

How to Configure Modbus Slave mode

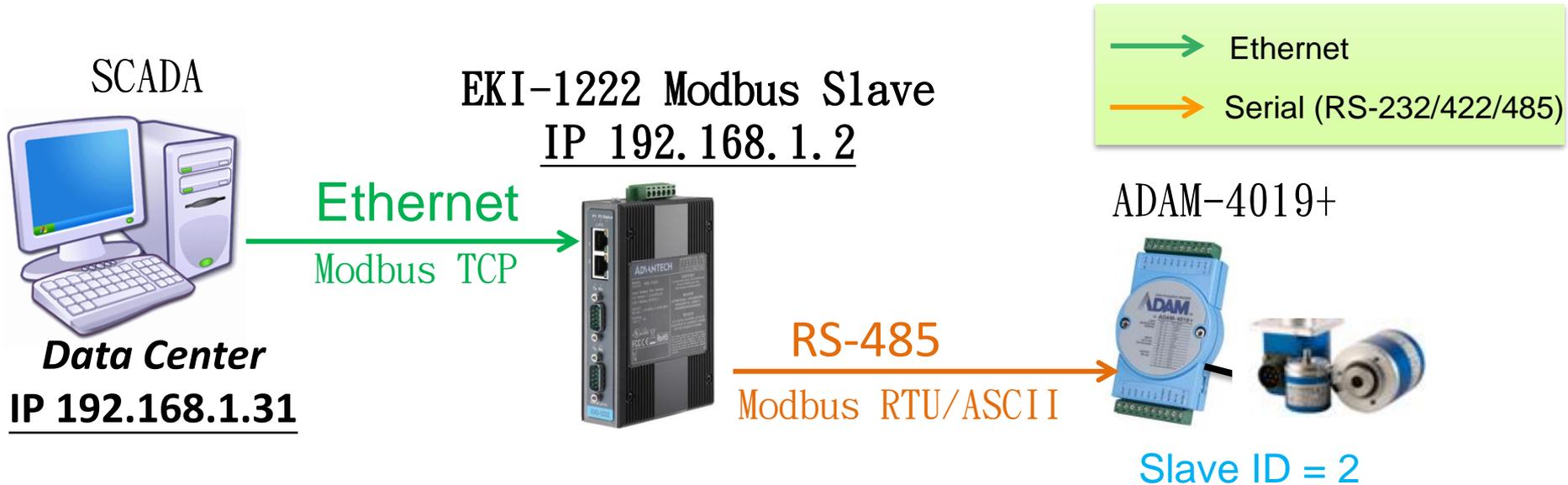
Overview

Modbus protocol is common industrial protocol. When we talk about how to communicate with Modbus serial data to Ethernet, the Modbus gateway is good solution to solve this problem. In Modbus gateway, there are two operation mode.

First, we called Modbus Slave mode, is most popular way to use this gateway. SCADA send out Modbus TCP command via gateway to get end terminal Modbus serial device status/data.

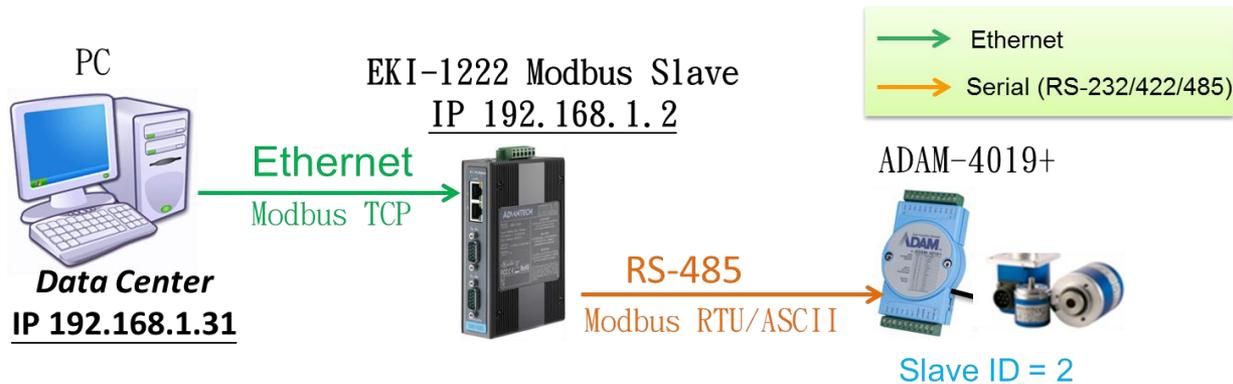
Another one we called Modbus Master mode. the polling way is opposite. SCADA send out Modbus RTU/ASCII command via gateway to get end terminal Modbus TCP device status/data.

Topology of Modbus Slave Mode



SCADA polls data through Modbus TCP. The EKI translates the data from TCP to RTU, and send to end device. Then end device responses data to *Data center*.

Configure Modbus Slave Mode(1/3)



Use “Launch Browser” in the Utility(Eth1/Eth2) or key in IP address in the browser **192.168.1.2** to connect to device server.

1st.

Choose the COM Port of “Port Configuration” to set up the Basic part first, then “Save” it.

ADVANTECH iCom

1st.

Port 1 configuration

Basic		Operation	
Basic	Operation	Advanced	
Type		RS485	
Baud Rate		9600	
Parity		None	
Data Bits		8	
Stop Bits		1	
Flow Control		None	

Save

Configure Modbus Slave Mode(2/3)

2 : Operation Page Setting

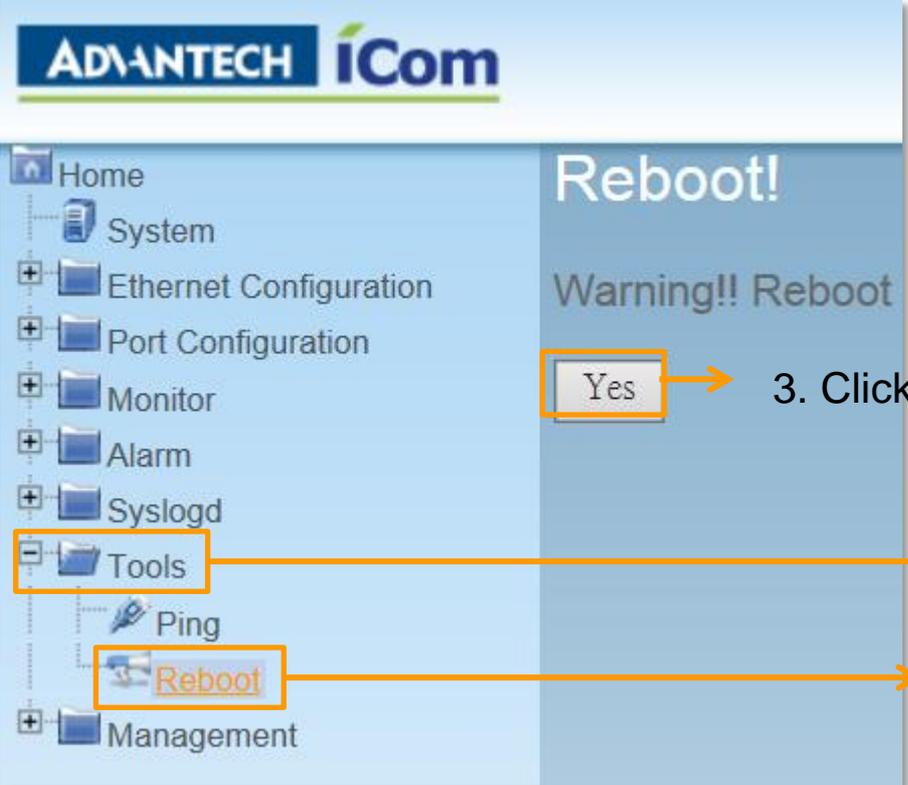
- 2nd. **Mode:** Modbus Slave Mode; **Protocol:** select “RTU/ASCII” type;
Slave Timeout: Modbus GW wait for slave device time interval
- 3rd. **Peer for Receiving Data <we support up to 32 peers>**
Slave ID : End device ID & Mapping ID: Host remapping ID
- 4th. **Save:** Save to change

The screenshot displays the 'Port 1 configuration' window with two tabs: 'Basic' and 'Operation'. The 'Operation' tab is active. The 'Mode' is set to 'Modbus Slave Mode' and the 'Protocol' is set to 'RTU'. The 'Slave Timeout(ms)' is 3000, 'Delay Time(ms)' is 0, and 'ASCII Timeout(ms)' is 10. Below these fields is a section titled 'Peer for Receiving Data' with a dropdown set to '5'. This section contains a table with 5 rows, each representing a peer configuration. The 'Save' button is located at the bottom left of the configuration window.

Peer for Receiving Data					
Peer Number		5			
1	Slave ID	1	Description	TEST	Mapping ID As 1
2	Slave ID	2	Description	ADAM_4019_PLC	Mapping ID As 12
3	Slave ID	3	Description	ADAM_4018_conveyor	Mapping ID As 3
4	Slave ID	4	Description	4	Mapping ID As 4
5	Slave ID	5	Description	ADAM-4050	Mapping ID As 5

Configure Modbus Slave Mode(3/3)

3. After modified the configuration, EKI need to reboot and run the new setting



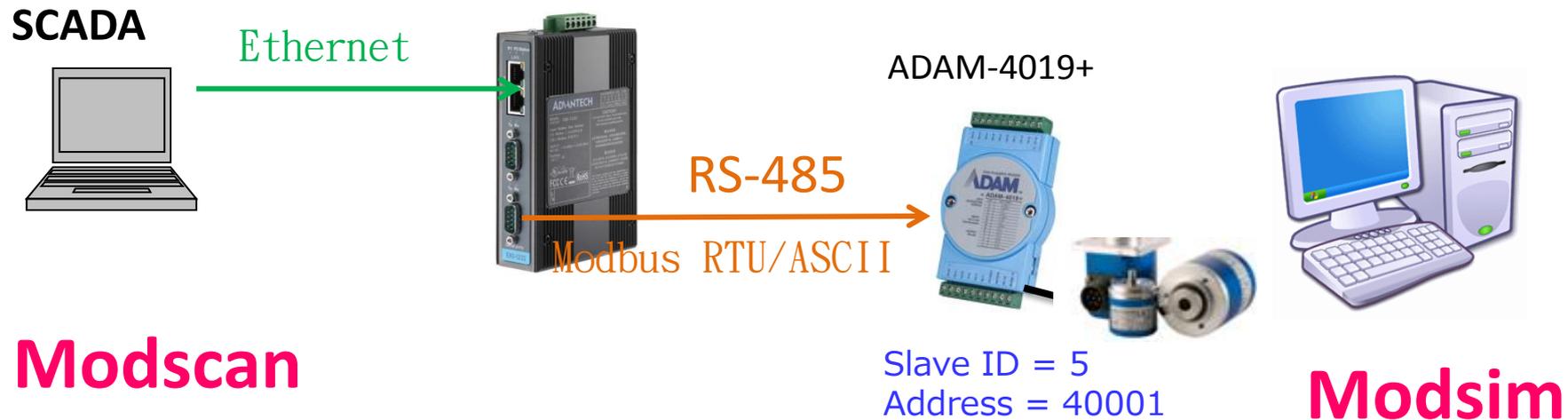
The screenshot shows the ADVANTECH iCom web interface. On the left is a navigation menu with items: Home, System, Ethernet Configuration, Port Configuration, Monitor, Alarm, Syslogd, Tools, Ping, and Management. The 'Tools' folder is highlighted with an orange box, and an arrow points to the text '1. Click "Tools"'. Below 'Tools', the 'Reboot' option is also highlighted with an orange box, and an arrow points to the text '2. Click "Reboot"'. On the right side of the interface, a 'Reboot!' warning dialog is displayed with the text 'Warning!! Reboot' and a 'Yes' button. The 'Yes' button is highlighted with an orange box, and an arrow points to the text '3. Click "Yes" to reboot the Device'.

Test Tool:

**Modscan/
Modsim tool**

Why use Modsim and Modscan ?

- Simulate both side works as Ethernet or COM port, and be able to send out the Modbus data which is Modbus TCP or Modbus RTU/ASCII
- It's compatible with Windows XP and 7 (Working as Administrator)



Weakness : Modsim only simulate the quantity of COM Ports up to 9

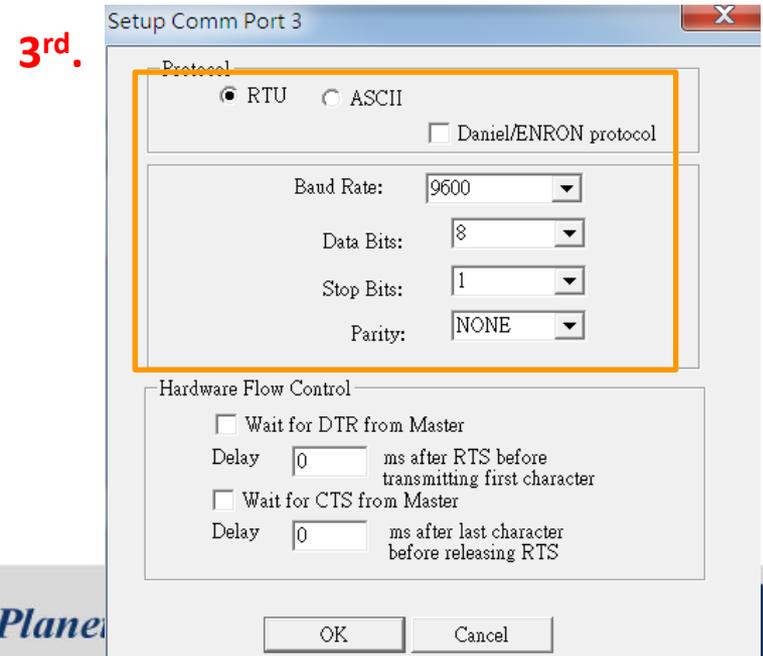
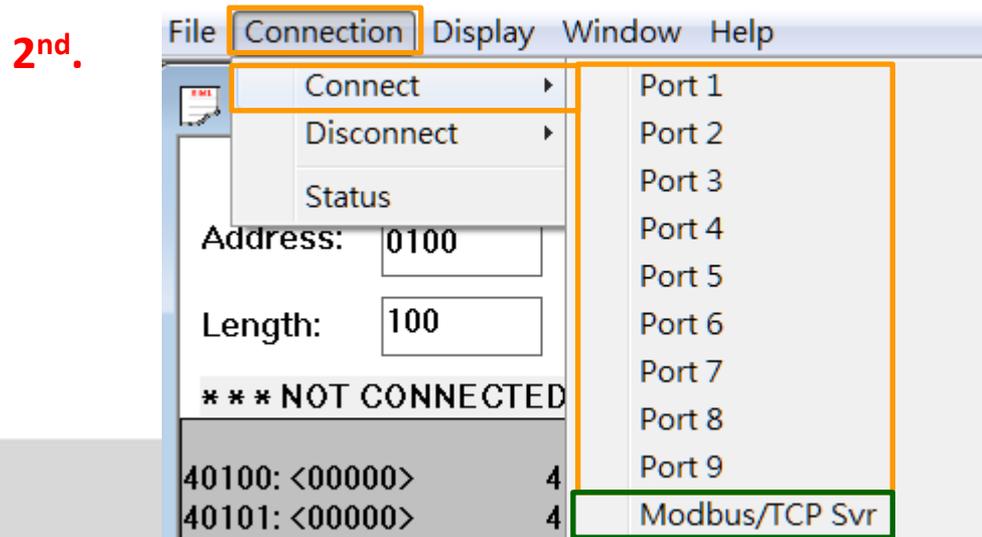
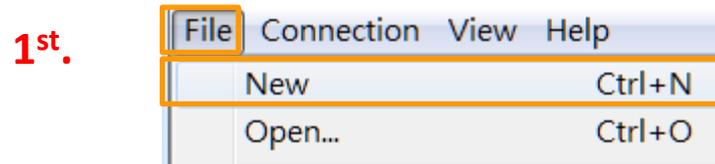
Set-up Modsim tool

If you want to simulate the end device to send out the data with Modbus RTU/ASCII

1st. Click “File” and “New”

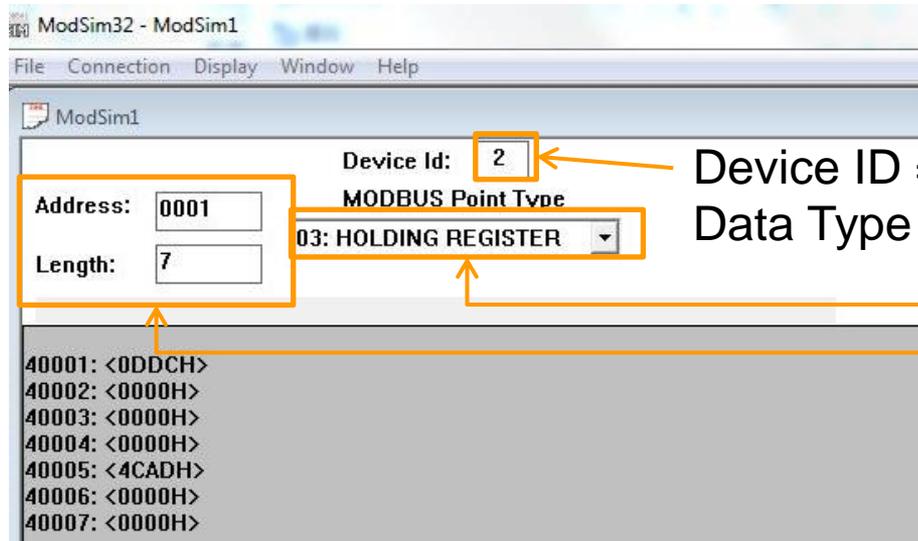
2nd. Click “Connection”, and select the “COM Port” (Up to 9)

3rd. Select the protocol of Modbus “RTU” or “ASCII”



Send out Modbus RTU/ASCII by Modsim

Slave ID, Function Code, Address and *Data Length* as below:



Device ID = Node of End device
Data Type of Modbus, Address and Data Length



Set-up Modscan tool

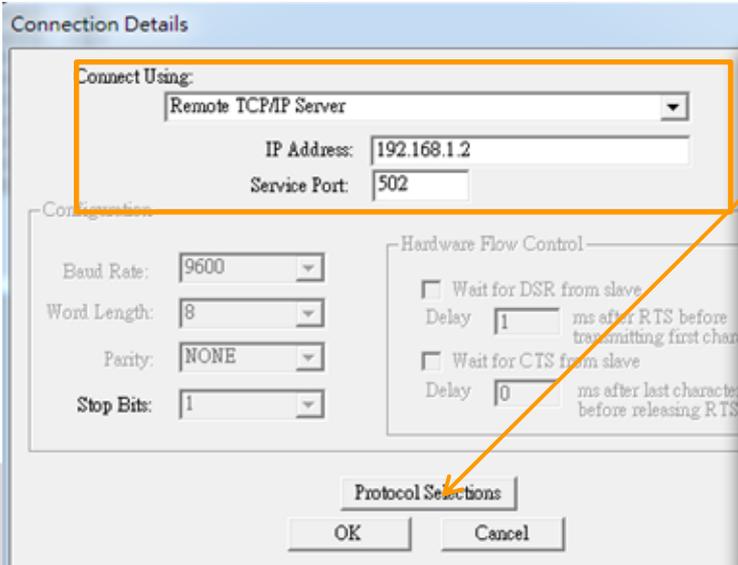
- If you want to simulate the data center to send out the polling with Modbus TCP
 - 1st. Click “Connection” and “Connect”
 - 2nd. To select “Remote TCP/IP Server” => IP Address: **Fill in the IP of Modbus gateway**
 - 3rd. Service Port: **502** (Default setting of Modbus)
 - 4th. Click “Protocol Selections” to select the protocol of Modbus

1st.

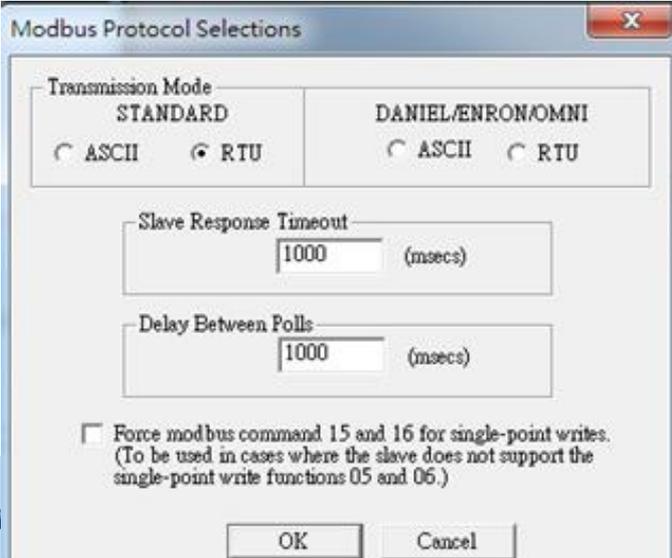


2nd.

3rd.



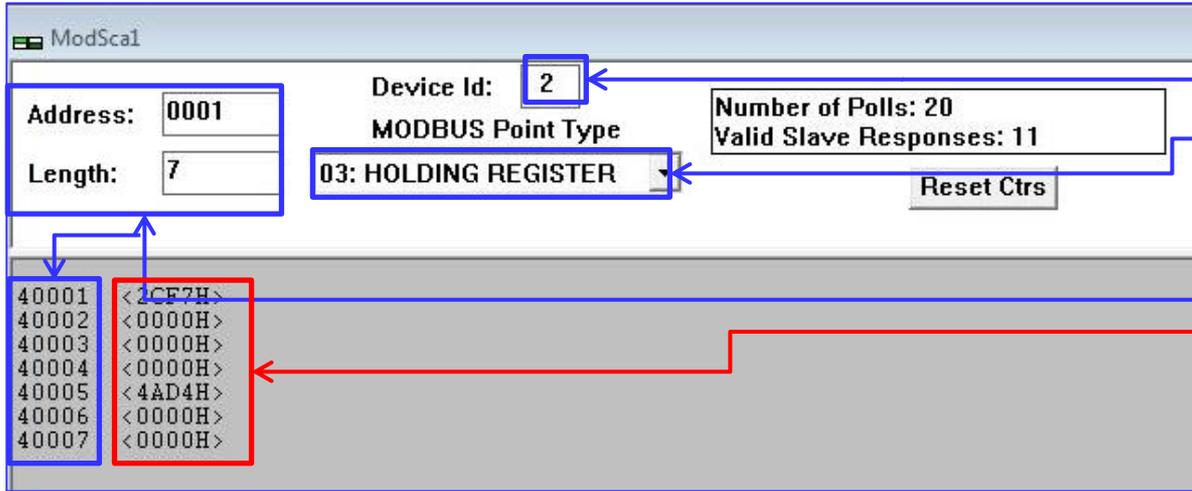
4th.



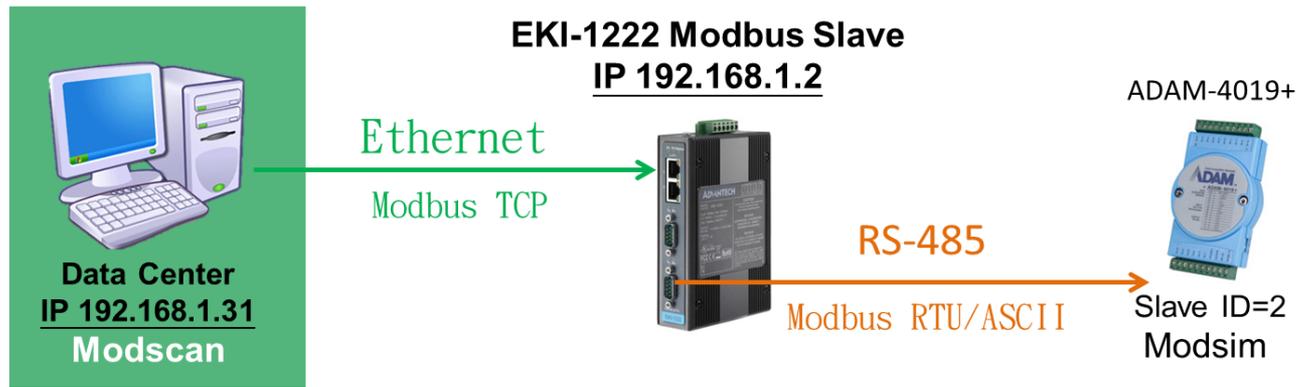
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Polling Modbus TCP data by Modscan

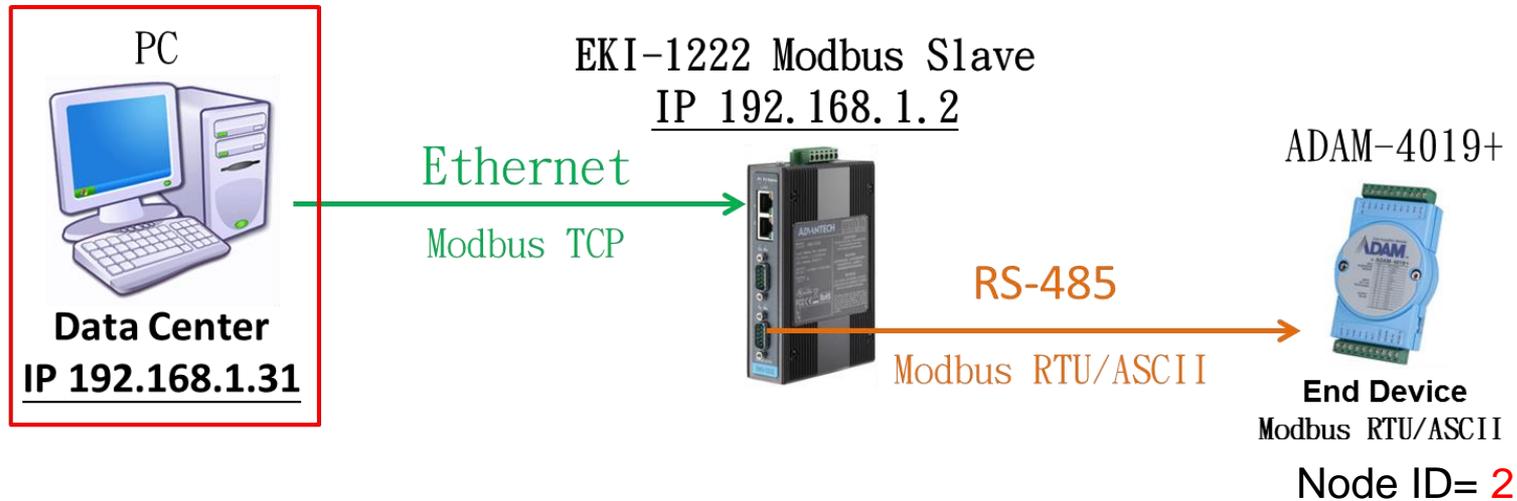


Device ID = Node of End device
 Data Type of Modbus
 Query Address and Length
 Received Data



How to Test Modbus Slave Mode

How to Test the Modbus Slave Mode



2nd. Click “Connection” and “Connect”

3rd. To select “Remote TCP/IP Server” => IP Address: **Fill in the IP of Modbus gateway**

4th. Service Port: **502** (Default setting of Modbus)

5th. Click “Protocol Selections” to select the protocol of Modbus

Device ID = Node of end device

Function Code, Address and Data Length ***The value must be same with end device**

The counter for Polling data and valid data

Address length:

40001~40008

Function Code:

03

ModSca1

Address: 0001
Length: 8

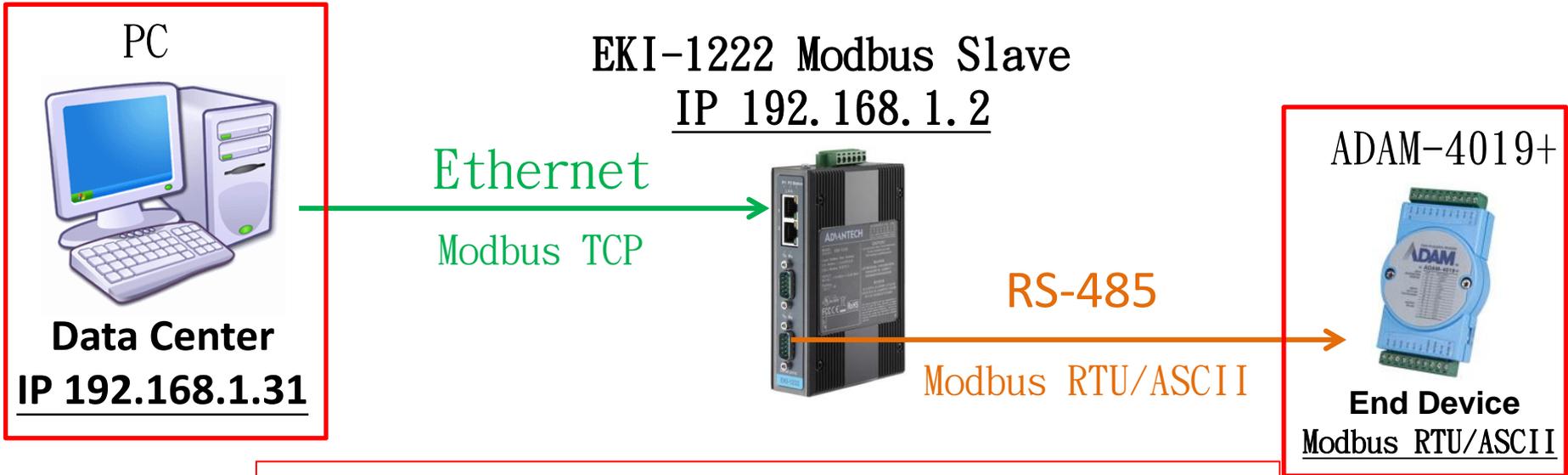
Device Id: 2

MODBUS Point Type: 03: HOLDING REGISTER

Number of Polls: 5
Valid Slave Responses: 0

Reset Ctrs

How to Test the Modbus Slave



Polling the data from Modbus gateway Slave Mode success

ModSca1

Address: 0001 Device Id: 2 Number of Polls: 69
 Length: 8 MODBUS Point Type: 03: HOLDING REGISTER Valid Slave Responses: 69
 Reset Ctrs

40001: <65535>
 40002: <32597>
 40003: <32750>
 40004: <32764>
 40005: <32774>
 40006: <32765>
 40007: <32765>
 40008: <32772>

Location	Type	Value[Dec]	Value[Hex]	Description
40001	Word	65535	FFFF	Ch-0 : TAC TypeK 0~1370 °C
40002	Word	32868	8064	Ch-1 : +/- 10 V
40003	Word	32780	800C	Ch-2 : +/- 10 V
40004	Word	32768	8000	Ch-3 : +/- 10 V
40005	Word	32775	8007	Ch-4 : +/- 10 V
40006	Word	32765	7FFD	Ch-5 : +/- 10 V
40007	Word	32767	7FFF	Ch-6 : +/- 10 V
40008	Word	32772	8004	Ch-7 : +/- 10 V

40001
Address

- Modbus Point Type
- 01: Coil Status =0
 - 02: Input Status =1
 - 03: Holding Register =4
 - 04: Input Register =3

Reference: Modscan/modsim tool

Developer Kits

Modbus
ActiveX

Modbus
Source Code

Additional Info

Free
Trial Demos

User
Manuals

E-Mail
Support

toolkits are available for both modbus master and slave applications.
e-mail wince@win-tech.com for details.

ModScan... Modbus Master Data Scanner

ModScan is a Windows application which operates as a modbus master. It allows you to access and change data points in a connected slave device using either the RTU or ASCII Transmission mode. ModScan is ideally suited for quick and easy compliance testing of the modbus protocol and its built-in display of serial traffic allows effective troubleshooting of field connections. The CE version of ModScan operates on any PocketPC running Windows CE 3.00, such as the ComPAQ iPAQ, ComPAQ Aero, HP Jornada, and Casio E-115. ModScan32 is an expanded Win32 version of the application for desktop PC's that allows you to open multiple documents to scan different sets of data points simultaneously. ModScan32 supports direct serial, modem and network connections which conform to the modbus/TCP communications standard as defined by Modicon. Access to modbus data through third-party applications such as Visual Basic or ExCel is provided via built-in Win32 OLE Automation and Database support. A simple-to-use scripting feature enables efficient production testing of modbus slave devices by performing repetitive loops of query/response verification.

<u>Download Demo</u>	<u>Additional Information</u>	
modscan32.zip	ModScan32	
modsim32.zip	ModSim32	
PocketPC Demos	ModScanCE ModSimCE	

<http://www.win-tech.com/html/modbus1.htm>



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