Omnitron Systems

iConverter® **XG+ Plug-In**

Quick Start

38 Tesla, Irvine, CA 92618 USA
Phone: (949) 250-6510; Fax: (949) 250-6514

General and Copyright Notice

This publication is protected by U.S. and international copyright laws. All rights reserved. The whole or any part of this publication may not be reproduced, stored in a retrieval system, translated, transcribed, or transmitted, in any form, or by any means, manual, electric, electronic, electromagnetic, mechanical, chemical, optical or otherwise, without prior explicit written permission of Omnitron Systems Technology, Inc.

The following trademarks are owned by Omnitron Systems Technology, Inc.: FlexPoint®, FlexSwitch®, HybridNID®, iConverter®, miConverter®, NetOutlook®, OmniLight®, OmniConverter®, RuggedNet®, Omnitron Systems Technology, Inc.™, OST™ and the Omnitron logo.

All other company or product names may be trademarks of their respective owners.

The information contained in this publication is subject to change without notice. Omnitron Systems Technology, Inc. is not responsible for any inadvertent errors.

Warranty

This product is warranted to the original purchaser (Buyer) against defects in material and workmanship for a period of two (2) years from the date of shipment. A lifetime warranty may be obtained by the original purchaser by registering this product at www.omnitron-systems.com/support within ninety (90) days from the date of shipment. During the warranty period, Omnitron will, at its option, repair or replace a product which is proven to be defective with the same product or with a product with at least the same functionality.

For warranty service, the product must be sent to an Omnitron designated facility, at Buyer's expense. Omnitron will pay the shipping charge to return the product to Buyer's designated US address using Omnitron's standard shipping method.

Limitation of Warranty

The foregoing warranty shall not apply to product malfunctions resulting from improper or inadequate use and/or maintenance of the equipment by Buyer, Buyer-supplied equipment, Buyer-supplied interfacing, unauthorized modifications or tampering with equipment (including removal of equipment cover by personnel not specifically authorized and certified by Omnitron), or misuse, or operating outside the environmental specification of the product (including but not limited to voltage, ambient temperature, radiation, unusual dust, etc.), or improper site preparation or maintenance.

No other warranty is expressed or implied. Omnitron specifically disclaims the implied warranties of merchantability and fitness for any particular purpose.

The remedies provided herein are the Buyer's sole and exclusive remedies. Omnitron shall not be liable for any direct, indirect, special, incidental, or consequential damages, whether based on contract, tort, or any legal theory.

Environmental Notices

The equipment covered by this manual must be disposed of or recycled in accordance with the Waste Electrical and Electronic Equipment Directive (WEEE Directive) of the European Community directive 2012/19/EU on waste electrical and electronic equipment (WEEE) which, together with the RoHS Directive 2015/863/EU, for electrical and electronic equipment sold in the EU after July 2019. Such disposal must follow national legislation for IT and Telecommunication equipment in accordance with the WEEE directive: (a) Do not dispose waste equipment with unsorted municipal and household waste. (b) Collect equipment waste separately. (c) Return equipment using collection method agreed with Omnitron.

The equipment is marked with the WEEE symbol shown to indicate that it must be collected separately from other types of waste. In case of small items the symbol may be printed only on the packaging or in the user manual. If you have questions regarding the correct disposal of equipment go to www.omnitron-systems.com/support or e-mail to Omnitron at intlinfo@omnitron-systems.com.

Safety Warnings and Cautions

ATTENTION: Observe precautions for handling electrostatic discharge sensitive devices.

WARNING: Potential damage to equipment and personal injury.

WARNING: Risk of electrical shock.

Technical Support:

Phone: (949) 250-6510
Fax: (949) 250-6514
Address: Omnitron Systems Technology
38 Tesla
Irvine, CA 92618 USA
E-mail: support@omnitron-systems.com
URL: http://www.omnitron-systems.com

040-8599R-002E 7/26

Description

Product update for firmware revision 1.1.4. Operational change to the self-diagnostic circuit test.

The iConverter XG+ (8599R-xx) is a protocol-transparent fiber media converter with two pluggable transceiver ports supporting data rates from 6G to 11.32G and supports the three Rs (regeneration, retiming and reshaping). The XG+ auto-detects the speed of the installed transceiver.

The XG+ supports power level 1 and 2 SFP+ transceivers and power level 1, 2, 3 and 4 XFP transceivers. Specifically, the module was designed to support power level 3 and 4 transceivers. To support only the lower level transceivers (1 and 2) use the XG (8599P) module.

The XG+ plug-in modules support the configuration of programmable XFP transceivers. To utilize this feature, the XG+ must be installed in a chassis with a Management module. Access the Port Configuration menu on the XG+ to configure the programmable XFP transceiver.

Refer to the data sheet for available models and product selection guidelines.

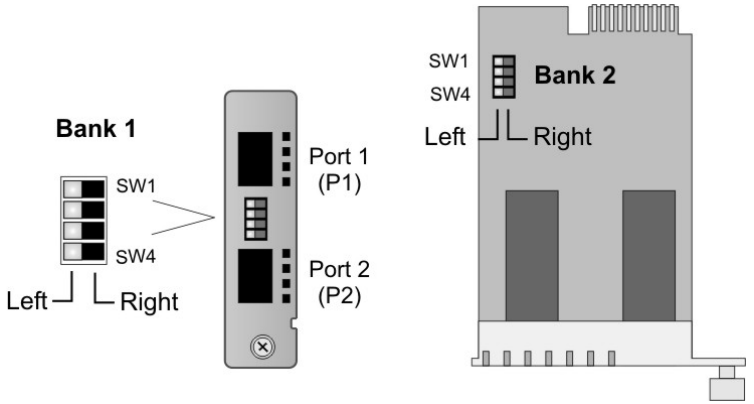
The XG+ requires management module firmware to be version 5.2.30 or higher and NetOutlook SNMP Management Software to be version 5.3.16 or higher.

MSA compliant SFP+ and XFP transceivers can be installed in the XG+. Refer to the transceiver manufacturer's data sheet for the maximum operating case temperature to avoid any damage to the transceiver due to overheating issue. Installation in chassis with high airflow fans may help reduce any overheating issue.

DIP-switch Settings

DIP-switch Bank 1

The location of the DIP-switches is shown below.



The function of DIP-switch Bank 1 is outlined below.

Switch	Function	Left (Default)	Right
SW1	P1 Loopback	Normal	Enabled
SW2	P2 Loopback	Normal	Enabled
SW3	Reserved		
SW4	Reserved		

The XG+ supports port loopback. The SFP+/SFP+ XG+ model supports loopback on each individual port or simultaneous loopback on Port 1 and Port 2. The SFP+/XFP and the XFP/XFP XG+ model supports loopback on each individual port and does not support simultaneous loopback.

In all cases, both transceivers must be installed in the XG+ for the loopback feature to operate.

SW1 - P1 Loopback "P1-LB"

When this DIP-switch is in the LEFT position (factory default), Port 1 (P1) loopback is disabled. When this DIP-switch is in the RIGHT "P1-LP" position, loopback is enabled on P1. When enabled, all data received on P1 is transmitted out P1 and all data received on Port 2 (P2) is dropped. No data is transmitted on P2 when loopback is enabled on P1.

For XFP models, the loopback feature is dependent on the capability of the installed XFP. XFPs with XFI-side Loopback feature are required.

SW2 - P2 Loopback "P2-LB"

When this DIP-switch is in the LEFT position (factory default), P2 loopback is disabled. When this DIP-switch is in the RIGHT "P2-LP" position, loopback is enabled on P2. When enabled, all data received on P2 is transmitted out P2 and all data received on P1 is dropped. No data is transmitted on P1 when loopback is enabled on P2.

For XFP models, the loopback feature is dependent on the capability of the installed XFP. XFPs with XFI-side Loopback feature are required.

SW3, SW4 - Reserved

These switches are reserved and must be in the LEFT default position.

DIP-switch Bank 2

The function of DIP-switch Bank 2 is outlined below.

SW1	SW2	SW3	SW4	Function
Left	Left	Left	Left	Link Segment (default)
Right	Left	Left	Left	Asymmetrical Link Propagate P1 to P2
Left	Right	Left	Left	Asymmetrical Link Propagate P2 to P1
Right	Right	Left	Left	Dual Asymmetrical Link Propagate
Left	Left	Left	Left	Remote Fault Detect P1 and P2
Right	Left	Right	Left	RFD + Asymmetrical LP P1 to P2
Left	Right	Right	Left	RFD + Asymmetrical LP P2 to P1
Right	Right	Right	Left	RFD + Dual Asymmetrical LP
Left	Left	LEFT	Right	Symmetrical Fault Detect (SFD)*
Left	Left	Right	Right	Self Diagnostic Circuit Test for Remote Module
Right	Right	Right	Right	Self Diagnostic Circuit Test for Local Module

Link Modes

These four DIP-switches configure the different link modes available on the XG+. It is recommended to have link modes set to Link Segment (default setting - all LEFT) during the initial installation. After the circuit has been tested and operational, configure the module for the desired mode.

For detailed information on the operation of the different Link Modes, download the application note iConverter Link Modes.

* SFD requires bookend configuration of two iConverter XG+ modules connected via Port 1.

Self Diagnostic Circuit Test (SFP+ models only)

The self-diagnostic circuit test on the 8599-0x and 8599N-0x are not compatible with the self-diagnostic circuit test on the 8599P-0x and 8599R-0x.

When two XG 8599P or XG+ 8599R converters are connected via Port 1 (Port 1 to Port 1), a self diagnostic circuit test is supported. To initiate a self diagnostic circuit test, both the local and remote module must be configured.

Configure the DIP-switches on the remote module for "Self Diagnostic Circuit Test for Remote Module" (LEFT, LEFT, RIGHT, RIGHT).

Configure the DIP-switches on the local modules for "Self Diagnostic Circuit Test for Local Module" (RIGHT, RIGHT, RIGHT, RIGHT).

The local XG+ will initiate the circuit test when all DIP-switches are in the RIGHT position, by generating and sending a test pattern out Port 1 to the remote XG+. Once remote XG+ detects a good test pattern, the remote XG+ will return the test pattern back to the local XG+. No data is transmitted on Port 2 of either module when the self diagnostic circuit test is enabled.

A successful test will produce a green blinking (5Hz) P1 LB LED on the local XG+ and a green blinking (1Hz) P1 LB LED on the remote XG+. If the local XG+ does not receive a valid response, the P1 LB LED will be blinking amber (5Hz). When

the self diagnostic circuit test is initiated, the traffic received on Port 2 of both XG+ converters will be discarded.

If loopback has been initiated, self diagnostic circuit test DIP-switches will be ignored. If self diagnostic circuit test has been initiated, loopback DIP-switches will be ignored.

Mounting and Cable Attachment

Caution: Use proper ESD protection to reduce the risk of damage to your equipment.

For recommended chassis configurations, see the iConverter XG+ Chassis Installation Guidelines Application Note.

1. Carefully slide the module into an open slot in the chassis. Align the module with the installation guides and ensure that the module is firmly seated against the backplane. Secure the module by fastening the front panel thumbscrew (push in and turn clockwise to tighten) to the chassis front.

2. Insert the appropriate XFP or SFP+ transceivers into the corresponding port receptacles on the XG+.

NOTE: The release latch of the transceiver must be in the closed position before insertion.

3. Connect an appropriate multimode or single-mode fiber cable to the fiber transceiver ports on the XG+. It is important to ensure that the transmit (Tx) is attached to the receive side of the device at the other end and the receive (Rx) is attached to the transmit side.

Both transceivers must be installed for the module to properly function. When only one transceiver is installed, the transmitter of the installed transceiver is disabled.

Software Controlled Settings

Additional settings are available via software control when a XG+ is installed in an iConverter chassis with a Management Module.

The following software settings can be controlled via Serial Console/Telnet Console, NetOutlook Management Software or other third-party SNMP-based clients:

- Port 1 and Port 2 SFP+/XFP Monitoring
- DWDM Tunable Configuration

Software controlled settings can be selected to override DIP-Switch settings.

For more information on using and configuring the Advanced Features, register for access to the NetOutlook Management Software user manual.

LED Indicators

The XG+ does not generate data, it only passes the data it receives from the connected equipment. Both transceivers must be installed and connected in order for the module to pass data traffic.

LED	Color	Description
Power "PWR"	Green	**OFF:** No power applied or module is not operational **ON:** Module has power
P1 or P2 Link "Lk"	Green	**OFF:** No Transceiver detected or no fiber link **Solid Green:** Fiber link (signal detect, not data) **Blinking Green (1/2Hz):** When SFD is enabled, receiving remote fiber fault signal from link partner
P1 or P2 Status "Stat"	Green/ Amber	**OFF:** Transceiver does not support digital diagnostic or no transceiver installed **Solid Green:** Transceiver supports digital diagnostic and no DDMI Alarm Detected **Solid Amber:** Transceiver supports digital diagnostic and DDMI alarm detected.
P1 Loopback "LP"	Green/ Amber	**OFF:** Port loopback mode not enabled **Solid Green:** Port set to Loopback mode and port in loopback. **Blinking Green (1 Hz):** Port responding to Circuit Test activation with valid Circuit Test response. **Blinking Green (5 Hz):** Port initiating Circuit Test and receiving valid Circuit Test response **Solid Amber:** Port set to loopback mode, but XFP does not support loopback. **Blinking Amber (5 Hz):** Port initiating Circuit Test and not receiving valid Circuit Test response
P2 Loopback "LP"	Green/ Amber	**OFF:** Port loopback mode not enabled **Solid Green:** Port set to Loopback mode and port in loopback. **Blinking Green (1 Hz):** Port responding to Circuit Test activation with valid Circuit Test response. **Blinking Green (5 Hz):** Port initiating Circuit Test and receiving valid Circuit Test response **Solid Amber:** Port set to loopback mode, but XFP does not support loopback. **Blinking Amber (5 Hz):** Port initiating Circuit Test and not receiving valid Circuit Test response
P1 Lk, P1 Stat, P2 Lk, P2 Stat	Amber	**Simultaneous Amber Blinking (1Hz)**: Ports disabled due to unsupported power level of the installed XFP transceiver. Module drawing more current than allowed

Specifications

Standard Compliances	IEEE 802.3ae (10G Ethernet), SONET OC-192, SDH STM-64, INCITS T11.2 (10G Fibre Channel), ITU-T G.709 OTN, CPRI option 6, 7, 7A and 8 SFF-8077, SFF-8477	
Regulatory Compliances	Safety: EMI: ACT:	UL, CE, NEBS 3 Compliant, UKCA FCC Class A, TAA, BAA, NDAA
Environmental	RoHS, WEEE, REACH	
Frame Size	Unlimited	
Port Types	Fiber:	Power Level 1 and 2 SFP+ transceivers Power Level 1,2, 3 and 4 XFP transceivers
Cable Types	Fiber:	Multimode: 50/125µm, 62.5/125µm Single-mode: 9/125µm
DC Power Requirements	DC Input: (Backplane)	3.75A @ 3.3VDC
Dimensions W x D x H	0.85” x 4.5” x 2.8” (21.6 mm x 114.3 mm x 71.1 mm)	
Weight	8 oz. (226.8 grams)	
Temperature	Commercial: Wide: Extended: Storage:	0 to 50°C -40 to 60°C -40 to 75°C -40 to 80°C
Humidity	5 to 95% (non-condensing)	
Altitude	-100m to 4,000m	
MTBF (hrs)	770,000	
Warranty	Lifetime warranty and 24/7/365 free Technical Support	

Intentionally Left Blank