

How to Configure Modbus Server Mode

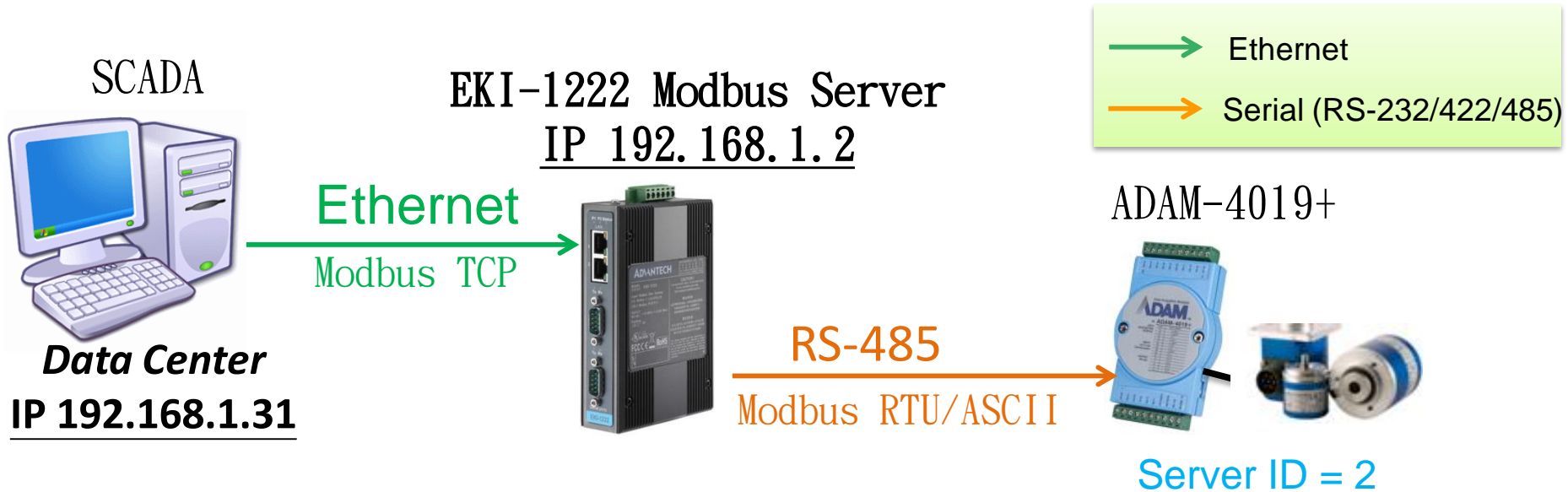
Overview

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 Server 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.

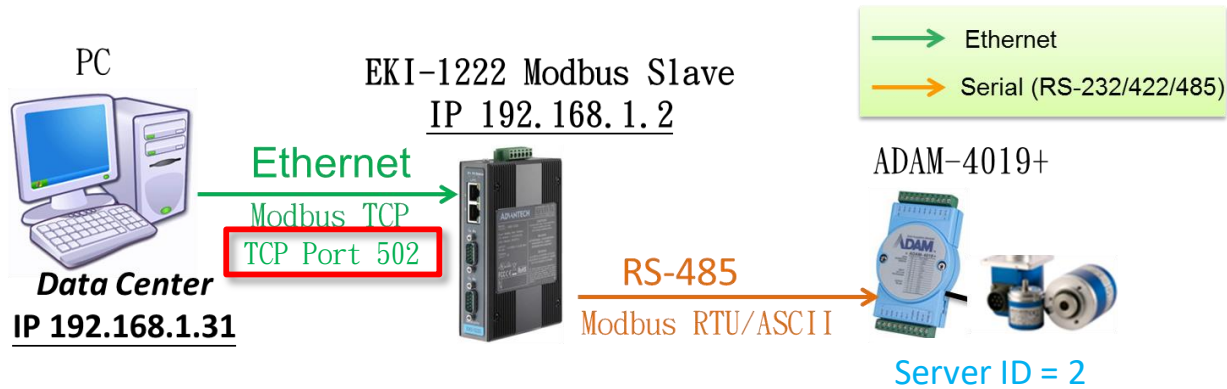
Another one we called Modbus Client Mode. the polling way is opposite. SCADA send out Modbus RTU/ASCII command via gateway to get end terminal Modbus TCP device status/data.

Topology of Modbus Server Mode



SCADA (Data Center) 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 Server Mode(1/4)



By default, the Listen Port for *Server Mode for Modbus/TCP* is **502**.

This parameter is defined in the page **System**.

Users can change it according to the requirement.

System Configuration

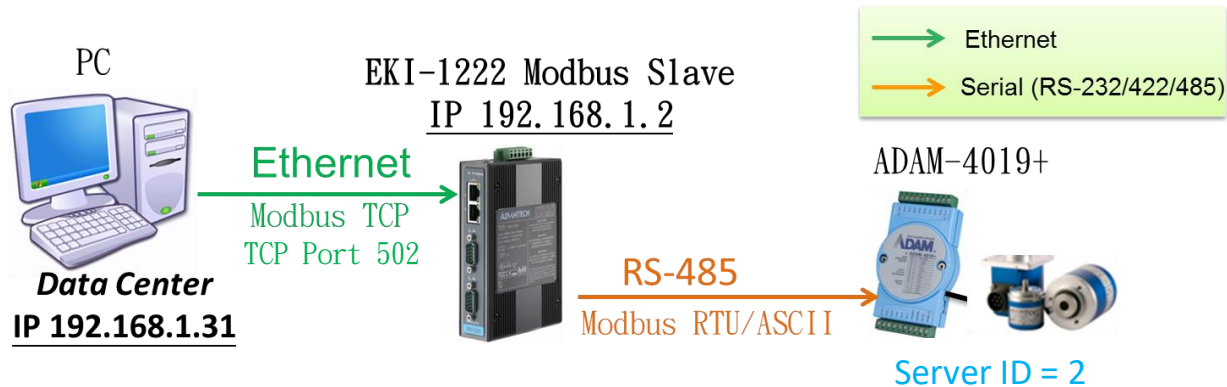
Firmware version: 1.09(beta 1)
Revision number: 6679
Device Name: ENABLE_JIT_DIAG
Device Description: Device Description

Local Time: Year: 2022, Month: 12, Day: 26
Hour: 13, Minute: 21, Second: 11
Time Zone: (GMT +0)
Time Server: Time Server
Daylight Saving Time: ☒ Disable ☐ Enable

Modbus Settings

Modbus Lagacy Mode: ☐
Listen Port for Server Mode: 502

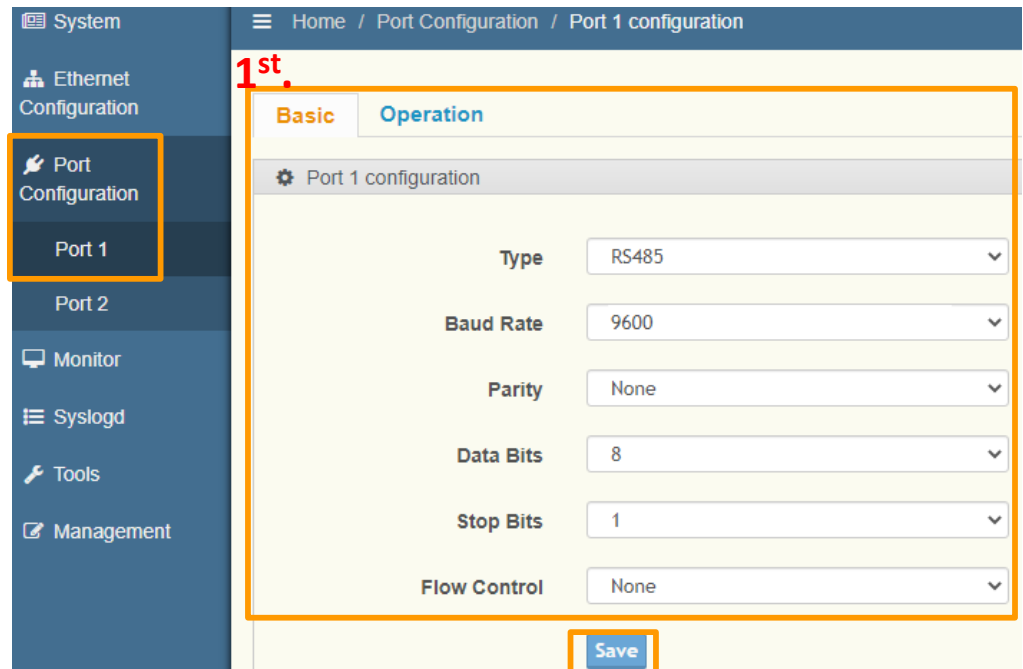
Configure Modbus Server Mode(2/4)



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.



Configure Modbus Server Mode(3/4)

2 : Operation Page Setting

2nd.

Mode: Modbus Server Mode;
Protocol: RTU (Modbus/RTU);
Server Timeout: Modbus GW
waiting time for response.

3rd. Peer for Receiving Data

<we support up to 32 peers>
Server ID : Actual ID on device
Mapping ID: Remapped ID

4th. **Save:** Confirm the change

System

Ethernet Configuration

Port Configuration

Port 1

Port 2

Monitor

Syslogd

Tools

Management

Basic Operation

Port 1 configuration

Mode: Modbus Server Mode

Protocol: RTU

Server Timeout(ms): 3000

Delay Time(ms): 0

Direct Access Port: 6000

Broadcast Pause (msec): 0 (1 - 1000)

RTS Control: ☒ Disable ☐ Enable

Peer for Receiving Data

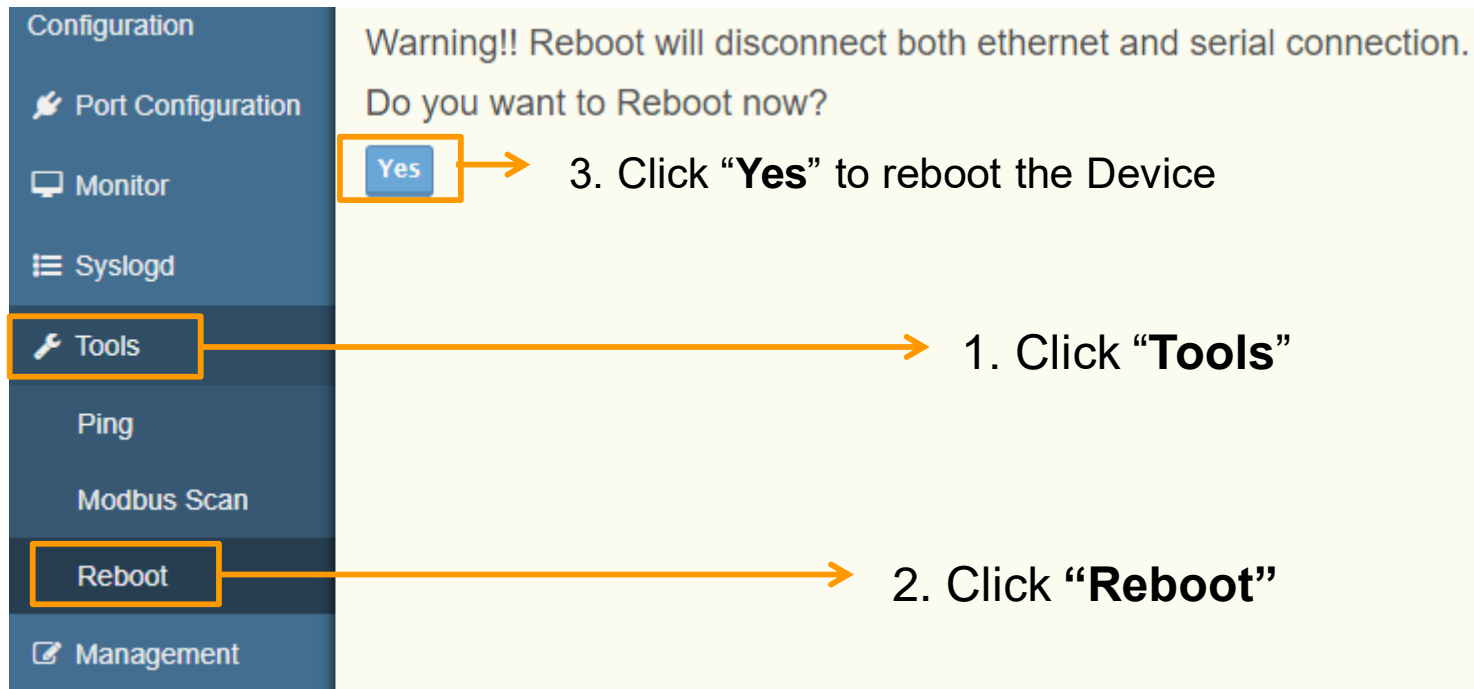
Peer Number: 2

#	Server ID	Description	Mapping ID AS
1	1	HMI_DATA	1
2	2	ADAM_4019_PLC	12

4th. Save

Configure Modbus Server Mode(4/4)

3. After modified the configuration, EKI need to reboot to actually apply the new settings.



The screenshot displays the EKI configuration interface. On the left, a dark blue sidebar contains a menu with the following items: 'Configuration', 'Port Configuration', 'Monitor', 'Syslogd', 'Tools' (highlighted with an orange box), 'Ping', 'Modbus Scan', 'Reboot' (highlighted with an orange box), and 'Management'. An orange arrow points from the 'Tools' menu item to the text '1. Click "Tools"'. Another orange arrow points from the 'Reboot' menu item to the text '2. Click "Reboot"'. The main area of the interface is light yellow and contains a warning message: 'Warning!! Reboot will disconnect both ethernet and serial connection. Do you want to Reboot now?'. Below this message, a blue button labeled 'Yes' is highlighted with an orange box. An orange arrow points from this 'Yes' button to the text '3. Click "Yes" to reboot the Device'.

Warning!! Reboot will disconnect both ethernet and serial connection.
Do you want to Reboot now?

Yes

3. Click "Yes" to reboot the Device

1. Click "Tools"

2. Click "Reboot"

Direct Access Port (EKI-122x-CE v1.07 or Later)

Designated COM port to direct access port which separate each serial port into different TCP service port, instead of combined all into Port 502.

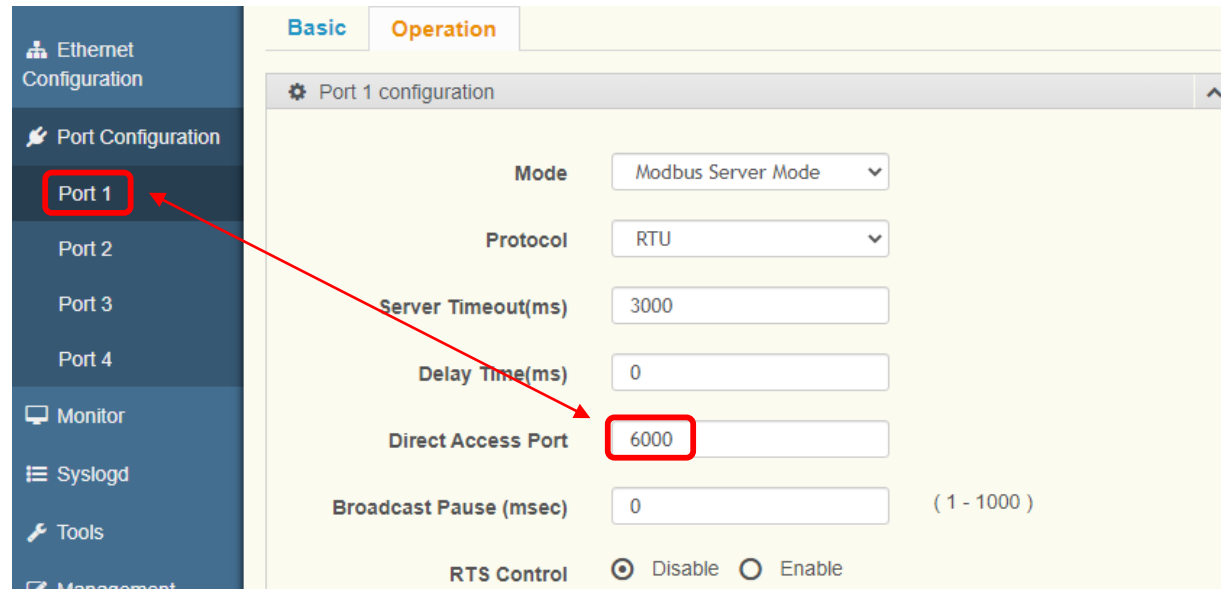
Default:

Port1: 6000

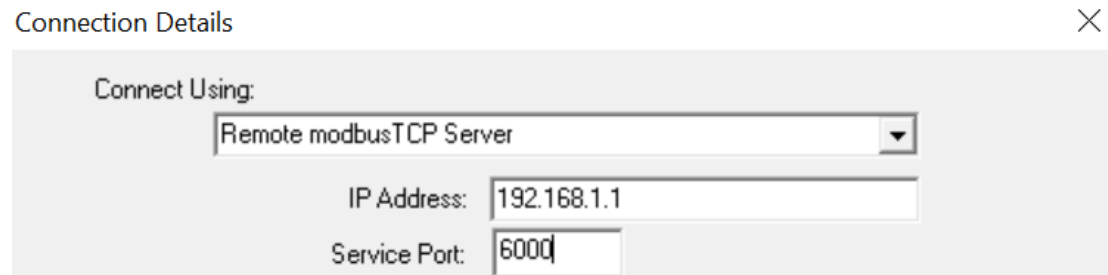
Port2: 6001

Port3: 6002

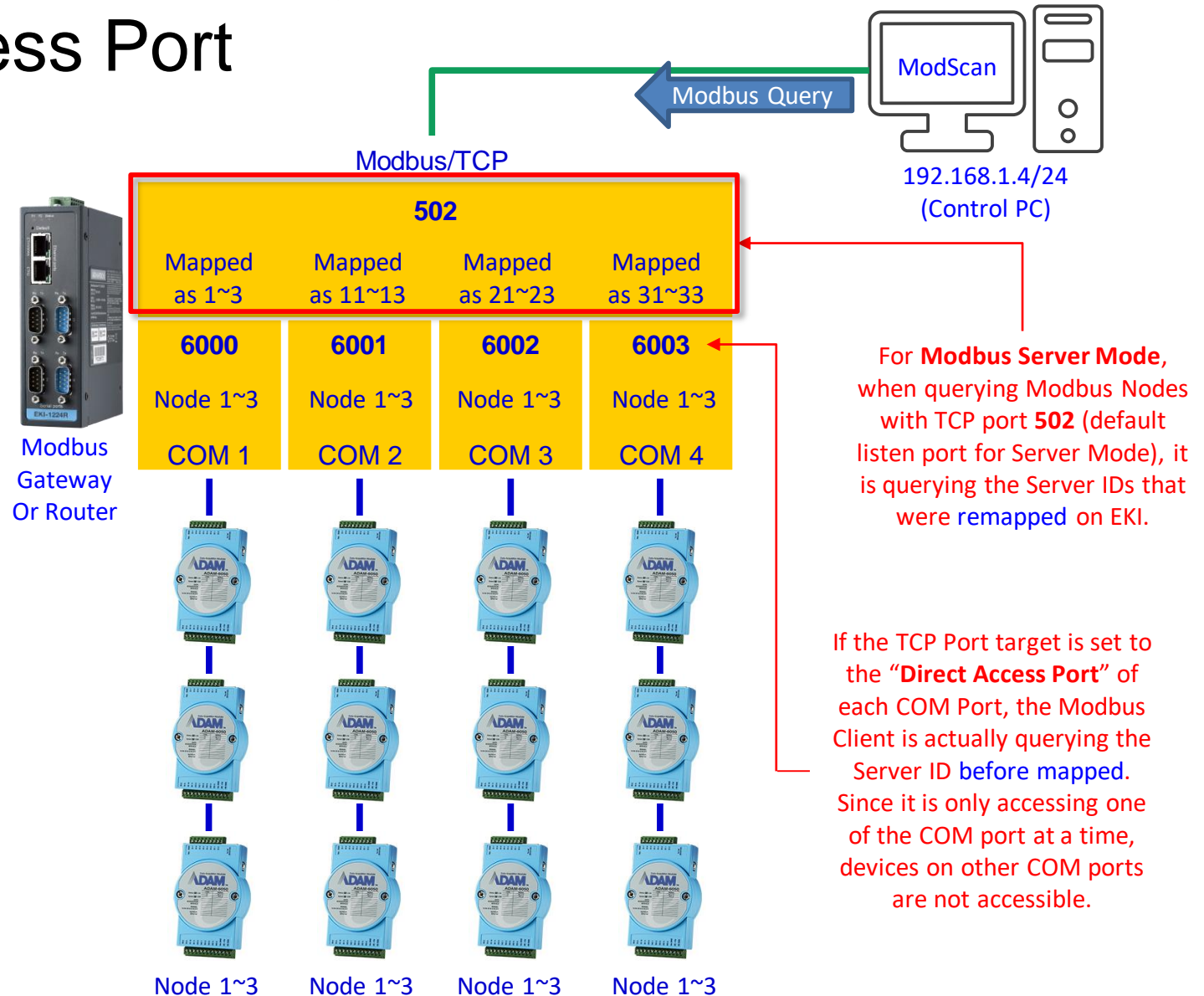
Port4: 6003



Set ModScan connection detail to TCP service port from port 6000~6003, according to the target COM port.



Difference between System Port and Direct Access Port

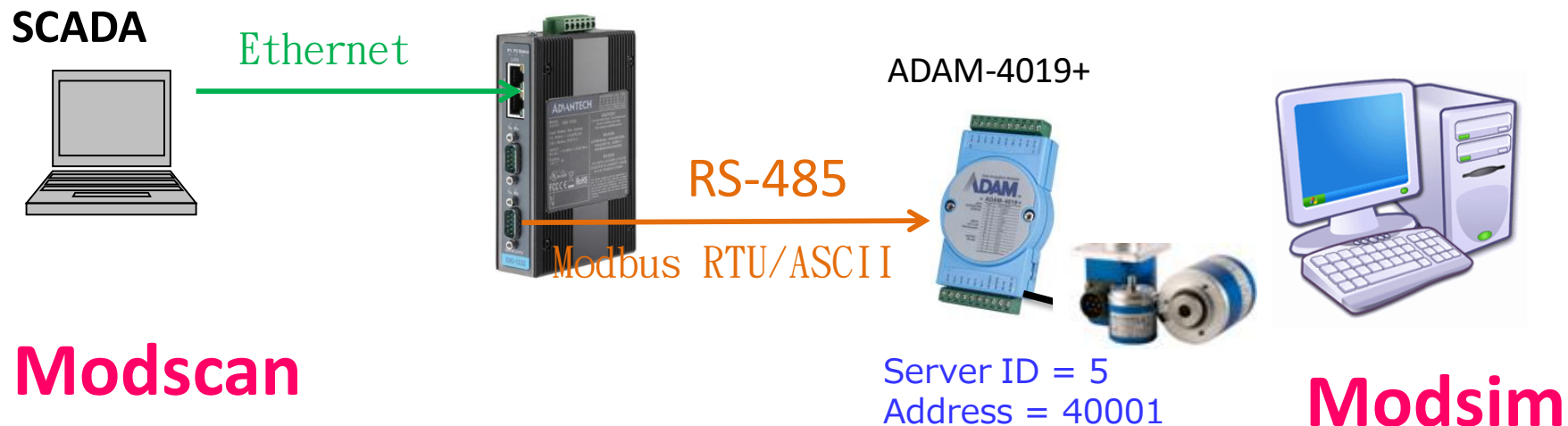


Test Tool:

**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

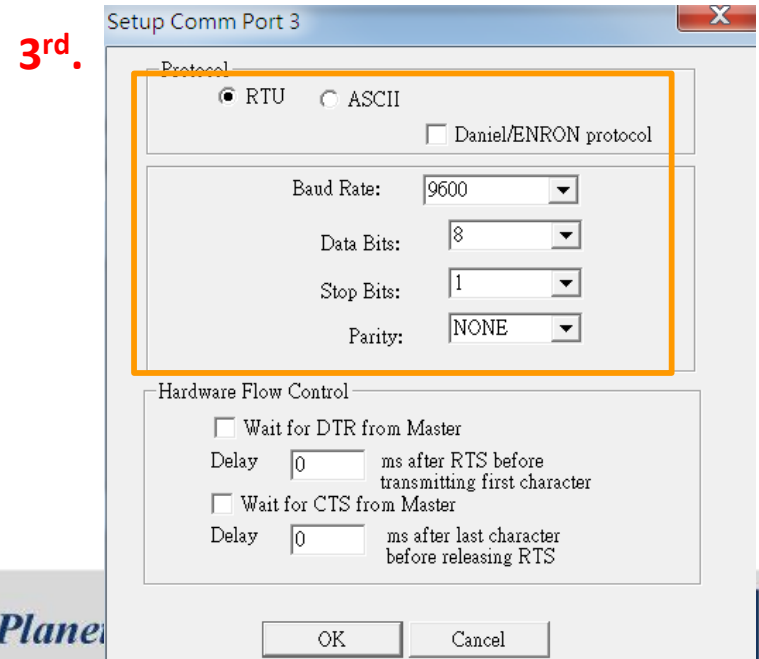
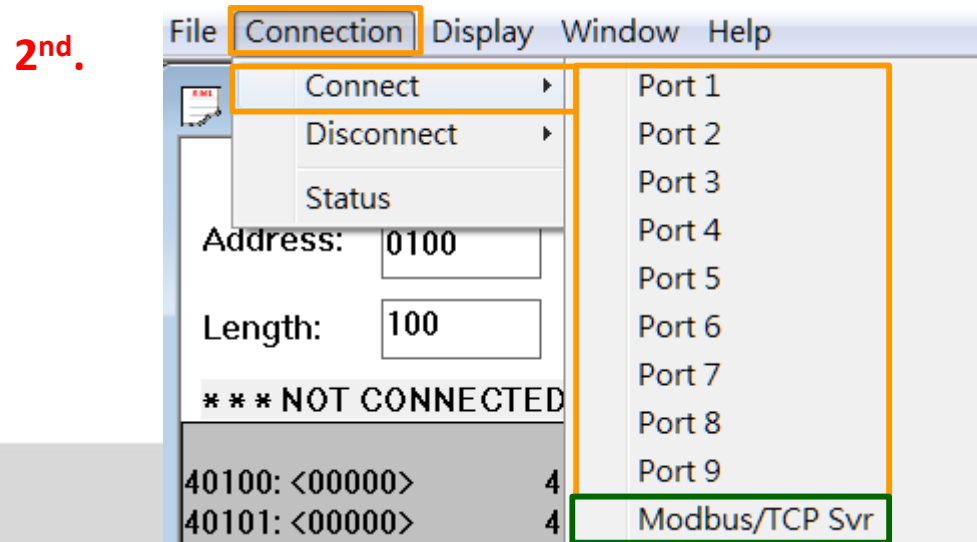
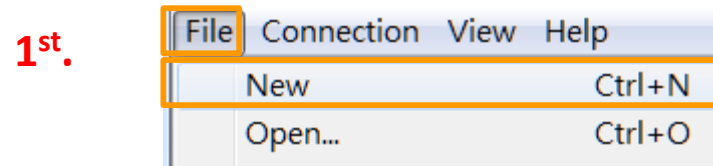
Set-up Modsim tool

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

1st. Click “File” and “New”

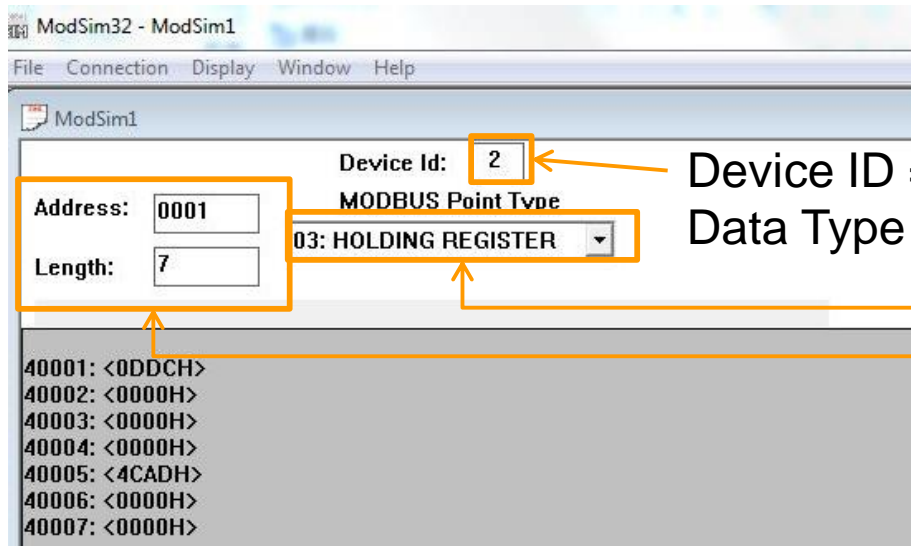
2nd. Click “Connection”, and select the “COM Port” (**Up to 9**)

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

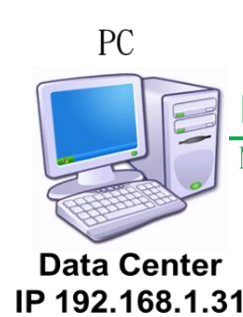


Send out Modbus RTU/ASCII by Modsim

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



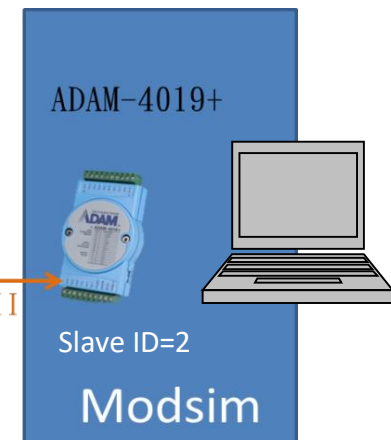
Device ID = Node of End device
Data Type of Modbus 、 Address and Data Length



EKI-1222 Modbus Slave
IP 192.168.1.2

Ethernet
Modbus TCP

RS-485
Modbus RTU/ASCII



Modscan

Set-up Modscan tool

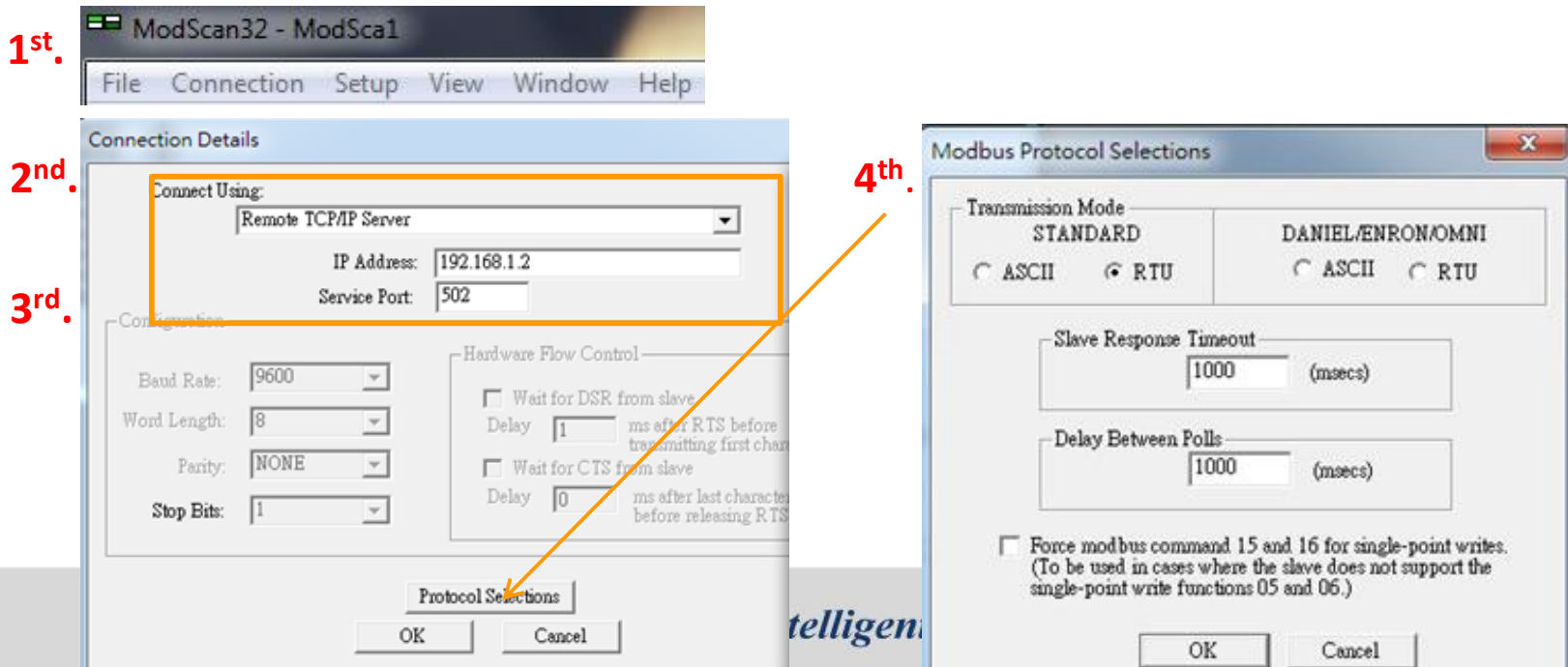
- If you want to simulate the data center to send out the polling with Modbus TCP

1st. Click “Connection” and “Connect”

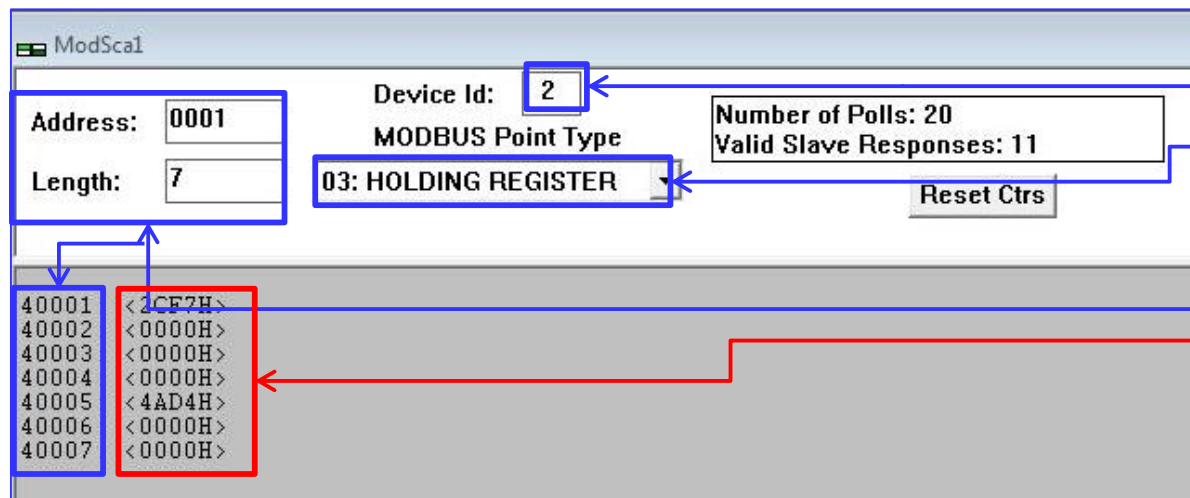
2nd. To select “Remote TCP/IP Server” => IP Address: Fill in the IP of Modbus gateway

3rd. Service Port: 502 (Default setting of Modbus Listen Port)

4th. Click “Protocol Selections” to select the protocol of Modbus



Polling Modbus TCP data by Modscan

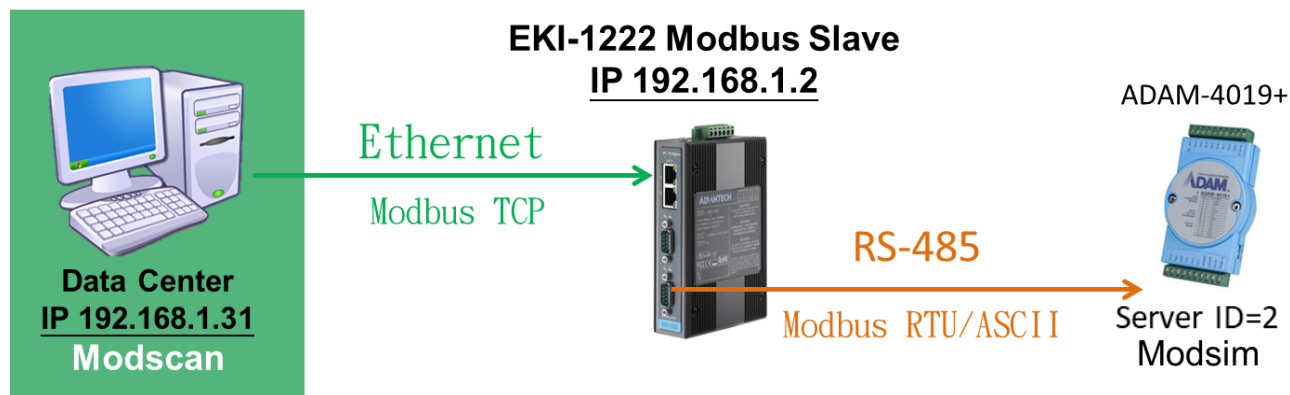


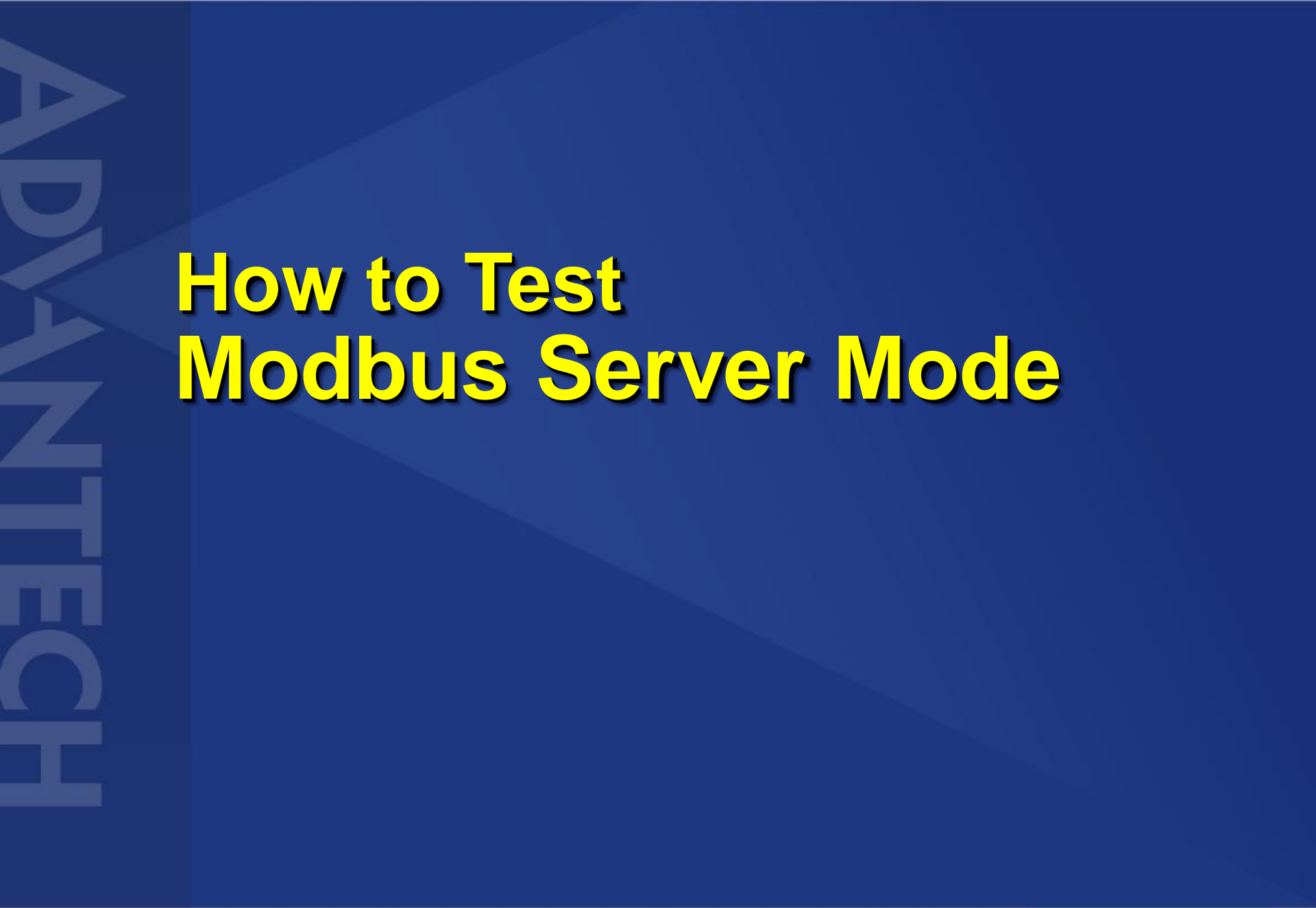
Device ID = Node of End device

Data Type of Modbus

Query Address and Length

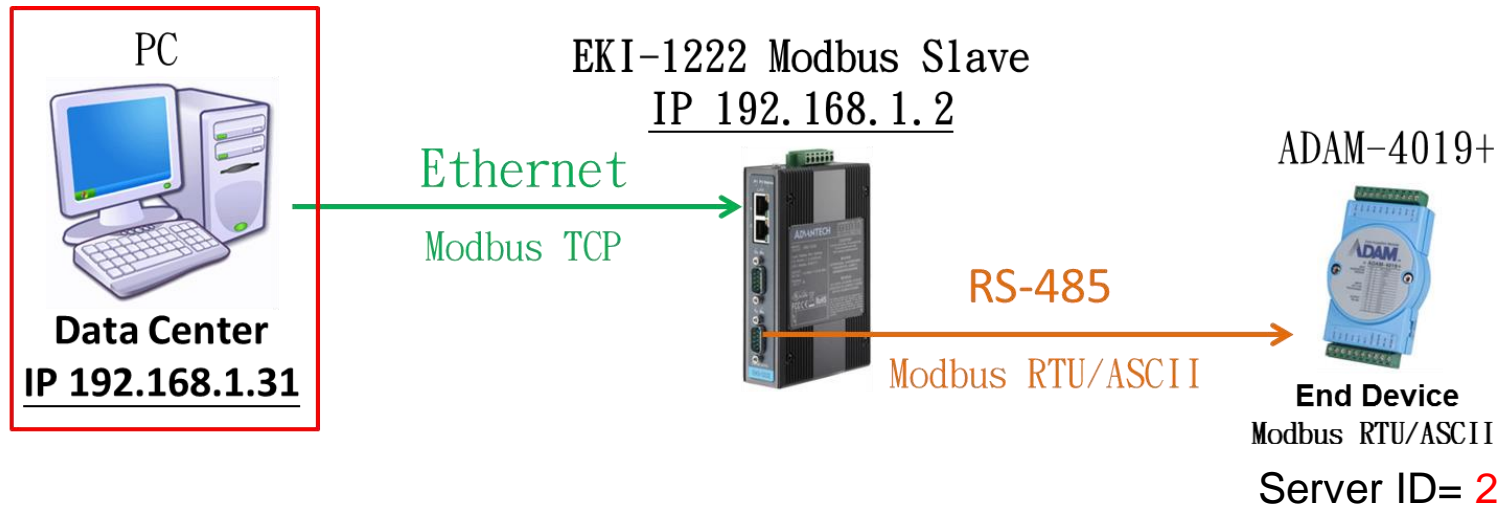
Received Data





How to Test Modbus Server Mode

How to Test the Modbus Server 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

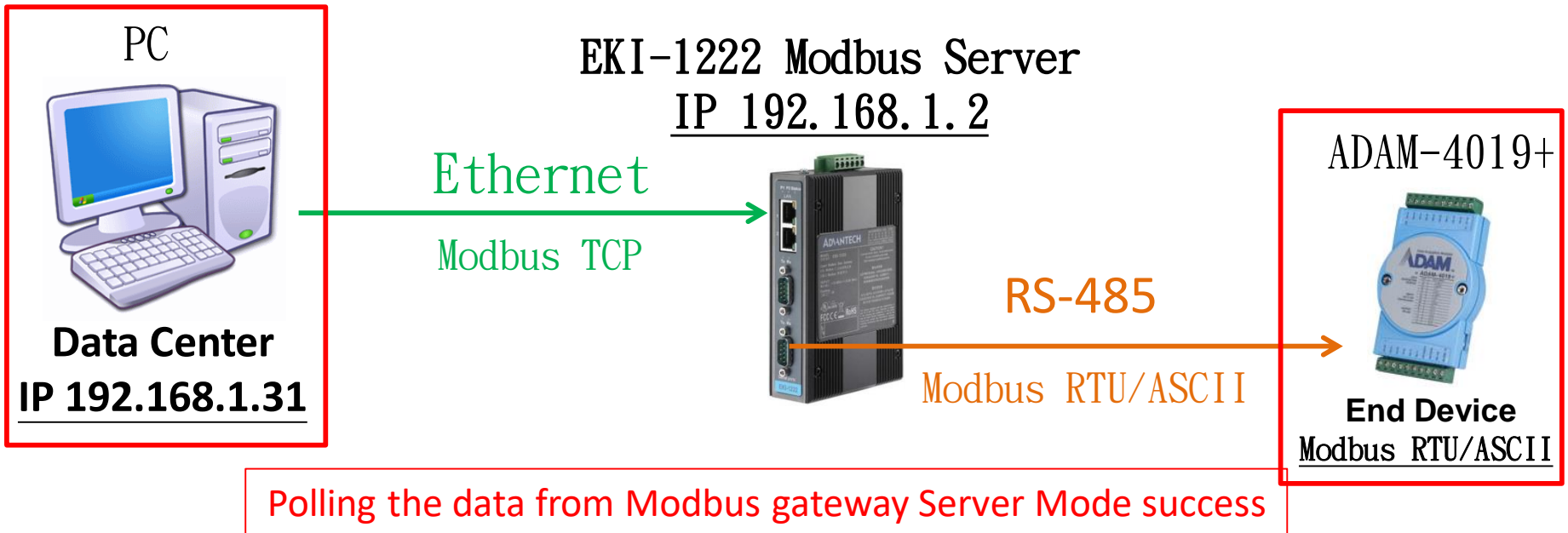
Device Id: 2

MODBUS Point Type
03: HOLDING REGISTER

Number of Polls: 5
Valid Slave Responses: 0

Reset Ctrs

How to Test the Modbus Server



ModSca1

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

Channel setting: Modbus

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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