

## Navigation Lights

"A set of lights shown by a ship or aircraft between sunset and sunrise, and in rain and fog, to indicate its position and orientation."

### RAILBLAZA illuminate Series Battery Powered Navigation

**Lights** are designed primarily to meet the US Coast Guard requirements (USCG 2NM) for navigation lights on power boats under 12 metres (39.4') in length. They are made in New Zealand, from high quality materials, and deliver fantastic performance at an affordable price.

### Requirements for vessels under 12 metres

All vessels under 12 metres shall exhibit one of the following:

- Separate or combined sidelights; a masthead light and a stern light
- Separate or combined sidelights and an all round white light.

The masthead or white all round light shall be carried at least one metre above the sidelights.

Power-driven vessels less than 7 meters in length whose maximum speed does not exceed 7 knots may in lieu of the above exhibit an all-round white light and shall, if practicable, also exhibit sidelights

### Form and Function of RAILBLAZA Lights

There are two models in the **illuminate Series**, the i360 All-round white, and the iPS Port/Starboard.

- i360 emits a white beam that is visible through the full arc of the horizon (360 degrees) for 2 nautical miles, this light can be used on canoes, kayaks and power boats under 12 metres in length.
- iPS emits 2 beams, red (port) and green (starboard) that are visible for 2 nautical miles, and is for use on vessels under 7 metres (23') that are capable of moving at speeds over 7 knots, and all vessels over 7 metres and under 12 metres in length. The red and green sectors are visible from zero degrees (straight ahead) through an arc of the horizon that measures 112.5 degrees, that is from zero degrees right through to 22.5 degrees abaft of the beam.

RAILBLAZA have not produced a tri-colour (red, green, white) light, **as a tricolour light is only for use on a sailboat on top of the mast**, and is not legal for use on any boat under power. A sailboat under motor only, or under sail and motor, is considered a powerboat, and must display appropriate lights. A battery powered masthead light would not be practical for normal use, as it would be necessary to climb the mast to turn it on.

### Lumens, candela and chromaticity

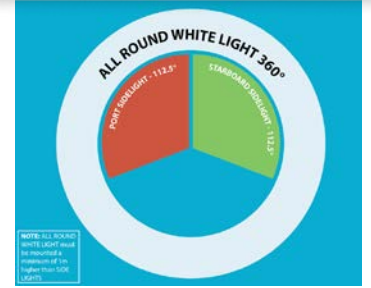
The effectiveness of navigation lights is measured in Candela. Lumens are a popular measure of light output, but are irrelevant in measuring the effectiveness of navigation lights as lumens only measure total light output of a light source – think power. If you are lighting a room, lumens are important, if you need a light to be seen from a given point and distance then you need to know the candela, or brightness, at that point. Chromaticity is the visible colour of a light source. There are specified values for the chromaticity output of navigation lights, this is another factor that is measured in the lab when they are tested for compliance with regulations.

### Design considerations

Navigation light design takes three factors into consideration, brightness, angle and colour. For a navigation light to comply with regulations it must emit the correct colour, in the right direction, at the correct intensity. This is achieved by selecting the correct LED for colour and output, and directing the beam through carefully designed optics to achieve both focus and directional cutoffs. RAILBLAZA illuminate Series Lights are compliant with the USCG 2NM standards, meaning they deliver at least 4.3 candela at certain specific angles and ranges to enable sufficient visibility at up to 2 nautical miles. *See diagram.*

### Disclaimer:

*This information is correct as at 1st November 2016, and is designed as a basic guide and introduction to navigation lighting for water craft. It is not to be used as a technical reference. RAILBLAZA assume no responsibility for any errors or omissions. Please check with the appropriate governing body regarding full regulations for navigation lights in your area.*



Some internet references for your local region;

### New Zealand

<http://www.maritimenz.govt.nz/recreational/documents/Safer-Boating-an-essential-guide-2014.pdf>

### Australia:

- QLD <http://www.msq.qld.gov.au/Safety/Navigation-lights>
- NSW <http://www.rms.nsw.gov.au/maritime/safety-rules/rules-regulations/night-safety.html>
- TAS <http://www.mast.tas.gov.au/recreational/navigation/>
- SA <https://www.sa.gov.au/topics/boating-and-marine/boat-and-marine-safety/international-boating-rules/navigation-lights>
- WA <http://www.transport.wa.gov.au/imarine/navigational-lights.asp>
- NT [https://nt.gov.au/\\_\\_data/assets/pdf\\_file/0007/230938/guide-recreational-boating.pdf](https://nt.gov.au/__data/assets/pdf_file/0007/230938/guide-recreational-boating.pdf)
- VIC <http://www.rms.nsw.gov.au/maritime/safety-rules/rules-regulations/night-safety.html>

### USA:

- <http://www.navcen.uscg.gov/?pageName=navRulesContent#rule23>



### ILLUMINATE i360

**Battery powered all round White Navigation Light**

- Designed and made in New Zealand using high quality materials, and the latest LED technology
- **3 operation modes**
  - Full brightness navigation mode 2NM – up to 25hrs battery life
  - Low brightness work mode – up to 160 hrs battery life
  - Flashing emergency mode – over 200hrs battery life
- Waterproof to 1 metre
- Floats with lens clear of water
- Powered by 3 x AA batteries, not supplied
- Fits any RAILBLAZA mounting port, ordered separately.
- Meets USCG 2NM 33 CFR 183.810 & ABYC A-16 2 nautical mile visibility
- Tested by Imanna Lab. Inc 19/5/2016 2 Nautical Miles visibility.



### ILLUMINATE iPS

**Battery powered Bi-Colour LED Navigation Light**

- Designed and made in New Zealand using high quality materials, and the latest LED technology
- **3 operation modes;**
  - Bi-Colour Port Starboard mode 2nm, 12-14hr battery life
  - Port light only mode, 2nm, 20-24hr battery life
  - Starboard light only mode, 2nm, 20-24hr battery life
- Waterproof to 1 metre
- Floats with lens clear of water
- Powered by 3 x AA batteries, not supplied
- Fits any RAILBLAZA mounting port, ordered separately
- Meets USCG 2NM 33 CFR 183.810 & ABYC A-16 2 nautical mile visibility.
- Tested by Imanna Lab. Inc 25/01/2017 2 nautical miles visibility.

