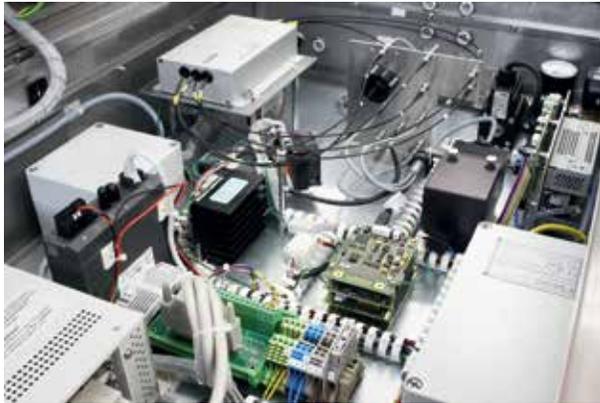




Product Overview

tec5USA was founded in 2001 and is a leading provider of industrial products for spectroscopic components, units and systems. We integrate high quality photonic components for fast operation and high sensitivity to create solutions for process control. tec5USA products monitor decisive production steps in a wide variety of industries including semiconductor, optical and many others.



Core competency:

- Cutting-edge technologies
- High Reliability
- Superior performance
- US production and support

Industries:

- Agriculture
- Biotech
- Chemical
- Food
- Optical
- Pharmaceutical
- Semicon
- Solar
- and more



Customized OEM Manufacturing

One of tec5USA's specialties is the creation and manufacturing of OEM spectrometer units that are customized to the requirements of instrument integrators. We work closely with our customers to combine all the technology to fit their requirements. With our modular components, we are capable of beginning serial production in a short amount of time.

Partners

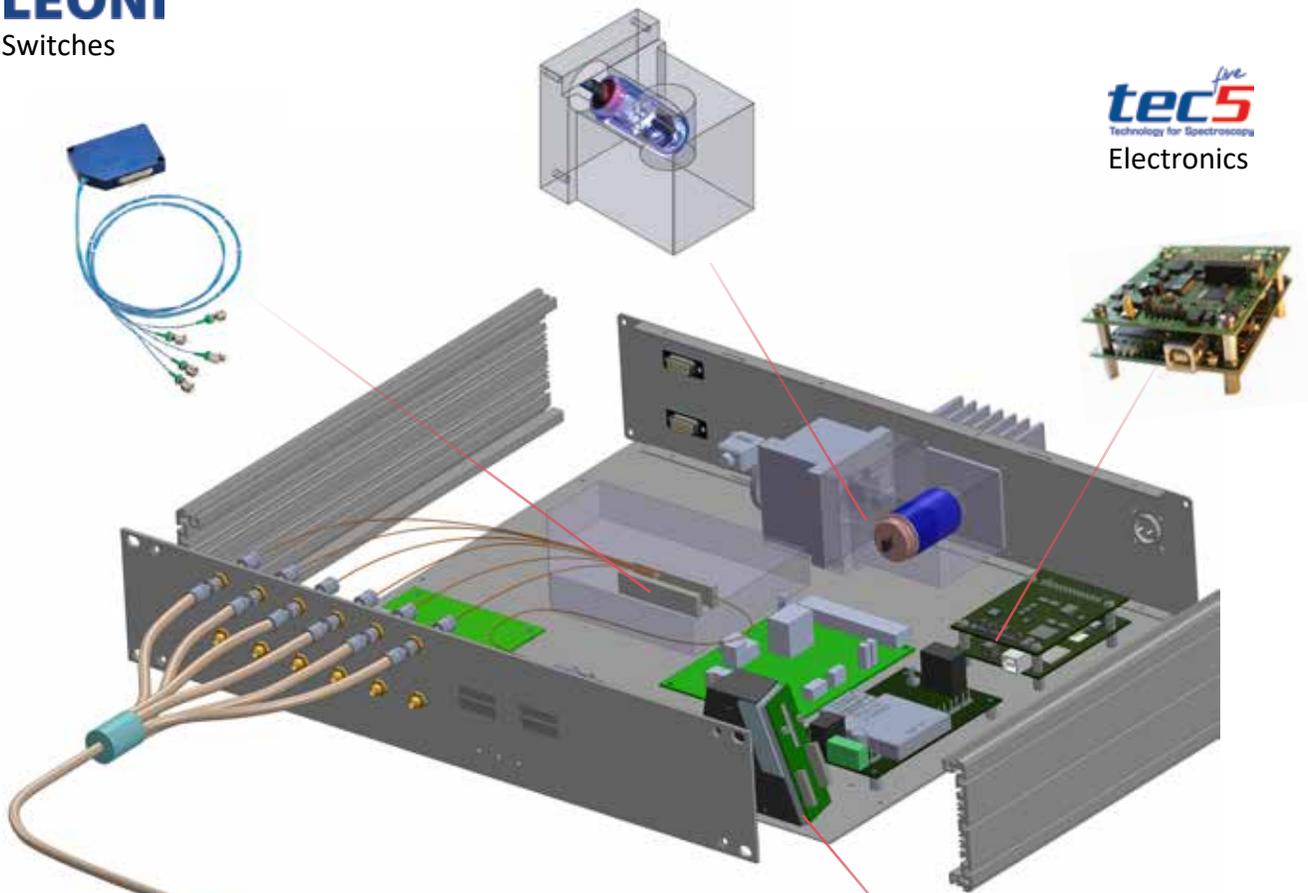
Collaborations & Integration

Direct collaboration with the leading manufacturers of key optical and electronic components allows us to offer high-quality tools for a variety of spectroscopic applications. Our team of scientists and engineers are experts in all areas of spectroscopy including optics, electronics, and mechanics.

LEONI
Switches

Heraeus
Light Sources

tec5
Technology for Spectroscopy
Electronics



PRINZ
Light Guides

Hellma
Probes



Spectrometer
Modules

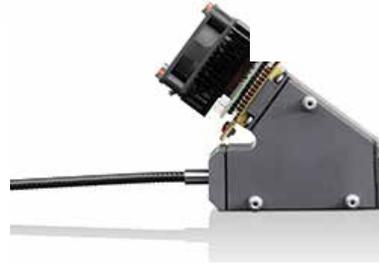
Spectrometer Modules



Our partner Carl Zeiss uses sophisticated designs, high quality components, and advanced mounting techniques to produce the leading spectrometer modules on the market. Key features include permanent wavelength calibration, high throughput and extreme durability. The modules cover spectral ranges between 180 and 2150 nm with various resolutions.

Performance:

- Excellent wavelength stability
- Accurate reproducibility
- High throughput & sensitivity
- Outstanding durability
- Large aperture input
- High-end detector
- Integrated preamplifier



Light Sources

We offer a variety of efficient, powerful broadband and single wavelength light sources with long lifetimes and low fluctuations. Our electronics control both the spectrometer and light source for synchronization between the light emission and the spectral data acquisition.



Options:

- Deuterium-Halogen
- Halogen
- Xenon flash
- LED
- 785-nm laser

Interfaces

Operating Electronics

The tec5 operating electronics are designed for fast, accurate spectral data acquisition with low noise for high quality detector arrays, which include various Hamamatsu sensors. The 16-bit analog-to-digital converters and a wide integration time range provide a large dynamic range. A variety of operating modes, including external triggering, are available to synchronize the spectroscopic instrument to other hardware or external processes.

One specialty is the electronics multiplexing, which combines several spectrometer modules and eliminates the requirement for separate electronics for each channel. It reduces the cost of ownership while guaranteeing perfect timing and long-term stability.

Performance:

- Up to 16-bit resolution
- Low readout noise
- Large dynamic range
- Up to 7000 spectra/s



Options:

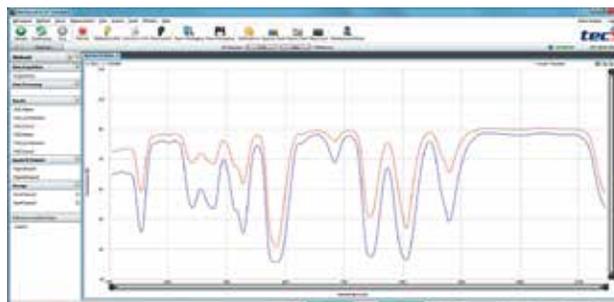
- Ethernet, PCIe, and USB
- Data preprocessing
- Embedded control
- Periphery control

Software

Our software controls the spectral data acquisition with a modular parameter setup and flexible displays. It can be tailored for additional data analysis including chemometrics predictors, colorimetric evaluation, or peak fitting. Software development kits enables the users to write their own code.

Features:

- MultiSpec Pro II
- SDK for C/C++, VB, Delphi
- SDK for LabVIEW



Probes & Heads

We offer a variety of measuring devices for measuring solid, liquid, and gas samples. The probes are tailored to meet customer demands in temperature, pressure and chemical resistivity. Body materials include stainless steel, titanium, hastelloy, PTFE, and others upon request. Measurement heads often include imaging optics for optimal efficiency.

Characteristics:

- Gap sizes: 1 to 50 mm
- Up to 350°C & 300 bar
- Fiber-optic interfaces
- Simultaneous reflection/transmission possible
- Sophisticate designs for high efficiency & stability

Designs:

- | | |
|---|-----------------------------------|
| <input type="checkbox"/> Transmission | <input type="checkbox"/> Emission |
| <input type="checkbox"/> Reflection | <input type="checkbox"/> Raman |
| <input type="checkbox"/> Diffuse reflection | <input type="checkbox"/> ATR |



Light Guides & Switches

Light guides are important for optimizing a spectrometer system as they connect the various functional units, such as the light source to a probe or a probe to the spectrometer. Fiber-optic switches can be a cost-effective method to monitor multiple locations with a single spectrometer.

Options:

- Monofiber and bundle extensions
- Multifucation
- Cross-section converters
- Homogenizers
- Aperture converters



tec5USA, in collaboration with its manufacturing partners, has the expertise and capabilities to create fiber-optic components that maximize the performance of your optical system. All parts are selected and tailored to meet the functional, temperature, pressure and spectral demands of the application.



Switch Features:

- Up to 32-channel
- Up to 600 μm fiber diameter
- High reproducibility
- <50 ms switching time

Systems

Spectrometer Systems



tec5USA offers high-quality systems for optical spectroscopy. Our UV-VIS-NIR systems cover various wavelength ranges between 200 – 2150 nm. The Raman system uses a 785-nm excitation source and covers from 300 – 3100 cm⁻¹. The combination of the modular design of our products and our in-depth knowledge of spectroscopy allows us to tailor these systems to match your individual requirements. They can be

incorporated into protective housings, IP54 or IP65, including explosion-proof, Zones 1 & 2 (ATEX certified). The systems are easily scalable from laboratory to in-line process control via various connections.

Characteristics:

- Minimal maintenance
- Synchronization to process control
- Customizations
- High reliability

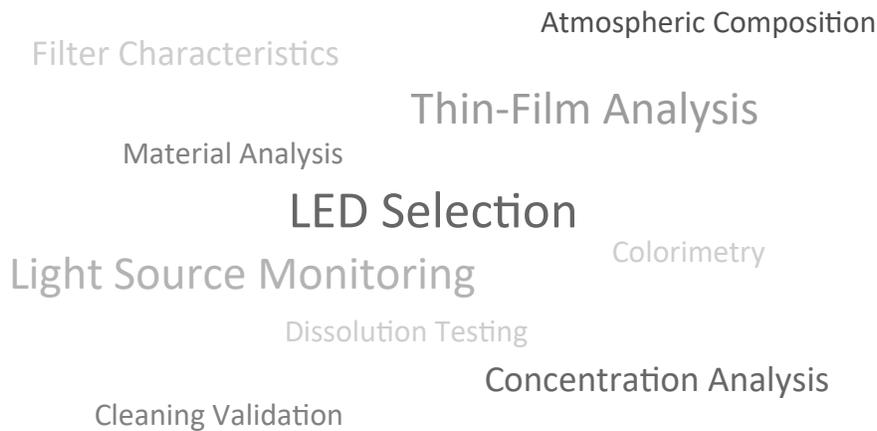


Features:

- OPC
- Profibus
- 4 - 20 mA
- D I/Os
- External triggering

Applications

Spectroscopy can be used in a wide range of applications and thousands of our spectrometer units are running 24/7 worldwide.





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