BROADCOM®

Data Sheet

Qwave AFBR-S20W2XX

Compact USB Spectrometer Combining Outstanding Optical Resolution and Sensitivity

Key Features

- Spectral resolution from 0.2 nm
- High optical sensitivity
- Exceptional thermal stability
- Smart and easy integration

Applications

- Light analysis
- Chemical research
- Raman spectroscopy
- Forensic analysis
- System integration
- Process control and monitoring
- Biomedical applications
- Quality control
- Environmental measurements

Overview

Armed with a high-resolution 3648-pixel linear CCD detector, the Qwave 2 series can cope with much bulkier spectrometer designs, still maintaining a package size of 89.5 mm × 68.0 mm × 19.5 mm. Together with the smart spectrometer software Waves and various communication interfaces, the Qwave is the ideal spectroscopic instrument to be integrated into high-performance applications.

Part Number	Product Configuration	Wavelength Range	Spectral Resolution
AFBR-S20W2UV	Qwave UV	220 nm to 390 nm	0.2 nm
AFBR-S20W2VI	Qwave VIS	350 nm to 880 nm	0.5 nm
AFBR-S20W2NI	Qwave NIR	700 nm to 1030 nm	0.4 nm

Specifications	
Focal length	75 mm
Grating	600 lines/mm
Entrance slit	20 µm (changeable)
Dynamic range	1500:1
Numerical aperture	0.10
Stray light	<0.1 %
Exposure time range	3 µs to 17 min.
Detector	3648-pixel linear CCD detector
A/D converter	16-bit
Calibration	Wavelength, sensitivity, nonlinearity, and multiple dark spectra stored within device
Internal memory	32 MB (>3000 spectra)
Transfer speed to PC	USB 2.0 high-speed
Optical interface	SMA connector
Digital interfaces	USB 2.0 with Type-C connector, SPI, UART
Dimensions	89.5 mm × 68.0 mm × 19.5 mm
Weight	155g
Operating temperature	–15°C to 60°C (non-condensing)
Storage temperature	–25°C to 70°C
Power consumption	5V DC, 200 mA (supplied via USB)
PC operating system	Windows 10, 8, 7, Vista, XP

Application Software

All Broadcom Qseries spectrometers are supported by a complimentary Waves software, developed for general-purpose spectroscopy applications. Waves greatly simplifies data acquisition and spectra evaluation by using sophisticated algorithms. By featuring a clean and intuitive interface the software make your first steps while evaluating the spectrometer very easy.

Useful options are:

- Take and display series of spectra
- Automatic exposure control with dark spectrum interpolation
- Import and export ASCII based files
- Comprehensive tools for displaying and analyzing spectra
- Strip charts for comparing characteristic values between multiple spectra including peak follower in real time
- Transmission, absorption, and reflection measurements

Various spectrum evaluation options are available with minimal effort and only a few mouse clicks. Waves is available as a free download from our website.

Software Library

The software package includes a software development kit (SDK). It consists of a Windows DLL library for the .NET framework, documentation, and sample codes. The SDK can be used with many programming languages that can use .NET DLLs, including C#, Visual Basic .NET, C++/CLI, Delphi, LabVIEW, Matlab, and Mathematica.

Communication Protocol

The spectrometer can also be directly controlled from an embedded microcontroller or other operating systems using the smart device communication protocol. Just like our application software, the protocol is designed to be both powerful and easy to use for software developers.

I/O Port and Trigger

The Qwave includes four I/O channels that can be configured as trigger input, shutter and light source control, or general purpose I/O pins.

The Qwave supports three trigger modes: software trigger, interval trigger, and external trigger. It can be set to trigger on the start or on the end of the exposure period.

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