

Moisture Monitor™ Series 3

Panametrics Moisture Analyzer

Applications

This dual-channel analyzer measures moisture in gases and non-aqueous liquids and oxygen (optional) in gases. Designed for portable or permanent installations, it is used in conjunction with TF and M Series moisture probes for industries including:

- Petrochemical
- Natural gas
- Industrial gas
- Semiconductor
- Furnace gas/heat treating
- Power generation
- Air dryer
- Pharmaceutical
- Aerospace



Features

- Optional pressure and temperature inputs used to calculate various parameters
- Calibrations traceable to National Institute of Standards and Technology (NIST)
- Rack, bench, panel, weatherproof (Type 4X) and explosion-proof (Type 7) configurations available
- Computer-enhanced response software for abrupt dry-down applications (optional)
- Real time display of any two parameters simultaneously
- Measures other parameters via auxiliary inputs
- Battery-powered version available
- Displays trace measurements in ppbv
- Built-in data logging
- PCMCIA card slot for additional memory and instrument program updates
- Modbus capability with external RS485 converter



Multifunction

The Moisture Monitor Series 3 is a dual-channel version of the Moisture Image® Series 1 top-of-the-line model in the GE Moisture Series family of analyzers. It features a two-line backlit liquid crystal display (LCD) for real time simultaneous display of any two parameters. The Moisture Monitor Series 3 measures moisture, temperature and pressure, in non-aqueous liquids and gases. There is also an option for measuring oxygen concentration in gases. In addition, the auxiliary inputs can accept readings from any sensor with 0/4 to 20 mA or 0 to 2 V output, including a variety of GE process control instruments. This feature makes the Moisture Monitor Series 3 a true multifunction analyzer, providing cost savings through system integration.

Optional Second Channel

An optional dual-channel version of the Moisture Monitor Series 3 can significantly reduce the cost-per-measurement point while providing a variety of configurations to meet the needs of specific applications.

Portable

The Moisture Monitor Series 3 is also available in a battery-powered portable configuration. Combined with built-in data logging, its portability is ideal for making spot measurements at remote sites and then bringing the data back to a central location for analysis.

TF Series or M Series Probe

The Moisture Monitor Series 3 is compatible with TF Series and M Series moisture probes. Temperature sensors on the same mount are optional. A pressure sensor is optional on the TF Series probe. Superior sensitivity, speed of response, calibration stability and wide dynamic range have made these probes the standard of performance and value in industrial moisture measurement. They are suitable for laboratory and industrial measurement applications in gases and non-aqueous liquids over a wide range of process conditions.

All moisture probe calibrations are NIST traceable.

Series 3 Specifications

Electronics

Intrinsic Safety

Galvanic isolation and energy-limiting circuitry for all inputs (except auxiliary):

BAS01ATEX7097

Ⓢ II (1) G [EEx ia] IIC -20°C to 50°C;

CSA C US Class I, Division 2, Groups B,C&D T4A-Assoc. Elec. Apparatus [Exia] and Class I, Division 1, Groups A, B, C & D T4

European Compliance

Complies with EMC Directive 89/336/EEC and 73/23/EEC LVD (Installation Category II, Pollution Degree 2)

Inputs

- Moisture: One or two channels
- Temperature: One or two channels
- Pressure: One or two channels
- Oxygen: One or two channels
- Auxiliary (optional): Two per installed channel; may be used for 0/4 to 20 mA and 0 to 2 V devices

Analog Outputs

Two per channel; internally optically isolated; 12-bit (.025% resolution)

Programmable Switch-Selectable Outputs

- 0 to 2 V, 10 k Ω minimum load resistance
- 0/4 to 20 mA, 400 Ω maximum series resistance

Digital Outputs

RS232 serial communications port; information is transmitted as ASCII characters

Computer-Enhanced Response

Optional: Software provides fast measurements in abrupt dry-down applications (three- to five-minute speed of response)

Data Logging

Up to 12 parameters simultaneously; stored in battery-backed RAM (64 kB); log length depends on number of items and time interval

Memory

- Standard: 64 kB RAM
- Optional: Additional 1 MB or more with PCMCIA card

PC-Interface Software

Optional: PanaView™ instrument interface software

Alarm Relays

- Two optional Form C relays per channel SPDT; rated for 2 A at 28 VAC/28 VDC
- Standard and hermetically sealed (for Division 2 hazardous areas per CSA) available for high and low limits on each channel; set to any level within the range of the instrument

Alarm Set Point Accuracy

$\pm 0.18^\circ\text{F}$ ($\pm 0.1^\circ\text{C}$) dew point

Display

2 line x 20 character backlit LCD

Display Functions

Displays two parameters

Power Requirements

- Universal power supply adjusts automatically for 90 to 260 VAC, 50/60 Hz
- Rechargeable battery pack (optional) lasts 8 hours under normal use and fully recharges in 16 hours

Temperature

- Operating: 32°F to 140°F (0°C to 60°C)
- Storage: -22°F to 158°F (-30°C to 70°C)

Configuration Dimensions (h x w x d)

- Rack mount: 5.22 in x 19.00 in x 17.03 in (13.26 cm x 48.26 cm x 43.26 cm)
- Bench mount: 6.35 in x 8.29 in x 17.03 in (16.13 cm x 21.06 cm x 43.26 cm)
- Panel mount: 8.25 in x 10.85 in x 17.03 in (20.96 cm x 27.56 cm x 43.26 cm)
- Weatherproof: 22.23 in x 16.23 in x 9.48 in (56.46 cm x 41.22 cm x 24.08 cm)
- Explosion proof: Consult factory

Add 1.65 in (4.19 cm) to accommodate strain relief tabs

Moisture Measurement

Type

GE TF and M Series thin-film aluminum oxide probes

Calibration Ranges

- Standard: 68°F to -112°F (20°C to -80°C) with data to -166°F (-110°C)
- Ultralow: -58°F to -148°F (-50°C to -100°C) with data to -166°F (-110°C)
- Extended high: 110°F to -112°F (60°C to -80°C) with data to -166°F (-110°C)

Accuracy (Dew/Frost Point)

- $\pm 3.6^\circ\text{F}$ ($\pm 2^\circ\text{C}$) from 140°F to -85°F (60°C to -65°C)
- $\pm 5.4^\circ\text{F}$ ($\pm 3^\circ\text{C}$) from -86°F to -166°F (-66°C to -110°C)

Repeatability (Dew/Frost Point)

- $\pm 0.9^\circ\text{F}$ ($\pm 0.5^\circ\text{C}$) from 140°F to -85°F (60°C to -65°C)
- $\pm 1.8^\circ\text{F}$ ($\pm 1.0^\circ\text{C}$) from -86°F to -166°F (-66°C to -110°C)

Operating Pressure

5 μ of Hg to 5000 psig (345 bar) limited by optional pressure sensor—see pressure sensor ranges

Other Moisture Parameters

Relative humidity (RH), parts per million by volume (ppmv), parts per million by weight (ppmw), parts per billion by volume (ppbv), pounds per million standard cubic feet (lb/MMSCF)

Temperature Measurement

Type

Optional thermistor built into moisture probe

Range

-22°F to 158°F (-30°C to 70°C)

Accuracy

$\pm 0.9^\circ\text{F}$ ($\pm 0.5^\circ\text{C}$) at -22°F (-30°C)

Pressure Measurement

Type

- Optional transducer built into moisture probe
- Variety of standard GE external transmitters
- Any user-supplied pressure transmitter, 24 V powered, 4 to 20 mA

Range

0 to 5000 psig (1 to 345 bar); specify type and pressure range

Accuracy

$\pm 1\%$ of full scale

Pressure Rating

Three times the span of the available range to a maximum of 7500 psig (518 bar)

Oxygen Measurement

Optional nondepleting electrolytic oxygen sensor. Additional details and specifications are available on request.



920-044D