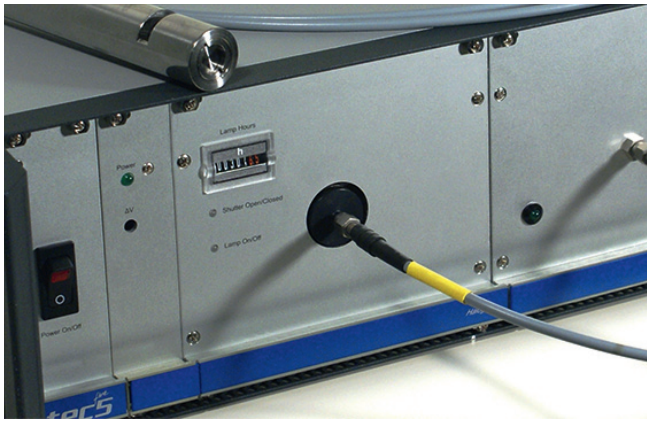
MultiSpec® CCD: UV-VIS-NIR Detector Array Spectrometer System

MultiSpec CCD is part of the modular MultiSpec instrument family of fast simultaneous read-out spectrometer systems. Based on flexible 19“ chassis technology, it is the perfect tool for process applications. The integrated spectrometers are high-sensitive modules without moving parts and with outstanding long-term stability. The detector array design allows acquisition of whole spectra in milliseconds. Multiplexing technology offers multichannel operation. The standardized SMA connectors on the front allow easy coupling of fiber optics with all types of probes and cells.

[Features]

- Suitable for detection of low light levels
- UV-sensitive back thinned CCD technology
- Available spectral range: 200 – 980 nm
- High dynamic range of 16 Bits
- Fast, precise, robust
- Versatile software packages

[MultiSpec UV-VIS-NIR]



Advantages

The back-thinned / back-illuminated CCD technology combines high sensitivity over the whole spectral range from UV to NIR with the large dynamic range of a classical photo-diode detector array. These CCDs are especially suitable for low light level detection like fluorescence, film thickness, plasma or diffuse reflection measurements. Due to the capability to detect small amounts of light, short exposure times are possible for high speed process control.

Carl Zeiss Spectrometer Modules

The MultiSpec system is based on the quasi-monolithic MCS CCD spectrometer modules from Carl Zeiss. The high sensitivity and the extreme stability of these modules combined with tec5 16 Bit electronics a allow for very reproducible and accurate measurements with a large dynamic range.

Plug-In Cassette Design

MultiSpec systems follow a modular concept. All the components, such as spectrometers or light sources, are integrated into cassettes, which can be changed easily.

Process Communication

The MultiSpec systems can be equipped with an OPC interface or various add-on I/O-boards (4-20mA, digital I/Os, Profibus) for process communication to transfer results and status information (e.g. system error, system warning, out-of-range signal) to a process control system. Additionally, a remote control from an SPS or PLS is available to trigger for maintenance measurement cycles or to stop continuous data aquisition.

[Technical Data]

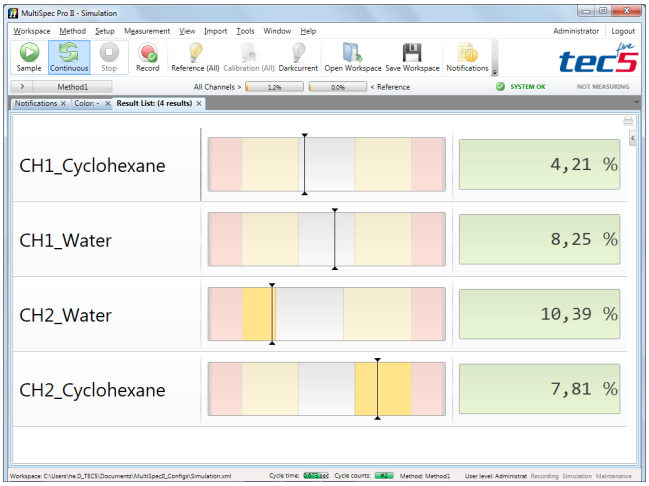
Spectrometer Cassettes - Standard Versions			
Spectral Sensor	**MCS CCD UV**	**MCS CCD UV-NIR**	**MCS CCD NIR**
Spectral Range	200 – 600 nm	200 – 980 nm	600 – 980 nm
CCD Array	Hamamatsu S7031; back-thinned, back-illuminated; TE cooled		
Number of Pixels	532	1044	532
Resolution (Rayleigh)	3 nm	3.5 nm	3 nm
Pixel Dispersion	0.8 nm		
Wavelength Accuracy	< 0.5 nm (absolut)		
Reproducibility	< 0.1 nm		
Temperature – Induced Drift	< 0.01 nm/K		
Light Sources	Shine-through lamp: 200nm – 2500nm; Xenon flash lamp: 200nm – 1100nm		

Electronics	
Intensity Resolution	16-Bit
Integration Time	variable from 3 ms – 6 s with array of 1044 pixels variable from 2 ms – 6 s with array of 532 pixels
Optical Interfaces	Standard SMA connectors
PC Interfaces	Ethernet, Highspeed USB

Miscellaneous	
Power Supply	110 / 220 V; 50 / 60 Hz
Dimensions [mm³] (Std.-enclosure)	133 x 448 x 435 (3HE/84TE)
Weight	12 kg
Operating Temperature	5°C – 35°C

[MultiSpec® Pro II Process Software]

MultiSpec Pro II is an improved new software bundle for laboratory and process applications. Incorporating current program environments and visualization schemes, a number of data acquisition modes, data processing and output options are provided. Three packages are offered, which range from a basic data acquisition tool to a process software, including status information and user management. Optional modules, including color determination, prediction of chemometric models and a number of process communication interfaces facilitate the adaption to required applications. The software package supports all tec5 spectrometer systems and electronics.



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Technology for Spectroscopy

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