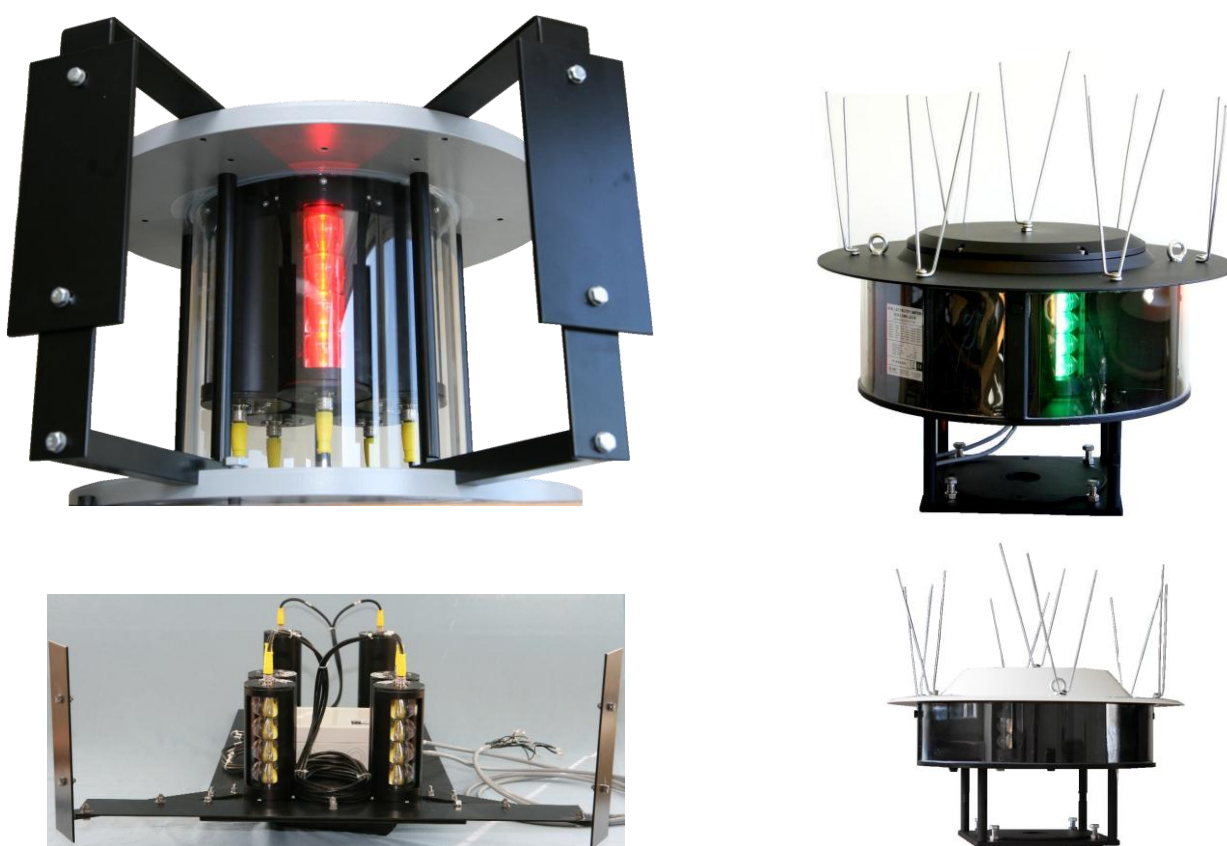


## Modular LED Sector Lanterns E826X

LED Sector Lanterns of the E826X product family are intended for use in shore side installations of marine visual aids to navigation (AtoN) infrastructure as modular medium range / medium precision light signal sources for generating different colours and/or rhythms over designated sectors. Each **E826X** is manufactured to a specification of target AtoN site, formed of a cluster of standard LED light signal modules, type E8261, that are mounted **off-centre as point sources** on a precision engineered bottom plate. This provides an opportunity to configure such lanterns in compact form with the architectural specifics of an installation site in mind, and ease of installation since only the whole factory-configured lantern needs to be oriented. Further spatial distribution of light sources in indoor applications allows reducing the signal shadowing effects of the window frames of a lantern room. Versions for use in field conditions are available.



Picture 1. Enclosure alternatives for indoor and outdoor operation of Sector Lanterns E826X.

Depending on the nominal range requirement, the Sector Lanterns E826X are supplied as:

**Up to 6 NM: E8262.RWG** using E8261.2.X LED modules with 2 lens blocks in each;

**Up to 7.5 NM: E8264.RWG** using E8261.4.X LED modules with 4 lens blocks in each.

Note: Nominal ranges are shown for single-tiered application, illuminance at the eye 0.2  $\mu$ lx.

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The E826X Sector Lantern assembly is modular, utilizing field replaceable energy efficient LED Sector Light Modules **E8261.X.X** that are working as red, green, or white point light sources. The modules are arranged on a bottom (or top) plate in corresponding outer enclosures with cut screens in accordance with the requirements of the host navigation mark. They are driven by an external power conditioning and control module configured at the factory for current that generates sufficient spare luminous intensity for provision of required nominal range throughout the expected lifetime. The whole assembly is housed in a common enclosure when necessary, or installed inside a lantern room in distributed arrangement. Capabilities of the E8261 LED modules are shown in the table below.

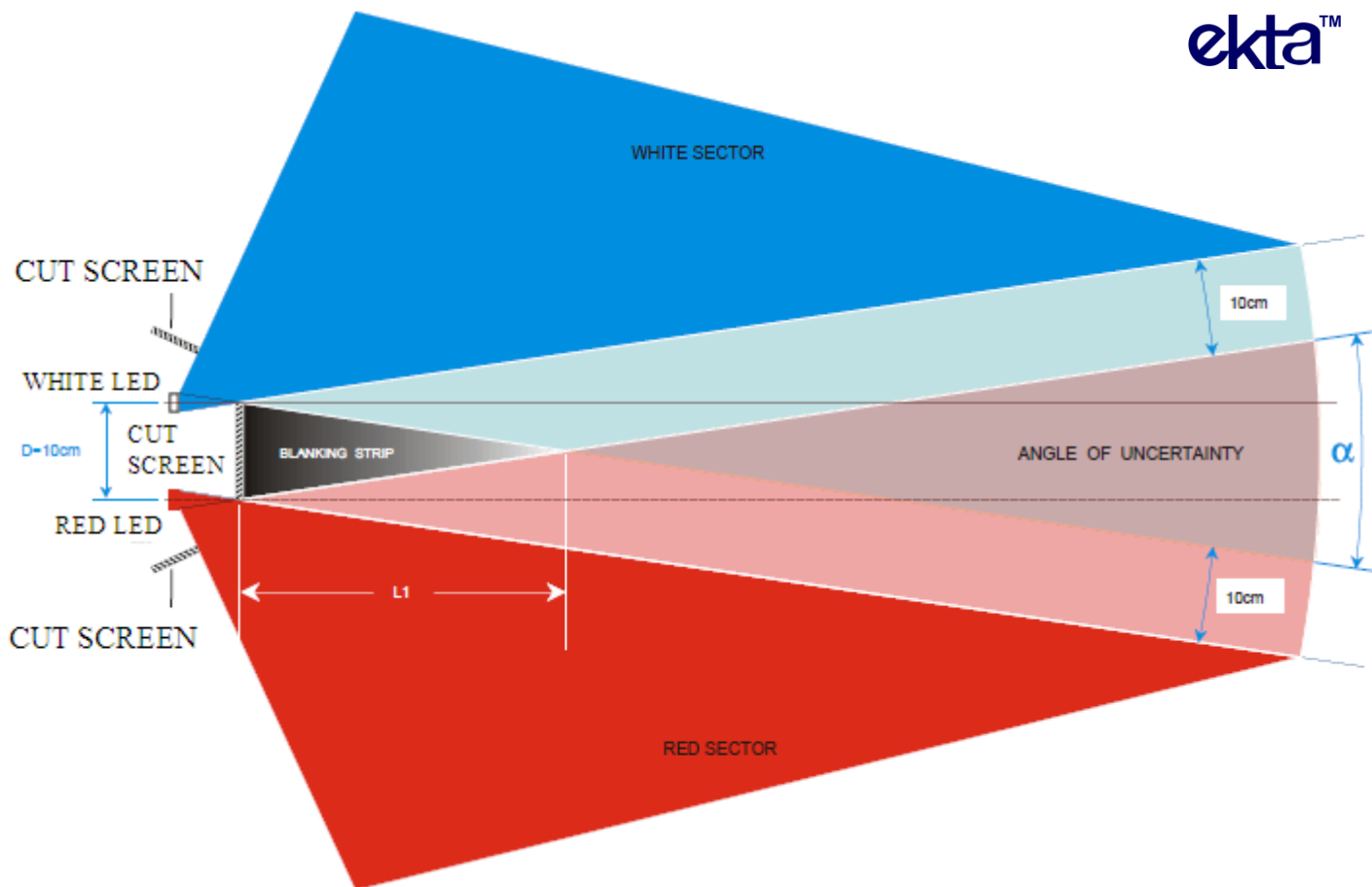
Parameter	E8261.2.X		E8261.4.X	
	I [cd]	P [W]	I [cd]	P [W]
<b>Typical luminous intensity and power consumption per module: steady state operation at +25°C/350 mA</b>				
Red LED module <b>E8261.X.R</b>	280 cd	2.1 W	560 cd	4.0 W
Green LED module <b>E8261.X.G</b>	700 cd	2.2 W	1400 cd	4.0 W
White LED module <b>E8261.X.W</b>	1000 cd	2.3 W	2000 cd	4.2 W
<b>Vertical divergence <math>2\Theta_{1/2}</math> (FWHM)</b>	3.5°			
<b>Horizontal divergence <math>2\Theta_{1/2}</math> (FWHM)</b>				
Red LED module E8261.X.R	120°			
Green LED module E8261.X.G	110°			
White LED module E8261.X.W	100°			
<b>Achievable sector boundary resolution</b>				
With cut screens of the outer enclosure 8261.X.D00-Q	1.8°			
With additional cut screens at 200 mm	22'			
With additional cut screens at 300 mm	15'			
With additional cut screens at 400 mm	11'			

Note: Luminous intensity of E8261.X.X LED modules is decreased by an enclosure snow screen when used, or by lantern room window panes when installed indoors.

Each E8261 module contains **two independent LED arrays** that are connected to the constant current supply module by dedicated wires, allowing to achieve full operational redundancy when necessary, and unification of the spare module stock. An E8261 is protected to IP67 and fixed inside the outer enclosure by a single screw. It connects to a control unit using a male 5-pole M12 connector located at the top of the module, requiring no adjustment in case of field replacement.



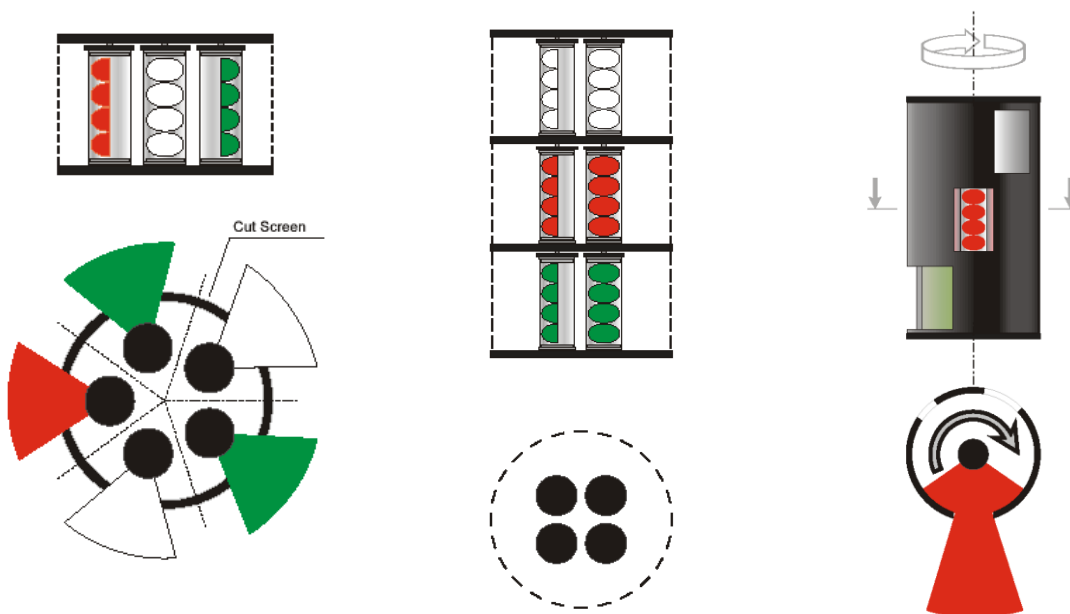
Picture 2. LED Modules E8261.4.W, E8261.2.G, outer enclosure 8261.2.D00-Q for E8261.2.X.



Picture 3. The principle of light signal formation in the LED Sector Lights E826X. The Angle of uncertainty of the lantern's light beam ( $\alpha$ ) can be calculated using the following formula where A is the distance of the Cut Screen from the light source:

$$\alpha \text{ [minutes]} \leq 3750 / A \text{ [mm]}$$

Example: If  $D = 10\text{cm}$  and  $\alpha = 15'$  ( $0.25^\circ$ ) then the blanking strip is crossed at  $L1 = 54 \text{ m}$ .



Picture 4. Examples of single- and multi-tier configurations of the LED Sector Lights E826X.



Picture 5. Sector Lantern E8264.RWG.LC-F3138 installed inside a lantern room at Heponiemi, Finland. The picture shows one half of the lantern. Sighting pins are visible in picture centre.



Picture 6. Sector Lantern E8262.RWG-LB-F6337 installed at Ronnbackskär, Finland.

Pictures 5 and 6 are courtesy of Mr. Sami Lasma (Finnish Transport Agency) and Mr. Ari Rivasto (Meritaito Oy).