

Portable Moisture Measurement that is Repeatable, Fast, and Accurate

Features:

- Fast dew point measurements - less than 10 minutes for T95 down to -70° C (-94° F) dew point.
- Line powered, with rechargeable battery pack option.
- Best in its class: $\pm 1^\circ \text{C}$ ($\pm 1.8^\circ \text{F}$) dew point accuracy.
- External 4-20 mA device input for temperature, pressure, or secondary dew point transmitters.
- Bluetooth connection for trouble-free download of data.
- Full pressure range from atmospheric to 5000 psig (6500 psig with external dew point sensor).
- Lightweight: less than 5 lb.
- Easy operation: just switch on and measure.



Applications

Replaces Stephens Analytical DL20N-EP5100 (HLI Model 7055-G501), HLI Model 5250 Low-Pressure Frost Point Indicator, Model 5100 High-Pressure FPI, or any other portable dew point monitor you are currently using. **The HLI9000 does it all!**

Description:

The HLI9000 provides faster response to low dew points, reducing the waiting time for every measurement. This allows the user to spend less time verifying the dew point of his system. The HLI9000 gives a measurement down to -70° C (-94° F) dew point in less than 10 minutes for T95 (dew point temperature at 95% confidence level).

The HLI9000 uses the latest Bluetooth technology to provide wireless communications for instrument setup and for downloading logged data, eliminating the need to carry connecting cables. This means a more efficient and simple remote connection, saving the user time and money.

The Enhanced Dew Point Hygrometer offers versatile sampling arrangements, ranging from simple fixed orifices for low-pressure measurement to configurable high-pressure sampling systems up to 6500 psig. Use the standard built-in moisture sensor, or connect external sensors for the measurement of dew point, pressure and temperature to display the values or further increase accuracy via pressure- and temperature-compensated measurements. This designed-in versatility ensures accurate measurement and provides protection to guarantee long term stability and sensor life.

The menu-driven display, easily accessible gas connections and application software means that the user can quickly and easily set up the instrument and be taking measurements within minutes. All measurement parameters are available at a touch. The keys can be operated in rough environmental conditions where the operator may need gloved hands.

Best-in-class accuracy of $\pm 1^\circ \text{C}$ ($\pm 1.8^\circ \text{F}$) dew point provides better measurement confidence and workload coverage.

The HLI9000 is designed as a line-powered device, and comes equipped with a rechargeable external battery pack for those locations without an outlet within reach.

The HLI9000 is not suitable for use in hazardous areas or with hazardous gases. Consult the factory for information on models for these applications.

With more than 45 years' experience in fluid processing systems, HLI understands what the user requires when it comes to spot checking dew point or moisture content in the field. The HLI9000 includes all the features you need for efficient work. An extremely fast response and accurate, stable measurement is complemented by an instrument that's easy to use, with data-logging and built in sampling standard and a wide range of available accessories, including a stand-alone sampling system and a hard transport case. It is NEMA 4 rated, and therefore suitable for demanding outdoor applications.

Howell Laboratories, Inc.

188 Harrison Rd.
Bridgton, Maine 04009
(207) 647-3327

(888) 744-8359

e-mail: contracts@howelllabs.com
An Employee-Owned Company

FAX (207) 647-8273

web: www.howelllabs.com
Certified to ISO 9001

Technology:

The HLI9000 uses a highly-developed ceramic impedance sensor, which is constructed using state-of-the-art thin and thick film techniques. Water vapor is absorbed into a porous non-conducting layer "sandwiched" between two conductive layers built on top of a base ceramic substrate. The active sensor layer is very thin - less than one micron - and the porous top conductor that allows transmission of water vapor into the sensor is less than 4×10^{-8} inches thick. As a result, the sensor responds rapidly to changes in moisture, both in detecting moisture and also when being dried. It is rugged and gives $\pm 1^\circ \text{C}$ ($\pm 1.8^\circ \text{F}$) dew point accuracy coupled with excellent long-term reliability and stability.

Technical Specifications:

Performance:

Measurement technology: ceramic, thin-film sensor.

Measurement accuracy: $\pm 1^\circ \text{C}$ ($\pm 1.8^\circ \text{F}$) from -60°C (-76°F) to $+20^\circ \text{C}$ ($+65^\circ \text{F}$) dew point.

$\pm 2^\circ \text{C}$ ($\pm 3.6^\circ \text{F}$) from -100°C (-148°F) to -600°C (-76°F) dew point.

$\pm 0.2^\circ \text{C}$ ($\pm 0.36^\circ \text{F}$) temperature.

Measurement range: Calibrated -100°C (-148°F) to $+20^\circ \text{C}$ ($+65^\circ \text{F}$) dew point

Readings to $+30^\circ \text{C}$ ($+86^\circ \text{F}$) dew point.

Measurement units: $^\circ \text{F}$, $^\circ \text{C}$, $^\circ \text{K}$ for dew point and gas temperature.

ppmv, ppmw for air, N_2 , H_2 , CO_2 , SF_6 , %RH, g/m^3 , g/kg .

Option: active pressure (psi, bar, MPa, KPa).

Resolution (display): 0.1 for all dew-point derived units and auto ranging where appropriate (e.g. ppm).

Resolution (measurement): 0.01°C (0.02°F) dew point.

Typical response speed: T95 in <10 minutes to -70°C (-94°F).

Measurement system repeatability: Better than 0.1°C (0.18°F).

Measurement system stability: 0.1°C (0.18°F).

Measurement system hysteresis: 0.05°C (0.09°F).

Electrical input/output:

Auxiliary inputs: 4-20 mA loop-powered external input selectable as either dew point, temperature, or pressure.

Power supply: 115 VAC power, or optional rechargeable battery operation.

Operating conditions:

Operating Pressure Range: 5000 psig for internal sensor, higher pressures with external sampling systems.

Operating Environment: Outdoors, 0 to +100% RH condensing; -20°C to $+50^\circ \text{C}$ (-4°F to $+122^\circ \text{F}$).

Storage/Transport Temperature: -40°C to $+70^\circ \text{C}$ (-40°F to $+158^\circ \text{F}$).

Mechanical specifications:

Display: Blue LCD graphical display.

Enclosure type: Steel fiber-loaded high-impact polyamide 6; NEMA 4 (IP66).

Gas connections: Compatible with existing shipboard installed sample ports; other options available.

Flow across sensor: 0.2 to 1.0 liters/min (0.4 to 2.0 scfh).

Filter: 50 micron stainless steel sinter in the inlet port.

Gas wetted materials: AISI 316L stainless steel.

Outline dimensions: 8.6 in. x 6.7 in. x 3.6 in. (218 mm x 170 mm x 90 mm).

Weight: 2.9 lb (1.3 kg).

General:

Data logging: 8 megabytes; Log interval: 5 to 60 second; Logs per log file: Up to 10,000.

Communications: (Wireless) Bluetooth™ range up to 5 meters (16.5 ft) (version 2.0).

Languages: English, Spanish, Portuguese, Italian, French, German.

Available accessories:

- Hard transport case: With foam padding and pockets to hold accessories.
- Gas fittings - various sizes available.
- External temperature sensor -various cable lengths available.
- External pressure sensor - various cable lengths available.
- External dew point sensor for high pressure applications (max 6500 psig).
- External battery pack: NiMH 4.8 V with more than 48 hours of typical usage between charges. This is in a molded plastic housing and includes an intelligent charger. Cannot be inadvertently connected to the AC power supply connection.