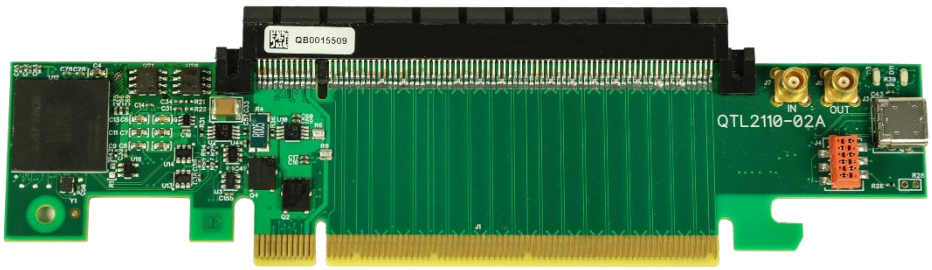
Quarch Technology Ltd
Gen4 PCIe x16 PAM Fixture
Technical Manual

For use with:

QTL2347 – Gen4 PCIe x16 PAM Fixture



Change History

1.0	June 2020	Initial customer release

Contents

About this Manual

Thank you for your purchase of this Quarch Fixture. This manual is intended as a technical reference, describing the features, operations and control API of the unit.

Additional documents available include Quick start guides, Datasheets and Application notes. These can be located on our website: www.quarch.com

This manual provides the following:

- Safety information
- An overview of the product and its features
- Details of the control interfaces
- Command specification
- Locations of additional help and examples.

Product Safety

This product is intended for experienced technical users in a test lab environment. It is essential that you are familiar with this manual before using the device.

Safety warnings

> This product must be used with the Quarch Power Analysis Module (PAM) only. It must be directly connected to the PAM via the provided USB-C cable.

Risk Assessment

While these products have no significant hazard cases, they must be used carefully by competent personnel.

In new use cases, a risk assessment should be completed, to ensure the entire test setup is safe to operate and will not cause an unacceptable risk to the operators or other lab users.

This should include careful routing of power and control cables to avoid trip hazards.

Cleaning and Maintenance

This product is a bare PCBA and should only be cleaned by a specialist, in an anti-static environment.

All parts of the system should be inspected before and after use.

Damaged components should not be used and cannot be repaired by the user. Please contact Quarch to arrange for repair.

Manufacturer Details

The Torridon System is designed and manufactured by:

Quarch Technology Ltd (registered in Scotland no: SC307569)

Unit 7, Dalfaber Industrial Estate

Aviemore

UK

PH22 1ST

Web: www.quarch.com

Email: enquiries@quarch.com

Phone: +44 1343 508 140

Environmental Conditions

The products are designed for use in dry, dust free, indoor lab conditions, at altitudes below 2000m and ambient temperatures between 20C-30C and 0-80% non-condensing humidity.

Installation

The product is designed for use on a desk/bench location. Parts should be kept in a dry and anti-static storage location when not in use.

Product Misuse

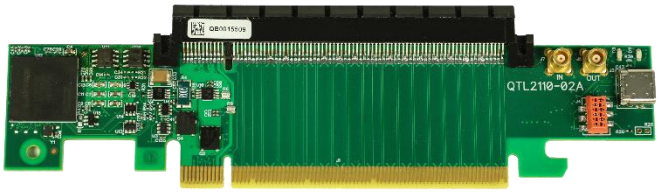
The product is designed lab testing industry standard interfaces, complying with the relevant industry specifications. Other uses may cause incorrect operation, protection impairment or damage to the product and should be avoided.

In the Box

Each power module comes with the same basic kit of parts.

QTL2347 – Gen4 PCIe x16 PAM Fixture

1x Fixture



Technical Specifications

Power Analysis products from Quarch are all based on the same design and can be used within the same testing system.

The QTL2347 allows you to capture analogue and digital measurements from a wide range of x16 PCIe devices. This is a modular system and any one of a number of fixtures can be attached to the unit, allowing to be adapted for a wide range of devices.

QTL2347 – Fixture connections

Connection panel of QTL2347

Item	Location	Purpose
Trigger IN	Side panel	NOT USED, connect to PAM triggering ports
Trigger OUT	Side panel	NOT USED, connect to PAM triggering ports
USB-C	Side panel	Connects to PAM controller

Introduction

The fixture allows you to capture both analogue measurements (mainly voltage, power and current) and access to digital sidebands and other useful information.

The data can be captured in high resolution and viewed in real time, or stored for later processing and analysis.

This fixtures requires a PAM controller to function.

Main features

- View and capture power performance of a device
- Capture digital sideband transitions
- Monitor a wide range of different devices

LEDs

The Fixture provides indication LEDs on the board. These provide basic information on the function of the product

LED (D3)

Color	Meaning
Off	No Power
Green	Power on and link active
Yellow	Power on and no link (Incompatible USB-C cable?)

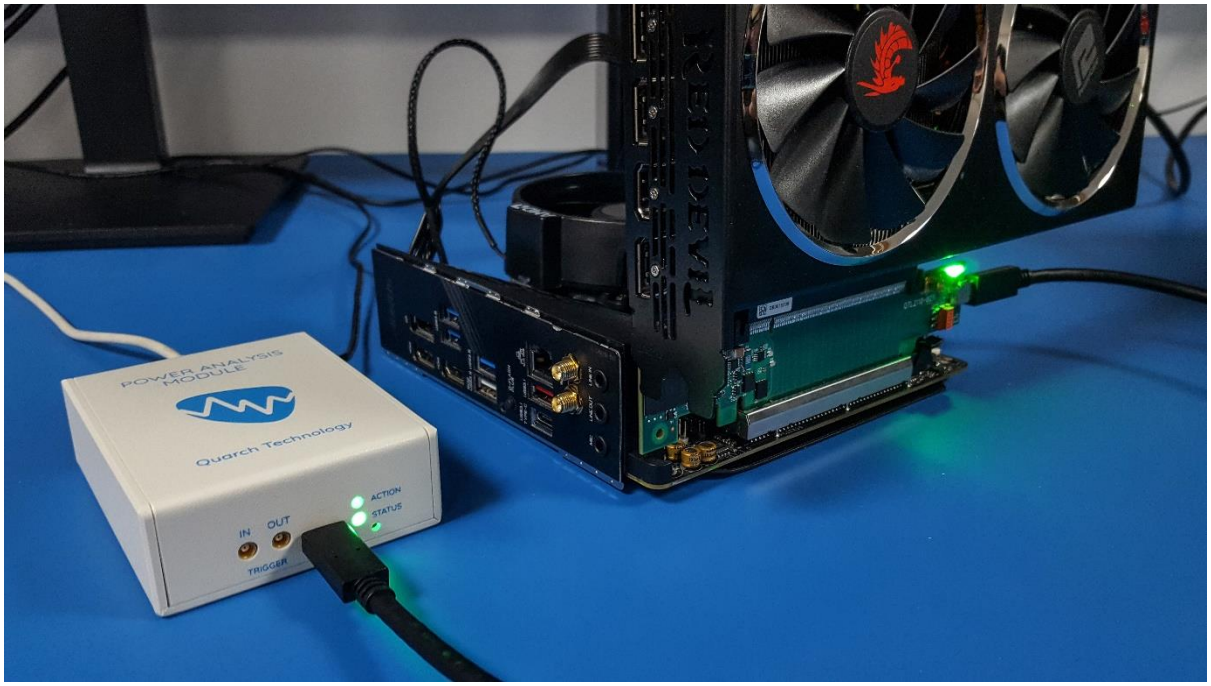
LED (D11)

Color	Meaning
Off	Normal state
Red	FPGA recovery mode active

Connection and accessories

The product is designed to connect to a PAM controller via the supplied USB-C cable. Only official PAM controllers may be connected here. Do not use this port for any other purpose. Only one fixture can be attached at a time and no additional USB-C switches, extenders or similar components may be used.

Here we show a “PCIe x16 PAM Fixture” along with the main unit, fitted into a Gen4 test system. This is for illustrative purposes only.



Controlling the Module

All control of the fixture is via the PAM controller. The PAM technical manual should be referenced to see the available commands.

Some PAM commands require to identify a specific measurement rail on the fixture. These details can be found in the Appendices below, which describe every measurement channel on this fixture.

Appendix 1 – Measurement Channels

The fixture supports multiple analog and digital measurement channels as listed below:

Channel_Type	Channel_Name	Unit
V | VOLTage	3.3V	mV
V | VOLTage	3.3V AUX	mV
V | VOLTage	12V	mV
C | CURrent	3.3V	uA
C | CURrent	3.3V AUX	uA
C | CURrent	12V	uA
D | DIGital	SMDAT	Boolean
D | DIGital	SMCLK	Boolean
D | DIGital	PERST#	Boolean
D | DIGital	CLKREQ#	Boolean
D | DIGital	WAKE#	Boolean
D | DIGital	PERST#	Boolean

Customer support from Quarch

There are multiple ways to access the support you need. You can contact us directly or access an extensive range of valuable support materials from http://quarch.com/support.

Contact us direct

Get going quickly and easily, with help direct from the engineers:

- Call **+44 1343 508 140** or email support@quarch.com during UK office hours.
- Our international partners are well trained in the use of our products and can deal with many basic technical queries from within your time zone, if you prefer. Check http://quarch.com/resellers for the contact details of your regional supplier.

Access support from the Quarch website

You can download up-to-date software and drivers, technical manuals, datasheets and more from our website. To help you get started quickly we provide additional documents, such as examples in Perl, Python and C# and Telnet and Serial instructions.

Key places to visit on the Quarch website

- Register your Quarch product to confirm your international warranty: http://quarch.com/product-registration
- Download a wide range of documentation, free applications and drivers to help you make the best possible use of your Quarch tools: http://quarch.com/content/downloads
- Access the Quarch support forum (http://quarch.com/forum):
  - Find discussion topics, support information and testing ideas.
  - Browse existing topics or login to your user account to ask for information and advice.
- Sign up for Quarch Technical Updates to get the most out of your Quarch products. Updates are published approximately once a quarter and include news about the latest features, tools, application notes and software updates. See http://quarch.com/content/sign-quarch-technical-updates.