



GPS MARK II MICROSONDE™



ocean systems division

FEATURES

- **INCORPORATES A CODE CORRELATING, ALL-IN-VIEW GPS RECEIVER IN EACH MARK II MICROSONDE**
- **USES COMMERCIAL GPS TECHNOLOGY**
- **WORLDWIDE COVERAGE, 24 HOURS/DAY**
- **ROBUST TO SATELLITE DROPOUTS AND DOPPLER COLLISIONS**
- **NO PRESSURE SENSOR IS REQUIRED**
- **OPERATION NOT AFFECTED BY HEIGHTENED SUNSPOT ACTIVITY**
- **TRACKS WEAKER GPS SATELLITE SIGNALS**
- **MAINTAINS ADVANTAGES OF DIGITAL RADIOSONDE TECHNOLOGY**
- **ALL SENSORS PRECALIBRATED AND PERMANENTLY INSTALLED**
- **MINIMAL LAUNCH PREPARATION**
- **SUITABLE FOR ALL RADIOSONDE APPLICATIONS**

GPS MARK II MICROSONDE

The GPS Mark II MICROSONDE is the newest member of the ZEEMET™ Mark II MICROSONDE series. This state-of-the-art MICROSONDE is designed to conduct a full synoptic sounding to balloon burst using data generated from proven Sippican meteorological sensors and the GPS satellite network.

A full code correlating, all in view GPS receiver and antenna are included in each GPS Mark II MICROSONDE. To ensure maximum reliability, the GPS receiver can process signals from all visible satellites and is integrated into the radiosonde electronics. The downlink is either raw GPS data (also called Line of Sight-LOS) or PVT (Position, Velocity, Time) data at 9600 baud.

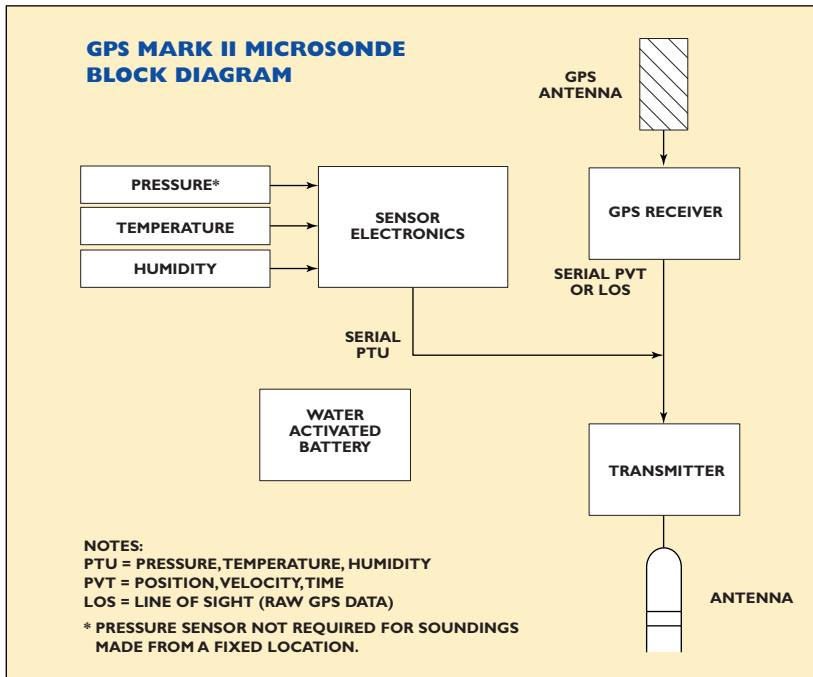
Accurate winds data is generated from GPS Mark II MICROSONDE data derived from the GPS satellite network. For soundings made from a fixed location, accurate pressure data is derived from the hydrostatic equation (incorporating GPS altitude, temperature, humidity, and

surface pressure) so an actual pressure sensor is not necessary.

For mobile radiosonde applications, the GPS Mark II MICROSONDE may be configured with a standard Sippican capacitance aneroid pressure sensor. All Mark II MICROSONDES include proven, accurate Sippican temperature and humidity sensors.

All of the advantages of the digital Mark II MICROSONDE are available to the user, including advanced error correction for data integrity, data redundancy, sensor calibration data and sonde serial number transmitted in the sonde data stream, spare data channels, and proven, accurate Sippican sensors.





SPECIFICATIONS

TRANSMITTER
 Nominal Frequency: 403 MHz
 Tuning Range: 400-406 MHz
 Frequency Stability over Entire Synoptic Range: 400 kHz
 Output Power (Nominal): 240 mW
 Modulation: FM

DATA TRANSMISSION
 Type: Digital
 Transmission Rate: 9600 Baud

DATA CHANNELS
 Pressure, Temperature, Humidity plus 4 spare channels*

*Pressure Sensor Not Included for Fixed Site Launches

SAMPLING RATE
 All parameters (PTU and winds) once per second. Each data set transmitted twice for added reliability.

POWER SOURCE
 Water activated battery.

SENSOR CALIBRATION
 Polynomial coefficients resident in sonde EEPROM are transmitted continuously in digital data stream.

PRESSURE SENSOR*
 Type: Continuously variable capacitance aneroid
 Measuring Range: 1080 mb to 3 mb
 Accuracy: ±0.5 mb (rms)
 Resolution: 0.1 mb

*Only Required for Mobile Radiosonde Applications

TEMPERATURE SENSOR
 Type: Thin rod thermistor
 Range: +60°C to -90°C
 Accuracy: ±0.2°C (rms)
 Resolution: 0.1°C

HUMIDITY SENSOR
 Type: Carbon
 Range: 5 to 100% RH; +40°C to -50°C
 Accuracy: 2% RH (rms)
 Resolution: 1% RH

DIMENSIONS
 144 x 102 x 193 (mm)

WEIGHT
 350 grams (including battery, antennas, dereeler, & cord)

MODEL
 I548 403 MHz, GPS/T,U
 403 MHz, GPS/P,T,U

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ADVANTAGES OF SIPPICAN FULL CODE CORRELATING GPS APPROACH VS. CODELESS GPS RECEIVER APPROACH

The Sippican GPS Mark II MICROSONDE provides significant advantages over GPS radiosonde solutions utilizing codeless receiver technology:

ROBUST TO SATELLITE DROPOUTS

Overdetermined, all-in-view, raw measurement solution tolerates dropouts and reacquires quickly.

DOPPLER COLLISION

Satellites are not lost if Dopplers are close.

DIFFERENTIAL GPS ACCURACY

The GPS MARK II MICROSONDE using raw measurements guarantees Sonde/Base Station satellite matching for DGPS accuracy.

JAMMING EFFECTS

Dual code correlators provide greater resistance to jamming which results in better tracking.

MOBILE APPLICATIONS

For mobile applications a local DGPS receiver and antenna are not required in the receiving system. Accurate winds are derived directly from the radiosonde PVT data.

SUNSPOT ACTIVITY

Code correlating GPS receiver is not affected by heightened sunspot activity.

The VIZ Meteorological Systems Group of Sippican, Inc. has over 50 years of dedicated experience in the field of upper air meteorological equipment. Our background and experience in the development of radiosonde systems makes us a world leader in the market. This background and experience assures you that Sippican can provide upper air instrumentation to meet your specific requirements.



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