

# OPG-X110

## 10 Gbps Electrical & Optical Data/Pattern Generator



### Overview

The OPTELLENT OPGX110 is a cost-effective easy-to-use 10G electrical and optical data/pattern generator for testing components and systems in R&D and manufacturing environments as well as field installations. The OPGX110 incorporates an internal reference clock, a pseudo-random bit sequence (PRBS) source, and an RS-232 or USB interface in one compact module that provides both electrical and optical outputs at data rates up to 11.35 Gbps. Additionally, the OPGX110 is offered with multiple PRBS outputs, popular stress patterns, and user-defined patterns. The OPGX110 comes with a standard 2-year warranty.

An intuitive Graphical User Interface enables easy point-and-click operation. Software drivers are available for incorporating the OPGX110 into test automation suites using programs like LabVIEW, VisualBASIC, HP VEE.

### Applications

- ▶ Testing of optical transceivers, transponders, linecards, and subsystems
- ▶ Testing of opto-electronic components and devices (TOSA, ROSA, lasers, etc...)
- ▶ Testing of Gb/s ICs, PCBs, electronic modules, subsystems, and systems
- ▶ Serial bus and high-speed backplane design
- ▶ Production and compliance testing (EMI, EMC)
- ▶ Installation testing and troubleshooting in optical transport networks

### Key Features

- ▶ Electrical and Optical Outputs
- ▶ Internal Reference Frequency
- ▶ Data output amplitude control
- ▶ Multiple PRBS Patterns:  $2^7-1$ ,  $2^{23}-1$ ,  $2^{31}-1$
- ▶ Stress Patterns: K28.5, CJPAT, CRPAT
- ▶ User-defined Patterns
- ▶ External Reference Input for Jitter Injection
- ▶ Intuitive GUI and Automated Test Report
- ▶ Easy-to-Use, Compact and Cost-Efficient
- ▶ 2-year Warranty

### Preset Data Rates

<b>SONET / SDH</b>	
OC-192: STS-192 / STM-64	9.95328 Gbps
G.709 with FEC	10.709 Gbps
<b>ETHERNET</b>	
10GBASE-T	10 Gbps
10GBASE-R (LAN/PHY)	10.3125 Gbps
10GBASE-R OTU2 FEC	11.096 Gbps
<b>FIBRE CHANNEL</b>	
10 x FC (10GFC)	10.519 Gbps
10GFC with FEC	11.317 Gbps
<b>INFINIBAND &amp; HDMI</b>	
4 x Infiniband	10 Gbps
HDMI 1.3	10.2 Gbps

Additional Preset Data Rates can be requested (See Ordering Info).

## Pattern Generator

Parameter	Min	Typ	Max	Units
<b>Data Output (Electrical)</b>				
Output Type	Differential			
Output Format	NRZ			
Termination	AC-Coupled			
Data Patterns	<ul style="list-style-type: none"> <li>• <b>PRBS:</b> 2<sup>7</sup>-1, 2<sup>23</sup>-1, 2<sup>31</sup>-1; 101010...pattern</li> <li>• <b>Pre-defined:</b> K28.5, CJPAT, CRPAT (Optional)</li> <li>• <b>User-defined:</b> 128 bits to 2000 bits (Optional)</li> </ul>			
Data Rates	<ul style="list-style-type: none"> <li>• <b>Preset:</b> OC-192/ STM-64 (9.95328 Gbps); Infiniband (10Gbps), 10GbE (10.3125 Gbps), 10GFC (10.519 Gbps); G.709 with FEC (10.709 Gbps); 10GbE with FEC (11.096Gbps), 10GFC with FEC (11.317Gbps)</li> <li>• <b>Custom Preset:</b> Special Data rates requested by customers (Optional)</li> </ul>			
Data Rate Range	9.95		11.35	Gbps
Frequency Accuracy			± 50	ppm
Output Amplitude (Single-ended)				
Fixed (Standard)	500		800	mV <sub>p-p</sub>
High Output Version, Fixed (Option)	1800		1900	mV <sub>p-p</sub>
Variable Output Amplitude (Option)	300		1800	mV <sub>p-p</sub>
Data Rise Time, (20 – 80%) <sup>(1)</sup>		20		ps
Data Fall Time, (20 – 80%) <sup>(1)</sup>		20		ps
Data Output RMS Jitter <sup>(1)</sup>		1.4		ps
Error Injection	Single error; 10 <sup>-7</sup> , 10 <sup>-8</sup> , 10 <sup>-9</sup>			
Connector	50Ω Nominal, 2.92mm Female			
<b>Data Output (Optical)</b>				
Interface	XFP housing provided as a standard feature MSA-Compliant XFP Transceiver (Optional)			
Wavelength	850nm, 1310nm, 1550nm, DWDM			
Fiber Type	Multimode and Single Mode Fiber			
Optical Connector	LC			
<b>Clock Output</b>				
Output Type	Differential			
Termination	AC- Coupled			
Output Amplitude (peak-to-peak, S.E.)			300	mV <sub>p-p</sub>
Connector	50Ω Nominal, SMA Female			
<b>Trigger Output</b>				
Output Amplitude	300			mV <sub>p-p</sub>
Output Type	Single-ended, AC-coupled			
Connector	50Ω SMA Female			

(1) Measurements based on PRBS<sup>23</sup>-1 data at 9.95328 Gbps (OC-192)

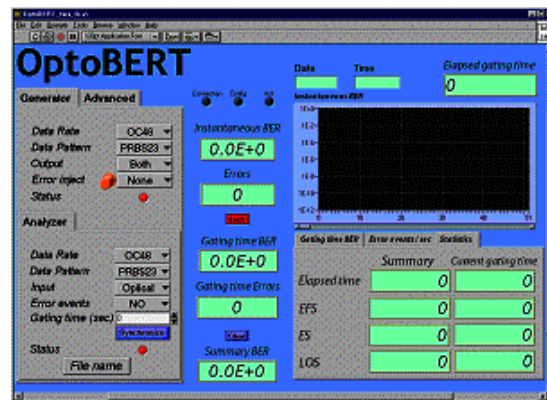
## System & General Specifications

PARAMETER	MIN	MAX	UNIT
Chassis Electrical Voltage	100	240	VAC
Current Drain at Normal Voltage		2.5	A
Operating Temperature Range	5	45	°C
Storage Temperature Range	-40	70	°C
Dimensions (L x W x H)	300 x 240 x 64 12 x 9.5 x 2.5		mm <sup>3</sup> inch <sup>3</sup>
Optical Interface	Standard XFP housing		
Safety	UL, IEC-61010-1		
EMC	EN55011, EN61000-3-2, EN61000-3-3, BS EN61326		
PC Interface	RS232/USB		
Standard Warranty	2 years		

## Software

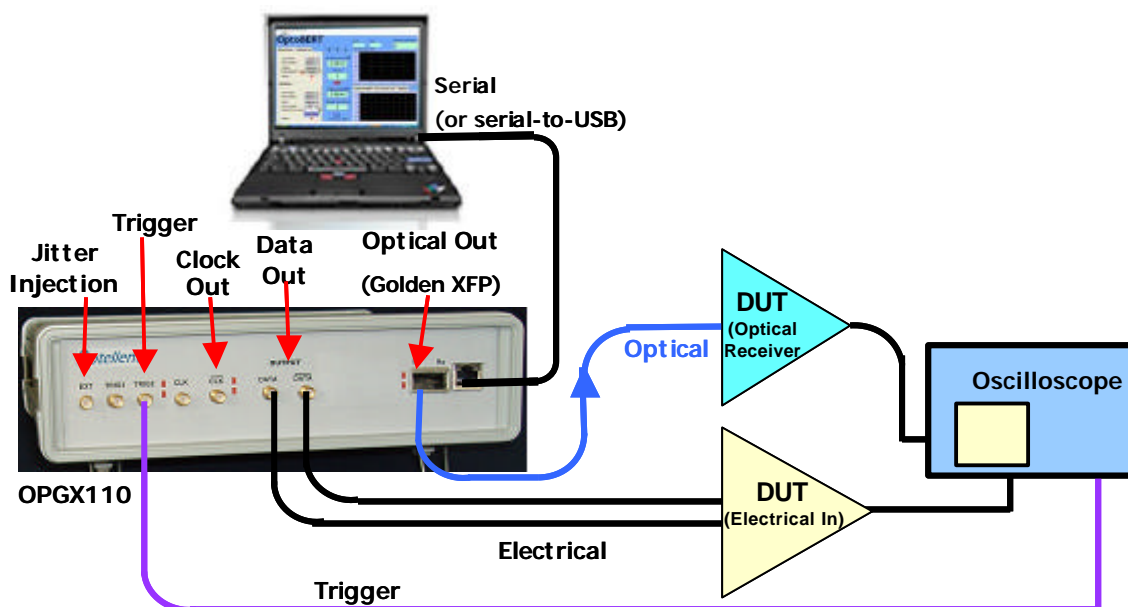
The Optellent OPGX110 software runs on Windows 98/2000/NT/XP and VISTA over USB or RS-232 serial interface via an RJ-45 Connector provided on the front panel.

Software drivers are available for incorporating the OptoBERT into test automation suites using programs like C++, LabVIEW, VisualBASIC, and HP VEE.



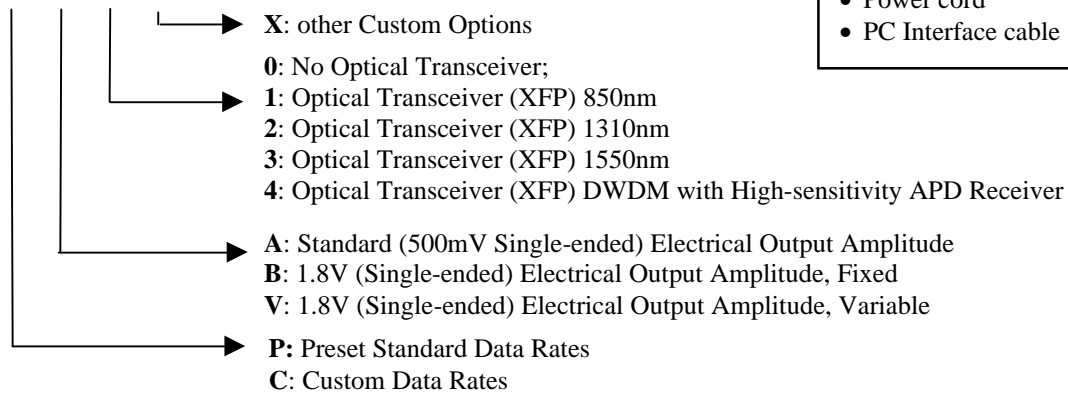
## Testing with the OPGX110

Example: Eye quality measurement setup of an electrical DUT and an optical receiver DUT using the OPGX110



## Ordering Information

OPGX110-X-X- X-X



### Accessories Included

- User Software
- User Manual
- Power cord
- PC Interface cable

Example: OPGX110-P-A-2: 10G Data/Pattern Generator, Preset data rates, 500mV Output Amplitude, 1310nm XFP

## Accessories & Services for OPGX110

Part Number	Description
OPZ1015	Serial-to-USB Converter
OPZ1201	Carrying Bracket
OPZ1202	Mounting Brackets
OPZ2015	Additional 1 year Warranty
OPZ3015	Calibration Service

## Related Products

Model Number	Description
OPBX110	10Gb OptoBERT (Optical & Electrical BERT)
OPB4250	4.25 Gb/s OptoBERT (Optical & Electrical BERT)
OPB3200	3.2 Gb/s OptoBERT (Optical & Electrical BERT)
OPG4250	4.25 Gb/s Data Generator (PPG)
OPG3200	3.2 Gb/s Data Generator (PPG)

## Ordering Contact

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