

VAISALA

Sensors and transmitters for data centers

Catalogue



ĐIỀU GÌ CẦN LƯU Ý KHI CHỌN CẢM BIẾN VÀ THIẾT BỊ ĐO CHO CÁC TRUNG TÂM DỮ LIỆU?

What to take into account when choosing sensors and transmitters for data centers?

Points to take into account when choosing sensors for data center

Những điểm lưu ý khi chọn cảm biến cho trung tâm dữ liệu

■ Reliability of the measurement

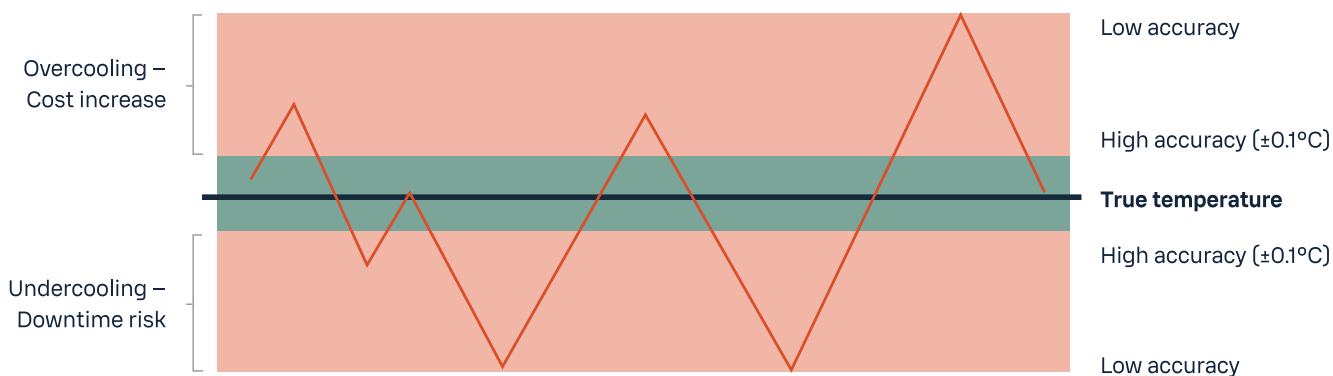
- Sensor accuracy
- Long-term stability

■ How easy is it to maintain the sensors

- Exchangeable probes/modules
- Possibilities for calibration and adjustment on site
- Availability of support and services

■ Long lifetime of the transmitters

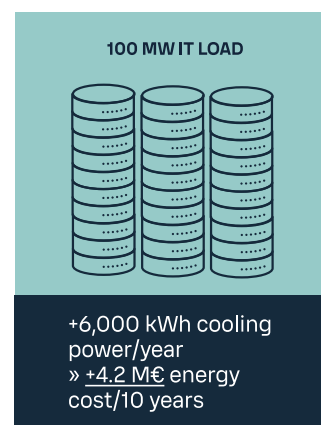
■ Experience of the instrument provider on critical measurements



A mere 1degree decrease in delta temperature could increase annual cooling energy consumption by up to 8.5% per 1megawatt of IT equipment load. This means that temperature measurement instruments with low accuracy, e.g., $\pm 0.5\sim 1$ degree could unnecessarily increase cooling energy consumption and increase costs significantly.

Chỉ cần giảm 1 độ trong chênh lệch nhiệt độ có thể làm tăng mức tiêu thụ năng lượng làm mát hàng năm lên đến 8.5% trên mỗi megawatt tải thiết bị CNTT. Điều này có nghĩa là các dụng cụ đo nhiệt độ có độ chính xác thấp, ví dụ: 0.5 ~ 1 độ có thể làm tăng mức tiêu thụ năng lượng làm mát một cách không cần thiết và làm tăng chi phí một cách đáng kể.

Impact of 1 °C Overcooling



WHY VAISALA? TẠI SAO LÀ VAISALA?

VAISALA là thương hiệu được công ty điều hành trung tâm dữ liệu đứng top 5 ở nước ngoài lựa chọn sử dụng thiết bị cảm biến nhiệt độ, độ ẩm có tính năng tốt và độ chính xác cao nhất, mang lại giá trị đo ổn định, độ chính xác cao dù hoạt động vận hành trong thời gian dài.

VAISALA là hãng sản phẩm đang được lựa chọn sử dụng quản lý nhiệt độ và độ ẩm trong các nhà máy pin, nhà máy sản xuất màn hình, nhà máy bán dẫn, xe tự hành trên sao hỏa của NASA với tính ổn định và độ chính xác cao. Tính toán chính xác được xác định bằng việc tiết kiệm chi phí cao.

Accuracy

VAISALA

± 0.8 RH
± 0.1°C



INDIGO500



INDIGO300



INDIGO PROBES



HMP9

± 1.5 RH
± 0.1°C



HMP110 | HMP110T



HMP113



HMD60 | TMD60

± 2.0 RH
± 0.2°C



HMW110



HMD110



HMS110



TMD110

± 3.0 RH
± 0.5°C



HMW88D



HMD82D



HMS82



INDIGO PROBES

How to increase measurement accuracy?

LÀM THẾ NÀO ĐỂ TĂNG ĐỘ CHÍNH XÁC CỦA CÁC PHÉP ĐO?



1. Nominal Accuracy

Choosing instruments with the highest nominal accuracy is the first step to controlling cooling precisely and reducing energy costs. Vaisala measurement instruments provide industry-leading accuracy of as high as ± 0.1 °C for temperature and up to $\pm 0.8\%$ RH for relative humidity.

Vaisala HUMICAP [Humidity and Temperature Probe HMP3](#) is a general purpose probe designed for various industrial processes. With RH accuracy up to 0.8 %RH, temperature accuracy up to 0.1 °C (0.18 °F, temperature measurement range -40 ... +120 °C (-40 ... +248 °F), the probe provides the best stability, a fast response time, and low hysteresis in a wide range of applications. HMP3 is compatible with [Indigo series transmitters](#) and [Insight PC software](#).

2. Stability

Long-term accuracy requires more than superb nominal accuracy, however. An instrument's stability denotes its ability to maintain accuracy over time and prevent drifting, i.e., slow variation of performance characteristics, which gradually reduces accuracy and must be addressed with regular calibration to return instruments to their nominal accuracy level.

By investing in instruments with high stability, you can minimize the impact of drifting and maintain high accuracy for longer. For example, Vaisala's humidity and temperature probe [HMP110](#), based on the renowned [HUMICAP®](#) sensor technology, provides high performance, chemical tolerance, and stability, and covers the full humidity range at temperatures from -40 to + 80 °C. Each individually adjusted probe comes with a calibration certificate traceable to NIST (National Institute of Standards and Technology) standards.





3. Calibration Interval

An instrument's calibration interval tells you how frequently it needs to be recalibrated to compensate for drifting. The longer you can extend the calibration interval, the fewer interruptions you have and the more you can reduce maintenance costs.

A typical data center can have several hundreds of sensors or more, making calibration a significant maintenance effort. Highly stable instruments such as Vaisala's modular [Indigo series](#) and [HMT120/130 humidity and temperature transmitters](#) allow you to maintain high accuracy for longer while reducing energy costs and minimizing maintenance efforts. The replaceable measurement probes ensure easy maintenance and eliminate process downtime.

4. Calibration Method

Calibration is important to keep your instruments in perfect tune. In some cases, a simple field check and calibration are sufficient, while some instruments require an off-site laboratory calibration.

With Vaisala's replaceable probes, you can carry out instrument calibration in as little as one minute, minimizing costs and eliminating disruptions. You simply remove the probe to be calibrated, plug in a replacement probe, and continue measuring. This significantly reduces calibration time and costs, particularly for a large fleet of instruments.

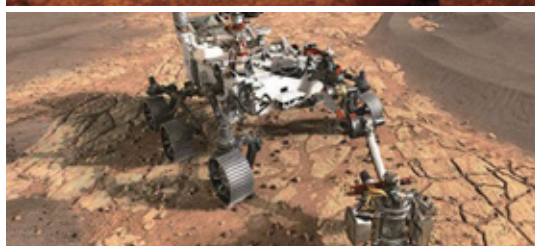
In addition, Vaisala offers a [replacement service](#) for the probes. When needed, you can order new, pre-calibrated probes from a Vaisala service center.



5. Durability

Durability is a crucial characteristic when it comes to maintaining long-term measurement accuracy. Repairing and maintaining instruments in data centers is time-consuming, and confidentiality regulations restrict third-party access to the premises. Vaisala's sensor technology features world-class durability, increasing accuracy in the long term while minimizing disruptions and maintenance needs.

Vaisala's signature durability has been field-proven in the harshest possible conditions, including in space – Vaisala HUMICAP® and BAROCAP® pressure and humidity sensors onboard the [Mars Rover Curiosity](#) have been operating continuously for more than eight years without disruption.



OUR technology on Mars

For the premium performance



INDIGO500

Configurable Transmitter

Versatile transmitter for Indigo Probes
Outputs: 4-20 mA, 0-10 V, Modbus TCP/IP
Robust metal appearance
User friendly interface



INDIGO300

Pre-configured Transmitter

Common transmitter for single Indigo probe use
Outputs: 4-20 mA, 0-10 V
Robust metal appearance
User friendly interface



INDIGO PROBES

Industrial Grade Measurement Probes

Compatible with INDIGO transmitter
Wide selection for professional use
HMP1: Wall-mounted RH + T probe
HMP3: General purpose RH + T probe
HMP7: RH + T probe



TMI110

Immersion Temperature Transmitter

Accuracy ± 0.1 °C (± 0.18 °F)
Outputs: 4-20 mA, Modbus RTU
Installed in a thermowell
Precise measurement of liquids
Very fast response time



HMD60

Duct Humidity and Temperature Transmitter

Accuracy $\pm 1.5\%$ RH, ± 0.1 °C (± 0.18 °F)
Outputs: 4-20 mA, 0-10 V, Modbus RTU, BACnet MS/TP
Full metal body, IP66 enclosure
Proven accuracy even in harsh conditions



TMD60

Duct Temperature Transmitter

Accuracy ± 0.1 °C (± 0.18 °F)
Output: 4-20 mA
Full metal body, IP66 enclosure
Proven accuracy even in harsh conditions



When the highest possible quality and reliability is required, we have the perfect solution for you. This is the new "de facto" selection for data centers applying the highest standards.

The selection brings together the most essential high-precision measurement instruments designed for critical environments. The products come with uniquely excellent accuracy, reliability and long-term stability of measurement.

Khi yêu cầu chất lượng và độ tin cậy cao nhất có thể, chúng tôi có giải pháp hoàn hảo cho bạn. Đây là lựa chọn "trên thực tế" mới cho các trung tâm dữ liệu áp dụng các tiêu chuẩn cao nhất.

Sự lựa chọn tập hợp các dụng cụ đo lường có độ chính xác cao thiết yếu nhất được thiết kế cho các môi trường quan trọng. Các sản phẩm đi kèm với độ chính xác, độ tin cậy và độ ổn định đo lường lâu dài tuyệt vời.



HMT120/130

Humidity and Temperature Transmitter, Multipurpose

Accuracy $\pm 1.5\%$ RH, ± 0.1 °C (± 0.18 °F)

Outputs: 4-20 mA, 0-10 V

Exchangeable measurement probes

IP65 enclosure, optional display

Ideal for demanding conditions and processes



TMT120/130

Temperature Transmitter, Multipurpose

Accuracy ± 0.1 °C (± 0.18 °F)

Outputs: 4-20 mA, 0-10 V

Exchangeable measurement probes

IP65 enclosure, optional display

Ideal for demanding conditions and processes



PDT101

Differential Pressure Transmitter

Accuracy: 0.4 % / 1 % of span

Outputs: 4-20 mA, 0-5 V, 0-10 V

Unidirectional/bidirectional options

Optional pressure ranges

Easy mounting



WXT530

Weather Transmitter

Weather parameters: air pressure, temperature, humidity, rainfall, wind speed, wind direction

Output: Modbus RTU

Integrated radiation shield



WMT700

Ultrasonic Wind Sensor

Accuracy (speed): ± 0.1 m/s or 2% of reading

Accuracy (direction): ± 2 degrees

Outputs: current, voltage

Designed for professional use



PTB210 + SPH20

Digital Barometer + Static Pressure Heads

Total accuracy up to ± 0.25 hPa

Outputs: 0-2.5 V, 0-5 V

Designed for harsh outdoor conditions

Minimized wind effects

Precision with streamlined features



HMT120/130

Humidity and Temperature Transmitter, Multipurpose

Accuracy $\pm 1.5\%$ RH, ± 0.1 °C (± 0.18 °F)

Outputs: 4-20 mA, 0-10 V

Exchangeable measurement probes

IP65 enclosure, optional display

Ideal for demanding conditions and processes



TMT120/130

Temperature Transmitter, Multipurpose

Accuracy ± 0.1 °C (± 0.18 °F)

Outputs: 4-20 mA, 0-10 V

Exchangeable measurement probes

IP65 enclosure, optional display

Ideal for demanding conditions and processes



HMW90

Room Humidity and Temperature Transmitter

Accuracy $\pm 1.7\%$ RH, ± 0.2 °C (± 0.36 °F)

Outputs: 4-20 mA, 0-10 V, Modbus RTU

Exchangeable measurement modules

Display with sliding cover



HMW110

Humidity and Temperature Transmitter, Wall-mounted

Accuracy $\pm 2\%$ RH, ± 0.2 °C (± 0.36 °F)

Outputs: 4-20 mA, Modbus RTU

IP65 enclosure, optional display

Durable design, minimized maintenance needs



TMW110

Temperature Transmitter, Wall-mounted

Accuracy ± 0.2 °C (± 0.36 °F)

Outputs: 4-20 mA, Modbus RTU

IP65 enclosure, optional display

Durable design, minimized maintenance needs



HMS110

Outdoor Humidity and Temperature Transmitter

Accuracy $\pm 2\%$ RH, ± 0.2 °C (± 0.36 °F)

Outputs: 4-20 mA, Modbus RTU

Integrated rain / solar radiation shield

Tolerant of high winds and icing conditions





We are pleased to introduce our world-class repertoire of high-accuracy transmitters, complementing the building automation system even in the most demanding indoor environments and their control needs.

Chúng tôi vui mừng giới thiệu các máy phát có độ chính xác cao đẳng cấp thế giới của chúng tôi, bổ sung cho hệ thống tự động hóa tòa nhà ngay cả trong môi trường trong nhà đòi hỏi khắt khe nhất và nhu cầu kiểm soát của chúng.

Vaisala's measurement instruments are the perfect fit for data centers with reliability as a priority, and within a reasonable budget.

Các công cụ đo lường của Vaisala hoàn toàn phù hợp với các trung tâm dữ liệu có độ tin cậy là ưu tiên và trong phạm vi ngân sách hợp lý.

The products come with excellent long-term stability of measurement, which ensures accuracy of measurement and precise controls also in the long term.

Các sản phẩm đi kèm với sự ổn định đo lường lâu dài tuyệt vời, đảm bảo độ chính xác của phép đo và kiểm soát chính xác trong dài hạn.



HMD110

Duct Humidity and Temperature Transmitter

Accuracy $\pm 2\%$ RH, ± 0.2 °C (± 0.36 °F)

Outputs: 4-20 mA, Modbus RTU

IP65 enclosure, optional display

Durable design, easy to install



TMD110

Duct Temperature Transmitter

Accuracy ± 0.2 °C (± 0.36 °F)

Outputs: 4-20 mA, Modbus RTU

IP65 enclosure, optional display

Durable design, easy to install



TMI110

Immersion Temperature Transmitter

Accuracy ± 0.1 °C (± 0.18 °F)

Outputs: 4-20 mA, Modbus RTU

Installed in a thermowell

Precise measurement of liquids

Very fast response time



TMW90

Room Temperature Transmitter

Accuracy ± 0.2 °C (± 0.36 °F)

Outputs: 4-20 mA, 0-10 V

Exchangeable measurement modules

Display with sliding cover



PDT101

Differential Pressure Transmitter

Accuracy: 0.4 % / 1 % of span

Outputs: 4-20 mA, 0-5 V, 0-10 V

Unidirectional/bidirectional options

Optional pressure ranges

Easy mounting



WXT530

Weather Transmitter

Weather parameters: air pressure, temperature, humidity, rainfall, wind speed, wind direction

Output: Modbus RTU

Integrated radiation shield



Compact options for rack installations

When the space is limited, the miniature-size measurement probes form a compact solution for critical sites. Probes are connected through Modbus RTU and can be daisy-chained for easy installation.

Optional accessories are also available for convenience, including magnetic probe attachment units and plug & play cables of various lengths, with standard M8 quick connectors.

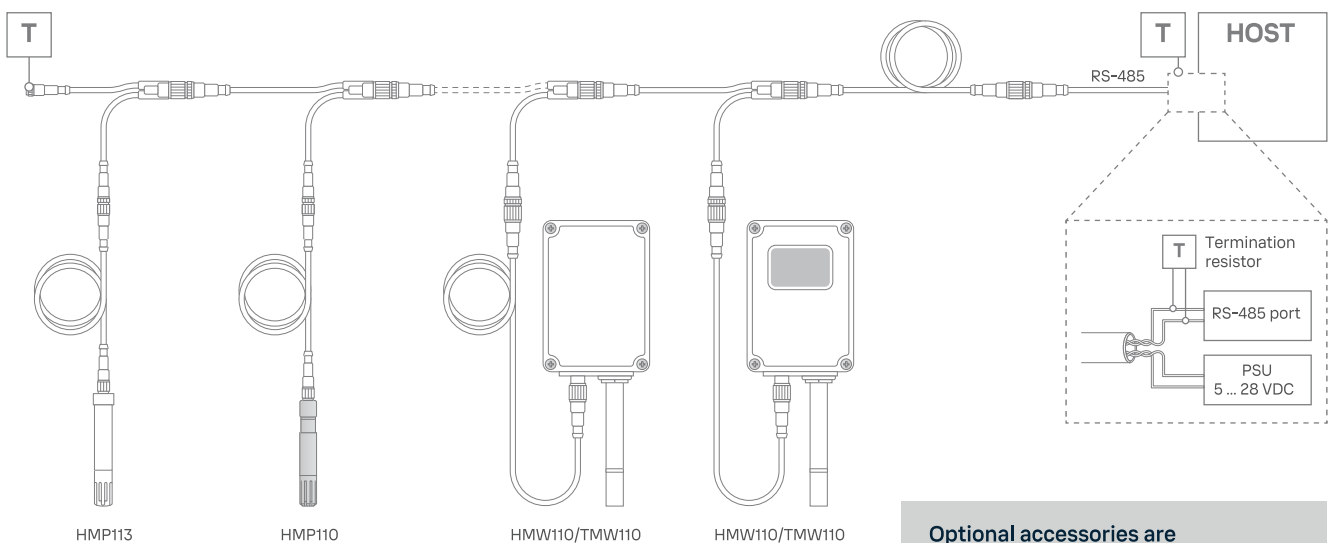
» Miniature-size measurement probes are a compact solution for critical sites.

Khi không gian bị hạn chế, các đầu dò đo kích thước thu nhỏ tạo thành một giải pháp nhỏ gọn cho các vị trí quan trọng. Các đầu dò được kết nối thông qua Modbus RTU và có thể được nối chuỗi để dễ dàng cài đặt.

Các phụ kiện tùy chọn cũng có sẵn để thuận tiện, bao gồm đầu dò từ tính, các đơn vị đính kèm và cáp cắm o play có độ dài khác nhau, với các đầu nối nhanh M8 tiêu chuẩn.

» Đầu dò đo kích thước thu nhỏ khu vực giải pháp nhỏ gọn cho các vị trí quan trọng.

Sensor Chain Example



Optional accessories are available for convenience:

- Cable splitter
- Magnetic probe attachment units
- Plug & play cables of various lengths with standard connectors

The modular sensor solution for mission critical buildings

GIẢI PHÁP CẢM BIẾN MO-DUN CHO CÁC CÔNG TRÌNH QUAN TRỌNG



HMW110

Humidity and Temperature Transmitter

The wall-mounted high-accuracy transmitter HMW110 is designed for demanding HVAC applications. The device is easy to daisy-chain using the optional M12 connector.

Accuracy $\pm 2\%$ RH, ± 0.2 °C (± 0.36 °F)
Traceable calibration (certificate included)
Outputs: 4-20 mA (loop powered), Modbus RTU
IP65 enclosure, optional display
Optional M12 connector available
Optional parameters: dew point, wet bulb, enthalpy, absolute humidity, mixing ratio



TMW110

Temperature Transmitter

The temperature transmitter TMW110 is the perfect choice for sites that benefit from smooth installation. The device is easy to daisy-chain using the optional M12 connector.

Accuracy ± 0.2 °C (± 0.36 °F)
Traceable calibration (certificate included)
Outputs: 4-20 mA (loop powered), Modbus RTU
IP65 enclosure, optional display
Optional M12 connector available
Durable design, minimized maintenance



HMP110 | HMP110T

Humidity and Temperature Probe

When the space is limited, the miniature-size measurement probes form a compact solution for critical sites. Probes are connected through Modbus RTU and can be easily daisy-chained.

Accuracy $\pm 1.5\%$ RH, ± 0.1 °C (± 0.18 °F)
Traceable calibration (certificate included)
Ideal for rough conditions
IP65 metal housing, with M8 connector
High chemical tolerance
Excellent measurement stability
Length 71 mm (2.8 in), diameter 12 mm (0.47 in)



HMP113

Humidity and Temperature Probe

Along with high accuracy, good stability and excellent reliability, the plastic probes offer fast thermal response time. Probes are easy to daisy-chain and connect to the field bus.

Accuracy $\pm 1.5\%$ RH, ± 0.1 °C (± 0.18 °F)
Traceable calibration (certificate included)
Fast thermal response time
IP54 plastic enclosure, with M8 connector
High chemical tolerance
Excellent measurement stability
Length 71 mm (2.8 in), diameter 12 mm (0.47 in)

Room transmitters

THIẾT BỊ ĐO TRONG PHÒNG




	HMW90 SERIES Humidity and Temperature Transmitters	TMW90 SERIES Temperature Transmitters	GMW90 SERIES Carbon Dioxide, Humidity and Temperature Transmitters
			
INSTALLATION	Wall-mount	Wall-mount	Wall-mount
OUTPUT PARAMETERS	Relative humidity Temperature Dew point / frost point temperature Wet bulb temperature Enthalpy Mixing ratio Absolute humidity Dew point depression	Temperature	Carbon dioxide Relative humidity Temperature Dew point/frost point temperature Wet bulb temperature Enthalpy Mixing ratio Absolute humidity Dew point depression
OUTPUT OPTIONS	4...20 mA loop powered 0...5/0...10 V, optional relay Modbus RTU	4...20 mA loop powered 0...5/0...10 V, optional relay	4...20 mA 0...5/0...10 V Modbus RTU
DETAILS	Accuracy $\pm 1.7\% \text{ Rh}$, $\pm 0.2^\circ\text{C}$ ($\pm 0.36^\circ\text{F}$) Display option IP30 enclosure Calibration certificate included	Accuracy $\pm 0.2^\circ\text{C}$ ($\pm 0.36^\circ\text{F}$) Display option IP30 enclosure Calibration certificate included	Accuracy $\pm 1.7\% \text{ Rh}$, $\pm 0.2^\circ\text{C}$ ($\pm 0.36^\circ\text{F}$) $\pm 50 \text{ ppm}$ at 1000 ppm CO_2 CO_2 range $0...5\ 000 \text{ ppm}$ Display option LED CO_2 indication option IP30 enclosure Calibration certificate included

Accuracy that lasts.

Future-proof design combined with unbeatable measurement stability – the secret of low total cost of ownership of our products.

Độ chính xác kéo dài

Thiết kế có khả năng thích ứng trong tương lai kết hợp với độ ổn định đo lường vượt trội – bí quyết giúp sản phẩm của chúng tôi có tổng chi phí sở hữu thấp.

HMW82/83 Humidity and Temperature Transmitters	TMW82 Temperature Transmitters	GMW83/84/86 Carbon Dioxide, Humidity and Temperature Transmitters
		
Wall-mount	Wall-mount	Wall-mount
Relative humidity Temperature	Temperature	Carbon dioxide Relative humidity Temperature
4...20 mA loop powered 0...10 V	4...20 mA loop powered	4...20 mA 0...10 V
Accuracy $\pm 3\%$ Rh, ± 0.5 °C (± 0.9 °F) IP30 enclosure	Accuracy ± 0.5 °C (± 0.9 °F) IP30 enclosure	Accuracy ± 60 ppm at 1000 ppm CO ₂ , $\pm 3\%$ Rh, ± 0.5 °C (± 0.9 °F) CO ₂ range 0...2000 ppm Display option (GMW83) LED CO ₂ indication option (GMW83A) IP30 enclosure

Wall transmitters

THIẾT BỊ ĐO TREO TƯỜNG

	HMT120/130 SERIES Humidity and Temperature Transmitters	TMT120/130 SERIES Temperature Transmitters	HMW110 SERIES Humidity and Temperature Transmitters
			
INSTALLATION	Wall-mount, duct-mount, outdoor	Wall-mount, duct-mount, outdoor	Wall-mount
OUTPUT PARAMETERS	Relative humidity Temperature Dew point / frost point temperature Wet bulb temperature Enthalpy Mixing ratio	Temperature	Relative humidity Temperature Dew point temperature Wet bulb temperature Enthalpy
OUTPUT OPTIONS	4...20 mA loop powered 0...1/0...5/0...10 V	4...20 mA loop powered 0...1/0...5/0...10 V	4...20 mA loop powered Modbus RTU
DETAILS	Accuracy $\pm 1.5\%$ Rh, ± 0.1 °C (± 0.18 °F) Display option IP65 enclosure Interchangeable probes Cable probe option Duct mounting kit option Calibration certificate	Accuracy ± 0.1 °C (± 0.18 °F) Display option IP65 enclosure Interchangeable probes Cable probe option Duct mounting kit option Calibration certificate	Accuracy $\pm 2\%$ Rh, ± 0.2 °C (± 0.36 °F) Display option IP65 enclosure M12 connector option Calibration certificate

When reliability is a priority.

Transmitters designed for demanding environments
- prestigious for reliability and unrivaled
measurement performance.





Khi độ tin cậy là ưu tiên hàng đầu

Máy phát được thiết kế cho các môi trường đòi hỏi khắt khe
- uy tín về độ tin cậy và hiệu suất đo lường vô song.

TMW110 SERIES Temperature Transmitters	HMW88/89 Humidity and Temperature Transmitters	TMW88 Temperature Transmitters	GMW87/88 Carbon Dioxide Transmitters
			
Wall-mount	Wall-mount	Wall-mount	Wall-mount
Temperature	Relative humidity Temperature Dew point temperature Wet bulb temperature Enthalpy	Temperature	Carbon dioxide
4...20 mA loop powered Modbus RTU	4...20 mA loop powered 0...10 V	4...20 mA loop powered	4...20 mA, 0...10 V Modbus RTU (GMW87)
Accuracy $\pm 0.2\text{ }^{\circ}\text{C}$ ($\pm 0.36\text{ }^{\circ}\text{F}$) Display option IP65 enclosure M12 connector option Calibration certificate	Accuracy $\pm 3\%$ Rh, $\pm 0.3\text{ }^{\circ}\text{C}$ ($\pm 0.54\text{ }^{\circ}\text{F}$) Display option IP65 enclosure	Accuracy $\pm 0.3\text{ }^{\circ}\text{C}$ ($\pm 0.54\text{ }^{\circ}\text{F}$) IP65 enclosure	Accuracy $\pm 60\text{ ppm}$ at 1000 ppm CO ₂ CO ₂ range 0...5000 ppm IP64 enclosure

Duct/immersion transmitters

THIẾT BỊ ĐO TRONG ỐNG DẪN/ NGẦM





	HMD60 SERIES Humidity and Temperature Transmitters	TMD60 SERIES Temperature Transmitters	HMD110 SERIES Humidity and Temperature Transmitters	TMD110 SERIES Temperature Transmitters
				
INSTALLATION	Duct-mount	Duct-mount	Duct-mount	Duct-mount
OUTPUT PARAMETERS	Relative humidity Temperature Dew point temperature Wet bulb temperature Enthalpy Absolute humidity Mixing ratio	Temperature	Relative humidity Temperature Dew point temperature Wet bulb temperature Enthalpy	Temperature
OUTPUT OPTIONS	4...20 mA loop powered 0...10 V Modbus RTU BACnet MS/TP	4...20 mA loop powered	4...20 mA loop powered Modbus RTU	4...20 mA loop powered Modbus RTU
DETAILS	Accuracy $\pm 1.5\%$ Rh, ± 0.1 °C (± 0.18 °F) Metal enclosure & probe IP66 (NEMA4X) enclosure Optional probe lengths 25 cm / 10 cm (10" / 4") Calibration certificate	Accuracy ± 0.1 °C (± 0.18 °F) Metal enclosure & probe IP66 (NEMA4X) enclosure Optional probe lengths 25 cm / 10 cm (10" / 4") Calibration certificate	Accuracy $\pm 2\%$ Rh, ± 0.2 °C (± 0.36 °F) Display option IP65 enclosure Calibration certificate	Accuracy ± 0.2 °C (± 0.36 °F) Display option IP65 enclosure Calibration certificate

For the premium performance.

With our top-of-the-line sensors you can always trust the measurement. It is the best possible input to your control loop.





Đối với hiệu suất cao cấp.

Với các cảm biến hàng đầu của chúng tôi, bạn luôn có thể tin tưởng vào phép đo. Đây là đầu vào tốt nhất có thể cho vòng điều khiển của bạn.

GMD110 SERIES Carbon Dioxide Transmitters	TMI110 SERIES Temperature Transmitters	HMD82/83, TMD82 Humidity and Temperature Transmitters	PDT101 Differential Pressure Transmitters
			
Duct-mount	Immersion type (in thermowell), or duct-mount	Duct-mount	Wall-mount / DIN-rail
Carbon dioxide	Temperature	Relative humidity Temperature Dew point temperature Wet bulb temperature Enthalpy	Differential pressure (air)
4...20 mA 0...10 V Modbus RTU	4...20 mA loop powered Modbus RTU	4...20 mA loop powered 0...10 V	4...20 mA 0...5/10 V
Accuracy ± 40 ppm CO ₂ CO ₂ ranges 2000/5000/ 10000 ppm IP65 enclosure Calibration certificate	Accuracy ± 0.1 °C Probe lengths 100/150/200 mm Thermowells available IP65 enclosure Calibration certificate	Accuracy $\pm 3\%$ Rh, ± 0.3 °C (± 0.54 °F) Display option IP65 enclosure	Accuracy 0.4% / 1% of span Unidirectional / bidirectional models Optional pressure ranges IP40 enclosure

Outdoor and weather transmitters

THIẾT BỊ ĐO TÍN HIỆU THỜI TIẾT VÀ NGOÀI TRỜI

	HMS110 SERIES Humidity and Temperature Transmitters	HMS82/83 & TMS82 Humidity and Temperature Transmitters	GMP252 Carbon Dioxide Probe with DTR250 Radiation Shield	WXT530 SERIES Weather Transmitters
				
INSTALLATION	Outdoor model with integrated radiation shield	Outdoor model with integrated radiation shield	Outdoor model with radiation shield	Outdoor model with integrated radiation shield
OUTPUT PARAMETERS	Relative humidity Temperature Dew point temperature Wet bulb temperature Enthalpy	Relative humidity Temperature Dew point temperature Wet bulb temperature Enthalpy	Carbon dioxide	Air pressure Temperature Humidity Rainfall Wind speed Wind direction
OUTPUT OPTIONS	4...20 mA loop powered Modbus RTU	4...20 mA loop powered 0...10 V	4...20 mA 0...10 V Modbus RTU	Modbus RTU
DETAILS	Accuracy $\pm 2\%$ Rh, ± 0.2 °C (± 0.36 °F) IP65 rating Calibration certificate	Accuracy $\pm 3\%$ Rh, ± 0.3 °C (± 0.54 °F) IP65 rating	Accuracy ± 40 ppm at 400 ppm CO ₂ CO ₂ ranges 0...3000/3000/5000 ppm	Accuracy ± 0.5 hPa, ± 0.3 °C (± 0.54 °F), $\pm 3\%$ Rh, $\pm 3\%$ at 10 m/s

Handheld Transmitter For portable diagnostics

THIẾT BỊ ĐO CẦM TAY ĐỂ CHẨN ĐOÁN DI ĐỘNG

HMP80 Series Handheld Humidity and Temperature Probes For spot-checking applications



Features

- Portable design optimized for industrial spot-checking and field calibration
- RH accuracy up to ± 0.8 %RH
- Temperature accuracy up to 0.1 °C (0.18 °F)
- Wide temperature measurement range
- Condensation-tolerant
- Sensor purge improves long-term stability and chemical resistance
- Compatible with Indigo80 handheld indicator and Insight PC software
- Calibration certificate included

HUMICAP â Handheld Humidity and Temperature Meter Series HM40



Features

- Humidity measurement range 0 ...100 %RH
- Temperature measurement ranges -40 ... +100 °C (-40 ... +212 °F), depending on probe model. The HM46 model can measure up to +180 °C (+356 °F) for a short period of time.
- Incorporates proven Vaisala HUMICAP® sensor technology
- Calibration reminder function
- Probes can be user calibrated using an on-site reference
- Graphical display indicates when measurement has stabilized
- Hold-button to freeze the screen and save the reading
- Multilingual user interface available in 10 languages (EN, DE, FR, JA, ZH, PT, ES, RU, FI, SV)

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