Kaymont

CHEXT Series of External Chamber Options

Introduction

The “CHEXT” Series is designed to give more flexibility to the Model 2000SP by providing a larger chamber volume, in addition to the standard internal fast response chamber. These extended chambers enable larger instrumentation, or multiple smaller units such as data loggers, to be checked and verified thereby giving every M2000SP the same functional purpose of larger chambers. However, because of the M2000SP design of the system and CHEXT chambers, response time and stability times within the external chamber are greatly improved over other systems with larger chambers. This significantly reduces test times from several hours to only minutes.

All External Chambers have large clear plastic covers for easy visual observation of recorder readings, digital wall mount transmitters or readings of other digital devices.

Description and Operation

The CHEXT Series of extended chambers options are add-on cabinets that are attached directly to the main chamber and the enclosure. The M2000SP continues to function as a high accuracy calibrator using the settings of the RH and Temperature controllers, and the precision calibrated internal control probe. However, there are 2 factors to be considered when using the external chamber. First, a high quality, high accuracy secondary reference instrument should be used for final settings. Secondly, the best overall performance is achieved when the operating temperature range is maintained at ambient, plus or minus a few degrees. The reason for this is that the External Chambers are not insulated, therefore there will be temperature gradients and this will directly effect the chamber conditions. Use of a reference instrument eliminates the potential for a variation between the set points of the controller and actual external chamber conditions.

The reference instrument can be any RH/T device that has been calibrated and adjusted to a high quality secondary or primary standard. The Kaymont KPPRHT-1 and KPPRHT-2 which have an RH/T display and a measuring probe that have been directly calibrated by an NVLAP Accredited Laboratory using NIST traceable instruments.

When using the external chamber the reference is inserted in the external chamber and continuously measures conditions within the chamber. M2000SP controller settings should be done using the readings of a reference instrument. Stable RH generation and temperature control will still be accomplished by the internal chamber probe.

It should be noted, when using the secondary reference instrument the accuracy of the M2000SP system is dependent on the accuracy of that instrument, thus the reason for using a high quality, dependable reference.

Since the external chamber is not insulated the recommended temperature range for testing should be within a few degrees of ambient. Best agreement between readings of the M2000SP RH controller display and readings of the reference instrument is achieved when the M2000SP temperature set point is at he same temperature measured by the reference instrument when inserted into the external chamber.

Typical operation would be to install the recorder or devices under test inside the external chamber. Insert the reference within the chamber and let remain for about 15 minutes. Read the temperature of the display and then set the M2000SP temperature controller to that value. Let system stabilize and then set the RH to any value within the recommended range of the CHEXT chamber. Stabilization should occur in less than 20-25 minutes in most cases, for the initial RH value. Once stabilized at temperature other changes in RH will typically stabilize in less than 15-20 minutes, depending on chamber size (shown on Page 3).

Description of the Various Extended Chambers

The Model 2000SP components have been selected for optimum performance for the volume of the internal chamber. When an Extended Chamber is used the volume is increased significantly. This increases the requirements of the RH generation system and subsequently reduces the RH operating range. The 3 optional Extended Chambers are described with the performance range.

Option CHEXT 10084

For calibration of small data loggers or small instruments with digital displays.

Option CHEXT 12106

For multiple data logger calibration and some types of circular chart recorders.

Option CHEXT 14126

For large volume calibration of data loggers, wall mount transmitters and other Instruments and devices with digital displays,

Option CHEXT 16148

This is the largest available external chamber. It can accommodate an instrument or recorder with dimensions of 400 x 350 x 200 mm (16” x 14” x 8”). Due to the extremely large volume the stabilization time increases and the overall RH generation is reduced. When operating this chamber it is strongly recommended that the temperature controller be set at the chamber values indicated by the temperature on the reference instrument.

Typical Performance Characteristics @ 23°C

Option	Dimensions* (cm)	Dimensions* (in)	RH Range (Note 1)	RH Diff @ 23°C (Note 2)
CHEXT-10084	**250 x 200 x 100**	**10 x 8 x 4**	**20-90%**	**±1.0%RH @ 23°C**
CHEXT-12106	**300 x 250 x 150**	**12 x 10 x 6**	**25-80%**	**±1.5%RH @ 23°C**
CHEXT-14126	**350 x 300 x 150**	**14 x 12 x 6**	**30-75%**	**±2.0%RH @ 23°C**
CHEXT-16148	**400 x 350 x 200**	**16 x 14 x 8**	**40-70%**	**±2.5%RH @ 23°C**

***** Dimensions shown are Height x Width x Depth

Notes:

(1) Recommended Operating Range to maintain smallest RH difference
(2) Because of the "non-insulated" factor these are the typical differences an operator may observe between the M2000SP RH controller set-point and the reference instrument humidity display. Results may vary between systems.

For minimum difference adjust the set-point temperature to be equal to the reference temperature. Example, if reference instrument within chamber reads 21°C then best results are obtained if the temperature controller set point is adjusted to 21°C.

Summary

The capability to utilize an external chamber greatly enhances overall performance of the Model 2000SP. By having the right enclosure for the instruments the test time is significantly reduced when compared to systems that have larger chambers. This is done without loss of accuracy, since a reference standard is used.

When the performance of a standard M2000SP is compared to other systems the advantages can be seen in overall accuracy, actual stabilization time (not just tesponse time), chamber uniformity and low maintenance. Adding the CHEXT enclosure for the special instrumentation completes the total advantages of the M2000SP.


MODEL 2000
HUMIDITY GENERATOR
HUMIDITY
TEMPERATURE
50.0
50.0
23.0
23.0
POWER
CONTROL
SAMPLE
FILL TUBE
WATER LEVEL
MAX
MIN
SAMPLE OUTPUT
KAYMONT