FIBERROAD

LAYER 2+ MANAGED INDUSTRIAL ETHERNET SWITCH

Product Data Sheet

Ver. 2.0

Fiberroad Technology Co., Limited

The New Generation Managed Industrial PoE Switch with 8-Port 10/100/1000Base-TX and 2xGigabit SFP ports provide reliable Ethernet transmission. To prevent fibre network communication during power loss, The Industrial Switch has built-in 2-channel SC/FC/ST connectors for optical bypass. A managed industrial network switch with optical fiber bypass supports a wide variety of management functions, including Rapid Spanning Tree, Multiple Spanning Tree and Ethernet Ring Protection Switching (ERPS) protocols for network redundancy. The IGMP facility can handle the multicast traffic commonly used in Video Surveillance deployments. Moreover, It can supply power to PD terminal equipment such as wireless AP, webcam, VoIP, and visual intelligent building intercom through network cable and meet the network environment that needs a high-density PoE/PoE+/PoE++ power supply.

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, IEEE 802.1X, SNMPv3, HTTPS and SSH to enhance network security.
- Bandwidth management prevents unpredictable network status with ”Lock Port” to restrict access to authorized MAC addresses.
- QoS, Priority mode based on 802.1P, Port & DSCP, queue scheduling algorithm including Equ, SP, WRR&SP+WRR

Optical Fiber Bypass

- Bypass Switching Time: ＜8ms
- Bypass Insertion Loss: ＜1.5dB

Dual power inputs enable the Managed Industrial Network Switch to provide redundant mechanisms for vital applications that require continuous connectivity. It is also possible to operate at an industry-standard operating temperature range of -40 to 75°C. These switches are ideal for harsh environments such as industrial networking or intelligent transportation systems (ITS), and are also suitable for military and utility markets applications where environmental conditions exceed commercial product specifications.

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Hardware Specifications				
Model	FR-7M3208FP	FR-7M3208FBT	FR-7M3408FP	FR-7M3408FBT
Ports	8x10/100/1000Base-T(X）RJ45 Ports 2x1000Base-X Optical Fiber Bypass		8x10/100/1000Base-T(X）RJ45 Ports 2x1000Base-X (SFP Slots) 2x1000Base-X Optical Fiber Bypass	
Port Mode(Tx)	Auto Negotiation Speed Full/Half Duplex Mode Auto MDI/MDI-X Connection			
Bypass Interface	2 x Simplex SC/FC/ST			
Bypass Optic Mode, Wavelength, Distance	Port 10: T1310/R1550nm 20km Port 12: T1550/R1310nm 20km			
Bypass Return Loss	Multimode: ＞50dB;Singlemode: ＞35dB			
Bypass Insertion Loss	Typical: 1.0dB; Max: 1.5dB			
Bypass Switching Time	＜ 8ms			
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			
Console	1x RJ45-to-RS232 Serial Port(115200)			
Packet Buffer Size	2Mbits			
Maximum Packet Length	Up to 9K			
MAC Address Table	4K			
Transmission Mode	Store and Forward (full/half duplex mode)			
Exchange Property	Delay time: < 7μs Backplane bandwidth: 20Gbps			
IGMP GroupS	2048			
Max. No. of VLAN	64			
VLAN ID Range	VID 1 to 4094			

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PoE & Power Supply

Model	FR-7M3208FP	FR-7M3208FBT	FR-7M3408FP	FR-7M3408FBT
PoE Ports	Port 1 to 8 IEEE802.3af/at @PoE+		Port 1 to 8 IEEE802.3af/at/bt @PoE++	
Power Supply Pin	Default: 1/2(+), 3/6(-)		Default: 1/2(+), 3/6(-) or 4/5(+), 7/8(-)	
Max Power Per Port	30W		90W	
Total PWR /Input Voltage	240W(DC48-56V) (Model dependent)		480W(DC48-56V) (Model dependent)	
Power Consumption	10 Watts Max(without PoE load)			
Power Inputs	2			
Input Voltage	9-56VDC,Redundant dual inputs			
Operating Voltage	Non-PoE Mode: 9-56VDC 30W PoE Mode: 48-56VDC 90W PoE Mode: 52-56VDC(IEEE802.3bt model)			
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			

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

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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%~90% (non-condensing)
Storage Temperature	-40℃~85℃ (-40 to 185 ℉)
MTBF	1,043,909 hours @ Telcordia SR-332 Standard
Heat Dissipation	853 BTU/h(with 240W PoE Load) 1262 BTU/h(with 360W PoE Load)
Cooling	Passive Coling, Fanless Design
Noise Level	0 dBA

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 (1-10/12)	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.

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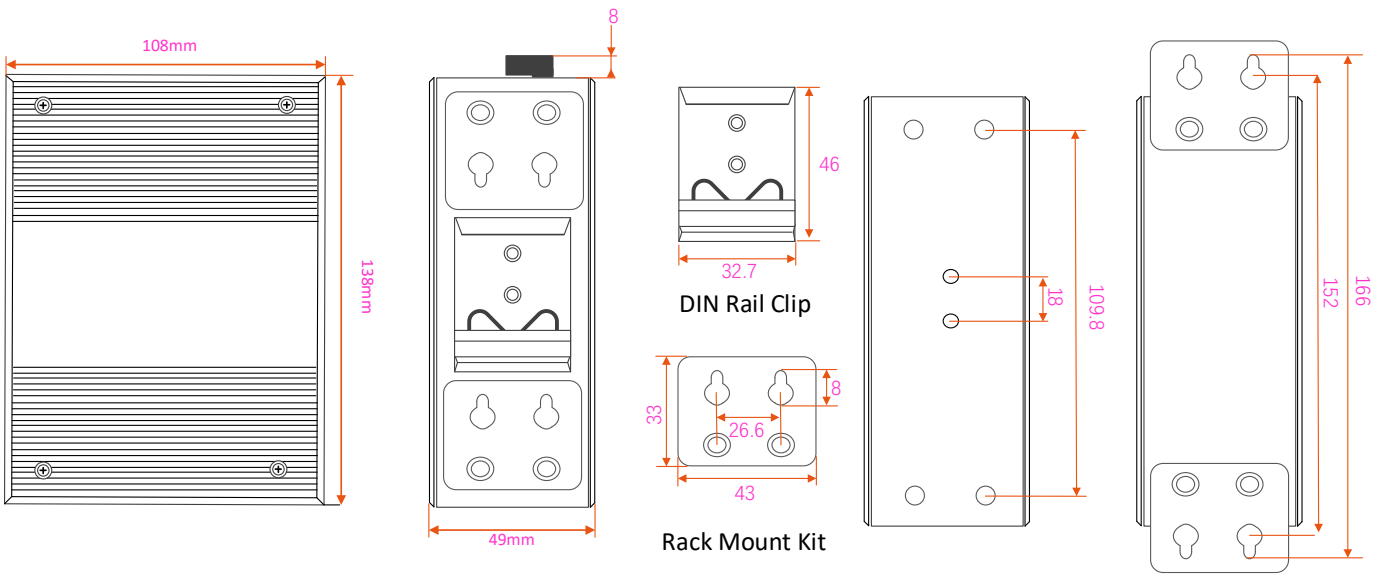
Regulatory & Warranty	
Safety	IEC/EN 62368-1
EMI	EN55032 Class A, CISPR 32 FCC Part 15B Class A
EMS	EN61000-4-2 (ESD) EN61000-4-3 (RS) EN61000-4-4 (EFT) EN61000-4-5 (Surge) EN61000-4-6 (CS) EN61000-4-8 (PFMF
Shock	IEC 60068-2-27
Free Fall	IEC 60068-2-32
Vibration	IEC 60068-2-6
Environmental	RoHS
Warranty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



Side View

Rear View

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Accessories(Sold Separately)

Power Supply	
FR-I-60-24	DIN-rail 24 VDC power supply with 60W/0.6A, 85 to 264 VAC, or 120 to 370 VDC input, -20 to 70°C operating temperature
FR-I-120-48	DIN-rail 48-58V VDC power supply with 120W/1.2A, , 85 to 264 VAC, or 120 to 370 VDC input, -20 to 70°C operating temperature
FR-I-240W-48	DIN-rail 48-55V VDC power supply with 240W/2A, , 85 to 264 VAC, or 120 to 370 VDC input, -20 to 70°C operating temperature
FR-I-480W-48	DIN-rail 48-55V VDC power supply with 480W/4A, , 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.

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Order Information

Model Number	10/100/1000Base-T(X), RJ45	1000Base-X Port	Optical Port Connector Option	Fiber Bypass Interface Option	Bypass Optic Mode ,Wavelength and Distance	PoE Standard	Input Voltage	Operating Temp.
FR-7M3208FP	8	—	—	2 x Simplex SC/FC/ST;	Port 10: T1310/R1550nm 20km Port 12: T1550/R1310nm 20km	IEEE802.3af/at	DC9-56V	-40 to +75℃
FR-7M3208FBT	8	—	—	2 x Simplex SC/FC/ST;	Port 10: T1310/R1550nm 20km Port 12: T1550/R1310nm 20km	IEEE802.3af/at/bt	DC9-56V	-40 to +75℃
FR-7M3408FP	8	2	LC	2 x Simplex SC/FC/ST;	Port 10: T1310/R1550nm 20km Port 12: T1550/R1310nm 20km	IEEE802.3af/at	DC9-56V	-40 to +75℃
FR-7M3408FBT	8	2	LC	2 x Simplex SC/FC/ST;	Port 10: T1310/R1550nm 20km Port 12: T1550/R1310nm 20km	IEEE802.3af/at/bt	DC9-56V	-40 to +75℃

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For more information

For more information about Fiberroad Managed Industrial Ethernet series products,
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