S P E C I F I C A T I O N S

USB-based, 4-channel Correlator Card

ISS unique, USB-based, 4-channel data acquisition card for Fluorescence Fluctuations Spectroscopy (FFS) and steady-state imaging by single-photon counting allows for the acquisition of:

- FCS, FCCS, PCH
- Scanning FCS
- RICS and N&B
- Single Molecule FRET
- Steady-state imaging by single-photon counting

The main applications features include:

a. Acquisition and storage of raw data, which can be utilized for further analysis

b. Capability of simultaneous data acquisition on four channels

c. Acquisition triggered by an external signal

d. Trigger out to synchronize external devices

e. A user-selected delay for acquisition after the trigger by an external source

f. Synchronization with Frame CLK for image acquisition

The ability to acquire and store raw data is essential for allowing the researcher to experiment with different analysis models without losing the information content of the acquired data. With the ISS USB-based, 4-channel correlator data acquisition card, data is collected and stored; the software provided allows for the determination of the auto-correlation and cross-correlation functions, the photon counting histograms. The researcher can enter a custom model to check the acquired data and/or calculate higher order correlation functions.

Specifications

Feature	Description
Architecture	USB2 (Windows 10 / 11 OS)
Acquisition mode	Counts mode or Time Tagged mode (user selectable through the software)
Raw data size	32 bits / 16 bits
Number of acquisition channels	4 synchronous or independent input channels for simultaneous auto or cross correlation
Data handling and storage	Acquisition of raw data (counts or time-tagged mode). The autocorrelation, PCH (photon counting histogram), Single Molecule FRET is performed through the software in real time. Option of storing the raw, autocorrelation, PCH or Single Molecule FRET data. The raw data can be post processed with different time bin or threshold
Sampling rate	Counts mode: up to 10 MHz Time-Tagged mode: up to 80 MHz
Data Incoming Stream	In Time-Tagged mode (80 MHz internal clock): Up to 12M CPS for single channel acquisition. Up to 3M CPS for each channel for using 4 channels simultaneously. In Counts mode (10 MHz internal clock): Up to 150M CPS for each channel for using 4 channels simultaneously.
Raw data file structure	Binary File with a header of 256 bytes.
Data acquisition dead time	3.125 ns for the cross correlation. 12.5 ns for the auto correlation.
TRIG IN	Used as a frame clock input to synchronize an image acquisition.
CH1-4	4 channels data input for 4 auto correlation and all possible cross correlation between channels (Ch1xCh2, Ch1xCh3, Ch1x Ch4, …).
DATA	D-SUB 9-PIN connector: *1 USB controller output* 2 FPGA Input 3 FPGA Input 4 FPGA Input 5 FPGA Input 6 FPGA Input 7 User +5V 8 FPGA output 9 GND
+5V	AUX +5V external supply
Dimensions (mm) Weight (g)	255 (L) x 70 (D) x 30 (H) 260

For more information please call (217) 359-8681
or visit our website at **www.iss.com**