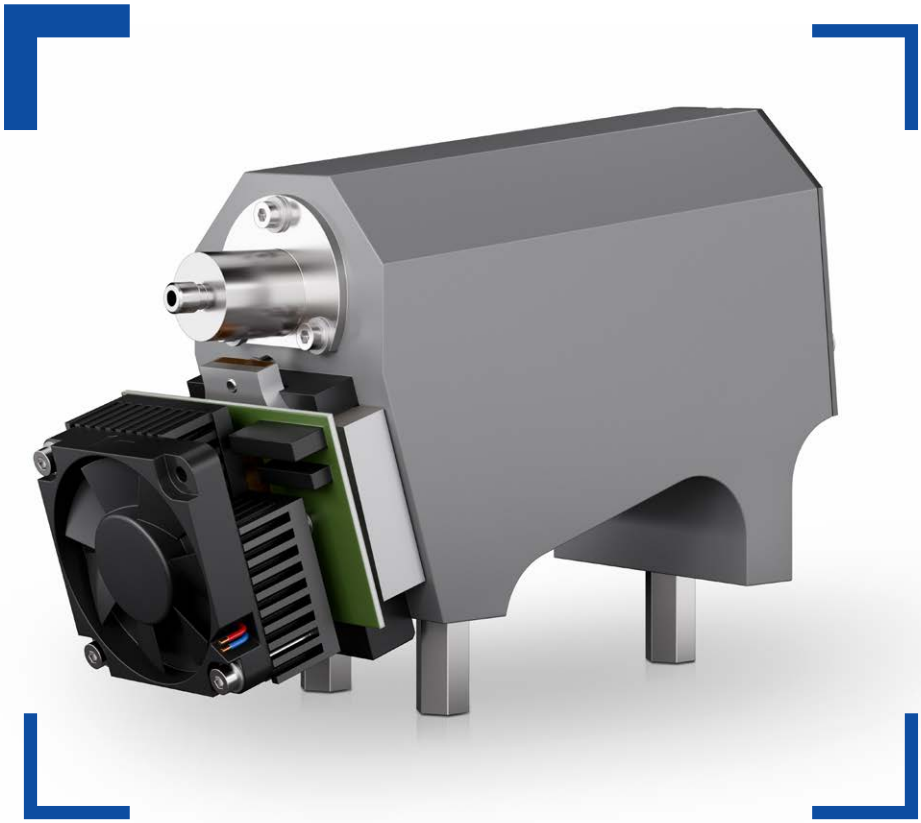
Multi Channel Spectrometer

190 – 1100 nm



ZEISS MCS Series

ZEISS

Seeing beyond

www.zeiss.com/mcs-series

UV 195 – 390 nm

UV-VIS 190 – 780 nm

UV-NIR 190 – 1100 nm

VIS-NIR 310 – 1100 nm

NIR 960 – 2500 nm

Overview

The MCS UV-NIR spectrometer combines a broad coverage within 190 – 1100 nm with high optical resolution of 3 nm. It employs an aberration corrected concave grating design. As optical input the MCS features a SMA connector with integrated round-to-slit fiber converter for maximizing light collection and system throughput. A ZEISS flat-field grating that enables large acceptance angles with a numerical aperture of 0.22 ensures high imaging quality in the detector plane. Suitable PDA or CCD detector options for highest signal/noise performance or low light level applications are available. All of the optical components are mounted in a housing made of a special alloy (FLEX series) or ceramic material that can be easily customized for OEM solutions. The MCS design and production process ensure thermal stability, low stray light levels and long-term stable calibration leading to reliable measurement results.

- **High resolution**
- **Fast readout**
- **Long-term calibrated**
- **Large NA (0.22)**
- **High repeatability**

Features

The ZEISS MCS has a fiber coupled SMA cross section converter with NA = 0.22 and custom slit, maximizing optical throughput. ZEISS aberration-corrected holographic gratings ensure a flat spectral image of 25 mm. Different materials (ceramics/aluminium) and housing designs are provided. MCS modules are available with PDA arrays for highest SNR > 11.000 or BT-CCD detectors for low-light applications.

Options

- Optical input: SMA cross-section converter / FC connector and / or custom slit 20/40/50/70 µm
- ZEISS gratings with different blaze wavelengths (200/250/300/750 nm)
- Selection of custom spectral coverage within 190 – 1100 nm
- TE-cooled/uncooled BT-CCD or PDA detector options
- Operating electronics with USB 2.0, 3.0/Ethernet interface
- ZEISS Aspect Plus software or SDK
- High scalability for volume production

Applications

- Thickness measurement: displays, photoresists, dielectric layers, coatings
- Semiconductor: plasma-monitoring, critical dimension measurement, CMP, wafer inspection
- Pharmaceuticals: compound analysis, high pressure liquid chromatography
- Environmental sensors: pollution monitoring, continuous emission monitoring systems
- Food & agriculture: fruit sorting, meat & dairy, plant health monitoring

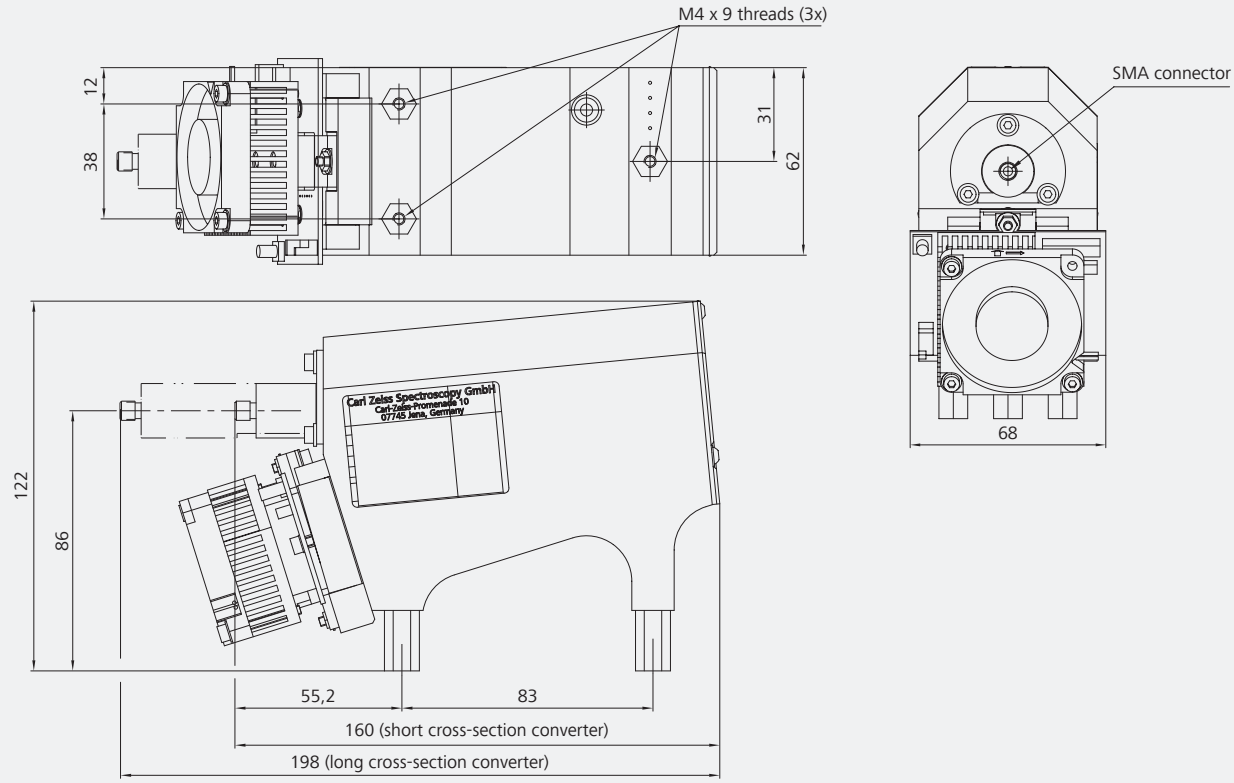
Specifications

	MCS CCD UV-NIR High (UV) sensitivity, housing of ceramics	**MCS FLEX CCD UV-NIR** High (UV) sensitivity, housing of alluminium alloy	**MCS PDA UV-NIR** Exceptional SNR, housing of ceramics	**MCS FLEX PDA UV-NIR** Exceptional SNR, housing of alluminium alloy
General				
Spectral range	190 – 980 nm		190 – 1015 nm	
Resolution (FWHM)	3 nm		3 nm	
Stray light	< 0.1 % (@340 nm, Deuterium lamp, $NaNO_2$ 50 g/L, 10 mm)		< 0.1 % (@340 nm, Deuterium lamp, $NaNO_2$ 50 g/L, 10 mm)	
Wavelength accuracy	≤ 0.5 nm		≤ 0.3 nm	
Temperature drift	< 0.01 nm/K	< 0.009 nm/K	< 0.005 nm/K	< 0.009 nm/K
Optical entrance	SMA with round-to-slit fiber converter (Ø 0.5 mm input, 70 x 1400 µm output), optional slit (20/40/50/70 µm)		SMA with round-to-slit fiber converter (Ø 0.5 mm input, 70 x 2400 µm output), optional slit (20/40/50/70 µm)	
Numerical aperture	0.22		0.22	
Grating	248 l/mm blazed for 250/750 nm	248 l/mm blazed for 250 nm	248 l/mm, blazed for 200/250/750 nm	248 l/mm blazed for 250 nm
Detector				
Detector type	Hamamatsu BT-CCD S7031-1006 (1044 x 64 px)		Hamamatsu NMOS S3904-1024Q (1024 px)	
Pixel size	24 x 24 µm		25 x 2500 µm	
Signal/noise	1000		12000	
Electronics (optional)				
Digitization	16-bit ADC		16-bit ADC	
Integration time	> 3 ms		> 1.1 ms	
Interface	USB 2.0, 3.0/Ethernet		USB 2.0, 3.0/Ethernet	
Environmental/physical				
Operating temperature	0 … 65 °C (non-condensing)		0 … 65 °C (non-condensing)	
Dimensions L x W x H	177 x 75 x 128 mm³	160 x 68 x 122 mm³ (short fiber converter), 198 x 68 x 122 mm³ (long fiber converter)	159 x 75 x 108 mm³	160 x 62 x 102 mm³

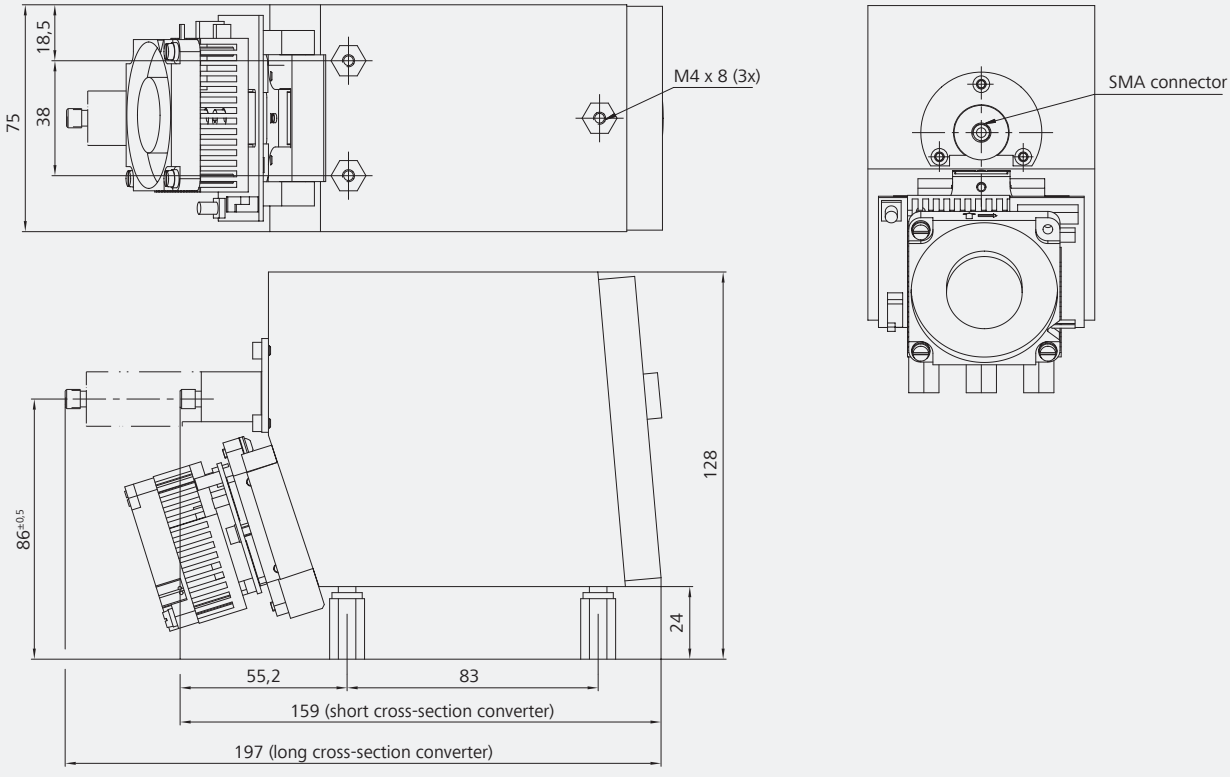
Specifications are subject to change without notice.

Dimensional drawings

Dimensional drawing MCS FLEX CCD

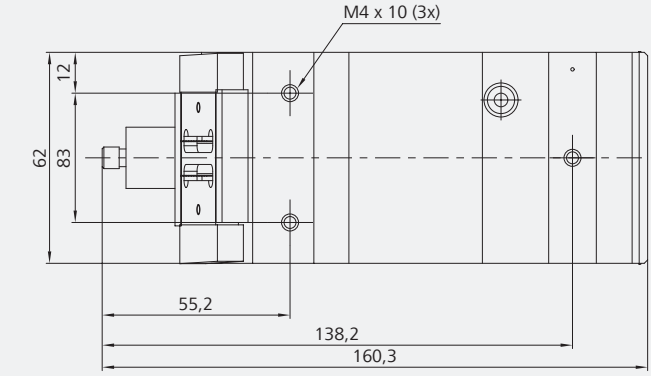


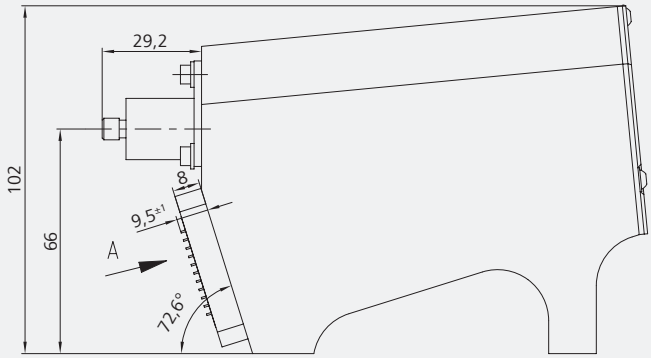
Dimensional drawing MCS CCD

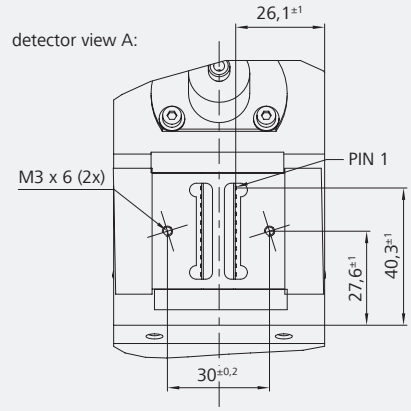


Dimensional drawings

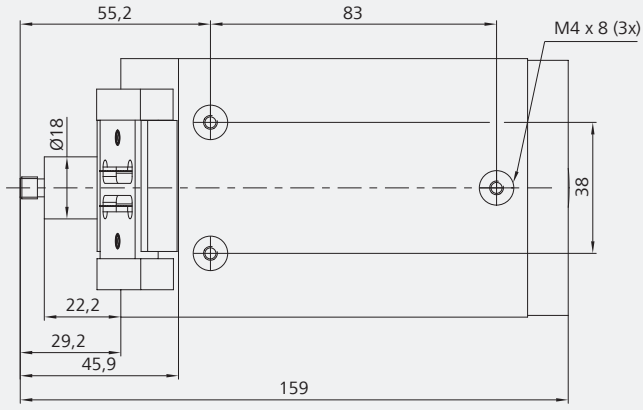
Dimensional drawing MCS FLEX PDA

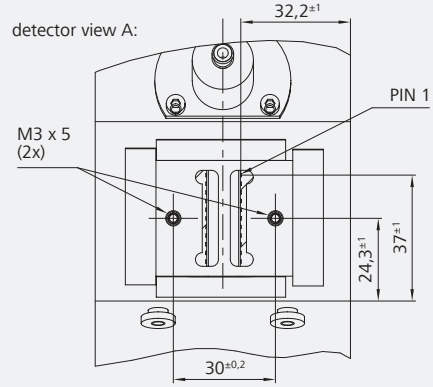


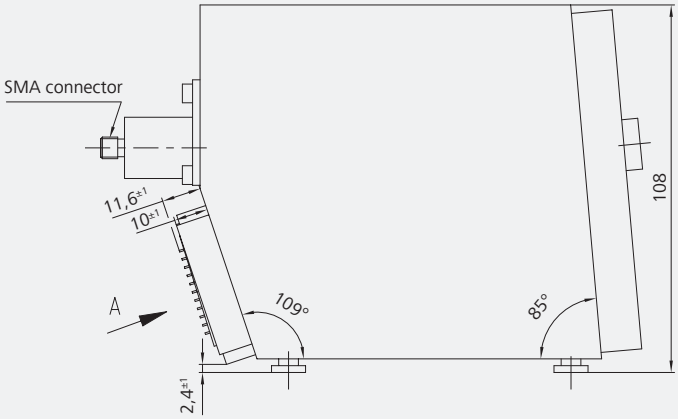


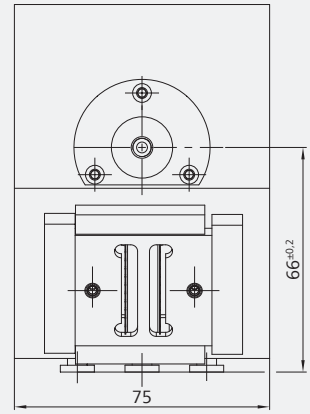


Dimensional drawing MCS PDA









Order information

Spectrometer	Description	Spectral Range	Order Number
MCS PDA UV-NIR	PDA with 1024 pixels, without preamplifier card	190 – 1015 nm	224036-9001-000
MCS PDA UV-NIR	PDA with 1024 pixels, with preamplifier card mounted on MCS with electromagnetic shielding	190 – 1015 nm	000000-2348-729
MCS PDA UV	PDA with 512 pixels, without preamplifier card	200 – 620 nm	224024-9001-000
MCS PDA UV-VIS	PDA with 512 pixels, without preamplifier card	300 – 720 nm	224028-9001-000
MCS PDA VIS	PDA with 512 pixels, without preamplifier card	360 – 780 nm	224020-9001-000
MCS PDA NIR	PDA with 512 pixels, without preamplifier card	695 – 1100 nm	224032-9001-000
MCS FLEX PDA UV-NIR	PDA with 1024 pixels, without preamplifier card	190 – 1015 nm	000000-1459-276
MCS CCD UV-NIR	Detector Hamamatsu S7031 with 1024 (1044) x 64 pixels, Peltier cooled (TE), incl. cooling body, without sensor board	190 – 980 nm	000000-1212-556
MCS CCD UV-NIR	CCD Detector Hamamatsu S7031 with 1024 (1044) x 64 pixels, Peltier cooled (TE), incl. cooling body, with mounted sensor board	190 – 980 nm	000000-2051-588
MCS CCD NIR	CCD Detector Hamamatsu S7031 with 512 (532) x 64 pixels, Peltier cooled (TE), incl. cooling body, without sensor board	600 – 980 nm	000000-2365-393
MCS CCD NIR	CCD Detector Hamamatsu S7031 with 512 (532) x 64 pixels, Peltier cooled (TE), incl. cooling body, with mounted sensor board	600 – 980 nm	000000-1292-310
MCS FLEX CCD UV-NIR	CCD Detector Hamamatsu S7031 with 1024 (1044) x 64 pixels, short CSC	190 – 980 nm	000000-1423-352
MCS FLEX CCD UV-NIR	CCD Detector Hamamatsu S7031 with 1024 (1044) x 64 pixels, long CSC	190 – 980 nm	000000-1761-535

CSC: Cross-section converter

For questions or order requests please contact us!

Carl Zeiss Spectroscopy GmbH
Carl-Zeiss-Promenade 10
07745 Jena, Germany

Phone: + 49 3641 64-2838
Fax: + 49 3641 64-2485

Email: info.spectroscopy@zeiss.com
www.zeiss.com/spectroscopy

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