SPECTRAL ENGINES
MEMBER OF THE NYNOMIC GROUP

SENSOR SPECIFICATION

NIRONE® SENSOR S2.0

We designed the world's most smartest and smallest spectral sensor to make material sensing easier. The NIRONE Sensor S2.0 offers excellent performance fully comparable with the best laboratory instruments in a small package and at only a fraction of the cost.

The NIRONE Sensor S2.0 is easy to integrate and it provides new opportunities for increasing meaningful intelligence in your business.

HIGH-PERFORMANCE AND COMPACT SPECTRAL SENSOR

Key Benefits

- High-tech spectrometer features integrated into a small package
- Modular design makes it easy to integrate in all designs
- True near-infrared means better sensitivity and specificity
- Significantly more cost-effective than its larger and more expensive alternatives
- The durability and robustness makes it ideal to be used in challenging environments

Example Applications

NIRONE Sensor S can create new applications for material analysis enabled by NIR spectroscopy.

- Pharmaceuticals composition analysis (Pharma Security)
- Anti-counterfeiting
- Textile and plastics identification
- Forensics applications like narcotics detection
- Moisture analysis
- Agriculture applications like soil, grain, feed and dairy analysis

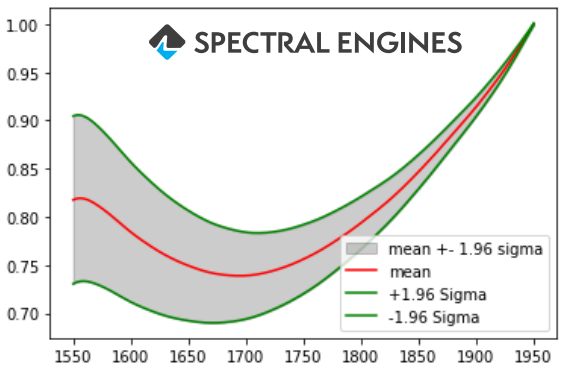
Advanced Technology

The NIRONE Sensor S2.0 uses the patented Micro-Electro-Mechanical Systems (MEMS) Fabry-Perot Interferometer, which is a fully programmable optical filter. The sensor can be driven across the whole wavelength range or it can operate only at selected wavelengths. The sensor's intelligent algorithms remove the need for additional temperature stabilization.

The NIRONE Sensor S2.0 has a single point detector instead of a linear array, which makes it an affordable solution for all applications. The use of a single detector and Fabry-Perot Interferometer technology allow the use of a larger detector area than in linear arrays where the light is restricted by a slit. This makes the sensor's S/N ratio significantly better. The InGaAs area can be reached cost-efficiently by using a single detector. This provides better sensitivity and specificity in material sensing applications.

Normalized White Reflectance Curve

The maximum scaled and normalized reflectance curve (using a white reference) over the sensor's wavelength range can be observed in the following diagram. The mean curve (in red), the +1.96 Sigma maximum curve (top green curve) and the -1.96 Sigma minimum curve (bottom green curve) are shown in the diagram below.



Technical Specifications

SPECIFICATIONS	VALUE
Product	Sensor S2.0
Wavelength range	1.55 – 1.95 µm *
Wavelength resolution (typical FWHM)	15 – 21 nm *
Detector type	Single element extended InGaAs
Illumination source	2 tungsten vacuum lamps
Bulb life	> 40,000 hrs ***
Wavelength switching time	1 ms
SNR (typical)	7'500 **
Temperature response	< 0.1 nm/°C
Temperature range	+10 °C to +50 °C (non condensing)
Power consumption	< 1.1 W (peak) < 0.3 W (nominal)
Optical interface	Micro reflection optics (standard) SMA-connector (optional)
Electrical interface	Supply voltage 5V UART (3.3V) I2C (3.3V) Digital trig in/out (3.3V) USB 2.0 (optional)
Mechanical interface	Mountable on PCB. Two M2 screws and PCB connector. PCB area of 25 x 25 mm2 needed
Size (W x L x H)	25 x 25 x 17.5 mm
Weight	15 g

* With an SMA-adapter and a fiber with 400 um core and 0.22 NA

** With external illumination and signal level of 75% of the maximum range

*** Specified by lamp manufacturer for ideal laboratory conditions. Lifetime may shorten as a result of shock, vibration, and extreme temperatures. Lifetime can be extended by using lower than 100% drive level.

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Watch the NIRONE S video:

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