

## **User Manual**

Version 1.2.0 July 2023

# **GW-2493M**

#### BACnet/IP Server to Modbus TCP Client Gateway







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#### **Important Information**

#### Warranty

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## 1. General Information

#### 1.1 BACnet/IP

BACnet is a communications protocol for building automation and control networks. It is an ASHRAE, ANSI, and ISO standard protocol. BACnet was designed to allow communication of building automation and control systems for applications such as heating, ventilating, and air-conditioning control, lighting control, access control, and fire detection systems and their associated equipment. The protocol provides mechanisms for computerized building automation devices to exchange information, regardless of the particular building service they perform.

BACnet/IP is based on Ethernet and used UDP to transmit BACnet network packets (NPDU). Messages are transmitted such as Who-is and Who-has through broadcast feature of UDP. The feature allows that the user could search for device information without knowing the actual location of the device.

#### 1.2 Modbus

Modbus protocol mainly has two versions RTU and TCP. RTU can be realized through COM interface and TCP can be realized through Ethernet. These two protocols are commonly used in industrial control and automation industry.

Modbus RTU is used to transmit and exchange data via RS-485. It's a serial communication between master and slave. Every slave has a unique address to identify. Users could implement communication through using different function codes.

MODBUS TCP is a variant of MODBUS RTU. MODBUS messages are passed in an "Intranet" or "Internet" environment by using the TCP/IP protocol. The most common use of this protocol is to connect PLCs and gateways to other simple fieldbus or I/O networks via Ethernet.

## 1.3 About GW-2493M

GW-2493M is a BACnet/IP Server to Modbus TCP Client Gateway. It allows BACnet client application to accesse Modbus TCP devices via GW-2493M module. The BACnet/IP protocol is used to relay and exchange information between building devices. GW-2493M contains a large number of BACnet objects (AI, AO, AV, BI, BO, BV, MSI, MSO, MSV) gives you flexibility in mapping Modbus TCP registers to any combination of BACnet objects. Multiple BIBBs (DS-RP-B, DS-RPM-B, DS-WP-B, DS-WPM-B,...etc.) are supported. All the data transfer is configurable using a standard web browser.

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## **1.4 Features**

- Read/Write Modbus registers via BACnet objects
- Configurable BACnet/IP Server
- Configurable Modbus TCP Client
- Supports BACnet AI, AO, AV, BI, BO, BV, MSI, MSO, MSV Object Types
- Supports Modbus discrete inputs, coils, input registers and holding registers
- Supports up to 180\* DI, 180\* DO, 180\* AI and 180\* AO to transfer to BACnet Objects
- Simple data translation allows you to manipulate data as it passes between protocol



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## **1.5 Specifications**

#### 1.5.1 GW-2493M (BACnet/IP Server to Modbus TCP Client Gateway)

Ethernet				
Controller	10/100Base-TX Ethernet Controller (Auto-negotiating, Auto_MDIX)			
Connector	RJ-45 with Ethernet indictor			
Protocol	BACnet/IP Server			
Max. Connections	8			
DIDDC	DS-RP-B, DS-RPM-B, DS-WP-B, DS-WPM-B, DM-DDB-B, DM-DOB-B,			
	DM-DCC-B, DM-RD-B			
Modbus Modbus TCP Clients (Max. 32)				
Power				
Protection	Power reverse polarity protection			
EMS Protection	ESD, Surge, EFT			
Supply Voltage	+10 VDC ~ +30 VDC			
Consumption	5 W @ 24 VDC			
LED Indicator				
LED (Pound)	Power (1), BACnet MS/TP Status (1), BACnet MS/TP Net(1), Modbus TCP			
	TxD / RxD / Link (3)			
Ethernet LED	Ethernet LED Ethernet Status (RJ-45) (2)			
Mechanism				
Installation	DIN-Rail			
Casing	Metal			
Dimensions	33 x 120 x 116 mm (W x L x H)			
Environment				
Operating Temp.	-25°C ~+75°C			
Storage Temp.	-30°C ~+85°C			
Humidity	10 ~ 90% RH, non-condensing			

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## 2. Hardware

## 2.1 Size (Unit : mm)



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## 2.2 Appearance

#### LED Indicator

#### **Ethernet Port**

The GW-2493M is equipped with a RJ45 port for Ethernet LAN connection. When 100BASE-TX is operating, the 10/100M LED is lit orange. When an Ethernet link is detected and an Ethernet packet is received, the Link/Act LED is lit green. The Modbus TCP use the same RJ45 port with difference TCP port from BACnet/IP.





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## 2.3 LED Indicator

There are six LEDs to indicate the various states of the GW-2493M. The following is the illustration of these six LEDs.



Figure 2.1 LED position of the GW-2493M

LED Name	GW-2493M Status	LED Status		
ALL LEDs	FW Updating Mode	LED will be twinkled		
		sequentially.		
	FW Initial Mode	LED will be twinkled per		
		500ms.		
PWR	Power On	On		
(Module)	Power Failure	Off		
NET	Connected by least one client	On		
(BACnet/IP)	No clients connect	Blink per 200 ms		
STA	Communication OK	On		
(BACnet/IP)	Communication Failure	Blink per 200 ms		
CNT	Connect to least one device	On		
(Modbus)	No devices are connected	Blink per 200 ms		
RxD	Data reception	On		
(Modbus)	No Data reception	Off		
TxD	Data transmission	On		
(Modbus)	No Data reception	Off		

Table 2.1 LED indication of the GW-2493M

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## 3. Getting Started With GW-2493M

This chapter mainly describes the operation process of the GW-2493M.

## 3.1 Wiring Preparation

Before setting up the GW-2493M, please complete the necessary preparation about wiring.

Please follow Figure 2.1 wiring diagram, to wire the following items:

- 1. Power Supply : +10 VDC ~ +30 VDC
- 2. Ethernet : Connect the GW-2493M with PC directly. Or let the GW-2493M and PC

connect with the same Ethernet Switch/Hub.

- 3. INIT : Special purpose. Don't care it this time.
- 4. FW : Special purpose. Don't care it this time.



Figure 3.1 GW-2493M Wiring Diagram

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## 3.2 GW-2493M Web Configuration

Please follow those steps to configure the GW-2493M via web browser.

#### Step0:

Use the default account "admin" and the password "admin" to enter the main setting page.



#### Step1:

The firmware version is shown on the web.

EW-2493M BACnet/IP to Modbus Gateway					
System Information					
System	Module Information	ı			
Account Management	Model Name Firmware Version	GW-2493M v1.100			
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#### Step2:

The GW-2493M is based on the information security law. Users need to change account and password for the first time before using it.

System Information	493M Modbus Gateway		
<ul> <li>System</li> <li>Firmware Version</li> <li>Account Management</li> </ul>	Account Managem Account New Password	ent ADMIN	]
2	Retype New Password		
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#### Step3:

Please reflash the web page and login again with new account and password. "Module Setting"

page will appear. Users could set the IP of the module.

ICP GW-2493M BACnet/IP to Modbus Gateway					
System Information Module Setting					
读 Port Setting					
Ethernet	Ethernet Configura	tions			
读 Protocol Setting	LAN1	LAN1			
Modbus	IP	172.17.123.124			
mousus	Mask	255.240.0.0			
BACnet/IP	Gateway	172.18.0.254			
读 Other	PORT				
Import/Export	Web Server Port	80			
Factory Default	Modbus TCP Port	502			
	Modify				
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#### Step4-1:

Press "Modify" to configure the parameters of Modbus in the Modbus page.



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#### Step4-2:

- (1) Press "+" button to add a Modbus TCP node.
- (2) After editing "Modbus Name" and "IP Address", press "+" button to add Modbus registers.
- (3) Press "+" button to add Modbus function codes and registers range.
- (4) Finally, the users need to press "save" to save all Modbus configuration into the GW-2493M.
- (5) The users need to restart the GW-2493M to make configuration work.

ICP GW-	-2493M	MBTCP Device
	nt/IP to Modbus Gateway	Module
System Information	Module Setting	Module Name         My_TCP_Device           IP         192         168         255         123
츛 Port Setting	Modbus	Modbus Address 1
Ethernet	Settings	Modbus Register
ộ Protocol Setting	Modbus Mode Client	2 Enabled Type Start Length Range
Modbus	Modbus Timeout 500 (ms)	
BACnet/IP	Modbus Retry 0 🗸	OK Cancel MBTCP Device
读 Other	Polling Interval 200 (ms)	Module
Import/Export		Module Name My_TCP_Device
Factory Default	Modbus Device	IP         IS2         IO0         ZOS         IZ2           Modbus Address         1
	Name Address 0x 1x 3x 4x	Modbus Register
	۲	Enabled Type Start Length Range
	Save	Coils Output (0x) ✓         0         3         [000000:00002]         Image: Imag
		OK Cancel

- (1) Press the icon to edit a Modbus registers of that node
- (2) Press the icon to delete that Modbus node.

stungs							
Modbu	s Mode Clie	ent					
Modbus Timeout		00 (	ms)				
Modbu	us Retry 0	•					
Polling	Interval 2	00 (	ims)				
Modbus Dev	rice						
Name	Address	0x	1x	3x	4x		
	001	2			3	X	ŵ
TCP_Device1	0x01	5					
TCP_Device1 TCP_Device2	0x01	5	5	5	-	X	ŵ

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#### Step5:

Press "+" button to add a BACnet object.

ICP DAS BACnet/IP to Modbus Eateway BACnet					
System Information	Module Setting				
츛 Port Setting	BACnet				
Ethernet	BACnet Objects				
🕸 Protocol Setting	Object No(0-255) Type Address Format Index Range				
Modbus					
BACnet/IP					
Save Save					
Import/Export					
Factory Default					
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- (1) The "Object" field is BACnet object which support AI/AO/AV/BI/BO/BV/MI/MO/MV.
- (2) The "No" field is the serial number of the BACnet object. If you have AI\*3 and AO\*4, you need assign the No as AI-0, AI-1, AI-2, AO-0, AO-1, AO-2, AO-3.
- (3) The "Type" field is the Modbus register type. The common configuration is shown below.
- BACnet BO object maps to Modbus Coil Output(0x)
- BACnet BI object maps to Modbus Input Status(1x)
- BACnet AO object maps to Modbus Holding Register(4x)
- BACnet AI object maps to Modbus Input Register(3x)
- (4) The "Address" field is the start address of the Integrated Modbus Register (Note1).
- (5) The "Format" field is the data format which support bool/int16/uint16/int32/uint32/float.
- (6) The "Index" field is reserved.
- (7) The "Range" field is the exact Modbus address of the register.

System Information	Module Setting
Port Setting	BACnet
Ethernet	BACnet Objects
Protocol Setting	Object No(0-255) Type Address Format Index Range
Modbus	Al v 0 3x v 10 Int16 v 0 v [3000A]
BACnet/IP	Al •         1         3x •         20         Int16 •         0 •         [30014]         1
🕸 Other	AO • 0 4x • 0 Int16 • 0 • [40000]
Import/Export	AO • 1 4x • 1 Int16 • 0 • [40001]
Factory Default	BI v 0 1x v 0 Bool v 0 v [10000] 🛍
	BI ▼ 1 1x ▼ 1 Bool ▼ 0 ▼ [10001] 1

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#### Note 1.

In the GW-2493M, all remote Modbus data which come from different remote Modbus TCP devices will be integrated by their register type. It means that all remote Coil Output data will be putted into a Coil Output integrated buffer. All remote Input Status data will be putted into an Input Status integrated buffer. There are also have Holding Register integrated buffer and Input Register integrated buffer in the GW-2493M. They ware integrated as the illustration shown below.



The BACnet object will read or wirte the data from those integrated buffers. Those Modbus data with the same type will be ordered by the Modbus Configuration Index in the integrated buffer. The first configuration Modbus command will be in the first address of the buffer. The order was shown below.

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Modbus Retry 0 🗸						
Polling Interval 200 (ms)						
	-					
Modbus Device						
Name	Address	0x	1x	3x	4x	
Device1	0x01	10/5				28 🛍
Device7	0x01		9			次 🛍
Device2	0x01	6				28 🖻
Device3	0x01			16		28 🛍
Device9	0x01		26			28 🛍
Device6	0x01			12		次 🛍
Device4	0x01				11/18	28 🛍
Device8	0x01			9		28 🛍
Device5	0x01				7	次 🛍
Device14	0x01		14			28 🛍
۲						

#### Save Cancel

For example by the illustration in Holding Register(4x), the Device4 and command 1 is the smallest ID and the smallest command index. The Device4 and command 1 occupies the first address of the Holding Register buffer. The "Address" field of the BACnet object means that the address in those integrated buffers. For example by the illustration, if the address of the BACnet "BO" object is 11, it means that the data of the "BO" object comes from the second bit of the Device 1 and command 2 in the Coil Output buffer. If the address of the BACnet "AO" object(int16) is 7, it means that the output data of the "AO" object(int16) will be written to the 8-th words of Device 4 and command 1 in the Holding Register buffer.

## 3.3 Import/Export Configuration

#### (1) Export All Configurations to CSV file:

The GW-2493M supports export function to write all configurations into a csv file..

	-2493M t/IP to Madbus Gateway 				
System Information	Module Setting				
读 Port Setting	Import				
Ethernet	Import the settings to GW-2493M				
Protocol Setting	The file of .csv format generated by GW-2493M can be re-				
Modbus	御澤梅宏 主後海午何梅宏 Import				
BACnet/IP					
청 Other	Export				
Import/Export	Export the settings from GW-2493M				
Factory Default	The configurations of GW-2493M can be downloaded and saved as .csv file for troubleshooting and project records.				
	Export				

#### (2)Import All Configurations from CSV file :

The users could import all configurations from a CSV file. It is convinient to move all configurations from one GW-2493M to another one. Firstly, the users select the CSV file. And then, they can press "Import" button to import configurations into the GW-2493M modules.

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	-2493M tt/IP to Modbus Gateway BACnet
System Information	Module Setting
ộ Port Setting	
Ethernet	Import the settings to GW-2493M
or Protocol Setting	The file of .csv format generated by GW-2493M can be re-
Modbus	選擇機会 主選擇任何機会 Import
BACnet/IP	
ộ Other	Export 1
Import/Export	Export the settings from GW-2493M
Factory Default	The configurations of GW-2493M can be downloaded and saved as .csv file for troubleshooting and project records.
	Export

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## 3.4 How to restore default Account/Password

If the users have forgotten the login information, they can follow the steps to restore default login information.

- (1) Short the "INIT" and "GND" pin of GW-2493M and turn on the power.
- (2) The GW-2493M will restore the login information.

IP : 192.168.255.1 Mask : 255. 255. 0 .0

Gateway: 192.168.0.1

Login Account: admin

Login Password: admin



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## 3.5 How to update the firmware

The GW-2493M can update the firmware via a software tool (Windows) by the following: 1) Download the latest version of the firmware program and update Tool (FW\_Update\_Tool) on the GW-2493M product page and store it in a computer that you want to connect to the GW-2493M.

#### -Update Tool: Please refers to ->

https://www.icpdas.com/en/download/show.php?num=7824&model=GW-2493M

2) Short the "FW" and "GND" pin of the GW-2493M and turn on the power. When the six LEDs of the GW-2493M turn blinking alternately, the GW-2493M is successfully entered the firmware updating mode.



Figure 3.2 GW-2493M FW & GND Pin

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3) Execute "FW\_Update\_Tool.exe" with the administrator privileges (\$) and follow the steps as Figure 3.3:

In "Download Interface", select a network port for connecting to the GW-2493M.

In "Firmware Path", select the latest firmware update file (GW\_2493M\_xxx.fw).

In "Firmware Update", click "Update" to start the firmware updating.

4) When the update is completed, "Update OK" will be displayed in the "FW\_Update\_Tool" window to indicate that the firmware updating is successful. Next, remove the short connection between FW and GND, and reboot the power supply, then check the current firmware version on the Web interface.

FW_Update_Tool v3.00	↔			×
1. Download Interface				
[192.168.31.5] [乙太網路] [Intel(	(R) Ethernet C	onnection (2	) I219-LN	4 -
IP Address: 192 . 168	- 31	. 2		
2. Firmware Path				
D:\BACnet\bacnet_mstp\fw\GW_2	139M_v0ff.fw			
		H	Browser	
3. Firmware Update				
Click "Update" butto	n to start firmv	ware updatin	ıg!!	
10P2				_
Children and a second s			Update	

Figure 3.3 FW\_Update\_Tool firmware update steps

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## 4.GW-249xM Software Utility

The built-in webpage in the GW-2493M can set all kinds of parameters and export the parameters to CSV file for saving easily. ICP DAS also provides the PC version of the utility, which is mainly for generating bulk BACnet objects, and can import the CSV parameter file from the previous GW-2493M into the utility for adding and further editing the objects. In addition, it is also possible to export the parameters into CSV file, which can be imported into other GW-2493M products. This chapter introduces the functions of the GW-249xM utility, how to generate bulk BACnet objects, and how to export and import the web page profiles (CSV files).This utility is applicable to both GW-2492M and GW-2493M products. The download link of the GW-249xM utility is as follows: https://www.icpdas.com/en/download/show.php?num=7823&mode1=GW-2493M

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## 4.1 GW-249xM Utility Overview and Summary

Figure 4.1 below shows the full picture of the utility. The software provides convenient import and export functions, and kindly divides the parameter settings into three tabs, namely "Ethernet & Serial", "Modbus Devices" and "BACnet Objects" to categorize the complex parameters into easy-to-understand groups. Among them are below.

- (1) [Ethernet&Serial] Sets the BACnet IP, serial parameters and BACnet ID.
- (2) [Modbus Devices] Set the Modbus devices and registers that GW-2493M polls.
- (3) [BACnet Objects] Set the BACnet objects of GW-2493M.



Figure 4.1 Overview of the GW-249xM Utility

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## 4.2 Importing and Exporting CSV Files by Utility

If you already have a GW-2493M module, you can follow the instructions in Chapter 3 of this manual. You can login to the built-in webpage in the GW-2493M to set the relevant parameters and export the CSV file from the webpage for safekeeping. After getting the CSV file of GW-2493M, you can import it into this utility to read the content, and if you need to modify the content, you can also modify it in this utility. Finish modifcation, you can save the file and then import it to another GW-2493M product in the future.

If you don't have a GW-2493M product and don't have its CSV file, this utility can directly generate the related settings and immediately save the settings as a CSV file. You can transfer the CSV file to the GW-2493M product by "Import/Export" on the webpage.

Open			×		
🗧 🕂 - 🛧 🏪 > Th	is PC → Local Disk (C:) → 🗸 🗸 🗸	Search Local Disk (C:)	Q		E
Organize 👻 New fold	er	855 -	0		
🗄 Documents 🖈 ^	Name	Date modified	Туре	~	BACnet
📰 Pictures 🛛 🖈	2GB Drive	6/3/2019 5-49 PM	File folder		
Local Disk (C:)	Backups	6/7/2019 9:00 PM	File folder	~	
	PerfLogs	6/8/2019 11:46 AM	File folder		
This PC	Program Files	6/3/2019 5:25 PM	File folder	~	
Desktop	Program Files (x86)	7/16/2016 6:23 AM	File folder		
Documents	Users	6/3/2019 5:25 PM	File folder	~	
🕹 Downloads	Windows	6/18/2019 7:11 AM	File folder		
👌 Music	NewUsers	12/29/2019 12:48	CSV File		
E Pictures					
Videos					

1. Import method: Select the specified CSV file to import.

Figure 4.2 Import CSV File

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2. Export method:Save all setting to the specified CSV file.



Figure 4.3 Export CSV file

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## 4.3 Ethernet IP/Serial Port/BACnet ID Configuration

There are also ethernet IP and serial port parameters in the built-in webpage of the product. The ethernet IP in this utility means the IP address of BACnet/IP. However, the serial parameter is for GW-2492M product, it is not necessary to set or edit in GW-2493M, and the serial communication can be set only when user selects GW-2492M on the radio button.



Figure 4.4 The Ethernet IP and Serial Port paramaters

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This utility has a BACnet ID parameter. It means that you can change the BACnet ID value by yourself. Please set it between 0 and 4194302, the default value is 3599.

/1.00						_		×
port CSV File								
Modbus Devices BACnet Objects								
l( with Modbus RTU) O G	W-2493M( with M	Nodbus TCP)						
Ethernet		Serial Port	1	$\square$	BACnet/IP	Server		
	BaudRate	115200	~	BAC	net ID 3599			
	DataBit	8	~					
	Parity	None	~					
	StopBit	1	~	U				J
WinPAC	ViewPAC	ERVER	TION			Mo	dbus	

Figure 4.5 BACnet ID Configuration

## 4.4 Modbus TCP Configuration in the GW-2493M

The GW-2493M acts as a Modbus TCP client and can access up to 32 Modbus TCP server devices. Therefore, the [Modbus Devices] page of this utility is mainly for editing remote Modbus TCP server information, as follows.

GW-249xM Utility v1.00				_	
Import CSV File Export CSV File	_				
Ethernet & Seria Modbus Devices	5 BACnet Objects				
All Modbus Devices	Modbus Timeout     500       Polling Interval     500	ms Retry <b>0</b>	~		
Name MB. ID MB. IP	Coil Output(0X)	Input Status(1X)	Input Resister(3X)	Holding Resister(4X)	
					Û

Figure 4.6 the [Modbus Devices] page

The GW-2493M module actively polls all Modbus TCP server devices and uses the same Timeout/PollingInterval/Retry parameters. These parameters will affect the performance of the GW-2493M in collecting Modbus TCP server information, so please set it according to the actual situation.

- "Modbus Timeout" indicates the maximum time to wait for the slave device to respond.
   Please set it according to the actual requirement.
- "Polling Interval" indicates the interval time between each poll. The time that can leave the communication network idle. Please set it according to the actual requirement.
- "Retry" indicates the number of times the slave device will be repeatedly queried when it has not responded for more than the timeout period. Please set it according to the actual demand.

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When the Modbus Devies table already has some Modbus devices and needs to delete a record, the user can click the small trash can icon on the right side of the record, it will delete the record. If users need to add a Modbus TCP server device, users can click the blank data row in the table as shown in Figure 4.7 below.

5W-249xM	Utility v1.00	SV File				-	
hernet &	Serial Modb	ous Devices	BACnet Objects				
All Mo	odbus Devi	ices	Modbus Timeout 500 Polling Interval 500	ms Retry <b>0</b> ms	~		
Name	MB. ID	MB. IP	Coil Output(0X)	Input Status(1X)	Input Resister(3X)	Holding Resister(4X)	Û

Figure 4.7 Create Modbus TCP server item

After clicking the blank data row, a dialog will appear, as shown in Figure 4.8 below.

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Modbus Registe	ers					
		Modb	us Regist	ters		
Module Na	me	Module ID	0	Modu	ule IP	
	Register Type	Reg. Start Addr.	Length	Ra	nge	
*	-					Ŵ
EXIT						
Close v	without Saving				Save and C	lose

Figure 4.8 Modbus Registers Dialog

When a new Modbus TCP server device is added, there will be some information that needs to be set, including the device name and ID, etc.

- "Modbus Name" is used to indicate the name of the server device, which is convenient to identify those server devices.
- "Module ID" means the Modbus ID of the server device.
- "Module IP" means the Ethernet IP of the server device.

Then users need to add a new Modbus register. Regardless of whether there is any data in the Modbus Registers table or not, when users want to add a new Modbus register, click on the blank data row, as shown in Figure 4.9 below.

		Modb	ous Register	s	
Module Nam	e	Module ID	0	Module IP	
F	Register Type	Reg. Start Addr.	Length	Range	
÷		•			Û

Figure 4.9 Modbus Registers Dialog---Create a register item

The following information is required for the new Modbus registers.

- "Register Type"indicates the Modbus register type. The item supports the following four Modbus register types.
  - 1. Coil Output (0X)
  - 2. Input Status (1X)
  - 3. Holding Regitster (4X)
  - 4. Input Register (3X)
- "Reg. Start Addr." means the start address of the Modbus register.

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- "Length" indicates the amount of the register.
- "Range" indicates the Modbus register range. This field calculates the range automatically and the user does not need to input it.
- "Trash-CAN icon" When it is necessary to delete a record, you can click on the small trash can icon on the right side of the record, and it will delete the record.

When all Modbus registers have been inputted and you are sure you want to save them, click "Save and Close" button to save the input information and leave this screen. If you don't save them, click "Close without saving" button to ignore any information and leave this screen.

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## **4.5 BACnet Object Configuration**

The GW-2493M acts as a BACnet/IP Server, which can accept the request from BACnet/IP Client and be retrieved the data of each object. Therefore, the BACnet Objects page of this utility is mainly for editing BACnet objects as shown below.

bort CSV File Export CSV File     thermet & Serial Modus Device   BACnet AD   BACnet AD BACnet AV BACnet BI BACnet BV BACnet BV BACnet MI BACnet MO BACnet MV    Object Type Obj. Index   MB. Start Address   Object Type BACnet AI   MB. Start Address   O   MB. Register   MB. End Address   O   MB. Register   New Object Count   0   New Object Count	W-245XW Ounty											0	
thermet & Serial Modbus Device BACnet Objects BACnet Al BACnet AV BACnet BI BACnet BO BACnet BV BACnet MI BACnet MO BACnet MV Object Type Obj. Index MB. Register MB. Address Format MB. Range Add a rang of BACnet objects Object Type BACnet AI Object Type BACnet AI MB. Start Address 0 MB. End Address 0 MB. End Address 0 MB. End Address 0 MB. End Address 0 MB. Register Coil Output(OX) New Object Count 0	ort CSV File E	xport CSV File	_		_								
BACnet AU       BACnet BU       BACnet BU       BACnet MI       BACnet MO       BACnet MV         Object Type       Obj. Index       MB. Register       MB. Address       Format       MB. Range         Image: Control of the state of the	hernet & Seria	Modbus De	vices BAC	net Object	s								
Object Type       Obj. Index       MB. Register       MB. Address       Format       MB. Range         Add a rang of BACnet objects       Image: Control object State Address         Object Type       BACnet Al       Image: MB. Start Address       Image: Control object State Address       Image: Control object State Address       Image: Control object State Address         MB. Register       Coli Output(OX)       Image: MB. Start Address       Image: Control object State Address       Image: Control object State Address	ACnet AI BAC	inet AO BAC	net AV BA	Cnet BI B	ACnet I	BO BACnet B	/ BACnet M	11 BACn	et MO BAC	Cnet MV			
Add a rang of BACnet objects   Object Type   BACnet Al   Object Format   Bool   MB. End Address   0   MB. Register   Coil Output(OX)   New Object Count   0	Object Type	Obj. Index	MB.	Register		MB. Address	Forma	at	м	B. Range			
Add a rang of BACnet objects         Object Type       BACnet Al         Object Format       Bool         MB. Register       Coil Output(0X)         New Object Count       0					-			•			Ē	·	
Add a rang of BACnet objects         Object Type       BACnet Al         Object Format       Bool         MB. Register       Object Output(OX)													
Add a rang of BACnet objects         Object Type       BACnet Al         Object Format       Bool         MB. Register       Coil Output(OX)         New Object Count       0													
Add a rang of BACnet objects         Object Type       BACnet Al         Object Format       Bool         MB. Register       Coil Output(0X)         New Object Count       0													
Add a rang of BACnet objects         Object Type       BACnet AI         Object Format       Bool         MB. Register       Coil Output(0X)         New Object Count       0													
Add a rang of BACnet objects         Object Type       BACnet AI         Object Format       Bool         MB. Register       Coil Output(0X)         New Object Count       0													
Add a rang of BACnet objects         Object Type       BACnet Al         Object Format       Bool         MB. End Address       0         MB. Register       Coil Output(0X)         New Object Count       0													
Add a rang of BACnet objects         Object Type       BACnet Al       MB. Start Address       0         Object Format       Bool       MB. End Address       0         MB. Register       Coil Output(0X)       New Object Count       0													
Add a rang of BACnet objects         Object Type       BACnet AI         Object Format       Bool         MB. Register       Coil Output(0X)         New Object Count       0													
Add a rang of BACnet objects         Object Type       BACnet AI         Object Format       Bool         MB. Register       Coil Output(0X)         New Object Count       0													
Add a rang of BACnet objects         Object Type       BACnet AI         Object Format       Bool         MB. Register       Coil Output(0X)         New Object Count       0													
Add a rang of BACnet objects         Object Type       BACnet Al         Object Format       Bool         MB. Register       Coil Output(0X)         New Object Count       0													
Add a rang of BACnet objects         Object Type       BACnet AI         Object Format       Bool         MB. Register       Coil Output(0X)         New Object Count       0													
Add a rang of BACnet objects         Object Type       BACnet AI         Object Format       Bool         MB. Register       Coil Output(0X)         New Object Count       0													
Add a rang of BACnet objects         Object Type       BACnet AI         Object Format       Bool         MB. Register       Coil Output(0X)         New Object Count       0													
Add a rang of BACnet objects         Object Type       BACnet AI       MB. Start Address       0         Object Format       Bool       MB. End Address       0         MB. Register       Coil Output(0X)       New Object Count       0													
Add a rang of BACnet objects         Object Type       BACnet AI       MB. Start Address       0         Object Format       Bool       MB. End Address       0         MB. Register       Coil Output(0X)       New Object Count       0													
Add a rang of BACnet objects         Object Type       BACnet AI       MB. Start Address       0         Object Format       Bool       MB. End Address       0         MB. Register       Coil Output(0X)       New Object Count       0													
Object Type     BACnet AI     MB. Start Address     0       Object Format     Bool     MB. End Address     0       MB. Register     Coil Output(0X)     New Object Count     0													
Object Format     Bool     MB. End Address     O     Create New       MB. Register     Coil Output(0X)     New Object Count     O	Add a rang o	f BACnet obj	ects										
MB. Register Coil Output(0X) Vew Object Count 0	Add a rang o	f BACnet obj BACnet Al	ects	~	MB. SI	tart Address	0						
MB. Register Coll Output(OX)	Add a rang o Object Type Object Format	f BACnet obj BACnet Al	ects	~	MB. St	tart Address	0				Create	New	
	<b>Add a rang o</b> Object Type Object Format	f BACnet obj BACnet Al Bool	ects	~	MB. St MB. E	tart Address End Address	0				Create BACnet C	New Dbjects	

Figure 4.10 BACnet Objects Page

The GW-2493M module supports 9 types of BACnet/IP objects, and you can configure the object's real-time data mapping from which register of the Modbus. When the BACnet Objects table is already partially available and a record needs to be deleted, click on the small trash can icon on the right side of the record and it will delete the record. If the user wants to add a new BACnet Object, the user can click the blank row as shown in Figure 4.11 below.

Below is a description of the fields.

- "Object Type" indicates the type of the BACnet object. This field is automatically generated according to the page of the object, so users do not need to enter it.
- "Obj. Index" indicates the ranking within the object type, which is the running number of

this object. This field will automatically generate consecutive running numbers. The users do not need to enter it.

- "MB. Register"indicates the Modbus register type to which the object corresponds. The following four Modbus register types are supported.
  - 1. Coil Output (0X)
  - 2. Input Status (1X)
  - 3. Holding Regitster (4X)
  - 4. Input Register (3X)
- "MB.Address"indicates the start address of the Modbus registers which the object corresponds.
- "Format" indicates the data type of the object and supports the following six data types
  - 1. Bool (Boolean)
  - 2. Uint16 (16-bit unsigned integer)
  - 3. Int16 (16-bit signed integer)
  - 4. Uint32 (32-bit unsigned integer)
  - 5. Int32 (32-bit signed integer)
  - 6. Float (Single-precision floating point numbers)
- "MB. Range" indicates the range of Modbus registers to which the object corresponds. This field automatically generates a continuous sequence number so that the user does not have to enter it.

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Figure 4.11 BACnet Objects page--- Create a new object

If users need to generate a mass number of consecutive objects, they can use "Add a range of BACnet objects" at the bottom of the page, as shown in Figure 4.12 below. The following are descriptions of the fields and buttons.

- "Object Type" indicates the type of BACnet objects to be added. Please select the objects you want to produce according to your needs.
- "Format"indicates the data type of the BACnet object. Select the data type according to your requirement.
- "MB. Register" indicates the Modbus register type for the BACnet object. Select the Modbus register type according to your requirement.
- "MB.Start Address" indicates the Modbus register start address for the first BACnet object.
- "MB.End Address" represents the address of the last corresponding Modbus register. This field will be calculated automatically according to the number of objects. Users do not need to enter it.

 "New Object Count" indicates how many BACnet objects are to be generated. Please enter a positive integer.

Once the above fields have been entered, click the "Create New BACnet Objects" button to create a large number of consecutive BACnet objects at once.

				1			
Object Type	Obj. Index	MB. Register	MB. Address	Format	MB. Range	Ê	
						<u> </u>	
ldd a rang o	f BACnet object						
ldd a rang o	f BACnet objec	:ts					
Add a rang o Object Type	of BACnet object	:ts ~	MB. Start Address				
Add a rang o Object Type	of BACnet object	:ts v	MB. Start Address				
<b>Idd a rang o</b> Object Type Object Forma	f BACnet object BACnet Al Bool	:ts ~	MB. Start Address MB. End Address			Create	New

Figure 4.12 BACnet Objects page--- Create a mass number of objects