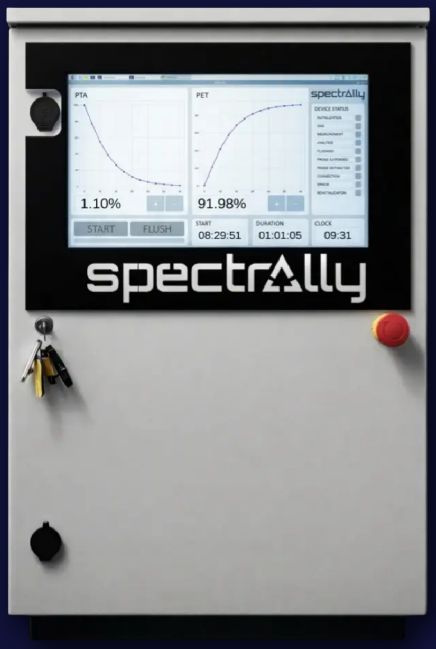
gekko photonics
Engineering-Driven Analytics

RAMAN PROCESS ANALYZER

Spectrally™ X1 INLINE

- Continuous measurement of composition and reaction progress, directly in the process
- Integration with PLC, DCS, MES and SCADA via Modbus
- Advanced neural-network process models in Spectrally™ OS



Parameter	Value
Measurement principle	Raman spectroscopy
Laser wavelength	785 nm (standard); 1064 nm (option)
Laser power	600 mW @ 785 nm; 800 mW @ 1064 nm (maximum)
Spectral range	300–1650 cm^{-1} (standard); 300–3500 cm^{-1} (option)
Spectral resolution	8 cm^{-1}
Measurement channels	1 (standard); 2 on request
Acquisition / integration time	5–300 s / 0.01–300 s
Detector	Back-thinned CCD (785 nm) / InGaAs array (1064 nm), TE-cooled (proprietary TEC driver)
Internal reference	Self-diagnostics and measurement validation; integrated in the probe
Laser lifetime	Min. 2 years
Warm-up time	30 min
Operating temperature	0–45 °C
Storage temperature	–15 to +50 °C
Humidity	20–70% RH, non-condensing
Power supply	100–240 V AC, 50/60 Hz, with protective earth
Power consumption	300 W plus peripherals, depending on configuration
Communication	Modbus TCP; Profinet on request (via gateway)
Operator panel	Standard without a screen; panel on request
Enclosure	2 cabinets, each 50 × 50 × 20 cm, IP54
Software	Spectrally™ OS (Debian GNU/Linux)
Probe	X1 PROBE (IP67, Retractex); fiber up to 20 m, 100 m on request

Chemical composition, measured in the installation

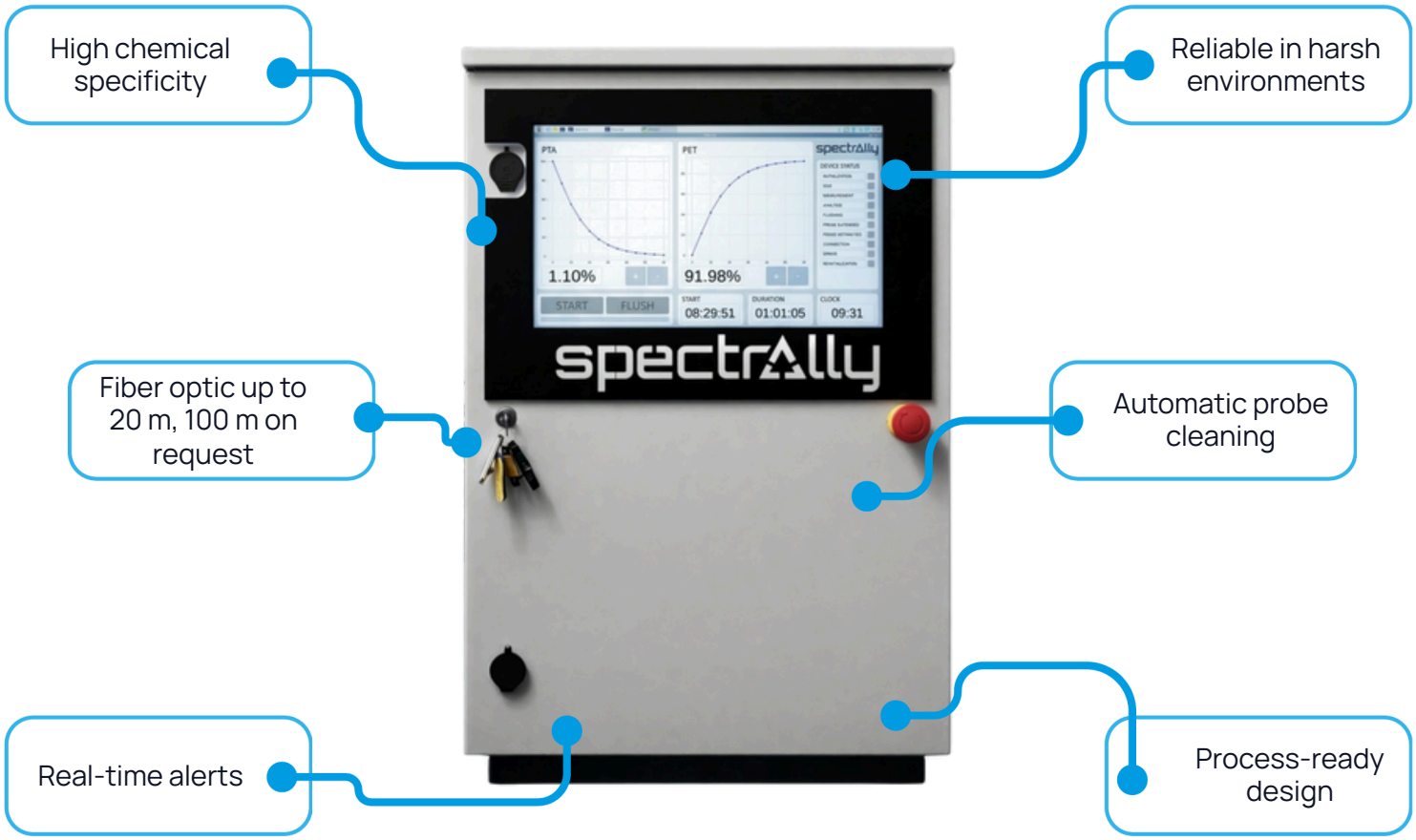
Spectrally™ X1 INLINE is a Raman process analyzer that measures chemical composition directly in the installation, around the clock. It needs no sampling and no process stop: the X1 PROBE sits in the reactor, pipeline or mixer, and the analyzer reports concentrations every few seconds. Acquisition time is configurable from 5 to 300 s.

Results go straight to the plant control system over Modbus, so operators can react to a deviation during the batch rather than after the lab report. The Retractex self-cleaning module retracts, rinses and reinserts the probe window, which keeps the signal stable in media that foul optics.

Spectrally™ OS

The software layer turns each spectrum into process values: concentrations of individual components, PASS/FAIL classification of a batch and alarms when the process drifts.

The same models run on X1 LAB, X1 PORTABLE and X1 INLINE, so work started in the lab carries over to the production line.



ATEX / IECEx Zone 0 configuration (X1 INLINE with X1 PROBE, 30 mW laser) is planned for June 2027. Until then, measurement points in hazardous areas are outside the scope of supply.

MANUFACTURER

gekko photonics
Engineering-Driven Analytics

Gekko Photonics Industrial Sp. z o.o.
ul. K. Liskego 7/5, 50-345 Wrocław, Poland
spectrally@gekkophotonics.com
gekkophotonics.com