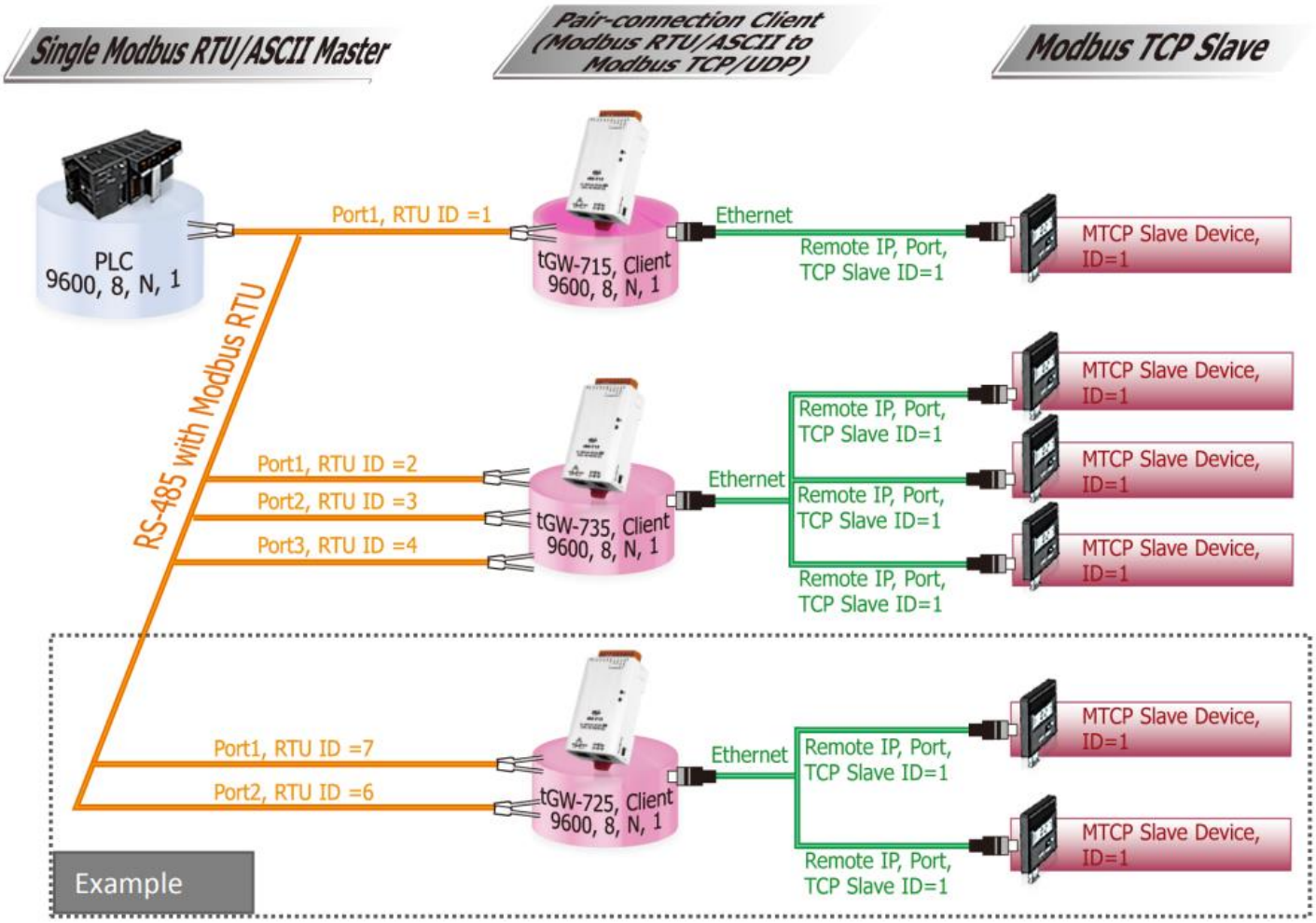
Classification	☐ tDS ☑ tGW ☐ PETL/tET/tPET ☐ DS/PDS/PPDS ☐ tM-752N ☐ I/O Card ☐ VXC Card ☐ VxComm ☐ Other				
Author	Mike Chou	Date	2020-06-22	NO.	FAQ053

Q: How do I access multiple Modbus TCP Slave devices from a single Modbus RTU/ASCII Master device?



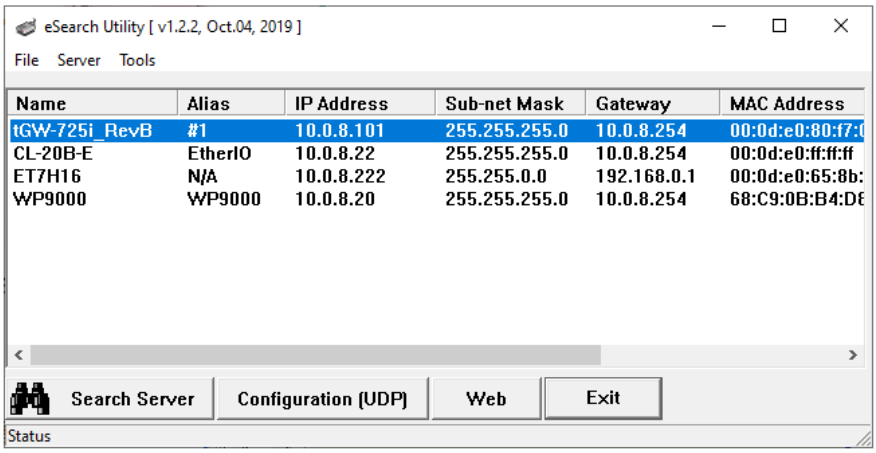
A:

When connecting multiple tGW-700 modules in an RS-485 network, the Virtual ID Range for a COM port on the tGW-700 can be used to access a specific Modbus TCP slave device within limit range. The following is a detailed description of the Virtual ID Range and Virtual ID Offset mapping configuration for the tGW-725 module:

Step 1: Confirm that both the Ethernet connection and the tGW-700 series module are functioning correctly. For detailed information regarding how to install, configure and operate your tGW-700 series module, refer to the tGW-700 Quick Start Guide, which can be downloaded from:

Download the

Quick Start Guide

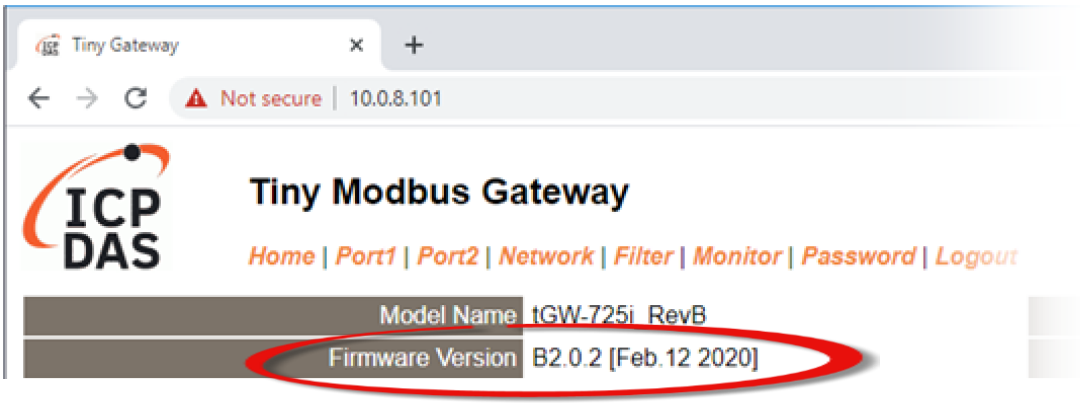


Step 2: Execute the eSearch Utility to search for any tGW-700 modules connected to the network, and then click the name of the tGW-700 module to select it.

Step 3: Click the "Web" button to log in to the web configuration pages for the tGW-700 module (use the default password "admin"), or enter the URL address of the tGW-700 in the address bar of the browser.

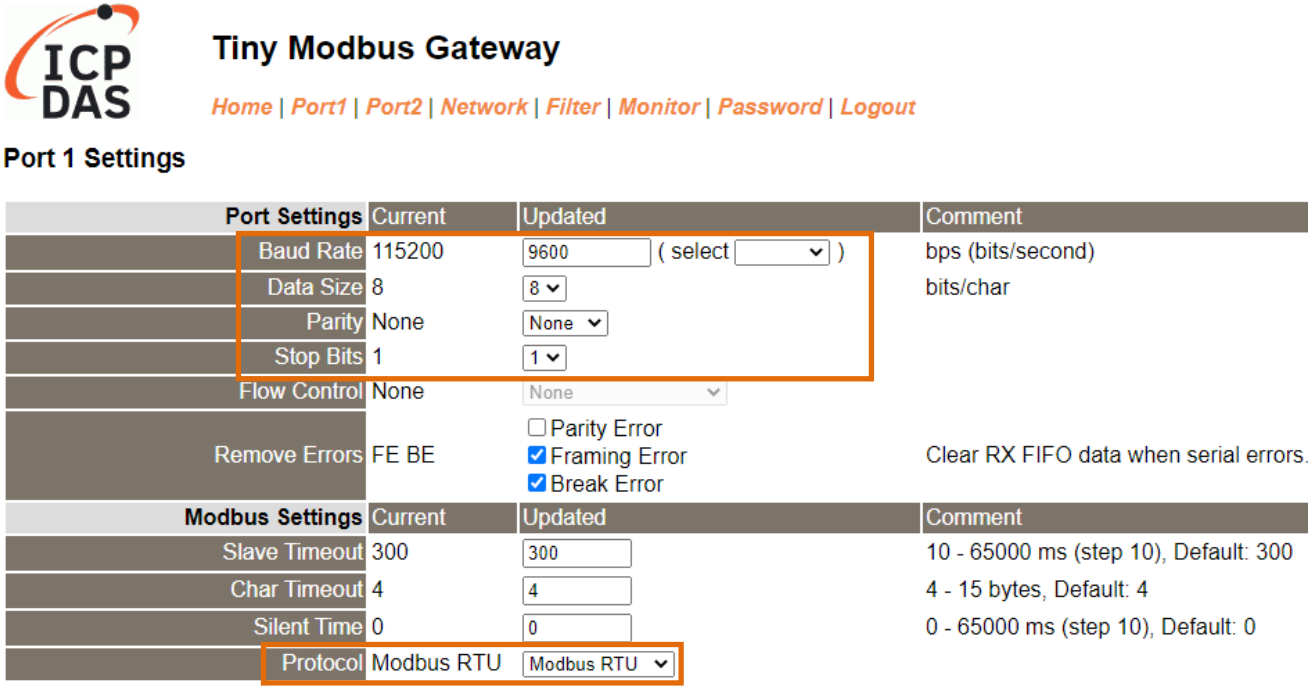
Step 4: Check that the firmware version for the module is v2.0.1 [Jan. 16, 2020] or later. Note that if your firmware version is earlier than v2.0.1 [Jan. 16, 2020], the firmware must first be updated to the latest version. For detailed information regarding the firmware update process, refer to the tGW700 firmware update documentation, which can be downloaded from:

Download the tGW-700 firmware update documentation

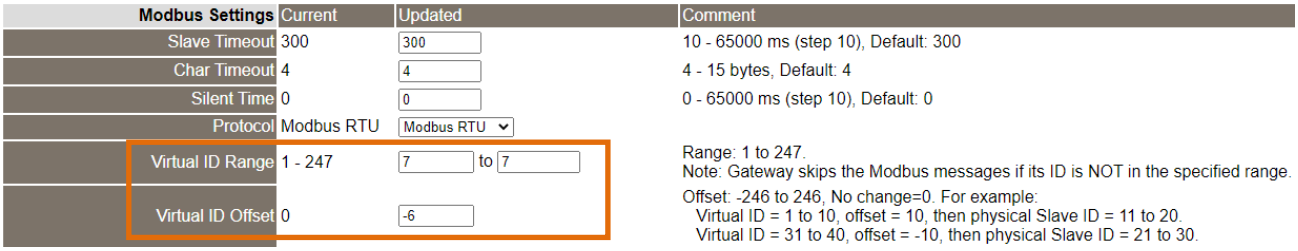


Step 5: Click the "Port1" tab to display the Port1 Settings page

Step 6: Select the appropriate Baud Rate, Data Format and Modbus Protocol settings from the relevant drop down options. The following is an example: Baud Rate (bps) "9600", Data Size (bits) "8", Parity "None", Stop Bits (bits) "1" and Modbus Protocol "Modbus RTU".



Step 7: In the Modbus Settings area for Port1, enter the Virtual ID Range and Virtual ID Offset settings. The following is an example: Virtual ID Range "7 to 7"、Virtual ID Offset "-6"。(RTU ID = 7，TCP Slave ID = 7 - 6 = 1)



Step 8: In the Pair-connection settings area for Port1, check that the configuration details are same as those shown in the table below:

Field	Application Mode	Network Protocol	Remote Server IP	Remote TCP Port
Pair-connection Settings	**Client**	**TCP**	**10.0.8.28**	**502**
		Modbus Protocol, IP address, TCP port for the Modbus TCP Slave device.		

Step 9: Amend any details as required and then click the "Submit" button to complete the configuration.

Pair-Connection Settings (Master/Slave Mode)	Current	Updated	Comment
Application Mode	Server	Client	Server=Slave, Client=Master
Network Protocol	TCP	TCP	
Remote Server IP	0.0.0.0	10 . 0 . 8 . 28	
Remote TCP Port	502	502	
		Submit	

Step 10: Click the "Home" tab to confirm that the pair-connection settings for Port1 are correct.

Current port settings:

Port Settings	Port 1	Port 2
Baud Rate (bps)	9600,8N1	115200,8N1
Flow Control	None	None
Protocol	RTU	RTU
Slave Timeout (ms)	300	300
Char Timeout (bytes)	4	4
Silent Time (ms)	0	0
Read Cache (ms)	980	980
Connection Idle (Seconds)	180	180
Local TCP Port	502	503
Virtual ID Range	7-7	1-247
Virtual ID Offset	-6	0
Pair-Connection Settings (Master/Slave Mode)	**Port 1**	**Port 2**
Application Mode	TCP Client	TCP/UDP Server
Remote Server IP	10.0.8.28	-
Remote TCP Port	502	-

Step 11: Click the "Port2" tab to display the Port2 Settings page.

Step 12: Select the appropriate Baud Rate, Data Format and Modbus Protocol settings from the relevant drop down options. The following is an example: Baud Rate (bps) "9600", Data Size (bits) "8", Parity "None", Stop Bits (bits) "1" and Modbus Protocol "Modbus RTU".

※ Refer to **Steps 5 to 6** for an illustration of how to perform the above procedure.

Step 13: In the Modbus Settings area for Port2, enter the Virtual ID Range and Virtual ID Offset settings. The following is an example: Virtual ID Range "6 to 6"、Virtual ID Offset "-5"。(RTU ID = 6，TCP Slave ID = 6 - 5 = 1)

Modbus Settings	Current	Updated	Comment
Slave Timeout	300	300	10 - 65000 ms (step 10), Default: 300
Char Timeout	4	4	4 - 15 bytes, Default: 4
Silent Time	0	0	0 - 65000 ms (step 10), Default: 0
Protocol	Modbus RTU	Modbus RTU	
Virtual ID Range	1 - 247	6 to 6	Range: 1 to 247. Note: Gateway skips the Modbus messages if its ID is NOT in the specified range.
Virtual ID Offset	0	-5	Offset: -246 to 246, No change=0. For example: Virtual ID = 1 to 10, offset = 10, then physical Slave ID = 11 to 20. Virtual ID = 31 to 40, offset = -10, then physical Slave ID = 21 to 30.

Step 14: In the Pair-connection settings area for Port2, check that the configuration details are the same as those shown in the table below:

Field	Application Mode	Network Protocol	Remote Server IP	Remote TCP Port
Pair-connection Settings	Client	TCP	10.0.8.33	502
		Modbus Protocol, IP address, TCP port for the Modbus TCP Slave device.		

Step 15: Amend any details as required and then click the "Submit" button to complete the configuration.

Pair-Connection Settings (Master/Slave Mode)	Current	Updated	Comment
Application Mode	Server	Client	Server=Slave, Client=Master
Network Protocol	TCP	TCP	
Remote Server IP	0.0.0.0	10 . 0 . 8 . 33	
Remote TCP Port	503	502	
		Submit	

Step 16: Click the "Home" tab to confirm that the pair-connection settings for Port2 are correct.

Current port settings:

Port Settings	Port 1	Port 2
Baud Rate (bps)	9600,8N1	9600,8N1
Flow Control	None	None
Protocol	RTU	RTU
Slave Timeout (ms)	300	300
Char Timeout (bytes)	4	4
Silent Time (ms)	0	0
Read Cache (ms)	980	980
Connection Idle (Seconds)	180	180
Local TCP Port	502	503
Virtual ID Range	7-7	6-6
Virtual ID Offset	-6	-5
Pair-Connection Settings (Master/Slave Mode)	**Port 1**	**Port 2**
Application Mode	TCP Client	TCP Client
Remote Server IP	10.0.8.28	10.0.8.33
Remote TCP Port	502	502