Multichannel Pattern Generator BPG 8x32G

Key Features

- Wide-band Test Generator for Multiplexer Circuits up to 256 GBit/s
- Eight-Channel Pulse Pattern Generator with Differential Outputs
- Maximum Data Rate 32 Gbit/s per Channel
- 8*128 MBit Memory for User Programmable Patterns
- Variable Pattern Length
- Operation via Front Panel or USB Interface
- Compact Desktop Design with Low Power Consumption and Low Fan Noise
- Optional:
  - Independently Adjustable Amplitudes of the Output Channels
  - Extended Pattern Memory of 8*256 MBit
  - Other Customizer Specific Features on Demand

Brief Description

The multichannel bit pattern generator BPG 8x32G is a wideband tuneable test generator with eight independent output channels for the development of fast multiplexer circuits.

User programmable patterns and pseudo random binary sequences at data rates between 1 and 32 GBit/s can be generated. An external clock signal is needed to provide the time base for operation. All eight output channels have complementary outputs and provide non-return-to-zero signals. In PRBS Mode there is a phase lag of one eights of the length of the pseudo random binary sequence between the output channels A, B, C, D, E, F, G and H to fulfill CCITT recommendations after 8 to 1 multiplexing.

The following patterns are selectable: Four Peudo Random Binary Sequences of $2^7 - 1$, $2^{15} - 1$, $2^{23} - 1$ und $2^{31} - 1$ bit length and structure according to CCITT standards and for each channel a short user pattern with a length of 128 Bit and a user pattern of 128 MBit length.

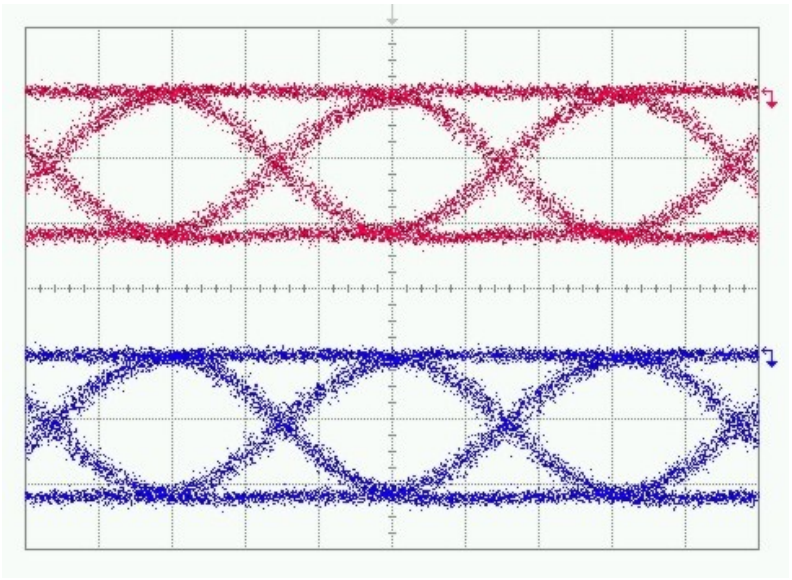
All user patterns are freely programmable, either via the instruments front panel controls (short user pattern) or via USB interface. Each bit can be set to a positive pulse or to zero and the length of the long user pattern is configurable from 384 bit up to 134 217 728 bit. The programmed bit sequence is then generated periodically. Additionally the pattern memory can be split in 2 or 4 parts to toggle synchronously between different waveforms.

Several clock and trigger signals are available: Complementary clock signals (Clock/2), a divided clock signal (Clock/16) and a word frame trigger signal. Single errors and programmable error sequences can be added to the data outputs over the error input.

The instrument can be operated locally via the front panel controls or remotely controlled via USB-interface. An easy-to-use graphical user interface is included in the supplied software and allows simple operation by mouse-clicking. Additionally self programmed software may be used to control the instrument.

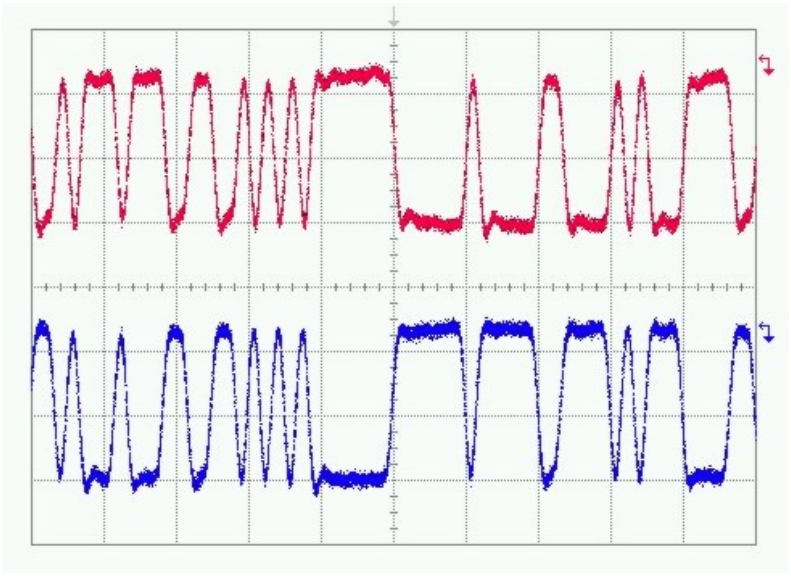
Output Signals

Example of Complementary Output Signals at 32 GBit/s



TIME 10 *ps/div*

PRBS $2^7 - 1$ at 32 GBit/s



TIME 200 *ps/div*

All oscillograms taken using Agilent 86100B sampling oscilloscope with sampling module 86118A (70 GHz cut-off frequency).

Technical Data

BPG 8x32G	
Bit Rate	1 Gbit/s ... 32 Gbit/s, full-range tuneable
Clock Input	0,5 GHz ... 16 GHz (External Clock = Bit Rate/2), $U_i = 0,5 \ldots 1\,V_{pp}$, $R_i = 50\,\Omega$, $\lvert r\rvert < 0,2$, 50 Ω SMA 6-Digit Frequency Display
Pulse Patterns	1. PRBS $2^{31}-1$, PRBS $2^{23}-1$, PRBS $2^{15}-1$, PRBS $2^{7}-1$ For Each Channel A, B, C, D, E, F, G and H: 2. User Pattern 128 Bit, Manually Programmable via Front Panel 3. User Pattern 128*m Bit ($m = 3,4 \ldots, 2^{20}$), (= max. 134 217 728 Bit), Programmable via USB-Port 4. User Pattern Consisting of Two Parts, Each of Length $128 * m$ Bit ($m = 3,4,\ldots,2^{19}$), Programmable and Synchronously Selectable via USB-Port (Two Waveform Mode) 5. User Pattern Consisting of Four Parts, Each of Length $128 * m$ Bit ($m = 3,4,\ldots,2^{18}$), Programmable and Synchronously Selectable via USB-Port (Four Waveform Mode) Long User Patterns only Programmable via USB Interface.
Data Outputs	A: NRZ and /NRZ, 50 Ω 2.92 mm (K-Type), B: NRZ and /NRZ, 50 Ω 2.92 mm (K-Type), C: NRZ and /NRZ, 50 Ω 2.92 mm (K-Type), D: NRZ and /NRZ, 50 Ω 2.92 mm (K-Type), E: NRZ and /NRZ, 50 Ω 2.92 mm (K-Type), F: NRZ and /NRZ, 50 Ω 2.92 mm (K-Type), G: NRZ and /NRZ, 50 Ω 2.92 mm (K-Type), H: NRZ and /NRZ, 50 Ω 2.92 mm (K-Type), Amplitude $0\,V/-0,5\,V$ ($\pm 0.1\,V$) into 50 Ω Rise / Fall time < 20 ps (10/90%) Jitter (pp) < 7 ps Polarity Reversible
Clock Outputs	Clock/2 and /Clock/2, $0.5\,V_{pp} \pm 0.1\,V$, AC-Coupled, 50 Ω 2.92 mm (K-Type) Data to Clock Skew $\pm 10\,ps$

BPG 8x32G	
Trigger Outputs	1. Clock/16 2. Word Frame Trigger CML: 0 V/-0.4 V into 50 Ω SMA
Error Addition	Programmable: 10^{-4}, 10^{-4}, ..., 10^{-10} Single Errors via Push Button or TTL Signal, max. 100 KHz, SMA
Interface	High Speed USB Max. Data Transmission Rate 2 MByte/s
Dimensions	19" Desktop W x H x D = 471 x 280.5 x 495 mm^3
Weight	approx. 18 kg
Power Supply	110 V-120 V/60 Hz/400 VA or 220 V-240 V/50 Hz/400 VA
Optionally Available	
Option 1	Adjustable Amplitude $0,4 \ldots 0,6\,V_{pp}$
Option 2	Extended Pattern Memory of 8*256 MBit

Ordering Information

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Included in delivery:

- BPG 8x32G
- 115/230 V Mains, User Manual, USB Cable Set
- CD-ROM with Device Drivers and Operating Software

The instrument is produced by SYMPULS in Germany.
We offer a reliable service and 24 month warranty.