

BERTScope® Digital Pre-emphasis Processor

DPP Series Data Sheet

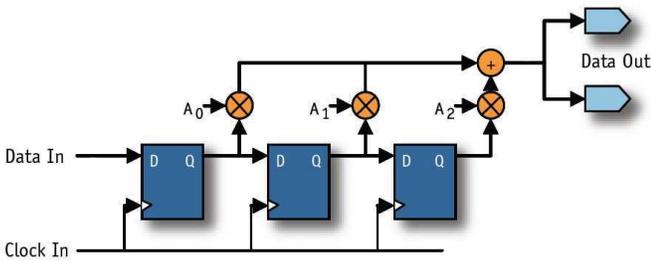
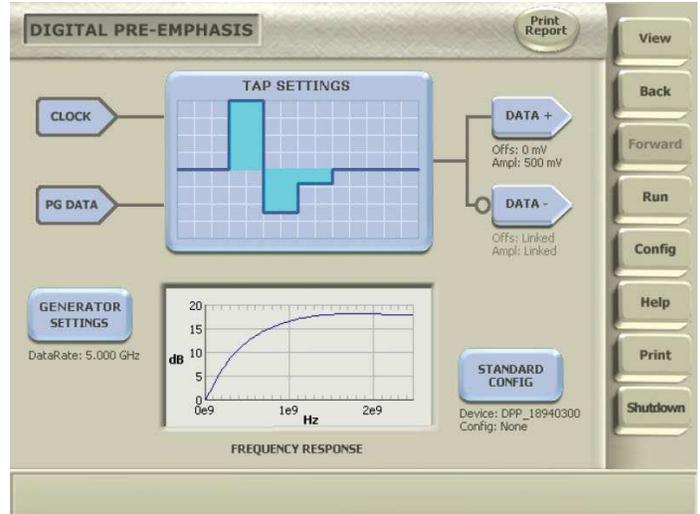


Features & Benefits

- 1 to 12.5 Gb/s for Support of Hardware-based Equalization of 2nd- and 3rd-generation Serial Standards
- 3- or 4-tap for Full Support of Compliance Testing for 802.3ap, Serial Attached SCSI, 10GBASE-KR Backplanes, DisplayPort™, USB 3.0 PCI Express® Gen3
- Pre-cursor or Post-cursor Adjustment for Optimizing Compensation for ISI and Loss
- Exceptionally Easy Setup with Concurrent Multiple Domain Views Ideal for Operation as a Stand-alone Instrument Controlled by a Remote PC, or with a BERTScope for Complete Software Integration
- Precise Control to Correct for Effects such as Backplane ISI or Optical Effects with Adjustability through Tap Weights or Step Response provides the Flexibility Needed for Complete Design Characterization

Applications

- Design Characterization for High-speed, Sophisticated Designs
- Certification Testing of Serial Data Streams for Industry Standards
- Design/Verification of High-speed I/O Components and Systems



Example functional block diagram (3-Tap shown).

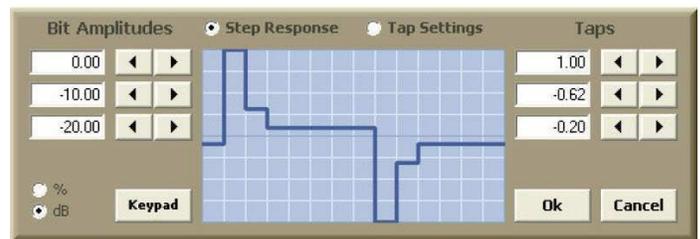
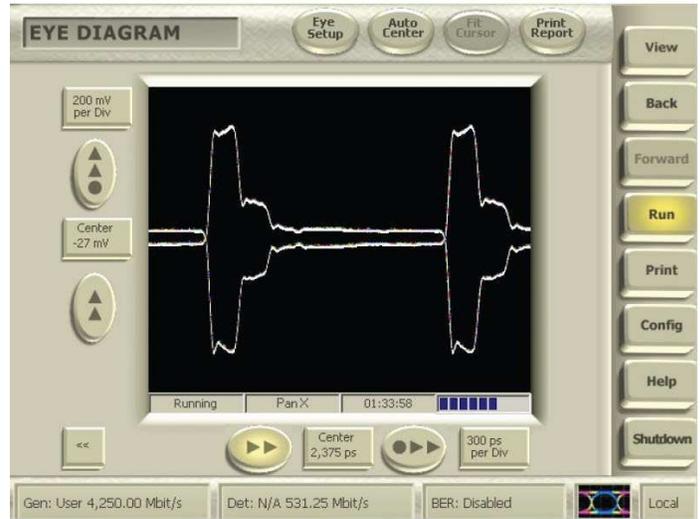
The BERTScope DPP Series is a nonlinear signal conditioner capable of adding controllable amounts of pre-emphasis to a signal. It takes in single-ended inputs of data and clock.

Intuitive Control with Many Views

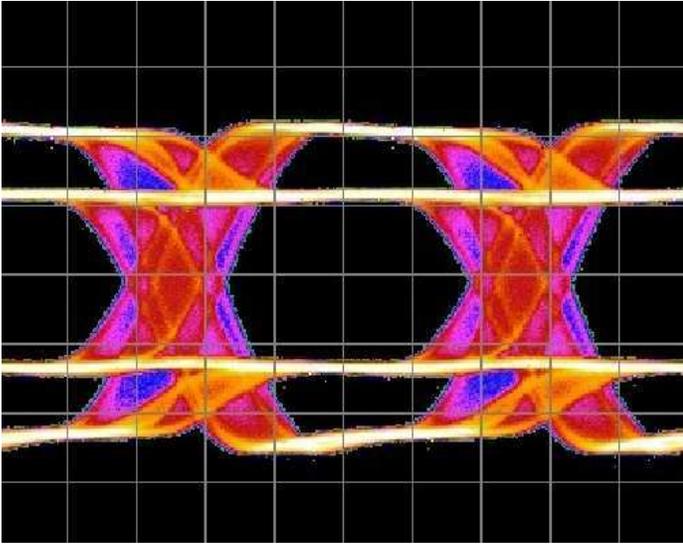
The wave shape can be adjusted in the user interface by either directly entering tap weights, or through an amplitude-weighted time domain bitmap showing the step response. In addition to these two views, a frequency-domain Bode plot is calculated and displayed to show the effect being implemented. This is particularly helpful when counteracting the effects of circuit board ISI with a measured frequency response.

Adjustable Output

Output amplitude is user adjustable in amplitude and offset, and is offered differentially.



Intuitive user interface gives multiple views of the output waveform.



De-emphasized signal with sinusoidal jitter from a BERTScope.

Characteristics

Specifications

Characteristic	Specification	Notes
Data Rate Range	1-12.5 Gb/s	
Inputs		
Clock	Single Ended	SMA
Sensitivity	250 mV (typ.)	
Termination	50 Ω, AC coupled	
Maximum jitter transfer	1:1	Input Clock to Output Data
Data	Single Ended	SMA
Sensitivity	250 mV (typ.)	PN31 pattern
Termination	50 Ω, AC coupled	
Outputs		
Data	Differential	SMA
Max. Amplitude	1.8 V (typ.)	Differential, Adjustable
Diff. skew	<2 ps (typ.)	
Max. DC offset	±500 mV (typ.)	
Coupling	AC	AC-coupled data with DC-coupled output offset
Function	3- or 4-tap, clocked FIR	
Random jitter	<350 f _{RMS} (typ.)	Additive, 1010 pattern
Tap range	-100 to +100 (including 0) in 1% steps	
Tap resolution	1% or 0.1 dB, any tap	
Transition time	<40 ps	All taps, 1010 pattern
General		
Control Interface	USB 2.0	
Dimensions (W × H × D)	39.4 × 9.5 × 33.6 cm (15.5 × 3.75 × 13.25 in.)	
Weight	9 lb. (4 kg)	
Power Consumption	<150 W	
Voltage	100-240 V AC, 45-63 Hz	Auto-range, IEC power plug



The BERTScope DPP Series can operate as a stand-alone instrument controlled by a PC, or with a BERTScope for complete software integration. It can be fully automated, and with its compact size, the DPP will easily fit into a manufacturing environment.

Emerging Standards Requirements

Standard	Required Number of Taps	Notes
802.3ap, 10GBASE-KR 10GbE Backplane	3	
PCI Express 2.5 GT/s Receiver	2	0.7 dB for receiver testing
PCI Express 5 GT/s Transmitter	2	Selectable 3.5 dB and 6.0 dB levels on transmitters
PCI Express 8 GT/s	3	Proposed for transmitter
SAS 6 Gb/s	2	2 dB for reference transmitters 2-4 dB for device transmitters
DisplayPort Transmitter 1.62 Gb/s and 2.7 Gb/s	2	Selectable 3.5 dB, 6 dB, or 9.5 dB on transmitters
USB 3.0 Transmitter 5 GT/s	2	3.5 dB nominal ±0.5 dB on transmitters



BERTScope DPP back panel.

Ordering Information

DPP125B

1-12.5 Gb/s 3-Tap Digital Pre-emphasis Processor.

Opt. 4T

Optional 4-Tap Digital Pre-emphasis Processor for DPP125.

The DPP can be operated stand-alone with a PC (not included) or with a suitable BERTScope model.

All Models Include: Power cable (US), USB cable, 2 SMA input cables, and CD-ROM with software.

Contact Tektronix:

- ASEAN / Australasia (65) 6356 3900
- Austria 00800 2255 4835*
- Balkans, Israel, South Africa and other ISE Countries +41 52 675 3777
- Belgium 00800 2255 4835*
- Brazil +55 (11) 3759 7627
- Canada 1 800 833 9200
- Central East Europe and the Baltics +41 52 675 3777
- Central Europe & Greece +41 52 675 3777
- Denmark +45 80 88 1401
- Finland +41 52 675 3777
- France 00800 2255 4835*
- Germany 00800 2255 4835*
- Hong Kong 400 820 5835
- India 000 800 650 1835
- Italy 00800 2255 4835*
- Japan 81 (3) 6714 3010
- Luxembourg +41 52 675 3777
- Mexico, Central/South America & Caribbean 52 (55) 56 04 50 90
- Middle East, Asia, and North Africa +41 52 675 3777
- The Netherlands 00800 2255 4835*
- Norway 800 16098
- People's Republic of China 400 820 5835
- Poland +41 52 675 3777
- Portugal 80 08 12370
- Republic of Korea 001 800 8255 2835
- Russia & CIS +7 (495) 7484900
- South Africa +41 52 675 3777
- Spain 00800 2255 4835*
- Sweden 00800 2255 4835*
- Switzerland 00800 2255 4835*
- Taiwan 886 (2) 2722 9622
- United Kingdom & Ireland 00800 2255 4835*
- USA 1 800 833 9200

* European toll-free number. If not accessible, call: +41 52 675 3777

Updated 10 February 2011

For Further Information. Tektronix maintains a comprehensive, constantly expanding collection of application notes, technical briefs and other resources to help engineers working on the cutting edge of technology. Please visit www.tektronix.com



Copyright © Tektronix, Inc. All rights reserved. Tektronix products are covered by U.S. and foreign patents, issued and pending. Information in this publication supersedes that in all previously published material. Specification and price change privileges reserved. TEKTRONIX and TEK are registered trademarks of Tektronix, Inc. All other trade names referenced are the service marks, trademarks, or registered trademarks of their respective companies.

27 Oct 2011

65W-25473-3

www.tektronix.com

