



8 / 7 Channel Time-Correlated Single Photon Counting Module

**Eight absolute timing channels or
Seven parallel TCSPC channels plus
One synchronisation / reference channel
High discriminator bandwidth
Excellent timing stability
Low dead time
Extremely high peak count rate**

**Recording of optical waveforms
Photon time- and parameter-tagging**

**Anti-bunching experiments
Fluorescence decay measurement
Molecular and metabolic lifetime measurements
FRET experiments
fNIRS and NIRS experiments
Single-molecule spectroscopy
Fluorescence correlation**



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Photon Channels

Principle	Threshold Discriminator
Discriminator Input Bandwidth	4 GHz
Min. Input Pulse Width	1 ns
Discriminator Threshold	-500 to 500 mV in Steps of 4 mV
Maximum Pulsed (<1 ms) Input Voltage Range	-5.5 V to +5.5 V
Maximum DC Input Voltage Range	-3.3 V to +3.3 V
Frequency Range	0 to 500 MHz
Input Connectors	SMC, 50 Ohm

Time-Measurement Circuitry

Principle	Time-to-Digital Converter
IRF Width, FWHM	<40 ps
Typical RMS Timing Jitter	14 ps
Min. Time / Bin	1 ps
Timing Stability, Range 16 ns, over 10 Minutes	<5 ps RMS
Diff. Nonlinearity	<2 % RMS
Dead Time	2 ns

Data Acquisition (FIFO Mode)

Method	Parameter-Tagging of Individual Photons, Continuous Writing to Disk
Peak Count Rate	500 MHz / Channel
Peak-Rate Buffer Capacity (Photons / Channel)	4,000
Sustained Count Rate (Bus-Transfer Limited)	140 MHz, All Channels Combined
On-Board FIFO Buffer Capacity (Photons Combined)	2,600,000

Data Acquisition GUI Software

Online Display Count Rates, Multiscaler, Delta-T Function, Threshold Scan, Auto-/Cross-Correlation

Delta-T Function

No. of Time Bins	1 to 10 M
Time / Bin	1 ps to 65,536 ps
Time Range	1 ps to 640 ms
Selectable Sync Channel	1 to 8
Optional External Trigger	Channel 8

Threshold Scan

Threshold Range	-500 mV to 500 mV
Stepsize	4 mV

Operation Environment

Operating System	Windows 10, Windows 11
Bus Connector (Slot Type)	PCI-ex
Total Power Consumption	approx. 12 W from +3.3 V, 3 W from +12 V
Dimensions	165 mm x 110 mm x 20 mm

Related Products

SPC-180N, SPC-180NX, SPC-180NXX, SPC-QC-104 TCSPC modules, HPM-100 hybrid detectors, DCC-100PCIe detector controller
 BDS-SM ps diode lasers, BDS-MM picosecond diode lasers, SPCImage NG data analysis software

Related Literature

W. Becker, The bh TCSPC Handbook, 10th edition (2023). 950 pages, available on <https://www.becker-hickl.com>. Please contact bh for printed copies.
 The bh TCSPC Technique, Principles and Applications. Overview brochure, 27 pages. Available on <https://www.becker-hickl.com>

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