OMA-406R Rackmount Process Analyzer

Applied Analytics Data Sheet No. DS-002B

A window into your process since 1994.

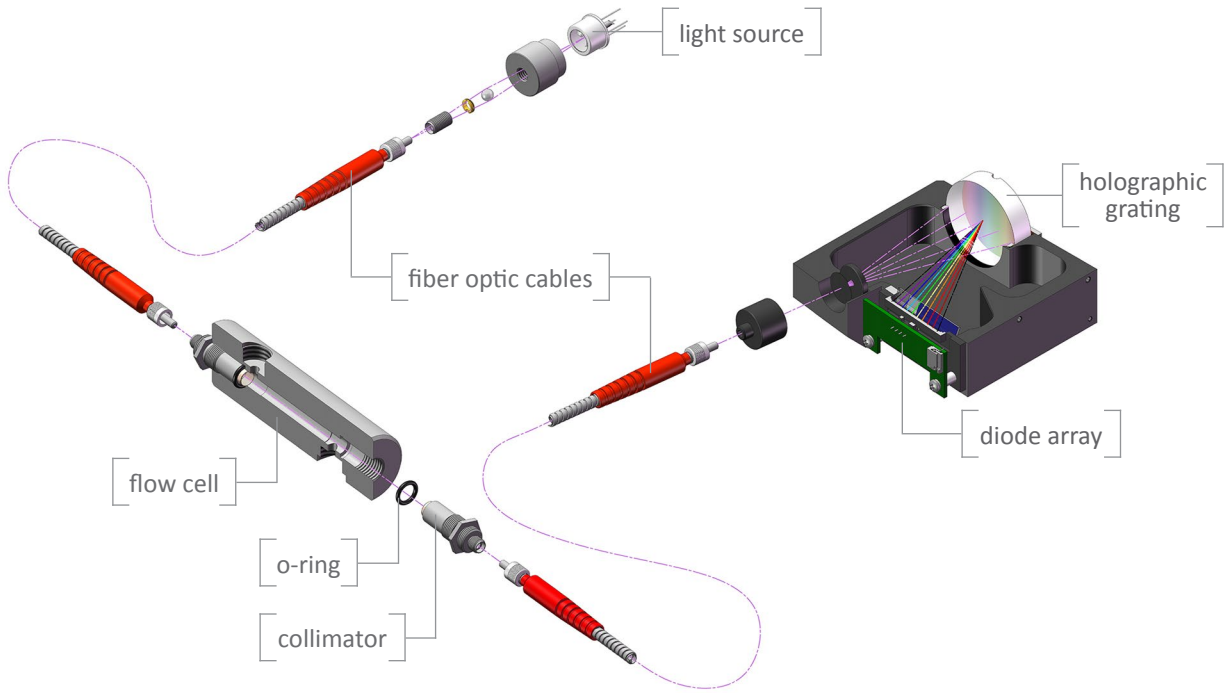
The OMA Process Analyzer continuously measures chemical concentrations and physical properties that can be correlated from the 200-1100 nm (UV-Vis / SW-NIR) absorbance spectrum.

Model OMA-406R deploys the OMA design in a rackmount enclosure for a standard 19” rack.

Features

- Continuously measures up to 5 chemicals’ concentrations in a liquid or gas process stream
- Ultra-safe fiber optic design with dedicated sample flow cell — no sample fluid in analyzer enclosure
- Totally solid state build with no moving parts — modern design for low maintenance
- Decades of field-proven performance in the world’s harshest industrial environments

Optical Assembly & Principle of Operation



The OMA measurement cycle is virtually 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.

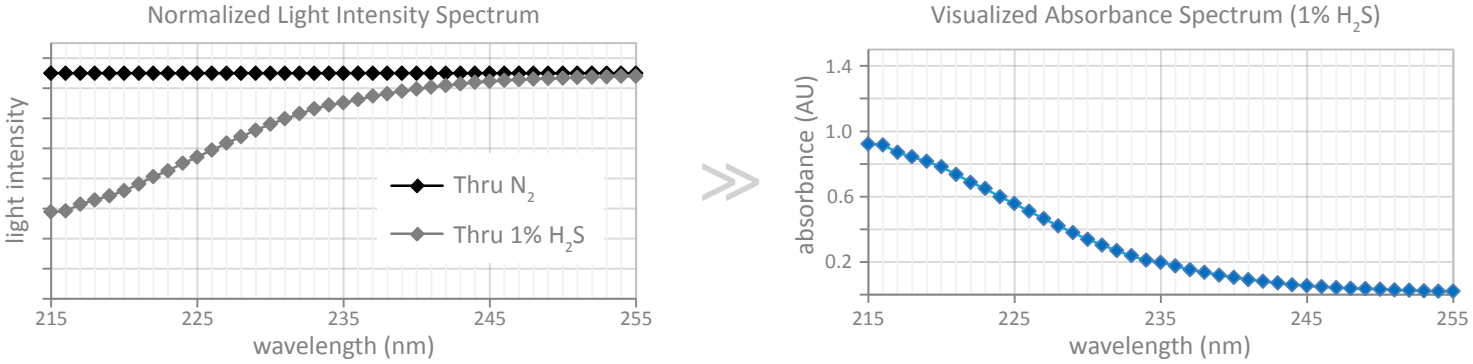
(3) The signal travels directly across the flow cell, interacting with the continuously drawn process sample.

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

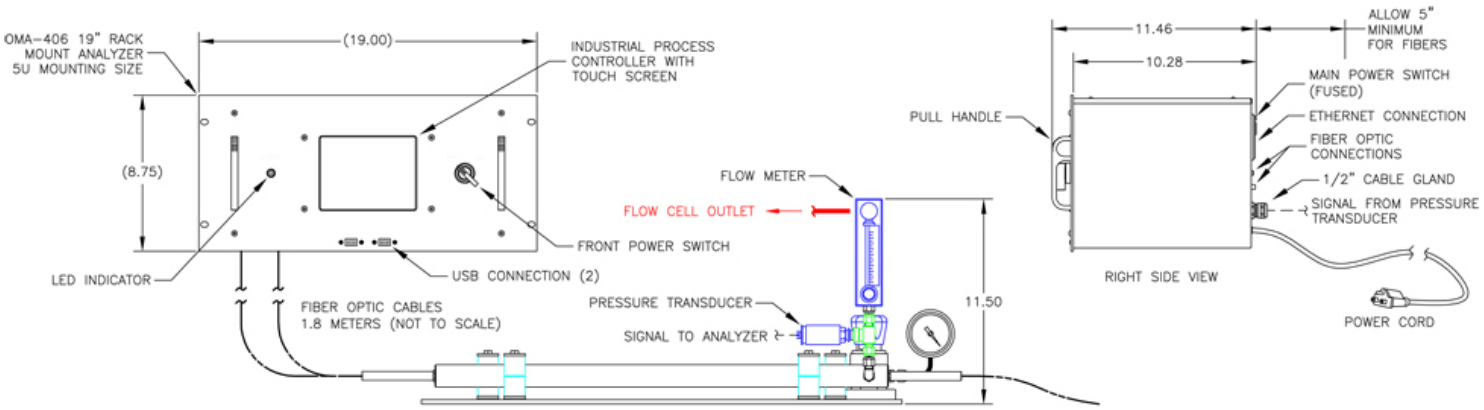
(5) The signal travels via fiber optic cable to the spectrophotometer.

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

(7) The absorbance spectrum is measured by plotting the lost light intensity at each wavelength:

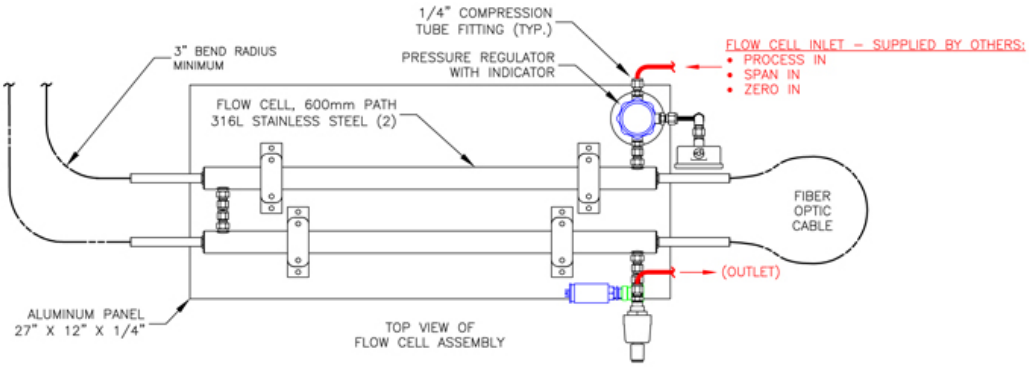


OMA-406R Technical Drawing



Flow Cell Panel

The sample flow cell panel is customized per application. The panel pictured below uses two flow cells in series for a longer optical path length. The flow cell panel connects to the OMA-406R via fiber optic cables.



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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.

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 (UV-Vis model) or 400-1100 nm (SW-NIR model)
Light Source	Standard: pulsed xenon lamp with average 5 year lifespan
Fiber Optic Cables	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	Steel rackmount enclosure for 19” rack
Measuring Parameters	
Repeatabilty	±0.5% of scale
Photometric Accuracy	±0.004 AU
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)
Physical Specifications	
Dimensions	8.75” H x 19” W x 11.46” D (222mm H x 483mm W x 291mm D)
Weight	30 lbs. (14 kg)
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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