

BELFORT WxPAK

FEATURES

- No moving parts – maintenance-free operation
- True and apparent wind speed and direction
- Barometric pressure
- Ambient air and wind chill temperature
- Heat index temperature
- Relative humidity
- Dew point temperature
- Internal GPS provides position (latitude and longitude), speed over ground (SOG), course over ground (COG), and time
- Two-axis solid-state compass provides heading
- Plastic housing is less prone to lightning strikes
- RS232 or RS422 output
- Belfort graphic software included

Real-Time, Site Specific Weather Information

The Belfort Ultrasonic WxPak weather station meets a growing need for real-time, site-specific weather information. The unit provides accurate data when monitoring weather conditions on-site or in remote locations.

The WxPak Weather Station is the only all-in-one weather station that calculates apparent wind speed and direction, barometric pressure, air temperature, relative humidity, dew point and wind chill temperature. With the internal compass and GPS, true wind speed and direction can also be calculated. The UV stabilized, compact housing is fully waterproof and resistant to chemicals lightning strikes.

*Belfort
WxPak*



- The only WxPak offering the perfect weather monitoring solution for any application by combining seven sensors into one compact unit with no moving parts.
- The lack of moving parts improves reliability, superior accuracy and longevity in the field.
- Other weather stations would take at least three separate sensors to achieve all of the weather readings in the WxPak.
- Low-cost and easy-to-install on a standard pole with 1" – 14 UNS or 3/4" NPT threads allowing for use as a fixed unit on portable system.
- WxPak readings are not affected by common problems associated with mechanical and weather measuring devices such as bearing wear, salt and dirt build-up and birds, all which can result in data inaccuracy or overall failure.
- Power and standard RS422 interface capabilities provided by a single cable (various lengths available).
- Belfort graphic PC software and USB converter provide a complete solution to connect directly to a PC.

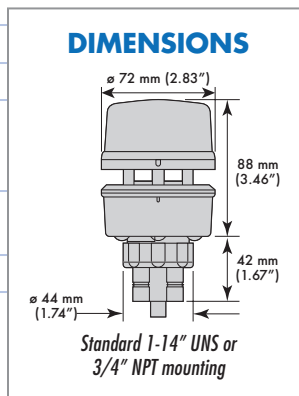
THE STANDARD
OF MEASUREMENT

BELFORT INSTRUMENT
www.belfortinstrument.com

BELFORT WxPAK

SPECIFICATIONS

| | |
|--|---|
| Wind Speed Range | 0 m/s to 40 m/s (0 MPH to 92 MPH) |
| Wind Speed Resolution | 0.1 m/s (0.1 MPH) |
| Wind Speed Accuracy @ 0°C to 55°C (32°F to 131°F), no precipitation* | Low Wind Speeds: 0 m/s to 5 m/s (0 MPH to 11.5 MPH); RMS error of 0.5 m/s (1.1 MPH) + 10% of reading High Wind Speeds: 5 m/s to 40 m/s (11.5 MPH to 92 MPH); RMS error of 1 m/s (2.3 MPH) or 5% RMS, whichever is greater |
| Wind Speed Accuracy in wet conditions** | 2.5 m/s (5.7 MPH) 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: 2 m/s to 5 m/s (4.6 MPH to 11.5 MPH) – 5° RMS typical High Wind Speeds: >5 m/s (>11.5 MPH) – 2° RMS typical |
| Wind Direction Accuracy in wet conditions** | >4 m/s (9.2 MPH) – 8° RMS typical |
| Compass Accuracy | 1° RMS when Level |
| Pitch and Roll Range/Accuracy | ±50° / <1° static tested @ 25°C (77°F) |
| Air Temperature Range | -25° to 55°C (-13°F to 131°F) |
| Air Temperature Resolution | 0.1°C (0.1°F) |
| Air Temperature Accuracy | ±1°C (±1.8°F)* @ >4 knots (>4.6 MPH) wind |
| Barometric Pressure Range | 300 mbar to 1100 mbar (8.86 inHg to 32.48 inHg, 300 hPa to 1100 hPa) |
| Barometric Pressure Resolution | 0.1 mbar (0.029 inHg, 0.1 hPa) |
| Barometric Pressure Accuracy | ±2 mbar (±0.059 inHg, ±2 hPa) when altitude correction is available |
| Relative Humidity Range | 10% to 95% RH |
| Relative Humidity Accuracy* | ±4% units RH |
| GPS Position Accuracy | 3 m (10') with WAAS/EGNOS (95% of the time, SA off) |
| Operating Temperature Range | -25°C to 55°C (-13°F to 131°F) |
| Supply Voltage | 9 VDC to 16 VDC |
| Supply Current | <150 mA |
| Weight | 258 grams (0.7 lb) |
| Sensor Baud Rate (RS422 with NMEA 0183 Interface Only) | 4,800 BPS (Can be increased to 38,400 bps with command) |
| Thread Sizes on Base | 1-14" UNS or 3/4" NPT |
| Certifications and Standards | CE, RoHS |



DATA OUTPUT PROTOCOL

| | | |
|-------------------------------------|------------------------------------|--|
| RS422/NMEA 0183 Sentence Structure* | SGPZDA | Time & Date |
| SGPD TM | Datum Reference | SHCHDG Heading, Deviation & Variation |
| SGPGGA | GPS Fix Data | SWIMDA Meteorological Composite |
| SGPGLL | Geo. Position—Latitude & Longitude | SWIMWD Wind Direction & Speed |
| SGPGSA | GNSS DOP & Active Satellite | SWIMWV Wind Speed & Angle |
| SGPGSV | Satellites in View | SWIMWR Relative Wind Direction & Speed |
| SGPRMC | Recommended Minimum GNSS | SWIMWT True Wind Direction & Speed |
| SGPVTG | COG & SOG | SYXXDR Transducer Measurements |

SENSOR PROVIDES

APPARENT AND TRUE WIND SPEED AND DIRECTION

Readings come from the ultrasonic anemometer

AIR TEMPERATURE

Based on a negative temperature coefficient thermistor that measures the ambient air temperature

RELATIVE HUMIDITY

Measured with a capacitive cell humidity sensor

BAROMETRIC PRESSURE

Measured using a temperature-compensated silicon piezoresistive pressure sensor corrected to equivalent sea level pressure based on altitude named by GPS

HEAT INDEX

Based on air temperature and relative humidity

WIND CHILL

Based on wind speed and air temperature

MAGNETIC COMPASS HEADING

Two-axis magneto-inductive sensors

PITCH AND ROLL ANGLES

Three-axis MEMS accelerometer

POSITION, SPEED, TIME AND COURSE OVER GROUND

Global Positioning System (GPS) receiver

MATERIALS

| | |
|---------------|-------------------|
| White Housing | GE® Gelyu® |
| Metal Plate | Anodized Aluminum |
| Wind Channel | Dupont® Delrin™ |

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.



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