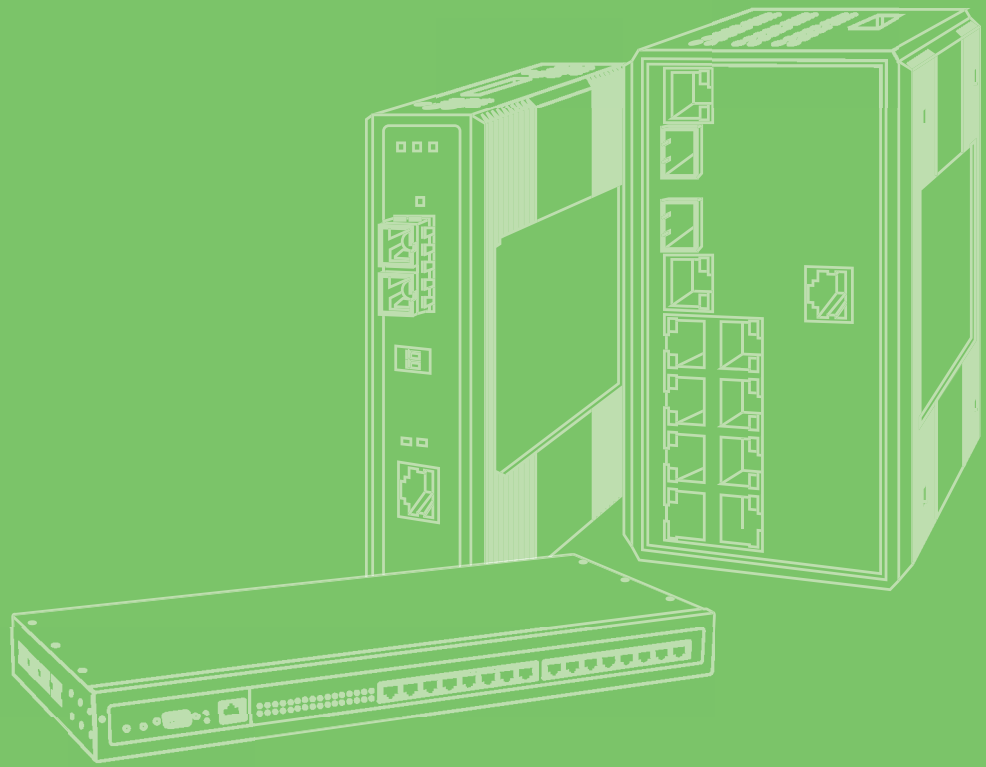


User Manual



EKI-1200 Series

1/2/4-port Modbus Gateways

ADVANTECH

Enabling an Intelligent Planet

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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.

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. For example,*



“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 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 Industrial Modbus Device
- 1 x DIN-Rail Mounting Bracket and Screws
- 1 x Wall-mounting Bracket and Screws

Note: Not including the screws for mounting the device to the wall.)

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 skilled service personnel.
14. If any of the following occurs, have the equipment checked by skilled person:
 - 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 shows 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

Advantech's EKI-1200 Series of Modbus Gateways (the following manual will use "EKI-1200 Series" instead of the complete model name) is a robust, feature-rich, and cost-effective solution for integrating Ethernet and Serial Modbus devices. The EKI-1200 Series provides serial ports (one, two, or four), Ethernet ports (one or two), a wide range of power inputs, and a compact, slim design, making it an ideal solution for connecting multiple Modbus/RTU and Modbus/ASCII serial devices to Modbus TCP (Ethernet).

Originally developed for PLCs in industrial automation and manufacturing control applications, Modbus is one of the most popular open-standard protocols in use today. The communication mode can be Modbus RTU/ASCII (Serial) or Modbus TCP (Ethernet). Many industrial devices use Modbus as their communication standard. However, the Ethernet-based Modbus protocol is different from the original serial-based protocols, requiring a Modbus Gateway to act as a bridge for integration.

The two Ethernet ports allow the EKI-122x to establish two separate Ethernet connections to two Ethernet domains or two Ethernet switches in the same domain. Through a dual Ethernet connection, the EKI-122x greatly improves device connectivity reliability, increases system stability, and simplifies redundant configuration.

The Modbus/RTU and Modbus/ASCII protocols define how a "Client" device polls one or more "Server" devices and writes real-time data over RS-232, RS-422, or RS-485 serial data communication. The EKI-1200 Series allows users to select Client or Server operation for each serial port. The EKI-1200 Series not only enables an Ethernet client to control serial servers but also allows serial clients to control Ethernet or serial servers. Furthermore, the EKI-1200 Series allows both Ethernet and serial servers to be controlled by both Ethernet and serial clients.

The EKI-1200 Series supports various operating modes: RTU Client, RTU Server, ASCII Client, and ASCII Server.

1.2 Product Features

- Provides 2 x 10/100 Mbps Ethernet ports for LAN redundancy (EKI-122x)
- Integration of Modbus TCP and Modbus RTU/ASCII networks
- Supports up to 921.6 kbps and any baud rate setting (EKI-122x)
- Supports up to 16 connections per serial port under Modbus client mode and 32 (EKI-1211) or 64 (EKI-122x) sessions under Modbus server mode
- Redundancy solutions provide backup mechanisms at different levels (EKI-122x)
- Modbus Data access via three different modes simultaneously
- Supports agent mode providing the fastest response time (EKI-122x)
- Auto searching EKI device over configuration utility or Windows network.
- Software selectable RS-232/422/485 communication
- The security mechanisms at both the serial and network interfaces provide protection for industrial communication
- Support for auto logout and auto refresh on the web page
- Mounts on DIN-rail and Wall mount
- Built-in 8 KV (EKI-1211) or 15 KV (EKI-122x) ESD protection for all signals
- Automatic RS-485 data flow control
- 'I' models support a wide operating temperature
- 'CI' models support isolation and wide operating temperature, surge protection for DC power ports with line to line 2 KV, and line to earth 4 KV

Chapter 2

Getting Started

2.1 Understanding Modbus Gateways

Networks have become increasingly vital for industrial automation applications. Many control devices today do not have a network port and can only communicate with a dedicated local PC or control panel. Advantech's revolutionary network-enabling technology allows control devices with serial ports to connect to Ethernet and share networks quickly and cost-effectively.

The EKI-1200 Series is a network-based Modbus gateway for integrating new and existing Modbus/RTU and Modbus/ASCII serial devices with newer TCP/IP network-based devices. Manufacturers, system integrators, and end users can now take advantage of Modbus gateways to create networked applications for remotely managing and accessing data from their control devices—something that was not possible before.

2.1.1 Protocol Overview

Originally developed for PLCs in industrial automation and manufacturing control applications, Modbus has become one of the most popular open-standard protocols in use today. When planning data communication for open, multi-vendor industrial control systems, Modbus is the first choice of end users and integrators.

Although it is not the most powerful protocol available, its simplicity allows for rapid implementation while remaining flexible enough to be applied in virtually all industrial situations. The communication modes of Modbus can be ASCII, RTU, or TCP/IP. Modbus gateways are used to support applications such as protocol conversion between serial (Modbus/ASCII or Modbus/RTU) and networked (Modbus/TCP) Modbus devices, or they can be used to bridge Modbus serial devices over a TCP/IP network.

The Modbus/RTU and Modbus/ASCII protocols define how a "Client" device polls one or more "Server" devices to read and write real-time data over RS-232, RS-422, or RS-485 serial communication. The simplicity of Modbus/RTU not only allows rapid implementation but also remains flexible enough to be applied in virtually all industrial situations.

During Modbus network communication, the protocol determines how each controller knows its device address, recognizes a message addressed to it, determines the kind of action to be taken, and extracts any data or other information contained in the message. If a reply is required, the controller constructs the reply message and sends it back using the Modbus protocol.

Controllers communicate with each other using a Client-Server technique, in which only one device (the Client) can initiate queries. The other devices (the Servers) respond by supplying the requested data to the Client or taking the action requested in the query. Typical Client devices include host processors and programming panels, while typical Servers include programmable controllers.

The Client can address individual Servers and initiate a broadcast message to all Servers. On the other hand, Servers return a response to queries addressed to them individually. Responses are not returned for broadcast queries from the Client.

The Modbus protocol has a definite format for the Client's query, which includes the device (or broadcast) address, a function code defining the requested action, any data to be sent, and an error-checking field. The Server's response message, which is also constructed using the Modbus protocol, contains fields confirming the action taken, any data to be returned, and an error-checking field. If an error occurs in receiving the message or if the Server is unable to perform the requested action, the Server constructs an error message and sends it as its response.

The basic system architecture is as below:

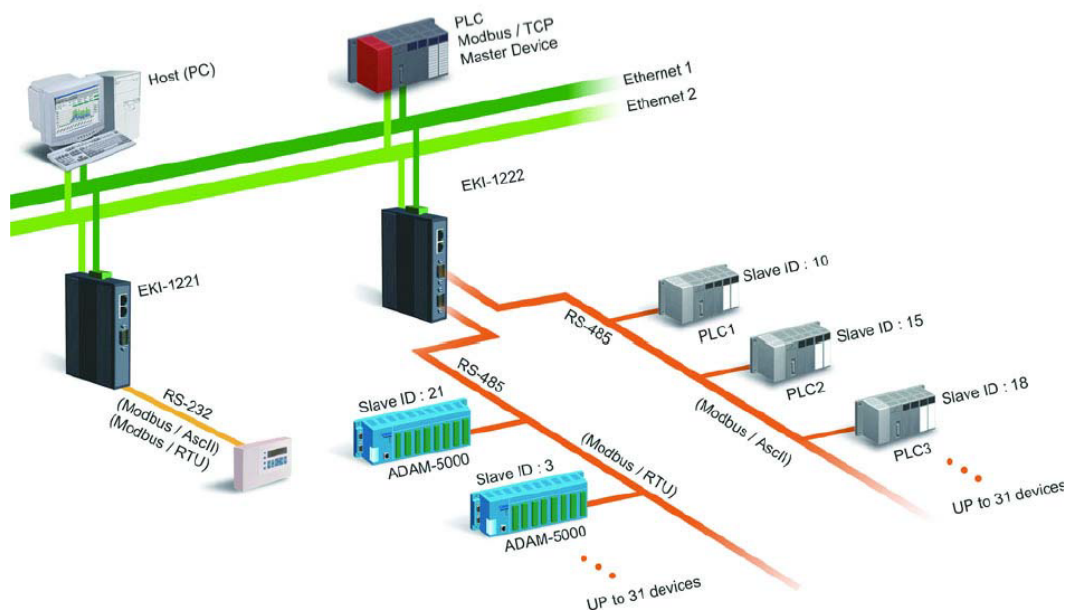


Figure 2.1 Modbus System Architecture 1

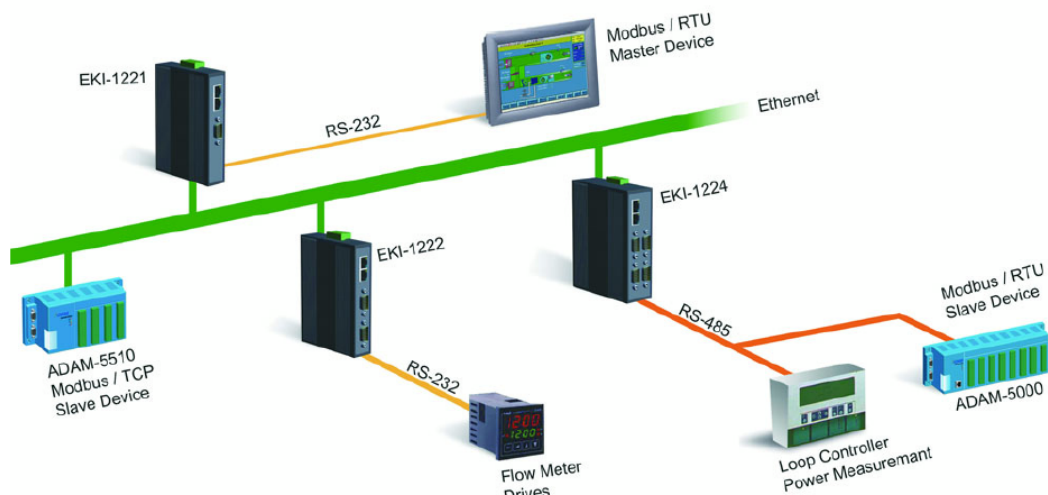


Figure 2.2 Modbus System Architecture 2

2.1.2 Modbus RTU

The Modbus/RTU protocol defines how a “Client” device polls one or more “Server” devices to read and write data in real time over RS-232, RS-422, or RS-485 serial communication.

When using RTU mode, each 8-bit byte in a message contains two 4-bit hexadecimal characters. The main advantage of this mode is that its greater character density allows for better data throughput than ASCII mode at the same baud rate. Nevertheless, each message must be transmitted as a continuous stream.

2.1.3 Modbus ASCII

When using ASCII mode, each 8-bit byte in a message is sent as two ASCII characters. The primary advantage of this ASCII mode is that it allows time intervals of up to one second to occur between characters without causing an error.

Table 2.1: Modbus ASCII

Mode	RTU	ASCII
Coding System	8-bit binary. Two hexadecimal characters contained in each ASCII character of the message	Hexadecimal. One hexadecimal character contained in each ASCII character of the message
Bits per Byte	1 start bit, 8 data bits, 1 bit for even/odd parity; no bit for parity 1 stop bit if parity is used; 2 bits if no parity	1 start bit, 7 data bits, 1 bit for even/odd parity; no bit for parity 1 stop bit if parity is used; 2 bits if no parity
Error Check	CRC	LRC

2.1.4 Modbus TCP

As a new extension of Modbus/RTU, the Modbus/TCP protocol defines how Modbus/RTU messages are encoded and transported over TCP/IP-based networks. Modbus/TCP is just as simple to implement and as flexible to apply as the original Modbus/RTU.

The Modbus/TCP protocol is defined by its method of encapsulating a Modbus request or response. This means that the Modbus request or response data is encapsulated in a TCP frame that includes a six-byte header in the Modbus/TCP protocol.

Modbus/TCP enables the use of Modbus messaging in an intranet running the TCP/IP protocols. It is most commonly used for Ethernet attachment of PLCs or I/O modules to other simple fieldbuses or I/O networks.

2.2 Specifications

Table 2.2: Specifications

Specifications	Description	
Interface	I/O Port	EKI-1211-A: 1 x RJ45 + 1 x RS-232/422/485 EKI-1221-CE: 2 x RJ45 + 1 x RS-232/422/485 EKI-1221I-CE: 2 x RJ45 + 1 x RS-232/422/485 EKI-1221CI-DE: 2 x RJ45 + 1 x RS-232/422/485 EKI-1222-CE: 2 x RJ45 + 2 x RS-232/422/485 EKI-1222I-CE: 2 x RJ45 + 2 x RS-232/422/485 EKI-1222CI-DE: 2 x RJ45 + 2 x RS-232/422/485 EKI-1224-CE: 2 x RJ45 + 4 x RS-232/422/485 EKI-1224I-CE: 2 x RJ45 + 4 x RS-232/422/485 EKI-1224CI-CE: 2 x RJ45 + 4 x RS-422/485
	Power Connector	Terminal block
Physical	Enclosure	Metal with solid mounting hardware
	Installation	DIN-Rail and Wall mount
	Dimensions (W x H x D)	EKI-1211: 46 x 85.1 x 21.2 mm (1.81" x 3.35" x 0.83") EKI-1221/EKI-1222: 30 x 140 x 95mm (1.18" x 5.51" x 3.74") EKI-1224: 42 x 140 x 95mm (1.65" x 5.51" x 3.74")
LED Display	System LED	EKI-1211: Power, Status EKI-122x: Power 1, Power 2, Status
	Port LED	LAN: Speed, Link/Active Serial: Tx, Rx
Environment	Operating Temperature	EKI-1211: -40 ~ 75 °C (-40 ~ 167 °F) EKI-122x: -10°C ~ 60°C (14°F ~ 140°F) 'CI & I' models: -40 ~ 80 °C (-40 ~ 176 °F)
	Storage Temperature	-40°C ~ 85°C (-40°F ~ 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 2.25 KV magnetic isolation
Serial Communications	Port Type	RS-232/422/485-2w/485-4w, software selectable EKI-1224CI-CE supports RS-422/485 only
	Port Connector	DB9 male EKI-1221CI-DE; EKI-1222CI-DE also provide 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-1211: 300 bps ~ 230.4 kbps EKI-122x: 50 bps ~ 921.6 kbps, any baud rate setting
	Protection	EKI-1211: Built-in 8 KV ESD for all signals EKI-122x: Built-in 15 KV ESD for all signals 'CI' models: 2KV Isolation for RS-422/485 signals

Table 2.2: Specifications

Power	Power Consumption	EKI-1211: 1W EKI-1221: 3.2W EKI-1222: 3.2W EKI-1224: 4.1W
	Power Input	EKI-1221: 9 ~ 36V _{DC} EKI-122x: 12 ~ 48V _{DC} , redundant dual inputs
Software	OS Support for Utility	Win11, WinServer2016, WinServer2019, WinServer2022, WinXP, Win7, Win10, Win2012R2, Win2008R2, Win8.1, Win8
	Utility	Advantech EKI Device Configuration Utility
	Operation Modes	Modbus RTU Client/Server mode Modbus ASCII Client/Server mode
	Configuration	Windows Utility, Web Browser
	Protocols	Modbus RTU, Modbus TCP, Modbus ASCII
Regulatory Approvals	EMC	CE, FCC Part 15 Subpart B (Class A)
	Hazardous Location	EKI-122x: UL/cUL (Class I, Division 2, Groups A, B, C and D), ATEX (Zone 2 Ex nA nC IIC T4 Gc)

2.3 Hardware

2.3.1 Front View

The following view depicts the EKI-1211.

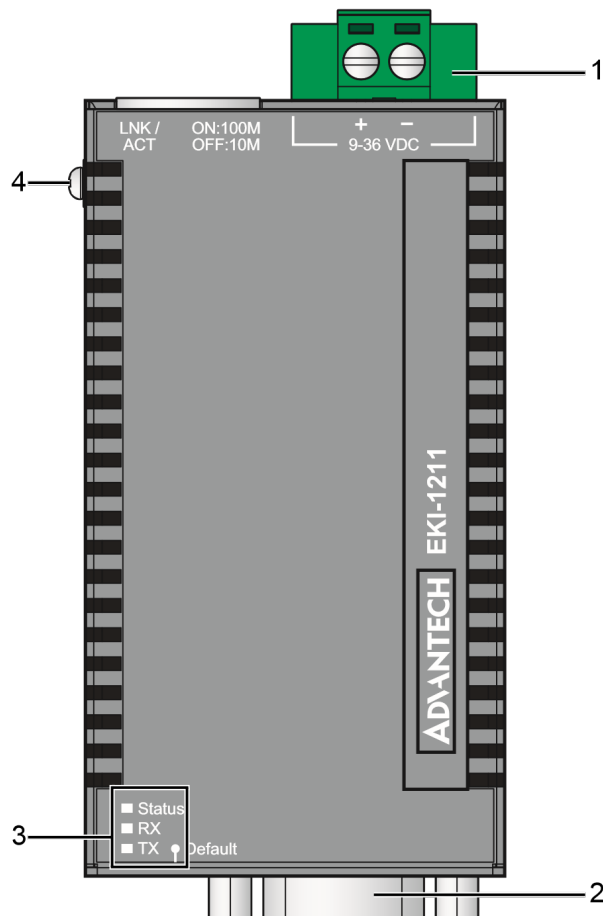
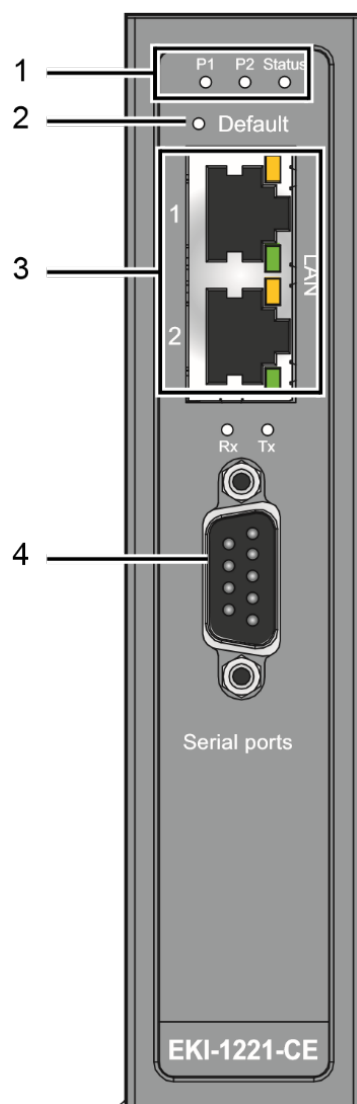
**Figure 2.3 EKI-1211 Front View**

Table 2.3: EKI-1211 Front View

No.	Item	Description
1.	Terminal block	Connect cabling for power wiring.
2.	Serial port	DB9 pin-out, supports RS-232/422/485
3.	System LED panel	See “LED Indicators” on page 26 for further details.
4.	Ground terminal	Screw terminal used to ground chassis.

The following view depicts the EKI-1221.

**Figure 2.4 EKI-1221 Front View****Table 2.4: EKI-1221 Front View**

No.	Item	Description
1.	System LED panel	See “LED Indicators” on page 27 for further details.
2.	Default button	Press for at least 10 secs. to rest device to default settings.
3.	ETH port	RJ45 ports x 2
4.	Serial port	DB9 pinout, supports 232/422/485

The following view depicts the EKI-1222.

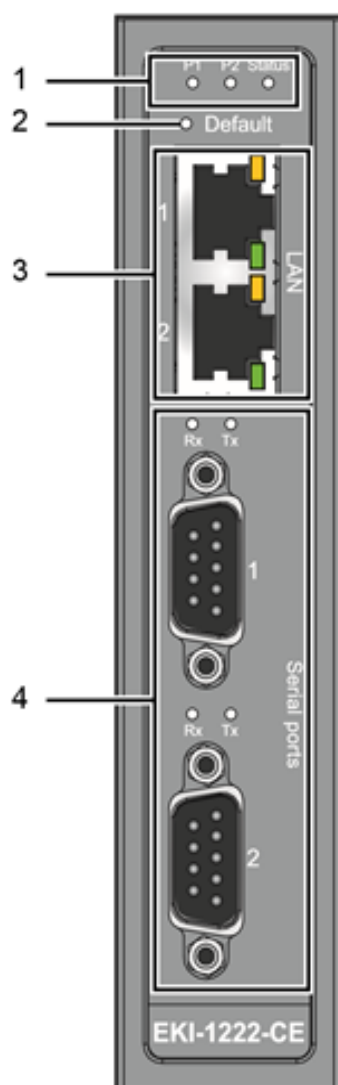


Figure 2.5 EKI-1222 Front View

Table 2.5: EKI-1222 Front View

No.	Item	Description
1.	System LED panel	See "LED Indicators" on page 27 for further details.
2.	Default button	Press for at least 10 secs. to rest device to default settings.
3.	ETH port	RJ45 ports x 2
4.	Serial port	DB9 (pinout) ports x 2, supports 232/422/485

The following view depicts the EKI-1224.

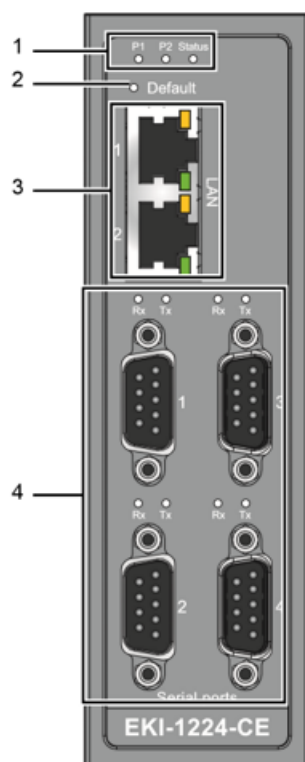


Figure 2.6 EKI-1224 Front View

Table 2.6: EKI-1224 Front View

No.	Item	Description
1.	System LED panel	See “LED Indicators” on page 27 for further details.
2.	Default button	Press for at least 10 secs. to rest device to default settings.
3.	ETH port	RJ45 ports x 2
4.	Serial port	DB9 (pinout) ports x 4, supports 232/422/485

2.3.2 Rear View

The following view depicts the EKI-1211.

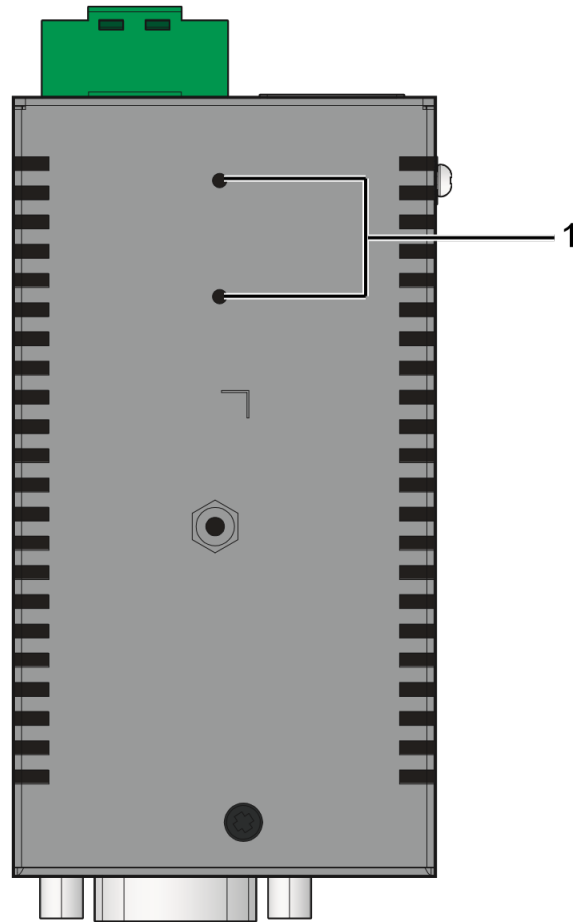


Figure 2.7 EKI-1211 Rear View

Table 2.7: EKI-1211 Rear View		
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 depicts the EKI-1221 and EKI-1222.

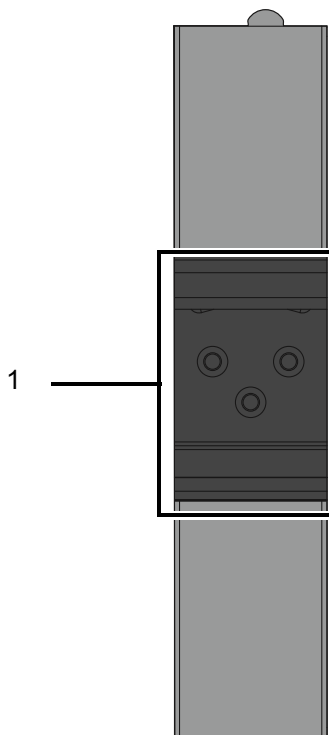


Figure 2.8 EKI-1221 and EKI-1222 Rear View

Table 2.8: EKI-1221 and EKI-1222 Rear View

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

The following view depicts the EKI-1224.

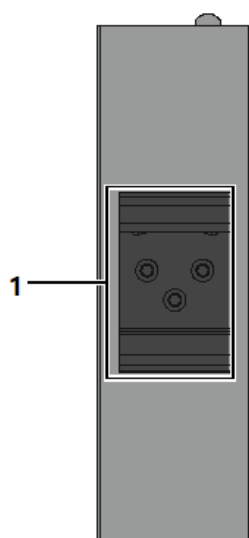


Figure 2.9 EKI-1224 Rear View

Table 2.9: EKI-1224 Rear View

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

2.3.3 Left View

The following view depicts the EKI-1211.

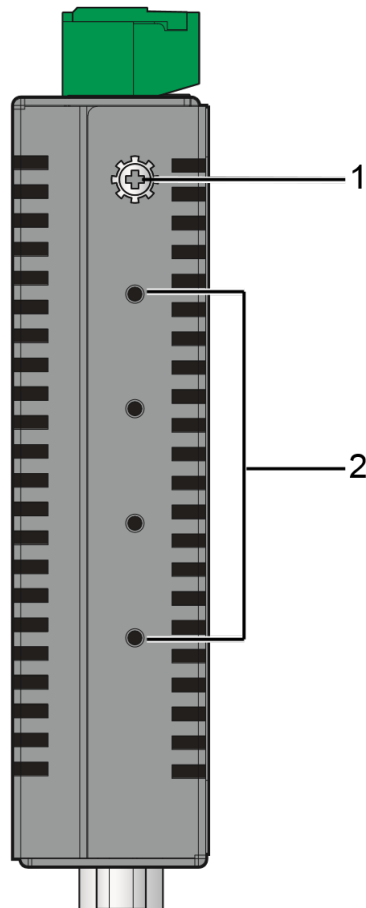


Figure 2.10 EKI-1211 Left View

Table 2.10: EKI-1211 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

2.3.4 Top View

The following view depicts the EKI-1211.

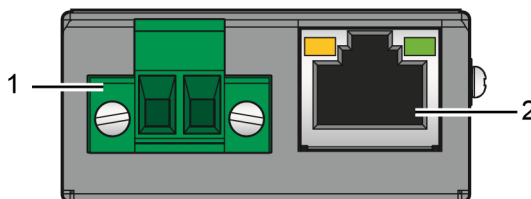


Figure 2.11 EKI-1211 Top View

Table 2.11: EKI-1211 Top View

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

The following view depicts the EKI-122x.

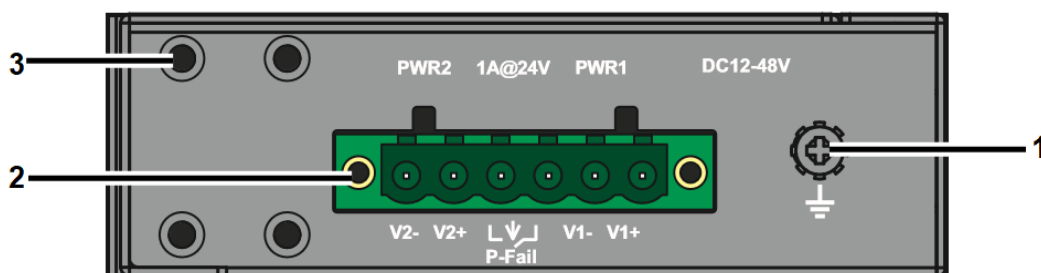


Figure 2.12 EKI-122x Top View

Table 2.12: EKI-122x Top View

No.	Item	Description
1.	Ground terminal	Screw terminal used to ground chassis
2.	Terminal block	Connect cabling for power and alarm wiring
3.	Wall mounting holes	Screw holes (4) wall mount installation. The device is designed with top and bottom side screw holes for wall mount bracket.

The following view depicts the EKI-1224.

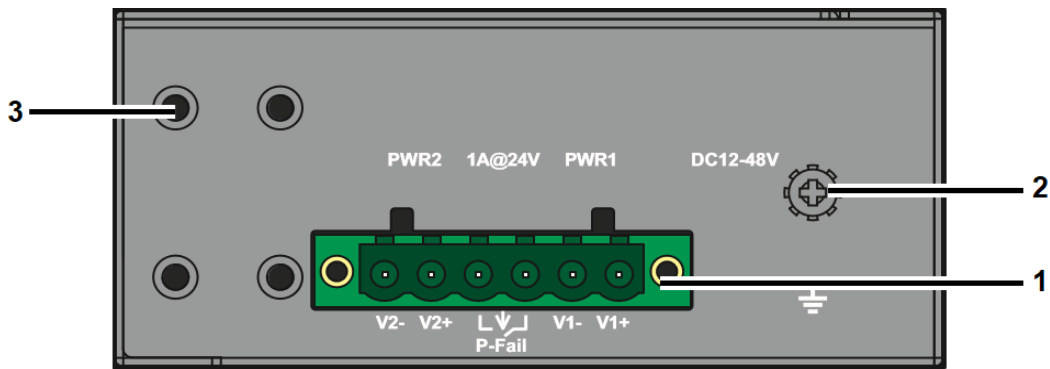


Figure 2.13 EKI-1224 Top View

Table 2.13: EKI-1224 Top View		
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 (4) wall mount installation. The device is designed with top and bottom side screw holes for wall mount bracket.

2.3.5 Bottom View

The following view depicts the EKI-1211.

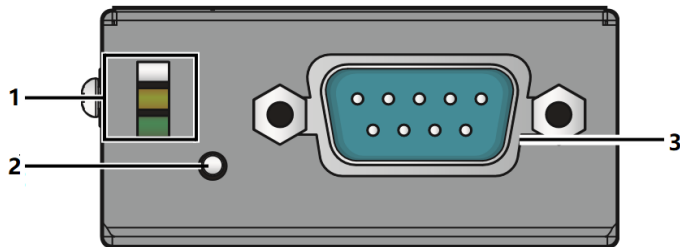


Figure 2.14 EKI-1211 Bottom View

Table 2.14: EKI-1211 Bottom View		
No.	Item	Description
1	System LED panel	See “LED Indicators” on page 19 for further details
2	Reset button	Reset to factory default, press and hold until status indicator blinks System reboot, press and hold for 2 seconds
3	Serial port	DB9 pin-out, supports RS-232/422/485

The following view depicts the EKI-122x.

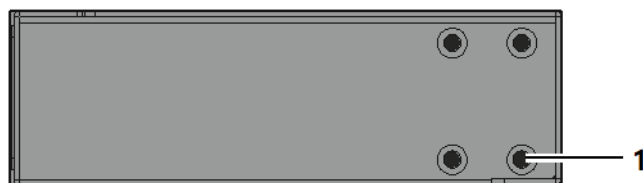


Figure 2.15 EKI-122x Bottom View

Table 2.15: EKI-122x Bottom View

No.	Item	Description
1	Wall mounting holes	Screw holes (4) wall mount installation. The device is designed with top and bottom side screw holes for wall mount bracket.

2.3.6 LED Indicators

The following view depicts the EKI-1211.

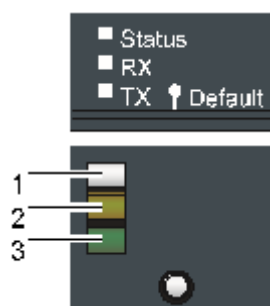


Figure 2.16 EKI-1211 System LED Panel

Table 2.16: EKI-1211 LED Indicators

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 depicts the EKI-122x.

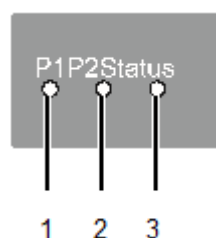


Figure 2.17 EKI-122x System LED Panel

Table 2.17: EKI-122x LED Indicators

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

2.3.7 Dimensions

The following view depicts the EKI-1211.

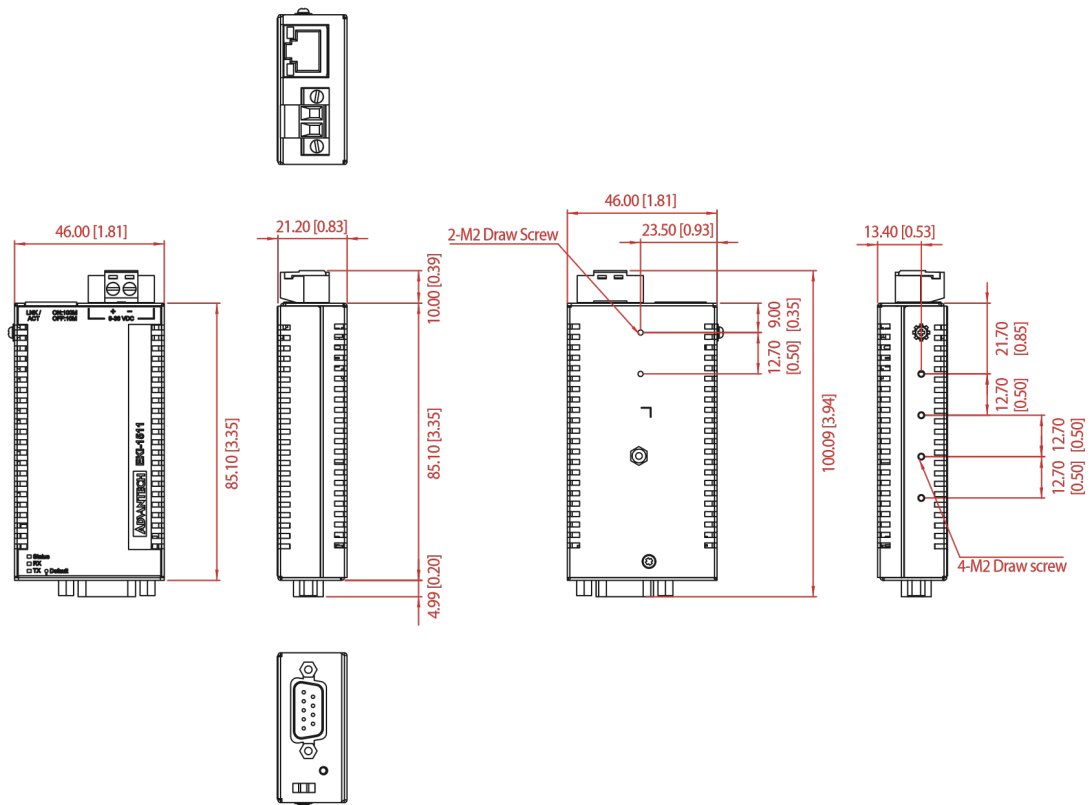


Figure 2.18 EKI-1211 Dimensions

The following view depicts the EKI-1221.

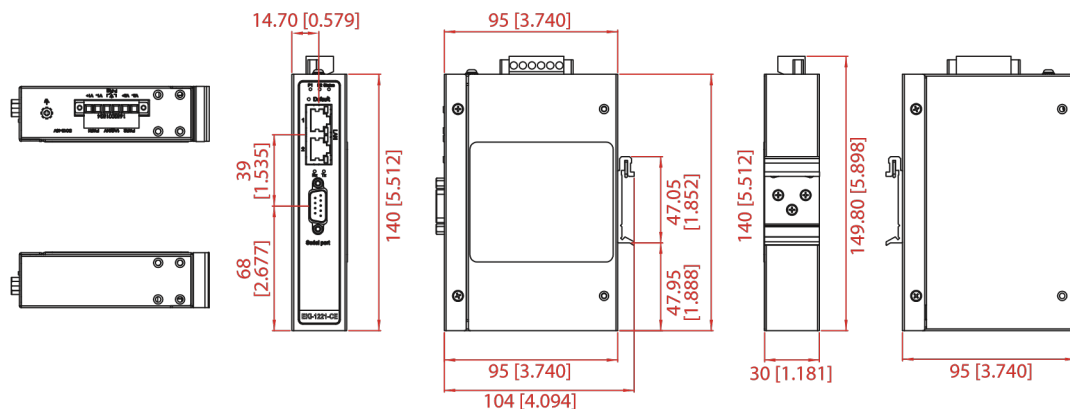


Figure 2.19 EKI-1221 Dimensions

The following view depicts the EKI-1222.

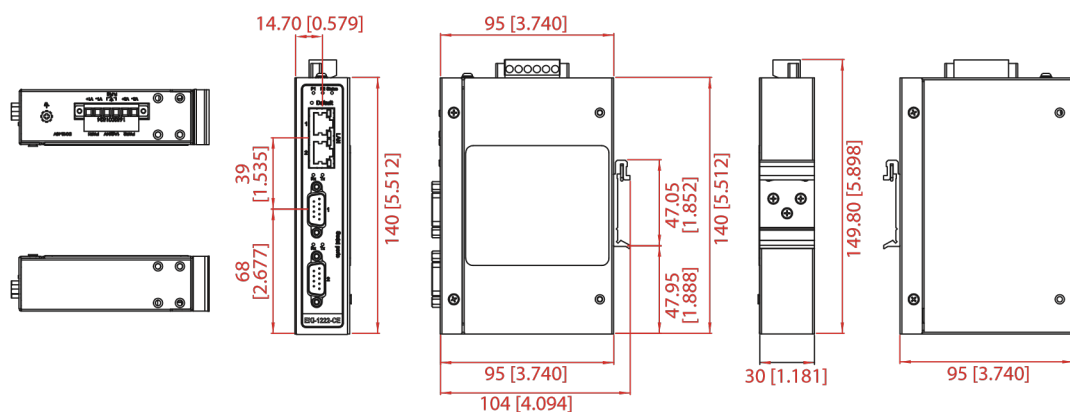


Figure 2.20 EKI-1222 Dimensions

The following view depicts the EKI-1224.

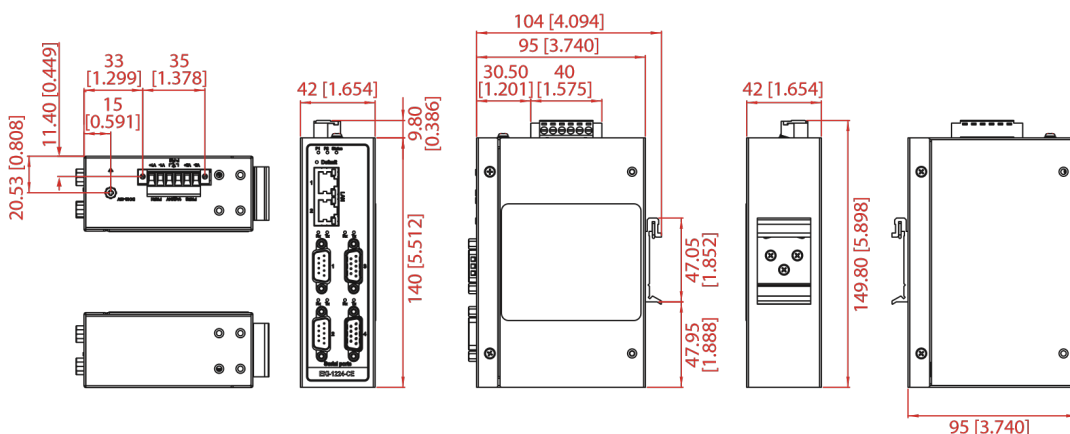


Figure 2.21 EKI-1224 Dimensions

2.4 Connecting Hardware

2.4.1 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.

2.4.1.1 Installing the DIN-Rail Mounting Kit (EKI-1211 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.

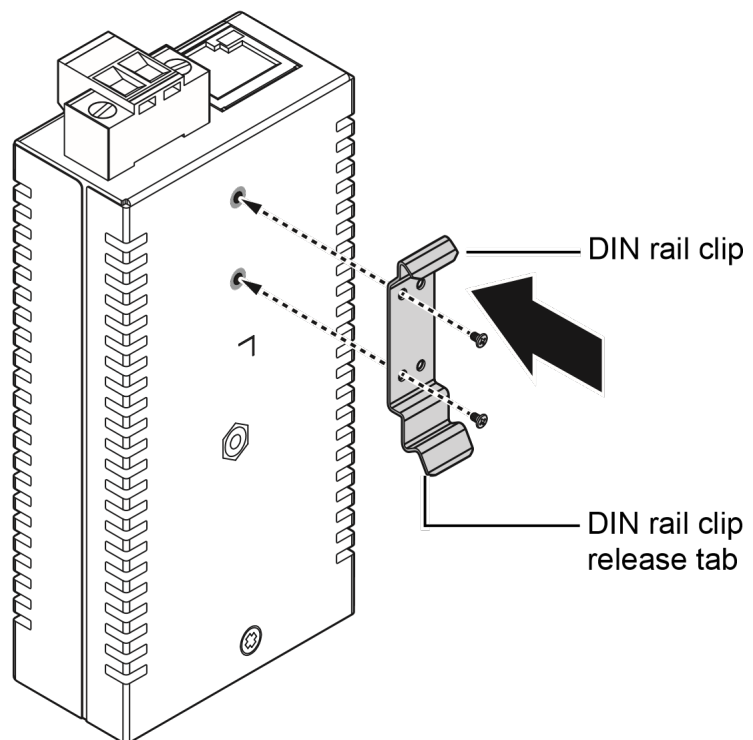


Figure 2.22 Installing the DIN Bracket (EKI-1211 Series)

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.

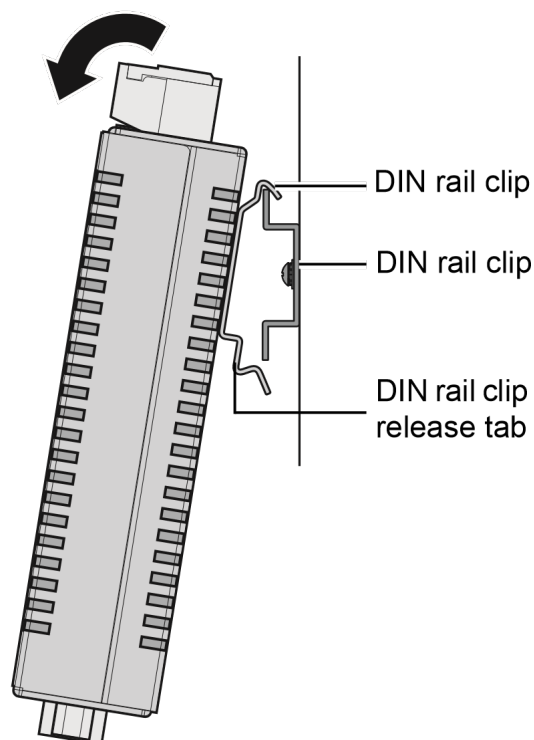


Figure 2.23 Installing the DIN-Rail Mounting Kit (EKI-1211 Series)

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

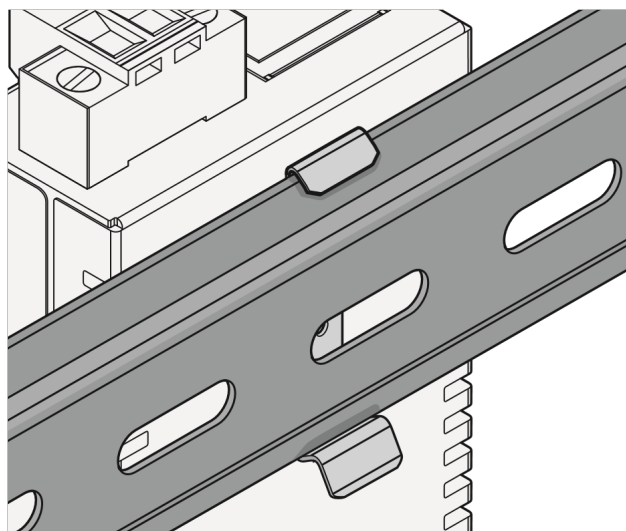


Figure 2.24 Correctly Installed DIN Rail Kit

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.

2.4.1.2 Installing the DIN-Rail Mounting Kit (EKI-122x Series)

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.

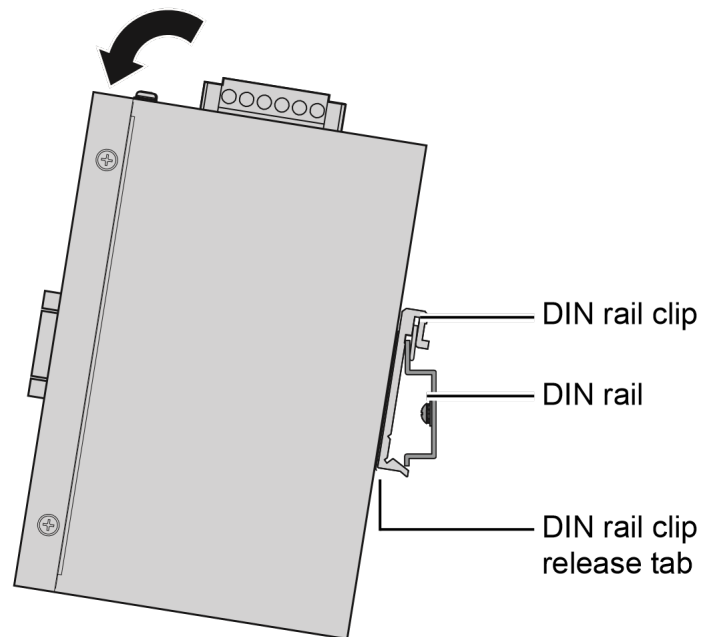


Figure 2.25 Installing the DIN-Rail Mounting Kit (EKI-122x Series)

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

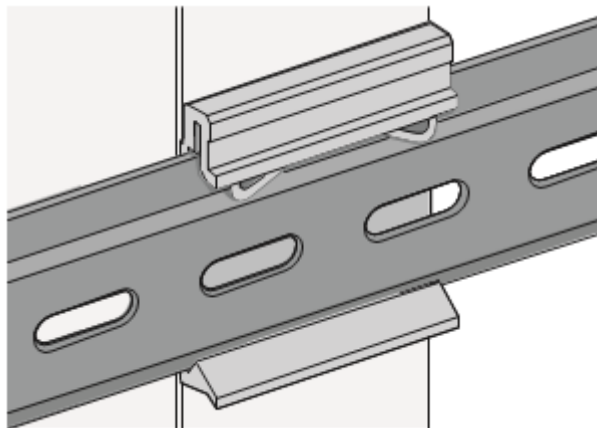


Figure 2.26 Correctly Installed DIN Rail Kit (EKI-122x Series)

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.

2.4.1.3 Removing the DIN-Rail Mounting Kit (EKI-1211 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.

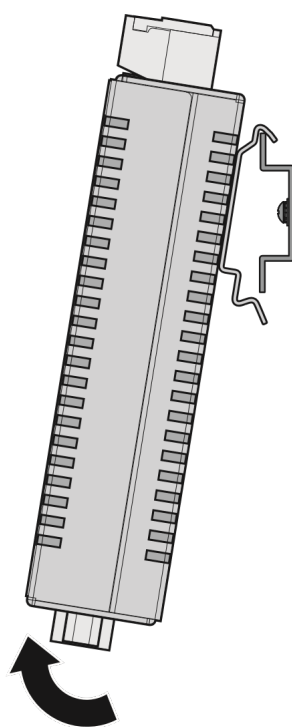


Figure 2.27 Removing the DIN-Rail (EKI-1211 Series)

2.4.1.4 Removing the DIN-Rail Mounting Kit (EKI-122x 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.

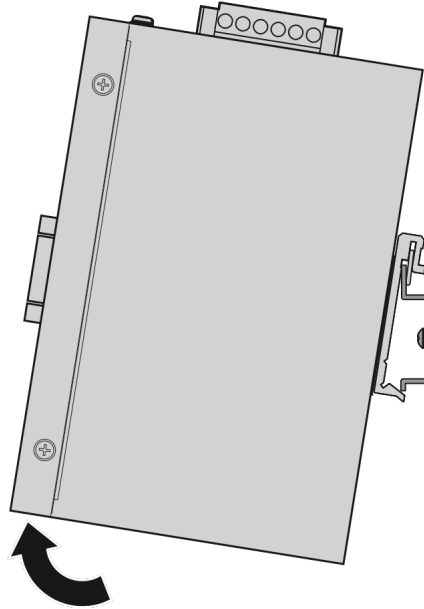


Figure 2.28 Removing the DIN-Rail (EKI-122x Series)

2.4.2 Wall-Mounting

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

2.4.2.1 Installing on EKI-1211 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. 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.

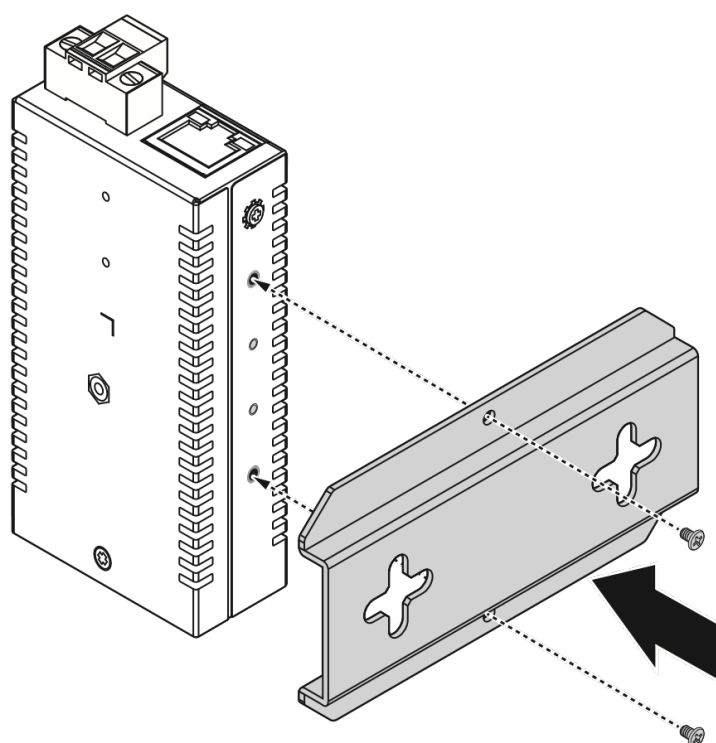


Figure 2.29 Installing Wall Mount Plates (EKI-1211 Series)

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 2.30 Securing Wall Mounting Screws

Note! *The accessory does not come with wall screws for fixing the system to the wall.*



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.

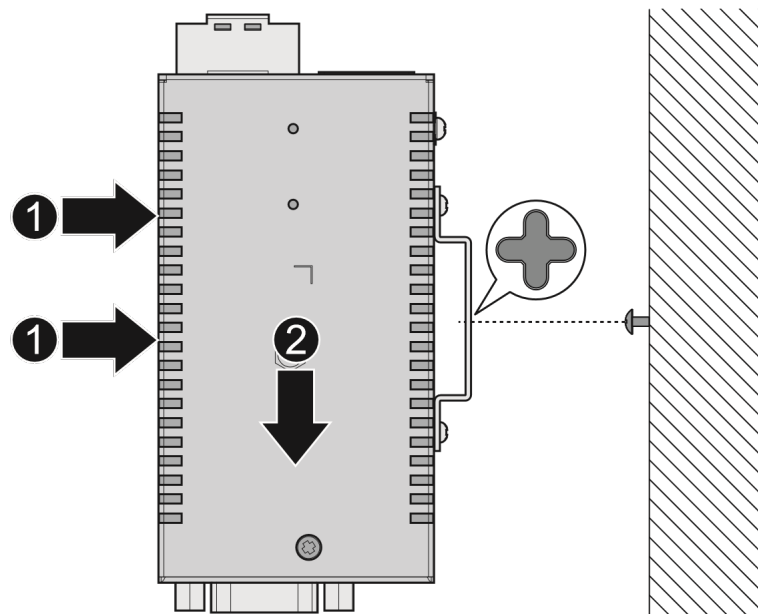


Figure 2.31 Wall Mount Installation (EKI-1211 Series)

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

2.4.2.2 Installing on EKI-122x 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.

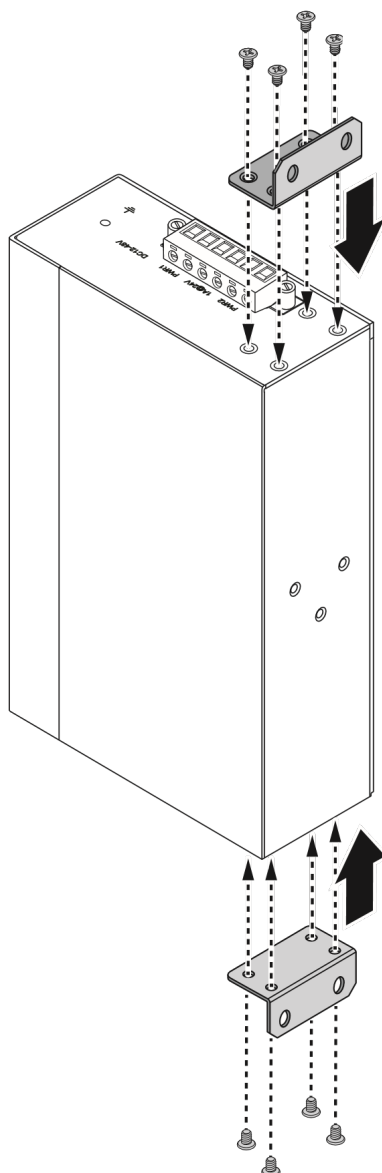


Figure 2.32 Installing Wall Mount Plates (EKI-122x Series)

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 2.33 Securing Wall Mounting Screws

Note! *The accessory does not come with wall screws for fixing the system to the wall.*



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).

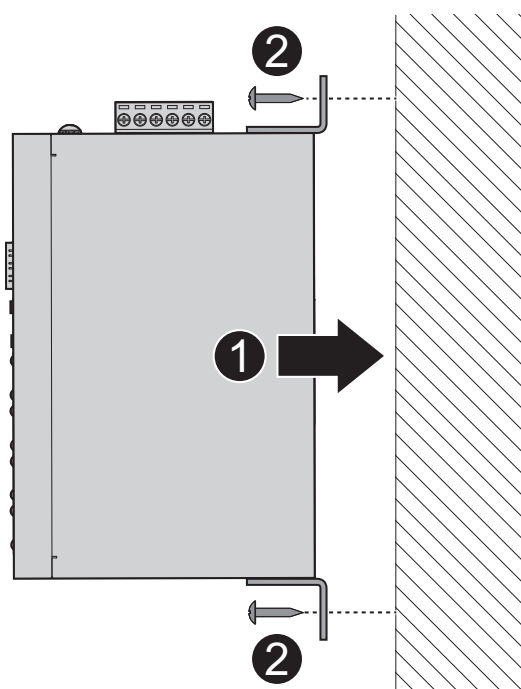


Figure 2.34 Wall Mount Installation (EKI-122x Series)

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

2.4.3 Serial Connection

EKI-1200 Series provides up to four ports DB9 (male) connectors. RS-232/422/485 pin assignments as below:

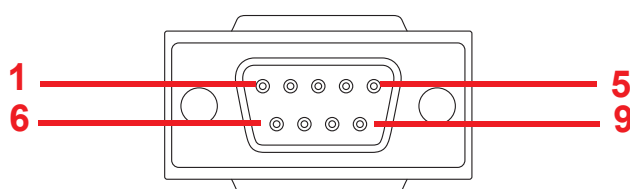


Figure 2.35 DB9 Pin Assignment

Table 2.18: Serial Connection									
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				

2.4.4 Terminal Block (RS-422, RS-485)

The DE versions have a terminal block connector for RS-422 and RS-485 signals.

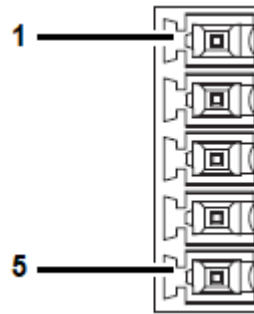


Table 2.19: Terminal Block (RS-422, RS-485)

Pin	1	2	3	4	5
RS-422 (RS485-4W)	GND	RX-	RX+	TX+	TX-
RS-485	GND			DATA+	DATA-

2.4.5 Power Connections

2.4.5.1 Connecting the Power Adapter

The EKI-1211 offers three types of power adapters (available for separate purchase) to meet power requirements. The adapter types are as follows:

- BB-RPS-v2-WR2-US Power Adapter 12v 0.5A US
- BB-RPS-v2-WR2-EU Power Adapter 12v 0.5A Europe
- BB-RPS-v2-WR2-UK Power Adapter 12v 0.5A UK

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

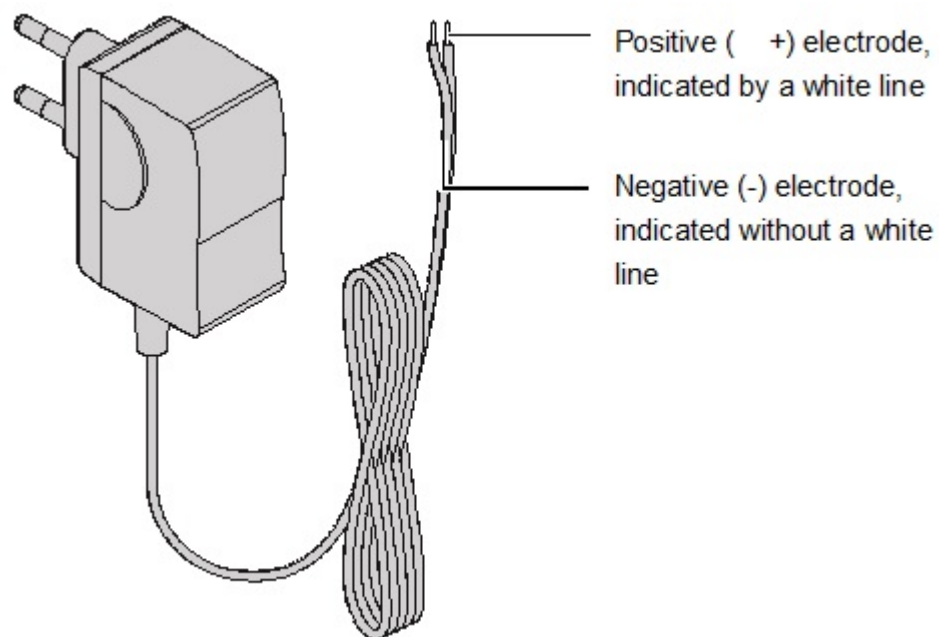


Figure 2.36 Power Adapter Electrode Label Indication

2.4.5.2 Wiring the Power Inputs

The EKI-122x-CE Series supports dual 12 to 48 VDC power inputs and power-fail relay output while the EKI-1211 supports 9 to 36 VDC power inputs.

The series consist of one terminal block connector. See the following steps to wire the power wire.

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.*



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-122x is working properly, the blue power LED lights up, indicating that it is receiving power.

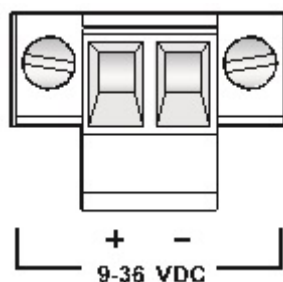


Figure 2.37 Power Wiring for EKI-1211

The EKI-122x series also support dual 12 to 48 V_{DC} 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.

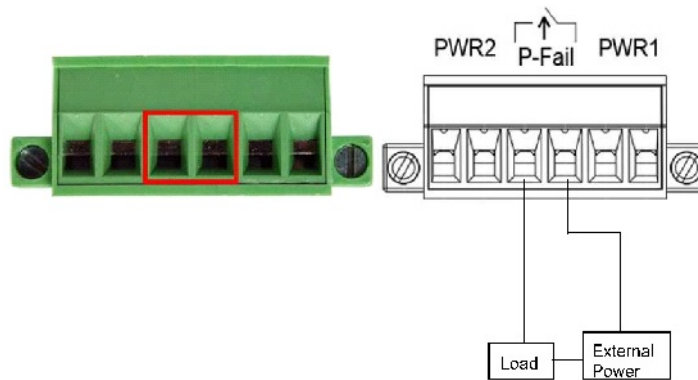


Figure 2.38 Power Wiring for EKI-1200-CE Series

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

Configuration

3.1 Configuration Utility Overview

Advantech EKI series serial device servers provide an easy-to-use utility for configuring your serial device server through an Ethernet connection. For secure administration, access rights for configuration can be restricted to only one host PC. With this security function enabled, other PCs will not have permission to configure the device. Once the installation of the Advantech EKI Device Configuration Utility is complete, the serial device servers are ready for use and configuration.

The Advantech EKI Device Configuration Utility is an excellent tool for managing device servers. It allows you to connect to and configure both local and remote Advantech serial device servers with ease. The utility provides access to the following functions:

- Configure network settings (set the IP address, gateway address, and subnet mask)
- View and set serial port parameters (configure the operating mode, baud rate, and other serial port settings)
- Perform diagnostic tests (virtual COM port testing, port status list)
- Perform administrative functions (export and import serial device server settings, manage access IPs, assign descriptive names, and upgrade firmware)

Note! *The EKI-1200 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 4.*



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> 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.

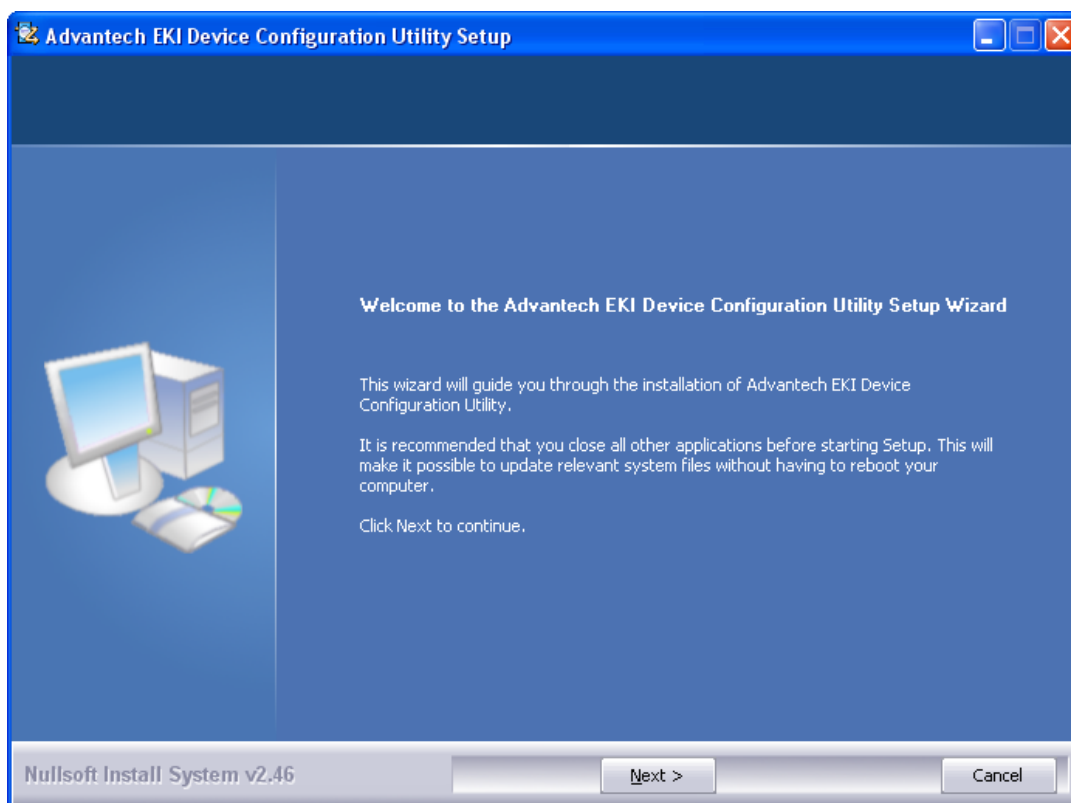


Figure 3.1 InstallShield Wizard 1 of 4

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

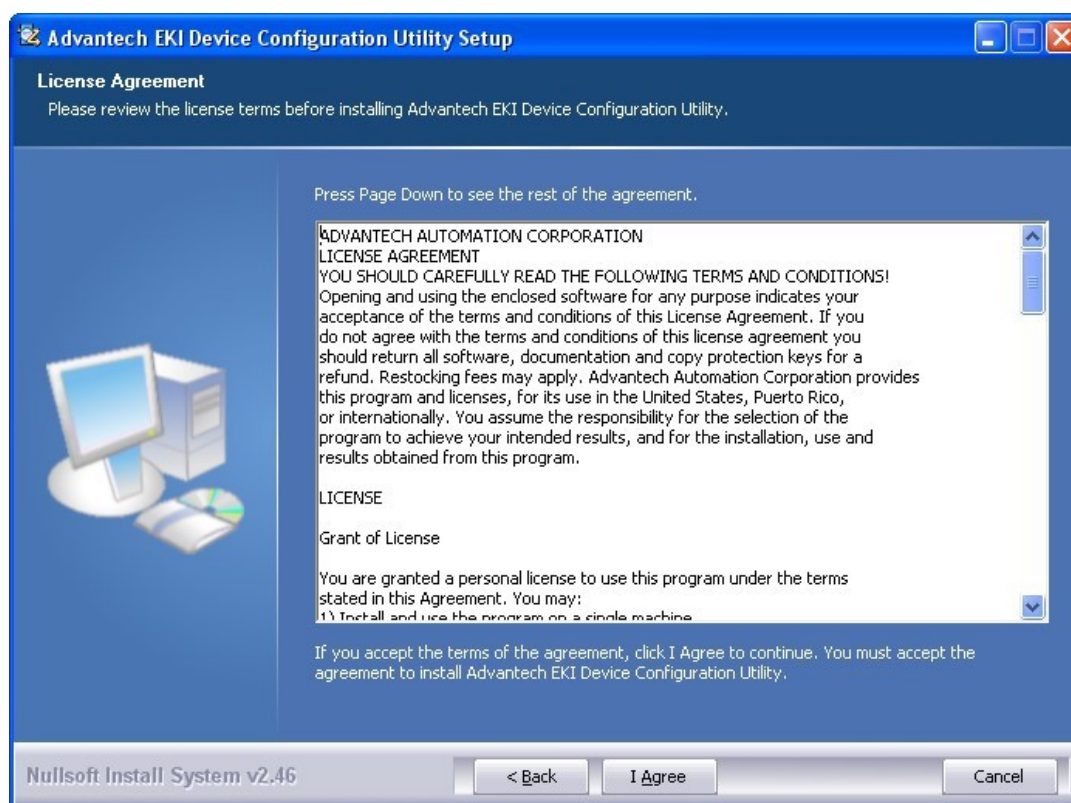


Figure 3.2 InstallShield Wizard 2 of 4

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

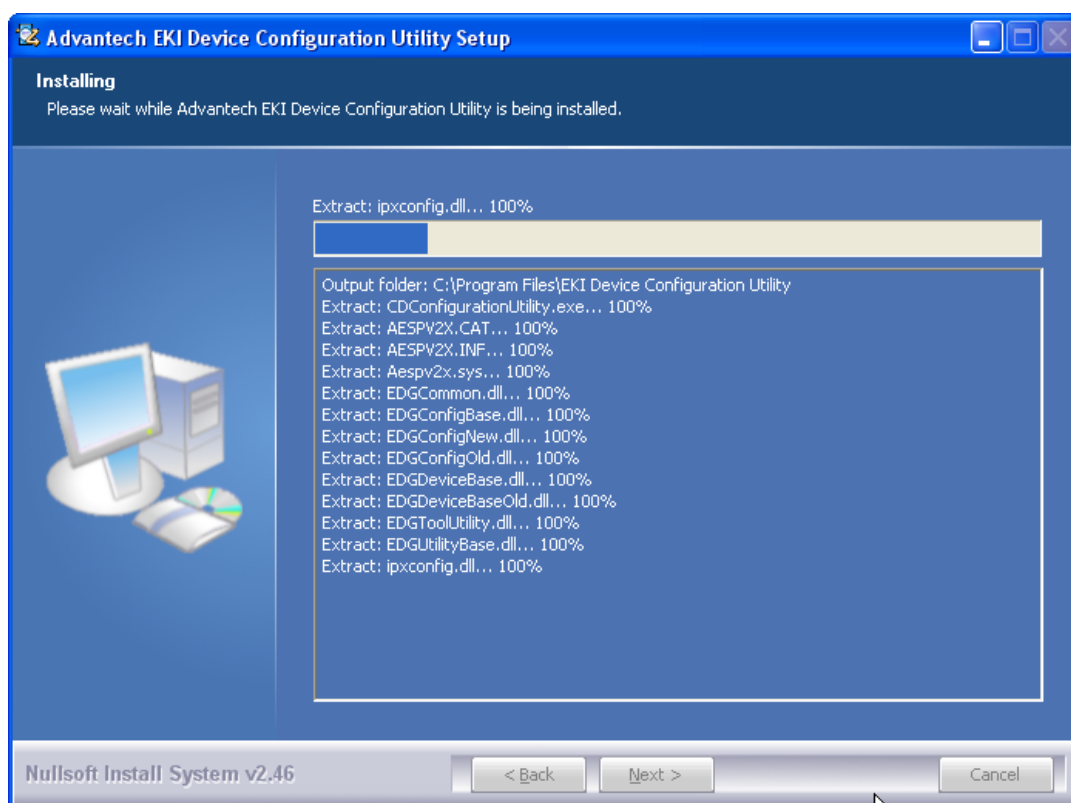


Figure 3.3 InstallShield Wizard 3 of 4

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.

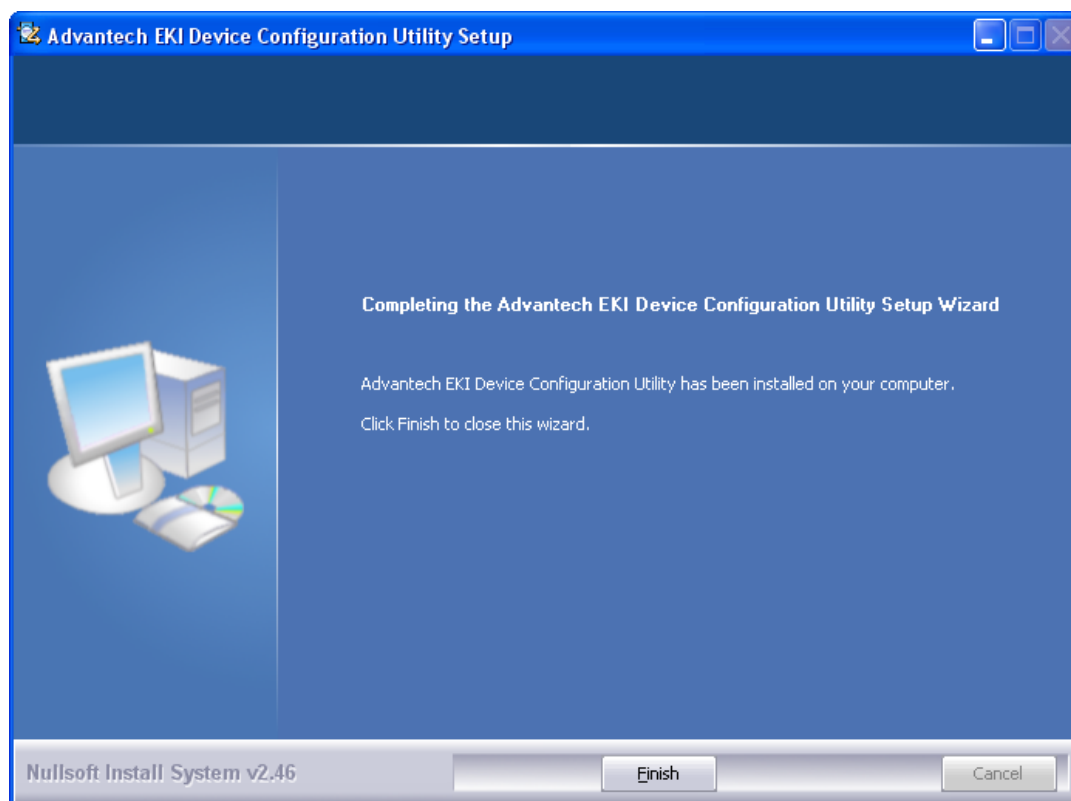


Figure 3.4 InstallShield Wizard 4 of 4

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.

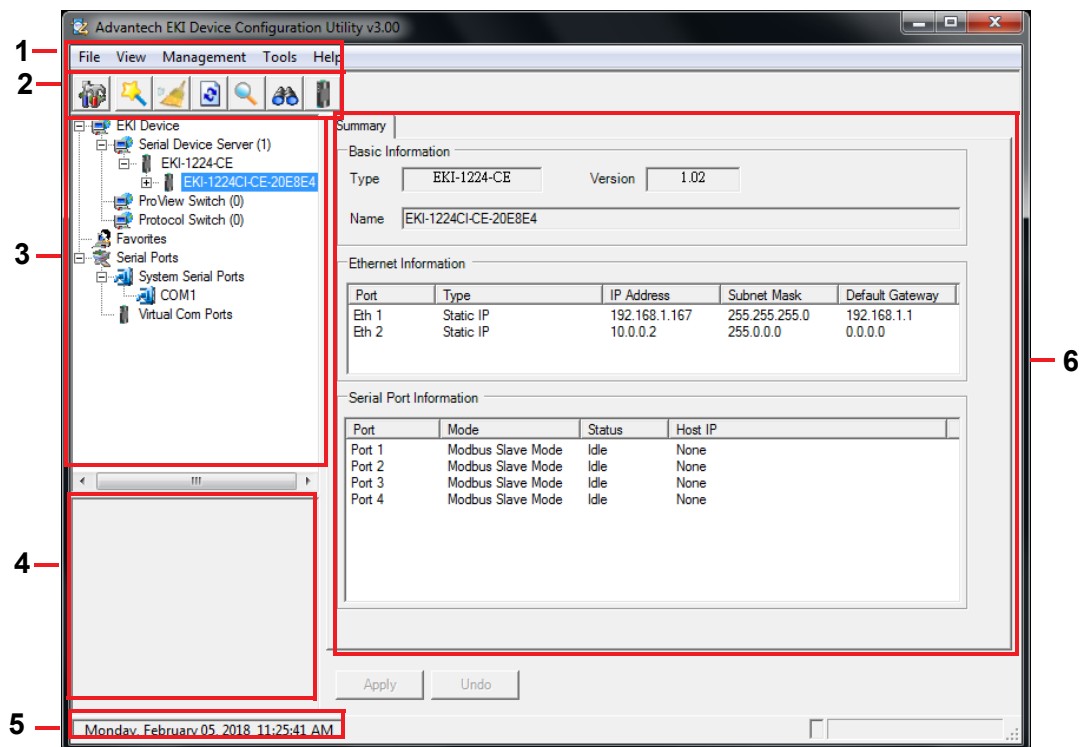


Figure 3.5 Configuration Utility Overview

Table 3.1: Menu Bar

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.

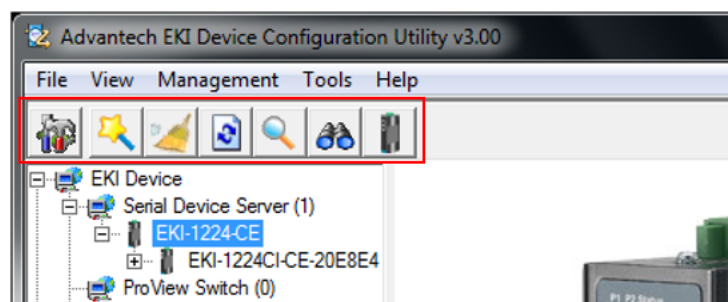


Figure 3.6 Quick Tool Bar Overview

Table 3.2: Quick Tool Bar

Icon	Item	Description
	Utility Settings	Click to 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.

3.4.1 Utility Settings

3.4.1.1 Main Form Setting

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

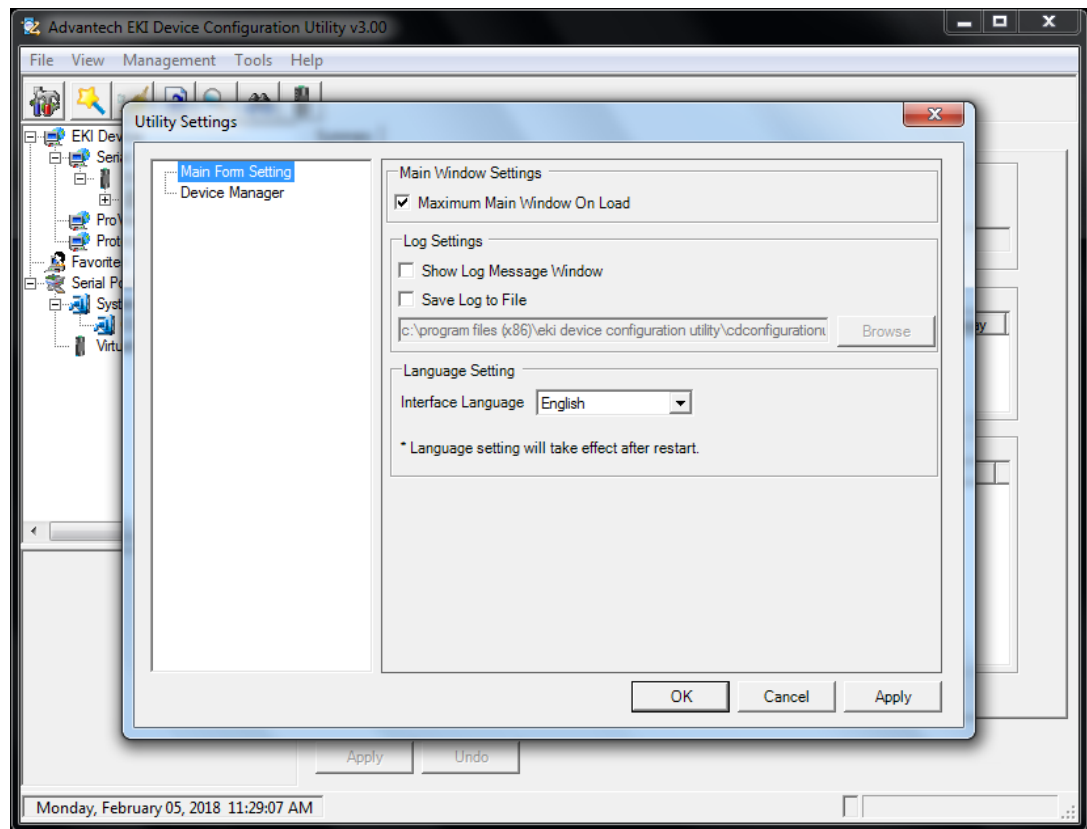


Figure 3.7 View > Settings > Main Form Setting

Table 3.3: Quick Tool Bar

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.

3.4.1.2 Device Manager

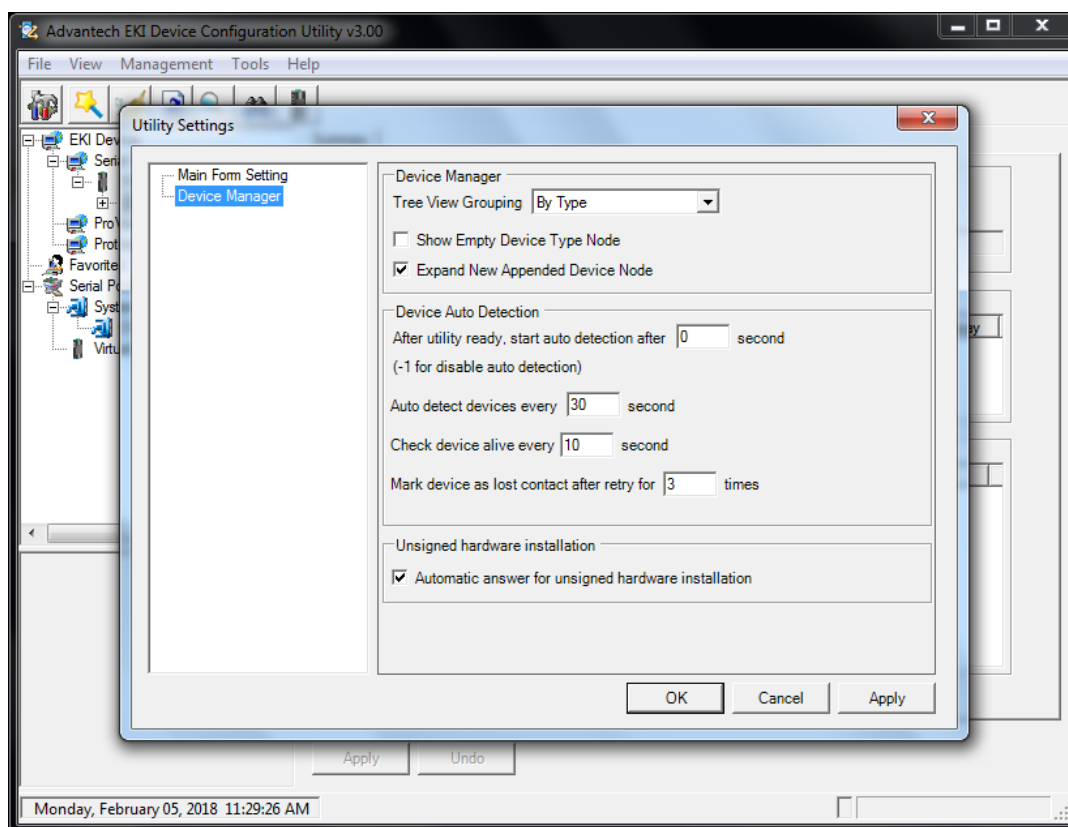


Figure 3.8 View > Settings > Device Manager

Table 3.4: Quick Tool Bar

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.

3.4.2 Discovering Your Device Server

3.4.2.1 Auto Searching

Advantech Serial Device Server Configuration Utility will automatically search all the EKI-1200 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 devices on the same network domain will be searched and displayed on Device Server List Area. You can click on a 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 “-” before the model name, and the utility will collapse the tree structure.

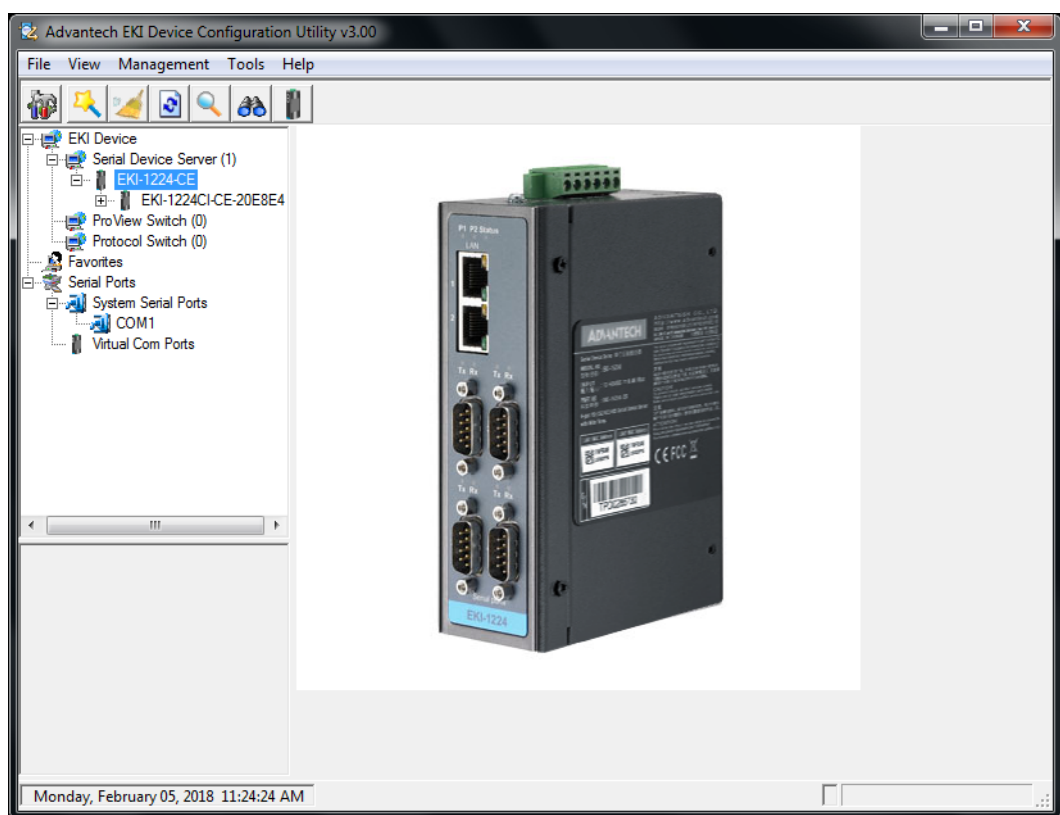


Figure 3.9 Open View of Serial Device Configuration Utility

In the previous figure, the EKI serial device server is listed as EKI-1224-CE-20E8E4.

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”. In the serial port information frame, it displays the operation mode, status and connected host IP.

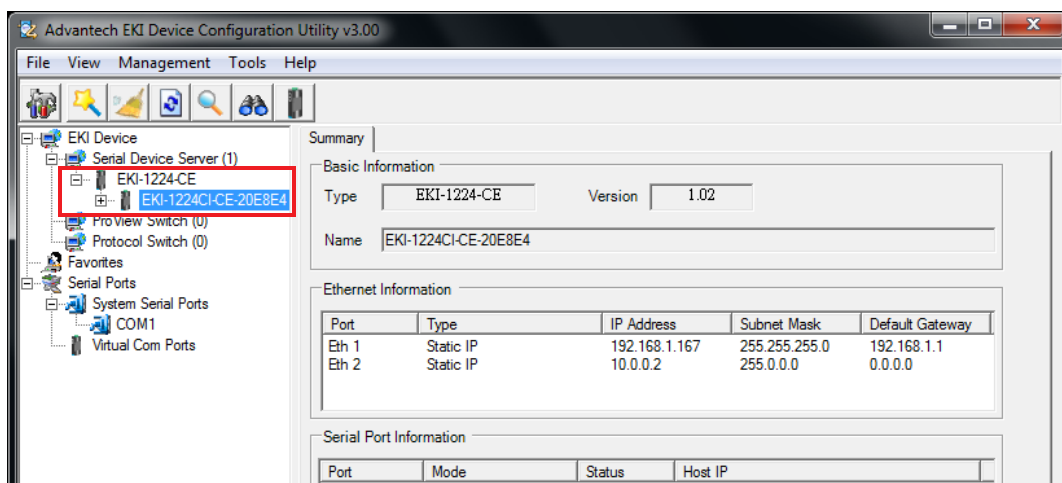


Figure 3.10 Selecting a Group

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

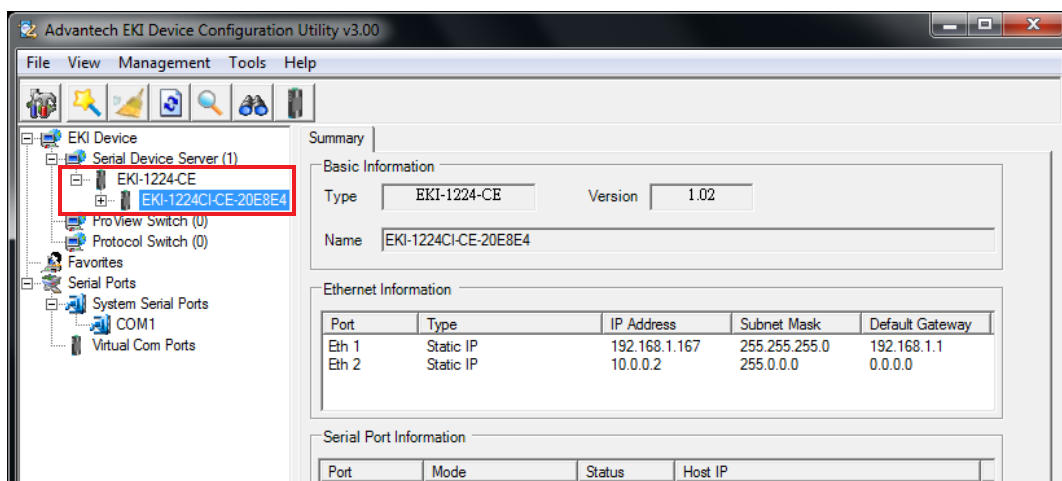


Figure 3.11 Selecting a Device

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

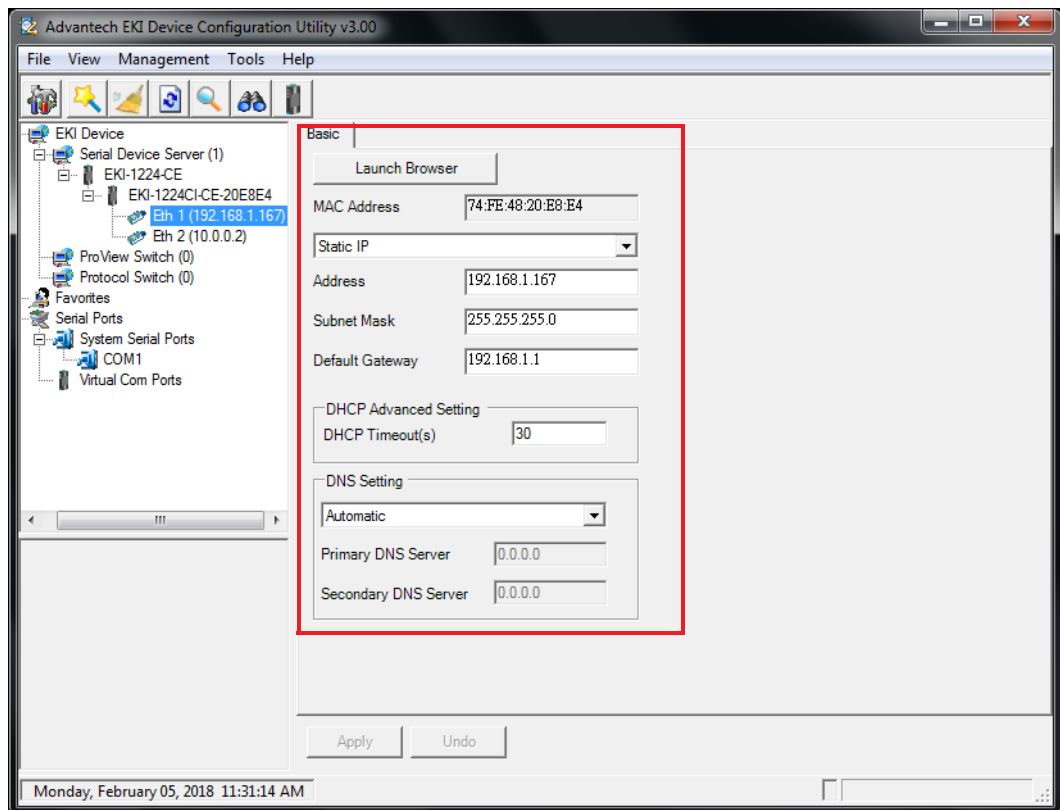


Figure 3.12 Viewing Basic Settings

3.4.3 Network Settings

This section explains how to configure the EKI-1200 Series network settings using the configuration utility to allow it to a serial device over a network connection.

Click on the “+” before the model name (e.g. EKI-1222) to expand the device’s sub-menu listing. Click on the “+” before the device name, and the utility expands the interfaces on the device server.

Select the Ethernet interface (Eth1 or Eth2) to view the settings and modify them.

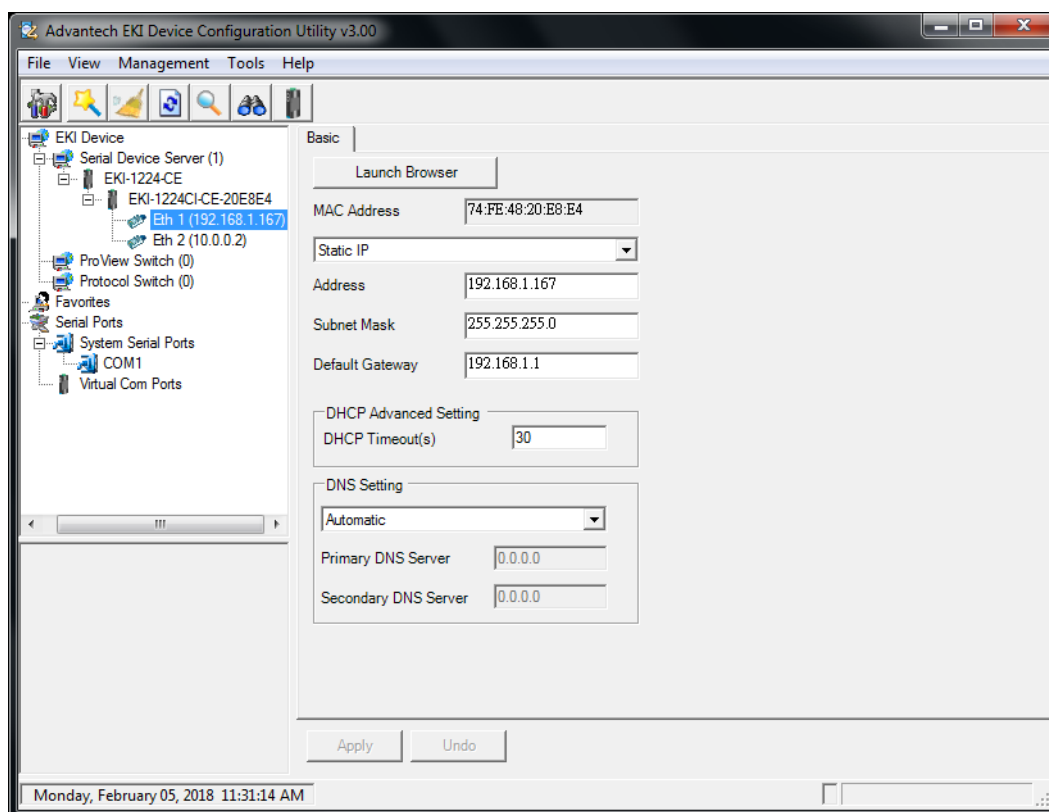


Figure 3.13 Utility Overview

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

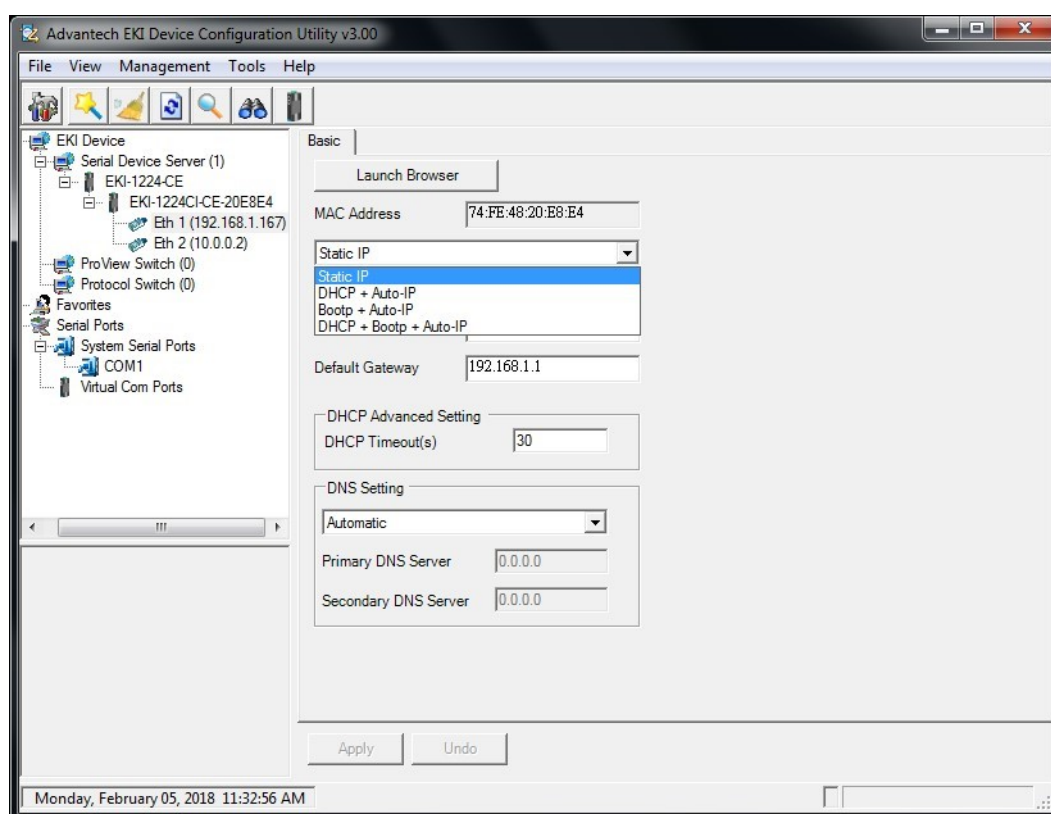


Figure 3.14 Network Settings Overview

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 serial 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.

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

To reset the device:

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

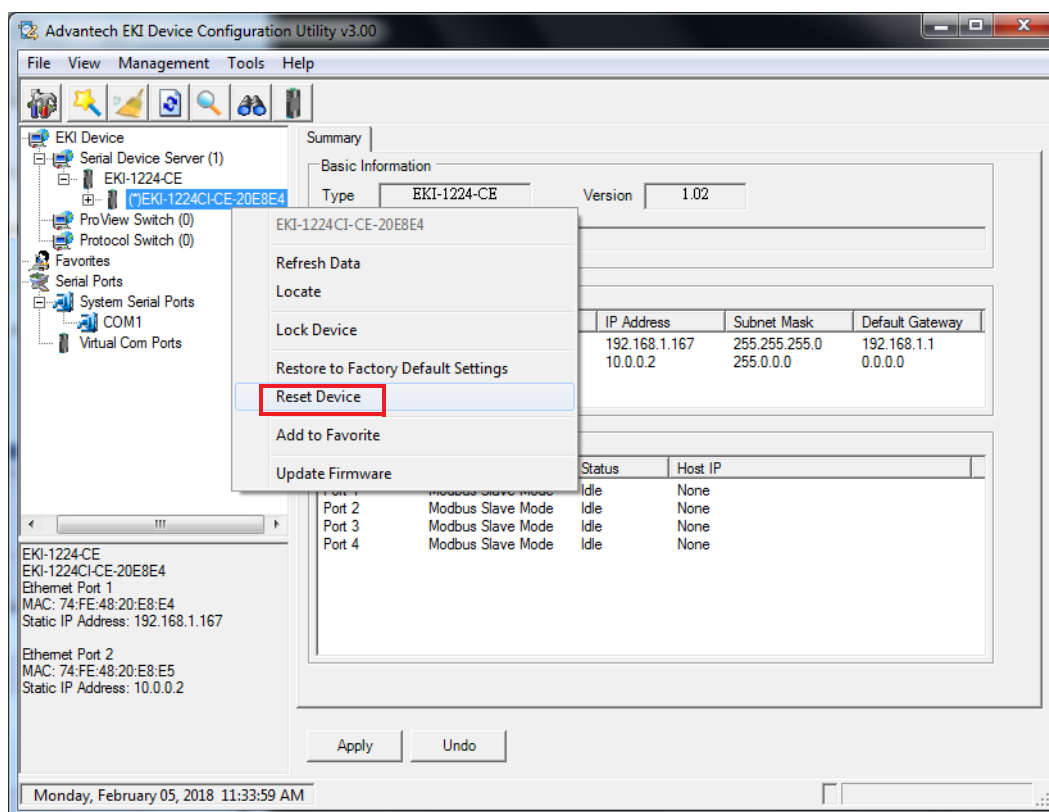


Figure 3.15 Reset Device

3.5 Administrator Settings

3.5.1 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.

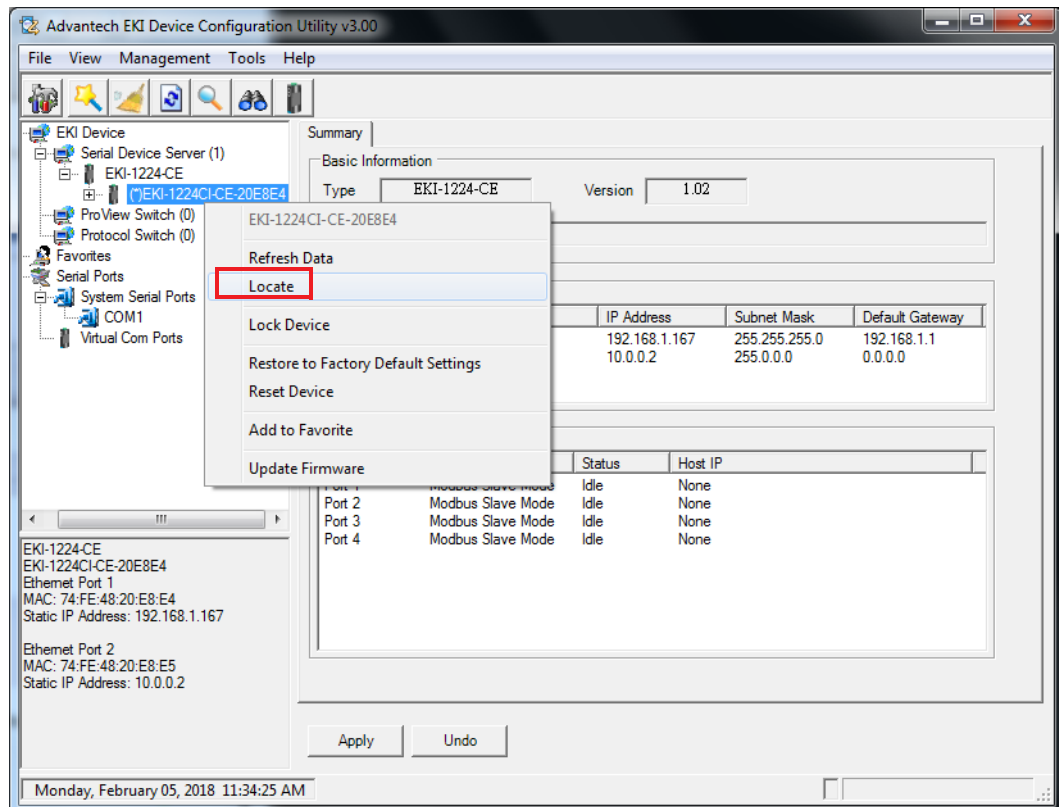


Figure 3.16 Locate the Serial Device Server

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

3.5.2 Securing the Serial Device Server

3.5.2.1 Lock the Serial Device Server

The configuration utility provides a “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**.

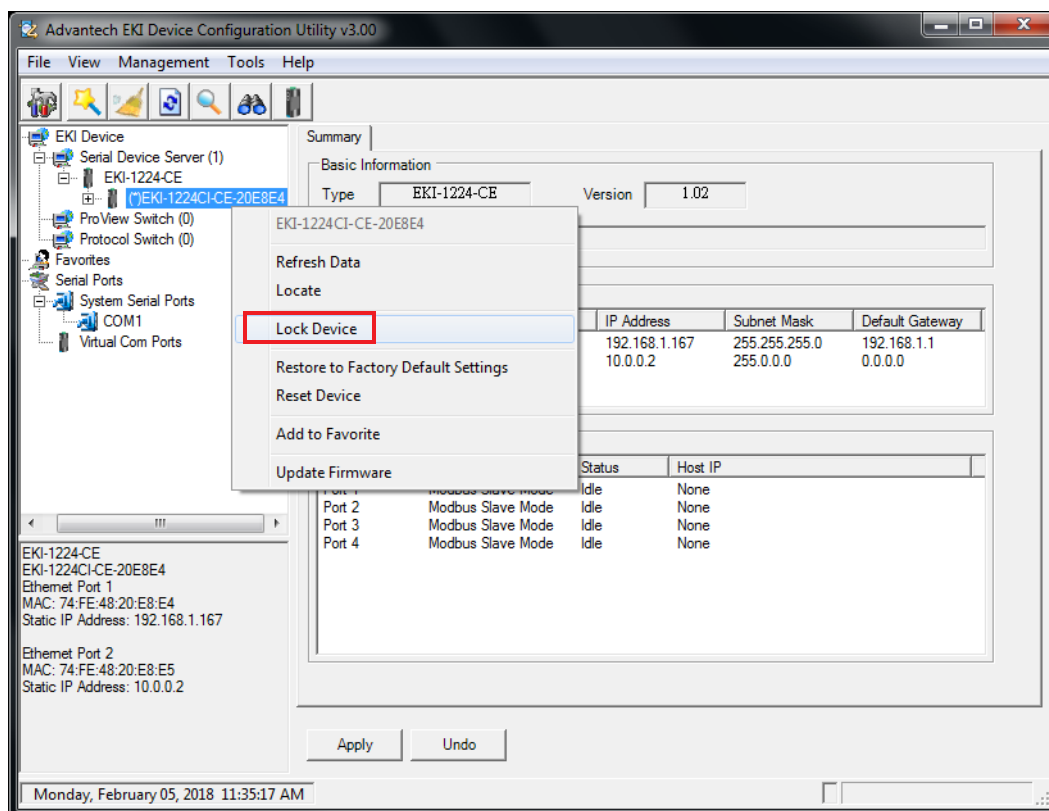


Figure 3.17 Lock the Serial Device Server

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

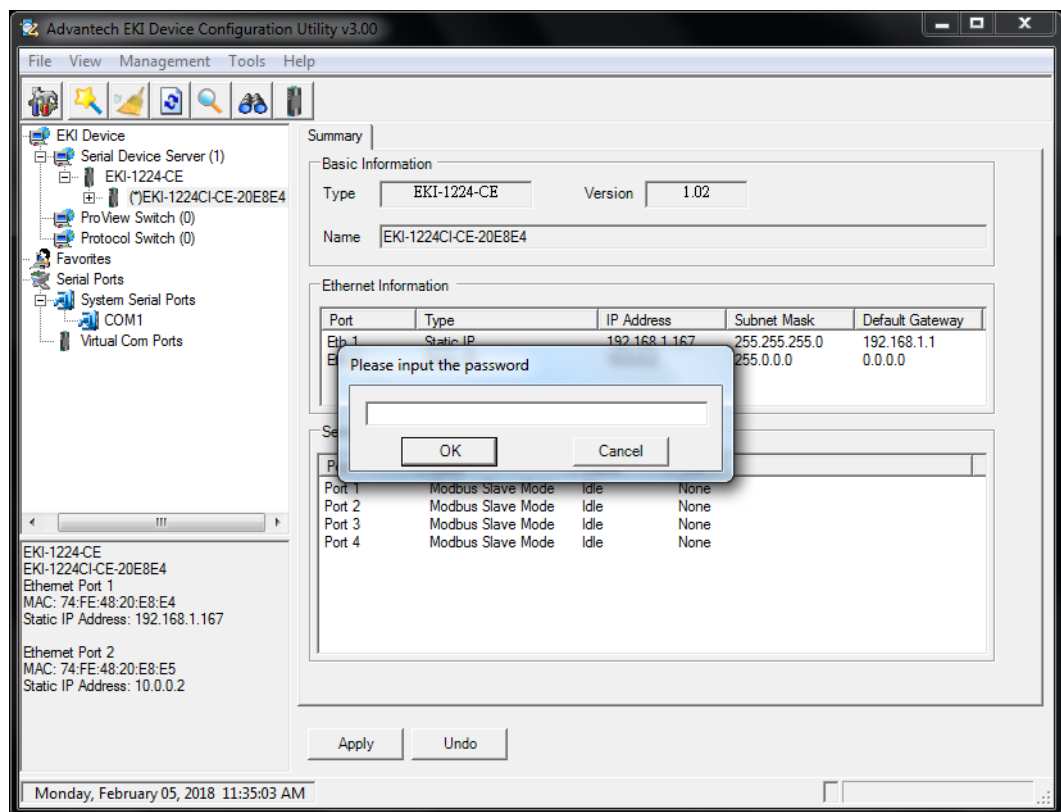


Figure 3.18 Enter a Password

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.

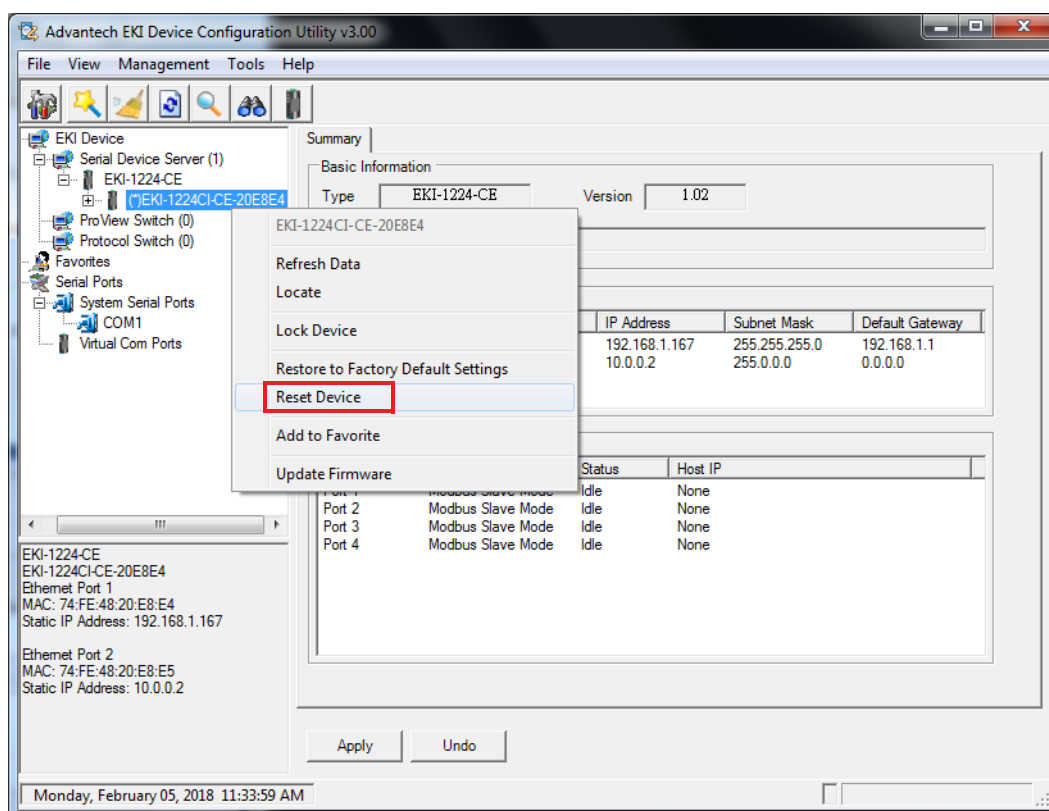


Figure 3.19 Reset Device

3.5.2.2 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.

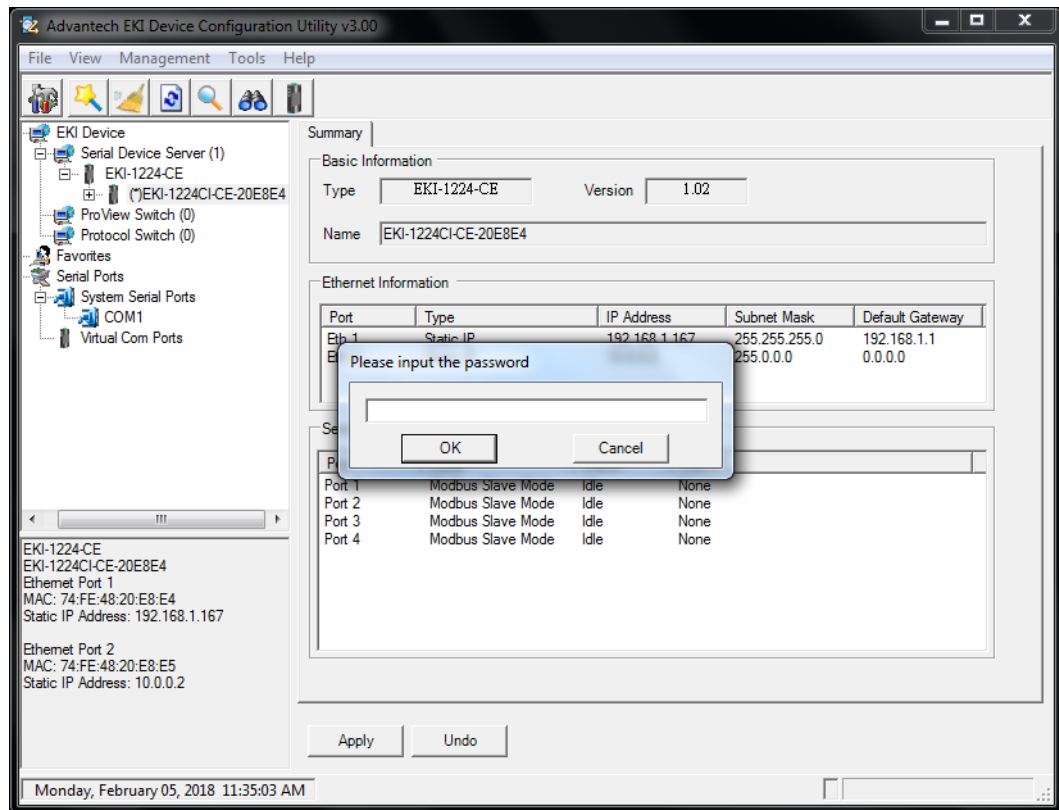


Figure 3.20 Unlock the Serial Device Server

3. Enter the password as entered in the Lock Device procedure.
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.

3.5.3 Restore to Factory Default Settings

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

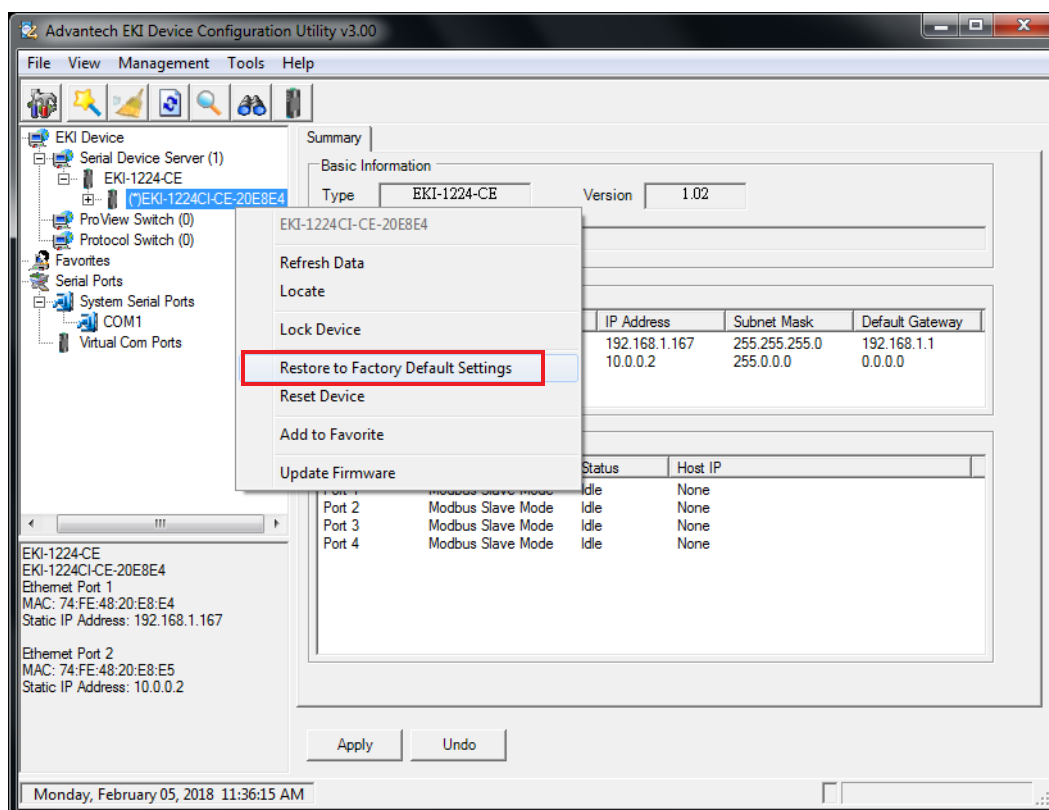


Figure 3.21 Restore to Factory Default Settings

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, 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.

3.5.4 Resetting the Device

The **Reset Device** function allows 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 must then 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.

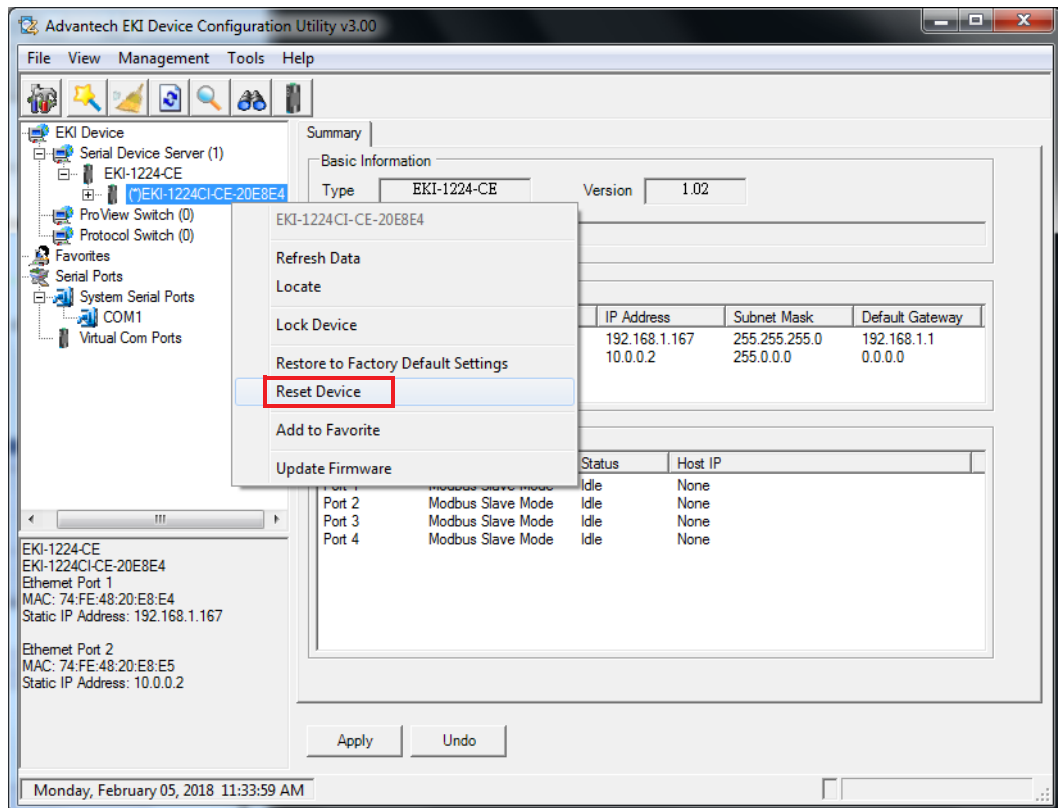


Figure 3.22 Reset Device

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

3.5.5 Add to Favorite

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

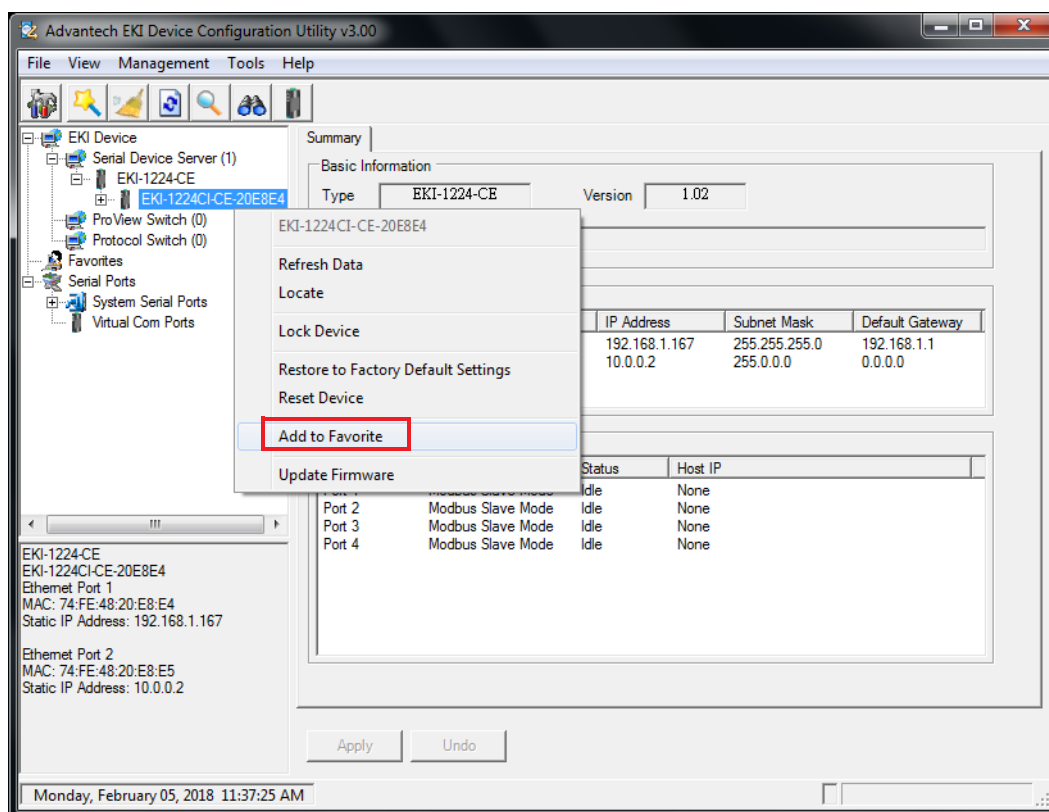


Figure 3.23 Add to Favorite

3.5.6 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**.

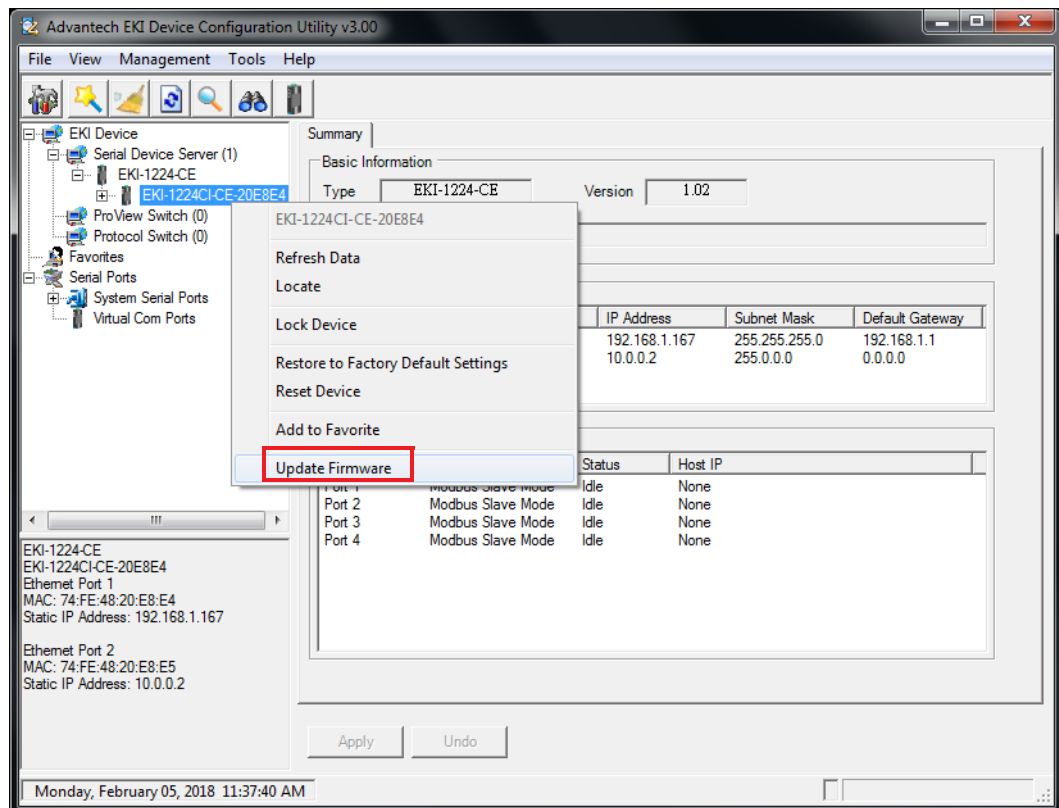


Figure 3.24 Update Firmware

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-1200 Series serial device server or the host PC can establish the TCP connection with the serial device server while doing the updating firmware process.



Chapter4

Web Interface

4.1 Overview

An EKI Modbus gateway 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 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.

4.2 Accessing the Web Page

4.2.1 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**.

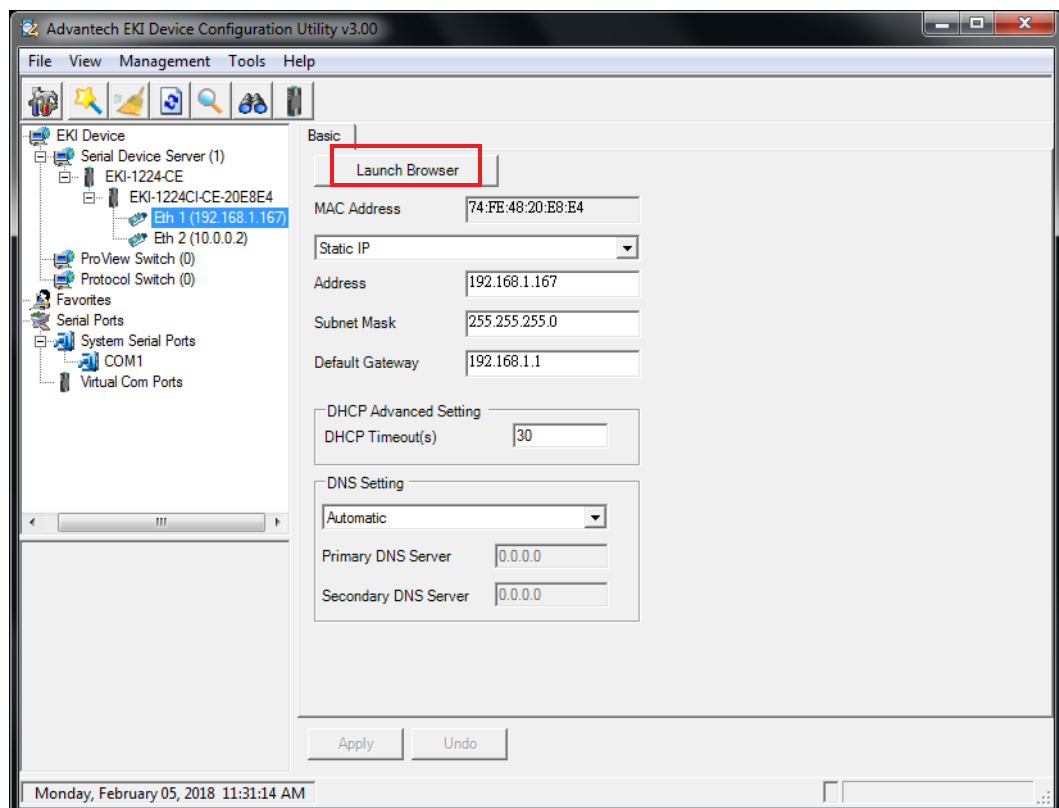


Figure 4.1 Accessing the Web Page via Configuration Utility

4.2.2 Accessing the Web Page

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 are: Eth1, 10.0.0.1; Eth2, 10.0.0.2 (EKI-1211 defaults is Eth1, 10.0.0.1).

4.3 System

You can change the Device Name and Device Description on this page. You can also modify the Timezone settings.
To access this page, click **System**.

System Configuration

Firmware version1.12

Revision number6951

Device Name

Device Name

Device Description

Device Description

SSDP

☒ Disable

☐ Enable

Local Time

Year

2024

Month

9

Day

13

Hour

21

Minute

58

Second

34

Time Zone

(GMT +0)

Time Server

Time Server

Daylight Saving Time

☐ Disable

☒ Enable

Start Time

First

Sunday

January

HH:MM

End Time

First

Sunday

January

HH:MM

Time Zone Offset

min. (-120 ~ 120)

Redundant

Redundant ID for Server Mode

1

#	Redundant ID	Primary Path	Secondary Path	
1	Redundant ID	Primary Path	Secondary Path	Resume

Virtual Gateway Settings

Virtual Gateway

☐ Disable

☒ Enable

Interface

Eth 1

Virtual IP

Virtual IP

ID

1

(1 - 255)

Priority

Primary

Save

Figure 4.2 System (EKI-122x)

EKI-1200 User Manual

60

System Configuration

Firmware version: 1.11

Revision number: 6917

Device Name:

Device Description:

Server Mapping: ☐ Disable ☒ Enable

Modbus Settings

Listen Port for Server Mode:

Redundant

Redundant ID for Server Mode:

Figure 4.3 System (EKI-1211)

The following table describes the items in the previous figure.

Table 4.1: 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.
Server Mapping**	Enable/ Disable Mapping Peer for Receiving Data
SSDP*	When enabled, the gateway is discoverable in a Windows network. When disabled, the gateway is discoverable by the EKI firmware update 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 Zone*	Select the GMT offset for your time zone. If using automatic Daylight Saving Time adjustments, select the offset for Standard Time here.
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.

Table 4.1: System**Redundant**

Redundant ID for Server Mode	Enter the number of Redundancy Enhanced Modbus IDs to configure. The gateway can map pairs of devices as a group, with one set as primary and one set as secondary (backup). Your Modbus clients access this group with one virtual server ID. If the primary device fails, the gateway will report values from the secondary device. Once the primary device is replaced, just click Resume to switch back to it.	
	Redundant ID	Enter a virtual server ID to access the group.
	Primary Path	Enter the mapped ID of the primary device. Mapped IDs for individual devices are set in the Port Configuration > Operation screen. See section 3.6.2.
	Secondary Path	Enter the mapped ID of the secondary device. Mapped IDs for individual devices are set in the Port Configuration > Operation screen. See section 3.6.2.
	Resume	Click to switch back to the primary device after replacing a failed device.

Virtual Gateway Settings*

Virtual Gateway	Virtual Gateway allows multiple EKI-12xx devices on the same network to act as one device with 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.
	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-122x's feature

**EKI-1211's feature

Note!

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

4.4 Service (EKI-122x)

The Service tab contains menu options for configuring the Modbus Agent, the Web Server, and RADIUS/LDAP/Local user management.

4.4.1 Modbus Settings

The Modbus Settings screen covers basic settings. When in Modbus Legacy Mode, only the Listen Port is configurable on this screen. Disabling legacy mode enables several additional settings here. The setting's effect on other features is documented throughout this chapter.

The screenshot shows the 'Modbus Settings' window. At the top, 'Modbus Legacy Mode' is checked. Below it, 'Listen Port for Server Mode' is set to 502, with a range of (1 ~ 65535) indicated. A 'Save' button is at the bottom.

Figure 4.4 Modbus Settings

The screenshot shows the 'Modbus Settings' window with 'Modbus Legacy Mode' unchecked. Additional settings are visible: 'Listen Port for Server Mode' is 502 (1 ~ 65535), 'TCP User Timeout (s)' is 3 (0 ~ 86400), 'Keepalive' is set to 'Disable' (radio buttons), 'Keep Idle Time (s)' is disabled (checkbox) with a range of ~ 7200 (1), 'Keep Interval (s)' is disabled (checkbox) with a range of ~ 240 (1), and 'Keep Count' is disabled (checkbox) with a range of ~ 9 (1). A 'Save' button is at the bottom.

Figure 4.5 Disable Modbus Legacy Mode

The following table describes the items in the previous figure.

Table 4.2: Modbus Settings

Item	Description
Modbus Legacy Mode	In Legacy Mode the gateway's functionality matches that of earlier versions of the firmware. Turning off Legacy Mode will enable new parameters in several areas of the UI. See subsection "4.7.8 Just-In-Time (JIT) Diagnostics (EKI-122x)" on page 76 for its impact on the JIT settings. Disabling Legacy Mode enables all other parameters on this screen other than Listen Port.
Listen Port for Server Mode	Enter a value to identify the channel for remote initiating connections. The default value is 502.
TCP User Timeout (s)	If Keep Alive is not enabled, the connection will be dropped after no activity for this amount of time.
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.
Save	Click Save to save the values and update the screen.

4.4.2 Modbus Agent (EKI-122x)

Agent Mode turns the gateway into a temporary data collector and allows it to query data from different stations, or Modbus addresses, and put them together in a contiguous buffer memory region. A Modbus client can then access the rearranged data, and get all the data with only one query.

Modbus Agent Setting

Modbus Agent Status ☒ Enable ☐ Disable

Modbus Agent Port

Add New Channel

(The remaining channels: 5)

IP Address

Port

Command Mapping Table (The remaining commands: 127)

Channel 0 (10.0.10.2:502)

Timeout(ms) (1 - 30000)

Delay(ms) (0 - 6000)

Retry Interval(s) (1 - 30)

Action	Map	Exception	UID	Address	Length	Type	Options
						01: Coil Status	☐ byteswap ☐ write

Figure 4.6 Modbus Agent Setting

The following table describes the items in the previous figure.

Table 4.3: Modbus Agent*

Item	Description
Modbus Agent Status	Enable/Disable Modbus Agent Mode .
Modbus Agent Port	Enter the TCP port for the Modbus Agent. This port should be different than the TCP port (502 by default) used by the ordinary Modbus Server Mode of the gateway.
Add New Channel	Each channel represents one Modbus client TCP connection. Maximum channels depend on model: EKI-1221-CE: 5 channels EKI-1222-CE: 6 channels EKI-1224-CE: 8 channels Enter the IP address and port for the Modbus server TCP connection and click Add. The channel IP and port can be edited, or the channel removed completely, using the Edit and Delete icons adjacent to the channel number, respectively.
Timeout (ms)	For each channel, set the timeout value for the server device.
Delay (ms)	For each channel, set the scan interval (delay) for the server device.
Retry Interval(s)	If a device fails to respond, query again after this interval.
Add/Delete Command	Add commands to the channel using the plus icon, or delete commands from the channel using the trashcan icon.
Map	Buffer memory address for the data on the gateway.
Exception	Buffer memory address for Modbus Exception Codes on the gateway.
UID	Target device ID.
Address	Starting Modbus address on the target device
Length	Address length to be read/write.
Type	Modbus Function Code. 01: Coil Status means 02: Input Status means 03: Holding Register means 04: Input Register means
Options	Byte Swap: applies to Coil Status and Input Status functions Write: applies to Coil Status and Holding Register functions
Clear	Erases the entire Modbus Agent configuration
Overview	Displays the Layout Overview shown in Figure 3.5.
Save	Click Save to save the values and update the screen.

The Modbus Agent can collect data from both Ethernet and serial devices. For Ethernet devices, enter the server device's IP address and port when adding a channel. For serial devices, set the IP address to the address of the gateway (or 127.0.0.1). Set the port to either the configured Modbus Server Mode TCP port or the configured Direct Access Port for the COM port.

Check the configured result in Overview Window, click the Overview button to view the mapping result.

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



The Layout Overview gives a graphical representation of all the mapped addresses used by the Modbus Agent, as shown in Figure 3.5. It can help visualize the structure of the consolidated data.



Figure 4.7 Modbus Agent - Layout Overview

The following table describes the items in the previous figure.

Table 4.4: Layout Overview	
Item	Description
Global	Each block represents 1024 addresses. The color indicates the status of the block, and an expanded view of the selected block is shown in the Detail section.
Detail	Memory usage shown in grids. Different colors represent different purpose. The address here is the buffered Modbus Address for another controller/SCADA to query. Click on the grid will also show the information of it on the right column, including related Command/Channel, mapping address, length, Exception Code Address, etc.
Information	Select an individual address to display its configuration data in the Information panel.

4.4.3 Web Server (EKI-122x)

The EKI-12xx 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 4.8 Web Server

The following table describes the items in the previous figure.

Table 4.5: 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.
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.*



4.4.4 LDAP and RADIUS Setting (EKI-122x)

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.

4.4.4.1 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

Super Access Setting

LDAP Super User DN: ex: ou=root,dc=example,dc=org

Access Setting

Port	Config DN ?
1	
2	

Figure 4.9 LDAP Setting

The following table describes the items in the previous figure.

Table 4.6: 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.

4.4.4.2 RADIUS Setting

The screenshot shows the 'Radius Setting' configuration interface. It contains several input fields and sections:

- Radius Server IP Address:** A text input field.
- Radius Server Port:** A text input field with the value '1812' and a range '(1 ~ 65535)'.
- Radius Server Secret Passphrase:** A text input field.
- Radius Server EAP Type:** A dropdown menu with 'MD5' selected.
- Radius Timeout:** A text input field with the value '60' and a range '(0 ~ 86400)'.
- Radius Rapid:** A text input field with the value '10' and a range '(0 ~ 120)'.
- Super Access Setting:** A section containing 'Radius Super User Header' with the value 'ex. root/'.
- Access Setting:** A table with two columns: 'Port' and 'Config Header'. It has two rows, numbered 1 and 2, each with an input field for the 'Config Header'.
- Save:** A blue button at the bottom center.

Figure 4.10 Radius Setting

The following table describes the items in the previous figure.

Table 4.7: 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	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 Rapid	Enter the string to indicate the time period used to arrange a rapid permission checkup.
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.

4.4.5 User Management (EKI-122x)

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 displays the 'User Management' interface. The top section, titled 'Authentication', features a 'Method' dropdown menu set to 'Local User' and a 'Save' button. Below this, the 'Local User Management' section 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. At the bottom, the 'Access Setting' section shows a table with columns: Action, Username, Password(SHA1), and Attribute. A green plus sign (+) is visible in the 'Action' column, indicating an option to add a new user.

Figure 4.11 User Management

The following table describes the items in the previous figure.

Table 4.8: 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.

4.5 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**.

The screenshot shows the 'Eth1 Configuration' window. It is divided into three sections: 'IPv4 Configuration', 'DNS Configuration', and 'Current Status'. In the 'IPv4 Configuration' section, 'Mode' is set to 'Static IP'. The 'MAC Address' is '74-FE-48-7E-BB-F8'. The 'IP Address' is '10.0.0.1', 'Subnet Mask' is '255.0.0.0', and 'Default Gateway' is '0.0.0.0'. In the 'DNS Configuration' section, 'DNS' is set to 'Automatic'. In the 'Current Status' section, 'IP 1' is '10.0.0.1'. A 'Save' button is located at the bottom of the 'Current Status' section.

Figure 4.12 Ethernet Configuration

The following table describes the items in the previous figure.

Table 4.9: User Management

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 - ccept IP configuration from either DHCP or BOOTP server ■ Bridge - set up a bridge connecton 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-1211 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. The default is 0.0.0.0.
DHCP Timeout (AutoIP Modes)	Enter the value in seconds to timeout a DHCP request.
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
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.*



4.6 Ethernet Bridge (EKI-122x)

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' web interface. It is divided into four main sections: IPv4 Configuration, Spanning Tree Protocol Configuration, DNS Configuration, and Current Status. In the IPv4 Configuration section, 'Mode' is set to 'Static IP', and the IP Address is '10.0.0.3'. The Spanning Tree Protocol Configuration section shows 'STP' and 'Redundant Mode' both set to 'Disable'. The DNS Configuration section shows 'DNS' set to 'Automatic'. The Current Status section shows 'IP 1' as 'Currently unavailable'.

Figure 4.13 Ethernet Bridge Configuration

The following table describes the items in the previous figure.

Table 4.10: User Management

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. The default is 0.0.0.0.
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-12xx control which Ethernet port is active. The gateway will block Eth2 while a link is detected on Eth1, and will activate Eth2 if the link is lost on Eth1.
DNS	Click the radio button to select the DNS mode: Automatic or Specific.
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**.



4.7 Port Configuration

The serial port configuration menu has Basic and Operation modes.

4.7.1 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 displays the 'Basic' tab of the 'Port 1 configuration' window. The window has two tabs: 'Basic' (selected) and 'Operation'. Below the tabs is a title bar with a gear icon and the text 'Port 1 configuration'. The main area contains six configuration items, each with a label and a dropdown menu:

- Type: RS422
- Baud Rate: 9600
- Parity: None
- Data Bits: 8
- Stop Bits: 1
- Flow Control: None

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

Figure 4.14 Port Configuration > Basic

The following table describes the items in the previous figure.

Table 4.11: Basic	
Item	Description
Type	Click the drop-down menu to select a serial interface: RS-232, RS-422, RS-485 or RS-485 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.
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 or DTR/DSR
Save	Click Save to save the values and update the screen.

4.7.2 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**. Use this menu to select the port configuration mode: Modbus Server Mode or Modbus Client Mode.

To translate RTU/ASCII to TCP, use Client Mode.

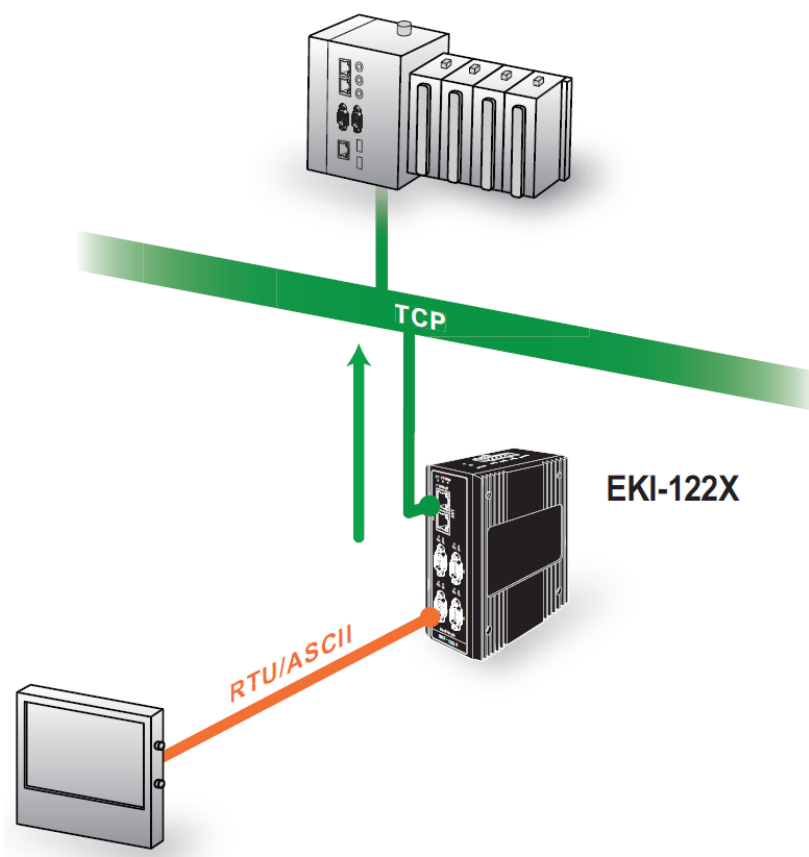


Figure 4.15 Client Mode

To translate TCP to RTU/ASCII, use Server Mode.

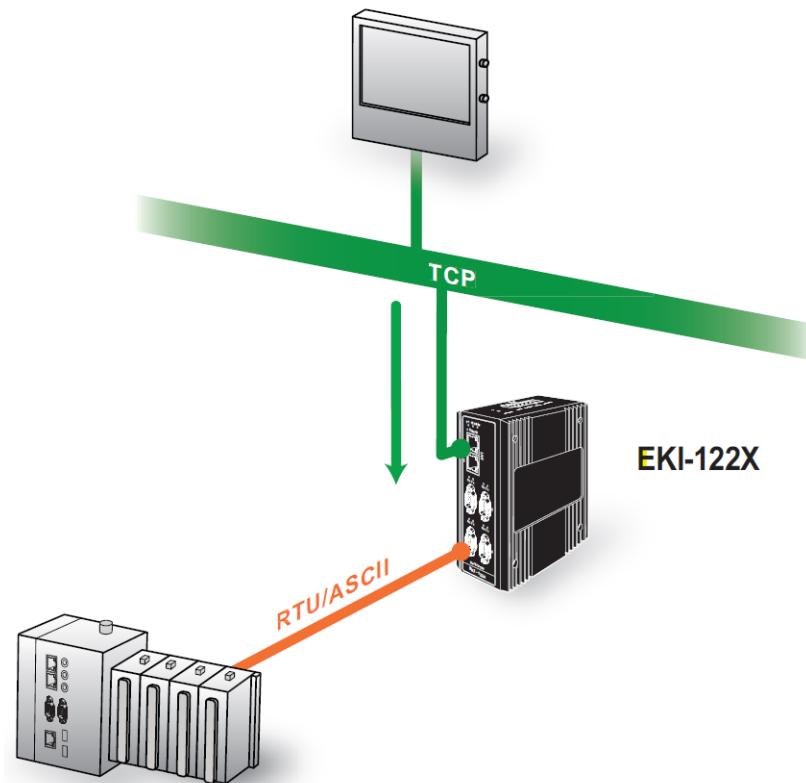


Figure 4.16 Server Mode

These are the options for Modbus Server Mode.

The screenshot shows the 'Port 1 configuration' window with the 'Operation' tab selected. The configuration is as follows:

Parameter	Value
Mode	Modbus Server Mode
Protocol	RTU
Server Timeout(ms)	3000
Delay Time(ms)	0
ASCII Timeout(ms)	10
Direct Access Port	6000
RTS Control	☒ Disable ☐ Enable
Peer for Receiving Data	
Peer Number	0

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

Figure 4.17 Port Configuration > Operation > Modbus Server Mode

The following table describes the items in the previous figure.

Table 4.12: Modbus Server Mode	
Item	Description
Mode	Click the drop-down menu to select the port configuration mode: Modbus Server Mode or Modbus Client Mode.
Protocol	Select the protocol of the Server Mode or Client Mode (RTU or ASCII).
Server Timeout (ms)	Specify the time duration in milliseconds for the EKI-1200 Series to wait for a response after it has issued a command while using Modbus/RTU or Modbus ASCII. After the timeout is expired and no response is received, the EKI-1200 Series will regard the command as failed. Note that the timeout for the host PC must be greater than the timeout setting here specified, otherwise an error will occur.
Delay Timeout (ms)	Enter a value to specify the delay timeout.
ASCII Timeout (ms)	Enter a value to specify the ASCII timeout.
Direct Access Port	This TCP service port can be used to directly access devices on this serial port. For example, using the default port settings, Modbus/TCP on port 6000 can access only the devices on serial port 1, whereas Modbus/TCP on port 502 can access devices on all serial ports. Defaults: ■ Serial Port 1 Port 6000 ■ Serial Port 2 Port 6001 ■ Serial Port 3 Port 6002 ■ Serial Port 4 Port 6003
RTS Control	Force the RTS signal to ON state. This generally isn't used. It is available for compatibility with some devices that require an RTS signal to determine when they should switch to "Data Accept Mode." When used, it is normally combined with disabled flow control.
Peer Number	Click the drop-down menu to select the number of network device which you want to connect. (0-32)
Save	Click Save to save the values and update the screen.

These are the options for Modbus Client Mode.

The screenshot displays the 'Port 1 configuration' window under the 'Operation' tab. The configuration is for 'Modbus Client Mode' using the 'RTU' protocol. The 'Client Timeout(ms)' is set to 5000, and the 'Frame Break(ms)' is set to 10. The 'Peer for Receiving Data' section shows 'Peer Number' set to 0. A 'Save' button is located at the bottom of the configuration area.

Figure 4.18 Port Configuration > Operation > Modbus Client Mode

The following table describes the items in the previous figure.

Table 4.13: Modbus Client Mode

Item	Description
Mode	Click the drop-down menu to select the port configuration mode: Modbus Server Mode or Modbus Client Mode.
Protocol	Select the protocol of the Server Mode or Client Mode (RTU or ASCII).
Client Timeout (ms)	Specify the time duration in milliseconds for the EKI-1200 Series to wait for a response after it has issued a command while using Modbus/RTU or Modbus ASCII. After the timeout is expired and no response is received, the EKI-1200 Series will regard the command as failed. Note that the timeout for the host PC must be greater than the timeout setting here specified, otherwise an error will occur.
Frame Break (ms)	Enter a value to specify the frame break time.
Peer Number	Click the drop-down menu to select the number of network device which you want to connect. (0-16)
Save	Click Save to save the values and update the screen.

4.8 Monitor

The EKI serial 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.

4.8.1 Setting (EKI-1211 or Legacy Mode Enabled)

The Monitor Setting page allows for easy viewing of the port's statistics.

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

Setting	Statistic	Connected IP
Port 1 Status		
Operation Mode	Modbus Server Mode	
Baud Rate	9600	
Data Bits	8	
Stop Bits	1	
Parity	None	
RTS/CTS	OFF	
XON/XOFF	OFF	
DTR/DSR	OFF	

Figure 4.19 Monitor > Setting

The following table describes the items in the previous figure.

Table 4.14: Setting (EKI-1211 or Legacy Mode Enabled)	
Item	Description
Operating 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.
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.

4.8.2 Statistic (EKI-1211 or Legacy Mode Enabled)

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

Setting	Statistic	Connected IP
Port 1 Status		
Tx Count	0	
Rx Count	0	
Total Tx Count	0	
Total Rx Count	0	
RTS	ON	
CTS	OFF	
DTR	ON	
DSR	OFF	
DCD	OFF	

Figure 4.20 Monitor > Statistic

The following table describes the items in the previous figure.

Table 4.15: Statistic (EKI-1211 or Legacy Mode Enabled)	
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.

4.8.3 Connected IP (EKI-1211 or Legacy Mode Enabled)

The Monitor Connected IP page allows for easy viewing of all connected device's IP address, while the specific serial port is operating under "Client Mode". To access this page, click **Monitor > Connected IP**.

Setting

Statistic

Connected IP

Port 1 Status

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 4.21 Monitor > Connected IP

The following table describes the items in the previous figure.

Table 4.16: Connected IP (EKI-1211 or Legacy Mode Enabled)	
Item	Description
Connected IP	Displays the IP designation for the device.
IP Address	Displays the current connected IP address of the selected port.

4.8.4 Status (Legacy Mode Disable)

With Modbus Legacy Mode disabled, information on the serial port function is presented in the Status section

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

Figure 4.22 Monitor > Status

The following table describes the items in the previous figure.

Table 4.17: Status (Legacy Mode Disable)	
Item	Description
TX	Display the TX count of the selected port.
RX	Display the RX count of the selected port.
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.

4.8.5 Modbus Statistics (Legacy Mode Disabled)

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

Modbus Statistics		
Unit ID	Max Respond Time (msecs)	Exception
1	0	timeout: 166

Figure 4.23 Monitor > Port n > Modbus Statistics

4.8.6 Just-In-Time (JIT) Diagnostics (Legacy Mode Disabled)

Just-In-Time Diagnostics settings are covered in section “4.7.10. JIT With Modbus Legacy Mode Disabled” on page 45.

4.9 Syslogd

The EKI serial 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.

4.9.1 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**.

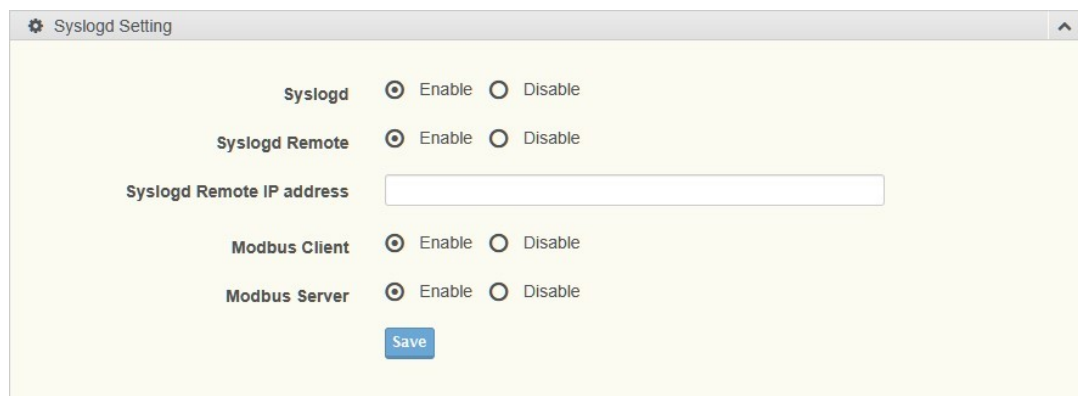


Figure 4.24 Syslogd > Syslogd Setting

The following table describes the items in the previous figure.

Table 4.18: 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.
Syslogd Remote IP address	Enter Syslogd Remote IP address.
Modbus Client	Display syslog messages relay to Modbus Client mode, not yet dispatch to a given serial port [In legacy mode]
Modbus Server	Display syslog messages relay to Modbus server mode, not yet dispatch to a given serial port [In legacy mode]
Save	Click Save to save the values and update the screen.

4.9.2 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**.

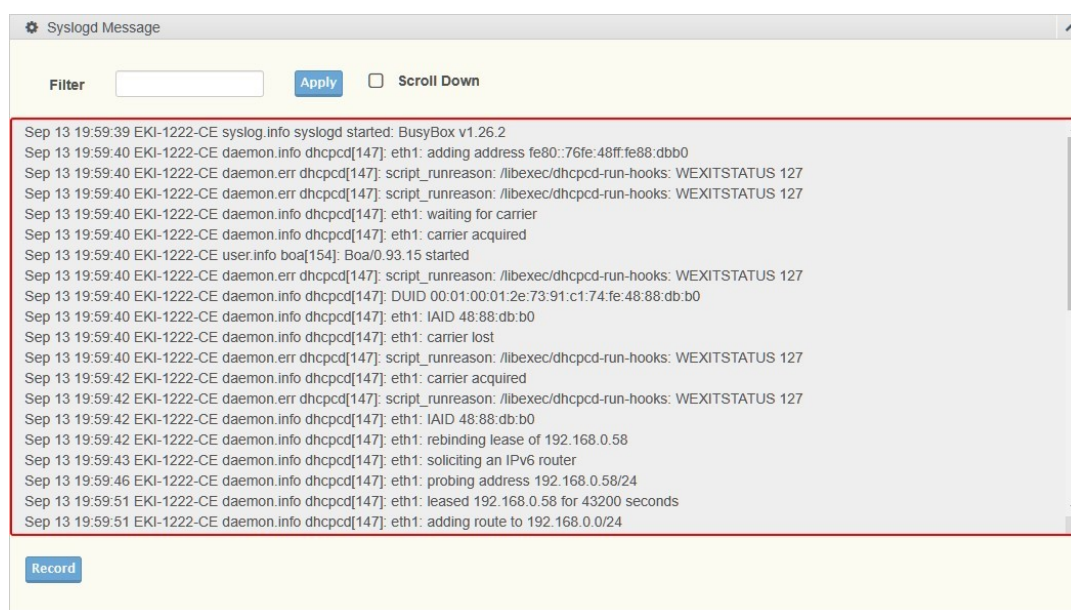


Figure 4.25 Syslogd > Syslogd Message

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.

4.9.3 Modbus IP Mapping (EKI-1211 or Legacy Mode Enabled)

While the gateway is operating under “Modbus Server Mode”, users can check the status of all the Modbus TCP Client devices, which are currently accessing the gateway.

To access this page, click **Syslogd > Modbus IP Mapping**.

Modbus IP Mapping		
IP Address	Port	Dropped Packets
	-	-

Figure 4.26 Syslogd > Modbus IP Mapping

4.9.4 Modbus Port Mapping (EKI-1211 or Legacy Mode Enabled)

Users can check the overview of the “Unit ID”/“serial port” mapping table of the Modbus Server Mode. It also records the error status of each individual Unit ID, which is very helpful while analyzing a Modbus communication. To access this page, click **Syslogd > Modbus Port Mapping**.

Modbus Port Mapping				
Unit ID	Port Number	Address	CRC Error	Timeout

Figure 4.27 Syslogd > Modbus Port Mapping

4.9.5 Modbus Server Response Time (EKI-1211 or Legacy Mode Enabled)

This page shows the longest response time of each individual unit ID. This should be helpful for optimizing the performance.

To access this page, click **Syslogd > Modbus Server Response Time**. Click Clear All to clear all response information.

Maximum Response Time		
ID	Response Time (msec)	Clear All

Figure 4.28 Syslogd > Modbus Server Response Time

4.9.6 Modbus Server (Legacy Mode Disable)

The Modbus Server screen includes diagnostic information such as addresses and ports, connection start/end time, receive/respond/fail-responding counters, etc. JIT options can also be enabled here. When enabled on this page versus the Monitor page, the JIT information is sorted by TCP Session instead of COM Port.

Clients

No.	Name	IP	Start	Info	JIT (Select All Clear All)	Action
1	Client63	IP: ::ffff:192.168.1.1 Port: 37194 Destination IP: ::ffff:192.168.1.1 Destination Port: 502	2024-09-25 00:51:12.268	receive: 2215 respond: 2214	serial: ☐ JIT_SER_RX ☐ JIT_SER_TX ☐ JIT_SER_RXRAW modbus: ☐ JIT_MBUS_RESP ☐ JIT_MBUS_CMD tcp: ☐ JIT_TCP_XMIT ☐ JIT_TCP_RECV ☐ JIT_TCP_CMD ☐ JIT_TCP_RESP ☐ JIT_TCP_TIMEOUT ☐ JIT_TCP_NO_ROUTE ☐ JIT_TCP_REDT	Save Refresh Select All Clear All
2	Client62	IP: ::ffff:192.168.1.253 Port: 59600 Destination IP: ::ffff:192.168.1.1 Destination Port: 502	2024-09-25 00:52:11.453	receive: 1134 respond: 1134	serial: ☐ JIT_SER_RX ☐ JIT_SER_TX ☐ JIT_SER_RXRAW modbus: ☐ JIT_MBUS_RESP ☐ JIT_MBUS_CMD tcp: ☐ JIT_TCP_XMIT ☐ JIT_TCP_RECV ☐ JIT_TCP_CMD ☐ JIT_TCP_RESP ☐ JIT_TCP_TIMEOUT ☐ JIT_TCP_NO_ROUTE ☐ JIT_TCP_REDT	Save Refresh Select All Clear All

History

No.	IP	Interface	Start	End	Info	Reason
1	IP: ::ffff:192.168.1.253 Port: 65371	Destination IP: ::ffff:192.168.1.1 Destination Port: 502	2024-09-26 21:51:35.385	2024-09-26 21:51:44.858	receive: 10 respond: 10	connection closed

Just-In-Time Diagnostic

JIT Default Setting

serial ☐ JIT_SER_RX ☐ JIT_SER_TX ☐ JIT_SER_RXRAW

modbus ☐ JIT_MBUS_RESP ☐ JIT_MBUS_CMD

tcp ☐ JIT_TCP_XMIT ☐ JIT_TCP_RECV ☐ JIT_TCP_CMD ☐ JIT_TCP_RESP ☐ JIT_TCP_TIMEOUT
☐ JIT_TCP_NO_ROUTE ☐ JIT_TCP_REDT

JIT Dump Length

Xmit (1 - 1024)

Recv (1 - 1024)

[Apply](#)

Figure 4.29 Syslogd > Modbus Server

4.9.7 Modbus Agent Monitor (EKI-122x)

The Modbus Agent Monitor screen contains settings to log Just-In-Time diagnostics for your Modbus Agent channels to syslogd. Each channel that is set up on the Service > Modbus Agent screen can be configured independently.

The screenshot shows the 'Channel0' configuration page. At the top, there's a 'JIT Net' section with three checked checkboxes: 'JIT_TCP_XMIT', 'JIT_TCP_RECV', and 'JIT_TCP_CONN'. Below this is the 'JIT Dump Length' section, which contains two input fields: 'Xmit' and 'Recv', both set to '16'. To the right of these fields are the ranges '(1 - 1024)'. A 'Save' button is located below the input fields. At the bottom left of the main configuration area are 'Reset' and 'Refresh' buttons. Below the configuration area is a 'Session Statistics' section showing 'status: online' and 'reconnections: 3'. At the bottom is a 'Modbus Server' section with a table.

#	Map	Modbus Statistics
1	1	

Figure 4.30 Syslogd > Modbus Agent Monitor

The following table describes the items in the previous figure.

Table 4.19: Modbus Agent Monitor (EKI-122x)

Item	Description
JIT_TCP_XMIT	Enable logging TCP transmitted messages to syslogd.
JIT_TCP_RECV	Enable logging TCP received messages to syslogd.
JIT_TCP_CONN	Enable logging TCP connection messages to syslogd.
Xmit	Set the number of bytes of the transmitted message to log to syslogd.
Recv	Set the number of bytes of the received message to log to syslogd.
Reset	Reset the channel's session statistics.
Refresh	Update the channel's session statistics.
Save	Apply the channel's JIT settings.

4.9.8 Just-In-Time (JIT) Diagnostics (EKI-122x)

The Just-In-Time (JIT) Diagnostics features of the Modbus gateway assist in troubleshooting communications issues. JIT diagnostics can be configured in one of two ways, depending on whether or not Modbus Legacy Mode is enabled in the Service > Modbus Settings screen.

4.9.9 Just-In-Time (JIT) With Modbus Legacy Mode Disabled (EKI-122x)

On the Service > Modbus Settings page, disable Modbus Legacy Mode and Save your changes.

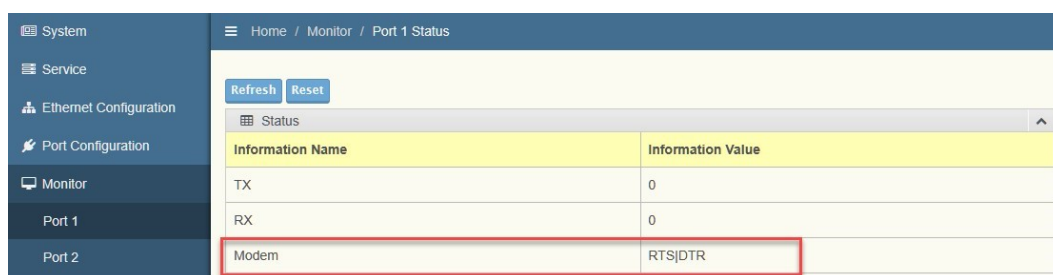
On the Syslogd > Syslogd Setting page, enable Syslogd and Save your changes.

Reboot the device (Tools > Reboot) to apply the changes.

The available options differ between Modbus Server mode and Modbus Client mode.

4.9.9.1 Modbus Server Mode (EKI-122x)

JIT Diagnostics in Modbus Client mode is similar to that in Modbus Server mode, but we have a few more options available.



Information Name	Information Value
TX	0
RX	0
Modem	RTS DTR

Figure 4.31 Monitor > Port n > Modbus Status

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

Any exception codes will be displayed and the counter will increase.



Unit ID	Max Respond Time (msecs)	Exception
1	0	timeout: 166

Figure 4.32 Monitor > Port n > Modbus Statistics

Select your desired types of JIT data in the **Just-In-Time Diagnostics** section of the page. The selected data will be displayed in the **Syslogd Message** page.

The options in the serial category will record raw bytes. The options in the **modbus** category will record parsed commands and responses.

In the **JIT Dump Length** section, Define the length of the raw data to be printed in the Syslog Message window. The default is 12 bytes.

Just-In-Time Diagnostic

serial ☐ JIT_SER_RX ☐ JIT_SER_TX ☐ JIT_SER_RXRAW

modbus ☐ JIT_MBUS_RESP ☐ JIT_MBUS_CMD

JIT Dump Length

TX (1 - 1024)

RX (1 - 1024)

Apply

Figure 4.33 Monitor > Port n > Just-In-Time Diagnostics (Server)

Note! The JIT options will take effect when you click Apply. Rebooting the device will clear these options.



4.9.9.2 Modbus Client Mode (EKI-122x)

The Modem Status can be seen on the **Monitor > Port n** page. Signals which are currently ON will be listed (e.g., RTS/CTS/DTR/DSR).

The options in the added tcp category are mainly for data sent by the COM port.

The Default length of the raw data to be recorded in Modbus Client mode is 16 bytes.

Just-In-Time Diagnostic

serial ☐ JIT_SER_RX ☐ JIT_SER_TX

tcp ☐ JIT_TCP_XMIT ☐ JIT_TCP_RECV ☐ JIT_TCP_CONN

modbus ☐ JIT_MBUS_RESP ☐ JIT_MBUS_CMD ☐ JIT_MBUS_ROUTE
☐ JIT_MBUS_EXCP

JIT Dump Length

TX (1 - 1024)

RX (1 - 1024)

Apply

Figure 4.34 Monitor > Port n > Just-In-Time Diagnostics (Client)

4.9.9.3 JIT Logging By TCP Session

JIT options on the Syslogd > Modbus Server page are selected by TCP session.

Only connections still alive are available; disconnected sessions will be removed.

Each distinct Source IP/Port and Destination IO/Port combination will be considered as different TCP session. Only TCP Sessions which are connecting to peers on COM Ports set in Server Mode will be recorded. TCP Peers connected by the Client mode will not be recorded here.



No.	Name	IP	Start	Info	JIT
1	Client31	IP: 192.168.1.124 Port: 37435 Destination IP: 127.0.0.1 Destination Port: 502	2023-08-24 09:41:07:199	receive: 597 respond: 597	serial: ☒ JIT_SER_RX ☐ JIT_SER_TX ☐ JIT_SER_RXRAW modbus: ☐ JIT_MBUS_RESP ☐ JIT_MBUS_CMD tcp: ☐ JIT_TCP_XMIT ☐ JIT_TCP_RECV ☐ JIT_TCP_CMD ☐ JIT_TCP_RESP ☐ JIT_TCP_TIMEOUT ☐ JIT_TCP_NO_ROUTE ☐ JIT_TCP_REDT
2	Client30	IP: 192.168.1.15 Port: 58139 Destination IP: 192.160.1.124 Destination Port: 502	2023-08-24 09:48:39:124	receive: 146 respond: 146	serial: ☐ JIT_SER_RX ☐ JIT_SER_TX ☐ JIT_SER_RXRAW modbus: ☐ JIT_MBUS_RESP ☐ JIT_MBUS_CMD tcp: ☐ JIT_TCP_XMIT ☐ JIT_TCP_RECV ☐ JIT_TCP_CMD ☐ JIT_TCP_RESP ☐ JIT_TCP_TIMEOUT ☐ JIT_TCP_NO_ROUTE ☐ JIT_TCP_REDT

Figure 4.35 Monitor > Port n > Just-In-Time Diagnostics (Client)

Note! The JIT options for a given TCP session are cleared when the connection is dropped, or after a reboot.



With JIT logging enabled for a TCP session, the Syslogd > Syslogd Message page allows you to inspect the Modbus data related to a specific Modbus/TCP Client, regardless of which COM Port was involved in the communication.

If the same options are selected for both the COM port and the TCP session, only one entry will appear in the syslogd log for each event.

```
Sep 13 09:52:48 EKI-1224-CE user.notice mbus_gw_server: Client(31)"JIT_TCP_RECV":rcv(12)bytes:bc 00 00 00 00 06 01 03 00 00 00 0a
Sep 13 09:52:48 EKI-1224-CE user.notice mbus_gw_server: Client(31)"JIT_TCP_CMD":cmd.tid(48128).pid(0).msglen(6).uid(1).read_holding_registers.addr(0).len(10)
Sep 13 09:52:48 EKI-1224-CE user.notice mbus_gw_server: Serial(2)"JIT_MBUS_CMD"client31:cmd.uid(1).read_holding_registers.addr(0).len(10)
Sep 13 09:52:48 EKI-1224-CE user.notice mbus_gw_server: Serial(2)"JIT_SER_TX"client31:tx(8/8)bytes:01 03 00 00 00 0a c5 cd
Sep 13 09:52:48 EKI-1224-CE user.notice mbus_gw_server: Serial(2)"JIT_SER_RXRAW"client31:rx 25 bytes:01 03 14 26 61 00 00 00 00 00 00 00
Sep 13 09:52:48 EKI-1224-CE user.notice mbus_gw_server: Serial(2)"JIT_SER_RX"client31:rx 25 bytes:01 03 14 26 61 00 00 00 00 00 00 00
Sep 13 09:52:48 EKI-1224-CE user.notice mbus_gw_server: Serial(2)"JIT_MBUS_RESP"client31:resp.uid(1).read_holding_registers.byte_cnt(20)
Sep 13 09:52:48 EKI-1224-CE user.notice mbus_gw_server: Client(31)"JIT_TCP_RESP":resp.tid(48128).pid(0).msglen(23).uid(1).read_holding_registers.byte_cnt(20)
Sep 13 09:52:48 EKI-1224-CE user.notice mbus_gw_server: Client(31)"JIT_TCP_XMIT":xmit (29/29)bytes:bc 00 00 00 00 17 01 03 14 26 61 00 00 00 00 00
```

Figure 4.36 Syslogd > Syslogd Messages with TCP session

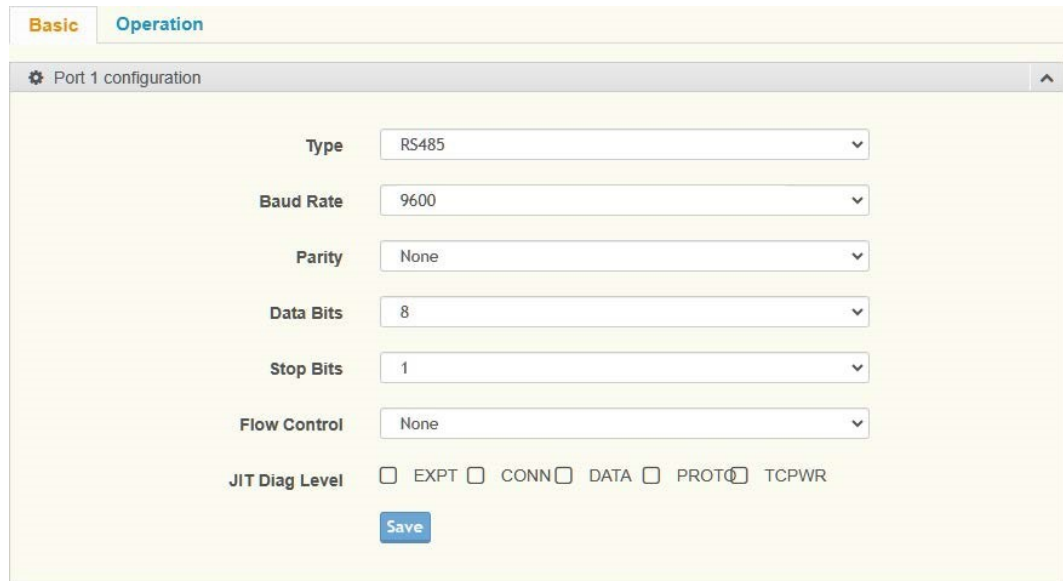
For example, the option JIT_SER_RX exists on both pages. Selecting them both will show only one entry when the Com port receives data.

4.9.10 Just-In-Time (JIT) with Modbus Legacy Mode Enabled (EKI-122x)

To use JIT diagnostics when Modbus Legacy Mode is enabled, you will need to change the Device Name on the System page to “**ENABLE_JIT_DIAG**” (without quotes) and Save your changes.

On the **Syslogd > Syslogd Setting** page, enable **Syslogd** and the desired Modbus modes (i.e., **Modbus Client** and/or **Modbus Server**). Save your changes.

On the **Port Configuration > Port n > Basic** page, select the JIT Diagnostics levels to be logged.



The screenshot shows the 'Port 1 configuration' page with two tabs: 'Basic' (selected) and 'Operation'. The configuration fields are as follows:

Field	Value
Type	RS485
Baud Rate	9600
Parity	None
Data Bits	8
Stop Bits	1
Flow Control	None
JIT Diag Level	☐ EXPT ☐ CONN ☐ DATA ☐ PROTO ☒ TCPWR

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

Figure 4.37 JIT Diagnostics Level

The following table defines the data included in each JIT level.

Table 4.20: Just-In-Time (JIT) with Modbus Legacy Mode Enabled (EKI-122x)

Item	Description
Exception (EXPT)	Unable to Open COM Port
	Failed to enable RTU detection
	Cannot get LSP (State: 0x%x)
	LSR_ERRORMASK (State: 0x%x)
	Write To Serial Failed
	Queue Full, Unable to make a reservation
	An Error event has occurred
Connection (CONN)	CRC Error (0x%x! =0x%x TID%d, UID%d, FID%d)
Data (DATA)	Read %d bytes non-MBus Data (TID%d, UID%d, FID%d) TID is the transition ID, UID is the Unit ID and FID is the function ID.
	Read %d bytes of serial Data (TID%d, UID%d, FID%d)
Protocol (PROTO)	Serial Rx Len = %d (TID%d, UID%d, FID%d:%s Note: The Protocol level message overwrites the Data level message.
TCP Write (TCPWR)	On Modbus read commands: Received MbusTCP Query for %u bytes of data (TID%d, UID%d, FID%d)
	On Modbus write commands: Received MbusTCP Query Command (TID%d, UID%d, FID%d)

In this table, %x is a hex value, %d is a decimal value, and %s is the beginning 8 bytes of serial data.

4.10 Tools

The EKI Modbus gateway provides tools for access to ping and reset functions.

4.10.1 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**.

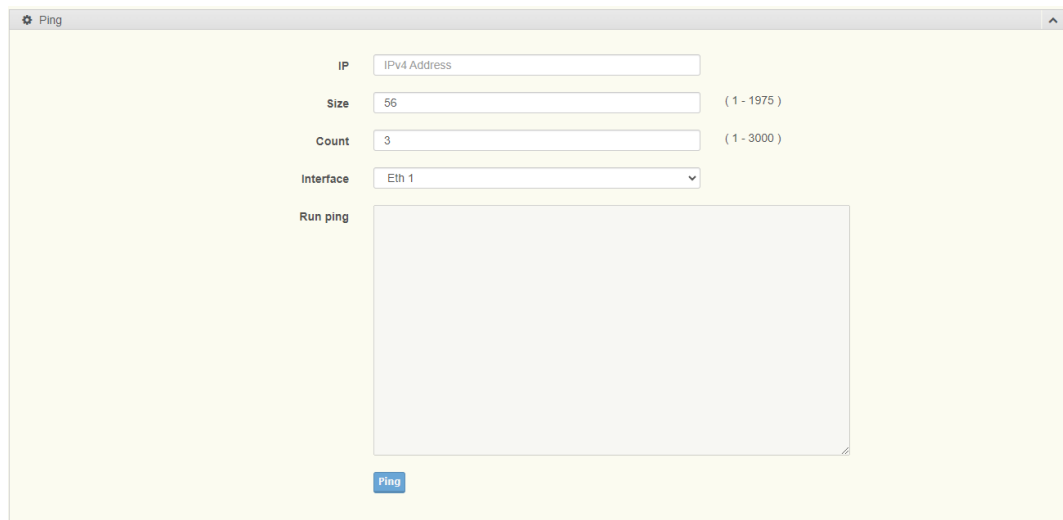


Figure 4.38 Tools > Ping

The following table describes the items in the previous figure.

Table 4.21: 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.
Ping	Click Ping to

4.10.2 Modbus Scan (EKI-122x)

Modbus Scan will scan for Modbus devices on the port and report the Server ID's that are found.

The scan sends requests to the specified target IP, port and range of Server IDs. The scan sends a specified Modbus request (default Read Register at address 0), and lists the Server IDs that respond to the request in the Result field. Any end devices that are not configured to respond to the selected request will not be found.

The screenshot shows the 'Modbus Scan' web interface. It features a light yellow background with a grey header bar containing the title 'Modbus Scan'. The interface includes several input fields and a large result area. The fields are arranged in a vertical list on the left side, with their respective ranges or units shown on the right. The 'Function' field is a dropdown menu. Below the main configuration fields is a 'Hide Options' button. At the bottom, there are 'Start' and 'Stop' buttons. The 'Result' field is a large, empty rectangular box.

Field	Value	Range/Unit
IP	127.0.0.1	
Port	6000	(1 - 65535)
Start UID	1	(1 - 255)
Scan Length	128	(1 - 255)
Function	Register	
Address	0	(0 - 65535)
Data Length	1	(1 - 65535)
Timeout	3000	msec (50 - 10000)
Status	idle	
Result		

Figure 4.39 Tools > Modbus Scan

The following table describes the items in the previous figure.

Table 4.22: Modbus Scan (EKI-122x)

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.
Port	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.
Start UID	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.
Scan Length	The number of sequential IDs to scan
Function	The Modbus function to request from each scanned ID
Address	The address to request from each scanned ID
Data Length	The data length to request from each scanned ID
Timeout	The timeout in ms to wait for a response to each request
Status	The scan status
Result	A list of all Server IDs that responded to the request
Start	Start the scan
Stop	Stop a running scan

4.10.3 Modbus Polling (EKI-122x)

The Modbus Polling function will send a Modbus request to one specified Modbus server (IP, Port and UID) and display the results.

The screenshot shows the 'Modbus Polling' configuration window. It includes the following fields and values:

- IP:
- Port: (1 - 65535)
- UID: (1 - 255)
- Function: (dropdown menu)
- Address: (0 - 65535)
- Data Length: (1 - 128)
- Timeout: msec (50 - 10000)
- Status:
- Result:

A 'Start' button is located at the bottom center of the window.

Figure 4.40 Tools > Modbus Polling

The following table describes the items in the previous figure.

Table 4.23: Modbus Polling (EKI-122x)	
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.
Port	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.
UID	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.
Function	The Modbus function to request
Address	The address to request
Data Length	The data length to request
Timeout	The timeout in ms to wait for a response to each request
Status	The polling status
Result	The response to the Modbus request
Start	Send the Modbus request

4.10.4 Reboot

The configuration will take effect after clicking Save button. But 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**.

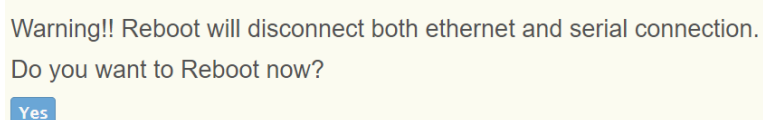


Figure 4.41 Tools > Reboot

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

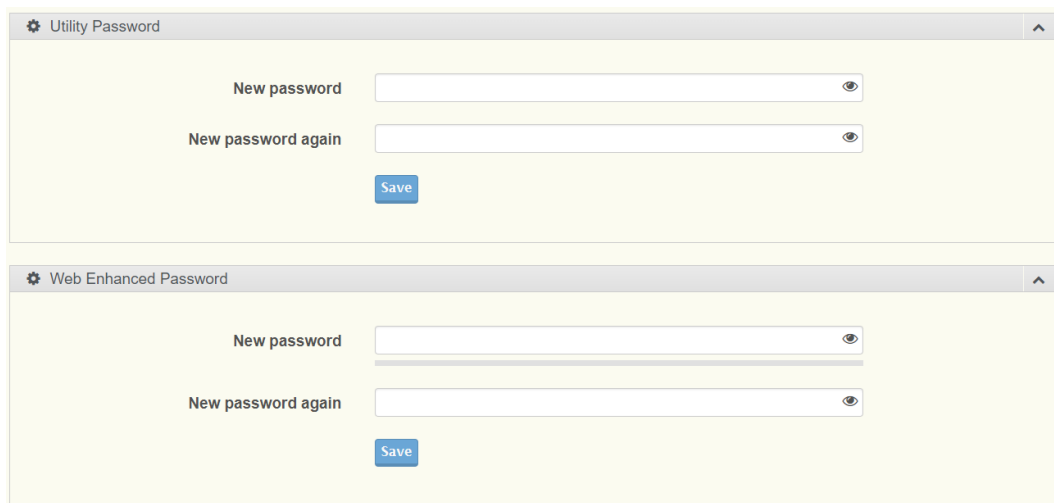
4.11 Management

The EKI serial 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.

4.11.1 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**.



The image shows two stacked web forms for changing passwords. The top form is titled 'Utility Password' and the bottom form is titled 'Web Enhanced Password'. Both forms have a light yellow background and a grey header bar with a gear icon and the title. Each form contains two text input fields: 'New password' and 'New password again'. Both input fields have a small eye icon to the right, indicating a toggle for password visibility. Below the input fields is a blue 'Save' button.

Figure 4.42 Management > Change Password (EKI-122x)



The image shows a single web form titled 'Change Password'. It has a light yellow background and a grey header bar with a gear icon and the title. The form contains two text input fields: 'New password' and 'New password again'. Both input fields have a small eye icon to the right, indicating a toggle for password visibility. Below the input fields is a blue 'Save' button.

Figure 4.43 Management > Change Password (EKI-1211)

The following table describes the items in the previous figure.

Table 4.24: Change Password

Item	Description
Utility Password*	
New password	Enter the character set for the defined 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 defined 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.

*EKI-122x feature

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.

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

4.11.2 Secure access IP

The Secure Access IP feature works as a whitelist for limiting Modbus/TCP connections when the gateway is in Server Mode. The Modbus requests to the gateway will be limited to the IP addresses entered into the Access IP addresses in the Secure Access. Up to 32 addresses can be given full read/write permissions.

Access from other addresses can be prohibited or restricted to read only.

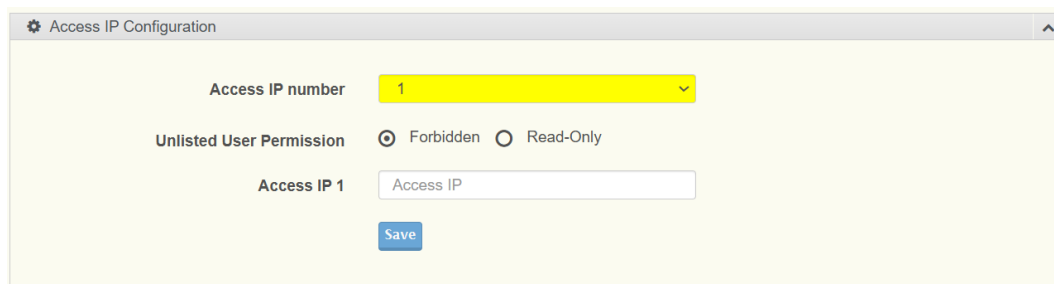


Figure 4.44 Management > Secure access IP

The following table describes the items in the previous figure.

Table 4.25: Secure access IP

Item	Description
Access IP number	Select the number of IP addresses to be configured for access. Maximum 32 If set to zero, no IP access restrictions will apply.
Unlisted User Permission	Set access permissions for addresses not listed on this page to either Forbidden or Read-Only.
Access IP x	Enter each IP address to be allowed access, up to the quantity specified in the Access IP number field above.
Save	Click Save to save the values and update the screen.

Note!  *Modbus Agent Channel using an IP address that is not associated with a serial port channel in Modbus Agent will continue to work even if the that channels address is not listed in the Secure Access IP Configuration.*

Note!  *When a channel in Modbus Agent Mode is set up for the serial device, the IP address used in the channel setup must be entered into one of the Secure Access IP addresses. For the Modbus Agent channels you should not use the loopback IP (127.0.0.1) if you are using the Secure Access IP feature. Use the gateway's IP address instead.*

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

4.11.3 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.

4.11.4 Import Device Settings

Import the server configuration settings to a .conf file.

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

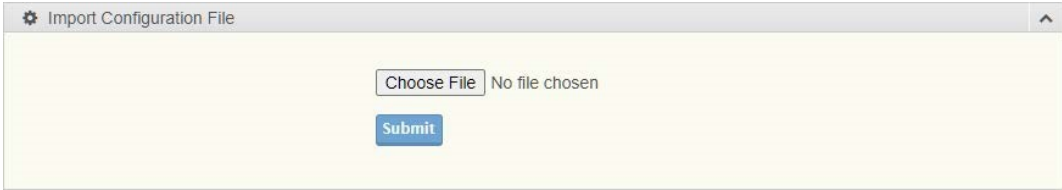


Figure 4.45 Management > Import

The following table describes the items in the previous figure.

Table 4.26: Import Device Settings	
Item	Description
Choose File	Click Choose File to select the configuration file.
Submit	Click Submit to backup the settings.

4.11.5 Firmware Upgrade (EKI-122x)

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 4.46 Management > Firmware Upgrade

www.advantech.com

Please verify specifications before quoting. This guide is intended for reference purposes only.

All product specifications are subject to change without notice.

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