# ZLAN9913 Profinet to Modbus RTU gateway Profinet to Modbus RTU master/slave

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#### 1. Summary

ZLAN9913 is a new gateway designed to solve the communication problems between Profinet and Modbus protocol devices in the industrial Internet of Things. Its core function is to realize the mutual transfer of Profinet and Modbus protocols, so as to open up the communication barriers between different protocol devices. Our company provides dedicated GSDML files, users do not need too much professional knowledge, you can connect the field Modbus master station or the equipment of the slave station to the equipment of the Profinet master station through the ZLAN9913 gateway, convenient and simple configuration.

The equipment is divided into two models: ZLAN9913-M and ZLAN9913-S: ZLAN9913-M and ZLAN9913-S. Supports Modbus master mode and Modbus slave mode. On the Profinet side, 9913 can only be used as the Profinet slave station, and the GSDML file corresponding to the master and slave station must be downloaded from the device that can be used as the PN master station.

ZLAN9913-M: The serial port of ZLAN9913-M can be connected to Modbus RTU slave station equipment, such as frequency converter, meter, sensor, flowmeter, etc., so that the Profinet master station can read the data of Modbus RTU slave station equipment.

ZLAN9913-S: ZLAN9913-S serial port can be connected to Modbus RTU master station equipment, such as PLC,DCS, touch screen. The Modbus RTU master station device can read the data of Profinet device.



Figure 1 ZLAN9913 device picture

ZLAN9913 has two network ports and four RS485 channels. The two network ports support switching and network cascading. The four serial ports can be used independently and do not interfere with each other. The parameters of each serial port can be set arbitrarily.

ZLAN9913 applications:

- Connect the serial device to the Ethernet bus
- Power, smart meters and energy monitoring
- Various configuration software and device communication interfaces

A typical application connection is shown in Figure 2. Using the ZLAN9913 gateway, we connect the RS485 serial port device of the original Modbus RTU protocol to the LAN. Through simple configuration software configuration, the data interaction between Profinet master station and Modbus RTU device is realized. It is now easy and convenient for both the Profinet master to read data from the Modbus device and the Modbus master to obtain information from the Profinet master. This optimization scheme not only improves the efficiency of data transmission, but also enhances the compatibility and scalability of the system.



Figure 2 Connection map

# 2. Function features

2.1 Hardware features

ZLAN9913 contains following features:

1. Rich ports, four RS485 channels can be used independently without interference.

2. There are three ways to install guide rail, backplane mounting ear, and desktop mounting ear. Especially suitable for industrial rail installation, due to the narrow transverse width can save installation space, installation, disassembly more convenient.

3. Terminal type power supply,  $9 \sim 24V$  wide voltage input, with reverse power supply protection.

4. The terminal type RS485 port supports 300 to 921600bps baud rate.

5. The rich panel indicator design provides users with convenient debugging experience and facilitates real-time monitoring of equipment status.

2.2 Software features

1. Support standard Profinet I/O protocol to achieve slave station function

2. Convenient configuration, providing dedicated GSDML files, without complex programming.

3. Complete function codes, including 01H, 02H, 03H, 04H, 05H, 06H, 0FH, and

10H function codes.

4. High communication efficiency, data can be read or written in the monitoring table according to the correspondence between Profinet input and output data area and Modbus communication data area.

5. Support status monitoring to know the online status of serial port devices in real time.

# 3. Technical parameter

Outline							
Interface:	485: terminal						
power supply:	terminal methods						
Size:	$L x W x H = 150 \text{mm} \times 105 \text{m}$	m×41mm	(Housing dimensions,				
	excluding interfaces)						
Telecommunicat	Telecommunication page						
Ethernet:	10M/100M*2						
Serial port:	RS485*4: 485A, 485B, 0	GND					
Serial port para	meter						
baud rate:	300~921600bps	Check	None, odd check, even check,				
		bits:	mark, space				
Digit bits:	8 bits	Stop	1, 1.5, 2				
	bits:						
Software							
protocol:	Profinet I/O、 Modbus RTU						
Configuration:	Botu、STEP 7-Micro/WIN SMART, etc PN master software						
Data length:	The data input and output length is up to 1024 bytes						
Modbus	Modbus RTU instructions maximum is 62 records						
instructions							
Working modes							
Modbus RTU master station Modbus TCP slave station							

Figure 1 technical parameter

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Power supply request				
Power supply:	9~24V DC(12V@200mA)			
Environment				
Operating	-40~85°C			
temperature:				
Storage	-45~165℃			
temperature:				
Humidity	5~95% accordingly			
range:				

# 4. Hardware specifications

## 4.1 Hardware interface



Figure 3 9913 Front view

The front view of the ZLAN9913 gateway is shown in the above figure, and the housing is made of black anti-radiation SECC metal housing.

**1. Power input:** The wiring terminal is 5.08mm terminal, the V+ is connected to 9 to 24V, the V- is connected to GND, and the shell ground is also available.

**2. RS485:** There are four RS485 ports in total. 1A, 1B, and 1GND are the first group with 12 terminals. 1 A indicates the 485 positive line, 1B indicates the 485 negative line. The 1GND can be disconnected. When there is communication interference, the GND of the 485 device can be connected. This 1GND is isolated from the internal power supply. The maximum communication distance is 1200 meters. Generally, when the RS485 line exceeds 300 meters, it is necessary to use the terminal resistance, and the 485 terminal resistance is 120 ohms.

**3. Network port:** Connects 10M/100M network cables and supports automatic crossover. Although they are called the primary network port and the level network port, the corresponding indicators are different for NET1 and NET2, and there is no difference between the two network ports in other aspects.



Figure 4 indicators

**4. Indicators:** Including Power, NET, LINK, PN, and ACT indicators indicate power supply, network port, network connection, PN status, and data active indicators respectively.

POWER	Power indicator: Green indicates that the device is powered on.
NET1~2	Off: The network cable is not connected. Blinking blue: The network cable is

	connected properly			
LINK	Subsequent extension use.			
PNRDY	The PN module starts the indicator correctly			
	(1) Steady on: The module is started correctly			
	(2) Blinking: The module is waiting for the host CPU to synchronize data			
	(3) Off: The module is not started correctly			
PNBF	PN link indicator			
	(4) Steady on: No link is available			
	(5) Blinking: The link status is normal; No communication link to PROFINET			
	controller			
	(6) Off: The PROFINET controller has an active communication link to the			
	PROFINET device			
PNSF	PN Diagnostic light			
	(1) Steady on: PROFINET diagnosis exists			
	(2) Off: No PROFINET diagnosis			
PNMT	PN Maintenance indicators			
ACT1-4:	485 Serial port 1 to 4 Data active indicator			

Use the indicator to debug communication methods:

1) If the NET indicator is not blinking blue, the network cable is not properly connected. Check the network cable.

2) If the PNRDY indicator is not steady on, the PN module is not started correctly. Please check the parameters and other Settings.

3) If the ACT indicator blinks, data is being transmitted or received. If no, check whether the baud rate is properly configured and whether positive or negative values of the RS485 port are reversed.

#### 4.2 Hardware connection

Generally speaking, ZLAN9913 only needs to be connected to the power supply, serial port, and network cable.

The power supply can be configured with a 12V power adapter or on-site 2-wire

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power supply, which can be directly connected to the positive and negative terminals of the power supply.

The 485 of the RS485 device is connected to the TA, and the 485 is connected to the TB.

Network port connection A network cable can be directly connected to a computer or connected to the network through a switch.

### 5. Module parameter

5.1. Modbus master module parameter

ZLAN9913-M is the Modbus master module, which supports access to the Modbus RTU slave device, so that the Profinet master station can read the data of the Modbus RTU slave device. The Modbus parameter and Serial parameter modules are added by default and do not need to be added by users.

5.1.1. Modbus parameter module

Modbus parameter module, which is used to set Modbus parameters.

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L 在线和诊断							0 6						01H read 128 bits	E
▶ → 程序块	_						0 9						01H read 32 bits	-
▶ ▲ 工艺対象		71 40					0 6						07H read 128 bits	
PLC THE PLC THE							0 7					1	02H read 32 bits	1
▶ Cel PLC 数据类型				-			0 8					1	02H read 8 bits	34
▶ 500 出控与强制表							0 1	0					03H read 16 words	
• 🙀 在线备份			-				0 1	1					03H read 32 words	4
Traces							0 1	2					OSH read 8 words	70
							0 1	3				1 1	04H read 32 words	1
In PLC 投帯文本列表							0 1	4				1	04H read 8 words	
▶ [] 本地模块							0 1	6					05H write 1 bit	
▶ 🔚 分布式 №0	1 -		A 1005		1						×		O6H write 1 word	
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Image: Image	▶ 常規 7800-0-05	Modbus parameter									^		10H write 32 words	
• 1 在线访问	· 超快带出	Parameter 1											10H write 8 words	
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		Work mode:	Modeus master									1 1	status 16 bytes	
▼ 赴老酒日		trans comm mode:	Modbus kiu										status 32 bits	
1 2 3 7 KLI	-	PN device version:	1										status 32 bytes	
		Parameter 2											status 8 bits	
▲ 洗細麵圖												▶ □■ 前線	機块	
• • • • • • • • • • • • • • • • • • • •		Monitor the status of slaves:	Disable											
	-	Work state PN nolink:	Stop								-			
17 DB		Write cmd mode:	Always write								*			
10H1		Delay between two cmd(ms):	20											
		Serial1 cmd timeout(ms):	1000											
		Serial2 cmd timeout(ms):	1000											
		Serial3 cmd timeout(ms):	1000											
		Serial4 cmd timeout(ms):	1000											
											~	> 信息		
◀ Portal 祝聞 🗄 島斑	PNIO-Modbu											「设备名称)	pnio-modbusmast	

#### Figure 5 Modbus parameter Stats

Modbus parameter The following table describes parameter meanings.

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Figure 3 Modbus parameter contents				
parameter name	value range	Contents		
Work mode	Modbus master	Working mode: The current mode is Modbus		
		master, which cannot be changed.		
Trans comm mode	Modbus RTU	Transmission mode: The current mode is		
		Modbus RTU, which cannot be changed.		
PN device version	1	The version number of the GSDML file		
		installed by Botu cannot be modified.		
Monitor the status of	Enable, Disable	Modbus monitors the status of the slave station.		
slaves		It can be used to view the communication status		
		of the slave station. If the communication is		
		normal, the value is 1, otherwise the value is 0.		
		(1) "Enable" Enable the monitoring function		
		(2) "Disable" Do not open.		
Work state PN nolink	Stop, Run	The operating status of ZLAN9913 when the		
		Profinet link is broken.		
		(1) "Stop "Stop running, that is, the command		
		configured last time is not sent.		
		(2) "Run" Continue to send the command		
		configured last time.		
Write cmd mode	Always write,	Write mode. This parameter applies only to		
	Write on change	function codes such as 05H, 06H, 0FH, and		
		10H.		
		(1) "Always write" Send instructions all the		
		time		
		(2) "Write on change" Write instructions are		
		issued only when the content being written has		
		changed.		
Delay between two	0~65535	The interval between two Modbus instructions.		
cmd(ms)		The value ranges from 0 to 65535 milliseconds		
Serial1 cmd timeout	0~65535	Timeout period for a serial port 1 command to		

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(ms)			wait for a reply, expressed in milliseconds
Serial2 cmd timeout	0~65535		Timeout period for a serial port 2 command to
(ms)			wait for a reply, expressed in milliseconds
Serial3 cmd timeout	0~65535		Timeout period of serial port 3 command
(ms)			waiting for reply, expressed in milliseconds
Serial4 cmd timeout	0~65535		Timeout period of serial port 4 command
(ms)			waiting for reply, expressed in milliseconds

#### 5.1.2. Serial parameter module

The Serial parameter module is used to set the RS485 serial port parameters of the serial port. The parameters of the four serial ports are independent and can be set to different parameters as required.



Figure 6 Serial parameter Stats

Serial parameter contents as followings.

Parameter	value range	Contents
name		
Baud(bps)	300~921600	Baud rate. The value ranges from 300 to
		921600.
Databits	8	Data bit. The default value is 8 data bits and

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		cannot be modified.	
Parity	None, odd, even, tag, space	The value can be none, odd, even, mark,	or
		space.	
Stopbits	1, 1.5, 2	The value can be 1, 1.5, or 2 stop bits	

#### 5.1.3. Custom addable modules

Customizable modules include Modbus module and Status Module. The former is the command delivery module related to Modbus. Slots 3-63 are available for adding modules. the latter is a status monitoring module. This module takes effect only when the Monitor the status of slaves function is enabled. Only one module can be added, and the slot of the module is 64.

The Modbus module folder contains the Modbus command module that users can select according to their requirements. The commands support function codes such as 01, 02, 03, and 06.



Figure 7 Modbus module folder

#### The functions of specific modules are shown in the following table: Figure 5 Modbus module function

Module	Function
01H	Read the coil status. You can read the coil status of 1 to 128bits
02H	You can read the status of the discrete input, ranging from 1 to 128bits
03H	Read hold registers. 1 to 32 registers can be read
04H	Read input registers. 1 to 32 registers can be read
05H	Write 1 coil state
06Н	Write 1 hold register
0FH	Write coil status: The number of coils that can be written to ranges from 1 to
	128bits
10H	Write hold registers. 1 to 32 hold registers can be written

Take ZLAN9913 control Modbus RTU slave station device as an example.

1. The 01H module reads the switch output (0X) status (ON or OFF) of the slave device. The data must contain the start address and number of coils to be read. For example, to output the command "01 01 00 10 00 08 3c 09" in RS485-1, the purpose is to read 8 consecutive coils starting from address 16, the parameters are shown in the following figure.

模块参数	
Module parameter	
Module parameter	
Serial select:	Serial 1
Modbus address:	1
Start address:	16
Read numbers(Bit):	8



The following table describes the Module parameter of the 01H module.

Figure 6 01H module parameter contents

parameter name	value range	Contents
Serial select	Serial 1~4	Select the RS485 port for the command output
Modbus address	0~255	Modbus Indicates the address of the secondary
		station

上海卓岚信息科技有限公司Tel:(021)64325189http://www.zlmcu.comStart address0~65535The coil reads the start addressRead numbers(Bit)1~128、1~32、1~8Read the number of coils, unit as Bit<br/>01H read 128 bits:1~128。Question01H read 32 bits:1~32。Question01H read 8 bits:1~8。

2. 02H module, this module reads the discrete input (1X) status (ON or OFF) from the slave device. The data must contain the starting address and the number of discrete quantities to be read. For example, to output the instruction "01 02 00 00 00 00 00 08 79 cc" in RS485-1, the purpose is to read eight consecutive discrete quantities starting at address 0, the parameters are shown below.

模块参数	
Module parameter	
Module parameter	
Serial select:	Serial 1
Modbus address:	1
Start address:	0
Read numbers (Bit):	8

Figure 9 02H The module reads discrete quantities

The following table describes the Module parameters of the 02H module.

parameter name	value range	contents
Serial select	Serial 1~4	Select the RS485 port for the command output
Modbus address	0~255	Modbus address of the slave station
Start address	0~65535	Discrete quantity read start address
Read numbers(Bit)	1~128、1~32、1~8	Read the number of discrete inputs, unit Bit
		02H read 128 bits:1~128.
		02H read 32 bits:1~32。
		02H read 8 bits:1~8.

Figure 7 02H module parameter contents

3. 03H module, this module reads the binary value from the device hold register (4X). The data must contain the starting address and the number of registers to be read. For example, to output the command "01 03 00 3f 00 01 b4 06" in RS485-1, the purpose is to read a hold register starting at address 63, the parameters are shown in

the following figure.

夏状参数	
lodule parameter	
Module parameter	
Serial select:	Serial 1
	1
Modbus address:	
Modbus address: Start address:	63

Figure 10 03H Module reads hold register

The following table describes the specific meanings of the Module parameters of the 03H module.

parameter name	value range	Contents
Serial select	Serial 1~4	Select the RS485 port for the command output.
Modbus address	0~255	Modbus address of the slave station
Start address	0~65535	Register read start address
Read numbers (Word)	1~32, 1~16, 1~8	Read the number of hold registers, unit is Word
		03H read 32 words:1~32。
		03H read 16 words:1~16.
		03H read 8 words:1~8.

Figure 8 03H module parameter contents

4. The 04H module, which reads the binary value from the device input register (3X). The data must contain the starting address and the number of registers to be read. For example, to output the instruction "01 04 00 00 00 08 f1 cc" in RS485-1, the purpose is to read eight consecutive input registers starting at address 0, as shown in the following figure.

模块参数	
Module parameter	
Module parameter	
Serial select:	Serial 1
Modbus address:	1
Modbus address: Start address:	0

Figure 11 04H Module reads input register

The following table describes the meanings of Module parameter of 04H module.

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Figure 9 04H module parameter contents			
parameter name	value range	Contents	
Serial select	Serial 1~4	Select the RS485 port for the command output	
Modbus address	0~255	Modbus address of the slave station	
Start address	0~65535	Register read start address	
Read numbers (Word)	1~32、1~16、1~8	Read the number of input registers, unit is Word	
		04H read 32 words:1~32.	
		04H read 16 words:1~16.	
		04H read 8 words:1~8。	

5. 05H module, which sets the state of one of the holding coils (0X) of the slave device to ON or OFF. The data must contain the address of the coil to be set. For example, to output the command "01 05 00 10 ff 00 8d ff" in RS485-1, the purpose is to set a coil starting from address 16, the parameters are shown in the following figure.

模块参数	
Module parameter	
Serial select:	Serial 1
Modbus address:	1
Start address:	16
Write numbers(Bit):	1

Figure 12 05H module wiring map

05H module's parameter, details as below.

	Diagram	10 05H	module	parameter	contents
--	---------	--------	--------	-----------	----------

parameter name	data range	contents
Serial select	Serial 1~4	Select the RS485 port for the command output
Modbus address	0~255	Modbus slave address
Start address	0~65535	Wiring start address
Write numbers(Bit)	1	Bit Quantity of wiring, unit is bit

6. 06H module, which sets one of the hold registers (4X) of the slave device to a specified value. The sent data must contain the address of the register to be set. For example, to output the instruction "01 06 00 3f 01 00 b8 56" in RS485-1, the purpose is to set an input register starting from address 63, the parameters are shown in the

following figure.

模块参数	
Module parameter	
Serial select:	Serial 1
Modbus address:	1
Start address:	63
Write numbers(Word):	1

Figure 13 06H Module write input register

The following table describes the specific meanings of Module parameters of the 06H module.

parameter name	data range	contents
Serial select	Serial 1~4	Select the RS485 port for the command output.
Modbus address	0~255	Modbus slave address
Start address	0~65535	Register write start address
Write numbers(Word)	1	Write hold the number of registers, unit in Word

Figure 11 06H module parameter contents

7. The 0FH module sets the continuous holding coil (0X) state from a section of the device to a specified value. The data must contain the address of the coil to be set. For example, to output the command "01 0f 00 10 00 08 01 ff 7f 16" in RS485-1, the purpose is to set 8 consecutive coils starting from address 16, as shown in the following figure.

莫块参数	
Module parameter	
Serial select:	Serial 1
Modbus address:	1
Start address:	16
Write numbers (Bit):	8

Figure 14 0FH module write multiple wires

0FH Module parameter as followings

Figure 12 0FH module parameter contents

parameter name	data range	Contents
Serial select	Serial 1~4	Select the RS485 port for the command output.
Modbus address	0~255	Modbus slave address

上海卓岚信息科技有限公司Tel:(021)64325189http://www.zlmcu.comStart address0~65535Coil write start address.Write numbers(Bit)1~128、1~32、1~8Write the number of coils, unit is Bit<br/>0FH write 128 bits:1~128。<br/>0FH write 32 bits:1~32。<br/>0FH write 8 bits:1~8。

8. 10H module, which sets a continuous hold register (4X) from a segment of the device to a specified value. The data must contain the address where the register needs to be set. For example, to output the command "01 10 00 3f 00 01 02 01 00 b8 56" in RS485-1, the purpose is to set a register starting from address 63, the parameters are shown in the following figure.

模块参数	
Module parameter	
Serial select:	Serial 1
Modbus address:	1
Start address:	63
Write numbers(Word):	1

Figure 15 10H module writes multiple registers

10H Module parameter is as followings

	0	1 8
Parameter name	data range	Contents
Serial select	Serial 1~4	Select the RS485 port for the command output.
Modbus address	0~255	Modbus slave address
Start address	0~65535	Register write start address.
Write numbers(Word)	1~32, 1~16, 1~8	The number of write hold registers, unit is Word
		10H write 32 words:1~32.
		04H write 16 words:1~16.
		04H write 8 words:1~8.

The Status module folder stores the status module, which is used to monitor the communication status of the Modbus slave station. The specific functions are as follows:

1. The value of "Status x bits" is to monitor the status of x slave stations. The value

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of "Address 1-address x" is used to store the status of each slave station. If the communication is normal, the value is 1; if it is abnormal, the value is 0. For example, the selected Status module is Status 8 bits.

status 8 bits _1	0	64	35	status 8 bits

Figure 16 status 8 bits module

#### Status 8 bits parameter configuration as followings:

Monitor the address of the I	MODBUS slave
Address 1:	1
Address 1.	- <mark></mark>
Address 2:	2
Address 3:	3
Address 4:	4
Address 5:	5
Address 6:	6

Figure 17 status 8 bits module parameter

#### Data as followings:

$\overline{x}$ 14 Status 8 bits $\overline{z}$
--

Bit0	Bit1	Bit2	Bit3
The status of station			
address 1 is 1 in	address 2 is 1 in	address 3 is 1 in	address 4 is 1 in
normal state and 0 in			
abnormal state	abnormal state	abnormal state	abnormal state
Bit4	Bit5	Bit6	Bit7
The status of station			
address 5 is 1 in	address 6 is 1 in	address 7 is 1 in	address 8 is 1 in
normal state and 0 in			
			1

For example, if station addresses 1, 3, 5, and 7 are abnormal and 2, 4, 6, and 8 are normal, the %IB35 data area is displayed as 0xAA in hexadecimal, which is 10101010 in binary.

2. "Status x bytes" monitors the Status of x slave stations. Address 1-address x

stores the status of the slave station according to each byte. If the communication is normal, it is 1, and if it is abnormal, it is 0.

status 8 bytes _1 0		0	64	3542	status 8 bytes	
	Figure	18 status	8 bytes	module param	eter	
Status x	bytes parameter of	configura	tion as	followings:		
	模块参数	_				
		ann maar				
	Monitor the address of the MODBUS slave					
	Monitor the addr	ess of the	MODBU	S slave		
Address 1: 1						
		Address 2	2			
		Address 3	i: 3			
		Address 4	4: 4			
		Address 5	5			
		Address 6	i: 6			
		Address 7	: 7			
		Address 8	1: 8			
			1			

Figure 19 status 8 bytes module parameter

Status 8 bytes as followings:

Figure 15 Status & bytes content	igure 15 Stat	8 8 bytes	contents
----------------------------------	---------------	-----------	----------

Byte0	Byte1	Byte2	Byte3
The status of station			
address 1 is 1 in	address 2 is 1 in	address 3 is 1 in	address 4 is 1 in
normal state and 0 in			
abnormal state	abnormal state	abnormal state	abnormal state
Byte4	Byte5	Byte6	Byte7
The status of station			
address 5 is 1 in	address 6 is 1 in	address 7 is 1 in	address 8 is 1 in
normal state and 0 in			
abnormal state	abnormal state	abnormal state	abnormal state

For example, the status of station addresses 1, 3, 5, 7 is abnormal, and 2, 4, 6, and 8 are normal, then the hexadecimal value of %IB35 data area is 0, the hexadecimal value of %IB36 data area is 1, the hexadecimal value of %IB37 data area is 0, the hexadecimal value of %IB38 data area is 1, and the hexadecimal value of %IB39 data

area is 0. The %IB40 data area is displayed as 1 hexadecimal, the %IB41 data area is displayed as 0 hexadecimal, and the %IB42 data area is displayed as 1 hexadecimal.

5.2. Modbus slave module parameter

ZLAN9913-S is a Modbus slave module that supports access to the Modbus RTU master station device to read the data of the Profinet master station device. The Modbus parameter and Serial parameter modules are added by default and do not need to be added by users.

#### 5.2.1. "Modbus parameter" module

"Modbus parameter" module, The function of this module is to set Modbus parameters.

	模块			机架	插槽	地址	Q 地址	类型	订货号	固件		
-	▼ PNIO-	ModbusSlave		0	0			PN-MB-S-4-SERIAL	1234567	V1.0.0		1
4	Pro	finet Modbu	Slave ga	. 0	0 X1			PNIO-ModbusSlave				Ē
	Modbu	us paramete	<u>_1</u>	0	1			Modbus parameter		1.0		
	Serial	parameter_1		0	2			Serial parameter		1.0		
	01H re	ad 128 bits	_1	0	3		116	01H read 128 bits		1.0		
	01H re	ad 32 bits _		0	4		1720	01H read 32 bits		1.0		1
<						_	ш			I with a set of the	>	
Modbus p	parameter_1	[Modbus p	paramete	er]				3.4	性」自信息	3 3 诊断		Ē
常規	10 变量	系统常	逸 文	本								
常规			横块参数	1								
硬件中断	1		K-//2/3	۵ —								
構状管理	1		Modbus	param	eter							
			Param	neter 1								
					Work	mode:	Modbus sla	ive			10	
				Т	rans comm	mode:	Modbus RT	U			(7)	
					PN device v	ersion:	1					
				Mode	ous slave ad	ldress:	1					
			Param	neter 2								
				We	rk state PN	nolink	Stop					
					Coile	C Adde	0	1				
					Cons	SAUUT.						
		•			Calls							
		•		- 1	Coil:	Num:	120	1				
				Dis	Coil: creteInputs	SAddr:	0					
		-		Dis	Coil: creteInputs screteInput:	SAddr: Num: Num:	0					
		,		Dis Di Holdir	Coil: creteInputs screteInput: ngRegisters	SAddr: Num: Num: SAddr:	0 128 0					
		,		Dis Dis Holdir Hold	Coil: creteInputs screteInput: ngRegisters ingRegister:	SAddr: SAddr: Num: SAddr: SAddr:	0 128 0 32					
				Disi Di Holdir Hold Inp	Coil: creteInputs screteInput: ngRegisters ingRegister: utRegisters	SAddr: SAddr: SAddr: SAddr: SAddr: SAddr:	0 128 0 32 0					

Figure 20 Modbus parameter parameter

Modbus parameter as followings.

Figure 16 Modbus parameter contents

Parameter	value range	Contents
Work mode	Modbus slave	Working mode, the current mode is Modbus
		slave, which cannot be changed.

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Trans comm mode	Modbus RTU	Transmission mode: The current mode is
		Modbus RTU, which cannot be changed.
PN device version	1	The version number of the GSDML file
		installed by Botu cannot be modified.
Modbus slave address	0~255	ZLAN9913 slave address
Work state PN nolink	Stop, Run	The operating status of ZLAN9913 when the
		Profinet link is broken.
		(1) "Stop" stops work, and the command
		received from the Modbus master station is not
		processed.
		(2) "Run" continues to work, processing
		received Modbus instructions.
Coils SAddr	0~65535	Start address of coil data area
Coils Num	1~128	The length of the coil data area.
DiscreteInputs SAddr	0~65535	Discrete quantity Start address of the input data
		area.
DiscreteInputs Num	1~128	Discrete quantity length of the input data area.
HoldingRegiters SAddr	0~65535	Hold the start address of the register data area.
HoldingRegiters Num	1~32	Holds the length of the register data area
InputRegisters SAddr	0~65535	Enter the start address of the register data area.
InputRegisters Num	1~32	Enter the length of the register data area

It should be noted that the coil, discrete input, hold register, and the start address and length of the data area of the input register must be set, otherwise they cannot be used normally.

#### 5.2.2. "Serial parameter" module

"Serial parameter" module, The function of this module is to set RS485 serial port parameters.

Serial



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Figure 21 Serial parameter parameter contents as followings.

Fig	ure 17	Serial	parameter	contents

parameter	data range	contents
name		
Baud(bps)	300~921600	Baud rate. The value ranges from 300 to
		921600.
Databits	8	Data bit. The default value is 8 data bits and
		cannot be modified.
Parity	None, odd, even, tag, space	The value can be none, odd, even, mark, or
		space.
Stopbits	1、1.5、2	Stop bits, available for $1 \times 1.5 \times 2$ bits stop bits

#### 5.2.3. Custom modules can be added

The customized modules that can be added include Modbus module. The former is the module that delivers commands related to Modbus, and the slots that can be added are 3-64.

The Modbus module folder contains the Modbus command module that users can select according to their requirements. The commands support function codes such as 01, 02, 03, and 06.



Figure 22 Modbus module folder

The functions of specific modules are shown in the following table:

module	Function
01H	Write coil status. The value ranges from 1 to 128bits
02H	Write discrete input status. The value ranges from 1 to 128bits
03H	Write hold register data, can write 1-32 hold registers
04H	Write input register data, can write 1-32 input registers
05H	Read the state of one coil, and write the command of the function code of the main Modbus station 05H and 0FH
06Н	The data of one hold register is read, and the instructions of the function code 06H and 10H of the Modbus master station are written
0FH	Read 1-128bits of coil status, write the command of 05H, 0FH function code of Modbus master station
10H	The data of 1-32 hold registers is read, and the function code instructions of the main Modbus station 06H and 10H are written

The following takes ZLAN9913 as an example to simulate Modbus RTU slave station.

1. The 01H module, such as the command "01 01 00 10 00 08 3c 09" sent by the

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Modbus master station, aims to read the status of the coil with the starting address 16 and length 8, and can write the data to the Q area for the master station to read.

模块参数	
Module parameter	
Start address:	16
Read numbers(Bit):	8

Figure 23 01 module wiring

2. The following table describes the Module parameter of the 01H module.

Figure 19 01H mod	ule parameter contents

Parameter name	data range	Contents
Start address	0~65535	Coil write start address
Read numbers(Bit)	1~128、1~32、1~8	Write wiring quantity, unit is Bit
		01H read 128 bits:1~128.
		01H read 32 bits:1~32。
		01H read 8 bits:1~8。

3. The 02H module, such as the command "01 02 00 00 00 00 08 79 cc" from the Modbus master station, aims to read the state of the discrete input with the starting address 0 and length 8, where the data can be written to the Q area for the master station to read.

模块参数	
Module parameter	
Start address:	0
Read numbers(Bit):	8

Figure 24 02 module discrete input

The following table describes the Module parameters of the 02H module.

parameter name	data range	Contents
Start address	0~65535	Discrete quantity write start address.
Read numbers(Bit)	1~128、1~32、1~8	Write the number of discrete inputs, unit is Bit
		02H read 128 bits:1~128。
		02H read 32 bits:1~32。
		02H read 8 bits:1~8.

4. The 03H module, such as the command "01 03 00 3f 00 01 b4 06" from the Modbus master station, aims to read the data of the hold register with the starting address 63 and length 1, where the data can be written to the Q area for the master station to read.

模块参数	
Module parameter	
Start address:	63
Read numbers (Word):	1

Figure 25 03 module hold register

The following table describes the specific meanings of the Module parameters of the 03H module.

		1
Parameter name	data range	Contents
Start address	0~65535	Register read start address.
Read numbers (Word)	1~32, 1~16, 1~8	The number of write hold registers, unit is Word
		03H read 32 words:1~32.
		03H read 16 words:1~16.
		03H read 8 words:1~8.

Figure	21	03H	module	parameter	contents
Inguie	<u>~ 1</u>	0.511	module	parameter	contents

5. The 5.04H module, such as the command "01 04 00 00 00 08 f1 cc" from the Modbus master station, aims to read the data of the input register with the starting address 0 and length 8, where the data can be written to the Q area for the master station to read.

模块参数	
Module parameter	
Start address:	0
Read numbers(Word):	8

Figure 26 04 Module hold register

The following table describes the meanings of Module parameter of 04H module.

Figure 22 04H module parameter contents

parameter name	data range	contents
Start address	0~65535	Register write start address.

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Read numbers (Word)	1~32、1~16、1~8	Write the number of input registers, unit is
		Word
		04H read 32 words:1 $\sim$ 32 $\circ$
		04H read 16 words:1~16.
		04H read 8 words:1~8.

6. The 05H module, such as the command "01 05 00 10 ff 00 8d ff" from the Modbus master station, aims to write the state of the coil of length 1 at the starting address 16, where the written data can be read from zone I.

模块参数	
Module parameter	
Module parameter	
Start address:	16
Write numbers(Bit):	1

Figure 27 05 module read wiring map

The following table describes the Module parameter of the 05H module

parameter name	data range	Contents
Start address	0~65535	The coil reads the start address.
Write numbers(Bit)	1	Read the number of coils, unit is Bit.

7. The 06H module, such as the command "01 06 00 3f 01 00 b8 56" from the Modbus master station, aims to write the data of the hold register at the starting address 63, length 1, where the written data can be read from the I area.

8.

模块参数		
Module parameter		
Module parameter		
Start address:	16	
Write numbers (Bit):	1	

Figure 28 06 module read wiring map

The following table describes the specific meanings of Module parameters of the 06H module.

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Figure 24 06H module parameter contents						
Parameter name data range Contents						
Start address	art address 0~65535 Register read start address.					
Write numbers(Word)	1	Read The number of read hold registers, unit is				
		Word.				

9. The 9.0FH module, such as the command "01 0f 00 10 00 08 01 ff 7f 16" from the Modbus master station, is intended to write the state of the coil of length 8 at the starting address 16, where the written data can be read from zone I.

模块参数	
Module parameter	
Module parameter	
Start address:	16
Write numbers(Bit):	8

Figure 29 0FH module read wiring map

The following table describes the Module parameter of the 0F module.

|--|

Parameter name	data range	Contents
Start address	0~65535	The coil reads the start address.
Write numbers(Bit)	1~128、1~32、1~8	Read the number of coils, unit is Bit
		0FH write 128 bits:1-128.
		0FH write 32 bits:1-32。
		0FH write 8 bits:1-8.

10. The 10H module, such as the command "01 10 00 3f 00 01 02 01 00 b8 56" from the Modbus master station, is intended to write the data of the holding register of length 1, starting at address 63, where the written data can be read from area I.

模块参数	
Module parameter	
Start address:	63
Read numbers (Word):	1

Figure 30 10H module read register

The following table describes the meanings of the Module parameter of the 10H module.

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Figure 26 10H module parameter contents				
parameter name	data range	Contents		
Start address	0~65535	Register read start address.		
Write numbers(Word)	1~32、1~16、1~8	Read the number of hold registers, unit is Word		
		10H write 32 words:1-32.		
		10H write 16 words:1-16.		
		10H write 8 words:1-8.		

# 6. Configuration case

6.1. Modbus master configuration case

This tutorial is based on PLC S7-1200 (model: 6ES7 212-1BE40-0XB0) and TIA PORTAL V15.1.

1. The first step is to create a new project "ZLAN9913 TIA TEST".



Figure 31 Create a new project for the main site

2. Click "Open Project View".

上海卓岚信息科技有限公	、司	Tel:(	021)6	4325189	http://www.zlmcu.com
2 *	新手上路				
19	项目: <b>"</b> 项目3"	"已成功打开。请选择	下一步:		
	⊢		$\hat{q}^{(\hat{q})}$	组态设备	
			٢	创建 PLC 程序	
		运动控制 & 技术		组态 工艺对象	
	→		Ø	组态 HMI 画面	
	Ļ	▶ 项目视图		打开项目视图	
		Figure 32 C	)pen j	project view	

3. Add new device: Profinet master device, here added is the S7-1200 "6ES7 212-1BE40-0XB0" model, note: if you do not know the version number of your device, it is best to choose the lowest version here, because the version is backward compatible.

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Figure 33 Add new device Profinet master station

4. To add GSDML file for ZLAN9913, click the option button to Manage Common Station Description File (GSD).

http://www.zlmcu.com



Figure 34 manage GSD documents

5. Select source path, insert ZLAN9913 GSDML document.

管理通用站描述文件	15			×
<b>已安装的 GSD</b> 项目中的 GS	D			
源路径: E:\ZLSN9913\GSDML				
导入路径的内容				
☑ 文件	版本	语言	状态	信息
GSDML-V2.35-ZLAN-Gateway-Mod	V2.35	英语	尚未安装	
GSDML-V2.35-ZLAN-Gateway-Mod	V2.35	英语	尚未安装	
			and the second s	
			一 删除 安装	山 取消

Figure 35 insert GSD document

6. Click Install, it will take a little time to install the GSD file, click close after the

安装		
	50% 安装 GSD 文件	
	安装可能需要一些时间。	
		剩余时间(秒) 5
		取消

#### Figure 36 install GSD document

 Make sure the computer is in the same network segment as PLC and ZLAN9913. Click Other field Devices ->PROFINETIO->ZLAN.Co.Ltd->PN MBMaster-> PN-MB-M-4-serial. Add the ZLAN9913 master or slave device to Network View.

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Figure 37 Add ZLAN9913 to LAN view map

8. Click "Unassigned" and select "PLC\_1.PROFINET Interface \_1".



Figure 38 Unallocated 9913 status

9. 分配完成后如下图所示。



Figure 39 located 9913 accomplish

10. Select the PLC in the network view. Click the property bar below -> General -> Ethernet Address to set the IP address of the PLC, which needs to ensure that the IP is

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unique and whether the network segment is the same as other devices in the LAN.

Figure 40 configuration of PLC IP address

11. Set the IP address and device name of the ZLAN9913. Note: The IP address and device name must be unique.

14 Siemens - E:VZLSN9913VZLSN9913 TIA	TEST/ZLSN9913 TIA TEST					_ # X
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10			Q IO 系统: PLC_1.PROFINET IO-System (100) ^	* '값 불	太型	▼ 目录 三
			-	<ul> <li>57-1200 station_1</li> </ul>	57-1200 station	<##>
📩 设备和网络	PLC_1	PNIO-Modbus		FIC1	CPU 1212C ACIDCIRy	🗹 过滤 🛛 配置文件 <全部> 🕶 💕 👽
- DI PLC_1 [CPU 1212C ACIDC/Rb]	CPU 1212C	PN-MB-M-4-SERU		PNIO-ModbusMaster	PN-MB-M-4-SERIAL	▶ 通控制器
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· 25 住所収 - 2 丁ラ対象	L	PLC_1.PROFINETIO-Syste				▶ □ 网络相伴
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<b>建</b> 程序值息						Drives
■ PLC 报警文本列表						Encoders
・二日本地理状						E SIEMENS AG
> 是未分组的设备						ZLAN Co.Ltd
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	PNIO-ModbusMaster [PN-MB-M	-4-SERIAL]		3.属性 3.信息	🔒 💹 诊断 👘 👘 👘	
▼ 参考项目	常規 10 变量 系统常	数 文本				
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	田录信息	子网编码: 255.255.255.0				
¥ 详细视图		岡原築田森坂古町 10 技制器				
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		PROFINE ( 2014) philo-modbusmaster				
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<ul> <li>✓ Portal 视图&lt;</li> </ul>	📩 设备和网络				🔜 🗸 頃田 zus	N9913 TIA TEST 已成功保存。

Figure 41 configuration for 9913 IP address and name

12. After the setting, the device name and IP address need to be assigned to ZLAN9913, as shown in the picture below. Right-click 9913 and click Assign device name.



Figure 42 distribute 9913 IP address and name

13. Select the correct network interface and click "Update List".

		组态的 PROFIN	<b>NET 设备</b> 设备名称:	pnio-modbusmaster		*
$\rightarrow$		ì	设备类型:	PN-MB-M-4-SERIAL		
		在线访问				
		PG/PC 接I	口的类型:	PN/IE		•
		PG	5/PC 接口:	Realtek PCIe GBE Famil	y Controller	
ل ا		设备过滤器				
8		☑ 仅显示同	一类型的设备	8		
			教设罢错误的	- 여급출		
			<b>右</b> 々称的迟3	5.		
			171-64100 100 F	•		
	网络中的可说	洞节点:	设备	PROCINET 设备支款	状态	
	1 203E	WINC YOAL	火曲	TROTINGT SCH HAND	1/1/454	
- 10K + co						
问例係 LED						
一 闪烁 LED	<				ESCUL+	
□ 闷烁 LED	<				E新列表	】 分配名称
— 內條 LED	٢			111	巨新列表	分散名称
☐ 闪烁 LED	<			11	更新列表	】 分配名称
<ul> <li>丙烯.LED</li> <li>在线状态信息:</li> </ul>	<			11	巨新列表	分配名称
(二) 闪烁 LED	K			11	<b>E新列表</b>	分配名称
<ul> <li>问练 LED</li> <li>在线状态信息:</li> </ul>	<				E¥A91	分配名称
<ul> <li>內拆 LED</li> <li>在线状态信息:</li> <li></li> </ul>	<		18	11	ESF30J表	→ 分散名称 ▶
<ul> <li>円括 LED</li> <li>在球状态信息:</li> <li></li> </ul>	<		11		ESANJA	) 分取名称   >



14. Select the correct ZLAN9913 device and click "Assign Name".

192.168.16.78 00-A0-45-02-23-05 ZLAN PNIO pnio-modbusslave 1 设备名称不同	IP 地址	MAC 地址	设备	PROFINET 设备名称		状态	
	192.168.16.78	00-A0-45-02-23-05	ZLAN PNIO	pnio-modbusslave	4	设备名称不同	

Figure 44 Assignment name

If the status prompts yes. Then click Close

IP 地址	MAC 地址	设备	PROFINET 设备名称	状态	
192.168.16.78	00-A0-45-02-23-05	ZLAN PNIO	pnio-modbusmaster	🥑 确定	

#### Figure 45 Close the allocation page

#### 15. Click "Device View" and select the corresponding option for ZLAN9913.



Figure 46 Option 9913 for Device view

16. Take ZLAN9913 control Modbus RTU slave station meter as an example, add the following modules to the slot:

2	模块	机架	插槽	1地址	Q地址	类型
	<ul> <li>PNIO-ModbusMaster</li> </ul>	0	0			PN-MB-M-4-SERIAL
	Profinet Modbus Master g	0	0 X1			PNIO-ModbusMaster
	Modbus parameter_1	0	1			Modbus parameter
	Serial parameter_1	0	2			Serial parameter
	01H read 8 bits _1	0	3	1		01H read 8 bits
	02H read 8 bits _1	0	4	2		02H read 8 bits
	03H read 8 words _1	0	5	318		03H read 8 words
	04H read 8 words _1	0	6	1934		04H read 8 words
	05H write 1 bit _1	0	7		1	05H write 1 bit
	05H write 1 bit _2	0	8		2	05H write 1 bit
	OFH write 8 bits _1	0	9		3	OFH write 8 bits
	OFH write 8 bits _2	0	10		4	OFH write 8 bits
	06H write 1 word _1	0	11		56	06H write 1 word
	06H write 1 word _2	0	12		78	06H write 1 word
	status 8 bytes 1 0	1	64 3	5 42	stat	us 8 hytes

Figure 47 Add 9913 module

17. Set up "Modbus parameter" module by following steps, meanwhile, Monitor the status of slaves choose Enable, open monitoring function

arameter 1	
Work mode:	Modbus master
Trans comm mode:	Modbus RTU
PN device version:	1
Monitor the status of slaves:	Enable
Monitor the status of slaves:	Enable
Monitor the status of slaves:	Enable
Work state PN nolink:	Stop
Monitor the status of slaves:	Enable
Work state PN nolink:	Stop
Write cmd mode:	Always write
Monitor the status of slaves:	Enable
Work state PN nolink:	Stop
Write cmd mode:	Always write
Delay between two cmd(ms):	20
Monitor the status of slaves:	Enable
Work state PN nolink:	Stop
Write cmd mode:	Always write
Delay between two cmd(ms):	20
Serial1 cmd timeout(ms):	1000
Monitor the status of slaves:	Enable
Work state PN nolink:	Stop
Write cmd mode:	Always write
Delay between two cmd(ms):	20
Serial1 cmd timeout(ms):	1000
Serial2 cmd timeout(ms):	1000
Monitor the status of slaves:	Enable
Work state PN nolink:	Stop
Write cmd mode:	Always write
Delay between two cmd(ms):	20
Serial1 cmd timeout(ms):	1000
Serial2 cmd timeout(ms):	1000
Serial3 cmd timeout(ms):	1000

Figure 48 set up Modbus parameter

18. Set up"Serial parameter"module"Serial 1" as 115200,8,None,1, others as default ones.

模块参数	
Serial parameter	
Serial 1	
Baud(bps):	115200
Databits:	8 Databits
Parity:	None parity
Stopbits:	1 Stopbits

Figure 49 set up Serial parameter

19. "01H read 8 bits \_1" module configuration by followings, slave address started from 16, read 8 coils consecutively.

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模块参数	
Module parameter	
Module parameter	
Serial select:	Serial 1
Modbus address:	1
Start address:	16

#### Figure 50 set up 01H module

20. "02H read 8 bits \_1" module configuration as followings, slave address start from 0, read 8 discrete inputs consecutively.

模块参数	
Module parameter	
Module parameter	
Serial select:	Serial 1
Modbus address:	1
Start address:	0
Read numbers (Rit)	8

#### Figure 51 set up 02H module

21. "03H read 8 words \_1" the module sets the following parameters, starting at address 63, to read 1 hold register.

模块参数	
Module parameter	
Module parameter	
Serial select:	Serial 1
Modbus address:	1
Start address:	63
Read numbers (Word):	1

Figure 52 set up 03H module

22. "04H read 8 words \_1" the module sets the following parameters, starting at address 0, to read eight consecutive input registers.

\_\_\_\_\_

<b>侯</b> 吠乡쥧	
Module parameter	
Module parameter	
Serial select:	Serial 1
Modbus address:	1
Start address:	0
Read numbers(Word):	8

Figure 53 set up 04H module

23. The 05H write 1 bit \_1 module sets the following parameters. Write one coil starting from address 16 and close the coil.

模块参数	
Module parameter	
Serial select:	Serial 1
Modbus address:	1
Start address:	16
Write numbers(Bit):	1

Figure 54 Set the closing coil of the 05H module

24. "05H write 1 bit \_2" module configuration as followings, write a coil starting from address 16 and disconnect the coil.

.状奓颈		
Module parameter		
Serial select:	Serial 1	_
Modbus address:	1	
Start address:	16	
Write numbers(Bit):	1	-

Figure 55 Set the 05H module to disconnect coil

25. "0FH write 8 bits \_1" Set the following parameters on the module. Write eight consecutive coils starting from address 16 and close coils 1 to 8.

模块参数	
Module parameter	
Serial select:	Serial 1
Modbus address:	1
Start address:	16
Write numbers (Bit):	8

Figure 56 set up 0FH Module closing coil 1~8

26. "0FH write 8 bits \_2" Module set the following parameters, write 8 consecutive coils starting from address 16, disconnect coils 1~8.

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-------------------	--

<b>犊块参数</b>	
Module parameter	
Serial select:	Serial 1
Modbus address:	1
Start address:	16
Write numbers(Bit):	8

Figure 57 set up 0FH Module closing coil 1~8

27. "06H write 1 word \_1" The module sets the following parameters to write a hold register from address 63 for writing the value to 2.

模块参数	
Module parameter	
Serial select:	Serial 1
Modbus address:	1
Start address:	63
Write numbers(Word):	1

Figure 58 set up 06H module write data as 2

28. "06H write 1 word 2" The module sets the following parameters to write a hold register from address 63, which is used to write the value to 1.

模块参数	
Module parameter	
Serial select:	Serial 1
Modbus address:	2
Start address:	63
Write numbers(Word):	1

Figure 59 set up 06H module write data as 1

29. Till now, the configuration has been done, just need to download to the PLC on the line, click compile, no errors can be.

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项目(P) 编辑(E) 视图(V) 插入(I)	在线(O) 选项(N) 工具(T)	窗口(W) 帮助(H)
编译 正在编译组态 成功生成用于目标 PLC	_1 的 User0	
		取消
<u>.</u>	编译完成(错	误:0;警告:1)

Figure 60 Compilation configuration

30. After the compilation is complete, click download, you need to select the correct network interface

	设备	设备类型	插槽	接口类型	地址	子网
	PLC_1	CPU 1212C AC/D	1 X1	PN/IE	192.1 <mark>6</mark> 8.16.75	PN/IE_1
		PG/PC 接口的	€型:	PN/IE		•
	「「」」で注意	哺的网络接口 PG/PC	爰凵:	Realtek PCIe	GBE Family Controller	
		接口/子网的道	É接:	插槽"1 X1"处的	防向	-
		第一个图	利关:			<u> </u>
	选择目标设备:				显示所有兼容的设备	
	50. de	The star size and	100 -	in the second		
	设备	设备类型	接口	类型 1	也址	目标设备
····	设留 plc_1	设备类型 \$7-1200	接口 PN/IE	类型 1	的 92.168.16.75	目标设备 PLC_1
	这首 pic_1 	设备类型 57-1200 一	接口: PN/IE PN/IE	<sup>类型</sup> 1 1 【1 【1 【1	啦 92.168.16.75 印也各	目标设备 PLC_1 -
	12首 pic_1 一	设备类型 \$7-1200 一	接口: PN/IE PN/IE	<sup>类型</sup> 1 1 (1) (1)	蚶 92.168.16.75 印代设备	目标设备 PLC_1 一
₩ 	校留 pic_1 一	设留奕型 57-1200 一	按山: PN/IE PN/IE	世 1 1 1 1 1	地 92.168.16.75 記忆设备	目标设备 PLC_1 一
·····································	校留 <u>pic_1</u> 一	收音类型 57-1200 一	接口: PN/IE PN/IE	<sup>类型</sup> 1 1 3 点击	<u>地</u> 92.168.16.75 記役後备	目标设备 PLC_1 一
了 了 闪烁 LED	及首  pic_1 	设备类型 57-1200 一	按口: PN/IE PN/IE	<sup>★型</sup> 1 1 3 4 点击	92.168.16.75 92.08.16.75 5℃设备	目标设备 PLC_1 - 2 开始搜索
■ 八烁 LED      我状态信息:	₩ pic_1 -	设备类型 57-1200 一	技山: PN/IE PN/IE	t 些数	9址 92.168.16.75 して設备	目标设备 PLC_1 - 2 开始搜索(
■	kx 亩 pic_1 	设备类型 57-1200 一	技口: PN/IE PN/IE	# 世类 1 1 1 日 1 日 1 日 1 1 日 1 日 1 日 1 日 1 日	91 92.168.16.75 10日日	目标设备 PLC_1 - 2 开始搜索(
N/K LED K状态信息: 找到可访问的设备 找到可访问的设备	及首 pic_1 一 pc-20200326qtmo wuzhe UZ 1 AE E E E E E E E E	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	技山: PN/IE PN/IE	t 世大 1 1 日日 1 日日 1 日日 1 日 1 日 1 日 1 日 1 日 1	4址 92.168.16.75 ■ ■ で設备	目标设备 PLC_1 - 2 开始搜索(

Figure 61 Download configuration

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31.	Select	"Stop All"	from	"Stop	Module"	and click	"Load".
-----	--------	------------	------	-------	---------	-----------	---------

<b>天</b> 念	1	目标		动作	
+1	<u> </u>	▼ PLC_1	下载准备就绪。	加载"PLC_1"	
	A	▼ 保护	保护系统。防止未授权的访问		
	A		连接到企业网络或直接连接到 internet 的设备必须采取合适的保护 措施以防止未经授权的访问,例如通过使用防火墙或网络分段。有 关工业安全性的更多信息,请访问 http://www.siemens.com/industrialsecurity		
	Å	▶ 不同的模块	已组态模块与目标模块(在线)之间的差异		
	0	▶ 停止模块	模块因下载到设备而停止。	全部停止	•
	0	▶ 设备组态	删除并替换目标中的系统数据	下载到设备	
	0	▶ 软件	将软件下载到设备	一致性下载	
			Ш		>

Figure 62 Load configuration

32. Click "Done" and the link between PLC and ZLAN9913 will be established.

₽			>
「载到)	设备后的状态和动作		
1	目标	消息	动作
0	▼ PLC_1	下载到设备已顺利完成。	加载"PLC_1"
0	▶ 启动模块	下载到设备后启动模块。	启动模块
		III	
			完成 装载 取消
		<ul> <li>★</li> <li>▼ 載到设备后的状态和动作</li> <li>引 目标</li> <li>② ▼ PLC_1</li> <li>③ ▼ PLC_1</li> <li>③ ● 自动模块</li> </ul>	<ul> <li>■标 消息</li> <li>● FLC_1</li> <li>下载到设备后启动模块。</li> <li>● 自动模块</li> <li>下载到设备后启动模块。</li> </ul>

#### Figure 63 Finish download

33. Here you can click "Go to online" to verify whether PLC and ZLAN9913 have established a link. You can see that the status bar on the left side of the module is all green, otherwise no link has been established.

目(P) 编辑(E)	视图(V) 插入(I) 存	线(O) 选项(N)	工具(T)	窗口(	W) 帮助(	H)					
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💕 (Statility)			-		Profinet Modbus Master a	0 0			Phile And Series	-	
	19				likodbuc parameter_1	0 1			Modbut parameter	m tf	B2279 - X8- *
1 8983					Serial parameter_1	0 2			Senal parameter	-10	Nodbus module
N GARROPHE					02H read 8 bits _1	0 4	2		02N read 8 bits	-	01H read 128 bits
<ul> <li>10 程序段</li> <li>1 工艺対象</li> </ul>				2	03H read 8 words _1	0 5	3.18		03H read 8 words		01H read 8 bits
▶ → 州創業文件					DaiH read & words _1	0 8	19.34		DAH read & words		02H read 128 bits
• ancgg •	. ZLAN		1		OSH write 1 bit _2	0 1		2	OSH write 5 bit		age read 32 bits
<ul> <li>Anc 許諾問題</li> <li>Controllant</li> </ul>					OFH write 6 bits_1	0 9		3	OPH write 8 bits		C2H read E Sits
· (1) ATENIERIA					OFH write 8 bits _2	0 10		4	OPH write 8 bits		Bill read 32 words
20 田校表_1					D6H write 1 word_1	0 11		5.8	Odel write 1 word		GOH read 8 words
Gii sana					Contraction of States 2	0 13		1.10	Con wroe - mark	1	Galt read 16 words
• 建在纸条份						0 14					Gett read 32 words
· Cal State (Second						0 15				1	05H write 1 bit
利相岸法常						0 16					Diliti sente 1 word
とないのでは「日本の日本の日本」			*			0 18				~	OFH write 128 bits
▶ 國本地積決	K	> 100%	·	61		8			>	1 A	DPH write 8 bits
· 34 未分量的设备						1	属性 *	4倍息 1		1	10H write 16 words
• 🙀 #2-02	大規 ○受付用 除法								1. Contraction of the local division of the		10H write 22 words
• 🙀 0.0000	0 1 0 826548									- 14	10H write B words
1 文档安置											Status module
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 AB	林至	1 68 84								status 16 bytes
参考项目	自于被行政责任最新的 因此尚未下载。		2023/12/13 10:17:2	8						0	ctatut 32 bits
12	0 由于软件是最新的。因此由未进载。		2023/12/13 10:17:2	1.							status 32 liytes
	2011年1日 2011年1月 2011 2011 2011 2011 2011 2011 2011 20		2023/12/13 10:17:2	4							status 8 bates
详细视频	巴通过地址 IF-192.168.16.75 直接到 FLC,1+		2023/12/19 10:17:5	0						1.00	ANTER
	● 新れに1部連接已美洲+		2023/12/13 10:56:5/	9							
	○ 已通过地址 IP~192.168.16.75 连接到 PLC_1+		2023/12/13 10:43:0	+							
28			2023/12/13 10:43:10	3							
6.0	• HE 1		2025/12/15 10:43:1								
	<ul> <li>#####</li> </ul>		2023/12/15 10:43:1	4							
	PLC_1已停止。		2028/12/13 10:43:11	1						1	
	● ₩付配置下数0.000-		2023/12/13 10:43:2	\$.						1	
	THE ING A RAIN		20291213 10:444	3						E	X · · · · · ·
	Fillight (#192.148.16.75 With PLC. 1+		2021/12/12 10 44 4								

Figure 64 Turn into online

34. At this time, you can create a "monitor table" to map the Modbus RTU device through the Profinet data area, click "Add new monitor table" in "Monitor and force table" to get "Monitor table \_1".



Figure 65 Adding a monitor table

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35. Add the following data area to the monitoring table as shown in the following figure.

					🦉 拓扑视	图 👗 网络视	图 11 设备视	<u>8</u>								
览									말 만	10 10	1. 9. 9. 1	30 00 00 V				
模块	机架	括樽	1 the tab	0 掛封	本型	订绘号	固件		i	名称	地址	显示格式	监视值	修改值	9	
<ul> <li>PNIO-ModbusMaster</li> </ul>	0	0	1		PN-MR-M-4-SERIAL	1234567	V100	-	1		%IB1	十六进制				
Profinet ModbusMaster	0	0.X1			PNIO-ModbusMaster				2		%IB2	十六进制				
Modbus parameter 1	0	1			Modbus parameter		10		3		%/W3	十六进制				
Serial parameter 1	0	2			Serial parameter		10		4		%ID19	十六进制				
01H mad 8 bits 1	0	-			Otherad 8 hits		1.0		5		%ID23	十六进制				
OTH read 8 bits 1	0				OTH read 8 bits		1.0		6		%ID27	十六进制				
02H read 8 bits _1	0	-	2 10		O2H read 8 bits		1.0		7		%ID31	十六进制				
Others d Burnds _1	0		310		Othered 8 words		1.0		8		%Q81	十六进制		16#01	<b>I</b>	
04H read 8 words _1	0	0	19		04H read a words		1.0		9		%Q82	十六进制		16#00		1
OSH write 1 bit_1	0	1		1	USH write 1 bit		1.0	-	10		%QB3	十六进制		16#FF		
USH write 1 bit _2	0	8		2	05H write 1 bit		1.0		11		%OB4	十六进制		16#00		61
OFH write 8 bits _1	0	9		3	OFH write 8 bits		1.0		12		%0%5	十六讲制		16#0200		2
OFH write 8 bits _2	0	10		4	OFH write 8 bits		1.0		13		%OW7	十六进制		16#0100		2
06H write 1 word _1	0	11		56	06H write 1 word		1.0		1.0		-05400	17/02/09		10#0100		•
06H write 1 word 2	0	12		78	O6H write 1 word		1.0		2.99		■ <新/4>>					

Figure 66 Monitoring table configuration

I Address: Users can read parameters based on the corresponding address. Keywords such as IB, IW, and ID can be used.

Q address: Users can set parameters according to the corresponding address, you can use QB, QW, QD and other keywords.

Monitor table address :%IB2 means that 1 byte of data with I address 2 is read.

Monitor value: Read the values of the I and Q addresses.

Modify the value: Write the value to the register of the Modbus RTU slave device.

The following table describes the mapping between the module parameters set in the preceding figure

parameter name	Ι	Q	address
	address	address	
01H read 8 bits_1	1		%IB1 (IB refer to 1 bit)
02H read 8 bits_1	2		%IB2 (IB refer to 1 bit)
03H read 8 words_1	3~18		%IW3~%IW17 (IW refer to 2 bits)
04H read 8 words_1	19~34		%ID19~%IW31 (ID refer to 4 bits)
05H write 1 bits_1		1	%QB1 (QB refer to 1 bit)
05H write 1 bits_2		2	%QB2 (QB refer to 1 bit)
0FH write 8 bits_1		3	%QB3 (QB refer to 1 bit)
0FH write 8 bits_2		4	%QB4 (QB refer to 1 bit)
06H write 8 word_1		5~6	%QW5 (QW refer to 2 bits)

Table 27 For your reference

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 http://www.zlmcu.com

 06H write 8 word\_2
 7~8
 %QW7 (QW refer to 2 bits)

 36. Click
 to monitor I zone data, read Modbus RTU slave station corresponding data; click
 to revise Q zone parameter to PLC, control Modbus RTU slave station devices corresponding functions.

	地址	显示格式	监视值	修改值	9
1	%IB1	十六进制	16#00		
2	%IB2	十六进制	16#00		
3	%IW3	十六进制	16#0100		
4	%ID19	十六进制	16#0000_0000		
5	%ID23	十六进制	16#0000_0000		
6	%ID27	十六进制	16#0000_0000		
7	%ID31	十六进制	16#0000_0000		
8	%QB1	十六进制	16#01	16#01	🗹 🔺
9	%QB2	十六进制	16#00	16#00	🗹 🔼
10	%QB3	十六进制	16#FF	16#FF	🗹 🔺
11	%QB4	十六进制	16#00	16#00	🗹 🔺
12	%QW5	十六进制	16#0200	16#0200	🗹 🔺
13	%QW7	十六进制	▼ 16#0100	16#0100	

Figure 67 Monitor data

#### 6.2. Modbus slave Configuration case

This tutorials is based on PLC S7-1200 (Item No.: 6ES7 212-1BE40-0XB0) and TIA PORTAL V15.1.

#### 1. Create project named of "ZLAN9913 TIA SLAVE TEST" 。



Figure 68 Create slave station new project

2. Click "open project view"

新手上路 _			
项目:"项目:	3" 已成功打开。请选择	¥下一步:	
开始			
-	设备和网络	\$ <sup>\$</sup>	组态设备
→	PLC 编程	٢	创建 PLC 程序
→	运动控制 & 技术	-	组态 工艺对象
→	可视化	Ø	组态 HMI 画面
	▶ 项目视图		打廾项目视图

Figure 69 Open project view

3. Add new device : Profinet main station device , here add S7-1200 "6ES7 212-1BE40-0XB0" item, Notice : If you do not know the version number of your device, it is best to choose the lowest version here, because the version is backward compatible.



Figure 70 Add new device Profinet main station

4. Add ZLAN9913 GSDML file, select button management Common Station Description File (GSD).



Figure 71 Add new device Profinet main station

5. Select path origin, insert ZLAN9913 GSDML file.

管理通用站描述文件	10			×
已安装的 GSD 项目中的 G	SD			
源路径: E:\ZLSN9913\GSDM	-			
导入路径的内容				
☑ 文件	版本	语言	状态	信息
GSDML-V2.35-ZLAN-Gateway-Mod	. V2.35	英语	尚未安装	
GSDML-V2.35-ZLAN-Gateway-Mod	. V2.35	英语	尚未安装	
<				>
			開除	安装 取消

Figure 72 insert GSD file

6. Click Install, it will take a little time to install the GSD file, click close after the installation is complete.



Figure 73 install GSD file

7. Ensure PLC 、ZLAN9913 in the same LAN , click other devices on the scene->PROFINETIO->ZLAN.Co.Ltd->PN MBSlave->PN-MB-M-4-SERIAL 。 AddZLAN9913 main station or slave station devices to "LAN view".

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Figure 74 Add ZLAN9913 to LAN view

8. Click "Unassigned", select "PLC\_1.PROFINET interface\_1".

PNIO-ModbusS	PIC 1
	CPU 1212C
选择 10 控制器	
PN-MB-S-4-SERIAL 未分配 选择 IO 控制器	2120

Figure 75 Click unassigned



Figure 76 Assignment complete

9. Select the PLC in the network view. Click the property bar below -> General -> Ethernet Address to set the IP address of the PLC, which needs to ensure that the IP is unique and whether the network segment is the same as other devices in the LAN.

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Figure 77 Set up PLC IP address

10. Set the IP address and device name of ZLAN9913. Note: The IP address and device name must be unique.

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Norments - EAVLSNOOD BV2LSNOOD B 11     Viel (************************************	ASLAVE TESTIZISN9913 TA SLAVE TE (0) 送顶00 工具(1) 留口(20) 税組 (1) 1 (**1) ① 田 田 岡 県 (7) ZISN9913 TIA SLAVE TEST ) (7) 門内協 観 連携 (HM) 正施	57 000 使 教室在线 JF 特定面线 参 圆 厚 本 二 现在和网络		-●■	ー・メ Totally Integrated Automation PORTAL 使作目录 ・ レ 支功
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Figure 78 Set the IP address and device name of 9913

11. After the setting, the device name and IP address need to be assigned to ZLAN9913, as shown in the picture below. Right-click 9913 and click Assign device name.



12. Select the correct network interface and click "Update List".

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1935: LED	P3% 甲比可加加 IP 地址	IPF原。 MAC 地址	设备 	PROFINET 设备名称	状态	→ 分配名称	
在线状态信息:			118			) 关词	

Figure 80 updated list

13. Select the correct ZLAN9913 device and click "Assign Name".

IP 地址	MAC 地址	设备	PROFINET 设备名称		状态	
192.168.16.78	00-A0-45-02-23-05	ZLAN PNIO	pnio-modbusmaster	4	设备名称不同	
<						
				更新	例表	分配名称

Figure 81 Assignment name

Confirm that the assignment is complete and click Close page.

192.168.16.78 00-A0-45-02-23-05 ZLAN PNIO pnio-modbusslave 🕑 确定

Figure 82 Definite allocation

14. Click "Device View" and select the corresponding option for ZLAN9913.

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◆ Portal 视图 医总斑	PNIO-Modbu					ROFINET	设备名称"pnio-modbusslave

Figure 83 9913 device view

15. Add the following modules to the slot using the ZLAN9913 analog Modbus RTU

slave station as an example.

***	模块	机架	插槽	1地址	Q地址	类型
	<ul> <li>PNIO-ModbusSlave</li> </ul>	0	0			PN-MB-S-4-SERIAL
	Profinet ModbusSlave ga	0	0 X1			PNIO-ModbusSlave
	Modbus parameter_1	0	1			Modbus paramete
	Serial parameter_1	0	2			Serial parameter
	01H read 8 bits _1	0	3		1	01H read 8 bits
	02H read 8 bits _1	0	4		2	02H read 8 bits
	03H read 8 words _1	0	5		318	03H read 8 words
	04H read 8 words _1	0	6		1934	04H read 8 words
	05H write 1 bit _1	0	7	1		05H write 1 bit
	06H write 1 word _1	0	8	23		06H write 1 word
	OFH write 8 bits _1	0	9	4		OFH write 8 bits
	10H write 8 words _1	0	10	520		10H write 8 words

Figure 84 9913 Add module

16. Set up "Modbus parameter" module configuration by following.

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Parameter 1	
Work mode:	Modbus slave
Trans comm mode:	Modbus RTU
PN device version:	1
Modbus slave address:	1
raidinetei z	
Work state PN nolink:	Stop
Work state PN nolink: Coils SAddr:	Stop
Work state PN nolink: Coils SAddr: Coils Num:	Stop           16           8
Work state PN nolink: Coils SAddr: Coils Num: DiscreteInputs SAddr:	Stop           16           8           0
Work state PN nolink: Coils SAddr: Coils Num: DiscreteInputs SAddr: DiscreteInputs Num:	Stop           16           8           0           8
Work state PN nolink: Coils SAddr: Coils Num: DiscreteInputs SAddr: DiscreteInputs Num: HoldingRegisters SAddr:	Stop           16           8           0           8           63
Work state PN nolink: Coils SAddr: Coils Num: DiscreteInputs SAddr: DiscreteInputs Num: HoldingRegisters SAddr: HoldingRegisters Num:	Stop           16           8           0           8           63           8
Work state PN nolink: Coils SAddr: Coils Num: DiscreteInputs SAddr: DiscreteInputs Num: HoldingRegisters SAddr: HoldingRegisters Num: InputRegisters SAddr:	Stop           16           8           0           8           63           8           0

Figure 85 Modbus parameter

17. Set up "Serial parameter" module "Serial 1" into 115200,8,None,1, others set up as default.

模块参数	
Serial parameter	
Serial 1	
Baud(bps):	115200
Databits:	8 Databits
Parity:	None parity
Stopbits:	1 Stopbits

Figure 86 Serial parameter

18. "01H read 8 bits \_1" module configuration as followings, slave address 16 start with 8 consecutive coils. Set the state of 8 coils.

模块参数	
Module parameter	
Start address:	16
Read numbers(Bit):	8

Figure 87 01H module set up 8 wiring

19. "02H read 8 bits \_1" the module sets the following parameters for 8 consecutive discrete quantities starting at address 0. Sets the state of the 8 discrete quantity inputs.

模块参数	
Module parameter	
Start address:	0
Read numbers (Bit):	8

Figure 88 02H The module is set up with 8 discrete inputs

20. "03H read 8 words \_1" The module sets the following parameters, 8 hold registers starting from address 63, and sets the data of 8 hold registers.

模块参数	
Module parameter	
Start address:	63
Read numbers(Word):	8

Figure 89 03H module set up 8 kept registers

21. "04H read 8 words \_1" The module sets the following parameters, 8 input registers starting from address 0, and sets the data of 8 input registers.

模块参数	
Module parameter	
Start address:	0
Read numbers(Word):	8

Figure 90 04H module set up 8 input registers

22. "05H write 1 bit \_1"The module sets the following parameters, one coil starting from address 0, to read the status of the Modbus master set coil.

模块参数	
Module parameter	
Module parameter	
Start address:	0
Write numbers (Bit):	1

Figure 91 05H module set up 1 wiring

**坩** 中 参 数

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23. "06H write 1 word \_1" The module sets the following parameters, starting from

address 63, 1 hold register, and reads the data of the Modbus master set hold register.

模块参数	
Module parameter	
Module parameter	
Start address:	63
Write numbers(Word):	1

Figure 92 06H The module sets 1 hold register

24. "0FH write 8 bits \_1" The module sets the following parameters, 8 coils starting

from address 16, and reads the status of the 8 coils set at the Modbus master station.

жлэх	
Module parameter	
Module parameter	
Start address:	16
Write numbers(Bit):	8

Figure 93 0FH The module is configured with 8 coils

25. "10H write 8 words \_1" The module sets the following parameters, 8 registers starting from address 63. Read data from the Modbus master Settings hold register.

模块参数	
Module parameter	
Module parameter	
Start address:	63
Write numbers(Word):	8

Figure 94 10H The module is set with 8 hold registers

26. Here, the configuration has been done, just need to download to the PLC on the line, click compile, no errors can be.



Figure 95 Compilation configuration

37. After the compilation is complete, click download, you need to select the correct network interface.

🍄 🎦 📘 保存 「展下载到设备	字项目 📑 🕽		ງ ± (	(4 ± 🗐		₩ 💋 转至在线
	组态访问节点属于	*PLC_1*	1.5.144		14.11	70
	设留 PLC_1	设备类型 CPU 1212C AC/D	插槽 1 X1	接口类型 PN/IE	地址 192.168.16.75	PN/IE_1
		ac inc. Hr This	<u>н л</u> і -			
			発型 · *ロ・	PN/IE	COT 5 11 C	•
			愛山 ・ 本位 ・	Kallek PCle	GBE Family Controller	
		按口行附加加	±192 ·		ניונייו	
	<b>详探由</b> 标识条:				夏子所有美容的设备	
	设备	设备类刑	接口:	生刑 1		目标设备
	plc_1	\$7-1200	PN/IE	1	92.168.16.75	PLC_1
; = ;	-	-	PN/IE	<mark>③く</mark> 点击P	LC设备	-
闪烁 LED						
						2 开始搜索(5)
在线状态信息:					🗌 仅显示错误消息	
<ol> <li>找到可访问的设备</li> <li>找到可访问的设备</li> <li>扫描已完成。 找到</li> </ol>	pc-20200326qtmo wuzhe  了 1 个与 5 可访问设备	相兼容的设备。				▲ Ⅲ
·? 正在检索设备信息					<b>4</b>	古下载 くうちょう くうちょう くうちょう しょうしょう しょう

Figure 96 Download configuration

Tel:(021)64325189

38. Select "Stop All" from "Stop Module" and click "Load".

大态	1	目标	消息 ////////////////////////////////////	动作	
1	<b>N</b>	▼ PLC_1	下载准备就绪。	加载"PLC_1"	
	4	▼ 保护	保护系统。防止未授权的访问		
	4		连接到企业网络或直接连接到 internet 的设备必须采取合适的保护 措施以防止未经授权的访问。例如通过使用防火墙或网络分段。有 关工业安全性的更多信息,请访问 http://www.siemens.com/industrialsecurity		
	Δ	▶ 不同的模块	已组态模块与目标模块(在线)之间的差异		
	0	▶ 停止模块	模块因下载到设备而停止。	全部停止	-
	0	▶ 设备组态	删除并替换目标中的系统数据	下载到设备	
	0	▶ 软件	将软件下载到设备	一致性下载	
					>

Figure 97 Load configuration

39. Click "Done" and the link between PLC and ZLAN9913 will be established.

、载台	果			
8	下载到ì	设备后的状态和动作		
状态	1	目标	消息	动作
4	0	▼ PLC_1	下载到设备已顺利完成。	加载"PLC_1"
	0	▶ 启动模块	下载到设备后启动模块。	启动模块
<			Ш	>

#### Figure 98 Finish download

40. Here you can click "Go to online" to verify whether PLC and ZLAN9913 have established a link. You can see that the status bar on the left side of the module is all green, otherwise no link has been established.

卓岚信息	科:	技有限公司	Tel:(021)64325189	http://ww	vw.zlmcu.co
项目(P) 编辑 📑 📑 🔒 保	(E) 保存项	视图(V) 插入(I) 在线	(O) 迭项(N) 工具(T) 窗口(W) 帮助(H) ( う さ (	<b>ま 🖉</b> 转至离约	ž 🛃 🖪 🖪
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13 13			2023121313 1017/23		status 22 kytes
		<ul> <li>(1) 新聞(1) 新聞(1) 新聞(1) 新</li> </ul>	2023/12/13 10:17:25		startus 8 bytes
~ 详细视图		已通过地址 IP-192.168.16.75 连接到 PLC_1+	2023/12/19 10 17:50		
		317-0-21812(第52-00) 計通过規程 (P+192.168.16.75 次接到 PLC.1+	20231213 10:20:39 20231213 10:42:04		
		◎ 影化C_1的店铺已关闭+	2023/12/13 10:43:10		
2.6		○ 干扮下戲詞法集。	2025/12/13 10:45:14		
		·	2022/12/13 10:45:15		
		<ul> <li>NC_1已停止。</li> </ul>	2025/12/13 10:43:18		
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1			2023/12/13 10:44.43		Banterose
		〇 日通过地址 (#+192.148.18.75 直接到 FLC_1+	2020/12/12 10 44 48		
				3	> 雪息

Figure 99 Turn into online

27. At this time, you can create a "monitor table" to map the analog Modbus RTU slave station through the Profinet data area for the master Modbus read and write, click "Add new monitor table" in "Monitor and force table" to get "Monitor table \_1".



28. Add the following data area to the monitoring table for read and write by the Modbus master.

#### 上海卓岚信息科技有限公司 Tel:(021)64325189 http://www.zlmcu.com 12 1 10 91 9 2 mm ■ 拓扑视 -显示格式 监视值 修改值 设备概览 i 名称 地址 +六进制 +六进制 +六进制 +六进制 %OB1 16#0F %QB2 %QW3 %QD19 %QD23 12 ... 模块 机架 插槽 I地址 Q地址 类型 16#F0 16#100 16#1111\_2222 16#3333\_4444 PNIO-ModbusSlave PN-MB-5-4-SERIAL PN-MB-5-4-SERIAL PNIO-ModbusSlave Modbus parameter Serial parameter 01H read 8 bits 02H read 8 bits Profinet ModbusSlave Modbus parameter\_1 0 X1 十六进制 Serial parameter\_1 %QD27 十六进制 16#5555\_6666 01H read 8 bits\_1 %QD31 十六进制 16#7777\_8888 > 02H read 8 bits 1 %IW2 %IB4 六进制 . 2 3...18 03H read 8 words \_1 03H read 8 words 04H read 8 words \_1 05H write 1 bit \_1 06H write 1 word \_1 04H read 8 word: 05H write 1 bit 06H write 1 word 19...34 1 六进制 1 2...3 %ID5 十六进制 1 %ID9 十六进制 OFH write 8 bits \_1 OFH write 8 bits %ID13 十六讲制 5...20 10H write 8 words \_1 10H write 8 words %D1 十六进制

Figure 101 Monitor table Settings

I Address: Users can set parameters based on the corresponding address. Keywords such as IB, IW, and ID can be used.

Q address: Users can read parameters according to the corresponding address, can use

QB, QW, QD and other keywords.

Monitor table address :%QB2 represents 1 byte of data set with Q address 2.

Monitor value: Read the values of the I and Q addresses.

Modified value: Data is written to Q area for read by Modbus RTU master station.

The following table describes the mapping between the module parameters set in the preceding figure .

Ι	Q	Address
address	address	
	Ι	%QB1 (QB is 1 bit)
	2	%QB2 (QB is 1 bit)
	3~18	%QW3~%QW17 (QW is 2 bits)
	19~34	%QD19~%QW31 (QD is 4 bits)
1		%IB1 (IB is 1 bit)
2~3		%IW2 (IW is 2 bits)
4		%IB4 (IB is 1 bit)
5~20		%ID5~%ID17 (ID is 4 bits)
	I address addr	I     Q       address     address       I     I       2     3~18       I     19~34       1     2       2~3     I       4     I       5~20     I

Figure	28	Reference	list
1 15410	20	iterenee	not

29. Click to monitor I zone data, click to revise Q zone parameter to PLC, simulate Modbus RTU slave device corresponding functions.

上海卓岚	信息科技有限公	公司	Tel:(021)6432	25189	http://www.zlmcu.com
地址	显示格式	监视值	修改值	9	注释
%QB1	十六进制	16#0F	16#0F	M 🛓	01H. 设置线圈1-8的状态
%QB2	十六进制	16#F0	16#F0	M 🔺	02H. 设置离散里输入1-8的状态
%QW3	十六进制	16#0100	16#0100	M 🔺	03H. 设置保持寄存器1的数据
%QD19	十六进制	16#1111_2222	16#1111_2222	M 🔔	04H. 设置输入寄存器1-2的数据
%QD23	十六进制	16#3333_4444	16#3333_4444		04H. 设置输入寄存器3-4的数据
%QD27	十六进制	16#5555_6666	16#5555_6666	M 🔔	04H. 设置输入寄存器5-6的数据
%QD31	十六进制	16#7777_8888	16#7777_8888	M 🔺	04H. 设置输入寄存器7-8的数据
%IB1	十六进制	16#00			05H. 读取主站设置线圈1的状态
%IW2	十六进制	▼ 16#1111			06H. 读取主站设置保持寄存器1的数据
%IB4	十六进制	16#80			OFH. 读取主站设置线圈1-8的状态
%ID5	十六进制	16#1111_2222			10H. 读取用户设置保持寄存器1-2的数据
%ID9	十六进制	16#3333_4444			10H. 读取用户设置保持寄存器3-4的数据
%ID13	十六进制	16#5555_0000			10H. 读取用户设置保持寄存器5-6的数据
%ID17	十六进制	16#0000_3333			10H. 读取用户设置保持寄存器7-8的数据
%ID5 %ID9 %ID13 %ID17	十六进制 十六进制 十六进制 十六进制 十六进制	16#1111_2222 16#3333_4444 16#5555_0000 16#0000_3333			10H.读取用户设置保持寄存器1-2的数据 10H.读取用户设置保持寄存器3-4的数据 10H.读取用户设置保持寄存器5-6的数据 10H.读取用户设置保持寄存器7-8的数据

Figure 102 Operate monitor table

Modbus Poll can be used to simulate the Modbus master device. The following is the Modbus Poll configuration and running results.

1. 01H Function code. Set the start address of the coil to 16. Set the number to 8. The training interval is 1000ms. 02H Function code: set the start address of the discrete quantity to 0. Set the number to 8. The training interval is 1000ms. 03H function code, set the start address of the hold register to 63. The number is 8. The training interval is 1000ms. 04H function code, set the input register start address to 0 and the number to 8. The training interval is 1000ms.

Read/Write Definition X	Read/Write Definition X	Read/Write Definition X	Read/Write Definition ×
Slave ID: 0K	Slave ID: 0K	Slave ID: 0K	Slave ID:
Function: 01 Read Coils (0x)  Cancel	Function: 02 Read Discrete Inputs (1x) V Cancel	Function: 03 Read Holding Registers (4x) V Cancel	Function: 04 Read Input Registers (3x) V Cancel
Address: 16 Protocol address. E.g. 11 -> 10	Address: 0 Protocol address. E.g. 10011 -> 10	Address: 63 Protocol address. E.g. 40011 -> 10	Address: 0 Protocol address. E.g. 30011 -> 10
Quantity: 8	Quantity: 8	Quantity: 8	Quantity: 8
Scan Rate: 1000 [ms] Apply	Scan Rate: 1000 [ms] Apply	Scan Rate: 1000 [ms] Apply	Scan Rate: 1000 [ms] Apply
Disable Bead/Write Disabled	Disable Read/Write Disabled	Disable Read/Write Disabled	Disable
Disable on error Read/Write Once	Disable on error Read/Write Once	Disable on error Read/Write Once	Disable on error Read/Write Once
View	View	View	View
Ouves     O 20 50 100 Fit to Quantity	Our Content of the second	Owe     O 20 0 50 0 100 Fit to Quantity	Ovvis     O 20 0 50 0 100 Fit to Quantity
Hide Alias Columns PLC Addresses (Base 1)	Hide Alias Columns PLC Addresses (Base 1)	Hide Alias Columns PLC Addresses (Base 1)	Hide Alias Columns PLC Addresses (Base 1)
Address in Cell Enron/Daniel Mode	Address in Cell Enron/Daniel Mode	Address in Cell Enron/Daniel Mode	Address in Cell Enron/Daniel Mode

Figure 103 poll 01、02、03、04H Function code setting

2. Set %QB1 to 16#0F in hexadecimal,% QB2 to 16#F0 in hexadecimal,%QW3 to 16#0100 in hexadecimal, The values of %QD19 to 31 are 16#1111\_2222,16#3333\_4444,16#5555\_66666,16#7777\_8888 in hexadecimal.

地址	显示格式	监视值	修改值	9	注释
%QB1	十六进制	16#0F	16#0F	M 🛓	01H. 设置线圈1-8的状态
%QB2	十六进制	16#F0	16#F0	M 📐	02H. 设置离散里输入1-8的状态
%QW3	十六进制	16#0100	16#0100	M 🛓	03H. 设置保持寄存器1的数据
%QD19	十六进制	16#1111_2222	16#1111_2222	M 🛓	04H. 设置输入寄存器1-2的数据
%QD23	十六进制	16#3333_4444	16#3333_4444	A 1	04H. 设置输入寄存器3-4的数据
%QD27	十六进制	16#5555_6666	16#5555_6666	A 1	04H. 设置输入寄存器5-6的数据
%QD31	十六进制	16#7777_8888	16#7777_8888	M 🛓	04H. 设置输入寄存器7-8的数据

Figure 104 9913 01、02、03、04H Function code setting

#### 3. Modbus poll can read the data of 01,02,03,04 function codes respectively, and the

result is shown in the figure below.

Tx = 115	Tx = 1154: Err = 0: ID = 1: F = 01: SR = 1000ms				Tx = 13	38: Err = 0: ID =	1: F = 02: SR = 1000ms	Tx = 14	04: Err = 0: ID =	= 1: F = 03: SR = 1	000ms		Tx = 1540: Err = 0: I	ID = 1: F = 04: SR = 1000ms
	Alias	00010	Alias	00020		Alias	00000		Alias	00060	Alias	00070	Alias	00000
0				0	0		0	0				0x0000	0	0x1111
1				0	1		0	1					1	0x2222
2				0	2		0	2					2	0x3333
3				0	3		0	3		0x0100			3	0x4444
4					4		1	4		0x0000			4	0x5555
5					5		1	5		0x0000			5	0x6666
6		1			6		1	6		0x0000			6	0x7777
7		1			7		1	7		0x0000			7	0x8888
8		1			8			8		0x0000			8	
9		1			9			9		0x0000			9	

Figure 105 poll 01、02、03、04H read result

4. 05H Function code, set the coil start address to 16. The number is 1. 06H function code, set the register start address to 63. Number is 1,0 FH function code, set the coil start address to 16. The number is 8,10 H function code, set the register start address to 63. The number is 8.

Read/Write Definition ×	Read/Write Definition ×	Read/Write Definition X	Read/Write Definition X
Steve ID:         ID         OK           Function:         05 Write Single Col         Cancel           Addess:         16         Protocol address: E.g. 10011 > 10           Durnthy:         1         Scan Rate           Scan Rate         100         Insi]           Dinable         00         Apply	Store ID:         II         DK           Function:         06 Write Single Register         Cancel           Addess:         53         Protocol address: E.g. 40011 > 10           Quantity:         1         Scan Rais         100           Dasble         Dasble         Apply         Dasble	Slove ID:         ID         OK           Function:         15 Write Multiple Colis         Cancel           Addess:         16         Protocol address: E.g. 10011 > 10           Quantity:         8           Scon Rate 1000         [m:]           Deable	Slove ID:         II         OK           Function:         16 Write Multiple Registers:         Cancel           Addess:         53         Protocol address:         E.g. 40011 > 10           Quantity:         8         Scen Rate 1000         [ms]         Apply           Deable         Totable         100         [ms]         Apply
Read/Wite Disabled     Disable on error     Vew     Rows     Rows	Read/Write Disabled     Disable on error     Read/Write Dince     Vew     Rove	Read/Wite Disabled     Disable on error     Read/Wite Droce     View     Rows     Rows	Read/Write Disabled     Disable on error     Read/Write Once     Vew     Revs     Revs
Hide Alias Columns     PLC Addresses (Base 1)     Address in Cell     EnroryDaniel Mode	Hide Alias Columns     PLC Addresses (Rase 1)     Address in Cell	Hide Alias Columns     DLC Addresses [Base 1)     Address in Cell     Enron/Daniel Mode	Hide Alas Columns     PLC Addresses (Base 1)     Address in Cell

Figure 106 poll 05、06、0F、10H Function code setting

5. 05H function code set the value to 16# 00. 06h function code set the value to 16# 1111,0 FH function code set the value to 16#80, 10H function code setting values are 16#1111, 16#2222, 16#3333, 16#4444, 16#5555, 16#0000, 16#0000, 16#3333 in hexadecimal.



6. As can be seen from the figure below, poll has successfully written data to the I address of PLC through 05H,06H,0FH,10H.

上海卓岚信息科技有限公司		Tel:(021)64325189		http://www.zlmcu.com		
%IB1	十六进制		16#00		05H.	读取主站设置线圈1的状态
%IW2	十六进制	-	16#1111		06H.	读取主站设置保持寄存器1的数据
%IB4	十六进制		16#80		OFH.	读取主站设置线圈1-8的状态
%ID5	十六进制		16#1111_2222		10H.	读取用户设置保持寄存器1-2的数据
%ID9	十六进制		16#3333_4444		10H.	读取用户设置保持寄存器3-4的数据
%ID13	十六进制		16#5555_0000		10H.	读取用户设置保持寄存器5-6的数据
%ID17	十六进制		16#0000_3333		10H.	读取用户设置保持寄存器7-8的数据



# 7. Ordering info

Table 8Ordering info

Item No.	Specifications
ZLAN9913-M	Modbus RTU master version, read and write sensor, electric meter
	Modbus RTU slave devices.
ZLAN9913-S	Modbus RTU slave version, passive acceptance Modbus RTU master
	station read and write

# 8. After sales service

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