Know Your Conditions

Alix James
CEO, Nielsen-Kellerman

Message from the CEO

Since 1996, Kestrel by NK has been relentlessly focused on meeting the specialized environmental measurement needs of demanding customers around the world. Our team comes to work every day committed to:

» **Immersing** ourselves firsthand in our customers' pursuits to gain expertise and understanding.

» **Designing** optimized, innovative solutions to real-world problems.

» **Validating** accuracy and specifications through rigorous testing.

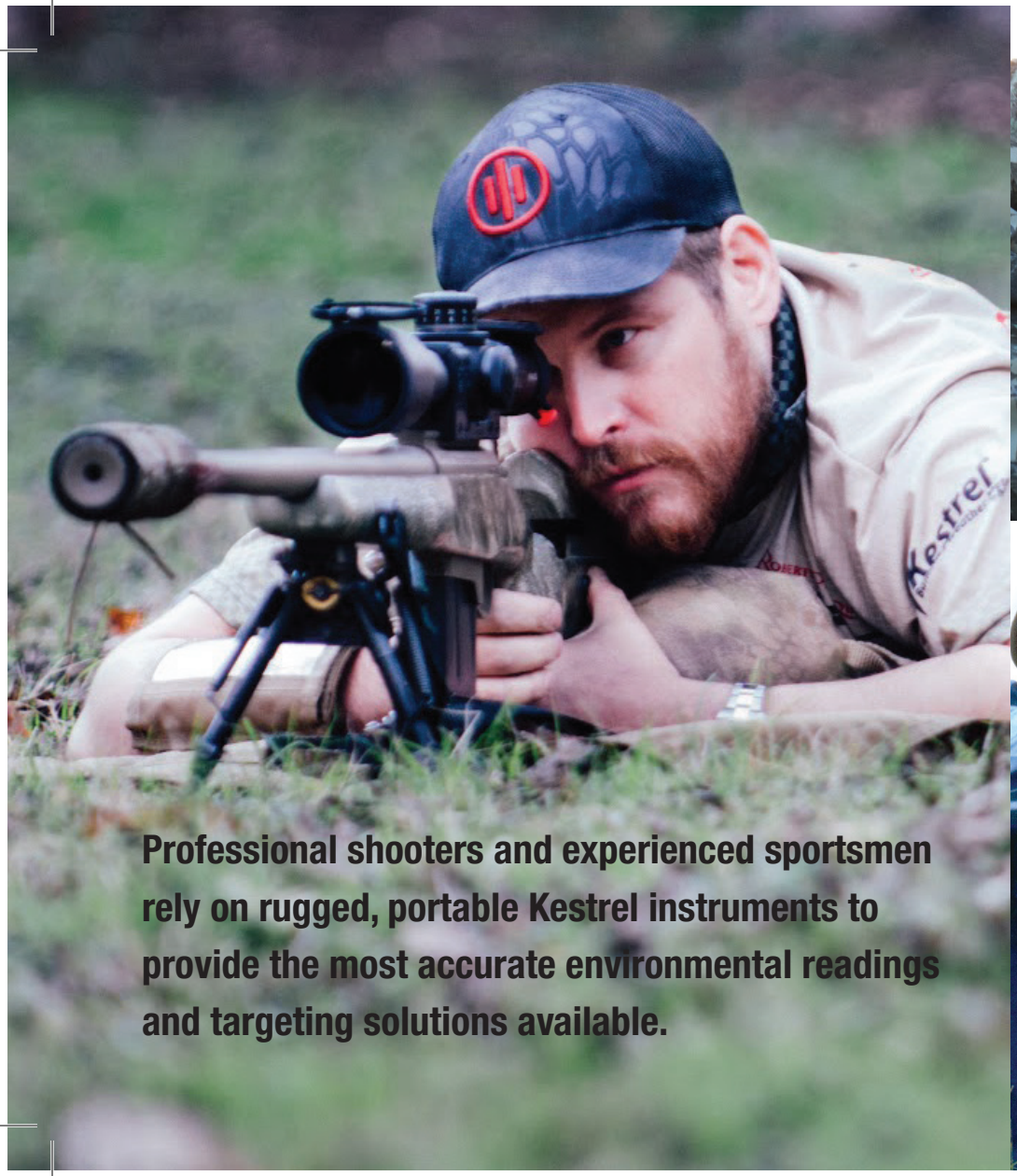
» **Delivering** rugged products that perform reliably in challenging environments.

» **Creating** job opportunities and economic value through American manufacturing and partnerships.

» **Treating** our customers and partners exactly as we would want to be treated.

Kestrel Weather & Environmental Meters have been proven to stand up to the harshest operational conditions while providing dependable and reliable data at the most critical of moments. We welcome you to the Kestrel community.

Know Your Conditions



Professional shooters and experienced sportsmen rely on rugged, portable Kestrel instruments to provide the most accurate environmental readings and targeting solutions available.

US Manufacturing - Sustainable Quality

Every Kestrel Weather & Environmental Meter is researched, designed, built, tested, calibrated, marketed, shipped AND supported in our facility in southeastern Pennsylvania. Having every part of our business in close proximity gives us unmatched ability to respond to our customers' needs. We apply Lean principles to every area of our business – empowering our employees to systematically improve their processes and staying relentlessly focused on the activities that produce value for our customers. We source materials close to home to support our local economy and minimize our environmental impact. We take immense personal satisfaction in building the products we ship with our own hands and testing and calibrating each one to ensure it will do its job right. Finally, we prove our confidence in our work with an industry-leading **FIVE-YEAR WARRANTY**.

DESIGNED & BUILT IN THE USA

Provides hundreds of hours of use on 2 standard Lithium AAA batteries

MIL-STD-810G Drop-tested
IP-67 Water- and Dustproof

1. Individual wind tunnel calibration of each wind/air flow impeller for +/- 3% accuracy.
2. Removable impeller can be replaced without tools – restoring calibration (patented).
3. Fast-response temperature-adjusted humidity sensor (patented).
4. Optional *Bluetooth*® Wireless Data Transfer.
5. Up to 6 primary measurements, 18 calculated measurements, and built-in decision aids, depending on model.
6. On-board data logging, graphing and review of EVERY measurement.
7. Clear, backlit display for easy viewing.
8. External thermally isolated thermistor for fast, accurate readings (patented).
9. Wide-range pressure sensor and pressure-altimeter.
10. Individually calibrated against NIST-traceable standards.

Kestrel® DROP

Wireless Temperature, Humidity & Pressure Logger

LOG IT. VIEW IT. SHARE IT.

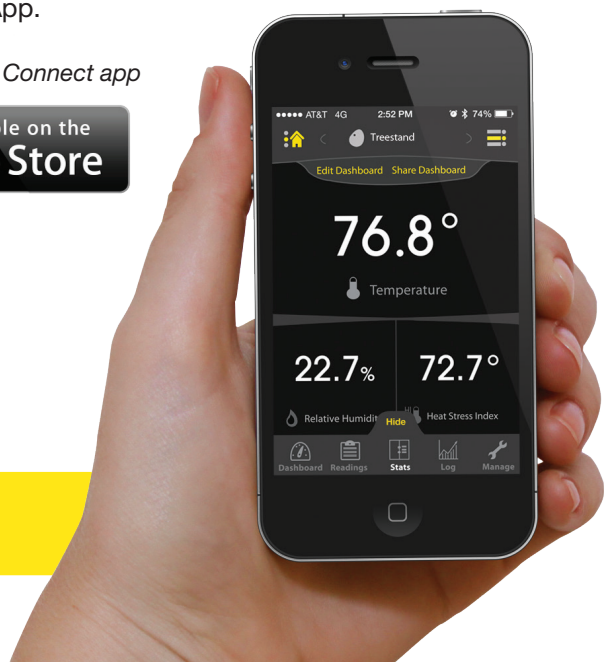
A **Kestrel DROP Wireless Environmental Data Logger** is the world's easiest-to-use rugged environmental data logger. A Kestrel DROP logger allows you to measure and track temperature, humidity, pressure and air density, and easily access and chart real-time and historical data on your phone or tablet with the Kestrel Connect app. Kestrel DROP loggers meet military and international standards for water, dust and shock resistance (IP-67 and MIL-STD-810G) and are designed to be used ANYWHERE you need to track environmental conditions. Each DROP is equipped with a sturdy integrated D-ring for hanging wherever needed. (Measurements are model dependent.)

*For a list of full measurement capabilities, see pages 12 & 13.

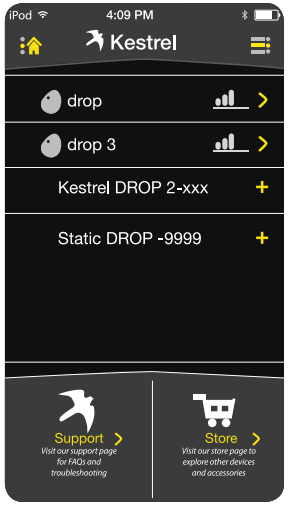
Kestrel Connect is the free app that powers the DROP loggers. With Kestrel Connect, you can view real-time readings from any DROP logger within wireless range (100' or more line of sight) via *Bluetooth*® Smart. Each phone or tablet can connect to up to 8 DROP loggers at the same time and store data logs from many more. Min/Max/Average readings are clearly displayed and the log is viewable as a scrolling graph with detailed data for each logged point. The app also allows adjustment of the logging interval and other settings as well as real-time threshold alerts. Readings can be updated as frequently as every 2 seconds, and logging time and date are automatically updated whenever connected to your smart device. Send and share real-time and logged environmental data via email, Facebook or Twitter. Easily swap between Kestrel Connect and your favorite ballistics app to enter accurate location temperature, pressure and air density (iOS platforms), or connect the Kestrel DROP D3 directly to the Applied Ballistics Kestrel Companion App and Applied Ballistics Mobile App.

Download the free Kestrel Connect app

Available on the App Store



COMPATIBLE WITH APPLIED BALLISTICS APP



Identify all DROPs within range.

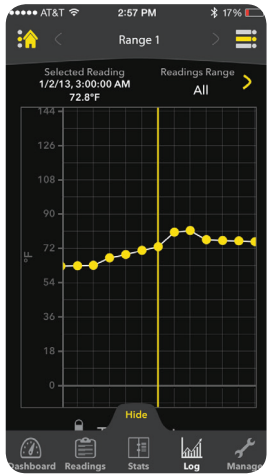


Chart and log data instantly.

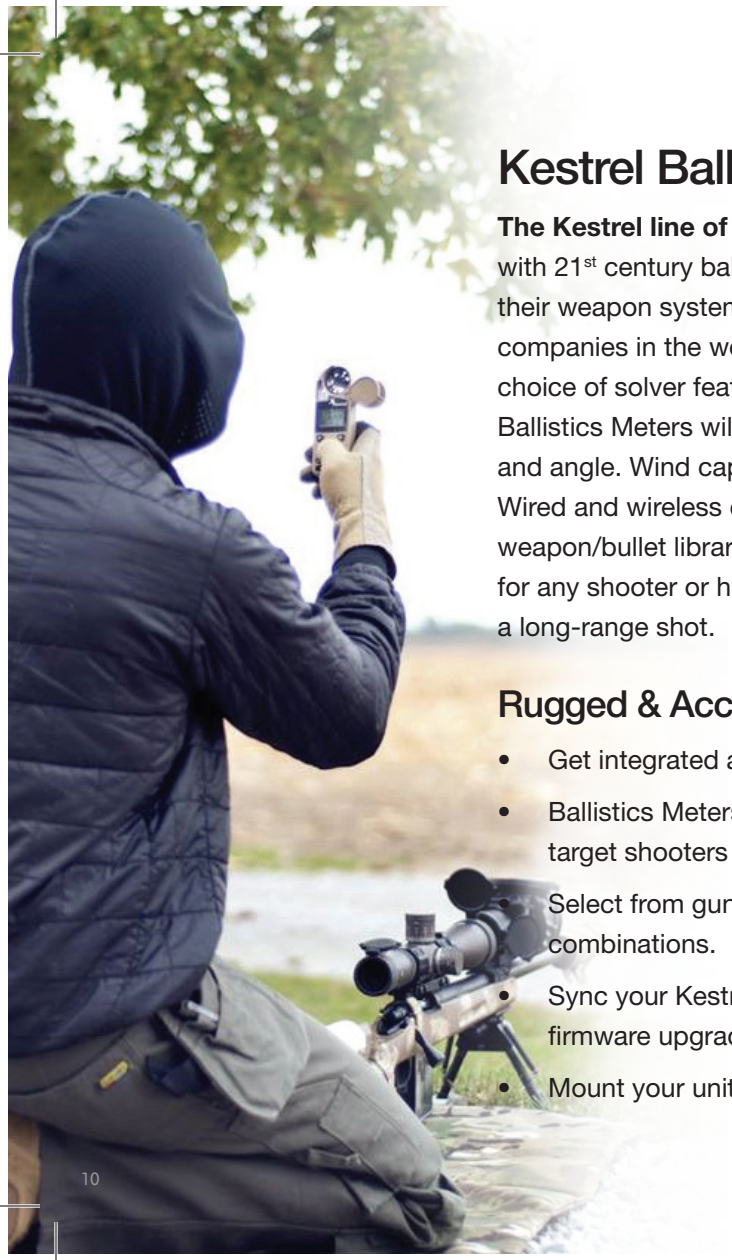
Kestrel Night Vision (NV) Weather Meter Line

As the weather changes, so does your game's behavior and your shot. Temperature, barometric pressure, wind speed, crosswind and wind direction all affect your success in targeting and dropping your prey. **Kestrel's NV Meters** provide every critical environmental reading while protecting your adapted night vision with a reduced brightness red-toned backlight.

Rugged & Accurate – Know Your Conditions

- Monitor wind, temperature and pressure to assist in determining your wind and elevation holds.
- Track weather trends to plan when and where to hunt.
- Predict animal behavior by monitoring rising/falling barometric pressure.
- Monitor environmental exposure conditions wherever you hunt to determine adequate clothing and hydration needs.

*For a list of full measurement capabilities, see pages 12 & 13.



Kestrel Ballistics Weather Meters Line

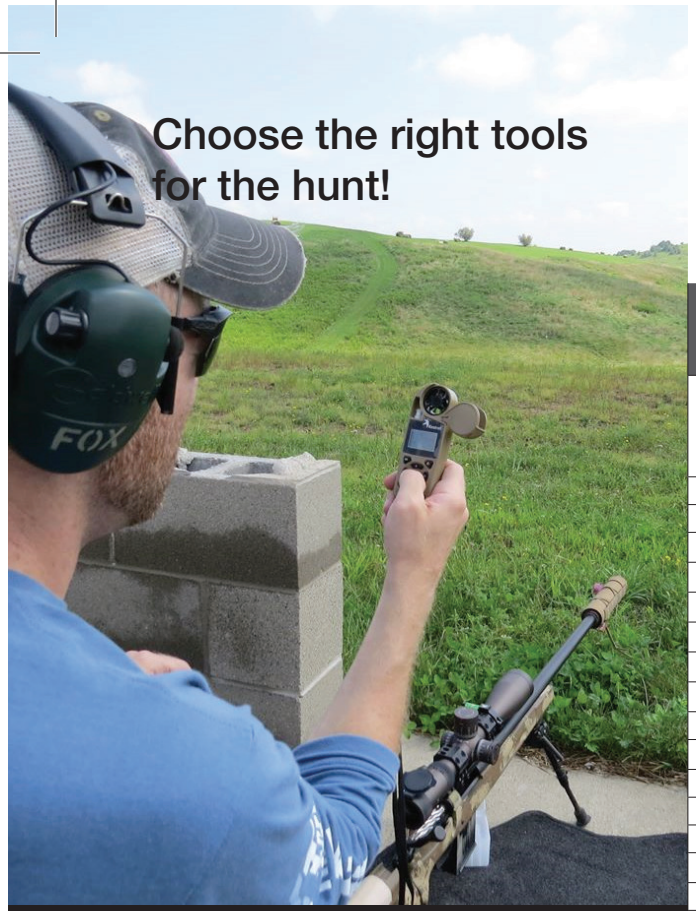
The Kestrel line of Ballistics Weather Meters combines precise environmental measurements with 21st century ballistics solvers, allowing users to obtain aiming solutions customized to their weapon system and bullet. Kestrel has partnered with two of the leading ballistics science companies in the world – Applied Ballistics and Horus Vision – to offer shooters and hunters a choice of solver features. Compatible with common targeting scopes and reticles, all Kestrel Ballistics Meters will track air density and provide an elevation hold specific to the target range and angle. Wind capture features also offer average/max windage holds and crosswind reads. Wired and wireless connectivity options, PC programs and apps make it even easier to build your weapon/bullet library and fine-tune ballistics inputs. Kestrel Meters have become the tool of choice for any shooter or hunter seeking accurate readings on the changing weather variables that impact a long-range shot.

Rugged & Accurate – Know Your Conditions

- Get integrated aiming solutions and comprehensive environmental data in one unit.
- Ballistics Meters offer a range of price points and feature sets to meet the needs of hunters, target shooters and extreme long-range shooters.
- Select from gun and ammo libraries (model dependent) or create and store custom combinations.
- Sync your Kestrel unit via *Bluetooth*® Wireless Data Transfer for access to the most up-to-date firmware upgrades from shooting industry experts.
- Mount your unit on a tripod for hands-free monitoring in any location.

Supersonic	Super/Subsonic Range	
Sportsman	AB	HORUS
Pre-Loaded Guns		
Holds up to 15 guns		Holds up to 59 guns
G1 & G7 Support		
	Access to Litz Library of BCs	Library of 1000 ammo/gun combinations
	Aerodynamic (crosswind) Jump	Multi-Segment Wind
	AB Spin Drift & Coriolis	Horus Spin Drift & Coriolis
	Muzzle Velocity	True Drop
Remote Viewing via the Kestrel Companion App		

*For a list of full measurement capabilities, see pages 12 & 13.



Choose the right tools for the hunt!

Available Functions	D1 MSRP $99 Part # 0710	D2 MSRP $169 Part # 0720	D3 MSRP $199 Part # 0730	1000 MSRP $99 Part # 0810
	Wireless			
	Available Colors:			
Wind Speed				
Temperature				
Wind Chill				
Relative Humidity				
Heat Stress Index				
Dew Point Temperature				
Wet Bulb Temperature				
Barometric Pressure				
Station Pressure				
Altitude				
Density Altitude				
Digital Compass				
Wind Direction				
Crosswind				
Headwind/Tailwind				
Backlit Display				
Pressure Trend				
Ballistics Calculator				
Data Storage & Charting				
Data Upload				
Clock				
Wet Bulb Globe Temp (WBGT)				

Abbreviation Key

BT *Bluetooth*® Wireless Data Transfer

NV Tactical, night-vision preserving backlight

SP Spotter Pack *(includes BT, tripod-compatible vane mount and Kestrel Companion app)*

Basic				Advanced		Heat Stress		Ballistics	
2000 MSRP $129 Part # 0820	2500 MSRP $199 Part # 0825	**3000** MSRP $199 Part # 0830	**3500** MSRP $259 Part # 0835	**4000** MSRP $339 Part # 0840	**4500** MSRP $409 Part # 0845	**HST** MSRP $899 Part # 0846TTAN	**SPORTSMAN** MSRP: $429 Part# 0845S	**HORUS®** MSRP: $619 Part #0845H	**APPLIED BALLISTICS** MSRP: $619 Part# 0845A
				4000 BT MSRP $459 Part # 0840B	**4500 BT** MSRP $529 Part # 0845B	**HST BT** MSRP $1019 Part # 0846TBTAN	**SPORTSMAN SP BT** MSRP: $589 Part# 0845SBNVM	**HORUS® BT** MSRP: $739 Part #0845HB	**APPLIED BALLISTICS BT** MSRP: $739 Part# 0845AB
NV(optional)			NV(optional)	NV(optional)	NV(optional)	NV	NV(SP only)	NV	NV
								HORUS	APPLIED

SENSORS

SENSOR	ACCURACY (+/-)*	RESOLUTION	SPECIFICATION RANGE	OPERATIONAL RANGE
Wind Speed | Air Flow	Larger of 3% of reading, least significant digit or 20 ft/min	0.1 m/s, 1 ft/min 0.1 km/h, 0.1 mph, 0.1 knots, 1 B	0.6 to 40.0 m/s , 118 to 7,874 ft/min, 2.2 to 144.0 km/h, 1.3 to 89.5 mph, 1.2 to 77.8 knots, 0 to 12 B	0.6 to 60.0 m/s , 118 to 11,811 ft/min, 2.2 to 144.0 km/h, 1.3 to 134.2 mph, 1.2 to 116.6 knots, 0 to 12 B
Ambient Temperature	0.9 °F, 0.5 °C	0.1 °F, 0.1 °C	-20.0 to 158.0 °F, -29.0 to 70.0 °C	14.0.0 to 131.0 °F, -10.0 to 55.0 °C
Globe Temperature-Tg	°F, 1.4 °C	0.1 °F, 0.1 °C	-20.0 to 140.0 °F, -29.0 to 60.0 °C	14.0 to 131.0 °F, -10.0 to 55.0 °C
Relative Humidity	3.0 %RH	0.1 %RH	5 to 95% non-condensing	0 to 100%
Pressure	0.03 inHg, 1.0 hPa|mbar, 0.01 PSI	0.01 inHg, 0.1 hPa|mbar, 0.01 PSI	8.86 to 32.49 inHg, 300.0 to 1100.0 hPa|mbar, 4.35 to 15.95 PSI and 32.0 to 185.0 °F, 0.0 to 85.0 °C	0.30 to 48.87 inHg, 10.0 to 1654.7 hPa|mbar 0.14 to 24.00 PSI and, 14.0 to 131.0 °F, -10.0 to 55.0 °C
Compass	5°	1°, 1/16th Cardinal Scale	0 to 360°	0 to 360°

ADDITIONAL SPECIFICATIONS

Display & Backlight	For 1000, 2000 and 3000 Models: Reflective 3 1/2 digit LCD. Digit height 0.36 in / 9 mm. Aviation green electroluminescent backlight. Manual activation with auto-off.	**Certifications**	CE certified, RoHS and WEEE compliant. Individually tested to NIST-traceable standards (written certificate of tests available at additional charge).
	For 2500, 3500 and 3500DT Models: Reflective 5 digit LCD. Digit height 0.36 in / 9 mm. Choice of aviation green or visible red (NV models only) electroluminescent backlight. Manual activation with auto-off.	**Origin**	Designed and manufactured in the USA from US and imported components. Complies with Regional Value Content and Tariff Code Transformation requirements for NAFTA Preference Criterion B.
	For 4000 Series Models: Multifunction, multi-digit monochrome dot-matrix display. Choice of aviation green or visible red (NV models only) electroluminescent backlight. Automatic or manual activation.	**Battery Life**	For 1000 through 3500 Models: CR2032, one, included. Average life, 300 hours. Battery life reduced by backlight use in 2000 to 3500 models.
Response Time & Display Update	All measurements except those based on relative humidity respond accurately within 1 second. Relative humidity and all measurements which include RH in their calculation may require as long as 1 minute to fully equilibrate to a large change in the measurement environment. Display updates every 1 second.		For 4000 Series Models: AAA Alkaline, two, included. Average life, 400 hours of use, reduced by backlight or Bluetooth radio transmission use. Tactical Models: AAA Lithium, two, included. Average life, 400 hours of use, reduced by backlight or Bluetooth radio transmission use.
Max/Avg Wind	For 1000 through 3500 Models: One-button clear and restart of Max Wind Gust and Average Wind measurement.	**Shock Resistance**	MIL-STD-810g, Transit Shock, Method 516.5 Procedure IV; unit only; impact may damage replaceable impeller.
	For 4000 Series Models: Max and average wind calculation may be started and stopped independently of data logging of other values, along with all other wind-related functions: air velocity, crosswind, headwind/tailwind, wind chill, WBGT, TWL, evaporation rate.	**Sealing**	Waterproof (IP67 and NEMA-6).
Data Storage & Graphical Display, Min/Max/ Avg History	For 4000 Series Models: Minimum, maximum, average and logged history stored and displayed for every measured value. Large capacity data logger with graphical display. Manual and auto data storage. Min/Max/Avg history may be reset independently. Auto-store interval settable from 2 seconds to 12 hours, overwrite on or off. Logs even when display off except for 2 and 5 second intervals (code version 4.18 and later).	**Operational Temperature Limits**	14° F to 131° F | -10 °C to 55 °C Measurements may be taken beyond the limits of the operational temperature range of the display and batteries by maintaining the unit within the operational range and exposing it to the more extreme environment for the minimum time necessary to take reading.
Data Upload & Bluetooth® Data Connect Option	For 4000 Series Models: Requires optional PC interface (USB or RS-232) or Bluetooth data transfer option and provided software. Bluetooth Data Transfer Option: Adjustable power consumption and radio range from up to 30 ft | 9 meters. Individual unit ID and 4-digit PIN code preprogrammed for easy identification and data security when pairing and transmitting. Employs Bluetooth Serial Port Protocol for data transmission.	**Storage Temperature**	-22.0 °F to 140.0 °F | -30.0 °C to 60.0 °C
Clock / Calendar	For 1000 through 3500 Models: Real-time hours:minutes clock.	**Size & Weight**	For 1000 through 3500 Models: 4.8 x 1.9 x 1.1 in / 12.2 x 4.8 x 2.8 cm, 3.6 oz / 102 g (including slip-on cover).
	For 4000 Series Models: Real-time hours:minutes:seconds clock, calendar, automatic leap-year adjustment.		For 4000 Series Models, excluding 4400:, 5.0 x 1.8 x 1.1 in / 12.7 x 4.5 x 2.8 cm, 3.6 oz / 102 g.
Auto Shutdown	For 1000 through 3500 Models: After 45 minutes of no key presses.		For 4400 Model Only: 6.5 x 2.3 x 1.1 in / 16.5 x 5.9 x 2.8 cm, 4.4 oz / 125 g.
	For 4000 Series Models: User-selectable – 15 or 60 minutes with no key presses or disabled.		
Languages	For 4000 Series Models: English, French, German, Italian, Spanish.		

CALCULATED MEASUREMENTS				
MEASUREMENT	**ACCURACY (+/-)***	**RESOLUTION**	**SPECIFICATION RANGE**	**SENSORS EMPLOYED**
Air Density	0.0002 lb/ft3, 0.0033 kg/m3	0.001 lbs/ft3, 0.001 kg/m3	Refer to Ranges for Sensors Employed	Temperature, Relative Humidity, Pressure
Air Flow	6.71%	1 cfm, 1 m3/hr, 1 m3/m 0.1m3/s, 1 L/s	Refer to Ranges for Sensors Employed	Air Flow, User Input (Duct Shape & Size)
Altitude	typical: 23.6 ft, 7.2 m max: 48.2 ft, 14.7 m	1 ft, 1 m	typical: 750 to 1100 mBar max: 300 to 750 mBar	Pressure, User Input (Reference Pressure)
Barometric Pressure	0.07 inHg, 2.4 hPa|mbar, 0.03 PSI	0.01 inHgm, 0.1 hPa|mbar 0.01 PSI	Refer to Ranges for Sensors Employed	Pressure, User Input (Reference Altitude)
Crosswind & Headwind/Tailwind	7.1%	1 mph, 1 ft/min, 0.1 km/h 0.1 m/s, 0.1 knots	Refer to Ranges for Sensors Employed	Wind Speed, Compass
Delta T	3.2 °F, 1.8 °C	0.1 °F, 0.1 °C	Refer to Ranges for Sensors Employed	Temperature, Relative Humidity, Pressure
Density Altitude	226 ft, 69 m	1 ft, 1 m	Refer to Ranges for Sensors Employed	Temperature, Relative Humidity, Pressure
Dewpoint	3.4 °F, 1.9 °C	0.1 °F, 0.1 °C	15 to 95 % RH Refer to Range for Temperature Sensor	Temperature, Relative Humidity, Pressure
Evaporation Rate	0.01 lb/ft2/hr, 0.06 kg/m2/hr	0.01 b/ft2/hr, 0.01 kg/m2/hr	Refer to Ranges for Sensors Employed	Wind Speed,Temperature, Relative Humidity, Pressure, User Input (Concrete Temperature)
Heat Index	7.1 °F, 4.0 °C	0.1 °F, 0.1 °C	Refer to Ranges for Sensors Employed	Temperature, Relative Humidity
Moisture Content | Humidity Ratio (Grains)	.3 gpp, .04g/kg	0.1 gpp, 0.01 g/kg	Refer to Ranges for Sensors Employed	Temperature, Relative Humidity, Pressure
Relative Air Density	0.3%	0.1%	Refer to Ranges for Sensors Employed	Temperature, Relative Humidity, Pressure
Thermal Work Limit (TWL)	10.9 W/m2	0.1 W/m2	Refer to Ranges for Sensors Employed	Wind Speed, Temperature, Globe Temperature, Relative Humidity, Pressure
Outdoor Wet Bulb Globe Temperature (WBGT)	1.3 °F, 0.7 °C	0.1 °F 0.1 °C	Refer to Ranges for Sensors Employed	Wind Speed, Temperature, Globe Temperature, Relative Humidity, Pressure
Wet Bulb Temperature - Naturally Aspirated (Tnwb)	1.4 °F, 0.8 °C	0.1 °F 0.1 °C	Refer to Ranges for Sensors Employed	Wind Speed, Temperature, Globe Temperature, Relative Humidity, Pressure
Wet Bulb Temperature - Psychrometric	3.2 °F, 1.8 °C	0.1 °F 0.1 °C	Refer to Ranges for Sensors Employed	Temperature, Relative Humidity, Pressure
Wind Chill	1.6 °F, 0.9 °C -	0.1 °F 0.1 °C	Refer to Ranges for Sensors Employed	Wind Speed, Temperature

For specs related to the Kestrel DROP, visit www.nkhome.com/kestrel/drop.

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