

## Model 5830 Moisture Analyzer

### FEATURES

- Quartz-crystal technology provides accuracy, speed, and calibration stability
- On-line verification system confirms analytical performance
- Intuitive, easy-to-use interface with keypad and display allows quick access to operating variables
- Multi-gas compatibility makes the analyzer ideal for periodic testing of multiple sample gases
- Menu-driven gas selection eliminates all manual adjustments

Building upon the success of our quartz-crystal moisture measurement technology, AMETEK's Model 5830 is an easy-to-use process moisture analyzer that offers a truly remarkable combination of performance features: exceptional accuracy, multi-gas compatibility, fast response speed, and wide measurement range.

The 5830 is ideal for critical moisture measurement applications including high purity gas production, semiconductor gases, and industrial gas production and quality assurance. Equipped with an on-line verification system, this state-of-the-art analyzer is designed to rapidly build and maintain operator confidence in its analyses. The verification system allows you to challenge the analyzer's sensor at will with either a zero gas or an actual NIST-traceable moisture concentration to check both its baseline stability and responsiveness to real moisture. No other manufacturer offers these exclusive abilities in their moisture analyzers.

### SUPERIOR PERFORMANCE

#### Multi-gas compatibility

The Model 5830 combines the excellent multi-gas compatibility of the Model 5800 with a new, easy-to-use operator interface. It is completely compatible with virtually all non-corrosive gases including inerts (He, Ar, Ne, Xe, Kr), H<sub>2</sub>, O<sub>2</sub>, N<sub>2</sub>, air, and many specialty gases such as sulfur hexafluoride. A single, simple menu selection is all that is needed to re-configure the 5830 for a new gas type. There are no other necessary adjustments on the analyzer.

So, if you want to analyze industrial, high purity, or semiconductor grade gases, and need an instrument that is compatible with a wide range of gases, turn to the Model 5830.

#### Exceptional accuracy

The Model 5830 is perfect for moisture applications that require accurate results. The accuracy of this analyzer,  $\pm 20$  ppbv or  $\pm 10\%$  of reading, is exceptional when you consider that a new



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aluminum oxide sensor is typically specified with an accuracy of  $+72\%/-57\%$  of reading (converted from the dew point specifications) for a moisture concentration of 0.1 ppmv at 14.7 psia.

Quartz-crystal technology and an on-line verification system combine to constantly provide assurance that the analyzer is continuing to provide you with this superior level of performance.

#### On-line verification system confirms analytical performance

The on-line verification system in the 5830 uses internal zero and internal moisture verification systems. The zero verification system strips the moisture from the sample gas prior to analysis by the sensor. This allows you to verify the zero point of the sensor's calibration, enhancing accuracy and confidence in ppbv measurements. The moisture verification system employs a NIST-traceable moisture generator to allow you to quickly confirm the sensor's responsiveness and accuracy at any time on your sample gas. The generator adds a known amount of moisture to conditioned gas. The resulting known wet gas is then directed to the analyzer's sensor, verifying proper sensor and system operation. An alarm contact alerts the operator if the analyzer fails verification. The verification sequences may be started on programmable schedule or on manual demand.

#### Fast response speed

The Model 5830 responds quickly to both increases and decreases in moisture concentration because the analyzer employs a unique non-equilibrium measurement technique. This technique continuously exposes the sensor to "wet" sample gas followed by "dry" sample gas to make its analysis. With this technique, the analyzer never needs to wait for the sensor to

reach equilibrium to establish its accurate measurement. Importantly, this technique is based upon the defined, repeatable physical properties of moisture transport to/from the sensor's surface. This means that quartz-crystal technology never employs the questionable prediction software often used to "speed-up" other, more limited technologies.

AMETEK's unique technique makes possible accurate moisture readings far faster than would be possible under equilibrium, or continuous "wet" sample gas, operating conditions.

### Wide measurement range

The Model 5830 accurately measures from 0.02 ppmv (20 ppbv) to 100 ppmv. While the recommended usable range is between 0.02 ppmv and 100 ppmv, the analyzer will provide measurements up to 1000 ppmv so that you can capture the nature of a process upset.

## PERFORMANCE SPECIFICATIONS

**Compatible Gases:** Inerts (He, Ar, Ne, Xe, Kr), H<sub>2</sub>, O<sub>2</sub>, N<sub>2</sub>, air, and some specialty gases such as sulfur hexafluoride. CO<sub>2</sub> requires a custom measurement cell. (Contact the factory to confirm compatibility with other gases.)

**Range:** 0 to 100 ppmv. Indicates trend to 1000 ppmv. Display is software settable to show ppmv, ppbv, or dew point (requires pressure input).

**Limit of Detection:** 20 ppb

**Accuracy:** ±20 ppbv or ±10% of the reading, whichever is greater

**Sensitivity:** 5 ppbv or 0.5% of instrument range, whichever is greater

**Response Time:** 63% of a step change in either direction in less than 5 minutes

**Inlet Pressure:** 20 to 50 psig (138 to 345 kPa)

**Exhaust Pressure:** Atmospheric

**Sample Flow Requirements:** Approx. 150 sccm in sample saver mode. Approx. 1 slpm with by-pass open.

**Sample Gas Temperature:** 32° to 212°F (0° to 100°C)

### Outputs

Four-line digital display

A fully programmable 4 to 20 mA analog output  
RS485/RS232 serial communication

## TYPICAL APPLICATIONS

### High purity gas production

Cryogenic separation produces inherently dry gas, typically on the order of a few hundred ppbv moisture. Suddenly increasing moisture is a widely used alarm condition because of the danger of catastrophic separator freeze-up and the downtime it causes. The Model 5830 satisfies this need perfectly with fast response to increasing moisture and accurate moisture readings in the critical 100 ppbv to 1 ppmv alarm range.

### Semiconductor gases

The Model 5830 provides reliable, efficient, and inexpensive moisture analysis for the semiconductor industry. Typical applications include continuous monitoring at points of connection, spot monitoring at drop sites to verify distribution system installation or repair, and verification of cylinder gas quality. The Model 5830 is also suitable for point-of-use analysis, especially at critical processing steps.

**Alarms:** Three dry contact closures, 32 VDC maximum, 1 A noninductive load (moisture, data valid, and system alarm). Alarm signals are available on the RS485 interface.

**Software Features:** Displays ppmv or ppbv moisture reading or dew point, timer status, and instrument status

**Environmental Conditions:** 41° to 122°F (5° to 50°C), 90 percent relative humidity, noncondensing, noncorrosive atmosphere. Optimal performance in ppbv applications is achieved when the ambient temperature is maintained within ±2°C.

### Utility Requirements

120/240 volts, 47 to 63 Hz, 200 W

Instrument Air: 70 to 100 psi (483 to 690 kPa)

**Mounting Configuration:** 19-inch rack/bench-top installation

**Dimensions:** (W x H x D): 19 x 5.25 x 16.5 in. (48.3 x 13.3 x 41.9 cm)

**Net Weight:** 18 lbs. (8.2 kg)

**Approvals and Certifications:** Non-hazardous. Complies with all relevant European Directives

One of a family of innovative process analyzer solutions from AMETEK Process Instruments. Specifications subject to change without notice.



**CANADA**  
2876 Sunridge Way N.E.  
Calgary, AB T1Y 7H9  
Ph. 403-235-8400  
Fax 403-248-3550

**USA - Delaware**  
455 Corporate Blvd.  
Newark, DE 19702  
Ph. 302-456-4400  
Fax 302-456-4444

**USA - Pittsburgh**  
150 Freeport Road  
Pittsburgh, PA 15238  
Ph. 412-828-9040  
Fax 412-826-0399

**USA - Texas**  
9750 Whithorn Drive  
Houston, TX 77095  
Ph. 281-463-2820  
Fax 281-463-2701

**CHINA**  
Ph. 86 21 6426 7049  
Fax 86 21 6426 7054

**FRANCE**  
Ph. 33 1 30 68 69 20  
Fax 33 1 30 68 69 29

**GERMANY**  
Ph. 49 21 59 91 36 0  
Fax 49 21 59 91 3680

**MIDDLE EAST - Dubai**  
Ph. 971-4-881 2052  
Fax 971-4-881 2053



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