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Gigabit Ethernet Fiber Media Converter - SM LC - 20km

ET91000SM20



*actual product may vary from photos

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FCC Compliance Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by StarTech.com could void the user's authority to operate the equipment.

Industry Canada Statement

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe [A] est conforme à la norme NMB-003 du Canada.

CAN ICES-3 (A)/NMB-3(A)

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Introduction

The ET91000SM20 converts a traditional copper Gigabit Ethernet connection (RJ45), into a Gigabit fiber connection. The media converter can then extend your network up to 20 km (12.4mi.) using single-mode LC fiber-optic cable. If needed, the included SFP module (LC fiber connector) can be removed from the media converter and be replaced with a transceiver module with different specifications.

Packaging contents

- 1x Gigabit Ethernet fiber media converter
- 1x universal power adapter (NA/EU/UK/AU)
- 1x instruction manual

System requirements

- Gigabit (1000Base-T) network equipment (For example, a copper network switch)
- Gigabit (1000Base-LX) fiber-optic network equipment (For example, a fiber network switch)
- Terminated RJ45 UTP Cat5e or better Ethernet cable
- Terminated fiber-optic cable (Single-mode, LC duplex connectors)
- AC electrical outlet

Product diagram

Front view



Rear view



Install the media converter

The media converter features a pre-installed 1000Base-LX (transparent conversion) (1310 nm) Gigabit SFP transceiver module with LC connectors. This module transmits signals up to 20 km (12.4 mi.).

Ensure the DIP switches are set appropriately to match your network infrastructure. Check with your network administrator, or your network documentation, as well as the **DIP switch settings** topic for details.

Warning: Fiber optic equipment can emit laser or infrared light that can injure your eyes. Never look into a fiber-optical cable or connector while it's connected to your equipment. Always assume that fiber optic cables are connected to an active laser light source.

1. Turn off any networking equipment that will be connected to the media converter.
2. Connect a duplex LC fiber-optic cable from the media converter's TX and RX connectors to your fiber network device. The cable must be paired at both ends of the connection (for example, TX to RX, and RX to TX).

Note: In addition to the pre-installed SFP module, the media converter can also be used with any MSA-compliant Gigabit (1000Mbps) SFP module. It does not support 10/100Mbps modules.

3. Connect an RJ45 Cat5e (or better) Ethernet cable from the media converter's RJ45 port to your Gigabit network device.
4. Select the appropriate power clip for your region and connect it to the power adapter.
5. Connect the power adapter to an AC electrical outlet and then to the media converter's **DC** power input port. The **PWR** LED (power) lights up and remains solid to indicate that the media converter is powered.
6. Turn on the networking equipment that you turned off in step 1.

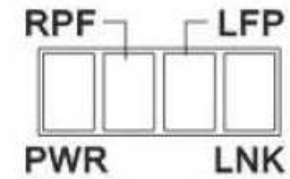
The **LNK** (fiber link) LED lights up and remains solid when a fiber link has been established, and the RJ45 **Link** (copper link) LED lights up and remains solid when a copper Ethernet link has been established.

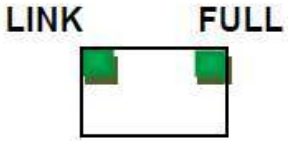
Notes:

- Fiber transceiver modules are designed to transmit signals over long distances. If the physical wiring distance is too short, the transmitting optical signal (laser) may be too strong and damage the receiving fiber transceiver module. In this situation, an in-line optical attenuator may be required to protect the transceiver modules from damage.
- The media converter accepts any MSA-compliant SFP transceiver modules (Gigabit only) with a data rate of up to 1.25Gbps. Follow all ESD precautions when handling the media converter and the SFP transceiver module. Fiber optic components and cables are sensitive to dirt, dust, and mishandling. Dirty or mistreated fiber might

cause errors and signal degradation.

LED indicators

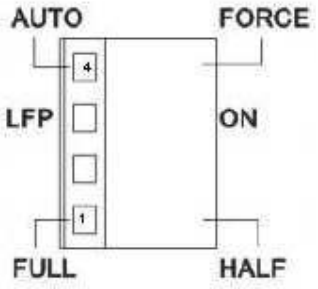




LED	Status	Indication
PWR (Green)	Solid	The media converter is powered on
	Blinking	The media converter is upgrading (rapid blinking)
	Off	The media converter is not powered on
RPF (Green)	Solid	Remote power failure
	Off	Remote power is normal
LFP (Green)	Solid	Link fault pass-through is turned on
	Off	Link fault pass-through is turned off
LNK (Green)	Solid	A fiber link between the media converter and fiber network equipment is established
	Off	A fiber link has not been established
LINK - RJ45 (Green)	Solid	A UTP copper link between the media converter and RJ45 network equipment is established
	Off	A UTP copper link has not been established
FULL - RJ45 (Green)	Solid	UTP copper link is set to full duplex
	Off	UTP copper link is not set to full duplex (half duplex)

DIP switch settings

The media converter features a four-position DIP switch that can be used to configure the ports for standalone operation.



DIP Switch Number	Position	Parameter
1	Off	Force full duplex (if forced mode is enabled)
	On	Force half duplex (if forced mode is enabled)
2	Off	Reserved
	On	Reserved
3	Off	LFP (link fault pass-through) is disabled
	On	LFP (link fault pass-through) is enabled
4	Off	RJ45 UTP is set to auto-negotiate
	On	RJ45 UTP forced mode is enabled

Note: DIP switch 2 is reserved, as it isn't used on the ET91000SM20 media converter. It does not matter which setting (upward or downward) DIP switch 2 is set to.

Link fault pass-through (LFP)

Link fault pass-through can notify you of link problems and provides an efficient solution for monitoring your network. The **LFP** DIP switch is set to OFF by default, and you can use the DIP switch to enable **(ON)** or disable (OFF) the LFP function.

If you are familiar with your network infrastructure and proper diagnostic procedures, you can leave the **LFP** DIP switch in the OFF position. Otherwise, it is recommended to set the **LFP** DIP switch to the downward **ON** position.

Enable LFP

When the DIP switch is set to **ON**, LFP is enabled. When a device is connected to the media converter, and the copper line or fiber line drops the link, then the media converter will disconnect the transmission link on the opposite interface.

- Slide the **LFP** DIP switch (DIP switch 3) to the downward **ON** position to enable LFP.

Disable LFP

When the DIP switch is set to OFF, LFP is disabled (default).

- Slide the **LFP** DIP switch (DIP switch 3) to the upward OFF position to disable LFP.

Troubleshoot

Always check to ensure the duplex setting of the connected fiber equipment matches the duplex setting of the media converter.

Troubleshoot the RJ45 copper UTP link

The RJ45 port supports Gigabit (1000Base-T) network devices and cables only. It does not support 10/100Mbps copper (RJ45) network devices.

The ET91000SM20 is a transparent media converter (it is not a switch). Therefore, the duplex setting of your fiber network equipment must match that of the media converter's RJ45 copper UTP port.

- For example, if your connected fiber device is full duplex, set the duplex DIP switch (DIP switch 1) on the media converter to the upward OFF **(FULL)** position.

Note: In most copper to fiber network infrastructures, your connected devices should be set to full duplex. In most networks, a copper link won't be established if you set DIP switch 1 to the downward **ON** (half duplex) position.

Always check your fiber network equipment to ensure it hasn't mistakenly been set to half duplex.

Troubleshoot the Fiber link

The media converter supports Gigabit fiber devices and cables only. It does not support 10/100Mbps fiber network devices or SFPs.

- The fiber port supports an auto-negotiate (default) or **FORCE** (forced) mode setting. When connected to third-party equipment (for example, a Cisco switch) you might encounter fiber link problems. In this scenario, try setting the DIP switch positions to the **FORCE** (forced) mode setting, as well as the **FULL** (full duplex) setting. Many switches do not support auto-negotiation on the fiber port(s).

Technical support

StarTech.com's lifetime technical support is an integral part of our commitment to provide industry-leading solutions. If you ever need help with your product, visit **www.startech.com/support** and access our comprehensive selection of online tools, documentation, and downloads.

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Warranty information

This product is backed by a two-year warranty.

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