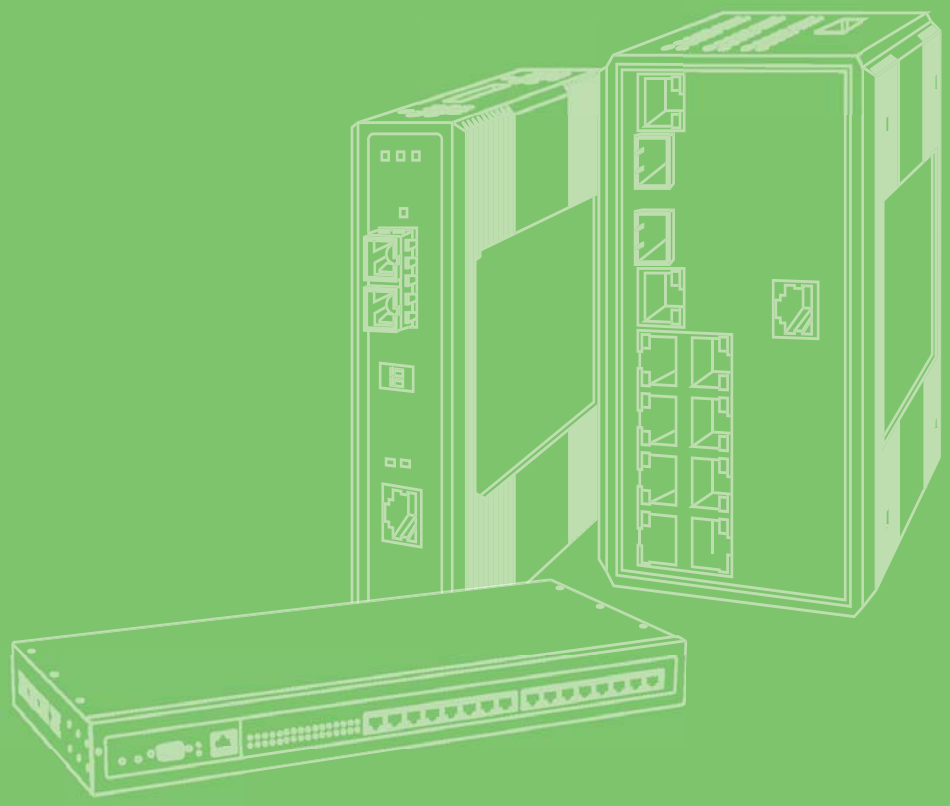
User Manual



EKI-1221IEIMB
EKI-1221IPNMB

Modbus TCP to PROFINET | EtherNet/IP Protocol Gateway

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Part No. Edition 1

Printed in Taiwan May 2017

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CE

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

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.

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   - 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: ICG.Support@advantech.com.tw

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 EKI-1221IEIMB | PNMB
- 1 x eAutomation Industrial Communication CD-ROM with User manual
- 2 x Wall Mounting Bracket and Screws
- 1 x DIN-rail Mounting Bracket and Screws
- 1 x EKI-1221IEIMB | PNMB Startup Manual
- 1 x DC Jack Cable φ2.0/150mm

Safety Instructions

1. Read these safety instructions carefully.
2. Keep this User Manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. DO NOT COVER THE OPENINGS.
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
12. Never pour any liquid into an opening. This may cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
14. If one of the following situations arises, get the equipment checked by service personnel:
15. The power cord or plug is damaged.
16. Liquid has penetrated into the equipment.
17. The equipment has been exposed to moisture.
18. The equipment does not work well, or you cannot get it to work according to the user's manual.
19. The equipment has been dropped and damaged.
20. The equipment has obvious signs of breakage.
21. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE MAY GO BELOW -20° C (-4° F) OR ABOVE 60° C (140° F). THIS COULD DAMAGE THE EQUIPMENT. THE EQUIPMENT SHOULD BE IN A CONTROLLED ENVIRONMENT.
22. CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER, DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.

Safety Precaution - Static Electricity

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

- To avoid electrical shock, always disconnect the power from your PC chassis before you work on it. Don't touch any components on the CPU card or other cards while the PC is on.
- Disconnect power before making any configuration changes. The sudden rush of power as you connect a jumper or install a card may damage sensitive electronic components.

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 attachment
   - Description of your software (operating system, version, application software, etc.)
   - A complete description of the problem
   - The exact wording of any error messages

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About This Manual

This user manual is intended to guide professional installers in installing and configuring the Protocol Gateway. It includes technical specifications, software utility introduction, as well as procedures for the use of the software utility to self-manage the devices.

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Chapter 1

Overview

1.1 Introduction

The EKI-1221 series are industrial protocol gateways that provide seamless communication between Fieldbus and Industrial Ethernet, which enables the integration of new and existing Modbus TCP devices to Ethernet/IP (EKI-1221IEIMB) or Modbus TCP devices to PROFINET (EKI-1221IPNMB) networks. The EKI-1221 series is a simple and cost-effective way to deliver the advantage of fast transferring I/O data between devices, while providing high profile extensible architecture for adaptability.

1.2 Device Features

- Support dual power input for power redundancy
- Integration of Modbus TCP and EtherNet/IP Network Communication (EKI-1221IEIMB only)
- Integration of Modbus TCP and PROFINET Network Communication (EKI-1221IPNMB only)
- Modbus TCP Master mode support 64 connections
- Mounts for DIN-rail and wall mounting
- 'I' models support a wide operating temperature

1.3 Device Specifications

Specifications	Description	
Interface	I/O Ports	■ 2 x RJ45 ■ 1 x RS-232/422/485 See the Ethernet Communications and Serial Communications
	Power Connector	■ 6-pin removable screw terminal (power & relay) ■ Power socket
Physical	Enclosure	IP30, metal shell with solid mounting kits
	Installation	DIN-Rail and wall mounting
	Dimensions (W x H x D)	37 x 140 x 95 mm (1.46" x 5.51" x 3.74")
LED Display	System LED	Power 1, Power 2, Status
	Port LED	■ LAN: Speed, Link/Active ■ Serial: Tx, Rx
Environment	Operating Temperature	-40 ~ 70°C (-40 ~ 158°F)
	Storage Temperature	-20°C ~ 80°C (-4°F ~ 176°F)
	Ambient Relative Humidity	10 ~ 95% (non-condensing)
Ethernet Communications	Compatibility	IEEE 802.3, IEEE 802.3u
	Speed	10/100 Mbps, auto MDI/MDIX
	Port Connector	8-pin RJ45
	Protection	Built-in 1.5 KV magnetic isolation
Power	Power Consumption	5.2W
	Power Input	12 ~ 48 V_{DC}, redundant dual inputs
Regulatory Approvals	EMC	CE, FCC Part 15 Subpart B (Class A)

Chapter 2

Getting Started

2.1 Hardware Overview

2.1.1 Front View

The following depicts the EKI-1221IEIMB.

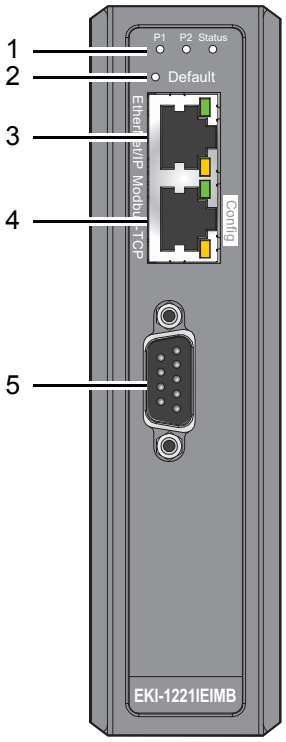


Figure 2.1 Front View

No.	Item	Description
1	System LED panel	See “LED Indicators” on page 8 for further details.
2	Default button	Press for at least 10 seconds to reset device to default settings.
3	ETH port	RJ45 port for EtherNet/IP.
4	ETH port	RJ45 port for Modbus/TCP.
5	Serial port	No available for this model.

The following depicts the EKI-1221IPNMB.

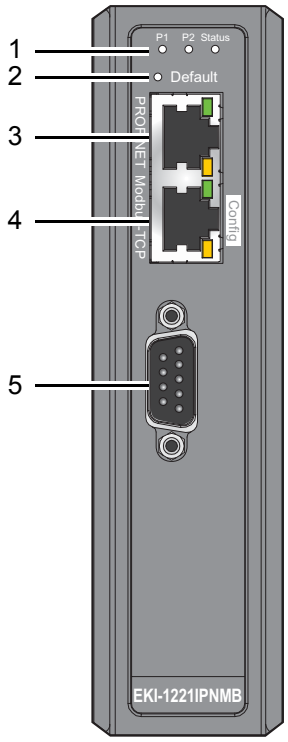


Figure 2.2 Front View

No.	Item	Description
1	System LED panel	See “LED Indicators” on page 8 for further details.
2	Default button	Press for at least 10 seconds to reset device to default settings.
3	ETH port	RJ45 port for PROFINET.
4	ETH port	RJ45 port for Modbus/TCP.
5	Serial port	No available for this model.

2.1.2 Rear View

The following depicts the rear view for all models.

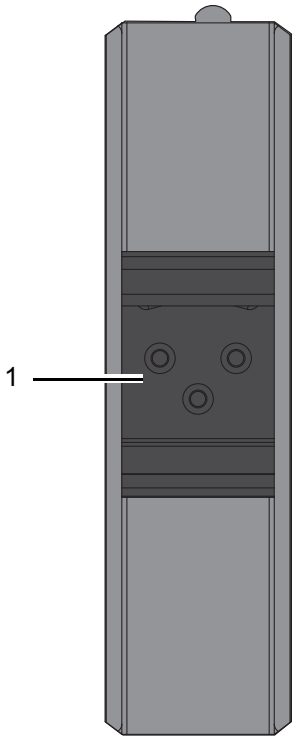


Figure 2.3 Rear View

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

2.1.3 Top View

The following depicts the top view for all models.

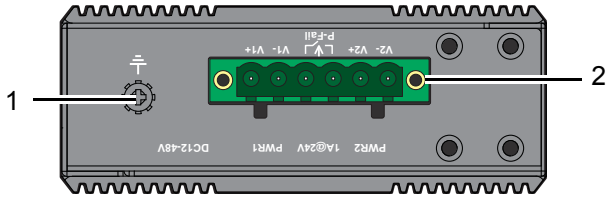


Figure 2.4 Top View

No.	Item	Description
1	Ground terminal	Screw terminal used to ground chassis.
2	Terminal block	Connect cabling for power and alarm wiring, see “Power Connection” on page 14.

2.1.4 LED Indicators

No.	LED Name	LED Color	Description
1	P1	Green	Power 1 is on
		Off	Power 1 is off, or power error condition exists
2	P2	Green	Power 2 is on
		Off	Power 2 is off, or power error condition exists
3	Status	Amber	EKI-1221IEIMB: EtherNet/IP I/O connection is established. EKI-1221IPNMB: System is ready.
		Amber, blinking	EKI-1221IEIMB: System is ready (1 cycle/sec.). EKI-1221IPNMB: Trigger by PROFINET utility's identify function to indicate the device location.
		Off	System is not working

2.1.5 Dimensions

The following view applies to EKI-1221IEIMB.

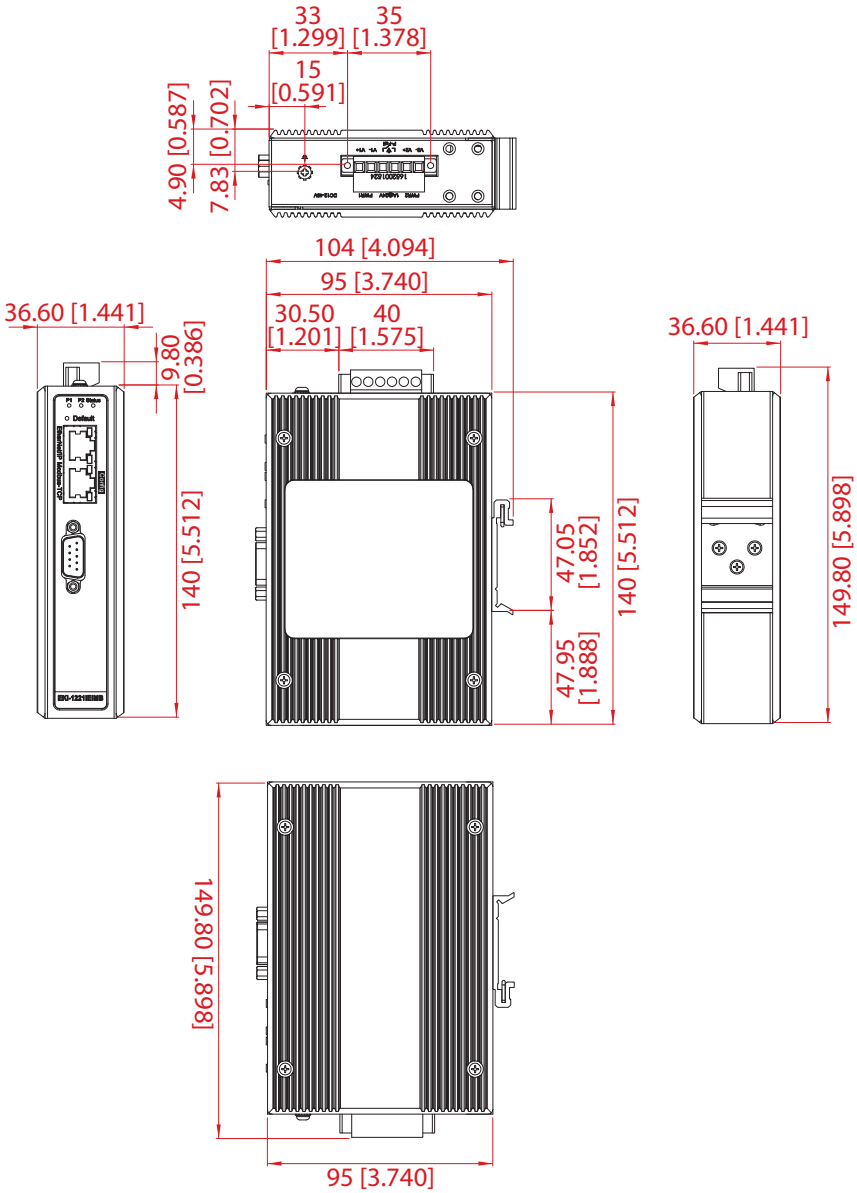


Figure 2.5 EKI-1221IEIMB Dimensions

The following view applies to EKI-1221IPNMB.

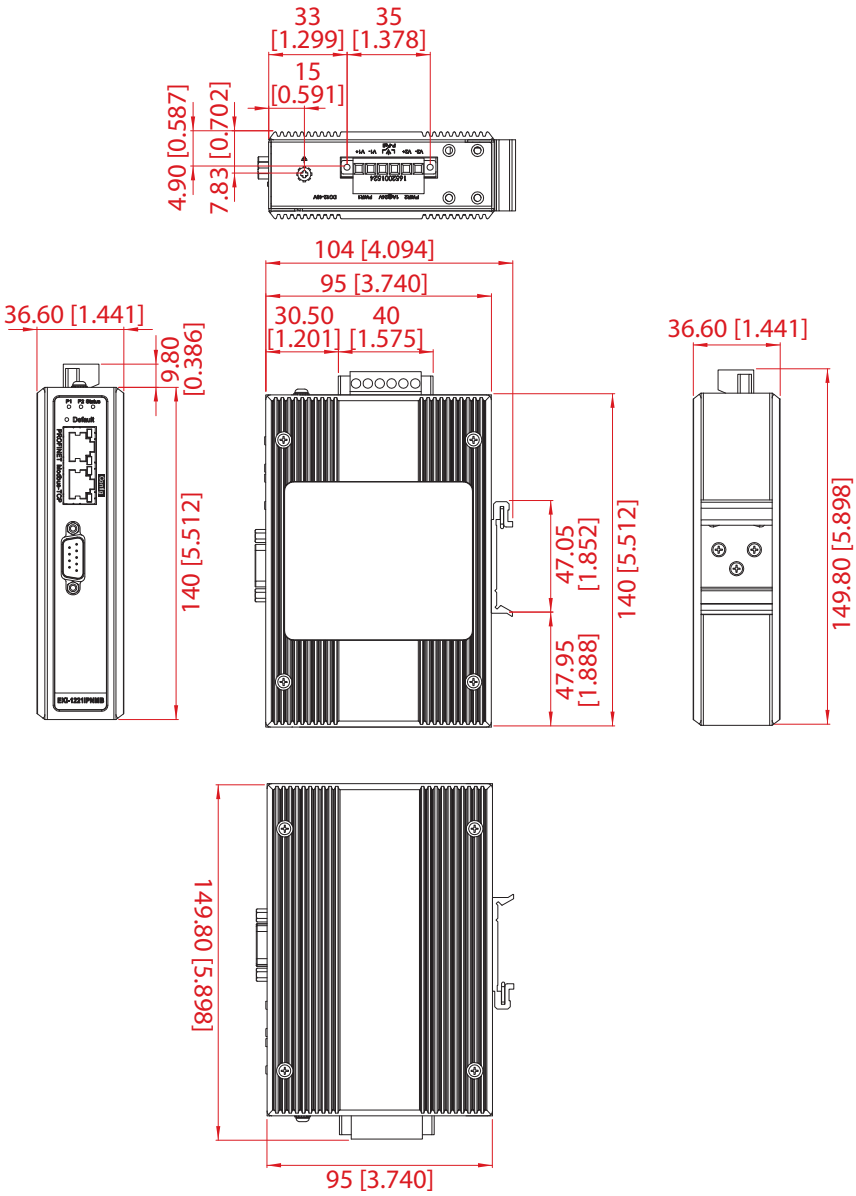


Figure 2.6 EKI-1221IPNMB Dimensions

2.2 Connecting Hardware

2.2.1 Choosing a Location

2.2.1.1 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 device. The device can be mounted onto a standard 35 mm (1.37”) x 75 mm (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.

Installing the DIN-Rail Mounting Kit

1. Insert the top back of the mounting bracket over the DIN rail.
2. Push the bottom of the device towards the DIN rail until it snaps into place.

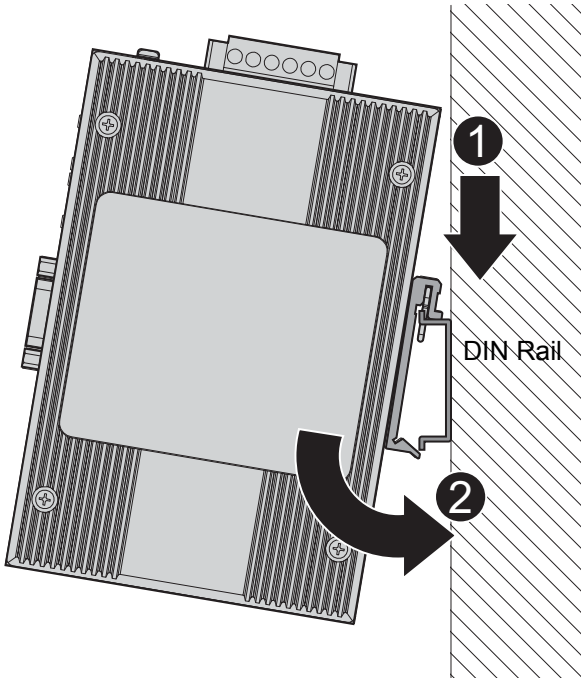


Figure 2.7 Installing the DIN-Rail Mounting Kit

Removing the DIN-Rail Mounting Kit

1. Push the device down to free the bottom of the plate from the DIN rail.
2. Rotate the bottom of the device towards you and away from the DIN rail.
3. Once the bottom is clear of the DIN rail, lift the device straight up to unhook it from the DIN rail.

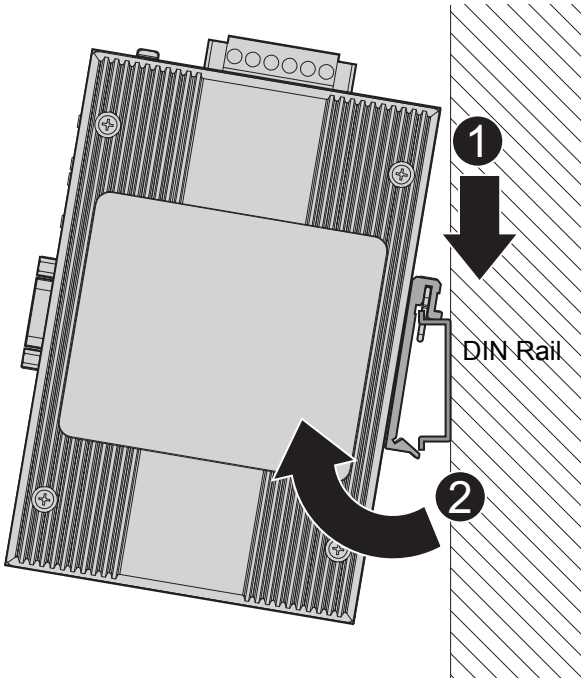


Figure 2.8 Removing the DIN-Rail

2.2.1.2 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 server.
3. Remove the DIN mounting plate. Store the DIN mounting plate and provided screws for later use.
4. Align the wall mounting plates on the rear side. The screw holes on the device and the mounting plates must be aligned, see the following illustration.
5. Secure the wall mount plates with M3 screws, see the following figure.

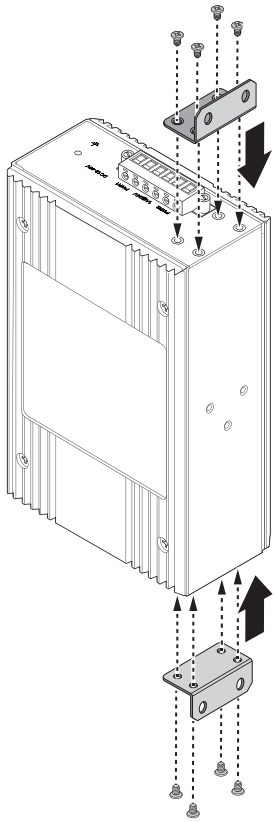


Figure 2.9 Installing Wall Mount Plates

Once the wall mounting plates are secure on the device, you will need to attach the wall screws (x8).

6. Locate the installation site and place the server against the wall, making sure it is the final installation location.
7. Use the wall mount plates as a guide to mark the locations of the screw holes.
8. Drill four holes over the four marked locations on the wall, keeping in mind that the holes must accommodate wall sinks in addition to the screws.
9. Insert the wall sinks into the walls.

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

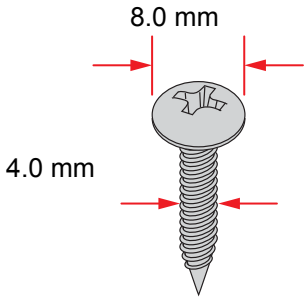


Figure 2.10 Wall Mounting Screw Dimensions

Note!

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

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

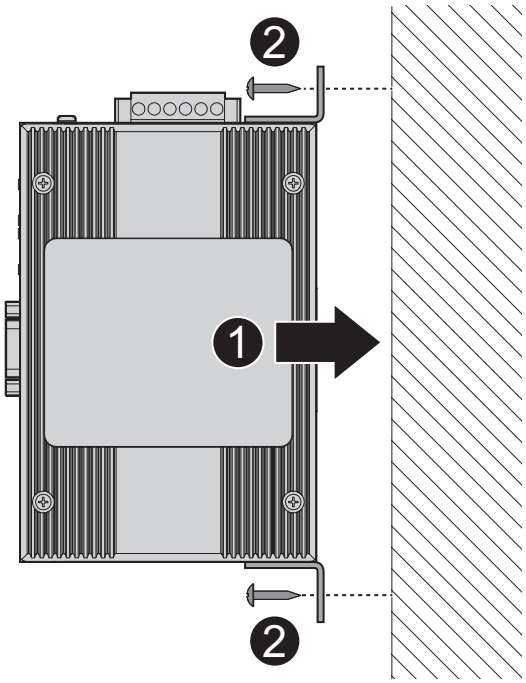


Figure 2.11 Wall Mount Installation

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

2.2.2 Ethernet Connection

2.2.2.1 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

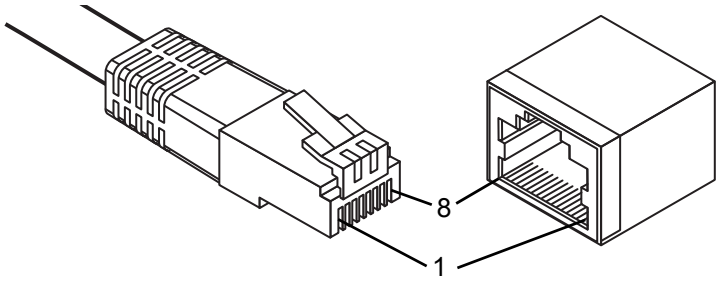


Figure 2.12 Ethernet Plug & Connector Pin Position

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

2.2.3 Power Connection

2.2.3.1 Overview

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

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

The EKI-1221IEIMB | PNMB supports dual 12 to 48 VDC power inputs and power-fail relay output.

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

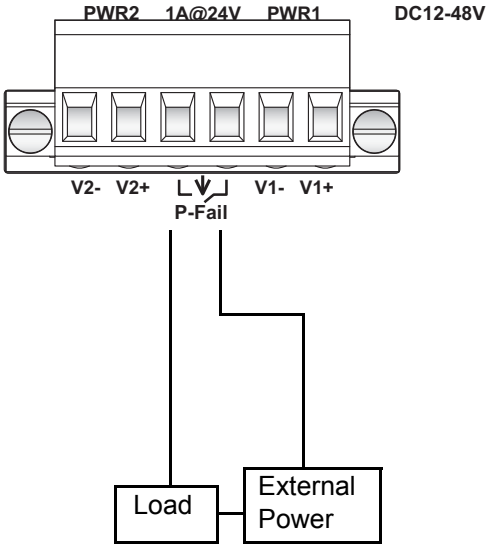


Figure 2.13 Power Wiring for EKI-1221IEIMB | PNMB

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

Chapter 3

Web Interface

3.1 Overview

An EKI modbus gateway can be configured through a web interface. In the browser's address field, enter the IP Address of your EKI protocol gateway. The default IP setting is 192.168.1.1. Once the IP is entered, the following window displays.

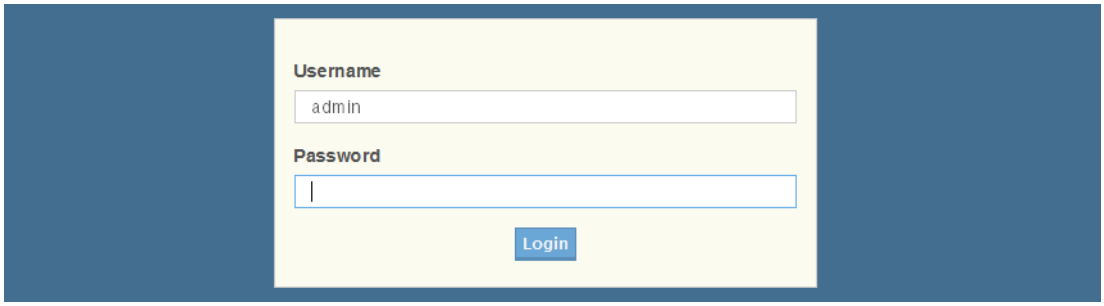


Figure 3.1 Default Login Screen

Note! *Before using the web-based configuration, make sure your host PC is on the same local network as the protocol gateway. Otherwise a connection can not be established between both devices.*

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

3.2 Accessing the Web Page

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

1. Launch your web browser on the PC.
2. In the browser's address bar, type the device's default IP address (EKI-1221IEIMB: Modbus/TCP: 192.168.1.1 Ethernet/IP: 192.168.1.1; EKI-1221IPNMB: Modbus/TCP:192.168.1.1 PROFINET: 0.0.0.0).

   The main interface window displays.

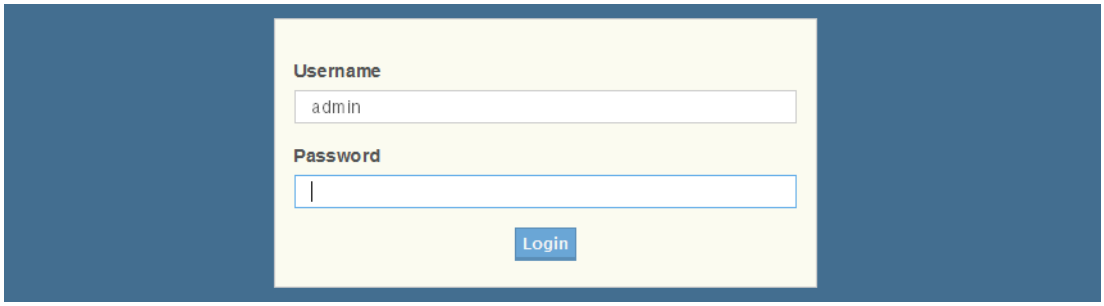


Figure 3.2 Default Login Screen

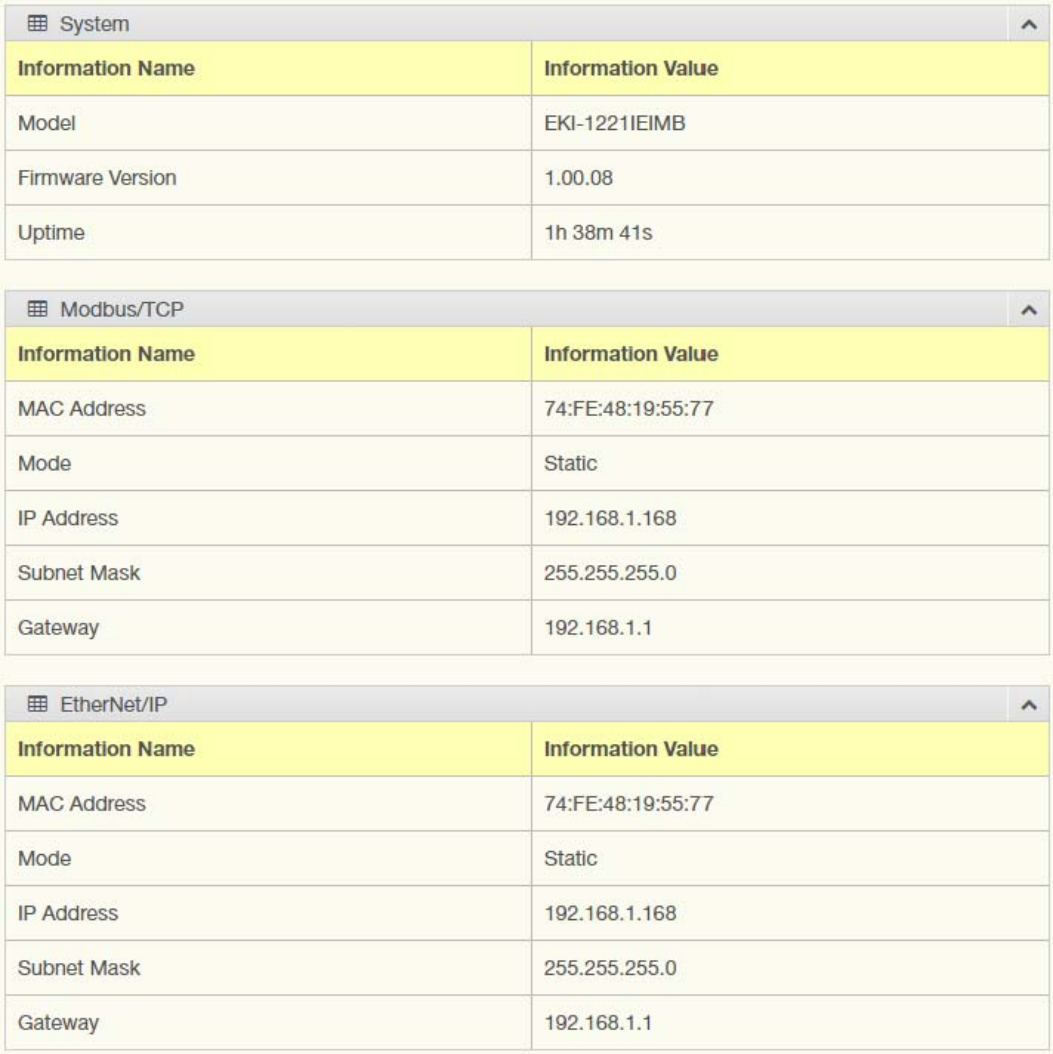
3.3 Overview

3.3.1 Device Information

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

The following figure depicts the IEIMB series device.

To access this page, click **Overview** > **Device Information**.



System

Information Name	Information Value
Model	EKI-1221IEIMB
Firmware Version	1.00.08
Uptime	1h 38m 41s

Modbus/TCP

Information Name	Information Value
MAC Address	74:FE:48:19:55:77
Mode	Static
IP Address	192.168.1.168
Subnet Mask	255.255.255.0
Gateway	192.168.1.1

EtherNet/IP

Information Name	Information Value
MAC Address	74:FE:48:19:55:77
Mode	Static
IP Address	192.168.1.168
Subnet Mask	255.255.255.0
Gateway	192.168.1.1

Figure 3.3 Overview > Device Information

The following table describes the items in the previous figure.

Item	Description
Information Name	
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.
Modbus/TCP	
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.

Item	Description
Subnet Mask	Displays the assigned subnet mask of the device.
Gateway	Displays the assigned gateway of the device.
EtherNet/IP (Previous figure represent the EKI-1221IEIMB UI, PROFINET not displayed in previous figure)	
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.

3.3.2 Diagnose

The following figure depicts the EIMB series device.

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

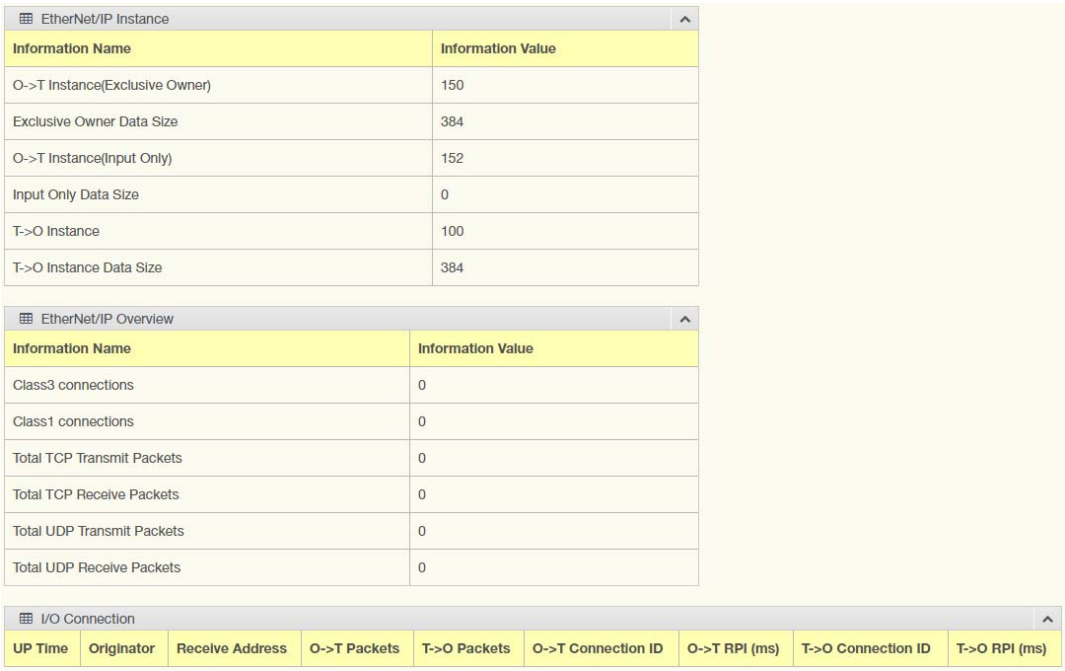


Figure 3.4 Overview > Diagnose

The following table describes the items in the previous figure.

Item	Description
EtherNet/IP Instance (EKI-1221IEIMB only)	Displays instance specific information, such as: 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.
EtherNet/IP Overview (EKI-1221IEIMB only)	Displays instance specific information, such as: Class3 connections, Class1 connections, Total TCP Transmit Packets, Total TCP Receive Packets, Total UDP Transmit Packets, and Total UDP Receive Packets.
I/O Connection (EKI-1221IEIMB only)	Displays data values for each established I/O connection.
PROFINET (EKI-1221IPNMB only)	Displays instance specific information, such as: Connect Status, Connect Counter, Connected PLC MAC Address, Connected PLC IP Address, PLC Operation Mode, Device Name, and Send Clock (m/s).

Item	Description
Modbus/TCP (EKI-1221IPNMB only)	Displays data values for each established Modbus/TCP connection.
Information Name	Displays the given name of the instance setting.
Information Value	Displays the expressed value of the instance setting.

3.3.3 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 from Modbus or EtherNet/IP packets.

The function is available in both the EKI-1221IEIMB and the EKI-1221IPNMB devices.

The following figure displays the Data View menu as found in the EKI-1221IEIMB.

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

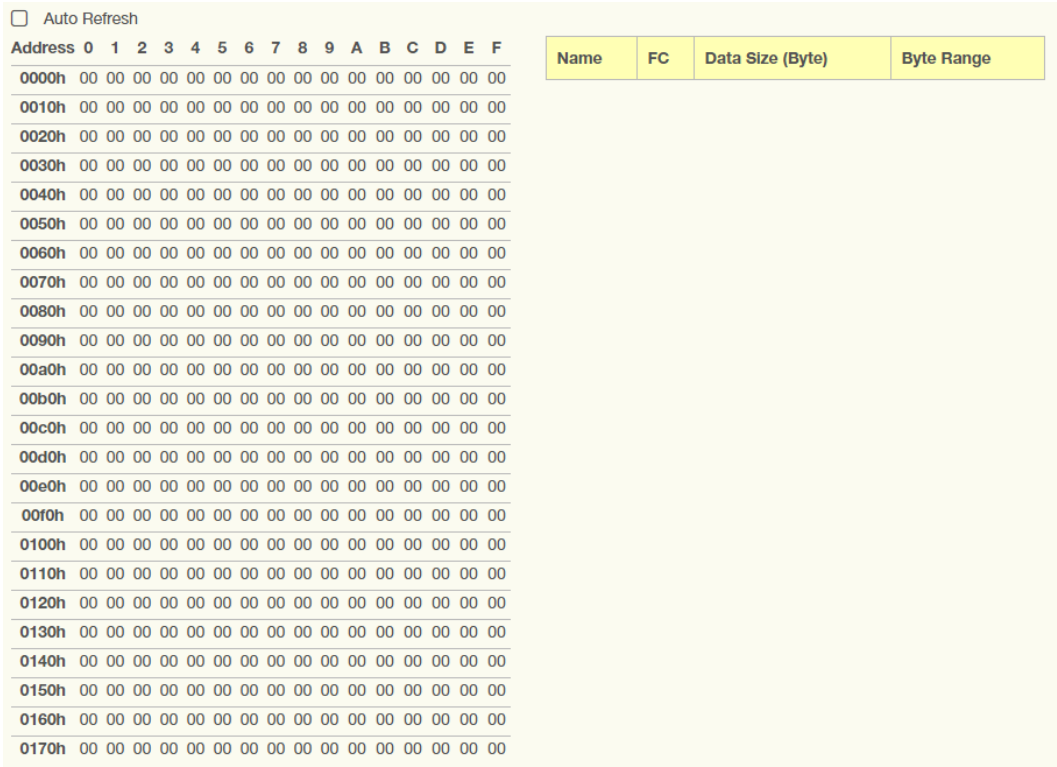


Figure 3.5 Overview > Data View (EKI-1221IEIMB)

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 Data View menu as found in the EKI-1221IPNMB. To access this page, click **Overview** > **Data View**.

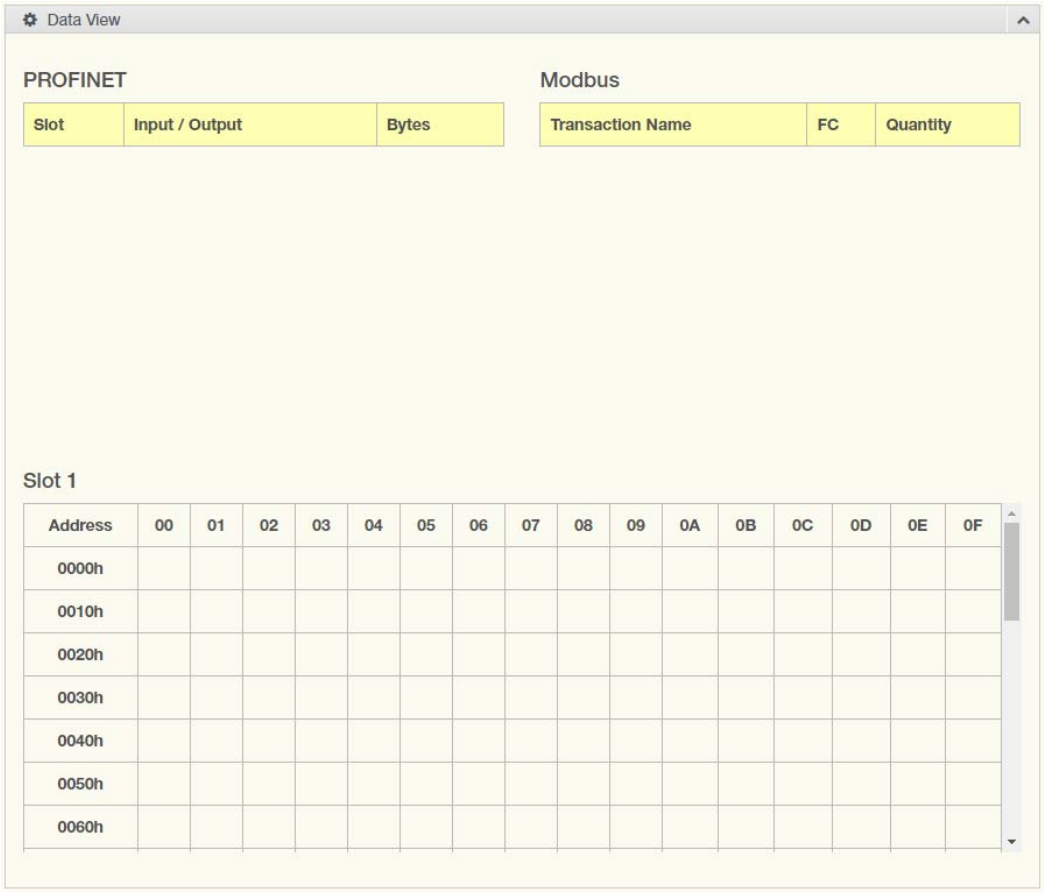


Figure 3.6 Overview > Data View (EKI-1221IPNMB)

3.4 Network Setting

3.4.1 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**.

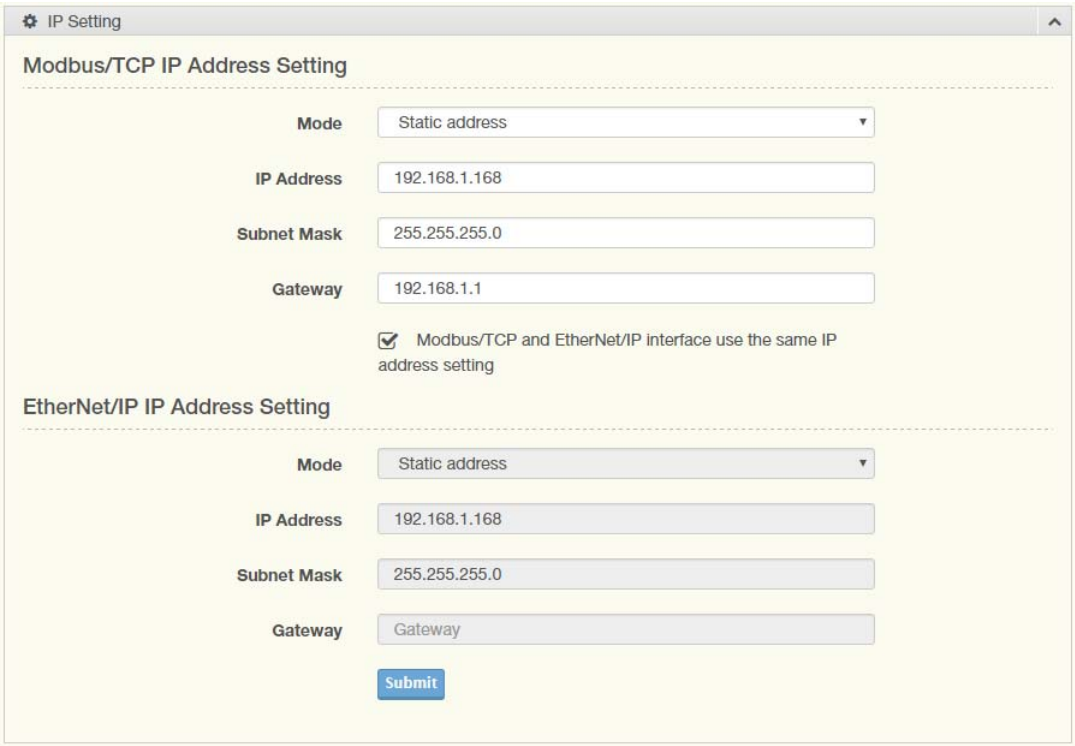


Figure 3.7 Network Setting > IP Setting

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 (EKI-1221IEIMB only)	Check the option to use same IP address setting for Modbus/TCP and EtherNet/IP. Use two different IP subnet when the option is unchecked.
EtherNet/IP IP Address Setting (EKI-1221IEIMB only)	
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.
PROFINET (EKI-1221IPNMB only)	
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.

3.5 Protocol Setting

3.5.1 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-1221IEIMB.

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

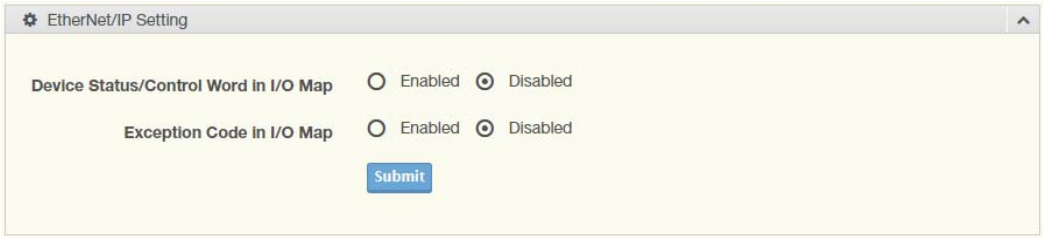


Figure 3.8 Protocol Setting > EtherNet/IP Setting

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: **Disabled**).
Exception Code in I/O Map	Select **Enabled** to dedicate the last 64 bytes of data from the Modbus/TCP network stream (default: **Disabled**).
Submit	Click **Submit** to save the values and update the screen.

3.5.2 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-1221IPNMB.

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

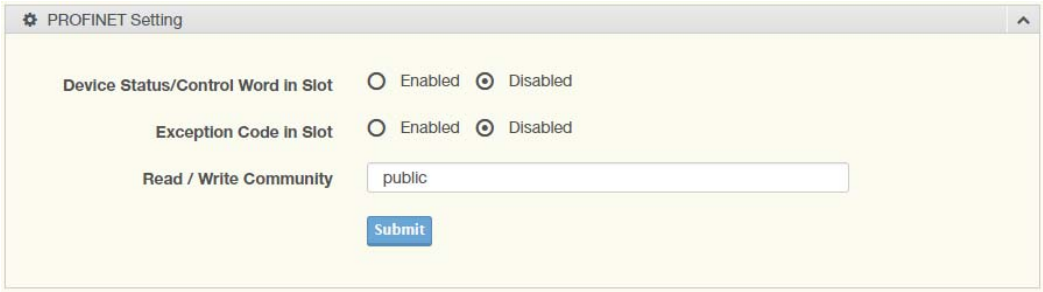


Figure 3.9 Protocol Setting > PROFINET Setting

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 previous definition.
Read / Write Community	Enter the value for the SNMP Read/Write Community string (default: Public).
Submit	Click **Submit** to save the values and update the screen.

3.5.3 Modbus/TCP 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/TCP Setting**.

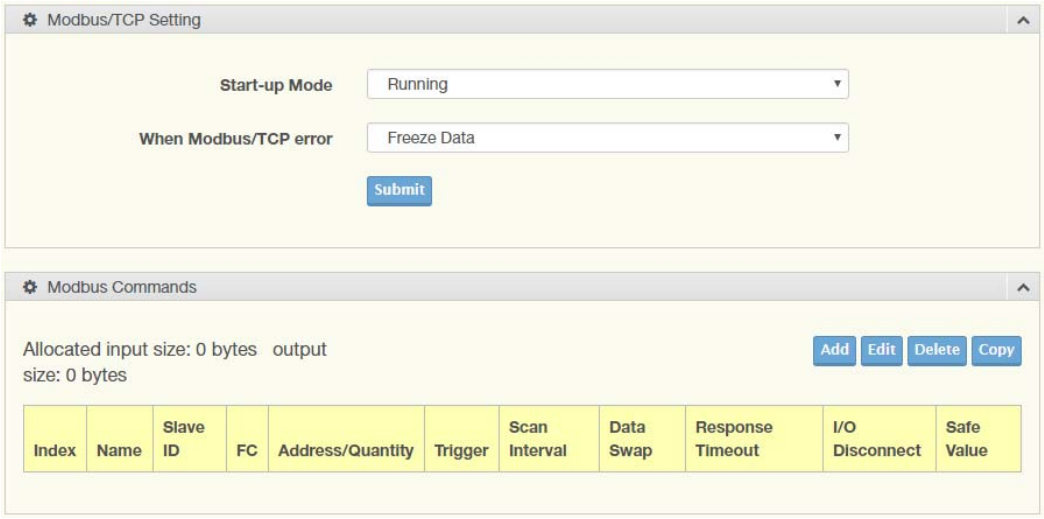


Figure 3.10 Protocol Setting > Modbus/TCP Setting

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.
Add	Click **Add** to add a new transaction. Transactions represent the data that is read from/written to the servers of the Modbus-TCP network.
Edit	Click **Edit** to modify existing transactions.
Delete	Click **Delete** to delete existing transactions.
Copy	Click **Copy** to copy an existing transaction.

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

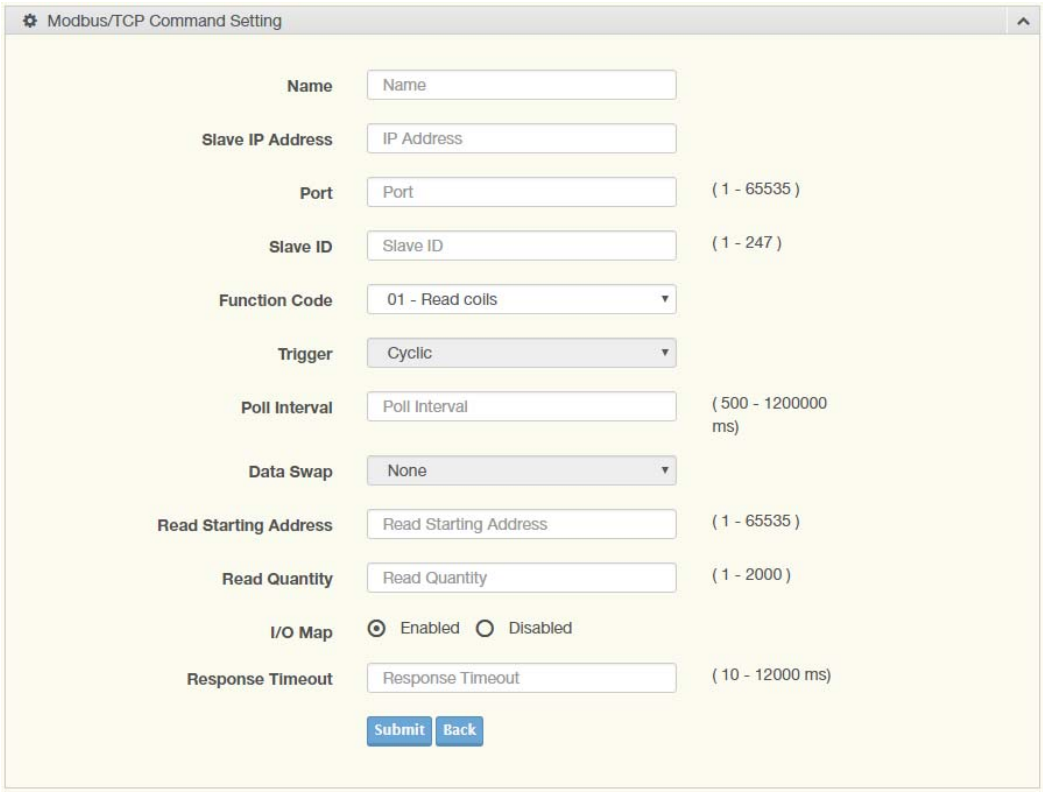


Figure 3.11 Protocol Setting > Modbus/TCP Setting > Add

The following table describes the items in the previous figure.

Item	Description
Name	Enter the name to identify the transaction, max length: 32 characters.
Slave IP Address	Enter the IP address of the Modbus/TCP server.
Port	Enter the TCP port number of remote slave device (default Modbus-TCP port is 502), value range: 0 - 65535.
Slave ID	Enter the Modbus/TCP server slave ID.
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

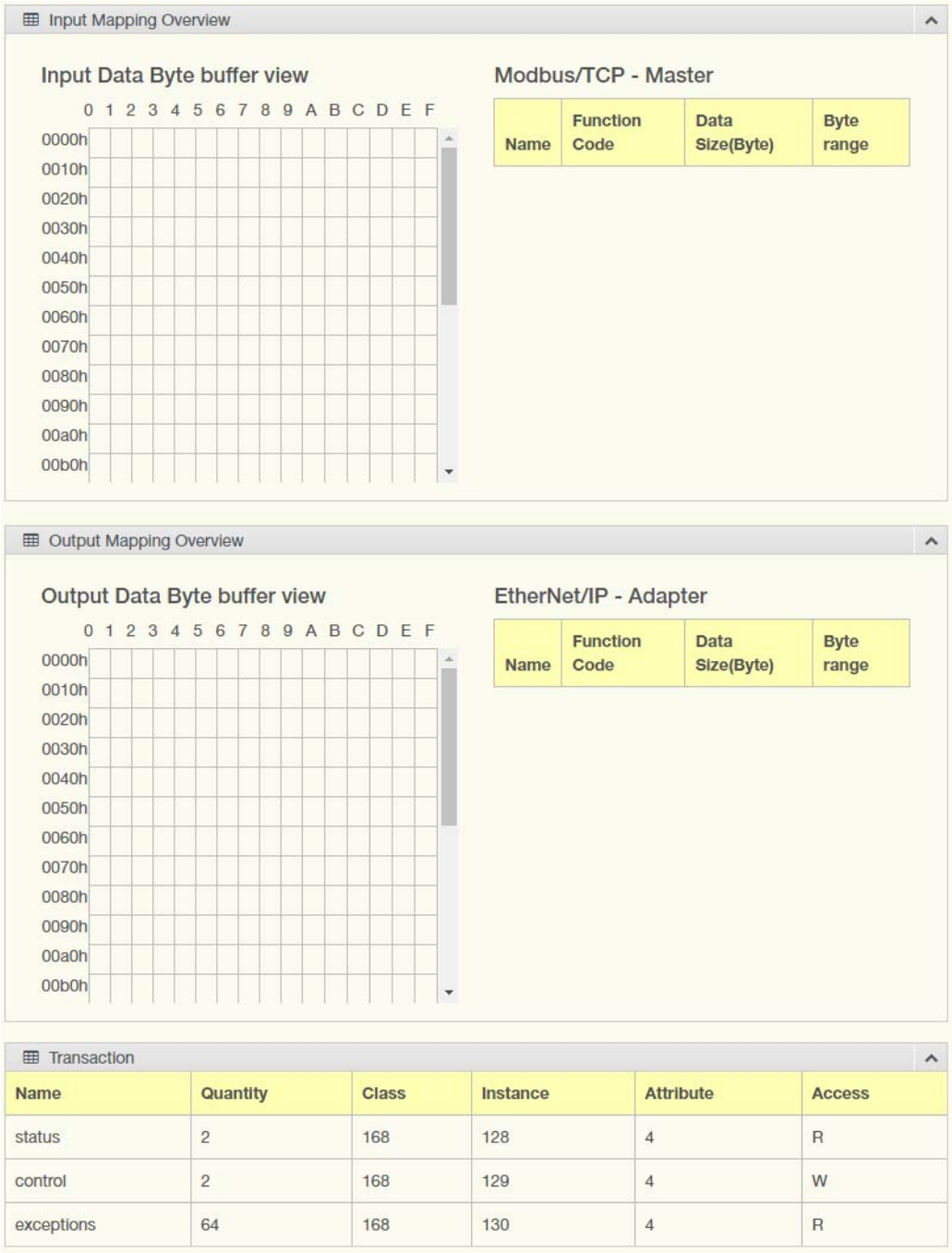
Item	Description
Trigger	Click the drop-down menu to select the trigger setting. ■ Cyclic: The trigger function is set to read/write in a cyclical instance once the specified interval is reached, see Poll Interval field. ■ Data change: Checks for any data changes at the specified interval as defined 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 options 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.
I/O Map	Designate whether or not to map to memory the data transmitted back and forth between the Modbus-TCP network and the EtherNet/IP Network.
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.

3.5.4 Mapping Overview

The Mapping Overview function allows the viewing of data between Modbus TCP to PROFINET Slot or Modbus TCP to EtherNet/IP.

The following figure displays the Data View menu as found in the EKI-1221IEIMB.

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

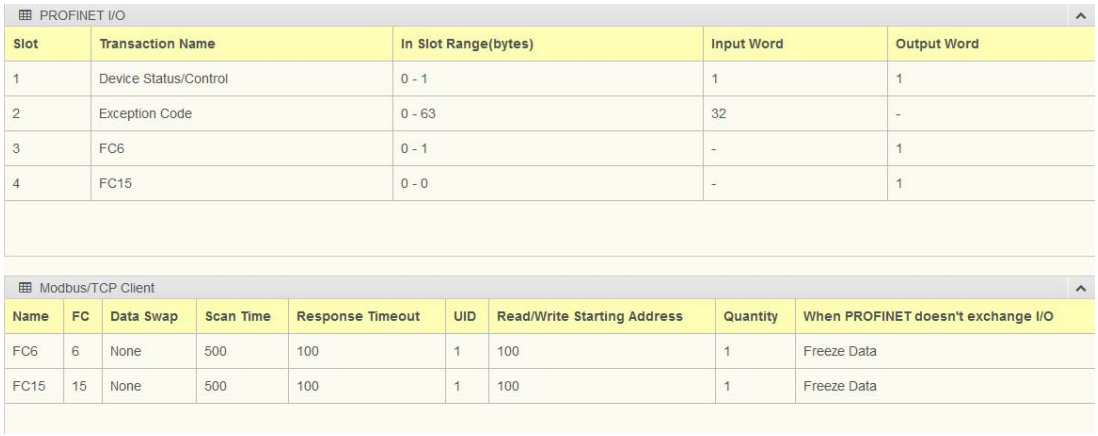


Name	Quantity	Class	Instance	Attribute	Access
status	2	168	128	4	R
control	2	168	129	4	W
exceptions	64	168	130	4	R

Figure 3.12 Protocol Setting > Mapping Overview (EKI-1221IEIMB)

The following figure displays the Data View menu as found in the EKI-1221IPNMB.

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



PROFINET I/O

Slot	Transaction Name	In Slot Range(bytes)	Input Word	Output Word
1	Device Status/Control	0 - 1	1	1
2	Exception Code	0 - 63	32	-
3	FC6	0 - 1	-	1
4	FC15	0 - 0	-	1

Modbus/TCP Client

Name	FC	Data Swap	Scan Time	Response Timeout	UID	Read/Write Starting Address	Quantity	When PROFINET doesn't exchange I/O
FC6	6	None	500	100	1	100	1	Freeze Data
FC15	15	None	500	100	1	100	1	Freeze Data

Figure 3.13 Protocol Setting > Mapping Overview (EKI-1221IPNMB)

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**.

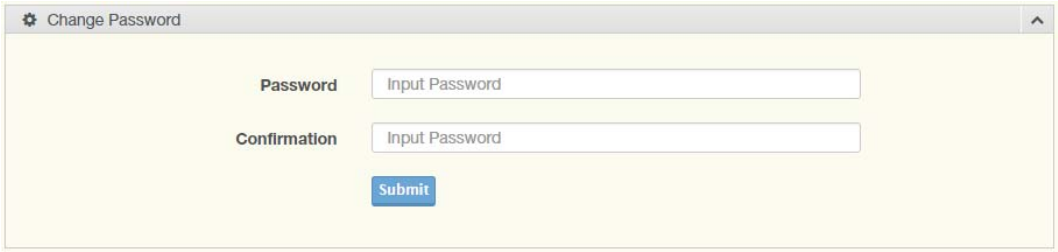


Figure 3.14 System Management > Change Password

The following table describes the items in the previous figure.

Item	Description
Password	Enter the character set to define 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 from the device or restore configuration file to the device.

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

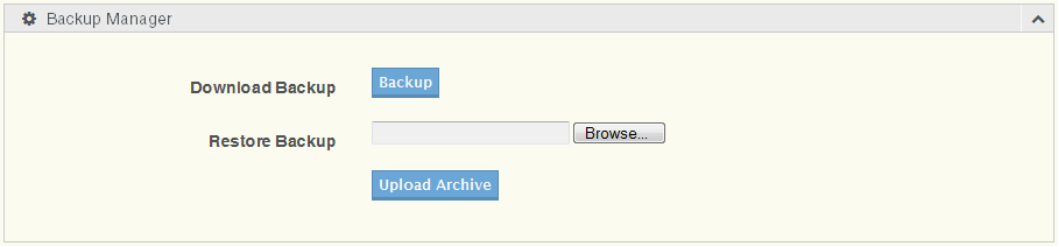


Figure 3.15 System Management > Backup Manager

The following table describes the items in the previous figure.

Item	Description
Backup	Click **Backup** to backup configuration from the device.
Choose File	Click **Browse** to select the configuration file.
Upload Archive	Click **Upload Archive** to restore configuration to the device.

3.6.3 Upgrade Manager

The Upgrade Manager page allows you to upgrade firmware.

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

Figure 3.16 System Management > Upgrade Manager

The following table describes the items in the previous figure.

Item	Description
Choose 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 **Restore** 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 3.17 System Management > Reset System

3.6.5 Reboot Device

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

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

Figure 3.18 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 3.19 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**.

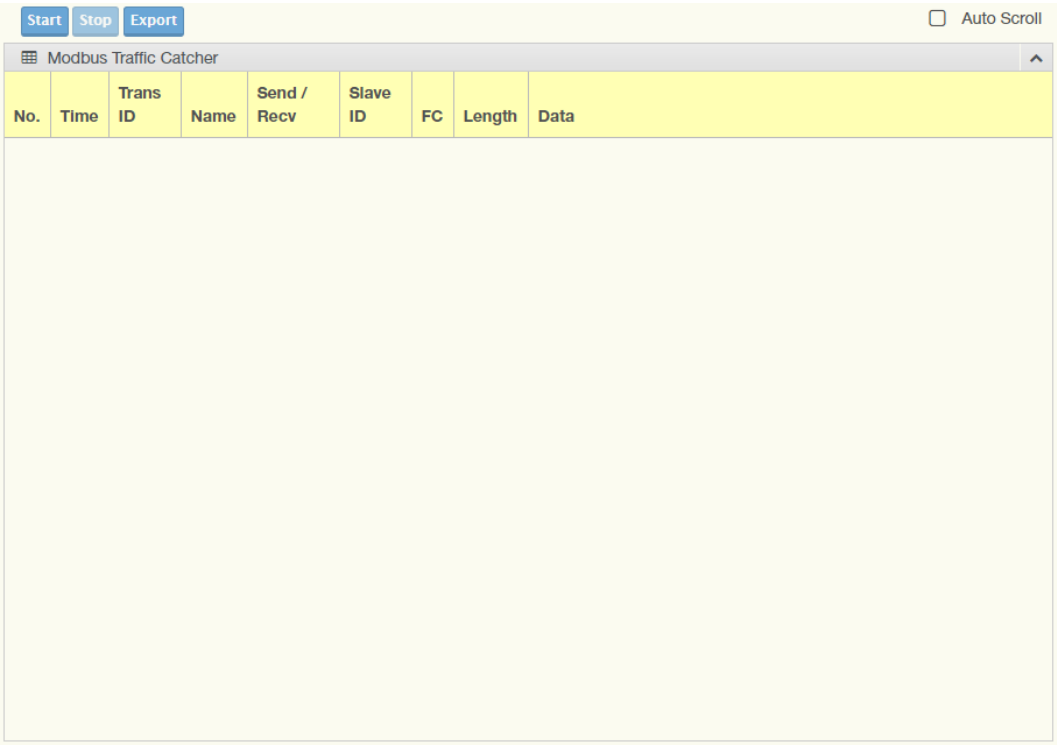


Figure 3.20 Tools > Modbus Traffic Catcher

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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