

# Thermo Scientific SOLA iQ

## Sulfur on-line analyzer

The Thermo Scientific™ SOLA iQ sulfur on-line analyzer determines the total sulfur content of liquid or gas phase samples to ensure process optimization, maximize profitability and maintain regulatory compliance.

### Features

- Measurement ranges from 2ppm to 100%
- Limits of detection as low as 25ppb
- Intuitive color touchscreen user interface
- Pure O<sub>2</sub> is not required, eliminating the risks associated with oxygen use in a process environment
- Semi-continuous operation; change in sulfur concentration indicated at every injection cycle
- Automatic density compensation for ppm sulfur wt/wt measurements
- Easy access for maintenance and >99% uptime
- Continuous control of UV light intensity ensures calibration is maintained over a long period of time

The SOLA iQ sulfur on-line analyzer replaces expensive and time consuming laboratory sampling with on-line analysis for rapid determination of sulfur concentrations. This state of the art analyzer ensures maximum product yield.

The SOLA iQ provides an accurate measurement of total sulfur in a range of liquid and vapor fluids, correlating to;

- ASTM Method D5453 for liquid phase samples
- ISO Method 20846 For Petroleum products
- ASTM Method D6313 for lead acetate colorimetry
- ASTM Method D2622 for XRF wavelength dispersion



Utilizing unique Pulsed UV Fluorescence technology the SOLA iQ builds on the success of the SOLA II range of total sulfur analyzers with an install base of thousands of units at the world's leading oil & gas companies.

### SOLA iQ Applications

#### Clean Fuels

The superior stability and precision of the SOLA iQ enables refiners to make timely process adjustments to enhance the economic efficiency of desulfurization and fuel blending operations.

#### Flare Gas & Condensable Vapors

The highly accurate SOLA iQ Flare analyzer features a dynamic measuring range from 10 ppm to 100% S by volume with fast high-to-low response time, enabling reliable flare stack sulfur emission reporting.

#### Multi-Calibration/Multi-Stream

The SOLA iQ analyzer enables multiple streams of different sulfur concentrations (i.e., batch processing, inlet/outlet of reactors, etc.) to be measured by a single analyzer.



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Performance	
Detector	Pulsed UV Fluorescence (PUVF) with Pyrolyzer for Total Sulfur Measurement
Measuring ranges (consult factory for higher ranges)	SOLA iQ Liquid: Full scale ranges from 5ppm to 5% - single or dual range analyzer SOLA iQ Vapor: Full scale ranges from 5ppm to 1% - single or dual range analyzer SOLA iQ Condensible Vapors (CV): Full scale ranges from 5ppm to 1% - single or dual range analyzer SOLA iQ Flare: Full scale ranges from 10ppm to 100% - dual range analyzer SOLA iQ Trace: Full scale ranges from 2ppm to 50ppm - single or dual range analyzer
Precision (1x std dev)	SOLA iQ Liquid & Vapor: Ranges $\geq 10\text{ppm}$ $\pm 2\%$ of full scale, 1 sample injection per minute; $\pm 1\%$ of full scale, 2 sample injections per min SOLA iQ Liquid & Vapor: Ranges $< 10\text{ppm}$ $\pm 2\%$ of full scale, two sample injections per minute SOLA iQ Flare: $\pm 1\%$ of full scale, two sample injections per minute SOLA iQ Trace: $\pm 1\%$ of full scale, two sample injections per minute
Lower limits of detection	SOLA iQ Liquid, Vapor, CV & Flare 1.25% of full scale or 125ppb (whichever is greater), defined as 3x standard deviation at low level sample SOLA iQ Trace 25ppb, defined as 3x standard deviation at low level sample
Linearity	Ranges $\geq 10\text{ppm}$ : $\pm 2\%$ of full scale, one sample injection per minute; $\pm 1\%$ of full scale, two sample injections per minute Ranges $< 10\text{ppm}$ : $\pm 2\%$ of full scale, two sample injections per minute
Response time	Semi-continuous, outputs updated every 1 second, typically 5-6 minutes to 90% of new value (application dependent)
Number of process streams	Single or multiple (up to 4) stream control via SOLA iQ pneumatic outputs, stream selector hardware to be supplied by customer/third party
Calibration/Validation	Automatic or manual
Connectivity	
Analog outputs & inputs	4x 4-20mA outputs, 4x inputs (user configurable as 4-20mA or 0-5V)
Serial	4x user configurable RS232 or RS485, TCP/IP Ethernet, MODBUS
Relay & digital outputs	8x relay outputs rated 6A at 240VAC, 8x solid state relay outputs rated 0.2A at 120VAC/VDC, 12 digital inputs
Pneumatic outputs	For calibration and sample stream selection
Graphical User Interface	Front panel mounted 7" color touchscreen user interface to access analyzer functions and diagnostic data including sulfur concentrations, oven and furnace temperatures, PMT and lamp voltages, detector flow rate and more. Connect securely from a remote location on your PC or mobile device to access all front panel display functions.
AutoCONFIG™ software	Security protected access to all analyzer setup, configuration parameters and all process and diagnostic data. Connect via a standard PC across your Local Area Network. Download 30,000 data records (process and analyzer functions), typically up to 24 hours of records (user configurable).
Utilities	
Ambient temperature	+12°C to +40°C (+54°F to +104°F)
Power requirements	100 VAC - 240 VAC, 50/60 Hz, 18 amp circuit recommended; 18 amps maximum during warm-up cycle; 7-8 amps once achieving operational temperatures
Cabinet purge air	Minimum 3.8, maximum 6.9 barg, 180-210 L/min (application dependent), Oil Free, -40°C (-40°F) dew point
Carrier & combustion gases	Zero Grade Air maximum 5.5 barg 300 ml/min. For SOLA Trace we recommend Heliox for combustion air - consult factory for application specific advice
Cabinet weights and dimensions	
Zone 1 and Div 1 configurations	H 1420mm (56"), W 610mm (24"), D 459mm (18") including top mounted purge control unit - consult factory for mounting details.
Zone 2 and Div 2 configurations	H 1130mm (45"), W 610mm (24"), D 459mm (18") purge control unit not fitted - consult factory for mounting details.
Product Weight	Approximately 250lb (113kg), typical; with options the estimated weight is 350lb (159kg)
Approvals	
	NEC Class I, Division 2, Groups B, C & D. T2/T3 & T4 (T4 rating is application dependent) NEC Class I, Division 1, Groups B, C & D. T2/T3 & T4 (T4 rating is application dependent) CSA with associated "C/US Mark" Class I, Division 2, Groups B, C & D. T2/T3 & T4 (T4 rating is application dependent) CSA with associated "C/US Mark" Class I, Division 1, Groups B, C & D. T2/T3 & T4 (T4 rating is application dependent) ATEX Zone 1 Ex px IIC T3 ATEX Zone 2 Ex pz IIC T3 IECEX Zone 1 Ex px IIC T3

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