FIBERROAD

LAYER 2+ MANAGED
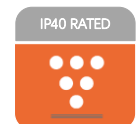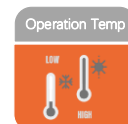## INDUSTRIAL ETHERNET SWITCH

Product Data Sheet

L2+ Managed Industrial Ethernet Switch

L2+ Managed Industrial Ethernet Switch is a multi-port, high-standard Industrial Managed Ethernet Switch independently developed by Fiberroad for industrial ethernet network. This product adopts industry-leading technical standards and can provide stable and reliable Ethernet transmission with high-quality design and reliability. They are designed in 1RU Rack Mount aluminum housing and have 24 Ethernet ports in total ,Plus an additional 4 Gigabit Combo Port(SFP/RJ45) providing for data uplink and backbone connectivity.

Main Features

- All-aluminum Case, Compact and Fanless Design
- -40 to 75℃ temperature maintains performance in extreme conditions
- 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.
- RADIUS, SNMPv3, IEEE 802.1x, HTTPs, SSHv2 and sticky MAC address to enhance network security
- EherNet/IP and Modbus TCP protocols supported for device management and monitoring
- Electric 8KV surge protection Complete status indicator, working state at a glance
- Power input polarity protection design, no worry about wrong operation
- QoS, Priority mode based on 802.1P, Port & DSCP, queue scheduling algorithm including Equ, SP, WRR&SP+WRR

The Industrial Ethernet Switch adopts mature technology and open network standards, enabling it to operate with low temperature and high temperature, anti-electromagnetic interference, antisalt fog, antivibration and anti-shake. Industrial switches are designed for harsh environments such as industrial networking and intelligent transportation systems (ITS) with standard IP40 protection. Additionally, they can be used in military and utility markets where environmental conditions exceed commercial product specifications.

Ethernet Interface

Model	FR-9M34F8	FR-9M348F	FR-9M3424
Ports	8×10/100/1000Base-TX 16×1000Base-X SFP 4xGigabit Combo(SFP/RJ45)	16×10/100/1000Base-TX 8×1000Base-X SFP 4xGigabit Combo(SFP/RJ45)	24×10/100/1000M Base-TX 4xGigabit Combo(SFP/RJ45)
Port Mode(Tx)	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 IEEE 802.1D-2004 for Spanning Tree Protocol IEEE 802.1w for Rapid Spanning Tree Protocol IEEE 802.1s for Multiple Spanning Tree Protocol IEEE 802.1p for Class of Service IEEE 802.1Q for VLAN Tagging IEEE 802.1X for authentication IEEE 802.3ad for Port Trunk with LACP		
Packet Buffer Size	4Mbits		
Maximum Packet Length	Up to 10K		
MAC Address Table	8K		
Transmission Mode	Store and Forward (full/half duplex mode)		
Exchange Property	Delay time: < 7μs Backplane bandwidth: 56Gbps		
IGMP Group	4096		
Max. No. of VLAN	256		
VLAN ID Range	VID 1 to 4094		

Physical Characteristics

Housing	Aluminum case
IP Rating	IP40
Dimensions	400mmx300mmx45mm
Installation	Rack Mount
Weight	2600g

Environmental

Operating Temperature	-40℃~75℃ (-40 to 167 ℉)
Operating Humidity	5%~90% (non-condensing)
Storage Temperature	-40℃~85℃ (-40 to 185 ℉)
MTBF	＞250,000@Telcordia(Bellcore)GB
Heat Dissipation	75 BTU/h
Cooling	Passive Cooling, Fanless Design
Noise Level	0 dBA

Power Supply

Power Consumption	24 Watts Max
Power Inputs	2
Input Voltage	9-56VDC,Redundant dual inputs
Connector	1 removable 6-contact terminal blocks Pin 1/2 for Power 1, Pin 3/4 for Power 2, Pin 5/6 for fault alarm
Protection	Overload Current Protection, Reverse Polarity Protection

Ethernet Software Features

Redundancy Protocols	Support STP/RSTP/MSTP/ERPSv2, 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), Cloud/MQTT
Alarm Management	Support 1 way relay alarm output, RMON, TRAP
Security	Broadcast Storm Protection, HTTPS/SSLv3, AAA & RADIUS, 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

| 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
FAIL(Only For PoE)	ON	PoE Status is abnormal
	OFF	PoE Status is normal
MAX(Only For PoE)	ON	Total PoE Power out of maximum power budget
	OFF	Total PoE Power under maximum power budget
R.O.	ON	Ring Owner
	OFF	Not Ring Owner
RING	ON	Ring is enabled
	OFF	Ring is disabled
Link/ACT (1-28)	ON	Port connection is active
	Blinking	Data transmitted
	OFF	Port connection is not active.
RJ45 Port Speed	ON	1000M is running
	OFF	No 1000M is running
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

Dimensions   Unit: mm
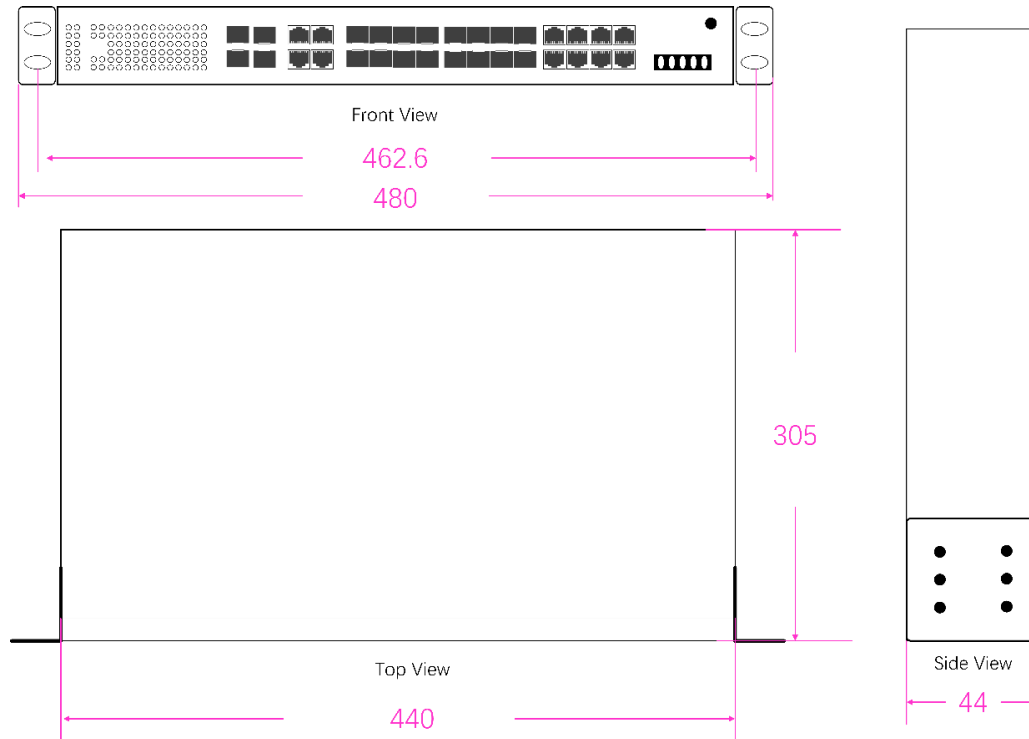
Accessories(Sold Separately)

Power Supply	
FR-I-40-24	DIN-rail 24 VDC power supply with 40W/1.7A, 85 to 264 VAC, or 120 to 370 VDC input, -20 to 70°C operating temperature
FR-I-60-24	DIN-rail 24 VDC power supply with 60W/2.5A, 85 to 264 VAC, or 120 to 370 VDC input, -20 to 70°C operating temperature

SFP Optical Transceiver	
FRSX-1L311C-I	1.25Gb/s 1310nm 10km SFP, wide operation temperature range of -40℃-85℃ (-40℉ - 185℉)
FRSX-1L341C-I	1.25Gb/s 1310nm 40km SFP, wide operation temperature range of -40℃-85℃ (-40℉ - 185℉)
FRSX-1L5X1C-I	1.25Gb/s 1550nm 80/100km SFP, wide operation temperature range of -40℃-85℃ (-40℉ - 185℉)
FRSX-1L3523/5323C-I	1.25Gb/s 1310nm/1550nm 20km BiDi SFP, wide operation temperature range of -40℃-85℃ (-40℉ - 185℉)

Armored Fiber Patch Cable / LAN Cable	
FRPC-A-LC	Armored LSZH LC UPC to LC UPC Duplex OS2 single mode 7.0mm for Ourdoor Application , 1-50m
FRLC-A-CAT6	Armored Cat6 Snagless shielded(SFTP) Ethernet Network Patch Cable, 26AWG, 1000Base-T, 0.5m – 3m

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	10/100/1000Base-T(X), RJ45	100/1000Base-X SFP	Gigabit Combo Port	Optical Port Connector Option	Input Voltage	Operating Temp.
FR-9M3424	24	—	4	LC	DC9-56V	-40 to +75℃
FR-9M348F	16	4	4	LC	DC9-56V	-40 to +75℃
FR-9M34F8	8	16	4	LC	DC9-56V	-40 to +75℃
FR-9M3424A	24	—	4	LC	90-264VAC	-40 to +75℃
FR-9M348FA	16	4	4	LC	90-264VAC	-40 to +75℃
FR-9M34F8A	8	16	4	LC	90-264VAC	-40 to +75℃

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.