

# Net10G

Network processing interface for up to OC192/STM64/10GbE



## Description

The Net10G is a mezzanine board that pairs with an EDT main board (for PCI or PCI Express) for high-speed data transfer. It supports electrical or optical Ethernet of up to 10GbE and also multiple SONET (SDH) signals.

The Net10G has two high-speed TCAMs and two pluggable form factors: one SFP for OC3/12/48 (STM1/4/16) or 1GbE (electrical or optical); and one XFP for OC192 (STM64) or 10GbE (electrical or optical). It has a programmable FPGA (Xilinx Virtex 5 LX), 2 GB of DRAM, and 8 MB of SRAM.

EDT provides FPGA configuration files to enable demultiplexing to VC-4C payloads and to support raw, framed, framed and descrambled, header, and payload data. Custom configuration files can be requested.

The main board supplies high-speed DMA, plus additional memory and programmable FPGA resources.

## Features

Mezzanine board – pairs with an EDT main board (in a PCI, PCI-X, or PCIe slot), which adds high-speed DMA, programmable FPGA resources, and memory

Channel 0: One optional SFP for 1GbE (electrical or optical) or OC3/12/48 (STM1/4/16), 155.52, 622.08, or 2488.32 Mb/s – 850, 1310, or 1550 nm

Channel 1: One optional XFP for 10GbE (electrical or optical) or OC192 (STM64), 9953.28 Mb/s – 850, 1310, or 1550 nm

Encoding: 8b/10b or 64b/66b

Time code: 1 pps, IRIG-B, or other input, with user-configurable output

FPGA: One programmable Xilinx Virtex 5 LX XC5VLX110/220/330

SRAM: 8 MB (2 M x 36) for general use or TCAM-associated data

DRAM: 2 GB (DDR2) for snapshot recording and data buffering

TCAMs: Two (with lookup tables, configurable entries, and output tied to FPGA)

EDT intellectual property for 10GbE media access control layer, SONET/SDH framing, and demultiplexing

## Applications

Multiple network data processing applications

# Specifications

<b>Product Type</b>	Net10G is a network processing mezzanine board for up to OC192/STM64/10GbE; it requires a main board.			
<b>FPGA Resources</b>	One programmable FPGA (Xilinx Virtex 5 LX XC5VLX110 or optional 220 or 330), plus FPGA on main board			
<b>Memory</b>	SRAM	8 MB (2 M x 36) for general use or TCAM-associated data		
	DRAM (DDR2)	2 GB for snapshot recording and data buffering		
	TCAMs (with lookup tables and output tied to FPGA)	Two cascading, configurable 40-, 80-, 160-, 320-, or 640-bit entries		
<b>Clocks</b>	Programmable internal reference clock with jitter attenuation			
<b>Data Rates</b>	Data rates are dependent on data format and main board.			
<b>Data Format (I/O)</b>	Time code (from external receiver)	1 pps, IRIG-B, or other input, with user-configurable output		
	Channel 0	1GbE (electrical or optical) or SONET OC3/12/48 (SDH STM1/4/16)		
	Channel 1	10GbE (electrical or optical) or SONET OC192 (SDH STM64)		
	(Output can be made to meet SONET/SDH jitter specifications if required.)			
<b>Protocols</b>	SONET/SDH - STM1/4/16/64 - concatenated payload; other payloads available upon request Ethernet - IEEE802.3, packet over SONET; header-only or header and payload available upon request			
<b>Transceivers</b>	One optional SFP and one optional XFP are available, supporting the data formats and specifications shown below.			
	<b><u>CHANNEL 0</u></b> <b>(SFP)</b>	<b><u>Electrical: 1GbE</u></b> <b>(1000 Base-T)</b>	<b><u>Optical: 1GbE or OC3/12/48 (STM1/4/16)</u></b>	
	Output power	–	<b>850 nm</b> –9 to –2.5 dBm	<b>1310 nm</b> –9.5 to –3 dBm
	Center wavelength	–	830 to 860 nm	1270 to 1360 nm
	Sensitivity	–	–18 dBm	–18 dBm
	Maximum input power	–	0 dBm	0 dBm
	Connector	RJ45	LC	LC
	<b><u>CHANNEL 1</u></b> <b>(XFP)</b>	<b><u>Electrical: 10GbE</u></b> <b>(10G Base-CX4)</b>	<b><u>Optical: 10GbE or OC192 (STM64)</u></b>	
	Output power	–	<b>850 nm</b> –3 to –1 dBm	<b>1310 nm</b> –6 to –1 dBm
	Center wavelength	–	850 nm	1290 to 1330 nm
	Sensitivity	–	–7.5 dBm	–13 dBm
	Maximum input power	–	–1 dBm	–0.5 dBm
	Connector	CX4	LC	LC
<b>Connectors</b>	One 7-pin Lemo for time code input One RJ45, LC, or CX4 on each transceiver as shown above			
<b>Cabling</b>	Consult EDT for purchase options: To 7-pin Lemo on board, from time code source			
			Via one DB9 (for 1 pps or IRIG-B) or BNC (for IRIG-B only)	
<b>Physical</b>	Weight	7.7 oz. typical		
	Dimensions	6.6 x 4.2 x 0.5 in. (with a main board)		
<b>Environmental</b>	Temperature	Operating 0° to 40° C Non-operating –40° to 70° C		
	Humidity	Operating 1% to 90%, non-condensing at 40° C Non-operating 95%, non-condensing at 45° C		
<b>System and Software</b>	For details on system requirements and EDT-provided software driver packages, see specifications for your EDT main board.			

## Support

EDT offers engineer-to-engineer customer support, from phone consultation to custom design of hardware, firmware, and software. Contact us for options and details.

## Contact

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## Ordering Options

- Main board: PCI GS / PCIe8 LX
- FPGA: XC5VLX**110** / 220 / 330
- Transceivers: 1 SFP and 1 XFP (options above)
- Cabling: DB9 / BNC

**Bold** is default.  
For more options, see main board datasheet.