

## SPECIFICATIONS

## SPC-150E, TCSPC Module

ISS utilizes the high performance SPC-series of cards by Becker and Hickl for Time-Correlated Single Photon Counting (TCSPC) data acquisition. Inserted in the PCI bus of the computer, the card features a high resolution time bin (813 fs) and on-board constant fraction discriminators for the photon signal and the synchronization signal. The cards operational parameters are fully controlled through the ISS VistaVision software which includes the data analysis using fitting routines and the phasor analysis.

**Measurements:**

- Time-resolved measurements (FLIM and PLIM)
- Single-wavelength FLIM, multi-wavelength FLIM
- Confocal images
- Polarization images (steady-state and time-resolved)
- FCS, FCCS, PCH
- Scanning FCS, RICS, N&B
- Single Molecule FRET
- PIE measurements

**Features:**

- 4-channel simultaneous acquisition using a router or using additional modules
- Direct input from PMTs
- Time channel resolution: 813 fs
- Electrical time resolution down to 7 ps FWHM; 4 ps RMS
- Dead time: 100 ns
- Trigger out to synchronize external devices
- Trigger input from external source
- Line, Frame and Pixel CLK synchronization
- Drivers for Windows 10 OS



## Specifications

Feature	Description
<b>Photon Channel</b>	
No. of channels	1 independent channel <ul style="list-style-type: none"> <li>• Up to 4 channels can be acquired using a router</li> <li>• Multiple cards can be used in parallel</li> </ul>
Time resolution (FWHM/RMS)	6.6 ps / 2.5 ps
Input voltage range	-30 mV to – 1 V
Min input pulse width	400 ps
Threshold	0 to -500 mV
Zero Cross Adj.	-100 mV to +100 mV
<b>Synchronization Channel</b>	
Input voltage range	-30 mV to – 1 V
Min input pulse width	400 ps
Threshold	0 to -500 mV
Zero Cross Adj.	-100 mV to +100 mV
Frequency Divider	1-2-4
Frequency Range	0-150 MHz
<b>Time-to-Amplitude Converters (TAC)</b>	
Principle	Ramp Generator / Biased Amplifier
TAC range	50 ns to 5 $\mu$ s
Biased Amplifier Gain	1 to 15
Biased Amplifier Offset	0 to 100% of TAC range
Min time per channel	813 fs

<b>Data Acquisition (Histogram Mode)</b>	
Dead time	100 ns
Useful count rate	5 MHz
Saturated counts rate	10 MHz
Collection time	0.1 $\mu$ s to 100,000 s
Display Interval time	0.1 $\mu$ s to 100,000 s
Repeat time	0.1 $\mu$ s to 100,000 s
Max counts per Time Channel	$2^{16} - 1$
Synchronization with scanning	Pixel, Line and Frame CLKs

<b>Data Acquisition (Time-Tagged)</b>	
Dead time	100 ns
Saturated counts rate	10 MHz
Macro time resolution, internal CLK	50 ns, 12 bit
Macro time resolution, external CLK	10 ns to 100 ns, 12 bit
Experiment trigger	TTL

<b>Data Acquisition (Time-Tagged Imaging)</b>				
Dead time	100 ns			
Saturated counts rate	10 MHz			
Image resolution				
No. of time channels	64	256	1024	4096
No. of pixels	4096x4096	2048x2048	1024x1024	512x512
Synchronization with scanning	Pixel, Line and Frame CLKs			

Operation	
Architecture	PCI bus (Windows 7, Windows 10)
Power	12 w from +5 V; 0.7 W from +12 V
Dimensions (mm)	240 (L) x 130 (W) x 15 (D)

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