FIBERROAD®

# LAYER 2 PLUS MANAGED INDUSTRIAL ETHERNET SWITCH

Product Data Sheet

Experience unparalleled performance with the Layer 2+ Plus Managed Industrial Ethernet Switch, designed specifically for demanding industrial environments. Engineered for exceptional stability and reliability, this switch ensures seamless Ethernet transmission in factories, outdoor settings, and harsh conditions. Its robust construction withstands the rigors of industrial applications while delivering advanced management features that facilitate optimal network control. Elevate your operational efficiency and safeguard your critical data communications with a solution that has consistently proven its mettle across various sectors. Invest in enduring quality—choose the Layer 2+ Plus Managed Industrial Ethernet Switch for your networking needs.

## Main Features

- 8x10/100/1000BASE-T Gigabit Ethernet RJ45
- 2x100/1000BASE-X SFP Slots
- 2x1000Base-X Optical Fiber Bypass
- Optionally support IEEE 802.3 af/at/bt Power Over Ethernet Standard
- Full gigabit L2+ management, easy to manage the network by CLI/WebGUI/NMS.
- Build up a redundant industrial network with STP/RSTP/MSTP/ERPSv2
- Port-based VLAN, IEEE 802.1Q VLAN, and GVRP to ease network planning
- Traffic Classification Based on IEEE 802.1p, CoS, WRR, and Strict Mode
- SNMPv1/v2c/v3 for different levels of network management
- Wide operating temperature range -40 to 75℃

(-40 to 167℉)

- All-aluminum Case, Compact and Fanless Design


Engineered for reliability in the most demanding industrial environments, the Layer 2+ Plus Managed Industrial Ethernet Switch seamlessly integrates dual power input design to ensure uninterrupted connectivity. Enclosed in a rugged IP40-rated housing that can be easily mounted on DIN rails or walls, it excels in harsh settings where durability and uptime are critical. With its exceptional operating temperature range of -40 to 75°C, this switch is built to withstand extreme conditions.

| **Hardware Specifications** | | | | |
|---|---|---|---|---|
| Product | | FR-7M3408F | FR-7M3408FP | FR-7M3408FBT |
| Copper Ports | | 8x10/100/1000BASE-T RJ45 Auto-MDI/MDI-X (Port 1-8) | | |
| Fiber Ports | | 2x100/1000BASE-X SFP Slots (Port 9 & 11) | | |
| Console | | 1x RJ45-to-RS232 Serial Port(115200) | | |
| Bypass Interface | Connector | Default: 2 x 1000BASE-X Simplex ST(Port 10 & 12); SC/LC/FC connector optional | | |
| | Bypass Optic Mode, Wavelength, Distance | Port 9: T1310/R1550nm 20km<br>Port 10: T1550/R1310nm 20km<br>(Default) | | |
| | Bypass Return Loss | Multimode: ＞50dB;Singlemode: ＞35dB | | |
| | Bypass Insertion Loss | Typical: 1.0dB; Max: 1.5dB | | |
| | Bypass Switching Time | ＜ 8ms | | |
| Connector | | 1 removable 6-contact terminal blocks<br>Pin 1/2 for Power 1, Pin 3/4 for Power 2, Pin 5/6 for fault alarm | | |
| Alarm | | One relay output for power failure, Alarm relay current carry ability: 1A@24V DC | | |
| RAM | | 128Mbyte | | |
| FLASH | | 32MByte | | |
| Reset Button | | ＜5 sec: System Reboot; ＞10 sec: Factory Default | | |
| Surge Protection | | ±6kV DC, ±4kV RJ45 | ±6kV DC, ±6kV RJ45 | |
| Enclosure | | IP40 aluminum case | | |
| Installation | | DIN-Rail and Wall-mount | | |
| Dimension | | 138 x 108 x 49mm | | |
| Weight | | 750g(Bare weight), 900g(With package) | | |
| **Switching** | | | | |
| Switch Architecture | | Store-and-Forward | | |
| Switch Fabric | | 36Gbps/non-blocking | | |
| Forwarding Rate | | 14.88Mpps(64-byte packet size) | | |
| Packet Buffer Size | | 4 Mbits | | |
| Maximum Packet Length | | 10K bytes | | |
| MAC Address Table | | 8K entries, automatic source address learning and aging | | |
| Flow Control | | IEEE 802.3x pause frame for full duplex, Back pressure for half duplex | | |
| **PoE & Power Supply** | | | | |
| PoE Ports | | \ | Port 1 to 8 IEEE802.3 af/at | Port 1 to 8 IEEE802.3 af/at/bt |
| PoE Power Supply Type | | \ | End-span | End-span |
| Power Supply Pin | | \ | 1/2(+), 3/6(-) | 1/2(+), 3/6(-) or 4/5(+), 7/8(-) |
| Max Power Per Port | | \ | 30W | 90W |
| Input Voltage | | DC9-56V | DC48-56V | DC52-56V |
| Power Consumption | | 10 Watts Max (without PoE load) | | |
| PoE Power Budget | | \ | 240W maximum<br>(Depending on power input) | 240W maximum<br>(Depending on power input) |

| Environmental | |
|---|---|
| Operating Temperature | -40℃~75℃ (-40 to 167 ℉) |
| Storage Temperature | -40℃~85℃ (-40 to 185 ℉) |
| Operating Humidity | 5%~95% (non-condensing) |
| MTBF | 907,476 hours @ Telcordia SR-332 Standard |
| Heat Dissipation | 34 BTU/h (non-PoE mode)<br>853 BTU/h (with 240W PoE load) |
| Cooling | Passive Cooling, Fanless Design |
| Noise Level | 0 dBA |

| Software Features | |
|---|---|
| Port Configuration | Port(Admin Status) disable/enable<br>Copper Port: Auto-negotiation 10/100/1000Mbps full and half duplex mode selection<br>Fiber Port: 100M/1000M speed selection<br>Flow Control disable/enable<br>Power saving(EEE) disable/enable<br>Each port description |
| Port Status | Display each ports' speed duplex mode, link status, flow control status, auto negotiation status, Fiber Port Information, Port Traffic |
| Port Mirroring | Source Ingress/ Egress Port/ Both, Many-to-1 monitor |
| VLAN | Up to 4K VLAN groups, out of 4094 VLAN IDs<br>IEEE 802.1Q tag-based VLAN<br>IEEE 802.1AD Q-in-Q tunneling(Double VLAN)<br>GVRP(Generic VLAN Registration Protocol) |
| Link Aggregation | IEEE 802.3ad LACP/Static trunk<br>Supports 6 trunk groups with 4 ports per trunk |
| Spanning Tree Protocol | IEEE 802.1D Spanning Tree Protocol<br>IEEE 802.1w Rapid Spanning Tree Protocol<br>IEEE 802.1s Multiple Spanning Tree Protocol |
| Multicast | Dynamic/Static Multicast groups<br>IGMP Snooping v1,2,3<br>Port-based IGMP Snooping Fast Leave<br>GMP Querier |
| Rate Limitation | Per Port Rate Limitation<br>Ingress: 16-1000000 kbps/Egress: 16-1000000 kbps |
| Ring | ITU-T G.8032 ERPS, Recovery time < 10ms |
| QoS | Traffic classification based, strict priority and WRR<br>8-level priority for switching<br>-Port number<br>-802.1p priority<br>-802.1Q VLAN tag<br>-DSCP/TOS field in IP Packet |
| ACL | IP-based ACL/MAC-based ACL<br>ACL based on:<br>-MAC Address<br>-IP Address<br>-Ethertype<br>-Protocol Type<br>-VLAN ID<br>-DSCP<br>-802.1p Priority |
| Security | Port Security<br>Static MAC address<br>IEEE 802.1x port-based network access control<br>RADIUS authentication<br>DHCP Snooping, DHCP option 82 |

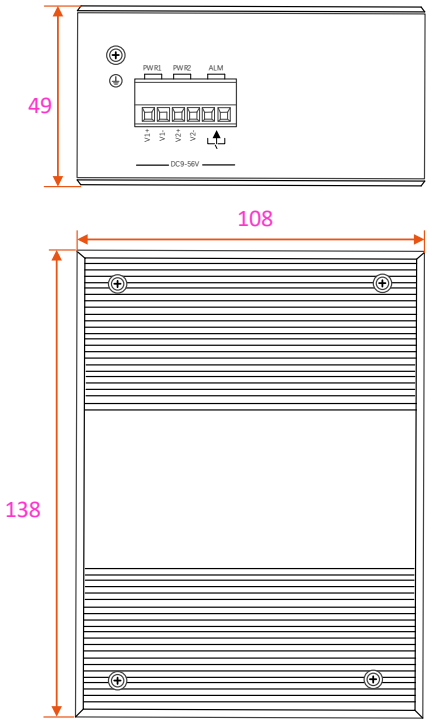
| PoE Management Functions | |
|---|---|
| PoE System Management | PoE Port status monitoring<br>Total PoE power budget control<br>PoE usage threshold and temperature threshold<br>PoE port Priority<br>PoE mode(PoE/PoE+/PoE++)<br>PD reboot(Zero Traffic Duration) |
| PoE Schedule | Absolute/Periodic Mode |
| **Serial Management Functions** | |
| 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 |
| **Layer 3 Functions** | |
| IP Interfaces | Max. 8 VLAN interfaces |
| Routing Table | Max.32 routing entries |
| Routing | IPv4 software static routing |
| **Management** | |
| Basic Management Interface | Console; Telnet; Web browser; SNMPv1/v2c |
| Secure Management Interface | SSHv2, TLSv1.2, SNMPv3 |
| System Management | Firmware Upgrade by HTTP protocol through Ethernet network<br>Configuration upload/download through HTTP<br>Remote syslog, System log<br>LLDP protocol, SNTP<br>PREVIEW NMS<br>Alarm(Relay, Led, Temperature, Trap, Power) |

| 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 |

| Regulatory & Warranty | |
|---|---|
| ISO | Manufactured in ISO-9001facility |
| Safety | IEC62368-1:2020+A11:2020 |
| EMI | FCC Part 15B Class A, IEC 61000-3-2 |
| EMS | IEC61000-4-2 ESD: Contact:±8kV, Air:±15kV<br>IEC61000-4-5 Surge: Power: ±6kV; RJ45:±4kV/±6kV(PoE) |
| Shock | IEC 60068-2-27 |
| Free Fall | IEC 60068-2-32 |
| Vibration | IEC 60068-2-6 |
| Environmental | RoHS 2011/65/EU Annex II(EU) |
| Warranty | 5 Years, Details See: https://fiberroad.com/warranty |

| Package Contents | |
|---|---|
| Device | 1 x Industrial Ethernet Switch |
| Cable | 1 x DB9 female to RJ45 |
| Installation Kit | 1 x DIN-Rail Clip |
| Documentation | 1 x Quick installation guide<br>1 x Warranty card |

**Dimensions Unit: mm**




**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,<br>-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,<br>-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,<br>-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,<br>-20 to 70°C operating temperature |

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

### 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-X Port SFP | Fiber Bypass Interface | Bypass Optic Mode ,Wavelength and Distance | PoE Standard | Input Voltage | Operating Temp. |
|---|---|---|---|---|---|---|---|
| FR-7M3408F | 8 | 2 | 2 x Simplex ST | Port 9: T1310/R1550nm 20km<br>Port 10: T1550/R1310nm 20km | — | DC9-56V | -40 to +75℃ |
| FR-7M3408FP | 8 | 2 | 2 x Simplex ST | Port 9: T1310/R1550nm 20km<br>Port 10: T1550/R1310nm 20km | IEEE802.3af/at | DC9-56V | -40 to +75℃ |
| FR-7M3408FBT | 8 | 2 | 2 x Simplex ST | Port 9: T1310/R1550nm 20km<br>Port10: T1550/R1310nm 20km | IEEE802.3af/at/bt | DC9-56V | -40 to +75℃ |

### Shipping

| Model No. | FR-7M3208F | FR-7M3208FP/FR-7M3208FBT |
|---|---|---|
| Classification Codes | HS Code: 851762 | |
| | HTS: 8517.62.00 | |
| NDAA Compliant | Yes | |
| Individual Gross Weight | 0.9kg | 0.95kg |
| Individual Package Dimension | 201x171x73mm | |
| Package Quantity | 20 Units | |
| Package Gross Weight | 19kg | 19.7kg |
| Package Dimension | 422x385x375mm | |

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### For more information

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