GEN3 PCIe Card and Drive Modules

Automate hot-plug, dual redundancy and fault injection testing for GEN3 PCIe card, M.2 and U.2 devices

Quarch
Data Sheet

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Technology

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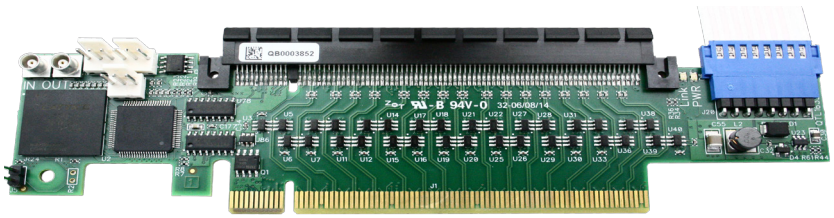


Highlights

- Supports x1 to x16 PCIe card devices and Dual Port PCIe SFF drives
- Removes manual intervention, for fully automated testing
- Precise and consistent timing control over hot-swap scenarios
- Completely transparent at the protocol layer
- Create and test many different fault conditions
- Simple to control with your existing test automation system

Use Cases

System Qualification	Run repeated test cycles with bounds testing of all possible hot-swap and lane width scenarios
Regression Testing	Automated regression tests spot issues earlier during development
RAID Testing	Force drive rebuilds, single/double RAID faults
Failover Testing	Test dual redundancy, fault monitoring and performance during a failure
Fault Injection	Simulate a large number of fault scenarios

Hot Swap

PCIe data is switched with high speed RF switches, ensuring that our modules are almost totally transparent to the storage system. Host/Device connections will appear as if they are directly attached.

Individual control over each pin allows us to create almost any possible hot-swap or fault scenario. Precise timing ensures that every test can be exactly re-created. Versions are available with inrush current limits, to help high power devices hot-plug on hosts with limited power supply capacity.

The modules can be manually controlled for bench testing, or easily integrated into your existing test automation system as part of a fully automated test solution.

Module Range

The PCIe SFF Drive Modules are identical in form factor and function to our SAS/SATA modules, allowing easy migration to the new interface.

PCIe Card Modules fit into a standard x16 PCIe slot and come in two ranges.

M.2 Card Modules fit a M.2 M-Key slot and hold the drive vertically.

Lite Modules do not have switches on the PCIe data lines, these are directly routed. Only power and sideband signals are switched.

HS Modules also switch the PCIe lanes and have an additional injection port to allow power margining and measurement from our Programmable Power Module.

All modules support data rates up to 8GT/s.

Active signal driving is support for signals such as PERST, CLKREQ and WAKE. The exact signals driven varies from module to module

All the PCIe Card modules support some form of power monitoring; basic internal measurement in the case of the 'Lite' module while the remaining devices have an injection port for the Power Module.

Interface options depend on the controller you chose, but include simple Serial, USB and LAN options. These can be accessed from almost any scripting language. You will need to purchase a separate controller to use this module.

Drive modules can be combined with other Torridon modules as part of a full test-automation system.

Supplied Parts

Drive Module - The main unit: Comes with a fixed 40cm Interface Cable to connect to a Torridon Controller

Also Required

Controller - You will require one slot on a Torridon Controller for each Cable Module

Downloads - Our website contains many useful downloads to help you get started: www.quarch.com

- **USB Drivers**
- **Technical Manuals**
- **Quick Start Guides**
- **Example Scripts**
- **TestMonkey GUI**

Support

Quarch provides direct support to all customers, regardless of the sales channel you use to purchase our equipment. We are available over email, or by phone during UK office hours. Our regional partners are also trained to handle many of the most common questions you might have.

Our support is normally free, though there may be charges if you require on-site training or significant development work. Please contact us if there is anything we can do to help.

Please see our website for access to drivers, technical manuals, quick-start guides, example scripts and more.

Email	**Phone**	**Web**
support@quarch.com	+44 1343 508 140	www.quarch.com/support

Ordering

Quarch have a network of specialist partners around the world. Please contact our partner in your region if you require a quote.

We recommend evaluating our products before purchase, so our partners will be happy to arrange a free evaluation unit.

Regional Contact Details

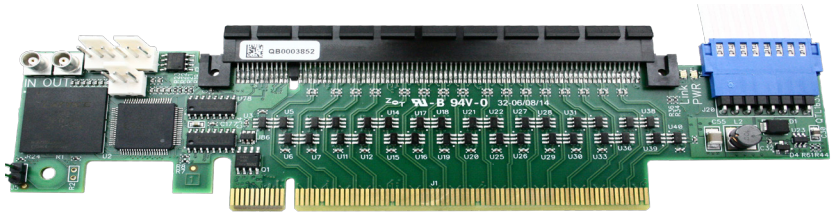
China, Hong Kong
Saniffer
Hong Kong

Email sales@saniffer.com
Web www.saniffer.com
Phone +86 21-58480285

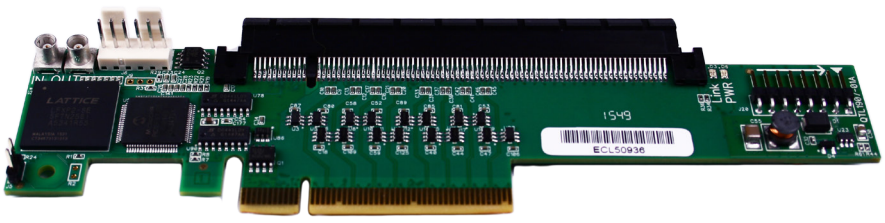
Products Versions

Product Code	Product Options
QTLXXXX	Product code, made up from options below
	QTL1848 GEN3 PCIe x16 Lite Card Module
	QTL2073 GEN3 PCIe x16 Lite Card Module + Inrush Limit (Modified QTL1848)
	QTL1630 GEN3 PCIe x16 HS Card Module
	QTL2074 GEN3 PCIe x16 HS Card Module + Inrush Limit (Modified QTL1630)
	QTL1688 GEN3 PCIe x16 HS Card Module + Triggering
	QTL1919 GEN3 PCIe x8 HS Card Module
	QTL1920 GEN3 PCIe x8 HS Card Module + Triggering
	QTL1743 GEN3 PCIe SFF HS Drive Module
	QTL2034 M.2 M-Key Vertical Card Module

Drive Module - Attached to a drive sled



x16 Card Module - Main Unit



x8 Card Module - Main Unit

Required Controllers - One port on a controller is required for each module

Product Code	Description	
QTL1260	Torridon Interface Kit Simple USB and Serial control options for bench testing	
QTL1461	4 Port Torridon Controller Control up to 4 modules via Serial/LAN/ USB connection	
QTL1079	28 Port Torridon Controller Control up to 28 modules via Serial, LAN or USB connection	

Accessories

Product Code	Description
QTL1824	XLC Programmable Power Module Power margining any uA range power measurement, ideal for PCIe devices
QTL1558	40cm Torridon Double Ended Interface Cable (Female to Female) Replacement cable for Card Modules, connects Module to Controller
QTL1870	100cm Torridon Double Ended Interface Cable (Female to Female) Replacement cable for Card Modules, connects Module to Controller
QTL1381	100cm Torridon Extension Cable (Male to Female) Extends an existing Double Ended Torridon cable or fixed Drive Module Cable

Technical Information

Connections	QTL1848	QTL1630	QTL1688	QTL1919	QTL1920	QTL1743	QTL2034
Host Side Connector	PCIe x16			PCIe x8		SFF8639	M.2 M-Key
Device Side Connector	PCIe x16			PCIe x8		SFF8639	M.2 M-Key
Max Speed	8GT/s						
Protocols	PCIe						PCIe, SATA
Signals Switched	Power*1	All*2					

*1 Only power signals and sideband are switched. Some signals are controlled as groups.
*2 All power, high speed data, mated and sideband pins are individually switched. GND pins are directly routed through the module.

External Connections	QTL1848	QTL1630	QTL1688	QTL1919	QTL1920	QTL1743	QTL2034
Power Supply	Via Torridon Controller						
Control Ports	Torridon Connector						
Triggering	X	X	SMA IN/OUT	X	SMA IN/OUT	X	X
Power Injection Port	X	√	√	√	√	X	X

Physical Dimensions	QTL1848	QTL1630	QTL1688	QTL1919	QTL1920	QTL1743	QTL2034
Offsets Drive By	41.94mm					11.86mm	N/A
Length/Width	167.67mm					69.05mm	80mm
Height	-					15.9mm	-
Compatible Devices	x1 - x16 PCIe Cards			x1 - x8 PCIe Cards		SSDs, HDDs	All M-Key

Features	QTL1848	QTL1630	QTL1688	QTL1919	QTL1920	QTL1743	QTL2034
Basic (power only) hot/swap	√	√	√	√	√	√	√
Full hot-swap	X	√	√	√	√	√	√
Pin Bounce Simulation	X	Simple/Custom. 10uS minimum period					
Signal Glitch	X	Single/Cycle/PRBS. 50nS minimum length					
Voltage Monitoring	3v3 / 12v on Host and Device						3v3 Rail
Power Monitoring	√ (Basic)	Requires Power Module				X	X
Active Signal Driving	X	CLKREQ, WAKE, PERST and similar (depending on the interface)					

Controllers	QTL1848	QTL1630	QTL1688	QTL1919	QTL1920	QTL1743	QTL2034
Serial Control	Supported on all Controllers						
USB Control	√ *1	Supported on all Controllers					
REST Control	Supported on QTL1079 and QTL1461						
Telnet Control	Supported on QTL1079 and QTL1461						

*1 No 'Direct' USB control. QTL1260 provides USB virtual COM port option, and QTL1079/QTL1461 allow USB control of the full system.

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