MIGE3028-4GF Serial

Rack Mounted Industrial Ethernet Switch

User Manual
(Edition: V1.0)

Wuhan Maiwe Communication Co., Ltd.

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Revision history:

Version	Date	Reason
V1.0	2016.1	Document creation

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. System Overview

1.1. Product Introduction

MIGE3028-4GF series rack industrial Ethernet switches manufactured by Wuhan Maiwei Photoelectric Technology Co., Ltd. are designed and developed for industrial high-speed communication network applications. This series of switches is used for simple application in plug-and-play mode. All electrical ports support auto-negotiation, 10/100Mbps full-duplex and half-duplex, and Auto-MDI/MDI-X.

This series of switches provides four hot-swap SFP Gigabit optical/electrical interfaces for external SFP Gigabit optical modules or electrical modules. The backplane bandwidth of the switch is 12.8Gbps, and both support 8K MAC address tables.

1.2. Characteristic

1.2.1. Industrial Network Performance

- Real-time broadcast storm suppression
- Redundant dual power input, power failure alarm to meet high availability requirements
- Storage and forwarding mechanism, the switch backplane bandwidth is 12.8Gbps
- 10/100M Tx port, full / half duplex, Auto-MDI/MDI-X adaptive working mode
- 100M Fx port is forced to 100M full-duplex working mode
- Gigabit port is forced to 1000M full-duplex working mode
- Full-duplex flow control and half-duplex back pressure flow control
- Can work without failure in a strong electromagnetic interference environment

1.2.2. Industrial Application Design

- Rack mount
- Industrial grade redundant dual power input design
- Relay power failure alarm
- Port changeover connection for quick recovery
- 100M Fx port can be equipped with 100Base-FX different transmission distances, different types of optical interfaces
- Supports 4 hot-swap Gigabit SFP interfaces, which can be connected to Gigabit optical modules or electrical modules

1.3. Packing List

The package list of the switch of Wuhan Maiwe Communication Co.,Ltd. is shown in Table 1-1 below. If any of the listed items is lost or destroyed, please contact the agent or the customer service center of Wuhan Maiwe Communication Co.,Ltd. to help you replace or make up.

Table 1-1 Switch product packaging list

Item	Quantity
Switch	1
User manual	1

1.4. Performance Specification

The performance specifications of the MIGE3028-4GF series rack industrial Ethernet switches are as follows.

Technical indicators:

IEEE standards: 802.3, 802.3u, 802.3x

Exchange mode: store and forward

Switch bandwidth: 12.8Gbps

Flow control: full-duplex flow control, half-duplex back pressure control

MAC address: 8K

Transmission distance: twisted pair 100m, fiber 1000Mbps single mode optical module distance up to 10km, 100Mbps distance varies according to optical module, generally 20km, 40km, 60km

Storm suppression: real-time broadcast storm suppression

Diagnostic function: relay power failure alarm

EMC standard:

EN61000-4-2 anti-static (ESD): ±8kV contact discharge, ±15kV air discharge

EN61000-4-3 electromagnetic field: 10V/m (80-1000MHz)

EN61000-4-6 anti-conduction: 3V (10kHz~150 kHz), 10V (150kHz~80 MHz)

EN55022: EN55022 Class A

2. Hardware Installation and Networking

2.1. Hardware Structure

2.1.1. System Structure

The system hardware is mainly composed of the following parts:

● Switched network controller uses high-performance ASIC chip technology to provide Layer 2 wire-speed forwarding of data packets

● Fiber interface adopts optical transceiver module for stable performance

● Power supply uses industrial grade power supply with over-current, over-voltage and EMC protection

● All data ports are EMC protected

2.1.2. Machine Structure

The chassis of this series is a 19-inch 1U rack structure. The whole machine adopts a six-sided fully enclosed structure. The left and right side panels of the chassis are made of single-ribbed aluminum profiles and are part of the overall cooling system. Abandoning the traditional heat sink cooling form, reducing the power consumption of the whole machine and improving the stability of the system.

The outline of the MIGE3028 series is shown in Figure 2-1: 482.6*44*210mm (width × height × depth).
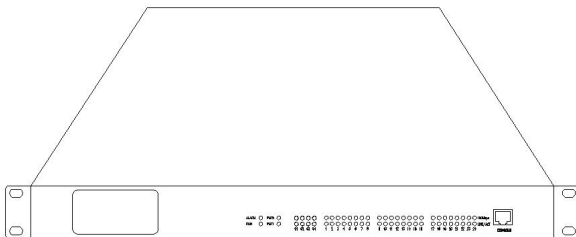

Figure 2-1 Diagram of the MIGE3028 chassis

The front panel indicators of this series of switches indicate the current working status of the switch. The details are shown in Table 2-1 below.

Table 2-1 Description of the indicators on the front panel

PWR1 PWR2	ALARM	RUN		Link/Act		10/100M		Speed	
Red light on	Green light off	Green light cycle blink	Green light cycle blink	Green light on	Green light blink	Green light on	Green light off	Green light on	Green light off
Normal power	No alarm	Alarm	The system is working properly	Link establishment	Data transmission	100M	10M	1000M link establishment	No gigabit or only 100M or 10M

The description of the indicators on the network port is shown in Table 2-2.

Table 2-2 Description of the indicators on the network port

100M RJ45 port					100M Fx port			Gigabit Fx port				
Yellow light		Green light			Green light			Yellow light		Green light		
On	Off	On	Blink	Off	On	Blink	Off	On	Off	On	Blink	Off
100M connection	No connection or 10M access	Port connection	Port has network activity	No connection on the port	Port connection	Port has network activity	No connection on the port	1000M connection	No connection or 10/100M access	Port connection	Port has network activity	No connection

100M optical interface

　　The 100M optical port can be divided into single mode or multi-mode fiber interface, and the connector can be SC, ST or FC. The fiber interface needs to be used in pairs (TX and RX are a pair), the TX port is the optical transmitter, and the optical transceiver RX of the optical interface of another remote switch is connected; the RX port is the optical transceiver, and the same optical interface is connected to the same remote switch. The light ends TX.

The 100M optical interfaces mainly include: SC, ST, and FC, as shown in Figure 2-2.

SC interface   ST interface   FC interface

Figure 2-2 Schematic diagram of a 100 Mbps optical interface

Ethernet RJ45 port

Each RJ45 port has an adaptive function that supports automatic MDI/MDI-X connections. You can connect the switch to a terminal device, server, hub, or other switch using a straight-through cable/crossover cable. Each port supports IEEE802.3x auto-sensing, so the most appropriate 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-sensing, the port will force itself to work at the same rate as the other party, avoiding full/half duplex mismatch, the transfer mode will default to half-duplex, and flow control will be automatically disabled. Gigabit Tx ports can support up to 1000Mbps.

SFP Gigabit Fx/Tx interface port

This product has four redundant 1000Base-LX full-duplex single-mode/multi-mode Fx interfaces or 1000Base Tx interface port; optical/electrical devices use SFP hot-swap devices; fiber interfaces use LC interfaces, Gigabit Tx port uses the RJ45 interface. The fiber interface needs to be used in pairs (TX and RX as a pair).

the TX port is the optical transmitter, and the optical transceiver RX of the optical interface of another remote switch is connected; the RX port is the optical transceiver, and the same optical interface is connected to the same remote switch. The light ends TX.

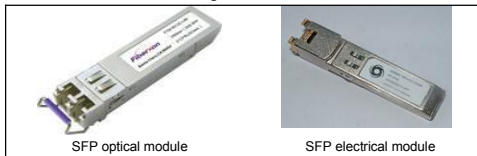The SFP device is shown in Figure 2-3.

SFP optical module   SFP electrical module

FIG 2-3 SFP hot plug device

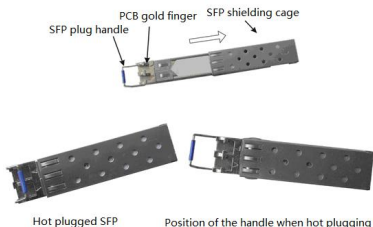SFP modules hot Swap step showed as fig 2-4.

Figure 2–4 SFP module hot swap

●Hot plugging steps:

Take the end of the PCB cheat.

The gold finger end is turned back to the PCB board and inserted into the metal shielding cage of the SFP. When the sound of the cymbal is heard, the device has been inserted into the position, and then the SFP is inserted and pulled, and placed in the normal position parallel to the interface.

●Hot extraction step:

First, the SFP plug handle is pulled down and perpendicular to the interface. At this time, the optical device should be disconnected from the hook of the SPF shielding cage.

The SFP module is pulled parallel.

Power input terminal

This series switches use standard dual AC220V power, with 5.08mm pitch power input terminal connected, as shown in FIG.2-5.Input voltage range:AC85~265V(frequency:47~63Hz) orDC110~370V.The power consumption of the whole machine is less than 40W.
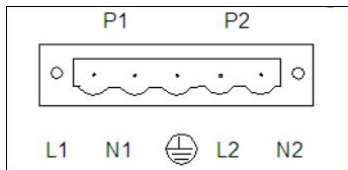

Figure2 -5Power input terminal schematic

The power requirements are shown in Table2- 3

Table2- 3 Switch power requirement table

Voltage	Voltage range	Operating temperature	Storage temperature	Humidity
12VDC	9~18VDC	-40°C ~+85°C	-4°C ~+85°C	5~95%
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	85~265VAC 47-63Hz or 110~370VDC	-40°C~+85°C	-40°C~+85°C	5~95%

Attention:

> The power specifications supported by this device are 12VDC,24VDC,48VDC, 220VAC/DC. Before connecting with the power supply, please confirm whether the power supply is consistent with the power supply requirements identified by the device to avoid damage to the device.

Alarm relay

This series of switches has a power failure alarm relay, and its terminal block uses a 3-bit 5.08mm pitch terminal. As shown in Figure 2-6. The relay adopts one normally open terminal and one normally closed terminal, one of the middle is a common terminal, the left two bits are normally open terminals, and the two right sides are normally closed terminals. When the switch works normally, the normally open terminal is in an open state and the normally closed terminal is in a closed state. When any one of the power supplies fails, the normally open state is the closed state, and the normally closed terminal is the open circuit state. The relay recommended switch load capacity is 1A (24VDC).
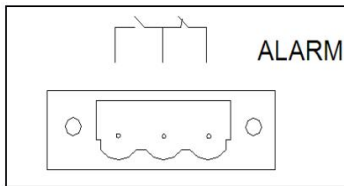
Figure 2-6

2.2. Hardware Installation

2.2.1. Installation Requirements

This series of industrial Ethernet switches is a single unit that can be mounted directly into a 19-inch rack.Before installing, first confirm that there is a suitable working environment, including power requirements, sufficient space, whether it is close to other network devices and other devices to be connected. Please confirm the following installation requirements:

Power requirements:AC220V standard product using a redundant electrical power supply,the other power supply Please refer to product labels, labels on the supply housing and associated instructions.

Environmental requirements: temperature-40°C~+85°C, relative humidity5~95%(no condensation).

Grounding resistance requirements:<5Ω;

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

Avoid direct sunlight, away from sources of heat or areas with strong electromagnetic interference.

Standard products are mounted in a 19-inch rack.Check for cables and connectors required for installation.

Attention

> Be sure to disconnect the power cord before installing or connecting an Ethernet switch.Calculate the maximum possible current in each power line and the common line, and observe all electrical information to know the maximum current allowed by the lines of different widths.If the current exceeds the maximum rated current, the wire will overheat and cause serious damage to the equipment.
> At the same time, you must also pay attention to the following:

Separate the path between the power cord and the device line. If the two paths must intersect, make sure that the lines are perpendicular at the intersection.Signal lines or communication lines and power lines cannot be laid in the same pipe. To avoid interference, lines 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.The rule of thumb is that wires with the same electrical characteristics can be bundled together.Separate the input and output lines.It is highly recommended that all equipment lines in the system be labeled when necessary.

The switch should be connected to the protection ground:

Grounding and wiring can effectively suppress the effects of noise caused by electromagnetic interference.A ground connection should be made before connecting the device, from the ground screw to the grounded surface.

2.2.2. Host Installation
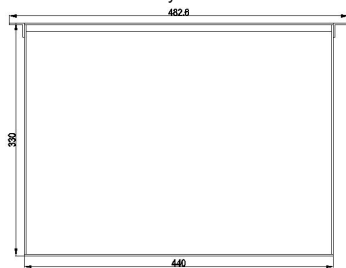
Switch as a whole is schematically shown in FIG2-7.

FIG 2-7 The top side of the machine

MIGE3028-4GF series of schematic front panel shown in FIG.2-8.

FIG2-8MIGE3028-4GF series switch front panel

MIGE3028-4GF -24Trear panel2-9 is schematically shown in FIG.

FIG2-9 MIGE3028 -4GF -24T schematic front panel switch

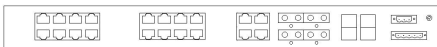Figure2-10 shows the rear panel of the MIGE3028-4GF-4S/M-20T.

Figure2-10 MIGE3028-4GF-4S/M-20T switch front panel

MIGE3028-4GF-8S / M-16T is a schematic view of the rear panel shown in FIG2-11.

Figure2-11 MIGE3028-4GF-8S/M-16T switch front panel

MIGE3028-4GF -12S/ M-12T is a schematic view of the rear panel shown in FIG 2-12.

Figure2-12 MIGE3028-4GF-12S/M-12T switch front panel

MIGE3028-4GF-16S / M-8T is a schematic view of the rear panel shown in FIG.2-13.

Figure2-13 MIGE3028-4GF-16S/M-8T switch front panel

MIGE3028-4GF-24S rear panel/M schematic shown in FIG 2-14.
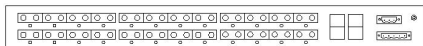

Figure 2-14 MIGE3028-4GF-24S/M switch front panel

For most industrial applications,19-inch rack mounting is very convenient for them.Before installation you should check the installation of the rack,including the following two elements:

If there is enough room to install this product?

If there is a power supply suitable for the work of this product?

When installing, first determine the installation position of the product, align the hole on the rack with the mounting hole of the switch,and then fix it with screws. The recommended size is M5×14.

2.2.3. Cable Connection

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

Working interface

The 100M Tx port is 10Base-T / 100Base-TX Ethernet RJ45 interfaces,Gigabit Tx port is 10/100/ 1000 Base-TX SFP electrical interface.Connect to the terminal device using a straight-through cable and connect to the network device using a crossover cable.

Connect the power supply

Once all other cables have been connected, the power supply for the product identification specification can be connected.

2.2.4. Fiber Optic Connection

This product provides 100Base-TX single-mode or multi-mode fiber interface.The type of 100M optical interface can be selected as SC, FC or ST.Alsoavailable 4 A redundant 1000M hot-plug SFP optical interface,the type of Gigabit fiber interface can be selected according to the requirements of LC.

Attention

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

The steps to connect a pluggable fiber module are as follows:

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

Check whether the fiber terminator is clean.If not, please wipe the clean paper towel or cotton ball slightly and gently wipe the cable plug.A dirty fiber optic terminator will degrade the quality of the optical transmission and affect port performance.

Connect one end of the cable to the fiber interface of the switch and the other end to the fiber interface of the other device.

After the connection is complete, check the optical port LINK/ACT indicator on the front panel of the switch. If the indicator is on, the connection is valid.

2.2.5. Laying Cable

Cables should be laid out in the following conditions:

Before the cable is laid, check the specifications, model and quantity of all cables in accordance with the construction drawing design and contract requirements.

Before the cable is laid, check whether the cable is damaged, whether there is a certificate such as the factory record and quality assurance to prove

its quality.

The specifications, quantity, routing direction, and placement position of the required cables should conform to the construction drawing design requirements. The wiring length of each cable should be determined according to the actual location.

The user cable is placed separately from the power cable.

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

The cable should be straight and tidy in the aisle, and the turn should be even, smooth and straight.

The cable should be straight in the channel, and should not be out of the channel, blocking other access holes, and should be tied and fixed at the cable exit channel or cable bend.

When the cable, power cable, and ground cable are placed in the same slot, the cable, power cable, and ground cable cannot overlap and mix.When the cable is too long, the cable grounding plate must be placed in the middle of the cable tray and cannot be pressed on other cables.

When the tail fiber is laid, it is necessary to prevent the cable from being knotted and the turning point should be minimized, and the turning radius should not be too small.The lashing should be tight and not too tight.When laying on the cable rack, it should be placed separately from other cables.

The two ends of the cable should have corresponding identifiers. The content of the identification is concise and easy to maintain.

Attention

> When laying the pigtail, it is necessary to prevent the cable from being knotted and the turning point should be minimized, and the turning radius should not be too small. If the turning radius is too small, the link optical signal will be seriously depleted.Affect the quality of communication.

2.3. Simple Test

2.3.1. System Self-test

When the device is powered on, all service port indicators on the front panel will flash once, indicating that the port is working properly.After that, the corresponding Power will be always on, and the Run light (system running status indicator) will flash periodically at intervals of 1s.

2.3.2. Tx Port Test

As shown in FIGS.2-15,the device is working with power supply, arbitrary ports are connected by two network port electrically straight-through cable and two test computers, sending Ping command to each other,both sides can

correctly Ping to each other without loss .Description tested two electrical interface hardware is working properly.

Figure2-15 Tx port test schematic

Example of **PING** command:

A test computer's IP address is192.168.16.220,the test computer IP address as192.168.16.221,make sure the local connection of two Firewall ICMP disposed in the first term,"allow incoming echo request"is checked, the method of operation is to open windows advanced firewall settings page,the ICMP protocol is provided.

Then click on the test computer 1-> Start run,or type cmd command (Win2000/ XP systems cmd,WIN98/ 95 system with command) to bring up a console window, send ping 192.168.16.221-l 1000-t,(-l Refers to the number of bytes sent by the packet,-t means to send data continuously.)Run ping 192.168.16.220 –l 1000 –t in test computer 2 in the same way.If test computer 1 shows Reply from 192.168.16.221: bytes=1000 time<10ms TTL=128, test computer 2 shows Reply from192.168.16.220:bytes=1000 time<10ms TTL=128,use CTL+after running for more than 10 minutes.The C command terminates the current ping. At this time, the console prints the ping packet statistics. If the statistics packet loss rate is 0, the device works normally.As shown in FIG.72-1.

Figure 2-16 The result graph returned after inputting the ping test computer in CMD

2.3.3. Fx Port Test

The composition of the two devices as shown in Figure 2-18 of the optical chain network.Each electrical port of each device is connected to the test computer through a direct connection network cable, and sends PING commands to each other.Both parties can correctly ping the other party without losing packets.At the same time, the LINK/ACT light corresponding to the Fx port should be on.Description tested two Fx interface hardware is working properly.Test other Fx ports in the same way.
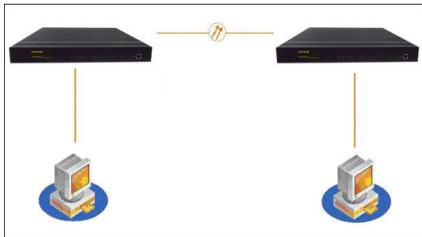

FIG 2-17 Fx port test schematic view

3. Repair and Service

Since the date of delivery, Wuhan Maiwe Communication Co., Ltd. provides a 5-year product warranty.According to the product specifications of Wuhan Maiwe Communication Co., Ltd., during the warranty period, if there is any malfunction or functional failure of the product, we will repair or replace the product for the user without charge.However, the above commitments do not cover damage caused by improper use, accidents, natural disasters, improper operation or improper installation.

In order to ensure that consumers benefit from the products of Wuhan Maiwe Communication Co., Ltd., help and problem solving can be obtained by the following methods:

-Internet service.

-Call the technical support office.

-Product is repaired or replaced.

3.1. Internet Service

Through the technical support section of Wuhan Maiwe Communication Co., Ltd., you can get more useful information and tips.

3.2. Technical Support Telephone Service

Users who use Wuhan Maiwe Communication Co., Ltd. can call the company's technical support office, and there will be professional technical engineers to help you solve the problems or problems you encounter in the first time.

3.3. Product Repair or Replacement

Product repair, replacement or return, in accordance with the processing procedures of Wuhan Maiwe Communication Co., Ltd., first confirm with the company's technical staff, and then with the company's regional sales staff to negotiate, to complete the repair, replacement or Return.

Attached record

Selection guide

100M optical module single mode / multi-mode optional, connector SC /ST / FC optional, Gigabit optical modules are single mode and multi-mode optional.

Model	100M Tx port	100M Fx port	Gigabit Fx/ Tx port
MIGE3028-4GF-24T	24	-	4
MIGE3028-4GF-4S/M-20T	20	4	4
MIGE3028-4GF-8S/M-16T	16	8	4
MIGE3028-4GF-12S/M-12T	12	12	4
MIGE3028-4GF-16S/M-8T	8	16	4
MIGE3028-4GF-24S/M	-	24	4

Note:

Our company has the right to change the model number without notifying the user.For the latest information, please consult our marketing or technical support staff.

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