Kestrel® Pocket Weather® Meters
Certificate of Calibration – Air Speed

Order #: 0123456 **Customer PO#:** PO243

Customer #: JOE01 **Customer Name:** Joe Kestrel

Instrument: Kestrel 5000 Environmental Meter **Manufacturer:** Nielsen-Kellerman

Instrument Serial No: 1234567 **Impeller Serial No:** IMP 7894561

Calibration Date: 1-Oct-16 **Recalibration Due:** 1-Oct-17 12 Months

The above designated impeller was calibrated on the date shown in direct comparison to a Gill Model 1350 Single-Axis Ultrasonic Anemometer, Serial No. 0001. The Standard Anemometer is traceable to NIST (National Institute of Standards and Technology) and was last calibrated in the NIST Low Velocity Airflow Facility and NIST Dual Test-Section Wind Tunnel on 19-June-2015, NIST Test Report No.685-287002-15. The accuracy of the Standard is verified at regular scheduled intervals by comparison to or measurement against national standards, natural physical constants, consensus standards, or by ratio type measurements using self-calibrating techniques. The Standard's maximum combined uncertainty is ±1.04% within the airspeed range 706.6 to 3923.9 fpm (3.59 to 19.93 m/s), and ±1.66% within the airspeed range 166.6 to 706.6 fpm (0.85 to 3.59 m/s).

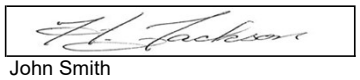
The **Kestrel 5000 Environmental Meter**

has a published Air Speed accuracy of ± **3%** in the range of **3.3 to 40.0 m/s**

Point	Reference		Acceptable Limits				DUT as Found		Difference		
1	600.0	fpm	582.0	to	618.0	fpm	601	fpm	1.0	fpm	0.2%
2	1200.0	fpm	1164.0	to	1236.0	fpm	1150	fpm	-50.0	fpm	-4.2%
Point	**Reference**		**Acceptable Limits**				**DUT as Left**		**Difference**		
3	600.0	fpm	582.0	to	618.0	fpm	602.0	fpm	2.0	fpm	0.3%
4	1200.0	fpm	1164.0	to	1236.0	fpm	1195.0	fpm	-5.0	fpm	-0.4%

NOTES:

- Calibration was performed in a 12 x 12 in (30.5 x 30.5 cm) rectangular test section wind tunnel at an ambient temperature of 77±7°F (25 ±4°C) and 40±10% relative humidity.
- Problems noted:
- ☐ Instrument was received **in** tolerance for Air Speed.
- ☑ Instrument was received **out of** tolerance for Air Speed.
- ☐ No change was made to instrument.
- ☑ Replacement Impeller, Serial No. IMP 9876543 was installed prior to "as Left" readings.
- The *maximum* recommended recalibration interval is 24 months. This instrument should be recalibrated sooner if it is frequently used at the extremes of the specified operational range. A shorter recalibration interval may also be required by user guidelines or advisable if maximum accuracy is required for the instrument application.

Technical Operator: 
John Smith

Approved By: 
Nils Steffensen, Director of Engineering

Kestrel Pocket Weather Meters
A Division of Nielsen-Kellerman
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www.nkhome.com

The above unit was tested according to NK's procedure number: NIST Verification 2008.10.01

Kestrel® Pocket Weather® Meters
Certificate of Calibration – Globe Thermistor

Order #: 0123456 **Customer PO#:** PO243

Customer #: JOE01 **Customer Name:** Joe Kestrel

Instrument: Kestrel 5000 Environmental Meter **Manufacturer:** Nielsen-Kellerman

Instrument Serial No: 1234567 **Impeller Serial No:** IMP 7894561

Calibration Date: 1-Oct-16 **Recalibration Due:** 1-Oct-17 12 Months

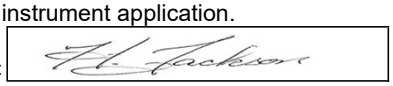
The above designated instrument was calibrated on the date shown in direct comparison to a Ametek Model DTI050 Digital Thermometer, Serial No. 2941072, Probe Serial No. 621609-06. The Standard Thermometer is traceable to NIST (National Institute of Standards and Technology) and was last calibrated on 18-December-2015. The accuracy of the Standard is verified at planned intervals by comparison to pressure standards traceable to NIST. The Standard's maximum combined uncertainty is ±0.020°C.

The **Kestrel 5000 Environmental Meter**
has a published Globe Temperature accuracy of ± **N/A** in the range of **N/A**

Point	Reference		Acceptable Limits				DUT as Found		Difference	
1	-10.0	°C	-11.0	to	-9.0	°C	-9.9	°C	0.1	°C
2	50.0	°C	49.0	to	51.0	°C	50.2	°C	0.2	°C

NOTES:

- Calibration was performed in a temperature-controlled chamber maintained at 25° C.
- There was no measurable air flow or solar load on the globe thermistor, in order to properly measure the air temperature without effects of the globe. Nominal time at each calibration value was 1 hour.
- Problems noted: None
- ☑ Instrument was received **in** tolerance for Temperature.
  ☐ Instrument was received **out of** tolerance for Temperature.
- ☑ No change was made to instrument.
- The *maximum* recommended recalibration interval is 24 months. This instrument should be recalibrated sooner if it is frequently used at the extremes of the specified operational range. A shorter recalibration interval may also be required by user guidelines or advisable if maximum accuracy is required for the instrument application.

Technical Operator: 
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Kestrel® Pocket Weather® Meters
Certificate of Calibration – Pressure

Order #: 0123456 **Customer PO#:** PO243

Customer #: JOE01 **Customer Name:** Joe Kestrel

Instrument: Kestrel 5000 Environmental Meter **Manufacturer:** Nielsen-Kellerman

Instrument Serial No: 1234567 **Impeller Serial No:** IMP 7894561

Calibration Date: 1-Oct-16 **Recalibration Due:** 1-Oct-17 12 Months

The above designated instrument was calibrated on the date shown in direct comparison to a Vaisala PTB 210A Digital Barometer, Serial No. K1440002. The Standard Barometer is traceable to NIST (National Institute of Standards and Technology) and was last calibrated on 15-June-2016. The accuracy of the Standard is verified at planned intervals by comparison to pressure standards traceable to NIST. The Standard's accuracy is ± 0.15 hPa at +20°C defined as the root sum of the squares (RSS) of end point non-linearity, hysteresis error, repeatability error and calibration uncertainty at room temperature.

The **Kestrel 5000 Environmental Meter**

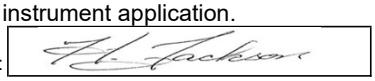
has a published Pressure accuracy of ± **1.5 hPa** in the range of **700 - 1100 hPa, 25 °C**

Point	Reference		Acceptable Limits				DUT as Found		Difference		
1	700.0	hPa	697.5	to	702.5	hPa	701.9	hPa	1.9	hPa	0.3%
2	1010.0	hPa	1008.5	to	1011.5	hPa	1012.1	hPa	2.1	hPa	0.2%
Point	**Reference**		**Acceptable Limits**				**DUT as Left**		**Difference**		
1	700.0	hPa	699.0	to	701.0	hPa	700.2	hPa	0.2	hPa	0.0%
2	1010.0	hPa	1009.0	to	1011.0	hPa	1010.3	hPa	0.3	hPa	0.0%

NOTES:

Nominal time at each calibration value was 1 hour.

- Problems noted:
- ☐ Instrument was received **in** tolerance for Pressure.
  ☑ Instrument was received **out of** tolerance for Pressure.
- ☐ No change was made to instrument.
- ☑ Instrument was recalibrated per manufacturer's protocol.
- The *maximum* recommended recalibration interval is 24 months. This instrument should be recalibrated sooner if it is frequently used at the extremes of the specified operational range. A shorter recalibration interval may also be required by user guidelines or advisable if maximum accuracy is required for the instrument application.

Technical Operator: 
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The above unit was tested according to NK's procedure number: NIST Verification 2008.10.01

Kestrel® Pocket Weather® Meters
Certificate of Calibration – Relative Humidity

Order #: 0123456
Customer #: JOE01
Instrument: Kestrel 5000 Environmental Meter
Instrument Serial No: 1234567
Calibration Date: 1-Oct-16

Customer PO#: PO243
Customer Name: Joe Kestrel
Manufacturer: Nielsen-Kellerman
Impeller Serial No: IMP 7894561
Recalibration Due: 1-Oct-17 12 Months

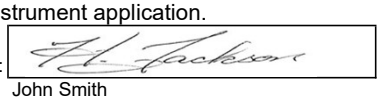
The above designated instrument was calibrated on the date shown in direct comparison to an Edgetech Dew Master Standard Chilled Mirror Hygrometer, Serial Number 2A4411X. The Standard Hygrometer is traceable to NIST (National Institute of Standards and Technology) and was last calibrated on 11-Dec-2015 Test Report Number 2015.11121. The Standard's maximum combined uncertainty is ±0.050%RH. The procedures used for calibration conform to ASTM Publication #E104, Standard Practice for Maintaining Constant Relative Humidity by Means of Aqueous Solutions.

The **Kestrel 5000 Environmental Meter**
has a published Relative Humidity accuracy of ± **2%** in the range of **10 to 90%, 25 °C**

Point	Reference		Acceptable Limits				DUT as Found		Difference	
1	32.8	%RH	29.8	to	35.8	%RH	34.2	% RH	1.4	%RH
2	75.3	%RH	72.3	to	78.3	%RH	72.1	% RH	-3.2	%RH
Point	**Reference**		**Acceptable Limits**				**DUT as Left**		**Difference**	
1	32.8	%RH	29.8	to	35.8	%RH	32.9	% RH	0.1	%RH
2	75.3	%RH	72.3	to	78.3	%RH	75.0	% RH	-0.3	%RH

NOTES:

- Calibration was performed in a temperature-controlled chamber maintained at 25° C.
  Nominal time at each calibration value was 1 hour.
- Problems noted:
- ☐ Instrument was received **in** tolerance for Relative Humidity.
  ☑ Instrument was received **out of** tolerance for Relative Humidity.
- ☐ No change was made to instrument.
- ☑ Instrument was recalibrated per manufacturer's protocol.
- The *maximum* recommended recalibration interval is 24 months. This instrument should be recalibrated sooner if it is frequently used at the extremes of the specified operational range. A shorter recalibration interval may also be required by user guidelines or advisable if maximum accuracy is required for the instrument application.

Technical Operator: 
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Kestrel® Pocket Weather® Meters
Certificate of Calibration – Temperature

Order #: 0123456 **Customer PO#:** PO243

Customer #: JOE01 **Customer Name:** Joe Kestrel

Instrument: Kestrel 5000 Environmental Meter **Manufacturer:** Nielsen-Kellerman

Instrument Serial No: 1234567 **Impeller Serial No:** IMP 7894561

Calibration Date: 1-Oct-16 **Recalibration Due:** 1-Oct-17 12 Months

The above designated instrument was calibrated on the date shown in direct comparison to a Ametek Model DTI050 Digital Thermometer, Serial No. 2941072, Probe Serial No. 621609-06. The Standard Thermometer is traceable to NIST (National Institute of Standards and Technology) and was last calibrated on 18-December-2015. The accuracy of the Standard is verified at planned intervals by comparison to pressure standards traceable to NIST. The Standard's maximum combined uncertainty is ±0.020°C.

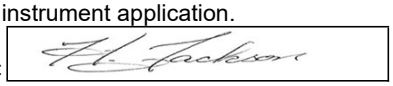
The **Kestrel 5000 Environmental Meter**

has a published Temperature accuracy of ± **0.5 °C** in the range of **-29 to 70 °C**

Point	Reference		Acceptable Limits				DUT as Found		Difference	
1	-10.0	°C	-11.0	to	-9.0	°C	-10.1	°C	-0.1	°C
2	50.0	°C	49.0	to	51.0	°C	50.1	°C	0.1	°C

NOTES:

- Calibration was performed in a temperature-controlled chamber maintained at 25° C. Nominal time at each calibration value was 1 hour.
- Problems noted: None
- ☑ Instrument was received **in** tolerance for Temperature.
  ☐ Instrument was received **out of** tolerance for Temperature.
- ☑ No change was made to instrument.
- The *maximum* recommended recalibration interval is 24 months. This instrument should be recalibrated sooner if it is frequently used at the extremes of the specified operational range. A shorter recalibration interval may also be required by user guidelines or advisable if maximum accuracy is required for the instrument application.

Technical Operator: 
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