

MISCOM7028GX/MISCOM8028GX Series

Industrial Ethernet Switch

User Manual

(Edition: V1.1)

Wuhan Maiwe Communication Co., Ltd.

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Statement

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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. Introduction

1.1. Product Introduction

MISCOM7028GX/MISCOM8028GX is Layer 3 Full Gigabit Industrial Ethernet Switch manufactured by Wuhan Maiwe Communication Co., Ltd, which is specifically designed and developed for core layer application in industrial communication network field. The series of switches provide a high-end industrial Ethernet communication solutions for complicated industrial application requirements, making the industrial communication more reliable, smoother and faster, meeting the constantly innovation requirements for customers in terms of added value application.

MISCOM7028GX/MISCOM8028GX with 10/100/1000Base-T Ethernet port supports both half-duplex and full-duplex work mode, as well as adaptive-negotiation mode, which is capable of interactively negotiating with other network equipment and confirm operating method and rate, simplifying the system configuration and management. The series of switches provide multiple management methods, inclusive of CLI thru hyper-terminal's access to switch, Telnet management system, SNMP management software, and other network monitoring protocols such as LLDP, SNMPv4, and DHCP. This layer 3 Industrial Ethernet Switch also supports multiple advanced management functions, such as MSTP, VRRP, IGMP, IGMP Snooping, RIPv1/v2 and OSPF v1/v2, Static routing, VLAN, GVRP, QoS, Trunk, Rate limitation, Broadcast storm suppression, ACL, Port mirroring and other common advanced management functions. In terms of device management, it supports FTP/TFTP upgrade, Syslog recording, Syslog uploading, and Power failure alarm. In terms of structure installation, it's a rack-mounting type switch with flexible choice of rack-mounting or desktop installation.

The rack-mounting Industrial Ethernet Switch is equipped with 28 Gigabit ports, including 8 Gigabit combo ports and 20 Gigabit FX ports. All ports support 802.1Q VLAN, minimum rate limitation of 64Kbps, 16K MAC table size, 4K VLAN, 512 IGMP Groups, L2/L3 Ipv4 and Ipv6 packets forwarding at full speed.

1.2. System Features

1.2.1. High-Performance Full Gigabit Industrial Ethernet Switch

- 28 Gigabit Ethernet ports, flexible networking mode provided.
- Gigabit SFP interface, support hot-swappable LC FX port module and RJ45 TX port module.
- 28 Gigabit SFP FX ports (8 combo ports, with FX or TX port optional)

configuration).

- Redundancy technique failure recovery time less than 20ms, enhance the reliability of system communication.
- Support VLAN based on IEEE802.1Q, number 4094.
- Support EAPS, MSTP, VRRP and other multiple redundancy protocols.
- Support Static Routing, RIP v1/v2 and OSPF v1/v2 and other multiple dynamic routing protocols.‡
- Support IGMP, PIM-SM, and PIM-DM and other multiple multicast protocols.‡
- MAC table size 16K.
- Support sophisticated QoS strategy and multiple Queues scheduling algorithms.
- Support SNMP, PMON, Telnet and other multiple network management protocols.
- Support CLI thru hyper-terminal's access to switch.
- Support hardware ACL function, L2-L7 layer data filter.
- Support IGMP Snooping detection.
- Support broadcast storm suppression.
- Support full-duplex and half-duplex mode flow control.
- Reliability: MTBF ≥ 50,000 hours.
- Support power alarms, port alarms, and ring alarms.
- FTP/TFTP-based online software upgrade allowing users easily manage and update equipment.
- Switch with graphical network configuration and maintenance functions, remotely monitoring the running status and performance of network, providing network fault monitoring, diagnosis, location and alarm capabilities.

Note: MISCOM7028GX Series DON'T support function‡ and ‡

1.2.2. Industrial Power Supply Design

Support redundancy dual power input: AD220 (85-264VAC/110-370VDC), single power supply, redundant power supply, flexible choice for customer.

Solid exterior design

- The efficient heat dissipation surface design without fan of the aluminum alloy housing makes it possible to operate the system steady in the environment of -40°C to +70°C
- High-strength enclosed aluminum alloy housing with IP40 protection allows the system to work reliably in harsh and dangerous industrial environments.

1.3. Packing List

Packing list of MAIWE Brand Managed Switch is listed as below. If any item in the list is lost or damaged, please contact the distributor or MAIWE's customer service center, they will assist you to make replacement or complement.

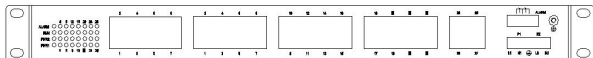
Items	Quantity
MAIWE Brand Managed Switch	1
CD (network management software, excluded in the standard configuration)	1
CONSOLE interface cable	1
Product quality certificate and warranty card	1

2. Interface Instructions

Front panel



Rear panel



Front panel indicator lights

Console port

Rear panel indicator lights

Ethernet RJ45 port

Gigabit SFP port

Relay port

Power supply port

Ground screw

2.1. Indicator Lights

The indicator lights of the front panel indicate the current working status of the switch. The specific description is shown in below table:

Front panel indicator lights

PWR1 PWR2	ALARM		RUN	LINK/ACT(1-24, X1-X4)		SPEED(1-24, X1-X4)	
	Red light on	Green light off	Green light periodically flashes	Green light periodically flashes	Green light on	Green light flashes	Green light on
Power supply normal	No alarm	Alarm	System work normally	Link established	Data transmission	1000M Link established	Link not established SPEED1-8 Refer to *Note*

Note

At the time when combo port 1-8 is configured as Gigabit TX port, SPED1-8 Green light off stands for 100M or 10M link established or not established.

At the time when combo port 1-8 is configured as Gigabit FX port, SPED1-8 Green light off stands for 1000M link not established.

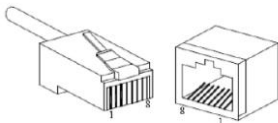
Rear panel indicator lights

PWR1 PWR2	ALARM		RUN	LINK/ACT(1-24、X1-X4)	
	Red light on	Green light off	Green light periodically flashes	Green light periodically flashes	Green light on
Power supply normal	No alarm	Alarm	System work normally	Link established	Data transmission

2.2. Ethernet RJ45 Port

Each RJ45 port with adaptive function, supporting auto MDI/MDI-X connection, can connect the switch with terminal equipment, servers, hubs or other switches via straight line/cross-over cable. Each RJ45 port supports IEEE802.3x adaptive function, so the optimum transmission mode (half or full duplex) and data rate (10/100/1000Mbps) can be automatically selected (the other connected equipment must meet this feature). If the equipment connected to these ports does not support adaptive function, the port will force itself to work at the same rate as the other parties, avoiding full/half duplex mismatch, the transfer mode will default to be half-duplex mode, and the flow control will be automatically disabled. Gigabit TX port can support up to 1000Mbps.

MISCOM7028GX/MISCOM8028GX Series Switches provide 8 RJ45 ports at most, it can be connected with other Ethernet terminal equipment via straight line/cross-over cable in use. RJ45 pin number seriation is shown as below.



RJ45 connector pin number seriation picture.

With supporting auto MDI/MDI-X adaptive function, this series switches can connect with other Ethernet switch by using of CAT. 5 straight line and cross-over cable, providing flexible choice for cable in practical use.

At the time when RJ45 port is 10/100Based-TX, pin definition is shown in the below table.

10/100Based-TX pin definition table.

Pin Number	MDI-X Signal Name	MD Signal Name
1	Receive data+(RD+)	Transmit data+(TD+)
2	Receive data-(RD-)	Transmit data-(TD-)
3	Transmit data+(TD+)	Receive data+(RD+)
6	Transmit data-(TD-)	Receive data-(RD-)
4,5,7,8	Unused	Unused

At the time when RJ45 port is 10/100/1000Based-T, pin definition is shown in the below table.

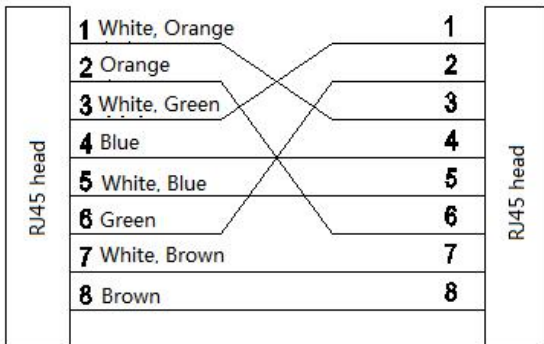
10/100/1000Based-T pin definition table.

Pin Number	MDI-X Signal Name	MD Signal Name
1	Transmit/receive data(TRD1+)	Transmit /receive data(TRD0+)
2	Transmit /receive data(TRD1-)	Transmit /receive data(TRD0-)
3	Transmit /receive data(TRD0+)	Transmit /receive data(TRD1+)
4	Transmit /receive data(TRD3+)	Transmit /receive data(TRD2+)
5	Transmit /receive data(TRD3-)	Transmit /receive data(TRD2-)
6	Transmit /receive data(TRD0-)	Transmit /receive data(TRD1-)
7	Transmit /receive data(TRD2+)	Transmit /receive data(TRD3+)
8	Transmit /receive data(TRD2-)	Transmit /receive data(TRD3-)

RJ45 port connection refer to below picture, 100M straight line and cross-over cable is compatible with 1000M cable.



CAT. 5 straight line cable connection method



CAT. 5 cross-over cable connection method

Note: Cable colors definition in the picture meet EIA/TIA568B Standard.

2.3. SFP FX Port

The Gigabit FX port of the switch is 1000Base-LX full-duplex single-mode/multi-mode FX port, using SFP hot-swappable device, and the type of FX port is LC. The FX port needs to be used in pair (TX and RX are in

pair), the TX port is the fiber transmitting end, connecting with the fiber receiving end RX of the other remote switch FX port. The RX port is the fiber receiving end, connecting with the fiber transmitting end TX of the other remote switch FX port. Two redundant 1000Base-LX FX ports can be used to establish a fiber redundant ring network. If system fails, the ring network redundancy recovery time is less than 20ms, which can effectively improve the reliability of network operation.

SFP module as below picture.



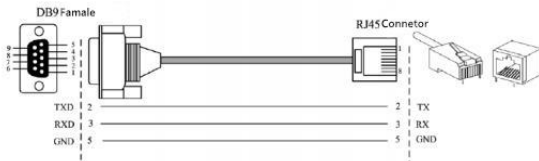
SFP module

2.4. CONSOLE Port

CONSOLE port is a RJ45 port, refer to below diagram. Please use MAIWE brand serial extension cable to connect with PC serial port. It is a standard 3 wire RS-232 cable.

Serial port communication parameters are as follows:

Baud Rate: 115200; Data Bits: 8; Parity: None; Stop Bit: 1; Flow Control: None.

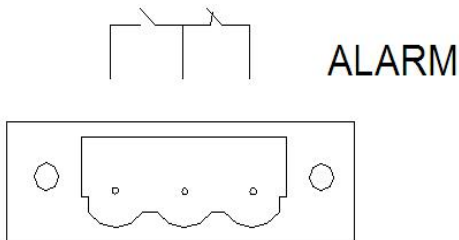


RJ45 serial port diagram

2.5. Relay Port

The terminal blocks of the series of switches' power failure alarm relay use 3-bit 5.08mm pitch terminal, please refer to below diagram. The alarm relay's

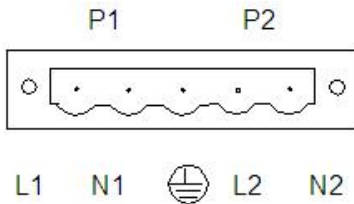
one side port is NO, the other side port is NC, the middle port is the public end, the left two terminals are NO relay, and the right two terminals are NC relay. If the switch is on normal work condition, the NO relay is closed, NC relay is open. If the dual power supplies' one port is power failure, port link is down or network storm occurs, the NO relay is open and the NC relay is closed. The relay recommended switch load capacity is 1A (24VDC).



Alarm delay diagram

2.6. Power Port

The standard configuration of the series switches is dual AC220V redundant power supplies, the terminal blocks use 5.08mm pitch terminals to connect two power inputs, see below diagram. Input power range: 24DC (18-36VDC), 48DC (36-72VDC), AC85~265V (Frequency 47~63Hz) or DC110~370V.



Power input terminal diagram

Switch power supply requirements table

Power	Voltage Range	Operating Temperature	Storage Temperature	Humidity
AD220	85~264VAC/ 110~370VDC	-40°C~+70°C	-40°C~+85°C	5~95%

Attention:

Important notes:

Power on operation: Connect the power supply cable with terminal blocks of the equipment according to above diagram definition, then power on.

Power off operation: Plug out the socket first, then take down the power cable.

Please follow the above operation order.

The supported power specifications of the device is 220VAC/DC. Please confirm whether the power supply is compliance with the requested power specification printed on the label of the device before powering on, so as not to damage the device.

2.7. Ground

The panel of the MISCOM7028GX/MISCOM8028GX Series Switches has a grounding screw. Press one end of the grounding wire to the cold-pressing terminal and fix it to the grounding hole of the housing with the grounding screw. Connect the other end of the grounding wire to the ground reliably. The grounding wire cross section is not less than 2.5 mm².

3. Hardware Installation

3.1. Installation Requirements

The Industrial Ethernet Switch is a kind of single structure that fits rack-mounting installation. Before installing, first confirm suitable working environment for installation, including power requirements, sufficient space, being closed to other network equipment to be connected. Please confirm the following installation requirements.

- Power requirements: The standard product is charged by AD220 power supply. For other power supply methods, please refer to the product label printed on the housing and related user manual.

- Environmental requirements: Temperature $-40\text{ }^{\circ}\text{C} \sim 70\text{ }^{\circ}\text{C}$, relative humidity $5 \sim 95\%$ (no condensation).

- Grounding resistance requirement: $<5\Omega$

- According to the contract configuration requirements, check whether the fiber cables are in place, fiber optic connectors are appropriate.

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

- Standard 19" U rack-mountable installation. Check for suitable cables and connectors.

Attention:

Make sure the power cable is disconnected before installing or connecting Ethernet switch. Calculate Max current of each power cable and public cables, observing all electric information so as to obtain allowed Max current of wires in different width. If exceeding the Max current, wires will overheat, causing serious damage to the equipment.

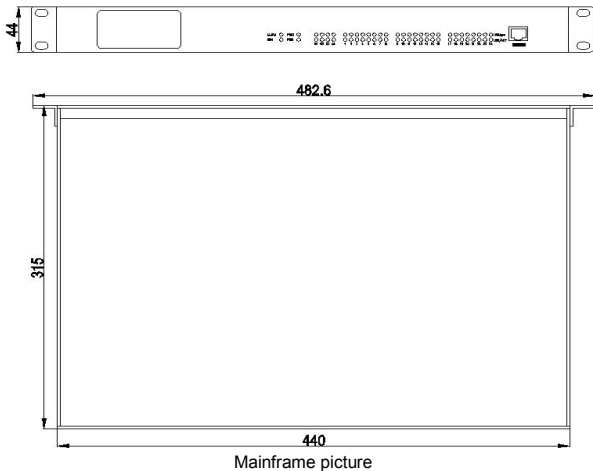
Meanwhile MUST pay attention on the following items:

Separate the power cable and other cables, if the two paths have to cross, MUST make sure that the intersection of these cables are vertical. Signal wires or communication wires and power cables cannot be laid 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 wires should be separated. The rule of thumb is that wires with the same electrical characteristics can be bundled together. Separate the input and output wires. It is highly recommended that all equipment wires in the system should be labeled when necessary.

The switch should be connected to the protection ground: Grounding and laying wires will effectively suppress the effects of noise caused by electromagnetic interference. A ground connection should be made before connecting the equipment, from the ground screw to the ground surface.

3.2. Mainframe Installation

Mainframe picture as below.



For most industrial applications, it is very convenient to install in a 19-inch rack. Check the rack installation before mainframe installation, including the following two items:

- Is there enough room for installing this product?
- Is there a power supply suitable for this product?

3.3. Cable Connection

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

- Server interface connection

The terminal equipment Gigabit TX ports provided by the product is

10/100/1000Based-TX. Connect the terminal equipment with straight line cable, connect the network equipment with cross-over cable.

- Connecting network managed port

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

- Connecting power

After all other cables have been connected, then connect the power supply that meets the product specifications.

3.4. Laying Cables

Laying cables should be compliance with the following items:

- Check whether the specifications, model and quantity of all cables are consistent with the construction drawing design and contract requirements before laying the cables.

- Before the cable is laid, check whether the cable is damaged, whether there are quality certificates such as the factory record and quality assurance.

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

- User cable and power cable should be placed separately.

- There MUST be no disconnection in the middle of the laying cable, or a connector in the middle.

- The cable should be straight and neatly discharged in the aisle, and the curve should be even, smooth and straight.

- The cable should be straight in the channel, and should not exceed over the channel, block other access holes, and should be tied and fixed at the cable exit channel or cable bend.

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

- Prevent the cable from knotting, reduce the bend and avoid small bend radius when laying the fiber on the tail. The lashing should be tight and not too tight. When placed on the cable tray, it should be placed separately from other cables.

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

Attention:

When laying the fiber on the tail, it is necessary to prevent the cable from being knotted, reduce the bend and avoid small bend radius. If the bend radius is too small, the link optical signal will be seriously depleted and also it will affect the quality of communication.

4. Annex

4.1. Technique Parameters

System Indicator	MISCOM7028GX/MISCOM8028GX
IEEE Standard	802.3, 802.3u, 802.3z, 802.3x, 802.1P, 802.3ab
Exchange Method	Store and forward
Backplane Bandwidth	56G
Packet Forwarding Rate	41.664 Mpps
Gigabit Port	28*1000Base-LX ports Or 8*10/100/1000Base-T+20*1000Base-LX ports
TX Port Parameter	Physical interface: RJ45 with shielding, IEEE802.3 standard RJ45 port: 10/100/1000Base-T (Gigabit) supports adaptive-negotiation function Transmission distance:<100 meters (Standard CAT5/CAT5e cable)
FX Port Parameter	Luminous power: >-12dBm(single-mode)>-17dBm(multi-mode) Light absorption sensitivity:<-38dBm(single-mode) <-35dBm(multi-mode) Wavelength :1310nm(single-mode) 1550nm(single-mode) 1310 nm(multi-mode) Transmission distance: <2Km(Gigabit multi-mode) Connector type: LC Transmission rate:1.25Gbps(Gigabit)
Power Parameter	Input power:220AC/DC(85-264VAC/110-370V DC) Input power consumption:32W(MAX) Overcurrent protection: built-in
Mechanical Parameters	Dimensions:482.6mm×44mm×315mm Installation method: standard 19' 1U rack type Heat dissipation form: aluminum alloy single rib type fanless casing house heat dissipation Outlet form: both front and rear Casing protection: IP40

	Weight: 4kg
Working Environment	Working temperature: -40°C~+70°C Storage temperature: -40°C~+85°C Humidity: 5%~95%(no condensation)

4.2. Industry Standard

EMS

EN61000-4-2 (ESD): $\pm 8\text{kV}$ (contact), $\pm 15\text{kV}$ (air)

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

EN61000-4-4 (EFT): Power Port: $\pm 4\text{kV}$; Data Port: $\pm 2\text{kV}$

EN61000-4-5(Surge): Power Port: $\pm 4\text{kV/DM}$; $\pm 2\text{kV/CM}$

Data Port: $\pm 2\text{kV/DM}$; $\pm 6\text{kV/CM}$

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

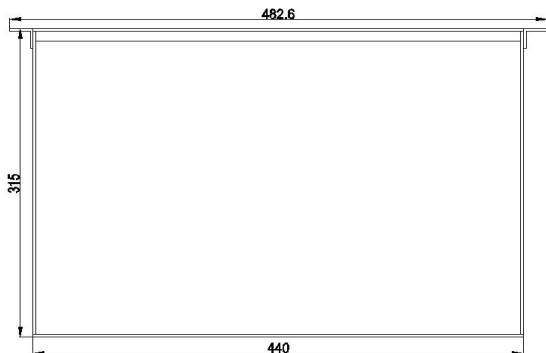
Machinery

IEC60068-2-6(Vibration)

IEC60068-2-27(Shock)

IEC60068-2-27(Shock)

4.3. Structure and Size



Mainframe picture

4.4. Product Selection Guide

Model	Gigabit FX Port	Gigabit Combo Port	Power Supply
MISCOM7028GX-20GF-8GC-2AD220	20	8	Dual redundant AD220
MISCOM828GX-20GF-8GC-2AD220	20	8	Dual redundant AD220

Note:

Our company has the right to change the product model name without prior notifying users. If necessary to obtain the latest information, please consult our company market or technical support staff.

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