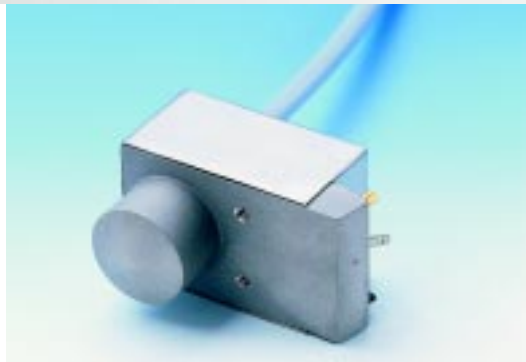
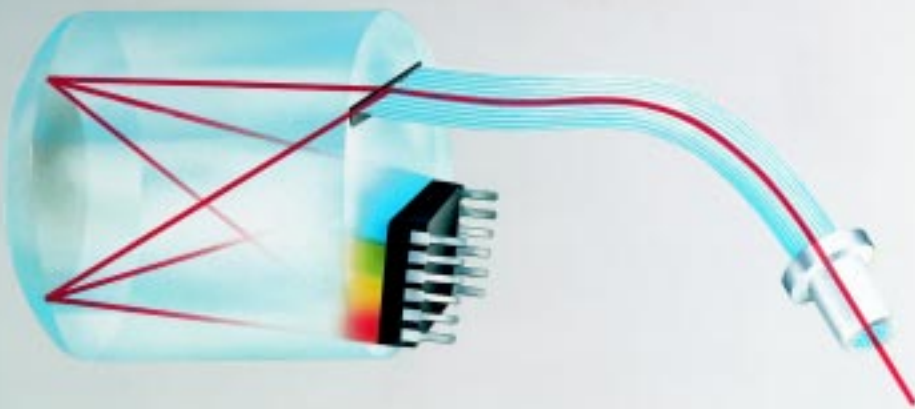


MMS 1 Monolithic Miniature-Spectrometer

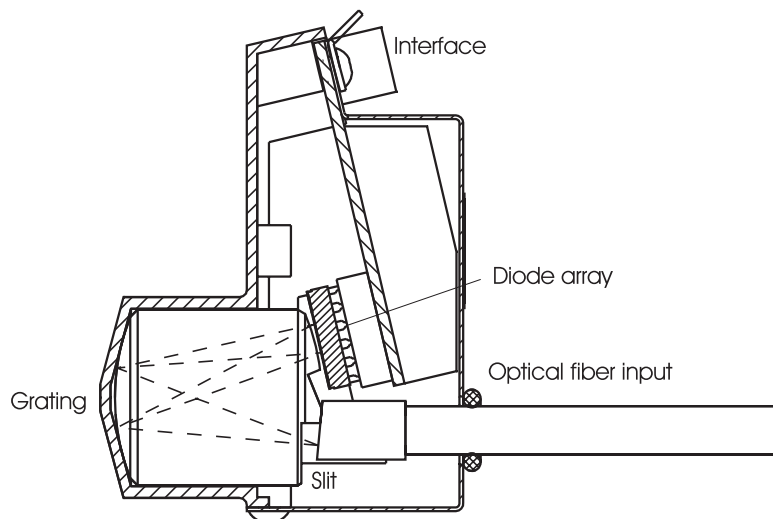


Product Information



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.

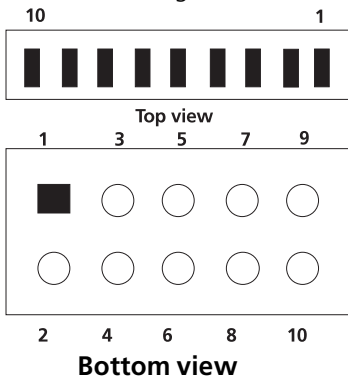
Preamplifiere

| | |
|--------------------|----------------------|
| 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 |