Universal Serial / PROFIBUS DP Gateway GT200-DP-RS

User Manual

V6.1

Rev B







E-mail: support@sstautomation.com

www.SSTAutomation.com

Important Information

Warning

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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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Technical Support Contact Information

www.sstautomation.com

www.sstcomm.com

Email: support@sstautomation.com



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1 Product Overview

1.1 Product Function

The GT200-DP-RS gateway can provide a seamless connection between serial (Modbus RTU/ASCII and generic) devices and a PROFIBUS DP master such as a Siemens PLC. The serial side supports RS-485, RS-232, and RS-422 serial interfaces. The gateway also supports data/status monitoring and debugging.

1.2 Product Features

- Wide Applications: Any device with a RS-485/RS-232/RS-422 interface can be connected to a PROFIBUS DP network through the GT200-DP-RS gateway. For example, Variable-Frequency Drives (VFDs) with a Modbus interface, Motor starting protectors, and transmitters can all be connected to PROFIBUS DP.
- Easy to Use: Users don't need to know the technical details of the PROFIBUS or Modbus protocols. Just configure the gateway according to the user manual to quickly and easily establish a seamless data communication.
- Transparent Data Transmission: Users can directly forward raw data between PROFIBUS DP and Modbus/serial to establish a transparent data communication.

1.3 Technical Specifications

- [1] Acts as a PROFIBUS DP slave.
 - Supports PROFIBUS DPV0.
 - PROFIBUS DP slave interface supports automatic baud rate detection. Maximum baud rate is 12Mbps.
 - Maximum Input data: 244 Bytes
 - Maximum Output data: 244 Bytes
- [2] Supports Modbus master, Modbus slave, or Universal modes in serial interface. Supports transparent data transmission between PROFIBUS DP PLC and serial devices.



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- [3] Serial interface: one RS-485/422 and one RS-232, half-duplex. Supported baud rates: 300, 600, 1200, 2400, 4800, 9600, 19.2 K, 38.4K, 57.6K and 115.2K bps. Parity: None, Odd, Even, Mark and Space.
- [4] As a Modbus master, supports 01, 02, 03, 04, 05, 06, 15 and 16 function codes.
 - Supports monitoring status of Modbus slave(s).
 - Supports clearing data or keeping the data when the input data is abnormal.
 - Supports command retries when response timeout.
- [5] As a Modbus slave, supports 01, 02, 03, 04, 05, 06, 15 and 16 function codes.
- [6] Supports two configuration modes:
 - Uses SST-MPG-CFG software to configure the GT200-DP-RS (Software Configuration mode):

Supports up to 100 Modbus commands. Function codes 03 and 04 support "Word / Byte mapping". The high-byte or low-byte mapping of the registers provides effective utilization of the PROFIBUS DP input-byte.

 Use DP Integrated software to configure the GT200-DP-RS (DP Integrated Configuration mode): Supports up to 48 Modbus commands.

Supports command sending control and capturing exception codes.

- [7] In universal mode, supports the control mode of character timeout and frame length (number of character).Supports periodically sending.
- [8] Power: 24VDC (11V~30V), 80mA.
- [9] Operating temperature: -4°F~140°F (-20°C~60°C). Humidity: 5%~ 95% (non-condensing).
- [10] Dimensions (W*H*D): 1.0 in * 4.0 in *3.6 in (25 mm * 100 mm * 90 mm).
- [11] Installation: 35mm DIN RAIL.
- [12] Protection Level: IP20.
- [13] In accordance with EMC test standard.



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1.4 Revision History

Revision	Date	Chapter	Description
V6.1, Rev B	09/19/2022	ALL	Updated software configuration screenshot.
			Revised some mistakes.
V6.1, Rev A	08/20/2021	ALL	Revised technical details. New quick start
			guide and chapters. revised.
V6.1	08/11/2020	ALL	New Release





2 Hardware Descriptions

2.1 Product Appearance



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

2.2 Indicators

Indicators	State	Description							
DDE	Red On	PROFIBUS DP communication failed.							
РВГ	OFF	Communication is normal.							
ST A	Green Flashing	Transferring data in PROFIBUS DP network.							
SIA	OFF	No data is transferred in PROFIBUS DP network.							
TV	Green Flashing	Sending data from RS-485/422/232 interface.							
	OFF	No data is sent from RS-485/422/232 interface.							
RX	Green Flashing	Receiving data in RS-485/422/232 interface.							
	OFF	No data is received in RS-485/422/232 interface.							

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2.3 LED Display

The LED display is located in the front of the product. Please refer to chapter 2.4 to change DP address and

operating mode.

LED Display	Description
CF	Configuration mode.
db	Debug mode.
	Run mode. The number is the GT200-DP-RS's PROFIBUS DP address. "-P"
Jumps between a	indicates that the GT200-DP-RS is in the "DP Integrated Configuration" mode
number and "-P"	allowing all the parameters in the PROFIBUS DP integrated configuration
	software, such as the STEP7 (<u>chapter 4.2.2</u>) and TIA Portal to be configured.
Jumps hatwaan a	Run mode. The number is the GT200-DP-RS's PROFIBUS DP address. "-U"
Jumps between a	indicates that the GT200-DP-RS is in the "Software Configuration" mode and is
number and -U	configured through the SST-MPG-CFG software (chapter 4.2.1).

Note: In Software Configuration mode (LED displays "-U"):

1. If the GT200-DP-RS is configured via USB cable, it will automatically switch to configuration mode.

2. If it's configured via RS-232 interface, the GT200-DP-RS should switch to configuration mode manually. See

chapter 2.4 for how to switch mode.

2.4 DP Address and Mode Setting Button

The DP address and mode setting button is located on the front panel of the GT200-DP-RS. It's used to set the PROFIBUS DP address and operating mode.







2.5 Interface

2.5.1 Power Interface



Pin	Description
1	GND
2	Not connected
3	24V DC +

2.5.2 PROFIBUS DP Interface



PROFIBUS DP interface uses DB9 male-connector, and the pins are defined as follow:

Pin	Description
3	PROFI_B, Data+
4	RTS (Request to send)
5	GND
6	+5 V for terminating resistors
8	PROFI_A, Data-
Others	Not connected

Note: It's recommended to use the standard PROFIBUS DP connector. The PROFI_B (Pin 3), PROFI_A (Pin 8) and the shield GND must be connected.

The RTS (Pin 4) is used to determine the transmission direction. The +5 V (Pin 6) and GND (Pin 5) are used for terminating resistors, and can also be used supply to fiber optic transceivers. The maximum output current of pin 5 and pin6 is 80mA.



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2.5.3 RS-485/RS-422 Interface



Pin	Description
1	R-, RS-422 Receive-
2	R+, RS-422 Receive+
3	GND
4	D-, RS-485/RS-422 Transmit-
5	D+, RS-485/RS-422Transmit+

2.5.4 RS-232 Interface



Pin	Description
1	TX, connected to user's device RS-232 RX
2	RX, connected to user's device RS-232 TX
3	GND, connected to user's device RS-232 GND



3 Hardware Installation

3.1 Mechanical Dimensions

Size: 1.0 in * 4.0 in * 3.6 in / (25mm * 100mm * 90mm)



3.2 Installation Method

Using 1.38 in (35mm) DIN RAIL.









4 Quick Start Guide

4.1 Connection

1. Connect to the power supply.



 Connect to the computer. You can use USB or RS-232 interface to configure the GT200-DP-RS. If you use the RS-232 interface, the connections are as shown below:



3. Connect to the serial devices. You can also connect the serial devices after you finish the configuration. The GT200-DP-RS is able to connect with RS-485 devices. When using multi-point connection, to prevent the reflection and obstruction of signal, it's suggested to connect the terminal resistor (120 Ω , 1/2W) parallel with the 2 data wires at both end of the network.







4. Connect to PROFIBUS DP PLC or control system. It's suggested to use the standard PROFIBUS DP connector, referring to chapter 2.5.2.



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4.2 Configuration

GT200-DP-RS V6.1 and higher versions support two configuration modes: DP Integrated Configuration mode and Software Configuration mode.

The Software Configuration mode allows user to configure the GT200-DP-RS in SST-MPG-CFG software.

The DP Integrated Configuration mode allows user to configure all parameters of the GT200-DP-RS in PROFIBUS integrated configuration software, such as STEP7 or TIA Portal.

Before starting the configuration, please check the configuration mode of the GT200-DP-RS.

4.2.1 Configure by SST-MPG-CFG Software

Reference the image below the step. In this example, the SST-MPG-CFG is of V1.3.3.

- 1. Download, install, and run the configuration software, SST-MPG-CFG, which can be found on the GT200-DP-RS product page at sstautomation.com.
- Click the upload button on the tool bar. The Upload Configuration will pop up, in this window select the 2. GT200-DP-RS gateway you wish to configure and click "Upload".

Note: This will upload the default configuration in the software, this is also how you can edit your configuration after downloading your configuration to the gateway. If you cannot find the gateway, check

your connections. S Gateway Configuration Software SST-MPG-CFG File(F) Edit(E) Tools(T) View(V) Help(H) 1 Ģ 1 Tŧ 1 Ch <u>F</u> .↓. == M ×= C? 0 Add C Upload Download AutoMap Conflict Debug Edit Addr Cancel Edit New Add N Export

Click "Field Bus" located in the Equipment Section. Configure the parameters to meet the needs of your 3. project. Ensure that the PROFIBUS address matches your device's address.

Note: If you select "Address setting using hardware" for PROFIBUS address, the PROFIBUS address is set by Setting Button on the GT200-DP-RS (chapter 2.4). For more details of the PRODIBUS address, please see chapter 6.4.1.



X

Open

Save

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Gate	way Configurat	ion Software	SST-MPG	-CFG										—	×
File(F)	Edit(E) Tools	T) View(V)	Help(H)												
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Field Su	eldbus bnet		Number Number Actions Modbus PROFII Compat	of PROFIB of PROFIB After Respo Command I BUS Address ibility Mode ration Mode	US Input E US Output nse Timeo Retransmis	Bytes Bytes ut sion Times				Setting throug Setting throug Clear Data 3 Address Setti Disable Via SST-MPC	th Hardward th Hardward ng Using H 3-CFG	e Configura e Configura ardware	tion of PRC tion of PRC	FIBUS DP FIBUS DP	

4. Click "Subnet" located in the Equipment Section. Configure the parameters located in the Configuration

Section to meet the needs of your project.

Note: These parameters must match project device settings to ensure communication through our gateway.

Gatewa File(F) Ec	ay Configurat lit(E) Tools	ion Software (T) View(V)	SST-MPG Help(H)	-CFG												×	
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State 1	11	(x	Protoco	ls Mode						Modbus Mas	ter					1	
Field	ious		Baud R	ate						19200						_	
Suoi	lei		Data Bit	s						8							
			Parity C	heck						None							
			Stop Bi	ts						1							
			Slave A	ddress													
			Transmi	Transmission Mode													
			Respon	se Timeout(5	-60000ms)					300							
			Delay b	Delay between Polls(0-2500ms) Output Mode							0						
			Output								Change of Value						
			Output	Pulse(200-25	00ms)												
			Scan Ra	Scan Rate(1-255)							10						
			Status o	tatus of Modbus Command Response													
			Time In	terval betwee	n Characte	rs											
			Frame Length														
			Auto Se	ending													
			Period of	of Auto Send	ing												
			CRC C	heck													
			Commu	inication Inter	rface					RS485							
			Debug 1	interface						USB							
			Time In	terval betwee	n Characte	rs(Sending)				0							
			Time In	terval betwee	n Characte	rs(Receiving	;)			0							

5. Right Click "Subnet" and Select "Add Node". Click the newly created node and configure the Slave Address

parameter.

File(F) Edit(E) Tools(T) View(V) Help(H) Image: Save Save Open Add N Delete N Add C Delete C Upload Download AutoMap Conflict Export Debug Edit Addr Cancel Edit File(bus * Slave Address(1-247) * <	🜀 Gatewa	y Configurat	tion Software	e SST-MPG	-CFG							Che en Che			-	×
Image: New Save Open Add N Delete N Add C Delete C Upload Download AutoMap Conflict Export Debug Edit Addr Cancel Edit Image: Save Address(1-247)	File(F) Ed	it(E) Tools	(T) View(V)) Help(H)												
New Save Open Add N Delete N Add C Delete C Upload Download AutoMap Conflict Export Debug Edit Addr Cancel Edit % Fieldbus * Slave Address(1-247) *					—	<u>_</u>	<u>C</u>	1	.↓	88			Ţ		8	
Image: Subset Slave Address(1-247)	New	Save	Open	Add N	Delete N	Add C	Delete C	Upload	Download	AutoMap	Conflict	Export	Debug	Edit Addr	Cancel Edit	
	Field	lbus et ew Node		* Slave A	ddress(1-247)										

6. Right click a node and select "Add Command". In the Select Command window, double click the command you wish to add.

	User	Mar	nual	Tell/1	RU			Ga		ay				
🕤 Gateway Cor File(F) Edit(E)	figuration Software Tools(T) View(V)	SST-MPG- Help(H)	CFG											
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New Sa	ive Open	Add N	Delete N	Add C	Delete C	Upload	Download	AutoMap	Conflict	Export	Debug	Edit Addr	Cancel Edit	
					Sel	ect Comma)1 Read C	nd oil Status	×						

7. Click the Command you wish to configure and configure the parameters in the Configuration Section to meet

the needs of your project.

🕤 Gate	eway Configu	uration Softwa	e SST-MPG	-CFG											×
File(F)	Edit(E) To	ols(T) View(\) Help(H)												
					<u> </u>	<u>C</u>	1	.↓			1	Ţ		ß	
New	Save	Open	Add N	Delete N	Add C	Delete C	Upload	Download	AutoMap	Conflict	Export	Debug	Edit Addr	Cancel Edit	
1 T2	aldhua		* Slave A	ddress(1-247	')				1						
TI B	land		Function	n Code					3						_
	B Subnet			Address					0						
E-33	Baad Holding Register			Number of Data											
	Read He	fulting Regist	Mappin	Mapping Address(HEX)											
	Preset N	Multiple Regi	Bit Offs	et(0-7)											
			Number	of Bytes					1	6					
			Data Fil	ter					F	ullword					
			Type of	Check					C	RC					
			Type of	Scan					F	ast Scan					
			Byte Sw	vap					N	lo Swap					

8. Once the "Fieldbus", "Subnet", Node(s), and Command(s) are configured, click "AutoMap" icon on the toolbar to map the Modbus data to the PROFIBUS DP network. Then check the mapping address in Conflict

Detection window.



9. Click "Download" to download your configurations into the GT200-DP-RS.

G Gate	way Configura	tion Software	SST-MPG	-CFG										0-0	×
File(F)	Edit(E) Tools	(T) View(V)	Help(H)												
]±		<u>[</u>]	<u>C</u>	1	1	==			Ţ		ß	
New	Save	Open	Add N	Delete N	Add C	Delete C	Upload	Download	utoMap	Conflict	Export	Debug	Edit Addr	Cancel Edit	

Note: The GT200-DP-RS will apply the new configuration after entering Run mode. After downloading, the software will ask to switch mode. You can also switch mode manually by setting button, referring to <u>chapter 2.4</u>.



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4.2.2 Configure by STEP7 (PROFIBUS Integrated Configuration Software)

The DP Integrated Configuration mode allows users to configure the GT200-DP-RS in PROFIBUS integrated configuration software, such as STEP7 or TIA Portal.

To apply this mode, please change the configuration mode of the GT200-DP-RS in SST-MPG-CFG software to "via PROFIBUS DP Integrated Configuration Software" and download the configuration. The LED should display "-P" that indicates the GT200-DP-RS is in DP Integrated Configuration mode.

Gateway Co	nfigurati	on Software	SST-MPG	-CFG											×
File(F) Edit(E)	l ools(1) View(V)	Help(H)		<u> []</u>	臣	Ţ	Ł				Ţ		ß	
New S	ave	Open	Add N	Delete N	Add C	Delete C	Upload	Download	AutoMa	p Conflict	Export	Debug	Edit Addr	Cancel Edit	
Fieldbus Subnet Node- Rea Pre	1 ad Holdi set Mult	ing Register tiple Registe	Number Number Actions Modbur PROFII Compat	r of PROFIB r of PROFIB After Respo s Command I BUS Address tibility Mode aration Mode	US Input I US Output nse Timeo Retransmis	Bytes Bytes ut sion Times				Setting throug Setting throug Clear Data 3 20 Disable Via the Config	h Hardward h Hardward guration So	e Configura e Configura ffware of P	tion of PRC tion of PRC ROFIBUS I	FIBUS DP FIBUS DP	

The following steps give an example of the STEP7 configuration process.

1. Double click on the "Hardware" to open the hardware configuration window of your project.

SIMATIC Manager - T_MODBUS	
Eile Edit Insert PLC Yiew Options Window Help	
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🚉 T_MODBUS D:\Program Files\Siemens\Step7\s7proj\T_MODB_1	
T_MODBUS SIMATIC 300 (1)	

Register the GSD file. On the top menu bar, select "Options" >> "Install DSG File..." and install the GSD files of GT200-DP-RS. For detailed description of the GSD files, please see <u>chapter 7</u>.





The installed GSD files are in the corresponding folder.

Additional Field Devices	
🗄 🚠 GT200-DP-RS Modbus Master V6.0	
🖅 \overline GT200-DP-RS Modbus Slave V6.0	
🖅 \overline \overline GT200-DP-RS Serial V6.0	
🕀 🚡 GT200-DP-RS V6.0	
🕀 🧰 Switching Devices	
🗄 💼 IO	
🕀 🦲 Gateway	
🗄 🚡 SS52 Master/Slave	

3. Add the GT200-DP-RS to the PROFIBUS DP bus. Drag the device and modules in the catalog to the DP bus, as shown below.

Note:

In the "DP Integrated Configuration" mode, you should use "GT200-DP-RS Modbus Master/Modbus Slave/Serial Vx.x" device. The "GT200-DP-RS Vx.x" device is used for "Software Configuration" mode (chapter 4.2.1).



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0) VR 1 1 1 2 N 1 4 3 4 2 1 5 6	S 307 5A A PPU 315-2 DP = P P 343-1 +		PROFIBUS (1): DP Pus (1)	Eind: Image: Standard Profil Standard Offic: Offic: Status (24 Commands) Status (24 Commands) Status (24 Commands) Status (24 Commands) Status (24 Commands) Status (24 Commands) Status (24 Commands) Status (26 Commands) Status (26 Commands) Status (26 Commands) Status (26 Commands) Status (26 Commands)
	11			- E sed 1-8 bits (Duranz) - E sed 3-16 bits (Duranz) - E sed 31-6 bits (Duranz) - E sed 37-42 bits (Duranz) - E sed 33-40 bits (Duranz) - E sed 33-40 bits (Duranz) - E sed 43-56 bits (Duranz) - E sed 42-56 bits (Duranz) - E sed 42-56 bits (Duranz)
(3) GT	200-DP-RS Modbus Maste	1		- Read 37 of Dits (DAXAX) - Read 73-80 Bits (DAXAX)
(3) GT (3) GT DP ID 0 1AI 1 1A0	200-DF-RS Modbus Maste Order Number / Designation Read 1 Word(4xxxx) Write 1 Word(4xxxx)	I Add Q Addres 256257 256257	Connent	Read 55-72 Bit & Comman Read 73-90 Bit & Comman Read 73-90 Bit & Comman Read 91-88 Bit & Comman Read 99-96 Bit & Comman Read 99-10 Bit & Comman Read 99-10 Bit & Comman
(3) GT 1AT 1AO 8DI 8DI 1 1 1 1 1 1 1 1 1 1 1 1 1	200-DP-KS Modbus Maste Order Number / Designation Beed 1 Word (Kenne) Write 1 Ford (Kenne) Beed 1-6 Bits (Danne) Beed 1-6 Bits (Danne)	I Add Q Addres 256257 258 259 259	S Connent	A wead of 55-72 Bit is (Denner) Read of 55-72 Bit is (Denner) Read 73-60 Bit is (Denner) Read 81-88 Bit is (Denner) Read 97-104 Bit is (Denner) Read 105-112 Bit is (Denner) Read 105-112 Dit is (Denner) Read 112-120 Bit is (Denner) Read 122-138 Bit (Denner) Read 127-148 Bit (Denner) Read 127-148 Bit (Denner)
(3) GT (3) GT (3) DP ID (4) DP ID (4) DP ID (4) DP ID (5) DP ID (6) DP ID (6) DP ID (6) DP ID (7) DP ID (7) DP ID (8) DP	200-DF-KS Modbus Haste Order Number / Designation Read 1 Word(Guzze) Write 1 Word(Guzze) Write 1 Ford(Guzze) Read 1-0 Bits(Unnucs) Read 1-0 Bits(Unnucs)	I Add Q Addres 256257 258 259 259 259	Connent Connent	Area 37 - 69 is \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$

- 4. The following steps introduce how to configure the GT200-DP-RS as a Modbus Master. The device is "GT200-DP-RS Modbus Master V6.0".
- Double click on a GT200-DP-RS device to open its properties window. In "General" window, Set the DP parameters.

	GT200-DP-RS Modbus M	laster V6.0
Designation:	GT200-DP-RS Modbus M	laste
Addresses Diagnostic	8186	Node/Master System PROFIBUS 7 DP master system (1)
SYNC/FREEZE Capabi	ilities	
🔽 SYNC	FREEZE	🔽 Watchdog
omment:		

In "Parameter Assignment" window, set the Modbus parameters. The communication interface will use these parameters to establish communication with Modbus serial devices.



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arameters	Value
Station parameters	
Device-specific parameters	
–≝ Baudrate (bps)	9600
–	8 None 1
–≝ Protocol Type	Modbus Master
– <mark>≡</mark> Response Timeout	300ms
—	No Delay
–≝ Transmission Mode	RTU
– <mark>≝] Write Mod</mark> e	Change of Value
—	Hold Data
–	3
└────────────────────────────────────	RS485
🕂 🦳 Hex parameter assignment	

After you finish the DP slave configuration, click "OK".

(2) Add modules to the device.

Select the GT200-DP-RS device on the DP bus, then double click on the modules you want to add to in the catalog. The added module is on the slot of the GT200-DP-RS device. Please select the appropriate modules according to the address area you want to read/write.

P-T	GT200-DP-RS Modbus Master V6.0	*	-	🔊 (3) GT200-DP	-RS Modbus Maste			
	Status (8 Commands)	-						
	Status (16 Commands)	-	S	DP TD	Order Number / Designation	T Add	Q Address	Comment
	📕 Status (24 Commands)						Q Had Con	Commerce
	📲 Status (32 Commands)		U	IAL	Kead I Word(4xxxx)	256257		
	📲 Status (40 Commands)		1	1 A O	Write 1 Word(4xxxx)	and an original origi	256257	1 million and a series of the
	📲 Status (48 Commands)		2	SDT	Read 1-8 Bits (1yyyy)	258	-	
	Exception Codes			001	nead 1 0 Dits (IAAAA)	200		-
	Read 1-8 Bits (Oxxxx)		3	801	Kead 1-8 Bits(Uxxxx)	259		
	📲 Read 9-16 Bits(Охххх)		4					
	📲 Read 17-24 Bits(Oxxxx)		E			-	-	
	📲 Read 25-32 Bits(Oxxxx)		2					
	📲 Read 33-40 Bits(Oxxxx)		6					
	📲 Read 41-48 Bits(Охххх)		7					1
	📲 Read 49-56 Bits(Охххх)				2			
	📲 Read 57-64 Bits(Oxxxx)		8					
	📲 Read 65-72 Bits(Oxxxx)		9					
	📲 Read 73-80 Bits(Охххх)		10				-	-
	📲 Read 81-88 Bits(Охххх)		10					
	📲 Read 89-96 Bits(Oxxxx)		11					
	📲 Read 97-104 Bits(Oxxxx)		12					
	📲 Read 105-112 Bits(Oxxxx)		12		2		-	
	📲 Read 113-120 Bits(Охххх)		13					
	📲 Read 121-128 Bits(Охихи)							
	📲 Read 129-136 Bits(Oxxxx)							
	📲 Read 137-144 Bits(Oxxxx)							
	📲 Read 145-152 Bits(Oxxxx)							
	📲 Read 153-160 Bits(Охххх)							
-	📲 Read 161-168 Bits(Охххх)							
	Read 169-176 Bits(Oxxxx)							

Note:	The max	number	of modules	is 64.	Maximum	input byte:	244.]	Maximum	output by	tes: 244.
						1 2			1.	

(3) Configure the module parameters. Double click on a module to open the parameters window.

For example, for the module "Read 1 Word (4xxxx)", set the DP Input address in the "Address / ID" .



erivianuai			Ŷ
Address / ID	'ID Parameter Assignment		
I/O	Input	Direct	Entry

Γ (Maximum 14 bytes hexadecimal, separated by comma or blank space)

Then set the Modbus parameters in the "Parameter Assignment" window, referring to the Modbus function code specifications.

Cancel

Help

Parameters	Value
🖃 🔄 Station parameters	
Device-specific parameters	
—	1
– <mark>∭ Funct</mark> ion	3
└	0
🕂 🦲 Hex parameter assignment	

After you finish the configuration, click "OK".

Compile and download the configuration to the PROFIBUS DP PLC. 5.

Manufacturer-specific data:

OK



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4.3 Debug

The SST-MPG-CFG software provides debug function that allows user quickly monitor data communication through GT200-DP-RS. For more details, please refer to <u>chapter 6.9</u>.

Note: Under "Software Configuration" mode (LED displays "-U"), the GT200-DP-RS supports debugging without DP master. Under "DP Integrated Configuration" mode (LED displays "-P"), the debug function is supported when the GT200-DP-RS is connecting with DP master.

Index	Status	Slave Address	Function Code	Starting Address	Data/Exceptio
1114	Respond corre	1	3	0	05 9C 07 97 (
1113	Respond corre	1	3	0	05 9C 07 97 (
1112	Respond corre	1	3	0	05 9B 07 96 (
1111	Respond corre	1	3	0	05 9B 07 96 (
1110	Respond corre	1	3	0	05 9A 07 95.
1109	Respond corre	1	3	0	05 99 07 94 0
1108	Respond corre	1	3	0	05 99 07 94 0
1107	Respond corre	1	3	0	05 98 07 93 0
1106	Respond corre	1	3	0	05 98 07 93 0
1105	Respond corre	1	3	0	05 97 07 92 0
1104	Respond corre	1	3	0	05 96 07 91 0
1103	Respond corre	1	3	0	05 96 07 91 0
Read data	05 9C 07 97 0	9 8D 00 00 00 00	0 00 00 00 00 00 00	0	



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5 Working Principle

The GT200-DP-RS has an input buffer and an output buffer. The data transmission between serial devices and PROFIBUS DP master through GT200-DP-RS is established by mapping address.

5.1 As Modbus Master

When the serial interface of the GT200-DP-RS is configured as Modbus master:

The data read from Modbus slave devices by function code 01, 02, 03 or 04 is stored in the input buffer then transmitted to PROFIBUS DP master. The data written by PROFIBUS DP master is stored in the output buffer, then sent to the Modbus slave devices by function code 05, 06, 15 or 16.

* Every address corresponds to one byte.



5.2 As Modbus Slave

When the serial interface of the GT200-DP-RS is configured as Modbus slave, it allows a Modbus master

communicates with user's PROFIBUS DP master.

The data is stored in GT200-DP-RS's input buffer and output buffer first.

For the Modbus master, the input buffer can be regarded as Coil Status (0x) area and Holding Register (4x) area.

The data of the input area can be read by function code 01 or 03, and can be written by function code 05, 06, 15 or

16. The PROFIBUS DP master reads the data in the input buffer.



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The output buffer can be regarded as Input Status (1x) area and Input Register (4x) area for the Modbus master.

The data of the output area can be read by function code 02 or 04. The PROFIBUS DP master writes the data to

the output buffer.

The data communication between PROFIBUS DP master and Modbus master through GT200-DP-RS is shown below.







5.3 Universal Mode

5.3.1 Data Exchange

The GT200-DP-RS supports universal serial protocol that allows PROFIBUS DP master to communicate with user's serial devices of customized protocol.



"Eo" / "Ei" is the transaction number of the data frame.

"i" / "j" is the data length of the data frame.

"D1"~"Di" / "D1"~"Dj" are data being transmitted.

5.3.2 Data Frame Format

Transaction number	Data length	Data	"00" to fill empty bytes
XX (1 byte)	N (1 byte)	<i>1A 2B</i> (N bytes)	$00 \ 00 \dots$ (M bytes , M \ge 0)

Transaction number: For output frame, the transaction number should add 1 to trigger the output. For input

frame, when receiving a new frame, the transaction number will automatically add 1.

Data length: The length of data included in this frame.

Data: The data being transmitted.



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"00" to fill empty bytes: The M bytes of "00" are used to fill the empty if the output data is shorter then the PROFIBUS DP module length (for example, when sending only 4 bytes with an 8-byte output module, the left (8-4) bytes are filled with "00").

Note:

- 1. The data of the frame are in hexadecimal.
- 2. For output frame, the transaction number must be changed to trigger the output. Otherwise the data won't be sent to serial devices.
- 3. The data length of PROFIBUS DP output module should be at least (N+2) bytes.
- 4. (N+M+2) should be equal to the length of PROFIBUS DP output module data length.
- In DP Integrated Configuration mode, if disable the "<u>Input Data Effective Length</u>", the Data length value (N) is fixed "11".

Example:

When using an 8-byte output module, output 3-byte data "01 02 03". The last transaction number is 0.

The current output frame should be:

[01][03][01][02][03][00][00][00][00]

When using an 8-byte input module, receive 4-byte data "03 04 05 06". The last transaction number is 2.

The received frame is:

[03][04][03][04][05][06][00][00][00]



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5.4 Data Mapping in Software Configuration Mode

In the "Software Configuration" mode, the data mapping address can be manually configured. The data mapping relationship between GT200-DP-RS buffer and PROFIBUS DP is shown below. The address N and M (or X and Y) can be discontinuous numbers.

PROFI Input A	BUS DP Address	GT200-DP-RS Input Buffer	PROFI	BUS DP Address	GT200-DP-RS Output Buffer
Madula 1	Ν	0000H		Х	4000H
Module 1	N+1	0001H	M. 4.1. 2	X+1	4001H
	М	0002H	Module 3	X+2	4002H
M. 4.1. 2	M+1	0003H		X+3	4003H
Module 2	M+2	0004H	M - 1-1- 4	Y	4004H
-	M+3	0005H	woodule 4	Y+1	4005H

For example, in STEP7, add the following modules on the slot. The I address corresponds to input buffer data and the Q address corresponds to output buffer.

The IB274~281 corresponds to 0000H~0007H of GT200-DP-RS input buffer. The IB300 of next input module corresponds to 0008H.

The QB272~QB279 can corresponds to 4000H~4007H of GT200-DP-RS output buffer. The QB326~327 of next output module corresponds to 4009H~400AH.

-	🌖 (5) GT200-DP	-RS V6.0			
S	DP ID	Order Number / Designation	I Add	Q Address	Comment
0	4AI	4 Words Input, 4 Words Output	274281		
1	4A0	> 4 Words Input, 4 Words Out,		272 279	j.
2	8DI	1 Byte Input	300		
3	1A0	1 Word Output	0	326327	j.
4					



6 SST-MPG-CFG Software Instructions

The SST-MPG-CFG software is used to configure the GT200-DP-RS gateway and is available for download at www.sstautomation.com/Download1/.

6.1 Notes before Configuring

SST-MPG-CFG is a product based on the Windows platform, and it can set related parameters and commands of

Modbus and PROFIBUS DP through the GT200-DP-RS.

Double-click the icon to enter the configuration interface:

					<u>C</u> +	<u>F</u>	1	.↓			1	Ţ		ß	
lew	Save	Open	Add N	Delete N	Add C	Delete C	Upload	Download	AutoMap	Conflict	Export	Debug	Edit Addr	Cancel Edit	
Field Subn	bus et	;	<												

6.2 User Interface

The SST-MPG-CFG interface includes a title bar, menu bar, toolbar, status bar, equipment section, configuration

section and notes section.

Note: All the gray parts in the software cannot be modified.

User Manual

Gatewa	ay Configurat	ion Software S	SST <mark>-</mark> MPG-	CFG										-	×
File(F) Ec	dit(E) Tools(T) View(V)	Help(H)												
					<u>_</u>	<u>F</u>	1	.↓				Ţ		ß	
New	Save	Open	Add N	Delete N	Add C	Delete C	Upload	Download	AutoMa	p Conflict	Export	Debug	Edit Addr	Cancel Edit	
New Field	Save Save	Open ×	Add N Type of Number Number Actions Modbus PROFIL Compati Configur	Delete N Protocol of PROFIB of PROFIB After Respon US Address ibility Mode ration Mode	Add c US Input E US Output nse Timeor Retransmiss	Delete C Bytes : Bytes ut ision Times	Upload	Download	AutoMa	p Conflict PROFIBUS Setting throug Clear Data 3 Address Setti Disable Via the Config	Export th Hardware th Hardware ng Using H guration So:	Debug e Configura e Configura ardware ftware of P	Edit Addr tion of PRC tion of PRC	Cancel Edit OFIBUS DP OFIBUS DP	
Info News	J														
Ready	-														

Toolbar is shown as below:

					<u>[+</u>	<u> </u>	<u>1</u>	.↓	88			Ţ
New	Save	Open	Add N	Delete N	Add C	Delete C	Upload	Download	AutoMap	Conflict	Export	Debug

New New: Create a new configuration project

Save Save: Save the current configuration

\Box

Open Open: Open a configuration project

.

Add N Add Nodes: Add a Modbus slave node

T

Delete N Delete Nodes: Delete a Modbus slave node

<u>c</u>

Add C Add Commands: Add a Modbus command

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<u>C</u>

Delete C Delete Commands: Delete a Modbus command

<u>1</u>

Upload Upload Configuration: Read the configuration from the module and show it in the software

↓

Download Download Configuration: Download the configuration from the software to the module

==

AutoMap Calculate Mapping Address: Calculating mapping address automatically

Conflict Conflict Detection: Detect whether there is conflict in memory data buffer of the gateway

×

Export EXCEL: Export the current configuration to local hard disk and save it as .xls file

Ţ

Debug Debug: For debugging Modbus communications, and defining the network fault

Edit Addr Edit Base Address: Edit the DP base address.

0

Cancel Edit Cancel Base Address: Cancel the DP base address edit.

6.3 The Operation of Equipment View

6.3.1 Equipment View Interface





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6.3.2 Operation Mode of Equipment View

The equipment view supports three types of operation: Edit Menu, Edit Toolbar or Right click edit Menu.



6.3.3 Operation Types of Equipment View

- Add nodes: Right click on subnet or existing nodes, and then perform the operation of adding a new node. Then there will be a new node named "new node" under subnet.
- 2. **Delete nodes:** Right click on the node to be deleted, and then perform the operation of deleting the node. The node and all its commands will be deleted.
- 3. Add commands: Right click on the node, and then perform the operation of adding command to add a command for the node. The dialog box will be shown as follow:

Currently supports the commands: 01, 02, 03, 04, 05, 06, 15 and 16.

Select the command: Double click the command

01	Read Coil Status
02	Read Input Status
03	Read Holding Registers
04	Read Input Registers
05	Force Single Coil
06	Preset Single Register
15	Force Multiple Coils
16	Preset Multiple Registe

4. **Delete commands:** Right-click on the command and then perform the operation of deleting the command.



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- 5. **Rename nodes:** Left click on the node to be renamed, and then the edit status will be shown and you can rename it.
- 6. **Copy node:** Left click on the existing node, choose the node and execute the operation of copying nodes (include all commands under the node)
- 7. **Paste node:** Left click and choose any existing node, execute the operation of pasting the node. Then under the subnet tree you can see a new node (include all commands under the node). Parameters of the new node is the default setting, therefore it needs to be reset.

6.4 The Operation of Configuration View

6.4.1 Interface of Fieldbus Configuration View

In the interface of device view, click Fieldbus, and then the configuration view is shown as follows:

🕤 Gatev	way Configurat	tion Software	SST-MPG	CFG										-	×
File(F)	Edit(E) Tools	(T) View(V)	Help(H)												
					브	<u>P</u>	<u>↑</u>	.↓.	88			Ţ		ß	
New	Save	Open	Add N	Delete N	Add C	Delete C	Upload	Download	AutoMa	p Conflict	Export	Debug	Edit Addr	Cancel Edit	
Fie	ldbus onet Node-1 ■ Read Hold ■ Preset Mu	ling Register ltiple Registe	Type of Number Number Actions Modbus PROFII Compat	Protocol of PROFIB of PROFIB After Respo s Command I BUS Address ibility Mode ration Mode	US Input I US Output nse Timeo Retransmis	Bytes Bytes ut sion Times				PROFIBUS Setting throug Clear Data 3 Address Setti Disable Via the Config	h Hardward h Hardward ng Using H guration So	e Configura e Configura ardware ftware of P	tion of PRC tion of PRC	DFIBUS DP DFIBUS DP	

Number of PROFIBUS Input Bytes: Set in PROFIBUS DP master configuration software, cannot be modified.

Number of PROFIBUS Output Bytes: Set in PROFIBUS DP master configuration software, cannot be modified.

Actions After Response Timeout: Clear data or Hold data can be selected.

Modbus Command Retransmission Times: 2 to 254 can be selected.

PROFIBUS address: Use the hardware to set the address or PROFIBUS address can be selected.

Compatibility mode: Open or Close can be selected.

6.4.2 Interface of Subnet Configuration View

1. Choose Modbus Master in protocol type

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Configurable parameters are shown as follows:

Baud Rate, Data Bits, Check Bit, Stop bit, Transmission mode, Response timeout, Delay between Polls, Output Mode, Scan Rate, Status of Modbus Command Response, Communication interface, Time Interval between Character (Sending) and Time Interval between Character (Receiving).

Interface of configuration view is shown as below:

Gatew File(F) E	vay Configura dit(E) Tool:	ition Software s(T) View(V)	SST-MPG Help(H)	-CFG											×
		8			<u>[]</u>	<u>ר</u> ם	<u>,</u> ↑	.↓.				Ţ		ß	
New	Save	Open	Add N	Delete N	Add C	Delete C	Upload	Download	AutoMap	Conflict	Export	Debug	Edit Addr	Cancel Edit	
dia mini	141	×	Protoco	ls Mode					1	Modbus Mas	ter				
Fiel	labus		Baud Ra	ate						19200					_
	Joda 1		Data Bit	s					8	3					
E Star	NOUE-1	ding Posistor	Parity C	heck					l	None					
	B Propot Mu	ung Register	Stop Bit	ts					1	l					
	Preset IVI	imple Registe	Slave A	ddress											
			Transmi	ission Mode]	RTU					
			Respon	se Timeout(5	-60000ms)				3	300					
			Delay be	etween Polls(0-2500ms)				()					
			Output 1	Mode					(Change of Va	alue				
			Output 1	Pulse(200-25	00ms)										
			Scan Ra	ate(1-255)						10					
			Status o	f Modbus C	ommand R	esponse			1	Disable					
			Time Int	terval betwee	n Character	rs									
			Frame L	length											
			Auto Se	ending											
			Period of	of Auto Send	ing										
			CRC C	heck											
			Commu	nication Inter	face]	RS485					
			Debug I	interface					T	USB					
			Time Int	terval betwee	n Character	rs(Sending)			()					
			Time Int	terval betwee	n Character	rs(Receiving)		()					

Baud Rate: 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600 and 115200bps optional

Data bits: 8

Check Bit: none, odd, even, mark and space optional

Stop bits: 1, 2

Transmission mode: RTU, ASCII optional

Response timeout: When the Modbus master sends commands, the time waiting for a response from the slave

ranges from 5~60000ms.

Delay between polls: After one Modbus command has been sent and has received a correct response, the delay

time before the next command is sent ranges from $0 \sim 2500$ ms.

Output Mode:

Modbus writing command (output command) has 3 kinds of outputting modes: Cycle, Forbidden and Change of

Value output.

Cycle: The same with Modbus read command, and output according to the scanning ratio.

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Forbidden: Prohibit outputting Modbus write command.

<u>Change of Value</u>: When the output data has changed, it outputs the write command and stops outputting after receiving a correct response.

Scan Rate: Ratio of slow scan and fast scan. If the fast scan command sends 10 times, slow scan command sends 1 time.

Status of Modbus Command Response: disable, 1byte, 2bytes, 3bytes, 4bytes, 5bytes, 6bytes, 7bytes, 8bytes, 9bytes, 10bytes, 11bytes, 12bytes and 13bytes can be selected. They are located in the first several bytes of PROFIBUS input data and show the status of the Modbus commands. The bit 0 of the first byte shows the status of the first Modbus command. Six bytes can show the status of all 48 commands. The value of the status is 0, when the communication is OK and the value is 1.

Communication Interface: There are RS-232 and RS-485 to be selected. (Note: When using the RS-422, select RS-485)

Time Interval between Characters (Sending): The serial port of the GT200-DP-RS will send every byte according to the time interval. The range of the value is 0 to 600, and the unit is 0.1ms. If the value is 100, then the time interval is 100* 0.1 ms =10ms. (Note: The time interval does not contain/cover the frame interval of the Modbus protocol)

Time Interval between Characters (Receiving): The serial port of the GT200-DP-RS will use this time interval to judge the receiving end basis. The range of the value is 0 to 600, and the unit is 0.1ms. If the value is 100, then the time interval is 100* 0.1 ms =10ms. (Note: The time interval does not contain/cover the frame interval of Modbus protocol)

Note: The reference time of the gateway receiving data and breaking frame: Time interval between characters (Receiving) + 3.5 character time of the Modbus protocol. Make sure that the response wait time is greater than time interval between characters + 3.5 character time.

2. Choose Modbus Slave in protocol type

Configurable parameters are shown as follows:

Baud Rate, Data Bits, Check Bit, Stops Bits, Slave Address, Transmission Mode, Communication Interface, Time interval between Character (Sending) and Time Interval between Character (Receiving).



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Interface of configuration view is shown as follow:

Gatew	ay Configurat	tion Software	e SST-MPG	-CFG										1	
File(F) E	dit(E) Tools	(T) View(V)	Help(H)												
					<u>C1</u>	<u>C1</u>	1	1			E	Ģ		ß	
New	Save	Open	Add N	Delete N	Add C	Delete C	Upload	Download	AutoMa	o Conflict	Export	Debug	Edit Addr	Cancel Edit	
dia mini			* Protoco	ls Mode						Modbus Slav	e				
Fiel	labus		Baud Ra	ate						19200					
35 DUU	net		Data Bit	s						8					
			Parity C	heck						None					
			Stop Bit	ts						1					
			Slave A	ddress											
			Transmi	ssion Mode						RTU					
			Respon	se Timeout(5	-60000ms)										
			Delay b	etween Polls	(0-2500ms)	1									
			Output	Mode											
			Output	Pulse(200-25	00ms)										
			Scan Ra	nte(1-255)											
			Frame 7	уре											
			Time Int	terval betwee	n Characte	rs									
			Frame L	ength											
			Auto Se	nding											
			Period of	of Auto Send	ing										
			CRC C	heck	-										
			Commu	nication Inte	rface					RS485					
			Debug I	nterface	c1 .	(0. 1.)				USB					
			Time In	terval betwee	n Characte	rs(Sending)				0					
			Time In	terval betwee	n Characte	rs(Receiving	5)			0					
			p.												

Baud Rate: 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600 and 115200bps optional.

Data Bits: 8

Check Bit: none, odd, even, mark and space optional

Stop Bits: 1, 2

Slave Address: range is 0~247.

Transmission Mode: RTU, ASCII

Communication Interface: There are RS-232 and RS-485 to be selected. (Note: If using the RS-422, here select RS-485)

Time Interval between Characters (Sending): The serial port of the GT200-DP-RS will send every byte according to the time interval. The range of the value is 0 to 600, and the unit is 0.1ms. If the value is 100, then the time interval is 100* 0.1 ms =10ms. (Note: The time interval does not contain/cover the frame interval of the Modbus protocol)

Time Interval between Characters (Receiving): The serial port of the GT200-DP-RS will use this time interval as the judge receiving end basis. The range of the value is 0 to 600, and the unit is 0.1ms. If the value is 100, then the time interval is 100* 0.1 ms =10ms. (Note: The time interval does not contain/cover the frame interval of the Modbus protocol)



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3. Choosing User Config in protocol type

Configurable parameters are shown as follows:

Baud Rate, Data Bits, Check Bit, Stop Bits, Frame Type, Time interval between Characters, Frame Length, Enable Auto Sending, Period of Auto Sending, Enable CRC Check, Communication Interface, Time interval between Character (Sending) and Time interval between Character (Receiving).

Interface of configuration view is shown as follows:

Gate File(F)	way Configura Edit(E) Tool	ation Software s(T) View(V)	SST-MPG Help(H)	-CFG										_	Х
					<u>C</u> <u>+</u>	므	<u>1</u>	.↓			1	Ţ	Ø	ß	
New	Save	Open	Add N	Delete N	Add C	Delete C	Upload	Download	AutoMa	o Conflict	Export	Debug	Edit Addr	Cancel Edit	
	1.41	;	Protoco	ols Mode					6	User Config					_
F I	bust		Baud R	ate						19200					_
	onet		Data Bit	ts						8					
			Parity C	Check						None					
			Stop Bi	ts						1					
			Slave A	ddress											
			Transm	ission Mode											
			Respon	se Timeout(5	-60000ms)										
			Delay b	etween Polls(0-2500ms)										
			Output	Mode	2.0										
			Output	Pulse(200-25	00ms)										
			Scan Ra	ate(1-255)											
			Frame	Гуре						Time Interval	between C	haracters			
			Time In	terval betwee	n Characte	rs				10					_
			Frame I	Length						111					
			Auto Se	ending						Disable					_
			Period	of Auto Send	ing					1000					
			CRCC	heck	c					Disable					
			Commu	inication Inter	тасе					RS485					-
			Debug	interrace	Changet	(Can dia)				USB					
			Time In	terval betwee	n Characte	rs(Sending)	`			0					
			I une In	terval betwee	n Characte	rs(Receiving	5)			U					

Baud Rate: 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600 and 115200bps optional

Data Bits: 8

Check Bit: none, odd, even, mark and space optional

Stop Bits: 1, 2

Frame Type: Time Interval between Characters, Frame length optional

Time Interval between Characters: It is maximum time interval between characters and used to decide whether

a frame is terminated or not. User input, the default is 10, and the range is $10 \sim 60000$ ms.

Frame Length: User input, the default is 111 and the range is $1 \sim 223$, only valid when the frame type is frame length.

Enable Auto Sending: There are Enable and Disable to be selected.

Period of Auto Sending: User input, the default is 1000 and the range is 10 ~ 60000ms, only valid when the

Enable Auto Sending is Enabled



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Enable CRC Check: Enable, Disable optional

Communication Interface: RS-232, RS-485 optional. (Note: If using the RS-422, here select RS-485)

Time Interval between Characters (Sending): The serial port of the GT200-DP-RS will send every byte according to the time interval. The range of the value is 0 to 600, and the unit is 0.1ms. If the value is 100, then the time interval is 100* 0.1 ms =10ms. (Note: The time interval does not contain/cover the frame interval of the Modbus protocol)

Time Interval between Characters (Receiving): The serial port of the GT200-DP-RS will use this time interval as the judge receiving end basis. The range of the value is 0 to 600, and the unit is 0.1ms. If the value is 100, then the time interval is 100* 0.1 ms =10ms. (Note: The time interval does not contain/cover the frame interval of the Modbus protocol)

6.4.3 Interface of Node Configuration View

When the protocol type of the subnet is "Modbus Master", in the interface of device view, left click a node and then the configuration interface will appear as shown as follow:

🕤 Gate	way Configura	ation Software	SST-MPG	-CFG										—	×
File(F)	Edit(E) Tool	s(T) View(V)	Help(H))											
					C‡	<u>F</u>	<u>1</u>	.↓			1	Ţ		ß	
New	Save	Open	Add N	Delete N	Add C	Delete C	Upload	Download	AutoMap	Conflict	Export	Debug	Edit Addr	Cancel Edit	
- Fi	eldbus	1	* Slave A	ddress(1-247)				1						<u> </u>
= 🖢 Su	ibnet														
÷-👷	Node-1		-												

In this window, you can modify the Modbus slave node address in the configuration view interface.

6.4.4 Interface of Command Configuration View

In the interface of device view, left click a command and then the configuration interface window shown as follows:



		GT20 Unive) <i>0-E</i> ersa	D <i>P-R</i> al Sei	'S rial/	PRO	FIB	US D	PG	atew	ay					
		User	Ма	nual												
Gatewa	ay Configu	ration Software	SST-MPG-	-CFG										_		×
File(F) Ec	dit(E) Too	ols(T) View(V)	Help(H)		21	-			_	-	-		50	~		
G			<u>.</u>	-1-		<u> </u>	L	.↓	88			Ļ	Ø	ß		
New	Save	Open	Add N	Delete N	Add C	Delete C	Upload	Download	AutoMa	p Conflict	Export	Debug	Edit Addr	Cancel Edit		
- Field	dbus	×	Slave A	ddress(1-247)					1						
Subr	net		Function	n Code						3						_
	ode-1		Starting	Address						0						
	Read Ho	Iding Register	Number	of Data						8						
	Preset N	fultiple Registe	Mapping	g Address(H	EX)					0H					_	_
			Bit Offs	et(0-7)						0						
			Number	of Bytes						16						
			Data Fill	ter l						Fullword						-
			Type of	Check						CRC East Coop						
			Dute Su	Scall						No Swap						
			Dyle Sw	ap						ino swap						

Configurable parameters are shown as follows:

Starting Address, Number of Data, Mapping Address (HEX), Mapping Bit (0~7) and Type of Scan

Starting Address: The starting address of register or switching value or loop and so on in Modbus slave and the

range is 0~65535.

Number of Data: number of register/switching value/coil in the Modbus slave

Mapping address (HEX): The starting address of data in memory buffer of the module.

The address range of data mapping in the module memory:

Read command: 0x0000~ 0x00F3

Write command: $0x4000 \sim 0x40F3$

When the write command is used exchanging locally, it also can use: $0x0000 \sim 0x00F3$

Mapping bit (0 - 7): For the bit operation commands, the position range of start-bit byte is $0 \sim 7$

Data Filter: There are three types of data filtering: full word, high byte, and low byte. Every register has two bytes. Full word mapping is the process of taking the two bytes of the register into the gateway memory buffer. High byte mapping is taking the high byte of the register into the gateway memory buffer. Low byte mapping is taking the low byte of the register into the gateway memory buffer.

Type of Scan: There are two types of scanning modes: the fast scan and the slow scan. Slow scan is equal to the fast scan being multiplied by the scan ratio. (Configure it in the subnet configuration interface)

Byte Swap: There are three types of byte swapping: no swap, double-byte swap and four-byte swap. Modbus function code 03H, 04H, 06H and 10H supports different byte swap types.



6.5 Conflict Detection

For the detection of whether there exists conflict of "the starting address of memory mapping".

6.5.1 Operation of Command List

All the configuration commands can be shown at the command list. Each select box before the command is used for checking the memory-mapping location of that command. Click on the command by selecting a check box, and in the memory-mapping area it can show the corresponding share of spatial location. Click the command again will remove the selected box and it doesn't show the mapping location. The function can be used for conflict detection of memory mapping area.

1	Conflict Detection	×
1	Command List	
	☑Read Holding Registers ☑Preset Multiple Registers	

6.5.2 Operation of Memory Mapping Area

Memory mapping area is divided into two parts: input area and output area.

Input-mapping address: 0x0000 ~ 0x3FFF.

Output-mapping address: 0x4000 ~ 0x7FFF.

Each box represents a byte address.

Green: Read command shown in the input-mapping area. No conflict.

Yellow: Write command shown when the mapping addresses is in the input area. No conflict.

Blue: When the address mapping area is located in the output area. no conflict.

Red: Output area or input area, different commands occupy the same byte address, the byte is shown as red.



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		Command List		
Read Holding Registers				
Preset Multiple Registers				
1 0				
	Input		Output	
0000	والمراجع المراجع فمراجع المراجع أنبارك	4000		
0010		4010		
0020		4020		
0030		4030		
0040		4040		
0050		4050		
0060		4060		
0070		4070		
		4080		
0080		4090		
0080 0090 0090				
0080 0090 00A0		40A0		
0080 0090 00A0 00B0		40A0 40B0		
0080 0090 00A0 00B0 00C0		40A0 40B0 40C0		
0080 0090 00A0 00B0 00C0 00D0		40A0 40B0 40C0 40D0		
0080 0090 00A0 00B0 00C0 00D0 00D0		40A0 40B0 40C0 40D0 40D0		

6.6 Hardware Communication

Hardware communications' menu items are shown as follows:



6.6.1 Serial Configuration

The software automatically scans the available serial port of the system, and the available serial can be shown in



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the serial l	ist. After modifying all the items, press "OK" to save your settings.

Senar Fort Connigura	ation		
Com	COM4	•	
Baud Rate	19200	¥	
Check Bit	None	*	
Data Bits	8	*	
Stop Bits	1	~	
OK	1	Cancel	1

6.6.2 Upload Configuration

Choose upload configuration, upload the gateway configuration information from the device to the software, the display interface is shown as follows:

	ingulation is succession
✔ Upload PR0FIBUS	parameter configuratior
🖊 Upload subnet para	ameter configuration
/ Upload subnet com	mand configuration

Note: Before uploading the configuration, please check whether the "serial port configuration" is the available port.

6.6.3 Download Configuration

Choose download configuration, download the reconfigured gateway information to the gateway, the display interface is shown as follows:



JSer W	anuai
D	ownload configuration
	Downloading the configuration is successful! Download PROFIBUS parameter configuration Download subnet parameter configuration Download subnet command configuration

Note:

1. Before downloading the configuration, please check whether the "serial port configuration" is the available port.

2. Before downloading the configuration, make sure that all configurations have been completed.

6.7 Load and Save Configuration

6.7.1 Load Configuration Project

Choosing "Open" can save a project.

New(N) Ctrl+N Open(O) Ctrl+O Save(S) Ctrl+S Save As(A) early file Exit(E) Exit(E)	ile(F)	Edit(E)	Tools(T)	View(V)	Help(H)
Open(O) Ctrl+O Save(S) Ctrl+S Save As(A) early file Exit(E) Exit(E)	Ne	ew(N)			Ctrl+N
Save(S) Ctrl+S Save As(A) early file Exit(E)	O	oen(O)			Ctrl+O
Save As(A) early file Exit(E)	Sa	ve(S)			Ctrl+S
early file Exit(E)	Sa	ve <mark>As(</mark> A).			
Exit(E)	ea	rly file			
	Ex	it(E)			

6.7.2 Save Configuration Project

Choosing "Save" can open a saved project before.



		Di Catenay
Jser Manı	al	
	File(F) Edit(E) Tools(T) V	/iew(V) Help(H)
	New(N)	Ctrl+N
	Open(O)	Ctrl+O
	Save(S)	Ctrl+S
	Save As(A)	
	early file	

6.8 Export EXCEL

The Excel document helps users to examine the configuration.

Tools(T)	View(V)	Help(H)
Seria	al Connecti	on
Ethe	rnet Conne	ection
Uplo	ad	
Dow	nload	
Map	ping Addr	ess Conflict Detection
Expo	ort EXCEL	
Deb	ug	
Calc	ulate Mapp	oing Address
Edit	Base Addr	ess
Cano	el Base Ad	dress

6.9 Debug

This function is for debugging Modbus network communications, the interface is shown as follows:

Click the Debug button will show up the firmware select dialog box, choose the matched version:

Note: Make sure to set the gateway to debug mode. (Chapter 2.4)

5.0 a	nd above	•	
5.0 a	nd above		
4.X (or 3.X		



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6.9.1 Debug Interface of 4.X or 3.X

Status	Slave	Startin	Data/Exception Code	
			· · · · · · · · · · · · · · · · · · ·	
femory	mapping ac	dress: 4	000	
	11 0		(0.0.5	
ata:	00 01 02 0	03		

Firmware Version of 4.X or 3.X only supports debug function in the protocol of "Modbus Master"

Status: Shows communication state with slave: response ok, response timeout, response abnormal and response error

Slave Address: Slave address in the configuration file (HEX)

Starting Address: "Modbus register starting address" (HEX) in the configuration file

Data/Exception Code: Display the slave data or exception code (HEX)

Memory mapping address: Starting address of data writing in the gateway

Data: Data writing into the gateway



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6.9.2 Debug Interface of 5.x and above

Index	Status	Slave Address	Function Code	Starting Address	Data/Exceptio
45	Respond corre	1	3	0	03 OC 05 07 (
44	Respond corre	1	3	0	03 0B 05 06 (
43	Respond corre	1	3	0	03 0B 05 06 (
42	Respond corre	1	3	0	03 0A 05 05.
41	Respond corre	1	3	0	03 0A 05 05.
40	Respond corre	1	3	0	03 09 05 04 0
39	Respond corre	1	3	0	03 08 05 03 0
38	Respond corre	1	3	0	03 08 05 03 0
37	Respond corre	1	3	0	03 07 05 02 0
36	Respond corre	1	3	0	03 06 05 01 0
35	Respond corre	1	3	0	03 06 05 01 0
34	Respond corre	1	3	0	03 05 05 00 0
Read data	03 0C 05 07 0	6 FD 00 00 00 00	0 00 00 00 00 00 0	0	_
Read data Iemory mapp	03 0C 05 07 0	6 FD 00 00 00 00	0 00 00 00 00 00 00 0	0	
Read data Iemory mapp	03 0C 05 07 0	6 FD 00 00 00 00	0 00 00 00 00 00 00 0	0	

Status: Shows communication state with slave: respond correctly, response timeout, respond abnormally and response error

response error

Slave Address: Slave address in the configuration file (only master, HEX)

Function Code (Command): Modbus command in the configuration file (only master, HEX)

Starting Address: "Modbus register starting address" (HEX) in the configuration file (only master, HEX)

Data/Exception Code: Display the slave data or exception code (HEX)

Notes: When the gateway is configured as a Modbus master, it will show the slave address, function code and the starting address.

Read Data: Show the latest read data (HEX)

Memory mapping address: Starting address of data writing in the gateway

Data: Data writing into the gateway

When users want to fill in the correct "memory mapping address" and "data", you can click the "send" button to



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send the package out.

Save Content/Stop Saving: The software supports saving the data to a local disk. When the saving is complete,

users need to click "Stop Saving" to save it.

Stop Displaying/Continue to Display: The software supports dynamic or static data debugging.

Clear Data: Click this button to clear the data in the debug interface.

Stop debug and exit: Click the button or the exit button to close the debug interface.

Exit: Force quit.



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7 GSD File Instructions

GT200-DP-RS V6.X version has four GSD files:

For Software Configuration mode, the corresponding GSD file is DPRS2V60A.GSD.

For DP Integrated Configuration mode, it has three GSD files. Please select the appropriate GSD file according to the actual application.

DPRS2V60M.GSD - Modbus master

DPRS2V60S.GSD - Modbus slave

DPRS2V60T.GSD - Universal mode

The following chapters introduce the GSD files in STEP7. For how to import GSD files, please refer to the appropriate documents of the PROFIBUS integrated software.

7.1 DPRS2A.GSD

In the "Software Configuration" mode, the parameters of GT200-DP-RS are configured in SST-MPG-CFG software. In the PROFIBUS DP system, user needs to configure the PROFIBUS DP input/output modules. The corresponding GSD file is **DPRS2A.GSD** with the device name "GT200-DP-RS V6.0".





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The supported modules are as follows:

Module	Integrity
N Words Input, M Words Output	word
1 Byte Input	byte
N Word Input	word
N Words Input Consistent	length
1 Byte Output	byte
N Word Output	word
N Words Output Consistent	length

Note:

- 1. N and M are integers. Please refer to the GSD file or <u>Appendix</u> for complete details.
- 2. The consistent module is of length integrity.

The modules on the slot can be configured the I/Q (input/output) address, which are the data stored address in the

PLC.

-	🔰 (4) GT200-DP	-RS V6.0			
S	DP ID	Order Number / Designation	I Add	Q Address	Comment
0	16AI	16 Words Input	304335		Î.
1	2A0	2 Words Output		258261	
2					
3					
4					

Open the properties window of a module to set the address.

L/O Input Direct Entry. Direct Entry. Direct Entry. Direct Entry. Direct Entry. Direct Entry. Direct Entry. Start: Start: End: 267 Process image: Vanufacturer-specific data: (Maximum 14 bytes hexadecimal, separated by comma or blank space)	ddress / ID				
Input Address: Length: Unit: Consistent Start: 260 Process image: Manufacturer-specific data: Maximum 14 bytes hexadecimal, separated by comma or blank space)	I/O	Input	Ŧ		Direct Entry
Start: 1980 14 Words Vunit V End: 267 Process image: V Manufacturer-specific data: (Maximum 14 bytes hexadecimal, separated by comma or blank space)	- Input	: Length:	Unit:	Consistent	
Manufacturer-specific data: (Maximum 14 bytes hexadecimal, separated by comma or blank space)	Start: 260 End: 267 Process image:	4 ==	Words <u> </u>]Unit	<u>×</u>
ynaximum i'r byces newalecimal, separatea by comma or brank spate,	Manufacturer-spec Mavinum 14 brtas	ific data: bayadacimal	reported by co	mma or blank en:	ana l
	Manufacturer-spec (Maximum 14 bytes	ific data: hexadecimal,	separated by co	mma or blank spa	ice)





7.2 DPRS2M.GSD

In the "DP Integrated Configuration" mode, if user wants to configure the GT200-DP-RS as a Modbus Master, the corresponding GSD file is **DPRS2M.GSD** with the device name "GT200-DP-RS Modbus Master V6.0".



The GT200-DP-RS supports Modbus function codes 01, 02, 03, 04, 05, 06, 15 and 16 acting as a Modbus Master,

and provides 3	type of functional	modules. The supported	d modules are shown below:
-	• •		

Module	Modbus Function Code
Read N - M Bits (0xxxx)	01
Read N - M Bits (1xxxx)	02
Read N Word(s) (3xxxx)	04
Read N Word(s) (3xxxx) Consistent	04
Read N Word(s) (4xxxx)	03
Read N Word(s) (4xxxx) Consistent	03
Write $N - M$ Bits (0xxxx)	05/15
Write N Word(s) (4xxxx)	06/16
Write N Word(s) (4xxxx) Consistent	06/16
Control (N Commands)	-
Status (N Commands)	-
Exception Codes	-

Note:

- 1. N and M are integers. Please refer to the GSD file for complete details.
- 2. The consistent module is of length integrity.





7.2.1 Basic Modules

♦ PROFIBUS DP Slave Properties

The configurable properties of the GT200-DP-RS are shown below:

'arameters	Value
🚔 Station parameters	
Device-specific parameters	
–≝ Baudrate (bps)	9600
—Ⅲ Data bits, Parity bit, Stop bits	8 None 1
–≝ Protocol Type	Modbus Master
–≝ Response Timeout	300ms
–≝) Delay Between Polls	No Delay
–≝ Transmission Mode	RTU
–∭ Write Mode	Change of Value
- Response Timeout Action	Hold Data
- Response Timeout for N times	3
Communication Interface	RS485
🗄 🫅 Hex parameter assignment	

Baud Rate (bps): 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200bps can be selected.

Data bits, Parity bit, Stop bits: 8 None 1, 8 Odd 1, 8 Even 1, 8 Mark 1, 8 Space 1 and 8 None 2 can be selected. **Protocol Type:** It depends on the device type (GSD file). For "GT200-DP-RS Modbus Master V6.0" device, it acts as a Modbus Master.

Response Timeout: Time to wait for response from Modbus Slave after Modbus Master sends a command. It is available when "Protocol Type" is Modbus Master. 100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1500, 2000, 3000, 4000, 5000ms can be selected.

Delay Between Polls: Delay time between the last response (or response timeout) and the new command. It is available when "Protocol Type" is Modbus Master. No Delay, 50, 100, 150, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1500, 2000ms can be selected.

Transmission Mode: RTU and ASCII can be selected.

Write Mode: Set output mode, Change of value or Cycle can be selected.

Response Timeout Action: When the gateway doesn't receive the response within the time set in "Response Timeout".



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Clear: Sets the response data in the input buffer to zero.

Hold: The data in the input buffer remains the same.

Response Timeout for N times: The number of retries to send the command when response error. Range: 2~254.

The default value is 3.

Communication Interface: RS485 and RS232 can be selected, the default is RS485.

♦ Module Properties

According to the Modbus address and read/write command, add the appropriate modules for the GT200-DP-RS device.

For example, the configurable parameters of the "Read1-8 Bits (0xxxx)" module is shown below:

Parameters	Value
Device-specific parameters	
Slave Address	1
- E Function	1
– 🗐 Starting Address	0
No. of Points	8
🗄 🔄 Hex parameter assignment	
└ <u>─</u> User_Prm_Data (0 to 3)	01,10,00,00

Slave address: Modbus slave address inquired by this command.

Function: Function code of the command.

Starting Address: Register/Coil/Status starting address. Range: 0~655335.

No. of Points: Number of data. Configurable only for modules that of function code 01, 02, 15.

7.2.2 Functional Modules

The GT200-DP-RS provides three types of advanced functional modules: Control Module, Status Module and



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Exception Module.

♦ Control Module

As a Modbus master, the GT200-DP-RS has a functional module "Control Module" to control whether to send the

Modbus commands.

Note: Without control module, the Modbus commands are sent automatically, according to the "Delay between

Polls" and '	'Write Mode"	of the	GT200-DP-RS	device p	roperties i	n chapter (7.2.1.
				1	1	1	

Control Module	Number of Commands Controlled	Length of Control Bytes
Control (8 Commands)	8	1 byte
Control (16 Commands)	16	2 bytes
Control (24 Commands)	24	3 bytes
Control (32 Commands)	32	4 bytes
Control (40 Commands)	40	5 bytes
Control (48 Commands)	48	6 bytes

The control module should be added above the command modules to be controlled. The commands above the

control module or exceeds the range are not controlled by the control module.

Each bit of the control module corresponds to the controlling state of a command below.

Value of Bit	Control Bit Description	
0	Disable the command.	
1	Enable the command.	

For example:

5	DP ID	Order Number / Designation	I Add	Q Address	Comment
1	24DI	Read 17-24 Bits(Oxxxx)	02		
2	129	Control (8 Commands)		0	
3	2A0	Write 2 Words(4xxxx)		264267	
4	8D0	Write 1-8 Bits(Oxxxx)		1	
5	1AI	Read 1 Word(3xxxx)	256257		
6	2AI	Read 2 Words (3xxxx)	324327		
7	2AI	Read 2 Words (3xxxx)	328331		
8	2AI	Read 2 Words (4xxxx)	332335		
9	16DI	Read 9-16 Bits(Oxxxx)	34		
10	4A0	Write 4 Words(4xxxx)		268275	
11	2A0	Write 2 Words(4xxxx)		276279	
10					

Add a "Control (8 Commands)" module above some commands. Only the commands on the slot 3 to slot 10 will be controlled by this module. Assume that the data value of this control module is "87" in HEX, which is "10000111" in binary. Then the commands on slot 3, 4, 5 and 10 are enabled, while the commands on slot 6, 7, 8 and 9 are disabled. The commands on slot 1 and 11 are always enabled.



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♦ Status Module

As a Modbus master, the GT200-DP-RS has a functional module "Status Module" to indicate the status of the

Modbus commands.

Status Module	Number of Commands Monitored	Length of Status Bytes
Status (8 Commands)	8	1 byte
Status (16 Commands)	16	2 bytes
Status (24 Commands)	24	3 bytes
Status (32 Commands)	32	4 bytes
Status (40 Commands)	40	5 bytes
Status (48 Commands)	48	6 bytes

The status module should be added above the command modules to be monitored. The commands above the control module or exceeds the range are not monitored.

Each bit of the status module corresponds to the status of a command below.

Value of Bit	Status Bit Description
0	Response correct.
1	Response error or timeout.

Note: When the GT200-DP-RS does not get the correct response of a command, it will retry to send the command.

After 3 retries and the response is still incorrect, the status bit will change to "0".

For example:

5	DP ID	Order Number / Designation	I Add	Q Address	Comment
1	16DI	Read 9-16 Bits(Oxxxx)	01		
2	16DI	Read 9-16 Bits(1xxxx)	3 4		
3	65	Status (8 Commands)	2		
4	24DI	Read 17-24 Bits(1xxxx)	57		
5	4AI	Read 4 Words (4xxxx)	324331		
6	7AI	Read 7 Words (4xxxx)	332345		
7	16DO	Write 9-16 Bits(Oxxxx)		01	
8	2A0	Write 2 Words(4xxxx)		264267	
9	4A0	Write 4 Words(4xxxx)		268275	
10	1AI	Read 1 Word(4xxxx)	256257		
11	3AI	Read 3 Words (4xxxx)	346351		
12	8DI	Read 1-8 Bits(1xxxx)	8		
10	012 12 00 00 00 00 00 00 00 00 00 00 00 00 00				

Add a "Status (8 Commands)" module above some commands. Only the commands on the slot 4 to slot 11 will be monitored by this module. If the value of this status module is "DE" in HEX ("11011110" in binary), the commands on slot 4 and 9 respond error, while the commands on slot 5, 6, 7, 8, 10 and 11 respond correctly. The status of commands on slot 1, 2 and 12 are unknown.



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♦ Exception Codes

The Exception Codes module is a 1-word module, able to give the exception codes of up to 48 commands. The bytes of the exception codes are defined below.

High Byte	Low Byte
Command index	Error code

The data values are defined as below.

High Byte Value	Description	
0x00~0x2F	Index of command with correct response.	
0x80~0xAF	Index of command with incorrect response.	
	The actual index is (N - 0x80).	

Low Byte Value	Description
0x00	Response correct.
0xFF	Timeout.
Others	Modbus exception code. Please see
	appropriate documentations.

Note:

- 1. The index counts beginning at the first command module under the exception codes module.
- 2. If the command responds error, the index of this command will add 0x80. For example, a command with index 0x12 when responding correctly, has the index 0x92 (= 0x12 + 0x80) when it responds error.
- 3. The value keeps updating. Exception codes of different commands take turns displaying.



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For example:

	DP ID	Order Number / Designation	I Add	Q Address	Comment
1	8DI	Read 1-8 Bits(Oxxxx)	9]	
2	1AI	Read 1 Word(4xxxx)	258259		
3	65	Exception Codes	352353		
4	2AI	Read 2 Words(4xxxx)	354357		
5	4AI	Read 4 Words(4xxxx)	358365		
6	2AI	Read 2 Words (3xxxx)	366369		
7	2AI	Read 2 Words (3xxxx)	370373		
8	3AI	Read 3 Words(3xxxx)	374379		
9	2A0	Write 2 Words(4xxxx)		276279	
10	2A0	Write 2 Words(4xxxx)		280283	
11	16DO	Write 9-16 Bits(Oxxxx)		23	
12	8D0	Write 1-8 Bits(Oxxxx)		4	
13	2AI	Read 2 Words (3xxxx)	380 383		
14	1AI	Read 1 Word(3xxxx)	384385		

Add a "Exception Codes" module above some commands in slot 3. This exception modules only gives error codes of the commands under slot 3 (from slot 4 to the end). If this exception codes gives value "01 00" "82 01" and "8A FF", which means that:

- 1. "01 00" The command on slot 5 (2th command under the exception code module) responds correctly.
- "82 01" The command on slot 6 (3th command under the exception code module) responds error and the exception code is "01". According to the Modbus exception codes, the error is "illegal function".
- "8A FF" The command on slot 14 (11th command under the exception code module) responds timeout. It does not get any response.

7.3 DPRS2S.GSD

In the "DP Integrated Configuration" mode, if user wants to configure the GT200-DP-RS as a Modbus Slave, the corresponding GSD file is **DPRS2S.GSD** with the device name "GT200-DP-RS Modbus Slave V6.0".



When the GT200-DP-RS acts as a Modbus slave, users can create the memory for the Modbus coils, status and registers. The GT200-DP-RS provides a functional module "Status" that counts the correct inquiry and response.



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The supported modules are shown below:

Module	Modbus Address	
N Bits Input (0xxxx)	Coil status (0x)	
N Bits Output (1xxxx)	Input status (1x)	
N Word(s) Input (4xxx)	Holding register (4x)	
N Word(s) Input (4xxx) Consistent	Istent Holding register (4x)	
N Word(s) Output (3xxx)	Input register (3x)	
N Word(s) Output (3xxx) Consistent	Input register (3x)	
Status	-	

Note:

- 1. N is integer. Please refer to the GSD file for complete details.
- 2. User's Modbus master can regard the GT200-DP-RS as a normal Modbus slave device.

7.3.1 Basic Modules

♦ PROFIBUS DP Slave Properties

The configurable properties of the GT200-DP-RS are shown below:

Parameters	Value
Station parameters	
	0500
-E Baudrate (bps)	9600
Data bits, Parity bit, Stop bits	8 None 1
-	Modbus Slave
- I Slave Address	1
– <u>≡</u> Transmission Mode	RTU
	RS485
🗄 🔄 Hex parameter assignment	
–≝ User_Prm_Data (0 to 7)	00,00,00,40,01,01,00,00
└ <mark>, User_Prm_Data (8)</mark>	00

Baud Rate (bps): Configure serial baud rate, 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200bps can be selected.

Data bits, Parity bit, Stop bits: 8 None 1, 8 Odd 1, 8 Even 1, 8 Mark 1, 8 Space 1 and 8 None 2 can be selected.

Protocol Type: It depends on the device type (GSD file). For "GT200-DP-RS Modbus Slave V6.0" device, it acts



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as a Modbus Slave.

Slave Address: When Protocol Type is Modbus Slave, configure the slave address of GT200-DP-RS. Range: 1~247.

Transmission Mode: RTU or ASCII can be selected.

Communication Interfaces: RS458 and RS232 can be selected, the default is RS485.

♦ Module Properties

Add appropriate modules of different Modbus memory address. The Modbus coil/status/register address begins at 0 (base0) or 1 (base 1), and begins at the first module. The following modules of same address area continue the address. Users can edit the DP input/output address of these modules.

For example:

5	DP ID	Order Number / Designation	I Add	Q Address	Comment
1	1AI	1 Word Input (4xxxx)	268269	[11
2	1A0	1 Word Output (3xxxx)		284285	Ĵ.
3	21	48 Bits Input(Oxxxx)	1116		0
4	1A0	1 Word Output (3xxxx)		286287	0
5	2AI	2 Words Input(4xxxx)	270273		<u>)</u>
6	16D0	16 Bits Output (1xxxx)		56	Ĵ.
7	8			5.5	12

Add some modules on the slot. The first module "1 Word Input (4xxxx)" creates a 1-word memory of 4x Holding

Register, with 4x0001 address. The Modbus address of GT200-DP-RS with the configuration in above figure is:

Module	Modbus Address Area	Address (base 1)
1 Word Input (4xxxx)	4x Holding Register	4x0001
1 Word Output (3xxxx)	3x Input Register	3x0001
48 Bits Input (0xxxx)	0x Coil Status	0x0001~0x0048
1 Word Output (3xxxx)	3x Input Register	3x0002
2 Word Input (4xxxx)	4x Holding Register	4x0002~4x0003
16 Bits Output (1xxxx)	1x Input Status	0x0001~0x0016

7.3.2 Functional Modules

♦ Stats Module

The Status Module is a 1-byte module that counts the correct inquiry and response. When the GT200-DP-RS acts



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as a Modbus slave, once it receives an inquiry and can respond correctly, the value of the Status Module will add one. The Status Module can be added to any slot and counts for all the commands. The counter will be reset when reaching 0xFF.

For example:

5	П пр тп	Order Number / Designation	T Add	Q Address	Comment
1	1A0	1 Word Output (3xxxx)	T Add	284285	Commerce
2	1 A0	1 Word Output (3xxxx)		286287	
3	2AI	2 Words Input (4xxxx)	270273		
4	65	Status	17		
5	16D0	16 Bits Output(1xxxx)		56	
6	16DI	16 Bits Input (Oxxxx)	1819		
7	5AI	5 Words Input (4xxxx)	274283		
8					

Add a Status Module. Assume that its value is "C6" now. If the user's Modbus master uses function code 04 to inquiry the 3x0001 input register, the GT200-DP-RS is able to respond correctly then the value of status module will change to "C7". If the Modbus master inquiry the 3x1000 register which is an illegal address for the GT200-DP-RS with the configuration in above figure, the value of status module won't change.

7.4 DPRS2T.GSD

In the "DP Integrated Configuration" mode, if user wants to transmit universal serial data by GT200-DP-RS, the corresponding GSD file is **DPRS2T.GSD** with the device name "GT200-DP-RS Serial V6.0". **Note:** Please see <u>chapter 5.3</u> for working principle of universal serial mode.



The supported modules are the same with that of **DPRS2A.GSD**. Please refer to the GSD file or <u>Appendix</u> for complete details.

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♦ PROFIBUS DP Slave Properties

The configurable properties of GT200-DP-RS are shown below:

Parameters	Value
🖃 🔄 Station parameters	
🕀 🗃 Device-specific parameters	
–≝] Baudrate (bps)	9600
– Data bits, Parity bit, Stop bits	8 None 1
– Protocol Type	Serial
– 🗐 Receiving Frame Type	Time Interval Between Char
– Interval Between Characters (ms)	10
– Frame Length	111
– 🗐 Enable Auto Sending	Disable
- Period of Auto Sending (ms)	1000
– Enable CRC Check	Disable
- Communication Interface	RS485
Input Data Effective Length	Disable
🕂 🦳 Hex parameter assignment	

Baud Rate (bps): Configure serial baud rate, 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200bps can be selected.

Data Bits, Parity Bit, Stop Bits: 8 None 1, 8 Odd 1, 8 Even 1, 8 Mark 1, 8 Space 1, 8 None 2 Optional.

Protocol Type: It depends on the device type (GSD file). For "GT200-DP-RS Serial V6.0" device, it acts as a Serial device.

Receiving Frame Type: "Time Interval Between Characters" (character timeout) and "Frame Length" (number of characters) optional. Select the way to capture the data frames.

Time Interval Between Characters: Breaks the frames according to the time interval between characters.

Frame Length: Breaks the frames according to the data length (number of characters).

Interval Between Characters (ms): The time interval between characters. When selecting "Time Interval Between Characters" in Receiving Frame Type, if the interval time between characters exceeds the set time, the data received before are regarded as a frame.

Frame Length: The number of characters in a frame. When selecting "Frame Length" in Receiving Frame Type, every data of the set length are regarded as a frame.

Enable Auto Sending: If enable, the output data will be sent automatically according to the Period of Auto Sending. If disable, the output data is sent according to the working principle in <u>chapter 5.3</u>.

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Period of Auto Sending (ms): The period to send output data when enabling Auto Sending.

Enable CRC Check: Enable and Disable optional. If enable, it adds the CRC check bytes for the output data.

When receiving data, it checks the CRC and filters the CRC bytes of correct frames.

Communication Interface: RS485 and RS232 optional.

Input Data Effective Length: The input data length. If enable, the received frame indicates the data length in

"Data length" (see chapter 5.3.2). If disable, the related value is fixed "11".



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Appendix: PROFIBUS DP Modules

The supported PROFIBUS DP modules of DPRS2A.GSD and DPRS2T.GSD are shown below.

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

For the data modules of word/byte integrity, the data can be used by the "MOVE" command in STEP7 or other

general programs.

For the data modules of length integrity, the data should be compressed and sent. In STEP, it mainly uses "SFC 14" and "SFC 15". Please refer to the appropriate documents of the PROFIBUS DP PLC program.

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	DPWR_DAT"]	
<u></u>	EN	ENO		-
\#16# 0-	LADDR	RET_VAL	- M W50	
P#DB100.				
DBXO.O BYTE 32-	RECORD			

SFC15

