

# SmartEngine™ Series

Raman System, Biomedical Detection,  
& Environmental Monitoring Analysis



## SmartEngine Series Lineup

Model Name	Detector Type	Characteristic
SE-3	CMOS with Fast Exposure	Shortest Exposure Time (0.2ms)
SE-4	Front-illuminated CCD	Excellent Cost Performance Value
SE-5	CCD with NIR-enhancement	NIR Range with High SNR
SE-6	CCD with UV-enhancement	UV Range & Full Wavelength Range with High SNR
SE-7	High Pixel-Resolution CCD	High Pixel-Resolution
SE-8	CMOS with Fast Exposure	Short Exposure Time (0.4ms) & High Pixel-Resolution
SE-9	CCD with Fast Exposure	Full Wavelength Range with Fast Exposure Time (1.5ms)
SE-10	CCD with High Sensitivity	Excellent Sensitivity

- Excellent Thermal, Humidity, Vibration and Shock Stability
- Support Continuous High-Speed & Multiple Exposures Mode
- Proprietary Stray Light Calibration Algorithm (Stray light can be eliminated to 0.01%)
- On-board CPU Supports Optical and Color Parameters Calculation
- More than 8 Different Sensors and 30 Different Gratings for Your Options
- An Extremely Low (near-zero) Coefficient of Thermal Expansion of Gratings, Dual Blazed Wavelength Gratings for Selection
- Option for Wireless Spectrometer with Built-in Wifi Module
- Full Wavelength Range Model: 180~1100 nm
- High SNR Model: SNR=500
- Short Exposure Time Model: 0.2ms
- High Resolution Model: 0.2nm

## Recommended Models

Application	Model Name	Wavelength Range	Resolution	SNR	Exposure Time	Dark Noise	Dynamic Range	Thermal Stability
LED Test	SE-3	350-1020 nm	1.9 nm	330	0.2 ms	19,22	3450/3000	0.027 nm/°C
Water Quality Analysis	SE-3	180-850 nm	1.9 nm	330	0.2 ms	19,22	3450/3000	0.027 nm/°C
Blood Analysis	SE-3	300-850 nm	6 nm	330	0.2 ms	19,22	3450/3000	0.027 nm/°C
Display Detection	SE-3	350-1020 nm	1.9 nm	330	0.2 ms	19,22	3450/3000	0.027 nm/°C
Raman Detection	SE-5	790-1090 nm	0.7 nm	500	5 ms	15	4400	0.015 nm/°C
Air Analysis	SE-3	200-400 nm	0.5 nm	330	0.2 ms	19,22	3450/3000	0.015 nm/°C
Educational Requirement	SE-4	350-1020 nm	1.2 nm	200	1 ms	30	2200	0.027 nm/°C
Film Thickness Measurement	SE-6	180-1100 nm	2.3 nm	500	5 ms	14	4700	0.039 nm/°C
Solar Panel Measurement	SE-6	180-1100 nm	2.3 nm	500	5 ms	14	4700	0.039 nm/°C
Fluorescence Detection	SE-3	340-850 nm	6 nm	330	0.2 ms	19,22	3450/3000	0.027 nm/°C
Gem Stone Examination	SE-3	400-500 nm	0.25 nm	330	0.2 ms	19,22	3450/3000	0.015 nm/°C
Food Analysis	SE-3	180-1100 nm	2.3 nm	330	0.2 ms	19,22	3450/3000	0.039 nm/°C
OCT Application	SE-3	790-1010 nm	0.5 nm	330	0.2 ms	19,22	3450/3000	0.015 nm/°C

## Specially Selected Models

Types	Model Name	Wavelength Range	Resolution	SNR	Exposure Time	Exposure Time	Dynamic Range	Thermal Stability
Best-Sold Model	SE-3	350-1020 nm	1.9 nm	330	0.2 ms	19, 22	3450/3000	0.027 nm/°C
Best CP Value Model	SE-4	350-1020 nm	1.2 nm	200	1 ms	30	2200	0.027 nm/°C
Full Wavelength Range Model	SE-2	180-1100 nm	2.3 nm	250	1 ms	40	1630	0.039 nm/°C
	SE-6	180-1100 nm	2.3 nm	500	5 ms	14	2200	0.039 nm/°C
High SNR Model	SE-5	180-1100 nm	2.3 nm	500	5 ms	15	4400	0.039 nm/°C
	SE-6	180-1100 nm	2.3 nm	500	5 ms	14	4700	0.039 nm/°C
Short Exposure Time Model	SE-3	350-1020 nm	1.9 nm	330	0.2 ms	19, 22	3450/3000	0.027 nm/°C
High Resolution Model	SE-2	400-500 nm	0.25 nm	250	1 ms	30	2200	0.007 nm/°C

## Make A Spectrometer for Your Own Special Need

Groove Density (g/mm)	Best Efficiency Wavelength (nm)	Bandwidth	Selectable Band	Resolutions (nm) Under Different Slit Sizes					
				10um	25um	50um	100um	200um	300um
2400	240/VIS	100nm UV 150nm	180-520 nm	0.2	0.25	0.4	0.7	1.2	1.8
1800	180/250/500	150nm UV 210nm	180-700 nm	0.3	0.4	0.6	1.0	1.8	2.6
1600	200	160nm UV 240nm	180-780 nm	0.3	0.4	0.7	1.2	2.0	2.9
1200	200/300/500/600/750/850/900	220nm UV 320nm	180-1010 nm	0.4	0.5	0.8	1.3	2.3	3.3
1000	250/900	300nm UV 400nm	180-1100 nm	0.5	0.7	1.1	1.9	4.0	6.5
900	500	360nm UV 450nm	180-1100 nm	0.6	0.8	1.3	2.3	4.6	7.1
830	800	410nm	180-1100 nm	0.7	1.0	1.6	2.7	5.4	8.3
600	300/400/500/800/1000	670nm	180-1100 nm	0.9	1.2	1.9	3.2	6.0	8.7
500	300/565/770	825nm	180-1100 nm	1.0	1.3	2.0	3.5	6.5	9.5
300	230/300 /500/422	920nm	180-1100 nm	1.5	2.0	3.0	5.3	10.5	-