



WX Series

WX Ultrasonic WeatherStation® Instruments for Marine Applications

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

Available Models: 120WX, 220WX

From racing and cruising sailboats to yachting and commercial fishing, Airmar has WeatherStation® products specifically designed for your marine application.

The WX Series WeatherStation instruments meet a growing need for real-time, site-specific weather information. For applications where theoretical and apparent wind are important, the 220WX is recommended and includes a 10Hz GPS, three-axis solid-state compass, rate gyro and tilt sensors. This model features configurable NMEA 0183 and NMEA2000® digital data outputs, providing unparalleled versatility for all your weather monitoring needs.

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



Actual
Size

FEATURES

- WeatherStation® instruments combine up to seven sensors, all with no moving parts, in one compact unit
- 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
- 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 waterproof rating (units with the relative humidity option added are IPX4 waterproof rated)
- Optional heater model available for colder climates under 1° C
- Operating voltage range of 12-24 VDC

Product Models to Satisfy Multiple Weather Needs



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



120WX



220WX

	Apparent Wind Model	Apparent & Theoretical Wind Model
	Recommended for Stationary Applications	Recommended for Moving Vessel Applications
Apparent wind speed and angle	✓	✓
Theoretical wind speed and direction		✓
Barometric Pressure	✓	✓
IPX6 waterproof rating	✓	✓
Air temperature plus calculated wind chill	✓	✓
Internal GPS position, speed over ground, course over ground		✓
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		✓
Optional field-serviceable relative humidity Calculated dew point Calculated heat index	✓	✓
Optional heater and upper ring	✓	✓
Output options include: NMEA 0183 NMEA2000®	✓	✓

WeatherCaster™ Software

Developer Assistance

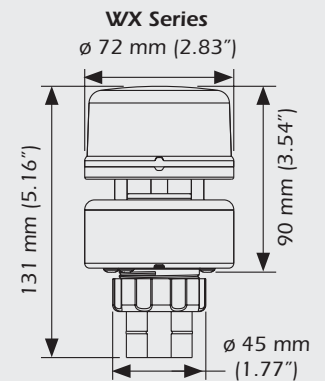
- Enable/disable functionality
- Optimize communications bandwidth
NMEA 0183 (RS232, RS422)
- Change sampling rate (output interval)



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

DIMENSIONS



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—220WX only

Pitch and Roll Range / Accuracy: ±50° / <1°—220WX

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

Relative Humidity Range: 10% to 95% RH

Relative Humidity Accuracy*: ±5% units RH

GPS Position Accuracy:

3 m (10') with WAAS/EGNOS (95% of the time)—220WX

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 (@ 12 VDC):

— (<85 mA) <1.0W, LEN 2 —120WX

— (<165 mA) <2.0W, LEN 4 —220WX

Supply Current (@ 24 VDC):

— (<42 mA) <1.0W —120WX

— (<85 mA) <2.0W —220WX

Heater Supply Current (@ 24 VDC):

— (2.5 A) <60W

Weight: 300 grams (0.8 lb)

Communication Interface: NMEA 0183 (RS422) and NMEA2000® (CAN bus)****

Mounting Thread Size on Base: Standard 1"-14 UNS (3/4" NPT optional)

Certifications and Standards:

CE, IPX6 (Relative Humidity/IPX4), RoHS, IEC60945

RMS—Root Mean Square LEN—Load Equivalency Number

*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.

***Temperature and relative humidity report invalid during heater operation.

****Airmar has made the address claiming modifications to enable compatibility with the ISO 11783 communication protocol for the agriculture industry – that is based on the SAE J1939 protocol.

DATA OUTPUT PROTOCOL

NMEA 0183 Sentence Structure

\$GPDTM GPS Datum Reference

\$GPGLL 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 Theoretical Wind Direction and Speed

\$YXXDR Transducer Measurements

NMEA2000® Output Message Structure

59392 ISO Acknowledgement

060928 ISO Address Claim

12620 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

PART NUMBERS

120WX: 44-858-1-01, NMEA 0183 (RS422) or NMEA2000® (CAN Bus)

220WX: 44-854-1-01, NMEA 0183 (RS422) or NMEA2000® (CAN Bus)

Field Serviceable RH Module: 33-627-02

120WXH: 44-852-1-01, NMEA 0183 (RS422)^{1,2,3}

220WXH: 44-856-1-01, NMEA 0183 (RS422)^{1,2,3}

¹ Relative Humidity (RH) not available on heater models

² Cables sold separately

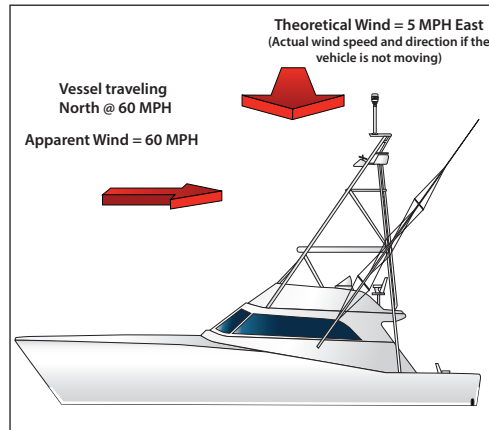
³ Heater requires 24VDC

Understanding Theoretical 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 theoretical 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 theoretical wind based upon the apparent wind, speed of the vehicle, and compass heading.

Theoretical wind information is significant for numerous applications on hazardous response vehicles. Theoretical wind speed and direction is also mission-critical. When enroute to an emergency situation, first responders can use the theoretical wind readings to predict wind conditions at the disaster site before they even arrive, giving vital information for planning operations and staging apparatus.

True Wind: True wind is the same as above BUT relative to True (or Magnetic) North. In the case of a moving vehicle, True wind is not relevant because the vehicle will (almost) never be aligned to True (or Magnetic) North. In a mobile application True wind is a meaningless value.

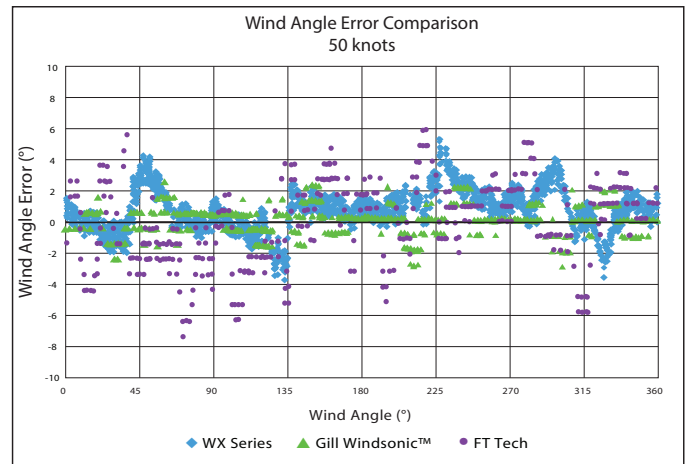
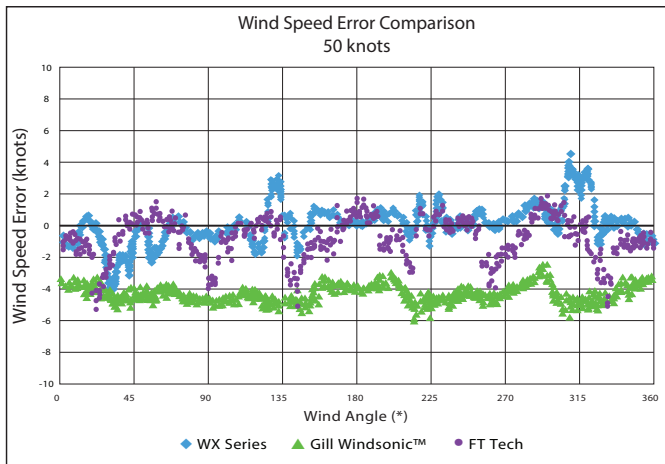


Airmar's WX Series products are the only all-in-one unit to offer theoretical and apparent wind speeds without additional sensors.

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



www.airmar.com

