

DB450N In-Situ Flue Gas Humidity Analyzer for CEMS (up to 200°C)

In-situ duct-mounted flue gas humidity analyzer rated to 200°C for CEMS, eliminating the need for gas sampling and conditioning.

Overview

The DABECO DB450N in-situ flue gas humidity transmitter is designed to accurately measure humidity in hot, wet flue gas environments, eliminating the need for gas sampling and conditioning. This approach provides real-time, accurate humidity data for optimizing combustion processes, ensuring efficient energy use, and controlling emissions. An IP65-rated housing and 316L stainless steel stem make it suited to demanding environments with high dust concentration and some chemical pollution, including industrial furnaces, incinerators, and drying processes.

Operating Principle

A capacitance-based humidity sensing element is mounted directly in the flue gas duct via a 316L stainless steel stem (direct insertion, DN65 standard flange), measuring humidity in-situ within the hot gas stream itself rather than through an extracted sample line. This eliminates sampling/conditioning delays and hardware, providing real-time volume ratio or relative humidity readings alongside programmable alarm outputs.

Key Features

- In-situ direct-insertion measurement — no gas sampling or conditioning required
- Capacitance-based humidity sensing
- Stem rated to 200°C; analyzer housing rated -10 to +50°C
- Selectable display: 4-digit or without
- Two programmable dry-contact alarm outputs
- 4-20mA analog output plus RS485 digital interface
- IP65-rated transmitter housing with 316L stainless steel stem
- DN65 standard flange duct installation

Benefits

- Direct in-situ insertion eliminates sample line lag and conditioning equipment, giving true real-time flue gas humidity data
- IP65 housing and 316L stem withstand high dust and chemically polluted duct environments
- Programmable alarm contacts support automated emissions and process control
- Dual output (4-20mA + RS485) integrates with both simple loops and digital CEMS platforms

Typical Applications

Continuous Emission Monitoring Systems (CEMS), Industrial Furnaces, Incinerators, Drying Processes, Combustion Process Optimization, Emissions Compliance Reporting

Technical Specifications

Measurement

Principle	Capacitance
Range	Volume ratio 0-40% VOL or Relative humidity 0-100% RH
Resolution	0.001
Accuracy	<±1.5% FS
Repeatability	<±1%
Response Time (T90)	<15s

Display

Type	4-digit or without
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Sampling & Installation

Sampling Method	Direct insertion (in-situ)
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Trace Heating Temperature	50°C - 150°C
Stem Length	Standard 0.5m, 1.0m, 1.5m; customized up to 1.8m
Installation	Duct, DN65 standard flange
Sample Gas Requirement	No flammable gas, no highly corrosive gas

Outputs

Analog	4-20mA DC (non-isolated, load resistance <500Ω)
Digital	RS485
Alarm	2× programmable dry contact (passive), max 220VAC/2A

Operating Conditions

Analyzer Working Temperature	-10°C to +50°C
Stem Working Temperature	0°C to 200°C

Power & Physical

Supply	AC220V ±10%, 50/60Hz
Consumption	<15VA
Stem Protection	316L stainless steel
Housing Protection	IP65
Service Life	Transmitter >36 months; sensor >24 months (normal use)