Multichannel Pattern Generator BPG 2x30G

(Illustration similiar)

Wide-band Test Generator for Multiplexer Circuits up to 60 GBit/s

Two-Channel Bit Pattern Generator with Differential Outputs and Maximum Data Rates of 30 Gbit/s

2*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 2*256 MBit**
- **Other Customizer Specific Features on Demand**

Brief Description

The multichannel bit pattern generator BPG 2x30G is a wideband tuneable test generator with two independent output channels for the development of fast multiplexer circuits.

User programmable patterns and pseudo random binary sequences at data rates between 1 and 30 GHz can be generated. An external clock signal is needed to provide the time base for operation.

Both output channels A and B have complementary outputs and provide non-return-to-zero signals. In PRBS Mode there is a phase lag between the output channels that equals half the length of the pseudo random sequence to fulfill CCITT recommendations after 2 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.

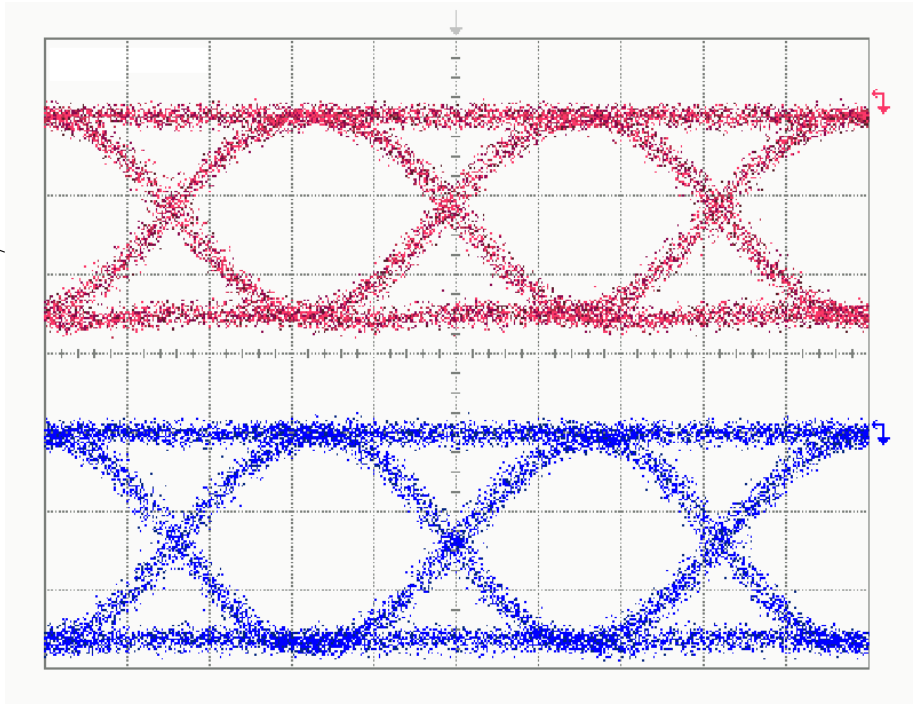
A gating input allows to disable the data signal outputs for burst mode.

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

Eye Diagram of the Complementary Output Signals at 30 GBit/s:



Technical Data

BPG 2x30G	
Bit Rate	1 Gbit/s ... 30 Gbit/s, full-range tuneable
Clock Input	0,5 GHz ... 15 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 Optionally: Full Clock Input 1 ... 30 GHz (External Clock = Bit Rate)
Pulse Patterns	1. PRBS $2^{31} - 1$, PRBS $2^{23} - 1$, PRBS $2^{15} - 1$, PRBS $2^7 - 1$ For Each Channel A and B: 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), 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 $\pm 10\,ps$
Trigger Outputs	1. Clock/16 2. Word Frame Trigger CML: 0 V/-0.4 V into 50 Ω SMA
Gate Input	TTL Control Input for Burst Mode Operation

BPG 2x30G	
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 = 462 x 140 x 435 mm
Weight	approx. 8 kg
Power Supply	110 V-120 V/60 Hz/90 VA or 220 V-240 V/50 Hz/90 VA
Optionally Available	
Option 1	Adjustable Amplitude $0,4 \ldots 0,6\,V_{pp}$
Option 2	Extended Pattern Memory of 2*256 MBit
Option 3	Full Clock Input 1 ... 30 GHz

Ordering Information

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Included in delivery:

- BPG 2x30G
- 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.