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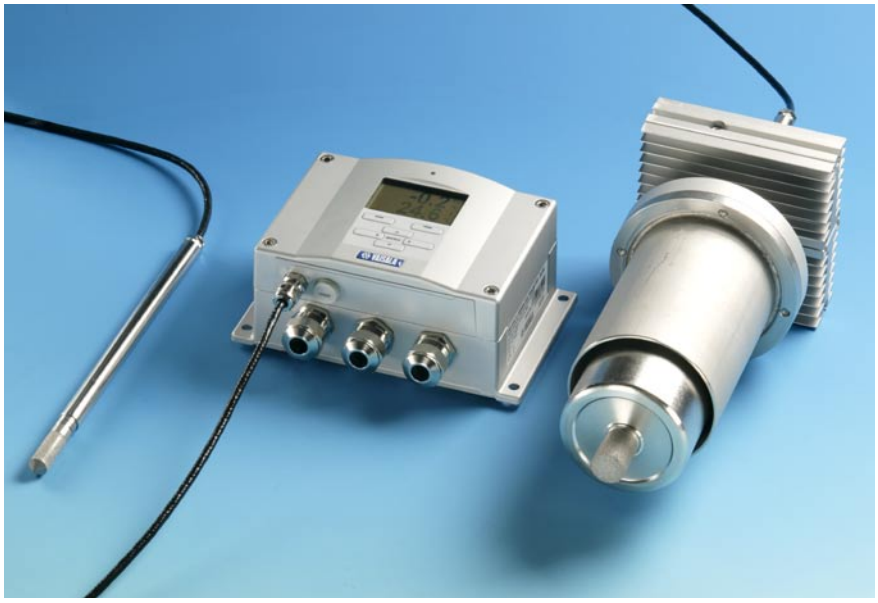
DMT345 and DMT346 Dewpoint Transmitters for High Temperature Applications



The Vaisala DRYCAP® Dewpoint Transmitters DMT345 and DMT346 are designed to measure and control humidity especially in dry environments with high temperatures.

Features/Benefits

- The DMT345 measures humidity in temperatures up to 180°C (356 °F)
- The DMT346 measures humidity in temperatures up to 350 °C (+662 °F)
- Dewpoint accuracy ±2 °C (±3.6 °F)
- Vaisala DRYCAP® Sensor provides accurate, reliable measurement with excellent long-term stability and fast response
- Withstands condensation
- Unique auto-calibration feature
- Optional local display with keypad, mains power supply module and alarm relays
- NIST traceable calibration (certificate included)

The Vaisala DRYCAP® Dewpoint Transmitters DMT345 and DMT346 are designed for humidity measurement in industrial drying applications with particularly high temperatures.

Both transmitters incorporate the Vaisala DRYCAP® sensor, which is accurate, reliable, and stable. The sensor withstands condensation and is immune to particulate contamination, oil vapor and most chemicals. The DRYCAP® sensor stands out for its swift response time and rapid recovery after getting wet.

Measure humidity directly in hot processes

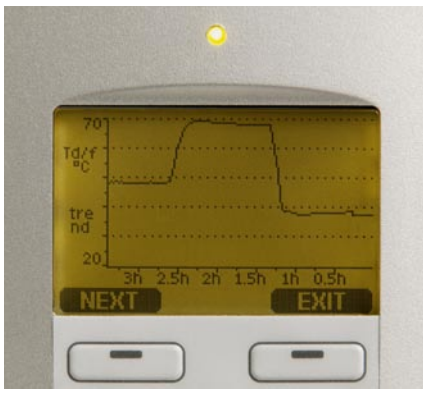
The DMT345 and DMT346 are constructed for direct measurement in hot processes. Therefore, there is no need for sampling systems and trace heating. As a result, high accuracy and constancy are maintained.
The accuracy and stability of the DMT345 and the DMT346 are due to the unique auto-calibration function, patented by Vaisala. This auto-calibration makes the transmitter perform a calibration and adjustment by itself while the measured process is running. If the measurement accuracy is not confirmed, corrections are made automatically. The procedure is so quick and corrections are so minor that it will go unnoticed. This ensures low maintenance and high performance. In normal conditions, it is recommended to have a traceable calibration performed once a year.

DMT345, Accurate in hot and dry environments

The DMT345 is designed for accurate humidity measurement in hot and dry conditions. This model provides unmatched dry end measurement accuracy in temperatures up to 140 °C, however the DMT345 can operate safely in temperatures up to 180 °C. The stainless steel probe is especially designed for high temperatures and has an optional installation flange that allows an adjustable installation depth and therefore a precise positioning.

DMT346, Reliable in very hot processes

When process temperatures range between 140 °C to 350 °C, the DMT346 provides the best measurement performance.
The DMT346 comes with a cooling set as a standard feature. The cooling effect may be regulated by adding the cooling fins, or removing them from the set for the best measurement performance. The cooling system operates without



The large and clear display allows the user to check data at a glance.

moving parts, additional power or cooling utilities, thereby eliminating the risk of sensor damage due to a mechanical cooling failure. Additionally, sensor warming minimizes the risk of condensing on the sensor. In low humidity the combination of auto-calibration and DRYCAP® ensures accurate measurement.

Versatile options

The DMT345 and DMT346 transmitters can be ordered with a large numerical and graphical display, which allows the user to clearly monitor operational data, measurement trends and up to 1-year measurement history. The display/keypad option simplifies operation. Output variables and other settings can be changed with the multilingual menu-based commands.

A wide variety of power supply options are also available. For serial interface the RS232 and RS485 can be used.

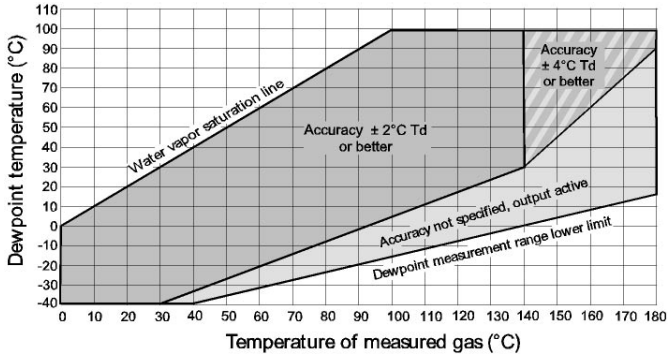
Additionally an alarm relay option is offered. Units are delivered installation-ready and meet ROHS requirements.

Technical Data

Measured variables DMT345

Dewpoint DMT345

Sensor	Vaisala DRYCAP®180S
Measurement range	-40 ... +100 °C (-40 ...+212 °F) Td
Accuracy	±2°C (±3.6 °F) Td
	See the accuracy graph below



Response time 63% [90%] flow rate 1 l/min and 1 bar pressure	
from dry to wet	5s [10 s]
from wet to dry including auto-calibration	45s [5 min]

Temperature DMT345

Measurement range	0...+180 °C (+32...+356°F)
with sensor warming	upper range limited by humidity (at 80% RH warming is switched on and T reading not actual process Temperature)
Accuracy	±0.4 °C at 100 °C
Temperature sensor	Pt 100 IEC 751 1/3 class B

Relative Humidity DMT345

Measurement range	0...100% RH
with sensor warming	0...80% RH
Accuracy	
below 10% RH	±10% of reading
above 10% RH	±1,5% RH + 1,5% of reading

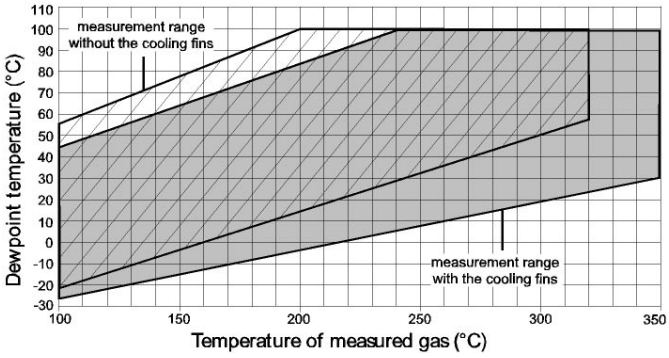
Mixing Ratio DMT345

Measurement range (typical)	0...1000 g/kg (0..7000 gr/lbs)
Accuracy (typical)	±12% of reading

Measured variables DMT346

Dewpoint DMT346

Sensor	Vaisala DRYCAP®180S
Measurement range	-25 ... +100 °C (-13 ...+212 °F) Td
Accuracy	±2°C (±3.6 °F) Td
	See the accuracy graph below

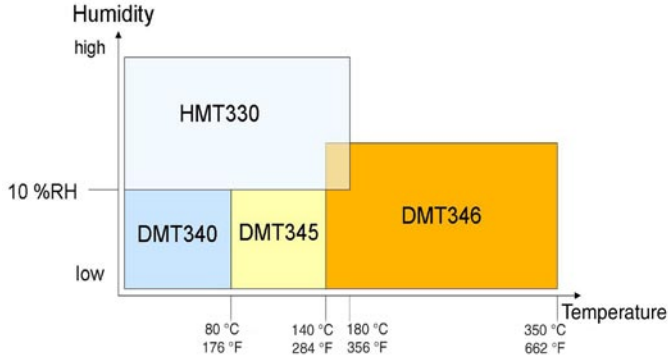


Response time 63% [90%] flow rate 1 l/min and 1 bar pressure	
from dry to wet	5s [10 s]
from wet to dry including auto-calibration	45s [5 min]

Mixing Ratio DMT346

Measurement range (typical)	0...1000 g/kg (0..7000 gr/lbs)
Accuracy (typical)	±12% of reading

Vaisala products for humidity measurement in hot processes



Technical Data for DMT345 and DMT346

Operating Environment, both models

Mechanical durability	Up to +180 °C (+356 °F) for DMT345
of probe heads	Up to +350 °C (+662 °F) for DMT346
for transmitter body	-40...+60 °C (-40...+140 °F)
with display	0...+60 °C (32...+140 °F)
Storage temperature range	-55...+80 °C (-67...+176 °F)
Pressure range for probes	slight pressure difference (~ 200 mbar)
Measured gases	non corrosive gases

Complies with EMC standard EN61326-1, Electrical equipment for measurement, control and laboratory use - EMC requirements; Industrial environment.

Inputs and outputs, both models

Operating voltage	10...35 VDC, 24 VAC
with optional power supply module	100...240 VAC 50/60 Hz
Default start-up time	
initial reading after power-up	3 s
full operation after sensor Purge and Autocal	about 6 min
Power consumption @ 20 °C (U_{in} 24 VDC)	
U_{out} 2x0...1V/0...5V/0...10V	max 25 mA
I_{out} 2x0...20mA	max 60 mA
RS-232	max 25 mA
display and backlight	+ 20 mA
during sensor purge	+ 110 mA max
Analog outputs	(2 standard, 3rd optional)
current output	0...20 mA, 4...20 mA
voltage output	0...1 V, 0...5 V, 0...10 V
Accuracy of analog outputs at 20 °C	± 0.05 % full scale
Temperature dependence of the analog outputs	± 0.005 %/°C full scale
External loads	
current outputs	R_L < 500 ohm
0...1V output	R_L > 2 kohm
0...5V and 0...10V outputs	R_L > 10 kohm
Max wire size	0.5 mm2 (AWG 20) stranded wires recommended
Digital outputs	RS-232, RS-485 (optional)
Relay outputs 2+2 pcs (optional)	0.5 A, 250 VAC, SPDT
Display (optional)	LCD with backlight, graphic trend display
Display menu languages	English, French, Spanish, German, Japanese, Russian, Swedish, Finnish

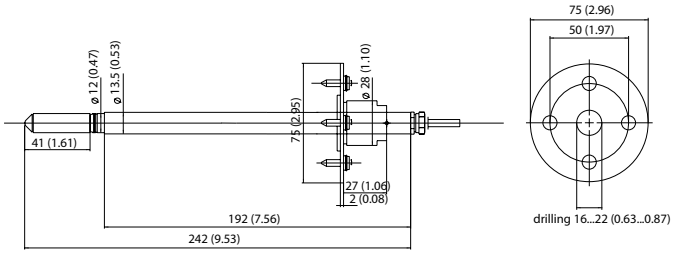
Mechanics, both models

Cable bushing	M20x1.5 For cable diameter 8...11mm/0.31..0.43"
Conduit fitting (optional)	1/2"NPT
User cable connector (optional)	M12 series 8- pin (male)
option 1	with plug (female) with 5 m / 16.4 ft black cable
option 2	with plug (female) with screw terminals
Probe cable diameter	5.5 mm
Probe cable lenght	2 m, 5 m or 10 m
Housing material	G-AlSi 10 Mg (DIN 1725)
Housing classification	IP 65 (NEMA 4X)
Housing weight	1.2 kg

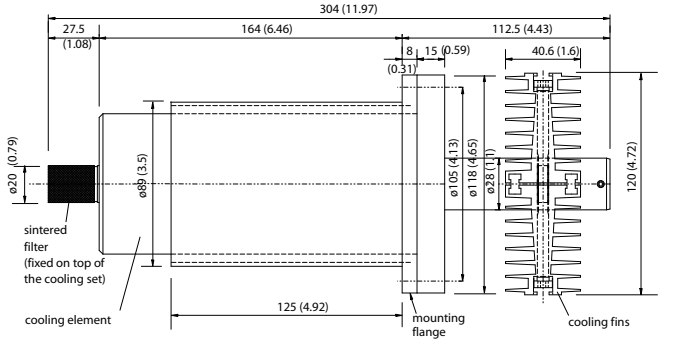
Dimensions

Dimensions in mm (inches)

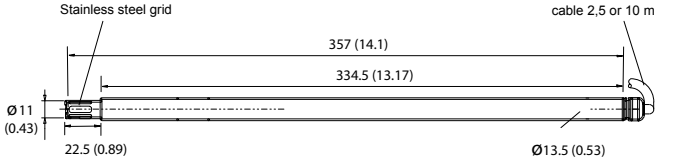
DMT345 probe and mounting flange



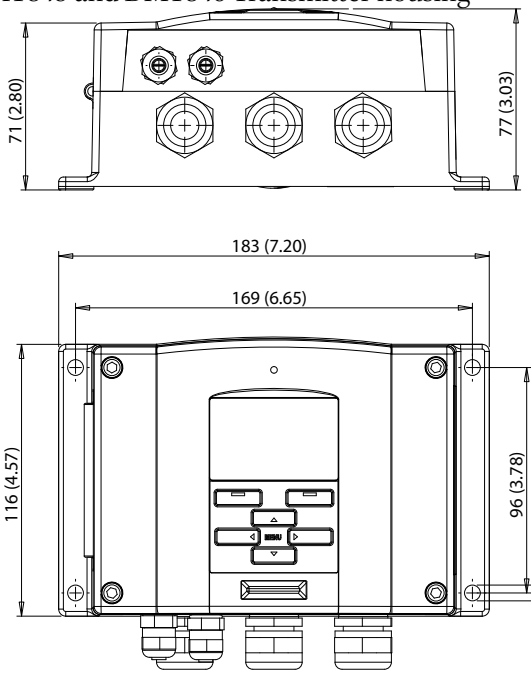
DMT346 Cooling set



DMT346 Probe



DMT345 and DMT346 Transmitter housing



Measure humidity in hot and dry processes

Paper production consumes a lot of energy. Optimizing the drying phase with the DMT346 will save energy and improve the yield of high quality end product.

Applications in the food industry call for accurate humidity measurement at high temperatures. The DMT345 and DMT346 cover the range of various food industry needs.

In the production of veneer, high yield and good quality are achieved with on-line humidity measurement. The DMT346 is a rugged and reliable instrument for veneer and other high temperature materials drying processes.