### YOUR BEST LAST CHANCE





ResQLink

Cobham Beacon Solutions 5757 Ravenswood Road Fort Lauderdale, FL 33312

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www.acrelectronics.com

### **406 MHz Personal Locator Beacons**

PRODUCT SUPPORT MANUAL

Model: PLB-375 / Product No.: 2880

Y1-03-0251 Rev. T1



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This manual supports all configurations of PLB-375 beacons. In addition to the part numbers listed on the cover page, other configurations of these products may be available, thus you may have purchased a product configuration with a different version of the part number (for example, 2880.63). As long as the first four digits are the same as one of the part numbers on the cover, this manual is applicable. If you have questions regarding the contents of the manual or something not covered in the manual, please contact our Technical Service Department at ACR Electronics Europe GmbH Telephone +43-1-5 237 237 240.

### PLEASE READ ALL WARNINGS, CAUTIONS AND NOTES **CARFULLY**



**CAUTION:** Before proceeding to test or use your new ACR Electronics' product, please read this Product Support Manual in its entirety.



**WARNING:** The PLB must be promptly registered with the appropriate National Authority. Failure to register the PLB could delay a Search and Rescue (SAR) response and may be unlawful.



WARNING: This transmitter is authorized for use only during situations of grave and imminent danger. Deliberate misuse may incur a severe penalty.



**CAUTION:** False alerts endanger lives and cause expensive disruption to Search and Rescue services, deliberate misuse of the PLB could result in penalty and fine.



CAUTION: Contains lithium batteries. Do not incinerate, puncture, deform, short-circuit or recharge.



CAUTION: Do not dismantle the PLB, contains no userserviceable parts.



**CAUTION:** Remove from pouch prior to operation



**Disposal:** Remove the Lithium battery. Dispose of the used battery in accordance with local waste disposal regulations.



Air Travel: Product contains small lithium metal batteries that comply with IATA SP 188-PI 970 Air Cargo. Always check with air carrier concerns for any additional restrictions.

# 1. Registration

# NOAR

Save Time! Register your beacon online at: www.beaconregistration.noaa.gov

### Official 406 MHz PLB Registration Form

Mail or Fax to: NOAA/SARSAT, NSOF, E/SP3; 4231 Sultland Road; Sultland, MD 20745. Fax 301-817-4565

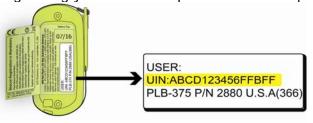
#### **REGISTERING YOUR BEACON**

Why is registration important?

As the owner of this 406 MHz beacon, it is a requirement that you register it with the National Authority of your country. Please note that in many countries all 406 MHz beacons are required to have their registration updated every two years by the owner. Please check the requirements for your country of registration.

#### **HOW REGISTRATION WORKS:**

All 406 MHz beacons transmit a Unique Identifier Number (UIN) when activated. This UIN is programmed into the beacon based on the country in which the beacon is registered, thus authorities are able to determine which country's database will have your registration information. Search and Rescue (SAR) forces will have information as to who you are as the owner of the beacon, the name and type of vessel that you have (if applicable), your address, and who to contact that might know of your current situation - but only if your beacon has been properly registered. Valuable search and rescue resources are wasted every year responding to false alerts, and registering your beacon helps to resolve this quickly.



PLB Information  Beacon ID (Unique	e Identifier Number)			
[A B C D 1 2 3 4 5 6 F F B F F				
PLB Manufacturer ACR Electronics Model No. RESQLINK PLB-375				
PLB Registration				
New PLB Registration ☐ Replacement of	of PLB Decal			
•	this PLB is a replacement for a previously registered PLB.			
	he old PLB unique ID number			
Owner/Operator Information  Name Sample, John, A	Telephone (115A)			
Mailing Address 5757 Ravenswood Rd	(954) 981-3333     Home   Work   Cellular   Fax   Other   (954) 983-5087     Home   Work   Cellular   Fax   Other			
City Fort Lauderdale State/Province FL	Home Work Cellular Fax Other			
ZIP (Postal) Code 33312 Country USA	Home Work Cellular Fax Other			
E-mail	Africa Cocile			
Specific Usage    Hinting   Hunting   Fishing   Other				
Jane Sample	Tom Sample			
Telephone	Telephone			
(555) 123-4567	(555)_234-5678			
(954) 981-3333 Home Work Cellular Fox Cther	(954) 981-3333			
(555) 235-6789 ☐ Home ☐ Work ★Cellular ☐ Fax ☐ Other	(555) 456-7891 Home Work Cellular Fax Oth			
( ) Home Work Callular Fax Other	(555) 567-8910			
Signature Tohn Somple	Date 01/14/2011			
you have any questions about this form or with PLB registration in general, please call 1-888-212-SAVE (7283) or 301-817-4515.  OMB (0648-0295) Excires: 31JAN 200 A1-20-1036 Raw.  A1-20-1036 Raw.				

# 1. Registration

What country should I register in? The beacon must be registered in the country of the owner's residence. If the beacon is not programmed to that country's code and protocol, and the residence is outside of the USA, the beacon needs to be reprogrammed.

Additionally, the beacon must be reprogrammed if you, as the owner, move out of the country where the beacon is registered. To verify the country for which a beacon is programmed, see the label with the UIN (Unique Identification Number) on the back of the unit.

For a complete list of all countries with online registration links visit <a href="https://www.acrelectronics.com/support/registrations/">www.acrelectronics.com/support/registrations/</a>

Please check to make sure that your PLB is registered correctly



# 1. Registration

Registration This Personal Locator Beacon is shipped into Europe with a country code programmed for the UK. To register this in the UK fill out the form that come with the Beacon. In countries other than the United Kingdom, 406 MHz beacons are registered with that country's national authority or on the Cospas-Sarsat International Registration Data Base (IBRD) www.cospas-sarsat.org/ibrd. The sales agent may have assisted you in filling out the forms and sending them to the country's national authority.

To verify that the unit is properly programmed for your country, view the UIN label on the back of the unit. In the event that the beacon is not programmed for your country, the sales agent (if properly equipped) can reprogram the unit for the correct country.



International customers should visit <a href="https://www.acrelectronics.com">www.acrelectronics.com</a> to find the proper location to register your beacon.

# 2. Anatomy Of A Rescue

#### STEP TWO - HOW THE BEACON WORKS

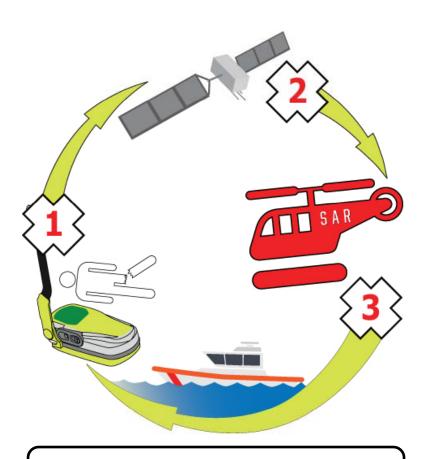
#### How your beacon summons help

406 MHz beacons are a type of portable emergency equipment that transmits a distress signal to search and rescue (SAR) organizations. The purpose of these beacons is to aid SAR teams in tracking and locating ships or individuals in jeopardy as rapidly as possible.

The 406 MHz frequency is a worldwide dedicated emergency frequency that is detected by a network of satellites called the Cospas-Sarsat system. This satellite system was established by, and continues to be supported by, its primary benefactors - the USA, Russia, Canada and France. The Cospas-Sarsat system has saved over 30,500 lives - and counting - since its inception. To learn more about the system visit <a href="https://www.cospas-sarsat.org">www.cospas-sarsat.org</a>.

When a 406 MHz beacon is activated, the digital distress message is sent to Cospas-Sarsat satellites and, in turn, the distress message is relayed to SAR forces. The distress message contains the beacon UIN and on some models the GPS location of the beacon. Additional information about the beacon is accessed by SAR forces from the beacon registration database. At the same time the 406 MHz signal is activated, a 121.5 MHz signal is turned on. The 121.5 MHz signal is used by SAR forces to home in on the beacon as they approach it.

The 406 MHz signal is detected by multiple satellites and from that information the location of the beacon can be calculated. This data alone is sufficient for SAR to find persons or ships in distress in a reasonable timeframe. However, as a further enhancement, some beacons have a GPS engine onboard. This feature allows the beacon to acquire current location coordinates from an internal GPS receiver. The purpose of this feature is to send an even more precise location of the beacon to the satellites, i.e., latitude and longitude data. This helps SAR to reach the location even faster.



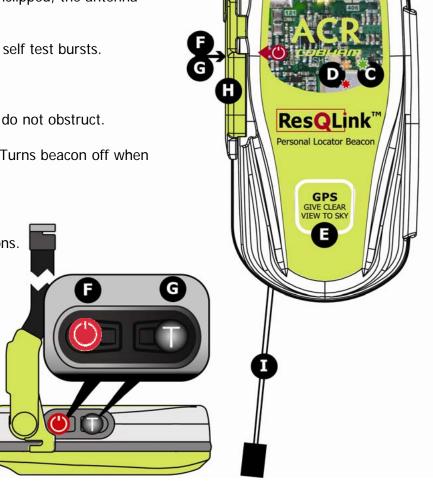
Learn more about the Cospas-Sarsat satellite system: www.cospas-sarsat.org

# 3. Anatomy Of Your Beacon

### Anatomy of your beacon

- **A.** <u>Antenna Latch</u> Latch unlocks antenna from beacon body. When unclipped, the antenna can be deployed to uncover On/Off and test buttons.
- **B.** <u>Strobe Light</u> Activates when beacon is turned on and at the end of self test bursts.
- C. <u>Green and Red LED Light</u> Visual indicator of beacon activity.
- **D. GPS** <u>Receiver</u> Location of GPS Receiver, give clear view to sky and do not obstruct.
- **E. ON/OFF Button** Activates the beacon when pressed for 1 second. Turns beacon off when pressed for 3 second.
- F. TEST Button Self Test Beacon to ensure it is working properly.
- **G. Antenna** Wraps around product and protects On/Off and Test Buttons.
- H. Lanyard Secures beacon to prevent loss.

**Warning**: This transmitter is authorized for use only during situations of grave and imminent danger. Deliberate misuse may incur a severe penalty.



# 4. Activating Your Beacon

#### Overview

Personal Locator Beacons are designed to be manually activated. They are only to be activated when all other means of self-rescue have been exhausted. When properly registered as required, the activation of the beacon tells Search and Rescue who you are, where you are, and that you are facing a life threatening situation.

#### **How To Activate Your Beacon**

To activate your beacon in a distress situation, follow these steps:

- 1. Unclip the antenna latch from the case.
- 2. Move antenna into the upright position
- 3. Depress the ON/OFF button for 1 full second.



To let you know the beacon has been activated, you will see the strobe light flash once every second while the RED light will flash once every 3 seconds.

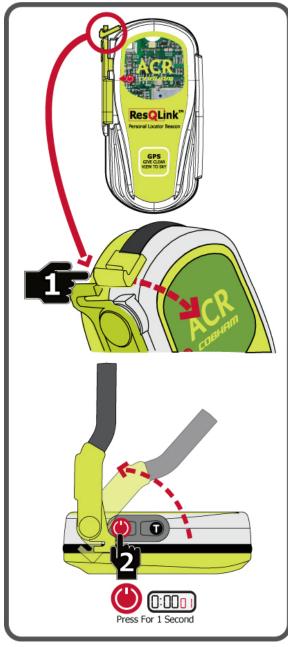
### After the First Minute:

While transmitting your distress signal, the RED light and Strobe light each will flash once every 3 seconds, alerting you that your beacon is active.

When the Red light is replaced by the GREEN light, this indicates that your beacon has successfully downloaded your GPS coordinates and is transmitting them along with your 406 MHz Distress Signal.







# 4. Activating Your Beacon

#### **Activation with GPS**

When your unit is activated, the GPS receiver will turn on, search to find your LAT/LON and incorporate it into your 406 MHz signal. As soon as the GPS receiver acquires valid positioning data, the red flashing light will be replaced by a green flashing light once every 3 seconds.

The same GPS data will be sent with each 406 MHz signal for the next 30 minutes. At that time the internal GPS will start up again, search to find your LAT/LON and incorporate it into your next 406 MHz signal. If for any reason the internal GPS cannot update your LAT/LON, your last position will be used for the next four hours. At that time the green LED will stop blinking and the red LED will flash once every 3 seconds until new GPS data is obtained.

#### **GPS** receiver orientation

When activated, it is critical that you do not cover the beacon with any body part, water, clothing, etc. The GPS receiver is located under the bottom portion of the case where it is outline with the text "GPS, Give Clear View To Sky."

To ensure optimum performance of the GPS receiver, the beacon needs to have an unobstructed view of the sky. Avoid submerging the GPS receiver in water if possible. Water will shield and inhibit the GPS receiver and may cause difficulties obtaining your GPS coordinates. Avoid leaning over the beacon to view blinking LED as you may shield the GPS reception.





Red Flashing Light = Sending 406 MHz Signal Only

Green Flashing Light = Sending 406 MHz Signal with GPS Coordinates



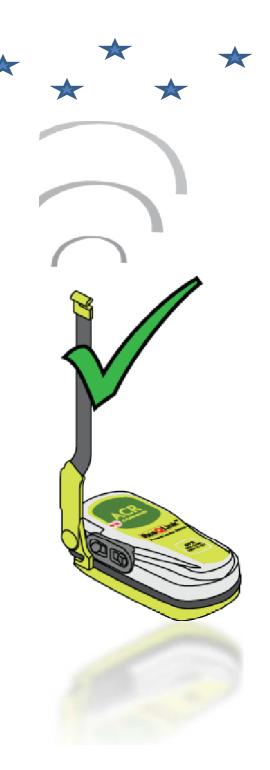
# 4. Activating Your Beacon

Proper Positioning and Handling during Activation

Do not cover the GPS receiver with your hand and make sure you have a clear view to the sky to ensure GPS is downloaded.



Make sure the antenna is pointing towards the sky, out of the water. Beacon is not intended to operate in water.



# 5. Turning Your Beacon Off

### Turning off the beacon

To deactivate your beacon; depress the ON/OFF button for more than 3 seconds. Once the beacon is deactivated, all blinking LED lights will stop, signifying that the beacon is no longer sending your distress message.

If deactivation should fail, try again before removing the 2 screws holding the unit together and unplugging the battery to disable the unit. Return the beacon to ACR Flectronics for service.

**NOTE:** Leave beacon on until rescued. Turning beacon off will prolong or prevent rescue. Repeated activations could be viewed as a hoax.



### Post Rescue Follow Up

Hopefully you are never put in the situation where you have to activate your beacon to be rescued, however, should you activate your beacon in an emergency that requires Search and Rescue assistance, please contact ACR Electronics in the days that follow.

It is important for us to learn the nature of your emergency, how the beacon performed so that we can continue to build the world's best life saving equipment.

Real life activations and how people use our beacons in these situations plays a major role in designing and manufacturing our products. We also like to share these rescues with others in an effort to promote proper use of Personal Locator Beacons.

You can learn more about our Post Rescue Follow Ups by visiting our Survivor Club at <a href="https://www.acrelectronics.com/survivors/">www.acrelectronics.com/survivors/</a>

# 6. Testing Your Beacon

Your beacon has the ability to perform 2 different tests to ensure the beacon is working perfectly. The first is a basic self test which checks the beacons Data Integrity and Memory; 406 MHz Synthesizer; RF Power/Battery; GPS header and sends a satellite burst. The second test is a GPS Self Test that actually turns the GPS Receiver on, downloads your position and then transmits this data in the Self Test satellite burst.

Note: Self test should only be performed in the first 5 minutes of any hour.

### **Basic Self Test (No GPS Data)**

During a Self-test your beacon will send a 406 MHz signal coded as Self-test to the satellite system. The 121.5 MHz homing signal is inhibited during Self-test; this allows you to test your beacon any time during the day without causing false alerts.

This beacon has enough excess battery life to perform 220 self tests over the 5 year life of the battery.

To perform a Basic Self Test:

- 1. Unclip the antenna latch from the case.
- 2. Move the antenna into the upright position
- 3. Depress the Test button for 1 full second

A Green Light will flash followed by a Second Long Green Light flash and the strobe light. This indicates a successful Basic Self Test.

If a red LED flashes at the completion of the Self-test, your beacon has failed. Repeat the Self-test. If the failure persists, contact ACR Electronics or an authorized Battery Replacement Center for servicing of your beacon.

ACR strongly recommends performing the **Self-Test once per month**, or at least two weeks prior to a trip allowing enough time for service should your beacon require it.

### **Battery Witness Seal Life**

If your beacon flashes an initial Orange light at the beginning of the Self- test, this indicates that your electronic witness has been broken and you have used more than 1 hour of battery life. While the beacon will still operate normally in a distress situation, ACR strongly recommends you have your battery replaced and the electronic witness reset to ensure that you will have at least 24 hours of battery power.

Light Sch	eme	Light Meaning
•	•	Self Test Passed
••••		Self Test Passed (Battery: <24 Hours)
•	•	Self Test Fail
•	••••	Self Test Fail (Battery: <24 Hours)

# 6. Testing Your Beacon

### **GPS Self Testing (GNSS Self-Test)**

The GPS receiver is located under the bottom front portion of the case. It is imperative that the receiver is not obstructed during Self-Test or activation to ensure that the GPS receiver is acquiring your latitude (LAT) and longitude (LON) position. This test must be performed outside with a clear view of the sky.

This beacon has enough excess battery life to perform 10 GPS self tests over the 5 year life of the battery. Once this GPS testing feature reaches 10 times, the feature will be disabled by internal software.

To perform a GPS Self Test:

- 1. Unclip the antenna latch from the case.
- 2. Move antenna into the upright position
- 3. Depress the Test button for 5+ seconds

3 Green Lights will flash followed by a series of RED flashes until GPS has been downloaded into the beacon. Once valid GPS data has been obtained, a long GREEN flash will appear followed by a flash of the Strobe Light. This indicates a successful Basic Self Test.

If at the end of the GPS Self Test, a long Red light appears, this indicates that the beacon was unable to find your GPS coordinates.

Quick Tip:
A Basic Self Test will take roughly 10 seconds to perform and complete.

A GPS Self Test will take roughly 45-120 seconds to perform and complete.



Light So	cheme	Light Meaning
•		GPS Downloaded and Sent in Test Burst
	*	GPS Unable Downloaded
**	**	Test Not Initiated: either GPS Self Test Limit Exceeded or Battery <24 Hours Remaining

## 8. False Alarms

### Preventing false alerts

A false alert is any activation of the beacon, intentional or otherwise, that does not result from a situation of grave and imminent danger.

Be sure to do the following to help minimize false alerts:

**Register your beacon.** This does not reduce false alert rates; however, when the beacon is properly registered, the situation can usually be resolved with a phone call.

Be careful with whom you leave your beacon. Make sure that they know how to use it, and that they understand the ramifications of causing a false alert. A lot of false alerts are generated by curious individuals. If you notice the beacon is flashing the red or green LED and strobing periodically on its own, this likely means it has accidentally been activated and needs to be shut off and reported.

The Cospas-Sarsat satellites detect distress beacon transmissions immediately and locate the transmission within a few minutes of beacon activation.

**NOTE:** If you report a false alert and the authorities have not received the signal, do not be concerned. This may mean that you were able to deactivate the beacon before transmitting the signal.

#### False alert

A false alert **must** be reported to the search and rescue authorities.

False alerts in the USA that are rectified must be reported to the US Air Force Rescue Coordination Center (AFRCC) to let them know that the situation has been corrected and everything is fine. Responsibly reporting these events to the AFRCC or your proper authority will not incur a penalty, but deliberate misuse or not notifying the proper authority may incur a severe penalty.

#### Reporting

Should there be a false alert for any reason, it **must** be reported to the nearest search and rescue authorities. The information that should be reported includes:

- The PLB 15-digit Unique Identifier Number (UIN)
- Time and date
- Duration and cause of activation
- Location of beacon at the time of activation

To report false alerts outside of the USA, contact the national authority where your beacon is registered.

**To report false alert in the United States**, contact the AFRCC:

**United States Air Force Rescue Coordination Center** (AFRCC)

Tel: 1-800-851-3051

## Beacon Maintenance

#### **Routine Maintenance**

Carefully inspect the beacon case for any visible cracks. Cracks may admit moisture, which could falsely activate the beacon or otherwise cause a malfunction. Any cracks observed should be immediately referred to ACR for evaluation by calling +43-1-5 237 237 240. ACR Technical Support can also be reached by sending an email to:

Technical.Support@acr-euope.com

After checking the beacon case for cracks, it may be wiped down with a clean, damp cloth. Do not use any type of cleaner on your beacon.

### **Battery Replacement**

Replace the battery no later than 6 years from beacon date of manufacture, 5 years from in service date, or after emergency use. At each inspection, check the time remaining until replacement is required. The battery should be replaced if the beacon has been activated for any use other than the Self-test. Always refer battery replacements and other beacon service to a factory authorized Battery Replacement Center. Battery replacement includes servicing the beacon by replacing all o-rings, testing the water seal and the electrical properties.

**NOTE:** There are no user serviceable items inside the beacon. DO NOT OPEN THE BEACON. Opening the beacon will void the warranty.



For the nearest location of a Battery Replacement Center, visit our website at www.acrelectronics.com/where-tobuy/find-a-battery-service-provider/

This beacon contains 1 lithium metal battery pack that is less than 0.8 grams. They are not classified as Hazmat for transportation. Prior to shipping beacon for service, alert your carrier about the batteries contained in this equipment to make sure they properly label your package. Call ACR's Technical Service department at +43-1-5 237 237 240 for proper shipping instructions or visit the ACR website for an MSDS at

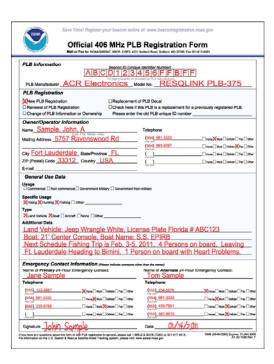
http://www.acrelectronics.com/media/products/1465/1942 01113556817/MSDS-57.pdf

## 9. Beacon Maintenance

### Changing ownership or contact information

As the owner of the beacon, it is your responsibility to advise the national authority of any change in your registration information. If you are transferring the beacon to a new owner, you are required to inform the national authority. You can do this by using their online database or by letter, fax or telephone and informing the authority of the name and address of the new owner.

The new owner of the beacon is required to provide the national authority with all of the information requested on the registration form. This obligation transfers to all subsequent owners.



# Lost or stolen PLBs If your PLB is lost or stolen, do the following immediately:

// Report to your local authorities that the PLB has been lost or stolen

//Contact your National Authority with the following information:

- Police department name
- Police department phone number
- Police case number

If your PLB were to be activated, the information you provided will be forwarded to the appropriate search and rescue authorities who will ensure that your PLB gets back to you.

If someone attempts to register a PLB reported as stolen, your national authority will notify the appropriate police department.

# 10. Product Specifications

**GENERAL/ENVIRONMENTAL** 

Product Number 2880 Model Number PLB-375

Size 1.3 x 1.9 x 3.9" (3.3 x 4.8 x 9.9 cm)

Weight 4.6 oz (130 g)

Material High impact and UV resistant plastic
Color ACR-treuse™(high visibility yellow)
Strobe Bright white, one flash per three seconds

Activation Manual

Operation 2 steps: deploy antenna, press ON button.

Give clear view of sky

Waterproof 16.40 ft (5 m) @ 1 hr., 33 ft (10 m) @ 10

min. Factory tested @ 70°F, exceeds RTCM

waterproof requirements

Buoyancy Category 2, non buoyant Accessories P/N 9521 Flotation Pouch

Approvals Pending: Cospas-Sarsat, FCC, Canada,

R&TTE

Limited Warranty 5 years Lead Free Yes **TEMPERATURE RANGE** 

Operating -4°F/-20°C to +131°F/+55°C Storage -40°F/-40°C to + 158°F/+70°C

**BATTERY** 

\*Batteries meet the UN Classification for non-dangerous goods

Class 2 (non-hazmat) lithium batteries

Replacement due six (6) years from date of

manufacture or five (5) years after beacon is

placed into service, whichever is first, or

after emergency use

Operational Life Exceeds 24 Hours @ -4°F/-20°C to

+131°F/+55°C

PLB-375 meets the requirements of Federal Communications Commission (FCC) Part 95 Subpart K. For all other type approval information, please visit our website at <a href="www.acrelectronics.com">www.acrelectronics.com</a>. Find the product than click on "Downloads".

#### **406 MHZ TRANSMITTER**

Frequency 406.037 MHz
Output Power 5+ Watts
Stability 2 ppb/100ms

**DIGITAL MESSAGE** 

Format 144 bits Long Message Serialized\*

Message Protocol Standard Location

Duration 520 ms
Rate 400 bps
Encoding Biphase L

Modulation  $\pm 1.1$  radians peak

\* Beacons are shipped from ACR with a Serialized code but can

be reprogrammed at a service center to other coded formats including nationality of

registration.

**121.5 MHZ TRANSMITTER** 

Frequency 121.5 MHz Tolerance  $\pm 50$  ppm

Output Power >25mW PEP (typical 63mW)

Morse Code "P" ID Every 50 seconds(approx.) (U.S. Protocol)

MODULATION

Type AM (3K20A3N) Sweep Range 500 to 1600 Hz

Sweep Rate 4 Hz Duty Cycle 33.3%

Morse P AM (2K00A2A)

**ANTENNA** 

Frequency 406.037 & 121.5 MHz

Polarization Vertical

VSWR Less than 1.5:1





CAUTION: Contains lithium batteries. Do not incinerate, puncture, deform, short-circuit or recharge. Do not dismantle the PLB, contains no user-serviceable parts. Dispose of the used PLB with the battery removed in accordance with local waste disposal regulations.

#### **Limited Warranty**

This product is warranted against factory defects in material and workmanship for a period of 1 (one) year\* from date of purchase or receipt as a gift. During the warranty period ACR Electronics, Inc. will repair or, at its option, replace the unit at no cost to you for labor, materials and return transportation from ACR. For further assistance, please contact our Technical Service Department at ACR Electronics Europe GmbH Handelskai 388 / Tpo 632, 1020 Vienna, Austria Email: <a href="mailto:Technical.Support@acr-euope.com">Technical.Support@acr-euope.com</a> Fax: +43-1 5 237 237 150, Telephone: +43-1 5 237 237 240.

This warranty does not apply if the product has been damaged by accident or misuse, or as a result of service or modification performed by an unauthorized factory. Except as otherwise expressly stated in the previous paragraph, THE COMPANY MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, AS TO MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR ANY OTHER MATTER WITH RESPECT TO THIS PRODUCT. The Company shall not be liable for consequential or special damages.

To place the warranty in effect, register online at <u>www.acrelectronics.com</u> or return the attached card within 10 days.

\*Five years for the following products: EPIRB, PLB, S-VDR, SSAS.

#### **Useful Life Policy**

The typical service life of a properly maintained Product is limited to 12 years from date of manufacture. Products that are 12 years and 1 month or older from date of manufacture will not be serviced by ACR or our Battery Replacement Centers. A Product that is 12 or less years old from date of manufacture will be serviced as long as the unit appears fit to be placed back into its final operational cycle. Service includes the replacement of those items that must be replaced at service intervals and the verification that the device appears to be in good mechanical and electrical working condition by an ACR authorized service technician.

Complete Warranty Online