

573 Dew Point Mirror



Industrial Chilled Mirror Hygrometer

- Integral frost/dew point measuring head
- Internal sample pump
- Optimal Response Injection System
- ForceFrost™ function
- Ice-Test user calibration verification
- User configurable sampling circuit
- Drop-in replacement for DP3, DP8 and DP30
- Dew points up to +95 °C

Typical applications:

- Heat treatment, annealing
- Fuel cell research
- Climatic test chambers
- Humidity generators
- Calibration of dew point sensors
- Meteorology, climate research

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Accurate and Flexible Humidity Measurement

Chilled mirror condensation technology provides highly precise, stable and repeatable humidity measurements. Water vapor condenses onto a temperature controlled mirror surface and this 'dew point' is detected with advanced optical electronics. Since dew point is specific to water vapor concentration and not temperature dependent, measurement precision is consistent across the full instrument range.

The 573 Dew Point Mirror is a high performance 19" rack format instrument with an integral measurement head, pressure sensor, sample pump and flow meter for continuous precision monitoring of frost/dew point and absolute humidity values across a wide range of applications.

Dew or Frost?

Below 0 °C, water can condense in either the liquid or solid phase (dew or frost). The difference in the temperature at which the condensate layer stabilizes can be up to 3 °C, therefore the condensate phase must be known for correct calculation or validation of parameters such as relative humidity. As shown on the picture to the right, it is also possible that dew and frost can exist concurrently on the mirror; this results in a non-stable value somewhere between the dew and frost point.

ForceFrost™ Function

Below a user defined temperature, the 573's ForceFrost function over-cools the mirror to force the condensed layer to the solid phase. This eliminates the uncertainty of whether dew or frost point is measured.



Connect and Go

The system is supplied ready for immediate use complete with internal sample pump, mechanical flow meter and pressure sensor, plus an external temperature probe. PC connectivity for remote data collection is easy with the simple yet robust protocol of the RS-232 interface. As an option, two user configurable analog outputs provide for connection to existing data acquisition systems.

Convenient Calibration Check

Users can easily check the 573 system's stability at any time using the built-in Ice-Test function. This is an automated test procedure that allows the user to check that ice on the mirror melts at 0 °C and therefore verify the stability of the mirror temperature measurement.

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Designed for Backwards Compatibility

The 573 is designed to be a drop-in replacement for the highly successful DP3, DP8 and DP30 instruments. The mechanical dimensions, flow meter, sampling features and output options

allow for an easy upgrade for users of these classic instruments giving access to the advanced user interface and improved performance offered by the latest RH Systems instruments.

Configurable Sampling Circuit

The 573 sampling circuit can be adapted by the user to suit any application.

The measuring head, flow meter and sampling pump use separate internal tubing that is connected using the 573 back panel fittings. The user can therefore bypass the flow meter and sample pump when needed.

Expanded Range

The 573H and HX versions can measure precisely at dew points up to +95 °C without risk of condensation in the sampling circuit, with the inclusion of a heated measuring head and temperature controlled inlet and outlet sample tubes. A condensate trap with automatic drain can be connected between the measuring head and the flow system to prevent condensate formation in the flow meter and sample pump.



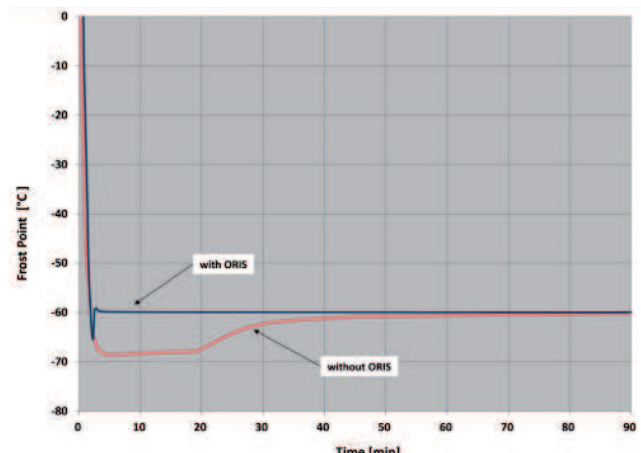
Mechanical Flow Meter

The 573 can be used in applications where the carrier gas is not air. A mechanical flow meter provides the user with indication and control of the gas flow to achieve consistent results irrespective of the make-up of the carrier gas.

Optimum Response Injection System: Accelerated Results

The Optimum Response Injection System (ORIS) is unique to RH Systems dew point instruments. At low frost/dew point conditions, the time to stabilize a condensate layer can be significant, sometimes as long as two hours for correct equilibrium.

ORIS reduces the stabilization time using a carefully programmed vapor injection procedure that accelerates the formation of a frost layer and then interfaces with the mirror control system to maintain stability. When the rate of sublimation and condensation is equal, the measurement system is truly in equilibrium, and the result precise.



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Specifications:	573S	573H	573HX
Measuring Range			
Frost/Dew Point	-55...+40 °C * -65...+40 °C * (w/ water cooling)	-30...+70 °C	-30...+95 °C
Temperature	-50...+100 °C	-50...+100 °C	-50...+100 °C
Pressure	0...2500 mbar	0...2500 mbar	0...2500 mbar
Instrument Features			
Optimum Response Injection System	Yes	No	No
Heated measuring head and internal inlet/outlet tubes	No	Yes	Yes
Accuracy			
Frost/Dew point	≤ ± 0.1 °C		
Temperature	≤ ± 0.1 °C		
Reproducibility			
Frost/Dew point	≤ ± 0.05 °C		
Temperature	≤ ± 0.05 °C		
Standard Features			
Digital I/O	RS-232		
Mirror cooling	3-stage Peltier thermoelectric, additional water cooling optional		
Display	5.7" LCD with touch screen		
Temperature measurement	External PRT on 3 m cable		
Internal gas tubes	Stainless Steel / FEP		
Gas inlet connections	6 mm or ¼" Swagelok fittings		
Sample connections	Flow meter and internal sample pump bypass loops		
Mechanical flow meter	0...1 l/min with adjustment valve		
Power cable	2.5 m		
Operating instructions	English		
Calibration certificate	Factory calibration: 5 points FP/DP, 3 points temperature Upgrade to SCS accredited ISO17025 calibration available		
Optional			
High pressure	10 or 20 bar internal pressure sensor (no sample pump fitted)		
Analog outputs	User programmable, 2 x 4...20 mA or 0...10 V		
Additional water cooling	Extends frost/dew point range to -70 °C (water temp. 5 °C, ambient 20 °C)		
High flow meter	0...2 l/min		
Additional Information			
Supply voltage	100-120 VAC / 200-240 VAC, 50/60 Hz (auto switching)		
Power consumption	200 Watt		
Cooling	Air, additional water cooling optional		
Operational conditions	-10 °C...+40 °C, Maximum 98 %rh, non-condensing		
Storage temperature	-20 °C...+50 °C		
Weights & Dimensions			
Instrument	Instrument		
Width	485 mm		
Height	147 mm		
Depth	370 mm		
Weight	10 kg		

RH Systems, LLC
 3416 Vista Alameda NE
 Albuquerque, NM 87113
 USA

Phone 505 856 5766
 Fax 866 891 3399

www.rhs.com
sales@rhs.com

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Ordering Information

	Order Code
573S, -55 (-65 w/ water cooling)... +40 ° FP/DP*	102455
573H, -40...70 °C FP/DP***	103114**
573HX, -40...95 °C FP/DP***	103897**
Options:	
573 upgrade factory calibration to ISO17025	103848
10 bar pressure upgrade	103635
Analog outputs, user programmable, 2 x 4...20 mA or 0...10 V	102662
Electronic flow meter 0...1 l/min	103636
Additional 1 year warranty upgrade (max. 3 years)	103632

* Measured dew points may not exceed the ambient temperature.

** These items will be available with the launch of the 573H and 573HX in Q4 2012.

*** 573H and 573HX require a heated hose, external controller and steam trap for operation.

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