

QKD subsystems

Space-grade electronic modules for satellite quantum communications

Quantum-secure communications is enabled by encoding bits into quantum states of single photons. Jena-Optronik builds onto its opto-electronics space heritage and performs the transition of quantum technology into space.

Quantum communications is a future satellite application. Security agencies estimate that the advent of quantum computing will compromise the security of classic cryptography. Governments urge the implementation of quantum key distribution (QKD) systems. On an international level, the European Quantum Communication Infrastructure (EuroQCI) will be established.

QKD works by encoding bits of information into quantum states of single photons. This information exchange is physically safe from spying, because quantum states cannot be intercepted without leaving a trace. Cheap and reliable optical links from satellites to Earth are needed for large-area coverage of quantum secure communications.

As quantum technology emerges from the labs, Jena-Optronik is the space industrialization partner to perform the technology transition into space.

Jena-Optronik's offers the design, qualification and production of radiation-hard, space qualified:

- sub-nanosecond pulsed laser diode drivers
- radio-frequency (RF) amplifiers to drive electro-optical modulators
- single-photon time-tagging electronics
- precision and lightweight telescopes

Furthermore, the Jena-based space company is providing subsystem qualification and manufacturing.