

tecSpec®: (Integrated) Diode Array Spectrometer Family

Compact diode array based spectrometer unit with outstanding performance for feasibility studies and measurement tasks in research, development and industry.

Easy adaptation of light guides and fiber-optic probes is possible by use of a standard SMA connector at the front panel.



Features

- UV to extended NIR wavelength ranges
- Based on Carl Zeiss Spectral Sensors
- Compact, maintenance-free and long-term stable
- Designed for fast spectral data acquisition
Selectable USB or Ethernet Interface
- For integration in inspection and production machinery
- Digital I/O

Applications

- Reaction monitoring
- End point detection
- Thin film measurements
- Color classification
- Concentration analysis
- Product and waste sorting
- Laboratory Research

Spectrometer Unit tecSpec

tecSpec is a ready-to-use spectrometer module with SMA fiber input connector and a USB or Ethernet interface. Taking advantage of Carl Zeiss high-performance spectrometer modules and tec5 electronic components, it allows to acquire accurate spectral data while offering a compact format and maintenance-free operation.

The module available in various wavelength ranges and allow high-speed analysis of ultraviolet, visible and near-infrared radiation with high dynamic range and a very good cost-performance ratio. Their mechanical design and universal functionality makes them an ideal choice for many applications in spectroscopy.

Light Source Unit

A 7W Halogen light source unit is available. Designed for low power consumption, it is ideally suited for transmission measurements. The signals for shutter control are supplied via cable from the tecSpec spectrometer unit.

Software Support

- MultiSpec Pro II Spectroscopy Software
- tec5 AdminTool included (configuration, testing, raw data acquisition)
- Various Programmer Interfaces (SDK) are available

Technical Data

Product Overview

tecSpec Unit	Wavelength Range [nm]	Optical Resolution [nm]	Detector Type
tecSpec MCS	UV-VIS-NIR 190 – 1020	3 – 4	High dynamic range silicon
tecSpec MCS CCD	UV-VIS-NIR 190 – 980	3 – 4	High sensitivity silicon
tecSpec PGS	NIR 960 – 2150	5 – 16	InGaAs
tecSpec MMS	UV-VIS-NIR 190 – 1020	7 – 10	High dynamic range silicon
tecSpec CGS	UV-VIS-NIR 190 – 1000	2 – 3	High sensitivity silicon

tecSpec MCS

USB: ID 11-014800 - ETH: ID 11-014810 -	Wavelength Range [nm]	Spectral Resolution [nm]	Wavelength Repeatability [nm]	Detector Array	Number of Pixels
3-01 MCS UV	195 – 620	Approx. 3	0.05	Si NMOS	512
3-02 MCS UV VIS	300 – 720	Approx. 3	0.05	Si NMOS	512
3-03 MCS VIS	360 – 780	Approx. 3	0.05	Si NMOS	512
3-04 MCS NIR	695 – 1100	Approx. 3	0.05	Si NMOS	512
3-05 MCS UV NIR	195 – 1020	Approx. 3 – 4	0.05	Si NMOS	1024

tecSpec MCS CCD

2-00 MCS CCD UV	200 – 600	Approx. 3	0.1	Peltier cooled CCD	532 x 64
2-01 MCS CCD UV NIR	200 – 980	Approx. 3 – 4	0.1	Peltier cooled CCD	1044 x 64

tecSpec PGS

1-01 PGS 1.7 tc	960 – 1690	Approx. 5	0.1	Peltier cooled InGaAs	512
1-02 PGS 1.7 tc	960 – 1690	Approx. 10	0.1	Peltier cooled InGaAs	256
1-03 PGS 2.0 tc	1340 – 2000	Approx. 6	0.1	Peltier cooled InGaAs	256
1-04 PGS 2.2 tc	1000 – 2150	Approx. 16	0.1	Peltier cooled InGaAs	256

For detailed specifications please refer to the data sheets of Carl Zeiss Spectral Sensors in use.

Technical Data

Electronics	Si NMOS	Peltier cooled CCD	Peltier cooled InGaAs
Dynamic Range	16 bit (65536 Counts)		15 bit (32768 Counts)
Noise Typ.	< 2 Counts	< 2 Counts	< 4 Counts
Integration Time	1.2 ms – 6.5 s	3.0 ms – 6.5 s	0.1 ms – 1.5 s
Interface (PC)	USB 2.0 (USB 1.1, USB 3.0 compatible), Ethernet 100BASE-T (10, 100, 1000 Mbits compatible)		
Miscellaneous			
Power Supply	110 / 220 V; 50 / 60 Hz (External Power Supply)		
Dimensions [mm ³]	235 x 175 x 115	290 x 175 x 115	235 x 175 x 115
Weight	Approx. 2.5 kg		
Operating Temperature	5°C – 35°C		

tecSpec MMS

(USB) ID: 11-014800 - (ETH) ID: 11-014810 -	Wavelength Range [nm]	Spectral Resolution [nm]	Wavelength Repeatability [nm]	Detector Array	Number of Pixels
4-10 MMS UV-VIS enh.	360 – 900	Approx. 10	0.2	Si diode array	256
4-20 MMS UV	220 – 390	Approx. 3	0.2	Si diode array	256
4-30 MMS UV-VIS	220 – 720	Approx. 7	0.2	Si diode array	256
4-40 MMS NIR enh.	400 – 1100	Approx. 10	0.2	Si diode array	256
4-50 MMS UV-VIS II	250 – 785	Approx. 7	0.2	Si diode array	256
4-60 MMS UV SB	190 – 390	Approx. 3	0.2	Si diode array	256
4-70 MMS UV-VIS SB	190 – 720	Approx. 7	0.2	Si diode array	256

For detailed specifications please refer to the data sheets of Carl Zeiss Spectral Sensors in use.

Electronics	MMS
Dynamic Range	15 bit (32768 Counts)
Noise Typ. SD	typ. < 1,5 Counts standard deviation; S/N: ≈ 20 000
Integration Time	1.5 ms – 6.5 s
Interface (PC)	USB 2.0 (USB 1.1, USB 3.0 compatible), Ethernet 100MBit (10, 100, 1000 GBit compatible)
Miscellaneous	
Power Supply	110 / 220 V; 50 / 60 Hz (External Power Supply)
Dimensions [mm ³]	120 x 120 x 180
Weight	Approx. 1 kg
Operating Temperature	5°C – 35°C

Technical Data

tecSpec CGS

ID: 11-0148201-00	Wavelength Range [nm]	Spectral Resolution [nm]	Wavelength Repeatability [nm]	Detector Array	Number of Pixel
CGS UV-NIR	190 – 1000	Approx. 2-3	-	Backthinned CCD array	2048
Electronic			CGS		
Dynamic Range	16 bit (65536 Counts)				
Noise Typ.	typ. < 6 rms				
Integration Time	0.2 ms – 1.5 s				
Interface (PC)	USB 2.0 (USB 1.1, USB 3.0 compatible)				
Miscellaneous					
Power Supply	110 / 220 V; 50 / 60 Hz (External Power Supply)				
Dimensions [mm ³]	78 x 115 x 175				
Weight	Approx. 0.8 kg				
Operating Temperature	5°C – 35°C				

tecSpec LS-H

ID: 11-0202045-00	Wavelength Range [nm]	Max. Power [W]	Life Time	Stability	Number of Pixel
Lamp Halogen	400 – 2500	7	> 1000 h (Halogen)	<5 x 10 ⁻⁵ AU @ 500 nm	2048
Power Supply	110 / 220 V; 50 / 60 Hz (External Power Supply)				
Dimensions (per unit) [mm ³]	120 x 115 x 116				
Weight	Approx. 1.0 kg				
Operating Temperature	5°C – 35°C				

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