



REDEFINING RANDOMNESS

QUANTIS

WHEN RANDOM NUMBERS CANNOT BE LEFT TO CHANCE

TRUE RANDOM NUMBER GENERATOR BASED ON QUANTUM PHYSICS

Although random numbers are required in many applications, their generation is often overlooked. Being deterministic, computers are not capable of producing random numbers. A physical source of randomness is necessary.

Quantum physics being intrinsically random, it is natural to exploit a quantum process for such a source. Quantum random number generators have the advantage over conventional randomness sources of being invulnerable to environmental perturbations and of allowing live status verification.

Quantis is a physical random number generator exploiting an elementary quantum optics process. Photons - light particles - are sent one by one onto a semi-transparent mirror and detected. The exclusive events (reflection - transmission) are associated to "0" - "1" bit values. The operation of Quantis is continuously monitored. If a failure is detected the random bit stream is immediately disabled.

Quantis is available as a PCI and PCI Express card, as well as a USB device and integrates easily in existing applications. It is compatible with the most commonly used operating systems. A library which allows easy access and a demonstration application are provided.



USB



PCI Express (PCIe)



PCI



Tested and certified by **METAS**
Swiss Federal Office of Metrology

APPLICATIONS

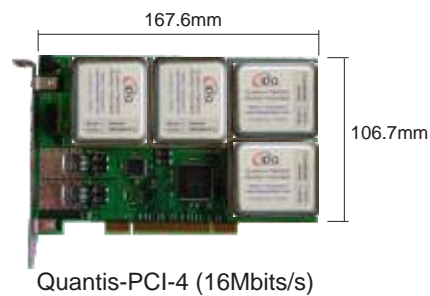
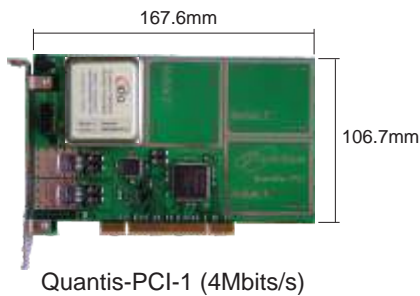
- Cryptography
- Gambling, lotteries
- Secure printing
- PIN number generation
- Mobile prepaid system
- Statistical research
- Numerical simulations

MAIN FEATURES

- True quantum randomness
- Certified by Swiss National Laboratory
- Passes NIST and Diehard randomness tests
- High bit rate up to 16 Mbits/s
- Low cost
- Compact and reliable
- Continuous status check
- Easy integration in applications



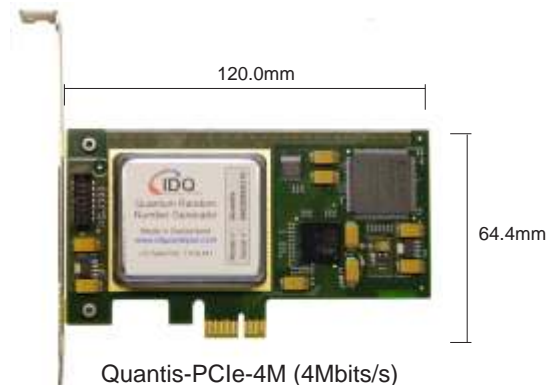
REDEFINING RANDOMNESS QUANTIS PCI CARD



GENERAL SPECIFICATIONS

- Random bit rate
 - 4 Mbit/s \pm 10% (Quantis-PCI-1)
 - 16 Mbit/s \pm 10% (Quantis-PCI-4)
- Thermal noise contribution < 1% (Fraction of random bits arising from thermal noise)
- Storage temperature -25 to +85°C
- Dimensions 167.6 mm x 106.7 mm
- PCI local bus specification 2.2
- Requirements IBM-compatible PC with available PCI slot

QUANTIS PCI EXPRESS (PCIe) CARD



GENERAL SPECIFICATIONS

- Random bit rate
 - 4 Mbit/s \pm 10% (Quantis-PCIe-4M)
- Thermal noise contribution < 1% (Fraction of random bits arising from thermal noise)
- Storage temperature -25 to +85°C
- Dimensions 120 mm x 64.4 mm
(supplied with low profile and standard height brackets)
- PCI Express specification PCI Express Base 1.0a compliant
- Requirements IBM-compatible PC with available PCI Express slot



REDEFINING RANDOMNESS QUANTIS USB DEVICE



GENERAL SPECIFICATIONS

| | |
|------------------------------|---|
| ■ Random bit rate | 4 Mbit/s \pm 10% (Quantis-USB-4M) |
| ■ Thermal noise contribution | < 1% (Fraction of random bits arising from thermal noise) |
| ■ Storage temperature | -25 to +85°C |
| ■ Dimensions | 61mm x 31mm x 114mm |
| ■ USB specification | 2.0 |
| ■ Requirements | IBM-compatible PC with available USB connector |
| ■ Power | via USB port |

SUPPORTED OPERATING SYSTEMS

Quantis software (drivers, Quantis library and application) available for the following operating systems:

| | PCI ¹ / PCIe ² | USB ³ |
|-----------------------------------|--------------------------------------|------------------|
| Windows XP (32-bit) | ✓ | ✓ |
| Windows XP (64-bit) | ✗ | ✗ |
| Windows Server 2003 (32-bit) | ✓ | ✓ |
| Windows Vista (32-, 64-bit) | ✓ | ✓ |
| Windows Server 2008 (32-, 64-bit) | ✓ | ✓ |
| Windows 7 (32-, 64-bit) | ✓ | ✓ |
| Linux 2.6 (32-, 64-bit) | ✓ | ✓ |
| Solaris / OpenSolaris | ✗ ⁴ | ✗ ⁴ |
| FreeBSD | ✗ ⁴ | ✗ ⁴ |
| NetBSD | ✗ ⁴ | ✗ ⁴ |
| OpenBSD | ✗ ⁴ | ✗ ⁴ |
| Max OS X | ✗ ⁴ | ✗ ⁴ |

Notes:

1 : Quantis-PCI-1, Quantis-PCI-4

2 : Quantis-PCIe-4M

3 : Quantis-USB-4M

4 : Available subsequently. Contact IDQ for more information



REDEFINING RANDOMNESS

SOFTWARE

EasyQuantis Application

Quantis comes with a truly invaluable cross operating system application called EasyQuantis allowing to read random numbers, which can be stored in a file or displayed. Random number can be generated in the following formats:

- Binary
- Integers
- Floating point

The application including a scaling functionality and can be used to access multiple Quantis generators.



Quantis Library

The Quantis library can be used to access the Quantis Quantum Random Number Generator. The library API is identical for the PCI, PCIe and USB library and is available on all supported operating systems.

The library offers the possibility to produce random binary data, integers and floating point numbers. It can be used to access multiple Quantis generators and includes advanced functionalities such as random data scaling.

Library Wrappers

Wrappers, allowing to access the Quantis library, as well as sample source code are provided for the following programming languages:

- C++
- C#
- Java
- VB.NET

ORDERING INFORMATION

- Quantis-PCIe-4M PCI Express card with 1 module generating a random bit stream of 4 Mbits/s
- Quantis-USB-4M USB device with 1 module generating a random bit stream of 4 Mbits/s
- Quantis-PCI-1 PCI card with 1 module generating a random bit stream of 4 Mbits/s
- Quantis-PCI-4 PCI card with 4 modules generating a random bit stream of 16 Mbits/s

RELATED PRODUCTS

- Quantis-OEM-4M OEM component generating a random stream of 4 Mbits/s

Disclaimer

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