High Performance TE-Cooled Backthinned Ethernet Communication Spectrometer

SM303N

Ethernet

Ethernet

SP SPECTRAL PRODUCTS

SM303N

High Performance TE-Cooled Backthinned Ethernet Communication Spectrometer

- Scientific-grade High Performance
- Extremely Low Dark Noise and Stray Light for Spectrophotometer/ Spectroradiometer
- High Signal to Noise Ratio (SNR)
- High Ultra-Violet Quantum Efficiency
- High Speed Data Acquisition
- **Optical Dark Option (Auto Shutter)**
- **Communication over long distance**
- **OnBoard averaging - average up to 65,535 spectra**
- **OnBoard Memory(Volatile) 50,000 spectra**
- **Interface - Ethernet, USB, RS232(Custom)**
- **Digital Gain/Offset 1024 step**

The Choice for Low Signal Level Applications

Spectral Products is offering the new SM303N TE cooled back-thinned 1024 pixel array CCD spectrometer. The SM303N provides high quantum efficiency in UV and high dynamic range. It is ideal for UV/VIS/NIR spectrometry that requires a very high signal to noise ratio and/or high dynamic range, like photoluminescence, Raman spectroscopy, measurement of photometric and radiometric values of light sources(LED, OLED, solar cell, etc) applications

 The back-thinned CCD has excellent sensitivity to UV and allows deep UV application.
Well-designed housing allows up to an 850nm measurement window from 200nm to 1050nm (smaller measurement window sizes increase spectral resolution and light sensitivity) with very low stray light. The TE cooled detector also helps measure very low light signals by reducing the noise level during long integration times. Thanks to the high dynamic range and low noise level, the SM303N is also ideal for radiometric measurement applications.

  The SM303N stores 50,000 spectra with onboard memory. Spectrometer data acquisition is possible without data loss due to readout time. This function is expected to be utilized in various applications when time synchronization is important.

Software support includes SDKs and DLLs for developing dedicated applications and Windows OS-based spectrum acquisition and analysis software (SMProMX).

Specifications :

| Physical Dimension	
Dimensions	173 mm X 120 mm X 79.8 mm (6.81" X 4.72" X 3.14")
Weight	2.0 kg (4.4lbs)
Fiber Optic Connector	SMA905 N.A.=0.22 Optical Fiber Input
Detector	
Detector	Hamamatsu S7031-1006S (TE Cooled Backthinned FFT CCD)
Cooling	One Stage TE(thermo-electric) Cooling(-10℃)
Spectral Response Range	200 - 1050 nm
Pixels	1044 X 64 pixels (Total)
	1024 X 58 pixels (Effective)
Pixel Size	24 μm X 24 μm
Active Area	24.576 mm X 1.392 mm
Full Well Capacity	320 ke- (vertical), 1000 ke- (horizontal)
Quantum Efficiency	>90 % @ 650nm
Optical Specification	
Wavelength Range	Full Range: ~200-1050 nm
	Other user customized range is possible
Optical Resolution	0.3-7 nm, dependent on the spectral range, slit width, and fiber core diameter
Dark	Auto Shutter
Dark Noise RMS	TYP > 2 @Min. Integration Time
Signal to Noise Ratio	1000 : 1
Stray Light	<0.05 % AVG
Filter	Second Order Blocking Filter Installed
OnBoard Memory (Volatile)	50,000 spectra
OnBoard averaging	Up to 65,535 spectra
Electrical Specification	
ADC resolution	16bit (0-65535)
Minimum Integration Time	7 msec
Data Transfer Speed	Up to 250 Spectra Per Second Via Ethernet and USB2.0
Computer Interface	Ethernet, USB, RS232(Custom)
Digital Gain / Offset	Gain : StepValue(0-1023) x 0.0487683 + 0.11 Offset : $2^{16} / 2^{10} = 2^6 = 64$ count
Trigger Mode	Free Run Mode Software Trigger Mode External trigger mode (20-pin connector) : TTL Edge trigger input
Power Input	DC 5V, 5A Max
Computer	
Operating System	Windows 7/10 (32/64 bit)
Software	SMProMX
Software Development Kit	Visual C++ DLL /LabVIEW VI SDK

Applications

Low Spectrum Signal Detection with High Accuracy

- High accurate optical monitoring and diagnostics of low spectrum intensity signals
- Acquisition of stable time trends of intensity signals with the help of internal TE(thermo-electric) cooling
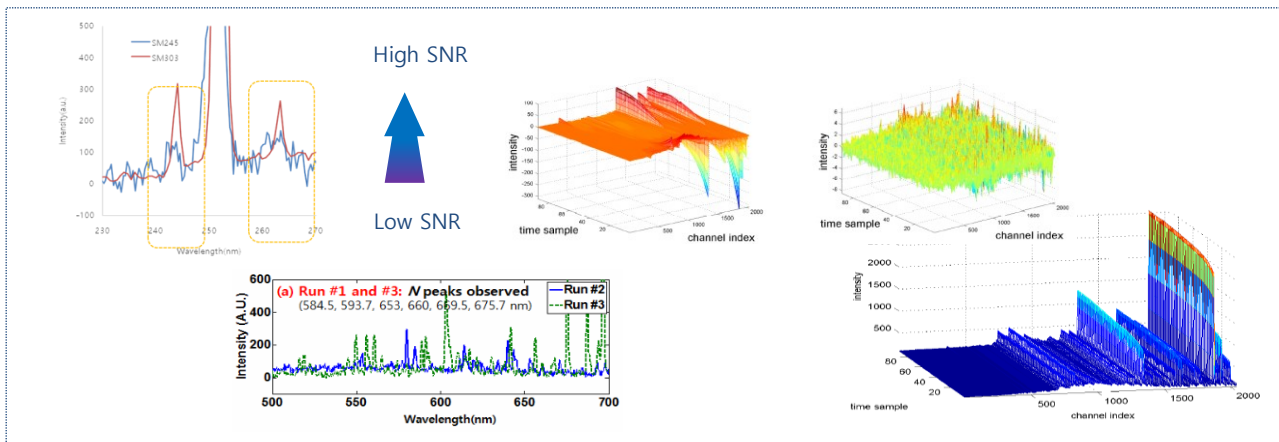

Measurement of Photometric and Radiometric Values

- Quantitative measurement and analysis of photometric and radiometric values for light sources
- Optical Sensor of Testers for real-time monitoring and quality control for LED/OLED fabrication
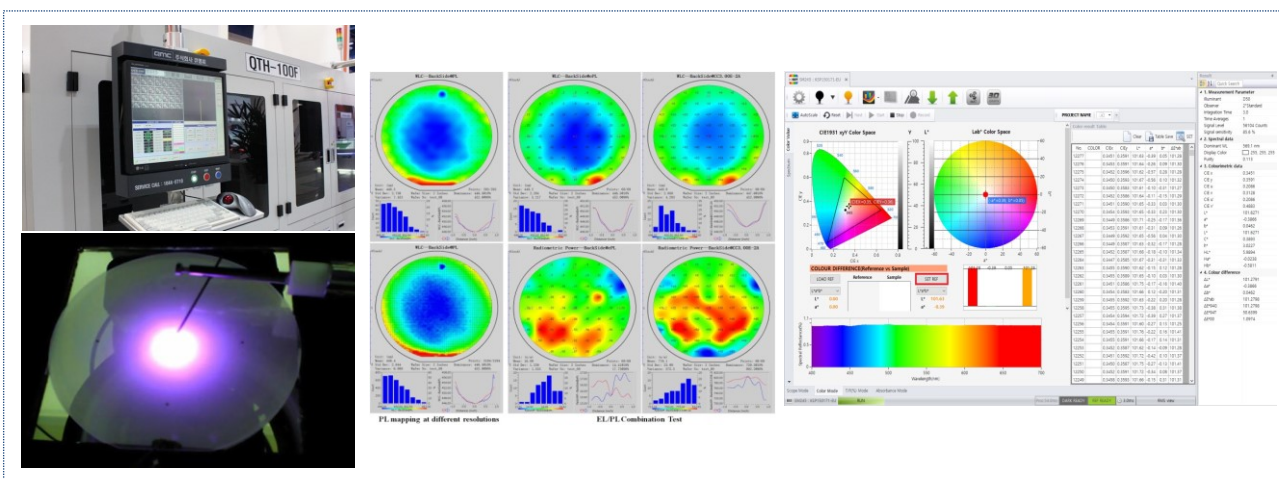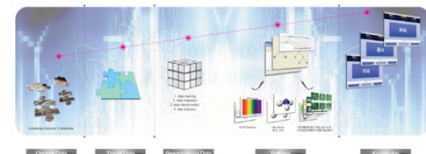
Raman Spectrum Analysis

- High sensitive and stable measurements of low-intensity Raman scattering signals
- Customization for field usage in various scientific and industrial application
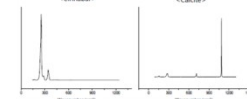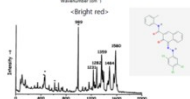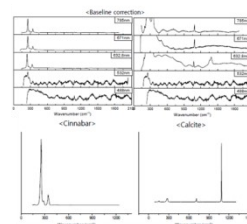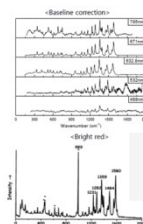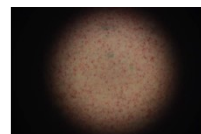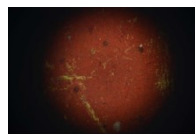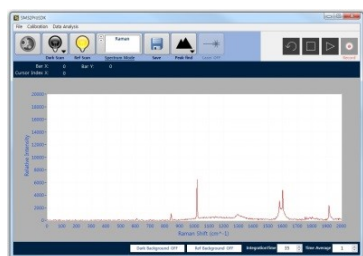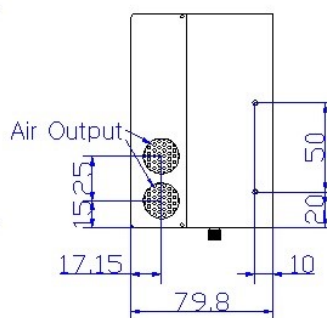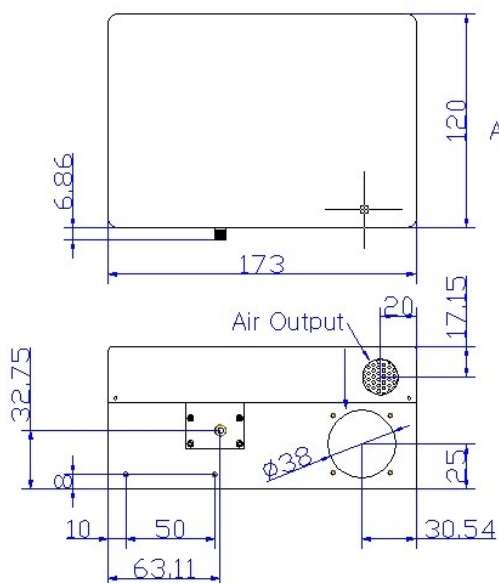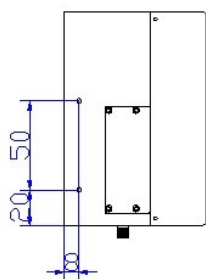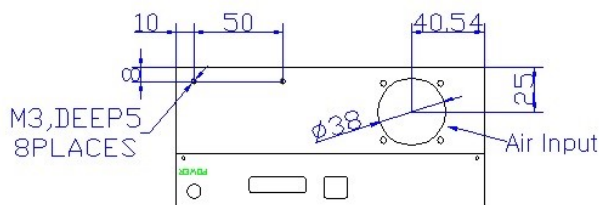

Real Time High Accuracy UV/VIS Spectrophotometer

- Real-time high accurate measurement of transmission and absorbance of solid, and liquid samples
- Convergence with gas detection sensors for environmental and agricultural monitoring purposes

Spectrometer **SM303N**

Case Dimension :

unit : mm