Product Release Note

New Linux Driver Library for TimeHarp 200

A new driver library for custom programming is now available to run the compact and easy-to-use Time-Harp TCSPC board from PicoQuant under Linux 2.6. The shared library and an associated kernel driver thereby support the newest Linux kernel versions. The library supports the same range of functionality as the Windows version: onboard histogramming, multi-detector routing with the PRT 400 router, as well as Time-Tagged Time-Resolved (TTTR) mode with or without routing. The new Linux version of the driver library is provided free of charge to owners of any previous release. It allows implementation of custom measurement programs with the TimeHarp 200 board. The board fully replaces a whole rack of conventional TCSPC electronics. It features a bin width of $<40\,\mathrm{ps}$, $3\,\mathrm{MHz}$ maximum count rate and an extremely low differential non-linearity. These specifications qualify the TimeHarp 200 for use with all common single photon detectors such as Photomultiplier Tubes (PMT) and Single Photon Avalanche Photodiodes (SPAD). The TimeHarp system is software reconfigurable and can operate in various modes. In addition to interactive histogramming, measurement modes for continuous on-line data collection are available. The continuous mode permits investigation of very fast fluorescence dynamics or single molecule transits and is also useable in image scanning setups interfacing with external hardware. TTTR mode permits recording of each individual photon with its picosecond timing relative to the laser pulse as well as the nanosecond timing relative to the beginning of the experiment. External markers for synchronization with other processes in TTTR mode can be recorded with selectable polarity. This allows synchronization with virtually all existing imaging devices including laser scanning microscopes (LSM). With this wealth of information, the user has ultimate flexibility for data analysis, e.g. to implement the recently published combined measurement of fluorescence lifetime and Fluorescence Correlation Spectroscopy (TCSPC-FCS). Sophisticated detection techniques are thereby made accessible for routine applications such as quality control and high throughput screening as well as demanding research applications. The TimeHarp driver package for Linux supports not only the popular LabVIEW measurement automation and visualisation software but also the GNU C/C++ compilers as well as Kylix. Sample code for all platforms and measurement modes is provided with the library to help developers getting started quickly.

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