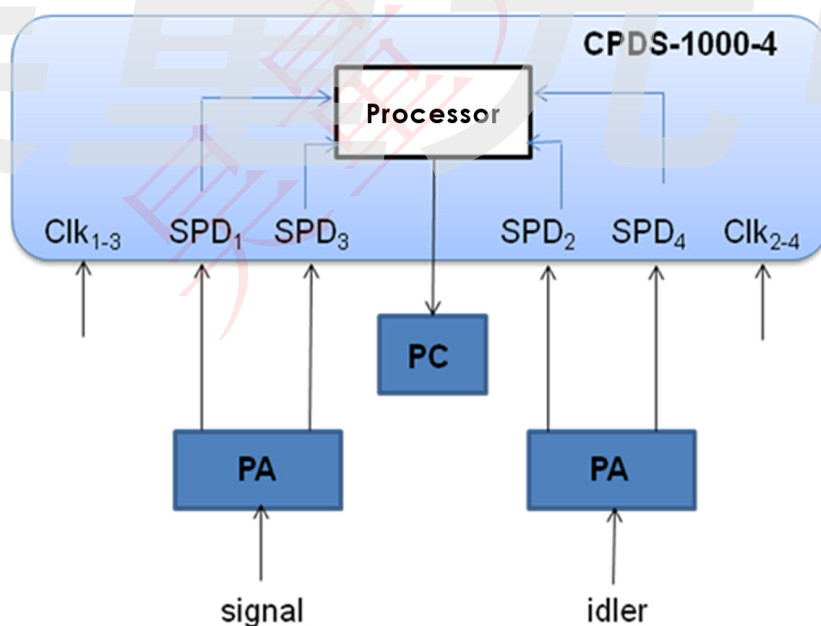


### Product Overview

### CPDS-1000

The correlated photon detection system (CPDS) consists of multiple single-photon detectors followed by electronic processing which measures the output of each detector individually as well as the correlations between the various detectors. The system is ideal for measuring entangled light distributed over optical fibers, as the differential delay experienced by the signal and idler photons when propagating over different lengths of fiber can be compensated by the internal processor. The threshold, bias voltage, and gate-pulse location relative to the clock is individually controllable for each single-photon detector (SPD). The optical input pulse repetition rate can be up to 50MHz. The system operates in the telecommunication wavelength bands (1300-1600nm).



The signal and idler photons from a quantum-correlated source are manipulated by polarization analyzers (PA) and detected with up to four different single-photon detectors (SPDs). A processor counts the single-photon events in each detector and the correlated detection events between the detectors and sends the data to a personal computer (PC).

- 2 or 4 integrated detectors for counting/correlating multiple single-photon inputs
- Integrated system for quantum-correlation measurements
- Fast 50MHz gate rate with >20% photon detection efficiency for each SPD
- Afterpulse blanking feature allows afterpulse events to be ignored in the processor

### Product Specifications

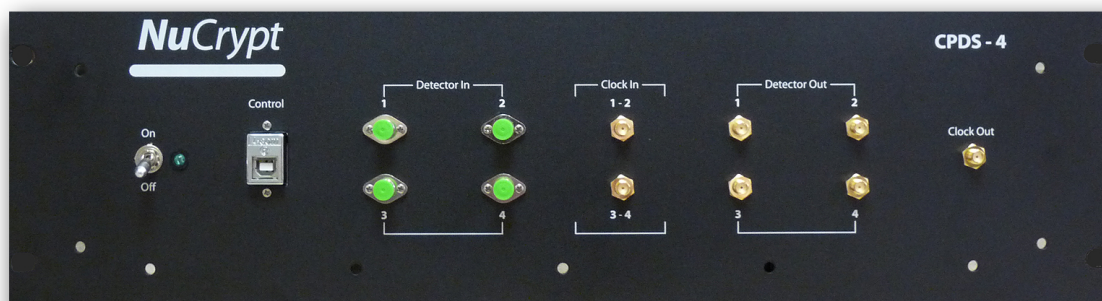
### CPDS-1000

Attribute	Value	Units	Comments
Number of Detectors	2 or 4		-2 or -4 Suffix on model number
Photon Detection Efficiency	>20	%	For each detector
After-Pulse Probability	{1, 4}	%	At {10, 50} MHz gate rates
Dark-Count Probability	4E-5		Per gate
Gate Temporal-Location Resolution	80	ps	50MHz input clock
Detection Temporal Window	250	ps	
Input Clock	1	V	
Correlation Delay	0-16,000	clock cycles	Up to 320 $\mu$ s arrival time diff. between photons (50MHz clock)
Clock Rate	50	MHz	Nominal value (user specified)
Form Factor			Standard 5U 19" rack mountable box

Specifications for NuCrypt CPDS-1000 Product

### Typical Applications:

- Count and correlate multiple single-photon detection (SPD) events using a single convenient instrument
- Use 4 SPDs to speed-up measurement times for entangled photons (4x faster than a comparable 2-SPD correlation system)
- Measure entanglement between signal and idler photons which have been distributed over fibers of different length



(\* Specifications listed above are estimates subject to change without notice)