



# Desktop Drive Enclosure Gen6

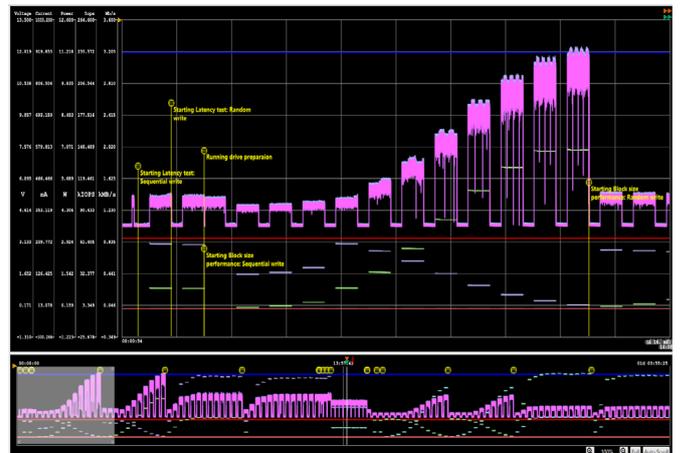
Advanced, automated testing for SSDs

Quarch  
Data Sheet



# Desktop Drive Enclosure Gen6

## Comprehensive testing for SSDs



## Highlights

- Supports most standard EDSFF SSDs (E1 and E3 versions available)
- MCIO x8 connector for direct attachment to HBA or host system
- Automates: hot-plug, lane restriction, REFCLK isolation, PCIe error injection, SMBUS error injection and much more
- Temperature monitored enclosure with variable fan control for thermal throttling
- Integrated PAM for power analysis and sideband capture
- PPM injection port to allow voltage margining
- External triggering ports for additional control or sideband/SMBUS output
- Compatible with Quarch Power Studio, QIS automation and existing Breaker control scripts
- Supports PCIe, CXL and OCP devices

## Use Cases

<b>Characterisation</b>	Analyse power consumption during workloads and in sleep states
<b>Thermal Throttling</b>	Allow drive overheat and test performance drop
<b>Hotswap Testing</b>	Test fast Vs slow hot-plug, unexpected power loss, varying voltage rail timings and more
<b>Fault Injection</b>	Create a huge range of brief interruptions or hard faults on power, sidebands, data and clocks
<b>Power resilience</b>	Test rail margining, ramps, glitches, brownout and crowbar (PPM required)
<b>Debugging</b>	Combine active testing and data capture to quickly home in on SSD faults





## Measurement + Margining

The enclosure provides optional PAM support. When added, we sample each rail at 250KHz. Digital sidebands are sampled at 1MHz. Quarch Power Studio or Python scripting can be easily used to capture power data, averaged down to a suitable sample rate for your purposes. Analog + Digital capture is particularly good for identifying issues with device enumeration and during some power state changes.

An external PPM can also be attached, This provides for an alternate means of measurement if you do not have the PAM option. It also adds full programmable control of both rails. Ramping, glitching, brownout and crowbar are just some of the active power tests than can be run.

Individual sidebands can be directed out the triggering ports (Such as SMBUS) for each access. They can also be monitored via python, or used at triggers to run other test actions such as glitches.

Finally we track fan speed, internal temperature and (If available) drive reported temperature for comprehensive data on your SSD

## Breaker Control

Incorporating all our standard breaker features, you can take full control of hot-plug and physical layer fault injection across the EDSFF interface.

This can be done at a click of a button, or via simple Python scripting.

On the fully featured versions, all power rails, sidebands, clocks and data lanes are instrumented for control.

Lower cost versions are available with control over everything except for the high speed data lanes

As the product works on the physical layer, any protocol electrically compatible with (or built on) PCIe is supported. This includes NVMe, OCP and CXL devices.



## Supplied Parts

- Enclosure** - The main unit
- Power Supply** - External 12v 100W power supply, with country specific plug
- USB Cable** - 2 meter USB-C to USB-A cable

## Also Required

- Downloads** - Our website contains many useful downloads to help you get started: [www.quarch.com](http://www.quarch.com)
  - USB Drivers
  - Technical Manuals
  - Quick Start Guides
  - Example Scripts
  - Quarch Power Studio





## Products Versions

Product Code	Product Options
<b>QTLXXXX/KIT_YY/ZZZ</b>	Product code, made up from options below
<b>QTLXXXX</b>	<b>QTL3187</b> GEN6 Drive Enclosure x8 MCIO to EDSFF x8-0 <b>QTL3271</b> GEN6 Drive Enclosure x8 MCIO to EDSFF x8-8
<b>/KIT_YY</b>	<b>/KIT_E1</b> EDSFF E1 version <b>/KIT_E3</b> EDSFF E3 version
<b>/ZZZ</b>	<b>/PAM</b> (Optional) Adds PAM support for power and sideband capture

## Related Products

Product Code	Description
QTL1999	HD Programmable Power Module Adds external programmable power supply and power analyzer
QTL1983	HD PPM to HD 60cm Fixture Cable Connects QTL1999 to the drive enclosure
QTL2181	HD PPM to HD 100cm Fixture Cable Connects QTL1999 to the drive enclosure





E3 SSD fitted into Drive Enclosure



LAN, USB, Power and Triggering ports



Optional QTL1999 Programmable Power Module





## Technical Information

Characteristics	QTL3178	QTL3271
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SSD Supply	12v and 3.3v <sup>1</sup>	
Input Supply	12v, 100w	
Max SSD power rating	25w	
SSF Form Factor	E1 or E3	

<sup>1</sup> With optional PPM attached: 12v rail = 0v to 14.4v and 3v3 rail = 0v to 3.96v

Measurement (via PAM)	QTL3178	QTL3271
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Sampling Rate	250 KHz Power, 1MHz Sidebands	
Typical Voltage Accuracy	±(2mV+1%)	
Current Accuracy	±(2mA+1%) @ 1 - 4000mA	
Low Range Accuracy	±(25uA+1%) @ 100uA - 1mA	
Voltage Range	40mV - 15V	
Current Range	100uA - 12A	
Sidebands Captured	DUALPORTEN, PRSNT0n, REF-CLK0_OK, PERST0n, PRSNT1n, REFCLK1_OK, PERST1n, SMCLK, SMDAT, BLUE_LED, AMBER_LED, MFG	

Signal Control	QTL3178	QTL3271
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High speed signals	Always Connected	8 Lanes Switched
Sidebands	Switched	
Power Rails	Switched	
Clocks	Switched	

External Connections	QTL3178	QTL3271
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Power Supply	External 12v, 100w PSU	
SSD Connection	EDSFF x8	
Control Ports	USB-C, LAN	
Triggering	MCX IN/OUT	
Power Injection	10 Pin Mini Tek (PPM)	





## 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.**



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