

Comprehensive List of 50 Humidity Sensor Types and Variations

#	Sensor Type / Variation	Technology	Key Characteristic / Application
Capacitive Humidity Sensors (15 Types)			Measures change in dielectric constant due to moisture absorption
1	Thin-Film Capacitive Sensor	Capacitive (Polymer)	Most common type, good linearity, wide range
2	Thick-Film Capacitive Sensor	Capacitive (Ceramic)	Robust, used in harsh industrial environments
3	MEMS Capacitive Sensor	Capacitive (IC)	Small size, low power, consumer electronics
4	Digital Capacitive Sensor (e.g., SHT3x)	Capacitive (IC)	Integrated signal processing, I2C/SPI output
5	Analog Capacitive Sensor	Capacitive (IC)	Voltage or frequency output
6	Surface Mount Capacitive Sensor	Capacitive (Package)	Automated assembly (SMD)
7	Probe-Style Capacitive Sensor	Capacitive (Package)	Duct or pipe mounting
8	High-Temperature Capacitive Sensor	Capacitive (Material)	Uses high-temp polymer or ceramic
9	High-Humidity Capacitive Sensor	Capacitive (Range)	Optimized for near-saturation conditions
10	Low-Drift Capacitive Sensor	Capacitive (Design)	Enhanced long-term stability
11	Capacitive Dew Point Sensor	Capacitive (Application)	Measures the temperature at

			which condensation occurs
12	Capacitive Relative Humidity (RH) Sensor	Capacitive (Measurement)	Measures water vapor relative to saturation
13	Capacitive Absolute Humidity Sensor	Capacitive (Measurement)	Measures mass of water vapor per volume
14	Capacitive Soil Moisture Sensor	Capacitive (Application)	Measures water content in soil
15	Capacitive RH/T Combo Sensor (e.g., Si7021)	Capacitive (IC)	Integrated humidity and temperature sensing
Resistive Humidity Sensors (15 Types)			Measures change in electrical resistance due to moisture absorption
16	Electrolytic Resistive Sensor	Resistive (Electrolyte)	High accuracy, good for low humidity
17	Polymer Resistive Sensor	Resistive (Polymer)	Simple, low cost, but sensitive to contaminants
18	Ceramic Resistive Sensor	Resistive (Ceramic)	Used in high-temperature environments
19	Salt-Based Resistive Sensor	Resistive (Salt)	Uses lithium chloride or similar salts
20	Digital Resistive Sensor (e.g., DHT11)	Resistive (IC)	Integrated signal processing, single-wire output
21	Thin-Film Resistive Sensor	Resistive (Construction)	Fast response time
22	Thick-Film Resistive Sensor	Resistive (Construction)	Robust construction
23	Resistive Dew Point Sensor	Resistive (Application)	Measures dew point by detecting condensation

24	Resistive Relative Humidity (RH) Sensor	Resistive (Measurement)	Measures water vapor relative to saturation
25	Resistive Absolute Humidity Sensor	Resistive (Measurement)	Measures mass of water vapor per volume
26	Resistive RH/T Combo Sensor (e.g., DHT22)	Resistive (IC)	Integrated humidity and temperature sensing
27	Resistive Soil Moisture Sensor	Resistive (Application)	Measures water content in soil (less accurate than capacitive)
28	Resistive Gas Sensor (Cross-Sensitivity)	Resistive (Application)	Used where humidity is a key variable for gas detection
29	Resistive Humidity Switch	Resistive (Function)	Triggers a switch at a set humidity level
30	Resistive Element with Heater	Resistive (Design)	Used for self-cleaning or preventing condensation
Thermal Conductivity Sensors (10 Types)			Measures change in air's thermal conductivity due to moisture
31	Thermal Conductivity Sensor (General)	Thermal	Measures difference in thermal conductivity between dry and moist air
32	Thermal Mass Flow Sensor (Humidity)	Thermal	Used to calculate absolute humidity
33	Thermal Micro-machined Sensor	Thermal (MEMS)	Small, fast response, low power

34	Thermal Dew Point Sensor (Chilled Mirror)	Thermal (Reference)	High-precision reference standard
35	Thermal Absolute Humidity Sensor	Thermal (Measurement)	Direct measurement of absolute humidity
36	Thermal Relative Humidity Sensor	Thermal (Measurement)	Derived from absolute humidity and temperature
37	Thermal Humidity Sensor Array	Thermal (Array)	Measures humidity distribution
38	Thermal Sensor with Temperature Compensation	Thermal (Design)	Integrated temperature sensor for correction
39	Thermal Humidity Transmitter	Thermal (Industrial)	Industrial-grade sensor with 4-20mA output
40	Thermal Humidity Probe	Thermal (Industrial)	Robust probe for industrial ducts/chambers
Mechanical & Optical Sensors (10 Types)			Measures physical or optical changes
41	Hair Hygrometer	Mechanical	Traditional, uses human or animal hair expansion
42	Mechanical Hygrometer (Coil)	Mechanical	Uses a moisture-sensitive coil or spring
43	Psychrometer (Wet-Bulb/Dry-Bulb)	Mechanical/Thermal	Measures temperature difference to calculate humidity
44	Optical Fiber Humidity Sensor	Optical	Measures change in light transmission/reflection
45	Fiber Bragg Grating (FBG) Humidity	Optical	Measures wavelength shift due

	Sensor		to moisture
46	Quartz Crystal Microbalance (QCM) Sensor	Mass-Sensitive	Measures mass change due to water absorption
47	Surface Acoustic Wave (SAW) Humidity Sensor	Acoustic	Measures change in wave propagation speed
48	Polymer-Coated QCM Sensor	Mass-Sensitive	Enhanced sensitivity with polymer coating
49	Optical Absorption Sensor (IR)	Optical	Measures absorption of IR light by water vapor
50	Integrated Environmental Sensor (e.g., BME680)	Multi-Sensor IC	Measures T, H, P, and Gas (VOCs) in one chip