

iConverter XG and XG+ 10Gbps Protocol-Transparent Media Converter/Transponder

The *iConverter* XG and XG+ are 10 Gigabit, protocol-transparent media converters with two pluggable transceiver ports supporting the three Rs (regeneration, retiming and reshaping). By taking advantage of the wide variety of 10G pluggable transceivers, they can be used as copper-to-fiber converters, fiber mode converters or WDM transponders.

The *iConverter* XG and XG+ support 100% traffic throughput and have no packet size restrictions. Ultra low packet latency enables high-performance connectivity for data centers and financial networks. All models are protocol transparent within the range of 9.95Gbps to 10.71Gbps or 9.95Gbps to 11.32Gbps, providing interoperability with 10G Ethernet, 10G SONET/SDH, 10G Fibre Channel and 10G OTN (G.709).

Three interface configurations are available: XFP to XFP, XFP to SFP+, and SFP+ to SFP+. Pluggable XFP and SFP+ transceivers can be used for multimode and single-mode applications, supporting short haul distances, long haul distances and WDM fiber links. The XFP interface is compatible with copper (10GBASE-CX4) transceiver modules, making it suitable for converting 10G copper to fiber.

The *iConverter* XG+ supports high-power (power level 4) XFP transceivers and the latest generation of wavelength tunable DWDM XFP transceivers. Utilizing management, the wavelength of a tunable transceiver can be programmed and saved, eliminating the need for external programming equipment.

The *iConverter* XG and XG+ are available as compact, unmanaged standalone units, or chassis plug-in modules that can be managed with a management module installed in the chassis. The hot-swappable, plug-in modules can be mounted in a variety of chassis with AC and DC power supplies.

Plug-in modules feature full management capabilities, including status reporting, fault detection, threshold violations, loopback functionality and SNMP trap notification. SNMP traps provide link status availability and transceiver threshold alerts.

The standalone *iConverter* XG and XG+ are unmanaged tabletop or wall-mount units. The tabletop model can be DIN-rail mounted using an optional DIN-rail mounting kit. Both the tabletop and the wall-mount models are DC powered and are available with an external AC/DC power adapter, or a terminal connector for DC power.

Built-in loopback functions, on-board status LEDs and link fault propagation modes facilitate easy setup and quick troubleshooting. Pluggable transceiver alarm conditions reported through the digital diagnostic monitoring interface are displayed by the on-board status LEDs or management interface on plug-in modules.



SFP+/XFPs not included

KEY FEATURES

iConverter XG+

- Supports MSA power level 4 XFP transceivers
- Provides management of wavelength tunable XFP transceivers, compliant with MSA SFF-8477 and INF-8077i

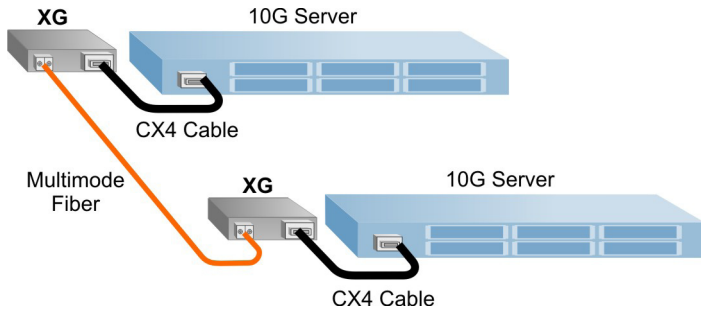
iConverter XG and iConverter XG+

- Protocol-transparent 10 Gigabit converter/transponder
- Ultra low latency
- Compatible with 10G Ethernet, 10G SONET/SDH, 10G Fibre Channel and 10G OTN (G.709)
- Compliant with MSA SFF-8472 and INF-8077i standards
- Supports Omnitron and third-party pluggable 10 Gigabit transceivers:
 - XFP to XFP (fiber and CX4 copper)
 - SFP+ to XFP (fiber and CX4 copper)
 - SFP+ to SFP+
- Omnitron transceivers support SFP+ and XFP Digital Diagnostic Monitoring Interface (DDMI) bus
- Multimode to multimode, multimode to single-mode, single-mode to single-mode and copper to fiber conversion
- Supports WDM XFPs for transponder applications
- Built-in loopback mode for installation verification and troubleshooting
- Link fault detection modes facilitate quick fault detection, isolation and reporting
- LED displays for immediate visual status of each port
- Management of the plug-in module is available with the addition of a management module to the chassis
- SNMP management via *NetOutlook*® provides monitoring, configuration and fault notification
- Lifetime Warranty and free 24/7 Technical Support

APPLICATIONS

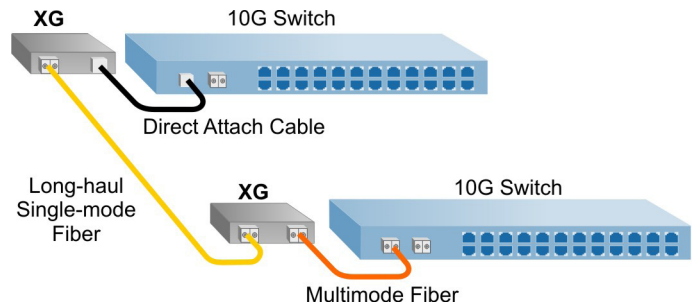
Copper to Fiber Conversion Application

This application shows two 10G servers with copper CX4 interfaces in two different locations. The servers need to be connected but are beyond the 15 meter distance limitation of a CX4 copper cable. Using a pair of 8599-11 (XFP to XFP) *iConverter* XG media converters, the servers are connected via multimode fiber (up to 300m). CX4 XFP transceivers provide the connectivity between the media converters and the servers.



Direct Connect/Fiber Conversion Application

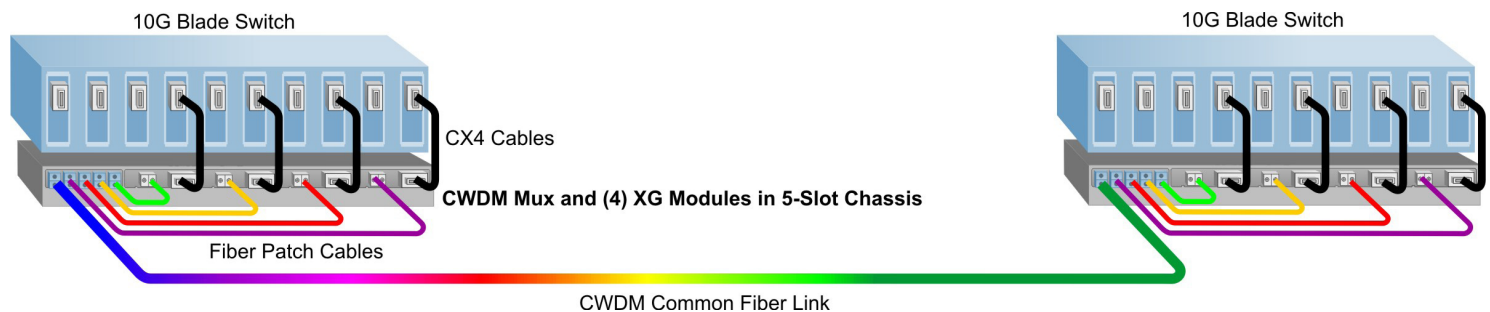
This application shows two 10G switches with SFP+ ports in two different locations. The switches are connected via long-haul, single-mode fiber (>80km) with a pair of *iConverter* XG 8599-01 (SFP+to XFP) media converters. In the top location, a low-cost SFP+ Direct Attach Cable is used to connect the 10G switch port to the media converter because the distance is within the 10 meter limit of the Direct Attach Cable. In the bottom location, a pair of multimode SFP+ transceivers provide the connectivity between the media converters and the switches.



CWDM Application

This application shows four 10G connections across a CWDM common fiber link (multi-color line) where fiber availability is limited and CWDM multiplexers are used to increase the fiber capacity.

An *iConverter* 4-Channel CWDM/X multiplexer module and four *iConverter* XG 8599-01 (SFP+ to XFP) modules are installed in a 5-Module Chassis at both locations. The *iConverter* XG modules are used as transponders to convert the CX4 interfaces on the 10G switch ports to CWDM wavelengths required by the CWDM/X multiplexers.



A CX4 transceiver is installed in port 1 on each *iConverter* XG. A CX4 cable is used to connect the 10G switch ports to each converter.

The second port of each *iConverter* XG contains an SFP+ CWDM transceiver that generates a specific CWDM optical wavelength, and is connected to the CWDM/X multiplexer with fiber patch cables (where each colored line represents a different wavelength).

SPECIFICATIONS

iConverter XG+ and Tunable Transceivers

Tunable XFP transceivers are configurable to support a specific channel in a DWDM optical network. Tunable XFPs allow network operators to remotely change wavelengths (channel paths) when they need to redistribute bandwidth, or reconfigure/upgrade traffic patterns and services.

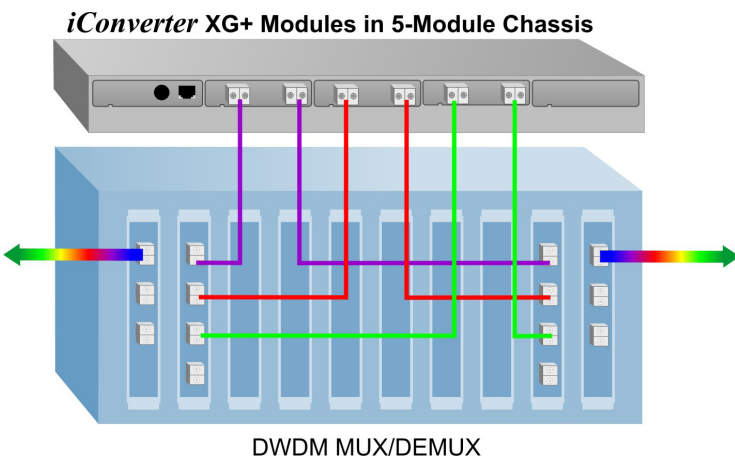
The *iConverter* XG+ management system supports the configuration of these tunable XFPs. When the XG+ is used in conjunction with an *iConverter* management module, it provides a user interface that allows the network operator to change the DWDM channel of the transceiver, eliminating the need to be physically on-site with external programming equipment.

In addition to changing the DWDM channel by specifying the wavelength or the transceiver-specific channel ID, the DWDM channel can be selected by inputting the industry-accepted ITU channel number.

Using tunable transceivers not only ensures quick responses to changes in network topology, it also lowers OpEx and CapEx by reducing truck rolls and eliminating up to hundreds of fixed-wavelength DWDM XFP transceivers from spares inventory.

OTN Long-Haul DWDM Application

This application shows three 10G DWDM connections across an OTN network. Three *iConverter* XG modules with high-power XFPs are installed in a 5-Module Chassis and connected with fiber patch cables to DWDM Multiplexer. The *iConverter* XG modules function as fiber repeaters and wavelength transponders. The high-power XFPs perform Forward Error Correction on the incoming signal, then amplify and re-encapsulate the outbound OTN signal.



Model Type	<i>iConverter</i> XG and XG+	
Protocols	10G Ethernet, 10G SONET/SDH, 10G Fiber Channel and 10G OTN (G.709)	
Speed	SFP+ Models:	9.95Gbps to 10.71Gbps
	XFP/XFP Model:	9.95Gbps to 11.32Gbps
XFP Transceiver	XG supports all XFP transceivers up to 3.5 watts Up to a maximum of 6.0 watts XG+ supports high powered XFP transceivers > 3.5 watts Up to a maximum of 11.0 watts (maximum 5.5 watts per port) XG+ provides manageability of tunable XFP transceivers	
Fiber Connector	LC (via XFP or SFP+)	
Copper Connector	CX4 (via XFP)	
Compliance	UL, FCC Class A, CE, NEBS 3 Compliant, SFF-8077, SFF-8477	
Plug-in Power Requirements	Typical:	1.1A @ 3.3VDC
Standalone Power Requirements	DC Power Input Connector:	2.5mm Barrel Connector or 2-Pin Terminal Connector
	DC Power:	7 - 60VDC XG: 1.2A @ 9VDC 0.9A @ 12VDC XG+: 1.5A @ 9VDC 1.1A @ 12VDC
	AC Power Adapter (US) via 2.5mm Barrel Connector:	100 - 120VAC/60Hz 0.20A @ 120VAC
	AC Power Adapter (Universal) via 2.5mm Barrel Connector:	100- 240VAC/50 - 60Hz 0.20A @ 120VAC
Dimensions	Plug-in: Standalone: Wall-mount:	W:0.85" x D:4.5" x H:2.8" W:3.1" x D:4.8" x H:1.0" W:3.8" x D:4.8" x H:1.0"
Temperature	Standard: Wide: Extended: Storage:	0 to 50° C -40 to 60° C -40 to 75° C -40 to 80° C
Weight	Plug-in: Standalone without power adapter: Standalone with power adapter:	8.0 oz 1.0 lb 1.5 lb
Humidity	5 to 95% (non-condensing)	
Altitude	-100m to 4000m	
MTBF (hrs)	Plug-in: Standalone without power adapter: Standalone with US power adapter: Standalone with Universal power adapter:	770,000 918,000 250,000 100,000

ORDERING GUIDELINES

Based on the installed XFP transceivers, use the tables below to determine the correct model:

XG/XG+ Transceiver Guidelines

SFP+ XFP Requirements	XG	XG+
(2) Power Level 1 or 2 SFP+	X	X
(2) Power Level 1 or 2 XFP	X	X
(1) Power Level 3 XFP*	X	X
(2) Power Level 3 XFP		X
(1) or (2) Power Level 4 XFP		X
Tunable XFPs		X

Typical SFP+/XFP Power Levels

SFP+	XFP	Power Requirements
Power Level 1		up to 1.0 watts
Power Level 2		up to 1.5 watts
	Power Level 1	up to 1.5 watts
	Power Level 2	1.5 to 2.5 watts
	Power Level 3	2.5 to 3.5 watts
	Power Level 4	3.5 to 5.5 watts

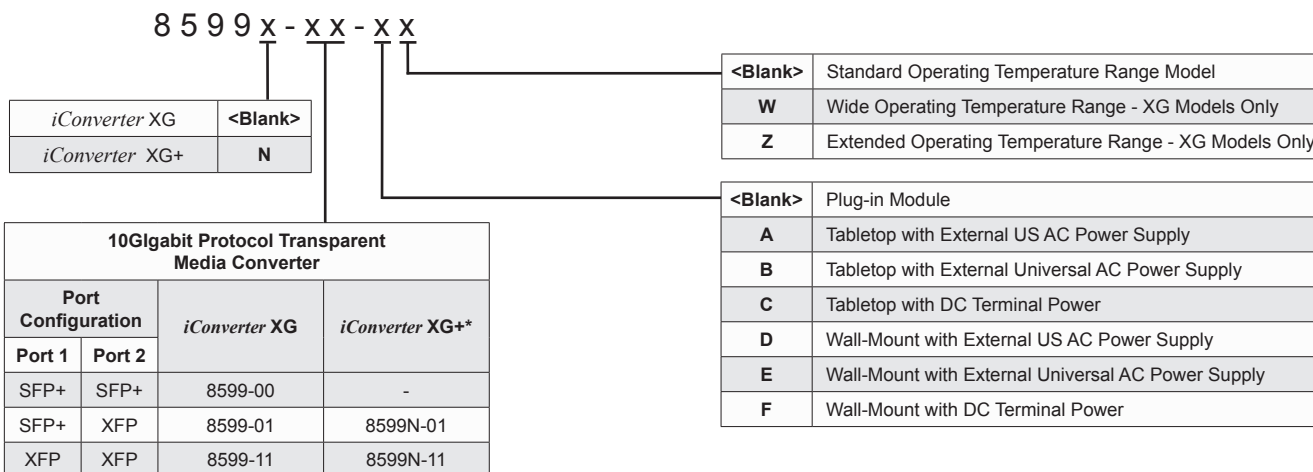
XG supports a combination of transceivers up to 6.0 watts.

XG+ supports a combination of transceivers up to 11 watts

* Where the other transceiver has a lower power requirement.

The XG+ requires specific chassis and installation configurations. Please contact Omnitron for more information.

ORDERING INFORMATION



* Refer to XG+ application note on installation requirements

Order the appropriate SFP+/XFPs separately.

For standard wavelengths: [See Optical Transceiver Data Sheet for available transceivers and optical specifications.](#)

For CWDM wavelengths: [See CWDM Optical Transceiver Data Sheet for available transceivers and optical specifications.](#)

Accessories	
7499-DC-1	10Gigabit SFP+ Direct Attach Cable (Twinax) 1m
7499-DC-3	10Gigabit SFP+ Direct Attach Cable (Twinax) 3m

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