ICS5028G Series

Layer 3 Industrial Ethernet Switch

User Manual

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【Introduction】

ICS5028G series switches are high-performance, cost-effective smart rack-mounted industrial layer 3 switches. The increase in bandwidth elevates the data transmission capability, and it's very suitable for the application of large-scale industrial network. The switch supports IPv4 platform, and various advanced administration functions such as IGMP, GMRP, DHCP Server/Client, STP/RSTP/MSTP, QOS, port mirroring, LLDP, static routing, RIP V1/V2, OSPF, VRRP, etc. The IPv4 layer 3 routing protocol, multicast technologies and policy routing mechanism provide users with complete IPv4 solutions; meanwhile, this series of products also support SNMPv1/v2/v3 (Simple Network Management Protocol), CLI, Web Management, TELNET management for more convenient device management. Combined with enhanced ACL control and anti-attack function, the management will be more secure.

The switches are in compliance with the FCC and CE standards, and supports 2-way redundant AC inputs and 2-way relay fault alarm output. Users can select flexibly according to actual environment. It adopts industrial no fan design, and is fit for severe industrial environment at a working temperature of -40℃～75℃, which can meet various industrial application requirements and provide reliable and economic solutions for Ethernet access.

【Packing list】

The industrial Ethernet switch is shipped with the following items. If any of these items are missing or damaged, please contact your customer service representative for assistance.

- Industrial Ethernet switch x 1
- Documentation and software CD x 1
- User manual x 1
- Rackmount ears x 2
- Power cords x 2

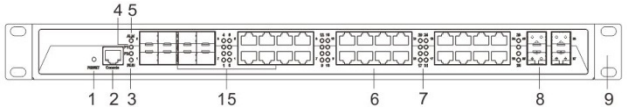
【Features】

- Support IGMP Snooping and GMRP filter multicast packet
- Support QOS of IEEE 802.1p/1Q TOS/DiffServ to promote network stability
- Support SNMP v1/v2/v3
- Support IEEE802.1X, HTTPS, and SSH to enhance network security
- Support link static / dynamic aggregation to optimize bandwidth
- Support ACL function to enhance flexibility and security of network management
- Support bandwidth management, ensuring network stability
- Support RMON, effectively improve network monitoring and predictive ability
- Support port mirroring for online debugging
- Support STP/RSTP/MSTP to enhance network stability
- Support IEEE802.1Q VLAN for easy network planning
- Support static routing, RIP, VRRP, OSPF Layer 3 Switching Technology
- Working temperature: -40℃-75℃
- Support two 100VAC~240VAC power inputs
- Support two power supplies for redundancy and high reliability
- Support two relay alarms to enhance reliability
- No fan design, industrial and rack-mounted installation

【Panel layout】

ICS5028G-4XGS -8GC-16GT-2P (100~240VAC):

Front panel



Rear panel



1. Restore factory settings
2. Console port
3. Systems running LED
4. The power LEDs (P1, P2)
5. Relay alarm LED
6. 10/100/1000BaseT(X) (RJ45) ports
7. Ethernet port Link/ACT LEDs(1~28)
8. 10 Gigabit Ethernet SFP+ slot
9. Rackmount ears
10. Relay 1 output terminal block
11. Power 1 input power socket
12. Grounding screw
13. Relay 2 output terminal block
14. Power 2 input power socket
15. 10/100/1000BaseT(X) or 1000Base SFP slot combo ports

【Power supply input】

The switch support dual redundant power supplies: Power Supply 1 (P1) and Power Supply 2 (P2). The switch rear panel provides power sockets for AC100~240V power entered. Socket diagram is as follows:



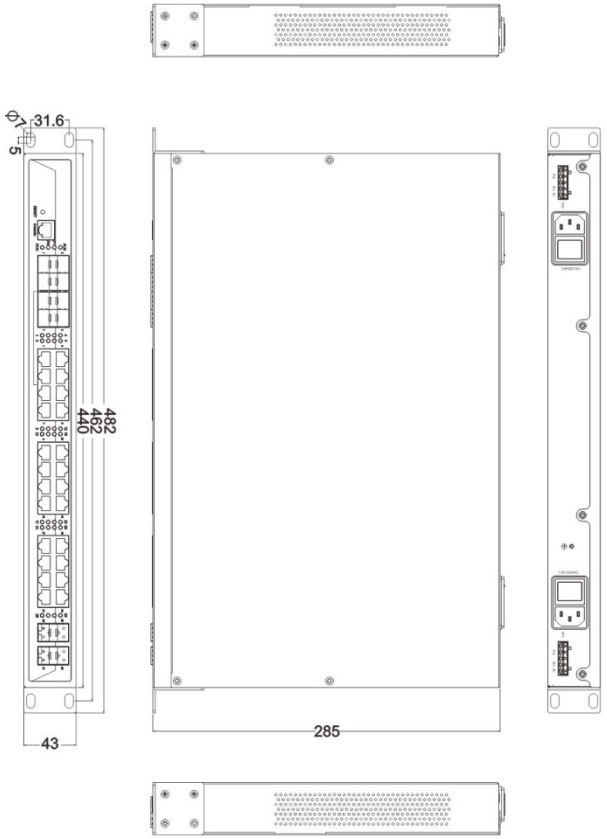
The redundant power can be used independently. P1 and P2 can supply power at the same time, once either of these two powers fails, another power can acts as backup automatically to ensure reliability of the network.

Important notice:

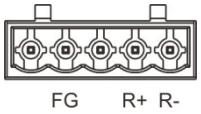
1. Power ON operation: Please connect to the device at first and then connect to the power supply with power cable.
2. Power switch “—” means power ON, “O” means power OFF.
3. Power OFF operation: First, the powers switch to the "O" side and then disconnect the power supply. Finally disconnect the connection between the device and the power cord.

【Dimension】

The series of products are the same size, and the number of the Ethernet interface is different. Unit (mm)



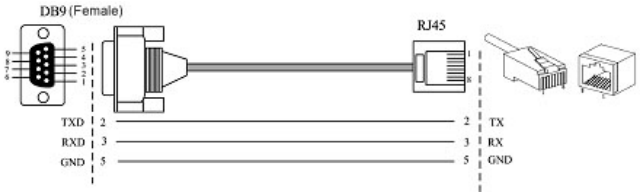
【Relay connection】



Relay access terminals in the rear panel of the device, next to the power input parts, R+ and R- are in the middle of the relay alarm output section. It is used to detect both power failure and port failure. The open circuit state in normal non alarm state, when there is any alarm information to the closed state. This series of switch device have 2 relay alarm output, external alarm lights or alarm buzzer or external switch signal acquisition device in order to timely notify operators when an alarm occurs.

【Console port】

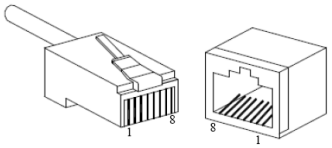
This series product provided 1pcs procedure test port based in serial port. It adopts RJ45 interface, located in top panel, can configure the CLI command through RJ45 to DB9 female cable.



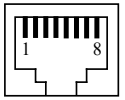
【Communication connector】

10/100/1000BaseT(X) Ethernet port

The pinout define of RJ45 port display as below, connect by UTP or STP. The connect distance is no more than 100m. 100Mbps is used 120 Ω of UTP 5, 10Mbps is used 120 Ω of UTP 3 ,4, 5.



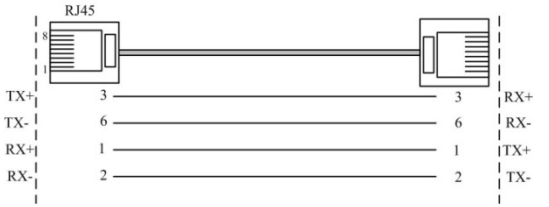
RJ 45 port support automatic MDI/MDI-X operation. That can connect the PC, Server, Converter and HUB. Pin 1, 2, 3, 4, 5, 6, 7, 8 Corresponding connections in MDI. 1→3, 2→6, 3→1, 4→7, 5→8, 6→2, 7→4, 8→5, are used as cross wiring in the MDI-X port of Converter and HUB. In MDI/MDI-X, 100/1000Base-TX PIN defines is as follows:



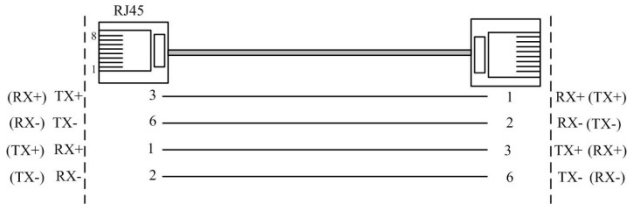
PIN	MDI	MDI-X
1	BI_DA+/TX+	BI_DB+/RX+
2	BI_DA-/TX-	BI_DB-/RX-
3	BI_DB+/RX+	BI_DA+/TX+
4	BI_DC+/—	BI_DD+/—
5	BI_DC-/—	BI_DD-/—
6	BI_DB-/RX-	BI_DA-/TX-
7	BI_DD+/—	BI_DC+/—
8	BI_DD-/—	BI_DC-/—

Note：10Base-T/100Base-TX, “TX±”transmit data±, “RX±”receive data±, “—”not use.

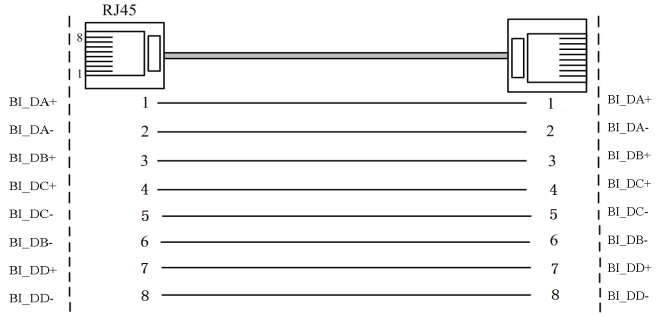
10/100Base-T(X) MDI (straight-through cable)



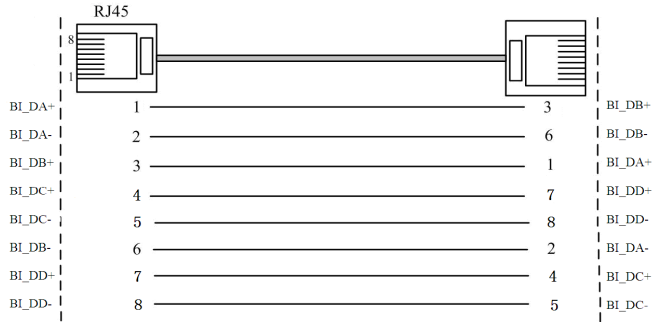
10/100Base-T(X) MDI-X (Cross over cable)



Gigabit MDI (straight-through cable)



Gigabit MDI-X (Cross over cable)

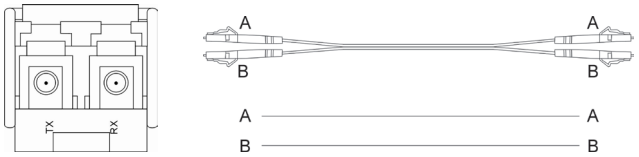


MDI/MDI-X auto connection makes switch easy to use for customers without considering the type of network cable.

1000Base SFP /10GbE SFP+ fiber port

1000BaseSFP and 10GbE SFP+ optical fiber interface is used are SFP optical module communication through optical fiber transmission, can choice different SFP module according to different transfer distance. Fiber interface must use for pair, TX port is transmit side, must connect to RX (receive side). The fiber interface support loss line indicator.

Suppose: If you make your own cable, we suggest labeling the two sides of the same line with the same letter (A-to-A and B-to-B, shown as below, or A1-to-A2 and B1-to-B2).



【LED Indicator】

LED indictor light on the front panel of product, the function of each LED is described in the table as below.

System Indication LED		
LED	State	Description
PWR (P1~P2)	ON	Power is being supplied to power input PWR input
	OFF	Power is **not** being supplied to power input PWR input
RUN	ON/OFF	System is not running well
	Blinking	System is running well
Alarm	ON	When the alarm is enabled, power or the port’s link is inactive.
	OFF	Power and the port’s link is active, the alarm is disabled.
Link/ACT (1~28)	ON	Port connection is active
	Blinking	Data transmitted
	OFF	Port connection is not active

【Installation】

Before installation, confirm that the work environment meet the installation require, including the power needs and abundant space. Whether it is close to the connection equipment and other equipments are prepared or not.

1. Avoid in the sunshine, keep away from the heat fountainhead or the area where in intense EMI.
2. Examine the cables and plugs that installation requirements.
3. Examine whether the cables be seemly or not (less than 100m) according to reasonable scheme.
4. Power: 100-240VAC power input
5. Environment: working temperature: -40～75℃
   Storage Temperature: -40～85℃
   Relative humidity 5%～95%

Rack mount installation

In most of industrial application, it is convenience to use rack mount installation, the step of installation is as follows:

1. Check if have rack mount installation tools and components (The package provided parts of components)
2. Check installation place strong or not, have the place to install the device or not.
3. Put the device into rack, aim at the screw hole of device and rack, fixed it in strong screw. Easy and convenience to

operation.

Wiring Requirements

Cable laying need to meet the following requirements,

1. It is needed to check whether the type, quantity and specification of cable match the requirement before cable laying;
2. It is needed to check the cable is damaged or not, factory records and quality assurance booklet before cable laying;
3. The required cable specification, quantity, direction and laying position need to match construction requirements, and cable length depends on actual position;
4. All the cable cannot have break-down and terminal in the middle;
5. Cables should be straight in the hallways and turning;
6. Cable should be straight in the groove, and cannot beyond the groove in case of holding back the inlet and outlet holes. Cables should be banded and fixed when they are out of the groove;
7. User cable should be separated from the power lines. Cables, power lines and grounding lines cannot be overlapped and mixed when they are in the same groove road. When cable is too long, it cannot hold down other cable, but structure in the middle of alignment rack;
8. Pigtail cannot be tied and swerved as less as possible. Swerving radius cannot be too small (small swerving causes terrible loss of link). Its banding should be moderate, not too tight, and should be separated from other cables;
9. It should have corresponding simple signal at both sides of the cable for maintaining.

【Specification】

Technology

Standard: IEEE802.3, IEEE802.3u, IEEE802.3z/ab, IEEE802.3x, IEEE802.3ae, IEEE802.1d, IEEE802.1w, IEEE802.1s, IEEE802.1q, IEEE802.1p, IEEE802.1x, IEEE802.3ad

Flow control: IEEE802.3x flow control, Back Pressure flow control

Protocol

IGMP Snooping , GMRP, SNMPv1/v2/v3, QOS, STP/RSTP/MSTP, DHCP Server/Client, DHCP, VLAN, LLDP, SNTP, Telnet, HTTP/HTTPS, SSH, LACP

Layer 3 Switching Technology

Static routing, RIP V1/V2, OSPF, VRRP, BGP

Interface

RJ45 port: 10/100 /1000BaseT(X), flow control, full / half duplex, adaptive work mode, MDI/MDI-X adaptive

Combo port: 1000Base-X SFP slot or 10/100/1000Base-T(X)

Gigabit SFP port: 1000Base-X SFP slot

10GbE SFP port: 10GbE SFP+ slot

Console port: CONSOLE Admin Port (RJ45)

Alarm port: 5-core 5.08mm wiring terminal (R+/R-), 2-way relay alarm output

Transmission distance

Twisted-pair: 100m (standard CAT5/CAT5e cable)

Multi-mode fiber: 1310nm, 2km

Single mode fiber: 1310nm, 20/40Km

1550nm, 60/80/100/120Km

LED indicator

Power indicator: P1/P2

Alarm indicator: ALM

Operation indicator: RUN

Port connection / operation status indicator: Link/ACT (1~28)

Switch attribute:

Transmission mode: store-and-forward

MAC address: 16K

Cache: 12Mb

Switched Bandwidth: 128G

1000M forwarding rate: 1488100pps

10000M forwarding rate: 14881000pps

Power Supply

AC input voltage: 100VAC~240VAC

AC input terminal: three-phase socket with rocker switch

Support 2-way AC input

Consumption

ICS5028G-4XGS-8GC-16GT

No-load consumption: 20W

Full-load consumption: 33W

Mechanical characteristics

Shell: IP30 protection, metal shell

Installation: 19” rack-mounted

Weight: 3.9kg

Dimension (L*W*H): 440mm×285mm×43mm

Working environment

Working temperature: -40℃～75℃

Storage temperature: -40℃～85℃

Humidity: 5%~95% (no condensation)

ICS5028G-4XGS-8GC-16GT EMI: FCC Part 15, CISPR (EN55022) class A

EMS: EN61000-4-2 (ESD), Level 4

EN61000-4-4 (EFT), Level 4

EN61000-4-5 (Surge), Level 4

Shock: IEC 60068-2-27

Free fall: IEC 60068-2-32

Vibration: IEC 60068-2-6

Certification:

CE, FCC, RoHS, UL508 (Pending)

Warranty: 5 years