

Compact Grating Spectrometer

190 – 1100 nm



ZEISS CGS Series





195–390 nm



190–780 nm



190–1100 nm



310–1100 nm



960–2500 nm

Overview

The CGS spectrometer series stands out for its compact, rugged and athermal design, with suitable CCD, PDA and CMOS detector options. It features a blazed flat-field grating combined with a corrective mirror for best imaging quality. Thus, a broad coverage (190–1100 nm) together with a uniformly high resolution is achieved. The optical design enables high throughput with numerical apertures of up to 0.22 together with lowest stray light levels. It's the ideal choice for direct process or system integration due to its compact design, reasonable price and long-term stability.

- ✓ **High resolution**
- ✓ **Small footprint**
- ✓ **Ultra low stray light**
- ✓ **Long-term calibrated**
- ✓ **Fast readout**



Features

ZEISS CGS spectrometers feature a SMA connector with custom entrance slit and high NA for maximized throughput. The aberration-corrected flat-field holographic grating allows for a resolution of < 2 nm over the 190 nm up to 1100 nm range. Three detector options are available: high-sensitivity, fast-readout CCD, a PDA sensor for highest SNR or the affordable CMOS versions for fast readout and good sensitivity.

Options

- Various slit sizes (10 ... 50 μm) available
- ZEISS gratings with different blaze wavelengths (230/400/750 nm) for optimized diffraction efficiency
- CCD, PDA or CMOS detector options
- Operating electronics with USB 2.0, 3.0/Ethernet
- ZEISS Aspect Plus Software or SDK
- High scalability for volume production

Applications

- LED and display process & quality control
- Semiconductor process control, e.g. optical emission spectroscopy, thin film & critical dimension measurement
- Colorimetry
- High pressure liquid chromatography (HPLC)
- Environmental sensors
- Biophotonics & pharmaceuticals

Specifications

	CGS CCD UV-NIR Fast acquisition & highest sensitivity	CGS PDA UV-NIR Highest SNR	CGS CMOS UV-NIR Fast acquisition, good SNR, & cost effective	CGS CMOS UV-NIR Fast acquisition, high UV sensitivity & cost effective	CGS CMOS UV-NIR Fast acquisition, high UV sensitivity & cost effective
General					
Spectral range	190–1015 nm	190–935 nm	190–1100 nm		
Resolution (FWHM)	2.2 nm (UV-VIS), 2.5 nm (NIR)	2 nm	1.1 ... 2.5 nm (depending on slit width and detector type)		
Stray light	< 0.1 % (@240 nm, NaI 10 g/L)		< 0.1 % (@240 nm, NaI 10 g/L)		
Temperature drift	< 0.02 nm/K		< 0.02 nm/K		
Optical entrance	SMA, entrance slit 43 µm (varied upon request)	SMA, entrance slit 37 µm (varied upon request)	SMA, entrance slit 13 µm or 43 µm (varied upon request)		
Numerical aperture	0.22		0.22		
Grating	538 l/mm, blazed for 230 nm		431 l/mm, blazed for 230 nm (400/750 nm on request)		

Detector

Detector type	Hamamatsu BT-CCD S11156 (2048 px)	Hamamatsu NMOS S3903 (1024 px)	Hamamatsu CMOS S12198 (1024 px)	Hamamatsu CMOS S11639 (2048 px)	Hamamatsu CMOS S13496 (4096 px)
Pixel size	14 x 1000 µm	25 x 500 µm	25 x 500 µm	14 x 200 µm	7 x 200 µm
Signal/noise	500	5000	1200	300	300

Electronics

Digitization	16-bit ADC		16-bit ADC		
Integration time	> 0.03 ms	> 0.5 ms	> 0.1 ms	> 0.2 ms	> 0.4 ms
Interface	USB 2.0, 3.0/Ethernet		USB 2.0, 3.0		

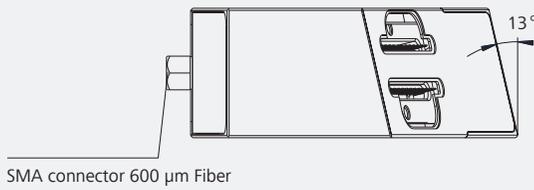
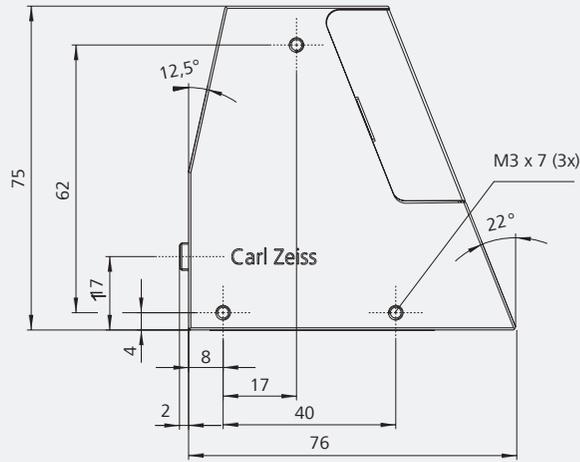
Environmental/physical

Operating temperature	0 ... 60 °C (non-condensing)		0 ... 60 °C (non-condensing)		
Dimensions L x W x H	78 x 30 x 75 mm ³		81 x 30 x 75 mm ³		

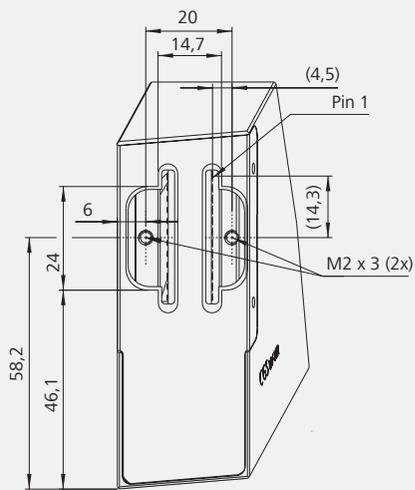
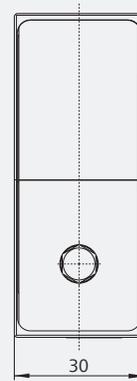
Specifications are subject to change without notice.

Dimensional drawings

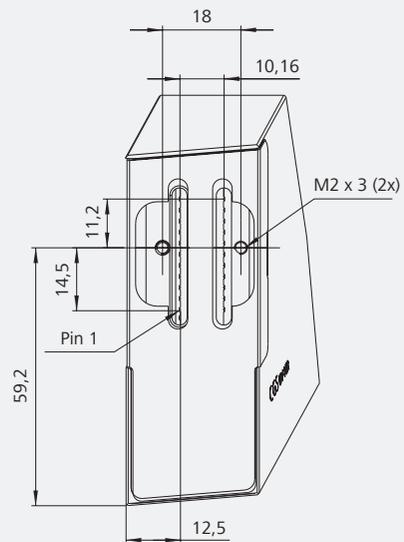
Dimensional drawing CGS CCD, CGS PDA



SMA connector 600 µm Fiber



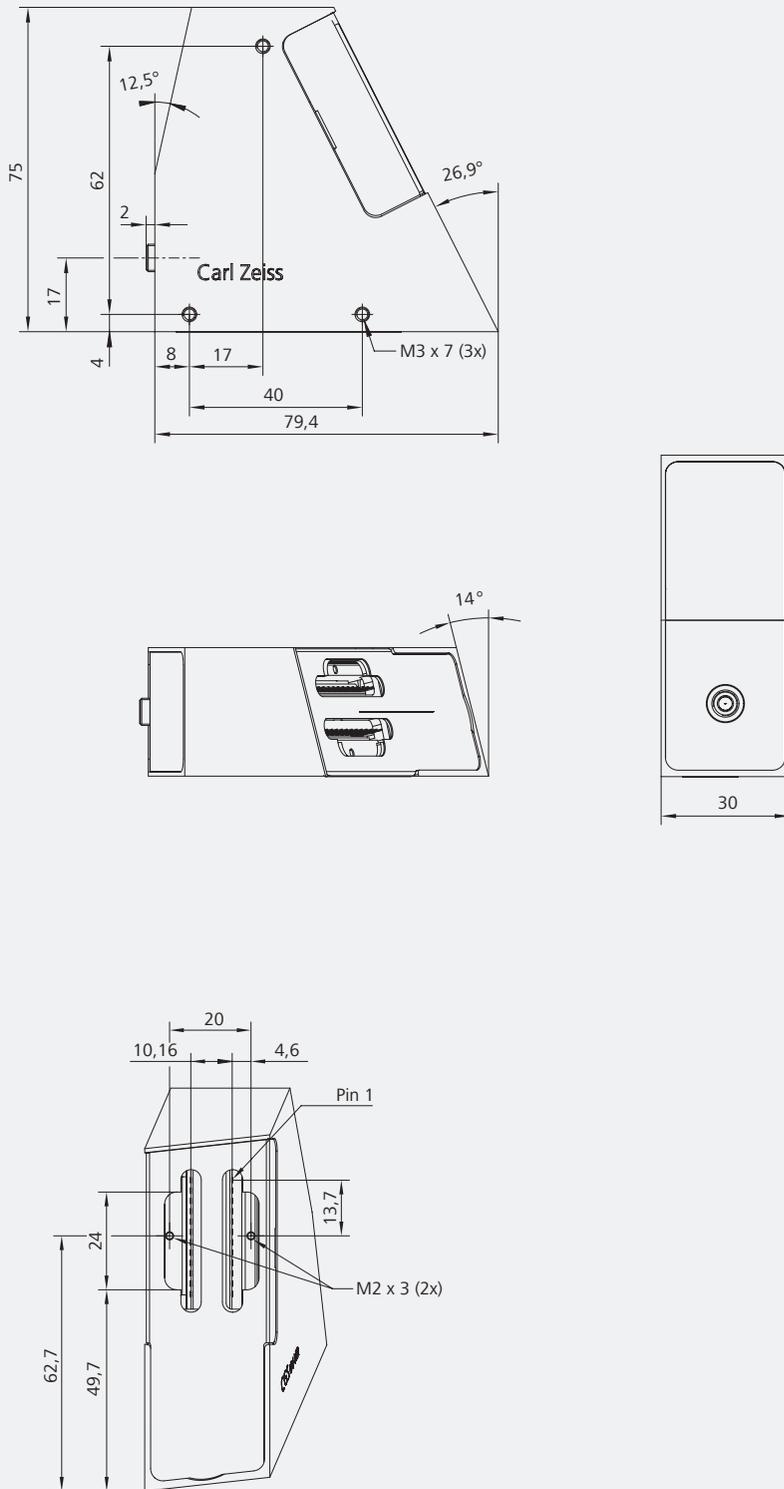
CGS CCD



CGS PDA

Dimensional drawings

Dimensional drawing CGS CMOS



Order information

Spectrometer	Description	Spectral Range	Order Number
CGS PDA UV-NIR	UV-NIR Spectral Sensor, Hamamatsu S3903, NMOS linear image sensor, 1024 pixel, mean spectral pixel pitch 0.7 nm, 37 µm optical slit	190–935 nm	000000-2034-897
CGS CCD UV-NIR	UV-NIR Spectral Sensor, Hamamatsu S11156, Back-thinned CCD, 2048 pixel, mean spectral pixel pitch 0.4 nm, 43 µm optical slit	190–1015 nm	000000-1794-791
CGS CCD UV-NIR high resolution	UV-NIR Spectral Sensor, Hamamatsu S11156, Back-thinned CCD, 2048 pixel, mean spectral pixel pitch 0.4 nm, 13 µm optical slit	190–1015 nm	000000-2114-835
CGS CMOS UV-NIR high resolution	UV-NIR Spectral Sensor, Hamamatsu S13496, high sensitivity CMOS, 4096 pixel, mean spectral pixel pitch 0.25 nm, 43 µm optical slit*	190–1100 nm	000000-2400-932
CGS CMOS UV-NIR high sensitivity	UV-NIR Spectral Sensor, Hamamatsu S11639, high sensitivity CMOS, 2048 pixel, mean spectral pixel pitch 0.5 nm, 43 µm optical slit*	190–1100 nm	000000-2400-931
CGS CMOS UV-NIR fast readout	UV-NIR Spectral Sensor, Hamamatsu S12198, high sensitivity CMOS, 1024 pixel, mean spectral pixel pitch 1.0 nm, 43 µm optical slit*	190–1100 nm	000000-2392-039

* variable on request



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

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