

SENSORS

Table with columns: SENSOR, 1000, 2000, 2500, 3000, 3500, 3500 DT, 4000, 4200, 4250, 4300, 4400, 4500, 4500 HOR, ACCURACY (%)\*, RESOLUTION, SPECIFICATION RANGE, OPERATIONAL RANGE, NOTES. Rows include Wind Speed | Air Flow, Ambient Temperature, Globe Temperature - Tg, Relative Humidity, Pressure, and Compass.

CALCULATED MEASUREMENTS

Table with columns: MEASUREMENT, 1000, 2000, 2500, 3000, 3500, 3500 DT, 4000, 4200, 4250, 4300, 4400, 4500, 4500 HOR, ACCURACY (%)\*, RESOLUTION, SPECIFICATION RANGE, SENSORS EMPLOYED, NOTES. Rows include Air Density, Air Flow, Altitude, Barometric Pressure, Crosswind & Headwind/Tailwind, Delta T, Density Altitude, Dewpoint, Evaporation Rate, Heat Index, Moisture Content | Humidity Ratio ("Grains"), Relative Air Density, Thermal Work Limit (TWL), Outdoor Wet Bulb Globe Temperature (WBGT), Wet Bulb Temperature - Naturally Aspirated (Twb), Wet Bulb Temperature - Psychrometric, and Wind Chill.

ADDITIONAL SPECIFICATIONS

Table with columns: Feature, 1000, 2000, 2500, 3000, 3500, 3500 DT, 4000, 4200, 4250, 4300, 4400, 4500, 4500 HOR. Rows include Display & Backlight, Response Time & Display Update, Max/Avg Wind, Data Storage & Graphical Display, Data Upload & Bluetooth® Data Connect Option, Clock / Calendar, Auto Shutdown, Languages, Certifications, Origin, Battery Life, Shock Resistance, Sealing, Operational Temperature Limits, Storage Temperature, and Size & Weight.

\* NOTE: Accuracy calculated as uncertainty of the measurement derived from statistical analysis considering the combined effects from primary sensor specifications, circuit conversions, and all other sources of error using a coverage factor of k=2, or two standard deviations (2σ).

Please note, these specifications are valid for all Kestrel 4400 products and all other Kestrel 4000 series with a serial number higher than 659340. If your product has a lower serial number, please reference the previous version of the specifications.



**Certificate of  
Conformity**

This instrument was produced under rigorous factory production control and documented standard procedures. It was individually visually inspected, leak tested and function tested for display, backlight, button and software performance. The accuracy of each of its primary measurements was individually calibrated and/or tested against standards traceable to the National Institute of Standards and Technology ("NIST") or calibrated intermediary standards. This instrument is certified to have performed at the time of manufacture in compliance with the following specifications as they apply to this meter's specific model, measurements and features.

## Methods Used in Calibration and Testing

### Wind Speed:

The Kestrel Pocket Weather Meter impeller installed in this unit was individually tested in a subsonic wind tunnel operating at approximately 300 fpm (1.5 m/s) and 1200 fpm (6.1 m/s) monitored by a Gill Instruments Model 1350 ultrasonic time-of-flight anemometer. The Standard's maximum combined uncertainty is  $\pm 1.04\%$  within the airspeed range 706.6 to 3923.9 fpm (3.59 to 19.93 m/s), and  $\pm 1.66\%$  within the airspeed range 166.6 to 706.6 fpm (0.85 to 3.59 m/s).

### Temperature:

Temperature response is verified in comparison with a Eutechnics 4600 Precision Thermometer or a standard Kestrel 4000 Weather and Environmental Meter calibrated weekly against the Eutechnics 4600. The Eutechnics 4600 is calibrated annually and is traceable to NIST with a system accuracy of  $\pm 0.05$  °C.

### Direction / Heading

The sensitivity of the magnetic directional sensor is verified at the component level by applying a magnetic field to the sensor and measuring the signal output at 4 points, as well as after assembly by orienting the unit to the cardinal directions and measuring the magnetic field output. In both cases the compass output must be accurate to within  $\pm 5$  degrees.

### Relative Humidity:

Relative humidity receives a two-point calibration in humidity and temperature controlled chambers at 75.3% RH and 32.8% RH at 25° C. The calibration tanks are monitored with an Edgetech Model 2002 DewPrime II Standard Chilled Mirror Hygrometer. Following calibration, performance is further verified at an RH of approximately 43.2% against the Edgetech Hygrometer. The Edgetech Hygrometer is calibrated annually and is traceable to NIST with a maximum relative expanded uncertainty of  $\pm 0.2\%$  RH.

### Barometric Pressure:

Pressure response is verified against a Mensor Series 6000 Digital Barometer or a standard Kestrel 4000 Weather and Environmental Meter calibrated weekly against the Mensor Barometer. The Mensor Barometer is calibrated annually and is traceable to NIST with a maximum relative expanded uncertainty of  $\pm 0.02\%$  F.S.

### Approved By:

Michael Naughton, Engineering Manager