

SPECIFICATIONS

USB-based, 4-channel Correlator Card

ISS unique, USB-based, 4-channel data acquisition card for Fluorescence Fluctuations Spectroscopy (FFS) allows for the acquisition of:

- FCS, FCCS, PCH
- Scanning FCS
- RICS and N&B
- Single Molecule FRET
- Stoichiometry

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. Acquisition synchronized with excitation light source
- g. 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, the researcher can try various models and then calculate the auto-correlation function, the photon counting histograms or higher order correlation functions.



Specifications

Feature	Description
Architecture	USB2 (Windows 10 OS)
Acquisition mode	Counts mode or photon mode (user selectable through the software)
Raw data size	32 bits
Number of acquisition channels	4 synchronous or independent input channels for simultaneous auto or cross correlation
CLK managers	4
Data handling and storage	Acquisition of raw data (counts or time-tagged-time-resolved 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 5MHz Time-Tagged mode: up to 80MHz
Data Incoming Stream	In Time-Tagged mode: Up to 12M CPS for single channel. Up to 3M CPS for each channel if 4 channels acquired at the same time. In Counts Mode: Up to 5M sampling frequency. Each channel can get 35M CPS, even 4 channels acquired at the same time.
Raw data file structure	Binary File with a header of 256 bytes.
Data acquisition dead time	3.125 ns (4 channel in use)
Clock IN	80MHz, 40MHz, 20MHz, 10MHz, external clock to synchronize the 4 channel correlator card
CLK OUT	20MHz, 10MHz, clock out for locking other devices.
TRIG IN	Used as a frame clock input to synchronize an image acquisition.

Feature	Description
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 <i>USB controller output</i> 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

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