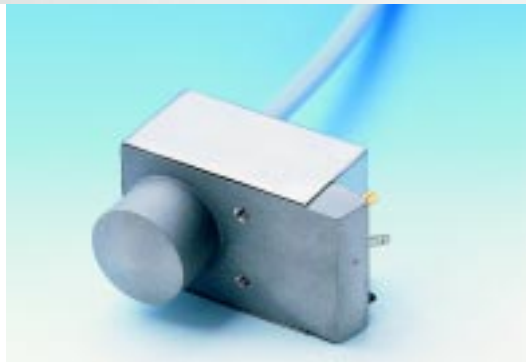
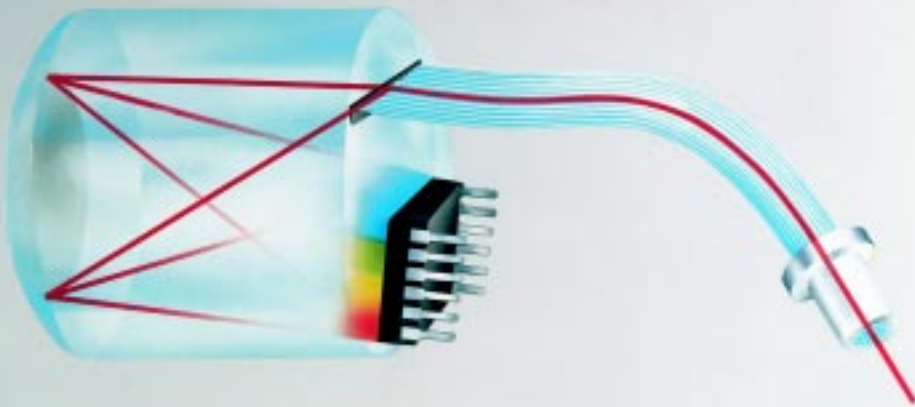


MMS 1 Monolithic Miniature-Spectrometer

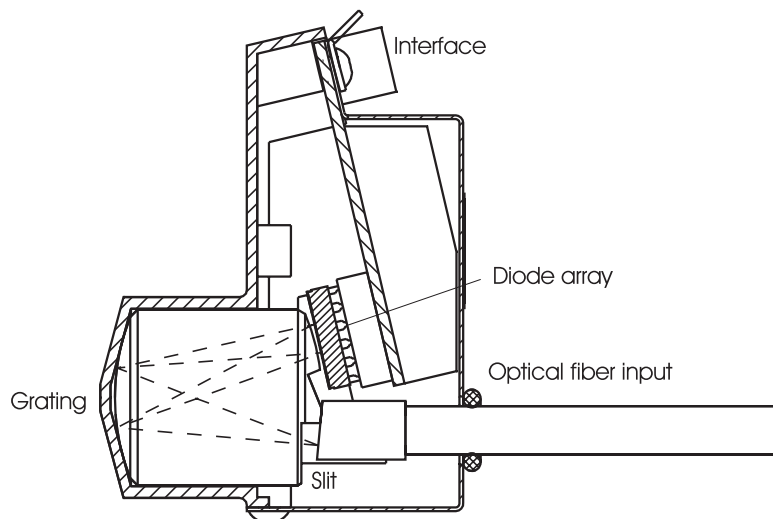


Product Information



Construction

The module consists of a spectrometer body made of UBK 7 glass with an aberration corrected grating, a fiber cross section converter as optical entrance and a diode array. Cross section converter and diode array are fixed to the glass body.



Scale 1:1

Benefits

- Use for diverse measuring tasks
- Compact, permanently aligned
- Robust and thermally stable
- Small
- High sensitivity

Specifications

Optical Entrance:	Fiber bundle consisting of approx. 30 quartz glass fibers with 70 μm core diameter each, designed as a cross section converter
input round:	diameter: 0.5 mm NA = 0.22 mounted in SMA-coupling
output linear:	70 μm x 2500 μm (optical entrance)
Grating:	Flat-field, 366 l/mm (center)
Spectral range:	310 nm ... 1100 nm specifications for the range 360 nm... 900 nm 400 nm ... 1100 (NIR enhanced)
Wavelength accuracy absolute:	0.3 nm
Temperature - induced drift:	< 0.02 nm/K
Spectral distance of pixel:	$D_{\perp\text{pixel}} \gg 3.3 \text{ nm}$
Resolution (Rayleigh-criterion):	$D_{\perp\text{Rayleigh}} \gg 10 \text{ nm}$
Sensitivity:	$\gg 10^{13}$ Counts/Ws (with 14-Bit-conversion)
Straylight:	< 0.8% with Halogen lamp Signal at 450 nm with filter GG 495
Dimensions:	
total (with case):	70 x 60 x 40 mm ³
cross section converter: (external length)	240 mm standard, up to 1 m available.
Options:	MMS 1 UV/VIS enhanced MMS 1 NIR enhanced

Diode Array

Producer:	Hamamatsu
Type:	S 3904 – 256Q in a special housing (S 4874 – 256 Q for MMS 1 NIR enhanced)
Number of pixels:	256
Dimensions of pixels:	25 x 2500 μm^2
Maximum clock – rate:	2 MHz

Blocking filter for the second order is directly coated on the diode array.

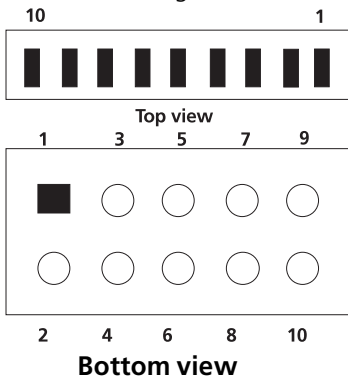
Preamplifiere

Output	3 V(full modulation)
Sensitivity:	40 $\mu\text{A/V}$
Rise time:	35 V/ms
Frequency range:	< 400 KHz
Power consumption:	500 mW

Interface

Video-Output:	SMB – Socket
Diode array drive:	Micromodul – connection MICS -D 10

Connector assignment:



Pin 1, 3, 5, 7, 9: 0 V – digital ground
Pin 2: start
Pin 4: Phi 2 – clock -rate
Pin 6: EOS – End of Scan
Pin 8: -5 V
Pin 10: +5 V

System data

Realised with:	14-Bit-AD-conversion, integration time 10 ms, clock – rate 28 KHz and 20 cycles averaging 2^{14}
Dynamic range:	
Noise:	1 count standard deviation