

# S8000 *Integrale*

## High Performance Precision Dew-Point Hygrometer

This reference dew-point instrument combines the ultimate measurement sensitivity and accuracy with flexibility for dynamic measurement and testing protocols or for use as a calibration reference standard.



### Highlights

- Fundamental, accurate and drift-free measurement
- -60 to +40°Cdp measurement range
- $\pm 0.1^\circ\text{Cdp}$  accuracy
- $0.001^\circ\text{C}$  sensitivity
- FAST – guaranteed frost formation below  $0^\circ\text{C}$
- Data logging to USB or SD card
- Vertical or horizontal configuration
- Operates at pressure up to 1.7 MPa (17 barg)

### Applications

- Metrology laboratories
- High voltage switchgear
- Clean/dry rooms
- Pharmaceutical
- Fuel cell research
- Engine testing
- ... and many more

## S8000 *Integrale* High Performance Precision Dew-Point Meter

### The NEW Bench-top Standard

The new S8000 *Integrale* continues Michell's tradition of excellence in the design of high performance products. This new generation of Michell hygrometers/dew-point meters offers unmatched accuracy and repeatability in dew-point measurement of air and gas systems in laboratories and many field applications. With its powerful state of the art thermoelectric heat pump the S8000 *Integrale* can precisely measure at dew points down to  $-60^{\circ}\text{C}$ . The integrated sensor head allows the instrument to function as a stand-alone instrument. Available in the vertical and horizontal configuration the S8000 *Integrale* can also be supplied in a rugged transportable case.



### Dual Optics for Supreme Sensitivity

The rate of formation of frost on the mirror surface can be extremely slow at lower frost points. An accurate and reliable measurement with a standard hygrometer can be difficult to perform. The S8000 *Integrale* utilizes a unique advanced dual optics system to master such critical measurements at low dew points.

The integral sample gas temperature compensation and the dual optics add up to a highly sensitive and highly responsive yet stable system that is superior to standard hygrometers measuring at low dew points.

### Measurement Reliability

All of the Michell Chilled Mirror Instruments incorporate an automatic compensation system that periodically re-balances the optics to compensate for any reduction in light intensity caused by contamination of the components in the optical path. The S8000 *Integrale* utilizes a system called DCC (Dynamic Contamination Correction). The DCC system is intuitive and adapts the instrument control to the operating conditions to achieve optimum measurement performance at all times. Although the DCC system is fully automatic it can be configured by the user for individual applications.

### Visual Verification

Available with the S8000 *Integrale* is a viewing microscope. This enables the user to inspect the mirror surface during the measurement process enhancing confidence in the measurement accuracy and the formation of the correct phase of water condensate (dew or frost) on the mirror surface.



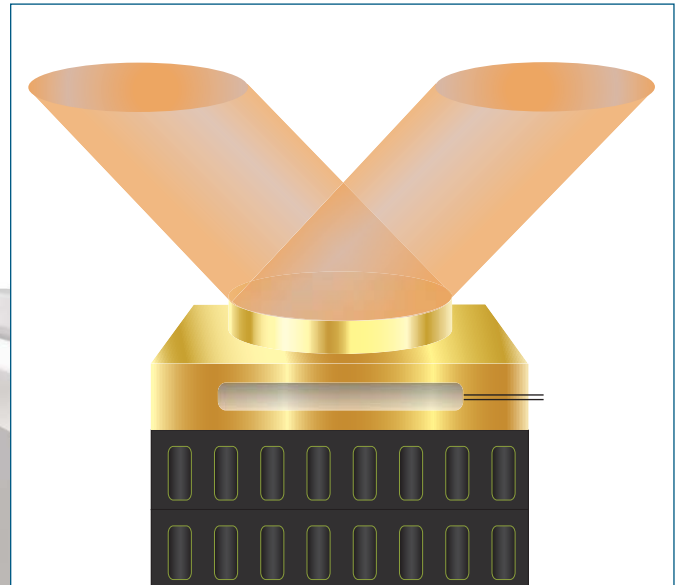
Application: Power generation and transformers

## 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.

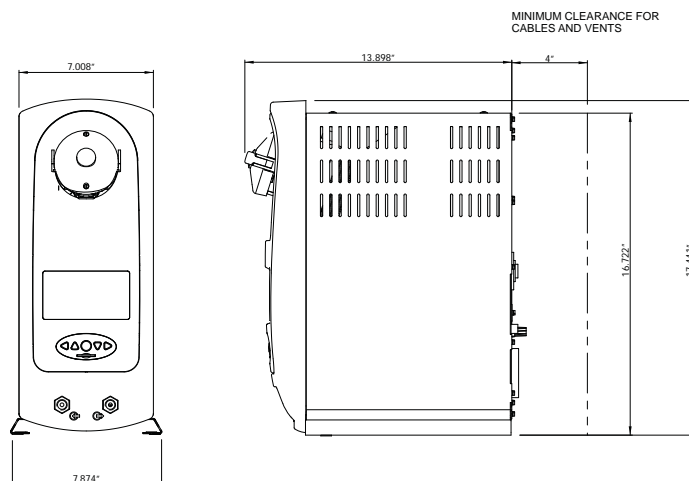
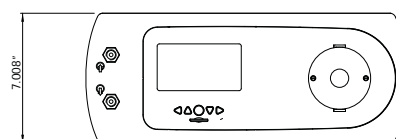
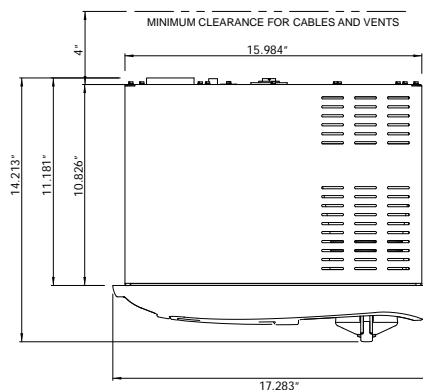


## Technical Specifications

General	
Measurement range	-60 to +40°Cdp
Measurement accuracy*	±0.1°Cdp
Stability	Better than 0.1°Cdp
Repeatability	<0.05°C
Measurement units	°Cdp or °Fdp; % RH; g/m <sup>3</sup> ; g/kg; ppm <sub>v</sub> ; ppm <sub>w</sub> ; SF <sub>6</sub> ; ml/min
Response speed	2°C/sec + settling time
Power supply	85 to 264 V, 47/63 Hz; 100 VA
Operating temperature range	-20 to +50°C
Dew-Point Sensor	
Mirror	Gold plated copper
Temperature measurement	4 wire Pt100, 1/10 DIN class B
Pressure	1.7 MPa (17 barg) (for higher pressure consult factory)
Flow Sensor	
Measurement range	0 to 1000 ml/min
Display Unit	
Resolution	User-selectable to 0.001 dependent on parameter
Outputs:	
Analog	Three channels; user-selectable 4-20 mA, 0-20 mA or 0-1 V
Digital	USB, SD Card slot
Alarm	Two volt free changeover contacts, one process alarm, one fault alarm; 1A @ 30 V dc
Cable pack	Supply and USB cables. Output connectors suitable for indoor use
Optional Remote PRT	
Temperature measurement	4 wire Pt100, 1/10 DIN class B
Measurement accuracy*	±0.1°C
Measurement units	°C or °F
Cable length	2 metres (250 metres max)
Optional Pressure Sensor (In-Built)	
Measurement range	2.5 MPa (25 bara)
Measurement accuracy*	0.25 % Full Scale, typical
Measurement units	barg; psig; Kpg; MPa

\* Measurement accuracy means maximum deviation between instrument under test and corrected reference. To this must be added the uncertainties associated with the calibration system and the environmental conditions during testing or subsequent use.

## Dimensions



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