 Multi-IP Addition

Configure a static IP address before adding multiple IP.

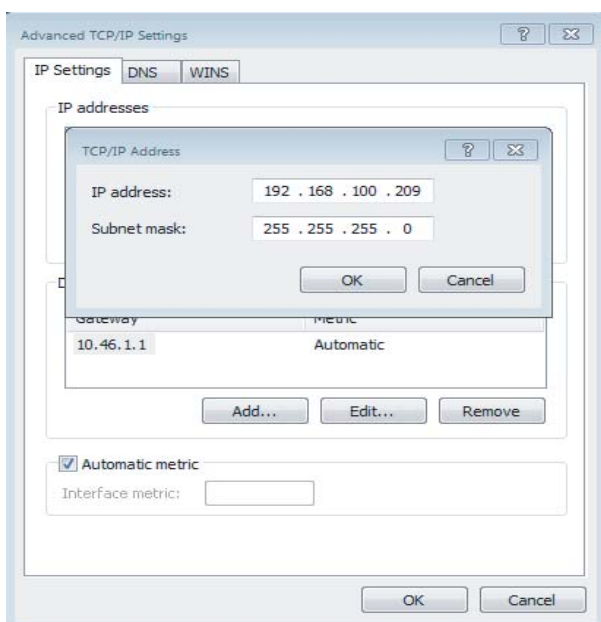Open protocol dialog and choose Advanced tab. TCP/IP setting dialog will display like below:

Fig.3.2

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Click "Add" in IP address bar to add an IP address which is in the same segment as "192.168.1.200", e.g., IP: 192.168.1.209，subnet mask 255.255.255.0，and click "OK"

3.2 Configuration

Input http://192.168.1.200 in the address bar in IE (suggest to use IE). Choose "Configuration" when web page of modbus gateway displays, as shown below:

Modbus Address	1 ⌄
Modbus Commu.Setting	9600 ⌄ None-无校验 ⌄
IP Address	192.168.1.200
Netmask	255.255.255.0
Gateway	192.168.1.1
Outlet Baudrate	600 ⌄

> if outlet baudrate is 600,then support outlet(0~3),in
> if outlet baudrate is 4800,then support outlet(0~3),i
Get Setting successful!

[Get Setting]   [Apply Setting]

Fig.3.3

Parameters Setting:

Parameter	Description
Modbus address	Modbus ID, to distinguish modbus gateway with multiple Modbus protocols in the same subnet. Don't repeat the address.
Modbus commu-nication setting	Baud rate: suggest 9600； Check bit: no checking by default Stop bit: 1StopBit by default
IP address	IP address of modbus gateway, multiple IPs can't be the same.
Subnet Mask	Default：255.255.255.0
Gateway	Local gateway address
Baud rate of the outdoor unit	Outdoor communication baud rate which is connected to modbus gateway

Click "Application Settings" after changing the corresponding parameters. Click "Get Settings" when apply the new settings. Modbus gateway will restart automatically after changing settings, the network will break and reconnect.

3.3 Air Conditioner Information Query

Choose "power winding" or "input register" in the web page to read information of the air conditioner unit.

When choose "power winding" it will be like the picture below.

Coil Outputs			Input Registers				Airconditione					
0	1	2	3	4	5	6	7	8	9	10	11	12
20	21	22	23	24	25	26	27	28	29	30	31	32
40	41	42	43	44	45	46	47	48	49	50	51	52
60	61	62	63			Indoor#0:COOL-MODE						Outle

1	FAN-MODE	○
2	DEHUMM-MODE	○
3	HEAT-MODE	○
4	COOL-MODE	●
5	AUTO-MODE	○
6	MODE-LOCK	○
7	--	○
8	ON/OFF	●
9	HIGH-FAN	●
10	MEDIUM-FAN	○
11	LOW-FAN	○
12	BREEZE-FAN	○
13	--	○
14	--	○
15	--	○
16	AUTO-FAN	○

28	Change Aire	○
29	Cleaner	○
30	Humnd	○
31	Add Oxygen	○
32	Dryer	○
33	Horizontal Sway	○
34	Add Water	○
35	Pump	●
36	--	○
37	LOCK COOL	○
38	LOCK HEAT	○
39	LOCK-CENTER-CTRL	○
40	LOCK-REMOTE-CTRL	○
41	E0 Phase Error	○
42	E1 Commu. Error	○
43	E2 T1 Sensor Error	○
44	E3 T2A Sensor Error	○

Fig.3.4

When click the address number of the indoor or outdoor unit, it will show corresponding operation information of the air conditioner. The chosen device will display in the red frame.

When click "input register", the interface will be like this:

Coil Outputs				Input Registers				Aircondit			
0	1	2	3	4	5	6	7	8	9	10	11	1
20	21	22	23	24	25	26	27	28	29	30	31	3
40	41	42	43	44	45	46	47	48	49	50	51	5
60	61	62	63		Indoor#0:COOL-MODE							0

30001	SystemStatus	0/0000	30017	
30002	UnitStyle-1	224/00E0	30018	OUTL
30003	UnitStyle-2	20/0014	30019	AC
30004	SET TEMP. Ts	17/0011	30020	AC1
30005	ROOM TEMP. T1	90/005A	30021	AC3
30006	EVAPORATOR-TEMP. T2A	90/005A	30022	AC4
30007	EVAPORATOR-TEMP. T2B	90/005A	30023	OUT
30008	CONDENSER TEMP. T3	255/00FF	30024	OU
30009	---	0/0000	30025	AC
30010	---	0/0000	30026	AC
30011	TIMER-ON	0/0000	30027	AC
30012	TIMER-OFF	0/0000	30028	AC
30013	POWER	8/0008	30029	A
30014	---	0/0000	30030	A
30015	---	0/0000	30031	A
30016	ERROR STATUS	0/0000	30032	A

Fig.3.5

The first column is the address, second is the content and the third is displayed value, e.g. 17/0011, 17 is decimal display, 0011 is hexadecimal display.
Explanation of part of the content:
E.g., outdoor unit on-line state: 1/0001. When No. 0 outdoor unit is on-line, its value is 1/0001(decimalism / hexadecimal), when No.0 outdoor and No. 1 outdoor unit are on-line, its value is 3/0003.

Air Conditioner Control
When click "Air Conditioner Control" on the web page, it will display like this:
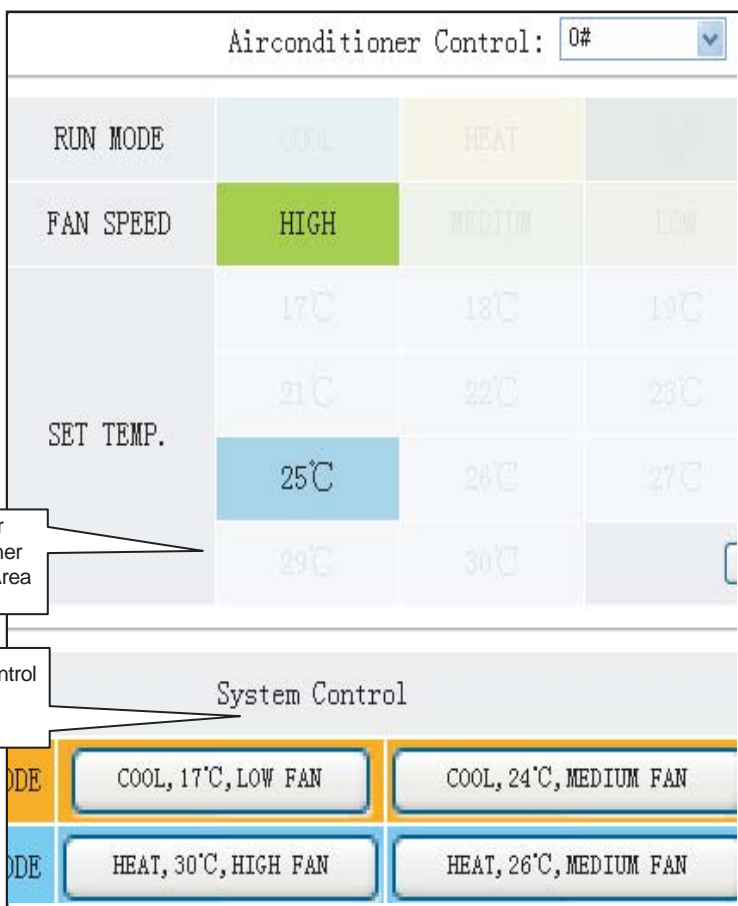
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Fig.3.6

Single air conditioner control area: control the single air conditioner. Choose a single air conditioner and set mode, wind speed and temperature.

Single control area: to choose a single air conditioner, set mode, wind speed, temperature and click "Apply" to carry out a single controlling function.

Group control area: to choose the corresponding group control button and carry out group controlling. All the indoor units under the control of modbus gateway carry out this operation.

3.4 Upper Computer Access

3.4.1 Upper Computer Access Mode

Upper computer system with Modbus protocol port can communicate with modbus gateway through Modbus TCP or Modbus RTU. For detailed information, please refer to Fig .2.2 and Fig. 2.3.

3.4.2 Access to Debug

Via Modbus Poll software to access debugging. Here is the debug procedure:

3.4.2.1 Install Modbus Poll software

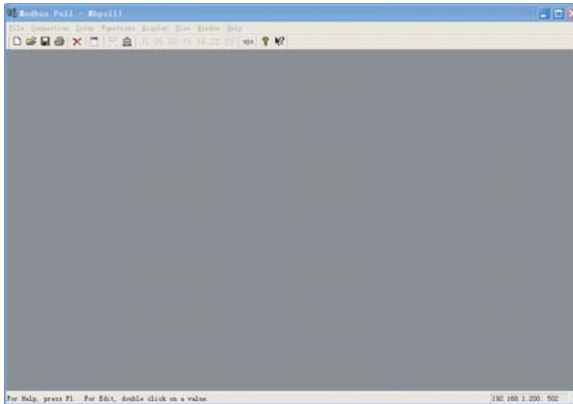When finish installing Modbus Poll software, the home page will display like this:

Fig.3.7

3.4.2.2 Connect Modbus Gateway

There're 2 connection ways: Modbus TCP and Modbus RTU
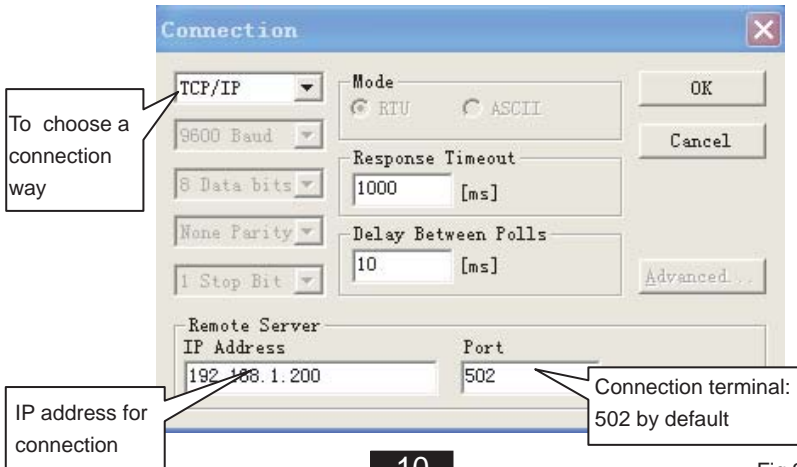1)Choose "Connection"->"Connection" in figure 3.7,and then chose TCP/IP in the pop-up window:

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Fig.3.8

Click "OK" when finish setting.

2）Connection through Modbus/RTU

Choose RTU to connect, as shown below:

To PC port

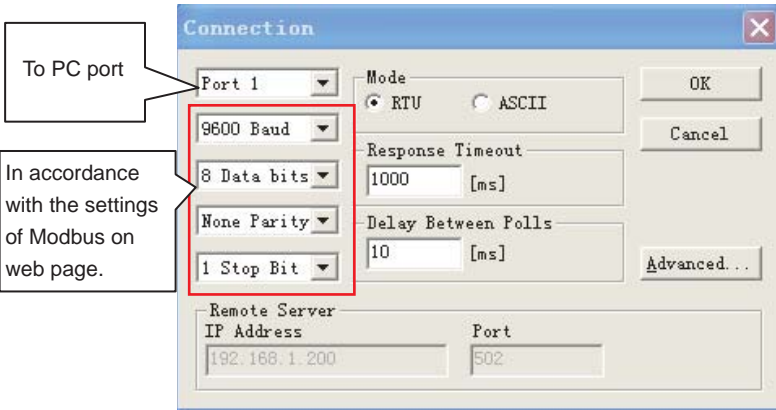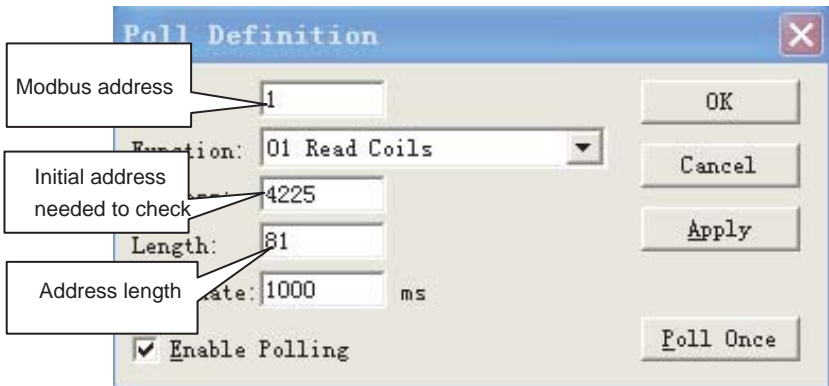In accordance with the settings of Modbus on web page.

Fig.3.9

3.4.2.3 Test

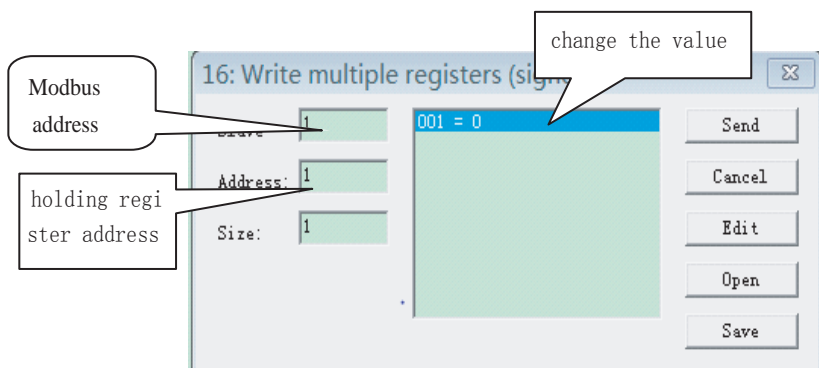Modbus Poll software can read/write the content of corresponding address in mapping table.

Take reading coil content for an example:

Choose "Poll Definition" under "Setup"

Modbus address

Initial address needed to check

Address length

Click the "OK" button and it will display the content. If the content is the same as the value of the web page which has the same address, it means that the software debugging success.

Take writting holding register for example:

Choose button 16 in Fig.3.7,as shown below:

change the value

Modbus
address

16: Write multiple registers (sig...

001 = 0

Send

Cancel

holding regi
ster address

Address: 1

Edit

Size: 1

Open

Save

After changed the value,click "send" button to finish the writting operation.

4 Software Reset

Press"RESET" button on the gateway for 3 seconds and power on again, the
software configuration will be back to the original setting.

5 Appendix《Mapping Table》

MD13IU-022BW

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本说明书规格：210x130、黑白打印