



irSys® E - The NIR spectrometer.
Customized. Profitable.





irSys[®]E
Spectrometer

- NIR - measurements of product quality and process parameters
- Easy and tight process integration and environmental monitoring
- Mixture analysis and quality assurance of raw materials and products
- Applications in primary and chemical industry, food industry, agriculture
- Optimization for control in "waste to energy" and recycling processes
- Layer thickness measurement

irSys® E: Next generation of flexible spectrometers

Custom-made instruments for your process measurement

↳ Forced by a steadily increasing number of industrial application fields and due to demands for shorter time of analysis, near infrared spectroscopy (NIRS) has been developed to a useful and essential method of analysis in the past years.

A variety of applications such as on-site analytics requires miniaturized and portable spectrometers at an affordable price. irSys® E opens up new opportunities to fill this gap by integration of micro system technology and optics.

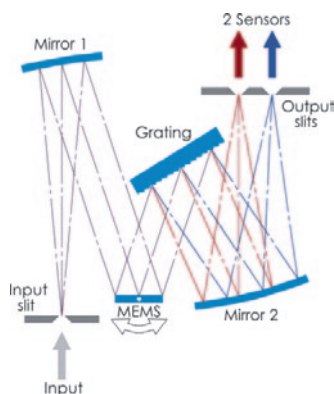
Highlights of irSys® E

- Compact, mobile and affordable
- Industrial proven body
- Free configurable (wavelength range, spectral resolution)
- Quick acquisition (4ms primary scan time) enables real time measurements
- High accuracy
- Flexible use (connection via fiber)
- Extensive development support for integration in custom specific systems, i.e. software customizing, automatic sample generation, light sources, automation technology
- Optional TE cooled sensors

Working principle:

The spectrometer irSys® E belongs to the category of scanning grating spectrometers. Main component is a fast oscillating micro mirror which periodically deflects radiation coming from fiber to a diffraction grating.

The separated spectral parts are lead to exit slits then. Those spectra are successively acquired by two single element detectors which can be cooled on demand. In combination, both two different detector types cover whole wavelength range.



Working principle of NIR spectrometer irSys® E

Extremely low noise amplifiers enable measurements within a large dynamic range. Using the integrated control logic spectral data are pre-processed. The data is transferred to a PC or laptop via USB or RS-485 connection. An application software serves as a visual data output and for simple data processing.

Typical applications:

- Transmissive absorption measurement
- Identification of polymers during recycling process
- Process control during polymerization
- Layer thickness measurement
- Determination of stationary final point of different reactions (e.g. esterification)
- Identification and classification of raw materials
- Determination of moisture after evaporation or drying
- Measurement of fat or water content in milk, butter etc.
- Determination of alcohol in beer, wine or other spirits
- Identification of saturated fatty acids

Software:

irSys® E application software controls spectrometer unit and visualizes obtained spectra. Spectra are shown accordingly to wavelength or wave number units. Simple spectral operations like offset correction or referencing are possible. Spectral data can be saved as an ASCII file either separated or in a common matrix.

Additional export options for adaption to 3rd party software can be delivered on request. Software is parameterized by a device specific INI file. For easy integration into user applications a simple DLL is provided, too. If desired, spectrometer firmware can be modified in accordance to user specific requirements.

Technical specifications irSys[®] E 1.7

Wavelength range
660 nm to 1.730 nm

Detectors
Si and InGaAs detectors

Spectral resolution
8 nm (300 µm slit)

SNR (single shot)
Typically 7.000:1

Technical specifications irSys[®] E 2.1

Wavelength range
910 nm to 2.100 nm

Detectors
2 x InGaAs detectors

Spectral resolution
11 nm (300 µm slit)

SNR (single shot)
Typically 2.500:1 (uncooled sensor)

Technical specifications irSys[®] E 2.4

Wavelength range
910 nm to 2.390 nm

Detectors
2 x InGaAs detectors

Spectral resolution
11 nm (300 µm slit)

SNR (single shot)
Typically 1.000:1 (uncooled sensor)

Common technical specifications

Stray light
-30 dB

Slit width (alternatives)
300 µm (350 µm, 250 µm, 200 µm, 150 µm)

Wavelength accuracy (after automatic calibration)
<1 nm
±0,1 nm short time jitter

Scan time
4 ms

Measurement throughput
80 spectra / minute

Recommended fiber
400 µm; 0,22 NA

Fiber port
SMA 905

Temperature range
5...45°C

Dimensions
138 mm x 89 mm x 66 mm

Weight
840g

Interfaces to host
USB / RS-485

Power supply / power consumption
24 V / 2,9 W (no TE)...5 W (2 TE on both sensors)

Software
Win XP / Win 7

TE cooling options

- Without TE
- 1 TE for long wave sensor
- 2 TE for long wave sensor
- 1 TE for short- and 2 TE for long wave sensor

Accessories

- Plug-in switching power supply unit
- USB cable with USB mini connector and USB driver
- irSys[®] E software
- User documentation

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