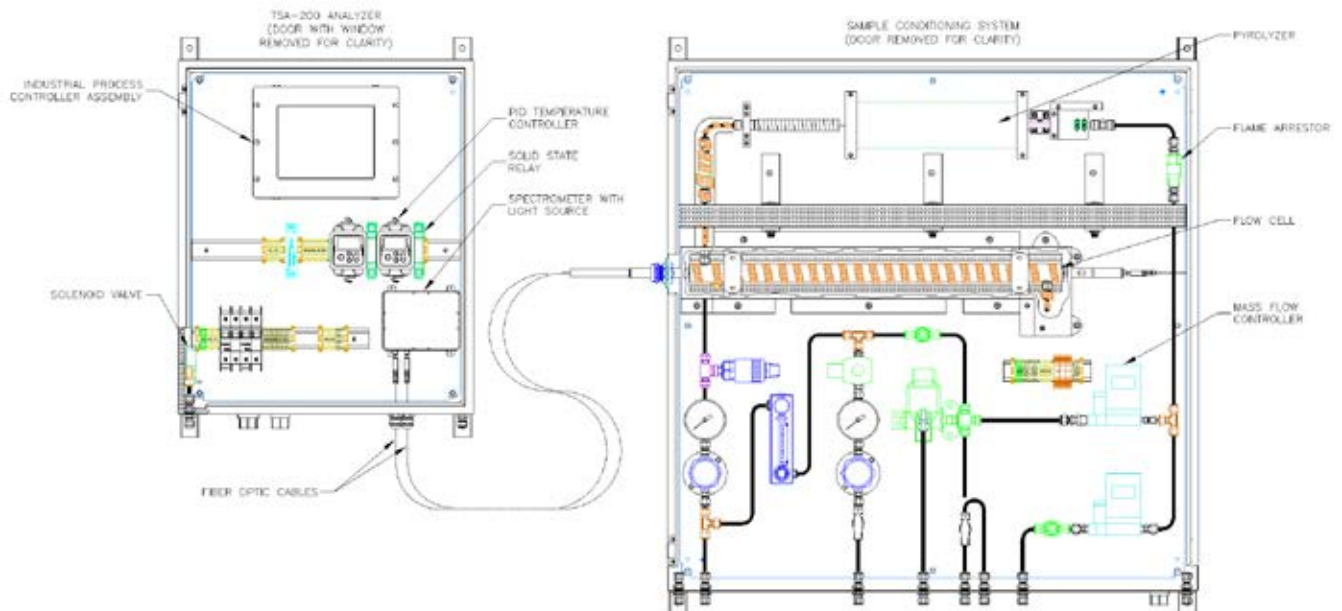


TSA-200 Total Sulfur Analyzer

Applied Analytics DS-008A — Revised 19 October 2016



Online monitoring of Total Sulfur through pyrolysis.

The Total Sulfur Analyzer measures the combination of all sulfur bearing compounds in one output signal using pyrolysis. Pyrolyzing the entire stream creates a typically interference free reading of total sulfur, accurately displaying a summation of the total amount of sulfur in the stream. The total sulfur analyzer brings light to the sample, creating a safe environment for the operator of the instrument and removing scenarios where workers are required to interact in close quarters with a hazardous gas.

Features

- » Continuously measures total sulfur as one output aided by pyrolysis
- » UV absorbance technology
- » Fully configurable alarms, thresholds, and dynamic ranges
- » Configurable to sense some sulfur species prior to pyrolysis

TSA-200 Total Sulfur Analyzer

Applied Analytics DS-008A — Revised 19 October 2016

TSA-200 Sample Conditioner

The primary purpose of the TSA-200 sample conditioning system is to pyrolyze the sample (i.e. controlled combustion). Upon entering the TSA-200 sample conditioning system, the sample flow encounters a pressure reducing regulator, then a solenoid shutoff valve for emergency cutoff of the sample. Next, the gas passes through a tee and is split between the fast loop and the sample loop. The fast loop takes most of the sample, passing it through a flow meter and then returning it to the process line. The flow meter can be adjusted, allowing the user to control the sample lag time as well as sample consumption.

A small portion of the sample enters the sample loop for preparation and analysis. The sample for analysis is filtered with a 15 μm particulate filter. After the filter, the sample reaches an air-actuated 3-way ball valve which allows for introduction of calibration gases for zeroing, calibration and validation. Mass flow rate controllers are then used to carefully mix the sample with air; the flow rates of the sample gas and air are application-specific because they are based on air/fuel ratio and fuel chemistry.

The sample/air mixture passes through a spark arrestor and into the pyrolyzer tube. The combustion products are primarily carbon dioxide, sulfur dioxide and water. The sample then reaches the flow cell, where UV absorbance is measured (via fiber optic cables). Finally, the sample flow passes through a backpressure regulator, which maintains a constant pressure inside the system. After the backpressure regulator, the sample exits the system as waste gas.

- » 36"x36"x12" NEMA 4 carbon steel enclosure
- » Pressure reducing regulator
- » Shutoff valve for upset conditions
- » Two mass flow controllers for sample gas and air supply
- » Flow cells
- » Pyrolyzer
- » Backpressure regulator to control the pressure of the gas flow
- » Air-actuated 3-way valve
- » Includes 15 μm particulate filters
- » Fast loop flow meter

TSA-200 Total Sulfur Analyzer

Applied Analytics DS-008A — Revised 19 October 2016

All performance specifications are subject to the assumption that the sample conditioning system and unit installation are approved by Applied Analytics. For any other arrangement, please inquire directly with Sales.

Subject to modifications. Specified product characteristics and technical data do not serve as guarantee declarations.

Technical Data	
General	
Measurement Principle	Dispersive ultraviolet-visible (UV-Vis) absorbance spectrophotometry Detector nova II™ UV-Vis diode array spectrophotometer
Light Source	Pulsed xenon lamp (average 5 year lifespan)
Sample Conditioning	The SCS utilizes mass flow controllers to continuously mix the sample gas with air at a precise fuel:air ratio. The system passes the resultant mixture through a furnace tube. Post-combustion, the stream absorbance is measured.
Analyzer Calibration	Factory calibrated with certified calibration gases.
Reading Verification	Simple verification with samples and self-check diagnostic
Human Machine Interface	Applied Analytics standard HMI: industrial controller with touch-screen LCD display Data sheet: http://aai.solutions/documents/AA_DS202A_HMI.pdf
User Interface	ECLIPSE™ Runtime Software Data sheet: http://aai.solutions/documents/AA_DS203A_Eclipse.pdf
Data Storage	Solid State Drive Data sheet: http://aai.solutions/documents/AA_DS204A_SSD.pdf
Enclosure	Standard: wall-mounted, carbon steel NEMA 4 enclosure Options in data sheet: http://aai.solutions/documents/AA_DS401X_Enclosures.pdf
Available Certifications	CSA Class I, Division 1 CSA Class I, Division 2 ATEX Exp II 2(2) GD <i>Please inquire for other certifications.</i>
Measuring Parameters	
Repeatability	±0.5% of scale
Photometric Accuracy	±0.004 AU @ 220 nm
Sample Conditions	
Sample Temperature	66 °C
Sample Pressure (max)	3600 psig
Ambient Conditions	
Analyzer Environment	Indoor/Outdoor (no shelter required)
Ambient Temperature	Standard: 0 to 35 °C (32 to 95 °F) With optional temperature control: -20 to 55 °C (-4 to 131 °F) To avoid radiational heating, use of a sunshade is recommended for systems installed in direct sunlight.
Physical Specifications	
Dimensions	Analyzer: 24" H x 20"W x 8"D (610mm H x 508mm W x 203mm D) SCS: 36"H x 36"W x 12" D (914mm H x 914mm W x 305mm D)
Weight	Analyzer: 32 lbs. (15 kg) SCS (if included): per system
Wetted Materials	Standard: K7 glass, Viton, stainless steel 316L <i>Various custom materials available — please inquire.</i>

TSA-200 Total Sulfur Analyzer

Applied Analytics DS-008A — Revised 19 October 2016

Utility Requirements	
Electrical Requirements	85 to 264 VAC 47 to 63 Hz
Power Consumption	Per system
Outputs/Communication	
Outputs	1x galvanically isolated 4-20mA analog output per measured analyte 2x digital outputs for fault and SCS control Optional: Modbus TCP/IP; RS-232; RS-485; Fieldbus; Profibus; HART; more
I/O Electronics	Voltage/Current Interface Module (i.e. I/O Board) Data sheet: http://aai.solutions/documents/AA_DS205A_VCIM.pdf



is a registered trademark of Applied Analytics, Inc. | www.aai.solutions

Headquarters

Applied Analytics, Inc.
Burlington, MA | sales@aai.solutions

Asia Pacific Sales

Applied Analytics Asia Pte. Ltd.
Singapore | sales@appliedanalytics.com.sg

India Sales

Applied Analytics (India) Pte. Ltd.
Mumbai, India | sales@appliedanalytics.in

North America Sales

Applied Analytics North America, Ltd.
Houston, TX | sales@appliedanalytics.us

Middle East Sales

Applied Analytics Oil & Gas Operations, L.L.C.
Abu Dhabi, UAE | sales@appliedanalytics.ae

Europe Sales

Applied Analytics Europe, AG
Genève, Switzerland | sales@appliedanalytics.eu

Brazil Sales

Applied Analytics do Brasil

Rio de Janeiro, Brazil | vendas@aadbl.com.br

© 2016 Applied Analytics, Inc. Products or references stated may be trademarks or registered trademarks of their respective owners. All rights reserved. We reserve the right to make technical changes or modify this document without prior notice. Regarding purchase orders, agreed-upon details shall prevail.