BROADCOM®

Data Sheet

Qwave AFBR-S20W1XX

Compact USB Spectrometer Combining Excellent Technical Specifications with Outstanding Spectroscopy Software

Overview

With its focal length of 75 mm, the Qwave offers technical specifications that you would normally expect to find in much larger spectrometers. Combined with our unique spectroscopy software, Waves, it is the ideal spectroscopic instrument for applications that require a resolution of 0.2 to 0.5 nm and a numerical aperture of up to 0.10.

Key Features

- Spectral resolution from 0.2 nm
- High sensitivity
- Exceptional thermal stability
- Includes sophisticated spectroscopy software

Applications

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

Part Number	Product Configuration	Wavelength Range	Spectral Resolution
AFBR-S20W1UV	Qwave UV	220 nm to 400 nm	0.2 nm
AFBR-S20W1VI	Qwave VIS	350 nm to 880 nm	0.5 nm
AFBR-S20W1NI	Qwave NIR	700 nm to 1040 nm	0.4 nm

Specifications	
Focal length	75 mm
Grating	600 lines/mm
Entrance slit	20 µm (default)
Dynamic range	1500:1
Numerical aperture	0.10
Stray light	<0.1 %
Exposure time range	100 µs to 600s
Detector	3648-pixel linear CCD detector
A/D converter	16-bit 15 MHz
Calibration	Wavelength, sensitivity, nonlinearity, and multiple dark spectra stored within device
Transfer speed to PC	40 ms per spectrum
Optical interface	SMA connector
Digital Interfaces	USB 2.0
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

Every Qwave spectrometer includes Waves user software developed for general-purpose spectroscopy applications. Waves includes sophisticated algorithms for data acquisition and evaluation, which provides the following features through a clear and straightforward user interface.

- Take and display series of spectra
- Automatic exposure control with dark spectrum interpolation
- Import most ASCII-based file formats
- Export as ASCII table to almost any numerical analysis software
- Comprehensive tools for displaying and analyzing spectra
- Strip charts for comparing characteristic values between multiple spectra including peak follower in real time
- Graph printing and export to PDF
- Dynamic peak finder (no need to set a threshold level)
- Dark spectrum interpolation
- Transmission, absorption, and reflection measurements
- Colorimetry

Waves is very easy to use and very intuitive. Various spectrum evaluation options are available with minimal effort and only a few mouse clicks. For example, to zoom in, adjust the zoom slider. To move around, adjust the scrollbar. To change the x-axis unit, select the corresponding button. Values such as peaks or colorimetry are instantly calculated as soon as a spectrum is taken. Waves is available as a free download from our website.

Software Library

A software development kit (SDK) is also included to control the spectrometer and take spectra from your own software. It consists of a Windows DLL library for the .NET framework, documentation, and sample code. The SDK can be used with any programming language that can use .NET DLLs, including C#, Visual Basic .NET, C++/CLI, Delphi, LabVIEW, Matlab, and Mathematica.

Communication Protocol

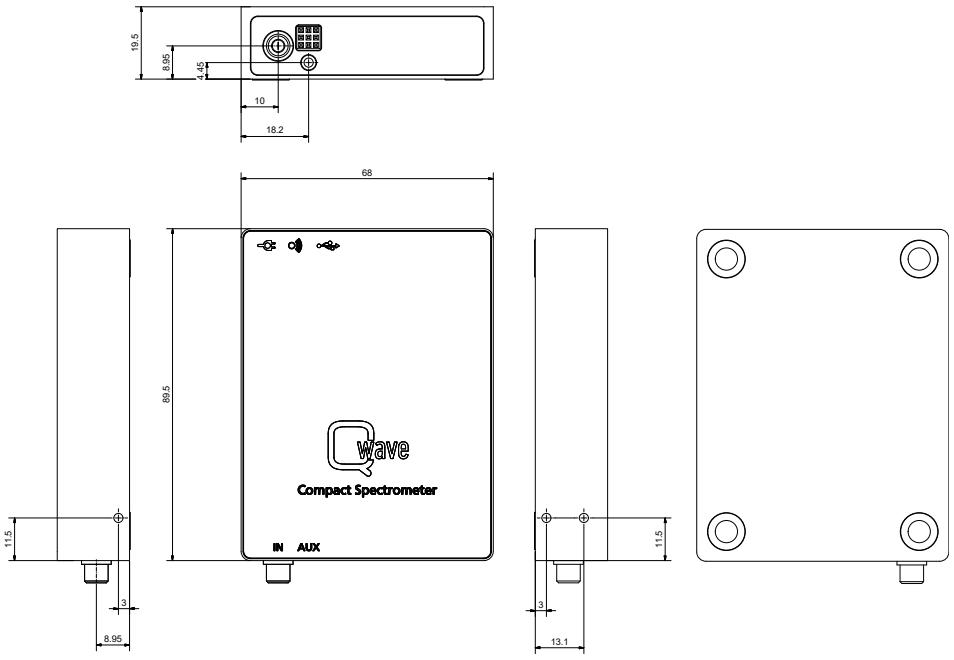
The spectrometer can also be directly controlled from an embedded microcontroller or other operating systems using the device communication protocol. Just like our application software, the protocol is designed to be both powerful and easy to use for software developers.

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 the end of the exposure period. For synchronizing the Qwave precisely to external events, a special low-jitter mode is available.

Qwave Schematic Drawing



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