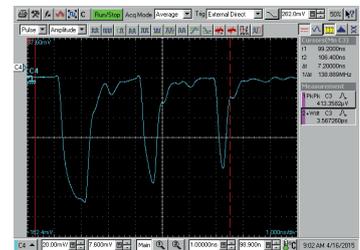# PPG 512

Programmable Pulse Generator

- Arbitrary pulse generator for the monitoring of Electro-Optic Modulators (EOM)
- 5 GS/s, 200 ps time bins
- Record length 512 Bytes / 102.4 ns, 8 bit resolution
- High output amplitude, up to 12 V into 50 Ohm

Applications

- Monitoring of Electro-Optic Modulators (EOM)
- Monitoring of Acousto-Optic Modulators (AOM)
- Monitoring of Laser Diodes / LED (Arbitrary Waveform Generation)

Example of a pulse profile

The PPG 512 is based on a programmable waveform generator, that permits to generate pulse patterns in a cyclic sequence of 512 bytes. The 512 bytes are stored in a special high-speed memory that can be read out at the full speed of 5 GS/s. This results in a timing resolution of 200 ps per byte (other values possible on request). By loading a data set , arbitrary pulse sequences can be defined with an amplitude resolution of 8 bits (0 to 255). This pre-defined sequence can then be run as a gapless loop at the full speed of 5 GS/s or started and stopped by an external control signal. .

Output amplitude between 0 V and +12 V
The output of the internal Digital to Analog Converter (DAC) is amplified by a broadband two-stage amplifier, which generates the output voltages with a maximum amplitude around +12 V (into 50 Ohm). Other amplitudes are available on request.

Control inputs
Additional external signal inputs are available to control the reading of the complete 512 byte sequence as well as start or stop the reading at arbitrary times.

Synchronization outputs
A synchronization signal is output by the PPG 512, that signals the full period of all 512 bytes, i.e. every 102.4 ns. An unamplified copy of the pulse pattern is also available at a separate output and can be used to, e.g., trigger other devices such as TCSPC units.

Easy programming via DLL
Programming the pulse patterns is possible via a programming library (DLL) for Windows by simply loading a suited array of 512 bytes into the onboard memory. The programmed pulse pattern is stored in the nonvolatile memory. This pattern will be set at every startup.

Specifications

Pulse pattern	
Length	512 bytes
Readout speed	5 GS/s, 200 ps time bins, other sampling rates <5 GS/s on request
Max. pulse width	no limitation, DC-Level are also possible

Output signals (into 50 Ohm)	
Main output	adjustable between 0V and +12 V in 256 steps (8 bit), other values on request
Aux output	attenuated main output
Sync out	+0.5 V after reading all 512 bytes, i.e. every 102.4 ns

Input signals	
Reset	>+3 V stops pulse pattern generation, <0.5 V restarts pattern generation
OP mode	> 0.75 V and < 1.1 V continues pattern generation with byte 0 after reading all 511 bytes < 0.2 V stops pattern generation after reading 511 bytes unconnected: continues pattern generation with byte 0 after reading all 511 bytes

Computer	
Operating system	Windows 10
PC interface	USB Typ-C (Virtual-COM Port)