FIBERROAD

LAYER 2+ MANAGED INDUSTRIAL ETHERNET SWITCH

Product Data Sheet

Ver. 2.0

Fiberroad Technology Co., Limited

The new generation Managed Industrial Switch with 8-Port 10/100/1000Base-TX + 2 x RS485/422/232 and 2xGigabit uplink ports provide stable and reliable Ethernet transmission. It concurrently converts RS-232/422/485 connections to Ethernet connections, allowing for seamless communication between traditional serial-based devices such as PLC, meters, sensors, and barcode readers to an IP-based Ethernet device.

With high-quality design and reliability. The FR-7M3208S support a wide range of management functions as well as Rapid Spanning Tree, Multiple Spanning Tree and Ethernet Ring Protection Switching (ERPS) protocols for network redundancy. IGMP functionality is supported to handle the multicast traffic, which is commonly used in IP CCTV deployment

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/MSTP/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 SP, WRR&SP+WRR
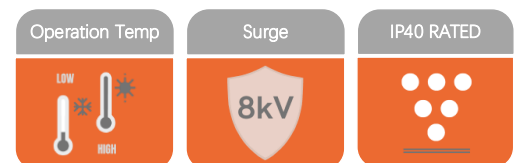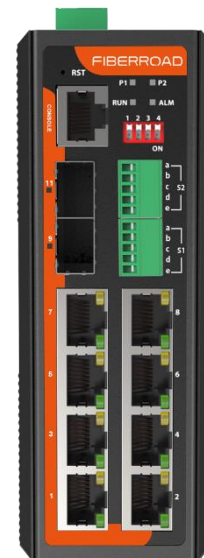
To ensure safe and reliable operation in industrial environments, FR-7M3208S can offer redundant mechanisms for critical applications that need always-on connections. It can also operate either at standard operating temperature range -40 to 75°C. Housed in rugged DIN rail or wall mountable IP40 enclosures, these switches are perfect choices for harsh environments, such as intelligent transportation systems (ITS) and are also suitable for many military and utility market applications where environmental conditions exceed commercial product specifications.

Ethernet Interface

Model	FR-7M3208S
Ports	8x10/100/1000Base-T(X）Ports(RJ45 connector) 2x100/1000Base-FX (SFP Slots) 2x RS485/422/232(5-pin Serial Terminal)
Port Mode(Tx)	Auto-Negotioation Speed 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: 20Gbps; Packet forwarding rate: 14.88Mpps
Packet Buffer	4Mbits
IGMP GroupS	2048
Max. No. of VLAN	64
VLAN ID Range	VID 1 to 4094

Series Port	Parameters
Ports	2 x RS485/422/232
Signals	RS-232: a:TXD、b:RXD、c:Na、d:Na、e:GND RS-422: a:T+、 b:T-、 c:R+、d:R-、 e:GND RS-485: : a: Na、 b: Na、 c:D+、d:D-、 e:GND
Baud rate	2400-115200bps
Terminal	5-Pin Terminal
Load Capacity	RS-485/422 supports 128 points polling environment
Movement	RS-485 adopts automatic data flow control technology
Interface Protection	RS-232 15KV static protection Isolation voltage 2KV, electrostatic protection 15KV
Management Features	
Serial Protocol	TCP Server/Client, UDP, Modbus ASCII TCP Server/Client, Modbus RTU Server/Client
Interconnection	Data Bits, Parity, Stop Bits Configuration
Serial Statistics	Bytes and Packets Statistics

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
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

Physical Characteristics

Housing	Aluminum case
IP Rating	IP40
Dimensions	138mm x 108mm x 49mm (L x W x H)
Installation	DIN Rail/Wall Mount
Weight	680g
Environmental	
Operating Temperature	-40℃~75℃ (-40 to 167 ℉)
Operating Humidity	5%~95% (non-condensing)
Storage Temperature	-40℃~85℃ (-40 to 185 ℉)
MTBF	1,043,909 hours @ Telcordia SR-332 Standard
Heat Dissipation	34 BTU/h
Cooling	Passive Cooling, Fanless Design
Noise Level	0 dBA

Power Supply

Power Consumption	10 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

LED	State	Description
PWR (P1&P2)	ON	Power is being supplied
	OFF	Power is not being Supplied.
RUN	Blinking	The system is running well
Link/ACT (1-10)	ON	Port connection is active
	Blinking	Data transmitted
	OFF	Port connection is not active.
ALM	ON	Has alarm information
	OFF	No alarm information

DIP Switch	State	Description
#1	ON	RSTP Disabled
	OFF	RSTP Enable(Default)
#2	ON	Port VLAN Enable
	OFF	Port VLAN Disable(Default)
#3	ON	SFP Port is 100M
	OFF	SFP Port 100/1000M(Default)
#4		Function Reserve

NOTE: 1. RSTP switches to the ON position, which indicates RSTP is in disabled status.
2. VLAN switches to the ON position, indicating VLAN is enabled. All LAN ports can only communicate with the SFP uplinks when this option is enabled.
3. To take effect the DIP Switch function while the ethernet switch is in operation, there is a need to reboot the Ethernet switch after tuning the DIP switch.

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
Installation Kit	1x DIN-Rail Clip 2x Wall-Mount Kits
Documentation	1 x Quick installation guide 1 x Warranty card 1x Product notice

Dimensions   Unit: mm

DIN Rail Clip

Rack Mount Kit

Side View   Rear View

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℃ to 85℃
FRSX-1L341C-I	1.25Gb/s 1310nm 40km SFP，wide operation temperature range of -40℃to 85℃
FRSX-1L5X1C-I	1.25Gb/s 1550nm 80/100km SFP，wide operation temperature range of -40℃ to 85℃
FRSX-1L3523/5323C-I	1.25Gb/s 1310nm/1550nm 20km BiDi SFP，wide operation temperature range of -40℃ to 85℃

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	1000Base-FX Port	Serial Port RS485/422/232	Optical Port Connector Option	PoE Standard	Input Voltage	Operating Temp.
FR-7M3208S	8	2	2	LC	—	DC9-56V	-40 to +75℃
FR-7M3208SP	8	2	2	LC	IEEE802.3af/at	DC9-56V	-40 to +75℃
FR-7M3208SBT	8	2	2	LC	IEEE802.3af/at/bt	DC9-56V	-40 to +75℃

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For more information

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