

nova II™ Spectrophotometer [SW-NIR model]

Applied Analytics DS-201B — Revised 21 April 2017



The heart of an Applied Analytics system.

The nova-II Spectrophotometer is a core component of several Applied Analytics products. This device performs absorbance spectroscopy by transmitting a light signal across the path of a sample fluid via fiber optic cables.

The major sub-components of the nova II include:

- (A) The light source. The shortwave near infrared (SW-NIR) model nova II uses a tungsten lamp.
- (B) The slit. This refers to the narrow aperture in the plate located at the focus of the spectrophotometer lens. It is exactly the size of one photodiode in the array, thus ensuring that each wavelength band is projected only onto the corresponding photodiode.
- (C) The holographic grating. Physical separation (dispersion) of the received light signal and spectral imaging onto the diode array are both accomplished by the concave holographic grating. The angle in which the light is dispersed is proportional to the wavelength, such that each wavelength is differentiated and imaged onto a different point in the diode array.
- (D) The photodiode array. The linear array contains 1,024 light-sensitive elements, each measuring an assigned wavelength; all the measurements occur in parallel such that the raw data comprises a complete spectral acquisition.

In a spectrophotometer, higher light transmittance provides more robust data. This was the guiding principle for designing the nova II, which maximizes light throughput while eliminating traditional sources of noise (e.g. focusing mirrors).

Features

- » Produces full SW-NIR 400-1100nm absorbance spectrum in real time at ~1nm resolution
- » Continuous tungsten light source with extremely stable performance and long lifespan (avg. 2 years)
- » Special holographic grating physically separates signal into constituent wavelengths for dispersive analysis
- » Rugged, solid state build — no moving parts or superfluous reflective elements
- » High signal:noise ratio due to CMOS analog circuitry and high-grade solid state optics

nova II™ Spectrophotometer [SW-NIR model]

Applied Analytics DS-201B — Revised 21 April 2017

Technical Data	
Dispersive Method	Flat field grating (aberration corrected)
Focal Length	70 mm
Spectral Range	400 nm to 1100 nm
Aperture	f/2
Resolution	<1 nm with a slit of 25 µm width
Stray Light	<0.1% at 340 nm
Dispersion	30 nm/mm
Wavelength Accuracy	<0.5 nm (with mathematical fit)
Reproducibility	<0.1 nm
Dimensions	107.5 mm W x 101 mm H x 50 mm D
Driver Information	Details: High dynamic range with 16-bit pixel resolution; 16-bit processor at MCU 30 MHz; Integration time from 5 ms to 5 s; USB link operating at 3 Mbyte/sec; Windows™ OS driver Power supply: 12 V 1 A max. for CMOS CCD

Grating Specifications					
Spectral Range (nm)	Optimized at WL (nm)	# Grooves (l/mm)	Blazed	Avg. Dispersion (nm/mm)	Spectral Length (mm)
190 - 800	250	477	N	25	25.4
190 - 1050	250	365	N	30	28.6
190 - 1050	250 & 500	365	Double	30	28.6
330 - 750	350	582	N	16	25.4
350 - 800	500	582	Y	16	25.4
350 - 1050	500	365	N	30	25.4
650 - 1020	675	365	N	30	12.7



is a registered trademark of Applied Analytics, Inc. | www.aai.solutions

Headquarters

Applied Analytics, Inc.
Burlington, MA | sales@aai.solutions

Asia Pacific Sales

Applied Analytics Asia Pte. Ltd.
Singapore | sales@appliedanalytics.com.sg

India Sales

Applied Analytics (India) Pte. Ltd.
Mumbai, India | sales@appliedanalytics.in

North America Sales

Applied Analytics North America, Ltd.
Houston, TX | sales@appliedanalytics.us

Middle East Sales

Applied Analytics Oil & Gas Operations, L.L.C.
Abu Dhabi, UAE | sales@appliedanalytics.ae

Europe Sales

Applied Analytics Europe, AG
Genève, Switzerland | sales@appliedanalytics.eu

Brazil Sales

Applied Analytics do Brasil

Rio de Janeiro, Brazil | vendas@aadbl.com.br

© 2017 Applied Analytics, Inc. Products or references stated may be trademarks or registered trademarks of their respective owners. All rights reserved. We reserve the right to make technical changes or modify this document without prior notice. Regarding purchase orders, agreed-upon details shall prevail.