

Using Cooled Mirror Hygrometers as reference instruments in Climatic Chambers

Application Background

Controlled environmental chambers are used in a number of test, research and development applications where defined temperature and humidity conditions are required. Applications for humidity chambers can include component failure condition testing, to find the extremes of a components performance range, or to provide standardized conditions for evaluation of materials, heat exchange and refrigeration equipment. They are also widely used in the automotive, pharmaceutical and paper industries. They can vary in size widely, from small chambers for testing electronic components, to very large arrangements for testing industrial or transport equipment. They can also come in the form of controlled environment storage vaults for valuable and/or delicate items.

Humidity and temperature probes are built into climatic chambers in order to provide control feedback for the switching of the condition generation devices (saturator, dryer, heaters, refrigerators etc). These probes are usually selected for their response speed and repeatability, rather than their accuracy. It is frequently important, with regards to many different testing applications, to verify the temperature and humidity conditions of the chamber. This instrument needs to provide the 'real' values of the climate inside; it does not always need to respond as quickly as the control probes. It does, however, need to be robust enough to withstand the conditions which are common in climatic testing. For this reason low cost humidity probes are not suited to this application, and instruments using robust, repeatable technology, such as cooled mirror are more suited to this environment.

Measurement Technique

The Optidew High Performance 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

All versions of the Optidew can be aligned in environmental chambers, but the High Temperature version of the Optidew Vision is the preferred solution for most chamber users and manufacturers. The Vision provides a high definition alphanumeric display of the measured humidity, two linear current outputs and 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 the Optidew Vision can be used for direct process control.



Optidew Display

Reference Users

British Aerospace, Consumer Research Association, Ministry of Defence, Vötsch, Weiss Technik GmbH, MIRA



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