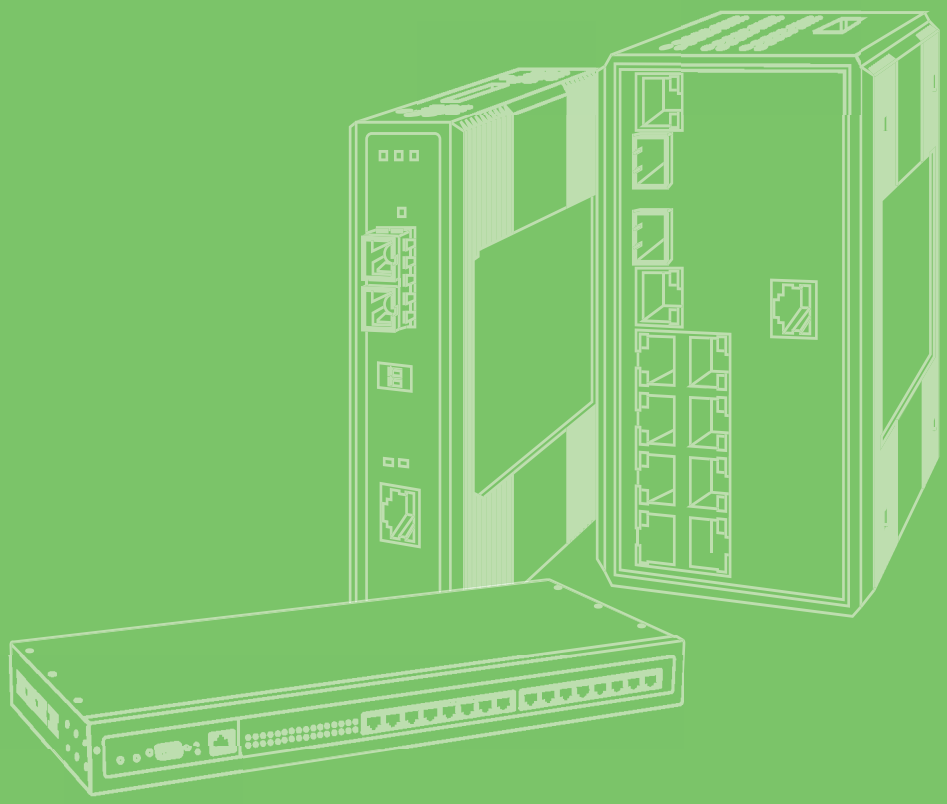
User Manual



EKI-1200 Series

1/2/4-port Modbus Gateways

ADVANTECH

Enabling an Intelligent Planet

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Product Warranty (5 years)

Advantech warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for five years from the date of purchase.

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Because of Advantech's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced at no charge during the warranty period. For out of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

If you think you have a defective product, follow these steps:

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

Edition 1

Printed in Taiwan July 2022

Declaration of Conformity

CE

This product has passed the CE test for environmental specifications. Test conditions for passing included the equipment being operated within an industrial enclosure. In order to protect the product from being damaged by ESD (Electrostatic Discharge) and EMI leakage, we strongly recommend the use of CE-compliant industrial enclosure products.

FCC Class A

Note: 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 which case the user will be required to correct the interference at his own expense.

Technical Support and Assistance

1. Visit the Advantech web site at www.advantech.com/support where you can find the latest information about the product.
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 you call:
   - 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, which if not observed, can cause personal injury!*

Caution! *Cautions are included to help you avoid damaging hardware or losing data. e.g.*

There is a danger of a new battery exploding if it is incorrectly installed. Do not attempt to recharge, force open, or heat the battery. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

Note! *Notes provide optional additional information.*

Document Feedback

To assist us in making improvements to this manual, we would welcome comments and constructive criticism. Please send all such - in writing to: support@advantech.com

Packing List

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

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

Safety Instructions

- Read these safety instructions carefully.
- Keep this User Manual for later reference.
- Disconnect this equipment from any DC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
- For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
- Keep this equipment away from humidity.
- Put this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage.
- The openings on the enclosure are for air convection. Protect the equipment from overheating. DO NOT COVER THE OPENINGS.
- Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
- Position the power cord so that people cannot step on it. Do not place anything over the power cord.
- All cautions and warnings on the equipment should be noted.
- If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
- Never pour any liquid into an opening. This may cause fire or electrical shock.
- Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
- If one of the following situations arises, get the equipment checked by service personnel:
  - The power cord or plug is damaged.
  - Liquid has penetrated into the equipment.
  - The equipment has been exposed to moisture.
  - The equipment does not work well, or you cannot get it to work according to the user's manual.
  - The equipment has been dropped and damaged.
  - The equipment has obvious signs of breakage.
- DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE MAY GO -40°C (-40°F) ~ 85°C (185°F). THIS COULD DAMAGE THE EQUIPMENT. THE EQUIPMENT SHOULD BE IN A CONTROLLED ENVIRONMENT.
- The sound pressure level at the operator's position according to IEC 704-1:1982 is no more than 70 dB (A).

  DISCLAIMER: This set of instructions is given according to IEC 704-1. Advantech disclaims all responsibility for the accuracy of any statements contained herein.

Safety Precaution - Static Electricity

Static electricity can cause bodily harm or damage electronic devices. To avoid damage, keep static-sensitive devices in the static-protective packaging until the installation period. The following guidelines are also recommended:

- Wear a grounded wrist or ankle strap and use gloves to prevent direct contact to the device before servicing the device. Avoid nylon gloves or work clothes, which tend to build up a charge.
- Always disconnect the power from the device before servicing it.
- Before plugging a cable into any port, discharge the voltage stored on the cable by touching the electrical contacts to the ground surface.

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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 complete model name) are a robust, feature-rich, and cost effective way to integrate 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 them 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 that a Modbus Gateway is needed to be a bridge for integration.

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

The Modbus/RTU and Modbus/ASCII protocols define how a "master" device polls one or more "slave" devices and write real-time data over RS-232, RS-422, or RS-485 serial data communication. The EKI-1200 Series provides a feature that can allow users to select master or slave operation for each serial port. The EKI-1200 Series not only allows Ethernet master can control serial slaves, but also allow serial masters to control Ethernet or serial slaves. Furthermore, the EKI-1200 Series can allow both Ethernet and serial slaves to be controlled by both Ethernet and serial masters.

The EKI-1200 Series supports various operating modes: RTU Master, RTU Slave, ASCII Master, and ASCII Slave.

1.2 Device Features

- Provides 2 x 10/100 Mbps Ethernet ports for LAN redundancy
- Integration of Modbus TCP and Modbus RTU/ASCII networks
- Supports up to 921.6 kbps and any baud rate setting
- Supports up to 16 connections and 32 simultaneously requests
- Auto searching slave ID over configuration utility
- Software selectable RS-232/422/485 communication
- Mounts on DIN-rail and Wall mount
- Built-in 15 KV ESD protection for all serial signals
- Automatic RS-485 data flow control
- Supports surge protection for DC power ports with line to line 2 KV, and line to earth 4 KV; for signal ports with 4 KV.
- 'I' models support a wide operating temperature
- 'CI' models support isolation and wide operating temperature
- EKI-1211: supports one Ethernet port and up to 230.4 Kbps baud rate

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 is now allowing control devices with serial ports to connect to the Ethernet and share networks quickly and cost-effectively. The EKI-1200 Series are network-based, Modbus gateways for integrating new and existing Mo bus/RTU and Modbus/ ASCII serial devices to newer TCP/IP networked-based devices. Manufacturers, system integrators, and end users can now take advantage of Modbus gateways to create networked applications for remote managing and accessing data for their control devices that wasn't possible before.

2.1.1 Protocol Overview

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

Although it's not the most powerful protocol available, its rare simplicity allows not only rapid implementation, but also remains flexible enough to be applied in virtually all industrial situations. The communication mode 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 it can be used to bridge Modbus serial devices over TCP/IP network.

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

During Modbus network communication, the protocol determines how each controller will know its device address, recognize a message addressed to it, determine the kind of action to be taken, and extract any data or other information contained in the message. If a reply is required, the controller will construct the reply message and send it back using Modbus protocol.

The way controllers communicate with each other is by using a master-slave technique, in which only one device (the master) can initiate queries. The other devices (the slaves) respond by supplying the requested data to the master, or by taking the action requested in the query. Typical master devices include host processors and programming panels. Typical slaves include programmable controllers.

It is the master that can address individual slaves and initiate a broadcast message to all slaves. On the other hand, slaves return a response to queries that are addressed to them individually. Responses are not returned to broadcast queries from the master.

The Modbus protocol has a definite format for the master's query, which incorporates the device (or broadcast) address, a function code defining the requested action, any data to be sent, and an error-checking field. The slave's response message, which is also constructed using Modbus protocol, contains fields confirming the action taken, any data to be returned, and an error-checking field. If an error occurred in receipt of the message, or if the slave is unable to perform the requested action, the slave will construct an error message and send it as its response.

The basic system architecture is as below:

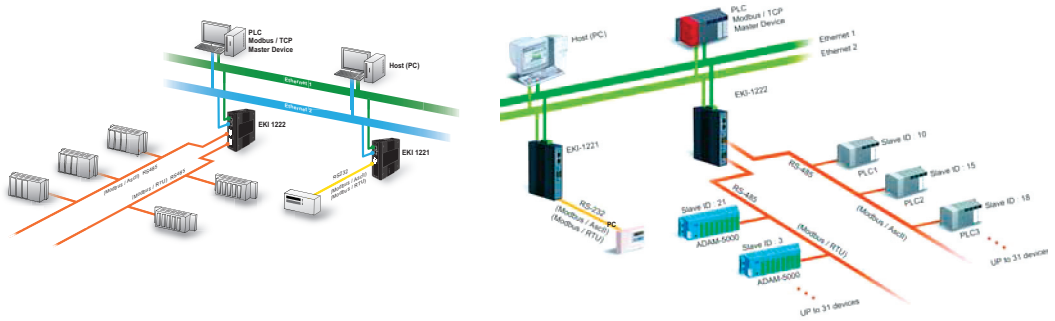

Figure 2.1 Modbus System Architecture 1

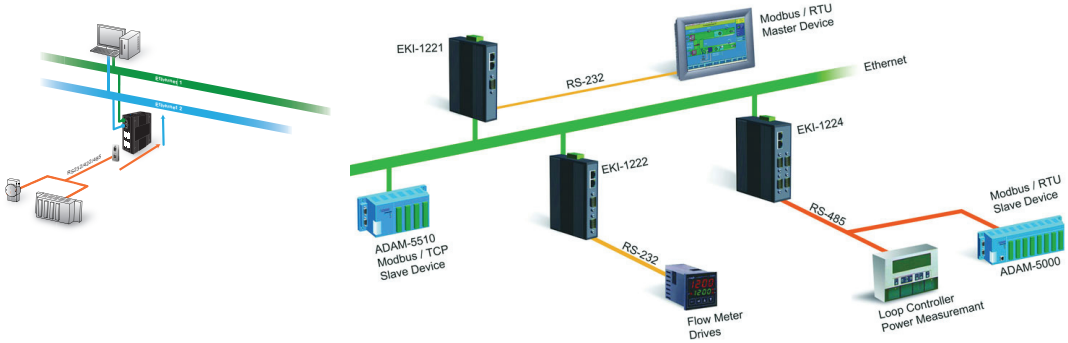

Figure 2.2 Modbus System Architecture 2

2.1.2 Modbus RTU

The Modbus/RTU protocol defines how a “master” device polls one or more “slave” devices to read and write data in real-time over RS-232, RS-422, or RS-485 serial data 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 better data throughput than ASCII mode for the same baud rate. Nevertheless, each message must be transmitted in continuous stream.

2.1.3 Modbus ASCII

When using ASCII mode, each 8-bit byte in a message is sent as two ACSII 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.

Mode	RTU	ASCII
Coding System	8-bit binary. Two hexadecimal character 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 ASCII

As a new extension of Modbus/RTU, the Modbus/TCP protocol defines how Modbus/RTU messages are encoded within and transported over TCP/IP-based networks. Modbus/TCP is just as simple to implement and flexible to apply as the original Modbus/RTU. The Modbus/TCP protocol is defined by its form of encapsulation for a Modbus request or response. That means the Modbus request or response data is encapsulated in TCP frame that has a six-byte header in Modbus/TCP protocol.

Modbus/TCP enables the use of Modbus messaging in an Intranet running the TCP/IP protocols. Modbus/TCP is most commonly used for Ethernet attachment of PLC's or I/O modules to other simple field buses or I/O networks.

2.2 Specifications

Specifications	Description	
Interface	I/O Port	■ EKI-1211: 1 x RJ45 + 1 x RS-232/422/485 ■ EKI-1221: 2 x RJ45 + 1 x RS-232/422/485 ■ EKI-1221I: 2 x RJ45 + 1 x RS-232/422/485 ■ EKI-1221I-MT: 1 x RJ45 + 1 x RS-232/422/485 ■ EKI-1222I-SC: 1 x RJ45 + 2 x RS-232/422/485 ■ EKI-1221CI-DE: 2 x RJ45 + 1 x RS-232/422/485 ■ EKI-1222: 2 x RJ45 + 2 x RS-232/422/485 ■ EKI-1222I: 2 x RJ45 + 2 x RS-232/422/485 ■ EKI-1222CI-DE: 2 x RJ45 + 1 x RS-232/422/485 ■ EKI-1224: 2 x RJ45 + 4 x RS-232/422/485 ■ EKI-1224I: 2 x RJ45 + 4 x RS-232/422/485 ■ EKI-1224CI: 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-1221/1222: 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/EKI-1221/EKI-1222/EKI-1224: -10°C ~ 60°C (14°F ~ 140°F) ■ CI models: -40°C ~ 70°C (-40°F ~ 158°F) ■ I models: -40°C ~ 75°C (-40°F ~ 167°F)
	Storage Temperature	■ EKI-122x: -20°C ~ 80°C (-4°F ~ 176°F) ■ EKI-1211: -40°C ~ 85°C (-40°F ~ 185°F)
	Ambient Relative Humidity	5 ~ 95% RH

Specifications	Description	
Ethernet Communications	Compatibility	IEEE 802.3, IEEE 802.3u
	Speed	10/100 Mbps
	Port Connector	■ EKI-1221: 2 x RJ45 ■ EKI-122x: 8-pin RJ45
	Protection	■ EKI-1211: built-in 2.25 KV magnetic isolation ■ EKI-122x: built-in 1.5 KV magnetic isolation
Serial Communications	Port Type	■ EKI-1211: RS-232/422/485 ■ EKI-122x: RS-232/422/485, software selectable ■ CI models: RS-422/485
	Port Connector	DB9 male
	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
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	32-bit/64-bit Windows 2000/XP/Vista/7/8/8.1/10, Windows Server 2003/2008/2008 R2/2012/2012 R2
	Utility	Advantech EKI Device Configuration Utility
	Operation Modes	Modbus RTU Master/Slave mode Modbus ASCII Master/Slave mode
	Configuration	Windows Utility, Web Browser
	Protocols	Modbus RTU, Modbus TCP, Modbus ASCII
Regulatory Approvals	EMC	CE, FCC Part 15 Subpart B (Class A)

2.3 Hardware

2.3.1 Front View

The following view depicts the EKI-1211.

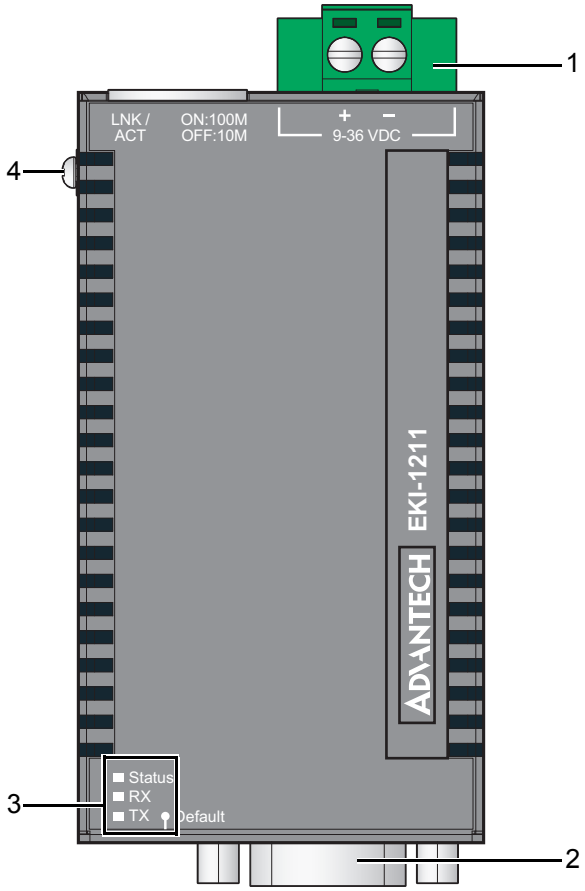

Figure 2.3 EKI-1211 Front View

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 19 for further details.
4.	Ground terminal	Screw terminal used to ground chassis.

The following view depicts the EKI-1221.

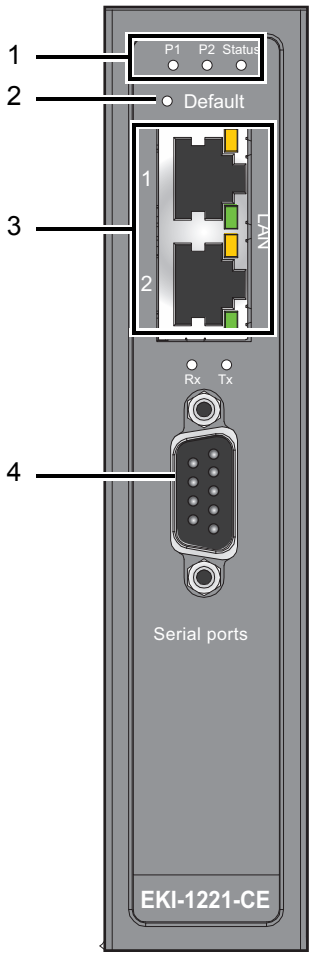

Figure 2.4 EKI-1221 Front View

No.	Item	Description
1.	System LED panel	See “LED Indicators” on page 19 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-1221I-MT.

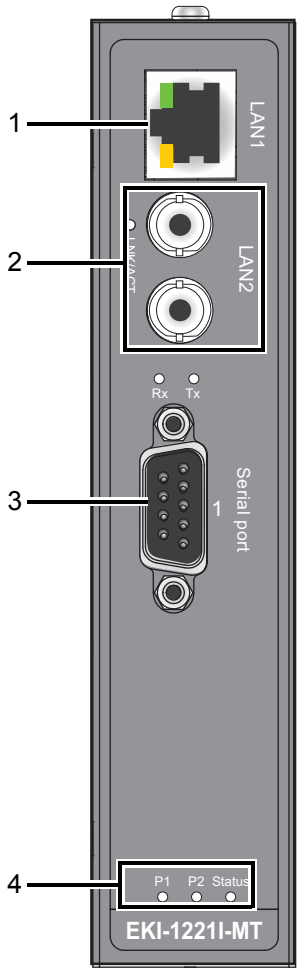

Figure 2.5 EKI-1221I-MT Front View

No.	Item	Description
1.	ETH port	RJ45 port
2.	Fiber Port	ST multi-mode fiber port
3.	Serial port	DB9 pinout, supports 232/422/485
4.	System LED panel	See “LED Indicators” on page 19 for further details.

The following view depicts the EKI-1222.

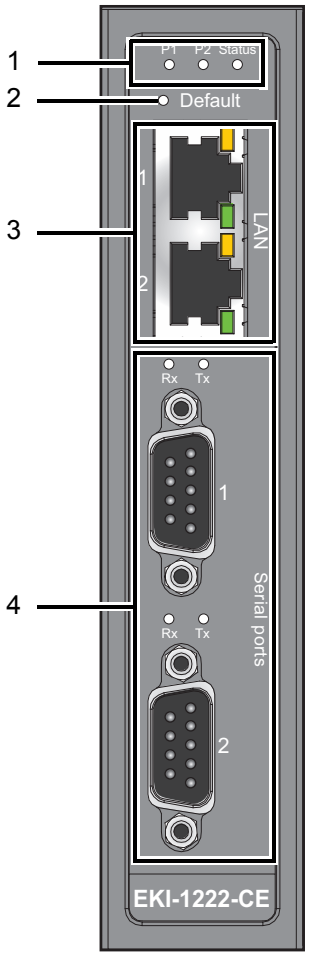

Figure 2.6 EKI-1222 Front View

No.	Item	Description
1.	System LED panel	See “LED Indicators” on page 19 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-1222I-SC.

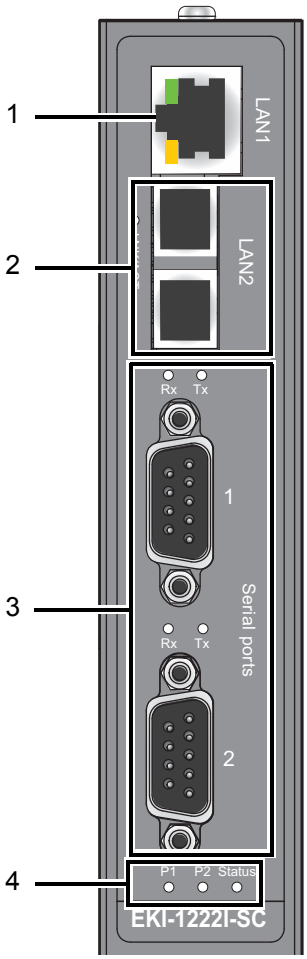

Figure 2.7 EKI-1222I-SC Front View

No.	Item	Description
1.	ETH port	RJ45 ports
2.	Fiber port	ST single mode Fiber port
3.	Serial port	DB9 (pinout) ports x 2, supports 232/422/485
4.	System LED panel	See “LED Indicators” on page 19 for further details.

The following view depicts the EKI-1224.

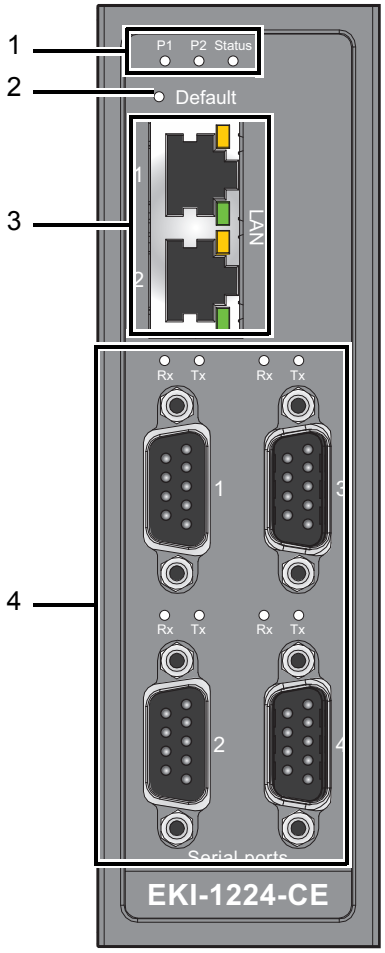

Figure 2.8 EKI-1224 Front View

No.	Item	Description
1.	System LED panel	See “LED Indicators” on page 19 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.

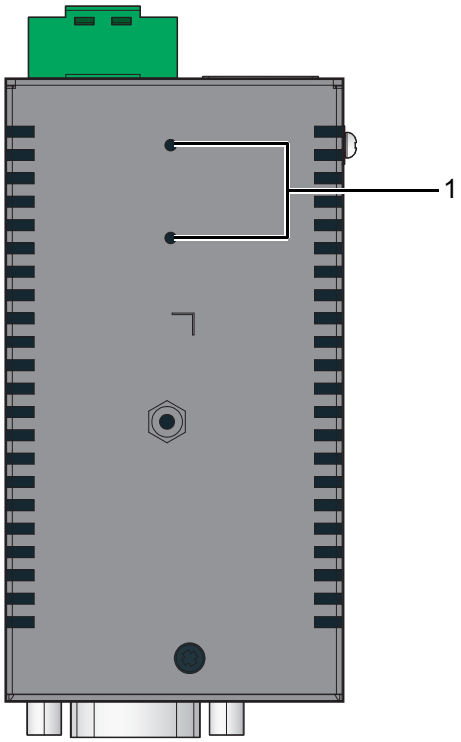

Figure 2.9 EKI-1211 Rear View

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.

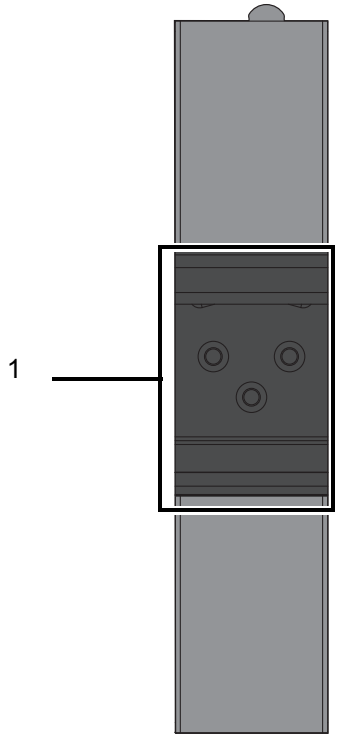

Figure 2.10 EKI-1221 and EKI-1222 Rear View

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.

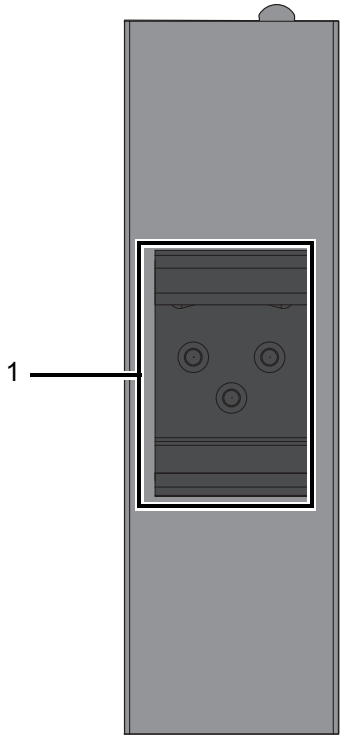

Figure 2.11 EKI-1224 Rear View

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.

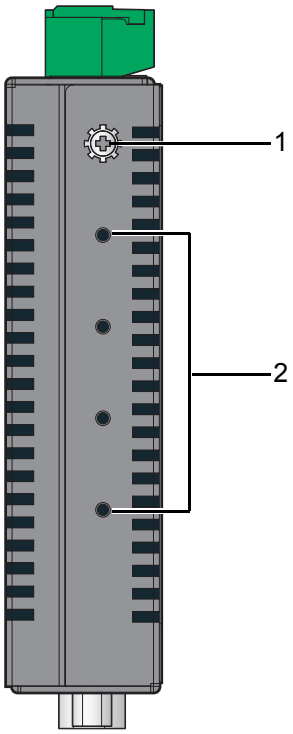

Figure 2.12 EKI-1211 Left View

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.

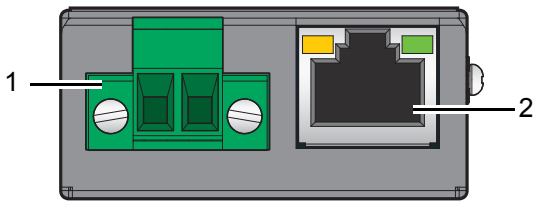

Figure 2.13 EKI-1211 Top View

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.

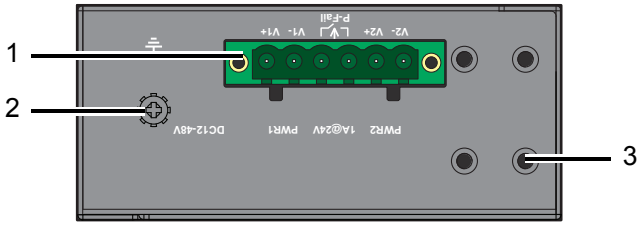

Figure 2.14 EKI-122x Top View

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.

The following view depicts the EKI-1221I and EKI-1222I.

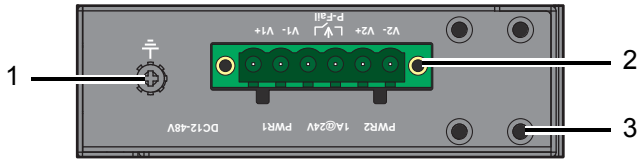

Figure 2.15 EKI-1221I and EKI-1222I Top View

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.

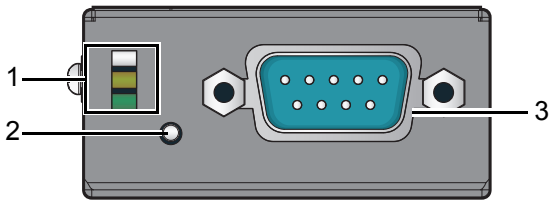

Figure 2.16 EKI-1211 Bottom View

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-1221I and EKI-1222I.

Figure 2.17 EKI-1221I and EKI-1222I Bottom View

No.	Item	Description
1.	Reset button	■ Reset to factory default, press and hold until status indicator blinks ■ System reboot, press and hold for 2 seconds
2.	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.

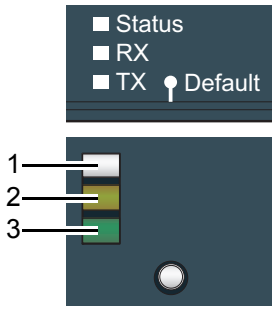

Figure 2.18 EKI-1211 System LED Panel

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.

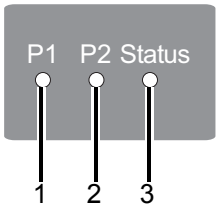

Figure 2.19 EKI-122x System LED Panel

No.	LED Name	LED Color	Description
1.	P1	Green	Power 1 is on
		Off	Power 1 is off, or power error condition exists

No.	LED Name	LED Color	Description
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.

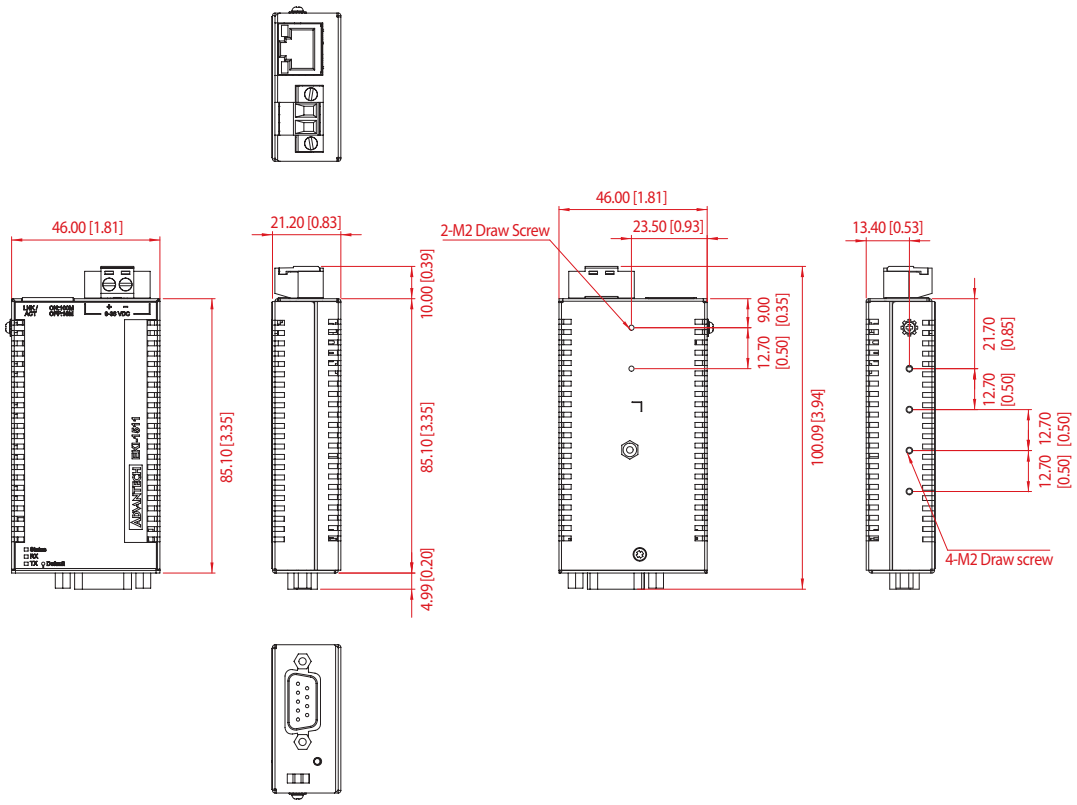

Figure 2.20 EKI-1211 Dimensions

The following view depicts the EKI-1221.

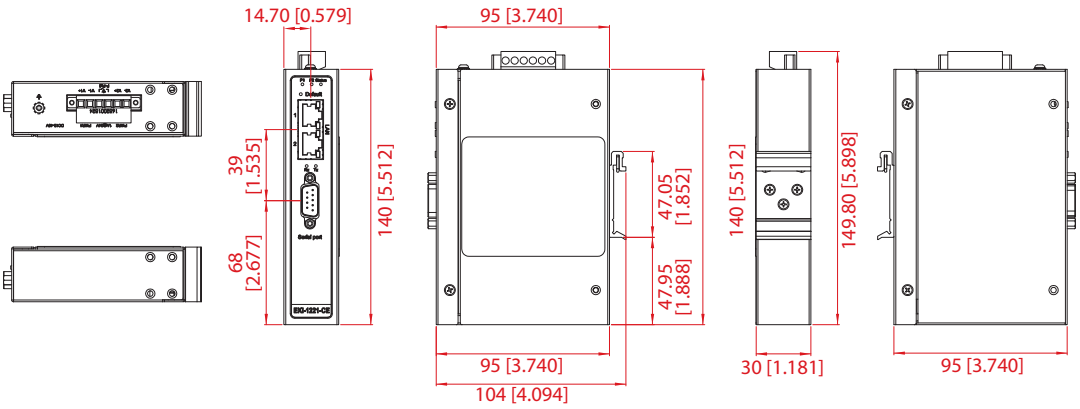

Figure 2.21 EKI-1221 Dimensions

The following view depicts the EKI-1221I-MT.

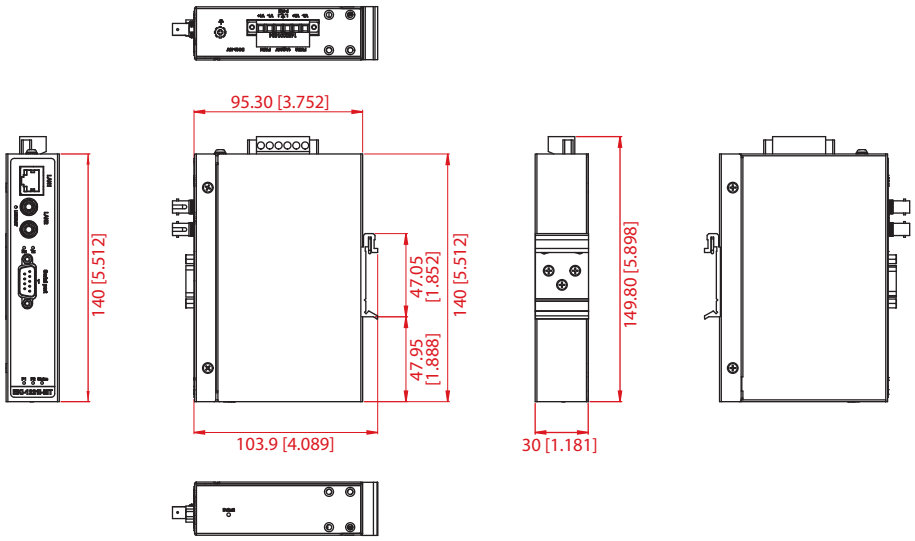

Figure 2.22 EKI-1221I-MT Dimensions

The following view depicts the EKI-1222I-SC.

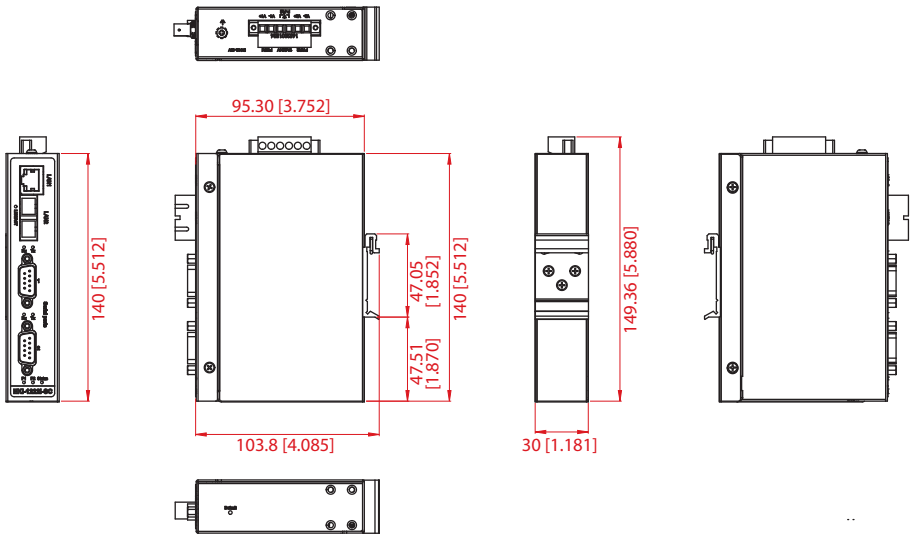

Figure 2.23 EKI-1222I-SC Dimensions

The following view depicts the EKI-1222.

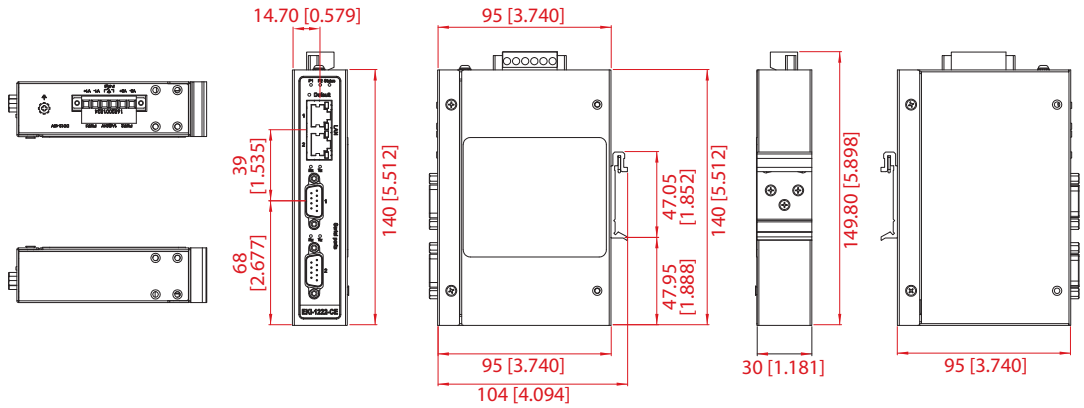

Figure 2.24 EKI-1222 Dimensions

The following view depicts the EKI-1224.

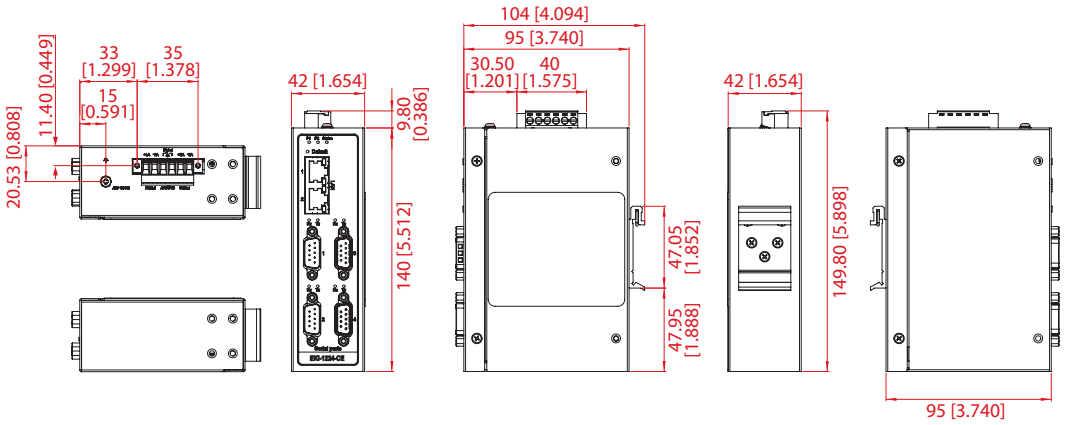

Figure 2.25 EKI-1224 Dimensions

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.

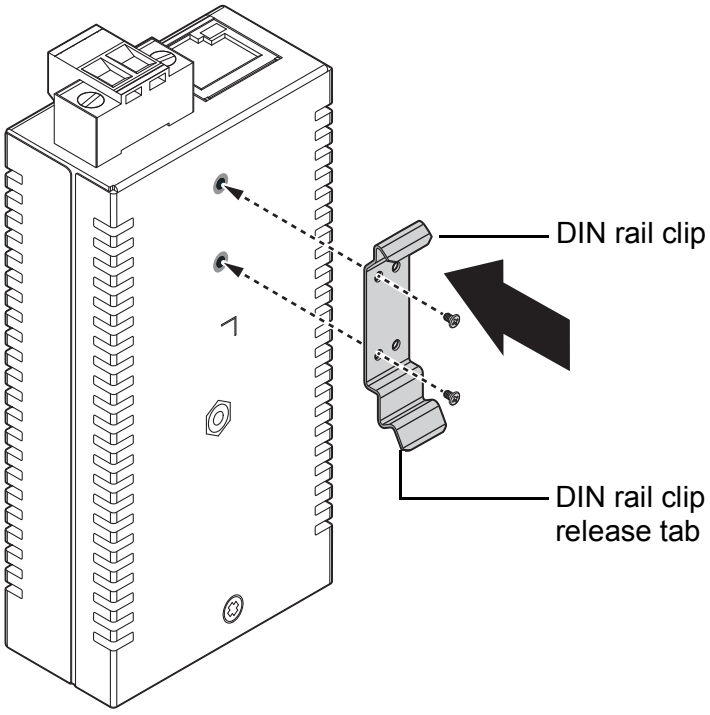

Figure 2.26 Installing the DIN Bracket (EKI-1211 Series)

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.

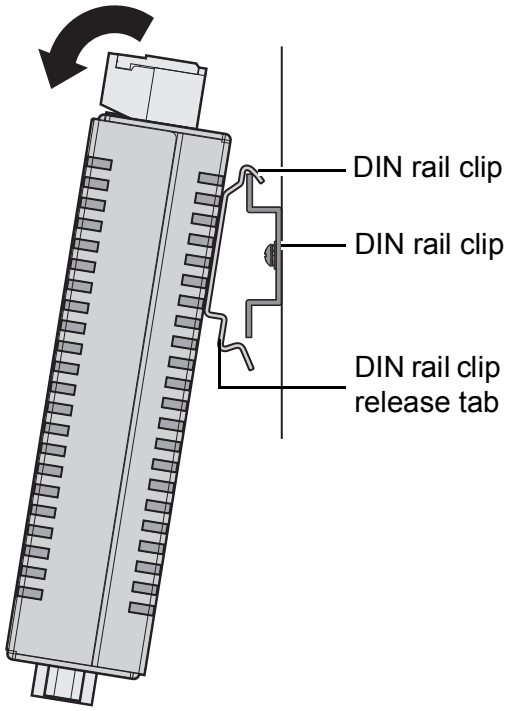

Figure 2.27 Installing the DIN-Rail Mounting Kit (EKI-1211 Series)

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

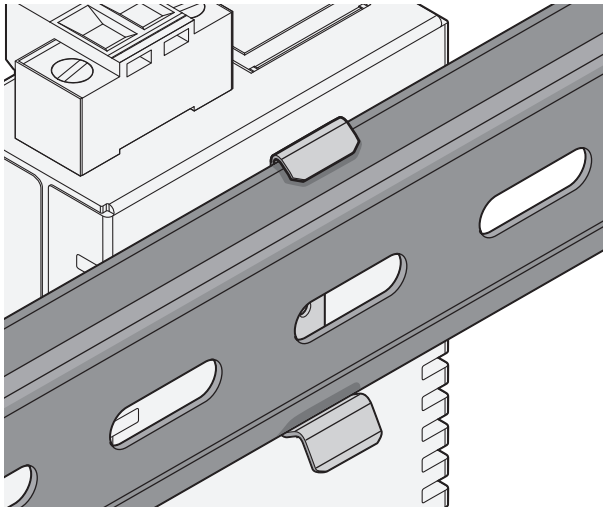

Figure 2.28 Correctly Installed DIN Rail Kit

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.

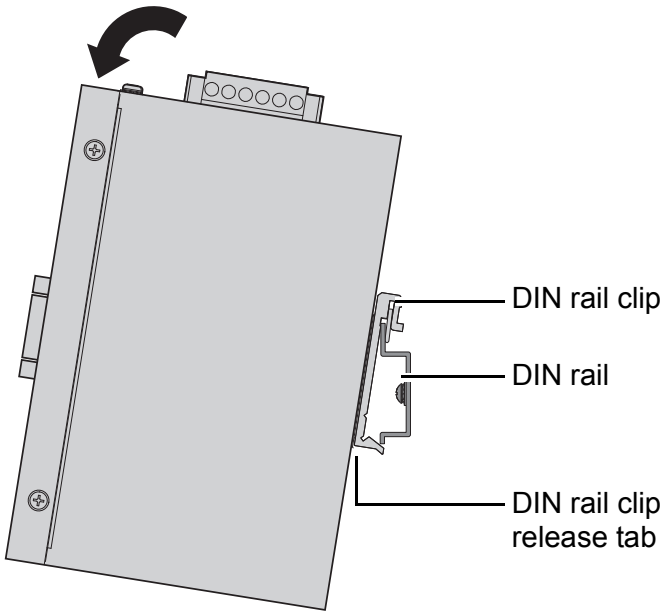

Figure 2.29 Installing the DIN-Rail Mounting Kit (EKI-122x Series)

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

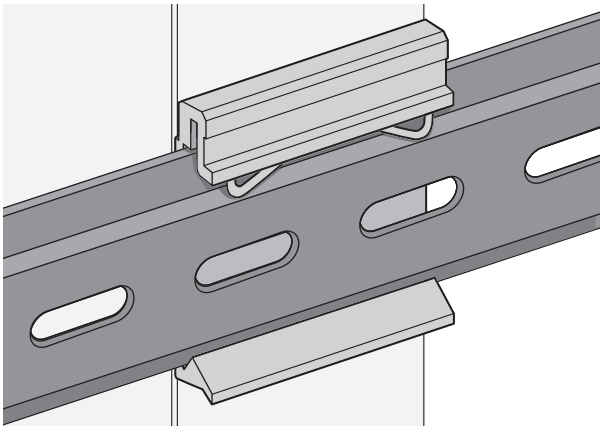

Figure 2.30 Correctly Installed DIN Rail Kit (EKI-122x Series)

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.

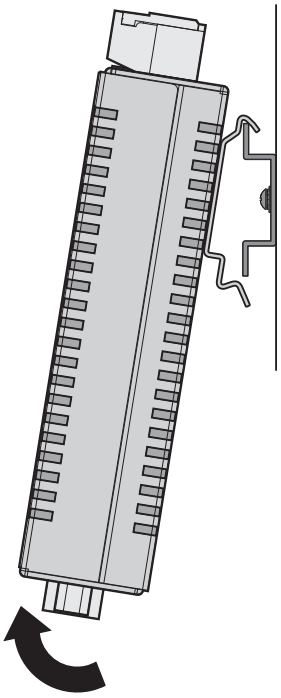

Figure 2.31 Removing the DIN-Rail (EKI-1211 Series)

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.

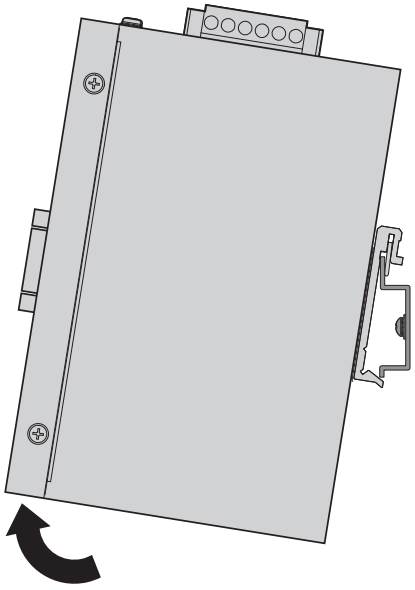

Figure 2.32 Removing the DIN-Rail (EKI-122x Series)

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

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

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

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

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

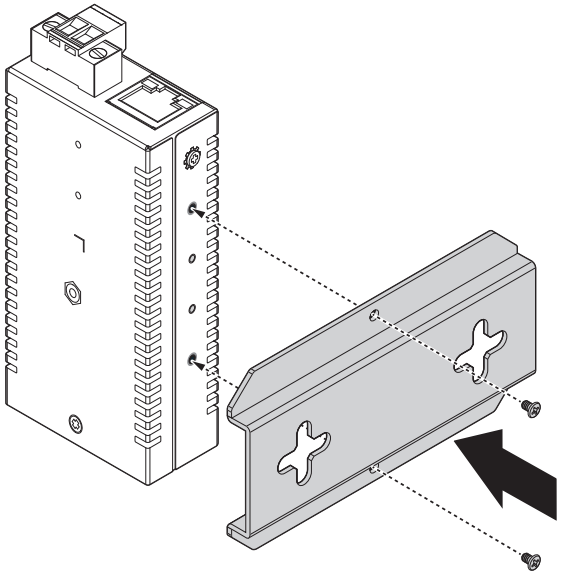

Figure 2.33 Installing Wall Mount Plates (EKI-1211 Series)

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 2.34 Securing Wall Mounting Screws

Note!

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

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.

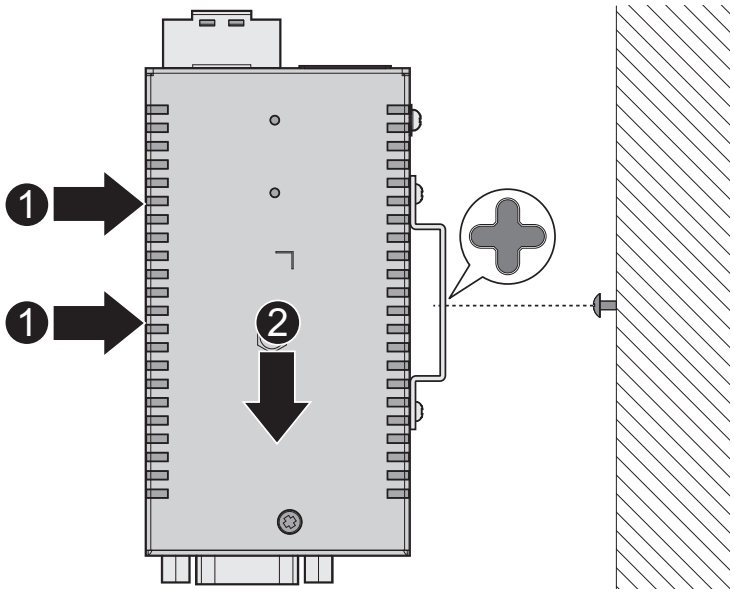

Figure 2.35 Wall Mount Installation (EKI-1211 Series)

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.

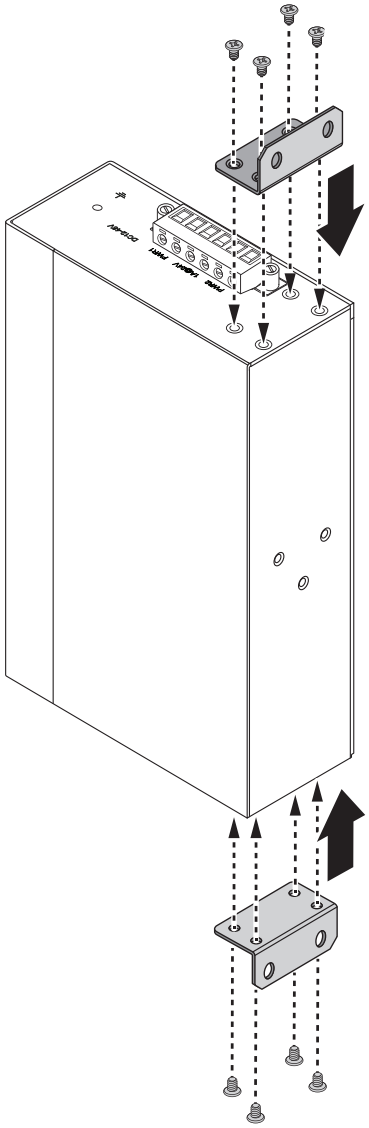

Figure 2.36 Installing Wall Mount Plates (EKI-122x Series)

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.

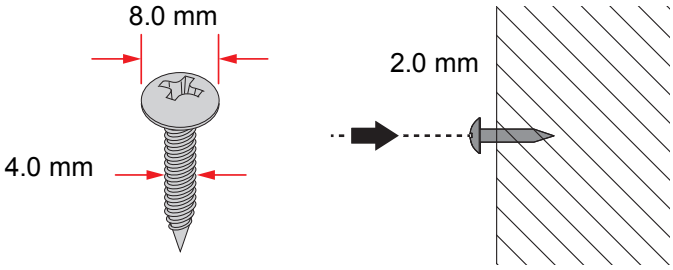

Figure 2.37 Securing Wall Mounting Screws

Note!

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

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

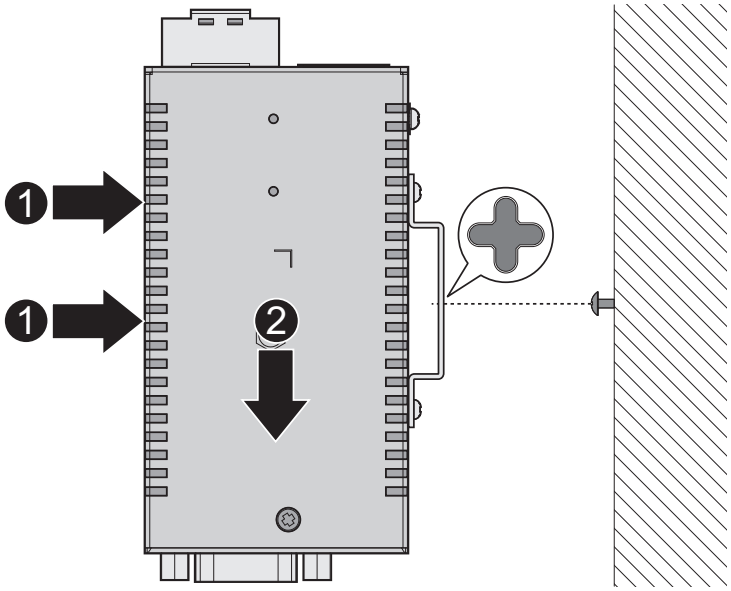

Figure 2.38 Wall Mount Installation (EKI-1211 Series)

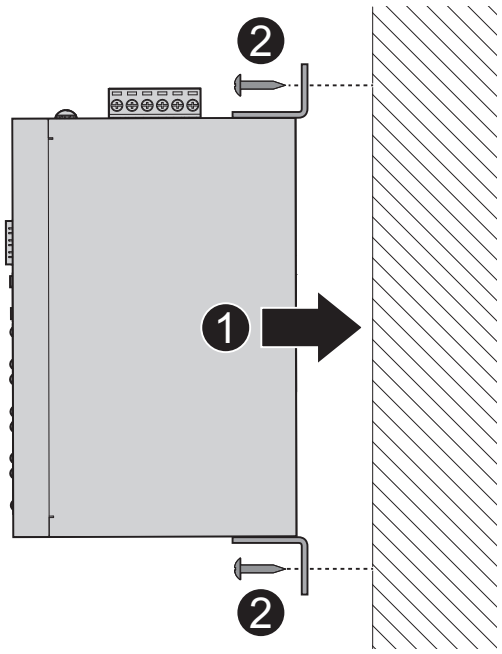

Figure 2.39 Wall Mount Installation (EKI-122x Series)

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:

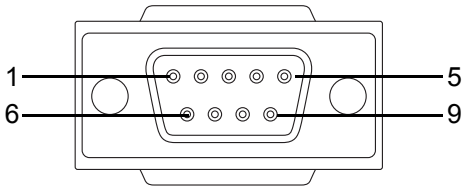

Figure 2.40 DB9 Pin Assignment

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

2.4.4 Power Connections

2.4.4.1 Connecting the Power Adapter

Three types of power adapters for EKI-1211 Series devices to accommodate 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.

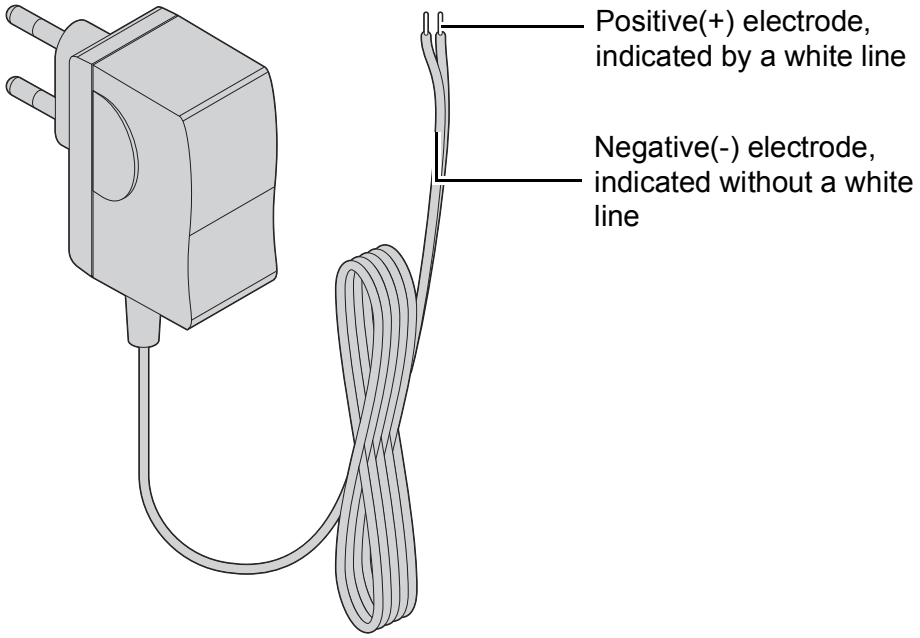

Figure 2.41 Power Adapter Electrode Label Indication

2.4.4.2 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 dual 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.

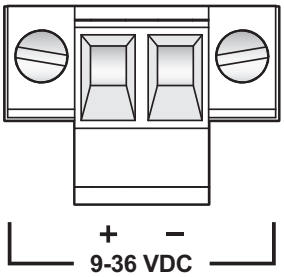

Figure 2.42 Power Wiring for EKI-1211

The EKI-122x series also support dual 12 to 48 VDC power inputs and power-fail relay output.

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

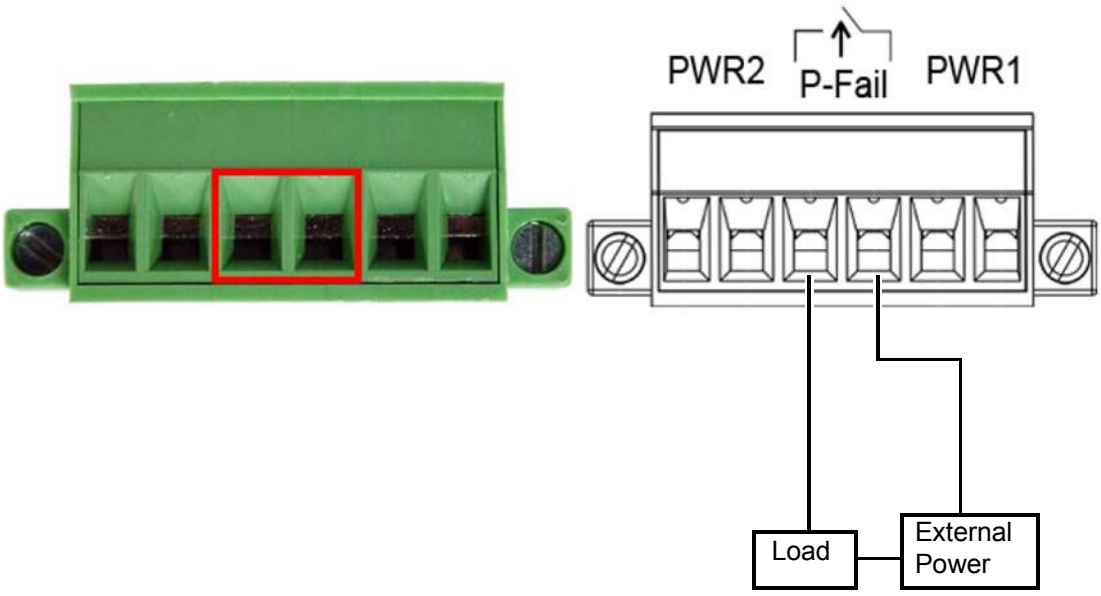

Figure 2.43 Power Wiring for EKI-1200-CE Series

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

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

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

3.2 Installing the Configuration Utility

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

1. Insert the Advantech EKI Device Configuration Utility CD-ROM into the CD-ROM drive (whereas E:\ is the drive name of your CD-ROM) on the host PC.
2. Use Windows explorer or the Windows Run command to execute the setup program, the path for the setup program on the CD-ROM is as follows:
   E:\EKI_Device_Configuration_Utility_v2.01.exe
3. 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.

4. Once the InstallShield Wizard screen displays, click **Next** to proceed with the installation.

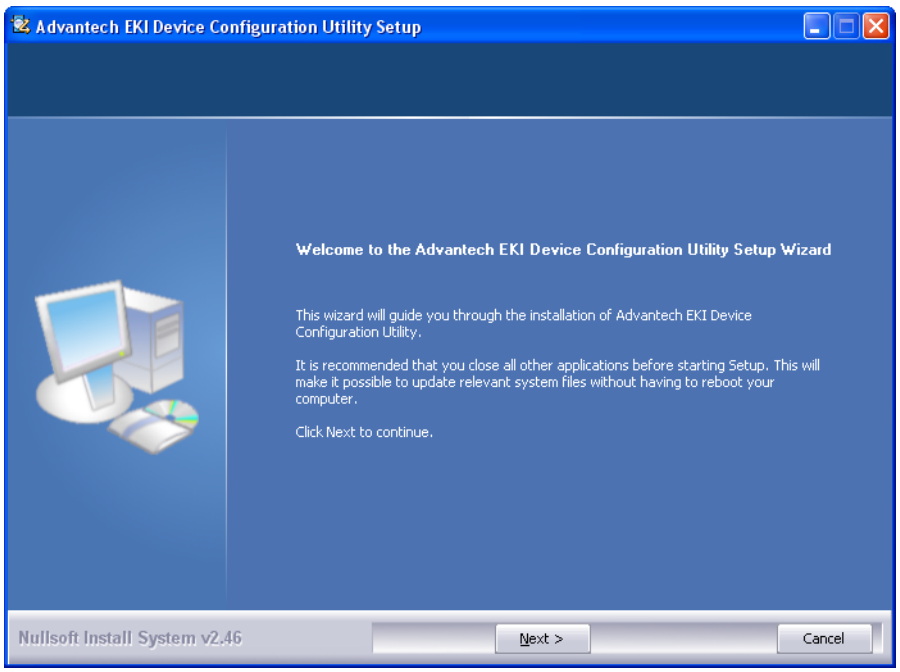

Figure 3.1 InstallShield Wizard 1 of 4

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

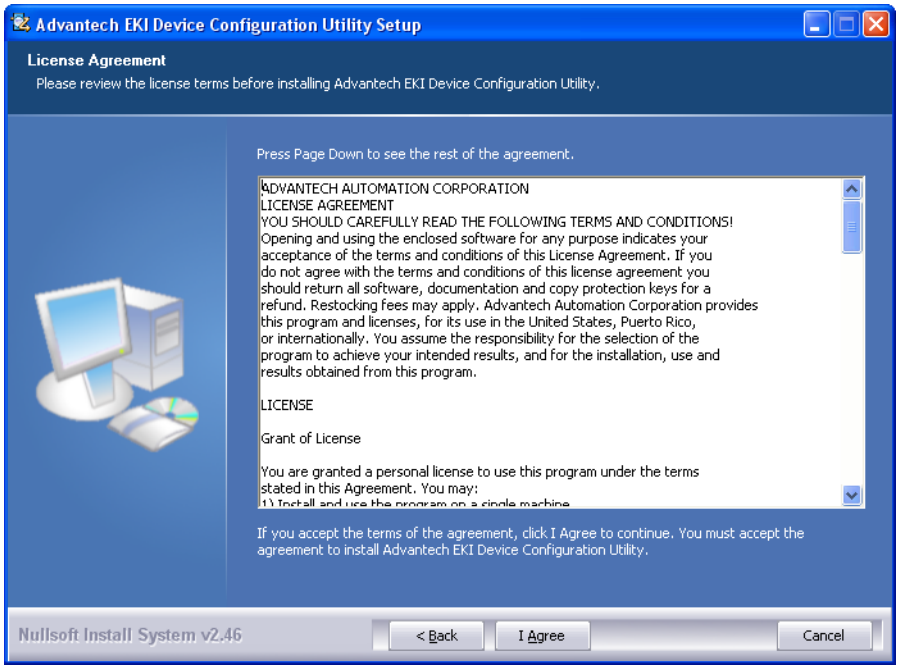

Figure 3.2 InstallShield Wizard 2 of 4

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

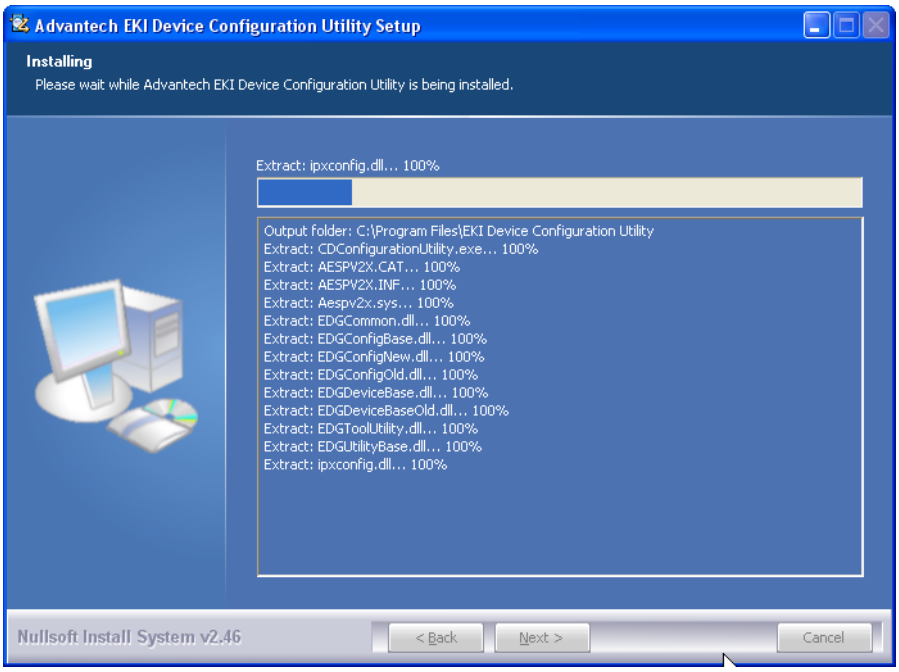

Figure 3.3 InstallShield Wizard 3 of 4

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

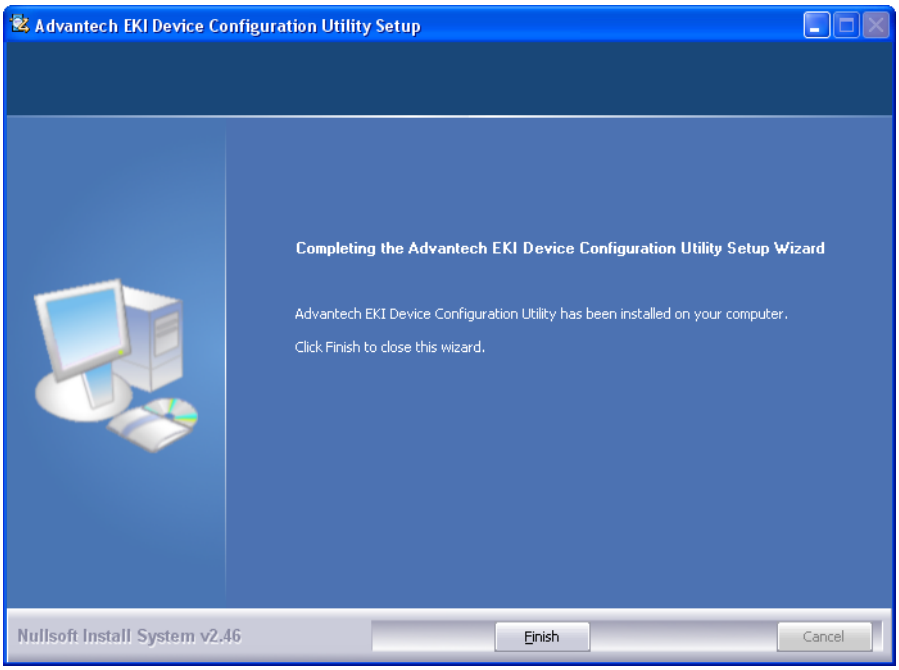

Figure 3.4 InstallShield Wizard 4 of 4

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.

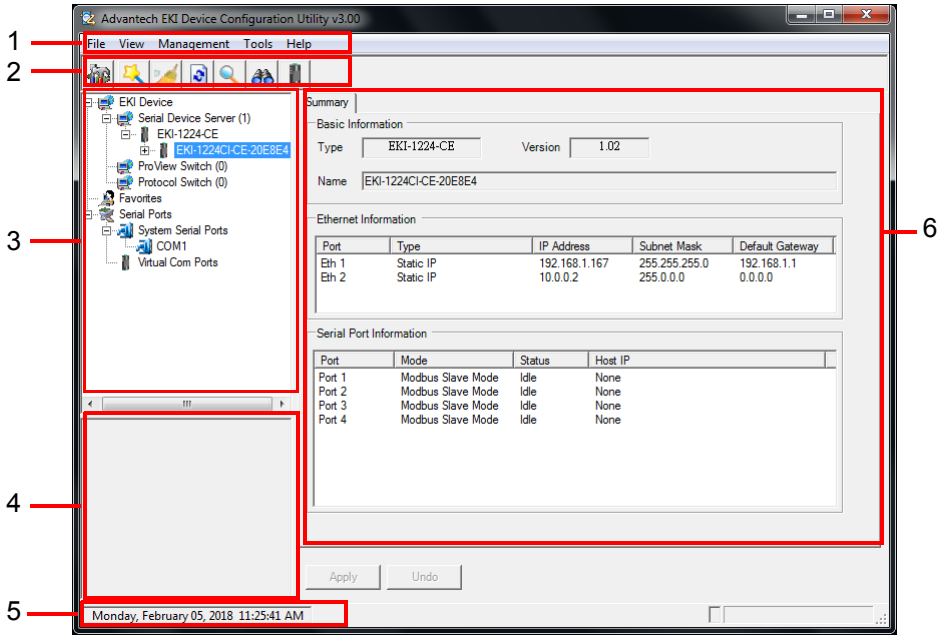

Figure 3.5 Configuration Utility Overview

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.

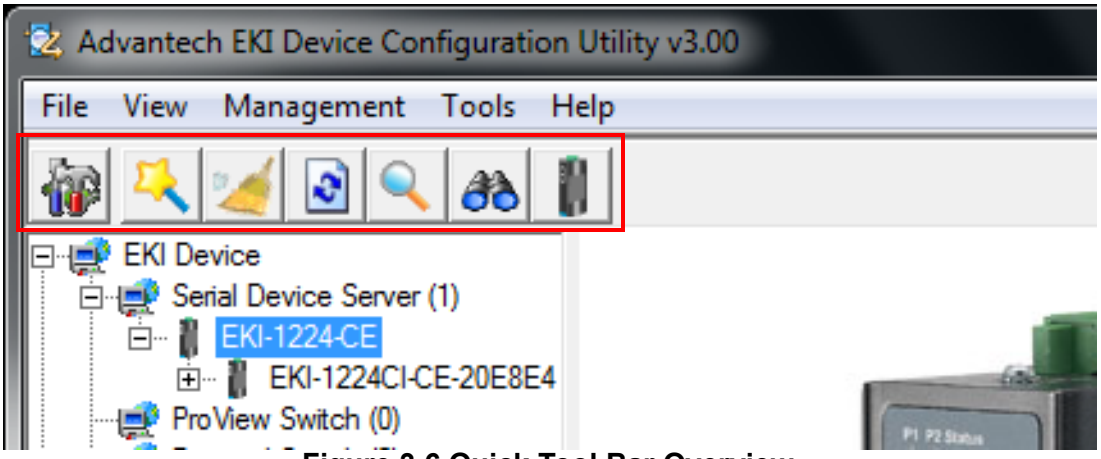

Figure 3.6 Quick Tool Bar Overview

Icon	Item	Description
	Utility Settings	Clear 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.

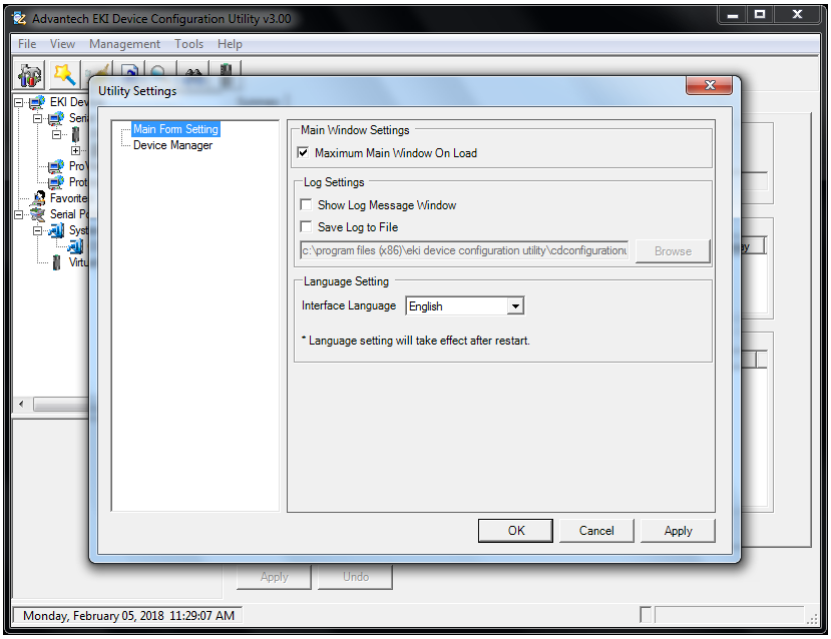

Figure 3.7 View > Settings > Main Form Setting

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

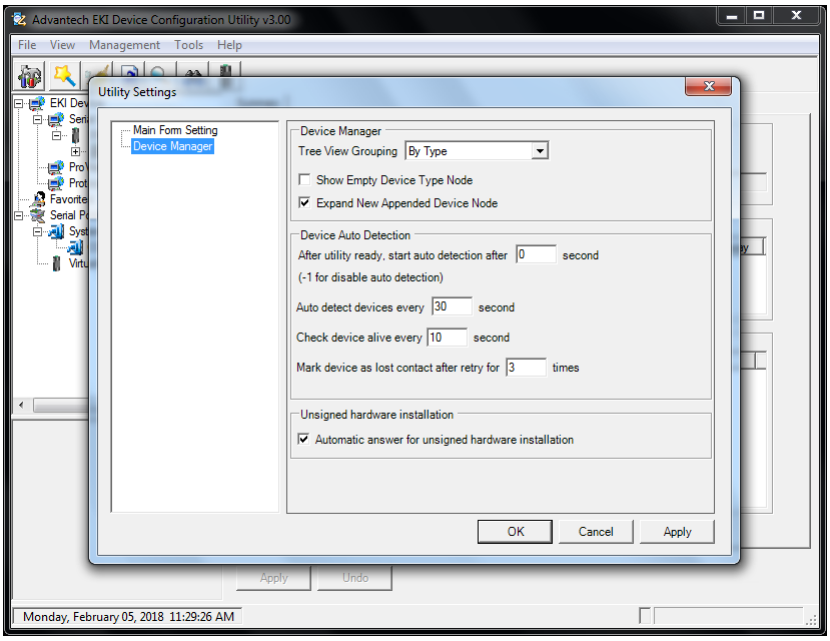

Figure 3.8 View > Settings > Device Manager

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	
After utility ready, start auto detection after X second	Enter a value to specify the time to auto detection time (-1 means disable 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.

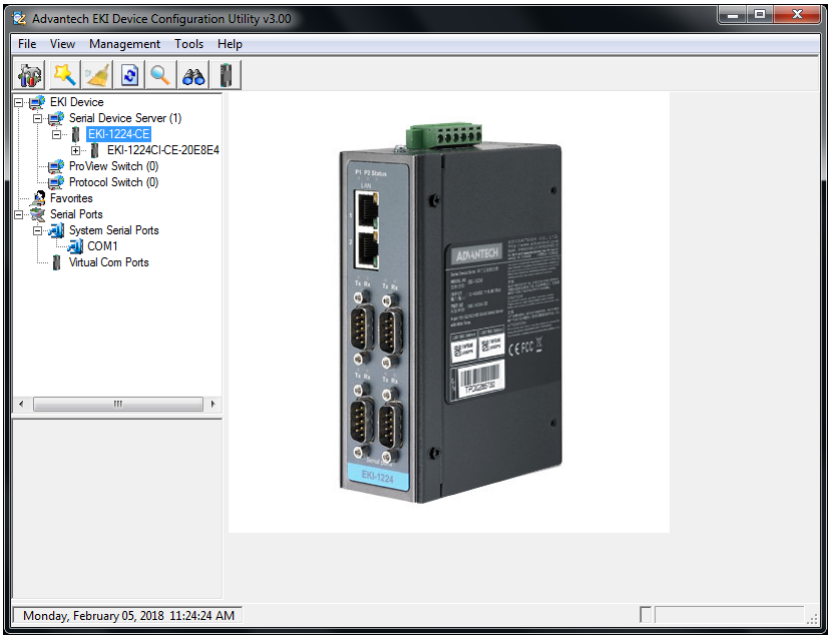

Figure 3.9 Open View of Serial Device Configuration Utility

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.

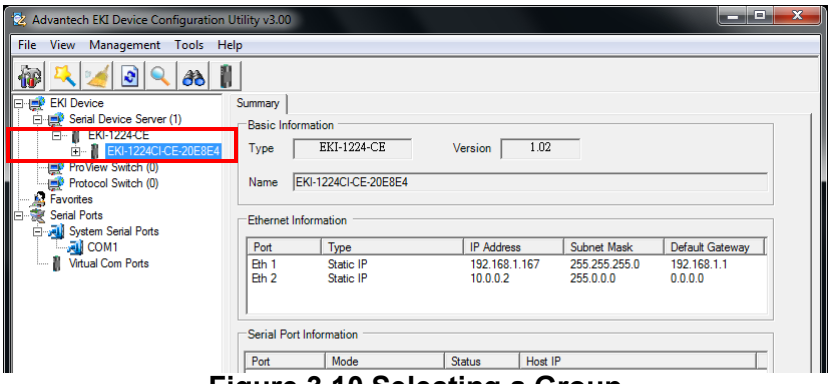

Figure 3.10 Selecting a Group

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

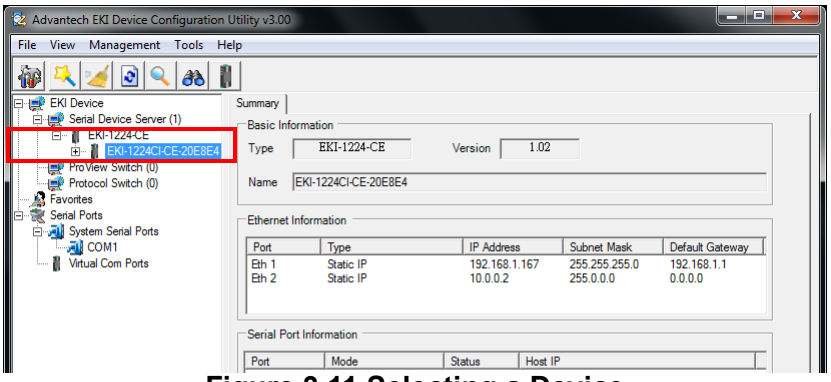

Figure 3.11 Selecting a Device

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

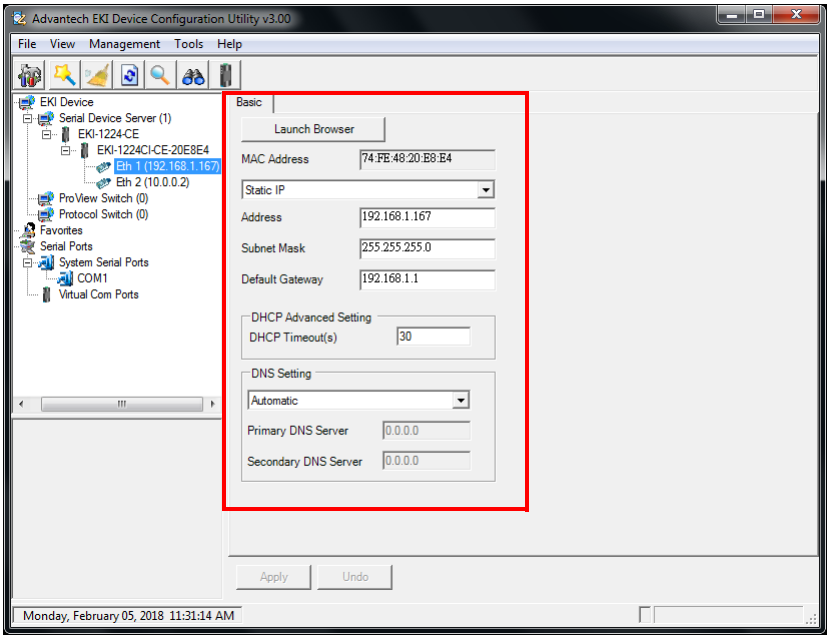

Figure 3.12 Viewing Basic Settings

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.

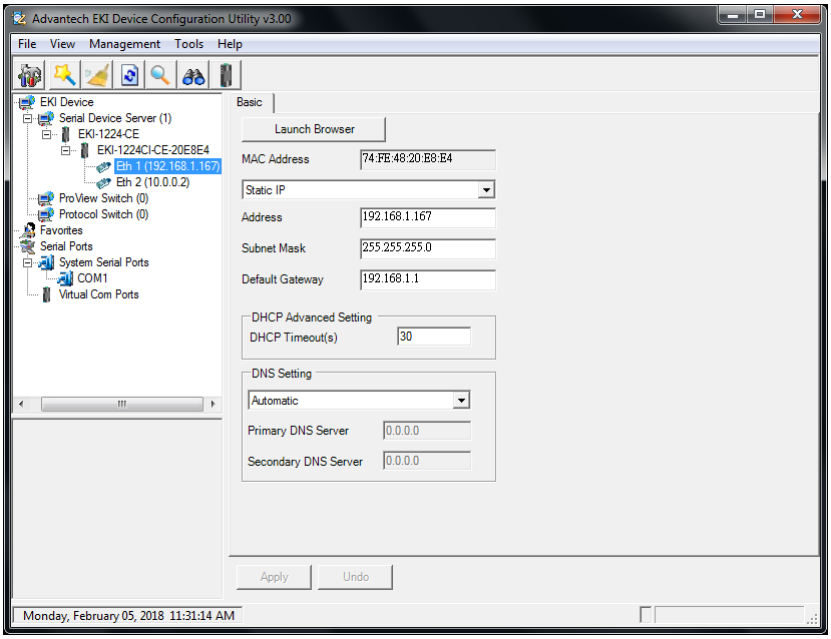

Figure 3.13 Utility Overview

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

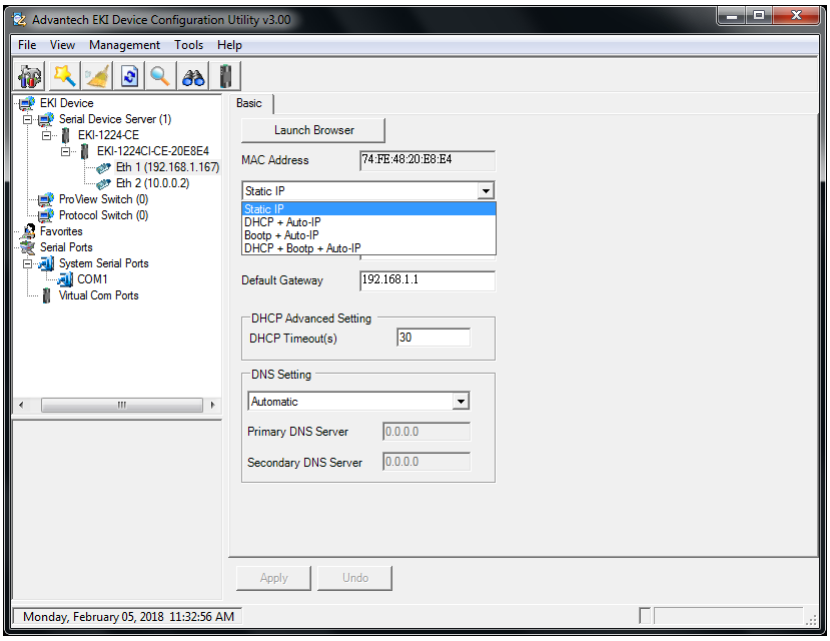

Figure 3.14 Network Settings Overview

Item	Description
Static IP	Static IPUser 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**.

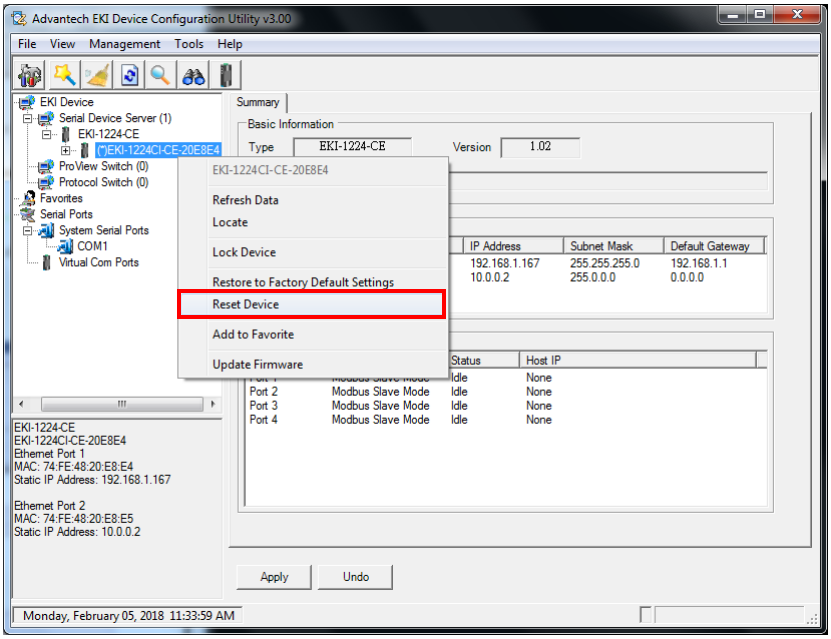

Figure 3.15 Reset Device

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.

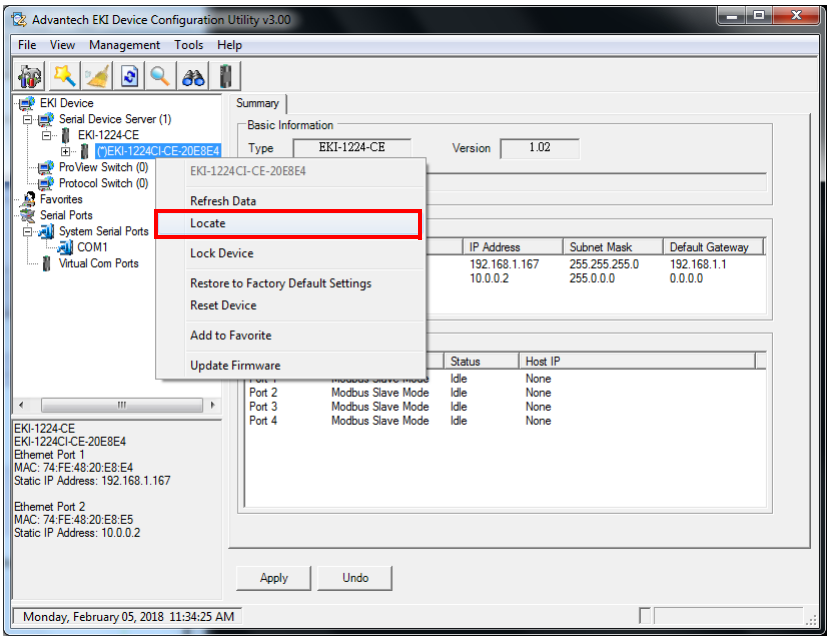

Figure 3.16 Locate the Serial Device Server

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**.

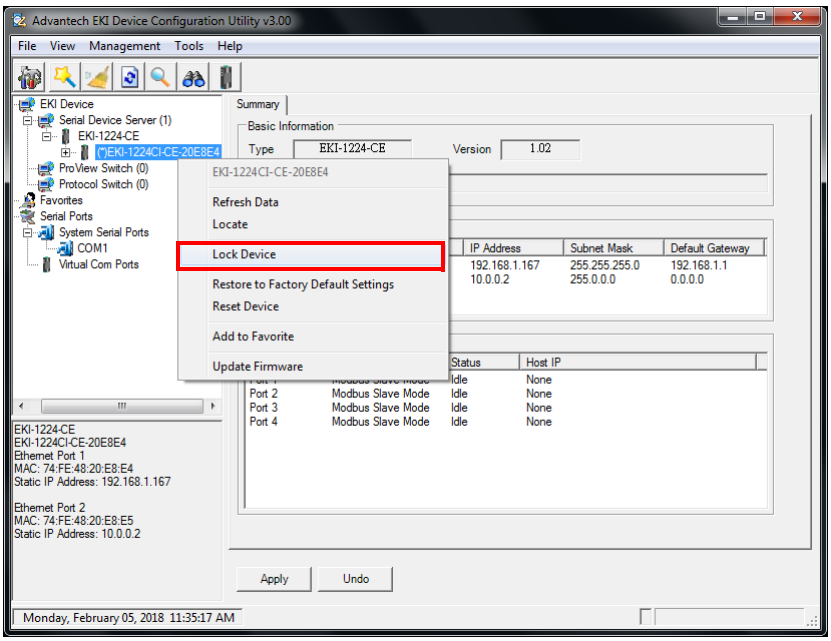

Figure 3.17 Lock the Serial Device Server

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

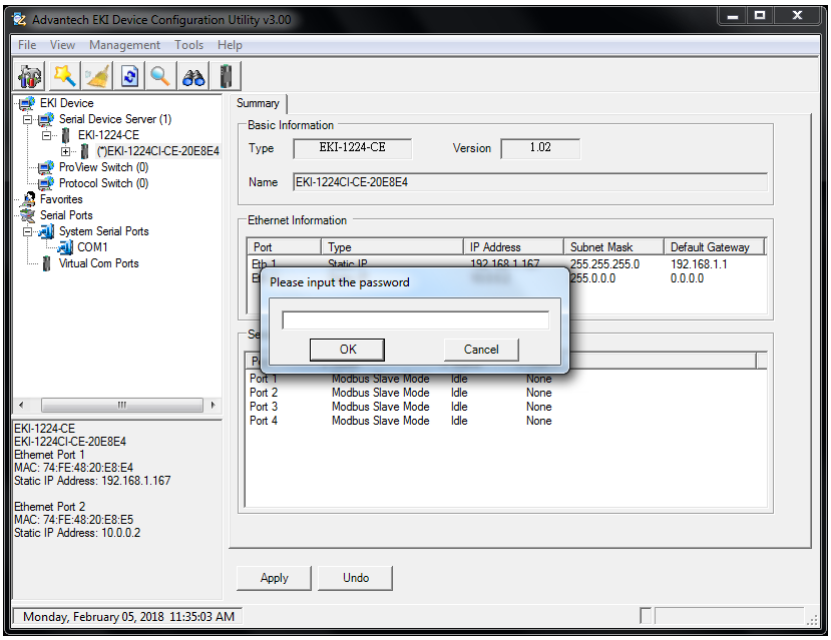

Figure 3.18 Enter a Password

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.

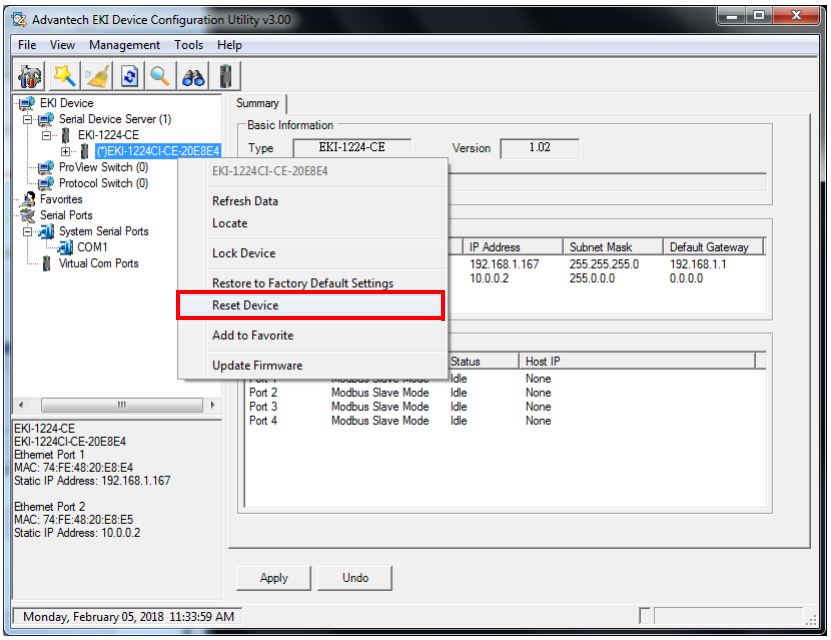

Figure 3.19 Reset Device

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**.

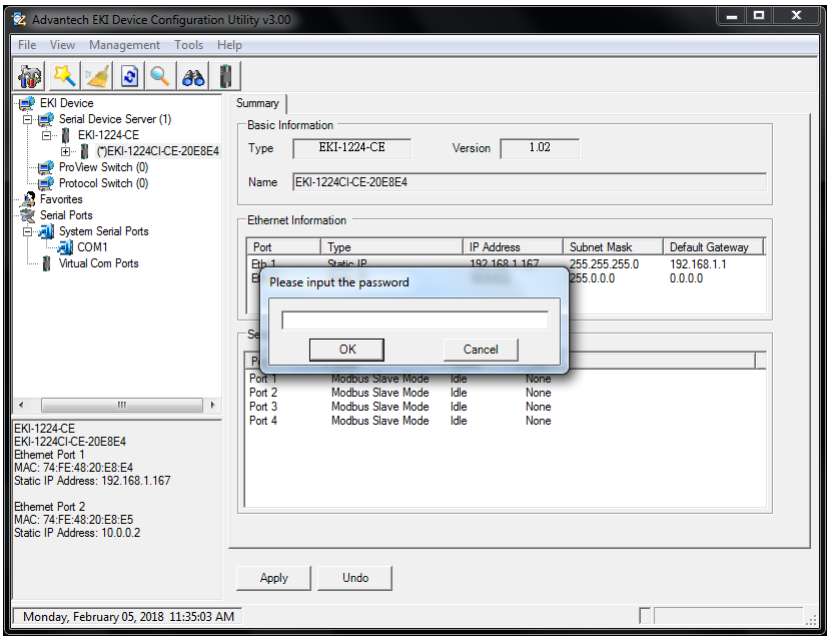

Figure 3.20 Unlock the Serial Device Server

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.

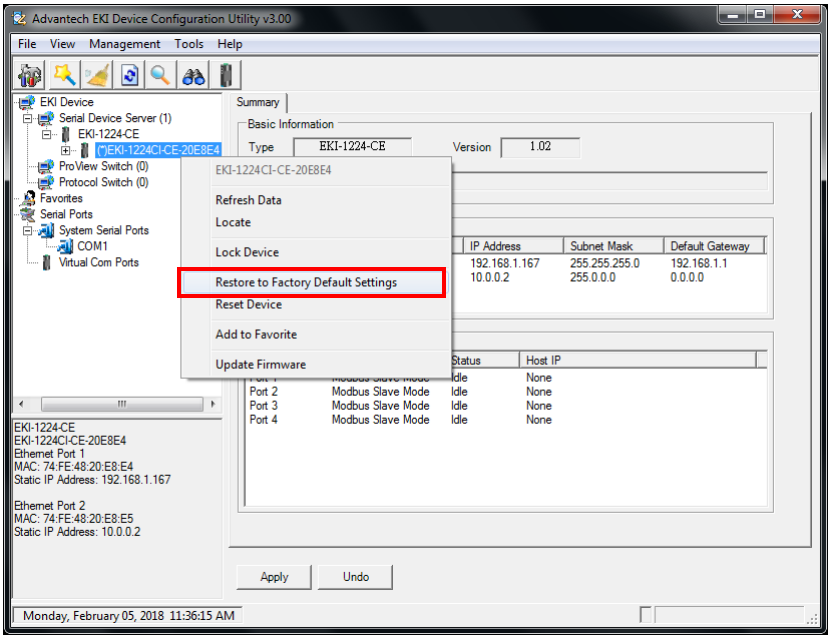

Figure 3.21 Restore to Factory Default Settings

The confirm message will display after clicking **Restore to Factory Default Settings**. If you really want to restore the serial device sever 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**.

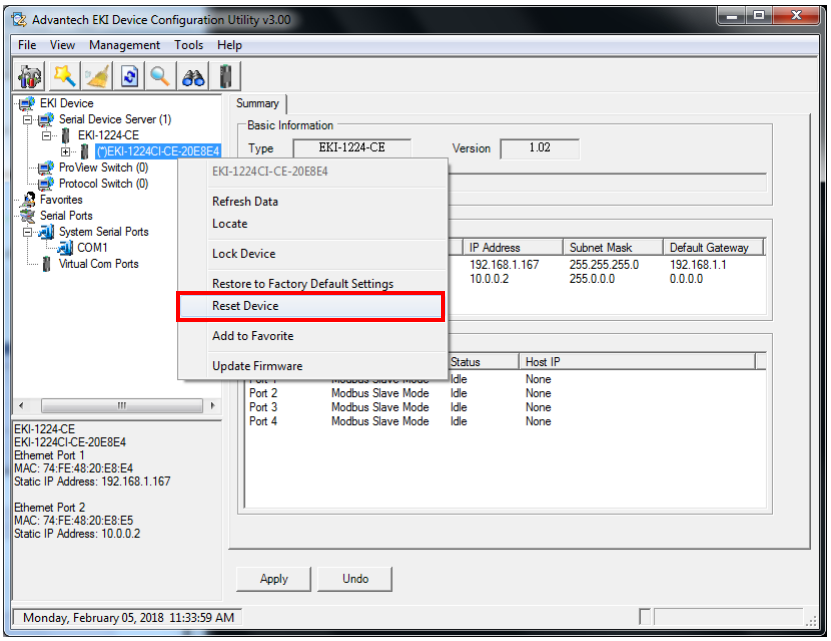

Figure 3.22 Reset Device

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.

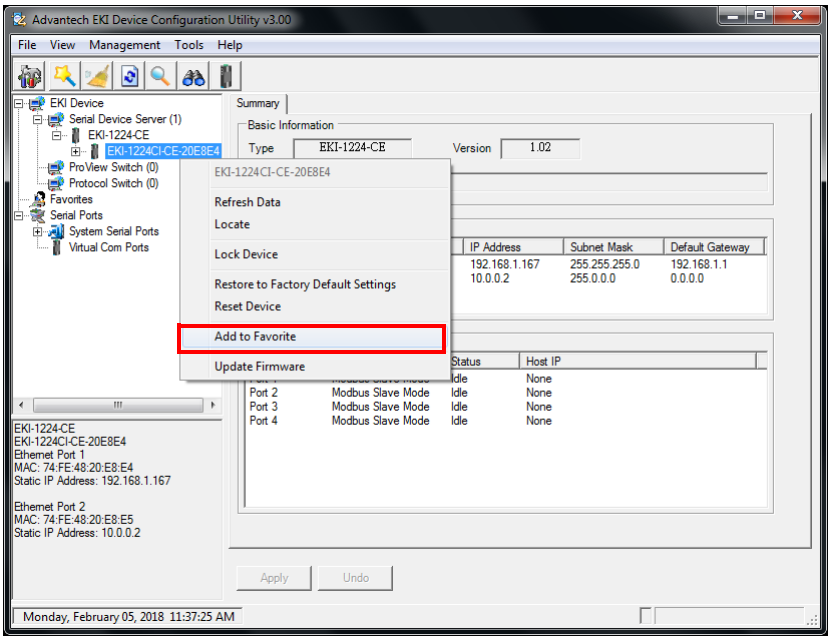

Figure 3.23 Add to Favorite

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**.

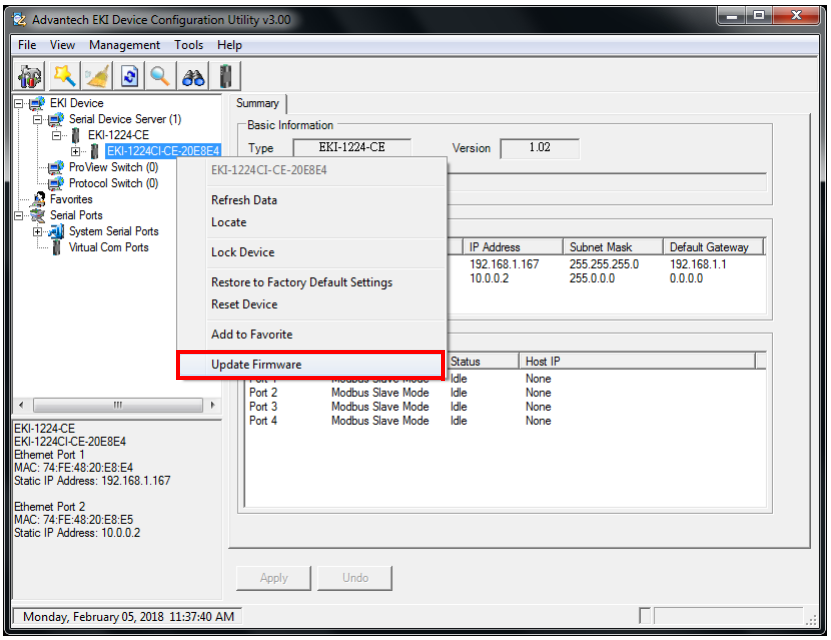

Figure 3.24 Update Firmware

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.*

Chapter 4

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**.

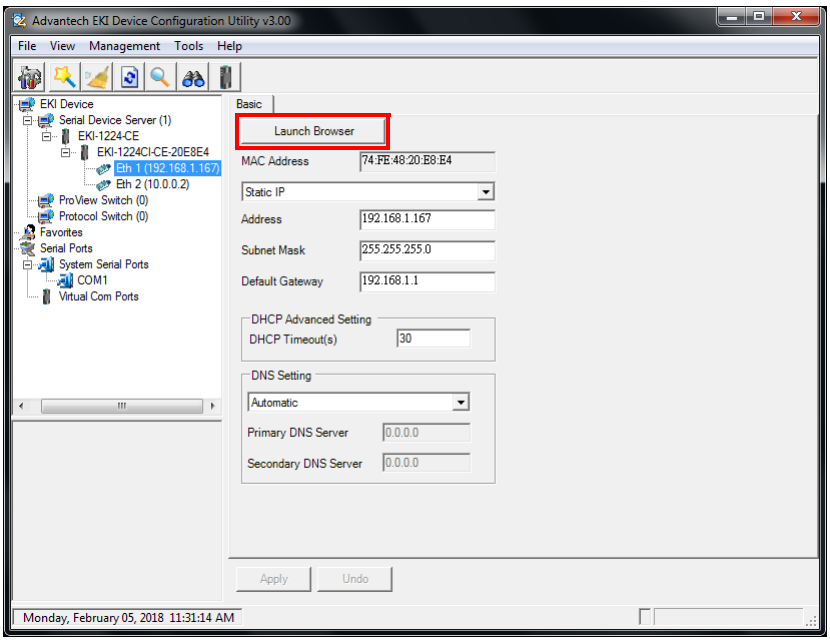

Figure 4.1 Accessing the Web Page via Configuration Utility

4.2.2 Accessing the Web Page via Web Browser

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

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

   The main interface displays.

4.3 System

You can change the Device Name and Device Description on this page. You can also enable or disable the Telnet function. You can also modify the Timezone settings.

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

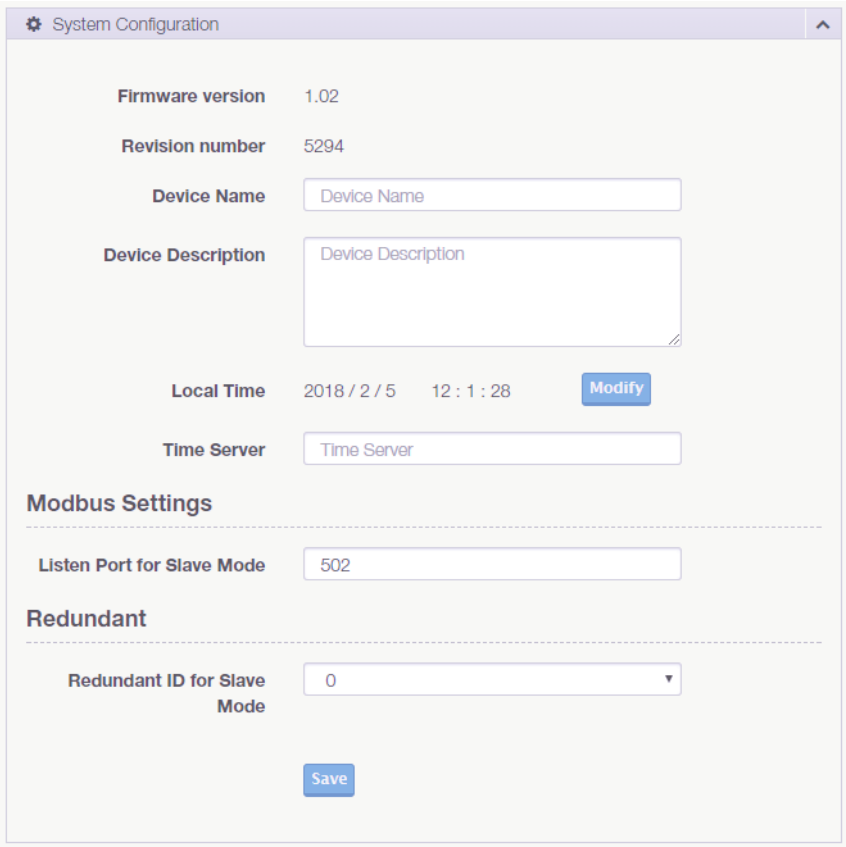

Figure 4.2 System

The following table describes the items in the previous figure.

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.
Local Time	Click **Modify** to set local date and time of the system.
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 host-name 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.
Listen Port for Slave Mode	Enter a value to identify the channel for remote initiating connec-tions. The default value is 502.
Save	Click **Save** to save the values and update the screen.

4.4 Ethernet Configuration

Choose either **Eth 1** or **Eth 2** in the Ethernet Configuration page. Enter the corresponding values for your network environment. Remember to press **Save** after entering all values.

To access this page, click **Ethernet Configuration**.

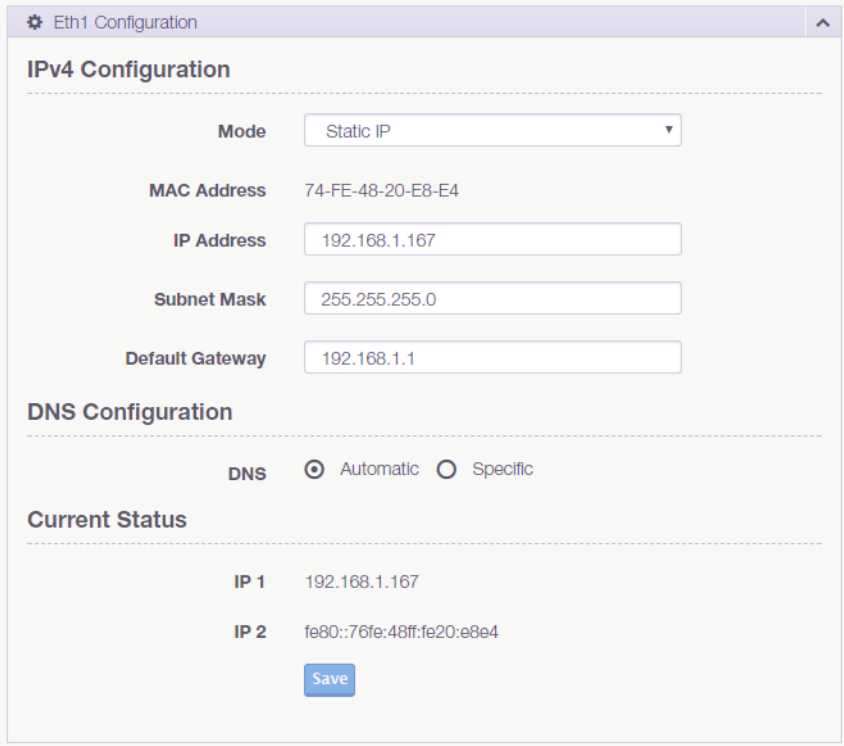

Figure 4.3 Ethernet Configuration

The following table describes the items in the previous figure.

Item	Description
IPv4 Configuration	
Mode	Click the drop-down menu to select the IP Address Setting mode: Static or DHCP.
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 192.168.1.1.
Subnet Mask	Enter a value to specify the IP subnet mask for the interface. The default is 255.255.255.0.
Default Gateway	Enter a value to specify the default gateway for the interface. The default is 192.168.1.254.
DNS	Click the radio button to select the DNS mode: Automatic or Specific.
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**.*

4.5 Port Configuration

The serial port configuration menu has Basic and Operation modes.

4.5.1 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**.

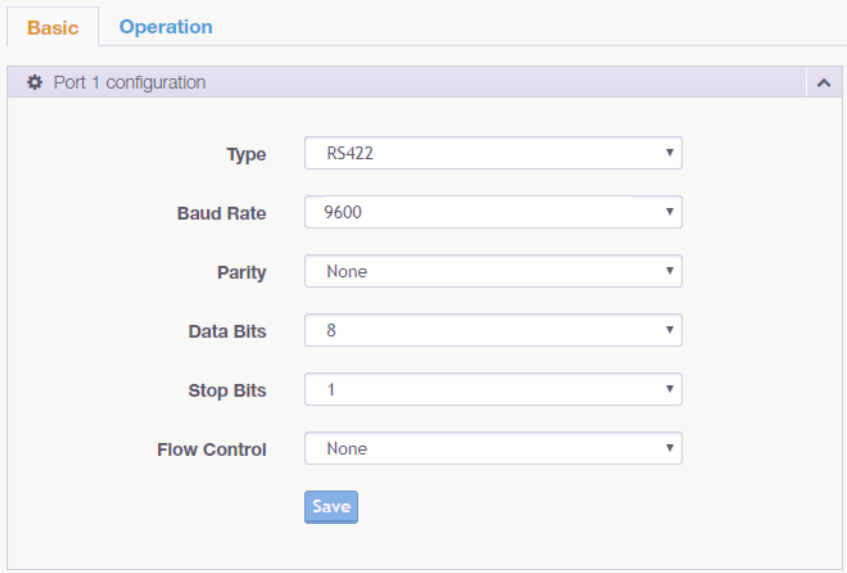

Figure 4.4 Port Configuration > Basic

The following table describes the items in the previous figure.

Item	Description
Type	Click the drop-down menu to select a serial interface: RS-232, RS-422 or RS-485.
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.

4.5.2 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 Slave Mode or Modbus Master Mode.

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

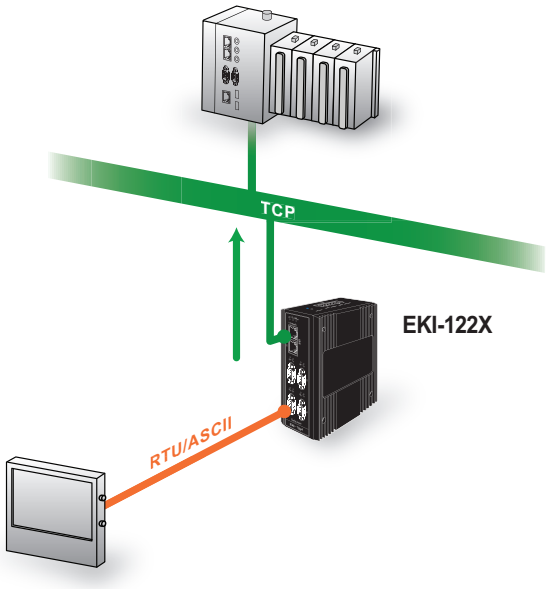

Figure 4.5 Master Mode

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

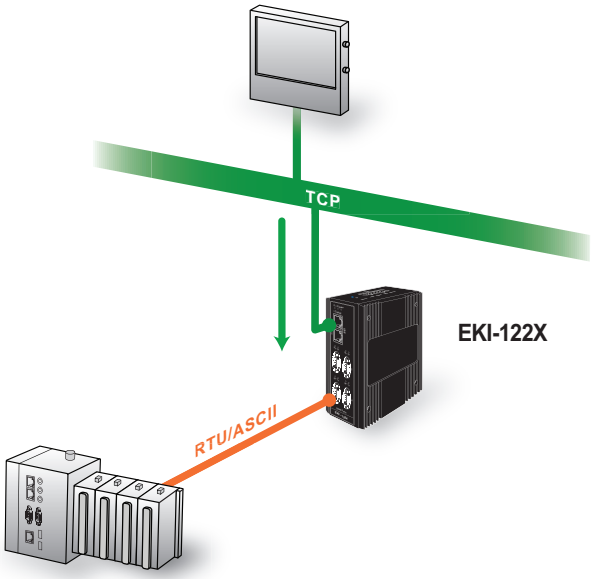

Figure 4.6 Slave Mode

These are the options for Modbus Slave Mode.

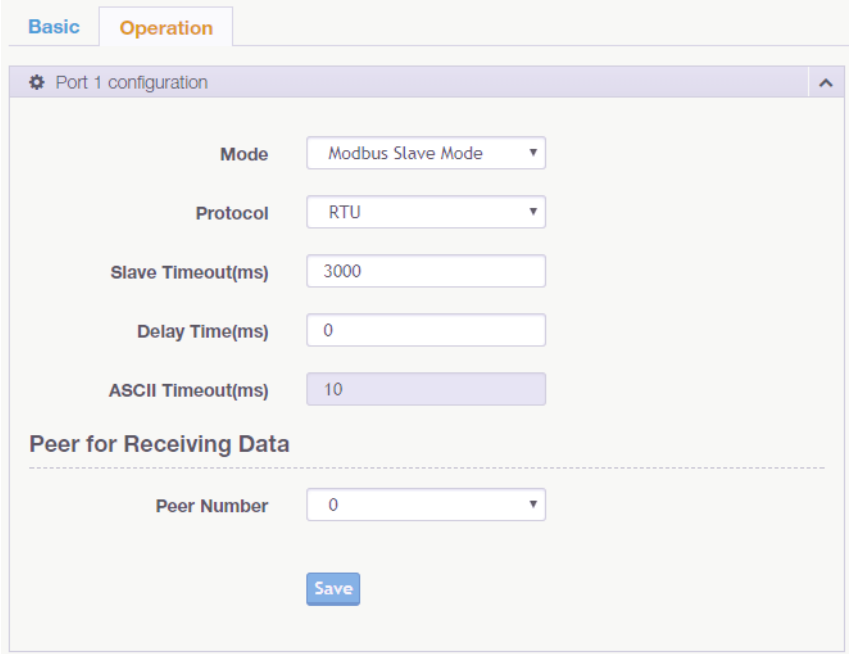

Figure 4.7 Port Configuration > Operation > Modbus Slave Mode

The following table describes the items in the previous figure.

Item	Description
Mode	Click the drop-down menu to select the port configuration mode: Modbus Slave Mode or Modbus Master Mode.
Protocol	Select the protocol of the Slave Mode or Master Mode (RTU or ASCII).
Slave 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.
Peer Number	Click the drop-down menu to select the number of network device which you want to connect.
Save	Click **Save** to save the values and update the screen.

These are the options for Modbus Master Mode.

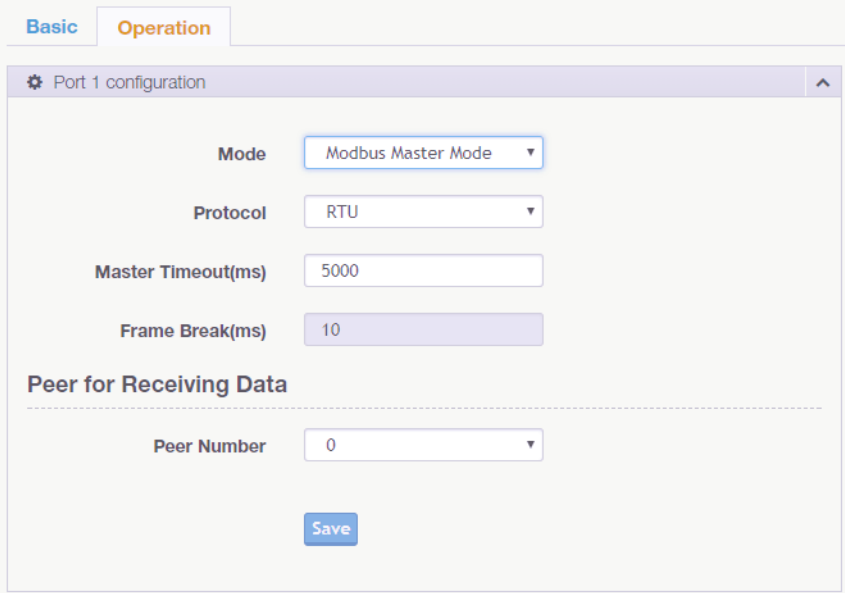

Figure 4.8 Port Configuration > Operation > Modbus Master Mode

The following table describes the items in the previous figure.

Item	Description
Mode	Click the drop-down menu to select the port configuration mode: Modbus Slave Mode or Modbus Master Mode.
Protocol	Select the protocol of the Slave Mode or Master Mode (RTU or ASCII).
Master 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.
Save	Click **Save** to save the values and update the screen.

4.6 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.

4.6.1 Setting

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

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

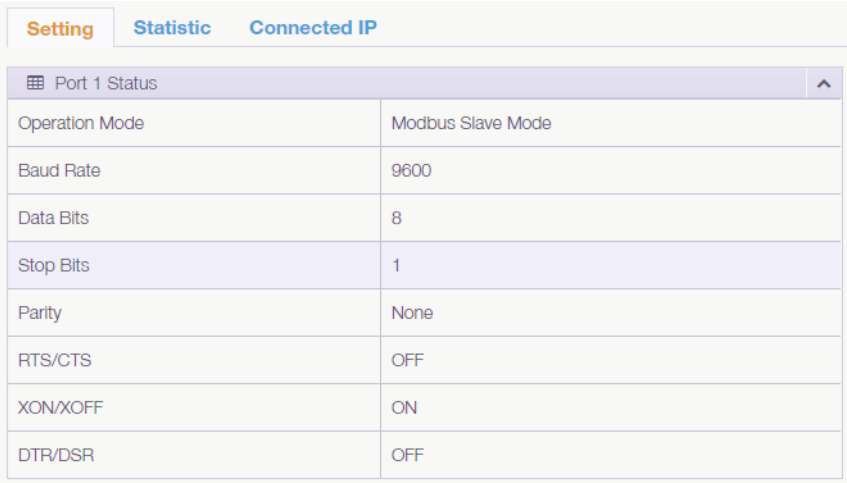

Figure 4.9 Monitor > Setting

The following table describes the items in the previous figure.

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.

4.6.2 Statistic

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

Figure 4.10 Monitor > Statistic

The following table describes the items in the previous figure.

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.

4.6.3 Connected IP

The Monitor Connected IP page allows for easy viewing of all connected device's IP address, while the specific serial port is operating under "Master Mode".

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

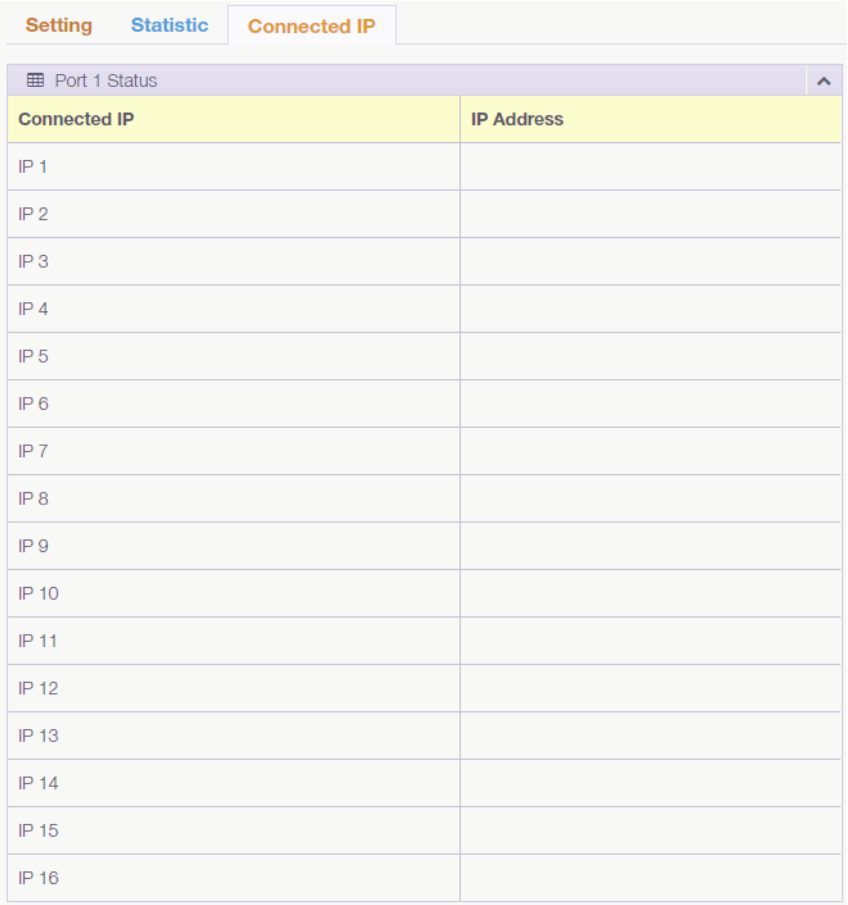

Figure 4.11 Monitor > Connected IP

The following table describes the items in the previous figure.

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

4.7 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.

4.7.1 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**.

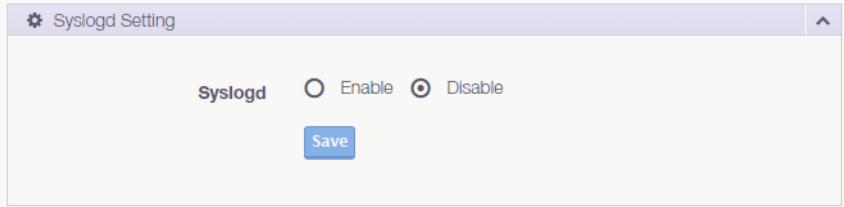

Figure 4.12 Syslogd > Syslogd Setting

The following table describes the items in the previous figure.

Item	Description
Syslogd	Click **Enabled** or **Disabled** to set the logging service status.
Save	Click **Save** to save the values and update the screen.

4.7.2 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**.

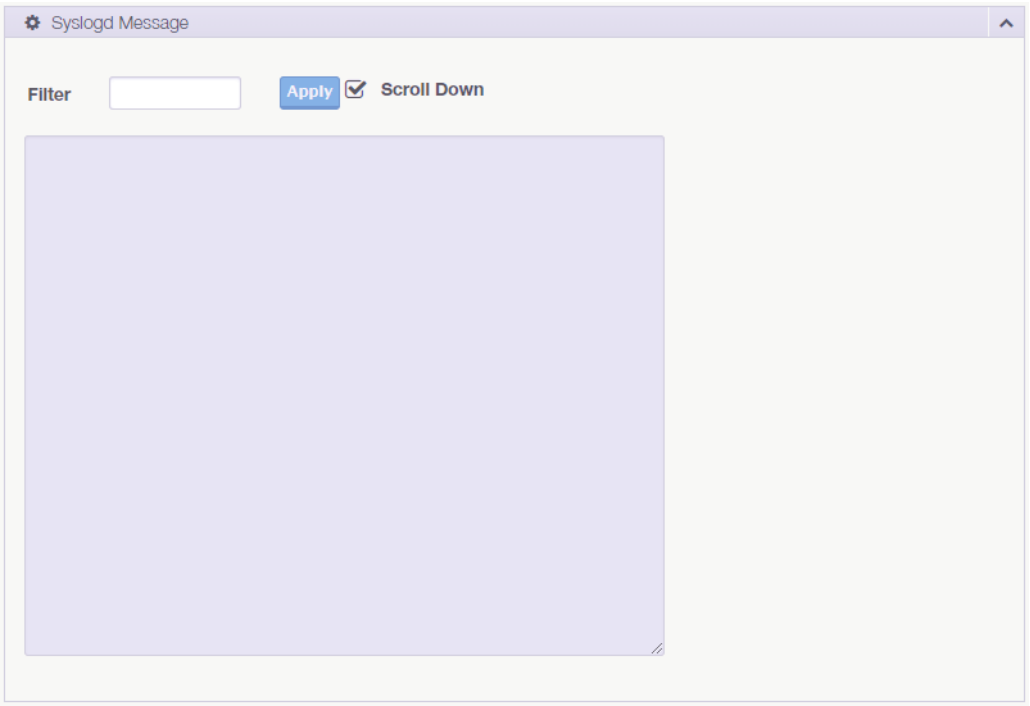

Figure 4.13 Syslogd > Syslogd Message

4.7.3 Modbus IP Mapping

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

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

Figure 4.14 Syslogd > Modbus IP Mapping

4.7.4 Modbus Port Mapping

Users can check the overview of the “Unit ID"/"serial port” mapping table of the Modbus Slave 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**.

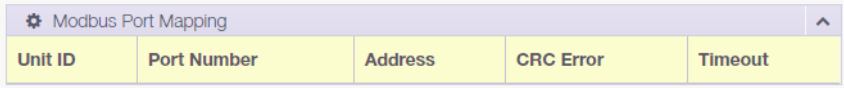

Figure 4.15 Syslogd > Modbus Port Mapping

4.7.5 Modbus Slave Response Time

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 Slave Response Time**.

Click **Clear All** to clear all response information.

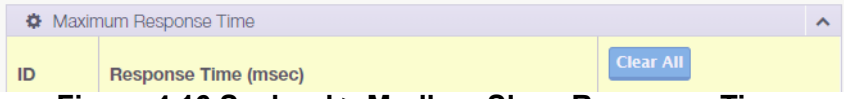

Figure 4.16 Syslogd > Modbus Slave Response Time

4.8 Tools

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

4.8.1 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**.

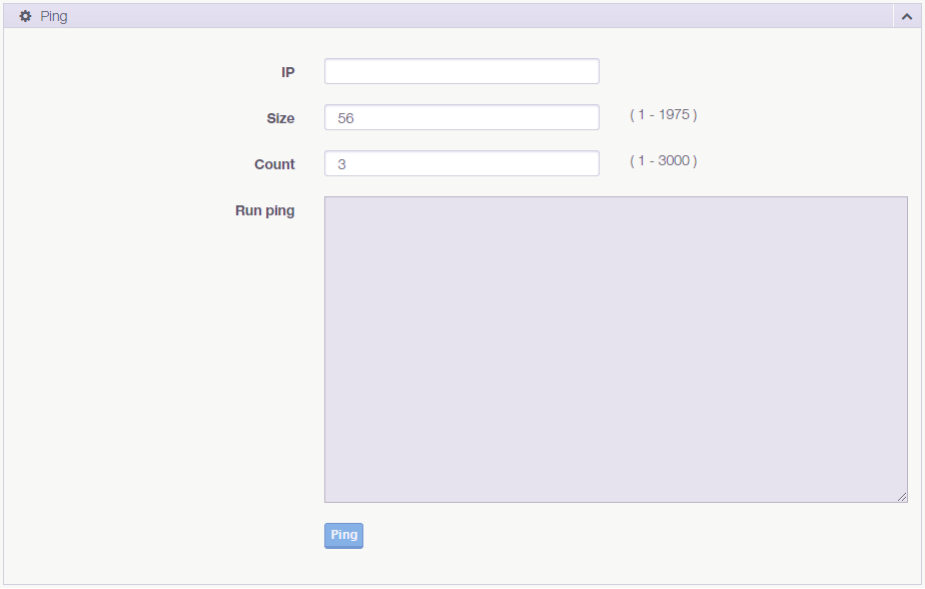

Figure 4.17 Tools > Ping

The following table describes the items in the previous figure.

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.
Run ping	Display the ping reply format.
Save	Click **Save** to save the values and update the screen.

4.8.2 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**.

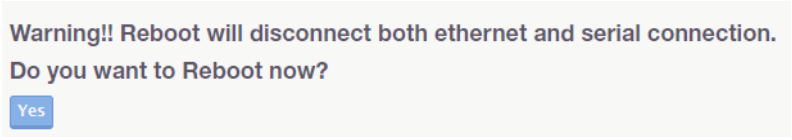

Figure 4.18 Tools > Reboot

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.

4.9 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.

4.9.1 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**.

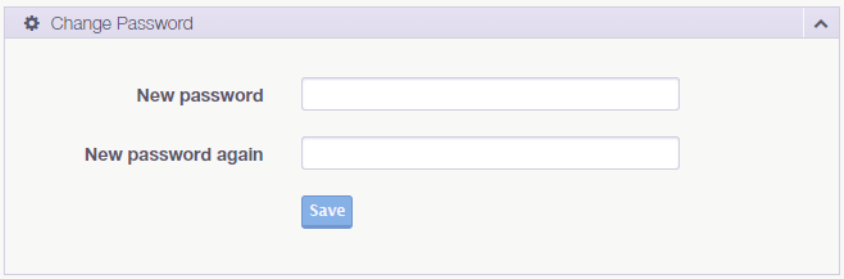

Figure 4.19 Management > Change Password

The following table describes the items in the previous figure.

Item	Description
Old password	Enter the old password.
New password	Enter the character set for the define password type.
New password again	Retype the password entry to confirm the profile password.
Save	Click **Save** to save the values and update the screen.

If you have set a password through the configuration utility or Telnet or serial console, 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 serial device server to make the change effective.

4.9.2 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.

4.9.3 Import Device Settings

Import the server configuration settings to a .conf file.

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

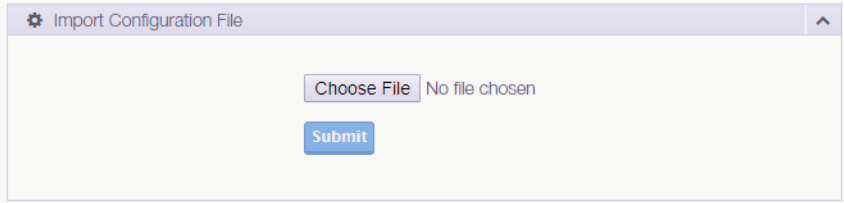

Figure 4.20 Management > Import

The following table describes the items in the previous figure.

Item	Description
Choose File	Click **Choose File** to select the configuration file.
Submit	Click **Submit** to backup the settings.

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