

How to Configure USDG Data mode in EKI-1500 series

Overview

When SCADA software that can directly use TCP socket to communicate with serial terminal device/equipment. That can choose USDG Data TCP mode in EKI-1500/ADAM-457x series device server. In this TCP mode, we support three different way to access. First one is TCP Client, TCP Server and TCP Peer-to-Peer mode.

Compare with Virtual COM mode, USDG Data TCP mode does not need installed VCOM driver in PC and directly send TCP packet communicate with serial device server. This can be the another option send/receive with serial terminal device.

Three different type of USDG Data Mode

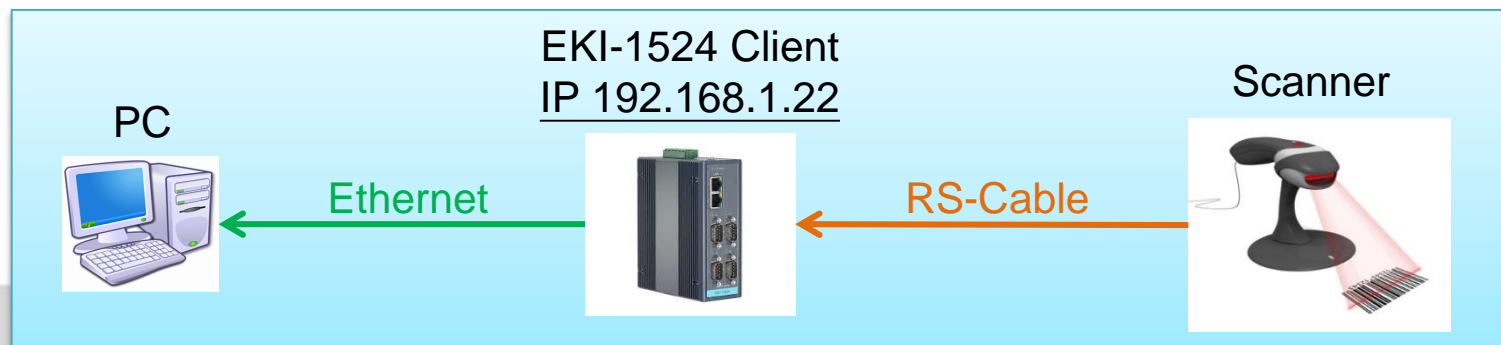
1. USDG Data TCP Server Mode

PC actively build up TCP communication with serial device server and send TCP data to the serial display equipment.



2. USDG Data TCP Client Mode

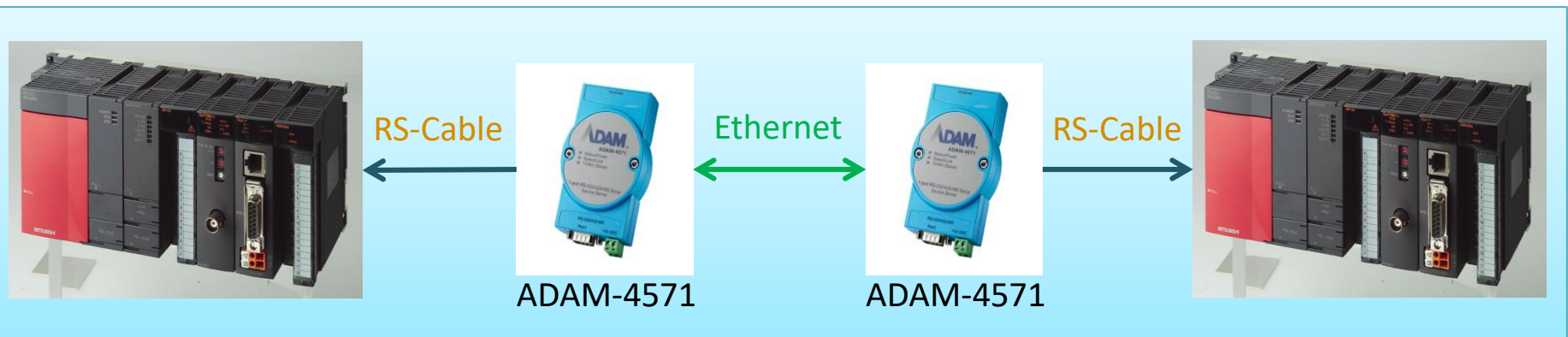
When serial device actively send data to PC. Serial device server build-up TCP communication with PC. Like bar-code actively send data to PC.



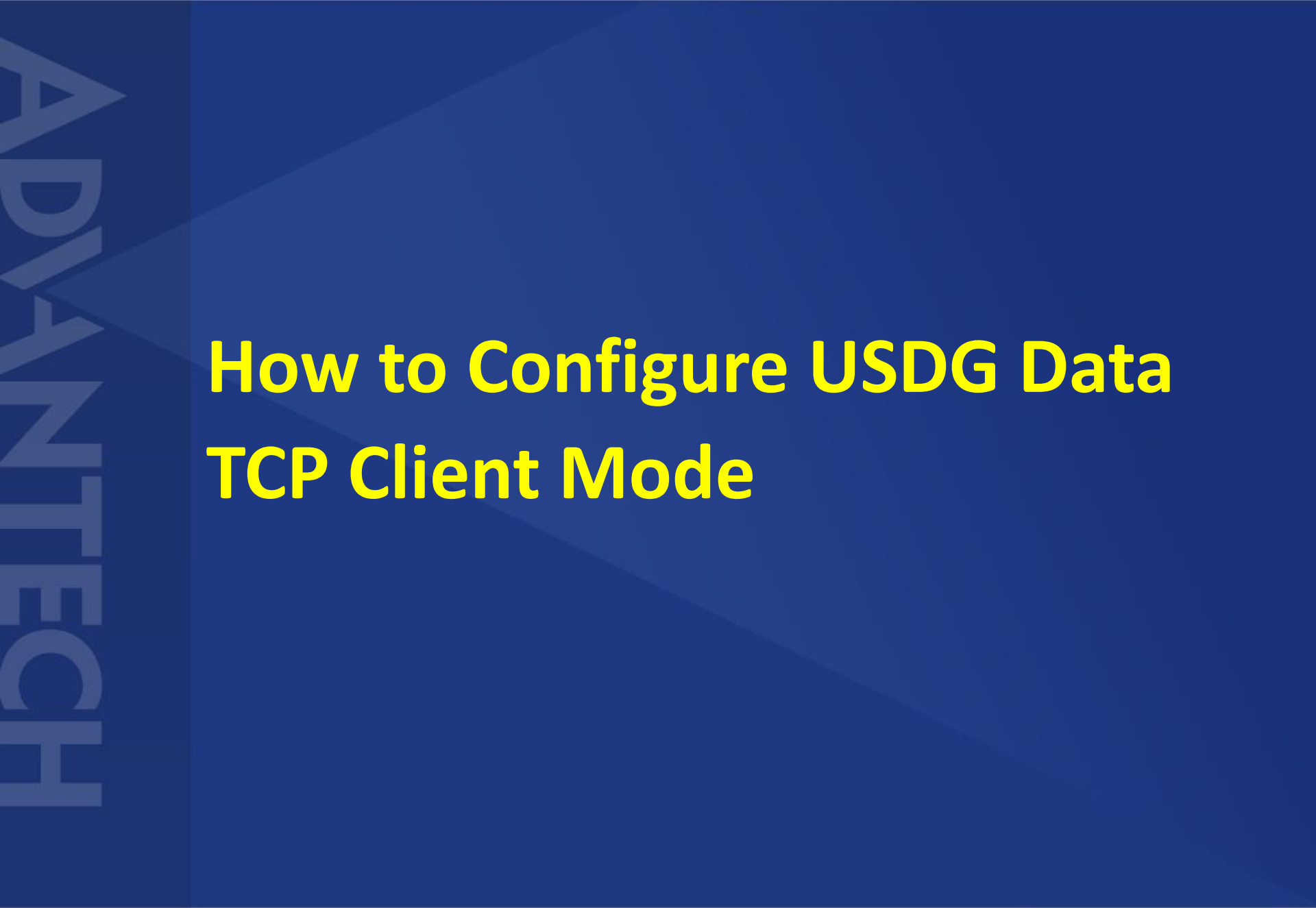
Three different type of USDG Data Mode

3. USDG Data TCP Peer-2-Peer Mode

when two serial PLCs would like to communicate that can choose Peer-2-Peer mode to access. Make sure the initial PLC that connect with TCP Client mode and another would Server mode.



Command PLC — TCP Client — TCP Server — Receive PLC



How to Configure USDG Data TCP Client Mode

Topology of USDG Client Mode

TCP Server
IP 192.168.1.1
PC



Ethernet



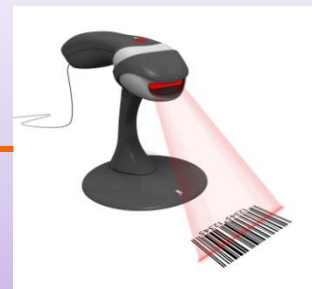
EKI-1524 Client
IP 192.168.1.22



RS-Cable



Scanner



In the initial connection, Device server send data by RS-Cable
After connected, data can be sent by both side

To Configure the USDG Client Mode

- Use web browser connect to device server with IP 192.168.1.22

System

Ethernet Configuration

Port Configuration

Port 1

Port 2

Port 3

Port 4

Monitor

Alarm

Syslogd

Tools

Management

Home / Port Configuration / Port 1 configuration

Basic Operation Advanced

Port 1 configuration

Type RS485

Baud Rate 9600

Parity None

Data Bits 8

Stop Bits 1

Flow Control None

Save

1. To Configure the “Basic” part first, then “Save” it

To Configure the USDG Client Mode

The screenshot shows the 'Port Configuration' window for 'Port 1'. The 'Operation' tab is selected. The 'Mode' is set to 'USDG Data Mode'. The 'Protocol' is 'TCP'. The 'Data Idle Timeout(s)' is '60'. The 'Data Listen Port' is '5300'. The 'Command Listen Port' is '5400'. The 'Response Timeout(ms)' is '0'. The 'Frame Break(ms)' is '0'. The 'Auto Connect To Peer IP' checkbox is checked. The 'Media' is 'None'. The 'When Data Full' dropdown is 'Stop'. The 'Pack conditions' section has 'By size' selected. The 'Char Format' is 'ASCII'. The 'Char Value' is empty. The 'By character-timeout' checkbox is unchecked. The 'Peer for Receiving Data' section has 'Peer Number' set to '1'. The 'Local Port' is '0'. The 'Peer IP address' is '192.168.1.1'. The 'Port' is '6100'. The 'Save' button is at the bottom.

1. Click "Port 1" in the left sidebar

2. Click "Operation" tab

3. Select USDG Data Mode

4. If you want to keep the connection always linked up, select the option

5. Add 1 Peer Port by selecting the Peer Number to "1" for receiving data

6. TCP Port of DS, Set to 0 means auto assign by EKI

7. Fill in the IP address of TCP Server and TCP Port for receiving the data

8. Save it

To Configure the USDG Client Mode

- Save the configuration and reboot to initialize the changes

The screenshot shows the USDG web interface. On the left is a dark blue sidebar with a menu. The 'Tools' menu item is highlighted with a red box, and a red arrow points from it to the text '1. Click "Tools"'. Below 'Tools' is the 'Reboot' menu item, also highlighted with a red box, with a red arrow pointing to the text '2. Click "Reboot"'. The main content area has a light yellow background and displays a warning: 'Warning!! Reboot will disconnect both ethernet and serial connection. Do you want to Reboot now?'. A red box highlights the 'Yes' button, with a red arrow pointing to the text '3. Click "Yes" to reboot the DS'.

System

Ethernet Configuration

Port Configuration

Monitor

Alarm

Syslogd

Tools

Ping

Reboot

Management

Home / Tools / Reboot

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

Yes

3. Click **"Yes"** to reboot the DS

1. Click **"Tools"**

2. Click **"Reboot"**



How to Test USDG Data TCP Client Mode

Test Tool: TestView

Using the 3rd party tool TestView to verified:

1. Convenience :

- ✓ You only need one computer with Ethernet and COM port, then you can do all of test in this application

2. Powerful Function :

- ✓ You can simulate both side as TCP/UDP Server/Client or COM Port

3. Easy to Use

4. Compatibility with Windows:

- ✓ It's compatible with Windows XP and 7

For more information, please reference to this below URL:

http://solvline.com/eng/download_center/download_new.php?dno=3&fno=2&c2=49

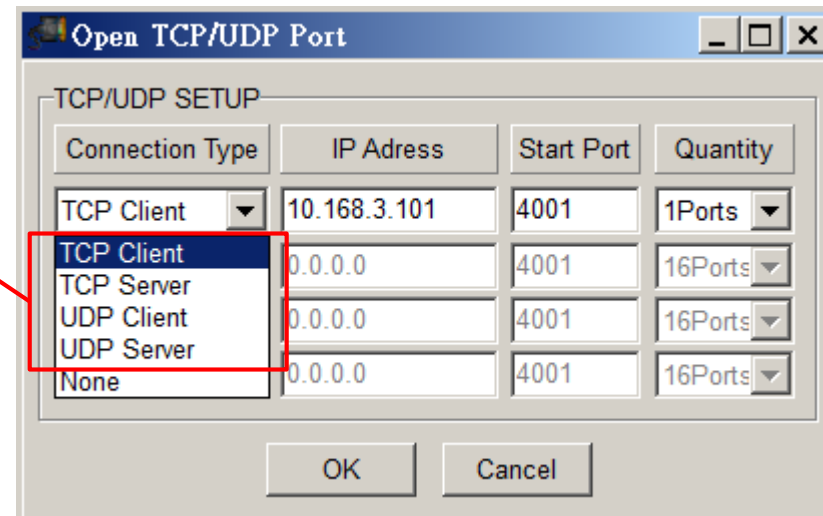
TestView V2.5

- Can Simulate Server and Client using both TCP and UDP to test USDG mode of the device server.



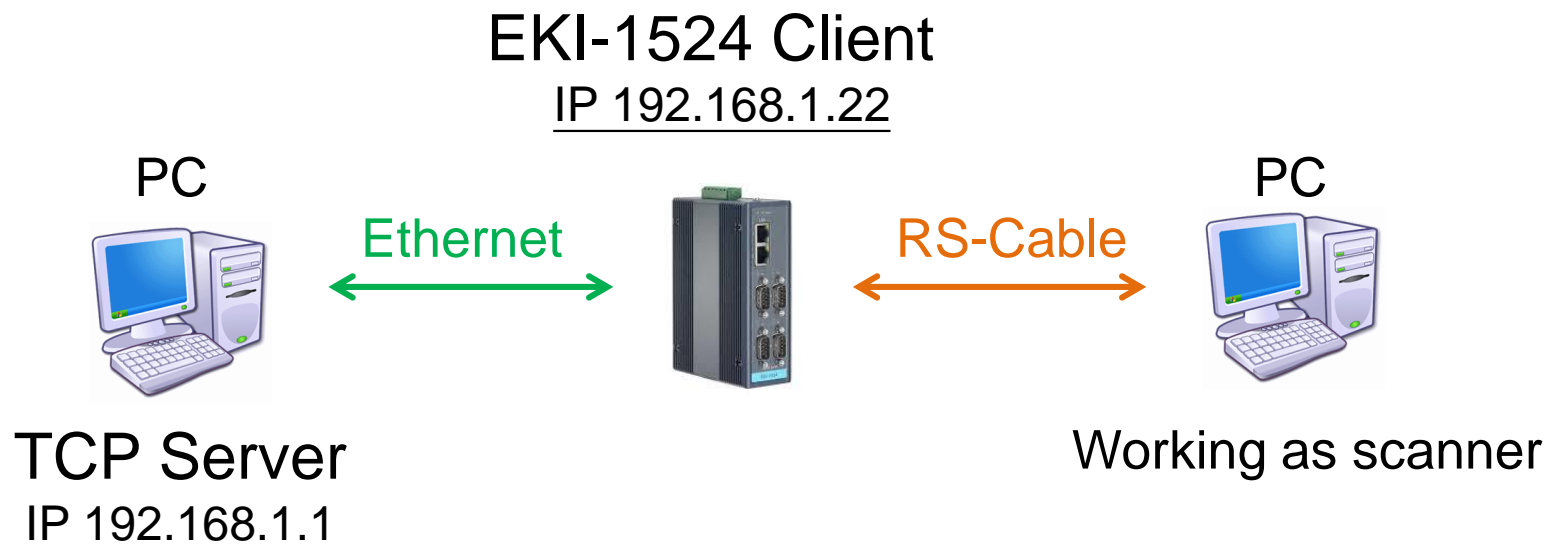
Connect to:

- TCP/UDP Server : PC act as a server and waiting connection from EKI (act as a client)
- TCP/UDP Client : PC act as a client and will try to connect to EKI (act as a server)



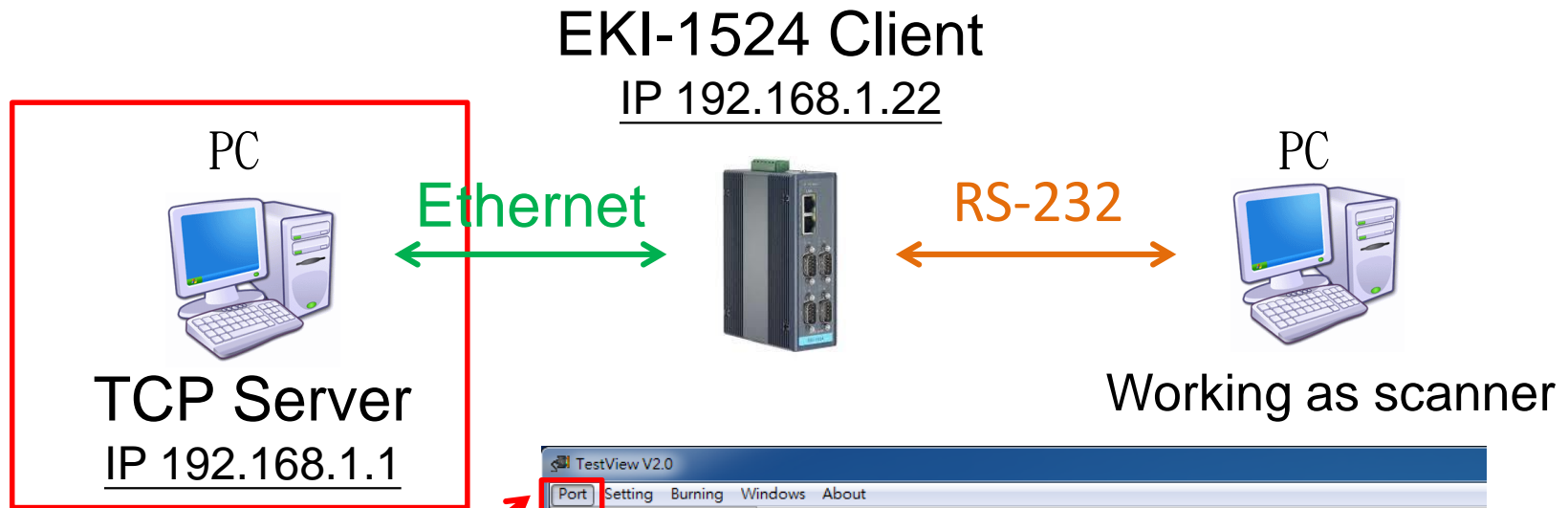
Test the USDG Client Mode

Topology



Test it by TestView

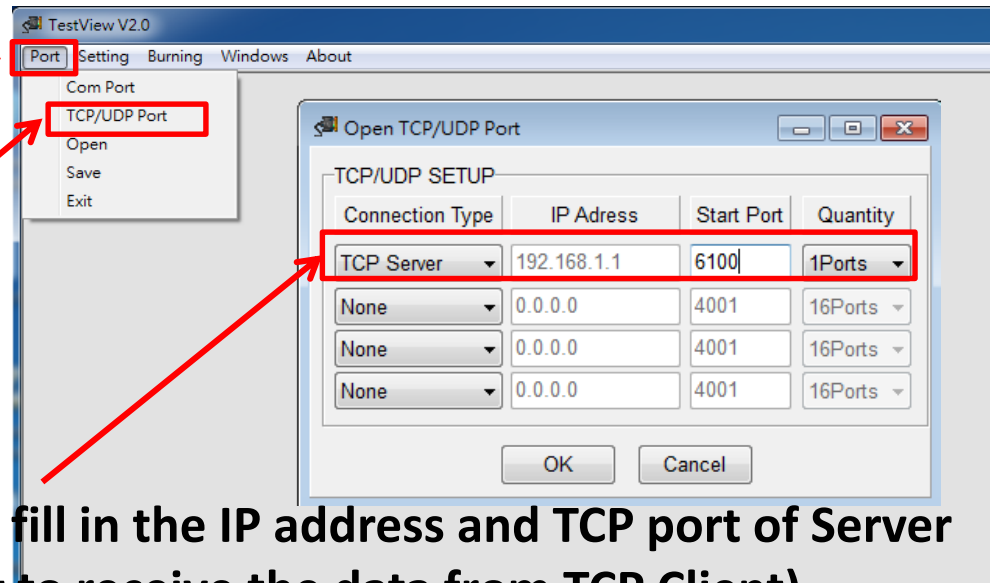
To Configure the TCP Server



1. Click Port

2. Select TCP/UDP Port

**3. Select TCP Server, and fill in the IP address and TCP port of Server
(TCP Port is using to receive the data from TCP Client)**



To Configure the COM port

EKI-1524 Client

IP 192.168.1.22



TCP Server

IP 192.168.1.1

Ethernet



RS-232

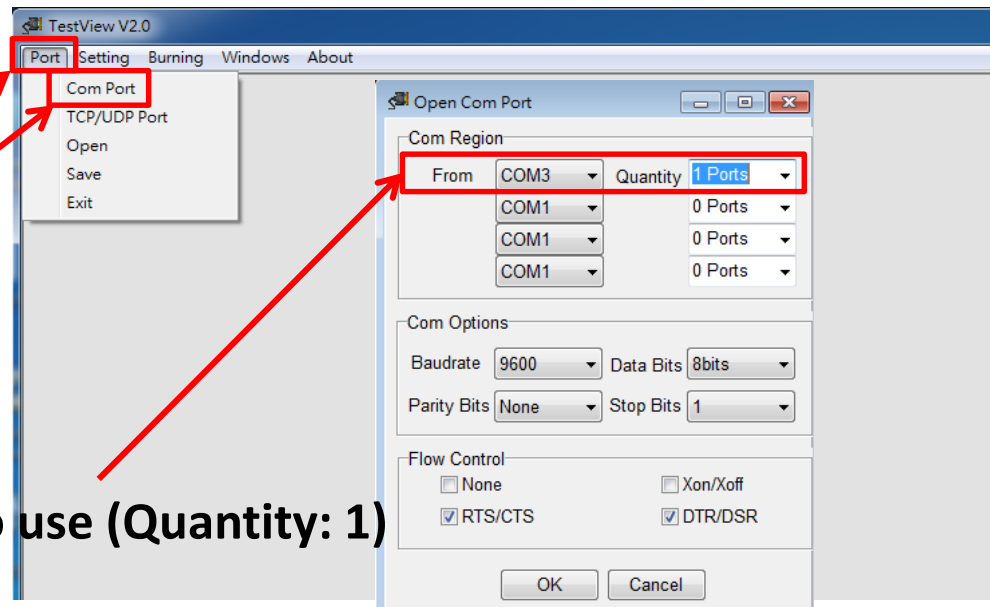


Working as scanner

1. Click Port

2. Select COM Port

3. Which port you want to use (Quantity: 1)



TCP Server
IP 192.168.1.1



EKI-1524 Client
IP 192.168.1.22



Working as scanner



Ethernet

RS-232

Left side is the TCP Server

Right side is the COM Port

1. Click "Connect"

2. The status is "Waiting"

3. Click "Terminal" and send out the data

4. Key in the character: 123, and observe the byte has increased

Then the status has become "Connected", Means the session has connected completely

Port	Status	Source	Destination	Send Bytes	Receive Bytes	Transmit throughput	Receive through
Tcp_server	Disconnect	192.168.1.1:6100		0	0	0	0
Tcp_server	Waiting...	192.168.1.1:6100		0	0	0	0
Tcp_server	Connect	192.168.1.1:6100	192.168.1.24:56444	0	3	0	0

Port	Status	Option	RTS	DTR	CTS	DSR	DCD	RI	Send Bytes	Receive Bytes	Parity Error	Overrun Error	Fram Error	Transmit throughput	Re thrc
COM3	Close	9600/N/8/1: Flow DTRRTS							0	0	0	0	0	0	0
COM3	Connect	9600/N/8/1: Flow DTRRTS							3	0	0	0	0	0	0

TCP Server
IP 192.168.1.1



Ethernet

EKI-1524 Client
IP 192.168.1.22



RS-232

Working as scanner



Left side is the TCP Server

Right side is the COM Port

TestView V2.0

Port Setting Burning Windows About

TCP/UDP Ports

Connect/Listen Disconnect Clear Send Data Stop Data Start Throughput Stop Throughput Terminal

Port	Status	Source	Destination	Send Bytes	Receive Bytes	Transmit throughput	Receive throughput
Tcp_server	Connect	192.168.1.1:6100	192.168.1.24:33315	18	11		0

type on COM
Type on TCP Server

Com Ports

Connect Disconnect Setup Clear Send Data Stop Data Start Throughput Stop Throughput Terminal

Port	Status	Option	RTS	DTR	CTS	DSR	DCD	RI	Send Bytes	Receive Bytes	Parity Error	Overrun Error	Fram Error	Transmit throughput	Receive throughput
COM3	Connect	9600/N/8/1: Flow DTRRTS	■	■	●	●	●	●	11	18	0	0	0	0	0

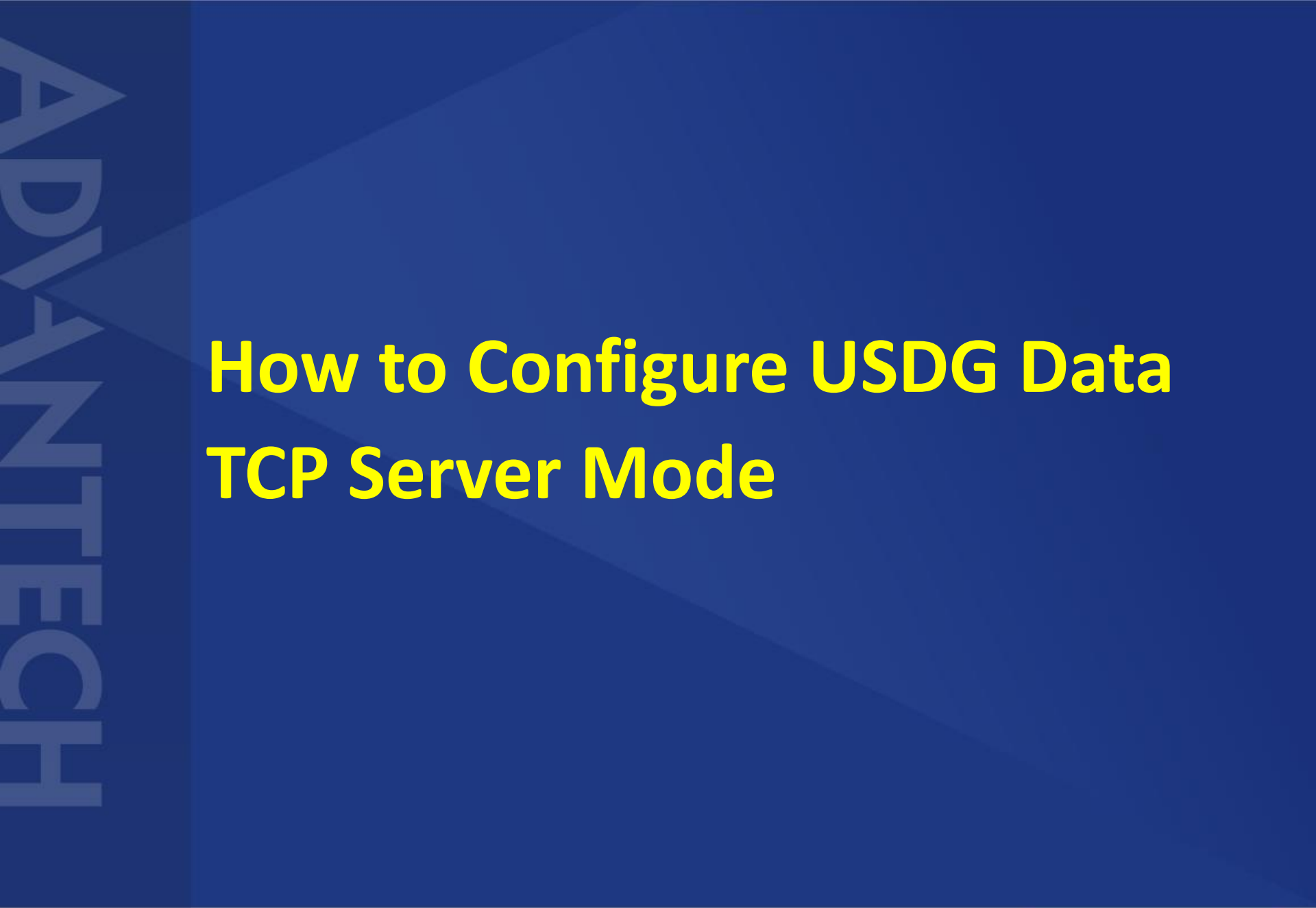
type on COMType on TCP Server

After connection, data can be sent by both side

Tips !

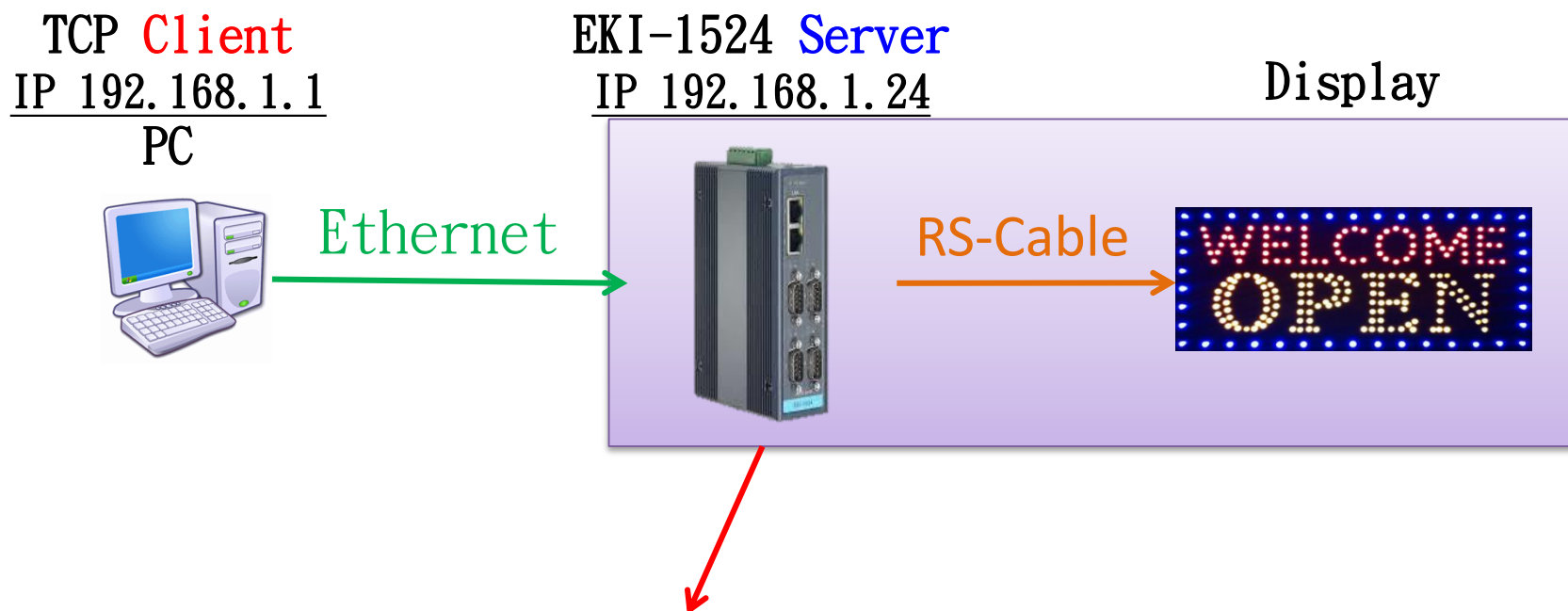
Host TCP Server		USDG Client of EKI	
		192.168.1.22	Ethernet IP
IP Address	192.168.1.1	↔ 192.168.1.1	Peer IP Address
		Any	Local Port
Data Listening Port	6100	6100	Peer TCP Port





How to Configure USDG Data TCP Server Mode

Topology of USDG Server Mode



Device server is using the TCP port to listen the data from the client over the Ethernet.
Device server will accept this session, after receiving the request.
And uses the TCP listening port to send/ receive the data.

To Configure the USDG Server Mode

- Use web browser connect to device server with IP 192.168.1.24

System

Ethernet Configuration

Port Configuration

Port 1

Port 2

Port 3

Port 4

Monitor

Alarm

Syslogd

Tools

Management

Home / Port Configuration / Port 1 configuration

Basic Operation Advanced

Port 1 configuration

Type RS485

Baud Rate 9600

Parity None

Data Bits 8

Stop Bits 1

Flow Control None

Save

1. To Configure the “Basic” part first, then “Save” it

To Configure the USDG Server Mode

The screenshot shows the Advantech USDG configuration interface. On the left is a sidebar with navigation options: Port Configuration, Monitor, Alarm, Syslogd, Tools, and Management. The main area is titled 'Port 1 configuration' and has three tabs: Basic, Operation, and Advanced. The 'Operation' tab is selected and highlighted with a red box and an arrow pointing to it from step 2. Below the tabs, the 'Mode' is set to 'USDG Data Mode', highlighted with a red box and an arrow from step 3. The 'Protocol' is set to 'TCP'. The 'Data Idle Timeout(s)' is set to '60'. The 'Data Listen Port' is set to '5300', highlighted with a red box and an arrow from step 4. The 'Command Listen Port' is set to '5400'. The 'Response Timeout(ms)' is set to '0'. The 'Frame Break(ms)' is set to '0'. Below these are 'TCP Mode Extra Options' including 'Auto Connect To Peer IP' (unchecked) and 'Port Data Buffering'. The 'Media' is set to 'None' and 'When Data Full' is set to 'Stop'. A section for 'Pack conditions (Pack sent immediately when reach 1024 Bytes)' includes options for 'By size', 'By interval', and 'By end-character'. The 'By end-character' option is selected, with 'Char Format' set to 'ASCII' and 'Char Value' set to an empty field. Below this is 'By character-timeout' (unchecked). The 'Peer for Receiving Data' section has a 'Peer Number' set to '0', highlighted with a red box and an arrow from step 5. At the bottom, there is a table with columns: #, Local Port, Peer IP address, and Port. Below the table is a 'Save' button, highlighted with a red box and an arrow from step 6.

1. Click "Operation"

2. Click "Operation"

3. Select USDG Data Mode

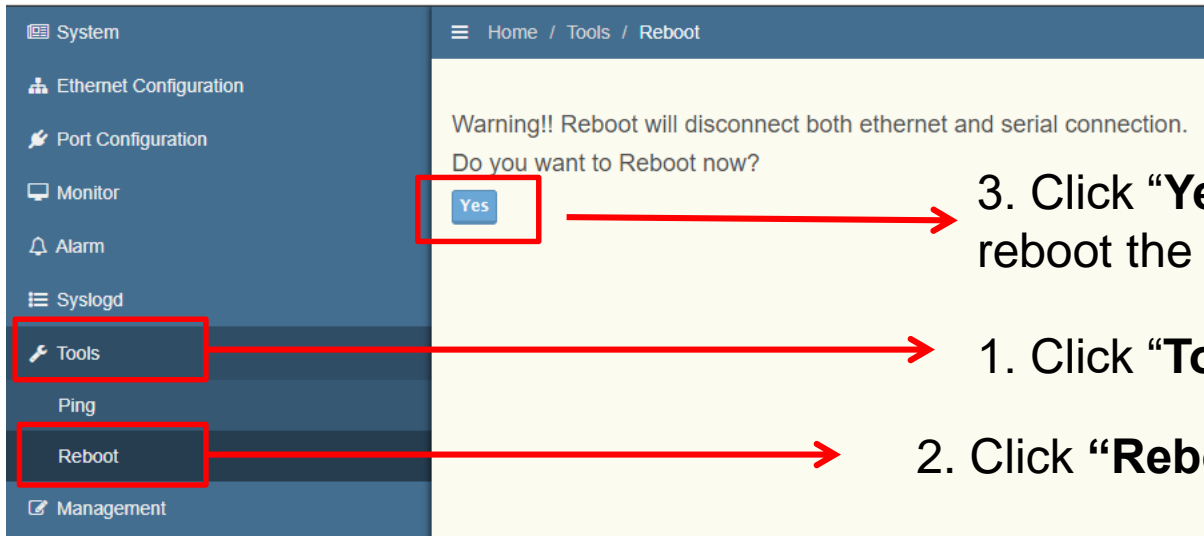
4. Fill in "Data Listen Port" for receiving data (Default: 5300)

5. Don't need to configure the peer port because Our Role is working as **server**

6. Save it

To Configure the USDG Server Mode

- Save the configuration and reboot to initialize the changes



The screenshot shows the USDG web interface. On the left is a dark blue sidebar with a menu. The 'Tools' menu item is highlighted with a red box, and a red arrow points from it to the text '1. Click "Tools"'. Below 'Tools' is the 'Reboot' menu item, also highlighted with a red box, with a red arrow pointing to the text '2. Click "Reboot"'. The main content area has a light yellow background and a dark blue header bar that reads 'Home / Tools / Reboot'. The main text area contains a warning: 'Warning!! Reboot will disconnect both ethernet and serial connection. Do you want to Reboot now?'. Below this text is a blue button labeled 'Yes', which is highlighted with a red box. A red arrow points from this button to the text '3. Click "Yes" to reboot the DS'.

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

Yes

3. Click **"Yes"** to reboot the DS

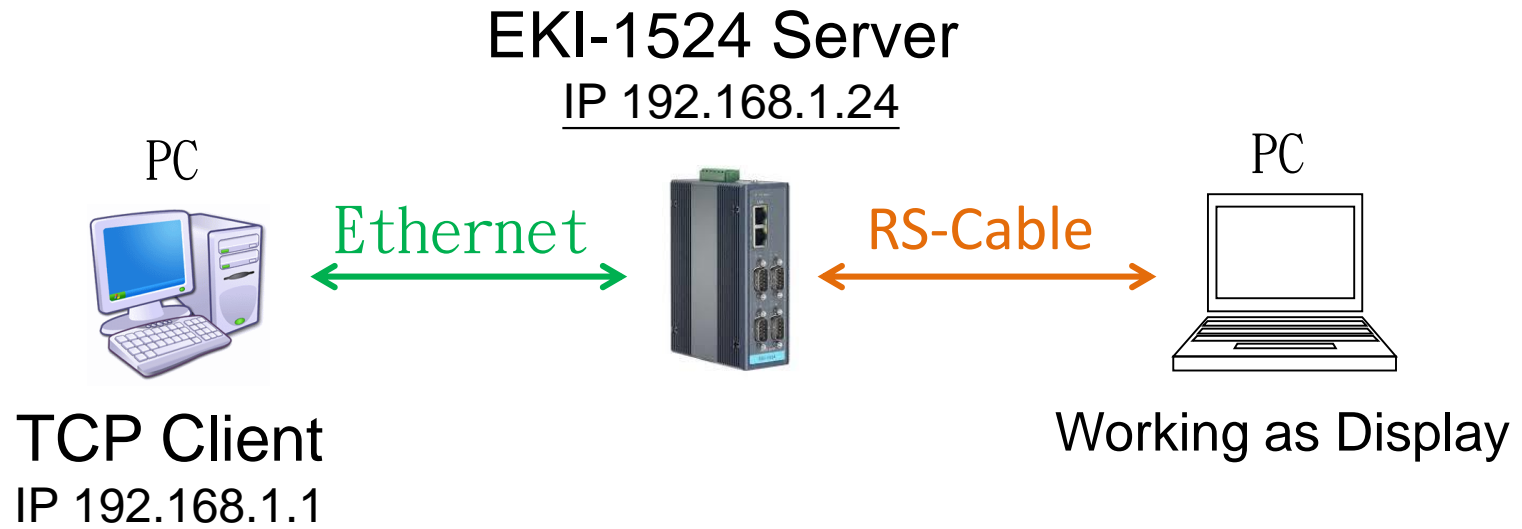
1. Click **"Tools"**

2. Click **"Reboot"**

How to Test USDG Data TCP Server Mode

Test the USDG Server Mode

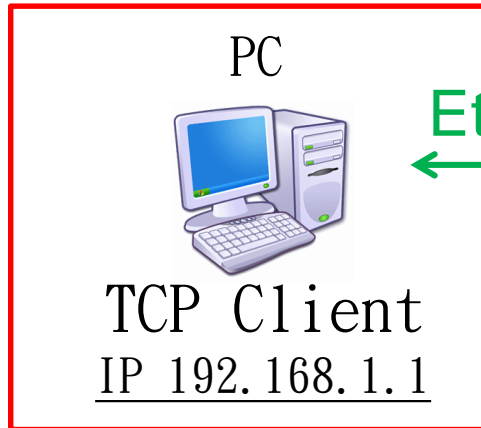
Topology



Test it by TestView

To Configure the TCP Client

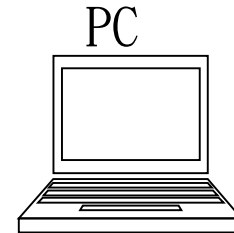
EKI-1524 Server
IP 192.168.1.24



Ethernet



RS-232

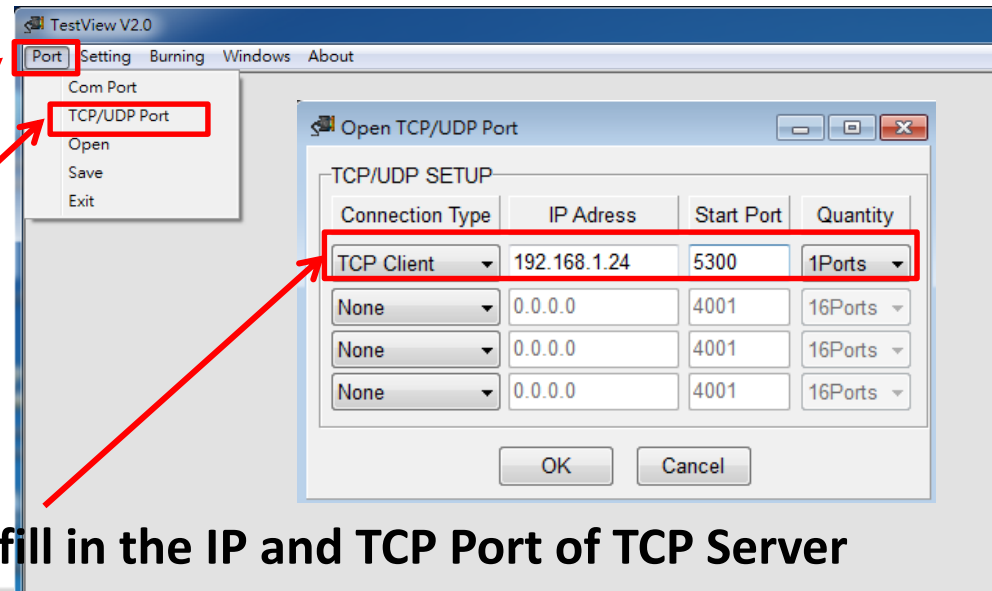


Working as Display

1. Click Port

2. Select TCP/UDP Port

3. Select TCP Client and fill in the IP and TCP Port of TCP Server



To Configure the COM Port

EKI-1524 Server

IP 192.168.1.24



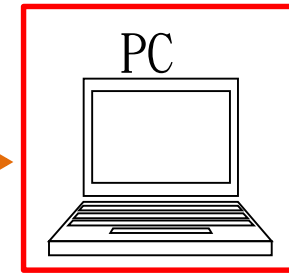
TCP Client

IP 192.168.1.1

Ethernet



RS-232

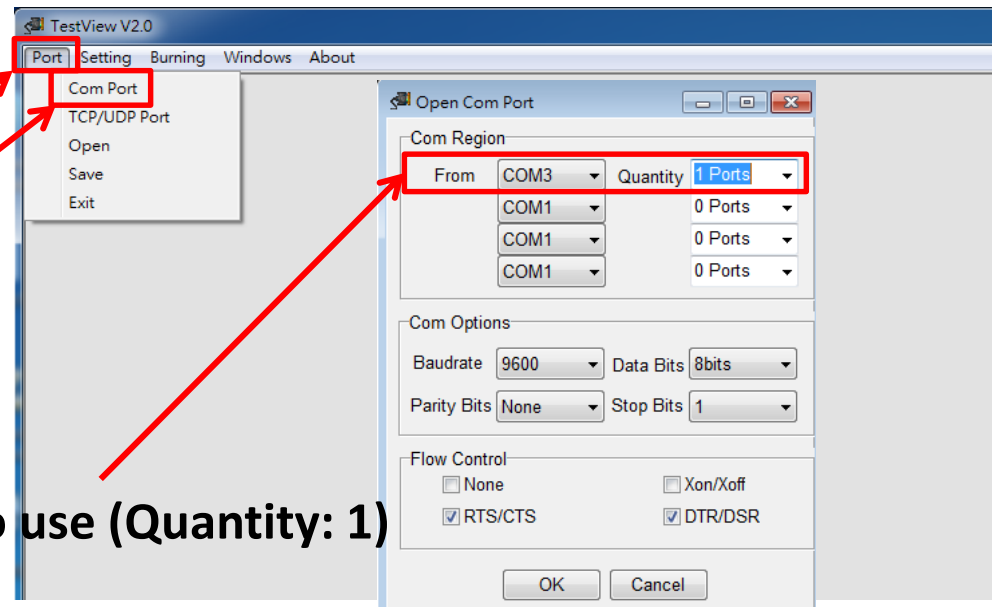


Working as Display

1. Click Port

2. Select COM Port

3. Which port you want to use (Quantity: 1)



TCP Client
IP 192.168.1.1



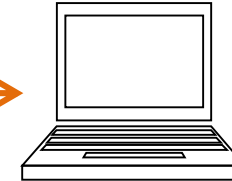
Ethernet

EKI-1524 Server
IP 192.168.1.24



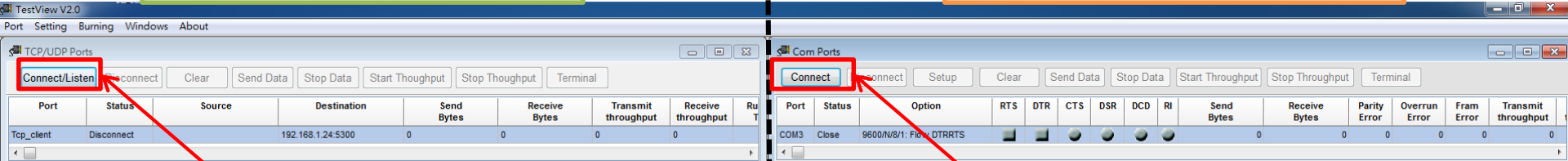
Working as Display

RS-232



Left side is the TCP Client

Right side is the COM Port



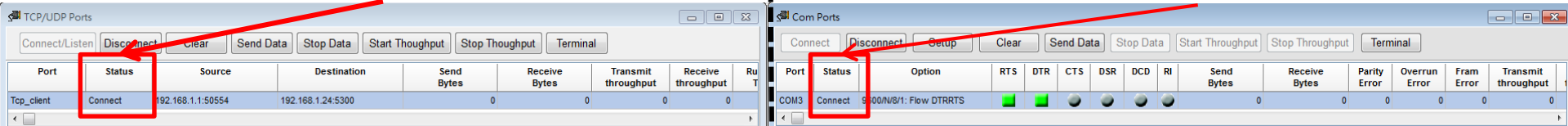
Click "Connect"

Click "Connect"



Then you can see the status become "Connected"

Then you can see the status become "Connected"



Device server will accept this session after receiving the request

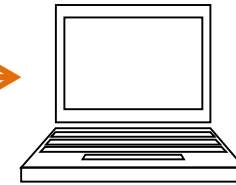
TCP Client
IP 192.168.1.1



EKI-1524 Server
IP 192.168.1.24



Working as Display

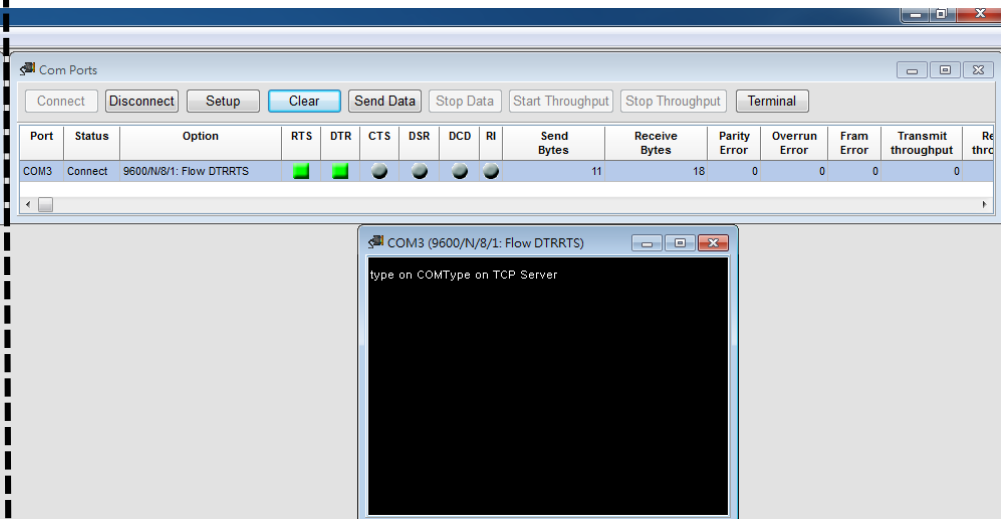
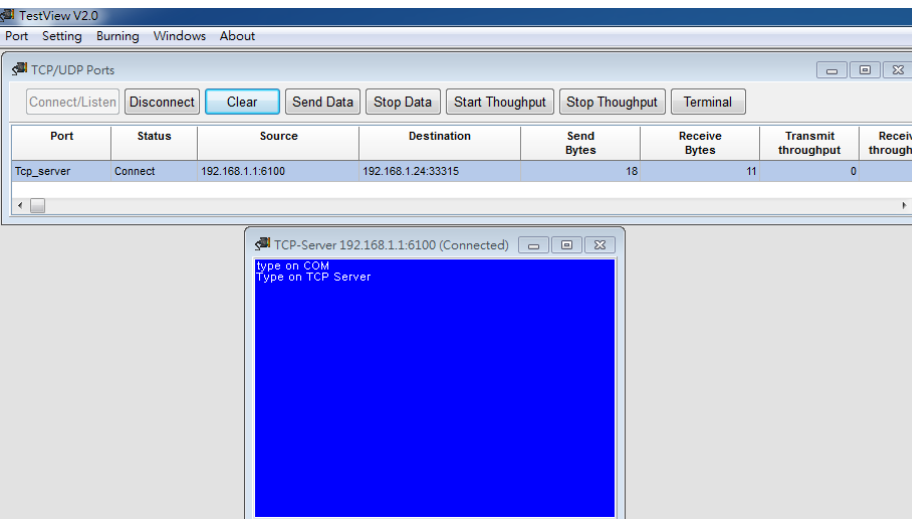


Ethernet

RS-232

Left side is the TCP Client

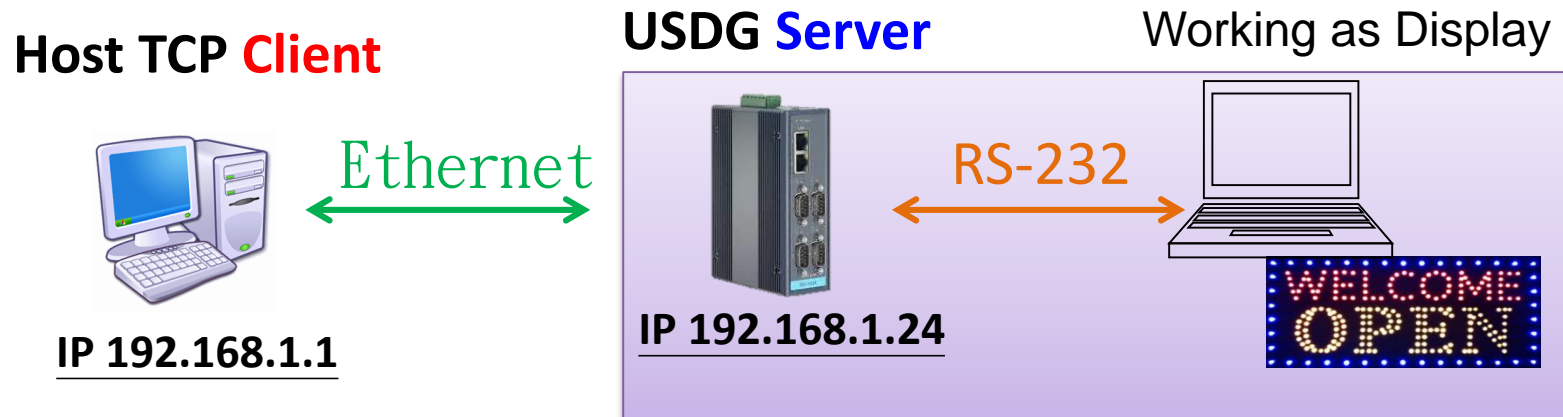
Right side is the COM Port



After connection, data can be sent by both side

Tips!!

TCP Client		USDG Server	
Ethernet IP	192.168.1.1	192.168.1.24	Ethernet IP
Peer IP Address	192.168.1.24		
Peer TCP Port	5300	5300	Data Listen Port

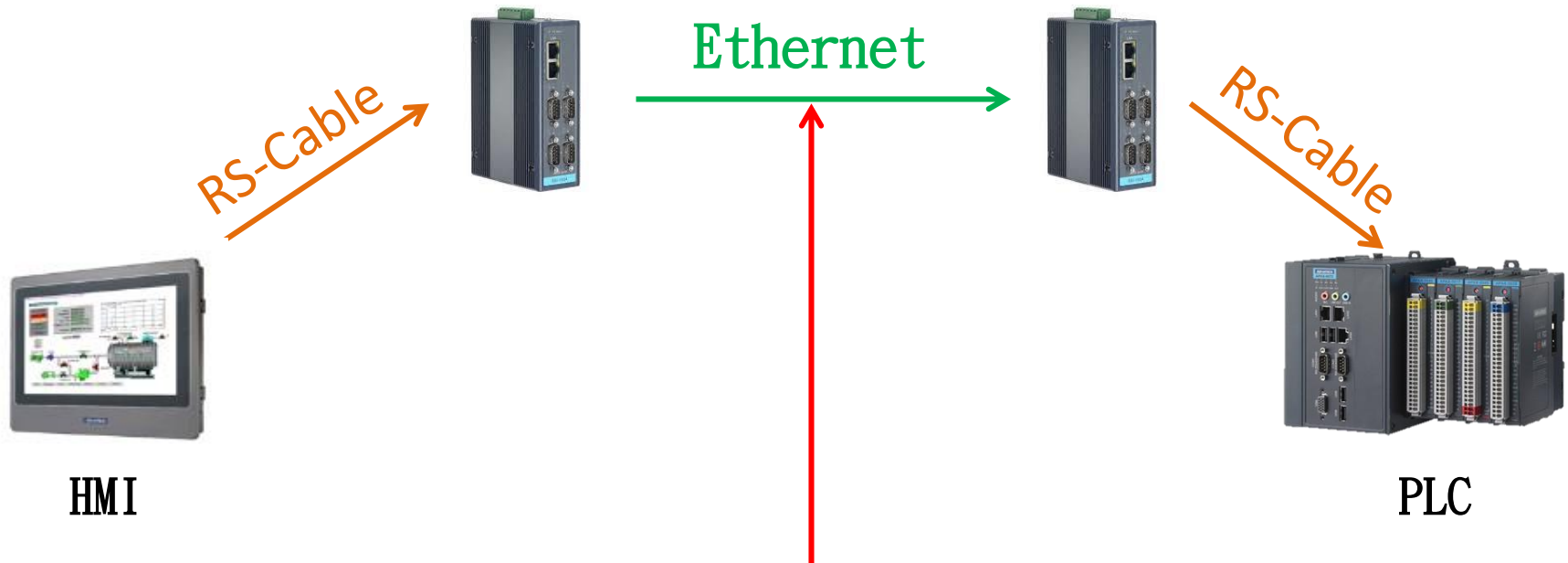


How to Configure USDG Data TCP Peer-2-Peer Mode

Topology of USDG P2P Mode

EKI-1524 TCP **Client**
IP 192.168.1.22

EKI-1524 TCP **Server**
IP 192.168.1.24



In this topology, the data is sent from left side to right side. So, TCP Client is the left device server, TCP Server at the right side.

To Configure the USDG Server Mode

- Use web browser connect to device server with IP 192.168.1.24

System

Ethernet Configuration

Port Configuration

Port 1

Port 2

Port 3

Port 4

Monitor

Alarm

Syslogd

Tools

Management

Home / Port Configuration / Port 1 configuration

Basic Operation Advanced

Port 1 configuration

Type RS485

Baud Rate 9600

Parity None

Data Bits 8

Stop Bits 1

Flow Control None

Save

1. To Configure the “Basic” part first, then “Save” it

To Configure the USDG Server Mode

The screenshot shows the Advantech USDG configuration interface. On the left is a sidebar with navigation options: Port Configuration, Monitor, Alarm, Syslogd, Tools, and Management. The main area is titled 'Port 1 configuration' and has three tabs: Basic, Operation, and Advanced. The 'Operation' tab is selected and highlighted with a red box and an arrow pointing to it from step 2. Below the tabs, the 'Mode' is set to 'USDG Data Mode', highlighted with a red box and an arrow from step 3. The 'Protocol' is set to 'TCP'. The 'Data Idle Timeout(s)' is set to '60'. The 'Data Listen Port' is set to '6100', highlighted with a red box and an arrow from step 4. The 'Command Listen Port' is set to '5400'. The 'Response Timeout(ms)' is set to '0'. The 'Frame Break(ms)' is set to '0'. Below these are 'TCP Mode Extra Options' including 'Auto Connect To Peer IP' (unchecked) and 'Port Data Buffering'. The 'Media' is set to 'None' and 'When Data Full' is set to 'Stop'. At the bottom, there are 'Pack conditions' (By size, By interval, By end-character, By character-timeout) and a 'Peer for Receiving Data' section with a 'Peer Number' set to '0', highlighted with a red box and an arrow from step 5. At the very bottom is a 'Save' button, highlighted with a red box and an arrow from step 6. A table at the bottom shows columns for '#', 'Local Port', 'Peer IP address', and 'Port'. The Advantech logo is in the bottom right corner.

1. Click "Operation"

2. Click "Operation"

3. Select USDG Data Mode

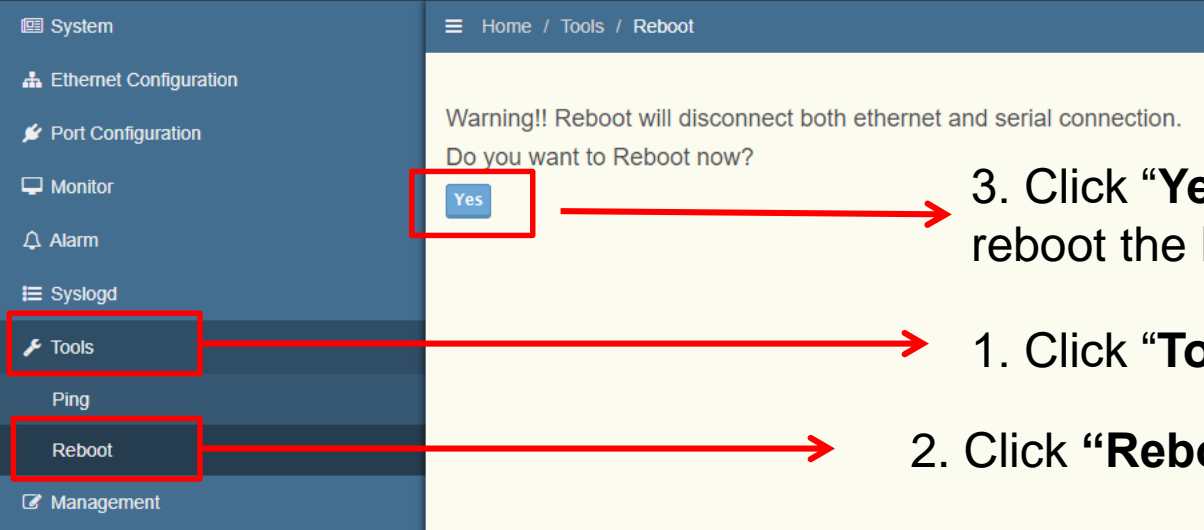
4. Fill in "Data Listen Port" for receiving data (Default: 5300)

5. Don't need to configure the peer port because Our Role is working as **server**

6. Save it

To Configure the USDG Server Mode

- Save the configuration and reboot to initialize the changes



The screenshot shows the USDG web interface. On the left is a dark blue sidebar with a menu. The 'Tools' menu item is highlighted with a red box, and a red arrow points from it to the text '1. Click "Tools"'. Below 'Tools' is the 'Reboot' menu item, also highlighted with a red box, with a red arrow pointing to the text '2. Click "Reboot"'. The main content area has a light yellow background and displays a warning: 'Warning!! Reboot will disconnect both ethernet and serial connection. Do you want to Reboot now?'. A red box highlights the 'Yes' button, with a red arrow pointing to the text '3. Click "Yes" to reboot the DS'.

System

Ethernet Configuration

Port Configuration

Monitor

Alarm

Syslogd

Tools

Ping

Reboot

Management

Home / Tools / Reboot

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

Yes

3. Click **"Yes"** to reboot the DS

1. Click **"Tools"**

2. Click **"Reboot"**

To Configure the USDG Client Mode

- Use web browser connect to device server with IP 192.168.1.22

System

Ethernet Configuration

Port Configuration

Port 1

Port 2

Port 3

Port 4

Monitor

Alarm

Syslogd

Tools

Management

Home / Port Configuration / Port 1 configuration

Basic Operation Advanced

Port 1 configuration

Type RS485

Baud Rate 9600

Parity None

Data Bits 8

Stop Bits 1

Flow Control None

Save

1. To Configure the “Basic” part first, then “Save” it

To Configure the USDG Client Mode

The screenshot shows the Advantech USDG Client Mode configuration interface. The left sidebar contains a menu with 'Port Configuration' (selected), 'Monitor', 'Alarm', 'Syslogd', 'Tools', and 'Management'. Under 'Port Configuration', 'Port 1' is selected. The main area has three tabs: 'Basic', 'Operation' (selected), and 'Advanced'. The 'Operation' tab shows the 'Port 1 configuration' section. The 'Mode' dropdown is set to 'USDG Data Mode'. The 'Protocol' is 'TCP'. The 'Data Idle Timeout(s)' is '60'. The 'Data Listen Port' is '5300'. The 'Command Listen Port' is '5400'. The 'Response Timeout(ms)' is '0'. The 'Frame Break(ms)' is '0'. The 'TCP Mode Extra Options' section has 'Auto Connect To Peer IP' checked. The 'Port Data Buffering' section has 'Media' set to 'None' and 'When Data Full' set to 'Stop'. The 'Pack conditions (Pack sent immediately when reach 1024 Bytes)' section has 'By size' selected. The 'Peer for Receiving Data' section has 'Peer Number' set to '1'. The 'Local Port' is '0'. The 'Peer IP address' is '192.168.1.1'. The 'Port' is '6100'. A 'Save' button is at the bottom.

1. Click "Port 1" in the left sidebar

2. Click "Operation" tab

3. Select to USDG Data Mode

4. If you want to keep the connection always linked up, select the option

5. Add 1 Peer Port for receiving data

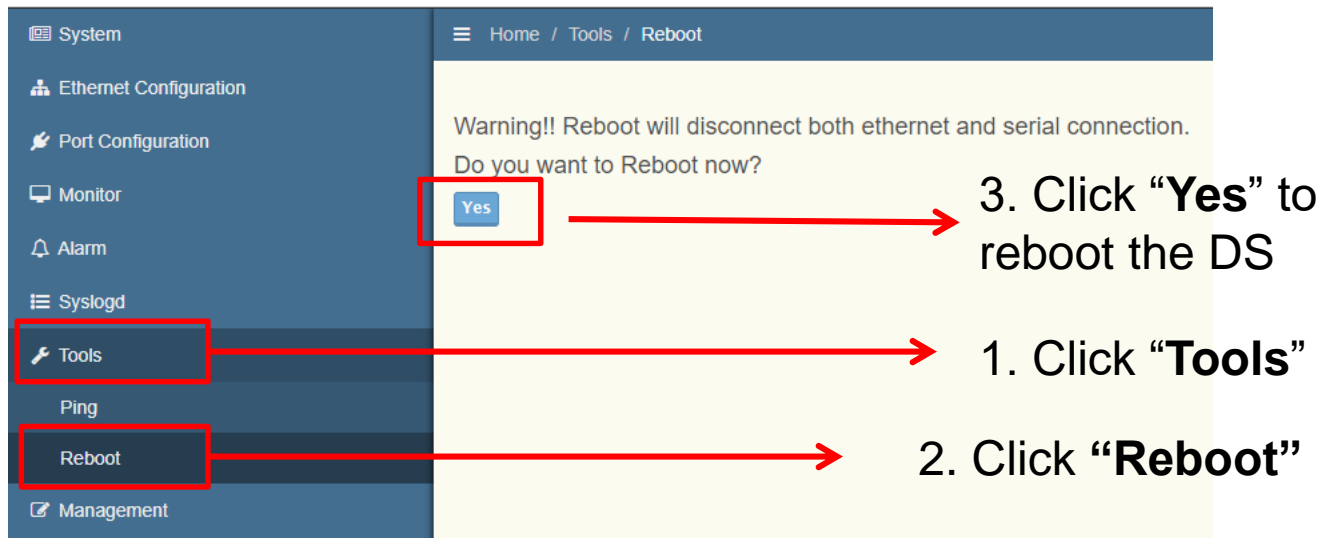
6. TCP Port of DS, Set to 0 means auto assign by EKI

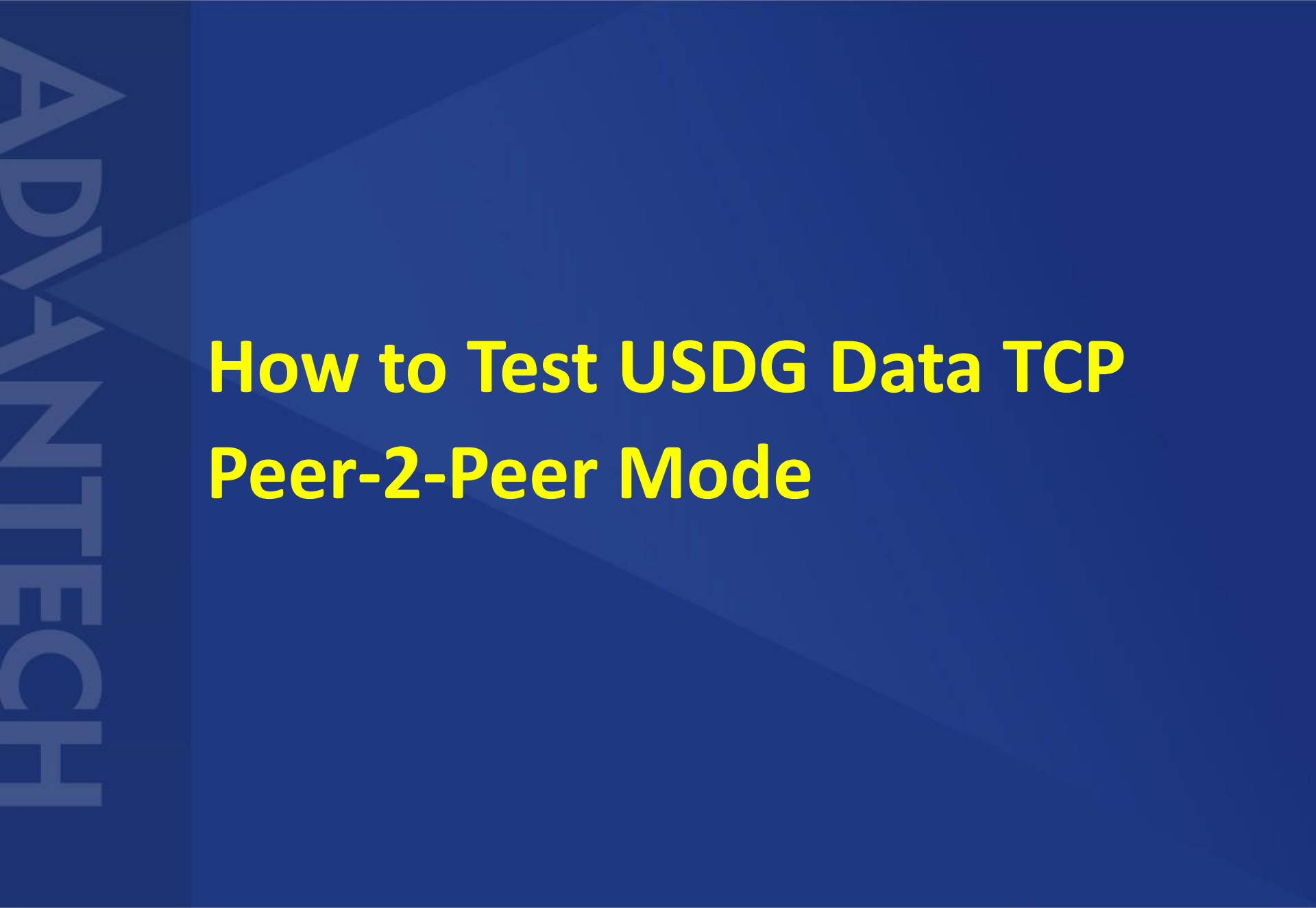
7. Fill in the IP address of TCP Server and TCP Port for receiving the data

8. Save it

To Configure the USDG Client Mode

- Save the configuration and reboot to initialize the changes

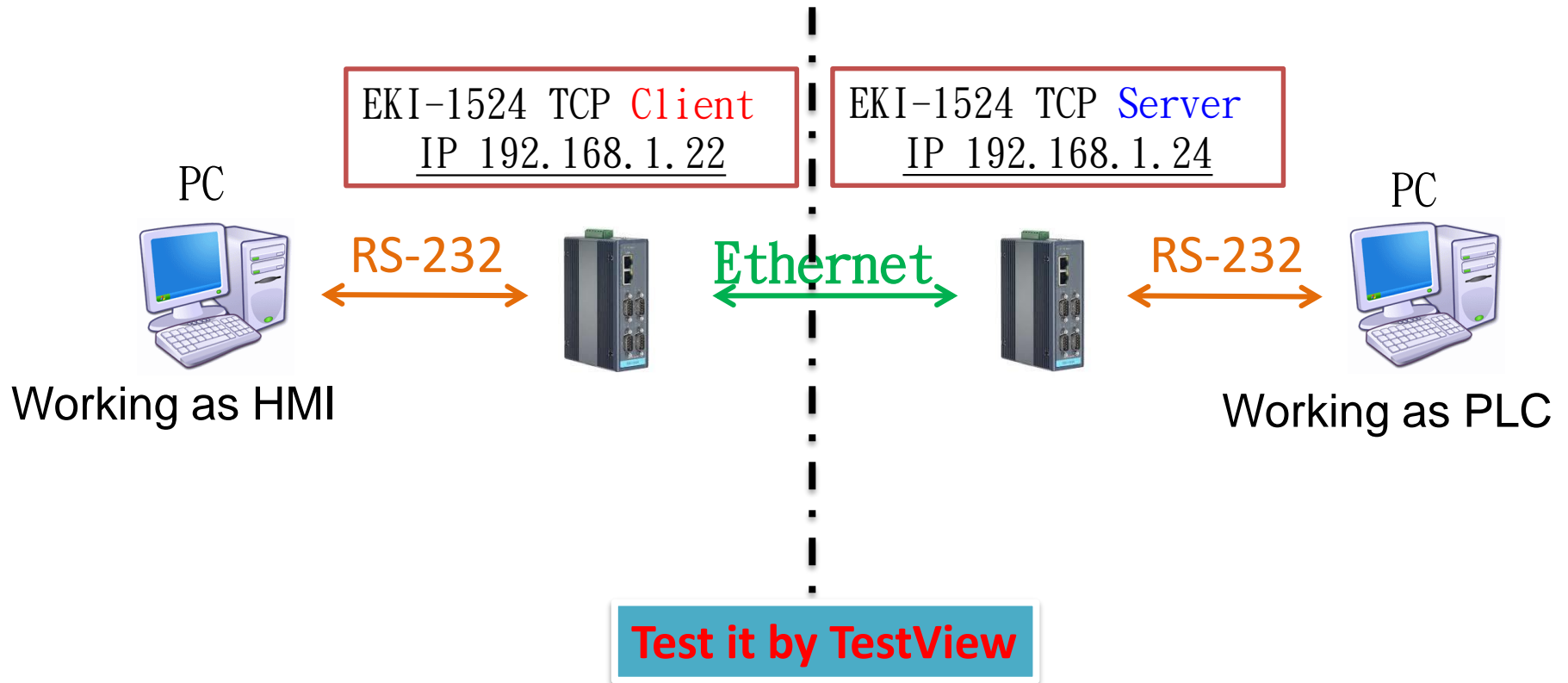




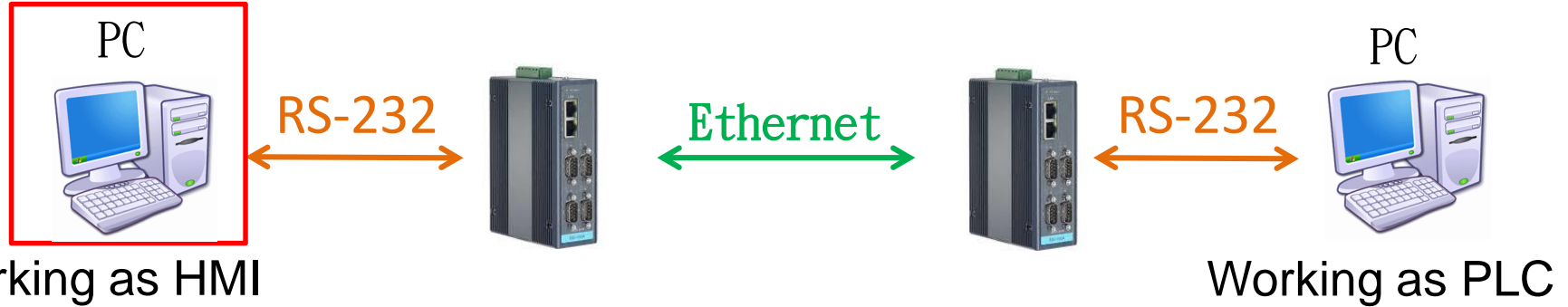
How to Test USDG Data TCP Peer-2-Peer Mode

Test the USDG P2P Mode

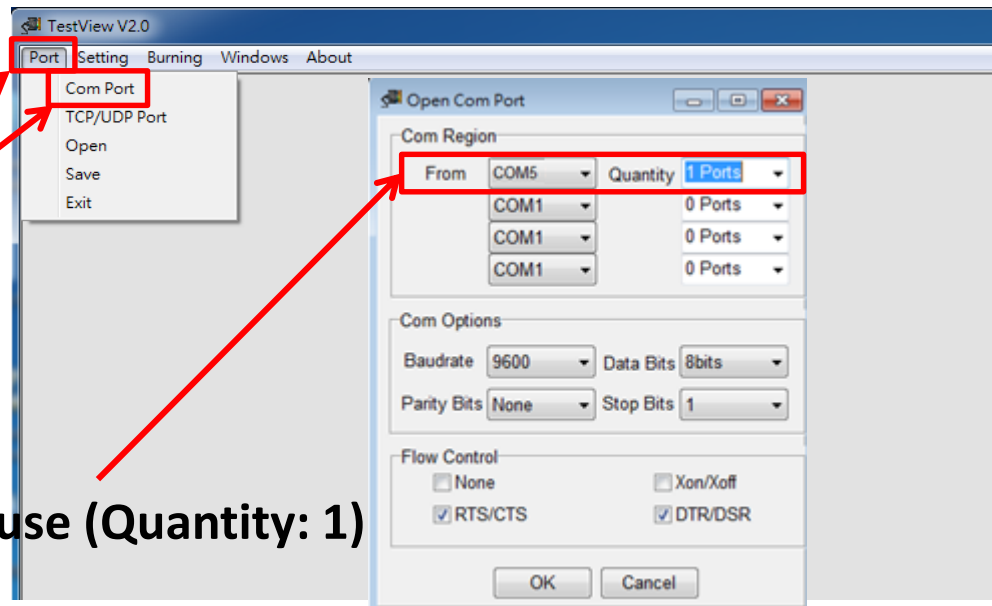
Topology



To Configure the COM Port



1. Click Port
2. Select COM Port
3. Which port you want to use (Quantity: 1)



To Configure the COM Port



RS-232



Ethernet



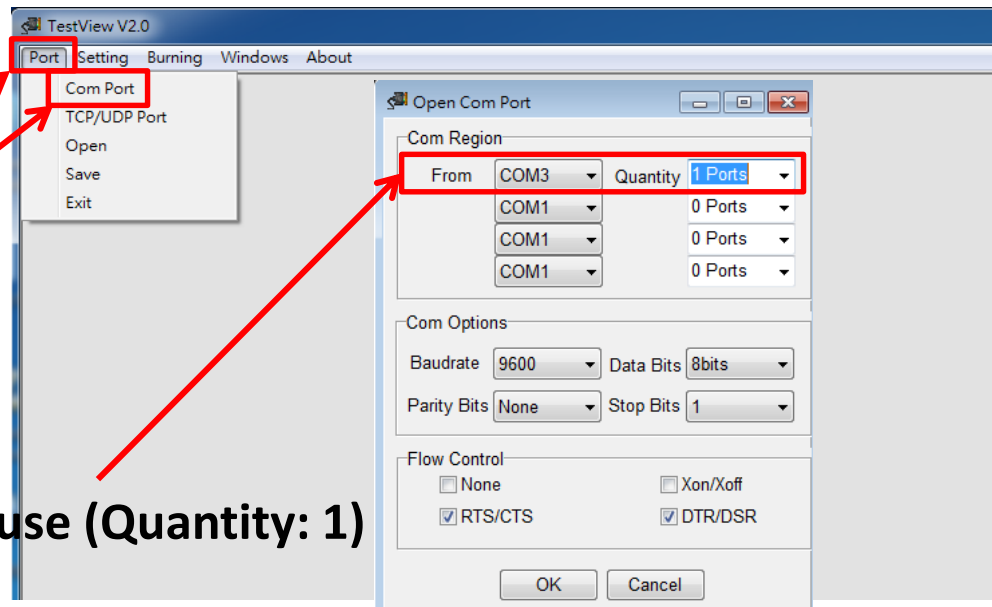
RS-232



Working as HMI

Working as PLC

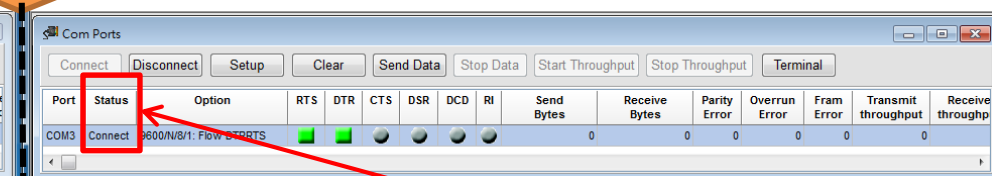
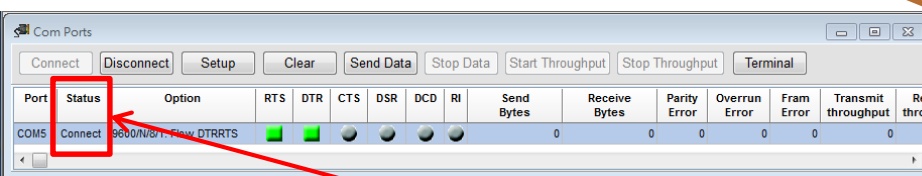
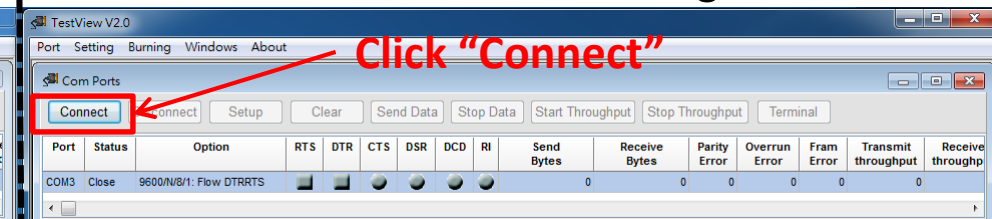
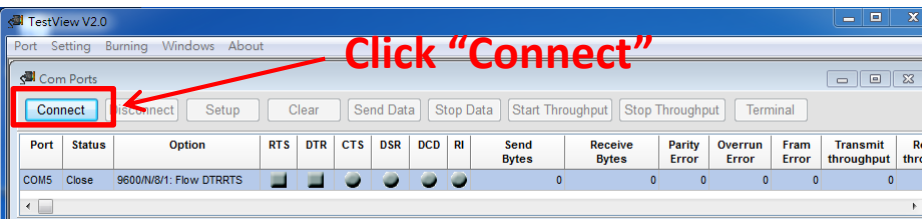
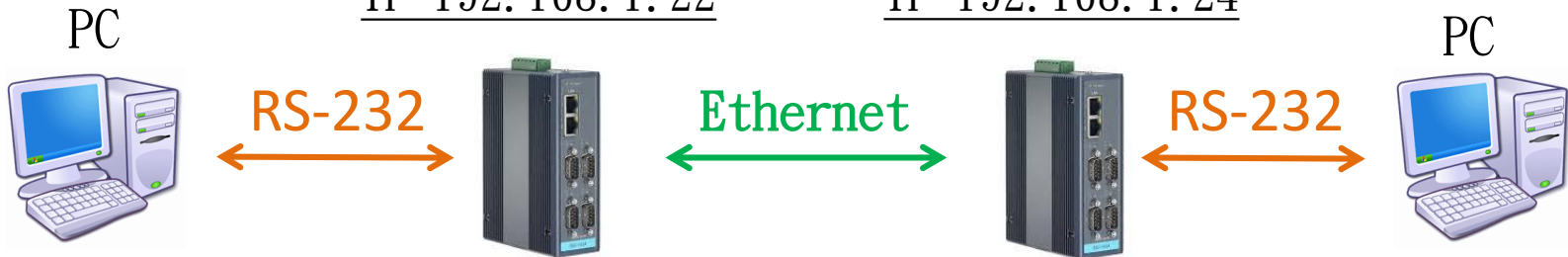
1. Click Port
2. Select COM Port
3. Which port you want to use (Quantity: 1)

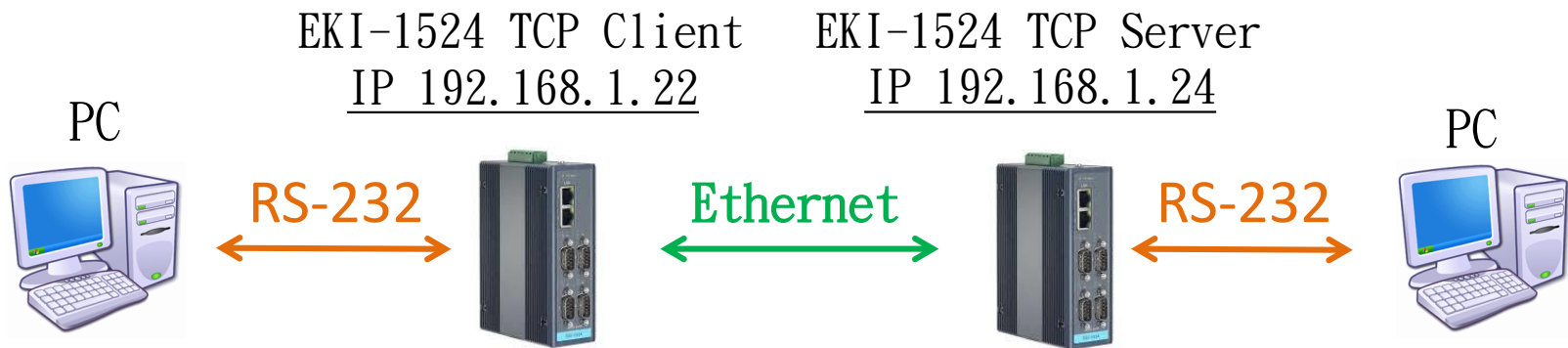


Test USDG P2P Mode

EKI-1524 TCP Client
IP 192.168.1.22

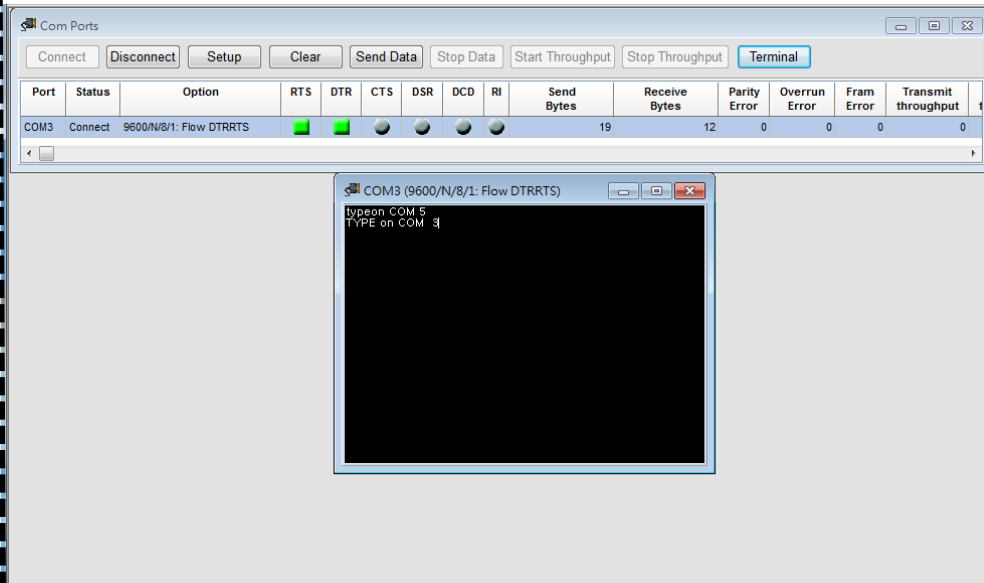
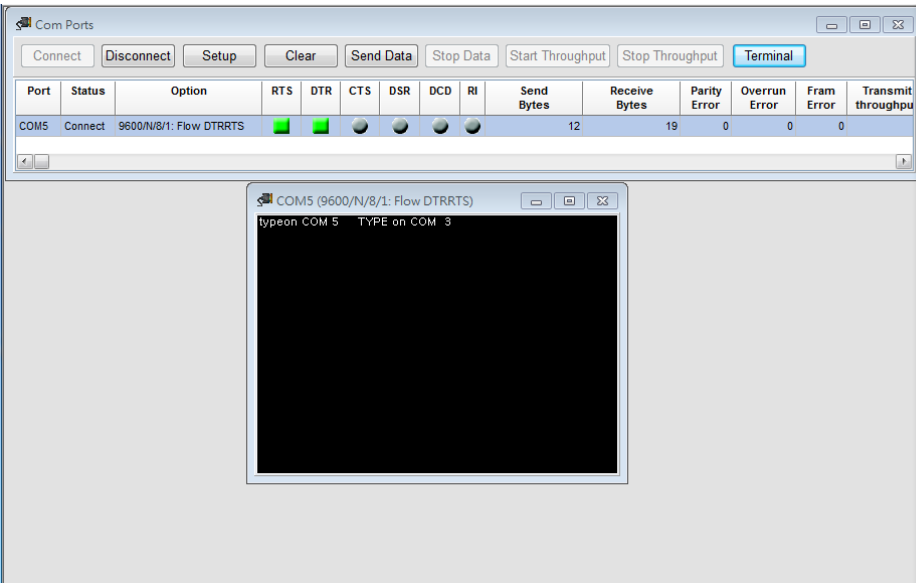
EKI-1524 TCP Server
IP 192.168.1.24





Left side is the TCP Client

Right side is the TCP Server



After connection, data can be sent by both side

Tips

USDG Client		USDG Server	
Ethernet IP	192.168.1.22	192.168.1.24	Ethernet IP
Peer IP Address	192.168.1.24		
		6100	Data Listen Port
Local Port	0 (Any)		
Peer TCP Port	6100		

EKI-1524 TCP **Client**
IP 192.168.1.22

EKI-1524 TCP **Server**
IP 192.168.1.24



RS-232



Ethernet



RS-232



Working as HMI

Working as PLC



Enabling an Intelligent Planet

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