

SPOT4LINE

MULTI-ANGLE LED SPECTROMETER

**CHAUVIN
ARNOUX**
INDATECH

Multi-angle LED spectrometer

**Do you know the precise composition of
your liquids?**

- SAM-Spec multi-angle **optical measurement** technology
- **Turbidity measurement**
- **Measurement of color and chemical concentration**
- **Temperature measurement**
- Checking on the **absence of contaminants**

SPOT4Line will tell you!



Measure up 

SPOT4Line the innovative optical measurement system serving industrial companies



Why use SPOT4Line optical measurement?

An acknowledged player in spectroscopy and the owner of numerous patents, INDATECH has designed SPOT4Line, the first multi-angle LED spectrometry for **analyzing any industrial liquid**.

The principle: the beam of light from the LEDs penetrates the liquid to reveal its "**optical fingerprint**" and validates several parameters in real time.

Multipoint spectral measurement for detailed spectral detection and multi-parameter analysis

SPOT4Line's LED spectral detection can be used to check several parameters in real time and obtain the product's unique spectral signature:

- **Turbidity** for measurement of particles
- **Color variability/disparity**
- **Temperature** to ensure that bacteria are destroyed
- **UV for measuring non-visible pollution** and nanoparticles which cannot be detected with a turbidity meter
- Detection of the **absence of contaminants**

Non destructive, no-contact in-line measurement

Installed on the pipework of your process, SPOT4Line performs these measurements without contact, sampling or infiltration. **This means it does not influence the measurement or the solution which it passes through.**

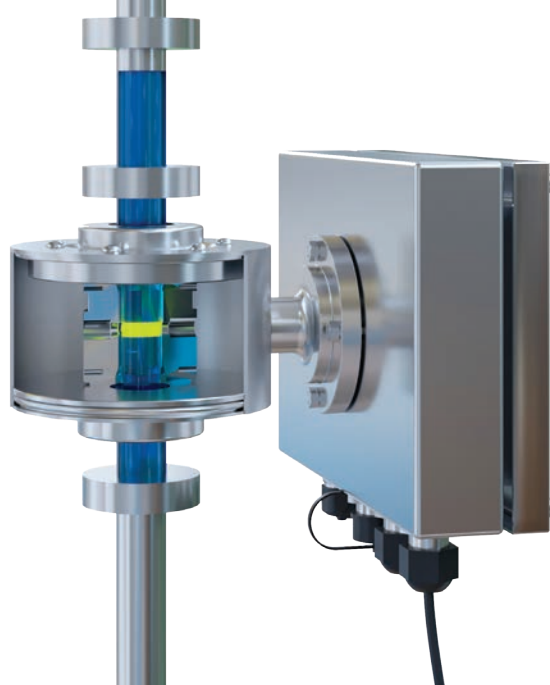
Continuous monitoring

SPOT4Line provides results continuously and in real time.

- Thanks to these detailed measurements, it can achieve **better quality control** of the liquid and the process. Particularly useful for process analysis and statistical tools, such as MSPC (Multi-Statistical Process Control).
- This real-time testing helps to **reduce production losses and eliminate the need for specimen tests in the laboratory**.
- **Possibility of integrating two quantitative prediction models** by using the transmittance or absorbance data with up to 6 wavelengths and 2 scattering angles.

Technology which is long-lasting and simple to use

- LED technology, **extra-long sensor life span**, no drift
- LED measurement method for **sustainable development** of your industrial equipment
- The precise detection offered by the SPOT4Line in-line analyzer helps to **reduce water and/or detergent consumption**
- Optimized hygienic internal design using a smooth tube to **reduce biofilm formation or clogging**, instead of an intrusive probe.
- Simple integration on a pipe, **compact format**
- Instrument **connectable to the standard industrial control systems**, with fast data transfer.



Operation of SPOT4Line in-line spectral measurement

Development of an innovative method: based on the spectral diffusion of light and backed by the patented SAM-Spec Spatially Resolved Spectroscopy (SRS) technology developed by INDATECH's researchers.

SPOT4Line is equipped with a network of LEDs measuring up to 6 wavelengths (from 375 to 860 nm) and combines SRS measurement from four angles: 180°/135°/90°/45°.

Thanks to this measurement complementarity, the SPOT4Line optical sensor **can perform chemical and physical characterization of the fluid measured.**

In this way, it assigns an **optical signature to the product or situation.**

Exemple d'application :

cleaning in place (CIP)

Optimize your cleaning in place with the SPOT4Line

The SPOT4Line multi-parameter analysis provides precise measurements concerning the physical and chemical composition of the liquid, including the turbidity, the color and the temperature.

By detecting each CIP phase precisely, the SPOT4Line LED spectrometer can help you save up to 15% on cleaning time.

Advantages



- **Optimized production time:** precise detection and optimization of each CIP phase



- **Continuous monitoring of the liquid's composition:** for reliable, reproducible supervision of the processes for CIP and SIP (Sterilization In Place)



- **Aseptic safety:** no internal elements in the measuring tube



- **Reduced environmental impact:** helps to minimize water and detergent consumption.



- **Simplified maintenance:** minimum cleaning, no sensor calibration.



- **Configurable alerts:** to indicate any composition variations.

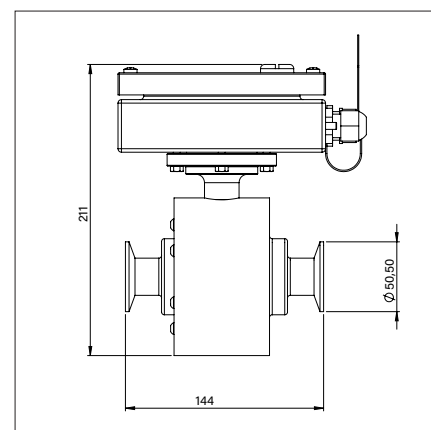
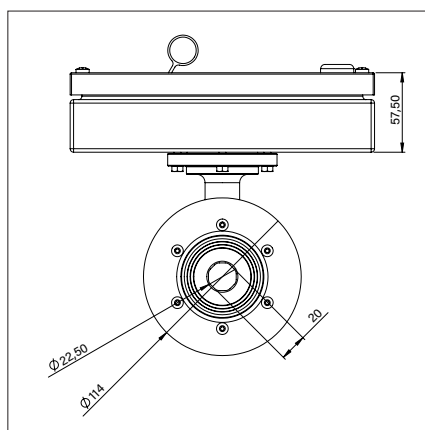
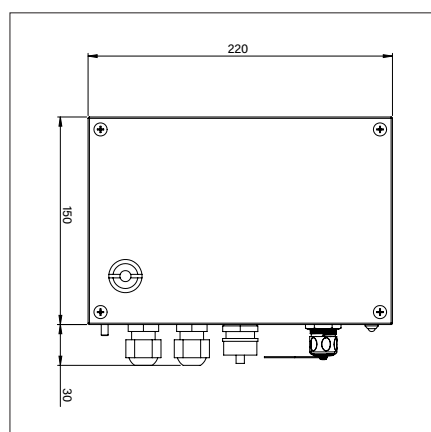


Technical specifications

Spectral measurement principle	Pulsed light from LEDs	UV, Vis and NIR
	Optical density at 6 wavelengths	375, 465, 525, 595, 625 and 860 nm
	Optical density with 4 scattering angles	180 °/135 °/90 °/45 °
Measurement range	Turbidity prediction	20 to 4,000 NTU
	Absorbance measurement range	At least up to 4 AU, and 20000 NTU
	Temperature measurement	0 °C to 85 °C
Measuring conditions	Continuous temperature	0 °C to 70 °C
	Maximum temperature	120 °C for 30 min
	3 pH range	1 - 12 *
Integratable predictive models	2 quantitative models	PLS
Communication system	RS 485 link	With MODBUS protocol
Material	Sensor / Measurement cell casing	Stainless steel 316L / PEEK and sapphire
Sealing	Seals	Kalrez
Processing software	S4Lready	Configurable and parameterizable

*Subject to compatibility of the chemicals with the materials

Dimensions



Installation

Two possible installation methods:

- directly onto the pipework using a standard clamp, DN 25 (25 mm diameter)
- installed using a bypass on the pipework

