

WX Series



WeatherStation® Multisensor – Ultrasonic 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. It includes a 10Hz GPS, three-axis solid-state compass, rate gyro and tilt sensors. This model features configurable NMEA 0183 and NMEA 2000® 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 than any other weather monitoring system on the market today.



Actual
Size



Wind
Speed &
Direction



Barometric
Pressure



Temp



Relative
Humidity



GPS



Compass

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 9 VDC to 40 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 and 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 NMEA 2000®	✓	✓

WeatherCaster™ Software

Developer Assistance

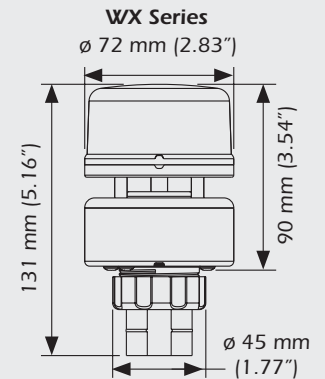
- Enable/disable functionality
- Optimize communications bandwidth
NMEA 0183 (RS232, RS422)
- Change sampling rate (output interval)



Field Installation Assistance

- Enable/disable functionality
- Sensor orientation
- Compass calibration
- Temperature offset
- Select specific device on a NMEA 2000® 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 to 40 m/s (0 knots to 89 knots)
Accuracy: 5% at 10 m/s (19 knots) at 4 angles
Resolution: 0.1 m/s (0.1 knots)
Calculations: User configurable damping

Wind Direction

Range: 0° to 359.9°
Accuracy: ±3° at 10 m/s
Resolution: 0.1°
Calculations: User configurable damping

Air Temperature

Range: -40° to 80°C (-40 to 176°F)
Accuracy: ±1.1°C at 20°C
Resolution: 0.1 °C

Optional Relative Humidity

Range: 0 to 100% RH
Accuracy: ±5% RH at 0 to 90% RH at 20°C
Resolution: 0.1% RH

Barometric Pressure

Range: 300 to 1100 hPa
Accuracy: ±0.5 hPa at 25°C (or better)
Resolution: 0.1 hPa

Three-axis Compass

Range: 0 to 359.9°
Accuracy: 1° RMS when level, 1° static heading accuracy; 2° dynamic heading accuracy (220WX only)
Resolution: 0.1°

Pitch and Roll

Measurement Type: MEMS
Range: 50°
Accuracy: ±1° in range of ±30°
Resolution: 0.1°

GPS Position Accuracy: 3 m (10') CEP

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

Power

Supply Voltage: 9 VDC to 40 VDC
Supply Current (at 12 VDC):
<55 mA (<0.7 W), LEN 2 — 120WX
<75 mA (<0.9 W), LEN 2 — 220WX
NMEA 2000® Load Equivalency Number (LEN): 2

Weight

275 grams (0.6 lbs) — 120WX
300 grams (0.7 lbs) — 220WX

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

Certifications and Standards: CE, IPX6 (IPX4 with optional Relative Humidity sensor), RoHS, IEC61000-4-2, IEC60945, IEC60950_1C, IEC60950_22A, EN55022, EN55024, EN15014982

COMMUNICATIONS

Available Hardware Interfaces

Serial RS232, Serial RS422, CAN

Available Protocols

Comma delimited ASCII, NMEA 0183, NMEA 2000®

Serial Output Rate:

1 Hz typical, user selectable, 10 Hz max recommended

SERIAL DATA OUTPUT PROTOCOL

NMEA 0183 Sentence Structure – Comma Delimited ASCII Format

\$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..... Theoretical Wind Direction and Speed
\$YXXDR..... Transducer Measurements

CAN DATA OUTPUT PROTOCOL

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

PART NUMBERS

120WX: 44-858-1-01, NMEA 0183 (RS422) or NMEA 2000® (CAN Bus)

220WX: 44-854-1-01, NMEA 0183 (RS422) or NMEA 2000® (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

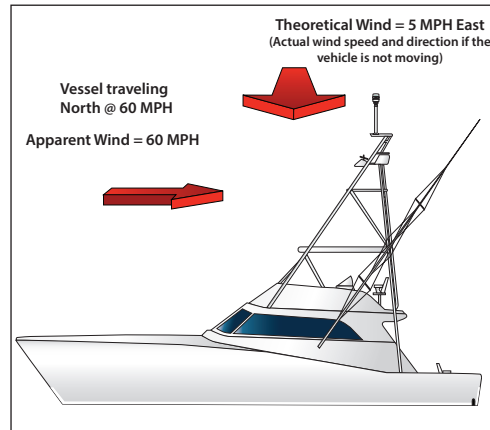
² Cables sold separately

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.

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.

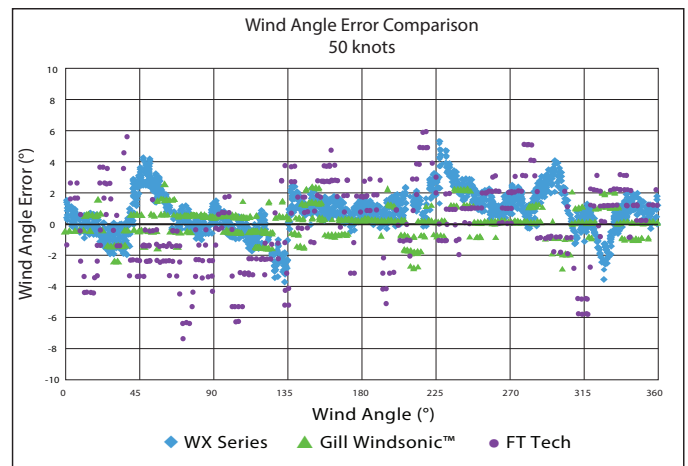
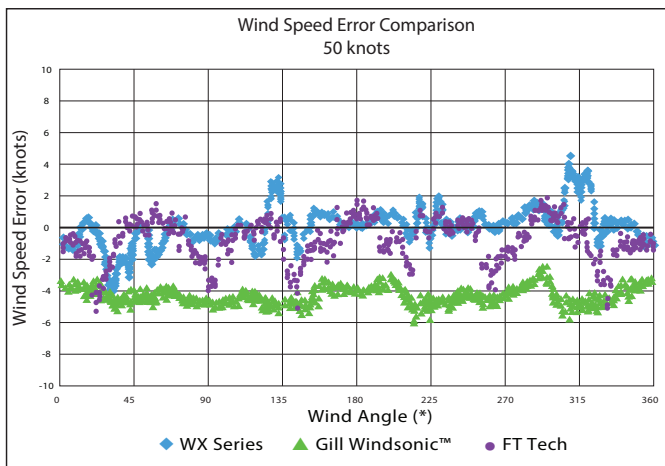


Airmar's WX Series products are the only all-in-one unit to offer theoretical and apparent wind speeds without additional sensors.

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



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