

Product Guide



Repeatable RH and temperature measurement for precise humidity control and validation

The Best in Relative Humidity Measurement to Optimize your Process



Michell Instruments is an international leader in high-precision sensing with over 40 years' humidity measurement and calibration experience. We design, qualify and manufacture all products within the range — from the polymer Relative Humidity (RH) element, through to our sophisticated laboratory RH and temperature calibrators.

Whether you want to optimize the performance of your gas turbine, protect your product during storage or transport, control moisture content, optimize your HVAC system or any of hundreds more applications, humidity measurement is critical to your process. If controlled environmental conditions are important to you, we have the widest range of products and expert knowledge to meet your application needs.

Stretching across more than 50 countries, our service and support teams are there to give you the help you need, when and where you need it; visit www.michell.com to find your local partner. Our priority is to keep your business running, offering field support to minimize cost and downtime. Our application engineers, subsidiaries and distributors are factory trained and we are privileged to employ and work with some of the key experts in the field of relative humidity measurement.

Polymer Sensing and Electronics Technology

Michell design, qualify and manufacture a range of polymer-based capacitance sensing elements to accurately measure RH for all applications. This sensing element technology is coupled with the latest high-resolution data processing electronics to give excellent performance and flexibility.

- Excellent accuracy up to $\pm 0.8\%$ RH
- Interchangeable modules for rapid maintenance
- Low hysteresis
- User reconfiguration and calibration
- Configurable output signals
- Outstanding $\pm 1\%$ RH long-term stability

Support and Expertise You Can Rely On

Reliable RH and temperature measurement and control can be challenging within a cost-driven framework. Michell offers a complete product and support package for all customer needs.

- Product variants for every budget
- Products and services designed for low maintenance and maximum convenience for the user
- Adaptable, custom-designed products
- Local service and calibration centers in our 10 subsidiaries
- Field humidity calibrators for simple and convenient on-site use

Relative Humidity and Temperature Measurement to Fit Your Application

Whatever your humidity challenge, we have the answer - from RH sensing elements to advanced transmitters.



RH
Elements



HygroSmart
Interchangeable
Sensors



Standard
Economical
Probes



Advanced RH
and Temperature
Probes



Advanced RH
and Temperature
Transmitters



The orange HygroSmart symbol is used to identify any Michell RH product which has the latest generation HS3 interchangeable sensor



The blue HygroSmart symbol identifies products using the I7000XP generation interchangeable sensor

Michell offers a broad range of sensors, probes and transmitters for RH and temperature measurement — meeting the needs of many industrial and process applications. The range offers customers two different approaches:

- The HygroSmart product line, denoted by the orange or blue HS logo, features an interchangeable sensor with its own calibration data — for maximum flexibility of use and virtually no downtime when maintained.
- The standard economical probes are fully sealed and extremely robust.

Typical Applications

Industrial

- Baking
- HVAC
- Data centers
- Heat treating
- Environmental testing

Heavy Industrial

- Automotive
- Military
- Transport
- Marine
- Meteorological

Controlled Environment

- Pharmaceutical
- Food sorting
- Food storage
- Climate chambers
- Animal husbandry

Process

- Power generation
- Nuclear power plant safety
- Paper processing
- Food/beverage





The Complete RH Offering

The new HS3 probe can be bought fully configured and used straight out of the box. However, it was designed to work as part of a complete RH and temperature package which hands complete control to the user, giving them increased confidence in their process along with low-lifetime costs.

There are three components to the package: the HygroSmart HS3 probe and replaceable sensor, a maintenance kit and a portable humidity validator. Users can choose to combine all three or just two of these to get the precise fit they need.

If you want to be flexible and adjust the range



- Fully configure each probe to your exact requirements
- Carry out a loop-checking simulation on installed probes to ascertain validity

If you want to validate and calibrate on-site



- Portable humidity generator, with built-in reference enables simple field validation of installed probes
- Reduced costs and downtime as no instruments need to be sent off-site for calibration

If you want full choice and control for your process



- Complete RH and temperature package
- Instrumentation engineers empowered to carry out all aspects of maintenance and configuration on site
- Minimum disruption and costs incurred

And if you want pure convenience and peace of mind simply order replacement HygroSmart HS3 sensor modules when calibration is due.

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Relative Humidity & Temperature Probes

Economical probes for industrial applications.



PC33 Probe

A simple, cost-effective, analog probe for use in a wide variety of industrial applications.

- Accuracy $\pm 3\%$ RH
- Output signals mA, voltage
- Power supply 5 to 30 V DC
- RH stability $\pm 1\%$ per year
- Ingress protection IP65
- Zero and span adjustment



PC52 Probe

A simple, accurate, analog probe for use in a broad range of industrial applications.

- Accuracy $\pm 2\%$ RH
- Output signals mA, voltage
- Power supply 5 to 30 V DC
- RH stability $\pm 1\%$ per year
- Moulded polymer and stainless steel housing
- Zero and span adjustment



HygroSmart PFMIni72 Probe

An accurate, digitally-based probe for use in higher performance applications.

- Accuracy $\pm 1.5\%$ RH
- Output signal voltage
- Power supply 5.5 to 32 V DC
- RH stability $\pm 1\%$ per year
- Stainless steel housing
- Interchangeable sensor for rapid maintenance



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Relative Humidity & Temperature Probes

Digitally-based probes for challenging applications.



PCMini52 Relative Humidity Probe

A cost-effective probe with a voltage RH output, ideal for OEM applications.

- Accuracy $\pm 2\%$ RH
- Output signals 0 to 1, 5 V DC
- Power supply 4.5 to 35 V DC
- RH stability $\pm 1\%$ per year
- Moulded polymer and stainless steel housing



PCMini52 Relative Humidity and Temperature Probe

A cost-effective, $\varnothing 12\text{mm}$ probe with measured or calculated hygrometric outputs, ideal for small space envelope applications.

- Accuracy $\pm 2\%$ RH
- Output signal voltage 0 to 1, 5, 10 V DC
- Power supply 4.5 to 35 V
- RH stability $\pm 1\%$ per year
- Moulded polymer and stainless steel housing
- Slim diameter $\varnothing 12\text{mm}$



HS3 Probe

An advanced, digital probe with measured or calculated outputs and a rugged 10 bar pressure rated housing.

- Accuracy $\pm 0.8\%$ RH
- Output Signals 0 to 1, 2.5, 5, 10 V & RS485 Modbus
- Power supply 5 to 28 V
- Probe diameter $\varnothing 15\text{mm}$
- 100% end-user configurable
- Interchangeable sensor for rapid maintenance

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Wall Mount Relative Humidity & Temperature Transmitters

Cost-effective products for wall mount transmitter applications.



WM33 & 52 Transmitter

A simple, cost-effective, analog transmitter series for use in a range of industrial applications.

- Accuracy WM33 $\pm 3\%$ RH
- Accuracy WM52 $\pm 2\%$ RH
- Output signals mA, voltage
- Power supply 5 to 30 V DC
- Optional hygrometric outputs
- Optional integral display



HygroSmart WM261 Transmitter

A slim, digital transmitter for use in a broad range of OEM applications.

- Accuracy $\pm 1.5\%$ RH
- Output signals mA, voltage
- Power supply 8 to 30 V DC
- RH stability $\pm 1\%$ per year
- Ingress protection IP65
- Interchangeable sensor assembly



HygroSmart WM Series Transmitter

An advanced, wall mount transmitter designed for a wide variety of heavy industrial and process applications.

- Accuracy $\pm 1.25\%$ RH
- Output signals mA, voltage, RS485
- Calculated hygrometric outputs
- Power supply 18 to 30 V DC
- RH stability $\pm 1\%$ RH per year
- Optional integral display
- Interchangeable sensor for rapid maintenance



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Duct Mount Relative Humidity & Temperature Transmitters

Economical, durable and flexible transmitters for duct mount applications.



HygroSmart DT269 Transmitter

A simple, cost-effective transmitter developed for use in OEM applications.

- Accuracy $\pm 1.5\%$ RH
- Output signals mA, voltage
- Power supply 8 to 30 V DC
- Probe diameter $\varnothing 19\text{mm}$
- Probe length 160 or 290mm
- Interchangeable sensor for rapid maintenance



DT722 Process Transmitter

A rugged, harsh environment transmitter ideal for use in challenging process applications.

- Accuracy $\pm 2\%$ RH
- Output signals loop powered mA
- Power supply 8 to 35 V DC
- Stainless steel housing with optional display
- Process temperatures up to $+150^\circ\text{C}$
- Probe length 500 or 900mm
- Probe diameter $\varnothing 19\text{mm}$



HygroSmart DT Series Transmitter

An advanced, wall mount transmitter, designed for use in a wide variety of heavy industrial and process applications.

- Accuracy $\pm 1.25\%$ RH
- Output signal mA, voltage, RS485
- Power supply 18 to 30 V DC
- Optional integral display
- Calculated hygrometric outputs
- Process temperatures up to $+140^\circ\text{C}$
- Alternative probe diameters $\varnothing 12, \varnothing 19\text{mm}$
- Interchangeable sensor

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Wall Mount Relative Humidity & Temperature Transmitters with Remote Probes

Advanced high temperature transmitters for tough process applications.



HygroSmart WR Series Transmitter

An advanced, remote probe transmitter designed to reliably and remotely measure moisture and temperature in a wide variety of process applications.

- Accuracy $\pm 1.25\%$ RH
- Output signal mA, voltage, RS485
- Power supply 18 to 30 V DC
- Optional integral display
- Calculated hygrometric outputs
- Process temperatures up to $+200^{\circ}\text{C}$
- Probe diameter $\varnothing 12\text{mm}$



HygroSmart PR Series Transmitter

An advanced, pressurized remote probe transmitter designed to reliably measure moisture in specialized higher pressure/temperature process applications.

- Accuracy $\pm 2\%$ RH
- Output signal mA, voltage, RS485
- Power supply 18 to 30 V DC
- Pressure rating 30 bar
- Flexible analog output configurations
- Interchangeable sensor assembly

RH Probe & Transmitter Accessories*

Michell offers a broad range of application-focused accessories - a selection is shown below



Mesh filter with protection cap



PVDF filter with protection cap



Stainless steel slotted cap with mesh filter



Arrow stainless steel sintered filter



M8 connector with 2m cable



M12 connector with 5m cable

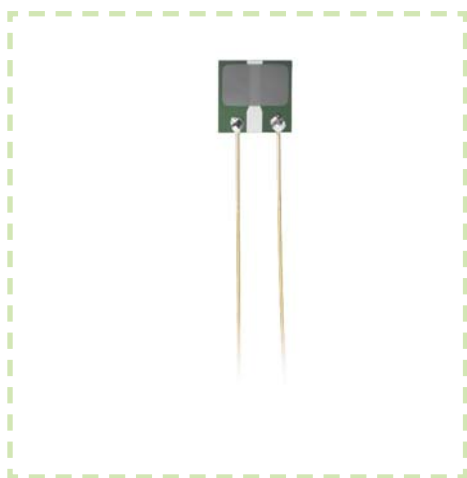
*See instrument order code sheets for more accessories and information - available from www.michell.com/uk or your local Michell Instruments' representative.



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Elements and HygroSmart Sensors

Michell offers a range of in-house elements and sensors for use in probes and transmitters.



H8000 Relative Humidity Element

The H8000 capacitive polymer element is the latest generation technology, developed to reliably and accurately measure moisture in a wide range of relative humidity applications.

This element is the core measurement element in Michell's new range of interchangeable HygroSmart sensors.

- Stability $\pm 1\%$ RH per year
- Operating temperature -40 to $+200^\circ\text{C}$
- Low thermal hysteresis
- $\varnothing 0.4\text{mm}$ leg diameter
- Nominal capacitance 250 pF
- Low RH hysteresis



HygroSmart I7000XP Sensor

This sensor uses the latest HygroSmart 3 technology, providing excellent performance across a wide customer measurement range and giving rapid field interchangeability on all Michell HygroSmart-based probes and transmitters.

- Relative humidity and temperature measurement
- Accuracy $\pm 1\%$ RH
- RH voltage output
- Suitable for integration into all HygroSmart transmitters and probes



HygroSmart HS3 OEM Sensor

The HygroSmart HS3 sensor is an accurate, stable, low power sensor designed to provide repeatable humidity measurement in a wide range of OEM applications. The miniature HS3 sensor features the new HygroSmart 3 measurement technology, providing both dual voltage and digital output signals across a wide temperature range.

- Relative humidity and temperature measurement Accuracy $\pm 0.8\%$ RH
- Dual output signal 0 to 1 V & Digital I^2C
- Power supply 3.3 to 7 V DC
- Operating temperature -40 to $+120^\circ\text{C}$
- Supply current consumption less than 300 uA



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Relative Humidity Validation & Calibration

Michell offers a wide range of equipment for relative humidity calibration, from portable validators for quick field testing to lab-based systems to generate and measure accurate temperature and humidity conditions over a wide range.



HygroCal100 Humidity Validator

The HygroCal100 provides a stable test chamber to validate the performance of relative humidity probes across a wide RH range - from 5 to 95% RH.

- Truly portable at 3.2kg, and completely self-contained
- Intuitive UI makes automating probe verification simple
- Integral battery pack for use without access to mains electricity
- Validates 7 probes simultaneously
- Automated validation procedures for reliable and easy use
- Download logged verification data direct to USB memory



OptiCal Humidity & Temperature Calibrator

The OptiCal is a premium calibration solution for humidity sensors. The stand-alone, transportable humidity calibrator features an integrated chilled mirror reference instrument to enable the operator to perform calibrations that are traceable to national standards.

- Precision relative humidity and temperature calibrator
- Generates 10 to 90% RH over a temperature range from +10 to +50°C
- Integral chilled mirror reference hygrometer with UKAS accredited calibration as standard
- Humidity and temperature profile generation for unattended verification of sensors
- Transportable to allow on-site calibrations



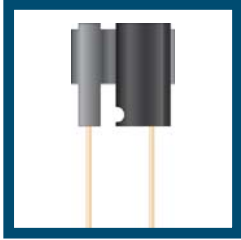
Optidew Vision Optical Dew-Point Meter

A precision hygrometer, combining drift free measurement with the flexibility of a remote sensor. Ideal as a calibration reference.

- Convenient, transportable package
- $\pm 0.2^{\circ}\text{Cdp}$ ($\pm 0.36^{\circ}\text{Fdp}$) accuracy; optional higher accuracy available
- High temperature sensor option to +130°C (+266°F)
- NEMA-12 bench-top housing
- High pressure sensor option to 25 MPa (250 barg / 3626 psig)

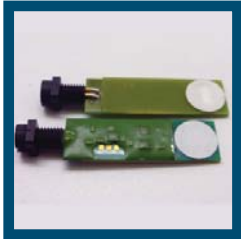
Services Guide

Michell Instruments offers a comprehensive service and support structure behind the relative humidity probe and transmitter range:



Application Support

Humidity applications can be challenging so Michell has a team of experienced application support engineers providing customers with technical application advice. This ensures that an optimum solution is recommended for stable and repeatable humidity measurement data.



Customization Projects

Where a standard product doesn't quite meet the needs of an application, Michell's team of design engineers will work with you to develop a specific solution. From specialized OEM sensors through to moisture generation systems, Michell's 40 years of experience in moisture measurement enables us to find the best fit for specific moisture measurement needs.

Trace Moisture Products Related to Michell's RH Range



SF52

A fast-responding, cost-effective dew-point transmitter for industrial dryer applications.



Easidew

A reliable transmitter with a wide measurement range. The industry-standard for compressed air.



Optidew

A fundamental chilled-mirror hygrometer designed for tough industrial conditions.



Other Product Ranges

Portable Instruments | Chilled Mirror Instruments | Process Analyzers

Calibration Instruments | Dew-Point Transmitters | Oxygen & Binary Gas Analyzers

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Michell Instruments adopts a continuous development programme which sometimes necessitates specification changes without notice.
Issue no: Relative Humidity Instruments_97243_V2_UK_0816