FIBERROAD

LAYER 2+ MANAGED INDUSTRIAL ETHERNET SWITCH

Product Data Sheet

Ver. 2.0

Fiberroad Technology Co., Limited

Take your industrial network to the next level with this rugged, full-featured Layer 2+ managed Ethernet switch. Built to withstand extreme temperatures from -40 to 75 degrees Celsius, this 16-port switch delivers reliable Gigabit performance with 16 RJ45 ports. Manage your network easily using the CLI, WebGUI or NMS software, while advanced features like STP/RSTP, ERPSv2 and VLANs ensure a robust, high-availability network. Optionally choose PoE/PoE+/PoE++ models to power devices over Ethernet. Tight security features include IEEE 802. X, RADIUS, HTTPS, SSH and SNMPv3 to safeguard your data. With its combination of extreme temperature tolerance, full manageability, advanced network tools and strong security, this Fiberroad switch provides the connectivity and control you need to build a high-performance industrial network that just keeps running.

Main Features

- 16x10/100/1000BASE-T Gigabit Ethernet RJ45 Ports
- Full gigabit L2+ management, easy to manage the industrial network by CLI/WebGUI/NMS.
- Optionally support PoE/PoE+/PoE++ Standard from Port 1-16
- 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
- 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 SP, WRR&SP+WRR

The L2+ Managed Industrial Ethernet Switch is a versatile and reliable solution designed specifically for small and medium-scale industrial network applications. With its advanced features and capabilities, this switch is ideal for use in intelligent transportation systems, as well as Smart City Infrastructure projects. Its managed functionality allows for greater control and customization of network settings, ensuring optimal performance and efficiency.

Ethernet Interface	
Ports	16x10/100/1000Base-T Ports(RJ45 connector)
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: 52Gbps
IGMP GroupS	2048
Max. No. of VLAN	64
VLAN ID Range	VID 1 to 4094

Physical Characteristics	
Housing	Aluminum case
IP Rating	IP40
Dimensions	160mmx132mmx70mm(L x W x H)
Installation	DIN Rail/Wall Mount
Weight	1200g
Environmental	
Operating Temperature	-40℃~75℃ (-40 to 167 ℉)
Operating Humidity	5%~90% (non-condensing)
Storage Temperature	-40℃~85℃ (-40 to 185 ℉)
MTBF	907,476 hours @ Telcordia SR-332 Standard
Heat Dissipation	65 BTU/h (non-PoE mode)
Cooling	Passive Cooling, Fanless Design
Noise Level	0 dBA
Electrostatic Discharge	Contact discharge: 8kV Discharge in air: 15kV
Surge Protection	Power Supply(Common mode): ±8kV/DM 2kV RI45 Port: ±4kV

PoE & Power Supply		
Model	FR-7M3016P	FR-7M3016BT
PoE Ports	Port 1 to 16 IEEE802.3af/at @PoE+	Port 1 to16 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	480W(DC48-56V) (Model Dependent)	
Power Consumption	10 Watts Max(without PoE load)	
Power Inputs	2	
Input 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	

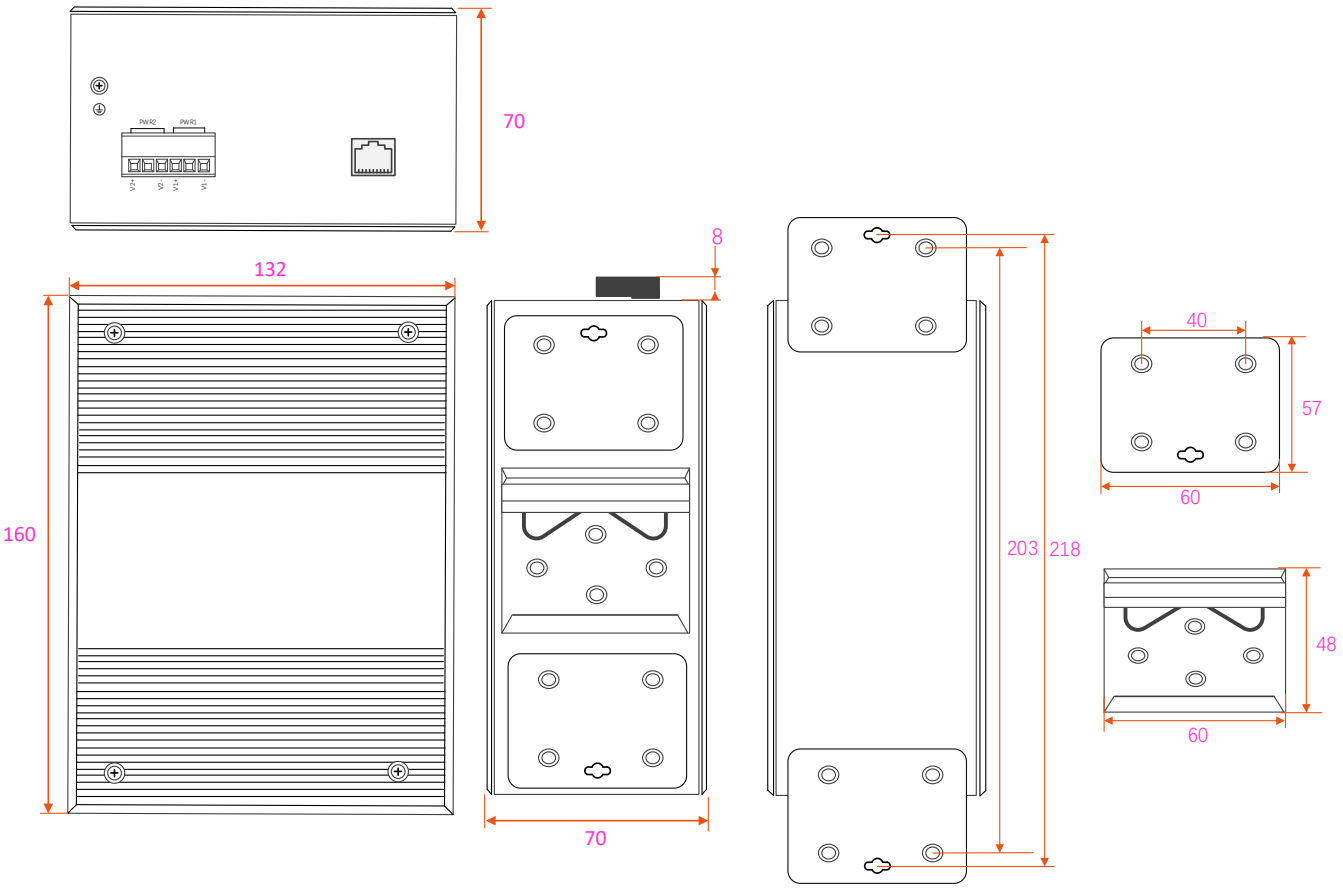
Ethernet Software Features	
Redundancy Protocols	Support STP/RSTP/ERPSv2, Link Aggregation
Multicast Support	Support IGMP Snooping V1/V2/V3，support GMRP, GVMP,802.1Q
VLAN	Support IEEE 802.1Q 4K VLAN，support QINQ, Double VLAN,
Time Management	SNTP
QOS	Flow-based redirection Flow-based rate limiting Flow-based 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 (Depending on model)	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	ON	Power is being supplied
	OFF	Power is not being Supplied.
SYS	ON	The system is running well
	OFF	The system is running unwell
Link/ACT	ON	Port connection is active
	Blending	Data transmitted
	OFF	Port connection is not active.
RJ45 Port Speed	ON	1000M is running
	OFF	Not 1000M is running

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
MTBF	500,000 hours

Package Contents	
Device	1x Industrial Ethernet Switch
Cable	1xDB9 female to RJ45 10-pin
Installation Kit	2 x cap, plastic, for SFP Slots Or 2 x cap, plastic, for SC fiber port Or 2 x cap, plastic, for ST fiber port 1x DIN-Rail Clip 2x Wall-Mount Kits
Documentation	1 x quick installation guide 1 x warranty card 1x product notice

Dimension(Unit : mm)



Accessories(Sold Separately)

Power Suppl	
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
FR-45-24	45W/2A DIN-Rail 24 VDC power supply with universal 85 to 264 VAC or 120 to 370 VDC input, -10 to 50°C operating temperature
FR-75-24	75W/3.2A DIN-Rail 24 VDC power supply with universal 85 to 264 VAC or 120 to 370 VDC input, -10 to 50°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 RJ45	100/1000Base-X SFP	Optical Port Connector Option	PoE Ports & Standard	Input Voltage	Operating Temp.
FR-7M3016	16	\	\	\	DC9-56V	-40 to +75℃
FR-7M3016P	16	\	\	Port 1-16 IEEE802.3af/at	DC9-56V	-40 to +75℃
FR-7M3016P	16	\	\	Port 1-16 IEEE802.3af/at/bt	DC9-56V	-40 to +75℃
FR-7M3808	8	8	LC	\	DC9-56V	-40 to +75℃
FR-7M3808P	8	8	LC	Port 1-8 IEEE802.3af/at	DC9-56V	-40 to +75℃
FR-7M3808BT	8	8	LC	Port 1-8 IEEE802.3af/at/bt	DC9-56V	-40 to +75℃
FR-7M3416	16	4	LC	\	DC9-56V	-40 to +75℃
FR-7M3416P	16	4	LC	Port 1-16 IEEE802.3af/at	DC9-56V	-40 to +75℃
FR-7M3416BT	16	4	LC	Port 1-16 IEEE802.3af/at/bt	DC9-56V	-40 to +75℃
FR-7M3816	16	8	LC	\	DC9-56V	-40 to +75℃
FR-7M3816P	16	8	LC	Port 1-16 IEEE802.3af/at	DC9-56V	-40 to +75℃
FR-7M3816BT	16	8	LC	Port 1-16 IEEE802.3af/at/bt	DC9-56V	-40 to +75℃

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For more information

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Visit https://www.fiberroad.com or contact your local account representative.