



DEW-STAT MA-99

CHILLED MIRROR DEW POINT MONITOR FOR MEDICAL AIR MONITORING

- Breakthrough self-cleaning technology
- No recalibration ever required
- Precision NIST-traceable fundamental dew point measurement
- Meets NFPA-99 requirements
- Continuous controlling chilled mirror technology
- Self-contained integrated package

The Dew-Stat MA-99 is a state-of-the-art instrument expressly designed for measuring the dew point temperature of compressed air in hospital breathing systems. NFPA-99 requires that this measurement be made, specifying that the dew point shall not exceed 39°F. General Eastern has responded with the MA-99, a highly reliable device that is easy to install, easy to use, and easy to maintain.

The MA-99 is an integrated device that includes a chilled mirror dew point sensor, all associated electronics, and a flow control system - with visual verification of proper flow - in one package. The MA-99 uses a bright LED display to continuously inform the user of the dew point temperature. If the dew point temperature exceeds the 39°F set point (factory set, but changeable by the user), an alarm condition occurs. The alarm consists of a relay actuation, a visual indicator on the MA-99 panel, and a loud audible alarm. The audible alarm is easily silenced by a front panel switch, but the relay and visual indicator remain in the alarm mode until the dew point goes back below set point. An optional 4-20mA output provides for constant monitoring or recording of the dew point temperature at a remote location.

The MA-99 was developed over a period of two years with extensive field trials in actual hospital breathing air systems. The continuously controlling chilled mirror sensor makes a fundamental measurement of dew point temperature directly traceable to NIST. Because this measurement is based on the accuracy and stability of a platinum thermometer, the MA-99 is virtually drift-free and never requires calibration. A self-

diagnostic routine can be run by the user at any time to verify the accuracy and operation of the MA-99. This routine is based on the melting point of ice, a physical constant. For installations with a history of false alarms, an Anti-False Alarm Circuit (AFAC) can be switched on at the discretion of the user. This causes the MA-99 to double check its own measurement in the event of an alarm condition.

The MA-99 is designed to require very little maintenance. An innovative system automatically cleans the mirror with a blast of compressed air on a regular basis. Actual field tests show that the MA-99 will run at least 2 to 3 times longer than other similar devices before requiring maintenance. An on-board microprocessor monitors all critical functions and lights a front panel indicator to inform the user when an Autoclean cycle is taking place. A separate indicator signals the user when it is time to perform manual cleaning. The sensor can be quickly opened without tools, exposing the mirror for easy access but without exposing any other critical parts or electronics. The MA-99 knows when the user has opened its sensor, and prepares itself for cleaning. Upon completion of this one-minute procedure, the MA-99 adjusts itself and goes back to work. Should the user inadvertently leave the sensor open, the alarm will activate after 20 minutes.

Each DEWSTAT is calibrated to NIST traceable reference standards and is suitable for use as humidity transfer standard. General Eastern's manufacturing and quality system certified to ISO-9001 standards. For more information on the theory and operation of General Eastern's Chilled Mirror Hygrometers contact us to obtain a catalog and application assistance.



SPECIFICATIONS

PERFORMANCE

Accuracy: $\pm 1.0^{\circ}\text{F}$ dew point over 30° to 50°F , $\pm 2.0^{\circ}\text{F}$ dew point over full measurement range

Repeatability: $\pm 0.2^{\circ}\text{F}$

Measurement Range: $+20^{\circ}$ to $+95^{\circ}\text{F}$ dew point (at 95°F ambient temp., 55 psig), $+10^{\circ}$ to $+77^{\circ}\text{F}$ dew point (at 77°F ambient temp., 55 psig)

Sample Flow: 1 scfh (settable, 0.5 - 2.0 scfh with integral throttling valve and flow meter)

Autoclean Function: Programmable interval, requires 20 psig minimum

AFAC: (Anti-False Alarm Circuit): ON or OFF, DIP switch selectable under access panel.

FUNCTIONAL:

Outputs:

Alarm: 1 Form C, 2 amps, 240 VAC/24 VDC resistive load, non-latching, NO/NC/COM field-settable via switch under access panel, automatic reset.

Trip Conditions: measured dew point above alarm set point; sensor head left open (time delay)

Audible Alarm: 85 dba at 3 feet, variable tone, silence button on front panel, automatic reset

Indicators: 3 1/2 digit LED dew point readout with $^{\circ}\text{C}/^{\circ}\text{F}$ switchable display. LED indicators for the following conditions: Auto-clean, Out of Range, Service; Alarm Adjustable visual flow meter with graduations 0-2 scfh

Diagnostics: Water phase change calibration check

Analog Output: 4-20mA DC, 500 ohm maximum load

Inputs:

Power: 115 VAC (+10% / -15%), 60 Hz, 35 watts max.

Operating Ranges:

Ambient Temperature: $+32^{\circ}\text{F}$ to $+120^{\circ}\text{F}$

Sample Pressure: 0-150 psig

Factory Setting (field resettable):

Temperature Units: $^{\circ}\text{F}$

Alarm Point: 39°F

Autoclean: Every 3 hours

AFAC: Enabled

Sensor Open Alarm:

20 minute delay before alarm.

PHYSICAL:

Dimensions: 12"H x 10"W x 8"D

Case Material: Molded thermoplastic

Weight: 10 lbs.

Connections:

Air: 1/8" NPTF, top of enclosure

Electrical: Terminal strip, 12 gauge wire maximum, bottom of enclosure

Sample Air Vent: Open, unobstructable, bottom exit

Environmental: Constructed to NEMA-12 requirements

Sensor Mirror: Replaceable

Mounting: Vertical, Wall mount

Electrical Env.: Fast transient burst per IEC 801-4; ESD per IEC 801-2; Line surge per IEC 801-5

Filter: In-line, replaceable

ORDERING INFORMATION:

Part number	Description
MA-99	Dew Point Monitor
BF-12SS	Inline Filter. Stainless Steel Body. 5 μM Borosilicate Glass Element.



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