

XMB-11K VHF BEACON

USER MANUAL



September 2014
Version 1.1
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VERSION HISTORY

Date Released	Version	Description
October 2013	1.0	Initial document
September 25, 2014	1.1	Updated format and O-ring specification

GENERAL DESCRIPTION

The XMB-11K is an independently powered, self-contained VHF beacon that is fully submersible up to 11,000m (36,089 ft). This beacon is designed to protect your valuable assets and make their recovery even easier.

The XMB-11K features a miniaturized design in an all titanium enclosure designed to meet or exceed your operational requirements for an ultra-deep water submersible beacon. The XMB-11K is backed by a comprehensive warranty and excellent support.

The XMB-11K is available with a remote head option, providing tremendous flexibility during installation. A flexible cable measuring 6' joins the remote head to the main enclosure. The remote head retains all the critical specifications of the original device including depth rating, power consumption and durability.

XMB-11K is intended for subsurface deployments. Xeos Technologies Inc. (Xeos) manufactures other specific products for surface applications.

See www.xeostech.com for details or call (902) 444-7650.

THEORY OF OPERATION

The XMB-11K is intended for instantly and accurately locating and recovering high value, free drifting assets at sea. After being activated, the XMB-11K is submerged (to a maximum depth of 11,000 meters), where it enters an Underwater Mode. Here, it monitors water conductivity between the top disk and the bulkhead for up to 2 years.

Once it reaches the surface, XMB-11K will transmit a pre-programmed frequency. The XMB-11K can be located using a direction finding device. XMB-11K will continue to transmit the frequency until it is manually turned off, the battery pack drops below the minimum voltage requirement of 7v, or the XMB-11K is re-submerged.

OPERATING INSTRUCTIONS

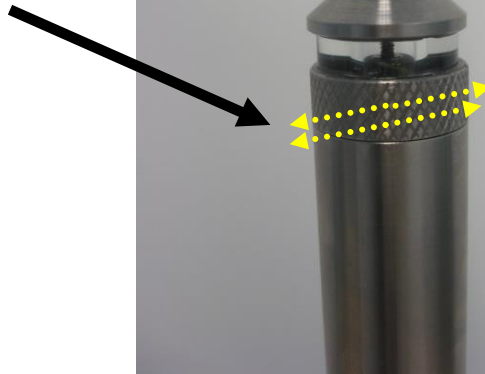
ON/OFF MODES AND TESTING

ON/OFF OPERATION

The XMB-11K beacon has three ways of turning ON and OFF. One way is through the use of an external magnet near an internal magnetic reed switch. Another way is to set the rotary dial located on the circuit board to '0'; this will turn the device OFF. The XMB-11K can be disabled by turning the device upside-down for a minute. Holding the XMB-11K upright will enable the device.

To turn XMB-11K ON using the magnet method, wipe the magnet back-and-forth quickly across the area directly below the antenna connection. Once the device is turned on, it will transmit a frequency depending on the dip switch settings.

Swipe magnet here

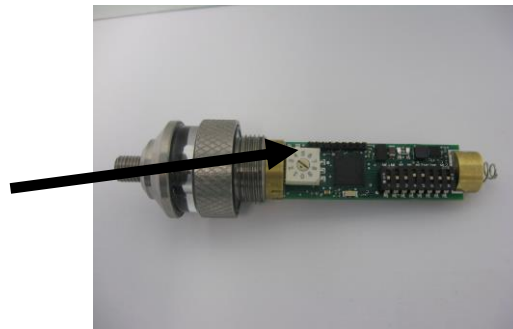


To turn the XMB-11K OFF using the magnet method, repeat the above procedure with the magnet swiped on the area below the antenna connection. Once the unit is turned off, it will no longer transmit a frequency.

Note: If you use the reed switch to turn the unit off and then manually cycle the Power by removing the batteries, the unit will begin to transmit.

ROTARY SWITCH

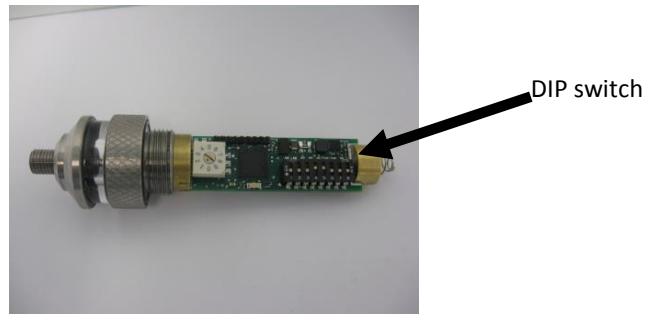
Rotary switch



Rotary Switch Position	Result
0	Transmitter OFF
1	Off time = Pulse Duration
2	Off time = 2 x Pulse Duration
3	Off time = 3 x Pulse Duration
4	Off time = 4 x Pulse Duration
...	...
9	Off time = 9 x Pulse Duration

The table above displays the operation of the rotary switch. Depending on what number the dial is set to the off time (i.e. time between pulses) will change. For example, if the rotary switch is set to '3', the time between pulses will be three times what the pulse duration is.

DIP SWITCH



Note: When viewing with rotary switch at the top and the DIP switch at the bottom:

L = left position

R = right position

PULSE DURATION

DIP Switch Pos	1 Second	2 Second	3 Second	4 Second
1	L	L	R	R
2	L	R	L	R

The above table titled “Pulse Duration” describes the operation of the transmitted pulse duration. For example, if switch 1 is in the left position and switch 2 is in the right position, the pulse duration will be 2 seconds.

SENSOR OPTIONS

DIP Switch Pos		
3	L = Reed Switch Enabled	R = Reed Switch Disabled
4	L = Tilt Sensor Enabled	R = Tilt Sensor Disabled
5	L = Fresh Water sensitivity	R = Salt Water Sensitivity
6	L = Water Sensor Enabled	R = Water Sensor Disabled

The above table titled “Sensor Options” describes the operation of the sensors associated with the XMB-11K. Setting switches 3,4, and 7 to the left position will enable the respective sensors. Switch 5 is used to choose the type of water unit is deployed in.

CHANNEL SELECTION

DIP Switch Pos	154.585 MHz	159.480 MHz	160.725 MHz	160.785 MHz
7	L	L	R	R
8	L	R	L	R

There are four pre-set, selectable frequencies for the XMB-11K; 154.585 MHz, 159.480 MHz, 160.725 MHz and 160.785 MHz. The above table titled “Channel Selection” describes the operation for frequency selection. For example, if switch 7 is set to the right position and switch 8 is set to the left position, the transmitted frequency will be 160.725MHz.

CHANGING THE BATTERIES

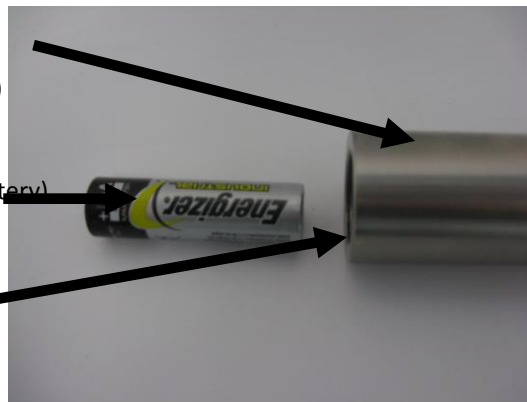
The chassis can easily be taken apart by unscrewing the top antenna end off of the unit. This must be done carefully as the circuit board is attached to the antenna, and will come out of the unit when the top is taken off the chassis. The batteries are inserted into the chassis with the positive end facing the circuit board, and the negative end facing the bottom of the chassis. When changing the batteries, ensure that the plastic protecting sleeve is still within the chassis.

The XMB-11K accepts 6x AA 1.5 volt batteries in the standard chassis (9 CR123A could also be used upon request). A shorter chassis that accepts 7 CR123A 3V lithium batteries is also available

Top end
(connects to antenna)

Positive terminal (battery)

Negative terminal
(battery)



Ensure that all batteries are inserted into the chassis with the correct polarity. The negative terminal of the battery should be facing the bottom of the chassis. The positive terminal of the battery should be facing the antenna and the circuit board.



The batteries inside the chassis are protected by a plastic tube. When replacing batteries, ensure that the plastic tube is still intact inside the chassis.

APPENDIX A - TECHNICAL SPECIFICATION - STANDARD

MECHANICAL:

Material:

Tube: Grade 9 Titanium housing
 Antenna: Stainless Steel
 Spacer: Glass

Dimensions:

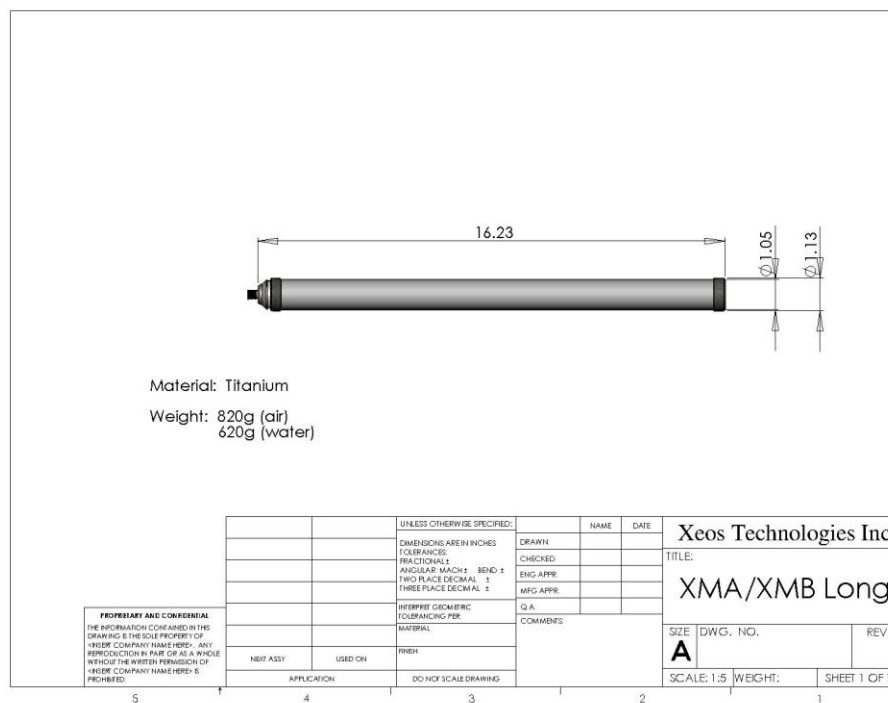
Length 13.9" L x 1.125" diam.
 Diameter of tube 1.05"
 Antenna: 7" length

Weight:

Out of water: 644g
 In water: 431g

O-rings: 2-020 70 DURO BUNA-N

O-Ring Lube: Dow Corning compound



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APPENDIX B - TECHNICAL SPECIFICATION – SHORT

MECHANICAL:

Material:

Tube: Grade 9 Titanium housing.

Antenna: Stainless Steel

Spacer: Glass

Dimensions:

Length 16.23" L x 1.125" diam.

Diameter of tube: 1.05"

Antenna: 7" length

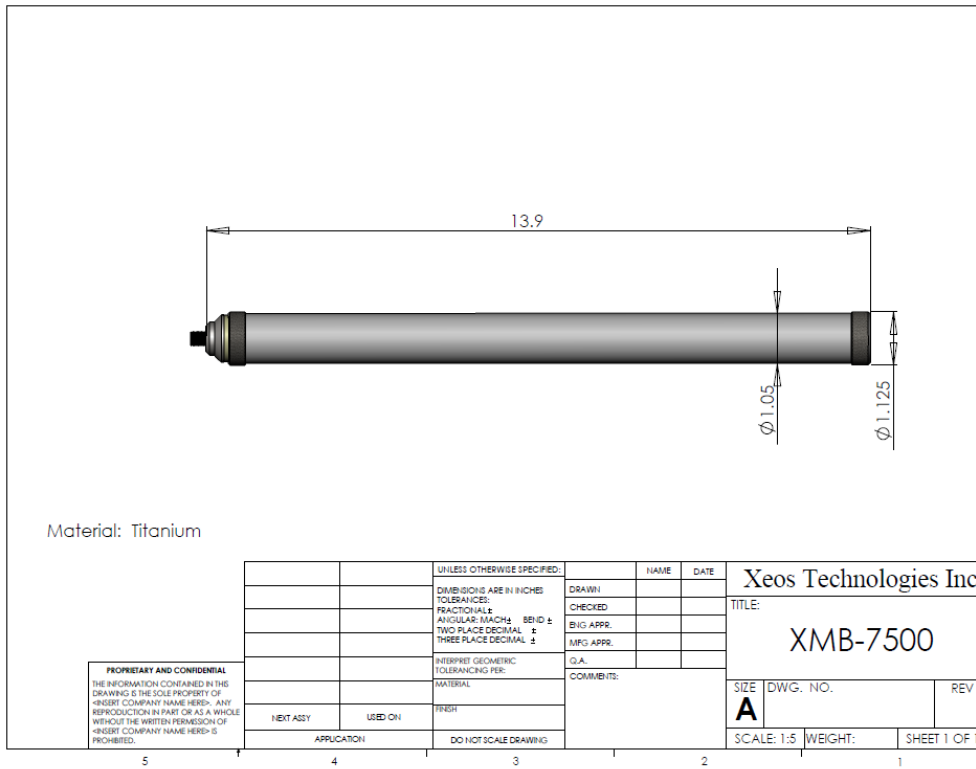
Weight:

Out of water: 820g

In water: 620g

O-rings: 2-020 70 DURO BUNA-N

O-Ring Lube: Dow Corning compound



APPENDIX C - ELECTRICAL

POWER SUPPLY

AA (STANDARD):

Internal Battery Supply: 6x 1.5 volt AA batteries

Voltage: 9 volts nominal

Capacity: Varies by manufacturer (1.8Ah – 2.8Ah)

Life expectancy: 6 Days at off time =2x pulse duration, tilt sensor off
12 Days at off time =5x pulse duration, tilt sensor off
(Approximate values, based on 2Ah alkaline)

AA ENERGIZER ULTIMATE LITHIUM (STANDARD):

Internal Battery Supply: 6x 1.5 volt AA Energizer Ultimate lithium batteries

Voltage: 9 volts nominal

Capacity: 3.0 Ah

Life expectancy: 7 Days at off time =2x pulse duration, tilt sensor off
15 Days at off time =5x pulse duration, tilt sensor off

NOTE: All life expectancy ratings are based on a 1 year below surface time

CR123A (STANDARD)

Internal Battery Supply: 9x CR123A 3 volt lithium batteries

Voltage: 27 volts nominal

Capacity: 1.4 Amp-hours

Life expectancy: 10 Days at off time =2x pulse duration, tilt sensor off
20 Days at off time =5x pulse duration, tilt sensor off
(Approximate values)

CR123A (SHORT):

Internal Battery Supply:	7x CR123A 3 volt lithium batteries
Voltage:	21 volts nominal
Capacity	1.4 Amp-hours
Life expectancy:	8 Days at off time =2x pulse duration, tilt sensor off
	17 Days at off time =5x pulse duration, tilt sensor off
	(Approximate values)

NOTE: All Life expectancy ratings are based on a 1 year below surface time

ELECTRONICS

Digital Controller:	Xeos VHF Beacon
ON/OFF Controls:	Switch on board (for storage and shipping)
	Reed Switch for activating without opening the case
	Solid State tilt switch for upright activation and deactivation
RF Beacon Output:	110 - 125mW
Output Signal:	1 kHz Pulsed Tone
Frequency Range:	151MHz – 161MHz (user switchable)
Harmonics:	-40dB

ENVIRONMENTAL

Operating Temperature:	-40° C to +60° C (-40° F to +140° F)
Depth Rating:	Submersible to 11,000m (36,089 ft)



WARRANTY, SUPPORT AND LIMITED LIABILITY

Xeos Technologies Inc. warrants the XMB-11K to be free of defects in material or manufacturing for a period of one year following delivery. Liability is limited to repair or replacement of the defective part and will be done free of charge.

LIMITED WARRANTY: Xeos Technologies Inc. warrants that the product will perform substantially in accordance with the accompanying written materials for a period of one year from the date of receipt.

CUSTOMER REMEDIES: Xeos Technologies Inc. entire liability and your exclusive remedy shall be at Xeos Technologies Inc. option, either (a) return of the price paid or (b) repair or replacement of the product that does not meet Xeos Technologies Inc. Limited Warranty and that is returned to Xeos Technologies Inc. with a copy of your receipt. This Limited Warranty is void if failure of the product has resulted from accident, abuse, or misapplication. Any replacement product will be warranted for the remainder of the original warranty period or ninety (90) days, whichever is longer.

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NO LIABILITY FOR CONSEQUENTIAL DAMAGES: In no event shall Xeos Technologies Inc. or its suppliers be liable for any damages whatsoever (including, without limitation, damages for loss of equipment, for loss of business profits, business interruption, loss of business information, or other pecuniary loss) arising out of the use of or inability to use this Xeos Technologies Inc. product, even if Xeos Technologies Inc. has been advised of the possibility of such damages.