

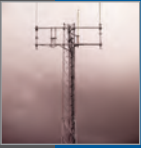


Actual  
Size

## WX Series Ultrasonic WeatherStation® Instruments

AIRMAR's best-in-class, all-in-one solution  
for real-time, site-specific weather information

WX Series



## Delivering an Accurate, Affordable, All-in-One Unit for Many Industries

Whether you are trying to improve the efficiency for sprayer applications or monitor maximum gust conditions, the WX Series Ultrasonic WeatherStation® Instruments meet a growing need for real-time, site-specific weather information. These accurate units offer weather specific data to help organizations monitor weather conditions on-site or in remote locations.

These all-in-one weather sensors measure apparent wind speed and direction, barometric pressure, air temperature, relative humidity, dew point and wind chill temperature. With the optional internal compass and GPS (available in the 150WX model), true wind speed and direction can also be calculated. The UV stabilized, compact housing is fully waterproof and resistant to chemicals and sunlight.

These new units offer a truly best-in-class solution at a better price point than any other weather monitoring system on the market today.

## Providing the Best-in-Class Solution at a Lower Price

### Key Features

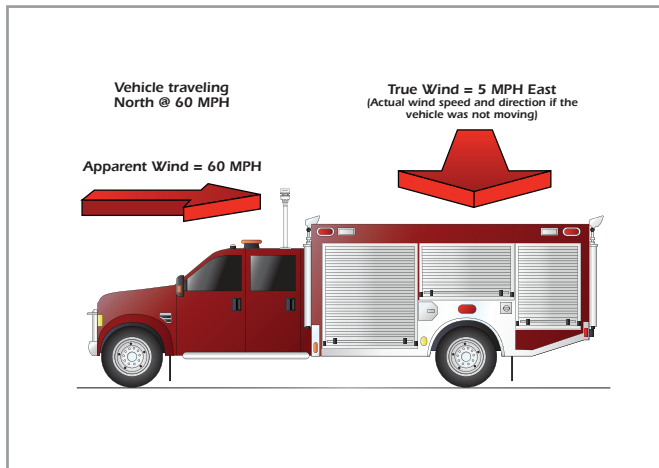
- The only WeatherStation that combines up to seven sensors, all with no moving parts, in one compact unit to:
  - improve reliability for superior accuracy and longevity in the field
  - offer true and apparent wind speeds (without additional sensors) with improved wind resolution from 0.5 knots to 0.1 knots
- Other weather stations would take at least three separate sensors to achieve all of the weather data Airmar WeatherStations provide.
- Wind readings are not affected by the common problems known in mechanical anemometers and weather measuring devices like bearing wear, salt and dirt build-up, or bird perching, which can all result in failure or data inaccuracy.
- Each unit is factory calibrated in our wind-tunnel testing lab prior to shipping.
- For a low-cost, the units are easy-to-install either permanently, or as a portable system. They can be installed on a standard pole with 1"-14 UNS or 3/4" NPT threads.
- IPX6 water proof rated.
- Includes a removeable humidity sensor that is serviceable in the field and IPX4 water proof rated.
- Offers a new power supply featuring a 50% reduction in current draw for use in remote locations that utilize solar or battery power.
- Wider operating voltage range of 9-40 VDC.
- Includes adjustable unfiltered wind data, available to monitor maximum gust conditions.
- Provides output via a single cable (various lengths available) for power and either RS232 (NMEA 0183) or RS422 (NMEA 0183) and CAN BUS (NMEA 2000®) data interface.
- WeatherCaster™ PC Software included for viewing and customizing data sentences.

# Understanding True and Apparent Wind

Virtually all mechanical and ultrasonic anemometers report apparent wind speed and direction. The Airmar WX Series is unique because it calculates both true and apparent wind speed and direction. These wind readings are the same if the unit is mounted in a fixed location. However, if the WX Series is mounted on a moving vehicle, the apparent wind is the wind you would feel on your hand if you held it out the window while going down the highway. Since the WX Series has a built in GPS

and compass, it calculates the true wind based upon the apparent wind, speed of the vehicle, and compass heading.

True wind information on hazardous response vehicles can also prove to be very valuable. When enroute to an emergency situation, responders can use the true wind readings to predict wind conditions at the disaster site before they even arrive, giving vital information for planning operations and staging apparatus.

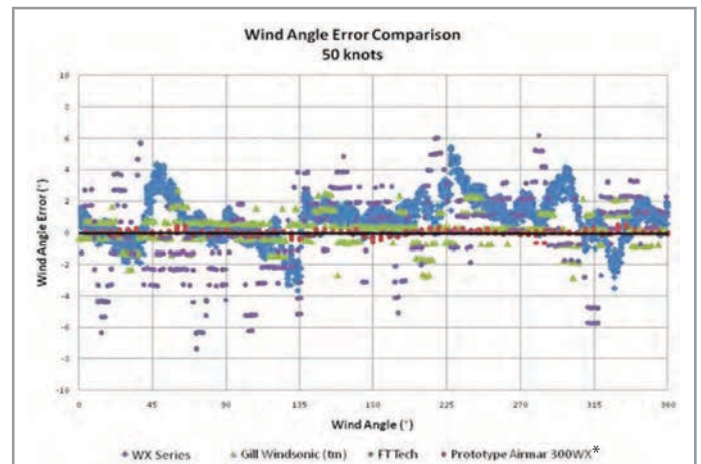
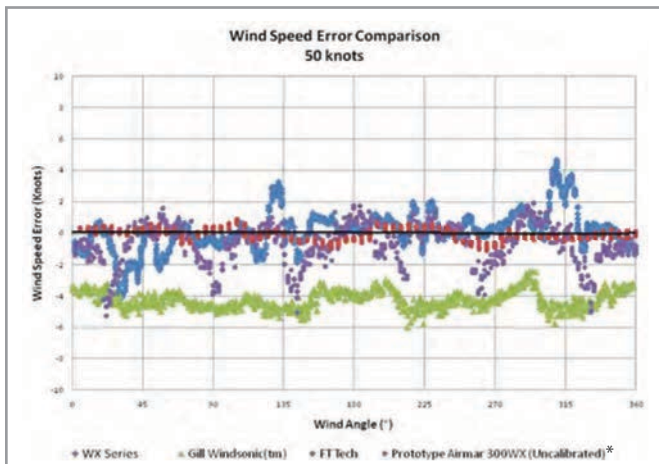


Airmar's WX Series WeatherStations are the only all-in-one unit to offer true and apparent wind speeds without additional sensors.



Each WeatherStation Instrument is factory calibrated in a wind tunnel at our state-of-the-art facility located in Milford, New Hampshire, USA.

## Performing Above and Beyond Competitive Products on the Market



# Offering Many Product Models to Satisfy Multiple Weather Needs

## Apparent Wind Models

Recommended for Stationary Applications

### 100WX

- Apparent wind speed and direction
- Ultrasonic wind readings up to 90 MPH/78 KTS (40 m/s)
- Barometric pressure
- Air temperature
- Calculated wind chill temperature
- Output options include:
  - NMEA 0183 (RS422)
  - NMEA 0183 (RS232)

### 110WX

Includes all 100WX base model features, plus:

- Optional field-serviceable relative humidity
  - Calculated dew point
  - Calculated heat index
- Optional heater and upper ring
- Output options include:
  - RS422/CAN BUS
  - RS232/CAN BUS



## WeatherCaster™ Software

Included with all of the WX Series WeatherStation models, AIRMAR's WeatherCaster™ Software puts your own personal weatherman on your PC 24 hours a day. Available with analog and digital weather information, this software is easy-to-use, customizable to your preferred settings, and allows for plug and play connectivity.



## Apparent and True Wind Models

Recommended for Moving Vehicle Applications

### 150WX

Includes all 110WX model features, plus:

- True wind speed and direction
- 10 Hz GPS (COG/SOG/Position)
- Two-axis solid state compass
- Three-axis accelerometer for pitch and roll
- Output options include:
  - RS422/CAN BUS
  - RS232/CAN BUS

### 200WX

Includes all 150WX model features, plus:

- Three-axis solid-state compass with dynamic stabilization\*
  - Better than 1° static compass accuracy
  - Best-in-class 2° dynamic compass accuracy
- Three-axis rate gyros provide rate-of-turn data
- Best-in-class pitch and roll accuracy
- Output options include:
  - RS422/CAN BUS
  - RS232/CAN BUS

\* Patent pending



# Achieving Best-in-Class Product Specifications

## SPECIFICATIONS

### Wind Speed Range:

— 0 knots to 78 knots (0 MPH to 90 MPH, 0 m/s to 40 m/s)

### Wind Speed Resolution:

— 0.1 knot (0.1 MPH, 0.1 m/s)

### Wind Speed Accuracy @ 0°C to 55°C (32°F to 131°F), no precipitation\*:

— Low Wind Speeds:

▪ 0-10 knots; 1 knot RMS +10% of reading

(0 MPH to 11.5 MPH; 1.1 MPH +10% of reading)

(0 m/s to 5 m/s; 0.5 m/s +10% of reading)

— High Wind Speeds:

▪ 10-78 knots; 2 knots RMS or 5%, whichever is greater

(11.5 MPH to 90 MPH; 2.3 MPH or 5%, whichever is greater)

(5 m/s to 40 m/s; 1 m/s or 5%, whichever is greater)

### Wind Speed Accuracy in wet conditions\*\*:

— 5 knots RMS (5.7 MPH RMS, 2.5 m/s RMS)

### Wind Direction Range: 0° to 360°

### Wind Direction Resolution: 0.1°

### Wind Direction Accuracy @ 0°C to 55°C (32°F to 131°F), no precipitation\*:

— Low Wind Speeds (5° RMS typical):

▪ 4-10 knots (4.6 MPH to 11.5 MPH, 2 m/s to 5 m/s)

— High Wind Speeds (2° RMS typical):

▪ >10 knots (>11.5 MPH, >5 m/s)

### Wind Direction Accuracy in wet conditions\*\* (8° RMS Typical):

>8 knots (>9.2 MPH, >4 m/s)

### Compass Accuracy:

— 1° RMS when level—(150WX only)

— 1° static heading accuracy; 2° dynamic heading accuracy—(200WX only)

### Pitch and Roll Range / Accuracy: ±50° / <1°—(150WX & 200WX)

### Air Temperature Range: -40°C to 55°C (-40°F to 131°F)

### Air Temperature Resolution: 0.1°C (0.1°F)

### Air Temperature Accuracy:

±1°C (±1.8°F)\* @ >4 knots wind (>4.6 MPH wind) (>2 m/s wind)

### Barometric Pressure Range:

300 mbar to 1100 mbar (24 inHg to 33 inHg, 800 hPa to 1100 hPa)

### Barometric Pressure Resolution: 0.1 mbar (0.029 inHg, 0.1 hPa)

### Barometric Pressure Accuracy:

±1 mbar (±0.029 inHg, ±1 hPa) when altitude correction is available

### Relative Humidity Range: 10% to 95% RH—(110WX, 150WX & 200WX)

### Relative Humidity Accuracy\*: ±4% units RH—(110WX, 150WX & 200WX)

### GPS Position Accuracy:

3 m (10') with WAAS/EGNOS (95% of the time, SA off)—(150WX & 200WX)

### Operating Temperature Range: -25°C to 55°C (-13°F to 131°F)

### Supply Voltage: 9 VDC to 40 VDC

### Supply Current (@ 12 VDC):

— <500mW (<40 mA) —100WX

— <600mW (<50 mA) —110WX

— <850mW (<70 mA) —150WX

— <1.8W (<90 mA) —200WX

### Weight: 300 grams (0.8 lb)

### Communication Interface: RS232 or RS422 & CAN

### Mounting Thread Size on Base: 1"-14 UNS or 3/4" NPT

### Certifications and Standards (Pending):

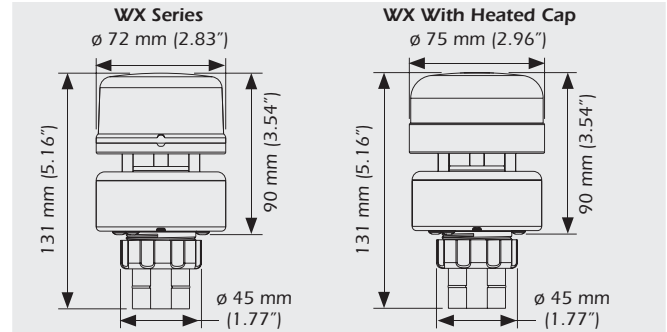
CE, IPX6 (Relative Humidity/IPX4), RoHS, IEC61000-4-2, IEC60945

RMS—Root Mean Square, LEN—Load Equivalency Number  
Humidity and temperature readings compared to Vaisala® Instruments

\*When the wind speed is less than 2 m/s (4.6 MPH) and/or air temperature is below 0°C (32°F), wind, temperature, and relative humidity readings will be less accurate.

\*\*Wet conditions include moisture, rain, frost, dew, snow, ice and/or sea spray in the wind channel.

## DIMENSIONS



## DATA OUTPUT PROTOCOL

### RS422 (NMEA 0183) Sentence Structure

\$GPDTM ..... RS422 Datum Reference  
\$GPGGA ..... GPS Fix Data  
\$GPGLL ..... Geographic Position—Latitude and Longitude  
\$GPGSA ..... GNSS DOP and Active Satellite  
\$GPGSV ..... Satellites in View  
\$GPRMC ..... Recommended Minimum GNSS  
\$GPVTG ..... COG and SOG  
\$GPZDA ..... Time and Date  
\$HCHDG ..... Heading, Deviation, and Variation  
\$HCHDT ..... True Heading  
\$HCTHS ..... True Heading and Status  
\$TIROT ..... Rate of Turn  
\$WIMDA ..... Meteorological Composite  
\$WIMWD ..... Wind Direction and Speed  
\$WIMWV ..... Wind Speed and Angle  
\$WIMWR ..... Relative Wind Direction and Speed  
\$WIMWT ..... True Wind Direction and Speed  
\$YXXDR ..... Transducer Measurements

### CAN (NMEA 2000®) Output Message Structure

59392 ..... ISO Acknowledgement  
060928 ..... ISO Address Claim  
126208 ..... Acknowledge Group Function  
126464 ..... PGN List  
126992 ..... System Time  
126996 ..... Product Information  
126998 ..... Configuration Information  
127250 ..... Vessel Heading  
127251 ..... Rate of Turn  
127257 ..... Attitude  
127258 ..... Magnetic Variation  
129025 ..... Position and Rapid Update  
129026 ..... COG and SOG, Rapid Update  
129029 ..... GNSS Position Data  
129033 ..... Time and Date  
129044 ..... Datum  
129538 ..... GNSS Control Status  
129539 ..... GNSS DOPs  
129540 ..... GNSS Sats in View  
130306 ..... Wind Data  
130310 ..... Environmental Parameters  
130311 ..... Environmental Parameters  
130312 ..... Temperature  
130313 ..... Humidity  
130314 ..... Actual Pressure  
130323 ..... Meteorological Station Data



Tan housing optional





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## About Airmar Technology

Airmar Technology Corporation is a world leader in the design and manufacture of ultrasonic sensor technology for marine and industrial applications. The product line includes advanced ultrasonic transducers, flow sensors, WeatherStation® instruments, and electronic compasses used for a wide variety of applications including fishing, navigation, meteorology, survey, level measurement, process control, and proximity sensing. Established in 1982, Airmar's headquarters are located in Milford, New Hampshire, with distribution offices in Lake City, South Carolina and Saint Malo, France.



*Sensing Technology*

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WX Series 6p

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