

# FA-165HA CLASS 1 DIV 2 A Revolutionary Short Range Aton Lantern



Pilots and Mariners complain that the lights on buoys and beacons “disappear” the closer the ship comes to the light. This is especially true with large vessels and is the result of vertical divergence that focuses the light in a narrow beam in the horizontal plane. As a ship approaches the light, the light appears to dim since the mariner’s eye is above the limits of the light’s vertical divergence. The FA-165HA is designed to eliminate this problem and offers superior visibility at both distant and close aboard situations.

The ability to see the light from any vertical direction allows easy survey of lights after a storm or other calamity by aircraft.

The FA-165HA uses a state-of-the-art high flux lambertian LED source. With a near uniform output from -30 to +30 degrees vertical divergence, the FA-165HA overcomes the problem of buoy lanterns disappearing the closer a vessel comes to the buoy—it can be seen with equal brightness looking directly down on the light—and provides a much higher probability of detection even with significant buoy roll in rough seas.

*You don't need a brighter  
light if you have good  
vertical divergence*

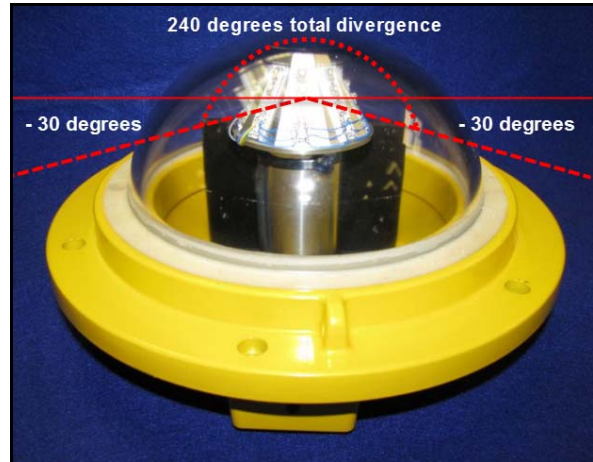
The lantern enclosure is comprised of cast marine grade aluminum with an upper section of a tempered, toughened glass globe cemented into a support ring. The metal/glass construction provides superior performance over plastic products in high temperature and high UV marine environments.

The LEDs are mounted on metal core PCBs with patented integrated heat pipes to cool the LED arrays. This highly efficient, passive, cooling system gives the LED array the highest design life in the marketplace (greater than 50,000 hours).

The FA-165HA's rugged enclosure ensures the life of the lantern housing will last the life of the LEDs.



**CLASS I DIVISION 2**



**MODEL FA-165**

**Patent No.:** US 7,461,952

**Tri-Color LEDs:** User can select Red, Green or White LED output by switch setting. Yellow color available on request.

**Flash Codes:** 256 user selectable

**Input Voltage:** 12-24V

Watts (fixed)	Red cd	Green cd	White cd	Yellow cd
9.2	56	70	84	70
4.6	30	37	45	37
2.3	15	18	23	18

Power settings are user selectable

**Equivalent Detection Range due to increased vertical divergence:** 6 + nm.

**Mounting:** (4) 5/8 in holes on 7 7/8 in circle, 90 degrees apart

*“I commend Automatic Power for providing a short-range navigation lantern that provides significantly improved, continuous, visibility from approach, to close aboard, to departure. The FA-165HA lantern overcomes a significant shortcoming in existing buoy lanterns.”*

Captain James T. Cushman  
Master Mariner

Maritime Operations Consultants, Inc.

Form no.: 072611



## WHY VERTICAL DIVERGENCE IS MORE IMPORTANT THAN INTENSITY FOR BUOY LANTERNS

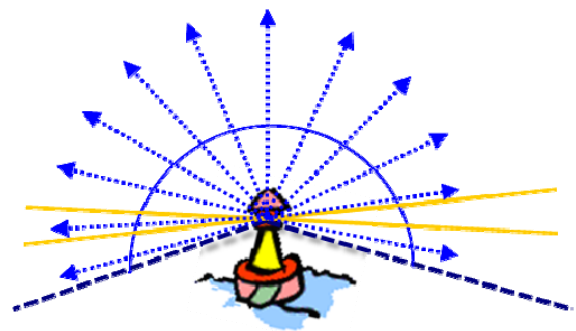
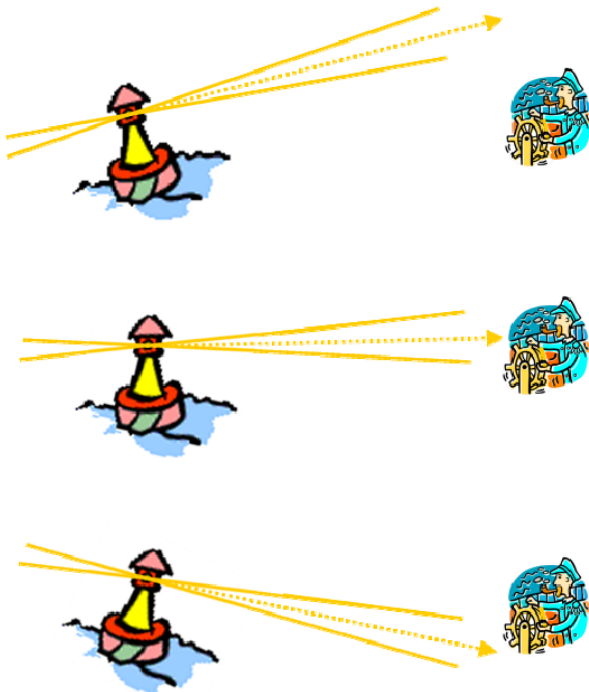
U.S. Coast Guard visual tests have shown that the typical effective range of a buoy light is only 30% of its nominal range due to buoy motion. However, lights with significant vertical divergence can achieve an effective range that is 80% + of its nominal rated range on a buoy in a seaway.

The unprecedented vertical divergence of the FA-165 actually increases the range at which a mariner can correctly identify a buoy by its lantern flash character. A 3 nm light with exceptional vertical divergence will be identifiable at a greater distance than a 5-7 nm light with a smaller vertical divergence.

The reason for this effect is that the roll of a buoy with a narrow lantern vertical divergence confuses the flash character to a distant mariner. Sometimes he sees the light, other times he doesn't as the buoy rolls. It is not possible to know if the disappearance of the light is due to a normal flash interval or the rolling of the buoy. So even though the mariner may see a lantern from some distance, he will not be able to identify the buoy by its flash character. The wider the vertical divergence the further away a lantern's flash character can be correctly identified.

However, the closer the mariner comes to the buoy, the dimmer the light appears until it is not seen at all when close aboard due to limited vertical divergence.

The FA-165 eliminates both these problems by providing a light visible over 240 degrees vertical—it can even be seen when the mariner is looking directly down on the lantern!



**The FA-165's vertical divergence allows the mariner to see the light continuously, even with a 30 degree buoy roll and when close aboard the navaid**

**Existing buoy lanterns with a small vertical divergence prevent correctly identifying the light character or seeing the light when close aboard**

