GC-UV · LABIO · SINCE 1990

INSCAN X

Industrial GC-UV process analyzer for 24/7 petrochemical QC

DETECTION ENVELOPE

<155 nm → 330 nm

Vacuum-UV through near-UV — continuous full-spectrum acquisition

UV ENVELOPE	CYCLE	ENCLOSURE	DUTY
<155 – 330 nm	**< 3 min**	**IP54**	**24 / 7**

Abstract

INSCAN X packages the deep-UV detector into an IP54 industrial enclosure with OPC UA / Modbus connectivity. It delivers per-cycle BTEX and xylene-isomer speciation directly to refinery DCS and historian systems.

Why GC-UV

GC-UV couples capillary gas chromatography to vapor-phase electronic absorption spectroscopy. Analytes eluting from the column traverse a heated optical flow cell where a continuous deuterium source illuminates them across the deep-UV. Each species contributes a structure-specific absorbance band ($\pi \rightarrow \pi^*$, $n \rightarrow \pi^*$, Rydberg) that, free of solvent perturbation, yields reproducible vapor-phase spectra suitable for library matching [1,2].

- Vapor-phase electronic spectra: no solvent shift, no chromophore quenching
- Discriminates structural and positional isomers GC-MS cannot resolve (e.g. xylene o/m/p) [2]
- Simultaneous multi-wavelength Beer–Lambert quantification in a single run
- No vacuum, no turbomolecular pump — robust for routine and field deployment
- Continuous full-spectrum acquisition (deuterium source, 1024-pixel array)
- Orthogonal and complementary to GC-MS for unambiguous compound confirmation

Specifications

Detector	Ruggedized deep-UV absorbance, vacuum-free
UV range	<155 – 330 nm
Flow cell	High-flow heated MgF_2, 280 °C
GC compatibility	Process and lab GCs, split / splitless
Data rate	up to 100 Hz
Dimensions (W×D×H)	650 × 720 × 540 mm
Power	100–240 V AC, 400 W
Operating environment	5–40 °C, IP54, panel- or shelter-mount
Communications	OPC UA, Modbus TCP, 4–20 mA, INSCAN Suite
Hazardous-area variants	ATEX / IECEx zoned options on request

Representative applications

BTEX in refinery streams

Continuous benzene / toluene / xylene quantification on reformate and naphtha.

Xylene isomer split

Real-time o/m/p-xylene ratio for reformer and PX-unit control [2].

Olefin process monitoring

Track isomeric olefins in cracker effluent.

Fuel blending QC

Verify aromatics content in finished gasoline (EN 238 / ASTM D5580).

References

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