

MIEN2216/18/20&MIEN6216/18/20

Industrial Ethernet Switch

User Manual

(Edition: V2.0)

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.

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.

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1. Product Overview

1.1. Product Introduction

Wuhan Maiwe Communication Co.,Ltd network management type 100M industrial switch, is an industrial Ethernet switch designed and developed for industrial high-speed communication network applications. This managed switch provides a high-end industrial Ethernet communication solution for flexible industrial applications, making industrial communication smoother, more reliable and faster, meeting the needs of customers for innovative applications for value-added applications.

Wuhan Maiwe Communication Co.,Ltd network management series switches can be used for simple application in plug-and-play mode, and can also be used in complex network management applications to meet the needs of users. All electrical ports support auto-negotiation, 10/100Mbps full-duplex and half-duplex, flow control, Auto-MDI/ MDI-X and more. Through the web network management or SNMP network management, the switches provide advanced management functions such as Mwring, virtual LAN, trunk, quality of service, IGMP snooping, rate control, port mirroring, static MAC address forwarding table, and diagnostic functions. A series of common advanced management functions such as Email/Relay fault alarm and firmware online upgrade. Wuhan Maiwe Communication Co.,Ltd network management series switches provide redundant power supply support, which can provide a wide range of DC or AC power input at the same time. In terms of structural installation, Wuhan Maiwe Communication Co.,Ltd is a compact switch that takes up less space and is installed with a rail.

Mwring technology is designed and developed by Wuhan Maiwe Communication Co.,Ltd for industrial applications. It provides self-recovery function after the Ethernet communication link is disconnected, and its recovery time is less than 20 milliseconds. Maiwe network management series switches can use ordinary 100 Mbps ports to provide faster recovery rate and communication bandwidth. Mwring technology provides an Ethernet network for link redundancy backup.

MIEN6216/18/20 series network management type 100M industrial Ethernet switches have 16 10/100Base-Tx ports and 0/2/4 100Base-FX single mode/multimode fiber interfaces. This product supports 802.1Q VLANs and supports port speed limit of 64K in steps. The backplane bandwidth is 8.8G and supports MAC address tables of 8K entries.

1.2. Performance Characteristic

1.2.1. High performance industrial Ethernet switch

- Link redundancy self-recovery technology based on Mwring technology
- Embedded web server for remote management and configuration via browser

- Trunk port aggregation
- Real-time broadcast storm monitoring control
- Online firmware update
- Dynamic IGMP Snooping support to filter multicast traffic
- Optional 100Base-FX different transmission distances, different types of fiber interfaces

- Storage and forwarding mechanism, backplane bandwidth is 8.8Gbps
- 100M electrical port 10/100M adaptive, full / half duplex, MDI / MDIX adaptive mode

- Full-duplex flow control and half-duplex back pressure flow control
- Port VLAN and IEEE 802.1Q VLAN
- Support QoS, IEEE802.1P and ToS/ Diff Serve to improve communication quality

- Support different levels of network management in SNMP V1/V2C
- Redundant dual power input for high reliability
- Meet the requirements of trouble-free operation under strong electromagnetic interference environment
- Support RMON and private MIB, effective remote data monitoring and forecasting capabilities

1.2.2. Industrial grade power supply design

Provides industrial-grade power supply with wide input range, which is convenient for customers to choose flexibly.

Support dual DC12~48V power input

Support dual DC48V (36~72V) power input

Support single standard AD220V (AC85~264V/DC110~370V) power input

1.2.3. Robust shell design

Aluminum chassis heat dissipation surface design, no fan and efficient heat dissipation, can make the system reliable work in the environment of -40~+85°C.

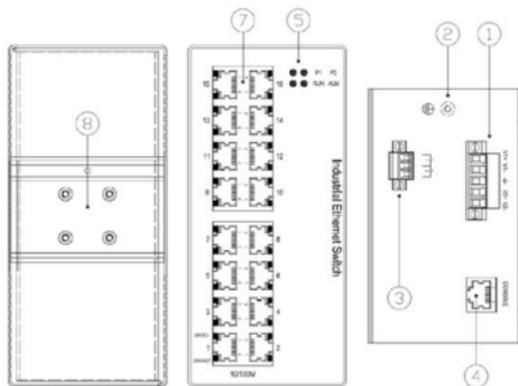
High-strength enclosed aluminum enclosure with IP40 protection level enables the system to work reliably in harsh and dangerous industrial environments.

1.2.4. Packing list

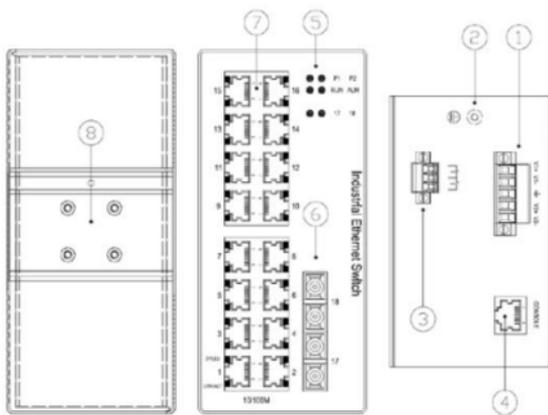
Item	QTY
Industrial Ethernet switch	1
User manual	1
CD	1
Console port line(DB9 to RJ45)	1
Certificate card	1

2. Interface Description

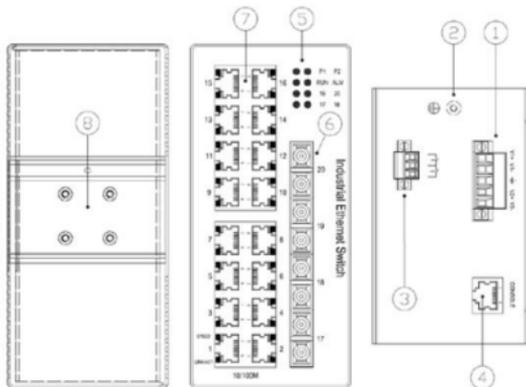
Model: MIEN2216, MIEN6216. Note: MIEN2216 does not contain CONSOLE port



Model: MIEN2218-2F, MIEN6218-2F. Note: MIEN2216-2F does not contain CONSOLE port



Model: MIEN2220-4F, MIEN6220-4F. Note: MIEN2220-4F does not contain CONSOLE port



1. P1/P2 power input
2. Grounded
3. Relay output terminal
4. CONSOLE port
5. Device status indicator
6. 100M single-mode/multi-mode fiber port
7. 10/100/1000Base-T copper port
8. DIN-Rail deck

1. Power interface

The upper panel of this series of switches provides 5-position power input terminal blocks, supports DC input, and its input supports redundant power input function. It provides two pairs of input terminals P1 and P2, which can be used individually or externally with two independent DC power supply systems. Use two pairs of terminals to introduce equipment at the same time. When any set of power system fails, the equipment can operate normally without interruption, which improves the reliability of network operation.

Support dual DC12~48V power input

Support dual DC48V (36~72V) power input

Support single standard AD220V (AC85~264V/DC110~370V) power input

Power input terminal pin definition and description table

Number	Pin definition	Illustrate
1	Power supply 1 input V1 AC-L/positive (DC)	
2	Power supply 1 input V1 (- AC-N)/negative (DC)	
3	Ground	
4	Power supply 2 input V2+/positive (DC)	
5	Power supply 2 input V2-/negative(DC)	

Switch power requirements table

Power	Power Range	Operating temperature	Storage temperature	Humidity
DC12-48V	12-48VDC	-40°C~+85°C	-40°C~+85°C	5~95%
DC48V	36-72VDC	-40°C~+85°C	-40°C~+85°C	5~95%
AD220	85~264VAC 47-63Hz or 110~370VDC	-40°C~+85°C	-40°C~+85°C	5~95%

important hint:**Power-on operation:**

first connect the power cord to the power connector of the device according to the definition shown in the figure above wire terminal, then power on;

Power-off operation: first unplug the power plug, then remove the power cord, please pay attention to the above sequence of operations.

2. Grounded

The industrial Ethernet switch has a ground screw, connect one end of the ground wire to the cold press

After the terminal is crimped, fix it to the grounding hole of the chassis with a grounding screw. The other end of the ground wire can be rely on the ground to access the earth. The cross section of the grounding wire is not less than 2.5mm²

3. Relay interface

The wiring terminal adopts 3-position 3.81mm pitch terminal. This relay is normally open and

One normally closed relay, the one in the middle is the common terminal, and the two terminals on the left are the normally open relay. For electrical

appliances, the two digits on the right are normally closed relays. When the switch is working normally, always open the relay.

The device is energized and closed, and the normally closed relay is disconnected. When the system is powered off, the normally open relay is powered off.

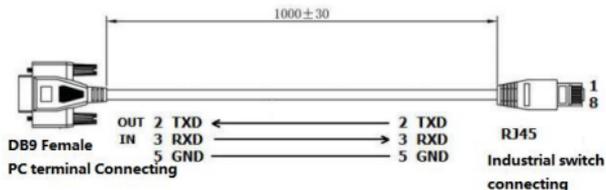
Normally closed relay is closed. The recommended switching load capacity of the relay is 1A (24VDC).

Relay output terminal pin definition and description table

Number	Pin definition	Illustrate
1	Alarm relay output normally open	
2	Alarm relay output common terminal	
3	Alarm relay output normally closed	

4. Console port

The network management port is an RJ45 interface, as shown in the figure below. Please use the serial port extension cable provided by our company to connect to the PC's serial port. The interface communication standard is 3-wire RS-232.



5. Indicator lights

System status indicator description		
LED	Indicate	status description
P1	On	Power supply 1 connection is operating normally
	Off	Power supply 1 is not connected or operating abnormally
P2	On	Power supply 2 connection is operating normally (AC none)
	Off	Power supply 2 is not connected or operating abnormally(AC None)
ALM	On	Power alarm
	Off	No power alarm

RUN	On	Equipment operate normal
	Off	Equipment abnormal
LINK/ACT	On	Port has established a valid network connection
	Blinking	The port is in network communication state
	Off	The port has not established a valid network connection
SPEED	On	Indicates the maximum rate
	Off	No connection or not reaching the maximum rate

6. 100M fiber port interface

This series of products have 0/2/4 100Base-FX full-duplex single-mode or multi-mode fiber ports, and the interface format can be SC, ST or FC. Fiber ports need to be used in pairs (TX and RX are a pair), TX port is the optical transmitter, which is connected to the optical port of another remote switch.

Receiving end RX; RX port is the optical receiving end, which is connected to the optical transmitting end TX of the optical interface of another remote switch. Two pairs of redundant 100Base-FX optical fiber interfaces can be used to form an optical fiber redundant ring network. When the system fails, the ring network redundancy switching time is less than 20ms, which can effectively improve the reliability of network operation.

The 100M optical interfaces mainly include: SC, ST, FC.



SC



ST

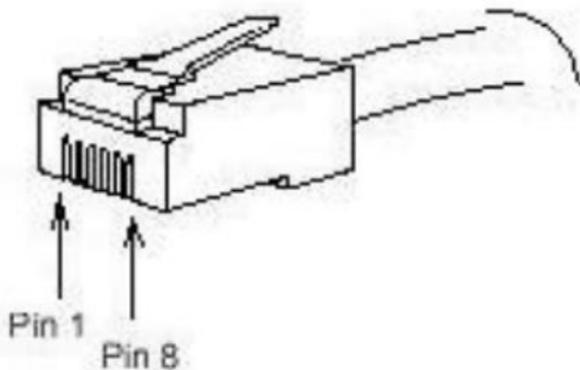


FC

7. Ethernet RJ45 port

This product has multiple RJ45 10Base-T/100Base-TX Ethernet ports. Each RJ45 port with auto-negotiation, auto MDI / MDI-X connection. Internet can be used straight line / cross-over cable to connect the switch to terminal equipment, servers, hubs or other switches. Each port supports IEEE802.3x adaptive, so the optimum transmission mode (half or full duplex) and data rate (10Mbps or 100Mbps) can be automatically selected (the connected devices must also support this feature). If the device is connected to these ports do not

support adaptive, then the port will send the correct speed, but will default to half duplex transmission mode.

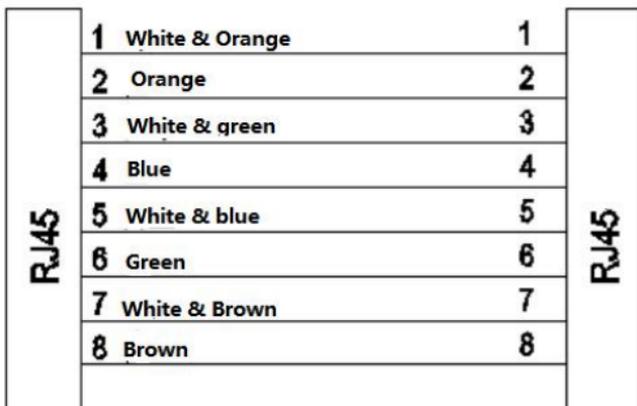


All RJ45 ports support the MDI/MDIX self-identification function of the cable.

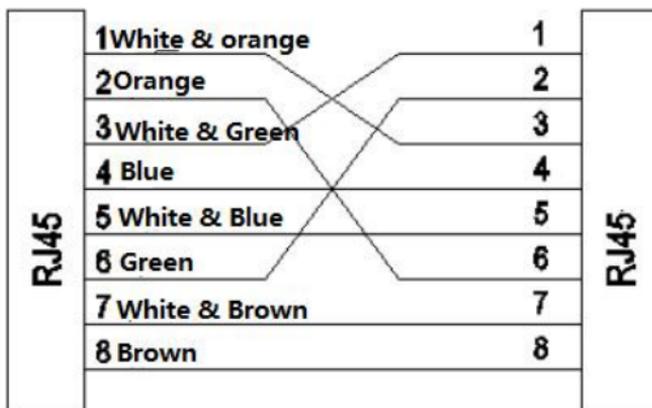
so when the switch is interconnected with other Ethernet terminals, either a Category 5 direct connection cable or a Category 5 crossover network cable can be used, which facilitates our practical cable selection.

Pin number	MDI-X signal name	MDI signal name
1	Receive data+ (RD+)	Send data+ (TD+)
2	Receive data- (RD-)	Send data-(TD-)
3	Send data+ (TD+)	Receive data+ (RD+)
6	Send data-(TD-)	Receive data- (RD-)
4.5.7.8	Unused	Unused

The RJ45 port connection is shown in the figure below. The 100M direct connection crossover cable is compatible with Gigabit.



Five types of crossover cable wiring method



Note: The color definition of the cable in the picture refers to the EIA/TIA568B specification

3. Hardware Installation

3.1. Installation Requirement

The Industrial Ethernet switch is used standard 35mm DIN-Rail install. Please make sure a suitable work environment, including power requirements, enough space, connect equipment and other equipment status. Please confirm the following installation requirements:

- Power supply: Standard redundant DC12BV ~DC36V power supply, other kind of power supply, please customer order.
- Environmental requirements: Temperature -40 °C ~ 85 °C, relative humidity 0 ~ 95% (no condensation).
- Grounding resistance requirement: $< .\Omega 5$
- Configuration requirements under the contract, check the cable is in place, fiber optic connectors is appropriate.
- Avoid direct sunlight and away from heat sources or areas with strong electromagnetic interference.
- Standard 35mm DIN-rail installation. Check for suitable cables and connectors.

Attention :

- Before installing or connecting Ethernet switch please make ensure that disconnect the power line. Do not exceed Max. current. If exceeds the maximum current, make the wire overheat, causing serious damage to the equipment.
- Separate the power cable and other cables, if the two paths must cross, must ensure that the intersection of these lines are vertical.
- 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

3.2. Switch Installation

3.2.1. Din-rail installation

When taking out the device from the packing box, the connecting seat of the DIN rail should be fixed on the back of the switch. If the switch needs to be installed on the DIN rail, the installation of the DIN rail should be checked before installation. Mainly include the following two contents.

Main including 2 terms :

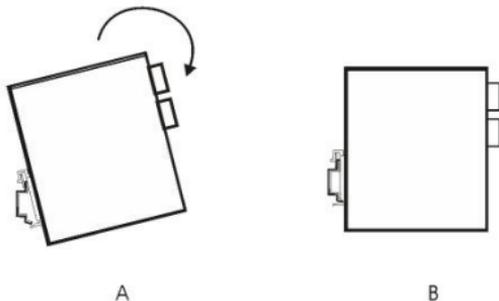
- Checking DIN-Rail is fixed firm, DIN-rail is installed on other equipment,

whether there is enough space .

- Checking DIN-Rail whether suitable for power input.

Please selected the correct position. As below behind picture shows:
Insert DIN-Rail into DIN-Rail slot and as schematics 2-1 shows turning equipment.

As schematics 2-1 shows, insert DIN-rail into DIN-Rail slot and confirm the switch reliable equipment installed on the DIN-rail.



3.2.2. Cable connection

After the correct installation, the cable can be installed and connected, mainly including the following interfaces cable connection.

Copper port

The 100M copper port of the terminal equipment provided by this product is a 10Base-T/100Base-TX Ethernet RJ45 interface. Using a straight-through network cable to connect to the terminal device, and a crossover network cable to connect to the network device.

Connecting the network management port

The CONSOLE port of this product can be connected to the serial port of the control computer.

Connect power

When all other cables are connected, you can connect to the power supply of the product identification specification.

3.2.3. Fiber connection

The Gigabit optical port of this product is a 1000Base-LX full-duplex single-mode/multi-mode fiber connection port, using SFP hot-swappable components, optical fiber interface using LC interface.

Attention :

This switch uses lasers to transmit signals over fiber cable. Laser Class 1 laser/LED products can cause serious damage on the eyes harmless. When the equipment is power on, please do not stare directly into the laser beam.

Connection fiber cable , please use following steps:

- When use fiber cable port, remove SC/FC/ST port cover; When it finish work, please put the plastic cover to protect the fiber optic head, keep clean.
- Check the fiber optic cable head whether it clean or not. If it not clean, will effect port and communication quality.
- One fiber optic head connect with Ethernet switch optic port, the other fiber head connect with another equipment fiber optic interface equipment.
- After connection, please check switch the front interface's LNK/ACT LED lights. If lights on, connection is available.

3.2.4. Cable layout

- Laying of cable should as following conditions:

Before laying cable please checking if it is suitable for project.

- Before laying cable laying please checking quantity, route to, location an other related , construction design whether suitable. Separate users cable and power supply cables.

- Please check the cable do not broken or other connector.

●Fiber optic cable should be straight in the aisles neatly inside, turning uniform, smooth and straight.

- cable in the channel, it should be straight, not close to channel, blocking the other inlet and outlet holes in the cable channel out of the corner site or cable should be binding and fixed.

- Do not mix cable, power cable, GND cable. Do not overlap.

●If cable is too long, it must be structured cable support rail site on the middle, do not pressure the cable.

- It is necessary to prevent the cable too tie and turns should be minimized, turning radius should be suitable. Banding should be appropriately tight, not too tight.

- Cable should be the appropriate identity, easy to maintain.

Attention:

Laying cable, it is necessary to prevent the cable tie and turns should be minimized, and the turning radius is not too small, the turning radius is too small will lead to a serious loss of optical signal link. The quality of communication.

4. Appendix

4.1. Technical Parameter

EMC standards:

IEC61000-4-2 Anti-static (ESD): ± 8 kV contact discharge, ± 15 kV air discharge

IEC61000-4-3 electromagnetic field (RS): 10V/m (80-1000MHz)

IEC61000-4-4 Electrical Fast Transient (EFT): Power port-- ± 4 kV, data Port-- ± 2 kV

IEC61000-4-5 Surge: ± 2 kV (differential mode), ± 4 kV (common mode)

IEC61000-4-6 Radio Frequency Conduction (CS): 3 V (10kHz~150 kHz), 10V

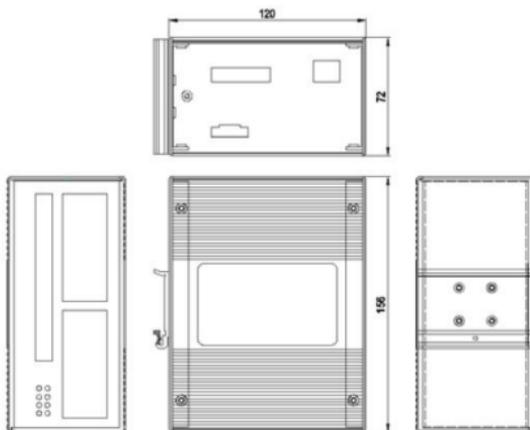
(150kHz~80 MHz)

IEC61000-4-8 Power frequency magnetic field: 100A/m

IEC61000-4-10 Damped oscillating magnetic field: 10A/m

EN55022: EN55022 Class A.

Structure size



Product parameters and selection

Model	Electrical characteristics		Environmental parameters		
	Input Power	Maximum power	Operating temperature	Storage temperature	Humidity
MIEN2216	DC12-48V DC48V AD220	7W	-40°C~+85°C	-40°C~+85°C	5~95%
MIEN2218-2S /2M	DC12-48V DC48V AD220	8W	-40°C~+85°C	-40°C~+85°C	5~95%
MIEN2220-4 S/4M	DC12-48V DC48V AD220	8W	-40°C~+85°C	-40°C~+85°C	5~95%
MIEN6216	DC12-48V DC48V AD220	8W	-40°C~+85°C	-40°C~+85°C	5~95%
MIEN6218-2S /2M	DC12-48V DC48V AD220	9W	-40°C~+85°C	-40°C~+85°C	5~95%
MIEN6220-4S /4M	DC12-48V DC48V AD220	10W	-40°C~+85°C	-40°C~+85°C	5~95%

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