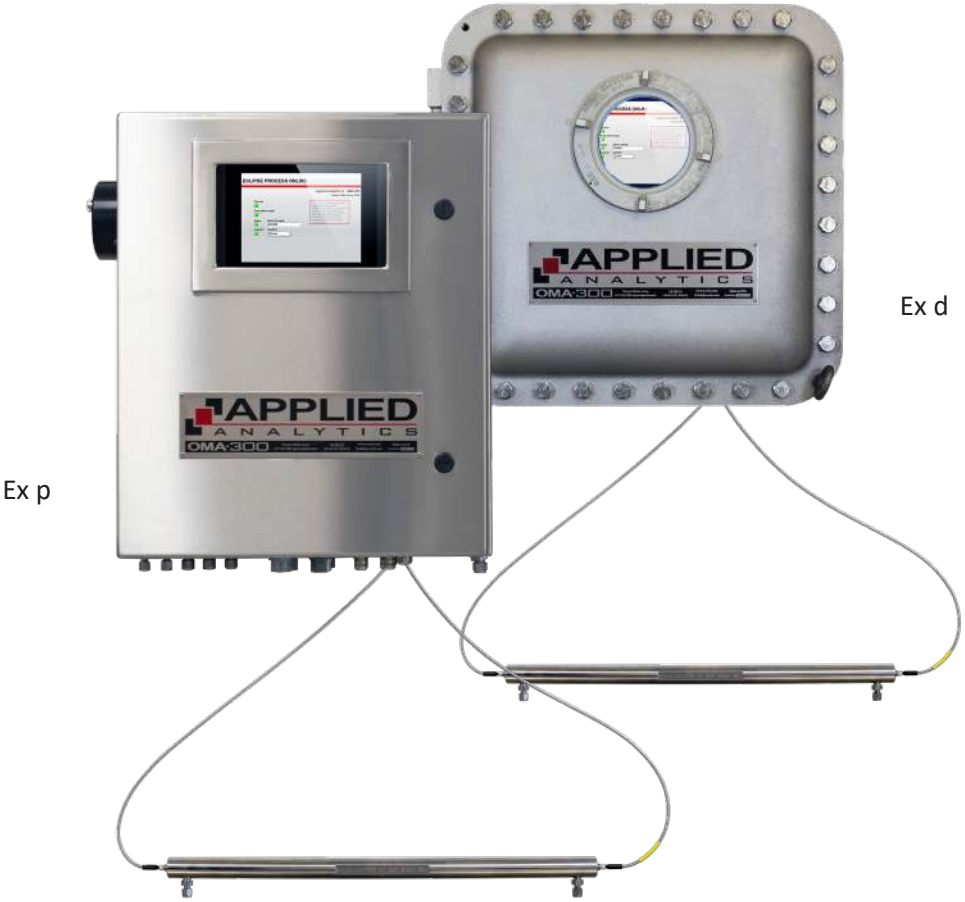
OMA-300 Hydrogen Sulfide Analyzer

Applied Analytics Data Sheet No. DS-001B — Revised 04 January 2024

H_2S



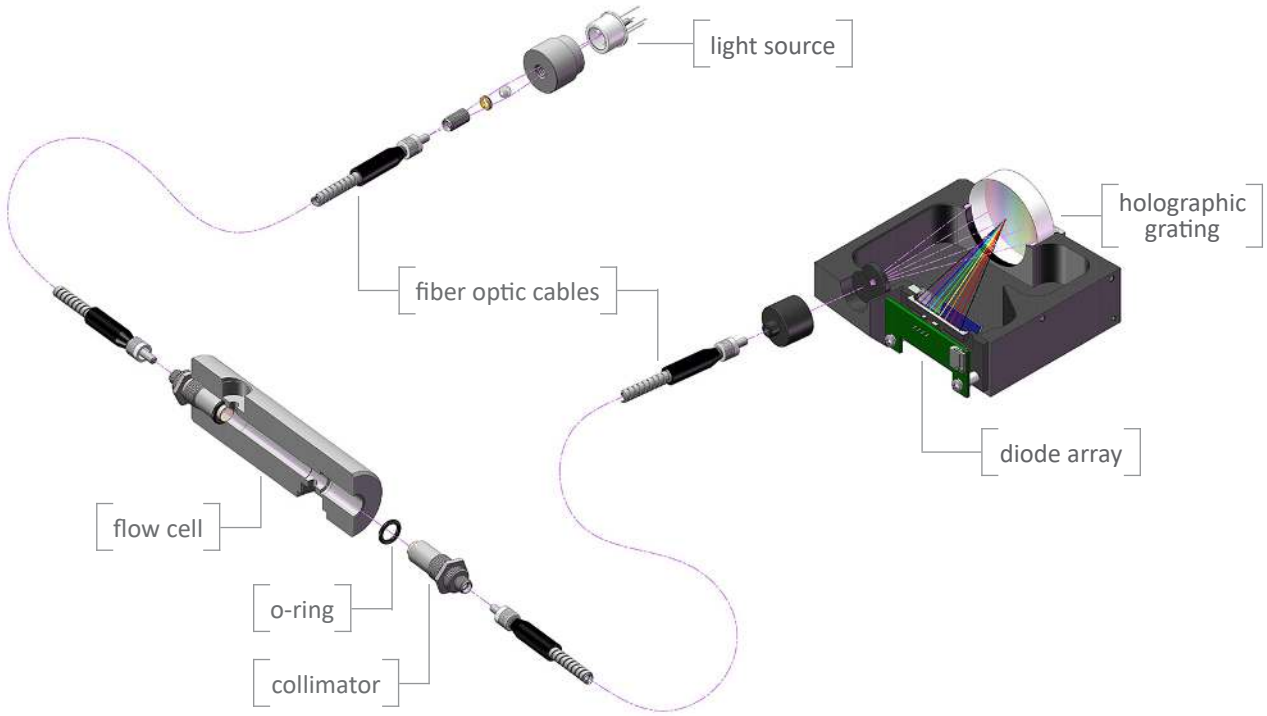
The world's safest continuous H_2S analyzer.

The OMA continuously measures H_2S concentration using a full-spectrum UV-Vis spectrophotometer, harvesting the power of collateral data to establish excellent dynamic range and sustain accuracy in the presence of cross-interfering species. With an ultra-safe fiber optic design and solid state build, this system is simple to install and relentlessly reliable.

Features

- Continuously measures H_2S concentrations in a liquid or gas process stream
- Up to 4 additional software benches for additional analytes (e.g. SO_2, R-SH)
- Totally solid state build with no moving parts — modern design for low maintenance
- Ultra-safe fiber optic design with dedicated sample flow cell — no toxic/corrosive sample fluid in analyzer enclosure
- Decades of field-proven performance in the world's harshest industrial environments

Optical Assembly & Principle of Operation



The OMA measurement cycle is instantaneous, but it can be helpful to visualize it in stages:

(1) The white light signal originates in the pulsed Xe lamp that functions as the light source.

(2) The signal travels via fiber optic cable to the flow cell. A collimator narrows the light beam.

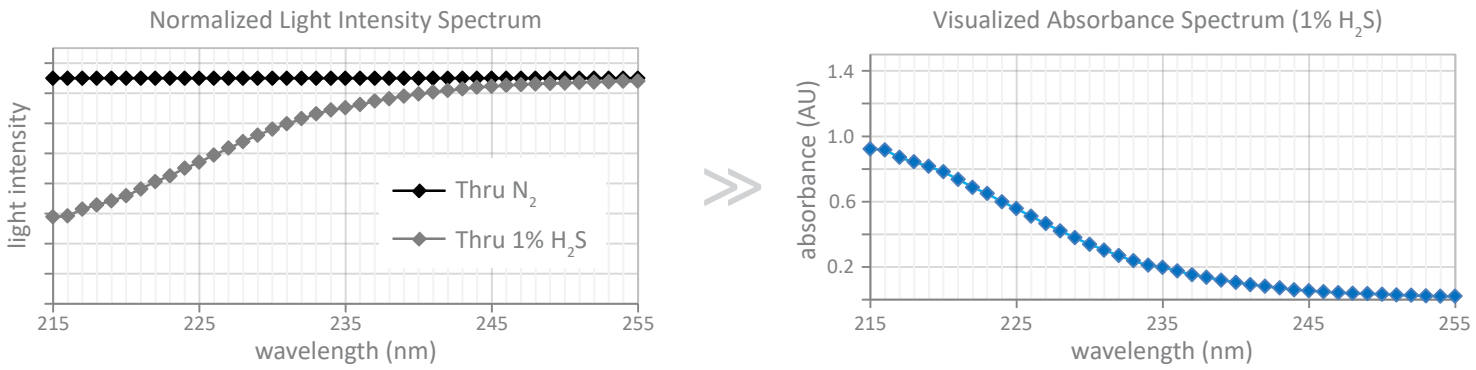
(3) The signal travels directly across the flow cell, interacting with the continuously drawn process sample.

(4) The signal exits the flow cell through a collimator, now containing the distinct absorbance imprint of the current chemical composition of the sample.

(5) The signal travels via fiber optic cable to the nova II.

(6) The signal is dispersed by the holographic grating. Each differentiated wavelength is focused onto a designated photodiode within the diode array.

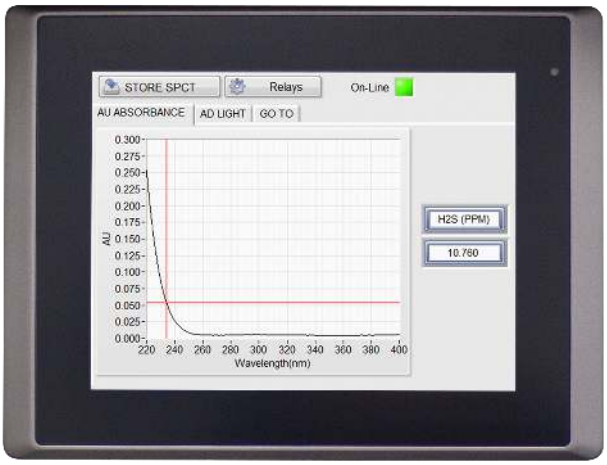
The nova II provides this rich data to the HMI for real-time visualization of the absorbance spectrum:



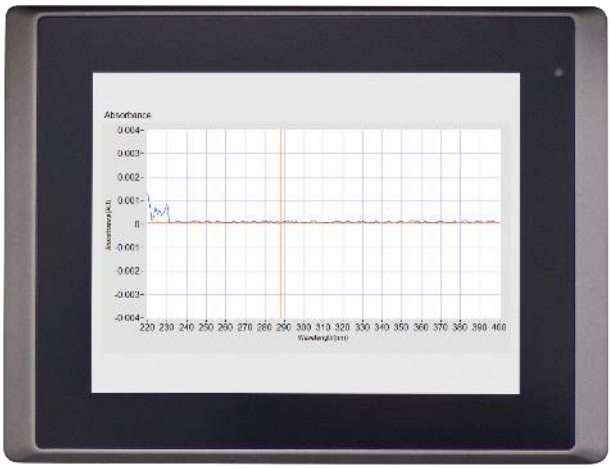
OMA Internal Components



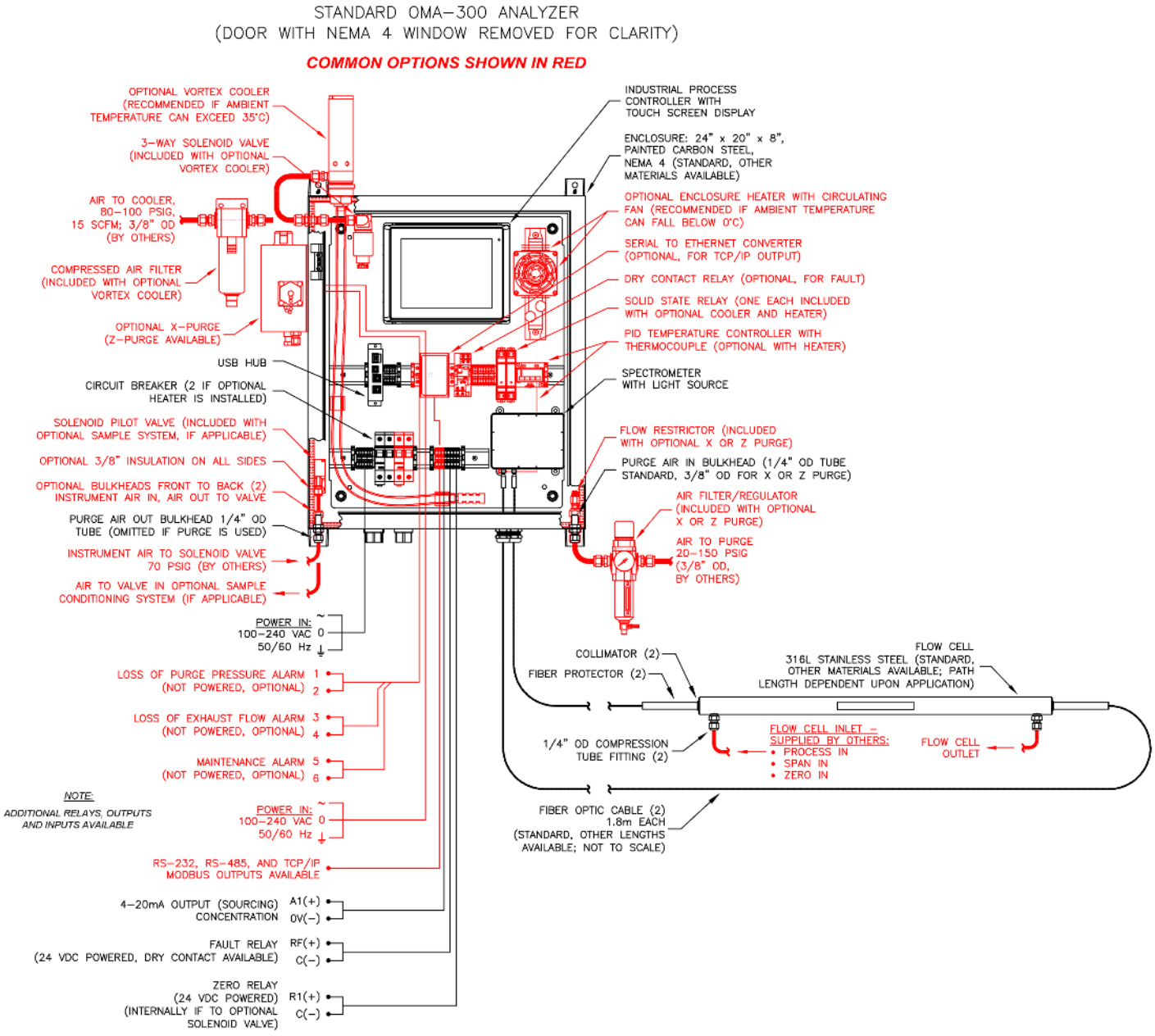
ECLIPSE™ Software User Interface



Normal Runtime: Real-time concentration data is displayed on the home screen.



Auto Zero: Runs on custom schedule to normalize the spectrophotometer readings on zero-absorbance fluid.


STANDARD OMA–300 ANALYZER
(DOOR WITH NEMA 4 WINDOW REMOVED FOR CLARITY)
COMMON OPTIONS SHOWN IN RED
OPTIONAL VORTEX COOLER (RECOMMENDED IF AMBIENT TEMPERATURE CAN EXCEED 35°C)
3–WAY SOLENOID VALVE (INCLUDED WITH OPTIONAL VORTEX COOLER)
AIR TO COOLER, 80–100 PSIG, 15 SCFM; 3/8" OD (BY OTHERS)
COMPRESSED AIR FILTER (INCLUDED WITH OPTIONAL VORTEX COOLER)
OPTIONAL X–PURGE (Z–PURGE AVAILABLE)
USB HUB
CIRCUIT BREAKER (2 IF OPTIONAL HEATER IS INSTALLED)
SOLENOID PILOT VALVE (INCLUDED WITH OPTIONAL SAMPLE SYSTEM, IF APPLICABLE)
OPTIONAL 3/8" INSULATION ON ALL SIDES
OPTIONAL BULKHEADS FRONT TO BACK (2) INSTRUMENT AIR IN, AIR OUT TO VALVE
PURGE AIR OUT BULKHEAD 1/4" OD TUBE (OMITTED IF PURGE IS USED)
INSTRUMENT AIR TO SOLENOID VALVE 70 PSIG (BY OTHERS)
AIR TO VALVE IN OPTIONAL SAMPLE CONDITIONING SYSTEM (IF APPLICABLE)
INDUSTRIAL PROCESS CONTROLLER WITH TOUCH SCREEN DISPLAY
ENCLOSURE: 24" x 20" x 8", PAINTED CARBON STEEL, NEMA 4 (STANDARD, OTHER MATERIALS AVAILABLE)
OPTIONAL ENCLOSURE HEATER WITH CIRCULATING FAN (RECOMMENDED IF AMBIENT TEMPERATURE CAN FALL BELOW 0°C)
SERIAL TO ETHERNET CONVERTER (OPTIONAL, FOR TCP/IP OUTPUT)
DRY CONTACT RELAY (OPTIONAL, FOR FAULT)
SOLID STATE RELAY (ONE EACH INCLUDED WITH OPTIONAL COOLER AND HEATER)
PID TEMPERATURE CONTROLLER WITH THERMOCOUPLE (OPTIONAL WITH HEATER)
SPECTROMETER WITH LIGHT SOURCE
FLOW RESTRICTOR (INCLUDED WITH OPTIONAL X OR Z PURGE)
PURGE AIR IN BULKHEAD (1/4" OD TUBE STANDARD, 3/8" OD FOR X OR Z PURGE)
AIR FILTER/REGULATOR (INCLUDED WITH OPTIONAL X OR Z PURGE)
AIR TO PURGE 20–150 PSIG (3/8" OD, BY OTHERS)
POWER IN: 100–240 VAC 50/60 Hz
LOSS OF PURGE PRESSURE ALARM (NOT POWERED, OPTIONAL) 1 2
LOSS OF EXHAUST FLOW ALARM (NOT POWERED, OPTIONAL) 3 4
MAINTENANCE ALARM (NOT POWERED, OPTIONAL) 5 6
NOTE: ADDITIONAL RELAYS, OUTPUTS AND INPUTS AVAILABLE
POWER IN: 100–240 VAC 50/60 Hz
RS–232, RS–485, AND TCP/IP MODBUS OUTPUTS AVAILABLE
4–20mA OUTPUT (SOURCING) CONCENTRATION A1(+) 0V(–)
FAULT RELAY (24 VDC POWERED, DRY CONTACT AVAILABLE) RF(+) C(–)
ZERO RELAY (24 VDC POWERED) (INTERNALLY IF TO OPTIONAL SOLENOID VALVE) R1(+) C(–)
COLLIMATOR (2)
FIBER PROTECTOR (2)
FLOW CELL 316L STAINLESS STEEL (STANDARD, OTHER MATERIALS AVAILABLE; PATH LENGTH DEPENDENT UPON APPLICATION)
1/4" OD COMPRESSION TUBE FITTING (2)
FLOW CELL INLET – SUPPLIED BY OTHERS:
• PROCESS IN
• SPAN IN
• ZERO IN
FLOW CELL OUTLET
FIBER OPTIC CABLE (2) 1.8m EACH (STANDARD, OTHER LENGTHS AVAILABLE; NOT TO SCALE)

OMA-300 Hydrogen Sulfide Analyzer

Applied Analytics Data Sheet No. DS-001B — Revised 04 January 2024

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 UV-Vis / SW-NIR absorbance spectrophotometry	
Detector	nova II™ Spectrophotometer Data sheet: http://aai.solutions/documents/AA_DS201A_novaII.pdf	
Spectral Range	200-800 nm	
Light Source	Pulsed xenon lamp with average 5 year lifespan	
Signal Transmission	Standard: 600 µm core 1.8 meter fiber optic cables (qty = 2) Data sheet: http://aai.solutions/documents/AA_DS206A_FiberOptics.pdf	
Sample Medium	Gas or liquid	
Sample Introduction	Standard: stainless steel 316L flow cell with application-dependent path length Options in data sheet: http://aai.solutions/documents/AA_DS207X_FlowCell_All.pdf	
Sample Conditioning	Custom design if necessary	
Analyzer Calibration	If possible, analyzer is factory calibrated with certified calibration fluids; no re-calibration required after initial calibration; measurement normalized by Auto Zero	
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 Options	Wall-mounted carbon steel NEMA 4 enclosure [standard] Wall-mounted stainless steel type 304/316L NEMA 4X enclosure Wall-mounted explosion-proof cast aluminum NEMA 4X enclosure More options: http://aai.solutions/documents/AA_DS401X_Enclosures.pdf	
Available Certifications	Standard: General Purpose Available Options: ATEX, IECEx, EAC, PESO, JPN *Please inquire with your sales representative for additional certifications (CSA, FM etc.).*	
Measuring Parameters		
Accuracy	**H_2S (liquid phase)** Example ranges below. Custom ranges available. 0-100 mg/L: ±1% full scale or 1 mg/L*	**H_2S (gas phase)** Example ranges below. Custom ranges available. Accuracy may be higher at higher pressure. 0-10 ppm (@1 bar): ±1 ppm (Increased pressure will yield increased accuracy); ±0.2 ppm (@5 bar) 0-100 ppm: ±1% full scale or 1 ppm* 0-10,000 ppm: ±1% full scale 0-100%: ±1% full scale
		*Whichever is larger.

Sample Conditions	
Sample Temperature	Standard: -20 to 70 °C (-4 to 158 °F) Optional: up to 150 °C (302 °F) with cooling extensions Contact AAI for temperatures above 150 °C (302°F)
Sample Pressure (max)	Using immersion probe: 100 bar (1470 psig) Using standard flow cell: 206 bar (3000 psi)
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 (if included): custom size
Weight	Analyzer: 32 lbs. (15 kg) SCS (if included): variable depending on custom build
Wetted Materials	Standard: K7 glass, Viton, stainless steel 316L *Various custom materials available — please inquire.*
Utility Requirements	
Electrical Requirements	85 to 264 VAC 47 to 63 Hz
Power Consumption	45 watts
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

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