TP-Link TL-FC311B-2

TP-Link TL-FC311B-2 Gigabit WDM SFP to RJ45 Fiber Media Converter User Manual

Model: TL-FC311B-2

1. Introduction

The TP-Link TL-FC311B-2 is a Gigabit WDM SFP to RJ45 Fiber Media Converter designed to convert 1000BASE-LX fiber optic signals to 1000Base-T copper media and vice versa. This device facilitates long-distance network connections by extending Ethernet over fiber optic cable, supporting distances up to 2 km using a single-mode fiber. It employs WDM (wavelength division multiplexing) technology, allowing data transmission and reception over a single fiber strand, which can reduce cabling costs and simplify infrastructure.

2. Product Overview

2.1 Key Features

- Converts 1000BASE-LX fiber to 1000Base-T copper media.
- Supports auto-negotiation for Half-Duplex/Full-Duplex transfer mode.
- Features auto MDI/MDIX for the TX port.
- Utilizes WDM technology for data transmission and reception over a single fiber.
- Achieves distances up to 2 km with single-mode fiber.
- Wavelengths: Tx 1310 nm, Rx 1550nm.
- Compatible with TP-Link TL-FC311A-2 for a complete fiber link.

2.2 Package Contents

- 1x TL-FC311B-2 Gigabit WDM SFP to RJ45 Fiber Media Converter
- 1x Power Adapter
- 1x User Manual

2.3 Device Layout

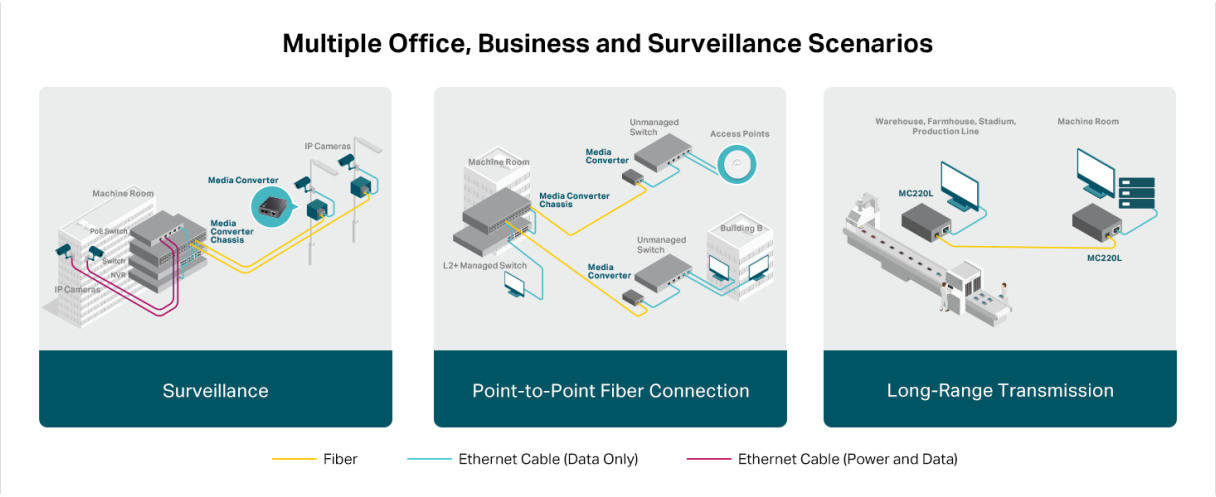
This image displays the front panel of the TL-FC311B-2 media converter. On the left is the SFP fiber port, followed by three LED indicators (PWR, Link/Act for fiber, Link/Act for Ethernet), and on the right is the Gigabit Ethernet (RJ45) port.

This image shows the side of the TL-FC311B-2 media converter, highlighting the 5V DC power input jack and its specifications (5V === 0.6A).

An angled perspective of the TL-FC311B-2 media converter, providing a clearer view of both the SFP fiber port and the Gigabit Ethernet RJ45 port, along with the LED indicators.

3. Setup Instructions

1. **Unpack the Device**: Carefully remove the TL-FC311B-2 from its packaging.
2. **Power Connection**: Connect the provided power adapter to the DC 5V port on the side of the media converter. Plug the adapter into a standard electrical outlet. The **PWR** LED indicator on the front panel should illuminate, indicating the device is powered on.
3. **Ethernet Connection**: Connect a standard Ethernet cable (RJ45) from your network device (e.g., switch, router, computer) to the **Gigabit Ethernet** port on the front of the TL-FC311B-2. The **Ethernet Link/Act** LED should light up when a valid connection is established and blink during data activity.
4. **Fiber Optic Connection**: Connect a single-mode fiber optic cable to the **SFP fiber port** on the front of the TL-FC311B-2.
    - **Important Note:** For a complete fiber link, you must use two compatible WDM media converters. The TL-FC311B-2 (Tx 1310nm, Rx 1550nm) must be paired with a TL-FC311A-2 (Tx 1550nm, Rx 1310nm) at the other end of the fiber link. Using two 'B' models or two 'A' models will prevent the link from establishing.
    - Ensure the fiber cable is securely connected. The **Fiber Link/Act** LED should illuminate when a stable fiber link is established and blink during data activity.
5. **Verify Connection**: Once both Ethernet and fiber connections are made, and the corresponding Link/Act LEDs are lit, your media converter is ready for operation.



This diagram demonstrates various network setups where the media converter can be utilized. It shows configurations for surveillance systems using IP cameras, point-to-point fiber connections between buildings, and long-range data transmission in industrial settings, highlighting the use of fiber and Ethernet cables.

4. Operating Instructions

The TL-FC311B-2 operates automatically once properly connected and powered. It functions as a transparent bridge between the fiber optic and Ethernet segments of your network.

4.1 LED Indicators

- **PWR (Power)**: Green LED. On when the device is powered.
- **Fiber Link/Act**: Green LED. On when a stable fiber optic link is established. Blinks when data is being transmitted or received over the fiber link.
- **Ethernet Link/Act**: Green LED. On when a stable Ethernet link is established. Blinks when data is being transmitted or received over the Ethernet port.

4.2 Automatic Functions

- **Auto-Negotiation**: The Ethernet port automatically detects the speed (10/100/1000Mbps) and duplex mode (Half-Duplex/Full-Duplex) of the connected Ethernet device.
- **Auto MDI/MDIX**: The Ethernet port automatically adjusts for straight-through or crossover Ethernet cables, eliminating the need for specific cable types.

5. Maintenance

- **Cleaning**: Keep the device clean and free from dust. Use a soft, dry cloth for cleaning. Do not use liquid or aerosol cleaners.
- **Ventilation**: Ensure proper airflow around the device to prevent overheating. Do not block ventilation openings.
- **Environment**: Operate the device within the specified temperature and humidity ranges (0-40°C, 10-90% non-condensing humidity).
- **Cable Management**: Ensure all cables are securely connected and not under strain. Avoid sharp bends in fiber optic cables.

6. Troubleshooting

- **No Power**:
  - Ensure the power adapter is securely connected to the device and a working electrical outlet.
  - Verify the power outlet is functional.
  - Check if the **PWR** LED is illuminated.
- **No Fiber Link (Fiber Link/Act LED Off)**:
  - Confirm that the fiber optic cable is correctly and securely connected to both media converters.
  - Ensure you are using a compatible pair of WDM media converters (e.g., TL-FC311B-2 with TL-FC311A-2). WDM converters require specific Tx/Rx wavelengths to match.
  - Check the fiber cable for damage.
  - Verify the fiber type (single-mode) and distance are within the device's specifications (up to 2 km).
- **No Ethernet Link (Ethernet Link/Act LED Off)**:
  - Ensure the Ethernet cable is securely connected to both the media converter and the network device.
  - Verify the Ethernet cable is not damaged.
  - Check the status of the connected network device (e.g., switch, router).
- **Slow Data Transfer**:
  - Ensure all connected devices support Gigabit Ethernet for optimal performance.
  - Check for excessive network traffic or other bottlenecks in your network.
  - Verify the fiber optic cable is not exceeding its maximum supported distance.

7. Specifications

Feature	Detail
Product Dimensions	3.72 x 2.87 x 1.06 inches (94.5 x 73.0 x 27.0 mm)
Item Weight	12.3 ounces
Model Number	TL-FC311B-2

Hardware Interface	Ethernet
Data Link Protocol	Auto-MDI
Data Transfer Rate	1 Gigabits Per Second
Fiber Port Type	1x 1000Mbps SC Fiber Port
Transmission Distance	Up to 2 km
Transmission Media	Single-Mode Fiber
Wavelength	Tx 1310 nm, Rx 1550nm
Operating Temperature	0-40°C (32-104°F)
Storage Temperature	-40-70°C (-40-158°F)
Operating Humidity	10-90% RH Non-Condensing
Storage Humidity	5-90% RH Non-Condensing

Product Picture					
Model	MC220L	MC200CM	MC210CS	TL-FC311A-2 / TL-FC311B-2	TL-FC311A-20/ TL-FC311B-20
Product Type	9V/0.6A Media Converter			5V/0.6A WDM Media Converter	
Fiber Ports	1 × Gigabit SFP Port	2 × 1000 Mbps SC Fiber Ports		1× 1000 Mbps SC Fiber Port	
Transmission Diatance	Depends on the used SFP module	550 m	20 km	2 km	20 km
Transmission Media		Multi-Mode	Single-Mode	Single-Mode	
Fiber Number		Dual Fiber		Single Fiber	
Wave Length		850 nm	1310 nm	A: TX—1550 nm, RX—1310 nm B: TX—1310 nm, RX—1550 nm	
Dimensions (W × D × H)	3.7×2.9×1.1 in (94.5×73.0×27.0 mm)				
Operating Temperature	0–40°C (32–104°F)			0–50°C (32–122°F)	
Environment	Storage Temperature: -40–70 °C (-40–158 °F); Operating Humidity: 10–90% RH Non-Condensing; Storage Humidity: 5–90% RH Non-Condensing				

This table provides detailed specifications for various TP-Link media converter models. For the TL-FC311B-2, it lists 1x 1000Mbps SC Fiber Port, 2 km transmission distance, Single-Mode Fiber, Tx 1310 nm, Rx 1550nm wavelength, dimensions of 3.7 x 2.9 x 1.1 inches, and an operating temperature range of 0-40°C (32-104°F).

8. Warranty and Support

For technical support, warranty information, and other inquiries, please contact TP-Link customer service using the details below:

- **Phone**: (866) 225-8139
- **Product Support Website**: myproducts.tp-link.com/us
- **Email**: support.USA@tp-link.com

For detailed warranty terms and conditions, please refer to the official TP-Link website or the warranty card included with your product.

This image provides TP-Link's customer support details: phone number (866) 225-8139, product support website myproducts.tp-link.com/us, and email support.USA@tp-link.com.