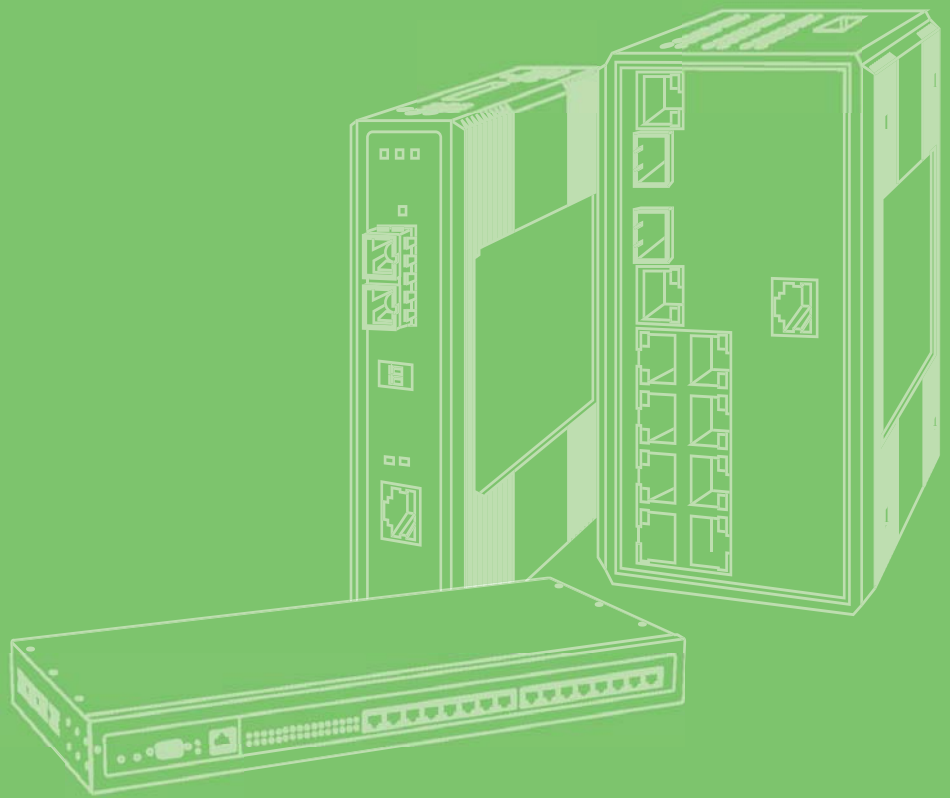


User Manual



EKI-122xR-CE Series

1/2/4-port Modbus Router

ADVANTECH

Enabling an Intelligent Planet

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Product Warranty (5 years)

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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.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain an RMA (return merchandise authorization) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

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 Modbus router
- 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.
- The device is used for the restricted access location.
- **WARNING: USE CONDUCTORS WITH INSULATION RATED FOR AT LEAST 75°C.**

AVERTISSEMENT : EMPLOYER DES CONDUCTEURS POUR AU MOINS 75°C.
- **BASE THE CONDUCTOR AMPACITY ON A MAXIMUM TERMINATION TEMPERATURE OF 75°C.**

LE COURANT ADMISSIBLE DU CONDUCTEUR DOIT ÊTRE DÉTERMINÉ EN FONCTION D'UNE TEMPÉRATURE MAXIMALE AUX TERMINAISONS DE 75°C.

-
- CAUTION: FOR USE IN A CONTROLLED ENVIRONMENT. REFER TO MANUAL FOR ENVIRONMENTAL CONDITIONS.
ATTENTION : POUR UTILISATION EN ATMOSPHÈRE CONTRÔLÉE.
CONSULTER LA NOTICE TECHNIQUE.
 - WARNING: EKI-1242 IS LIVE. RISK OF ELECTRIC SHOCK. DISCONNECT POWER BEFORE SERVICING.
AVERTISSEMENT : EKI-1242 EST SOUS TENSION. RISQUE DE CHOC ÉLECTRIQUE, COUPER LE COURANT AVANT L'ENTRETIEN.
 - WARNING: DISCONNECT ALL SOURCES OF SUPPLY BEFORE SERVICING.
AVERTISSEMENT : COUPER TOUTES LES SOURCES D'ALIMENTATION AVANT DE FAIRE L'ENTRETIEN ET LES RÉPARATIONS.
 - NEUTRAL FLOATING.
NEUTRE FLOTTANT.
 - IMPORTANT SAFETY INSTRUCTIONS
INSTRUCTIONS IMPORTANTES CONCERNANT LA SÉCURITÉ
 - SAVE THESE INSTRUCTIONS - THIS MANUAL CONTAINS IMPORTANT SAFETY INSTRUCTIONS.
CONSERVER CES INSTRUCTIONS. CETTE NOTICE CONTIENT DES INSTRUCTIONS IMPORTANTES CONCERNANT LA SÉCURITÉ.
 - WARNING: SHOCK HAZARD. ONLY FOR MOUNTING IN A RACK OR ENCLOSURE FULLY ENCLOSING ALL LIVE PARTS.
AVERTISSEMENT : RISQUE D'ÉLECTROCUTION. NE DOIT ÊTRE INSTALLÉ QUE DANS UN BÂTI OU UN BOÎTIER RECOUVRANT ENTIÈREMENT TOUTES LES PIÈCES SOUS TENSION.
 - WARNING: HOT SURFACE.
AVERTISSEMENT : SURFACE CHAUDE.
 - WARNING: PROPER VENTILATION IS REQUIRED TO REDUCE THE RISK OF HAZARDOUS OR EXPLOSIVE GAS BUILDUP DURING INDOOR CHARGING. SEE OWNERS MANUAL.
AVERTISSEMENT : UNE VENTILATION ADÉQUATE EST NÉCESSAIRE AFIN DE RÉDUIRE LES RISQUES D'ACCUMULATION DE GAZ DANGEREUX OU EXPLOSIFS DURANT LA RECHARGE À L'INTÉRIEUR. VOIR LE MANUEL D'ENTRETIEN.
 - FOR USE WITH COPPER CONDUCTORS ONLY.
DESTINÉ À ÊTRE UTILISÉ AVEC DES CONDUCTEURS EN CUIVRE SEULEMENT.
 - WARNING: HOT SURFACE(S).
AVERTISSEMENT : SURFACE(S) CHAUDE(S).

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 with 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

Product Overview

1.1 Specifications

Specifications	Description	
Interface	I/O Port	<ul style="list-style-type: none"> ■ EKI-1221R-CE: 2 x Ethernet + 1 RS-232/422/485 ■ EKI-1222R-CE: 2 x Ethernet + 2 RS-232/422/485 ■ EKI-1224R-CE: 2 x Ethernet + 4 RS-232/422/485
	Power Connector	6-pin removable screw terminal (power & relay)
Physical	Enclosure	Metal with solid mounting hardware
	Installation	DIN-rail, wall mount
	Dimensions (W x H x D)	<ul style="list-style-type: none"> ■ EKI-1221R-CE: 30 x 140 x 95 mm (1.19" x 5.52" x 3.75") ■ EKI-1222R-CE: 30 x 140 x 95 mm (1.19" x 5.52" x 3.75") ■ EKI-1224R-CE: 42 x 140 x 95 mm (1.66" x 5.52" x 3.75")
LED Display	System LED	P1, P2, Status
	Port LED	<ul style="list-style-type: none"> ■ LAN: Speed, Link/Active ■ Serial: Tx, Rx
Environment	Operating Temperature	-10°C ~ 60°C (14°F ~ 140°F)
	Storage Temperature	-40°C ~ 85°C (-40°F ~ 185°F)
	Ambient Relative Humidity	5 ~ 95% (non-condensing)
Power	Power Consumption	<ul style="list-style-type: none"> ■ EKI-1221R-CE: 3.2W ■ EKI-1222R-CE: 3.2W ■ EKI-1224R-CE: 4.1W
	Power Input	12 ~ 48 V _{DC} , redundant dual power inputs
Certifications	EMC	CE, FCC Part 15 Subpart B (Class A)

1.2 Hardware Views

1.2.1 Front View

1.2.1.1 EKI-1221R-CE

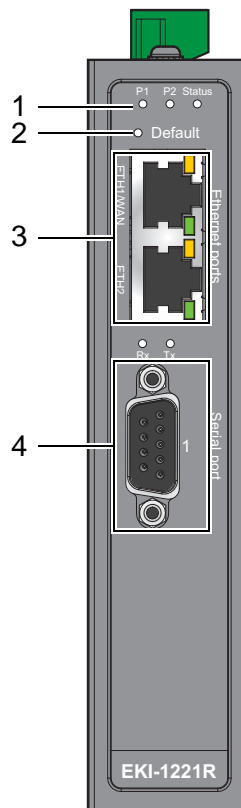


Figure 1.1 Front View

No.	Item	Description
1	System LED panel	See "LED Indicators" on page 9 for further details.
2	Default	Press to restart the device. Press and hold 10 seconds to reset to factory default.
3	ETH ports	RJ45 ports for Ethernet.
4	Serial port	DB9 pinout supports RS232/422/485.

1.2.1.2 EKI-1222R-CE

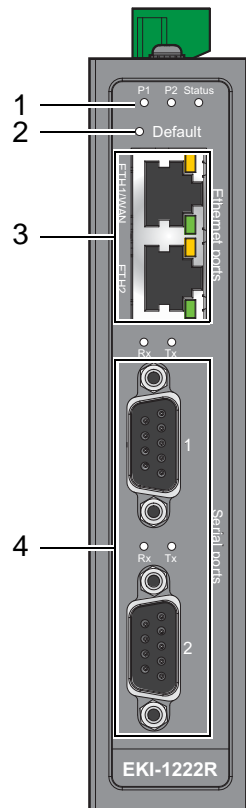


Figure 1.2 Front View

No.	Item	Description
1	System LED panel	See "LED Indicators" on page 9 for further details.
2	Default	Press to restart the device. Press and hold 10 seconds to reset to factory default.
3	ETH ports	RJ45 ports for Ethernet.
4	Serial ports	DB9 pinout supports RS232/422/485.

1.2.1.3 EKI-1224R-CE

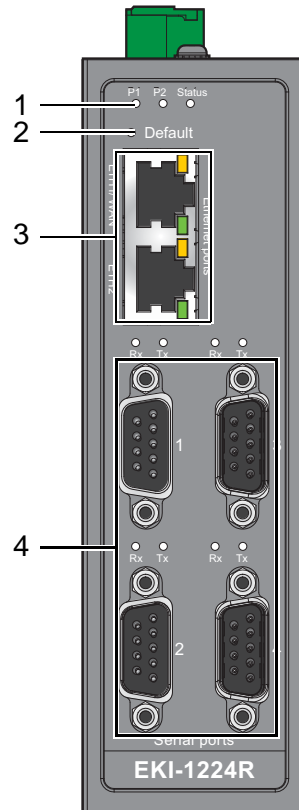


Figure 1.3 Front View

No.	Item	Description
1	System LED panel	See “LED Indicators” on page 9 for further details.
2	Default	Press to restart the device. Press and hold 10 seconds to reset to factory default.
3	ETH ports	RJ45 ports for Ethernet.
4	Serial ports	DB9 pinout supports RS232/422/485.

1.2.2 Rear View

1.2.2.1 EKI-1221R-CE/EKI-1222R-CE

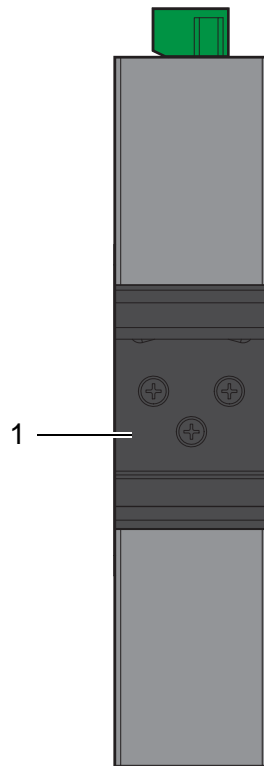


Figure 1.4 Rear View

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

1.2.2.2 EKI-1224R-CE

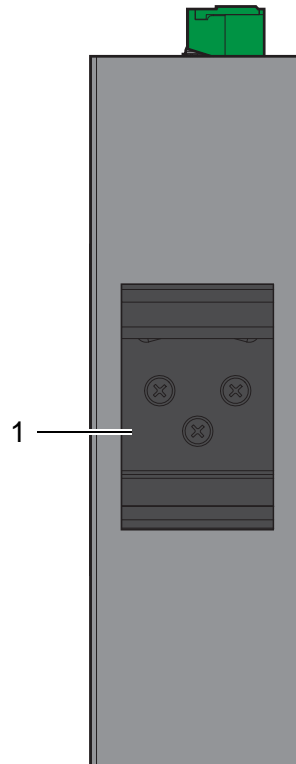


Figure 1.5 Rear View

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

1.2.3 Top View

1.2.3.1 EKI-1221R-CE/EKI-1222R-CE

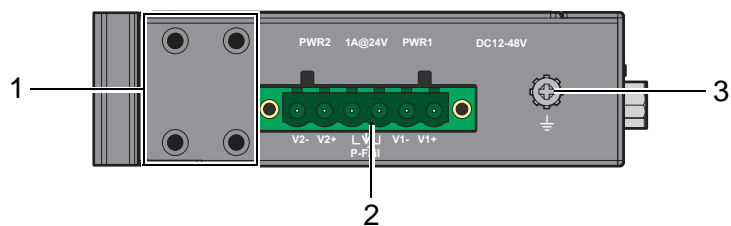


Figure 1.6 Top View

No.	Item	Description
1	Wall mounting screws	Screws (x4) used in the installation of a wall mounting plate.
2	Terminal block	Connect cabling for power and alarm wiring.
3	Ground terminal	Screw terminal used on ground chassis.

1.2.3.2 EKI-1224R-CE

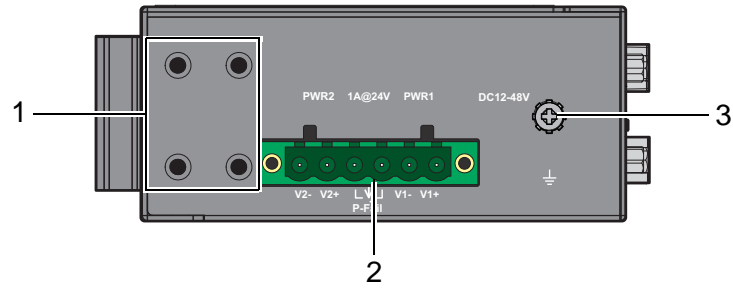


Figure 1.7 Top View

No.	Item	Description
1	Wall mounting screws	Screws (x4) used in the installation of a wall mounting plate.
2	Terminal block	Connect cabling for power and alarm wiring.
3	Ground terminal	Screw terminal used on ground chassis.

1.2.4 Bottom View

1.2.4.1 EKI-1221R-CE/EKI-1222R-CE

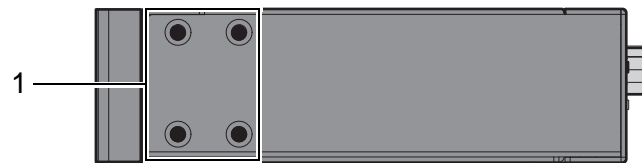


Figure 1.8 Bottom View

No.	Item	Description
1	Wall mounting screws	Screws (x4) used in the installation of a wall mounting plate.

1.2.4.2 EKI-1224R-CE

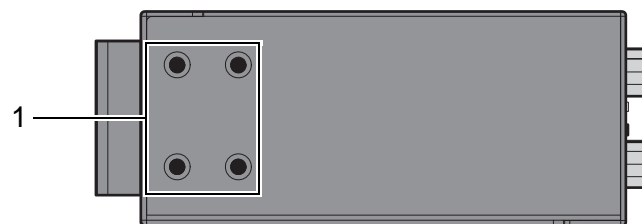


Figure 1.9 Bottom View

No.	Item	Description
1	Wall mounting screws	Screws (x4) used in the installation of a wall mounting plate.

1.2.5 LED Indicators

LED Name	LED Color	Description
P1	Green	Power 1 is on
	Off	Power 1 is off or power error condition exists
P2	Green	Power 2 is on
	Off	Power 2 is off or power error condition exists
Status	Amber	The device is located using the location function in utility
	Blinking	System is ready
	Off	System is powered off
WAN/Ethernet2	Amber	On: 100Mbps Ethernet connection Off: 10Mbps Ethernet connection
	Green	Blinking: Ethernet port is transmitting or receiving data Steady on: Ethernet has a good link for 10Mbps or 100Mbps operations
Serial	Amber	Serial port is receiving data
	Green	Serial port is transmitting data
	Off	Data is not transmitted or received through the serial port

1.3 Dimensions

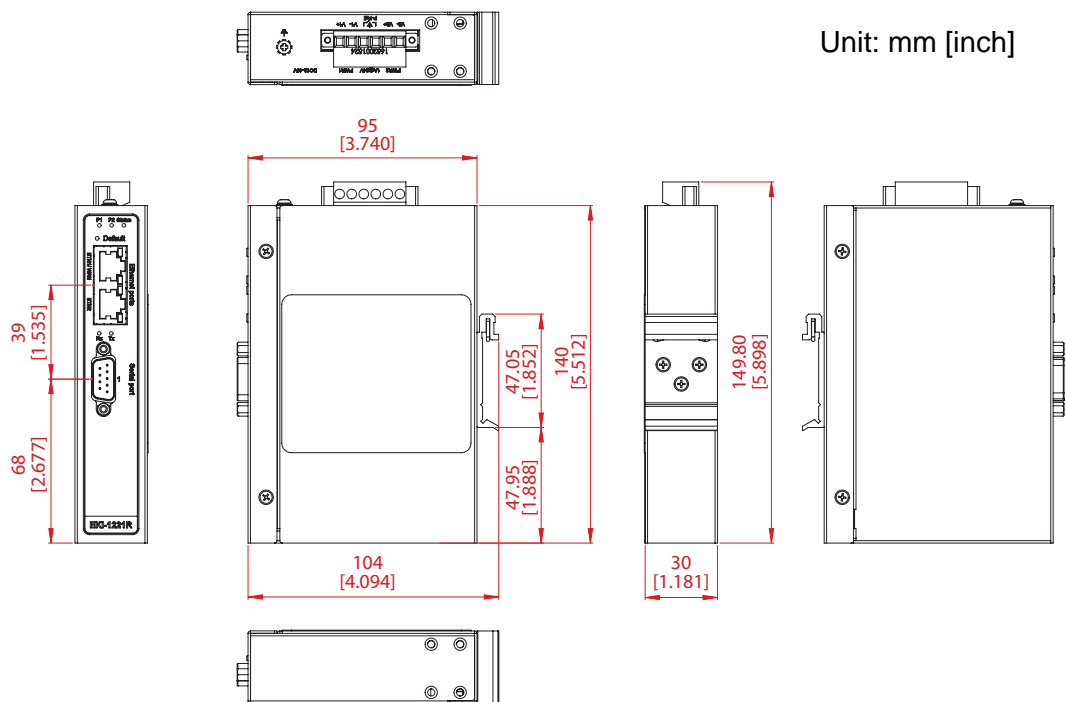


Figure 1.10 Dimensions (EKI-1221R-CE)

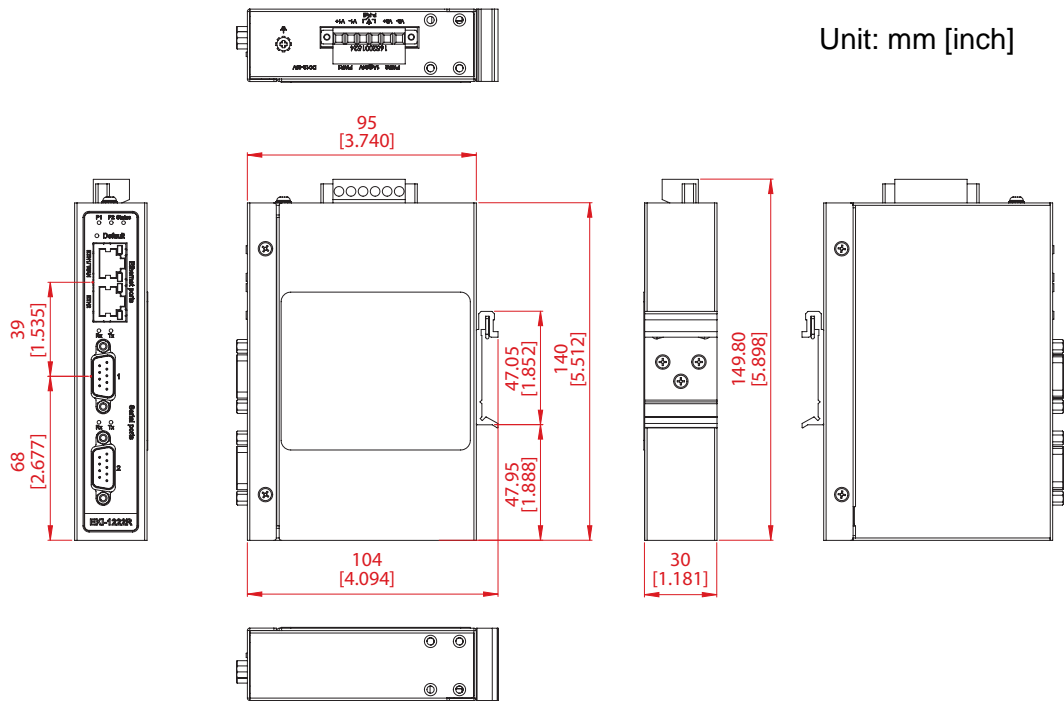


Figure 1.11 Dimensions (EKI-1222R-CE)

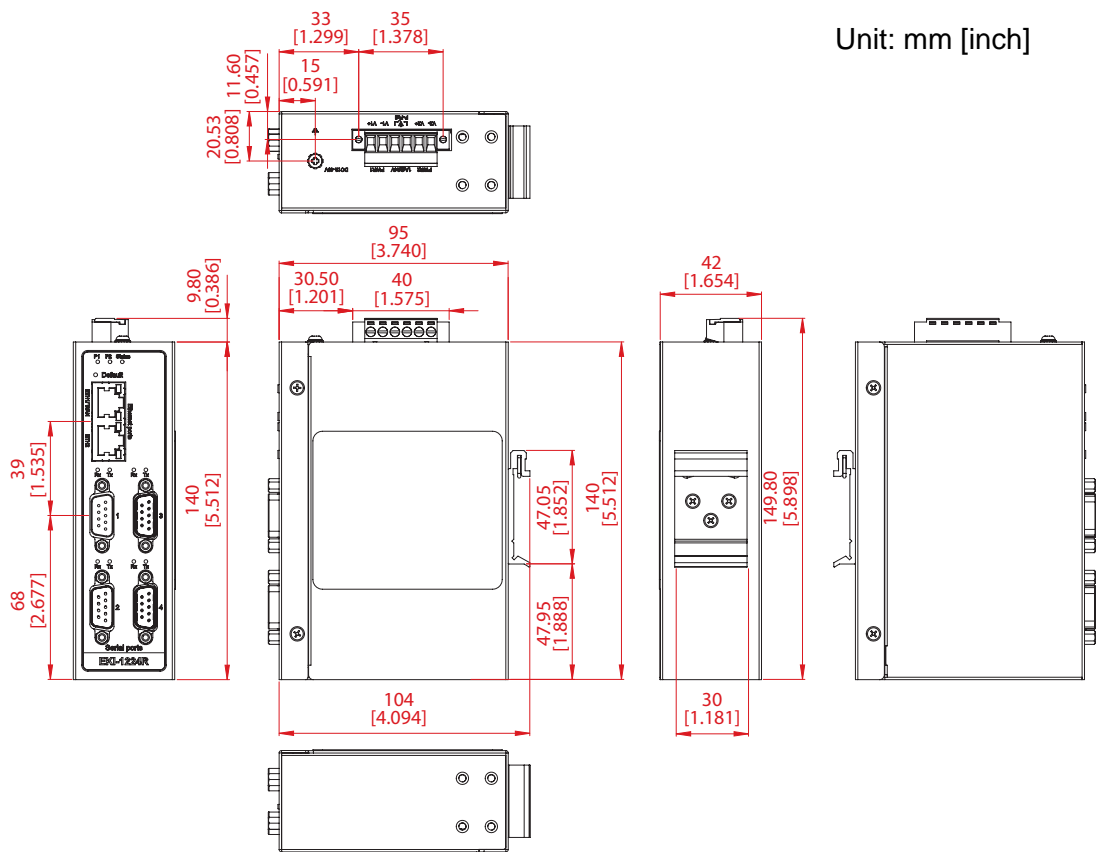


Figure 1.12 Dimensions (EKI-1224R-CE)

Chapter 2

Modbus Router Installation

2.1 Installation Guidelines

The following guidelines are provided to optimize the device performance. Review the guidelines before installing the device.

- Make sure cabling is away from sources of electrical noise. Radios, power lines, and fluorescent lighting fixtures can interference with the device performance.
- Make sure the cabling is positioned away from equipment that can damage the cables.
- Operating environment is within the ranges listed range, see “Specifications” on page 2.
- Relative humidity around the modbus router does not exceed 95 percent (noncondensing).
- Altitude at the installation site is not higher than 10,000 feet.
- In 10/100 fixed port devices, the cable length from the modbus router to connected devices cannot exceed 100 meters (328 feet).
- Make sure airflow around the modbus router and respective vents are unrestricted. Without proper airflow, the modbus router can overheat. To prevent performance degradation and damage to the modbus router, make sure there is clearance at the top and bottom and around the exhaust vents.

2.1.1 Connecting Hardware

In this instruction, it will explain how to find a proper location for your Modbus Routers, and how to connect to the network, hock up the power cable, and connect to the EKI-122xR-CE Series.

2.2 Verifying Modbus Router Operation

Before installing the device in a rack or on a wall, power on the modbus router to verify that the modbus router passes the power-on self-test (POST). To connect the cabling to the power source see “Power Supply Installation” on page 18.

At startup (POST), the System LED blinks green, while the remaining LEDs are a solidly green. Once the modbus router passes POST self-test, the System LED turns green. The other LEDs turn off and return to their operating status. If the modbus router fails POST, the System LED modbus routers to an amber state.

After a successful self-test, power down the modbus router and disconnect the power cabling.

The modbus router is now ready for installation on its final location.

2.3 Installing the Modbus Router

2.3.1 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 modbus router. 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.

2.3.1.1 Installing the DIN-Rail Mounting Kit

1. Position the rear panel of the modbus router 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 modbus router to rotate the modbus router 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.

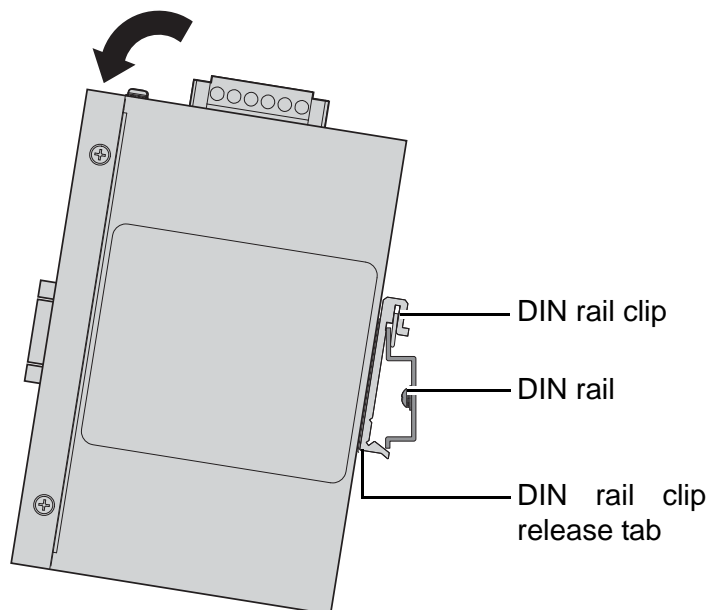


Figure 2.1 Installing the DIN-Rail Mounting Kit

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

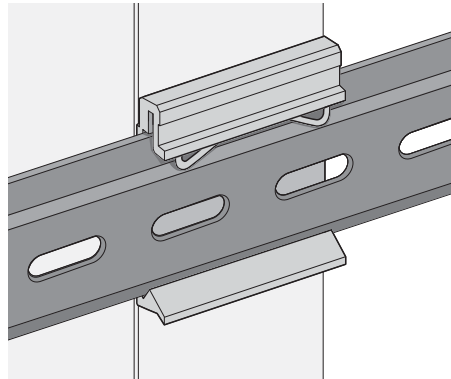


Figure 2.2 Correctly Installed DIN Rail Kit

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

2.3.1.2 Removing the DIN-Rail Mounting Kit

1. Ensure that power is removed from the modbus router, and disconnect all cables and connectors from the front panel of the modbus router.
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 modbus router, as shown in the following illustration.

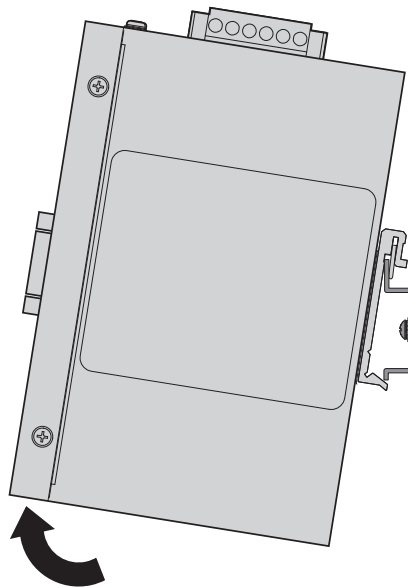


Figure 2.3 Removing the DIN-Rail

2.3.2 Wall-Mounting

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. 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 modbus router.
3. Remove the DIN mounting plate. Store the DIN mounting plate and provided screws for later use.
4. Remove the screws securing on the top and bottom of the device.
5. 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.
6. Secure the wall mount plates with the provided screws, see the following figure.

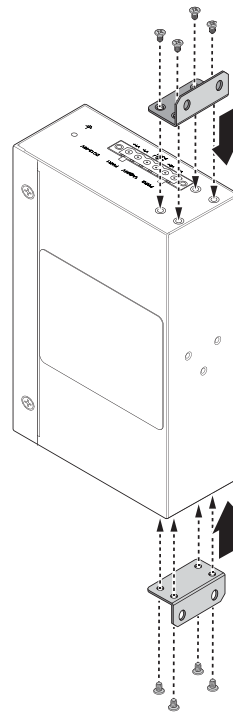


Figure 2.4 Installing Wall Mount Plates

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

7. Locate the installation site and place the modbus router against the wall, making sure it is the final installation location.
8. Use the wall mount plates as a guide to mark the locations of the screw holes.
9. 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.

To mount the wall plate, use screws of the size shown in the following illustration.

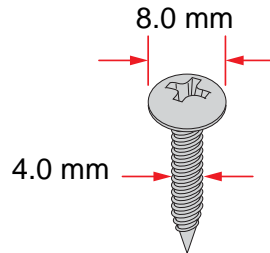


Figure 2.5 Wall Mounting Screw Dimensions

Note! *Make sure you use the recommended screw length for your particular application. The screws need to penetrate properly for the rated weight rating.*



10. Align the wall mount plate over the screws on the wall.
11. Install the wall mount plate on the screws and slide it forward to lock in place, see the following figure.

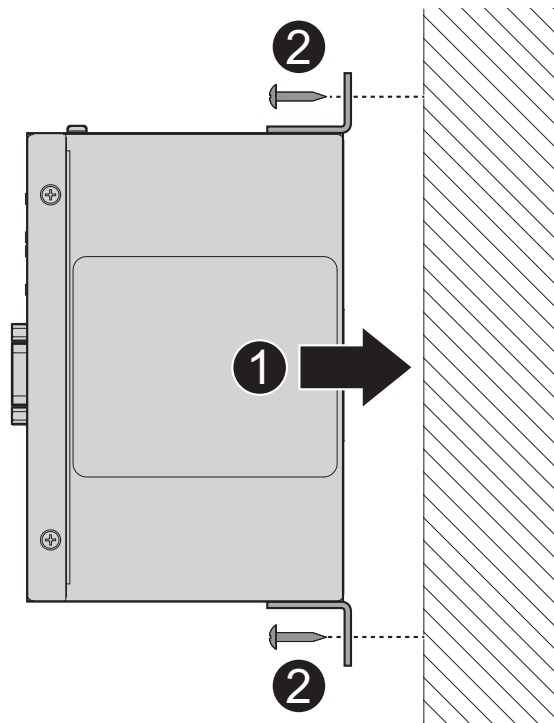


Figure 2.6 Wall Mount Installation

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

2.4 Connecting the Modbus Router to Ethernet Ports

2.4.1 RJ45 Ethernet Cable Wiring

For RJ45 connectors, data-quality, twisted pair cabling (rated CAT5 or better) is recommended. The connector bodies on the RJ45 Ethernet ports are metallic and connected to the GND terminal. For best performance, use shielded cabling. Shielded cabling may be used to provide further protection.

Straight-thru Cable Wiring		Cross-over Cable Wiring	
Pin 1	Pin 1	Pin 1	Pin 3
Pin 2	Pin 2	Pin 2	Pin 6
Pin 3	Pin 3	Pin 3	Pin 1
Pin 6	Pin 6	Pin 6	Pin 2

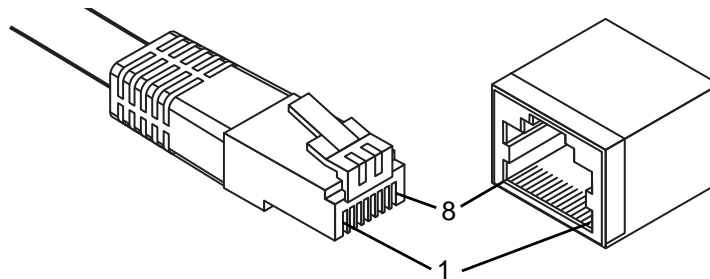


Figure 2.7 Ethernet Plug & Connector Pin Position

Maximum cable length: 100 meters (328 ft.) for 10/100BaseT.

2.5 Serial Connection

EKI-122xR-CE Series provides eight ports DB9 (male) connectors. RS-232/422/485 pin assignments as below:

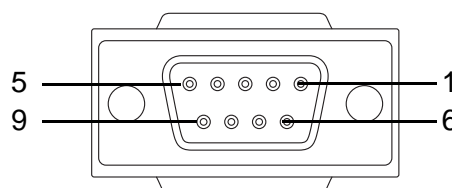


Figure 2.8 DB 9 Pin Position

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

2.6 Power Supply Installation

2.6.1 Overview

Warning! Power down and disconnect the power cord before servicing or wiring the modbus router.



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 modbus router device.

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



The modbus routers can be powered by using the same DC source used to power other devices. A DC voltage range of 12 to 48 V_{DC} must be applied between the V1+ terminal and the V1- terminal (PW1), see the following illustrations. The chassis ground screw terminal should be tied to the panel or chassis ground. A redundant power configuration is supported by a secondary power supply unit to reduce network downtime as a result of power loss.

EKI-122xR-CE Series support 12 to 48 V_{DC}. Dual power inputs are supported and allow you to connect a backup power source.

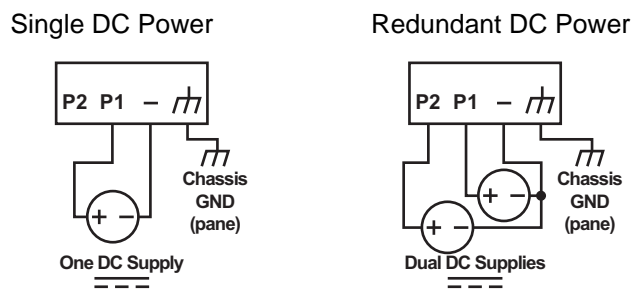


Figure 2.9 Power Wiring for EKI-122xR-CE Series

2.6.2 Considerations

Take into consideration the following guidelines before wiring the device:

- The Terminal Block (CN1) is suitable for 12-24 AWG (3.31 - 0.205 mm²). Torque value 7 lb-in.
- The cross-sectional area of the earthing conductors shall be at least 3.31 mm².
- Calculate the maximum possible current for each power and common wire. Make sure the power draw is within limits of local electrical code regulations.
- For best practices, route wiring for power and devices on separate paths.
- Do not bundle together wiring with similar electrical characteristics.
- Make sure to separate input and output wiring.
- Label all wiring and cabling to the various devices for more effective management and servicing.

Note! *Routing communications and power wiring through the same conduit may cause signal interference. To avoid interference and signal degradation, route power and communications wires through separate conduits.*



2.6.3 Grounding the Device

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 modbus router device.

Caution! *Before connecting the device properly ground the device. Lack of a proper grounding setup may result in a safety risk and could be hazardous.*



Caution! *Do not service equipment or cables during periods of lightning activity.*



Caution! *Do not service any components unless qualified and authorized to do so.*



Caution! *Do not block air ventilation holes.*



Electromagnetic Interference (EMI) affects the transmission performance of a device. By properly grounding the device to earth ground through a drain wire, you can set up the best possible noise immunity and emissions.

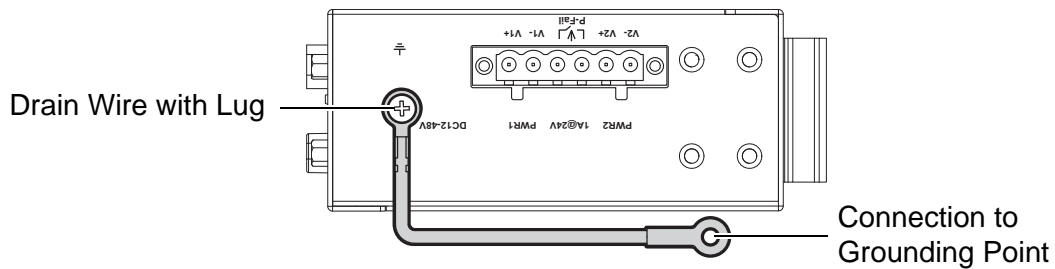


Figure 2.10 Grounding Connection

By connecting the ground terminal by drain wire to earth ground the modbus router and chassis can be ground.

Note! Before applying power to the grounded modbus router, it is advisable to use a volt meter to ensure there is no voltage difference between the power supply's negative output terminal and the grounding point on the modbus router.



2.6.4 Wiring a Relay Contact

The following section details the wiring of the relay output. The terminal block on the EKI-122xR-CE Series is wired and then installed onto the terminal receptor located on the EKI-122xR-CE Series.

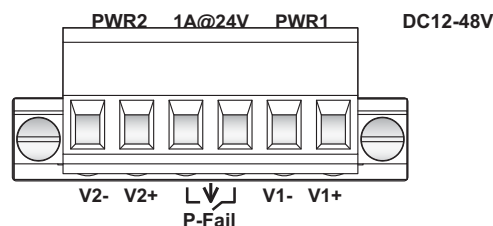


Figure 2.11 Terminal Receptor: Relay Contact

The terminal receptor includes a total of six pins: two for PWR1, two for PWR2 and two for a fault circuit.

2.6.5 Wiring the Power Inputs

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 modbus router device.

Warning! Power down and disconnect the power cord before servicing or wiring the modbus router.



There are two power inputs for normal and redundant power configurations. The power input 2 is used for wiring a redundant power configuration. See the following for terminal block connector views.

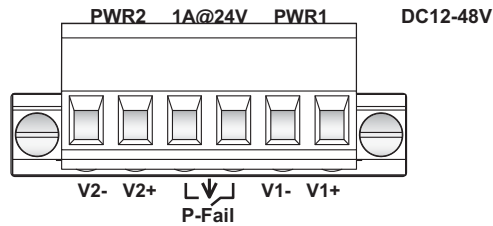


Figure 2.12 Terminal Receptor: Power Input Contacts

To wire the power inputs:

Make sure the power is not connected to the modbus router or the power converter before proceeding.

1. Loosen the screws securing terminal block to the terminal block receptor.
2. Remove the terminal block from the modbus router.

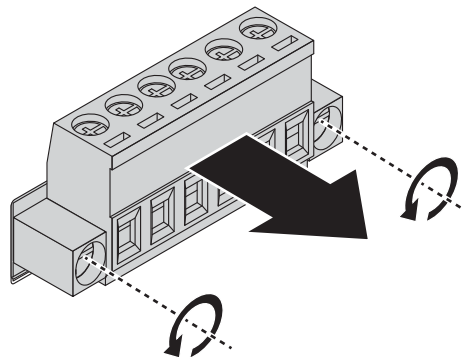


Figure 2.13 Removing a Terminal Block

3. Insert a small flat-bladed screwdriver in the V1+/V1- wire-clamp screws, and loosen the screws.
4. Insert the negative/positive DC wires into the V+/V- terminals of PW1. If setting up power redundancy, connect PW2 in the same manner.
5. Tighten the wire-clamp screws to secure the DC wires in place.

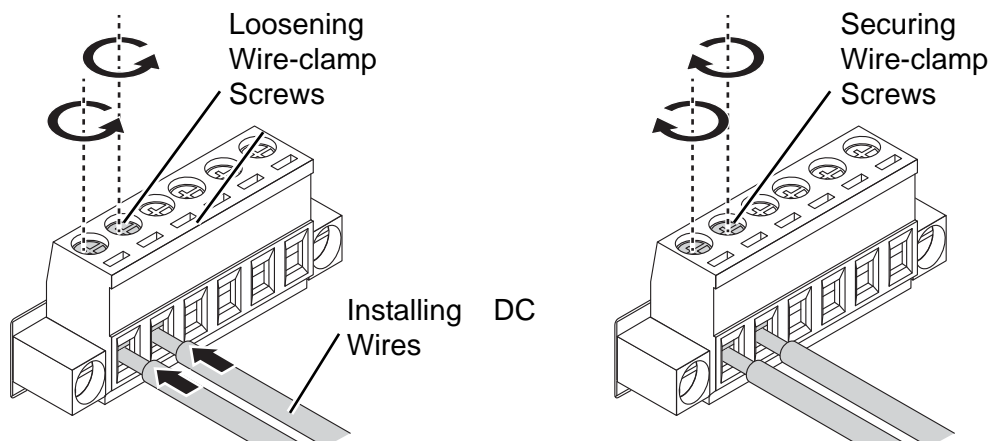


Figure 2.14 Installing DC Wires in a Terminal Block

6. Align the terminal block over the terminal block receptor on the modbus router.
 7. Insert the terminal block and press it in until it is flush with the terminal block receptor.
 8. Tighten the screws on the terminal block to secure it to the terminal block receptor.
- If there is no gap between the terminal block and the terminal receptor, the terminal block is seated correctly.

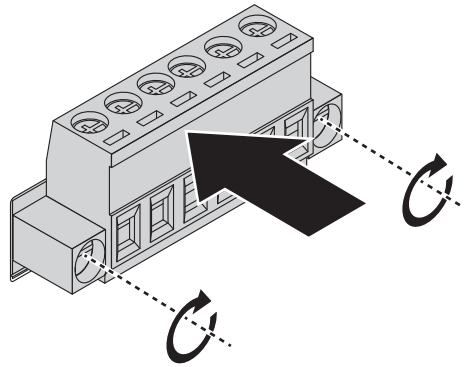


Figure 2.15 Securing a Terminal Block to a Receptor

2.7 Default Button

Reset configuration to factory default:

Press and hold the Default button for 10 seconds.

System reboot:

Press the Default button.

Note! Do NOT power off the modbus router when loading default settings.



Chapter 3

Configuration

3.1 Configuration Utility Overview

Advantech EKI series modbus routers provide an easy-to-use utility to configure your modbus router 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 modbus routers are ready for use and configuration.

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

- Configure the network settings (you can set the IP address, Gateway address, and Subnet mask)

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.
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.

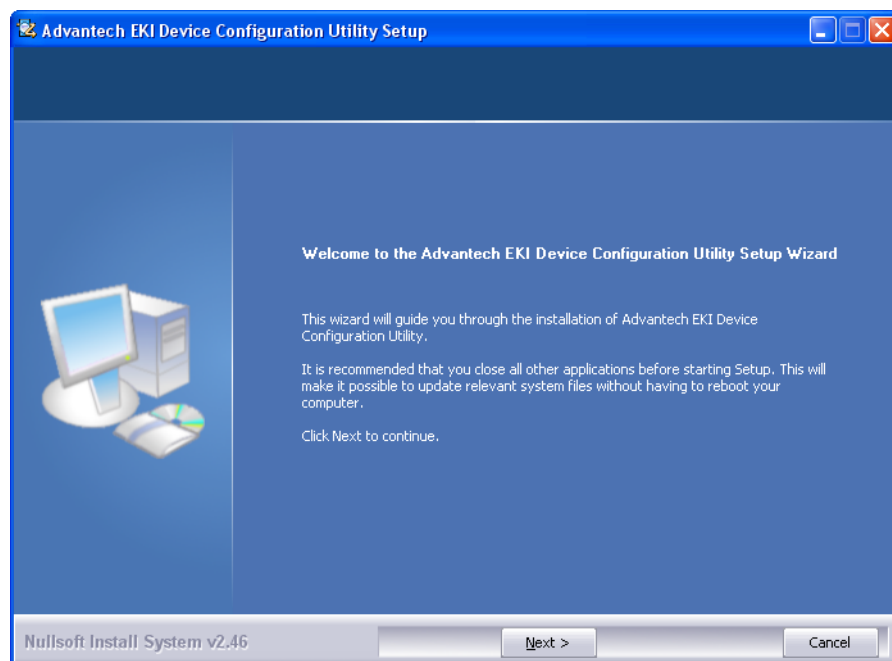


Figure 3.1 InstallShield Wizard 1 of 4

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

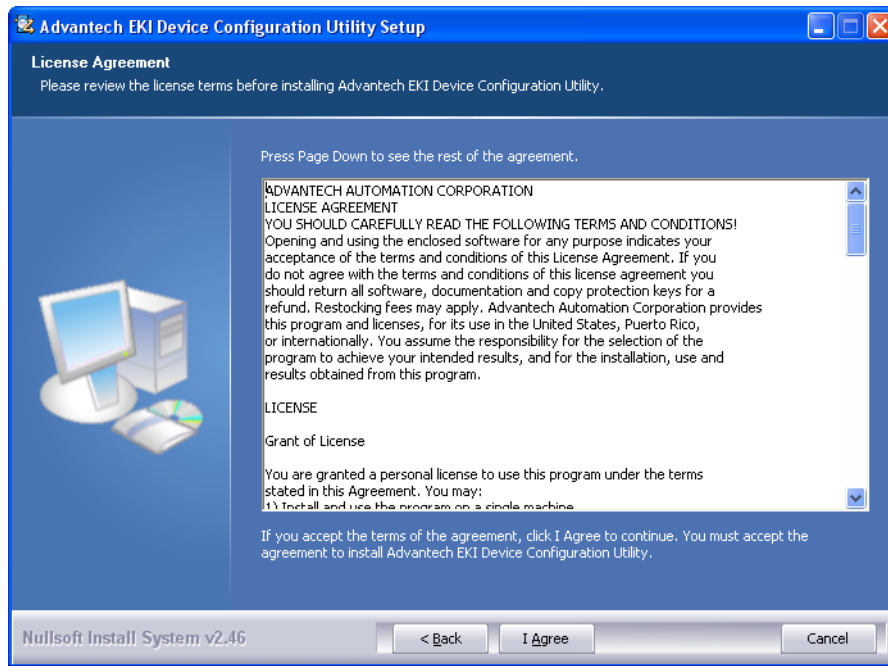


Figure 3.2 InstallShield Wizard 2 of 4

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

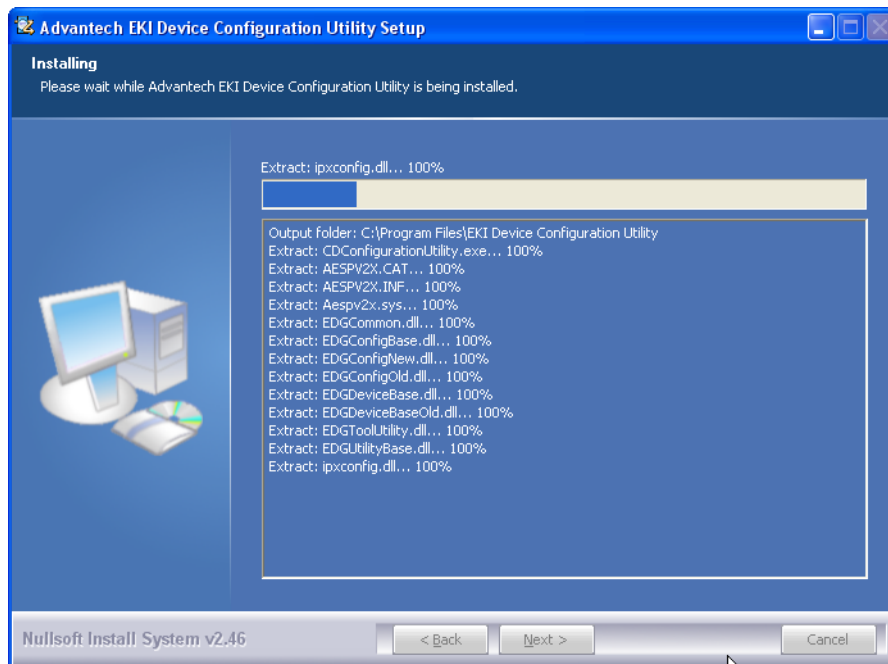


Figure 3.3 InstallShield Wizard 3 of 4

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.

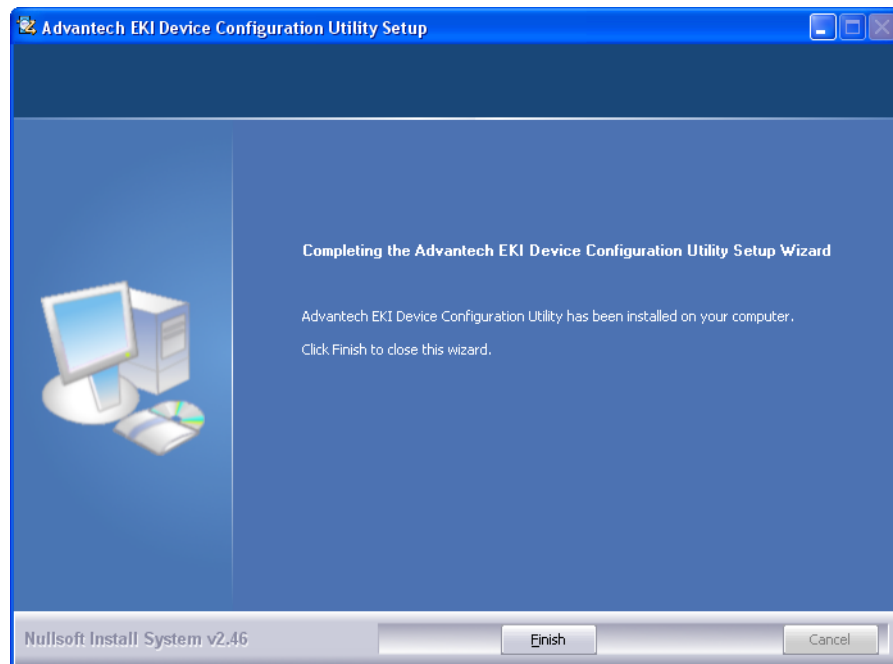


Figure 3.4 InstallShield Wizard 4 of 4

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.

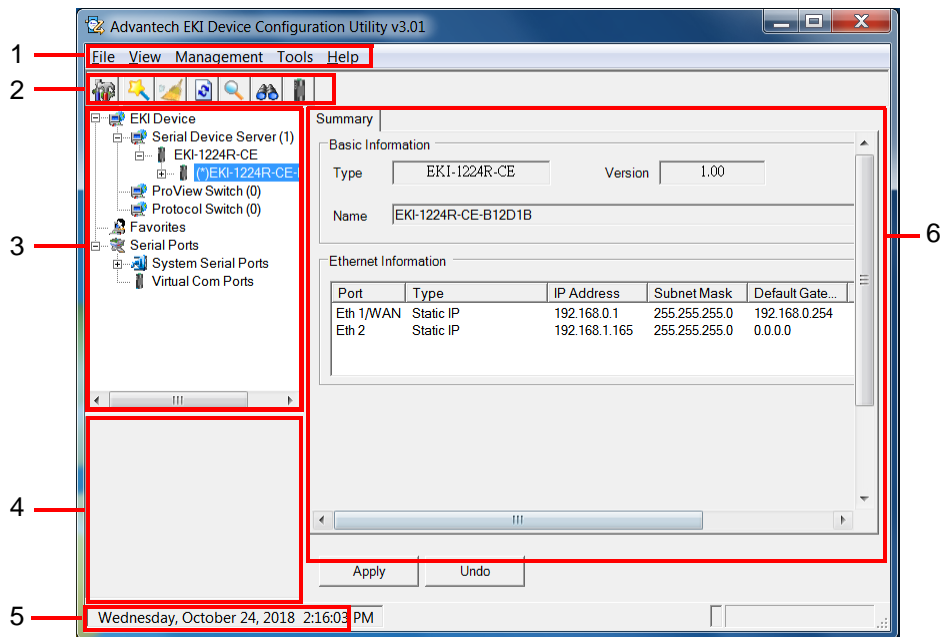


Figure 3.5 Configuration Utility Overview

No	Item	Description
1	Menu Bar	Displays File, View, Management, Tools and Help.
2	Quick Tool Bar	Useful management functions shortcuts.
3	Device 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 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.

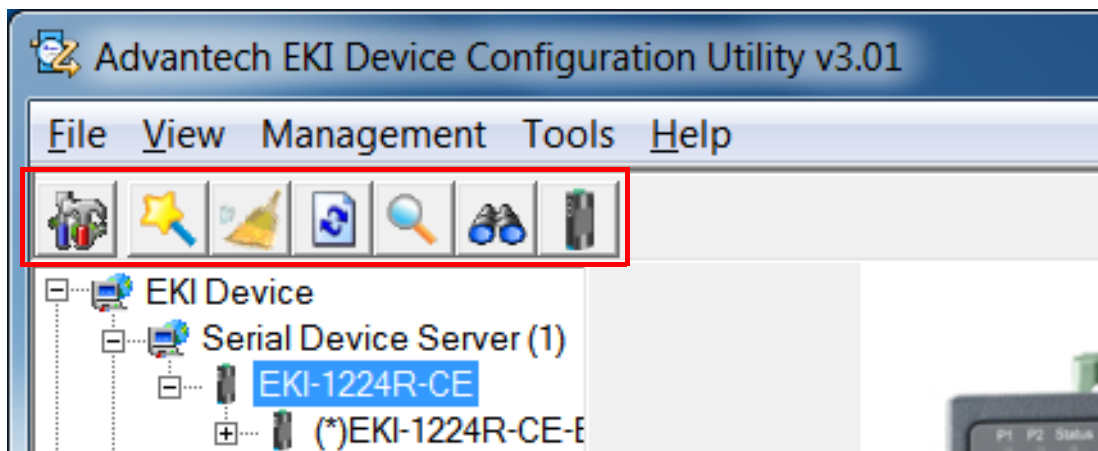









Figure 3.6 Quick Tool Bar Overview

Icon	Item	Description
	Utility Settings	Click to configure the general settings for the Main Form Setting and Device Manager menus. Refer to "Utility Settings" on page 30.
	Configuration Wizard	Start the software wizard (setup assistant) to lead you through the VCOM configuration process for modbus router product.
	Clear Device List and Search Again	Click to clear listed modbus routers in the Device List Area and initiate a new search. A continuous click of the icon results in the following message: Please do not refresh so frequently.
	Search Again	Click to search for modbus routers 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 address to begin 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 modbus router to the network.

3.4.1 Utility Settings

3.4.1.1 Main Form Setting

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

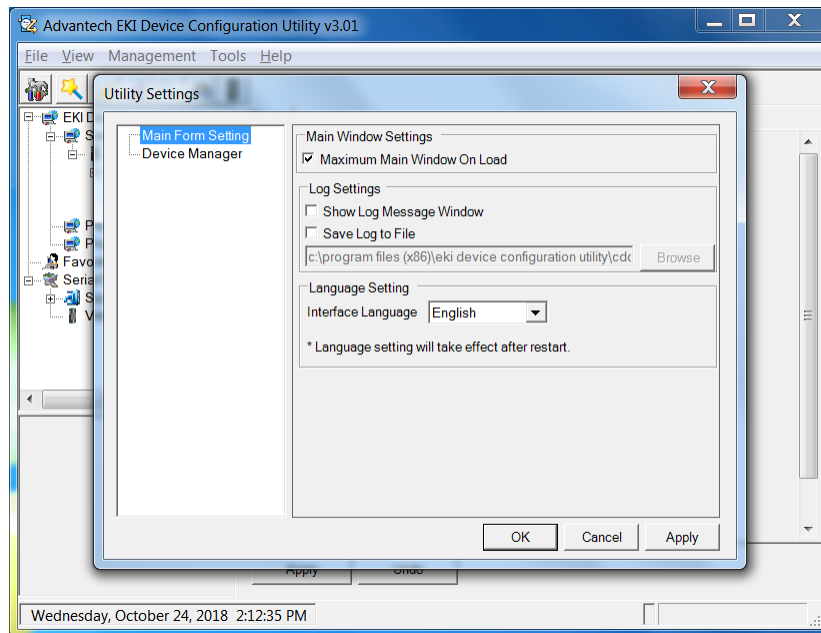


Figure 3.7 View > Settings > Main Form Setting

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. <i>NOTE: A restart is required for the settings to take effect.</i>
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

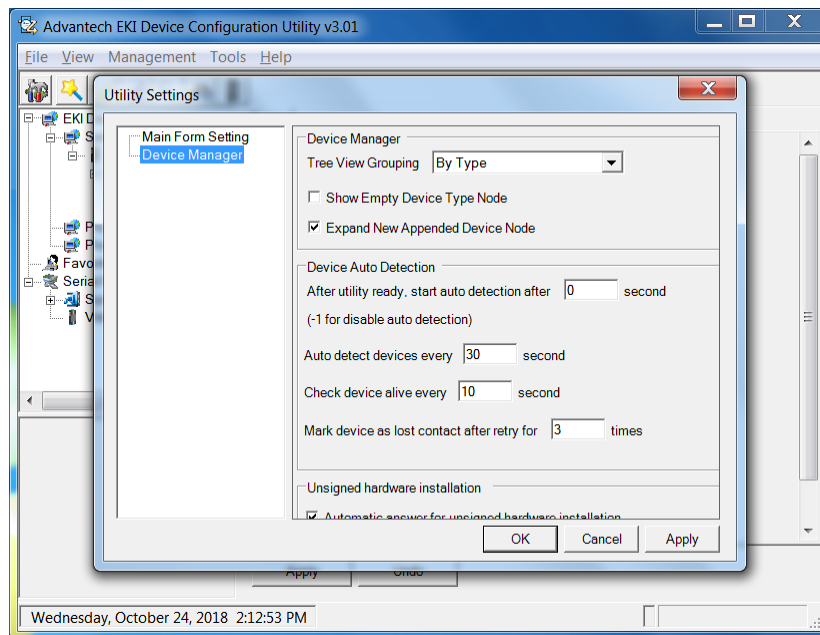


Figure 3.8 View > Settings > Device Manager

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 Modbus Router

3.4.2.1 Auto Searching

Advantech EKI Device Configuration Utility will automatically search all the EKI-122xR-CE Series modbus routers on the network and show them on the Device 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 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.

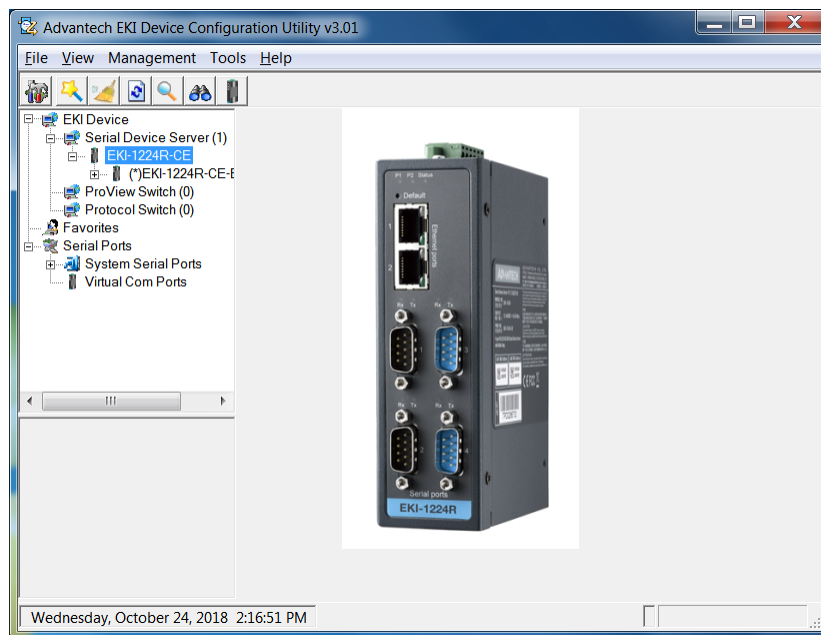


Figure 3.9 Open View of Device Configuration Utility

In the previous figure, the EKI modbus router is listed as EKI-1224R-CE-B12D1B.

Note! *When you run the configuration utility for the first time, the default device name is obtained from the 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.

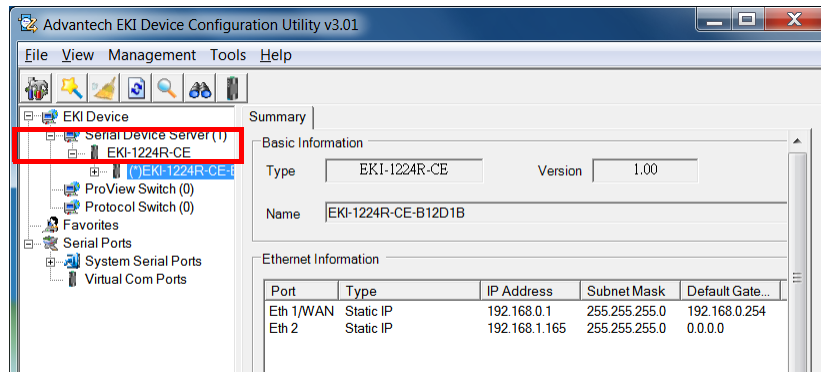


Figure 3.10 Selecting a Group

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

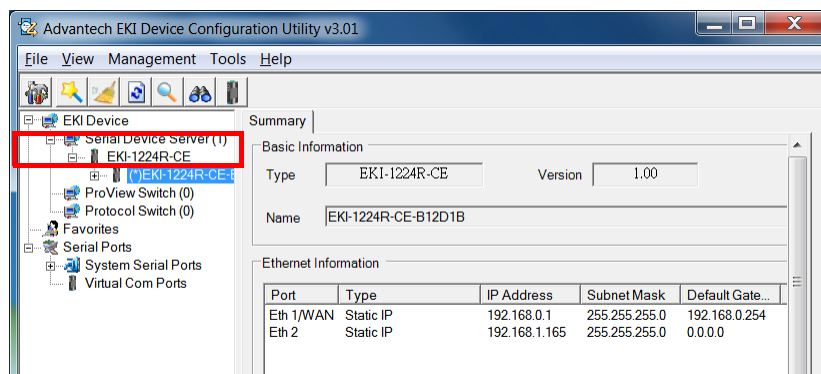


Figure 3.11 Selecting a Device

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

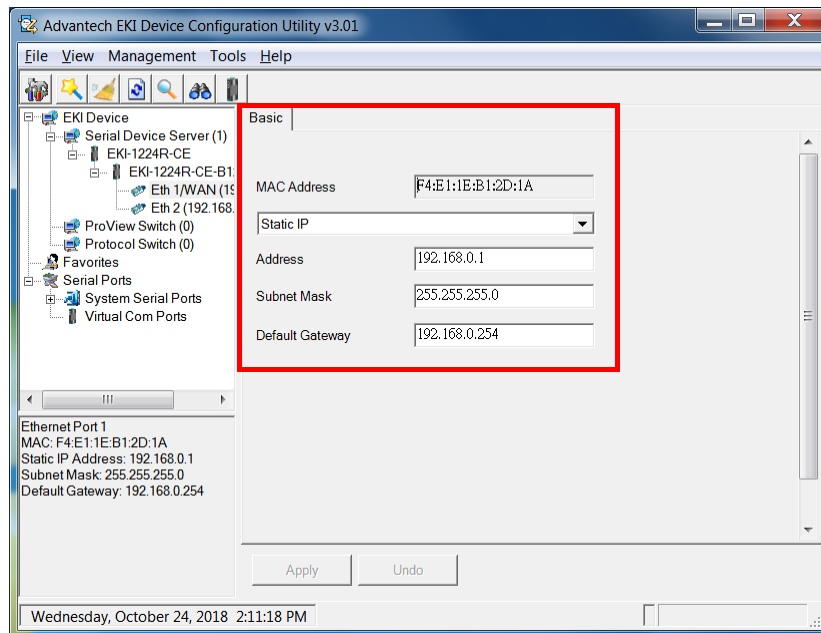


Figure 3.12 Viewing Basic Settings

3.4.3 Network Settings

This section explains how to configure the EKI-122xR-CE Series network settings using the configuration utility to allow it to a 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 modbus router.

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

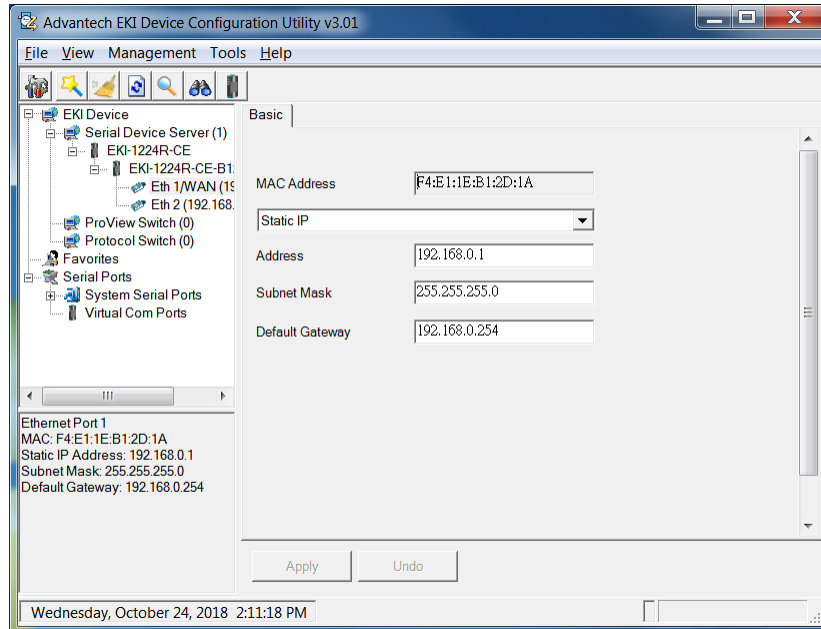


Figure 3.13 Utility Overview

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

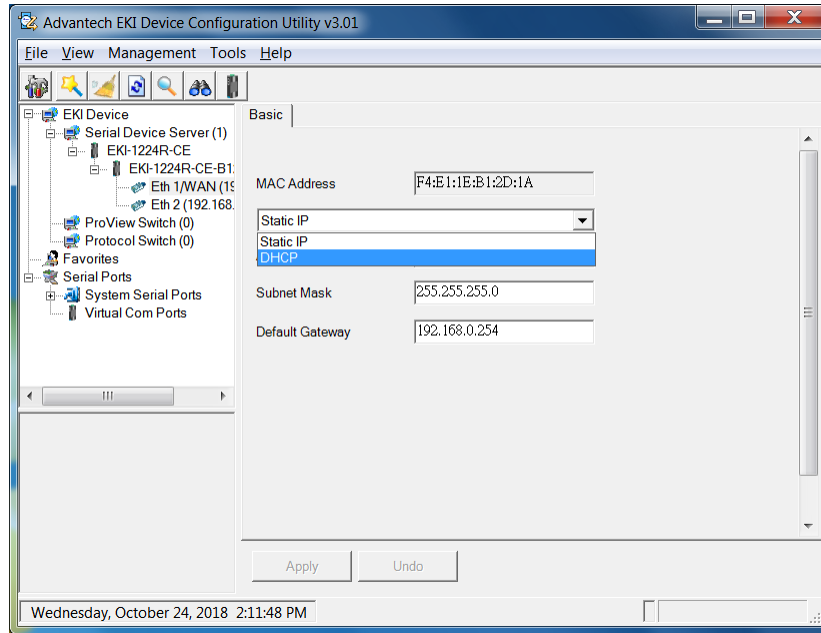


Figure 3.14 Network Settings Overview

Item	Description
Static IP	User defined IP address, Subnet Mask, and Default Gateway.
DHCP	DHCP Server assigned IP address, Subnet Mask, and Default Gateway.

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 modbus router.*



Click **Reset Device** to reboot the modbus router. 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**.

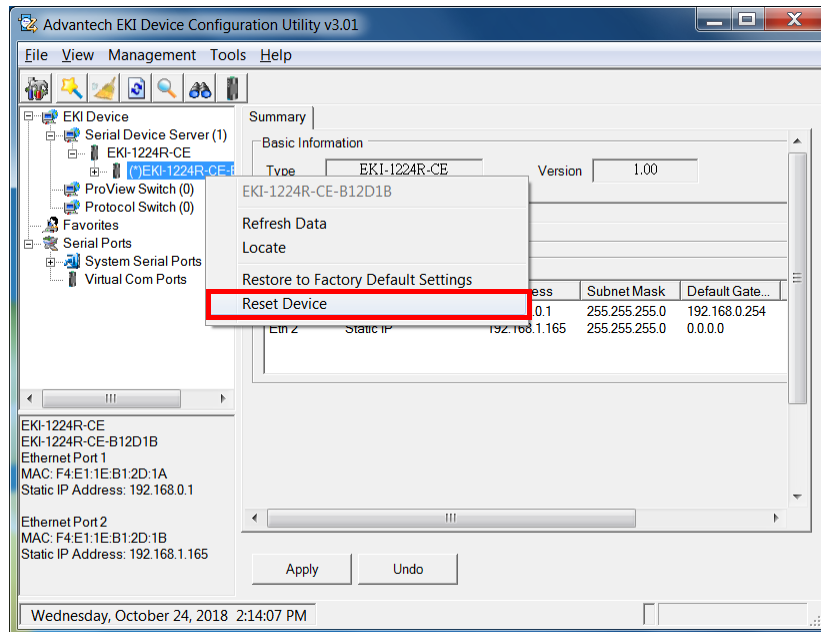


Figure 3.15 Reset Device

3.5 Administrator Settings

3.5.1 Locate the Modbus Router

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

To locate the modbus router:

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.

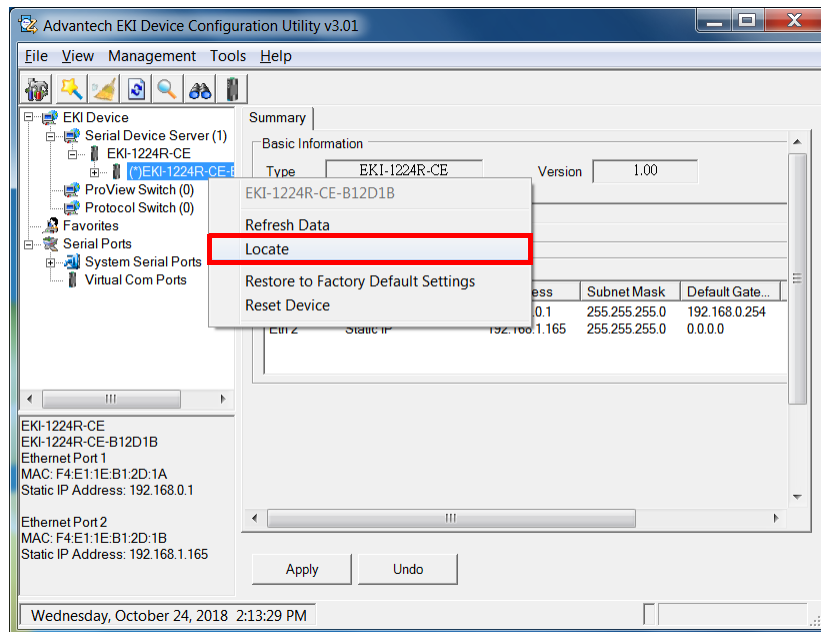


Figure 3.16 Locate the Modbus Router

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

3.5.2 Restore to Factory Default Settings

The configuration utility provides the function to restore the modbus router to factory default settings.

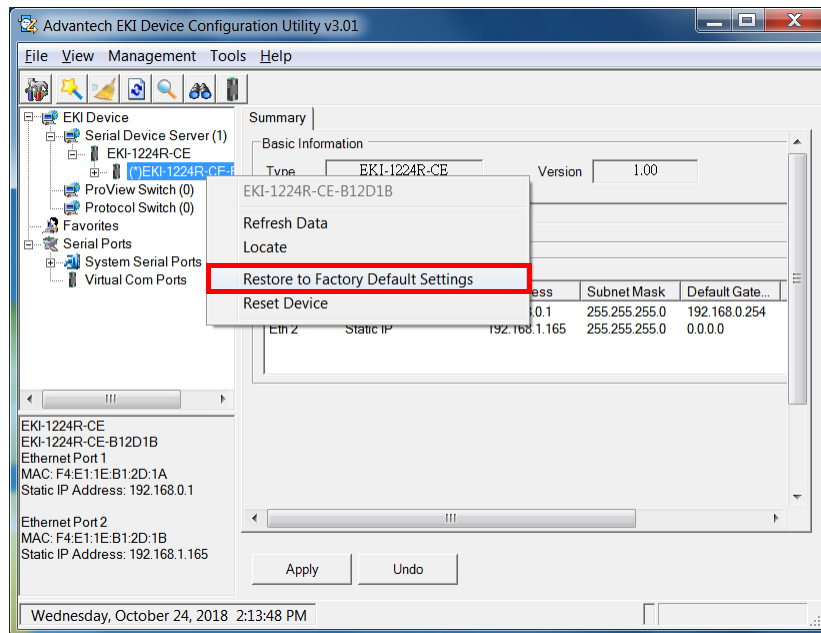


Figure 3.17 Restore to Factory Default Settings

The confirm message will display after clicking **Restore to Factory Default Settings**. If you really want to restore the modbus router to factory default settings, click **Yes** button to continue.

Power off the modbus router 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 modbus router will not be changed.

3.5.3 Resetting the Device

The **Reset Device** function allows you to reset the modbus router. The function disconnects both the ethernet and serial connections.

The function also allows the modbus router 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**.

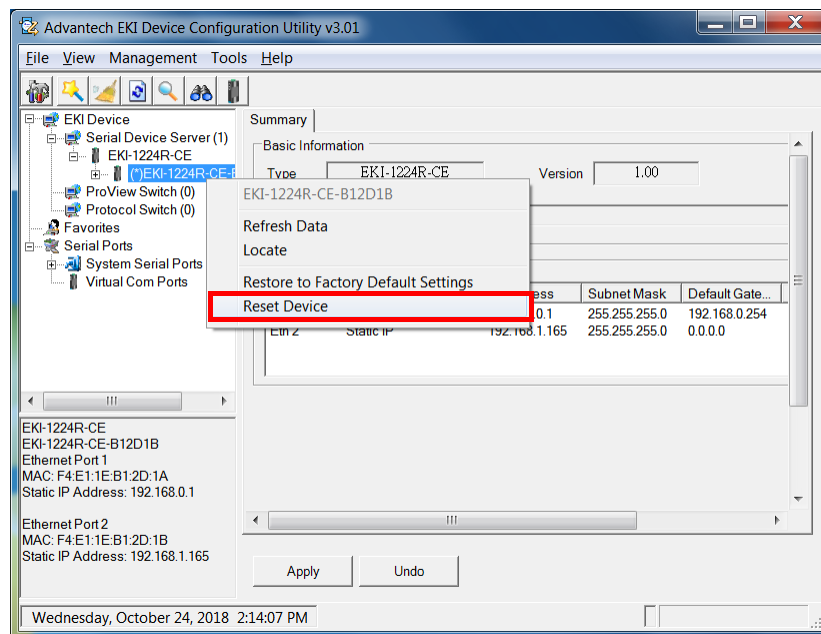


Figure 3.18 Reset Device

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

Chapter 4

Managing Modbus
Router

4.1 Overview

An EKI modbus router 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 modbus router. The default IP setting is 192.168.1.1, 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 modbus router, or it can establish the TCP connection with the modbus router.*



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 **ETH2** under the desired device.
2. Click **Launch Browser**.

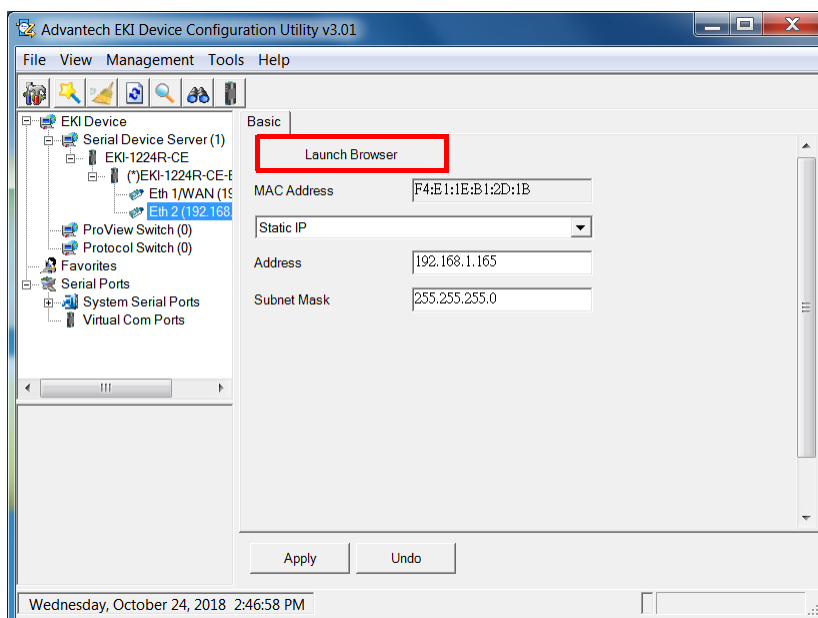


Figure 4.1 Accessing the Web Page via Configuration Utility

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: 192.168.0.1, Eth2: 192.168.1.1).

The main interface displays.

4.2.3 Changing Default Password

In keeping with good management and security practices, it is recommended that you change the default password as soon as the device is functioning and setup correctly. The following details indicate the necessary steps to change the default password.

To change the password:

1. Navigate to **System Management > Administration**.
2. In the **Password** field, type in the new password. Re-type the same password in the **Confirmation** field.
3. Click **Apply** to change the current settings.

The image shows a web browser window titled "Administration" with a gear icon on the left and an upward arrow on the right. Below the title bar, the text "Changes the administrator password for accessing the device" is displayed. A horizontal dashed line separates this header from the form fields. There are two text input fields: the first is labeled "Password" and the second is labeled "Confirmation". Below these fields is a blue button with the text "Apply".

Figure 4.2 Changing a Default Password



4.3 Overview

The Overview menu lists information pertaining to the system, such as Hostname, Model, Firmware version, and more. The information is for review only. To modify the device information, see the respective item within the user interface.

The following figures represent multiple supported devices. Some interface screens may represent specific device models.

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

System			
Information Name	Information Value		
Hostname	ADV-EKI-1224R-CE		
Model	EKI-1224R-CE		
Firmware Version	1.00.04		
Local Time	Mon Oct 8 06:55:38 2018		
Uptime	2h 29m 36s		

Network	
Information Name	Information Value
WAN Status	 Address: 192.168.0.1 Netmask: 255.255.255.0 Gateway: 192.168.0.254 RX: 42.65 KB (544 Pkts.) TX: 6.17 KB (94 Pkts.) MAC-Address: F4:E1:1E:B1:2D:1A
LAN Status	 Address: 192.168.1.165 Netmask: 255.255.255.0 Gateway: 0.0.0.0 RX: 3.40 MB (32593 Pkts.) TX: 7.03 MB (18449 Pkts.) MAC-Address: F4:E1:1E:B1:2D:1B

DHCP Leases			
Hostname	IPv4-Address	MAC-Address	Leasetime remaining
There are no active leases.			

Figure 4.3 Overview

The following table describes the items in the previous figure.

Item	Description
System	
Hostname	Displays the host name of the device.
Model	Displays the model name of the device.
Firmware Version	Displays the current firmware version of the device.
Local Time	Displays the current time.
Uptime	Displays the accumulated time for continuous operation.
Network	
WAN Status	Displays the WAN information.
LAN Status	Displays the LAN information.
DHCP Leases	The ensuing table for DHCP Leases settings are informational only: Hostname, IPv4-Address, MAC-Address and Leasetime remaining.

4.4 LAN and DHCP

To access this page, click **LAN and DHCP**.

The screenshot shows a configuration window for LAN and DHCP settings. The 'LAN' section includes fields for IPv4 Address (192.168.1.165) and IPv4 Netmask (255.255.255.0). The 'DHCP Server' section has radio buttons for 'DHCP Server' (Enabled/Disabled), 'Start' (100), 'Limit' (150), 'Leasetime' (12) with a 'Hours' dropdown, 'DNS Strict-order' (Enabled/Disabled), and 'Custom Primary DNS Server' and 'Custom Secondary DNS Server' fields. An 'Apply' button is located at the bottom.

Figure 4.4 LAN and DHCP

The following table describes the items in the previous figure.

Item	Description
LAN	
IPv4 Address	Enter a value to specify the IP address of the interface. The default is 192.168.1.1.
IPv4 Netmask	Enter a value to specify the IP subnet mask for the interface. The default is 255.255.255.0.
DHCP Server	
DHCP Server	Click the radio button to designate the DHCP server function type. When a new DHCP server mode is selected, the router requires a system restart for the new mode to take effect.
Start	Enter a value to specify the start number of subscribers. The default is 100.
Limit	Enter a value to specify the limited number of subscribers. This functionality allows an Internet service provider (ISP) to limit the number of leases available to clients per household or connection. The default is 150.
Leasetime	Set the valid time lease of IP address obtained by DHCP. The default is 12 hours.
DNS Strict-order	Check to enable or disable By default, dnsmasq will send queries to any of the upstream servers it knows about and tries to favor servers that are known to be up. Setting this flag forces dnsmasq to try each query with each server strictly in the order they appear in the device. The default is Disable.
Custom Primary DNS Server	Enter a value to specify the DNS server for the interface. The default is none.

Item	Description
Custom Secondary DNS Server	Enter a value to specify the DNS server for the interface. The default is none.
Apply	Click Apply to save the values and update the screen.

4.5 WAN

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

Figure 4.5 WAN

The following table describes the items in the previous figure.

Item	Description
Protocol	Click the drop-down menu to select the WAN IP Address Setting mode: static IP or DHCP client.
IPv4 Address	Enter a value to specify the IP address of the interface. The default is 192.168.0.1.
IPv4 Netmask	Enter a value to specify the IP subnet mask for the interface. The default is 255.255.255.0.
IPv4 Gateway	Enter a value to specify the default gateway for the interface. The default is 192.168.0.254.
Custom DNS Server 1	Enter a value to specify the DNS server for the interface. The default is none.
Custom DNS Server 2	Enter a value to specify the DNS server for the interface. The default is none.
Apply	Click Apply to save the values and update the screen.

4.6 VPN Passthrough

To access this page, click **VPN Passthrough**.

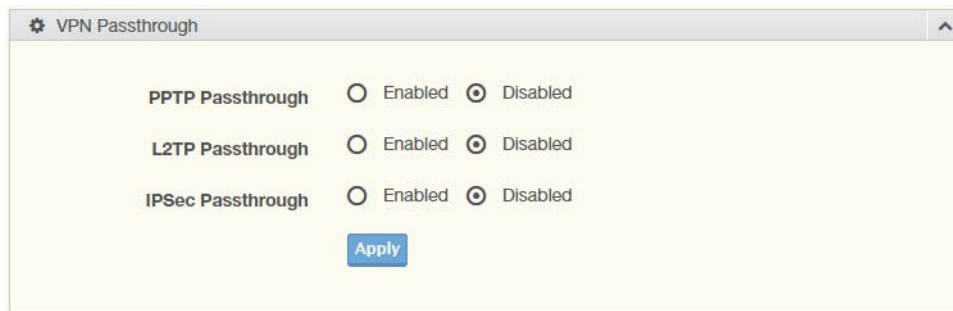


Figure 4.6 VPN Passthrough

The following table describes the items in the previous figure.

Item	Description
PPTP Passthrough	Click the radio button to enable the PPTP passthrough function.
L2TP Passthrough	Click the radio button to enable the L2TP passthrough function.
IPSec Passthrough	Click the radio button to enable the IPSec passthrough function.
Apply	Click Apply to save the values and update the screen.

4.7 Port Configuration

4.7.1 Modbus Settings

To access this page, click **Port Configuration > Modbus Settings**.



Figure 4.7 Port Configuration > Modbus Settings

The following table describes the items in the previous figure.

Item	Description
Listen Port for Slave Mode	Enter a value to identify the channel for remote initiating connections. The default value is 502.
Apply	Click Apply to save the values and update the screen.

4.7.2 Port

4.7.2.1 Basic

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

The screenshot shows the 'Port Basic Configuration' interface. It features two tabs at the top: 'Basic' (highlighted in orange) and 'Operation'. Below the tabs is a title bar with a gear icon and the text 'Port Basic Configuration'. The main configuration area contains the following items:

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

An 'Apply' button is located at the bottom center of the configuration area.

Figure 4.8 Port Configuration > Port > Basic

The following table describes the items in the previous figure.

Item	Description
Type	Click the drop-down menu to select a serial interface: RS232, RS422 or RS485.
Baud Rate	Click the drop-down menu to select 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 or RTS/CTS.
Apply	Click Apply to save the values and update the screen.

4.7.2.2 Operation

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

The screenshot shows the 'Port Operation Configuration' page. It features two tabs: 'Basic' and 'Operation'. The 'Operation' tab is active. The page contains the following fields and controls:

- Mode:** A dropdown menu set to 'Modbus Slave Mode'.
- Protocol:** A dropdown menu set to 'RTU'.
- Slave Timeout(ms):** A text input field containing '1000', with a range '(0 - 60000)' indicated to the right.
- Peer for Receiving Data:** A section header followed by a dashed line and a 'Peer Number' dropdown menu set to '0'.
- Apply:** A blue button at the bottom center.

Figure 4.9 Port Configuration > Port > Operation

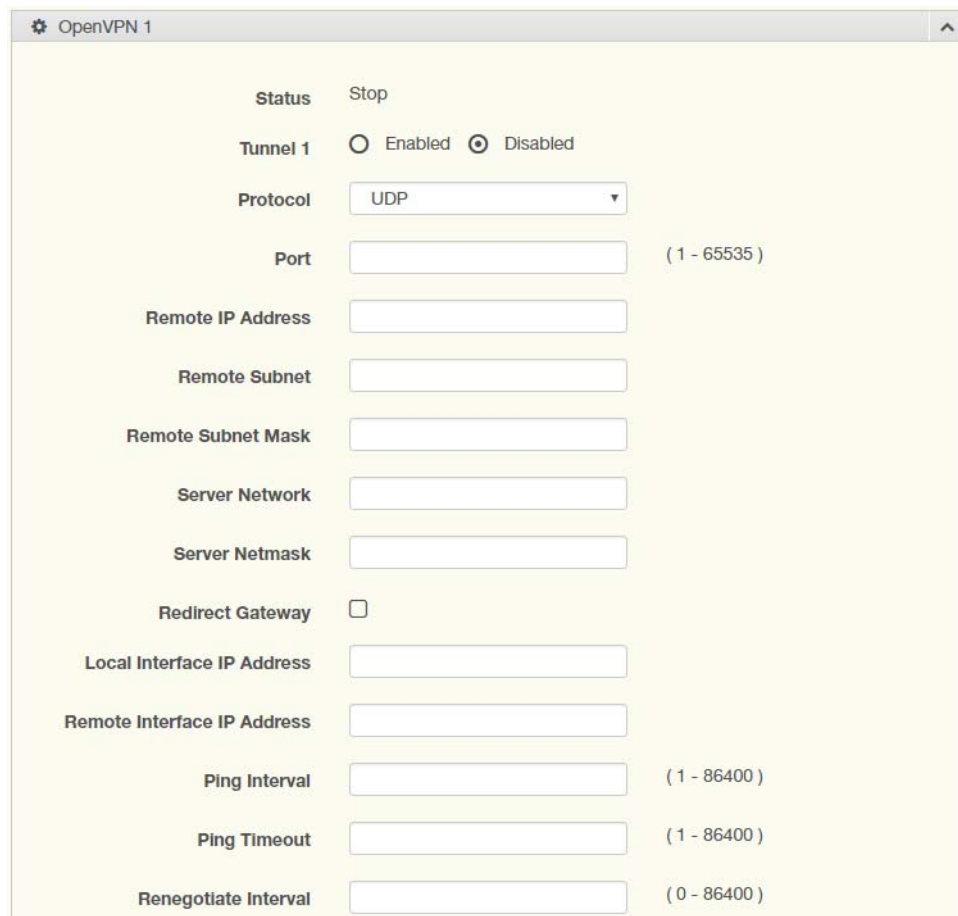
The following table describes the items in the previous figure.

Item	Description
Mode	Click the drop-down menu to select the port configuration mode: Modbus Slave Mode.
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-122xR-CE 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-122xR-CE 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.
Peer for Receiving Data	
Peer Number	Click the drop-down menu to select the number of network device which you want to connect.
Apply	Click Apply to save the values and update the screen.

4.8 OpenVPN

4.8.1 Tunnel

To access this page, click **OpenVPN > Tunnel**.



The screenshot shows the configuration interface for OpenVPN 1. The status is 'Stop'. The tunnel is currently 'Disabled'. The protocol is set to 'UDP'. The port is '1 - 65535'. There are input fields for Remote IP Address, Remote Subnet, Remote Subnet Mask, Server Network, and Server Netmask. The 'Redirect Gateway' checkbox is unchecked. There are input fields for Local Interface IP Address and Remote Interface IP Address. The Ping Interval is '1 - 86400', Ping Timeout is '1 - 86400', and Renegotiate Interval is '0 - 86400'.

Figure 4.10 OpenVPN > Tunnel

The following table describes the items in the previous figure.

Item	Description
Status	Display the current status of the tunnel.
Tunnel 1	Click the radio button to enable or disable the tunnel.
Protocol	Click the drop-down menu to select the tunnel protocol: UDP, TCP Server or TCP Client.
Port	Enter a value to import or export certificate (CRL).
Remote IP Address	Enter a value to specify a remote IP address.
Remote Subnet	Enter a value to specify a remote subnet.
Remote Subnet Mask	Enter a value to specify a remote subnet mask.
Server Network	Enter a value to specify a server netmask.
Server Netmask	Enter a value to specify a server network.
Redirect Gateway	Check the box to initiate the redirect gateway feature. When redirect-gateway is used, OpenVPN clients will route DNS queries through the VPN, and the VPN server will need handle them.
Local Interface IP Address	Enter a value to specify a ping interval.

Item	Description
Remote Interface IP Address	Enter a value to specify a local interface IP address.
Ping Interval	Enter a value to specify a local interface IP address.
Ping Timeout	Enter a value to specify a ping timeout period.
Renegotiate Interval	Enter a value to specify an interval to renegotiate data channel key.
Max Fragment Size	Enter a value to specify the maximum fragment size for backups and restores.
Compression	Click the radio button to enable Compression.
NAT Rules Applied	Click the drop-down menu to specify the authenticate mode.
Authenticate Mode	Enter a value to specify the shared key or TLS-AUTH static password.
Pre-shared Secret	Click Browse to select the Pre-shared key file which you can use for every authentication mode.
CA Certificate	Click Browse to select the CA certificate file which you can use for the username/password and X.509 Certificate authentication modes.
DH Parameters	Click Browse to select the DH parameter file e which you can use for X.509 Certificate authentication in the server mode.
Local Certificate	Click Browse to select the local certificate file. Use this authentication certificate for the X.509 Certificate authentication mode.
Local Private Key	Click Browse to select the local private key file. Use the key for the X.509 Certificate authentication mode.
Username	Enter the name of the new user entry.
Password	Enter the character set for the define password type.
Extra Options	Enter a string to specify additional parameters for the OpenVPN tunnel, such as DHCP options. The parameters are preceded by two dashes.
Apply	Click Apply to save the values and update the screen.

4.9 Filter

4.9.1 Filter Settings

To access this page, click **Filter > Filter Settings**.

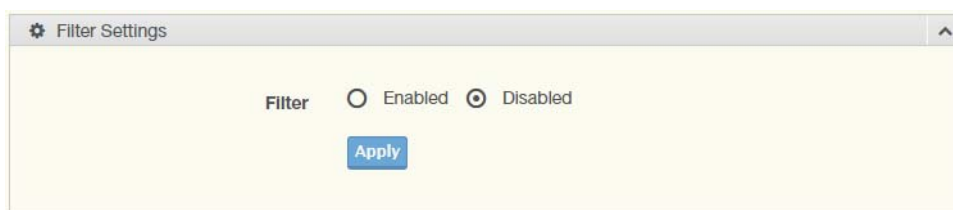


Figure 4.11 Filter > Filter Settings

The following table describes the items in the previous figure.

Item	Description
Filter	Click the radio button to enable the filter function.
Apply	Click Apply to save the values and update the screen.

4.9.2 Filter Rules

To access this page, click **Filter > Filter Rules**.



Enabled	Source Zone	Destination Zone	Source IP	Destination IP	Protocol	Source Port	Destination Port	Action	Delete
---------	-------------	------------------	-----------	----------------	----------	-------------	------------------	--------	--------

Figure 4.12 Filter > Filter Rules

The following table describes the items in the previous figure.

Item	Description
Add	Click Add to add a new filter rule.
Apply	Click Apply to save the values and update the screen.

4.10 Port Forward

4.10.1 Port Forwarding

To access this page, click **Port Forward > Port Forwarding**.



Name	Start Port	End Port	Local IP	Local Port	Protocol	Delete
------	------------	----------	----------	------------	----------	--------

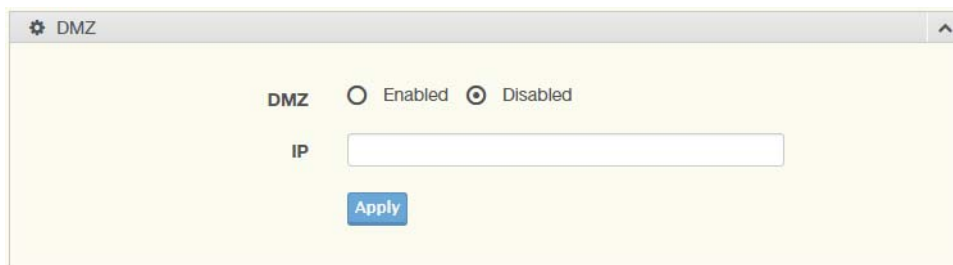
Figure 4.13 Port Forward > Port Forwarding

The following table describes the items in the previous figure.

Item	Description
Add	Click Add to add a new port forwarding setting.
Apply	Click Apply to save the values and update the screen.

4.10.2 DMZ

To access this page, click **Port Forward > DMZ**.



DMZ Enabled Disabled

IP

Figure 4.14 Port Forward > DMZ

The following table describes the items in the previous figure.

Item	Description
DMZ	Click the radio button to enable or disable the DMZ function.

Item	Description
IP	Enter a value to specify the IP address of the DMZ.
Apply	Click Apply to save the values and update the screen.

4.11 QoS

The QoS function allows you to configure settings for the router QoS interface and how the router connects to a remote server to get services.

4.11.1 QoS Settings

The QoS Settings allows you to set up the QoS function.

To access this page, click **QoS > QoS Settings**.

Figure 4.15 QoS > QoS Settings

The following table describes the items in the previous figure.

Item	Description
QoS	Click the radio button to enable the QoS function.
Download Speed (kbit/s)	Enter a value to specify the download speed. The default speed is 8291 kbit/s.
Upload Speed (kbit/s)	Enter a value to specify the upload speed. The default speed is 2048 kbit/s.
Apply	Click Apply to save the values and update the screen.

4.11.2 QoS IP Base Rules

The QoS rule specifies what actions are to be taken with the data packets. It specifies the source and destination of the communication, what services can be used, at what times, whether to log the connection and the logging level.

To access this page, click **QoS > QoS IP Base Rules**.



Figure 4.16 QoS > QoS IP Base Rules

The following table describes the items in the previous figure.

Item	Description
Add	Click Add to add a new QoS IP base rule.
Apply	Click Apply to save the values and update the screen.

4.11.3 QoS Protocol Base Rules

The QoS Protocol Base Rule menu allows you to forward the device which works in tandem with signaling protocols to ensure end-to-end QoS.

To access this page, click **QoS > QoS Protocol Base Rules**.

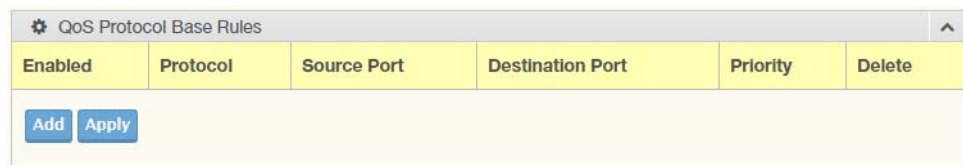


Figure 4.17 QoS > QoS Protocol Base Rules

The following table describes the items in the previous figure.

Item	Description
Add	Click Add to add a new QoS protocol base rule.
Apply	Click Apply to save the values and update the screen.

4.12 Static Routes

A static route provide fixed routing path through the network. It is manually configured on the router and must be updated if the network topology was changed recently. Static routes are private routers unless they are redistributed by a routing protocol.

4.12.1 Static IPv4 Routes

To access this page, click **Static Routes > Static IPv4 Routes**.



Figure 4.18 Static Routes > Static IPv4 Routes

The following table describes the items in the previous figure.

Item	Description
Add	Click Add to add a new static IPv4 route.
Apply	Click Apply to save the values and update the screen.

4.13 Diagnostics

Through the Diagnostics function configuration of settings for the router diagnostics is available.

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

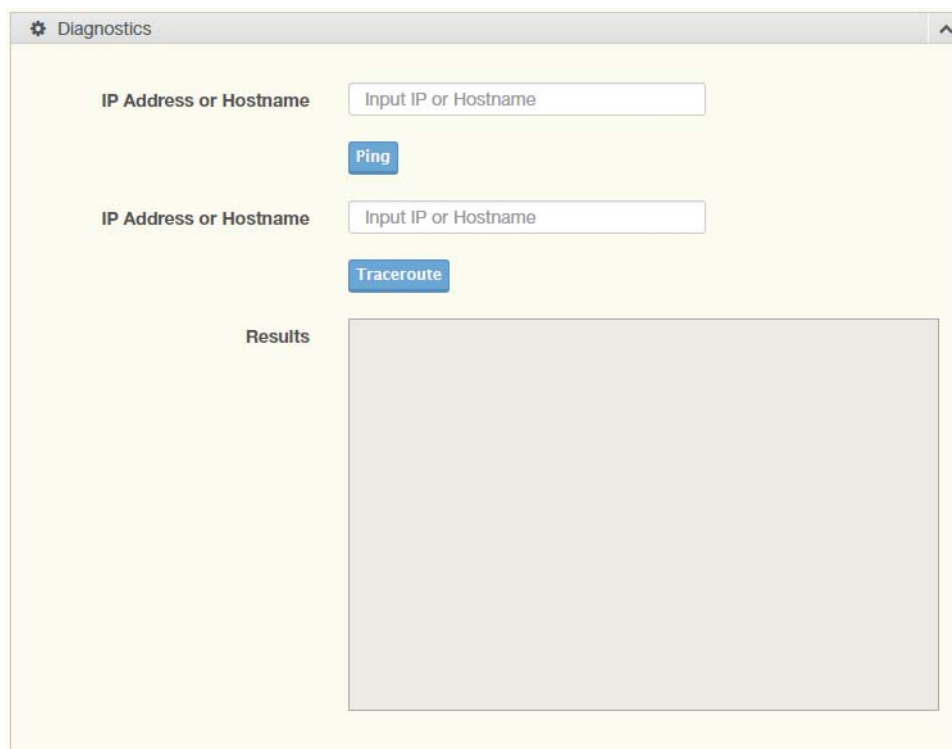


Figure 4.19 Diagnostics

The following table describes the items in the previous figure.

Item	Description
IP Address or Hostname	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.
Ping	Click Ping to display the ping reply format.
IP Address or Hostname	Enter the IP address or host name of the station to traceroute. 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.
Traceroute	Click Traceroute to display the traceroute reply format.
Apply	Click Apply to save the values and update the screen.

4.14 Status

Status contains Routes and Syslog.

4.14.1 Routes

To access this page, click **Status > Routes**.

ARP		
IPv4-Address	MAC-Address	Interface
192.168.1.59	1c:6f:65:28:35:ae	eth1

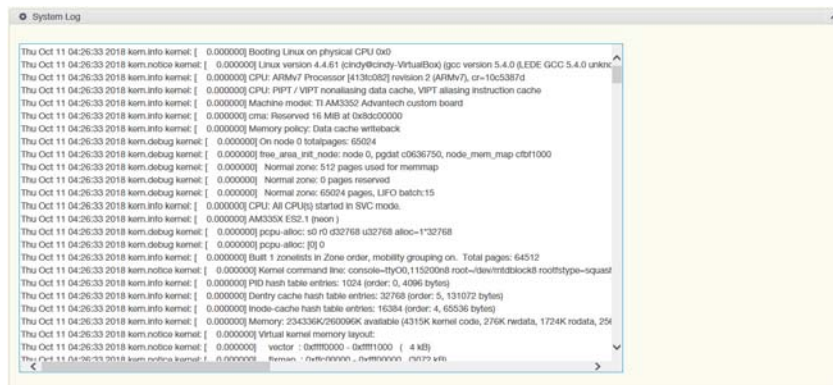
Active IPv4-Routes				
Network	Target	IPv4-Gateway	Metric	Table
wan	0.0.0.0/0	192.168.0.254	0	main
wan	192.168.0.0/24		0	main
lan	192.168.1.0/24		0	main

Figure 4.20 Status > Routes

4.14.2 Syslog

Users can check the history in the Syslog page.

To access this page, click **Status > Syslog**.



```
System Log
Thu Oct 11 04:26:33 2018 kern.info kernel: [ 0.000000] Booting Linux on physical CPU 0x0
Thu Oct 11 04:26:33 2018 kern.notice kernel: [ 0.000000] Linux version 4.4.61 (cindy@beyond-VirtualBox) (gcc version 5.4.0 (LEDE GCC 5.4.0) unknown)
Thu Oct 11 04:26:33 2018 kern.info kernel: [ 0.000000] CPU: ARMv7 Processor [413fc082] revision 2 (ARMv7), cr=10c5387d
Thu Oct 11 04:26:33 2018 kern.info kernel: [ 0.000000] CPU: PIPT / VIPT nonaliasing data cache, VIPT aliasing instruction cache
Thu Oct 11 04:26:33 2018 kern.info kernel: [ 0.000000] Machine model: TI AM3352 Advantech custom board
Thu Oct 11 04:26:33 2018 kern.info kernel: [ 0.000000] cma: Reserved 16 MB at 0x8dc00000
Thu Oct 11 04:26:33 2018 kern.info kernel: [ 0.000000] Memory policy: Data cache writeback
Thu Oct 11 04:26:33 2018 kern.debug kernel: [ 0.000000] On node 0 totalpages: 65024
Thu Oct 11 04:26:33 2018 kern.debug kernel: [ 0.000000] free_area_init_node: node 0, pgdat c0636750, node_mem_map cfbf1000
Thu Oct 11 04:26:33 2018 kern.debug kernel: [ 0.000000] Normal zone: 512 pages used for memmap
Thu Oct 11 04:26:33 2018 kern.debug kernel: [ 0.000000] Normal zone: 0 pages reserved
Thu Oct 11 04:26:33 2018 kern.debug kernel: [ 0.000000] Normal zone: 65024 pages, LIFO batch:15
Thu Oct 11 04:26:33 2018 kern.info kernel: [ 0.000000] CPU: All CPU(s) started in SVC mode.
Thu Oct 11 04:26:33 2018 kern.info kernel: [ 0.000000] AM335X ES2.1 (pxon)
Thu Oct 11 04:26:33 2018 kern.debug kernel: [ 0.000000] pcpu alloc: s0 rd c32768 us2768 alloc-1*32768
Thu Oct 11 04:26:33 2018 kern.debug kernel: [ 0.000000] pcpu alloc: [?] 0
Thu Oct 11 04:26:33 2018 kern.info kernel: [ 0.000000] Built 1 zonelists in Zone order, mobility grouping on. Total pages: 64512
Thu Oct 11 04:26:33 2018 kern.notice kernel: [ 0.000000] Kernel command line: console=ttyO0,115000n8 root=/dev/mtdblock8 rootfstype=squashfs
Thu Oct 11 04:26:33 2018 kern.info kernel: [ 0.000000] PID hash table entries: 1024 (order: 0, 4096 bytes)
Thu Oct 11 04:26:33 2018 kern.info kernel: [ 0.000000] Dentry cache hash table entries: 32768 (order: 5, 131072 bytes)
Thu Oct 11 04:26:33 2018 kern.info kernel: [ 0.000000] Inode-cache hash table entries: 16384 (order: 4, 65536 bytes)
Thu Oct 11 04:26:33 2018 kern.info kernel: [ 0.000000] Memory: 234339K/260596K available (4315K kernel code, 276K read-only, 1724K rodata, 25K
Thu Oct 11 04:26:33 2018 kern.notice kernel: [ 0.000000] Virtual kernel memory layout:
Thu Oct 11 04:26:33 2018 kern.notice kernel: [ 0.000000] vector : 0xfffff000 - 0xfffff000 ( 4 kB)
Thu Oct 11 04:26:33 2018 kern.notice kernel: [ 0.000000] fixmap : 0xffff0000 - 0xffff0000 ( 1072 kB)
```

Figure 4.21 Status > Syslog

4.15 System Management

4.15.1 Administration

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

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

The screenshot shows a web interface titled "Administration" with a gear icon. Below the title is the text "Changes the administrator password for accessing the device". There are two input fields: "Password" and "Confirmation". Below these fields is a blue "Apply" button.

Figure 4.22 Management > Administration

The following table describes the items in the previous figure.

Item	Description
Password	Enter the character set to define a password.
Confirmation	Retype the password entry to confirm the profile password.
Submit	Click Submit to save the values and update the screen.

If you want to disable the password protection, change the password to the default option None (leave the password column blank). Make sure you apply and reboot the system (**Management > Reboot**) to save the updates.

4.15.2 Backup / Flash Firmware

To access this page, click **Management > Backup / Flash Firmware**.

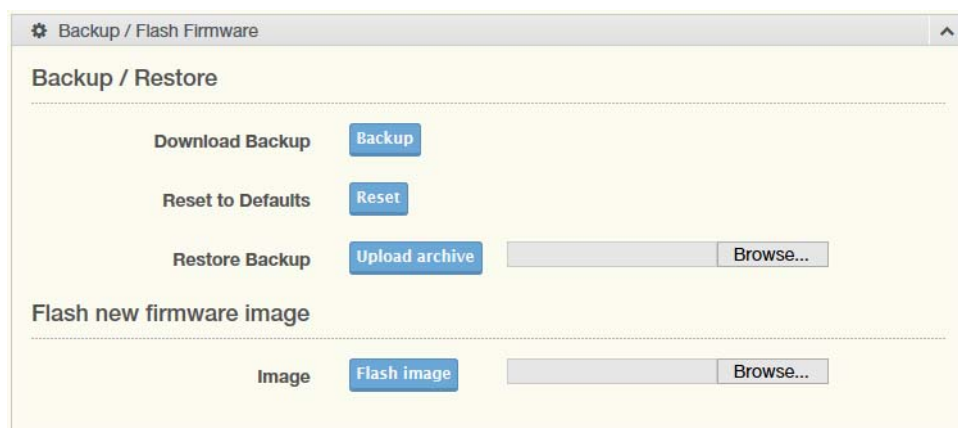
The screenshot shows a web interface titled "Backup / Flash Firmware" with a gear icon. Below the title is the text "Backup / Restore". There are three sections: "Download Backup" with a blue "Backup" button; "Reset to Defaults" with a blue "Reset" button; and "Restore Backup" with a blue "Upload archive" button and a "Browse..." button. Below these is a section titled "Flash new firmware image" with a blue "Flash image" button and a "Browse..." button.

Figure 4.23 Management > Backup / Flash Firmware

The following table describes the items in the previous figure.

Item	Description
Backup / Restore	
Download Backup	Click Backup to backup configuration from the device.
Reset to Defaults	Click Reset to have all configuration parameters reset to their factory default values. All changes that have been made will be lost, even if you have issued a save.

Item	Description
Restore Backup	Click Browse to select the configuration file and click Upload Archive to restore configuration to the device.
Flash new firmware image	
Image	Click Browse to select the firmware file and click Flash image to upgrade the firmware.

4.15.3 System

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

Figure 4.24 Management > System

The following table describes the items in the previous figure.

Item	Description
System	
Local Time	Displays the current time. Click Sync with browser and synchronize the time on the device with the local PC.
Hostname	Enter the device name: up to 31 alphanumeric characters.
Timezone	Click the drop-down menu to select a system time zone.
NTP Setting	
NTP	Click the radio button to enable or disable the NTP.
Provide NTP Server	Click the radio button to enable or disable the provide the NTP server.
NTP Server Candidates	Enter the address of the NTP server. This is a text string of up to 64 characters containing the encoded unicast IP address or hostname of a NTP server. Unicast NTP 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 NTP request is sent to it.
Apply	Click Apply to save the values and update the screen.

4.15.4 Reboot Device

To access this page, click **Management > Reboot Device**.

Click **Reboot** to reboot the modbus router. Any configuration changes you have made since the last time you issued a save will be lost.



Figure 4.25 Management > Reboot Device

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