

LC1200 Quick User Manual



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LC1200 Quick User Manual

This document is a quick illustration of the use of the MODBUS-TCP coupler LC1200 and LC series IO modules with some engineering experience, designed to allow users to get started quickly.

1. Installation and removal

1. Installation

> Align the notch at the module shown in the figure below:



Figure 1-1 at the notch of the alignment module

Push the IO module into the DIN pin in the direction of the arrow and place the module on the DIN guide rail;





Figure 1-2, install the module on the guide rail

2. Removal mode

- > First, all the signal cables or power cables of this module shall be removed;
- Pull the pin in the direction of the arrow (the yellow part in the figure below);
- \succ Remove the module.



Figure 1-3 Removing the module from the guide rail

3. Precautions

Iule is difficult to install, do not use brute force to avoid damage to the



current module or other modules; remove the module from the guide rail, check for abnormalities (such as foreign body blockage, etc.), and plug if there is no problem.



2. The wiring instructions

> In this paper, the topology is LC2488 + LC1488 + LC4134 + LC3134.

1. Terminal wiring

The wiring terminal of the LC series 10 module adopts the screw-free design, which only requires a one-word screwdriver (one word is recommended, and the model of the screwdriver is 275mm).

It is recommended to use 14A W G wire. In the wiring process, first strip the wire for a certain length, then use a sub-type screwdriver vertically into the terminal hole, lever down, and the other hand inserts the peeled wire into the opened circular hole, and then pull out a sub-type screwdriver, and the wire will automatically be tightly pressed by the spring.

ul not to connect the positive and negative poles of the power supply, otherwise it may cause the module to fail to work, work abnormally, or even damage the module.

2. System power supply wiring

As shown in the figure below, use a 220V AC-> 24V DC power module (preferably dual output) to connect the control end, power line and power end power line.





Figure 2-1 System power supply connected to the LC1100



3. Common-terminal power supply wiring of the system





Figure 4-1 Schematic diagram of coupler LC1200 and MODBUS master station > Set the dial switch of LC1200 as required



Figure 4-2 Set the IP address switch of the LC1200

Set the coupler address: 192.168.1.xxx, set the IP address xxx by dial switch, cannot



be 0 and 1.

Ξ , Software configuration

1. MODBUS main station software ModbusPoll

1.1 Connect the coupler MODBUS slave station

- Sendd address: set MODBUS-TCP coupling LC1200 slave address to 192.168.1.xxx, and set IP address xxx through the dial switch. For example, set to 16, the dial switch should be dialed to the ON terminal to set a range of 2-255;
- Modbus Host network address: the IP address of the host is 192.168.1.100, the subnet mask is 255.255.255.0, and the default gateway is 192.168.1.1.

1.2 Network connection

> Open the ModbusPoll software, and then select File (File) -> New (New), from the



menu bar to create the new file

- k on the Connection
- Click on the Connection



Modbus Poll - Mbpoll1

File Edit	Connection	Setup	Function	15				
0 🖌	Conne	Connect Disconnect						
Mbn	Discon							
Tx = 0: No conr	E Auto C It Quick	Auto Connect Quick Connect						
	Alias		00000					
0			0					
1			0					
2			0					
2			0					

Figure 1-2 Click on the Connect

> Configure connection information

SR = 1000ms	Connection Setup	×
00000	Connection	ОК
0	Modbus TCP/IP ~	
0	Serial Settings	Cancel
0	COM1 ~	Mode
0	9600 Baud 😪	● RTU ○ ASCII
0	R Data bite	Response Timeout
0	0 D'did Dita	1000 [ms]
0	Even Parity	Delay Between Polls
0	1 Stop Bit 🔗 Advanced	20 [ms]
0	Remote Modbus Server	
0	IP Address or Node Name	
1	192.168.1.16	~
	Server Port Connect Timeout	IPv4
	502 3000 [ms]	O IPv6

Figure 1-3 Connection configuration interface

- 1. Set the connection target to Modbus TCP / IP
- $2\,$. This IP address is set to 192.168.1.16 according to the dial switch value
- $3\,{}_{\mathrm{v}}$ The Server Port was set to 502.
- Read the register data

The slave Id, register type, register address and number of read registers can be set independently in the following figure.



Alias	00000	Read/Write Definition >
1	0 0	Slave ID:
2	0	Function: 03 Read Holding Registers (4x) V Cancel
3	0	Address: 0 Protocol address. E.g. 40011 -> 10
4	0	Quantity: 10
5	0	Scan Bate: 1000 [ms]
	0	Disable
	0	Read/Write Disabled
в	0	Disable on error Read/Write Once
9	0	View Rows ● 10 ◯ 20 ◯ 50 ◯ 100 ◯ Fit to Quantity
		Hide Alias Columns PLC Addresses (Base 1) Address in Cell Enron/Daniel Mode

Figure 1-4 Connection configuration interface

> Set up the display data format

Modbus Poll - [Mbpoll2]

Doc.	File	Edit	Conne	ction	Setup	Fur	nctio	ns	Disp	olay	View	Wi	ndow	Help		
C	6		X	•	見自	лI	05	06	15	16	17 22	23	TC]	e ?	₩?	
Tx	= 8:	Err = O	: ID = 1	: F =	03: SR	= 10)00r	ns								

Alia	ias 010	00
	44	103
		0
		0
		0
		0

Figure 1-5 Data display format

Data displays by default in 10 penetrant. After selecting all tables, the data can be converted to 16 preciliant in the Display of the toolbar; the register displays the data in 10 units.



Modbus Poll - [Mbpoll2]

3 🖻		見首 几 05 0	6 Signed	Alt+Shift+S
x = 356	: Err = 0: ID = 1:	: F = 03: SR = 1000	Unsigned	Alt+Shift+U
			Hex	Alt+Shift+H
	Alias	00990	Binary	Alt+Shift+B
0			Long AB CD	
1			Long CD AB	
2			Long BA DC	
3			Long DC BA	
4			Float AB CD	
5			Float CD AB	
6			Float BA DC	
7			Float DC BA	
8			Double AB CD EF GH	
9			Double GH EF CD AB	
	+		Double HG FE DC BA	
			DIC Addresses (Base 1)	
			 Protocol Addresses (Base I) Protocol Addresses (Base I) 	e 0)
			Error Counters	F11
			Communication	

Figure 1-6 Data go to 16 bases

2, the structure of the MODBUS-TCP data message

2.1 Read the register data:

Read the data request message: 00 01 00 00 00 06 01 03 00 00 00 02

data	meaning
00 01	The communication transaction identifier, generally after each communication, will be required to add 1 to distinguish the different communication data messages
00 00	Represents the protocol identifier, and the number 00 00 is the modbus protocol
00 06	Data length, used to indicate the length of the following data, in unit byte
01	Device address for identifying a remote server connected to a serial line or network. The above seven bytes are also known as the modbus message header
03	Function code, at this time code 03 for read hold register data
00 00	start address
00 02	Number of registers, (16-bit)

Read the data response message: 00010000000701030400 ff 0011



data	meaning
00 01	The response transaction identifier requires the response message to be consistent with the previous corresponding request
00 00	Protocol identifier, consistent with the previous corresponding request
00 07	Data length, used to indicate the length of the following data, in unit byte
01	Equipment address, the response message is consistent with the previous corresponding request
03	Under normal circumstances, the response message requires consistent with the previous corresponding request and returns 0x80 + previous function code (read error code 83)
04	Byte length of the following data
00 ff 00 11	Data value in the read hold register (high level before)

2.2 Write to the register data:

Write the data request message: 00 01 00 00 00 0B 01 10 00 02 00 02 04 00 ff 00 11

Write to the data request					
data	meaning				
00 01	The communication transaction identifier, generally after each communication, will be required to add 1 to distinguish the different communication data messages				
00 00	Represents the protocol identifier, and the number 00 00 is the modbus protocol				
00 OB	Data length, used to indicate the length of the following data, in unit byte				
01	Device address for identifying a remote server connected to a serial line or network. The above seven bytes are also known as the modbus message header				
10	Function code, when code 10 is the write register data				
00 02	start address				



00 02	Write the number of registers
04	Number of bytes written to the data
00 ff	Written data (top)
00 11	

Write to data response: 00 01 00 00 00 06 01 10 00 02 00 02

Write data response						
data	meaning					
00 01	The communication transaction identifier, the response message should be consistent with the previous corresponding request;					
00 00	Protocol identifier, consistent with the previous corresponding request					
00 06	Data length, used to indicate the length of the following data, in unit byte					
01	Equipment address, the response message is consistent with the previous corresponding request					
10	Under normal circumstances, the response message is consistent with the previous corresponding request, and if wrong, return 0x80 + previous function code (write error code 90)					
00 02	Write to the starting address					
00 02	Write Register Length (16-bit)					

3, the coupler modbus tcp data read and write instance

3.1 Establish the corresponding keeping register table according to the card type and arrangement order:

Card type	Number of assigned addresses	data type	remarks
1、LC1488	Assign an address (receive data)	UINT16	Digital input is NPN type 8-way
2、LC1108	Assign an address (receive data)	UINT16	Digital input is PNP type 8-way
3、LC2488	Assign an address (send data)	UINT16	Digital output NPN type 8 road
4、LC2108	Assign an address (send data)	UINT16	Digital output NPN type 8 road



5, LC3008	Assign four addresses (received data)	INT16 x 4	Analog input voltage type 4-circuit
6、LC3108	Assign four addresses (received data)	INT16 x 4	Analog input current type 4-circuit
7、LC4008	Assign four addresses (send data)	INT16 x 4	Analog output voltage type 4- circuit
8、LC4108	Assign four addresses (send data)	INT16 x 4	Analog output current type 4 circuit
9、LC3602	Assign three addresses (1 send + 2 receive)	UINT16 + INT16 x 2	Loadcell Sensor is 2-way

In this example, we selected a digital output LC2488, a digital input LC1488, an analog output LC4134, and an analog input LC3134.

The order is LC2488 + LC1488 + LC4134 + LC3134 with 10 addresses 00 00 to 00 09:

Register serial number	Data information	data type
Register O	Card 0: the data for the LC2488	Lower 8 bits indicates the
		digital output
Register 1	Card 1: the data for the LC1488	Lower 8 bits indicates the
		amount of digital input
Register 2	Card 4: data for LC4134	Analog output 1 channel: INT 16
Register 3		Analog output 2-channel: INT 16
Register 4		Analog output 3-channel: INT 16
Register 5		Analog output 4-channel: INT 16
Register 6	Card 5: LC3134 of the data	Analog input 1 channel: INT 16
Register 7		Analog input 2-channel: INT 16
Register 8		Analog input 3-channel: INT 16
Register 9		Analog input 4-channel: INT 16
Register 999	Card fault information	The no-failure time value is O:
		UINT16
Register of	Card type	Up to 32 card types are
1000-1007	Each 4bit indicates one card	indicated
	type	UINT16 x 8

Register 999 stores the card fault information, the master program can cycle to query the register value to obtain the fault information, 0 means no fault.

Experiment 1: Read the values of Type of 4 cards:



Register address (1000-1007) stores card type data, one address 16bit stores four card type (TYPE) values with up to 32 cards.

(TYPE) price	Card type	number
1	The 8-way NPN digital quantity input	LC1488
2	The 8-way PNP digital quantity input	LC1108
3	The 8-way NPN digital quantity output	LC2488
4	The 8-way PNP digital quantity output	LC2108
5	A 4-way voltage-type analog input	LC3134
6	A 4-way current-type analog input	LC3104
7	A 4-way voltage-type analog output	LC4134
8	A 4-way current-type analog output	LC4104
9	A 2-way pressure sensor with an analog input	LC3602

The read data format is: 00 01 00 00 00 06 01 03 03 e8 00 02 Modbus Poll The read register settings are shown below:

Mbpoll1		
ix = 0: Err = 0: ID = 1: F = 03: SR = lo connection	ms Read/Write Definition	×
Alias 01000 0 0 1 0 2 0 3 0 4 0 5 0 6 0 7 0 8 0 9 0	Slave ID: Function: 03 Read Holding Registers (4x) ✓ Address: 1000 Protocol address. E.g. 400 Quantity: 2 Scan Rate: 1000 [ms] Disable Read/write Disabled Disable on error View Rows ① 10 0 20 0 50 0 100 O Fit to Quantity Hide Alias Columns DLC Addresse Address in Cell DENT	OK Cancel 11 → 10 Apply ad/Write Once antity s (Base 1) Mode



Modbus Poll - Mbpoll1

File	Edit Connectio	on Setup	Functions	Dis	play	V	iew	W
۵	🖻 🖬 🎒 🗙		ġ ⊥ 0	5 06	15	16	17	22
P	Mbpoll1							
Tx	= 14: Err = 0: IC) = 1: F = 1	03: SR = 10	000m	IS			
	1822	-	11011000					
	Alia	s	01000					
0			0x5713					
1			0x0000					
2								
3								

Because the register value is high eight in the front, and low eight in the back, the actual order of 10 is: 3175 0000,

The four cards are arranged in the following order: Coupler-> Card 0: LC2488-> Card 3: LC1488-> Card 4: LC4134-> Card 5: LC3134

Experiment 2: Light up all the lights of the card zero: The write data format is: 00 01 00 00 00 09 01 10 00 00 00 01 02 00 ff Modbus Poll Write register settings are shown below:

Modbus Poll - Mbpoll1

File Edit Connection Setup	Functions Display View Windo	w Help	
D ≥ ■ ● × □	05: Write Single Coil 06: Write Single Register 15: Write Coils 16: Write Registers 17: Report Slave ID	Alt+F5 Alt+F6 Alt+F7 Alt+F8	2 k ?
0	22: Mask Write Register 23: Read/Write Registers		
1	Test Center	Alt+T	
2			
3			
4			
5			
6			
7			
8			



ns (DISABLED)	
16: Write Multiple Registers	×
Slave ID: 1 000 = 0x00FF	Send
Address: 0	Cancel
Quantity: 1	Edit
Type: Hex 🗸	Open
	Save

Select register address 0, Quantity 1, Type value in Hex format, set value to 0x00FF, and click Send to light all the lights of card 0.

Experiment 3: Read the input value of card 1: The read data format is: 00 01 00 00 00 06 01 03 00 01 00 01 Modbus Poll The read register settings are shown below:

📲 Modbi	us Poll - Mbpoll1			
File Edit	Connection S	etup Functions Di	splay View Window Help	
		볼 @	15 16 17 22 23 TC 🖳 🦉 🦎	_
Mbpo	oll1			
Tx = 23:	Err = 0: ID = 1:	F = 03: SR = 1000	ns	
			Read/Write Definition	< -
	Alias	00000	Slave ID: 1 OK	1
1		0x0010	Function: 03 Read Holding Registers (4x) V	
2			Address: 1 Protocol address. E.g. 40011 -> 10	
3			Quantity: 1	
4			Scan Rate: 1000 [ms] Apply	1
5			Disable	
6			Read/Write Disabled Disable on error Read/Write Once	
7			View	
8			Bows ● 10 ○ 20 ○ 50 ○ 100 ○ Fit to Ruserbitu	
			Address in Cell Enron/Daniel Mode	
				-



From the figure above, register 01 is 0x0010, which indicates that the seventh channel has a signal input in card 1. Experiment 4: causes the third channel of the analog output card 2 to output 10V: INT 16-bit representation-10V to + 10V: 0X0000-0 X 7 FFF is 0 to 10V; 0X8000-FFFF is-10V to 0V The write data format is: 00 01 00 00 00 09 01 10 00 04 00 01 02 7 fff Modbus Poll Write register settings are shown below:

00000	16: Write Multiple Registers	×
0×0000	004 - 0v7EEE	Cond
0x0000		Send
0x0000	Address: 4	Cancel
0x7FFF	Quantity:	Edit
0x0000	Type: Hex ~	Open
0xFFF2		Save
0xFFE7		
0x7FFE		
OxFFFC		

Experiment 5: Read the error feedback value (address 0x03e7): The read data format is: 00 01 00 00 00 06 01 03 03 e7 00 01 Modbus Poll The read register settings are shown below:



Mbpoll1			Read/Write Definition	>
x = 27: Err	= 0: ID = 1:	F = 03: SR = 1000ms	Slave ID:	OK
	Alias	00990	Function: 03 Read Holding Registers (4x) 🗸	Cancel
0			Address: 999 Protocol address. E.g. 400	011 -> 10
1			Quantity: 1	
2			Scan Rate: 1000 [ms]	Apply
3			Disable	
4			Read/Write Disabled	11-22-0
5			Disable on error	ead/Write Unce
6			View	
7			● 10 ○ 20 ○ 50 ○ 100 ○ Fit to Qu	antity
8			Hide Alias Columns DLC Addresse	es (Base 1)
9		0x0103	Address in Cell Enron/Daniel	Mode



Unplug card 3, the register value is 0x0103, where 01 represents the communication error and 03 represents the error card is card 3.