



Optidew

High Performance Optical Dew-Point Transmitter



Fundamental cooled mirror technology in a state-of-the-art, digital dew-point transmitter, gives Optidew the combination of highest performance and economy of ownership



High Performance Optical Dew Point Transmitter
(Remote, Display Version illustrated)

Setting the Standard

The Optidew High Performance Optical Dew-Point Transmitter works on the proven, fundamental optical dew-point measurement principle, giving unmatched and drift-free long-term performance. It offers a wide measurement range from the equivalent of <math><0.5</math> to 100 %rh at ambient temperatures from -40 to +90°C. Optidew provides two linear 4-20 mA outputs in addition to serial communications, allowing set-up and monitoring by a suitable computer or PLC system or via specific Optidew logging software. An adjustable volt-free contact alarm means that Optidew can be used for direct process control. An optional high definition alphanumeric display provides local indication of the measured humidity, as illustrated opposite.

Rugged Design

Optidew is capable of withstanding most industrial conditions, whilst 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 to work hard - with a corrosion-resistant gold plated mirror and solid construction. Optidew's transmitter unit is IP66 (NEMA 6) protected and suitable for outdoor use.

Continuous Measurement

The power and sophistication of the Optidew sensor and its digital control loop electronics, means that there is no need to compromise measurement confidence by adopting a cyclic measurement method. Optidew locks on to the actual dew-point temperature of the gas being measured and stays there - continuously. This means you can be certain your process is always in control, irrespective of fluctuations in process temperature, pressure or humidity conditions.

Features

- Fundamental drift-free dew point measurement
- High performance digital control loop technology
- Range: equivalent to <math><0.5</math> to 100%rh from -40 to +90°C ambient
- Totally weatherproof sensor
- 0.2 °C dew-point accuracy
*0.15 °C optional
- Rugged, IP66 (NEMA 6) industrial housing
- Precision process dew point, %rh and temperature measurement
- 4 wire 100Ω PRT technology
- High temperature sensor option to 130 °C

Supreme Flexibility

Optidew can be mounted in a variety of ways to suit the application - direct in-process, flange mounted, tee mounted, or via an external sample line. No other transmitter offers such performance and flexibility in a single package. Class leading depression coupled with cable length capability of up to 250 metres and a pressure rating up to 2 MPa (optionally 25MPa), 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.

The table indicates the operating range of each sensor version, in ideal conditions (with an air cooled heat sink to dissipate heat generated by the thermoelectric cooler) and in free-air conditions with no additional heat sinking.

Sensor	Single Stage	Two Stage
Lowest mirror temperature (air cooled heat sink at 21 °C)	-34	-45
Lowest dew point measurable (air cooled heat sink at 21 °C)	-30	-40
Lowest dew point measurable with no heat sink	-24	-29



The Dew Point Specialists



Measurement Reliability - DCC (Dynamic Contamination Correction)

To alleviate the problems of measurement accuracy due to contamination, Michell has engineered a totally new contamination compensation system for Optidew. Dynamic Contamination Correction (DCC) automatically eliminates any

error that may be caused by mirror particulate contamination. DCC is a self-learning 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 user configured to accommodate your own process conditions. As further protection in extreme conditions, sintered stainless steel or porous membrane guard options are available. Either guard can also be used as a flow limiter in high velocity direct insertion applications.

Applications

Optidew is designed to satisfy a wide range of industrial and laboratory applications from Environmental chamber monitoring and control to NOX emission control on combined cycle gas-fired power generation plant. Optidew can be effectively deployed in any situation where precise and continuous measurement of the dewpoint or relative humidity of a process is required.

Technical Specifications

GENERAL

Overall accuracy	± 0.2 °C dew point; ± 0.1 °C temperature * 0.15 °C dewpoint accuracy optional
Measurement units	°C, °F dew point; %rh; °C, °F temperature; gm^{-3} ; gkg^{-1} ; a_w ; $\Delta(t - t_{dp})$
Response speed	1 °C sec^{-1}
Power supply	90 to 264 V, 47/440 Hz

SENSOR

Operating temp range	-40 to +90 °C * with optional high temp sensor -20 to +130 °C
Mirror	Gold plated copper
Temp measurement	4 wire 100 Ω platinum resistance thermometer
Sample flow rate	0.1 to 2 $Nlmin^{-1}$ (in sampling block)
Max velocity	10 $msec^{-1}$ (direct insertion); 30 $msec^{-1}$ (with sintered guard fitted)
Pressure	2 MPa (25 MPa optional))
Cable length	250 metres (max)

TRANSMITTER ELECTRONICS

Resolution	0.1 °C
Outputs: analogue	4-20 mA or 0-20 mA over user selectable range for any parameter. Sensor fault alarm
	digital RS232 with user selectable baud rate
	Analogue and digital outputs are updated every five seconds
	alarm Volt free contact, 2A @ 30 V dc, 0.5A @120 V ac. User adjustable
Status LEDs	Power on, DCC and alarm status
Operating temp	-20 to +40 °C
Enclosure	304 stainless steel (DIN 1.4301)
Ingress protection	IP66 (NEMA 6), IP65 (NEMA 4) for HP option
Cable pack	Mains, RS232 cables and output connector suitable for indoor use

OPTIONS

Integrated alphanumeric display for all humidity parameters and temperature. Remote sensor; cable length up to 250 metres (2 metres standard); sensor probe version; sintered stainless steel sensor guard; HDPE sensor guard; weatherproof cable pack; RS485 output, sensor locking nut, Palm PDA logging kit; high temperature sensor

Dimensions

