

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

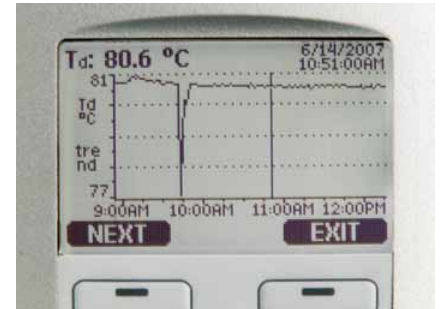
- The DMT345 measures humidity in temperatures up to 180 °C (356 °F)
- The DMT346 measures humidity in temperatures up to 350 °C (+662 °F)
- Dew point accuracy ± 2 °C (± 3.6 °F)
- Vaisala DRYCAP® Sensor provides accurate, reliable measurement with excellent long-term stability and fast response
- Withstands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

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

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 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.

Graphical Display

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 one-year measurement history.

The optional data logger with real-time clock makes it possible to generate more than four years of the measured history and zoom in on any desired time or time frame.

Versatile Outputs and (Wireless) Data Collection

The transmitter can be connected to a network with an optional (W)LAN interface, which enables a (wireless) Ethernet connection.

For serial interface also the USB connection, RS232 and RS485 can be used. Additionally an alarm relay option is available.

The transmitter can have up to three analog outputs. Galvanic isolation of supply power and analog outputs are also offered. The recorded measurement data can be viewed on the display or transferred to a PC with Microsoft Windows® software.

DMT345-346 is also capable in applying the MODBUS communication protocol and together with an appropriate connection option provides either MODBUS RTU (RS485) or MODBUS TCP/IP (Ethernet) communication.

Units are delivered installation-ready.

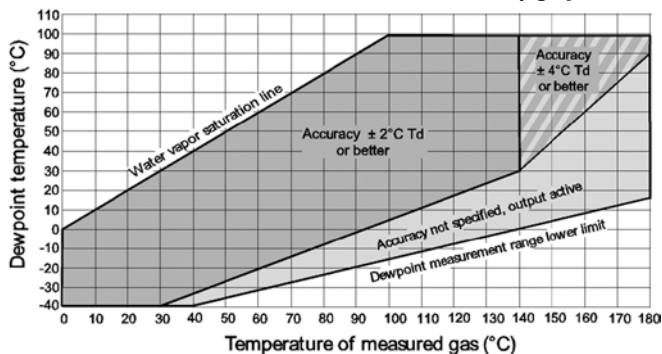
Technical Data

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



Dewpoint accuracy vs. measurement conditions

| | |
|--|--------------------------------------|
| 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 |

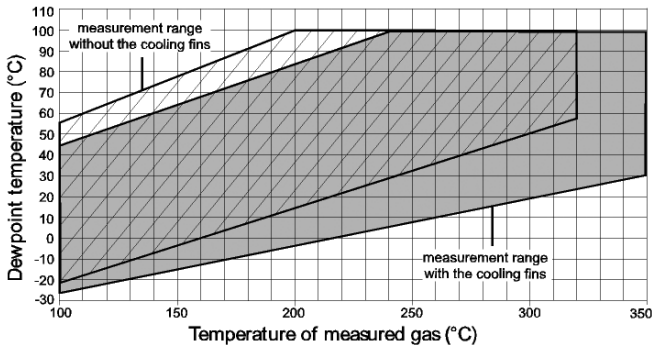
Technical Data

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



Dewpoint accuracy vs. measurement conditions

| | |
|--|-------------|
| 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 |

Operating Environment, Both Models

| | |
|--|--|
| Mechanical durability of probes | Up to +180 °C (+356 °F) for DMT345 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} 24VDC) | |
| 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 mm ² (AWG 20) stranded wires recommended |
| Digital outputs | RS-232, RS-485 (optional) |
| Protocols | ASCII commands, MODBUS RTU |
| Service connection | RS-232, USB |
| Relay outputs 2+2 pcs (optional) | 0.5 A, 250 VAC, SPDT |
| Ethernet interface (optional) | |
| Supported standards | 10BASE-T, 100BASE-TX |
| Connector | 8P8C (RJ45) |
| IPv4 address assignment | DHCP (automatic), static |
| Protocols | Telnet, MODBUS TCP/IP |
| WLAN interface (optional) | DHCP (automatic), static |
| Supported standards | 802.11b |
| Antenna connector type | RP-SMA |
| IPv4 address assignment | DHCP (automatic), static |
| Protocols | Telnet, MODBUS TCP/IP |
| Security | WEP 64/128, WPA WPA2/802.11i |

Authentication / Encryption (WLAN)

| | |
|---|--|
| Open / no encryption | |
| Open / WEP | |
| WPA Pre shared key / TKIP | |
| WPA Pre shared key / CCMP (a.k.a. WPA2) | |
| Optional data logger with real-time clock | |
| Logged parameters | max. four with trend/min/max values |
| Logging interval | 10 sec (fixed) |
| Max. logging period | 4 years 5 months |
| Logged points | 13,7 million points per parameter |
| Battery lifetime | min. 5 years |
| Display (optional) | LCD with backlight, graphic trend display |
| Display menu languages | English, French, Spanish, Chinese, German, Japanese, Russian, Swedish, Finnish |

Mechanics, Both Models

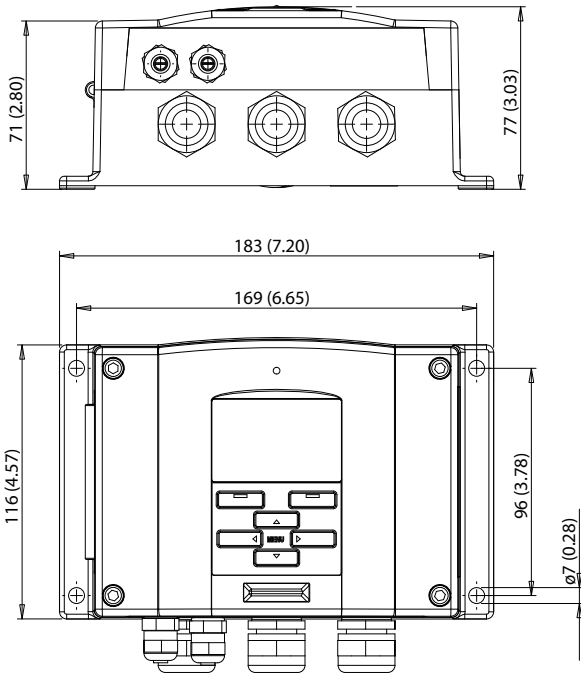
| | |
|----------------------------------|--|
| Cable bushing | M20x1.5 For cable diameter 8 ... 11mm/0.31 ... 0.43" |
| Conduit fitting (optional) | 1/2" NPT |
| User cable connector (optional) | M12 series 8-pin (male) |
| option 1 | with plug (female) with 5 m /16.4 ft black cable |
| option 2 | with plug (female) with screw terminals |
| USB-RJ45 Serial Connection Cable | part. no 219685 |
| Probe cable diameter | 5.5 mm |
| Probe cable length | 2 m, 5 m or 10 m |
| Housing material | G-AISI 10 Mg (DIN 1725) |
| Housing classification | IP 65 (NEMA 4X) |
| Housing weight | 1.2 kg |

Technical Data

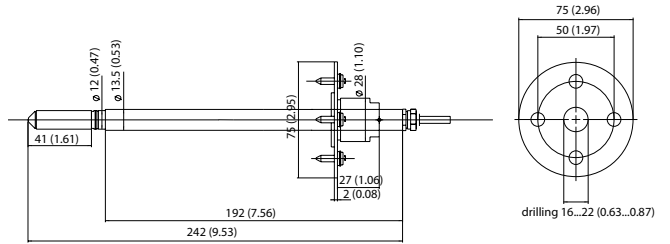
Dimensions

Dimensions in mm (inches)

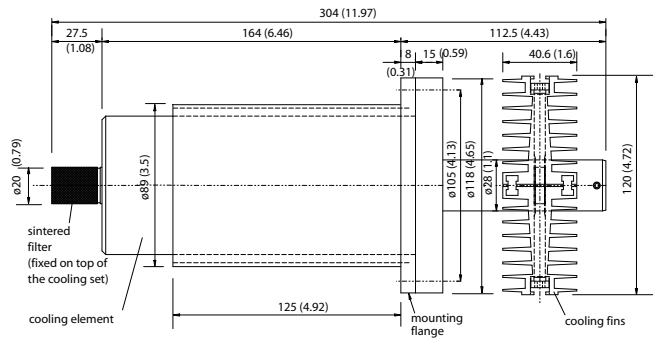
DMT345 and DMT346 Transmitter housing



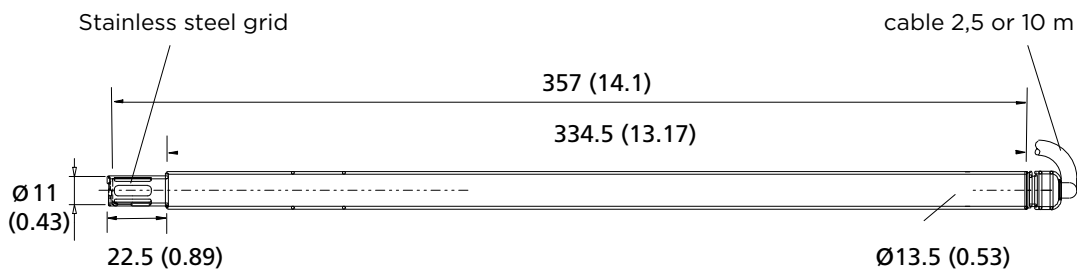
DMT345 probe and mounting flange



DMT346 Cooling set



DMT346 Probe



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