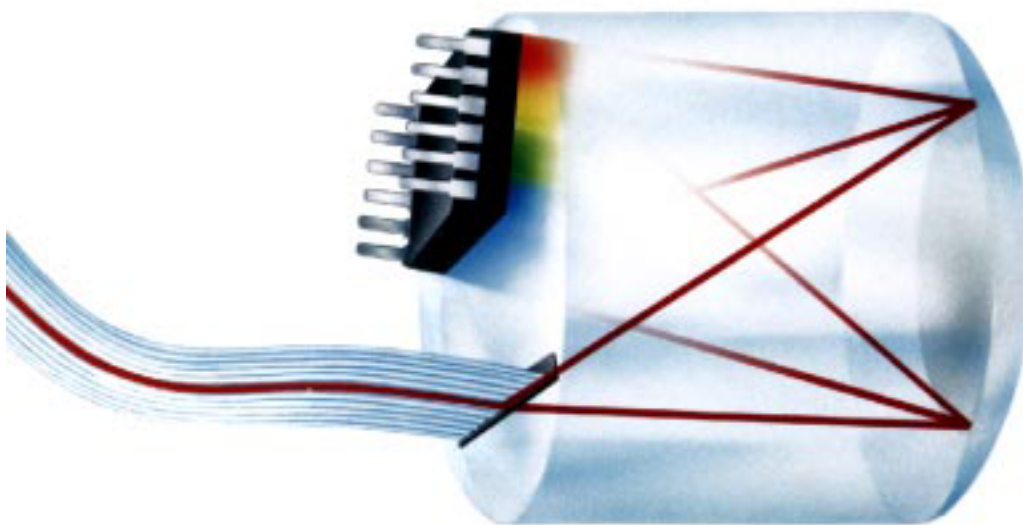


# Product Information

## MMS 1

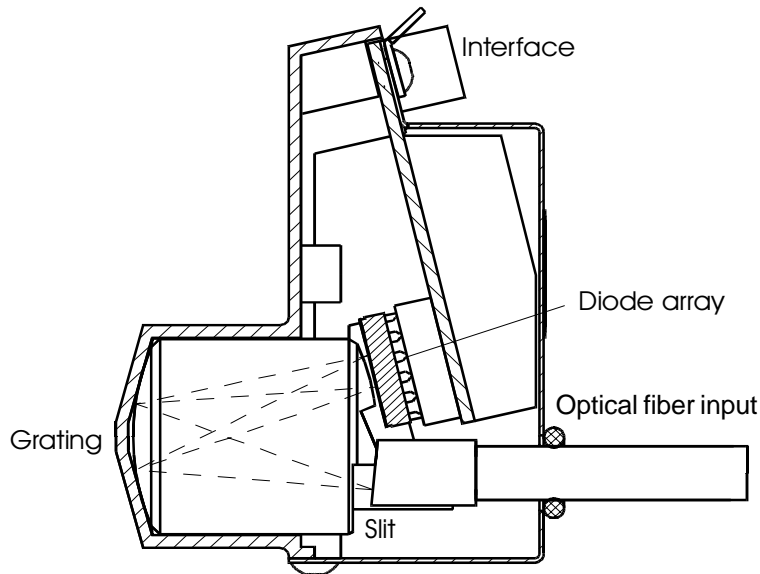
### Monolithic Miniature - Spectrometer



〒164-0011  
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## 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.



## Benefits

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

## Specifications

<b>Optical entrance:</b>		Fiber cable consisting of approx. 30 quartz glass fibers with 70 $\mu\text{m}$ core diameter each, designed as a cross section converter.
	input round:	diameter: 0.5mm NA = 0.2
	output linear:	mounted in SMA-coupling 70 $\mu\text{m}$ x 2500 $\mu\text{m}$ (optical entrance)
<b>Grating</b>		Flat-field, 366 l/mm (center) blazed for approx. 330 nm UV enh. 450 nm VIS enh. 600 nm NIR enh.
<b>Spectral range:</b>		305nm ... 1150nm specifications for the range 360 nm... 900nm
<b>Wavelength accuracy absolute:</b>		0.3 nm
<b>Temperature - induced drift:</b>		< 0.02 nm/ K
<b>Spectral distance of pixel:</b>		$\Delta\lambda_{\text{pixel}} \approx 3.3 \text{ nm}$
<b>Resolution (Rayleigh-criterion):</b>		$\Delta\lambda_{\text{Rayleigh}} \approx 10 \text{ nm}$
<b>Sensitivity:</b>		$\approx 10^{13}$ Counts/Ws (with 14-Bit-conversion)
<b>Straylight:</b>		2.0% Halogen lamp Signal at 360 nm with $\text{NaNO}_2$ solution (50g/l)
<b>Dimensions:</b>		
	total (with case):	70 x 60 x 40 mm <sup>3</sup>
	cross section converter: (external length)	24 cm standard, up to 1m available.
<b>Options:</b>		MMS 1 VIS enhanced MMS 1 UV 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 $\mu\text{m}^2$
Maximum clock - rate:	2 MHz

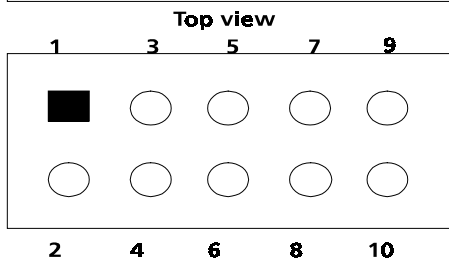
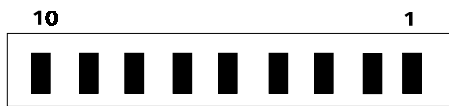
Blocking filter for the second order is directly coated on the diode array.

## Preamplifier

Output:	3 V (full modulation)
Sensitivity:	40 $\mu\text{A}/\text{V}$
Rise time:	35 V/ms
Frequencyrange:	< 400 KHz
Power consumption:	50 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



Bottom view

## System data

Realised with:	14 - Bit - AD - conversion, integration time 10 ms clock rate 28 KHz and 20 -cycles averaging
Dynamic range:	$\approx 14$
Noise:	1 count standard deviation

Subject to technical alteration. 5.98



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