



A multi-purpose system for monitoring pharmaceutical processes

SentroPAT FO NIR

SentroPAT FO NIR is a flexible, robust and reliable system that can be used to monitor a variety of unit operations during the processing of solid dose pharmaceuticals. The system is based on a diode array near infrared spectrometer. In combination with any SentroProbe, and configured with the compliant software package SentroSuite GMP, it is a turn-key solution providing valuable process insights from product development to routine operation.

The NIR advantage

NIR spectroscopy is the most versatile PAT technology available. With a proven track record in many industrial applications, it can be deployed to capture both physical and chemical process parameters. Sometimes, NIR measurements even render more specialized PAT equipment unnecessary.

Diode Array Spectrometer

The core component of the SentroPAT FO NIR is a diode array based spectrometer. A key advantage of this technology is the simultaneous measurement of the entire wavelength range within milliseconds. The speed of the measurement makes the system ideal for analyzing fast moving samples, without compromising accuracy. Furthermore, the elimination of spectra acquired during a phase of poor sample presentation is possible with this technology. The long-term stability provided by

the technology is complemented by smart internal standards. This results in high reliability of the system and provides a superior system to system comparability. The sum of the outstanding features enables easy method transfer between instruments, production systems and different scales. Based on an optionally installed multiplexer the SentroPAT FO can measure sequentially with up to four probes.

Embedded PC

The spectrometer module is accompanied by an embedded PC running a standard Windows operating system. An Ethernet connection allows for easy integration into an existing network and enables the use of TCP/IP based communication such as OPC or other standards. The system is quite compact and the housing is GMP-friendly. Smooth surfaces and the IP65/NEMA 4 enclosure mean quick and easy cleaning, enabling installations directly in the production area but also in the technical area.

Low maintenance

A fundamental focus of the design and development of this system was minimizing the maintenance required and cost of ownership. The majority of probes designed for the SentroPAT FO are based on single core optical fibres. These probes can be installed up to 50 m away from the analyser without the need for installation

of expensive fibre bundles. The system continuously and automatically monitors all key instrument parameters, resulting in reliable performance for extended periods without user intervention. The only routine maintenance required is light source replacement every 6 to 24 months.

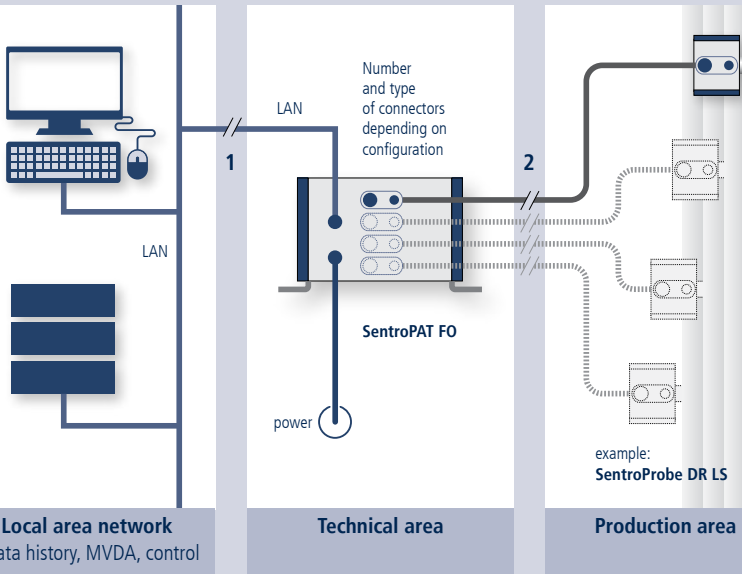
TEC Add On

For applications which require long integration times or need the lowest possible spectroscopic noise, the SentroPAT FO can be equipped with a thermoelectrical cooler (TEC) module. This module, which allows for operation of the detector at -20°C or lower, minimizing temperature variation of all performance relevant system components and thus shifts the stability of the measurement to a new level.



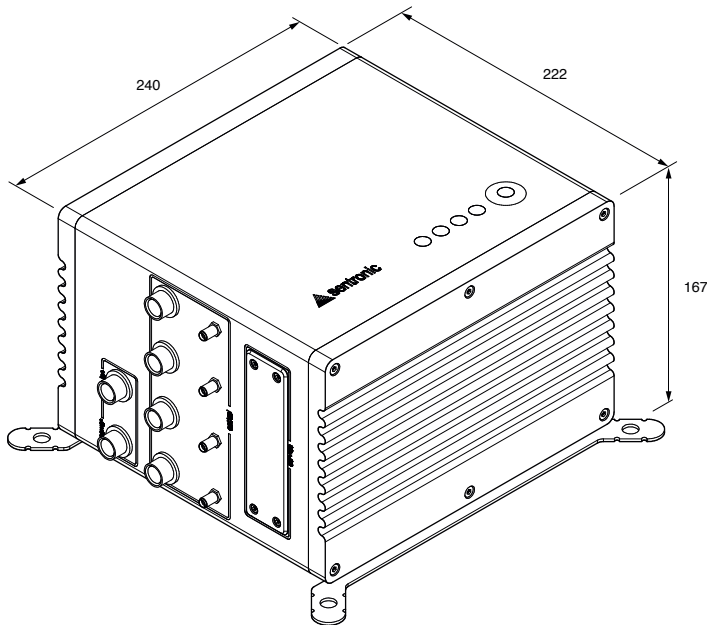
The SentroProbe series are the perfect sample interface optimized for the SentroPAT FO.

System Layout



- 1 network connection**
- data history, MVDA, control
- 2 optical connection**
- for SentroProbe DR LS: max. 4 optical and control cables with a length up to 50 m
 - for SentroProbe DR MS7: Optical connector with 7 channels up to 5.5 m

Dimensions



dimensions in mm
(for versions without TEC module)

Technical Parameters

Technology	Diode array spectrometer
Wavelength range	1150–2100 nm
Spectral resolution (FWHM)	12 nm
Measurement channels	Up to 4 channels, sequentially measured, integrated multiplexer
Fiber optical connection	FSMA905, 400 µm single core fiber
Compliance	USP<1119> EP 2.2.40
Embedded PC	Intel® Atom Windows 7 / Windows 10 256 GB Solid State Disk
Service port	DVI-D, 3 x USB
Communication	OPC, TCP/IP based on Ethernet
Enclosure	IP65 / NEMA4, cGMP friendly, Aluminum anodized
Dimensions	240 x 222 x 167 mm
Weight	Approx. 5 kg
Software	SentroSuite GMP; Conform to 21CFR part 11
Power supply	24VDC, 3–5A instrument type dependent
Ambient Conditions	10°C – 30°C

Performance specification is based on configuration with a standard SentroProbe DR

Product versions

Product number	Channels	Internal light source	Probe type supported	TEC Add On
2530800600141	1	○	DR LS	●
2530000300179	3	●	DR LS	●
2530800300157	4	○	DR LS	●
2530800400154	1	●	DR MS7	●
2530801200142	7	●	DR MS7	●
2530000900171	3	●	DR LS & MS7	●

● Standard ● Option ○ Not available

Systems with an internal light source can be used with any fibre optical probe.

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