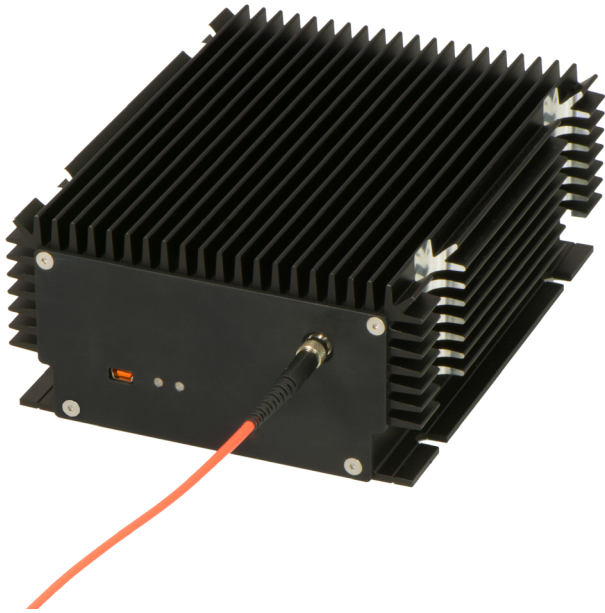


# Inline Sensor

AUTOMATED FLUORESCENCE SPECTROMETER  
FOR PROCESS CONTROL AND QUALITY CHECK  
IN INDUSTRIAL PRODUCTION LINES



The Inline Sensor is a complete fluorescence spectroscopy system based on the Qwave spectrometer. It is used in production lines to control and monitor material concentrations. The device includes an excitation light source, optical filters, a beam splitter and I/O ports for communication with other test equipment.

The sensor takes a complete spectrum of the fluorescence light emitted by a sample and uses customized algorithms to detect specific fluorescence peaks and remove background signals. A measurement takes typically one second to complete. The device operates autonomously and provides the measurement results via digital I/O ports to other equipment. The detection algorithm can be upgraded for new materials via USB.

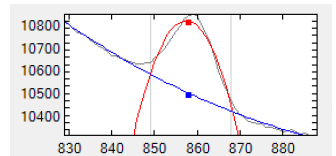
## Optical interface



A single optical fiber is used both for excitation and detection. In most cases the other end of the fiber just needs to be pointed at the sample without requiring further optical elements. This provides high flexibility for mounting the sensor in narrow spaces.

## Detection algorithm

Almost all materials can emit fluorescence. Measured spectra therefore usually exhibit a broad fluorescence background signal.

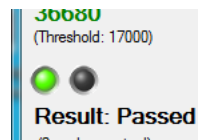


In order to precisely measure the strength of certain fluorescence peaks, the background signal must be compensated. The Inline Sensor uses a specialized algorithm to fit the fluorescence peaks as well as the background signal to mathematical models.

The peak heights are then calculated as the difference between these two fits.

Several fluorescence peaks can be evaluated individually and combined into a single result that determines if the sample passes or fails the test.

A PC software is available to calibrate the Inline Sensor and adjust the measurement parameters to specific materials.



## Optical specifications

Excitation wavelength	UV-LED 365 nm (other wavelengths available)
Excitation power	5 mW
Optical connector	SMA 905 for optical fibers
Spectrometer	Czerny-Turner with 75 mm focal length
Detection range	380 - 880 nm (other ranges on request)
Optical grating	600 lines/mm (default)
Spectral resolution	0.5 nm FWHM (default)
Detector	3648 pixel linear CCD detector
A/D converter	16 bit 15 MHz

## Electrical specifications

9-pin D-Sub connector:

1	V <sub>CC</sub>	Input	Supply voltage 24 V DC, up to 0.5 A
2	START	Input	Start measurement
3	FINISH	Output	Measurement has finished
4	FAILED	Output	Sample failed the test
6	GND		Ground
7	READY	Output	Ready to start measurement
8	PASSED	Output	Sample passed the test

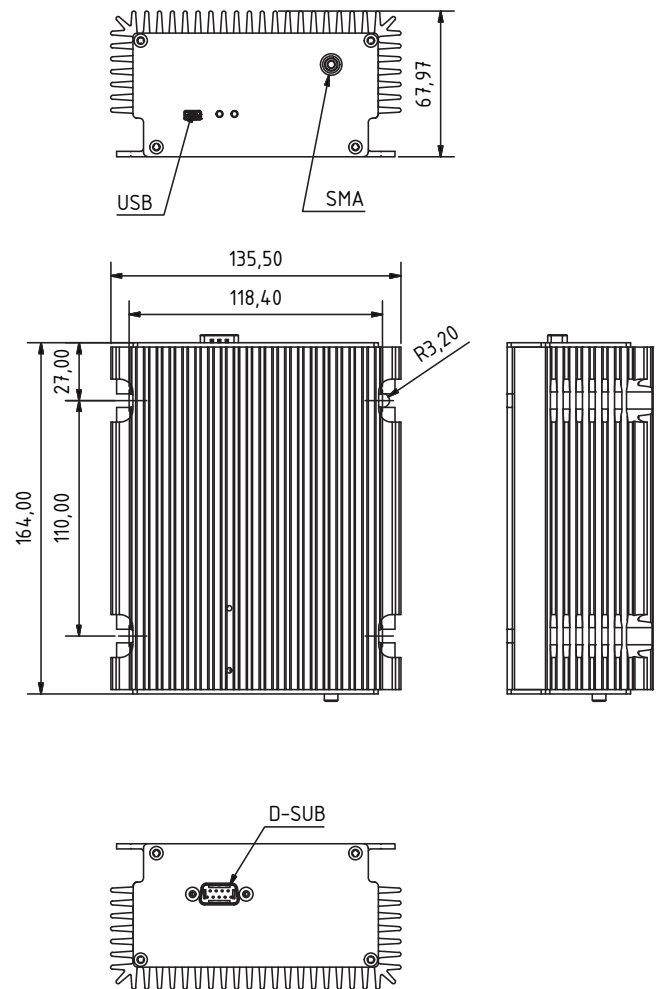
Logic levels are: 0 V = low, 24 V = high.

The USB 1.1 connector is used for setup, service and upgrades.

## Mechanical Specifications

Dimensions	135 × 68 × 171 mm
Weight	1.3 kg
Operating temperature	15 °C to 40 °C (non-condensing)
Storage temperature	-15 °C to 60 °C

## Technical drawing



Please contact us if your requirements are not matched by these specifications. Custom modifications are available for any quantities. All specifications are subject to change without notice. The latest versions can be found on our website.

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