High Performance TE-Cooled Backthinned Spectrometer

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SM303

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Scientific-grade High Performance

Extremely Low Dark Noise and Stray Light for Spectrophotometer/ Spectro-radiometer

High Signal to Noise Ratio

High Ultra-Violet Quantum Efficiency

High Speed Data Acquisition

Optical Dark Option (Auto Shutter)

The Choice for Low Signal Level Applications

Spectral Products is offering the new SM303 TE cooled back thinned 1024-pixel array CCD spectrometer. The SM303 provides high quantum efficiency in UV and high dynamic range. It is ideal for UV/VIS/NIR spectrometry that requires 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 in 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 help to measure very low light signals by reducing the noise level in long integration times.

Thanks to high dynamic range and low noise level, the SM303 is also ideal for radiometric measurement applications.

Standard interface of the SM303 series is a USB 1.1/2.0 compatible interface with 16-bit AD conversion. Our USB board can support multichannel configuration up to 8. With this multichannel configuration, a high resolution for wide range or a dual spectrometer system (one for measurement and the other for reference) is possible.

Software support includes an SDK and DLLs for dedicated applications development and our SM32Pro Windows-based spectral acquisition and analysis software.

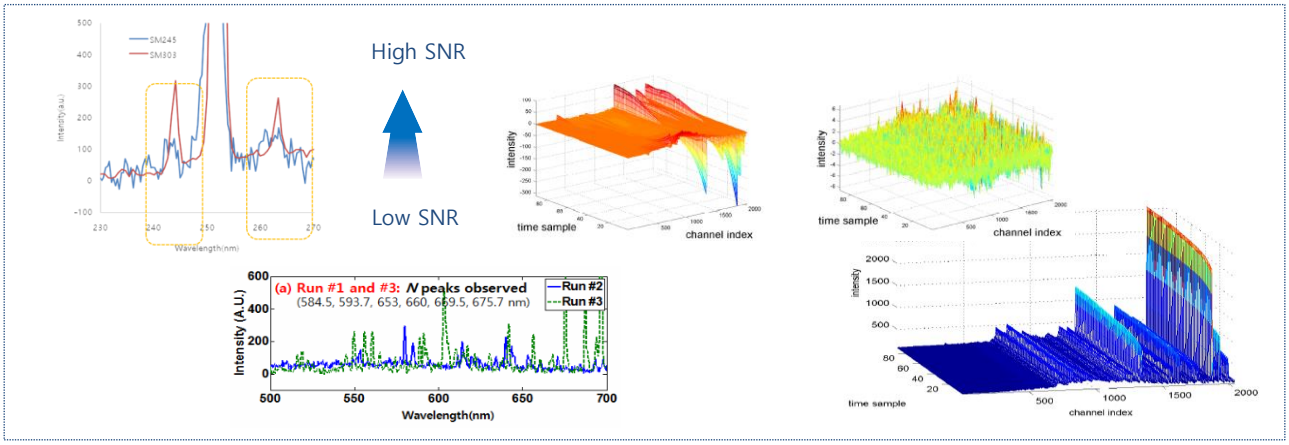
Specifications :

Physical Dimension		
Dimensions	6.81 X 4.72 X 3.14 inches (173 X 120 X 79.8 mm)	
Weight	4.41lbs (2.0kg)	
Fiber Optic Connector	SMA905 N.A.=0.22 Optical Fiber Input	
Detector		
Detector	Hamamatsu S7031-1006 (TE Cooled Backthinned FFT CCD)	Hamamatsu S10141-1107S (TE Cooled Backthinned FFT CCD)
Cooling	One Stage TE(thermo-electric) Cooling (-10℃)	One Stage TE(thermo-electric) Cooling (-10℃)
Spectral Response Range	~200 - 1100nm at max	~200 - 1100nm at max
Pixels	1044 X 64 pixels (Total)	2068 X 128 pixels (Total)
	1024 X 58 pixels (Effective)	2048 X 122 pixels (Effective)
Pixel Size	24 um X 24 um	12 um X 12 um
Active Area	24.576 mm X 1.392 mm	24.576 mm X 1.464 mm
Full Well Capacity	300 Ke- (Vertical) 600 Ke- (Horizontal)	60 Ke- (Vertical) 400 Ke- (Horizontal)
Quantum Efficiency	>90% @ 650nm	90% or higher at peak
Optical Specification		
Wavelength Range	Full Range : ~200-1100nm	
	UV/VIS Range : ~200-800nm	
	Visible Range: ~300-900nm	
	other user customized range	
Optical Resolution	~0.2-7nm, dependent on spectral range, slit width, fiber diameter, and so on	
Dark	Auto Shutter	
Dark Noise RMS	TYP >2 @Min. Integration Time	TYP >9 @Min. Integration Time
Signal to Noise Ratio	>1000 : 1 at single scan	>300 : 1 at single scan
Stray Light	<0.05% AVG	
Filter	Second Order Blocking Filter Installed	
Electrical Specification		
ADC resolution	16bit (0-65535)	
Minimum Integration Time	7 ms	8 ms
Computer Interface	USB 1.1/2.0 Compatible	
Trigger Mode	Free Run Mode	
	Software Trigger Mode	
	External trigger mode (9-pin connector) : TTL Edge trigger input/digital output for monitoring	
Power Input	100~240V(47~63Hz),1.9A	
Computer		
Operating System	Windows XP/Windows VISTA/Win 7/Win 8.1/Windows10 (32/64 bit)	
Software	SM32ProMX	
Software Development Kit	Visual C++ DLL /LabVIEW VI SDK	

Applications

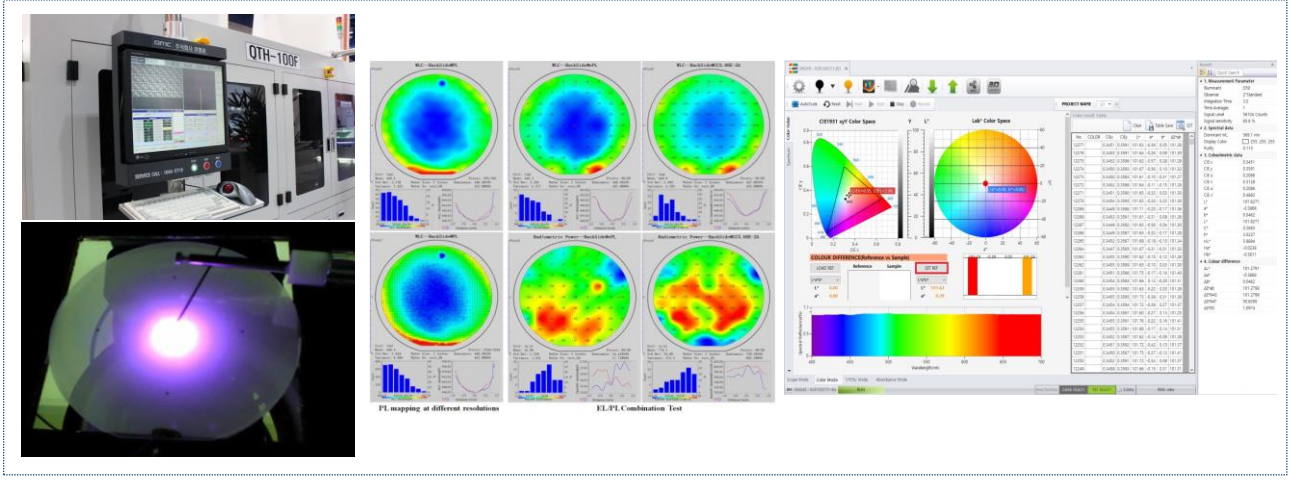
Low Spectrum Signal Detection with High Accuracy

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



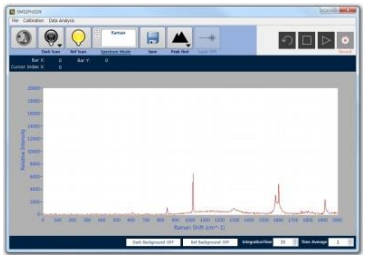
Measurement of Photometric and Radiometric Values

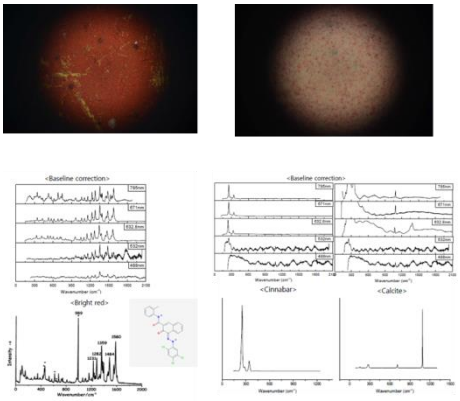
- Quantitative measurement and analysis of photometric and radiometric values for light sources
- Optical Sensor of testers for real time monitoring and quality control for LED/OLED fabrication



Raman Spectrum Analysis

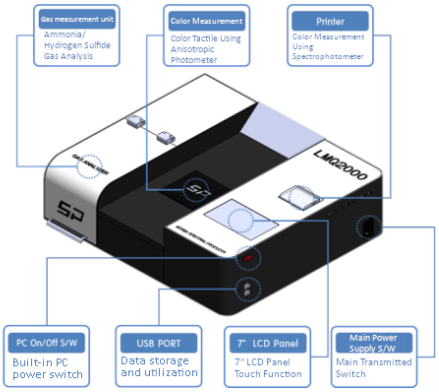
- Highly sensitive and stable measurements of low intensity Raman scattering signals
- Customization for field usage in various scientific and industrial application

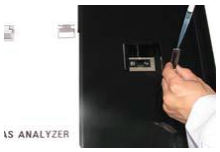


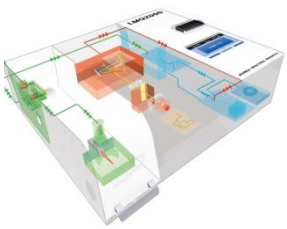


Real Time High Accuracy UV/VIS Spectrophotometer

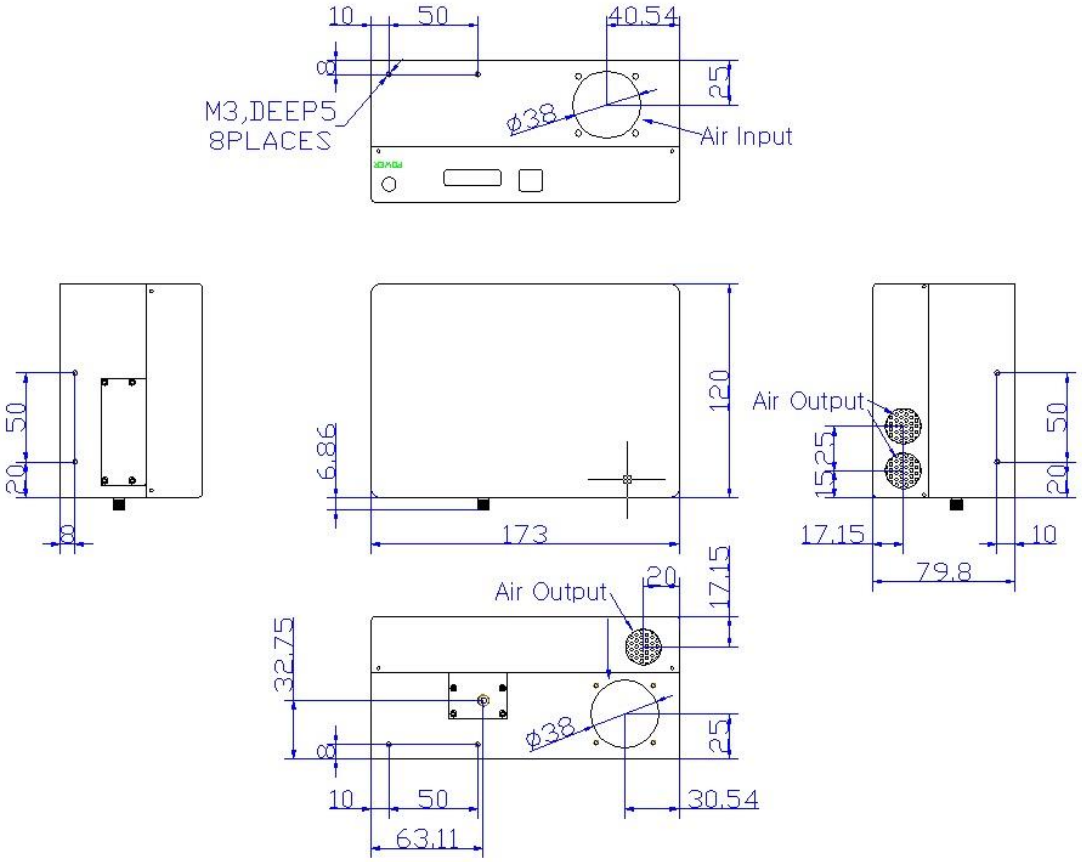
- Real time high accurate measurement of transmission and absorbance of solid/liquid samples
- Convergence with gas detection sensors for environmental and agricultural monitoring purposes







Case Dimension:



Units in mm

Ordering Information : Please indicate product number plus description when ordering

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