Panametrics

Datasheet

air.IQ

Moisture analyzer packaged solution

air.IQ simplifies the selection and installation of your moisture analyzer. Install the moisture probe, wire your power and outputs to the terminal strip, and connect your gas to the inlet fitting.

- Wall-mounted IP66 / NEMA 4X stainless steel enclosure with clear window
- Includes the analyzer display, moisture probe and complete sample system
- Measurement range –110°C to +20°C (–166°F to +68°F) dew/frost point
- Up to 200 psig process pressure
- 4–20 mA / 0–2 V analog output, two alarm relays and fail-safe fault relay
- Optimized sampling design for fast moisture response

PANA087DS Rev. 7

System Overview

air.IQ is supplied as a complete measurement system comprising the dew.IQ moisture analyzer, IQ.probe sensor and an integrated sample system. Predefined system variants eliminate component-level configuration - simply choose voltage and process connection fitting size.

What's Included

Item	Description
dew.IQ	Moisture analyzer with display, 4-20mA output, alarm relays
IQ.probe	AlOx moisture probe with wide measurement range
Sample System	Needle valve, filter, pressure gauge, rotameter - SS tubing

Environmental Protection

- IP66 complying with EN62208; EN60529
- NEMA 4X complying with UL508A
- Impact resistance IK10 complying with EN62208; EN62262

Available Variants

Variant	Description
air.IQ-1-1	100–240 VAC, ¼" fittings
air.IQ-1-2	100–240 VAC, 6 mm fittings
air.IQ-2-1	24 VDC, ¼" fittings
air.IQ-2-2	24 VDC, 6 mm fittings
air.IQ-1-1-SI	100–240 VAC, ¼" fittings, SI units
air.IQ-1-2-SI	24 VDC, ¼" fittings, SI units
air.IQ-2-1-SI	100–240 VAC, 6 mm fittings, SI units
air.IQ-2-2-SI	24 VDC, 6 mm fittings, SI units

Application Parameters

Parameters	Description
Sample gases	Inert gases such as air, nitrogen or argon
Process gas pressure	0 to 200 psig (0 to 1,379 kPa)
Sample gas temperature	0 to +50°C (32 to 122°F)
Moisture Content	–110 to +20°C dew/frost point, non-condensing
Power (AC)	100–240 VAC, 50–60 Hz
Power (DC)	24 VDC option available

Wiring Made Simple

All electrical connections are made at a single 15-position covered terminal block with no internal wiring required. Connections are grouped logically:

- **Power** - L1/N/PE (AC) or +24V/0V/PE (DC), clearly labelled
- **Analog output** – 4-20 mA, 0-20 mA or 0-2 V, switch-selectable on the front panel
- **Alarm relays** - two programmable SPDT form C relays, set from the front panel
- **Fault relay** - one dedicated fail-safe relay confirming instrument health at all times

Applications

The standard air.IQ package is designed for moisture measurement in any inert gas application, in industrial environments classified as safe areas, where the process gas pressure is slightly positive to a maximum of 200 psig.

It combines the Panametrics dew.IQ and IQ.probe with 50 years of sample system design, to deliver the moisture measurement you have come to trust.

Markets and applications served include:

- Industrial gas
- Air dryer/clean dry air
- Plastics drying
- Pharmaceutical
- Aerospace
- Power generation

Designed for Measurement Integrity

High Quality Materials

All gas-wetted components are 316 stainless steel chosen for minimal moisture adsorption and fast equilibration. The result is a system that responds quickly to real changes in the process rather than artefacts of the sampling materials themselves.

Filtration

PVDF fluorocarbon microfiber particulate filter removes 99.5%+ of 0.1 micron particles and aerosols before they reach the sensor - protecting the IQ.probe from contamination without restricting flow. The filter housing is rated to 5000 PSIG and is designed for easy replacement with interchangeable filter cartridges, ensuring straightforward maintenance.

Measurement Conditions

Pressure Conditions

air.IQ operates across both pressurized (process) and atmospheric measurement conditions, up to a maximum inlet pressure of 200 psig. Depending on whether atmospheric or pressurized dew point is being measured, the sample is either introduced under line pressure or allowed to flow through the measurement cell at near-atmospheric conditions.

For volumetric moisture reporting (ppmv), a fixed line pressure value can be entered into the dew.IQ analyzer. This enables accurate conversion from dew point to ppmv under defined pressure conditions.

Flow Control

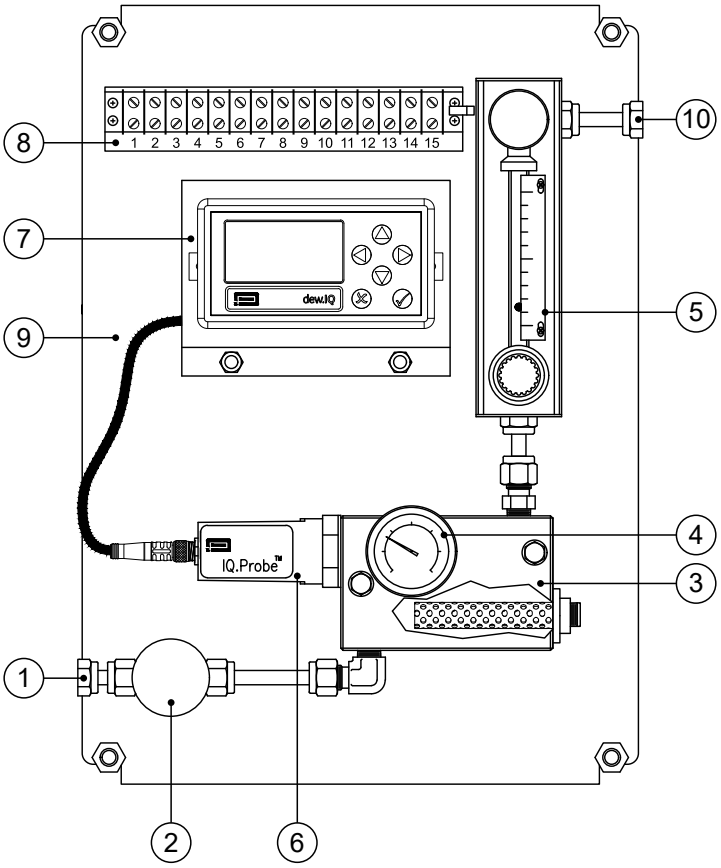
Sample flow is regulated using two complementary control elements, depending on operating conditions. For atmospheric measurements, the stainless steel needle valve is used to gently initiate and adjust flow. Under pressurized conditions, flow is primarily controlled using the integral valve within the rotameter assembly, allowing the sample flow to be set and stabilized as it enters the air.IQ sampling system.

Flow Indication

A borosilicate glass rotameter provides straightforward visual confirmation of both flow presence and stability. This enables the operator to quickly verify that a steady sampling regime has been achieved, supporting consistent and reliable measurement.

System configuration

	Component	Description
1	Inlet process connection and material	6mm or 1/4" fitting (316 stainless steel)
2	Needle valve	5000 PSI (344 BARG), 316SS
3	Sample Cell Manifold	5000 PSIG Rated, 316SS, with filter, PVDF Fluorocarbon
4	Pressure Gauge	316 SS, Range 0 to 200 PSI
5	Flowmeter	Borosilicate Glass Tube, 200 PSIG rated, with flow valve (1.9 to 19.5 SCFH / 54 to 540 SLPH), Viton 'O' Ring"
6	IQ.probe	dew point transmitter (refer to IQ.probe datasheet)
7	dew.IQ	moisture analyzer (refer to dew.IQ datasheet)
8	Terminal Block	15 positions terminal
9	Back panel	Zinc
10	Outlet process connection and material	6mm or 1/4" fitting (316 stainless steel)



Technical **Specifications***

dew.IQ

European certification	Complies with EMC directive 2004/108/EC and 2006/95/EC low voltage directive (installation category II, pollution degree II)
Input	Moisture signal from an IQ.probe
Analog output	Single internal isolated recorder output, internally optically isolated, 10-bit (0.1%) resolution
Switch-selectable outputs	• 0 to 2 V, 10k Ω minimum load resistance • 0 to 20 mA, 400 Ω maximum series resistance • 4 to 20 mA, 400 Ω maximum series resistance • User-programmable within measurement range
Alarm relays	• One fail-safe fault relay • Two standard form C relays SPDT, rated for 3 A at 250 VAC/30 VDC • Set to any level within the range of the instrument; programmable from the front panel
Alarm set point repeatability	±0.1°C (±0.2°F) dew point
Datalogger	32 GB capacity with MicroSD card, 4 GB card included
Display	128 x 64 matrix LCD
Display functions	Dew point temperature in °C or °F, ppmv with a constant pressure input
Power requirements	Universal power 100-240 VAC @ 50-60 Hz 24VDC option available
Warm-up time	Meets specified accuracy within three minutes

* Refer to dew.IQ (PANA011DS) and IQ.probe (PANA085DS) data sheets for complete specification details

IQ.probe

Sensor type	Thin-film aluminum oxide
Dew/frost point temperature	• Overall range capability: –110 to 60°C (–166 to 140°F) • Standard: –80 to 20°C (–112 to 68°F) with data to –110°C (–166°F)
Calibrated accuracy at 77°F (25°C)	• ±2°C (±3.6°F) above –100°C (-148°F) • ±3°C (±5.4°F) below -100°C (-148°F)
Repeatability	• ±0.2°C (±0.4°F) above –100°C (-148°F) • ±0.5°C (±0.9°F) below –100°C (-148°F)

Sensor Shield

The IQ.probe is fitted as standard with a stainless steel sensor shield. This protects the aluminum oxide sensing element from physical damage during installation, removal and routine maintenance - extending sensor life without any compromise to response time or measurement accuracy.

Moisture Sensor Exchange Program

When recalibration is due, Panametrics exchanges your IQ.probe with a freshly calibrated replacement sensor dispatched in advance - according to a mutually agreed schedule. Your measurement continues uninterrupted while the returned sensor is recalibrated at a Panametrics service center and held ready for your next calibration cycle.

Each aluminum oxide sensor is individually calibrated across its full measurement range using Panametrics' advanced moisture calibration systems, traceable to national standards. Only sensors meeting Panametrics' accuracy and stability specifications are shipped. Calibration data sheets are available electronically via the Panametrics Digital Solutions Store.

The probe exchange process is an ideal time to replace the filter element, helping protect the sensor and maintain reliable measurements.

The program offers fixed pricing over 3, 4 or 5-year terms, and optional local field service engineers can deliver, install and collect probes on site. Calibration certificates are available as an option. Panametrics will notify you proactively when exchange is due, no internal tracking required.

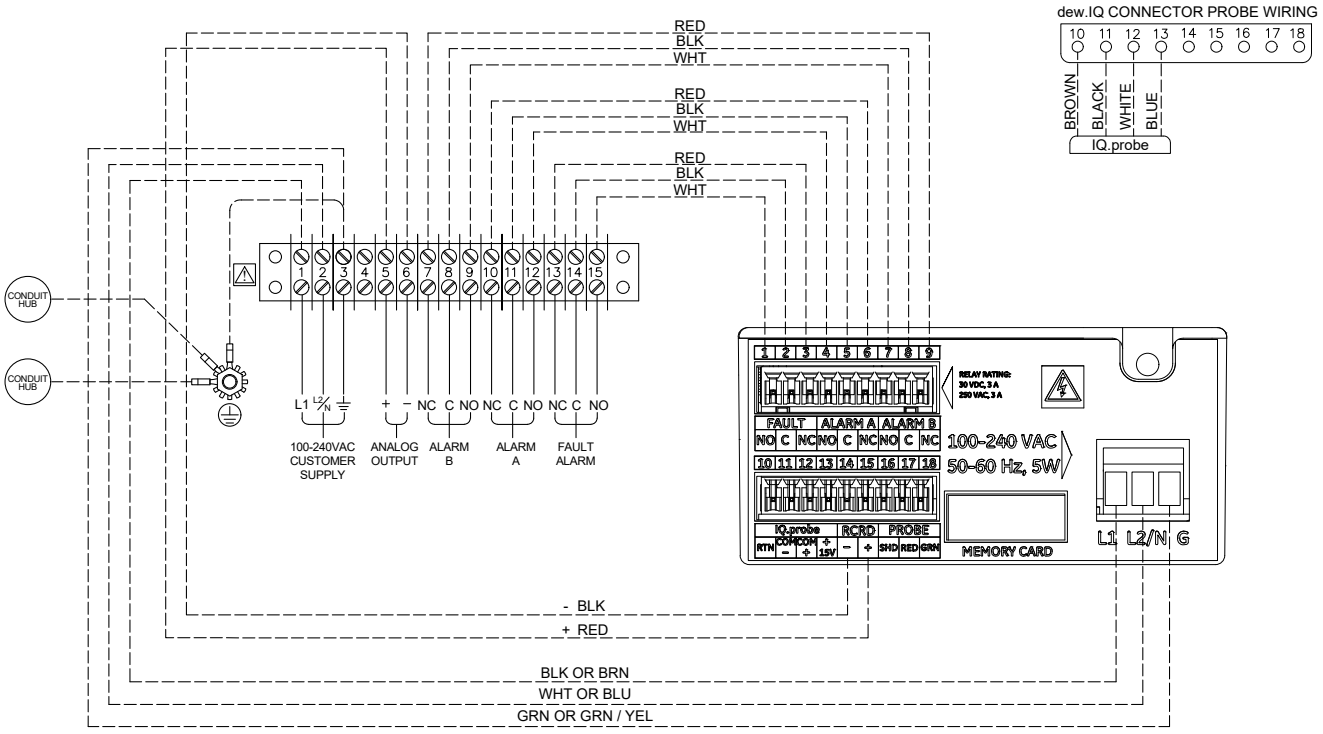
Spare Parts & Replacements

The IQ.probe and dew.IQ are both field-replaceable. Should either unit require replacement, quote the part numbers below when contacting Panametrics to ensure the correct variant is supplied for your configuration.

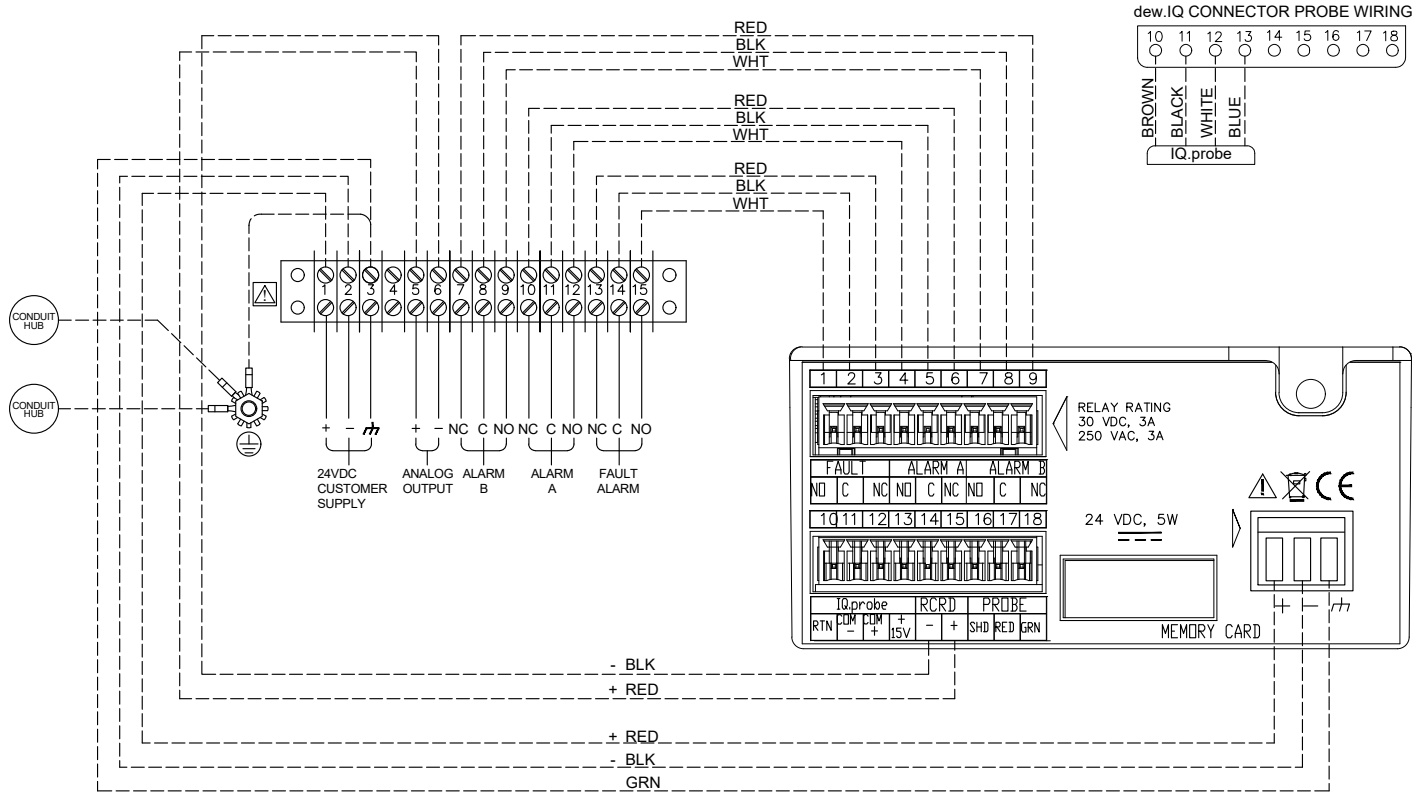
- IQ.probe: IQ.PROBE-2-W-0-0-0-0
- dew.IQ:
  - » DEW.IQ-3-6-1-0 for AC Version (100-240VAC)
  - » DEW.IQ-3-5-1-0 for DC Version (24VDC)

Wiring Diagram

1. AC Version (100-240 VAC)



2. DC Version (24 VDC)

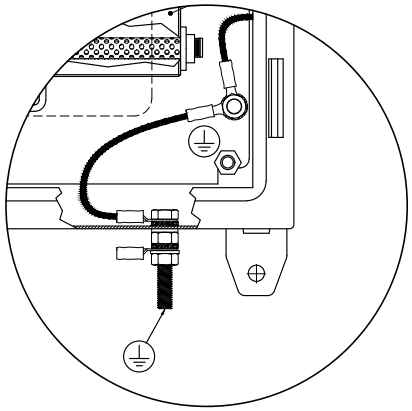


Wiring the System

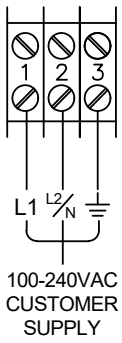
All on-site electrical connections are made at a clearly labelled terminal rail mounted inside the enclosure alongside the dew.IQ, the two are pre-connected at the factory. No internal wiring is required. Customer-supplied cable (16–26 AWG) is required for all output connections. Refer to the dew.IQ User Manual (PANA011C11) for full terminal diagrams.

Enclosure Earthing

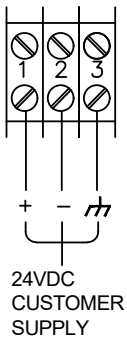
A dedicated earth stud is provided on the outside of the enclosure and must be connected to site earth before energizing the system. Terminal 3 of the terminal rail is linked to this stud via an internal earth screw, providing a common earth reference for both the instrument and the enclosure. The position earth stud on enclosure is shown in the detail view below.



Connecting the Input Power



For AC units, connect L1 to terminal 1 and L2/N to terminal 2 on the terminal rail.



For DC units, connect +24 V to terminal 1 and 0 V to terminal 2 on the terminal.

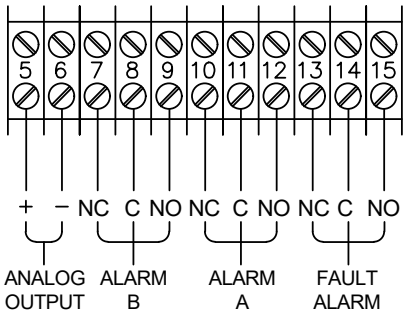
Ensure all local electrical safety codes and regulations are observed before energizing the system.

Optional Connections

The terminal rail provides dedicated terminals for the analog output and alarm relays. Both are optional and independent of one another - connect only those required for your application. The diagram below shows the terminal rail layout for reference before wiring.

Connecting the Analog Output

The analog output (terminals 5 and 6) is switch-selectable between 4–20 mA and 0–2 V on the dew.IQ main PCB - confirm the correct output type is set before wiring. The output is internally optically isolated; do not connect line voltage to the output terminals.



Connecting the Alarm Relays

Two SPDT form C relays are available for high and low moisture set points. Alarm A connects at terminals 7 (NC), 8 (C) and 9 (NO); Alarm B at terminals 10 (NC), 11 (C) and 12 (NO). Each relay is rated 3 A at 250 VAC / 30 VDC. Set points and alarm behavior are fully programmable from the dew.IQ front panel without specialist tools.

A dedicated fail-safe fault relay connects at terminals 14 (NC), 15 (C) and 16 (NO). This relay changes state whenever the instrument detects an internal fault condition. It can be configured as normally energised (fail-safe) or normally de-ener

Start-Up Procedure

Before pressurizing the system, check the IQ.probe is fully and securely installed in the sample cell.

- Ensure the inlet needle valve and the rotameter valve are both fully closed before connecting gas
- For process pressure measurement (max. 200 psig): Slowly open the inlet needle valve until fully open, then crack the rotameter valve until flow is visible on scale
- For atmospheric pressure measurement: Fully open the rotameter valve first, then slowly crack the inlet needle valve until flow appears on the rotameter scale
- Switch on and allow 3 minutes, the dew.IQ is then ready for service

Verify the reading on the dew.IQ display - dew point in °C or °F, or ppmv with constant pressure input selected

Shut-Down Procedure

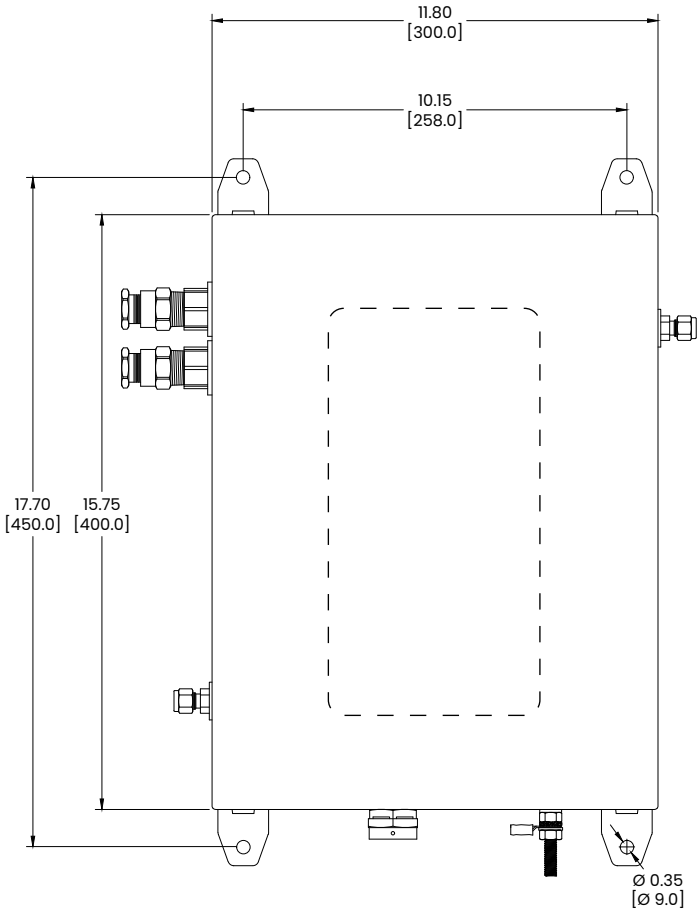
- Isolate power supply
- Slowly close the inlet needle valve to reduce flow to zero
- Slowly open the rotameter valve until the pressure gauge reads 0 psig / 0 kPa
- Remove the IQ.probe from the sample cell

Flow Rate Guidance

The rotameter scale runs from 2 to 20 SCFH (54 to 540 SLPH). For most applications a mid-scale flow of 5 SCFH (2.5 SLPH) gives the optimal response time. Avoid running continuously at maximum flow unless the application demands it.

Stainless Steel Enclosure Dimensions

Component	Dimensions (W x H x D)
Enclosure	11.80 × 15.75 × 7.9 in [300 × 400 × 200 mm]
Wall mounting holes	10.15 × 17.70 × 7.9 in [258 × 450 × 200 mm]



If all you need is a transmitter... we offer two

DewPro MMY30 and MMY31

Dew Point Transmitters

The DewPro MMY30 is a loop-powered transmitter with 4 to 20 mA output. The DewPro MMY30 is specifically designed to measure dew point or ppm in gases at line pressure oratmospheric pressure.

The DewPro MMY31 measures dew point or ppmv in gases. It is a cost-effective, loop-powered dew point transmitter designed for “in-line” installation where trace moisture measurement is required.

Both use the planar aluminum oxide sensor provides excellent corrosion resistance, longer calibration stability, and quick response times.

Applications include glove boxes, environmental chambers, test chambers, and other locations where direct insertion is required.

MMY30

Features

- Loop-powered, 4 to 20 mA transmitter
- Fast response planar aluminum oxide sensor
- Trouble-free indoor or outdoor mounting
- Microcontroller electronics in Type 4X/IP67 enclosure

MMY31

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