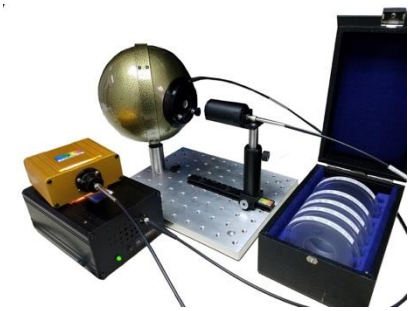
User Manual

Spectrometers, Software, and Accessories



A Universe of Spectroscopy Solutions

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StellarNet Welcomes You

StellarNet, Inc. is a global provider of low cost compact spectrometers, systems, and software for product analysis, research, education, and OEM. StellarNet instrumentation is research grade and rugged for any environment – lab, process, or field.

StellarNet has a long history in the spectroscopy business. Begun in the early 1990's, StellarNet revolutionized the miniature spectrometer market by creating the first holographic *concave grating spectrometer*. StellarNet also focused on instrument robustness and miniaturization, which led NASA to launch three Shock-Proof BLUE-Wave spectrometers into orbit to participate in a materials exploration study on-board the International Space Station.

Today StellarNet focuses on providing research quality spectrometer instrumentation and clever engineering at a low cost. Just about every university worldwide has a few StellarNet spectrometer systems either used for chemical research or teaching laboratories. Most systems are deemed "undergrad-proof" due to their rugged design. StellarNet is committed to keeping its spectrometers cost effective with the highest quality possible in compact crush proof metal enclosures (e.g. run over by SUV). This makes StellarNet spectrometers ideal for educational settings since they are robust enough for students to handle while also remaining cost effect for educators

StellarNet systems are also popular in many industries for these same reasons and are often put into production lines for process monitoring or used for field application. Within the past 10 years StellarNet has released a set of Analyzer systems designed for portable and handheld applications involving light or luminaire measurement, unknown substance identification, and even molecular and elemental analysis.

StellarNet is committed to designing high performance instruments excelling in durability, portability, size, and low price. StellarNet is proud of its R&D Engineers, Optical Engineers, and production staff and has teams of application sales scientists and worldwide distribution networks continuously focused on providing high quality spectroscopy solutions and excellent product support.

Popular Spectrometer Models and Features

StellarNet miniature spectrometers are portable and compact fiber optic instruments for UV, VIS, and NIR measurements in the 190-2300nm range. The StellarNet series of miniature spectrometers is a step up in low cost instrument design, offering CCD 2048 & PDA 512/1024 detectors. The units are engineered to have no moving parts, no detector sockets, ruggedized aluminum enclosure, and an integrated A/D digitizer for unmatched durability and quality that out performs any instrument in its class. Numerous models offer standard or high-resolution optics for selected spectral ranges, as shown in below.

BLUE-Wave Series (15 models**)** with *Holographic and Ruled* 2048 pixel CCD with ranges 200-1150nm. Many options and upgrades available with BLUE-Wave models.

BLACK-Comet Series (6 models) with Research Grade *Holographic, Concave Grating* 2048 pixel CCD with ranges (C) 190-850nm (CXR) 280-900nm, (C-SR) 200-1080nm, and (CXR-SR) 220-1100nm.

SILVER-Nova widest range spectrometer with *Extreme Grating* 2048 element CCD High Resolution model with range 200-1100nm and integrated TE cooler.

GREEN-Wave Series (8 models) with *Holographic and Ruled* 2048 pixel CCD with ranges 350-1100nm. No upgrades available with GREEN-Wave models.

High Resolution Series (HR) (>20 models) for high resolution applications spanning 200-2300nm with resolutions as good as 0.1nm.

HR-X eXtreme Hi-Res Series (>13 models) for highest resolution applications spanning 200-2300nm.

DWARF-Star and RED-Wave NIR InGaAs Series (cooled 512 and 1024 PDA) with range 900-1700nm and 900-2300nm, respectively.

Raman-HR-TEC Spectrometers **405**/**532**/**633**/**785**/**830** high resolution spectrometers configured for 532nm, 784nm, or 1064nm Raman lasers. Custom wavelengths are available.

Optical Advantages

Making a spectrometer is both an art and a science. StellarNet's team of optical engineers and manufacturing technicians have unmatched experience and technical capability. A spectrometer must be optimized for system sensitivity as well as resolution across its wavelength range. StellarNet follows strict quality control and internal standards to make sure all spectrometers maintain high performance and consistency. Likewise our technical sales teams and distributing partners work closely with our optical manufacturing teams to provide system configuration advice pre-sale.

Additionally, StellarNet's flagship spectrometers, the ***BLACK-Comet Series*** utilize concave grating optics which have unmatched performance of any compact spectrometer. Most spectrometers use

crossed Czerny Turner optics which requires several mirrors and a plane grating in order to properly image the spectrum on the detector. In the BLACK-Comet series the concave grating holographic grating is the mirror and requires only once optical bounce! With applications that require the use of UV light, especially UV-Vis absorbance, fluorescence, and solar radiometry, multiple mirrors can be detrimental to the performance of an instrument. The use of a holographic concave grating can eliminate the sensitivity issues and provide other benefits including: stray light reduction, aberration correction, thermal stability, and improved ruggedness.

Go online to https://www.stellarnet.us/performance-advantages-concave-grating-optics-compact-fiber-optic-spectrometers/ to read more about Performance Advantages of Concave Grating Optics in Compact Fiber Optic Spectrometers.

Detector Quality and Options

Building spectrometers for over 25 years has taught us a thing or two about choosing the right detector and the right detector vendors. StellarNet offers SONY, Toshiba, Hamamatsu, & Sensors Unlimited CCD and PDA detectors. Depending on the specific model spectrometer you purchase we will install and calibrate the appropriate sensor. For UV and many visible applications we have specialty detector enhancing coatings that are applied to increase sensitivity as well as smooth spectral response. Our coating system and quality inspections will guarantee you to collect every photon possible!

Amazing Software

Each StellarNet spectrometer comes with the powerful SpectraWiz® 32/64 bit spectrometer software FREE of charge. It has many built in applications for SpectroRadiometry, SpectroColorimetry, SpectroChemistry, Optical Spectral Analysis, Spectral Library Matching, Calibration, and much more.

StellarNet also offers application specific software packages for LED Test Reporting, Haze Measurement, Thin Film Analysis, Chemometrics, graphing & display. Also, we have software developed for tablet interfaces such as the StellarRAD program which has large buttons for fat fingers and a reduced interface specifically designed for field radiometric measurement.

If you want complete control of your spectrometer we offer a SDK with full programs and sources in many languages such as C, C#, VB, LabVIEW, Pascal, and VBA for MS Excel. Linux drivers with a webserver capability allow even more flexibility and control of your spectrometer.

Focus on Ruggedness

StellarNet spectrometers are like no other on the market and are designed to withstand rugged applications. Spectrometers are enclosed in a rugged extruded aluminum enclosure where their optics are bolt mounted to an internal optical housing. Gratings are mill-bonded in place with no moving parts for an ***eXtremely*** robust, shock-proof experience.

Cost Performance Advantage

StellarNet has always been the industry leader in providing the highest quality spectrometers at the lowest cost. We dare you to find a better deal. Contact us for more information.

Sales, Service, and Delivery

We pride ourselves in offering the wonderful customer service. Focusing on the customer and their applications has enabled us to forge a strong relationship with our base and gain many repeat customers. Likewise having a customer focus has allowed us to make continual improvements to our products along the way, making *StellarNet Spectrometers* a popular brand in both academia and industry alike.

StellarNet delivery is almost as good as Amazon. Most items are "in stock." If not, lead times on instrument build is typically less than 1.5 weeks after receipt of order.

US Sales & Support Team 2018 Holiday Party

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