

iConverter[®] XG+ Industrial Fiber Converter/Transponder

The iConverter Industrial XG+ is a protocol-transparent fiber converter/transponder providing data-agnostic operation over a continuous range of data rates from 9.8 to 11.35 Gbps. The XG+ features pluggable transceiver ports, and can be used as fiber mode converter, CWDM or DWDM transponder, or fiber repeater supporting the three Rs (regeneration, retiming and reshaping).

Typical data rates are shown in the table below:

| SFP+ Models and Associated Applications | |
|--|--|
| 9.8304 Gbps | Common Public Radio Interface (CPRI) |
| 9.95 Gbps | SONET OC-192, SDH STM-64, 10 Gbps Ethernet WAN PHY |
| 10.31 Gbps | 10 Gbps Ethernet LAN PHY |
| 10.52 Gbps | 10 Gbps Fibre Channel (10 GFC) |
| 10.70 Gbps | OTN OTU-2 (G.709) |
| 11.09 Gbps | 10 Gbps Ethernet LAN PHY with 255/237 FEC coding |
| 11.32 Gbps | 10 Gbps Fibre Channel with 255/237 FEC coding |
| XFP Models and Associated Applications | |
| Data rates depend on the type and make of the XFP transceivers | |

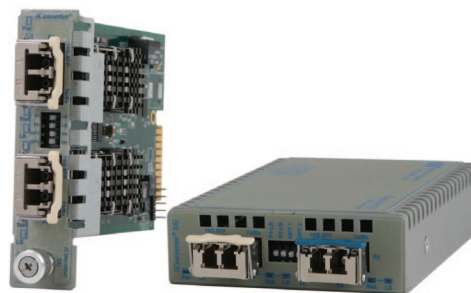
The XG+ supports 100% traffic throughput and has no packet size restrictions. Ultra-low packet latency (< 50nsec) enables high-performance connectivity for data centers and financial networks.

The iConverter XG+ supports high-power (power level 3 and 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.

The XG+ has built-in loopback functions, on-board status LEDs and link fault propagation modes facilitate easy setup and quick troubleshooting.

The iConverter XG+ is available as a compact, unmanaged standalone units, or chassis plug-in modules that can be managed with a Management Module (NMM2) or Network Interface Device (NID) installed in the chassis. The management module provides access to the advanced features available on the module.

The XG+ standalone units are available with an external AC to DC power adapter or with a 2-pin terminal connector for direct connection to DC power. The standalone modules can be DIN-Rail mounted using the optional DIN-Rail mounting bracket (8250-0).



SFP+/XFPs not included

KEY FEATURES

- Supports commercial (0 to 50°C), wide (-40 to 60°C) and industrial (-40 to 75°C) temperature ranges
- Protocol-transparent 9.8 Gbps to 11.32 Gbps fiber converter and transponder with ultra-low latency
- Functions as a fiber mode converter, a CWDM or DWDM transponder, or a fiber repeater supporting the three Rs
- Automatic Speed Selection detects the data rate of the installed transceiver and the connected device
- Compatible with 10G Ethernet, 10G SONET/SDH, 10G Fibre Channel, 10G OTN (G.709) and 9.8 Gbps CPRI
- Compliant with MSA SFF-8472 and INF-8077i standards
- Supports MSA power level 3 and 4 XFP transceivers
- Provides management of wavelength tunable XFP transceivers
- Built-in loopback mode for installation verification and troubleshooting
- Self-Diagnostic Circuit Test for validating link connectivity
- Link fault detection modes facilitate quick fault detection, isolation and reporting
- Automatic Link Recovery
- 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
- Omnitron transceivers support SFP+ and XFP Digital Diagnostic Monitoring Interface (DDMI) bus
- TAA, BAA and NDAA compliant, and Made in the USA
- Lifetime Warranty and free 24/7 Technical Support

APPLICATIONS

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.

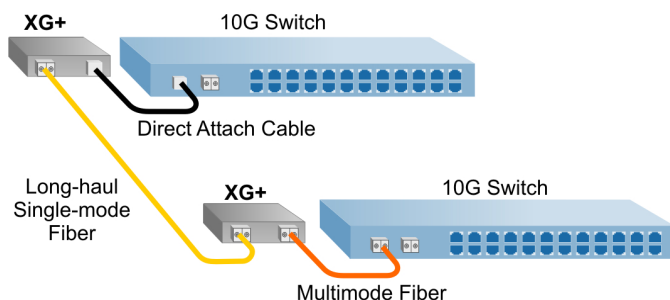
In addition to changing the DWDM channel by specifying the wavelength or the transceiver-specific channel ID, the DWDM channel can be selected by inputting the industry-accepted ITU channel number.

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.

Direct Connect/Fiber Conversion Application

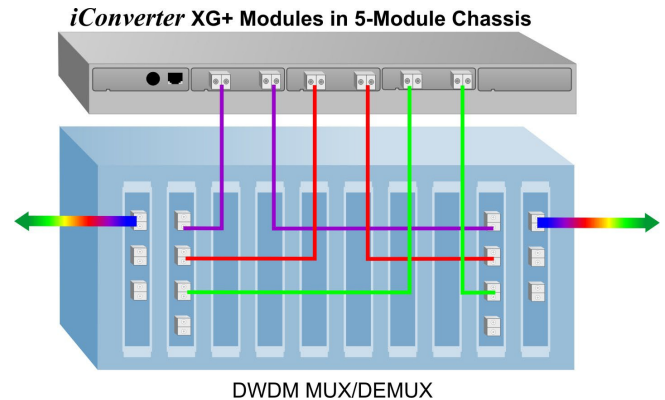
This application shows two 10G switches with SFP+ ports in two different locations. The switches are connected via long-haul, single-mode fiber (>80km) with a pair of iConverter XG+ 8599R-01 (SFP+to XFP) media converters. In the top location, a low-cost SFP+ Direct Attach Cable is used to connect the 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.

The key benefit of using XG+ fiber media converters in this application is that they cost much less than proprietary transceivers required in many fiber switches. In addition, the external fiber media converters do not invalidate fiber switch manufacturer's warranty.



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.



SPECIFICATIONS

| | | |
|-------------------------------|---|--|
| Description | iConverter Industrial XG+ Protocol-Transparent Fiber Converter/Transponder | |
| Standard Compliances | IEEE 802.3ae (10G Ethernet), SONET OC-192, SDH STM-64, INCITS T11.2 (10G Fibre Channel), ITU-T G.709 OTN, 9.8 Gbps CPRI | |
| Regulatory Compliances | Safety: EMI: ACT: | UL, cUL, CE, NEBS 3 Compliant, UKCA FCC Class A TAA, BAA, NDAA |
| Environmental | RoHS, WEEE, REACH | |
| Frame Size | Unlimited | |
| Port Types | Fiber: | 10GBASE-SR (SFP+, XFP) 10GBASE-LR (SFP+, XFP) 10GBASE-ER (SFP+, XFP) 10GBASE-ZX (XFP) 10GBASE-BR (Single-fiber: SFP+, XFP) |
| Cable Types | Fiber: | Multimode: 50/125µm, 62.5/125µm Single-mode: 9/125µm |
| AC Power Requirements | AC Adapter: (US) | 100 - 240VAC/50 - 60Hz 0.20A @ 120VAC (max) |
| | AC Adapter: (Universal) | 100 - 240VAC/50 - 60Hz 0.20A @ 120VAC (max) |
| DC Power Requirements | DC Input: (Backplane) | 3.3VDC, 3.75A @ 3.3VDC (Max) |
| | DC Input: (Terminal Block) | 7 - 60VDC, 1.5A @ 9VDC, 1.1A @ 12VDC 2-Pin Terminal (non-isolated) |
| | DC Input: (AC Adapter) | 7 - 60VDC, 1.5A @ 9VDC, 1.1A @ 12VDC 2.5mm Barrel Connector |

| | | |
|-----------------------------|--|---|
| Dimensions W x D x H | Plug-in: | 0.85" x 4.5" x 2.8" (21.6 mm x 114.3 mm x 71.1 mm) |
| | Standalone: | 3.1" x 4.8" x 1.0" (78.7 mm x 121.9 mm x 25.4 mm) |
| | Standalone: (Wall-mount) | 3.8" x 4.8" x 1.0" (96.5 mm x 121.9 mm x 25.4 mm) |
| Weight | Plug-in: | 8 oz. (226.8 grams) |
| | Standalone w/o Adapter: | 1.0 lb. (453.6 grams) |
| | Standalone w Adapter: | 1.5 lbs. (680.4 grams) |
| Temperature | Commercial: | 0 to 50°C |
| | Wide: | -40 to 60°C |
| | Industrial: | -40 to 75°C |
| | Storage: | -40 to 80°C |
| Humidity | 5 to 95% (non-condensing) | |
| Altitude | -100m to 4,000m | |
| MTBF (hrs) | Plug-in: | 770,000 |
| | Standalone w/o Adapter: | 106,000 |
| | Standalone w/ US Adapter: | 96,000 |
| | Standalone w/ Uni Adapter: | 96,000 |
| Warranty | Lifetime warranty with 24/7/365 free Technical Support | |



TRANSCEIVER GUIDELINES

| 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 |
| The XG+ supports a combination of transceivers up to 11 watts | | |

| Power Levels for Omnitron Transceivers | | | |
|--|-------------------------------------|-------------|----------------|
| Omnitron Model Number | Omnitron Description | Power Level | Power Required |
| 7406-0 | 10GBASE-SR SFP+ LC/MM/850nm (300m) | 1 | 1.0W |
| 7407-1 | 10GBASE-LR SFP+ LC/SM/1310nm (10km) | 1 | 1.0W |
| 7407-2 | 10GBASE-ER SFP+ LC/SM/1550nm (40km) | 2 | 1.5W |
| 7407-3 | 10GBASE-ZR SFP+ LC/SM/1550nm (80km) | 2 | 1.5W |
| 7426-0 | 10GBASE-SR XFP LC/MM/850nm (300m) | 1 | 1.5W |
| 7427-1 | 10GBASE-LR XFP LC/SM/1310nm (10km) | 2 | 2.0W |
| 7427-2 | 10GBASE-ER XFP LC/SM/1550nm (40km) | 3 | 3.0W |
| 7427-3 | 10GBASE-ZR XFP LC/SM/1550nm (80km) | 3 | 3.5W |

ORDERING INFORMATION

Step 1: Choose a Base Part Number (xxxxx-ss-pt)

| iConverter XG+ Models | |
|---|--|
| Model Number | Description |
| 8599R-ss-pt | iConverter XG+ with two pluggable transceiver receptacles, supporting power level 1, 2, 3 and 4 transceivers |
| <p>iConverter XG+ 8599N model numbers are no longer available, and are replaced with iConverter XG+ 8599R model numbers. For more information on XG+ feature differences and improvements, download the Product Replacement Application Note.</p> <p>The XG+ plug-in modules require specific chassis and installation configurations. For more information on XG+ chassis installation requirements, download the iConverter XG, XG+ and XGT+ Chassis Installation Guidelines for Airflow and Cooling Application Note.</p> <p>Contact Omnitron for other configurations. Order the appropriate SFPs separately. Visit the Omnitron Optical Transceivers web page.</p> <p>For chassis options, see iConverter Chassis Overview web page.</p> | |

Step 2: Choose a Transceiver Option (xxxxx-ss-pt)

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|--|
| 00 = Two SFP+ Transceiver Receptacles |
| 01 = One SFP+ Transceiver and one XFP Transceiver Receptacles |
| 11 = Two XFP Transceiver Receptacles |

Step 3: Choose a Power Option (xxxxx-ss-pt)

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|--|
| <leave blank> = Plug-in module |
| A = Barrel Connector and AC/DC Power Adapter, 100-240VAC, 50-60Hz, with US power cord without integrated mounting brackets |
| B = Barrel Connector and Universal AC/DC Adapter, 100-240 VAC, 50-60Hz, No Power Cord, without integrated mounting brackets |
| C = Direct DC input, 2 pin terminal connector, no AC/DC power adapter, without integrated mounting brackets |
| D = Barrel Connector and AC/DC Power Adapter, 100-240VAC, 50-60Hz, with US power cord with integrated mounting brackets |
| E = Barrel Connector and Universal AC/DC Adapter, 100-240 VAC, 50-60Hz, No Power Cord, with integrated mounting brackets |
| F = Direct DC input, 2 pin terminal connector, no AC/DC power adapter, with integrated mounting brackets |

Step 4: Choose an Operating Temperature Range (xxxxx-ss-pt)

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|---|
| <leave blank> = Commercial temperature (0 to 50°C) |
| W = Wide temperature (-40 to 60°C) |
| Z = Extended temperature (-40 to 75°C) |

ACCESSORIES

| Model Number | Description |
|--------------|--|
| 8250-0 | DIN-Rail Mounting Bracket for Models without Integrated Mounting Brackets |
| 8251-0 | DIN-Rail Mounting Bracket for Models with Integrated Mounting Brackets |
| 8260-0 | 19" 1U Rack Mount Shelf for Models with Integrated Mounting Brackets (up to 4 modules) |
| 7499-DC-1 | 1 meter 10G SFP+ Direct Attach Cable (Twinax) |
| 7499-DC-3 | 3 meter 10G SFP+ Direct Attach Cable (Twinax) |

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