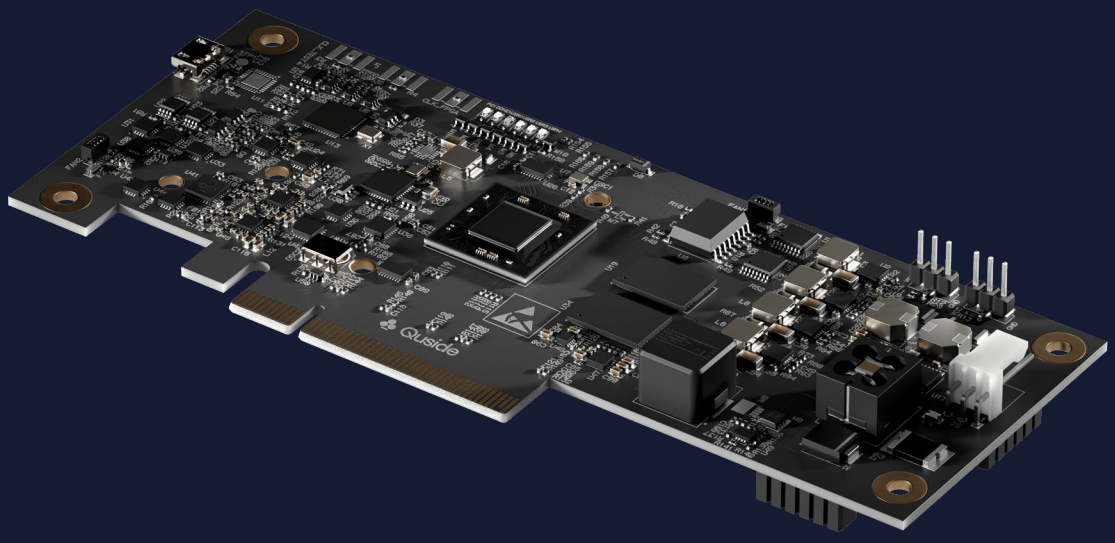
Quside

Product Datasheet

Quside Garnet™ Plus A41



The Quside Garnet™ Plus A41 is a **quantum random number generator** designed to operate at up to 1 Gbit/s raw random number generation on a standard PCIe interface. Powered by the Ruby™ N1 chip, the Garnet Plus obtained the SP800-90B Entropy Certificate by NIST.

Applications

Random numbers are required in a broad range of applications, including cybersecurity, high-performance computation, or gambling. The Quside Garnet™ Plus A41 is designed for high-performance quantum random number generation for even the most demanding application. Some key applications include:

· Quantum random number generation

· Crypto-agile & quantum-safe deployments

· Quantum key distribution

· Post-quantum cryptography

· Advanced entropy monitoring

· Cloud security

· Entropy-as-a-Service

· High-performance Monte Carlo simulations

Features

· Up to 1 Gbit/s raw generation rates

· Single-bit conditional min-entropy: 0.99 (25°C)

· Conditional min-entropy rate: 0.9

· Standard PCIe Gen 2x4 interface

· Entropy Certificate #E178 by NIST on SP800-90B compliance

· Metrology and monitoring of the entropy source and entropy quality

· Drivers and libraries for Debian, RedHat (beta) and Windows (beta)

· Support to Secure Boot/UEFI mode

Electrical specifications

	Units	Min	Typ	Max
Power consumption Garnet Plus A41 at 100 Mbps & 1Gbps	W		9	

Status monitor specifications

	Units	Min	Typ	Max
Bias monitor Garnet Plus A41 at 100 Mbps & 1 Gbps	mA	39	40	41
Temperature monitor[1] (T = environmental temp.)	°C			T + 20

1 At Tamb = 25°C

Randomness specifications

	Units	Min	Typ	Max
Single-bit conditional min-entropy: Conditional min-entropy rate:	Bits	0.99 0.9		
Raw bit rate Garnet Plus A41 at 100 Mbps Garnet Plus A41 at 1 Gbps	Mbps		100 1000	
Extracted bit rate[2] Garnet Plus A41 at 100 Mbps Garnet Plus A41 at 1 Gbps	Mbps		~72 ~727	

Absolute maximum ratings

	Units	Min	Typ	Max
Operating Ambient Temperature	°C	-20	25	65
Storage Ambient Temperature	°C	-40	25	80

Tested at Relative Humidity 50% (non-condensing).
Device stability verified for operating temperature variations of 0.2° C per minute in 10° C intervals.

OS compatibility

- Ubuntu 20.04 LTS, 22.04 LTS and 24.04 LTS
- RHEL 8+ (beta)
- Windows 10, version 21H2+ (beta)

Mechanical specifications

Standard Profile and Low Profile compatibility - Low Profile PCIe dimensions

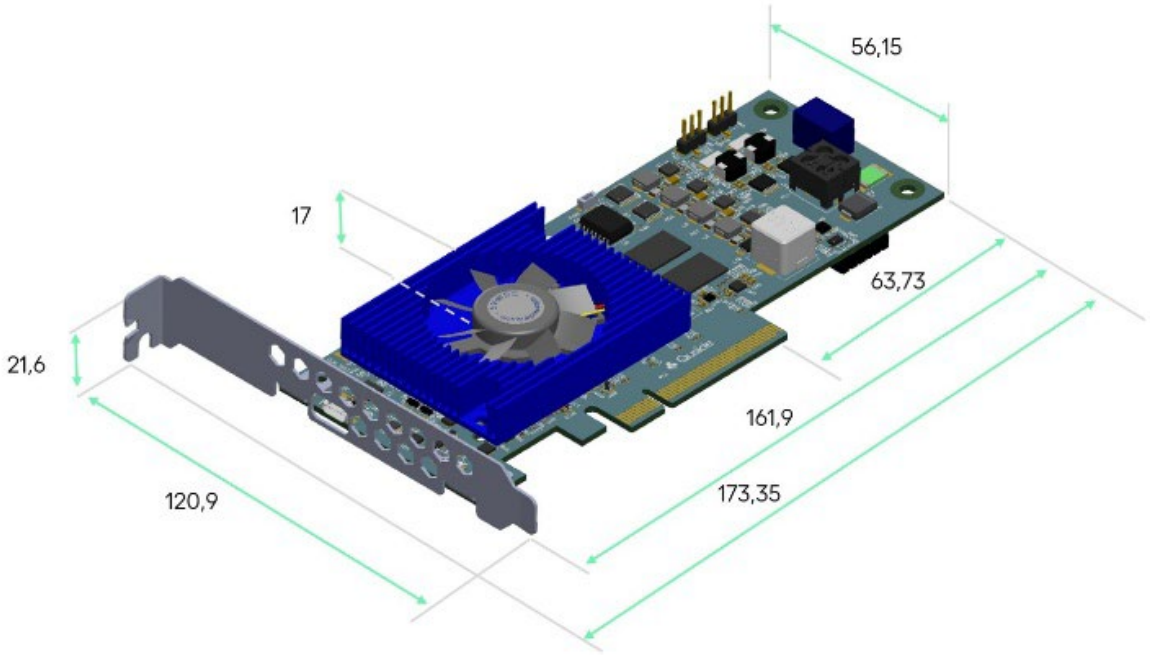
Dimensions Garnet Plus A41

· Full Height: 56.15mm

· Length: 173.35mm

· Single-slot PCIe card: 21.6 mm

[2] Extraction from 352 bits to 256 bits, using the randomness extractor from [D. Frauchiger, R. Renner, & M. Troyer (2013), arXiv:1311.4547].



Thanks for being part of our quantum journey!

To learn more about our products visit
www.quside.com and contact: sales@quside.com support@quside.com