

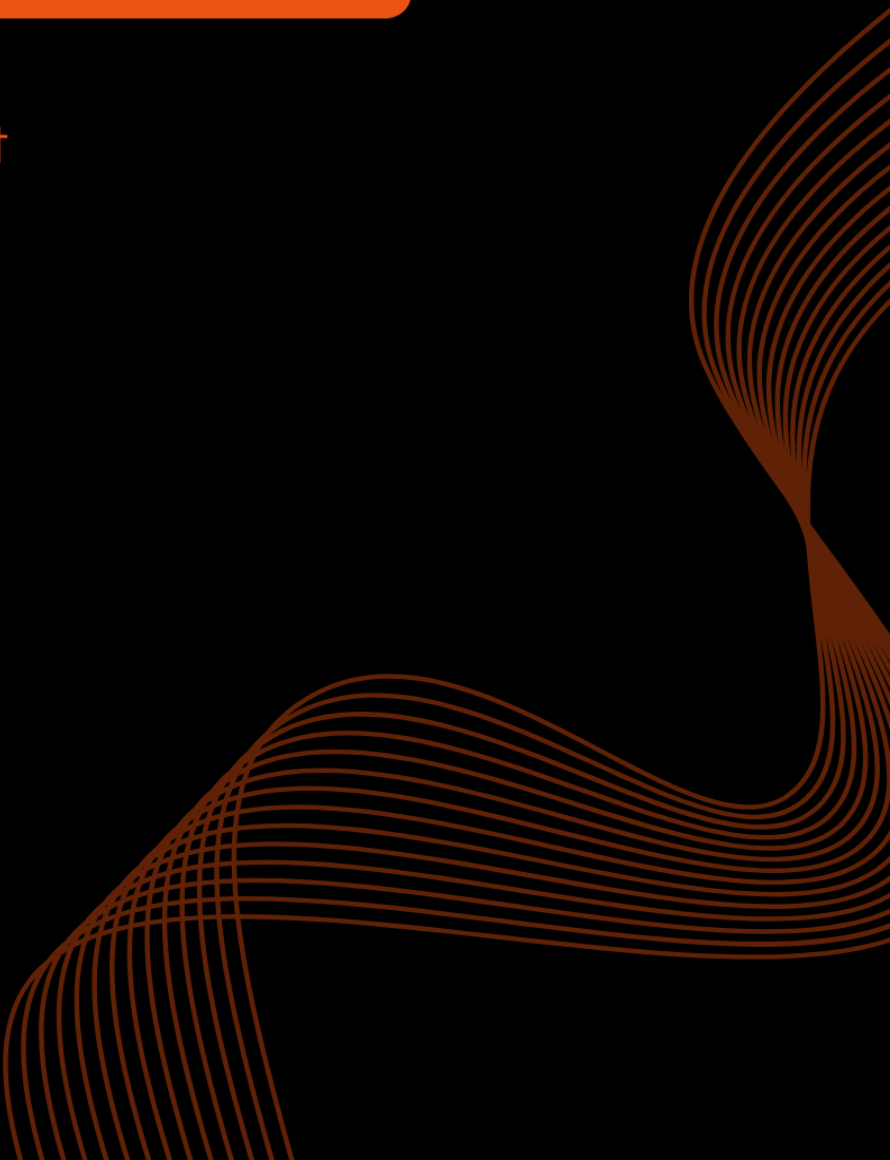
FIBERROAD[®]

LAYER 2 PLUS MANAGED INDUSTRIAL ETHERNET SWITCH

SPECIFIC FOR POWER AND ENERGY SYSTEM

Product Data Sheet

Fiberroad Technology Co., Limited



L2+ Managed Industrial Ethernet Switch

FR-WIST series is an industrial Ethernet switch independently developed by our company to meet the specific requirements of power automation in industrial settings. This product utilizes advanced Ethernet technology and adheres to open network standards, ensuring compatibility and reliability. Designed to withstand high and low temperature extremes, as well as harsh environments with strong electromagnetic interference or corrosive salt spray, It offers superior performance in challenging conditions. With a redundant dual DC power input backup design and support for AC/DC universal power supply scenarios, this switch can adapt to various power supply access requirements with efficiency and reliability. The large backplane bandwidth design enables fast data transmission speeds, while the loop-breaking function ensures network redundancy in ring networks for seamless operation. Additionally, the FR-WIST series Industrial Switches can serve as a convergence network node for quick service forwarding using star network configurations. Meeting EMC level 4 protection standards, this industrial Ethernet switch boasts exceptional anti-interference capabilities for dependable performance in demanding environments.

Main Features

- -40 to 75°C temperature maintains performance in extreme conditions
- 9-56VDC/110-370VDC, Redundant dual inputs
- DIN Rail and wall-mountable – quick to install and remove for maintenance
- Full gigabit L2+ management, easy to manage the industrial network by CLI/WebGUI/NMS.
- Build up a redundant network with STP/RSTP/ERPSv2.
- 802.1X Security Access, SNMPv3, IEEE 802.1x, HTTPs, SSHv2 and sticky MAC address to enhance network security
- Power input polarity protection design, no worry about wrong operation
- QoS, Priority mode based on 802.1P, Port & DSCP, queue scheduling algorithm including SP, WRR&SP+WRR



Product Specifications

Ethernet Interface

Model	FR-WIST6000	FR-WIST648F16	FR-WIST6412F12	FR-WIST6416F8
Ports	24 × 10/100/1000Base-T RJ45 4 × 1000Base-X 1x9 Module	16 × 10/100Base-TX RJ45 8 × 100Base-X SFP Slot 4 × 1000Base-X 1x9 Module	12 × 10/100Base-TX RJ45 12 × 100Base-X SFP Slot 4 × 1000Base-X 1x9 Module	8 × 10/100Base-TX RJ45 16 × 100Base-X SFP Slot 4 × 1000Base-X 1x9 Module
Port Mode(Lan Port)	Auto Negotiation Full/Half Duplex Mode Auto MDI/MDI-X Connection			
Standards	IEEE 802.3 for 10BaseT IEEE 802.3u for 100BaseT(X) and 100BaseFX IEEE 802.3ab for 1000BaseT(X) IEEE 802.3z for 1000BaseSX/LX/LHX/ZX IEEE 802.3x for flow control			
Packet Buffer Size	4Mbit		2Mbit	
MAC Address Table	8K		4K	
Transmission Mode	Store and Forward (full/half duplex mode)			
Exchange Property	Delay time: < 7μs Backplane bandwidth: 56Gbps		Delay time: < 7μs Backplane bandwidth: 12.8Gbps	

Physical Characteristics

Housing	Aluminum case
IP Rating	IP40
Dimensions	400mmx265mmx45mm
Installation	Rack Mount
Weight	3500g

Environmental

Operating Temperature	-40°C~75°C (-40 to 167 °F)
Operating Humidity	5%~95% (non-condensing)
Storage Temperature	-40°C~85°C (-40 to 185 °F)
MTBF	> 250,000@Telcordia(Bellcore)GB
Cooling	Passive Cooling, Fanless Design

Power Supply

Power Consumption	20 Watts Max
Power Inputs	2
Input Voltage	9-56VDC/110-370VDC,Redundant dual inputs Or AC85-264V, Redundant dual inputs
Connector(DC Power)	1 removable 5-contact terminal blocks Pin 1/2 for Power 1, Pin 4/5 for Power 2
Alarm Relay	One relay output, 1 A @ 24V DC
Protection	Overload Current Protection, Reverse Polarity Protection

Product Specifications

EMC (Electromagnetic Compatibility) Anti-interference Degree

ESD	Level 4 (±8kV Contact Discharge, ±15kV Discharge in air)
Radiation	Level 3 (80MHZ – 1GHZ)
Electric fast instantaneous pulse group	Level 4 (Power Port: ±4kV, other ports:±2kV)
Surge Impact	Level 4 (Common Mode:±4kV, Differential Mode:±2kV)
Power Frequency Magnetic Field	Level 5 (Stable magnetic field: 100A/m, Short-time magnetic field: 1000A/m)
Damped Oscillating Field	Level 5 (100A/m)
Damped Oscillating Wave	Level 3 (Common Mode:±2.5kV, Differential Mode:±1kV)
Voltage Dip	100ms

Ethernet Software Features

Redundancy Protocols	Support STP/RSTP/MSTP/ERPSv2(Switching Time≤20ms@20 units, Link Aggregation
Multicast Support	Support IGMP Snooping V1/V2/V3, support GMRP, GVMP,802.1Q
VLAN	Support IEEE 802.1Q 4K VLAN, Support QinQ, Double VLAN,
Time Management	SNTP
QoS	Flow-based redirection Flow-based rate limiting Flow-based packet filtering 8*Output queues of each port 802.1p/DSCP priority mapping Diff-Serv QoS, Priority Mark/Remark Queue Scheduling Algorithm (SP, WRR, SP+WRR)
ACL	Port-based Issuing ACL ACL based on port and VLAN L2 to L4 packet filtering, matching first 80 bytes message. Provide ACL based on MAC, Destination MAC address, IP Source, Destination IP, IP Protocol Type, TCP/UDP Port, TCP/UDP Port Range, and VLAN, etc
POE Management	Total power limit of PoE power supply PoE output power allocation PoE output priority configuration PoE working status Scheduling of PoE operation
Diagnostic Maintenance	Support port mirroring, Syslog, Ping
Management Function	Support CLI、WEB、SNMPv1/v2/v3, Telnet server for management, EEE, LLDP, DHCP Server/Client(IPv4/IPv6)
Alarm Management	Support 1 way relay alarm output, RMON, TRAP
Security	Broadcast Storm Protection, HTTPS/SSLv3, SSH2.0 Support DHCP Snooping, Option 82, 802.1X security access, Support user hierarchical management, ACL access control list, Support DDOS, port-based MAC filtering / binding, MAC black holes, IP source protection, Port isolation, ARP message speed limit
Advance Layer 2+ Features	IPv4/IPv6 Management Static Route

Product Specifications

LED	State	Description
PWR (P1&P2)	ON	Power is being supplied
	OFF	Power is not being Supplied.
RUN	Blinking	The system is running well
	OFF	The system is running unwell
Link/ACT	ON	Port connection is active
	Blinking	Data transmitted
	OFF	Port connection is not active.
ALM	ON	Has alarm information
	OFF	No alarm information

Regulatory & Warranty

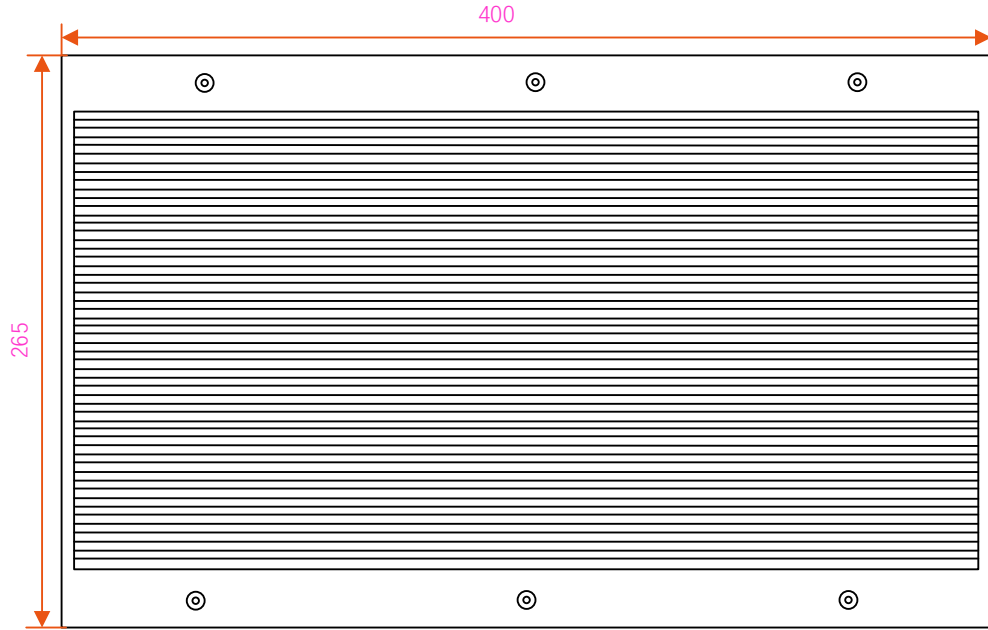
Safety	IEC/EN 62368-1
EMI	EN55032 Class A, CISPR 32 FCC Part 15B Class A
EMS	EN61000-4-2 (ESD) EN61000-4-3 (RS) EN61000-4-4 (EFT) EN61000-4-5 (Surge) EN61000-4-6 (CS) EN61000-4-8 (PFMF)
Shock	IEC 60068-2-27
Free Fall	IEC 60068-2-32
Vibration	IEC 60068-2-6
Environmental	RoHS
Warranty	5 Years, Details See: www.fiberroad.com

Package Contents

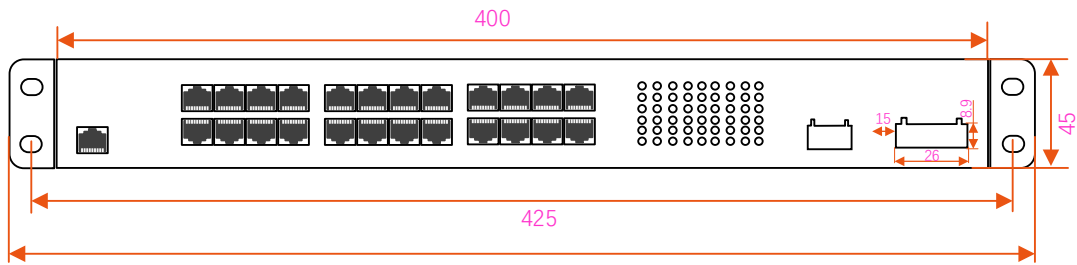
Device	1x Industrial Ethernet Switch
Cable	1xDB9 female to RJ45 10-pin
Installation Kit	2x Rack-Mount Kits
Documentation	1 x Quick Start guide 1 x Warranty card

Product Specifications

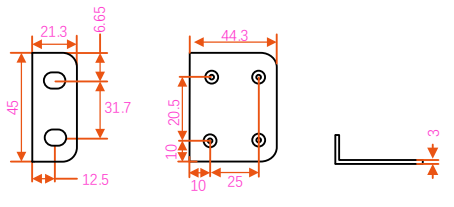
Dimensions Unit: mm



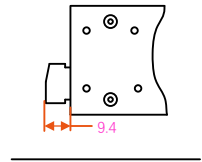
Top View



Front View



Rack Mount Kit



(Side View)
Height of projections

Precautions

To avoid damage to the equipment and personal injury caused by improper use, please observe the following precautions:

- ❖ Keep the power off during installation, wear an anti-static wrist, and ensure that the anti-static wrist is in good contact with the skin to avoid potential safety hazards.
- ❖ The switch can work normally under the correct power supply. Please confirm that the power supply voltage matches the voltage indicated by the switch.
- ❖ Before powering on the switch, please make sure that the power circuit is not overloaded, so as not to affect the normal operation of the switch and even cause unnecessary damage.
- ❖ To avoid the risk of electric shock, do not open the case while the switch is working, even if it is not charged, do not open it yourself.
- ❖ Before cleaning the switch, pull out the power plug of the switch. Do not wipe with a wet cloth. Do not use liquid to clean it.
- ❖ The equipment installed in the rack is generally from bottom to top to avoid overload installation.
- ❖ Avoid placing other heavy objects on the surface of the switch to avoid accidents.

Order Information

Model Number	10/100Base-TX RJ45	10/100/1000Base-T, RJ45	100Base-X Fiber (SFP Slot)	1000Base-X Fiber (SC/LC/FC/ST)	Input Voltage
FR-WIST6000	\	24	\	4	9-56VDC
FR-WIST648F16	16	\	8	4	9-56VDC
FR-WIST6412F12	12	\	12	4	9-56VDC
FR-WIST6416F8	8	\	16	4	9-56VDV

The information in this document is subject to change without notice. Fiberroad has made all effects to ensure the accuracy of the information, but all information in this document does not constitute any kind of warranty. Visit our website for the most up-to-date product information

For more information

For more information about Fiberroad Smart Industrial Ethernet series products, Visit <https://www.fiberroad.com> or contact your local account representative.