Optidew

Optical Dew-Point Transmitter

A state-of-the-art digital dew-point transmitter with chilled mirror technology providing high performance, fundamental measurement, maximum flexibility and low cost of ownership.

Highlights

- Precision process dew point, %RH and temperature measurement
- Measurement Range:
  <0.5 to 100 %RH, -40 to +90°Cdp
  (-40 to +194°F)
- ±0.2°Cdp accuracy (±0.36°F)
  (±0.15°C optional (±0.27°F))
- Fundamental drift free dew-point measurement
- Rugged NEMA 4X industrial housing
- High temperature sensor option to +130°C (+266°F)
- Optional local display

Applications

- Environmental chambers
- Food Industry
- Pharmaceutical
- Frost protection of turbine blades
- Fuel cell research
- Engine testing - high performance to commercial vehicle engines
- … and many more

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Setting the Standard

The Optidew high performance optical dew-point transmitter is based on the proven, fundamental optical dew-point measurement principle, giving long-term unmatched drift-free performance. It offers a wide measurement range from the equivalent of <0.5 to 100% RH at ambient temperature (dew point range: -40 to + 90°C (-40 to +194°F), and up to 130°C (266°F) with high temp option). Optidew provides two linear 0/4-20 mA outputs and RS232 serial communications, allowing configuration and monitoring by a suitable computer or PLC system or via specific Optidew logging software. An adjustable isolated alarm contact allows Optidew to be used for direct process control. An optional high definition alphanumeric display provides local indication of the measured moisture and temperature values.

Tablet Coating Machine

Rugged Design

Optidew is capable of withstanding most industrial conditions, while retaining the performance and sensitivity of a high-level reference hygrometer. Yet it is so easy to use. Simply connect the instrument, power up and Optidew is ready to operate. The sensor is designed with a corrosion-resistant gold plated mirror and solid construction. The enclosure for the Optidew is rated to NEMA 4X and is suitable for outdoor use.

Continuous Measurement

The power and sophistication of the Optidew sensor and its digital control electronics, mean that there is no interruption in the data flow. Optidew locks on to the actual dew-point temperature of the gas being measured and stays there continuously. This means you can be certain the Optidew is always in control regardless of fluctuations in gas temperature, pressure or humidity conditions.

Supreme Flexibility

The Optidew sensor can be mounted in a variety of ways to suit the application - directly in the process, flange mounted, tee mounted, or by using a sample line. No other transmitter offers such performance and flexibility in a single package. 'Best in class' depression together with cable lengths up to 250m (820ft) and a pressure rating up to 300 psig (optionally to 3630 psig), makes almost any industrial application possible. Two sensor versions are available, with either single or two stage cooling. For extreme applications, a high temperature sensor version is available to +130°C (+266°F).

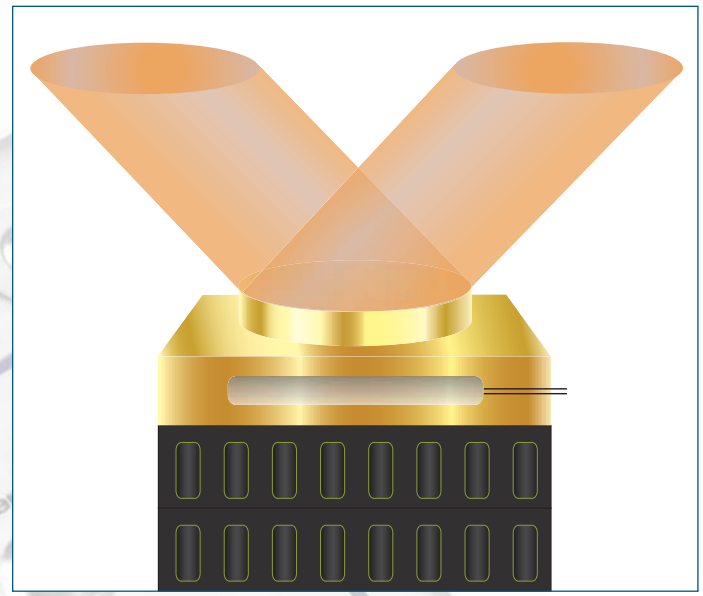
User Measurement Reliability - DCC (Dynamic Contamination Correction)

To minimize the problems of mirror contamination, Michell engineered a totally new contamination compensation system for Optidew. Dynamic Contamination Correction (DCC) automatically eliminates any optical error that may be caused by particulates on the mirror. DCC is an intuitive system that adapts itself to operating conditions, predicts and reacts to the real requirements for contamination correction to achieve optimum transmitter performance at all times. Although the DCC system is fully automatic, it can be configured to accommodate your own process conditions. For further protection in extreme conditions, sintered stainless steel or porous membrane sensor guard options are available. Either guard can also be used as a velocity limiter in high flow direct insertion applications.

High Temperature Sensor

Technology:
Chilled Mirror

Michell's chilled mirror dew-point meters are precision instruments for critical measurement and control applications. The fundamental nature of this method means that chilled mirror instruments can be used as either extremely reliable and stable field instruments or as laboratory reference standards for the calibration of other devices. Michell's chilled mirror sensors are fundamental in their method of operation.



A miniature mirror is cooled by a solid state Peltier thermoelectric heat pump until it reaches the dew point of the gas under test. When this temperature has been reached, condensation will begin to form on the mirror surface. An electro-optical loop detects that condensation is forming, by a reduction in the intensity of light reflected from the mirror surface and through the control electronics of the chilled mirror instrument. This modulates the cooling power applied to the Peltier.

The mirror surface is then controlled in an equilibrium state whereby evaporation and condensation are occurring at the same rate. In this condition the temperature of the mirror (measured by a platinum resistance thermometer) is equal to the dew-point temperature of the gas.

Technical Specifications

Performance

Measurement Range	
1-stage	-30 to +90°Cdp (-22 to +194°Fdp) at sensor temperature of 20°C
2-stage	-40 to +90°Cdp (-40 to +194°Fdp) at sensor temperature of 20°C
High Temperature	-20 to +130°Cdp (-4 to +266°Fdp) at sensor temperature of 20°C
Measurement Accuracy	±0.2°Cdp (±0.36°F) ±0.1°C temperature (±0.18°F) ±0.15°Cdp accuracy optional (±0.27°Fdp)
Measurement units	°C, °F dew point; % RH; °C, °F temperature; g/m^3; g/kg; aw; Δ (t – t dew point)
Response Speed	1°C/sec plus settling time (dew point dependant) (1.8°F/sec)
Power supply	85 to 264 V AC, 47/440 Hz

Dew-Point Sensor

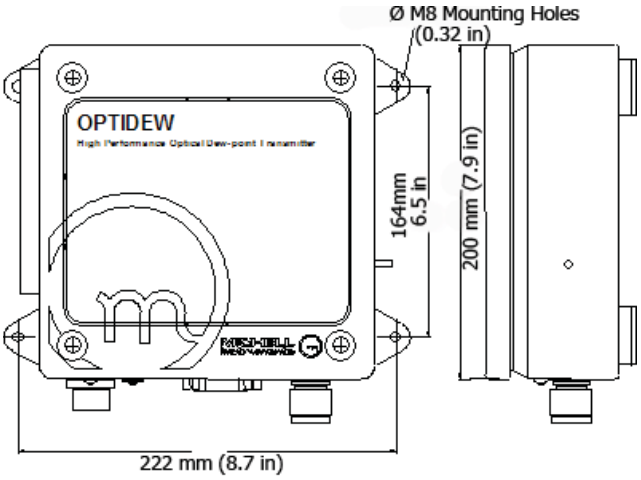
Mirror options available	Gold plated copper Solid gold High temp sensor - 316 stainless steel
Temperature Measurement	4 wire Pt100, 1/3 DIN class B
Sample flow rate	0.1 to 2 l/min in sampling block (0.2 to 4.23 scfh)
Max velocity	10 m/sec direct insertion (1968 ft/min) 30 m/sec with sintered guard (5905 ft/min)
Pressure	2 MPa (20 barg/290 psig) 25 MPa (250 barg/3626 psig) optional
Ingress protection	IP66 (NEMA 4) IP65 25 MPa (250 barg/3636 psig) sensor (NEMA 12)
Cable length - remote	2m (6.5ft) Maximum 250m (820ft)

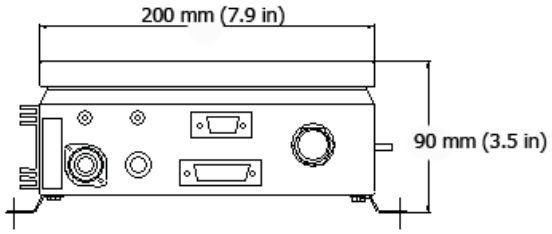
Remote PRT

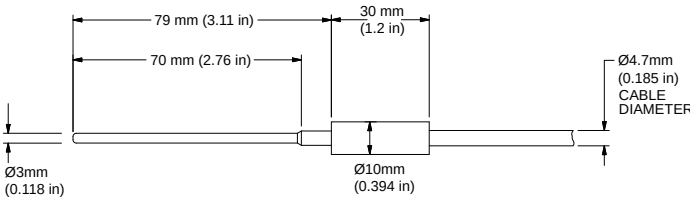
Temperature measurement	4 wire Pt100, 1/10 DIN class B

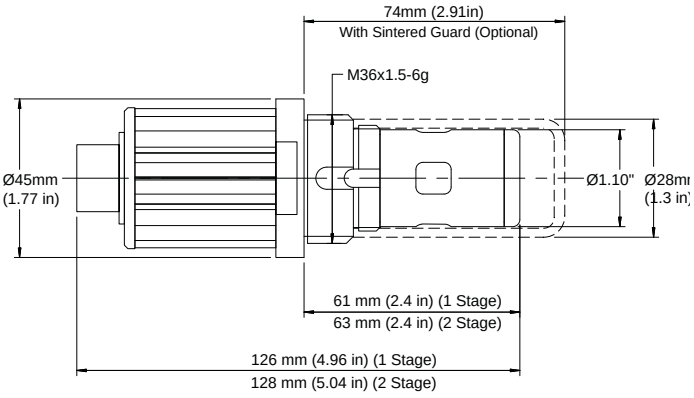
Transmitter Electronics

Resolution	0.1 for °C, °F and %RH 0.01 for g/m^3 and g/kg
Outputs:	
Analog	Two channels 0/4-20 mA
Digital	RS232 (RS485 optional)
Alarm	Volt free contact, 2 A @ 30 V DC
Status LEDs	Power on, DCC and alarm status
Operating Temperature	-20 to +40°C ambient (-4 to +104°F)
Enclosure	304 stainless steel
Ingress Protection	IP66 (NEMA 4X)
Cable Pack	Power and RS232 cables









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Michell Instruments adopts a continuous development programme which sometimes necessitates specification changes without notice.
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