



Zurich
Instruments

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Lock-in Amplifier/AWG with Pulse Counter

Zurich Instruments has expanded their UHFLI, a 600 MHz Lock-in Amplifier and Arbitrary Wave Generator (AWG), with a Pulse Counter option for recording random pulses. Pulses of a minimal time of 4.44 ns can be counted on up to four channels at a bandwidth of 225 MHz.

Description

The Pulse Counter can be used in four different modes: In free-running mode, the counter is activated by a configurable timer, and after the acquisition, it is reset and restarted. The total number of counts recorded in each sequence is transferred after the acquisition. In gated-mode, the counter is activated on a rising edge and deactivated on a falling edge. On the falling edge, the number of pulses is transferred. The gated-free-running mode is a combination of the previous two modes. Time-tagging mode records each event with a timestamp and transfers to the PC. For fast data transfer to the host PC, USB 2.0 and Ethernet 1GbE connections are included.

The LabOne user interface enables swift and straightforward data handling. This feature-rich toolset is further strengthened with an Histogram, Oscilloscope with a sampling rate of 1.8 GSa/s, FFT Spectrum Analyzer and a Threshold Unit. The available APIs for LabView, MATLAB, Python, C/C++ and .NET allow simple interfacing with other programs.

Applications

The Pulse Counter option has applications in fluorescence lifetime and ion-trap experiments, for example. In the area of quantum information processing, the Pulse Counter data can be used to quickly modify the output-sequence of the AWG as often required in quantum-error-correction protocols and quantum teleportation experiments.

Resources

Zurich Instruments MF Threshold Unit website: <http://www.zhinst.com/products/uhfli/uhf-cnt>

Zurich Instruments website: www.zhinst.com

Twitter: [@zhinst](https://twitter.com/zhinst)

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