Ki3 PHOTONICS
Technologies

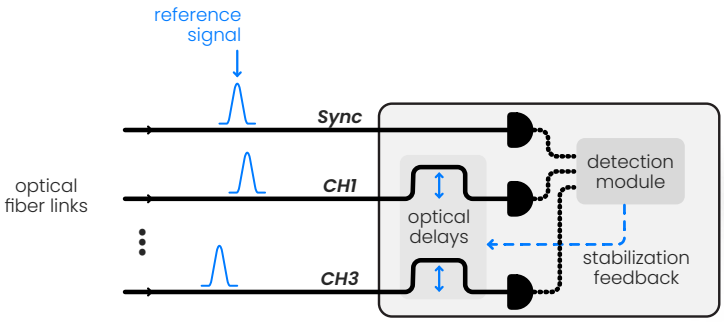
Ki3 LINQ.SYNQ

Optical Link Stabilizer

The **Ki3 LINQ.SYNQ** is a precision module engineered to synchronize distributed quantum network nodes — enabling secure quantum communication, distributed quantum computing, and ultra-precise time transfer.

Designed for deployment on existing fiber infrastructure, LINQ.SYNQ delivers the stability and accuracy required for quantum network applications. Once connected to the optical fiber link, the low-crosstalk stabilization system automatically tracks and corrects fiber length drifts in real time.

Multiple nodes can be locked to a common reference, enabling shared timing for photon correlation measurements, entanglement distribution, and multi-user protocols. The system detects picosecond-scale fluctuations in optical path length using high-speed electronics and actively compensates to maintain synchronization and coherence. The reference and quantum signals are separated for low-crosstalk and high isolation.



Features and benefits:

- Track and stabilize the length of optical fiber links - Ensures high-fidelity operations, interference, and processing on quantum signals within a network
- Distribute a common time reference - Reliable and synchronized timing for high-performance communications, with a resolution of <5ps
- Isolate the reference from the signal - Mitigate the impact of crosstalk on signal and measurement fidelity
- Maintain coherence over long distances - Enable new quantum network protocols and increase node separation
- Integrate with existing telecommunication infrastructure - Extends the capabilities of existing fiber links to quantum use-cases by compensating for drifts at the network nodes
- Scale efficiently with a compact design – Optimized for quantum networking and future scalability.

Questions and quote requests:
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Specification[a]	Value
Stabilization resolution	< 5 ps
Optical delay step size	< 0.01 ps
Delay compensation range	150 - 1260 ps
Number of synchronized optical channels	4
Optical band	Visible, O-band, or C-band
Connector types	Optical: SMF-28 or PMF, FC/APC Electrical: SMA
Footprint	The detection module is housed in a 1U rack mount (19”×1.75”×13”), while each channel feedback module is housed in a 2U rack mount (19”×3.5”×13”).

a. Custom specifications available, please contact info@ki3photonics.com. Automatic polarization control and stabilization of the optical channel can optionally be included.

b. Optical loss can be optimized for specific optical wavelengths, please reach out to discuss custom specifications.

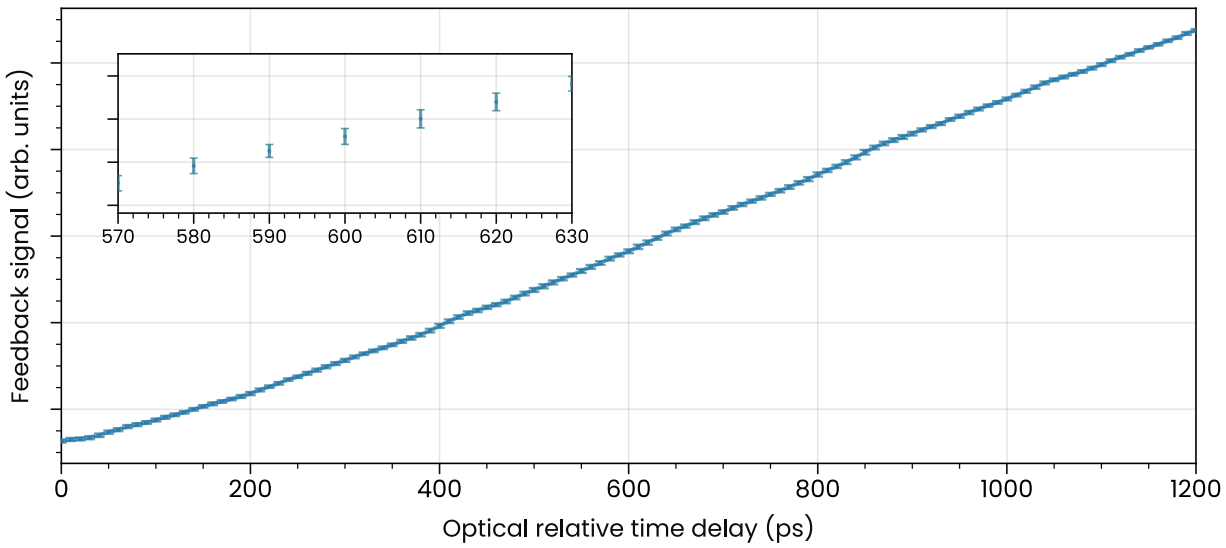

Fig. 1: The Ki3 LINQ.SYNQ module measures the relative length between multiple fiber channels with picosecond-level resolution, stabilizing drifts in real-time.

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