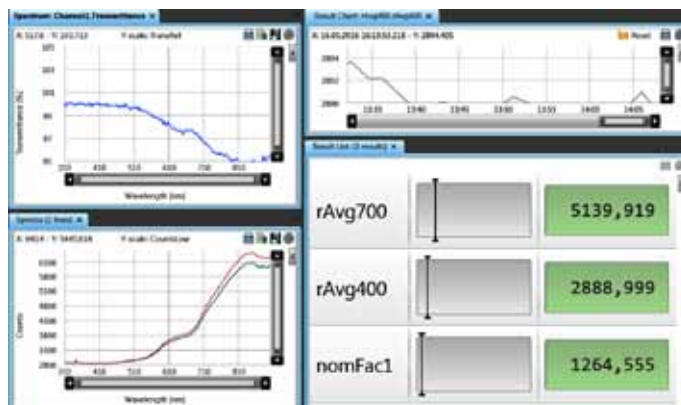


## tecSaaS® MPT: Monitoring and Parametrization Tool for the tecSaaS® Embedded Spectroscopy Platform

tecSaaS® [tec5 Spectrometer as a sensor] is a modular system platform for embedded spectroscopy, which can be used in industrial and vehicle-mounted applications. The tecSaaS® core electronics is designed for highly reliable operation in production, machinery and on-site. No separate [Windows] PC is needed for regular use. The stand-alone tecSaaS® spectrometer devices provide fast and accurate results with a wide selection of powerful hardware and firmware modules.

For implementing the tecSaaS® spectrometer devices in the required process application, including start-up, deployment, parameter setting or monitoring purposes, a user-provided PC is temporarily connected to the embedded system, running the MPT monitoring and parametrization tool [MPT] software.



MPT Graphical user interface [example detail]

The MPT is used for initial set-up of the tecSaaS® spectrometer devices and for different tasks related to the device management and monitoring, such as:

- Monitoring the device's operating status and measurement functions in a user friendly and customizable user interface
- Viewing and configuring the device's components and multiple measurement algorithms
- Upgrading the firmware, installing licenses and calibration files
- Backing up device configurations to local project files

### [ Key Features of the MPT Software ]

- Supports all tecSaaS® devices – depending on the requirements, the modular hardware and firmware are customized for the measurement task
- By parametrization of the tecSaaS® device settings with the MPT software instead of programming a fast and efficient project realization is possible
- Graphical display of spectra and results provided by the tecSaaS® based system
- Configuration of the measurement algorithms at runtime without stopping or rebooting the device
- The configuration and monitoring interface is based on TCP/UDP Ethernet protocols and is separated from the process communication interfaces on the tecSaaS® devices
- Different access levels with password protection. Unauthorized access to the tecSaaS® device's configuration is prevented by the MPT software
- The user interface and workspace concepts are aligned to the look-and-feel of the tec5 MultiSpec® ProII software giving customers a smooth transition to the new product line
- The MPT standard license offers full functionality and manages one active measurement method. Specific features or modules can be added by a special licence
- Designed for backward compatibility with all tecSaaS® devices and forward-compatibility with newer tecSaaS® devices, as far as the functions are supported by the MPT version. Therefore, a single tecSaaS® MPT installation can be used in many cases to support a wide range of tecSaaS® products.

After the the initial set-up and parametrization, the tecSaaS® devices are running in fully autonomous mode, acquiring and processing relevant data and passing the results to a process control system. The PC and the MPT software are not connected and not needed during continuous regular operation.

In addition, spectra and results can be monitored by an Android App.

### [ Use of the MPT Software and Methods ]

The entity parameter settings and processing steps of the tecSaaS® device can be configured as required for the measurement and saved to an application-specific method. With the MPT software, a number of methods can be edited and stored on the tecSaaS® device. Selectable method steps perform single tasks, such as interacting with peripheral hardware, data acquisition, writing spectra to a data pool, processing spectral data, calculating results and many more.

The MPT is used to manage, edit or activate methods and to store them on the tecSaaS® device. Even though its main purpose is to select and apply parameter and system settings, it can also be used to monitor spectral data and results

for test or debugging. The mathematics for result calculations within the embedded system can be activated with the MPT – e.g. by defining processing functions using the integrated formula parser or by activating available method steps for colorimetric calculation, peak-finder or chemometric models. After definition of a method using the MPT, it is loaded to the embedded system and activated for fully autonomous operation. At this stage, the MPT software can be closed and the PC can be disconnected from the tecSaaS® device.

A wide selection of functions is available in the tecSaaS® standard software. In addition, customized builds can be implemented by tec5 to include additional processing capabilities.

### [ Features/ Highlights of tecSaaS® Platform ]

The tecSaaS® based spectrometer units, which can be configured by the MPT application software, contain hardware and instrument software [firmware] with the following key features:

- Embedded spectroscopy system platform for industrial and mobile applications
- System software for integrated data processing, evaluation and result calculations
- Support of a choice of sensor technologies [UV-VIS-NIR spectral sensors, photometers etc.]
- Process integration e.g. with Modbus/TCP, CAN, ISOBUS and other process interfaces
- Flexible choice of processing functions and parametrization
- Integration of customer-specific add-on modules [special “build”]
- Proprietary processing algorithms can be integrated as binary code
- Security concept including user management, authorization and encryption
- Real-time capabilities, based on a lean RTOS [Real Time Operating System]

### [ MPT Hardware Requirements ]

- PC with Windows Operating System: Windows 7 [32-bit, 64-bit] / Windows 8
- tecSaaS® device with established Ethernet connection to the PC

tec5\_3409\_PI\_Software\_MPT\_e\_2016[04]



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