

DB5301 High-Precision RS485 Humidity & Temperature Transmitter

EMC-hardened RS485 humidity/temperature transmitter for data centers and industrial rooms.

Overview

The DABECO DB5301 is a high-precision temperature and humidity transmitter built for data centers, communication rooms, and industrial environments, using a Swiss-imported digital humidity sensing chip for accurate, stable measurement. Advanced EMC protection — surge immunity, electrical fast transient burst immunity, and electromagnetic isolation — keeps it reliable in electrically noisy environments, with RS485 Modbus RTU communication and wall-mounted, duct-mounted, remote-probe, flange, thread, clip, or insertion installation options.

Operating Principle

A digital humidity sensing chip paired with a Pt1000 RTD measures relative humidity and temperature at the sensor head, transmitting readings over RS485 using Modbus RTU. Multiple units can be networked on the same bus (addresses 1-255) for centralized monitoring across a facility, with optional customization to output dew point, absolute humidity, or mixing ratio.

Key Features

- Swiss-imported digital humidity sensing chip
- Humidity range 0-100% RH; temperature -40 to 120°C (probe dependent)
- RS485 Modbus RTU, up to 1200 m communication distance
- EMC protection: surge, EFT burst immunity, electromagnetic isolation
- Multiple installation types: wall, duct, remote probe, flange, thread, clip, insertion
- Optional large LCD display
- Customizable outputs: dew point, absolute humidity, mixing ratio
- Optional IP67 protection rating

Benefits

- EMC hardening suited to electrically noisy data-center and industrial environments
- Multi-point RS485 networking for centralized facility monitoring
- Multiple mounting formats cover duct, wall, and remote-probe installs from one platform
- Long-term stability (<1% RH/year, <0.1°C/year) reduces recalibration frequency

Typical Applications

Data Centers & Communication Rooms, Server Cabinet Hot/Cold Aisle Monitoring, HVAC & Building Automation, Pharmaceutical Storage & Vaccine Cold Chain, Laboratories & Test Chambers, Warehouses & Industrial Facilities

Technical Specifications

Measurement

Humidity Range	0-100% RH
Humidity Accuracy	±2.0% RH (20-80% RH @ 25°C)
Temperature Range	-40 to 120°C (probe dependent)
Temperature Accuracy	±0.2°C (0-60°C)
Stability	<1% RH/year, <0.1°C/year

Sensors

Humidity	IIC Digital Humidity Sensor
Temperature	Pt1000, IEC60751 (DIN43760), $\alpha=0.003850$

Communications

Interface	RS485, Modbus RTU
Distance	Up to 1200 m

Address Range	1-255
Baud Rate	9600-115200 bps

EMC Compliance

Standards	IEC 61000-4-4 (1kV, Class A), IEC 61000-4-5 (500V, Class A), IEC 61000-4-2 (4kV/8kV, Class B)
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Power & Physical

Supply	9-36 VDC
Consumption	<2.5 W
Response Time (T63)	Humidity ≤8s; Temperature >2s
Enclosure	IP67 available as option

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