Omnitron Systems

iConverter® XG+ Standalone User Manual

Product Overview

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.

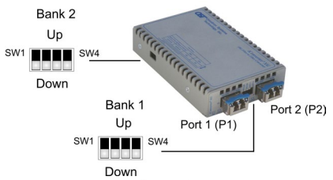
The XG+ supports power level 1 and 2 SFP+ transceivers and power level 1, 2, 3 and 4 XFP transceivers. To support only the lower level transceivers (1 and 2) use the XG (8599P) module.

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

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	DOWN (Default)	UP
SW1	Normal	P1 Loopback Enabled
SW2	Normal	P2 Loopback 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+ models support 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 DOWN position (factory default), Port 1 (P1) loopback is disabled. When this DIP-switch is in the UP "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 DOWN position (factory default), P2 loopback is disabled. When this DIP-switch is in the UP "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 DOWN default position.

DIP-switch Bank 2

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

SW1	SW2	SW3	SW4	Function
Down	Down	Down	Down	Link Segment (default)
Up	Down	Down	Down	Asymmetrical Link Propagate P1 to P2
Down	Up	Down	Down	Asymmetrical Link Propagate P2 to P1
Up	Up	Down	Down	Dual Asymmetrical Link Propagate
Up	Down	Up	Down	Remote Fault Detect P1 and P2
Up	Down	Up	Down	RFD + Asymmetrical LP P1 to P2
Down	Up	Up	Down	RFD + Asymmetrical LP P2 to P1
Up	Up	Up	Down	RFD + Dual Asymmetrical LP
Down	Down	Down	Up	Symmetrical Fault Detect (SFD)*
Down	Down	Up	Up	Self Diagnostic Circuit Test for Remote Module
Up	Up	Up	Up	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 DOWN) 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" (DOWN, DOWN, UP, UP).

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

The local XG+ will initiate the circuit test when all DIP-switches are in the UP 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.

1. The standalone module is available with or without integrated mounting brackets. When using the standalone module with integrated mounting brackets, use the four

mounting holes on the module to secure the module to the wall. The module can accommodate #6 screws (not included).

Standalone modules without mounting brackets can use the optional mounting bracket kit (2x 4381). Use the four mounting holes on the module to secure the module to the wall. The module can accommodate #6 screws (not included).

Installation of the module should be such that the air flow in the front, back, side and top vents of the switch are not compromised or restricted.

For AC models:

To power the unit using the AC/DC adapter, connect the AC/DC adapter to an AC outlet. Then connect the barrel plug at the end of the wire on the AC/DC adapter to the 2.5mm DC barrel connector (center-positive) on the unit. Confirm that the unit has powered up properly by checking the power status LED located on the front of the unit.

For DC Models:

To power the unit using a DC power source, prepare a power cable using a two conductor insulated wire (not supplied) with 12AWG to 16AWG thickness. Cut the power cable to the length required. Strip approximately 3/8 of an inch of insulation from the power cable wires. Connect the power cables to the unit by fastening the stripped ends to the DC power connector.

Connect the power wires to the DC power source. The Power LED should indicate the presence of power.

WARNING: Note the wire colors used in making the positive and negative connections. Use the same color assignment for the connection at the DC power source.

NOTE: If mounting with a safety ground attachment, use the safety ground screw at the rear of the unit.

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.

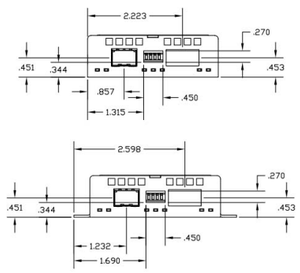
LED INDICATORS

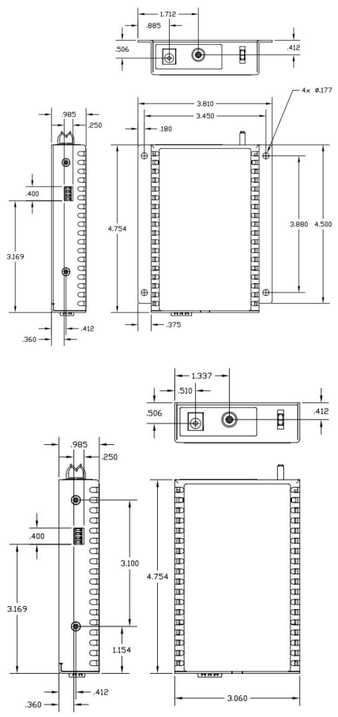
The XG+ does not generate data, it only passes the data it receives from the connected equipment. Both transceivers must be installed and connected in order for the module to pass data traffic.

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

LED	Color	Description
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

MECHANICAL





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
AC Power Requirements	AC Adapter:	100 - 240VAC/50 - 60Hz 0.20A @ 120VAC (max)
DC Power Requirements	DC Input: (Terminal)	7 - 60VDC, 1.5A @ 9VDC 2-Pin Terminal (non-isolated)
	DC Input: (AC Adapter)	7 - 60VDC, 1.5A @ 9VDC 2.5mm Barrel Connector
Dimensions W x D x H	Standalone: 3.1" x 4.8" x 1.0" (78.7 mm x 121.9 mm x 25.4 mm) Standalone with Integrated Brackets: 3.8" x 4.8" x 1.0" (96.5 mm x 121.9 mm x 25.4 mm)	
Weight	1.0 lb. (453.6 grams) - without AC Adapter 1.5 lbs. (680.4 grams) - with AC Adapter	
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)	106,000 - Module 96,000 - Module with AC Adapter	
Warranty	Lifetime warranty and 24/7/365 free Technical Support	

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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.omniton-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.

Customer Support Information

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