

DG-4 Dewpoint Generator

Versatile control of water vapor content of an air stream

The DG-4 relative humidity and dewpoint controller allows versatile control of water vapor content of an air stream. It can be operated in either a locally-controlled mode, or a computer-controlled mode that allows the generation of complex water vapor ramps and steps.

In relative humidity controller mode, the DG-4 reads the temperature of the area in which relative humidity control is required, via supplied thermistor probe. Using a saturated air stream as its input (saturator supplied with unit), the DG-4 then adjusts the water vapor content of the air stream to yield the precise set relative humidity. It does so by calculating the saturated water vapor pressure at the regulated air, using the measured temperature at that point. Then, it calculates the target water vapor pressure corresponding to the desired relative humidity entered by the user. Finally, it calculates the dew point corresponding to the target water vapor pressure and regulates its internal condensing unit at that temperature, using a solid-state heat pump.

The result is accurate, consistent relative humidity control even in the face of fluctuating environmental temperatures. This is a unique capability of the DG-4 that is invaluable for biological experimentation, product testing, protein crystallography, and other demanding applications.



FEATURES

Regulates water vapor content of air stream based on relative humidity or dewpoint

Creates accurate vapor pressure or humidity profiles, even in fluctuating environments

Easy operation using intuitive and flexible controls

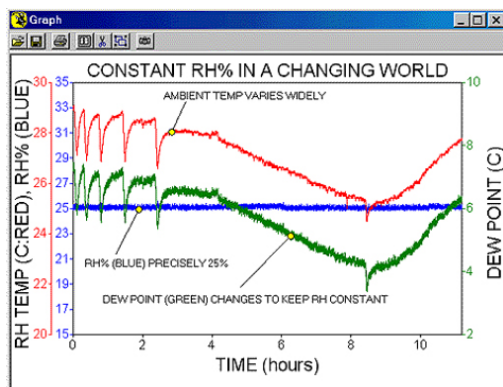
Solid state heat pump (Peltier effect)



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Alternatively, the DG-4 can be used as a dewpoint regulator (range 1 – 45 °C) or as a water vapor partial pressure regulator. Air flow rates ranging from about 25 mL/minute to 5 liters/minute can be used without affecting the system's regulation efficiency. Condensed water is evacuated from the condenser by a miniature diaphragm pump at user-settable intervals. Alternatively, a simple plumbing change allows the user to remove condensate slowly and continuously with a user-supplied peristaltic pump.

Operation is intuitive and flexible, allowing easy operation by a wide range of users. All adjustments and settings are permanently retained in the event of power outage. Analog and serial data outputs are standard.



Temperature (red line), dew point (green line), and relative humidity (blue line) data from a system being humidity controlled by a DG-4 Dewpoint Generator. The DG-4 Dewpoint Generator maintains an extremely stable relative humidity even under conditions of large and / or rapid temperature fluctuations.

SPECIFICATIONS

ACCURACY AND RESOLUTION	Dewpoint accuracy 0.25 °C, resolution 0.01 °C
ANALOG OUTPUT	Multi-range for relative humidity, dewpoint or water vapor pressure; 0-5V output with 16 bit resolution
CONDENSATE REMOVAL	Miniature diaphragm pump, user-settable actuation from 1/minute to 1/30 minutes, actuation duration user-settable from 1 sec to 30 seconds
DIMENSIONS	8 x 9 x 10 in. (20.3 x 22.9 x 25.4 cm)
DEWPOINT RANGE	1-45 degrees °C, in 0.1 °C increments
FLOW RATE	25 ml/minute to 3,000 ml/minute
INTERNAL A/D CONVERSION	16 bits
OPERATING TEMPERATURE	5 - 35 °C, relative humidity non-condensing
PANEL DISPLAY	Digital 2-line alphanumeric LCD, simultaneous display of set and read values
POWER REQUIREMENTS	12 VDC at 8A. Universal Input (90-240 VAC power adapter supplies)
REGULATION	PID (Proportional Integral Derivative), dewpoint deviation < 0.05 C RMS typical
RELATIVE HUMIDITY RANGE	At 25 °C target temperature, approximately 20 - 95+ RH% attainable; settable from 0-100% RH in 0.1% RH increments
SERIAL DATA OUTPUT	Comma delimited ASCII string of all measured parameters, standard RS232 serial, polled or auto-sent at user definable intervals from 0.5 - 600 seconds.
TECHNOLOGY	Solid state heat pump (Peltier effect)
TUBING FITTINGS	Nickel plated barb fittings for 1/8" (3 mm) i.d. flexible or semi-rigid tubing; other fittings available by special order
USER INTERFACE	Intuitive menu system backed by nonvolatile memory of user settings
WATER VAPOR PRESSURE RANGE	0.65 kPa - 9.6 kPa, in 0.01 kPa increments
WEIGHT	13 lb (5.9 kg)

ABOUT US

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