![Tektronix logo]

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
- Model 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. Model 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

Model PPG1251 jitter insertion

High frequency jitter insertion option	Add-on option for the instrument. Sum of external, internal sine, and internal noise. Total range depends on modulation frequencies. Exceeding the range can generate errors.
Frequency range	5 kHz to 200 MHz
Amplitude range	0 to 200 ps_{p-p}
Accuracy	±10%, typical
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}
Accuracy	±10%, typical
Built-in random noise source	Programmable from either the front panel touch screen or remote control.
Amplitude range	0 to 25 ps RMS
Accuracy	±10% typical
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

External clock inputs

Frequency range	6.25 GHz to 12.5 GHz
Input signal	400 mV_{p-p}, typical, AC coupled
Maximum input signal	800 mV_{p-p}, ±5 V DC, Damage threshold
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
PPG1251 JIT	12.5 Gb/s programmable pattern generator, 1 channel, with jitter insertion option

Instrument options

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

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

Product(s) complies with IEEE Standard 488.1-1987, RS-232-C, and with Tektronix Standard Codes and Formats.

Datasheet

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.

www.tektronix.com

Tektronix®