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MBW calibration

HYGROMETERS

PRODUCT DATASHEET

573 Dew Point Mirror

Industrial Chilled Mirror Hygrometer

ISO/IEC 17025
ACCREDITED
SCS 0125

- **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 MBW DP3, DP8 & DP30**
- **Dew point up to +95˚C**

Typical applications:

- Heat treatment, annealing
- Fuel cell research
- Climatic test chambers
- Humidity generators
- Calibration systems
- Meteorology, climate research

Accurate and Flexible Humidity Measurement

Chilled mirror condensation technology provides highly precise, stable and repeatable humidity measurements. Water vapor condenses on 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.

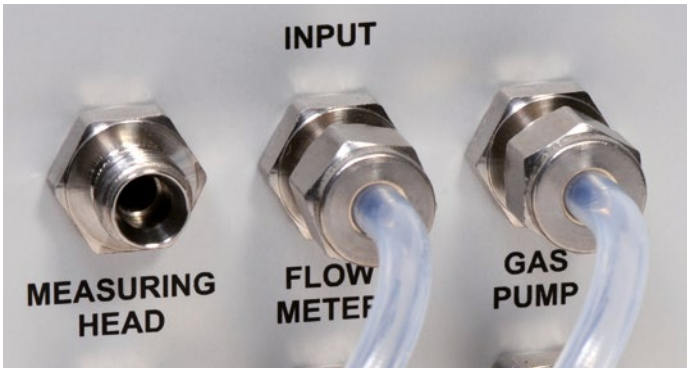
Designed for Backwards Compatibility

The 573 is designed to be a drop-in replacement for the highly successful MBW 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 and enable access to the advanced user interface and improved performance offered by the latest digital MBW 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.



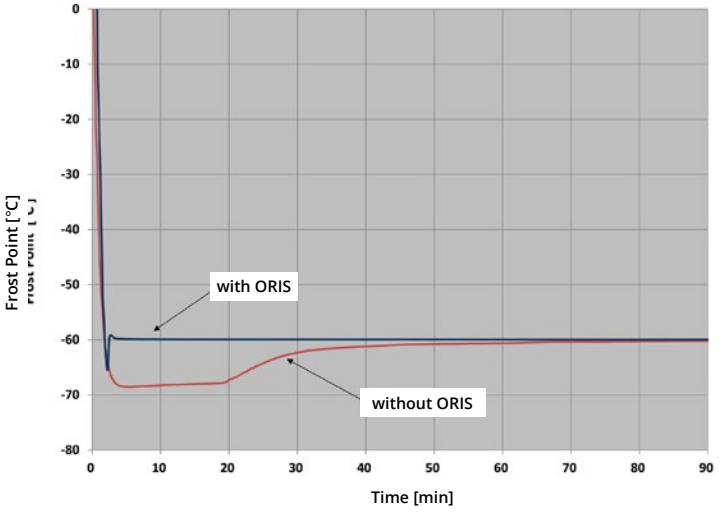
Expanded Range with Sample Path Temperature Control

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 internal inlet and outlet sample tubes. A condensate trap with automatic drain can be connected between the measuring head and the flow control system to prevent condensation in the flow meter and sample pump. The 573 includes power and control for an inlet heated sample hose (ordered separately).

Mechanical Flow Meter

The 573 has an integrated mechanical flow meter to provide the user with indication and control of the gas flow to achieve consistent results.

Optimum Response Injection System for Accelerated Results



The Optimum Response Injection System (ORIS) is unique to MBW chilled mirror instruments. At low frost point conditions, the time to form a stable 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 condensate layer and interfaces with the mirror control system to maintain stability. When the rate of sublimation and condensation is equal, the measurement is truly in equilibrium, and the result precise.

Specifications

Specifications:	573S	573H	573HX
Measuring Ranges			
Frost/Dew point:			
Min./Max. expected range of use	-60...+20 °C	-60...+70 °C	-50...+95 °C
Calibrated range	-50...+20 °C	-40...+70 °C	-40...+95 °C
Temperature	-50...+100 °C	-50...+100 °C	-50...+100 °C
Sample pressure	0...2500 mbar	0...2500 mbar	0...2500 mbar
Instrument Features			
Optimum **R**esponse **I**njection **S**ystem	Yes	No	Yes
Heated measuring head and internal inlet/outlet tubes	No	Yes	Yes
Accuracy			
Frost/Dew point (over calibrated range)	≤ ± 0.1 °C		
Temperature	≤ ± 0.07 °C		
Reproducibility			
Frost/Dew point	≤ ± 0.05 °C		
Temperature	≤ ± 0.04 °C		
Standard Features			
Digital I/O	RS-232		
Display	5.7" LCD with touch screen		
External temperature probe	PRT (Pt-100), Ø2 x 100 mm, on 3 m cable		
Mirror cooling	3-stage Peltier thermoelectric, additional water cooling		
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 needle valve		
Electronic flow meter	S0...1 l/min		
Cooling	Air/Water		
Power cable	2.5 m		
Operating instructions	English		
Calibration certificate	Factory calibration: 5 points FP/DP, 3 points temperature		
Optional			
Calibration upgrade	Upgrade to SCS accredited ISO 17025 calibration		
High pressure	10 or 20 bar internal pressure sensor		
Analog outputs	Two analog outputs, user programmable, -10...+10 V and 4...20 mA		
Additional Information			
Supply voltage	100-120 VAC / 200-240 VAC, 50/60 Hz (auto switching)		
Power consumption	200 Watt (573S) / 300 Watt (573H and HX)		
Operational conditions	10 °C...+40 °C, Maximum 98 %rh, non-condensing		
Storage temperature	-20 °C...+50 °C		
Weight & Dimensions	**Instrument**		
Width	485 mm		
Height	147 mm		
Depth	370 mm		
Weight	10 kg		

573 V2.6 2.2022 We reserve the right to change design or technical data without notice.

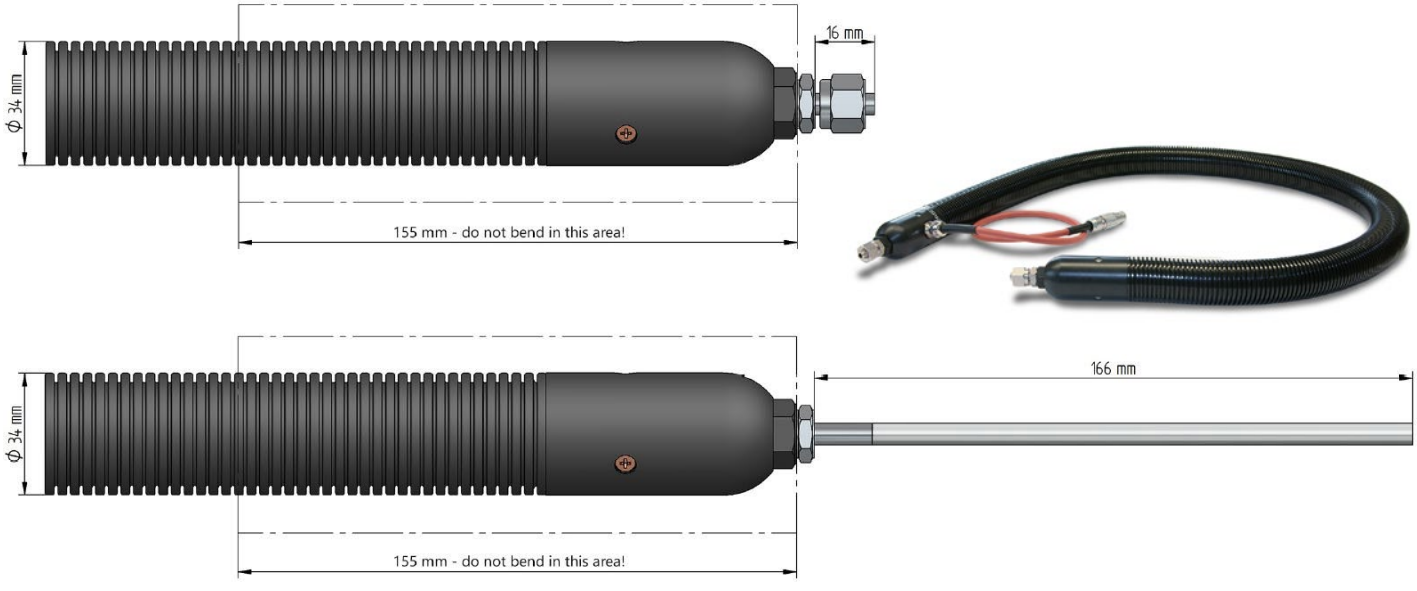
Heated hose and steam trap are required for dew points above ambient temperature.

Ordering information

Description:		Order code
573S	-60...20 °C FP/DP	102455
573H	-60...70 °C FP/DP*	103114
573HX	-50...95 °C FP/DP*	103897

Options:	Order code
573-Upgrade to SCS accredited calibration (ISO 17025)	103848
10 bar pressure upgrade	103635
20 bar pressure upgrade	104021
Two analog outputs, user programmable, -10...+10 V and 4...20 mA	102662
Additional 1 year warranty upgrade (max. 3 years)	103632

Accessories:	Order code
Calibrated external temperature sensor, Ø2 x 100 mm, -50 ... +100 °C, with 3 m cable	103638
Steam trap, stainless steel, with auto drain (for H and HX only)	140391
Heated sample hose, 1.2m, 6mm fittings**	103010



For a complete range of options and accessories, please contact us and request our pricelist.

* 573H and 573HX require a heated hose and steam trap for operation at dew points above ambient temperature.
** Other lengths and fitting configurations are available.

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PREMIUM INSIGHTS – GAIN REAL-TIME INSIGHT INTO YOUR PROCESS

Process Insights' products and solutions deliver innovative and differentiated analysis and measurement solutions and technologies that add high value to our customers and protect the environment.

Our commitment is to deliver smart and affordable innovation that optimizes process, improves safety, and transforms our world.

CENTERS OF EXCELLENCE

PROVIDING PROVEN SOLUTIONS FROM A GLOBAL TECHNOLOGY LEADER

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