



## User's Guide SFMFF4040-100

Optical Line Converter for  
Small Form Factor Pluggable (SFP)  
Transceiver Modules

The Transition Networks SFMFF4040-100 optical line converter is designed to accommodate two (2) small form factor pluggable (SFP) transceiver modules.

The following SFP transceiver modules are compatible with the SFMFF4040-100 converter and are available from Transition Networks (*sold separately*).

	Port 1	Port 2
<b>SFMFF4040-100</b>	<b>empty</b>	<b>empty</b>
<b>Part Number</b>	<b>Description</b>	
<b>TN-SFP-SX</b>	LC, 1000Base-SX, 850 nm multimode, 220-500 m (720-1640 ft)	
<b>TN-SFP-LX1</b>	LC, 1000Base-LX, 1310 nm single mode, 10 km (6.2 miles), DMI	
<b>TN-SFP-LX3</b>	LC, 1000Base-LX, 1310 nm single mode, 30 km (18.8 miles), DMI	
<b>TN-SFP-LX5</b>	LC, 1000Base-LX, 1550 nm single mode, 50 km (31.2 miles), DMI	
<b>TN-SFP-LX8</b>	LC, 1000Base-LX, 1550 nm single mode, 80 km (50.0 miles), DMI	
<b>TN-SFP-LX12</b>	LC, 1000Base-LX, 1550 nm single mode, 120 km (74.56 miles) DMI	
<b>TN-SFP-OC3M</b>	LC, 100Base-FX/OC-3 SFP 1300 nm multimode 2km (1.2 miles), DMI	
<b>TN-SFP-OC3S</b>	LC, 100Base-FX/OC-3 SFP 1310 nm single mode 20km (12.4 miles), DMI	
<b>TN-SFP-OC12M</b>	LC, OC-12/STM-4 SFP 1300 nm multimode 1 km (0.6 miles), DMI	
<b>TN-SFP-OC12S</b>	LC, OC-12/STM-4 SFP 1310 nm single mode 20 km (12.4 miles), DMI	
<b>TN-SFP-FC2XM</b>	LC, 2x/1x/OC-48/STM-16/1000Base-SX, 850 nm multimode, DMI, 150 m (492 ft)* on 62.5/125 μm fiber, 300 m (984ft)* on 50/125 μm fiber	
<b>TN-SFP-FC2XS2</b>	LC, 2x/1x/OC-48/STM-16/1000Base-LX, 1310 nm single mode, 2 km (1.2 miles), DMI	
<b>TN-SFP-FC2XS15</b>	C, 2x/1x/OC-48/STM-16/1000Base-LX, 1310 nm single mode, 15 km (9.3 miles), DMI	
<b>TN-SFP-FC2XS40</b>	LC, 2x/1x/OC-48/STM-16/1000Base-LX, 1310 nm single mode, 40 km (24.9 miles), DMI	

## Optical line converters -- continued

\*Typical maximum cable distance. Actual distance is dependent upon the physical characteristics of the network.

**NOTE:** Third-party Multi-Source Agreement (MSA) compliant Small Form Factor Pluggables (SFPs) can be used in the SFMFF4040-100.

With any two of Transition Networks SFP transceiver modules installed, the SFMFF4040-100 converter can perform the following mode and wavelength line conversions.

Mode conversions:

- multimode to multimode
- multimode to single mode
- single mode to single mode

Wavelength line conversions:

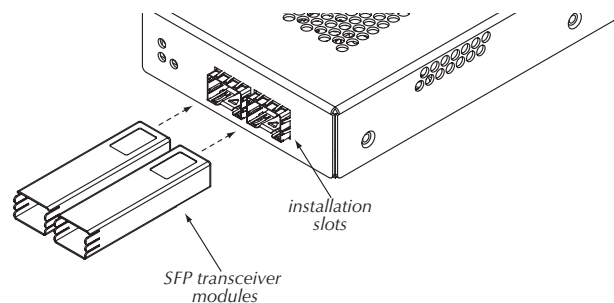
- 850 nm to 850 nm
- 850 nm to 1310 nm
- 850 nm to 1550 nm
- 1310 nm to 850 nm
- 1310 nm to 1310 nm
- 1310 nm to 1550 nm
- 1550 nm to 850 nm
- 1550 nm to 1310 nm
- 1550 nm to 1550 nm
- CWDM (*coarse wavelength division multiplexing*)
- DWDM (*dense wavelength division multiplexing*)

## Installation

### Install SFP Transceiver Modules

To install SFP transceiver modules into the SFMFF4040-100 converter:

1. Position the SFP transceiver module at either installation slot, with the label facing up.
2. Carefully slide the module into the slot, aligning it with the internal installation guides.
3. Ensure that the module is firmly seated against the internal mating connector.
4. Repeat steps 1 - 3 to install a second module in the remaining slot.

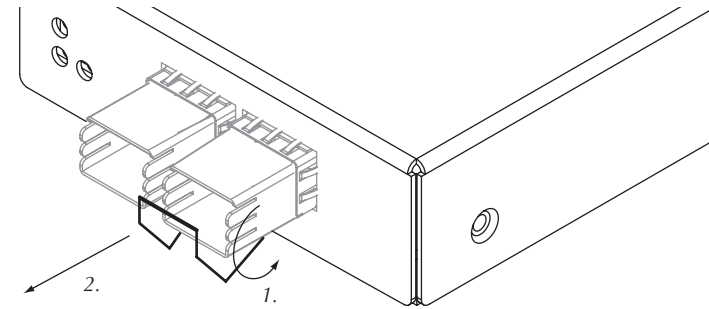


## Installation -- continued

### Remove SFP Transceiver Modules

To remove a SFP transceiver module from the SFMFF4040-100 converter:

1. Swing the handle on the SFP transceiver to the "out" position.
2. Carefully pull the module outward until it separates from the converter.



### Power the SFMFF4040-100

AC:

1. Connect the barrel connector, on the power adapter, to the power port on the converter (*on the back of the converter*).
2. Connect the power adapter plug to AC power.
3. Verify that the converter is powered by observing the illuminated LED power indicator light.

DC:

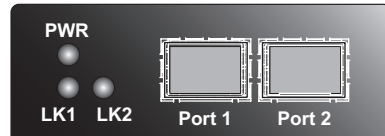
Consult the user's guide for the Transition Networks SPS1872-xx DC external power supply for powering the converter.

## Operation

### Status LEDs

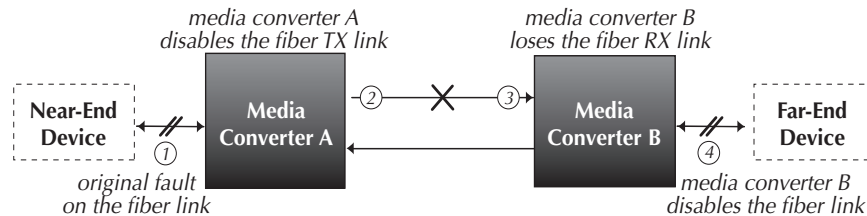
The SFMFF4040-100 optical line converter is designed to operate without user intervention. Use the status LEDs to view the operation of the converter in the network.

PWR (Power)	On = Connection to external power.
LK1 (Fiber Link - Port 1)	On = Fiber port 1 is receiving a signal.
LK2 (Fiber Link - Port 2)	On = Fiber port 2 is receiving a signal.



### Link Pass-Through

The Link Pass-Through feature allows the media converter to monitor both fiber RX (receive) ports for loss of signal. In the event of an RX signal loss (1), the media converter will automatically disable the TX (transmit) signal (2), thus, "passing through" the link loss (3). The far-end device is automatically notified of the link loss (4), which prevents the loss of valuable data unknowingly transmitted over an invalid link.



**Note:** Link losses will be automatically repaired by the converters.

## Technical Specifications

For use with Transition Networks model SFMFF4040-100 or equivalent.

<b>Standards</b>	MSA (Multi-Source Agreement) compliant SFP (Small Form Factor Pluggables)
<b>Dimensions</b>	3.25 x 4.7 x 1.0" (83 x 121 x 25 mm)
<b>Weight</b>	10 oz. (283 g) approximate
<b>Power</b>	2.0 Watts (with two (2) Transition Networks SFPs installed.)
<b>Consumption</b>	(Power consumption depends on the type of SFPs installed.)

## Technical Specifications -- continued

<b>Power Supply</b>	12VDC, 0.5 Amp (North America) 12VDC, 0.41 Amp (Europe, Japan, Latin America) 12VDC, 1.25 Amp (UK, Australia, New Zealand, South Africa)
<b>Environment</b>	Tmra*: -10° to 60°C (14° to 185°F) Storage Temp: -40° to 85°C (14° to 185°F) Humidity: 5 to 95%, non condensing Altitude: 0 to 10,000 feet
<b>Warranty</b>	Lifetime

\*Manufacturer's rated ambient temperature.

The information in this user's guide is subject to change. For the most up-to-date information on the SFMFF4040-100 optical line converter, view the user's guide on-line at: [www.transition.com](http://www.transition.com).

The chassis version of the media converter is CFMFF4040-100. For more information, see the CFMFF4040-100 user's guide on-line at: [www.transition.com](http://www.transition.com).

For the most up-to-date information on the TN-SFP-xxx transceiver modules, see the user's guide on-line at: [www.transition.com](http://www.transition.com).

Product is certified by the manufacturer to comply with DHHS Rule 21/CFR, Subchapter J applicable at the date of manufacture.

**WARNING:** Visible and invisible laser radiation when open. Do not stare into beam or view directly with optical instruments. Failure to observe this warning could result damage to your eyes or blindness.

**WARNING:** Use of controls, adjustments or the performance of procedures other than those specified herein could result in hazardous radiation exposure.

The fiber optic transmitters on this device meet Class I Laser safety requirements per IEC-825/CDRH standards and comply with 21 CFR1040.10 and 21CFR1040.11.

### Optional Accessories

Part Number	Description
<b>SPS-1872-SA</b>	Optional External Power Supply; 18-72VDC Stand-Alone; Output: 12.6VDC, 1.0 A
<b>SPS-1872-PS</b>	Optional External Power Supply; 18-72VDC Piggy-Back; Output: 12.6VDC, 1.0 A
<b>E-MCR-04</b>	12-Slot media converter Rack (includes universal internal power supply) 17 x 15 x 5 in. (432 x 381 x 127 mm)
<b>WMBL</b>	Optional Wall Mount Bracket; 4.0 in. (102 mm)
<b>WMBV</b>	Optional Vertical Mount Bracket; 5.0 in. (127 mm)
<b>WMBD</b>	Optional DIN Rail Mount Bracket; 5.0 in. (127 mm)
<b>WMBD-F</b>	Optional DIN Rail Mount Bracket (flat); 3.3in. (84 mm)

## Troubleshooting

If the SFMFF4040-100 converter fails, isolate and correct the failure by determining the answers to the following questions and taking the indicated action:

1. Is the PWR (*power*) LED illuminated?
  - NO
    - Ensure that the power adapter is the proper type of voltage and cycle frequency for the outlet (*See "Power Supply" on page 5.*)
    - Ensure the power adapter is properly installed in the converter and in the grounded outlet.
    - Contact Technical Support: US/Canada: 1-800-260-1312, International: 00-1-952-941-7600.
  - YES
    - Proceed to step 2.
  
2. Are both LK1 & LK2 LEDs (*fiber link for ports 1 & 2*) illuminated?
  - NO
    - Ensure both SFP transceiver modules are properly inserted in the converter.
    - Check the fiber cables for proper connection.
    - Verify that the TX and RX cables on the media converter are connected to the RX and TX ports, respectively, on the other device.
    - Contact Technical Support: US/Canada: 1-800-260-1312, International: 00-1-952-941-7600.
  - YES
    - Proceed to step 3.
  
3. Is the LK1 LED (*fiber link 1*) flashing?
  - NO
    - If there is no network activity on port 1, proceed to step 4.
    - If there is network activity on port 1, disconnect and reconnect the fiber cables to restart the initialization process.
    - Contact Technical Support: US/Canada: 1-800-260-1312, International: 00-1-952-941-7600.
  - YES
    - Proceed to step 4.
  
4. Is the LK2 LED (*fiber link 2*) flashing?
  - NO
    - If there is no network activity on port 2, contact technical support.
    - If there is network activity on port 2, disconnect and reconnect the fiber cables to restart the initialization process.
    - Contact Technical Support: US/Canada: 1-800-260-1312, International: 00-1-952-941-7600.

## Contact Us

### Technical support

Technical support is available 24 hours a day.  
 US and Canada: 1-800-260-1312  
 International: 00-1-952-941-7600

### Transition now

Chat live via the Web with Transition Networks Technical Support. Log onto [www.transition.com](http://www.transition.com) and click the Transition Now link.

### Web-based seminars



Transition Networks provides seminars via live web-based training. Log onto [www.transition.com](http://www.transition.com) and click the Learning Center link.

### E-Mail

Ask a question anytime by sending an e-mail to our technical support staff. [techsupport@transition.com](mailto:techsupport@transition.com)

### Address

Transition Networks  
 6475 City West Parkway  
 Minneapolis, MN 55344, U.S.A.  
 telephone: 952-941-7600  
 toll free: 800-526-9267  
 fax: 952-941-2322

 <b>Declaration of Conformity</b>	
Name of Mfg:	Transition Networks 6475 City West Parkway, Minneapolis MN 55344 U.S.A.
Model:	SFMFF4040-100 SFP Optical Line Converter
Part Number:	SFMFF4040-100
Regulation:	EMC Directive 89/336/EEC
Purpose:	To declare that the SFMFF4040-100 to which this declaration refers is in conformity with the following standards.
	EN 55022:1998 Class A; EN 55024: 1998+A1+A13164:2002; FCC Part 15 subpart B; 21CFR subpart J
<i>I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s) and Standard(s).</i>	
 Stephen Anderson, Vice-President of Engineering	June 6, 2006 Date

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# Compliance Information

## CISPR22/EN55022 Class A + EN55024; CE Mark

### FCC regulations

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 the user's own expense.

### Canadian regulations

This digital apparatus does not exceed the Class A limits for radio noise for digital apparatus set out on the radio interference regulations of the Canadian Department of Communications. Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la Class A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

### European regulations

**Warning** This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

**Achtung!** Dieses ist ein Gerät der Funkstörgrenzwertklasse A. In Wohnbereichen können bei Betrieb dieses Gerätes Rundfunkstörungen auftreten. In diesem Fall ist der Benutzer für Gegenmaßnahmen verantwortlich.

**Attention!** Ceci est un produit de Classe A. Dans un environnement domestique, ce produit risque de créer des interférences radioélectriques, il appartiendra alors à l'utilisateur de prendre les mesures spécifiques appropriées.



In accordance with European Union Directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003, Transition Networks will accept post usage returns of this product for proper disposal. The contact information for this activity can be found in the 'Contact Us' portion of this document.



CAUTION: RJ connectors are NOT INTENDED FOR CONNECTION TO THE PUBLIC TELEPHONE NETWORK. Failure to observe this caution could result in damage to the public telephone network.

Der Anschluss dieses Gerätes an ein öffentliches Telekommunikationsnetz in den EG-Mitgliedstaaten verstößt gegen die jeweiligen einzelstaatlichen Gesetze zur Anwendung der Richtlinie 91/263/EWG zur Angleichung der Rechtsvorschriften der Mitgliedstaaten über Telekommunikationsendeinrichtungen einschliesslich der gegenseitigen Anerkennung ihrer Konformität.

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