

ELEMENTS

Simultaneous Analysis of Total Sulfur and
Total Nitrogen in One Single Run



- ⊕ Detection limits surpassing market needs
- ⊕ Long term stability results in low calibration frequency
- ⊕ Instrument touchscreen interface and easy accessible consumable parts

LEADING MANUFACTURER FOR ELEMENTAL COMBUSTION ANALYSIS OF TOTAL SULFUR AND TOTAL NITROGEN

ElementS is the most advanced, modular analytical system available for the detection of Total Nitrogen and/or Total Sulfur content in solid, liquid, gaseous and LPG samples. ElementS is available in a vertical configuration with direct sample injection and horizontal with boat inlet sample introduction. Both configurations can be equipped with detectors for Sulfur or Nitrogen analysis or as dual channel configuration for simultaneous analysis.

ElementS detects sulfur and nitrogen through a uniquely efficient process that includes Ultra Violet Fluorescence (UVF) and Chemiluminescence (CLD). The analyzer is key for monitoring and protecting key processes in the refining industry.



Vertical configuration
with 749 autosampler

Front maintenance door
to allow easy access for
consumable parts

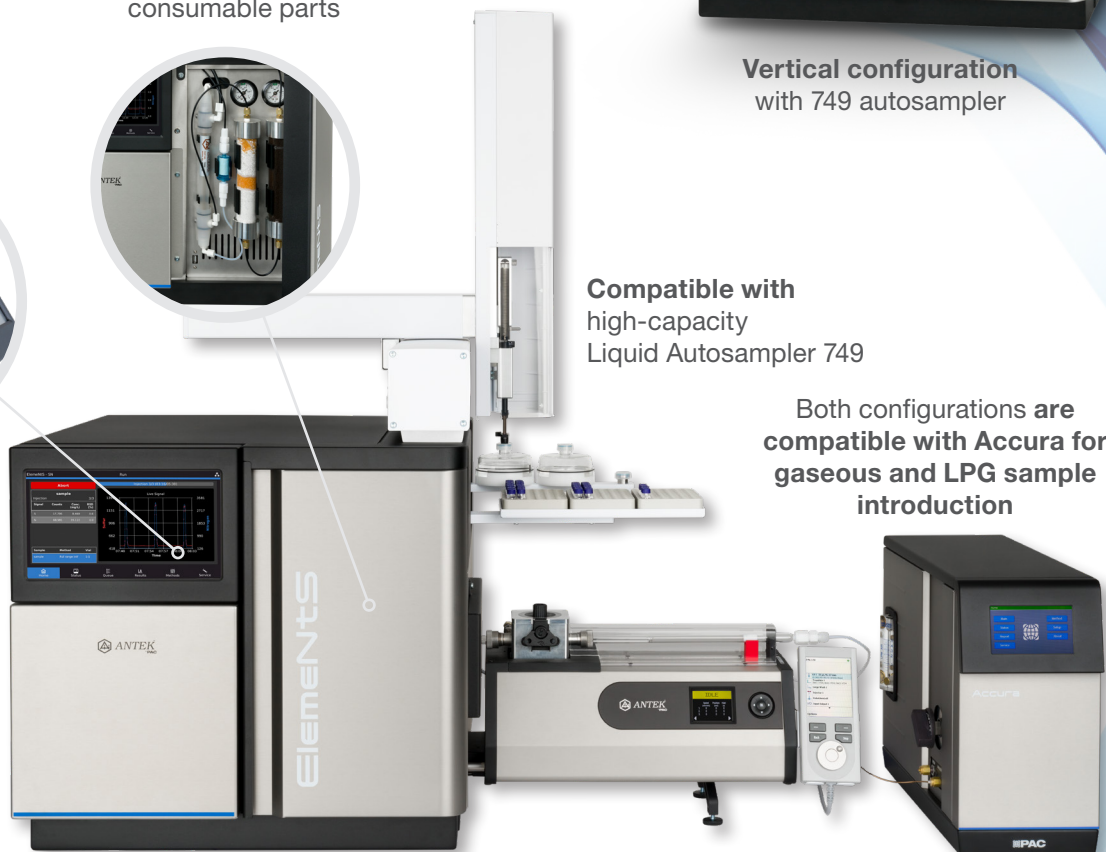


Compatible with
high-capacity
Liquid Autosampler 749

Both configurations are
compatible with Accura for
gaseous and LPG sample
introduction



10" touchscreen
swivels to operate
at any position for
extra comfort



Horizontal ElementS with Boat
Inlet Drive (BID), 749 autosampler
and Accura gas sampler

Boat Inlet Drive (BID)

KEY ADVANTAGES



HIGH PERFORMANCE FOR WIDE APPLICATION RANGE & QUICK ANALYSIS

- Quick analysis of various sample types
- Ability to analyze solids, liquids, gas and LPG samples quickly and accurately
- Simultaneous analysis of Nitrogen and Sulfur
- Low maintenance, optimal combustion and conditioning of gases results in near zero downtime
- Intuitive software and user interface ensure smooth operation of the instrument
- Long term stability for continuous use



IMPROVED LAB PRODUCTIVITY THROUGH REDUCED USER INTERVENTION

- Factory tuned analyzer. The instrument is ready for analysis as soon as it's installed
- Direct instrument control and data preview through user touch screen
- High capacity liquid autosampler (324 samples) reduces need for operators to be present when running samples
- Long-term stability reduces calibration frequency



APPLICATION-SPECIFIC CONFIGURATION PROVIDES EXCELLENT PRECISION

- Highly versatile analyzer that can easily be optimized for its intended application
- PAC application specialists can develop customized methods (no on-site method development needed)



PROVEN COMPLIANCY FOR MULTIPLE INDUSTRIES

- Low detection limits ensure results meet regulatory and quality requirements
- Wide application range helps multiple industries meet standards requirements
- Complies with international standards like: ASTM, ISO, EN, IP, UOP, GB/T, SH/T, JIS K, and GOST

SAMPLING OPTIONS

ElementS can be configured with a **749 Liquid autosampler** for both the vertical and horizontal configuration. The vertical configuration can also be used with the Single Shot Autosampler.

749 Liquid Autosampler:

High capacity liquid autosampler for large sample throughput. Available syringe sizes: 10, 25, 50 and 100 μ l.



Single Shot Autosampler:

Cost-effective solution for injecting a single replicate sample by syringe. Available syringe size: 25 μ l.



SERVICE YOU CAN TRUST

PAC adds unique value to the industry by offering a 100% guaranteed solution, delivered fully factory calibrated, tested to certified reference materials, fine-tuned fully dedicated to methods specified by the user. PAC qualified service engineers commission the instrument and provide operator/user training.

- ④ Best-in-class aftersales service department with over 60 personnel to support direct customer's channel
- ④ 140+ strong distributors located in almost every country to provide local service support
- ④ Regional service teams based in America, Europe and Asia, providing timely response for issues
- ④ Highly skilled and professional onsite service support
- ④ Skilled helpdesk to provide remote support and assist with troubleshooting
- ④ Internal customer-facing key performance indicators (KPIs) to drive the behavior for faster turnaround and provide excellent customer service
- ④ Basic and complete care service program packaging offering preventive maintenance/calibration services to proactively maintain/calibrate your analyzers
- ④ Hands-on service level training courses available for our ElementS instruments



MARATHON PETROLEUM COMPANY TESTIMONIALS



“**PAC creates a unique value** for Marathon by providing, one, highly reliable instruments, and two, it’s really the turnaround time when it comes to service. Overall, if we need something that needs to get handled and we make a phone call to PAC, we usually get a call (the) same day if not (the) next day to at least help us address issues, and if we need someone to come on-site, usually within three to seven business days, we can get someone here.”

Jonathan Kammo

Lab Supervisor Technician



“**The ElemeNtS is very good with repeatability.** It’s very robust. The maintenance on it is very simple. (And) most of the techs have a really easy time using the software.”

Jonathan Mouhot

Lab Manager



TECHNICAL SPECIFICATIONS

Instrument Specifications		Sulfur	Nitrogen
Measuring principle		UV Fluorescence	Chemiluminescence
Operating range		µg/L to % level	µg/L to % level
Repeatability		< 1% @ 5 µg/L	< 1% @ 5 µg/L
Linear Dynamic Range		10 ⁴	10 ³
Limit of Detection ¹⁾		< 5 µg/L	< 5 µg/L
Compliance		ASTM D5453, EN ISO 20846, ASTM D6667, ASTM D7183, ASTM D7551, EN 15486, IP 490, JIS K 2541	ASTM D4629, ASTM D5176, ASTM D5762, ASTM D7184, DIN 51444, ISO/TR 11905, GB/T 17674, UOP 936, JIS K 2609
Application Limit of Detection ¹⁾			
Sulfur		Nitrogen	
Aqueous	< 5 µg/L	Aqueous	< 5 µg/L
Alcohol	< 5 µg/L	Alcohol	< 5 µg/L
Petrochemicals	< 5 µg/L	Petrochemicals	< 20 µg/L
Aromatics	< 20 µg/L	Aromatics	< 20 µg/L
(Bio)Fuels	< 20 µg/L	(Bio)Fuels	< 20 µg/L
Gaseous/LPG	< 20 µg/L	Gaseous/LPG	< 20 µg/L
Solids	< 100 µg/kg	Solids	< 100 µg/kg
Typical Sample Size ²⁾			
Gas: 10 ml	LPG: 10 ml	Liquids: 20 µL	Solids: 20 mg
Typical Analysis Time			
Gases / Liquids: 5 minutes		Solids: 2-15 minutes (dependent upon sample type/weight)	
Typical Sample Size	Vertical	Horizontal	
Combustion zone	Dual zone combustion top temperature typical 950 °C Bottom temperature typical 1050 °C	Single zone combustion dual pass pyrotube typical temperature 1050°C (up to 1100°C)	
Inlet	N/A – direct injection	Temperature Controlled Inlet +/- 15°C below ambient	
Gases			
Oxygen	> 600 ml/min, >5 bar (75 psig), grade 5.0 or better (99.999%)		
Carrier*	Helium/Argon: > 200 ml/min, >5 bar (75 psig), grade 5.0 or better (99.999%)		
* Helium may be substituted for Argon as a carrier gas (carrier gas adjustment is required)			
Miscellaneous Specifications		Dimensions (WxDxH) ³⁾	
Power	100 – 240 VAC, 50/60 Hz, 1550 VA	Vertical Configuration	52.5 x 55.5 x 51.5 cm. or 20.6 x 21.8 x 20.2 in.
Weight	41 kg (90 lbs)	Horizontal Configuration	100 x 55x 51.5 cm. or 39.4 x 21.8 x 20.2 in.

Continuing research and development may result in specifications or appearance changes at any time.

Note 1: The above referenced limit of detection values are determined conform ISO 11843 using specific sample matrices and optimized instrument conditions.

Note 2: Typical sample sizes are recommended for optimal instrument performance.

Note 3: Dimensions excluding autosampler.



ABOUT PAC

PAC develops advanced instrumentation for lab and process applications based on strong analytical expertise that ensures optimal performance for our customers. Our analyzers help our customers meet complex industry challenges by providing a low cost of ownership, safe operation, high performance with fast, accurate, and actionable results, high uptime through reliable instrumentation, and compliance with standard methods.

Our solutions are from industry-leading brands: AC Analytical Controls, Advanced Sensors, Alcor, Antek, Herzog, ISL, Cambridge Viscosity, Phase Technology, PSPI, and PetroSpec. We are committed to delivering superior and local customer service worldwide with 16 office locations and a network of over 50 distributors. PAC operates as a unit of Roper Technologies, Inc., a diversified technology company and a constituent of S&P 500, Fortune 1000, and Russell 1000 indices.

HEADQUARTERS

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Contact us for more details. Visit our website to find the PAC representative closest to you.

