

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	
2⁷ - 1 bits	Polynomial = $X^7 + X^6 + 1$
2¹⁵ - 1 bits	Polynomial = $X^{15} + X^{14} + 1$
2²³ - 1 bits	Polynomial = $X^{23} + X^{18} + 1$
2³¹ - 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 40 °C (32 °F to 104 °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, 50/60 Hz)
Opt. A10 China power plug (50 Hz)
Opt. A11 India power plug (50 Hz)
Opt. A99 No power cord

Manuals

071-3413-xx Printed PPG/PED Installation & Safety instructions

077-1091-xx Tektronix PPG1251 PatternPro® Programmable Pattern Generator User Manual, PDF-only, downloadable from Tektronix.com

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.

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