



XMF-11K

LED FLASHER USER MANUAL



Version 1.3

March 2014

SHIPPED FROM:

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1 VERSION HISTORY

Version Number	Date	Description
1.0	January 2013	Original release
1.1	March 2013	Minor changes for specifications
1.2	Oct 2013	Change address for Xeos, review specifications
1.3	March 2014	Update O-ring & lube recommendations, formatting

2 GENERAL DESCRIPTION

The XMF-11k is an independently powered, self-contained surface flasher that is fully submersible up to 11,000m (36,089 ft.). The super-bright LED provides unparalleled visibility in even the worst conditions and the reliability provided by our solid state surface sensor is a significant improvement over mechanical methods.

The XMF-11k features a miniaturized design in an all Grade 9 Titanium enclosure designed to meet or exceed your operational requirements for an ultra-deep water submersible flasher. The XMF-11k is backed by a comprehensive warranty and excellent support.

The XMF-11k features microprocessor controlled, ultra-bright LED available in multiple colour options. The XMF-11k has a long lasting operational life of and features multiple activation options.

XMF-11k is intended for subsurface deployments. Xeos Technologies Inc. (Xeos) manufactures other specific products for surface and subsurface applications.

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

3 THEORY OF OPERATION

The XMF-11k is intended for locating and recovering high value, free drifting assets at sea. After being activated, the XMF-11k is submerged, where it enters an Underwater Mode. Here, it monitors water conductivity between the top disk and the bulkhead for up to 2 years. The LED will not flash while the XMF-11k is submerged.

Once it reaches the surface, the XMF-11k will begin to flash. If the daylight off, or tilt options are enabled, the device will not flash during daytime, and/or it is oriented upside down. The XMF-11k will continue to flash until it is manually turned off, the battery pack drops below the minimum voltage requirement of 7v, the XMF-11k is re-submerged, or if the daylight off, and/or tilt option prohibits.

4 OPERATING INSTRUCTIONS

4.1 ON/OFF MODES AND CONFIGURATION

4.1.1 ON/OFF OPERATION

The XMF-11k beacon has 4 ways of turning ON and OFF. The first way is through the use of an external magnet near an internal magnetic reed switch (if the reed switch is activated).

The second way is through the use of an internal tilt sensor (if the tilt sensor is activated). Turn off the XMF-11k by turning the device upside-down for a minute. Holding the XMF-11k upright will enable the device again.

The third way is through the use of an internal Light sensor (if the light sensor is activated) The XMF-11k will turn off during daylight hours, and it will resume flashing at dusk.

The fourth way is through the use of a capacitive water sensor (if the water sensor is enabled) Turn the device off by submerging it in water. The device will begin flashing again once it surfaces.

To turn XMF-11k ON using the magnet method, wipe the magnet back-and-forth quickly across the area directly below the glass portion of the lens. A flashing sequence of a dim flash, followed by a bright flash indicates that the device is powering up. Once the device is turned on, it will flash depending on the dip switch and rotary switch settings.

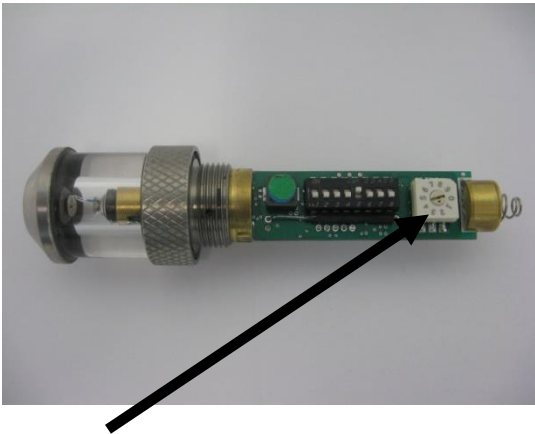
Swipe magnet here



To turn the XMF-11k OFF using the magnet method, repeat the above procedure with the magnet swiped on the area below the glass portion of the lens. A flashing sequence of a bright flash, followed by a dim flash indicates that the device is powering down. Once the unit is turned off, it will no longer flash.

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 flash

4.1.2 ROTARY SWITCH

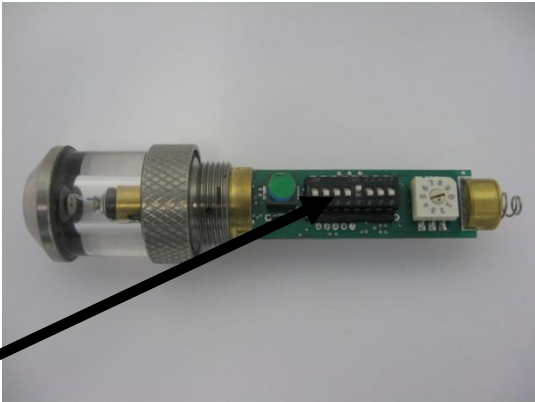


Rotary switch

Switch Position	Delay (Seconds)
1	1
2	2
3	3
4	4
5	5
6	6
7	10
8	15
9	20
0	30

The table above outlines the operation of the rotary switch. The switch position sets the delay in seconds between flashes. For example, if the rotary switch is set to '7', the time between LED flashes will be ten seconds.

4.1.3 DIP SWITCH



DIP switch

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

L = left position

R = right position

DIP Switch Pos	0 Flashes	1 Flash	2 Flashes	3 Flashes
1	L	R	L	R
2	L	L	R	R

The Flashing Sequence is determined by the position of BOTH DIP switches. To set the flashing sequence, make sure the 1 and 2 DIP switches match the setting for the sequence you want. For instance, if you want the XMF-11K to flash 3 times per cycle, set both DIP 1 and DIP 2 to the R or right position.

Please note that the sequence does not change the time between flashes. So these settings:

Rotary Dial 7

DIP 1 L

DIP 2 R

Would result in a 2 flash sequence with 10 seconds between each pair of flashes.

4.1.4 SENSOR OPTIONS

The XMF-11K contains a number of sensors which can affect the behavior of the XMF-11K. In order for the XMF to begin its flashing sequence, ALL the sensor criteria must be met. The configuration for the sensors is on the remaining DIP switch positions, 3-6. The table below describes their function and how to use them:

Sensor	Function	DIP Switch Pos	Left Position	Right Position
Reed Switch	Controls the ability to turn On/Off with magnet. DO NOT CHANGE. ¹	3	Enabled	Disabled
Light Sensor	Controls whether flashes during daylight – Enabled PREVENTS flashing in lit conditions	4	Enabled	Disabled
Accelerometer	Controls flashing based on orientation. If Enabled PREVENTS flashing when upside down.	5	Enabled	Disabled
Fresh water sensor	Senses salinity of the water. If salinity does not meet the threshold, it won't Flash. Setting to Fresh Water will meet the threshold for all salinity levels.	6	Fresh Water Threshold	Salt Water Threshold
Water sensor	Senses whether or not XMF is submerged. If set to Enabled, will prevent flashing when submerged.	7	Enabled	Disabled

The default settings for all sensors are in the LEFT position. That means that the environment will have to meet ALL the following conditions in order to begin the flashing sequence:

- Reed Switch/Magnet sensor is ENABLED (and the unit is turned on), AND
- There is no light detected, AND
- The XMF-11K is right side up, AND
- The salinity level meets the threshold (all water should meet the default), AND
- The XMF-11K is NOT submerged.

¹ The ability to disable the reed switch is available for repair purposes only. Do not change this position or you will be unable to use the flasher under any condition.

4.2 CHANGING THE BATTERIES

The chassis can easily be taken apart by unscrewing the top lens end off of the unit. This must be done carefully as the circuit board is attached to the lens, 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.

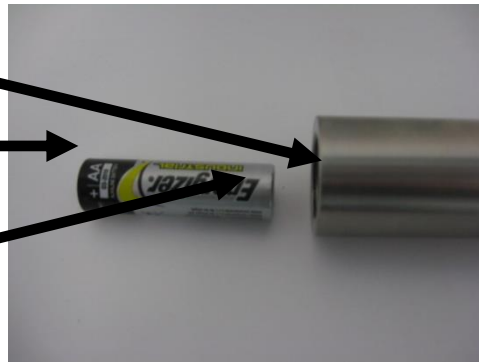
The XMF-11k accepts 6x AA 1.5 volt batteries in the standard chassis.

(a shorter Chassis that accepts 7 CR123A 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.



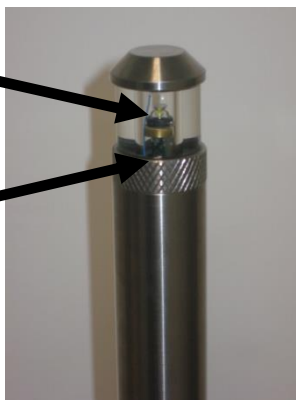
The batteries inside the chassis are protected by a plastic tube. When replacing batteries, ensure that the plastic tube is still intact inside the chassis.



When unscrewing the top ALWAYS grasp the top by the knurl and rotate counter clockwise.

Glass Lens

Knurl



APPENDIX A - TECHNICAL SPECIFICATION – STANDARD

Mechanical:

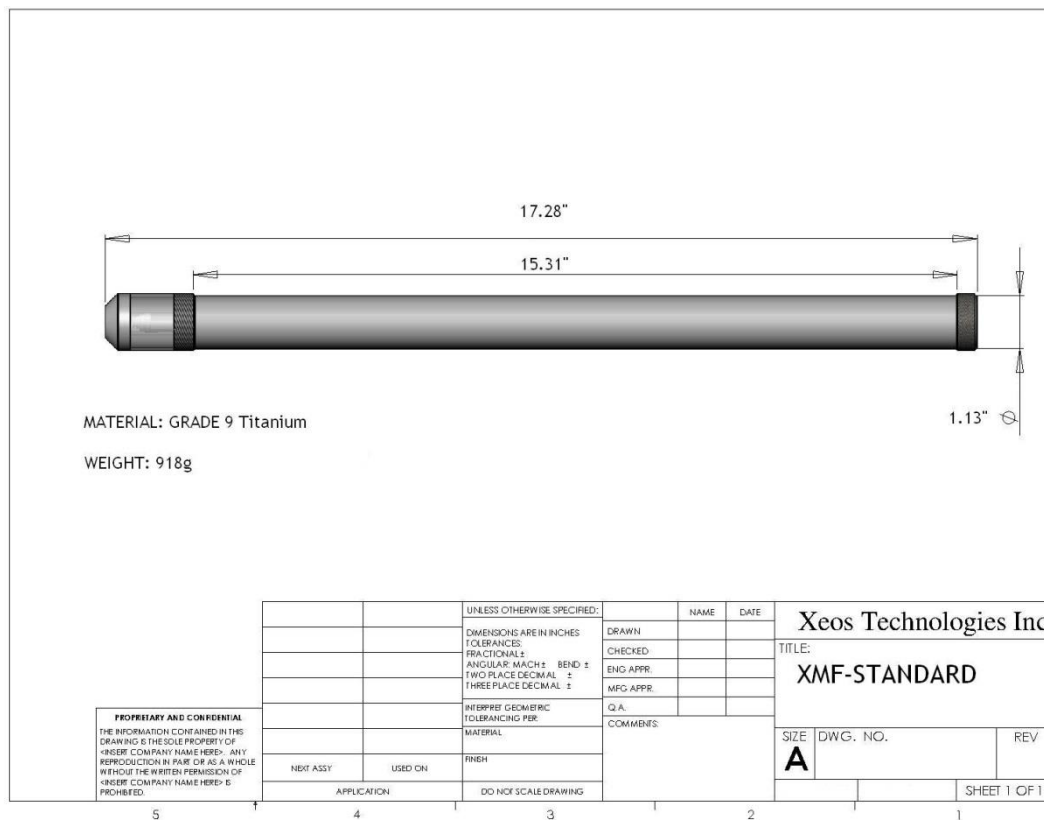
Material: Chassis: Grade 9 Titanium
Lens: Glass

Dimensions: Length 17.28"
Diameter of tube: 1.13"

Weight: Out of water: 918g
In water: TBD

O-rings: 568-020 70A DURO BUNA

O-Ring Lube: Dow Corning Compound 111



APPENDIX B - TECHNICAL SPECIFICATION - SHORT

Mechanical:

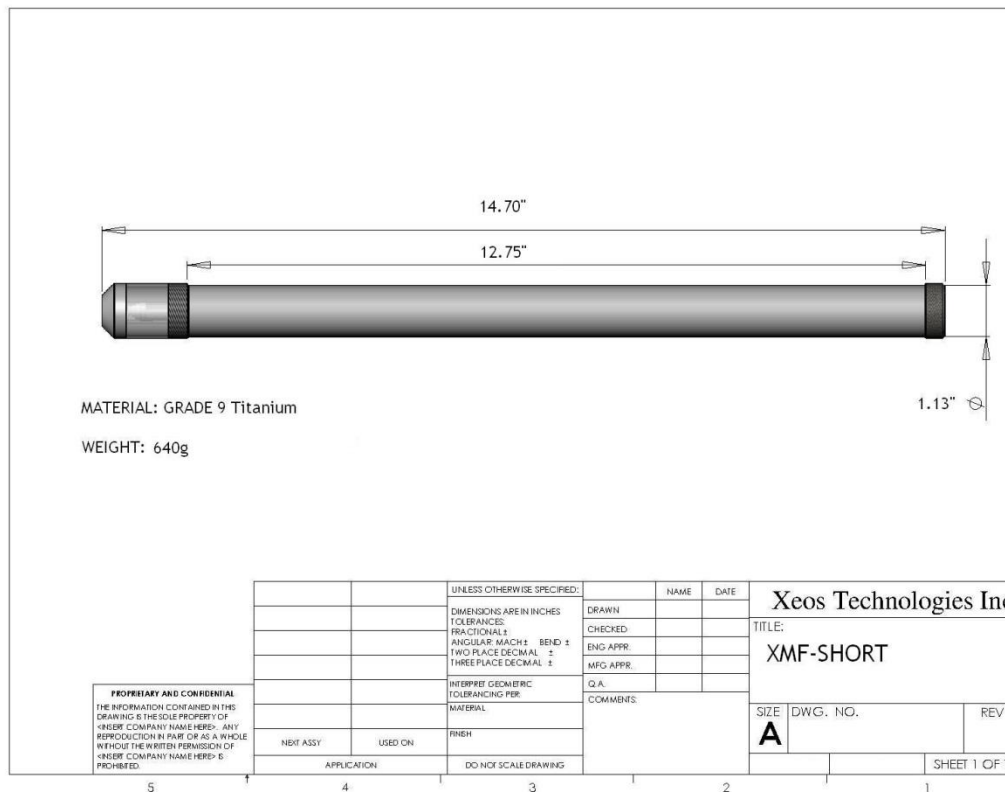
Material: Chassis: Grade 9 Titanium
Lens: Glass

Dimensions: Length 14.7"
Diameter of tube: 1.13"

Weight: Out of water: 640g
In water: TBD

O-rings: 568-020 70A DURO BUNA

O-Ring Lube: Dow Corning Compound 111



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:	12 Days single burst every 2 seconds, daylight off 60 Days single burst every 10 seconds, daylight 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:	15 Days Single Burst Every 2 seconds, daylight off 73 Days Single Burst every 10 seconds, daylight 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:	16 Days single burst every 2 seconds, daylight off 77 Days single burst every 10 seconds, daylight 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:	12 Days single burst every 2 seconds, daylight off 58 Days single burst every 10 seconds, daylight off (Approximate values)

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

Electronics

Digital Controller:	Xeos LED Flasher
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 Light sensor for daylight deactivation and night time activation
Pulse Options:	1,2 or 3 flashes/cycle
LED:	3.9W, single emitter type
Luminous Flux:	White – 70 lumens (70lm) Cyan – 110 lumens (110lm) Amber – 70 Lumens (70lm)

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 XMF-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.

NO OTHER WARRANTIES: Xeos Technologies Inc. disclaims all other warranties, either express or implied, including but not limited to implied warranties of merchantability and fitness for a particular purpose, with respect to the product or the accompanying written materials. This limited warranty gives you specific legal rights. You may have others, which vary from state to state.

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 damage.