12.5 Gb/s PatternPro® Programmable Pattern Generator

PPG1251 Series Datasheet

The Tektronix PPG1251 PatternPro® programmable pattern generator provides pattern generation for high-speed Datacom testing.

Key performance specifications

- 800 Mb/s to 12.5 Gb/s data rate range
- 250 mV to 2.0 V output amplitude
- -2.0 V to 3.0 V offset window
- 35% to 65% programmable crossing point

Key features

- Programmable data rate, amplitude, offset, and crossing point
- Differential data, pattern trigger, clock/n, and full rate clock outputs
- Integrated programmable clock source
- PRBS and user defined patterns
- Option PPG1251 JIT includes SJ, PJ, and RJ insertion
- Front panel touch screen GUI and USB computer control

Applications

- High Speed Serial data testing
- Semiconductor & component testing
- R&D design verification

Product description

The Tektronix PPG1251 is a fully programmable instrument with an integrated clock source. This pattern generator features high-performance DC coupled limiting amplifiers that result in accurate, fast rise time data signals. Option PPG1251 JIT adds built-in impairments, including SJ, PJ, and RJ insertion.

Specifications

Data outputs

Amplitude	Differential/complimentary output, Positive and negative differential outputs are independently programmable.
Single-ended	250 mV to 2.0 V
Differential	500 mV to 4.0 V
Rise/fall time	Scope bandwidth can impact the measured signal rise time.
20 to 80%	17 ps, typical
10 to 90 %	25 ps, typical
Offset	-2.0 V to +3.0 V window, programmable/adjustable
Crossing point range	35% to 65% typical
Output impedance	
50 Ω	Single-ended
100 Ω	Differential

Clock outputs

Full rate clock output	AC coupled, single-ended
Amplitude	400 mV_{p-p}, typical
Trigger output	Programmed as pattern trigger or clock/n
Amplitude	-600 mV to 0 V
Connector type	SMA

Data patterns

Pattern type	Data (from memory) or PRBS
Data rate	Programmable/adjustable
Range	800 Mb/s to 12.5 Gb/s
Resolution	10 kb/s
Accuracy	±5 ppm
PRBS pattern lengths	
2^7 -1 bits	Polynomial = $X^7 + X^6 + 1$
2^{15} - 1 bits	Polynomial = $X^{15} + X^{14} + 1$
2^{23} - 1 bits	Polynomial = $X^{23} + X^{18} + 1$
2^{31} - 1 bits	Polynomial = $X^{31} + X^{28} + 1$
Data pattern depth	512 kbit
Programmable error insertion	Single bit

Jitter insertion option (PPG1251 JIT)

High frequency jitter insertion	Peak-to-peak range for all sources combined.
Amplitude range	0 to 200 ps_{p-p}
Built-in sine source	Programmable from either the front panel touch screen or remote control.
Frequency range	5 kHz to 200 MHz
Amplitude range	0 to 200 ps_{p-p}
Built-in random noise source	Programmable from either the front panel touch screen or remote control.
Amplitude range	0 to 25 ps RMS
Low frequency sine/periodic jitter	Programmable from either the front panel touch screen or remote control.
Frequency range	10 Hz to 1 MHz
Maximum amplitude	100 UI @ 0 to 10 kHz, 10 UI @ 100 kHz, 1 UI @ 1 MHz
Accuracy	±10%, typical
SSC Modulation	Programmable from either the front panel touch screen or remote control
Modulation frequency	28 kHz to 34 kHz
Frequency deviation	0 to 0.5% peak-to-peak
Modulation type	down/center/up spread
Modulation waveform	triangular

External clock inputs

Frequency range	6.25 GHz to 12.5 GHz
Input signal	400 mV_{p-p}, typical, AC coupled
Maximum input signal	1 V_{p-p}
Input impedance	50 Ω, AC-coupled

Control interfaces

Front panel touchscreen GUI	Yes, edit all instrument settings.
Computer programmable interface	USB TMC, program all instrument settings.

Physical characteristics

Front panel width (with mounting tabs)	48.3 cm (19.0 in)
Height	13.3 cm (5.25 in)
Depth (rack mount)	35.1 cm (13.8 in)
Weight	11.1 kg (24.5 lbs)
Operating temperature	0 °C to 50 °C (32 °F to 122 °F)

Ordering information

Models

PPG1251	12.5 Gb/s programmable pattern generator, 1 channel

Options

Instrument options

PPG1251 JIT	Jitter insertion option for PPT1251

Power plug options

Opt. A0	North America power plug (115 V, 60 Hz)
Opt. A1	Universal Euro power plug (220 V, 50 Hz)
Opt. A2	United Kingdom power plug (240 V, 50 Hz)
Opt. A6	Japan power plug (100 V, 110/120 V, 60 Hz)
Opt. A10	China power plug (50 Hz)
Opt. A11	India power plug (50 Hz)
Opt. A99	No power cord

User manual options

Opt. L0	English manual

CE Marking Not Applicable.

Tektronix is registered to ISO 9001 and ISO 14001 by SRI Quality System Registrar.

Product Area Assessed: The planning, design/development and manufacture of electronic Test and Measurement instruments.

ASEAN / Australasia (65) 6356 3900
Belgium 00800 2255 4835*
Central East Europe and the Baltics +41 52 675 3777
Finland +41 52 675 3777
Hong Kong 400 820 5835
Japan 81 (3) 6714 3010
Middle East, Asia, and North Africa +41 52 675 3777
People's Republic of China 400 820 5835
Republic of Korea 001 800 8255 2835
Spain 00800 2255 4835*
Taiwan 886 (2) 2722 9622

Austria 00800 2255 4835*
Brazil +55 (11) 3759 7627
Central Europe & Greece +41 52 675 3777
France 00800 2255 4835*
India 000 800 650 1835
Luxembourg +41 52 675 3777
The Netherlands 00800 2255 4835*
Poland +41 52 675 3777
Russia & CIS +7 (495) 6647564
Sweden 00800 2255 4835*
United Kingdom & Ireland 00800 2255 4835*

Balkans, Israel, South Africa and other ISE Countries +41 52 675 3777
Canada 1 800 833 9200
Denmark +45 80 88 1401
Germany 00800 2255 4835*
Italy 00800 2255 4835*
Mexico, Central/South America & Caribbean 52 (55) 56 04 50 90
Norway 800 16098
Portugal 80 08 12370
South Africa +41 52 675 3777
Switzerland 00800 2255 4835*
USA 1 800 833 9200

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

Updated 10 April 2013

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.

25 Apr 2014

65W-30272-1

www.tektronix.com

Tektronix®