



## USER'S GUIDE

### F-SM-MM-06

#### Stand-Alone Media Converter

- OC-12 ATM / SONET
- Singlemode to Multimode

Transition Networks F-SM-MM-06 Ethernet Media Converter extends ATM or SONET over singlemode fiber-optic cable up to 40 km.

| Part Number    | Port One - Fiber-Optic                     | Port Two - Fiber-Optic                        |
|----------------|--|---|
| F-SM-MM-06     | SC, 1300 nm multimode<br>2 km (1.2 miles)* | SC, 1310 nm singlemode<br>15 km (9.3 miles)*  |
| F-SM-MM-06(XL) | SC, 1300 nm multimode<br>2 km (1.2 miles)* | SC, 1310 nm singlemode<br>40 km (24.9 miles)* |

\* Typical maximum cable distance. Actual distance is dependent upon the physical characteristics of the network. See the Cable Specifications on page 4 for more information on the cable length.

#### Optional Accessories (sold separately)

| Part Number | Description   |
|-------------|---|
| SPS-1872-SA | Optional External Power Supply; 18-72VDC Stand-Alone<br>Output: 12.6VDC, 1.0 A                                  |
| SPS-1872-CC | Optional External Power Supply; 18-72VDC Piggy-back;<br>Output: 12.6VDC, 1.0 A                                  |
| E-MCR-03    | 12-Slot Media Converter Rack (includes universal internal power supply)<br>17 x 15 x 5 in. (432 x 381 x 127 mm) |
| WMBL        | Optional Wall Mount Brackets<br>Length: 4.0 in. (102 mm), Fits converter length: 4.7 in. (119 mm)               |
| WMBV        | Optional Vertical Mount Bracket; Length: 5.0 in. (127 mm)   |
| WMBD        | Optional DIN Rail Mount Bracket; Length: 5.0 in. (127 mm)   |
| WMBD-F      | Optional DIN Rail Mount Bracket (flat); Length: 3.3in. (84 mm)  |

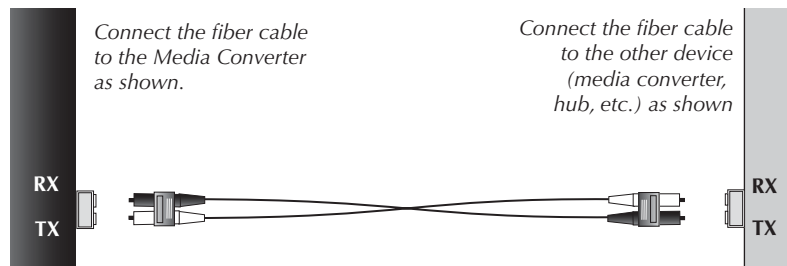
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## INSTALLATION

### Installing the Cable

#### FIBER

1. Locate or build fiber cable with male, two-stranded TX to RX connectors installed at both ends.
2. Connect the fiber cables to the Media Converter as described:
  - Connect the male **TX** cable connector to the female **TX** port.
  - Connect the male **RX** cable connector to the female **RX** port.
3. Connect the fiber cables to the other device (another media converter, hub, etc.) as described:
  - Connect the male **TX** cable connector to the female **RX** port.
  - Connect the male **RX** cable connector to the female **TX** port.



### Power the Media Converter

#### AC

1. Install the power adapter cord to the back of the Media Converter.
2. Connect the power adapter plug to AC power.
3. Verify that the Media 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 Media Converter.

## OPERATION

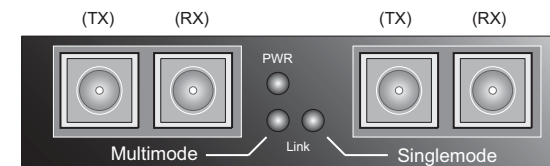
### Using Status LEDs

Use the status LEDs to monitor the Media Converter operation in the network.

**Pwr** Steady LED indicates connection to external AC and DC power.

**Link (left)** Steady LED indicates multimode fiber link connection.

**Link (right)** Steady LED indicates singlemode fiber link connection.



## CABLE SPECIFICATIONS

The physical characteristics must meet or exceed ANSI T1.646-1995, ITU G.957 specifications.

|                                   |                            |                |
|-----------------------------------|----------------------------|----------------|
| Bit Error Rate:                   | <10 <sup>-10</sup>         |                |
| <b>Multimode</b>                  | 1300 nm                    |                |
| Recommended:                      | 62.5/125 µm                |                |
| Optional:                         | 100/140, 85/125, 50/125 µm |                |
| Fiber Optic Transmitter Power:    | min: -19.0 dBm             | max: -14.0 dBm |
| Fiber Optic Receiver Sensitivity: | min: -26.0 dBm             | max: -14.0 dBm |
| Link Budget:                      | 7.0 dB                     |                |
| Minimum cable distance*           | 2 meters (6.6 ft)          |                |
| Typical maximum cable distance*   | 2 km (1.2 miles)           |                |
| <b>Singlemode</b>                 |                            |                |
| Recommended:                      | 9 µm                       |                |
| <b>F-SM-MM-06</b>                 | 1310 nm                    |                |
| Fiber Optic Transmitter Power:    | min: -15.0 dBm             | max: -8.0 dBm  |
| Fiber Optic Receiver Sensitivity: | min: -28.0 dBm             | max: -7.0 dBm  |
| Link Budget:                      | 13.0 dB                    |                |
| Minimum cable distance*           | 2 meters (6.6 ft)          |                |
| Typical maximum cable distance*   | 15 km (9.3 miles)          |                |
| <b>F-SM-MM-06(XL)</b>             | 1310 nm                    |                |
| Fiber Optic Transmitter Power:    | min: -3.0 dBm              | max: +2.0 dBm  |
| Fiber Optic Receiver Sensitivity: | min: -29.0 dBm             | max: -7.0 dBm  |
| Link Budget:                      | 26.0 dB                    |                |
| Minimum cable distance*           | 2 meters (6.6 ft)          |                |
| Typical maximum cable distance*   | 40 km (24.9 miles)         |                |

\* Actual distance is dependent upon the characteristics of the network installation.

## TECHNICAL SPECIFICATIONS

For use with Transition Networks Model F-SM-MM-06 or equivalent

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

|                           |   |                           |
|---------------------------|---|---------------------------|
| <b>Standards:</b>         | ANSI T1.646-1995, ITU G.957   |                           |
| <b>Data Rate:</b>         | 622 Mb/s  |                           |
| <b>Case Dimensions:</b>   | 4.7" x 3.0" x 1.0" (119 mm x 76 mm x 25 mm)   |                           |
| <b>Weight:</b>            | 10 oz. (283 g) (approximate)  |                           |
| <b>Power Consumption:</b> | 3.1 W   |                           |
| <b>Power Supply</b>       | 12VDC, 0.4 A (minimum)  |                           |
| <b>DC Output:</b>         | minimum output regulation: 5%<br>Connector: 2.1mm barrel, center pin positive                             |                           |
| <b>MTBF</b>               | 51,185 hours ( <i>MIL217F2 V5.0</i> ) ( <i>MIL-HDBK-217F</i> )<br>124,339 hours ( <i>Bellcore7 V5.0</i> ) |                           |
| <b>Environment:</b>       | Tmra*:  | 0 to 50°C (32 to 122°F)   |
|                           | Storage Temp:   | -20 to 85°C (-4 to 185°F) |
|                           | Humidity:   | 10 to 90%, non condensing |
|                           | Altitude:   | 0 to 10,000 feet          |
| <b>Warranty:</b>          | Lifetime  |                           |

\*Manufacturer's rated ambient temperature.

**CAUTION: Visible and Invisible Laser Radiation When Open. Do Not Stare Into Beam Or View Directly With Optical Instruments.**

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

## FAULT ISOLATION and CORRECTION

If the Media Converter fails, isolate and correct the failure by determining the answers to the following questions and then taking the indicated action:

### 1. Is the **PWR LED on the Media Converter illuminated?**

#### NO

- Is the power adapter the proper type of voltage and cycle frequency for the AC outlet?
- Is the power adapter properly installed in the Media Converter and in the outlet?
- Contact Technical Support: US/Canada: 1-800-260-1312, International: 00-1-952-941-7600.

#### YES

- Proceed to step 2.

### 2. Is the multimode **Link LED (on the left) illuminated?**

#### NO

- 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 singlemode **Link LED (on the right) illuminated?**

#### NO

- 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

- Contact Technical Support: US/Canada: 1-800-260-1312, International: 00-1-952-941-7600.

## CONTACT US

### Technical Support

Technical support is available 7:00 AM - 6:00 PM CST (GMT -6:00)

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** and click the **Transition Now** link.

### Web-Based Seminars

Transition Networks provides seminars via live web-based training.

Log onto **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**

### Address

Transition Networks

6475 City West Parkway

Minneapolis, MN 55344, USA

telephone: 952-941-7600

toll free: 800-526-9267

fax: 952-941-2322

| TRANSITION<br>networks |   | DECLARATION OF CONFORMITY |
|------------------------|---|---------------------------|
| Name of Mfg:           | <b>Transition Networks</b>  |                           |
|                        | 6475 City West Parkway, Minneapolis MN 55344 USA  |                           |
| Model:                 | <b>F-SM-MM-06 Series Media Converters</b>   |                           |
| Part Number(s):        | <b>F-SM-MM-06, F-SM-MM-06(XL)</b>   |                           |
| Regulation:            | <b>EMC Directive 89/336/EEC</b>   |                           |
| Purpose:               | To declare that the <b>F-SM-MM-06</b> to which this declaration refers is in conformity with the following standards.                     |                           |
|                        | EMC-CISPR 22: 1985 Class A; EN 55022: 1988 Class A; EN 50082-1:1992; EN 60950 A4:1997; IEC 801.2, 801.3, 801.4; IEC 950; 21 CFR subpart J |                           |
|                        | <i>I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s) and Standard(s).</i>          |                           |
|                        | <i>Stephen Anderson</i>   | January 1, 1997           |
|                        | Stephen Anderson, Vice-President of Engineering   | Date                      |

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# COMPLIANCE INFORMATION

**UL Listed**  
**C-UL Listed (Canada)**  
**CISPR22/EN55022 Class A**  
**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 weichen Fällen der Benutzer für entsprechende Gegenmaßnahmen werantwortlich ist.

### **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.

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