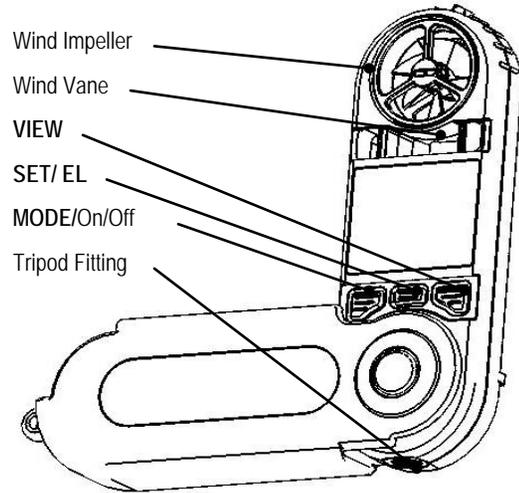


# WindMate® 350 Weather Monitor

## User Manual (Version 11/09)



You now own a sophisticated, precise, and comprehensive weather monitor. Please study the manual to understand all of the unit's features and to maximize its benefits.

### Getting Started

Open your **WindMate®** to 180° as shown on the right. If using a tripod, open it to a 90° angle as shown above to access the tripod fitting at the bottom of the unit.



Press and hold **Mode** Key to turn on. Press and hold **Mode** for 3-4 secs. to turn off. You can turn off the unit in any function. If the unit is idle for 5 minutes, it will auto shut down to preserve battery life. ▶ Your unit can be customized to: deactivate auto shut down or any other functions you do not need, choose memory settings or adjust display contrast. See **Customizing your WindMate® 350**.

## Operating the WindMate® 350

When the unit is turned on for the first time, the default mode is **Time**. Each time the unit is reactivated, it returns to the last function used. Press the **Mode** Key to move to other functions. For **Backlight**, press **SET/EL**.

### Mode Sequence

- Time
- Wind Speed
- Compass (reads vertically)
- Temperature
- Wind Chill
- Humidity
- Wet Bulb
- Dew point
- Comfort Index
- Delta Temperature
- Barometric
- Altitude
- Density Altitude

### Choosing Measurement Units

Pressing and holding the **Set/EL** Key at any mode, (except time, compass and humidity), chooses your preferred measurement unit. Press the **View** Key to select, then press **Set/EL** to save and exit Units Setting. Below is the sequence of measurement units for each mode.

#### Wind Speed

MPH---->KMPH---->MPS---->FPM---->KNT---->BF

Temp. / Wind Chill/ Wet Bulb/ Dew Point/ Comfort Index/ Delta T

°F---->°C

Barometer mbar---->inHg

Altitude / Density Altitude ft---->m

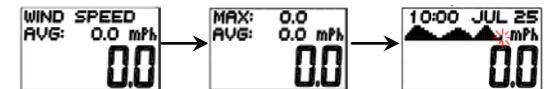
### Bar Graph Display

For best results with any bar graph display, set the low and high limits of the instrument to reflect the range of actual conditions the unit will

experience. In all modes except Time and Compass, press and hold the **Set/EL** key until the current unit of measure is flashing. Press the **Mode** key to see the "Low Limit" of measure the instrument will graph. Press the **View** key to increase the value of the "Low Limit." Holding down the **View** key will cause the increase to take place much faster. If you go past the value you desire, continue to increase the value until it scrolls around back to the number you need. When you have reached the value you need, press the **Mode** key and you will then be able to set the "High Limit" that the instrument will graph in exactly the same way. When you have reached the value you need, press the **Mode** key again and screen will go back to the current unit of measure flashing. Press the **Set/EL** key to save and exit. Changing the "Low Limit" and "High Limit" values of the WM-350 only changes the representation of the history graph. It does not change any of the previously recorded data or have any impact on the data yet to be recorded.

### History and Min/Max Feature

All modes, except Time and Compass, have a Min-Max and a History display option. Your unit is preset for 1-hr increments and 48-hr bar graph. (See **Customizing your WindMate® 350** to change the storage interval.) To change the display option from the normal view press the **View** Key. The diagram below will show you the sequence.



The current view shown in the History is the recorded data of the previous hour. To view the recorded data history previous 2 hours, 3 hours and etc. press the **Set/EL** Key. The recorded data will be displayed in numerical format and at the same time will be indicated in the graph.

## Time

The Time mode will display the following information: complete date, weekday and 12-24 HR format option.

To set the time, press and hold the **Set/EL** Key for 3 sec. To adjust the current setting, press the **View** Key. To go to the next option, press the **Mode** Key. To exit and save the setting, press the **Set/EL** Key.

## Wind Speed

In the wind speed mode, you can take real time wind speed measurements. Press **View** to display Max-Avg, press **View** again to display bar graph history. Press **Set/EL** to view each increment. Press **Mode** to go to next function.

When taking wind measurements by hand, be sure to keep the unit at an arm's length from the body with the display facing towards you, so the wind enters the impeller through the rear. Use the wind vane to orient the meter so you are on the wind's axis. This will give you the most accurate measurement.

To get precise readings on a given vector, use our optional wind tunnel with the unit mounted on a tripod.

**CAUTION:** The **WindMate®** is very accurate at low and mid-range air speeds. Consistent uses at very high speeds, such as from a car, will damage the impeller's bearing and reduce accuracy. See below for impeller replacement.

## Compass (hold, read, set vertically)

The compass feature can compute the cross and head wind. Align the unit to the course direction, press and hold the **View** Key to mark the course direction. Then point the unit directly into the wind to mark wind direction, press and hold the **View** key. The unit will display cross

wind. Press **View** to display head wind. The head wind may indicate a minus(-) or plus(+). Minus will indicate the wind is coming from the back. Plus will indicate wind coming from the front. Press **Mode** to return to compass.

## Compass Calibration for Declination & Deviation

### Compass Declination

Declination/Variation is the difference between magnetic N and true N. Depending on where you are on the earth, the angle of declination will be different—in some locations, the geographic and magnetic poles are aligned so declination is minimal, but from other spots, the angle between the two poles is large. To adjust your compass, get declination information from a GPS or [www.ngdc.noaa.gov/geomagmodels/struts/calcDeclination](http://www.ngdc.noaa.gov/geomagmodels/struts/calcDeclination) .

Go to compass mode and hold **Set/EL** Key till display shows HOLD TO SET. Use the **View** Key to choose E or W. Then press **Mode** and degrees will blink. Use **View** to change the degrees. Press **Set/EL** to lock in values.

**Compass Deviation** (only necessary if the compass is near ferrous metals)

In compass mode press and hold **Set/EL** until you see HOLD TO SET. You will see the declination setting. Press **Mode** twice. Screen will say Calibrate Compass? YES. Press **Mode**. (If you do not need to calibrate, press **View** for NO. Press **Set/EL**.) Hold the unit and turn around slowly twice, 15 sec per each ¼ turn. When calibration is complete, you will see 11 dots at the top of the screen. Press **Set/EL** and

the display shows "END." If the display shows "ERR" redo the calibration.

## Using

### Temperature/Windchill Humidity/WetBulb/Dewpoint/DeltaT\*\* Density Altitude\*\*\*

Choose the function you wish. Press **View** to display Min/Max. Press **View** to display history bar graph. Press **Set/EL** to view each increment. Press **View** to return to normal function or press **Mode** to go to the next.

\*\***DeltaT** is the difference between wet & dry bulb temperature, used in agricultural spraying.

\*\*\***Density Altitude** is pressure altitude adjusted for air temp and humidity, used for aircraft, formulating race car fuel mix, & very long-range shooting.

### Comfort Index

Accuweather.com@Comfort Index™ is the effect of temp, wind speed, relative humidity & sun intensity on the human body. You can adjust the formula based on sun intensity. The solar factor has range from 0 to 3.0. Full sun = 3.0. Heavy clouds = 0. The unit is preset for 1.5, medium sun intensity.

To change, press and hold the **Set/EL** Key and press the **Mode** Key again to go into solar factor. Press **View** to select the desired value, then press the **Set/EL** Key to confirm and exit the setting mode.

### Barometer and Altimeter

#### *Understanding Barometric Pressure*

High or low air pressure caused by weather, and air pressure caused by elevation affect the barometer's reading. No matter what the weather is doing, air pressure decreases with height. Actual or STATION pressure is the true

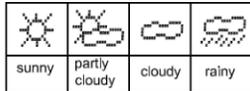


air pressure at a fixed point. However, the weather service gives us the barometric pressure reading, which adjusts for elevation. Example: In Denver, an average barometer reading will be 29.90, however, the STATION (uncorrected) pressure might be 26.10 because of Denver's elevation. The barometric pressure reading gives us a frame of reference within parameters we understand.

## Barometric Pressure

The barometric pressure should be calibrated for first time use, after battery replacement, or if the altitude of your position changes.

Calibrate the weather forecast icon: press and hold the **Set/EL** Key for 3 sec while in the normal Barometer mode or Min-Max mode. Select the preferred measurement unit by pressing the **View** Key. Press **Mode** Key and select the weather icon most appropriate for your **current** weather condition, using the **View** Key. **Note:** If you recalibrate because of an altitude change, you don't need to repeat this part of the setup.



To calibrate the barometric pressure, you can either: **a)** enter your correct altitude in the Altitude function (See **Altitude**), or **b)** enter the correct barometric pressure for your location, if available.\*\* In Barometer Mode, press and hold **Set/EL** Key for 3 sec. Scroll till you see the pressure displayed. Press **Mode** Key. Enter your current barometric pressure by pressing the **View** Key. Press **Mode** Key to go to the next digit. Press the **Set/EL** Key to save and exit the Calibration settings.

\*\* You can use the barometer reading from your local weather service. Weather cells can be small and pressure different within a local area, but for initial setup, the weather service pressure figure should be fine.

The instrument will display air pressure either as uncorrected STATION pressure or BAROMETER for barometric pressure (corrected for elevation). The BAROMETER reading is what most of us are used to.

## Using the Barometer

In Barometer mode, press **View** to display Min/Max. Press **View** again to show pressure and bar graph. If you want to review pressure history, press **Set/EL** to review each past increment. Press **View** again to see 6-12hr weather forecast. Press **View** again to see the current BAROMETER reading. Press **Mode** to go to the next function.

## Storm Warning Alarm

If there is a 6-millibar change in air pressure over a 3-hr period, the Storm Alarm will sound "BEEP BEEP BEEP" every 15 minutes and an icon will blink on the screen. This will also occur if you experience dramatic changes in elevation. See **Customizing your WindMate® 350** to deactivate this feature.



## Altitude (Altimeter)

The Altimeter must be calibrated for first time use and after a battery replacement. If you stay in one location, additional calibration is not required. If you change locations (hiking, climbing) and use the altimeter, you must recalibrate at known benchmarks to maintain accuracy. The altimeter readings are also affected by any weather-related air pressure changes.\*\*

To calibrate the Altimeter press and hold the **Set/EL** Key for 3 sec while in normal Altimeter

mode or Min-Max mode. Select the preferred unit of measurement by pressing the **View** Key and then press the **Mode** Key to confirm. Enter the current altitude by pressing the **View** Key then press **Mode** Key to go to the next digit. Press **Set/EL** to save and exit the Calibration settings. This calibration requires you to enter a known altitude for your location.

## \*\* Understanding the Altimeter

The WM-350 altimeter functions via barometric pressure changes, unlike a GPS, which reads the GEOMETRIC altitude, relative to a sea-level baseline that is defined in the WGS84 coordinate system. GPS altitude is unaffected by atmospheric conditions. Airplane altimeters use the barometric measurement system, but are constantly updated in flight. To compensate for weather changes, your altimeter must be calibrated using a known altitude. If you are climbing and want accurate data, you may need to re-calibrate frequently at known elevations.

## Using the Altimeter

In Altimeter mode, press **View** to display Min/Max. Press **View** again to show Altitude bar graph. To review history, press **Set/EL** to review each increment. Press **View** to return to normal Altimeter mode or press **Mode** to go to the next function.

## Customizing your WindMate® 350

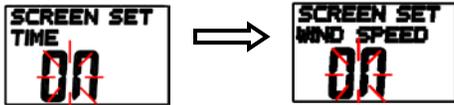
You can customize your unit by turning off unnecessary modes for your application, choosing memory settings, adjusting display contrast, etc.

Turn on the unit then press and hold **Mode** key until you see this screen flashing. (**This will take about 7-8 secs.**) Release the **Mode** Key when this is displayed.



## Screen Set Menu

To navigate the Screen Set Menu press the **Set/EL** Key to go to the next screen and set as shown:



To turn on or off a mode, press the **View** Key.

To save and exit the screen set menu press the **Mode** Key, this will take you to the Memory Settings.

## Memory Settings

In the Memory Settings, you can:

- Set **Storage Rate**, which changes the intervals for recording and saving data
- Turn on or off the **Memory Over-write** option
- Clear Memory** and view the **Memory Status**
- Deactivate Auto Shut-off & Storm Alarm**
- Change Display Contrast.**

To navigate the Memory Setting press the **Set/EL** Key.

**Storage Rate** has the following fixed options: 5 min, 10 min, 20 min, 30 min, 1 hr, 2 hr, 6 hr, and 12 hr. The default setting is 1 hr.



To select Storage Rate press the **View** Key. **Note:** The bar graph always shows 48 increments. Ex. If you keep the 1 hr increment, the bar graph shows a 48-hr history. If you change to a 2-hr increment, you will have a 96-hr history; 12-hr increment will give you 2 measurements per day for 24 days.

**Memory Overwrite** option can be turned on or off. If this option is turned on, the unit will automatically over-write old data after the memory is full. Press the **View** Key to turn on or off this option.

**Clear All Logs** option allows you to clear and erase all old data, so you have a new history. To select yes or no, press the **View** Key. The selected option will take effect after pressing **Mode** Key. You can also reset the Min/Max/Avg choices for each function.

**Memory Status.** The amount of data saved and unused memory is measured in hours. The Memory Status shows you the amount of saved data & unused memory as shown on the right. Press **Mode** Key to save. This will take you to Auto-Shutoff option.



## Deactivate Auto Shut-Off

The Auto Shut-Off feature helps preserve the battery. With Auto Shutoff deactivated, the unit will work until the memory is full. This feature can be switched on or off by pressing the **View** Key. To save settings and go to the next option press the **Mode** Key.

## Deactivate Storm Warning Alarm

To turn off the alarm (or reactivate), press the **View** Key. To save and go to the next option, press the **Mode** Key.

## Change Display Contrast

Display text contrast goes from light (0) to dark (15). The unit is preset to 8. To darken or lighten, press the **View** Key. To save and exit to Time mode press the **Mode** Key.

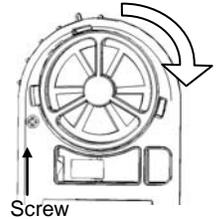
## Replacing the Battery

Because this unit has a capacitor, it will hold your settings during a battery change, as long as it is within several minutes. The unit uses a CR

2032 Lithium battery. Turn the unit to access the battery cover. Turn it as indicated by the arrow using a coin. Insert the battery into the unit. The printed side faces you. Close the battery door using the coin.

## Replacing the Wind Impeller

Contact WeatherHawk or your dealer for parts to replace the impeller.



### Impeller Replacement:

Turn the unit so the back faces you. Remove the screw cover plug & loosen the screw. Turn the wind impeller clockwise and pull it from the unit. Insert the new wind impeller. Turn it in a counter-clockwise direction and tighten the screw. Replace the screw cover plug.

\* \* \* \* \*

The **WindMate® 350** has a 2-year warranty. Please keep your invoice or receipt. Contact WeatherHawk for questions or service. 435-750-1840, M-F, 8:00 – 5:00, USA Mountain Standard Time, [www.weatherhawk.com](http://www.weatherhawk.com)

Additional manuals and instrument specifications can be accessed from our website at [www.weatherhawk.com](http://www.weatherhawk.com).

### ACCURACY:

- Wind speed +/- 3%
- Compass +/- 2°
- Wind Direction +/- 2°
- Temperature +/- 1.8° F; 1° C
- Relative Humidity +/- 3%
- Wet Bulb & Dewpoint +/- 3.6° F; 2° C
- Barometer +/- .05 inHg; 1.5 hPa
- Altimeter +/- 50 Ft; 15 m
- Density Altitude +/- 246 Ft; 75 m

## Key Matrix

Mode	Key		
	Mode	Set /EL	View
Time	Change mode Hold to turn on or off	Light Hold to enter Time Setting Mode	-----
Wind Speed	Change mode Hold to turn on or off	Hold to enter unit settings	Change view
Compass	Change mode Hold to turn on or off	Hold to enter Compass Calibration	Hold to mark direction
Crosswind	Change mode Hold to turn on or off	Hold to enter Compass Calibration	Headwind
Headwind	Change mode Hold to turn on or off	Hold to enter Compass Calibration	Crosswind
Compass Calibration	Change mode Hold to turn on or off	Exit compass calibration	-----
Temperature	Change mode Hold to turn on or off	Hold to enter unit settings	Change view
Wind Chill	Change mode Hold to turn on or off	Hold to enter unit settings	Change view
Humidity	Change mode Hold to turn on or off	View history	Change view
Wet Bulb	Change mode Hold to turn on or off	Hold to enter unit settings	Change view
Dew Point	Change mode Hold to turn on or off	Hold to enter unit settings	Change view
Comfort Index	Change mode Hold to turn on or off	Hold to enter Comfort Index setting	Change view

Comfort Index Setting	-----	Enter Solar Factor	Advance
Solar Factor	Change mode Hold to turn on or off	Exit Solar Factor	Advance
Delta T	Change mode Hold to turn on or off	Hold to enter unit settings	Change view
Barometer	Change mode Hold to turn on or off	Hold to enter settings	Change view
Altitude	Change mode Hold to turn on or off	Hold to enter settings	Change view
Density Altitude	Change mode Hold to turn on or off	Hold to enter unit settings	Change view
Unit Setting	-----	Exit Unit Setting mode	Advance
Settings	Next	Exit Settings	Advance