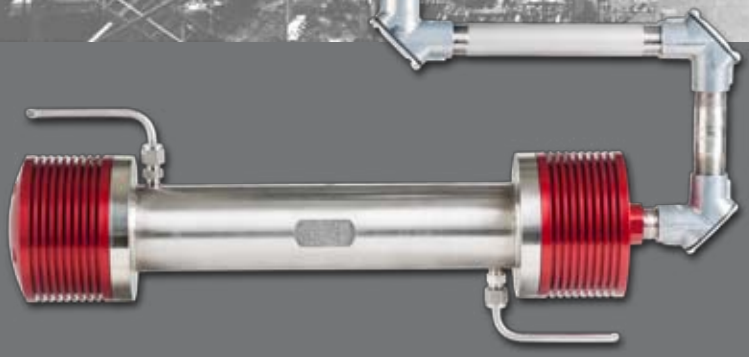
APPLIED ANALYTICS



MCP-200
Infrared Analyzer

- rugged solid state design
- for both liquid and gaseous streams
- intuitive graphical interface
- standard industry I/O (4-20mA, relay)
- elegant modular design
- application-specific flow cells

From AAI's MICROSPEC Series comes the MCP-200, a direct in-stream concentration monitor for species that absorb infrared radiation. A non-dispersive IR detector and a proprietary optical path combine in this solid state package for ultra-stable measurement accuracy. With a sleek modular design and a compact form factor, the MCP-200 excels both as a rugged standalone and as an integrated unit within larger analytical systems.

CARBON MONOXIDE CARBON DIOXIDE METHANE EQUIVALENCY ETHYLENE LIQUID WATER IN MISCIBLE SOLVENTS

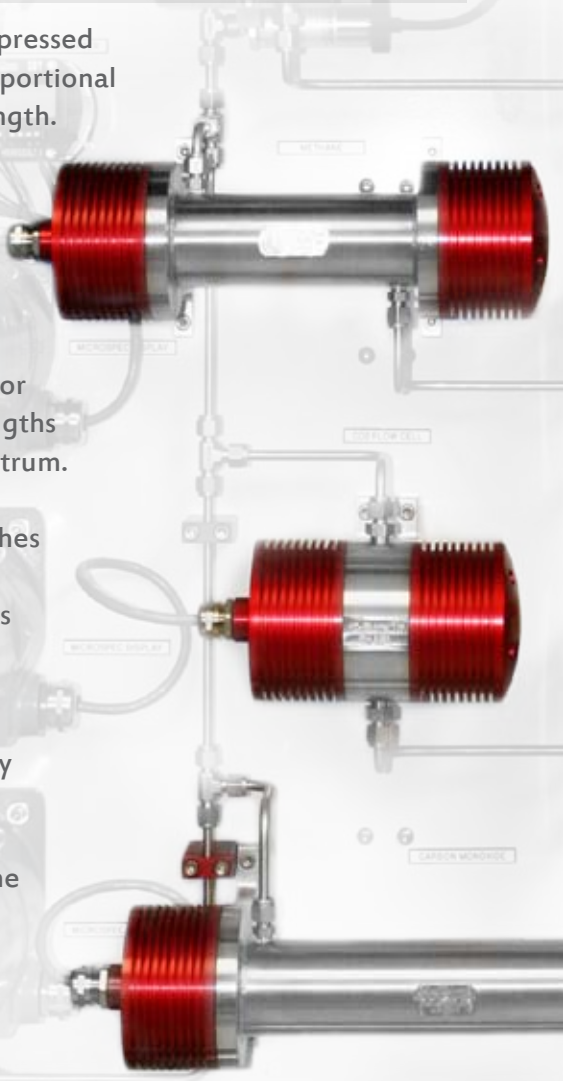
Principle of Operation

AAI systems employ spectroscopy in analysis of chemical composition. As expressed by the Beer-Lambert Law, the concentration of a given species is directly proportional to its absorbance (the quantity of light it absorbs) at a specified light wavelength. The MCP-200 monitors the absorbance in a continuously drawn sample to determine the real-time concentration of the chosen analyte.

The measurement cycle is virtually instantaneous, but more easily understood in stages. First, a light signal emitted by a tungsten black body source is transmitted across the flow cell, which contains the process sample. A specialized optical filter tailors the light signal depending on the analyte; for example, a filter designed for carbon dioxide will isolate the precise wavelengths corresponding to the distinctive structural peaks in the CO_2 absorbance spectrum.

After interacting with the sample, the light signal exits the flow cell and reaches the infrared detector, where light intensity is measured at precisely defined wavelength regions corresponding to the filter. From the absorbance (seen as dips in transmittance), the real-time sample concentration is calculated.

The MCP-200 can be fitted with a variety of flow cell lengths (see right). Low-concentration applications require longer path lengths to maximize the absorbance signal-to-noise ratio.



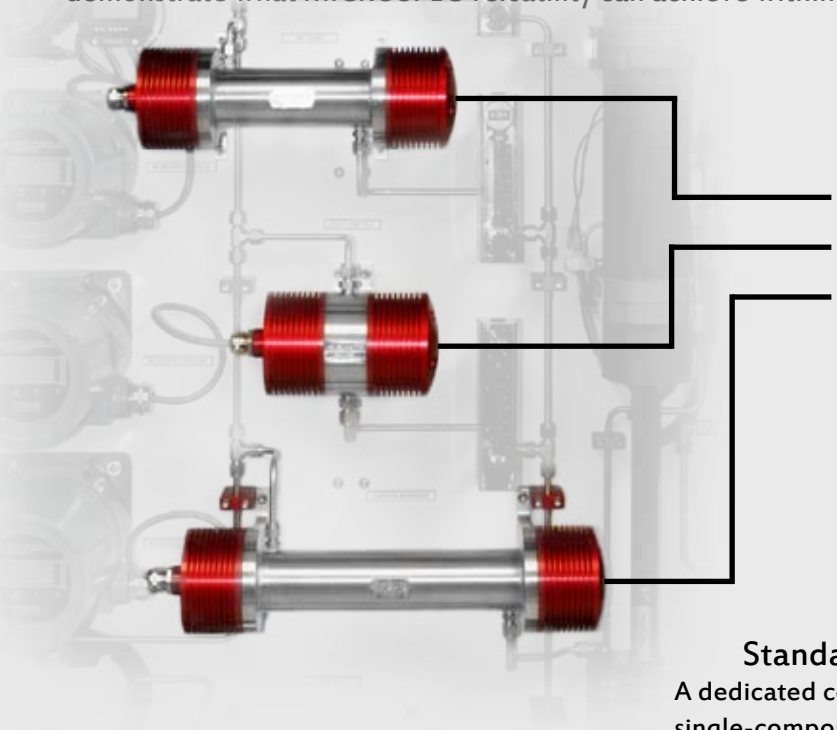
Graphical User Interface

The MCP-200 uses a 192x128 pixel backlit LCD screen as a graphical interface. The main screen (at left) displays the current concentration of the configured analyte. Four variable-function buttons at the bottom of the screen are used to navigate the GUI.

With the simple menus in the firmware, the user can easily perform tasks such as assigning minimum/maximum concentrations for the alarm threshold and scheduling an auto-zero. The MCP-200 comes factory pre-calibrated for most applications, but on-site calibration is swift and streamlined; the "startup wizard" guides users through introducing calibration fluids to the system. Alternatively, a user can directly input values for the slope and offset of a known calibration line.

Modular Design

Integration is where AAI engineering gets to shine. The MCP-200 design is fully adaptable for any site requirements and can be built into a custom sampling system if necessary. Integration schemes are detailed below to demonstrate what MICROSPEC versatility can achieve within your process.

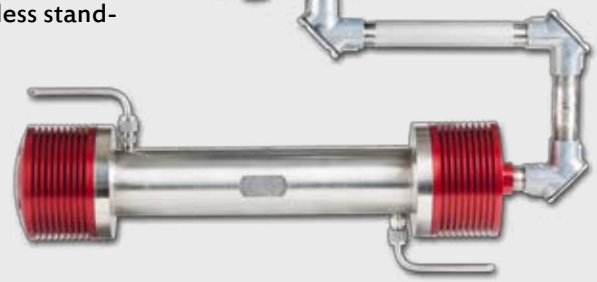


Modular MCP-200

The unit excels as a repeating element within larger analytical systems. All units are operated through a central controller (via RS-232) for seamless integration. Capabilities such as synchronous zero and shared sample conditioning maximize the modular unit's value.

Standalone MCP-200

A dedicated controller governs the single-component system. The solid state build ensures relentless standalone performance.



MCP-200 with Sample Conditioning System

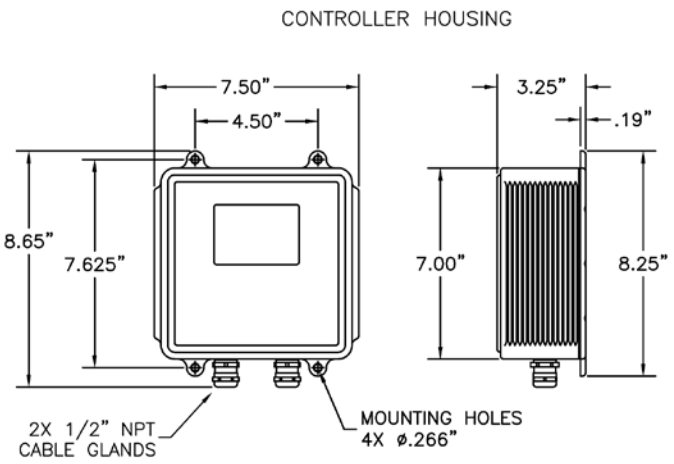
The standalone unit can be built with a range of sample conditioning options to meet the unique needs of your process.

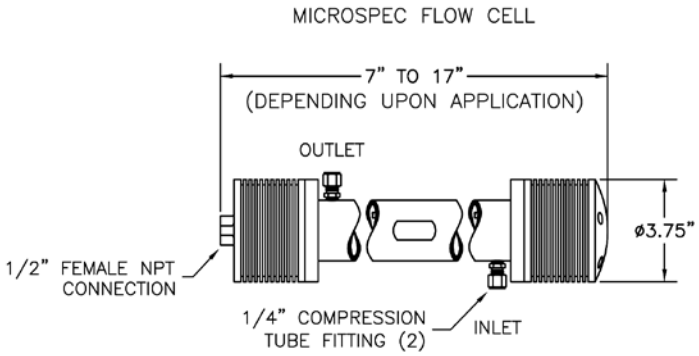
Note: The sample conditioning system pictured is designed for monitoring the level of moisture in a liquid solvent (ranging from 10 ppm up to the miscible limit). This system performs particle filtration, automatic zero gas introduction, and other key procedures.

The AAI Brand

Applied Analytics, Inc. (AAI) designs, manufactures, and supports advanced analytical solutions for a higher caliber of process control. Our products primarily serve the chemical, petrochemical, pharmaceutical, power generation, refining, environmental, and semiconductor industries, yet we remain pioneers in process control technology—always eager for new applications and opportunities for innovative engineering.

MCP-200 Specifications





Detection Technology	IR photometry (2 to 10 micron)
Accuracy	±1% full scale
Repeatability	±1% full scale
Stability	±1% full scale / 24 hours
Sample Introduction	Continuous flow from positive pressure stream
Ambient Temperature	-20 to 50 °C (-4 to 122 °F)
Operating Pressure	0-35 bar
Environment	Indoor/Outdoor (no shelter required)
Warm-up Time	2 minutes
Process Connections	1/4" tube fittings
Wetted Materials	Stainless steel 316L and sapphire
Outputs	4-20mA outputs; modbus TCP/IP (optional); RS-232 (optional); three digital outputs for fault and sample conditioning system control (all user programmable)
Electrical Requirements	85 to 264 VAC 47 to 400 Hz
Power Consumption	7 watts (maximum)
Size	Controller: 7.5" W x 8.65" H x 3.25" D (191 mm W x 220 mm H x 83 mm D); flow cell size varies by application
Weight	Controller: 5 lbs; flow cell: 10-30 lbs depending on path length
Area Classification	Class I, Division 1 B, C, D
Enclosure	NEMA 4

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