

# Low Noise Non TE-Cooled Back-thinned CCD Ethernet Communication Spectrometer

Non-TE-Cooled Backthinned Spectrometer

## SM642N



**SP SPECTRAL PRODUCTS**

## SM642N

### Low Noise Non TE-Cooled Back-thinned CCD Ethernet Spectrometer

- Low Cost and High Performance Back-thinned CCD Spectrometer
- Low Dark Current 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) 30,000 spectra
- Interface - Ethernet, USB, RS232(Custom)
- Digital Gain/Offset 1024 step



### The Choice for Low Signal Level Applications

Spectral Products is offering the new SM642N Non-TE cooled back thinned 2048-pixel array CCD spectrometer.

The SM642N provides high quantum efficiency in UV and high dynamic range. The detector used in the SM642N has 2048 pixels and helps to get better resolution. It is ideal for UV/VIS/NIR spectrometry that requires high signal to noise ratio and/or high dynamic range.

SM642N delivers acquisition communications via USB and Ethernet. Our spectrometer 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. Especially, ethernet communication provides the ability to read the spectrum over long distances.

The SM642N stores 30,000 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 :

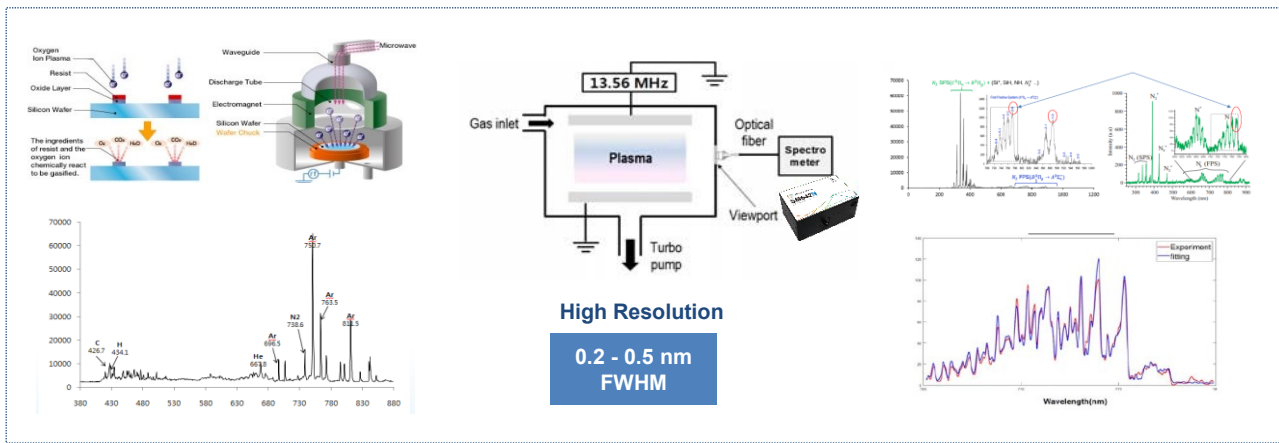
Physical Dimension	
Dimensions	5.98" X 3.94" X 2.61" (152 mm X 100 mm X 66.4 mm)
Weight	2.64lbs (1.2 kg)
Fiber Optic Connector	SMA905 (default) or FC, N.A.=0.22 Optical Fiber Input
Detector	
Detector	Hamamatsu S10420-1106S (Non-TE-Cooled Backthinned FFT CCD)
Cooling	None
Windows Material	Quartz
Spectral Response Range	~200-1100 nm at max
Pixels	2068 X 70 pixels (Total) 2048 X 64 pixels (Effective)
Pixel Size	14 $\mu$ m X 14 $\mu$ m
Active Area	28.672 mm X 0.896 mm
Full Well Capacity	200 Ke-
Quantum Efficiency	>75 % @ 600 nm
Optical Specification	
Wavelength Range	Full Range : 200-1100 nm Another user customized range is possible
Optical Resolution	~0.25-7nm , dependent on spectral range, slit width, and fiber core diameter
Dark	Auto Shutter (option)
Dark Noise RMS	TYP < 7 counts @Min. Integration Time
Signal to Noise Ratio (SNR)	450 : 1
Stray Light	<0.05 % AVG
Filter	Second Order Blocking Filter Installed
OnBoard Memory (Volatile)	30,000 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	1024 step
Trigger Mode	Free Run Mode
	Software Trigger Mode
	External trigger mode (20-pin connector) : TTL Edge trigger input
Power Input	100-240V(50/60Hz), 1.5A Max
Software	
Operating System	Windows 7/8.1/10 (32/64 bit)
Software	SM32Pro & SMProMX
Software Development Kit	Visual C++ DLL /LabVIEW VI SDK



# Applications

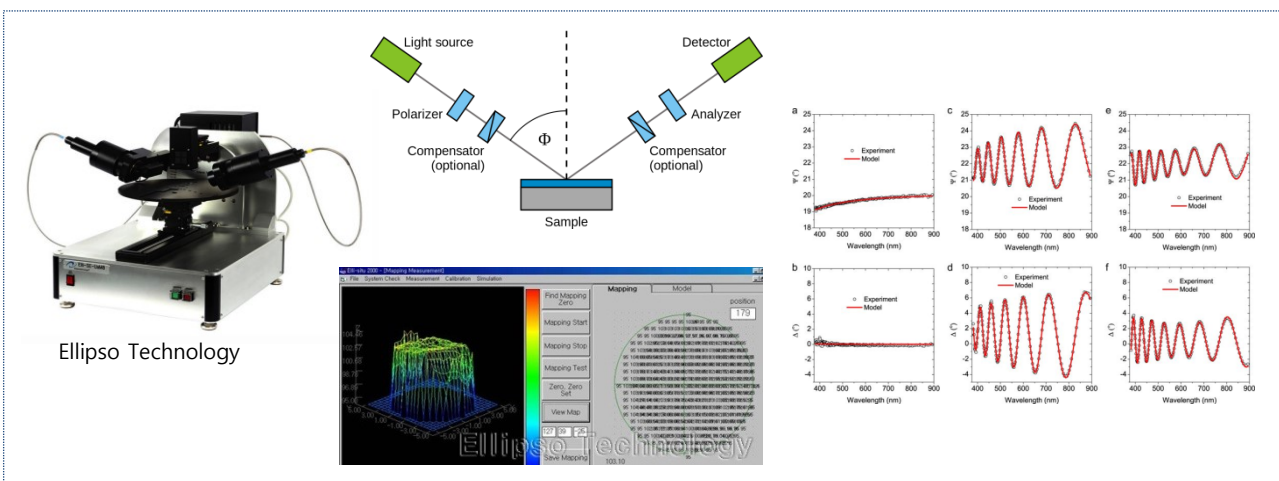
## Process Condition Monitoring in Semiconductor Fabrications

- High resolution optical monitoring and diagnostics of plasma process
- Real time measurement of plasma information as like electron and gas temperatures



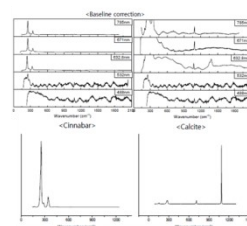
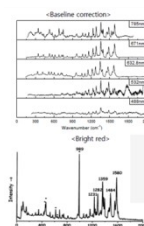
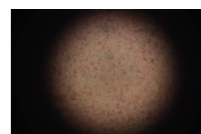
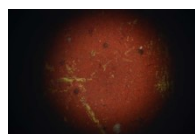
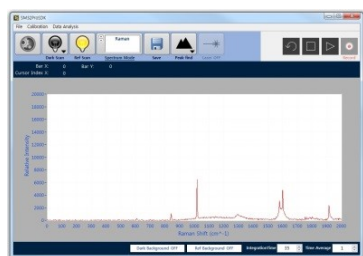
## Film Measurement by SE & SR

- Optical sensor for measurement of thickness and optical properties of films
- Main sensor for spectroscopic ellipsometer (SE) and spectroscopic reflectometer (SR)



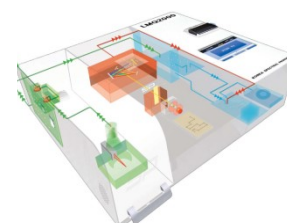
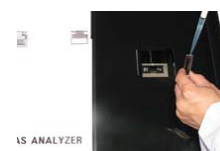
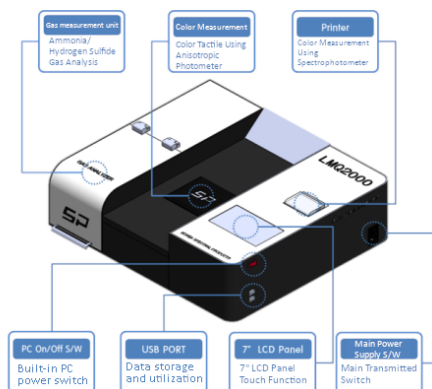
## Raman Spectrum Analysis

- High optical resolution spectrometer for Raman spectrum measurements (down to 0.2 nm)
- Customization for field usage in various scientific and industrial application

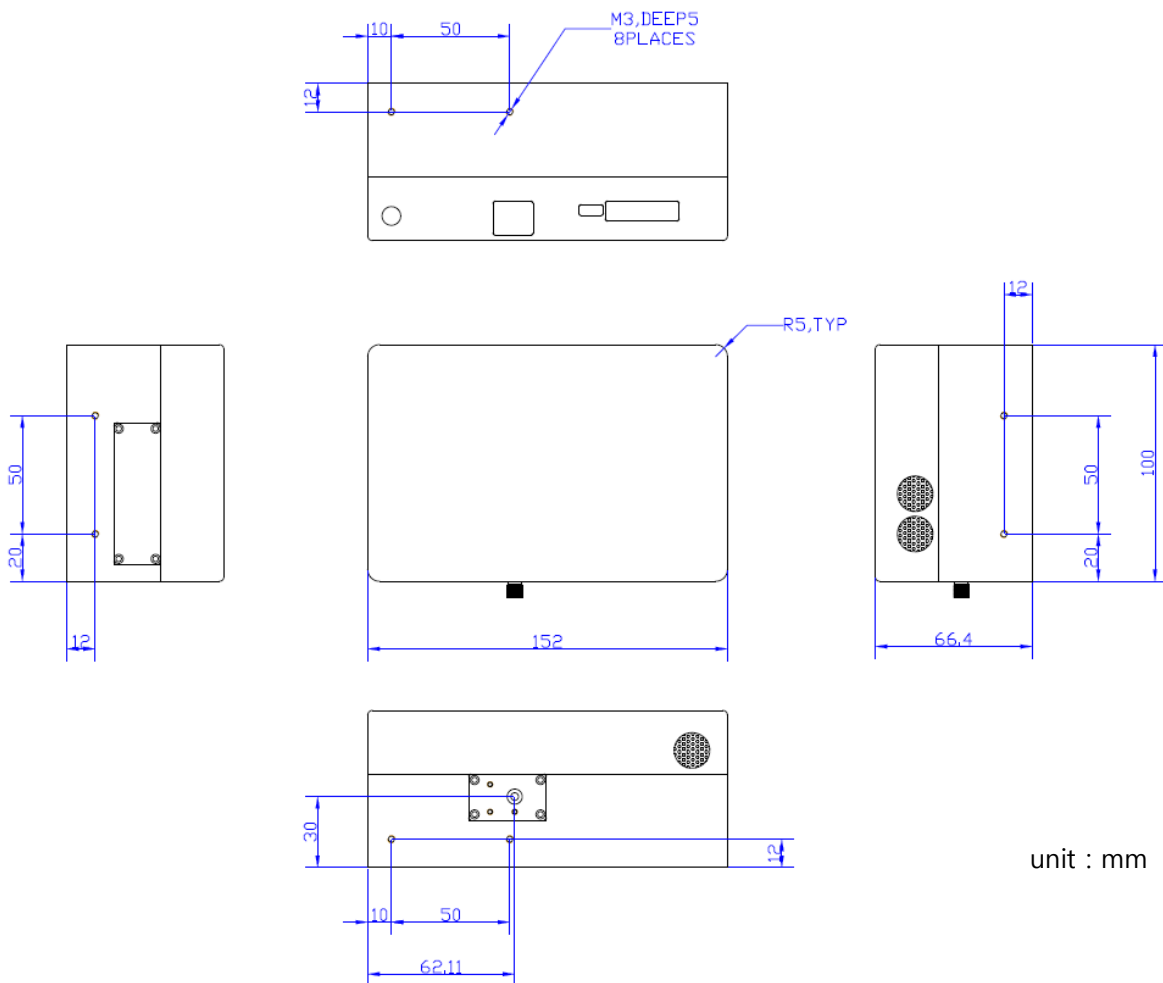


## Real Time UV/VIS Spectrophotometer

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



## Case Dimension :



**Ordering Information :** Please indicate product number plus description when ordering  
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