FIBERROAD

Ethernet Media Converter

Quick Start Guide

Content

Introduction

Thank you for choosing Fiberroad Ethernet Media Converter. This guide is designed to familiarize you with the layout of the Ethernet Media Converter and describes how to deploy them in your network. The Quick Start Guide contains Fiberroad's Unmanaged (PoE) Ethernet Media Converter, Managed (PoE) Ethernet Media Converter.

In order to understand the network management instructions of Managed Ethernet Media Converter, please visit our website: www.fiberroad.com.

Product Overview

One of the most innovative products in Fiberroad's lineup is their Ethernet Media Converter Series, which includes a range of options to suit different needs. For those who need a simple solution without too many bells and whistles, the Unmanaged Ethernet Media Converter might be best. However, for businesses that require more control over their network infrastructure, the Managed Media Converter allows for greater customization and management capabilities. Another popular option is the PoE Media Converter, which provides power over Ethernet to devices such as IP cameras or wireless access points. Finally, if you work in an industrial setting where harsh conditions are common, consider investing in an Industrial Media Converter that can withstand extreme temperatures and other environmental factors. No matter what your networking needs may be, Fiberroad has a solution designed to help you get connected with ease and efficiency

Hardware Overview

Unmanaged Ethernet Media Converter

Model:FR-2201 & FR-2203

Ports	FR-2201	FR-2203
RJ45	10/100Base-T	10/100/1000Base-T
Fiber	100M SFP or 1x9 Module	1000M SFP or 1x9 Module

LED	Status	Description
TP/LNK	Green	Link through copper port is successfully established, but no data transmission
	Blinking	Copper port is actively sending or receiving data.
	Off	Copper port is linked down.
FX/LNK	Green	Link through fiber port is successfully established, but no data transmission
	Blinking	Fiber port is actively sending or receiving data.
	Off	Fiber port is linked down.
SPD	On	Run In Maximum Speed (100M or 1000M, Based on model)
PWR	On	The Device is Powered On

DIP Switch	Name	Status	Description
#1	LFP	OFF	LFP Disable
		ON	LFP Enable
#2	ALS	OFF	ALS Disable
		ON	ALS Enable
#3	FX Reset	OFF	FX Reset Disable
		ON	FX Reset Enable
#4	FX Speed	OFF	FX 1000M
		ON	FX 100M(FR-2203)

Model:FR-2206

Ports	FR-2206
RJ45	2x10/100/1000Base-T
Fiber	1000MM SFP

DIP Switch	Name	Status	Description
#1	Reserved	\	\
#2	Jumbo Frame	OFF	Up to 1500Bytes
		ON	Up to 9KB
#3	Port Isolation	OFF	Disable
		ON	Enable
#4	FX Speed	OFF	FX 1000M
		ON	FX 100M

LED	Status	Description
TP/LNK	Green	Link through copper port is successfully established, but no data transmission
	Blinking	Copper port is actively sending or receiving data.
	Off	Copper port is linked down.
FX/LNK	Green	Link through fiber port is successfully established, but no data transmission
	Blinking	Fiber port is actively sending or receiving data.
	Off	Fiber port is linked down.
PWR	On	The Device is Powered On

Model:FR-2222

Ports	FR-2222
RJ45	100M/1G/2.5G/5G/10Base-T
Fiber	10G SFP+

LED	Status	Description
TP/LNK	Green	Link through copper port is successfully established, but no data transmission
	Blinking	Copper port is actively sending or receiving data.
	Off	Copper port is linked down.
SPD	Green	TP 10G
	Off	TP 100M ~ 10G
FX/LNK	Green	Link through fiber port is successfully established, but no data transmission
	Blinking	Fiber port is actively sending or receiving data.
	Off	Fiber port is linked down.
PWR	On	The Device is Powered On

DIP Switch	Name	Status	Description
#1	LFP	OFF	Disable
		ON	Enable
#2	ALS	OFF	Disable
		ON	Enable
#3	Media Conversion Mode	ON	1: TP=10G, FX=10G
		OFF	2: TP=10/100/1000M, FX=1G
#4		OFF	TP=10/100/1000M/10G,
		ON	FX=10G

Model:FR-2212

Ports	FR-2212
RJ45	100M/1G/2.5G/5G/10Base-T
Fiber	10G SFP+

LED	Status	Description
SFP1/2	Green/On	The SFP port is actively sending or receiving data
	Off	The SFP port link is down
LOOP	Green/On	Loop enable
	Off	Loop disable
PWR	Green	The device is powered on

DIP Switch	Name	Status	Description
#1	Combination Setting	#1 OFF / #2 OFF	125M-11.3G
		#1 ON / #2 OFF	10.35G-11.7G
#2		#1 OFF / #2 ON	8.5G
		\	\
#3	Combination Setting	#3 OFF / #4 OFF	Normal
		#3 ON / #4 OFF	ALS Enable
#4		#3 OFF / #4 ON	LFP Enable
		#3 ON / #4 ON	Loop Enable

NOTE:

1. LFP: Link fault pass through, When enabled, the UTP receiver is passed to the fibre transmitter to make the media converter appear transparent to the connected end devices. It uses link fault pass-through to indicate when far-end fault issues occur. If a fault occurs, the end device indicates a failure for troubleshooting.
2. ALS，Automatic laser shutdown is a procedure to automatically shut down the laser when there is no input light and stop emitting optical signals。
3. FX：Optical Fiber Port
4, FX Reset: When enabled, the PoE will restart if there is no data input to the UTP receiver.
5, Loop: When enabled, run a loop back test to check the interconnection between two media converter devices.

Hardware Specifications

Chassis

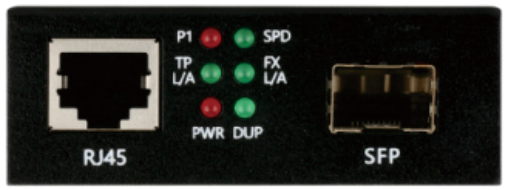
Specification	Description
Slots	12
Height	1U
Output Voltage	12 x 12VDC, 60W Max
Power Interface	12x2.1mm Plugs
Indicating LEDs	2xPower, 2xFan Operational
Input Current	1.8A (115 VAC) / 1A (230 VAC)
Power Input	2
Power Interface	2 x IEC C14 Sockets
Input Voltage	90-264 VAC
Heat Dissipation at Max Load (BTU/h)	205
Operating Temperature	0℃ to +50℃
Storage Temperature	-20℃ to +70℃
IP Rating	IP 30
Product Class	Commercial Grade

Standalone

Specification	Description
Power Input	1
Power Interface	2.1mm Input Socket
Input Voltage	5-12 VDC
Heat Dissipation at Max Load (BTU/h)	10
Operating Temperature	0℃ to +50℃
Storage Temperature	-20℃ to +70℃
IP Rating	IP 30
Product Class	Commercial Grade

Unmanaged PoE Media Converter

Model:FR-POE231 & FR-POE232

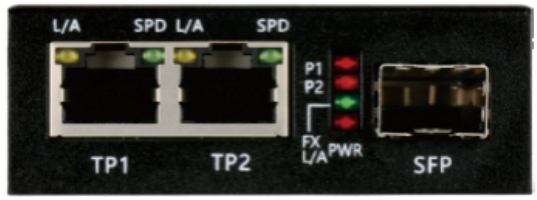


Ports	FR-POE231	FR-POE232
RJ45	10/100Base-T	10/100/1000Base-T
Fiber	100M SFP or 1x9 Module	1000M SFP or 1x9 Module

LED	Status	Description
TP/LNK	Green	Link through copper port is successfully established, but no data transmission
	Blinking	Copper port is actively sending or receiving data.
	Off	Copper port is linked down.
FX/LNK	Green	Link through Fiber port is successfully established, but no data transmission
	Blinking	Fiber port is actively sending or receiving data.
	Green	Fiber port is actively sending or receiving data
P1	On	PoE is working
SPD	On	Run In Maximum Speed (100M or 1000M, Based on model)
DUP	On	In Full Duplex Mode
PWR	On	The Device is Powered On

DIP Switch	Name	Status	Description
#1	LFP	OFF	LFP Disable
		ON	LFP Enable
#2	ALS	OFF	ALS Disable
		ON	ALS Enable
#3	FX Reset	OFF	FX Reset Disable
		ON	FX Reset Enable
#4	FX Speed	OFF	FX 1000M/100M(Model-based)
		ON	FX 100M/1000M(Model-based)

Model:FR-POE233



Ports	FR-POE231
RJ45	2x10/100/1000Base-T
Fiber	1000M SFP

LED	Status	Description
TP/LNK	Green	Link through copper port is successfully established, but no data transmission
	Blinking	Copper port is actively sending or receiving data.
	Off	Copper port is linked down.
FX/LNK	Green	Link through Fiber port is successfully established, but no data transmission
	Blinking	Fiber port is actively sending or receiving data.
	Green	Fiber port is actively sending or receiving data
P1/P2	On	PoE is working
SPD	On	Run In Maximum Speed (1000M)
PWR	On	The Device is Powered On

DIP Switch	Name	Status	Description
#1	AI PoE	OFF	AI PoE Disable
		ON	AI PoE Enable
#2	Jumbo Frame	OFF	Up to 1500Bytes
		ON	Up to 9KB
#3	VLAN	OFF	Port VLAN Disable
		ON	Port VLAN Enable
#4	FX100M	OFF	FX 1000M
		ON	FX 100M

Model: FR-POE331 & FR-POE332

Ports	FR-POE331	FR-POE332
RJ45	10/100Base-T	10/100/1000Base-T
Fiber	100M SFP or 1x9 Module	1000M SFP or 1x9 Module

LED	Status	Description
TP/LNK	Green	Link through copper port is successfully established, but no data transmission
	Blinking	Copper port is actively sending or receiving data.
	Off	Copper port is linked down.
FX/LNK	Green	Link through Fiber port is successfully established, but no data transmission
	Blinking	Fiber port is actively sending or receiving data.
	Green	Fiber port is actively sending or receiving data
PoE	On	PoE is working
100M/1000M	On	Run in maximum speed, 100M or 1000M
PWR PoE	On	PoE Voltage in normal
PWR	On	The Device is Powered On

DIP Switch	Name	Status	Description
#1	ENROM	OFF	FX Reset Disable
		ON	FX Reset Enable
#2	FX100M	OFF	FX 1000M
		ON	FX 100M
#3	PoE Shutdown	OFF	PoE Shutdown Disable
		ON	PoE Shutdown Enable
#4	LFP	OFF	LFP Disable
		ON	LFP Enable
#5	Mode1	OFF	ALS Disable
		ON	ALS Enable
#6	Mode2	OFF	AI PoE Disable
		ON	AI PoE Enable

NOTE:

1. ENROM： When enabled, when the optical link is down, the media converter will reboot
2. LFP: Link fault pass through, When enabled, the UTP receiver is passed to the fiber transmitter to make the media converter appear transparent to the connected end devices. It uses link fault pass-through to indicate when far-end fault issues occur. If a fault occurs, the end device indicates a failure for troubleshooting.
3, Ai PoE: When enabled, the PoE will restart if there is no data input to the UTP receiver.

Hardware Specifications

Model:FR-POE231, FR-POE232, FR-POE233

Specification	Description
Power Input	1
Power Interface	2.1mm Input Socket
Input Voltage	48-56 VDC
PoE	30W PoE Per Port
PSE Mode	Mode A
Heat Dissipation at Max Load (BTU/h)	113
Operating Temperature	0℃ to +50℃
Storage Temperature	-20℃ to +70℃
IP Rating	IP 30
Product Class	Commercial Grade

Model: FR-POE331, FR-POE332

Specification	Description
Power Input	1
Power Interface	IEC C14 Sockets
Input Voltage	100-240 VAC
PoE	30W PoE Per Port
PSE Mode	Mode A
Heat Dissipation at Max Load (BTU/h)	113
Operating Temperature	0℃ to +50℃
Storage Temperature	-20℃ to +70℃
IP Rating	IP 30
Product Class	Commercial Grade

PoE & Power Supply (Based on Model)

Standard Model

PoE Standard	IEEE802.3af/at (Based on model)
Power Supply Pin	Default: 1/2(+), 3/6(-)
Max PWR Per Port	30W
Total PWR/ Input Voltage	DC48-56V

IEEE802.3bt Model

PoE Standard	IEEE802.3bt (Based on model)
Power Supply Pin	Default: 1/2(+), 3/6(-), 4/5(+), 7/8(-)
Max PWR Per Port	90W
Input Voltage	DC52-56V

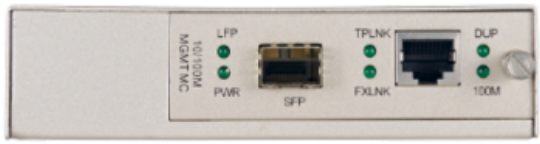
PoE Power Specification

Spec	**802.3af PoE**	**802.3at PoE+**
Device Power	12.95W	25.5W
Supplied Power	15.4W	30W
Device Voltage	44-57V	50-57V
Supplied Voltage	37-57V	42.5-57V
Current (MAX)	350mA	600mA
Resistance(Ω)	20	12.5
Cable Type	Cat3, Cat5	Cat5
Spec	**802.3bt 4PoE**	**802.3bt Type4**
Device Power	51W	71W
Supplied Power	60W	100W
Device Voltage	50-57V	52-57V
Supplied Voltage	42.5-57V	41.1-57V
Current (MAX)	600mA	960mA
Resistance(Ω)	12.5	12.5
Cable Type	Cat5	Cat5

Hardware Overview

Managed Media Converter

Model:FR-6101/R



Ports	FR-6101/R
RJ45	10/100Base-T
Fiber	100M SFP or 1x9 Module

LED	Status	Description
TP/LNK	Green	Link through copper port is successfully established, but no data transmission
	Blinking	Copper port is actively sending or receiving data.
	Off	Copper port is linked down.
FX/LNK	Green	Link through Fiber port is successfully established, but no data transmission
	Blinking	Fiber port is actively sending or receiving data.
	Green	Fiber port is actively sending or receiving data
100M	On	Run In Maximum Speed (100M)
DUP	On	In Full Duplex Mode
PWR	On	The Device is Powered On

Model:FR-6102/R

Ports	FR-6102/R
RJ45	2x10/100Base-T
Fiber	100M SFP or 1x9 Module

LED	Status	Description
TP/LNK	Green	Link through copper port is successfully established, but no data transmission
	Blinking	Copper port is actively sending or receiving data.
	Off	Copper port is linked down.
FX/LNK	Green	Link through Fiber port is successfully established, but no data transmission
	Blinking	Fiber port is actively sending or receiving data.
	Green	Fiber port is actively sending or receiving data
100M	On	Run In Maximum Speed (100M)
PWR	On	The Device is Powered On

Model: FR-6103/R

Ports	FR-6103/R
RJ45	10/100/1000Base-T
Fiber	1000M SFP or 1x9 Module

LED	Status	Description
TP/LNK	Yellow	Link through copper port is successfully established, but no data transmission
	Blinking	Copper port is actively sending or receiving data.
	Off	Copper port is linked down.
FX/LNK	Green	Link through Fiber port is successfully established, but no data transmission
	Blinking	Fiber port is actively sending or receiving data.
	Green	Fiber port is actively sending or receiving data
1000M	On	RJ45 In Maximum 1000M Speed
100M	On	RJ45 In Maximum 100M Speed
DUP	On	In full duplex mode
LFP	On	LFP function in active
PWR	On	The Device is Powered On

Model: FR-6104/R

Ports	FR-6104/R
RJ45	2x10/100/1000Base-T
Fiber	1000M SFP

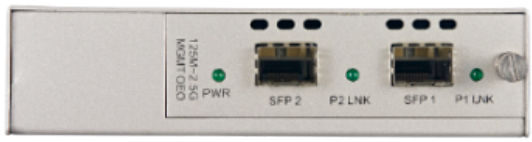
LED	Status	Description
TP/LNK	Green	Link through copper port is successfully established, but no data transmission
	Blinking	Copper port is actively sending or receiving data.
	Off	Copper port is linked down.
FX/LNK	Green	Link through Fiber port is successfully established, but no data transmission
	Blinking	Fiber port is actively sending or receiving data.
	Green	Fiber port is actively sending or receiving data
1000M	On	Run In Maximum Speed (1000M)
PWR	On	The Device is Powered On

Model: FR-6601/R

Ports	FR-6601/R
RJ45	10G Base-T
Fiber	10G SFP+

LED	Status	Description
P1/LNK	Green	Link through copper port is successfully established, but no data transmission
	Blinking	Copper port is actively sending or receiving data.
	Off	Copper port is linked down.
P2/LNK	Green	Link through Fiber port is successfully established, but no data transmission
	Blinking	Fiber port is actively sending or receiving data.
	Green	Fiber port is actively sending or receiving data
P1 10G	On	RJ45 In Maximum Speed (10G)
P2 In	On	Optical Transceiver Inserted
Loop	On	Loopback mode in active
PWR	On	The Device is Powered On

Model: FR-6201/R



Ports	FR-6201/R
Fiber	125M to 2.5G SFP

LED	Status	Description
P1/LNK	Green	Link through Fiber port is successfully established, but no data transmission
	Blinking	Fiber port is actively sending or receiving data.
	Off	Fiber port is linked down.
P2/LNK	Green	Link through Fiber port is successfully established, but no data transmission
	Blinking	Fiber port is actively sending or receiving data.
	Green	Fiber port is actively sending or receiving data
PWR	On	The Device is Powered On

Model: FR-6603/R

Ports	FR-6603/R
Fiber	125M to 10G SFP

LED	Status	Description
P1/LNK	Green	Link through Fiber port is successfully established, but no data transmission
	Blinking	Fiber port is actively sending or receiving data.
	Off	Fiber port is linked down.
P2/LNK	Green	Link through Fiber port is successfully established, but no data transmission
	Blinking	Fiber port is actively sending or receiving data.
	Green	Fiber port is actively sending or receiving data
P1 IN	On	Optical Transceiver Inserted
P2 IN	On	Optical Transceiver Inserted
Loop	On	Loopback mode in active
PWR	On	The Device is Powered On

Model: FR-6604/R

Ports	FR-6604/R
Fiber	8.5G to 11.7G SFP+

LED	Status	Description
P1/LNK	Green	Link through copper port is successfully established, but no data transmission
	Blinking	Copper port is actively sending or receiving data.
	Off	Copper port is linked down.
P2/LNK	Green	Link through Fiber port is successfully established, but no data transmission
	Blinking	Fiber port is actively sending or receiving data.
	Green	Fiber port is actively sending or receiving data
Loop	On	Loopback mode in active
PWR	On	The Device is Powered On

Hardware Specifications

Chassis

Specification	Description
Slots	17
Height	2U
Output Voltage	DC 5V Per Slot
Power Interface	12x2.1mm Plugs
Power Input	2
Power Interface	2 x IEC C14 Sockets
Fan Unite	3
Input Power	AC 100-240V or DC-48V 1.5-3.0A, 50/60Hz
Operating Temperature	0℃ to +50℃
Storage Temperature	-20℃ to +70℃
IP Rating	IP 30
Product Class	Commercial Grade

Standalone

Type 1: Without Fan Unit, Support Media Converter card with rates below 10Gbits/s

Specification	Description
Power Input	1
Power Interface	IEC C14 Sockets
Input Power	AC 100-240V or DC-48V 1.5-3.0A, 50/60Hz
Power Switch	1
Operating Temperature	0℃ to +50℃
Storage Temperature	-20℃ to +70℃
IP Rating	IP 30
Product Class	Commercial Grade

Type 2: With Fan Unit, Support Media Converter card with rate up to 10Gbit/s or above.

Specification	Description
Power Input	1
Power Interface	IEC C14 Sockets
Input Power	AC 100-240V or DC-48V 1.5-3.0A, 50/60Hz
Power Switch	1
Fan Unit	1
Operating Temperature	0℃ to +50℃
Storage Temperature	-20℃ to +70℃
IP Rating	IP 30
Product Class	Commercial Grade

Installation Guidelines

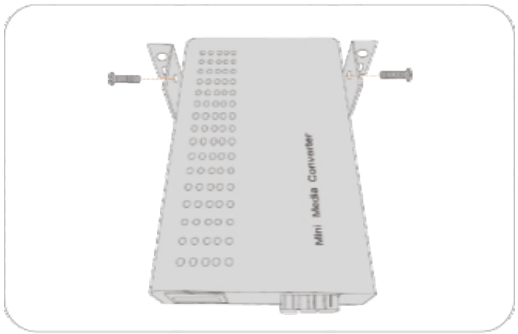
Before determining where to place the Ethernet Media Converter, Please read these guidelines.

Environment Guideline

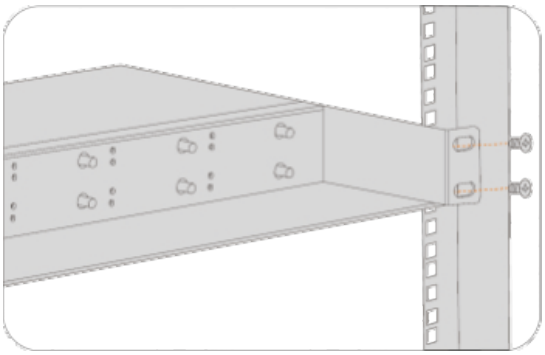
- Do Not operate it in an area that exceeds an ambient temperature of 50℃
- The installation stie should be well ventilated.
- Be sure that the Ethernet Media Converter is level and stable to avoid any hazardous condition.
- Do not install the equipment in a dusty environment.
- The installation site must be free from leaking or dripping water, heavy dew and humidity.

Rackmount Installation (Instruction for FR-2000 series)

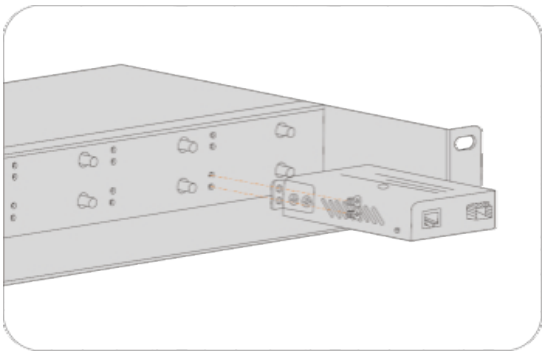
1. Install the hanging ears on the left rear side of the media converters with two screws.



2. Place the chassis into the rack. Align the brackets to the side holes on the rack and use the rack screws to secure the chassis to the rack.

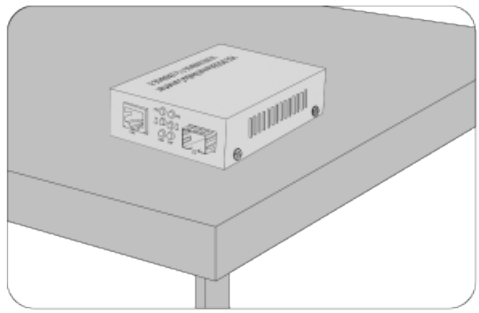


3. Install the media converter in the chassis in sequence (First install the lower level, then the upper level). Each media converter can be fixed tightly in the chassis by two screws.



Desk Mounting (Each of the Standalone Type Media Converter Supported)

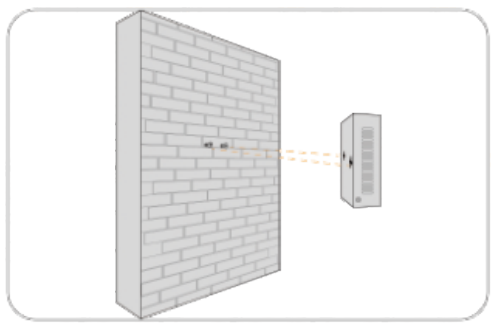
Place the media converters on the flat, secure surface (such as a desk), leaving ample space around them for ventilation.



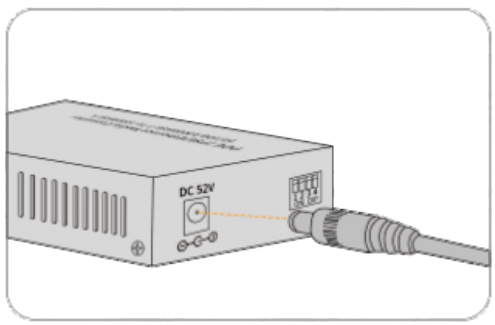
Wall Mounting (Individual Model Support)

1.Install mounting bracket on the bottom of the media converter

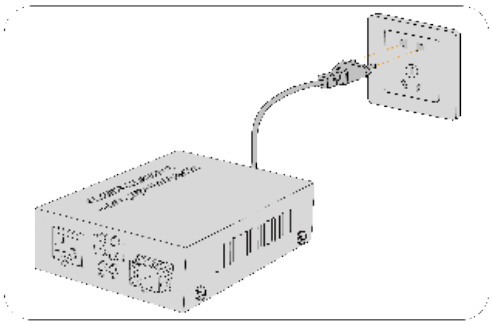
2.Place at desired location and secure with dedicated screws.



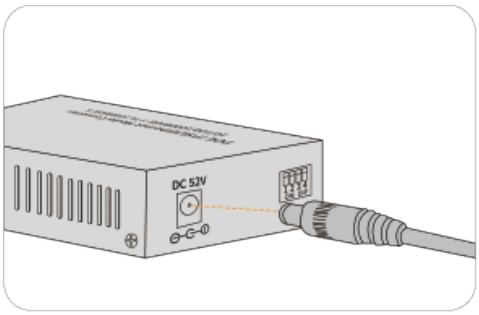
Connecting to the power（Based on Model）



1.Desktop Mounting: Connect the power adapters to the media converter and verify that the Power LED lights up.



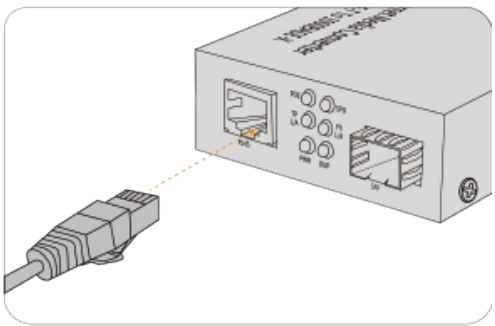
2.Rack Mounting: Connect the power cord to the media converter chassis and turn on the power switches on the back of the media converter chassis. Then verify that the power LED Lights up.

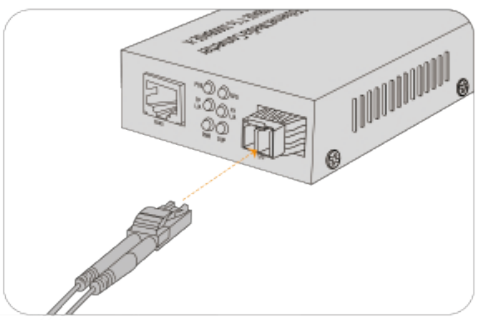


Port and Slot Connection

Connecting to the RJ45

Connect an Ethernet cable to the RJ45 port of the media converter





Connecting to the Fiber Optical Port

1.Insert an SFP module into the SFP slot

2.Connect a fiber optic cable to the SFP module. Plug the other end of the fiber optic cable to the fiber network

Wiring Requirements

Cable laying need to meet the following requirements,

1.It is needed to check whether the type, quantity and specification of cable match the requirement before cable laying;

2.It is needed to check the cable is damaged or not, factory records and quality assurance booklet before cable laying;

3.The required cable specification, quantity, direction and laying position need to match construction requirements, and cable length depends on actual position;

4.All the cable cannot have break-down and terminal in the middle;

5.Cables should be straight in the hallways and turning;

6.Cable should be straight in the groove, and cannot beyond the groove in case of holding back the inlet and outlet holes. Cables should be banded and fixed when they are out of the groove;

7.User cable should be separated from the power lines. Cables, power lines and grounding lines cannot be overlapped and mixed when they are in the same groove road. When cable is too long, it cannot hold down other cable, but structure in the middle of alignment rack;

8.Pigtail cannot be tied and swerved as less as possible. Swerving radius cannot be too small (small swerving causes terrible loss of link). Its banding should be moderate, not too tight, and should be separated from other cables;

9.It should have corresponded simple signal at both sides of the cable for maintaining.

Troubleshooting and Maintenance

Managed Media Converter

If the Manager page does not appear:

- Ping the device's IP address from the PC where the browser is launched. If not, check Computer's network connectivity.
- Confirm that the port LED for the NMC port connected to your network is green.
- Confirm that the computer that you are using to access the managed media converter has network connectivity by clicking it to

a well-known web server in your network. If there is no network connection, troubleshoot the network settings on the computer.

- Make sure that the IP address in the browser is correct.
- If the IP address in the browser is valid, the network managed card LED is green, and the computer has network connectivity, continue troubleshooting by reconnecting the laptop to the switch. Configure a static IP address on the computer in the same subnet as the switch IP address.
- When the LED on the NMC port connected to the computer is green, reenter the IP address in a web browser to display the Device Manager. When Device Manager appears, you can continue with the switch configuration.

Diagnosing Problem

The ethernet media converter LEDs provide troubleshooting information. They show fast boot failures, port-connectivity problems, and overall performance.

Media Converter LEDs

Look at the port LEDs information when troubleshooting the ethernet media converter. See each model of media converter LEDs, for a description of the LED colors and their meanings.

Connections

Bad or Damaged Cable

Please always examine the cable for marginal damage or failure. A cable might be just good enough to connect at the physical layer, but it could corrupt packets due to slight damage to the wiring or connectors. You can identify this problem because the port has many packet errors or constantly flaps (loses and regains link).

- Exchange the copper or fiber-optic cable with a known suitable cable.
- Look for broken or missing pins on cable connectors.
- Rule out any bad patch panel connections or media convertors between the source and the destination. If possible, bypass the

patch panel, or eliminate media convertors (fiber-optic-to-copper).

- Try the cable in another port to see if the problem follows the line.

Ethernet and Fiber-Optic Cables

Make sure that you have the correct cable:

- For Ethernet, use Category 3 copper cable for 10 Mb/s UTP connections. Use either Category 5, Category 5e, or Category 6 UTP for 10/100 Mb/s, and PoE connections.
- Verify that you have the correct fiber-optic cable for the distance and port type. Make sure that the connected device ports match and use the same type of encoding, optical frequency, and fiber type.
- Determine if a copper crossover cable was used when a straight-through was required or the reverse.

Link Status

Verify that both sides have a link. A broken wire or a shutdown port can cause one side to show a link even though the other side does not have a connection.

- A port LED is on does not guarantee that the cable is functional. It might have encountered physical stress, causing it to function at a marginal level. If the port LED does not turn on:
- Connect the cable from the media converter to a known suitable device.
- Ensure that both ends of the line are connected to the correct ports. Verify that both devices have power.
- Verify that you are using the correct cable type.
- Look for loose connections. Sometimes a cable appears to be seated but is not. Disconnect the line, and then reconnect it.

LAN Port Connections

If a port appears to malfunction:

- Verify the status of all ports by checking the LEDs.
- Verify the cable type.

SFP Module

Use only Fiberroad SFP modules. Each Fiberroad module has an internal serial EEPROM encoded with security information.

This encoding verifies that the module meets the requirements for the media converter.

- Inspect the SFP module. Exchange the suspect module with a known suitable module.
- Verify that the module is supported on this platform. (The media converter release notes on Fiberroad list the SFP modules that the media converter supports.)
- Make sure that all fiber-optic connections are clean and securely connected.

Interface Settings

Verify that the interface is not disabled or powered off. If an interface is manually shut down on either side of the link, it does not come up until you reenable the interface. If needed, reenable the interface.

Ping End Device

Ping from a laptop first, and then work your way backport by port, interface by interface, and trunk by trunk until you find the source of the connectivity issue. Make sure that each switch can identify the end device MAC address in its Content Addressable Memory (CAM) table.

Performance

A common issue occurs when duplex and speed settings are mismatched between two switches, between a button and a router, or between a workstation or server. Mismatches can happen when manually setting the speed and duplex or from auto-negotiation issues between the two devices.

To maximize switch performance and ensure a link, follow one of these guidelines when changing the duplex or the speed settings.

- Let both ports auto-negotiate both speed and duplex.
- Manually set the speed and duplex parameters for the interfaces on both ends of the connection.
- If a remote device does not auto-negotiate, use the same duplex settings on the two ports. The speed parameter adjusts itself even if the connected port does not auto-negotiate.

Cable and Connectors

Connector Specifications

100M/1G/2.5G/5G/10G LAN Ports Pinouts

The Ethernet Copper LAN Port on the switches use RJ45 connectors

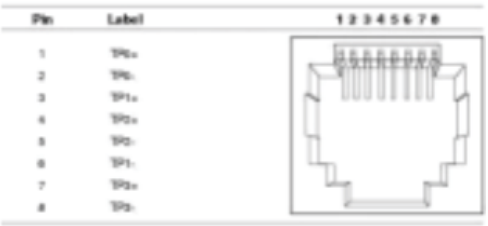


Figure: Ethernet Copper LAN Port Pinouts

NOTE: For the models of the media converter that support PoE, connector pins 4 and 5 supply +48VDC and pins 7 and 8 are the DC voltage return lines.

CAUTION: PoE faults are caused when non-compliant cabling or powered devices connect pre-standard IP phones, IP cameras, or wireless access points or IEEE 802.3af/at/by compliant devices to PoE ports. A cable or device that causes a PoE fault must be removed from the network.

NOTE: You can use the MDIX auto interface configuration command via CLI or Web GUI to enable the automatic medium-dependent interface crossover (Auto-MDIX) feature. When the Auto-MDIX feature is enabled, the switch detects the required cable type for copper Ethernet and configures the interfaces accordingly. Therefore, you can use either a crossover or straight-through actions to a copper SFP module port on the switch, regardless of the type of device on the other end of the connection.

Fiber- Optic Module Connectors

Figure 17 Fiber-Optic Module Connectors show LC, SC, FC, ST type connectors used with Fiber-Optic Module. It's a fiber-optic cable connector.

Warning: Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments.

Fiber-Optic Module Cables

Each port must match the wave-length specifications on each end of the cable, and for reliable communications, the cable must not exceed the allowable length.

NOTE:

- The maximum operating temperature of the switch varies depending on the type of SFP module you use.
- Modal bandwidth applies only to multimode fiber.
- A mode-field diameter/cladding diameter = 9 micrometers/125 micrometers.
- A mode-conditioning patch cord is required when using 1000BASE-LX/LH SFP modules, MMF, and a short link distance. An ordinary patch cord can cause transceiver saturation, resulting in an elevated bit error rate (BER). When using the LX/LH SFP module with a 62.5-micron diameter MMF, you must install a mode-conditioning patch cord between the SFP module and the MMF cable on both the sending and receiving ends of the link. The mode-conditioning patch cord is required for connection distances greater than 984 feet (300 m).

- 1000BASE-ZX SFP modules can send data up to 62 miles (100 km) using dispersion-shifted SMF or low-attenuation SMF. The distance depends on the fiber quality, the number of splices, and the connectors.
- When the fiber-optic cable span is less than 15.43 miles (25 km), insert a 5- decibel (dB) or 10-dB inline optical attenuator between the fiber-optic cable plant and the receiving port on the 1000BASE-ZX SFP module.

Compliance Information

FCC

NOTE: This equipment had been tested and found to comply with the limits for a class digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communication. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help

The device complies with part 15 of the FCC Rules. Operation is subject to the This device may not cause harmful interference, and

- This device must be accepted any interference received, including interference that may cause undesired operation.

CAUTION:

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

CE

Fiberroad Technology Co., Limited hereby declares that this device is compliance with Directive 2014/30/EU. A copy of the EU Declaration of conformity is available at https://fiberroad.com/en/resources/certificates/

www.fiberroad.com