PROMETHEUS

The leading standalone quantum-dot based single-photon source

Cryostat, pulsed laser, solid-state single photon sources and active demultiplexer

ALL IN ONE SYSTEM

Optical Quantum technologies require long streams of identical single photons produced in a stable and robust manner.

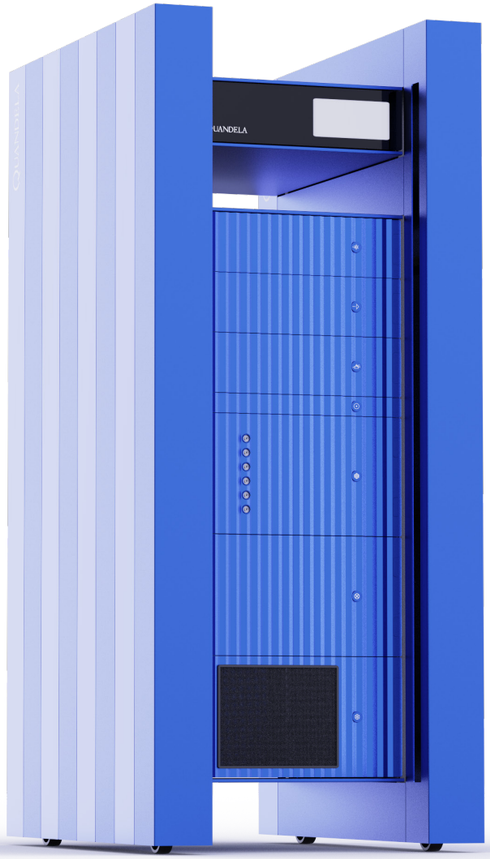
The revolutionary concept and design of Prometheus' stand-alone single-photon source makes it the optimal solution for providing a high rate of single and indistinguishable photons for demanding quantum applications.

It consists of an all-in-one device that provides a stable stream of photons with a record brightness thanks to our proprietary technology.

Hence, with Prometheus, engineers and researchers can now focus their efforts on their ideas for the design of new experiments based on the manipulation of a large number of optical quantum bits.

Modular Design

Ready for large-photon number applications



An optical laboratory in one reliable and vertical device

After years of research and innovation, Prometheus is the only standalone device for the emission and the detection of single photons at record rates.

Inside Prometheus:

- A Helium closed cycle cryostat with air-cooled compressor (water cooling possible) integrating eDelight single photon sources and SNSPDs detectors (optional);
- A 80-MHz pulsed laser used for the optical excitation of the source
- Optical and electronical modules for the use of the source and detectors
- Optional Active Demultiplexer Q-DMX (from 6 to 12 outputs)
- Vacuum Turbo Pump
- Main Computer with user-friendly control software

Applications:

Use of multiple single photons at the input of programmable interferometers. Photonic Integrated Circuits can be provided.

All the modules are interconnected via optical fibers, which provides a modularity and upgradability.

Thus, the performance of the device can be upgraded, which will never be obsolete.

SPECIFICATIONS / REQUIREMENTS

Technology	Proprietary fabrication process and design, fully deterministic: a selected quantum dot coupled to the optical cavity mode.
Single-photon emission wavelengths	925nm (+/- 5nm) 780nm (+/- 5nm) Telecom wavelengths (1550nm) single photons available via a Frequency Conversion Module (optional)
Photon Polarization	All the photons have the same polarization
Minimal Guaranteed Fibered Brightness(photon presence per pulse probability)	From 17% to 26%[1]
Typical Single-photon generation rate	> 20 M photons per second
Single-photon purity : g(2)(0)	Typically 2%, < 3% guaranteed[1]
Indistinguishability	Typically 94%, > 92% guaranteed[2]
Single-photon bandwidth – emitter lifetime	1.2 (+/- 0.4) GHz , < 150 (+/- 50) picoseconds Fourier-transform-limited" emission
Cooling Time About 12	hours for the pumping and cooling to 4K
User Interface	All-in-one fully automated software on the integrated computer
Required Electrical Supply & Power Consumption	220V ; < 3kW For Air-cooled compressor
Physical dimensions (cm)	185 (h) x 108 (w) x 76 (d)

1 Depending on the chosen performance by the customer, typical brightness is higher than the minimal guaranteed brightness
2 Second order correlation measured" via Hanbury Brown-Twiss interferometer

Please note that these specifications are subject to change without any prior notice.