

DATA SHEET

GPI GLIDE PATH INDICATOR



The powerful GPI light beams enable the pilot to easily locate the helideck from a distance of approx. 5 nm and will guide the helicopter to a position above the landing area. The light beams consist of three different vertical sectors: A steady green sector in the center that indicates the correct approach angle of abt. 4°, a yellow/amber, slow flashing upper sector above the green sector and a red, fast flashing lower sector warning the pilot of a dangerously low approach angle.

ARTICLE NO. | 02001-00-0003 GPI

The two fully redundant LED driven light beams are stabilized to $\pm 0.3^\circ$ using an internal motion sensor (Inertial Measurement Unit IMU) and powerful servo actuators to compensate up to $\pm 45^\circ$ of roll and pitch motions, irrespective of the relevant helicopter approach course.

A high resolution camera with motorized zoom facing towards the approaching helicopter will assist visual surveillance of helideck landing operations. When not used as GPI, the camera can be integrated in the CCTV system and act as pan/tilt camera for additional observations.

System integrity and operational reliability is controlled by Optonaval's internal electronics combining multiple sensors measuring temperature, humidity and electric current, providing 24/7 monitoring of the GPI's status. In that respect, the GPI will show an upcoming malfunction before it actually fails. Easily exchangeable standard dry agent cartridges provide effective absorption of residual humidity. Nitrogen filling, as alternative mode of humidity control, is available as optional feature.

ELECTRICAL SPECIFICATIONS

Supply Voltage	48 VDC
Power Pmax	250 W

OPERATING CONDITIONS

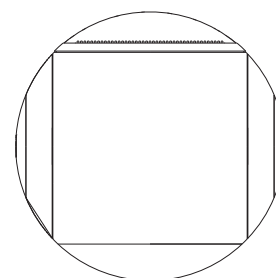
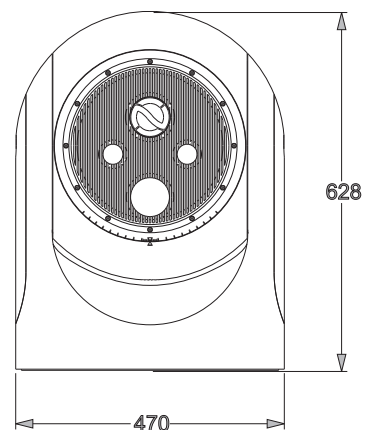
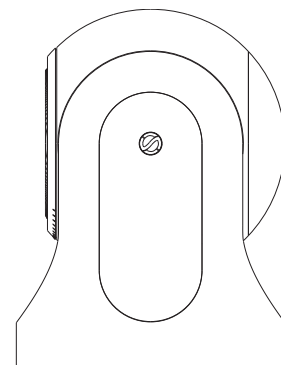
Temperature	-20°C to 50°C
Ingress Protection	IP66

MECHANICAL SPECIFICATIONS

Dimensions (Ø × H)	470 × 629 mm
Material	Seawater resistant anodized aluminium alloy
Surface Coating	Customer specific
Colour	Customer specific
Gloss Grade	Customer specific
Weight	approx. 49 kg

OPTICAL SPECIFICATIONS

Light Source	Redundant 2 × LED Light Engine
Optical Characteristics	STANAG 1445 / 1236
NVG compatible	Acc. to MIL-STD-3009



DATA SHEET

CDPERL COMBINED DECK EDGE AND PERIMETER LIGHT



The Optonaval Combined Deck Edge and Perimeter Light (CDPERL) combines two different functions:

1. Deck Edge Light (DEL), >20° elevation, with low, dazzle free light intensity
2. Perimeter Light (PERL) with visibility of about 2 nm from 0° to abt. 20°

Modern LED technology provides energy-saving, long life and low maintenance performance. Due to its solid moulded structure, there is no possibility for moisture to enter within the LEDs or the electrics.

CDPERL COMBINED DECK EDGE AND PERIMETER LIGHT



ARTICLE NO. | 02017-00-0001_R01 CDPERL

The Perimeter Lights ring produce a directed and bright light around 360° in a horizontal angle and of 0° to 20° vertically, which serves as CAP 437 conform marking of the outer limits of the landing area and can be seen from a distance of 2 nm during night time. This light is available in different colours, usually green or amber. The Deck Edge Light (DEL) on top is undirected, of comparatively low intensity and covers the remaining vertical angle (20° to 90 °) glare free in order to assist the pilot in the final stages of approach.

Due to the consequent use of state-of-the-art Power LED technology, the FDL is energy saving, maintenance free and still compact in design.

The functionality of the CDPERL light is controlled by Optonaval's internal electronics combining multiple sensors measuring temperature, humidity and electric current, providing 24/7 monitoring of the light's status. In that respect, the light will show an upcoming malfunction before it actually fails.

ELECTRICAL SPECIFICATIONS

Supply Voltage	48 VDC
Power Pmax	7 W

OPERATING CONDITIONS

Ambient Temperature	-30°C to 50°C
Ingress protection level	IP 66/67
EMC	acc. to MIL-STD-461G

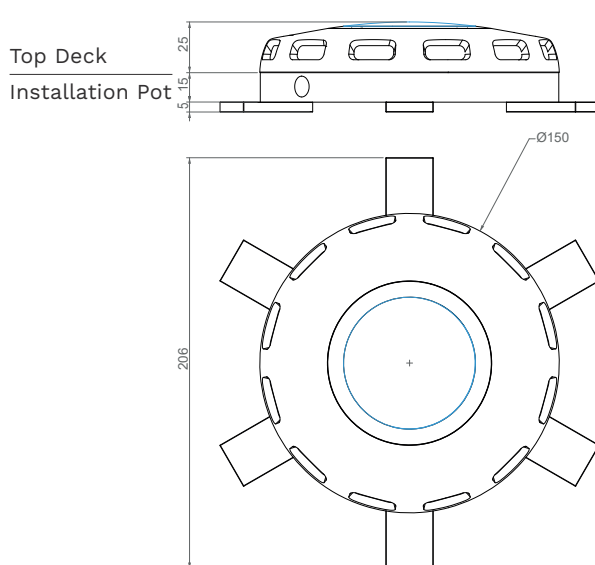
MECHANICAL SPECIFICATIONS

Dimensions	Variation 1	Ø 206 × 45mm
	Variation 2	Ø 150 × 125mm
Material	Seawater resistant anodized aluminium alloy/ alternativ Stainless steel	
Colour	Customer specific	
Gloss Grade	Customer specific	
Weight	ca. 2,1 kg	

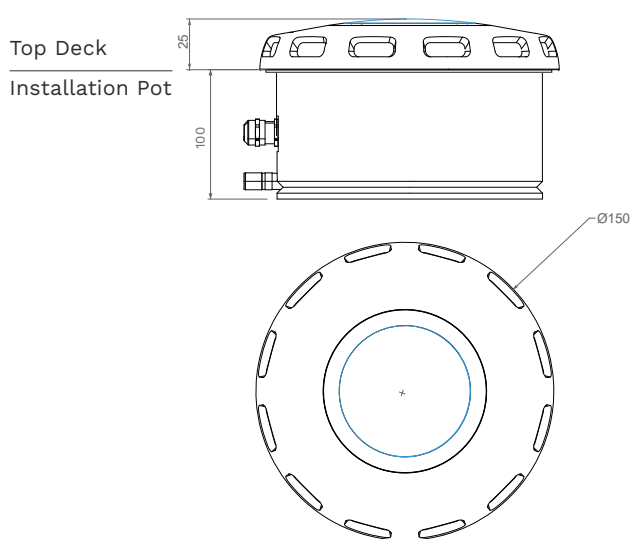
OPTICAL SPECIFICATIONS

Light Source	LED
Deck Edge Light	
Beam Angle	> 20° vertical
Light Output	3 cd
Luminous flux	100 lm (green)
Perimeter Light	
Light Output	30 cd / 0-10° vertical 15 cd / 10- 20° vertical
Luminous flux	600 lm (green)

Variation 1:



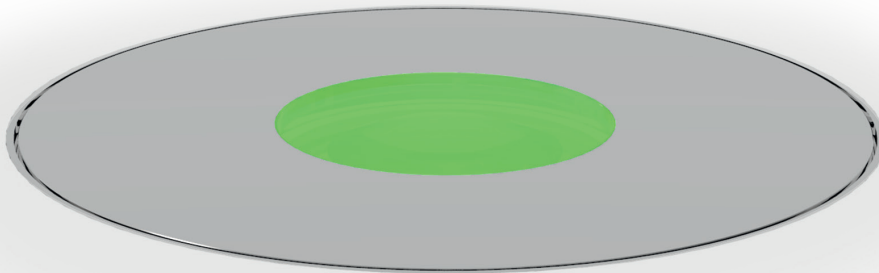
Variation 2:



ARTICLE NO. | 02017-00-0001_R01 CDPERL

DATA SHEET

FDEL FLUSH DECK EDGE LIGHT



The Optonaval Flush Deck Edge Light (FDEL) has been designed to mark the edges of the Flight Deck. The DEL gives the hovering helicopter pilot an important information about the limitations of the flight deck.

Flush Deck Edge Light (DEL), >20° elevation, with low, dazzle free light intensity

ARTICLE NO. | 02014-03-0002 FDEL

When activated the Flush Deck Edge Lights produce a bright light around 360° in a vertical angle and of 20° to 90° vertically, which serves as CAP 437 conform marking of the outer limits of the landing area and can be seen from a distance of 2 nm during night time.

This light is available in different colours, usually green or amber. The Deck Edge Light (DEL) on top is undirected, of comparatively low intensity and covers the remaining vertical angle (20° to 90 °) glare free in order to assist the pilot in the final stages of approach.

The surface of the light around the DEL can be adapted to the surface of the surrounding deck, be it teak, resin compound or alike.

Due to the consequent use of state-of-the-art Power LED technology, the FDL is energy saving, maintenance free and still compact in design.

The functionality of the FDEL light is controlled by Optonaval's internal electronics combining multiple sensors measuring temperature, humidity and electric current, providing 24/7 monitoring of the light's status. In that respect, the light will show an upcoming malfunction before it actually fails.

ELECTRICAL SPECIFICATIONS

Supply Voltage	48 VDC
Power Pmax	70W

OPERATING CONDITIONS

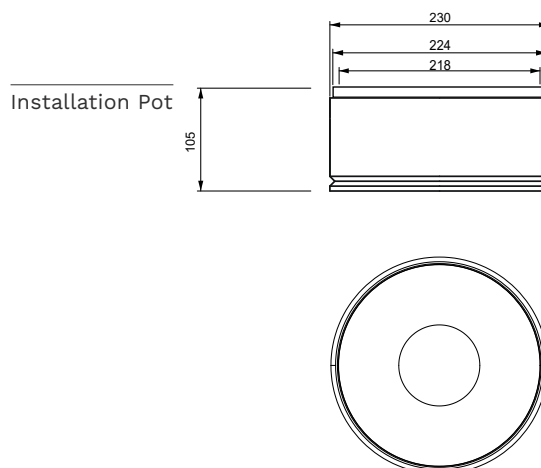
Ambient Temperature	-30°C to 50°C
Ingress protection level	IP 66 / 67
EMC	acc. to MIL-STD-461G

MECHANICAL SPECIFICATIONS

Dimensions	Ø 218 × (105) mm
Dimensions Installation Pot	Ø 230 × 105 mm
Material Light Element	Seawater resistant anodized aluminium alloy; Stst Cover
Material Installation Pot	aluminum or stainless steel
Surface Coating	polished
Colour	Customer specific
Gloss Grade	Customer specific
Weight	ca. 5 kg /excl. Installation Pot)

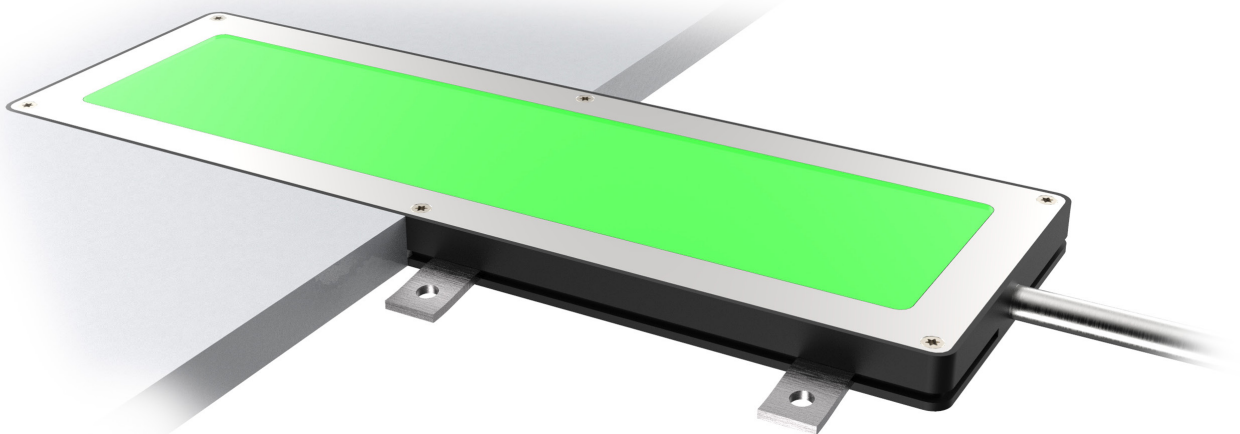
OPTICAL SPECIFICATIONS

Light Source	LED
Deck Edge Light	
Beam Angle	> 20° vertical
Light Output	3 cd
Luminous flux	100 lm (green)



DATA SHEET

FIL FLUSH INSERT MARKING LIGHT



The Optonaval Flush Insert Marking Light (FIL) is designed to light the heliport identification and position marking, aiming circle, landing-H and perimeter circle in an aesthetic manner. The compact, solid and functional design of the FIL is made to excel in extreme marine environment conditions as well as in day and night operations.

ARTICLE NO. | 02019-00-0001 FIL

The FIL provides the incoming helicopter pilot with important orientation about the dimensions and safe landing conditions on the Flight Deck.

and indicate if the lamp is impaired. The FIL can be easily exchanged by removing FIL module from the provided deck recess.

Modern LED and induction technology provides energy-saving, long life and low maintenance performance. Due to its solid moulded structure, there is no possibility for moisture to enter within the LEDs or the electrics. Power is provided through inductive transfer and data control is by means of wireless optical transmission. Multiple sensors guarantee functionality

ELECTRICAL SPECIFICATIONS

Supply Voltage	48 VDC
Power Pmax	8 W

OPERATING CONDITIONS

Ambient Temperature	-40°C to 60°C
Ingress protection level	IP 66 / 67
EMC	acc. to MIL-STD-461G

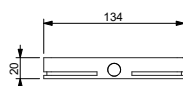
MECHANICAL SPECIFICATIONS

Dimensions FIL	400 × 130 × 18 mm
Deck attachment	Glueing, bolting, welding
Dimensions Mounting Frame	404 × 134 × 20 mm
Material	Stainless steel; Resin
Surface Coating	Powder coated
Colour	Customer specific
Gloss Grade	Customer specific
Weight	ca. 3,2 kg

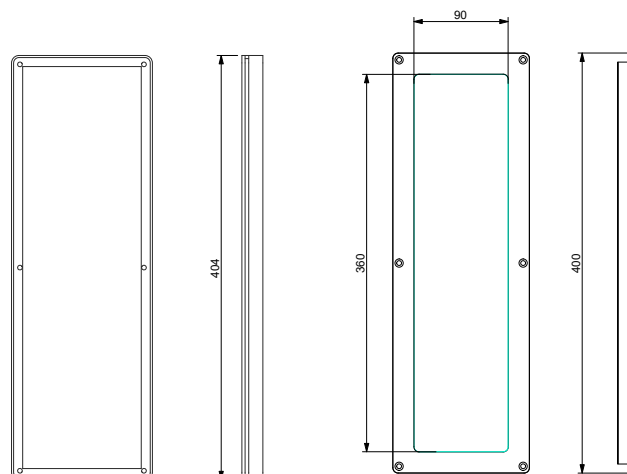
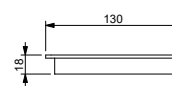
OPTICAL SPECIFICATIONS

Light Source	Dimmable High Power LED
Light Colour	RGBW
Luminous flux	350 lm
Beam Angle	120°

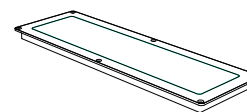
MOUNTING FRAME



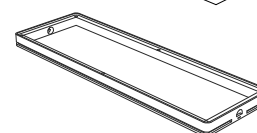
FIL MODULE



FIL MODULE



MOUNTING FRAME



DATA SHEET

PDSFL-R PERIMETER, DECK AND SERVICE FLOOD LIGHT (RETRACTABLE)



The Optonaval Flight Deck Light (FDL) combines four different functions to illuminate the flight deck in the best possible way:

1. Deck Edge Light (DEL), >20° elevation, with low, dazzle free light intensity
2. Perimeter Light (PERL) with Visibility of abt. 2 nm from 0° to abt. 20°
3. Deck Flood Light (DFL), illuminating the flight deck with a downward directed light beam to illuminate only the flight deck. This light is also available in a very limited horizontal angle of not more than 10° to illuminate particular deck markings.
4. Helicopter Service Light (HSL) (optional), used after touch-down to illuminate the helicopter for service, refueling, crew/passenger boarding.

PDSFL-R PERIMETER, DECK AND SERVICE FLOOD LIGHT (RETRACTABLE)



ARTICLE NO. | 02014-00-0002 PDSFL-R

When activated and elevated, the Perimeter Lights in the upper ring produce a directed and bright light around 360° in a horizontal angle and of 0° to 20° vertically, which serves as CAP 437 conform marking of the outer limits of the landing area and can be seen from a distance of 2 nm during night time. This light is available in different colours, usually green or amber. The Deck Edge Light (DEL) on top is undirected, of comparatively low intensity and covers the remaining vertical angle (20° to 90 °) glare free in order to assist the pilot in the final stages of approach.

The lower ring provides an undisturbed horizontal white Flight Deck Light (FDL) to evenly illuminate the surface of the Flight Deck during the approach of the helicopter. Additionally, a Helicopter Service

Light (HSL) can be integrated to give light output in a different angle directed straight towards the helicopter after landing.

The surface of the light around the DEL can be adapted to the surface of the surrounding deck, be it teak, resin compound or alike. Due to the consequent use of state-of-the-art Power LED technology, the FDL is energy saving, maintenance free and still compact in design.

The functionality of the pop-up light is controlled by Optonaval's internal electronics combining multiple sensors measuring temperature, humidity and electric current, providing 24/7 monitoring of the light's status. In that respect, the light will show an upcoming malfunction before it actually fails.

ELECTRICAL SPECIFICATIONS

Supply Voltage	48 VDC
Power Pmax	70W

OPERATING CONDITIONS

Ambient Temperature	0°C to 50°C (add. heating coil optional)
Ingress protection level	IP 66/67
EMC	acc. to MIL-STD-461G

MECHANICAL SPECIFICATIONS

Dimensions	Ø 218 × 125 mm
Dimensions Installation Pot	Ø 230 × 428 mm
Material Light Element	Seawater resistant anodized aluminium alloy; Stst Cover aluminium or stainless steel
Material Installation Pot	aluminum or stainless steel
Surface Coating	Powder coated
Colour	Customer specific
Gloss Grade	Customer specific
Weight	ca. 25 kg
Operating pressure	6 bar / ISO 8573-1:2010 [7:4:4]

OPTICAL SPECIFICATIONS

Light Source	LED
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Deck Edge Light

Beam Angle	> 20° vertical
Light Output	3 cd
Luminous flux	100 lm (green)

Perimeter Light

Light Output	30 cd / 0-10° vertical 15 cd / 10- 20° vertical 3 cd / 20 - 90° vertical
Luminous flux	600 lm (green)

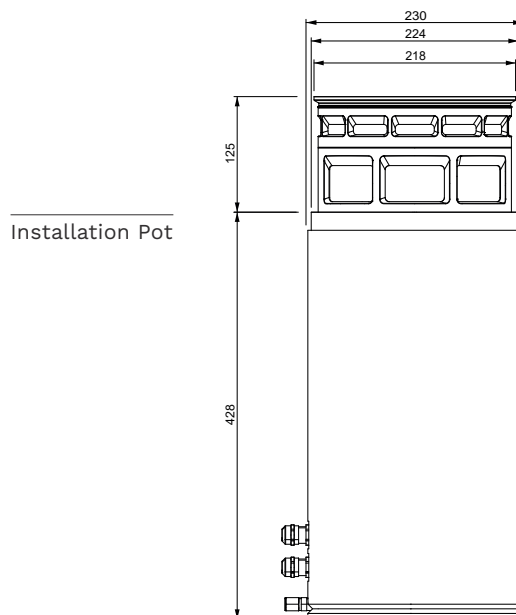
Deck Flood Light

Beam Angle	130° horizontal/ -8° to 0° vertical
Luminous flux	950 lm (white)

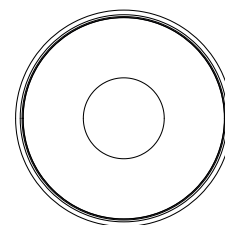
Helicopter Service Light

Beam Angle	100° horizontal/ 0° to 35°
Luminous flux	1000 lm (white)

OPTION: integrated deck surveillance camera



Installation Pot



DATA SHEET

PERL-R PERIMETER LIGHT (RETRACTABLE)



The Optonaval Flight Deck Light (FDL) combines two different functions:

1. Deck Edge Light (DEL), $>20^\circ$ elevation, with low, dazzle free light intensity
2. Perimeter Light (PERL) with visibility of about 2 nm from 0° to abt. 20°

When activated, the light pops up pneumatically from the deck and will retract into a position completely flush with the deck surface when turned off. This feature allows alternative use of the helipad, e.g. for recreational activities. The top plate can be adapted to match the surrounding deck materials, e. g. by teak inlays.

ARTICLE NO. | 02015-00-0002 PERL-R

When activated and elevated, the Perimeter Lights in the elevated ring produce a directed and bright light around 360° in a horizontal angle and of 0° to 20° vertically, which serves as CAP 437 conform marking of the outer limits of the landing area and can be seen from a distance of 2 nm during night time. This light is available in different colours, usually green or amber. The Deck Edge Light (DEL) on top is undirected, of comparatively low intensity and covers the remaining vertical angle (20° to 90 °) glare free in order to assist the pilot in the final stages of approach.

Due to the consequent use of state-of-the-art Power LED technology, the FDL is energy saving, maintenance free and still compact in design.

The functionality of the pop-up light is controlled by Optonaval’s internal electronics combining multiple sensors measuring temperature, humidity and electric current, providing 24/7 monitoring of the light’s status. In that respect, the light will show an upcoming malfunction before it actually fails.

ELECTRICAL SPECIFICATIONS

Supply Voltage	48 VDC
Power Pmax	25 W

OPERATING CONDITIONS

Ambient Temperature	0°C to 50°C (add. heating coil optional)
Ingress protection level	IP 66 / 67
EMC	acc. to MIL-STD-461G

MECHANICAL SPECIFICATIONS

Dimensions Retractable Light	Ø 218 × 55 mm
Dimensions Installation Pot	Ø 230 × 271 mm
Material Light Element	Seawater resistant anodized aluminium alloy; Stst Cover aluminium or stainless steel
Material Installation Pot	
Surface Coating	Powder coated
Colour	Customer specific
Gloss Grade	Customer specific
Weight	ca. 15 kg
Operating pressure	6 bar / ISO 8573-1:2010 [7:4:4]

OPTICAL SPECIFICATIONS

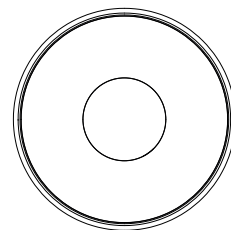
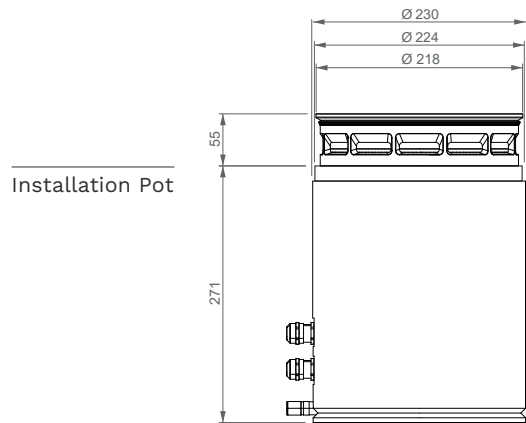
Light Source	LED
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Deck Edge Light

Beam Angle	> 20° vertical
Light Output	3 cd
Luminous flux	100 lm (green)

Perimeter Light

Light Output	30 cd / 0-10° vertical 15 cd / 10- 20° vertical 3 cd / 20 - 90° vertical
Luminous flux	600 lm (green)





Optonaval

DATA SHEET

ILLUMINATED WINDSOCK



The Optonaval Illuminated Windsock (ON-IWS) is designed for day and night operations in CAP437 installations.

Integrated in Optonaval's HVLAS System it can be controlled remotely via interface or work as a standalone unit with an independent on/off/dimming switch.

Optionally, the ON-IWS can also be switched to NVG (Night Vision Goggle) mode.

The ON-IWS is dismountable and is packaged in a compact container. It is easily assembled and safely installed in various locations around the perimeter .

Standard power supply will be realized by inductive transmitters installed in the female part as well as in the windsock rod. Lithium cell power supply is available on request.

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Optonaval

DATA SHEET

IWS - ILLUMINATED WINDSOCK

ELECTRICAL SPECIFICATIONS

Supply Voltage	24-48 VDC by induction or lithium cells
Power P max	5W
Ingress Protection	IP 66/67

OPERATING CONDITIONS

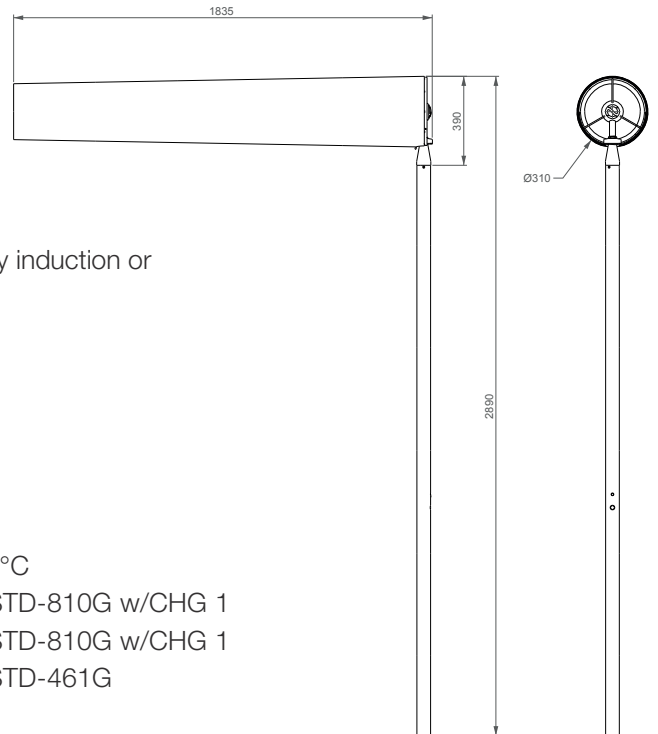
Temperature	-30°C to +55°C
Shock	acc. to MIL-STD-810G w/CHG 1
Vibration	acc. to MIL-STD-810G w/CHG 1
EMC	acc. to MIL-STD-461G

MECHANICAL SPECIFICATIONS

Transport box dimensions (W x D x H)	1230 x 640 x 450 mm
IWS - Dimensions (W x D x H)	1850 x 300 x 2885 mm
Material	Seawater resistant AL
Surface Coating	RAL 3001 and RAL 9003
Weight	12kg

OPTICAL SPECIFICATIONS

Source of Light	LED white/green
white	5500K, 500lm
green	525nm, 500lm
NVG - capability	acc. to MIL-STD-3009



ORDER NO.

30016-50-001 ON-IWS

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DATA SHEET

WOL WAVE OFF LIGHT



The Wave Off Light (WOL) is a member of the Optonaval marine signal light family, a modular platform based on a universal housing design. The light can be varied in technical setup for various functionalities and performance levels. The rigid design of the massive seawater resistant aluminum body is optimized for performance in extreme marine environments.

ARTICLE NO. | 02015-00-0001 WOL

The Wave Off Light is installed in pairs on top of the hangar above the helicopter landing deck in direct line of visibility to the helicopter pilot. The Wave-Off Lights are only activated in case of emergency to signal immediate abortion of landing operations. Rapid flashes of red light warn that landing/approach is unsafe. In night vision mode acc. to STANAG 1445 the Wave-Off Lights flash in green color.

The functionality of the WOL is controlled by Optonaval's internal electronics combining multiple sensors measuring temperature, humidity and electric current, providing 24/7 monitoring of the light's status. In that respect, the light will show an upcoming malfunction before it actually fails.

Wave-Off Lights are semi directional with a 180° angle towards the flight deck and emit red and green light through high power LEDs with a visibility of not less than 2 nm.

ELECTRICAL SPECIFICATIONS

Supply Voltage	48 VDC
Power Pmax	6 W green / 20 W red

OPERATING CONDITIONS

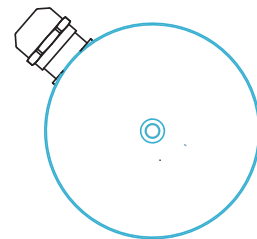
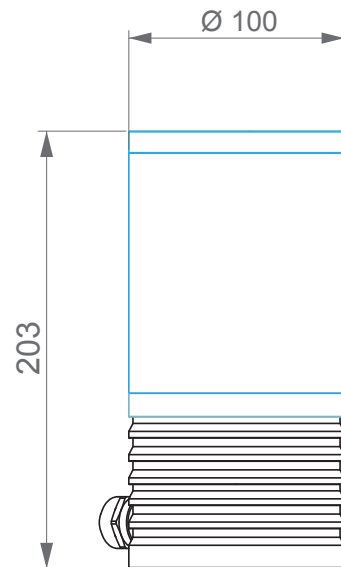
Ambient Temperature	-20°C to 50°C
Ingress protection level	IP 66 / 67
Shock	acc. to MIL-STD-810G w / CHG1
Vibration	acc. to MIL-STD-810G w / CHG1
EMC	acc. to MIL-STD-461G
NVG capability	acc. to MIL-STD-3009

MECHANICAL SPECIFICATIONS

Dimensions	Ø 100 × 203 mm
Material	Seawater resistant anodized aluminium alloy
Surface Coating	Customer specific
Colour	Customer specific
Gloss Grade	Customer specific
Weight	2.2 kg

OPTICAL SPECIFICATIONS

Light Source	LED
FWHM vertical / horizontal	100° / 180°
Colour	Green (530nm), red (625nm)
Luminous flux	60 lm green / 1500 lm red
Visibility Range	2 nm



DATA SHEET

HBL HOMING BEACON LIGHT



The Homing Beacon (HBL) is a member of the Optonaval marine signal light family, a modular platform, based on a universal housing design. The light can be varied in technical setup for various functionalities and performance levels. The rigid design of the massive seawater resistant aluminum body is optimized for performance in extreme marine environments.

ARTICLE NO. | 02009-00-0001 HBL

The Homing Beacon is mounted on the top of the mast of the ship and guides the pilot towards the specific ship by emitting the ships unique light signature through a repetitive flashing sequence. The light can be identified from a distance of at least 10 nm. To avoid any glaring distraction of the pilot when in closer vicinity to the ship, the Homing Beacon Light can be customized to emit light only in a narrow angle above and below the horizon.

The Homing Beacon is omnidirectional and emits a flashing white light through Hi Power LEDs with a visibility of at least 10 nm and can be customized in it's visibility range and directional characteristics.

The functionality of the HBL controlled by Optonaval's internal electronics combining multiple sensors measuring temperature, humidity and electric current, providing 24/7 monitoring of the light's status. In that respect, the light will show an upcoming malfunction before it actually fails.

ELECTRICAL SPECIFICATIONS

Supply Voltage	48 VDC
Power Pmax	40 W

OPERATING CONDITIONS

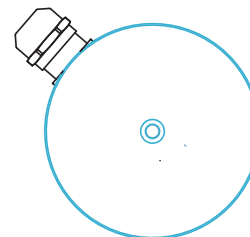
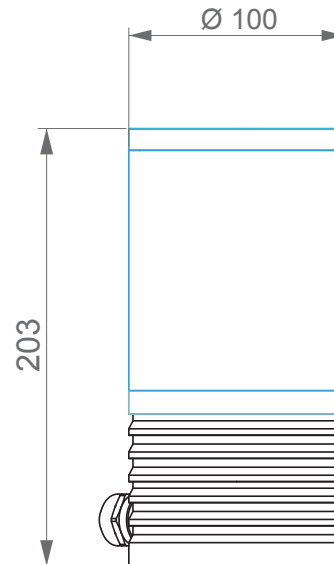
Ambient Temperature	-20°C to 50°C
Ingress protection level	IP 66/67
Shock	acc. to MIL-STD-810G w/CHG1
Vibration	acc. to MIL-STD-810G w/CHG1
EMC	acc. to MIL-STD-461G
NVG compatible	acc. to MIL-STD-3009

MECHANICAL SPECIFICATIONS

Dimensions	Ø 100 × 203 mm
Material	Seawater resistant anodized aluminium alloy
Surface Coating	Customer specific
Colour	Customer specific
Gloss Grade	Customer specific
Weight	2.2 kg

OPTICAL SPECIFICATIONS

Light Source	LED
FWHM vertical/horizontal	20° – 100° / 360°
Colour	White (6200K)
Luminous flux	3500 lm
Visibility Range	10 nm



DATA SHEET

OL OBSTRUCTION LIGHT



The Obstruction Light is a member of the Optonaval marine signal light family, a modular platform based on a universal housing design. The light can be varied in technical setup for various functionalities and performance levels. The rigid design of the massive seawater resistant aluminum body is optimized for performance in extreme marine environments.

ARTICLE NO. | 02010-00-0001 OL

The Obstruction Light marks elevated and protruding structures in the vicinity of the helicopter landing area to facilitate safe maneuvering of the helicopter during landing and take-off operations.

The functionality of the OL is controlled by Optonaval's internal electronics combining multiple sensors measuring temperature, humidity and electric current, providing 24/7 monitoring of the light's status. In that respect, the light will show an upcoming malfunction before it actually fails.

The obstruction light is omnidirectional and emits blue light through Hi Power LEDs with a visibility of at least 2 nm in the basic setup. The visibility range, color configuration and specific horizontal and vertical light emitting angles can be adapted to customer requirements.

ELECTRICAL SPECIFICATIONS

Supply Voltage	48 VDC
Power Pmax	8 W

OPERATING CONDITIONS

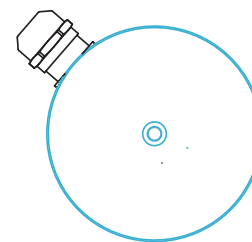
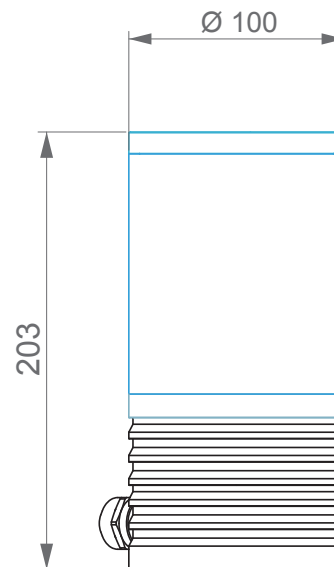
Ambient Temperature	-20°C to 50°C
Ingress protection level	IP 66/67
Shock	acc. to MIL-STD-810G w/CHG1
Vibration	acc. to MIL-STD-810G w/CHG1
EMC	acc. to MIL-STD-461G
NVG compatible	acc. to MIL-STD-3009

MECHANICAL SPECIFICATIONS

Dimensions	Ø 100 × 203 mm
Material	Seawater resistant anodized aluminium alloy
Surface Coating	Customer specific
Colour	Customer specific
Gloss Grade	Customer specific
Weight	2.2 kg

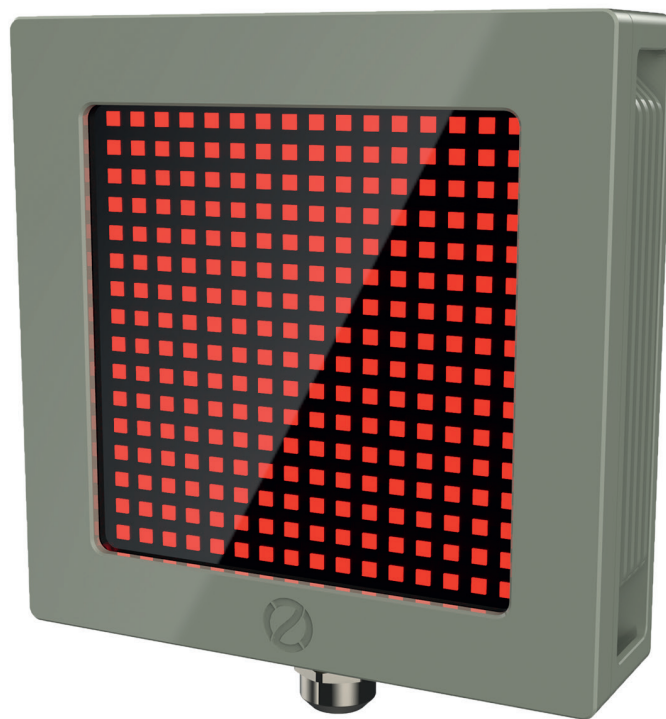
OPTICAL SPECIFICATIONS

Light Source	LED
FWHM vertical/horizontal	100°/360°
Luminous flux	60 lm
Colour	Customer specific, (450 nm) standard
Visibility Range	2 nm



DATA SHEET

UTL UNIVERSAL TRAFFIC LIGHT



The universal flat square signal light based on an RGB LED matrix panel that can be customized in color and displayed array/symbol. The rigid design in massive, seawater resistant aluminum is optimized for performance in extreme marine environments.

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The UTL can be installed in many positions. Typical installations display a vertical line on the transom below the flight deck level and a vertical arrangement on the hangar wall. Together with the Deck mounted Line-Up Lights they form a straight line parallel to the centerline of the flight deck and provide a perfect set of reference markings for the horizontal alignment of the helicopter during final approach.

A radiation screen provides excellent visibility in direct sunlight conditions. The functionality of the UTL is controlled by Optonaval's internal electronics combining multiple sensors measuring temperature, humidity and electric current, providing 24/7 monitoring of the light's status. In that respect, the light will show an upcoming malfunction before it actually fails.

The 256 pixel RGBW LED matrix light source of this signal light platform offers a high level of customization options and can be integrated in a variety of naval safety and signaling systems. The light can display single colors, change colors and can display text or symbols with a resolution of 16 x 16 pixels (LEDs).

ELECTRICAL SPECIFICATIONS

Supply Voltage	48 VDC
Power Pmax	10 W

OPERATING CONDITIONS

Ambient Temperature	-20°C to 50°C
Ingress Protection	IP 66 / 67
Shock	acc. to MIL-STD-810G w/CHG1
Vibration	acc. to MIL-STD-810G w/CHG1
EMC	acc. to MIL-STD-461G
NVG capability	acc. to MIL-STD-3009

MECHANICAL SPECIFICATIONS

Dimensions (W x H x D)	220 x 220 x 60 mm
Material	Seawater resistant anodized aluminium alloy
Surface Coating	Customer specific
Colour	Customer specific
Gloss Grade	Customer specific
Weight	approx. 5 kg

OPTICAL SPECIFICATIONS

Light Source	LED
Luminous flux	30 lm
Beam angle	120°

