Compact Ethernet Communication Spectrometer

Ethernet Communication Spectrometer

SM245N

Ethernet

SM245N
High speed Ethernet Communication Spectrometer

- Wide Spectral Range (up to 200~1050nm)
- Enhanced Dark Current Noise
- High-Speed Data Acquisition
- Compact & Modular Design
- **OnBoard averaging - up to 65,535 spectra**
- **OnBoard Memory (Volatile) - 31,000 spectra**

Excellent choice for high speed data acquisition and various applications.

Spectral Products is offering the new **SM245N** high-speed 2048-pixel array CCD spectrometer. Thanks to the enhanced design on the electronic board of the **SM245N**, the dark current noise level as well as the data acquisition speed have been improved.

Based on a special optical bench design, it supports various applications where spectral or color measurements are required, including high-speed data acquisition. The **SM245N** can accept light directly through its built-in slit or via optical fiber. The durable mechanical housing that encloses the **SM245N** provides stable optical bench operation over a wide range of temperatures.

Our array detectors(in conjunction with our special UV coating process and customized order sorting filters) allow up to a 1050 nm measurement range from 200 nm to 1050 nm (a smaller measurement range mix increase spectral resolution and light sensitivity).

SM245N delivers acquisition communications via **USB** and **Ethernet**. Our USB board can support up to 8 multi-channel configurations, which allows a wide range of high-resolution or dual spectrometer systems (one for measurement and the other for reference). Applying a new UV-enhanced coating to the CCD increases UV sensitivity below 450 nm compared to conventional UV coatings widely used in CCD spectrometers. Thanks to this new UV coating, signal sensitivities below 450 nm can generally be improved up to ~2-3 times more.

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

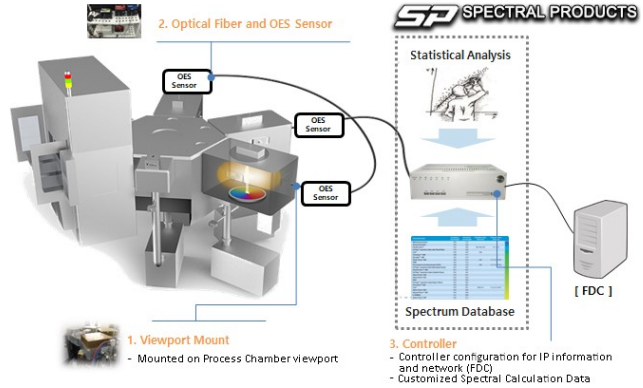
Specifications :

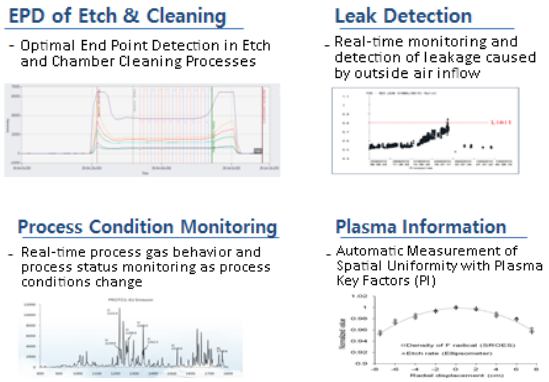
Physical Dimension	
Dimensions (Inches)	90 mm X 70 mm X 44 mm (3.54 x 2.76 x 1.73)
Weight	0.4 kg (0.9lbs)
Fiber Optic Connector	SMA905 N.A.=0.22 Optical Fiber Input
Detector	
Detector	Sony ILX511 (UV Enhanced Coated)
Cooling	None
Windows Material	Quartz or Glass
Spectral Response Range	200-1050 nm
Pixels	2048 (Effective)
Pixel Size	14 µm X 200 µm
Well Depth	62,500 e-
Optical Specification	
Wavelength Range	Full Range : ~200-1050 nm
	Other user customized range is possible
Optical Resolution	~0.3-10 nm, dependent on spectral range, slit width, and fiber core diameter
Dark Noise RMS	< 35 in 16bit @ 35ms integration time
Signal to Noise Ratio (SNR)	> 300 : 1
Stray Light	<0.1 % AVG.
OnBoard Memory (Volatile)	**31,000 spectra**
OnBoard averaging	**up to 65,535 spectra**
Filter	Second Order Blocking Filter Installed
Electronics Specification	
ADC Sampling Rate	500 kHz
ADC resolution	16bit (0-65535)
Minimum Integration Time	1 msec
Data Transfer Rate (Normal Mode) @ Min. Integration Time	**Up to 250 spectra per second via Ethernet and USB**
Computer Interface	**Ethernet, USB, RS232(Custom)**
Trigger Mode	Free Run Mode
	Software Trigger Mode
	External trigger mode (20-pin connector): TTL Edge trigger input
Software	
Operating System	Windows 7/8.1/10 (32/64 bit)
Software	SMProMX
Software Development Kit	Visual C++, LabVIEW, etc

Applications

Multichannel Optical Monitoring and Diagnostics of Plasma

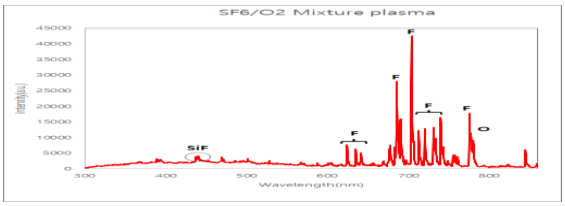
- Real-time optical monitoring and diagnostics of the plasma process in semiconductor fabrications
- Multichannel based OES (optical emission spectroscopy) sensors in plasma process diagnostics

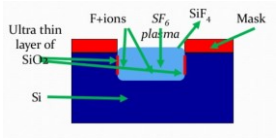


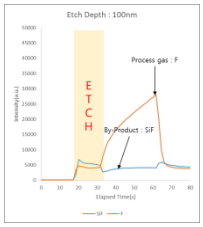


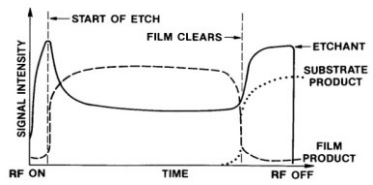
End Point Detection of Etching Process & Chamber Cleaning

- Endpoint detection (EPD) of plasma etching and cleaning process in semiconductor fabrications
- Saving production cost and time loss by optimization of EPD with statistical algorithms









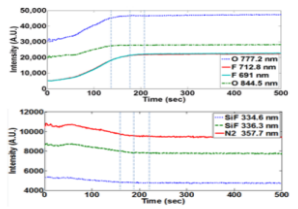


Fig. 3. Time trace data of (a) process gas species and (b) by-product species.

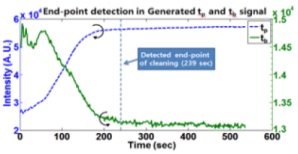
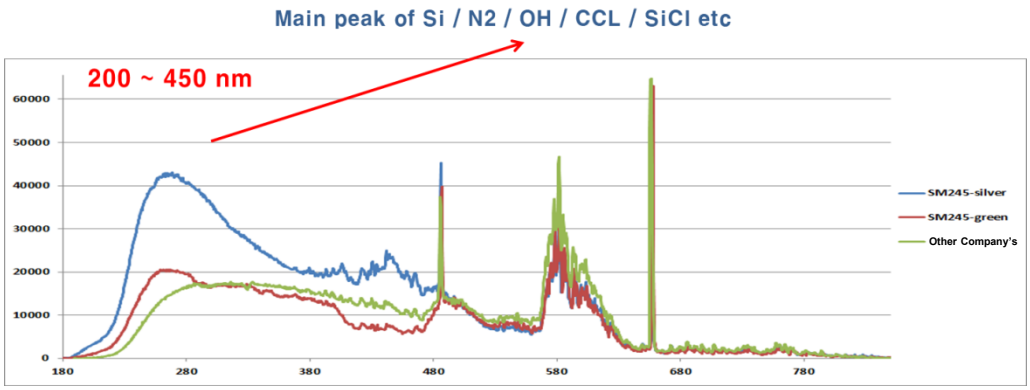


Fig. 4. Generated end-point detection signals; tp (process gas species) and tb (by-product).

Sang Jeen Hong et. al. (2013)

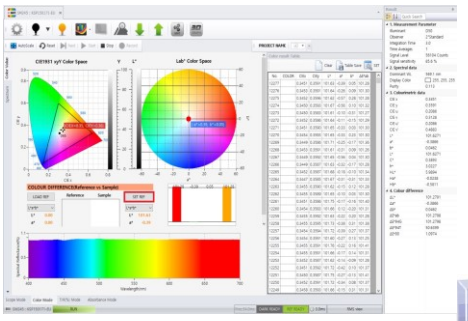
Highly Sensitive Deep UV Enhanced Coated CCD

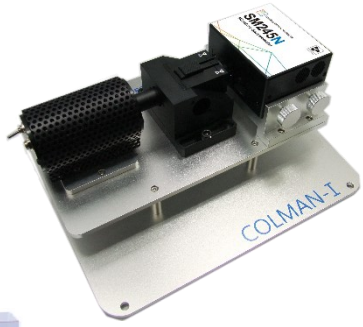
- High sensitive deep UV responsivity (200-450 nm) 2-3 times more than general UV enhanced spectrometers
- High signal-to-noise ratio and more accurate UV spectrum measurement results

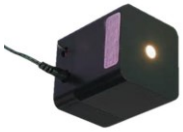


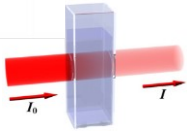
Compact Color and Absorbance Measurement System (COLMAN)

- Color measurement with photometric and radiometric values in reflectance and transmittance mode
- Compact real-time spectrophotometer for analysis of chemical and optical properties of samples





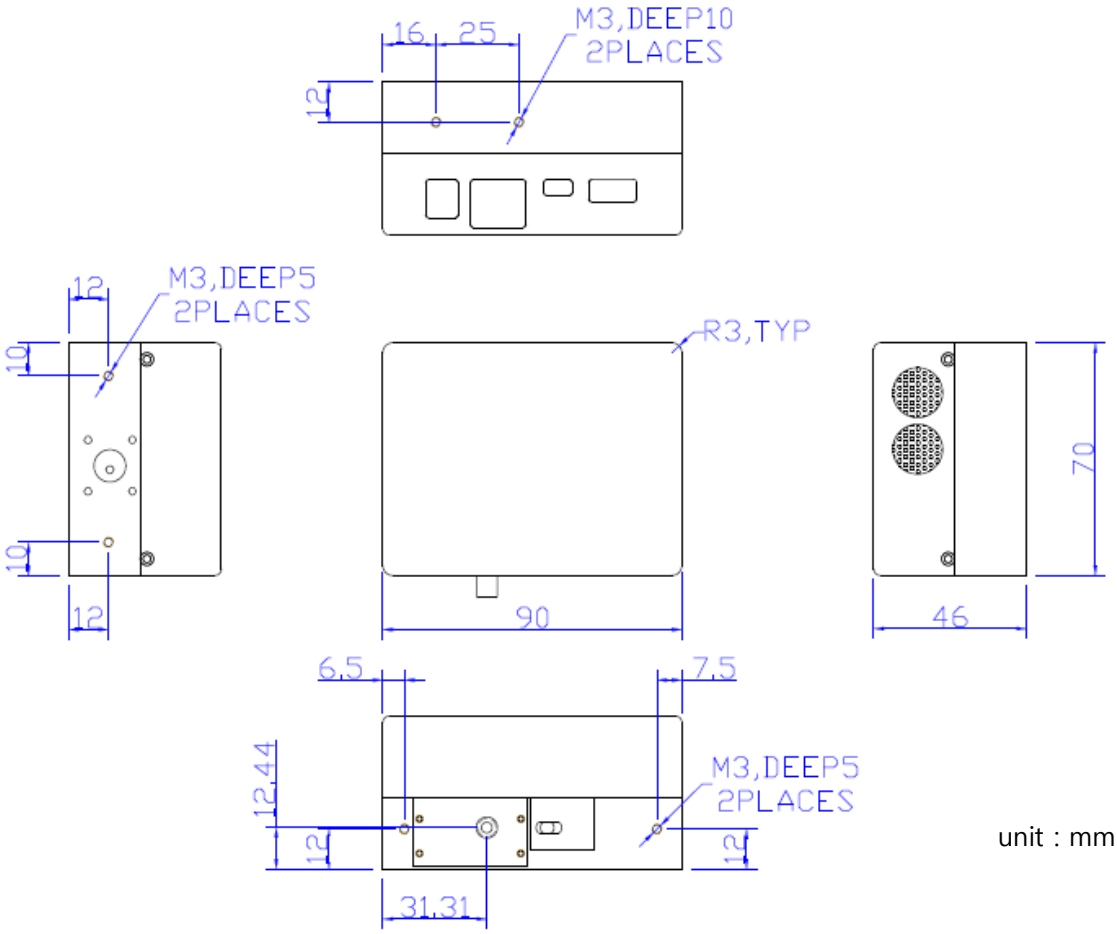




Transmission (T) = I / I_0

Absorbance (A) = - $\log_{10}$(T)

Case Dimension :



unit : mm

Ordering Information : Please indicate product number plus description when ordering

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