

Compact spectrometer with PbS - and PbSe - SENSOR TECHNIQUE



The high performance spectrograph technique for NIR and MIR applications

Measuring range 1-3, 1-5 μm

Reflection configuration

Wide spectral range

All-round operation

Continuous justified construction



Applications:

- Laser measurements
- Chemical applications
- Food applications
- Sorting processes
- Recycling
- Geological applications
- Remote sensing

Multiplexed 256 element linear arrays of Cal Sensors, which are specifically designed for low-cost spectroscopy, are used as sensors (NIR-measuring range from 1 up to 3 μm with PbS Arrays and additional MIR-measuring range from 1 up to 5 μm with PbSe Arrays). Multiplexed arrays have proven to be reliable and are cost effective alternatives to InGaAs material. Both types comprise a thermoelectric cooler with integrated thermistor. An alternative dielectric edge filter on the sensor disables the second order of the measuring light.

The sensor electronic - positioned directly around the sensor – ensures an ideal wiring to all critical analogue and digital units. A programmable digital electronics creates all important managing signals for the sensor. By a micro connector all signal- and supply-lines are routed to the micro controller electronics with USB-interface.

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Technical data:

Spectrograph	Czerny-Turner, f=50 mm
Sensor	Up to 2 MHz multiplexed PbS- or PbSe Array
Spectral area	1 up to 3 μm (PbS); 1 up to 5 μm (PbSe)
Number of pixel	256 detector elements
Pixel Size	pixel width 40 μm , height 450 μm and pitch 50 μm
Integration Range	10% of array signal mean
Linearity	90%
Pixel Operability	98% minimum
Detector Rise Time	<1ms
Coupling	SMA – Fibre input with 50 μm slit (30,80,100 and 200 available)
Signal Integration	Variable integration with adjustable well size (before or during readout)
Edge filter	Suppression of the second diffraction order on the sensor
Signal dynamic	16 Bit
Signal input	Digital signals: Clock, Start and ADC-CON
Clock input	Digital signals for pixel-scan (positive logic pulse)
Sensor cooling	-4°C (TEC stabilized)
Operating temperature	+5 up to +30°C
Housing	L 220 mm, H 80 mm, T 80 mm

Mechanical features:

The aluminium produced spectrograph body with its compactly combined components guarantees a notably high long-run stability and a reliable reproducibility of the measured data.