

# 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

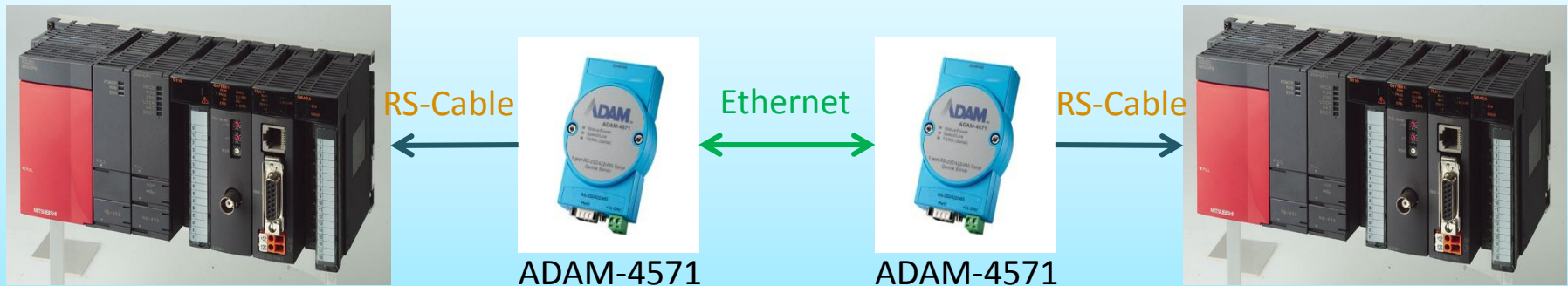
When serial device actively send data to PC. Serial device server build-up TCP communication with PC. Like bar-code actively send data to PC.



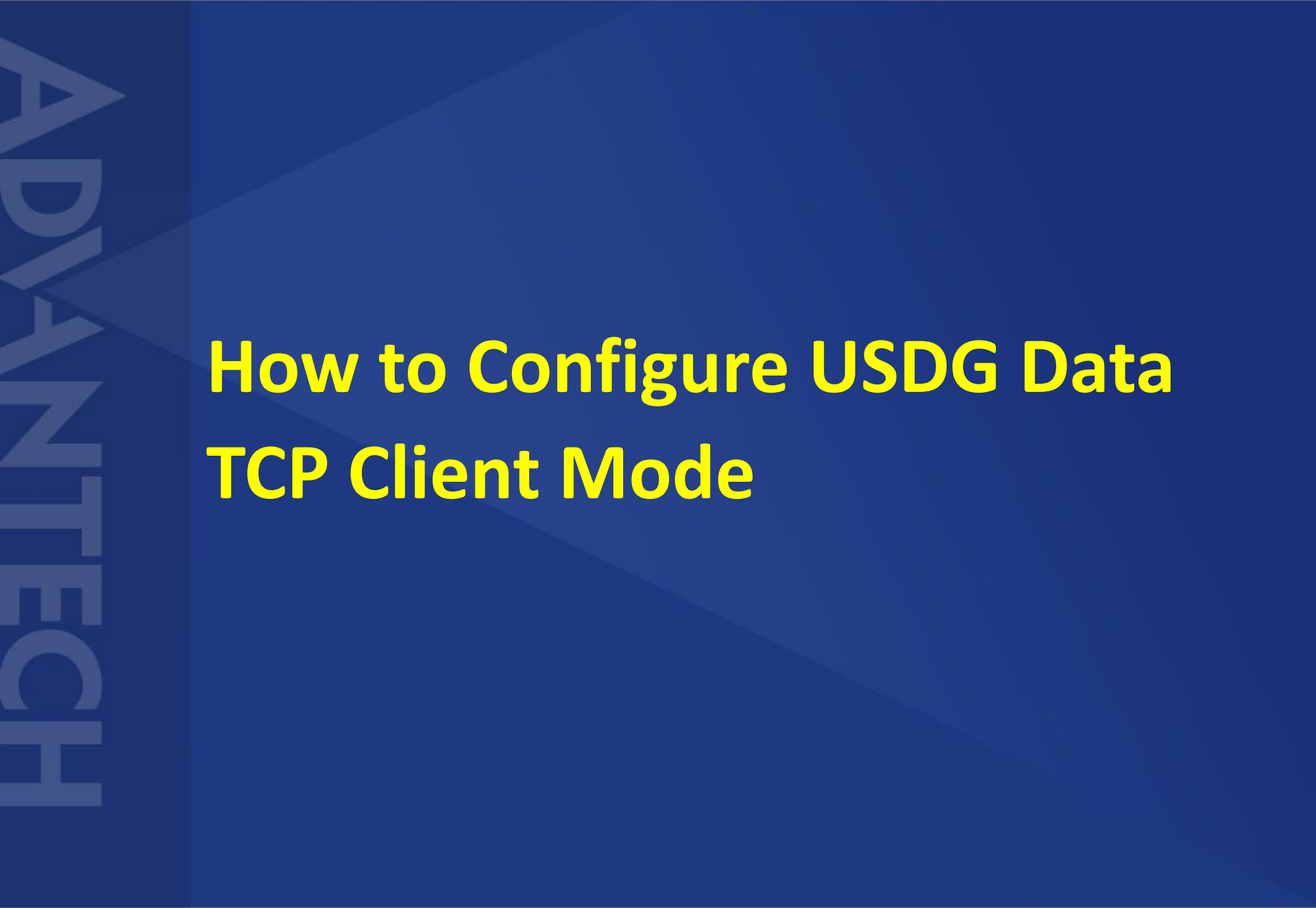
# Three different type of USDG Data Mode

## 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

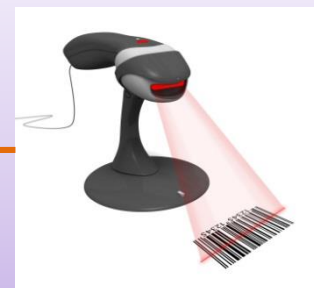
TCP Server  
IP 192.168.1.1  
PC



EKI-1524 Client  
IP 192.168.1.24



Scanner



Ethernet

RS-Cable

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 192.168.1.54

ADVANTECH iCom

Home  
System  
Ethernet Configuration  
Port Configuration  
Monitor  
Alarm  
Syslogd  
Tools  
Management

Port 1 configuration

Basic Operation Advanced

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 1 configuration' window in the ADVANTECH iCom software. 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 '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 (Packet sent immediately when reach 1024 Bytes)' section has 'By size' checked, 'By interval' checked, 'By end-character' checked, and 'By character-timeout' checked. The 'Peer for Receiving Data' section has 'Peer Number' set to '1'. The 'Peer IP address 1' is '192.168.1.1' and 'Port 1' is '6100'. The 'Save' button is at the bottom left.

Annotations:

- 1. Click "Port 1" in the left sidebar.
- 2. Click "Operation" tab.
- 3. Select "USDG Data Mode" in the Mode dropdown.
- 4. Add 1 Peer Port for receiving data (Peer Number 1).
- 5. TCP Port of DS, Set to 0 means auto assign by EKI (Port 1 6100).
- 6. Fill in the IP address of TCP Server and TCP Port for receiving the data (Peer IP address 1 192.168.1.1).
- 7. Save it (Save button).

2. Click "Operation"

3. Select to USDG Data Mode

4. Add 1 Peer Port for receiving data

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

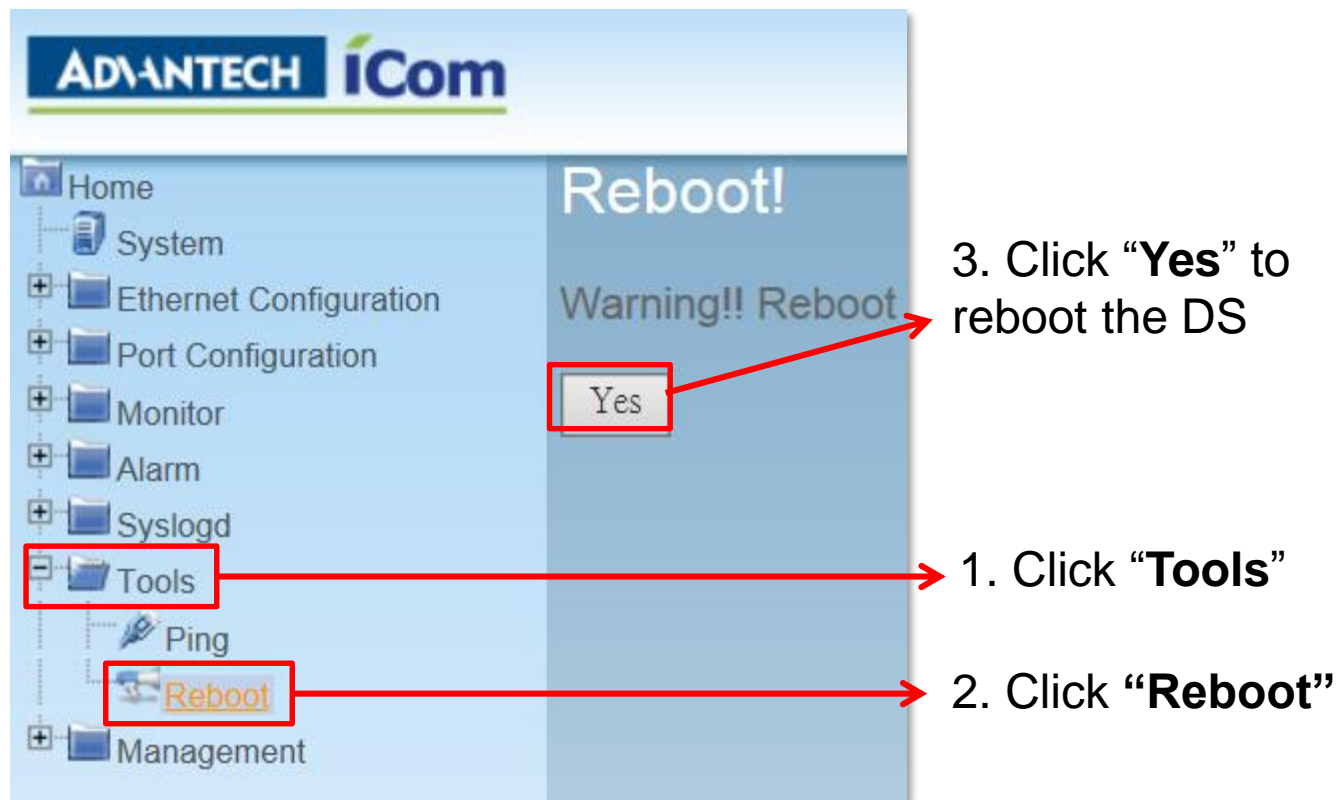
6. Fill in the IP address of TCP Server and TCP Port for receiving the data

7. Save it



# To Configure the USDG Client Mode

- Save the configuration and reboot to initialize the changes





# How to Test USDG Data TCP Client Mode

# Test Tool: TestView

Using the 3<sup>rd</sup> 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](http://solvline.com/eng/download_center/download_new.php?dno=3&fno=2&c2=49)

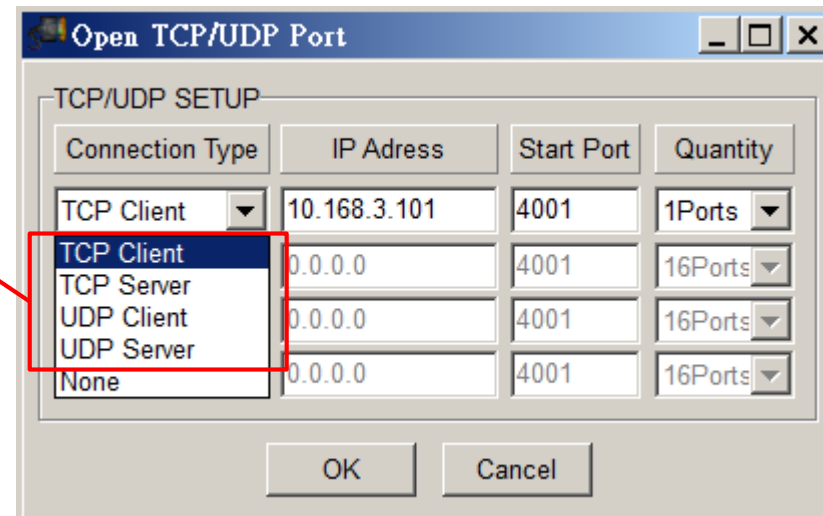
# TestView V2.5

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



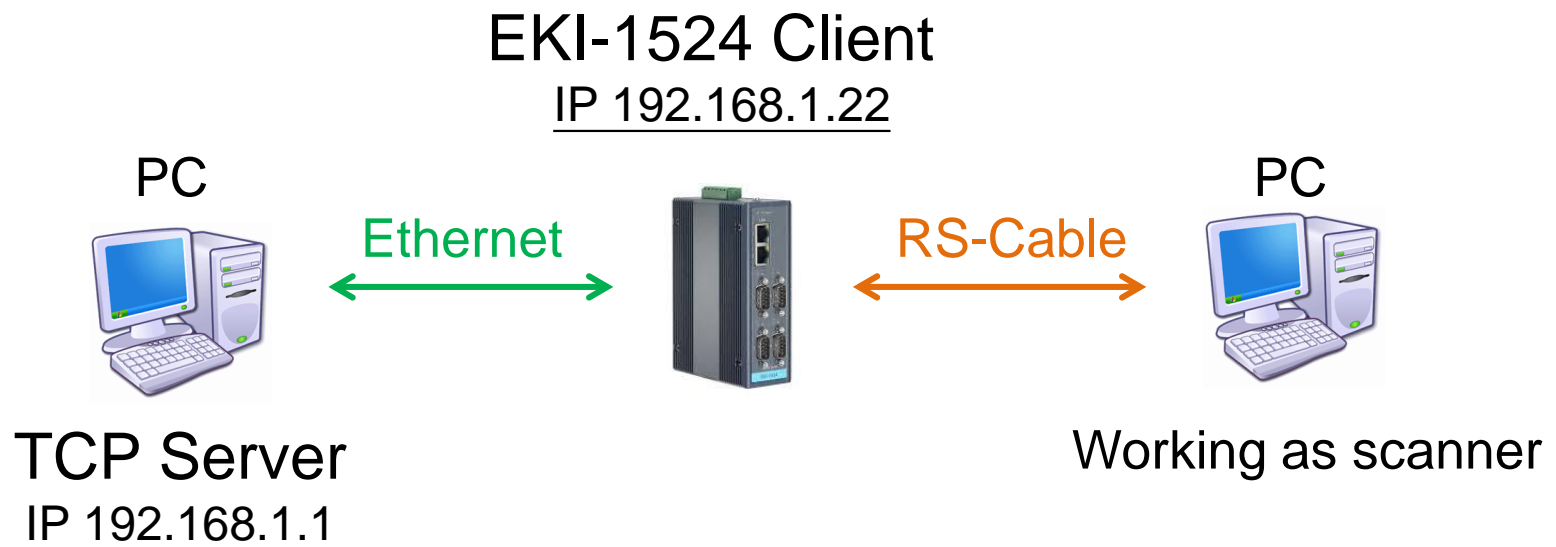
## Connect to:

- 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)



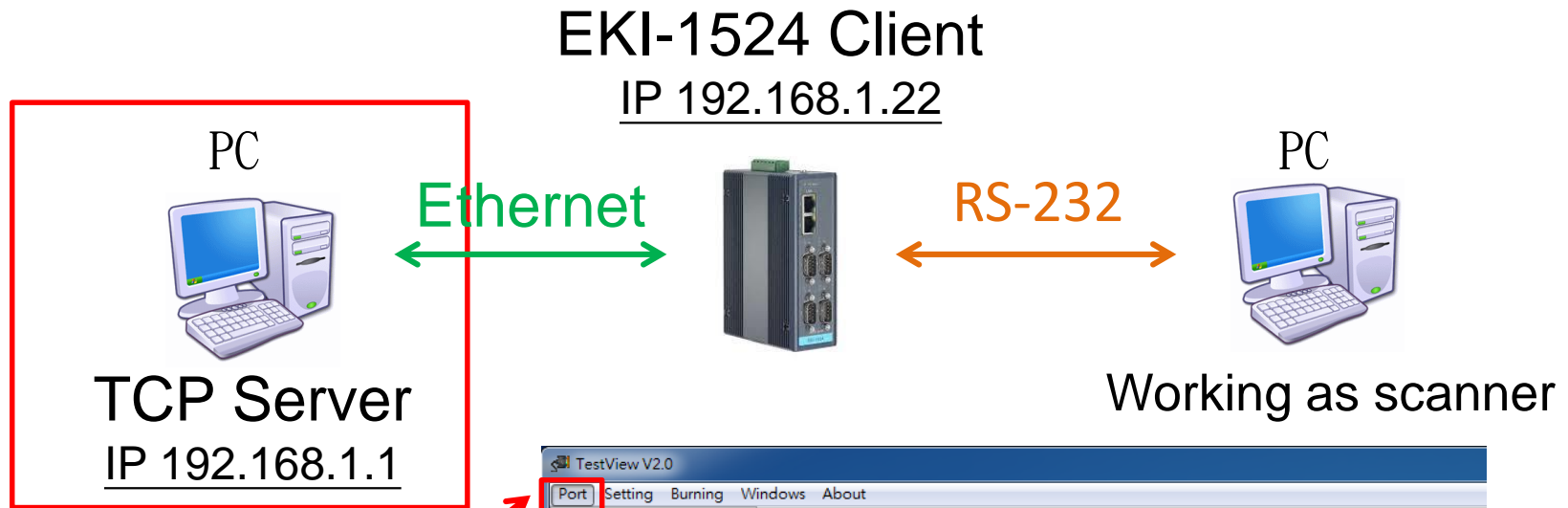
# Test the USDG Client Mode

## Topology



**Test it by TestView**

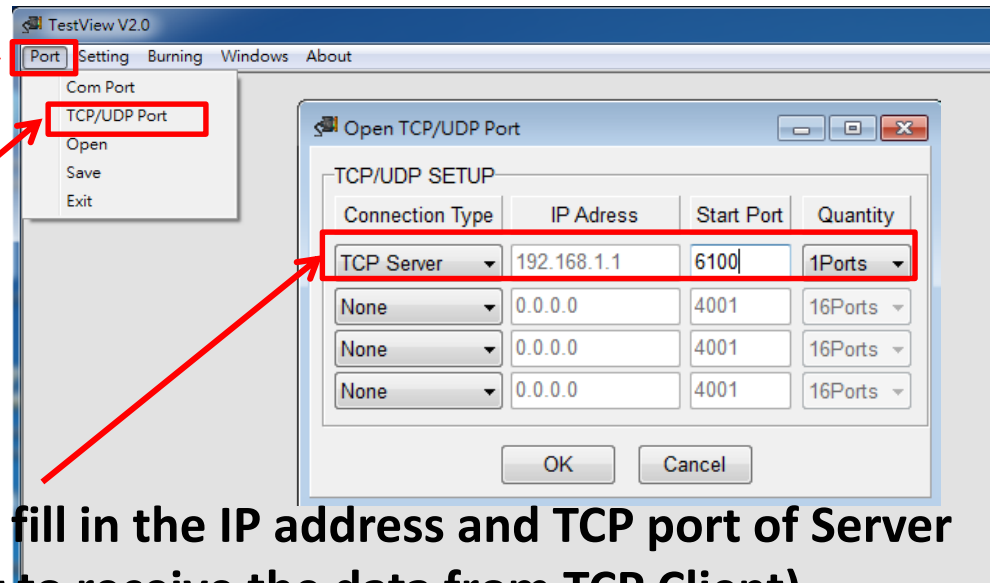
# To Configure the TCP Server



**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

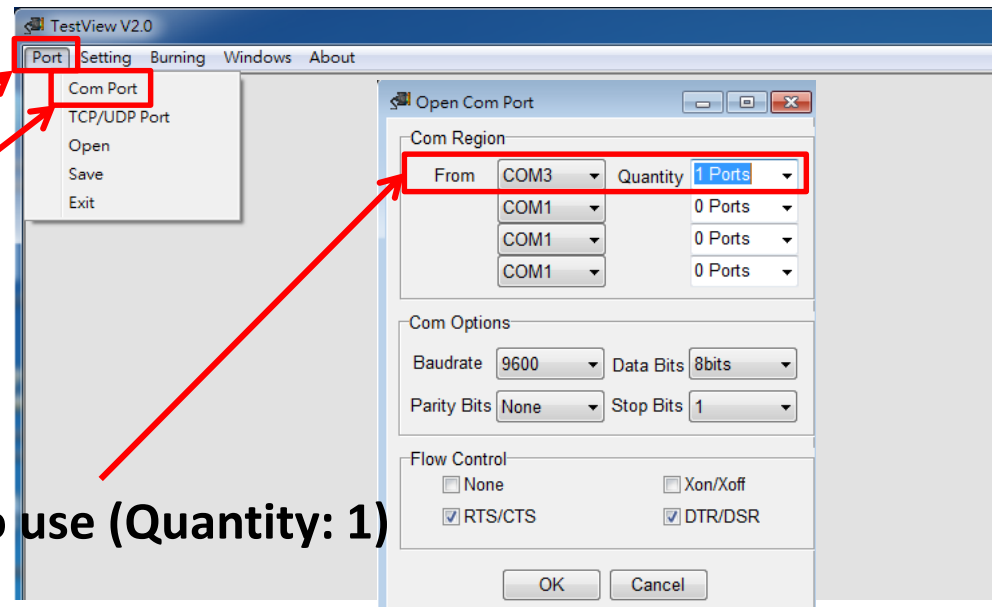


Working as scanner

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

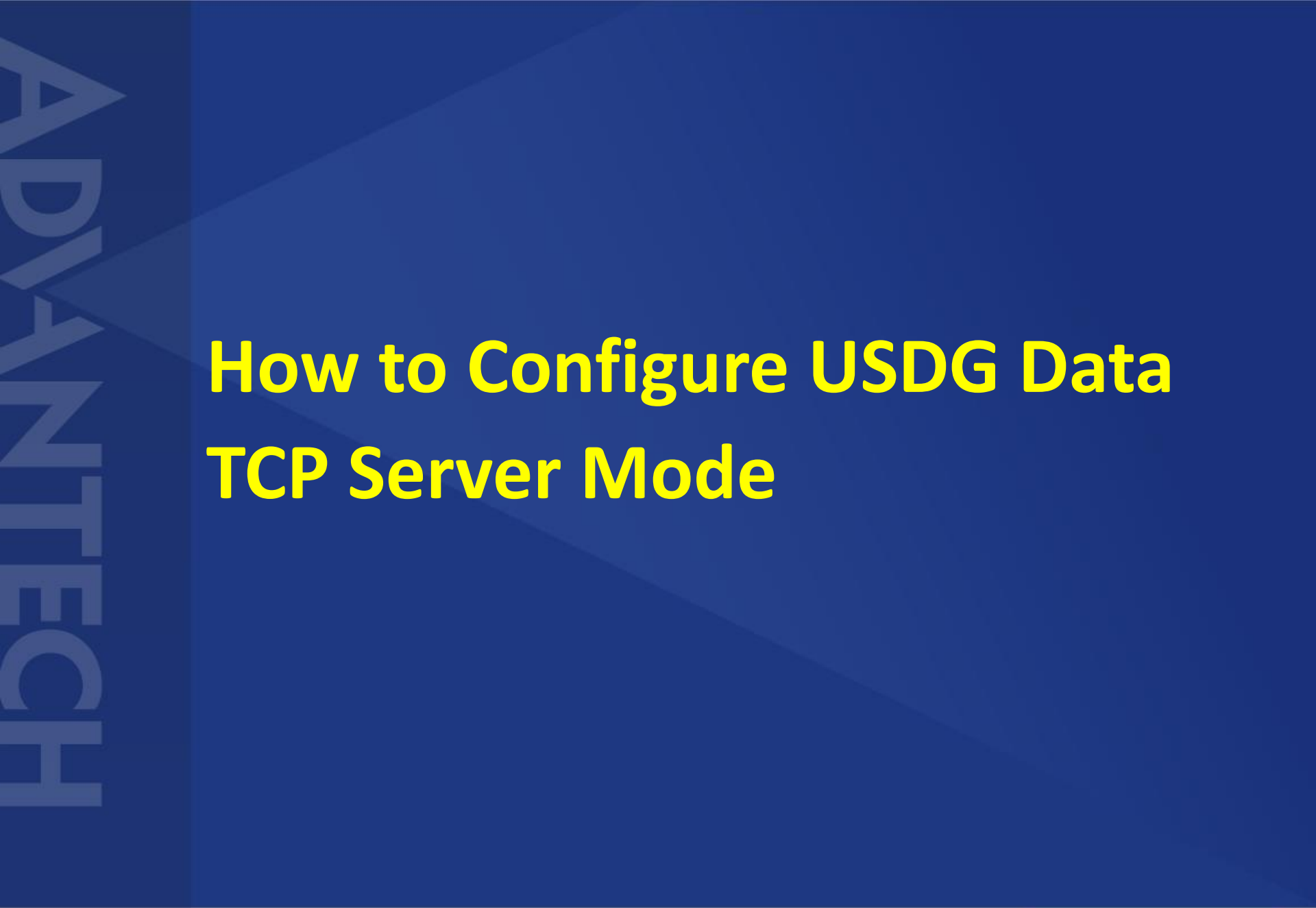
type on COMType on TCP Server

**After connection, data can be sent by both side**

# Tips !

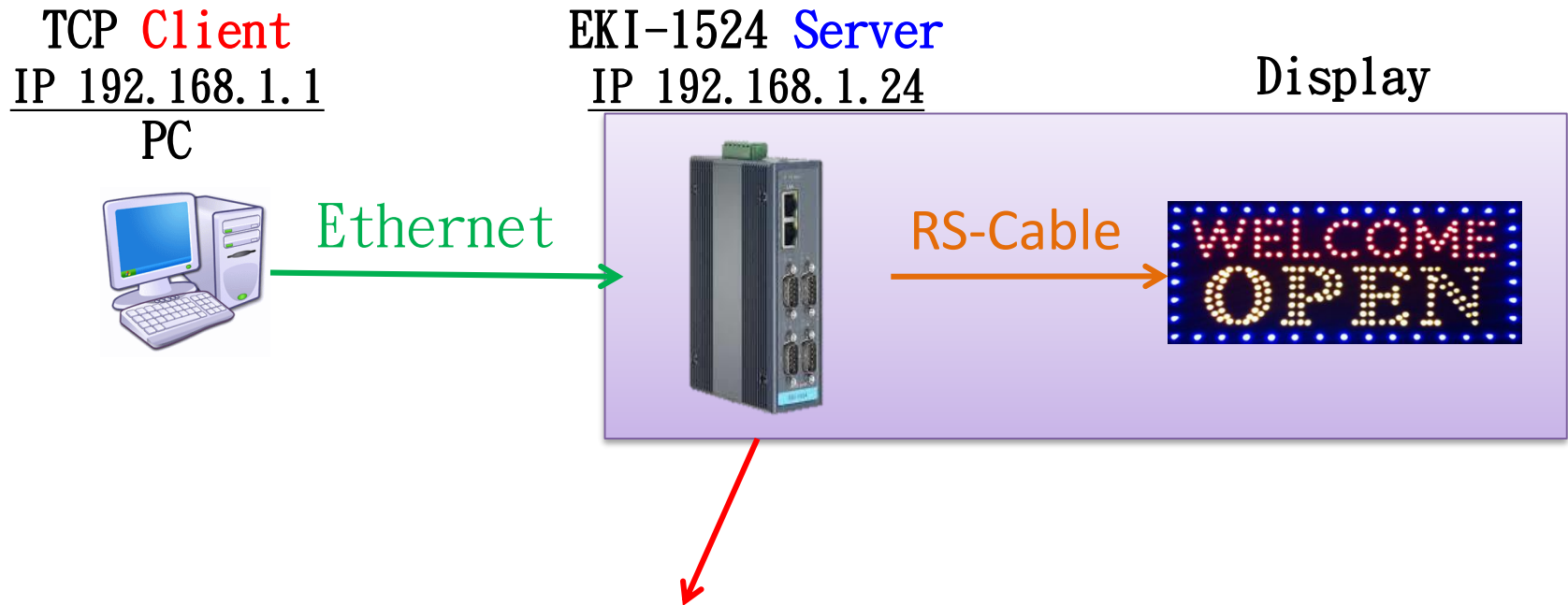
Host TCP Server		USDG Client of EKI	
		192.168.1.52	Ethernet IP
IP Address	192.168.1.100	192.168.1.100	Peer IP Address
		Any	Local Port
Data Listening Port	6100	6100	Peer TCP Port





# 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

ADVANTECH iCom

Home  
System  
Ethernet Configuration  
Port Configuration  
  Port 1  
  Port 2  
  Port 3  
  Port 4  
Monitor  
Alarm  
Syslogd  
Tools  
Management

## Port 1 configuration

Basic	Operation	Advanced
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

Port 1 configuration

Basic	Operation	Advanced
Mode	USDG Data Mode	
Protocol	TCP	
Data Idle Timeout(s)	60	
Data Listen Port	5300	
Command Listen Port	5400	
Response Timeout(ms)	0	
Frame Break(ms)	0	
TCP Mode Extra Options		
Auto Connect To Peer IP	<input type="checkbox"/>	
Port Data Buffering		
Media	NONE	
When Data Full	Stop	
Pack conditions (Packet sent immediately when reach 1024 Bytes)		
<input type="checkbox"/> By size	<input type="text"/> Bytes(1 ~ 1024 Bytes)	
<input type="checkbox"/> By interval	<input type="text"/> ms(1 ~ 60000 ms)	
<input type="checkbox"/> By end-character	Char Format <input type="text"/> ASCII	
<input type="checkbox"/> By character-timeout	Char Value <input type="text"/>	
Peer Number	Peer for Receiving Data 0	
Save		

2. Click "Operation"

3. Select to USDG Data Mode

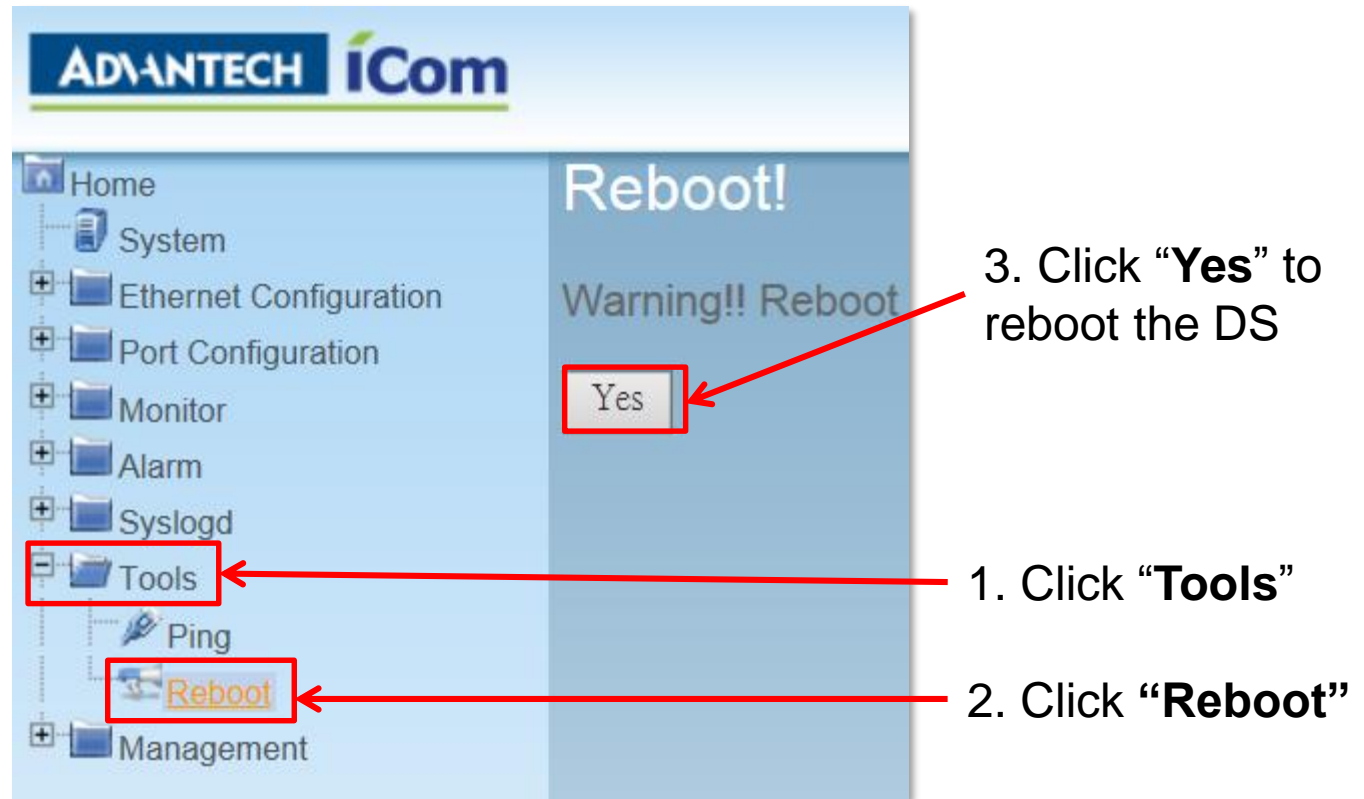
4. Fill in "Data Listen Port"  
(Default: 5300)

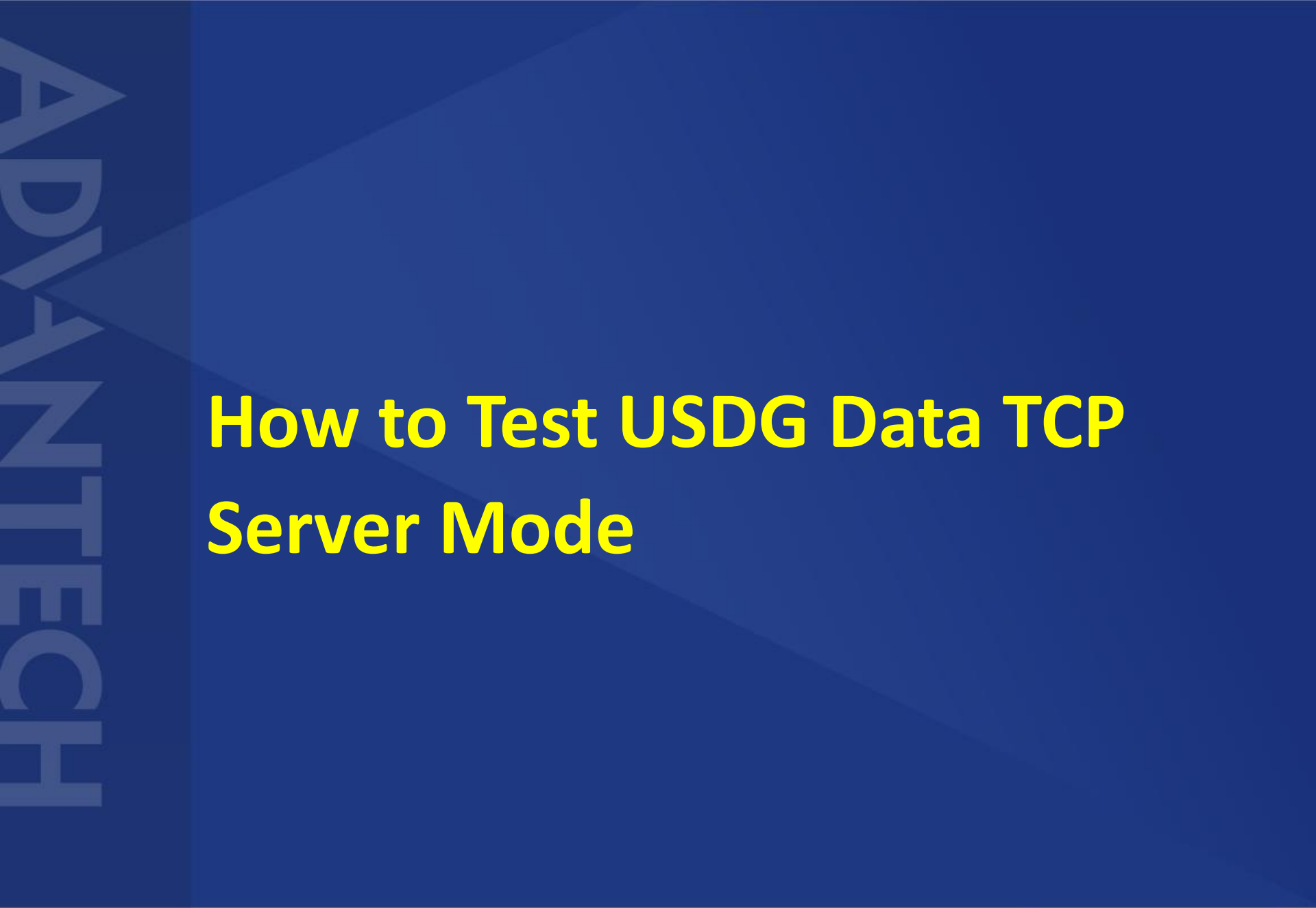
5. Don't need to configure the  
peer port  
because Our Role is working  
as **server**

6. Save it

# To Configure the USDG Server Mode

- Save the configuration and reboot to initialize the changes



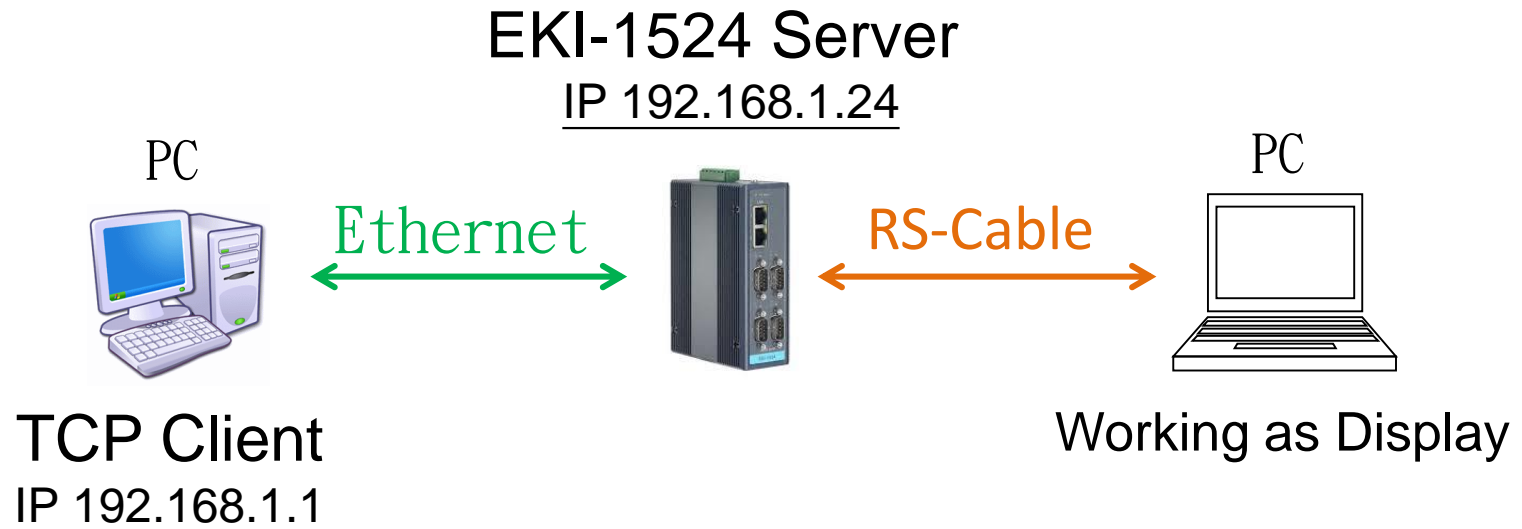


# How to Test USDG Data TCP Server Mode



# Test the USDG Server Mode

## Topology

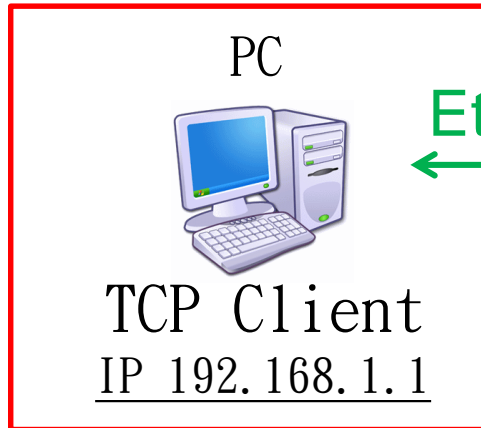


**Test it by TestView**

# To Configure the TCP Client

EKI-1524 Server

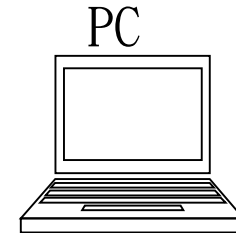
IP 192.168.1.24



Ethernet



RS-232

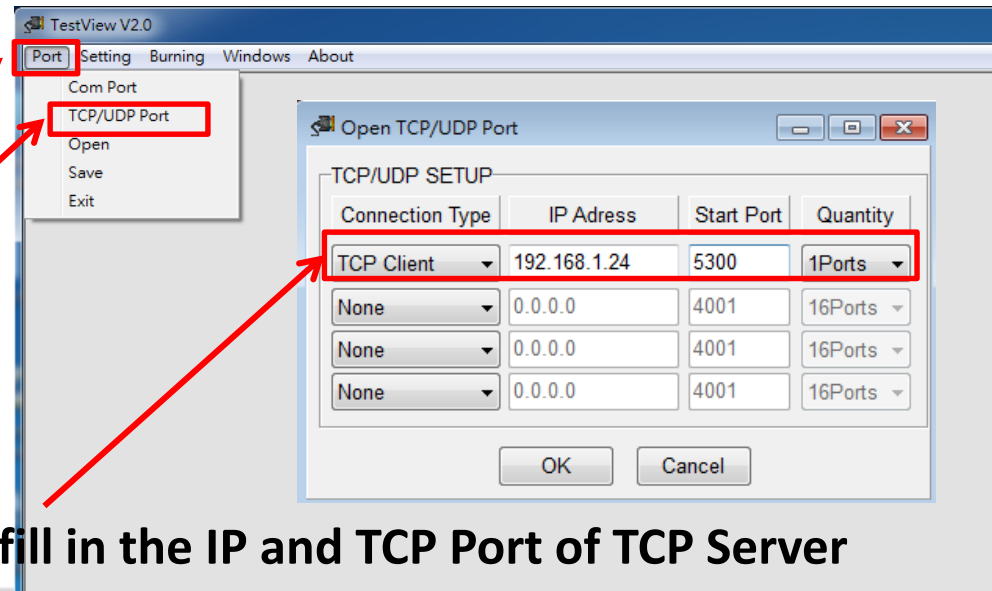


Working as Display

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



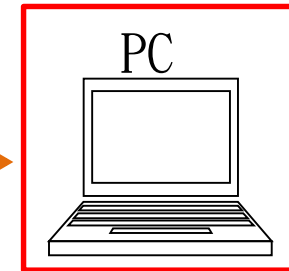
TCP Client

IP 192.168.1.1

Ethernet



RS-232

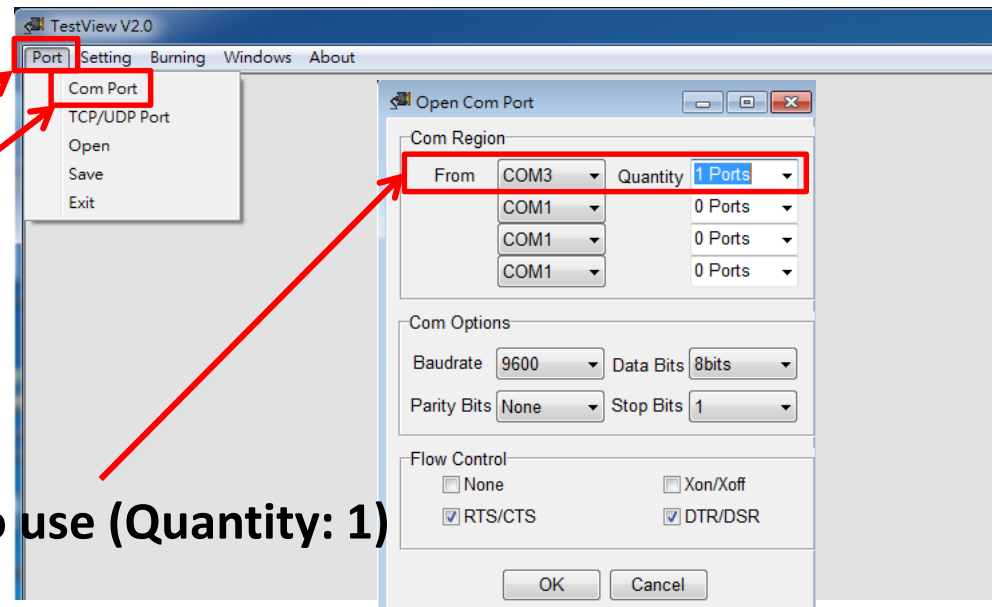


Working as Display

1. Click Port

2. Select COM Port

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



**TCP Client**  
**IP 192.168.1.1**



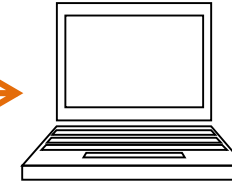
**Ethernet**

**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**

TestView V2.0

Port Setting Burning Windows About

**TCP/UDP Ports**

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

Port	Status	Source	Destination	Send Bytes	Receive Bytes	Transmit throughput	Receive throughput	Run
Tcp_client	Disconnect		192.168.1.24:5300	0	0	0	0	T

**Click "Connect"**

**Then you can see the status become "Connected"**

**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
COM3	Close	9600/N/8/1: Flow DTRRTS							0	0	0	0	0	0

**Click "Connect"**

**Then you can see the status become "Connected"**

**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	Run
Tcp_client	Connect	192.168.1.1:50554	192.168.1.24:5300	0	0	0	0	T

**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
COM3	Connect	9600/N/8/1: Flow DTRRTS	■	■					0	0	0	0	0	0

**Device server will accept this session after receiving the request**

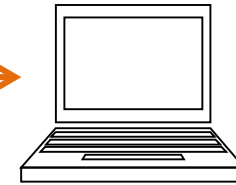
**TCP Client**  
**IP 192.168.1.1**



**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**

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

**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

**TCP-Server 192.168.1.1:6100 (Connected)**

type on COM  
Type on TCP Server

**COM3 (9600/N/8/1: Flow DTRRTS)**

type on COMType on TCP Server

**After connection, data can be sent by both side**

# Tips!!

TCP Client		USDG Server	
Ethernet IP	192.168.1.100	192.168.1.51	Ethernet IP
Peer IP Address	192.168.1.51		
Peer TCP Port	5300	5300	Data Listen Port

Host TCP **Client**



IP 192.168.1.100

Ethernet

USDG **Server**



IP 192.168.1.52

Working as Display

RS-232



WELCOME  
OPEN

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

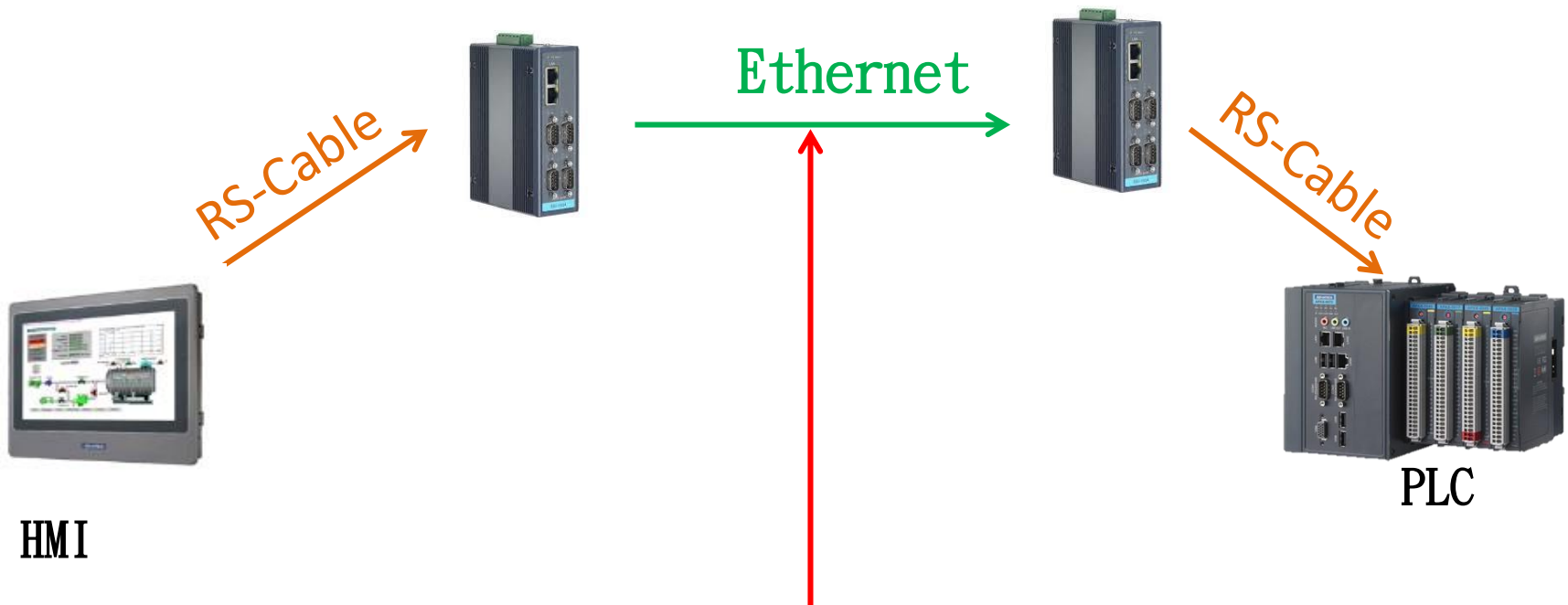
# Topology of USDG P2P Mode

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

ADVANTECH iCom

Home  
System  
Ethernet Configuration  
Port Configuration  
Monitor  
Alarm  
Syslogd  
Tools  
Management

## Port 1 configuration

Basic	Operation	Advanced
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 'Port 1 configuration' window with several elements highlighted by red boxes and arrows:

- Operation Tab:** A red box highlights the 'Operation' tab, with an arrow pointing to it from step 2.
- Mode:** A red box highlights the 'Mode' dropdown menu, which is set to 'USDG Data Mode', with an arrow pointing to it from step 3.
- Data Listen Port:** A red box highlights the 'Data Listen Port' input field, which contains the value '5300', with an arrow pointing to it from step 4.
- Peer for Receiving Data:** A red box highlights the 'Peer for Receiving Data' dropdown menu, which is set to '0', with an arrow pointing to it from step 5.
- Save Button:** A red box highlights the 'Save' button at the bottom left, with an arrow pointing to it from step 6.

The configuration form includes the following sections and fields:

- Basic / Operation / Advanced:** Tabbed interface.
- Mode:** USDG Data Mode (dropdown).
- Protocol:** TCP (dropdown).
- Data Idle Timeout(s):** 60 (input).
- Data Listen Port:** 5300 (input).
- Command Listen Port:** 5400 (input).
- Response Timeout(ms):** 0 (input).
- Frame Break(ms):** 0 (input).
- TCP Mode Extra Options:**
  - Auto Connect To Peer IP:** ☐
- Port Data Buffering:**
  - Media:** NONE (dropdown).
  - When Data Full:** Stop (dropdown).
- Pack conditions (Packet sent immediately when reach 1024 Bytes):**
  - ☐ By size: [ ] Bytes(1 ~ 1024 Bytes)
  - ☐ By interval: [ ] ms(1 ~ 60000 ms)
  - ☐ By end-character: Char Format ASCII (dropdown), Char Value [ ]
  - ☐ By character-timeout
- Peer Number:** 0 (dropdown).
- Peer for Receiving Data:** 0 (dropdown).
- Save:** Button at the bottom left.

2. Click "Operation"

3. Select to USDG Data Mode

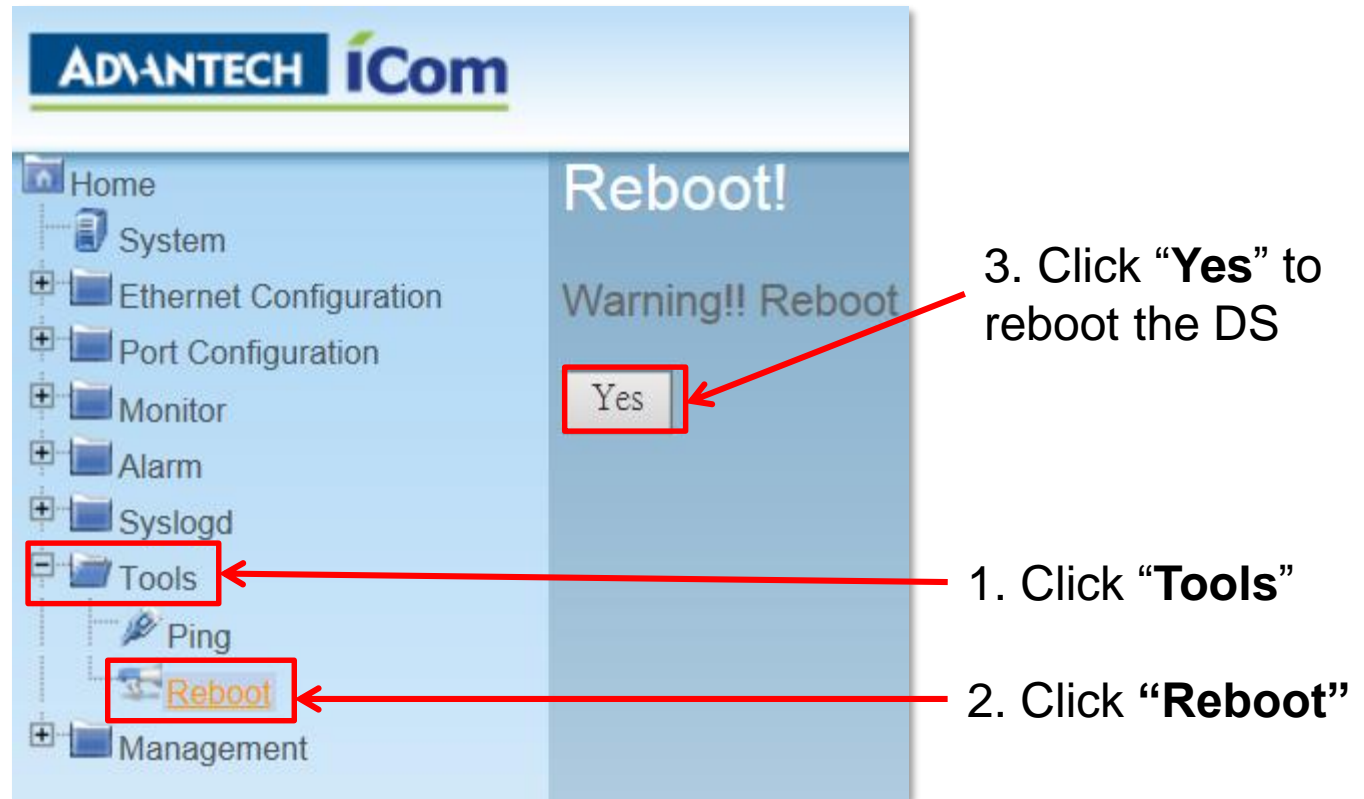
4. Fill in "Data Listen Port"  
(Default: 5300)

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

6. Save it

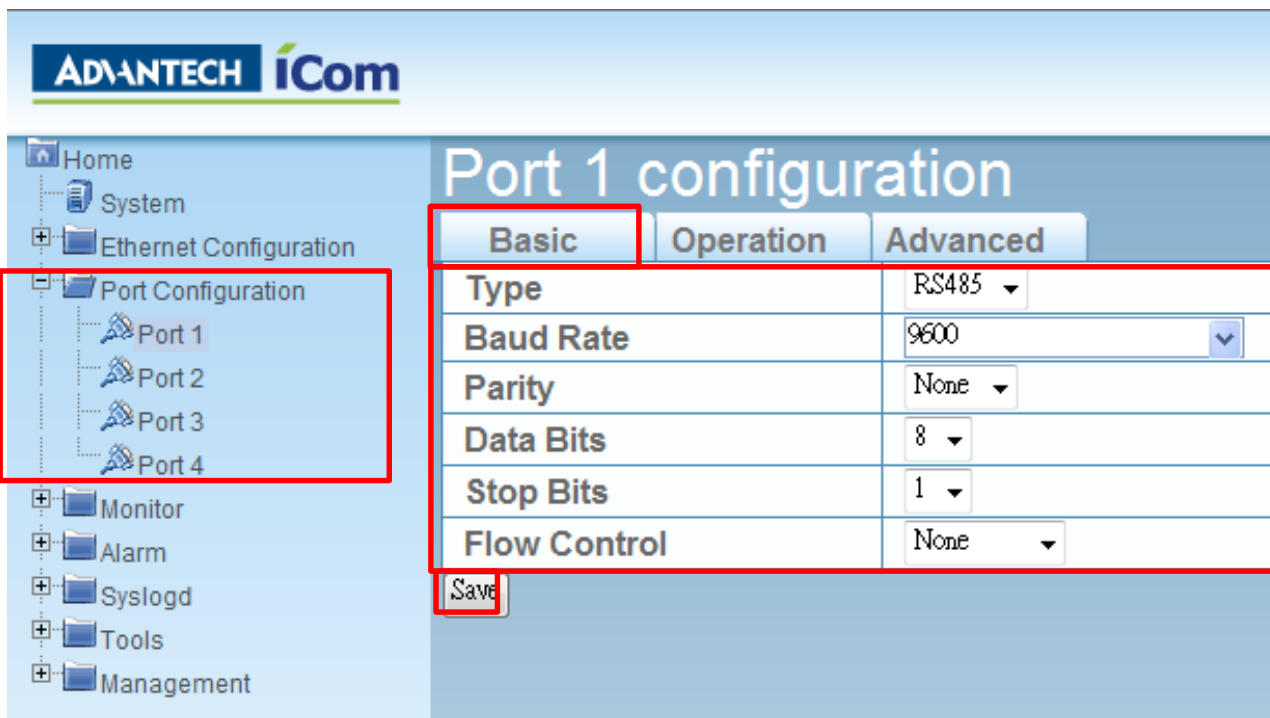
# To Configure the USDG Server Mode

- Save the configuration and reboot to initialize the changes



# To Configure the USDG Client Mode

- Use web browser connect to device server with IP 192.168.1.24



ADVANTECH iCom

Home

System

Ethernet Configuration

Port Configuration

- Port 1
- Port 2
- Port 3
- Port 4

Monitor

Alarm

Syslogd

Tools

Management

## Port 1 configuration

Basic	Operation	Advanced
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

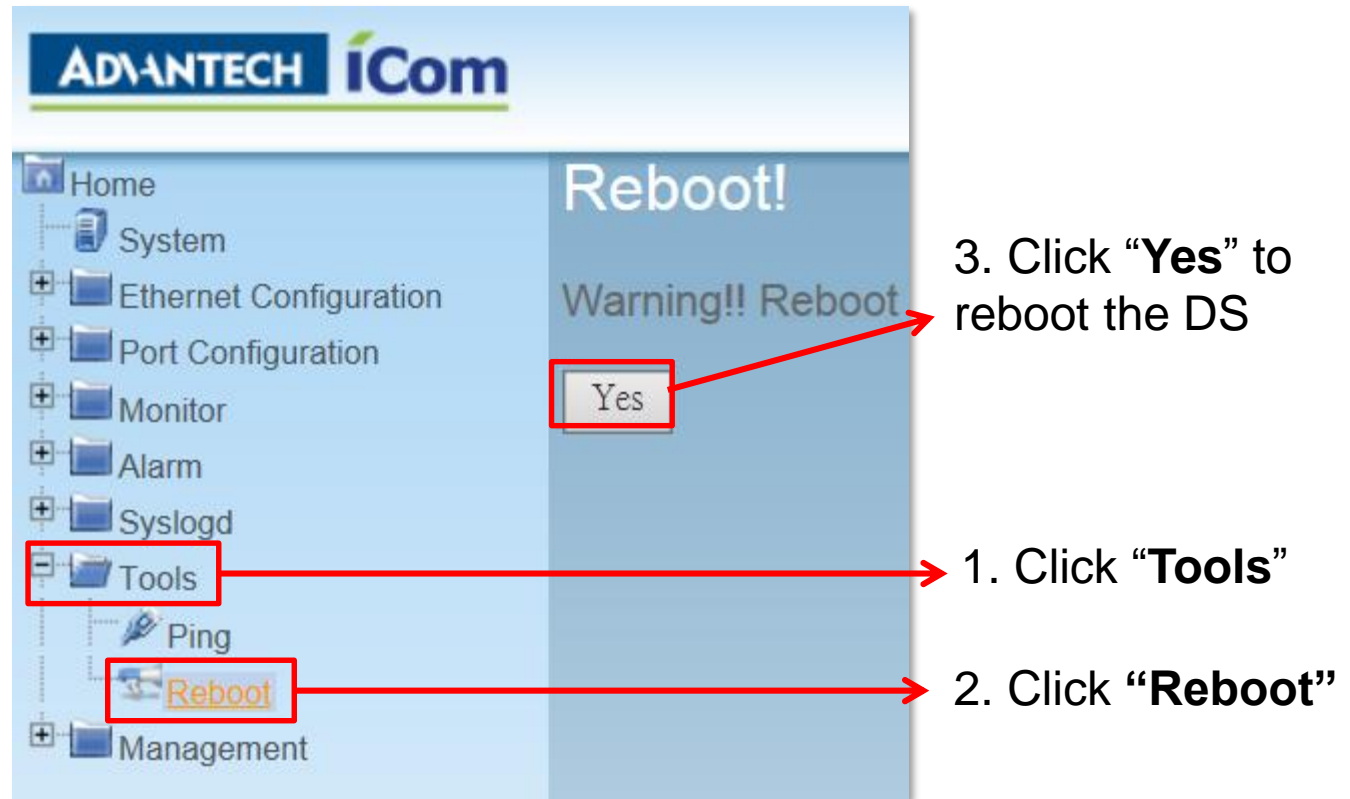
# To Configure the USDG Client Mode

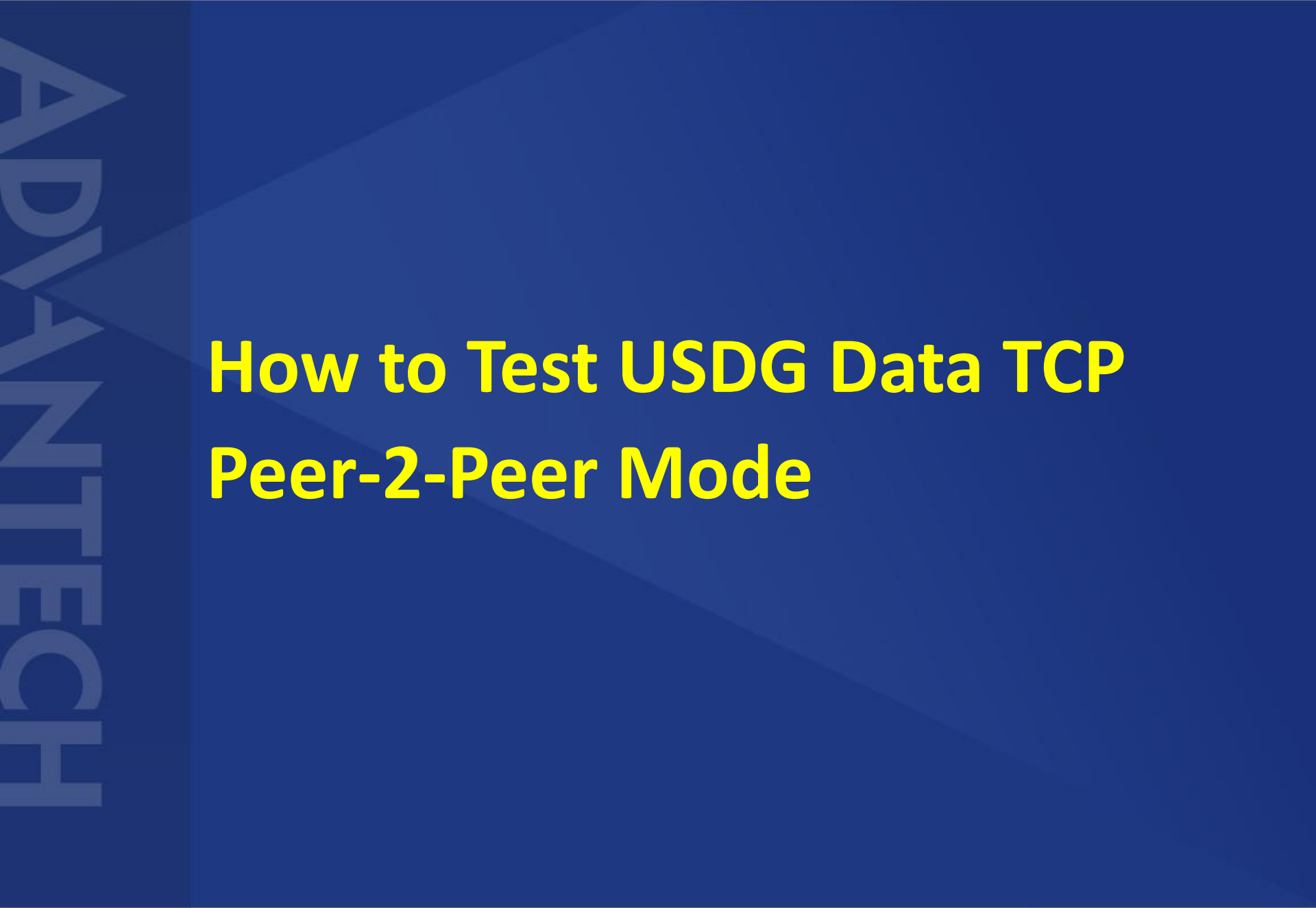
The screenshot shows the 'Port 1 configuration' window in the ADVANTECH iCom software. The 'Operation' tab is selected. The 'Mode' is set to 'USDG Data Mode'. The 'Protocol' is set to 'TCP'. The 'Data Idle Timeout(s)' is 60. The 'Data Listen Port' is 5300. The 'Command Listen Port' is 5400. The 'Response Timeout(ms)' is 0. The 'Frame Break(ms)' is 0. The 'Auto Connect To Peer IP' checkbox is checked. The 'Media' is set to 'NONE'. The 'When Data Full' is set to 'Stop'. The 'Pack conditions' section shows 'By size' selected with a value of 1024 Bytes. The 'Peer for Receiving Data' section shows 'Peer Number' 1, 'Peer IP address 1' 192.168.1.24, and 'Port 1' 5300. The 'Save' button is at the bottom left.

2. Click "Operation"
3. Select to USDG Data Mode
4. Click in the Client mode
5. In the Client mode, Use Peer Port for receiving data <Max 16 Peer>
6. EKI use TCP Port connect to Peer IP address
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

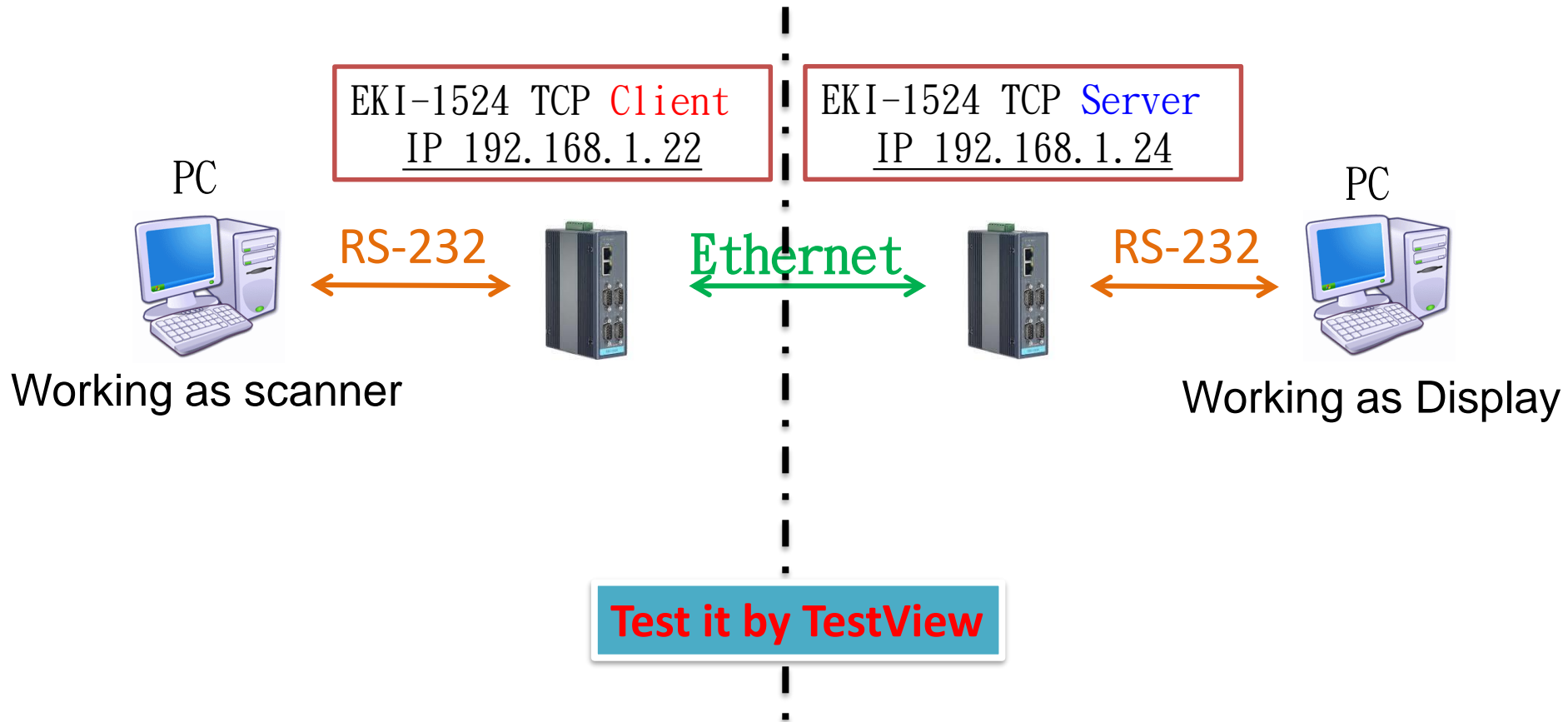




# How to Test USDG Data TCP Peer-2-Peer Mode

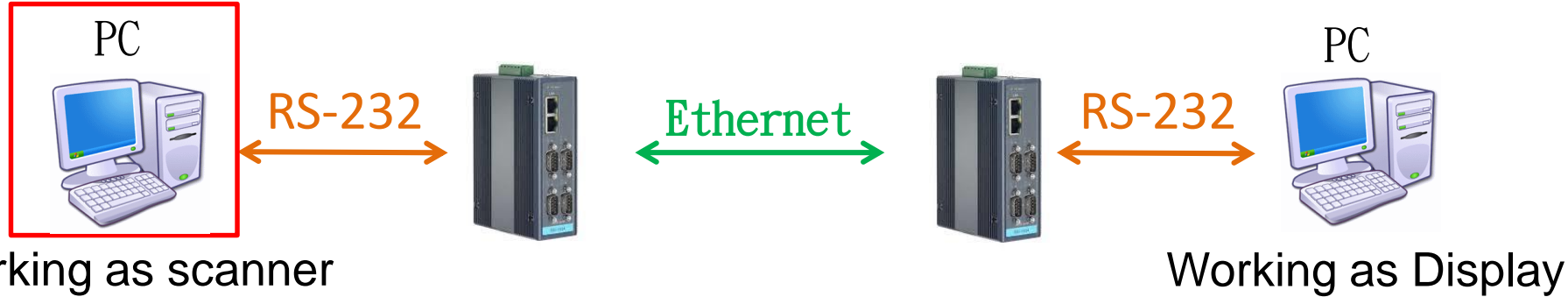
# Test the USDG P2P Mode

## Topology





# To Configure the COM Port



1. Click Port

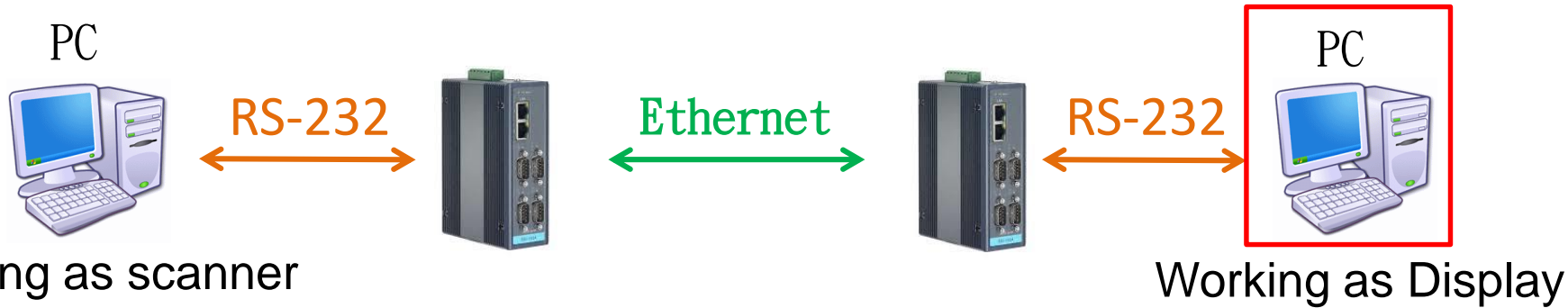
2. Select COM Port

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

The screenshot shows the 'TestView V2.0' application window. The 'Port' menu is open, and 'Com Port' is selected. The 'Open Com Port' dialog box is displayed, showing a table of COM regions. The 'From' column is set to 'COM5' and the 'Quantity' is set to '1 Ports'. The 'Com Options' section shows 'Baudrate' at 9600, 'Data Bits' at 8bits, 'Parity Bits' at None, and 'Stop Bits' at 1. The 'Flow Control' section has 'None' selected for both 'RTS/CTS' and 'DTR/DSR'.

From	Quantity
COM5	1 Ports
COM1	0 Ports
COM1	0 Ports
COM1	0 Ports

# To Configure the COM Port



1. Click Port

2. Select COM Port

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

TestView V2.0

Port Setting Burning Windows About

Com Port

TCP/UDP Port

Open

Save

Exit

Open Com Port

Com Region

From COM3 Quantity 1 Ports

COM1 0 Ports

COM1 0 Ports

COM1 0 Ports

Com Options

Baudrate 9600 Data Bits 8bits

Parity Bits None Stop Bits 1

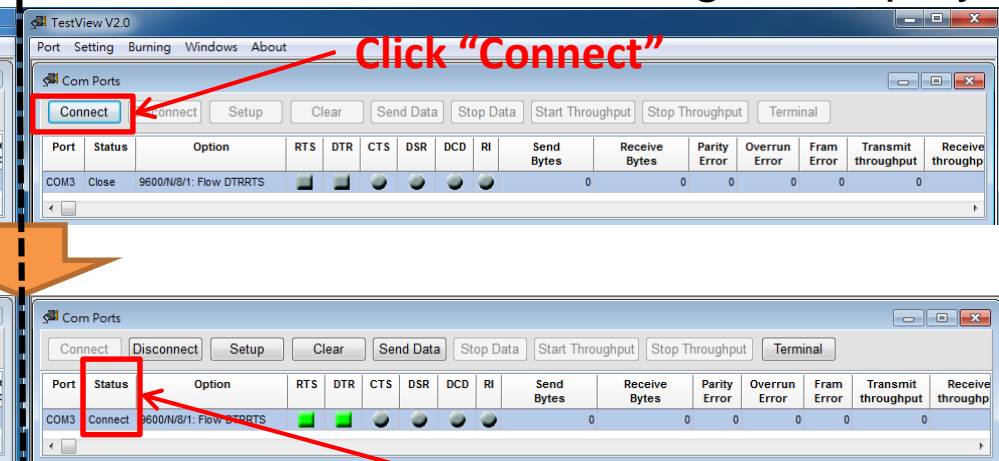
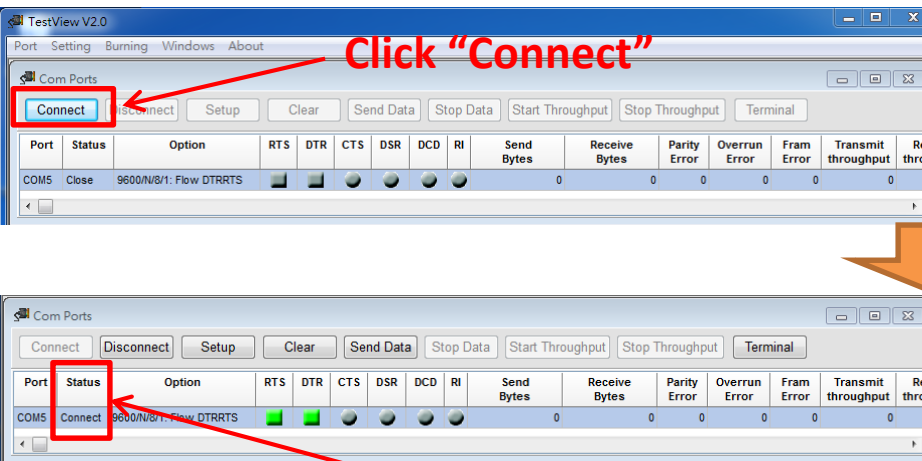
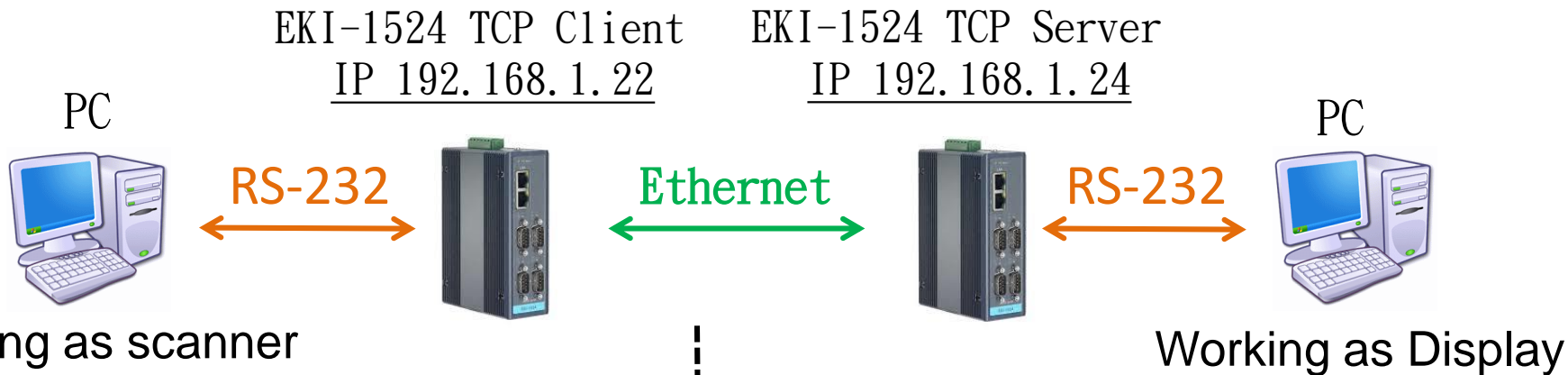
Flow Control

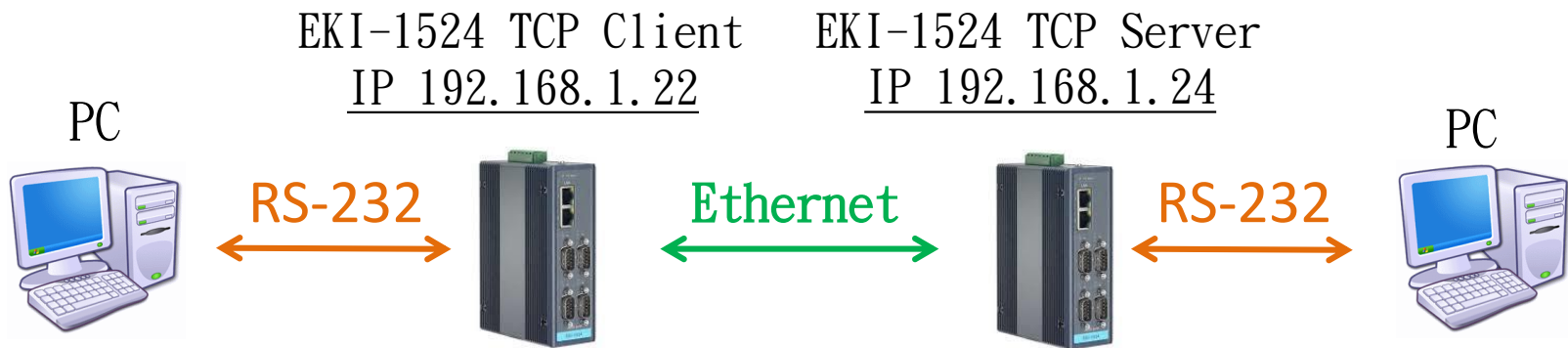
☐ None ☐ Xon/Xoff

☒ RTS/CTS ☒ DTR/DSR

OK Cancel

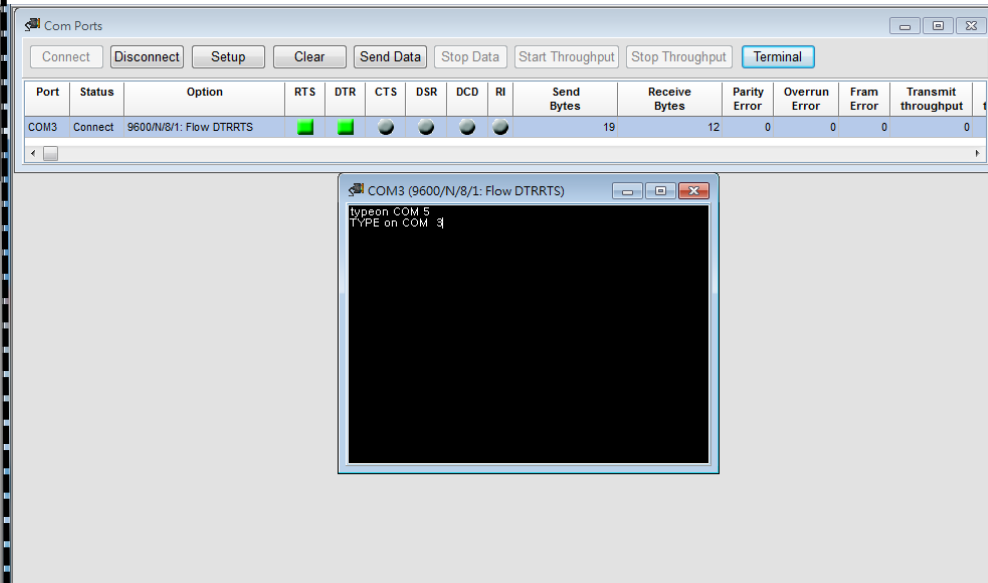
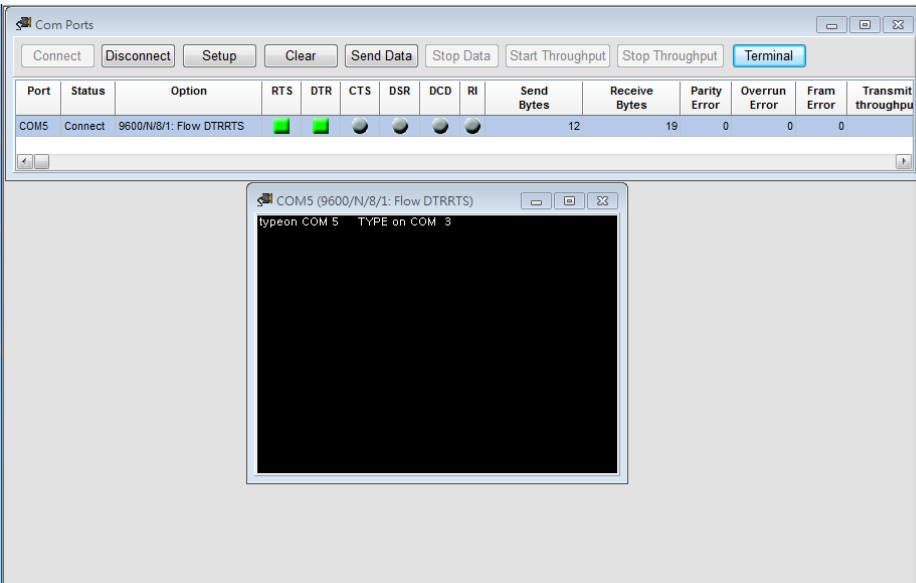
# Test USDG P2P Mode





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	192.168.1.100	192.168.1.54	Ethernet IP
Peer IP Address	192.168.1.52		
		6100	Data Listen Port
Local Port	Any		
Peer TCP Port	6100		

EKI-1524 TCP **Client**  
IP 192.168.1.52

EKI-1524 TCP **Server**  
IP 192.168.1.54



RS-232



Ethernet



RS-232



Working as HMI

Working as PLC



# Enabling an Intelligent Planet

*Enabling an Intelligent Planet*

**ADVANTECH**