

MOISTURE & DEW POINT MEASUREMENT SERIES

HYGROTRACE

ULTRA-TRACE MOISTURE ANALYZER

Engineered and manufactured by Vympel

Supplied and supported by Blue Dragon Technology

Ultra-trace online moisture measurement for natural gas and industrial gases, with direct reporting in ppmV, calculated water dew point, and mg/m³

The HygroTrace is an automatic moisture analyzer designed for continuous ultra-trace moisture measurement in natural gas and other gases that do not chemically interact with phosphorus pentoxide. Using a coulometric measurement principle, it measures moisture volume fraction and converts the result to calculated water dew point and mass concentration. When used with a gas preparation system, it supports stable low-level moisture monitoring for gas quality assurance, process protection, and industrial continuous measurement applications.



Ultra-Trace Moisture Measurement

Measures moisture volume fraction from 0.1 ppmV for very dry gas applications



Multi-Unit Reporting

Reports moisture in ppmV, calculated water dew point, and mg/m³



Industrial Connectivity

4–20 mA output, RS-485 Modbus RTU, IP66/IP67 housing, and Ex protection



Ultra-Trace Sensitivity

Measures moisture from 0.1 ppmV for low-level gas monitoring



Wide Moisture Coverage

Available measurement ranges up to 2000 ppmV with dew point indication down to -90 °C



Multi-Unit Output

Displays moisture as ppmV, calculated water dew point, and mg/m³



Coulometric Principle

Electrolytic moisture measurement for trace-level analytical performance



Continuous Operation

Designed for automatic online monitoring in industrial service



Hazardous-Area Ready

Explosion-protected analyzer for industrial gas installations



Natural Gas Processing

- Dry gas quality monitoring
- Gas dehydration systems
- Pipeline gas conditioning



Petrochemicals

- Process gas moisture control
- Drying system verification
- Protection of sensitive



Industrial Gases

- Nitrogen and inert gas monitoring
- Dry gas quality assurance
- Utility gas systems



Chemical Industry

- Continuous low-moisture verification
- Process gas handling
- Gas preparation systems



Laboratories & QA

- Reference moisture checks
- Method validation
- Analytical verification



Power & Utilities

- Instrument gas systems
- Dry gas process support
- Moisture control

HOW IT WORKS

1



Sample Gas

A representative gas sample enters the analyzer system

2



Moisture Absorption

Water is captured by the hygroscopic sensing layer

3



Electrolytic Decomposition

Captured water is decomposed electrochemically

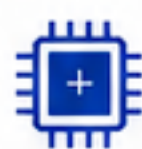
4



Current Measurement

The analyzer measures electrolysis current proportional to moisture

5



Moisture Conversion

Electronics convert the signal to ppmV, mg/m³, and calculated dew point

6



Continuous Monitoring

Plant systems receive continuous moisture information

TECHNICAL SPECIFICATIONS

Measurement Principle	Automatic coulometric hygrometer
Measured Parameter	Moisture volume fraction
Calculated Values	Water dew point; mass concentration
Moisture Measurement Range	0.1–2000 / 1–2000 / 5–2000 ppmV*
Water Dew Point Range	-90 to +20 °C**
Mass Concentration Range	0.07–1500 mg/m³
Moisture Accuracy	±0.1 ppmV (0.1–1 ppmV); ±7.5% (1–2000 ppmV)
Water Dew Point Accuracy	±0.3% max
4–20 mA Conversion Error	RS-485 Modbus RTU; 4–20 mA; 2 alarm outputs
Measurement Chamber Pressure	≤0.3 MPa (3 bar)
Maximum Inlet Pressure	≤16 MPa (160 bar) with Model-018
Gas / Ambient Temperature	Gas: -40 to +60 °C; Ambient: +10 to +50 °C
Gas Flow	Chamber: 0.05–0.1 L/min; Bypass: 0.5–5 L/min
Outputs / Interface	4–20 mA passive; RS-485 Modbus RTU
Power Supply / Consumption	20–27 VDC / ≤15 W
Ingress & Explosion Protection	IP66/IP67; 1 Ex d IIC T5 Gb
Dimensions / Weight	≤230 × 245 × 235 mm / ≤14 kg

* Available range depends on analyzer configuration.
** Calculated value dependent on working pressure.
*** At working gas pressure ≤10 MPa (100 bar).

INSTALLATION & INTEGRATION



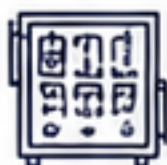
Heated Shelter Installation

Designed for installation in a heated box or indoor hazardous-area location



Gas Preparation System

Can be supplied with Model-018 gas preparation system for stable pressure and sample



Plant System Integration

20–27 VDC supply, 4–20 mA output, RS-485 Modbus RTU, and alarm connectivity

APPLICATION GUIDANCE



Best for ultra-trace moisture monitoring

Ideal for low-level moisture control in dry gas applications



Suitable gas streams

Use with natural gas and gases that do not chemically react with phosphorus pentoxide



Stable flow is important

Maintain representative and stable sample and bypass flow for best performance



Use gas preparation when needed

Pressure reduction and conditioning are recommended for high-pressure service



Factory-tested industrial design

Built for continuous industrial operation in demanding environments

