

IOT9031BD(SV) **Guide Rail Type RS485** to TCP\_IP Serial Port **Gateway Server** 

#### I. Product Overview

This product is an RS485-to-TCP/IP serial port server with an integrated TCP/IP protocol stack that can realize two-way transparent transmission of network data packets and serial port data, data protocol conversion and other functions. It can facilitate the connection of serial port devices to the Ethernet Internet and realize network upgrade and communication of serial port devices. Supporting bidirectional transmission of MODBUS protocol, the serial port device can immediately have TCP/IP network interface function, connect to the network for data communication, and extend the communication distance of the serial port device. It can be easily configured through the WEB terminal, which is convenient and fast. Products are widely used in industrial automation control systems, access control systems, attendance systems, credit card systems, POS systems, building automation systems, power systems, monitoring systems, data collection systems and bank self-service systems, etc.

#### **II. Function Parameters**

1. RS485 baud rate: supports 300bps-921600bps (default: 9600bps).

- 2. Data bits: support 7, 8 (default: 8).
- 3. Check digit: supports None, Odd, Even (default: None).

4. Stop bit: supports 1, 1.5, 2 (default: 1).

5. Support Modbus TCP to Modbus RTU and Modbus ASCII, support data transparent transmission and other functions.

6. RS485 can connect 32 devices.

7. IP acquisition method: static IP, DHCP.

- 8. Network connection type: wired TCP/IP connection (TCP, UDP, DHCP, DNS, HTTP).
- 9. Network data upload method: MOTT.
- 10. The number of concurrent clients that can be connected in TCP Server mode is 1-15.
- 11. Supports registration package + heartbeat package/data package length 1-2048 bytes.
- 12. Support Alibaba Cloud IoT platform.
- 13. Support Modbus gateway and cross-network communication.
- 14. Supports web configuration, AT command configuration, and product firmware supports remote and local upgrades.
- 15. Supports 10/100M, full-duplex/half-duplex adaptive Ethernet interface, compatible with 802.3 protocol.
- 16. Electrostatic protection:  $\pm$ 8KV, IEC61000-4-2 contact discharge;  $\pm$ 15KV, IEC61000-4-2 air gap discharge.
- 17. RS485 surge protection: 600W.
- 18. Button function: long press the button before powering on and release it for 5 seconds to restore the factory settings; short press the button after powering on to restart the system.

#### III. Product Factory Default Parameters

- 1. Serial communication baud rate: 9600bps
- 2. Product working mode: TCP Server
- 3. Connect IP address: 192.168.1.200
- 4. Default port: 2000

#### **IV. Interface Description**





2	RS485-B	RS485-B interface
3	RS485-A	RS485-A interface
(4)	VCC-	Negative power supply interface
(5)	VCC+	Positive power supply interface
6	Reset	Reset/Restore Factory Settings
7	LAN	Network port
8	Power	Power indicator light
9	ТХ	Data sending indicator light
(10)	RX	Data receiving indicator light
11	LINK	Network communication indicator light

#### V. Product Connection Diagram



VI. Scenario Application

#### Agricultural Internet of Things

In agricultural production, there are many environmental monitoring and automation equipment that use serial communication, such as weather stations in greenhouses (used to monitor parameters such as temperature, humidity, light, etc.) and irrigation control systems. The serial port server can connect these devices to the farm's IoT network. Farmers can remotely view greenhouse environmental data in the office or through their mobile phones, and automatically or manually control the irrigation system based on the data to achieve precision agricultural management.



#### VII. Product Accessories

1. One product

2. Two terminal blocks

#### **IX. Product Accessories**

1. The LAN interface wiring method is T568B.

2. The RS485 interface requires A to A and B to B.

3. The voltage of the power interface must be between 5-40V.

4. The devices connected to the LAN port need to be in the same IP network segment.

#### X. Things To Note

#### **Basic testing FAQ**

1. The serial port wiring is wrong. You need to check the serial port pin wiring according to the instruction manual. RS485 serial port wiring A-A, B-B.

2. The connection cannot be established in TCP server mode, the firewall is not turned off, and other network cards are disabled.

3. The data is garbled, the serial port baud rate is set incorrectly, and the serial port parameters consistent with the serial port device are not set.

#### Troubleshooting FAQs

- 1. The serial port cannot transmit data:
  - Check the serial port wiring. RS485 requires A to A and B to B.

Check whether the serial port line is in good contact. You can use a multimeter to measure whether there is continuity.

RS485 half-duplex communication does not allow simultaneous transmission of data in both directions.

2. Abnormal network connection:

Check whether the network cable is in good contact and whether the network port indicator light is normal.

When connecting to the switch, check whether the switch is working properly and whether the IP is in the same network segment.

Directly connect to the computer and check whether the IP of the computer and the device are in the same network segment.

To connect to a remote server for communication, the device needs to be connected to a router that can access the Internet.

And the product's IP must be set to DHCP or set to a static IP on the same network segment as the router.

Connect to the router and confirm whether the router is working properly and whether there are IP restrictions or firewall blocking.and the serial port parameters consistent with the serial port device are not set. 3. The transparent transmission data format is incorrect.

Supports transparent transmission of data, whatever data is sent by the serial port will be received by the network.

Supports Modbus gateway function, the serial port only recognizes Modbus RTU and Modbus ASCII format data, The network only recognizes ModbusTCP format data, and the device converts

it internally. The amount of data sent each time should be set appropriately based on the

packaging time, packaging length, and baud rate. The serial port parameters must be set consistent with the connected serial port terminal parameters. Including baud rate, data bits, stop bits, and parity

bits. 4. Modbus gateway function has no data

The ModbusTCP function needs to be enabled, and the host computer software should set a reasonable collection command time interval, not too fast. recognizes ModbusTCP format data, and the device converts it internally.

#### **XI. Operation Guide**

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#### **Test environment preparation**

Hardware test environment

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(1) Before starting, please connect the product to the power supply and connect the product's network port to the computer with a network cable.



(2) Use a serial cable to connect the serial interface of the product and the USB end of the computer.

Software testing environment Prepare the debugging software as follows:



NetAssist\_V5 NetAssist network debugging assistant

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Poll



UartAssist serial port debugging assistant

TECH  $\mathcal{U}_{in}$ 2 ModScan32



ModScan32 Default parameter test

Factory default parameters				
Project	Content			
Working mode	TCP Server			
Device IP	192. 168. 1. 200			
Subnet mask	255. 255. 255. 0			
Default gateway	192.168.1.1			
Network port	2000			
Baud rate	9600			
Data bits	8			
Stop bit	1			
Check digit	None			
Transmission method	Data transparent			
	transmission			
Web login address	192. 168. 1. 200			
Web login account	admin			
name				
Web login password	admin			

#### Network test environment

In order to prevent users from problems such as being unable to search, unable to ping, and unable to open web pages in the application. After the hardware is  $connected \ and \ before \ use, \ check \ the \ computer \ for \ the \ following \ contents.$ 1) Turn off the computer's firewall and anti-virus software (usually in the control

panel). 2) Turn off the network card irrelevant to this test and keep only one local

connection.

3) The computer's IP must be set to a static IP in the same network segment as the IOT9031BD (SV) 's IP, for example: 192.168.1.201.



#### Application in TCP Server mode

#### Friendly serial port debugging assistant test

(1) Open the friendly serial port debugging assistant and select the port as

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(2)Mode选择为【 Serial Port Utility Elia Edit Yiew Jools Control Help	【TCP Client】。 - □ ×	
■ an     ■ im     ■ im     ■       Serial Port Setting       ■ and Port Setting       ■ and Port Setting       ■ and Port Setting       ■ forsive Setting       ■ forsive Setting       ● forsi		
55 The socket is not connected Re: 0 B		
(3) Fill in the dev	evice IP and network port of the TCP Server in the figure into the	:
[HOST] and [Por	rt] of the debugging assistant.	
Serial Port Setting	► - [□ Φ]	
Mode TCP Client • Host 192.168.1.200 • Port 2000 •	TCP server IP	
Receive Setting Text @ Hex P Auto Feed Line P Display Send P Display Time Send Setting C Text @ Hex Line P Hex	TCP Server port	
The socket is not connected Ro 01		
(4) Click [Start],	, and the green text Connection is established will appear, indic	ating
that the connect	ction is successful.	
Serial Port String Port TCP/UDP Mode TCP Client Host 192.166.1.200 Port 2000		
Receive Setting <pre></pre>	Start	
F Display Send     F Display Time     Send Setting		
Connection is established. [5		
(5) Open the dev	vice manager and check the port number of the serial port cabl	e.
Fac         Computer         View           ←         →         ↑         ➡         This PC           >         ■         Quick access         >         Folder		- D X
) © Coloria Coloria ) O Coloria Period ) O Coloria Period D Coloria Period D Coloria Period Coloria Coloria Period Coloria D Coloria Period Coloria D Color	A Start Andrew Control <ul> <li> <ul></ul></li></ul>	Sons >
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(6) Open one mo corresponding t are consistent w Serial Pert Utility File Edit View Tools Control Help	ore serial port debugging assistant, select [Port] as the port nu to the serial port line, [Baud rate], [Data bit], [Check bit], [Stop	mber bit]
	×	
Serial Port Setting	+ - • •	
Serial Port Setting Port Setting Port (Otto   Badrets 5460   Date 815   Porty None  Flow Type None  Receive Setting  Factore Setting  Fac	+ -	
Serial Port Setting Next (Otto ) Badrets (S400 ) Date Bits ( Porty None ) Step Bits ( Porty None ) Receive Setting @ Text C Next C Auto Feed Line C Display Send @ Send Setting @ Text C Next Send Setting @ Text C Next D Send Setting D Send Seting D Send Setting D Send Setting D Send	<pre>with the product, and [Flow control] select None.</pre>	
Serial Port Setting Next (ONL) ■ Badrets (S400 ■ Date Bits 6 ■ Prity None ■ Step Bits 1 = Play Type None ■ Receive Setting @ Text ∩ Next ∩ Display Time @ Setd Setting @ Text ∩ Next Display Time P Setd Setting @ Text ∩ Next Display Time Display Time Display Time Display Time Display Time	<pre>with the product, and [Flow control] select None.</pre>	
Serial Port Setting Net (ONIO Buddets 5400 ) Buddets 5400 ) Data Bits 6   Parity None   Step Bits 1   Flow Type None   Receive Setting @ Tata f ed Line Display Send Postpay Time Send Setting @ Text f Nex Floop 1000 1 ns	<pre>with the product, and [Flow control] select None.</pre>	
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The series of t	<pre>with the product, and [Flow control] select None. +-  *+- *******************************</pre>	
The second setting se	<pre>with the product, and [Flow control] select None. +-  *+- *******************************</pre>	
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CONTRCIDENT Sectors     Control Control Control     Control Control     Control Control     Control Control     Control Control     Control Control     Contr	with the product, and [Flow control] select None.	rent

#### Product Settings ModBus TCP to ModBus RTU

 (1) Enter [192.168.1.200] in the browser address bar, and then click the [Enter] key to enter the Web configuration page;
 Enter the default user name [admin] and default password [admin] on the login

Enter the default user name [admin] and default password [admin] o interface, and click [Confirm].

2'0 0 kp + + + C 0 1 1210



(2) Successfully enter the configuration page, click [Port Parameters], select [ModBus TCP to ModBus RTU] in the protocol conversion, check [ $\sqrt{}$ ] for LINK, and then click [Save Settings].



(3) Click [Confirm] to complete the configuration of protocol conversion.



(4) Open [NetAssist Network Debugging Assistant] and [UartAssist Serial Port Debugging Assistant].





NetAssist\_V5....

(5) In the NetAssist network debugging assistant, select the protocol type as [TCP Client], the remote host address as [192.168.1.200], and the remote host port as [2000];

Select the corresponding [serial port number] in the UartAssist serial port debugging assistant, the baud rate is [9600], the check bit is [None], the data bit is [8], the stop bit is [1], and the flow control is [None].



(6) Click [Connect] and [Shortcut Commands] in the NetAssist network debugging assistant;

Click [Open] and [Shortcut Commands] in the UartAssist serial port debugging assistant.



(7) Click [Modbus Command] in the NetAssist network debugging assistant, select [Modbus-TCP] as the protocol, select the slave device ID number as [0x01], select the function number as [03H: Read Holding Register], the register address is [0x0001], and the number of registers is [1];

Click [Modbus Command] in the UartAssist serial port debugging assistant, select [Modbus-RTU] as the protocol, select the slave device ID number as [0x01], select the function number as [03: Read holding register], the register address is [0x0001], and the read data length is [1]. Click [Send] in the NetAssist network debugging assistant.

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er Readul		1.0 Rc7 Dc0 Read	A W Readd	 1 Root Tx:3 Peert

(8) It can be seen that the Modbus TCP format message with the content: 00 04 00 00 00 06 01 03 00 01 00 01 is converted into the Modbus RTU format message with the content: 01 03 00 01 00 01 D5 CA, realizing the protocol conversion from ModBus TCP to ModBus RTU.

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tataliasiz Tianas Sent Option C ASCH @ HEX T Use Excape Dran@ T Anto Append Tex. T Sent how Fe T Cyste 1100 mm Shecture BASSacc	Utria Sende   Detra Sende   Detra con	Update Copy Dear Tiend F Clear to De Eand	Send Options C ASCII & HEX File Data Transform C Option Time To may Shartest Statesy	DetaSted [1,10] + 2 100 5.113 6.110 + 5.0	Upder Capy Der Send 10 6 1010 • 7,332 • 8.035 • 9.31 • € Der • Orr Send
IF Sending finished		2/2 RC14 DC24 Recet	A Send Options	1.	2 RX9 TX6 Reat

The product uses sensors in ModBus TCP to ModBus RTU mode Use ModScan32 software to monitor temperature and humidity sensor data

(1) Connect the sensor to the product, connect [A and B of the sensor 485 interface] to [A and B of the product 485 interface] respectively, [power on] the temperature and humidity sensor, and use ModScan32 software to monitor the temperature and humidity sensor data.







(2) Click [Connection Settings]. ModScan32-ModScal File Connection Setup View Window Help

Connection Details

a ModSca1 Address: 0001 Length: 100	Device Id: MODBUS Poir 01: COIL STATUS	1 st Type v	Number of Poll Valid Slave Re	s: 0 sponses: 0 Reset Ctrs			
Data Uninitialii     1001	**         00025         <0>           <00         00026         <0>           <00         00027         <0>           <00         00028         <0>           <00         00029         <0>           <00         00029         <0>           <00         00031         <0>           <00         00031         <0>           <00         00033         <0>           <00         00033         <0>           <00         00033         <0>           <00         00033         <0>           <00         00035         <0>	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	00049: <0> 00051: <0> 00051: <0> 00052: <0> 00052: <0> 00055: <0> 00055: <0> 00055: <0> 00055: <0> 00055: <0> 00055: <0> 00055: <0> 00055: <0> 00055: <0> 00050: <0> 00050: <0> 00050: <0>	00061: <0> 00062: <0> 00063: <0> 00064: <0> 00066: <0> 00066: <0> 00066: <00 00067: <0> 00067: <0> 00067: <0> 00067: <0> 00071: <0> 00071: <0> 00072: <0>	00073: <0 00074: <0 00075: <0 00076: <0 00078: <0 00078: <0 00080: <0 00081: <0 00081: <0 00081: <0 00082: <0 00082: <0	<ul> <li>00005: (0)</li> <li>00086: (0)</li> <li>00086: (0)</li> <li>00088: (0)</li> <li>00089: (0)</li> <li>00090: (0)</li> <li>00091: (0)</li> <li>00092: (0)</li> <li>00092: (0)</li> <li>00094: (0)</li> <li>00095: (0)</li> <li>00095: (0)</li> </ul>	00097: <0> 00099: <0> 00099: <0> 00199: <0> 00100: <0>

(3) Click [Connect]. × n32 - M .dl .dl Cor Set @ ? N? Co nect 2 011 uto-Start Device Id: 1 MODBUS Point Type 01: COIL STATUS Number of Polls: 0 Valid Slave Responses: 0 • 0001 Address: Length: 100 Reset Ctrs 00097: <0> 00098: <0> 00099: <0> 00100: <0>

(4) Select [Remote modbus TCP Server] for the connection used, enter the IP of the device [192.168.1.200], enter the port number of the device [2000], and then click [Confirm].

Polls: 0

Resps: 0

 $\times$ 

Connect Using:
Bemote modbusTCP Server
IP Address: 192.168.1.200
Service Port: 2000
Configuration         Baud Rate:         19200         Word Length:         8         Parity:         NONE         Stop Bits:         1         O         ms after ATS before transmitting first character         Delay         0         ms after last character         before releasing RTS
Protocol Selections OK Cancel (5) Click (Quick Connection) click (Show Eleve) click (Hay) enter the concert
(5) CIICK [QUICK Connection], CIICK [Snow Flow], CIICK [Hex], enter the sensor's
register address [0001], enter the sensor's device ID [2], enter the length [1], and
select [U3: HOLDING REGISTER] for Type.
File Connection Setup 14W Window roup 2 Display traffic
Be ModScal
Adress: dual MODUS Point Type Valid Shore Responses: du Length: 1 04: NPUT REGISTER · Reset Ctra Cost dos fost (cost (c
ModScan32 - (192.168.1.200) Polls: 48 Resp: 48
(6) The sent and received data can be seen in the red box. Medicent2 - Medicat File Connection Setup View Window Help □ I I I I I I I I I I I I I I I I I I I
ModScan32 · (192.168.1.200) Polls: 289 Resps: 198

#### Use ModBus Poll software to monitor temperature and humidity sensor data

(1) Connect the sensor and product, and use ModBus Poll software to monitor the temperature and humidity sensor data.



(3) Set the sensor parameters, as shown in the figure:

....

Enter "2" for Slave ID

- Function select "03 Read Holding Registers (4x)"
- Address mode select "Dec"
- Address input "0"
- Quantity enter "10"Click [OK]



Eunction:       03 Read Holding Registers (4x)         Address mode            • Dec       Heg         Address:       0         Quantity:       10         Sgan Rate:       1000 (ms)         Diable       Bead/Write Disabled         Diable       Disable         Baddress:       0         View       0         Rows       0         02 0       0         Hide Name Columns       DLC Address         Address:       0         Request       RTU         ASCII       3A 30 32 30 33 00 30 30 30 30 30 30 4	Cancel Apply Read/Write Once uantity is (Base 1) Mode ii 146 31 0D 0A c [Connect] in the submen	u.
Pr COS Galax Correct 7 2 Nove 0000 Control Control Contro Control Control Control C		
<ul> <li>(5) Configure the connection par</li> <li>Connection select "Modbus T</li> <li>Enter IP Address or Node Nam</li> <li>Enter "2000" for Server Port</li> <li>Click [OK]</li> </ul>	ameters, as shown in the CP/IP" ne "192.168.1.200"	figure:
Connection Setup		×
Connection		ок
Modbus TCP/IP Serial Settings USB Serial Port (COM14) 9600 Baud ~ 8 Data bits ~ None Parity ~ 1 Stop Bit ~	✓ Ad <u>v</u> anced	Cancel Moc PRTU ASCII esponse Timeout 1000 [ms] Delay Between Polls 20 [ms]
Remote Modbus Server		
IP Address or Node Name		
Server <u>P</u> ort 2000	Connect Timeout 3000 [ms]	© IPv <u>4</u> ○ IPv <u>6</u>
(6) After successful connection, y	'ou can see the received si	ensor data.
Coupley communication traffic (7) Click the [Display communic receiving data. M Andreas Full-Mappell The Edit Concernes Search Purchase Disates View Window	ation traffic] icon button	to view the sending and
	Display communication traffic	
Ex.         Communication Traffic           Egst         \$2000         Gear         \$3001           Ext:000012-00         02         00         00         17         02         3         14         02         18         00	Copy         Log         Stop on Error         Time st           FE         00 <td>×</td>	×

# Ext Stop Oref Same Doty Lgo Stops on [pror ] [me stamp Re: 100011-00 02 00 01 02 03 00

#### Product Settings ModBus TCP to ModBus ASCII

Firmware version: V 5011

(1) Open the Web configuration page, click [Port Parameters], select [ModBus TCP to ModBus ASCII] in the protocol conversion, check [ $\sqrt{}$ ] for LINK, and then click [Save Settings].

DTECH -Industrial Internet of Things@Diter-			
Current status		parameter	Help
Native IP actings PAT generations Extension Advanced strateging Module management	Baud rete: [ Data hist:] Chesk digit: [ Stop hits:] Local Port: [ Remote Server Adopt Protocol Conversion: [ Stave the setter Conversion: [ Stave the setter	potential       potential	HTTPD URL: The module antronic or and HTTPL 1.5 to the URL according to the user does not meet the user does HTTPD house the user does HTTPD house HTTPD house HTT

(2) Click [Confirm] to complete the configuration of protocol conversion.

DTECH -Industrial Internet of Things@Diter-	District/h	
Current status	parameter	Help
Native IP settings	Boud rate: 9600 bps(300~921.6K)	HTTPD URL:
Port parameters	□ta bits: 8 ✔ bit	The module automatically adds
Extended functionalit	Check digit: None 🗸	GET/POST and HTTP/1.1 to the
Advanced settings	Stop bits: 1 v bit	URL according to the user's settings,
Hobde management	Severite settings Settings are not saved	and the user does not need to set a <b>HTTPD backet</b> with the set of

(3) Open [NetAssist Network Debugging Assistant] and [UartAssist Serial Port DebuggingAssistant].



(4) In the NetAssist network debugging assistant, select the protocol type as [TCP Client], the remote host address as [192.168.1.200], and the remote host port as [2000];

Select the corresponding [serial port number] in the UartAssist serial port debugging assistant, the baud rate is [9600], the check bit is [None], the data bit is [8], the stop bit is [1], and the flow control is [None].

** · /	Network Assistant	4 - D ×	·	Unit Assistant	- D
Settings           TIP Photod           TOP Clear           QT Rearce Hours Adds           TR2 Test Hours Peril           2000           Of Rearce Hours           Concent           Top Concent           To	Datalog	500 100 000	Start Dates Converti GUI 4 a. vi Brack 900 - vi Status 1 - vi Provide 1 - vi ASCI - 4 HIX - Some Record Date - Some Record Date		Scharberten         1788         Anno Toh           Scharb         ASS Toh         New Toh           Scharb         Scharb         New Toh           Scharb         New Toh         New Toh
Cycle 100 ms	http://www.emsoft.co.	Sead	Cycle Time 10 ms	111111	+ Dear T_ Dear Send

(5) Click [Connect] and [Shortcut Commands] in the NetAssist network debugging assistant;

Click [Open] and [Shortcut Commands] in the UartAssist serial port debugging assistant.

2 · · /	Network Assistant	4 - O ×	···		1 - D ×
Sering     (1) Protocol     (1) Pr	Coastep	NetAmint V2.9.3 🖗 🖓	Celef Unitor Charate (CMA B. w) Baddele (MA B. w) Baddele (MA B. w) Stable (1 . w) Papelot (NA B. w) P	Data Upphanic/S0.16 © C	Mode/Dolp (         1000         Des Cont           Contain (         Activity (         Model (
Astakely Themax -Send Options @ ASCII C HEX IF Use Escape Char(0) IF Anto Append Bytes IF Send from File IF Cycle 100 ms Shortcut Itilistary	Data Send   http://www.masit.en	€ Clear t_ Clear Sead	Send Options C ASCII (# HEX C File Data Transfet I'' Use Encode Dianro D Auto Append Bytes I'' Cycle Time 10 ms Shortest Mixtery	Data Send	C C C C C C C C C C C C C C C C C C C

(6) Click [Modbus Command] in the NetAssist network debugging assistant, select [Modbus-TCP] as the protocol type, select the slave device ID number as [0x01], select the function number as [03H: Read Holding Register], the register address is [0x0001], and the number of registers is [1];

Click [Modbus command] in the UartAssist serial port debugging assistant, select [Modbus-ASCII] as the protocol type, select the slave device ID number as [0x01], select the function number as [03: Read holding register], the register address as [0x0001], and the read data length as [1], and click [Send] in the NetAssist network debugging assistant.



(7) It can be seen that the Modbus TCP format message with the content: 00 05 00 00 00 06 01 03 00 01 00 01 is converted into the Modbus ASCII format message with the content: 010300010001FA, realizing the protocol conversion from ModBus TCP to ModBus ASCII.

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#### Application in TCP Client mode

Product settings transparent transmission mode

(1) Enter the Web configuration page, click [Port Parameters], set the local port to [2000], set the remote port to [2000], select [TCP Client] for the working mode, the address of the remote server refers to the address of the TCP SERVER, enter [192.168.1.201], select [Transparent Transmission] in the protocol conversion, check [ $\sqrt{}$ ] for LINK, and then click [Save Settings].

Current status	parameter	Help
Suther IP netting: Net <u>Gaussets</u> intended functionals Advanced setting Hobdie management	Baud rate [9600] bps(300-921.6k) Data bits: [9] bit Check digs: [None v] Step bits: [] v] bit Local Perr: 2000 (1-65533) Hewit revist: [] 192.168.20] Hewit revist: [] 192.168.120] Protocol Conversion: [] 192.168.120] Protocol Conversion: [] Transparent transmission v Lite: [] Save the settings: Settings are not saved	HTTPD URL: The module GET/VOGT and HTTPJL1 to the Off the sour does not read to set off the sour does not read to set of the sour does in the sour does of the source does

(2) Click [Confirm] to complete parameter configuration.

DTECH -Industrial Internet of Things@Diter-	操作成功 CK	
Current status	parameter	Help
Native IP settings	Baud rate: 9600 bps(300~921.6K)	HTTPD URL:
Port parameters	Data bits: 8 🗸 bit	The module automatically adde
Extended functionalit	Check digit: None 🗸	GET/POST and
Advanced settings	Stop bits: 1 v bit Local Port: 2000 (0~65535)	URL according to the user's settings,
Module management	Remote Ports: 2000 (1~65535)	not need to set it
	How it works: TCP Client v Remote Server Address: [122 f63.124] [122.163.124] Protocol Conversion: Transparent transmission UIX:  Save the settings   Settings are not saved	• ITTPD header: BHSGR/WPGERD a%Abstort, POST BLTCasteri- Length", RIP-KBIQ R

(3) Open [NetAssist Network Debugging Assistant] and [UartAssist Serial Port Debugging Assistant].



(4) In the NetAssist network debugging assistant, select the protocol type as [TCP Server], the local host address as [192.168.1.201], and the local host port as [2000]; Select the corresponding [serial port] in the UartAssist serial port debugging assistant, the baud rate is [9600], the check bit is [None], the data bit is [8], the stop bit is [1], and the flow control is [None].

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Shatat Mistay				Readul	,	D/0 RX0 TX0 Reset

## (5) Click [Open] in the NetAssist network debugging assistant, and click [Open] in the UartAssist serial port debugging assistant.

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(6) Enter the data to be sent in the NetAssist network debugging assistant, and then click Send;

Enter the data to be sent in the UartAssist serial port debugging assistant, and then click Send to achieve transparent transmission of data.

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Product Settings ModBus TCP to ModBus RTU

(1) Enter the Web configuration page, click [Port Parameters], select [ModBus TCP to ModBus RTU] in the protocol conversion, check  $[\sqrt{\ }]$  for LINK, and then click [Save Settings].



(2) Click [Connect] and [Shortcut Commands] in the NetAssist network debugging assistant; lick [C n] and [Shou ands] in the HartAssist serial nor

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indeger (1777 mere) Caracterization	Constant Constan	A Detunit (a) Catal (b) detailer (b) and (b) detailer (b) and (b) detailer (b) and		Alle Sold Course in 2012 of Maria Sold Course

Chartest Mistory Fead 20x10x Mistory TX:120 (3) Click [Modbus Command] in the NetAssist network debugging assistant, select [Modbus-TCP] as the protocol type, select the slave device ID number as [0x01], select the function number as [03H: Read Holding Register], the register address is [0x0001], and the number of registers is [1]; Click [Modbus command] in the UartAssist serial port debugging assistant, select

[Modbus-RTU] as the protocol type, select the slave device ID number as [0x01], select the function number as [03: Read holding register], the register address is [0x0001], and the read data length is [1], and click [Send] in the NetAssist network debugging assistant. Delots Hetherin VS.0.3 (2017) JUDE Date Date | RosCover | Deckwar | A

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(4) It ca 00 06 03 content	n be seen that the Modbus TCP L 03 00 01 00 01 is converted in :: 01 03 00 01 00 01 D5 CA, rea	format me to the Mo lizing the	essage with the content: 00 05 00 00 dbus RTU format message with the protocol conversion from ModBus

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# Server/Client application under a group of products

Transfer Data Computer serial port Slave Client Server **Return data** 

# **Configure hardware**

IF Ready

.....

(1) Connect the server-side product to the sensor. [A and B of the sensor 485 interface] are connected to [A and B of the product 485 interface] respectively t power the temperature and humidity sensor.



(2) One end of the product network port is connected to a network cable, and the other end of the network port is connected to the product that will be configured as a client. Plug in the product to power it.



## Configure the server side

The server side needs to connect to the slave product and power the sensor and product. Plug the network port into the network cable and connect it to the computer network port for configuration. Check the host's local address, open Control Panel  $\rightarrow$  Network and

 $Internet \rightarrow Network\ Connection, select\ insert\ the\ corresponding\ network\ port,$ right-click and select Properties.



Select Internet Protocol version 4 (TCP/IPv4) in the properties and set the IP address, subnet mask, and default gateway. 以太网 3 Properties × Internet 协议版本 4 (TCP/IPv4) Properties Networking

Intel(R) Ethemet Connection (7) I219-V	this capability. Otherwise, yo for the appropriate IP setting	u need to ask your network administrator gs.
Configure	Obtain an IP address au	utomatically
his connection uses the following items:	Use the following IP add	dress:
☑ ➡ Microsoft 网络客户端 ☑ ➡ VMware Bridge Protocol	IP address:	192 . 168 . 1 . 201
☑ 🦞 Microsoft 网络的文件和打印机共享	Subnet mask:	255 . 255 . 255 . 0
☑ 望QoS 数据包计划程序	Default gateway:	192.168.1.1
☑ _ Internet 协议版本 4 (TCP/IPv4)		
☑ Internet 协议版本 4 (TCP/IPv4) □ Microsoft 网络适配器多路传送器协议 <	Obtain DNS server addr Obtain DNS server addr Obtain DNS server addr	erver addresses:
<ul> <li>✓ Internet 协议版本 4 (TCP/IPv4)</li> <li>▲ Microsoft 网络适配器多路传送器协议</li> <li>✓ Install</li> <li>Uninstall</li> </ul>	Obtain DNS server addr Obtain DNS server addr Outse the following DNS s Preferred DNS server:	ers automatically erver addresses:
<ul> <li>▲ Internet 协议版本 4 (TCP/IPv4)</li> <li>▲ Microsoft 网络道配器多路传送器协议</li> <li>▲ Install</li> <li>Unnstall</li> <li>Propertie</li> </ul>	Obtain DNS server addr Use the following DNS s Preferred DNS server: Alternate DNS server:	ess automatically erver addresses:
<ul> <li>✓ Internet 协议版本 4 (TCP/IPv4)</li> <li>Microsoft 网络道配器多级传送器协议</li> <li>Install.</li> <li>Uninial</li> <li>Propertie</li> <li>Description</li> <li>传输控制协议/Internet 协议。该协议是默认的广场项的协议。用于在不同的相互连接的网络上面信。</li> </ul>	Obtain DNS server add     Obtain DNS server add     @ Use the following DNS se     Prefered DNS server:     Alternate DNS server:     Alternate DNS server:     Validate settings upon	ess automatically erver addresses:  exit Advanced

Open the browser and enter 192.168.1.200 (default device IP). Enter the user name: admin, password: admin, click  $OK \rightarrow$  enter the web management interface. 

> Serial server login 2

Select the local IP settings to view the local IP, subnet mask and gateway address. The host address of the local IP address cannot be the same as the serverside setting. Here it is set to 192.168.1.100. The gateway address needs to be consistent with the default gateway address of the computer host. (Note: The popup box will not pop up) 🙍 帝特电子科技 × + ▲ 不安全 | 192.168.4. → C û



Re-enter the newly configured 192.168.1.100 local IP address to enter: Enter the password to enter the Web management page. To set the baud rate in the port parameters, you need to obtain the baud rate of the slave device (the baud rate of the slave here is 9600). The local port is the IP address of the product itself. The client needs to set the remote port. The remote port is the local port that needs to be connected to the server. Here it is 2000. The working mode is changed to Client, and there are three options for protocol conversion: choose transparent transmission without protocol conversion, and choose corresponding for the other two Modbus protocols. After the configuration



**Configure the client** 

未识别 Intel(R)

. The Client side is connected to the configured Server side, and the network port is inserted into the network cable and connected to the computer host network port.  $\mathsf{Check} \ \mathsf{the} \ \mathsf{host's} \ \mathsf{local} \ \mathsf{address}, \mathsf{open} \ \mathsf{Control} \ \mathsf{Panel} {\rightarrow} \mathsf{Network} \ \mathsf{and}$  $Internet {\rightarrow} Network\ Connection, select\ insert\ the\ corresponding\ network\ port,\ right-insert\ barrow and a select\ insert\ barrow and a select\ insert\ barrow and a select\ barrow and a sele$ click and select Properties. 以太网

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	•	Disable	
		Status	
		Diagnose	
	•	Bridge Connections	
		Create Shortcut	
	-		



#### **No network LAN** Serial port connection to computer

(1) Connect the serial port to the USB port of the computer through a conversion cable. If there is a network connection to the switch/router, unplug the network cable and perform a test without network.

(2) Open the friendly serial port debugging assistant and perform the following operations:



Flow Type None	
Receive Setting	
Auto Feed Line	
Display Send	
- Sond Sotting	
• Text C Hex	
□ Loop 1000 📩 ms	
	55 AA
	Send
	3
COM14 OPENED, 9500, 8, NONE, 1, OFF	Xx: 15 Bytes Tx: 10 Bytes
(4) Enter the data in	the debugging assistants of both computers, and then click
[Send] to achieve tr	ansparent transmission of data and the test is successful.
Screenshot of the p	age of another computer device connected to the LAN:
Serial Port Utility	– 🗆 X
The fait Tien Tool? Poultoi Helb	
Serial Port Setting	[10:49:41.192] 55 AA
Port TCP/UDP -	10:49:41.655 55 AA [10:55:35.932] 55 AA
Mode TCP Client	10:55:50.0881 55 AA
Host 192.168.1.200 -	
Port   2000	
Receive Setting	
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Send Setting	
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and humidity sensor, connect the LAN port of the serial port server to a switch/route

Parity N Stop Bits 1

humidity sensor data.
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A and B of R5482 interface Product R5482 interface A and B
2/6-TECH
ModScar22
(2) Open [ModScan32] on another computer connected to the LAN and click
[Connection Settings].
Bill         Device Id:         1         Loss do to the           Address:         Bibli         Device Id:         1           Length:         Biblic
(3) Click [Connect].
ModScan32 - ModSca1 File Connection Setup, View Minowr Fielp ∏ Connection 11 455 ♥ [Mo]
Disconnect Disconnect
Address: 0001 MODBUS Point Type Valid Slave Responses: 0
Lengui. Too UI. COL STATUS - Reset Cirs
■ Data Uninitialized ** 00001: (d) 00131: (d) 00125: (d) 00025: (d) 00037: (d) 00049: (d) 00061: (d) 00073: (d) 00065: (d) 00097: (d) 000022: (d) 00134: (d) 00025: (d) 00039: (d) 00050: (d) 00652: (d) 00074: (d) 00066: (d) 00098: (d) 000003: (d) 00155: (d) 00027: (d) 00039: (d) 00511: (d) 00652: (d) 00055: (d) 00066: (d) 00098: (d) 000031: (d) 00155: (d) 00027: (d) 00039: (d) 00511: (d) 00652: (d) 00155: (d) 00066: (d) 00098: (d) 000031: (d) 00155: (d) 00027: (d) 00039: (d) 00511: (d) 00652: (d) 00155: (d) 00066: (d) 00098: (d) 000031: (d) 00155: (d) 00027: (d) 00039: (d) 00151: (d) 0051: (d) 0057: (d) 00066: (d) 00098: (d) 000031: (d) 00155: (d) 00027: (d) 00039: (d) 00051: (d) 0051: (d) 0051: (d) 0055: (d) 00066: (d) 00098: (d)
00006; (3) 00012; (3) 00022; (4) 00042; (5) 00053; (3) 00056; (5) 00077; (5) 00099; (5) 00006; (3) 00018; (4) 00030; (4) 00042; (5) 00054; (5) 00056; (5) 00079; (5) 00099; (5) 00007; (5) 00018; (4) 00031; (5) 00042; (5) 00055; (5) 00057; (5) 00079; (5) 00099; (5) 00009; (5) 00012; (4) 00031; (6) 00045; (5) 00055; (6) 00059; (6) 00091; (6) 00091; (6) 00009; (6) 00021; (6) 00031; (6) 00045; (6) 00057; (6) 00059; (6) 00031; (6) 00051; (6)
100010: (0) 00022; (0) 00034; (0) 00044; (0) 00058; (0) 00770; (0) 00082; (0) 00094; (0) 000111; (0) 00023; (0) 00035; (0) 00047; (0) 00059; (0) 00071; (0) 0003; (0) 00094; (0) 00012; (0) 00023; (0) 00035; (0) 00047; (0) 00059; (0) 00771; (0) 00031; (0) 00094; (0) 00012; (0) 00023; (0) 00035; (0) 00047; (0) 00059; (0) 00772; (0) 00084; (0) 00795; (0) 00012; (0) 00035; (0) 00048; (0) 00048; (0) 00072; (0) 00084; (0) 00096; (0)
(4) Select "Remote modbus TCP Server" for the connection used, enter "192.168.4.200" for the IP Address, enter "2000" for the service port, and click
[Confirm]. Connection Details ×
Connect Using:
IP Address: 192.168.4.200
Sec. 10. D. 4. 2000
Configuration
Service Pot:     2000       Configuration     Hardware Flow Control       Baud Rate:     19200       Word Length:     8
Service Port:     2000       Configuration     Hardware Flow Control       Baud Rate:     19200       Word Length:     8       Parity:     NONE       Parity:     NONE
Service Port:     2000       Configuration     Hardware Flow Control       Baud Rate:     19200       Word Length:     8       Parity:     NONE       Stop Bits:     1       Stop Bits:     1
Service Port:     2000       Configuration     Hardware Flow Control       Baud Rate:     19200       Word Length:     Image: Stop Bits:       Parity:     NONE       Stop Bits:     Image: Stop Bits:         Image: Stop Bits:     Image: Stop
Service Port:       2000         Configuration       Hardware Flow Control         Baud Rate:       19200         Word Length:       Image: Control image: Contro
Service Port: 2000 Configuration Baud Rate: 19200 Word Length: 8 Parity: NONE Parity: NONE Stop Bits: 1 Protocol Selections OK Cancel (5) Click [Quick Connection], click [Show Traffic], click [Hex], and set the parameters:
Service Port: 2000 Baud Rate: 19200 Hardware Flow Control Wait for DSR from slave Wait for DSR from slave Wait for DSR from slave Wait for DSR from slave TR Control: Disable TS Control: Disab
Service Port: 2000 Baud Rate: 19200 Hardware Flow Control Wait for DSR from slave Word Length: 8 V Wait for DSR from slave DTR Control: Disable Parity: NONE V DIR Control: Disable TS Control: Disable Bits: 1 V Delay 92 ms after RTS before transmitting first character Delay 92 ms after last character Delay 92 before releasing RTS before releasing RTS before releasing RTS Enter "0001" as the register address of the temperature and humidity sensor. Enter "2" for the Device ID of the temperature sensor. Enter "1" for Length
Service Port 2000 Service Port 2000 Service Port 2000 Hardware Flow Control Wait for DSR from slave DTR Control: Disable TTS C
Service Port 2000 Baud Rate: 1920 U Hardware Flow Control Wait for DSR from slave Word Length: B Parity: NONE U Baud Rate: TS Control Disable Stop Bit: Delay I was after RTS before U and the register address of the temperature and humidity sensor. 5) Click [Quick Connection], click [Show Traffic], click [Hex], and set the parameters: Enter "0001" as the register address of the temperature and humidity sensor. Enter "1" for the Device ID of the temperature sensor. Enter "1" for Length Select "03:HOLDING REGISTER" for MODBUS Point Type. ModSand2-Modest 1 Click Link File Connection Selection Control Disable I Click Link File Connection Selection Connection Selection Connect
Service Port: 2000 Baud Rate: 19200   Hardware Flow Control Wait for DSR from slave Word Length: 8   Wait for CTS from slave DTR Control: Disable TS Control: Disable TS Control: Disable Party: NONE   NONE   Cancel (5) Click [Quick Connection], click [Show Traffic], click [Hex], and set the parameters: (5) Click [Quick Connection], click [Show Traffic], click [Hex], and set the parameters: Enter "0001" as the register address of the temperature and humidity sensor. Enter "1" for the Device ID of the temperature sensor. Enter "1" for Length Select "03:HOLDING REGISTER" for MODBUS Point Type. Moderate: Select "03:HOLDING REGISTER" for MODBUS Point Type. Moderate: Select "03:HOLDING REGISTER" for MODBUS Point Type. Moderate: Select "03:HOLDING REGISTER" for MODBUS Point Type.
Service Port: 2000 Baud Rate: 19200   Hardware Flow Control Wait for DSR from slave Word Length: 8   Wait for CTS from slave DTR Control: Disable TS Control: Disable TS Control: Disable Party: NDNE   NDNE   Protocol Selections DE   Protocol Selections DK Cancel (5) Click [Quick Connection], click [Show Traffic], click [Hex], and set the parameters: Enter "0001" as the register address of the temperature and humidity sensor. Enter "1" for the Device ID of the temperature sensor. Enter "1" for Length Select "03:HOLDING REGISTER" for MODBUS Point Type. Modean22-Modical Modean2-Modical Modical Modean2-Modical Modical Modical Modical Modic
Service Port: 2000 Baud Rate: 1920 U Hardware Flow Control Baud Rate: 1920 U
Service Pot: 2000 Service Pot: 2000 Service Pot: 2000 Word Length: B and Rate: 1320 Parity: NONE Parity: NONE Parity: NONE Parity: NONE Parity: NONE Parity: NONE Parity: NONE Parity: NONE Parity: NONE Protocol Selections Delay 92 ms after RTS before Delay 92 ms after RTS before RTS b
Service Port 2000 Service Port
Service Port 2000 Service Port 2000 Service Port 2000 Word Length: B J J Control Wait for CPS from slave Party: NONE J I Control Diable J Form slave Party: NONE J I Control Diable J Form slave Party: NONE J I Control Diable J Form slave Protocol Selections Control Delay 92 me after IRTS borne the store releasing RTS Stop Bits: I J J Control Delay 92 me after last character Delay 92 me after last char
Service Port       2000         B aud R at:       1920         Word Length:       Wait for CTS from slave         D R Control:       Isable         TS control:       Isable         TS control:       Isable         TS control:       Isable         D R Control:       Isable         D R Control:       Isable         D Stop Bh:       Isable         D R Control:       Isable         D R Con
Service Pott 200           Baud Rate:         1920           Word Lengt:         Baud Rate:           Party:         NONE           Party:         NONE           Stop Bit:         Baud Rate:           Party:         NONE           Party:         Party:           S
Service Pott Service Pott Service Pott Void Length: Perty: NDNE: Perty: NDNE: Perty: Stop Bz: Perty: Stop Bz: Perty: Stop Bz: Perty: Perty: Stop Bz: Perty: Perty: Stop Bz: Perty: Perty: Stop Bz: Perty: Perty: Stop Bz: Perty: Perty: Stop Bz: Perty: Perty: Stop Bz: Perty: Perty: Perty: Stop Bz: Perty: Perty: Stop Bz: Perty: Stop Bz: Perty: Perty: Stop Bz: Perty: Perty: Stop Bz: Perty: Stop Bz: Perty: Perty: Stop Bz: Perty: Perty: Stop Bz: Perty: Perty: Stop Bz: Perty: Perty: Stop Bz: Perty: Stop Bz: Perty: Perty: Stop Bz: Perty: Perty: Stop Bz: Perty: Perty: Stop Bz: Perty: Stop Bz: Perty: Perty: Stop Bz: Perty: Perty: Stop Bz: Perty: Perty: Stop Bz: Perty: Stop Bz: Stop Bz: Perty: Stop Bz: Stop Bz:
<pre>Service Pot 2000 Service Pot 2000 S</pre>
Service Potr 2000 Service Potr 2000 Service Potr 2000 Service Potr 2000 Badd Rate: Service Potr 2000 For Control Party: NONE Party: NONE Party: NONE Party: NONE Party: NONE Potrocol Selections Control Party Party: Stop Bit: Protocol Selections Control Party Party: None Potrocol Selections (S) Click [Quick Connection], click [Show Traffic], click [Hex], and set the parameters: Enter "0001" as the register address of the temperature and humidity sensor. Enter "2" for the Device ID of the temperature sensor. Enter "1" for Length Select "03:HOLDING REGISTER" for MODBUS Point Type. Notes 1: Model Device IS: Display traffic Person 2: Dis
Service Per 2000 Factor Per 2000 Facto

### 4)[00][00][00][00][01] 4][e6][00][00][00][00] 9][00][00][00][05][00] 10][00][00][00][0 9][00][00][00][0

**Common problems and solutions** Q: I forgot the IP address configured for the product and cannot enter the web

management interface. A: In this case, you need to restore the factory settings: without plugging in the power supply, press and hold the stuck pin Reset => plug in the power supply for five seconds to restore the product to factory settings. After restoring factory settings, the IP address of the product web management interface is: 192.168.1.200

[[00][00][ [[e3][00]]

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Q: If there are no problems with the IP address and gateway of the local computer and the local IP of the product configuration, the remote server address in Client mode, and the gateway, there will still be problems such as being unable to communicate. A: The IP addresses that need to be assigned to the product and the local computer are unoccupied addresses. Replace the IP address and gateway with non-conflicting and unoccupied ones.

Q: Why can't ModbusTCP protocol be converted into Modbus RTU protocol? A: Note that this situation occurs when configuring a group of products. The server at one end is connected to the slave machine and is configured in transparent transmission mode. The client side on the other end is connected to the computer serial port. Configure to Modbus TCP to Modbus RTU mode.

## Product Warranty Card

Customer	Inform	natio	on		
Model	:				
Date of purc	hasel:				
User telephone:					
User address:					
Distributor:					
Agency address:					
User telephone:				Dealersta	ımp valid
Intenance	Reco	ords	;		
Repair times	Date	e	Fault	Treatment measures	Repair work N