

OMA-406R Rackmount Process Analyzer



Data Sheet No. DS-002B



Introduction

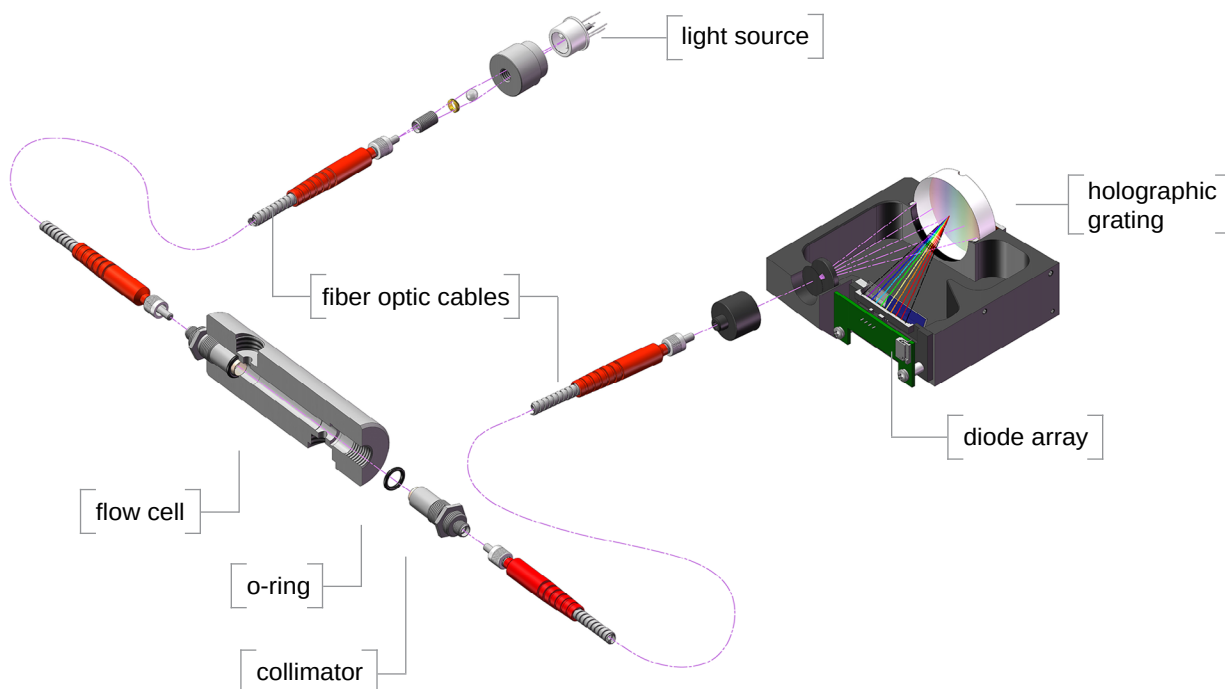
The OMA Process Analyzer continuously measures chemical concentrations and physical properties that can be correlated from the 200-1100 nm (UV-Vis / SW-NIR) absorbance spectrum.

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

Features

- Continuously measures the concentration of up to five chemicals in a liquid or gas
- 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 from countless industries around the globe

Optical Assembly & Principle of Operation

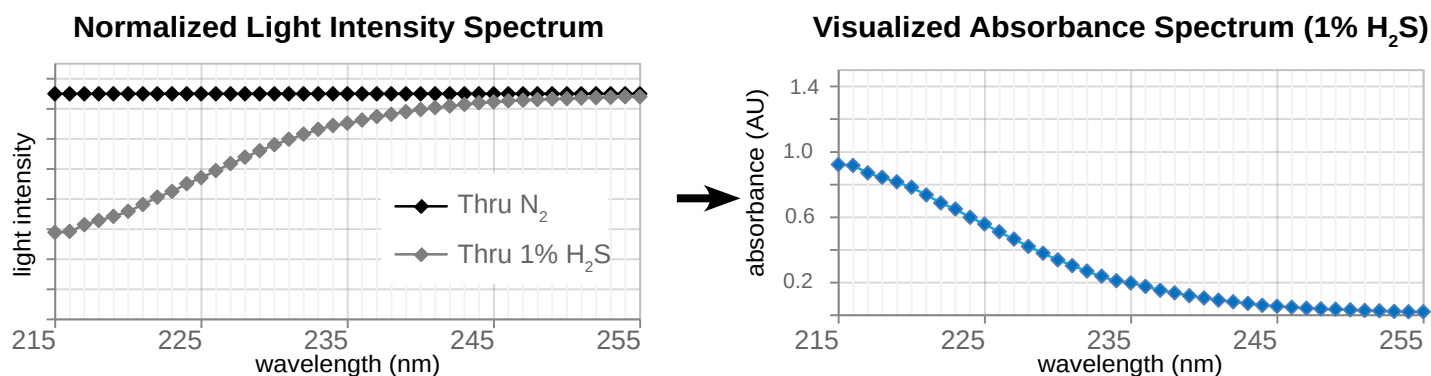


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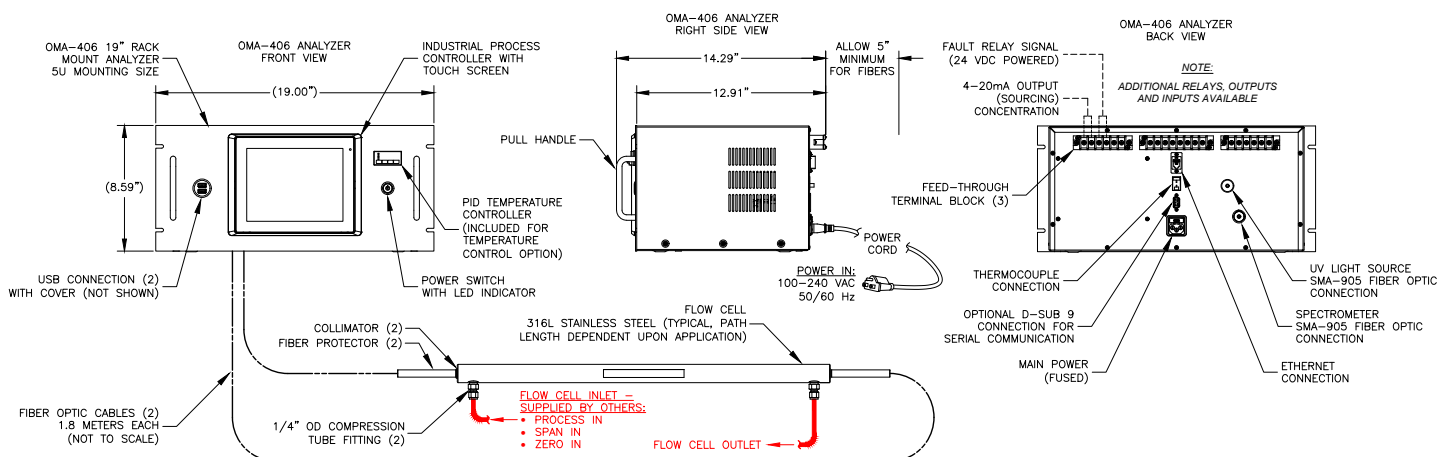
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The OMA measurement cycle is virtually instantaneous, but it can be helpful to visualize it in stages:

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

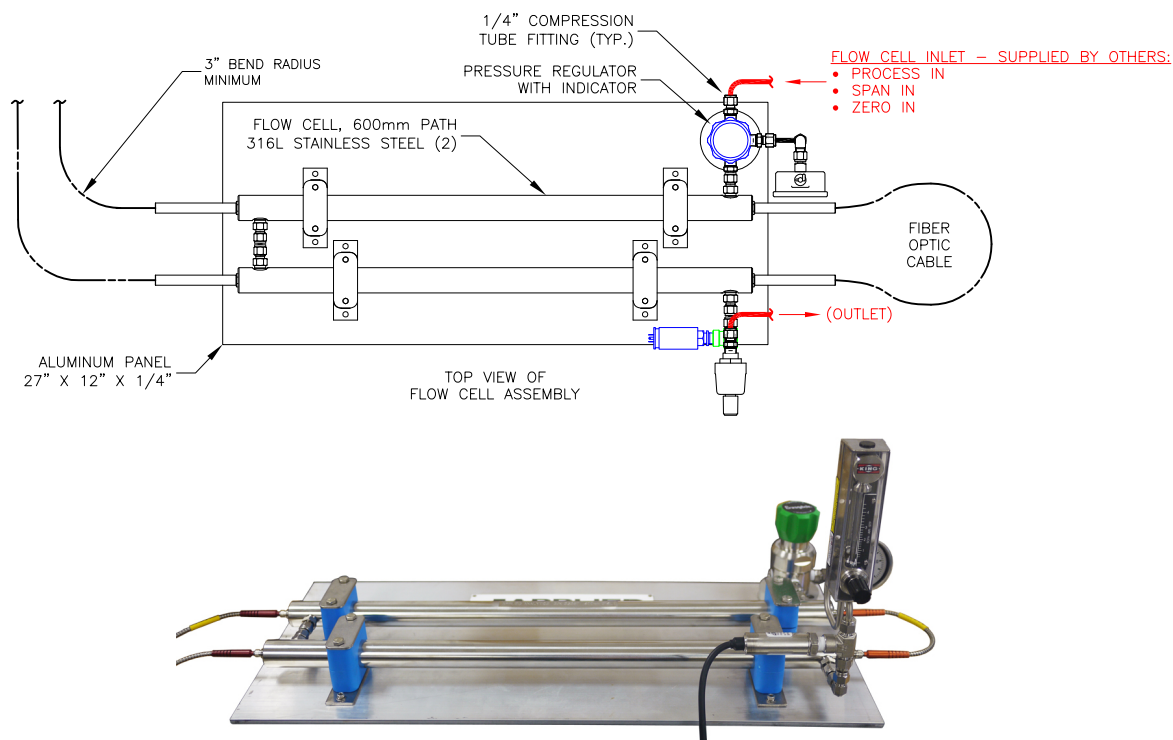


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Data Sheet No. DS-002B

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.



Technical Data

General

Measurement Principle	Dispersive UV-Vis / SW-NIR absorbance spectrophotometry
Detector	nova II™ Spectrophotometer Data sheet: https://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 μ m core 1.8 meter fiber optic cables (qty = 2) Data sheet: https://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: https://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 or neutral density filters
Human Machine Interface	Applied Analytics standard HMI: industrial controller with touch-screen LCD display Data sheet: https://aai.solutions/documents/AA_DS202A_HMI.pdf

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Data Sheet No. DS-002B

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User Interface	ECLIPSE™ Runtime Software Data sheet: https://aai.solutions/documents/AA_DS203A_Eclipse.pdf
Data Storage	256GB Solid State Drive Data sheet: https://aai.solutions/documents/AA_DS204A_SSD.pdf
Enclosure	Steel rackmount enclosure for 19" rack
Measuring Parameters	
Repeatability	±0.5% of scale
Photometric Accuracy	±0.004 AU
Sample Conditions	
Sample Temperature	Using standard flow cell: -20 to 150 °C (-4 to 302 °F) contact Applied Analytics for temperature outside this range
Sample Pressure (max)	Using standard flow cell: 206 bar (3000 psi)
Ambient Conditions	
Analyzer Environment	Indoor
Ambient Temperature	Standard: 0 to 35 °C (32 to 95 °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	Options include: Fused quartz, sapphire, BK7, Viton, FFKM, 316L stainless steel, monel, hastelloy, and other 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; HART; more
I/O Electronics	Voltage/Current Interface Module (i.e. I/O Board) Data sheet: https://aai.solutions/documents/AA_DS205A_VCIM.pdf

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04