

FA-249 Gimbaled Lantern

The FA-249 Gimbaled Lantern is the technological solution to the problem posed by the movement of marine structures in a seaway. While versions of gimbaled lanterns were routinely used on the optics of lightships, Automatic Power has refined this technology to effectively compensate for the movement of large navigation buoys, floating production platforms (FPSO), tension leg platforms, and the heeling of buoyant beacons.

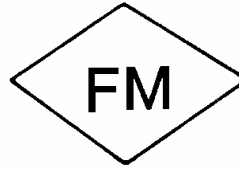
Modern, molded acrylic lens are extremely efficient in concentrating light output in a relatively small horizontal beam. When a buoy or buoyant beacon is heeled over by wind, current, or wave action, the light is visible only intermittently to the mariner and its effective range is greatly reduced. Until the introduction of the FA-249 Gimbaled Lantern, the only available alternatives to improve service to the mariner were larger, more stable and more expensive buoys, very expensive, deep water fixed structures, and/or high powered, wide vertical divergence lights.

The FA-249 Gimbaled Lantern maintains its optic in a vertical position for inclinations of +/- 9 degrees (18 degrees total). This assures the **full light intensity is continually available** in the most severe sea conditions. It exceeds the vertical divergence requirements of the COLREGS for shipboard running lights.

The lantern also incorporates a clear acrylic lens cover that protects the precise fresnel prisms of the 155 mm lens from accumulating optical contaminants or fillets between the prisms. A buildup of these fillets can permanently reduce the lens output as much as eighteen percent in just six weeks of exposure to the marine environment. The lens cover also assures that, under any weather conditions, the maximum degradation of output is approximately ten percent by preventing moisture accumulation in the lens prisms.

The basic components of the lantern include a modified 155 mm acrylic lens mounted on a two-axis gimbal within a silicone-filled base--all protected by a 250 mm lens cover. Gimbal hinges are of a special polypropylene material tested to 69 million flex cycles (no metallic parts). The heavy silicone fluid in which the gimbal counterweight is immersed maintains a viscosity of 100,000 SSU at all operating temperatures. This dampens any violent buoy motion and lengthens the natural period of the mechanism to over nine seconds.

The development of the APCL-10 FLASHCHANGER® and the 12-volt, 9-amp, high



pressure halogen lamp permit flashed FA-249 Gimbaled Lanterns to produce ranges exceeding eleven miles (at $t=0.74$). Duplex, synchronized units can produce ranges exceeding thirteen miles. When powered by solar energy, the lantern provides a reliable, effective light capable of long unattended service periods.

The FA-249 Gimbaled Lantern is an excellent solution for solarizing large navigation buoys, floating production platforms, tension leg platforms, and other large navigation buoys. It also permits cost-effective, long-range, buoyant beacons to be substituted for deep water, fixed structures.

The FA-249 Gimbaled Lantern is Factory Mutual



Approved for NEC Class I, Division 2 rating.

The FA-249 Gimbaled Lantern is listed by the U. S. Coast Guard as an acceptable lens/lamp combination in Title 33, Code of Federal Regulations Part 67 for Class "A" structures for use on tension leg platforms to 9 degrees tilt.

FIXED INTENSITIES (candela)

Lamp C-8 Filament

| | |
|------------|------|
| 6V 0.25a | 28 |
| 6V 0.46a | 81 |
| 6V 0.70a | 105 |
| 6V 0.90a | 119 |
| 12V 0.55a | 114 |
| 12V 0.77a | 171 |
| 12V 1.15a | 247 |
| 12V 2.03a | 382 |
| 12V 3.05a | 782 |
| *12V 9.00a | 3550 |

CC-8 Filament

| | |
|----------|------|
| 12V 0.5a | 182 |
| 12V 1.0a | 486 |
| 12V 2.0a | 998 |
| 12V 3.0a | 1312 |

Halogen Lamps

| | |
|-------------|------|
| 12V 20 Watt | 895 |
| 12V 35 Watt | 1350 |
| 12V 50 Watt | 1400 |
| 12V 75 Watt | 1800 |

For red lens multiply above by 0.30. For green lens multiply above by 0.32. For amber lens multiply above by 0.68.

*APCL-10 FLASHCHANGER® limited to 75 watts average power.

TECHNICAL DATA

LENS:

155 mm 360 degree visibility acrylic fresnel lens with 250 mm lens cover available in clear, red, green, and amber.

FLASHCHANGER®:

Four- or Six-place motor driven, APCL-5/APCL-10 with selectable flash rhythms, pulse width modulation regulation, solar charge regulator, monitoring, synchronization, self-test function, communications port, photocell, and enhanced environmental protection.

LAMPS:

Prefocussed T3.5, S-8, or S-11 envelope and C-8 or CC-8 filament, incandescent or tungsten halogen lamps to 150 watts.

MATERIALS:

Acrylic plastic lens, aluminum base, stainless steel fittings, silicone-rubber lens gasket.

FINISH:

Gray painted base.

MOUNTING:

Four each 5/8 inch diameter holes on a 7 7/8 inch bolt circle--90 degrees apart.

DIMENSIONS:

64 pounds
11in. X 11in. X 30in.

SHIPPING DATA:

72 pounds
17in. X 17in. X 36in.

MANUFACTURED UNDER PATENT NO. 4,736,205.

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