Beacon Descriptions

The following pages include copies of the manufacturers' sales materials for the beacons tested by Equipped To Survive Foundation for the Evaluation of 406 MHz Location Protocol Distress Beacons, April, 2004:
Evaluation of 406 MHz Location Protocol Distress Beacons

April, 2004

Manufacturers' Product Literature

GlobalFix™ 406

Product No. 2744 Cat II (Manually Deployed) 406 MHz EPIRB with Integral GPS
Model No.: RLB-35 Cat II

- FastACQ™ GPS engine acquires LAT/LON from a cold start better than normal GPS engines
- Patented proprietary electronics package provides greater frequency stability for most accurate position through the LEOSAR satellites
- FastACQ™GPS is on for up to 25 minutes in the first 45 minutes of operation
- 100 m (110 yds) GPS position accuracy, optimum allowed by COSPAS-SARSAT
- Only EPIRB available that provides a GPS acquisition test, a full functional self test of internal circuitry, and battery voltage test
- High-impact polycarbonate case with non-tangling lanyard

- Universal Low Pro™ Category II EPIRB Bracket (P/N 9430) included; bulkhead and rail mounting options
- Class I battery for colder temperature operation; minimum 48 hrs @ -40°C (-40°F), 5 year replacement
- Automatically activated when out of bracket and in the water or manually activated
- Transmits on 406 MHz (COSPAS-SARSAT) with your registered, digitally-coded distress signal, and 121.5 MHz (SAR homing frequency)
- Audio/visual indicators of active transmission
- Floats upright with high visibility built-in strobe

Size: 17.5 x 4.75 x 3.5 in (44.4 x 12.1 x 8.9 cm)
Weight: 2.3 lbs (1.04 kg)

Material: High impact polycarbonate blend case/polyethylene bracket
Color: Hi-Viz Yellow/White bracket
Deployment: Manual
Operation: Lift switch up, slide left, push down fully breaking tab; water activated when out of bracket
Waterproof: 33 ft (10 m)

Accessories: 1096 Battery Replacement Kit
Certification: Approved by COSPAS-SARSAT, FCC, USCG; complies with GMDSS, European MED
Radiated Power: 5 watts ± 2 dB (406 MHz) 50 mW ± 3 dB (121.5 MHz)
Battery Type: Lithium 5-year replacement life (11-year storage life)
Frequency: 406.028 MHz, 121.5 MHz
Carton Weight: 3.5 lbs (1.59 kg)
Carton Dimensions: 18.0 x 7.0 x 6.0 in (45.7 x 17.8 x 15.0 cm)
Units Per Carton: 1
Modulation: AM
Limited Warranty: 5 years
U.S. Patent No. 6,501,340

ACR Electronics, Inc.
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A Chelton Group Company
Evaluation of 406 MHz Location Protocol Distress Beacons
April, 2004

Manufacturers’ Product Literature

RapidFix™ 406

Product No. 2777.5 Cat II (Manually Deployed)
406 MHz EPIRB with GPS Interface
Model No.: RLB-33 Cat II

- Improved GPS LED Infrared Interface (NMEA 0183) cable, visually confirm GPS download; GPS LAT/LON are sent on the very first burst, no waiting to acquire GPS coordinates
- Patented proprietary electronics package provides greater frequency stability for most accurate position through the LEOSAR satellites
- When GPS data is present, 100 m (110 yds) GPS position accuracy, optimum allowed by COSPAS-SARSAT
- World’s smallest 406 MHz EPIRB that meets all regulations and is fully approved worldwide
- GPS confirmation test; a full functional self test of internal circuitry, and battery voltage test
- High-impact polycarbonate case with non-tangling lanyard

- Universal Low Pro™ Category II EPIRB Bracket (P/N 9430) included; bulkhead and rail mounting options
- Class I battery for colder temperature operation; minimum 48 hrs @ -40°C (-40°F), 5 year replacement
- Automatically activated when out of bracket and in the water or manually activated
- Transmits on 406 MHz (COSPAS-SARSAT) with your registered, digitally-coded distress signal, and 121.5 MHz (SAR homing frequency)
- Audio/visual indicators of active transmission
- Floats upright with high visibility built-in strobe

Size: 14.5 x 4.25 x 3.62 in (36.8 x 10.8 x 9.2 cm)
Weight: 1.9 lbs (0.861 kg)

Material: High impact polycarbonate blend case/polyethylene bracket
Color: Hi-Viz Yellow/White bracket
Deployment: Manual
Operation: Lift switch up, slide left, push down fully breaking tab; water activated when out of bracket
Waterproof: 33 ft (10 m)

Accessories: 1096 Battery Replacement Kit
Certification: Approved by COSPAS-SARSAT, FCC, USCG; complies with GMDSS, European MED
Radiated Power: 5 watts ±2dB (406 MHz) 50 mW ±3 dB (121.5 MHz)
Battery Type: Lithium 5-year replacement life (11-year storage life)
Frequency: 406.028 MHz, 121.5 MHz
Carton Weight: 3.0 lbs (1.36 kg)
Carton Dimensions: 18.0 x 7.0 x 6.0 in (45.7 x 17.8 x 15.0 cm)
Units Per Carton: 1
Modulation: AM
Limited Warranty: 5 years
U.S. Patent No. 6,501,340

ACR Electronics, Inc.
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www.acrel.com
GyPSI™ 406 PLB

406 MHz Personal Locator Beacon with GPS Interface
Product No. 2793 FCC APPROVED
Product No. 2790 Approved for sale outside the United States

- Transmits on 406 MHz via the COSPAS-SARSAT satellite system with your registered unique, digitally coded distress signal and 121.5 MHz (SAR homing frequency).
- Recessed, waterproof GPS/programming interface (NMEA 0183) transmits GPS data for even faster response.
- Small, lightweight unit can be easily carried in a pack or pocket; small enough to wear on deck by racers, crew, solo cruisers, kayakers, climbers, hikers, hunters, pilots or any outdoor enthusiast.
- Single, three-position switch for simplicity. Red LED flashing indicates unit is "ON". Yellow LED flashing indicates test sequence in process, steady green LED indicates unit has passed full functional test.
- Functional test for battery power, 406 MHz transmission, and GPS.
- Flat, stainless steel antenna wraps compactly around bottom case for easy stowage; is easily positioned when needed.
- Floats to avoid loss if dropped in water, waterproof to 3.3 ft (1 m).
- Case and instruction label are oil, water and UV resistant, with non-corroding components.
- Wrist lanyard ensures security when hand-held.
- Can be stored between -50°C and +70°C (-58°F and +158°F).

Size: 1.9 x 6.5 x 3.8 in (4.8 x 16.5 x 9.5 cm)
Weight: 17.6 oz. (499 g)
Battery: Lithium 5 year replaceable (11 year storage)
Material: Fiber reinforced polycarbonate blend with resin tougheners
Color: Hi-Viz Yellow/Blue
Deployment: Manual
Operation: Lift switch up, slide right, push forward breaking tab
Accessories: RapidDitch-P carrying bag included (P/N 2267)
Certification: Approved by COSPAS-SARSAT; FCC approved
Limited Warranty: 5 years

Radiated Power: 5 watts ± 2dB (406 MHz) 50 mW ± 3dB (121.5 MHz)
Operational Life: In excess of 24 hours @ -40°C (-40°F), longer in higher ambient temperature

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A Chelton Group Company
Pains Wessex has broken new ground in developing technically advanced equipment for safety at sea with the new Precision 406 GPS EPIRB. Designed specifically to meet the needs of leisure boaters and commercial ship operators alike, the Precision 406 GPS features an internal 12 channel parallel GPS receiver within a compact 406 EPIRB.

- USCG & FCC approved
- Built-in 12 Channel GPS receiver
- Transmits on the NEW clearer 406.028 MHz frequency (Only GPS EPIRB to do so)
- Long life SIX YEAR battery (12 year useful life)
- Once activated operates up to 60 HOURS (48 hours minimum requirement)
- 121.5 MHz homing signal up to 40 Mile range
- Pinpoints global position to within 100 feet
- Alert time to rescue service approximately 3 minutes
- Updates accurate latitude/longitude position every 20 minutes
- Built-in self-test & diagnostic check capabilities
- Smallest, lightest & most powerful GPS EPIRB available. Weight 1.6lbs, height 8.25”
- Available in Category 1 (Automatic) or Category 2 (Manual) deployment
- 5 year limited warranty

Using the latest Cospas Sarsat geo-stationary constellation, the Precision 406 GPS EPIRB provides an instant alert to the search and rescue services with the vessels details including latitude and longitude.
Emergency Position Indicating Radio Beacon (EPIRB)

The Precision 406 MHz EPIRB is the result of extensive research and development which brings together the expertise of McMurdo and the knowledge of Pains Wessex, utilizing the award-winning design of the Rescue 406 EPIRB.

The Precision 406 MHz EPIRB features an integral 12 channel parallel GPS receiver within a compact 406 EPIRB. The benefits of the Precision's integral GPS is that position information is updated every 20 minutes providing an accurate position even when the EPIRB has been activated and is drifting in the sea.

Using the latest Cospas-Sarsat satellite constellation, the McMurdo Pains-Wessex Precision 406 MHz EPIRB provides an instant EPIRB alert to the search and rescue services. The vessel's details, together with latitude and longitude, are signalled to rescue services thus avoiding lengthy searches.

As with all McMurdo Pains-Wessex commercial products the Precision 406 EPIRB is fully compliant with international legislation and meets worldwide approval standards.

- High intensity xenon strobe light
- Global coverage with Cospas Sarsat polar orbiting satellites
- Geostationary coverage > 75°N - 75°S
- Typical battery life 48 hours at -4°F
- Transmits on new C5 frequency of 406.028MHz
- Comprehensive transmit fault indicator
- Handles all Cospas Sarsat EPIRB message formats (location and save protocols)
- Comprehensive transmit fault indicator
- 1.21.5 MHz homing transmitter indicator
- 406 MHz Transmitting Indicator
- 121.5 MHz fault indicator
- 406 MHz fault indicator
- GPS position acquired indicator
- GPS position transmitted indicator
- Integral 12 channel parallel GPS receiver
- GPS cold start to fully operational typically less than 5 minutes
- GPS transmitted position update rate every 20 minutes
- Time to alert, less than 5 minutes (via geostationary satellite)

Ordering Information

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<th>Model</th>
<th>Category</th>
<th>Class</th>
<th>Employment / Description</th>
<th>Part No.</th>
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<td>Microbi / Inflatable Buoy</td>
<td>03-214A</td>
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<tr>
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<td>Microbi / Inflatable Protective Housing</td>
<td>03-224A</td>
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Other GMDSS equipment in the McMurdo Pains-Wessex Safety product range includes Radios and SART

REVERSE

Exclusive US importer for McMurdo Pains Wessex Electronics

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The Fastfind and Fastfind Plus series of Personal Location Beacons are the very latest from McMurdo Pains Wessex designed to provide individuals with the highest chance of being found in an emergency.

The Fastfind and Fastfind Plus series of Personal Location Beacons are the very latest from McMurdo Pains Wessex designed to provide individuals with the highest chance of being found in an emergency.

In the event of an emergency an alert signal is transmitted to COSPAS-SARSAT satellites and forwarded to a rescue coordination center within approximately 3 minutes. The built-in GPS receiver will provide latitude and longitude coordinates to a position of within approximately 100 feet anywhere in the world.

- Built-in GPS receiver
- Global alert to COSPAS-SARSAT satellites
- 121.5MHz homing in frequency
- Alert time typically within 3 minutes
- Positional accuracy to within approximately 100 ft
- Compact & stylish
- Complete with lanyard and carry case
- User replaceable battery packs (-40°F or -40°F)
- Floats with -40°F battery pack
- Accepts serializit or MMSI protocols
- Simple three stage manual activation

The standard 406MHz Personal Location Beacon has all the features of the Fastfind Plus but without GPS. The 406MHz frequency provides and alert signal to rescue services within 90 minutes maximum, depending on satellite passes and gives a positional accuracy to within 2 miles. Once in the vicinity the 121.5MHz transmitter provides a signal for the rescue services to home-in on. This information is more than sufficient to enable rescue services to find an individual in distress.

These latest advanced products from McMurdo Pains Wessex have been designed to provide the very best chance of being found in an emergency by:

- Professional & recreational boaters
- Single handed boaters
- Kayakers
- Fishermen
- Pilots
- Hikers
- Campers
- Mountain climbers
- Skiers
- Hunters
- Divers

Three stage activation

Transmitting
**Fastfind and Fastfind Plus**

**Personal Location Beacons**

The Fastfind and Fastfind Plus Personal Location Beacons feature the same advanced technology as found in the award-winning Rescue and Precision 406 MHz EPIRBs. Designed using miniaturized components to fit into aesthetically styled compact casing both versions employ a simple three-stage manual operation and feature user replaceable battery packs, available in for use in temperatures of -40° and 10°F Fahrenheit.

These latest advanced products from McMurdo Pains Wessex have been designed to provide all types of outdoormen with the very best chance of being found without delay in an emergency on land, on sea, or in air.

- **Global coverage with Cosas-Sasat polar orbiting satellites**
- **Geostationary coverage >75°N - 75°S**
- **Comprehensive indication of operation**
  - 121.5 MHz transmission
  - 406 MHz transmission
  - GPS acquisition and fix status
- **Integral 12 channel parallel GPS receiver**
- **GPS cold start time to fix typically less than 3 minutes**
- **GPS transmitted position update rate every 20 minutes (as permitted by Cosas-Sasat)**
- **GPS reacquisition time, typically less than 60 seconds**
- **Positional accuracy typically 100 feet**
- **Time to alert, typically three minutes** (via geostationary satellite)

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**Carry case and lanyard**

Carrying the Fastfind could not be simpler; both versions come equipped with a lanyard and carrying case to enable the user to keep the PLI safely attached at all times. A watertight canister is also available for diving.

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**REVERE**

**Supply Co., Inc.**

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[Visit the website](http://www.reveresupply.com)

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**Exclusive US Importer for McMurdo Pains Wessex Electronics**
Multi Function Personal Locator Beacons PLUS Embedded GPS
Series 500-27

FULLY COMPLIANT TO TSO-C91a & C126
JTSO-2C91a & C126 COSPAS/SARSAT
Multi Function Personal Locator Beacons
PLUS Embedded GPS
Series 500-27

Features
- Simultaneous Transmissions.
- Beacon and Speech Modes and COSPAS/SARSAT coverage.
- Continuous transmission of GPS data on COSPAS/SARSAT data burst.
- Unique remotely programmable country code function for 406 MHz.
- Manual or automatic operation.
- Meets NATO STANAG 7007, latest issue.
- ED-26 ICAO CAP 208 Chapter 10.
- Waterproof to 10 metres.
- Reprogrammable on aircraft.

The Series 500-27 Personal Locator Beacons are simple, compact lightweight units which can be used either manually or automatically via ejection seat harness. A fully embedded 12 channel GPS with data burst transmission on 406.025 MHz. Fully compatible with the majority of search and rescue equipment including the COSPAS/SARSAT satellite based survivor location equipment.

The PLB is a one piece unit with the transmission housed in a yellow pigmented or NATO green moulded thermoplastic case, which is designed such that the replaceable battery pack can be mounted within the overall package to form a smooth but non-slip hand portable unit. The PLB is rugged and designed to be fully waterproof. The PLB can be mounted in a variety of locations on the aircraft and can be easily removed from the aircraft.

Specifications

Transmitter Signal
Frequency
The PLB transmits a modulated homing signal on both 121.5 MHz (CIV), and 243.0 MHz (Military distress) frequencies, with characteristics in accordance with STANAG 7007, together with 406.025 MHz in accordance with COSPAS/SARSAT.

Channel
Transmissions and receptions on both frequencies are compatible with 25kHz channel spacing.

Modulation (121.5 and 243 MHz)
Continuous Sweep Rate of at least 70kHz within the Sweep Range.
Sweep Range
1.6 kHz to 300 kHz (i.e. downward)
Sweep Rate
2-3 kHz
Modulation Depth - 87% minimum (80% typical)

Modulation (406.025 MHz)
6.5 Hz to 10 kHz every 30 sec.
Phase modulation of 10 - 500 kHz (peak)
Digital modulator to include GPS C/A code, Rev 4, Section 31
RF Synchronisation Frame Synchronisation
Protected Code
Emergency Code/National Use code
Long Message (optional)

GPS Receiver (Embedded)
- Snap Start (advanced hot start): 2 sec
- Hot Start (Cold Start): < 15 sec
- Warm Start (Cold Start): < 40 sec
- Cold Start: < 50 sec
- Satellite Signal Acquisition Time: 100 ms
- No of Channels: 12
- Correlation Points: 96
- Min Signal Level Required: -12 dBm
- Power Consumption: 110 mA
- Receiver: L1 ICA Code
- Protocols: NMEA 0183, SBR

GPS Antenna
- Centre Frequency: 1575.42 MHz
- Bandwidth: 2.0 kHz (98% min - 99.8% point)
- Gain: 4 dB (nominal 30%)
- VSAR cut off: 2.0 - 1 max
- Impedance cut off: 50 ohm
- Polarisation: RHCP

Power Output (121.5 and 243 MHz)
48 hours min 10.0mW +10°C and +70°C

Power Output (406.025 MHz)
24 hours min 5W +13dBm +1 3dBm at +20°C

Activation
- Manual or Automatic

Dimensions
- 150 x 87.5 x 37.5 mm

Weight
659 gm nominal

Colour
NATO green 21 yellow

Compliance
- The PLB is compliant with the following specifications.
- Civil: ICAO Annex 10, 1000M series general requirements for use in aircraft.
- Military: NATO - STANAG 7007 latest issue Personal Locator Beacon Approval
- TSO C121a and C129a, TSO C120a and C129a.