GEN6 PCIe Card and Drive Breaker Modules

Automate hot-plug, dual redundancy and fault injection testing for GEN6 PCIe/CXL devices

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Data Sheet

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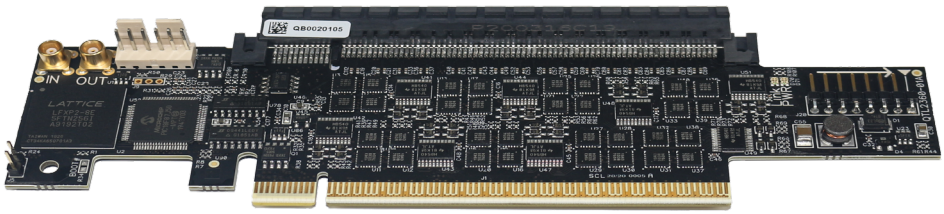


Highlights

- Supports the full range of PCIe and CXL devices
- 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 advanced 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. Where lanes are not switched, they are directly routed. For example, an x16-1 breaker has 1 switched lane (Lane 0) and the remaining 15 are directly connected.

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 Gen6 range is expanding as the interface gains traction. If you do not see the module you require, please let us know and we can get a time scale for you.

NOTE: Due to the signal integrity issues around Gen6 devices, we strongly recommend you evaluate a module in your test system before purchase.
The 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 64GT/s.

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

Sideband monitoring allows you to query the state of a sideband, or even divert the state out of the triggering port, for easy connection to a scope or analyzer

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

Each module comes with a 40cm interface cable, for connection to a controller.

Also Required

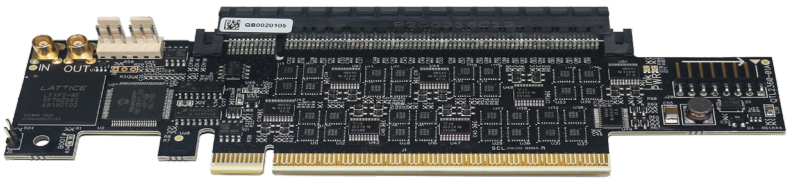
Controller - You will require one slot on a Torridon Controller for each Cable Module

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

Products Versions

Product Code		Product Options
QTLXXXX		Product code, made up from options below
	QTL3238	Gen6 PCIe AIC x16-0 Breaker + Triggering
	QTL3148	Gen6 PCIe AIC x16-1 Breaker + Triggering
	QTL3074	Gen6 PCIe AIC x16-16 Breaker + Triggering
	QTL3185	Gen6 PCIe AIC x4-4 Breaker + Triggering
	QTL3187	Gen6 PCIe AIC x8-8 Breaker + Triggering
QTLXXXX/KIT_E1 **QTLXXXX/KIT_E3**	**QTL3133**	Gen6 EDSFF x4-4 Breaker
	QTL3207	Gen6 EDSFF x4-4 Breaker + Triggering
	QTL3141	Gen6 EDSFF x8-1 Breaker
	QTL3189	Gen6 EDSFF x8-1 Breaker + Triggering
	QTL3078	Gen6 EDSFF x8-0 Breaker
	QTL3085	Gen6 EDSFF x8-0 Breaker + Triggering



x16-16 AIC Breaker Module

EDSFF E3 x4-4 Breaker Module

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
QTL1999	HD 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	QTL3238	QTL3148	QTL3074	QTL3185	QTL3187
Host Side Connector	AIC x16				
Device Side Connector	AIC x16				
Max Speed	64GT/s				
Protocols	PCIe, CXL				
Sidebands Switched	All*1				
Lanes Switched*2	x16-0	x16-1	x16-16	x4-4	x8-8

Connections...	QTL3133	QTL3207	QTL3141	QTL3189	QTL3078	QTL3085
Host Side Connector	EDSFF x4		EDSFF x8			
Device Side Connector	EDSFF x4		EDSFF x8			
Max Speed	64GT/s					
Protocols	PCIe, CXL					
Sidebands Switched	All*1					
Lanes Switched*2	x4-4		x8-1		x8-0	

*1 All power, mated and sideband pins are individually switched. GND pins are directly routed through the module
*2 First number is total lane count, second is the number switched. Un-switched high speed lanes are directly routed from Tx to Rx

Control	QTL3238	QTL3148	QTL3074	QTL3185	QTL3187	QTL3085
Power Supply	Via Torridon Controller					
Control Ports	Torridon Connector					
Triggering	MCX (Cables to SMA included)					
Power Injection Port	√	√	√	√	√	√

Control...	QTL3133	QTL3207	QTL3141	QTL3189	QTL3078	QTL3085
Power Supply	Via Torridon Controller					
Control Ports	Torridon Connector					
Triggering	X	SMA	X	SMA	X	SMA
Power Injection Port	X	X	X	X	X	X

Technical Information

Dimensions	QTL3238	QTL3148	QTL3074	QTL3185	QTL3187
Offsets Drive By	46.75mm				
Length/Width	167.67mm				
Height	-	-	-	-	-
Compatible Devices	AIC devices from x1 to x16				

Dimensions...	QTL3133	QTL3207	QTL3141	QTL3189	QTL3078	QTL3085
Offsets Drive By	64.4mm					
Length/Width	E1=33.75mm, E3=76mm					
Height	-	-	-	-	-	-
Compatible Devices	EDSFF E1 & E3 drives					

Controllers	All Modules
Serial Control	Supported on all Controllers
USB Control	Supported on all Controllers
REST Control	Supported on QTL1079 and QTL1461
Telnet Control	Supported on QTL1079 and QTL1461

Features	QTL3238	QTL3148	QTL3074	QTL3185	QTL3187
Basic (power) hot/swap	√	√	√	√	√
Full hot-swap	X	X	√	X	X
Pin Bounce Simulation	1uS minimum period				
Signal Glitch	Single/Cycle/PRBS				
Voltage Monitoring	√	√	√	√	√
Power Monitoring	X	X	X	X	X
Active Signal Driving	PERST, CLKREQ, WAKE, PWRBRK				
Signal Monitoring	SMCLK, SMDAT, PERST, WAKE, PWRBRK				

Features...	QTL3133	QTL3207	QTL3141	QTL3189	QTL3078	QTL3085
Basic (power) hot/swap	√	√	√	√	√	√
Full hot-swap	√	√	X	X	X	X
Pin Bounce Simulation	1uS minimum period					
Signal Glitch	Single/Cycle/PRBS					
Voltage Monitoring	√	√	√	√	√	√
Power Monitoring	X	X	X	X	X	X
Active Signal Driving	PRSNT0, PRSNT1, SMBRST, DUALPORTEN, PWRDIS, PERST0, PERST1, LED					
Signal Monitoring	PRSNT0, PRSNT1, PERST0, PERST1, SMBRST, SMBDAT, SMBCLK, LED, PWRDIS, MFG, DUALPORTEN					

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.
Don't see the product or form factor you need? Please get in touch with us at support@quarch.com, we may have something in the pipeline that will effectively solve your testing challenge.

North America
serialcables.com

India
esaindia.com

Singapore, Malaysia
embeddedsingapore.com

Hong Kong, China
saniffer.com

South Korea
jwill.co.kr

Taiwan, trust-tek Corp.
trust-tek.com.tw

Testforce, Canada
testforce.com

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