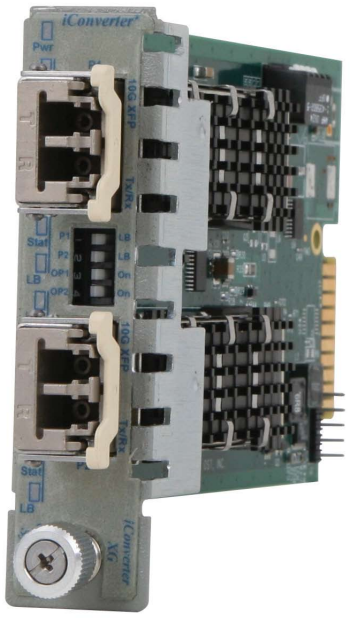
Omnitron Systems Technology, Inc.

iConverter® XG+



Plug-In Module
USER MANUAL

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1.0 OVERVIEW

The *iConverter* XG+ is a 10 Gigabit, protocol-transparent media converter with two pluggable transceiver ports. The *iConverter* XG+ can be used as a copper-to-fiber converter, a fiber mode converter, a WDM transponder or a fiber repeater supporting the three Rs (regeneration, retiming and reshaping). The *iConverter* XG+ supports DWDM tunable and high-power (power level 4) XFP transceivers up to a combined power of 11.0 watts. Power level 4 XFP transceivers typically perform OTN functions, where error correction is required to achieve distance requirements. Typically, most single-mode applications will require power level 2 or power level 3 XFP transceivers.

IMPORTANT

This manual provides information on the installation and configuration of the module using the menu-driven interface via the Serial Console Port on the Network Management Module. For ongoing network management, Omnitron Systems recommends *NetOutlook*®, an SNMP-based Network Management Software.

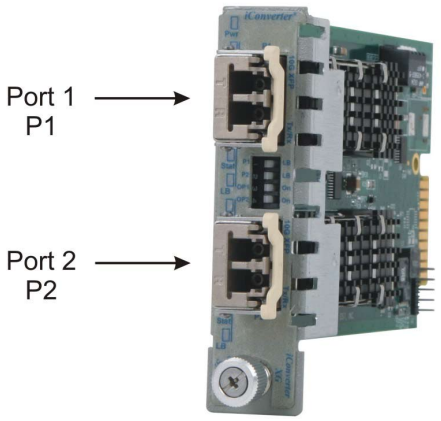
NetOutlook provides efficient, user-friendly configuration, monitoring and management of devices installed on a single network or on a series of networks by providing an intuitive graphical display with real-time status and alarm (trap) information. The user can easily manage *iConverter* equipment on a large Enterprise network or Metropolitan Area Network (MAN) from a single location without the need of additional resources.

The version of *NetOutlook* and the firmware on the Network Management Module must be 3.8 or higher for the XG+ to be properly managed.

2.0 PORT STRUCTURE

2.1 OVERVIEW

The XG+ front panel provides the access to the fiber ports and loopback and rate selection DIP-switches.



Front Panel

2.2 FIBER PORTS

The XG+ supports the following port configurations:

XFP to XFP (8599N-11)

XFP to XFP models are protocol transparent within the range of 9.95Gbps to 11.32Gbps, providing interoperability with common protocols including: 10G Ethernet, 10G SONET/SDH, 10G Fibre Channel and 10G OTN (G.709).

XFP to XFP models support two types of XFP transceivers: transceivers with internal clocking (more common) and transceivers requiring an external clock source (less common). The transceivers installed in the 8599N-11 must be the able to operate at the same data rate.

If both XFPs are internally clocked, the XG+ will automatically support rates from 9.95Gbps to 11.32Gbps.

If one or both transceivers requires external clocking, the XG+ will support rates from 9.95Gbps to 11.32Gbps by configuring the DIP-switches and jumper as described in Section 3.2.1.3.

SFP+ to XFP (8599N-01)

The 8599N-01 operates between 9.95Gbps to 10.71Gbps by setting the rate selection DIP-switches as described in Section 3.2.1.3. 10 Gigabit Ethernet (10.3Gbps) is selected by default.

The SFP+ transceiver installed in the 8599N-01 must be able to operate at the data rate as configured by the DIP-switches as described in Section 3.2.1.3.

3.0 INSTALLATION PROCEDURE

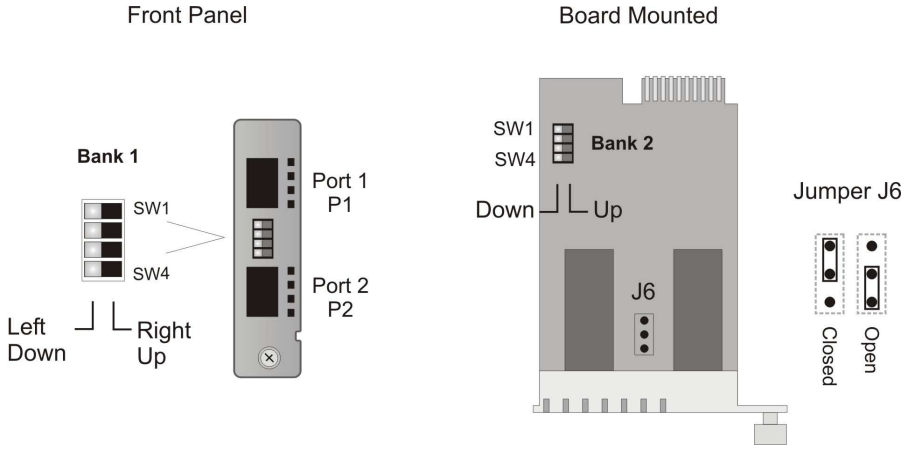
3.1 OVERVIEW

The following steps outline the installation and configuration procedures for the XG+. Refer to the specified sections for detailed instructions.

- Configure DIP-switches and Jumper (Section 3.2)
- Installing the Module and Connecting Cables (Section 3.3)
- Verify Operation (Section 3.4)
- Configuring the Module via Network Management Module (Section 3.5)

3.2 CONFIGURING DIP-SWITCHES AND JUMPER

The XG+ has front panel and board-mounted banks of DIP-switches. The locations of DIP-switch Bank 1 and Bank 2 are illustrated below.



DIP-switch Locations

3.2.1 Board-Mounted Bank 1 Settings

The functions of DIP-switch Bank 1 are described in the table below.

Switch	LEFT/DOWN (Default)	RIGHT/UP
SW1	Normal	P1 Loopback Enabled
SW2	Normal	P2 Loopback Enabled
SW3	Rate Selection (See Section 3.2.1.3)	
SW4		

DIP-switch BANK 1 Definitions

3.2.1.1 SW1 - Port 1 Loopback "P1-LB"

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

For XFP transceiver models 8599N-01 and 8599N-11, only one port can be in loopback at any time.

NOTE: For the 8599N-11, the availability of the loopback feature is dependent on the capability of the installed XFP. XFPs with XFI-side Loopback feature are required.

3.2.1.2 SW2 - Port 2 Loopback "P2-LB"

When this DIP-switch is in the LEFT/DOWN position (factory default), P2 loopback is disabled. When this DIP-switch is in the RIGHT/UP "P2-LB" 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 transceiver models 8599N-01 and 8599N-11, only one port can be in loopback at any time.

3.2.1.3 SW3, SW4 - Rate Selection

These switches are for the SFP+ models and XFP models with transceivers requiring external clocking.

These two switches, in conjunction with Jumper J6*, configure the operating data rate of the supported XG+. Configure the module to the data rate that corresponds to the transport protocol used.

Jumper J6 is located on the module directly behind DIP-switch Bank 1. The factory default position is OPEN.

Jumper J6	SW3	SW4	Speed Mode
OPEN	DOWN	DOWN	10G Ethernet (10.3125 Gb/s)
OPEN	DOWN	UP	10G SONET/SDH (9.95328 Gb/s)
OPEN	UP	DOWN	10G Fiber Channel (10.51875 Gb/s)
OPEN	UP	UP	10G OTN (G.709) (10.70923 Gb/s)
CLOSED	DOWN	DOWN	*10GbE w/ FEC (11.049 Gb/s)
CLOSED	DOWN	UP	*10GbE w/ FEC stuff bytes (11.095 Gb/s)
CLOSED	UP	DOWN	*10GbFC w/ FEC (11.270 Gb/s)
CLOSED	UP	UP	*10GbFC w/ FEC stuff bytes (11.317 Gb/s)

DIP-switch BANK 1 Rate Selection

* Only supported on the 8599N-11 model

3.2.2 Board-Mounted Bank 1 Settings

The functions of DIP-switch Bank 2 are described in the table 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
DOWN	DOWN	UP	DOWN	Remote Fault Detect for 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
All combinations except UP, UP, UP			UP	Symmetrical Fault Detect (SFD)*
UP	UP	UP	UP	Self Diagnostic Circuit Test

DIP-switch BANK 2 Link Mode and Self Test Configurations

3.2.2.1 SW1,SW2, SW3 and SW4 - 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.

* Symmetrical Fault Detect requires bookend configuration of two *iConverter* XG+ modules connected via Port 1.

For detailed information on the operation of the different Link Modes, download the application note *"iConverter* Link Modes" available on Omnitron's web page:

http://www.omnitron-systems.com/downloads_iconverter.php

3.2.2.2 Self Diagnostic Circuit Test (SFP+ models only)

When two XG+ modules are connected via Port 1 (Port 1 to Port 1), a self diagnostic circuit test is supported. The XG+ initiating the circuit test (all DIP-switches to UP) will generate and send a test pattern out Port 1 to the other XG+. The receiving XG+ will detect a good test pattern and return the test pattern back to the initiating XG+.

A successful test will produce a green blinking (5Hz) P1 LB LED on the initiating XG+ and a green blinking (1Hz) P1 LB LED on the receiving XG+. If the initiating 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-switch will be ignored. If self diagnostic circuit test has been initiated, loopback DIP-switches will be ignored.

3.3 INSTALLING THE MODULE AND CONNECTING CABLES

The XG+ module must be installed using the following chassis configurations/guidelines:

19-Module Chassis 8201-3 (AC) or 8207-3 (DC). The slot on the right side of the installed XG+ module must be empty and a blank panel must be installed over the empty slot. A maximum of nine XG+ modules can be installed in a 19-Module chassis. All empty slots must have a blank panel installed.

5-Module Chassis 8221-2 (AC) or 8227-2 (DC). An XG+ module can be installed in all slots. All empty slots must have a blank panel installed.

2-Module Chassis 8232-1 (AC) or 8238-1 (DC). Only one XG+ can be installed in the chassis. The other slot can have another *iConverter* module installed (NMM2, 10/100M2, etc). If the slot is empty, it must have a blank panel installed.

1-Module Chassis is not supported with the XG+ (recommend using a standalone model).

The *iConverter* XG+ can be used in a managed configuration by installing a Management Module (such as an *iConverter* NMM2 or 10/100M2 with firmware release 3.8 or greater) that provides monitoring, configuration and trap notification in the same chassis.

a. Carefully slide the XG+ 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. Verify the "Pwr" LED is ON (indicating the chassis is powered).

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

b. Insert the appropriate XFP or SFP+ transceivers into the corresponding port receptacle on the XG+.

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

c. When using copper CX4 XFP, connect the cable between the converter and external device using the recommended copper CX4 cable.

d. 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.

NOTE: FOR 8599N-01 AND 8599N-11, BOTH TRANSCEIVERS MUST BE INSTALLED FOR THE XG+ TO PROPERLY FUNCTION. WHEN ONLY ONE XFP TRANSCEIVER IS INSTALLED AND THERE IS NO TRANSCEIVER INSTALLED IN THE OTHER PORT, THE TRANSMITTER OF THE INSTALLED TRANSCEIVER IS DISABLED.

3.4 VERIFY OPERATION

Once the module has been installed and configured per steps 1 and 2, verify the module is operational by viewing the LED indicators.

NOTE: THE XG+ P1 AND P2 LINK LEDS (LK) WILL TURN ON (GREEN) WHEN BOTH TRANSCEIVERS ARE INSTALLED AND PROPERLY CABLED TO THE CONNECTED EQUIPMENT. THIS IS AN INDICATION THAT THE OPTICAL (LIGHT) CONNECTION IS GOOD, BUT NOT NECESSARILY AN INDICATION THAT THERE IS DATA BEING TRANSMITTED OR RECEIVED. THE USER WILL RECEIVE CONFIRMATION OF DATA FLOW BY CHECKING TO SEE IF THE LINK LED IS ILLUMINATED ON THE CONNECTED EQUIPMENT.

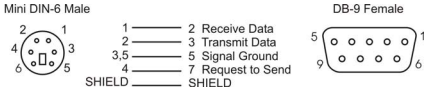
Legend	OFF State	Color	ON/Blinking State
Pwr	Off – No power	Green	Green – Power On
P1/P2 Lk	Off – No Transceiver detected or no fiber link	Green	Green Solid – Fiber link Green Blinking (1/2Hz) – When SFD is enabled, receiving remote fiber fault signal from link partner
P1/P2 Stat	Off – Transceiver does not support digital diagnostic or no transceiver installed	Green	Green Solid – Transceiver supports digital diagnostic and no DDMI Alarm Detected
		Amber	Amber Solid – Transceiver supports digital diagnostic and DDMI alarm detected
P1 LB	Off – Port loopback mode not enabled or configured	Green	Green Solid – Port set to Loopback mode and port in loopback Green Blinking (1 Hz) - Port responding to Circuit Test activation with valid Circuit Test response Green Blinking (5 Hz) - Port initiating Circuit Test and receiving valid Circuit Test response
		Amber	Amber Solid – Port set to loopback mode, but XFP does not support loopback Amber Blinking (5 Hz) - Port initiating Circuit Test and not receiving valid Circuit Test response
P2 LB	Off – Port loopback mode not enabled or configured	Green	Green Solid – Port set to Loopback mode and port in loopback
		Amber	Amber Solid – Port set to loopback mode, but XFP does not support loopback
P1 Lk, P1 Stat, P2 Lk, P2 Stat	-	Amber	Simultaneous Amber Blinking (1Hz) – Ports disabled due to installed XFP drawing more current than allowed

LED Indicators

3.5 CONFIGURING THE MODULE VIA NETWORK MANAGEMENT MODULE

The XG+ module must be installed in the same chassis as the Network Management Module (NMM2) or a media converter with integrated management (such as an *iConverter* GX/TM2) to configure, monitoring, and provide trap notifications. Management access is through the installed Network Management Module.

Attach the Serial Console Port of the Network Management Module to a DB-9 serial (RS-232) equipped computer with terminal emulation software such as HyperTerminal. The Serial Console Port (DCE) is a mini DIN-6 female connector which can be changed to a DB-9 connector with the included adapter (Part #8082-0). Attach the ends of a serial cable to the serial port of the PC and the Serial Console Port of the Network Management Module. This is a standard RS-232 asynchronous serial interface. The pin-outs are illustrated below.



Serial Connector Pin Outs

Start HyperTerminal and select the correct COM Port in the HyperTerminal "Connect To:" window.

Set the PC's serial port to the following:

Bits Per Second:	57,600
Stop Bits:	1
Data Bits:	8
Parity:	NONE
Hardware Flow Control:	NONE

Refer to the User Manual of the Network Management Module for more details.

Once connected, press <*ENTER*>, the ***Password Entry*** screen will be displayed. Type the password and press <*ENTER*>. If a password has not been configured, the ***Password Entry*** screen will be skipped and the *Management Options* screen will be displayed.

```
Omnitron Systems Technology, Inc.                          iConverter, Serial Agent
Copyright 2001-2011 OST, Inc.                                        Password Entry

-------------------------------------------------------------------------------
Omnitron Systems Technology        Technical Support:       (949) 250-6510
140 Technology #500                Sales/Products:          (800) 675-8410
Irvine, CA 92618                   On the web at:           www.omnitron-systems.com
-------------------------------------------------------------------------------

IP Address  192.168.1.220
MAC         00:00:00:00:00:00







[xxxxxxxx]
Please enter the password >
```

```
Management Options                                         iConverter, Serial Agent

Network Management
1:  Chassis and Module Management
2:  Set Module Identifier

Management Module Preferences
3:  IP and Control Preferences
4:  SNMP Preferences
5:  Other Networking Features
6:  Restore to Factory Defaults
7:  Restart Management Module

Management Module Maintenance
8:  Firmware Update
9:  Set Date/Time



                                                  [MAC 00:06:87:00:9D:95]
IP Address        = 192.168.1.220                 01/01/2000  00:00:01 AM
Chassis Number    = 1   Slot Number = 1           sysUpTime: 0

Enter Choice, (H)elp, E(x)it >
```

To access the XG+ ***Module*** configuration menu, select *1* at the ***Management Options*** screen, and press <*ENTER*>. The ***Chassis Selection*** screen will be displayed.

```
Chassis Selection                                          iConverter, Serial Agent

Number      Chassis Name
1           NMM2
2           Not Available
3           Not Available
4           Not Available
5           Not Available
6           Not Available
7           Not Available
8           Not Available
9           Not Available
10          Not Available
11          Not Available
12          Not Available
13          Not Available
14          Not Available
15          Not Available
16          Not Available
17          Not Available
18          Not Available
19          Not Available
Connected to Chassis Number 1

Chassis Number(1-19), Management Options(0), (H)elp, E(x)it > 1
```

From the ***Chassis Selection*** screen, select the chassis number where the XG+ resides. The ***Chassis View*** screen will displayed. Select the slot number of the XG+ (slot 3), and press <*ENTER*>.

```
Chassis View 19 Slot                                       iConverter, Serial Agent

Chassis Number = 1

Slot  Model     Type                | Slot  Model    Type
1     8000N-0   NMM2                | 16    8759-0   T3/E3 Fiber
2     8911N-1   10/100M2            | 17    8840-0   X21
3     8599N-11  XG+                 | 18    8763-1   RS232
4     N/A                           | 19    8783T-1  RS422/485
5     8862-2    CWDM MUX            | 20    8200-9   Power Supply
6     N/A                           | 21    8200-9   Power Supply
7     8860-1    CWDM MUX            | 22    N/A
8     N/A                           |
9     8861-0    CWDM MUX            |
10    8653-1    Fiber/Fiber         |
11    8870-0    CWDM MUX            |
12    8383-1    10/100              |
13    8481-4    4Tx VT              |
14    8699-0    Fiber/Fiber         |
15    8719-0    T1/E1               |


Module to View(1-22), Chassis Selection(0), (R)eset, (H)elp, E(x)it >
```

The XG+ ***Module*** configuration screen will displayed.

```
Module - iConverter XG                              iConverter, Serial Agent
Identifier -

Chassis Number     = 1
Slot Number        = 3
Model Number       = 8599N-11     Front Panel Switches
Serial Number      = 00288486        ON Condition    OFF Condition    H/W   Actual
Manufacturing Date = 20110921     1: P1 Loopback     P1 Normal        Off   Off
Product Revision   = 33           2: P2 Loopback     P2 Normal        Off   Off
Software Revision  = 2.6.5        3: OPT 1 On        OPT 1 Off        Off   Off
                                  4: OPT 2 On        OPT 2 Off        Off   Off

LED                               On Board Switches
1: Power           = On           5: P1->P2 Asy-LP   P1->P2 Normal    Off   Off
2: P1 Link         = Off          6: P2->P1 Asy-LP   P2->P1 Normal    Off   Off
3: P1 Status       = Off          7: RFD             Normal           Off   Off
4: P1 Loopback     = Off          8: SFD             Normal           Off   Off
5: P2 Link         = Off
6: P2 Status       = Off
7: P2 Loopback     = Off          Saved Pre-Set Transceiver Configuration
8: Not Available                  9: Auto-Reload Wavelength                Off
9: Not Available

Toggle Switch(1-9), (I)dentifier, (S)FP, (P)ort, (R)eset, (H)elp, E(x)it >
```

3.5.1 Module Configuration Screen

The ***Module*** configuration screen provides general information concerning the configuration and status of the module. The screen displays the model and serial numbers, hardware and software revisions, as well as the condition of the LEDs and DIP-switches. The DIP-switches can be re-configured (options 1 - 8) without removing the module from the chassis. Select the appropriate option to change the DIP-switch setting. Selecting DIP-switch options *1 - 8*, will cause the selection to change states under the 'Actual' heading. See section 3.2 for more information on the DIP-switch settings.

Option *9* enables the Auto-Reload Wavelength function. When Auto-Reload Wavelength is enabled, the module will configure the wavelength of the installed XFP transceiver using the saved configuration in memory when any of the following events happen: Module insertion, module reset, XFP transceiver insertion or XFP transceiver reset.

The ***Module*** configuration screen provides access to the XFP/SFP+ and Port configuration screens.

3.5.2 SFP Information Screen

The SFP ports provide general and specific information on the installed optical transceivers. The information is displayed using hexadecimal values per SFF-8472 specification.

To view the information on the installed transceivers, select *S* from the ***Module*** screen, and press <*ENTER*>. The ***SFP Information*** screen for Port 1 Address A0 Page will be displayed.

```
SFP Information - iConverter XG                    iConverter, Serial Agent
Identifier -
Chassis Number = 1    Slot Number = 3    Model Number = 8599N-11  Port = 1

Address A0 Page Contents
================================================
00: 06 40 53 00 F3 00 50 00 F6 00 C7 3F EC DF D7 B7 .@S...P....?....
10: F6 2E 9C 40 1D 4C 92 7C 27 10 37 2D 07 CB 31 2D ...@.L.|'.7-..1-
20: 09 D0 45 77 00 64 3D E9 00 9E 8D CC 75 30 88 B8 ..Ew.d=.....u0..
30: 79 18 FB BF FF EF B7 7F FD FF 00 00 00 00 00 00 y...............
40: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
50: 00 40 05 40 BE 00 00 00 00 00 00 00 00 00 00 00 .@.@............
60: 10 80 00 00 3A 34 18 77 00 00 80 0A 00 00 22 B8 ....:4.w......".
70: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 01 01 ................
80: 06 50 07 44 40 00 00 00 00 00 00 F0 63 69 0A 00 .P.D@.......ci..
90: 00 00 00 40 46 49 4E 49 53 41 52 20 43 4F 52 50 ...@FINISAR CORP
A0: 2E 20 20 20 F9 00 90 65 46 54 4C 58 31 34 31 32 .   ...eFTLX1412
B0: 44 33 42 43 4C 20 20 20 30 30 66 26 25 1C 4B E9 D3BCL   00f&%.K.
C0: 64 78 06 00 55 4A 53 30 38 30 54 20 20 20 20 20 dx..UJS080T
D0: 20 20 20 20 31 30 31 32 32 31 20 20 08 60 70 1F     101221  .`p.
E0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
F0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................

Enter Previous Screen(0), (n)ext page, (H)elp, E(x)it >
```

Use option *n* to go to the next page. The ***SFP Information*** screen for Port 1 Address A2 Page will be displayed. Use option *p* to go to the previous page.

```
SFP Information - iConverter XG                    iConverter, Serial Agent
Identifier -
Chassis Number = 1    Slot Number = 3    Model Number = 8599N-11  Port = 1

Address A2 Page Contents
================================================
00: 00 00 00 00 00 00 00 00 00 00 00 F0 63 69 0A 00 ............ci..
10: 00 00 00 40 46 49 4E 49 53 41 52 20 43 4F 52 50 ...@FINISAR CORP
20: 2E 20 20 20 F9 00 90 65 46 54 4C 58 31 34 31 32 .   ...eFTLX1412
30: 44 33 42 43 4C 20 20 20 30 30 66 26 25 1C 4B E9 D3BCL   00f&%.K.
40: 64 78 06 00 55 4A 53 30 38 30 54 20 20 20 20 20 dx..UJS080T
50: 20 20 20 20 31 30 31 32 32 31 20 20 08 60 70 1F     101221  .`p.
60: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
70: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
80: 00 00 00 00 00 00 47 03 00 00 00 F0 63 69 0A 00 ......G.....ci..
90: 00 00 00 40 46 49 4E 49 53 41 52 20 43 4F 52 50 ...@FINISAR CORP
A0: 2E 20 20 20 F9 00 90 65 46 54 4C 58 31 34 31 32 .   ...eFTLX1412
B0: 44 33 42 43 4C 20 20 20 30 30 66 26 25 1C 4B E9 D3BCL   00f&%.K.
C0: 64 78 06 00 55 4A 53 30 38 30 54 20 20 20 20 20 dx..UJS080T
D0: 20 20 20 20 31 30 31 32 32 31 20 20 08 60 70 1F     101221  .`p.
E0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
F0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................

Enter Previous Screen(0), (n)ext page, (p)revious page, (H)elp, E(x)it >
```

The following information is available depending on the installed transceiver:

SFP+ A0 Information Display

This section displays fixed SFP Module information for the following areas.

- Identifier Values
- Extended Identifier
- Connector Values
- Transceiver Codes
- Encoding Rules
- Normal Bit Rate
- Link Length
- Vendor Name
- Vendor OUI
- Vendor Revision Number
- Laser Wavelength
- Options
- Vendor Serial Number
- Date Code
- Diagnostic Monitoring Type
- Enhanced Options
- SFF-8472 Compliance
- Part Number

SFP+ A2 Information Display

This section displays decoded SFP data collected for the following statistics (when available).

- Measured Temperature
- Measured Vcc
- Measured Bias
- Measured Tx Power
- Measured Rx Power
- Temperature High Alarm Setting
- Temperature Low Alarm Setting
- Temperature High Warning Setting
- Temperature Low Warning Setting
- Vcc High Alarm Setting
- Vcc Low Alarm Setting
- Vcc High Warning Setting
- Vcc Low Warning Setting
- Bias High Alarm Setting
- Bias Low Alarm Setting
- Bias High Warning Setting
- Bias Low Warning Setting
- Tx Power High Alarm Setting
- Tx Power Low Alarm Setting
- Tx Power High Warning Setting
- Tx Power Low Warning Setting
- Rx Power High Alarm Setting
- Rx Power Low Alarm Setting
- Rx Power High Warning Setting
- Rx Power Low Warning Setting

XFP Up A0 Block Information Display

This section displays fixed XFP Module information for the following areas.

- Identifier Values
- 10G Ethernet Compliance
- 10G Fibre Channel Compliance
- 10G Copper Links
- Lower Speed Links
- SONET/SDH Codes - SH
- SONET/SDH Codes - LH
- SONET/SDH Codes - VLH
- Encoding Mechanism Support
- Bit Rate Min
- Bit Rate Max
- Length for SMF fiber (km)
- Length for 50um fiber OM3 (m)
- Length for 50um fiber OM2 (m)
- Length for 62.5um fiber OM1 (m)
- Link length for copper (m)
- Device Technology
- Transmitter Technology
- Vendor Name
- CDR Support
- Loopback Support
- Vendor OUI
- Part Number
- Vendor Revision Number
- Laser Wavelength
- Laser Wavelength Tolerance
- Max Case Temperature
- Max Power Dissipation
- Max Power Dissipation on Pwr Dwn
- Max Current by +5V Supply
- Max Current by +3.3V Supply
- Max Current by +1.8V Supply
- Max Current by -5.2V Supply
- Vendor Serial Number
- Date Code
- Auxiliary Monitor Input 1
- Auxiliary Monitor Input 2

XFP Lo A0 Block Information Display

This section displays fixed XFP Module information for the following areas.

- Measured Temperature
- Measure Tx Bias
- Measure Tx Power
- Measured Rx Power
- Auxiliary 1 Measured
- Auxiliary 2 Measured
- Temperature High Alarm Setting
- Temperature Low Alarm Setting
- Temperature High Warning Setting
- Temperature Low Warning Setting
- Bias High Alarm Setting
- Bias Low Alarm Setting
- Bias High Warning Setting
- Bias Low Warning Setting
- Tx Power High Alarm Setting
- Tx Power Low Alarm Setting
- Tx Power High Warning Setting
- Tx Power Low Warning Setting
- Rx Power High Alarm Setting
- Rx Power Low Alarm Setting
- Rx Power High Warning Setting
- Rx Power Low Warning Setting
- AUX 1 High Alarm Setting
- AUX 1 Low Alarm Setting
- AUX 1 High Warning Setting
- AUX 1 Low Warning Setting
- AUX 2 High Alarm Setting
- AUX 2 Low Alarm Setting
- AUX 2 High Warning Setting
- AUX 2 Low Warning Setting

3.5.3 Port Configuration Screen

The ***Port Config*** screen allows the user to configure the wavelength, vendor channel, ITU channel or TX dither of tunable XFP transceivers. The ***Port Config*** screen is only available on XFP models.

To access the ***Port Config*** screen, select *P* from the ***Module*** screen, and press <*ENTER*>. The ***Port Config*** screen will be displayed.

The screen displayed below indicates an XFP that does not support tunability.

```
Port Config - iConverter XG                          iConverter, Serial Agent
Identifier -
Chassis Number = 1    Slot Number = 3    Model Number = 8599N-11  Port = 1

Features                                 Configurations      Current    Saved
---------------------------------------  ----------------------------------------
Part Number:        FTLX1412D3BCL        Wavelength (nm)     n/a        1545.30
First Frequency (THz)         n/a        Wavelength Error    n/a
Last Frequency (THz)          n/a        Frequency (THz)     n/a
Frequency Spacing (GHz)       n/a        Frequency Error     n/a
Available Vendor Channels     n/a        Vendor Channel      n/a        1
First ITU Channel             n/a        ITU Channel         n/a
Last ITU Channel              n/a        TX Dither           n/a        1
ITU Channel Increments

Configure and Save Configurations        Status
---------------------------------------  ----------------------------------------
1: Not Available                         Tx Type:                    Fixed
2: Not Available                         Nominal Wavelength (nm):    1307.50
3: Not Available                         Auto-Reload Wavelength:     Off
4: Not Available


Enter Choice (1-4), (c)lear saved config, (n)ext port, (H)elp, E(x)it >
```

The screen displayed below indicates an XFP that does support tunability.

```
Port Config - iConverter XG                          iConverter, Serial Agent
Identifier -
Chassis Number = 1    Slot Number = 3    Model Number = 8599N-11  Port = 1

Features                                 Configurations      Current    Saved
---------------------------------------  ----------------------------------------
Part Number:     JXP01TMAC1CX5GEN        Wavelength (nm)     1568.75    0.00
First Frequency (THz)       191.10       Wavelength Error    0.00
Last Frequency (THz)        196.15       Frequency (THz)     191.10
Frequency Spacing (GHz)      50.00       Frequency Error     0.00
Available Vendor Channels      102       Vendor Channel      1          0
First ITU Channel            11.00       ITU Channel         11.0
Last ITU Channel             61.50       TX Dither           1          0
ITU Channel Increments         0.5

Configure and Save Configurations      Status
---------------------------------------  ----------------------------------------
1: Configure by Wavelength (nm)          Tx Type:                    Tunable
2: Configure by Vendor Channel           Nominal Wavelength (nm):    n/a
3: Configure by ITU Channel              Auto-Reload Wavelength:     Off
4: Configure TX Dither


Enter Choice (1-4), (c)lear saved config, (n)ext port, (H)elp, E(x)it >
```

Under the Features column, the installed XFP transceiver displays the following information (if available); part number, first and last supported DWDM frequency, frequency spacing, the number of available vendor channels, the first and last supported ITU channel and the ITU channel increment.

Under the Configurations column, the current and saved configuration is displayed.

Depending on the manufacturer (vendor) of the tunable XFP transceiver, the XFP can be configured by entering the wavelength, vendor channel or ITU channel. Only one of the parameters needs to be configured.

Use Appendix A to relate the ITU Channel or wavelength to the frequency range supported by the tunable XFP transceiver.

To configure the transceiver by wavelength, enter *1* and press <*ENTER*>. Backspace over the existing value, type the new wavelength, and press <*ENTER*>. A successful configuration entry will display the new value in the "Current" and "Saved" columns. See Appendix A.

To configure the transceiver by vendor channel, enter *2* and press <*ENTER*>. Backspace over the existing value, type the new channel number, and press <*ENTER*>. A successful configuration entry will display the new value in the "Current" and "Saved" columns. Use the vendor data sheet to relate the vendor channel number to the desired wavelength.

To configure the transceiver by ITU channel, enter *3* and press <*ENTER*>. Backspace over the existing value, type the new ITU channel number, and press <*ENTER*>. A successful configuration entry will display the new value in the "Current" and "Saved" columns. See Appendix A.

TX dither can be enabled (1) or disabled (0). TX Dither, when enabled, helps suppress the effects of Stimulated Brillouin Scattering (SBS).

When a powerful light wave travels through a fiber it interacts with acoustical vibration modes in the fiber optic cabling. This causes a scattering mechanism to be formed that reflects much of the light back to the source. This interaction is called Stimulated Brillouin Scattering (SBS).

Use option *n* to go to the next page. The ***Port Config*** screen for Port 2 will be displayed. Use option *p* to go to the previous page.

Use option *c* to clear the saved information.

4.0 XG+ SPECIFICATIONS

Model Type	*iConverter* 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 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
Power Requirement	1.1A @ 3.3VDC (Typical)
Dimensions	W:0.85” x D:4.5” x H:2.8”
Temperature	Standard: 0 to 50° C Wide: -40 to 60° C Extended: -40 to 75° C Storage: -40 to 80° C
Weight	8.0 oz
Humidity	5 to 95% (non-condensing)
Altitude	-100m to 4000m
MTBF (hrs)	770,000

5.0 APPENDIX A - ITU CHANNELS

ITU Channel	Frequency (THz)	Wavelength (nm)
1	190.100	1577.03
1.5	190.150	1576.61
2	190.200	1576.20
2.5	190.250	1575.78
3	190.300	1575.37
3.5	190.350	1574.95
4	190.400	1574.54
4.5	190.450	1574.13
5	190.500	1573.71
5.5	190.550	1573.30
6	190.600	1572.89
6.5	190.650	1572.48
7	190.700	1572.06
7.5	190.750	1571.65
8	190.800	1571.24
8.5	190.850	1570.83
9	190.900	1570.42
9.5	190.950	1570.01
10	191.000	1569.59
10.5	191.050	1569.18
11	191.100	1568.77
11.5	191.150	1568.36
12	191.200	1567.95
12.5	191.250	1567.54
13	191.300	1567.13
13.5	191.350	1566.72
14	191.400	1566.31
14.5	191.450	1565.90
15	191.500	1565.50
15.5	191.550	1565.09
16	191.600	1564.68
16.5	191.650	1564.27
17	191.700	1563.86
17.5	191.750	1563.45
18	191.800	1563.05
18.5	191.850	1562.64

ITU Channel	Frequency (THz)	Wavelength (nm)
19	191.900	1562.23
19.5	191.950	1561.83
20	192.000	1561.42
20.5	192.050	1561.01
21	192.100	1560.61
21.5	192.150	1560.20
22	192.200	1559.79
22.5	192.250	1559.39
23	192.300	1558.98
23.5	192.350	1558.58
24	192.400	1558.17
24.5	192.450	1557.77
25	192.500	1557.36
25.5	192.550	1556.96
26	192.600	1556.55
26.5	192.650	1556.15
27	192.700	1555.75
27.5	192.750	1555.34
28	192.800	1554.94
28.5	192.850	1554.54
29	192.900	1554.13
29.5	192.950	1553.73
30	193.000	1553.33
30.5	193.050	1552.93
31	193.100	1552.52
31.5	193.150	1552.12
32	193.200	1551.72
32.5	193.250	1551.32
33	193.300	1550.92
33.5	193.350	1550.52
34	193.400	1550.12
34.5	193.450	1549.72
35	193.500	1549.32
35.5	193.550	1548.91
36	193.600	1548.51
36.5	193.650	1548.11

ITU Channel	Frequency (THz)	Wavelength (nm)
37	193.700	1547.72
37.5	193.750	1547.32
38	193.800	1546.92
38.5	193.850	1546.52
39	193.900	1546.12
39.5	193.950	1545.72
40	194.000	1545.32
40.5	194.050	1544.92
41	194.100	1544.53
41.5	194.150	1544.13
42	194.200	1543.73
42.5	194.250	1543.33
43	194.300	1542.94
43.5	194.350	1542.54
44	194.400	1542.14
44.5	194.450	1541.75
45	194.500	1541.35
45.5	194.550	1540.95
46	194.600	1540.56
46.5	194.650	1540.16
47	194.700	1539.77
47.5	194.750	1539.37
48	194.800	1538.98
48.5	194.850	1538.58
49	194.900	1538.19
49.5	194.950	1537.79
50	195.000	1537.40
50.5	195.050	1537.00
51	195.100	1536.61
51.5	195.150	1536.22
52	195.200	1535.82
52.5	195.250	1535.43
53	195.300	1535.04
53.5	195.350	1534.64
54	195.400	1534.25
54.5	195.450	1533.86

ITU Channel	Frequency (THz)	Wavelength (nm)
55	195.500	1533.47
55.5	195.550	1533.07
56	195.600	1532.68
56.5	195.650	1532.29
57	195.700	1531.90
57.5	195.750	1531.51
58	195.800	1531.12
58.5	195.850	1530.72
59	195.900	1530.33
59.5	195.950	1529.94
60	196.000	1529.55
60.5	196.050	1529.16
61	196.100	1528.77
61.5	196.150	1528.38
62	196.200	1527.99
62.5	196.250	1527.60
63	196.300	1527.22
63.5	196.350	1526.83
64	196.400	1526.44
64.5	196.450	1526.05
65	196.500	1525.66
65.5	196.550	1525.27
66	196.600	1524.89
66.5	196.650	1524.50
67	196.700	1524.11
67.5	196.750	1523.72
68	196.800	1523.34
68.5	196.850	1522.95
69	196.900	1522.56
69.5	196.950	1522.18
70	197.000	1521.79
70.5	197.050	1521.40
71	197.100	1521.02
71.5	197.150	1520.63
72	197.200	1520.25

6.0 WARRANTY

This product is warranted to the original purchaser against defects in material and workmanship for a period of TWO YEARS from the date of shipment. A LIFETIME warranty may be obtained by the original purchaser by REGISTERING this product with Omnitron within 90 days from the date of shipment. TO REGISTER, COMPLETE AND MAIL OR FAX THE ENCLOSED REGISTRATION FORM TO THE INDICATED ADDRESS. Or you may register your product on the Internet at http://www.omnitron-systems.com. During the warranty period, Omnitron will, at its option, repair or replace a product which is proven to be defective.

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 defects 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.

Exclusive Remedies

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.

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