

PRODUCT DATA SHEET

3050-AP Moisture Analyzer

Quartz-Crystal Microbalance (QCM) technology: accurate, reliable, durable

The 3050-AP measures trace levels of moisture in a gas through the use of a quartz-crystal oscillator sample cell – the industry standard for applications ranging from ultra-high purity semiconductor gases to natural gas streams containing 30% hydrogen sulfide (H₂S).

Moisture concentration is measured directly, in parts per million by volume (ppmv), parts per million by weight (ppmw), or mass-of water per standard volume, without additional pressure or temperature compensation. To convert concentration to dew point temperature, the 3050-AP can be programmed for a live process pressure input or a fixed pressure.

The quartz-crystal sensor

The heart of the 3050-AP analyzer is a QCM sensor, a quartz-crystal disc coated with a hygroscopic polymer. As the amount of moisture absorbed onto the polymer varies, the mass of the QCM changes, producing a corresponding change in the frequency of oscillation. The accuracy of the 3050-AP is an amazing 0.1 ppmv or 10% of reading, whichever is greater.

Unique sampling system

The 3050-AP delivers a fast-response, accurate analysis of the sample gas's moisture concentration while consuming less than 100 standard cubic centimeters per minute (sccm) sample gas. If contaminants are a concern, the 3050-AP can be operated in sensor-saver mode and equipped with a contaminant trap prior to the dryer. This configuration allows the sensor to see the contaminant-free reference gas for an extended period, exposing it to less contamination and resulting in a longer sensor life.

Long-term stability and reliability

Quartz crystal oscillators are resistant to contamination and inherently very stable, delivering a longer sensor life with more stable, more accurate performance.



KEY BENEFITS

- Most accurate trace moisture measurement technology available
- Fast response to both increasing and decreasing moisture levels
- Specific to moisture in most applications
- Provides a much more rugged sensor

KEY MARKETS

- Industrial gas
- Petrochemical
- Refinery
- Chemical

PERFORMANCE SPECIFICATIONS

Technology	QCM
Range	Calibrated from 0.1 to 2500 ppmv. Readout capability in ppmw, lb/mmscf, mg/Nm ³ , and dewpoint temperature in °C or °F (requires process pressure as an input)
Reference gas	Continuously produced using actual sample gas
Accuracy	±0.1 ppmv or 10% of reading from 1 to 2500 ppmv with standard calibration; Special calibration ranges not required
Reproducibility	±5.0% of reading from 1 to 2500 ppmv
Limits of detection	0.1 ppmv
Reliability	No routine factory calibration required due to highly stable and reliable nature of QCM sensor
QCM response time	Near real-time. Computer-enhanced response, which may lead to errors, is not required to obtain quick wet-up or dry-down response
Sensitivity	0.1 ppmv or 1% of reading, whichever is greater
Allowable inlet pressure	1.3 to 3.3 Bar (20 to 50 psig) up to 200 Barg (3000 psig) with optional pressure reducer. Analyzer performance is independent of process pressure
Exhaust pressure	Atmospheric
Sample gas temperature	0 to 100°C (32 to 212°F); analyzer performance is immune to changes in sample gas temperature
Gas flow requirements	Approximately 50 sccm Approximately 900 sccm @ 50 psig inlet with bypass option
Outputs	Isolated 4-20 mA analog signal keyboard selectable; 12-bit (0.025%) resolution, RS232 and RS485 serial communication ports
Alarms	Three contact closures: System, data invalid and concentration
Ambient temperature limits	Analyzer: 5 to 50 C (11 to 122°F)
Voltage/Power requirements	Analyzer: 24 VDC, 60 watts
Approvals and certifications	UL/CSA/CE for non-hazardous areas. Other approvals pending at time of printing

SALES, SERVICE & MANUFACTURING

USA - Pennsylvania

150 Freeport Road
Pittsburgh PA 15238
Tel: +1 412 828 9040
Fax: +1 412 826 0399

USA - Delaware

455 Corporate Blvd.
Newark DE 19702
Tel: +1 302 456 4400
Fax: +1 302 456 4444

Canada - Alberta

2876 Sunridge Way NE
Calgary AB T1Y 7H9
Tel: +1 403 235 8400
Fax: +1 403 248 3550

WORLDWIDE SALES AND SERVICE LOCATIONS

USA

Tel: +1 713 466 4900
Fax: +1 713 849 1924

Brazil

Tel: +55 19 2107 4100

France

Tel: +33 1 30 68 89 20
Fax: +33 1 30 68 89 99

Germany

Tel: +49 2159 9136 0
Fax: +49 2159 9136 39

India

Tel: +91 80 6782 3200
Fax: +91 80 6780 3232

Singapore

Tel: +65 6484 2388
Fax: +65 6481 6588

China

Beijing
Tel: +86 10 8526 2111
Fax: +86 10 8526 2141
Chengdu
Tel: +86 28 8675 8111
Fax: +86 28 8675 8141
Shanghai
Tel: +86 21 5868 5111
Fax: +86 21 5866 0969



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