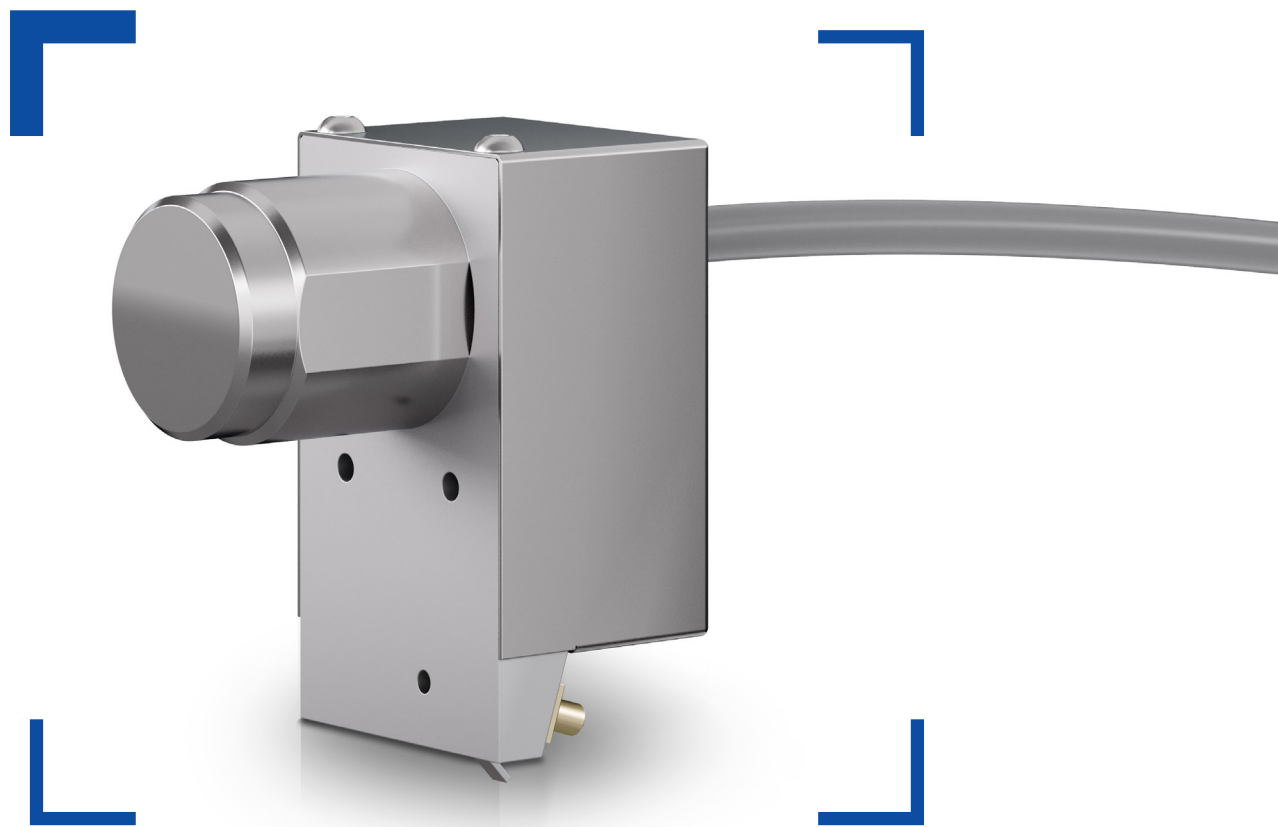


# Monolithic Miniature Spectrometer

190 – 1100 nm



**ZEISS MMS Series**





195 – 390 nm



190 – 780 nm



190 – 1100 nm



310 – 1100 nm

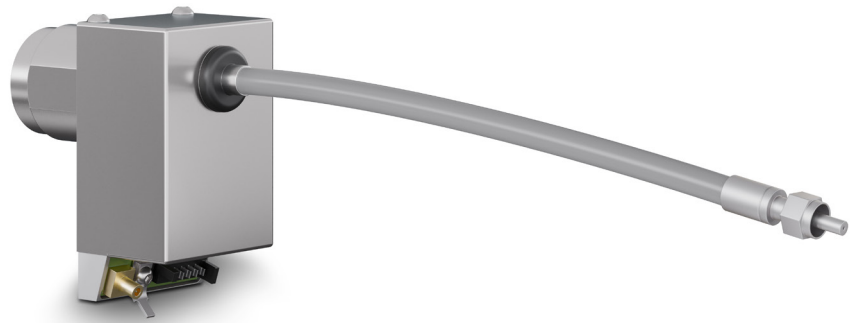


960 – 2500 nm

## Overview

The ZEISS MMS spectrometer series combines a robust, athermal design with a small footprint that enables precise and highly reproducible measurement results. A unique coupling of the light via a round-to-slit fiber converter guarantees highest throughput and repeatability. The spectrometers are equipped with NMOS sensors, providing excellent signal/noise performance. They are ideally suited for portable, process and OEM applications. The ZEISS conceptual design and integrated aberration-corrected holographic gratings ensure permanent calibration, thermal stability and long lifetime with stable performance.

- ✓ **Small footprint**
- ✓ **Outstanding repeatability**
- ✓ **Low UV-VIS stray light**
- ✓ **Long-term calibrated**
- ✓ **Robust, athermal design**



## Features

ZEISS MMS modules feature a round-to-slit fiber converter for maximum throughput. The aberration-corrected holographic gratings ensure high diffraction efficiency and ultra-low stray light. MMS modules have linear photodiode arrays with large active area and very low noise, delivering highest SNR. Two options are available: S3904-256Q for high UV sensitivity or S8381-256Q for high NIR sensitivity.

## Options

- Round-to-slit fiber converter with custom length SMA connector, optional solarization resistance
- ZEISS gratings with different blaze wavelengths (225/335 nm)
- Custom spectral coverage within 190 – 1100 nm
- S3904-256Q/S8381-256Q for high UV/NIR sensitivity
- Pre-amplifier board integrated into housing, can be omitted
- Operating electronics with USB 2.0, 3.0/Ethernet
- ZEISS Aspect Plus Software or SDK

## Applications

- Water quality monitoring: drinking water, industrial water and wastewater monitoring
- Color measurement: lighting, coatings, displays, printing
- Fruit quality control: color, brix, acidity
- Process metrology: paper web, surface coatings
- Environmental monitoring: pollution monitoring, seawater, sewer systems
- High performance liquid chromatography (HPLC)

# Specifications

	<b>MMS UV</b> UV Spectroscopy, high resolution	<b>MMS UV-VIS I</b> UV-VIS Spectroscopy	<b>MMS UV-VIS II</b> UV-VIS Spectroscopy	<b>MMS 1 UV-VIS enh.</b> UV-NIR Spectroscopy, UV-VIS sensitivity enhanced	<b>MMS 1 NIR enh.</b> UV-NIR Spectroscopy, NIR sensitivity enhanced
<b>General</b>					
<b>Spectral range</b>	195–390 nm	190–720 nm	250–780 nm	310–1100 nm	
<b>Spectral pixel pitch</b>	0.8 nm/px	2.2 nm/px		3.3 nm/px	
<b>Resolution (FWHM)</b>	3 nm	7 nm		10 nm	
<b>Stray light</b>	< 0.3 % (@240 nm, NaI 10 g/L)	< 0.3 % (@310 nm, NaNO <sub>2</sub> 50 g/L)		< 0.2 % (@560 nm, RG 695)	
<b>Wavelength accuracy</b>	0.2 nm	0.2 nm		0.3 nm	
<b>Temperature drift</b>	< 0.004 nm/K	< 0.006 nm/K		< 0.01 nm/K	
<b>Optical entrance</b>	SMA with round-to-slit fiber converter (Ø 0.4 mm input, 70 x 1250 µm output)	SMA with round-to-slit fiber converter (Ø 0.5 mm input, 70 x 2500 µm output)		SMA with round-to-slit fiber converter (Ø 0.5 mm input, 70 x 2500 µm output)	
<b>Numerical aperture</b>	0.22	0.22		0.22	
<b>Grating</b>	flat-field, 1084 l/mm, blazed for 225 nm	flat-field, 366 l/mm, blazed for 225 nm		flat-field, 366 l/mm, blazed for 335 nm	

## Detector

<b>Detector type</b>	S3904-256N (256 px)	S3904-256Q (256 px)	S3904-256Q (256 px)	S8381-256Q (256 px)
<b>Pixel size</b>	25 x 2500 µm	25 x 2500 µm		25 x 2500 µm
<b>Signal/noise</b>	11600	11600		11600

## Electronics

<b>Digitization</b>	16-bit ADC	16-bit ADC	16-bit ADC
<b>Integration time</b>	> 0.3 ms	> 0.3 ms	> 0.3 ms
<b>Interface</b>	USB 2.0, 3.0/ Ethernet	USB 2.0, 3.0/ Ethernet	USB 2.0, 3.0/ Ethernet

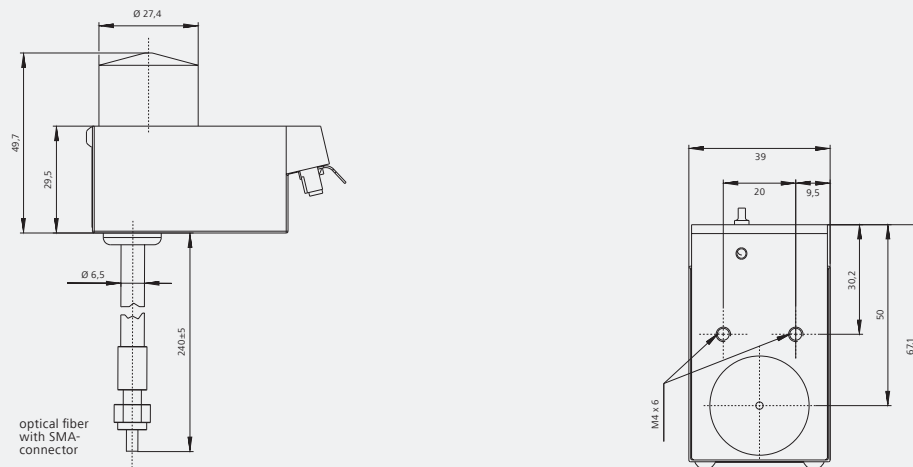
## Environmental/physical

<b>Operating temperature (non-condensing)</b>	0... 65 °C	0... 65 °C	0... 65 °C
<b>Dimensions L x W x H</b>	70 x 60 x 40 mm <sup>3</sup> , fiber converter 240 mm length or custom	67 x 60 x 40 mm <sup>3</sup> , fiber converter 240 mm length or custom	70 x 50 x 40 mm <sup>3</sup> , fiber converter 240 mm length or custom

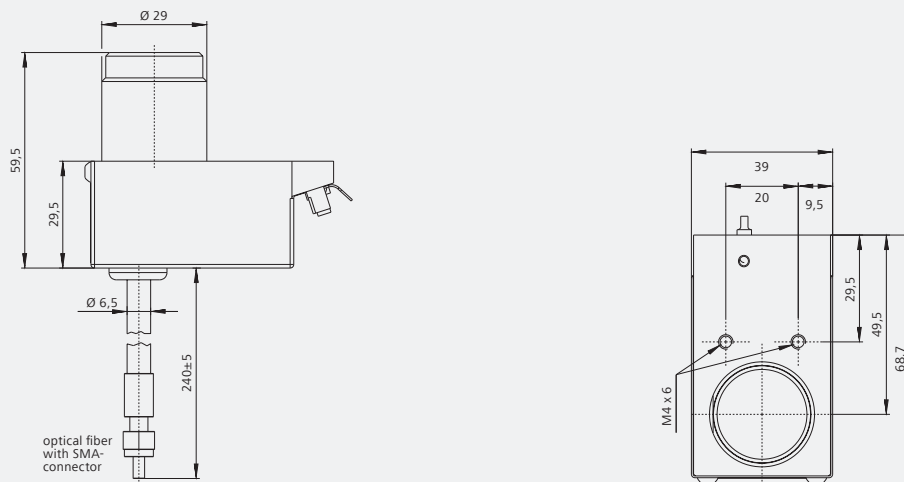
Specifications are subject to change without notice.

# Dimensional drawings

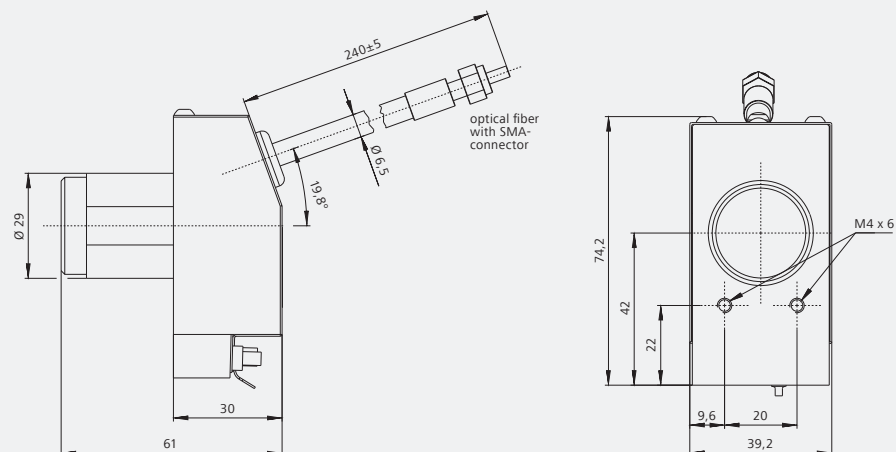
Dimensional drawing MMS 1



Dimensional drawing MMS UV-VIS I / UV-VIS II



Dimensional drawing MMS UV



# Order information

Spectrometer	Description	Spectral Range	Order Number
MMS UV	PDA S5713 with 256 pixels, EFL 240 mm, SPE 200 kHz	195–390 nm	224002-9020-000
MMS UV	PDA S5713 with 256 pixels, EFL 240 mm, SPE 200 kHz, with solarisation stabilized fiber	195–390 nm	000000-1392-178
MMS UV-VIS I	PDA S5713 with 256 pixels, EFL 240 mm, SPE 200 kHz	190–720 nm	224000-9001-000
MMS UV-VIS I	PDA S5713 with 256 pixels, EFL 240 mm, SPE 200 kHz, with solarisation stabilized fiber	190–720 nm	000000-1410-176
MMS UV-VIS I	PDA S5713 with 256 pixels, EFL 240 mm, FPE 1 MHz	190–720 nm	000000-2109-198
MMS UV-VIS I HR	UV-VIS spectral sensor, NMOS S5713 with 256 pixels, with mounted preamplifier board, 35 µm optical slit, 240 mm external solarisation stabilized fiber	190–720 nm	000000-2800-246
MMS UV-VIS II	PDA S5713 with 256 pixels, EFL 240 mm, SPE 200 kHz	250–780 nm	000000-1090-197
MMS 1 UV/VIS enh.	PDA S5713 with 256 pixels, EFL 240 mm, SPE 200 kHz	310–1100 nm	224001-9001-000
MMS 1 UV/VIS enh.	PDA S5713 with 256 pixels, EFL 180 mm, SPE 200 kHz	310–1100 nm	224001-9011-000
MMS 1 UV/VIS enh.	PDA S5713 with 256 pixels, EFL 180 mm, FPE 1 MHz	310–1100 nm	000000-2192-803
MMS 1 NIR enh.	PDA S8381 with 256 pixels, EFL 240 mm, SPE 200 kHz	310–1100 nm	000000-1233-038

S5713: Contains PDA sensor S3904 in special housing

EFL: External Fiber Length (variable on request)

SPE: Standard preamplifier electronics

FPE: Fast preamplifier electronics

HR: High Resolution



**For questions or  
order requests  
please contact us!**

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