



NoviConnect™ 508 SFP+ ER Transceiver



NoviConnect 508: This Industry Standard 10GBase-ER SFP+ Transceiver operates at 1550nm over Single-Mode Fiber, with a maximum reach of 40km connected via a LC connector, is certified for optimal performance with NoviFlow switching products, and is fully compliant with MSA (Multi-Source Agreement) standards. All *NoviConnect* products from NoviFlow are 100% functionally tested to ensure trouble-free installation and operation when used with NoviFlow's NoviSwitch and NoviKit network products.

NoviConnect Transceivers are factory programmed with specific configuration data required for seamless networking compliance and for optimal network performance when used with NoviFlow switching products. These transceivers can be mixed and connected to devices with MSA industry standard compliant transceivers, for outstanding network performance.

NoviFlow Inc.™ aims to change the traditional approach to networking by making switching smarter. The company was founded to deliver upon the promise of SDN. Our SDN data plane products combine the benefits of virtualization and programmability with network processors that can handle complex flows, making it possible for data center and network operators to keep up with today's exponentially growing networking demand. In order to ensure the highest levels of network performance, seamless compatibility and trouble-free upgrades with our NoviSwitch and NoviKit products, NoviFlow offers a complete line of high-performance and cost-effective SFP transceiver modules.

PRODUCT DESCRIPTION

The *NoviConnect 508 SFP+ ER Transceiver* (10 Gbps over fiber) is a high performance, cost effective module supporting dual data-rate of 10Gbps and supporting distances up to 40km with SMF.

REGULATORY COMPLIANCE

- ESD to the Electrical PINs: compatible with MIL-STD-883E Method 3015.7.
- ESD to the Duplex LC Receptacle: compatible with IEC 61000-4-2
- Immunity compatible with IEC 61000-4-3.
- EMI compatible with FCC Part 15 Class B EN55022 Class B (CISPR 22B) VCCI Class B.
- Laser Eye Safety compatible with FDA 21CFR 1040.10 and 1040.11 EN60950, EN (IEC) 60825-1,2.
- RoHs compliant with 2002/95/EC 4.1&4.2 2005/747/EC.

Key Features:

- Duplex LC connector
- Support hot-pluggable
- Metal with lower EMI
- Excellent ESD protection
- RoHS compliant and Lead Free
- Compliant with IEEE 802.3ae
- ITU-T G.959, G.691compliant
- Temperature-stabilized EML transmitter and PIN ROSA
- Up to 40KM for single mode fiber
- GR-253-CORE compliant
- Compliant with SFP+ MSA: SFF-8431 Rev.4.1
- Digital diagnostic compatible with SFF-847 Rev11.0
- Single 3.3V power supply and low power dissipation <2.5W

RECOMMENDED OPERATING CONDITIONS

NOTE: All information presented in this document is provided as is WITHOUT ANY WARRANTY, EXPRESS OR IMPLIED, and is subject to change without notice. Copyright © 2019, NoviFlow Inc.

NoviConnect 508 SFP+ ER Data Sheet

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT
Power Supply Voltage	Vcc	3.13	3.30	3.47	V
Power Supply Current	Icc			750	mA
Case Operating Temperature – Commercial	Tc	0		70	°C
Case Operating Temperature – Industrial	Tc	-40		85	°C
9/125µm SMF	Lmax			40	km

ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT
TRANSMITTER					
Differential data input swing	V _{in,pp}	120	600	850	mV
Input differential impedance (*)	Z _{in}	85	100	115	Ω
TX Disable-High		2.0		V _{cc} +0.3	V
TX Disable-Low		V _{ee}		0V _{ee} +0.8	V
TX Fault-High		2.0		V _{cc} +0.3	V
TX Fault-Low		V _{ee}		V _{ee} +0.8	V
RECEIVER					
Differential data output swing	V _{out,pp}	350	400	700	mV
LOS-High		2.0		V _{cc} +0.3	V
LOS-Low		V _{ee} -0.3		0.8	V

* AC Coupled

RATE SELECTION

The SFP+ module provides two inputs RS0 and RS1 that can optionally be used for rate selection. This rate select functionality can also be controlled by software as defined by SFF-8472. Optionally the rate select methods of Part 2 SFF-8079 may be used instead of the method described here by setting the management declaration bit (A0h byte 93 bit 2) to 1, see SFF-8472.

PARAMETER	STATE	CONDITIONS
RS0	Low	Rx signally rate less than or equal to 4.25GBd.
	High	Rx signally rate great than 4.25GBd.
RS1	Low	Tx signally rate less than or equal to 4.25GBd.
	High	Tx signally rate great than 4.25GBd.

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	MIN.	MAX.	UNIT
Maximum Supply Voltage	Vcc	-0.5	4.0	V
Storage Temperature	TS	-40	85	°C
Operating Humidity	RH	5	95	%

OPTICAL CHARACTERISTICS

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	NOTES
TRANSMITTER						
Operating Date Rate		9.95		11.3		
Output Opt. Power	PO	-1		3	dBm	
Optical Extinction Ratio	ER	8.2			dB	
Side Mode Suppression Ratio	SMSR	30			dB	
Center Wavelength Spacing			100		GHz	
Optical Wavelength	λ	1528	1550	1565	nm	
Generation 1(20KHZ-80MHZ)				0.3	UI p-p	1
Generation Jitter 2(4MHZ-80MHZ)				0.1	UI p-p	1
Optical Eye Mask 1		ITU-T G.691				1
Optical Eye Mask 2		Compatible with IEEE 802.3-2005				2
RECEIVER						
Overload		0.5			dBm	1
Optical Center Wavelength	λ _C	1270		1600	nm	1
LOS De-Assert	LOSD			-20	dBm	
LOS Assert	LOSA	-30			dBm	
LOS Hysteresis		0.5		5	dB	
Receiver Sensitivity @ non-FEC rate	P _{min1}			-16	dBm	3
Receiver Sensitivity @ FEC rate	P _{min2}			-19	dBm	3

NOTES:

- BER ≤ 10⁻¹²@PRBS231-1 at 10.3125Gb/s.

DIGITAL DIAGNOSTIC MONITORING INTERFACE

The digital diagnostic monitoring interface also defines another 256-byte memory map in EEPROM, which makes use of the 8 bi address 1010001X (A2h). The monitoring specification of this product is described in this table.

PARAMETER	RANGE	ACCURACY	CALIBRATION
Temperature	0°C to 70°C	±3°C	Internal
Voltage	2.97V to 3.63V	±3%	Internal
Bias Current	0mA to 100mA	±10%	Internal
TX Power	-1dBm to 3dBm	±2dB	Internal
RX Power	-18dBm to 0.5dBm	±2dB	Internal

Ordering information: Model number 400000508

For more information, please visit www.noviflow.com™ or e-mail us at contact@noviflow.com.

NoviFlow products are warranted according to the terms and conditions of the agreements under which they are provided. NoviFlow, the NoviFlow logo, noviflow.com, NoviSwitch, NoviWare, NoviConnect and NoviSwitch are trademarks of NoviFlow Inc. All other product names, company names and trademarks mentioned herein are the property of their respective owners. Document #DSNC508-02