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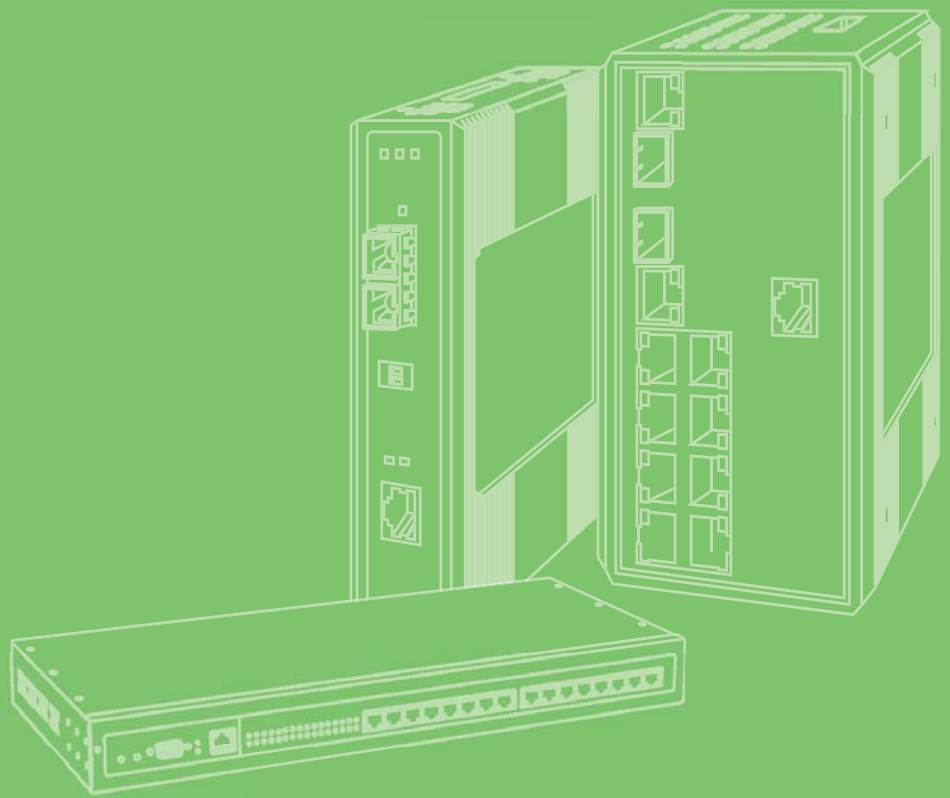
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User Manual



EKI-7710 Series

8FE+2G/8GE+2G Combo port L2
Managed Switch

AVANTECH

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 merchandise authorization) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

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Declaration of Conformity

CE

This product has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables. This 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.

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@advan-tech.com

Packing List

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

- 1 x Industrial Ethernet Switch
- 2 x Wall-mounting Bracket
- 1 x DIN-Rail mounting Bracket and Screws
- 1 x Startup Manual
- 1 x EKI Device Configuration Utility CD ROM

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 -40°C (-40°F) \sim 85°C (185°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.
23. 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.

Wichtige Sicherheitshinweise

1. Bitte lesen sie sich diese Hinweise sorgfältig durch.
2. Heben Sie diese Anleitung für den späteren Gebrauch auf.
3. Vor jedem Reinigen ist das Gerät vom Stromnetz zu trennen. Verwenden Sie keine Flüssig- oder Aerosolreiniger. Am besten dient ein angefeuchtetes Tuch zur Reinigung.
4. Die Netzanschlusssteckdose soll nahe dem Gerät angebracht und leicht zugänglich sein.
5. Das Gerät ist vor Feuchtigkeit zu schützen.
6. Bei der Aufstellung des Gerätes ist auf sicheren Stand zu achten. Ein Kippen oder Fallen könnte Verletzungen hervorrufen.
7. Die Belüftungsöffnungen dienen zur Luftzirkulation die das Gerät vor Überhitzung schützt. Sorgen Sie dafür, daß diese Öffnungen nicht abgedeckt werden.
8. Beachten Sie beim Anschluß an das Stromnetz die Anschlußwerte.
9. Verlegen Sie die Netzanschlusbleitung so, daß niemand darüber fallen kann. Es sollte auch nichts auf der Leitung abgestellt werden.
10. Alle Hinweise und Warnungen die sich am Geräten befinden sind zu beachten.
11. Wird das Gerät über einen längeren Zeitraum nicht benutzt, sollten Sie es vom Stromnetz trennen. Somit wird im Falle einer Überspannung eine Beschädigung vermieden.
12. Durch die Lüftungsöffnungen dürfen niemals Gegenstände oder Flüssigkeiten in das Gerät gelangen. Dies könnte einen Brand bzw. elektrischen Schlag auslösen.
13. Öffnen Sie niemals das Gerät. Das Gerät darf aus Gründen der elektrischen Sicherheit nur von autorisiertem Servicepersonal geöffnet werden.
14. Wenn folgende Situationen auftreten ist das Gerät vom Stromnetz zu trennen und von einer qualifizierten Servicestelle zu überprüfen:
 15. Netzkabel oder Netzstecker sind beschädigt.
 16. Flüssigkeit ist in das Gerät eingedrungen.
 17. Das Gerät war Feuchtigkeit ausgesetzt.
 18. Wenn das Gerät nicht der Bedienungsanleitung entsprechend funktioniert oder Sie mit Hilfe dieser Anleitung keine Verbesserung erzielen.
 19. Das Gerät ist gefallen und/oder das Gehäuse ist beschädigt.
 20. Wenn das Gerät deutliche Anzeichen eines Defektes aufweist.
21. **VORSICHT:** Explosionsgefahr bei unsachgemäßen Austausch der Batterie. Ersatz nur durch denselben oder einem vom Hersteller empfohlene-männlichen Typ. Entsorgung gebrauchter Batterien nach Angaben des Herstellers.
22. **ACHTUNG:** Es besteht die Explosionsgefahr, falls die Batterie auf nicht fachmännische Weise gewechselt wird. Verfangen Sie die Batterie nur gleicher oder entsprechender Type, wie vom Hersteller empfohlen. Entsorgen Sie Batterien nach Anweisung des Herstellers.
23. Der arbeitsplatzbezogene Schalldruckpegel nach DIN 45 635 Teil 1000 beträgt 70dB(A) oder weniger.

Haftungsausschluss: Die Bedienungsanleitungen wurden entsprechend der IEC-704-1 erstellt. Advantech lehnt jegliche Verantwortung für die Richtigkeit der in diesem Zusammenhang getätigten Aussagen ab.

Safety Precaution - Static Electricity

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

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

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Chapter 1

Product Overview

1.1 Supported Models

Standard Models:

| | | |
|---------------|--------------|---------------|
| EKI-7710E-2C | EKI-7710G-2C | EKI-7710E-2CP |
| EKI-7710G-2CP | | |

Wide Temperature Models:

| | | |
|----------------|---------------|----------------|
| EKI-7710E-2CI | EKI-7710G-2CI | EKI-7710E-2CPI |
| EKI-7710G-2CPI | | |

1.2 Specifications

| Specifications | Description | |
|-------------------|---------------------------|--|
| Interface | I/O Port | 8 x RJ45 + 2 x Combo (RJ45/Fiber) |
| | Power Connector | 6-pin removable screw terminal (power & relay) |
| Physical | Enclosure | Metal Shell |
| | Protection Class | IP30 |
| | Installation | DIN-Rail and Wall mount |
| | Dimensions (W x H x D) | 74 x 152 x 105mm |
| LED Display | System LED | SYS, R.M, PWR1, PWR2, Alarm |
| | Port LED | Speed, Link, Activity |
| Environment | Operating Temperature | Standard Temperature: -10°C ~ 60°C (14°F ~ 140°F) Wide Temperature: -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) |
| Switch Properties | MAC Address | 8K-entry |
| | Switching Bandwidth | <ul style="list-style-type: none"> ■ EKI-7710E-2C/EKI-7710E-2CI: 5.6 Gbps ■ EKI-7710E-2CP/EKI-7710E-2CPI: 5.6 Gbps ■ EKI-7710G-2C/EKI-7710G-2CI: 20 Gbps ■ EKI-7710G-2CP/EKI-7710G-2CPI: 20 Gbps |
| Power | Power Consumption | 12.1 W@48Vdc (System) |
| | Power Input | <ul style="list-style-type: none"> ■ EKI-7710E-2C/EKI-7710E-2CI: 12V~48V (8.4V to 62.4V) ■ EKI-7710E-2CP/EKI-7710E-2CPI: 24V~48V (16.8V to 62.4V) ■ EKI-7710G-2C/EKI-7710G-2CI: 12V~48V (8.4V to 62.4V) ■ EKI-7710G-2CP/EKI-7710G-2CPI: 24V~48V (16.8V to 62.4V) |

| Specifications | Description | |
|----------------|-------------|---|
| Certifications | Safety | UL508 |
| | EMC | CE, FCC |
| | EMI | EN 55032 Class A, EN 61000-6-4, FCC Part 15 Sub-part B Class A |
| | EMS | <ul style="list-style-type: none"> ■ EN 55024/ EN 61000-6-2 ■ EN 61000-4-2 (ESD) Level 3 ■ EN 61000-4-3 (RS) Level 3; ■ EN 61000-4-4 (EFT) Level 3 ■ EN 61000-4-5 (Surge) Level 3; ■ EN 61000-4-6 (CS) Level 3 ■ EN 61000-4-8 (Magnetic Field) Level 3 |
| | Shock | IEC 60068-2-27 |
| | Freefall | IEC 60068-2-32 |
| | Vibration | IEC 60068-2-6 |

1.3 Hardware Views

1.3.1 Front View

The following view applies to EKI-7710E-2C, EKI-7710E-2CI, EKI-7710G-2C and EKI-7710G-2CI.

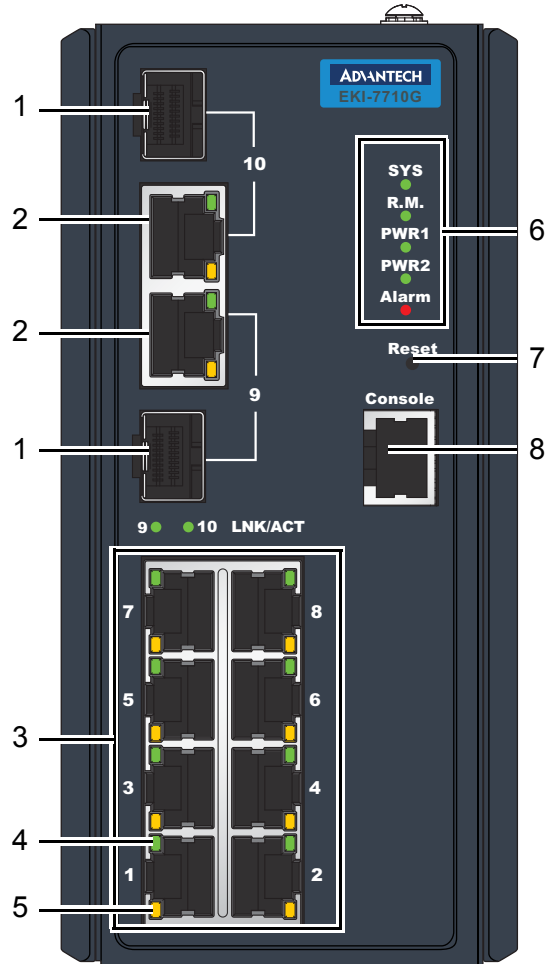


Figure 1.1 Front View

| No. | Item | Description |
|-----|---------------------|--|
| 1 | ETH port | Fiber ports x 2 |
| 2 | ETH port | RJ45 ports x 2 |
| 3 | ETH port | RJ45 ports x 8 |
| 4 | LNK/ACT LED | Link activity LED |
| 5 | Speed LED | <ul style="list-style-type: none"> ■ Orange: 100M ■ Green: 1G |
| 6 | System LED panel | See "System LED Panel" on page 6 for further details. |
| 7 | Reset button | Button allows for system soft reset or factory default reset. |
| 8 | Console serial port | Console cable port to COM port (DB9 male) on computer to RS232 managed switch (RJ45 female). |

The following view applies to EKI-7710E-2CP, EKI-7710E-2CPI, EKI-7710G-2CP and EKI-7710G-2CPI.

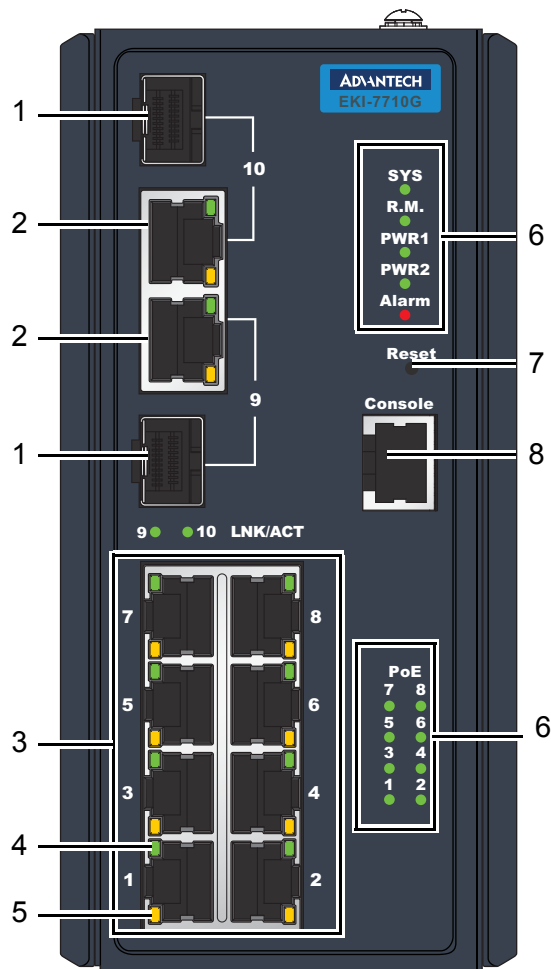


Figure 1.2 Front View

| No. | Item | Description |
|-----|---------------------|---|
| 1 | ETH port | Fiber ports x 2 |
| 2 | ETH port | RJ45 ports x 2 |
| 3 | ETH port | RJ45 ports with PoE x 8 |
| 4 | LNK/ACT LED | Link activity LED |
| 5 | Speed LED | <ul style="list-style-type: none"> ■ Orange: 100M ■ Green: 1G |
| 6 | System LED panel | See "System LED Panel (only for EKI-7710E-2CP/EKI-7710E-2CPI, EKI-7710G-2CP/EKI-7710G-2CPI)" on page 7 for further details. |
| 7 | Reset button | Button allows for system soft reset or factory default reset. |
| 8 | Console serial port | Console cable port to COM port (DB9 male) on computer to RS232 managed switch (RJ45 female). |

1.3.1.1 System LED Panel

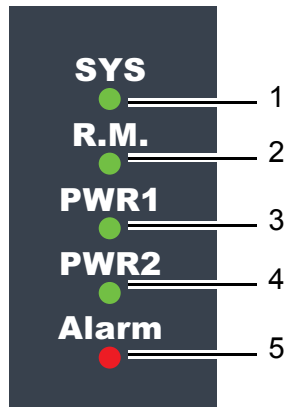


Figure 1.3 System LED Panel

| No. | LED Name | LED Color | Description |
|-----|----------|-------------|---|
| 1 | SYS | Solid green | System is operating normally |
| | | Off | System is powered down / system crash / operation initiating |
| 2 | R.M. | Solid green | Active when determining ring master |
| 3 | PWR1 | Solid green | Powered up |
| | | Off | Powered down or not installed |
| 4 | PWR2 | Solid green | Powered up |
| | | Off | Power down or not installed |
| 5 | Alarm | Solid red | SFP ports is disconnected or the link is down, for port 9 and 10 only |
| | | Off | Normal operation |

1.3.1.2 System LED Panel (only for EKI-7710E-2CP/EKI-7710E-2CPI, EKI-7710G-2CP/EKI-7710G-2CPI)

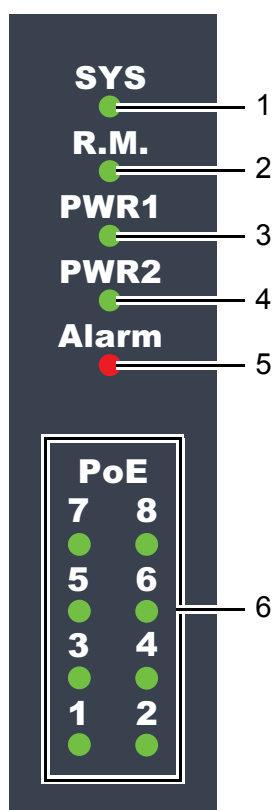


Figure 1.4 System LED Panel

| No. | LED Name | LED Color | Description |
|-----|-------------------------------|-------------|---|
| 1 | SYS | Solid green | System is operating normally |
| | | Off | System is powered down / system crash / operation initiating |
| 2 | R.M. | Solid green | Active when determining ring master |
| 3 | PWR1 | Solid green | Powered up |
| | | Off | Powered down or not installed |
| 4 | PWR2 | Solid green | Powered up |
| | | Off | Power down or not installed |
| 5 | Alarm | Solid red | SFP ports is disconnected or the link is down, for port 9 and 10 only |
| | | Off | Normal operation |
| 6 | PoE (depending the PoE ports) | Solid green | PoE activated. |
| | | Off | PoE non-working. |

1.3.2 Rear View

The following view applies to EKI-7710E-2C, EKI-7710E-2CI, EKI-7710G-2C, EKI-7710G-2CI, EKI-7710E-2CP, EKI-7710E-2CPI, EKI-7710G-2CP and EKI-7710G-2CPI.

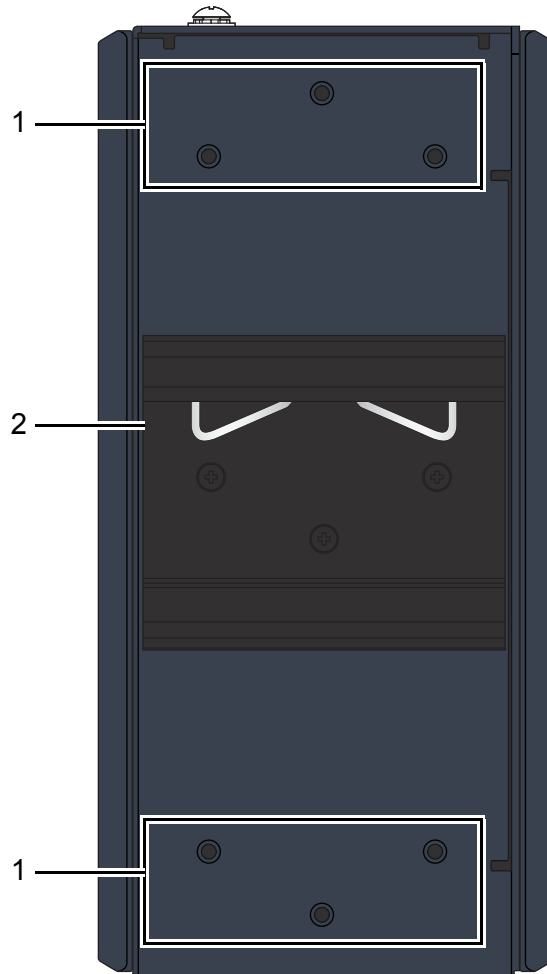


Figure 1.5 Rear View

| No. | Item | Description |
|-----|-------------------------|---|
| 1 | Wall mounting holes | Screw holes (x6) used in the installation of a wall mounting plate |
| 2 | DIN-Rail mounting plate | Mounting plate used for the installation to a standard DIN rail plate |

1.3.3 Top View

The following view applies to EKI-7710E-2C, EKI-7710E-2CI, EKI-7710G-2C and EKI-7710G-2CI.

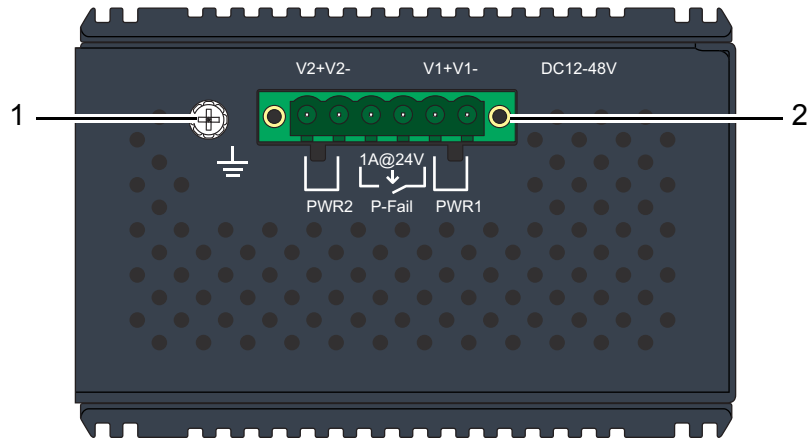


Figure 1.6 Top View

| No. | Item | Description |
|-----|-----------------|--|
| 1 | Ground terminal | Screw terminal used to ground chassis |
| 2 | Terminal block | Connect cabling for power and alarm wiring |

The following view applies to EKI-7710E-2CP, EKI-7710E-2CPI, EKI-7710G-2CP and EKI-7710G-2CPI.

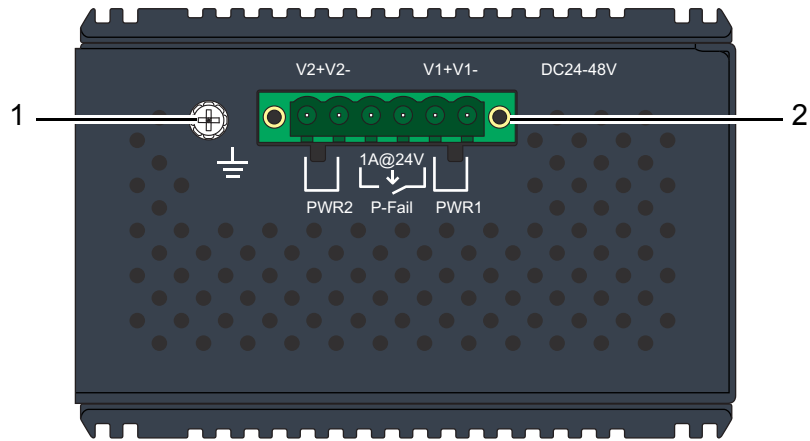


Figure 1.7 Top View

| No. | Item | Description |
|-----|-----------------|--|
| 1 | Ground terminal | Screw terminal used to ground chassis |
| 2 | Terminal block | Connect cabling for power and alarm wiring |

Chapter 2

Switch 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 interfere 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 switch 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 switch to connected devices can not exceed 100 meters (328 feet).
- Make sure airflow around the switch and respective vents is unrestricted. Without proper airflow the switch can overheat. To prevent performance degradation and damage to the switch, make sure there is clearance at the top and bottom and around the exhaust vents.

2.1.1 Connecting Hardware

These instructions will explain how to find a proper location for your Modbus Gateways, and how to connect to the network, hook up the power cable, and connect to the EKI-7710 Series.

2.2 Verifying Switch Operation

Before installing the device in a rack or on a wall, power on the switch to verify that the switch passes the power-on self-test (POST). To connect the cabling to the power source see “Power Supply Installation” on page 21.

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

After a successful self-test, power down the switch and disconnect the power cabling. The switch is now ready for installation on its final location.

2.3 Installing the Switch

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 switch. The device can be mounted onto a standard 35mm (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.

2.3.1.1 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 switch towards the DIN rail until it snaps into place.

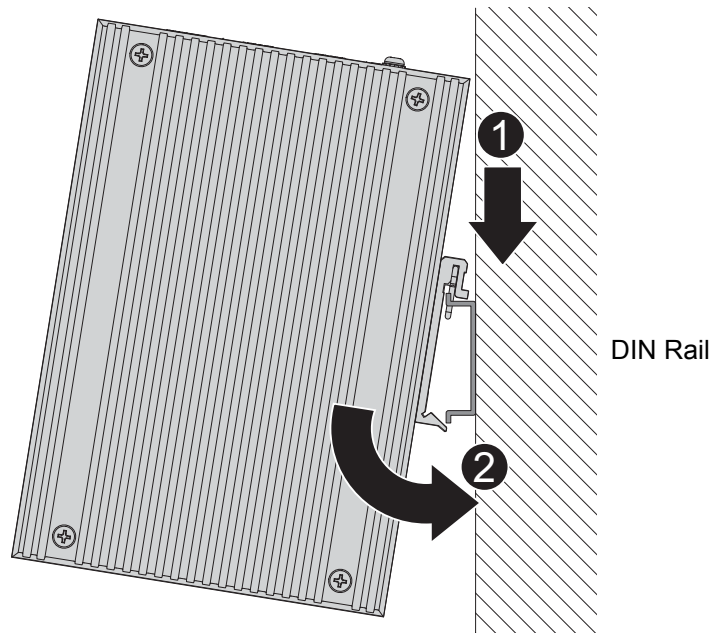


Figure 2.1 Installing the DIN-Rail Mounting Kit

2.3.1.2 Removing the DIN-Rail Mounting Kit

1. Push the switch 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.