

Vigilant

Aircraft Hygrometer System

The Vigilant Aircraft Hygrometer is a rugged, shock mounted instrument used for the measurement of dew/frost point in flight or in installations with existing flow, such as wind tunnels.

The Vigilant features a miniature, remote, primary method chilled mirror dew/frost point sensor employing a platinum resistance thermometer, and has 15 feet of interconnecting cable to the control unit. Custom cable lengths are available. Alternately, the sensor may be permanently mounted to the control unit. Precision calibration units for the linear analog outputs are included.

The specially designed remote dew/frost point sensor can be mounted through the skin of the aircraft on either the left or right side. The chilled mirror dew/frost point detection method utilized assures precision accuracy, high repeatability and high reliability.

Features:

- Designed for atmospheric sciences
- Measures dew/frost points in flight
- Rugged shock-mounted instrument
- Choice of left or right-side of aircraft mounting
- 90 to 240 Vac operating power
- Two or three stage sensors available to fit specifications

Five soft keys for setup and operation:

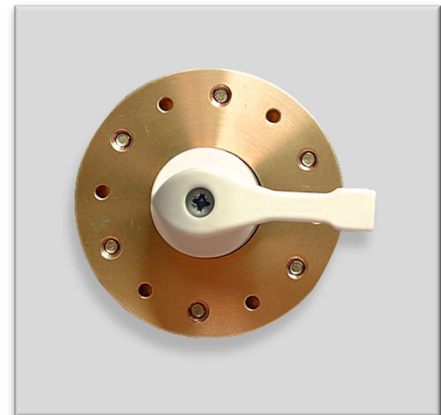
- Displayed parameter selection, °C/°F toggle
- View/change time, date, digital averaging, baud rate
- Manual Auto Balance Cycle initiate
- Program Auto Balance Cycle for start time, interval, output
- Track/Hold
- Maximum Heat toggle
- Maximum Cool toggle
- View/change high and low limits for analog outputs
- View/change alarm parameters, high/low limits, high or low alarms, latched or unlatched relays
- Reset front panel alarm indicators, latched only



**Vigilant Aircraft Hygrometer System with
S2 Sensor Mounted on 137 Controller**



**Vigilant Aircraft Hygrometer System with
137 Controller and Remote A3 Sensor**



**The Vigilant A3 Sensor Mounting Fitting
Outside and Inside Views**



Edgetech Instruments

ISO/IEC 17025:2017 Accredited
ISO 9001:2015 Registered

Technical Specifications

Dew/Frost Point Range:

S2 Sensor Two Stage:
-40°C to +60°C (-40°F to +140°F)
A3 Sensor Three Stage:
-50°C to +90°C (-58°F to +194°F)

Dew/Frost Point Accuracy:

±0.20°C (±0.36°F) nominal

Dew/Frost Point Sensor:

Chilled mirror with 3-wire Platinum
Resistance Thermometer (PRT)
100 ohms at 0°C, nominal

Depression:

65°C (117°F), nominal, S2 Sensor
65°C (117°F), nominal, A3 Sensor

Sensor Materials:

Chromium, glass, epoxy, anodized aluminum

Slew Rate:

1.5°C (2.7°F)/second max, above 0°C

Repeatability:

±0.05°C (0.09°F)

Hysteresis:

Negligible

Precision Resolution:

0.1 degrees C or F

Sample Flow Rate:

0.25 to 2.5 liters/minute (0.5 to 5.0 SCFH)

Operating Temperature:

Control Unit: 0°C to +50°C (+32°F to +122°F)
S2 Sensor: -40°C to +60°C (-40°F to 140°F)
A3 Sensor: -50°C to +100°C (-58°F to 212°F)

Display:

LCD graphics backlit display 0.25 inch digits

Analog Output:

Voltage: 0 to 5 Vdc, scalable from -75°C to +100°C
(-103°F to +212°F), 1 K ohms minimum load
resistance
Current: 4 to 20 mA, scalable from -75°C to +100°C
(-103°F to +212°F), 1000 ohms max loop resistance

Vigilant Ordering Information:

Item Number	Description
Model 137	Vigilant Aircraft Hygrometer control unit complete w 15' of cable. (Includes NIST traceable certificate of calibration included. One-year warranty and two (2) instruction manuals.)
A-3	A-Type Chilled Mirror dew point sensor (required). Sensor Assembly, Miniature Probe, 3 stage TEC (65°C depression)
137- A3 - AS/R	Aircraft Sampling System, Right-Side Pilot's perspective. (Includes A3 sensor mount.)
137- A3 - AS/L	Aircraft Sampling System, Left-Side Pilot's perspective. (Includes A3 sensor mount.)
137- A3 - MPR	A3 Sensor Probe – Right Sample Mount (Wing)

Serial Digital Communication:

RS-232C compatible 9-pin D sub-miniature
connector (female)

Baud Rates: 1200/2400/4800/9600/19200
Protocol: N81

Output of time, date and dew/frost point at
timed intervals

Programming of most keypad functions

Auto Balance Control:

Manual initiation of ABC at any time

Automatic ABC with start time and interval
programmable from keypad or RS-232 port

Outputs programmable for Track or Hold
during ABC

Physical:

Shipping weight: 11 lb. (5 kg) with sensor

Dimensions:

Less shock mount base (L x W x H):
13 x 7.6 x 4.9 in. (33 x 19.3 x 12.4 cm)

With shock mount base (L x W x H):
13.1 x 7.6 x 5.8 in. (33.2 x 19.3 x 14.7 cm)

Mounting Configurations:

AS/L Aircraft sampling module, left side to
pilot perspective

AS/R Aircraft sampling module, right side to
pilot perspective

Power Requirements:

90 to 240 Vac, 50-60 Hz, 75 W maximum

Fuses:

90 to 150 Vac Operation:
1 A, 3 AG, 250 Vac, Slo-Blo

160 to 240 Vac Operation:
1 A, 3 AG, 250 Vac, Slo-Blo

Options:

Additional sensor cable over 15 feet

S2 sensor mounted to control unit

Keypad:

Five soft keys for setup and operation

Qualification:

Military qualified

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