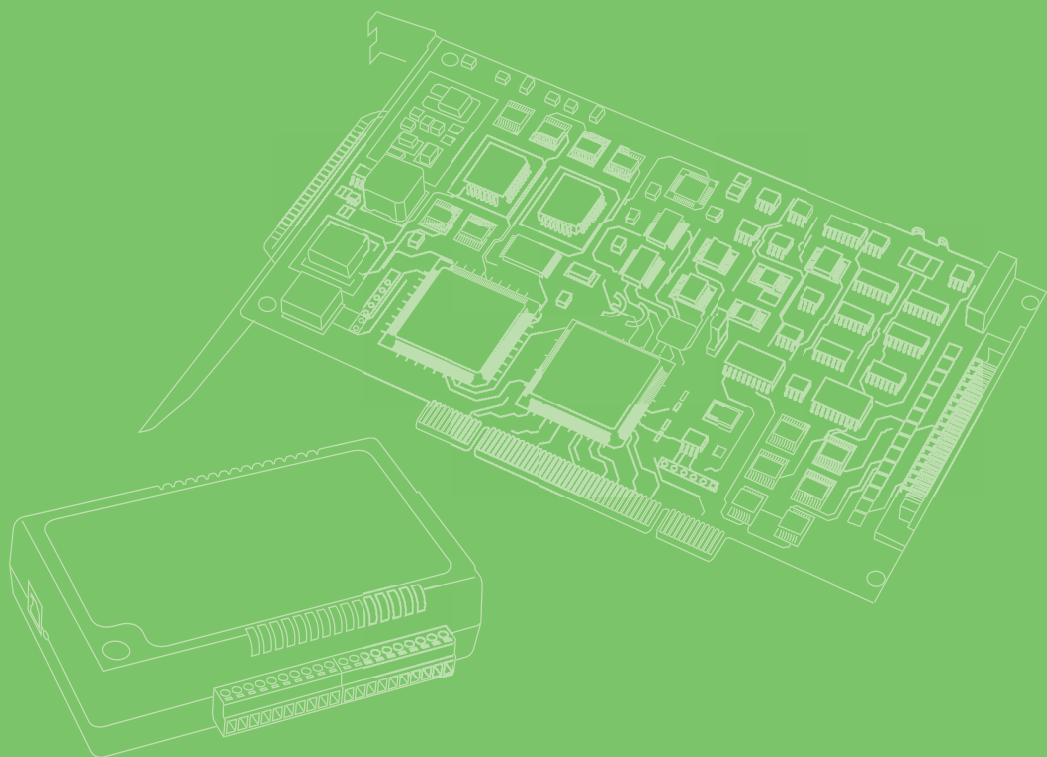


User Manual



EKI-1500 Series

**1/2/4-Port RS-232/422/485 Serial
Device Servers**

ADVANTECH

Enabling an Intelligent Planet

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1. Collect all the information about the problem encountered. (For example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages displayed when the problem occurs.
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3. If your product is diagnosed as defective, obtain a return merchandise authorization (RMA) number from your dealer. This allows us to process your return more quickly.
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5. Write the RMA number clearly on the outside of the package and ship the package prepaid to your dealer.

Declaration of Conformity

CE

This product has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables. This type of cable is available from Advantech. Please contact your local supplier for ordering information.

Test conditions for passing also include the equipment being operated within an industrial enclosure. In order to protect the product from damage caused by electrostatic discharge (ESD) and EMI leakage, we strongly recommend the use of CE-compliant industrial enclosure products.

FCC Class A

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference. In this event, users are required to correct the interference at their own expense.

Technical Support and Assistance

1. Visit the Advantech website at www.advantech.com/support to obtain the latest product information.
2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before calling:
 - Product name and serial number
 - Description of your peripheral attachments
 - Description of your software (operating system, version, application software, etc.)
 - A complete description of the problem
 - The exact wording of any error messages

Warnings, Cautions, and Notes

Warning! *Warnings indicate conditions that if not observed can cause personal injury!*



Caution! *Cautions are included to help prevent hardware damage and data losses. E.g.*



“Batteries are at risk of exploding if incorrectly installed. Do not attempt to recharge, force open, or heat the battery. Replace the battery only with the same or equivalent type as recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.”

Note! *Notes provide additional optional information.*



Document Feedback

To assist us with improving this manual, we welcome all comments and constructive criticism. Please send all such feedback in writing to support@advantech.com.

Packing List

Before system installation, check that the items listed below are included and in good condition. If any item does not accord with the list, contact your dealer immediately.

- 1 x Device Server
- 1 x DIN-Rail Mounting Bracket and Screws
- 1 x Wall-mounting Bracket

Safety Instructions

1. Read these safety instructions carefully.
2. Retain this user manual for future reference.
3. Disconnect the equipment from all power outlets before cleaning. Use only a damp cloth for cleaning. Do not use liquid or spray detergents.
4. For pluggable equipment, the power outlet socket must be located near the equipment and easily accessible.
5. Protect the equipment from humidity.
6. Place the equipment on a reliable surface during installation. Dropping or letting the equipment fall may cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. Do not cover the openings.
8. Ensure that the voltage of the power source is correct before connecting the equipment to a power outlet.
9. Position the power cord away from high-traffic areas. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage from transient overvoltage.
12. Never pour liquid into an opening. This may cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
14. If any of the following occurs, have the equipment checked by service personnel:
 - The power cord or plug is damaged.
 - Liquid has penetrated the equipment.
 - The equipment has been exposed to moisture.
 - The equipment is malfunctioning, or does not operate according to the user manual.
 - The equipment has been dropped and damaged.
 - The equipment show obvious signs of breakage.
15. Do not leave the equipment in an environment with a storage temperature of below -40°C (-40°F) or above 85°C (185°F) as this may damage the components. The equipment should be kept in a controlled environment.
16. In accordance with IEC 704-1:1982 specifications, the sound pressure level at the operator's position does not exceed 70 dB (A).

DISCLAIMER: These instructions are provided according to IEC 704-1 standards. Advantech disclaims all responsibility for the accuracy of any statements contained herein.

Safety Precautions - Static Electricity

Follow these simple precautions to protect yourself from harm and the products from damage.

- To avoid electrical shock, always disconnect the power from the PC chassis before manual handling. Do not touch any components on the CPU card or other cards while the PC is powered on.
- Disconnect the power before making any configuration changes. A sudden rush of power after connecting a jumper or installing a card may damage sensitive electronic components.

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Chapter 1

Introduction

1.1 Overview

The EKI-1500 Series are network-based serial device servers that connect RS-232/422/485 serial devices, such as PLC, meters, sensors, and barcode readers, directly to a TCP/IP network.

Once connected through a EKI-1500 Series serial server, devices are able to send and receive data through a network. This extends the traditional COM ports of a PC, with access over a TCP/IP network. Through networking, you can control and monitor remote serial devices over either a LAN or WAN. Since the EKI-1500 Series is connected through a TCP/IP network, you may need to know some basic facts about networking in order to connect the server correctly.

The EKI-152x Series features two independent Ethernet ports and MAC addresses to provide a redundant network mechanism to avoid data loss. The EKI-1500 Series provides various operations: COM port redirection mode (Virtual COM Port mode), TCP Server/ Client mode, UDP mode, Control mode and RFC2217 mode. Detailed descriptions of each operation are provided in a later chapter.

1.2 Device Features

- Provides 2 x 10/100 Mbps Ethernet ports for LAN redundancy (EKI-152x)
- Provides COM port redirection (Virtual COM), TCP and UDP operation modes
- Supports up to 921.6 kbps, and any baud rate setting (EKI-152x)
- Allows a max. of 5 hosts to access one serial port
- Allows a max. of 16 hosts to be accessed as TCP client mode
- Built-in 15 KV ESD protection for all serial signals
- Provides rich configuration access, including: Windows utility, Telnet console, and Web Browser
- Supports 32-bit/64-bit Windows XP/7/8/8.1/10/11, Windows Server 2016/2019/2022, and Linux
- Automatic RS-485 data flow control
- Supports surge protection for D.C. power ports with line to line 2 KV, and line to earth 4 KV; for signal ports with 4 KV.
- Supports a wide operating temperature (I models only)
- Supports isolation and wide operating temperature (CI models only)

1.3 Specifications

Table 1.1: Specifications

Specifications		Description
Interface	I/O Port	■ EKI-1511-A: 1 x RJ45 + 1 x RS-232/422/485 ■ EKI-1521-CE: 2 x RJ45 + 1 x RS-232/422/485 ■ EKI-1521I-CE: 2 x RJ45 + 1 x RS-232/422/485 ■ EKI-1521CI-DE: 2 x RJ45 + 1 x RS-232/422/485 ■ EKI-1522-CE: 2 x RJ45 + 2 x RS-232/422/485 ■ EKI-1522I-CE: 2 x RJ45 + 2 x RS-232/422/485 ■ EKI-1522CI-DE: 2 x RJ45 + 2 x RS-232/422/485 ■ EKI-1524-CE: 2 x RJ45 + 4 x RS-232/422/485 ■ EKI-1524I-CE: 2 x RJ45 + 4 x RS-232/422/485 ■ EKI-1524CI-CE: 2 x RJ45 + 4 x RS-422/485
		Power Connector
		Terminal block
		Enclosure
		Metal with solid mounting hardware
		Installation
		DIN-Rail and Wall mount
		Physical
		Dimensions (W x H x D)
LED Display	System LED	■ EKI-1511: 46 x 85.1 x 21.2 mm (1.81" x 3.35" x 0.83") ■ EKI-1521/EKI-1522: 30 x 140 x 95mm (1.18" x 5.51" x 3.74") ■ EKI-1524: 42 x 140 x 95mm (1.65" x 5.51" x 3.74")
	Port LED	■ LAN: Speed, Link/Active ■ Serial: Tx, Rx
Environment	Operating Temperature	■ EKI-1511: -40 ~ 75°C (-40 ~ 167°F) ■ EKI-152x: -10~ 60°C (14 ~ 140°F) ■ 'CI & I' models: -40 ~ 80°C (-40 ~ 176°F)
	Storage Temperature	-40 ~ 85°C (-40 ~ 185°F)
	Ambient Relative Humidity	95% RH
Ethernet Communications	Compatibility	IEEE 802.3, IEEE 802.3u
	Speed	10/100 Mbps
	Port Connector	8-pin RJ45
	Protection	Built-in 1.5 KV magnetic isolation

Table 1.1: Specifications

Serial Communications	Port Type	■ RS-232/422/485-2w/485-4w, software selectable ■ EKI-1524CI-CE supports RS-422/485 only
	Port Connector	■ EKI-1511/EKI-152x -CE: DB9 male ■ EKI-152x-DE: DB9 male; Terminal block
	Data Bits	5, 6, 7, 8
	Stop Bits	1, 1.5, 2
	Parity	None, Odd, Even, Space, Mark
	Flow Control	XON/XOFF, RTS/CTS
	Baud Rate	■ EKI-1511: 300 bps ~ 230.4 kbps ■ EKI-152x: 50 bps ~ 921.6 kbps, any baud rate setting
	Protection	■ EKI-1511: Built-in 8 KV ESD for all signals ■ EKI-152x: Built-in 15 KV ESD for all signals ■ 'CI' models: 2KV Isolation for RS-422/485 signals
Security*	Authentication	RADIUS, LDAP, Local Management
	Security Protocols	SNMPv3, HTTPS (TLS 1.3), SSH
Power	Power Consumption	■ EKI-1511: 1W ■ EKI-1521: 3.2W ■ EKI-1522: 3.2W ■ EKI-1524: 4.1W
	Power Input	■ EKI-1521: 9 ~ 36VDC ■ EKI-152x: 12 ~ 48VDC, redundant dual inputs
Software	OS Support for Utility	32-bit/64-bit Windows XP/7/8/8.1/10/11, Windows Server 2016/2019/2022
	Utility	Advantech EKI Device Configuration Utility
	Operation Modes	■ COM port redirection mode (Virtual COM) ■ TCP/UDP server (polling) mode ■ TCP/UDP client (event handling) mode ■ Pair connection (peer to peer) mode
	Configuration Management	Windows Utility, Web Browser (HTTP/HTTPS*)
		SNMP MIB-II
Regulatory Approvals	EMC	CE, FCC Part 15 Subpart B (Class A)
	Hazardous Location*	UL/cUL (Class I, Division 2, Groups A, B, C and D), ATEX (Zone 2 Ex nA nC IIC T4 Gc)

* EKI-152x features

Chapter 2

Getting Started

2.1 Hardware

2.1.1 Front View

The following view shows the EKI-1511.

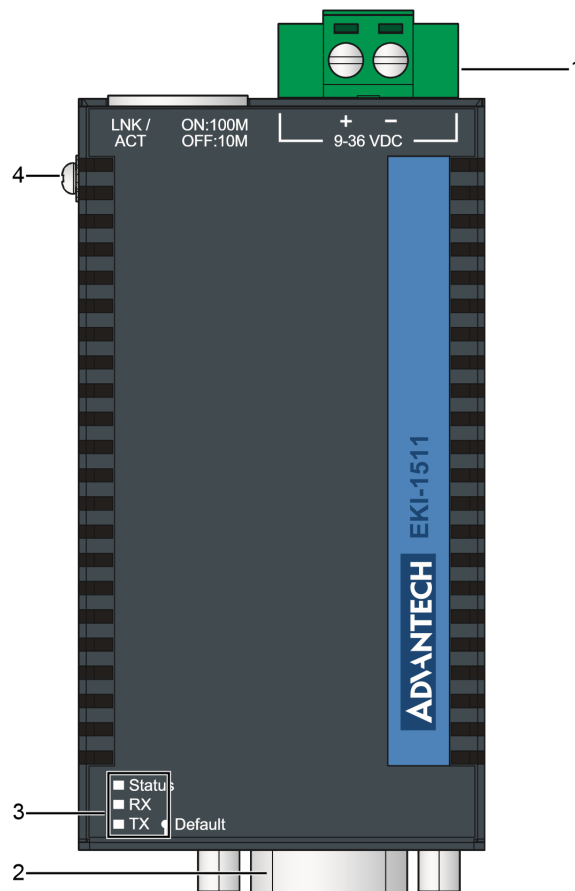


Figure 2.1 Front View

Table 2.1: Front View (EKI-1511)

No.	Item	Description
1.	Terminal block	Connect cabling for power wiring
2.	Serial port	DB9 pinout, supports RS-232/422/485
3.	System LED panel	See "LED Indicators" on page 24 for further details.
4.	Ground terminal	Screw terminal used to ground chassis

The following view shows the EKI-1521.

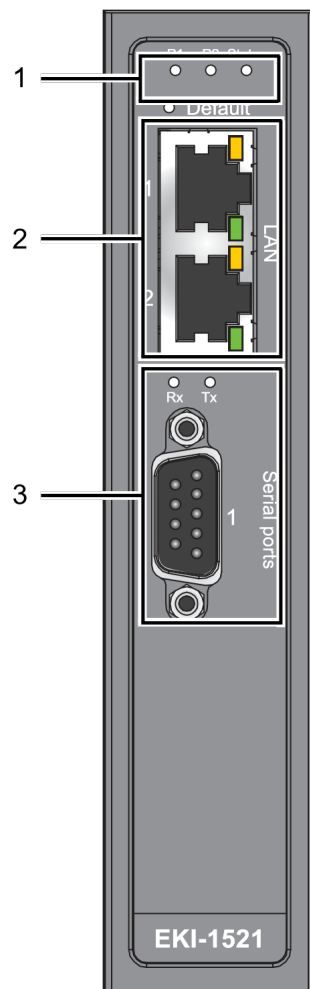


Figure 2.2 Front View

Table 2.2: Front View (EKI-1521)

No.	Item	Description
1	System LED panel	See “LED Indicators” on page 24 for further details.
2	ETH port	RJ45 ports x 2
3	Serial port	DB9 pinout, supports RS-232/422/485

The following view shows the EKI-1521CI-DE.

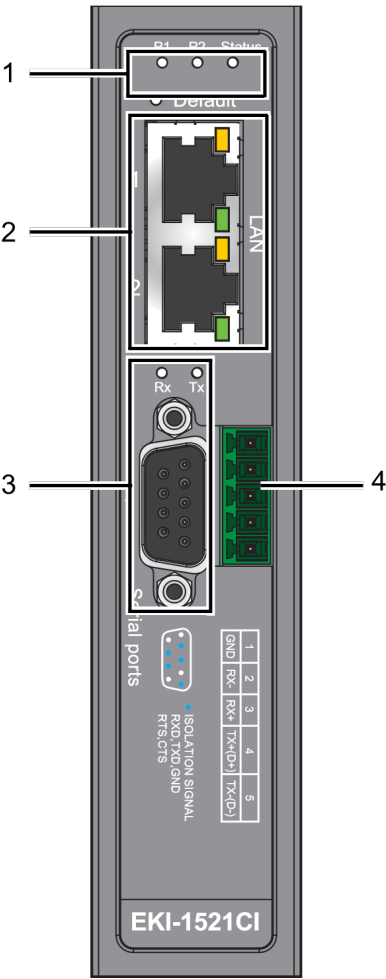


Figure 2.3 Front View

Table 2.3: Front View (EKI-1521CI-DE)		
No.	Item	Description
1	System LED panel	See “LED Indicators” on page 24 for further details.
2	ETH port	RJ45 ports x 2
3	Serial port	DB9 pinout, supports RS-232
4	Terminal block	Supports RS-422/485

The following view shows the EKI-1522.

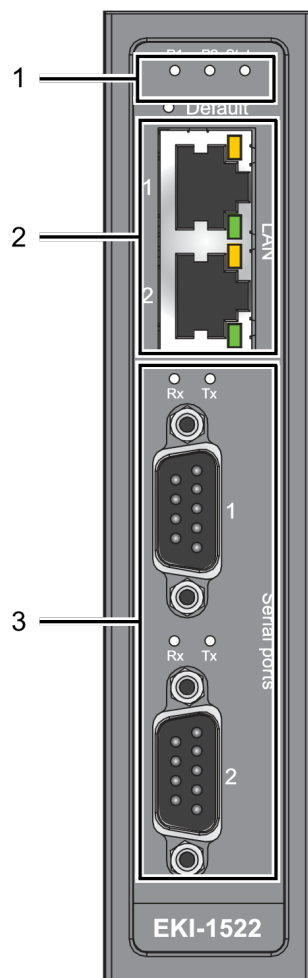


Figure 2.4 Front View

Table 2.4: Front View (EKI-1522)

No.	Item	Description
1	System LED panel	See “LED Indicators” on page 24 for further details.
2	ETH port	RJ45 ports x 2
3	Serial port	DB9 pinout, supports RS-232/422/485

The following view shows the EKI-1522CI-DE.

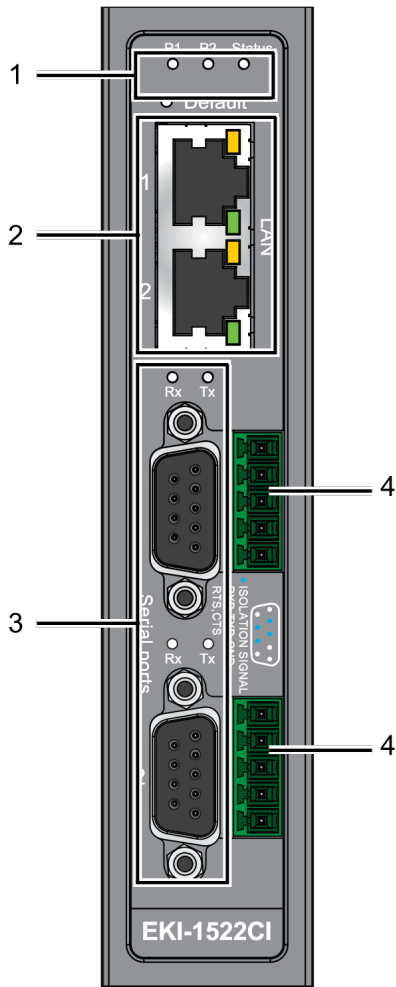


Figure 2.5 Front View

Table 2.5: Front View (EKI-1522CI-DE)		
No.	Item	Description
1	System LED panel	See “LED Indicators” on page 24 for further details.
2	ETH port	RJ45 ports x 2
3	Serial port	DB9 pinout, supports RS-232
4	Terminal block	Supports RS-422/485

The following view shows the EKI-1524.

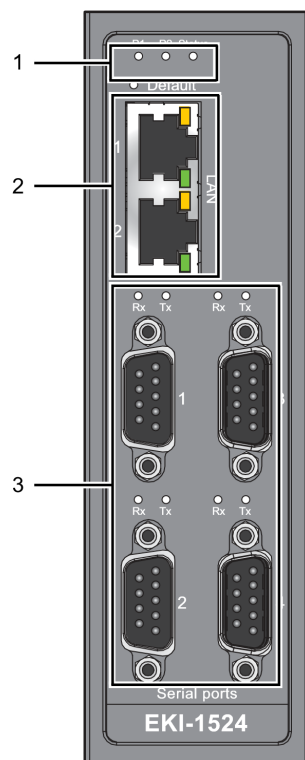


Figure 2.6 Front View

Table 2.6: Front View (EKI-1524)

No.	Item	Description
1	System LED panel	See “LED Indicators” on page 24 for further details.
2	ETH port	RJ45 ports x 2
3	Serial port	DB9 pinout, supports RS-232/422/485

2.1.2 Rear View

The following view is valid for the EKI-1511.

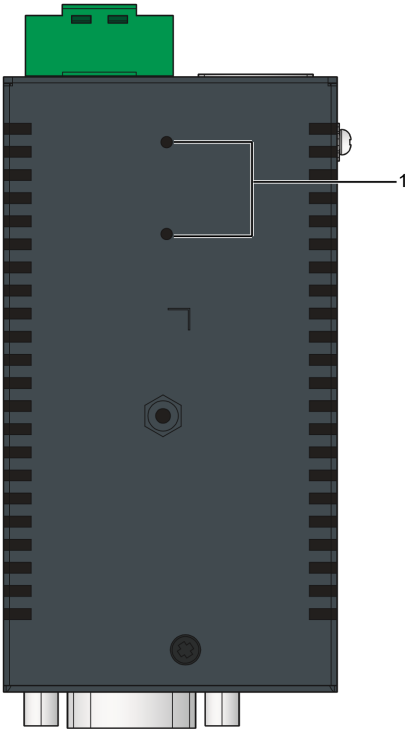


Figure 2.7 Rear View

Table 2.7: Rear View (EKI-1511)		
No.	Item	Description
1	M2 screw holes	Screw holes (2) used in the installation of a DIN mounting bracket or wall mounting

The following view is valid for the EKI-1521 and EKI-1522.

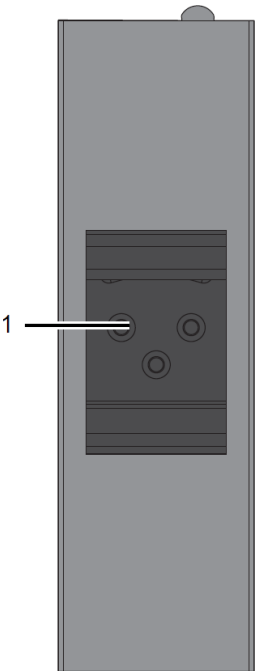
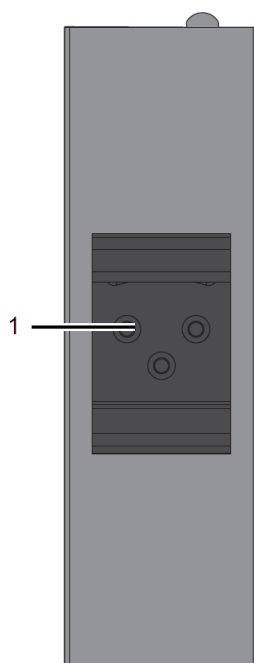


Figure 2.8 Rear View

Table 2.8: Rear View (EKI-1521 and EKI-1522)

No.	Item	Description
1	DIN-Rail mounting plate	Mounting plate used for the installation to a standard DIN rail

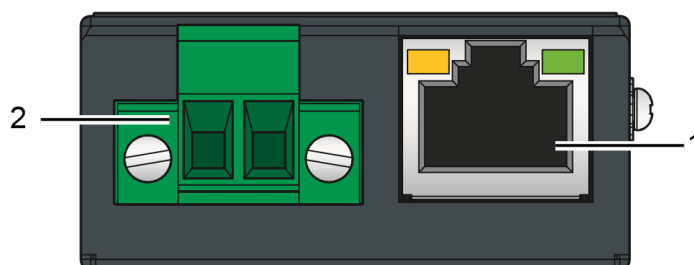
The following view shows the EKI-1524.

**Figure 2.9 Rear View****Table 2.9: Rear View (EKI-1524)**

No.	Item	Description
1	DIN-Rail mounting plate	Mounting plate used for the installation to a standard DIN rail

2.1.3 Top View

The following view is valid for the EKI-1511.

**Figure 2.10 Top View****Table 2.10: Top View (EKI-1511)**

No.	Item	Description
1.	ETH port	RJ45 ports x 1
2.	Terminal block	Connect cabling for power wiring

The following view is valid for the EKI-1521 and EKI-1522.

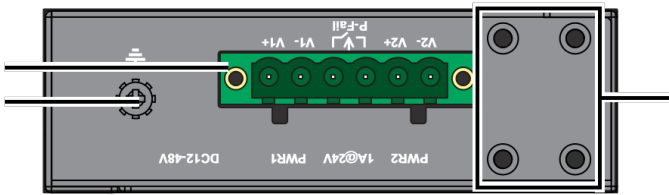


Figure 2.11 Top View

Table 2.11: Top View (EKI-1521 and EKI-1522)		
No.	Item	Description
1	Terminal block	Connect cabling for power and alarm wiring
2	Ground terminal	Screw terminal used to ground chassis
3	Wall mounting holes	Screw holes (x4) used in the installation of a wall mounting plate

The following view is valid for the EKI-1524.

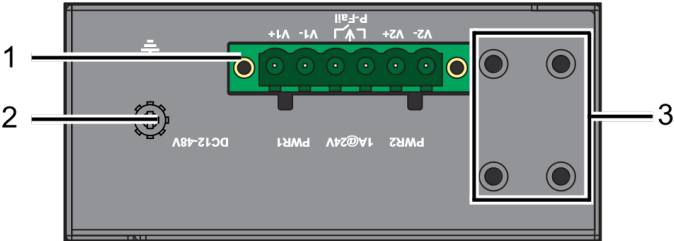


Figure 2.12 Top View

Table 2.12: Top View (EKI-1524)		
No.	Item	Description
1	Terminal block	Connect cabling for power and alarm wiring
2	Ground terminal	Screw terminal used to ground chassis
3	Wall mounting holes	Screw holes (x4) used in the installation of a wall mounting plate

2.1.4 Bottom View

The following view is valid for the EKI-1511.

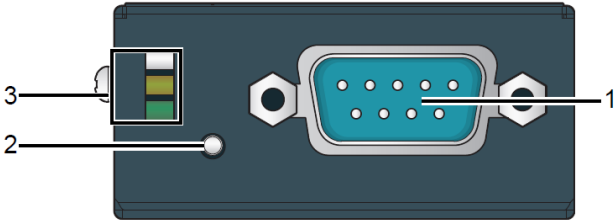


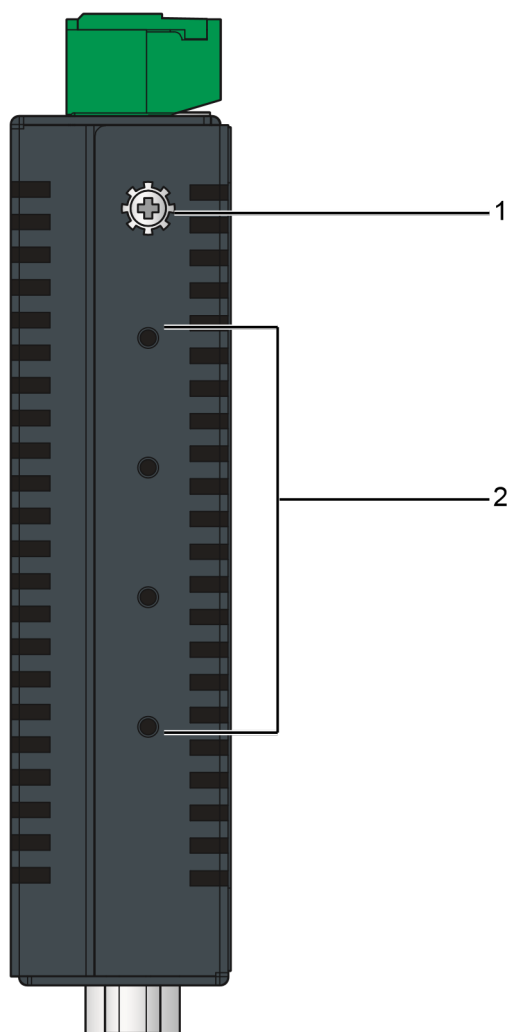
Figure 2.13 Bottom View

Table 2.13: Bottom View

No.	Item	Description
1.	Serial port	DB9 pin-out, supports L: RS-232, X: RS-422/485
2.	Reset button	Reset to factory default, press and hold until status indicator blinks System reboot, press and hold for 2 seconds
3.	System LED panel	See “LED Indicators” on page 24 for further details

2.1.5 Left View

The following view is valid for the EKI-1511.

**Figure 2.14 Left View****Table 2.14: Left View**

No.	Item	Description
1.	Ground terminal	Screw terminal used to ground chassis
2.	M2 screw holes	Screw holes (4) for DIN brackets or wall mounting

2.1.6 LED Indicators

The following view shows the EKI-1511.

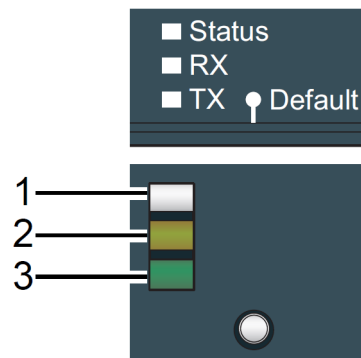


Figure 2.15 System LED Panel

Table 2.15: System LED Panel (EKI-1511)

No.	LED Name	LED Color	Status	Description
1.	Status/Power	Blue, blinking	On	Heartbeat (1 time/sec.)
		Off	Off	System is not working
2.	Rx (Serial)	Amber	On	Data being received
			Off	No data being received
3.	Tx (Serial)	Green	On	Data being transmitted
			Off	No data being transmitted

The following view shows the EKI-152x.

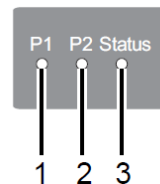


Figure 2.16 System LED Panel

Table 2.16: System LED Panel (EKI-152x)

No.	LED Name	LED Color	Description
1	P1	Green	Power 1 is on
		Off	Power 1 is off, or power error condition exists
2	P2	Green	Power 2 is on
		Off	Power 2 is off, or power error condition exists
3	Status	Amber	The device server has been located by utility's location function
		Amber, blinking	System is ready (1cycle/sec.)
		Off	System is not working

2.1.7 Dimensions

The following view is valid for the EKI-1511.

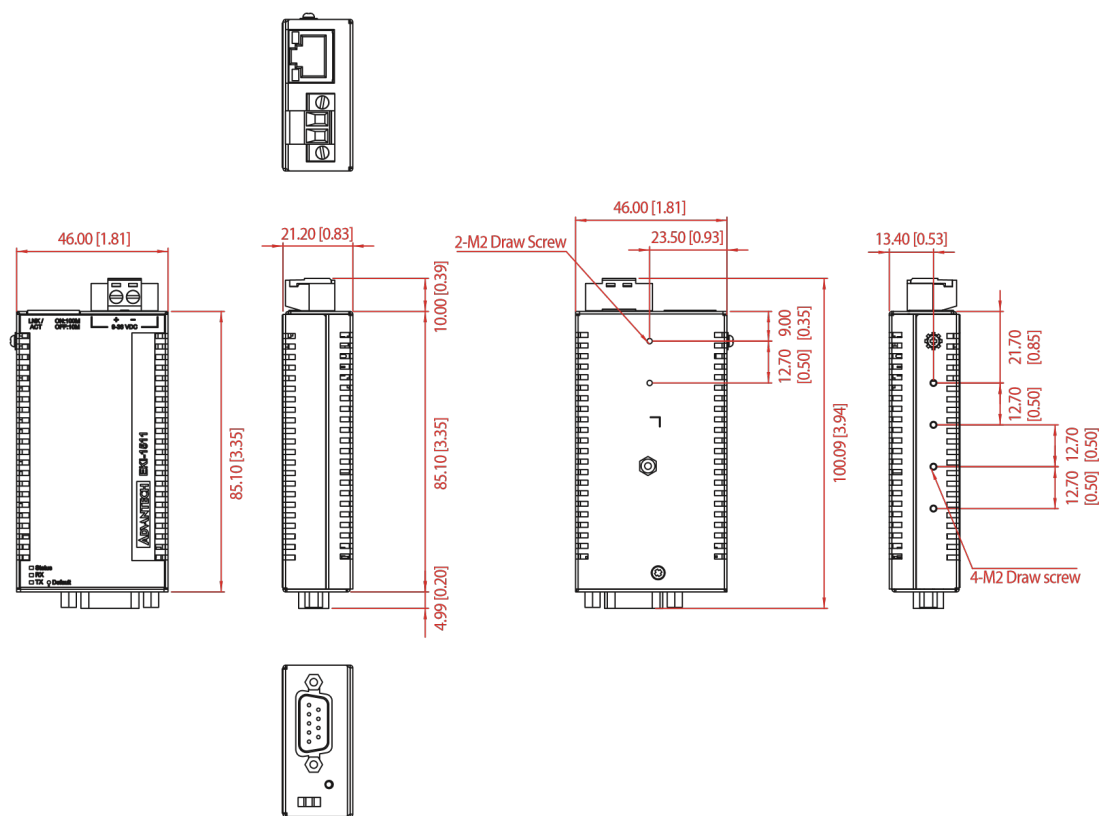


Figure 2.17 Dimensions (EKI-1511)

The following view is valid for the EKI-1521.

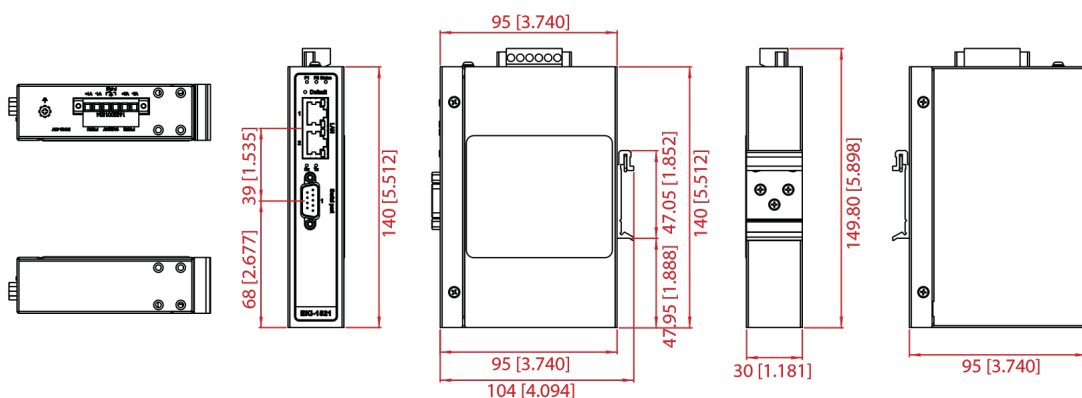


Figure 2.18 Dimensions (EKI-1521)

The following view is valid for the EKI-1521CI-DE.

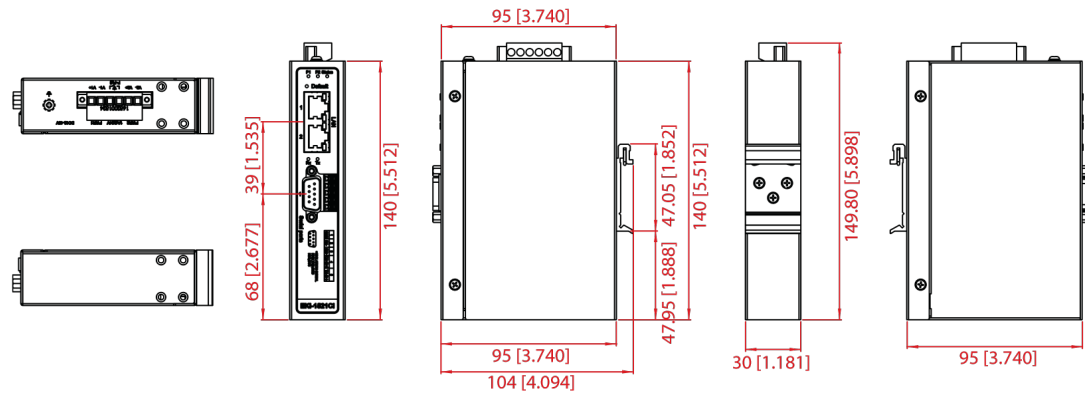


Figure 2.19 Dimensions (EKI-1521CI-DE)

The following view is valid for the EKI-1522.

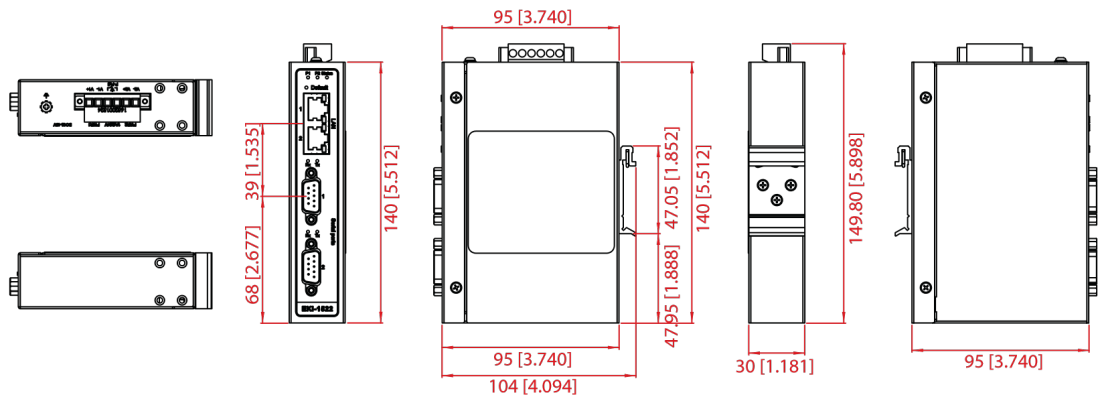


Figure 2.20 Dimensions (EKI-1522)

The following view is valid for the EKI-1522CI-DE.

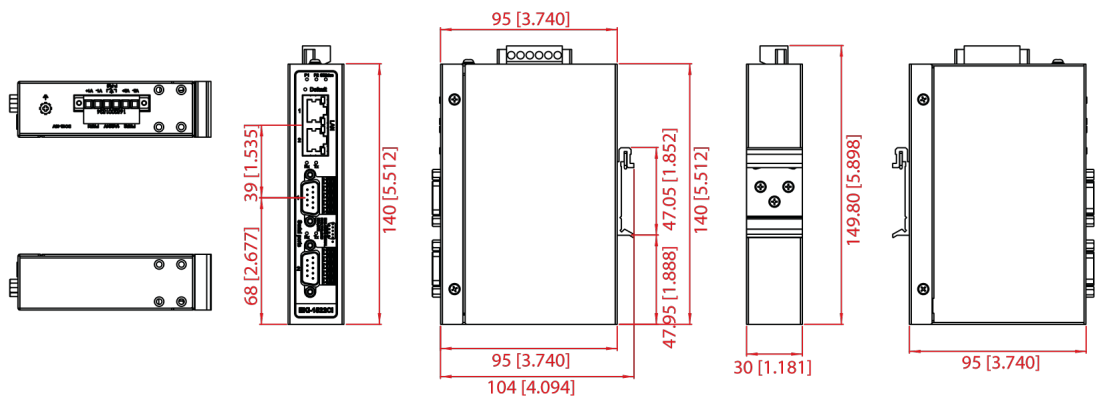


Figure 2.21 Dimensions (EKI-1522CI-DE)

The following view is valid for the EKI-1524.

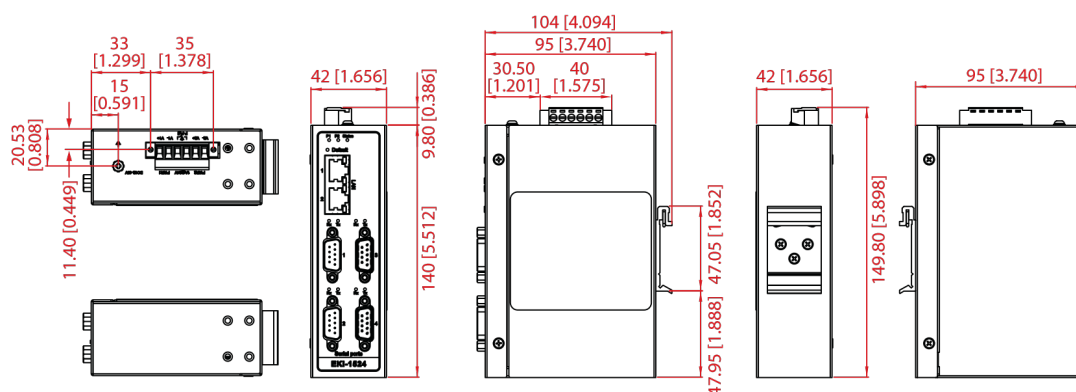


Figure 2.22 Dimensions (EKI-1524)

2.2 Connecting Hardware

2.2.1 DIN Rail Mounting

The DIN rail mount option is the quickest installation option. Additionally, it optimizes the use of rail space.

The metal DIN rail kit is secured to the rear of the switch. The device can be mounted onto a standard 35 mm (1.37") x 7.5 mm (0.3") height DIN rail. The devices can be mounted vertically or horizontally. Refer to the following guidelines for further information.

Note! A corrosion-free mounting rail is advisable.



When installing, make sure to allow for enough space to properly install the cabling.

2.2.1.1 Installing the DIN-Rail Mounting Kit (EKI-1511 Series)

1. Align the provided DIN bracket with the device. The bracket can be installed on the left or rear side of the device to accommodate various environments. For this demonstration, the bracket is depicted on the rear of the device.
2. Insert the provided screws and tighten them to secure the bracket to the device.

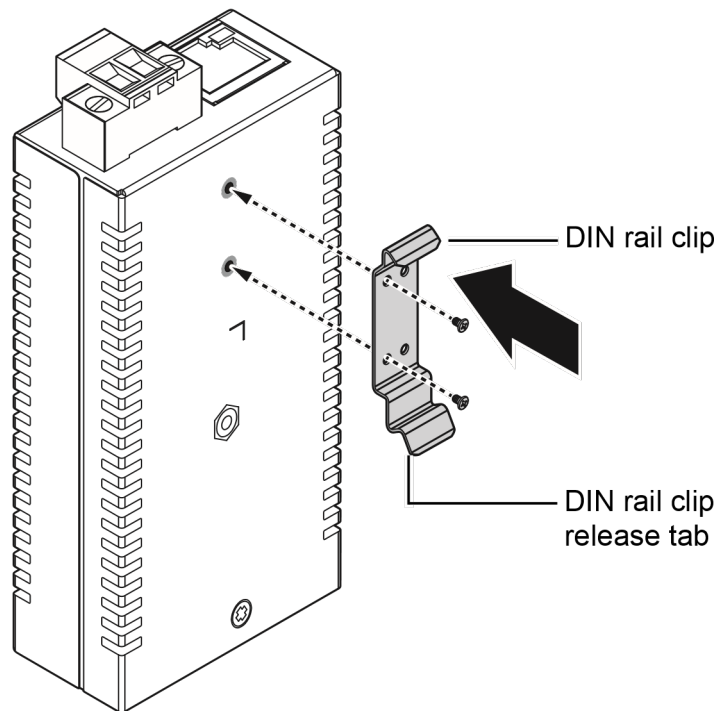


Figure 2.23 Installing the DIN Bracket (EKI-1511 Series)

3. Position the rear panel of the switch directly in front of the DIN rail, making sure that the top of the DIN rail clip hooks over the top of the DIN rail, as shown in the following illustration.

Warning! Do not install the DIN rail under or in front of the spring mechanism on the DIN rail clip to prevent damage to the DIN rail clip or the DIN rail.
Make sure the DIN rail is inserted behind the spring mechanism.



4. Once the DIN rail is seated correctly in the DIN rail clip, press the front of the switch to rotate the switch down and into the release tab on the DIN rail clip.

If seated correctly, the bottom of the DIN rail should be fully inserted in the release tab.

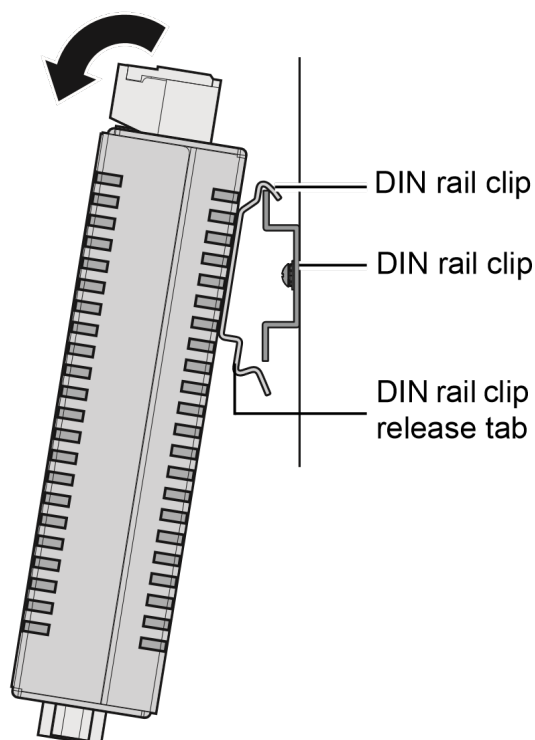


Figure 2.24 Installing the DIN-Rail Mounting Kit (EKI-1511 Series)

See the following figure for an illustration of a completed DIN installation procedure.

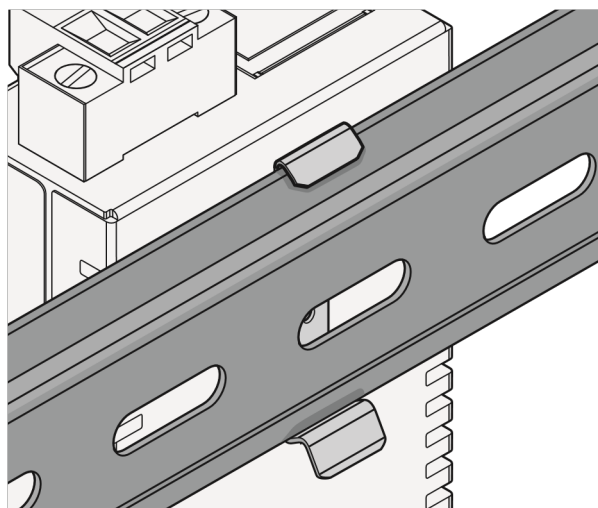


Figure 2.25 Correctly Installed DIN Rail Kit

5. Grasp the bottom of the switch and slightly rotate it upwards. If there is resistance, the switch is correctly installed. Otherwise, re-attempt the installation process from the beginning.

2.2.1.2 Installing the DIN-Rail Mounting Kit (EKI-152x)

1. Position the rear panel of the switch directly in front of the DIN rail, making sure that the top of the DIN rail clip hooks over the top of the DIN rail, as shown in the following illustration.

Warning! Do not install the DIN rail under or in front of the spring mechanism on the DIN rail clip to prevent damage to the DIN rail clip or the DIN rail.



Make sure the DIN rail is inserted behind the spring mechanism.

2. Once the DIN rail is seated correctly in the DIN rail clip, press the front of the switch to rotate the switch down and into the release tab on the DIN rail clip. If seated correctly, the bottom of the DIN rail should be fully inserted in the release tab.

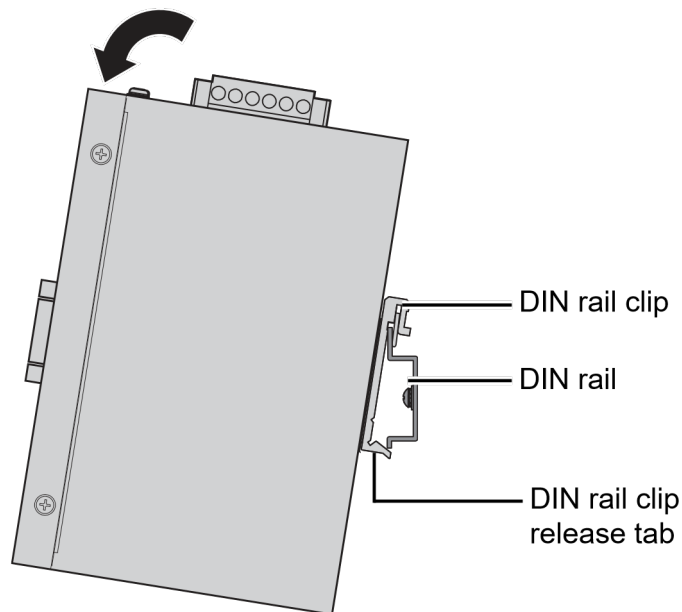


Figure 2.26 Installing the DIN-Rail Mounting Kit

See the following figure for an illustration of a completed DIN installation procedure.

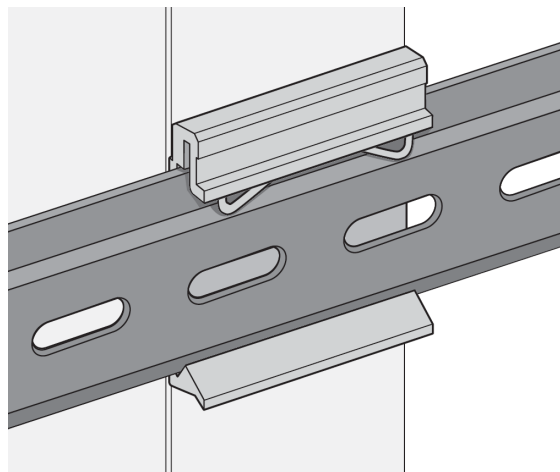


Figure 2.27 Correctly Installed DIN Rail Kit

3. Grasp the bottom of the switch and slightly rotate it upwards. If there is resistance, the switch is correctly installed. Otherwise, re-attempt the installation process from the beginning.

2.2.1.3 Removing the DIN-Rail Mounting Kit (EKI-1511 Series)

1. Ensure that power is removed from the switch, and disconnect all cables and connectors from the front panel of the switch.
2. Push down on the top of the DIN rail clip release tab with your finger. As the clip releases, lift the bottom of the switch, as shown in the following illustration.

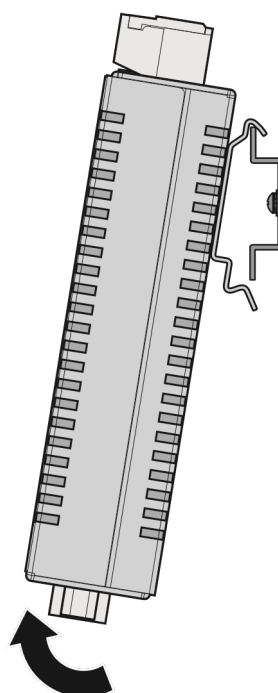


Figure 2.28 Removing the DIN-Rail (EKI-1511 Series)

2.2.1.4 Removing the DIN-Rail Mounting Kit (EKI-152x)

1. Ensure that power is removed from the switch, and disconnect all cables and connectors from the front panel of the switch.
2. Push down on the top of the DIN rail clip release tab with your finger. As the clip releases, lift the bottom of the switch, as shown in the following illustration.

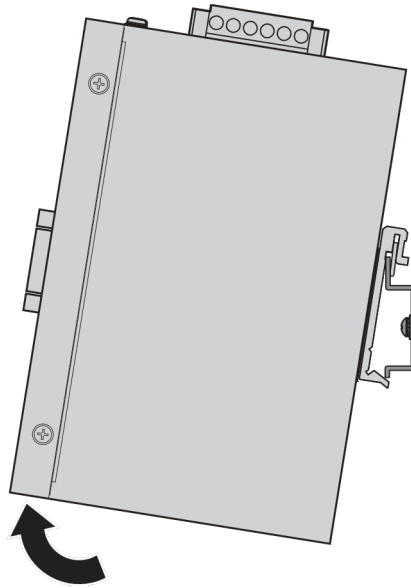


Figure 2.29 Removing the DIN-Rail

2.2.2 Wall-Mounting

The wall mounting option provides better shock and vibration resistance than the DIN rail vertical mount.

2.2.2.1 Installing on EKI-1511 Devices

The wall mounting option provides better shock and vibration resistance than the DIN rail vertical mount.

Note! *When installing, make sure to allow for enough space to properly install the cabling.*



Before the device can be mounted on a wall, you will need to remove the DIN rail plate.

1. Align the wall mounting plate with the rear side of the device. The screw holes on the device and the mounting plates must be aligned, see the following figure.
2. Secure the wall mount plates with the provided screws, see the following figure.

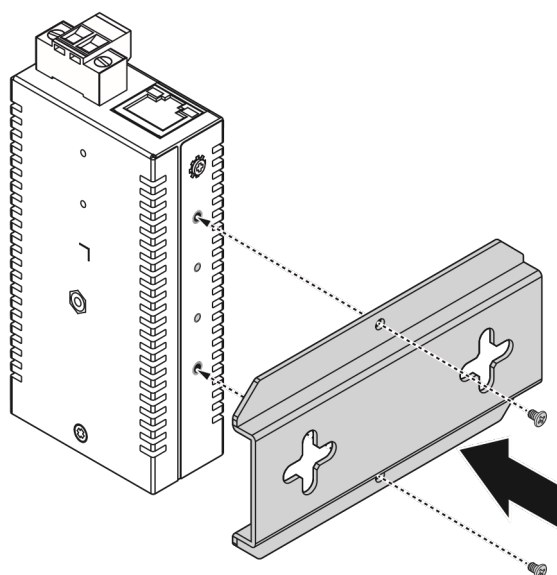


Figure 2.30 Installing Wall Mount Plates

Once the wall mounting plates are secure on the device, you will need to attach the wall screws (x2).

3. Locate the installation site and place the mount plate against the wall, making sure it is the final installation location.
4. Use the plates as a guide to mark the locations of the screw holes.
5. Drill two holes over the marked locations on the wall, keeping in mind that the holes must accommodate the width of the wall sinks in addition to the screws.
6. Insert the wall sinks into the walls.
7. Insert the screws into the wall sinks. Leave a 2 mm gap between the wall and the screw head to allow for wall mount plate insertion.



Figure 2.31 Securing Wall Mounting Screws

- Note!**
- Make sure the screws dimensions are suitable for use with the wall mounting plate.
 - Do not completely tighten the screws into the wall. A final adjustment may be needed before fully securing the wall mounting plates on the wall.

8. Align the wall mount plate over the screws on the wall.

9. Install the wall mount plate on the screws and slide in the direction to lock it over the keyhole, see the following figure.

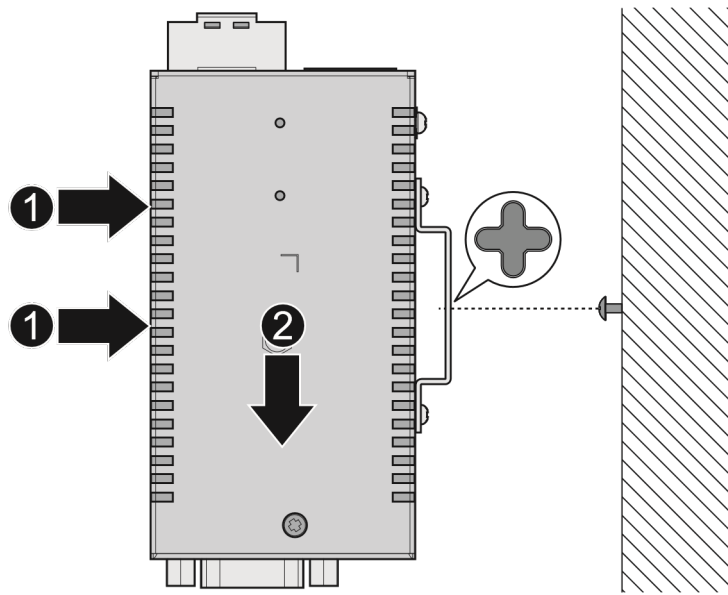


Figure 2.32 Wall Mount Installation

Once the device is installed on the wall, tighten the screws to secure the device.

2.2.2.2 Installing on EKI-152x Devices

Note! When installing, make sure to allow for enough space to properly install the cabling.



Before the device can be mounted on a wall, you will need to remove the DIN rail plate.

1. Rotate the device to the rear side and locate the DIN mounting plate.
2. Remove the screws securing the DIN mounting plate to the rear panel of the switch.
3. Remove the DIN mounting plate. Store the DIN mounting plate and provided screws for later use.
4. Align the wall mounting plates on the rear side. The screw holes on the device and the mounting plates must be aligned, see the following illustration.
5. Secure the wall mount plates with the provided screws, see the following figure.

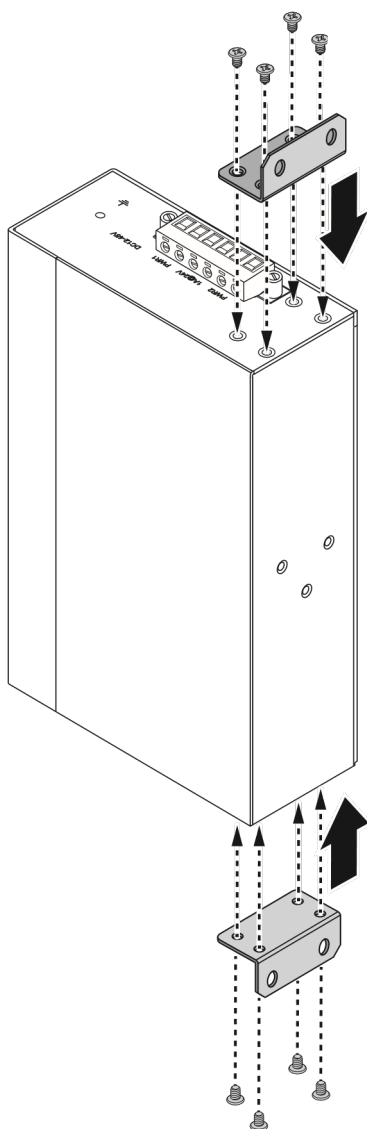


Figure 2.33 Installing Wall Mount Plates

Once the wall mounting plates are secure on the device, you will need to attach the wall screws (x4).

6. Locate the installation site and place the switch against the wall, making sure it is the final installation location.
7. Use the wall mount plates as a guide to mark the locations of the screw holes.
8. Drill four holes over the four marked locations on the wall, keeping in mind that the holes must accommodate wall sinks in addition to the screws.
9. Insert the wall sinks into the walls.
10. Insert the screws into the wall sinks. Leave a 2 mm gap between the wall and the screw head to allow for wall mount plate insertion.

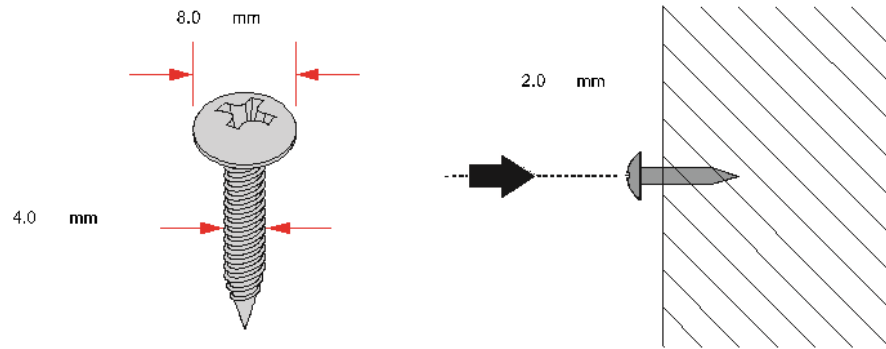


Figure 2.34 Securing Wall Mounting Screws

- Note!**
- Make sure the screws dimensions are suitable for use with the wall mounting plate.
 - Do not completely tighten the screws into the wall. A final adjustment may be needed before fully securing the wall mounting plates on the wall.

11. Align the wall mount plate over the screws on the wall.
12. Install the wall mount plate on the screw(s) and slide it forward to lock in place, see the following figure(s).

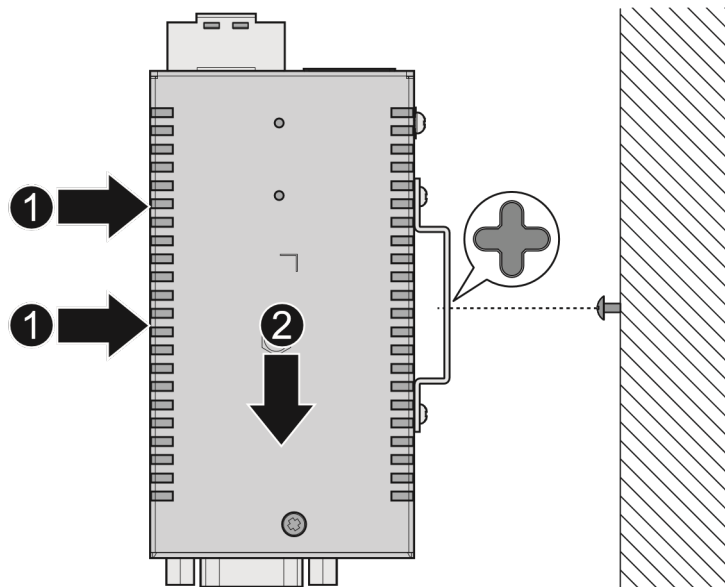


Figure 2.35 Wall Mount Installation (EKI-1511 Series)

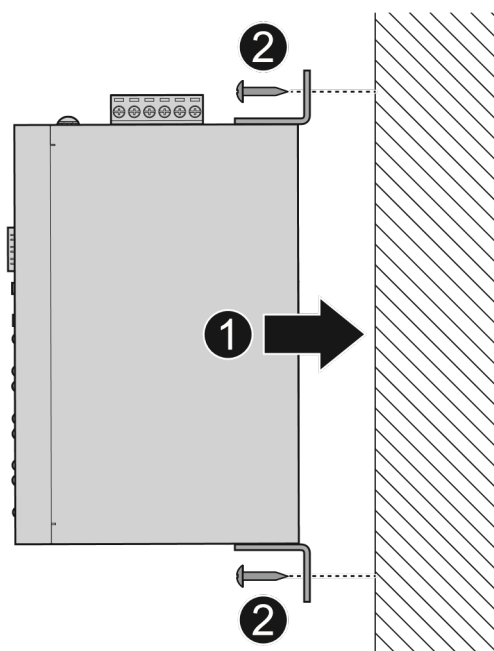


Figure 2.36 Wall Mount Installation (EKI-152x Series)

13. Once the device is installed on the wall, tighten the screws to secure the device.

2.2.3 Serial Connection

EKI-1500 Series provides up to four ports DB9 (male) connectors. RS-232/422/485 pin assignments as below:

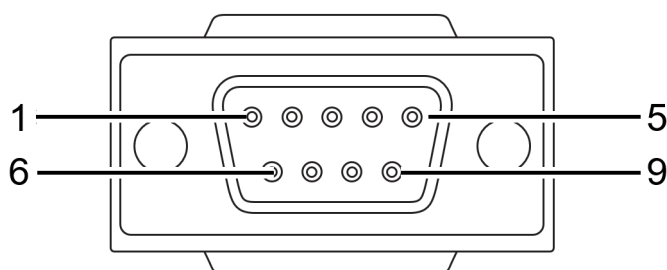


Figure 2.37 DB9 Pin Assignment

Table 2.17: DB9 Pin Assignment									
Pin	1	2	3	4	5	6	7	8	9
RS-232	DCD	RX	TX	DTR	GND	DSR	RTS	CTS	RI
RS-422 (RS485-4W)	TX-			TX+	GND		RX+		RX-
RS-485	DATA-			DATA+	GND				

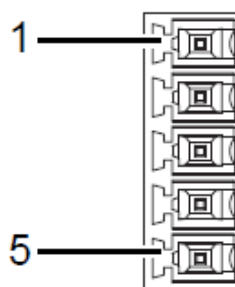


Figure 2.38 Terminal Block Pin Assignment (DE version)

Table 2.18: Terminal Block Pin Assignment

Pin	1	2	3	4	5
	GND	RX-	RX+	TX+ (D+)	TX- (D-)

2.2.4 Power Connection

2.2.4.1 Connecting the Power Adapter (EKI-1511)

Three types of power adapters are provided to accommodate power requirements. The adapter

Power Adapter Connection types are as follows:

- OPT1-PSU12V05-US Power Adapter 12v 0.5A US
- OPT1-PSU12V05-EU Power Adapter 12v 0.5A Europe
- OPT1-PSU12V05-UK Power Adapter 12v 0.5A UK

The following figure depicts a typical power adapter. The figure also describes the labels for the electrodes.

Positive(+) electrode, indicated by a white line

Negative(-) electrode, indicated without a white line

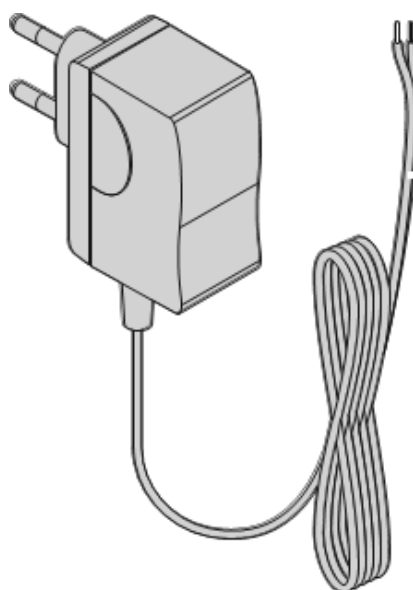


Figure 2.39 Power Adapter Electrode Label Indication

2.2.4.2 Wiring the Power Inputs

Warning! *Power down and disconnect the power cord before servicing or wiring the serial device server.*



Caution! Do not disconnect modules or cabling unless the power is first switched off.



The device only supports the voltage outlined in the type plate. Do not use any other power components except those specifically designated for the serial device server.

Caution! Disconnect the power cord before installation or cable wiring.



(EKI-1511)

1. Insert the power wire from DC power supply into the power contacts of the terminal lock connector on the EKI device.
2. Tighten the terminal screws to prevent the DC wires coming loose.
3. Switch on the DC power supply.

If the EKI-1511 Series is working properly, the blue power LED will light up, indicating that the EKI-1511 Series is receiving power.

The EKI-1511 Series supports 9 to 36 VDC power inputs and power-fail relay output.

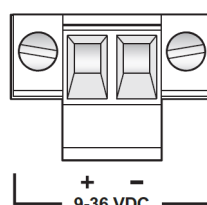


Figure 2.40 Power Wiring for EKI-1511 Series

(EKI-152x)

The EKI-152x Series supports dual 12 to 48 VDC power inputs and power-fail relay output.

The following figure illustrates a P-Fail alarm application example. The P-Fail alarm contacts are visible on the front view of the terminal block.

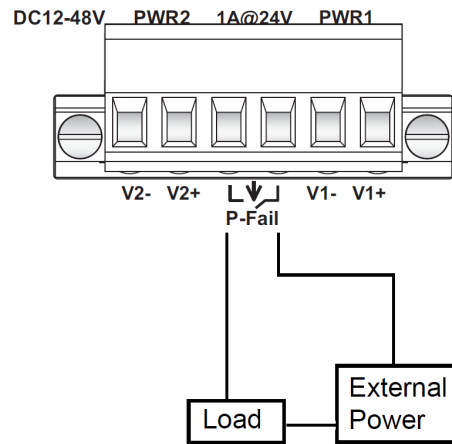


Figure 2.41 Power Wiring for EKI-152x Series

You can connect an alarm indicator, buzzer or other signaling equipment through the relay output. The relay opens if power input 1 or 2 fails. In a wiring example where an LED is connected to the relay output, the LED would be off in an Open state.

Chapter 3

Utility Configuration

3.1 Configuration Utility Overview

Advantech EKI series serial device servers provide an easy-to-use utility to configure your serial device server through an Ethernet connection. For secure administration, it can also restrict the access rights for configuration to only one host PC. With this secure function enabled, other PCs will not have permission for configuration. After the installation program on the Advantech EKI Device Configuration Utility is finished, the serial device servers are ready for use and configuration.

Advantech EKI Device Configuration Utility is an excellent device server management tool. You can connect and configure the local and remote Advantech serial device servers easily. The utility provides access to the following functions:

- Configure the network settings (you can set the IP address, Gateway address, and Subnet mask).
- View and set the serial port parameters (configure operating mode, baud rate, serial port settings and operating mode settings).
- Perform diagnostic tests (virtual COM port testing, port status list).
- Perform administrative functions (export and import the serial device server setting, manage access IP, a descriptive name, upgrade firmware).

Note!  The EKI-1500 can be configured via the Web Interface or the EKI Utility running on a PC. The Web Interface is the primary setup tool, offering both basic and advanced configuration features. For Web Interface configuration, please refer to Chapter 6.

3.2 Installing the Configuration Utility

The Advantech EKI Device Configuration Utility is available for download. Please download the latest version from Advantech's website at <http://www.advantech.com>.

Note!  Microsoft.NET Framework version 2.0 or greater is required for this application.

3.2.1 Installing the Software

1. Please download the Advantech EKI Device Configuration Utility from the Advantech website at <http://www.advantech.com>. and then run the following setup program to begin the installation process: EKI_Device_Configuration_Utility_[version].exe
2. If there is an existing COM port mapping utility on the host PC, remove it at this time. A system reboot may be necessary before continuing the installation.
3. Once the InstallShield Wizard screen displays, click Next to proceed with the installation.

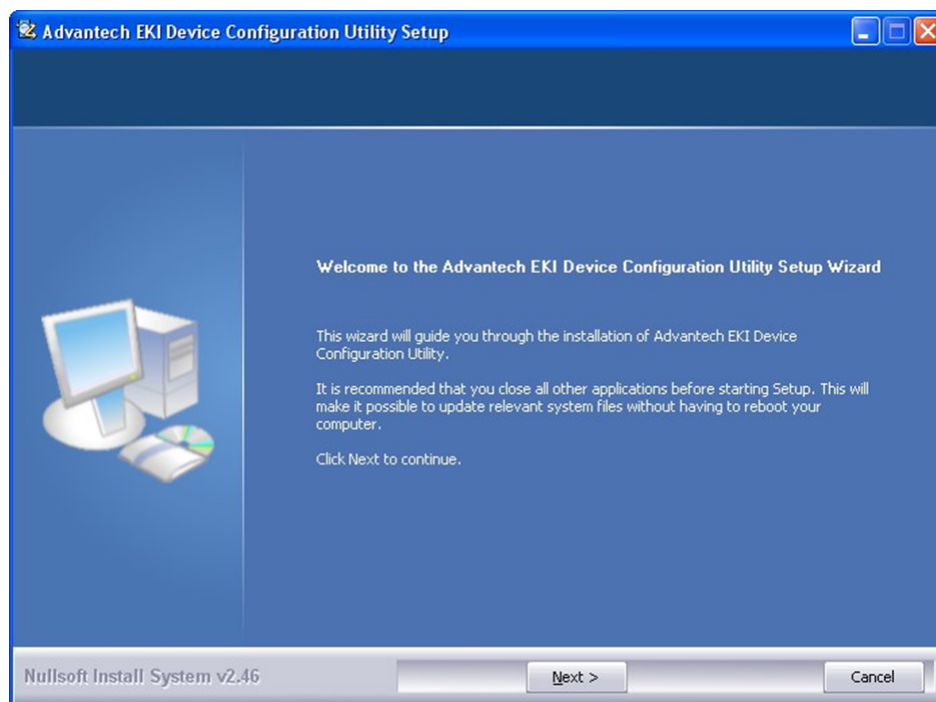


Figure 3.1 InstallShield Wizard 1 of 4

4. The Software License Agreement displays, press I Agree to continue or Cancel to stop the installation.

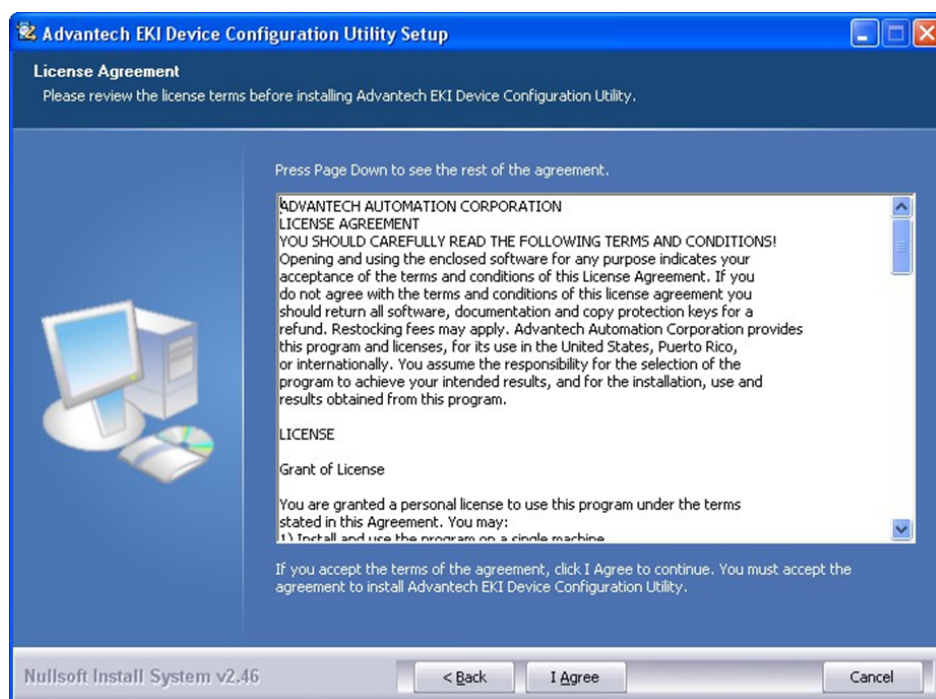


Figure 3.2 InstallShield Wizard 2 of 4

The InstallShield continues and a status screen display. The default installation path is C:\Program Files\EKI Device Configuration Utility.

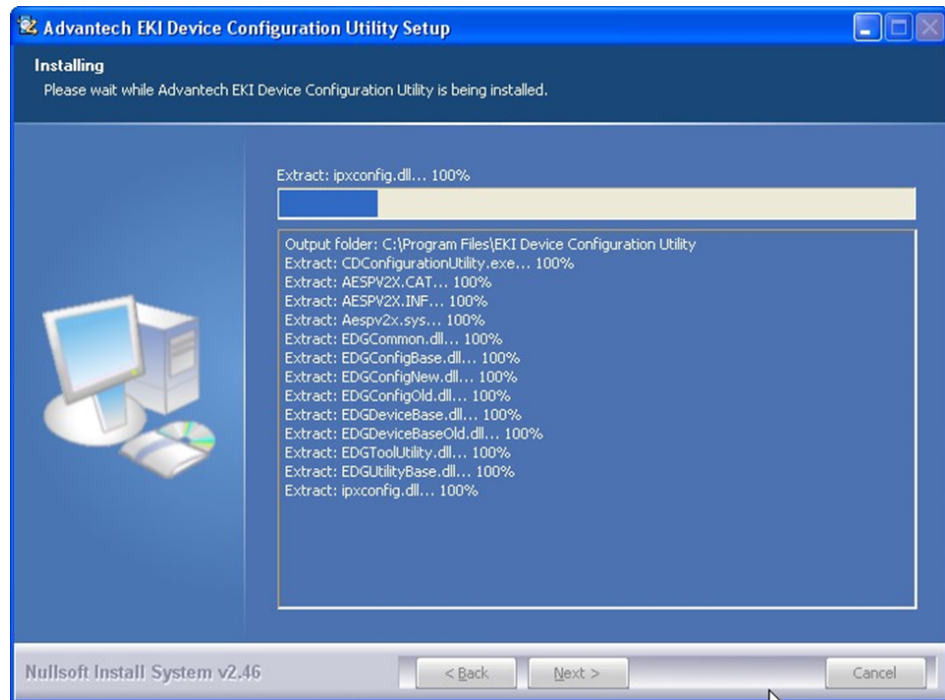


Figure 3.3 InstallShield Wizard 3 of 4

5. Once the installation of the package is finished a Configuration Utility Setup screen display. Click Finish to conclude the process and exit the InstallShield Wizard.

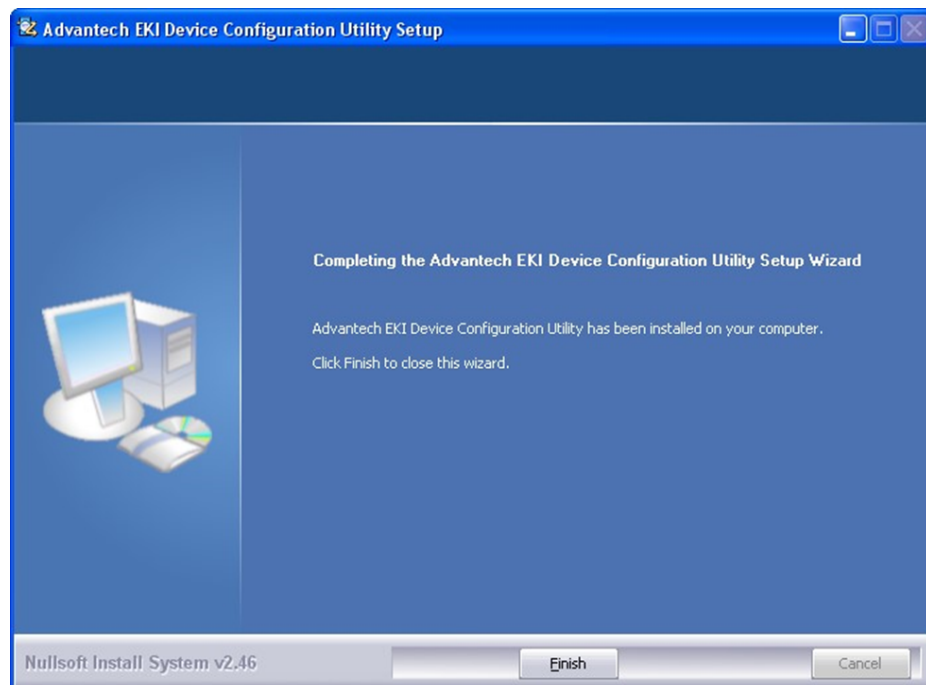


Figure 3.4 InstallShield Wizard 4 of 4

3.3 Menu Bar

You can open the Configuration Utility from the Windows Start Menu by clicking Start > All Programs > EKI Device Configuration Utility > EKI Device Configuration Utility. The Configuration Utility displays as shown in the following figure.

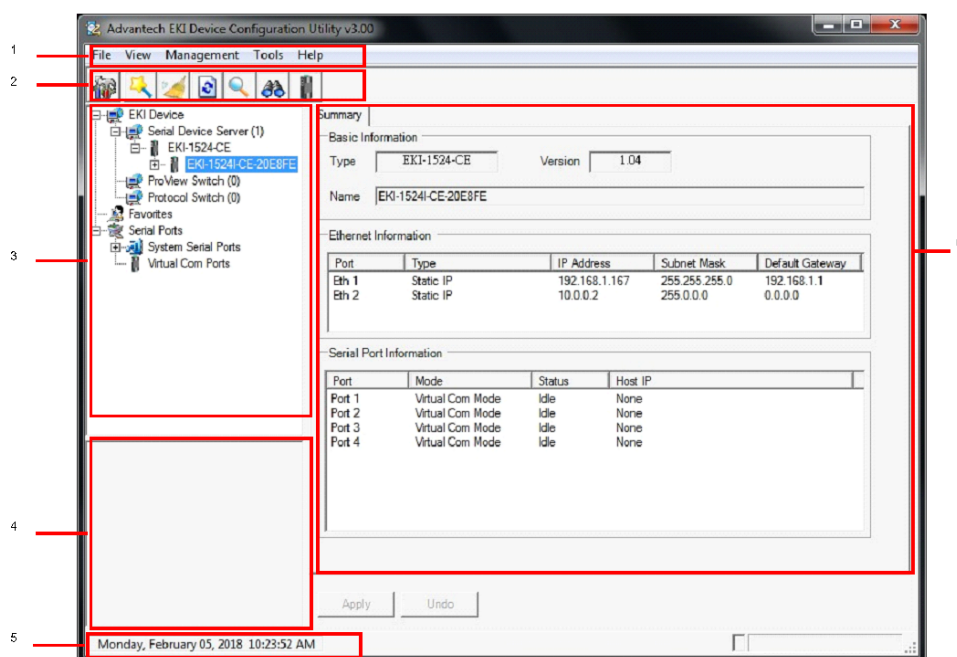


Figure 3.5 Configuration Utility Overview

Table 3.1: Configuration Utility Overview

No	Item	Description
1	Menu Bar	Displays File, View, Management, Tools and Help.
2	Quick Tool Bar	Useful management functions shortcuts.
3	Serial Device Server List Area	Available devices are listed in this area. Devices and COM ports can be organized or grouped in this area.
4	Information Panel	Click on the devices or move cursor to the devices, the related information is shown in this area.
5	Status Bar	Displays the current time.
6	Configuration Area	Click on the item on the Device Server List Area, the configuration page displays.

3.4 Quick Tool Bar

The Advantech EKI Device Configuration Utility makes use of a Quick Tool Bar menu to allow quick access to the management functions. See the following figure for further information.

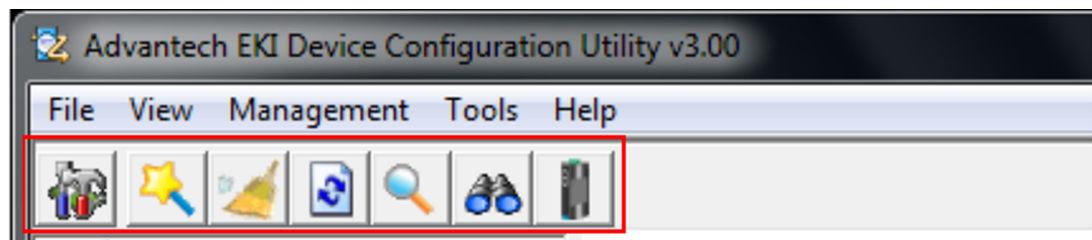
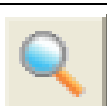


Figure 3.6 Quick Tool Bar Overview

Table 3.2: Quick Tool Bar Overview

Icon	Item	Description
	Utility Settings Clear	Configure the general settings for the Main Form Setting and Device Manager menus. Refer to "Utility Settings" on page 40.
	Configuration Wizard	Start the software wizard (setup assistant) to lead you through the VCOM configuration process for device server product.
	Clear Device List and Search Again	Click to clear listed device servers in the Serial Device Server List Area and initiate a new search. NOTE: A continuous click of the icon results in the following message: Please do not refresh so frequently.
	Search Again	Click to search for serial device servers on the local LAN.
	Add IP Address to Favorite	Click to include the selected IP Address into the Favorites list group.
	Search for a Range of IP Addresses	Click to begin a range search. Enter the beginning and ending IP addressed to being a search within the string parameters.
	Manual Direct Mapping Virtual COM Port	Click to add a target by selecting the Device Type and inputting the IP address without physically connecting the serial device server to the network.

3.5 Utility Settings

3.5.1 Utility Settings

3.5.1.1 Main Form Setting

Click **View > Settings** to configure utility settings.

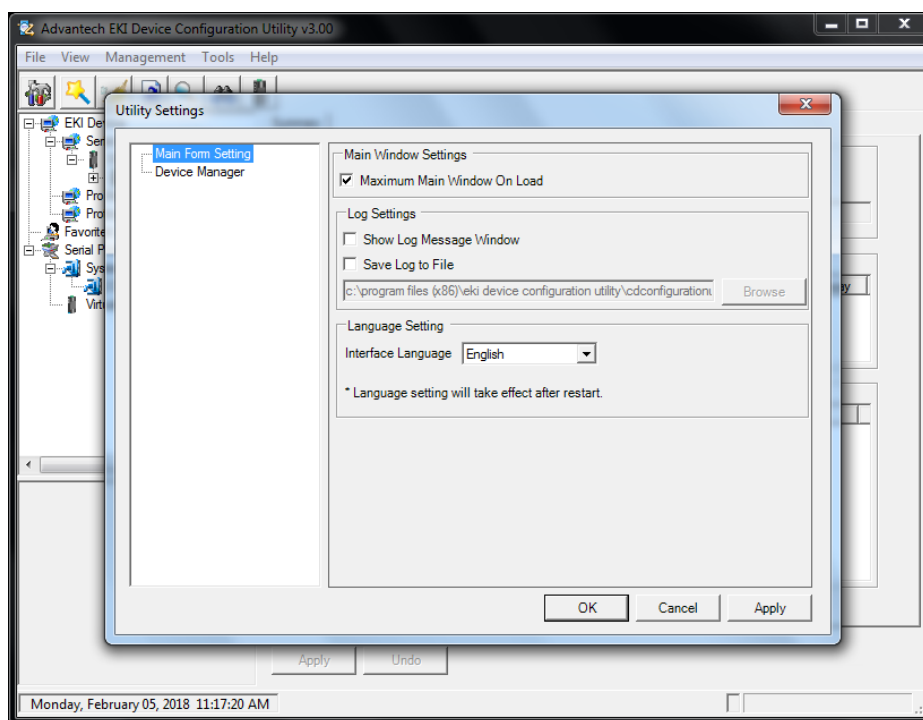


Figure 3.7 View > Settings > Main Form Setting

Table 3.3: Main Form Setting	
Item	Description
Main Window Settings	
Maximum Main Window On Load	Check the box to enable the limiting of main windows on-load to the maximum value.
Log Settings	
Show Log Message Window	Check the check box to activate the AdvLogMessage form. The Form Log message displays.
Save Log to File	Check the check box to save log to file.
Browse	If the Save Log to File option is enabled, click Browse to select a file to save log data.
Language Settings	
Interface Language	Click the drop-down menu to select an interface language: Traditional Chinese, Simplified Chinese or English. NOTE: A restart is required for the settings to take effect.
OK	Click OK to save and exit the Utility Settings menu.
Cancel	Click Cancel to discard the changes.
Apply	Click Apply to save the main form settings.

3.5.1.2 Device Manager

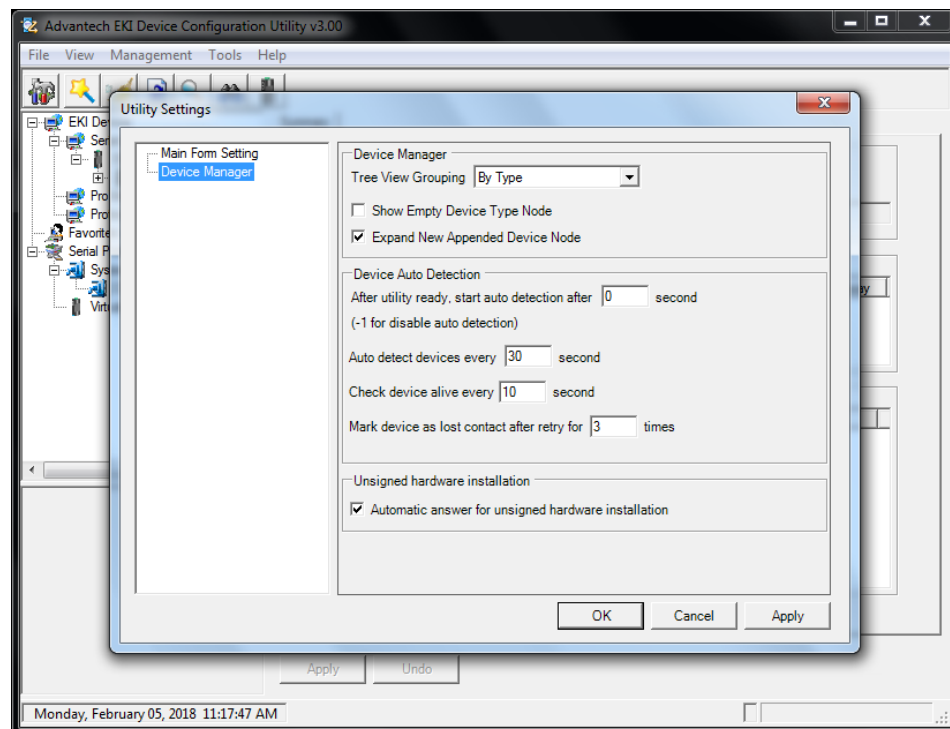


Figure 3.8 View > Settings > Device Manager

Table 3.4: Device Manager

Item	Description
Device Manager	
Tree View Grouping	Click the drop-down menu to enable or disable grouping.
Show Empty Device Type Node	Check the check box to show empty device type node or not.
Expand New Appended Device Node	Check the check box to expand a new appended device node.
Device Auto Detection	
Auto detect devices every X second	Enter a value to specify the time to auto detect devices.
Check device alive every X second	Enter a value to specify the time to check device alive
Mark device as lost contact after retry for X times	Enter a value to specify the time to mark device as lost contact.
Unsigned Hardware Installation	
Automatic answer for unsigned hardware installation	Check the check box to enable or disable answer automatically for unsigned hardware installation
OK	Click OK to save and exit the utility setting.
Cancel	Click Cancel to discard the changes.
Apply	Click Apply to save the utility setting.

3.5.2 Discovering Your Device Server

Note! The EKI-152x supports SSDP (Simple Service Discovery Protocol). After enabling the SSDP function on the EKI-152x configuration web-page, users can use Windows Network Discovery to easily discover the EKI-152x.

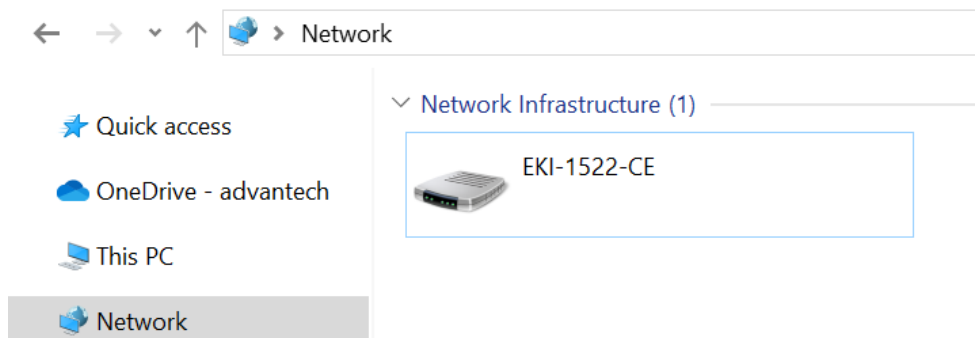


Figure 3.9 Network

3.5.2.1 Auto Searching

Advantech Serial Device Server Configuration Utility will automatically search all the EKI-1500 Series device servers on the network and show them on the Serial Device Server List Area of the utility. The utility provides an auto-search function to show your device (s) by simply executing the configuration utility program from the Start Menu.

From here all device on the same network domain will be searched and displayed on Device Server List Area. You can click on the device name to show the features of the specific device.

Click on the “+” before the model name, and the utility will expand the tree structure to show the individual device name. Click on the “-” minus symbol before the model name, and the utility will collapse the tree structure.

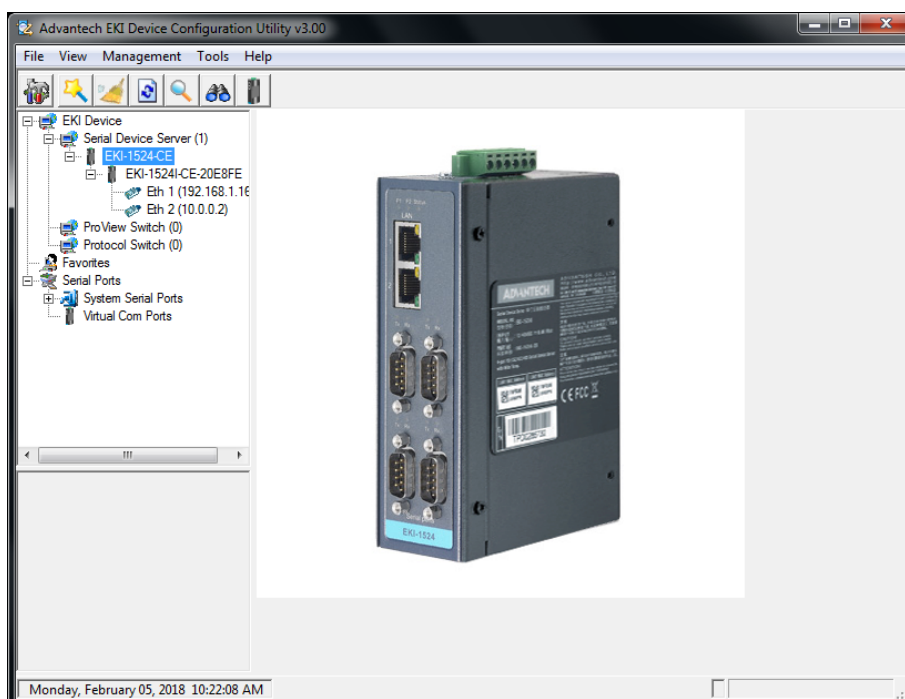


Figure 3.10 Open View of Serial Device Configuration Utility

In the previous figure, the EKI-1500 Series device server is listed as EKI-1524-BE04FFAB.

Note! When you run the configuration utility for the first time, the default device name is obtained from the serial device's MAC identification number. The name can be altered through the configuration utility.

Select the device in this sub-tree. The first tab on the Configuration Area shows the summary of “Basic Information” included device type, version, and name, “Ethernet Information”, and “Serial Port Information”. The serial port information frame displays the operation mode, status and connected host IP.

Click on the “+” before the device name, and the utility will expand the interfaces on this device server.

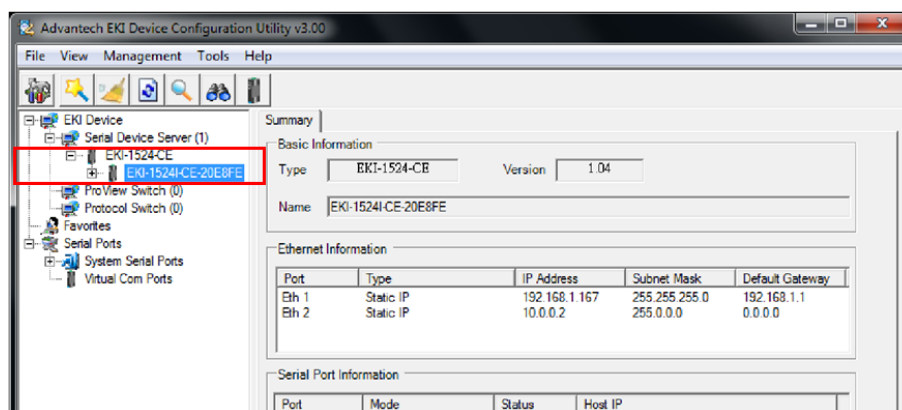


Figure 3.11 Selecting a Device

Click on each item to enter the configuration page to change the setting. The configuration will be introduced on following sections.

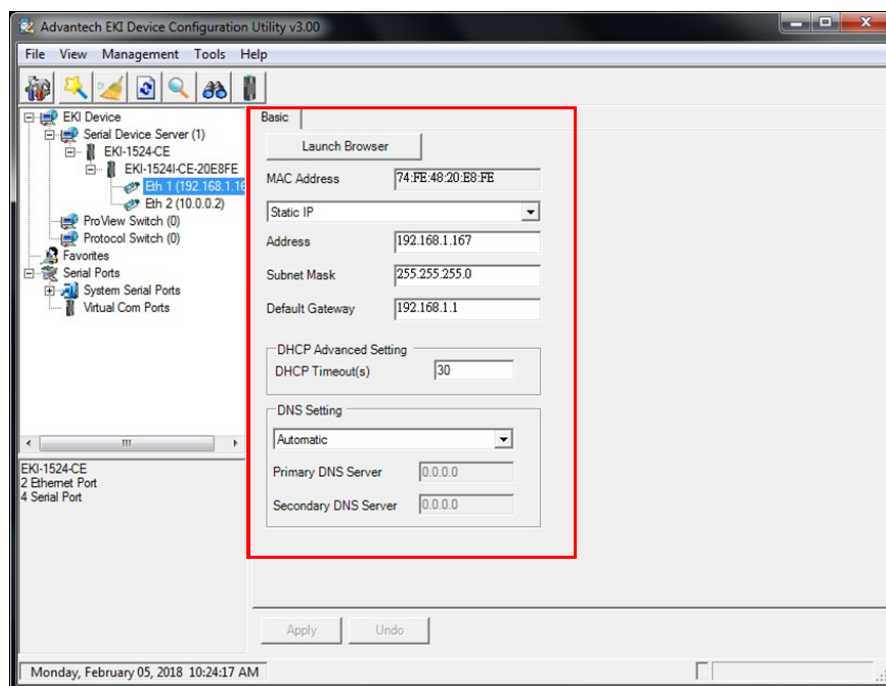


Figure 3.12 Viewing Basic Settings

3.5.3 Network Settings

Prior to setting up the server's IP address determine the IP address mode.

There are four mode types available:

- Static IP: mode to assign a specific assigned address
- DHCP / AutoIP: mode to automatically assign IP addresses through a DHCP server
- BOOTP / AutoIP: mode to automatically assign an IP address through the configuration server
- DHCP/BOOTP/AutoIP: mode to automatically assign an IP address using a Bootstrap Protocol or DHCP server.

The server is set with the following default IP configuration:

- 10.0.0.1 (Eth1)
- 10.0.0.2 (Eth2) (EKI-152x only)

The EKI-1500 Series includes a software utility option, which you can install on your system, for configuration through computer-based software. The EKI-1500 Series also includes a web interface option for configuration through a standard web browser.

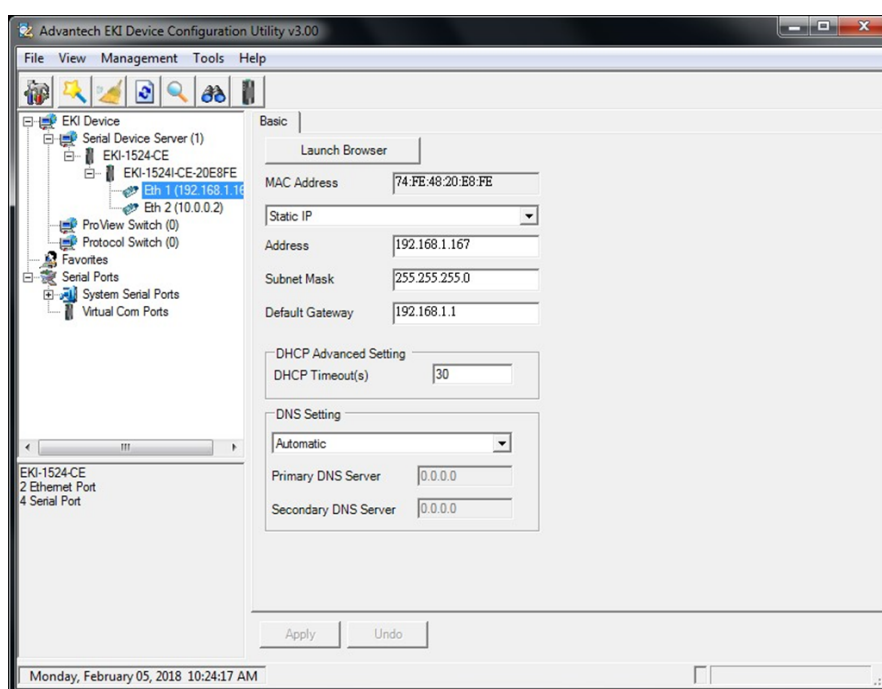


Figure 3.13 Utility Overview

You can choose from four possible IP Configuration modes --- Static, DHCP, BOOTP, and DHCP/BOOTP.

Figure 3.14 Network Settings Overview

Table 3.5: Network Settings

Item	Description
Static IP	Static IP User defined IP address, Subnet Mask, and Default Gateway.
DHCP + Auto-IP	DHCP Server assigned IP address, Subnet Mask, Default Gateway, and DNS.
BOOTP + Auto-IP	BOOTP Server assigned IP address.
DHCP + BOOTP + Auto-IP	DHCP Server assigned IP address, Subnet Mask, Default Gateway, and DNS, or BOOTP Server assigned IP address. (If the DHCP Server does not respond)
DNS Setting	In order to use DNS feature, you need to set the IP address of the DNS server to be able to access the host with the domain name. The EKI-1500 Series device server provides Primary DNS Server and Secondary DNS Server configuration items to set the IP address of the DNS server. Secondary DNS Server is included for use when Primary DNS server is unavailable.
DHCP Advanced Setting	When you enabling DHCP protocol to get IP address, it will be waited DHCP server to give IP within DHCP time out. The default value is 180 seconds.

Note!  When you have finished the configuration of these settings for each category, please press the “Apply” button in order to make these settings effective on the Serial Device Server.

3.6 Administrator Settings

3.6.1 Locate the Serial Device Server

When several serial device servers are connected to the network, identification of a specific serial device is possible through the Locate function.

To locate the serial device server:

1. From the device list frame, locate the desired device and right-click on it to display the settings menu.
2. Select **Locate** from the menu.

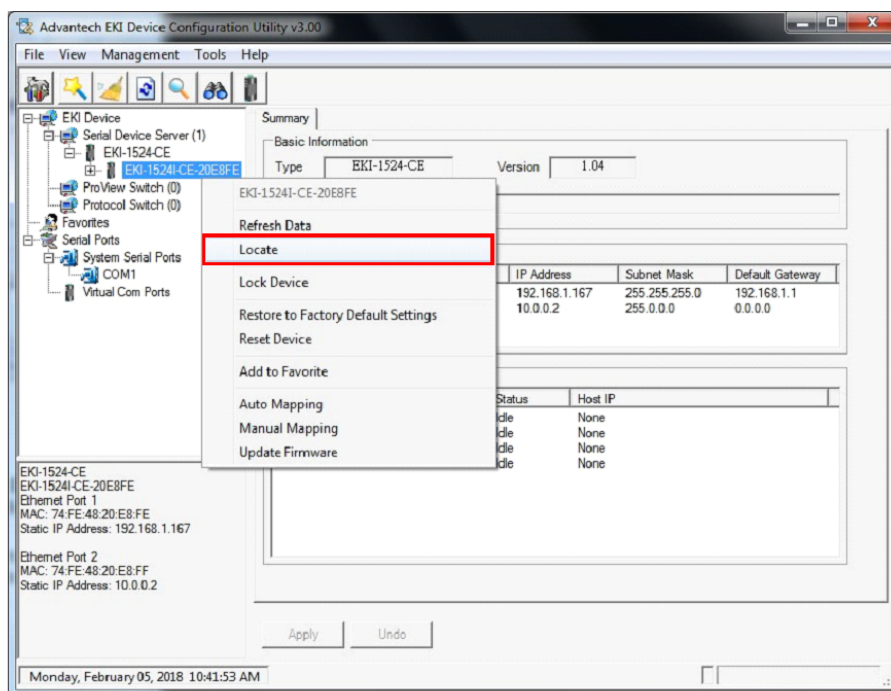


Figure 3.15 Locate the Serial Device Server

The unit's Status LED will turn solid amber and the buzzer will sound until you click **Stop Locate**.

3.6.2 Securing the Serial Device Server

3.6.2.1 Lock the Serial Device Server

The configuration utility provides the "Lock Device" function to make it more secure.

To lock the serial device server:

1. Right-click a desired device to display the settings menu.
2. Select **Lock Device**.

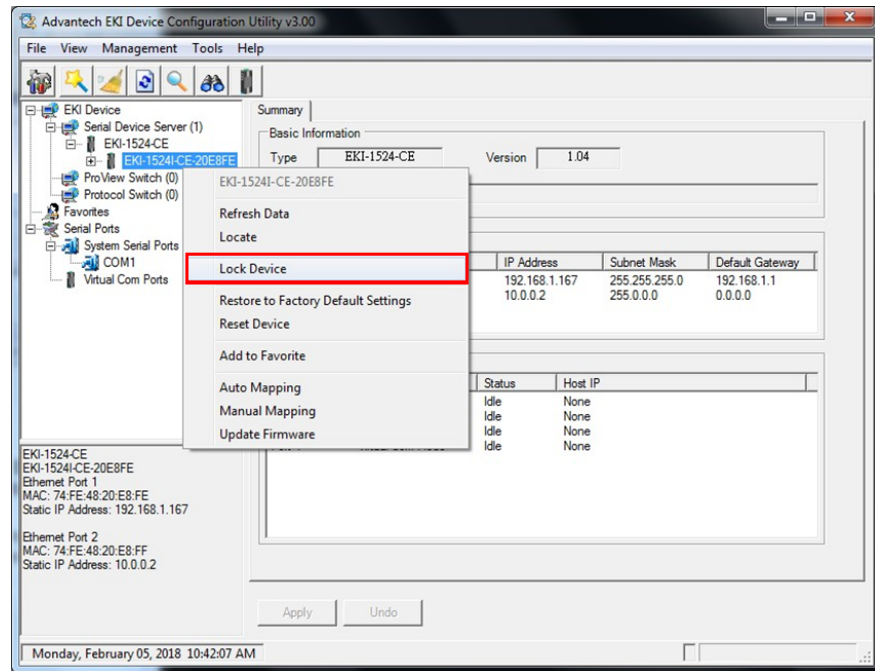


Figure 3.16 Lock the Serial Device Server

3. Enter a password. Retype the password entry to confirm the profile password.

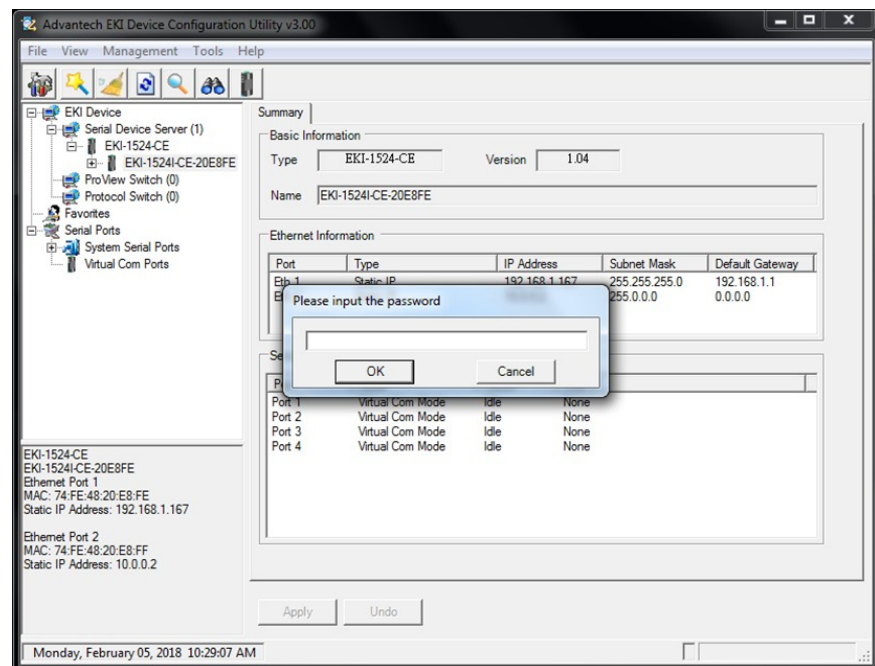


Figure 3.17 Enter a Password

4. Right-click a desired device to display the settings menu. Select Reset Device to restart the serial device server and store your setting password into the memory.

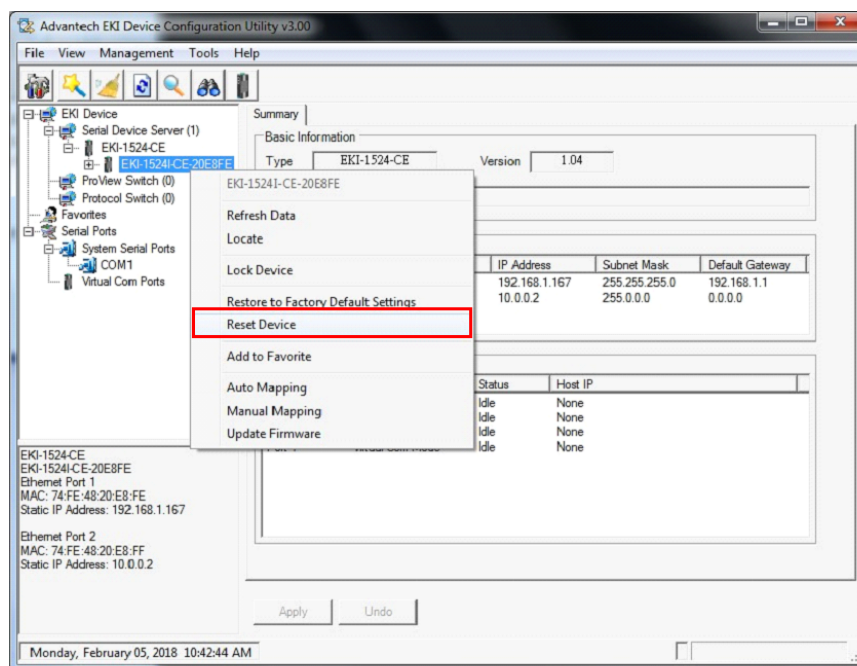


Figure 3.18 Reset Device

3.6.2.2 Unlock the Serial Device Server

To unlock the serial device server:

1. Right-click a desired device to display the settings menu.
2. Select Unlock Device.
3. Enter the password as entered in the Lock Device procedure.

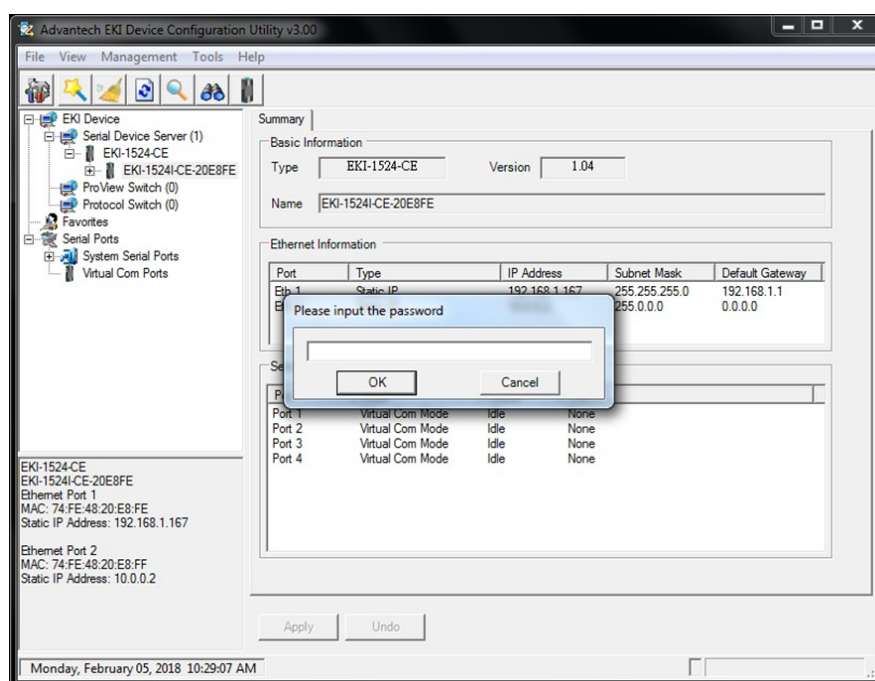


Figure 3.19 Unlock the Serial Device Server

If you forgot the password, you must restore the setting of the serial device server to the factory defaults, which will be introduced in the next section.

3.6.3 Restore to Factory Default Settings

The configuration utility provides the function to restore the serial device server to factory default settings.

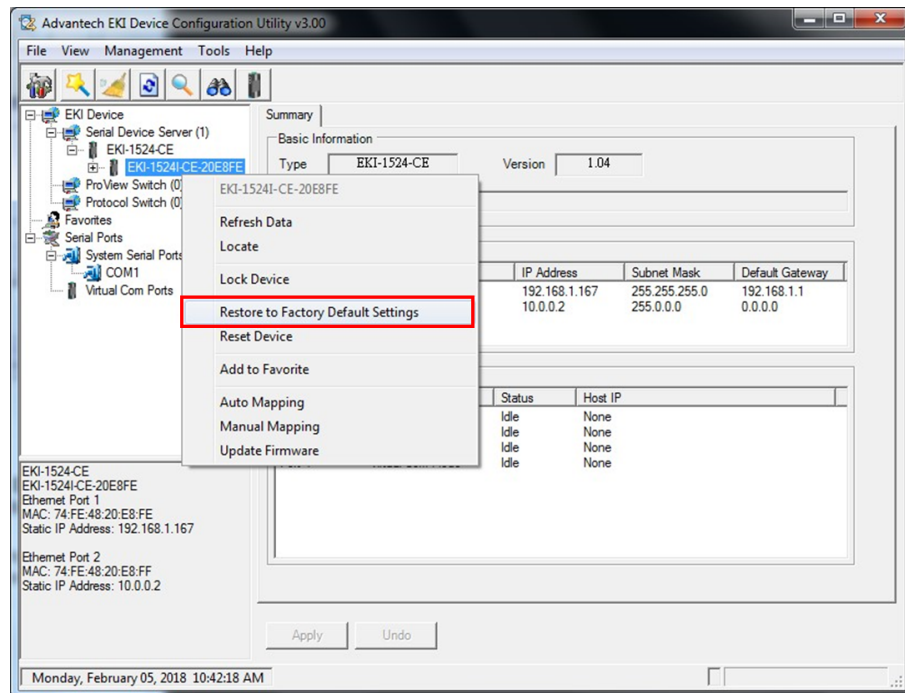


Figure 3.20 Restore to Factory Default Settings

The confirm message will display after clicking Restore to Factory Default Settings. If you really want to restore the serial device server to factory default settings, please click Yes button to continue.

Power off the serial device server within ten seconds. After reconnecting the power, all settings will be reset to the factory default. If the power supply remains connected for more than ten seconds, the serial device server will not be changed.

3.6.4 Resetting the Device

The **Reset Device** is available to allow you to reset the serial device server. The function disconnects both the Ethernet and serial connections.

The function also allows the serial device server to save new configuration settings to flash memory. Once a new setting is changed, you can use the Save function to accept the changes. You will need to reset the device to save the settings to flash memory.

To reset the device:

1. Right-click a desired device to display the settings menu.
2. Select **Reset Device**.

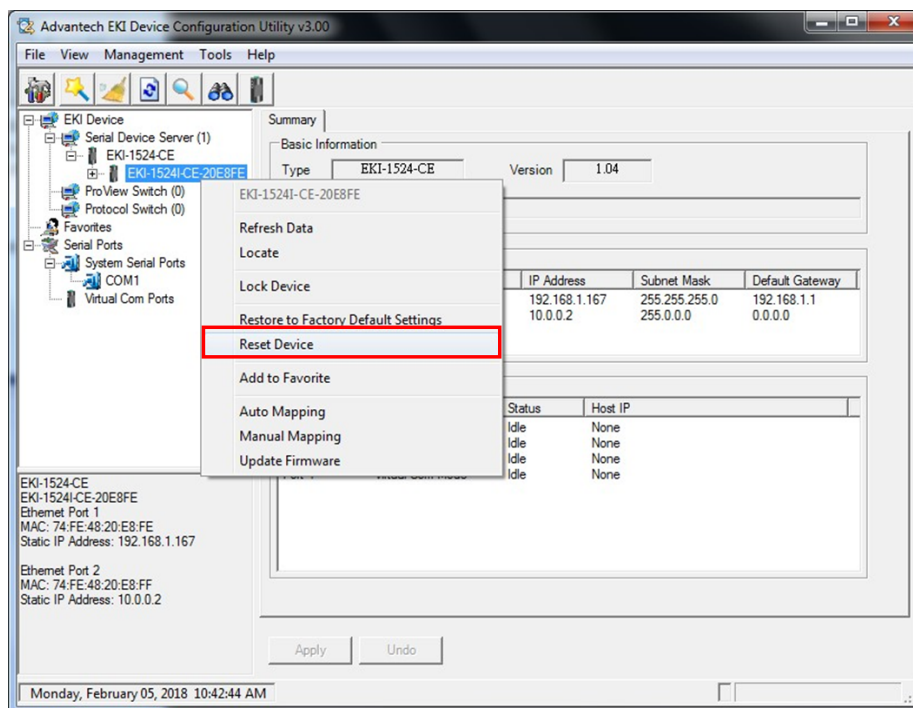


Figure 3.21 Reset Device

The device resets. Once the process is complete, the serial device server displays under the Serial Device Server listing once again.

3.6.5 Add to Favorite

The Add to Favorite function allows to easily map available devices to Favorite's. By bookmarking specific devices, you can create quickly accessible shortcuts for existing critical devices from the vast pool of locally or remotely networked EKI-1500 Series devices.

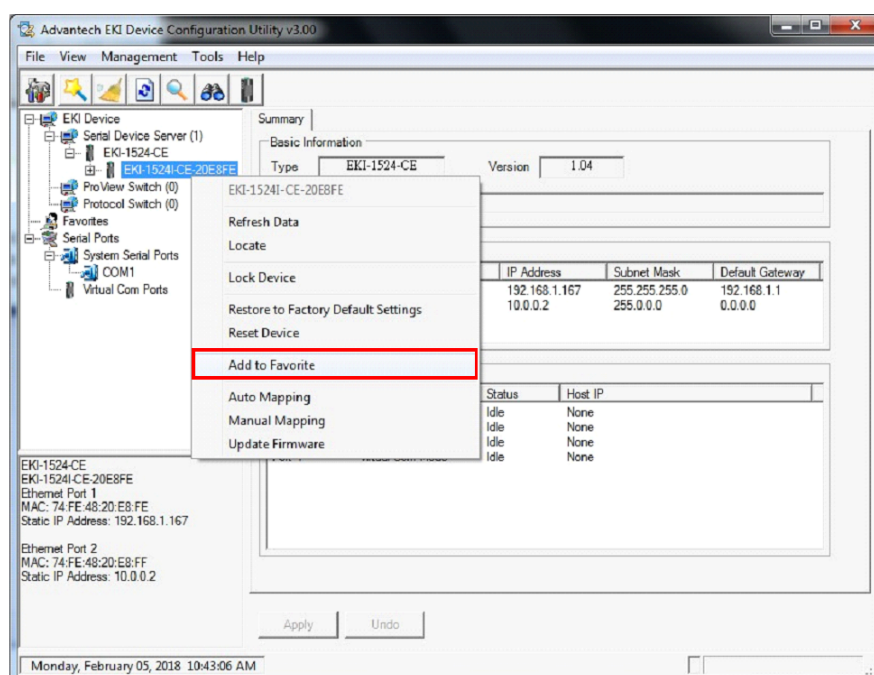


Figure 3.22 Add to Favorite

3.6.6 Auto Mapping

See “Auto Mapping” on page 65 for further details.

3.6.7 Manual Mapping

See “Manual Mapping” on page 67 for further details.

3.6.8 Update Firmware

Advantech continually upgrades its firmware to keep up with the ever-expanding world of computing. You can use the update firmware function in the utility to carry out the upgrade procedure. Please access Advantech’s website: <http://www.advantech.com> to download the latest version of the firmware. Before updating the firmware, make sure that your host’s Network domain is as same as the serial device server or the host can establish the TCP connection to the serial device server.

To update firmware:

1. Right-click a desired device to display the settings menu.
2. Select **Update Firmware**.

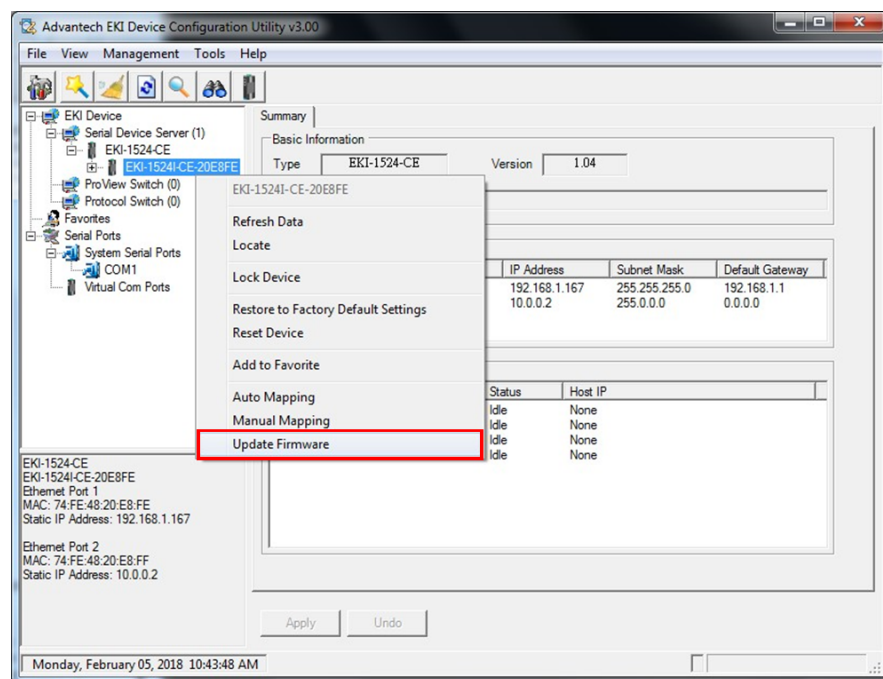


Figure 3.23 Update Firmware

3. Select the firmware file you want to update.

Wait for a few seconds for the firmware to finish updating. After the update has completed, click on the **OK** button. The serial device server will restart automatically.



Note! Be sure that the host PC Ethernet network domain is as same as the EKI-1500 Series serial device server or the host PC can establish the TCP connection with the serial device server while doing the updating firmware process.

Chapter 4

Selecting An
Operating Mode

4.1 Overview

The EKI-1500 Series is designed to network-enable any RS-232/422/485 serial device, and provides industry-grade hardware and easy-to-use software to make connecting serial devices to an Ethernet network a surprisingly simple process.

These units immediately upgrade your existing serial devices for integration into the Internet world. The EKI-1500 Series features many powerful functions, such as high-speed data transfer, access-control, auto-detection of all EKI-1500 Series products, and more.

After the simple installation steps to attach your network and serial device to the appropriate connectors on the serial device servers and driver installation, you will be able to communicate with the serial devices via its own application software and with the EKI-1500 Series device server. COM port redirector, USDG TCP server mode, TCP client mode, UDP server mode, UDP client mode, RFC2217 mode are all different methods of making a serial connection across using one or more serial device servers.

4.2 COM Port Redirector (Virtual COM Port)

Advantech EKI Device Configuration Utility is a serial COM port redirector that creates virtual COM ports and provides access to serial device connected to Advantech serial device server. You can configure the serial device server and enable the Virtual COM port using one integrated utility. Advantech EKI Device Configuration Utility allows you to configure Microsoft applications to communicate with network enabled serial device servers as easily as if they were physically installed in or directly connected on the PC.

The Advantech redirector can create up to 255 virtual COM ports. Application to the host can open a virtual COM port to access the serial device servers at the same time. The redirector will handle each active virtual COM port as a separate TCP connection to Advantech serial device servers.

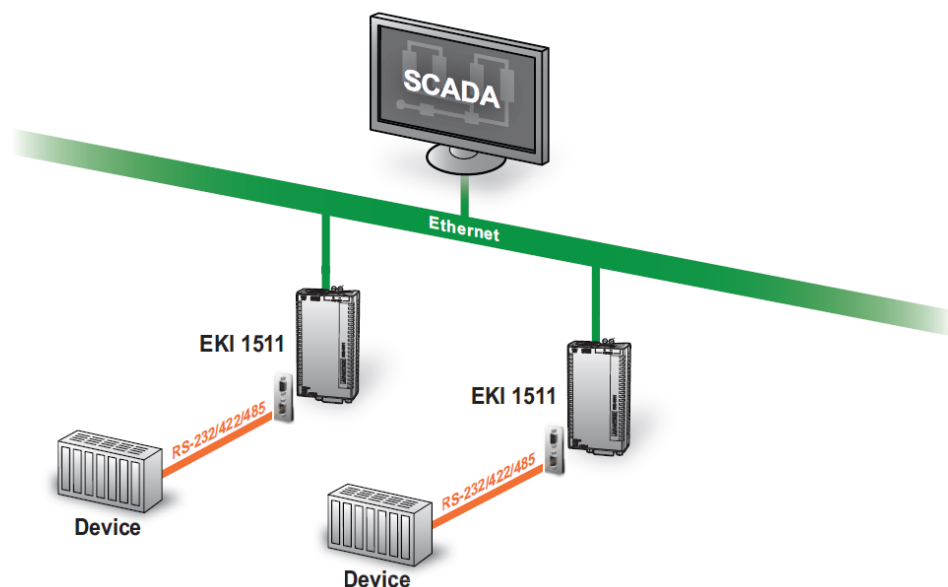


Figure 4.1 Virtual COM Mode (EKI-1511)

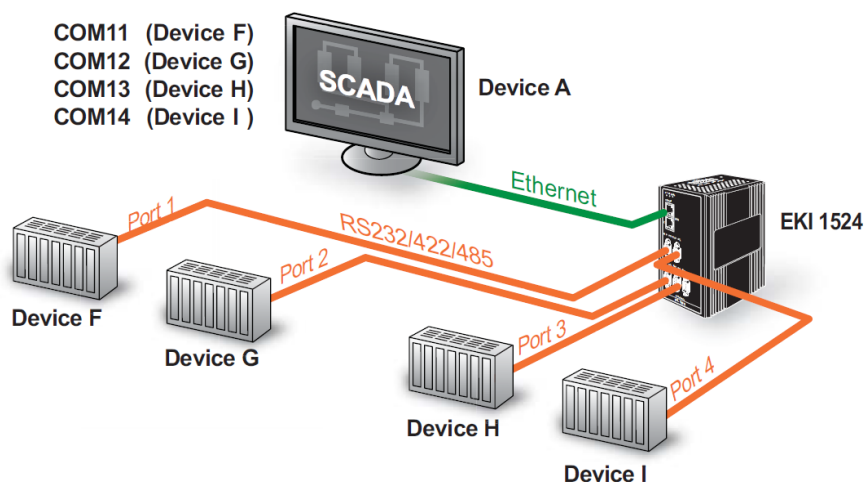


Figure 4.2 Virtual COM Mode (EKI-152x)

The EKI-1500 Series provides Multi-access function through an Ethernet connection path, allowing a maximum of five connections to open one serial port simultaneously. In this mode all connections must use the same serial setting. If one serial setting within this configuration is configured differently, the data communication will not function correctly.

Figure 4.3 Configuring Virtual COM Mode

The Host Idle Timeout setting monitors the connection between the host and the device. If the Host Idle Timeout setting time is reached, the device server will release the resources allocated to the port mapping. This prevents a stalled host from affecting the connective device.

Note! The default value of "Host Idle Timeout" is 60 seconds.



The Multi-access function has two modes. One is **Normal mode** and the other is **Round-Robin mode**.

4.2.1 Normal mode

By setting the Response Timeout parameter to 0, the EKI-1500 Series will operate in normal mode. When multiple hosts simultaneously open the serial port, only the first connected host obtains management control; the remaining connections have data communication functionality only. Each serial port supports up to five simultaneous connections, allowing multiple hosts to transmit and receive data through the same serial port at the same time. Every host can transmit data to the same serial port, and the EKI-1500 Series will also transmit data to every host. When multiple hosts transmit data to the same serial port simultaneously, the received data from Ethernet and the serial port outputs are mixed. When the EKI-1500 Series receives data from the serial port, it transmits the data to all connected hosts simultaneously.

4.2.2 Round-Robin mode

If the Response Timeout value is between 0 and 65,535, the EKI-1500 Series operates in Round-Robin mode. Each serial port supports up to five simultaneous connections, allowing hosts to transmit and receive data through the same serial port at the same time. Every host can transmit data to the same serial port, and the EKI-1500 Series processes the data in the order it arrives. The EKI-1500 Series processes the first host's request and replies. The serial device server determines the end of the serial acknowledgment through a response timeout.

When the EKI-1500 Series serial device server does not receive a response from the serial port after a response timeout query, the device replies with an acknowledgment and then processes the next host request. With an increased number of hosts, response time may be lengthy, increasing the Response Timeout period.

Frame Break is an important parameter for Round-Robin mode. It is a smart method for reducing ineffective waiting periods and streamlining the transmission process.

If the **Frame Break** function is disabled, EKI-1500 Series devices will wait for a Response Timeout period, whether or not the device has transmitted data. During this period, host commands are queued and processed in the order received.

If Frame Break is enabled and the serial port remains idle longer than the Frame Break period, the EKI-1500 Series assumes the communication is complete and continues with the next query. This is an efficient way to reduce waiting time and improve performance..

Note! *The Respond Timeout is used in some multiple access applications, for applications with single access by a TCP client, this option is not needed.*



4.3 USDG Data Mode

The EKI-1500 Series can function as either a Data TCP server or a Data TCP client. Both operations support TCP and UDP protocol. The EKI-1500 Series allows you to treat your serial devices as if they were networking devices. You can issue commands or transmit data from serial devices, connected to a EKI-1500 Series device, to any devices that are connected to the Internet.

4.3.1 USDG TCP Client Mode

In TCP Client mode, the TCP connection is established from the EKI-1500 Series device server. This operation mode supports a maximum of 16 simultaneous connections for each serial port on the EKI-1500 Series, either to a single host or multiple hosts. You can configure the IP address and TCP port number of the network hosts connected to the EKI-1500 Series device server using the Advantech Serial Device Server Configuration Utility.

After configuring the devices, when the EKI-1500 Series device server receives data from the serial port, it connects to the configured hosts.

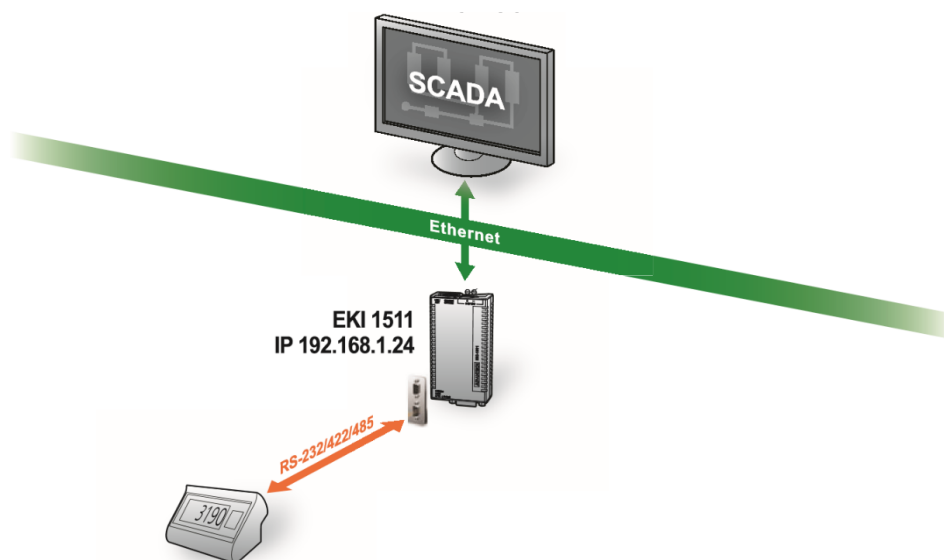


Figure 4.4 USDG TCP Client Mode (EKI-1511)

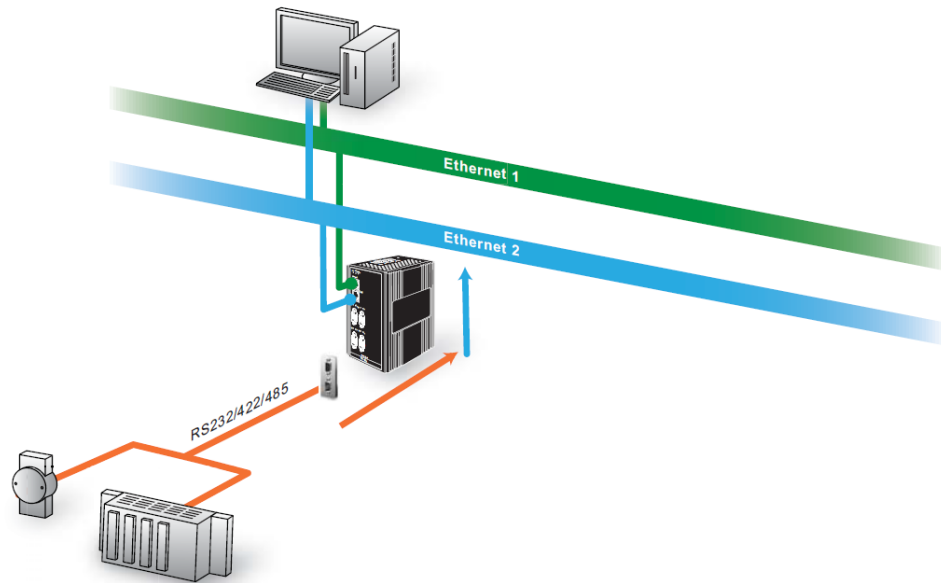


Figure 4.5 USDG TCP Client Mode (EKI-152x)

In USDG Data TCP Client mode, you may need to enable the peer numbers you would like to receive. You can set a maximum sixteen network devices to which you may connect. You need to fill out the IP Address and Port (including local port and peer port) of each network device to which you want to connect.

In the Peer for Receiving Data menu, entering “0” as the value for the Local Port will assign a random TCP Port for an EKI-1500 Series device.

Transmit Target Peers

Peer Number

#	Local Port	Peer IP address	Port
Save			

Figure 4.6 Peers for Receiving Data

4.3.2 USDG Data TCP Server mode

In TCP server mode, the TCP connection is initiated from the host to the EKI-1500 Series device server. This operation mode supports a maximum of five simultaneous connections for each serial port on an EKI-1500 Series device server from a single or multiple hosts. However, a multi-host connection simultaneously transmits the data from a single serial port.

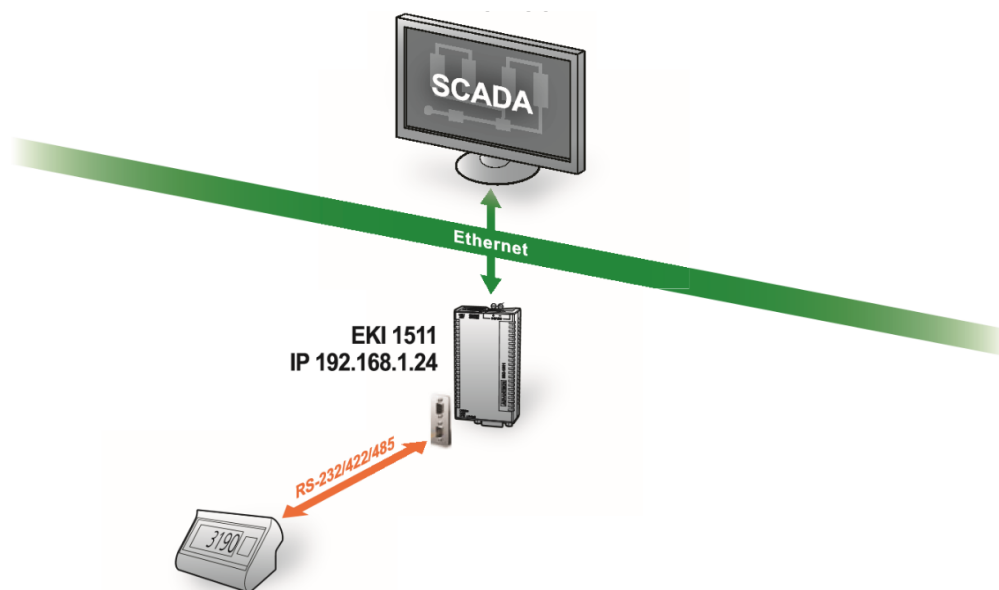


Figure 4.7 USDG TCP Server Mode (EKI-1511)

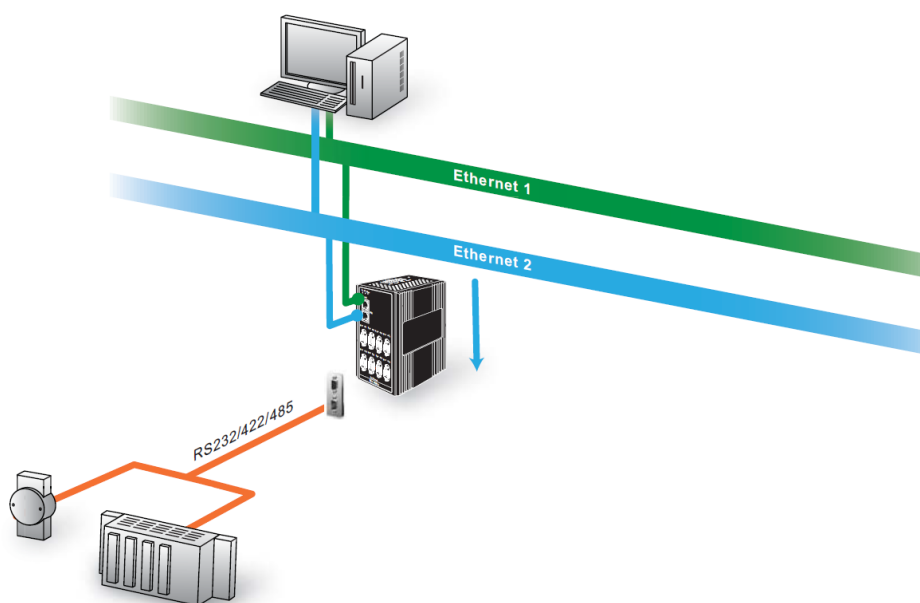


Figure 4.8 USDG TCP Server Mode

Basic Operation

Port 1 configuration

Mode	USDG Data Mode	
Protocol	TCP	
Data Idle Timeout(s)	60	(0 ~ 65535)
Data Listen Port	5300	(1 ~ 65535)

Figure 4.9 USDG Data Mode

4.3.3 USDG UDP Server/Client Mode

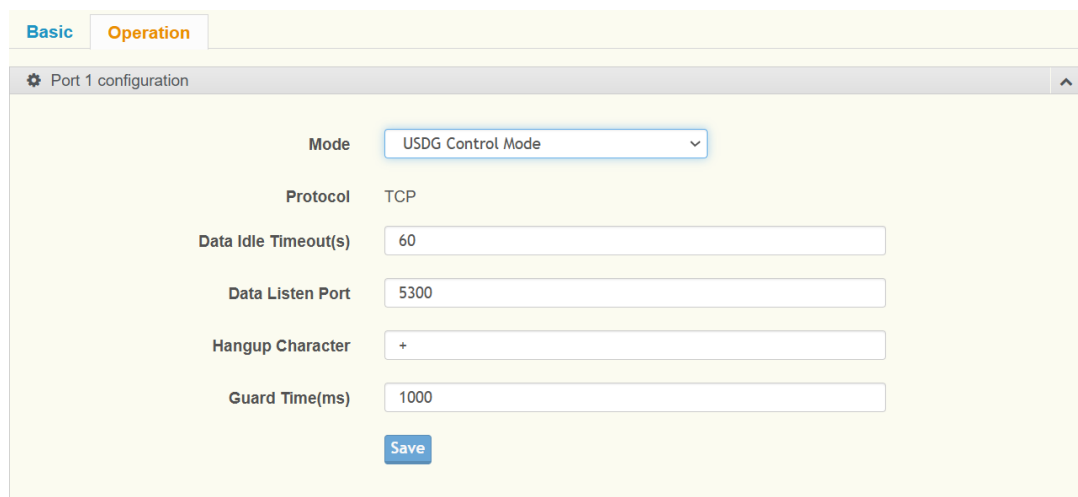
The USDG UDP mode is primarily used for the broadcasting of messages over a network. In UDP server mode, data is transmitted from the Host connected to the EKI-1500 Series USDG UDP Port (Default Port 5300). In the default UDP client mode, EKI-1500 Series device servers simultaneously transmit UDP messages to a maximum of 16 peers.

For detailed information on USDG Data Mode features and settings, please refer to Chapter 6: Web Interface Port Configuration > Port 1 (or Port 2) Operation > USDG Data Mode page (6.7.22).

4.4 USDG Control Mode

In controlling mode, the EKI-1500 Series device server presents a modem interface to the attached serial device: it accepts AT-style modem commands to connect / disconnect to other networking device.

If you want a serial device running application program to connect/disconnect to different devices on request, this function is available through the USDG Control mode.



The screenshot shows the 'Port 1 configuration' window with the 'Operation' tab selected. The 'Mode' dropdown is set to 'USDG Control Mode'. The 'Protocol' is set to 'TCP'. The 'Data Idle Timeout(s)' is set to '60'. The 'Data Listen Port' is set to '5300'. The 'Hangup Character' is set to '+'. The 'Guard Time(ms)' is set to '1000'. A 'Save' button is located at the bottom of the configuration area.

Figure 4.10 USDG Control Mode

4.4.1 Hangup Character

The default character is "+". After you have connected to another serial device via EKI-1500 Series device, you may need to disconnect, using the command "+++". To do this, press "+" three times and wait for the Guard timeout <default value is 1000ms>; the device will disconnect. You can set "Guard Time" to define the idle time.

4.4.2 Guard Time

The default value is 1000 ms.

Example: <Guard Time>+++<Guard Time>

Table 4.1: Guard Time

Command	Function
ATD <IP address><TCP port><CR>	Forms a TCP connection to the specified host. Ex: ATDT 192.0.55.22:5201 In above example, the EKI-1500 Series device server forms a raw TCP connection to the networking device (192.0.55.22). The TCP port is 5201.
ATA <CR>	Answering an incoming call
+++<CR>	Returns the user to the command prompt when entered from the serial port during a remote host connection.
<LF><CR> OK <LF><CR>	Commands are executed correctly
<LF><CR> CONNECT <LF><CR>	Connect to other device
<LF><CR> RING ddd.ddd.ddd <LF><CR>	Detect the connection request from other device, which IP address is ddd.ddd.ddd.ddd.
<LF><CR> DISCONNECT <LF><CR>	Disconnect from other device
<LF><CR> ERROR <LF><CR>	Incorrect commands
<LF><CR> FAIL <LF><CR>	If you issue an ATDT command and can not connect to the device, it will response "FAIL".

4.5 RFC2217 Mode

RFC2217 mode is similar to virtual COM mode in that a driver is used to establish a transparent connection between a host computer and a serial device by mapping the serial port on EKI-1500 Series devices to a local COM port on a host computer. RFC2217 defines general COM port control options based on the Telnet protocol. Third party drivers supporting RFC2217 are widely available on the Internet and can be used to implement virtual COM mapping to the serial port of your device.

4.6 SSH Console Mode

SSH console mode is designed to expose the serial console interface via SSH protocol; this function allows users to set up out-of-band management for network switches routers and firewalls. It can also be helpful for building test beds for centralized research and development labs.

Chapter 5

Setting up Virtual COM

5.1 Setting COM Port Redirector

Advantech COM port mapping software is a serial COM port redirector that creates virtual COM ports and provides access to serial devices connected to an Advantech serial device server. Your serial device applications can communicate with serial devices connected to the Advantech serial device servers without software changes. Since the virtual COM ports work like standard Windows COM ports, your application software sees no difference between a local serial device and one connected to an Advantech serial device server.

The COM redirector utility and the virtual COM port management utility are integrated into one utility with same GUI. The Advantech Serial Device Server Configuration Utility can create all Virtual COM ports using the Auto Mapping function or by using the manual mapping function.

5.2 Virtual COM Port Mapping

5.2.1 Auto Mapping

1. On your desktop, navigate to Start > EKI Device Configuration Utility and click Advantech EKI Device Configuration Utility to open the utility.
2. Under Serial Device Servers, locate your server and click the icon to expand the listing.
3. Select the target device and right-click on it to open up the options menu window.
4. Locate Auto Mapping and select it.

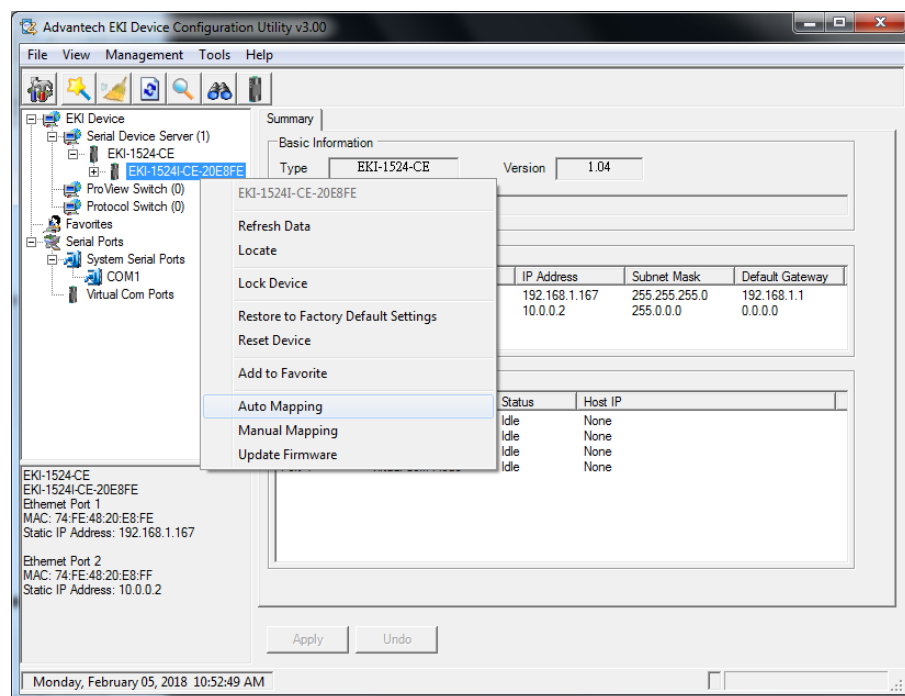


Figure 5.1 Selecting Auto Mapping

The **Batch Automatic Mapping Virtual COM Port** window displays.

5. Locate From System Port and click the drop-down menu to select the target COM port.

6. From the network address list, select the address options to map.

The selected address displays the Device Port and (EKI-1500 Series device server physical serial port) and the system port which will be the VCOM port for the PC.

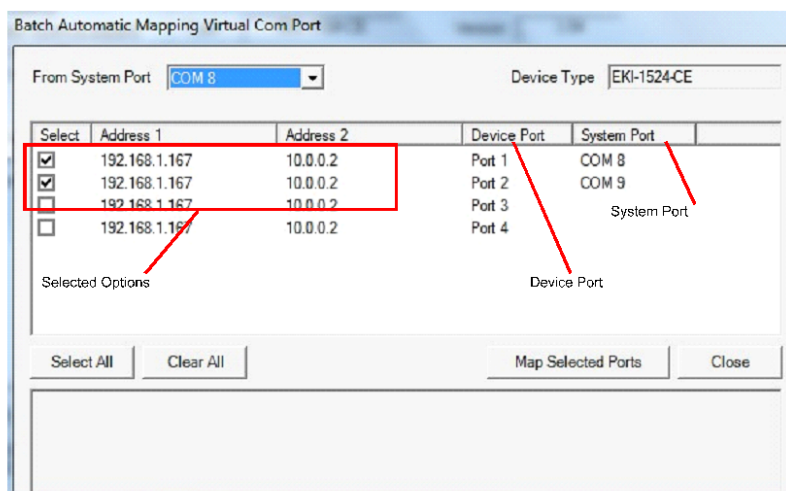


Figure 5.2 Selecting Auto Mapping

7. From the network address list, select the address options to map.
8. Click Map Selected Ports to set the configuration.

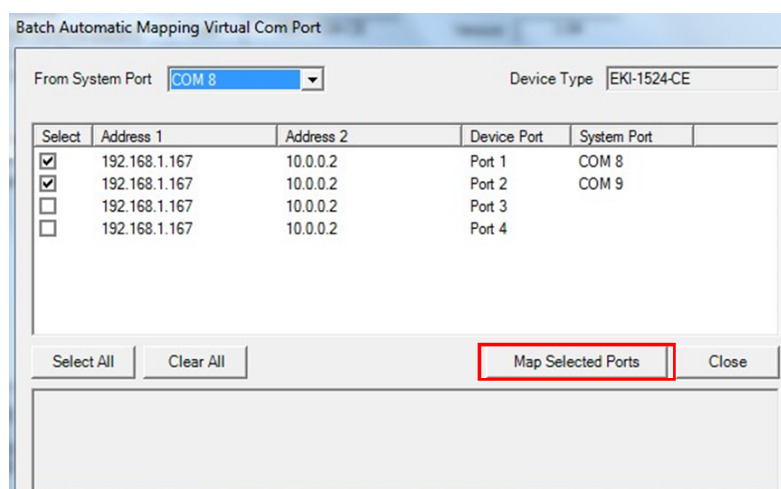


Figure 5.3 Mapping Selected Ports

Once the mapping function is initialized, a successful mapping process results in the virtual mapping of the designated physical serial port and VCOM PC port. See the following figure.

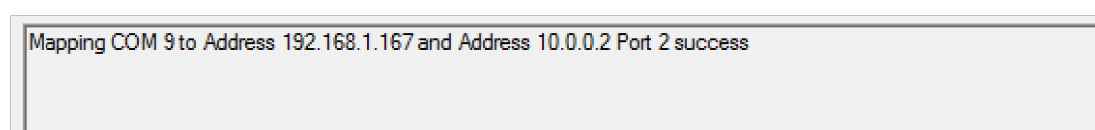


Figure 5.4 Viewing VCOM Mapping Results

5.2.2 Manual Mapping

1. On your desktop, navigate to Start > Configuration Utility and click utility.
2. Under Serial Device Servers, locate your server and click the icon to expand the listing.
3. Select the target device and right-click on it to open up the options menu window.
4. Locate Manual Mapping and select it.

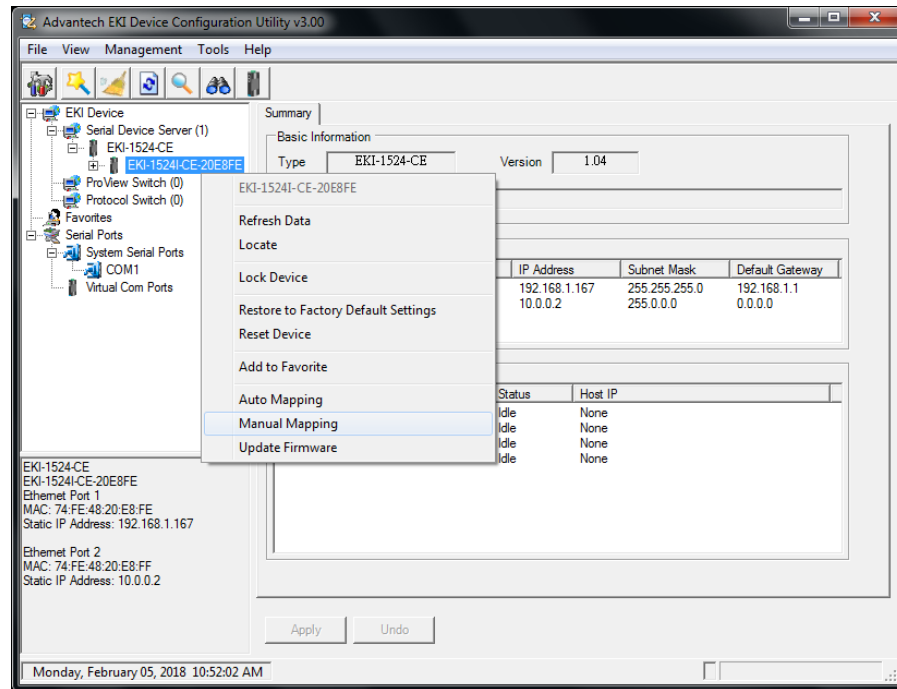


Figure 5.5 Selecting Manual Mapping

The Manual Mapping Virtual COM Port window displays.

5. In the Device > Serial Port drop-down menu, select the target port to map. This is the physical serial port on the EKI-1500 Series device.
6. In the Host > COM Port drop-down menu, select the target COM port to map. This is the virtual port on the target PC.

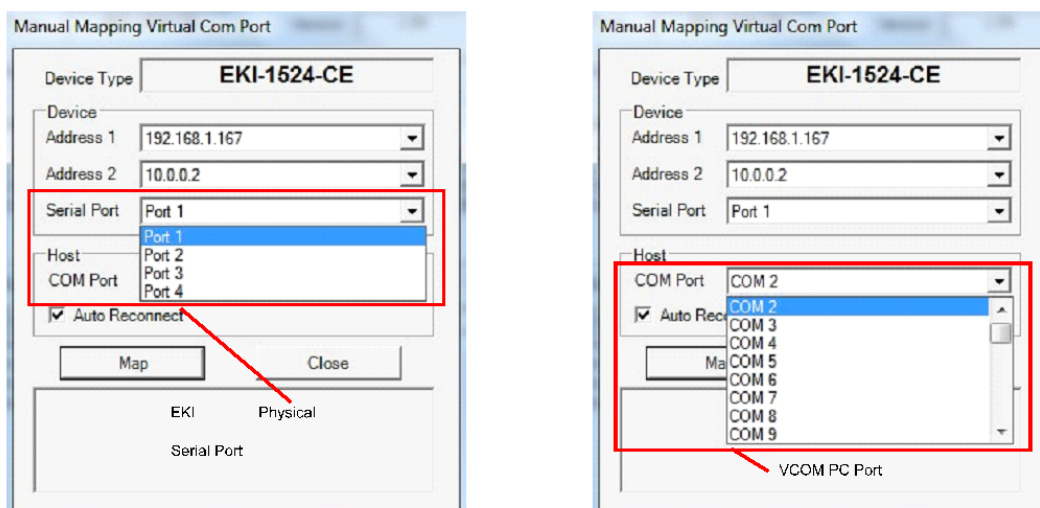


Figure 5.6 Viewing Manual VCOM Mapping Results

7. Click Map it to continue the process. The mapping process may require a short time. Once this step is completed, the Manual Mapping Virtual COM Port window displays again to map the VCOM port on the target PC. Once the mapping function is initialized, a successful mapping process results in the virtual mapping of the designated physical serial port and VCOM PC port. See the following figure.

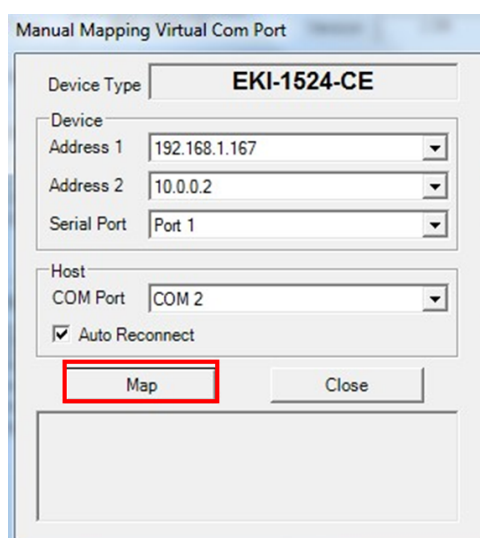


Figure 5.7 Viewing Manual VCOM Mapping Results

To allow for an automatic connection after a reboot or a power up, click the Auto Reconnect option to enable this function.

5.2.3 Configuration Wizard

1. On your desktop, navigate to **Start > All Programs > EKI Device Configuration Utility** and click **Advantech EKI Device Configuration Utility** to open the utility.

2. Under Serial Device Servers, locate your server and click the icon to expand the listing.
3. From the tool bar, select Configuration Wizard.

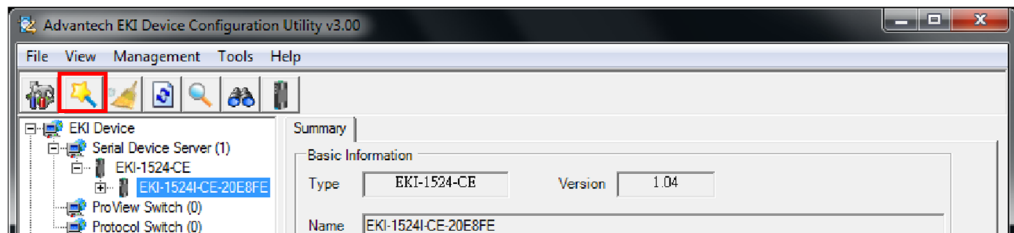


Figure 5.8 Selecting the Configuration Wizard

The Wizard screen displays and lists available devices.

4. Select the target device and click **Next** to continue. The Wizard Device Settings window displays.
5. Under Serial Port Settings, click the **Type** drop-down menu and select the port type. Review the settings under the Ethernet fields and verify them.
6. Click **Next** to continue or **Previous** to return to the previous screen. The selected settings are displayed in the following Wizard window.
7. Locate the radio button correlating to the target port to modify and click on it to select it. Verify the Device Port (EKI-1500 Series device physical serial port) and System Port (virtual COM port for PC) settings before continuing.
8. Click **Finish** to complete the process. A Wizard complete! screen displays indicating the completion of a successful procedure.

5.2.4 Confirming Virtual COM Settings

1. On your desktop, navigate to **Start > Advantech EKI Device Configuration Utility** and click utility.
2. Locate Serial Ports menu in the menu pane and click on the Expand icon next to Virtual COM Ports to view a list of the mapped ports.
3. Select a VCOM port to view its settings.

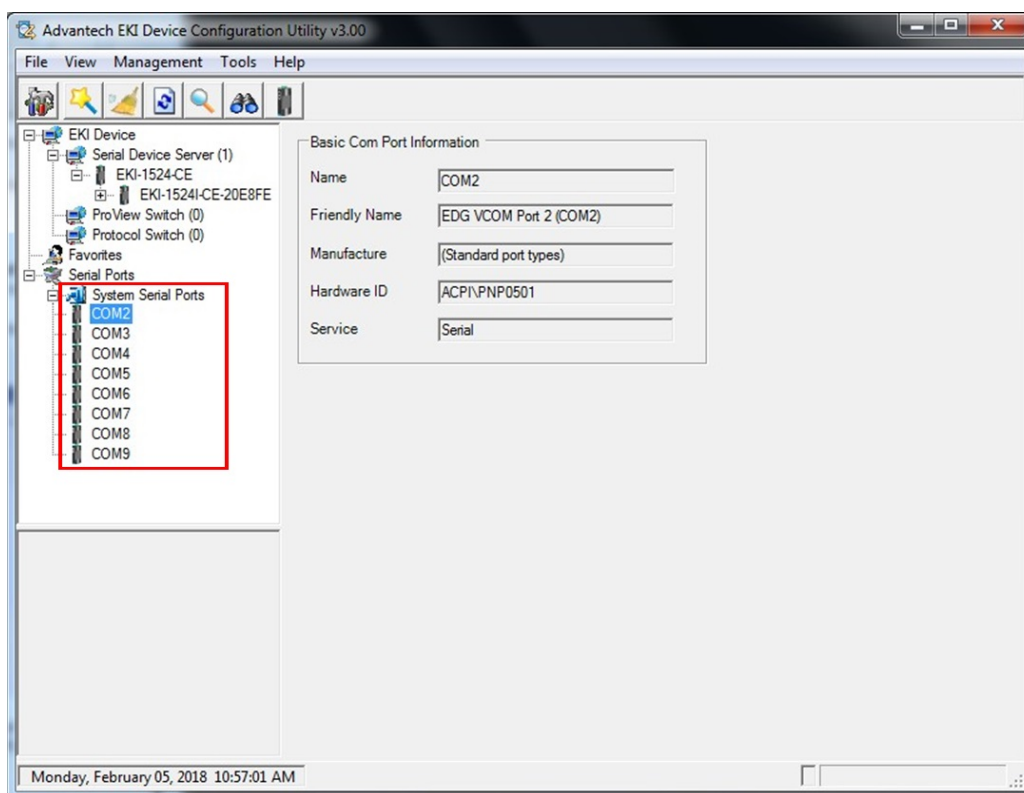


Figure 5.9 Serial Port Listing on EKI-1500 Series Device

For the next step, you will need to open the device manager on your system. Using the Device Manager, you can both view and change the COM port settings.

Note! *The following instructions were developed in a Windows 7 environment; the Windows XP equivalent is displayed in parentheses (). Instructions may vary according to the operating system used.*

4. On your desktop, click on the **Start** button and then on **Control Panel**. A window displays showing all the available control panels.
5. Click on **Hardware and Sound (Hardware)**. A list of all available hardware configuration options displays.
6. Under **Devices and Printers**, click on the **Device Manager** link. A new window displays showing a list of all the available devices on your computer.
7. Locate **Ports (COM & LPT)** and click on the expand icon. A list of all available serial and parallel port devices display.

The newly mapped VCOM port should be listed under the same mapped settings used in the previous steps.

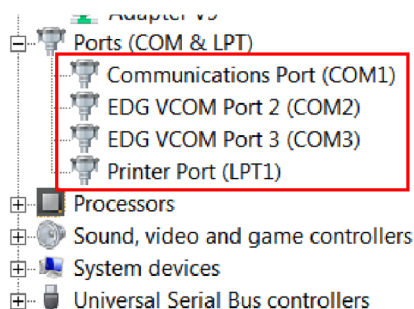


Figure 5.10 System Port VCOM Mapping Configuration

The newly mapped VCOM port is listed under the same mapped settings used in the previous steps. The settings correspond to the VCOM port configuration on the EKI-1500 Series device, see the following figure.

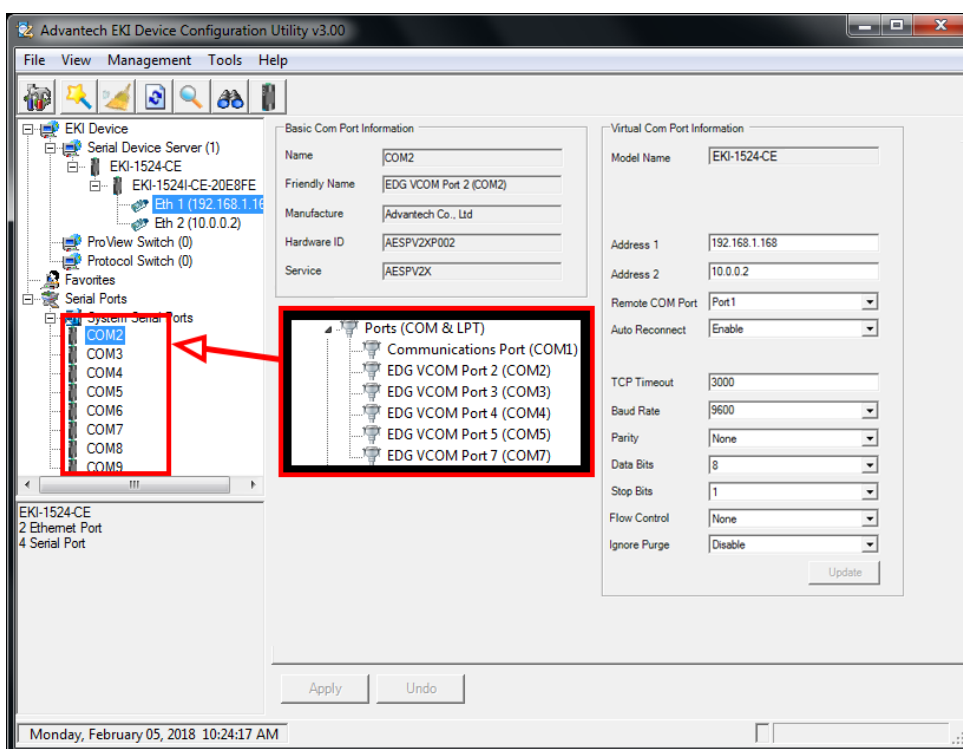


Figure 5.11 Verifying VCOM Mapping Configuration

If the settings do not correspond, the VCOM mapping is not correct. See “Virtual COM Port Mapping” on page 62 to re-map the VCOM ports.

5.2.5 Removing VCOM Ports

1. On your desktop, navigate to **Start > All Programs > EKI Device Configuration Utility** and click **Advantech EKI Device Configuration Utility** to open the utility.
2. Under Serial Ports, click the expand icon on Virtual COM Ports to view the configured port list.
3. Locate the port to remove and right-click on it to open the options menu.
4. Scroll down to **Remove This Port** and click on it to initiate the procedure.

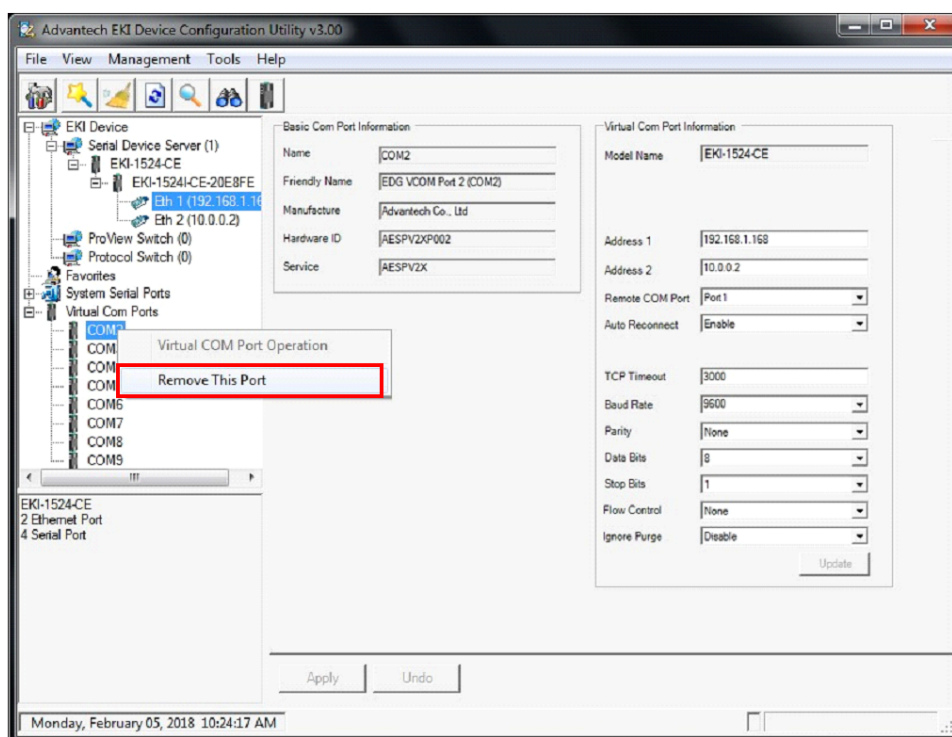


Figure 5.12 Remove VCOM Port

A Remove Port confirmation window displays.

5. Click OK to continue with the removal process or Cancel to return to the previous menu.

Once the procedure is completed, a prompt displays the successful removal of the port from the VCOM mapping list.

5.2.6 Exporting and Importing VCOM Mapping

Importing and exporting Virtual COM Port Mapping is useful when the factory has already used a number of serial device servers in VCOM mode. You can easily upgrade to a new utility, and don't need to re-map the Virtual COM Ports. For example, when you would like to upgrade from Utility 1.71 to Utility 3.0, you can export your own mapped Virtual COM Ports in Utility 1.71 and save them as a *.cpm file. After upgrading to Utility 3.0, import your *.cpm file and restore your own Virtual COM Ports.

Note! This Virtual COM Port Mapping tool can only recover Virtual COM Ports that have been mapped previously. For newly installed serial device servers, please follow the virtual COM Port mapping steps.

1. On your desktop, navigate to Start > All Programs > EKI Device Configuration Utility and click Advantech EKI Device Configuration Utility to open the utility.
2. Locate Serial Ports menu in the menu pane and click on the Expand icon next to Virtual COM Ports to view a list of the mapped ports.
3. Select a VCOM port.
4. Click Import Virtual COM Port Mapping or Export Virtual COM Port Mapping in the File menu.

5.3 Running a Diagnostic Test

The loopback test allows you to determine if the EKI-1500 Series device server is configured correctly to identify any failed nodes in the network. The test allows you to send a signal from the server and return (looped back) it back to the server.

1. Connect the loopback connector to a COM port on the EKI-1500 Series device server.
2. On your desktop, navigate to Start > All Programs > EKI Device Configuration Utility and click Advantech EKI Device Configuration Utility to open the utility.
3. Under Serial Ports, click the expand icon on Virtual COM Ports to view the configured port list.
4. Open the ICOMToolsPlus utility to open the EKI-1500 Series device server settings.
5. Set the COM port configuration to match the Port Configuration.
6. Click the Start menu.

A successful loop back test incrementally displays the Bytes/sec values on both displayed menus.

Chapter 6

Web Interface

6.1 Overview

EKI-1500 Series serial device server can be configured through a web interface. By using a standard web browser, the same procedure as with the Windows configuration utility can be used. In the browser's address field, enter the IP Address of your EKI-1500 Series serial device server. The default IP setting is 10.0.0.1, but you should use the IP which you have previously assigned for this device. Once the IP is entered, you will be presented with the following windows.

Note! *Before using the web-based configuration, make sure your host PC Ethernet network IP domain is as same as the serial device server, or it can establish the TCP connection with the serial device server.*



Note! *It is recommended that you use Microsoft Internet Explorer 7.0 or higher.*



Note! *Any changes made to the web page functionality will only take effect after a reboot.*



Note! *EKI-1511 only support VCOM 1.0 and USDG 1.0, the layout of the web-page may vary slightly.*



6.2 Accessing the Web Page

6.2.1 Accessing the Web Page via Configuration Utility

To access the web page via configuration utility:

1. Select Ethernet under the desired device.
2. Click **Launch Browser**.

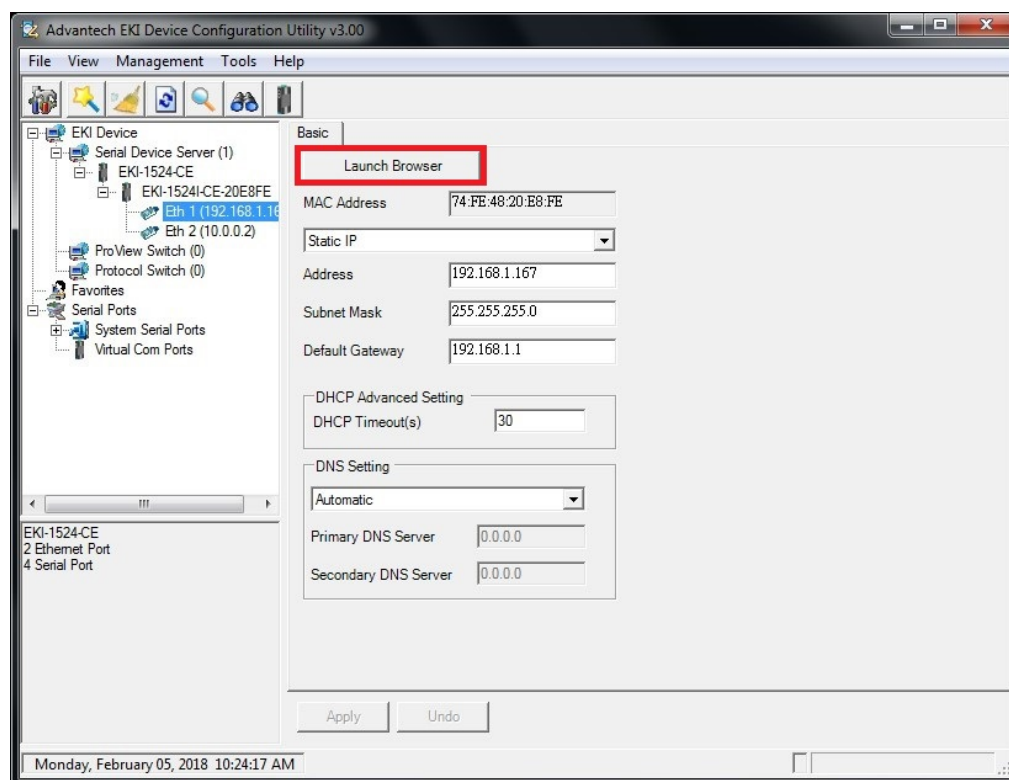


Figure 6.1 Accessing the Web Page via Configuration Utility

6.2.2 Accessing the Web Page via Web Browser

Once the device is installed and connected, power on the device. The following information guides you through the logging in process.

1. Launch your web browser on the PC.
2. In the browser's address bar, type the device's default IP address (Eth1: 10.0.0.1, Eth2: 10.0.0.2).
The main menu is shown.

6.3 System

You can change the Device Name and Device Description on this page. You can also enable or disable the Telnet and SNMP functions. Moreover, you can set the Time zone related settings.

To access this page, click **System**.

The screenshot shows the 'System Configuration' page. At the top, it displays 'Firmware version 1.32' and 'Revision number 6950'. Below these are input fields for 'Device Name' and 'Device Description'. A section for 'VCOM Ignore Device ID' has a radio button set to 'Disable'. Below this are radio buttons for 'Telnet' (Disable), 'SSH' (Disable), 'SNMP' (Enable), and 'SSDP' (Disable). The 'Local Time' section includes dropdowns for Year (2024), Month (12), Day (10), Hour (17), Minute (54), and Second (5). The 'Time Zone' is set to '(GMT +0)'. The 'Time Server' field is empty. The 'Daylight Saving Time' is set to 'Enable'. The 'Start Time' and 'End Time' sections each have dropdowns for 'First', 'Sunday', and 'January', followed by 'HH:MM' input fields. The 'Time Zone Offset' field is empty, with a note 'min. (-120 ~ 120)'. The 'Virtual Gateway Settings' section has a radio button set to 'Enable'. It includes dropdowns for 'Interface' (Eth 1), 'Virtual IP' (Virtual IP), 'ID' (1), and 'Priority' (Primary). A 'Save' button is at the bottom.

Figure 6.2 System

The following table describes the items in the previous figure.

Table 6.1: System

Item	Description
Firmware version	Displays the current firmware version of the device.
Revision number	Displays the revision number of the device.
Device Name	Enter the device name: up to 31 alphanumeric characters.
Device Description	Enter the device description.
VCOM Ignore Device ID	Click Enabled or Disabled to enable or disable VCOM ignore device ID.
Telnet	Click Enabled or Disabled to set remote access through the Telnet Service function.
SSH*	Click Enabled or Disabled to set remote access through the SSH Service function.
SNMP	Click Enabled or Disabled to define the SNMP daemon.

Table 6.1: System

SSDP*	When enabled, the gateway is discoverable on a Windows network. When disabled, the gateway is discoverable by the EKI Device Configuration Utility.
Local Time*	Enter the year, month, day, hour, minute and second. ■ The year must be entered in 4-digit format. ■ The time must be entered in 24-hour format. ■ All six fields must have values.
Time Server*	Enter the address of the SNTP server. This is a text string of up to 64 characters containing the encoded unicast IP address or hostname of a SNTP server. Unicast SNTP requests will be sent to this address. If this address is a DNS hostname, then that hostname should be resolved into an IP address each time a SNTP request is sent to it.
Daylight Saving Time*	To use automatic Daylight-Saving Time adjustment, enable the feature then select the starting and ending times and time zone offset.
Virtual Gateway Settings*	
Virtual Gateway COM Port Redundancy	
Interface	Select an Ethernet Interface (Eth1/Eth2)
Virtual IP	Enter an IP address for the virtual gateway. This address will be used to access the group of gateways as one device. Enter the same Virtual IP address for all devices participating in the virtual gateway.
Virtual Gateway* ID	Enter a Modbus ID for the Virtual Gateway. Enter the same ID for all devices participating in the virtual gateway.
Priority	Select a priority for this device (i.e., Primary, Secondary, Third or Fourth). Only one device will be active at any time. If the highest priority device becomes unavailable, the next lower priority device will become active.
Save	Click Save to save the values and update the screen.

* EKI-152x features

6.4 Service (EKI-152x)

The Service tab contains menu options for configuring the VCOM, USD, Web Server, SSH Console Setting, and RADIUS/LDAP/Local user management.

6.4.1 VCOM

VCOM retains its earlier functionality, along with the advanced VCOM Security features. In the default VCOM 1.0 protocol version, the device server's functionality aligns with that of previous firmware versions. Switching to VCOM 2.0 enables new parameters across several areas of the UI and enhances serial data transmission.

**Figure 6.3 VCOM 1.0**

Figure 6.4 VCOM 2.0

The following table describes the items in the previous figure.

Table 6.2: VCOM

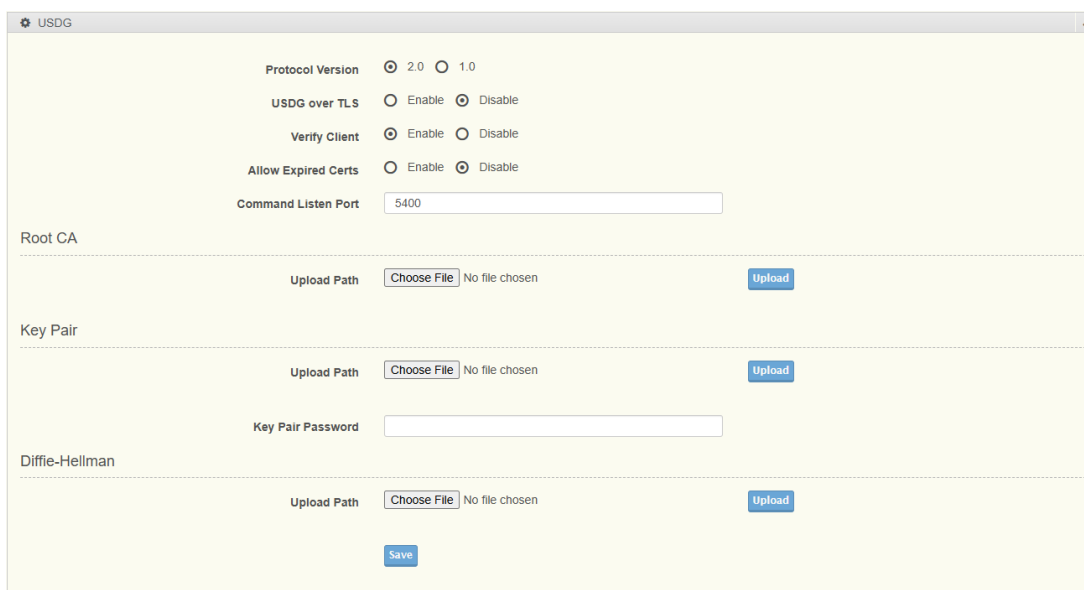
Item	Description
VCOM over TLS	Click to enable or disable virtual COM using a TLS connection encrypts all data sent between serial interface.
Allow Expired Certs	Click to enable or disable using expired certificate. However, there are many security risks to using an expired SSL certificate.
VCOM Handshake Timeout (ms)	Enter the VCOM Handshake Timeout time to ensure a secure connection by preventing TLS handshake errors, as it defines the duration (ms) a virtual COM port waits for a successful handshake before terminating the connection if unsuccessful.
Root CA	The Root CA signs certificates that are used to authenticate the identity of the devices or servers in a TLS-secured communication.
Upload Path	Click Browse to select a Root CA public key for the VCOM over TLS. Click Upload to import the selected file. Click Delete to remove the selected file. Click + Show Details to view the details of the selected key.
Key Pair	A Key Pair consists of a private key and a public key. The public key is embedded in its TLS certificate (signed by a CA), and the private key is used to decrypt incoming data encrypted with the public key.
Upload Path	Click Browse to select a Key Pair for the VCOM over TLS. Click Upload to import the selected file. Click Delete to remove the selected file. Click + Show Details to view the details of the selected key.
Key Pair Password	Enter a password to protect the private key within the Key Pair.
Diffie-Hellman	Allows the server and client to securely agree on a shared encryption key for their session without transmitting it over the network.
Upload Path	Click Browse to select a Key Pair for the VCOM over TLS. Click Upload to import the selected file. Click Delete to remove the selected file. Click + Show Details to view the details of the selected key.

Table 6.2: VCOM

Save	Click Save to save the values and update the screen.
------	--

6.4.2 USDG

USDG retains its earlier functionality, along with the advanced USDG Security features. In the default USDG 1.0 protocol version, the device server's functionality aligns with that of previous firmware versions. Switching to USDG 2.0 enables new parameters across several areas of the UI and enhances data transmission.

**Figure 6.5 USDG1.0****Figure 6.6 USDG 2.0**

The following table describes the items in the previous figure.

Table 6.3: USDG

Item	Description
USDG over TLS	Click to enable or disable virtual COM using a TLS connection encrypts all data sent between serial interface.
Verify Client	Verify the client's signature.
Allow Expired Certs	Click to enable or disable using expired certificate. However, there are many security risks to using an expired SSL certificate.
Command Listen Port	Enter a value to identify the command listen port for accepting connected request of other network device. Each port has its own command listen port to accept connection requests from other network devices, so the command listen port cannot be set to the same value. The Command Listen Port is different from the Data Listen port. <Default Port is 5400>

Table 6.3: USDG

Root CA	The Root CA signs certificates that are used to authenticate the identity of the devices or servers in a TLS-secured communication.
Upload Path	Click Browse to select a Root CA public key for the USDG over TLS. Click Upload to import the selected file. Click Delete to remove the selected file. Click + Show Details to view the details of the selected key.
Key Pair	A Key Pair consists of a private key and a public key. The public key is embedded in its TLS certificate (signed by a CA), and the private key is used to decrypt incoming data encrypted with the public key.
Upload Path	Click Browse to select a Key Pair for the USDG over TLS. Click Upload to import the selected file. Click Delete to remove the selected file. Click + Show Details to view the details of the selected key.
Key Pair Password	Enter a password to protect the private key within the Key Pair.
Diffie-Hellman	Allows the server and client to securely agree on a shared encryption key for their session without transmitting it over the network.
Upload Path	Click Browse to select a Diffie-Hellman for the USDG over TLS. Click Upload to import the selected file. Click Delete to remove the selected file. Click + Show Details to view the details of the selected key.
Save	Click Save to save the values and update the screen.

6.4.3 Web Server

The EKI-152x web interface uses the unsecure http protocol by default, but can be configured to use https for added security. When HTTPS is enabled, communication between the web browser and the EKI device is encrypted using an SSL certificate. An HTTPS connection is required if you plan to update the device firmware using the web interface instead of using the utility provided with the firmware.

Figure 6.7 Web Server

The following table describes the items in the previous figure.

Table 6.4: Web Server

Item	Description
Support HTTPS	Enable to use secure https protocol for the web interface. If enabled, load an SSL certificate and private key, both in one .pem file.
Certificate	After enabling https support, choose a .pem file containing your SSL certificate and click Upload.

Table 6.4: Web Server

Private Key	After enabling https support, choose a .pem file containing your private key and click Upload.
Save	Click Save to save the values and update the screen.

Note! *HTTPS will not work without a certificate and private key. The SSL certificate and private key should both be contained in one .pem file.*



Upload the same file as both Certificate and Private Key.

Note! All new configurations will take effect after rebooting. To reboot the device, click Tools > Reboot.



6.4.4 SSH Console Setting

The SSH Console Setting function allows for the setup of the system wide configurations related to the SSH console service.

**Figure 6.8 SSH Console Setting****Table 6.5: SSH Console Setting**

Item	Description
Host Key	Click Regenerate to reissue the CA key for the SSH console service.

6.4.5 LDAP and RADIUS Setting

The gateway can use the LDAP protocol or RADIUS protocol for user management, or user management can be controlled locally. Setting up LDAP or RADIUS integration is an advanced topic with security implications. We recommend that the LDAP or RADIUS setting be configured by your network administrator.

6.4.6 LDAP Setting

LDAP Setting

LDAP Server

IP Address or Domain name.

LDAP Key

uid

LDAP Timeout

60

(0 ~ 86400)

LDAP Rapid

10

(0 ~ 120)

LDAP over TLS

☐ Enable ☒ Disable

Root CA

Upload Path

Choose File

No file chosen

Upload

Super Access Setting

LDAP Super User DN

ex. ou=root,dc=example,dc=org

Access Setting

Port	Read-Only DN ⓘ	Read-Write DN ⓘ	Config DN ⓘ
1			
2			

Save

Figure 6.9 LDAP Setting

The following table describes the items in the previous figure.

Table 6.6: LDAP Setting	
Item	Description
LDAP Server	Enter the string to indicate the IP address or DNS of the LDAP server.
LDAP Key	Enter the string to indicate the user name prefix to define the LDAP DN key.
LDAP Timeout	Enter the string to indicate the interval period between permission updates for each SSH connection.
LDAP Rapid	Enter the string to indicate the interval period between permission checks when the device detects a permission change on a SSH connection.
LDAP over TLS	Click to enable (default) or disable the LDAP over TLS function.
Root CA	
Upload Path	Click Browse to select a Root CA public key for the LDAP server. Click Upload to import the selected file. Click Delete to remove the selected file. Click + Show Details to view the details of the selected key.
Access Setting	
Port	Displays the port number of the access setting.
Config DN	Displays the DN of the directory, which holds users with permission to configure basic functions of this serial interface
Save	Click Save to save the values and update the screen.

6.4.7 RADIUS Setting

The screenshot shows the 'Radius Setting' web interface. It contains several input fields and a table. The 'Radius Server' section includes fields for IP Address, Port (1812), Secret Passphrase, EAP Type (MD5), Timeout (60), and Rapid (10). The 'Super Access Setting' section has a 'Radius Super User Header' field. The 'Access Setting' section is a table with 4 columns: Port, Read-Only Header, Read-Write Header, and Config Header. There are two rows in the table, numbered 1 and 2. A 'Save' button is located at the bottom of the form.

Figure 6.10 Radius Setting

The following table describes the items in the previous figure.

Table 6.7: Radius Setting	
Item	Description
Radius Server IP Address	Enter the string to indicate the value for the address of the RADIUS server.
Radius Server Port	Enter the string to indicate the port for the RADIUS server.
Radius Server Secret Passphrase	Enter the string to indicate the passphrase used by the Radius server.
Radius Server EAP Type	Click the drop-down menu to select the value for the EAP type of the Radius server. Options: ■ MD5 ■ PEAP ■ TTLS
Radius Timeout	Enter the string to indicate the periodic time period used for checking with the RADIUS server.
Radius Super User Header	Highest authority user header
Access Setting	
Port	Displays the port number of the access setting.
Config DN	Displays the DN of the directory, which holds users with permission to configure basic functions of this serial interface
Save	Click Save to save the values and update the screen.

6.4.8 User Management

Users can be managed via LDAP, Radius or Local user management settings. If local user management is used, the user list is managed from this screen. A Web Enhanced Password must be set on the Passwords page in order to activate user management. That web password will show up on this page as the 'root' user.

The screenshot shows a web interface for user management. The top section, titled 'Authentication', has a 'Method' dropdown menu set to 'Local User' and a 'Save' button. The bottom section, titled 'Local User Management', contains two input fields: 'Local Timeout' set to 60 (range 0 ~ 86400) and 'Local Rapid' set to 10 (range 0 ~ 120), with a 'Save' button below them. At the bottom, there is an 'Access Setting' section with a table header: 'Action', 'Username', 'Password(SHA1)', and 'Attribute'. A green plus sign is visible in the 'Action' column.

Figure 6.11 User Management

The following table describes the items in the previous figure.

Table 6.8: User Management		
Item	Description	
Method	LDAP, Radius or Local User. The remaining settings on this page is only relevant when Local User is selected.	
Local Timeout	The system will check the privilege settings for all connected users on this timeout interval. If there's a privilege change (e.g., the user is no longer allowed), the user will be disconnected. A new user logging in will trigger a privilege check of all connected users immediately regardless of the Timeout value.	
Local Rapid	When the system discovers a privilege change, it will wait for the Rapid interval to check all users again, and will continue until all connected users have the correct privilege	
Local User Access Setting	When the system discovers a privilege change, it will wait for the Rapid interval to check all users again, and will continue until all connected users have the correct privilege	
	Add	Add a new local user. Specify username and password, and enable/disable the Config attribute for each port.
	Edit	Modify the password or attributes for an existing user.
	Delete	Remove an existing user.
	Username	Enter a user name.
	Password	Enter a password.
	Attribute	Enable each port that this user should be able to configure. A user must have config permission on at least one port in order to save the username in this list.
Save	Click Save to save the values and update the screen.	

Note! All new configurations will take effect after rebooting. To reboot the device, click **Tools > Reboot**.



Changing user management setting may cause you to lose access to the device! Make sure you have access permissions with your new settings.

6.5 Ethernet Configuration

Choose either **Eth 1** or **Eth 2** (EKI-1211 only has **Eth 1**) in the Ethernet Configuration page. Enter the corresponding values for your network environment. Remember to press **Save** after entering all values. To access this page, click **Ethernet Configuration**.

Figure 6.12 Ethernet Configuration

The following table describes the items in the previous figure.

Table 6.9: Ethernet Configuration

Item	Description
IPv4 Configuration	
Mode	Select the IP Address Setting mode: ■ Static IP - Set a fixed IP configuration ■ DHCP/AutoIP - IP configuration set by DHCP server ■ BootP/AutoIP - IP configuration set by BOOTP server ■ DHCP/BootP/AutoIP - accept IP configuration from either DHCP or BOOTP server Bridge - set up a bridge connection between the two Ethernet ports
MAC Address	Enter the MAC address to which packets are statically forwarded.
IP Address	Enter a value to specify the IP address of the interface. The defaults are: Eth1, 10.0.0.1; Eth2, 10.0.0.2. (EKI-1511 defaults is Eth1, 10.0.0.1)
Subnet Mask	Enter a value to specify the IP subnet mask for the interface. The default is 255.0.0.0.
Default Gateway	Enter a value to specify the default gateway for the interface
DNS Configuration	
DNS	■ Automatic: Get DNS server assignment from the DHCP server (no DNS will be assigned if the Mode is set to Static IP) ■ Specific: Enter primary and secondary DNS server addresses
Current Status	
IP 1	Displays the current IP address 1 of the device.
IP 2	Displays the current IP address 2 of the device.
Save	Click Save to save the values and update the screen.

Note! All new configurations will take effect after rebooting. To reboot the device, click *Tools > Reboot*.



6.6 Ethernet Bridge (EKI-152x)

In Ethernet Bridge mode, both Ethernet interfaces use the same IP address. Either Spanning Tree Protocol (STP) or Redundancy Mode can be used to prevent loops and provide a backup communications path.

The screenshot shows the 'Br1 Configuration' window. It has four main sections:

- IPv4 Configuration:** Includes a 'Mode' dropdown set to 'Static IP', a 'MAC Address' field, an 'IP Address' field with '10.0.0.3', a 'Subnet Mask' field with '255.0.0.0', and a 'Default Gateway' field with '0.0.0.0'.
- Spanning Tree Protocol Configuration:** Includes 'STP' and 'Redundant Mode' sections, each with 'Disable' (selected) and 'Enable' radio buttons.
- DNS Configuration:** Includes a 'DNS' section with 'Automatic' (selected) and 'Specific' radio buttons, and two text fields for 'DNS 1' and 'DNS 2'.
- Current Status:** Shows 'IP 1' as 'Currently unavailable' with a 'Save' button below it.

Figure 6.13 Ethernet Bridge Configuration

The following table describes the items in the previous figure.

Table 6.10: Ethernet Bridge	
Item	Description
IPv4 Configuration	
Mode	Static IP is the only valid option for the Ethernet Bridge.
MAC Address	Enter the MAC address to which packets are statically forwarded.
IP Address	Enter a value to specify the IP address of the interface. The default is 10.0.0.3.
Subnet Mask	Enter a value to specify the IP subnet mask for the interface. The default is 255.0.0.0.
Default Gateway	Enter a value to specify the default gateway for the interface.
Spanning Tree Protocol Configuration	
STP	Enable to use Spanning Tree Protocol to control which Ethernet port is active. All devices on the network build a spanning tree and determine which ports should be blocked to prevent loops.
Redundant Mode	Enable to let the EKI-152x control which Ethernet port is active. The
DNS Configuration	

Table 6.10: Ethernet Bridge

DNS	Click the radio button to select the DNS mode: Automatic or Specific.
Current Status	
IP 1	Displays the current IP address 1 of the device.
Save	Click Save to save the values and update the screen.

Note! All new configurations will take effect after rebooting. To reboot the device, click **Tools > Reboot**.



6.7 Port Configuration

The serial port configuration menu has Basic, Operation Mode, and Advanced Settings.

6.7.1 Basic

The Basic menu allows for the configuration of the serial interface type, baud rate, parity, data / stop bits, and flow control for port configuration. To access this page, click **Port Configuration > Basic**.

The screenshot shows the 'Basic' tab of the 'Port 1 configuration' window. It contains the following settings:

- Type: RS232
- Baud Rate: 9600
- Parity: None
- Data Bits: 8
- Stop Bits: 1
- Flow Control: None

A 'Save' button is located at the bottom of the configuration area.

Figure 6.14 Port Configuration > Basic

The following table describes the items in the previous figure.

Table 6.11: Basic

Item	Description
Type	Click the drop-down menu to select a serial interface: RS232, RS422, RS485 or RS485 4-WIRE
Baud Rate	Enter a value to specify the baud rate. The value should conform to the current transmission speeds of connected devices when setting the baud rate.
Parity	Click the drop-down menu to select the parity: None, Odd, Even, Mark or Space.
Data Bits	Click the drop-down menu to select the data bits: 5, 6, 7, or 8.

Table 6.11: Basic

Stop Bits	Click the drop-down menu to select the stop bits: 1, 1.5 or 2.
Flow Control	Click the drop-down menu to select the flow control mode: None, Xon/Xoff, RTS/CTS
Save	Click Save to save the values and update the screen.

6.7.2 Operation

The operation menu allows for the configuration of the mode type and related attributes for port configuration.

To access this page, click **Port Configuration > Operation**.

6.7.2.1 Virtual COM Mode

The screenshot shows the 'Port 1 configuration' window with the 'Operation' tab selected. The 'Mode' is set to 'Virtual COM Mode'. Under 'Serial Scheduling', 'Response Timeout(ms)' is 0. Under 'Serial RX Frame', 'Character Timeout' is enabled, and 'End Character (HEX)', 'Length', and 'Break Time (ms)' are disabled. Under 'Serial Data Forwarding', 'Serial RX Forwarding' is set to 'Multicast', 'Serial Token Idle Timeout(ms)' is disabled, and 'TX Broadcast' is disabled. A 'Save' button is at the bottom.

Figure 6.15 Port Configuration > Operation

The following table describes the items in the previous figure.

Table 6.12: Virtual COM Mode

Item	Description
Mode	Click the drop-down menu to select the port configuration mode: Virtual COM Mode, USDG Data Mode, USDG Control Mode, RFC2217 Mode or SSH Console Mode
Host Idle Timeout(s)	Enter a value to define the host idle timeout period.
Serial Scheduling	
Response Timeout(s)	Enter a value to define the response timeout period.
Serial RX Frame	
Character Timeout	Enable or disable to send pack immediately by character-timeout.
End Character (HEX)	Click the option to send pack immediately by end-character.
Length	The length to request for Serial RX Frame
Break Time (ms)	Enter a value to specify the frame break time.
Serial Data Forwarding	

Table 6.12: Virtual COM Mode

Serial RX Forwarding	Unicast or multicast data from the serial device to one or multiple host computers, and the serial device can also receive data from one or multiple host computers, making this mode ideal for message display applications.
Serial Token Idle Timeout(ms)	Enter a value for serial communication will wait without receiving any data or tokens before it considers the communication idle or inactive.
TX Broadcast	Enable or Disable TX Broadcast to transmit data from one device and broadcast it to multiple destinations or devices over a serial communication interface. Multicast: All devices in the network can see the data. Unicast: Only the devices connected to the PC can see the data.

6.7.2.2 USDG Data Mode

The screenshot shows the 'Port 1 configuration' web interface. The 'Basic' tab is selected, and the 'Operation' sub-tab is active. The 'Mode' is set to 'USDG Data Mode'. The 'Protocol' is set to 'TCP'. The 'Data Idle Timeout(s)' is 60 (range 0 ~ 65535). The 'Data Listen Port' is 5300 (range 1 ~ 65535). The 'Telnet IAC' is set to 'Disable'. The 'TCP User Timeout (s)' is 3 (range 0 ~ 86400). The 'Keepalive' is set to 'Disable'. The 'Keep Idle Time (s)' is 1 ~ 7200. The 'Keep Interval (s)' is 1 ~ 240. The 'Keep Count' is 1 ~ 9. The 'Serial Scheduling' section has a 'Response Timeout(ms)' of 0 (range 0, 100 ~ 65535). The 'Serial RX Frame' section has 'Character Timeout' set to 'Disable', 'End Character (HEX)' is 00 ~ FF, 'Length' is 1 ~ 1024, and 'Break Time (ms)' is 10 ~ 65535. The 'Serial TX Frame' section has 'End Character (HEX)' is 00 ~ FF, 'Length' is 1 ~ 1024, and 'Modbus RTU Command' is set to 'Disable'. The 'Serial Data Forwarding' section has 'Serial RX Forwarding' set to 'Multicast', 'Serial Token Idle Timeout(ms)' is 1 ~ 5000, and 'TX Broadcast' is set to 'Disable'. The 'Transmit Target Peers' section has a 'Peer Number' of 0. At the bottom, there is a table with columns: #, Local Port, Peer IP address, and Port. A 'Save' button is located below the table.

Figure 6.16 Port Configuration > Operation > USDG Data Mode

The following table describes the items in the previous figure.

Table 6.13: USDG Data Mode

Item	Description
Protocol	Click the drop-down menu to select the protocol: TCP or UDP.
Data Idle Timeout (s)	Enter a value to define the data idle timeout period.
Data Listen Port	Enter a value to identify the channel for remote initiating connections.
Telnet IAC	Enable Telnet IAC to allow USDG to support Telnet without producing garbled characters.
TCP User Timeout (s)	Enter a value for the TCP connection will wait before determining that a data transmission has failed due to a lack of acknowledgment.
Keepalive	If Disabled, the gateway assumes the host is always available. If Enabled, the following settings control the TCP Keep Alive function.
Keep Idle Time (s)	When no data is transmitted over this interval, initiate the Keep Alive function
Keep Interval (s)	When Keep Alive is activated, send a TCP Keep Alive message at the specified interval.
Keep Count	Disconnect with the host after the specified number of consecutive TCP Keep Alive requests fail to receive a response.
Serial Scheduling	
Response Timeout(s)	Enter a value to define the response timeout period.
Serial RX Frame	
Character Timeout	Enable or disable to send pack immediately by character-timeout.
End Character (HEX)	Click the option to send pack immediately by end-character.
Length	The length to request for Serial RX Frame
Break Time (ms)	Enter a value to specify the frame break time.
Serial TX Frame	
End Character (HEX)	Click the option to send pack immediately by end-character.
Length	The length to request for Serial RX Frame
Modbus RTU Command	Enable or disable sending Modbus RTU commands to a Modbus RTU end device, with data parsed according to the Modbus command format to ensure proper interpretation.
Serial Data Forwarding	
Serial RX Forwarding	Unicast or multicast data from the serial device to one or multiple host computers, and the serial device can also receive data from one or multiple host computers, making this mode ideal for message display applications.
Serial Token Idle Timeout(ms)	Enter a value for serial communication will wait without receiving any data or tokens before it considers the communication idle or inactive.
TX Broadcast	Enable or Disable TX Broadcast to transmit data from one device and broadcast it to multiple destinations or devices over a serial communication interface. Multicast: All devices in the network can see the data. Unicast: Only the devices connected to the PC can see the data.
Transmit Target Peers	
Peer Number	Click the drop-down menu to select the number of network device which you want to connect. Maximum is 16 network devices.

6.7.2.3 USDG Control Mode

Figure 6.17 Port Configuration > Operation > USDG Control Mode

The following table describes the items in the previous figure.

Table 6.14: USDG Control Mode	
Item	Description
Protocol	TCP protocol of the USDG control mode.
Data Idle Timeout (s)	Enter a value to define the data idle timeout period.
Data Listen Port	Enter a value to identify the channel for remote initiating connections.
Hang up Character	The default character is "+". After you have connected to another serial device via an EKI device, you may need to disconnect, using the command "+++". To do this, press "+" three times and wait for the idle timeout <default value is 100ms>; the device will disconnect. You can set "Guard Time" to define the idle time.
Guard Time (ms)	Enter a value to identify the guard time.

6.7.2.4 RFC2217 Mode

Figure 6.18 Port Configuration > Operation > RFC2217 Mode

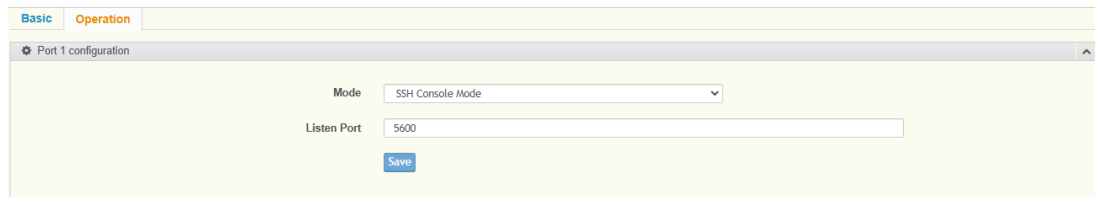
The following table describes the items in the previous figure.

Table 6.15: RFC2217 Mode	
Item	Description
Listen Port	Enter a value to identify the channel for remote initiating connections.
Host Idle Timeout (s)	Enter a value to define the host idle timeout period.
Save	Click Save to save the values.

6.7.2.5 SSH Console Mode (EKI-152x)

If not configured, the account can only log in via HTTPS. If configured, it allows for permission management on the serial port.

LDAP, RADIUS, or local user authentication methods can be used for SSH logins.



The screenshot shows the 'Port 1 configuration' window with the 'Operation' tab selected. The 'Mode' dropdown menu is set to 'SSH Console Mode'. The 'Listen Port' text input field contains the value '5600'. A blue 'Save' button is located below the input field.

Figure 6.19 Port Configuration > Operation > SSH Console Mode

The following table describes the items in the previous figure.

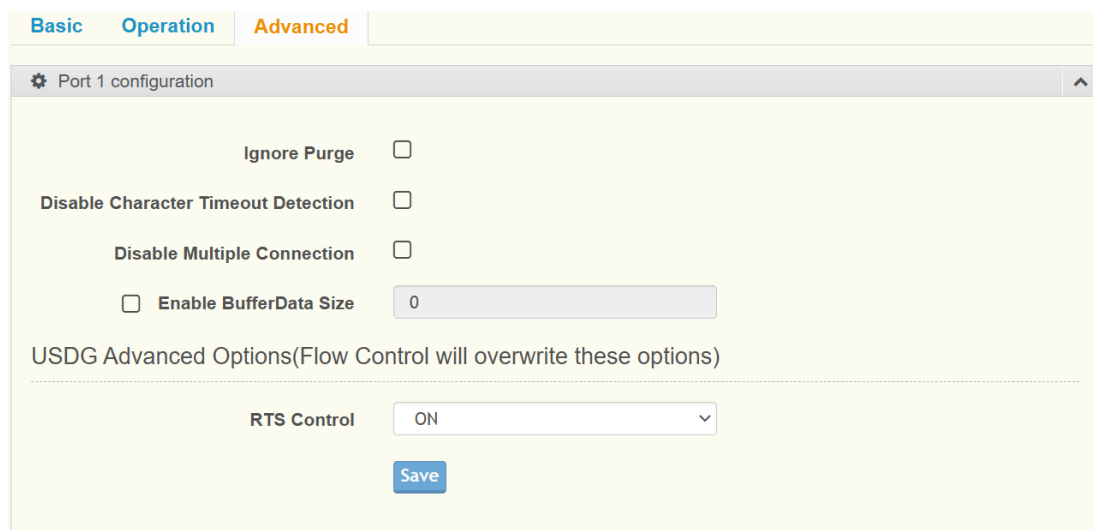
Table 6.16: SSH Console Mode

Item	Description
Listen Port	In the Listen Port field, enter a value to bind the TCP port to the value. In the following figure a SSH client example is shown displaying the specified Port destination as configured in the Listen Port setting. To connect the EKI, the SSH client must also be configured to use TCP port 5600.
Save	Click Save to save the values.

6.7.2.6 Advanced (EKI-1511)

The Advanced menu allows for the configuration of the time delay, buffer data size and FIFO size for port configuration.

To access this page, click **Port Configuration > Advanced**. If not configured, the account can only log in



The screenshot shows the 'Port 1 configuration' window with the 'Advanced' tab selected. It contains several configuration options: 'Ignore Purge' (checkbox), 'Disable Character Timeout Detection' (checkbox), 'Disable Multiple Connection' (checkbox), and 'Enable BufferData Size' (checkbox) with a value of '0'. Below these is a section titled 'USDG Advanced Options(Flow Control will overwrite these options)' containing 'RTS Control' (dropdown menu set to 'ON'). A blue 'Save' button is at the bottom.

Figure 6.20 Port Configuration > Advanced

The following table describes the items in the previous figure.

Table 6.17: Advanced (EKI-1511)

Item	Description
Ignore Purge	Click the option to purge the serial port when the serial port opens first time.
Disable Character Timeout Detection	Click the option to disable the serial port character timeout detection.
Disable Multiple Connection	Click the option to disable the multi-access function. Then only one TCP connection is allowed on this serial port.
Enable Buffer Data Size	Click the option to enter the value to queue data to become a packet.
USDG Advanced Options (Flow Control will overwrite these options)	
RTS Control	Click the drop-down menu to select the status of RTS: ON, OFF, Toggle By Connect or Toggle By Data.
Save	Click Save to save the values and update the screen.

6.8 Monitor

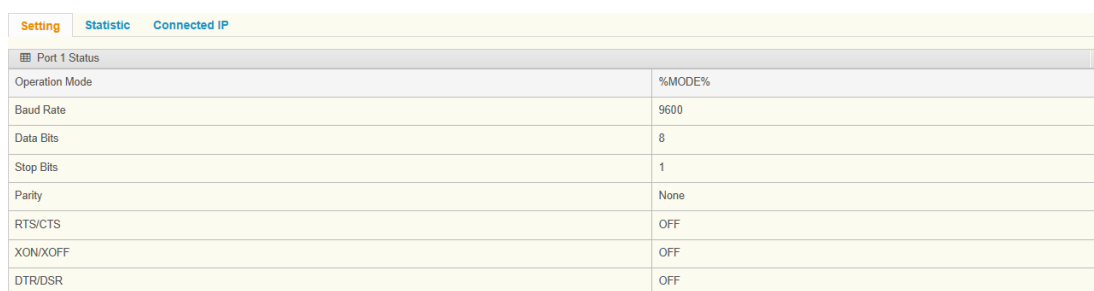
The EKI-1500 Series device server allows monitoring of the serial ports' status. The serial port's operation mode and status is available for display. The IP address of the host PC which is communicating with serial port is also displayed.

The Monitor function provides a method to monitor the serial device server's status (operation mode, baud rate, data bits, stop bits, parity and RTS/XON/DTR).

Monitoring information is divided into three main message types: Setting/Statistic/Connected IP.

6.8.1 Setting (VCOM 1.0)

The Monitor Setting page allows for easy viewing of the port's statistics. To access this page, click **Monitor** > **Setting**.



The screenshot shows a web interface with three tabs: 'Setting' (selected), 'Statistic', and 'Connected IP'. Below the tabs is a section titled 'Port 1 Status' containing a table of serial port parameters.

Port 1 Status	
Operation Mode	%MODE%
Baud Rate	9600
Data Bits	8
Stop Bits	1
Parity	None
RTS/CTS	OFF
XON/XOFF	OFF
DTR/DSR	OFF

Figure 6.21 Monitor > Setting

The following table describes the items in the previous figure.

Table 6.18: Setting (VCOM 1.0)

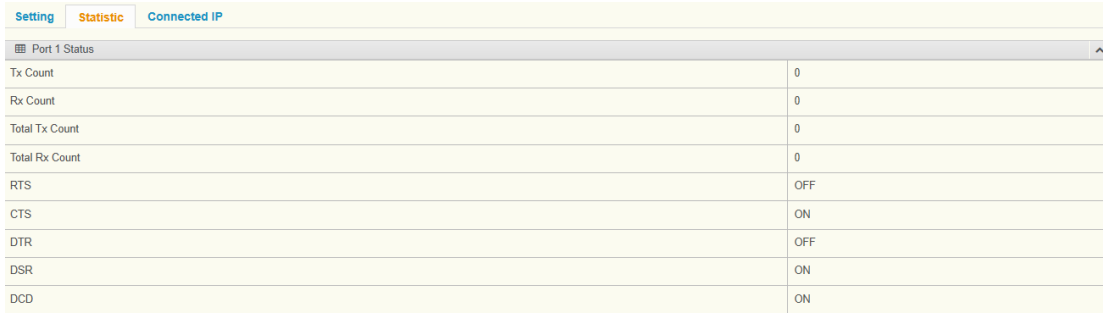
Item	Description
Operation Mode	Display the current operation mode of the selected port.
Baud Rate	Display the current baud rate of the selected port.
Data Bits	Display the current data bits of the selected port.
Stop Bits	Display the current stop bits of the selected port.

Table 6.18: Setting (VCOM 1.0)

Parity	Display the current parity of the selected port.
RTS/CTS	Display the current RTS/CTS status of the selected port.
XON/XOFF	Display the current XON/OFF status of the selected port.
DTR/DSR	Display the current DTR/DSR status of the selected port.

6.8.2 Statistic (VCOM 1.0)

The Monitor Statistic page allows for easy viewing of the port's TX/RX data count. To access this page, click **Monitor > Statistic**.



Port 1 Status	
Tx Count	0
Rx Count	0
Total Tx Count	0
Total Rx Count	0
RTS	OFF
CTS	ON
DTR	OFF
DSR	ON
DCD	ON

Figure 6.22 Monitor > Statistic

The following table describes the items in the previous figure.

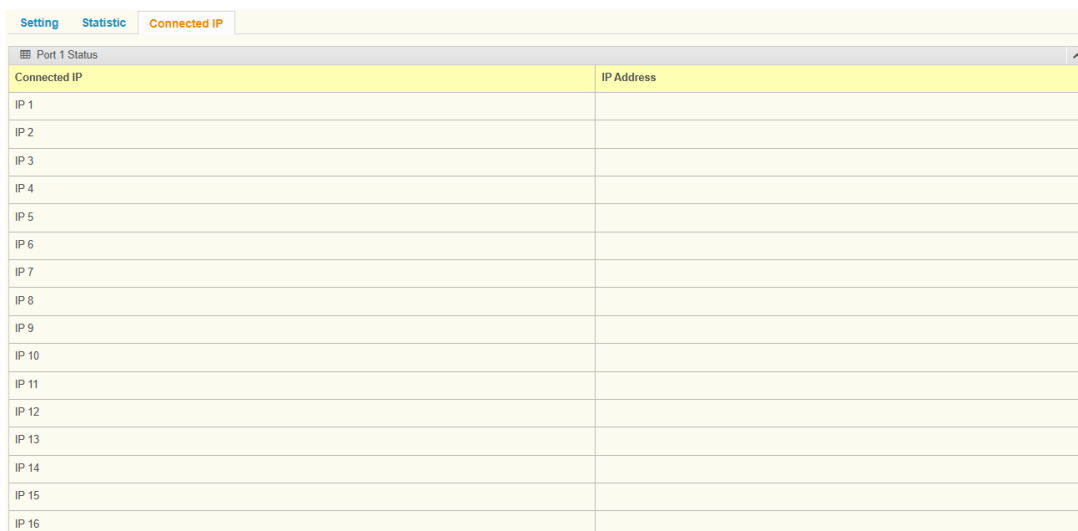
Table 6.19: Statistic (VCOM 1.0)

Item	Description
Tx Count	Display the current Tx count of the selected port.
Rx Count	Display the current Rx count of the selected port.
Total Tx Count	Display the current total Tx count of the selected port.
Total Rx Count	Display the current total Rx count of the selected port.
RTS	Display the current RTS status of the selected port.
CTS	Display the current CTS status of the selected port.
DTR	Display the current DTR status of the selected port.
DSR	Display the current DSR status of the selected port.
DCD	Display the current DCD status of the selected port.

6.8.3 Connected IP (VCOM 1.0)

The Monitor Connected IP page allows for easy viewing of all connected device's IP address.

To access this page, click **Monitor > Connected IP**.



Connected IP	IP Address
IP 1	
IP 2	
IP 3	
IP 4	
IP 5	
IP 6	
IP 7	
IP 8	
IP 9	
IP 10	
IP 11	
IP 12	
IP 13	
IP 14	
IP 15	
IP 16	

Figure 6.23 Monitor > Connected IP

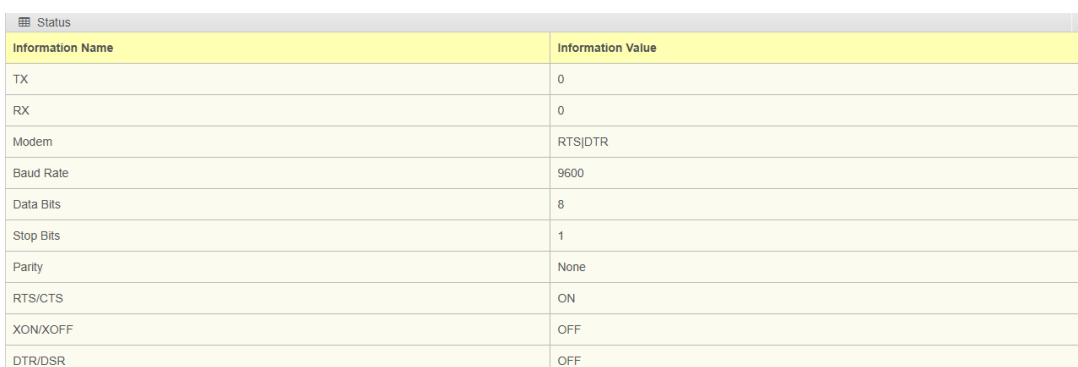
The following table describes the items in the previous figure.

Table 6.20: Connected IP (VCOM 1.0)

Item	Description
Connected IP	Displays the IP designation for the device.
IP Address	Displays the current connected IP address of the selected port.

6.8.4 Status (VCOM 2.0)

VCOM Protocol Version 2.0 is chosen, information on the serial port function is presented in the Status section.



Information Name	Information Value
TX	0
RX	0
Modem	RTS/DTR
Baud Rate	9600
Data Bits	8
Stop Bits	1
Parity	None
RTS/CTS	ON
XON/XOFF	OFF
DTR/DSR	OFF

Figure 6.24 Monitor > Status

The following table describes the items in the previous figure.

Table 6.21: Status (VCOM 2.0)

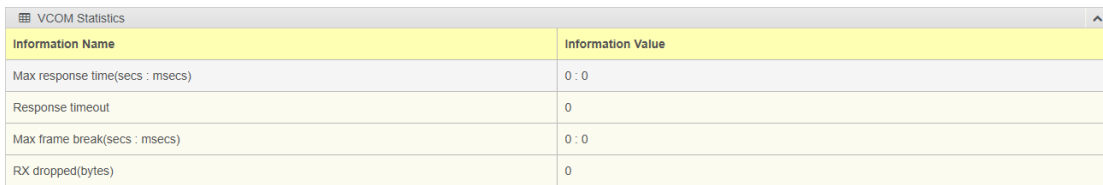
Item	Description
TX	Display the TX count of the selected port.
RX	Display the RX count of the selected port.

Table 6.21: Status (VCOM 2.0)

Modem	Display any active modem signals (RTS, CTS, DTR, DSR, DCD)
Baud Rate	Display the current baud rate of the selected port.
Data Bits	Display the current data bits of the selected port.
Stop Bits	Display the current stop bits of the selected port.
Parity	Display the current parity of the selected port.
RTS/CTS	Display the current RTS/CTS status of the selected port.
XON/XOFF	Display the current XON/OFF status of the selected port.
DTR/DSR	Display the current DTR/DSR status of the selected port.

6.8.5 VCOM Statistics (VCOM 2.0)

The maximum response time measurement is shown in the VCOM Statistics section of the page. You can check the actual maximum response time of the nodes, and adjust the timeout parameters accordingly.

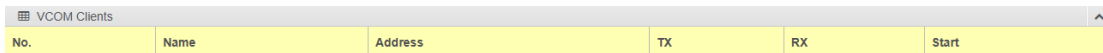


Information Name	Information Value
Max response time(secs : msecs)	0 : 0
Response timeout	0
Max frame break(secs : msecs)	0 : 0
RX dropped(bytes)	0

Figure 6.25 Monitor > VCOM Statistics

6.8.6 VCOM Clients (VCOM 2.0)

Display diagnostic information for VCOM clients, including addresses and connection start times.

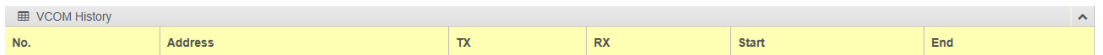


No.	Name	Address	TX	RX	Start
-----	------	---------	----	----	-------

Figure 6.26 Monitor > VCOM Clients

6.8.7 VCOM History (VCOM 2.0)

Display diagnostic information for connected VCOM clients, including addresses and connection start and end times.



No.	Address	TX	RX	Start	End
-----	---------	----	----	-------	-----

Figure 6.27 Monitor > VCOM History

6.8.8 Just-In-Time Diagnostics (VCOM 2.0)

The Just-In-Time (JIT) Diagnostics features of the device server assist in troubleshooting communication issues.

The JIT Event Analyzer allows for the dynamic insertion of multiple event trackers into a communication session at runtime for in-depth analysis, while JIT System Statistics continuously records data from each end device and TCP session, providing valuable insights for performance tuning and future audits. Additionally, the JIT Diagnostics feature helps resolve communication issues between the EKI network and downstream serial devices by enabling remote analysis and checking device status before disconnection.

JIT diagnostics can be enabled on Service > VCOM page, selecting VCOM 2.0, and saving your changes.

On the Syslogd > Syslogd Setting page, enable Syslogd and save your changes.

Reboot the device (Tools > Reboot) to apply the changes. JIT logs will then be displayed on the Syslogd > Syslogd Message page.

Figure 6.28 Monitor > Just-In-Time Diagnostics

6.9 Auto Warning (Alarm)

You can set the e-mail server and SNMP Trap server in the setting page, and set the event type in the Event page.

6.9.1 Setting

The Alarm Setting menu includes three alarm setting menus for event notification: Mail Sever, SNMP Trap Server, and the SNMP Agent Setting.

At the top of the list is the Mail Server setting which allows you to specify the mail server to be used by the serial device server in order to deliver notifications to selected Email accounts.

The SNMP Trap Server settings allows you to specify the management station of a significant event by way of an unsolicited SNMP message.

The Simple Network Management Protocol (SNMP) is used by the serial device server to collect detailed information about the serial device server. To access this page, click **Alarm > Setting**.

Alarm Setting

Mail Server

Mail Server

From Email address

Email address 1

Email address 2

Email address 3

Email address 4

SNMP Trap Server

Trap Server

Trap Server Port

Trap Version ☒ v1 ☐ v2c ☐ v3

Trap Community

SNMP Agent Setting

Read Community

Write Community

SNMPv3 User Name

SNMPv3 Password

SNMPv3 Authentication Type ☒ MD5 ☐ SHA

SNMPv3 Privacy Type ☒ DES ☐ AES

Contact

Location

Figure 6.29 Alarm > Setting

The following table describes the items in the previous figure.

Table 6.22: Setting

Item	Description
Mail Server	
Mail Server	Enter the SMTP mail server.
From Email address	Enter the email address.
Email address 1	Enter the email address 1 to receive alarm emails.
Email address 2	Enter the email address 2 to receive alarm emails.
Email address 3	Enter the email address 3 to receive alarm emails.
Email address 4	Enter the email address 4 to receive alarm emails.
SNMP Trap Server	
Trap Server	Enter the SNMP Trap server address.
Trap Server Port	Enter the SNMP Trap server port.
Trap Version	Click the radio button to select the SNMP version credentials: v1 or v2c or v3.
Trap Community	Enter the community string to be passed for the specified event.
SNMP Agent Setting	
Read Community	Enter the read-only, public, community string.
Write Community	Enter the write-only, private, community string.
SNMPv3 User Name	Enter the user's name for network search of SNMPv3.
SNMPv3 Password	Enter the password for network search of SNMPv3.
SNMPv3 Authentication Type	Select authentication based on the MD5 or SHA.

Table 6.22: Setting

SNMPv3 Privacy Type	Select data encryption type based on DES or AES.
Contact	Enter the individual designated the contact point for this event.
Location	Enter the designated location/department of the setting.
Save	Click Save to save the values and update the screen.

6.9.2 Event

The Alarm Event page allows the selection of triggers for system, DCD and DSR events for the alarm function.

To access this page, click **Alarm > Event**.

Figure 6.30 Alarm > Event

The following table describes the items in the previous figure.

Table 6.23: Event

Item	Description
System Event	
Cold Start	Click the option to select a warning type when the device server's power is cut off and reconnected.
Warm Start	Click the option to select a warning type when the device server is reboot.
Authentication failure	Click the option to select a warning type when an incorrect password is entered.
IP address changed	Click the option to select a warning type when the IP address is changed.
Password changed	Click the option to select a warning type when the password is changed.
Ethernet1 link down	Click the option to select a warning type when the Ethernet 1 port is disconnected.
Ethernet2 link down	Click the option to select a warning type when the Ethernet 2 port is disconnected.
DCD changed*	

Table 6.23: Event

Port	Click the option to select a warning type of the selected port when a change in the DCD (Data Carrier Detect) signal indicates that the modem connection status has changed.
DSR changed	
Port	Click the option to select a warning type of the selected port when a change in the DSR (Data Set Ready) signal indicates that the data communication equipment is powered off.
Save	Click Save to save the values and update the screen.

*EKI-152x feature

6.10 Syslogd

The EKI-1500 Series device server provides the functionality to allow network devices to send event messages to a logging server, also known as a Syslog server, by way of the Syslogd function. The Syslog protocol is supported by a wide range of devices and can be used to log different types of events.

6.10.1 Syslogd Setting

Users can enable the syslogd function to record historical events or messages locally or on a remote syslog server.

To access this page, click **Syslogd** > **Syslogd Setting**.

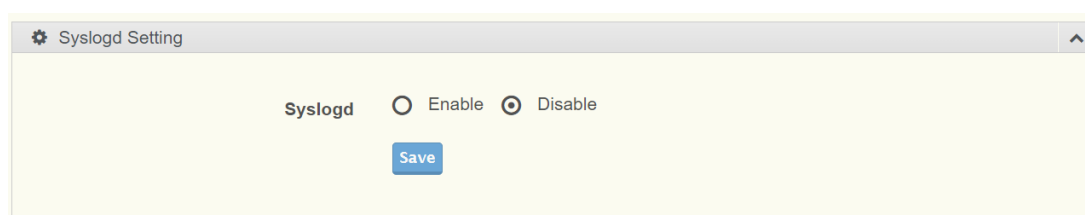


Figure 6.31 Syslogd > Syslogd Setting



Figure 6.32 Syslogd > Syslogd Setting

The following table describes the items in the previous figure.

Table 6.24: Syslogd Setting

Item	Description
Syslogd	Click Enabled or Disabled to set the logging service status.
Syslogd Remote	Enable to send syslogd messages to a remote syslog server. Note that syslogd messages will not display in the local window when the remote feature is active.

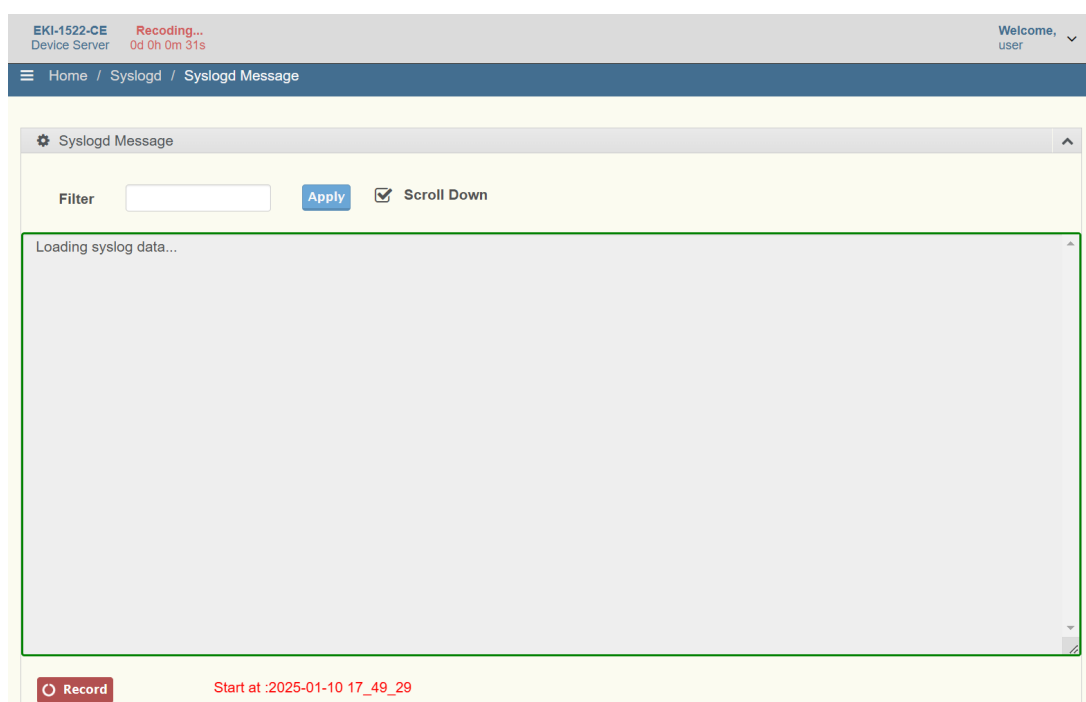
Table 6.24: Syslogd Setting

Syslogd Remote IP address	Enter Syslogd Remote IP address.
VCOM	Display syslog messages relay to VCOM 1.0 mode
USDG	Display syslog messages relay to USDG 1.0 mode
Save	Click Save to save the values and update the screen.

6.10.2 Syslogd Message

After enabling the syslogd function, users can check the history in the syslogd message page.

To access this page, click **Syslogd > Syslogd Message**.

**Figure 6.33 Syslogd > Syslogd Message**

The message types selected on the Syslogd Setting page will be displayed. If Just-In-Time (JIT) Diagnostics are enabled, those messages will also appear here.

The Record function will create a temporary file in the browser to record the logs in the Syslogd Message window. Recording will continue until the button is clicked again, then the file will be downloaded to your PC as a text file.

6.10.3 VCOM Status (EKI-152x)

If the VCOM TLS handshake fails and the port cannot be identified, the error message will appear here.

Refresh				
VCOM Connection Failure				
No.	Address	Start	Latest	Events

Figure 6.34 Syslogd > VCOM Status

6.11 Tools

The EKI-1500 Series device server provides tools for access to ping and reset functions.

6.11.1 Ping

The Ping page can help users diagnose Ethernet problems. Users can use the ping page to ask the device to ping a specific target to check the Ethernet network status. The Ping page allows you to configure the test log page. To access this page, click **Tools > Ping**.

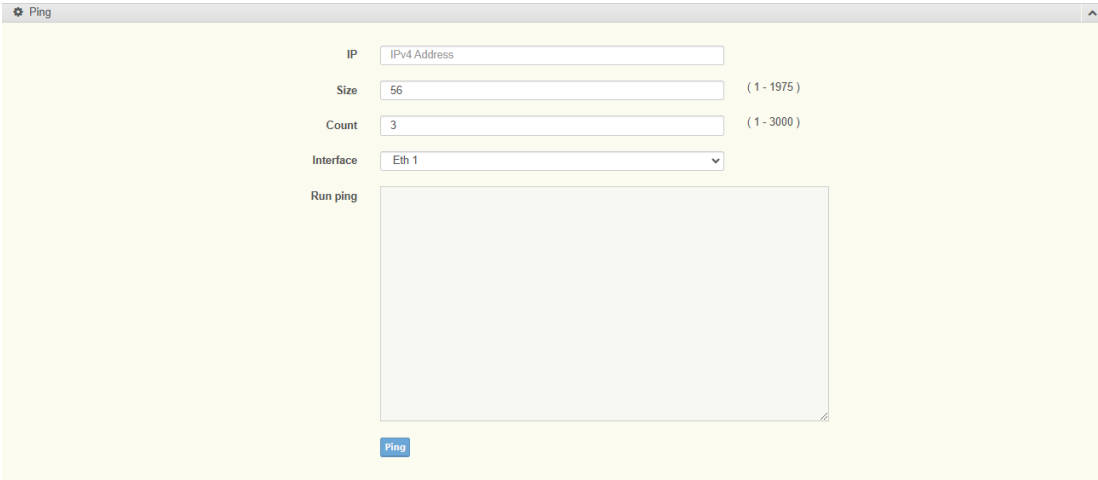


Figure 6.35 Tools > Ping

The following table describes the items in the previous figure.

Table 6.25: Ping

Item	Description
IP	Enter the IP address or host name of the station to ping. The initial value is blank. The IP Address or host name you enter is not retained across a power cycle. Host names are composed of series of labels concatenated with periods. Each label must be between 1 and 63 characters long, maximum of 64 characters.
Size	Enter the size of ping packet. The default value is 56. The value ranges from 8 to 5120. The size entered is not retained across a power cycle.
Count	Enter the number of echo requests to send. The default value is 4. The value ranges from 1 to 5. The count entered is not retained across a power cycle.
Interface	Select the Ethernet port to use for the ping.
Run ping	Display the ping reply format.

6.11.2 Reboot

The configuration will take effect after clicking Save button. All configurations are saved to flash memory after a system reboot. Press the Reboot button and the system will give a reset response. It will take a few seconds to reconnect with the new values.

To access this page, click **Tools > Reboot**.

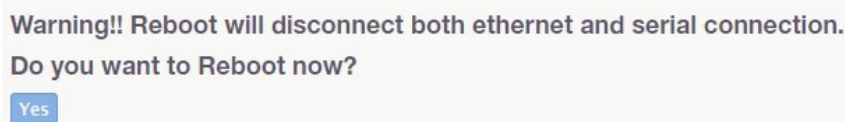


Figure 6.36 Tools > Reboot

Click **Yes** to reboot the serial device server. Any configuration changes you have made since the last time you saved will be lost.

6.12 Management

The EKI-1500 Series device server allows for easy installation and maintenance and reliable maintenance access from anywhere. With the reliable management tools available, you can streamline staffing and troubleshooting requirements to a centralized system.

6.12.1 Log File

If users enable the system event or serial event to log in file, users can download the log file from here.

To access this page, click **Management > Log File**.

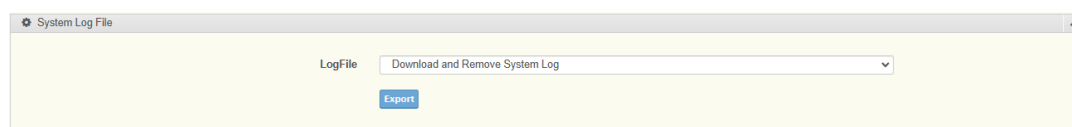


Figure 6.37 Management > Log File

The following table describes the items in the previous figure.

Table 6.26: Log File

Item	Description
System Log File	Click the drop-down menu to select a specific action for the system log file. Available options: Download System Log, Remove System Log, Download and Remove System Log.
Export	Click Export to download the log file.

6.12.2 Change Password

The Change Password function allows you to easily update your current password from a single menu.

To access this page, click **Management > Change Password**.

Figure 6.38 Management > Change Password (EKI-1511)

The following table describes the items in the previous figure.

Table 6.27: Change Password	
Item	Description
Change Password	
New password	Enter the character set for the define password type.
New password again	Retype the password entry to confirm the profile password.
Save	Click Save to save the values and update the screen.

Figure 6.39 Management > Change Password (EKI-152x)

The following table describes the items in the previous figure.

Table 6.28: Change Password	
Item	Description
Utility Password	
New password	Enter the character set for the define password type.
New password again	Retype the password entry to confirm the profile password.
Save	Click Save to save the values and update the screen.
Web Enhanced Password	
New password	Enter the character set for the define password type.
New password again	Retype the password entry to confirm the profile password.
Save	Click Save to save the values and update the screen.

If you have set a password, when you access the web configuration you need to key in the password. It is not necessary to enter the user name in the dialog. If you want

to disable the password protection, change the password to the default option **None** (leave the new password column blank). Be sure to press the **Save** button and reboot the Modbus gateway to make the change effective.

Note! *If a password is set, a 20-minute session timer will start each time you log in to the web interface. To reset the timer before it expires, click the Session Timeout display at the top of the Web UI. When the session timer expires, you will be automatically logged out of the web interface.*



6.12.3 Secure access IP

To access this page, click Management > Secure access IP.

Figure 6.40 Management > Secure access IP

The following table describes the items in the previous figure.

Table 6.29: Secure access IP

Item	Description
Access IP number	Enter a value to define access IP number
Save	Click Save to save the values and update the screen.

6.12.4 Export Device Settings

Export the server configuration settings to a .conf file.

To access this page, click **Management > Export**.

Click **Export** to export the serial device server settings.

6.12.5 Import Device Settings

Import the server configuration settings to a .conf file. To access this page, click **Management > Import**.

Figure 6.41 Management > Import

The following table describes the items in the previous figure.

Table 6.30: Import Device Settings

Item	Description
Choose File	Click Choose File to select the configuration file.
Submit	Click Submit to back up the settings.

6.12.6 Firmware Upgrade (EKI-152x)

If HTTPS security is enabled, the device firmware can be updated from the web UI. The standard method for firmware updates is to use the Windows utility that is packaged with the firmware download.

Firmware Upgrade - Secure Access Required

Please ensure you are accessing this site securely via HTTPS.

[Click here to access via HTTPS](#)

Figure 6.42 Management > Firmware Upgrade

Chapter 7

Telnet and SSH

7.1 Overview

EKI-152x device server not only allows users to log in and configure the device via EKI Utility or Web GUI, but it also provides Telnet or SSH access to the EKI-152x, allowing users to view the device server through commands.

Note! *For security reasons, we recommend using SSH instead of Telnet. SSH (Secure Shell) is an encrypted network protocol that establishes a secure tunnel for network transmission, providing encrypted remote connections.*



7.2 Create a Telnet Connection

Enable the Telnet function in the EKI-152x Web GUI.

System Configuration

Firmware version 1.32

Revision number 6950

Device Name

Device Description

VCOM Ignore Device ID ☒ Disable ☐ Enable

Telnet ☐ Disable ☒ Enable

SSH ☐ Disable ☒ Enable

Figure 7.1 Enable Telnet or SSH Function

Then, search for the "Command Prompt" application in your computer's search bar and open it.

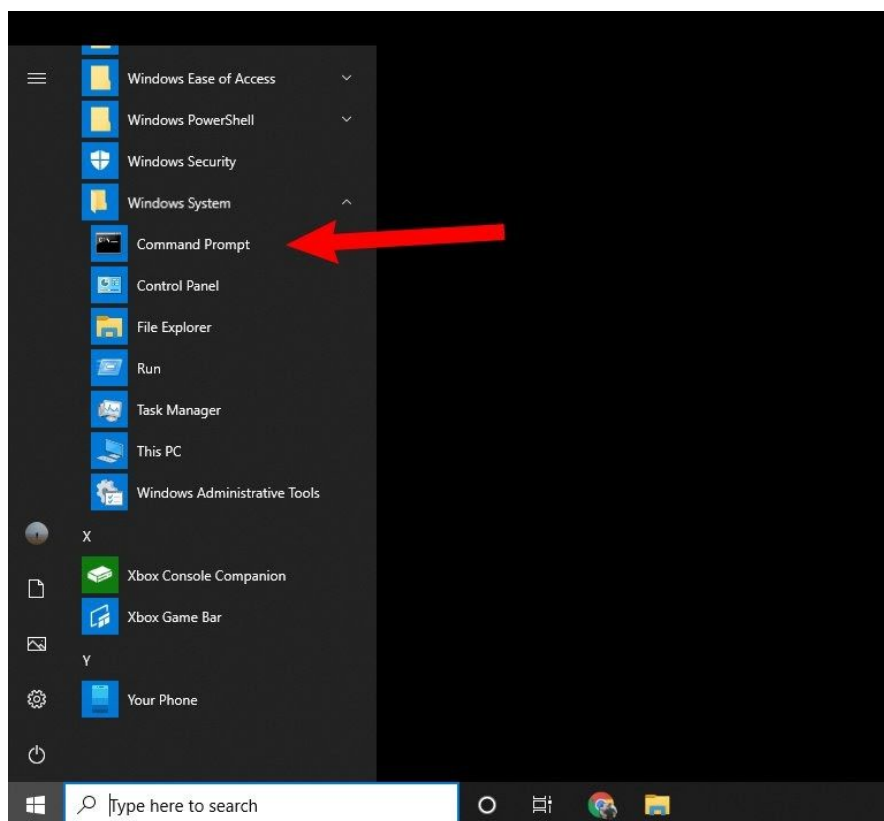


Figure 7.2 Open the Command Prompt

In the Command Prompt, type "telnet" followed by the EKI-152x device's local network IP address, and press Enter. For example, if the EKI-152x local network IP is 10.0.0.1, type "telnet 10.0.0.1" and press Enter.

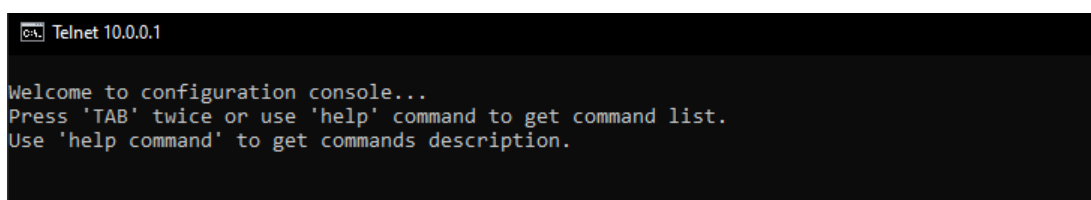


Figure 7.3 Telnet Connection

At the command prompt, you can type a "help" followed by the Enter button, or <Tab> twice, to display the command list. You can toggle between the different command menu options.

7.3 Command List

Table 7.1: Command List

Command	Function Description
system	Show or configure the system information
port	Show or configure the serial ports information
portadv	Show or configure the serial ports advanced settings
mvcom	Show or configure the serial ports in Virtual COM mode
mctrl	Show or configure the serial ports in Control mode (USDG)
mdata	Show or configure the serial ports in Data mode (USDG)
net	Show or configure the Ethernet ports settings
password	Set or change the password
alarm	Show or configure the auto warning functions including mail alarm and SNMP alarm
monitor	Monitor the serial ports status
mrhc2217	Show all port modes and mode information.
apply	Write settings to the flash memory and reboot the system immediately
exit	Terminate the shell session
help	Display command list help information
reboot	Write settings and reboot the system immediately.

Chapter 8

TCP and UDP Port

8.1 List of Known TCP and UDP Port Numbers

Table 8.1: List of Known TCP and UDP Port Numbers

Port	Protocol	Service
5048	(TCP/UDP)	Configuration Utility
5058	(TCP/UDP)	Configuration Utility
5202	(TDP)	VCOM/RVCOM
9999	(TDP)	Firmware Download
22	(TDP)	SSH
23	(TDP)	Telnet
25	(TDP)	SMTP (Mail Client)
53	(TCP/UDP)	DNS
67	(UDP)	BOOTP Server/DHCP
68	(UDP)	BOOTP Client/DHCP
80	(TDP)	Web Interface/HTTP
123	(TDP)	NTP
161	(TDP)	SNMP
162	(TCP/UDP)	SNMP Trap
443	(TDP)	HTTPS
502	(TDP)	Modbus/TCP (Default)
514	(TDP)	Syslog
546	(TCP/UDP)	DHCPv6 Client
547	(TCP/UDP)	DHCPv6 Server

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