qtlabs

Quantum Technology Laboratories

#OpticalGroundStation800

Our society is increasingly dependent on digital technologies. The ever-increasing connectivity makes our homes, hospitals or factories smarter but at the same time also more vulnerable to cyber-attacks.

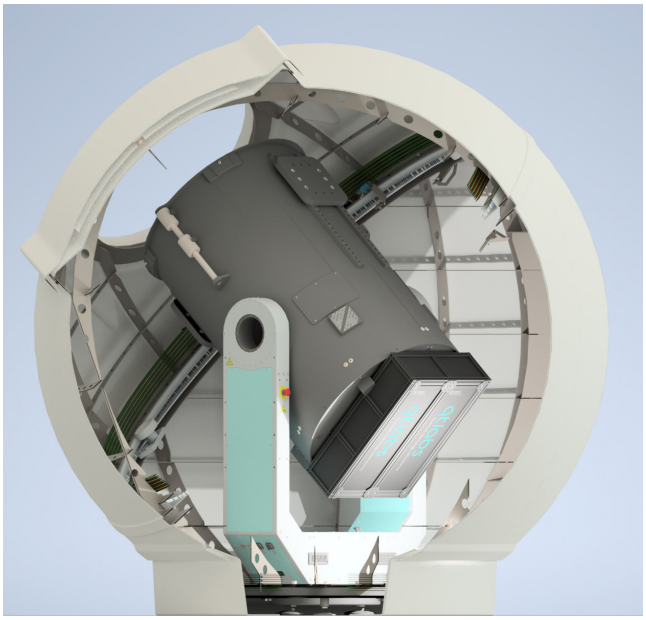
Today's critical IT infrastructure is secured using public-key encryption (PKE) systems. PKE relies on the belief that some mathematical puzzles are almost impossible to solve using today's super-computers. Unfortunately, this belief is refuted as soon as a sufficiently powerful quantum computer is available, which is already on the horizon. Also, it is well known that large scale government agencies are wiretapping on the backbone optical fibers and store data, which they can decrypt once a quantum computer is available.
This is why governments and enterprises need to move to quantum encryption now. The OGS 800 enables long distance free-space quantum communication protocols.

Harness qtlabs 20+ years of experience.

The team behind qtlabs is on the forefront of academic quantum communication for over 20 years, with one of the highest publication and citation counts in the field. We now utilize this knowledge to create a quantum-safe future.

The OGS 800 is a fully fletched turn-key telescope combined with a quantum signal demodulator in a robust enclosure. It is the ideal candidate for various QKD applications. The high-speed precision mount is capable of tracking a passing satellite with the press of a button.

With the OGS 800 you are able to implement both a prepare and measure as well as entanglement based QKD protocols. Because of the wide spectral range from 500 nm to 1700 nm the OGS 800 can be readily used for the QKD wavelength standard of the future.



The OGS 800 with mounting, dome and quantum signal demodulator

For the OGS 800 we offer four different quantum signal demodulators:

- **Wavelength: 810 nm**
  Polarization encoding
- **Wavelength: 810 nm**
  Time-bin encoding
- **Wavelength: 1550 nm**
  Polarization encoding
- **Wavelength: 1550 nm**
  Time-bin encoding

Included in the OGS 800 are the following features:

- Telescope with 80 cm aperture including mount and dome
- Certified product including electronic and laser safety
- Optional service and support contract
- Satellite tracking software
- Quantum signal demodulator
- Initial start-up at costumer's premises

If we have sparked your interest and you want to know more about this product, contact us at sales@qtlabs.at and we will get back to you shortly!

Satellite Tracking Quantum Communication Telescope – Optical Ground Station 800

Primary mirror diameter	≥ 800 mm
Mount	Alt-Azimuth
Optical design	Ritchey-Chrétien
Spectral range	500 nm to 1700 nm
Mirror coating reflectivity	92% @ 850 nm, 95% @1550 nm
Closed-loop tracking jitter	≤ 10 µrad RMS
Telescope control HW	External 19“ rack
Total mass	1.350 kg
Total power consumption	≤ 3.0 kW
Enclosure dimensions	2.8 m, spherical
Temperature range	-30°c to +40°C
Wind speed	up to 80km/h

Quantum Signal Demodulator for polarization encoding

Spectral range	500 nm to 900 nm
Decoding degree of freedom	Polarisation (4-stage pol. Analysis)
Protocol	Prepare & Measure and entanglement based
Polarisation errors	≤ 0.5%
Basis selection	50/50 (passive)
Optical input beam diameter	20 mm (collimated)
Optical input acceptance angle	up to 5 mrad
System efficiency (total)	up to 40% @ 850 nm
Dark count rate (total)	≤ 400 cps
Time tagging unit temporal resolution	1 ps
Timing Jitter FWHM (total)	350 ps
Afterpulsing probability	1%
Dimensions (L x W x H)	0.8 m x 0.6 m x 0.2 m
Total mass	50 kg
Power consumption	≤ 500 W