Series Gateways

ODOT-S4E2 User Manual

Modbus RTU to Modbus TCP/IP Protocol Converter



Sichuan Odot Automation System Co., Ltd.

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1 Description

1.1 Function

This product, developed by Sichuan Zero Automation System Co., Ltd., is a Modbus RTU to Modbus TCP/IP protocol converter based on market demand and years of experience.

All the Modbus RTU/ASCII slave devices with RS485/RS422/RS232 interface can connect to Modbus TCP/IP network and communicate with TCP clients. Realize high speed data transmission by connecting the low speed serial device to the high-speed Ethernet. This protocol converter has two type working mode, "transparent transmission" and "mapping", which can achieve the maximum system compatibility.

1.2 Features

♦ 9-36V wide range voltage input, reverse protection.

◆DC-DC isolated power,3000V isolated voltage.

◆2KV isolated protection, 10M/100Mbps auto adapting 2KV, intelligent MDI/MDIX flipping.

- ♦ Small size, save space.
- Address mapping mode, fast response to TCP CLP client request.
- ♦ Connect up to 5 clients request.
- Mapping mode supports function code:0x01,0x02,0x03,0x04,0x05,0x06,0x0F,0x10.
- Transmission mode supports all public function code and customized

function code.

- ♦6KB huge buffer,data transmission,larger data transmission.
- ♦RS485 serial ports real time refresh, short scan period, better loading capability.
- ♦ RTU and ASCII mode optional, stronger adaptability.
- ♦ Watchdog can be enabled, watchdog time can be set.
- Support IAP download, update and upgrade firmware program in product

through network port.

• RS485 surge protection, internal terminal resistance and bias circuit enhance stability.

- ◆The packet sending interval can be adjusted freely, and the use is more flexible.
- Self diagnostic, slave devices status live monitoring.
- One push to rest button, restore factory setting.
- 35mm standard guide rail.
- EMC comply EN 55022:2010 & EN55024:2010 international standard.

2. Technical parameters

To make the product works better, please operate it in the range of preference parameter. All the related technical parameters are shown in "Table 1".

Environment Parameter	
Operating temperature	-40~85°C
Storage temperature	-45~125℃
Humidity	5%~95% (no condensing)
Power parameter	
Number of power terminal	1 bus
Power range	9~36VDC
Consumption	Max.100mA@24V

Tabl	e 1
------	-----

Ethernet parameter	
Working mode	Transparent transmission mode, address
	mapping mode, Modbus TCP protocol
Number of ethernet	2 RJ45, 10M/100M auto-adaption router
terminal	function
Net protocols	ETHERNET、ARP、IP、TCP、ICMP
Number of TCP connection	Max. 5
Serial parameter	
Number of serial	4 RS485/RS232 or 2 RS422
Serial communication	RTU mode & ASCII mode
mode	
Baud rate	1200~115200 bps
Checking mode	None, odd, even
Number of client	Max.124 (without relay)
Mapping mode protocol	0x01、0x02、0x03、0x04、0x05、0x06、0x0F、
Function code	0x10
	0xxxx ⊠ (coil) : 8192 Bit
	1xxxx 🗵 (discrete magnitude): 8192 Bit
Modbus buffer	3xxxx 🗵 (input register) : 2048 Word
	4xxxx 🗵 (hold register): 2048 Word
	$3xxxx \boxtimes (system diagnose zone) : 263 Word$

Hardware description

2.1 Appearance



2.2 Status in LED indicators

There are total 6 LED status indicators. The symbol definition and status indicators are shown in "Table 2".

Symbol	Definition	Status	Description
PWR	power supply indicators	ON	Power is supplied to the unit
		OFF	No power is supplied to the unit
		ON	TCP gateway communication error
ETH	status indicator	OFF	TCP gateway communication normal
TX1	Series port 1 sending indicator	Flashing	Series port 1 is sending data
		OFF	Series port 1 is not sending data
RX1	Series port 1 receiving indicator	Flashing	Series port 1 is receiving data
		OFF	Series port 1 is not receiving data
ТХ2	Series port 2 sending	Flashing	Series port 2 is sending data
	indicator	OFF	Series port 2 is not sending data
RX2	Series port 2 receiving	Flashing	Series port 2 is receiving data
ΓΛΖ	indicator	OFF	Series port 2 is not receiving data

I able 2	Tab	ble	2
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2.3 Terminals definition

Device wiring adopts10Pin 3.81mm gap Plug-in terminals, the terminal definition of RS485 interface are shown in "table 3".

No	RS485		RS232	RS422			
·	symbol	Wiring definition	Wiring definition	Wiring	g definition		
1	1R/S-	Serial port 1	Serial port 1		RS422 Send positive		
	110/0-	RS485-	RS232_RX		end		
2	1T/S+	Serial port 1	Serial port 1		RS422 Send		
2	11/3+	RS485+	RS232_TX	<u>-</u>	negative		
3	GND	Shield	Public land	RS422 channel	Shield		
4	2 R/S-	Serial port 2	Serial port 2	22 cl	RS422 Positive		
4	2 R/3-	RS485-	RS232_RX	RS4:	reception		
5	2 T/S+	Serial port 2	Serial port 2		RS422 Negative		
5	2 1/5+	RS485+	RS232_TX		reception		
6	GND	Shield	Public land		Shield		
7	3 R/S-	Serial port 3	Serial port 3		RS422 Send positive		
	3 K/3-	RS485-	RS232_RX		end		
0	27/0	Serial port 3	Serial port 3		RS422 Send		
8	3T/S+	RS485+	RS232_TX	2 Junel 2	negative		
9	GND	Shield	Public land	2 channel	Shield		
10	4R/S-	Serial port 4	Serial port 4	RS422	RS422 Positive		
10	4K/5-	RS485-	RS232_RX	Å	reception		
11	4 7/8 1	Serial port 4	Serial port 4		RS422 Negative		
11	4 T/S+	RS485+	RS232_TX		reception		
12	GND	Shield	Public land		Shield		
13	PE	Ground terminal		<u>. </u>			
14	PE	Ground terminal					
15	V-	Power input negative					

Table3



16 V+	power input positive
-------	----------------------

2.4. Reset switch



Click the reset button by the paper clips. When all lights flash once, it means successful reset and the technical parameters of the gateway are as follows:

parameter name		Defaults		
Ethernet side	Protocol converter IP	192.168.1.254		
	Subnet mask	255.255.255.0		
	LAN gateway IP	192.168.1.1		
	Modbus TCP data port	502		
	Configure the port	1024		
	Modbus-TCP watchdog time	30S		
	The enabling of Modbus-TCP watch dog	enabling		

1 1					
	Gateway work mode	Transtransmission mode			
	Gateway station number	247			
Serial port	Serial port mode	Master station mode			
	Protocol type of Modbus	Modbus RTU			
	Serial port baud rate	9600bps			
	Check digit	No check			
	Data bits	8bit			
side	Stop bit	1bit			
	Receive character interval	3.5t			
	Message sent	0			
	Timeout processing	Data retention			
	Slave response timeout	500ms			

2.5. Size



3 HOW TO USE THE PROTOCOL CONVERTER

3.1. The description of protocol converter

3.1.1. Serial working mode

There are two types of working modes :Master mode and slave mode.

When the serial port works in master mode, the serial port can connect up to 31 Modbus RTU/ASCII slave devices without relaying. This mode is mainly used for data communication between Modbus TCP master and Modbus RTU/ASCII

slaves.

When the serial port works in slave mode, the serial port can connect to a Modbus RTU/ASCII master device. This mode can be applied as follows:

- (1) Data Communication Between Modbus TCP Client and Modbus RTU/ASCII Master Station.
- (2) Data communication between Modbus RTU/ASCII masters.
- (3) Modbus TCP client and a Modbus RTU/ASCII master communicate with a Modbus RTU/ASCII slave at the same time.

3.1.2. Gateway working mode

There are two types of working modes: transparent mode and mapping mode .When "Transparent" mode is in a factory setting without data cache nor editing the address mapping table. The gateway directly sends the instructions of the TCP/IP clients to Modbus RTU/ASCII slave station equipment, and waits for a slave station devices response after getting the instructions from the Modbus TCP/IP clients.The data will directly be returned to the TCP clients.

"Mapping"mode adopts the way of data cache and need to edit the station address mapping table. The gateway polls each of the slave station after power on, and stores the data in the buffer cache. Directly,the gateway will read the data directly from the data buffer, and then returned to the TCP clients after receiving Modbus TCP/IP clients instructions. This method can greatly reduces the waiting time for the client to access to the station and improves the refresh rate.

3.1.3. Data storage area

Data storage is divided into five parts.

- Part 1. "Coil" (DO) storage area, 8192 points in total.
- Part 2. "Discrete magnitude input" (DI) storage area,8192 points in total.
- Part 3. "Input register" (AI)storage area, 2048 points in total.
- Part 4. "Hold register"(AO) storage area, 2048 points in total.
- Part 5. "System diagnostic" (DO) storage area, storage from the station

equipment working condition, 263 points in total. Access to the "**system diagnostic**" area can obtain the slave station's information and used to setting the disconnection alarm.

The distribution of the data storage area and the scope of the address coding are shown in table 5.

Storage Address range Item Storage type Description capability 8192 Bit 1 Area 0 coil 0x0000~0x1FFF Discrete 2 Area 1 8192 Bit 0x0000~0x1FFF magnitude input 2048 Word 0x0000~0x07FF 3 Area 3 Input register 4 Area 4 Hold register 2048 Word 0x0000~0x07FF System 5 Area 3 263 Word 0x2000~0x2106 diagnostic

Table5

3.1.4 System diagnostic area

The diagnosis system is divided into two parts.

The first part: The address 0x2000-0x200F is in total of 16 word that is 256 bits as the "slave station error indicator area". The number 1-247 are respectively corresponding to slave stations 1-247 and keep 248-256 bit number. When the error occurres from the station communication, the corresponding bit of the station address is set to 1. The corresponding error indicator bit will be cleared automatically after the slave station to return to normal. Its data encoding format is shown in Table 6.

	BIT	Bit15	Bit14	Bit13	Bit12	Bit11	Bit10	Bit9	Bit8
address	Bit number	16	15	14	13	12	11	10	9
0x2000	BIT	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
	Bit number	8	7	6	5	4	3	2	1
	BIT	Bit15	Bit14	Bit13	Bit12	Bit11	Bit10	Bit9	Bit8
address	Bit number	32	31	30	29	28	27	26	25
0x2001	BIT	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
	Bit number	24	23	22	21	20	19	18	17
	BIT	Bit15	Bit14	Bit13	Bit12	Bit11	Bit10	Bit9	Bit8
address	Bit number	x	x	х	х	х	x	x	x
0x200F	BIT	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
	Bit number	x	247	246	245	244	243	242	241

Table6

The second part :Address 0x2010-0x2106 Word ,total 247 words, as "from the station status indicator" area. Reading the area could obtain the salve stations' current working status, the data encoding format is as shown in Table 7.

address	Slave	Byte1	Byte0
0x2010	station1	Function code	Error code
address	Slave	Byte1	Byte0
0x2011	station2	Function code	Error code
address0x	Slave	Byte1	Byte0
2106	station 247	Function code	Error code

Table7

Each Word is divided into high and low two bytes, Byte1 are the high byte, indicating the current implementation of the mapping to the function code of the slave stations. Byte0 are the low byte, indicating the current error code of the salve stations' communication. The specific meaning of the error code of the slave stations is as shown in table 8.

Error code	indication
0x00	Slave stations operates normally
0x01	Illegal function code

0x02	Illegal data address
0x03	Illegal data value
0x04	Slave station equipment failure
0x06	Busy slave station equipment
0x07	Parity check error
0x09	CRC check error
0x0B	Response timeout from devices
0x0F	Write response error from slave devices

3.2. Default parameters

Parameter name		Defaults	
	Protocol converter IP	192.168.1.254	
	Subnet mask	255.255.255.0	
Ethernet	LAN gateway IP	192.168.1.1	
side	Modbus TCP data port	502	
	Configure the port	1024	
	Modbus-TCP watchdog time	30S	

	The enabling of Modbus-TCP watch dog	enabling		
	Gateway working mode	Transparent mode		
	Gateway station number	247		
	Serial operating mode	Master mode		
	Modbus protocol type	Modbus RTU		
	Serial baud rate	9600bps		
	Check digit	No check		
Serial port	Data bits	8bit		
side	Stop bit	1bit		
	Receive character interval	3.5t		
	Message sent	0		
	Timeout processing	Data retention		
	Slave response timeout	500ms		

3.3. Typical description of application

3.3.1 Communicate between Modbus TCP client and Modbus

RTU/ASCII slave station

3.3.1.1. Application topology

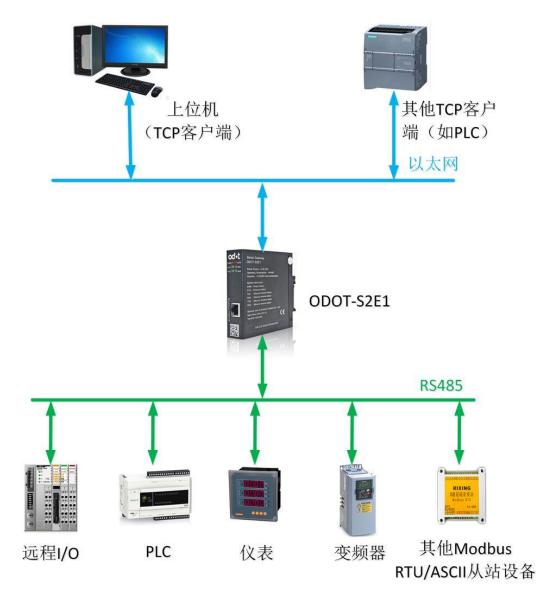


Chart 3.1

3.3.1.2. Transparent transmission mode configuration

1. Open configuration software "odot MGCC Config", Right click the slave configuration page and select "Add Device", Add "ODOT-S4 E2".

∞+ Modbus RTU/ASCII—Modbus TCF	gateway config		– 🗆 X		
File Communication Adv	anced configuration	About			
Ethernet configuration		Slave configuration			
IP Address	192.168.1.254]			
Subnet mask	255. 255. 255. 0]			
Gateway	192.168.1.1	Add gate			
Modbus-TCP数据通讯端口 mounus-rer port	502		ODOT-S2E2 ODOT-S4E2		
Download port	1024]	MG-S1EX		
Modbus-TCP watchdog time (s)	30]			
Modbus-ICP watchdog enable					
Upload	Download	Import	Export		
Connection status No download 💥					

2. Double-click "ODOT-S4E2" or right-click "ODOT-S4E2", Select "common device attributes", Set the gateway working mode to Transparent in the popup page. $_{\circ}$

ಯ Modbus RTU/ASCII—Modbus TCP gateway config	_	×
File Communication Advanced configuration About		
Ethernet configuration Slave configuration		
IP Address 192.168.1.254 Subnet mask 255.255.255.0 Modbus-TCP数据通 Modbus-TCP数据通 Down Getway working mode: Transmission transparent 、 Modbus-TCP watchdog Getway address: 247		
Modbus-TCP watch OK Upload Download Import Ex	rport	
Connection status Current mode : Transmission transparent	-	download .

3. Double-click "COM1", "COM2", "COM3", "COM4"or right-click "COM1", "COM2", "COM3", "COM4" and click "Serial Properties", the "Serial Settings" window pops up. After setting the communication parameters, click the "OK" button to save and return. Take COM1 as an example.

The meaning of each parameter is as follows:

Operating mode:

It is used to set up gateway as master station or slave station in the network. Default is master mode.

Modbus protocol type:

it's used to set up the gateway's protocol type of the network between the communication of the serial port and other connected devices. You can choose Modbus RTU or Modbus ASCII. Please keep this parameter in accord with the device that is connected to the serial port.

Baud rate:

Serial port baud rate: optional range is 1200~115200bps and default is 9600bps, Please keep this parameter in accord with the device that is connected to the serial port.

Check Digit:

no parity, odd parity, even parity, no default can be chose. Please keep this parameter in accord with the device that is connected to the serial port.

Stop bit:

You can choose 1 stop bit or 2 stop bits. Default is 1 stop bit. Please keep this parameter in accord with the device that is connected to the serial port. Receive character interval:

when receiving packets Frame interval detection time can be chose from 1.5t to 200t. Default is 3.5t. In general, you don't have to change this parameter. Packet transmission interval:

Interval time for sending Modbus commands (Delayed time from receiving the slave response message to sending the next command) can be set from 0ms-65535ms. Default is 0ms. It is recommended to set 100ms. It can Prevent connected devices from communication failure due to slow response.

Timeout processing:

Read data from slave station. Data processing mode can choose "data clear" or "data retention" if slave station response timeout. Default is "Data Hold mode". This parameter is only valid for Modbus read command. Please set this value according to actual needs.

d•t Modi	bus RTU/ASCII—Moc	lbus TCP gateway confi	g				_		\times
File	Communication	Advanced config	uration	Ab	out				
Ethern	et configuration				Slave configuration	_			
(odbus-	IP Subr Subr Modbus-1 Downlc -TCP watchdog t;	Data bits Stop bits Receive delay Send delay(ms)	ModBus RTU 9600 None parity 8 1 3.5t 0	•	CON CON CON CON CON	Add slave Configure serial Copy slaves (Ci Paste (Ctrl+V)	J		
Modì	bus-TCP watchdog	Timeout mode	Data holding Cancel						
[Upload	Download			Import		Export		
Conne	ection status 🍯 C	urrent mode : Trans	nission t	rans	parent		N	lo down	load

4. Select "COM1", "COM2", "COM3", "COM4".Take COM1 as an example. Right click to select Add Slave, input "Slave Name", fill in "Slave Station Number" and slave "Response Timeout" time, click "Confirm" to return. The station number of the slave station cannot be the same and cannot be the same as the station number of the device. Range of the slave station address is between 1 and 247.The name of slave station can not be the same under the same serial port. The "Response timeout" time needs to be obtained from the manual of the device. It is recommended to set up more 500ms.Click "Confirm".

File Communication Advanced configuration Al thernet configuration COM1_1#'s parameters Slave Name COM1_1# Slave Address 1 Slave response 500 timeout (ms) timeout (ms) Cancel Modbus-TCP watchdog enable	Slave configuration Slave configuration COM1 COM1 Configure Configure Copy slave Paste (Ct	e serial ves (Ctrl+C)
Upload Download	Import	Export No downl

5. Configure the Ethernet parameters of the gateway by configuring the "Ethernet Configuration" on the left half of the software.

Some of the parameters are as follows:

Modbus gateway IP: The device's own IP address;

Subnet mask: Subnet mask of the device;

LAN gateway IP: Gateway IP address of the network where the device resides;

Modbus-TCP data communication port: Generally 502;

Configure the port: The configuration software downloads the configuration to the device through this port of the device;

Modbus-TCP watchdog time: The time interval from when the gateway receives the last Modbus TCP packet to the automatic restart;

Note: Automatic restart of the gateway can release connection resources that have not been used for a long time in time;

∞+ Modbus RTU/ASCII—Modbus TCP gateway config	_		\times
File Communication Advanced configuration About Ethernet configuration IP Address 192.168.1.254 Subnet mask Gateway Modbus-TCP数据通讯端口 mounus=rer port Download port 1024 Modbus-TCP watchdog time (s) Modbus-TCP watchdog enable			
Upload Download Import	Export	t No downi	load -

Modbus-TCP watchdog enable: Whether the watchdog function is enabled.

6. Set the destination gateway address that you want to download and

download communication port number through

"Communication" — "Communication Configuration" . The default is the gateway factory default IP 192.168.1.254 and port number 1024.

^{od} •t Modbus RTU/ASCII—Modb	ous TCP gateway config		- 🗆 X
Sublet	nmunication channel mask 200.200.200.0 teway 192.168.1.1 port 502 port 1024 (s) 30	About Slave configuration ODOT-S4E2 COM1 COM2 COM3 COM4	
Upload	Download rrent mode : Transmission tra	Import	Export No download;

7. Click the button "Download Gateway Configuration ".Download configuration parameters to the gateway.After the download is successful, the "Download successful" prompt appears in the Status Bar at the lower right.After the download is successful, the gateway restarts automatically.then the gateway go into running state.

If the download fails, please check out whether the computer's IP address and gateway IP address are in the same network segment. Then check whether the gateway IP address is set correctly. If you forget the gateway IP address, you can reset the gateway through the reset button, After reset, the gateway IP address is the factory default IP address.

Click "Import Profile" and "Export Profile" to import and save the configuration

file to the local disk.Click "Upload Gateway Configuration" to upload the current gateway configuration to the software.

Note: When downloading and uploading, you need to ensure that the computer and the gateway are in the same network segment.

🕬 Modbus RTU/ASCII—Modbus TCP gateway cont)	– 🗆 X
Subnet mask 255.25 Gateway 192.1	1.254 .255.0 8.1.1 2 4.4	22
Upload Download	Import	Export
Connection status 🍯 Current mode : Trans	ission transparent	No download .::

8. After completing the above settings, the Modbus TCP client can use the Modbus TCP protocol to access the slave device 16DI which the station number is 1 though the gateway IP address 192.168.1.254, the Modbus data communication port 502 and the slave station number 1.

3.3.1.3 Mapping mode configuration

1. Open the configuration software "odot MGCC Config".Right-click on the configuration page of slave station and select "Add Device" ,then add "ODOT-S4E2".

File Communication Advanced configuration	About
Ethernet configuration IP Address 192.168.1.254 Subnet mask 255.255.255.0 Gateway 192.168.1.1 Modbus-TCP port 502 Download port 1024 Modbus-TCP watchdog time (s) 30 Modbus-TCP watchdog enable	Slave configuration Add gateway ODOT-S2E1 ODOT-S2E2 ODOT-S4E2 MG-S1EX
Upload Download	Import Export

 Double-click "ODOT-S4E2", or right-click "ODOT-S4E2". Select "Common Properties of Device Serial Port".Set the gateway working mode to "Mapping Mode" in the popup setting page.

od+t Modbus RTU/ASCII—Modbus TCP gateway config	—		\times
File Communication Advanced configuration About			
Ethernet configuration Slave configuration			_
IP Address 192. 168. 1. 254	e		
Common attribute Change device	•		
Mo Getway working mode: Mapping model			
Getway address: 247			
Modbus-TCP watch OK Cancel			
Upload Download Import	Export	:	
🔴 Connection status 🥞 Current mode : Mapping model	1	No downlo	ad:

3. Double-click "COM1", "COM2" or right-click "COM1", "COM2" .Click "Serial Properties" to bring up the "Serial Setting" window. Set up the communication parameters, then click the "Confirm" button to save and return.

The meaning of each parameter is as follows:

Operating mode:

It is used to set up gateway as master station or slave station in the network. Default is master mode.

Modbus protocol type:

it's used to set up the gateway's protocol type of the network between the communication of the serial port and other connected devices. You can choose Modbus RTU or Modbus ASCII. Please keep this parameter in accord with the device that is connected to the serial port.

Baud rate:

Serial port baud rate: optional range is 1200~115200bps and default is 9600bps, Please keep this parameter in accord with the device that is connected to the serial port.

Check Digit:

no parity, odd parity, even parity, no default can be chose. Please keep this parameter in accord with the device that is connected to the serial port.

Stop bit:

You can choose 1 stop bit or 2 stop bits. Default is 1 stop bit. Please keep

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this parameter in accord with the device that is connected to the serial port. Receive character interval:

when receiving packets Frame interval detection time can be chose from 1.5t to 200t. Default is 3.5t. In general, you don't have to change this parameter. Packet transmission interval:

Interval time for sending Modbus commands (Delayed time from receiving the slave response message to sending the next command) can be set from 0ms-65535ms. Default is 0ms. It is recommended to set 100ms. It can Prevent connected devices from communication failure due to slow response.

Timeout processing:

Read data from slave station. Data processing mode can choose "data clear" or "data retention"if slave station response timeout. Default is "Data Hold mode" .This parameter is only valid for Modbus read command. Please set this value according to actual needs.

∞4 Modbus RTU/ASCII—Modbus TCP gateway config			\times
File Communication Advanced configuration About COMI configuration Serial port working mode Master mode Communication protocol ModBus RTU Baud rate 9600 Check None parity Check None parity Copy slaves (Ctrl+C) Paste (Ctrl+V)			
Modbus-TCP wat: Send delay(ms) 0 Modbus-TCP v OK Cancel			
Upload Download Import Connection status Current mode : Mapping model	Export No	o downl	oad .::

4. Select "COM1" or "COM2". Right-click to select "Add Slave". Input "Slave name". fill in "Slave station number". Then configure Modbus function code, start address of slave data, number of data, start address of gateway mapping area and response timeout time and if "event output" (only when the data changes, the gateway will execute this command once) according to the communication manual of slave station equipment. Under the same serial port the station number of the slave station cannot be the same and cannot be the same as the station number of the station. Range of the slave station address is between 1 and 247. Under the same serial port the slave station's name cannot be the same. After completing the settings, click "Save Current Mapping Table Edit".

od•t Modbus RTU/ASCII—Modbus TCP gateway config		– 🗆 X
File Communication Advanced configuration A Ethernet configuration IP Address 192.168.1.254 Subnet mask 255.255.255.0 Gateway 192.168.1.1 Modbus-TCP port 502 Download port 1024 Modbus-TCP watchdog time (s) 30 Modbus-TCP watchdog enable ✓	Slave configuration COM1 Add slave COM1 Add slave Configure seri Copy slaves (t Paste (Ctrl+V)	Ctrl+C)
Upload Download	Import	Export
🔴 Connection status 🤔 Current mode : Mapping model		No download:

5. Configure the Ethernet parameters of the gateway by the "Ethernet Configuration" on the left of the software.

Some of the parameters are as follows:

Modbus gateway IP: The device's own IP address;

Subnet mask: Subnet mask of the device;

LAN gateway IP: Gateway IP address of the network where the device resides;

Modbus-TCP data communication port: Generally 502;

Configure the port: The configuration software downloads the configuration to the device through this port of the device;

Modbus-TCP watchdog time: The time interval from when the gateway receives the last Modbus TCP packet to the automatic restart;

Note: Automatic restart of the gateway can release connection resources that have not been used for a long time in time;

Modbus-TCP watchdog enable: Whether the watchdog function is enabled.

∞+ Modbus RTU/ASCII—Modbus TCP	gateway config			_	
File Communication Adva	anced configuration	Abo	ut		
Ethernet configuration			Slave configuration		
IP Address	192.168.1.254		□ 🐨 ODOT-S4E2		
Subnet mask	255. 255. 255. 0		COM1		
Gateway	192.168.1.1		-> COM2		
Modbus-TCP port	502		COM4		
Download port	1024				
Modbus-TCP watchdog time (s)	30				
Modbus-TCP watchdog enable					
Vpload	Download		Import	Export	
🔴 Connection status 🤔 Current :	mode : Mapping model			I	Wo download .::

6. Set the destination gateway address that you want to download and download communication port number through

"Communication" — "Communication Configuration". The default is the gateway factory default IP 192.168.1.254 and port number 1024.

∞⊶ Mod	bus RTU/ASCII—Modbus TCF	ogateway config			_		
File	Communication Adv	anced configur	ation Abo	ut			
Ether	Download			Slave configuration			
	Upload			I ■ T S ODOT-S4E2			
	Configure commun	ication channe	I				
c	Gateway	Configuration f	or communica	ation X			
	Modbus-TCP port	IP Address:	192. 168. 1. 25				
Modbus	Download port	Port:	1024	Reset			
	Modbus-TCP watchdog time (s) Modbus-TCP watchdog enable OK Cancel						
	Upload	Download		Import	Export		
e Conne	ection status 🎽 Current	mode : Mapping	model		No	o download _{.::}	

7. Click the button "Download Gateway Configuration ".Download configuration parameters to the gateway. After the download is successful, the "Download successful" prompt appears in the Status Bar at the lower right. After the download is successful, the gateway restarts automatically. then the gateway go into running state.

If the download fails, please check out whether the computer's IP address and gateway IP address are in the same network segment. Then check whether the gateway IP address is set correctly. If you forget the gateway IP address, you can reset the gateway through the reset button, After reset, the gateway IP address is the factory default IP address.

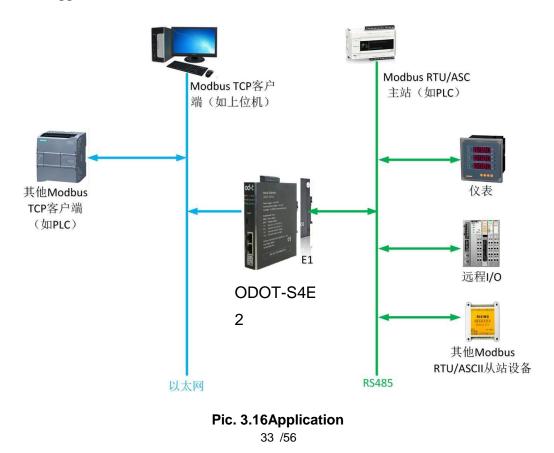
Click "Import Profile" and "Export Profile" to import and save the configuration file to the local disk.Click "Upload Gateway Configuration" to upload the current gateway configuration to the software.

Note: When downloading and uploading, you need to ensure that the computer and the gateway are in the same network segment.

File Communication Advanced configurat	ion About	
Ethernet configuration	Slave configuration	
IP Address 192.168.1.2	54	
Subnet mask 255.255.255	. 0	
Gateway 192.168.1.	1	
Modbus-TCP port 502		
Download port 1024		
Nodbus-TCP watchdog time (s) 30		
Modbus-TCP watchdog enable 🖂		
Upload Download	Import	Export

8. After completing the above settings, the Modbus TCP client can use the Modbus TCP protocol to access the slave device 16DI which the station number is X(0<X<248 and X cannot be the device station number for the gateway) though the gateway IP address 192.168.1.254, the Modbus data communication port 502 and the slave station number 1.

3.3.2. Realize Modbus TCP Client and Modbus RTU/ASCII Master Station Communication



3.3.2.1. Application

3.3.2.2. Setup

1. Open the configuration software "odot MGCC Config".Right-click on the configuration page of slave station and select "Add Device" ,then add "ODOT-S4E2".

[:] ∞+t Modbus RTU/ASCII—Modbus TCP gateway	config		_	
File Communication Advanced co	onfiguration Abou	ut		
Ethernet configuration		Slave configuration		
IP Address 19	2.168.1.254	Add gateway 🕨	ODOT-S2E1	
Subnet mask 25	5.255.255.0		ODOT-S2E2	
Gateway 1	92.168.1.1		ODOT-S4E2	
			MG-S1EX	
Modbus-TCP port	502			
Download port	1024			
Modbus-TCP watchdog time (s)	30			
Modbus-TCP watchdog enable 🖂				
Upload Down	oad	Import	Export	
Connection status			N	o download 🚲

2. Double-click "ODOT-S4E2" or right-click "ODOT-S4E2", Select "common device attributes", Set the gateway as the station number of the Modbus RTU/ASCII slave on the popup setup page.

od+ Modbus RTU/ASCII—Modbus TCP gateway config	_		\times
File Communication Advanced configuration About Ethernet configuration TD Address I 92 168 1 254 Common attribute Getway working mode: Mapping model Getway address: 23	•		
Modbus-TCP OK Cancel Modbus-T Upload Download Import	Export		
🔴 Connection status 🎒 Current mode : Mapping model	N	o downlo	ad:

3. Double-click "COM1", "COM2", "COM3", "COM4" or right-click "COM1", "COM2", "COM3", "COM4".Click "Serial Properties" to bring up the "Serial Setting" window. Set up the communication parameters, Set serial operating mode as slave mode. Then click the "Confirm" button to save and return.

The meaning of each parameter is as follows:

Operating mode:

It is used to set up gateway as master station or slave station in the network. Default is master mode. Here is set up slave mode.

Modbus protocol type:

it's used to set up the gateway's protocol type of the network between the communication of the serial port and other connected devices.You can choose Modbus RTU or Modbus ASCII. Please keep this parameter in accord with the device that is connected to the serial port.

Baud rate:

Serial port baud rate: optional range is 1200~115200bps and default is 9600bps, Please keep this parameter in accord with the device that is connected to the serial port.

Check Digit:

no parity, odd parity, even parity, no default can be chose. Please keep this parameter in accord with the device that is connected to the serial port.

Stop bit:

You can choose 1 stop bit or 2 stop bits. Default is 1 stop bit. Please keep this parameter in accord with the device that is connected to the serial port. Receive character interval:

When receiving packets Frame interval detection time can be chose from 1.5t to 200t. Default is 3.5t. In general, you don't have to change this parameter.

Slave response delay:

The gateway acts as a Modbus RTU/ASCII slave, from the time it receives a message from the master to when it sends a reply. This parameter relates to the performance of the master.

od•t Modb	ous RTU/ASCII—Mo	odbus TCP gateway config						
File	Communication	n Advanced configu	ration Ab	oout				
Ethern	et configuration	n COM2 configuration		Sle	we configuration 0D0T-S4E2			
	Subj	Serial port working mode Communication protocol Baud rate	ModBus RTV	• • •	-> COM1 -> COM2 -> COM3	Add slave	_	_
	Modbus-	Check Data bits		•	> COM4	Configure Copy slav	e serial ves (Ctrl+C)	
	Downl	Stop bits Receive delay		•		Paste (C	trl+V)	
Modbus-	-TCP watchdog t	Slave respond delay(ms)						
Modb	ous-TCP watchdo							
		OK	Cancel]				
	Upload	Download			Import		Export	
Conne	ction status ອ	Current mode : Mapping	g model				N	lo download .::

4. Configure the Ethernet parameters of the gateway by the "Ethernet Configuration" on the left of the software.

Some of the parameters are as follows:

Modbus gateway IP: The device's own IP address;

Subnet mask: Subnet mask of the device;

LAN gateway IP: Gateway IP address of the network where the device resides;

Modbus-TCP data communication port: Generally 502;

Configure the port: The configuration software downloads the configuration to the device through this port of the device;

Modbus-TCP watchdog time: The time interval from when the gateway receives the last Modbus TCP packet to the automatic restart;

Note: Automatic restart of the gateway can release connection resources that have not been used for a long time in time;

Modbus-TCP watchdog enable: Whether the watchdog function is enabled.

5. Set the destination gateway address that you want to download and

download communication port number through

"Communication" — "Communication Configuration". The default is the gateway factory default IP 192.168.1.254 and port number 1024.

6. Click the button "Download Gateway Configuration ".Download configuration parameters to the gateway.After the download is successful, the "Download successful" prompt appears in the Status Bar at the lower right.After the download is successful, the gateway restarts automatically.then the gateway go into running state.

If the download fails, please check out whether the computer's IP address and gateway IP address are in the same network segment. Then check whether the

gateway IP address is set correctly. If you forget the gateway IP address, you can reset the gateway through the reset button, After reset, the gateway IP address is the factory default IP address.

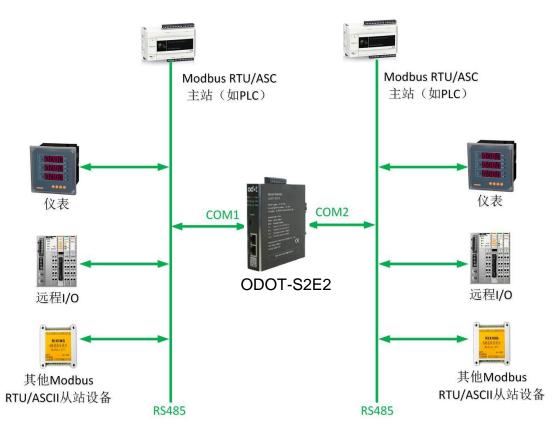
Click "Import Profile" and "Export Profile" to import and save the configuration file to the local disk.Click "Upload Gateway Configuration" to upload the current gateway configuration to the software.

Note: When downloading and uploading, you need to ensure that the computer and the gateway are in the same network segment.

7. After setting up, connect the gateway to Modbus TCP network by Ethernet and connect to the Modbus RTU/ASCII network by the corresponding serial port (routine configuration is COM2). The gateway acts as a Modbus TCP server in the Modbus TCP network and as a slave in the Modbus RTU/ASCII network. Modbus TCP client can read and write" gateway internal data storage area" through Modbus TCP protocol. Modbus RTU/ASCII master can also read and write "gateway internal data storage area "through Modbus RTU/ASCII protocol. The gateway realize communication between the Modbus TCP client and the Modbus RTU/ASCII master by taking the role of a data relay.

3.3.3. Realize communication between Modbus RTU/ASCII master stations

3.3.3.1. Application



3.3.3.2. Setup

1. Open the configuration software "odot MGCC Config".Right-click on the configuration page of slave station and select "Add Device" ,then add "ODOT-S4E2".

∞+t Modbus RTU/ASCII—Modbus TCP	gateway config			- 🗆 X
File Communication Adva	nced configuration	About		
Ethernet configuration		Slave configuration	1	
IP Address	192.168.1.254	Add gateway	ODOT-S2E1	
Subnet mask	255.255.255.0		ODOT-S2E2	_
Gateway	192.168.1.1	=	ODOT-S4E2 MG-S1EX	
_		_	WIG-STEX	
Modbus-TCP port	502			
Download port	1024			
Modbus-TCP watchdog time (s)	30			
Modbus-TCP watchdog enable				
Upload	Download	Import	Ex	port
Connection status				No download;

2. Double-click "ODOT-S4E2" or right-click "ODOT-S4E2". Select "common device attributes", Set the gateway as the station number of the Modbus RTU/ASCII slave on the popup setup page.

	anced configuration A	bout		
Ethernet configuration		Slave configuration		
IP Address	192.168.1.254	Belete current de	vice	
Subnet mask	255.255.255.0	Common attribut	e	
Gateway	Common attribute	Change device	•	
Modbus-TCP port	Getway working mode: Transm	ission transparent 🔹		
Download port	Getway address: 247			
Nodbus-TCP watchdog time (s)	OK	Cancel		
Modbus-TCP watchdog enable				
Upload	Download	Import	Expor	+

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3.Double-click "COM1", "COM2", "COM3", "COM4" or right-click "COM1", "COM2", "COM3", "COM4".Click "Serial Properties" to bring up the "Serial Setting" window. Set up the communication parameters, Set two serials' operating mode as slave mode. Then click the "Confirm" button to save and return.

The meaning of each parameter is as follows:

Operating mode:

It is used to set up gateway as master station or slave station in the network. Default is master mode. Here is set up slave mode.

Modbus protocol type:

it's used to set up the gateway's protocol type of the network between the communication of the serial port and other connected devices. You can choose Modbus RTU or Modbus ASCII. Please keep this parameter in accord with the device that is connected to the serial port.

Baud rate:

Serial port baud rate: optional range is 1200~115200bps and default is 9600bps, Please keep this parameter in accord with the device that is connected to the serial port.

Check Digit:

no parity, odd parity, even parity, no default can be chose. Please keep this parameter in accord with the device that is connected to the serial port.

Stop bit:

You can choose 1 stop bit or 2 stop bits. Default is 1 stop bit. Please keep

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this parameter in accord with the device that is connected to the serial port.

Receive character interval:

when receiving packets Frame interval detection time can be chose from

1.5t to 200t. Default is 3.5t. In general, you don't have to change this parameter.

Slave response delay:

The gateway acts as a Modbus RTU/ASCII slave, from the time it receives a message from the master to when it sends a reply. This parameter relates to the performance of the master.

od•t Modbus RTU/ASCII—M	lodbus TCP gateway config					_		\times
Ethernet configura	DM2 configuration Serial port working mode Communication protocol Baud rate	Slave mode ModBus RTU 9600 None parity 8 1 3.5t	• • • • • • • • • • • • • • • • • • •	configuration ODOT-S4E2 COM1 COM2 COM3 COM4	Add slav Configur Copy sla Paste (C	re serial aves (Ctrl+C)		
Upload	Download			Import		Export		
🔴 Connection status 阿	Current mode : Transmi	ssion trans	parent			N	o downlo	oad .::

4. Configure the Ethernet parameters of the gateway by the "Ethernet Configuration" on the left of the software.

Some of the parameters are as follows:

Modbus gateway IP: The device's own IP address;

Subnet mask: Subnet mask of the device;

LAN gateway IP: Gateway IP address of the network where the device resides;

Modbus-TCP data communication port: Generally 502;

Configure the port: The configuration software downloads the configuration to the device through this port of the device;

Modbus-TCP watchdog time: The time interval from when the gateway receives the last Modbus TCP packet to the automatic restart;

Note: Automatic restart of the gateway can release connection resources that have not been used for a long time in time;

Modbus-TCP watchdog enable: Whether the watchdog function is enabled.

5. Set the destination gateway address that you want to download and download communication port number through

"Communication" — "Communication Configuration". The default is the gateway factory default IP 192.168.1.254 and port number 1024.

6. Click the button "Download Gateway Configuration ".Download

configuration parameters to the gateway.After the download is successful, the "Download successful" prompt appears in the Status Bar at the lower right.After the download is successful, the gateway restarts automatically.then the gateway go into running state.

If the download fails, please check out whether the computer's IP address and gateway IP address are in the same network segment. Then check whether the gateway IP address is set correctly. If you forget the gateway IP address, you can reset the gateway through the reset button, After reset, the gateway IP address is the factory default IP address.

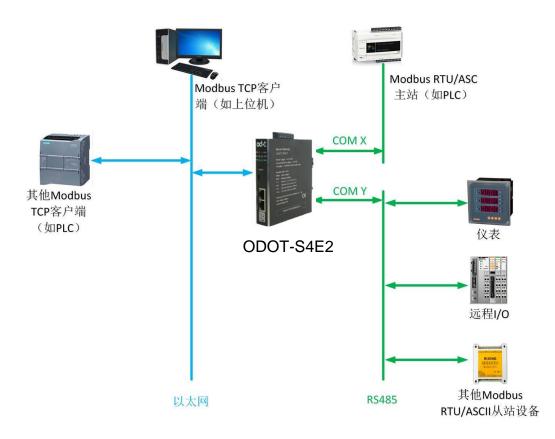
Click "Import Profile" and "Export Profile" to import and save the configuration file to the local disk.Click "Upload Gateway Configuration" to upload the current gateway configuration to the software.

Note: When downloading and uploading, you need to ensure that the computer and the gateway are in the same network segment.

7. After setting up, two different Modbus RTU/ASCII networks are accessed through the corresponding serial ports. The gateway acts as slave station in both Modbus RTU/ASCII networks. The Modbus RTU/ASCII master stations in both networks can both read and write the gateway's" internal gateway data storage area" the Modbus RTU/ASCII protocol. The gateway realize communication between the Modbus TCP client and the Modbus RTU/ASCII master by taking the role of a data relay.

3.3.4 Implementing Modbus TCP Client and Modbus RTU/ASCII Master Simultaneously Accessing One Modbus RTU/ASCII Slave Station

3.3.4.1. Application topology



3.3.4.2. Simple configuration

1. Open the configuration software "odot MGCC Config".Right-click on the configuration page of slave station and select "Add Device" ,then add "ODOT-S4E2".

∞d•t Modbus RTU/ASCII—Modbus TCP	gateway config		- 🗆 X
	192. 168. 1. 254 255. 255. 255. 0 192. 168. 1. 1 502	About Slave configuration Add gateway >	ODOT-S2E1 ODOT-S2E2 ODOT-S4E2 MG-S1EX
Download port Modbus-TCP watchdog time (s) Modbus-TCP watchdog enable	1024 30		
Upload	Download	Import	Export No download "

2. Double-click "ODOT-S4E2" or right-click "ODOT-S4E2", Select "common device attributes". Set the gateway as the station number of the Modbus RTU/ASCII slave on the popup setup page.

7件 通讯	高级关	ŧŦ								
太网配置					串口	配置				
	MODBUS网关	EIP	192.168.	1.254		-	_			
			255.255.	0EE 0		添加	设备,	ODO	DT-S2E1	
	子网相			200.0		A second at		ODO	DT-S2E2	
	局域网网	Comm	on attribute					ODO	DT-S4E2	
	Jest and a la							MG	-S1EX	
Modbus-T	CP数据通讯	Getw	ay working	mode: Mapp	oing model		•	MG	-S1EX	
Modbus-T					oing model		•	MG	-S1EX	
	CP数据通讯 配置		ay working Getway addu		oing model		•	MG	-S1EX	
Modbus-T Modbus-TCP	CP数据通讯 配置		Getway add				•	MG	-S1EX	
Modbus-TCP	CP数据通讯 配置					cel	•	MG	-S1EX	
Modbus-TCP	CP数据通讯 配置 看门狗时间		Getway add			cel	•	MG	-SIEX	

3. Double-click "COM1", "COM2", "COM1", "COM2" or right-click "COM1", "COM2", "COM1", "COM2" .Click "Serial Properties" to bring up the "Serial Setting" window. Set up the communication parameters, Set two serials' operating mode to

slave mode. Then click the "Confirm" button to save and return.

The meaning of each parameter is as follows:

Operating mode:

It is used to set up gateway as master station or slave station in the network. Default is master mode. Here is set up slave mode.

Modbus protocol type:

it's used to set up the gateway's protocol type of the network between the communication of the serial port and other connected devices. You can choose Modbus RTU or Modbus ASCII. Please keep this parameter in accord with the device that is connected to the serial port.

Baud rate:

Serial port baud rate: optional range is 1200~115200bps and default is 9600bps, Please keep this parameter in accord with the device that is connected to the serial port.

Check Digit:

no parity, odd parity, even parity, no default can be chose. Please keep this parameter in accord with the device that is connected to the serial port.

Stop bit:

You can choose 1 stop bit or 2 stop bits. Default is 1 stop bit. Please keep this parameter in accord with the device that is connected to the serial port. Receive character interval:

when receiving packets Frame interval detection time can be chose from

1.5t to 200t. Default is 3.5t. In general, you don't have to change this parameter.

Slave response delay:

The gateway acts as a Modbus RTU/ASCII slave, from the time it receives a message from the master to when it sends a reply. This parameter relates to the performance of the master.

od•t Modbi	COM1 configuration			—	\times
File - Etherne	Serial port working mode Communication protocol Baud rate	ModBus RTU • 9600 • None parity •	configuration ODOT-S4E2 COM1 COM2 COM3 COM4		
Modbus-' Modbu	Stop bits Receive delay Send delay(ms) Timeout mode	3.5t •			
Connect	OK	Cancel	Import	Export No downlo) ad:

4. Select "COM1" or "COM2". Right-click to select "Add Slave". Input "Slave name". fill in "Slave station number". Then configure Modbus function code, start address of slave data, number of data, start address of gateway mapping area and response timeout time and if "event output" (only when the data changes, the gateway will execute this command once) according to the communication manual of slave station equipment. Under the same serial port the station number of the slave station cannot be the same and cannot be the same as the station number of the station. Range of the slave station address is between 1 and 247. Under the same serial port the slave station's name cannot be the same. After completing

od∗t Modbus RTU/ASCII—Modbus TCP	gateway config		— 🗆 X
File Communication Adva Ethernet configuration IP Address Subnet mask Gateway Modbus-TCP port Download port Modbus-TCP watchdog time (s) Modbus-TCP watchdog enable	anced configuration 192.168.1.254 255.255.255.0 192.168.1.1 502 1024 30	About Slave configuration ODOT-S4E2 COM1 Add slave Configure Copy slave Paste (Ctreated of the second secon	es (Ctrl+C)
Upload	Download	Import	Export
Connection status 🍯 Current :	node : Transmission t	ransparent	No download

the settings, click "Save Current Mapping Table Edit".

.av	e name	: COM1_1#从站			Slave address(1-	-247): 1		
	Funct	ion code		Slave register start address	Number of data	Gateway register start address	Slave response timeout	When data change: the command is valid
	03 Read	4хххх Re	\sim	0	10	0	500	
			\sim				500	

5. Double-click "COM1", "COM2", "COM1", "COM2" or right-click"COM1", "COM2", "COM1", "COM2" .Click "Serial Properties" to bring up the "Serial Setting" window. Set up the communication parameters, Set two serials' operating mode to slave mode. Then click the "Confirm" button to save and return.

The meaning of each parameter is as follows:

Operating mode:

It is used to set up gateway as master station or slave station in the network. Default is master mode. Here is set up slave mode.

Modbus protocol type:

it's used to set up the gateway's protocol type of the network between the communication of the serial port and other connected devices. You can choose Modbus RTU or Modbus ASCII. Please keep this parameter in accord with the device that is connected to the serial port.

Baud rate:

Serial port baud rate: optional range is 1200~115200bps and default is 9600bps, Please keep this parameter in accord with the device that is connected to the serial port.

Check Digit:

no parity, odd parity, even parity, no default can be chose. Please keep this parameter in accord with the device that is connected to the serial port.

Stop bit:

You can choose 1 stop bit or 2 stop bits. Default is 1 stop bit. Please keep this parameter in accord with the device that is connected to the serial port. Receive character interval:

when receiving packets Frame interval detection time can be chose from 1.5t to 200t. Default is 3.5t. In general, you don't have to change this parameter.

Slave response delay:

The gateway acts as a Modbus RTU/ASCII slave, from the time it receives a message from the master to when it sends a reply. This parameter relates to the performance of the master.

od•t Mod C	OM2 configuration					
File Ether:	Serial port working mode	Slave mode	•	e configuration		
	Communication protocol	ModBus RTV	•	ODOT-S4E2		
	Baud rate	9600	•	COM1		
	Check	None parity	•	COM2		
	Data bits	8	•	─≫ COM4		
	Stop bits	1	•			
Modbus	Receive delay	3.5t	•			
Mod	Slave respond delay(ms)	0				
	ОК	Cancel		Import	Export	
Connec	tion status 🤔 Current mode : N	apping model			N	lo download ,

6. Configure the Ethernet parameters of the gateway by configuring the "Ethernet Configuration" on the left half of the software.

Some of the parameters are as follows:

Modbus gateway IP: The device's own IP address;

Subnet mask: Subnet mask of the device;

LAN gateway IP: Gateway IP address of the network where the device resides;

Modbus-TCP data communication port: Generally 502;

Configure the port: The configuration software downloads the configuration to the device through this port of the device;

Modbus-TCP watchdog time: The time interval from when the gateway receives the last Modbus TCP packet to the automatic restart;

Note: Automatic restart of the gateway can release connection resources that have not been used for a long time in time;

Modbus-TCP watchdog enable: Whether the watchdog function is enabled.

7. Set the destination gateway address that you want to download and download communication port number through

"Communication" — "Communication Configuration". The default is the gateway factory default IP 192.168.1.254 and port number 1024.

8. Click the button "Download Gateway Configuration ".Download configuration parameters to the gateway. After the download is successful, the "Download successful" prompt appears in the Status Bar at the lower right. After the download is successful, the gateway restarts automatically. Then the gateway go into running state.

If the download fails, please check out whether the computer's IP address and gateway IP address are in the same network segment. Then check whether the gateway IP address is set correctly. If you forget the gateway IP address, you can reset the gateway through the reset button, After reset, the gateway IP address is the factory default IP address.

Click "Import Profile" and "Export Profile" to import and save the configuration file to the local disk.Click "Upload Gateway Configuration" to upload the current gateway configuration to the software.

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Note: When downloading and uploading, you need to ensure that the computer and the gateway are in the same network segment.

9. After completing the above settings, connect a Modbus RTU/ASCII slave to COM1 and a Modbus RTU/ASCII master to COM2, Connect Modbus TCP Client to Gateway via Ethernet, Gateway will automatically refresh the underlying Modbus RTU/ASCII slave data from COM1, The Modbus RTU/ASCII master and Modbus TCP clients indirectly access the Modbus RTU/ASCII slaves by accessing the gateway's internal gateway data store.

4 Simple application in Siemens 1500

The simple configuration of the gateway ODOT-S4E2 is as follows:

The gateway adopts mapping work mode, The gateway IP address is: 192.168.1.4, RS485 side COM1 port parameters: Modbus RTU、9600、N、8、 1, slave station ID=1, Use function code No. 03 to read 6 numbers.

∞+ Modbus RTU/ASCII—Modbus TCP g	ateway config				\times
File Communication Advar	nced configuration	About			
Ethernet configuration		Slave configuration			
IP Address	192.168.1.4	□ In the odd of the o			
Subnet mask	255.255.255.0	□ COM1 □ COM1_2#从站	ו		
Gateway	192.168.1.1	COM2	1		
Modbus-TCP port	502				
Download port	1024	COM4			
Modbus-TCP watchdog time (s)	30				
Modbus-TCP watchdog enable 🕞	3				
Upload	Download	Import	Export		
Connection status	ode : Mapping model		N	lo downl	.oad:

COM1 configuration	
Serial port working mode	Master mode 🔹
Communication protocol	ModBus RTV 🔹
: Baud rate	9600 •
r Check	None parity 🔹
. Data bits	8 🔹
. Stop bits	1 •
Receive delay	3.5t 🔹
Send delay(ms)	0
Timeout mode	Data holding 🔹
OK	Cancel

Function code	Slave register start address	Number of data	Gateway register start address	Slave response timeout	When data changes the command is valid
04 Read Зжжжж Re 🗠	0023	6	0000	500	
~					

5.2. Simple application in Botu software.

Programming function block MB-CLIENT is programmed in OB1 software organization block OB1. First create the data blocks DB2, DB10, DB2: pointers to the Modbus data registers, and DB10: establish all the address parameters required to set up the connection.

15	Siemens - 项目1 ∃(P) 编辑(E) 视图(V) 插入(I)	+-48	(O)		±17	5/61	\ \	工具(7) 窗口		(4)	_	-	-	_
											+ 和大が 雪 :	나 고대 고 나라		Totally
	🎦 🔜 保存项目 🔳 🐰 🤨	= X												m j.
	项目树			项	E	1	•	PLC_1 [CPU	1513-1 PN)▶積	Ē序块 ▸ DA	TA [DB2	2]	_
	设备													
					*** • • • • • • • • • • • • • • • • • •									
						AT		n ex ine e	- 02- 029		(>			
	- 5 1501				U		A 名利	5		数据类	e #1		偏移單	启动值
3	▼ _ 0 项目1 ● 添加新设备		^	4				h Static		劉媚头	4 <u>4</u> 2		柵杉里	眉幼凰
5	■ 添加新设置 ▲ 设备和网络			1				Static S2E2		Arrowld	020] of Int		100	
8	▼ 📑 PLC_1 [CPU 1513-1 PN]			2	_		- 1	 S2E2 S2EX 			020] of Real		42.0	
	◆ U PLC_1 [CP0 1515-1 PN]			4				CANEX			020] of Bool		126.0	
	□ (2 国纪心)			-	-			- Children		/ and yet			.20.0	
	▼ □ 程序块													
	■ 添加新块													
	Hain [OB1]													
	DATA [DB2]													
	Data_TCP [DB10]													
	▶ ■ 系统块													
	▶ 🙀 工艺对象													
	▶ 🔤 外部源文件													
	▶ 🔚 PLC 变量													
	▶ 🛅 PLC 数据类型													
	🕨 🤜 监控与强制表													
	Traces													
	▶ 🔛 设备代理数据													
	聖 程序信息													
	PLC 报警													
	主 文本列表													
	▶ 📠 本地模块													
	▶ □ 分布式 I/O													
	▶ 📑 公共数据		~											
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