

CompactSpec® EMB: Compact UV-VIS-NIR Spectrometer System with Embedded Electronics for Process Control

The CompactSpec® EMB is an IP protected spectrometer system series for the UV, VIS and NIR, capable of withstanding the harsh conditions in industrial production environment. It combines maintenance-free Carl Zeiss spectrometer modules with long lifetime light sources for outstanding long-term stability. Using the tecSaaS® embedded technology no separate

Computer is needed for standard operation. The data collected by the UV-VIS-NIR spectral sensors is processed in real-time by the system and only the required results are sent to the process interface. The package **can be customized and offers the possibility to add various optical measurement heads and probes via light guides and SMA connectors.**

["Designed for Real Time Embedded Spectroscopy"]

[Applications]

UV, Color and NIR Measurement for

- Reaction monitoring
- End point detection
- Concentration Measurement

of liquids, solids and gases.



[CompactSpec® EMB with probe]

[Advantages]

- Robust, stand-alone system for operation on-site, in production and integrated in machinery
- Integrated IT security concept
- Maintenance-free, extremely stable spectrometer modules without moving parts
- Measurement ranges between 190 and 2150 nm
- Intelligent, highly available and autonomous [no external [Win] PC needed]
- Protection against dust and water splashes in accordance to IP65 or higher
- 24 V power supply [12 or 230 V available upon request]



[CompactSpec® Flow]



tecSaaS®

[tecSaaS® Demo Unit]

[embedded-spectroscopy.com]

[tecSaaS® – Embedded Platform | Spectrometer as a Sensor]

tecSaaS® is a modular embedded platform. High performance is reached by a lean real-time operating system [RTOS] combined with optimized firmware for fast data processing and dedicated timing. No separate [Windows] PC is needed for normal operation; all the well-known disadvantages such as IT insecurity, instability, downtime, as

well as maintenance and update costs are not an issue any more. Systems based on our new tecSaaS® platform are smart, networked process sensors. This technology follows today's most frequently demanded requirements of the NAMUR recommendation NE 153 "Automation Security Agenda 2010" and of the Industry 4.0 initiative.

[Parameterization]

For startup, deployment, parameter setting or monitoring purposes, the unit can be connected to a PC over an Ethernet connection. tec5 provides a PC software [tecSaaS®-MPT] as the online monitoring and parameterization tool to access the sensor, retrieve the current instrument status, spectra and process results. It is an easy-to-use Windows tool, which allows workspace and method administration in a similar way as our PC based spectroscopy software MultiSpec® Pro II.



[tecSaaS®-MPT - Monitoring & Parameterization tool via Ethernet]

[Onboard [Result Engine]]

tecSaaS® offers customized mathematical processing using an integrated formula parser as well as complex algorithms such as chemometrics [e.g. created by SensoLogic Calibration Wizard] and FFT. The calculation of concentration values can also use a linear regression model, which may include additional calculation steps, also taking external variables such as temperature and pressure into account. Advanced data pre-processing steps are available to compensate for instabilities due to bubbles or particles in the process stream.

[Process Communication]

The system supports the Modbus/TCP protocol for the transfer of results and status messages. Other bus systems [e.g. EtherCat, PROFINET, CAN] and analog interfaces [4-20mA] on request

The following functions are available:

- Checks system info and system status [e.g. error messages and operating hours]
- Retrieve and switch methods
- Spectral information and process values to be transferred
- Run commands [e.g. start DC or reference acquisition]

[Technical Data]

System	
"Embedded" Version for the direct data transfer to an SPS or PCS via standard process interfaces	
Data Connection	Modbus/TCP [Ethernet for MPT Parameterization Tool]
Housing Material	Stainless Steel V4A or Aluminum*
Environmental Protection Rating	IP 65 to 67*
Spectral Range	within 190 – 2170 nm
Lamp	Mini Xenon flash or long-life process halogen lamp with 10.000 hrs run-time
Measurement Rate	> 1 measurement/s*
Dimension [L x B x H] mm	240 x 200 x 120 - incl. connectors*
Operating Temperature	min. 5°C – 35°C* [add. cooling options available]
Power Supply	24 V*
Weight	3,6 kg*

* Depends on systems type.

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