Modbus / Industrial Ethernet / MQTT Gateway GT200-MQ-IE

User Manual

V 3.2

Rev B







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

Important Information

Warning

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

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GT200-MQ-IE

Modbus / Industrial Ethernet / MQTT Gateway

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1 Product Overview

1.1 Product Function

The GT200-MQ-IE is a RS485 and 10/100M-RJ45 based wireless gateway with GPS function. The data transmission is based on 4G mobile network. The gateway can connect Modbus RTU/ASCII and Modbus TCP devices, or EtherNet/IP PLC to the IoT Cloud by MQTT. It supports the MQTT connection to various IoT cloud platforms, such as Microsoft Azure, Amazon AWS IoT, and customized MQTT Servers.

The GT200-MQ-IE integrates three running modes, switched by downloading the BIN files on <u>Appendix B:</u> <u>Change Product Firmware</u>:

Mode	Description
Modbus TCDS / Modbus M/S	Modbus TCP Server, Modbus RTU/ASCII Master/Slave/Transparent
Modous ICP S / Modous MI/S	Transmission, 2 digital inputs and 2 digital outputs
Madhua TCD C / Madhua M	Modbus TCP Client, Modbus RTU/ASCII Master, 2 digital inputs and 2
Modbus TCP C / Modbus M	digital outputs
EtherNet/IP Adapter	EtherNet/IP Adapter, 2 digital inputs and 2 digital outputs

The GT200-MQ-IE supports different countries/regions mobile network, please specify the SKU when purchasing:

SKUSupported Country/RegionGT200-MQ-IE-APEMEA and SEAGT200-MQ-IE-NAUSA and CanadaGT200-MQ-IE-MXMexico

The GT200-MQ-IE is wildly used in unmanned industrial spots such as water quality monitor stations, environmental monitor stations, intelligent building systems, intelligent agriculture systems, and energy and electricity systems that require remote monitoring.



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1.2 Product Feature

- > One RS485 Interface Modbus Master/Slave, Transparent transmission
 - ☆ As Modbus Master interface, connects field devices to the IoT Cloud Platform, implementing data acquisition and device control via 4G mobile network.



- As Modbus Slave interface, integrates PLC, DCS and other Modbus master station with the IoT Cloud
 Platform via 4G mobile network.
- ♦ The RS485 interface also supports transparent data transmission between filed devices.
- > Dual Ethernet Interfaces Modbus TCP Client/Server, EtherNet/IP Adapter
 - ♦ As Modbus TCP Client interface, connects Modbus TCP Server devices, such as intelligent instruments.
 - ♦ As Modbus TCP Server interface, connects Modbus TCP Client, such as SCADA systems.
 - As EtherNet/IP Adapter interface, connects EtherNet/IP Scanner(Master), such as AB PLC, OMRON PLC, etc.
- > 2 digital input and 2 digital output I/O interfaces.
- Supports GPS.
- ▶ 4G mobile network is always online. Supports connection detect and auto reconnect functions.
- Supports MQTT broker URL connection.
- SSL V3.0 and TLS V1.0/V1.1/V1.2. Supports custom Client ID.
- \triangleright QoS 0 and 1 supported.
- Supports two publish mode: publish when data changes or publish periodically at custom cycle time, which can reduce the data traffic.
- > Supports two Message Types: register message or property message.
- > Real-time device status monitoring on the IoT Cloud Platform.
- ➢ 4G network quality detection and display.
- > Applies to industrial field with high reliability. Supports real-time monitoring and automatic reset.

1.3 Technical Specifications

- [1] 4G/3G/2G mobile network
 - Supported standard:
 - GT200-MQ-IE-AP: FDD LTE: B1/B3/B7/B8/B20/B28A

TDD LTE: B38/B40/B41

WCDMA: B1/B8

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GSM/EDGE: B3/B8

• GT200-MQ-IE-NA>200-MQ-IE-MX:

FDD LTE: B2/B4/B5/B12/B13/B14/B66/B71

WCDMA: B2/B4/B5

Note: Some wireless network carriers require exact APN settings, which is mandatory when configuring the GT200-MQ-IE. Please refer to the carriers' support information. For example, the SIM card of AT&T will work with the following settings:

APN: NXTGENPHONE

APN Username & Password: Not set (leave as default)

- Transmission speed:
 - GT200-MQ-IE-AP: FDD LTE (Mbps): 150(DL)/50(UL)

FDD LTE(Mbps): 150(DL)/50(UL)

TDD LTE(Mbps): 130(DL)/30(UL)

WCDMA(Kbps): 384(DL)/384(UL)

EDGE(Kbps): 296(DL)/236.8(UL)

GPRS(Kbps): 107(DL)/86.5(UL)

• GT200-MQ-IE-NA>200-MQ-IE-MX:

FDD LTE(Mbps): 150(DL)/50(UL)

WCDMA(Kbps): 384(DL)/384(UL)

[2] One serial interface

- Physical standard: RS485, half-duplex.
- Parity: Odd, Even, None, Mark, Space.
- Stop bits: 1 or 2.
- ◆ Baud rate: 600~115200 bps.
- Protocol: Modbus RTU/ASCII Master/Slave, Transparent transmission.
- Modbus command: 01, 02, 03, 04, 05, 06, 15, 16.
- Interface type: 3.81 mm 3-pin port.
- Galvanic isolation: 1kV

- [3] 2 Ethernet interfaces available simultaneously
 - Physical standard: RJ-45, full-duplex and half-duplex.
 - Speed: 10/100 Mbps, auto-detected.
 - Protocol: Modbus TCP Client/Server (supports command: 01, 02, 03, 04, 05, 06, 15, 16)

EtherNet/IP Adapter (Slave)

- Supports DHCP.
- [4] Maximum data and connections:
 - ♦ Modbus RTU/ASCII:

Input bytes ≤ 512 bytes

Output bytes \leq 512 bytes

Maximum connections: 31 serial devices

Maximum commands: 100 commands (as Modbus master)

• Modbus TCP:

Input bytes \leq 512 bytes

Output bytes \leq 512 bytes

Maximum connections: 4 Clients or 4 Servers

Maximum commands: 100 commands (as Modbus TCP Client)

• EtherNet/IP:

Input bytes \leq 492 bytes

Output bytes \leq 492 bytes

• Maximum properties:

Mode Modbus TCP S / Modbus M/S and Mode Modbus TCP C / Modbus M: 1000 properties.

Mode EtherNet/IP Adapter: No limits.

[5] 2 Digital inputs

- Port: 3.81mm 3-pin port.
- Supported DI contact: Dry contact.
- [6] 2 Digital outputs:
 - Port: 3.81mm 4-pin port.

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Maximum output: 30 VDC / 220 VAC, 0.9A

Note: The digital outputs are available only with at least 24V DC power on.

- [7] Power supply: 24 VDC (11~30 VDC)
- [8] Operating temperature: -20°C~60°C (-4°F~140°F). Humidity: 5%~95% (non-condensing).
- [9] External dimensions (W*H*D): 1.33 in*4.56 in*4.21 in (34mm*116mm*107mm).
- [10] Installation: 1.38 in (35 mm) DIN RAIL.
- [11] Protection level: IP20.

1.4 Related Products

The related products include: IOT600-TWX-TS, GT200-HT-MT, GT200-HT-RS and GT200-HT-EI etc.

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

1.5 Revision History

Revision	Date	Chapter	Description
V3.2	3/2/2021	ALL	New release
V3.2, Rev A	4/1/2021	Chapter 1, 5	Revision
V3.2, Rev B	5/21/2021	Chapter 1	Picture updated and revision





2 Hardware Descriptions

2.1 Product Appearance



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



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2.2 LED Indicators

LED	State	State description
	OFF	4G module is not started.
	Green, slow blinking	The gateway is searching available network.
STA	(200 ms ON / 1800 ms OFF)	
	Green, slow blinking	The 4G module is in standby.
	(1800 ms ON / 200 ms OFF)	
	Green, quick blinking	Data transmission via 4G mobile network.
	OFF	The SIM card is invalid.
	Croop ON	The connection is being established or could not be
	Green, ON	established.
	Green, slow blinking	Description
SG	(1000 ms ON / 1000 ms OFF)	Poor signal
	Green, blinking	Weak sizes1
	(500 ms ON / 500 ms OFF)	weak signal
	Green, quick blinking	Strong signal
	(200 ms ON / 200 ms OFF)	Strong signal
TX/RX	Green, blinking	No data transmission on RS485 interface.
170/107	Green	Data transmission on RS485 interface.
	OFF	The digital inputs (outputs) are not connected.
	Red	The DI1 (DO1) is connected.
DI(DO)	Green	The DI2 (DO2) is connected.
	Orange	The DI1 (DO1) and DI2 (DO2) are connected.
	Green, slow blinking	No Modbus TCP or EtherNet/IP connection.
ENC	Green, quick blinking	Fixed IP Address: 192.168.0.10
ENS	Red, blinking	Locating the gateway.
	Green	Normal connections.

2.3 Configuration Button

After powering on the GT200-MQ-IE, long press the button for 5 seconds. The IP address will then be set to 192.168.0.10 and the ENS indicator will quickly blink green. This function can fix the IP address when the



GT200-MQ-IE can't be searched in normal status. Press the button again, the GT200-MQ-IE will be restarted and begin operating normally.

After powering on the GT200-MQ-IE, double press the button to disable uploading/downloading configuration.

The GT200-MQ-IE can be searched but can't be configured. This function can prevent the wrong operations. Press the button again to set back to normal status.

Button action	Description
	The IP address is set to 192.168.0.10 and the ENS
Long press for 5 seconds	is blinking green quickly. Press the button again to
	set back to normal status.
	Uploading/downloading configuration is disabled.
D 11	The GT200-MQ-IE can be searched but can't be
Double press	configured. Press the button again to set back to
	normal status.

2.4 Interface

2.4.1 Power Interface



Pin	Function
1	Power ground
2	Not connected
3	24V+, DC

2.4.2 RS-485 Serial Interface

The GT200-MQ-IE has a RS-485 serial interface (Under mode "EtherNet/IP Adapter...", this interface is disabled).

RS-485 Specification:

- 1. Network topology: Linear bus with active terminal resistors at both sides.
- 2. Baud rate: 600 bps ~115.2K bps.

- 3. Physical Media: Shielded twisted-pair cable that also can cancel the shielding, depending on environmental conditions (EMC).
- 4. Station number: 31 stations per section (without repeater), and up to 127 stations in total (with repeaters).
- 5. Plug connection: 3-pin port.

RS-485 Installation:

- 1. All stations are connected with RS-485 bus.
- 2. Up to 31 stations can be connected per section.
- 3. Connect a terminal resistor (120 Ω , 1/2W) in parallel at both ends of the communication lines to ensure stable communication.
- 4. The interface is a 3-pin port and the wiring is as follows:



Pin	Function
1	GND
2	D-
3	D+

2.4.3 Digital Output



Pin	Function
1	DO1+
2	DO1-
3	DO2+
4	DO2-



2.4.4 Digital Input



Pin	Function
1	GND
2	DI1
3	DI2

2.4.5 Ethernet Interface



Pin	Signal description
S1	TXD+
S2	TXD-
S3	RXD+
S4	-
S5	-
S6	RXD-
S7	-
S8	-

The Ethernet interface is a RJ-45 socket.

2.4.6 Micro SIM Card Slot



Format: Micro-SIM (3FF)

Length * Width: 15 mm * 12 mm (0.59 in * 0.47 in)

Thickness: 0.76 mm (0.030 in)



3 Hardware Installation

3.1 Mechanical Dimensions

Size: 34mm * 116mm * 107.4mm / 1.34 in * 4.57 in * 4.22 in (width * height * depth)



3.2 Installation Method

Use 13.8 in (35 mm) DIN Rail.









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4 Quick Start Guide

4.1 Connection

- 1. Insert the Micro SIM card into the slot behind the GT200-MQ-IE correctly.
- 2. Connect the power supply as follows.

Note: Please do not power on the devices before finishing all the connections.



Connect the serial devices. (Under EtherNet/IP Adapter mode, the serial interface is disabled.)
 Note: The GT200-MQ-IE doesn't have the terminal resistor in the RS-485 serial interface. When connecting
 multiple RS-485 serial devices, it's recommended to connect a terminal resistor (120Ω, 1/2W) in parallel at
 both ends of the communication lines to ensure stable communication.



- 4. Connect the Ethernet/IP scanner (master) or Modbus TCP clients/servers via Ethernet cable.
- 5. Connect the GT200-MQ-IE with the PC via Ethernet cable.
- 6. Power on the GT200-MQ-IE.

4.2 Configuration

Please see "SST-MQT-CFG Software Content" for details.

1. Download the configuration software SST-MQT-CFG from <u>www.sstautomation.com</u> and install it. Open the

software and select a device.



2. Configure the Wireless Internet (MQTT Server configuration).



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New Save Open Add Node Del Node Add Cmd Del Cmd Upload Download AutoMap Conflict Export Debug Wireless Internet # 46/36/26 Type of MQTT Server AWS IoT Please select CA certification World Add/Gad # 46/36/26 # 6/36/26 Please select client certification Please select client certification Client Key File Please select private certification Client Key File Please select private certification G Topic1 # Digital Mode Change of Value Sending Cycle (Seconds) 60 # PN # APN # APN # APN # APN # Digital Input 1 # Distable Please select Password	-
New Save Open Add Node Del Node Add Cmd Del Cmd Upload Download AutoMap Conflict Export Debug Wireless Internet Type of MQTT Server AWS IoT AWS IoT CA File Please select CA certification MQTT Topic Client Certificate File Please select client certification Client Key File Please select private certification Timestamp Disable Publish Mode Change of Value Sending Cycle (Seconds) 60 APN APN APN APN APN APN APN Password Password Password Password Password	-
Wireless Internet X Type of MQTT Server AWS IoT CA File Please select CA certification Client Certificate File Please select client certification MQTT Topic Client Key File Please select private certification Timestamp Disable Publish Mode Change of Value Sending Cycle (Seconds) 60 OgS APN APN Username Username APN Password Password MOTT Broker Address Password	
Wireless Internet CA File Please select CA certification Client Certificate File Please select client certification MQTT Topic File Please select client certification Topic1 Disable Publish Mode Change of Value Sending Cycle (Seconds) 60 APN APN APN Username Username APN Password Password MOTT Rooker Address Password	
Image: AG/3G/2G Client Certificate File Please select client certification Image: AG/3G/2G Client Key File Please select private certification Image: AG/3G/2G Client Key File Please select private certification Image: AG/3G/2G Timestamp Disable Image: AG/3G/2G Please select private certification Disable Image: AG/3G/2G Publish Mode Change of Value Image: AG/3G/2G Sending Cycle (Seconds) 60 Image: AG/3G/2G APN APN Image: APN APN APN Image: APN Username Username Image: APN Password Password Image: Address Password	
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APN APN APN APN APN Username Username APN APN Username Password APN APN Username Password	
Publish Mode Change of Value Publish Mode Change of Value Sending Cycle (Seconds) 60 Popical Input/Output APN APN Vasename Username APN Password Password Poligital Input 1 MOTT Broker Address	
GPS Sending Cycle (Seconds) 60 GPS APN APN Digital Input/Output APN Password Username APN Password Password Password	
GPS APN Digital Input/Output APN Vername Digital Input 1 MOTT Broker Address	
Digital Input/Output APN Username Username APN Password Password Digital Input 1 MOTT Brocker Address	
APN Password Password Password	
- Bigital Input 1 MOTT Broker Address	
B Digital Input 2 MQTT Broker Port	
- B Digital Output 1 Message Type Property	
Remote Update Server Address 54. 222. 133. 11	
Remote Update Server Port 8885	-
Climat ID Default	-

3. Add or edit MQTT Topic.

Wew Save Open Add Node Del Node Add Cmd Del Cmd Upload Download AutoMap Conflict Export Debug Wireless Internet Wireless Internet AdG/36/26 MQTT Topic Topic1 Topic2 Digital Input/Output Digital Input/1 Digital Input 1 Digital Output 1
New Save Open Add Node Del Node Add Cod Del Cmd Upload Download AutoMap Conflict Export Debug Wireless Internet
Wireless Internet * Topio Name Topio1 Wireless Internet Subscribe/Publish Publish MQTT Topic 0 0 MQTT Topic 0 Topic1 0 Topic2 Digital Input/Output
Bigital Input 2 Bigital Output 1

4. Configure the Digital Input/Output, Modbus TCP, Subnet and EtherNet/IP Interface parameters.

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Gateway configuration software SST-MQT- File(F) Edit(E) Tool(T) View Help(H)	CFG	
New Save Open Add Node	Del Node Add Cmd Del Cmd Upload Download AutoMap Conflict Export Debug	
× Coil Status ^ -& Input Status - & Holding Register - & Input Register	Select Protocol Modbus Master Baud Rate 19200 Data Bits 8 Parity Check None Stop Bits 1 Slave Address 1	Config
Subnet Subnet Gamma Read Coil Status Gamma Read Holding Registers Gamma Force Single Coil Gamma Preset Multiple Register	Transmission Mode RTU Response Timeout (5~6000ms) 300 Delay between Polls (0~2500ms) 0 Output Mode Change of Value Output Cycle (200~2500ms) 10 Scan Rate (1~255) 10 Communication Status Disable Time Interval between Sending Character 0	Property
< ►	Time Interval between Receiving Character 0	
Right click on the Subnet to add not	des. When selecting Modbus Master protocol, it supports up to 100 nodes under the Subnet.	*
Info News	Numb	er

5. Configure the properties.

ew Save Open Add	다. 다. 다 Node Del Node Add Cmr	☐ 1 Del Cmd Upload	Download AutoMap Cont	Rict Export Debug	
Q. 0-11 0t-t	* Topic Name	Data Type	Property Name	Register Count	Register Start
Coll Status	Topic1	BOOL	BI1	1	0
	Topic1	BOOL	BI2	1	1
- 🔏 Holding Register	Topic1	BOOL	BI3	1	2
P. Innut Register	Topic1	BOOL	BI4	1	3
	Topic1	BOOL	BI5	1	4
Subnet	Topic1	BOOL	BI6	1	5
Node-1	Topic1	BOOL	BI7	1	6
	Topic1	BOOL	BI8	1	7
	Topic1	BOOL	BI9	1	8
Read Holding Regist	Topic1	BOOL	BI10	1	9
- 금 Force Single Coil	Topic1	BOOL	BI11	1	10
Preset Multiple Regi	iste Topic1	BOOL	BI12	1	11
and the state of the state of the state of the	Topic1	BOOL	BI13	1	12
m	, Topic1	BOOL	BI14	1	13
lessage Type - Property: "version": "1.1.1.0", "time": "18/12/07,17:04:0 "properties": { "B13": false, "B15": false, "B16": false	7",				

- 6. Check the mapping buffer and the property names. Use the "Auto Mapping" and "Name Properties in Order" functions.
- 7. Save the configuration project and download it to the GT200-MQ-IE.

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5 Configuration Software SST-MQT-CFG

SST-MQT-CFG is the configuration software which can be used to configure GT200-MQ-IE. It is based on

Windows OS. Download the software on www.sstautomation.com and run the setup program to begin the

installation. Please follow the prompts to install the software.

For detailed software content, please see "SST-MQT-CFG Software Content". Or open the SST-MQT-CFG, select

Gateway configuration software SST-MQT-C	FG	
File(F) Edit(E) Tool(T) View(V) Help(H)		
	📮 🗎 🔔 🦾 🔛 🖾	
New Save Open Add Node	Del Node Add Cmd Del Cmd Upload Download AutoMap Conflict Export Debug	
×	Type of MQTT Server	AWS IoT
🖶 🔛 Wireless Internet	CA File	Please select CA certification 📃 🇿
	Client Certificate File	Please select client certification
🖶 💭 MQTT Topic	Client Key File	Please select private certification
	Timestamp Publich Mode	Usable de Value
	Sending Cycle (Seconds)	60
I GPS	APN	APN
	APN Username	Username
Digital Input/Output	APN Password	Password
	MQTT Broker Address	per
	MQTT Broker Port	4
- S Digital Output 1	Message Type	Property
- P. Digital Output 2	Remote Update Server Address	54. 222. 133. 11
	Remote Update Server Port	8885
B Modbus TCP	contract ID	Default Proble
	SSL/ILS Custom Message Roymet	Dischla
	Edit Message Format	DISABIC
	Date woodage i erwate	
B Subnet		
Read Coil Status		
Read Holding Registers		
Force Single Coil		
Preset Multiple Peristens		
Preset Multiple Registers		
× Industrial IoT Gateway Easily connect your Modbus/Mod cloud application through MQTT, Azure IoT, AWS IoT, All IoT, EMG	r Series Bus TCP/EtherNet IP PLC or devices to ThingWorx AlwaysOn, etc. For example, 2, etc.	
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6 EtherNet/IP Connection Parameters

The GT200-MQ-IE supports the following connection parameters:

Data Size Parameters	128 Bytes	256 Bytes	492 Bytes
Input Instance	102	112	122
Output Instance	101	111	121
Configuration Instance	103	113	123

To configure the Connection Parameters of an EtherNet/IP Module, please see 8.1 I/O Configuration.

Type: Vendor: Parent:	ETHERNET-MODULE Generic Eth Allen-Bradley ENetIPMaster	ernet Module			
Na <u>m</u> e:	GT200MQIE	Connection Para	ameters Assembly	Size	
Description:	4		112	132	÷ (8-bit)
		O <u>u</u> tput:	111	128	* (8-bit)
Comm <u>F</u> orma - Address / I	t: Data - SINT	<u>C</u> onfiguration:	113	10	* (8-bit)
• IP Add	ress: 192 . 168 . 0 . 90	Status Input:			
C Host N	ame:	Status Output:			



7 Working Principle

7.1 Connection Process



7.2 Data Exchange

The GT200-MQ-IE is able to connect Modbus RTU/ASCII, Modbus TCP, Digital Input/output and EtherNet/IP devices to MQTT Servers, such as Microsoft Azure, Amazon AWS IoT, and customized MQTT Servers.









8 Read/Write Data in EtherNet/IP Network

Take RSLogix 5000 for example.

8.1 I/O Configuration

Right click on the EtherNet/IP master module and select "New Module":



In the pop-up interface, click "+" to unfold the "Communications" and select "ETHERNET-MODULE". Click "OK".



Select	∎odule		
Nodule		Description	Vendor
- 1' - 1' - 1' - 1' - 1' - 1' - 1' - 1'	769-L35E Ether. 788-EN2DN/A 788-ENBT/A 788-EWEB/A 794-AENT/A 794-AENT/B rivelogix5730 . THERNET-BRIDGE THERNET-BRIDGE THERNET-MODULE therNet/IP H-PSSCENA/A tal	. 10/100 Mbps Ethernet Port on CompactLogix5335E 1788 Ethernet to DeviceNet Linking Device 1788 10/100 Mbps Ethernet Bridge, Twisted-Pai 1788 10/100 Mbps Ethernet Bridge w/Enhanced W 1794 10/100 Mbps Ethernet Adapter, Twisted-Pa 1794 10/100 Mbps Ethernet Adapter, Twisted-Pa 10/100 Mbps Ethernet Port on DriveLogix5730 Generic EtherNet/IP CIP Bridge Generic Ethernet Module SoftLogix5800 EtherNet/IP Ethernet Adapter, Twisted-Pair Media	Allen-Bradley Allen-Bradley Allen-Bradley Allen-Bradley Allen-Bradley Allen-Bradley Allen-Bradley Allen-Bradley Allen-Bradley Parker Hannifin Corp.
			Eind Add Fave

Configure the module parameters:

Set the connection parameter Please refer to <u>chapter 6</u> .
Connection Parameters Assembly Assembly Size: Instance: Size: Input: 112 0utput: 111 128 (8-bit) Configuration: 113 Status Input: (8-bit) Status Output: Status Output:

The above parameters need to be configured are:

Name - The module name of the EtherNet/IP slave module.

Comm Format - The data type. Users can choose DINT, INT, SINT and REAL, etc. The comm format can't be



changed after creating the module. If you want to change the data type, please delete the module and add a new one.

IP Address -The IP address of the EtherNet/IP slave module.

Connection Parameters - The connection parameters are used for I/O communication. The Size should be consistant with the corresponding input/output/configuration bytes. Please refer to <u>chapter 6</u>.

Click "OK". Set the Module Properties:

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

Click "OK" to save the configuration.

Double click on the "Controller Tags" to open the "Monitor Tags", as below.

The GT200MQIE:O.Data[0]~[127] are the output data of the EtherNet/IP master.

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RSLogix 5000 - Test1 in ene3500704_BAK0002 File Edit View Search Logic Communications	2021. J	ACD [1756-L55]* - [Controller Ta s Window Heln	gs - Testl (conti	roller)]				
	-							
■ 🖉 📕 🎒 🚴 🛍 🖻 🖂 HE6121		<u></u>	<u> </u>					
Offline 📴 🗸 🗐 RUN		Path: AB_ETHIP-1\192.168.0.147\Backplan	e\0× 🔻 🖁	5				
No Forces				-1				
No Edits	<u> </u>		L)-			×		
Redundancy 👦		Favorites & Add-On & Alarms & Bit	Timer/Counter	Input/Output 🔏 Co	mpare 🔏 Compute	eñv		
E Gontroller Testi		Scope: Ta Test1 - Show.	- STRING, ALAR	M, ALARM ANALO	, ALARM_DIGITAL	L, AXIS_CONSUMED	, AXIS GENERIC, AXIS GENERIC DRIVE, AXIS SERVO, AXIS SERV	O DRIVE,
- Ontroller Tags		Name A	Value 🗲	Force Mac Stule	Data Tune	Description	1	-
Controller Fault Handler			()	{}	AB:ETHEBN	Description		
Tasks		GI200M0IE:0 Data	()	{} Decin	al DINT[32]			-1
😑 🤕 MainTask		E-GT200MQIE:0.Data[0]	0	Decin	al DINT			
HainFrogram		E GT200MQIE:0.Data[1]	0	Decin	al DINT			
Motion Groups		E-GT200MGIE-0 Data[2]	0	Decin				
Ungrouped Axes		E:GT200MQIE:0 Data[3]	0	Decin	al DINT			
Add-On Instructions		+ GT200MQIE:0 Data[4]	0	Decin				
- Jata Types		E-GT200MQIE:0.Data[5]	0	Decin				
E Gr Strings		E-GT200MQIE:0.Data[6]	0	Decin				
Add-On-Defined		±:GT200MQIE:0.D xta[0]	0	Decin		-		
🕀 🔐 Predefined		E-GT200MQIE:0.D-dta[7]	0	Decin				
Trends		+-CT200MQIE.0.Data[0]	0	Decin				
🖻 🔄 I/O Configuration		+-GT200MQIE.0.Data[5]	0	Decin				
🖃 📟 1756 Backplane, 1756-A7	_	Elicit 200MQIE:0.Data[10]	0	Decin				
[0] 1756-L55 Test1	Ľ⊪	E-GT200MQIE:0.Data[11]	0	Decin		-		
		E GT200MQIE:0.Data[12]	0	Decin				
			0	Decin		-	· · · · · · · · · · · · · · · · · · ·	
		G1200MQIE:0.Data[14]	0	Decin				
	- H-	GT200MQIE:0.Data[15]	0	Decin		-		
		ErGT200MQIE:0.Data[16]	U	Decin	al DINT	-		
		Trai 200MQIE:0.Data[17]	0	Decin			8	
			0	Decin	al DINT			
		GT200MQIE:0.Data[19]	0	Decin	al DINT			
	•	GT200MQIE:0.Data[20]	0	Decin	al DINT	-		- L -
-			1					

The first 4 bytes are the real-time frame head of the EtherNet/IP slave. The other are the input data.

BSLogix 5000 - Text1 in ene3500704_BAK0002021. A Eile Edit View Search Logic Communications Tools	CD [1756-L55]* - [Controller Ta; : <u>W</u> indow Help	gs – Testi (controller)					_ 8 ×
1000 - HEI6121	- <u>KKK -</u>	<u> </u>					
Offline 🛛 🗸 🗖 RUN	Path: AB_ETHIP-1\192.168.0.147\Backplane	×0×					
No Forces	also be all as has been been				-		
No Edits		_) [_]		_	×		
Redundancy 💀	Favorites & Add-On & Alarms & Bit	Timer/Counter X Input/Outp	ut 🖌 Comp	are 🖌 Compute	e/fv		
Controller Test1	Scope: Mattest1 - Show.	STRING ALARM ALARN	ANALOG A	LARM DIGITAL	AXIS CONSUMED) AXIS GENERIC AXIS GENERIC DRIVE AXIS SERVO AXIS SER	
Controller Tags		Value A Free Ma	4 Cours	In the Target	In		
		value rorce ma	style		Description		<u>_</u>
	E-CT200MQIE:	() () Desired	AD.ET HENN			
- A MainTask		() (Decinal	DINT			
😟 🚭 MainProgram		0	Decimal	DINT	-		
	B-GT200MQIE:I.Data[1]	0	Decimal	DINT	-		
Inground Aver	G 1 200MQIE: Data[2]	0	Decimal	DINT			
Add-On Instructions	GT200MQIE:I.Data[3]	0	Decimal	DINT			
🖃 😁 Data Types	GT200MQIE:I.Data[4]	0	Decimal	DINT			
- User-Defined	GT200MQIE:I.Data[5]	0	Decimal	DINT			
E Strings	E-GT200MQIE:I.Data[6]	0	Decimal	DINT			
Add-Un-Defined	GT200MQIE:I.Data(7)	0	Decimal	DINT			
H Gm Module-Defined	E-GT200MQIE:I.Data[8]	0	Decimal	DINT			
Trends	GT200MQIE:I.Data[9]	0	Decimal	DINT			
🖻 📇 I/O Configuration	E-GT200MQIE LD ata(10)	0	Decimal	DINT			
	E GT200MQIE I Data[11]	0	Decimal	DINT	-		
	E-GT200MOIELD staf121	0	Decimal	DINT			
	E-GT200MQIELD dts[12]	0	Desimal	DINT			
		0	Desinal	DINT			
		0	Decimal	DINT			
	TG 1200MQIE:I.D ata[15]	0	Decimal	DINI			
	GT200MQIE:I.Data[16]	0	Decimal	DINT			
	GT200MQIE:I.Data[17]	0	Decimal	DINT			
	GT200MQIE:I.Data[18]	0	Decimal	DINT	-		
	GT200MQIE:I.Data(19)	0	Decimal	DINT			
	GT200MQIE:I.D ata[20]	0	Decimal	DINT			-
	■\Monitor Tags & Edit Tags	/		•			•



8.2 MSG Configuration

8.2.1 Read Data

Add two new tags in the "Controller Tags". In this example, name the tags as "ReadTag" and "ReadData". Set the ReadTag type as "MESSAGE" and the ReadData type as "DINT[500]".

gix 5000 - Textl im ene3500704_BAX0002021.ACD [1756-155]* - [Controller Tags - Textl(controller)]	ESLogix 5000 - Test1 in enc3500704_BAK0002 Eile Edit View Search Logic Communications
	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
0. TRUN	
	No Forces P BAT Redundancy Log
Controller Test Contr	Controller Testi Controller Tess Controller Fault Handler Forer-Up Handler
Tasks	E 🔁 Tasks E 🔁 MainTask
Bill MainFrogram HeadData () Decimal DINT[S00] White Result HeadData () () Decimal DINT[S00]	MainFrogram Unscheduled Programs / Phases Motion Groups
Botton Groups Add-On Instructions Data Types But Wargroups Areas But Types But Types <td><pre>d Motion Groups</pre></td>	<pre>d Motion Groups</pre>
	Ready

Right click on the ReadTag and select Configure "ReadTag".

1 BeadData		{	3	{}	Decima
± ReadTag		New Tag	<u>.</u>	Ctrl+W	
		Edit "ReadTag" Edit "ReadTag" Properties		Alt+Enter	
		Configure "ReadTag"	1	Ctrl+I	
		Edit "MESSAGE" Data Type Go to Cross Reference for "ReadTa	e" 1	Ctrl+E	
		Message Path Editor Go To	1	Ctrl+G	
		Toggle Bit	ļ	Ctrl+T	
		Force On			
		Force Off			
		Remove Force			
	Ж	Cut	1	Ctrl+X	
		Сору	1	Ctrl+C	
	B	Paste	1	Ctrl+V	
_		Paste Pass-Through			
▶ \∎onito		Delete	4	Del	
		Find All "ReadTag"			



Configure the parameters in the pop-up window:

Message <u>Type</u> : CIP Generic	•	
Service Get Attribute Single Service Code: e (Hex) Class: 4 (Hex) Instance: 102 Attribute: 3 (Hex)	Source Element:	0 (Bytes) ReadData New_Tag
)Enable 🔾 Enable Waiting 🔾 Start)Error Coć Extended Error rror	🔾 Done Done	e O Timed Our€

In "Configuration*" page:

Message Type: Select "CIP Generic".

Service Type: Select "Get Attribute Single" and the Service Code will be set to "e (HEX)".

Class: 4

Instance: 102 (128 bytes), 112 (256 bytes) and 122 (492 bytes) are optional.

Attribute: 3 (Hex)

Destination: Select "ReadData" and all the read(input) data will be stored in the ReadData tag.

Jump to the "Communication" page.

ath: EIPMaster, 2, 1	92.168.0.90	•			Brows	se
Communication Met	nod Channel:	· [T Destin	ation Links	0	Ą
C CIP <u>W</u> ith Source ID	<u>S</u> ource Link:	0	Destir	ation <u>N</u> ode:	0	(Octal
Connected		🔽 Cach <u>e</u>	Connections	•		
Enable 🔘 Enabl	e Waiting	🔾 Start	🔵 Done	Done	0	

Input the EtherNet/IP slave path. The path format is "EtherNet/IP master name", "slot number", "EtherNet/IP



slave IP address". In this example, the EtherNet/IP master name is "EIPMaster", the slot number is "2" and the EtherNet/IP slave (GT200-MQ-IE) IP address is 192.168.0.90.

Click "OK" or "Apply" to save and apply the configuration.

Open the "MainProgram" >> "ManRoutine" in the left tree view and add a "MSG" command. Select the "ReadTag" as the Message Control.

This command can send one simple read query, users need to configure more logic blocks to trigger the command.

BSLogix 5000 - Text1 in ene3500704_BAK000202 B File Edit View Search Logic Communications T	21.ACD [1756-155]* - [MainFrogram - MainRoutine*] cols Mindow Melp	_ (8) × _ (8) ×
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	- 48. I - 19 - 9 - 9	
Offine D RUN No Forces C RAT No Edits A T I/O	Path: AB_ETHIP-111921680.1147/Backplane10" Image: Comparison of the compariso	
Controller Testi Controller Testi Controller Testi Proeruly Handler Frogram Tags Mainlack	Image:	Local 1:0. CommandRegister Run () Message Message Control Resulting (ER) (ER)
Ready	MainRoutine'	Rung 1 of 2 AFF VER

Download the configuration to the PLC and set to online.

Double click on the "Controller Tags" to open the "Monitor Tags", as below:

User Manual

😤 RSLogix 5000 - Controller in Controller1.ACD	[1756-L55]*						X
File Edit Fiew Search Logic Communications Tools	s <u>M</u> indow Help						
	_ ගිහිනි	🕞 📝 💇 🔍 Q					
Offline 0. E RUN	Path: AB_ETHIP-1\192.168.0.1	47\Backplane\0*	- **				
No Forces							
No Edits		AND OR XOR SWPB NOT	CLR BTD			4	
Redundancy 👧	Favorites 🖌 Add-On 🔏 Al	arms 🖌 Bit 🔏 Timer/Cour	nter 🔏 Input/Out	out 🔏 Compare 🔏 Comput	e/Math 🔪 Move/Logical 🔨 File/Misc. 🔏	File/Shift & Sequer	
	🖉 Controller Tags - Cont	troller (controller)					
- Z Controller Tags	Scope: 17 Controller 👻	Show Show All					
Controller Fault Handler		A 1 Yolun 6 15-	6 [0µ]-	Data Tura	Description		
- Tasks	- ReadDate		Le Style	DINITIERO	Description		
🖻 🤯 MainTask	+ ReadData[0]	16#0000_0000	Len Len	DINT			
🖃 🛶 MainProgram	E neaubata(0)	16#0000_0000	Hex	DINT			
Trogram lags	E neauData(1)	16#0000_0000	Hex	DINT			
- Unscheduled Programs / Phases	E ReadData[2]	16#0000_0000	Hex	DINT			
Motion Groups	+ ReadData[3]	16#0000_0000	Hex	DINT			
Add-On Instructions	theadData[4]	16#0000_0000	Hex	DINT			
🖶 🗁 Data Types	TheadData(0)	16#0000_0000	Hex	DINT			
User-Defined	E ReadData[0]	16#0000_0000	Hex	DINT			
+ - Strings	+ ReadData[7]	16#0000_0000	Hex	DINT			
🕀 🙀 Predefined	t:ReadData[9]	16#0000_0000	Hex	DINT			
😟 🙀 Module-Defined	TheadData(3)	16#0000_0000	Hex	DINT			
Trends	E ReadData[10]	16#0000_0000	Hex	DINT			
E = 1756 Backplane, 1756-A7	+ ReadData[11]	16#0000_0000	Hex	DINT			
- 10 [0] 1756-L55 Controller	t:ReadData[12]	16#0000_0000	Hen	DINT			
[1] 1756-DNB DeviceNet_Master	E ReadData[13]	16#0000_0000	Hou	DINT			
in g (c) 1100 babiya waster	E neadData[14]	16#0000_0000	Hen	DINT			
	+ ReadData[15]	16#0000_0000	Hex	DINT			
	+ ReadData[17]	16#0000_0000	Hen	DINT			
	TheadData[17]	16#0000_0000	How	DINT			
	E ReadData[19]	16#0000_0000	How	DINT			
	E PeadData[10]	16#0000_0000	Hen	DINT			
	+ ReadData[21]	16#0000_0000	Hen	DINT			
	t:ReadData[21]	16#0000_0000	How	DINT			
	E ReadData(22)	16#0000_0000	How	DINT			
	T-ReadData[24]	16#0000_0000	Hav	DINT			
	H ReadData[29]	16#0000_0000	Hey	DINT			
	H BeadData[25]	16#0000_0000	Hey	DINT			
	Tenitor Tags & Fr	tit Tags /	HEA				
	(aona ton tugs // b)			- Caralla			

8.2.2 Write Data

Add two new tags in the "Controller Tags". In this example, name the tags as "WriteTag" and "WriteData". Set the WriteTag type as "MESSAGE" and the WriteData type as "DINT[500]".

Right click on the WriteTag and select Configure "WriteTag".

Configure the parameters in the pop-up window:



User Manual

Message <u>Type</u> : CIP Generic	•	
Service Type: Get Attribute Single Service Code: e (Hex) Class: 4 (Hex) Instance: 101 Attribute: 3 (Hex)	<u>Source Element</u> Source L <u>ength</u> Destination	©
)Enable 🔾 Enable Waiting 🔾 Start)Error Coć Extended Error) Done I	Done O Timed Ou ¢

In "Configuration*" page:

Message Type: Select "CIP Generic".

Service Type: Select "Get Attribute Single" and the Service Code will be set to "e (HEX)".

Class: 4

Instance: 101 (128 bytes), 111(256 bytes) and 121 (492 bytes) are optional.

Attribute: 3 (Hex)

Destination: Select "WriteData" and all the write(output) data will be stored in the WriteData tag.



ssage Configuration -	WriteTag
Configuration Communicat	tion*] Tag]
Path: EIPMaster, 2, 192.168.	.0.90 <u>B</u> rowse
CIP C DH+ Chanr C CIP With Source ID Source	nel: Destination Link: 0 📻 :e Link: 0 🚍 Destination Node: 0 🚍 (Octal)
	🔽 Cach <u>e</u> Connections 🔸

Jump to the "Communication" page. Input the EtherNet/IP slave path. The path format is "EtherNet/IP master name", "slot number", "EtherNet/IP slave IP address". In this example, the EtherNet/IP master name is "EIPMaster", the slot number is "2" and the EtherNet/IP slave (GT200-MQ-IE) IP address is 192.168.0.90.

Click "OK" or "Apply" to save the apply configuration.

Open the "MainProgram" >> "ManRoutine" in the left tree view and add a "MSG" command. Select the "WriteTag" as the Message Control.



User Manual

🎉 RSLogix 5000 - Controller in Controller1	CD [1756-L55]*		
$\underline{F}ile \underline{E}dit \underline{V}iew \underline{S}earch \underline{L}ogic \underline{C}ommunications \underline{T}earch \underline{V}earch V$	ols <u>W</u> indow <u>H</u> elp		
	- <u>2</u> 20		
Offline 📴 🗸 🗖 RUN	Path: AB_ETHIP-1\192.168.0.147\Backplane\0* ·	- Ba	
No Forces			
No Edits	MOV MUM AND OR XOR SWPB NOT	CLR BTD	•
Redundancy 0.0	Favorites & Add-On & Alarms & Bit & Timer/Counter	r 🔏 Input/Output 🔏 Compare 🔏 Compute/Math 🔪 Move/Logical 🔬 File/Misc. 🔏 File/Si	hift K Sequer
Controller Centroller Controller Fault Handler Controller Fault Handler Controller Fault Handler Tasks Mainfragran	Image: Second Status Image: Second Status	Local 1:0 CommandRegister Run Timer On Delay Timer Timer Con Press 1000 Accum 100 4 Startup1 Startup2 Ti U U Startup1 MSO (U) Type - CP Generic Message Control ReadTagW	(EN) (CN) (CN) (RES) (EN) (ER) (CN) (CN) (CR) (CR)
Description Status Offline	MainRoutine*		• •

Download the configuration to the PLC and set to online.

Double click on the "Controller Tags" to open the "Monitor Tags" to monitor data.



Appendix A: MQTT Message Format

A.1 Default Format

A.1.1 Publish Message

Note: "//" indicates the comments part.

Property type:

```
GPS:
         //Global Positioning System
{
     "version":
                   "1.1.1.0",
    "GPS":{
    "Latitude":
                   31.057020,
    "Longitude": 121.189590
     }
}
DI:
             //Digital Input
{
     "version":
                   "1.1.1.0",
    "DI":
              {
    "DI1":
              false,
    "DI2":
              true
     }
}
```

Read Coil Status / Input Status:

```
{
```

```
      "version":
      "1.1.1.0",
      //Version information

      "time":
      "19/03/07,17:04:07",
      //Time stamp

      "properties": {
      //When publishing messages in property type, the GT200-MQ-IE can publish 8 properties at most in one message. If more than 8 properties need to be transmitted, the GT200-MQ-IE will publish multiple message
```

message. If more than 8 properties need to be transmitted, the GT200-MQ-IE will publish multiple messages of 8 or less properties. "BI3": false,

"BI4": true, "BI5": false,



33

```
GT200-MQ-IE
Modbus / Industrial Ethernet / MQTT Gateway
User Manual
"BI6": false
```

} }

Read Holding Register / Input Register:

```
{
    "version": "1.1.1.0",
    "time": "19/03/07,17:10:03",
    "properties":{
        "AI2": 999999.500000, //The data type (for example, Float) consists with the property configuration
        "AI3": 888888.500000,
        "AI4": 777777.500000,
        "AI5": 6666666.500000
    }
}
```

Register / Data only type:

GPS:

```
{
    "version": "1.1.1.0",
    "type": "GPS",
    "Latitude": 31.057243,
    "Longitude": 121.188759
}
```

DI:

When two DI are enabled:

```
{
    "version": "1.1.1.0",
    "type": "DI1,DI2", //The data type
    "npoint": 2, //The number of data
    "data": "00,ff"
}
```

,

When only one DI is enabled:

```
{
    "version": "1.1.1.0",
    "type": "DI1",
    "npoint": 1,
    "data": "ff"
}
```

User Manual

Modbus Master:

Read Coil Status/Read Input Status:

Example (Read Coil Status):

```
"version":"1.1.1.0","type":"MODBUS_MASTER","slave id":1,//The slave address of the field device"fc": 1,//Modbus function code" addr ":0,//Modbus coil/register starting address, starting form 0"npoint":2,//The number in data"data":"42,81",//The data type consists with that in Modbus protocol"time":"19/02/27,16:05:14"//Time stamp. If disable, the message will not contain this line.
```

}

{

Read Holding Register/Read Input Register:

Example (Read Holding Register):

```
{
    "version": "1.1.1.0",
    "type": "MODBUS_MASTER",
    "slave id": 1,
    "fc": 3,
    " addr ": 0,
    "npoint":32,
    "data":"11,11,00,00,33,33,00,00,55,55,00,00,77,77,00,00,99,99,00,00,11,11,00,00,13,13,00,00,15,15,00,00"
}
```

```
Modbus Slave / Modbus TCP Server:
```

Coil Status:

{

}

When only one coil' status changes:

```
"version": "1.1.1.0",
"type": "MODBUS_TCP_SLAVE",
"block": 0, //Modbus Block. For example, "0" indicates the Coil Status block.
" addr ": 2, //Modbus status/register starting address, starting form 0
"npoint": 1,
"data": "FF", //00 or FF indicates 0 or 1.
"time": "19/02/27,16:13:40"
```



When multiple coils' status change:

Example 1:

{

"version": "1.1.1.0",
"type": "MODBUS_TCP_SLAVE",
"block": 1,
" addr ": 3, //Modbus coil/register starting address, starting form 0
"npoint": 2,
//In this example, the 4th and 5th bits of the 1st byte are the two coils' statue.
"data": "18", //It's HEX data.
"time": "19/02/27,16:23:35"

}

Example 2:

{

"version": "1.1.1.0",
"type": "MODBUS_TCP_SLAVE",
"block": 0,
" addr ": 6, //Modbus coil/register starting address, starting form 0
"npoint": 4,
//In this example, the 1st bit of the 1st byte, the 7th and 8th bits of the 2nd byte is the three coils' status.
"data": "c0,03",
"time": "19/02/27,16:35:01"

}

Holding Register:

Example:

```
{
    "version": "1.1.1.0",
    "type": "MODBUS_TCP_SLAVE",
    "block": 4,
    " addr ": 1,
    "npoint": 4,
    "data": "11,22,33,44",
    "time": "19/02/27,16:48:39"
}
```

A.1.2 Subscribe Message

Note: "//" indicates the comments part.

Property type: (Up to 8 properties can be changed at one time)

```
DO: //Digital Output
{
    "DO":{
    "DO1": false,
    "DO2": true
    }
}
```

Modbus Master/Slave / Modbus TCP Server

Change Coil/Input Status:

```
{
    "properties": {
    "BO3": false,
    "BO4": true,
    "BO5": false
    }
}
```

Change Holding/Input Register:

```
{
    "properties": {
        "AO3": 123.5,
        "AO4": 321.5,
        "AO5": 555.6
     }
}
```

Register / Data Only Type:

```
DO:
{
    "type": "DO1",
    "npoint": 1,
```

```
"data": "00"
```

}

Modbus Master:

```
Force Single Coil:
```

{

User Manual

"type": "MODBUS_MASTER", "slave id": 1, "fc": 5, //Modbus function code " addr ": 0, "npoint": 1, //00 or FF indicates 0 or 1. "data": "FF"

```
}
```

{

}

Force Multiple Coils:

```
"type": "MODBUS_MASTER",
"slave id": 1,
"fc": 15, //Modbus function code
" addr ": 0,
"npoint": 2,
//The data contains multiple coils' status.
"data": "ff,aa"
```

Preset Single Register:

```
{
    "type": "MODBUS_MASTER",
    "slave id": 1,
    "fc": 6,
    " addr ": 0,
    "npoint": 2,
    "data": "aa,bb"
}
```

Preset Multiple Registers:

}

Modbus Slave / Modbus TCP Server

Change single input status bit:

{

User Manual

"type": "MODBUS_SLAVE",
"block": 1, //Modbus Block. "1" indicates the Input Status block.
"addr ": 0,
"npoint": 1,
"data": "FF"

}

{

Change multiple input status bits:

```
"type": "MODBUS_SLAVE",

"block": 1,

"addr": 0,

"npoint": 8,

//In this example, 8 bits are sent in a byte.

"data": "aa"
```

Change Input Register:

```
{
    "type": "MODBUS_SLAVE ",
    "block": 3,
    "addr": 1,
    "npoint": 12,
    "data": "02,22,03,33,04,44,05,55,06,66,07,77"
}
```

A.2 Custom Message Format

```
{
   "timestamp": |TIMESTAMP|,
   "values": {
        |#each VALUES|
        "name": "|PROPERTIESNAME|", "v": |VALUE||#unless @last|,|/unless|
        |/each|
   }
}
```

(1) Variable description

|PROPERTIESNAME|: Property Name. For example, AI1.

|VALUE|: The value of the property.

|TIMESTAMP|: The time when the property was read.

(2) Grammar

|#each VALUES|

|PROPERTIESNAME|, |VALUE|, |TIMESTAMP|,

/each

The "each" is to generate text for each property. Users just need to edit one single property template between

"|#each VALUES|" and "|/each|" and it will be copied to every property. Up to 8 properties can be published in one

message.

Template example:

{

```
|#each VALUES|
    "|PROPERTIESNAME| value": |VALUE|,
    "|PROPERTIESNAME| timestamp": |TIMESTAMP|,
/each
```

}

{

Message example:

```
"AI1_value": 23,
    "AI1 timestamp": 1456150184825,
    "AI2_value": 17,
    "AI2 timestamp": 1456150184984,
    . . .
}
```

(3) Additional grammar description:

|#unless @last|,|/unless|

This line means "Must insert a comma at the end of each line, unless it's the last line". It cancels the comma in the last line. If users regard the comma in the last line as a syntax error, the template must contain this line.



Appendix B: Change Product Firmware

SST Automation provides the built-in product firmware update platform to update the product firmware and change the <u>running mode</u>. Users can change the GT200-MQ-IE firmware by the following steps:

- 1. Change the IP address of PC as fixed 192.168.0.xxx.
- 2. Hold the button on the GT200-MQ-IE and power it on. The DI/DO LED will blink red and green, that indicates the GT200-MQ-IE is ready to update the firmware. Then release the button.
- 3. Enter 192.168.0.10 in your web browser to enter SST Automation Product Firmware Update Platform. Login with the following information:

Username: user

Password: sstautomation

SST Automation Product Firmware Update Platform						
	Username:	user				
	Password:					
		Login				

4. Click "Browse..." to select a Bin file. The Bin files are located in the installation path of the SST-MQT-CFG software.







5. Click "Download" to download the specified firmware into the GT200-MQ-IE.



6. After download, it shows the firmware update is successful. Click "Reboot" to restart the GT200-MQ-IE.



7. Wait for the GT200-MQ-IE to restart.



