EtherNet/IP / PROFIBUS DP Gateway GT200-DP-EI

User Manual

V 1.7

Rev A







Email: support@sstautomation.com www.SSTAutomation.com

Important Information

Warning

The data and examples in this manual cannot be copied without authorization. SST Automation reserves the right to upgrade the product without notifying users.

The product has many applications. The users must make sure that all operations and results are in accordance with the safety of relevant fields, and the safety includes laws, rules, codes and standards.

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www.sstautomation.com E-mail: support@sstautomation.com



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GT200-DP-EI EtherNet/IP / PROFIBUS DP Gateway User Manual

1 Product Overview

1.1 Function

GT200-DP-EI gateway is solution to connect EtherNet/IP and PROFIBUS DP network easily and quickly. This gateway supports interconnection between PROFIBUS DP master PLC and AB (Rockwell) PLC.

1.2 Features

- > With an Ethernet interface (EtherNet/IP slave interface) and a PROFIBUS DP slave interface.
- ► Ethernet 10/100M adaptive.
- > IP address conflict detection.
- Support DHCP, BOOTP and static setting.
- > I/O data monitoring capabilities.

1.3 Technical Specification

- [1] Support PROFIBUS DP V0 protocol.
- [2] PROFIBUS DP slave, baud rate adaptive, maximum baud rate 12M.
- [3] PROFIBUS DP:
 - Max input data bytes is 244 bytes.
 - Max output data bytes is 244 bytes.
 - input + output data bytes is 488 bytes.
- [4] PROFIBUS DP interface: 1KV photoelectric isolation.
- [5] Support ODVA standard EtherNet/IP communication protocol.
- [6] EtherNet/IP can support 3 groups I/O communication simultaneously.
- [7] I/O data accessing of EtherNet/IP can support 2 ways:
 - Set up I/O connection to access I/O data directly (Recommended).
 - Use MSG command to access I/O data (Advanced function).
- [8] Two end network can monitor connection status mutually.
- [9] Provide byte swap function: No swap, two bytes swap and four bytes swap.
- [10] Power supply 24VDC (11~30VDC), 160mA (24VDC).
- [11] Operating temperature: -4°F to 140°F (-20°C~60°C). Humidity: 5% ~ 95% (no condensation).
- [12] External Dimensions (W*H*D): 1.6in*5.0in*4.4in (40mm* 125mm * 110mm).
- [13] Installation: 1.4 in (35 mm) RAIL.
- [14] Protection level: IP20.



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1.4 Related Products

Related products include:GT200-DP-CA, GT200-CO-EI, GT200-EI-2RS485, GT200-DP-EI etc.

To get more information about related products, please visit SSTCOMM website: <u>www.sstautomation.com</u>.

1.5 Revision History

Revision	Date	Chapter	Description
V1.7 Rev A	1/13/2022	ALL	Update the format



2 Hardware Description

2.1 Product Appearance



Notes: This picture is for reference only. The product appearance is subject to the actual product.



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2.2 Indicators

Indicators	Status	Description
STA(green)	Blink	PROFIBUS DP bus data is communicating.
Sin(green)	Off	No data communicating.
PBF (red)	On	PROFIBUS DP bus data communication fails.
	Off	Communication is ok.
	Blink (red)	DHCP or BOOTP status.
MS	On (red)	IP confliction.
	OFF(red)	Normal communication.
	On(green)	Modbus TCP connection has been established.
NS	Flash(green)	Modbus TCP connection is not established or disconnected.
	OFF(green)	Modbus TCP is not started.
MS, NS, and STA flashes once		Boot up.
MS and NS ON		Configuration status.

2.3 Switch

2.3.1 DIP Switch

The configuration switch is located on the button of the product. The function is listed below:



Mode(1)	Function(2)	Description
Off	Off	Run mode, allow reading and writing configuration data.
Off	On	Run mode, forbid reading and writing configuration data.
On	Off	Configuration mode, IP address is 192.168.0.10 (fixed), this mode can read and write configuration data but cannot finish communication between EtherNet/IP and
		PROFIBUS DP.
On	On	Reserved.

Notes: Restart GT200-DP-EI (power off and power on) after resetting the configuration to make the configuration take effect!



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2.3.2 PROFIBUS DP Address Setting Switch

The 2-code rotary switch in the left-side is used for setting the PROFIBUS DP address of the device.



In this example, the calculation formula of PROFIBUS DP address will be: 42((4x10) + (2x1)).

2.4 Interface

2.4.1 Power Interface

Pin	Function
1	Power GND
2	NC, (Not Connected)
3	24V+, DC



2.4.2 Ethernet Interface

Ethernet interface uses RJ-45 connector, 10/100M self-adaptive. its pin (standard Ethernet signal) is defined as below:

pin	Signal Descriptions
S1	TXD+, Transmit Data+
S2	TXD-, Transmit Data-
S3	RXD+, Receive Data+
S4	Bi-directional Data+
S5	Bi-directional Data-
S6	RXD-,Receive Data-
S7	Bi-directional Data+
S 8	Bi-directional Data-



RJ-45 port



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2.4.3 PROFIBUS DP Interface

Pin	Function
3	PROFI_B, Data positive
5	GND
8	PROFI_A, Data negative

PROFI_A (Pin 8)



PROFI_B (Pin 3) GND (Pin5)



3 Installation

3.1 Machine Dimension

Size (width * height * depth):

1.6 in * 5.0 in 4.4 in (40 mm * 125 mm * 110 mm)







3.2 Installation Method

Using 1.4 in (35mm) DIN RAIL.

Install the gateway



Uninstall the gateway

- 1. Use a screwdriver to pass through the DIN RAIL bar, pull down and hold.
- 2. Pull out the gateway.
- 3. Lift up the gateway.





4 Quick Start Guide

Basic steps when configuring GT200-DP-EI:

- 1. Wiring: See also Chaper2.4 Interface.
 - (1) Connect the network port of the gateway to the PC with a network cable for downloading the configuration.

(2) Connect the PROFIBUS DP port of the gateway to the PLC for communication. It is recommended to use standard PROFIBUS DP connector to finish the wiring.

- (3) Connect the gateway power supply and power on.
- 2. Download SST-EP-CFG software from www.sstcomm.com/Download1/ and install it.

3. Download GSD file and EDS file for GT200-DP-EI from www.sstcomm.com/Download1/.

4. Build your configuration using SST-EP-CFG and download it to the gateway. For more details,see_SST-EP-CFG software->Help->Contents.

(1) The software can configure the IP address of the gateway and EtherNet/IP protocol related parameters.

(2) Please set the PROFIBUS DP protocol related parameters in the configuration software of the PROFIBUS DP Master station.

(3) Please use the rotary switch on the gateway to set the PROFIBUS DP address. Also see Chapter 2.3.2.

If the gateway cannot be searched, please note:

- The network factory setting of GT200-DP-EI is 192.168.0.XXX. Please check whether the computer and gateway are in the same network segment.
- Please test the network connection first. Please refer to the note "<u>How to Use the Ping Command</u>" located on our Support page on the sstcomm.com website.
- If you are not sure about the IP address of the gateway. Please set the DIP switch to "1-ON, 2-OFF", make the gateway enter the configuration mode, and restart GT200-DP-EI (power off and power on). At this time, the IP address will be fixed to 192.168.0.11

5. Install the EDS file in the configuration software of the EtherNet/IP Master station. Configure the EtherNet/IP network as required. Make sure that the configuration matches the configuration present in the GT200-DP-EI.6. Install the GSD file in the PROFIBUS DP configuration tool. Configure the PROFIBUS DP network as required. Make sure that the configuration matches the configuration present in the GT200-DP-EI.

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5 Configuration Software SST-EP-CFG

SST-EP-CFG is the software based on Windows platform. It is used to configure GT200-DP-EI through network Interface. Download the software on <u>www.sstcomm.com/Download1/</u> and run the setup program to begin the installation. Please follow the prompts to install the software.

For detailed software content, please open the SST-EP-CFG, select "Help" >> "Contents" on the menu bar.

Double-click on the icon to device selecting interface:



Choose the GT200-DP-EI, and enter the main interface:

Gateway Configuration software SST-EP-CFG File(F) Edit(E) Tool(T) Help(H)						– Title Bar]	×
		🖳 Menu Bar		1	Ţ	The Dai		
New Save Open Add Node	Hade Add Cmd Del	Cmd Upload Download	AutoMap Confild	Export	Debug			
Device	Toolbar							
Fieldbus	100100		Ether	Net/IP Slave				
Ethernet	Assign IP Mode		Manu	ally Assign				
	IP Address		192.10	68.0.10				
l N	Subnet Mask		255.2	55.255.0				
	Default Gateway		192.10	08.0.1				_
	DNS2		0.0.0	0				
	Number of Input Byte	es(Instance102)	248	•	1			_
	Number of Output	Configuration plate	c	$\overline{}$	/			
Equipment plate:	f Input B	Input configuration	parameters,					
Users can choose ope	eration f Output l	gray parts cannot be	e modified	monitoring of	f networks at	both ends		
object, includes Ethernet	type,			p				_
adding node and command	1							
× [Comm	nent plate	e:	_	
					ioni piai			
				Explai	in the fu	inction of t	he	
		_		config	uration	options		
				2	,			
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Info News								
Ready						Capital Num	ber	1.



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6 Working Principle

6.1 EtherNet/IP Connection Parameters

Connection parameters the gateway provides are as below:

- ◆ Input Instance: 102 (4+244 Bytes), 112 (4+244 Bytes), 122 (4+244 Bytes).
- ◆ Output Instance: 101 (244 Bytes), 111 (244 Bytes), 121 (244 Bytes).
- ◆ Configuration Instance: 113 (10 Bytes).

Input Instance 102, 112, 122 data length can be set in SST-EP-CFG, range 5~248 bytes, among them the first four bytes are the real time frame header (Reserved).

Output Instance 101,111, 121 data length can be set in SST-EP-CFG, range 1~244 bytes.

Take configuration parameters of RSLogix5000 as an example:

Lodule P	roperties: ENe	t l aster (E	THERNET-MOD	ULE 1.1))o	X
General Con Type: Vendor: Parent:	nection Module Info ETHERNET-MODULE Allen-Bradley ENetMaster	Generic Ethern	et Module	ameters		
Na <u>m</u> e: Description:	ENetAdapter	<	Input:	Assembly Instance: 102 101	Size:	(32-bit) (32-bit)
Comm <u>F</u> ormal Address / H IP <u>A</u> ddr	t: Data - DINT Host Name ess: 192 . 168 . ame:	0.12	<u>Configuration:</u> Status Input: Status Output:	113] (8-bit)
Status: Offline		ОК	Cancel	Appl	p.	Help

Notes: The "Size" (the bytes number that has been configured) in the above picture, is consistent with the input/output bytes number of Instance which has been configured in the configuration software SST-EP-CFG).



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6.2 How to Read/Write I/O Data

6.2.1 Read and Write Data using I/O mode(Recommended)

The following RSLogix 5000 example will describe how to read/write I/O data using I/O mode. Right click on EtherNet/IP master module, click "New Module", as shown below:



In the pop-up dialog box, unfold "+" before "Communications", choose "ETHERNET-MODULE", click "OK", as shown below:

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a constrainte na	Description	Vendor
	 ther. 10/100 Mbps Ethernet Fort on CompactLogi A 1788 Ethernet to DeviceNet Linking Devic 1788 10/100 Mbps Ethernet Bridge, Twiste 1788 10/100 Mbps Ethernet Bridge w/Enham 1794 10/100 Mbps Ethernet Adapter, Twist 1794 10/100 Mbps Ethernet Adapter, Twist 1794 10/100 Mbps Ethernet Adapter, Twist 10/100 Mbps Ethernet Fort on DriveLogixS IDGE Generic EtherNet/IF CIP Bridge DULE Generic Ethernet Module SoftLogixS800 EtherNet/IF A Ethernet Adapter, Twisted-Pair Media 	ix5335E Allen-Bradley re Allen-Bradley ed-PaiAllen-Bradley ted-PaAllen-Bradley ted-PaAllen-Bradley ted-PaAllen-Bradley 5730 Allen-Bradley Allen-Bradley Allen-Bradley Parker Mannifin Corp.
•		

Configure relevant information of GT200-DP-EI in the pop-up window, as shown below:

		10000000000		Set Ins	stance and	siz
Туре:	ETHERNET-MODULE Generic Ether	net Module		This m	neans 248 h	vt
Vendor:	Allen-Bradley				1 2 10 0	
Parent:	Master	Connection De		input	and 244	by
Va <u>m</u> e:	GT200DPEI	- Connection Pa	rameters	output		
Description:		8	Assembly Instance:	$\overline{}$		Γ
5 0001 <u>P</u> 011.	Set name of EtherNet/I	P Input:	102	62	÷ (32-bit)	
	slave	O <u>u</u> tput:	101	61	÷ (32-bit)	
Comm <u>F</u> orm	at: Data - DINT 📃 💌	Cantanatan	. 113	10	- (0 La)	
-Address /	Host Name	Configuration	c prio		- (o-Di()	
	dress: 192 . 168 . 0 . 10	<u>S</u> tatus Input:				
C Host N	lame: IP address of GT200	-DP-EI	t]		
						1
Open Mo	idule Properties	OK				1

In the above picture, the module information needs to be configured includes:

Name: Name the added EtherNet/IP salve module (GT200-DP-EI module).

Comm Format: Configure data types. Users can choose data types as DINT, INT, SINT and REAL, etc. After confirmation, this cannot be changed. If you want to change data types, you can create new module.

IP Address: Set IP address of the EtherNet/IP slave module (IP address of GT200-DP-EI). IP address of GT200-



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DP-EI is the address downloaded into module through software SST-EP-CFG.

Connection Parameters: Set Connection parameters during communication, this parameter GT200-DP-EI supports can refer to past chapter.

Note: "Size" (configured bytes) in the above picture should be the consistent with relevant input and output bytes of Instance in the SST-EP-CFG.

Click "OK", set master polling time interval in the pop-up dialog box, the default is 10ms, as shown below:

■ ■odule Properties: ■aster (ETHERHET-■ODVLE 1.1)	×
General Connection Module Info <u>B</u> equested Packet Interval (RPI): 10.0 ms (1.0 - 3200.0 ms)	
Major Fault On Controller If Connection Fails While in Run Mode	
Status: Offline OK Cancel Apply	Help

After setting this interval, click "OK" to save. Double click "Controller Tags", unfold "GT200DPEI: O", as shown below:



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25	RSLogix 5000 - Controller in Controller1.	ACD [1	756-L55] *							
Eile Edit Eise Search Logic Communications Tools Mindow Help										
E			<u>-</u> & & & I	28 29						
Off	line 🛛 🗸 🗖 RUN	18 F	ath: AB_ETHIP-1\192.168.0.147\B	ackplane\0*	- *					
No	Forces			na come de service d						
No	Edits 🔒 🗖 1/0	. -		-(U)(L)-	Þ					
Rec	dundancy reg	$\langle \rangle$	Favorites 🖌 Add-On 🔏 Alarms	K Bit K Timer/Counte	er 🖌 li					
1	🕞 🚔 Castallar Castallar	1 I 🔽	Controller Tags - Control	ler(controller)					_ [0]	X
	Controller Controller			<u> </u>						-
	Controller Fault Handler	9	cope: Di Controller	Show All						
	Power-Up Handler		Name 🛆	Value 🔶	Force 🗲	Style	Data Type	Description		
	🖻 😁 Tasks		EPS320IP:C	{}	{}		AB:ETHERNET_MODULE:C:0			
	- A MainTask		1 EPS320IP:1	{}	{}		AB:ETHERNET_MODULE_DINT_2			
			E-EPS320IP:0	{}	{}		AB:ETHERNET MODULE DINT 2			
	🖨 🔄 Motion Groups		EPS320IP:0.Data	()	{}	Hex 🗸	DINTI611			
	Ungrouped Axes		EPS320IP 0 Data(0)	16#0000 0000		Hex	DINT			
			F-EPS320IP-0 Data[1]	16#0000_0000		Hav	DINT			
	User-Defined		E-cpcccolp.o.p.a.(1)	16#0000_0000		Hau	DINT			
	🕀 🚘 Strings			10#0000_0000		nex	DINT			
	Add-On-Defined		EPS320IP:0.Data[3]	16#0000_0000		Hex	DINI			
	🕀 🛄 Predefined		EPS320IP:0.Data[4]	16#0000_0000		Hex	DINT			
	H 48 Module-Defined		EPS320IP:0.Data[5]	16#0000_0000		Hex	DINT			
			EPS320IP:0.Data[6]	16#0000_0000		Hex	DINT			
	🖻 🖅 1756 Backplane, 1756-A7		EPS320IP:0.Data[7]	16#0000_0000		Hex	DINT			
	- 🛱 [0] 1756-L55 Controller		EPS320IP:0.Data[8]	16#0000_0000		Hex	DINT			
	- 📙 [1] 1756-DNB DeviceNet_master		EPS320IP:0.Data[9]	16#0000_0000		Hex	DINT			
	E- [] [2] 1756-ENBI/A Master		EPS320IP:0.Data[10]	16#0000 0000		Hex	DINT			
	ETHERNET-MODULE EPS3201P		±-EPS320IP:0 Data[11]	16#0000 0000		Hex	DINT			
	1756-ENBT/A Master		EPS320IP/0 Data[12]	16#0000 0000		Hex	DINT			
	36		+-EPS220IP-0 D-2-2[12]	16#0000_0000		Hay	DINT			
			+-cpc200.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0	16#0000_0000		Uou	DINT			
			+ cr 5320(7:0.Data[14]	16#0000_0000		Liev.	DINT			
			EPS320P(U.Data[15]	10000000000		Hex	DINT			
			#"EPS320IP:0.Data[16]	16#0000_0000		Hex	DINI			
			+ EPS320IP:0.Data[17]	16#0000_0000		Hex	DINT			
			±-EPS320IP:0.Data[18]	16#0000 0000		Hex	DINT			

In the above picture, GT200DPEI:O.Data [0] ~GT100EIRS:O.Data [60] is the corresponding output data address

of GT200-DP-EI module in master.

Unfold "GT200DPEI: I", as shown below:

25	fi KSLogix 5000 - Controller in Controller1.ACD [1756-155]*										
Eile Edit View Search Logic Communications Tools Mindow Help											
i	1 2 9 8 8 6 8 9 9		- <u>S</u>	<u> </u>							
o	0 Marte A Run Path: AB ETHIP:1\192158.0147\Backtolane\0"										
No											
No											
Be			Favorites Add-On A Alan	is & Bit & Timer/Count							
			(X X	- <u>_</u>							
	🖃 🔠 Controller Controller	- III 🗳	Controller Tags - Contro	ller (controller)							
	Controller Tags		Scope: 🛐 Controller 🔹	Show Show All							
	Power-Up Handler		Name 4	Value 🗲	Force *	Stule	Data Tupe	Description		1-1	
	🖃 😁 Tasks		EPS3201P-C	()	{}		ABETHEBNET MODULE:C.O				
	🖻 🤕 MainTask			1 1	1 1		ABETHERNET MODULE DINT 2				
	H La MainProgram			()	()	Hex 🗸	DINTE21				
	Motion Groups		+	16#0000_0000	1	Hau	DINT			-	
	- Ungrouped Axes		+-EPC220IP-I Data[1]	16#0000_0000		Цан	DINT				
	Add-On Instructions		EF-5020(F.I.Data[1]	16#0000_0000	(<u>) </u>	LI-	DINT			-	
	User-Defined		EF5320F1.Data[2]	16#0000_0000		nex	DINI			-	
	E Strings		EPS320IP1.Data[3]	16#0000_0000		Hex				-	
	- 🦛 Add-On-Defined		EPS320IP:I.Data[4]	16#0000_0000		Hex	DINI			-	
	🗄 🔜 Predefined		EPS320IP:I.Data[5]	16#0000_0000		Hex	DINI			- 1	
	Trends		EPS320IP:I.Data[6]	16#0000_0000	<u> 1</u>	Hex	DINT			- 1	
	- 🔄 I/O Configuration		EPS320IP:I.Data[7]	16#0000_0000		Hex	DINT				
	🖃 🖅 1756 Backplane, 1756-A7		EPS320IP:1.Data[8]	16#0000_0000		Hex	DINT				
	[0] 1756-L55 Controller		EPS320IP:1.Data[9]	16#0000_0000		Hex	DINT				
	[1] IISD-DNB DeviceNet_master		EPS320IP:I.Data[10]	16#0000_0000		Hex	DINT				
	E L Ethernet		EPS320IP:I.Data[11]	16#0000_0000		Hex	DINT				
	ETHERNET-MODULE EPS320IP		EPS320IP:I.Data[12]	16#0000_0000		Hex	DINT				
	1756-ENBT/A Master		EPS320IP:I.Data[13]	16#0000_0000		Hex	DINT				
			EPS320IP:I.Data[14]	16#0000_0000		Hex	DINT				
			EPS320IP:1.Data[15]	16#0000_0000		Hex	DINT				
			EPS320IP:1.Data[16]	16#0000_0000		Hex	DINT				
			EPS320IP:1.Data[17]	16#0000_0000		Hex	DINT				
			EPS320IP:I.Data[18]	16#0000_0000		Hex	DINT				
			EPS320IP:I.Data[19]	16#0000_0000		Hex	DINT				

In the above picture, four bytes of GT200DPEI: I. Data [0] is real time frame head of EtherNet/IP slave.



GT200DPEI:I.Data [1] ~GT100EIRS: I. Data [61] is the corresponding input data address of GT200-DP-EI module in master.

6.2.2 Read and Write Data using MSG

The following RSLogix 5000 example will describe how to read/write I/O data using MSG.

1 Read I/O Data

Create a new project. it is in the "Offline" mode. Add two new tags "ReadTag" and "ReadData" under the "Controller Tags" and set the type of "ReadTag" as "MESSAGE" and "ReadData" as "DINT [500]".

👫 BSLogix 5000 - Controller in Controller1. A	ACD [1756-155]*					_ & ×	
File Edit Yiew Search Logic Communications Iools Mindow Help							
	- & & & I	- <u>r</u> e qq					
Offline 📴 🖉 RUN	Path: AB_ETHIP-1\192.168.0.147\E	lackplane\0* 💌 몲					
No Forces							
No Edits 🔒 🗖 1/0		OR NOR SWPB NOT CLR BTD			<u>></u>		
Redundancy 📲	Favorites & Add-On & Alarms	K Bit K Timer/Counter K Input/Outp	out 🕻 Compare 🥻 Compute/Math 🗎 Μ	ove/Logical 🖌 Flie/Nisc. 🖌 Flie/Shif	t K Sequer		
- Controller Controller	Controller Tags - Control	ler (controller)					
Controller Tags	Scope: Ma Controller	Show All					
Controller Fault Handler		Mahan 6 Fauna 6 Shida	Data Tuna	Description			
- Tasks	Trane C	value Fuice Sigle	AD.17EC DNR E009	Description			
🖨 🙀 MainTask	Tit cost 1:0		AP-1756_DNR_0000ytes110				
HainProgram	El and 1:0		AP:1750_DND_4300yk8.0.0				
MainRoutine	El PassiData	() () Hen	DINTIEROI				
Unscheduled Programs / Phases	Headland Tax	() () Hex	MESSAGE	2			
- S Hotion Groups	in insiding	() ()	INESOMOL				
Add-On Instructions							
😑 😂 Data Types							
User-Defined							
Add-On-Defined							
🖶 🚟 Predefined							
i Gm Module-Defined							
Irends							
🗄 📾 1756 Backplane, 1756-A7							
[1] [0] 1758-L55 Controller							
[1] 1758-DNB DeviceNet_Master							
The Ethernet							
Status Offline							
Module Fault							
	The Manitor Tong (Edit	Toga /					
Keady							

Right click "ReadTag", select "Configure "ReadTag"":



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🖉 Controller Tags -	LyEthernet I	P (control	ller)							
Scope: MyEthernetIP	✓ Show	Show All								
Name	🛆 Value 🛛 🗲	Force Mask 🗲	Style	Data T	/pe	Description				
E Local:1:1	{}	{}		AB:175	6_DN					
E-Local:1:0	{}	{}		AB:175	6_DN					
E-Local:1:S	{}	{}		AB:175	6_DN					
▶ ± ReadTag	Fdit "ReadTag"			115001	<u>~</u> E					
+ ReadData	Edit "ReadTag"	Properties	8	Alt+Enter)					
	Configure "Read	Tag"								
	Edit "MESSAGE"	Edit "MESSAGE" Data Type								
	Go to Cross Ref Message Path Ed	Ctrl+E								
	<u>G</u> o To	1	Ctrl+G	2						
	Toggle Bit			Ctrl+T						
	Force On									
	Force Off									
	Remove Force									
*	Cut	6	Ctrl+X							
E.	Сору			Ctrl+C						
ß	Paste			Ctrl+V						
	Paste Pass-Thro	ugh								
	Delete		Del							
	Options									
▲ → ∎onitor Tags	🖌 Edit Tags	/				4				

In the new pop-up window, it needs to set some parameters as below:

Message Type: CIP Generic.

Service Type: Select "Get Attribute Single", now, relevant service code will become "e (Hex)".

Class: 4 (Hex).

Instance: 102 (4+244 Bytes), 112 (4+244 Bytes) and 122 (4+244 Bytes) can be set.

Attribute: 3 (Hex).

Destination: Select "ReadData" label, now, the data that have been received will be saved in this tag.

User Manual

M essage Configuration - ReadTag	
Configuration - Reading Configuration* Communication Tag Message Iype: CIP Generic Service Get Attribute Single • Type: Service • Service e (Hex) Class: Code: e (Hex) Class: Instance: 102 Attribute: 3	Source Element: Source Length: Destination ReadData New Tag
 Enable Start Error Code: Extended Error Error Error 	◯ Done Done O └─ Timed Ou∵€

Choose "Communication" label, input the relevant path of connecting EtherNet/IP slave in the blank space behind the Path, the path format is: EthetNet IP hostname, EtherNet/IP master slot No., IP address of EtherNet/IP slave, after setting the path, click "Apply", "Confirm". As is shown below:

In this instance, EtherNet/IP hostname is "Master", EtherNet/IP master slot No. Is "2", EtherNet/IP slave (GT200-DP-EI) is "192.168.0.10". IP address of GT200-DP-EI is the address which is downloaded into the module through SST-EP-CFG.

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Add a "MSG" command in "MainRoutine" under the "MainProgram" and choose "ReadTag" as "Message Control", as shown below:



This is a simple command which can sent a read request, it still needs to add some logic commands to trigger this command in common program. About the detailed information, please refer to RSLogix5000.

Download the program to the PLC and set PLC into "Online" state.

Click "Control Tags" and select "Monitor Tags", unfold "ReadData", shown as below. Data stored starting from



GT200-DP-EI EtherNet/IP / PROFIBUS DP Gateway User Manual

address ReadData[0] are the data PLC read from PROFIBUS DP master through gateway GT200-DP-EI.

🆀 BSLogix 5000 - Controller in Controller1.	ACD [1756-L55]*					X
<u>File Edit View Search Logic Communications T</u>	ools <u>W</u> indow Help					
	- 33	1 🖪 🖉 🖪 🔍				
Offline 📴 🔲 RUN	Path: AB_ETHIP-1\192.168.0	.147\Backplane\0" 🗸	- 8			
No Forces						
No Edits 🔒 🗖 🖓		AND OR XOR SWPB NOT	CLR BTD			<u>></u>
Redundancy 🖓	✓ Favorites	Alarms 🔏 Bit 🔏 Timer/Counter	er 🔏 Input/Output 🔏 Corr	pare 🔏 ComputeMath 🔪 Move/Logical 🖌 FileA	Aisc. 🖌 File/Shitt 👗 Sequ	er
Controllor Controllor	Controller Tags - Co	ntroller (controller)			- 0 ×	
Controller Tags	Seener Pa Centroller	Show Show All				
- Controller Fault Handler	Scope. By controller		- r r			
Power-Up Handler	Name	△ Value Force	Style Data	Type Description	^_	
- A MainTask	ReadData	{} {	Hex DINT	500]		
🗄 🕞 MainProgram	HeadData[0]	16#0000_0000	Hex DINT			
🖉 Program Tags	# ReadData[1]	16#0000_0000	Hex DINT			
Inscheduled Programs / Phares	E ReadData(2)	16#0000_0000	Hex DINT			
- Motion Groups	+ ReadData[3]	16#0000_0000	Hex DINT			
Ungrouped Axes	E-ReadData[4]	16#0000_0000	Hex DINT			
Add-On Instructions	E ReadData(5)	16#0000_0000	Hex DINT			
- Data Types	E ReadData[6]	16#0000_0000	Hex DINT			
🔿 🙀 Strings	E ReadData[7]	16#0000_0000	Hex DINT			
Add-On-Defined	E ReadData[8]	16#0000_0000	Hex DINT			
H Medefined	E ReadData(9)	16#0000_0000	Hex DINT			
Trends	E ReadData[10]	16#0000_0000	Hex DINT			
🖻 🚍 I/O Configuration	E ReadData[11]	16#0000_0000	Hex DINT			
ITS6 Backplane, 1756-A7	E:ReadData[12]	16#0000_0000	Hex DINT			
[1] [1] 1756-DNB DeviceNet Master	E ReadData[13]	16#0000_0000	Hex DINT			
⊞- 🖞 [2] 1756-ENBT/A Master	E ReadData[14]	16#0000_0000	Hex DINT			
6191	E-ReadData[15]	16#0000_0000	Hex DINT			
	E ReadData(16)	16#0000_0000	Hex DINT			
	E:ReadData(17)	16#0000_0000	Hex DINT			
	E ReadData[18]	16#0000 0000	Hex DINT			
	E ReadData[19]	16#0000 0000	Hex DINT			
	E ReadData[20]	16#0000_0000	Hex DINT			
	E ReadData[21]	16#0000 0000	Hex DINT			
	E ReadData[22]	16#0000 0000	Hex DINT			
	E ReadData[23]	16#0000_0000	Hex DINT			
	E ReadData(24)	16#0000_0000	Hex DINT			
	E BeadData[25]	16#0000 0000	Hex DINT			
	E ReadData[26]	16#0000 0000	Hex DINT		-1	
4 F	I Ionitor Tags	Edit Tags /		de la companya de la		
			T Laurantee			

2 Write I/O Data

Enter the "Offline" mode, add two new tags "WriteTag" and WriteData" under the "Controller Tags". Define the type of "WriteTag" as "MESSAGE" and "WriteData" as "DINT [500]":

New Tag		×	Hew Iag		×
<u>N</u> ame:	WriteData	ОК	<u>N</u> ame:	WriteTag	ОК
Description:	×	Cancel	Description:		Cancel
		Help			Help
				•	
<u>U</u> sage:	<normal></normal>		<u>U</u> sage:	<normal></normal>	
Typ <u>e</u> :	Base Connection		Typ <u>e</u> :	Base Connection	
Alias <u>F</u> or:	v		Alias <u>F</u> or:	T	
Data <u>T</u> ype:	DINT[500]		Data <u>T</u> ype:	MESSAGE	
<u>S</u> cope:	Controller		<u>S</u> cope:	🚺 Controller 📃	
Style:	Hex		Style:		
🗖 Open Con	figuration		Den ME	SSAGE Configuration	

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😤 BSLogix 5000 - Controller in Controller1. M	ACD [1756-155]*				X			
Eile Edit Yiew Search Logic Communications Too	ols <u>W</u> indow Help							
	- <i>&</i> &&	22 99						
ine 🛛 🗸 🔲 RUN 💦 🙀 Patr: AB_ETHIP-1\132.168.0.147\Backplane\0' 🔽 😹								
No Forces								
No Edits 🔒 🗖 1/0	FAL FOC COP	FLL AVE SRT STD SIZE CR	P3					
Redundancy M	Favorites & Alarms & Bit & T	imer/Counter 🔏 Input/Output 🖌	Compare 🔏 Compute/Math 🔏 Move/Logical 🔪	File/Misc. K File/Shift K Sequencer K Eq	ui			
E - Controller Controller	Controller Tags - Control	ler (controller)		_ 🗆 🗙				
Controller Tags	Scoper Mil Controller	Show All						
- Controller Fault Handler				• · · · · · · · · · · · · · · · · · · ·				
Figure Tasks	Name C	Value Force Sty	ye Data Type	Description				
😑 🤯 MainTask		() ()	AB:1756_DINB_500Bytes:10					
🖻 🕞 MainProgram		() ()	AB:1756_DINB_496B9(68:U/U					
Program Tags		() ()	AB:1756_UNB_Status_126Bytes:5:0					
- Unscheduled Programs / Phases	B-D IF	{} {} He	EX DIN1[500]					
🖶 😂 Motion Groups	Headi ag	() ()	MESSAGE					
	- WinteData	{} {} He:	IN DIN 1[500]					
Data Types	C WriteData[U]	1690000_0000 He	ex DINT					
- User-Defined	WriteData[1]	16#0000_0000 Hes	ex DINI					
H Strings	WriteData[2]	16#0000_0000 He:	ex DINT					
H Predefined	WriteData[3]	16#0000_0000 He:	ex DINT					
🗄 🙀 Module-Defined	WriteData[4]	16#0000_0000 He	ex DINT					
- Trends	WriteData[5]	16#0000_0000 He	ex DINT					
- I/O Configuration	WriteData[6]	16#0000_0000 He:	DINT					
[1] [0] 1756-L55 Controller	WriteData[7]	16#0000_0000 He:	ex DINT					
[1] 1756-DHB DeviceNet_Maxter	WriteData[8]	16#0000_0000 Hes	DINT					
	#WriteData[9]	16#0000_0000 Hes	INT DINT					
	# WriteData[10]	16#0000_0000 He	ex DINT					
	WriteData[11]	16#0000_0000 Hes	DINT					
	± WriteData[12]	16#0000_0000 Hes	INT DINT					
	WriteData[13]	16#0000_0000 He:	EX DINT					
	WriteData[14]	16#0000_0000 Hes	ex DINT					
	WriteData[15]	16#0000_0000 Hes	DINT					
	± WriteData[16]	16#0000_0000 He:	m DINT					
	WriteData[17]	16#0000_0000 He	ex DINT					
	H WriteData[18]	16#0000_0000 Hes	DINT					
	# WriteData[19]	16#0000_0000 He	DINT					
	WriteD ata[20]	16#0000_0000 Hes	ex DINT					
	WriteData[21]	16≇0000_0000 He	DINT					
	Ionitor Tags / Edit ?	Fags /	•					
Reden a dag sage								

Enter the "Monitor Tags" interface. input some data beginning from address WriteData[0] in the "WriteData" tag. These data will be outputted to GT200-DP-EI through PLC for PROFIBUS DP reading.

Right click "WriteTag", select "Configure "WriteTag"":

ReadData	1	{}	{}	Hex	DINT[500]				
ReadTag	8	{}	{}		MESSAGE				
WriteData		{}	{}	Hex	DINT[500]				
Wrib 👩	New Tag		Ctr	1+₩	MESSAGE				
	Edit "WriteTag" Edit "WriteTag" Pr	operties	Alt	+Enter					
	Configure "WriteTa	ıg″							
	Edit "MESSAGE" Dat Go to Cross Refere	a Type nce for "WriteT	1+E						
	Message Path Edito	r	C to	140					
	Toggle Bit		Ctr	1+T					
	Force On								
	Force Off								
	Remove Force								
Ж	Cut			1+X					
Ē	Copy		Ctr	1+C					
R	Paste			1+V					
	Paste Pass-Through	L							
	Delete		Del						
	Find All "WriteTag	;"							

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In the new pop-up window, it needs to configure as below:

Message Type: CIP Generic

Service Type: Select "Set Attribute Single", now, relevant Service Code will become "10 (Hex)"

Class: 4 (Hex)

Instance: 101 (244Bytes), 111 (244Bytes) and 121 (244Bytes) optional

Attribute: 3 (Hex)

Source Element: Select "WriteData" tag, it indicates the data in the "WriteData" tag will become the data PLC outputs.

Source Length: Use byte as unit, this value should be less than or equal to the current selecting bytes which Instance represents (Configured bytes number in SST-EP-CFG).

Configuration* Communication Tag		
Message <u>Type</u> : CIP Generic	_	
Service Type: Set Attribute Single Service Code: 10 (Hex) Class: 4 (Hex) Instance: 101 Attribute: 3 (Hex)	<u>S</u> ource Element: Source L <u>e</u> ngth: Destination	WriteData
)Enable)Enable Waiting)Start)Error Code: Extended Error rror	⊙ Done D	Done O Timed Ou∵←

Choose "Communication" label, input the relevant path of connecting EtherNet/IP slave in the blank space behind the Path, the path format is: EthetNet IP hostname, EtherNet/IP master slot No., IP address of EtherNet/IP slave, after setting the path, click "Apply", "Confirm". As is shown below:



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Path:	Master,2,19	2.168.0.10				Brows	:e
	Master, 2, 19	92.168.0.10				<u></u>	
Com	munication M	lethod				-	
•	CIP C DE	<u>+</u> <u>C</u> hannel:		Destinat	ion Link:	0	
0 g	CIP <u>W</u> ith Source ID	<u>S</u> ource L	ink: 0	Destinat	ion <u>N</u> ode:	0	(Octal)
Г	C <u>o</u> nnected		🔽 Cack	e Connections	•		
Frah	1. O.R.	.b]. Woiting	. A Stant	Dana	Dene	0	
Enab	16 () III.	abie Warcing	, gotar	O Done	Done		

In this instance, EtherNet/IP hostname is "Master", EtherNet/IP master slot No. Is "2", EtherNet/IP slave (GT200-DP-EI) is "192.168.0.10". IP address of GT200-DP-EI is the address which is downloaded into the module through SST-EP-CFG.

Add a "MSG" command in "MainRoutine" under the "MainProgram" and choose "WriteTag" as "Message Control", as shown below:



Download PLC program to the PLC and set PLC to "Online" state, the data in "WriteData" will be outputted to PROFIBUS DP master through GT200-DP-EI (EtherNet/IP slave).



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6.3 Step7 Read and Write Gateway Data

GT200-DP-EI provides Modules shown as follow. The maximum allowed number of modules is 64 in Step7. The maximum allowed number of input bytes is 244, the max number of output bytes is 244 and the aggregate of maximum number of input bytes and output bytes is 488.

Module	Consistent				
4 Words Input, 4 Words Output	Word Consistent				
8 Words Input, 8 Words Output	Word Consistent				
24 Words Input, 24 Words Output	Word Consistent				
56 Words Input, 56 Words Output	Word Consistent				
1 Byte Input	Byte Consistent				
1 Word Input	Word Consistent				
2 Words Input	Word Consistent				
4 Words Input	Word Consistent				
8 Words Input	Word Consistent				
16 Words Input	Word Consistent				
32 Words Input	Word Consistent				
64 Words Input	Word Consistent				
2 Words Input Consistent	length Consistent				
4 Words Input Consistent	length Consistent				
8 Words Input Consistent	length Consistent				
16 Words Input Consistent	length Consistent				
1 Byte Output	Byte Consistent				
1 Word Output	Word Consistent				
2 Words Output	Word Consistent				
4 Words Output	Word Consistent				
8 Words Output	Word Consistent				
16 Words Output	Word Consistent				
32 Words Output	Word Consistent				
64 Words Output	Word Consistent				
2 Words Output Consistent	Total length Consistent				
4 Words Output Consistent	Total length Consistent				
8 Words Output Consistent	Total length Consistent				
16 Words Output Consistent	Total length Consistent				

As is shown above, the data modules which GT200-DP-EI supports include: Word Consistent, Byte Consistent



GT200-DP-EI EtherNet/IP / PROFIBUS DP Gateway User Manual

and Length Consistent.

For the data modules that support Word and Byte Consistent, you can use command "MOVE" to access the data during STEP7 programming.

For the data modules that support length Consistent, user can take compression way to send and receive data. The compression way mainly uses "SFC 15" when sending and receiving uses "SFC 14":



SFC14 (compressing sending)



SFC15 (compressing receiving)

6.4 Network Status Monitoring

GT200-DP-EI can support both ends network monitoring each other. This function can be set to enable or disable. If PROFIBUS side enables network status monitor function, the network status word occupies the first two bytes of input data, and input data will move backward two bytes, the available max input data will become 242 bytes. If it disables, then it doesn't occupy input data bytes.

If EtherNet/IP side enables network status monitor function, he network status word occupies the first two bytes of input data, and input data will move backward two bytes after real time frame header, the available max input data will become 242 bytes. If it disables, then it doesn't occupy input data bytes.

Network status word: it will be 0 when peer network has established connection. it will be 1 when peer network hasn't established connections or connections have broken.



7 Typical Application



In this typical application, GT200-DP-EI acts connects PROFIBUS DP and EtherNet/IP network. It realizes the data exchange between PROFIBUS master PLC (or controller, IPC) and EtherNet/IP master PLC (or controller, IPC).

GT200-DP-EI supports interconnection between Siemens PROFIBUS DP master PLC and AB (Rockwell) PLC.



Appendix: Using STEP7 Set PROFIBUS DP

The following shows how to use STEP7 to configure GT200-DP-EI: First of all, copy *. gsd file to the following path: *Step7\S7data\gsd*

1. Open SIMATIC Manager 🌠 . Figure 1:

SIMATIC Manager	
Elle PLC View Options Window Help	

Figure 1

2. Click File->New, create a new project. Figure 2:

SIMATIC Manager		_ 🗆 🗙
Eile PLC View Options Window Help		
🗅 🚅 🔡 🛲 🏹 🏐 😵		
	New Project	
	User projects Libraries Multiprojects	
	Nome Storage nath	
	name otorage path	
	Add to current multiproject	
	Name: <u>T</u> ype:	
	T_MODBUS	
	Storage location	
	D. (frogram files(Siemens(Step)(Sipro)	
	UK Cancel Help	

Figure 2







3. Insert->Station->SIMATIC 300 Station. Figure3:

SIMATIC Manager - T_MODBUS	
Eile Edit Insert PLC View Options Window Help	
🗅 😂 🔡 🐖 🕺 📾 🛍 😰 🐾 💁 🐩 🗰 📾 🗹 No Filter > 💽 🍞 🞇 🕮 🗮 🖬 📢	
By T_MODBU5 D:\Program Files\Siemens\Step7\s7proj\T_MODB_1	-O×
Image: Approximation of the second	



4. Open S7 PLC hardware configuration: SIMATIC 300(1)->Hardware, double-click. Figure 4:

SIMATIC Manager - T_MODBUS	- 🗆 ×
File Edit Insert PLC View Options Window Help	
🗅 😂 🔡 🛲 🕺 🛍 😰 🏪 🕒 🚰 🏥 💼 主 📝 No Filter > 🔽 🍞 🞇 🕮 🚍 🖬 😢	
T_MODBUS D:\Program Files\Siemens\Step7\s7proj\T_MODB_1	

Figure 4



5. Click Option->Update Catalog, update GSD in device catalog.



Figure 5

6. Here you can find your equipment in the right side of the window. Figure 6



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Figure 6

7. Set PLC rack, click the "Hardware Catalog \ SIMATIC 300 \ RACK-300 \ Rail". Figure 7:

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BigHW Config - [SIMATIC 300(1) (Configuration) T_MODBUS] Big Station Edit Insert PLC View Options Window Help	X 0 ×
	▲ : □ x Eind:
	Profil Standard
S Properties - PROFIBUS interface DP (R0/S2.1) 7	Image: Constraint of the second sec
() UR S Module Order number	U 316-2 DP U 317-2 U 317-2 PN/DP U 317F-2 PN/DP U 317F-2 PN/DP
Image: Concest of the a statute OK Concest of the a statute 1 1 1 1 2 1 1 1 1 3 1 1 1 1 4 1 1 1 1 5 1 1 1 1 6 1 1 1 1 8 1 1 1 1 10 1 1 1 1	Help U 318-2 U 319-3 PN/DP CPU 319-3 PN/DP CPU 614 CPU 614 CPU 614 CPU 614 CPU 614 CPU 614 CPU 700 CPU 814 CONCELLANT CONCELANT

Figure 7

8. Set CPU module and select the corresponding device type and the occupied slots.

9. Create PROFIBUS DP network and set up PROFIBUS DP: Click New and then Network settings, select DP. select a baud rate such as 187.5Kbps, then "OK". Double-click it. Figure 8:

User Manual

Real HW Config - [SIMATIC 300(1) (Configuration) T_MODBU	5]	
uni Statiou Fait Tursett Firr Jiem Obtious Milugom Helb		
	₩?	
➡ (i) 1B	<u></u>	
		Eind: Mt Mi
2		Profil Standard
3 4		F- CPU 314 IFM
5		
6 Propertie	es - PROFIBUS interface DP (R0/52.1)	X U 314C-2 PtP
Gener	al Parameters	11 315-2 DP
		6ES7 315-2AF00-0AB0
Proper	ties - New subnet PROFIBUS	× BEST 315-2AF01-0AB0
		5ES7 315-2AF02-0AB0
Gen	erat mechora peccanga	BEST 315-2AF03-0AB0
		DEST 315-2AP02-0AD0
Hi	ighest PROFIBUS	5FS7 315-24G10-04B0
R	Idress:	5EST 315-24H14-04B0
		315-2 PN/DP
		315F-2 DP
13	ansmission Kate: 45.45 (31.25) Kbps	315F-2 PN/DP
	187.5 Kbps	316
All 1000	500 Kbps	316-2 DP
	3 Mhne	317-2
▲ → 1 (0) UR Pr	ofile: DP	317-2 PN/DP
	Standard	317F-2 PW/NP
S Module Order number (Universal (DP/FMS)	318-2
	Bus P	arameters 319-3 PN/DP
		319F-3 PN/DP
		614
	Cancel Cancel	Help M7
6		
7		Gateway T
8		6ES7 315-2AF00-0AB0
9		connections; for multi-tier configuration up to 32
1 101		modules
Press F1 to get Help.		Chg //

Figure 8

🖳 HW Config - [SIMATIC 300(1) (Configuration) T_MODBUS]	
🕅 Station Edit Insert PLC View Options Window Help	_ & ×
Find:	nt ni
3 Select PROFIBUS Address	Standard 💌
	CPU 314 IFM
	CPU 314C-2 Dr
7	CPU 315
General Parameters	CPU 315-2 DP
Address: If a subnet is selected,	6EST 315-2AF00-0AB0
Highest address: 126 the next available address is	
Transmission rate: 187 5 Khns	EST 315-2AF03-0AB0
	EST 315-24F82-04B0
Subnet:	+ - 6EST 315-2AG10-0AB0
PROFILES (1) 187.5 Kbps	🗄 🧰 6ES7 315-2AH14-0AB0
Properties	CPV 315-2 PN/DP
Telete	CPU 315F-2 DF
	CPU 316
	CPV 316-2 DP
	CPU 317-2
() UR	CPU 317F-2
S Madule Drder number	CPV 317F-2 PN/DP
1 OK Cancel Help	CPV 318-2
	+ CPU 319F-3 PN/DP
	- CPV 614
6	Gateway V
	315-2AF00-0AB0
9 Work m	nemory 48 KB; 0.3 ms/1000 instructions; MPI + DP
	ss v
Press F1 to get Help.	Chq /

10. Select PROFIBUS Master station address, Figure 9:

Figure 9





User Manual

11. Drag GT200-DP-EI to PROFIBUS DP network bus, and drag data modules to a slot, that is mapping the input and output data module into master controller's memory. Figure 10:



Figure 10

Operation is divided into two steps, the first step is dragging GT200-DP-EI to PROFIBUS DP network bus, the mouse will change shape, and that is to say, it can be placed. The second step is dragging data module into master controller's memory.

Note: The slave address should be the same as rotary switch of module!

12. Compile and download into PLC.