WX Ultrasonic WeatherStation® Instruments

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

Actual Size

Delivering a Compact, Affordable Instrument for Harsh Weather Environments

Available Heater Models: 120WXH, 220WXH

The WXH models have been carefully designed with a sophisticated heating system, for operation in ice-prone areas both onshore and offshore.

Its compact size, robust construction, and no moving parts provide many years of reliable service despite the harsh weather conditions associated with many land and marine applications.

The WXH models are designed, developed and manufactured to meet a growing need for real-time, site specific weather information.

FEATURES

- Model 120WXH – Measures apparent wind speed and angle, barometric pressure, air temperature and wind chill temperature
- Model 220WXH – Includes all of the features of the 120WXH and, with the internal compass and GPS, true wind speed and direction can also be calculated
- UV stabilized, compact housing
- Automatic and user controlled heater operation

AIRMAR® TECHNOLOGY CORPORATION

Sensing Technology

Product Models to Satisfy Multiple Weather Needs

	120WXH Apparent Wind Model	220WXH Apparent & True Wind Model
	Recommended for Stationary Applications	**Recommended for Moving Vehicle Applications**
Apparent wind speed and angle	✓	✓
True wind speed and direction		✓
Barometric Pressure	✓	✓
Air temperature plus calculated wind chill	✓	✓
Heater	✓	✓
10 Hz GPS (Position, COG, SOG)		✓
Three-axis solid-state compass with dynamic stabilization: Better than 1° static compass accuracy Best-in-class 2° dynamic compass accuracy		✓
Three-axis accelerometer for pitch and roll		✓
Three-axis rate gyros provide rate-of-turn data		✓
Best-in-class pitch and roll accuracy		✓
Output options include: NMEA 0183 (RS422) NMEA 0183 (RS232)	✓	✓

Now available on iTunes — OnSiteWX
The innovative App for real-time weather data!

WeatherCaster™ Software

Developer Assistance

- Enable/disable functionality
- Optimize communications bandwidth NMEA 0183 (RS232, RS422)
- Change sampling rate (output interval)

Field Installation Assistance

- Enable/disable functionality
- Sensor orientation
- Compass calibration
- Temperature offset
- Select specific device on a NMEA2000® network
- Alarms for wind speed and barometric pressure
- Altitude offset
- More accurate GPS position in 2D mode
- More accurate BP reading

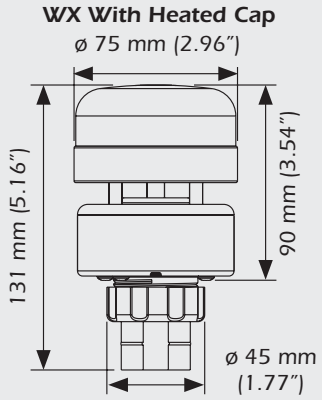
Achieving Best-in-Class Product Specifications

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; 1.1MPH + 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° static heading accuracy; 2° dynamic heading accuracy—220WXH only
Pitch and Roll Range / Accuracy: ±50° / <1°—220WXH
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:
±1.1°C (±2°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
GPS Position Accuracy:
3 m (10') with WAAS/EGNOS (95% of the time)—220WXH
Operating Temperature Range: -25°C to 55°C (-13°F to 131°F)
Heater Operating Temperature Range: -40°C to 55°C
Heater cycles on when sensor reaches 1°C
Supply Voltage: 12 VDC to 24 VDC
Heater Supply Voltage: 24 VDC
Supply Current (@ 24 VDC):
— (<42 mA) <1.0W —120WXH
— (<85 mA) <2.0W —220WXH
Heater Supply Current (@ 24 VDC):
— (2.5 A) <60W
Weight: 300 grams (0.8 lb)
Communication Interface: NMEA 0183 (RS422 or RS232)
Mounting Thread Size on Base: Standard 1"-14 UNS (3/4" NPT optional)
Certifications and Standards:
CE, IPX6, RoHS, IEC61000-4-2, IEC60945

RMS—Root Mean Square
***When the wind speed is less than 2 m/s (4.6 MPH) and/or air temperature is below 0°C (32°F), wind, and temperature readings will be less accurate.**
****Wet conditions include moisture, rain, frost, dew, snow, ice and/or sea spray in the wind channel.**
*****Temperature reports invalid during heater operation.**

DIMENSIONS



DATA OUTPUT PROTOCOL

NMEA 0183 Sentence Structure
$GPDTM..... GPS 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

PART NUMBERS

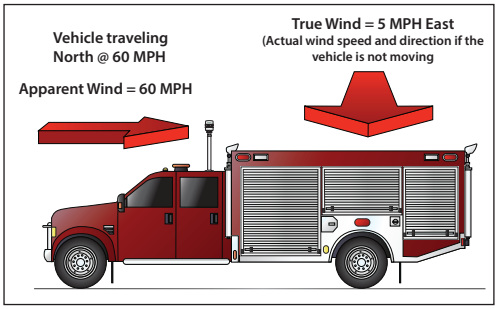
120WXH 44-852-1-01, NMEA 0183 (RS422)
120WXH: 44-851-1-01, NMEA 0183 (RS232)
220WXH: 44-856-1-01, NMEA 0183 (RS422)
220WXH: 44-859-1-01, NMEA 0183 (RS232)

[1] Relative Humidity (RH) not available on heater models
[2] Cables sold separately
[3] Heater requires 24VDC

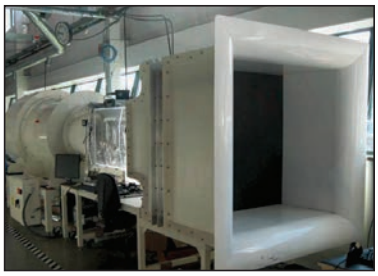
Understanding True and Apparent Wind

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 is significant for numerous applications on hazardous response vehicles. True wind speed and direction is also mission-critical. When en route to an emergency situation, first 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.

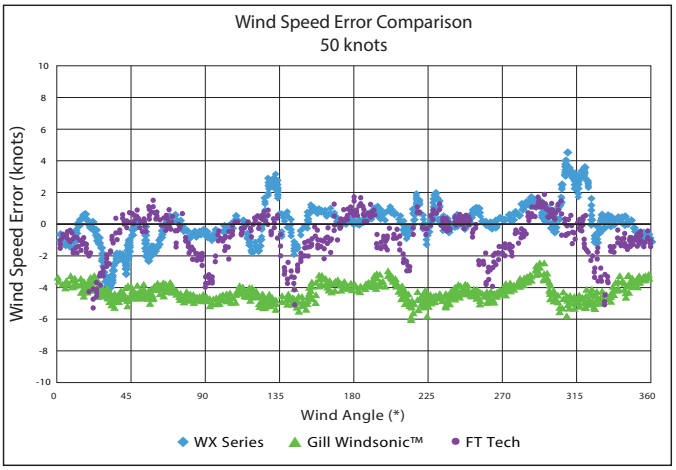


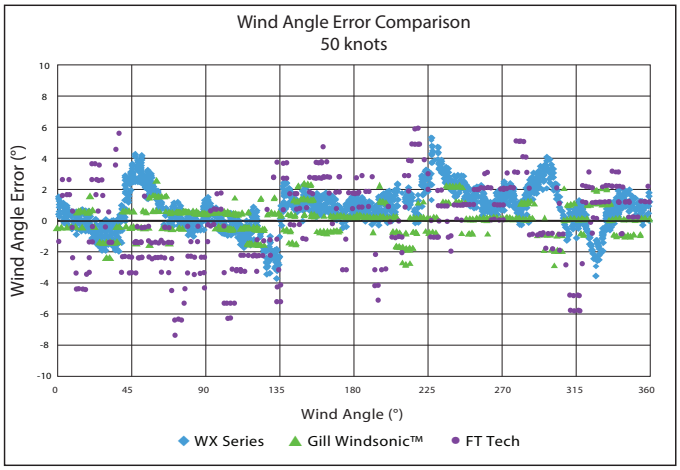
Airmar's WX Series products are the only all-in-one unit to offer true and apparent wind speeds without additional sensors.



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





ISO CERTIFIED CE MADE IN THE USA

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AIRMAR® TECHNOLOGY CORPORATION
Sensing Technology

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