TRANSITION NETWORKS

User's Guide

TN-GB-xM5x

Gigabit Interface Converter (GBIC) Transceiver Modules

The Transition Networks TN-GB-xM5x series Gigabit Interface Converter (GBIC) transceiver modules, designed to be installed in any GBIC port, connect multimode 1000Base-SX or single mode 1000Base-LX fiber-optic cable to the network through the GBIC connector.

The GBIC transceiver also complies with IEEE 802.3z™ which allows this device to be used with IEEE 803.3z™ compliant devices from other vendors without voiding the warranty of either device.

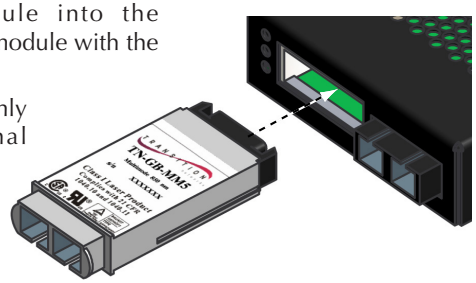
Part Number	Duplex Fiber-Optic Port
TN-GB-MM5	*SC, 1000Base-SX, 850 nm multimode, 220m (720ft)* (62.5/125µm), 500m (1640ft)* (50/125 µm)*
TN-GB-ESX5	*SC, 1000Base-SX, 1300 nm, extended multimode, up to 2Km (1.2 miles)* (50/125µm only)*
TN-GB-ESX6	*SC, 1000Base-SX, 1300 nm, extended multimode, up to 2Km (1.2 miles)* (60/125µm only)*
TN-GB-SM5	*SC, 1000Base-LX, 1310 nm single mode, 10 km (6.2 miles)**
TN-GB-SM53	*SC, 1000Base-LX, 1310 nm single mode, 30 km (18.8 miles)**
TN-GB-SM55	*SC, 1000Base-LX, 1550 nm single mode, 50 km (31.2 miles)**
TN-GB-SM58	*SC, 1000Base-LX, 1550 nm single mode, 80 km (50.0 miles)**
TN-GB-SM512	*SC, 1000Base-LX, 1550 nm single mode, 120 km (75.0 miles)***

Installation

Install the GBIC Transceiver

To install the TN-GB-xM5x GBIC transceiver module into a media converter:

1. Position the module at the installation slot so that the label faces up.
2. Carefully slide the module into the installation slot, aligning the module with the internal installation guides.
3. Ensure that the module is firmly seated against the internal mating connector.



NOTE: The TN-GB-xM5x GBIC transceiver module can be hot swapped.

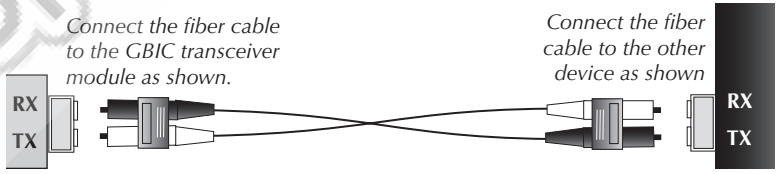
Installation -- Continued

NOTE: Per Cisco Systems' literature, the Cisco switches with SFP slots do not accept modules other than Cisco's own SFPs. The Cisco switch identifies the manufacturer ID along with the part number and blocks operations to this port for non-Cisco interfaces. Other major SFP switches manufacturer do not indicate, in their literature, that such restrictions are imposed.

Transition Networks' SFP units fully comply with Multi-Sourcing Agreement (MSA). This compliance allows Transition Networks SFP modules to be used on other MSA compliant SFP platforms without any problems.

Install the Fiber Cable

1. Locate or build 1000Base-SX or 1000Base-LX fiber cable with male TX to RX connectors installed at both ends.
2. Connect the fiber cables to the GBIC transceiver module 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 1000Base-SX or 1000Base-LX device as described:
   - Connect the male **TX** cable connector to the female **RX** port.
   - Connect the male **RX** cable connector to the female **TX** port.



Technical Specification

For use with Transition Networks Model TN-GB-xM5x or equivalent.

Standards	IEEE802.3z Gigabit Ethernet (1000BASE-SX and 1000BASE-LX); Revision 5.4 compliant [4] (GBIC). Laser Class 1 Product which complies with the requirements of IEC 60825-1 and IEC 60825-2	
Dimensions	1.2″ x 0.5″ x 2.5″ (30 mm x 12 mm x 65 mm)	
Weight	2 oz. (59 g) (approximate)	
Environment	Tmra*:	0 to 70°C (32° to 158° F)
	Storage Temp:	-40° to 85°C (-40° to 185°F)
	Humidity	5 to 95%, non condensing
	Altitude	0 to 10,000 feet
Warranty	Lifetime	

*Manufacturer's rated ambient temperature.

Fiber Cable Specification

The physical characteristics must meet or exceed IEEE 802.3z™ specifications.

Single mode fiber (recommended):	9 µm	
Multimode fiber (recommended):	62.5/125 µm	
Multimode fiber (optional):	100/140, 85/140, 50/125 µm	
TN-GB-MM5	850 nm multimode	
Fiber Optic Transmitter Power:	min: -9.5 dBm	max: -4.0 dBm
Fiber Optic Receiver Sensitivity:	min: -18.0 dBm	max: -3.0 dBm
Link Budget:	8.5 dB	
TN-GB-ESXx	1300 nm multimode	
Fiber Optic Transmitter Power:	min: -10.0 dBm	max: -3.0 dBm
Fiber Optic Receiver Sensitivity:	min: -18.0 dBm	max: -3.0 dBm
Link Budget:	8.0 dB	
TN-GB-SM5	1310 nm single mode	
Fiber Optic Transmitter Power:	min: -9.0 dBm	max: -3.0 dBm
Fiber Optic Receiver Sensitivity:	min: -20.0 dBm	max: -3.0 dBm
Link Budget:	11.0 dB	
TN-GB-SM53	1310 nm single mode	
Fiber Optic Transmitter Power:	min: -5.0 dBm	max: 0.0 dBm
Fiber Optic Receiver Sensitivity:	min: -24.0 dBm	max: -3.0 dBm
Link Budget:	19.0 dB	
TN-GB-SM55	1550 nm single mode	
Fiber Optic Transmitter Power:	min: -5.0 dBm	max: 0.0 dBm
Fiber Optic Receiver Sensitivity:	min: -24.0 dBm	max: -3.0 dBm
Link Budget:	19.0 dB	
TN-GB-SM58	850 nm single mode	
Fiber Optic Transmitter Power:	min: 0.0 dBm	max: +5.0 dBm
Fiber Optic Receiver Sensitivity:	min: -24.0 dBm	max: -3.0 dBm
Link Budget:	24.0 dB	
TN-GB-SM512	1550 nm single mode	
Fiber Optic Transmitter Power:	min: 0.0 dBm	max: +5.0 dBm
Fiber Optic Receiver Sensitivity:	min: -32.0 dBm	max: -9.0 dBm
Link Budget:	32.0 dB	

Fiber Cable Specifications -- Continued

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.

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

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.

The information in this user's guide is subject to change. For the most up-to-date information on the TN-GB-xM5x transceiver module, view the user's guide on-line at: www.transition.com.

Compliance Information

CISPR22/EN55022 Class A & B
CE Mark

FCC Regulations

This equipment has been tested and found to comply with the limits for a Class A&B 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&B 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&B prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

Contact Transition Networks

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

Chat live via the Web with Transition Networks Technical Support.
Log onto www.transition.com and click the **Transition Now** link.

Transition Networks provides seminars via live web-based training.
Log onto www.transition.com and click the **Learning Center** link.

Send an e-mail anytime to our technical support staff at: **techsupport@transition.com**

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

Declaration of Conformity

Name of Mfg:	Transition Networks 6475 City West Parkway, Minneapolis MN 55344 U.S.A.
Model:	TN-GB-xM5x Series GBIC Transceiver Modules
Part Number(s):	TN-GB-MM5, TN-GB-ESX5, TN-GB-ESX6, TN-GB-SM5, TN-GB-SM53, TN-GB-SM55,TN-GB-SM58, TN-GB-SM512
Regulation:	EMC Directive 89/336/EEC

Purpose: To declare that the TN-GB-xM5x to which this declaration refers is in conformity with the following standards.

EN 55022:1994 Class A&B; FCC Part 15 Subpart B; EN 61000-4-3; IEC 1000-4-3; EN 61000-4-4; IEC 1000-4-4; IEC 801.2; MIL-STD-883C method 3015.4; EIAJ#1988.3.2B v. 2

I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s) and Standard(s).

Stephen Anderson, Vice-President of Engineering — November 2007 Date