General-Purpose Time-Correlated Single Photon Counting Module

Picosecond resolution
Ultra-high sensitivity
Multi-detector / multi-wavelength capability
High-speed on-board data acquisition
Photon distribution and time-tag modes
Unlimited sequential recording of curves or images
Time channel width down to 813 fs
Electrical time resolution (jitter) 6.6 ps fwhm / 2.5 ps rms
Reversed start/stop: Laser repetition rates up to 150 MHz
Saturated count rate 10 MHz
Total useful recorded count rate up to 5 MHz
Dead time 100 ns
Standard fluorescence lifetime experiments
Multi-wavelength lifetime experiments
Transient fluorescence lifetime effects
Fluorescence correlation
Anti-bunching experiments
Single-molecule spectroscopy

Covered by patents DE 43 39 784 and DE 43 39 787
**Photon Channel (Start Input)**
- **Principle**: Constant Fraction Discriminator (CFD)
  - **Time Resolution (Jitter, FWHM, RMS, electrical)**: 6.6 ps / 2.5 ps
  - **Optimum Input Voltage Range**: - 30 mV to - 1 V
  - **Min. Input Pulse Width**: 400 ps
  - **Threshold**: 20 mV to - 500 mV
  - **Zero Cross Adjust**: - 100 mV to + 100 mV

**Synchronisation Channel (Stop Input)**
- **Principle**: Constant Fraction Discriminator (CFD)
  - **Optimum Input Voltage Range**: - 30 mV to - 1 V
  - **Min. Input Pulse Width**: 400 ps
  - **Threshold**: 20 mV to - 500 mV
  - **Frequency Range**: 0 to 200 MHz
  - **Frequency Divider**: 1:2-4
  - **Zero Cross Adjust**: - 100 mV to + 100 mV

**Time-to-Amplitude Converter / ADC**
- **Principle**: Ramp Generator / Biased Amplifier
  - **TAC Range**: 50 ns to 5 us
  - **Biased Amplifier Gain**: 1 to 15
  - **Biased Amplifier Offset**: 0 to 100% of TAC Range
  - **Time Range incl. Biased Amplifier**: 3.3 ns to 5 us
  - **Time Range incl. Biased Amplifier**: 3.3 ns to 5 us
  - **Diff. Nonlinearity**: < 0.5% rms, typ. <1% peak

**Data Acquisition (Histogram Mode)**
- **Method**: online display
  - **Decay curves (waveforms)**: 100 ns, independent of computer speed
  - **Data Transfer Rate**: 10 MHz
  - **Threshold**: 10 MHz
  - **Saturated count rate**: 10 MHz
  - **Count rate**: typ. 4 MHz
  - **Macro Timer Resolution**: 12 / 12 / 4
  - **FIFO buffer Capacity (photons)**: 2 M
  - **Macro Timer Resolution, clock from SYNC input**: 10ns to 100ns, 12 bit, overflows marked by MTOF entry in data stream

**Data Acquisition (FIFO / Time-Tag Mode)**
- **Method**: online display
  - **Decay function, FCS, Cross-FCS, PCH, MCS traces**: unlimited
  - **Time and wavelength tagging of individual photons and continuous writing to disk**: unlimited
  - **Dead Time**: 100 ns
  - **FIFO buffer Capacity (photons)**: 2 M
  - **Macro Timer Resolution**: 10ns to 100ns, 12 bit, overflows marked by MTOF entry in data stream

**Operation Environment**
- **Computer System**: PC Pentium, multi-core CPU recommended
- **Power Consumption**: approx. 45 W at +5V, 2 W at +12V
- **Dimensions**: 225 mm x 115 mm x 25 mm

**Related Products**
- SPC-134 EM 4-channel TCSPC modules
- SPC-150 TCSPC modules
- SPC-154 4-channel TCSPC modules
- SPC-830 TCSPC modules
- Simple-Tau 130 compact TCSPC systems
- Simple-Tau 150 compact TCSPC systems
- Simple-Tau 134 compact 4-channel TCSPC systems
- Simple-Tau 154 compact 4-channel TCSPC systems
- Simple-Tau 830 TCSPC compact systems
- DPC-230 16-channel ps photon correlator module

**Related Literature**
Please see also www.becker-hickl.com, ‘Literature’, ‘Application notes’

More than 15 years experience in multi-dimensional TCSPC. More than 1300 TCSPC systems worldwide.