Panametrics

Datasheet

HygroPro II

Aluminum Oxide Moisture Transmitter

This aluminum oxide moisture transmitter measures moisture concentration in gases and non-aqueous liquids from trace to ambient levels. It is suitable for a wide range of industrial applications including:

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

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The HygroPro™ moisture transmitter is an intrinsically safe, compact, loop-powered display transmitter designed specifically to meet the demands of rugged industrial applications. With certified intrinsically safe electronics (when installed with appropriate associated apparatus) packaged in an IP66/IP67/Type 4X enclosure, the HygroPro™ is ideal for use in pipeline natural gas, petrochemical, power generation, and other industrial gas or hydrocarbon liquid applications.

The HygroPro™ features an integrated backlit display and a 6-button keypad to provide viewing of up to three parameters simultaneously. This Human Machine Interface (HMI) allows easy navigation of the software for configuration of the probe measurement, analog and digital (HART) output, and other user functions and diagnostics. The HygroPro™ has built-in multi-drop networking capability via the digital HART interface that allows multiple units to be connected on a single network.

Using an industry-proven state-of-the-art aluminum oxide moisture sensor, the HygroPro™ features a built-in thermistor and optional pressure transducer to provide real-time measurement of the sample dew/frost point, temperature and pressure. This allows for the calculation of other moisture content parameters such as ppmv in gases, ppmw in liquids, pounds per million standard cubic feet in natural gas or percent relative humidity. Three sensors mounted on a single probe mount provide installation flexibility when space is limited. The glass-to-metal seal in this probe mount is certified to meet ANSL/UL 122701 single seal standards ensuring reliable isolation of the probe electronics from the process. This design also allows for real-time temperature compensation of the raw moisture reading.

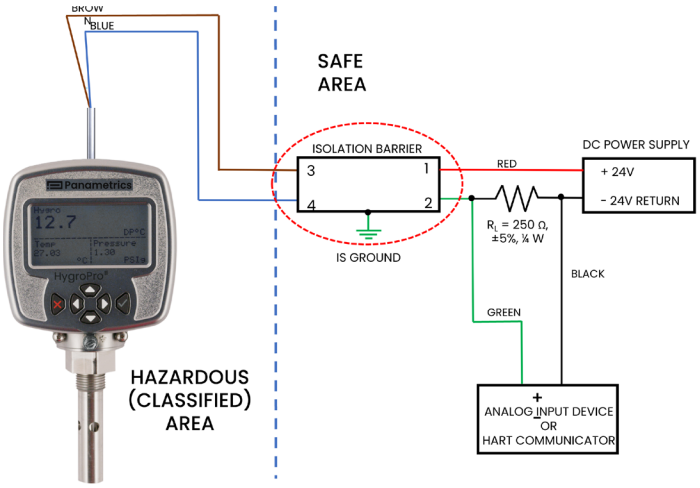
The HygroPro™ consists of a display/keypad housing, and a replaceable transducer element (RTE), which contains the aluminum oxide moisture sensor, thermistor, optional pressure transducer and associated electronics. The RTE is field replaceable by simply loosening a couple of mounting screws and disconnecting an internal cable. Also, since the calibration data for the moisture and pressure sensors are stored on a non-volatile EEPROM in the RTE, the user does not need to enter any calibration data manually when changing an RTE.

Advanced moisture sensor technology

The HygroPro™ combines a technologically advanced aluminum oxide moisture sensor with onboard temperature compensation, state-of-the-art hygrometry software, and robust read-out electronics for unequaled overall performance. The probe is maintained dry using high capacity desiccant packs inside an Aluminum cap, which if unscrewed just prior to installation on the process, enables fast dry down.

Calibration traceable to international standards

Superior sensitivity, speed of response, calibration stability, and wide dynamic range have made Panametrics aluminum oxide moisture probes the standard of performance and value in industrial moisture measurement. They are suitable for process and industrial moisture measurement applications in a wide variety of gases and hydrocarbon liquids over a wide range of process conditions. Calibration traceability is available to the NIST or the NPL with the option of an ISO 17025 accredited calibration.



Typical hazardous area installation showing connection to an Analog output device/HART master with an optional resistively limited isolation barrier

Features

- Intrinsically safe
- Ambient to ppb-level moisture measurement using next-generation aluminum oxide moisture sensor
- Built-in temperature sensor for temperature compensation
- Optional pressure sensor
- Calibrations traceable to National Institute of Standards and Technology (NIST) or National Physical Laboratory (NPL) with the option of fully accredited calibration to ISO 17025
- Complete programming capability via User Interface that consists of integrated display and 6-button keypad
- Analog and digital outputs
- HART communication over the 4 – 20 mA analog output

HygroPro[II] Specifications

Calibration ranges (dew/frost point)	Standard: 50 to -112°F (+10 to −80°C) with data from +68 to -166°F (+20 to -110°C)
Operating temperature	-4°F to 140°F (−20°C to 60°C)
Storage temperature	-40°F to 158°F (-40°C to 70°C)
Accuracy	• ±3.6°F (±2°C) above -148°F (-100°C) • ±5.4°F (±3°C) below -148°F (-100°C)
Repeatability	• ±0.4°F (±0.2°C) above -148°F (-100°C) • ±0.9°F (±0.5°C) below -148°F (-100°C)

Mechanical

Sample connection	• 3/4-16 in. (19 mm) straight male thread with O-ring • G 1/2 with optional adapter
Operating pressure	5 µm Hg to 5000 psig (345 bar)
Enclosure	Type 4X, IP 66 and IP 67
Dimensions	• H x W x D: 7.88 x 3.99 x 2.56 in. (200 x 101 x 65 mm) • Weight: 2.53 lbs. (1147 g)
European compliance	Complies with EMC directive 2014/30/EU
Hazardous area certification	• US/Canada: Class I, Division 1, Groups A, B, C and D; T4 Class II, III Division 1, Groups E, F and G; T4 (US Only) Class I, Zone 0, AEx ia IIC T4 Ga • US/Canada: Class I, Division 2, Groups A, B, C and D; T4 Class II, III Division 2, Groups F and G; T4 Class I, Zone 2, AEx ic IIC T4 Gc (US Only) • ATEX/IECEx: Ex ia IIC T4 Ga; Ex ic IIC T4 Gc • Ambient temperature range -20°C ≤ Ta ≤ +60°C Single Seal Certified per ANSI/UL 122701

Electrical

Power	• Voltage: 12 to 28 VDC (loop-powered, customer supplied) • Output: 4 to 20 mA analog & HART Registered digital • Output Resolution: 0.01 mA/12 bits • Cable: 6 ft. (2 m) and 30 ft. (10 m) options standard (consult factory for custom lengths); cable includes molded weatherproof connector with flying leads
Display	• 128 x 64 LED backlit LCD • Display from one to three parameters and diagnostics

Moisture sensor

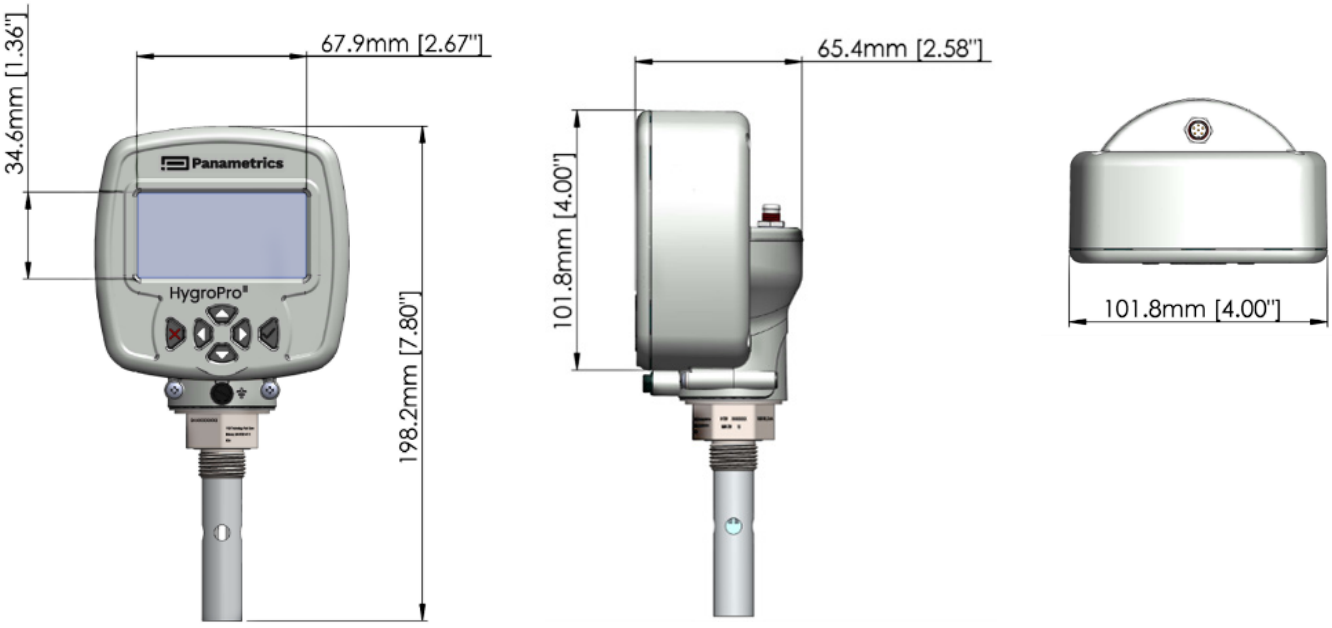
Sensor type	Thin-film aluminum oxide moisture sensor
Calibration	Each sensor is individually computer-calibrated against known moisture concentrations, traceable to national standards
Calibration interval	Panametrics recommends moisture sensor recalibration every six to twelve months depending on application

Temperature sensor

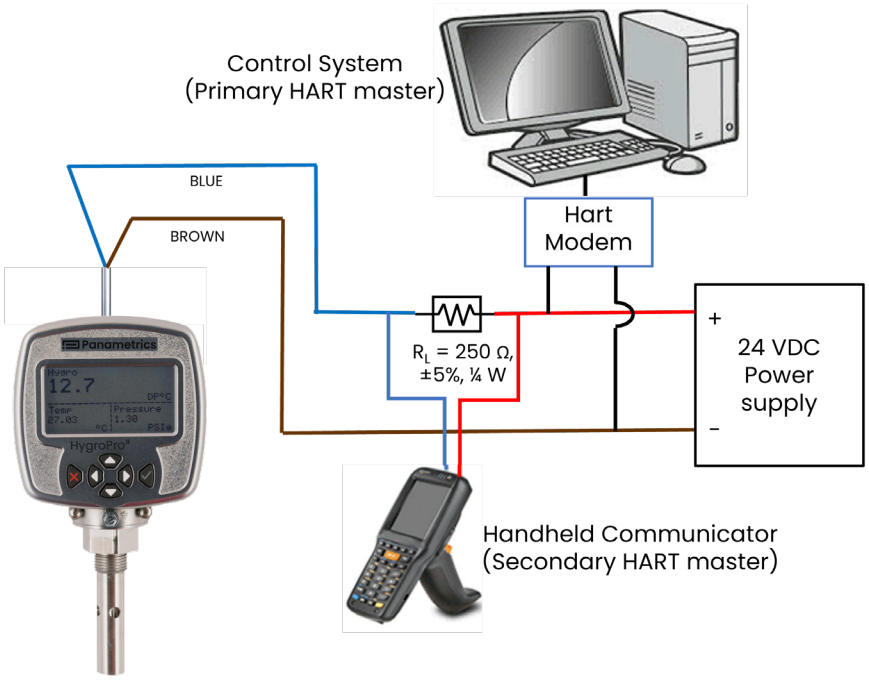
Sensor type	NTC thermistor
Operating range	-22°F to 158°F (−30°C to 70°C)
Accuracy	±0.9°F (±0.5°C) overall

Pressure sensor

Sensor type	Solid state/piezoresistive
Available ranges	• 30 to 300 psig (3 to 21 bar) • 50 to 500 psig (4 to 35 bar) • 100 to 1000 psig (7 to 69 bar) • 300 to 3000 psig (21 to 207 bar) • 500 to 5000 psig (35 to 345 bar)
Accuracy	±1% of full scale (FS)
Pressure rating	Three times the span of the specified range to a maximum of 7500 psig (518 bar)



HygroPro™ dimensions



Digital communication connections with HART master devices
(handheld and plant control system)

Configuration options

Record selected option in blank spaces indicated at bottom of form.
HYGROPROII-B-C-D-E-F-G-H-I-J Option Code

A - Model only
HYGROPRO II: HygroPro II absolute moisture transmitter

B - Version
1 Loop-powered, 12 to 30 VDC, 2m black cable
2 Loop-powered, 12 to 30 VDC, 10m blue cable
3 Loop-powered, 12 to 30 VDC, 10m black cable
4 Loop-powered, 12 to 30 VDC, 2m blue cable

C - Pressure Transducer on Probe
0 None
1 30 to 300 psig pressure transducer
2 50 to 500 psig pressure transducer
3 100 to 1000 psig pressure transducer
4 300 to 3000 psig pressure transducer
5 500 to 5000 psig pressure transducer

D - Laboratory Services
0 None
1 Cleaning for oxygen service

E - Calibration Certification
0 None
1 NIST Certificate
3 ISO-17025 Calibration
4 NPL Certificate

F - O-ring Options
0 Standard Viton O-ring
1 Teflon O-ring
2 CPA-70 O-ring
3 Kalrez O-ring

G - Material Certification
0 None
1 NACE/EN 10204.3.1 Compliant

H - Calibration
0 Standard Calibration, -80 to +10 °C dew/frost point. Data from -110 to +20 °C
1 Low-End Calibration, -100 to -50 °C dew/frost point. Data from -110 to -50 °C

I - Certification (contact Panametrics for full certification descriptions)
0 General Purpose safe area
1 US/Canada Class I Div 1 (requires I.S. barrier sold separately)
2 US/Can Class I Div 2 non-incendive (no I.S. barrier required), Class I Zone 2 AEx/Ex ic IIC T4 Ga (requires I.S. barrier sold separately)
3 IECEx/ATEX: Ex ia IIC T4 Ga (II 1G Zone 0) (requires I.S. barrier sold separately)
4 IECEx/ATEX: Ex ic IIC T4 Ga (II 3G Zone 2) (requires I.S. barrier sold separately)

J - Special
0 None
1 Special, Consult Factory

A - B - C - D - E - F - G - H - I - J

Per avere più informazioni
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