KestrelMet® 6000
Cellular Weather Station
Instruction Manual

KestrelMet®

NK

Nielsen-Kellerman (NK)
Family of Weather Brands

Weather Monitoring Solutions For
Your Profession or Passion

**When the elements can affect the outcome—
accuracy and accessibility are all that matter.**

NK understands that you depend on accurate measurements to understand changing environmental conditions. The need for immediate and accurate weather data from monitoring devices that simply work is vital to taking action. Because knowing your conditions means making the right decision.

ambient weather®   **Kestrel**® Instruments   **KestrelMet**®

AWN AMBIENT WEATHER NETWORK™

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Product Safety & Information

Find additional product information, FAQs, technical support, instructional videos and more at **AmbientWeather.net/support**

Getting to Know Your KestrelMet 6000

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Vane Anemometer

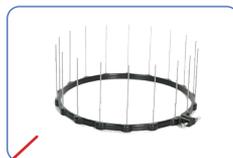Rain Gauge

PV Power Panel

Works With | AWN
AMBIENT
WEATHER NETWORK

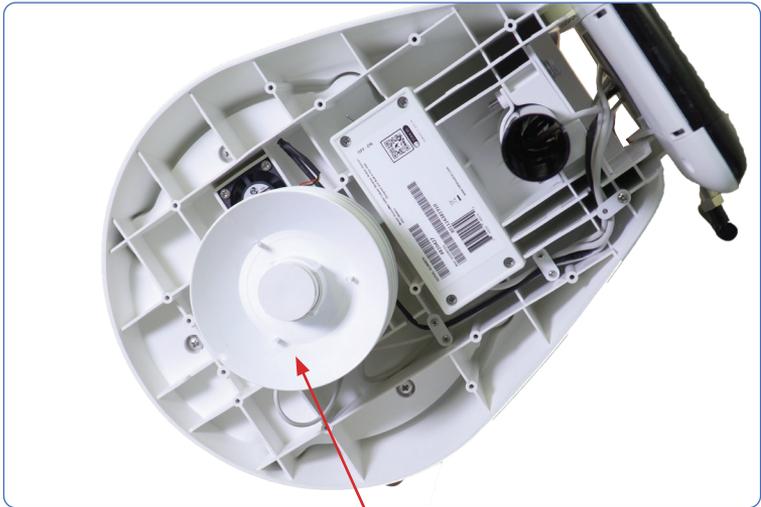Anemometer Mast Extension

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Components & Hardware (continued):

*Aspirated Temperature
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Introduction

You are minutes away from the ability to monitor weather with professional-grade accuracy anywhere, for any personal or professional reason.

The KestrelMet 6000 Cellular Weather Station delivers accurate, hyper-local weather information. It is lightweight, durable, easy to set up and quick to connect.

Your KestrelMet station transports your weather data to a personal dashboard where you can view and share data, view history and graphs, and build reports.

Set up your dashboard at *www.AmbientWeather.net*. Refer to page 12 of this manual for further instruction.
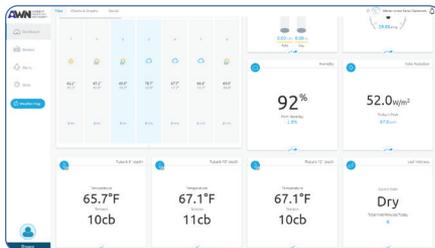
View your KestrelMet 6000 weather station data at www.AmbientWeather.net or on the Ambient Weather Network (AWN) app.

Getting Started With Your KestrelMet 6000

⚠️ **IMPORTANT:** Read through these instructions once before starting, and do the steps in the order presented:
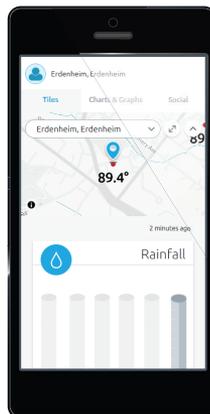
1. **Plan your station location and mounting. Confirm you have purchased the correct mounting hardware (Tripod or Mono Mount, sold separately) for your chosen location.**

2. **Unbox the station**

3. **Register the station account**

4. **Assemble the station**

5. **Mount the station**

6. **Turn the station on**

7. **View your data on Ambient Weather Network**

   AWN AMBIENT WEATHER NETWORK™

📌 *See appendix 3 for assembly of optional AG sensors*

1 Station Siting & Setup

Where you install your KestrelMet 6000 can positively or negatively impact accuracy. Natural and artificial obstructions around the weather station, like trees or other structures, could skew the data. You can get more detailed station location and siting guidelines at **AmbientWeather.net/support**

Location Considerations:

» Your station requires direct sunlight to maintain the battery charge at a healthy level. Installing the station in a partially shaded location will have an adverse effect on the battery lifetime and may limit the data transmission frequency.

» Pick a spot you can easily access, as you may have to remove debris from the rain gauge bucket once or twice a year.

» The station should ideally be mounted at least 5 ft (1.52 meters) above ground and away from roads, buildings and other sources of radiant heat.

» The station should be well away from trees that could shade the station, block wind or create a natural umbrella.

» For best results with a roof mount, install the station at the highest point on the roof.

Station Siting & Setup

Mounting Considerations:

» The rain gauge must be level to provide accurate rainfall measurements. Ensure that your chosen mounting location is sturdy and does not sway in the wind with the additional weight of the station. Excess motion or tilting will greatly reduce the accuracy of rainfall measurements.

» The assembled station weighs 8.4 lbs, but wind will increase loading on the mount. Mounting hardware is not included with the station.

» In the Northern Hemisphere, the PV power panel must point south to capture maximum solar energy and for the anemometer to provide accurate wind direction. In the Southern Hemisphere, the panel should point north.

⊘ *More siting and setup information is available at AmbientWeather.net/support*

2 Unboxing

What's included:

» Pre-assembled station base; including rain gauge, air temperature, RH and barometric pressure sensors

» Anemometer mast extension

» Vane anemometer (wind speed and direction sensors)

» Bird guard

» Assembly tools: 5 mm hex key and #2 Phillips tool (Two spare screws included)

» If you opted to purchase a Mono Mount, your package will include the Mono Mount parts.

3 Activating Data Plan & Registering Online

You must register your station at *AmbientWeather.net* to activate the station's data plan:

» Create a new account or log in to your existing account.

» Choose "Devices" from the menu on the left and select "Connect a New Device" (fig A).

Figure A

» Enter the MAC address of your KestrelMet 6000 (fig B1), which can be found on the last page of your manual or on the underside of the station. This will add your new station to your AWN account.

» Next, enter the time zone and location for your weather station location and press the "Create" button.

Figure B1

» Finally, enter your billing information (Fig B2) to ensure that your cellular access plan remains active when your free year of cellular data expires. If you already have a credit card associated with your Ambient account, that card will be used to renew your cellular access plan automatically. Only one credit card can be used to pay for all services and subscriptions on an AWN account.

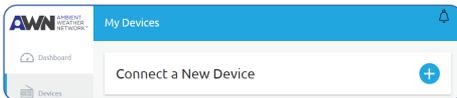*NOTE: Your station will not begin sending data to AWN until you complete Step 5 on Pg 17.*
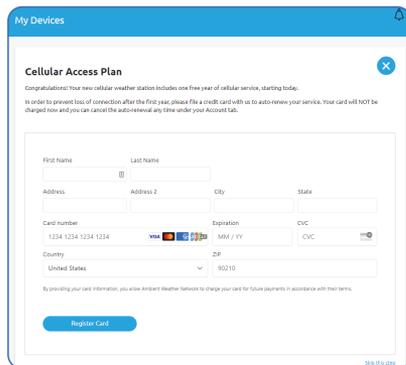
Figure B2

4 Station Assembly

⚠️ **IMPORTANT:** Complete these steps before powering up your station so the sensors initiate correctly.

Assemble the Anemometer

» Find the three screws on the anemometer mast extension. Remove and save the small Philips screw at the dimpled end (fig C).
NOTE: This screw has a smaller head than the other two.

» Loosen the screw closest to the middle of the extension by three turns.

» The non-dimpled end is marked with red tape. Remove the screw and the tape and save the screw for attaching to the station base (fig D).

» Pull the anemometer cable out of the station base (fig E), and straighten the cable. Feed the cable into the end that was marked by red tape and continue to push the cable through the anemometer mast extension (fig F) while sliding the extension onto the station base so the connector comes out of the dimpled end (fig G).
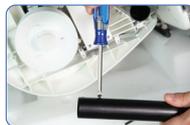
Figure C

Figure D

Figure E

Figure F

Figure G

Station Assembly

» Rotate the anemometer mast extension until the screw aligns with the slot in the station base, then slide the screw all the way into the slot and hand tighten (fig H).

» Place the screw that was removed from the non-dimpled end of the mast (fig D) into the hole below the station base slot and hand-tighten it well.

» Plug the end of the cable into the anemometer. The red side should be closest to the hub's center and the black side closest to the hubwall (fig I).

» Slide the anemometer hub onto the anemometer mast extension with the slot oriented in line with the dimple as shown (fig J).

» Replace the screw that was removed from the dimpled end of the mast to secure the anemometer in place and handtighten with a Phillips screwdriver (fig K).

📌 *Spare screws are provided in the zip lock bag with the assembly tools.*

Figure H

Figure I

Figure J

Figure K

Station Assembly

Align the PV Panel

» Slightly loosen the 5mm hex bolt with included wrench, adjust the PV power panel angle to match your latitude as indicated in the table below, then re-tighten the bolt (fig L).

Figure L

Latitude	Angle from vertical	Clicks from vertical
0–22.5	75°	5
22.5–55	45°	3
55–90	15°	1

0 Clicks

1 Click (15°)

2 Clicks

3 Clicks (45°)

4 Clicks

5 Clicks (75°)

6 Clicks

Station Assembly

Install the Bird Guard

📌 *This step can be done on-site after the station is mounted.*

- » Remove the protective plastic film from the PV panel (fig M)

- » Loosen the screw, set the bird guard on the rim of the rain gauge bucket with the spike holes facing up, then tighten the screw and insert the spikes (fig N).

- » There is a black cable on the underside of the station that can be used to connect additional KestrelMet sensors. The sensor connector is covered by a black cap which should be left in place (fig O). For more information, visit www.KestrelMet.com/Sensors

- » Birds can trigger false rainfall readings if they perch on the rain bucket. The bird guard prevents this.

⚠️ **IMPORTANT:** Exercise caution when installing the spikes.

Figure M

Figure N

Figure O

5 Connection Status

Confirming Your Station is Online

» Flip the toggle switch on the underside of the station base to "ON" (fig P).

📌 *It is best to minimize the number of on/off cycles during station startup, as frequent switching can lead to cell modem connection delays.*

» The LED status light on the PV power panel will flash blue and then flash magenta. This means the station is attempting to connect to a cellular network.

» The light will flash green when the station has successfully connected. Go to AmbientWeather.net and check your dashboard to confirm your station is transmitting data from all sensors (fig Q).

» Refer to the troubleshooting guide at the end of this manual if the LED status light indicator does not blink green within 20 minutes of turning the station on.

✅ **To conserve power, turn the station off if you don't plan on mounting it within 12 hours.**

📌 *In areas with poor cellular signal strength, you may need to optimize the station location and antenna configuration. Get detailed instructions on your station's signal strength indicators at AmbientWeather.net/support*

📌 *You may experience cellular service interruption due to weather, location, network limitations and other factors.*

Figure P
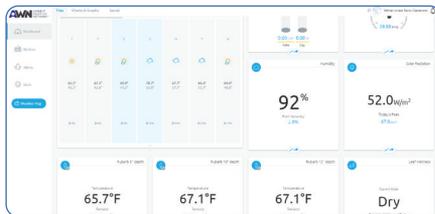
Figure Q

6 Mounting

Refer to AmbientWeather.net/support

» Mount the station.

*See appendix for Mono Mount and Tripod Mount mechanical drawings (pgs 32-33). Find detailed instructions and installation videos at **AmbientWeather.net/support***

» Confirm that the rain gauge bucket is level using one of these methods:

- Place a level across the top of the rain bucket and take two readings perpendicular to each other (fig R & S).

- Cover the rain gauge bucket drain with a piece of duct tape and add approx. 16 oz of water. If level, the edges of the water should be centered in the bottom of the bucket. Remove the tape to allow the water to pass through the drain and test the rain gauge (fig T).

Figure R

Figure S

Figure T

Mounting

Mounting Instructions:

» Mount the support mast securely to the support structure using the Mono Mount or Tripod (sold separately) or standard U-bolts. Do not tighten the support structure to the KestrelMet, as directional orientation will be required.

» Rotate the assembled unit until the electronics enclosure with the solar panel cover faces south if you're in the Northern Hemisphere, or north if you're in the Southern Hemisphere. This will capture maximum solar energy and help the anemometer provide accurate wind direction. Use a compass for accuracy.

» Secure the support mast to the assembly. Prevent rotation by lining up the two holes in each mast

⊘ **At this point, the entire unit should be secured to the support structure. It is crucial that the device is oriented as precisely as possible.**

7 Powering Up

After mounting the station, confirm the power is ON and the station is transmitting to **AmbientWeather.net** as shown in figure U.

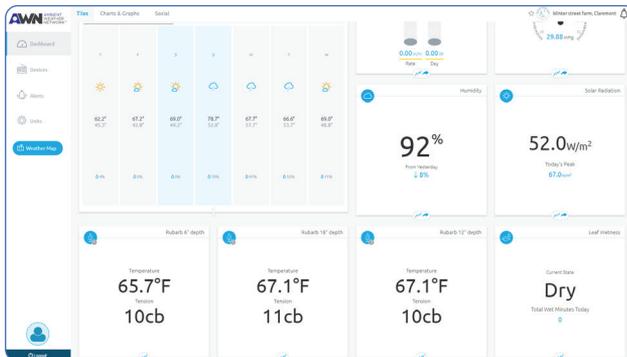📌 *After a power cycle, data can take up to 5 minutes before it is shown on AmbientWeather.net*

Figure U

8 Troubleshooting

» Refer to **AmbientWeather.net/support** for FAQs and additional troubleshooting information

» The KestrelMet 6000 cellular weather station can ONLY connect to a cellular network (typically Verizon or AT&T according to your station's SIM card for US customers), and cannot connect to a Wi-Fi network. You can use provider coverage maps or third party tools such as the Open Signal app or RootMetrics app to plan an optimal location for your station. After your station is registered, you can use the signal indicators on **AmbientWeather.net/devices** for live cellular signal readings.

» When power switch is flipped ON, the station will transmit once every 5 minutes for a period of 30 minutes and then revert to normal operation mode, transmitting every 15 minutes. Upon station startup, data may take up to 20 minutes to display on the AWN dashboard. During that time, the multicolor LED status light on the PV power panel will indicate the connection status:

  • Flashing **magenta** (every 10 seconds): Attempting to connect to a cellular network
  • Flashing **green** (every 10 seconds): Normal Operation
  • Flashing **blue** (every 10 seconds): Power Saver mode
  • Flashing **red** (every 10 seconds): Logging mode
  • Flashing **red** (every 20 seconds): Hibernation mode

» If the LED status light is flashing green but your AWN dashboard displays "There's no real-time data yet", click on the devices tab and double check that the station MAC address on AWN matches the actual MAC address of the station. The station MAC address can be found on the label attached to the last page of the manual and on the label attached to the underside of the station, shown in Fig P. If the MAC listed on AWN is incorrect, click on the blue AWN logo under the station name, and then click "delete this device". Then, click "Connect a new device" to repeat registration with the correct MAC address.

Troubleshooting

The KestrelMet 6000 station is shipped with a fully charged battery and the station is designed to maintain normal operation in subfreezing weather. If solar charging is insufficient due to extended snow cover or installation in a shaded location, the station will change operating modes to conserve power as detailed in the station specifications operating mode table.

⚠️ **IMPORTANT:** If the station enters hibernation mode due to a depleted battery, the station must be left turned "on" and placed in direct sunlight to recharge. When the battery is charged sufficiently (typically 1-3 days), the station will switch back to Logging mode, then Normal Operation mode as charging allows. You will receive an email notification when the station returns to Normal Operation mode.

» In winter conditions, the rain gauge will not measure precipitation until the accumulated contents of the bucket have melted and drained through the strainer at the bottom of the bucket.

Replacement of consumable materials (battery):

If the battery must be replaced due to an extended low voltage situation, it can be replaced with a UB445 4V 4.5AH AGM (F1 terminals). Follow these steps:

1. It is advisable to remove the station from the mount and turn it upside down for ease of disassembly and reassembly.
2. Remove the 4 screws on the battery cover.
3. Remove the 2 screws which hold the battery retaining board in place and move the retaining board to the side.
4. Detach the positive and negative leads from the battery terminals.
5. Remove the existing battery and replace it with a new battery.
6. Reattach the positive and negative leads to the respective battery terminals.
7. Replace the retaining board and fasten in place with the 2 screws that were removed.
8. Replace the battery cover and fasten in place with the 4 screws that were removed.

9 Specifications

SENSORS	Accuracy (+/-)	Resolution	Range	Notes
Wind Speed	larger of 5% or 1 mph between 1 to 57 mph	0.1 mph 0.1 knot 0.1m/s 0.1 km/hr	1 to 145 mph 1 to 126 knots 1 to 64.8 m/s 1 to 233.4 km/hr	Wind speed is measured continuously and stored in station memory as a series of 2 second averages. The reported wind speed is the average over the 15 minute logging interval. The highest measured speed during the logging interval is reported as the gust value.
Wind Direction	2°	1°	1° ~ 360°	Wind direction is measured continuously and stored in station memory as a series of 2 second averages. The reported wind direction is the average scalar direction over the 15 minute logging interval. The gust direction is the average scalar direction for the 2 second record corresponding to the gust value.
Temperature	0.45° F 0.25° C	0.1° F 0.1° C	-40° to 140° F -40° to 60° C	Temperature is measured once per minute. The reported temperature is the average value for the 15 minute logging interval. High and low temperatures are based on the 1-minute readings.
Relative Humidity (typical)	1.5% between 0 - 80%	1%	0 to 100%	See fig T for accuracy tolerance over the RH range. Humidity is measured once per minute. The reported humidity is the average value for the 15 minute logging interval. High and low RH are based on the 1-minute readings.
Absolute Pressure	1.5 mbar/hPa 0.044 inHg 1.1 mmHg	0.1 mbar/hPa 0.01 inHg 0.1 mmHg	600 to 1100 mbar/hPa 17.72 to 32.48 inHg 450.0 to 825.1 mmHg	Pressure is measured once per minute. The reported pressure is the average value for the logging interval. High and low pressures are based on the 1-minute readings.
Rain Rate	5% at 2"/hr (5% upgradeable to 2%)	0.01 in/hr 0.1 mm/hr	0 to 7.8 in/hr	Rainfall is measured continuously in 0.2 mm increments (tipping bucket calibration volume)

NOTE: Specifications for optional sensors can be found on the sensor product pages at KestrelMet.com.
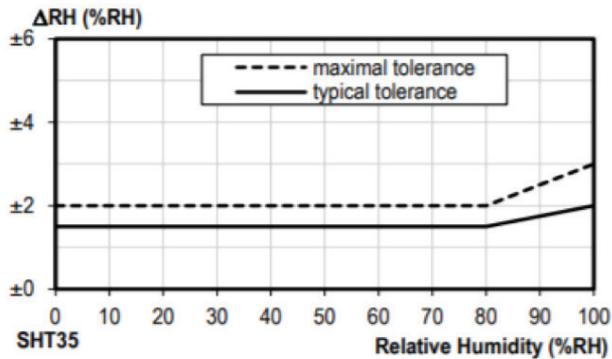
Specifications

Relative Humidity (typical)

ΔRH (%RH)

maximal tolerance
typical tolerance

SHT35   Relative Humidity (%RH)

Figure W

Specifications

SYSTEM

Operating Environment Temperature:	-40° to 140° F (-40° ~ 60°C)
Dimensions:	11"x23"x36" (28 x 58 x 91 cm)
Weight:	8.9 lbs (4.04 kg)
Certifications:	FCC, CE, IC
Data Cache Capacity:	365 Days
Logging Rate:	Every 15 minutes (See sensor specification notes for details)
Cellular Transmission Rate:	Every 15 minutes
AWN Data Storage Rate:	Every 15 min (standard free plan)
Battery Type:	UB445 non-spillable 4V 4.5Ah AGM sealed lead-acid 1A peak, 12 mA typical
Battery Life:	2 to 5 Years typical
Cellular Modem Type:	CAT-M / NB-IoT
Solar Panel Type:	Monocrystalline 7V 2.3 W
Warranty	2 Years

Station Operating Modes	Standard	Power Saver	Logging	Hibernate	Recharge
Battery Status	Battery Charged	Low Battery	Critically Low Battery	Critically Low Battery	Critically Low Battery
Aspirated Sensor Measurement Frequency	1 min	2 mins	5 mins	None	None
Cellular Data Transmission Frequency	15 mins	15 mins	24 hrs	None	None
Panel LED Status Light Color	Green	Blue	Red	Red	None
LED Status Light Blink Frequency	10 sec	10 sec	10 sec	20 sec	None

Product & Safety Information

⚠ **WARNING:** Read and follow these guidelines to reduce the risk of injury or death.

- » Fully read your KestrelMet 6000 user manual to familiarize yourself with the product's features before operating.

- » Failure to operate this product correctly can damage it or produce inaccurate readings.

- » Use good judgement whenever you rely on station readings to make decisions regarding safety, health or property protection.

- » Allow a margin of safety for changing conditions and reading errors (2–3% of readings is recommended).

Be certain your weather station's accuracy has not been compromised by improper installation, contamination or damage. When in doubt, verify your weather station's accuracy against a known good standard for the measurement in question, and contact Kestrel Instruments Technical Support with any questions or concerns.

📌 **NOTICE:** All instructions and associated documents are subject to change at the sole discretion of the manufacturer. For up-to-date product information, visit **kestrelmet.com/support**

Compliance

FCC

KestrelMet 6000 contains approved transceiver modules:

FCC IDs : MCQ-XB3M1, XPY2AGQN4NNN and A8TBM71S2

This product was type-tested and found to comply with the limits for a class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC rules, designed to provide reasonable protection against such interference in residential installation. We make no guarantee that interference won't occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, try correcting the interference in one or more of these ways:

» Reorient the receiving antenna.

» Increase the separation between the equipment and the receiver.

» Connect the equipment to an outlet on a circuit different from the one the receiver is connected to.

» Contact the manufacturer or an experienced radio/television technician for additional help.

To satisfy FCC RF exposure requirements for mobile transmitting devices, a separation distance of 25 cm or more should be maintained between the antenna of this device and persons during device operation. To ensure compliance, operations at closer than this distance are not recommended. The antenna used for this transmitter must not be co-located in conjunction with any other antenna or transmitter.

While the antenna is detachable, the KestrelMet 6000 must only be used with the supplied antenna. Use of an unapproved antenna with regards to compliance and its ramifications will not be the responsibility of the manufacturer.

IC

KestrelMet 6000 contains approved transceiver modules :

IC IDs: 1846A-XB3M1, 8595A-2AGQN4NNN and 12246A-BM71S2

This product was type-tested and found to comply with the limits for a class B computing device in accordance with the specifications in ICES-003 and Part 15 of FCC rules.

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

While the antenna is detachable, the KestrelMet 6000 must only be used with the supplied antenna. Use of an unapproved antenna with regards to compliance and its ramifications will not be the responsibility of the manufacturer.

CAUTION! This equipment is approved for mobile and base station transmitting devices only. Antenna(s) used for this transmitter must be installed to provide a separation distance of at least 25 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

ATTENTION! Cet équipement est approuvé pour la mobile et la station base dispositifs d'émission seulement Antenne(s) utilisé pour cet émetteur doit être installé pour fournir une distance de séparation d'au moins 25 cm à partir de toutes les personnes et ne doit pas être situé ou fonctionner en conjonction avec tout autre antenne ou émetteur.

Compliance

$C\epsilon$ EU Declaration of Conformity

This product was tested and found to comply with EU Council Radio Equipment Directive 2014/53/EU (RED).

EN 61010-1, SAFETY REQUIREMENTS FOR ELECTRICAL EQUIPMENT

EN 55022, Enclosure of Ancillary Equipment

EN 61000-4-3, Radio Frequency Electromagnetic Field

EN 61000-4-2, Electrostatic Discharge

This product contains:

Digi International Modem, Model XB3M1, with a manufacturer

Declaration of Conformity to EU Council Radio Equipment Directive 2014/53/EU (RED).

Microchip Inc Bluetooth Module, Model RN4871, with a manufacturer

Declaration of Conformity to EU Council Radio Equipment Directive 2014/53/EU (RED).

RoHS (Reduction of Hazardous Substances) compliant.

Marked in accordance with the WEEE (Waste Electrical and Electronic Equipment) Directive. **Please do not dispose of the Kestrel batteries in your household trash.** Return to NK, an NK dealer, or a designated recycling center for proper recycling and disposal.

Does not contain greater than >0.1% of the substances of Very High Concern (SVHC) on the REACH European Regulation on the Registration, Evaluation, Authorization and Restriction of Chemicals Candidate List.

CONTACT US AT

www.KestrelMet.com

Techsupport@nkhome.com

(800) 784-4221 Toll-Free North America

(610) 447-1555 Continental US

Proposition 65 Warning

⚠ **WARNING:** This product and/or its included or branded accessories can expose you to chemicals, including lead, lead compounds and phthalate DEHP, which are known to the State of California to cause cancer, and lead and lead compounds, bisphenol A (BPA), and phthalate DnHP, which are known to the State of California to cause birth defects or other reproductive harm. For more information, go to **www.P65Warning.ca.gov.**

More Information

Many of the elements listed under Proposition 65 are commonly found in products in the electronics industry. Although Kestrel Instruments' manufacturing process is "lead-free," it remains possible that small amounts of lead could be found in components or subassemblies. Bisphenol A (BPSA) could be found in plastic housings, lenses, labels or adhesives, and DEHP & DINP (phthalates) could be found in PVC wire coatings of cables, housings, carrying cases, an/or power cords. Because we cannot guarantee that these chemicals are never present, we have elected to place the warning on our products to ensure compliance with California law and our customers' right to know. While we have not attempted to evaluate exposure, we believe that normal consumer use of this product is unlikely to result in exposure that creates a significant risk of harm. For more information visit **kestrelinstruments.com/Prop65** or contact us directly at **techsupport@nkhome.com.**

Warranty

Your **KestrelMet 6000 Cellular Weather Station** from Nielsen-Kellerman is warrantied be free of defects in materials and workmanship for a period of **TWO YEARS** from the date of its first consumer purchase. Nielsen-Kellerman agrees to repair or replace any defective damage due to the product or part when notified within the warranty period without charge.

The following are excluded from warranty coverage: damage due to improper use, abuse, accident and/or lack of reasonable care; improper storage, maintenance or handling (including corrosion); the fixing of any attachment not provided with the product; lightning strike and/or power surge.

Removal/reinstallation charges and any warranty service performed by a non-authorized repair service are also not covered. NK assumes no responsibility for any special, incidental or consequential damages and NK authorizes no other warranty, written or oral.
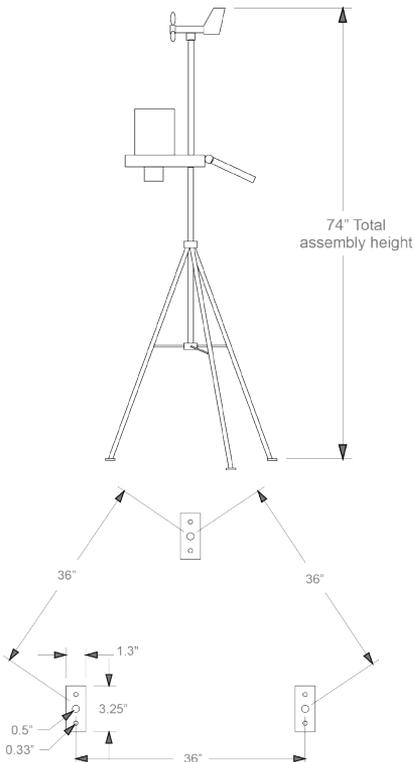
This warranty gives you specific legal rights, and you may have other rights, which vary from state to state. Some states do not allow the exclusion of incidental or consequential damages, and so the above exclusions and limitations may not apply to you.

To return a unit under warranty: Contact Nielsen-Kellerman for Return Authorization.

Make sure equipment is properly packed—preferably in the original box. Damage incurred in shipping is not covered under this warranty.
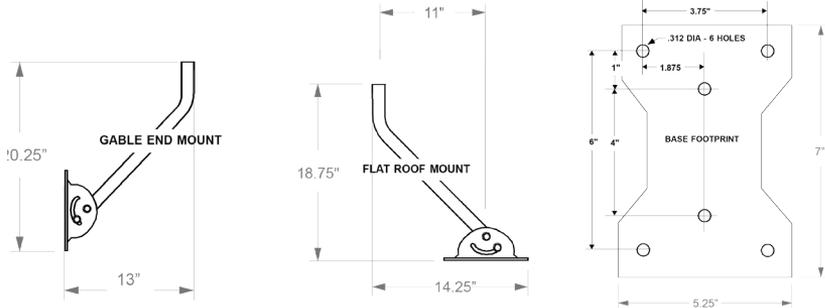
Appendix 1: Tripod Mount

Tripod Mechanical Drawings

74" Total assembly height

36"

36"

1.3"

3.25"

0.5"

0.33"

36"

Appendix 2: Mono Mounts

Mono Mount Mechanical Drawings

GABLE END MOUNT
20.25"
13"

FLAT ROOF MOUNT
11"
18.75"
14.25"

BASE FOOTPRINT
3.75"
.312 DIA - 6 HOLES
1"
1.875
6"
4"
7"
5.25"

Appendix 3: Optional AG Sensors

More Information at www.KestrelMet.com/AG

Appendix 3: Optional AG Sensors

Solar Irradiance Sensor

The solar irradiance sensor comes pre-wired to the station, but the metal bracket needs to be attached to the station base.

In the plastic bag, you'll find two stainless steel Phillips head screws. Use these to attach the solar irradiance sensor bracket to station base. See red arrows in Fig 1.
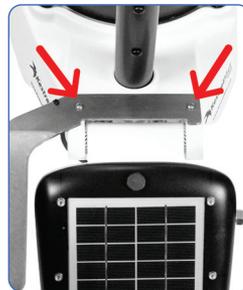

Figure 1

Soil Sensor Array

The soil sensor array (Fig 2) consists of 3 probes, each on a 15' cable. Each probe measures soil water tension using a Watermark sensor and soil temperature. Probes are typically buried at 3 different depths corresponding to the root zone of the target vegetation.

Before connecting the soil sensor array, flip the power switch on the underside of the station to the "off" position. Remove the black protective cap from the silver aux sensor connector on the underside of the station.

Figure 2

Appendix 3: Optional AG Sensors

Soil Sensor Array Connector

Align the ridge on the inside of the station connector with the channel on the soil sensor array connector (see red arrows). Press the two fittings together as you screw the threaded metal coupling together. You should feel detent ridges as the threads are tightened together completely.

A completely tightened fitting may still have some threads showing between the two sides of the coupling, as shown on the far right in Fig 3. Once the coupling is tight, the station can be powered on and will begin transmitting soil temperature and soil water tension data.

NOTE: *Wrenches are not required to achieve a watertight connection.*

The white housing of the soil array sensor can be attached to the lower section of the station mast using the provided zip ties (Fig 4). Take care to attach it so that there is no tension on the cable going to the station or on the cables connecting the soil probes.

Connector from station

Connector from soil sensor array

Figure 3

Figure 4

Appendix 3: Optional AG Sensors

Soil Sensor Array Probe ID

Probe numbers are marked with zip ties as shown in Fig 5. (i.e. The probe with two zip ties will be displayed as Soil Moisture 2 / Soil Temperature 2 on your dashboard) Make a note of the depth for each probe. The sensor names on your **AmbientWeather.net** dashboard can be edited to include the depth (i.e. Soil Moisture 36")
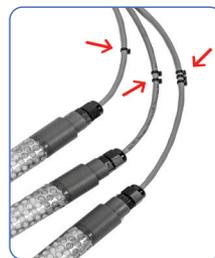

Figure 5

Soil Sensor Array Probe Placement Overview

Plan soil sensor array locations and probe depths according to your application. The recommended references in this manual provide guidance based on soil type, crop type, and irrigation options.

Recommended tools and supplies:

⅞" soil auger or coring tool, ⅜" dowel or rod, bucket, water jug, zip ties

NOTE: *If seasonal sensor removal is required, 1" Sch 40 PVC pipe can be attached to each probe with provided adapters and screws. See red arrows in Fig 6.*

1. Soak probes overnight in irrigation water. Several soak/dry cycles are recommended for new probes.

2. Cut dowel or 1" Sch 40 PVC pipe to desired lengths and mark target depth. If pipe is left in place, it should be capped.

3. Drill a 7/8" hole to the desired depth.

4. Prepare 2-3 cups of a soil slurry (no rocks or organic matter).

5. Pour slurry into hole to a depth of 2-3"

6. Insert soil probe into hole and press into the slurry.

7. Pour remaining slurry into the hole and tamp using the dowel.

Figure 6

Manuals & Websites

AmbientWeather.net/Support

SCAN ME

Informational Videos

SCAN ME

U Of Nebraska Watermark Probe Installation

SCAN ME

MMM Consultants Watermark Probe Installation

SCAN ME

U Of Nebraska Irrigation Scheduling Basics

SCAN ME

U Of Georgia Irrigation Scheduling

Manuals & Websites

The KestrelMet 6000 AG Weather Station helps farmers and operators maximize yields with the minimum required resources. Here you'll find helpful guidance and information regarding best practices in irrigation management.

Watermark installation manual

https://www.irrometer.com/pdf/instruction-manuals/landscape/712%20InstallToolMnl%20web1.pdf

Available Water Conversion Tables for Soil Moisture Monitors

https://waterquality.montana.edu/farm-ranch/irrigation/irrigation-tools/shallow-conversion.html

Irrigation Scheduling Strategies When Using Soil Water Data

https://extensionpubs.unl.edu/publication/9000020403114/irrigation-scheduling-strategies-when-using-soil-water-data/

How to use Watermark sensors for irrigation

https://www.uaex.uada.edu/publications/pdf/FSA57.pdf

Moisture Sensor Agricultural Irrigation Design Manual

https://www.irrometer.com/pdf/supportmaterial/ADG2006.pdf

Soil water tension irrigation criteria for various crops

https://catalog.extension.oregonstate.edu/sites/catalog/files/project/pdf/em8900.pdf

Watermark Granular Matrix Sensor to Measure Soil Matric Potential for Irrigation Management

https://extensionpublications.unl.edu/assets/pdf/ec783.pdf

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