

PRODUCT DATA SHEET

5100HD Gas Analyzer for Measuring Moisture in Natural Gas

Based on Tunable Diode Laser Absorption Spectroscopy (TDLAS)

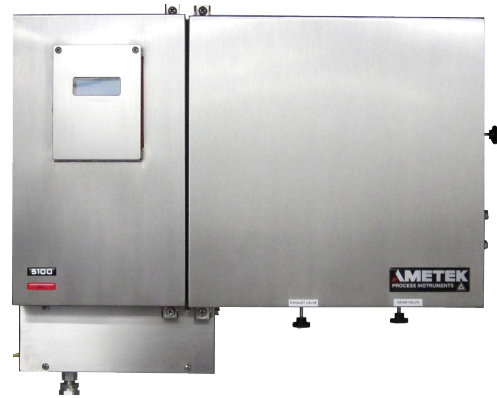
In natural gas operations – pipelines and transmission, gas processing, custody transfer points – moisture (water vapor) analysis is important for multiple reasons. The presence of water can negatively impact the energy value of the gas stream, contribute to hydrate formation and even lead to corrosion of pipes and other hardware.

The AMETEK 5100HD is an extractive-type analyzer designed for hot/wet sample analysis.

The tunable diode laser technique used in the 5100HD is inherently free from many of the problems that can occur with physical-contact sensors – notably degradation of the sensor with repeated exposure to contaminants, and a delayed measurement response to sudden process upsets. The reliability of TDLAS-based analyzers has been proven, as they have been used in refineries, petrochemical plants and in natural gas production operations globally for over a decade. Components analyzed in a variety of background gases include acetylene, carbon monoxide, carbon dioxide, hydrogen sulfide, oxygen and methane.

For natural gas analysis, there is no sample conditioning required for the 5100HD analyzer system, other than particulate filtering and assuring the sample does not condense at the maximum integrated oven temperature of 150°C (302°F). The analyzer uses a completely digital implementation of the Wavelength Modulation Spectroscopy (WMS) approach.

A key feature of the 5100HD is the use of sealed reference cells, which contain known amounts of analyte gases measured, for referencing the emission wavelengths of the lasers. The use of reference cells enables both the ability to line-lock the lasers and to continuously verify the optical system performance.



KEY BENEFITS

- Non-contact measurement offers low maintenance
- Laser line-lock verification using internal reference cell
- Resistant to contamination
- Web-based interface
- Modbus, Ethernet and analog connectivity
- Type 4X enclosure houses the electronic components – designed for outdoor installation, in temperature ranging from -20 to 50°C (-4 to 122°F)
- Fully-integrated sample handling

APPLICATIONS

- Custody transfer
- Gas processing
- Dehydration
- Feed stock

KEY MARKETS

- Oil and gas
- Petrochemical
- Refining

PERFORMANCE SPECIFICATIONS

Typical ranges and performance	Ranges: 0-500 ppm (typical)
Accuracy	±4ppmv or ±2% of reading, whichever is greater
Ambient temperature	-20 to 50°C (-4 to 122°F)
Relative humidity	0 to 90%, non-condensing
Sample flow rate	1 to 10 SLPM recommended (2 to 20 SCFH)
Sample cell pressure	70 to 170 kPa absolute (10 to 25 psia)
Speed of response	<2 second photometric response. Total system response is dependent on sample flow rate
Electrical requirements	120 VAC (108 to 132V); 47 to 63 Hz, or 240 VAC (216 to 264V), 47 to 63 Hz; 24 VDC (consult AMETEK)
Power requirements	5100HD: 450W; 105W without heater
Outputs	Local display Fast ethernet (IEEE802.3) RS485 serial port, isolated (supports Modicon Modbus RTU) (1) single isolated 4-20 mA loop-powered analog output (4) dry relay contacts. Contact rating 30 VAC, 60 VDC, 100 VA resistive
Physical dimensions (W x H x D)	830 x 674 x 305 mm (32.7 x 26.5 x 12.0 in.)
Weight	5100HD CEC/NEC Class I Division 2: 60 kg (132 lb)
Enclosure	IP65 and Type 4X
Approvals and certifications	Certified to meet multiple ATEX, IECEx, CSA, NEC and Inmetro standards for hazardous areas. Consult AMETEK for more details

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