

Product Release Note

New High Resolution TCSPC System PicoHarp 300

For immediate release: New High Resolution TCSPC System PicoHarp 300 PicoQuant announces a new Time-Correlated Single Photon Counting system based on a novel time digitizer with 4 ps resolution, a processing rate of up to 10 million counts per second, and an extremely low differential nonlinearity. The “PicoHarp” provides unique new features, notably two identical input channels that can operate independently, but with a common crystal time base. Therefore, not only TCSPC histograms for the measurement of fluorescence decays, but also picosecond coincidence correlations of any order can be obtained. The latter is of great interest in single molecule work and quantum cryptography. The high timing resolution qualifies the system for use with high resolution detectors such as Micro Channel Plate PMT (MCP-PMT). Overall time resolutions of 30 ps can be achieved. Of course, the PicoHarp can also be used with all other common single photon detectors. Fully software controlled Constant Fraction Discriminators (CFD) in both input channels ensure precise and optimized timing. Accessories such as preamplifiers, attenuators, and signal inverters allow the adaption to virtually all signal sources. Sync/excitation sources can be as fast as 80 MHz but even very slow sources can be used efficiently with ‘multi-stop’ acquisition. The on-board histogramming mode provides up to 65 536 bins. This results in a time span of 262 ns. The base resolution of 4 ps can be binned in hardware, thereby providing histogram spans up

to 33 μ s. Time spans in Time Tagged mode are virtually unlimited. The system is designed as a USB 2.0 “Plug and Play device,” allowing control and data acquisition from a PC. The system hardware is reconfigurable by software for the implementation of different measurement modes and field upgrades. Standard modes are on-board histogramming and time tagging. The latter provides a stream of individual events that can be processed and analyzed with virtually unlimited flexibility, e.g., for photon burst detection, coincidence correlation or for combined measurement of fluorescence lifetime and Fluorescence Correlation Spectroscopy (FCS). The system software runs on all recent 32-bit Windows platforms including Windows ME, 2000, and XP. It permits control of the hardware as well as convenient data handling and visualization and supports control for monochromators, permitting the automated recording of Time-Resolved Emission Spectra (TRES).

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