

Introducing Vaisala HUMICAP[®] Humidity and Digital Humidity Meas

For demanding industrial applications, a new generation of digital humidity and temperature transmitters has been introduced by Vaisala. Vaisala HUMICAP[®] Humidity and Temperature Transmitter Series HMT330 has been developed to meet the diverse needs of industry. Measurement conditions as well as requirements set for a measuring instrument vary considerably. The needs of timber drying varies from those of brick drying and the food, chemical and process industries are similarly different.

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Temperature Transmitter Series HMT330

Measurement Enters New Era

Vaisala HUMICAP® Humidity and Temperature Transmitter Series HMT330 has been introduced to provide a versatile and flexible solution to a range of industrial processes. The series comprises six different transmitters, each with its own sensor head type that are specified for different temperature and pressure conditions. Depending on model, the transmitters can be used in conditional monitoring, in confined spaces, over a wide pressure and temperature range and, in applications with a constant high humidity, even close to condensing conditions. Special attention has been paid in designing the sensor heads to be reliable and vapor tight in applications where high pressure of water vapor is present.

The series has been designed to allow users to select the particular suitable properties and functions for the particular application during the ordering phase.

Flexible installation possibilities

The transmitters of Vaisala HUMICAP® Humidity and Temperature Transmitter Series HMT330 offer several different installation possibilities. The transmitter body can be mounted directly on a wall or on a connection box. The input/output cable can also be brought in through the back of the transmitter giving the possibility to connect the transmitter without cabling on the surface of the wall. An optional DIN rail mounting kit can also be used or the transmitter can be mounted on a vertical pole e.g. for ➤

outdoor measurements. Different probe installation accessories enable installing the sensor heads into test chambers, air conditioning ducts and in pressurized pipelines.

Supply output cables can be connected using glands, using fittings for cable conduits or by using an external 8-pole connector so that disconnecting/connecting the transmitter for service and calibration can be carried out easily.

Flexible outputs & connections

In addition to measuring relative humidity and temperature, this new digital series can calculate and output the humidity measurements into other forms: dew-point/frostpoint, mixing ratio, absolute humidity, wet bulb temperature, enthalpy, ppm and partial pressure of water vapor.

Vaisala HUMICAP® Humidity and Temperature Transmitter Series HMT330 provides several different communication signals. Communication with the transmitter can take place via either an RS 232 or RS 485 serial line or measurements can be read as a linear current or voltage signal. Voltage and current ranges can easily be modified using simple dip switches. If needed, the



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unit can also be equipped with a third analog output and, in this way, output three different humidity or temperature signals simultaneously.

The voltage supply range

ranges from 10 to 35 VDC, which allows the transmitter to be used in battery powered applications. To avoid potentially problematic current loops, the supply input and signal outputs can also be galvanically isolated using a plug-in module inside the transmitter. An optional AC power supply module enables the transmitter to be connected to all universal mains AC supplies. Vaisala has also developed an optional alarm output module with two programmable relay outputs that allows the transmitter to be used in controlling external regulators for humidity control, for example.

When using serial line HMT330 transmitters can either be linked via terminal program or specific Windows® software can be used to transfer the measuring data to a PC, where it then can be further processed and copied to other Windows® programs.

Display that speaks your language

An optional graphic display, together with an intuitive menu-based interface, makes it easy for the user to become familiar with the transmitter's operation. Seven different language alternatives are available: English, German, French, Spanish, Swedish, Finnish and Japanese.

Graphical trend curves allow the user to monitor the measurement history of the process or at the measurement site. The curves are stored in six different time windows. This gives the user a picture of the process/measurement history ranging up to one year of active operation. Cursors on the display allow users to refer values at individual time spots and to read the minimum and maximum values.

Probe warming and chemical purge

Fast changes in ambient temper-

A History of Digital Technology

Vaisala introduced the first truly digital humidity transmitter in 1992. This was the Vaisala HUMICAP® Humidity and Temperature Transmitter Series HMP230 which has had wide industrial use. Since its introduction the HMT230 series has gained a clear market leader position in demanding humidity measurement applications.

In line with market developments the HMP230 series has been updated and improved through its lifetime, the HMT330 now steps in as a new generation with enhanced performance characteristics. ●



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Main Features of the HMT330 Series

	temperature range	pressure range
HMT331 for wall mounting	-40 ... +60 °C	
HMT333 for ducts/tight spaces	-40 ... +80 °C	
HMT334 for high pressure/vacuum	-40 ... +180 °C	vacuum...100 bar
HMT335 for high temperatures	-70 ... +180 °C	
HMT337 for high humidities	-70 ... +180 °C	
HMT338 for pressurized pipelines	-70 ... +180 °C	up to 40 bar

- different probe cable lengths
- graphical display with backlight
- multilingual 'easy to use' interface
- measurement history in trends curves
- serial and analog outputs
- several installation possibilities
- warmed probe option for condensing applications
- optional modules for additional functions
- alarm relays
- third analog output
- RS 485 communication
- galvanic isolation between supply voltage and outputs
- alternative calibration and maintenance contract possibilities

ature can cause serious errors in relative humidity measurements. Dew formation on the sensor in high humidity can be one reason for this. Another factor is the stabilization time needed for the sensor head to reach thermal equilibrium with the ambient temperature.

The warmed sensor head method patented by Vaisala offers a reliable solution for humidity measurement in such conditions. This option is especially suitable for outdoor measurements as well as in applications where humidity needs to be measured close to saturating conditions. Measurement in environmental test chambers, curing, meat processing and timber drying are some examples.

A special version of Vaisala HUMICAP® sensor or, alternatively, the chemical purge option, makes the probes stable even in those environments where very high concentrations

of chemicals or cleaning agents are present. In chemical purge mode, the sensor performance is returned to normal by evaporating the interfering chemicals from the sensor polymer. Chemical purge helps to maintain measurement accuracy between calibrations.

Easy calibration

Calibration and adjustment of the transmitter can be made in several ways: using the internal press buttons; the serial line connection or, the optional display and keypad. Calibrating the transmitter with saturated salt solutions is very easy. The user only needs to place the probe into the calibrator, tell the transmitter the reference salt used and the unit takes care of the rest.

At the actual measurement site, a quick one-point field calibration can be made, for example by using the Vaisala HUMI-

CAP® Humidity and Temperature Meter HM70. With a connection cable, the hand held indicator can be connected to the HMT330 unit and the readings of both the reference probe and the transmitter can easily be compared and the transmitter output adjusted. In this way, the transmitter can be checked at the actual measuring environment without removing the units and interrupting measurements.

New calibration and maintenance possibilities

When ordering the transmitter the customer can select the type of production calibration required. A standard factory calibration is made at six humidity points against references traceable to NIST. If the customer chooses an accredited calibration, this can be carried out at the Measurement Standards Laboratory of Vaisala, which is an

EA accredited laboratory for humidity and temperature.

Vaisala HUMICAP® Humidity and Temperature Transmitter HMT330 series also offers a new maintenance method, to order re-calibration, accredited calibration and maintenance contracts. These services have been implemented according to the initial order/configuration code to make it easy for the customer to join these according to the application requirements. When purchasing a HMT330 transmitter the customer can sign up to a calibration/accredited calibration and maintenance contract simultaneously.

The HMT330 Series represents the new generation of digital humidity measurement transmitters with an ability to meet the huge range in requirements of modern industrial applications. ●