MIEN3024/3026

Rack Mount Industrial Ethernet Switch

User Manual

(Edition: V3.0)

Wuhan Maiwe Communication Co., Ltd.

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Statement
Due to continuous update and improvement of products and technology, the contents of this document may not be completely consistent with the actual products, appreciate for your understanding. If necessary to inquiry the updates of the product, please check our official website or contact our representative directly.

Revision history:

Version	Date	Reason
V1.0	2013.08	Document creation
V1.1	2013.11	Modified housing size
V2.0	2014.07	Product upgrade
V3.0	2015.14	Product upgrade

Safe Use Instruction

This product performance is excellent and reliable in the designed range of use, **but it's necessary to avoid man-made damage or destroy for the equipment**.

- Read the manual carefully and keep this manual for reference if need afterwards.
- Do not put the device close to the water sources or damp places.
- Do not put anything on the power cable, it should be placed out of reach.
- To avoid causing fire, do not knot or wrap the cable.
- Power connector and other device connectors should be firmly connected with each other, frequently inspection is needed.
- Please keep the fiber socket and plug clean. Do not look directly at the fiber section when the equipment is working.
- Please keep the equipment clean and wipe it with a soft cotton cloth if necessary.
- Please do not repair the equipment by yourself, unless there is clear instructions in the manual.

Under the following circumstances, please cut off power immediately and contact us.

- Equipment water damage.
- The equipment is broken or the casing is broken.
- The equipment works abnormally or the performance has completely changed.
- The equipment produces odor, smoke or noise.

Statement: Information requiring explanation in use of the managed software.
Attention: Matters requiring specific attention in the use of the managed software.

Catalogue

1. Introduction

1.1. Product instruction

The Maiwe industrial rack-mount Ethernet switch is specially designed and developed for industrial high speed communication network applications. This series of switches features is simple plug and play, all copper port support auto-negotiation, 10/100Mbps full duplex and half duplex, Auto-MDI/MDI-X and other functions.

This series switch offer RPS support and can provide wide range of AC and DC power input at the same time. In terms of structural installation, they use the rack mount to meet the industrial site.

The MIEN3024 series of industrial Ethernet switches have a total of 24 100M ports, and the MIEN3026-2S/M industrial Ethernet switches have a total of 26 100M ports. Both the switching bandwidth is 8.8G and support 8K entries in the MAC address table.

1.2. Product characteristic

1.2.1. Industry Network features

- Broadcast storm protection
- Optional 100Base-FX different transmission distances, different types of optical fiber interfaces
- Store and forward mode, switched bandwidth is 8.8Gbps.
- 10/100M TX auto negotiation ,full/half duplex, auto MDI/MDI-X connection
- Full-duplex flow control, half-duplex back pressure flow control
- Redundancy dual power supply input, suitable for high performance requirement.
- No interference operation in hard EMI Environment.

1.2.2. Industrial application design

- Redundancy dual power supply input design.
- Rack-mount
- Relay power failure alarm
- Fast recovery of port wire changing connection

1.3. Packing list

The packing list of MIEN3024/3026 series rack-mounted industrial Ethernet switch is as below. If any of the following items is lost or damaged, please contact the agent or the company's customer service center, and they will assist you to replace or supplement.

Item	QTY
MIEN3024/3026 industrial Ethernet switch	1pcs
User manual	1pcs
Certificate and warranty card	1pcs

1.4. Product parameters

The rack-mount Ethernet switch can finish Ethernet information exchange. Users must refer to the following data for reasonable selection and use in order to show good industrial characteristics and excellent network information exchange capabilities

IEEE standard	802.3,802.3u,802.3x
Exchange method	Store and forward
Flow control	Full-duplex flow control, half-duplex back pressure flow control
Mac address	8k
Transmission distance	Twisted pair 100m,Optical fiber 100Mbps Maximum 20km\40km\60km\80km
Broadcast storm	Real-time broadcast suppression
Diagnostic function	Relay power failure alarm
EMC Standard	
IEC61000-4-2 electrostatic prevention ESD	±8kv contact discharge, ±15kv air discharge
IEC61000-4-3 electromagnetic field	10V/m(80~1000MHz)
IEC61000-4-6 radio frequency presentation	3V(10kHz~150kHz),10V(150kHz~80kHz)
EN55022	EN55022 Class A

2. Product application

2.1. Hardware structure

2.1.1. System structure

System hardware mainly composed following parts:

●The switch network controller uses high performance ASIC chip technology to provide layer 2 wire-speed forwarding of data packets.

●The fiber port use integrated optical transceiver module, stable performance.

●Industrial power supply with EMC and over-current/over-voltage protection.

●All data ports and copper port have the EMC protection.

2.1.2. Product configuration

The MIEN3024 rack-mount industrial Ethernet's chassis is the 19-inch 1U structure. The whole machine use six-side fully enclosed structure. The left and right side panels of the chassis are made of single-ribbed aluminum material which it is one part of whole cooling system. It abandon the traditional flow fan heat dissipation and reduce the power consumption of the whole machine but also improve the stability of the system at the same time.

MIEN3024, MIEN3024-4/8S/M and MIEN3026-2S/M the picture is as below.

Dimension size is as below:482.6x210x44mm

MIEN3024-12/16/24S/M picture as below, Dimension size is below series switch are:

482.6mm×315mm×44mm

The front Interface panel indication lights is as below:

The Interface indication lights function:

PWR1 PWR2	ALARM		RUN	LINK/ACT		10/100M	
Red on	Green off	Green flash	Green periodic flash	Green on	Green flash	Green on	Green off
Power normal	Both power supply	Single power supply	System working normal	Link connected	Data transmission	100M	10M

100M fiber connector

This switch has multi full duplex 100Base-FX single-mode or multi-mode fiber connectors, the connector has 3 types SC, ST, or FC to be chosen. The fiber connector is used in pairs, the TX is the transmitting port and the RX is the receiving port. TX port is the optical transmitting end which is connected to the optical receiving end RX of another remote switch optical interface; RX port is the optical receiving end which is connected to the optical transmitting TX of the same remote switch optical interface.

Below is the 100M fiber connector:

SC connector

ST connector

FC connector

Ethernet RJ45 connector

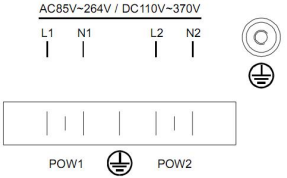
This switch series has multi 10Base-T/100Base-TX Ethernet RJ45 ports. Each port has adaptive function and support auto MDI/MDI-X connection. The switch use straight-through network cables/crossover network cables to connect to terminal devices, servers, hubs or other switches. Each port supports IEEE802.3x adaptive, so the most suitable transmission mode (half duplex or full duplex) and data rate (10Mbps or 100Mbps) can be automatically selected (the connected device must also support this feature). If the devices connected to these ports do not support auto-negotiation, the ports will send at the correct speed, but the transmission mode will default to half-duplex.

The Power supply input terminal block

This series of switches standard configuration uses 2 channels of AC220V redundant power supply, MIEN3024 and MIEN3024-4/8S/M, MIEN3026-2S/M wiring terminals use 7.62mm pitch terminals to connect 2 power inputs.

MIEN3024-12/16/24S/M terminal block uses 5.08mm pitch terminal to connect 2 power inputs. The power consumption of the whole series is less than 25W

The Power supply input terminal block picture as below:



This series rack mount industrial Ethernet switch power requirement is as below:

Voltage	Voltage range	Working temperature	Storage temperature	Humidity
24vdc	18-36vdc	-40°C~+85°C	-40°C~+85°C	5~95%
48vdc	36-72vdc	-40°C~+85°C	-40°C~+85°C	5~95%
220vac/dc	85-264vac 47-63hz or 110-370vdc	-40°C~+85°C	-40°C~+85°C	5~95%

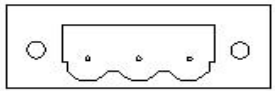
Notice:

The power supply specifications supported by this device are 24VDC, 48VDC, 220VAC/DC. Before connecting to the power supply, please confirm whether the power supply is consistent as required to avoid damage to the device

Alarm relay

The switch power-on and power-down alarm relay, the wiring terminal adopts 3 5.08mm pitch terminals, this relay is one normally open and one normally closed relay, as shown in the figure below. The one in the middle is the common terminal, the two terminals on the left are normally open relays, and the two on the right are normally closed relays. When the switch is powered on and working normally, the normally open relay is energized and closed, and the normally closed relay is disconnected. When the system is powered off or one of the redundant power supplies is power off, the normally open relay is powered off and the normally closed relay is closed. The recommended switching load capacity of the relay is 1A (24VDC), Check below

chart



Alarm relay description

	Power on	Power off	
Normally open relay	closure	disconnect	Power on alarm
Normally closed relay	Disconnect	closure	Power failure alarm Dual power failure alarm

2.2. Hardware Installation

2.2.1. Installation requirements

This series switch is single structure which can directly installed on 19 inch rack. Before installation, please confirm that there is a suitable working environment including power requirements, sufficient space, whether it is close to other network equipment which is going to be connected and whether other equipment is in place. Please confirm the following installation requirements.

●Power supply: product uses redundant AC220V power supply,for other power supply methods, please refer to the product label, the power supply label on the housing and related manuals

●Environmental requirements: Temperature -40 ℃ ~ 85 ℃, relative humidity 5 ~ 95% (no condensation).

●Grounding resistance requirement: <Ω5.

●According to the contract configuration requirements, check whether the optical cable is in place and whether the optical fiber connector is suitable.

●Avoid direct sunlight and be away from heat sources or areas with strong electromagnetic interference.

●Check for suitable cable and connectors.

Attention:

Before installing or connecting Ethernet switch please make ensure disconnect the power line. Calculate the maximum possible current in each power line and common line, and observe all electrical information to know the maximum current allowed by lines of different widths. If the current exceeds the maximum rated current, the wires will overheat and cause serious damage to the equipment.

Also need to pay attention to the following items at the same time.

Separate the paths of power lines and equipment lines. If the two paths must cross, make sure that these lines are vertical at the intersection. It is not allowed to lay signal wires or communication wires and power wires in the same pipe. To avoid interference, wires with different signal characteristics should be separated. We can use the type of signal transmitted in a line to determine which lines should be separated. It is strongly recommended to label all equipment lines in the system when necessary.

The switch must be connected to the protective ground:

Grounding and cabling can effectively suppress the noise caused by electromagnetic interference. Before connect the switch with equipment please connect GND first. Connected to the grounding screw from the ground surface.

2.2.2. The equipment installation

The installation dimensions of MIEN3024,MIEN3024-4/8S/M and MIEN3026-2S/M are in Figure 2-6 to Figure 2-10 as below:

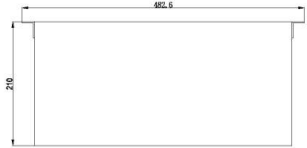


Figure 2-6 MIEN3024 and MIEN3026-2S/M upper cover schematic diagram

Figure 2-7 shows the schematic diagram of the rear panel of MIEN3024 (24 100M TX).

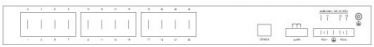


Figure 2-7 Schematic diagram of the rear panel of MIEN3024 (24 100M TX)

Figure 2-8 shows the schematic diagram of the rear panel of MIEN3024-4S/M (20 100M TX and 4 100M FX).

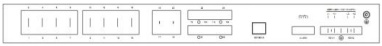


Figure 2-8 MIEN3024-4S/M (20 100M TX and 4 100M FX) rear panel diagram

Figure 2-9 shows the rear panel of MIEN3024-8S/M (16 100M TX and 8 100M FX).

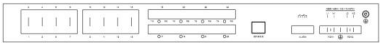


Figure 2-9 MIEN3024-8S/M (16 100M TX and 8 100M FX) rear panel diagram

Figure 2-10 shows a schematic diagram of the rear panel of MIEN3026-2S/M (24 100M TX and 2 100M FX).

Figure 2-10 MIEN3026-2S/M (24 100M FX and 2 100M TX) rear panel diagram

The installation dimensions of MIEN3024-12/16/24S/M are shown in Figure 2-11 to Figure 2-14.

Figure 2-11 MIEN3024-12/16/24S/M upper cover diagram

Figure 2-12 shows the rear panel of MIEN3024-12S/M (12 100M TX and 12 100M FX).

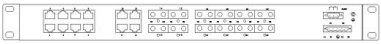


Figure 2-12 MIEN3024-12S/M (12 100M TX and 12 100M FX) rear panel diagram

Figure 2-13 shows the rear panel of MIEN3024-16S/M (8 100M TX and 16 100M FX).

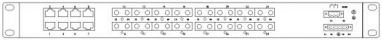


Figure 2-13 MIEN3024-16S/M (8 100M TX and 16 100M FX) rear panel diagram

Figure 2-14 shows the schematic diagram of the rear panel of MIEN3024-24S/M (24 100M FX).

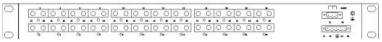


Figure 2-14 MIEN3026-24S/M (24 100M FX) rear panel schematic diagram

For most industrial applications, 19-inch rack installation is very convenient. The installation situation of the rack should be checked before installation. It mainly includes the following two contents:

- Sufficient space to install product
- suitable power introduction for the work of the product

2.2.3. Cable connection

After correct installation, you can install and connect the cables, mainly below following interfaces:

- Operation port

The terminal device interface provided by the industrial Ethernet switch is a 10Base-T/100Base-TX Ethernet RJ45 interface,use a straight-through network cable to connect to the terminal device, and a crossover network cable to connect to the network device.

- Power connection

The standard of the power on our product label could be connected after all the other cables are ready.

2.2.4. Fiber optic connection

This series of rack-mounted industrial Ethernet switches respectively provide multiple 100Base-TX single-mode or multi-mode optical fiber interfaces. The type of optical fiber interface can be selected from SC, FC or ST.

Attention：

This switch uses lasers to transmit signals on fiber optic cables. The laser meets the requirements of Class 1 laser products, and normal operation is harmless to eyes.However, when the equipment is powered on, do not look directly at the optical transmission port and the end face of the optical fiber terminator.

For modules with a transmission distance longer than 60km, do not use short optical fibers (below 20km) to connect, so as not to cause the optical saturation and overpower at the receiving end of the module to burn out.

The steps to connect the pluggable fiber optic module are as follows:

●Remove and keep the rubber boot of the SC, FC or ST port. When not in use, put on a rubber sleeve to protect the optical fiber terminator.

●Check whether the fiber optic terminator is clean. Slightly moisten a clean paper towel or cotton ball, and gently wipe the cable plug. Dirty fiber optic terminator will reduce the quality of optical transmission and affect port performance.

●Connect one end of the optical cable to the optical interface of the switch, and the other end to the optical interface of another device.

●• After the connection is completed, please check the corresponding LINK/ACT indicator of the optical port on the front panel of the switch. If the indicator is on, the connection is valid.

2.2.5. Cable Layout

The cable layout must meet the following conditions:

●Check whether the specifications, models and quantities of all cables are consistent with the construction drawing design and contract requirements before laying out the cables.

●Before laying the cable, check whether the cable is damaged, whether there are factory records and quality assurance certificates that prove its quality.

●The specifications, quantity, routing direction, and location of the cables to be laid should meet the design requirements of the construction drawing, and the wiring length of each cable should be determined according to the actual location

●The user cables and power cables are routed separately.

●There must be no broken wires or joints in the middle of the laid cables.

●Cables should be laid out neatly in the aisle, turn evenly, smooth and straight turns.

●The cable should be straight in the channel, and shall not go beyond the channel to block other wire inlets and outlets. The cable exits the channel or the cable turn should be tied and fixed.

●When cables, power cords, and ground wires are placed in the same slot, the cables, power cords, and ground wires cannot overlap or be mixed. When the cable is too long, the cable must be neatly placed in the middle of the cabling rack and cannot be placed on other cables.

●When laying pigtails, prevent the optical cable from knotting and minimize the turning points, and the turning radius should not be too small. The lashing should be moderately tight,It should not be too tight. When laying on the cable rack, it should be placed separately from other cables.

●Both ends of the cable should have corresponding marks, and the content of the marks should be concise and easy to maintain.

Attention:

When laying out pigtails, prevent the optical cable from kinking and minimize the turning point, and the turning radius should not be too small. If the turning radius is too small, it will cause serious loss of the link optical signal and affect the quality of communication.

2.3. Testing guide

2.3.1. System self-examination

All the service port indicators on the front panel will flash once when the device is powered on, which means that the port is working normally. After that, the corresponding power will be always on. The Run light (system running status indicator) will flash at intervals of 1s.

2.3.2. Copper port testing

As shown in Figure 2-15, power on the device, connect any two copper port to the network

ports of two test computers through a direct-connected network cable, and send Ping commands to each other. Both parties can correctly ping each other without packet loss. It indicates that the hardware of the tested two copper port is working normally.

Figure 2-15 Schematic diagram of copper port test

PING command examples:

The IP address of computer 1 is 192.168.0.10, and the IP address of computer 2 is 192.168.0.11. Make sure that the first item "Allow incoming echo requests" in the ICMP settings of the local connection of the firewall of the two machines is checked.The operation method is to open the windows protection in the advanced page of firewall settings, set the ICMP protocol, as shown in Figure 2-16 below

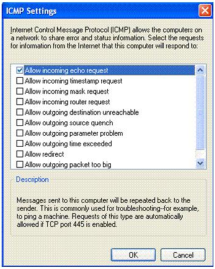


Figure 2-16 ICMP setting interface diagram

Then click Start→Run of Computer 1, and enter cmd or command (cmd for Win2000/XP system, WIN98/95 the system uses the command) command to pop up the console window and send ping 192.168.0.11 -l 1000 -t, (-l refers to the word for sending data packets the number of sections, -t means sending data continuously), run ping 192.168.0.10 -l 1000 -t in the computer 2 in the same way. If computer 1 returns Reply from 192.168.0.11: bytes=1000 time<10ms TTL=128, computer 2 returns reply from192.168.0.10: bytes=1000 time<10ms TTL=128, after running for more than 10 minutes, use the CTL+C command to calculate the packet loss rate as 0,the device is working properly. As shown in Figure 2-17 below.

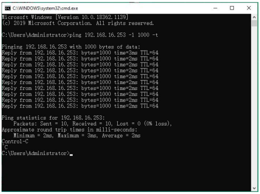


Figure 2-17 The result of testing inputting ping computer in CMD

2.3.3. Fiber port testing

Combine the two devices into a fiber optic chain network as shown in Figure 2-18. Any fiber port of each device is connected to the test computer through a direct-connected network cable and sends PING commands to each other. Both parties can correctly PING to each other without packet loss . At the same time, the LINK/ACT lamp corresponding to the fiber port should be on, it indicates that the two fiber port under test are working normally. Use the same method to test another fiber port.

Figure 2-18 Schematic diagram of FX test

3. Maintain and Service

The switch has 5 years' guarantee according to the product specifications of Maiwe. We will maintain or replace the product for free if has any problem during the guarantee.However, the above commitment does not cover damage caused by improper use, accidents, natural disasters, incorrect operation or incorrect installation.

To ensure the customer's benefit, we also provide some methods to help the customer and solve their problem as followings:

Service on line

Call technical support office

Maintain or replace

3.1. On-line service

In our website,you can get more useful product information and usage methods in the part of technical support.

3.2. Call for technical support service

when you have any problem, please contact our technical support department at any time.Our engineer will give you reply and solve your problem at first time.

3.3. Warranty Policy

As for product maintenance, replacement or return, you should first confirm with the technical staff and then contact the sales and get the problem resolved. The above should be handled in accordance with the processing procedures of Wuhan Maiwe Communication Co., Ltd.

4. Appendix

Selection guide:

100M fiber port single-mode/multi-mode optional, connector SC/ST/FC optional

Model	100M Base-FX	10/100M Base-TX
MIEN3024	0	24
MIEN3026-2S/M	2	24
MIEN3024-4S/M	4	20
MIEN3024-8S/M	8	16
MIEN3024-12S/M	12	12
MIEN3024-16S/M	16	8
MIEN3024-24S/M	24	0

Our company has the right to change the product model without notifying the user. For the latest information, please consult our company's market or technical support staff.

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