

HUMIDITY SENSORS BUYING GUIDE

WHAT DO THEY DO?

Humidity sensors measure relative humidity (RH), the percentage of water vapor in the air compared to the maximum the air can hold at a given temperature. Because RH depends on temperature, these sensors also measure temperature to provide accurate readings.

Monitoring RH is essential because it determines how air interacts with its surroundings. Accurate RH measurement enables effective control of indoor comfort, HVAC systems, industrial processes, and the preservation of sensitive materials by anticipating how moisture moves between air and objects.

- **High RH** indicates the air is near saturation and may transfer moisture to cooler surfaces or objects, potentially causing condensation, mold growth, corrosion, or damage to sensitive instruments and materials.
- **Low RH** indicates the air is relatively dry and may draw moisture from its surroundings, which can lead to static electricity, drying or cracking of wood, paper, and other materials, as well as discomfort in indoor spaces.

Topics

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Humidity sensors typically use capacitive or resistive elements to detect moisture, combined with integrated temperature sensors. The measured RH and temperature are converted into standardized outputs for controllers or monitoring systems.

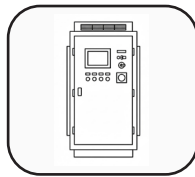
- **Duct-mount** sensors sample airflow directly with side-insertion probes for HVAC and ventilation systems.
- **Wall-mount** sensors monitor ambient room conditions for offices, labs, or indoor spaces.
- **DIN-rail / Panel-mount** sensors operate inside enclosures for industrial or process monitoring.

APPLICATIONS

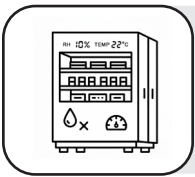
Humidity sensors are essential for monitoring moisture levels in industrial, commercial, and laboratory settings. They help protect sensitive electronics from corrosion, prevent warping in moisture-sensitive materials, and ensure optimal climate conditions for comfort and product quality.



Environmental Control (Labs, Clean Rooms, Museums): Provides accurate temperature and humidity measurements for maintaining precise environmental conditions, protecting instruments, experiments, and valuable artifacts.



Industrial Cabinets and Enclosures: Monitors humidity to help prevent condensation, corrosion, and drift in electrical and electronic components exposed to fluctuating moisture levels.



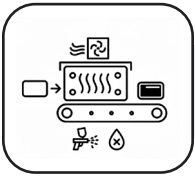
Moisture-Sensitive Manufacturing or Storage Areas (electronics, pharmaceuticals, food, or paper): Provides precise humidity monitoring to protect products from warping, swelling, or degradation due to excessive moisture.



Greenhouses and Agricultural Facilities: Helps promote healthy plant growth and disease prevention through humidity-based climate control and balanced air moisture.



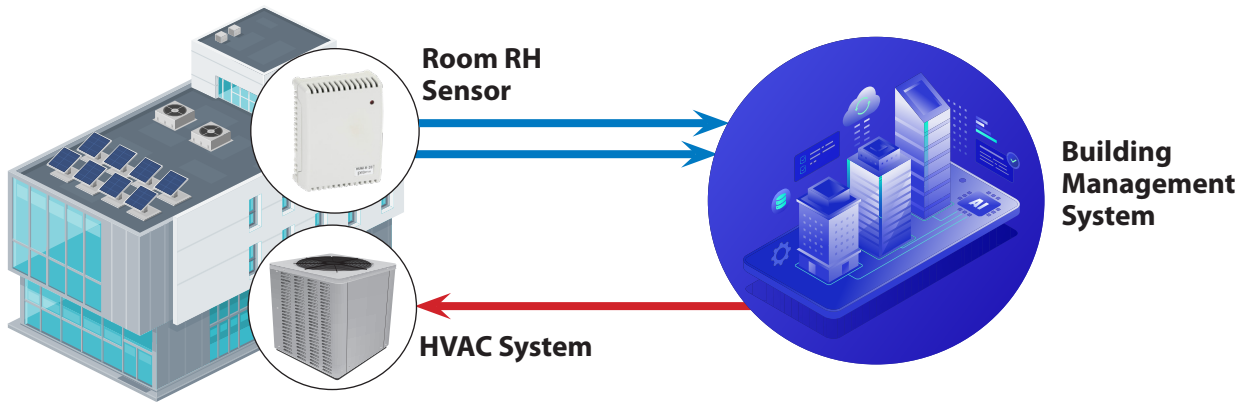
Data Centers and Server Rooms: Protect critical IT equipment from condensation and electrostatic discharge by monitoring humidity to stay within safe operating ranges.



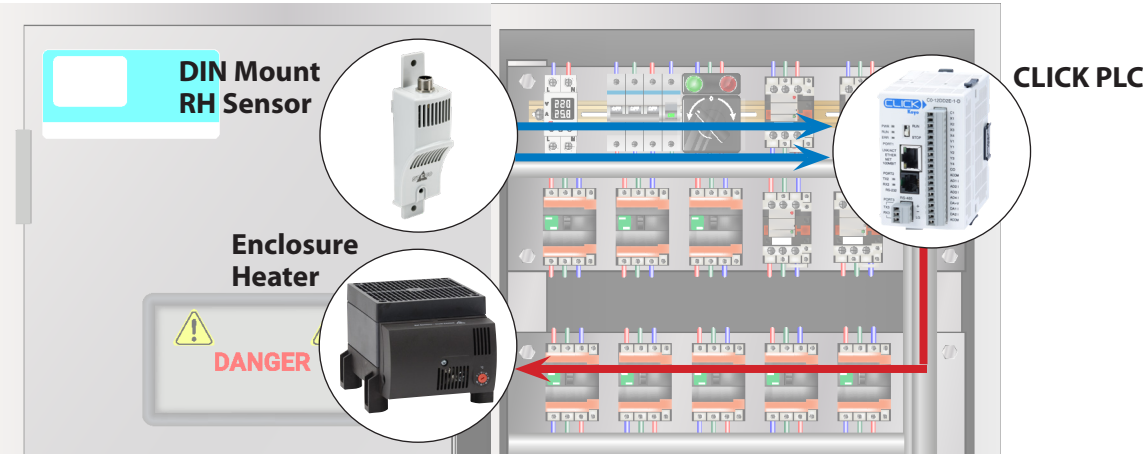
Drying, Curing, or Coating Processes: Monitors humidity to help achieve consistent results, ensuring even drying and smooth, defect-free surfaces.

APPLICATION EXAMPLES

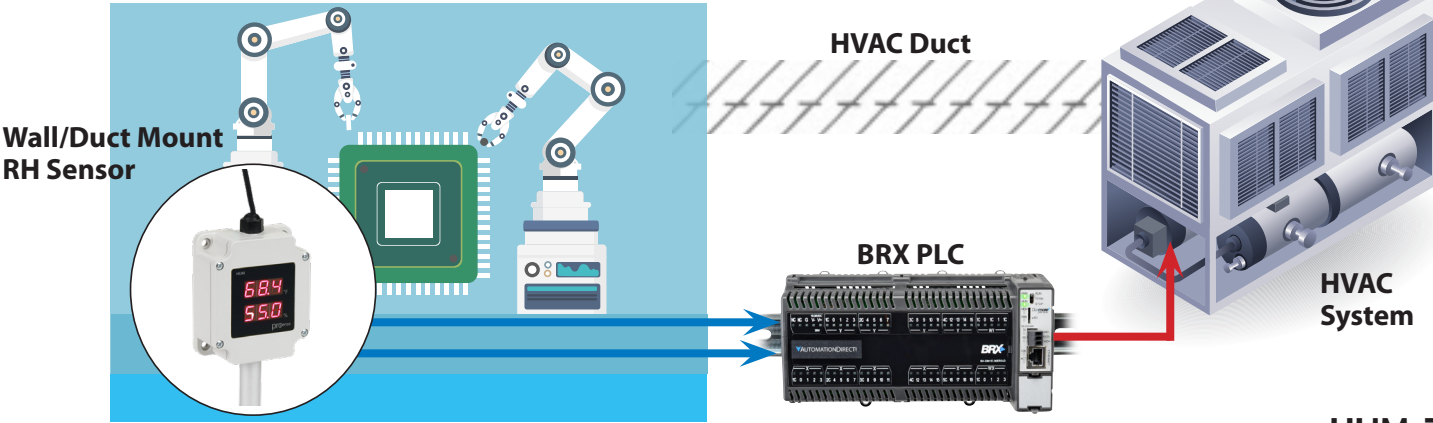
- **Building HVAC Control:** Humidity sensors feed the building management system to maintain temperature and RH setpoints, reduce energy use, and prevent moisture damage.



- **Enclosures:** DIN-mount sensors provide temperature and relative humidity data, enabling PLC-controlled enclosure heaters to maintain optimal conditions and prevent condensation.



- **Cleanroom Process Control:** Sensors monitor RH and temperature for PLC controlled cleanroom systems, maintaining precise humidity, preventing contamination and static, and supporting consistent yields.



HOW TO CHOOSE

Selecting the right humidity sensor ensures accurate measurements and reliable control. Consider the measurement type, environment, and system requirements to select a sensor that performs consistently. The right choice helps maintain optimal conditions and protect sensitive materials or processes.

1. Consider the type of measurement and required accuracy. Most applications use relative humidity, but some processes need absolute humidity or dew point measurements. High precision is essential for sensitive electronics, pharmaceuticals, or lab environments.
2. Evaluate the operating environment. Make sure the sensor can handle the temperature range, moisture levels, and potential exposure to chemicals or dust. Sensors with protective coatings or IP-rated housings are recommended for harsh conditions.
3. Match the sensor's form factor and mounting to your application. Wall-mounted sensors suit ambient monitoring, duct or airflow probes are ideal for HVAC systems, and panel- or DIN-rail-mounted sensors fit control enclosures.
4. Check electrical compatibility. Ensure the output signal, such as 4–20 mA, 0–10 V, or digital protocols, matches your controller. Confirm power requirements and consider low-power options if needed.

A well-chosen sensor helps protect sensitive materials, maintain optimal conditions, and support efficient operations.



5. Consider response time. Fast response is important for dynamic processes like drying or climate control, while slower sensors may suffice for general ambient monitoring.
6. Plan for connectivity and integration. Determine whether the sensor will connect to a controller, data logger, or network system. Features like diagnostics, temperature compensation, and alarm outputs can add value.
7. Align with application-specific requirements. Labs and clean rooms often demand high accuracy and chemical resistance, industrial processes may require ruggedness and IP-rated housings, and building automation may prioritize long-term stability and cost-effectiveness.



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SELECTION GUIDE

Sensor Type	Probe Style	Display	Output Type	Starting Price
ProSense HUM Series Duct Mount	100 or 200mm back-mount probe	No	Two-channel 4 to 20 mA	\$209.00
ProSense HUM Series Wall /Duct Mount	100 or 200mm bottom-mount probe	No	Two-channel 4 to 20 mA	\$209.00
ProSense HUM Series Wall / Duct Mount with LED	100 or 200mm bottom-mount probe	2-line LED	Two-channel 4 to 20 mA	\$241.00
ProSense HUM Series Room Sensor	Built-in sensor	No	(2) 4 to 20 mA outputs or (1) 4 to 20 mA and (1) PT100 output (HUM-R-PT)	\$180.00
Stego Compact Series DIN-Rail / Panel Mount	Built-in sensor	No	Two-channel 4 to 20 mA or IO-Link	\$179.00

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HUMIDITY SENSORS



PROSENSE HUM SERIES DUCT MOUNT HUMIDITY SENSORS
PRICED AT \$209.00

ProSense HUM series duct-mount temperature/ humidity sensors are designed for installation directly in HVAC and ventilation ducts. They deliver accurate measurements and provide long-term, dependable performance for applications such as warehouses and agricultural facilities.

- 0.0 to 99.9% RH sensing range monitors humidity across the full span of possible conditions
- 19.9 to 60.0°C [-4 to 140°F] temperature range delivers separate temperature and humidity outputs from a single device
- Separate 4 to 20 mA temperature and humidity outputs simplify integration with standard control and monitoring systems
- 100 mm or 200 mm probe lengths allow flexible installation using the included mounting brackets
- IP65 protection rating ensures reliable operation in harsh industrial environments

PROSENSE HUM SERIES WALL / DUCT MOUNT HUMIDITY SENSORS
STARTING AT \$209.00

ProSense HUM series wall- or duct-mount temperature / humidity sensors provide precise humidity measurements for environmental and process monitoring. Designed for versatile installation, the probe can be mounted through a duct or suspended from a wall, delivering dependable performance in applications such as data centers and drying, curing, or coating processes.

- 0.0 to 99.9% RH sensing range provides accurate humidity readings across all operating conditions
- 19.9 to 60.0°C [-4 to 140°F] temperature range allows both humidity and temperature monitoring from one device
- Separate 4 to 20 mA temperature and humidity outputs simplify connection to common control and monitoring equipment
- Select models feature a bright 2-line, 3-digit LED display showing both temperature and relative humidity at a glance
- 100 mm or 200 mm probe options support flexible wall or duct installation using the supplied mounting brackets
- IP65 protection rating ensures reliable operation in harsh industrial environments



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PROSENSE HUM SERIES WALL MOUNT ROOM HUMIDITY SENSORS
PRICED AT \$180.00

ProSense HUM Series wan-mount room sensors are compact and easy to install. They monitor ambient temperature and humidity with supreme accuracy and are ideal for cleanrooms, server rooms, and greenhouses.

- 0.0 to 99.9% RH sensing range provides humidity readings across the full range of operating conditions
- 19.9 to 60.0°C [-4 to 140°F] temperature range supports accurate temperature and humidity measurement from a single device
- Dual 4 to 20 mA outputs, with temperature via Pt100 on HUM-R-PT model, provide standard signals for seamless system integration
- Standard 24 VDC operating voltage ensures compatibility with most industrial power supplies



IO-Link

STEGO DIN-RAIL / PANEL-MOUNT AMBIENT HUMIDITY SENSORS FOR ENCLOSURES
PRICED AT \$179.00

Stego compact DIN-rail or panel-mount sensors provide accurate temperature and humidity measurements in enclosures and control cabinets. They are available with standard analog or IO-Link output options for easy integration into monitoring and control systems. Built for wide temperature and humidity ranges, they deliver reliable performance in demanding industrial environments.

- 0 to 100% RH sensing range provides full-range humidity measurement for cabinet environments
- -40 to 140°F [-40 to 60°C] temperature range enables simultaneous humidity and temperature monitoring
- Dual 4 to 20 mA channels or single IO-Link output provide flexible interface options to control and monitoring systems
- 24 VDC operating voltage is compatible with most standard industrial power supplies
- IP20 finger-safe protection rating provides built-in operator safety and compliance for control cabinets



mHUM-7