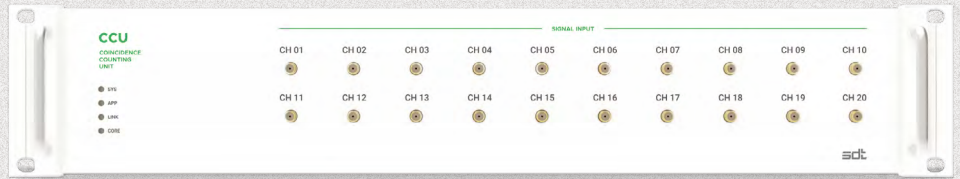


Specifications



Channels	20
Max Count Rate	100 MHz
Minimum Coincidence Time Window	2 ns
Input Voltage Range	+3.3 V
Interfaces	SMA Female on front panel for input channels LAN/Ethernet, Gigabit USB 2.0 Maintenance USB
Dimensions (W x H x D)	W430 X H84.2 (2U) X D318.2 mm
Power Supply	AC 100-240 V, 50/60 Hz

Key Features

- 20 input channels, the highest in its category
- Up to 100 MHz count rate for high-performance operation
- Internal delay block functionality with 0.5 ns step resolution for precise timing control
- 2 ns coincidence time window for accurate quantum event detection
- Software-based input channel multiplexing for flexible signal management
- Python library for seamless development and integration
- High-speed data transmission up to 1 Gbps via Gigabit Ethernet
- Built on SDT's proprietary patented IP*, this product can be tailored to customer needs
* [Patent Registration KR 10-1571133](#)

Introduction

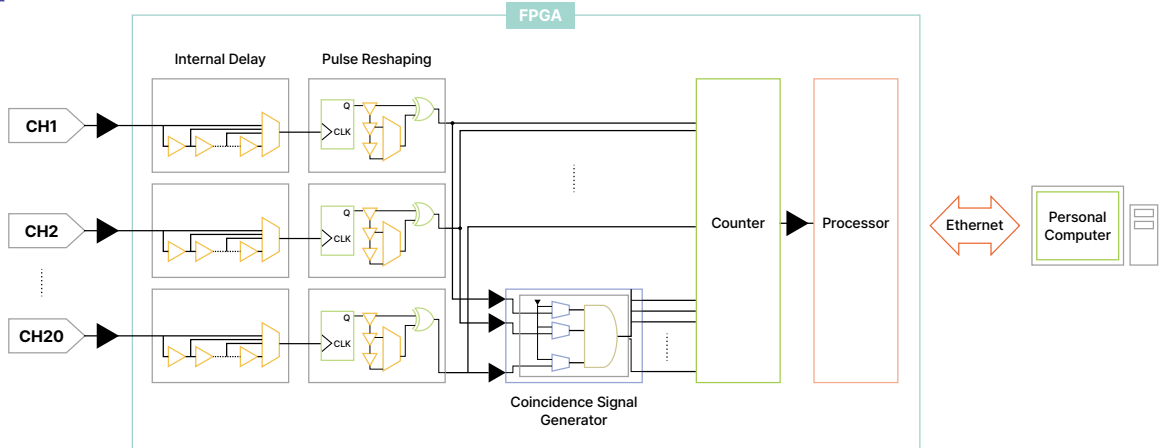
The CCU (Coincidence Counting Unit) precisely measures the arrival time of every detection event, making it essential for quantum optics experiments and quantum key distribution. With 20 input channels—the highest in the world—it supports count rates up to 100 MHz and a 2 ns coincidence time window, offering unparalleled precision.

The CCU also includes an integrated Python library, offering researchers a user-friendly platform to conduct experiments efficiently, even without extensive programming expertise.

Certifications



Functional Description

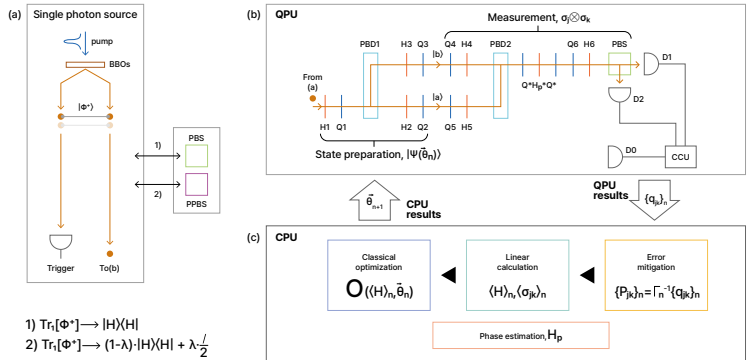


Applications

• Photon-Based Quantum Experiments

The CCU is employed in experiments designed to verify quantum superposition and entanglement through single-photon counting and coincidence detection.

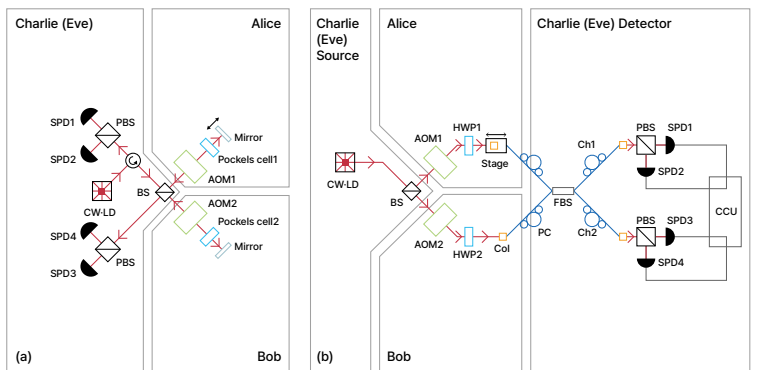
"Error-mitigated photonic variational quantum eigensolver using a single-photon quartet," Optica 9, 88-95 (2022)



• Quantum Key Distribution

The CCU enables noise reduction and facilitates entanglement measurements for quantum key distribution using single-photon detectors.

"Plug-and-play measurement-device-independent quantum key distribution," Phys. Rev. A 93, 032319 (2016)



Compatibility

- SDT's Qubit Controller Unit (QCU), Time Tagging Measurement Unit (TTMU), Pulse Generator Unit (PGU)
- C, C++, and Python (3.0 or higher)

