# Modbus-RTU/ASCII to Profibus-DP Protocol Converter

# **DPM01**

# **User Manual**

V1.0

2024.04.18

DPM01

TEL: +86-0816-2538289





#### 2024-04

Copyright ©2024 Odot Automation all rights reserved

TEL: +86-0816-2538289

#### **Version Information**

DateVersion No.Modify ContentAuthor2024-04-18V1.0Initial Version

The document has been modified as follows:

#### **Ownership rights information**

Without the permission of the copyright owner, all or part of this document shall not be republished as a paper or electronic document.

#### Disclaimer

This document is only intended to assist the reader in using the products, and the company shall not be responsible for any loss or error caused by the use of the information in this document. The product and text described in this document are under constant development and refinement. Odot Automation System Co., Ltd. has the right to modify this document without notifying users.

#### Software download

Please log on the official website: www.odotautomation.com and click on the corresponding product page to download.

H - 1 -
H - 1 -

1 Product Overview
1.1 Product Functions
1.2 Main technical parameters
2 Hardware Description
2.1 Product Appearance4
2.2 Indicator Description
2.3 DIP Switch
2.4 Profibus-DP Interface
2.5 Terminal definition
2.6 External terminal resistance
2.7 Installation dimension
3 Product application topology
4 Testing application in Siemens Step 7
4.1 Modbus RTU Master Mode11
4.2 Modbus RTU Slave Mode27
5 Testing application in Siemens TIA V16
5.1 Modbus RTU Master Mode
5.2 Modbus RTU Slave Mode
5.3 Modbus ASCII Master Mode56
5.4 Modbus ASCII Slave Mode
6 Test application in Beckhoff TwinCAT 260
7 Annex
7.1 Modbus-RTU Protocol Introduction
7.1.1 Modbus Storage Area69
7.1.2 Modbus Function Code69
7.2 Brief introduction of serial port network topology75
7.2.1 RS232

7.2.2 RS422	77
7.2.3 RS485	

# **1 Product Overview**

### **1.1 Product Functions**

The DPM01 gateway is a Modbus-RTU/ASCII to Profibus-DP Protocol converter. It could realize data transmission from Modbus-RTU/ASCII to Profibus-DP protocols. Any device with an RS485 interface that supports the Modbus-RTU/ASCII protocol can be interconnected with the fieldbus Profibus-DP using this product. Such as: PLC, DCS, remote IO, transducer, motor start protection device, intelligent high and low voltage electrical appliances, fuel gauge device, and intelligent field measuring equipment and instrument etc.

## 1.2 Main technical parameters

- 1. Support Modbus function codes:01/02/03/04/05/06/15/16
- 2. Support Profibus-DP/V0 protocol
- 3. DP Communication rate: 9.6Kbps~12Mbps self-adaptive
- 4. DP Data Zone: the input up to 244 bytes

the output is up to 244 bytes

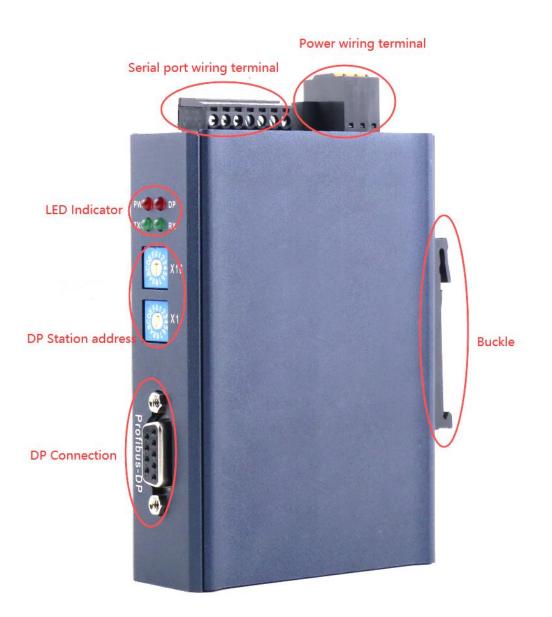
the maximum sum of input and output is 288 bytes

- 5.Maximum number of DP slave slots: 42
- 6.Modbus master: support
- 7.Modbus slave: support
- 8.Number of Modbus sites supported: 31
- 9.Modbus Baud rate:1200~115200bps Optional
- 10. 8 data bits, N/A, Odd or Even parity checking,1 or 2 stop bits
- 11. Operating Voltage:9~36 VDC, Current: Max.50mA@24V
- 12.Operating temperature:-40~85°C, Relative humidity:5~95% (No Condensation)
- 13.Storage temperature:-55~125°C
- 14. Mounting type:35mm DIN-Rail

- 15.Size: 110\*27.5\*110(Length\*width\*height, Unit: mm)
- 16. Ingress protection rating IP20
- 17.Product certifications: CE

# **2 Hardware Description**

## 2.1 Product Appearance



### **2.2 Indicator Description**

There are total 4 LED status indicators. The symbol definition and status description

are shown in "Table 2.2".

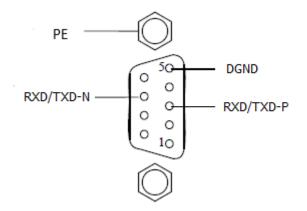
Symbol	Definition	Status	Description
PWR	Power supply indicator	ON	The system power supply is normal.
PWK	(RED)	OFF	The system power supply is abnormal.
		ON	
DP	DP network status indicator (RED)	Flashing	DP bus communication error
	indicator (RED)	OFF	DP bus communication normal
TV	Series port sending	Flashing	Series port is sending data
TX	indicator (GREEN)	ON	Series port is not sending data
DV	Series port Receiving	Flashing	Series port is sending data
RX	indicator (GREEN)	ON	Series port is not sending data

### 2.3 DIP Switch



As shown in the figure, the high-level DIP switch (X16) set by the Profibus-DP address is dialed to 0, the DIP switch (X1) in the lower position is dialed to 3, this means that the address of the module in the DP network is set to 0\*16+3=3, and the valid address range of Profibus-DP is 1-125.

### 2.4 Profibus-DP Interface



Profibus-DP port is 9 Pin terminals and its Pin definition is as follows:

Pin	RS-485	Definition	Description
1		Shield	Earthing of Shield
2		M24V	
3	B/B ′	RXD/TXD-P	Data line B
4		CNTR-P	Direction control-P
5	C/C ′	DGND	Signal Grounded
6		VP(+)	+5v
7		P 24V	
8	A/A′	RXD/TXD-N	Data line A
9		CNTR-N	Direction control-N

## 2.5 Terminal definition

The equipment wiring adopts 7Pin 3.81mm pitch plug-in terminal., the terminal

No.	Terminal	RS422 Wiring	RS485 Wiring	RS232 Wiring
INO.	Terminal	Definition	Definition	Definition
1	R-	RS422 Receiving-		
2	R+	RS422 Receiving+		
3	TB-	RS422 Sending-	RS485-	
4	TA+	RS422 Sending+	RS485+	
5	SGND		Signal GND	
6	RX			RS232 Receiving

definition of serial port as follows:

7	TX			RS232 Sending
---	----	--	--	---------------

Power terminals are defined as follows:

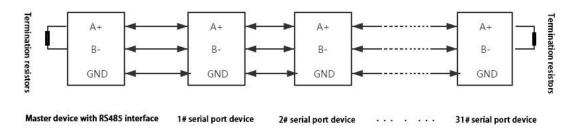
No.	Symbol	Definition
1	PE	Grounding terminal
2	V-	Power Input Negative
3	V+	Power Input Positive

### 2.6 External terminal resistance

According to the site situation, the gateway serial port side needs an external 120  $\Omega$  terminal resistance. The RS485 bus supports a maximum of 32 nodes without relay. The "daisy chain" connection is used between nodes, and terminal resistors are required at both ends of the communication cable, and their resistance is required to be approximately equal to the characteristic impedance of the transmission cable. In short-distance transmission, no terminating resistor is required, that means no terminating resistor is generally required below 300 meters. The terminating resistor is connected to the two ends of the transmission cable.

When the gateway is used in the site, if the site RS485 bus is far away and the site interference is large, so it is necessary to add  $120\Omega$  terminal resistance at both ends of the RS485 bus to prevent the reflection of the serial signal.

Note: 120  $\Omega$  resistance attached to the package, please check.



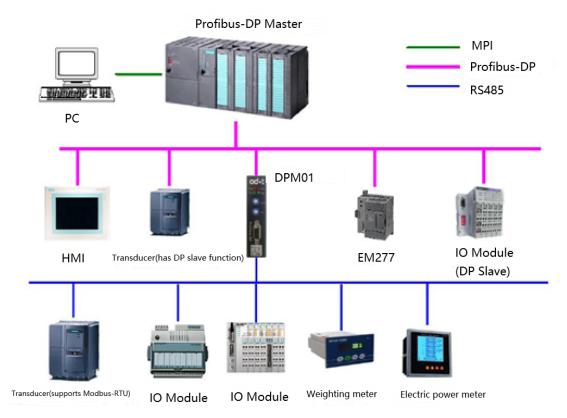


## 2.7 Installation dimension

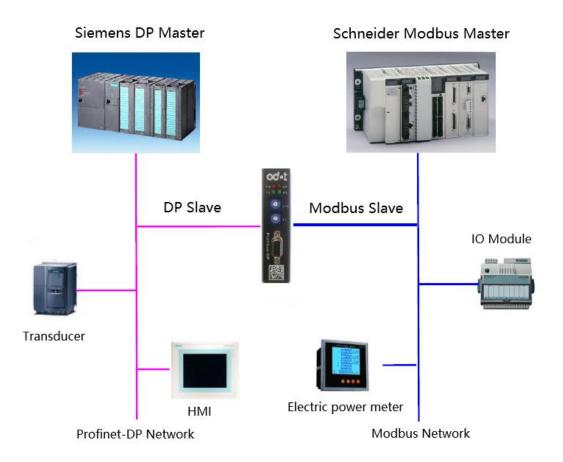
# **3 Product application topology**

The typical network topology of the RS485 interface in Modbus RTU master mode

(as shown below).



Typical network topology of RS485 interface set to Modbus RTU slave mode (as shown below)



# 4 Testing application in Siemens Step 7

## 4.1 Modbus RTU Master Mode

1. Find the GSD folder in the product CD and confirm that there are the following files in the folder. If not, please contact the supplier to request them. If the following files exist, copy them to

C:\Program Files\Siemens\Step7\S7DATA\GSD



2. Open Step7 software, create a new project, name DPM01-TEST. There should be no Chinese characters in the storage path

SIMATIC Manager	
File_PLC View Options Window Help	
D 😹 🛲 🗇 🥯 😵	
New Project         User projects         Libraries         Hame         Storage path         Add to current multiproject         Name:         DPM01-TEST         Froject         Storage location         C:\frogram Files\Siemens\Step7\s7proj         Drowse         OK	
Press F1 to get Help.	TCP/IP(Auto)

3. Right click on the project name, insert a new object, select "SIMATIC 300 Site", click "SIMATIC 300", and then double-click "Hardware" on the right to enter the hardware configuration interface.

SIMATIC Manager -					- • •
File Edit Insert PLO	C View Options W		No Filter >	I V 2 C E E C	1 12
		<u> </u>			
		mens\Step7\s7proi\	DPM01-TE		1
	Cut	Ctrl+X	]		
	Сору	Ctrl+C			
	Paste	Ctrl+V			
	Delete	Del			
	Insert New Object	•	SIMATIC 400 Station		
	PLC	۲.	SIMATIC 300 Station		
	Rename	F2	SIMATIC H Station		
	Object Properties	Alt+Return	SIMATIC PC Station Other Station		
			SIMATIC S5		
			PG/PC		
			SIMATIC 200 Station		
			MPI		, 
			PROFIBUS Industrial Ethernet		
			PTP		
			S7 Program		
	L A L AN	14	of fregram		
Inserts the object to be	selected at the cursor	position.			11.
SIMATIC Manager -	DPM01-TEST				
File Edit Insert PLC					
D 🛩   🔐 🛲   🐰	Pa 🛍 🛉 🖌 🗣 🏪		🔁 🛛 < No Filter >	. y   % @   % E (	0 K?
					1
DPM01-TEST -	C:\Program Files\Sie		DPM01-TE		
DPM01-TEST		vare			
,					
Press F1 to get Help.					TCP/IP(Auto)

4. Before configuring the hardware, click on "Options" in the menu bar, click "Install GSD File", click "Browse" in the pop-up box, and navigate to the directory where DPM01\_V2.GSD is located. In this case, it is C: \Users \Administrator \Desktop \DPM01 GSD. In the "Install GSD File" interface, click "Install", and then click "Yes".

Station Edit Insert PLC View Options Window Help         Image: Station Edit Insert PLC View Options Window Help         Image: Station Edit Insert PLC View Options Window Help         Image: Station Edit Insert PLC View Options Window Help         Image: Station Edit Insert PLC View Options Window Help         Image: Station Edit Insert PLC View Options Window Help         Image: Station Edit Insert System Error         Edit Catalog Profile         Update Catalog View Options Insell HW Updates         Install GSD File         Find in Service & Support         Create GSD File for 1-Device	==== ntni •
Specify Module       Configuration         Install HW Updates       Simaric 400         Simaric 400       Simaric 400         B: Simaric 700       Simaric 700         B: Simaric 700	nțni
Configuration Configuration Configuration Configuration Configuration Configuration Configuration Symbol Table Ctrl+Alt+T Report System Error Edit Catalog Profile Update Catalog Install HW Updates Install GSD File Find in Service & Support	nțni
Symbol Table Ctri+Alt+T Report System Error Edit Catalog Profile Update Catalog Install HW Updates Install GSD File Find in Service & Support	
Report System Error     Edit Catalog Profile       Update Catalog     Install HW Updates       Install GSD File     Find in Service & Support	
Install HW Updates     Image: SIMATIC 400       Install GSD File     Image: SIMATIC PC Based Control 300/400       Find in Service & Support     Image: SIMATIC PC Station	
Install HW Updates     Image: SIMATIC 400       Install GSD File     Image: SIMATIC PC Based Control 300/400       Find in Service & Support     Image: SIMATIC PC Station	
Install HW Updates Install GSD File Find in Service & Support	
Install GSD File	
Create GSD file for I-Device	
× *	
SIMATIC 300(1)	
S Designation	
PROFIDEVE aver for SIMATIC S7, W7, and C	7 <b>t</b> <u></u>
Changing of settings; calling up network, symbol table, catalog profile; special functions	
the HW Config - SIMATIC 300(1)	- • ×
Station Edit Insert PLC View Options Window Help	
in SIMATIC 300(1) (Configuration) DPM01-TEST	
Ĕind:	n† ni
Profil Standard	•
Install GSD Files  Install GSD F	
Install GSD Files: from the directory 💌	
B IN ATIC 300	
C:\Wsers\Administrator\Desktop\OD07-DPM01-GSD-V3.7 (2019.03.28)	
C:\Users\Administrator\Desktop\0D07-DFM01~GSD~V3.7 (2019.03.28) Browse File SIMATIC 300 File SIMATIC 400	
C: Wsers\Administrator\Desktop\ODDT-DPM01-6SD-V3.7 (2019.03.28)         Browse         ● ● SIMATIC 300           File         Release Version Languages         ● ● SIMATIC FC Based Control. 300/400	
[C: Wsers\Administrator\Desktop\DD0T=DHM01=GSD=V3.7 (2019.03.28)         Browse         ● ● SIMATIC 300           File         Release Version Languages         ● ● SIMATIC FC Based Control 300/400	
[C: Wsers\Administrator\Desktop\DD0T=DHM01=GSD=V3.7 (2019.03.28)         Browse         ● ● SIMATIC 300           File         Release Version Languages         ● ● SIMATIC FC Based Control 300/400	
C:\Users\Administrator\Desktop\ODDT-DFM01-6SD-V3.7 (2019.03.28)         Browse           File         Release Version Languages	
C:\Users\Administrator\Desktop\ODDT-DFM01-6SD-V3.7 (2019.03.28)         Browse           File         Release Version Languages	
C:\Users\Administrator\Desktop\ODDT-DFM01-6SD-V3.7 (2019.03.28)         Browse           File         Release Version Languages	
C: Wsers\Administrator\Desktop\ODDT-DPM01-6SD-V3.7 (2019.03.28)         Browse         ● ● SIMATIC 300           File         Release Version Languages         ● ● SIMATIC FC Based Control. 300/400	
C:\Users\Administrater\Desktop\DDUT=DFM01-6SD=V3.7 (2019.03.20)         File         File         PHD1V37.gsd         DFMD1V37.gsd         Default	
C:\Users\Administrator\Desktop\ODDT-DFM01-6SD-V3.7 (2019.03.28)         Browse           File         Release Version Languages	
C:\Users\Administrater\Desktop\DDUT=DFM01-6SD=V3.7(2019.03.28) Provss Pile Release Version Longuages DFM01V07.gsd Default Install Show Log Salect All Deselect All	
C:\Users\Administrater\Desktop\DDUT=DFM01-6SD=V3.7 (2019.03.20)         File         File         PHD1V37.gsd         DFMD1V37.gsd         Default	
C:\Users\Administrater\Desktop\DDUT=DFM01-6SD=V3.7(2019.03.28) Provss Pile Release Version Longuages DFM01V07.gsd Default Install Show Log Salect All Deselect All	
F: Users \Administrator\Besktop\ODDT-DFH01-6SD-V3.T(2019.03.28)     Browse       File     Release Version Lonemacs       BP001Y37.gsd     Default       Install     Show Log       Salect All     Deselect All       Close     Help	
File     Release     Version     Lonenacs:       BP001Y37.gsd      Default       Install     Show Log     Select All       Close     Nelp	
F: Wsers \Administrator\Desktop\DDUT-DFMOI-62D-V3.7 (2019.03.28)     Browse       File     Release Version Labouarst       DPMD1Y37.gd     Default       Install     Show Log       Salect All     Desslect All       Close     Nalp	
F: Wsers \Administrator\Desktop\DDUT-BH01-62D-V3.7 (2019.03.28)     Browse       File     Release Version Labouarst       DP001Y37.gd     Default       Install     Show Log       Salect All     Desalect All       Close     Nalp	
F: Wsers \Administrator\Desktop\DDUT-BH01-62D-V3.7 (2019.03.28)     Browse       File     Release Version Labouarst       DP001Y37.gd     Default       Install     Show Log       Salect All     Desalect All       Close     Nalp	
F: Wsers \Administrator\Desktop\DDUT-BH01-62D-V3.7 (2019.03.28)     Browse       File     Release Version Labouarst       DP001Y37.gd     Default       Install     Show Log       Salect All     Desalect All       Close     Nalp	
F: Users Mahninistrator/Besktop/ODDT-DPHOI-62D-V3.7 (2019.03.28)     Browse       File     Releaste Version       File     Releaste Version       Default     Befault       Install     Show Log       StattC 70 Station	
F: Users Mahninistrator/Besktop/ODDT-DPHOI-62D-V3.7 (2019.03.28)     Browse       File     Releaste Version       File     Releaste Version       Default     Befault       Install     Show Log       StattC 70 Station	7 <b>t</b>
File     Befault       Install     Show Log       Select All     Deselect All	7 25

5. Click on "Options" in the toolbar and then click on "Update Catalog" in the drop-down menu.

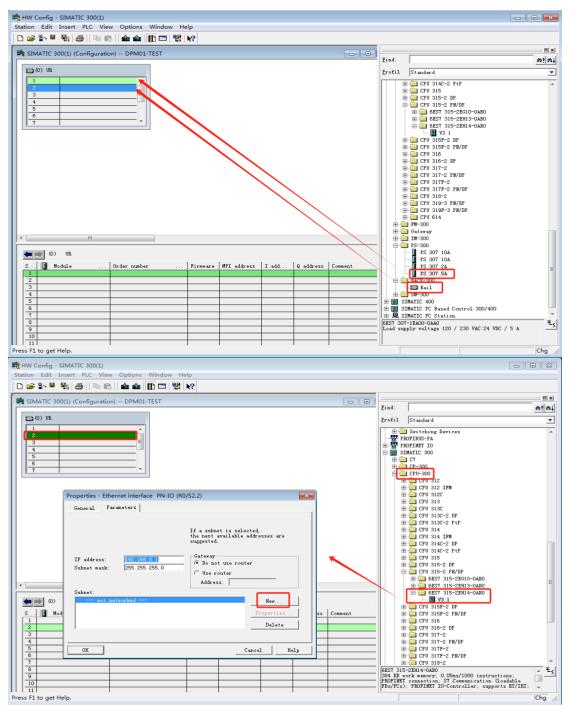
HW Config - SIMATIC 300(1)				
Station Edit Insert PLC View	Options Window Help			
] D 😅 🖫 🎴 🗞 🛛 🚳 🗌 🖻 🛍	Customize	Ctrl+Alt+E		
SIMATIC 300(1) (Configuration		Ctrl+Alt+T	■	MATIC 300
Changing of antiinen culling up of	unde australitation antale a second			
Changing of settings; calling up net	work, symbol table, catalog profile; sj	pecial functions		

6. Gateway device "DPM01 V2.0" can be found in "PROFIBUS-DP"-"Additional

Field Devices"-"Gateway".

🛱 HW Config - SIMATIC 300(1)			- • •
Station Edit Insert PLC View Options Window Help			
D 🛎 🖫 🖳 🚳    🛍 🛍 👔 🗊 📼 🐮 🕅			
SIMATIC 300(1) (Configuration) DPM01-TEST			미치
	 Find:	1	n† ni
	Profil	Standard	-
	PR	OFIBUS DP	~
		Additional Field Devices	
		- Switching Devices - IO	
	Ē	Gateway	
		H AS-I H DP/DP Coupler	
		DP/RS232C Link	
		⊕ DDOT-DPM01 V3.6     ⊕ DP/DP Coupler, Release 2	,
		- Compatible PROFIBUS DP Slav	
		CiR=Object Closed=Loop Controller	=
	😟 🗀	Configured Stations	
		DP VO slaves	
		DP/AS-i DP/PA Link	
	÷-	ENCODER	
		ET 200B	
	÷-	ET 200eco	
<		ET 200iS ET 200iSP	
		ET 2001SF	
(mm) SIMATIC 300(1)		ET 200M	
S Designation		ET 200pro ET 200R	
	 ÷-)	ET 2005	
		ET 200U ET 200X	
	÷-	Function Modules	
		IDENT	
	÷-	I IIC	-
			₹ś
Press F1 to get Help.			1.

7. Start configuring the hardware, first place the Rail, and then place the power module and CPU module in slots 1 and 2 respectively. When adding a CPU, a PLC Ethernet interface parameter window will pop up, fill in the IP address of the PLC, and create a new subnet.



SIMATIC 300(1) (Configuration) DPM01-TEST	
	Find: Mt Mi
I         I           3         I           4         I           5         I           6         I           7         I	Brofil         Standard           Image: Standard         ▼           Image: Standard         ▼           Image: Standard         ▼           Image: Standard         ●           Image: Standard         ● <trtr>         Image: Standard         ●</trtr>
Properties - Ethernet interface PN-IO (R0/S2.2)	
General Parameters General	
If a submet is selected, the next available addresses are suggested.     S7 submet ID: 0031       IP address:     192.168.0.1     Gatesy       Submet mask:     255.255.0     © Do not use router       Vise router     Address:     Date created ::       Address:     Internet addresses     New       Submet:     Properties     Delete	<pre>rnst(B] - 0005 rogram Files\Siemens\StepT\sTproj\DFM01-TE //2024 09:39:24 AM //2024 09:39:24 AM</pre>
3         0K         Cancel         Help           6         0K         0K           7         0         0K           8         0         0           9         0         0           10         0         0	Cancel Help CFW 317F-2 CFW 317F-2 FM/DF CFW 317F-2 FM/DF CFW 310-2 REST 315-22H4-0ABO 304 EB work secory: 0.05sx/1000 instructions: FD/FETC connection; ST Communication Coadable FD/FETC connection; ST Communication; Coadable FD/FETC

After adding the CPU, double-click on CPU 315-2 PN/DP, click on Cycle/Clock

Memory in the pop-up interface, and modify the process image input/output area size. Default 128, increase to 2000.

HW Config - SIMATIC 300(1)									
Station Edit Insert PLC View Options Win	idow Help								
🗋 🗅 🚘 💁 🖳 🦉 🏭 🛍 💼 🚯 🚯	🗖 🔡 K?								
SIMATIC 300(1) (Configuration) DPM01-TES	F		Find:	==== 					
Ethernet(1): PROFINET-IO-System (100)			Elnd.	<u>ui</u> u†					
🔁 (0) UR			Profil Standard	-					
1 PS 307 5A			E- CPU 314C-2 PtP						
2 CPU 315-2PM/DP	Properties - CPU 315-2PN/DP - (R0/S	(2)	CPU 315						
1 MF1/UF 12 PN-I0			CPU 315-2 DP						
IZ PI Fort I		nterrupts   Time-of-Day Inter							
IZ P2 Port 2	Cyclic Interrupts   Diagnostics/ General   Startup   Synchr	Clock   Protection   Communication onous Cycle Interrupts   Cycle/Clock							
3	General   Startup   Synchr	onous Cycle Interrupts Cycle/Ciol	6EST 315-2EH14-0AB0						
	Cycle		V3. 1						
	✓ Update OB1 process image cycl	lically	CPU 315F-2 DP						
	Scan cycle monitoring time	150	CPU 315F-2 PN/DP						
	Minimum scan cycle time	0	CPU 316-2 DP						
	Scan cycle load from communicati	ion 20	CPU 317-2						
	Prioritized OCM communication	n	CPU 317-2 PM/DP						
	Size of the process-image input	2000	CPU 317F-2						
	Size of the process-image output		CPU 317F-2 PN/DP						
	OB85 - call up at I/O access	No OB85 call up	CBV 210-2 BW/DB						
	UB05 - call up at 1/U access	CFU 319-3 FN/DF							
			CPU 614						
	Clock Memory								
<	Clock memory		teway -300						
*	Memory Byte:	0							
			PS 307 10A						
			PS 307 10A						
S Module Order number	OK	Cancel	Help PS 307 2A	=					
1 PS 307 5A 6EST 307-1EA00- 2 CPV 315-2PN/DP 6EST 315-2EH		Calleer	Relp PS 307 5A						
II MPI/DP		7047*	E Rail						
12 PN-IO	2	2046*							
II Port 1		2045*	E-M SIMATIC 400						
12 Port 2		2044*	SIMATIC PC Based Control 300/400						
3 4			EST 315-22H14-0AB0						
5			384 KB work memory; 0.05ms/1000 instructions;	^ ₹ <u>&lt;</u>					
6			PROFINET connection; S7 Communication (Loadabl FBs/FCs); PROFINET IO-Controller; supports RT/						
1 7									
Press F1 to get Help.				Chg //,					

8. Double click on "X1 MPI/DP", select the interface type: PROFIBUS, and a PROFIBUS interface parameter box will pop up. Click on "New Subnet" and "OK" to complete the establishment of the DP master station system.

MW Config - SIMATIC 300(1)     Station Edit Insert PLC View Options Window Help	
SIMATIC 300(1) (Configuration) DPM01-TEST  Ethernet (1): PROFINET-TO-System (100)  Ei	nd: nt ni
Image: Constraint of the second se	andwrd         w           ICPU 312 ITPU         icPU 312           ICPU 312 C         icPU 313           ICPU 313C         p           ICPU 314         p           ICPU 314C         p
Interface Properties - PROFIBUS inte	
Type:     FROFILS     General     Farmeters       Address:     2     Address:     2       Networked:     No     Froperties     Address:       Comment:     Subnet:     Subnet:	• Ner Properties
Properties - New subnet PROFIBUS	Delete
General Network Settings Nume: 2004106101 S7 subnet ID: 0001 - 0010	CancelHelp
	B = 1 M=300 → P5-300 →
	OFINET connection; S7 Communication (Loadable
Press F1 to get Help.	s/FCs); PROFINET IO-Controller; supports RT/IRT; +
[ .	
🛱 HW Config - SIMATIC 300(1) Station Edit Insert PLC View Options Window Help	
Big SIMATIC 300(1) (Configuration) DPM01-TEST         DIM           Ethernet (1): PROFINET-ID-System (100)         Ein	nd:
Image: Constant of the system     Image: C	ofil     Standard       ⊕     CPU 312 CTPM       ⊕     CPU 312       ⊕     CPU 312       ⊕     CPU 313       ⊕     CPU 313       ⊕     CPU 313-2 DP       ⊕     CPU 313-2 PF       ⊕     CPU 314-2 PF       ⊕     CPU 314-2 PF       ⊕     CPU 315-2 DP       ⊕     CPU 315-2 DP       ⊕     CPU 315-2 DP       ⊕     GEST 315-2DH-0AB0       ⊕     GEST 315-2DH-0AB0       ⊕     GEST 315-2DH-0AB0       ⊕     GEST 315-2DH/DP       ⊕     CPU 315-2 DP       ⊕
	⊕ CPU 319-3 PN/DP ⊕ CPU 319F-3 PN/DP
S         Module         Order number         Firmware         MPI address         I add         Q address         Comment           1         FS 307 5A         DEST 307-IEA00-0AA0         V3 1	⊕ □ CPU 614     ⊕ □ CPU 614     ⊕ □ Gateway     ⊕ □ IM=300     ⊕ □ F= 75-300     ≡
12 P#-T0 2046*	- D PS 307 10A
I2 Fort 1 2045* I2 Fort 2 2044*	PS 307 10A PS 307 2A
III         Port 2         2044           3	PS 307 2A PS 307 5A RACK-300
Zort 2         Zort 4           3         -           4         -           5         -           6         -           7         -	PS 307 2A PS 307 5A

9. Drag and drop the gateway device DPM01 directly onto the DP bus, and a PROFIBUS interface parameter window will pop up. Fill in the DPM01 address, which should be consistent with the address set on the DPM01 gateway hardware dial switch. Click OK. Complete the addition of the gateway.

#### HW Config - SIMATIC 300(1) Edit Insert PLC View Op 🗅 🚅 🗣 🦉 🦓 🎒 👘 💼 🛙 🏜 🏙 📳 🗔 💥 🕅 nfiguration) -- DPM01-TEST In SIMATIC 300(1) (Co - -Ethernet(1): PROFINET-IO-System (100) Find: nt ni Profil Standard • PS 307 5A CPU 315-2PM/DP MPI/DP PM-DD Port 1 Port 2 PROFIBUS(1): DP master system 0 PROFIBUS interface ODOT-DPM01 V3.6 × General Parameters | 3 -Address Transmission rate: 1.5 Mbps Subnet Properties. PROFIBUS(1): DP master Modul OK Cancel Help PROFIBUS address 🗄 🦲 SIMODRIVE ₹ś Press F1 to get Hel Chg //

#### od•t Odot Automation System Co., Ltd

10. Double click on the gateway icon and the following configuration will appear:

HW Config - SIMATIC 300(1)	
Station Edit Insert PLC View Options Window Help	
	-
SIMATIC 300(1) (Configuration) DPM01-TEST	
Ethernet(1): PROFINET-IO-System (100)	Eind: nt ni
🔁 (0) UR	Erofil Standard -
1 PS 307 5A	PROFIBUS DP
2 CPU 315-2PN/DP	- Additional Field Devices
II MPI/DP IZ FM-IO FROFIBUS(1): DP master system (1)	🕀 🧰 Switching Devices
IZ PI Fort I	
12 P2 Port 2	🖻 🧰 Gateway 🕀 🧰 AS-I
	DF/DF Coupler
	DP/RS232C Link
<b>本太自动化</b>	DODT-DPM01 V3.6
	- CiR-Object
Properties - DP slave	🗄 🧰 Closed-Loop Controller
	Configured Stations
General Parameter Assignment	DP VO slaves     DP/AS-i
Module	DP/PA Link
Order number: GSD file (type file):	E CODER
Pamily: Gateway	
DP slave type: ODOT-DPM01 V3.6	
Designation: DDOT-DPM01_V3.6	E 20015
Addresses Node/Master System	🕀 🧰 ET 200iSP
Diagnostic 2042 PROFIBUS 3	🗄 🚊 ET 200L
DP master system (1)	ET 200Pro
(3) ODOT-DPMO1 V3.6 SYNC/FREEZE Capabilities	⊕ 💼 ET 200S
	🗈 🧰 ET 200V
S DP ID Order W 🗹 SYNC 🔽 FREEZE 🔽 Watchdog	ET 200X     Function Modules
1 Comment:	H- IDENT
2 <u>-</u>	IPC
4	🗈 🚊 NC
5	Hetwork Components     Sensor system
6 7 0K Cancel Help	E SIMADYN
	E SIMATIC
9	E E SIMODRIVE
	τ <sub>ι</sub>
Press F1 to get Help.	Chg //

Click "Assign Parameters" again to set the Modbus parameters for the gateway (which must match the RS485 device connected to the user). After setting, click the "OK" button, as shown in the following figure:

#### HW Config - SIMATIC 300(1) 🗅 🥔 💱 📓 👫 🖓 🕒 💼 💼 🎰 🎰 🚯 📼 👯 校 SIMATIC 300(1) ( tion) -- DPM01-TEST - -Ethernet(1): PROFINET-IO-System (100) Find nt ni Profil Standard • PS 307 5A CPU 315-2PN/DP MPI/DP PN-JD Port 1 Port 2 PROFIBUS DP → Additional Field Devices → Svitching Devices → DP/DP Coupler, Balaxes 2 → Classofible PBOFIBUS DP Slaves → Classofible PBOFIBUS DP Slaves → Classofible Svitching → DP/DF Coupler, Balaxes → DP/TA Link → DP/TA Link → DP/TA Link - W PROFIBUS DP 82 82 Pi 82 Pi 82 P2 PROFIBUS(1): DP master system (1) od•t - DP slave General Parameter Assignment Value neters Station parameters ENCODER ET 2006 ET 2006 ET 2006 ET 2006 ET 20015 ET 2001 ET 2001 ET 2001 ET 2000 ET 5 **- S** a <u>Device-specific parameters</u> - Ⅲ Modbus Mode 工作模式 - Ⅲ WriteOutputOnPower-UP 上电写.. - Ⅲ Parity 校验位 Master RTU Mode 主站RTU Disable 禁止 9600 bps None 无校验 8 bit 1 bit 1 bit 20 ms 3.5t 100ms Data Holding 数据仍 Poll Mode 轮询模式 ODOT-DPMO1 V3.6 (3) DP ID Order olding 数据保持 Modules Slave Respond Delay 从站响内延迟 NC Network Components Sensor system SIMADYN SIMATIC OK Cancel Help SIMODRIVI ₹≤ s F1 to get He Chg

#### od•t Odot Automation System Co., Ltd

11. Device specific parameter settings:

#### Modbus Mode工作模式:

Master Mode 主站模式。

#### Baudrate波特率:

Serial baud rate, optional range 1200~115200bps, default 9600bps.

#### Parity校验位:

You can choose no parity, odd parity, or even parity, with no parity by default.

#### Data\_Bit数据位:

Fixed to 8-bit data.

#### Stop\_Bit停止位:

1 or 2 stop bits are optional, default to 1 stop bit.

#### Send Delay报文发送间隔:

The interval time for sending Modbus commands (the delay from receiving the response message from the slave station to sending the next command) is optional from 0ms to 5000ms, with a default of 20ms.

#### Receive Delay接收字符间隔:

The frame interval detection time when receiving a message is optional from 1.5t to 200t, with a default of 3.5t (t is the time for transmitting a single character, which is

related to the baud rate).

#### Slave Timeout从站响应超时:

The time it takes for the slave station to respond after the master station sends a command. 10ms~5000ms optional, default to 100ms.

#### Timeout Mode超时处理方式:

After reading data from the station timeout, the data processing method can be selected as "data reset" or "data hold". The default "data hold" mode is only valid for Modbus read commands.

#### Data Out Mode数据输出模式:

You can choose between "Polling Mode" or "Event Triggering" mode, in which Modbus periodically sends write messages. In the "event triggered" mode, write commands are only sent when the Modbus output data changes. The default is "polling mode", which is only valid for Modbus write commands.

#### Slave ID:

This parameter is invalid for the Master mode.

#### Slave Respond Delay从站响应延迟:

This parameter is invalid for the Master mode.

12. Modbus Master Station Mode Data Command Configuration:

The Master station module starts with M: and can only be used in Modbus Master mode.

Note: When the MODBUS side slave equipment needs to use function code 05 (to write a single coil), please use M: Write singer bit (0xxxx). When the MODBUS side slave equipment needs to use function code 06 (to write a single register), please use M: Write singer word (4xxxx).

Click on the gateway icon and insert the desired read and write command into the slot. Insert two diagnostic commands into the first two slots. Insert the third slot into "M: Read 8 Word (3xxxx)". Note: The RS485 device is simulated using the testing software Modbus Slave.

IMATIC 300(1) (Configuration) DPM01-TEST hernet (1): PROFINET-IO-System (100)	Eind:		⊒ 
D(0) VR	Profil	Standard	
1 PS 307 5A	LIOITI	,	
2 CPU 315-2PN/DP		- M: Read 4 Words (4xxxx) M: Read 5 Words (4xxxx)	
XI MPI/DP		M: Read 5 Words (4xxxx) M: Read 6 Words (4xxxx)	
E2 PROFIBUS(1): DP master system (1)		M: Read 7 Words (4xxxx)	
IZ Pi Port 1		M: Read 8 Words (4xxxx)	
12 P2 Port 2		M: Read 9 Words (4xxxx)	
3 T (3) 0D0T-		M: Read 10 Words (4xxxx)	
		M: Read 11 Words (4xxxx)	
冬点自动化		M: Read 12 Words (4xxxx)	
		- M: Read 13 Words (4xxxx)	
		- M: Read 14 Words (4xxxx)	
		M: Read 15 Words (4xxxx)	
		M: Read 16 Words (4xxxx)	
		M: Read 1 Words (Зжжж)	
		M: Read 2 Words (Зинии)	
		M: Read 3 Words (3xxxx) M: Read 4 Words (3xxxx)	
		M: Read 5 Words (3xxxx)	
		M: Read 6 Words (3xxxx)	
		M: Read 7 Words (3xxxx)	
		M: Read 8 Words (Sama)	
		M: Read 9 Words (3xxxx)	
(3) ODOT-DPMO1 V3.6		M: Read 10 Words (3xxxx)	
DP ID Order Number / Designation I Add Q Address Command		M: Read 11 Words (Зжжжж)	
8DI M: Module Status Input (8 CH) 0		- M: Read 12 Words (Зинии)	
AI M: Module Err Code Input(1 CH) 256257		- M: Read 13 Words (Зинии)	
3 8AI M: Read 8 Words (3xxxx) 258273		M: Read 14 Words (3xxxx)	
		M: Read 15 Words (Зжжжж)	
		M: Read 16 Words (Зиник)	
3		M: Write 8 Bits (Ожжжж)	
		M: Write 16 Bits (Oxxxx)	
3		M: Write 24 Bits (Oxxxx)	
		M: Write 32 Bits (Oxxxx) M: Write 40 Bits (Oxxxx)	
10		II. Waite 49 Dita (0)	
		I II Weita AR Rite (Norrow)	
10		I III III Weitz AR Ritz (Marawa)	

Double click on the added function block "Read 8 Words (3xxxx)" to configure its parameters. The Slave ID slave number must be consistent with the corresponding Modbus address set by the slave, and the "start address" refers to the starting address of the Modbus cache area that needs to be read. For example, in this example, the Modbus slave used is 1, and the Modbus address table is 0.

		_		
SIMATIC 300(1) (Configuration) DPM01-TEST		Find:		
Ethernet(1): PROFINET-IO-System (100)		-		<u>uiu</u>
1 PS 307 5A		Profil	Standard	
Image: CPU 315-2PN/DP           Image: CPU 315-2PN/DP	DFIBUS (1): DF master system (1) (3) 0D0T- cotot Address / DP slave Address / ID Forsmeter Assignment Parameters V	alue	Wor Wor Yord	is (4xxxx) is (4xxxx) is (4xxxx) is (4xxxx) is (4xxxx) is (4xxxx) · ds (4xxxx) · ds (4xxxx) · ds (4xxxx)
() 0D0T-DPM01 V3.6	Garameters     Construction parameters     Construction of the second se		ford ford ford ford ford ford ford ford	Is (Зикик) Is (Зикик) Is (Зикик) Is (Зикик) Is (Зикик) Is (Зикик) Is (Зикик) Is (Зикик) Is (Зикик) Is (Зикик)
S DP ID Order Number / Designation				ds (Зихих)
1 8DI M: Module Status Input(8 CH)				-ds (Зинии) -ds (Зинии)
2         1AI         M: Module Err_Code Input (1 CH)           3         8AI         M: Read 8 Words (3xxxx)			Tor	ds (Зиник)
4				ds (Зинии) ds (Зинии)
5				s (Orrer)
<u> </u>				ts (Oxxxx)
8				ts (Oxxxx) ts (Oxxxx)
9	OK	C		ts (Oxxxx)
10				+= (Nuuuu)
11 12				

Note: When the slave address code starts from 1, it indicates that its address code is a

PLC address. At this time, "start address" is the actual PLC address in the address table minus 1. When the slave address code starts from 0, "start address" is the actual encoded address in the address table.

According to the actual situation, other data modules can be inserted into the later slots.

13. Click "Save and Compile", and if there are no errors, click "Download". Click"OK" - "Yes" in the pop-up interface.

🖞 HW Config - SIMATIC 300	0(1)					E	- • •
	View Options Window Help						
D ≌ ≌ ª ¶ ∰ ⊜    !	è 🖻 🧰 🏜 🚯 🗖 👯 📢			_			
SIMATIC 300(1) (Configuent Ethernet (1): PROFINET-IO				E Eind:			 
🔁 (0) VR				Profil	Standard		•
1         1	V3.6 Drder Munher / Designation I Add			Profil		<ol> <li>Read 4 Words (Annex)</li> <li>Read 5 Words (Annex)</li> <li>Read 6 Words (Annex)</li> <li>Read 8 Words (Annex)</li> <li>Read 8 Words (Annex)</li> <li>Read 10 Words (Annex)</li> <li>Read 11 Words (Annex)</li> <li>Read 11 Words (Annex)</li> <li>Read 11 Words (Annex)</li> <li>Read 12 Words (Annex)</li> <li>Read 13 Words (Annex)</li> <li>Read 14 Words (Annex)</li> <li>Read 14 Words (Annex)</li> <li>Read 14 Words (Annex)</li> <li>Read 15 Words (Annex)</li> <li>Read 14 Words (Annex)</li> <li>Read 14 Words (Annex)</li> <li>Read 15 Words (Annex)</li> <li>Read 16 Words (Annex)</li> <li>Read 18 Words (Annex)</li> <li>Read 3 Words (Annex)</li> <li>Read 5 Words (Annex)</li> <li>Read 6 Words (Annex)</li> <li>Read 8 Words (Annex)</li> <li>Read 8 Words (Annex)</li> <li>Read 8 Words (Annex)</li> <li>Read 8 Words (Annex)</li> <li>Read 10 Words (Annex)</li> <li>Read 10 Words (Annex)</li> <li>Read 10 Words (Annex)</li> <li>Read 11 Words (Annex)</li> <li>Read 11 Words (Annex)</li> <li>Read 10 Words (Annex)</li> <li>Read 10 Words (Annex)</li> <li>Read 12 Words (Annex)</li> <li>Read 12 Words (Annex)</li> </ol>	
3         6AI         4           5         6         7           7         7         7           8         9         10           10         11         12	: Nodule Err_Code Input () CHO 256 Read 8 Yords Charge ) 259	257 273				1: Read 14 Words (Smnnx) 1: Read 15 Words (Smnnx) 1: Read 15 Words (Smnnx) 1: Write 8 Bits (Omnnx) 1: Write 16 Bits (Omnnx) 1: Write 48 Bits (Omnnx) 1: Write 48 Bits (Omnnx) 1: Write 48 Bits (Omnnx)	
13 14							
ess F1 to get Help.							Chg
Over which static CPU 315-2PN/DP? Rack: Slot: Target Station:	on address is the progr	amming device (	connected to th	e module			
	C Can be reached by m	eans of gateway	5				
	n to target station:						
IP address	MAC address		Station name				
192.168.0.1	AC-64-17-1D-C2-6F	CPU 315-2	\$7300/ET2	PLC_1			
•				•			
Accessible Nodes							
192, 168, 0, 233 192, 168, 0, 1 2	EO-BE-03-90-A2-8F AC-64-17-1D-C2-6F	SIMATIC-PC CPU 315-2	S7300/ET2	PLC_1			
<u> </u>							
•				+			
	Upda	te 1					
ОК		c	ancel }	felp			

14. Right click on the "8AI" module in slot 3, then click "Monitor/Modify", and select "Monitor" in the pop-up board to read the values of each channel. The red box in the figure below is the value read in this example.

HW Config - SIMATIC 300(1)				
Station Edit Insert PLC View Options Window Help D 🗃 🍄 🏪 👯 🎼 🛛 🏙 🃾 🕼 🗌 🏛 🏜 📗 🗊 🗖 않음 😡				
🕅 SIMATIC 300(1) (Configuration) DPM01-TEST		C		 
Ethernet(1): PROFINET-IO-System (100)		Find: Profil Standar	d	nt n.
1 PS 307 5A 2 S CPU 315-2PN/DP	Monitor/Modify - 8AI		••••••••••••••••••••••••••••••••••••••	1
SI         MPT/DP           S2         F.PF-DD           S2         PROFIBUS (1): DP master syst           S2         Prort J				
Image: Apple of the second s		ATIC 300(1)\CPU 315-2P		
od-t	1 IW 258	HEX	¥#16#0100	
本,改革初代。	3 I₩ 262	HEX	W#16#007D W#16#09F2	
	4 IW 264 5 IW 266	HEX HEX	W#16#0356 W#16#0000	
	6 IW 268 7 IW 270	HEX	W#16#0000 W#16#0000	
	8 IW 272	HEX	W#16#0000	
< <u> </u>	X Row Not Effective	Update Force Symbol	with F5	
(3) ODDT-DPM01 V3.6	Run conditionally	Run immediately		
S DP ID Order Number / Designation   I Add   Q Address   Co	Monitor Modify		Enable Peripheral Out           I/O Display	
1         80I         M: Module Status Input(8 CH)         0           2         1AI         M: Module Err_Code Input(1 CH)         256257           3         6AI         M: Read 8 Fords (3xxxx)         258273	😋 Trigger		RUNNING	
4         6         7 <th7< th=""> <th7< th=""> <th7< th=""> <th7< th=""></th7<></th7<></th7<></th7<>	Close		Help	
6 7			M: Write 24 Bits (Oxxxx)	
8			M: Write 32 Bits (Oxxxx) M: Write 40 Bits (Oxxxx)	
			H. Weitz AR Ritz (Nurre)	t
13 14				
ess F1 to get Help.				
<mark>과 ☞ 묘</mark> 셸   <mark>한   및 효   ᠀ №</mark> 및 Mbslave1				
D = 1: F = 04				
Alias 00000				
0 0x0100				
1 0x007D				
2 0x09F2				
3 0x0356				
4 0				
5 0				
6 0				
7 0				
8				
9				
r Help, press F1.	Port 10: 9	600-8-N-1		

The above figure shows the use of AI modules, which are similar to DI, DO, AO

modules, and other standard Modbus devices. (Note: I and Q addresses can be changed by oneself)

15. Mater diagnostic module

The Master diagnostic module is a selectable module and can only be used in Modbus Master mode. The Master diagnostic module is divided into two types: "Slot Status Input" and "Slot Error Code Input Module ErrCode Input". At most one module can be inserted into each of the two types. The status module can only be inserted into slot 0, while the error code module can be inserted into slots 0 and 1. When the error code module is inserted into slot 1, slot 0 can only be inserted into the status module.

	! 🕵 ( 🖧   🖻 🖻   🏜 🎪	🗈 🗖 🚼 💦					
	300(1) (Configuration) DPM0						<u> </u>
Ethernet (1	): PROFINET-IO-System (100)				Find:		10 t 1
🔁 (0) VR	PS 307 5A				Profil	Standard	1
2 II II2 II2 PI II2 PI 3	RCFU 315-2PH/DP           MP2/DP           PM-ID           Port 1           Port 2	PROFIDUS (1)	: DP master (3) 0007 でで・1 本点句 妙化	system (1)		<ul> <li>N: Write 4 Words (4xxxx)</li> <li>N: Write 5 Words (4xxxx)</li> <li>N: Write 5 Words (4xxxx)</li> <li>N: Write 6 Words (4xxxx)</li> <li>N: Write 0 Words (4xxxx)</li> <li>N: Write 0 Words (4xxxx)</li> <li>N: Write 10 Words (4xxxx)</li> <li>N: Write 11 Words (4xxxx)</li> <li>N: Write 11 Words (4xxxx)</li> <li>N: Write 13 Words (4xxxx)</li> <li>N: Write 13 Words (4xxxx)</li> <li>N: Write 15 Words (4xxxx)</li> <li>N: Write 16 Words (4xxxx)</li> <li>N: Write 10 Words (4xxx)</li> <li>N: Write 10 Words (10 Note)</li> </ul>	6) 60 740
	III					M: Module Status Input (32 ( M: Module Status Input (40 (	
(3) S (1) 2) 1) 2) 1) 2) 1) 2) 1) 3) 8) 4 5) 6 7) 7 8 9 10 11 12 11 13 14 15 16 17 17 16 17 16 17 16 17 16 17 16 17 16 16 17 16 16 17 16 16 17 16 16 17 17 16 16 17 16 16 16 17 16 16 16 17 17 16 16 16 17 17 17 16 16 17 17 16 17 17 17 17 17 17 17 17 17 17	DP ID Order Number / D I M: Module Status I M: Module Err_Cod	Input (8 CH) 0 e Input (1 CH) 256257		Cosmae		<ul> <li>M. Module Err_Code Input()</li> <li>S: DP Input 8 Bits (Oxern)</li> <li>S: DP Input 24 Bits (Oxern)</li> <li>S: DP Input 25 Bits (Oxern)</li> <li>S: DP Input 32 Bits (Oxern)</li> <li>S: DP Input 40 Bits (Oxern)</li> <li>S: DP Input 50 Bits (Oxern)</li> <li>S: DP Input 50 Bits (Oxern)</li> <li>S: DP Input 50 Bits (Oxern)</li> <li>S: DP Input 60 Bits (Oxern)</li> <li>S: DP Input 60 Bits (Oxern)</li> <li>S: DP Input 96 Bits (Oxern)</li> </ul>	

The status module can monitor the working status of each data slot. When a data slot fails, the corresponding status bit is set to 1, and it automatically resets to zero after the fault is restored.

When a data slot malfunctions, the error code module can display the serial number and specific error code of the erroneous data slot. Users can determine the cause of the malfunction based on the error code and take corresponding adjustment methods. Please refer to the "Error Code Table" for a detailed description.

The error code module can only display the fault status of one slot. When multiple slots fail simultaneously, the error code module will display the fault status of the slot

http://www.odotautomation.com

with the lowest serial number in the error slot.

Right click on slots 0 and 1, select "Monitor/Modify", and check "Monitor" in the pop-up panel to display module status and error codes.

ű	Mo	nitor/Modify ·	8DI - (R-/S1	)		×	- <u></u>	Мо	nitor/Modif	fy - 1AI - (R-/S2	)		<b>—</b> ×
On	line	via assigned	CPU services							ed CPU service:			
Path: DPM01-TEST\SIMATIC 300(1)\CPU 315-2PN/DP								th:			)(1)\CPV 315-2PN/	'nP	
		-				I	1.4		jbrillor 1	LSI (SIMAIIC SO		51	
	1	Address	Symbol		Status value	Modify value		1	Address	Symbol	Display format	Status value	Modify value
		I 0.0		BIN	2#1		1		I₩ 256		HEX	₩#16#010B	
2		I 0.1		BIN	2#0					A			
3		I 0.2		BIN	2#0								
4		I 0.3		BIN	2#0								
5		I 0.4		BIN	2#0								
6		I 0.5		BIN	2#0								
7		I 0.6		BIN	2#0								
8		I 0.7		BIN	2#0								
							1						
2	< Ro	w Not Effecti	ve Updat	e Force Symbol w	ith F5		>	< Ro	w Not Effec	tive Upda	te Force Symbol w	ith F5	
-1	lun d	conditionally	-Run imm	ediately			-1	81110 0	onditional:	ly Bup imm	ediately		
5	Z M.	nitor	@CStat:	us Value	Enable Periphe	ral Out			nitor			Enable Periphe	cal Out
1			00,7	····· / /							us raide j	bhable i ei iphe.	tar out
	Mo	dify	<b>≤≥</b> ¶odi	fy Value 🛛 🗸	I/O Display			Mo	dify	<b>≤</b> Panodi	fy Value	I/O Display	
	C) 1	frigger	1			UNNING		0,1	rigger			A .	
					V	CONNING						<b>V</b> •	UNNING
	C1.	ose				Help		C1.	ose				Help
-	51					herp	-	01					nerp

As shown in the above figure, when the corresponding slot module fails, the module status corresponding bit is set to 1. The error code is 0x010B, where 0x01 indicates a fault in the first data slot and 0x0B indicates a "slave response timeout". Other error codes are shown in the table below.

Modbus Master Error Code Table

Error Code	Fault description	Troubleshooting method
0x00	Working properly	N/A
0x01	Illegal function code	The device does not support the current function code, please refer to the slave manual to select the corresponding function code module
0x02	Illegal data address	If the device data exceeds its address range, refer to the slave manual to modify the data starting address or data length
0x03	Illegal data value	Data length error, data length beyond the Max. allowed value 125(Word) or 2000(Bit), modify the length
0x04	Slave device error	Check the status of the slave device
0x06	Slave device busy	Check the status of the slave device

0x07	parity error	Check parity, baud rate, stop bit, and hardware connection status
0x09	CRC verification error	Slave response message CRC calculation error, check the working status of the slave
0x0B	Slave device response timeout	Increase the timeout time, check the hardware connection status, and view communication parameter settings such as baud rate
0x0E	Response message length error	Increase the receive character spacing
0x0F	Write slave device response error	Check the hardware connection state

Note: The testing method for setting the Modbus ASCII master mode of the RS485 interface is the same as the testing method for setting the master mode of the Modbus RTU protocol. Only the working mode of the gateway needs to be changed to the corresponding Modbus ASCII master mode.

### 4.2 Modbus RTU Slave Mode

1.Modbus Slave Mode Data Address Table

Data area	Effective address range
Zone 0 (0XXXX)	0~1951
Zone 1 (1XXXX)	0~1951
Zone 3 (3XXXX)	0~121
Zone 4 (4XXXX)	0~121

#### 2→10 Refer to 4.1 (Master Station Mode)的1→9。

11. Double click on the gateway icon and the following configuration will

appear.

SIMATIC 300(1) (Configuration) DI Ethernet (1): PROFINET-IO-System (100		Find:	nt
(100 Strate of the second seco	,	Profil	Standard
1 PS 307 5A		FIGHT	
2 CPU 315-2PN/DP			M: Write 3 Words (4xxxx) M: Write 4 Words (4xxxx)
11 MPI/DP 12 PN-10	Properties - DP slave		M: Write 5 Words (4xxxx)
IZ Pi Port 1			M: Write 6 Words (4xxxx) M: Write 7 Words (4xxxx)
12 P2 Port 2	General Parameter Assignment		M: Write 8 Words (4xxxx)
3	Module		M: Write 9 Words (4xxxx)
	Order number: Family: Gateway	GSD file (type file):	M: Write 10 Words (4xxxx)
	DP slave type: ODOT-DPM01 V3.6		M: Write 11 Words (4xxxx) M: Write 12 Words (4xxxx)
	Designation: DDOT-DPMO1 V3.6		M: Write 13 Words (4xxxx)
	,		M: Write 14 Words (4xxxx)
	Addresses	Node/Master System	M: Write 15 Words (4xxxx) M: Write 16 Words (4xxxx)
	Diagnostic 2042	PROFIBUS 3	M: Write Single Bit (Oxxxx)
		DP master system (1)	M: Write Single Word (4xxxx)
			M: Module Status Input(8 CH) M: Module Status Input(16 CH)
	SYNC/FREEZE Capabilities		M: Module Status Input (18 CH)
	SYNC FREEZE	V Watchdog	M: Module Status Input (32 CH)
	Comment:		M: Module Status Input (40 CH)
(3) ODOT-DPM01 V3.6			M: Module Err_Code Input(1 CH) S: DP Input 8 Bits (0xxxx)
S DP ID Order Number			S: DP Input 16 Bits (ORNER)
1 SDI M: Module Sta			S: DP Input 24 Bits (ORERE)
2 1AI M: Module Err,		Cancel	Help S: DP Input 32 Bits (Oxxxx) S: DP Input 40 Bits (Oxxxx)
3 SAI M: Read 8 Wor			S: DP Input 48 Bits (Oxxxx)
5			— S: DP Input 56 Bits (Оккик)
6			S: DP Input 64 Bits (Oxxxx) S: DP Input 72 Bits (Oxxxx)
7			S: DP Input 80 Bits (Oxxxx)
8 9			S: DP Input 88 Bits (Oxxxx)
10			S: DP Input 96 Bits (ORERE)
11			
12			

Click "Assign Parameters" again to set the Modbus parameters for the gateway (which must match the RS485 device connected to the user). After setting, click the "OK" button, as shown in the following figure:

#### HW Config - SIMATIC 300(1) - - -Edit Insert PLC View Options Window Help D 😂 🖫 🖳 🎒 🛍 🛍 🏙 💼 🚼 👯 📢 에 SIMATIC 300(1) (Configuration) -- DPM01-TEST Ethernet(1): PROFINET-IO-System (100) Find nt ni Profil Standard -Write 3 Words (4mmm) Write 4 Words (4mmm) Write 5 Words (4mmm) Write 5 Words (4mmm) Write 8 Words (4mmm) Write 8 Words (4mmm) Write 8 Words (4mmm) Write 10 Words (4mmm) Write 10 Words (4mmm) Write 12 Words (4mmm) Write 12 Words (4mmm) Write 13 Words (4mmm) Write 15 Words (4mmm) Write 5 Single Bit (0mmm) Write 5 Single Bit (0mmm) Write 5 Single Bit (0mmm) Write 5 Single Word (4mmm) Hodule Status Input (6 Ch) Hodule Status Input (6 Ch) 1 2 81 82 82 81 82 81 82 82 PS 307 5A CPU 315-2PN/DP MPI/DP PM-ID Port 1 Port 2 Prop rties - DP slave General Parameter Assignment \$2 P2 Parameters Value Station parameters 국 Device-specific parameters - 프 Modbus Mode 工作模式 - 프 WriteOutputOnPower-UP 上电写.. Slave RTU Mode 从站RTU模式 Disable 架正 -■ Baudrate 波特率 -■ Parity 校验位 -■ Data\_Bit 数据位 9600 bps None 无校验 8 bit 1 bit □ Stop\_Bit 停止位 □ Stong\_Bit 停止位 □ Send Delay 报文发送间隔 □ Receive Delay 接收字符间隔 □ Slave Timeout 从站响应超时 20 ms 3.5t 100ms Data Holding 数据保持 Poll Mode 轮询模式 4 5 Sms □ Timeout Mode 超时处理方式 □ Data Out Mode 数据输出模式 □ Slave ID 从站地址 □ Slave Respond Delay 从站响内码 (3) ODOT-DPMO1 V3.6 DP ID Order Numbe Module Stat Module Err Read 8 Word OK Cancel Help ₹ś F1 to get Help

#### od•t Odot Automation System Co., Ltd

#### Modbus Mode工作模式:

Slave Mode从站模式。

#### Baudrate波特率:

Serial baud rate, optional range 1200~115200bps, default 9600bps.

#### Parity校验位:

You can choose no parity, odd parity, or even parity, with no parity by default.

#### Data\_Bit数据位:

Fixed to 8-bit data.

Stop\_Bit停止位:

1 or 2 stop bits are optional, default to 1 stop bit.

Send Delay报文发送间隔:

This parameter is invalid for the slave mode.

#### Receive Delay接收字符间隔:

The frame interval detection time when receiving a message is optional from 1.5t to 200t, with a default of 3.5t (t is the time for transmitting a single character, which is related to the baud rate).

#### Slave Timeout从站响应超时:

This parameter is invalid for the slave mode.

#### Timeout Mode超时处理方式:

This parameter is invalid for the slave mode.

#### Data Out Mode数据输出模式:

This parameter is invalid for the slave mode.

#### Slave ID:

Slave ID number, valid range is 1-247, default value is 1.

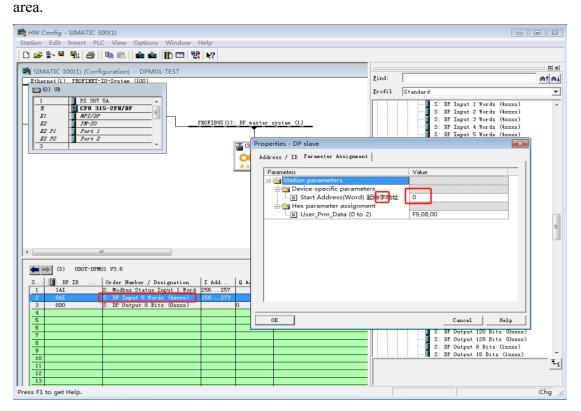
#### Slave Respond Delay从站响应延迟:

The response delay time of the slave station is when the slave station receives a request message from the master station, processes the data, delays for a certain length of time, and then replies to the data message. 0ms~2000ms optional, default 5ms.

12. Modbus slave mode data command configuration

The module starting with S: is a slave module and can only be used in Modbus slave mode.

13. Insert the Modbus slave status module in slot 0, and an input module "DP Input 8 Words (4xxxx)" in slot 1, filling in the starting word address of the Modbus 4xxxx



14. Insert an output module "DP Output 8 bits (0xxxx)" into slot 2 and fill in the starting byte address of the Modbus 0xxxx area.

- 🙀 HW Config - SIMATIC 300(1)	
Station Edit Insert PLC View Options Window Help	
D 🌽 🐎 🔍 🙀 🚑 🐚 🖻 🕍 🏜 🛍 🗊 📼 🧏 👷	
SIMATIC 300(1) (Configuration) DPM01-TEST	
Ethernet(1): PROFINET-IO-System (100)	Eind: nt ni
≥ 0) VR	Profil Standard -
1 PS 307 5A A	S: DP Input 1 Words (4xxxx)
2 CPW 315-2PW/DP II MPJ/DP	S: DP Input 2 Words (4xxxx)
PROFILE	S: DP Tanut 3 Words (4xxxx)
IZ PI Fort I Properties - DP slave	
12 P2 Port 2 Address / ID Parameter Assignment	(XXX)
3	(XXX)
Parameters	Value (XXX)
Device-specific parameters	
■ Start Address(Byte) 起始字节	
□ → Hex parameter assignment	AXXXX)
User_Prm_Data (0 to 2)	FA,08,00 4xxxx)
	4xxxx) 4xxxx)
	(ARAX) (ARAXX)
	EXXX)
	DXXXX)
	ряняя)
۲	ринии) Динии)
	Dxxxx)
(3) ODOT-DPM01 V3.6	Derex)
S DP ID Order Number / Designation I Add.	ржжж)
1 1AI S: Modbus Status Input 1 Word 2562	Джжж) Джжж)
2 SAI S: DP Input 8 Words (Avvvv) 2582	Cancel Help DXXXX)
3 8D0 S: DP Output 8 Bits (Oxxxx)	Dxxxx)
	S: DP Output 104 Bits (Oxxxx)
8	S: DP Output 112 Bits (DREER) S: DP Output 120 Bits (DREER)
7	S: DP Output 120 Bits (DXXXX)
8	S: DP Output 8 Bits (1xxxx)
	- S: DP Output 16 Bits (1xxxx)
	- t <u></u>
12	
13	
Press F1 to get Help.	Chg

15. Download the configuration program to the PLC after saving and compiling.

HW Config - SIMATIC 300(1)	-	• ×
Station Edit Insert PLC View Options Window Help		
D 🔊 🖫 🔍 🚳 👘 💼 🧰 🎰 🛅 🗔 器 👷		
M SIMATIC 300(1) (Configuration) DPM01-TEST		
Ethernet(1): PROFINET-IO-System (100)	Eind:	nt ni
	Profil Standard	-
1 PS 307 5A		· ·
2 CPU 315-2PN/DP	S: DP Input 1 Words (4xxxx)	<u>^</u>
II MPI/DP	S: DP Input 2 Words (4xxxx) S: DP Input 3 Words (4xxxx)	
22 PROFIBUS (1): DF master system (1)	S: DF Input 3 Words (4xxxx)	
IZ PI Port I	S: DP Input 5 Words (4xxxx)	
12 P2 Port 2 3 (3) 0001-	S: DP Input 6 Words (4xxxx)	
	S: DP Input 7 Words (4xxxx)	
od•t	S: DP Input 8 Words (4xxxx)	
Select Target Module	S: DP Input 9 Words (4xxxx)	
	S: DP Input 10 Words (4xxxx) S: DP Input 11 Words (4xxxx)	
Target modules:	S: DF Input 11 Words (4xxxx) S: DF Input 12 Words (4xxxx)	
Module Racks Slot	S: DF Input 12 Words (4xxxx)	
CPU 315-2PN/DP 0 2	S: DP Input 14 Words (4xxxx)	
	S: DP Input 15 Words (4xxxx)	
	S: DP Input 16 Words (4xxxx)	
	S: DP Output 8 Bits (Oxxxx)	=
	S: DP Output 16 Bits (Oxxxx)	
	S: DP Output 24 Bits (Dxxxx)	
< III Select All	S: DP Output 32 Bits (OXXXX) S: DP Output 40 Bits (OXXXX)	
	S: DP Output 40 Bits (0xxxx)	
(3) ODOT-DPM01 V3.6	S: DP Output 56 Bits (OXXXX)	
OK Cancel Help	S: DP Output 64 Bits (OXXXX)	
S DP ID Order Number / Designa	S: DP Output 72 Bits (Oxexe)	
2 SAI S: DP Input 8 Words (4xxxx) 258273	- S: DP Output 80 Bits (Oxxxx)	
3 800 S: DP Output 8 Bits (OKKN) 0	S: DP Output 88 Bits (Oxxxx)	
4	S: DP Output 96 Bits (Oxxxx)	
5	S: DP Output 104 Bits (Oxxxx) S: DP Output 112 Bits (Oxxxx)	
6	S: DF Output 112 Bits (DEEEE)	
7	S: DP Output 128 Bits (Oxxxx)	
8	S: DP Output 8 Bits (1xxxx)	
	- S: DP Output 16 Bits (1xxxx)	Ψ.
		₹ <u>≺</u>
12		
13		
Press F1 to get Help.		

Normal Config - SIMATIC 300(1) Station Edit Insert PLC View Options Windo		
		ㅋㅋ
SIMATIC 300(1) (Configuration) DPM01-TEST Ethernet(1): PROFINET-IO-System (100)	Eind:	ntai
DO) WR	Profil Standard	<u> </u>
1 PS 307 5A	Denne president	
2 CPV 315-2PN/DP	Select Node Address	<b>^</b>
II MPI/DP II PN-IO	Over which station address is the programming device connected to the module OP Input 3 Words (4xxxx)	
IZ P1 Fort 1	CPU 315-2FN/DP? DP Input 4 Words (4xxxx) DP Input 5 Words (4xxxx)	
12 P2 Port 2	DP Input 6 Words (4zxxz)	
	Rack: 0 DP Input 7 Words (4xxxx)	
	Slot: 2 - DP Input 8 Words (4xxxx) DP Input 9 Words (4xxxx)	
	Target Station: @ Local DP Input 10 Words (4xxxx)	
	DP Input 11 Words (4xxxx)	
	DP Input 12 Words (4xxxx)	
	Enter connection to target station:	
	IP address MAC address Module type Station name Modul P Input 19 Words (4xxxx) PP Input 15 Words (4xxxx)	
	192.168.0.1 AC-64-17-1D-C2-6F CPU 315-2 SIMATIC 3 CPU 3	
	DP Ontput 16 Bits (Dyyry)	=
	Accessible Nodes DP Output 24 Bits (ORNER)	
<	DP Output 32 Bits (Oxxxx)	
	112.100.0.1 RC-64-11-10-02-67 CF0 315-2 SIMMILE 3. CF0 31 DP Output 40 Bits (0xxxx) DP Output 48 Bits (0xxxx)	
(3) ODOT-DPM01 V3.6	DP Output 56 Bits (Oxxxx)	
S DP ID Order Number / Designatio	P Output 64 Bits (Oxxxx)	
1 1AI S: Modbus Status Input 1 W	DP Output 72 Bits (DEEE)	
2 SAI S: DP Input 8 Words (4xxxx 3 8D0 S: DP Output 8 Bits Oxxxx	DP Output 88 Bits (DXXXX)	
3 8D0 S: DP Output 8 Bits (Oxxxx	DP Output 96 Bits (Oxxxx)	
5	OK DF Output 104 Bits (Oxxxx) DF Output 112 Bits (Oxxxx)	
6	S: DP Output 120 Bits (Oxxxx)	
7 8	S: DP Output 128 Bits (Oxxxx)	
9	S: DP Output 8 Bits (lxxxx) S: DP Output 16 Bits (lxxxx)	-
10		۰
11 12		7
13		
Press F1 to get Help.		

16. Right click on slots 2 and 3, click "Monitor/Modify", and then select "Monitor" to see the DP input data. The monitoring data value is consistent with the data written by the Modbus Poll (used to simulate the RS485 device master station) master station, as shown in the following figure.

Modbus Poll Master Station Write Data:

DP Input Data:

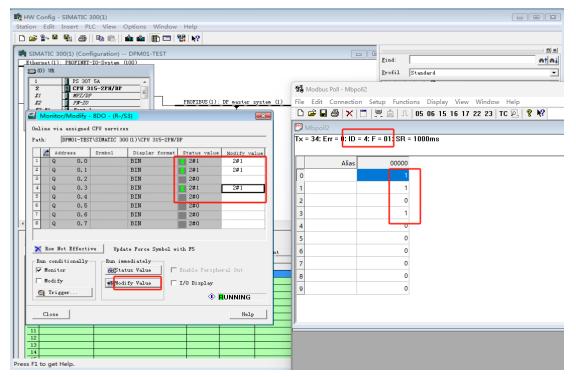
HW Config - SIMATIC 300(1)	
Station Edit Insert PLC View Options Window Help	
D 😅 🖫 🚇 🖏 🎒 🗈 💼 🧰 🏜 🚯 📼 👯 📢	
SIMATIC 300(1) (Configuration) DPM01-TEST	nivi
Ethernet(1): PROFINET-IO-System (100)	Modbus Poll - Mbpoll1
	File Edit Connection Setup Functions Display View Window Help
1 PS 307 5A	🗅 😂 🖬 🎒 🗙 🛅 🖳 🚊 💷 05 06 15 16 17 22 23 TC 🗵
2 CPU 315-2PW/DP	
L)	💭 Mbpoll1
	Tx = 60: Err = 1 ID = 4: F = 03: SR = 1000ms
Online via assigned CPV services	
Path: DPM01-TEST\SIMATIC 300(1)\CPU 315-2PN/DP	Alias 00000
Address Symbol Display format Status value Modify value	
1 IW 258 HEX W#16#000C	0 0x000C
2 IW 260 HEX W#16#000F	1 0x000F
3 IW 262 HEX W#16#00C8 4 IW 264 HEX W#16#0000	0x00C8
4 IW 264 HEX W#16#0000 5 IW 266 HEX W#16#0000	
6 IW 268 HEX W#16#0000	30
7 IW 270 HEX W#16#0000	4 0
8 IW 272 HEX W#16#0000	5 0
	6 0
	7 0
Row Not Effective Update Force Symbol with F5	
Run conditionally Run immediately	8 0
Monitor Monitor	9 0
Modify Modify Value   I/O Display	
Trigger     RUNNING	
Close Help	
9 10	
11	
12 13	
14	
Press F1 to get Help.	

17. Modify the output value in DP output data, and then click the modify button, as

shown in the following figure.

Modbus Poll reads data from Modbus slave station:

#### DP output data:



#### 18. Modbus slave status module

The Modbus slave status module can only be used in slave mode, and the DP side can read the slave status to determine the working status of the Modbus slave. When the slave station is working normally, the error code is 0. When an error occurs at the slave station, the error code will indicate the cause of the error.

Error codes are shown in the table below:

#### **Modbus Slave Error Code Table**

Error Code	Fault description	Troubleshooting method
0x00	Working properly	N/A
0x01	Illegal function code	The device does not support the current function code, please refer to the slave manual to select the corresponding function code module
0x02	Illegal data address	If the device data exceeds its address range, refer to the slave manual to modify the data starting address or data length

0x03	Illegal data value	Data length error, data length beyond the Max. allowed value 125(Word) or 2000(Bit), modify the length
0x07	parity error	Check parity, baud rate, stop bit, and hardware connection status
0x09	CRC verification error	Slave response message CRC calculation error, check the working status of the slave
0x0E	Response message length error	Increase the receive character spacing

Note: The testing method for setting the Modbus ASCII slave mode of the RS485 interface is the same as the testing method for setting the slave mode of the Modbus RTU protocol. Only the working mode of the gateway needs to be changed to the corresponding Modbus ASCII slave mode.

# **5** Testing application in Siemens TIA V16

This chapter will use SIEMENS CPU 315-2 PN/DP as the PROFIBUS Controller and TIA as the configuration software to illustrate the configuration method of DPM01.

## 5.1 Modbus RTU Master Mode

1. Download the GSD folder of DPM01 from the official website and confirm that there are the following files in the folder. If not, please contact the supplier to request them.



DPM01V36.gsd

2. Open TIA V16 software, create a new project named DPM01-TEST, with no Chinese characters in the storage path. Click Create and then click on the project view in the bottom left corner.

Via Sie	mens						_ # X
							Totally Integrated Automation PORTAL
启	动			创建新项目			
		<b>*</b>	● 打开现有项目		项目名称: 路径:	DPM01-TEST C1Users1CCLIDesktopitest	
			🥚 创建新项目		版本:	V14 SP1 CCL	•
			● 移植项目		作者: 注释:		
		-					V
			● 欢迎光临				创建
	在线与诊断	1					
			● 已安装的软件				
			● 帮助				
			🕥 用户界面语言				
►	项目视图						ラ 英 🦘 🙂 💐 🖀 🛊 🔛

Via Sie	mens - C:\Users\C	CCL\Desktop\tes	t\DPM01-TEST\DPM01-TEST						_ # X
									Totally Integrated Automation PORTAL
启	动				新手上路				
	设备与网络	<b>*</b>	🌑 打开现有项目		项目:"DPM0	1-TEST" 已成功打开。	请选择下一	一步:	
	PLC		🔵 创建新项目		开始				
	PLC 编程	<b>A</b>	● 移植项目						
	运动控制 & 技术	*	● 关闭项目						
							<b>R</b>	组态设备	
	可视化		● 欢迎光临						
	在线与诊断	10	🥚 新手上路				Ŷ	创建 PLC 程序	
		-			┝	运动控制 & 技术		组态 工艺对象	
			● 已安装的软件				1	组态 HMI 画面	
			● 帮助						
			🕥 用户界面语言						
					4			打开项目视图	激活 Windows
					· · · · ·				转到"设置"以激活 Windows。
•	项目视图		已打开的项目:	C:\Users\CCL\Desk	top\test\DPM01-	TEST\DPM01-TEST			<b>41.10</b>



管理通用站描述文件					_	×
☐ 已安装的 GSD 页目中的	GSD					
源路径:    G:\Lingdian\LiaoL	.iang\20181115	i自主产品资料\	产品		$\Box_1$	
导入路径的内容						
☑文件	版本	语言	状态		信息	
drm01v36.gsd		默认	尚未安装			
2						
-						
<				3		>
				ř –		
			删除	安装	取消	

管理	通用站描述文件			×
安	装结果			
- <del></del>	war 消息			
0	安装已成功完成。			
				_
	保存日志	安装其它文件		关闭

管理通用站描述文目 已安装的 GSD		×
源路径: G:\	LingdianlLiaoLiang\20181115自主产品资料\产品	
导入路径的内容 ☑ 文件 ☑ dpm0	<b>井目录</b> 更新硬件目录 更新可能需要一些时间。	<u></u>
		取消
<	111	>
	朝除	安装 取消

4. Under Project Number Device DPMO1-TEST, click Add New Device, select CPU



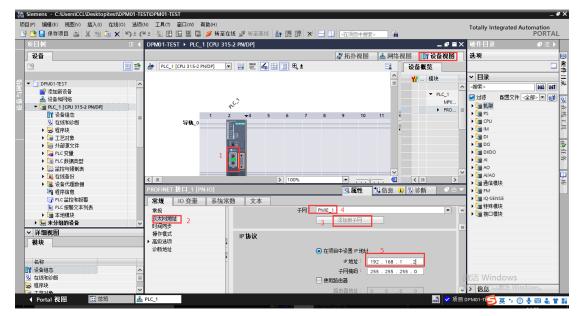
315-2 PN/DP for testing in the pop-up window, and click OK.

#### VA Siemens - C:\Users\CCL\Desktop\test\DPM01-TEST\DPM01-TEST N X Totally Integrated Automation PORTAL - ■■× 硬件目 ∎ 🛛 🕨 设备 📑 拓扑视图 🔥 网络视图 ₩ 设备视图 洗顶 東キ 🔐 PLC\_1 [CPU 315-2 PN/DP] 💌 🔛 💹 🕼 🖽 🛄 🍳 ± 🔲 🖻 设备概览 DPH01/TEST 为如前设备 法如前设备 公式和同场合 公式和同场合 公式和同场合 公式和同场合 公式外前心断 ○ 理乐块 ○ 理乐块 ○ 理乐块 ○ 可名外部的重估 ○ 可名称和 ○ 不会和 ^ ≡ ✓ 目录 🐈 ... 模块 Ť ini init 樹索 PLC\_1 MPI/DP ... PROFINE. di 建建 i 通 机架 i 通 机 i 通 CPU i 通 CPU i 通 IIA i 通 OI i 通 G i 低 i 通 M i 通 M i 通 OI i 通 G i 低 i ✔ 过滤 配置文件 <全部> ▼ 📑 ų, 6 7 8 9 10 11 1 5 导轨 融任务 3 1005 e 💷 16息 12诊断 🔍 属性 常規 IO 变量 系统常数 文本 ▶ 常規 ▶ MPI/DP 接口 [X1] ▶ PROFINET 接口 [X2] ∨ 详细视图 常規 模块 启动 循环 时钟存储器 名称: PLC\_1 名称 作者: 名称 計 设备组态 型 在线和诊断 型 程序块 注释 中断 诊断系统 > 信息 ◀ Portal 视图 A PLC 1 ..... ✓ 项目 DPM0\* (i) 🍨 🖼 🛔 🕇 👪

od-t Odot Automation System Co., Ltd

5. In the device view, select the network port of the PLC, set properties, add a new

subnet, and modify the IP address.



Select the MPI/DP interface of the PLC, set properties, select PROFIBUS interface type, and click to add a new subnet.

Siemens - C:\Users\CCL\Desktop\test\DPM01-TE	TTDPM01-TEST	_ # ×
项目(P) 编辑(E) 初图(V) 插入(I) 在线(O) 选项	9 工具(1) 富田(14) 幕助(H) 14 司 🔃 🛄 🔛 🧊 博筆在线 💋 特筆商紙 🏭 💽 膺 🗶 🖃 🔟 《在项目中授家》 🏔	Totally Integrated Automation PORTAL
项目树 □ ◀	DPM01-TEST → PLC_1 [CPU 315-2 PN/DP]	< 硬件目录 ■ □ ▶
设备	🦉 拓扑视图 👗 网络视图 📑 设备视图	选项
		·····································
		▼ 目录
篮 ▼ 🗋 DPM01-TEST		▲ · · · · · · · · · · · · · · · · · · ·
▲ ● 添加新设备	▼ PIC 1	
····································	State MP/	N 100 40 200
·····································		
및 在线和诊断		▶ 🛄 CPU
▶ → 程序块		· • • • • • • • • • • • • • • • • • • •
→ ↓ ↓ IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII		▶ (jiii) DI ▶ (jiii) DO
▶ 圖 外部源文件 ▶ □ PLC変量		
▶ <b>□</b> PLC 数据类型		
▶ □□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□		• • • • • • • • • • • • • • • • • • •
▶ 2 在线备份	< III > 100% •	▲ Al/AO ▲ 通信模块
▶ 28. 设备代理数据 29. 程序信息	MPI/DP 接口_1 [Module] 到信息 3 型诊断 ■ □	→ m EM
File 程序信息 GP PLC 监控和报警	■ 10 交量 系统常数 文本	IQ-SENSE
■ PLC 报警文本列表	<b>#</b> ig	▶ 🛅 特殊模块
▶ 1 本地模块	PROFIBUS 地址 2	▲ ▶ 🛅 接口模块
▶ 🔙 未分组的设备 🗸 🗸	操作模式 接口连接到	
✓ 详细视图	时间同步	
模块	SYNC/FREEZE 子网: PROFIBUS_1 4 V	
	1980年1911 添加新子网	
名称	参数	
1) 设备组态         へ           Q 在线和诊断         =	20 WX	数活 Windows
	接口类型 PROFIBUS <sup>3</sup>	
도 포함하여 🗠 🗠		
✓ Portal 视图	PLC_1	I DPM01-T 🧭 A 🤧 🙂 🔮 🖀 🖀 🖀 🔛

For the S7-300 series PLC, when using the gateway, it is necessary to modify the size of the process image input and output area. The default value is 128. Increase this value according to the customer's own needs. Complete the simple setup of the PLC.

Siemens - C:\Users\CCL\Desktop	\test\DPM01-TEST\DPM01-TEST						_ • ×
项目(P) 编辑(E) 视图(V) 插入()						Totally Integrated Automatic	on
📑 📑 🖬 保存项目 🔳 🐰 🤨 🗊	ĨX ♡±@± Ĩ 🛙 🖬 🖬	🛚 📮 🚿 转至在线 🖉 转至离线 🛔	🖪 🖪 🗶 😑 🛄 🚈 项目	中搜索> 🙀		POF	RTAL
项目树 □ ◀	DPM01-TEST → 设备和网络					硬件目录 🔹	
设备			🛃 拓扑视图	🚠 网络视图 📑	<b>设备视图</b>	选项	
E E E E E E E E E E E E E E E E E E E	💦 网络 🔡 连接 🕻	📑 网络概览	连接 IO 通信 VP	N 远程控制			2 魚
	♀ 主站系统: PLC_1.DF	P-Mastersystem (1) 🛆 🔤 🧛 设备		子网地址	子网	✓ 目录	- I
🖉 🔻 🛅 DPM01-TEST 📃 🔨				T200M station			int 💥
🚔 📑 添加新设备		> PL		i-2 PN/DP	L		
📩 📥 设备和网络	PLC_1 CPU 315-2 PN/DP	· · · GSD		vice			1 📑 👿
🙁 👻 🚺 PLC_1 [CPU 315-2	Cr0515/211001	- si	ave_2 DP-Gate	way V3.6 5		▶ 1 控制器	在线
■ 设备组态	TT	GSD -	levice_1 GSD dev	vice		▶ 🛅 HMI	1
2 在线和诊断 =		si	opor-pi	PM01 V3.6 3		▶ 🛅 PC 系统 ▶ 🛅 驱动器和起动器	— 「 工 具
▶ 2 程序块		PLC_1.DP-Master				▶ 1 网络组件	
▶ □ LI 2015 min/4	PN/IE_1	~				▶ 1 检测和监视	心任务
<ul> <li>         ・          ・         ・</li></ul>	< 11	> 1	ш			▶ 🛄 分布式 I/O	- 1
▶ Ca PLC 数据类型	PLC 1 [CPU 315-2 PN/DP]		风屋性	1.信息 🔒 🗓 诊断		▶ <u>→</u> 供电与配电	1
▼ □ 监控与强制表		alcold.				▼ 1 現场设备	
◎ 金加新监	<b>常規</b> 10 变量 系统	常数 文本				▶ 📶 AS 接口	
	▶ 常规	循环				• m Commanding and signaling dev	vices 🛬
[] 强制表	▶ MPI/DP 接口 [×1]	D471.				SIPLUS HCS	
▶ 1 在线备份	▶ PROFINET接口 [X2]					▼ 🛄 其它现场设备	
▶ 2 设备代理数据	启动	循环周期监视时间:	50 ms			▶ 🛅 其它以太网设备	
29 程序信息	循环	由通信引起的循环负荷:	20 %			PROFINETIO	
□ PLC 监控和报警	时钟存储器	h F	OCM通信优先			PROFIBUS DP	
■ PLC 报警文本	<ul> <li>中断 诊断系统</li> </ul>	· 过程映像输入区域的大小:	2000			Dim PLC	
<ul> <li>董 本地模块</li> </ul>	©町系現 ▶ 系統诊断					▶ 🛅 编码器	
▶ 🛅 分布式 I/O	时间	· 过程映像输出区域的大小:				▶ 🛄 标识系统	
🕨 🔛 未分组的设备	→ Web 服务器	发生 I/O 访问错误时调用 OB85:	无 OB85 调用		•	▶ 🛅 常规	
▶ 📴 未分配的设备	保持性存储器					▶ 1 驱动器	
▶ → → → → → → → → → → → → → → → → → → →	(保护					▶ <b>□</b>	
< III >					Í	<	>
> 详细视图	地址总览					🔸 信息 🛛 🔁 英 🤫 🙂 🦉	the state of the s
✓ Portal 视图 至总缆	🖞 👗 设备和网络 🐰	监控表_1			🔜 🖌 🕅	目 DPM01-TEST 已成功保存。	

6. Click to enter the network view, find the newly installed DPM01 in the hardware directory on the right, and drag it to the network view.

V14	Siemens - C:\Users\CCL\Desktop\test\DP	и01-TE	ST\DPM01-TEST						- •	' X
	页目(P) 编辑(E) 视图(V) 插入(I) 在线(O)							Totally Integrated Autor	nation	
E	🍄 📑 🔚 保存项目 🔳 🐰 🗎 角 🗙 🕨	<mark>າ</mark> ະ ເ		在线 🖉 转至离线 🔐 🛄 🦿 🦿 🕻	▲ (本项目中搜索)	- 54			PORTAL	
	项目树		DPM01-TEST → 设备和网络				_ <b>=</b> =×	硬件目录		
	设备				🚽 拓扑视图	📩 网络视图	11 设备视图	选项		
		•	💦 网络 🔡 连接 HMI 连接	🖂 🖾 📰 🔍 ±			络概覧 ▲▶			奥华
						<u> </u>	2 设备	▼ 目录		Ē
资	▼ DPM01-TEST	^					<ul> <li>\$7300/ET200M</li> </ul>	<捜索>	ini ini	×
ΪĒ.	■ 添加新设备		PLC 1	Slave 1			PLC_1	☑ 过滤 配置文件 <全部		
岫	📥 设备和网络		CPU 315-2 PN/DP	ODOT-DPM01 V			<ul> <li>GSD device_1</li> </ul>	■ 10.05 目(五文)+ <u>*主日</u> 目前 HMI		8
58	▼ □ PLC_1 [CPU 315-2 PN/DP] □ 设备组态			未分配		-	Slave_1	PC 系统		在线
	↓ (c) 首组心 以 在线和诊断	=				<u>•</u>		1 駅訪器和記訪器		2
								M 网络组件		Ť
	<ul> <li>▶ □ 工艺对象</li> </ul>		PN/IE_1			-		👔 检测和监视		
	▶ 婦 外部源文件		PROFIBUS_1					分布式 I/O		۵.
	▶ 🔚 PLC 変量					_		🛅 供电与配电		前任务
	▶ <a>Image: PLC 数据类型</a>							📠 现场设备		*
	▶ □□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□					~		📑 其它现场设备		
	▶ 🙀 在线备份		< II	> 100%				▶ 🛅 其它以太网设备		ЫŅ
	▶ 🖳 设备代理数据		GSD device 1 [Device]	[1]		16息 3 2		PROFINET IO     PROFIBUS DP		10
	四 程序信息				34 /鳴1主	PIC AUT	12 IBT	PROFIBUS DP     PLC	=	
	□ PLC 监控和报警		常規 IO 变量 系统:	常数 文本				→ 1 编码器		
	<ul> <li>PLC 报警文本列表</li> <li>加本地模块</li> </ul>		常規	常規				▶ □ 标识系统		
	<ul> <li>▶ → 未分组的设备</li> </ul>			10 A				▶ 🛅 常规		
	✓ 详细视图							▶ 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
				名称: GSD	-			▼ 🛅 网关		
	模块			f 作者: CCL				🗸 🖬 ODOT Co.,Ltd.		
				注释:			~			
	名称			F				DOT-DPM	ð1.	
	11 设备组态	^						SIEMENS AG	~	
	Q 在线和诊断	=					✓ 3	C Windows	>	
	■ 程序块	~						り 信息 以激活 Window	VS.	
	◆ Portal 视图 置息览	4	设备和网络					DPM01-T 🧐 🎘 , 🙂 🍨		
		000						<b>→</b> ₩ <sup>•</sup> , <b></b> ♥		Ξŭ

7. Select the gateway and assign a master station to it. Select the PROFIBUS-DP

interface and modify the PROFIBUS parameters.

TA Sigmons Collig

	(生 記 🔃 🗳 🦉 装室在线 🖉 装至离线 🏭 📑 👘 👘 👘	Totally Integrated Automation PORT	AL
项目树 □ ◀	DPM01-TEST > 设备和网络	-■■★ 硬件目录 ■ □	۱.
设备	🗗 拓扑视图 🔜 网络视图 📑 设备	A视图 选项	
🖬 🕅 🖬 🖬	■ 网络银行 法接 HM 连接		<u>奥</u> 条
	▲ 🖞 设备	▼ 目录	- #
🐲 💌 DPM01-TEST 📃 🔨		0/ET200M < / / / / / / / / / / / / / / / / /	*
🏝 📑 添加新设备			
🚠 设备和网络	PLC_I SI8VE_I ODT_DPL01 V = OCO	- 1228 自2五又1+ <主部> ● 世	- 0
🕺 👻 📑 PLC_1 [CPU 315-2 PN/DP]		ave_1 Bac Tit	在线
11 设备组态 =		ave_1 1 PC 系统	- 18
☑ 在线和诊断	FCC_I.WFIDF 接口_I	□ 92403841324038 □ 网络组件	19
<ul> <li>▶ 😓 程序块</li> <li>▶ 🕞 工艺对象</li> </ul>	PN/IE_1	□ 检测和监视	
<ul> <li>▶ → 小部源文件</li> </ul>	PROFIBUS_1	□□ 分布式 //O	副任务
▶ □ PLC 変量		☐ 供电与配电	
▶ C PLC 数据类型		1 现场设备	*
<ul> <li>▶ □ 监控与强制表</li> </ul>		🚺 其它现场设备	
▶ 1 在线备份		▶ 🛄 其它以太网设备	- M
▶ III 设备代理数据	< III > 100% •	PROFINET IO	1
四 程序信息	図属性 11 信息 🔒 12 诊断	📑 🚍 👻 👻 🧰 PROFIBUS DP	=
□ PLC 监控和报警	常规	PLC	
■ PLC 报警文本列表		→ 🛅 编码器	
<ul> <li>Ima 本地模块</li> </ul>		▶ 🛄 标识系统	
🕨 📜 未分组的设备 🛛 🗠 🗠	无可用"属性"。	▶ 🛄 常規	
✓ 详细视图	目前未显示任何"属性"。可能未选择对象,或者所选对象没有可显示的属性。	▶ <mark>通</mark> 驱动器	
模块		▼ □	
		ODOT C6.,Ltd.     ODOT-DPM01 V3.6	
		ODOT-DPM01 V3:6	
名称		SIEMENS AG	
1 设备组态		-	~
<ul> <li>№ 在线和诊断</li> <li>■ 程序块</li> </ul>		游行 Windows	
■ 程序状 ■ 工芸計会		キショ 宿息 以激活 Windows。	
	设备和网络	✓ 项目 DPM01-TEST 已打开。	

av

The default PROFIBUS address is 3. Check if the gateway hardware ID is dialed to 3.

(The ID filled in here should be consistent with the actual hardware dialing)

Siemens - ChoseisiccLibesktopitestid-Mot-TE		
项目(P) 编辑(E) 视图(V) 插入(I) 在线(O) 选项		Totally Integrated Automation
📑 📑 🔜 保存项目 🚢 🐰 🤖 🗀 🗙 🍤 ± 🤇	😆 🔂 🛄 🔛 📓 💕 接至在线 🖉 接至高线 🏭 💷 🏋 🚍 🛄 《在项目中搜索》 🗌	PORTAL
项目树 🛛 🗸	DPM01-TEST > 设备和网络 _ I = I = X	硬件目录 ■ □ ▶
设备	■ 拓扑视图 晶 网络视图 」]] 设备视图	选项
	R 网络 🖞 连接 HM 连接 🔽 🐨 🐨 🐨 🐨 🕄 🖽 🛄 🔍 ±	-
		- <u>-</u> *
篮 ▼ DPM01-TEST		▼ 目录 単
▲ 5 Montes		· 《搜索> · · · · · · · · · · · · · · · · · · ·
	PLC_1 Slave 1	☑ 过滤 配置文件 <全部> ▼ 💓 🕠
PLC_1 [CPU 315-2 PN/DP]		🔄 HMI 🦳 🗛
	PIC_1	PC 系统
L 在线和诊断	TX RX	🚂 驱动器和起动器
▶ 😓 程序块	PN/IE_1	一 网络组件 滞
<ul> <li>・ 🐺 工艺対象</li> </ul>	PLC_1.DP-Mastersystem (1)	检测和监视
<ul> <li></li></ul>	501-	□ 分布式 I/O □ 供电与配电
▶ 🔁 PLC 变量		□ 分布式 I/O  □ 供电与面电 □ 现场设备   ※
<ul> <li>▶ [ig] PLC 数据类型</li> <li>▶ [ig] 监控与强制表</li> </ul>	2 <b>2 2 1 6</b>	1 其它现场设备
<ul> <li>         ・ 国語         ・         ・         ・</li></ul>	- 08F.	
▶ ■ 让然首历 ▶ ■ 设备代理数据	< III > 100%	→ 1 其它以太网设备 → 1 PROFINETIO
四 程序信息	Slave_1 [PB1] 3 展性 1 8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	▼ 📴 PROFIBUS DP
□ PLC 监控和报警	常規 10 变量 系统常数 文本 X1	▶ 🛅 PLC
PLC 振警文本列表	→ 常规 PROFIBUS 地址 へ	▶ 🛅 编码器
<ul> <li> <u> </u></li></ul>	FOR PERIOD AND A STATE OF A STATE	▶ 🛅 标识系统
・ 1 分布式 1/0 ~		▶ 🛅 常规
✓ 详细视图	10.54t-024t	▶ 🛅 驱动器
模块	+六讲制参約分配 .	▼ 1 (1) (1) (1) (1) (1) (1) (1) (1) (1) (
	看门狗 添加新子网	ODOT Co.,Ltd.     ODOT-DPM01 V3.6
	SYNC/FREEZE	ODOT-DPM01 V3.6
名称	诊断地址 参数	SIEMENS AG
☐ 设备组态 ▲ 以 在线和诊断 =		When the state of
№ 社球和珍町 =	地址 3	K Windows
● 性形状 ■ 工事計算	最高地址: 126 🗸 🗸	》信息"以激活 Windows。
✓ Portal 视图 医总炎 晶	យ 谷和网络 🔜 😪 项目	DPM01-TEST 已打开。
le	₩ I 0 0 0 0 1 <sup>1</sup> (1999) (10 0 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0	17 10 35

8. Click on the specific parameters of the gateway device and set the gateway MODBUS parameters (which must match the serial port parameters of the RS485 device connected to the user). If the customer cannot determine the serial port parameters, it is recommended that the customer use a USB to 485 converter and use MODBUS POLL software to directly read 485 device data through the serial port. MODBUS testing software can be downloaded from the official website or consulted with technical support.

页目树 □    DPM01-TEST > 设备和网络				< 硬件目录	
设备		■ 拓扑视图 → 网络	A 视图 👖 设备视图	选项	2
			1		
					-
A heater and the	Claure 1	•			
▲ 设备和网络 CPU 315-2 PN/DP	ODOT-DPM01 V				Ð
PLC_1 [CPU 315-2 P					^
		SSD device 2	GSD device		
			DB Cataurau 1/2 6		
	· · · · · · · · ·				
		9.属性 <u>1</u> 信息	🔒 🗓 诊断 👘 👘 👘		
	常数 文本				
	设备特定参数				
			Ĭ	▼ 🕞 其它现场设备	
<ul> <li>         ・ 「</li></ul>	Modbur Mode 工作模式:	Master PTI Mode 文法PTI 博士			
12011002					
- recimitivite	Parity校验位:	None 无校验	•		=
三 1 2 报曹文本列政	Data_Bit 救据位:		<b>T</b>		
	◆ Stop_Bit 停止位:	1 bit			
	Send Delay 报文发送间隔:	20 ms			
详细视图		3.5t			
				✓ Im Profibus-Gateway	
名称				▼ DP-Gate way V3.6	
	Data Out Mode 数据输出模式:	Poll Mode 轮词模式	•	DP-Gateway V3.6	
	Slave ID 从站地址:	1		激評國科MENSARys	-
	Slave Respond Delay 从站响应				11

Specific meanings of parameters:

## Modbus Mode工作模式:

Master RTU Mode 主站RTU模式。

## Baudrate波特率:

Serial baud rate, optional range 1200~115200bps, default 9600bps.

## Parity校验位:

You can choose no parity, odd parity, or even parity, with no parity by default.

## Data\_Bit数据位:

Fixed to 8-bit data.

## Stop\_Bit停止位:

1 or 2 stop bits are optional, default to 1 stop bit.

## Send Delay报文发送间隔:

The interval time for sending Modbus commands (the delay from receiving the response message from the slave station to sending the next command) is optional from 0ms to 5000ms, with a default of 20ms.

#### Receive Delay接收字符间隔:

The frame interval detection time when receiving a message is optional from 1.5t to 200t, with a default of 3.5t (t is the time for transmitting a single character, which is related to the baud rate).

Slave Timeout从站响应超时:

The time it takes for the slave station to respond after the master station sends a command. 10ms~5000ms optional, default to 100ms.

## Timeout Mode超时处理方式:

After reading data from the station timeout, the data processing method can be selected as "data reset" or "data hold". The default "data hold" mode is only valid for Modbus read commands.

## Data Out Mode数据输出模式:

You can choose between "Polling Mode" or "Event Triggering" mode, in which Modbus periodically sends write messages. In the "event triggered" mode, write commands are only sent when the Modbus output data changes. The default is "polling mode", which is only valid for Modbus write commands.

## Slave ID:

This parameter is invalid for the Master mode.

## Slave Respond Delay从站响应延迟:

This parameter is invalid for the Master mode.

9. Double click on the gateway to enter the gateway MODBUS master mode data read and write command configuration.

The Master station module starts with M: and can only be used in Modbus Master station mode.

Note: When the MODBUS side slave equipment needs to use function code 05 (to write a single coil), please use M: Write singer bit (0xxxx). When the MODBUS side slave equipment needs to use function code 06 (to write a single register), please use M: Write singer word (4xxxx).

10. In order to facilitate monitoring of the communication status of 485 devices on site, a diagnostic module can be added. The master station diagnostic module is a selectable module.

页目树 🗉	DPM01	1-TEST → 未分组的设备 →	Slave 1						_ # =	× 硬	件目录	T 10 1
设备					■ 拓扑视图	1	网络视图		备视图	选		
	• d+ s		•	) n. dr. kraite	M THIT MAD	3   000	P1-A 1/683					-
9 🔳 🗉	a ar 🕞	lave_1 [ODOT-DPM01 V3.6]	• 🖬	设备概览								-
		5 ave )		1 模块	机架	插槽	1 地址	Q 地址	类型	~	目录	
	^	ela.		Slave_1	0	0	2042*		ODO	^ 4	8索>	init ini
■ 添加新设备 ▲ 设备和网络					0	1				=	过滤 配置文件 <全部>	- 0
★ 10 金石県内治 ● 10 C 1 [CPU 315-2 P			•		0	2					M: Write 3 Words (4xxxx)	
◆ L PLC_1 [CP0 315-2 P	=				0	3					M: Write 4 Words (4xxxx)	-
2 在线和诊断	-		1		0	4					M: Write 5 Words (4xxx)	
<ul> <li>■ 程序块</li> </ul>					0	5					M: Write 6 Words (4xxx)	
<ul> <li>▶ → 工艺対象</li> </ul>					0	6	_		_	- 1	M: Write 7 Words (4xxx)	
<ul> <li>         ・</li></ul>		-	~		0	7				- 1	M: Write 8 Words (4xxx)	
▶ 🔚 PLC 变量	< III			<	0	8			>	Ť	M: Write 9 Words (4xxx)	
▶ Co PLC 数据类型	N [ m]	· · · · · · · · · · · · · · · · · · ·				( <b>1</b> ) ) )					M: Write 10 Words (4xxxx)	
▶ 🔜 监控与强制表					🧟 属性	自信	息 追 💈	诊断			M: Write 11 Words (4xxxx)	
▶ 🙀 在线备份	常規										M: Write 12 Words (4xxx)	
▶ 温 设备代理数据	P										M: Write 13 Words (4xxxx)	
24 程序信息											M: Write 14 Words (4xxxx)	-
►PLC 监控和报警		无可用"属性"。									M: Write 15 Words (4xxxx)	
E PLC 报警文本列表		日前未显示任何"屋性"。可能:	k洗择对象,或	者所选对象没有可显示的属性。							M: Write 16 Words (4xxxx)	
- · · · · · · · · · · · · · · · · · · ·	~	PRESS OF A PROPERTY OF A PROPE	1021473261	MUNICIPALITY OF HIGH TRANSPORTED							M: Write Single Bit (0xxxx)	
											M: Write Single Word (4xxxx)	_
详细视图	-										📕 M: Module Status Input(8 CH	0
纤细状图	_										📗 M: Module Status Input(16 C	.H)
											M: Module Status Input(24 C	.H)
											M: Module Status Input(32 C	.H)
名称	-										M: Module Status Input(40 C	.H)
10100											M: Module Err_Code Input(1	CH)
	-										Stor input a pic (avera)	
											S: DP Input 16 Bits (0yyyy)	

The main station diagnostic module is divided into two types: "Slot Status Input" and "Slot Error Code Input Module ErrCode Input". Two types of modules can only be plugged in at most one each. And insert it into the slot at the front position.

The status module can monitor the working status of each data slot. When a data slot fails, the corresponding status bit is set to 1, and it automatically resets to zero after the fault is restored.

When a data slot malfunctions, the error code module can display the serial number and specific error code of the erroneous data slot. Users can determine the cause of the malfunction based on the error code and take corresponding adjustment methods. Please refer to the "Error Code Table" for a detailed description.

The error code module can only display the fault status of one slot. When multiple slots fail simultaneously, the error code module will display the fault status of the slot with the lowest serial number in the error slot. The detailed error codes are shown in the table below

Error Code	Fault description	Troubleshooting method
0x00	Working properly	N/A
0x01	Illegal function code	The device does not support the current function code, please refer to the slave manual to select the corresponding function code module
0x02	Illegal data address	If the device data exceeds its address range, refer to the slave manual to modify the data starting address or data length
0x03	Illegal data value	Data length error, data length beyond the Max. allowed value 125(Word) or 2000(Bit), modify the length
0x04	Slave device error	Check the status of the slave device
0x06	Slave device busy	Check the status of the slave device
0x07	parity error	Check parity, baud rate, stop bit, and hardware connection status
0x09	CRC verification error	Slave response message CRC calculation error, check the working status of the slave
0x0B	Slave device response timeout	Increase the timeout time, check the hardware connection status, and view communication parameter settings such as baud rate
0x0E	Response message length error	Increase the receive character spacing
0x0F	Write slave device response error	Check the hardware connection state

## Modbus Master Error Code Table

11. Add input status module, error code module, read MODBUS Zone 0/Zone 1/Zone 3/Zone 4 data, and write Zone 0/Zone 4 data. The default parameter for all commands is slave ID=1. The starting address is 0. Therefore, for the actual 485 equipment on site, corresponding read and write commands should be selected, and the slave station ID and start address should be modified.

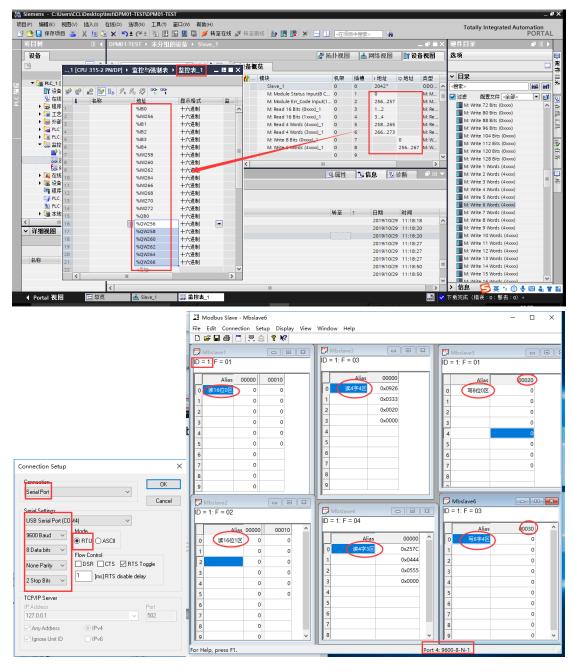
This document provides a simple demonstration. The first four commands use default values, changing the starting address of the fifth command to 20 and the starting address of the sixth command to 30. Simulate on-site 485 devices using Modbus Slave software.

反日树 💷 🖣	DPM01-TEST → 未分组的设备 → Slave_1			_ # =×	硬件目录 🔹 🗉 🗉
设备		🚽 拓扑视	图 📩 网络视图	🛯 设备视图	选项
ž 📃 🖻	🚮 Slave_1 [ODOT-DPM01 V3.6] 💌 🔭 📑	设备概览			
		₩ 模块	机架 插槽 1 地	址 0地址	▼ 目录
DPM01-TEST	518 <sup>12</sup>	Slave 1	0 0 204		
💣 添加薪设备		M: Module Status Input(8 CH) 1	0 1 0	· · · ·	
📥 设备和网络		M: Module Err Code Input(1 CH) 1			☑ 过滤 配置文件 <全部>   ■
▼ 📑 PLC_1 [CPU 315-2 P		M: Read 16 Bits (0xxxx) 1	0 3 1		M: Read 88 Bits (0xxxx)
📝 设备组态 📃		WE READ TO DIES (00000) 1	0 4 3		M: Read 96 Bits (0xxxx)
2 在线和诊断		M: Read 4 Words (4xxxx) 1			M: Read 104 Bits (0xxxx)
▶ 🛃 程序块		M: Read 4 Words (3xxxx) 1			M: Read 112 Bits (0xxxx)
▶ 3 1 2 2 3 2 3 2 3 2 3 2 3 2 3 2 3 2 3 2		M: Write 8 Bits (0x00x) 1	0 7	0	M: Read 120 Bits (0xxxx)
▶ 副 外部源文件		M: Write 6 Words (4xxxx) 1	0 8	256267	M: Read 128 Bits (0xxxx)
▶ 🔚 PLC 变量		in the others (they_)	0 9	200207	M: Read 8 Bits (1xxxx)
▶ 📴 PLC 数据类型	K III >		0 10	~	M: Read 16 Bits (1xxxx)
		< 11		>	M: Read 24 Bits (1xxxx)
▶ ဩ 在线备份	M: Read 16 Bits (0xxxx) 1 [Module]	🧟 属性	1 信息 🔒 💟	ふ断 コロマ	M: Read 32 Bits (1xxxx)
▶ 🔛 设备代理数据		1	131103 913		M: Read 40 Bits (1xxxx)
22 程序信息	常規 10 变量 系统常数 文本				M: Read 48 Bits (1xxxx)
	▶ 常規 设备特定参数				M: Read 56 Bits (1xxxx)
PLC 报警文本列表	<b>该省行</b> 定節数	·			M: Read 64 Bits (1xxxx)
▶ 1 本地模块 ~	十六进制参数分配				M: Read 72 Bits (1xxxx)
	1/0 地址	Slave ID 从站号: 1			M: Read 80 Bits (1xxxx)
详细视图	- Star	t Address 記始地址: 0			M: Read 88 Bits (1xxxx)
		Bit Number 位个教: 16	_		M: Read 96 Bits (1xxxx)
		bic number 1 <u>w</u> 1 gg.			M: Read 104 Bits (1xxxx)
	•				M: Read 112 Bits (1xxxx)
名称					M: Read 120 Bits (1xxxx)
					M: Read 128 Bits (1xxxx)
					M: Read 1 Words (4xxxx)

12. After setting up, save, compile, and download the project.

V14	Siemens - C:\Users\CCL\Desktop\	test\DPM01-TEST\DPM01-TEST									- 7	×
项	目(P) 编辑(E) 视图(V) 插入(I)	在线(O) 送项(N) 工具(T) 窗口(W)	扩展的下载到设备			_				Automatio		
1	🛉 🖪 保存项目 📑 🐰 🤨 🕻	🖹 🗙 崎 🖞 🤃 🕄 🗒 🖫 😭	步展的下稿到反面							tomatio POR	TAL	
	项目树 🛛 🗸	DPM01-TEST → 设备和网络		组态访问节点属于 "PL(	U1"							-
		DPM01-TEST V 反由和网络		设备	设备类型	插槽	类型	地址	子网			
	设备			PLC_1	CPU 315-2 PN/DP	2 X2	PN/IE	192.168.1.2	PN/IE_1		E	
	🖻 🔲 🖻	N 网络 🔡 连接 HM 连接			CPU 315-2 PN/DP	2 X1	PROFIBUS	2	PROFIBUS_1			2
												8
统	DPM01-TEST	PLC_1										ź.
X		CPU 315-2 PN/DP								ini i		
ц Ц	📥 设备和网络				PG/PC 接口的	**刑:	PN/IE		•	-	<b>I</b>	2
1	▼ 📺 PLC_1 [CPU 315-2				PG/PC		_					ŧ
	📑 🔐 设备组态	P						e FE Family Controller			2	1
	☑ 在线和诊断	PN/IE_1			接口/子网的		PN/IE_1		•			리
	▶ 🔜 程序块				第一个	- 阿关:			- 💎 👻		- 1	
	<ul> <li>基 工艺对象</li> </ul>											5
	▶ 圖 外部源文件			法择目标设备:				显示所有兼容的设备	•			心化务
	▶ 🔁 PLC 变量			- 過名 - 過名	设备未刑		ak mi		目标设备			5
	<ul> <li>DEC 数据类型</li> <li>国 监控与强制表</li> </ul>			CPU 315-2 PN/DP	CPU 315-2 PN/DP			192.168.1.1	日 怀 吱 笛 CPU 315-2 PN/DP			
	▶ 🙀 在线备份			CF0 515-2 FWDF	CF0 515-2 FW/DF	PN/IE		访问地址				
	▶ 🔛 设备代理数据		81					en e			=	-
	2 程序信息									V3.6		
	→ PLC 监控和报警									401 V3.6		
	PLC 报警文本	<	□ 闪烁 LED							У		
	▶ 1 本地模块										~	
	<								开始搜索(S)			
	✓ 详细视图	常规 🗓 交叉引用 编译							7130132# (2/		<u>^</u>	
	模块	🔂 🛕 🚺 显示所有消息	在线状态信息:					🔲 仅显示错误消息		d•t	-	
		编译完成(错误:0;警告:0)	1 扫描已结束。1 台可设	访问的设备中找到1台兼	容的设备。				^		-	
	das Tilas	! 路径	よう 正在恢复设备信息…						=			
	名称	✓ ▼ 程序块	✓ 扫描和信息恢复已完成	成。								
	<ul> <li></li></ul>	Main (OB1)							~	/3.6		
	※ 住线和诊断 ₩ 建应伸	•										
	< II >	<						下劇	间 🔁 莱 ,	🙂 🍨 📟 🕯	. * 1	
	🖣 Portal 视图 🚟 总缆	🗼 设备和网络										

13. After downloading, open the monitoring table, fill in the command address corresponding to the gateway, open Modbus Slave software, simulate the slave station, and set the serial port parameters to 9600/N/8/1.



14. Turn the TIA project online, click the online monitoring button on the monitoring table, and you can check that the PLC collected data is consistent with the 485 serial port side data. When writing data, fill in the modified value column with the value to

be written, click *I* Immediately modify the ownership system at once, and the

485 side will receive data issued by the PLC. At this point, the gateway is in a normal working state, and both the input status address value and the error code address value display 0.

页目树	[	■	▶ 未分组的设备	→ Slave_1		1						
讥炙	7					1	<b>"</b> # \$	6扑视图	1 📥	网络视图	₩ 设备	
	EST → PLC_1 [CPL	J 315-2 PN/DP] 🕨 법	监控与强制表 🕨 🗄	监控表_1 🗕	∎ <b>■</b> ×	概览			- Innn			
	12 13 16 91 9	3 2 m m				模块		机架	插槽	1地址	Q地址	类型
	地址	显示格式	监视值	修改值	4	Slave_	i ule Status Input(8 C	0	0	2042* 0		ODC M: N
1	%IBO	二进制	2#0000_0000	1.00 Process			ule Err_Code Input(8 C		2	256257		M: N
2	%IW256	十六进制	16#0000				d 16 Bits (0xxxx)_1	0	3	12		M: R
3	%IB1	二进制	2#1100_1111				d 16 Bits (1xxxx)_1	0	4	34		M: R
4	%IB2	二进制	2#0000_0000			M: Rea	d 4 Words (4xxxx)_1	0	5	260267		M: R
5	%IB3	二进制	2#0000_0111			M: Rea	d 4 Words (3xxxx)_1	0	6	268275		M: R
6	%IB4	二进制	2#1100_0000			M: Write	e 8 Bits (0xxxx)_1	0	7		0	M: V
7	%IW258	十六进制	16#0000			M: Write	e 6 Words (4xxxx)_1	0	8		260271	M: V
8	%IW260	十六进制	16#1234					0	9			
9	%IW262	十六进制	16#0333					0	10			
10	%IW264	十六进制	16#0020					0	11			
11 12	%IW266	十六进制	16#4567				1111	^	10			
12	%IW268 %IW270	十六进制 十六进制	16#0987 16#0444				1	◙属性	包信		诊断	
14	%IW272	十六进制	16#0555						I			
15	%Q80	二进制	2#0001_1101	2#0001_1101								
16	%QW256	十六进制	16#0222	16#0222								
17	%QW258	十六进制	16#0333	16#0333								
18	%QW260	十六进制	16#0444	16#0444				转至	?	日期	时间	
19	%QW262	十六进制	16#0555	16#0555						2019/10/2	9 11:58:3	8
20	%QW264	十六进制	16#0666	16#0666						2019/10/2	9 11:58:5	1
	%QW266	十六进制	16#6666	16#6666							9 12:02:5	
21	%QW266 III <添加>	十六进制	16#6666						?	2019/10/2	9 12:02:5	3
21		十六进制	16#6666						?	2019/10/2 2019/10/2	9 12:02:5 9 12:02:5	3 3
21			16#6666						?	2019/10/2 2019/10/2	9 12:02:5	3 3
21 22		十六进制	16#6666						?	2019/10/2 2019/10/2	9 12:02:5 9 12:02:5	3 3
21			16#6666						?	2019/10/2 2019/10/2	9 12:02:5 9 12:02:5	3 3
21	■ <添加>	III • •	16#6666						?	2019/10/2 2019/10/2 2019/10/2	9 12:02:5 9 12:02:5 9 13:12:0	3 3
21	III →添加>	III ave - Mbslave1		16#6666		111			?	2019/10/2 2019/10/2	9 12:02:5 9 12:02:5 9 13:12:0	3 3
21	III 《添加》	III ave - Mbslave1 nnection Setup Dis	play View Windo	16#6666		III			?	2019/10/2 2019/10/2 2019/10/2	9 12:02:5 9 12:02:5 9 13:12:0	3 3
22	III →添加>	III ave - Mbslave1 nnection Setup Dis	play View Windo	16#6666					?	2019/10/2 2019/10/2 2019/10/2	9 12:02:5 9 12:02:5 9 13:12:0	3 3
21	II →添加> A Modbus Sla File Edit Cor □ ☞ II ●	ave - Mbslave1 nnection Setup Dis	splay View Windo	16#6666			Marlaun 5		?	2019/10/2 2019/10/2 2019/10/2	9 12:02:5 9 12:02:5 9 13:12:0	3 3
21	■ 《添加> A Modbus Sla File Edit Cor □ ☞ ■ ●	ave - Mbslave1 nnection Setup Dis	play View Winda ?	16#6666 pw Help			Mbslave5		-	2019/10/2 2019/10/2 2019/10/2	9 12:02:5 9 12:02:5 9 13:12:0	3 3
21	II →添加> A Modbus Sla File Edit Cor □ ☞ II ●	ave - Mbslave1 nnection Setup Dis	play View Winda ?	16#6666			D = 1: F = 01		-	2019/10/2 2019/10/2 2019/10/2	9 12:02:5 9 12:02:5 9 13:12:0	3 3
21	■ <添加> III <添加> File Edit Cor □ ☞ ■ ● ID = 1; F = 01 ID = 1; F = 01	ave - Mbslave1 Innection Setup Dis	play View Windo	16#6666 pw Help Mbslave3 - 1: F = 03		n X	ID = 1: F = 01		-	2019/10/2 2019/10/2 2019/10/2	9 12:02:5 9 12:02:5 9 13:12:0	3 3
21	■ 《茶加> All Modbus Sla File Edit Cor □ ☞ ● ● □ = 1: F = 01 Alian	ave - Mbslave1 anection Setup Dis	splay View Windo	16#6666 w Help Mbslave3 = 1: F = 03 Alias	>		ID = 1: F = 01	ias	-	2019/10/2 2019/10/2 2019/10/2 2019/10/2	9 12:02:5 9 12:02:5 9 13:12:0	3 3
22	■ <添加> III <添加> File Edit Cor □ ☞ ■ ● III = 1; F = 01	ave - Mbslave1 anection Setup Dis	splay View Windo	16#6666 pw Help Mbslave3 - 1: F = 03	00000 0x1234		ID = 1: F = 01		-	2019/10/2 2019/10/2 2019/10/2	9 12:02:5 9 12:02:5 9 13:12:0	3 3
21	■ 《茶加> All Modbus Sla File Edit Cor □ ☞ ● ● □ = 1: F = 01 Alian	ave - Mbslave1 anection Setup Dis	play View Winds	16#6666 w Help Mbslave3 = 1: F = 03 Alias	>		ID = 1: F = 01		-	2019/10/2 2019/10/2 2019/10/2 2019/10/2	9 12:02:5 9 12:02:5 9 13:12:0	3 3
21	■ 《添加>	ave - Mbslave1 anection Setup Dis	splay View Windo	16#6666 w Help Mbslave3 = 1: F = 03 Alias	00000 0x1234		ID = 1: F = 01 Al		-	2019/10/2 2019/10/2 2019/10/2 2019/10/2 	9 12:02:5 9 12:02:5 9 13:12:0	3 3
21	■ <添加>	mection Setup Dis     Se	splay View Windo	16#6666 w Help Mbslave3 = 1: F = 03 Alias	00000 0x1234 0x0333		D = 1: F = 01		-	2019/10/2 2019/10/2 2019/10/2 0019/10/2	9 12:02:5 9 12:02:5 9 13:12:0	3 3
21	■ <添加>	mection Setup Dis     Setup Dis     Setup Dis     Setup Dis     S 00000     O0010     T     O     T     O     T     O     T     O     T     O     T     O     T     O     T     O	play View Windo	16#6666 w Help Mbslave3 = 1: F = 03 Alias	00000 0x1234 0x0333 0x0020		D = 1: F = 01 A 0 写8位 1 2 3		-	2019/10/2 2019/10/2 2019/10/2 0019/10/2 0020 1 0020 1 1 0 1 1	9 12:02:5 9 12:02:5 9 13:12:0	3 3
21	■ <添加>	ave - Mbslave1 anection Setup Dis □	splay View Windo	16#6666 w Help Mbslave3 = 1: F = 03 Alias	00000 0x1234 0x0333 0x0020		D = 1: F = 01 A 0 写8位 1 2 3 4		-	2019/10/2 2019/10/2 2019/10/2 0019/10/2 0020 1 0 1 1 1 1 1	9 12:02:5 9 12:02:5 9 13:12:0	3 3
21	■ <添加>	mection Setup Dis     Setup Dis     Setup Dis     Setup Dis     S 00000     O0010     T     O     T     O     T     O     T     O     T     O     T     O     T     O     T     O	play View Winds P D 0 1 2 3 4 5	16#6666 w Help Mbslave3 = 1: F = 03 Alias	00000 0x1234 0x0333 0x0020		D = 1: F = 01 A 0 写8位 1 2 3		-	2019/10/2 2019/10/2 2019/10/2 0019/10/2 0020 1 0 0 1 1 1	9 12:02:5 9 12:02:5 9 13:12:0	3 3
21	■ <添加>	ave - Mbslave1 anection Setup Dis □	splay View Windo	16#6666 w Help Mbslave3 = 1: F = 03 Alias	00000 0x1234 0x0333 0x0020		D = 1: F = 01 A 0 写8位 1 2 3 4		-	2019/10/2 2019/10/2 2019/10/2 0019/10/2 0020 1 0 1 1 1 1 1	9 12:02:5 9 12:02:5 9 13:12:0	3 3
21	■ <添加>	ave - Mbslave1 anection Setup Dis □	play View Winds P D 0 1 2 3 4 5	16#6666 w Help Mbslave3 = 1: F = 03 Alias	00000 0x1234 0x0333 0x0020		D = 1: F = 01 A 0 写的位 1 2 3 4 5 6		-	2019/10/2 2019/10/2 2019/10/2 2019/10/2	9 12:02:5 9 12:02:5 9 13:12:0	3 3
21	■ <添加>	we - Mbslave1     mection Setup Dis	play View Winds	16#6666 w Help Mbslave3 = 1: F = 03 Alias	00000 0x1234 0x0333 0x0020		D = 1: F = 01 A 0 写8位 1 2 3 4 5 6 7		-	2019/10/2 2019/10/2 2019/10/2 0020 1 0 1 1 1 1 1 0 0	9 12:02:5 9 12:02:5 9 13:12:0	3 3
21	■ <添加>	ave - Mbslave1 anection Setup Dis □	play View Windo	16#6666 w Help Mbslave3 = 1: F = 03 Alias	00000 0x1234 0x0333 0x0020		D = 1: F = 01 A 0 写的位 1 2 3 4 5 6		-	2019/10/2 2019/10/2 2019/10/2 2019/10/2	9 12:02:5 9 12:02:5 9 13:12:0	3 3
21	■ <添加>	we - Mbslave1     mection Setup Dis	play View Winds	16#6666 w Help Mbslave3 = 1: F = 03 Alias	00000 0x1234 0x0333 0x0020		D = 1: F = 01 A 0 写8位 1 2 3 4 5 6 7		-	2019/10/2 2019/10/2 2019/10/2 2019/10/2	9 12:02:5 9 12:02:5 9 13:12:0	3 3
21	■ <添加>	we - Mbslave1     mection Setup Dis	play View Windo	16#6666 w Help Mbslave3 = 1: F = 03 Alias	00000 0x1234 0x0333 0x0020		D = 1: F = 01		000	2019/10/2 2019/10/2 2019/10/2 2019/10/2 0 0 0 0 1 1 1 1 0 0 0 0 0 0 0	9 12:02:5 9 12:02:5 9 13:12:0	3 3
21	■ <添加>	m     m	play View Winds P 0 0 1 2 3 4 5 6 7 8 9	16#6666 w Help Mbslave3 = 1: F = 03 Alias	00000 0x1234 0x0333 0x0020 0x4567		D = 1: F = 01 A 0 写8位 1 2 3 4 5 6 7		000	2019/10/2 2019/10/2 2019/10/2 2019/10/2	9 12:02:5 9 12:02:5 9 13:12:0	3 3

D = '	1: F = 02						Mbslave4 = 1: F = 04		23	ID =	1: F = 03		
	Alias	00000	00010	^	1					Г	Alias	00030	^
0	读16位1区	1	0				Alias	00000	^	0	写6字4区	1092	
1		1	0			0	读4字3区	0x0987		1		1365	
2		1	0			1		0x0444		2		1638	
3		0	0			2		0x0555		3		26214	
4		0	1			3		0x0000		4		0	
5		0	1			4				5		0	
6		0				5				6		0	
7		0				6				7		0	
8		0				7				8		0	
9		0		~		8			~	9		0	

15. When the input status address value and error code address value are not 0, analyze the fault location based on the actual displayed value and the error code, as shown in the following figure:% IB0=2 # 00100000,% IW256=16 # 0602, indicating that the sixth read and write command in the gateway configuration is faulty and has an invalid data address.

1         4480         二进制         25010,000           2         5481         二进制         25100,000           3         5481         二进制         27100,011           4         5482         二进制         22000,001           5         5483         二进制         22000,001           6         5484         二进制         22000,011           6         5484         二进制         22000,011           7         54925         十六进制         1691234           9         54925         十六进制         169030           10         549264         十六进制         168033           11         549926         十六进制         168037           13         54927         十六进制         168044           14         54927         十六进制         189055           15         54980         二进制         22000,1101         1           16         549428         十六进制         169035         1           15         54980         二規制         22000,1101         1           16         549428         十六进制         169035         1           17         549426         十六进制         169033         1	64、 1 修改值 2 2 2 2 2 2 2 2 2 2 2 2 2		0	0 2	络视图 】 】 ¥ 地址 Q 地址 2042* 0	★型 ODO ▲ M: M	送项 ✓ 目录 ☆常素>	
学 記         上         男人名         学 空 空           1         -         地址         豊木格式         监視信         1           1         SuB0         二进制         220010,0000         166002           2         SuN256         十六进制         221001,0000         166002           3         SuB1         二进制         220000,0000         111           6         SuB3         二进制         220000,0000         111           6         SuB4         二进制         166033         1161124           7         SuV260         十六进制         166033         166046           10         SuV264         十六进制         166046         166044           11         SuV270         十六进制         166055         15         Su2000_1101         12           15         Su202         二处地制         126002_1011         12         SuV255         十六进制         166033           16         Su2025         十六进制         1660255 <th>64、 1 修改值 2 2 2 2 2 2 2 2 2 2 2 2 2</th> <th>技 模块 Slave_1 M: Module Status Input(8 C M: Module Er_Code Input(1 M: Read 16 Bits (0xxx)_1</th> <th>机架 0 .0 0</th> <th>插槽 I 0 2 1 0</th> <th>地址 Q 地址 2042*</th> <th>类型 ODO ^</th> <th>▼ 目录</th> <th></th>	64、 1 修改值 2 2 2 2 2 2 2 2 2 2 2 2 2	技 模块 Slave_1 M: Module Status Input(8 C M: Module Er_Code Input(1 M: Read 16 Bits (0xxx)_1	机架 0 .0 0	插槽 I 0 2 1 0	地址 Q 地址 2042*	类型 ODO ^	▼ 目录	
上         地址         股示格式         监視値           1         ***80         二述制         220000,0000           2         ***80         二述制         220000,0000           3         ***80         二述制         221000,0000           5         ***82         二进制         221000,0000           5         ***82         二进制         220000,0000           5         ***82         二进制         220000,0000           6         ****83         二进制         220000,0000           7         ************************************	<b>修</b> 改值	r 模块 Slave_1 M: Module Status Input(8 C M: Module Err_Code Input(1 M: Read 16 Bits (0xxxx)_1	0	0 2	2042*	0D0 🔨	1.1.1	
i         地址         登示格式         监視値           1         5480         二週別         220000,0000           2         5480         二週別         220000,0000           3         5481         二週別         221000,0000           5         5482         二週別         220000,0000           5         5483         二週別         220000,0000           5         5483         二週別         220000,0000           5         5484         二週別         220000,0000           6         5484         二週別         220000,0000           7         54874         二週別         220000,0000           8         54870         十八世別         1667033           9         54870         十八世別         1667032           10         548724         十八世別         1667032           11         548704         十八世別         1667032           12         548724         十八世別         1667032           13         548707         十八世別         1667035           15         5490         二世別         220001_1101           16         5490         二世別         220001_1101      16         5490         二世別         2	修改值 💅	Slave_1 M: Module Status Input(8 C M: Module Err_Code Input(1 M: Read 16 Bits (0xxxx)_1	0	0 2	2042*	0D0 🔨	1.1.1	
上         地址         股示格式         监視値           1         ***80         二述制         220000,0000           2         ***80         二述制         220000,0000           3         ***80         二述制         221000,0000           5         ***82         二进制         221000,0000           5         ***82         二进制         220000,0000           5         ***82         二进制         220000,0000           6         ****83         二进制         220000,0000           7         ************************************	修改值	M: Module Status Input(8 C M: Module Err_Code Input(1 M: Read 16 Bits (0xxx)_1	. 0	1 0			、 <複索>	
1         NHB0         二进制         280010,0000           2         NHV256         十六进制         1800602           3         NHB1         二进制         221100,1111           4         NHB2         二进制         220000,0001           5         NHB3         二进制         220000,0111           6         NHB4         二进制         220000,0111           7         NHVX55         十六进制         1641034           9         NHV262         十六进制         1641034           9         NHV264         十六进制         1640087           11         NHV264         十六进制         1640987           12         NHV264         十六进制         1640987           13         NHV272         十六进制         1640444           15         N4280         二延制         280001_1101           15         N4280         二延制         280001_1101           15         N4280         二延制         1860285           15         N4280         二延制         1860244           15         N4280         二近制         1860222           15         N4280         二近制         1660233           16         N42925         十六进制<		M: Module Err_Code Input(1 M: Read 16 Bits (0xxxx)_1	0		5	M-M		1044
2         %W256         十大进制         156062           3         %481         二进制         281100_1111           4         %482         二进制         281000_0000           5         %483         二进制         280000_0000           5         %483         二进制         281000_0111           6         %484         二进制         18100_0000           7         %40268         十大进制         1661234           9         %40262         十大进制         1661234           10         %40264         十大进制         1660000           11         %40264         十大进制         1660287           13         %40272         十大进制         1660444           14         %40272         十大进制         1660444           15         %4260         二进制         2820001_1101         2           16         %404256         十大进制         1660232         16         1660232           17         %404256         十大进制         1660233         16         1660232		M: Read 16 Bits (0xxxx)_1		2 2		THE AVE.	- <mark>▼</mark> 过滤 配置文件 <全部>	- 0
3 %481 二进制 221000_1111 4 %42 二进制 220000_0000 5 %483 二进制 220000_0111 6 %484 二进制 221000_0111 6 %484 二进制 221100_000 8 %47258 十六进制 1661033 10 %47258 十六进制 1661033 10 %47258 十六进制 1661033 11 %47258 十六进制 1661055 13 %47256 十六进制 1661055 15 %420 二进制 220001_1101 16 %47256 十六进制 166033 16 %47256 十六进制 166033		· · · · · ·	0	-	256257	M: M ≡	M: Write 72 Bits (0xxxx)	
4 %42 二进制 220000_0000 5 %483 二进制 220000_0111 5 %484 二进制 221100_0000 7 %484 二进制 1690000 8 %4826 十六进制 1691234 9 %4826 十六进制 1691234 10 %4826 十六进制 1691234 11 %4826 十六进制 169000 11 %4827 十六进制 169000 11 %4827 十六进制 169005 15 %4290 二进制 1690055 15 %4290 二进制 220001_1101 16 %40825 十六进制 1690222 16 %40825 十六进制 1690222		M: Read 16 Bits (1xxxx)_1	•	3 1	12	M: Re	M: Write 80 Bits (0xxxx)	-
5 %483 二进制 220000_0111 6 %484 二进制 2#1100_0000 7 %4W258 十六进制 16#0000 8 %4W258 十六进制 16#0333 9 %4W262 十六进制 16#0333 10 %4W264 十六进制 16#033 11 %4W266 十六进制 16#057 13 %4W266 十六进制 16#057 13 %4W272 十六进制 16#0444 16#0555 15 %4Q80 二进制 2#0001_1101 16 %4W256 十六进制 16#0222 17 %4W256 十六进制 16#0233	<b>Z</b>		0	4 3	34	M: Re	M: Write 88 Bits (0xxxx)	
6 %484 二进制 2=1100,0000 7 %4W258 十六进制 16#0300 8 %4W260 十六进制 16#1234 9 %4W262 十六进制 16#0333 10 %4W264 十六进制 16#0327 11 %4W268 十六进制 16#04567 13 %4W272 十六进制 16#0455 14 %4W272 十六进制 16#0455 15 %4280 二进制 2#0001_1101 15 %4280 二进制 2#0001_1101 16 %40W258 十六进制 16#0333		M: Read 4 Words (4xxxx)_1	0	5 2	260267	M: Re	M: Write 96 Bits (0xxxx)	
7         %1W258         十六进制         16#0800           8         %1W260         十六进制         16#033           9         %1W262         十六进制         16#020           10         %1W264         十六进制         16#020           11         %1W264         十六进制         16#057           12         %1W266         十六进制         16#0987           13         %1W270         十六进制         16#0987           14         %1W272         十六进制         16#0985           15         %2490         二进制         2#0001_1101           16         %2496         十元进制         16#0222           17         %249256         十六进制         16#0233		M: Read 4 Words (3xxxx)_1	0	6 2	268275	M: Re	M: Write 104 Bits (0xxxx)	
8 %IV/260 十六法制 16#1234 9 %IV/262 十六法制 16#0333 10 %IV/264 十六法制 16#0320 11 %IV/266 十六法制 16#0567 13 %IV/270 十六法制 16#0587 13 %IV/270 十六法制 16#0555 15 %IQ072 十六法制 16#0555 15 %IQ072 十六法制 16#0232 16 %IQ/0256 十六法制 16#0233	2	M: Write 8 Bits (0xxx)_1	0	7	0	M: W	M: Write 112 Bits (0xxxx)	
9 %IV262 十六进制 16#0333 10 %IV264 十六进制 16#0320 11 %IV266 十六进制 16#4567 12 %IV268 十六进制 16#087 13 %IV270 十六进制 16#087 15 %Q80 二进制 16#0555 15 %Q80 二进制 2#000_1101 2 16 %QV256 十六进制 16#0222	<b>4</b>	M: Write 6 Words (4xxxx)_1	0	8	26027	71 M: W	M: Write 120 Bits (0xxxx)	
10 %W264 十大进制 16#0202 11 %W266 十大进制 16#4567 12 %W266 十大进制 16#0987 13 %W270 十大进制 16#0987 14 %W272 十大进制 16#0444 15 %Q80 二进制 2#0001_1101 16 %Q4/256 十大进制 16#0232 17 %Q4/258 十大进制 16#0333			0	9			M: Write 128 Bits (0xxxx)	
11 \$4,00266 十六进制 1644567 12 \$4,00258 十六进制 1640587 13 \$4,00270 十六进制 1640044 14 \$4,00272 十六进制 1640055 15 \$4,020 二进制 2240001_1101 3 16 \$4,00258 十六进制 16400323 17 \$4,00258 十六进制 1640033			0	10			M: Write 1 Words (4xxxx)	
12         %I/V268         十六进制         16#0987           13         %I/V270         十六进制         16#0944           14         %I/V272         十六进制         16#0955           15         %Q40         二进制         2#0001_1101         2           16         %Q40256         十六进制         16#0222         1           17         %Q40258         十六进制         16#0233         1			0	11			M: Write 2 Words (4xxxx)	
13 %W070 十大进制 1660444 14 %W072 十大进制 1660555 15 %Q20 二进制 220001_1101 3 16 %QV256 十大进制 1660232 17 %QV258 十大进制 1660333	4		0	10		>	M: Write 3 Words (4xxxx)	
14 \$4W272 十六进制 16#0555 15 \$4Q80 二进制 2#0001_1101 16 \$4QW256 十六进制 16#0222 17 \$4QW258 十六进制 16#0233	· · · ·						M: Write 4 Words (4xxxx)	
15         %Q80         二进制         2#0001_1101         3           16         %QW256         十六进制         16#0222         17         %QW258         十六进制         16#0333		1	9.属性	16.	. 🗓 诊断		M: Write 5 Words (4xxxx)	
16 %QW256 十六进制 16#0222 17 %QW258 十六进制 16#0333							M: Write 6 Words (4xxx)	
17 %QW258 十六进制 16#0333	2#0001_1101						M: Write 7 Words (4xxxx)	
	16#0222						M: Write 8 Words (4xxxx)	
	16#0333		44.77				M: Write 9 Words (4xxx)	
170243	16#0444		转至		期 时间		I to Write 10 Words (dury)	
	16#0555				019/10/29 11:58		M: Write 11 Words (4xxxx)	
1770243	16#0666				019/10/29 11:58		M: Write 12 Words (4xxxx)	
	16#6666				019/10/29 12:02		M: Write 13 Words (4xxxx)	
22 📃 <添加>					019/10/29 12:02		M: Write 14 Words (4xxxx)	
				2	019/10/29 12:02	:53	M: Write /(5-Words (4xxxx)	

## 5.2 Modbus RTU Slave Mode

1. Modbus Slave Mode Data Address Table

Data area	Effective address range
Zone 0 (0XXXX)	0~1951
Zone 1 (1XXXX)	0~1951
Zone 3 (3XXXX)	0~121
Zone 4 (4XXXX)	0~121

2→8 Refer to 4.1(Master mode)的1→7。

9. Click on the specific parameters of the gateway device and set the gateway MODBUS parameters (which must match the serial port parameters of the RS485 device connected to the user). The gateway working mode selects the slave RTU mode. Gateway 485 side serves as a slave station, with slave station ID=4 and serial port parameters using default values.

	DPM01-TEST → 设备和网络			_ • •	× 硬件目录 ■ □
设备			🛃 拓扑视图	🚠 网络视图 📑 设备视图	选项
¥ 🛛 🖬 🖻	💦 网络 🔡 连接 HM 连接	🔻 🗹 📆 🖽 🔲 🍳 ±		网络概览 连接 🛛	
		↓ 主站系统: PLC	_1.DP-Mastersystem (1)	₩ 设备	✓ 目录
DPM01-TEST				<ul> <li>\$7300/ET200M station 1</li> </ul>	▲ 《搜索》 WH W
💣 添加新设备				PLC 1	
📥 设备和网络	PLC_1	Slave_3 ODOT-DPM01 V	Slave ODO	<ul> <li>GSD device_2</li> </ul>	■ 过滤 配置文件 <全部> ▼ 00
▼ 📑 PLC_1 [CPU 315-2		PLC_1	未分・	Slave_2	▶ 1 检测和监视 ▶ 1 分布式 I/O
☆     ☆				<ul> <li>GSD device_1</li> </ul>	・ 10 分布式 10     ・ 10 供电与配电
▲ 任我和诊断 =				Slave_1	▼ 通 現场设备
<ul> <li>▶ 🔤 在所状</li> <li>▶ 🔜 工艺对象</li> </ul>		1.DP-Mastersystem (1)	×	<ul> <li>GSD device_3</li> </ul>	✓ ▲ X2A0 KC M ▲ AS 接口
<ul> <li>▶ → 小部源文件</li> </ul>	< 11	> 100%	The second seco	< III >	Commanding and signaling de
▶ 🔚 PLC 変量	Slave_3 [Module]		🧟 属性	1.信息 1.诊断	
▶ ■ PLC 数据类型	常規 10 变量 系统常数	1 文本			▼ 1 其它现场设备
▼ 🛄 监控与强制表	<ul> <li>▶ 常规</li> </ul>		Slave RTU Mode 从站RTU模式	•	▲ 其它以太网设备
➡ 添加新监	PROFIBUS 推計				PROFINETIO
3. 监控表_1	常规 DP 参数	Baudrate 波特率:			
1. 强制表		Parity校验位:	None 无校验	•	PLC
▶ 📴 在线备份	十六进制参数分配	Data_Bit 数据位: [	8 bit	<b>*</b>	
▶ 强 设备代理数据	看门狗	Stop_Bit 停止位:	1 bit	•	▶ 🛄 怀识承琐
22 程序信息	SYNC/FREEZE	Send Delay 报文发送间隔:	20 ms	<b></b>	▶ 1 常規
SPLC 监控和报警	诊断地址	-	3.5t		<ul> <li>▶ 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1</li></ul>
<ul> <li>■ PLC 报警文本</li> <li>▶ 1 本地模块</li> </ul>		2 100 101 101 101			ODOT Co.,Ltd.
▶ <u>■</u> 本地協吠 ▶ <u>■</u> 分布式 I/O	F I	and a second sec	100ms	•	• 0001-00,200.
		Timeout Mode 超时处理方式:	Data Holding 数据保持	•	ODOT-DPM01 V3.6
		D I D I L HLIBAGILIAR-D	Poll Mode 检询模式	-	Profibus-Gateway
🕨 🔙 未分组的设备		Data Out Mode 数据输出模式:	LOU WOOD ADMUNDA		
		Data Out Mode 刻婚胸工模式: Slave ID 从站地址:			SIEMENS AG

## Modbus Mode工作模式:

Slave Mode从站模式。

## Baudrate波特率:

Serial baud rate, optional range 1200~115200bps, default 9600bps.

## Parity校验位:

You can choose no parity, odd parity, or even parity, with no parity by default.

http://www.odotautomation.com

#### Data\_Bit数据位:

Fixed to 8-bit data.

Stop\_Bit停止位:

1 or 2 stop bits are optional, default to 1 stop bit.

Send Delay报文发送问隔:

This parameter is invalid for the slave mode.

## Receive Delay接收字符间隔:

The frame interval detection time when receiving a message is optional from 1.5t to 200t, with a default of 3.5t (t is the time for transmitting a single character, which is related to the baud rate).

Slave Timeout从站响应超时:

This parameter is invalid for the slave mode.

Timeout Mode超时处理方式:

This parameter is invalid for the slave mode.

## Data Out Mode数据输出模式:

This parameter is invalid for the slave mode.

#### Slave ID:

Slave ID number, valid range is 1-247, default value is 1.

## Slave Respond Delay从站响应延迟:

The response delay time of the slave station is when the slave station receives a request message from the master station, processes the data, delays for a certain length of time, and then replies to the data message. 0ms~2000ms optional, default 5ms.

10. Double click the gateway icon to enter the device view. The slave module read and write commands starting with S: can be found in the hardware directory on the right. Contains input/output commands and Modbus status input commands. The Modbus slave status module can only be used in slave mode, and the DP side can read the slave status to determine the working status of the Modbus slave. When the slave station is working normally, the error code is 0. When an error occurs at the slave station, the error code will indicate the cause of the error. The error codes are shown in the table below:

Error Code	Fault description	Troubleshooting method
0x00	Working properly	N/A
0x01	Illegal function code	The device does not support the current function code, please refer to the slave manual to select the corresponding function code module
0x02	Illegal data address	If the device data exceeds its address range, refer to the slave manual to modify the data starting address or data length
0x03	Illegal data value	Data length error, data length beyond the Max. allowed value 125(Word) or 2000(Bit), modify the length
0x07	parity error	Check parity, baud rate, stop bit, and hardware connection status
0x09	CRC verification error	Slave response message CRC calculation error, check the working status of the slave
0x0E	Response message length error	Increase the receive character spacing

## Modbus Slave Error Code Table

The Modbus state input command is not mandatory when testing applications.

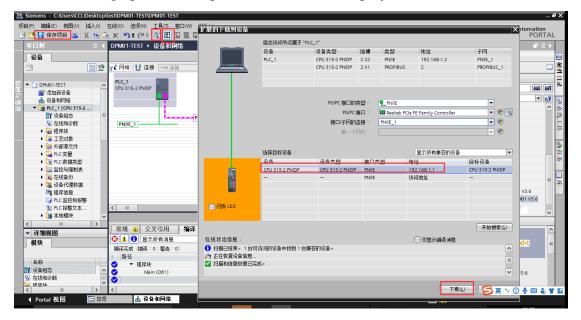
11. Add an input status module, DP outputs data from Zone 0/Zone 1/Zone 3/Zone 4, and DP inputs data from Zone 0/Zone 4. The default parameter for all commands is a starting byte/word address of 0. So, for the actual 485 master station equipment on site, set the corresponding starting byte/word address to communicate data with the DP master station.

This document provides a simple demonstration by changing the starting <u>byte</u> address of the third command to 1, the starting <u>word</u> address of the sixth command to 7, and using default values for other commands. Simulate the on-site 485 master station equipment using Modbus Poll software.

	在线(0) 选项(N) 工具(7) 窗口 副 🗙 🌀 ± (7) ± 🗟 🛄 🛄		🖉 转至應线 🏭 🖪 🐨 🗶 📃	▲ 在项目	中搜索> 🖬			Totally Integrated	Automation PORT/
原目树 🔳 🗸	DPM01-TEST > 未分组的设	备 → Slave_3					_ 🖬 🖬 🗙	硬件目录	
设备			a de la companya de la	拓扑视图	👗 网络视图	👔 设行	备视图	选项	
i 🗐 🖻	Slave_3 [ODOT-DPM01 V3.	1 🖬 ' 🖬 🗌	设备概览		1				C
		^	₩ 模块	机架	插槽 1 地址	Q 地址	类型	▼ 目录	
DPM01-TEST	Ne <sup>2</sup>	=		-	0 2043*		ODO ^		644 64
📑 添加新设备	510-		S: Modbus Status Input 1	N D	1 25625	7	S: M	✓ 过滤 配置文件 <全	
📥 设备和网络			S: DP Input 8 Bits (0xxxx)_1	þ	2 0		S: DP		
▼ 1 PLC_1 [CPU 315-2			S: DP Input 7 Words (4xxxx	1.1	3 25827	1	S: DP	S: DP Output 24 Bits (	
📝 设备组态			S: DP Output 24 Bits (0xxx	o D	4	02	S: DP	S: DP Output 32 Bits (	
Q 在线和诊断 =		d•t	S: DP Output 16 Bits (1xxx	o D	5	34	S: DP	S: DP Output 40 Bits (	
▶ 🛃 程序块			S: DP Output 2 Words (3xx		6	256259	S: DP	S: DP Output 48 Bits (	
▶ 🙀 工艺对象			S: DP Output 3 Words (4xx	c	7	260265	S: DP	S: DP Output 56 Bits (	
▶ 🔤 外部源文件	•••			þ	8			S: DP Output 64 Bits (	
▶ 🔚 PLC 变量					9		~	S: DP Output 72 Bits (	
▶ 词 PLC 数据类型	< III >		<	•	10		>	S: DP Output 80 Bits (	
▼ 😡 监控与强制表								S: DP Output 88 Bits (	
参添加新监	S: DP Output 3 Words (4xx)	x)_1 [Module]		🧟 属性	3.信息 2	诊断		S: DP Output 98 Bits (	
	第24 10 空量 系	院常数 文本						S: DP Output 104 Bits	
器 监控表_2 18 强制表	▶ 常规							S: DP Output 120 Bits	
	设备特定参数	设备特定参数						S: DP Output 128 Bits	
<ul> <li>■ 1±3(首)</li> <li>■ 设备代理数据</li> </ul>	十六进制総約分配							S: DP Output 8 Bits (1:	
四 程序信息	10 地址	Start Addre	ess(Word) 記言字地					S: DP Output 16 Bits (	
□ PLC 當控和报警			址: 7					S: DP Output 24 Bits (	
El PLC 招幣文本		4						S: DP Output 32 Bits (	
▶ 1 本地模块								S: DP Output 40 Bits (	
▶ <u>1</u> 分布式 I/O		•						S: DP Output 48 Bits (	
▶ 🔙 未分组的设备								S: DP Output 56 Bits (	
▶ 📝 未分配的设备								S: DP Output 64 Bits (	1 x000x)
1. 144 45.4m								S: DP Output-72-Bits (	
>    >								<ul> <li>C: DP Output 80 Rite (</li> <li></li></ul>	1)

Note: The starting address for bit reading and writing is a byte address

12. After setting up, save, compile, and download the project.



13. After downloading, open the monitoring table, fill in the command address corresponding to the gateway, open Modbus Poll software, simulate the main station, establish a connection, default RTU protocol, serial port parameters 9600/N/8/1.

#### Via Siemens - C:\Users\CCL\Desktop\test\DPM01-TEST\DPM01-TEST Totally Integrated Automation PORTAL Ε. ↓ DI DPM01-TEST → PLC\_1 [CPU 315-2 PN/DP] → 监控与强制表 → 监控表\_2 \_∎∎× 📲 拓扑视图 🔚 网络视图 📑 设备视图 洗顶 野東台 日家 12 1/2 10 91 96 97 99 4 A 槙块 机架 插槽 1 地址 Q 地址 名称 inil init 监视值 修改值 地址 %IB256 %IB257 ave\_3 Modbus Status Input 1 W... DP Input 8 Bits (0xxxx)\_1 DP Input 7 Words (4xxxx)\_1 機索 十六进制 十六进制 十六进制 十六进制 : M. 🖌 过滤 配置文件 全部> - 💣 : DP. 258...271 5: DP... 5: DP... 5: DP... 5: DP... %IBO %IW258 0...2 DP Output 24 Bits (0x 十六进制 十六进制 十六进制 %IW260 DP Output 16 Bits (1xxxx) 3...4 %IW262 DP Output 2 Words (3xxx 256...259 %IW264 DP Output 3 Words (4xxx 260...265 S: DP. 前任务 %IW266 %JW268 %IW270 %OB0 日尾 %QB0 %QB1 %QB2 %QB3 %QB4 %QW256 %QW256 %QW258 %QW260 ◎ 尾性 1 信息 🛛 诊断 转至 ? 日期 时间 2019/10/29 14:47:58 2019/10/29 14:47:58 2019/10/29 14:48:17 %QW262 20 21 2019/10/29 14:48:20 2019/10/29 14:48:20 2019/10/29 14:48:20 2019/10/29 14:48:31 2019/10/29 14:48:10 < 在网络上找到了1个设 DP Output 64 Bits (1 下载完成(错误:0:警告:0)。 2019/10/29 14:48:32 DP Output 72 Bits (1 > → 信息 > 详细视图 🔮 🖮 👗 👕 👪 🛄 监控表\_2 ▲ Portal 视序 11 日本 □ 监控表\_ 下载完成(错误:0:警告:0) Modbus Poll - Mbpoll1 File Edit Connection Setur Functions Display View Window Heli □ 📽 🖬 🚳 🗙 | □ | 🖳 🚊 | ⊥ | 05 06 15 16 17 22 23 | TC 🗵 | 💡 🛠 . 🕎 MI Tx = 62; Err = 1; ID = 4; F = 03; SR = 1000ms ection Setup 00000 × Alia Communication Traffic ОК Serial Port Exit Stop Cancel Clear Save Copy Log Image: Constraint of the state of USB Serial Port (COM4) ● RTU ○ ASCII 9600 Baud 🛛 🗸 Response Timeout 8 Data bits 🗸 🗸 1000 [ms] None Parity 🗸 🗸 7 Delay Bel en Polls 1 Stop Bit Advanced... ~ 20 8 0 [ms] q Remote Modbus Server 502 3000 ) IPv6 For Help, press F1 Port 4: 9600-8-N-1

od•t Odot Automation System Co., Ltd

From the Modbus poll message, it can be seen that the communication connection has been established.

14. Transfer the TIA project online and click on the monitor table The online monitoring button allows you to view that the data collected by the PLC is consistent with the serial port data of the 485 main station. When outputting data, fill in the modified value column with the value to be output, click By modifying the

ownership system at once, the 485 side of the main station will receive data issued by the PLC.

#### Via Siemens - C:\Users\CCL\Desktop\test\DPM01-TEST\DPM01-TEST Totally Integrated Automation PORTAL 第二日 保存项目 3 X 注 注 X (つ 1 C\* 3 L) [1] [2] 2 X (つ 1 C\* 3 L) [1] [2] 2 X (つ 1 C\* 3 L) [1] [2] 2 X (つ 1 C\* 3 L) [2] 2 X (0 1 C\* 3 L) [2 В. ● DPM01-TEST → 🛃 拓扑视图 🔜 网络视图 👔 设备视图 洗顶 日東京 览 模块 Sla / 目录 机架 插槽 1 地址 Q 地址 类型 × ve 3 显示格式 监视值 修改值 inil init (被索) 2007 1000 1017 RETXPI 1000 5: DP Output 11 Words (3000) 5: DP Output 13 Words (3000) 5: DP Output 15 Words (3000) 5: DP Output 15 Words (3000) 5: DP Output 15 Words (4000) 5: DP Output 15 Words (4000) 5: DP Output 15 Words (4000) 5: DP Output 21 Words (4000) 5: DP Output 13 Words (4000) 5: DP Output 14 Words (4000) 5: DP Output 14 Words (4000) 5: DP Output 15 Words (4000) 5: DP Output 14 Words (4000) 5: DP Output 15 Words (4000) 5: DP Output 14 Words (4000) <t S: Modbus Status Input 1 W... S: DP Input 8 Bits (0xxxx)\_1 S: DP Input 7 Words (4xxxx)\_1 S: DP Output 24 Bits (0xxxx)... %IB256 256...257 十六进制 十六进制 🖌 过滤 配置文件 全部> - 💣 S: DP.. S: DP.. S: DP.. S: DP.. S: DP.. %IB257 16#00 %IB0 %IW258 %IW260 %IW262 %IW264 258...271 二进制 2#1000\_10 0...2 十六进制 16#0540 十六进制 十六进制 十六进制 16#0222 DP Output 16 Bits (1xxx).. 3...4 0 16#3333 DP Output 2 Words (3xxx 256...259 16#5555 5: DP Output 3 Words (4xxx. 260...265 S: DP.. 前任务 %IW266 十六进制 16#1111 %IW268 十六进制 十六进制 6#0000 %IW270 5#0343 2#0000\_0001 2#0000\_0111 2#0000\_0111 2#0001\_0111 16#0999 16#9898 16#0777 16#0888 16#6666 %OB0 二进制 二进制 二进制 二进制 二进制 二进制 十六六进 十六六进 十六进 十六进 十六进 十六进 十六进 十六 0000 日尾 %Q80 %Q81 %Q82 %Q83 %Q84 %QW256 %QW256 %QW256 🧕 属性 🚺 信息 🛛 诊断 \$#9898 节地 址: 0 %QW262 6#0888 20 %QW264 > > 信息 ○ 中 · , ② ● 四 ▲ 音 # ✓ 已通过地址 IP=192.168.1.2 连接到 P... > 详细视图 ◀ Portal 视图 🔁 总览 Slave\_3 益 监控表\_1 🛄 监控表\_2 Modbus Poll - Mbpoll6 \_ $\times$ File Edit Connection Setup Functions Display View Window Help 🗅 🗃 🖶 🎒 🗙 | 🗂 | 🗒 🏩 | Л. | 05 06 15 16 17 22 23 | TC 🗵 | ? N? Mbpoll2 鬥 м 🗒 Mbpoll1 🗖 🗖 🔀 Tx = 538: Err = 0: ID = 4: F = 16: S Tx = 447: Err = 0: ID = 4: F = 01: SR = 1000ms Tx = 710: Err = 0: ID = 4: F = Alias 00000 Alias 0000 00010 s 00020 Alias )0000 0 DP输入7字4区 (?@) 0x0540 0 0 0 0 DP输入8位0区 1 (?") 0x0222 0 DP输出24位0区 0 1 1 1 2 (33) 0x3333 2 0 0 0 0 2 3 (UU) 0x5555 3 1 0 n 3 1 4 (??) 0x1111 4 0 0 4 0 5 (??) 0x0000 5 0 0 5 0 (?C) 0x0343 0 6 6 1 6 0 7 7 1 1 7 1 8 8 1 1 8 9 9 0 0 9 📴 МЬ - - X - • × 🔛 Mbpoll5 Mbpoll6 Tx = 399: Err = 0: ID = 4: F = 02: SR = 1000ms Tx = 750; Err = 0; ID = 4; F = 04; SR Tx = 750: Err = 0: ID = 4: F = 03: SR = 10 Alias 00000 00010 Alias 00000 Alias 00000 0 DP输出16位1区 1 0 0 DP輸出2字3区 (??) 0x0999 0 0 0 (??) 0x9898 1 1 2 1 1 2 2 3 3 3 4 1 0 4 4 5 0 0 5 5 6 0 6 6 7 0 7 (?w) 0x0777 8 1 8 (??) 0x0888 8 9 9 9 (ff) 0x6666 1 Port 4: 9600-8-N-1 For Help, press F1.

## od•t Odot Automation System Co., Ltd

At this time, the gateway is in a normal working state, and the input status address value shows 0.

## 5.3 Modbus ASCII Master Mode

Refer to 4.1 MODBUS RTU master station mode configuration.

Just change the gateway working mode to: Master Station ASCII mode. Save

compilation download.

Siemens - C:\Users\CCL\Desktop	\test\DPM01-TEST\DPM01-TEST					- •	×
项目(P) 编辑(E) 视图(V) 插入(I)	在线(O) 选项(N) 工具(T) 窗口(V	V) 帮助(H)				Totally Integrated Automation	
📑 📑 🛃 保存项目 🚢 🐰 🤖 🛛	🗎 🗙 🎝 ± (P ± 🗟 🗓 🗓 🖳	🛛 🔝 🎽 转至在🍊 🥤 计互密线 🛔	? 🖪 🖪 🗶 🖃 🛄 🗠 夜頭目	+搜索> ₩		PORTAL	
项目树 🔳 🗸	DPM01-TEST → 设备和网络			-	- = = ×	硬件目录 ■ □ ▶	
设备			■ 拓扑视图	👗 网络视图 📑 设备	和图	选项	
	· □ 网络 批 连接 HM 连接		网络概览 连接 10 ì				硬件
		统: PLC 1.DP-Mastersystem (1) 个					*
🥸 🕨 📴 在线备份 🔽		EXE: PLC_1.DP-Mastersystem (1)	* · · · · · · · · · · · · · · · · · · ·	类型	子网地址		¥
▲ (二、日の)			<ul> <li>S7300/ET200M station_1</li> </ul>	S7300/ET200M station CPU 315-2 PN/DP		<搜索> MI M1	· · ·
2 程序信息	C_1 Slave		PLC_1      GSD device 2	GSD device		🗹 过滤 🛛 配置文件 <全部> 💌 💓	2
☆ PLC 监控和报警		T-DPM01 V 🔳 🔿 🔿 📲	Slave 2	DP-Gateway V3.6	5	▶ 1 检测和监视	÷.
■ PLC 报警文本			<ul> <li>GSD device_1</li> </ul>	GSD device		▶ 🛅 分布式 I/O	线
▶ 1 本地模块			Slave 1	ODOT-DPM01 V3.6	3	<ul> <li>         ·</li></ul>	
▶ 📠 分布式 I/O	PLC_1.DP-Mast	tersystem (1)	<ul> <li>GSD device_3</li> </ul>	GSD device		▼ 1 現场设备 ▶ 1 和 AS 接口	1
→ 🔙 未分组的设备	N/IE_1	~	Slave_3	ODOT-DPM01 V3.6	3	▶ 【■ AS 按口 ▶ 】 Commanding and signaling de	<b>1</b>
<ul> <li>▶ 22 未分配的设备</li> <li>▶ 24 公共数据</li> </ul>	< III > 100%		< [ III		>	SIPLUS HCS	1
<ul> <li>↓ □ 文档设置</li> </ul>	Slave 1 [PB1]		風屋性	1 信息 1 诊断		▼ 1 其它现场设备	前任务
<ul> <li>▶ Call 文信反应</li> <li>▶ Call 注言和资源</li> </ul>	■ <b>常規</b> 10 変量 系统)	常数 文本				▶ 📺 其它以太网设备	
▼ 🖬 在线访问		13.0 人平				PROFINET IO	
1 显示隐藏接口	▶ 常规 PROFIBUS 地址	设备特定参数			_	PROFIBUS DP	聖
▶ 🛄 COM [RS232/PPI 🧤	常规 DP 参数				-	PLC	
🔻 🋄 Realtek PCIe FE Fam. 🐻	一 设备特定参数	Modbus Mode 工作模式:	Master ASCII Mode 主站ASCII模式			▶ <u>□</u> 編码器	
A? 更新可访问的	十六进制参数分配						
Implc_1 [192.168	看门狗	Baudrate 波特案:				<ul> <li>▶ 1 常規</li> <li>▶ 1 部功器</li> </ul>	
Intel(R) Centrino(R)	SYNC/FREEZE	Parity 枝验位:	None 无枝验		-	▶ 班初盛 ▼ 网关	
Microsoft Wi-Fi Dire	诊断地址	Data_Bit 数据位:				▼ → ODOT Co.,Ltd.	
▶ 1 PC internal (本地)  □ USB (S7USB)  □		• Stop_Bit 停止位:	1 bit		•	✓ → ODOT-DPM01 V3.6	
▶ TeleService (自动 )		Send Delay 报文发送间隔:	20 ms			DDOT-DPM01 V3.6	
▶ 📴 读卡器/USB 存储器		Receive Delay接收字符间隔:	3.5t			Profibus-Gateway	
		Slave Timeout 从站响应超时:	500ms		1	SIEMENS AG	
<		Timeout Mode 超时处理方式:	Data Holding 数据保持		-	< 激活 Winglows , ▶	
> 详细视图		Data Out Mode 数据输出模式:				> 信息 🥵 美 🤸 🙂 🕹 🚔 🕇	
◆ Portal 视图 Ⅲ 影	🖞 🔥 设备和网络 📖	监控表_1 <a>些控表_2</a>	For mode skipity d		and the second s	到 PLC_1 的连接已关闭。	
	000 00 00 000 000	Contracting a					

When using Modbus Slave software for testing, choose the ASCII protocol when

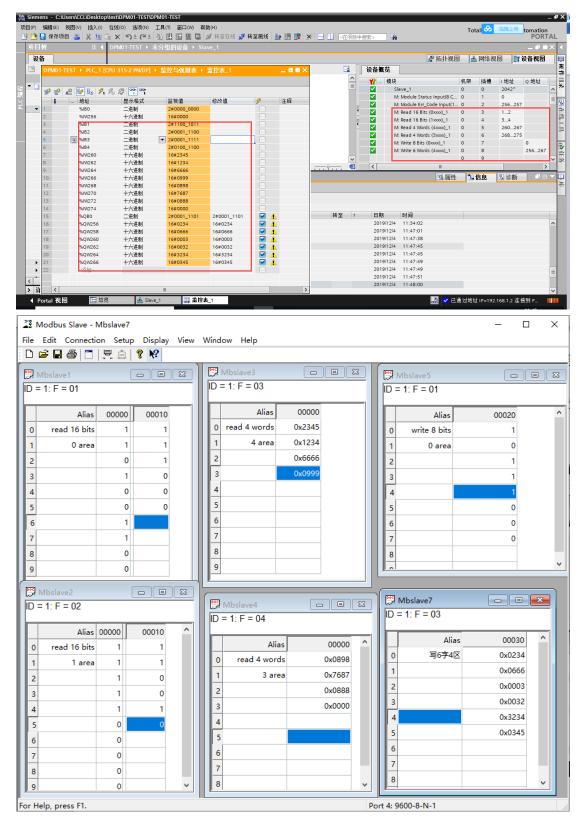
establishing a connection.

Connection		ΟΚ
Serial Port	~	Cancel
Serial Settings		
USB Serial Port (CC	)M4) ~	
9600 Baud 🛛 🗸	Mode O RTU   ASCII	
8 Data bits $\sim$	Flow Control	
None Parity $\sim$		
2 Stop Bits $\sim$	1 [ms] RTS disable d	elay
TCP/IP Server		
IP Address		Port
127.0.0.1	~	502
🗹 Any Address	IPv4	
🗹 Ignore Unit ID	O IPv6	

Transfer the TIA project online and click on the monitoring table 💌 The online monitoring button allows you to view that the data collected by the PLC is consistent with the serial port data of the 485 main station. When outputting data, fill in the

http://www.odotautomation.com

modified value column with the value to be output, click <sup>?</sup> Immediately modify the ownership at once, and the 485 side of the main station will receive data issued by the PLC.



## **5.4 Modbus ASCII Slave Mode**

## Refer to 4.2 MODBUS RTU slave mode configuration

Just change the gateway working mode to: Slave ASCII mode. Save compilation

download.

Kiemens - C:\Users\CCL\Desktop\	test\DPM01-TEST\DPM01-TEST							_ # X
项目(P) 编辑(E) 视图(V) 插入(I)	在线(O) 送项(N) 工具(T) 窗口(W)	帮助(H)					Totally Integrated Automation	
👎 🎦 🔒 保存项目 💷 📈 💼 🗊	x >± (4± ₩ 10 16 9	📑 💋 转至在线 🖉 转至离线 🛔		《在项目中搜索>	-		POR	TAL
项目树 □ ◀	DPM01-TEST > 未分组的设备			- Loven Plante		_ 7 = X	硬件目录 司	1
	Drivio 1-1231 7 ×71 ±1 High	* 3lave_3						
设备			₽ 拓扑	视图 👗	网络视图 🔡 👔	备视图	选项	
🖻 🖻 📄 🗎	Slave_3 [ODOT-DPM01	🗒 ' 🔄 设备概览						回換
		▲ ₩ 模块	ar.	1架 插槽	lutento lutenti	类型	▼ 目录	
篮 💌 🗋 DPM01-TEST 📃 🔺	23		ve 3 0		2043*	0D0 ^	(後索) (1)	
🚔 📑 添加新设备	304		Adbus Status Input 1 W 0		256257	S: M., =		
			OP Input 8 Bits (0xxxx) 1 0		0	S: DP	☑ 过滤 配置文件 <全部> ▼	
🔻 🛅 PLC_1 [CPU 315-2			P Input 7 Words (4xxxx) 1 0	3	258271	S: DP	S: DP Output 11 Words (3xxxx)	<u>^</u>
■ 设备组态			OP Output 24 Bits (0x000) 0		02	S: DP	S: DP Output 12 Words (3xxxx)	在线工具 <
L 在线和诊断 =	od		P Output 16 Bits (1xxxx) 0		34	S: DP	S: DP Output 13 Words (3xxxx)	
▶ 🛃 程序块		•1	P Output 2 Words (3xxx 0	6	25625	9 S: DP	S: DP Output 14 Words (3xxxx)	- T
▶ □ 工艺对象		V S: D	P Output 3 Words (4xxx 0	7	26026	5 S: DP 🗸	S: DP Output 15 Words (3xxxx)	-
▶ 圖 外部源文件	<		Ш			>	S: DP Output 16 Words (3xxxx)	<b>1</b>
▶ 🔁 PLC 变量	Slave 3 [Module]		<b>风</b> 属	7. Jak 🔸 🥠	息 🔒 🖁 🗞 诊断		S: DP Output 1 Words (4xxxx)	前任务
▶ <u>■</u> PLC 数据类型			<u> </u>		8 🖌 🔽 🕅 🕅		S: DP Output 2 Words (4x000)	
▼ 🛄 监控与强制表	<b>常規</b> 10 変量 系统常	数 文本		_			S: DP Output 3 Words (4xxxx)	m
■ 添加新监	▶ 常規	Modbus Mode 工作模式:	Slave ASCII Mode 从站ASCII	横式		• ^	S: DP Output 4 Words (4xxxx)	3
器 监控表_1 器 监控表_2	PROFIBUS 地址	Baudrate 波特室:	9600 pps			•	S: DP Output 6 Words (4xxx)	74
55 血红衣_4	常规 DP 参数	Parity 校验位:	None 无检验				S: DP Output 7 Words (4xxxx)	
► C 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	设备特定参数					I	S: DP Output 8 Words (4xxxx)	
<ul> <li>▶ 3 12 12 12 12 12 12 12 12 12 12 12 12 12</li></ul>	十六进制参数分配		8 bit				S: DP Output 9 Words (4xxxx)	
四 程序信息	看门狗	Stop_Bit 停止位:	1 bit			•	S: DP Output 10 Words (4xxxx)	
PLC 监控和报警	SYNC/FREEZE	Send Delay 报文发送间隔:	20 ms				S: DP Output 11 Words (4xxxx)	
E PLC 报警文本	诊断地址	Receive Delay 接收字符间隔:	3.5t				S: DP Output 12 Words (4xxxx)	
▶ ▲ 本地模块	l	Slave Timeout 从站响应超时:	100ms				S: DP Output 13 Words (4xxx)	
▶ <b>□</b> 分布式 I/O							S: DP Output 14 Words (4xxxx)	
▶ 🔙 未分组的设备		Timeout Mode 超时处理方式:	Data Holding 数据保持			•	S: DP Output 15 Words (4xxxx)	
▶ 📴 未分配的设备		Data Out Mode 数据输出模式:	Poll Mode 轮询模式				S: DP Output 16 Words (4xxxx)	=
< 12 At 11 45 (10)		Slave ID 从站地址:	4				🔚 S: Modbus Status Input 1 Word	~
、 // // // // // // // // // // // // //	1	Slave Respond Delay从站响应					> 信息 🔁 🚍 - , @ 🔍 📾 🔒	101
			5ms					i T 🔛
◆ Portal 视图 置总缆	Slave_3	监控表_1 器 监控表_2				🔜 <	到 PLC_1 的连接已关闭。	

When using Modbus Poll software for testing, choose the ASCII protocol when establishing a connection.

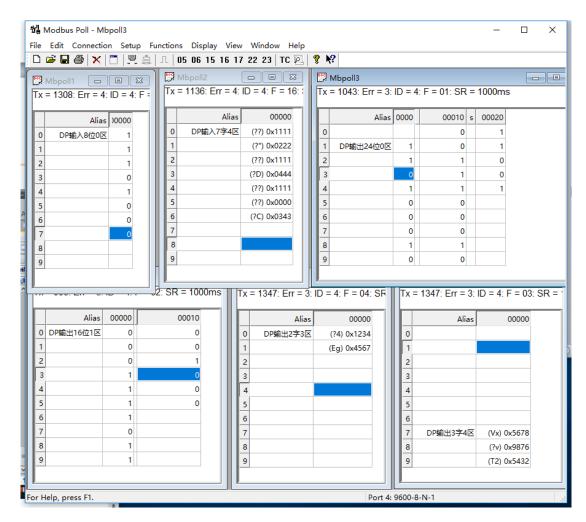
Connection Setup		×
Connection		ОК
Serial Port	~	Consol
Serial Settings		Cancel
USB Serial Port (COM4)	~	Mode
9600 Baud 🗸 🗸		⊖ RTU
8 Data bits 🛛 🗸		Response Timeout
None Parity 🗠		Delay Between Polls
1 Stop Bit 🛛 🗸	Advanced	20 [ms]
Remote Modbus Server		
IP Address or Node Name		
127.0.0.1		~
Server Port	Connect Timeout	IPv4
502	3000 [ms]	O IPv6

Transfer the TIA project online and click on the monitoring table 💌 The online monitoring button allows you to view that the data collected by the PLC is consistent with the serial port data of the 485 main station. When outputting data, fill in the

http://www.odotautomation.com

modified value column with the value to be output,  $click^{?}$  Immediately modify the ownership at once, and the 485 side of the main station will receive data issued by the PLC.

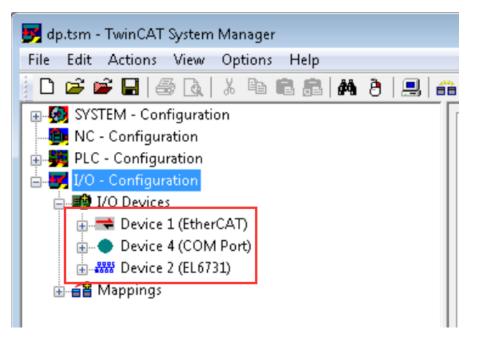
页目树	🗉 🖣 D									_ 🖬 🖬 🗙	硬件目录		
PM01-TEST	PLC_1 [CPU 315-2 ]	PN/DP] 🕨 监控의	∋强制表 → 监控表_	2 <b>_ 12 B X</b>	₽ 托	扑视图	品	网络视图	<b>11</b> 设行	<b>新祝图</b>	选项		
					览								C.
<sup>≥</sup> ⊒ <sup>2</sup> µ <u>©</u>	1 1. 9. 9. 27 "	200h 1			模块	机架	插槽	1 地址	Q 地址	类型	▼ 目录		
名称	地址	显示格式	监视值	修改值	Slave_3	0	0	2043*		0D0 ^	<搜索>		ini in
	%IB256	十六进制	16#00		S: Modbus Status Input 1 W	0	1	256257		S: M ≡	☑ 过滤 配	B文件 <全部>	•
	%IB257	十六进制	16#00		S: DP Input 8 Bits (0xxx)_1	0	2	0		5: DP		ut 11 Words (3xxxx	
	%IBO	二进制	2#0001_0111		S: DP Input 7 Words (4xxx)_1	0	3	258271		5: DP		ut 12 Words (3xxxx)	
	%IW258	十六进制	16#1111		S: DP Output 24 Bits (0xxxx)		4		02	5: DP		ut 13 Words (3xxxx	
	%IW260	十六进制	16#0222		S: DP Output 16 Bits (1xxx)		5		34	5: DP		ut 14 Words (3xxxx	
	%IW262	十六进制	16#1111		S: DP Output 2 Words (3xxx		6		256259	5: DP		ut 15 Words (3xxxx	
	%IW264	十六进制	16#0444		S: DP Output 3 Words (4xxx	0	7		260265			ut 16 Words (3xxxx	
	%IW266	十六进制	16#1111							>		ut 1 Words (4xxx)	·
	%IW268	十六进制	16#0000		10	属性	包信	息 🛛	诊断			ut 2 Words (4xxxx)	
	%IW270	十六进制	16#0343			S 7PH LL		AG 🔝	19 01			ut 3 Words (4xxx)	
	%QB0	二进制	2#0111_0001	2#0111_0001								ut 4 Words (4xxxx)	
	%QB1	二进制	2#0011_0100	2#0011_0100								ut 5 Words (4xxxx)	
	%QB2	二进制	2#0001_1111	2#0001_1111								ut 6 Words (4xxxx)	
	1 %QB3	二进制	2#0111_1000	2#0111_1000		转至	?	日期	时间			ut 7 Words (4xxx)	
	%QB4	二进制	2#0001_0011	2#0001_0011				2019/10/2	9 16:01:5	6 ^		ut 8 Words (4xxxx)	
	%QW256	十六进制	16#1234	16#1234				2019/10/2	9 16:08:1			ut 9 Words (4xxx)	
	%QW258	十六进制	16#4567	16#4567				2019/10/2	9 16:08:1	8		ut 10 Words (4xxxx	0
	%QW260	十六进制	16#5678	16#5678				2019/10/2	9 16:08:1	8		ut 11 Words (4x000	
	%QW262	十六进制	16#9876	16#9876				2019/10/2	9 16:08:2	2		ut 12 Words (4xxxx	
	%QW264	十六进制	16#5432	16#5432				2019/10/2	9 16:08:2	2		ut 13 Words (4xxxx	
	<添加>							2019/10/2	9 16:08:2	2		ut 14 Words (4xxxx	
								2019/10/2	9 16:08:3	3		ut 15 Words (4xxxx	
<		11		>	1			2019/10/2	9 16:08:3	3 🗉		ut 16 Words (4xxxx	
			IF=192.168.1.2 许传到 FI		1			2019/10/2	9 16:08:4			Status Input 1 Wo	



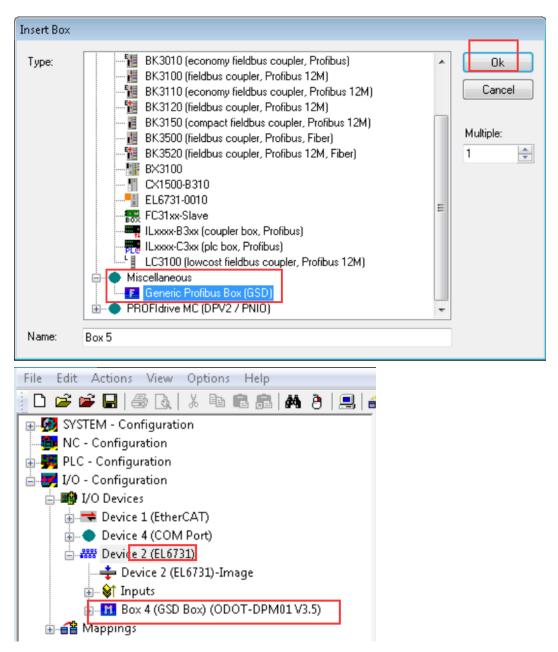
# 6 Test application in Beckhoff TwinCAT 2

1. Power on all hardware cables and connect the CX5120 to the monitor. Open the corresponding Beckhoff software System Manager, PLC Control interface.

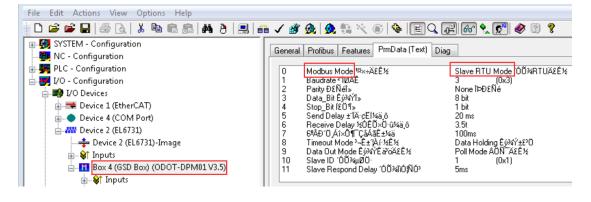
Open the System Manager interface, click Actives--Set/Reset TwinCAT to Config Mode, PLC enters the configuration mode. Right-click I/O Devices—Scan Devices, In the dialog box that pops up (not all device types can be discovered automatically), click OK, in the dialog box that appears, select the I/O device type, click OK, in the pop-up dialog box (Scan Boxes), click Yes, in the dialog box that pops up (Activate Free Run), click NO. It could automatically scan all IO modules attached to the CX5120. See diagram below.



Right-click Device 2 (EL6731)—Append Box, in the dialog box that pops up, select Generic Profibus Box (GSD)—OK, locate the file where the GSD file of DPM01 resides, click to open, the gateway is automatically attached to the EL6731 module.



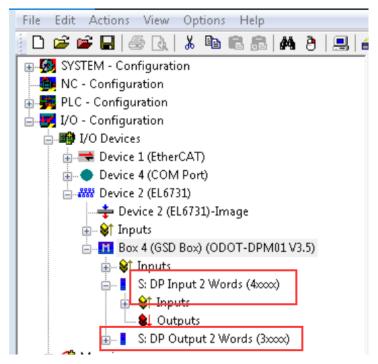
Select the DPM01. On the right side of PrmData, set the serial port parameters of the gateway. Gateway working mode select Slave mode, that is, the gateway 485 side is the Slave of 485.



Right-click DPM01—Append Module, in the dialog box that appears, select Read and Write Commands.

Because the working mode of the gateway is Slave, select the read and write commands with S: in the front of. After the command is added, it will be attached to the lower side of the gateway DPM01.

In	sert Module					
ſ	Module Type:	s				ОК
	Туре:	S: DP Input 96 Bits (0xxxx) S: DP Input 104 Bits (0xxxx) S: DP Input 112 Bits (0xxxx) S: DP Input 120 Bits (0xxxx) S: DP Input 128 Bits (0xxxx) S: DP Input 1 Words (4xxxx) S: DP Input 2 Words (4xxxx) S: DP Input 3 Words (4xxxx) S: DP Input 4 Words (4xxxx) S: DP Input 5 Words (4xxxx) S: DP Input 5 Words (4xxxx) S: DP Input 6 Words (4xxxx) S: DP Input 7 Words (4xxxx)			•	Cancel
		S: DP Input 8 Words (4xxxx)	M. Ralas		Ŧ	
			Multiple:	1 🚖		
	Comment:					
_						
In	sert Module					
In	sert Module Module Types	3				ОК
In		S: DP Output 104 Bits (1xxxx) S: DP Output 112 Bits (1xxxx) S: DP Output 120 Bits (1xxxx) S: DP Output 120 Bits (1xxxx) S: DP Output 1 Words (3xxxx) S: DP Output 2 Words (3xxxx) S: DP Output 3 Words (3xxxx) S: DP Output 4 Words (3xxxx) S: DP Output 5 Words (3xxxx) S: DP Output 5 Words (3xxxx) S: DP Output 6 Words (3xxxx) S: DP Output 8 Words (3xxxx) S: DP Output 8 Words (3xxxx)			•	OK Cancel
In	Module Type:	S: DP Output 104 Bits (1xxxx) S: DP Output 112 Bits (1xxxx) S: DP Output 120 Bits (1xxxx) S: DP Output 128 Bits (1xxxx) S: DP Output 1 Words (3xxxx) S: DP Output 2 Words (3xxxx) S: DP Output 3 Words (3xxxx) S: DP Output 4 Words (3xxxx) S: DP Output 5 Words (3xxxx) S: DP Output 5 Words (3xxxx) S: DP Output 7 Words (3xxxx) S: DP Output 7 Words (3xxxx) S: DP Output 8 Words (3xxxx)	Multiple:	1	•	
In	Module Type:	S: DP Output 104 Bits (1xxxx) S: DP Output 112 Bits (1xxxx) S: DP Output 120 Bits (1xxxx) S: DP Output 128 Bits (1xxxx) S: DP Output 1 Words (3xxxx) S: DP Output 2 Words (3xxxx) S: DP Output 3 Words (3xxxx) S: DP Output 4 Words (3xxxx) S: DP Output 5 Words (3xxxx) S: DP Output 5 Words (3xxxx) S: DP Output 7 Words (3xxxx) S: DP Output 7 Words (3xxxx) S: DP Output 8 Words (3xxxx)	Multiple:	1	•	



Select the added command, and set the corresponding start address of 485 device in

PrmData on the right, and the start address of both test commands is 0.

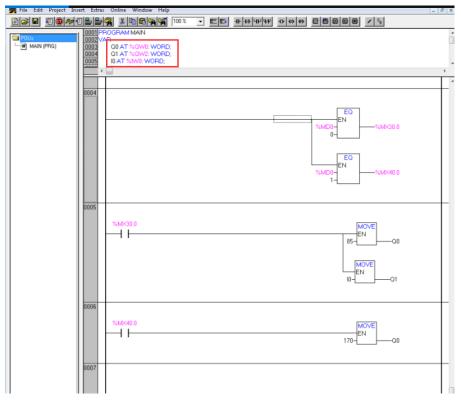
🛃 dp.tsm - Twin	CAT System Manager		
File Edit Acti	ons View Options Hel	2	
i 🗅 🚅 📽 🗖	🏉 🖪   🕹 🖻 🗂 🗂	1   # 8   🔜 🖬 🗸 🏄 💁 💱 🔨 🔍 🔍 🖗 🗐 🖓 🚱 🚱 🛠 🕅 😵	
G SYSTEM -     G	Configuration figuration of-TEST 5120-TEST-Image Inda'd Inputs MAIN.Q0 MAIN.Q0 MAIN.Q0 MAIN.Q1 figuration vices vices vices vices Vices Vices Stop Inputs Stop Inputs Stop Inputs Stop Output 2 Words (4 Main.Q1) Device 2 (EL6731)-Image Inputs Stop Inputs Stop Output 2 Words (4 Main.Q1) Stop Inputs Stop Output 2 Words (4 Stop Inputs Stop Inputs Stop Inputs Stop Inputs Stop Inputs Stop Inputs Stop Inputs Stop Inputs Stop Inputs Main.Q1) Main.Q2) Main.Q1) Main.Q2)	Image: Start Address (Sin)         PmData (Bin)         PmData (Fext)           Image: Start Address (Sin)         Oxid) (# &E loc () (B)         0         (bin)           PM01 V3.5)         Soco)         Soco)         Soco)         Soco)         Socol         S	
Server (Port)	Timestamp . 12/28/2018 12:38:21 PM 4	Message 9 Starting COM Server TcEventLogger !	
₹		III	+
Ready		Local (10.15.10.1	5.1.1) RTime 1%

2. Open the PLC Control interface, create a new project, default options, and click

OK.

Choose Target System Type		<b>×</b>
<ul> <li>PC or CX (x86)</li> <li>BC via AMS</li> <li>BC serial</li> <li>BC xx50 or BX via AMS</li> <li>BCxx50 or BX via serial</li> </ul>	C CX (ARM)	OK Cancel

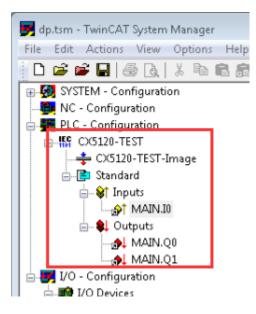
Edit a simple program, define variables, and the program logic is Q0 alternately assigned 85 or 170, Q1=I1.



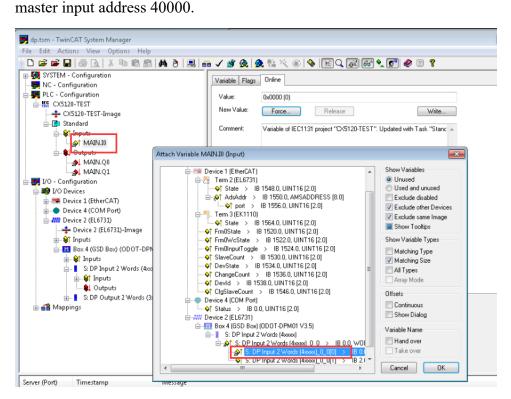
Compile all the programs, and a file CX5120-TEST.tpy will appear in the program save directory.



3.Return the System Manager interface, right-click PLC Configuration—Append PLC Project, in the dialog box that pops up, select the file that was compiled in the PLC Control interface earlier CX5120-TEST.tpy, click the OK. Expand the PLC Configuration drop-down menu, see the following figure, it could see the input and output variables.



Double-click MAIN.I0, in the pop-up dialog box, could select the corresponding 485



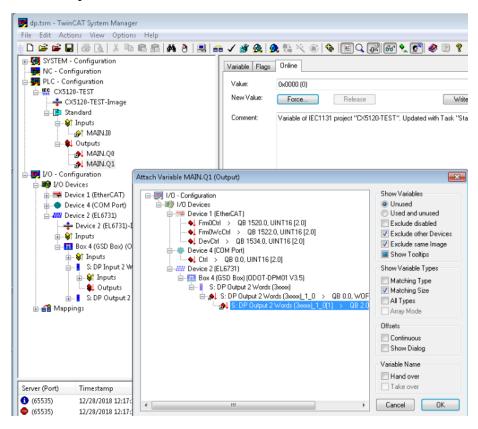
Double-click MAIN.Q0, in the pop-up dialog box, could select the corresponding 485

master output address 30000.

🗅 🖆 🗳 🖬 🎒 🌆 🖪 🖉	🏘 👌   🔜 📾 🗸 🎯 🙊   💁 🗞 🔌 🔳	Q 🔐 🔐 🍢 🛃 🧶 🕲 🐧
SYSTEM - Configuration     NC - Configuration     PLC - Configuration     Status     CV5120-TEST     CV5120-TEST-Image     Standard     Standar		ease W "CX5120-TEST". Updated with Task "
MAIN.Q1	fariable MAIN.Q0 (Output)	
<ul> <li>I/O Devices</li> <li>Device 1 (EtherCAT)</li> <li>Device 4 (COM Port)</li> <li>Device 2 (EL6731)</li> <li>Thruts</li> <li>Box 4 (GSD Box) (O</li> <li>Fill Box 4 (GSD Box) (O</li> <li>Fill Box 4 (GSD Box) (O</li> <li>Fill Device 2 (EL6731)</li> <li>S: OP Inputs</li> <li>S: OP Inputs</li> <li>S: OP Outputs</li> <li>S: S: OP Output 2</li> <li>Mappings</li> </ul>	I/O - Configuration         I/O Devices         Device 1 [EtherCAT]         → I FrmOVrb1 > QB 1522.0, UINT16 [2.0]         → I FrmOVrb1 > QB 1532.0, UINT16 [2.0]         → I FrmOvcctl > QB 1532.0, UINT16 [2.0]         → I DevCrl > QB 1532.0, UINT16 [2.0]         → I DevCrl > QB 0.0, UINT16 [2.0]         → I S: DP Output 2 Words (3xxxe)         → I S: DP Output 2 Words (3xxxe)         → I S: DP Output 2 Words (3xxxe)	

Double-click MAIN.Q1, in the pop-up dialog box, could select the corresponding 485

master output address 30001.



Click Active – Active Configuratin, active the configuration.

4.return the PLC Control interface, click Online—Login—Run, download the

program to the CX5120, click Online-Create Bootproject to create a root program.

🥦 TwinCAT PLC Control - CX	(5120-TEST.p	••* - [MAIN (PRG-LD)]				
	ert Extras	Online Window Help				_ 8 ×
🖹 🚘 🖬 📲 🚳 🛷 🗄	3 🏝 🎥 🧯	Login	F11	· 4F 4/F •• •• ••	日 四 国 国 一 本 S <sub>R</sub>	
	0001 PR	Logout	F12			*
POU: 	0002VA 0003	Download				
	0003	Run	F5			
	0005	Stop	Shift+F8			-
	•	Reset				÷.
		Reset All				^
	0004	Toggle Breakpoint	F9			
		Breakpoint Dialog				
		Step over	F10		EQ	
		Step in	F8		EN %MX30.0	
		Single Cycle	Ctrl+F5		0-	
		Write Values	Ctrl+F7			
		Force Values	F7		EQ	
		Release Force	Shift+F7		EN	
		Write/Force-Dialog	Ctrl+Shift+F7		%MD0- 1- %MX40.0	
		Show Call Stack				
		Display Flow Control	Ctrl+F11			
	0005					
		Simulation Mode Communication Parameters				
		Sourcecode download				
				-	8500	
		Choose Run-Time System				
		Create Bootproject			MOVE	
		Create Bootproject (offline) Delete Bootproject			EN	
		Delete Bootproject			10-LQ1	
	0006					
		%MX40.0			MOVE	
					ENQ0	
					1700	
	0007					
	•					4
<u>∎</u> <b>, <sup>™</sup>.</b> , <mark>₩</mark> , ₩,		III				•

5.Return the System Manager interface, click Active –Set/Reset TwinCAT to Run Mode, at this point, DPM01 and Beckhoff's DP adapter set up DP communication. 6. Online monitoring, open the MODBUS POLL software, simulate the master system connected to the gateway 485. The data of the CX5120 PLC can be monitored and displayed alternately at the system address 30000 of 485 master, and the data of the 30001 changes with the data of the 40000.

#### 🛍 Modbus Poll - Mbpoll2.mbp File Edit Connection Setup Functions Display View Window Help 🗅 🚔 🖶 🎒 🗙 🛅 🖳 🚊 🕮 05 06 15 16 17 22 23 | TC 🗵 💡 💔 🗒 Mbpoll2.mbp 📃 🗉 🖾 🕎 Mbpoll1.mbp Tx = 20374: Err = 7: ID = 1: F = 04: SR = 10( Tx = 102891: Err = 12: ID = 1: F = 03: SR = 10 Alias Alias 0×AA00 IO Q0 Q1=I0 Port 4: 9600-8-N-1 For Help, press F1.

## od•t Odot Automation System Co., Ltd

# 7 Annex

## 7.1 Modbus-RTU Protocol Introduction

For user, it is important to understand that Modbus has 8 important function codes corresponding to 4 areas: 4 read, 2 write a single bit or register, and 2 write multiple bits or multiple registers (Address description adopts PLC address).

## 7.1.1 Modbus Storage Area

The storage area of the controller (or Modbus device) involved in Modbus is identified by 0XXXX, 1XXXX, 3XXXX and 4XXXX.

Storage ID	Name	Data Type	Read/Write	Storage Unit Address
				00001~0XXXX,
0XXXX	Output Coil	Bit	Read/Write	XXXX: related to the
				device
				10001~1XXXX,
1XXXX	Discrete Input	Bit	Read Only	XXXX: related to the
				device
				30001~3XXXX,
3XXXX	Input Register	Word	Read Only	XXXX: related to the
				device
				40001~4XXXX,
4XXXX	Output/Holding	Word	Read/Write	XXXX: related to the
	Registers			device

## 7.1.2 Modbus Function Code

Modbus messages are relatively fixed, so it could know the structure after reading a few messages, and users can inquire about it when necessary.

(1) Read output coil status

Function Code: 01H

Master station inquiry message format:

Address	Function Code	Start Address High Byte	Start Address Low Byte	Number of coils High Byte	Number of coils Low Byte	CRC
0x11	0x01	0x00	0x13	0x00	0x25	xxxx

Function: Read slave station output coil 0XXXX status.

Note: Some device coil start address is 00000, which corresponds to address 00001 in the device, and the sequence is postponed.

In this example: read the output coil of the slave station No. 0x11, the register start address is 0x13=19, and the number of coils is 0x0025H=37.

Therefore, the function of this query message is: read the output coil 00019-00055 of the slave station No. 0x11 (17), A total of 37 coil status.

Address	Function Code	Byte Count	Coil Status 19-26	Coil Status 27-34	Coil Status 35-42	Coil Status 43-50	Coil Status 51-55	CRC
0x11	0x01	0x05	0xCD	0x6B	0xB2	0x0E	0x1B	xxxx

Slave station response format:

Function: Slave returns to output coil 0XXXX status.

(2) Read discrete input status

Function Code: 02H

Master station query message format:

Address	Function Code	Start Address High Byte	Start Address Low Byte	Number of coils High Byte	Number of coils Low Byte	CRC
0x11	0x02	0x00	0xC4	0x00	0x16	xxxx

Function: Read the status of slave station input coil 1XXXX.

Note: Some equipment coil start address is 10000, which corresponds to the address of 10001 in the device, and the sequence is postponed.

In this example: read the input coil of the slave station No. 0x11, the starting address is 0x00C4=196, and the number of coils is 0x0016=22.

Therefore, the function of this query message is: read the input coil 10196-10217 of the slave station No. 0x11(17), a total of 22 discrete input status.

## Slave station response format:

Address	Function Code	Byte Count	DI 10196-10203	DI 10204-10211	DI 10212-10217	CRC
0x11	0x02	0x03	0xAC	0xDB	0x35	xxxx

Function: Slave returns to input coil 1 XXXX status.

(3) Read output/holding register

Function Code: 03H

Master station query message format:

Address	Function Code	Register Start Address High Byte	Register Start Address Low Byte	Number of Registers High Byte	Number of Registers Low Byte	CRC
0x11	0x03	0x00	0x6B	0x00	0x03	xxxx

Function: Read slave station holding register 4XXXX value.

Note: The starting address of some device registers is 40000, which corresponds to the address 40001 in the device, and the sequence is postponed.

In this example: read the holding register value of the slave station No. 0x11, the starting address is 0x006BH=107, and the number of registers is 0x0003.

Therefore, the function of this query message is: read the value of 3 holding registers 40107-40109 of the slave station No. 0x11 (17H).

Address	Function Code	Byte Count	Register 40107 High Byte	Register 40107 Low Byte	Register 40108 High Byte	Register 40108 Low Byte	Register 40109 High Byte	Register 40109 Low Byte	CRC
0x11	0x03	0x06	0x02	0x2B	0x01	0x06	0x2A	0x64	xxxx

Function: The slave returns to the value of the holding register: (40107)=0x022B, (40108)=0x0106, (40109)=0x2A64

(4) Read the input register Function code: 04H

Master station query message format:

Address	Function Code	Register Start Address High Byte	Register Start Address Low Byte	Number of Registers High Byte	Number of Registers Low Byte	CRC
0x11	0x04	0x00	0x08	0x00	0x01	XXXX

Function: Read slave station input register 3XXXX value.

Note: In some devices, the register start address is 30000, which corresponds to the address 30001 in the device, and the sequence is postponed.

In this example: read the input register value of the slave station No. 0x11, the start address is 0x0008H, and the register number is 0x0001.

Therefore, the function of this query message: read the value of 1 input register 30008 of slave station No. 0x11 (17).

Slave station response format:

Address	Function Code	Byte Count	Input Register 30008 High Byte	Input Register 30008 Low Byte	CRC
0x11	0x04	0x02	0x01	0x01	xxxx

Function: The slave station returns to the value of the input register 30008; (30008) =0x0101

(5) Force a single coil

Function code: 05H

Master station query message format:

Address	Function Code	Coil Address High Byte	Coil Address Low Byte	Break Flag	Break Flag	CRC
0x11	0x05	0x00	0xAC	0xFF	0x00	XXXX

Function: Force the 0XXXX value of slave station coil 0x01 (17). In some devices, the coil start address is 00000, which corresponds to the address 00001 in the device, and the sequence is postponed.

Break Flag = FF00, force the coil ON. Break Flag = 0000, force the coil OFF.

Example: The starting address is 0x00AC=172. Force No. 17 slave station coil 0172 to ON status.

Response format: return to the original text

Function: Force No. 17 slave device coil 0172 ON and return to the original text

Address	Function Code	Coil Address High Byte	Coil Address Low Byte	Break Flag	Break Flag	CRC
0x11	0x05	0x00	0xAC	0xFF	0x00	xxxx

(6) Preset single holding register

Function Code: 06H

Master station query message format:

	Eumotion	Register Start	Register Start	Number of	Number of	
Address	Function	Address	Address	Registers	Registers	CRC
Code	Code	High Byte	Low Byte	High Byte	Low Byte	
0x11	0x06	0x00	0x87	0x03	0x9E	XXXX

Function: Preset single holding register 4XXXX value. In some devices, the coil start address is 40000, which corresponds to the address 40001 in the device, and the

sequence is postponed.

Example: Preset the value of the single holding register 40135 of No. 17 slave device to 0x039E;

Response format: return to the original text

Address	Function Code	Register Start Address High Byte	Register Start Address Low Byte	Number of Registers High Byte	Number of Registers Low Byte	CRC
0x11	0x06	0x00	0x87	0x03	0x9E	XXXX

Function: Preset the No. 17 slave device single holding register 40135 value to 0x039E and return to the original text.

## (7) Force Multi-coil

## Function Code: 0FH

Master station query message format:

Address	Function Code	Coil Start Address High Byte	Coil Start Address Low Byte	Number of coils High Byte	Number of coils Low Byte	Byte Count	Coil Status 20-27	Coil Status 28-29	CRC
0x11	0x0F	0x00	0x13	0x00	0x0A	0x02	0xCD	0x00	xxxx

Function: Force multiple continuous coils 0XXXX to ON/OFF status. Note: In some devices, the coil start address is 00000, which corresponds to the address 00001 in the device, and the sequence is postponed.

In this example: Force multiple continuous coils in slave station 0x11, the start address of the coil is 0x0013=19, and the number of coils is 0x000A=10. Therefore, the function of this query message is: to force the value of 00019-00028 of the 10 coils of slave station No. 0x11 (17); CDH $\rightarrow$ 00019-00026; 00H $\rightarrow$ 00027-00028.

Slave station response format:

Address	Function Code	Coil Start Address High Byte	Coil Start Address Low Byte	Number of coils High Byte	Number of coils Low Byte	CRC
0x11	0x0F	0x00	0x13	0x00	0x0A	xxxx

(8) Preset multiple registersFunction Code: 10HMaster station query message format:

Addre ss	Functio n Code	Start Register Address High Byte	Start Register Address Low	Number of Register s High	Number of Register s Low	Byte Count	Data High Byte	Data Low Byte	Data High Byte	Data Low Byte	CRC
		Ingh Dyte	Byte	Byte	Byte						
0x11	0x10	0x00	0x87	0x00	0x02	0x04	0x01	0x05	0x0A	0x10	xxxx

Function: Preset multiple holding register values 4XXXX of the slave station. Note: In some devices, the holding register start address is 40000, which corresponds to the address 40001 in the device, and the sequence is postponed.

In this example: Preset multiple holding register values of slave station 0x11, the register start address is 0x0087=135, and the number of coils is 0x0002=2. Therefore, the function of this query message is: preset the value of 2 holding registers of slave station No. 0x11 (17);  $0105H\rightarrow40135$ ;  $0A10H\rightarrow40136$ .

## Response Format:

Address	Function Code	Start Register Address High Byte	Start Register Address Low Byte	Number of Registers High Byte	Number of Registers Low Byte	CRC
0x11	0x10	0x00	0x87	0x00	0x02	xxxx

# 7.2 Brief introduction of serial port network topology7.2.1 RS232

RS232 is one of serial communication interfaces controlled by industry. It is widely used to connect computer serial interface with peripherals. RS232 using a signal and a signal transmission form, return lines were in the land of the three wire connection mode, can realize full-duplex communications, the transmission signals for single ended, the total transmission of easy to generate common-mode interference, so the noise resistance is weak, the transmission distance is limited, RS232 interface standards stipulated in the code element distortion maximum transmission distance is less than 4% under the condition of standard values of 50 feet (15 meters) (more than 15 m long distance communication, need to adopt modem), the maximum transmission distance is also associated with communication baud rate, in the process of practical application, if the transmission distance is far, Please reduce the baud rate. In order to reduce the electromagnetic interference from the outside during the signal transmission, please use the shielded cable as the communication cable.

RS232 interface standard specifies that TXD and RXD:

RS232 USES negative logic to transmit signals and takes the signal of  $-(3\sim15)$  V as logic "1". Take the signal of  $+(3\sim15)$  V as logical "0"; Voltages between -3 and +3V are meaningless, as are voltages lower than -15V or higher than +15V.

RS232 Interface Classification:

DB9 header interface

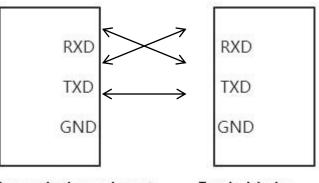


The top left corner is 1, the bottom right corner is 9

9-pin RS232 serial port (DB9)					
Pin	Name	Function			
1	CD	Carrier detect			
2	RXD	Receive data			
3	TXD	Send data			
4	DTR	Data terminal ready			
5	GND	Signal ground			
6	DSR	Data ready			
7	RTS	Request to send			
8	CTS	Clear to send			
9	RI	Ring alert			

As the RS232 interface has the above electrical characteristics, it can only realize point-to-point communication.

RS232 communication wiring diagram is shown in the figure below:



Communication equipment with RS232 interface

Terminal device with RS232 interface

## 7.2.2 RS422

The full name of RS422 interface standard is "Electrical Characteristics of Balanced Voltage Digital Interface Circuit", which defines the characteristics of the interface circuit. RS422 adopts four-wire plus ground wire (T+, T-, R+, R-, GND), full-duplex, differential transmission, multi-point communication data transmission protocol. It USES a balanced transmission line that is unidirectional/non-reversible, with or without an enabling end. Because the receiver USES a high input impedance and the sending driver is stronger than RS232, it is allowed to connect multiple receiving nodes on the same transmission line, up to 10 nodes. That is, one Master device (Master), the rest are slave devices (Salve), and the slave devices cannot communicate with each other, so RS-422 supports point-to-many two-way communications. The RS-422 has a maximum transmission range of 4,000 feet and a maximum transmission rate of 10Mb/s. The length of the balanced twisted pair is inversely proportional to the transmission rate, and the maximum transmission distance can be reached only if the rate is below 100KB /s. The highest rate of transmission can be obtained only over very short distances. Generally, the maximum transmission rate obtained on 100 meters long twisted pair is only 1Mb/s.

The RS-422 requires a terminal resistance that is approximately equal to the characteristic impedance of the transmission cable. In short distance transmission, no final resistance is required, that is, no final resistance is generally required below 300 meters. The final resistance is connected to the farthest end of the transmission cable. In a master multi-slave network connection, all the sending terminals of the slave connect to the receiving terminals of the master station by daisy-chain. All the receiving ends of the slave stations are connected by daisy-chain to the sending end which is finally connected to the master station.

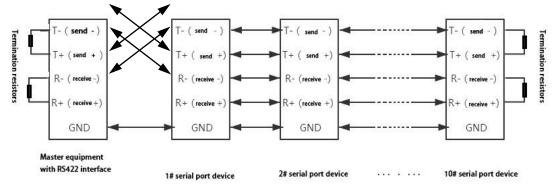
RS422 (9 Pin)		Function	Remark
3	R-	Receive negative	Must connect
2	T-	Send negative	Must connect
7	R+	Receiving positive	Must connect
8	T+	Send positive	Must connect

The RS422 pin definition:



The upper left corner is 1, the lower right corner is 9.

The RS422 communication wiring diagram is shown in the figure:



## 7.2.3 RS485

Since the RS-485 is developed from the RS-422, many electrical provisions of the RS-485 are similar to those of the RS-422. If they all adopt the balanced transmission mode, they all need to connect the final resistance on the transmission line, etc. The RS-485 can adopt two - wire and four - wire mode, and the two - wire system can realize real multi - point two - way communication.

RS485 is a standard for defining the electrical characteristics of drivers and receivers in a balanced digital multipoint system, using a combination of balanced drivers and differential receivers for enhanced common-mode dry resistance, i.e., good noise interference resistance. Because the semi-duplex network composed of RS485 interface generally adopts the wiring mode of two-wire system and adopts differential signal to transmit data, the voltage difference between the two lines is -(2-6)V to represent logic "0 ", and the voltage difference between the two lines is +(2-6)V to

RS485 signal transmission distance is related to communication baud rate, the higher the baud rate, the shorter the transmission distance, under the condition of the baud rate is not higher than 100 KBPS, theory of the maximum communication distance is about 1200 meters, in the process of practical application, Due to electromagnetic interference and other factors, often cannot meet the maximum communication distance, if in a long-distance communication, please reduce the baud rate, to reduce the signal during transmission by external electromagnetic interference, please use twisted-pair shielded cable as a communication cable.

RS485 bus in the case of no trunk to support a maximum of 32 nodes, node and node between the "Daisy chain" connection mode, in the communication cable at both ends need to add terminal resistance, the resistance value is required to be approximately equal to the transmission cable characteristic impedance. In short distance transmission, no final resistance is required, that is, no final resistance is generally required below 300 meters. The final resistance is connected at the ends of the

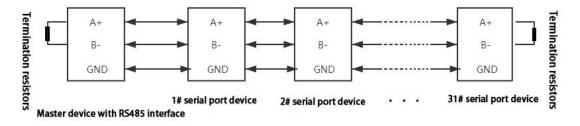
http://www.odotautomation.com

transmission cable.

RS485 9 pin definition:

Pin	Name	Function	Remark
1	Data-/B-/485-	Send	Must
	Data-/D-/403-	positive	connect
2	Data+/A+/485+	Receiving	Must
		positive	connect
5	GND	Ground	
	GND	wire	

The RS485 communication wiring diagram is shown in the figure:



#### Odot Automation System Co., Ltd.

Add: Plant No. 204 MianYang Comprehensive Bonded Zone, Eastern section of FeiYun Avenue, MianYang, Sichuan Province, China. 621000



Tel: +86-0816-2538289

Zip Code: 621000

Email: sales@odotautomation.com

Web: www.odotautomation.com