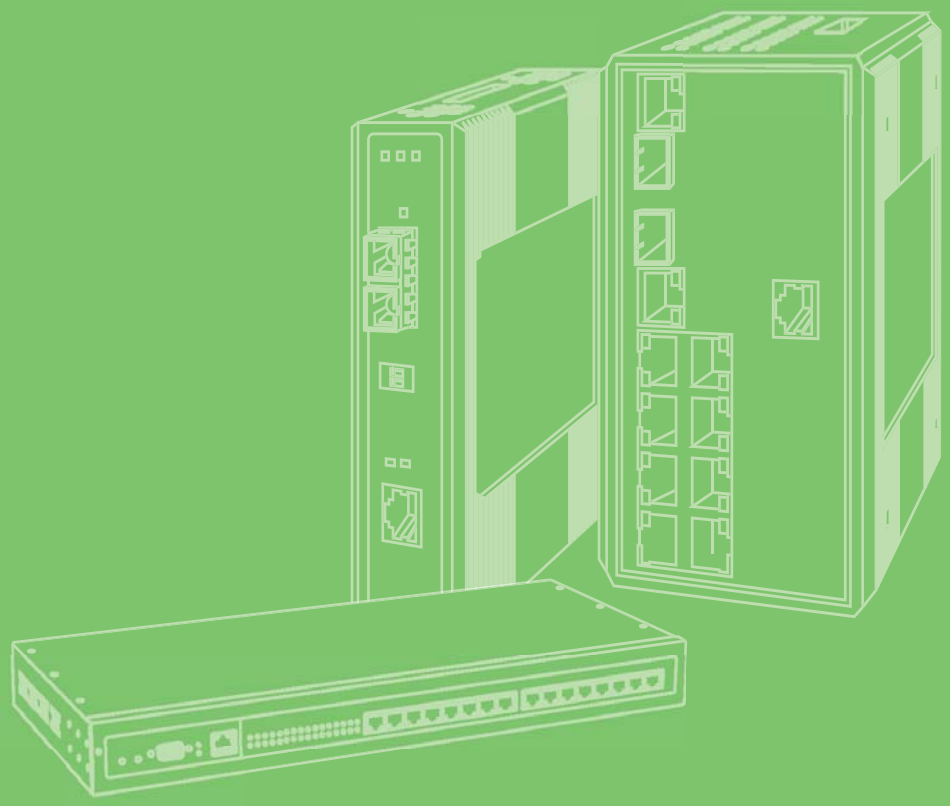
User Manual



EKI-1242 Series

Modbus RTU/TCP to BACnet IP/MSTP | EtherCAT | EtherNet/IP | PROFINET Fieldbus Gateway

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.

This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by Advantech, or which have been subject to misuse, abuse, accident or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

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.
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 merchandize 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.

Part No. 2009124200 Edition 1

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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 Fieldbus gateway
- 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.

Contents

List of Figures

Chapter 1

Product Overview

1.1 Specifications

Specifications	Description	
Interface	I/O Port	■ EKI-1242BNMS/EKI-1242IBNMS: 2 x Modbus TCP + 2 x BACnet IP + 1 x BACnet MSTP + 1 x RS-232/422/485 ■ EKI-1242ECMS/EKI-1242IECMS: 2 x RJ45 + 2 x EtherCAT + 2 x RS-232/422/485 ■ EKI-1242EIMS/EKI-1242IEIMS: 2 x RJ45 + 2 x EtherNet/IP + 2 x RS-232/422/485 ■ EKI-1242PNMS/EKI-1242IPNMS: 2 x RJ45 + 2 x PROFINET + 2 x RS-232/422/485
	Power Connector	6-pin removable screw terminal (power & relay)
	MicroSD Card	Configuration backup and restore
Physical	Enclosure	Metal with solid mounting hardware
	Installation	DIN-rail, wall mount
	Dimensions (W x H x D)	42 x 140 x 95mm (1.66” x 5.52” x 3.75”)
LED Display	System LED	P1, P2, Status
	Protocol LED	■ EKI-1242BNMS/EKI-1242IBNMS: BACnet IP (BN), Modbus (MS) ■ EKI-1242ECMS/EKI-1242IECMS: EtherCAT (EC), Modbus (MS) ■ EKI-1242EIMS/EKI-1242IEIMS: EtherNET/IP (EI), Modbus (MS) ■ EKI-1242PNMS/EKI-1242IPNMS: PROFINET (PN), Modbus (MS)
	Port LED	■ LAN: Speed, Link/Active ■ Serial: Tx, Rx ■ EtherCAT: Speed, Link/Active (EKI-1242ECMS/EKI-1242IECMS only)
Environment	Operating Temperature	-10°C ~ 60°C (14°F ~ 140°F) “I” models: -40°C ~ 75°C (-40°F ~ 167°F)
	Storage Temperature	-40°C ~ 85°C (-40°F ~ 185°F)
	Ambient Relative Humidity	10 ~ 95% (non-condensing)
Power	Power Consumption	5.2W
	Power Input	■ EKI-1242BNMS/EKI-1242IBNMS: 24 V_{AC}, redundant dual power inputs ■ EKI-1242ECMS/EKI-1242IECMS: 12~48 V_{DC}, redundant dual power inputs ■ EKI-1242EIMS/EKI-1242IEIMS: 12~48 V_{DC}, redundant dual power inputs ■ EKI-1242PNMS/EKI-1242IPNMS: 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

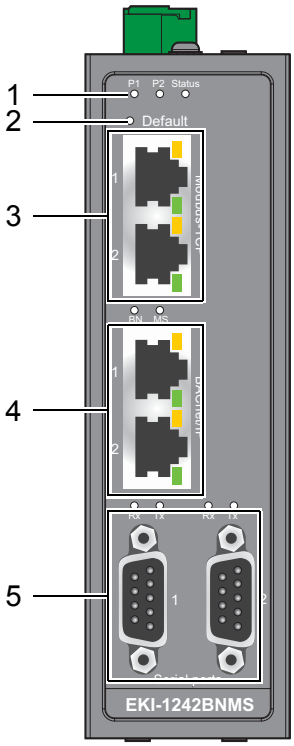

Figure 1.1 Front View (EKI-1242BNMS/EKI-1242IBNMS)

No.	Item	Description
1	System LED panel	See “LED Indicators” on page 8 for further details.
2	Default	Press less than 5 seconds to restart the device, press over 5 seconds to reset to factory default.
3	ETH port	RJ45 port for Modbus/TCP and device configuration.
4	ETH port	RJ45 port for BACnet/IP.
5	Serial port	DB9 pinout. Port 1 supports BACnet MSTP and port 2 supports RS-232/422/485.

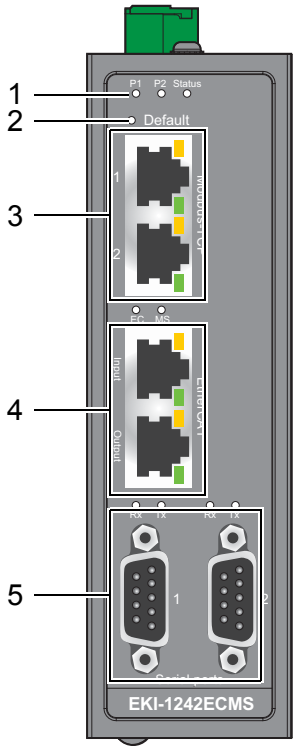

Figure 1.2 Front View (EKI-1242ECMS/EKI-1242IECMS)

No.	Item	Description
1	System LED panel	See “LED Indicators” on page 8 for further details.
2	Default	Press less than 5 seconds to restart the device, press over 5 seconds to reset to factory default.
3	ETH port	RJ45 port for Modbus/TCP and device configuration.
4	ETH port	RJ45 port for EtherCAT.
5	Serial port	DB9 pinout supports 232/422/485.

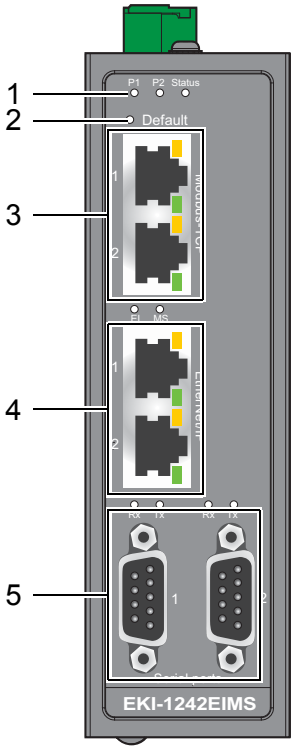

Figure 1.3 Front View (EKI-1242EIMS/EKI-1242IEIMS)

No.	Item	Description
1	System LED panel	See “LED Indicators” on page 8 for further details.
2	Default	Press less than 5 seconds to restart the device, press over 5 seconds to reset to factory default.
3	ETH port	RJ45 port for Modbus/TCP and device configuration.
4	ETH port	RJ45 port for EtherNet/IP.
5	Serial port	DB9 pinout supports 232/422/485.

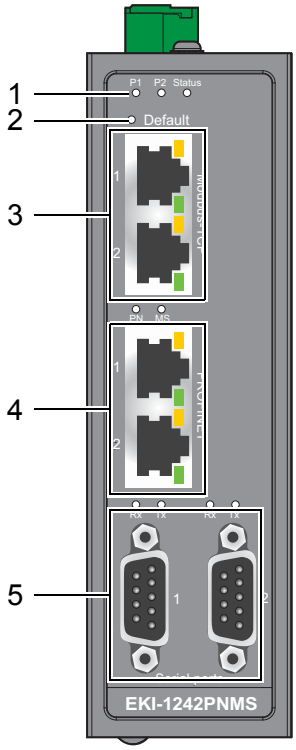

Figure 1.4 Front View (EKI-1242PNMS/EKI-1242IPNMS)

No.	Item	Description
1	System LED panel	See “LED Indicators” on page 8 for further details.
2	Default	Press less than 5 seconds to restart the device, press over 5 seconds to reset to factory default.
3	ETH port	RJ45 port for Modbus/TCP and device configuration.
4	ETH port	RJ45 port for PROFINET.
5	Serial port	DB9 pinout supports 232/422/485.

1.2.2 Rear View

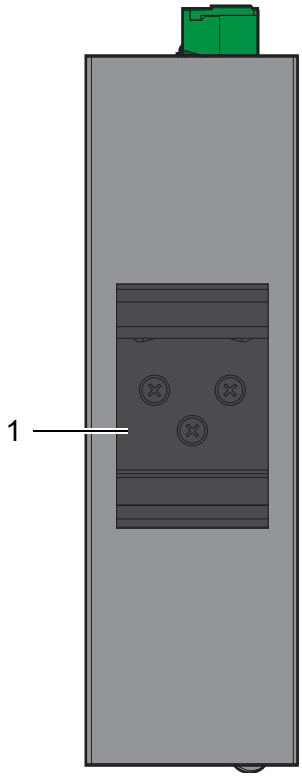

Figure 1.5 Rear View

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

1.2.3 Top View

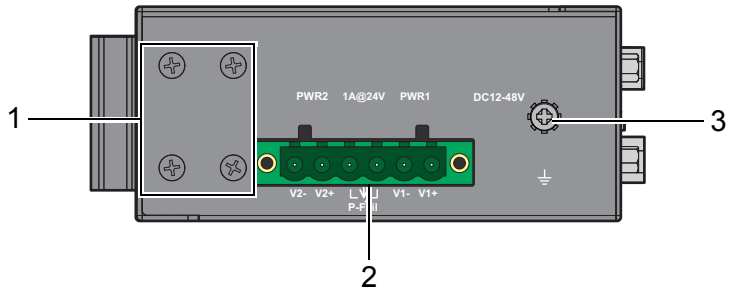

Figure 1.6 Top View

No.	Item	Description
1	Wall mounting screws	Screw (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 to ground chassis

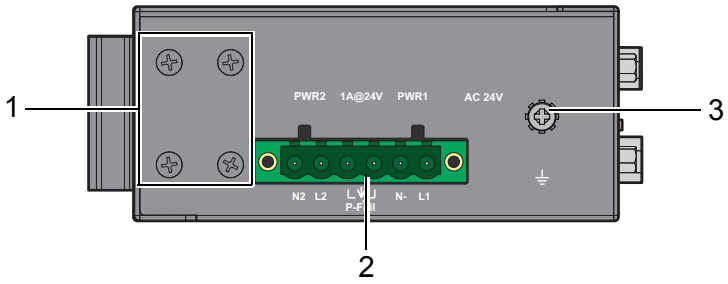

Figure 1.7 Top View ((EKI-1242BNMS/EKI-1242IBNMS)

No.	Item	Description
1	Wall mounting screws	Screw (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 to ground chassis

1.2.4 Bottom View

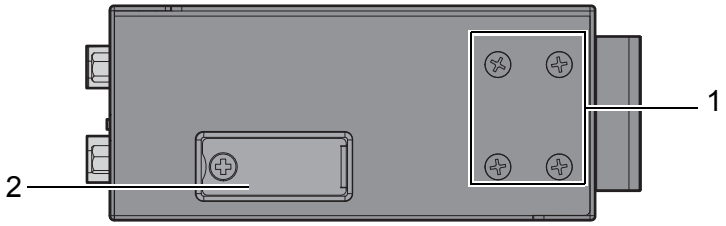

Figure 1.8 Bottom View

No.	Item	Description
1	Wall mounting holes	Screw holes (x4) used in the installation of a wall mounting plate
2	Component cover	Open to access microSD card port (only supports FAT32 or exFAT file system).

1.2.5 LED Indicators

1.2.5.1 EKI-1242BNMS/EKI-1242IBNMS

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	Orange	■ Blinking: System is ready ■ Solid: – Restore config from SD card successfully to factory default state during booting – Backup config to SD card successfully during booting
	Off	System is powered off

LED Name	LED Color	Description
BACnet (BN)	Orange	Reserved
	Green	■ Blinking: BACnet Daemon is not ready ■ Solid: BACnet Daemon is ready
Modbus (MS)	Orange	Blinking: One of Modbus transaction query failed
	Green	Solid: All Modbus transactions query successfully
	Off	No Modbus transmission
Serial	Orange	Serial port is receiving data
	Green	Serial port is transmitting data
	Off	Data is not transmitted or received through the serial port

1.2.5.2 EKI-1242ECMS/EKI-1242IECMS

Catalog	LED Name	LED Color	Description
System LED	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	Orange	■ Blinking: System is ready ■ Solid: – Restore config from SD card successfully to factory default state during booting – Backup config to SD card successfully during booting – Automatically Backup function is disabled
		Off	System is powered off
Protocol LED	EtherCAT (EC)	Orange	■ Heartbeat: Connect to EtherCAT failed ■ Blinking (500ms ON, 500ms OFF) : EtherCAT is Error-State
		Green	■ Blinking (200ms ON, 200ms OFF): EtherCAT is PreOP state ■ Blinking (200ms ON, 700ms OFF): EtherCAT is SafeOP state ■ Solid: EtherCAT is OP state
		Off	EtherCAT is Init-state
	Modbus (MS)	Orange	Blinking: One of Modbus transaction query failed
		Green	Solid: All Modbus transactions query successfully
		Off	No Modbus transmission

Catalog	LED Name	LED Color	Description
Port LED	Serial	Orange	Serial port is receiving data
		Green	Serial port is transmitting data
		Off	Data is not transmitted or received through the serial port
	EtherCAT RJ45	Orange	■ Off: init ■ Flash 1x-12x: SafeOP 1x ■ Blinking: PreOP ■ Flickering: Bootstrap ■ On: Op
		Green	■ Off: No link ■ Blinking: Link and activity ■ On: Link without activity
	RJ45	Green	■ Off: No link ■ Blinking: Link and activity ■ On: Link without activity
		Orange/ Green	■ Off: no link ■ Solid Orange: Current link speed is 100M ■ Solid Green: Current link speed is 10M

1.2.5.3 EKI-1242EIMS/EKI-1242IEIMS

Catalog	LED Name	LED Color	Description
System LED	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	Orange	■ Blinking: System is ready ■ Solid: – Restore config from SD card successfully to factory default state during booting – Backup config to SD card successfully during booting – Automatically Backup function is disabled
		Off	System is powered off
Protocol LED	EtherNET/IP (EI)	Orange	Reserved
		Green	■ Blinking: IO connection do not establish ■ Solid: IO connection establish
	Modbus (MS)	Orange	Blinking: One of Modbus transaction query failed
		Green	Solid: All Modbus transactions query successfully
		Off	No Modbus transmission

Catalog	LED Name	LED Color	Description
Port LED	Serial	Orange	Serial port is receiving data
		Green	Serial port is transmitting data
		Off	Data is not transmitted or received through the serial port
	RJ45	Green	■ Off: No link ■ Blinking: Link and activity ■ On: Link without activity
		Orange/ Green	■ Off: no link ■ Solid Orange: Current link speed is 100M ■ Solid Green: Current link speed is 10M

1.2.5.4 EKI-1242PNMS/EKI-1242IPNMS

Catalog	LED Name	LED Color	Description
System LED	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	Orange	■ Blinking: System is ready ■ Solid: – Restore config from SD card successfully to factory default state during booting – Backup config to SD card successfully during booting – Automatically Backup function is disabled
		Off	System is powered off
Protocol LED	PROFINET (PN)	Orange	Blinking: PLC connection do not establish
		Green	■ Blinking: Indicated by TIA portal ■ Solid: IO connection establish
	Modbus (MS)	Orange	Blinking: One of Modbus transaction query failed
		Green	Solid: All Modbus transactions query successfully
		Off	No Modbus transmission
Port LED	Serial	Orange	Serial port is receiving data
		Green	Serial port is transmitting data
		Off	Data is not transmitted or received through the serial port
	RJ45	Green	■ Off: No link ■ Blinking: Link and activity ■ On: Link without activity
		Orange/ Green	■ Off: no link ■ Solid Orange: Current link speed is 100M ■ Solid Green: Current link speed is 10M

1.3 Dimensions

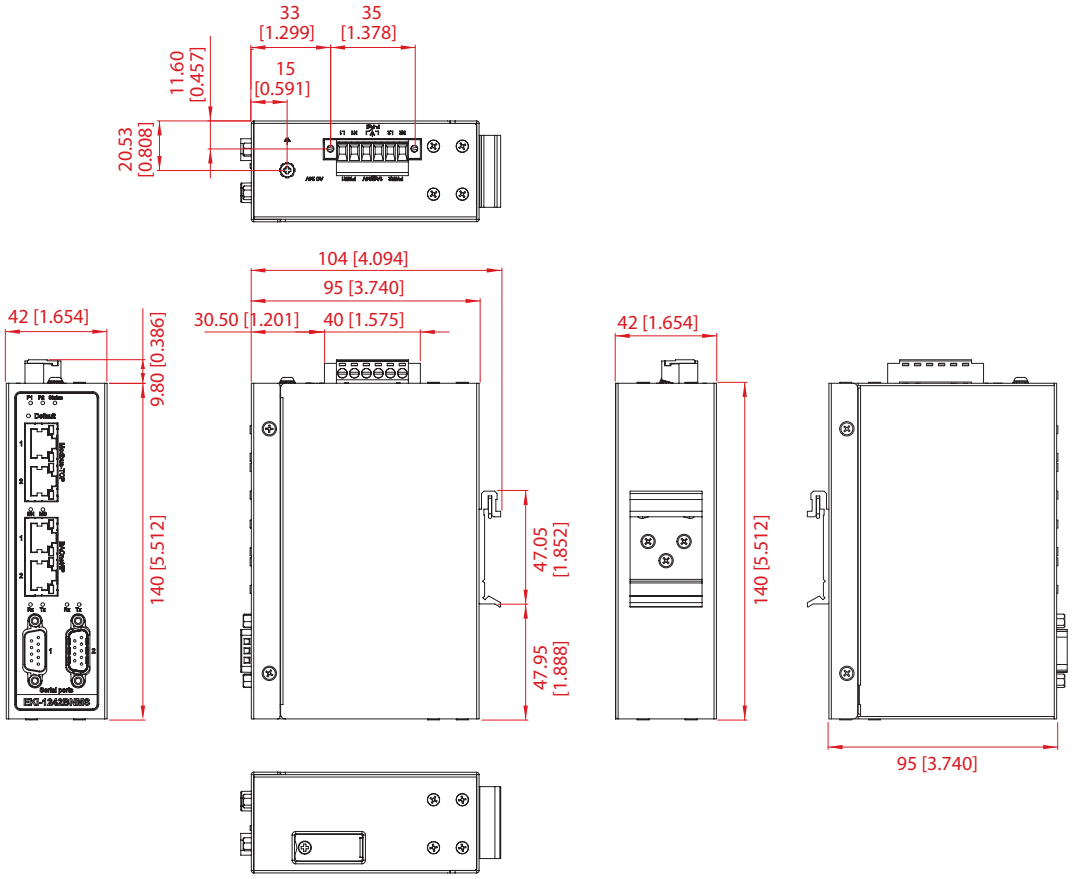

Figure 1.9 Dimensions (EKI-1242BNMS/EKI-1242IBNMS)

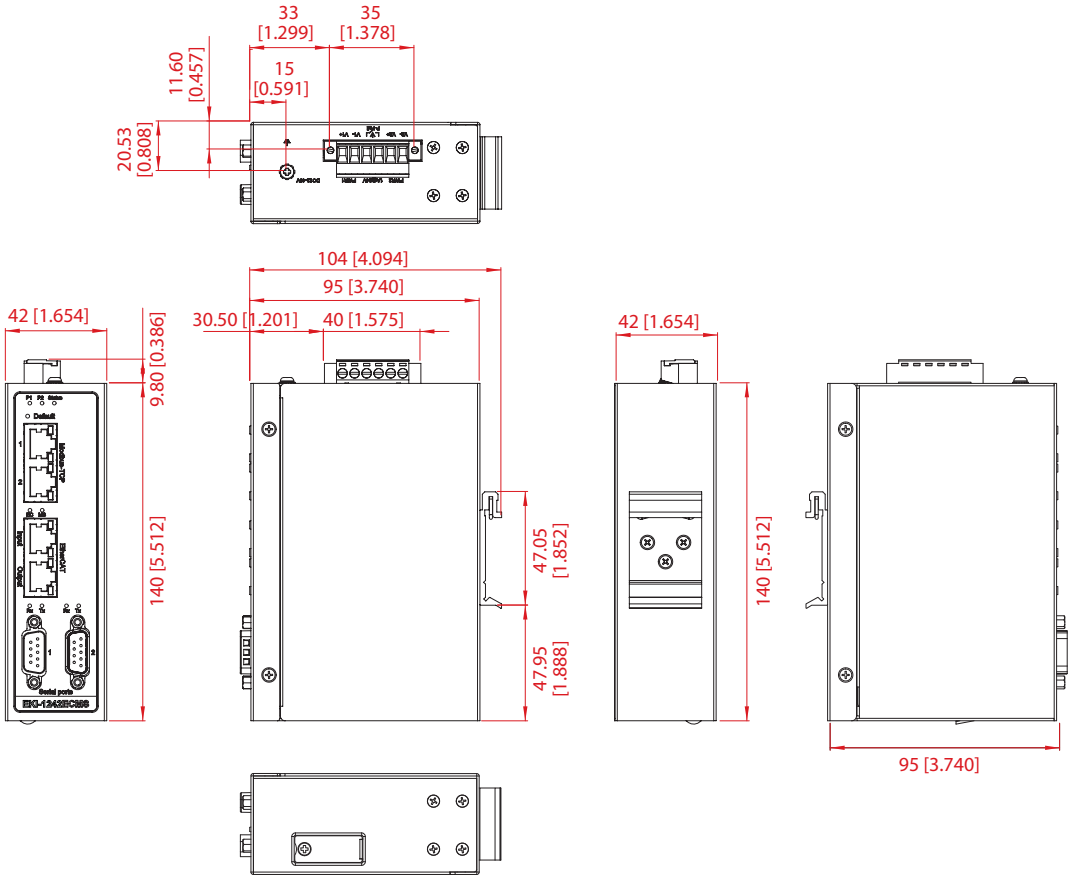

Figure 1.10 Dimensions (EKI-1242ECMS/EKI-1242IECMS)

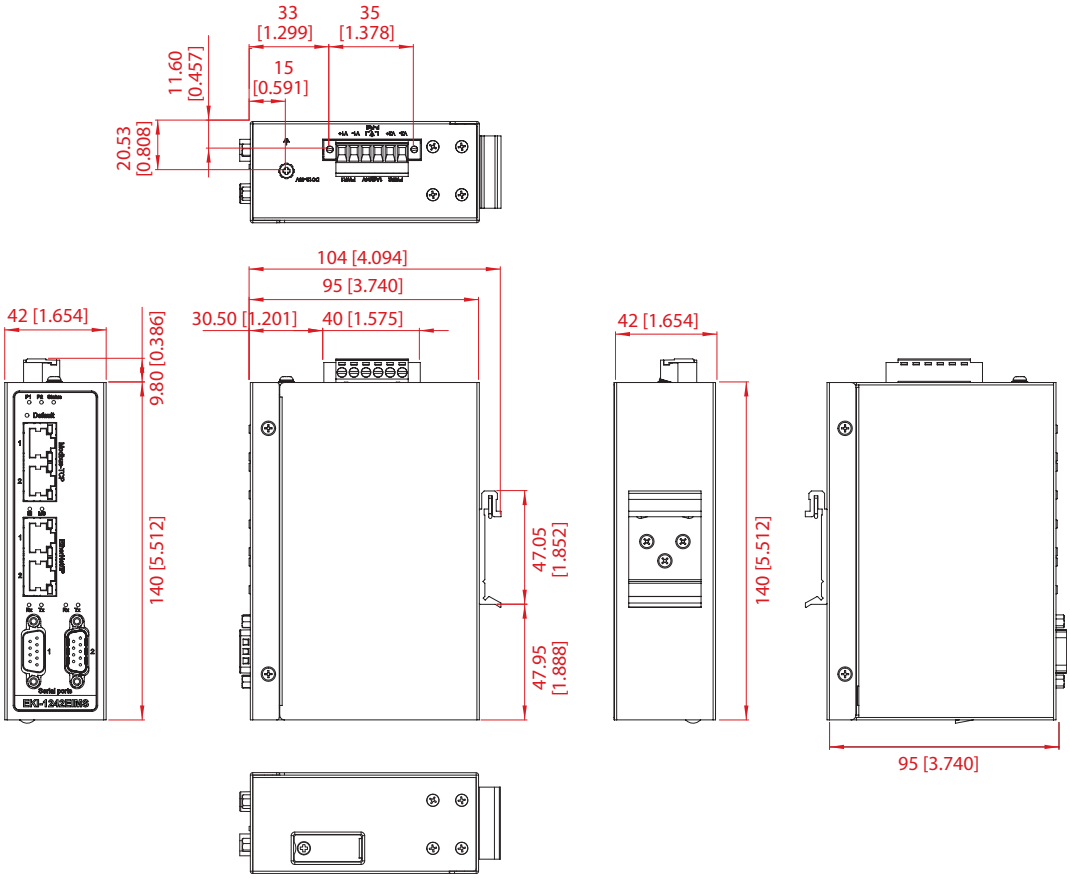

Figure 1.11 Dimensions (EKI-1242EIMS/EKI-1242IEIMS)

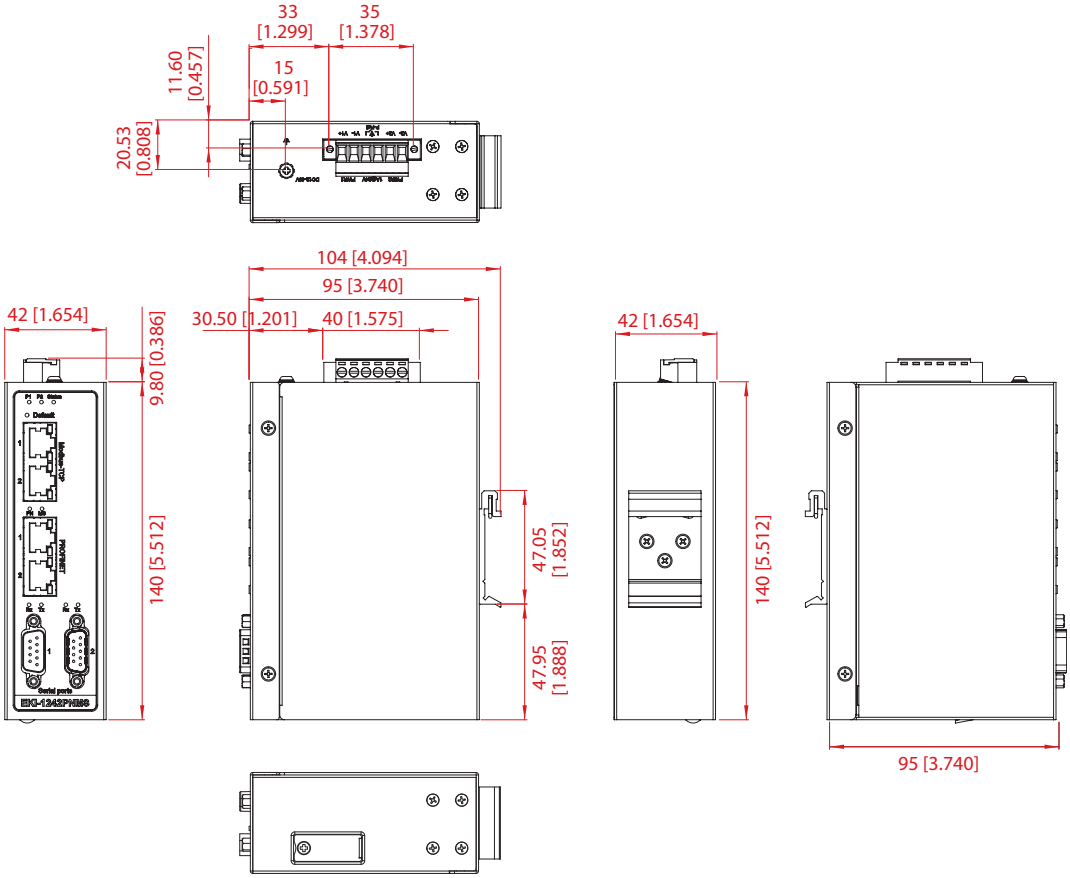

Figure 1.12 Dimensions (EKI-1242PNMS/EKI-1242IPNMS)

Chapter 2

Fieldbus Gateway 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 fieldbus gateway does not exceed 95 percent (noncondensing).
- Altitude at the installation site is not higher than 10,000 feet.
- In 10/100 and 10/100/1000 fixed port devices, the cable length from the fieldbus gateway to connected devices cannot exceed 100 meters (328 feet).
- Make sure airflow around the fieldbus gateway and respective vents are unrestricted. Without proper airflow, the fieldbus gateway can overheat. To prevent performance degradation and damage to the fieldbus gateway, 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 Fieldbus Gateways, and how to connect to the network, hock up the power cable, and connect to the EKI-1242 Series.

2.2 Verifying Fieldbus Gateway Operation

Before installing the device in a rack or on a wall, power on the fieldbus gateway to verify that the fieldbus gateway passes the power-on self-test (POST). To connect the cabling to the power source see “Power Supply Installation” on page 23.

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

After a successful self-test, power down the fieldbus gateway and disconnect the power cabling.

The fieldbus gateway is now ready for installation on its final location.

2.3 Installing the Fieldbus Gateway

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 fieldbus gateway. 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 fieldbus gateway 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 fieldbus gateway to rotate the fieldbus gateway 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.

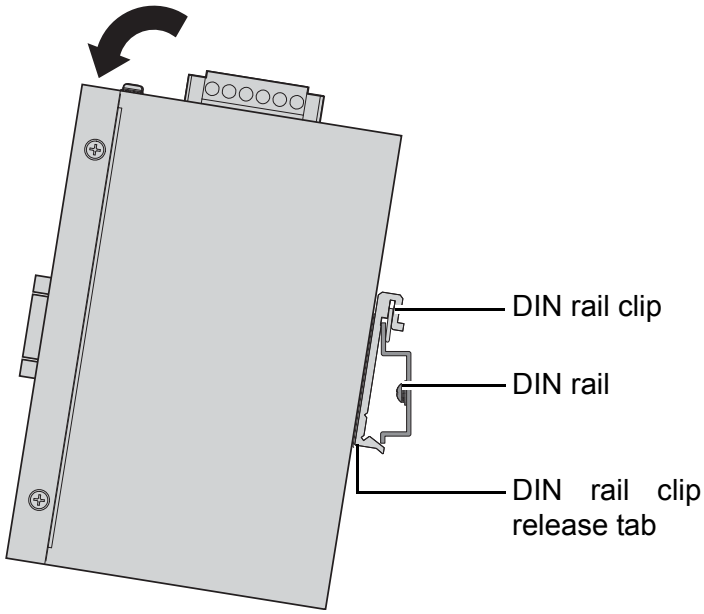

Figure 2.1 Installing the DIN-Rail Mounting Kit

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

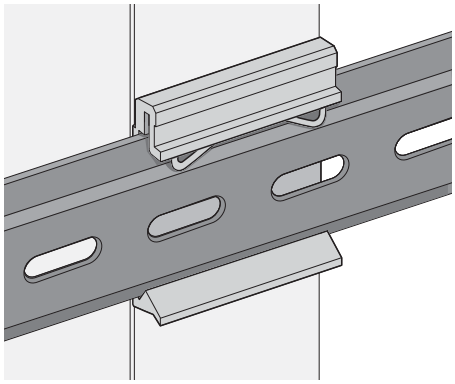

Figure 2.2 Correctly Installed DIN Rail Kit

3. Grasp the bottom of the fieldbus gateway and slightly rotate it upwards. If there is resistance, the fieldbus gateway 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 fieldbus gateway, and disconnect all cables and connectors from the front panel of the fieldbus gateway.
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 fieldbus gateway, as shown in the following illustration.

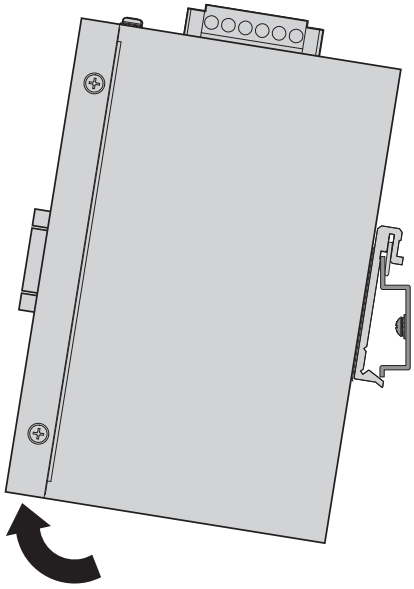

Figure 2.3 Removing the DIN-Rail

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 fieldbus gateway.
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.

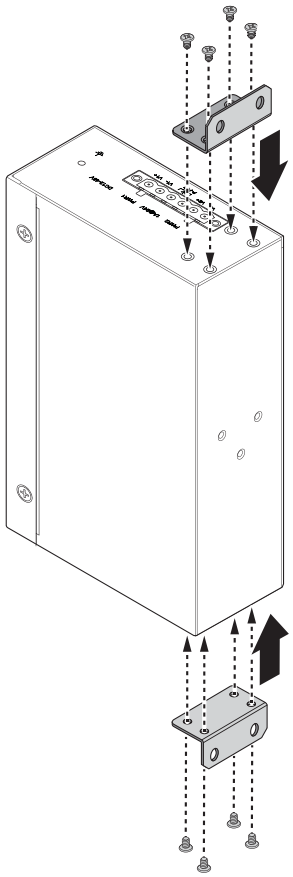

Figure 2.4 Installing Wall Mount Plates

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 fieldbus gateway 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.

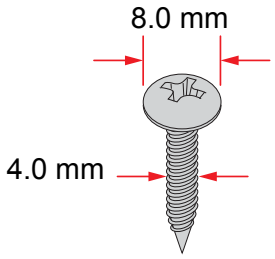

Figure 2.5 Wall Mounting Screw Dimensions

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.

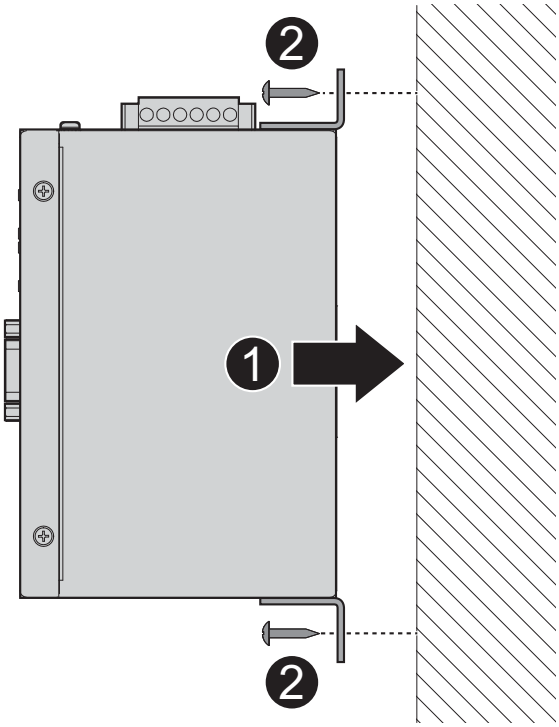

Figure 2.6 Wall Mount Installation

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

2.4 Connecting the Fieldbus Gateway 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

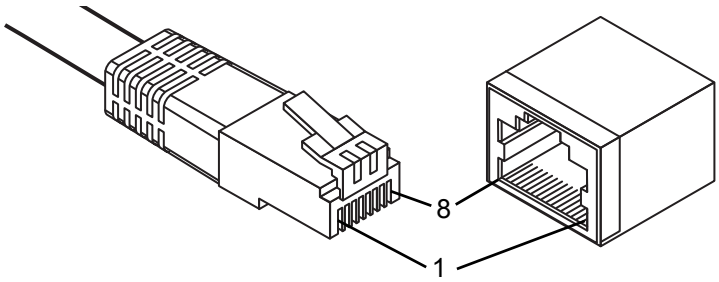

Figure 2.7 Ethernet Plug & Connector Pin Position

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

2.5 Serial Connection

EKI-1242 Series provides eight ports DB9 (male) connectors. RS-232/422/485 pin assignments as below:

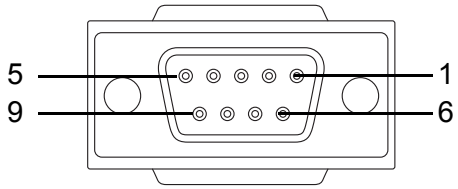

Figure 2.8 DB 9 Pin Position

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 MicroSD Card Installation

The EKI-1242 Series provides an easy way to backup, restore, and deploy configuration settings. The fieldbus gateway provides a microSD card slot to support simple means to manage system configuration settings.

Only microSD cards with the FAT32 or exFAT file systems are supported.

2.6.1 Installing a MicroSD Card

1. Before continuing, make sure the file system on the microSD card is set to FAT32 or exFAT. If necessary, format the microSD card and then continue with the procedure.
2. Remove the screw securing the component cover.

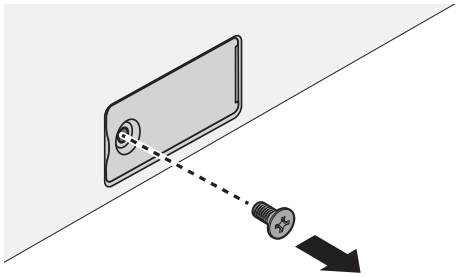

Figure 2.9 Removing the Component Cover Screw

3. Open the component cover.

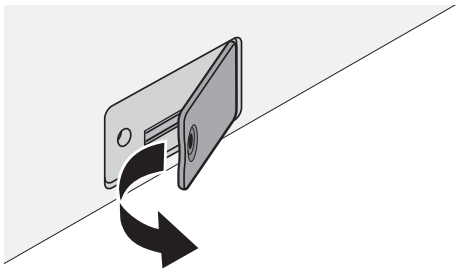

Figure 2.10 Opening the Component Cover

4. The microSD card has a beveled edge. Align the microSD card with the slot making sure the card is aligned with the groove. If there is any resistance, remove the card and re-align it to the slot.
5. Insert the microSD card and press it in until an audible click sounds.

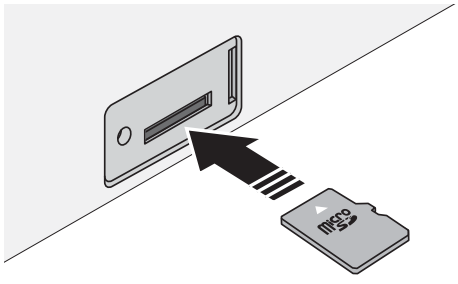

Figure 2.11 Installing the MicroSD Card

6. Close the component cover.

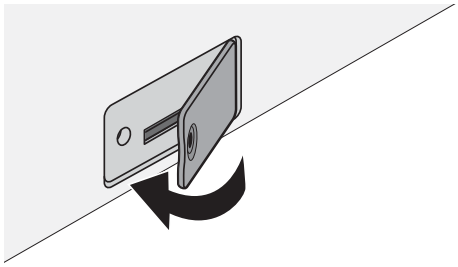

Figure 2.12 Closing the Component Cover

7. Secure the component cover with the provided screw.

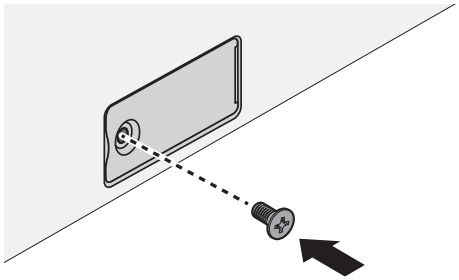

Figure 2.13 Installing the Component Cover Screw

2.6.2 Utilizing a MicroSD Card

1. The device includes a microSD port to provide easy functionality to backup and deployment operations. The following information describes the supported uses when a microSD card (FAT32 or exFAT) is installed in the device.

   Further information see “Backup Manager” on page 49 and “Upgrade Manager” on page 50.
2. The following functions are available:
   - Deployment management:
   - Reset configuration to factory default and power off.
   - Insert a microSD card with a valid configuration file.
   - Power on the device.
   - The device uses the valid configuration settings in the microSD card.
   - Backup management:
   - Device setting is not factory default.
   - Enable Automatically Backup, see “Backup Manager” on page 49.
   - Power off the device and insert a microSD card.
   - Power on the device. The device’s current configuration settings are saved to the microSD card.

2.6.2.1 MicroSD Support

In the event of possible function errors, see the following information:

1. Check that the microSD card file system is FAT32 or exFAT.
2. Check that the microSD card has at least 20 Mbytes of free space.
3. Check that the microSD card is not write-protected.
4. Check that the file system is not corrupted.
5. Check that the microSD card is not damaged.

If any of the events occur, the fieldbus gateway halts operation and the status LED begins flashing.

2.7 Power Supply Installation

2.7.1 Overview

Warning! *Power down and disconnect the power cord before servicing or wiring the fieldbus gateway.*

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 fieldbus gateway device.

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

The fieldbus gateways 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-1242 Series support 12 to 48 V_{DC}. Dual power inputs are supported and allow you to connect a backup power source.

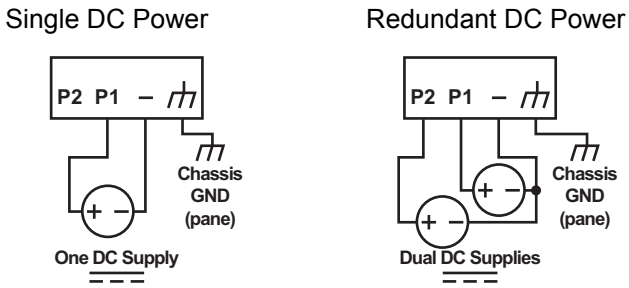

Figure 2.14 Power Wiring for EKI-1242 Series

2.7.2 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 mm^2). Torque value 7 lb-in.
- The cross-sectional area of the earthing conductors shall be at least 3.31 mm^2.
- 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.*

2.7.3 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 fieldbus gateway 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.

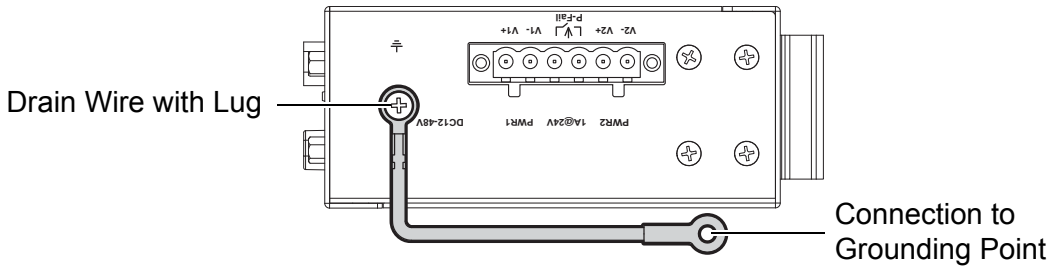

Figure 2.15 Grounding Connection

By connecting the ground terminal by drain wire to earth ground the fieldbus gateway and chassis can be ground.

Note! *Before applying power to the grounded fieldbus gateway, 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 fieldbus gateway.*

2.7.4 Wiring a Relay Contact

The following section details the wiring of the relay output. The terminal block on the EKI-1242 Series is wired and then installed onto the terminal receptor located on the EKI-1242 Series.

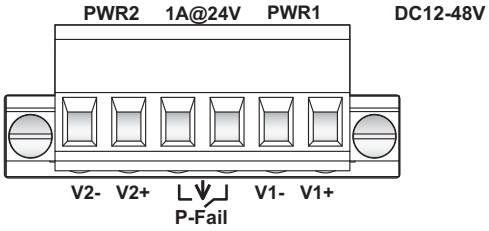

Figure 2.16 Terminal Receptor: Relay Contact

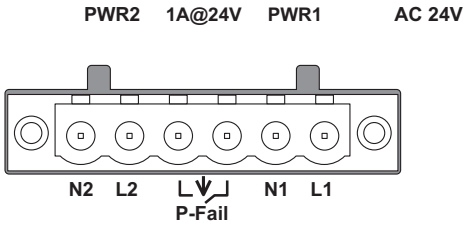

Figure 2.17 Terminal Receptor: Relay Contact (EKI-1242BNMS/EKI-1242IBNMS)

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

2.7.5 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 fieldbus gateway device.

Warning! *Power down and disconnect the power cord before servicing or wiring the fieldbus gateway.*

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.

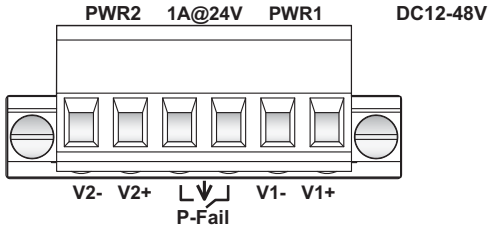

Figure 2.18 Terminal Receptor: Power Input Contacts

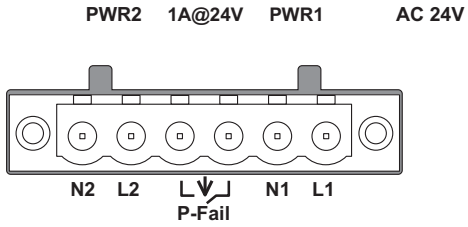

Figure 2.19 Terminal Receptor: Relay Contact (EKI-1242BNMS/EKI-1242IBNMS)

To wire the power inputs:

Make sure the power is not connected to the fieldbus gateway 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 fieldbus gateway.

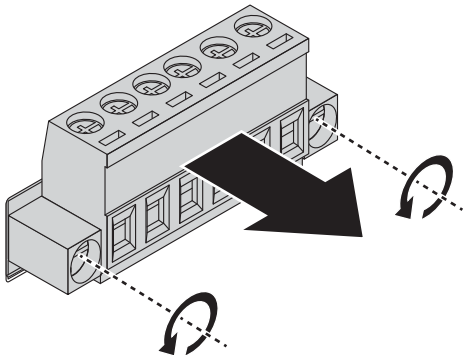

Figure 2.20 Removing a Terminal Block

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.

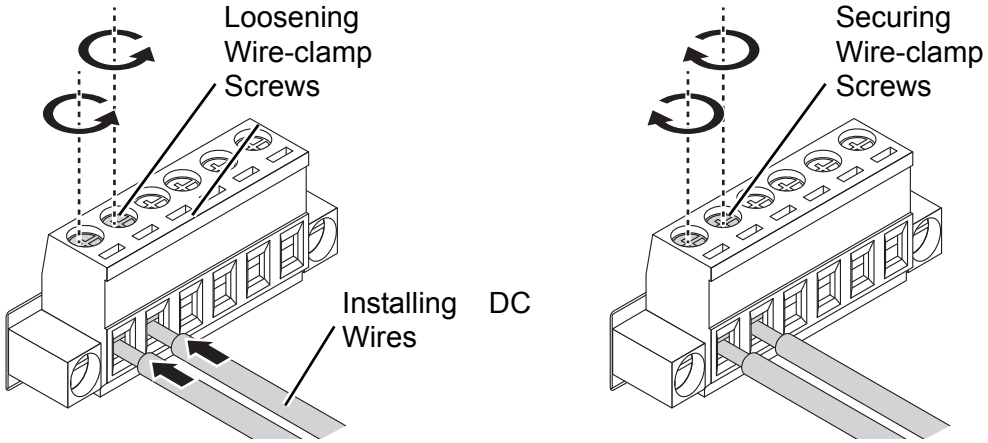

Figure 2.21 Installing DC Wires in a Terminal Block

6. Align the terminal block over the terminal block receptor on the fieldbus gateway.
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.

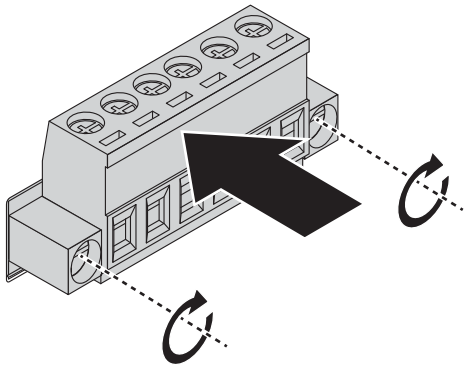

Figure 2.22 Securing a Terminal Block to a Receptor

2.8 Reset Button

Reset configuration to factory default:

Press and hold the Reset button for 5 seconds.

System reboot:

Press and hold the Reset button for 2 seconds.

Note! *Do NOT power off the fieldbus gateway when loading default settings.*

Chapter 3

Managing Fieldbus Gateway

3.1 Log In

To access the login window, connect the device to the network, see “Connecting the Fieldbus Gateway to Ethernet Ports” on page 20. Once the fieldbus gateway is installed and connected, power on the fieldbus gateway see the following procedures to log into your fieldbus gateway.

When the fieldbus gateway is first installed, the default network configuration is set to DHCP enabled. You will need to make sure your network environment supports the fieldbus gateway setup before connecting it to the network.

1. Launch your web browser on a computer.
2. In the browser’s address bar type in the fieldbus gateway’s default IP address (192.168.1.1). The login screen displays.
3. Enter the default user name and password (admin/admin) to log into the management interface. You can change the default password after you have successfully logged in.
4. Click Login to enter the management interface.

Figure 3.1 Login Screen

3.1.1 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 the necessary steps to change the default password.

To change the password:

1. Navigate to **System Management** > **Change Password**.
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.

Figure 3.2 Changing a Default Password

After saving all the desired settings, perform a system save (**System Management** > **Apply Configuration**). The changes are saved.

3.2 Overview

3.2.1 Device Information

The Device Information menu lists information pertaining to the system, such as Model, Firmware version, MAC Address, 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** > **Device Information**.

Figure 3.3 Overview > Device Information > System

The following table describes the items in the previous figure.

Item	Description
Model	Displays the model name of the device.
Firmware Version	Displays the current firmware version of the device.
Uptime	Displays the accumulated time for continuous operation.

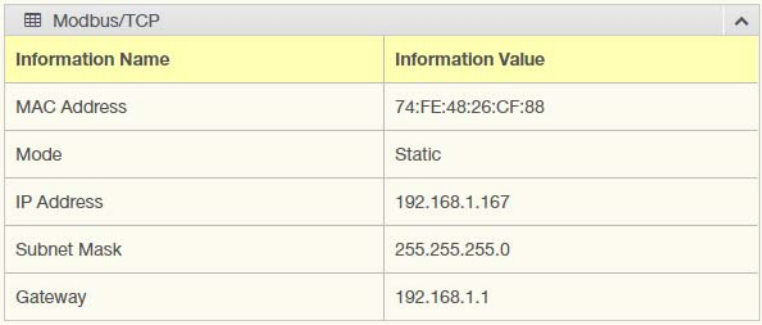

Figure 3.4 Overview > Device Information > Modbus/TCP

Item	Description
MAC Address	Displays the MAC address of the device.
Mode	Displays the IP address setting mode of the device.
IP Address	Displays the assigned IP address of the device.
Subnet Mask	Displays the assigned subnet mask of the device.
Gateway	Displays the assigned gateway of the device.

The following figure displays the menu as found in the EKI-1242BNMS/EKI-1242IBNMS.

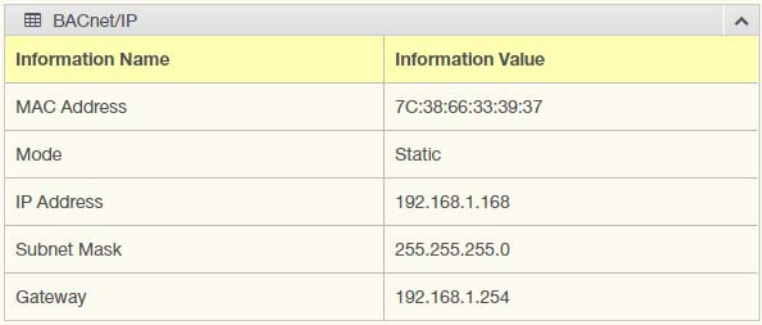

Figure 3.5 Overview > Device Information > BACnet/IP

The following table describes the items in the previous figure.

Item	Description
MAC Address	Displays the MAC address of the device.
Mode	Displays the IP address setting mode of the device.
IP Address	Displays the assigned IP address of the device.
Subnet Mask	Displays the assigned subnet mask of the device.
Gateway	Displays the assigned gateway of the device.

The following figure displays the menu as found in the EKI-1242EIMS/EKI-1242IEIMS.

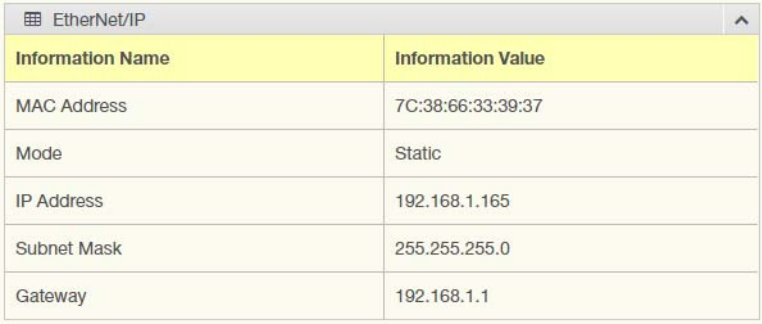

Figure 3.6 Overview > Device Information > EtherNet/IP

The following table describes the items in the previous figure.

Item	Description
MAC Address	Displays the MAC address of the device.
Mode	Displays the IP address setting mode of the device.
IP Address	Displays the assigned IP address of the device.
Subnet Mask	Displays the assigned subnet mask of the device.
Gateway	Displays the assigned gateway of the device.

The following figure displays the menu as found in the EKI-1242PNMS/EKI-1242IPNMS.

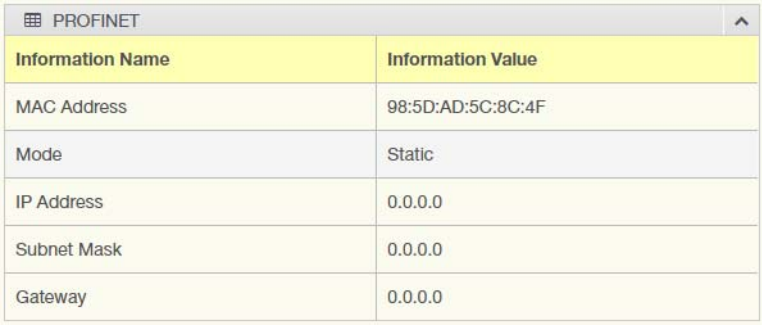

Figure 3.7 Overview > Device Information > PROFINET

The following table describes the items in the previous figure.

Item	Description
MAC Address	Displays the MAC address of the device.
Mode	Displays the IP address setting mode of the device.
IP Address	Displays the assigned IP address of the device.
Subnet Mask	Displays the assigned subnet mask of the device.
Gateway	Displays the assigned gateway of the device.

3.2.2 Diagnose

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

The following tables are only available for EKI-1242BNMS/EKI-1242IBNMS.

- The ensuing table for **Modbus** table settings is for reference only: Transaction Name, Connect Status, Read Counter, Write Counter, Connect Error Counter, Read Error Counter and Write Error Counter.

The following tables are only available for EKI-1242ECMS/EKI-1242IECMS.

- The ensuing table for **EtherCAT** table settings is for reference only: Current State, Port A (Input) and Port B (Output).
- The ensuing table for **Modbus** table settings is for reference only: Transaction Name, Connect Status, Read Counter, Write Counter, Connect Error Counter, Connect Error Counter and Write Error Counter.

The following tables are only available for EKI-1242EIMS/EKI-1242IEIMS.

- The ensuing table for **EtherNet/IP Instance** table settings is for reference only: AA, O->T Instance(Exclusive Owner), Exclusive Owner Data Size, O->T Instance(Input Only), Input Only Data Size, T->O Instance and T->O Instance Data Size.
- The ensuing table for **EtherNet/IP Overview** table settings is for reference only: Class3 connections, Class1 connections, Total TCP Transmit Packets, Total TCP Receive Packets, Total UDP Transmit Packets and Total UDP Receive Packets.
- The ensuing table for **I/O Connection** table settings is for reference only: UP Time, Originator, Receive Address, O->T Packets, T->O Packets, O->T Connection ID, O->T RPI (ms), T->O Connection ID and T->O RPI (ms).

The following tables are only available for EKI-1242PNMS/EKI-1242IPNMS.

- The ensuing table for **PROFINET** table settings is for reference only: Connect Status, Connect Counter, Connected PLC MAC Address, Connected PLC IP Address, PLC Operation Mode, Device Name and Send Clock (ms).
- The ensuing table for **Modbus** table settings is for reference only: Transaction Name, Connect Status, Read Counter, Write Counter, Connect Error Counter, Connect Error Counter and Write Error Counter.

3.2.3 Data View

I/O Data View function allows for the display of exchanged data for all I/O modules. Select data flow directions to obtain the correct data of EtherNet/IP data for EKI-1242EIMS/EKI-1242IEIMS, monitor EtherCAT input data for EKI-1242ECMS/EKI-1242IECMS and Profinet slot data for EKI-1242PNMS/EKI-1242IPNMS.

To access this page, click **Overview** > **Data View**.

The following figure displays the menu as found in the EKI-1242BNMS/EKI-1242IBNMS.

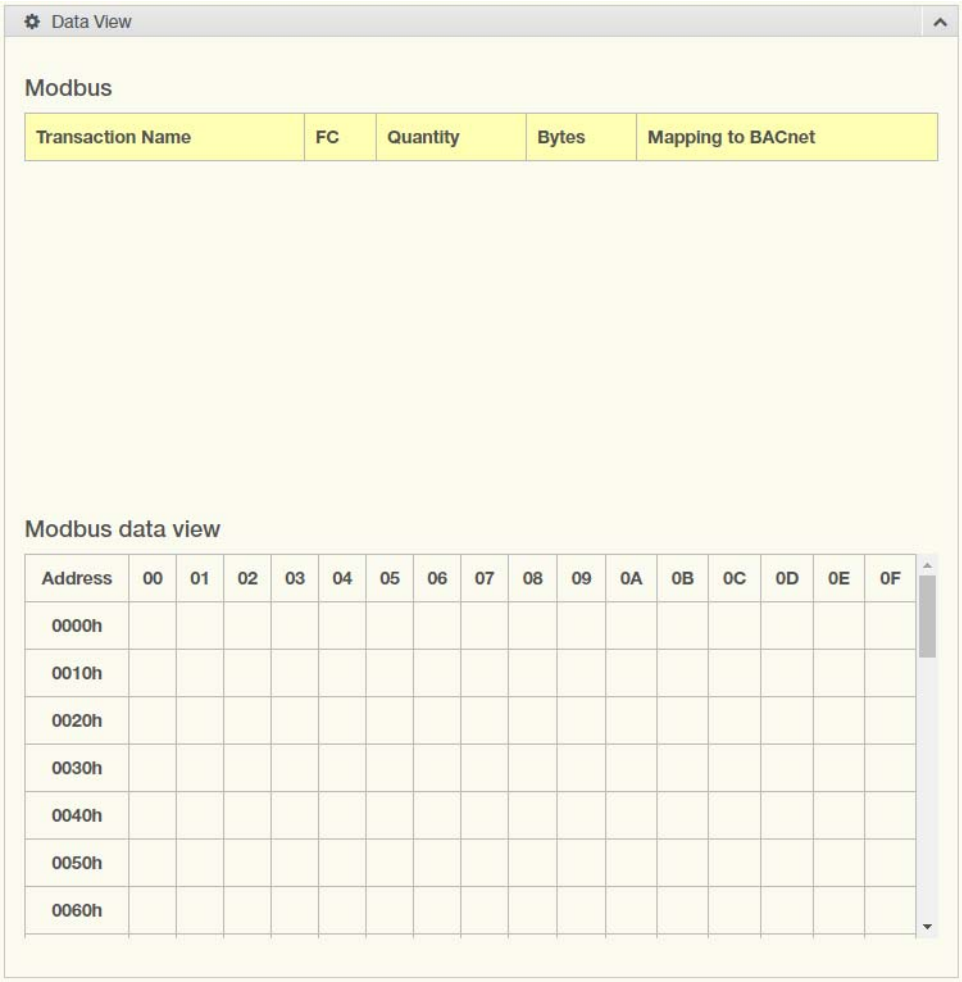

Figure 3.8 Overview > Data View

The following figure displays the menu as found in the EKI-1242ECMS/EKI-1242IECMS.

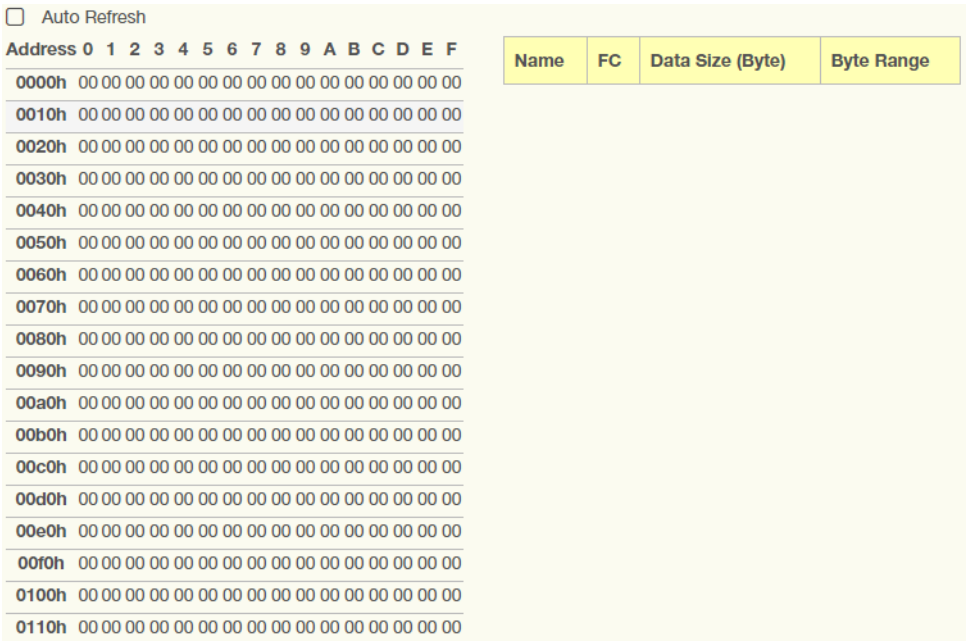

Figure 3.9 Overview > Data View

The following table describes the items in the previous figure.

Item	Description
Auto Refresh	Check the option to automatically have the table refresh the information.

The following figure displays the menu as found in the EKI-1242EIMS/EKI-1242IEIMS.

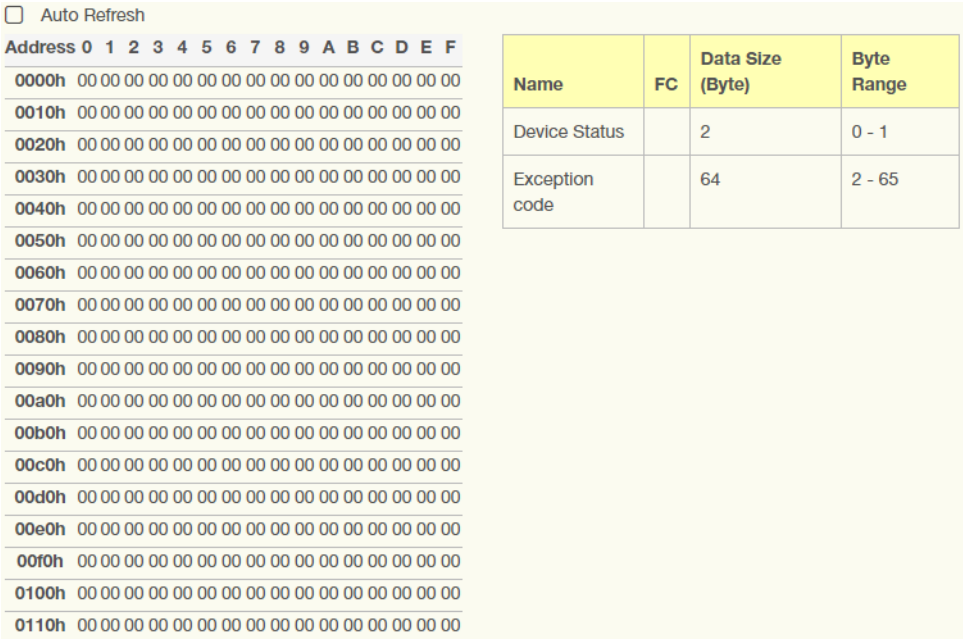

Figure 3.10 Overview > Data View

The following table describes the items in the previous figure.

Item	Description
Auto Refresh	Check the option to automatically have the table refresh the information.

The following figure displays the menu as found in the EKI-1242PNMS/EKI-1242IPNMS.

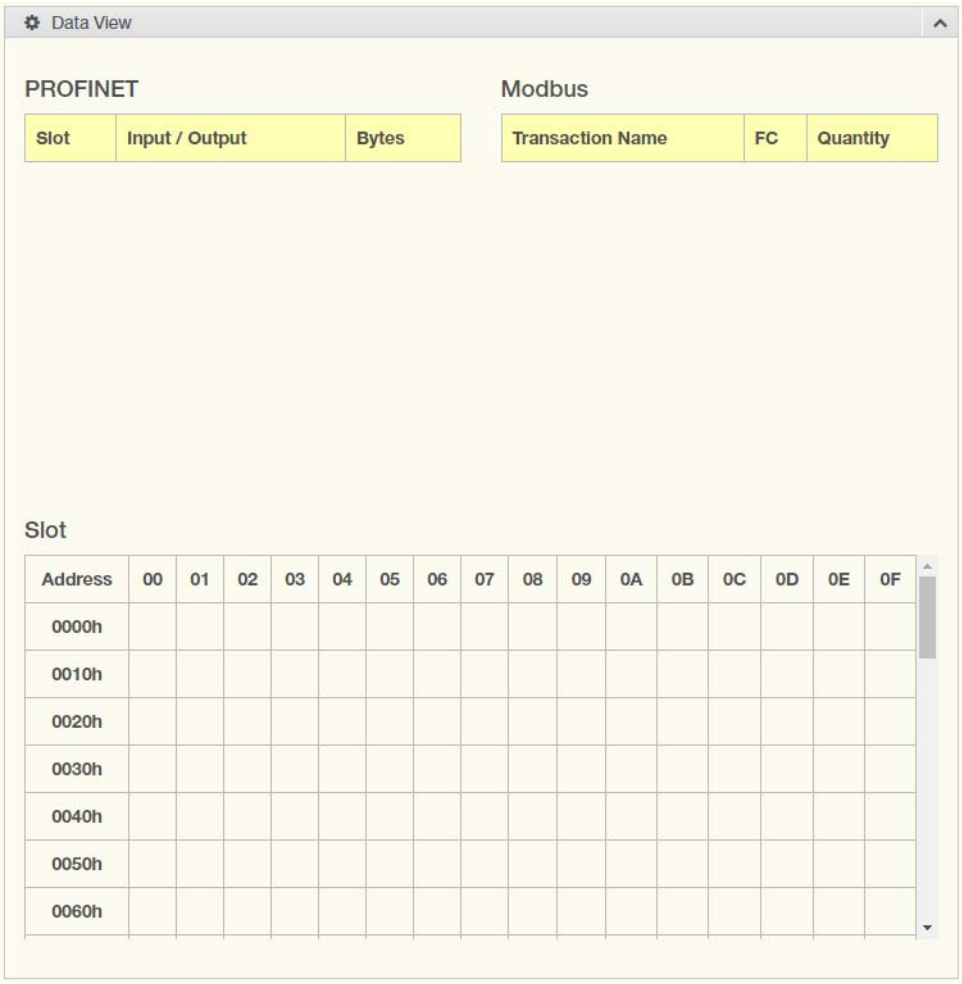

Figure 3.11 Overview > Data View

3.3 Network Setting

3.3.1 IP Setting

The IP Setting menu allows you to select a static or DHCP network configuration. The Static displays the configurable settings for the static option.

To access this page, click **Network Setting** > **IP Setting**.

The following figure displays the menu as found in the EKI-1242BNMS/EKI-1242IBNMS.

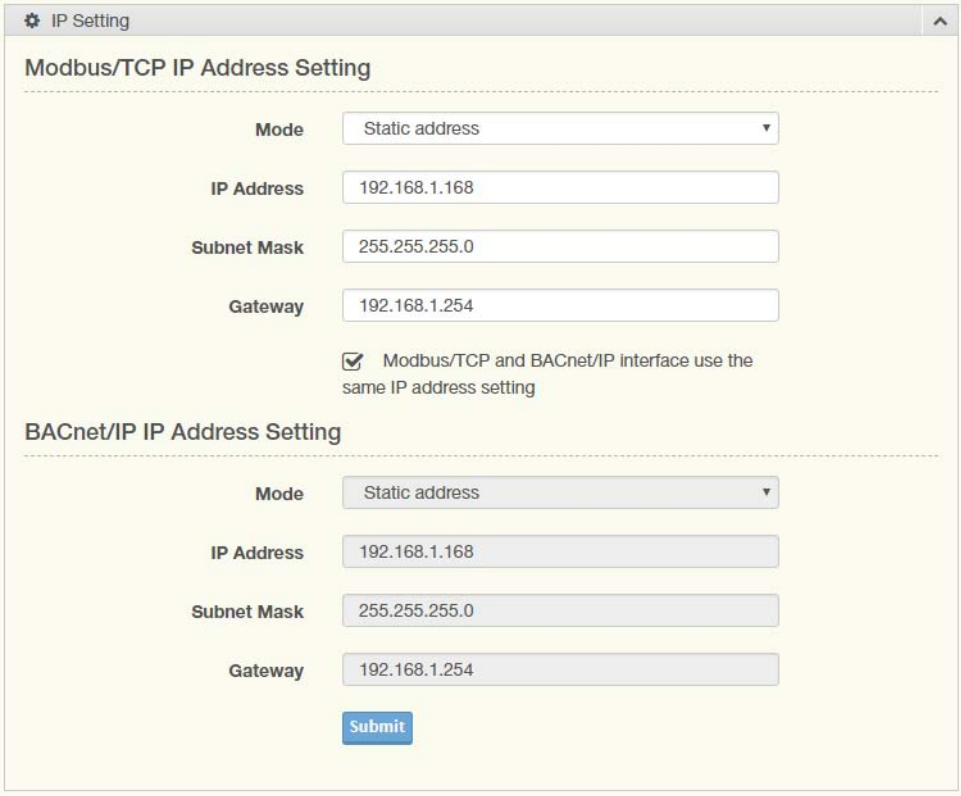

Figure 3.12 Network Setting > IP Setting

The following table describes the items in the previous figure.

Item	Description
Modbus/TCP IP Address Setting	
Mode	Click the drop-down menu to select the IP address setting mode: Static address, or DHCP client.
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.
Gateway	Enter a value to specify the default gateway for the interface. The default is 192.168.1.254.
Modbus/TCP and BACnet/IP interface use the same IP address setting	Check the option to use same IP address setting on Modbus/TCP and BACnet/IP interface. In this mode, the BACnet ports of Modbus/TCP and BACnet/IP are bridged, so the traffic can be forwarded between these interfaces. Unchecked the option to use two different IP subnet on Modbus/TCP and BACnet/IP interface. In this mode, the BACnet ports of Modbus/TCP and BACnet/IP are not bridged, so the traffic can't be forwarded between these interfaces.

Item	Description
BACnet/IP IP Address Setting	
Mode	Click the drop-down menu to select the IP Address Setting mode: Static address, or DHCP client.
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.
Gateway	Enter a value to specify the default gateway for the interface. The default is 192.168.1.254.

The following figure displays the menu as found in the EKI-1242ECMS/EKI-1242IECMS.

Figure 3.13 Network Setting > IP Setting

The following table describes the items in the previous figure.

Item	Description
Mode	Click the drop-down menu to select the IP address setting mode: Static address, or DHCP client.
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.
Gateway	Enter a value to specify the default gateway for the interface. The default is 192.168.1.254.

The following figure displays the menu as found in the EKI-1242EIMS/EKI-1242IEIMS.

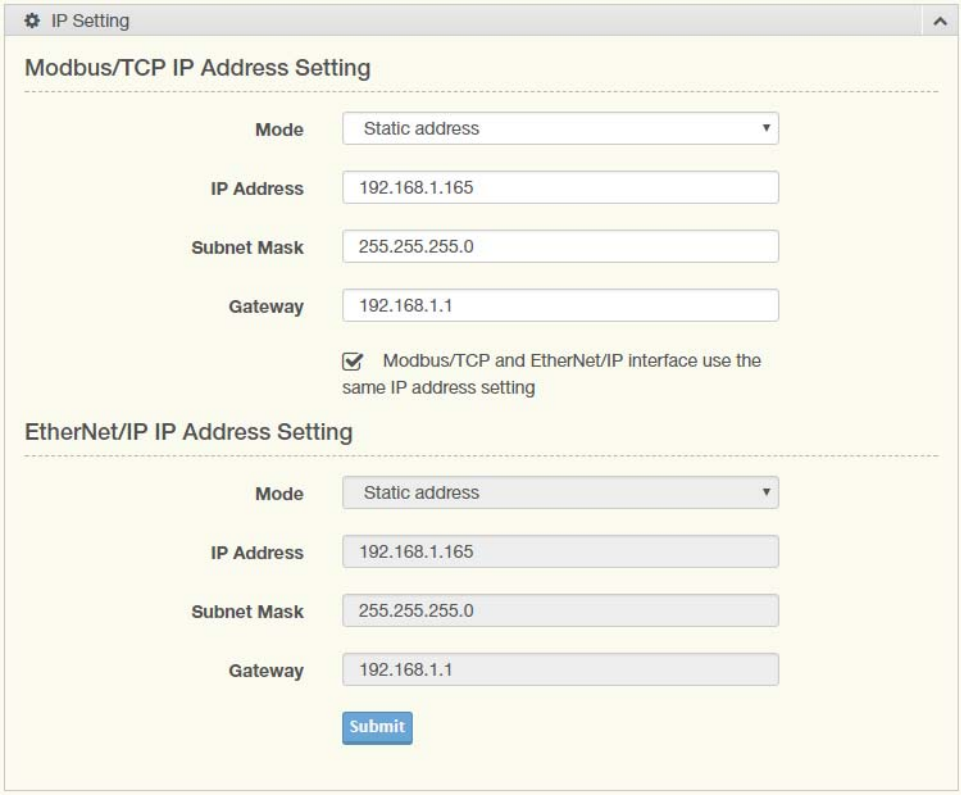

Figure 3.14 Network Setting > IP Setting

The following table describes the items in the previous figure.

Item	Description
Modbus/TCP IP Address Setting	
Mode	Click the drop-down menu to select the IP address setting mode: Static address, or DHCP client.
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.
Gateway	Enter a value to specify the default gateway for the interface. The default is 192.168.1.254.
Modbus/TCP and EtherNet/IP interface use the same IP address setting	Check the option to use same IP address setting on Modbus/TCP and EtherNet/IP interface. In this mode, the Ethernet ports of Modbus/TCP and EtherNet/IP are bridged, so the traffic can be forwarded between these interfaces. Unchecked the option to use two different IP subnet on Modbus/TCP and EtherNet/IP interface. In this mode, the Ethernet ports of Modbus/TCP and EtherNet/IP are not bridged, so the traffic can't be forwarded between these interfaces.
EtherNet/IP IP Address Setting	
Mode	Click the drop-down menu to select the IP Address Setting mode: Static address, or DHCP client.

Item	Description
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.
Gateway	Enter a value to specify the default gateway for the interface. The default is 192.168.1.254.

The following figure displays the menu as found in the EKI-1242PNMS/EKI-1242IPNMS.

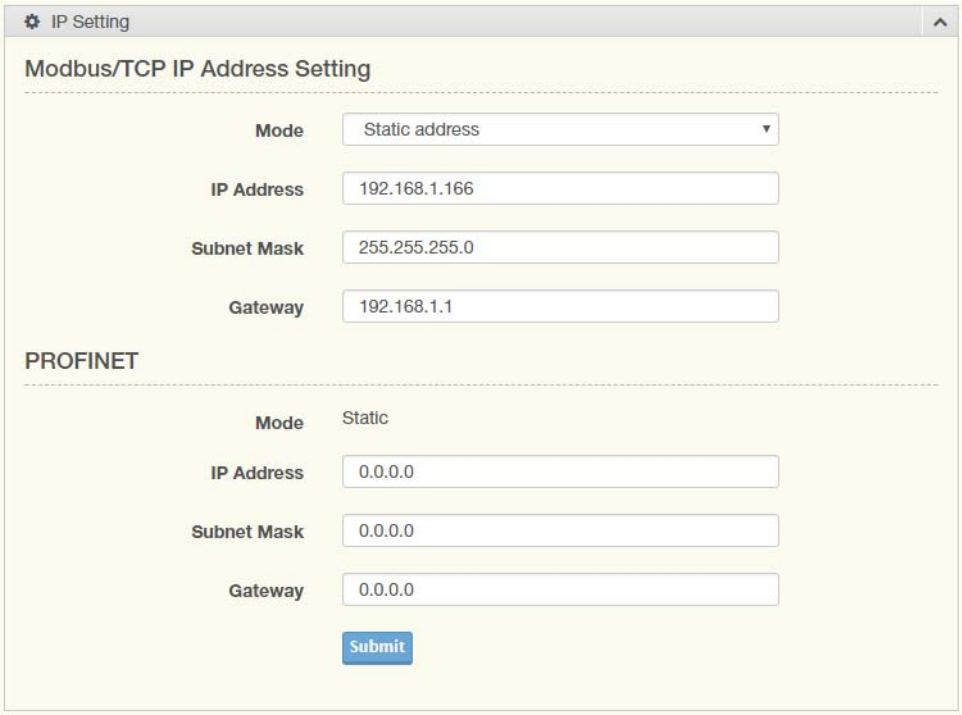

Figure 3.15 Network Setting > IP Setting

The following table describes the items in the previous figure.

Item	Description
Modbus/TCP IP Address Setting	
Mode	Click the drop-down menu to select the IP address setting mode: Static address, or DHCP client.
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.
Gateway	Enter a value to specify the default gateway for the interface. The default is 192.168.1.254.
PROFINET	
Mode	Displays the IP address setting mode of the device.
IP Address	Enter a value to specify the IP address of the interface. The default is 0.0.0.0.
Subnet Mask	Enter a value to specify the IP subnet mask for the interface. The default is 0.0.0.0.
Gateway	Enter a value to specify the default gateway for the interface. The default is 0.0.0.0.

3.4 Serial Settings

3.4.1 Port

To access this page, click **Serial Settings** > **Port 1/Port 2**.

The following figure displays the menu as found in the EKI-1242ECMS/EKI-1242IECMS, EKI-1242EIMS/EKI-1242IEIMS, EKI-1242PNMS/EKI-1242IPNMS and EKI-1242BNMS/EKI-1242IBNMS port 2 (Modbus).

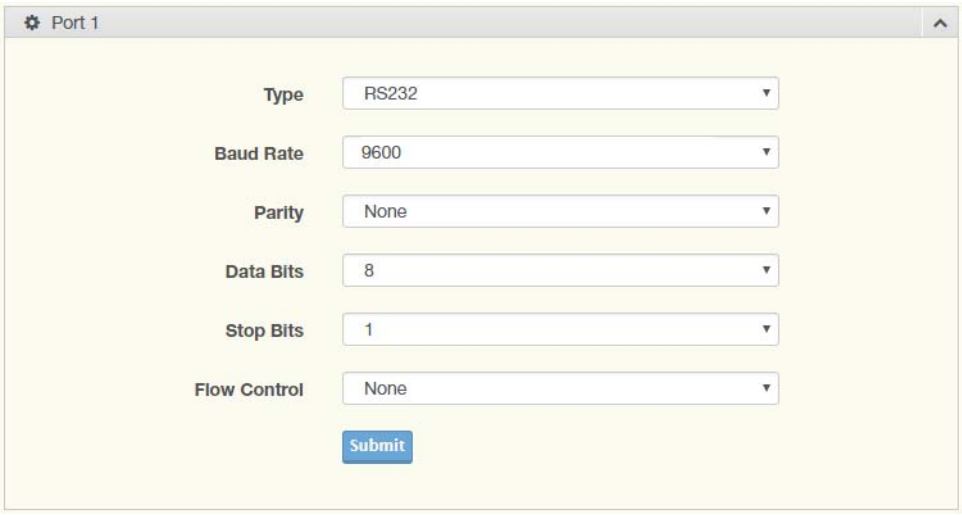

Figure 3.16 Serial Settings > Port 1/Port 2

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	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 or RTS/CTS.
Submit	Click **Submit** to save the values and update the screen.

The following figure displays the menu as found in the EKI-1242BNMS/EKI-1242IBNMS port 1 (BACnet).

Figure 3.17 Serial Settings > Port 1

The following table describes the items in the previous figure.

Item	Description
Baud Rate	Click the drop-down menu to specify the baud rate. The value should conform to the current transmission speeds of connected devices when setting the baud rate.
Submit	Click **Submit** to save the values and update the screen.

3.5 Protocol Setting

3.5.1 BACnet Setting

The BACnet Setting page is only available for EKI-1242BNMS/EKI-1242IBNMS.

To access this page, click **Protocol Setting** > **BACnet Setting**.

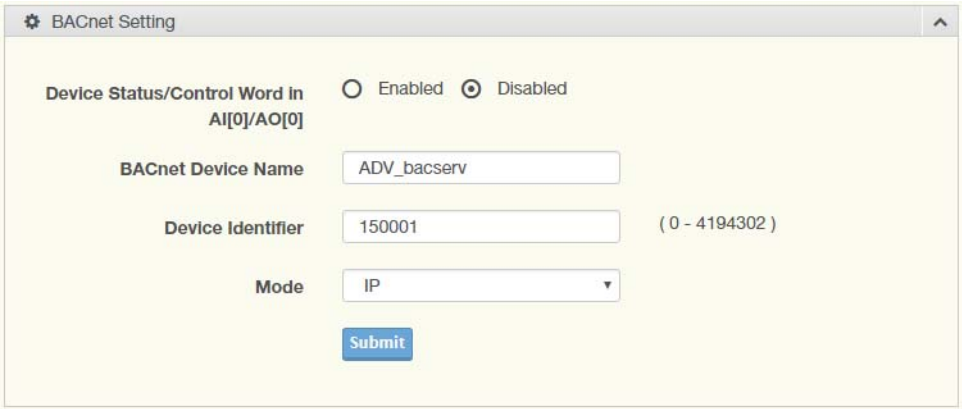

Figure 3.18 Protocol Setting > BACnet Setting

The following table describes the items in the previous figure.

Item	Description
Device Status/ Control Word in AI[0]/ AO[0]	When enabled, Device Status/Control Word should be in BACnet object AI[0]/AO[0]. Default value is **Disabled**.
BACnet Device Name	Enter the name of the BACnet device.
Device Identifier	Enter the value to specify the device identifier.
Mode	Click the drop-down menu to select the BACnet mode: IP or MSTP.
Max. Masters	Available under MSTP mode. Enter the variable defining the maximum number of masters.

Item	Description
Max Info Frames	Available under MSTP mode. Enter the variable defining the Max Info Frames setting. The Max Info Frames setting should be high enough to allow for the transmission of at least as many MS/TP frame packets as there are available MS/TP frame buffers.
MAC Address	Available under MSTP mode. Enter the MAC address of the identified devices connected to the serial bus.
Submit	Click **Submit** to save the values and update the screen.

3.5.2 EtherCAT Setting

The EtherCAT Setting page is only available for EKI-1242ECMS/EKI-1242IECMS.

To access this page, click **Protocol Setting** > **EtherCAT Setting**.

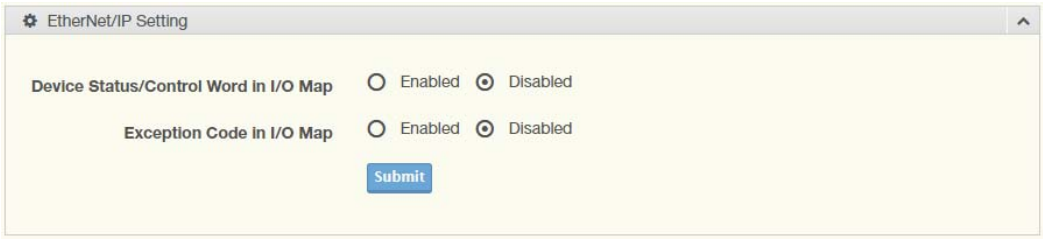

Figure 3.19 Protocol Setting > EtherCAT Setting

The following table describes the items in the previous figure.

Item	Description
Device Status/ Control Word in I/O Map	Select **Enabled** to dedicate the first two I/O mapped bytes for status/ control information (default: **Disabled**).
Exception Code in I/ O Map	Select **Enabled** to dedicate the last 64 bytes of data from the EtherCAT network stream (default: **Disabled**).
Submit	Click **Submit** to save the values and update the screen.

3.5.3 EtherNet/IP Setting

On the EtherNet/IP network, the gateway transmits mapped data to scanner through I/O data. The first two I/O mapped bytes in either direction can be dedicated for status/control information, and another 64 bytes of data coming from the Modbus/ TCP network can feature the Modbus exception codes.

The EtherNet/IP Setting page is only available for EKI-1242EIMS/EKI-1242IEIMS.

To access this page, click **Protocol Setting** > **EtherNet/IP Setting**.

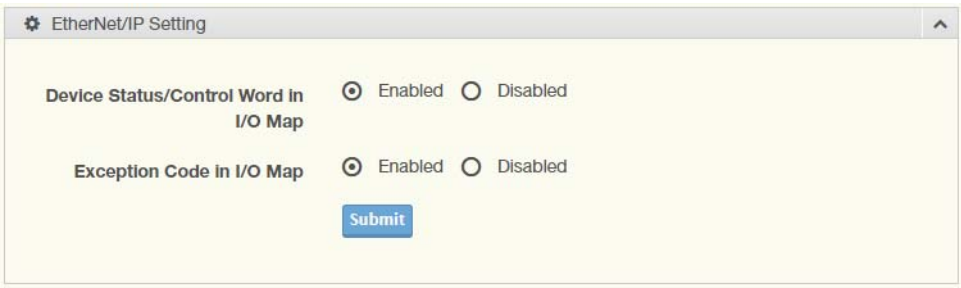

Figure 3.20 Protocol Setting > EtherNet/IP Setting

The following table describes the items in the previous figure.

Item	Description
Device Status/ Control Word in I/O Map	Select **Enabled** to dedicate the first two I/O mapped bytes for status/ control information (default: **Enabled**).
Exception Code in I/ O Map	Select **Enabled** to dedicate the last 64 bytes of data from the EtherNet/IP network stream (default: **Enabled**).
Submit	Click **Submit** to save the values and update the screen.

3.5.4 PROFINET Setting

On the PROFINET network, the gateway transmits mapped data to PROFINET I/O Slot.

There are two types of slot mappings as defined in the following figure.

The PROFINET Setting page is only available for EKI-1242PNMS/EKI-1242IPNMS.

To access this page, click **Protocol Setting** > **PROFINET Setting**.

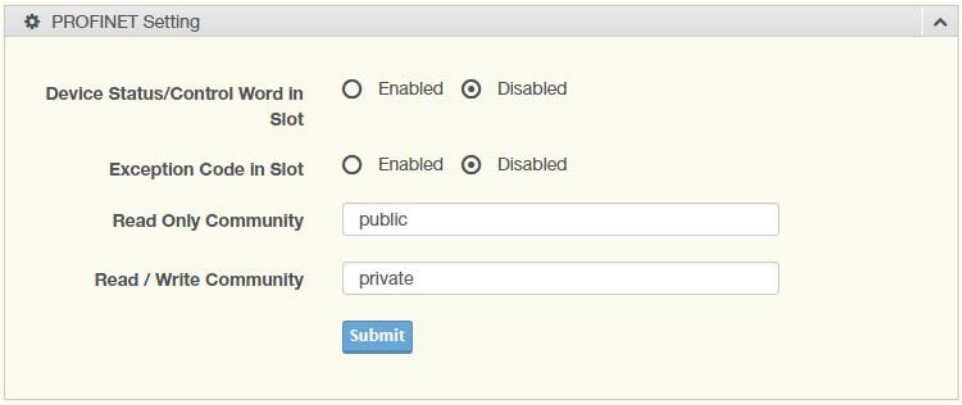

Figure 3.21 Protocol Setting > PROFINET Setting

The following table describes the items in the previous figure.

Item	Description
Device Status/ Control Word in Slot	When enabled, Device Status/Control Word should be in PROFINET slot 1. The Modbus exception codes should be in PROFINET I/O slot 2. When disabled, the Modbus exception codes should be in PROFINET I/O slot 1. Default value is **Disabled**.
Exception Code in Slot	Enable to use the Modbus exception code setting, see Device Status/ Control Word in Slot in the previous definition.
Read Only Community	Enter the value for the SNMP Read Only Community string (default: public).
Read / Write Community	Enter the value for the SNMP Read/Write Community string (default: private).
Submit	Click **Submit** to save the values and update the screen.

3.5.5 Modbus Setting

To communicate with remote Modbus/TCP slave devices, specify the Modbus command for each slave device. Each slave device may need more than one command for communication, so it is necessary to add all the commands manually.

To access this page, click **Protocol Setting** > **Modbus Setting**.

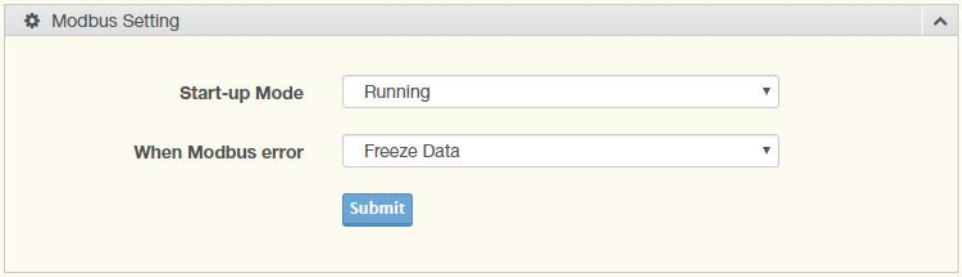

Figure 3.22 Protocol Setting > Modbus Setting

The following table describes the items in the previous figure.

Item	Description
Start-up Mode	Click the drop-down menu to select the slave device's mode at start-up: Running or Idle (default: Running).
When Modbus/TCP error	Click the drop-down menu to select the command to initiate in the event of an error: Freeze Data or Clear Data. ■ Select **Freeze Data** to continue delivering the data most recently received from the Modbus-TCP network to the EtherNet/IP scanner. ■ Select **Clear Data** to clear any input entered into the data area and transmit only zeros to the EtherNet/IP scanner.
Submit	Click **Submit** to save the values and update the screen.

The ensuing table for Modbus Commands table settings is for reference only: Allocated input size, output size, Index, Name, Mode, Slave ID, FC, Address/ Quantity, Trigger, Scan Interval, Data Swap, Response Timeout, I/O Disconnect, Safe Value, **Add** (click to add a new transaction), **Edit** (click to modify existing transactions), **Delete** (click to delete existing transactions), **Copy** (click to copy an existing transaction) and FlowCtrl Status.

To add a new transaction:

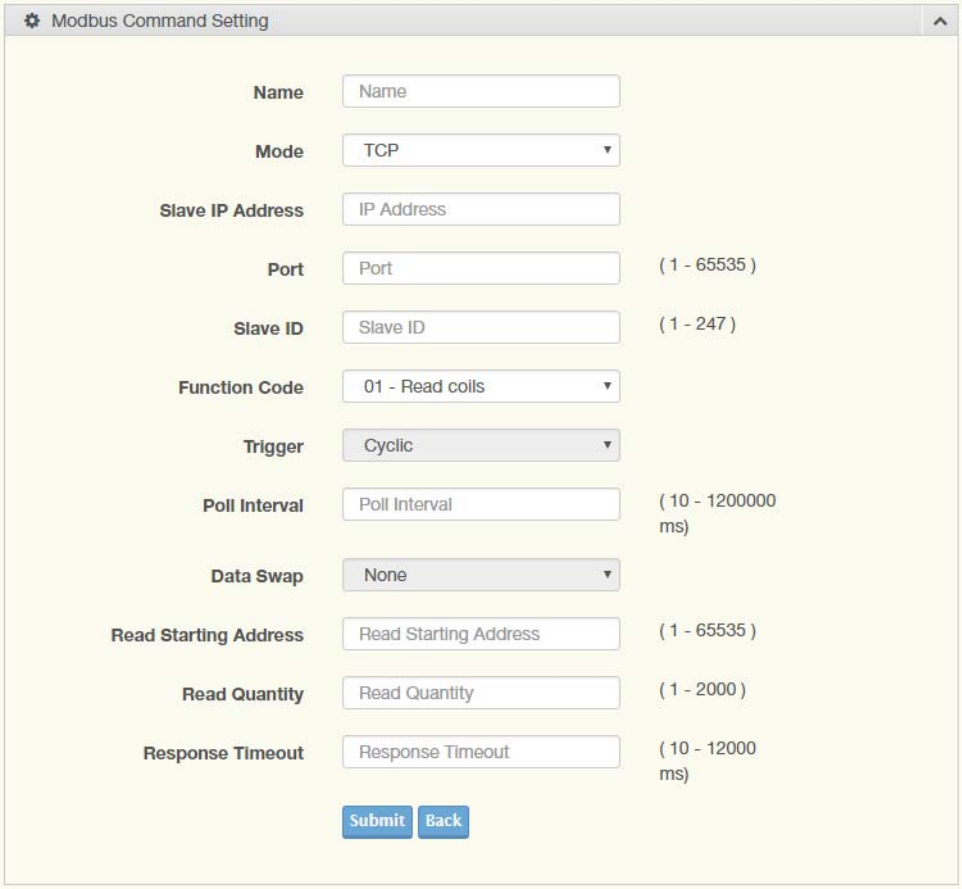

Figure 3.23 Protocol Setting > Modbus Setting > Add

The following table describes the items in the previous figure.

Item	Description
Name	Enter the name to identify the transaction, max length: 32 characters.
Mode	Click the drop-down menu to select Modbus protocol mode: TCP or RTU. ■ TCP: Modbus TCP communication over TCP/IP networking. ■ RTU: Modbus RTU communication via the serial port.
Slave IP Address	Enter the IP address of the Modbus/TCP server on Modbus/TCP mode.
Port	Enter the TCP port number of the remote slave device (default Modbus-TCP port is 502), value range: 0 - 65535.
Serial Port	■ BNMS models: port 1 is dedicated for BACnet, port 2 is dedicated for Modbus. ■ Non BNMS models: select the serial interface where the remote Modbus/RTU device is located.
Slave ID	Enter the Modbus/TCP server slave ID.

Item	Description
Function Code	The master device delivers packets to the slave device containing instructions as defined in the function code fields. The following is a list of the supported function codes. ■ 01: Read coils ■ 02: Read discrete inputs ■ 03: Read holding registers ■ 04: Read input register ■ 05: Write single coil ■ 06: Write single register ■ 15: Write multiple coils ■ 16: Write multiple registers ■ 23: Read/Write multiple registers (Not available for on EKI-1242BNMS/EKI-1242IBNMS models)
Trigger	Click the drop-down menu to select the trigger setting. ■ Cyclic: The trigger function is set to read/write in a cyclical instance once the specified interval is reached, see Poll Interval field. ■ Data change: Checks for any data changes at the specified interval as defined the Poll Interval field. When a given change in the data area is noted, a write command is delivered.
Poll Interval	The Poll Interval value defines the frequency with which the Modbus command is re-issued.
Data Swap	The Data Swap field determines the order in which the particular bytes of the received/transmitted data are delivered. ■ None: Do not swap ■ Word: 0x01, 0x02 becomes 0x02, 0x01 ■ Double Word: 0x01, 0x02, 0x03, 0x04 becomes 0x04, 0x03, 0x02, 0x01 **NOTE:** ■ When function code is set to 1, 2, 5, or 15, the available option is None. ■ When function code is set to 6, the available options are None and Word. ■ When function code is set to 3, 4, 16, or 23, the quantity must be designated as an even integer.
Read Starting Address	Designate the read from/write to starting address for the Modbus registry.
Read Quantity	Designate the number of read cycles.
Response Timeout	Define the span of time, in milliseconds, within which the server is required to produce a response to the exchange. In I/O mapped write transaction, when EtherNet/IP does not exchange I/O: ■ Clear data to Modbus server: Transmits only zeros. ■ Freeze data to Modbus server: Repeat the last stored data. ■ Write safe value: The value to transmit for each element. ■ Stop: The transmission of any and all data to the Modbus server is halted.
Submit	Click **Submit** to save the values and update the screen.
Back	Click **Back** to return the previous page.

3.5.6 Mapping Overview

The Mapping Overview function allows the viewing of data between Modbus RTU/TCP to PROFINET Slot, EtherNet/IP I/O, EtherCAT PDI/PDO, BACnet/IP or BACnet/MSTP.

To access this page, click **Protocol Setting** > **Mapping Overview**.

The following tables are only available for EKI-1242BNMS/EKI-1242IBNMS.

- The ensuing table for **Transaction** table settings is for reference only: Name, Quantity, and Access.
- The ensuing table for **BACnet Object Mapping - AI** table settings is for reference only: Object identifier, Device name, Address and Object name.
- The ensuing table for **BACnet Object Mapping - AO** table settings is for reference only: Object identifier, Device name, Address and Object name.
- The ensuing table for **BACnet Object Mapping - BI** table settings is for reference only: Object identifier, Device name, Address and Object name.
- The ensuing table for **BACnet Object Mapping - BO** table settings is for reference only: Object identifier, Device name, Address and Object name.

The following tables are available for EKI-1242ECMS/EKI-1242IECMS only.

- The ensuing table for **Input Mapping Overview** table settings is for reference only: Input Data Byte buffer view, Input Data Name, Input Data Function Code, Input Data Size (Byte) and Input Data Byte range.
- The ensuing table for **Output Mapping Overview** table settings is for reference only: Output Data Byte buffer view, Output Data Name, Output Data Function Code, Output Data Size (Byte) and Output Data Byte range.
- The ensuing table for **Gateway** table settings is for reference only: Status, Control and Exceptions.
- The ensuing table for **Transaction** table settings is for reference only: Name, Index, Bytes and Access.

The following tables are only available for EKI-1242EIMS/EKI-1242IEIMS.

- The ensuing table for **Input Mapping Overview** table settings is for reference only: Input Data Byte buffer view, Master Name, Master Function Code, Master Size (Byte) and Master Byte range.
- The ensuing table for **Output Mapping Overview** table settings is for reference only: Output Data Byte buffer view, Adapter Name, Adapter Function Code, Adapter Size (Byte) and Adapter Byte range.
- The ensuing table for **Transaction** table settings is for reference only: Name, Quantity, Class, Instance, Attribute and Access.

The following tables are only available for EKI-1242PNMS/EKI-1242IPNMS.

- The ensuing table for **PROFINET I/O** table settings is for reference only: Slot, Transaction Name, In Slot Range(bytes), Input Word and Output Word.
- The ensuing table for **Modbus Client** table settings is for reference only: Name, FC, Data Swap, Scan Time, Response Timeout, UID, Read/Write Starting Address, Quantity and When PROFINET doesn't exchange I/O.

3.6 System Management

3.6.1 Change Password

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

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

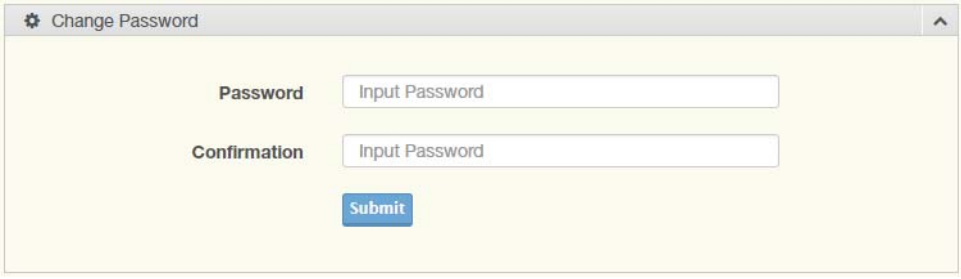

Figure 3.24 System Management > Change Password

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). Be sure apply and reboot the system (**System Management** > **Apply Configuration**) to save the updates.

3.6.2 Backup Manager

The Backup Manager page allows you to backup configuration settings from the device or restores a configuration file to the device.

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

Figure 3.25 System Management > Backup Manager > Backup Manager

The following table describes the items in the previous figure.

Item	Description
Backup	Click **Backup** to backup configuration from the device.
To	Click the radio button to select the backup file destination.
Restore Backup	Click **Browse** to select the configuration file.
Upload Archive	Click **Upload Archive** to restore configuration to the device.
From	Click the radio-button to select upload file source.

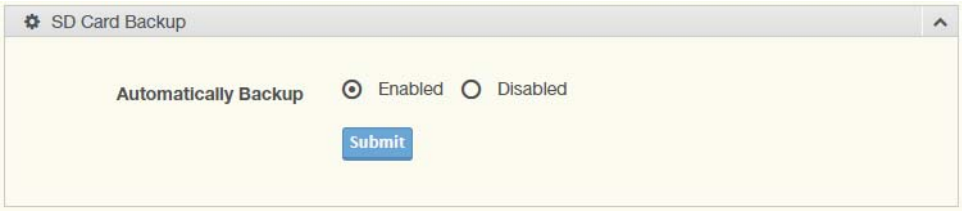

Figure 3.26 System Management > Backup Manager > SD Card Backup

The following table describes the items in the previous figure.

Item	Description
Automatically Backup	Click the radio-button to enable or disable the SD card automatically backup function.
Submit	Click **Submit** to save the values and update the screen.

3.6.3 Upgrade Manager

The Upgrade Manager page allows you to upgrade firmware.

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

Figure 3.27 System Management > Upgrade Manager

The following table describes the items in the previous figure.

Item	Description
Browse File	Click **Browse** to select the firmware file.
Upload Archive	Click **Upload Archive** to upgrade the firmware.

3.6.4 Reset System

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

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.

Reset settings take effect after a system reboot.

Figure 3.28 System Management > Reset System

3.6.5 Reboot Device

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

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

Figure 3.29 System Management > Reboot Device

3.6.6 Apply Configuration

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

Click **Apply and Reboot** to have configuration changes you have made to be saved across a system reboot. All changes submitted since the previous save or system reboot will be retained by the device.

Figure 3.30 System Management > Apply Configuration

3.7 Tools

3.7.1 Modbus Traffic Catcher

The Modbus Traffic Catcher page shows only data sent and received by Modbus.

To access this page, click **Tools** > **Modbus Traffic Catcher**.

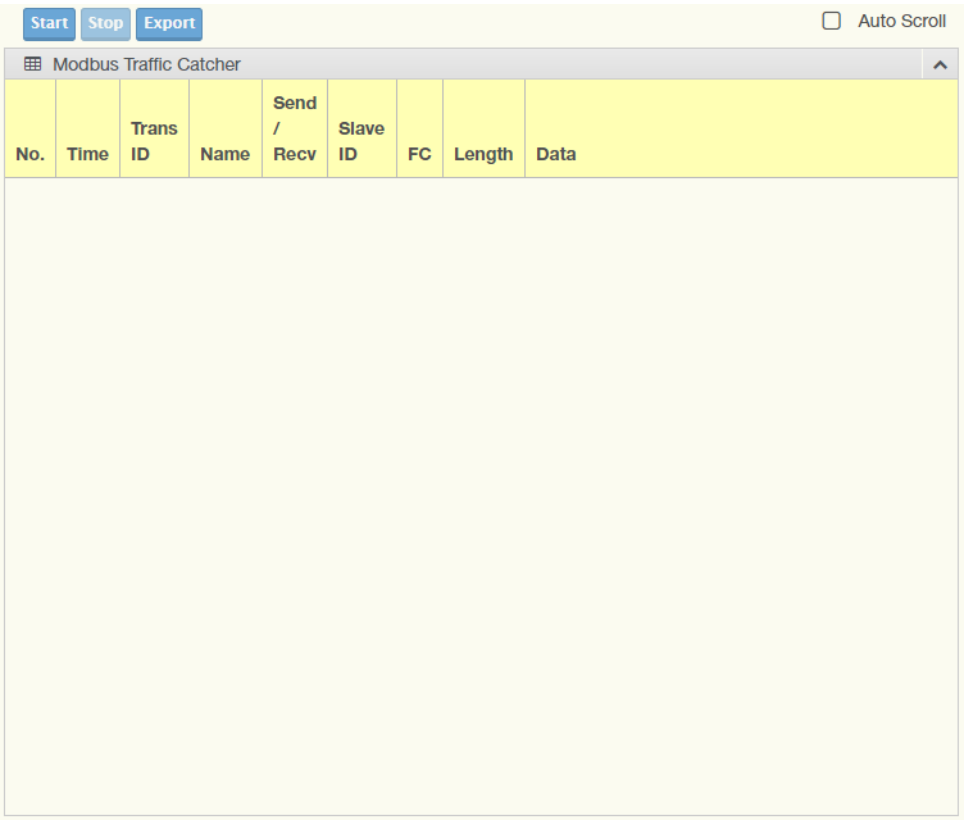

Figure 3.31 Tools > Modbus Traffic Catcher

The following table describes the items in the previous figure.

Item	Description
Start	Click **Start** to start capturing the data.
Stop	Click **Stop** to stop capturing the data.
Export	Click **Export** to export and download the captured data.
Auto Scroll	Check the option to cycle through all of the data screens automatically while start capturing data.

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All product specifications are subject to change without notice.