

coreDAQ

Multi-channel optical power meter



Applications :

- Optical power measurements
- Photonic IC characterization
- Data acquisition and logging

Features :

- Quad channel
- InGaAs/Si photodetectors
- Logarithmic/Linear amplifiers
- Ultra low noise
- True simultaneous sampling
- Deep memory



Product Overview

The CoreDAQ is a versatile four-channel optical data-acquisition system designed for accurate optical power monitoring, automated data collection, and high-resolution characterization of photonic components. Whether used for general laboratory power measurements or for advanced swept-source analysis, CoreDAQ delivers stable, repeatable results with the performance required for modern integrated photonics research.

Each FC/PC port features a low-noise transimpedance front-end with either linear or logarithmic gain architectures. The linear TIA model provides eight calibrated gain stages, enabling high-accuracy measurements from -90 dBm to 5 dBm. The logarithmic TIA model achieves the full dynamic range within a single scan, making it well suited for broadband measurements where power may vary by orders of magnitude. Designed with photonic device testing in mind, CoreDAQ is fully optimized for use with swept-wavelength sources. All four channels are sampled truly simultaneously, preserving relative phase and amplitude information across the scan. Each scan can acquire up to 4 million samples per channel, ensuring that fine spectral features—such as resonances, mode splitting, and filter passbands—are captured at full resolution. The trigger port allows synchronised power measurements in conjunction with any device that provides a standard TTL interface. The USB programming interface is “driverless” enabling any serial communication capable device to automate the hardware. For ease of operation, a fully documented python API is included.

General specifications



Parameter	Unit	Specifications	Notes
No. of channels	-	4	FC-PC
Interface	-	USB 2.0	USB-C connector
Trigger Input/Output	V	3.3 / 5.0 (TTL)	BNC Connector
Supply voltage	V	15	Power Brick Incl.
Operating Temperature	°C	10 to 40	
Operating humidity	%	<80	Non condensing
Weight	g	600	
Dimensions WxDxH	mm	103x80x31	Anodized aluminum case

Sensor specifications

Parameter	Unit	Specifications	Notes
Photodiode	-	InGaAs	
Wavelength range	nm	1200-1680 ¹	
Power Range	dBm	-90 to 5	1 nW to 3 mW
Dynamic range	dB	> 65	
Number of gain stages	-	8 ²	
Damage threshold	mW	30	
Linearity	%	< 1% (0.5 Typ.) ³	
Log conformance	dB	0.1 ⁴	1 nW – 1 mW
Averaging Time		10 µs – 10 s	
Sampling Rate	ksps	100	on all 4 channels
Data logging buffer		4 million points / channel ⁵	
Internal ADC resolution		16 bit	
Data Connector		Type - C	
Data transfer rate		USB 2.0_HS (25 MBps)	

¹The wavelength range reflects the photodiode's responsivity limits; however, power calibration is performed at 1550 nm unless otherwise requested. Measurements at other wavelengths are estimated using the manufacturer's responsivity data for the selected photodiode.

^{2,3} Only applicable to linear frontend.

⁴ Only applicable to logarithmic frontend.

⁵ The 32 million buffer is redistributable and can also be allocated to single channel.

