



E4-1111H-GE

CHILLED MIRROR DEW POINT TRANSMITTER

Precision Duct Mounted Humidity Transmitter with Integrated Chilled Mirror Sensor

The model E4-1111H-GE dew point transmitter was derived from time proven chilled mirror technology, which is widely used for precision humidity measurement in metrology and standards labs worldwide.

This configuration was developed to measure and control water vapor injection into the intake of gas and liquid fueled power turbines, however the design is applicable to many applications where accurate and repeatable humidity measurement is required. This technology was chosen because power turbines require the precise metering water vapor injection is the combustion chamber to reduce pollutant emissions. Water vapor is also added to the intake of the turbine to increase the mass flow which in turn increases compression and electrical power output. The Model E4-1111H-GE is a laboratory grade chilled mirror hygrometer, designed to meet the requirements of industrial applications.

The transmitter is suitable for operation in a wide range of environmental conditions, including outdoor air. The sensor fully recovers from condensation and exhibits negligible long-term drift. The electronic components used are of the highest industrial quality. Each unit is calibrated to NIST traceable reference standards and the E4-1111H-GE is suitable for use as a dew point 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.

APPLICATIONS:

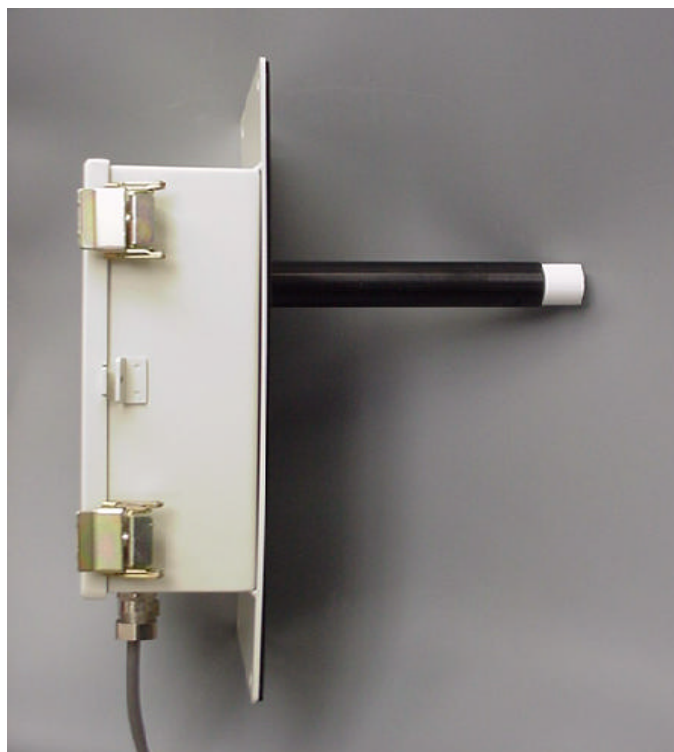
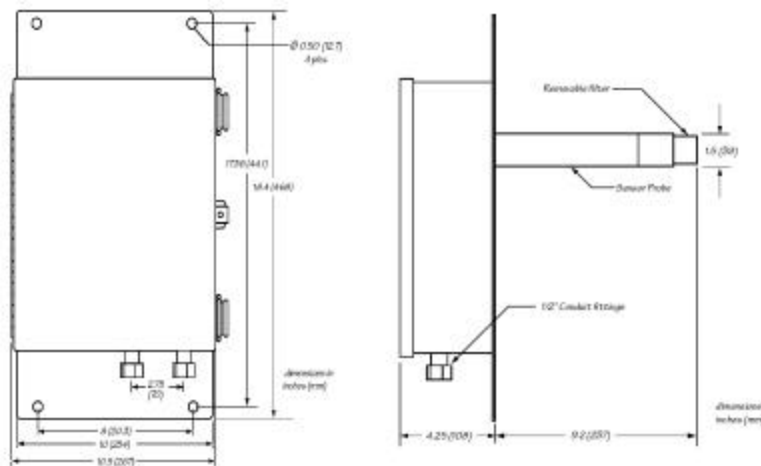
- Gas & Liquid Fueled Power Turbines
- Environmental Test Chambers
- Pharmaceutical Validation Chambers
- Precision HVAC Monitoring & Control
- Outdoor Air for Building Enthalpy Control & Cooling Tower Efficiency Calculations
- Engine Test Cells & Emissions Testing
- Heat Exchanger and Refrigerant Coil Calorimetry
- Weather Telemetry

- Utilizes the time proven single stage 1111H chilled mirror sensor
- Sensor fully recovers from condensation
- Direct primary dew point measurement. NIST traceable.
- Provides linear 4-20mA Signal
- RS-232 Interface
- Equipped with patented PACER self-cleaning & optical balancing system
- Sensor wetted components are inert. Optional platinum mirror for more aggressive environments.
- High accuracy: $\pm 0.2^{\circ}\text{C}$ dew/frost point
- No long-term drift
- Equipped with membrane filter
- Mirror is easily accessible for manual cleaning
- Optional temperature or pressure sensor input for %RH, absolute humidity or mixing ratio



SPECIFICATIONS

Sensing Element	1/3 Class A DIN 43760 PRT, 100 ohm @ 0°C (32°F)
Dew/Frost Point Accuracy	±0.2°C (±0.36°F)
Sensitivity	> 0.05°C (0.09°F)
Repeatability	±0.05°C (±0.09°F)
Hysteresis	None
Cooling Stages	1
Depression @ 25°C, 1 Atmosphere, air)	45°C (81°F)
Maximum Cooling Rate	1.5°C (2.7°F)/sec (typical, above 0°C (32°F))
Dew/Frost Point Range	-45 to +75°C (-49 to +167°F) limited by dew point depression.
Relative Humidity Range	Equivalent to 6% to 100% at 25°C Dry Bulb
Response Time	1.5°C Td /Sec above 0°C
Sample Flow Rate	0.5 to 5.0 SCFH (0.25 to 2.5L/min)
Operating Temperature	Probe: -40 to +80°C (-40 to +176°F) Electronics: -20° to +80°C (-29 to +176°F)
Sensor Body Material	Epoxy-coated aluminum. Equipped with field replaceable PTFE membrane filter
Sensor Wetted Material	Aluminum, mylar, teflon, rhodium mirror
Power	100, 115 or 230 VAC (±10%), 50-60HZ, 50 watts max. (Specify voltage when ordering).
Analog Output	4-20 mADC, 500 ohm max. 0-5 VDC, 5mA max. Scaled for -45 to +75°C Td. Factory programmable for custom ranges
Digital Interface	RS-232 for programming and diagnostic purposes. 1200 Baud, 8 Data Bits, 1 Stop Bit, No Parity.
PACER Cycle	Factory Preset for 12 Hours. PACER runs on power up
Alarms	Service Alarm: TTL compatible. Indicates when mirror needs manual cleaning.
Dimensions	Enclosure: 13.69"H x 10.36"W x 4.31"D Probe: 1.25" Dia. x 9"L Mounted to flange with 8" x 17.35" mounting centers.
Weight	8 lbs net. 12 lbs. shipping
EMI Compliance	Complies to CE EMI Directive
Electronics Enclosure	NEMA-4/12 water and dust resistant, wall mount
Electrical I/O	Screw terminal block. Enclosure equipped with 1/2" conduit openings.
Fuse Protection	Line voltage and neutral fuses. 1A Slo-Blo, 3AG
Options	
HEX-1	Rhodium Mirror (Replacement Mirror)
HEX-2	Platinum Mirror (Recommend for more aggressive gases)
T-100E	Temperature Sensor for %RH measurement
PT-30A	Pressure Sensor for PPMv measurement
1111H-GE	Spare 1111H-DMX Probe
PTFE-GE	Spare PTFE Filters
MSK-2	Mirror Cleaning Kit



Side view. The probe extends 9" into the duct. Side clamps and conduit hubs insure moisture proof protection of the electronic components. The probe is equipped with a field replaceable PTFE filter. The chilled mirror probe is also field replaceable without the need for calibration.

Measurement & Sensing Technologies
General Eastern Instruments

500 Research Dr
Wilmington, MA 01887 USA
Tel: 978 203 1900 Fax: 978 203 1920
Email: info@geinet.com
www.generaleastern.com

