



PROFILE

SKILL

DATA SHEET

COMPANY PROFILE

Since 1958 Sice technicians have developed products and systems suitable for off shore platforms.

SICE systems have been initially implemented on the marine installations of Adriatic Sea, then in many other zones of the world (Mediterranean Sea, Atlantic Ocean, Red Sea, North Sea and Caspian Sea).

Always our target is to reach the customer satisfaction through the continuous improvement of designing, engineering and manufacturing of our system/product and a pertinent and fast assistance post-sale.

SICE was established in 1958 by its founder, Mr. Luigi Donati and took on its new name of SICE S.R.L. (limited company) in 2002, differentiating its activities and potentialities.

Over the years SICE has specialized in designing and manufacturing acoustic and luminous navigation aids systems for off-shore platforms and has gained extensive experience in off/on shore photovoltaic energy production.

Taking account of inherently difficult environmental and installation site conditions, our low maintenance products are designed and manufactured to guarantee exceptional reliability.

SICE provides all the technical support necessary to define individual customer requirements in accordance with existing regulations and on the basis of installation site limitations. SICE also provides technical assistance for system installation and after-sales service.

One of strengths of our company is that all our products are designed, manufactured and tested internally.

In order to differentiate its activities and satisfy an even greater range of customer requirements, SICE, together with some partner companies, is able to offer a complete package of navigation aid system for off-shore platforms, for ports, buoys etc (SICE S.R.L. Products) for helidecks (IMT bv Products), obstructions lights (Combustion & Energy S.R.L.).

Recently SICE has applied its specialist knowledge to develop a distribution system for off-shore platforms. The aim of this system is to power any single user installed on the platform both in DC and in AC. One of main prerogatives of the system is to use explosion-proof enclosures.

SICE supplies all the systems focusing on innovation technology of its products. The features of the products are a high robustness and reliability, a high efficiency and quality and are suitable to work in marine environments. The final aim is to reach the customer satisfaction through the possibility to integrate the supplied systems giving our *historical and potential clients a turnkey system.*



Sice

INNOVATION TECHNOLOGY

LED TECHNOLOGY

REALIABLE AND ROBUST PRODUCTS

EFFICIENCY AND HIGH QUALITY



CERTIFICATION

IALA RECCOMENDATIONS

ICAO – CAP437 – FAA – IMO- MODU

ISO – ATEX – IECEX

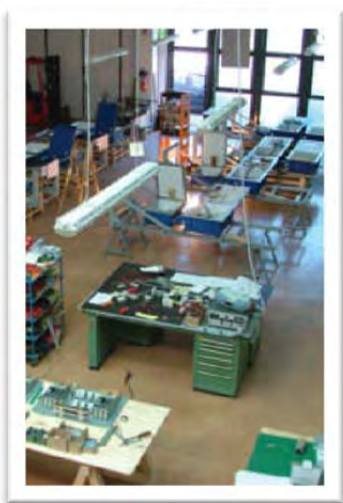


FLEXIBILITY & CUSTOMIZATION

ACCORDANCE TO CUSTOMER SPECIFICATION

CUSTOMIZED SYSTEM

TURNKEY SYSTEM



ON SITE SERVICE

SYSTEM START-UP

ASSISTANCE ON SITE

LONG EXPERIENCE ON OFFSHORE SERVICES



SICE OFFSHORE SOLUTIONS

CONTROL PANELS

Centralized Control Panel
Battery Breaker Panel
Battery Cut Off Panel (For ESD)
Emergency Circuits Panel
Boat Landing Control Panel
Helideck Lighting Control Panel
Status Light Control Panel

NAVIGATION AIDS PRODUCTS

L.E.D. Lantern (10NM)
L.E.D. Lantern (15 NM)
Fog Horns
Photocell System
Visibility Meter (Safe Area)
Visibility Meter (Ex)
Battery Box (Ex)
Visual Navigation Aids (Distributed System)
Visual Navigation Aids (Centralized System)

TEMPORARY NAVIGATION AIDS SYSTEMS

Solar Powered ATEX Certified System (5NM)
Solar Powered ATEX Certified System (10NM)
Solar Powered LED Lantern (Safe Area)
Solar Powered Fog Horn (Safe Area)
Solar Powered LED Lantern &Fog Horn (Safe Area)
Primary Battery System (Safe Area)

PHOTOVOLTAIC PRODUCTS

Solar Charge Regulator Panel
Temperature Probe (Ex)
On/Off Solid State Solar Charge Regulator
Programmable Battery Charger

HELIDECK LIGHTS

Circle-H
Illuminated Windsock
Status Light
Perimeter Light
Floodlight

OBSTRUCTION LIGHTS

Liol
Miol
Dual Miol

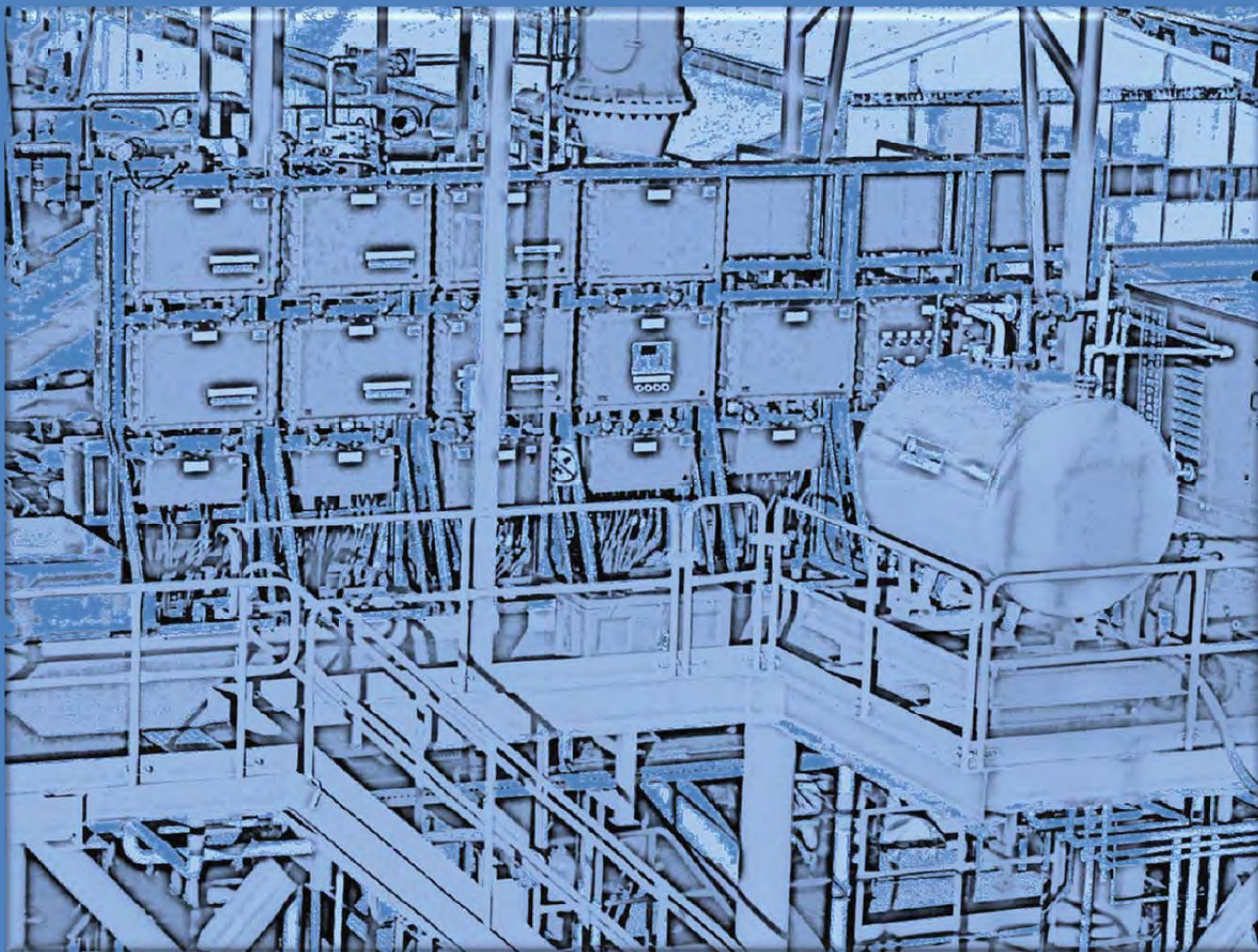


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CONTROL PANELS



SICE NCCP - NAVIGATION AIDS CENTRALIZED CONTROL PANEL EQUIPPED WITH INTELLIGENT SUPERVISOR SYSTEM

STANDARD INDUSTRIAL VERSION FOR SAFE AREA (EXAMPLE)



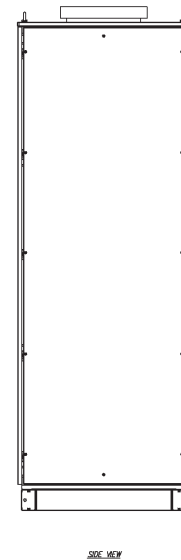
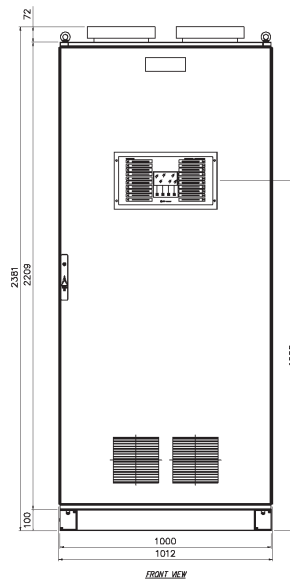
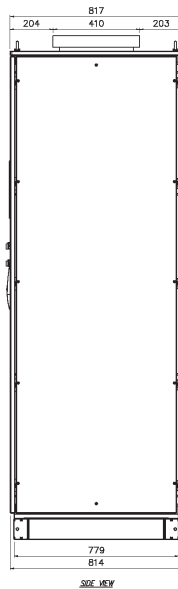
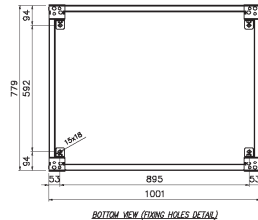
SIMPLIFIED TECHNICAL DESCRIPTION

This Navaid Centralized Control Panel has the aim of managing the working of the whole pieces of equipment which are part of the navigation aid system, included aeronautical obstruction lights & helideck lighting (if installed). Normally it is powered by mains input at 230Vac. The Navaid Centralized Control Panel is complete with control circuits for the driven pieces of equipment (coders & current relays) and SICE intelligent supervisor system. This supervisor system is complete with CPU module, Digital Input modules and Digital Output modules. It receives, as inputs, the status and the eventual alarms of the whole equipment that is part of the complete system. The supervisor system elaborates the received data and proceeds automatically with the activation/deactivation of the pieces of equipment and the signalling of eventual alarm or failure situations. Furthermore the system is equipped with local display panel, complete with graphic display & four push buttons. This display, made by SICE, is very useful in all cases where several sub-systems have to be integrated, providing to the user a complete check for the overall installed system. In particular, through some pages on this graphic display, the user can monitor all the configured statuses and alarms of the several installed equipment, one by one. At the same time, by using the frontal push buttons, the user can give the expected commands. Normally this panel is equipped with a 50% redundant battery charger complete with two separated rectifier modules, of equal power, that work in parallel. If one of these modules fails, the supervisor system sends this failure to the remote control system and the navaid system remains correctly working, but the recharge time is doubled. Other selectors, for Manual/Automatic/Remote working selection can be included and installed in the front door of the Panel, in compliance with Customer requisition. Predisposed for remote controls connections via MODBUS RS485 two wires and/or via hard wired



SICE NCCP - NAVIGATION AIDS CENTRALIZED CONTROL PANEL EQUIPPED WITH INTELLIGENT SUPERVISOR SYSTEM

The dimensions can be changed in compliance with the Customer requisition and the requested features



MAIN ELECTRICAL FEATURES:

- Mains input : 230Vac 50Hz \pm 10% (other voltage can be requested)
- Battery charger power : 4500W (maximum output power)
- Battery charger efficiency : 85%
- Input insulating transformer : 8kVA (maximum power, installed when requested)

MAXIMUM MANAGING CAPACITY:

- Marine Lanterns : No. 8 total pieces (Main, Secondary & Subsidiary lanterns), complete with separate & independent control circuits for protection, driver & coder
- Fog Horns : No. 4 total pieces (Main and secondary fog horns), complete with separate & independent control circuits for protection, driver & coder
- Aeronautical Obstruction Lights : No. 3 separated lines including independent protection circuit and current control relays
- Helideck Perimeter Lights : No. 2 separated lines including independent protection circuit and current control relays
- Helideck Touchdown Floodlights : No. 2 separated lines including independent protection circuit and current control relays
- Illuminated Windsock : No. 1 line including protection circuit and current control relays

MAIN MECHANICAL FEATURES:

- Construction type : Industrial, suitable for indoor installation in safe area
- Degree of protection : IP 55 maximum (can be reduced in case of ventilation system)
- Painting type : Industrial (compliant with Manufacturer Standard or Customer Specification)
- Standard painting color : RAL 7035 (other color can be requested)
- Dimensions : 1012mm x 814mm x 2381mm (h) (other dimensions can be requested)
- Total weight : 400 Kg approx.

The above listed features are indicative, SICE is able and available to build the system in accordance with Client specifications and in compliance with International Standards.



SICE NCCP - NAVIGATION AIDS CENTRALIZED CONTROL PANEL EQUIPPED WITH INTELLIGENT SUPERVISOR SYSTEM

ATEX CERTIFIED EXPLOSION PROOF VERSION (EXAMPLES)



Control Panel suitable for floor installation, with mechanical support in AISI 316L stainless steel and prepared for cable inlet from top.

Typical managing capacity:

- ✓ Q.ty 2 Main fog horns (as for IALA)
- ✓ Q.ty 4 Main white lanterns (as for IALA)
- ✓ Q.ty 2 MIOL (Medium Intensity Obstruction Lights) (as for ICAO)
- ✓ Q.ty 4 LIOL (Low Intensity Obstruction Lights) (as for ICAO)
- ✓ Q.ty 1 Visibility Meter (Fog Detector)
- ✓ Q.ty 1 General Photocell system
- ✓ 50% Redundant battery charger (1200W total output)
- ✓ Battery breaker
- ✓ Dimensions: 832mm (W) x 2452mm (H) x 800mm (D)
- ✓ Weight: 374kg



Control Panel suitable for floor installation, complete with mechanical support in AISI 316L stainless steel and prepared for the cable inlet from bottom, already installed on platform.

Typical managing capacity:

- ✓ Q.ty 2 Main fog horn (as for IALA)
- ✓ Q.ty 4 Main white lanterns (as for IALA)
- ✓ Q.ty 2 LIOL (Low Intensity Obstruction Lights) (as for ICAO)
- ✓ Q.ty 1 Visibility Meter (Fog Detector)
- ✓ Q.ty 1 General Photocell system
- ✓ 50% Redundant battery charger (1200W total output)
- ✓ Battery breaker
- ✓ Dimensions: 1000mm (W) x 1847mm (H) x 700mm (D)
- ✓ Weight: 330kg

Examples of Navigation Aids Centralized Control Panels manufactured by SICE using ATEX and IECEx Certified enclosures and suitable for installation in classified areas of Zone 1 & 2. The Navaid Panel is manufactured according to the Customer specifications and ATEX Directive. It can be manufactured in different dimensions, using different enclosure types and can be supplied suitable for floor installation, complete with suitable mechanical support (pictures example), or for wall installation complete with suitable brackets. The panel can contain the same electronic devices and components that are placed inside standard industrial cabinet type, so the working philosophy of this version is equal to the standard industrial version. Only the battery charger power must be reduced in compliance with maximum power dissipation of the used enclosure, usually the battery charger power is approx 1500W maximum. The standard type of enclosure is made in copper free aluminium, painted internally (anticondensation) and externally, in compliance with Manufacturer procedure or Customer Specification, suitable for off-shore use. The external colour can be changed in compliance with Customer needs.

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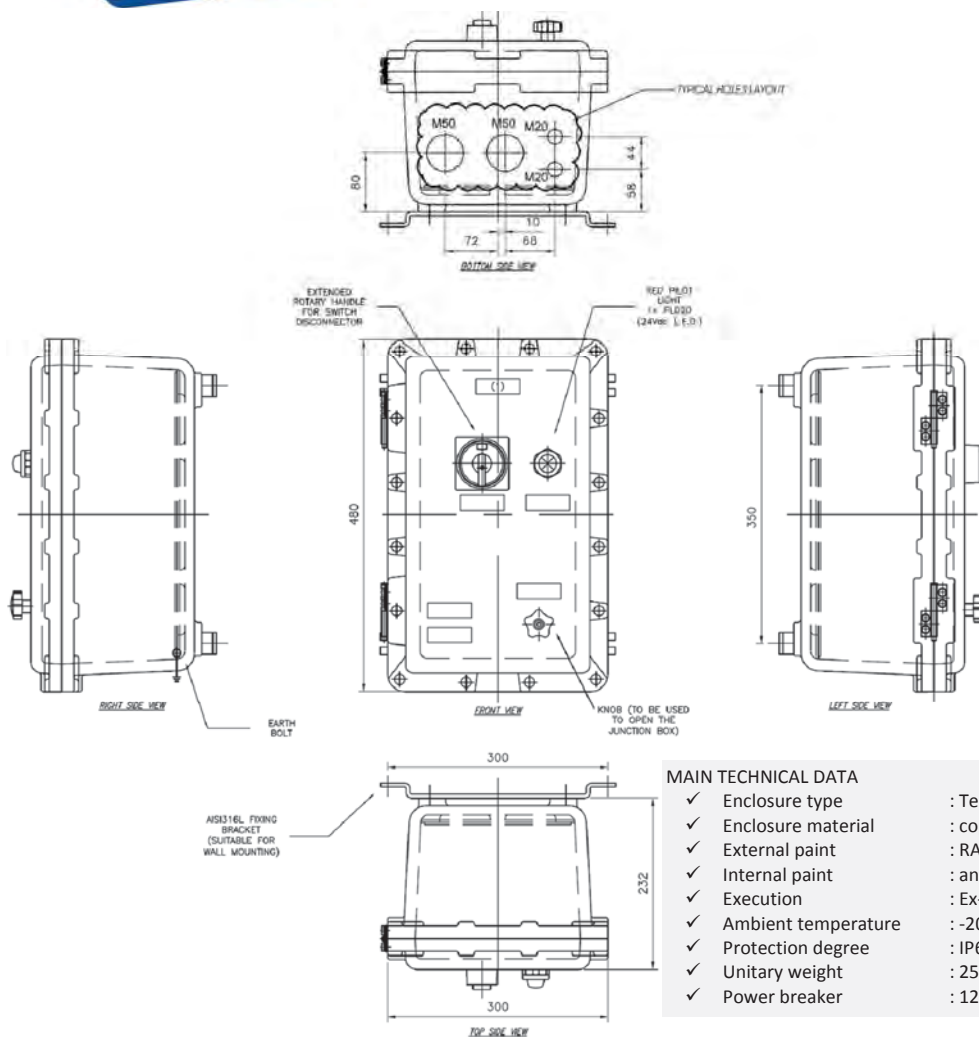
BATTERY BREAKER CIRCUIT (PANEL) DATA SHEET



This device is suitable to be inserted between the NAVIGATION AID CONTROL PANEL (that include the BATTERY CHARGER SYSTEM) and the BATTERY BANK and it is used to manually disconnect, through a suitable isolator (not automatic switch), the two above mentioned sub-systems, when this operation is required, for example during maintenance of the batteries.

The status of the switch is continuously monitored by the control system placed inside the NAVAIDS CONTROL PANEL so that, when the switch is opened manually, the corresponding alarm is raised to warn the operator of this condition (backup battery no longer available). In addition, a red pilot light, installed on the enclosure cover, is lit when the breaker is opened for a VISUAL ALARM.

This equipment is suitable for wall mounting and, normally, it is installed near the battery system, in the battery room. For this reason it can be executed with "+H2" certification, suitable for installation in a zone where hydrogen presence is possible.



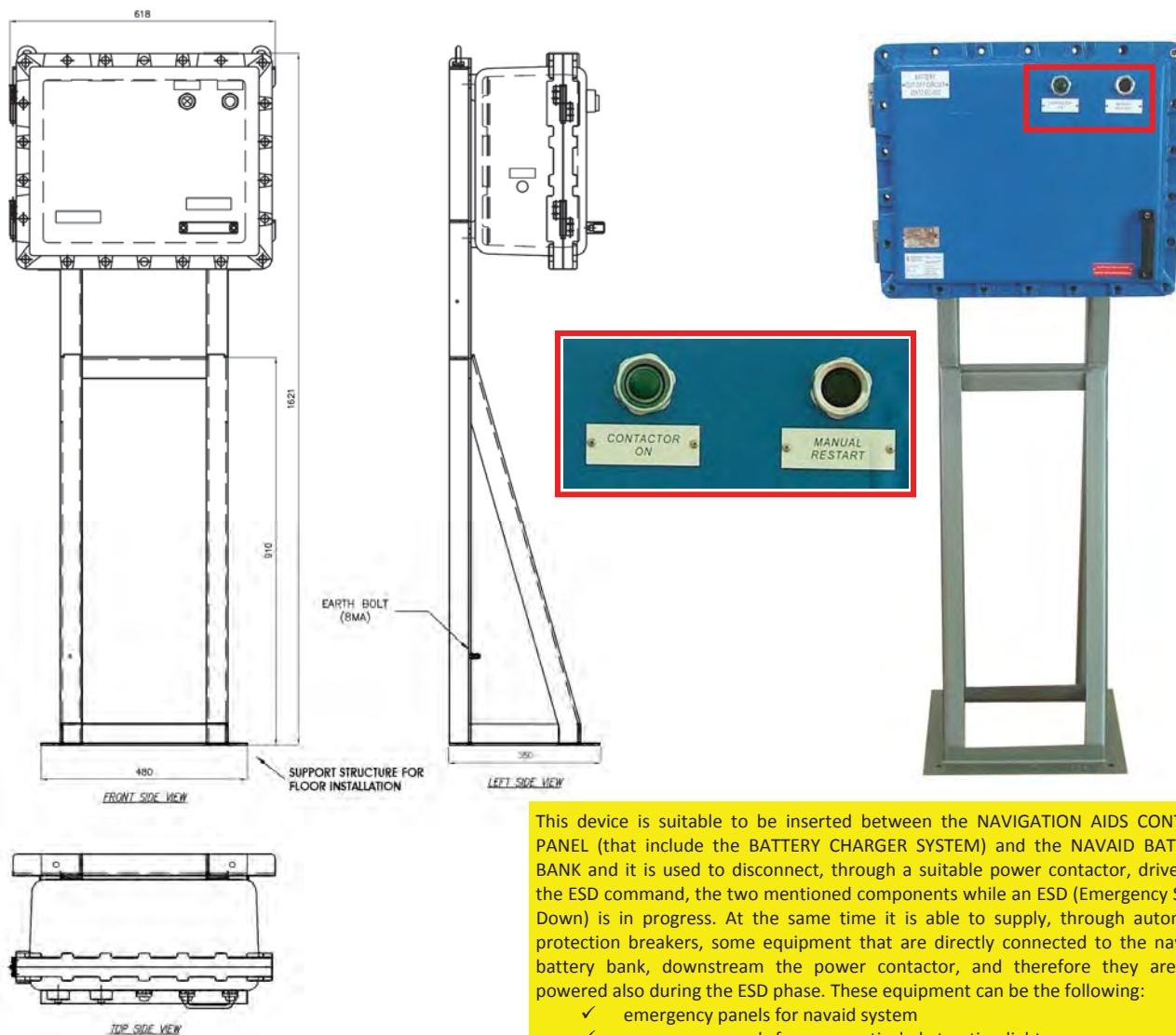
MAIN TECHNICAL DATA

✓ Enclosure type	: Technor EJB-5 (or equivalent)
✓ Enclosure material	: copper free aluminium
✓ External paint	: RAL 5017 (other colours available)
✓ Internal paint	: anticorrosion
✓ Execution	: Ex-d IIB T6 (+H2 when required)
✓ Ambient temperature	: -20°C / +50°C (standard)
✓ Protection degree	: IP66
✓ Unitary weight	: 25kg
✓ Power breaker	: 125A (Not Automatic)

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BATTERY CUT-OFF CIRCUIT (PANEL) DATA SHEET



This device is suitable to be inserted between the NAVIGATION AIDS CONTROL PANEL (that include the BATTERY CHARGER SYSTEM) and the NAVAID BATTERY BANK and it is used to disconnect, through a suitable power contactor, driven by the ESD command, the two mentioned components while an ESD (Emergency Shut-Down) is in progress. At the same time it is able to supply, through automatic protection breakers, some equipment that are directly connected to the navaids battery bank, downstream the power contactor, and therefore they are still powered also during the ESD phase. These equipment can be the following:

- ✓ emergency panels for navaid system
- ✓ emergency panels for aeronautical obstruction lights
- ✓ boat landing status lights panel
- ✓ helideck status lights panel

The power contactor and all automatic circuit breakers, that are installed inside this enclosure, are monitored by the control system installed inside the NAVIGATION AIDS CONTROL PANEL so, when the latter is powered on, if the power contactor or at least one circuit breaker is opened automatically or manually, the corresponding alarm is raised to signal to the users this condition. A green pilot light "CONTACTOR ON" indicates that the contactor is closed (when turned off means that the contactor is open). In addition, a push button "MANUAL RESTART" is installed in the enclosure cover. This push button is used when, after an ESD, the power contactor must be closed again but the NAVAIDS BATTERY BANK has no enough energy to power the coil. In this case, when the battery charger output is available in this circuit, by pressing this push-button, the power contactor is closed using the energy incoming from the NAVIGATION AIDS CONTROL PANEL (battery charger).

SICE is able to manufacture this equipment in compliance with the Customer specification and requirements, the dimensions can change.

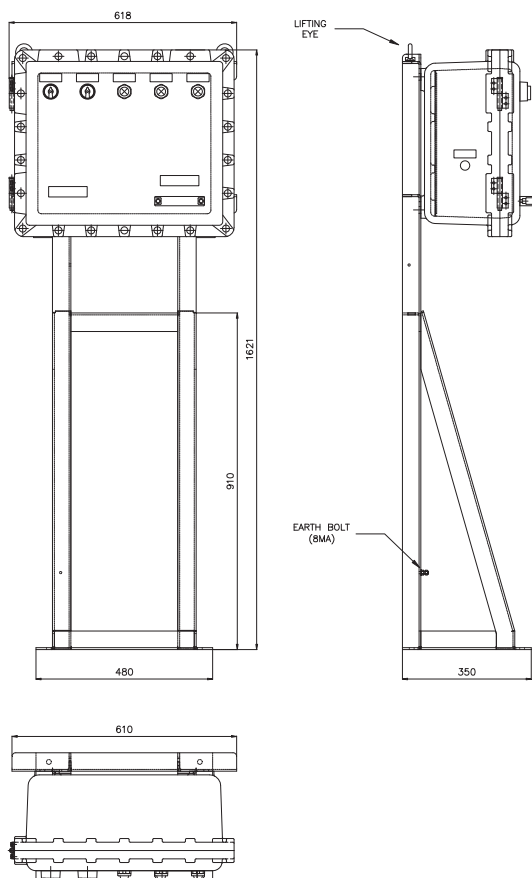
MAIN TECHNICAL DATA

- ✓ Enclosure type : Technor EJB-11 (or equivalent)
- ✓ Enclosure material : copper free aluminium
- ✓ External paint : RAL 5017 (other colours available)
- ✓ Internal paint : anticorrosion
- ✓ Execution : Ex-d IIB T6 (+H2 when required)
- ✓ Ambient temperature : -20°C / +50°C (standard)
- ✓ Protection degree : IP66
- ✓ Mechanical support : AISI 316L s.steel not painted
- ✓ Unitary weight : 100kg (support included)

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EMERGENCY CIRCUIT (PANEL) DATA SHEET



FOR NAVAID



FOR OBSTRUCTION



NAVAID



OBSTRUCTION

Pilot lights and selector switches details

MAIN TECHNICAL DATA

Enclosure data:

Type:	EJB-11
Manufacturer:	Technor - Italsmea
Material:	Copper free aluminium (light alloy)
Painting:	External Offshore RAL 5017 (other colors can be required) Internal Anticondensation
Execution:	Ex-d IIB T4-IP66 (suitable for Zone 1 installation)
Ambient temperature:	-20°C / +50°C
Unitary weight:	75kg

Mechanical support structure:

Material:	AISI 316L S.S. (not painted)
Unitary weight:	30kg
Total weight:	105kg

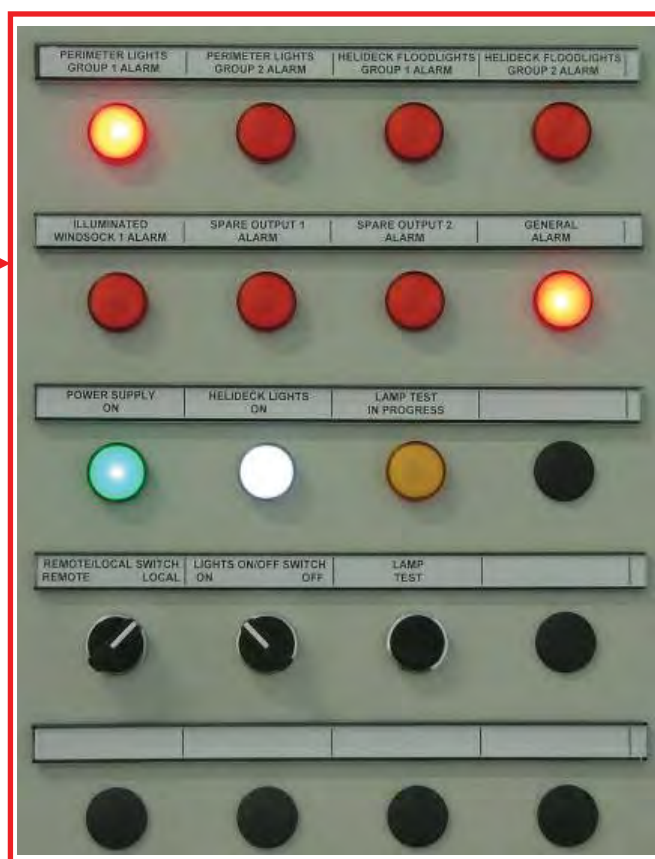
SICE Pesaro (ITALY)

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SICE HELIDECK LIGHTING CONTROL PANEL STANDARD VERSION SUITABLE FOR INSIDE AND FOR SAFE AREA

MIMIC PANEL (TYPICAL)



OR DISPLAY PANEL (TYPICAL)



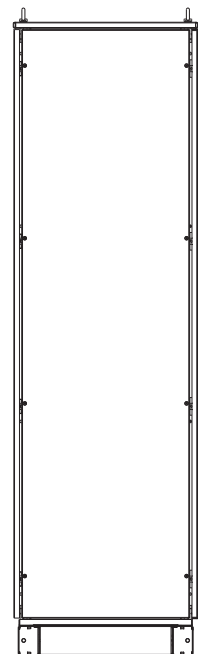
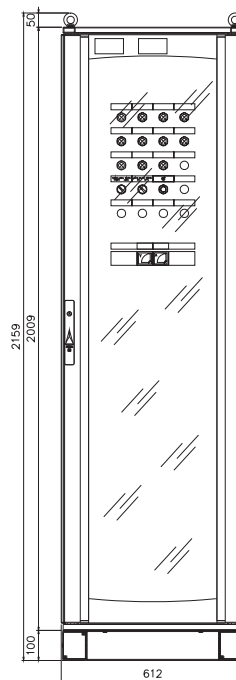
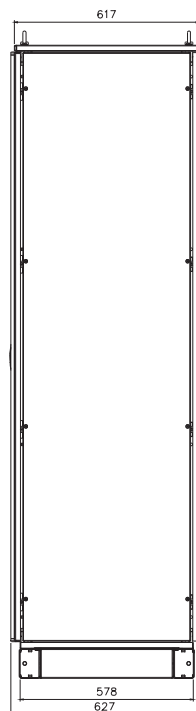
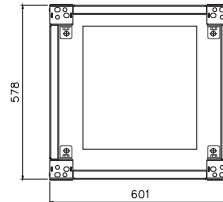
SIMPLIFIED TECHNICAL DESCRIPTION:

This Helideck Lighting Control Panel (standard type) is made in an industrial cabinet suitable for indoor installation, in safe area. This cabinet is equipped with an external protective door having a transparent window through which the user can see the mimic panel (or display), selector switches and push buttons, that are installed onto the internal door, without opening the external door. This Helideck Lighting Control Panel has the aim of managing the working of whole equipment that are part of the Helideck Lighting System. Normally it is powered by UPS with mains input at 230Vac. Other voltage values can be required. This panel can be equipped with a mimic panel or, when required, with a digital display that includes signaling LEDs, selectors and push buttons.



SICE HELIDECK LIGHTING CONTROL PANEL STANDARD VERSION FOR INSIDE AND FOR SAFE AREA

The dimensions can be changed in compliance with the Customer requisition and the requested features



MAIN ELECTRICAL FEATURES:

-Mains input : 230Vac 50Hz \pm 10% (other voltage can be requested)

TYPICAL MANAGING CAPACITY:

-Helideck Perimeter Lights	: No. 2 separated lines including independent protection circuit and current control relays
-Helideck Touchdown Floodlights	: No. 2 separated lines including independent protection circuit and current control relays
-Illuminated Windsack	: No. 1 line including protection circuit and current control relay
-Remote control interface	: Included for status, alarms and external commands. Wired or via MODBUS RS485 two wires
-Helideck Status Lights (optional)	: Including power supply and logic control
-Helideck Circle H System (optional)	: Including power supply and logic control

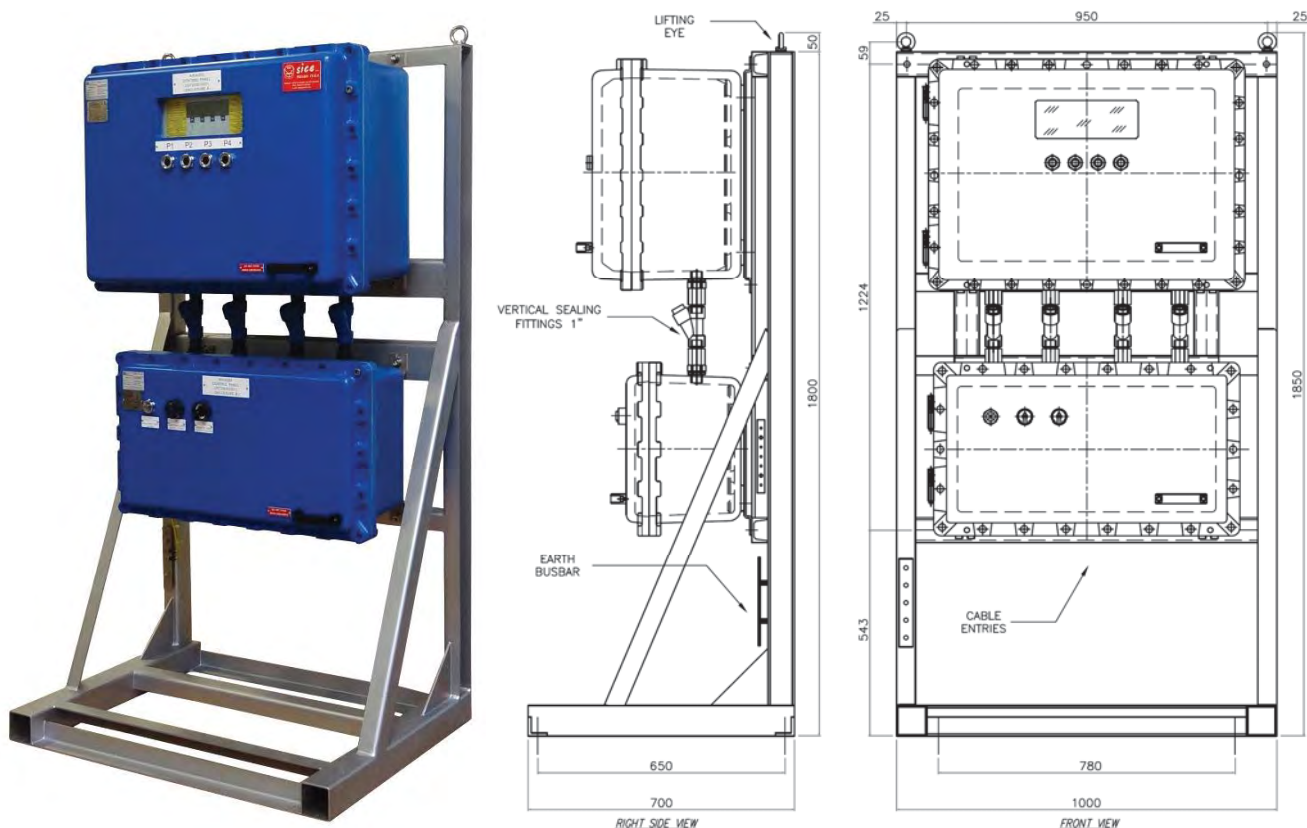
MAIN MECHANICAL FEATURES:

-Construction type (standard)	: Industrial, suitable for indoor installation in safe area (other solution, also suitable for hazardous area installation can be requested)
-Degree of protection (standard)	: IP 55 maximum (can be reduced in case of ventilation system)
-Painting type	: Industrial (Manufacturer Standard)
-Standard painting color	: RAL 7035 (other color can be requested)
-Dimensions	: 812mm x 827mm x 2159mm (h) (other dimensions can be requested)
-Total weight	: 200 Kg approx.

The above listed features are indicative, SICE is able and available to build the system in accordance with Client specifications and in compliance with International Standards.



SICE HELIDECK LIGHTING CONTROL PANEL Ex VERSION SUITABLE FOR OUTSIDE AND CLASSIFIED AREA OF ZONE 1 & 2



Example of Helideck Lighting Control Panel manufactured by SICE using ATEX and IECEx Certified enclosures and suitable for outside installation, in classified areas of Zone 1 & 2. The Helideck Lighting Panel is manufactured according to the Customer specifications and ATEX Directive. It can be manufactured in different dimensions, using different enclosure types and can be supplied suitable for floor installation, complete with suitable mechanical support (same of the pictures example), or for wall installation complete with suitable brackets only. The panel can contain the same electronic devices and components that are placed inside standard industrial cabinet type, so the working philosophy of this version is equal to the standard industrial version. The standard type of enclosure is made in copper free aluminium, painted internally (anticondensation) and externally, in compliance with Manufacturer procedure or Customer Specification, suitable for off-shore use. The external colour can be changed in compliance with Customer needs. The cables input/output can be arranged from bottom or from top, in compliance with customer needs

MAIN FEATURES:

Typical managing capacity:

- ✓ Helideck Perimeter Lights : No. 2 separated lines including independent protection circuit and current control relays
- ✓ Helideck Touchdown Floodlights : No. 2 separated lines including independent protection circuit and current control relays
- ✓ Illuminated Windsock : No. 1 line including protection circuit and current control relay
- ✓ Remote control interface : Included, wired or via MODBUS RS485 two wires (on request)
- ✓ Digital display : Included

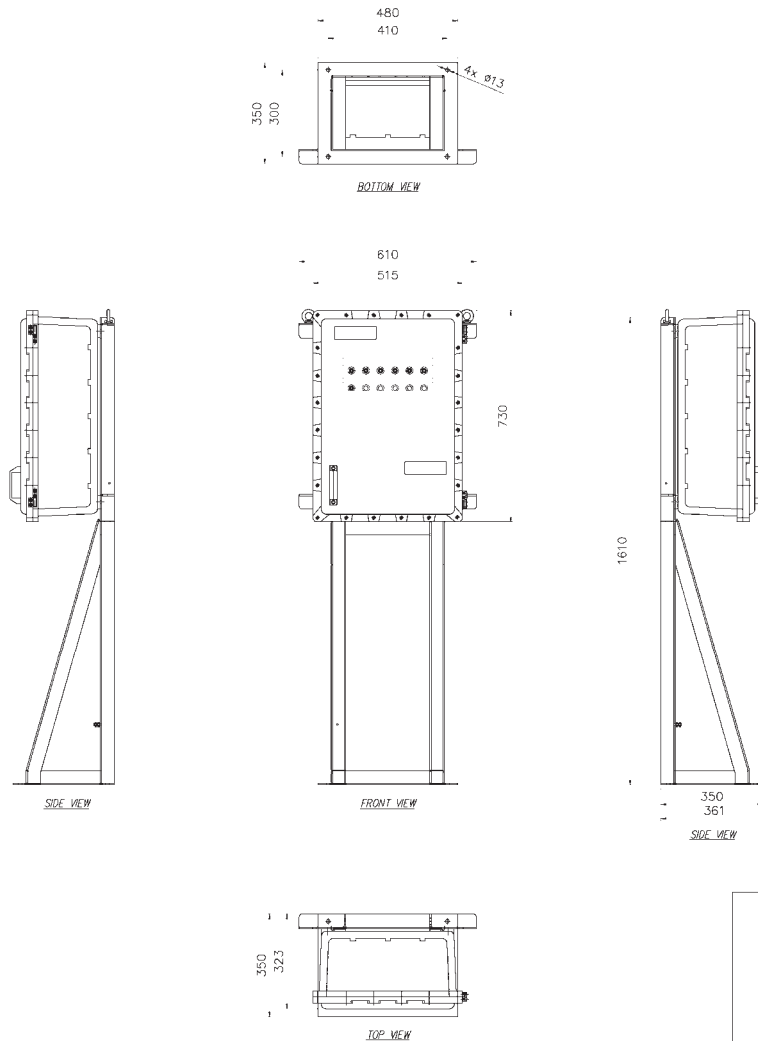
Mechanical features:

- ✓ Execution : Ex-d IIB T5
- ✓ Mechanical Protection : IP66
- ✓ Support and brackets : AISI 316L stainless steel not painted (standard)
- ✓ Dimensions : 1000mm (L) x 1800mm (H) x 700mm (W)
- ✓ Total Weight : 330kg

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STATUS LIGHTS CONTROL PANEL DATA SHEET



TECHNICAL DATA

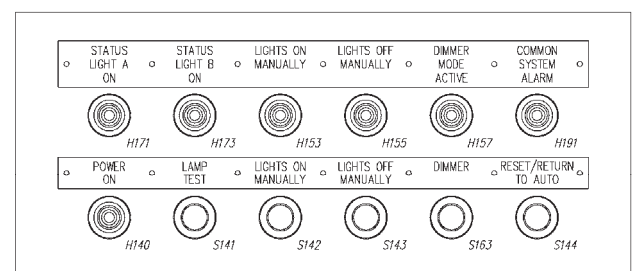
Enclosure data:

Type: EJB-13
 Manufacturer: Technor Italsmea
 Material: Copper free aluminium
 External paint: Offshore RAL 5017
 Internal paint: Anticondensation
 Execution: Ex-d IIB T4-IP66
 Ambient temperature: -50°C / +55°C
 Unitary weight: 122kg

Support structure:

Material: AISI 316L S.S. (not painted)
 Unitary weight: 35kg

Total weight: 157kg



DETAIL 1 - PILOT LIGHTS AND PUSH-BUTTONS ON ENCLOSURE COVER

ITEM NAME	TYPE	DESCRIPTION	COLOUR
H140	PILOT LIGHT	POWER ON	GREEN
H171	PILOT LIGHT	STATUS LIGHT A ON	WHITE
H173	PILOT LIGHT	STATUS LIGHT B ON	WHITE
H153	PILOT LIGHT	LIGHTS ON MANUALLY	WHITE
H155	PILOT LIGHT	LIGHTS OFF MANUALLY	WHITE
H157	PILOT LIGHT	DIMMER MODE ACTIVE	WHITE
H191	PILOT LIGHT	COMMON SYSTEM ALARM	RED
141	PUSH-BUTTON	LAMP TEST	BLACK
142	PUSH-BUTTON	LIGHTS ON MANUALLY	BLACK
143	PUSH-BUTTON	LIGHTS OFF MANUALLY	BLACK
163	PUSH-BUTTON	DIMMER	BLACK
144	PUSH-BUTTON	RESET/RETURN TO AUTO	BLACK

PILOT LIGHTS AND PUSH-BUTTONS COLOURS

SICE Pesaro (ITALY)

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NAVIGATION AID PRODUCTS



ZONE 1 SICE TYPE LS-10NM-L-1

10 NAUTICAL MILE MAIN WHITE SIGNAL LIGHT

(ALSO SUITABLE FOR >3 NAUTICAL MILE RED SUBSIDIARY SIGNAL LIGHT)



Main white lantern, led type, with very high efficiency & long life. It is suitable for marking the fixed obstacles in the sea, in compliance with IALA recommendations, where a range of 10 nautical miles is required. Made with one tier equipped with 48 leds that are driven with a "U" coder & power circuit. This lantern assures an excellent vertical and horizontal light distribution, with a "white optimum colour", for all power conditions. The construction is very rugged and is sealed for life. No maintenance is required during total life time. Inside this lantern only the LED tier is installed, no other devices and no moving components are present. The photocell and "U" coder driver circuit are placed externally, so the reliability of this equipment is very high. The photometric data have been tested by Italian Institute in compliance with IALA chromaticity and 90th percentile intensity standards. It can be used also as "subsidiary red signal light". In this case the leds mounted are of same type but with red colour.

Main advantages:

- Very long life. Expected minimum 40 years of working time, with "U" coder and with lumen output in compliance with IALA Recommendations. After this timing, SICE suggests to change with a new lantern, even if it is still working.
- Available as "main & reserve system", two separated led lines system (optional).
- No maintenance is required during all life. The lantern is sealed for life and body is in AISI 316L stainless steel.
- Very low energy consumption and excellent horizontal & vertical light distribution.
- Excellent value for money.
- Reduced connection cable section.
- Reduced dimensions.
- No moving parts placed inside the lanterns. Only the LEDs are placed inside this equipment.
- No electronic control circuits are placed inside the lantern. The constant current driver and coder circuits are placed in a suitable junction box placed next to the lantern, in the support pole or in the centralized control panel.



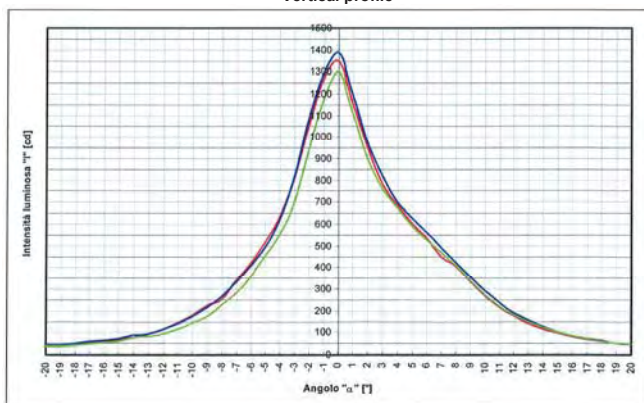
MAIN TECHNICAL DATA:

-Control circuit driver & coder supply voltage	:	Standard 24Vdc (range from 21 to 33Vdc) (available others voltage on request)
-Single LED line supply voltage (standard system)	:	White 150Vdc; Red 100Vdc (+/-5% approx.)
-Double LED lines supply voltage (option for main & reserve)	:	White 75+75V; Red 50Vdc (+/-5% approx.)
-10 n. mile (white) expected power	:	25W peak approx. (average 3,5W approx. during night) (*)
->3 n. mile (red) expected power	:	10W peak approx. (average 1,4W approx. during night) (*)
-10 n. mile effective intensity	:	>1500cd (during dot) (*)
->3 n. mile (red) effective intensity	:	>150cd (during dot) (*)
-Vertical divergence	:	+/- 3,6 degrees to 50%; +/- 9 degrees to 10%
-Horizontal divergence	:	360 degrees (Uniformity within +/-6%)
-Expected life time minimum	:	>50.000 working hours (79 years approx. with "U" code) (*)
-Lumen maintenance	:	90% at 30.000 hours (47 years approx. with "U" code) (*)
-Construction mode	:	Sealed for life, maintenance free
-Working temperature range	:	From -20° to +50°C
-Photocell	:	External
-Synchronization	:	Possible
-(*) Expected IALA "U" CODE	:	0,4" on; 0,5" off; 0,4" on; 0,5" off; 1,2" on; 12" off
-Marking	:	Ex II 2G Ex d IIB T6 Gb IP66
-ATEX Certificate Number	:	SEV 13 ATEX 0101
-IECEx Certificate Number	:	INE 14.0048X

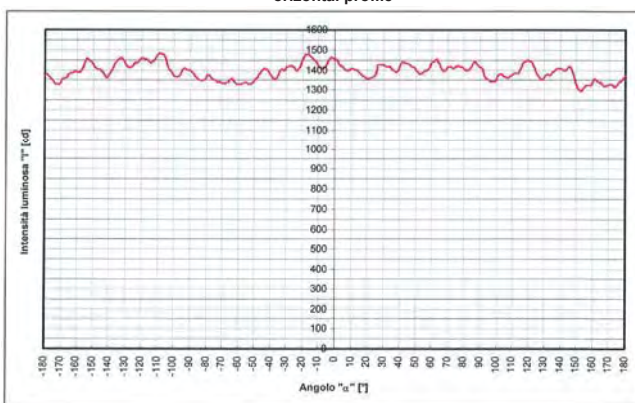


ZONE 1 SICE TYPE LS-10NM-L
10 NAUTICAL MILE MAIN WHITE SIGNAL LIGHT
(ALSO SUITABLE FOR 3 NAUTICAL MILE RED SUBSIDIARY SIGNAL LIGHT)

Vertical profile

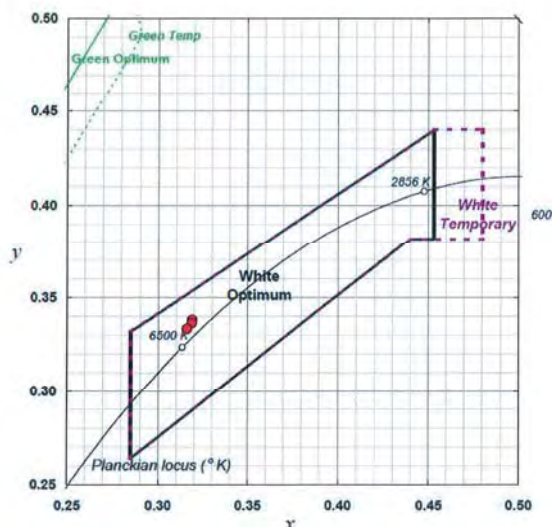


Horizontal profile

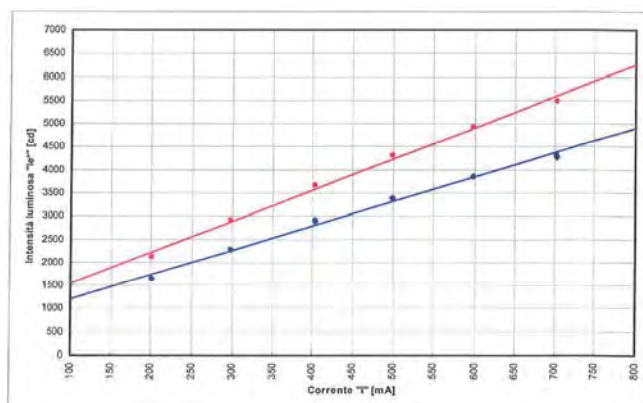


Coordinate cromatiche,

Chromatic coordinates



Effective intensity at the corresponding led current value
 with "U" code standard IALA: red = 1,2" (line) - blue = 0,4" (dot)



THE PHOTOMETRIC DATA ARE IN COMPLIANCE WITH IALA CHROMATICITY AND 90TH PERCENTILE INTENSITY STANDARDS

MAIN MECHANICAL DATA:

-Body & pedestal material	:	AISI 316L Stainless Steel polished, not painted
-Cover cylinder type	:	Methyl Methacrylate (Acrylic), clear, non flammable
-Cover cylinder external diameter	:	300mm
-Cover cylinder thickness	:	10mm
-Cover cylinder weather resistance	:	Exceptional at each climatic condition
-LED manufacturer	:	OSRAM
-LED quantity	:	48
-LED Fresnel lenses material	:	PMMA
-Connection junction box (if installed)	:	Glass reinforced polyester, IP66 minimum, ATEX Certified
-Signal light dimensions	:	330mm (base diameter) x 388mm (height), including anti-winged system
-Signal light weight	:	25kg
-Signal light mechanical protection degree	:	IP66



ZONE 1 SICE TYPE LS-10NM-L
10 NAUTICAL MILE MAIN WHITE SIGNAL LIGHT
(ALSO SUITABLE FOR 3 NAUTICAL MILE RED SUBSIDIARY SIGNAL LIGHT)



LED LANTERN AND SUPPORT POLE
TYPICAL ASSEMBLING PICTURES



OPTION FOR "MAIN & RESERVE LINES" CONFIGURATION

This equipment can be supplied with the LED tiers connected to two overlapped and separated lines that are powered through two separated driver circuits, one for each line. During normal working both lines are normally powered, so the consumption and photometric data are in compliance with the above described and showed. Instead, when an failure occurs, at one led line or at one driver circuit, the remaining driver circuit increases automatically the working current of the led line that is still working and restores the lumen output in compliance with the IALA Recommendations. So, in this configuration, the failure of one line is not serious because the working mode of lantern remains still compliant. During this phase, when one line is failed, the lantern consumption increases of 40% approx and an remote control of failure is available from control circuit.

Document can be subjected to modifications, without prior notice



ZONE 1 TYPE SICE-LXS-WHT-15-3 MAIN & SECONDARY MARINE SIGNAL LIGHT STATION



SIGNAL LIGHT STATION
SICE-LXS-WHT-15-3
INCLUDING PEDESTAL

Main white lantern station, led type, with very high efficiency & long life. It is suitable for marking the fixed obstacles over the sea, in compliance with IALA recommendations, where a range of 15 nautical miles is required. This lantern contains 3 tiers of white LEDs, each tier equipped with 48 LEDs. Each tier is driven by one dedicated and independent "driver & coder circuit", at constant controlled current. When the mains power supply is available, the lantern work as "MAIN" (with light range of 15 n.m.). Instead, when the mains power supply is not available and the navais lanterns are powered by back-up battery bank, the lantern work as "SECONDARY" (with light range of 10 Nautical Miles). Inside this lantern only the LED tiers are installed, no other devices and no moving components are present. The photocell and "U" coder & driver circuits are placed externally, so the reliability of this equipment is very high.

Main advantages:

- ✓ Long lifetime >10+ years life expectancy (expected 25 years)
- ✓ Led constant current drivers
- ✓ Main & Secondary lights in the same enclosure
- ✓ High efficiency for low energy consumption
- ✓ Excellent value for money
- ✓ Reduced connection cable size
- ✓ Reduced dimensions
- ✓ Easy installation
- ✓ Very low maintenance required
- ✓ No moving parts placed inside the lanterns. Only the LEDs are placed inside this equipment.
- ✓ No electronic control circuits are placed inside the lantern. The "constant current driver and coder circuits" are placed in a suitable junction box placed next to the lantern, in the support pole, or in the centralized control panel.
- ✓ The eventual failure of one led tier reduces the range but not affect the working of the other tiers. In this case the range is reduced from 15 Nautical Miles to >14 Nautical Miles (in MAIN mode) and from 10 Nautical Miles to >9 Nautical miles (in SECONDARY mode)

MAIN TECHNICAL DATA:

✓ -Control circuit driver & coder supply voltage	:	Standard 24Vdc (range from 21 to 33Vdc) (available others voltage on request)
✓ -Supply voltage	:	150Vdc (+5% approx., provided by coder-driver circuit)
✓ -15 n. mile expected power from mains supply	:	450W peak approx. (840Wh/day for 14 hours activation/day) (*) (**)
✓ -15 n. mile effective intensity	:	>15000cd (during dot) (*)
✓ -10 n. mile expected power from battery	:	54W peak approx. (100Wh/day for 14 hours activation/day) (*) (**)
✓ -10 n. mile effective intensity	:	>1500cd (during dot) (*)
✓ -Vertical divergence	:	8 degrees to 50%; asymmetric (+1.5 / - 6.5)
✓ -Horizontal divergence	:	360 degrees
✓ -Expected life time minimum	:	>25.000 working hours (>35 years approx. with "U" code) (*)
✓ -Lumen maintenance	:	90% at 25.000 hours (35 years approx. with "U" code) (*)
✓ -Working temperature range	:	From -52°C to +60°C
✓ -Coder & driver circuits	:	External
✓ -Photocell	:	External
✓ -Synchronization	:	Possible through coders circuits
✓ -Marking	:	Ex II 2GD - Ex de IIC T4 - Ex tD A21 IP65 T 135°C
✓ -ATEX Certificate Number	:	INERIS 01ATEX 0019X
✓ -(*) Expected IALA "U" CODE (standard)	:	0.4" on; 0.5" off; 0.4" on; 0.5" off; 1.2" on; 12" off (15" total period)
✓ -(**) Driver & coder efficiency included	:	



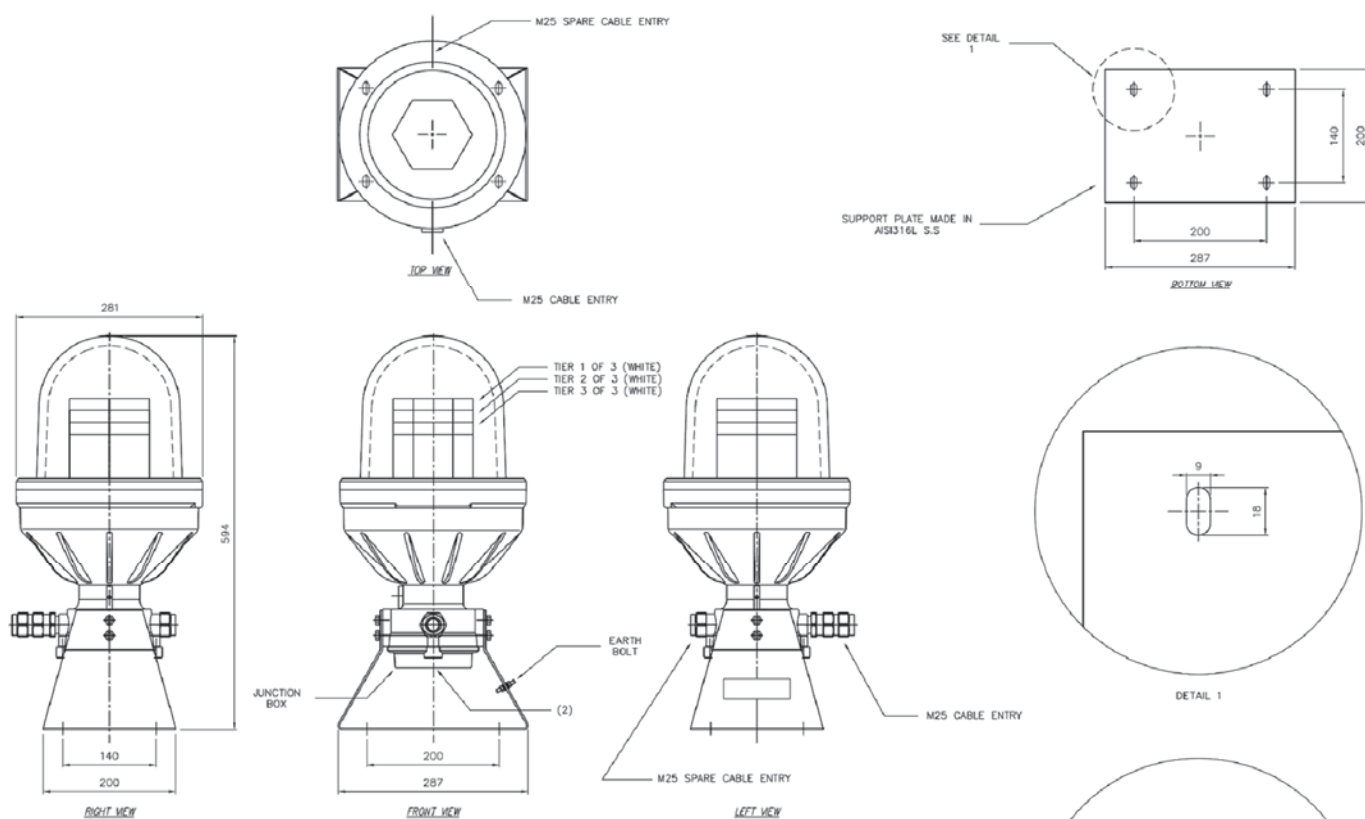
ZONE 1 TYPE SICE-LXS-WHT-15-3 MAIN & SECONDARY MARINE SIGNAL LIGHT STATION



Internal layout with LED arrays,
LED lenses, heatsink and
bubble highlighted



Terminal strip junction box
placed in the bottom side



MAIN MECHANICAL DATA:

-Body material	: Marine grade aluminium painted for off-shore use
-Painting color	: RAL 7035 (other colors available on request)
-Pedestal	: AISI 316L Stainless Steel not painted
-Cover	: Borosilicate fused tempered glass, self-cleaning
-LED manufacturer	: CREE
-LED quantity	: 48 for each tiers (144 LEDs in total)
-Connection junction box	: Included in the equipment
-Connection terminals	: Suitable for wires from 0.5 to 2.5 mm ²
-Signal light weight	: 15kg
-Optional accessory	: Support pole

Document can be subjected to modifications, without prior notice



SICE TYPE NV-V FOG HORN

ATEX & IECEx CERTIFIED - SUITABLE FOR ZONE 1 INSTALLATION

NV-V1 (1NM RANGE) - NV-V3 (2NM RANGE) - NV-V4 (MAIN & SECONDARY FOG HORN STATION)



**SICE NV-V3 FOG HORN
RANGE 2 NAUTICAL MILES
INCLUDING LOCAL CONTROL CIRCUIT
ENCLOSED IN A Ex-d JUNCTION BOX**

Durable and very low maintenance fog horn, composed of omnidirectional acoustic emitters stacked in order to form a vertical column. This type of construction allows a perfect sonorous irradiation of 360 degrees and an excellent sonorous performance (column effect). One fog horn column is sufficient, as long as it can emit a 360-degree beam of sound in the horizontal plane.

GENERAL MAIN TECHNICAL DATA:

- ✓ Complies with IALA Recommendations.
- ✓ **Acoustic emitters** made in marine grade aluminum, subjected to a special protective treatment suitable for sea climate (treatment performed and tested by SICE).
- ✓ **Cylindrical Emitter Covers** made in AISI 316L Stainless Steel.
- ✓ **Acoustic drivers type SICE DR780**, equipped with special stainless steel resonant diaphragm and placed inside the emitter boxes. Each emitter box has two bolted covers, one for each side, for an easy replacement of the driver in case of failure.
- ✓ **Support base and other mechanical frame** made in AISI 316L Stainless Steel.
- ✓ The fog horn is suitable for installation in classified area of Zone 1, in large buoys or platforms. This construction allows an easy installation on the floor of the platform.
- ✓ The coder and control circuit can be installed in a centralized control panel or locally, inside an enclosure installed on the support base of the fog-horn. The coder can be programmed for each required sounding code and can be synchronized with other coders.
- ✓ Prepared for local/remote/automatic (by visibility meter) control.
- ✓ The emitters work by square waves broadcasting a complex sound that reduces the interferences due to reflexions.
- ✓ The acoustic driver used for this fog-horn is a special equipment with high reliability, with a failure rate lower than 1%, and a MTBF higher than 10 years: maintenance is not required.
- ✓ Sound pressure level tests performed in large anechoic chamber, in compliance with E-109 IALA Recommendation "On The Calculation Of The Range Of A Sound Signal", Edition 1 - May 1998.
- ✓ Minimum vertical divergence 5 degrees at maximum power output (2NM fog horn).
- ✓ Working (resonance) frequency ranging between 826Hz and 832Hz.
- ✓ Mechanical protection IP56 (available also IP67 for safe area use only, tested by Nemko).
- ✓ Marking : Ex II 2G Ex d IIB T5 Gb IP56
- ✓ ATEX Certificate Number : INERIS 02ATEX0073X
- ✓ IECEx Certificate Number : INE 14.0043X
- ✓ Operating temperature range : from -40°C to +55°C
- ✓ Emitter painting colour : standard RAL 7000 (other colours can be required)

AVAILABLE MODELS:

- ✓ **Model NV-V1**, Range 1NM Fog Horn, complete with 1 emitter only.
- ✓ **Model NV-V3**, Range 2NM Main Fog Horn, complete with 3 stacked emitters.
- ✓ **Model NV-V4**, Range 2/½NM, Main & Secondary Fog Horn Station, as for IALA Recommendations, complete with 4 stacked emitters. The 4th emitter, and a dedicated amplifier set, provide the required secondary fog signal with range >½ Nautical Miles. For a better reliability, this horn is completely independently operated and controlled, but integrated into one single station for an easy installation.

ELECTRICAL DATA:

- ✓ Supply voltage : 24Vdc or 230Vac (other voltage on request)
- ✓ Power consumption NV-V1 : 30W peak (including control circuit - 4W average with U code standard IALA)
- ✓ Power consumption NV-V3 : 90W peak (including control circuit - 12W average with U code standard IALA)

SOUND PRESSURE LEVEL DATA:

- ✓ NV-V1 sound pressure level : 125dB minimum (calculated at 1 meter)
- ✓ NV-V3 sound pressure level : 134dB minimum (calculated at 1 meter)



SICE TYPE NV-V FOG HORN

ATEX & IECEx CERTIFIED - SUITABLE FOR ZONE 1 INSTALLATION

NV-V1 (1NM RANGE) – NV-V3 (2NM RANGE) – NV-V4 (MAIN & SECONDARY FOG HORN STATION)



SICE DR780 ACOUSTIC DRIVER



TOP LED LANTERN
INSTALLATION DETAIL



SICE NV-V1 FOG HORN
RANGE 1 NAUTICAL MILE
INCLUDING LOCAL CONTROL
CIRCUIT ENCLOSED IN A
Ex-d JUNCTION BOX



SICE NV-V4 MAIN & SECONDARY
FOG HORN STATION
2 1/2 NAUTICAL MILES RANGE
INCLUDING LOCAL CONTROL
CIRCUIT ENCLOSED IN A
Ex-d JUNCTION BOX



SICE NV-V3 MAIN FOG HORN
2 NAUTICAL MILE RANGE
INCLUDING LOCAL CONTROL
CIRCUIT ENCLOSED IN A
Ex-d JUNCTION BOX AND TOP
LED LANTERN

WEIGHT DETAILS

THE FOLLOWING WEIGHT DETAILS
INCLUDE ALSO THE FOG HORN BASE
AND LOCAL CONTROL PANEL,
EXPLOSION PROOF TYPE.

Type NV-V1: 134kg

Type NV-V3: 260kg

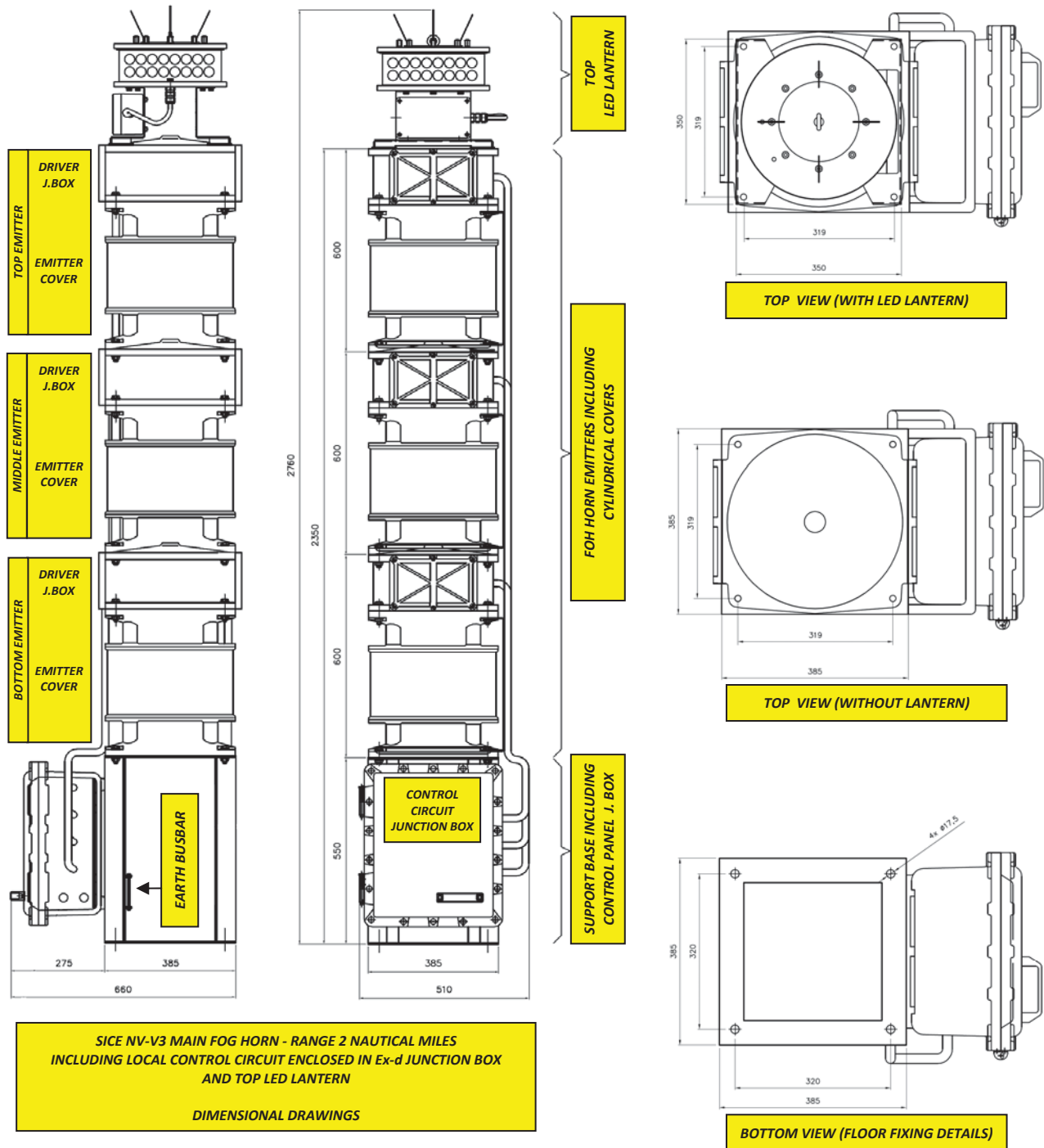
Type NV-V4: 324kg

Type NV-V3 + Lantern: 285kg



SICE TYPE NV-V FOG HORN

ATEX & IECEx CERTIFIED - SUITABLE FOR ZONE 1 INSTALLATION
NV-V1 (1NM RANGE) – NV-V3 (2NM RANGE) – NV-V4 (MAIN & SECONDARY FOG HORN STATION)



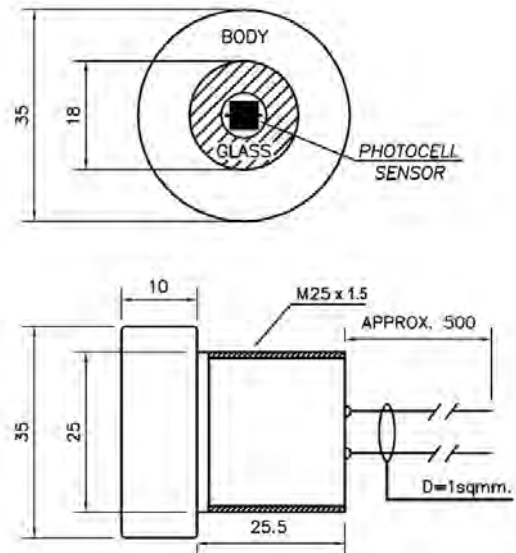
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SICE NAVIGATION AID SYSTEM Ex PHOTOCELL SYSTEM



**SICE FTC M25 COMPLETE DEVICE
INCLUDING PHOTOCONDUCTIVE CELL
SENSOR, ENCLOSURE, ENCAPSULATION
AND CONNECTING CABLE**



**SICE FTC M25 COMPLETE DEVICE
DIMENSIONAL DRAWING**

Photoconductive cell (photoresistor), rugged type, installed, connected and encapsulated by SICE inside a special enclosure, M25 threaded, that includes the glass window. The complete device (photoresistor + enclosure + encapsulation + connecting cable) is ATEX and IECEx certified and is suitable for Zone 1 installation. This device can be installed on a dedicated Junction Box (Photocell Junction Box) or inside the same navigation aids control panel, depending on the navigation aids requirements. Main technical characteristics:

Photoconductive cell details:

- ✓ Type : VT50N1 (or equivalent)
- ✓ Resistance range at 10 lux : from 4.0kΩ to 12kΩ
- ✓ Resistance at dark : 200kΩ minimum
- ✓ Working voltage : 200Vpk maximum
- ✓ Power dissipation : 0.5W maximum
- ✓ Operating (and storage) temperature : from -45°C to +75°C

Complete device details:

- ✓ Type : SICE FTC M25
- ✓ Enclosure body material : AISI 316L Stainless Steel
- ✓ Window glass type : tempered
- ✓ Glass thickness : 10mm
- ✓ Rating voltage : 80Vdc/ac maximum
- ✓ Rating current : 0.1A maximum
- ✓ Mechanical protection : IP66
- ✓ Rated service temperature range : from -40°C to +55°C
- ✓ Protection mode (marking) : II 2 G Ex d IIB Gb IP 66
- ✓ ATEX certificate number : 02ATEX9006U
- ✓ IECEx certificate number : INE 14.0022U



**VT50N1 (OR EQUIVALENT)
PHOTOCONDUCTIVE CELL SENSOR
INSTALLED INSIDE ENCLOSURE**



SICE NAVIGATION AID SYSTEM Ex PHOTOCELL SYSTEM

REDUNDANT PHOTOCELL SYSTEM TYPE EJB-2 + 3xFTC



PHOTOCELL DEVICE 1

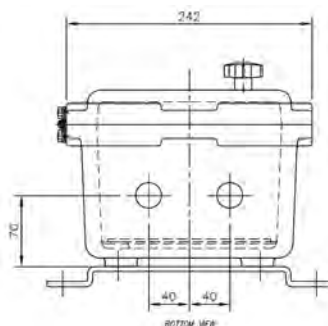
PHOTOCELL DEVICE 2

PHOTOCELL DEVICE 3



INTERNAL BASE
PLATE LAYOUT
(TYPICAL)

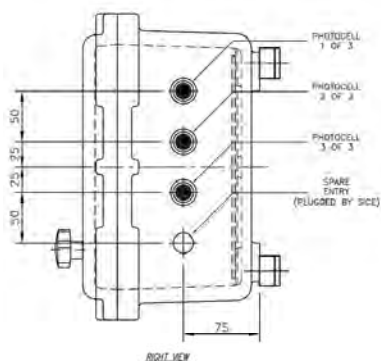
EJB-2 + 3 FTC
Ex ENCLOSURE TYPE EJB-2
ASSEMBLED WITH THREE
PHOTOCELL DEVICES TYPE FTC
(TYPICAL)



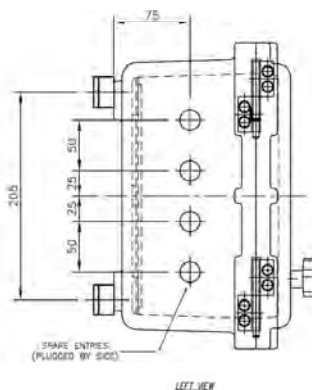
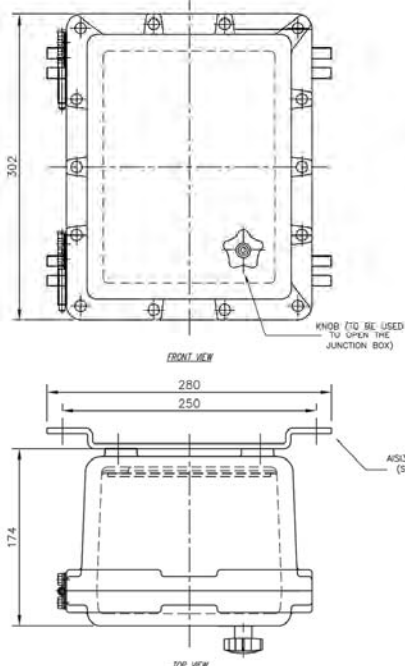
This redundant photocell system includes Q.ty 3 photocell sensors, ATEX and IECEx certified, type SICE FTC M25, placed in the side of one explosion proof enclosure type EJB-02 (or equivalent enclosure). These sensors are managed by SICE supervisor system placed in the SICE navais control panel and work as follows:

- ✓ When at least 2 photocell sensors detect "day", the navais control panel switches-off the signal lights.
- ✓ When at least 2 photocell sensors detect "night", the navais control panel switches-on the signal lights.

In this way, the failure of one photocell sensor does not affect the correct activation/deactivation of the lights system.



EJB-2 Ex ENCLOSURE
TYPICAL DIMENSIONAL DRAWING



Enclosure details:

- ✓ Type: EJB-2
- ✓ Manufacturer: Technor-Italsmea
- ✓ Material: marine grade aluminium
- ✓ External paint: for off shore use
- ✓ Internal paint: anticondensation
- ✓ Mechanical protection: IP66
- ✓ Execution: Ex d IIB T6 IP66
- ✓ Temp. range: from -40°C to +55°C
- ✓ ATEX certificate: INERIS 00ATEX0021X
- ✓ IECEx certificate: INE 10.0015X
- ✓ Weight: 12kg (approx.)



SICE NAVIGATION AID SYSTEM Ex PHOTOCELL SYSTEM

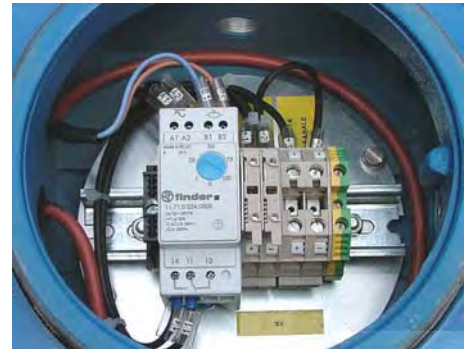
PHOTOCELL SYSTEM TYPE GUB-02 + 1xFTC



GUB-02 + 1xFTC
Ex ENCLOSURE TYPE GUB-02
ASSEMBLED WITH ONE PHOTOCELL
DEVICE TYPE FTC M25
(TYPICAL)

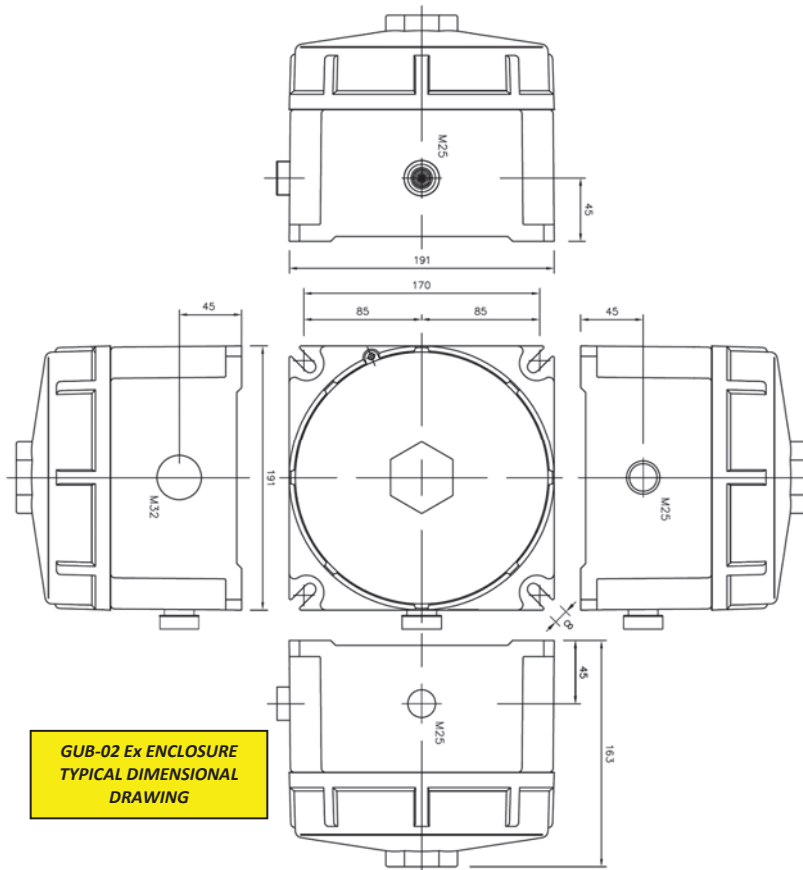


INTERNAL BASE PLATE LAYOUT OF
GUB-02 + 1xFTC STANDARD TYPE
(TYPICAL)



INTERNAL BASE PLATE LAYOUT OF
GUB-02 + 1xFTC COMPLETE TYPE
(TYPICAL)

This system includes (usually) Q.ty 1 photocell sensor device, ATEX and IECEx certified, type SICE FTC M25, placed in the side of one explosion proof enclosure, type GUB-02 (or equivalent enclosure). SICE can manufacture this system in compliance with Customer specifications and requirements, as in the following two examples.



GUB-02 Ex ENCLOSURE
TYPICAL DIMENSIONAL
DRAWING

GUB-02 + 1xFTC standard type:

Inside the enclosure are installed the photocell sensor device and the terminal strip only. The photocell sensor device must be managed by SICE Navais Panel, where the light dependant relay, that manages the photocell sensor, is installed. This system does not require power supply voltage, it is powered by Navais Panel directly through the two wires used for the connection.

Main technical details:

- ✓ Working voltage: $\leq 24Vdc$ (from SICE Navaid Panel)
- ✓ Power consumption: $\leq 0.5W$

GUB-02 + 1xFTC complete type:

This system is complete also with local light dependant relay and, in this case, it is able to switch ON / OFF the loads directly. So, in this case, the photocell system must be also powered by external voltage.

Main technical details:

- ✓ Working voltage: $24Vdc / 230Vac$
- ✓ Power consumption: $1.3VA / 0.8W$ (excluded loads)
- ✓ Relay contacts current: $16A$ at $250Vac$ (AC1)

Enclosure details:

- ✓ Type: GUB-02
- ✓ Manufacturer: Technor-Italsmea
- ✓ Material: marine grade aluminium
- ✓ External paint: for off shore use
- ✓ Internal paint: anticondensation
- ✓ Mechanical protection: IP66
- ✓ Execution: Ex d IIC T6 IP66
- ✓ Temp. range: from $-40^{\circ}C$ to $+55^{\circ}C$
- ✓ ATEX certificate: INERIS 00ATEX0033x
- ✓ IECEx certificate: BKI 15.0003
- ✓ Weight: $6kg$ (approx.)

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SICE NAVIGATION AID SYSTEM SAFE AREA VISIBILITY METER (FOG DETECTOR)



Visibility Sensor PWD20 is an optical sensor that measures visibility (meteorological optical range, MOR). The sensor measures visibility using the principle of a forward scatter measurement.

With a measurement range of 10...20,000 meters, this Visibility Sensor, type PWD20, offers long-range visibility measurement for several applications covering harbors, coastal areas, heliports, windmill parks- indeed, any locations or areas where visibility measurement is necessary.

The PWD20 Visibility sensor is compact, low weight and less than one meter long. It is equipped with a cable and connector for easy installation, and can be mounted in many ways on any existing mast.

SICE includes, in the Visibility meter kit, a mechanical fixing bracket, complete with connecting junction box that is suitable to mount this equipment on an existing pipe of 1-½", as for following drawing.



Recommended Location of PWD20:

The receiver and transmitter optics should not point towards powerful light sources. It is recommended that the receiver will point north in the northern hemisphere, and south in the southern hemisphere. The receiver circuit may become saturated in bright light, in which case the built-in diagnostics will indicate a warning. Bright daylight will also increase the noise level in the receiver.

PWD20 has been calibrated at the factory. Thus, no initial calibration is required. Periodic maintenance includes the following:

- ✓ Cleaning the transmitter and receiver lenses and hoods.
- ✓ Checking the visibility calibration and calibrating it, if necessary.

PWD20 is designed to operate continuously for several years without other maintenance than cleaning of the lenses.

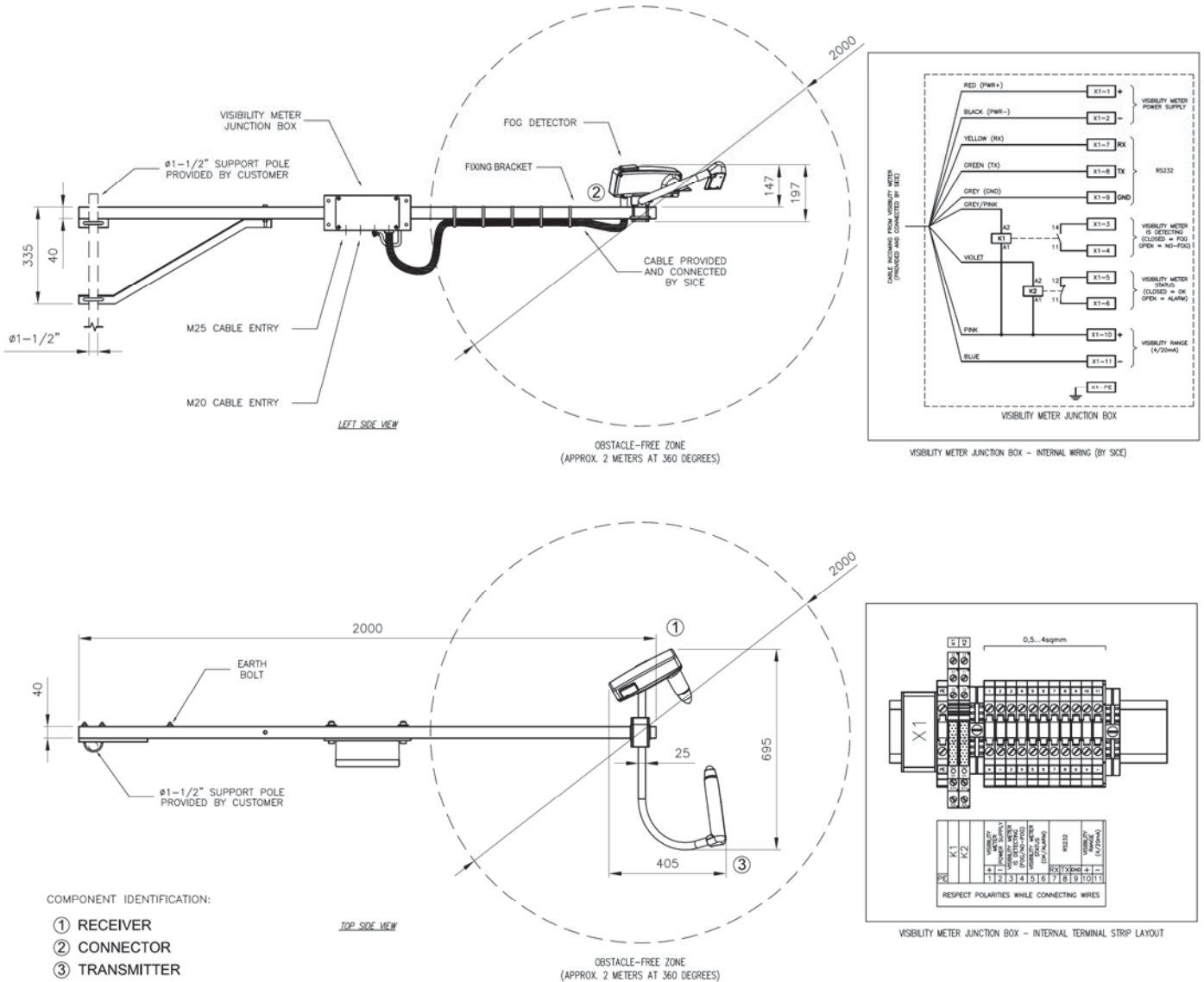
Main technical data:

✓ Type	: PWD20
✓ Manufacturer	: VAISALA
✓ Range	: 10m to 20km
✓ Accuracy	: +/-10% for range from 10m to 10km; +/-15% for range from 10m to 20km
✓ Relative humidity	: 0-100%
✓ Working voltage	: from 12 V DC to 50 V DC (electronics)
✓ Power consumption	: 3W approx.
✓ Operating temperature	: -40°C + 60°C (with optional heater for extended range -40°C)
✓ Output (standard)	: control relay (fog/no fog) and diagnostic relay (ok/alarm)
✓ Output (available)	: 4-20mA (for visibility range measurement)
✓ Mechanical protection	: IP66
✓ Weight	: 3kg (excluded fixing bracket)
✓ Hardware	: Included (AISI 316 stainless steel)
✓ Calibration KIT	: optional
✓ Fixing bracket	: included, type SICE SVM-PWD20, made in AISI 316L stainless steel
✓ Connecting junction box	: included, type Glass Reinforced Polyester, IP66

Available optional summary:

- ✓ Calibration KIT
- ✓ Heaters for extended range -40°C

SICE NAVIGATION AID SYSTEM SAFE AREA VISIBILITY METER (FOG DETECTOR)



PWD20 VISIBILITY METER (FOG DETECTOR) SICE TYPICAL INSTALLATION WITH FIXING BRACKET TYPE SVM-PWD20 DIMENSIONAL DRAWING

Main data:

- ✓ Visibility Meter type: PWD20 (VAISALA)
- ✓ Mounting bracket type: SVM-PWD20 (SICE)
- ✓ Junction box type: E016269 (TECHNOR)
- ✓ Mounting bracket material: AISI 316L stainless steel
- ✓ Junction box material: Glass Reinforced Polyester (black)
- ✓ Mounting bracket weight: 7kg (including junction box)
- ✓ Assembling total weight: 10kg
- ✓ Fixation accessories: included (A4)

Document can be subjected to modifications, without prior notice

SICE NAVIGATION AID SYSTEM Ex VISIBILITY METER (FOG DETECTOR)




ATEX certified Visibility Sensor, suitable for ZONE 1 installation. Measures atmospheric visibility (meteorological optical range) by determining the amount of light scattered by particles (smoke, dust, haze, fog, rain, & snow) in the air that passes through the sample volume. A 42-degree forward scatter angle is used to ensure performance over a wide range of particle sizes. MOR is calculated by the user by converting the received signal strength (extinction coefficient, σ) using Koschmeider's formula, MOR (Km)= $3/\sigma$.

Performance in all weather conditions was a design prerequisite for this Visibility Meter. The sensor uses ATEX rated Ex housings and offshore marine grade sheathed cables to ensure all-weather, Zone I, IP66 certified performance. A sturdy aluminum frame painted with durable powder-coat paint is used to mount the housings and provide mounting to a customer supplied mounting pipe. Power and signal lines are protected with surge and EMI filtering to help guarantee uninterrupted service for the life of the sensor.

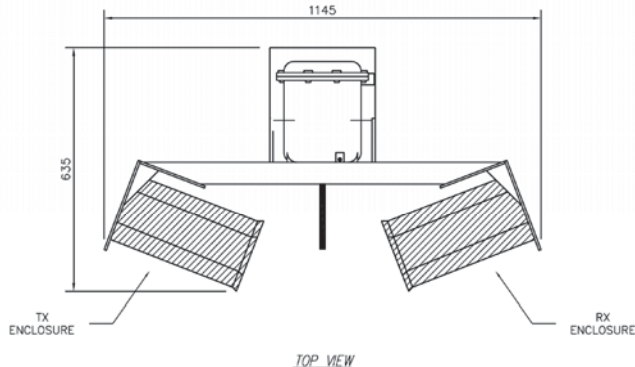
Installation of the Visibility Meter is easy. A mounting flange located on the bottom of the sensor housing mates with a supplied support pole. Power and signal connections are made through M25 threaded holes using user supplied, ATEX approved cable glands and wiring. User wiring is made to DIN rail mounted terminal boards in the Signal Processing Box.

Calibration of the Visibility Meter in the field is as simple as attaching a calibration fixture to the back of the sensor and following a procedure that requires less than 20 minutes. Each sensor is supplied with a calibration fixture. Semiannual calibration is recommended.

Main technical data:

✓ Type	: SVSEEx
✓ Manufacturer	: ENVIROTECH SENSORS, INC
✓ Range	: 15m to 8km
✓ Accuracy	: +/-10% RMSE
✓ Scatter angle	: 42 deg. Nominal
✓ Source	: 880 nm LED
✓ Output (standard)	: control relay (fog/no fog) and diagnostic relay (ok/alarm)
✓ Output (optional)	: 4-20mA
✓ Working voltage	: 12Vdc or 24Vdc
✓ Power consumption	: 8W approx.
✓ Operating temperature	: -20°C + 60°C (available optional hood heater for extended range -40°C)
✓ Mechanical protection	: IP66 (NEMA-4X)
✓ Protection mode	:  II 2GD Ex d IIB T5/T6
✓ ATEX certificates	: CESI 01 ATEX036 and CESI 01 ATEX027
✓ Weight	: 40kg (excluded support pole)
✓ Frame	: sturdy aluminium (painted)
✓ Hardware	: AISI 316 stainless steel
✓ Mounting	: Nominal 102mm pipe, 122mm OD max (4 inch IPS pipe, 4.8 inch OD max)
✓ Calibration KIT	: included
✓ Support pole	: included, type SICE PF/FD-Ex

SICE NAVIGATION AID SYSTEM
Ex VISIBILITY METER (FOG DETECTOR)



SVSEEx VISIBILITY METER (FOG DETECTOR)
SICE TYPICAL INSTALLATION ON SUPPORT POLE TYPE PF/FD-Ex
DIMENSIONAL DRAWING

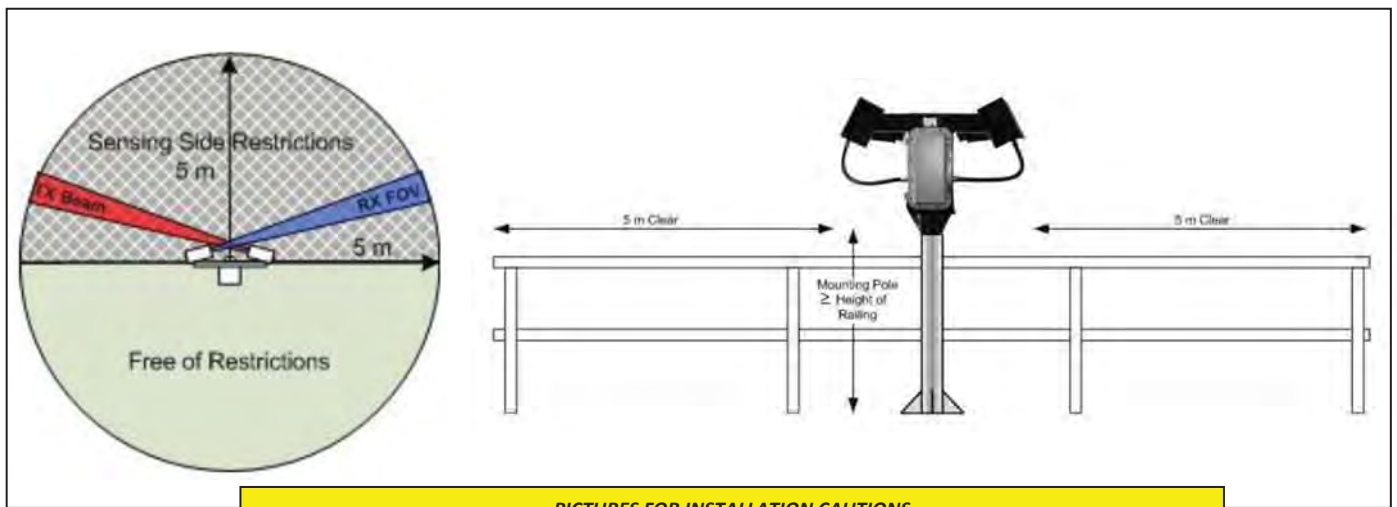
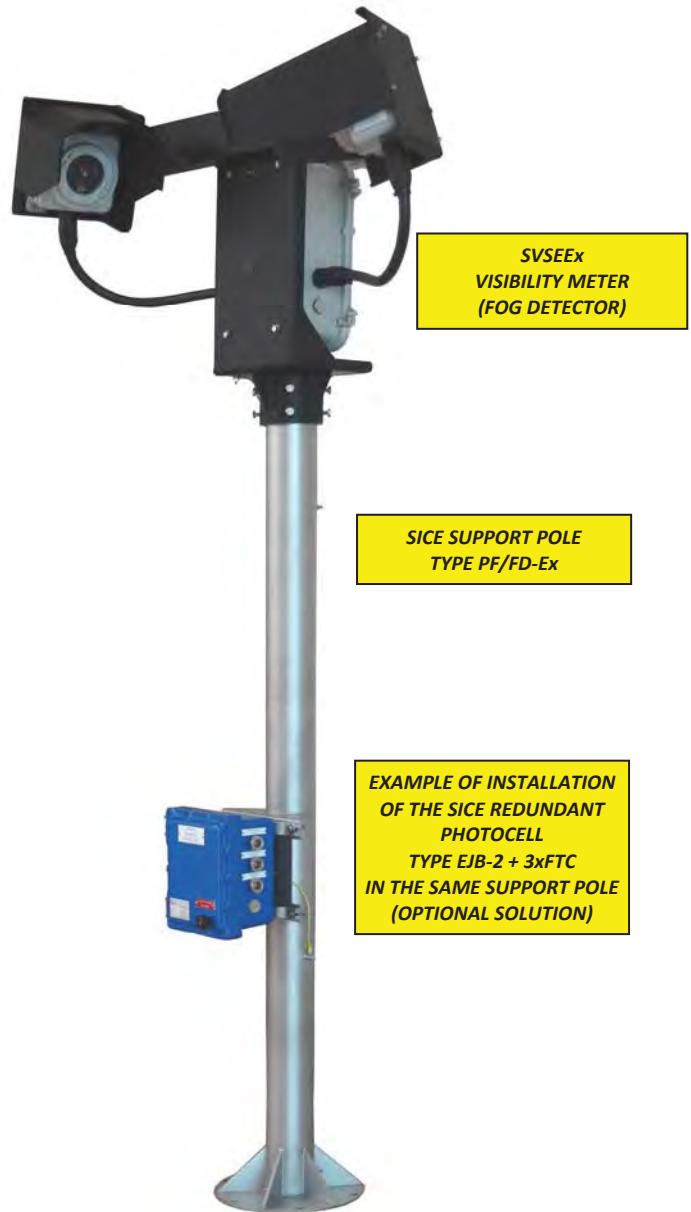
- ✓ *Visibility Meter type:SVSEEX*
- ✓ *Support pole type: PF/FD-Ex*
- ✓ *Support pole material: AISI 316L stainless steel*
- ✓ *Support pole weight: 30kg*
- ✓ *Assembling total weight: 70kg*

SICE NAVIGATION AID SYSTEM Ex VISIBILITY METER (FOG DETECTOR)

INSTALLATION CAUTIONS (extract from the operating manual)

The best location to site the Visibility Sensor is at the edge of the platform deck with the optics looking over the rail and the TX head towards the south so the RX optics window looks towards the north. If the Visibility sensor is mounted so it looks over the rail, the mounting pole should be at equal to or greater than the height of the rail. The area along the rail should be straight for at least 5m on either side of the Visibility Sensor and not have any obstructions, bright lights or navigation beacons within that area. Lights installed on the inside of the rail to illuminate the walkway for safety reasons are acceptable. The area above the sensor must be clear to the sky and not subject to dripping water from hoses or other objects. High powered sources of RF energy such as HF antennas or microwave communication dishes must not be within 10m of the Visibility Sensor to avoid interference or damage to the sensitive RX electronics. If the Visibility Sensor cannot be installed along the rail, the 2nd best location is in an open area like a deck. The height of the customer supplied mounting pole should be ~2.5m, so the sensor optics are 3 m above the deck. The area to be clear of obstructions and walkways is a hemisphere of radius 5m on the sensing side of the Sentry (were the TX and RX Heads are). If the sensing side must overlook a walkway, locate the Visibility Sensor 2-3 m from the walkway and 3 m above the deck. The hemisphere area on the other side of the sensor (with Main Electronics Enclosure) is considered free of restrictions as shown in the following figure. If the full restrictions on the sensing side of the Sentry cannot be met, it is suggested that the area be cordoned off and placards used to caution personnel not to linger or to leave equipment or containers in that area.

See the operative manual for other and exhaustive information.



PICTURES FOR INSTALLATION CAUTIONS

Document can be subjected to modifications, without prior notice



Ex BATTERY BOX SUITABLE FOR ZONE 1 INSTALLATION



This battery system is composed by a battery box that includes some battery cells that are already assembled and connected. The whole complex, that includes the box, the cells and the interconnections, is manufactured in compliant with ATEX (European) Directive and is certified for use in classified area of Zone 1. Different types of batteries, from more manufacturers, which are selected among the most important and qualified of the market, can be used for the realization of this battery system.

SICE has performed a mainly selection and, usually, uses the following battery types:

VRLA BATTERIES MADE BY FIAMM:

- SMG
- SMG/S (Solar) for photovoltaic system

VRLA BATTERIES MADE BY SONNENSCHNEIN:

- A400
- A500
- A600
- A600 (Solar) for photovoltaic system

NiCd BATTERIES MADE BY SAFT:

- SBLE
- SUNICA+(Solar) for photovoltaic system
- Uptimax UP1L

Other types of batteries from same and other manufacturers, that are already approved and included in the ATEX certificate (for example ENERSYS and HOPPECKE), can be used for the construction of this battery system. SICE is open to evaluate all customer requirements.

MAIN TECHNICAL GENERAL DATA

Execution	:	ATEX II 2G Ex-e IIC T6 Gb IP56
Certificate	:	INERIS 12ATEX0061X
Box Manufacturer	:	EXCEN for SICE
Box Material	:	Iron sheet with anti-acid painting
Maximum capacity for each box	:	1960Ah (C5)
Box mechanical protection	:	IP23 (minimum)
Complex mechanical protection	:	IP56 (protection battery + battery box)
Standard temperature range	:	-20°C to +40°C

Main available options:

Box material	:	AISI 316L Stainless Steel not painted
Box mechanical protection	:	IP43
Connection mechanical protection	:	IP66 (Complex protection battery + battery box)
Terminal strip junction box material	:	AISI 316L Stainless Steel
Extreme temperature range	:	-60°C to + 60°C (according to the cell manufacturer specifications)
Hinged cover	:	

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SICE NAVIGATION AID SYSTEM

ZONE 1 VISUAL NAVIGATION AIDS - LANTERN STATION FOR DISTRIBUTED SYSTEM

FRONT COVER OF J.BOX INCLUDING TRANSPARENT WINDOW AND DESCRIPTION LABELS
(SYSTEM THAT INCLUDES THE OPTION FOR MAIN AND RESERVE LINES)

LED LANTERN

LANTERN JUNCTION BOX

PHOTOCELL DEVICE

LANTERN STATION SUPPLIED BY SICE ALREADY PRE-ASSEMBLED AND WIRED

LEDs SHORT DESCRIPTION		
REVERSE POLARITY ALARM (H1)	ON	THE POLARITIES OF THE 24VDC POWER SUPPLY ARE REVERSED
	OFF	THE POLARITIES OF THE 24VDC POWER SUPPLY ARE NOT REVERSED
STAND-BY (ORANGE)	ON	THE CODER CIRCUIT IS IN STAND-BY
	OFF	IF NO FURTHER FRONTAL LED IS SWITCHED-ON, THE CODER CIRCUIT IS NOT POWERED
CODE (ORANGE)	BLINKING	THE LOCAL PHOTOCELL CONNECTED TO THE CODER CIRCUIT IS NOT WORKING PROPERLY
		THIS LED REPRODUCES THE CODE GENERATED BY THE CODER CIRCUIT
LIGHT OK (ALARM (GREEN/RED))	ON (GREEN)	THE CODER CIRCUIT IS ACTIVATED AND NO ALARM IS DETECTED IN THE CORRESPONDING LED TIER
	ON (RED)	THE CODER CIRCUIT IS ACTIVATED AND AT LEAST ONE ALARM IS DETECTED IN THE CORRESPONDING LED TIER
	OFF	THE CODER CIRCUIT IS NOT ACTIVATED
CODER OK (ALARM (GREEN/RED))	ON (GREEN)	THE CODER CIRCUIT IS ACTIVATED AND NO ALARM IS DETECTED IN THE CODER ITSELF
	ON (RED)	THE CODER CIRCUIT IS ACTIVATED AND AT LEAST ONE ALARM IS DETECTED IN THE CODER ITSELF
	OFF	THE CODER CIRCUIT IS NOT ACTIVATED
	BLINKING (RED)	THE POWER SUPPLY VOLTAGE IS LOWER THAN THE MINIMUM ALLOWED THRESHOLD

(A MORE COMPLETE AND DETAILED DESCRIPTION OF THE LEDs CAN BE FOUND IN THE RELEVANT OPERATIVE MANUAL)

Rugged, simple, long life and very reliable, Visual Navigation Aids System (Lantern Station). Compliant with IALA Recommendations, where a range of 10 nautical miles is required. The system includes a mechanical support pole type SICE PF/1300-LED, a Marine LED Lantern type SICE LF10NM-L-1 and the Lantern Junction Box. Inside the Junction Box are installed the U-coder/driver circuit(s) type SICE 266, the Photocell device(s) type SICE FTC M25, the reverse polarity protection diode and the protection circuit breaker(s), inside lantern only LED devices are installed. The Station is manufactured by SICE in compliance with ATEX and IECEx Directives and is certified for use in classified area of Zone 1. This Station can be synchronized with other Stations, with same features, and is also complete with a remote signal of alarm. Through the transparent window, present on the cover of the Junction Box, it's possible to monitor the statuses of the Lantern Station, that are:

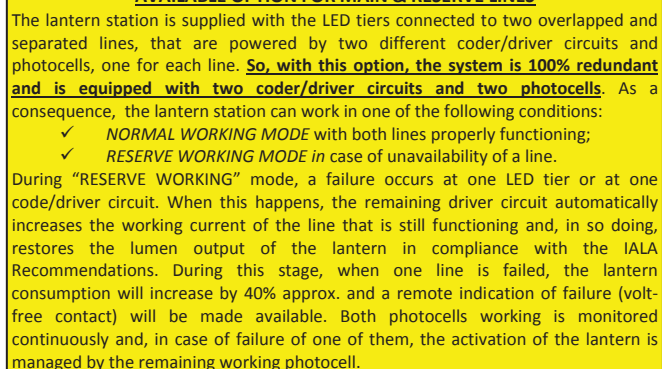
- ✓ Status of the circuit breaker(s)
- ✓ Status of the red pilot light named "REVERSE POLARITY ALARM"
- ✓ Status of the coder/driver circuit(s)

In the front of the Junction Box is installed a label that briefly describes the meanings of the various pilot lights placed inside, allowing the operator to perform a fast and complete audit regarding the working status of the Lantern Station, without opening the junction box.

Main technical characteristics:

- ✓ Working voltage: 24Vdc, range from 21 to 33V (other voltages on request)
- ✓ Station peak power during ON periods: 32W
- ✓ Station daily power consumption: 75Wh/day (3.125Ah/day (note 1))
- ✓ Low voltage disconnecting system included (reconnecting is automatic when the voltage returns above the programmed value)
- ✓ Synchronization mode : wired
- ✓ Remote control : voltage-free contact (closed = System OK)
- ✓ Support pole: AISI 316L Stainless Steel or galvanized steel painted in compliance with standard or Customer procedure with required colour
- ✓ Junction Box type: EJB-5 Technor (or equivalent), made in copper free aluminium, painted in compliance with standard or Customer procedure with required colour

Note 1: at 24Vdc, based on 14 hours activation/day, considering IALA "U" code 15" (0,4" on; 0,5" off; 0,4" on; 0,5" off; 1,2" on; 12" off; Duty Cycle = 0.133)



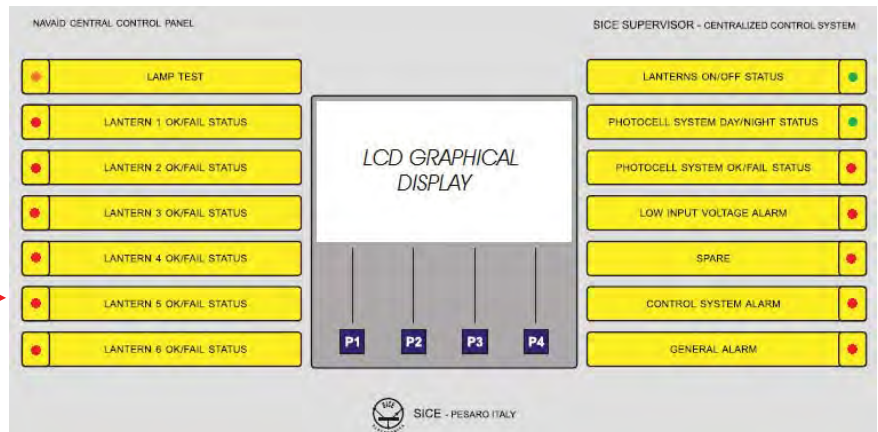
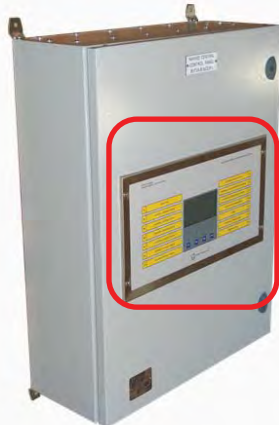
Pag. 2 of 2



SICE NAVIGATION AID SYSTEM

VISUAL NAVIGATION AIDS – CENTRALIZED SYSTEM

SICE NAVAID CENTRALIZED CONTROL PANEL
SUITABLE FOR WALL INSTALLATION-SAFE AREA
INCLUDING SUPERVISOR AND DISPLAY PANEL



Simple and very reliable Visual Navigation Aids System (lantern system), compliant with IALA Recommendations, composed by NCCP (Navaid Centralized Control Panel), General Photocell System and Main White Signal Lights (LED lanterns), as for following system block diagram.

SICE REDUNDANT PHOTOCELL SYSTEM
SUITABLE FOR WALL INSTALLATION-ZONE 1



SICE ZONE 1 LED LANTERN
INCLUDING SUPPORT POLE AND JUNCTION BOX



The **NAVAID CENTRALIZED CONTROL PANEL** is built in a wall mounting box suitable for indoor installation in safe area. This equipment is manufactured by SICE in compliance with Customer requirements and specifications. The components installed inside the cabinet can be divided in the following sub-sections:

- ✓ **CIRCUIT FOR MARINE SIGNAL LIGHTS:** it includes the automatic circuit breakers and the U-coders (drivers) used to drive the MARINE LANTERNS.
- ✓ **PHOTOCELL INTERFACE CIRCUIT:** it includes the automatic circuit breakers and the light detector relays used to read the data incoming from the three photocell sensors installed (outside) on one dedicated PHOTOCELL SYSTEM enclosure.
- ✓ **CONTROL SYSTEM:** the above listed sub-systems are monitored by the control system. This system is designed/manufactured by SICE and it is very useful in all cases where several sub-systems have to be integrated together, providing to the user a complete local and remote control for the whole system. The local interface panel is composed of a graphic display and signaling led, by which the user can monitor all the configured status, alarms, analogue values. In particular, through some pages on this graphic display, the user can monitor all the configured statuses and alarms of the several installed equipment, one by one.

The redundant **PHOTOCELL SYSTEM, type SICE EJB-2 + 3xFTC**, is used to detect the ambient light conditions and it is used to switch-on/off the marine lanterns when the corresponding commands request the mentioned groups of lights to be driven accordingly to the photocell system (AUTO). The installed sensors are three in order to have a redundancy that guarantees, even if one or two sensors are failed, to continue to switch-on/off the lanterns properly during night/day. This equipment is ATEX and IECEx certified, suitable for Zone 1 installation.

The **MARINE SIGNAL LIGHTS (LANTERNS), type SICE LS-10NM-L-1**, (Main White Lights) are used to mark the off-shore obstacles, on which they are installed, where a range of 10 nautical miles is required, as for IALA Recommendations. These lanterns are supplied by SICE complete with support pole and connecting junction box. This equipment is ATEX and IECEx certified, suitable for Zone 1 installation.

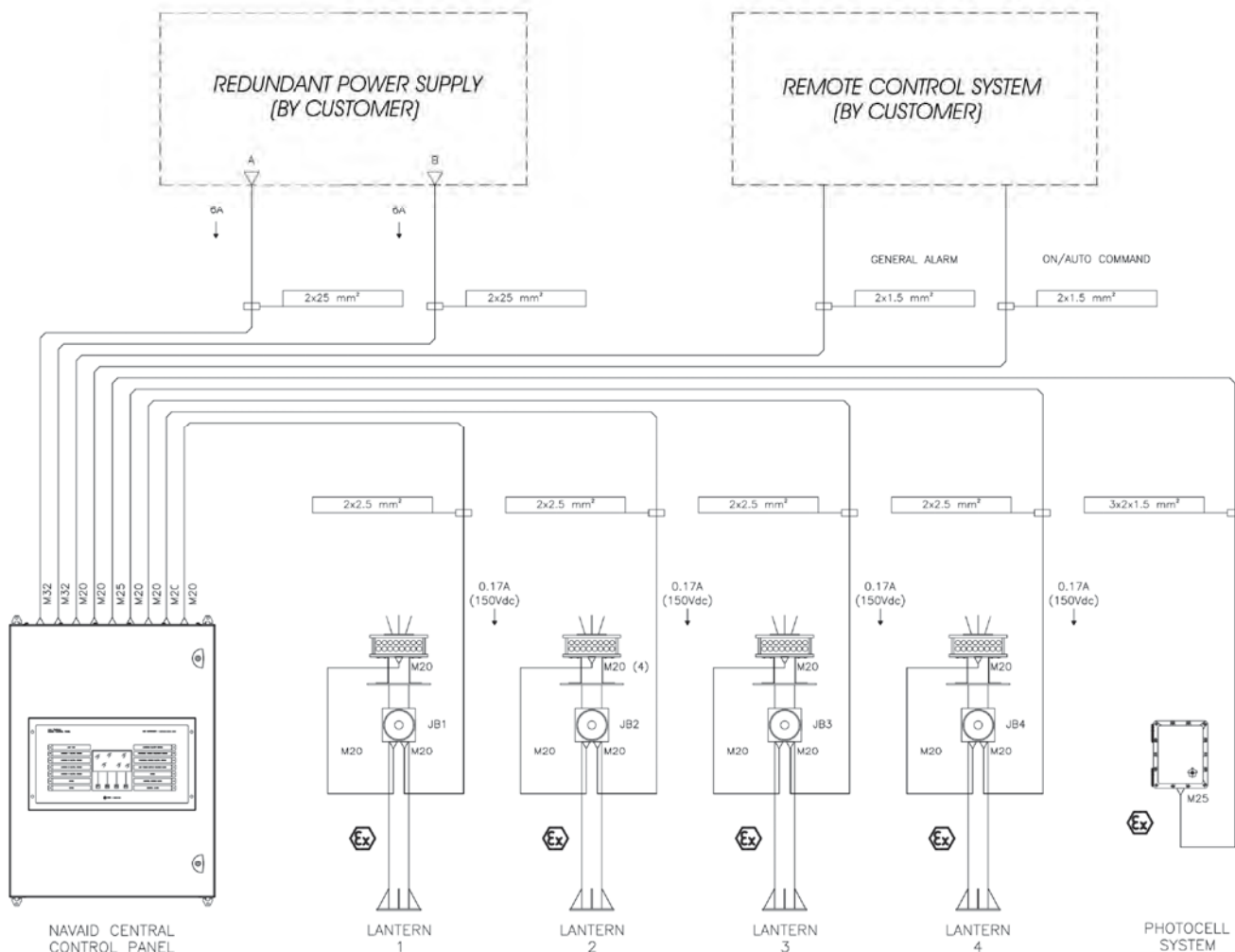
CONNECTIONS ADVANTAGE: the synchronization facility is made inside NCCP, so, only the lanterns power connections are required for this system. Due to the low consumption of LED lanterns, these power connections can be carried out using cables with small size. For example, using cables 2x2.5mm², these can be longer up to 1km with voltage drop lower than 4%. Considering that these lanterns keep on working properly also with a drop voltage of 20% approx., the theoretical cables length (using 2.5mm²) can be up to 5km approx. So, this "centralized" system is suitable and highly suggested for use in large platforms.



SICE NAVIGATION AID SYSTEM

VISUAL NAVIGATION AIDS – CENTRALIZED SYSTEM

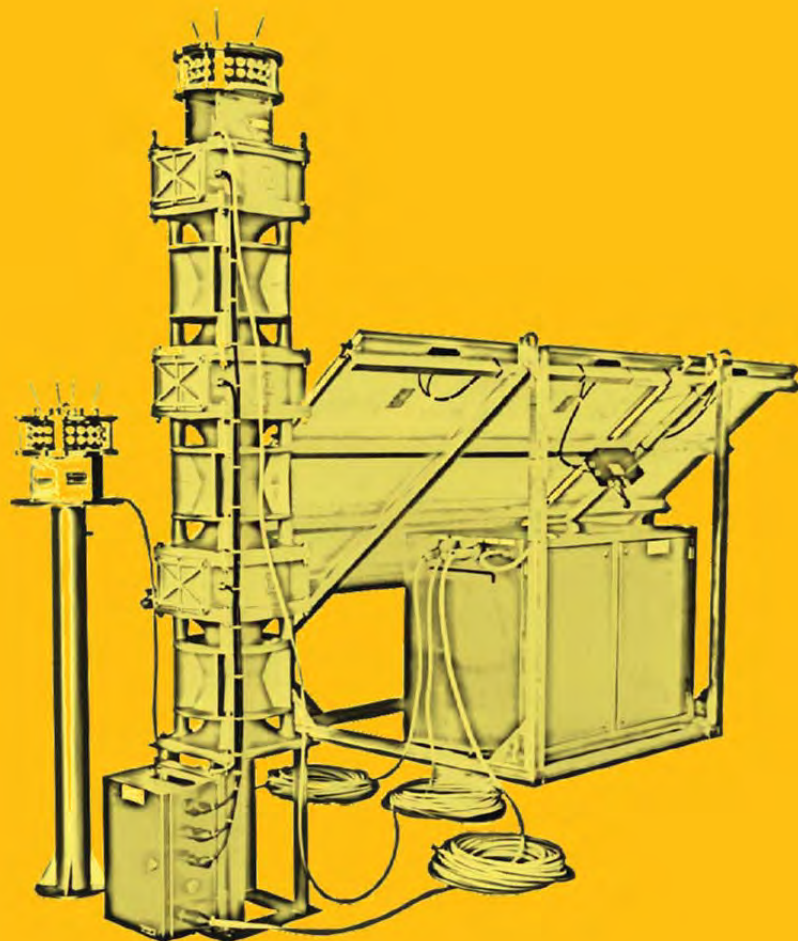
BLOCK DIAGRAM FOR STANDARD SYSTEM INCLUDING Qty. 4 LANTERNS



GENERAL TECHNICAL INFORMATIONS

LOCAL DISPLAY CONFIGURATION (standard): <ul style="list-style-type: none"> ✓ Lamp test ✓ Lanterns ON/OFF status ✓ Lantern 1 OK/FAIL status ✓ Lantern 2 OK/FAIL status ✓ Lantern 3 OK/FAIL status ✓ Lantern 4 OK/FAIL status ✓ Photocell system DAY/NIGHT status ✓ Photocell system OK/FAIL status ✓ Input voltage measurement ✓ Low input voltage alarm ✓ Supervisor system alarm ✓ General alarm Notes: <ol style="list-style-type: none"> Display configuration can be changed in compliance with Customer request (if applicable) 	REMOTE CONTROLS (standard hard wired): <ul style="list-style-type: none"> ✓ General alarm: <ul style="list-style-type: none"> • Close contact = system OK • Open contact = system FAILED (at least an alarm is been detected) ✓ ON/AUTO command: <ul style="list-style-type: none"> • Closed contact = ON (lanterns forced ON) • Open contact = AUTO (lanterns activated by photocell system) Notes: <ol style="list-style-type: none"> Remote control configuration can be changed in compliance with Customer request (if applicable) 	OTHER TECHNICAL DATA (standard system with 4 lanterns): <ul style="list-style-type: none"> ✓ Working voltage: 24Vdc (range from 21 to 33V) (note 1) ✓ Input peak power to NCCP: 126W ✓ Daily power required: 450Wh/day ✓ Daily current required: 18.75Ah/day (at 24Vdc) ✓ Lantern activation (expected): 14h/day ✓ Lantern "U" code (expected): standard IALA 15" ✓ Lantern power consumption during ON times: <27W (note 2) ✓ Control & supervisor system consumption: 4W ✓ Lantern working voltage: 153Vdc (generated by coder) ✓ Lantern current average during ON times: 0.175A ✓ NCCP dimensions: 800mm (H) x 600mm (W) x 250mm (D) (note 3) Notes: <ol style="list-style-type: none"> Other voltages can be required (the electrical data can change) See the SICE data sheet of system components (lantern and photocell) for further and detailed informations. For maximum 6 lanterns (the dimension can increase if the lantern quantities is more than six).
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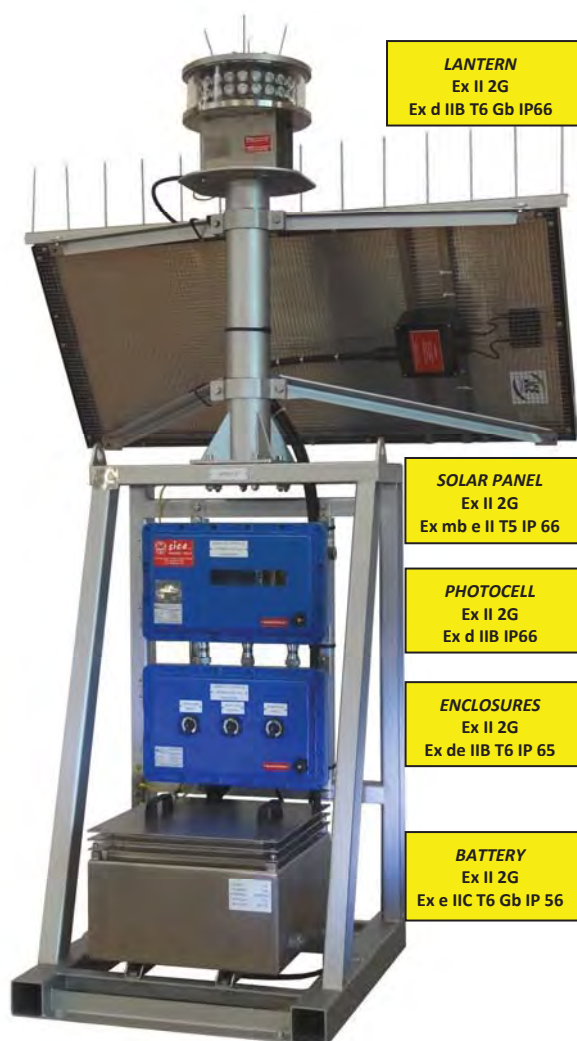
TEMPORARY SYSTEMS



SICE VISUAL NAVIGATION AID SYSTEM TYPE Ex/SL/LED

SOLAR POWERED & ATEX CERTIFIED SYSTEM - SUITABLE FOR ZONE 1 INSTALLATION

"U" CODE STANDARD IALA WHITE LIGHT - RANGE >5 NAUTICAL MILES



LANTERN
Ex II 2G
Ex d IIB T6 Gb IP66

SOLAR PANEL
Ex II 2G
Ex mb e II T5 IP 66

PHOTOCELL
Ex II 2G
Ex d IIB IP66

ENCLOSURES
Ex II 2G
Ex de IIB T6 IP 65

BATTERY
Ex II 2G
Ex e IIC T6 Gb IP 56

Very rugged system with high reliability and long life, 40 years and more life expectancy for the lantern, without maintenance requirements. The system is completely manufactured in compliance with ATEX Directive and all components are ATEX certified by external Authorized European Institutes, auto-certifications are not expected. Equipped with LED technology lantern, PWM solar charge regulator, photocell, high quality battery (suitable for solar system) and protection switches. The signal light body, the support structure and battery box are made in AISI 316L Stainless Steel, not painted. The explosion proof enclosures are made in copper free aluminium, painted internally and externally. Painting and tropicalization are made in compliance with manufacturer procedure suitable for off-shore use. Enclosures external colour can be selected from Customer. The lantern range calculation is performed considering also the IALA Guideline no. 1048 "on led technologies and their use in signal lights". Main technical Characteristics:

- Installation: self-standing, suitable for Zone 1 (& 2)
- Temperature range: from -20°C to +50°C (standard system)
- Solar panel: 130Wp 12V nominal (polycrystalline type)
- Solar panel total derating expected: >40% (considered 77W)
- Battery recharging time: <10 days (with 5 sun hours/day)
- Battery capacity: 12V 170Ah (2x85A parallel connected)
- Battery type: VRLA for solar system (made by Sonnenschein)
- Temperature compensation: expected in the charge regulator
- Lantern type SICE LS-10NM-L1 with white led
- Lantern contr. circuit: SICE 266 constant current driver & coder
- Available flashing code: everyone, programmable
- System daily consumption: 56Wh/day (with U code std IALA)
- Expected activation time for day: 14 hours/day
- Battery autonomy: >30 days at 20°C (with U code std IALA)
- Battery life: 800 cycles at 60% DoD (at 20°C)
- Lantern luminous peak power output: >350cd
- Lantern luminous range: >5 Nautical Miles
- Lumen output degrades is considered, as for IALA Guideline
- Lantern synchronization system included
- Remote controls (status and alarm) included
- Load disconnection system for low battery voltage included
- Battery breaker included (manoeuvrable from outside)
- Solar panel breaker included (manoeuvrable from outside)
- Lantern breaker included (manoeuvrable from outside)
- Local visual signalizations available from transparent window of the enclosure, as following:
 - LED's indicate battery status and faults
 - DISPLAY indicates the battery voltage
 - DISPLAY indicates the solar panel charging current
 - DISPLAY indicates the load consumption current
 - DISPLAY indicates the load disconnection circuit status
 - LED indicate the lantern ON/STAND-BY status
 - LED indicate the lantern OK/FAILURE status
 - LED indicate the driver / coder circuit OK/FAILURE
 - LED that repeat the code flashing

Two available options:

TYPE Ex/SL/LED (as per picture)

Solar powered Led Lantern dimension & weight:
1500mm (L) x 800mm (D) x 2383mm (H)
Total weight: 274kg

TYPE Ex/L/LED (without solar panel)

Mains powered Led Lantern dimensions & weight:
740mm (L) x 800mm (D) x 2383mm (H)
Total weight: 235kg

Base dimensions (same for both systems)
741mm x 800mm

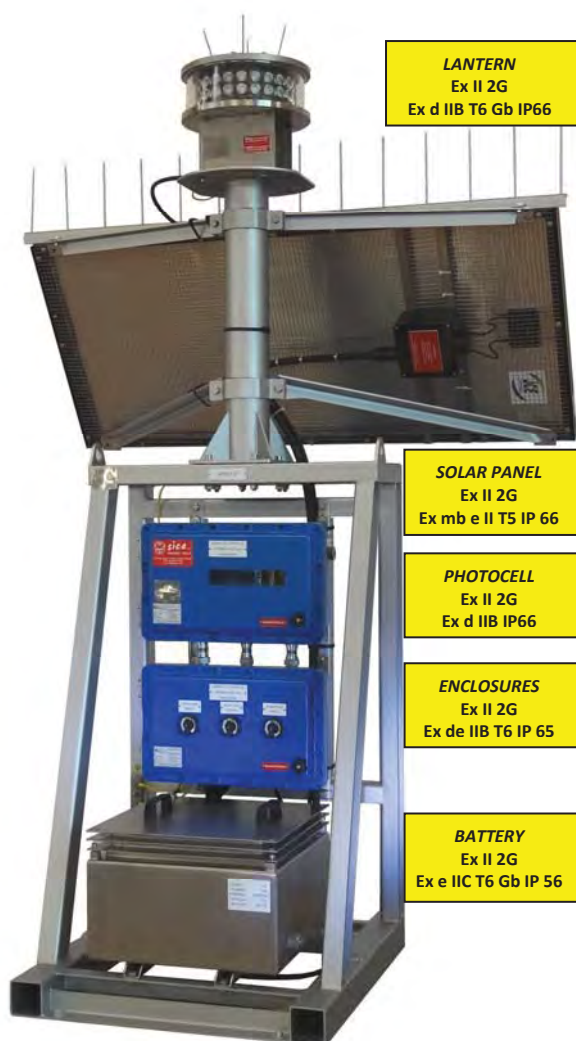
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SICE VISUAL NAVIGATION AID SYSTEM TYPE Ex/SL/LED

SOLAR POWERED & ATEX CERTIFIED SYSTEM - SUITABLE FOR ZONE 1 INSTALLATION

"U" CODE STANDARD IALA WHITE LIGHT - RANGE 10 NAUTICAL MILES



LANTERN
Ex II 2G
Ex d IIB T6 Gb IP66

SOLAR PANEL
Ex II 2G
Ex mb e II T5 IP 66

PHOTOCELL
Ex II 2G
Ex d IIB IP66

ENCLOSURES
Ex II 2G
Ex de IIB T6 IP 65

BATTERY
Ex II 2G
Ex e IIC T6 Gb IP 56

Available option for Main & Reserve lines configuration

The LED lantern tiers are connected to two overlapped and separated lines that are powered through two separated driver circuits and photocells, one for each line. When an failure occurs, at one led line or at one driver circuit (or photocell), the remaining driver circuit increases automatically the working current of the led line that is still working and restores the lumen output in compliance with the IALA Recommendations. During this phase, when one line is failed, a remote control of failure is available from control circuit. In the worst case, when the failure has occurred, this option requires an minimum solar radiation of 2kWh/m² because the system daily consumption increase of 40%, the battery autonomy is reduced from 20 days to 12 days

SICE Pesaro (ITALY)

Very rugged system with high reliability and long life, 40 years and more life expectancy for the lantern, without maintenance requirements. The system is completely manufactured in compliance with ATEX Directive and all components are ATEX certified by external Authorized European Institutes, auto-certifications are not expected. Equipped with LED technology lantern, PWM solar charge regulator, photocell, high quality battery (suitable for solar system) and protection switches. The signal light body, the support structure and battery box are made in AISI 316L Stainless Steel, not painted. The explosion proof enclosures are made in copper free aluminium, painted internally and externally. Painting and tropicalization are made in compliance with manufacturer procedure suitable for off-shore use. Enclosures external colour can be selected from Customer. The lantern range calculation is performed considering also the IALA Guideline no. 1048 "on led technologies and their use in signal lights".

Main technical Characteristics (standard):

- ✓ Installation: self-standing, suitable for Zone 1 (& 2)
- ✓ Temperature range: from -20°C to +50°C (standard system)
- ✓ Solar panel: 130Wp 12V nominal (polycrystalline type)
- ✓ Solar panel total derating expected: >30% (considered 90W)
- ✓ Minimum solar radiation required: 1.5kWh/m²
- ✓ Battery capacity: 24V 85Ah
- ✓ Battery type: VRLA for solar system (made by Sonnenschein)
- ✓ Battery life: 800 cycles at 60% DoD (at 20°C)
- ✓ Temperature compensation: expected in the charge regulator
- ✓ Lantern type SICE LS-10NM-L1 with white led
- ✓ Lantern contr. circuit: SICE 266 constant current driver & coder
- ✓ Available flashing code: everyone, programmable
- ✓ System daily consumption: 80Wh/day (with U code std IALA)
- ✓ Expected activation time for day: 14 hours/day
- ✓ Battery autonomy: >20 days at 20°C (with U code std IALA)
- ✓ Lantern luminous peak power output: >1400cd effective
- ✓ Lantern luminous range: 10 Nautical Miles
- ✓ Lumen output degrades is considered, as for IALA Guideline
- ✓ Lantern synchronization system included
- ✓ Remote controls (status and alarm) included
- ✓ Load disconnection system for low battery voltage included
- ✓ Battery breaker included (manoeuvrable from outside)
- ✓ Solar panel breaker included (manoeuvrable from outside)
- ✓ Lantern breaker included (manoeuvrable from outside)
- ✓ Local visual signalizations available from transparent window of the enclosure, as following:
 - ❖ -LED's indicate battery status and faults
 - ❖ -DISPLAY indicates the battery voltage
 - ❖ -DISPLAY indicates the solar panel charging current
 - ❖ -DISPLAY indicates the load consumption current
 - ❖ -DISPLAY indicates the load disconnection circuit status
 - ❖ -LED indicate the lantern ON/STAND-BY status
 - ❖ -LED indicate the lantern OK/FAILURE status
 - ❖ -LED indicate the driver / coder circuit OK/FAILURE
 - ❖ -LED that repeat the code flashing
- ✓ **Base dimensions** : 741mm x 800mm
- ✓ **Height** : 2377mm (all included)
- ✓ **Total weight** : 274kg



SOLAR POWERED LED LANTERN TYPE TS/LED

RANGE 10 NAUTICAL MILES - SAFE AREA VERSION



VERY RUGGED SYSTEM WITH HIGH RELIABILITY AND LONG LIFE, 40 YEARS AND MORE LIFE EXPECTANCY FOR THE LANTERN, WITHOUT MAINTENANCE REQUIREMENTS. EQUIPPED WITH LED TECHNOLOGY LANTERN, SOLAR PANEL, MPPT SOLAR CHARGE REGULATOR, PHOTOCCELL, HIGH QUALITY BATTERY (SUITABLE FOR SOLAR SYSTEM) AND PROTECTION SWITCHES. THE LANTERN BODY, THE SUPPORT STRUCTURES (THAT INCLUDES THE ANTI-WINGED SYSTEMS) AND THE CONTROL/BATTERY BOX, ARE MADE IN AISI 316L STAINLESS STEEL, NOT PAINTED.

Main technical Characteristics:

- ✓ Installation: bolted/welded to the floor, in Safe Area
 - ✓ Temperature range: from -20°C to +50°C
 - ✓ Solar panel: 125Wp
 - ✓ Battery capacity: 24V 60Ah (C100)
 - ✓ Battery type: VRLA (suitable for solar system)
 - ✓ Battery life: 1200 cycles at 60% DoD (at 20°C)
 - ✓ Autonomy: >10 days at 20°C (with std U code IALA)
 - ✓ Charge temperature compensation: included
 - ✓ Low voltage disconnection system: included
 - ✓ Lantern type: SICE LS-10NM-L1 with white led
 - ✓ Lantern driver/coder circuit: SICE 266 (constant current)
 - ✓ Available flashing code: anyone, programmable (by SICE)
 - ✓ Daily consumption: 86Wh/day (with std "U" code IALA)
 - ✓ Expected activation time for day: 14 hours/day
 - ✓ Lantern luminous peak power output: >1500cd
 - ✓ Lantern luminous range: 10 Nautical Miles
 - ✓ Lantern synchronization system: included
 - ✓ Battery breaker included
 - ✓ Solar panel breaker included
- Remote controls included:
- ✓ Lantern failure (voltage free contact)
 - ✓ Lantern status (voltage free contact)

Local visual signalizations available inside the control/battery enclosure, as following:

- ✓ DISPLAY indicates the solar panel voltage
- ✓ DISPLAY indicates the battery voltage
- ✓ DISPLAY indicates the solar panel charging current
- ✓ DISPLAY indicates the battery charging current
- ✓ LED indicates the lantern ON/STAND-BY status
- ✓ LED indicates the lantern OK/FAILURE status
- ✓ LED indicates the driver / coder circuit OK/FAILURE
- ✓ LED that repeats the code flashing
- ✓ LED indicates the load disconnection circuit status

Dimensions and weight:

- ✓ L: 1585mm x W: 1130mm x H: 2388mm (1)
- ✓ Floor fixing base: 250mm x 250mm (square)
- ✓ Weight: 170kg (1)

Notes:

- (1) The dimensions and weight are referred to the system showed in this data sheet that is complete with solar panel of 125Wp and with support pole of 2000mm height. SICE can manufacture the system with reduced dimensions and weight, in compliance with customer needs and installation zone.
- (2) This system (as showed in this data sheet) is suitable for installation on latitude with minimum (tilted) solar radiation of 1.2kWh/m²/day.

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SICE TEMPORARY NAVIGATION AID SYSTEM TYPE TS-NV/PV

SOLAR POWERED 2 NAUTICAL MILES FOG HORN

NV-V3 FOG HORN INCLUDING
CONNECTION CABLE AND PLUG



POWER SKID INCLUDING SOLAR
SYSTEM AND BATTERY

PWD20 VISIBILITY METER INCLUDING FIXING
BRACKET, CONNECTION CABLE AND PLUG
(OPTIONAL)

TYPE TS-NV/PV GENERAL DESCRIPTION:

Comply with IALA Recommendations as "Main Fog Horn", powered by solar system that assure a correct working for an indeterminate time. Equipped with main fog horn, fog horn control circuit, solar panels, anti-bird system, solar charge regulator, battery and protection switches. The standard solar panels structure is made in galvanized steel, instead the battery box is made in AISI 316L stainless steel.

MAIN TECHNICAL CHARACTERISTICS:

- ✓ Suitable for safe area
- ✓ Power supply voltage at 24VDC nominal
- ✓ Battery bank of 24V 480Ah (approx.)
- ✓ Solar system of 490Wp (approx.)
- ✓ Fog horn type SICE NV-V3
- ✓ Consumption: 400Wh day (approx.) with U code IALA standard (period 30 seconds).
- ✓ Battery autonomy >15 days (of no sun days)
- ✓ Suitable for installation zone with minimum 2kWhm²/day of solar radiations.
- ✓ Fog horn sounding range of 2 Nautical Miles
- ✓ Equipped with connection cable (type FG7OR) and suitable plug for easy connection.
- ✓ Fog horn mechanical protection IP67
- ✓ Fog horn J. Box mechanical protection IP66
- ✓ Battery box mechanical protection IP43
- ✓ Preliminary dimensions & weights:
 - fog horn 586x385x2380mm (h), 240kg
 - power skid 1580x1310x1710mm (h), 480kg, included battery blocks

AVAILABLE OPTIONS:

- ✓ Solar panel structure Made in AISI 316L Stainless Steel
- ✓ External visibility meter for automatic activation
- ✓ Synchronization facility (with another same equipment)
- ✓ Remote controls for status and alarm

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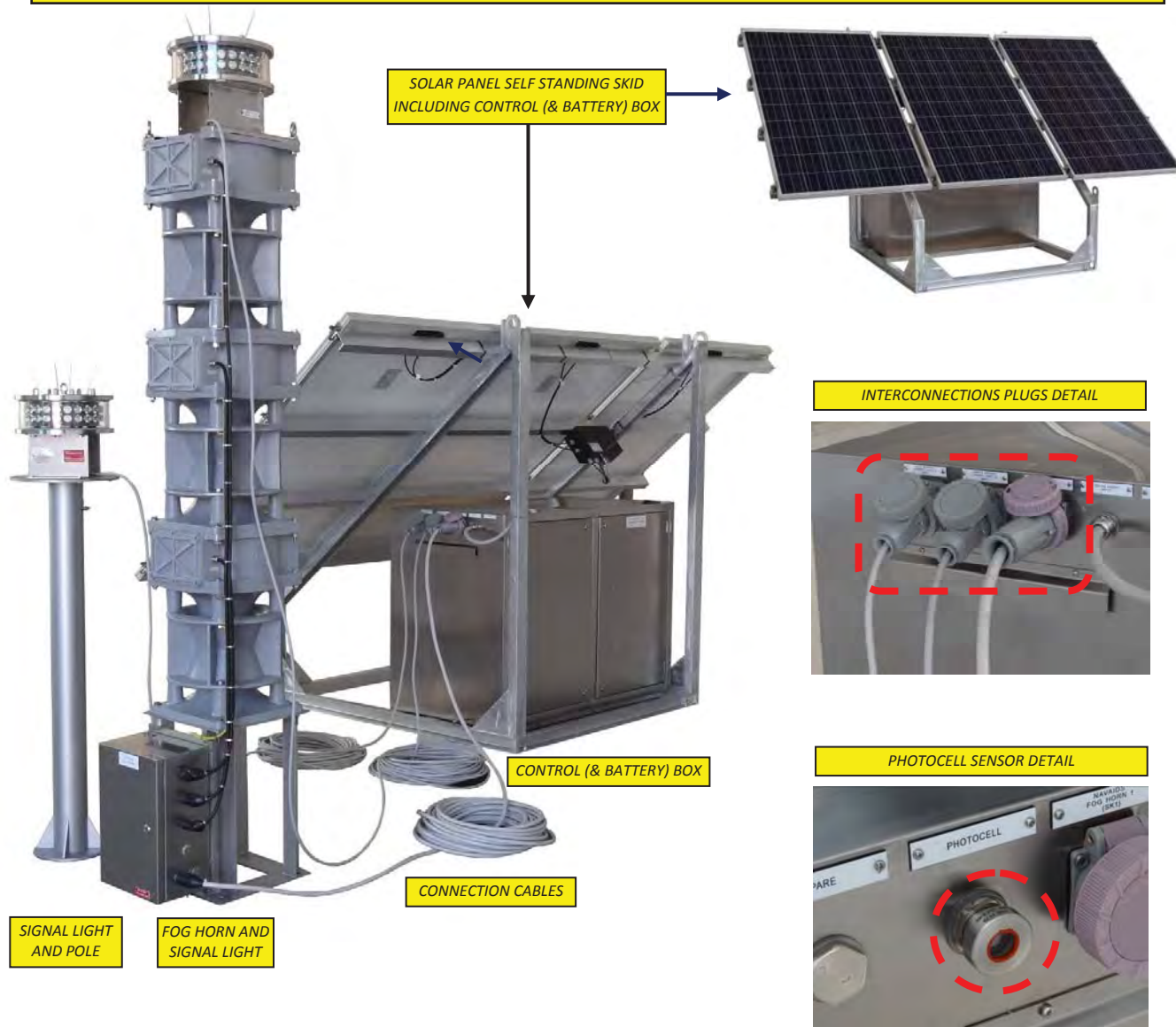


SICE TEMPORARY NAVIGATION AID SYSTEM TYPE TS-NV/LED/PV SOLAR POWERED SAFE AREA VERSION

TEMPORARY NAVIGATION AID SYSTEM

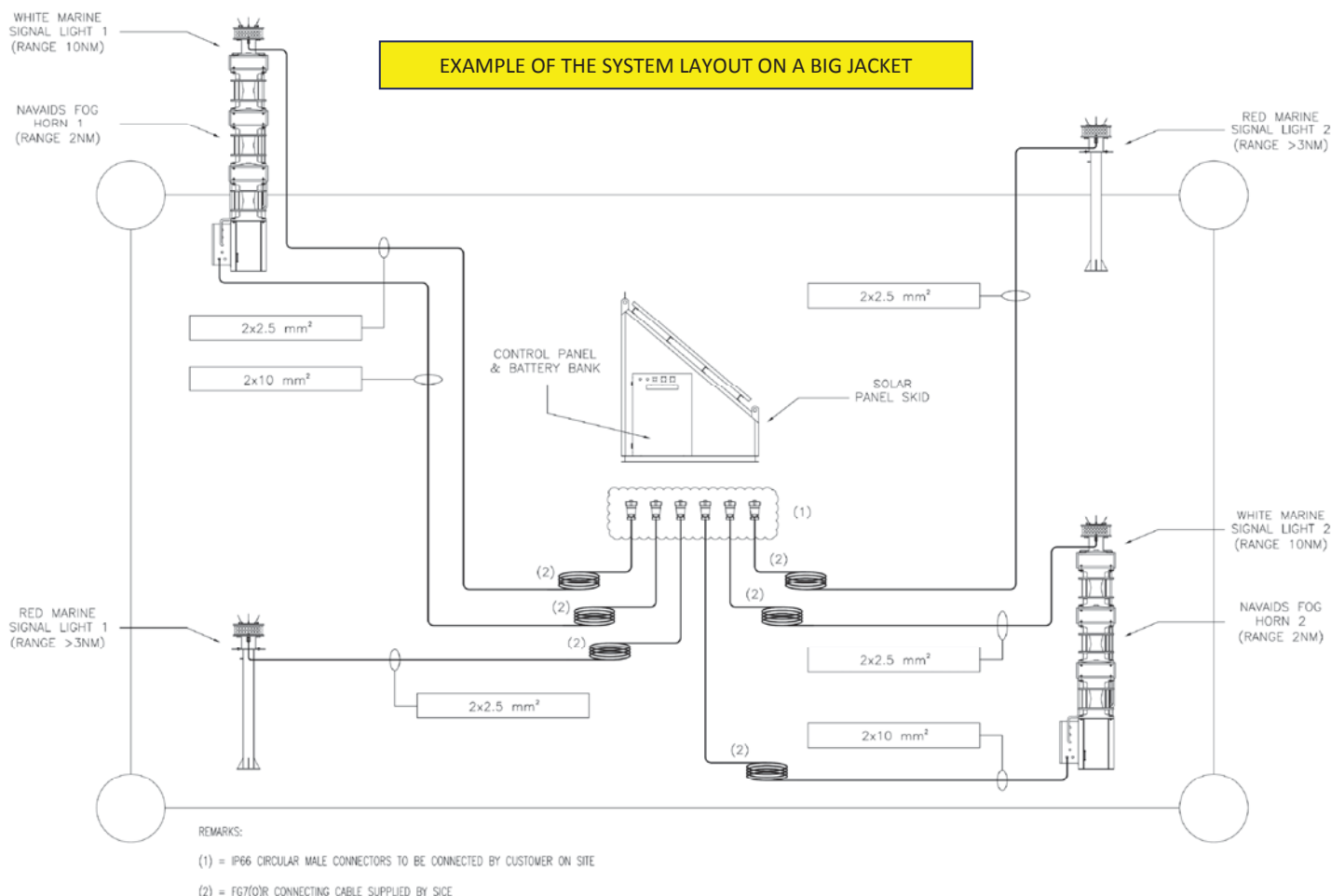
SUITABLE FOR SAFE AREA INSTALLATION, WITH EASY CONNECTIONS AND ACTIVATION

USED TO MARK THE OFFSHORE STRUCTURES TEMPORARILY, FOR EXAMPLE DURING THE JACKET INSTALLATION, BEFORE INSTALLING THE DEFINITIVE DECK. EQUIPPED AND POWERED BY SOLAR SYSTEM THAT ASSURES A CORRECT WORKING WITHOUT MAINTENANCE, FOR AN INDETERMINATE (LONG) TIME. THIS SYSTEM IS MANUFACTURED IN COMPLIANCE WITH CUSTOMER REQUISITION AND IALA RECOMMENDATIONS AND CAN BE EQUIPPED WITH ONE OR MORE MAIN WHITE SIGNAL LIGHT(S), ONE OR MORE SUBSIDIARY RED SIGNAL LIGHT(S) AND ONE OR MORE MAIN FOG HORN(S). THE TYPE AND QUANTITIES OF EQUIPMENT DEPENDS OF THE DIMENSIONS AND LAYOUT OF THE OFFSHORE STRUCTURE THAT MUST BE MARKED. SICE IS ABLE TO HELP THE CUSTOMER IN ORDER TO SUPPLY A SYSTEM THAT IS COMPLIANT WITH IALA RECOMMENDATIONS. THE ELECTRIC/ELECTRONIC EQUIPMENT (SOLAR CHARGE REGULATOR, FOG HORN(S) AND LANTERN(S) CONTROL CIRCUITS, PHOTOCELL AND AUTOMATIC BREAKERS) ARE PLACED INSIDE CONTROL & BATTERY BOX IN DEDICATED WATERPROOF ENCLOSURES





SICE TEMPORARY NAVIGATION AID SYSTEM TYPE TS-NV/LED/PV SOLAR POWERED - SUITABLE FOR SAFE AREA



Main technical Characteristics:

- ✓ Material of solar panels self-standing structure and lantern support pole: galvanized steel, not painted
- ✓ Material of control & battery box: AISI 316L stainless steel, not painted
- ✓ Solar panel power: calculated by SICE in compliance with the solar radiation expected in the installation site
- ✓ Battery type: VRLA maintenance free, suitable for solar system
- ✓ Battery capacity: calculated by SICE in compliance with "no sun days" expected in the installation site
- ✓ Main White Lantern type and range: type SICE LS-10NM-L-1; range >10 Nautical Miles
- ✓ Subsidiary Red Lantern type and range: type SICE LS-5NM-L-1; range >3 Nautical Miles
- ✓ Main Fog Horn type and range: type SICE NV-V3; range 2 Nautical Miles
- ✓ Connection cables: included, type FG7(O)R
- ✓ Easy interconnection plugs: IP66/67 heavy duty type, already prepared by SICE and included in the connection cables
- ✓ Synchronization facilities: included, for fog horn and lantern systems
- ✓ Solar charge regulator: type MPPT (or PWM) complete with digital display and temperature probe
- ✓ Electrical protections: by MCB, fuse are not used
- ✓ Load disconnection system for battery low voltage: included

Dimensions and weights:

- ✓ Solar panel skid: according to the solar panels power and battery capacity that are required in the system sizing
- ✓ Fog horn including LED lantern: L 586mm x W 385mm x H 2760mm; weight 265kg
- ✓ LED lantern including support pole: L (Ø) 330mm x H 1688mm; 45kg

Optional:

- ✓ Visibility meter for automatic activation/deactivation of fog horn(s)
- ✓ Remote control interface for system status and alarms

Document can be subjected to modifications, without prior notice



SICE TEMPORARY NAVIGATION AID SYSTEM TYPE TS-NV/LED

PRIMARY BATTERY POWERED

10 NAUTICAL MILE WHITE SIGNAL LIGHT & 2 NAUTICAL MILE FOG HORN



TYPE TS-NV/LED:

Primary battery powered complete navaid system

Equipped with main signal light, main fog horn, navaid control circuit, photocell, primary (not rechargeable) battery and protection switches. The support structure is made in galvanized steel, instead the control and battery boxes are made in AISI 316L Stainless steel. This equipment permits a very easy installation and is suggested when the off-shore structure must be marked for a determinate time and/or is placed in very low solar radiation zone and others power supply system are not available.

Main technical Characteristics:

- Installation: suitable for safe area
- Power supply voltage: 24VDC
- Primary Battery of 24V 3600Ah (nominal)
- Signal light type LS-10NM-L, with clear lens
- Fog horn type NV-V3
- Power consumption: 465Wh/day (U code standard IALA for fog horn & signal light)
- Battery autonomy >180 days
- Luminous range of 10 nautical miles
- Sounding range of 2 nautical miles
- Approx dimensions & weights:
 - 1400x720x3230 (h)mm
 - total weight (with battery) 800kg approx.

OPTIONS:

On Customer request, this system can be supplied with the following options:

- Equipped with visibility meter for automatic fog horn activation. This solution can increase the battery autonomy.
- Equipped with synchronization circuit. This solution permits to install two of these system in the same plant.

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TEMPORARY SELF-CONTAINED LED LANTERN DATA SHEET TYPE COSEMA CL 299



Nominal range	Up to 6 nautical miles (max. 12.5% duty cycle)
Number of LEDs	9 high intensity LEDs
LEDs life expectancy	100.000 hours
Horizontal output	360 degrees
Available light colors	Clear, red, green, amber, blue
Lens	155 mm. acrylic clear (optional: colored lens)
Lantern body	Enamelled stainless steel
Daylight control on/off	70/100 lux
Flashing characteristics	All IALA flash patterns (others on demand)
Minimum solar radiation	3 hours (3kWh/m ² /day)
Solar charge regulator	Included
Photocell	Included, at the bottom of the lantern base
On/off switch	Included, at the bottom of the lantern base
Solar panels type	Crystalline 14% efficiency
Battery type	Sealed lead battery 12V - 12Ah
Battery design life	5 years
Lens and battery	Replaceable
Temperature range	- 40° / + 60° C
Mechanical protection	IP 67
Battery protective vent	Included, at the bottom of the lantern base
Assembly flange	4 holes 16 mm. diameter on 200 mm PCD
Weight	Kg. 13
Dimensions	mm 250 x 250 x 650 (h).

Testing and Certification

CE Approved according to 2004/108/CE

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PHOTOVOLTAIC PRODUCTS



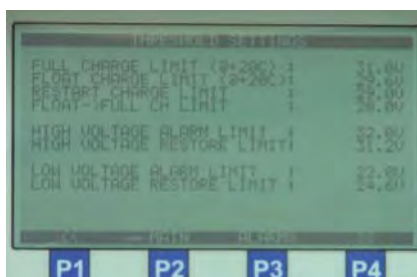
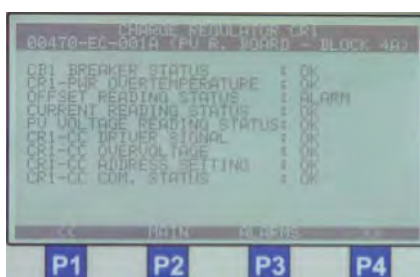
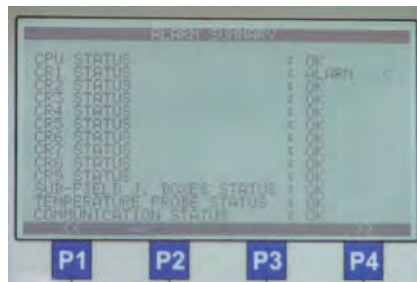
SICE CHARGE REGULATOR PANEL EQUIPPED WITH INTELLIGENT SUPERVISOR SYSTEM & GENERAL DISPLAY



REGULATION PANEL



DISPLAY
PANEL
&
DISPLAY
PAGES
SAMPLES

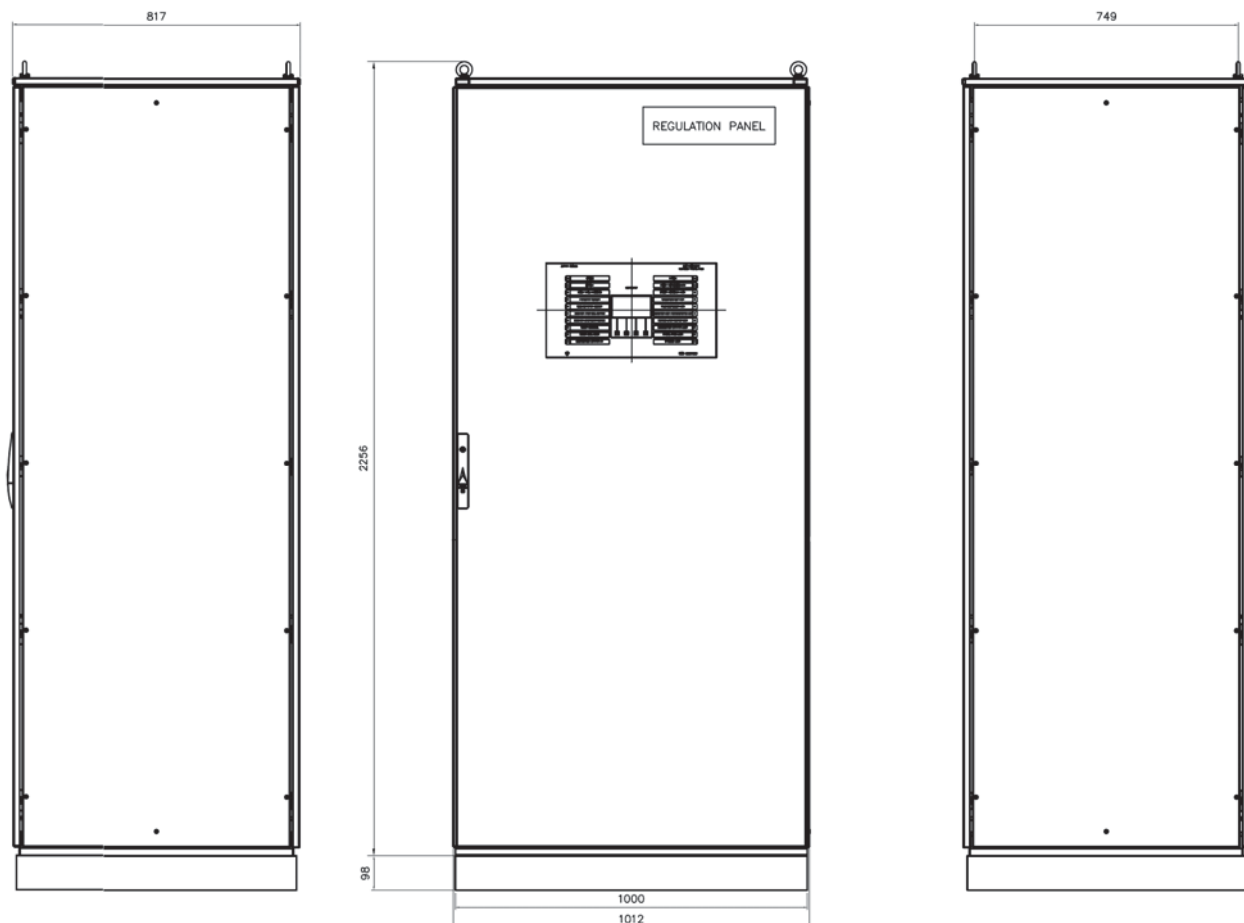


SIMPLIFIED TECHNICAL DESCRIPTION

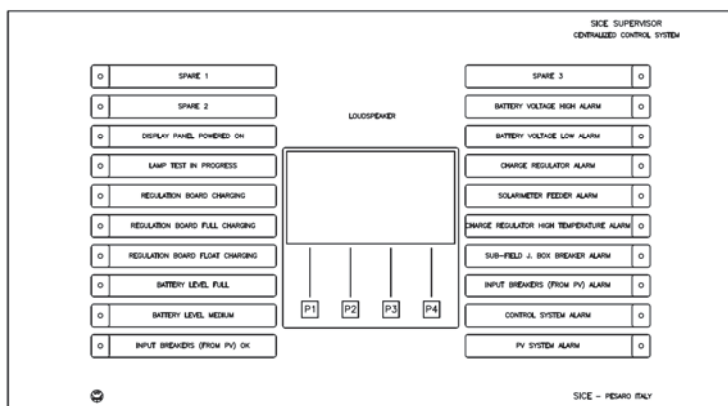
This REGULATION PANEL is mainly equipped with several independent charge regulators and with a dedicate general control "supervisor" system, manufactured by SICE. The charge regulators, installed in this panel, are type SICE 262+255/CC and are connected to each other through a communication line RS 485 (two wires). **If one charge regulator fails, the other charge regulators remain working. If the RS485 control system fails, all the charge regulators remain working, in this case an alarm is raised.** The CHARGE REGULATOR PANEL is powered from solar panels and is connected to the battery bank. When the solar power source is available, this equipment is able to charge the battery in two modes: full charge or float charge. The battery recharging is performed in automatic mode and the two above mentioned values (of full/float charge) can be modified by the user. The charge regulators checks continuously the battery and solar panel voltages and, considering these voltage values, make the charge of the battery in float or fully mode. The SICE supervisor system is equipped with a local display panel, placed in the external door of the cabinet and suitable for working checks of all the charge regulators (and other devices) installed inside. This display panel is equipped with Qty. 4 push buttons, one graphic display and some signalization LEDs. The supervisor system is complete with CPU module, Digital Input modules and Digital Output modules. It receives, as inputs, the status and the eventual alarms of the whole devices and equipment that are part of the complete system. The supervisor system elaborates the received data and proceeds automatically with the required charging phases and the signalling of eventual alarm or failure situations. In particular, through some pages on this graphic display, the user can monitor all the voltage and current values expected for this system and all the configured statuses and alarms of the several installed charge regulators, one by one. At the same time, by using the frontal push buttons, the user can check the different pages of the display and can give the setting values (if expected). Instead, through the signalization LEDs, the operator has an quick overview of the state of the whole system. Can be predisposed for remote controls connections via MODBUS RS485 two wires and/or via hard wired



SICE CHARGE REGULATOR PANEL EQUIPPED WITH INTELLIGENT SUPERVISOR SYSTEM & GENERAL DISPLAY



Display panel detail (typical)



MAIN TYPICAL FEATURES:

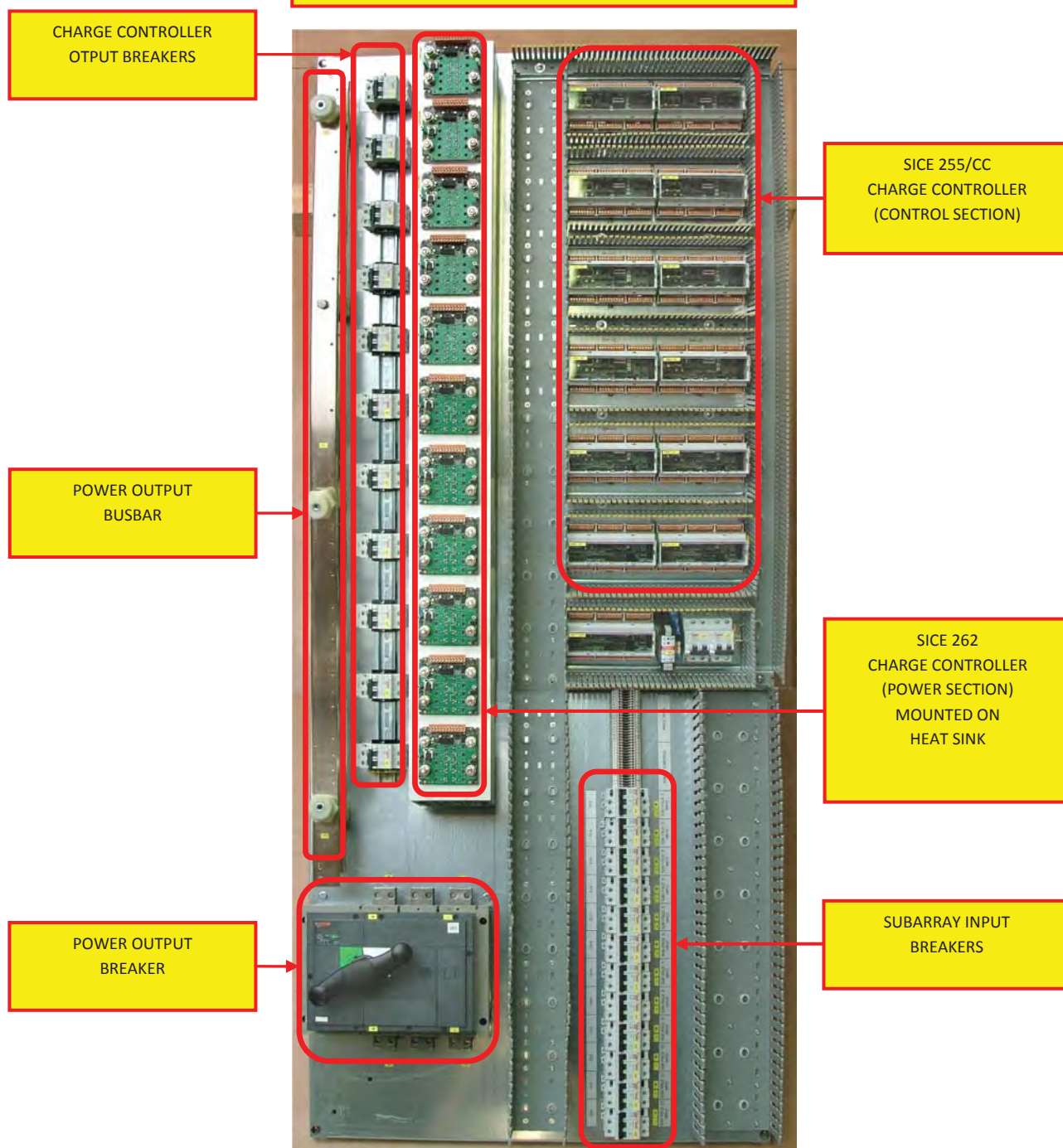
- Battery system voltage : 24V
- Solar Panel Input Voltage maximum : 55V (Open Circuit Voltage, Voc)
- Solar Panel Input Voltage typical : 35V (Voltage at Maximum Power, Vmp)
- Solar Panel Input Voltage minimum : >20V (minimum voltage required)
- Solar charge regulator type : SICE 262+255/CC
- Charge Regulator Power : 1500W (each charge regulator)
- Total Managed Power : 18000W (No. 12 charge regulators)
- Total dissipated power : 500W approx. at max. power charging
- Typical efficiency : >95%
- Temperature compensation : Possible
- Construction type : Industrial, suitable for indoor safe area
- Degree of protection : IP 32 minimum (with display)
- Painting type : Industrial (Manufacturer Standard)
- Standard painting color : RAL 7035 (other colors on request)
- Dimensions : 1012mm x 817mm x 2354mm (h)
- Total weight : 350 Kg approx.

The above listed features are indicative, SICE is able and available to built the system in accordance with Client specifications and in compliance with International Standards. The regulation panel dimension can be changed according the required power management and charge regulators quantities.



SICE CHARGE REGULATOR PANEL EQUIPPED WITH INTELLIGENT SUPERVISOR SYSTEM & GENERAL DISPLAY

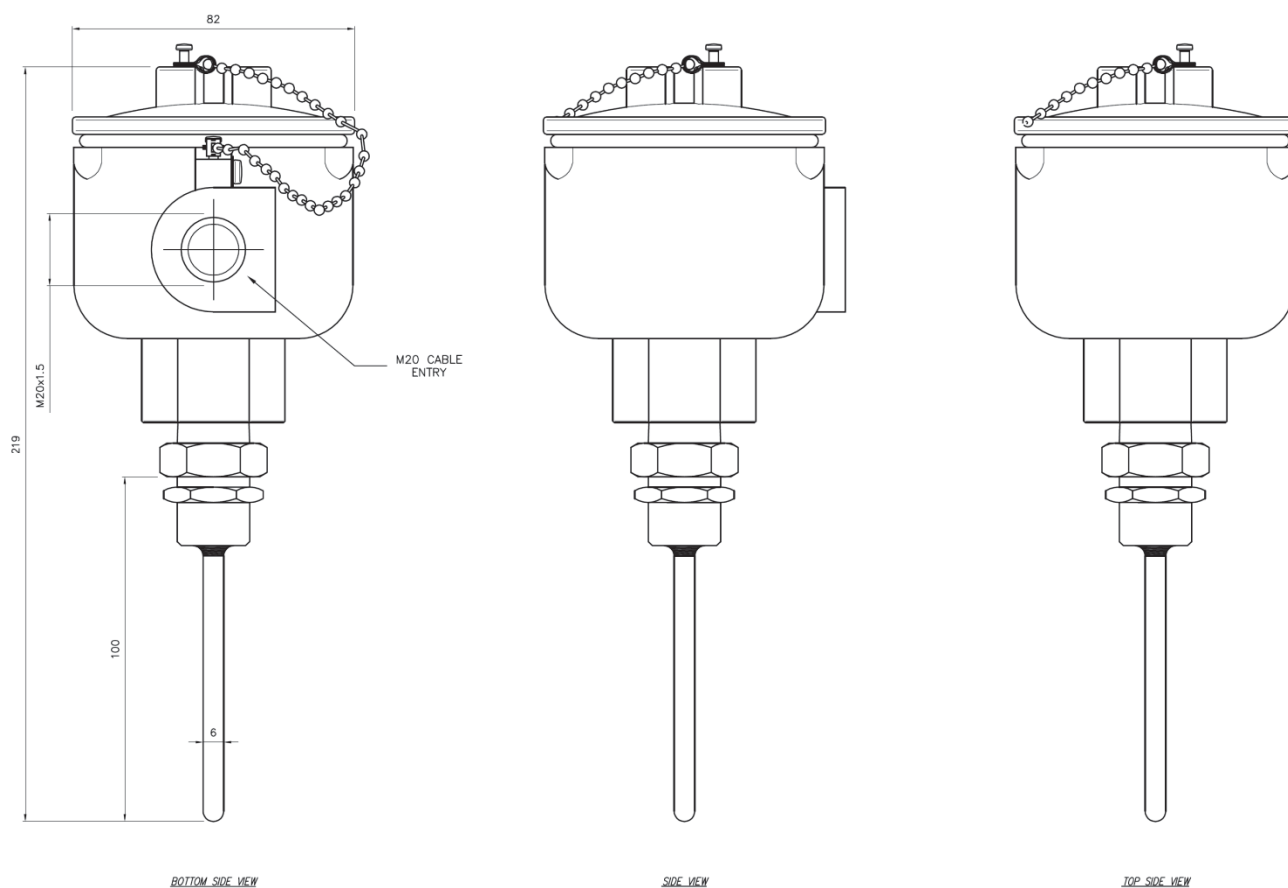
BASE PLATE TYPICAL CONSTRUCTION SAMPLE



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EX TEMPERATURE PROBE



TECHNICAL DATA

TEMPERATURE PROBE:

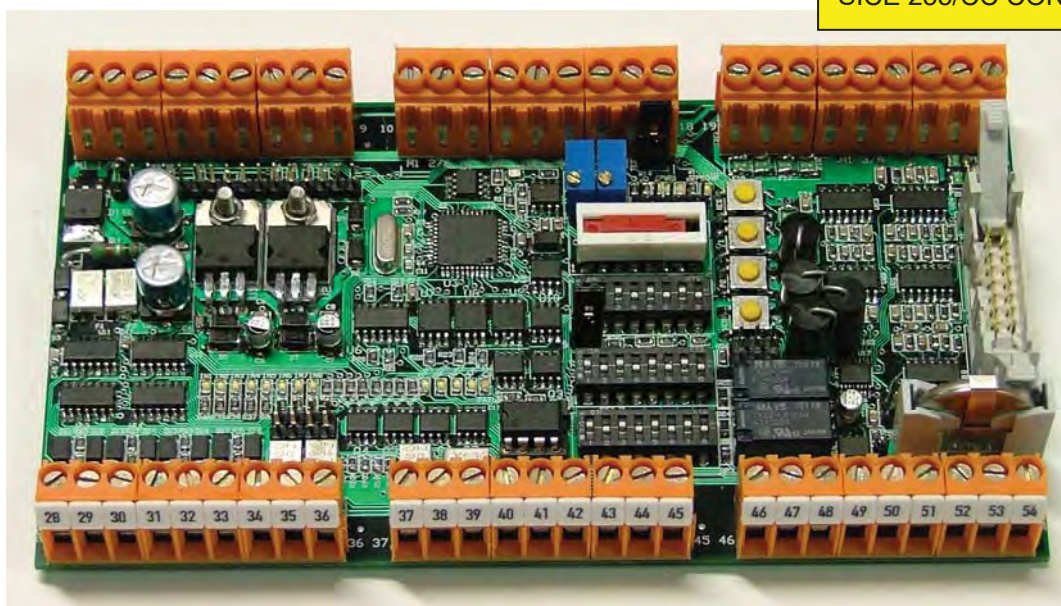
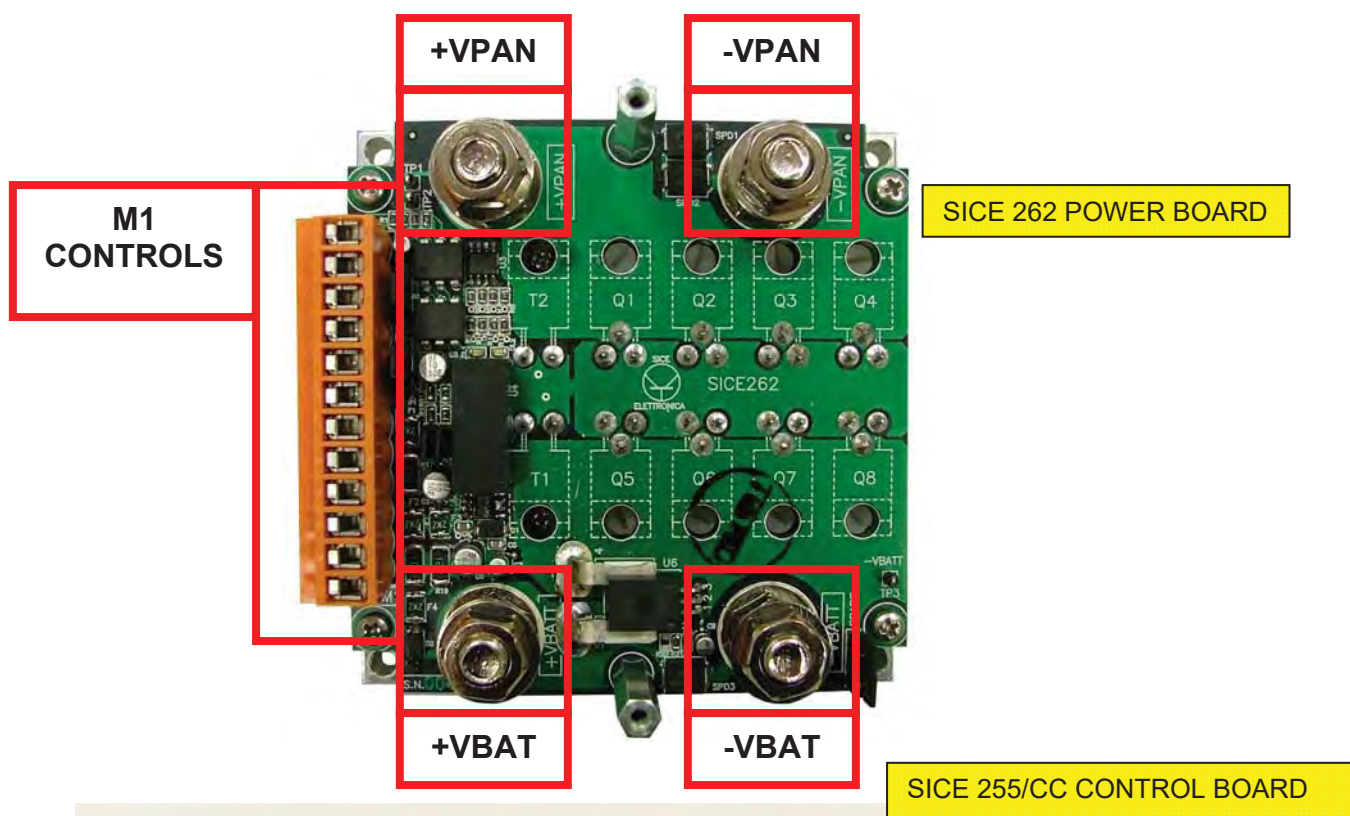
-TYPE	:	TCL
-MANUFACTURER	:	TERMICS
-EXECUTION	:	Ex-d IIC T6
-TEMP. PROBE TYPE	:	PT100
-OPERATING TEMPERATURE	:	-20°C / +50°C
-4/20mA SIGNAL TYPE	:	LOOP POWERED
		4mA = -20°C
		20mA = +50°C
WEIGHT	:	5kg

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SICE 262+255/CC-SOLAR CHARGE REGULATOR SYSTEM DATA SHEET

Each Solar Charge Regulator is equipped with two boards. One "Power board" named SICE 262 and one "Control board" named SICE 255/cc





SICE 262+255/CC-SOLAR CHARGE REGULATOR SYSTEM DATA SHEET

SYSTEM DESCRIPTION

SICE 262 circuit is suitable to be used in photovoltaic system where a power solid state contact is necessary to be inserted between the photovoltaic field and the battery bank. The photovoltaic field supply energy to the battery bank and the this energy passes through the solid state relay, the charge controller (SICE255/CC) drives the solid state relay in order to charge correctly the battery.

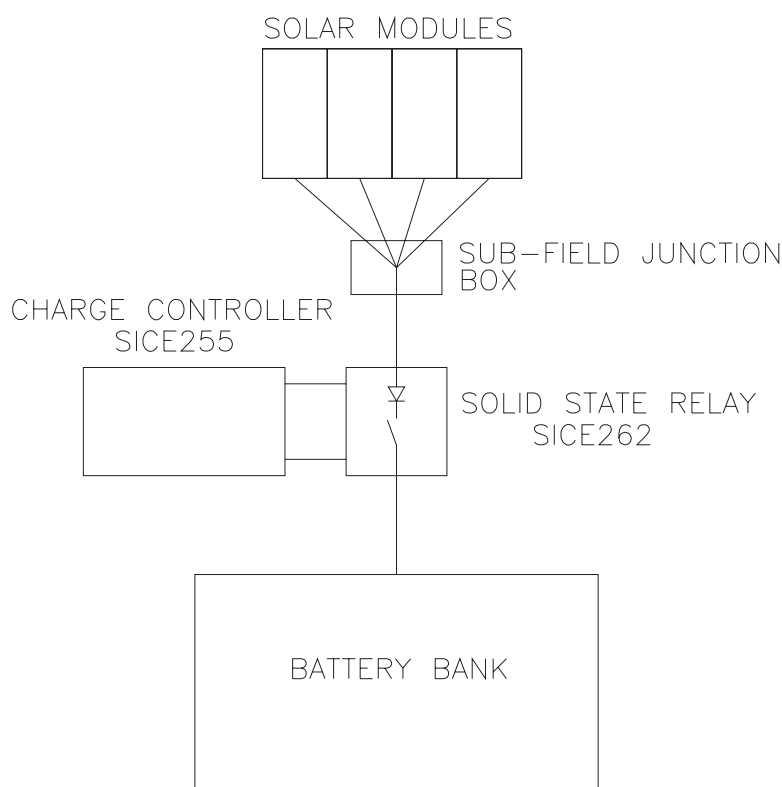


FIG. 1: EXAMPLE OF TYPICAL PHOTOVOLTAIC SUB-FIELD

The circuit includes the block diode that avoid a discharging of the battery bank through the solar modules if the solid state relay is closed (solid state contact closed) and the solar modules are not able to supply energy (no-sun condition for example). This block diode is short circuited when the solar modules are able to charge the battery, reducing in this way the power losses between the solar sub-field and the battery. SICE 262 provides to the charge controller some remote controls by which the charge controller itself can know if the card is working properly or if it has a problem. Some micro-led can be used to have information about the status of the charging.



SICE 262+255/CC-SOLAR CHARGE REGULATOR SYSTEM DATA SHEET

TECHNICAL FEATURES

SICE 162 SOLID STATE RELAY

- power supply voltage (nominal): 24Vdc
- maximum current from PV-field to battery: 50A (continuously)
- minimum charging current: 300mA
- card power consumption (@24vdc): 24mA

SICE255/CC CONTROL BOARD:

- Circuit protection against:
 - supply voltage inversion
 - input overcurrent
 - input overvoltage
- Redundant power supply section:

$V_{\text{supply min}}$	=	20 Vdc
$V_{\text{supply max}}$	=	40 Vdc
- card power consumption (@24vdc): 80mA
- Digital inputs individually protected against overvoltage and overcurrent
- Digital outputs individually protected against overcurrent and complete with protection diode (suitable to avoid overvoltages that may damage the output MOS)
- Digital outputs configurable to drive monostable relays or bistable relays
- EEPROMs to save status and alarms
- On-board temperature sensor
- On-board Real Time Clock complete with back-up battery
- On-board 12-bit multichannel A/D converter
- Quick connection to a local text display (usually not used when a graphical display is available)
- Self-check of board correct working
- Quick programming on board of the main MCU
- Secondary MCU that controls constantly the work of the main one
- RS485 communication interface (complete with power supply terminals)
- Configurable on board push-buttons
- Configurable supply voltage of output relay coils used with digital outputs
- Quick connections to peripheral modules through flat cables



SICE 262+255/CC-SOLAR CHARGE REGULATOR SYSTEM DATA SHEET

BOARD PROGRAMMING

The board can be programmed by simply interconnecting the Programmer to the programming port (figure 4) and selecting the position 2 on the selector named SEL3 as shown in the picture below (figure 5). The orange LED named PROG will be switched on to confirm that the board is waiting for the firmware transferring from the HEX file to the main MCU. After a correct programming of the main MCU, select the position 1 on the selector in order to enable the running mode of the board.

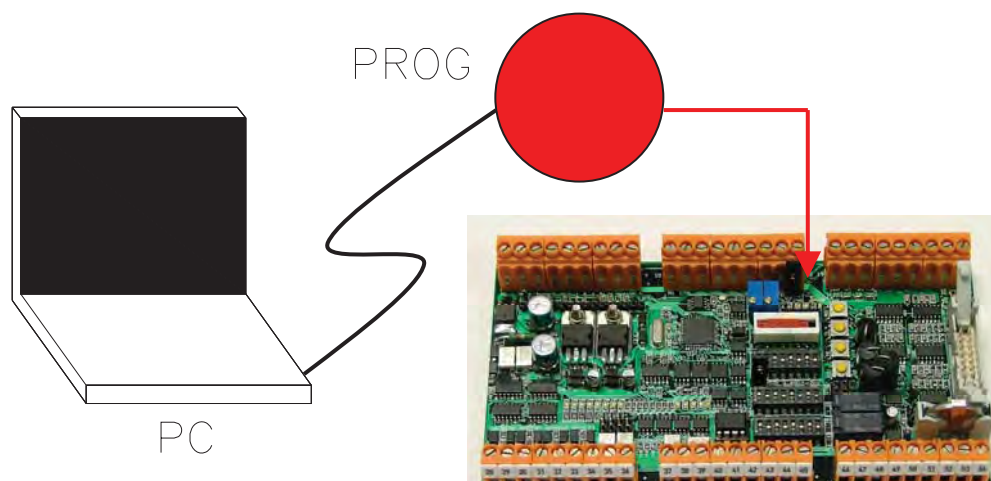


FIG. 3: PROGRAMMING PORT CONNECTION

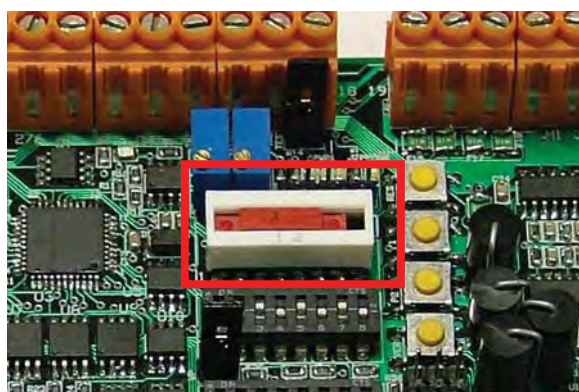


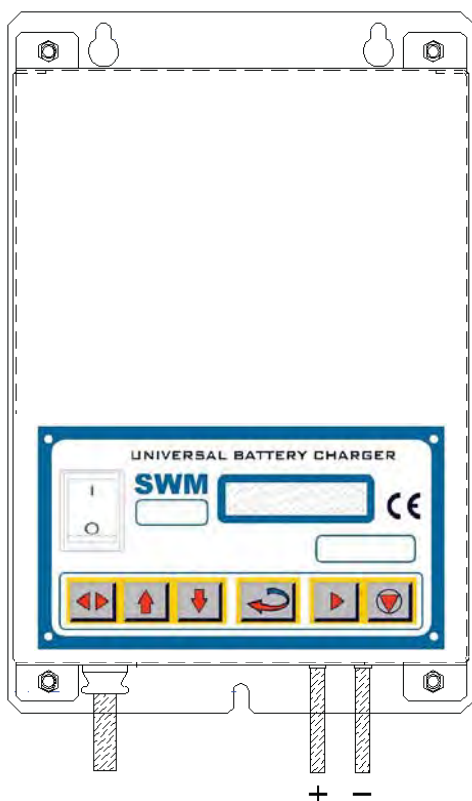
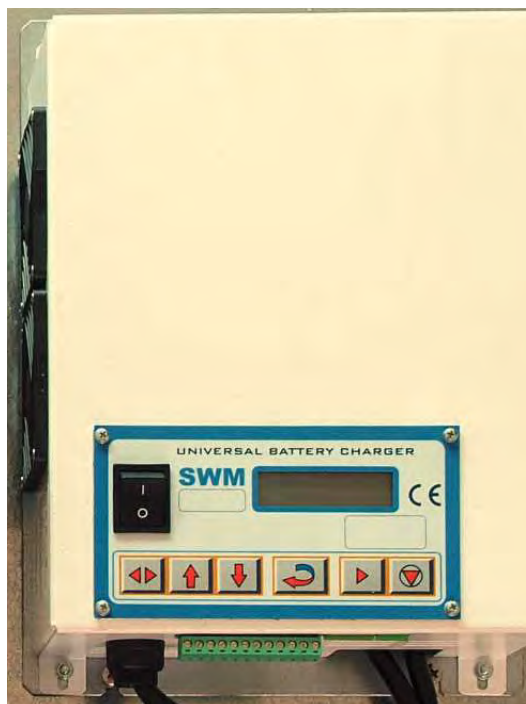
FIG. 4: PROGRAMMING SELECTOR

PROGRAMMING SELECTOR

- POS. 1 = RUNNING mode
- POS. 2 = PROGRAMMING mode

BATTERY CHARGER MODULE DATA SHEET TYPE SWM 5S-DSP AND SWM 3S-DSP

MAIN TECHNICAL CHARACTERISTICS



Battery charger module description:

Programmable module switching mode technology, with microprocessor control. Rectifier equipped with DISPLAY and KEYBOARD which allows the visualization and the modification of the charge parameters. The charge control and check are carried out by a microprocessor which allows both an easy choice of the programmes and a complete battery check, to guarantee an excellent conservation of the battery itself. All the reset parameters are stored and kept also without network.

Remote controls:

For the remote controls, 4 programmable independent relays are available, controlled by the micro-checker, each one with NO or NC contact selectable through a jumper. Furthermore a new digital remote input is available for remote control (ex. remote ON/OFF).

Main technical characteristics

- ✓ **Approx. power supply** 1 x 230V \pm 10% 50 / 60 Hz
- ✓ **Battery Nominal voltage** 12V / 24V
- ✓ **Charge current max.** 80A with electronic limit (type 5S)
- ✓ **Charge current max.** 30A with electronic limit (type 3S)
- ✓ **Charge feature** Programmable
- ✓ **Conversion module** Switching
- ✓ **Ventilation** Forced
- ✓ **Use temperature** From -10 to + 40°C
- ✓ **Instrumentation** Digital display
- ✓ **Minimum voltage alarm** Expected
- ✓ **Dimensions (LxHxW)** 330 x 235 x 103 mm (type 5S)
- ✓ **Dimensions (LxHxW)** 275 x 210 x 95 mm (type 3S)
- ✓ **Maximum input current** 16A (type 5S)
- ✓ **Maximum input current** 6A (type 3S)
- ✓ **Cos ϕ** 0,98 (at full load)
- ✓ **Efficiency** 85%
- ✓ **Overload and overheat protected**

Programming:

Through the display interface + keyboard it is possible and easy to perform the following main operations:

- ✓ **Output voltage programming**
- ✓ **Output current programming**
- ✓ **Charge curve selection**
- ✓ **Charge end type selection**
- ✓ **Battery type selection: (open Pb - GEL - VRLA - NiCd)**
- ✓ **Low voltage threshold alarm programming**
- ✓ **Low voltage threshold pre-alarm or charging phase programming**
- ✓ **Ventilation fan deactivation time programming**

Through the display a clear visualization of the main charge parameters are possible:

- ✓ **Battery voltage**
- ✓ **Battery current**

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HELIDECK LIGHTS



ILED® Aquarius CIRCLE-H® Helideck Lighting System

Low profile - Less than 25 mm
Precision Machined
Interlock Mounting System
Special Anti-slip Coating





Why CIRCLE-H®?

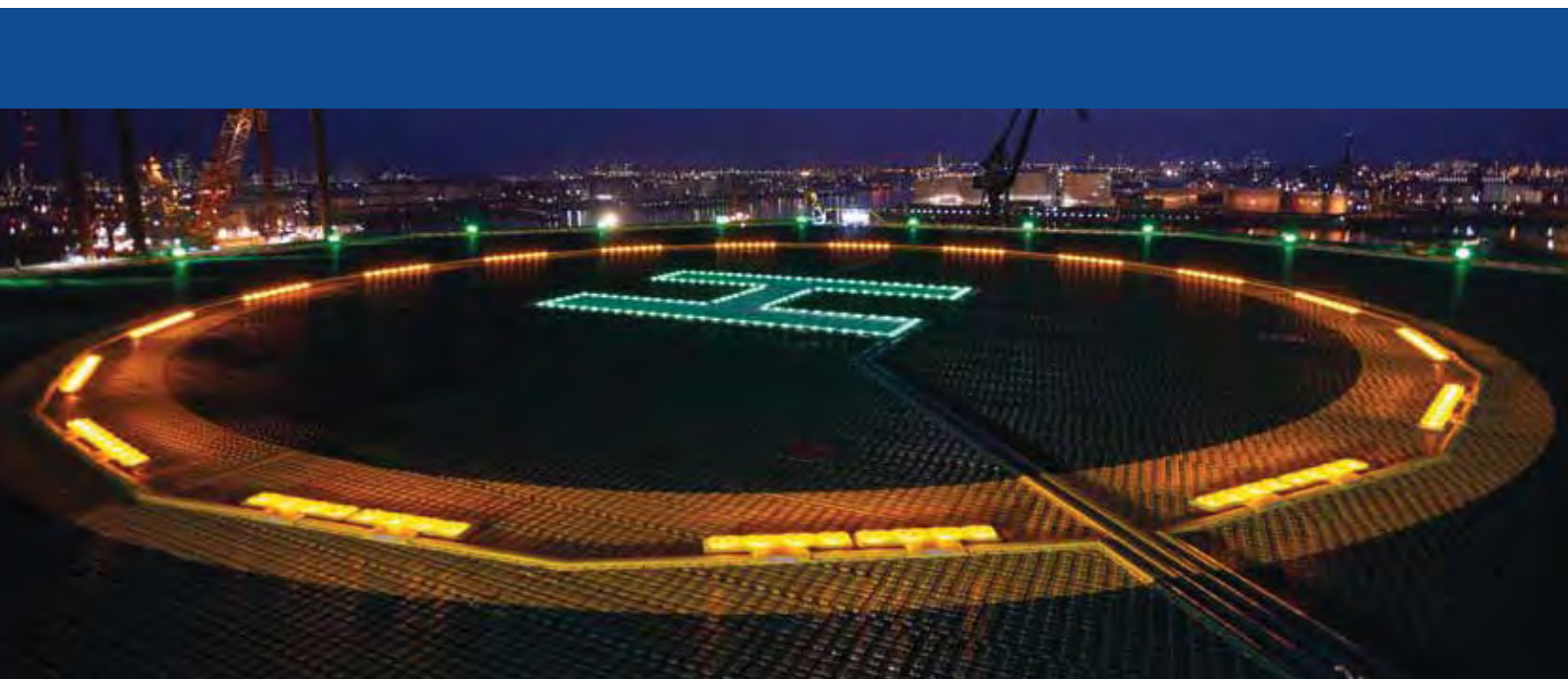
Helicopter deck signalisation lighting has now taken off into a new direction with the IMT CIRCLE-H® Lighting System.

Throughout the industry, it is now fully agreed and accepted that the old method of illuminating the TD/PM Circle and H with flood lights results in the common dangerous problem of creating the disorientating “black hole” effect and at the same time being a source of glare to the helicopter pilots.

Developed with close guidance from the CAA and in full accordance with the requirements of CAP 437, IMT’s CIRCLE-H® TD/PM Lighting System provides the optimum solution to these problems.

Cleanly and clearly indicating the TD/PM Circle and H, the IMT CIRCLE-H® is the only fully certified system of its type – providing optimised safety – without compromise.

The unique integrated mounting plate is able to be customised to suit specific requirements and with a choice of fixing and installation methods to suit all deck types, the CIRCLE-H® can be installed as a stand-alone system or as a fully integrated total helideck lighting and status light safety system solution.



The light characteristics of the CIRCLE-H® system are designed in compliance with CAP 437 so that the location of the helideck on the platform is easier to establish and increases its conspicuity. In line with CAP 437 requirements, our CIRCLE-H® system has been independently tested and certified – by DEKRA – Attestation of Conformity No: 2168390.01 AOC.

CIRCLE-H® is less than 25 mm high, even with the mounting plate. The system is comprised of just 4 main parts. The light unit is easily connected by an Ex-certified, patented plug system. Only cables and conduits are variable – to the D-Value of the helideck.

IMT's CIRCLE-H® system is manufactured from marine grade aluminium – which is by far and away the best material for marine applications and for temperature management control. The one-piece mounting plate is designed so that it can easily be adapted to suit all types of deck construction.



Low profile



Less than 25 mm



Precision machined

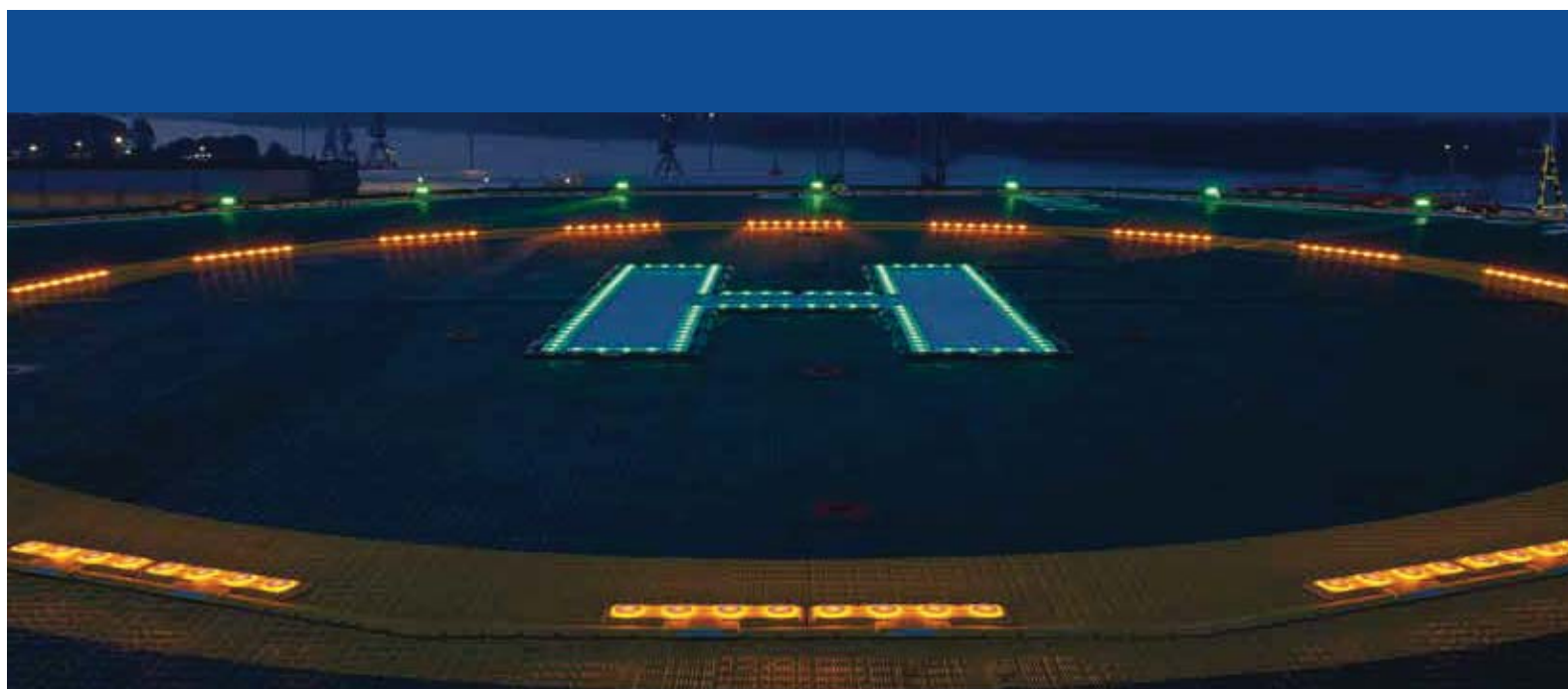


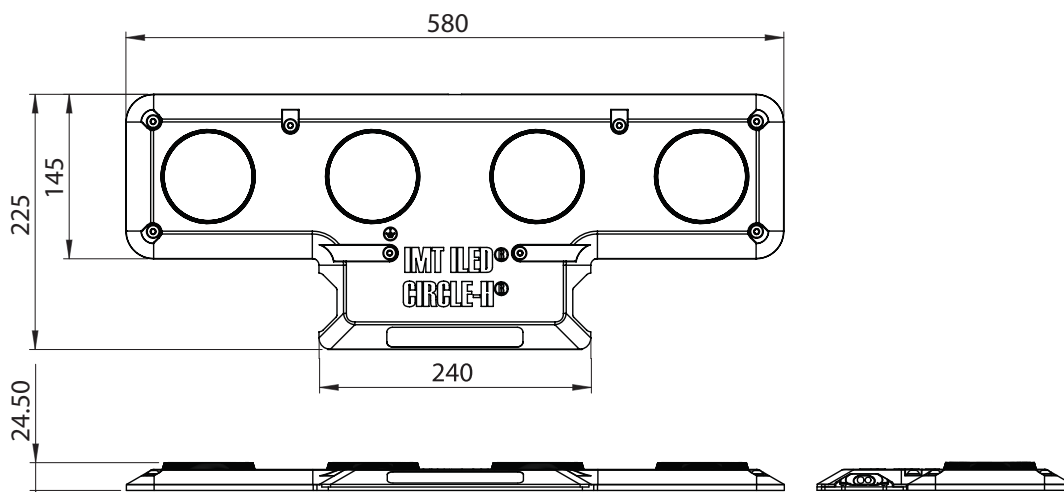


IMT understand and fully appreciate that it is not merely about the CIRCLE-H® system – but just as – if not more importantly – that it is installed correctly and proficiently. Therefore, IMT have teamed up with selected partners so as to be able to carry out pre installation surveys of helidecks – these surveys and inspections are carried out by fully certified and competent personnel. When installation is taking place off-shore and where the helideck is positioned such that working conditions are liable to be extreme and exacting, then our approved survey and install teams have the following base skill sets as an absolute minimum:

- CompEx
- BOSIET
- MIST
- Offshore medical
- IMT approved installer status
- Mechanical fixings approved installer status
- IRATA rope access accreditation lead by a level 3 accredited team member
- Helideck landing area awareness

With regard to “new build and yard” installation – then the necessity for an extreme working conditions trained and fully certified install team is lessened somewhat. So, whatever your install requirements are, be it off-shore, yard, full turnkey or supervised, then IMT has the solution to best fit your needs and legal requirements. In preparation for installation and to ensure that all issues relating to correct compliance of CAP437, ICAO Annex 14 and IMO MODU are covered and adhered to, IMT can offer a comprehensive and extensive on-site helideck survey and report service. If you would like further information and advice as to how we can help you in the process of pre-qualifying and preparation for CIRCLE-H® installation, then please contact us.





Technical Details

Light source	LED
Luminous intensity	Standard and bright setting
Average power for a complete system	Approx. 175 W in bright setting (Depending on size D-value/system requirements)
Light colour	Green and Amber
Horizontal Emission	According to CAP 437
Ambient temperature	-30 °C to +55 °C
Burning position	Base down
(Re)ignition	Immediate
Voltage range system	24 Vdc \pm 10 % and 90 – 255 Vac
Ingress protection	IP67
IEC protection classes	Class 1
Lens	PC protected against UV light
Housing	Marine Grade Aluminium With a special anti-slip coating RAL 9003 Signal White or RAL BS 4800 – 10.E.53 Sun Flower Yellow \pm 3 kg
Weight of the light fitting	Dependant on system type and configuration
Package weight per piece	Dependant on system type and configuration
Package dimensions	Special explosion proof plug system
Connection	

Certificates

ATEX classification	Group II, Category 2, Gas
Area classification	Category 2 (Zone 1)
Atex Certificate (DEKRA)	DEKRA 13ATEX0173
IECEx Certificate (DEKRA)	IECEx DEK 13.0059
Light Distribution Attestation (DEKRA)	2168390 AOC
Marking (ATEX)	Ex II 2 G Ex e mb IIB T4 Gb
Marking (IECEx)	Ex e mb IIB T4 Gb
CE	Yes

Unique Technical Points

- Fitted in place – including mounting plate – less than 25 mm
- DEKRA LIGHT CERTIFICATE**
- Certified to IP67**
- Ambient Temperature Range of **-30°C to +55°C**
- Machined Marine Grade Aluminium** – no mixing of plastic and steel materials
- Unique 'interlock' design to withstand impact shear forces
- Light intensity adjustable – Full control by communication
- Can be fully integrated with Helideck Status Light Systems
- Only 4 parts, only variable parts are cable covers and cables
- Easy connection by plug system
- Different fixing methods** – to suit all helideck types
- Easy to replace fixtures**
- ATEX and IECEx Zone 1 certified**
- Low power consumption
- Special anti slip coating

-  **DEKRA Certification**
- Lloyds – Installation Design Approved
- High Life expectancy with low maintenance
- Shock and vibration resistant
- According to CAP 437**
- According to ICAO
- According to IMO MODU
- ABS certified





IMT B.V.

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P.O. 88, 4100 AB Culemborg
The Netherlands
Tel: +31 88 12 69 100
<http://www.imt.eu>

IMT Lighting (UK) Ltd

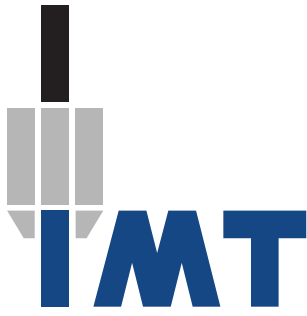
Saltergate Lane
Bamford, Hope Valley
S33 0BE
Tel: +44 1433 695 518
<http://www.imt-lighting.com>

IMT Far East Pte Ltd

22 Boon Lay Way
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<http://www.imt-deutschland.de>



ILED® & IQL® Aquarius Illuminated Windsock

CAP 437 Helidecks
Offshore Wind Farms
Petro-Chem Industries



ILED® & IQL® Aquarius Illuminated Windsock

Overview

The ILED Aquarius Illuminated Windsock provides pilots with an indication of the wind direction as required by IMO Modu Code, CAA CAP 437 and ICAO Annex 14. These regulations require the presence of at least one windsock, which, if the helideck is intended for use at night, must be illuminated. Utilising IMT's ILED technology, the windsock is illuminated internally, thereby minimising glare and thus increasing safety.

The ILED Aquarius Illuminated Windsock is just one of the products in IMT's complete range of ILED helideck signalisation and lighting solutions, which includes the CIRCLE-H® and Helideck Status Light (Wave-Off) Systems as well as perimeter lights, obstruction warning lights and floodlights.

The ILED Aquarius Illuminated Windsock is manufactured out of corrosion resistant materials. All exposed material, with the exception of the lighting fixture itself, is Stainless steel AISI 316L. For the lighting fixture aluminium was chosen because of its excellent thermal conductivity, ensuring that the LEDs have the longest possible service life. The alloy used is extremely corrosion resistant and recommended for offshore use.

Also available as an optional extra is an integral Red obstruction light – which also uses IMT's ILED technology. Available as either certified to ATEX Zone 1, or as an industrial Safe Area-version – the windsock system is also ideal for onshore installations such as petro-chemical works, helipads and airports. As with all IMT products, the ILED Aquarius Illuminated Windsock is designed to require an absolute minimum of maintenance.

IMT's "sealed for life" philosophy, which keeps all contaminants and corrosive influences away from sensitive electronics, combined with the ATEX/IECEX Ex e certification means that only a periodic visual inspection is required, whilst smart design and the use of the highest grade materials and components enables excellent heat management that ensures the longest possible operating life.

An example of the smart design that sets the windsock apart from all others is the unique reflector mechanism which completely removes the need to use moving electrical parts – such parts being highly prone to failure, especially in the corrosive environment encountered offshore. All of this means improved and increased safety, along with significantly reduced maintenance costs resulting in a very low "total cost of ownership".

Technical Details

Model
Light source
Luminous flux (light source)
Luminous flux (light source) lm/w
Lamp lumen depreciation
System power
Light colour
Colour rendering
Ambient temperature
Burning position
(Re)ignition
Voltage range
Power factor/Cos φ
IP Rating
IEC protection classes
Lens
Mercury level
Housing
Reflector
Construction
Construction height
Base pole height
Windsock size
Weight of construction
Mounting flange size
Mounting holes
Standard version

Certificate Details

Model
ATEX classification
Area classification
Certificate (KEMA)
Certificate (GOST)
Certificate (IECEX)
Certificate (ATEX)
Marking
ABS Rules PDA Certificate
CE

Optional

Voltage Range
Top Obstruction Light (Red)
Construction height (incl. top light)
Dividable Base Pole
Mounting
Windsock size
Windsock colour options
Junction Box
Cable
Construction

Adapter Flange for
conversion from existing
Windsock systems



ILED® Aquarius Windsock

LED
--
--
--
± 35 W (without top light)
White
--
-40 °C up to +55 °C
--
Immediate
90 – 250 Vac
>0.90
IP66
Class 1
Toughened borosilicate glass
--
Marine Grade Aluminium Anodized
--
--
2.58 m
1.67 m
Ø 50 cm, length 150 cm
45 kg
Ø 220 mm
8 x 18, Ø 180 mm
Standard Ex e junction box 1x M20 entry (stainless steel)
Terminals suitable for max. 4 mm ²

IQL® Aquarius Windsock

QL (Induction)
6,200 lm
73 lm/W
30 % loss after 60,000 hours
85 W
Standard White (colour 830)
Ra>80
-40 °C up to +40 °C
Windsock illuminated from below
Immediate
200 – 277 Vac/dc ± 6 %
>0.98
IP66
Class 1
Borosilicate glass
5.0 mg
Stainless steel AISI 316L
275 mm shield – stainless steel AISI 316L
Galvanised steel
2.55 m
1.00 m
Ø 50 cm, length 150 cm
70 kg
Ø 220 mm
8 x 18, Ø 180 mm
Standard Ex e junction box 3x M25 entries (GRP)
Terminals suitable for max. 4 mm ²
Suitable for through wiring

ILED® Aquarius Windsock

Group II, Category 2, Gas and Dust
Category 2 (Zone 1 and 21)
--
--
IECEx SIR 11.0046X
SIRA 11ATEX3101X
Ex II 2 G Ex e mb IIC T4 Gb
Ex II 2 D Ex tb IIIC T135 °C Db IP66
14-LD1100054-PDA
Yes

IQL® Aquarius Windsock

Group II, Category 2, Gas and Dust
Category 2 (Zone 1 and 21)
KEMA 02ATEX1257X
POCC NL.HO06.B00732
--
--
Ex II 2 GD EEx me II T4 T135 °C
--
Yes

24 Vdc ± 10 % – 35 W
5 W, type A & B acc. to ICAO annex 14 and Group A acc. to CAP 168 & CAP 437
2.80 m
Height 2 x 83.5 cm
Weldable flange, Ø 220 mm, 8 x M16
Ø 60 cm, length 240 cm
Red/White, Orange
--
On request
--

100 – 120 Vac/dc +6 %
--
--
--
--
--
Red/White
Stainless steel AISI 316L
On request
Stainless steel AISI 316L

- IQL® High life expectancy with low maintenance
- ILED® High life expectancy with low maintenance
- Light fitting is "sealed for life"
- Shock and vibration resistant
- Patented construction
- According to ICAO Annex 14, CAA CAP 437 & 168 and IMO Modu Code 2009, helideck as per § 13.3.2

**Unique Reflector Mechanism****ILED® Obstruction Light****Interchangeable Windsock****Fully stainless steel**



ILED® Dorado Helideck Status Light

CAP 437 Helideck Platforms
Offshore Windfarm Installations
NavAid Systems



I LED® Dorado Helideck Status Light

Overview

The ILED Dorado is hermetically sealed, so as to ensure that environmental conditions do not affect the functionality of the light.

The housing is manufactured from marine grade aluminium alloy – making the product extremely resistant to seawater.

A special and unique thermal management system ensures that the cooling fins of the ILED Dorado provide for highly efficient cooling – even at high ambient temperatures. With no moving parts or mechanisms the light has an extremely high shock and vibration resistance and low maintenance.

The lens is made out of toughened borosilicate glass – which is especially shock resistant and break proof. In utilising the highest quality LEDs, the ILED Dorado has a low maintenance long operating lifetime.

The electronics and IP66 rated junction box are located in the base, the sealing and packing of which is made from highly weather and seawater resistant material, thus ensuring the light is impermeable to moisture.

The ILED Dorado is available either as an Ex-hazardous Area or Industrial Safe Area-version – and both with the option of a bird deterrent spike.

Technical Details

Model	I LED® Dorado Marine Lantern 10 NM
Light source	LED
Luminous intensity	10 NM (>1,400 cd)
Luminous intensity dimmed	--
Flash frequency	Morse Code – "U"
Average power	9 W
Light colour	White
Ambient temperature	-40 °C up to +55 °C
Burning position	Base Down
(Re)ignition	Immediate
Voltage range	24 Vdc ± 10 %
IP Rating	IP66
Horizontal Emission	360°
IEC protection classes	Class 1
Lens	Toughened borosilicate glass
Housing	Marine Grade Aluminium Anodized
Weight of the light fitting	16 kg
Package weight per piece	17 kg
Package dimensions	400x400x380 mm LxWxH
Standard version	Ex e junction box with 3x M25 entries
Information	Control, monitoring and Synchronization from NavAid Central Control Panel Automatic operation via central photocell from NavAid Central Control panel

Certificate Details

ATEX classification	Group II, Category 2, Gas and Dust
Area classification	Category 2 (Zone 1 and 21)
Certificate (IECEX)	IECEX SIR 11.0031X
Certificate (ATEX)	SIRA 11ATEX3053X
Marking	Ex II 2 G Ex e mb IIC T4 Gb Ex II 2 D Ex tb IIIC T135 Db IP66
CE	Yes
According regulations	IALA
ABS Rules PDA Certificate	14-LD1100054C-PDA

Characteristics

- Low maintenance
- Sealed unit
- Shock and vibration resistant
- No moving parts
- Special heat management system
- According to IALA regulation





ILED® Dorado Marine Lantern 15 NM

LED
15 NM (>12,000 cd)
--
Morse Code – “U”
65 W
White
-40 °C up to +55 °C
Base Down
Immediate
230 Vac ± 5 %
IP66
360°
Class 1
Toughened borosilicate glass
Marine Grade Aluminium Anodized
25 kg
26 kg
400x400x600 mm LxWxH
Ex e junction box with 3x M25 entries
Control, monitoring and Synchronization from NavAid Central Control Panel
Automatic operation via central photocell from NavAid Central Control panel

ILED® Dorado Status Light

LED
2 – 10° 700 cd min.
0 – 90° 176 cd min.
60 cd max.
2 Hz
80 W
Red
-40 °C up to +55 °C
Base Down
Immediate
24 Vdc ± 10 %
IP66
360°
Class 1
Toughened borosilicate glass
Marine Grade Aluminium Anodized
16 kg
17 kg
400x400x380 mm LxWxH
Ex e junction box with 3x M25 entries
--

Group II, Category 2, Gas and Dust

Category 2 (Zone 1 and 21)
IECEX SIR 11.0031X
SIRA 11ATEX3053X
Ex II 2 G Ex e mb IIC T4 Gb
Ex II 2 D Ex tb IIC T135 Db IP66
Yes
IALA
14-LD1100054C-PDA

Group II, Category 2, Gas and Dust

Category 2 (Zone 1 and 21)
IECEX SIR 11.0031X
SIRA 11ATEX3053X
Ex II 2 G Ex e mb IIC T4 Gb
Ex II 2 D Ex tb IIC T135 Db IP66
Yes
ICAO Annex 14, CAA CAP 437 &
IMO Modu code 2001
14-LD1100054C-PDA

Optional

Voltage / Power	Status Light	10 NM
	115 Vac ± 5 %/100 W	12 Vdc -10 %/+20 %/10.0 W
	230 Vac ± 5 %/100 W	115 Vac ± 5 %/13.5 W
		230 Vac ± 5 %/13.5 W
Cable	On request	
Facility for synchronisation through GPS	On request	
Bird spike	On request	
Mounting	On request	
Pedestal	On request	

The ILED® Dorado Marine Lantern produces an extraordinary light output of 10 nautical miles with a power consumption of only 9 watts.



Fresnel Lens, Borosilicate Glass



IMT® ILED® Technology

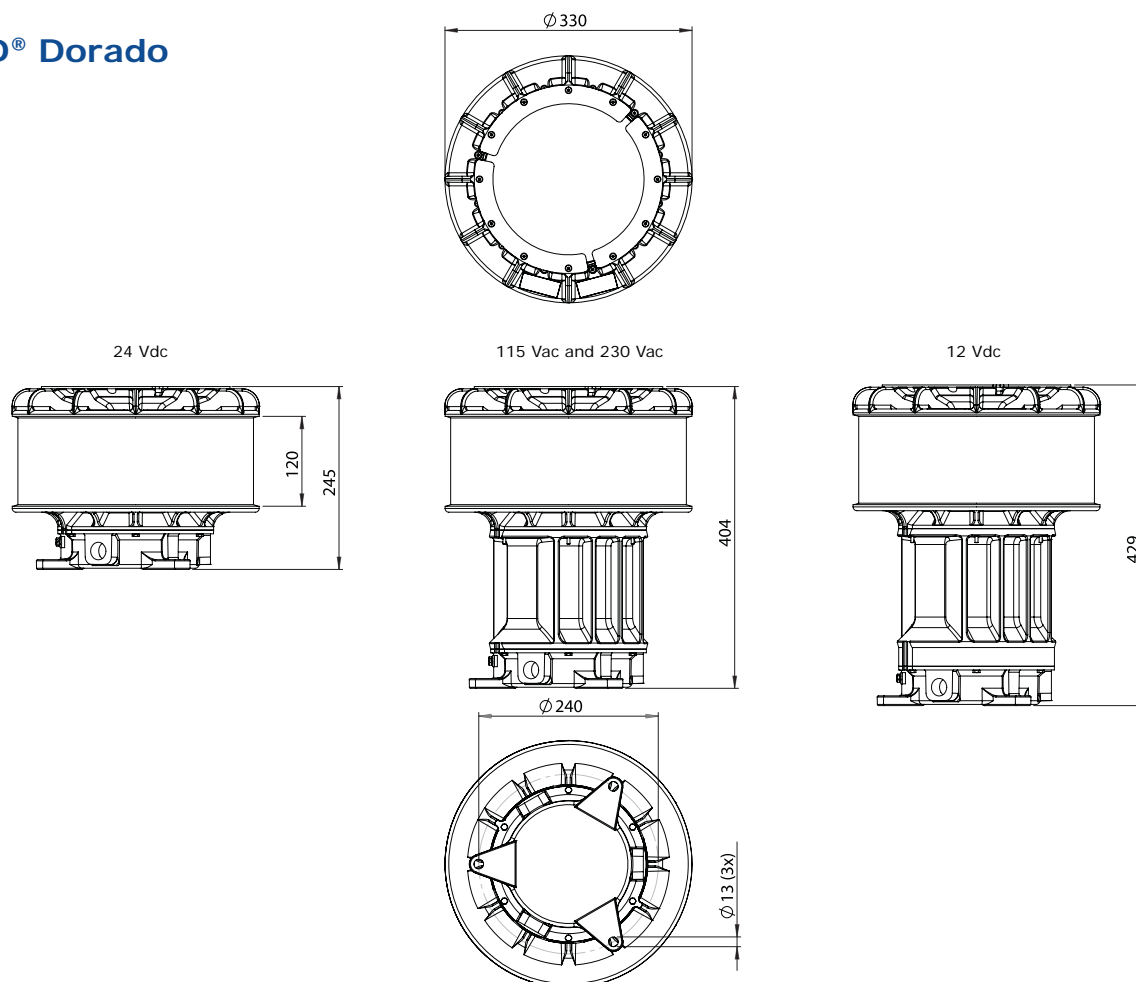


Efficient Cooling



Marine Lantern System

ILED® Dorado



Article Code	Version	Wattage	Voltage	Connection	Weight
ELUA1JAF243	10 NM – Ex	9 W	24 Vdc	Ex e junction box with 3x M25 entries	17 kg
ELUAFJAF243	10 NM – Ex	13.5 W	115 Vac	Ex e junction box with 3x M25 entries	25 kg
ELUA4JAF243	10 NM – Ex	13.5 W	230 Vac	Ex e junction box with 3x M25 entries	25 kg
ELUAGJAF243	10 NM – Ex	10 W	12 Vdc	Ex e junction box with 3x M25 entries	25 kg
ELUA4JAG243	15 NM – Ex	65 W	230 Vac	Ex e junction box with 3x M25 entries	25 kg
ELWA1HAJA243	Status Light – Ex	80 W	24 Vdc	Ex e junction box with 3x M25 entries	17 kg
ELWAFHAJA243	Status Light – Ex	100 W	115 Vac	Ex e junction box with 3x M25 entries	25 kg
ELWA4HAJA243	Status Light – Ex	100 W	230 Vac	Ex e junction box with 3x M25 entries	25 kg

Accessories

Article Code	Version	Weight
CDI0200	Pedestal for Dorado Lantern	1.36 kg



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ILED® Aquarius Perimeter/Repeater/ Signal Light

**CAP 437 Helideck Platforms
Offshore Industry
(Petro) Chemical Industry
Signalisation**



ILED® Aquarius Perimeter/Repeater/Signal Light

Overview

The ILED Aquarius – in all its variants – is manufactured with a toughened soda lime glass lens that has a high impact and fracture resistance and utilises the highest quality of high power LEDs – in the colours of Green, Red, Blue, Amber, and White.

The output intensity of the LED lights is that as required according to CAA and ICAO guidelines and requirements.

The main housing, mounting plate and fastenings are made of high quality stainless steel AISI 316L. The IP66 rated junction box is protected by a sealing and packing which is made from highly weather and seawater resistant material, thus ensuring the unit is impermeable to moisture.

The ILED Aquarius is available as either an Ex-hazardous Area or Industrial Safe Area-version.

Characteristics

- Low maintenance
- Sealed unit
- Shock and vibration resistant

Technical Details

Model	ILED® Aquarius Perimeter Light
Light source	LED
Luminous intensity	According to CAP 437
Average power	9 W
Light colour	Green
Flash frequency	--
Ambient temperature	-40 °C up to +55 °C
Burning position	Universal
(Re)ignition	Immediate
Voltage range	95 – 255 Vac
Power factor/Cos φ	>0.90
IP Rating	IP66
IEC protection classes	Class 1
Light distribution	--
Lens	Toughened soda lime glass
Housing	Stainless steel AISI 316L
Weight of the light fitting	9 kg
Package weight per piece	10 kg
Package dimensions	390x260x240 mm LxWxH
Flash frequency	--
Standard version	Standard Ex e junction box 3x M20 entries (GRP) Terminals suitable for max. 4 mm² Suitable for through wiring

Certificate Details

Model	ILED® Aquarius Perimeter Light
ATEX classification	Group II, Category 2, Gas and Dust
Area classification	Category 2 (Zone 1 and 21)
Certificate (ATEX)	KEMA 08ATEX0158X
Marking	Ex II 2 G Ex e mb II T4 Ex II 2 D Ex tD A21 IP66 T100 °C
According	ICAO (Annex 14), CAA CAP 437 and IMO Modu Code 2009, helideck as per § 13.3.2
ABS Rules PDA Certificate	14-LD1100054B-PDA
CE	Yes



ILED® Aquarius Bi-colour Perim.	ILED® Aquarius Repeater Light	ILED® Aquarius Signal Light
LED	LED	LED
--	16 – 60 cd	Depends on light distribution
--	5 W	12 W max.
Green/Yellow 10 W max. Green/Blue 20 W max.	Red	White
--	1 Hz or 2 Hz, sync possible	--
-40 °C up to +55 °C	-40 °C up to +55 °C	-40 °C up to +55 °C
Universal	Universal	Universal
Immediate	Immediate	Immediate
100 – 240 Vac	24 Vdc ± 10 %	95 – 255 Vac
>0.90	--	>0.90
IP66	IP66	IP66
Class 1	Class 1	Class 1
--	--	Side emitting
Toughened soda lime glass	Toughened soda lime glass	Toughened soda lime glass
Stainless steel AISI 316L	Stainless steel AISI 316L	Stainless steel AISI 316L
9 kg	9 kg	9 kg
10 kg	10 kg	10 kg
390x260x240 mm LxWxH	390x260x240 mm LxWxH	390x260x240 mm LxWxH
--	1 Hz or 2 Hz – Sync. possible	--
Standard Ex e junction box 3x M20 entries (GRP)	Standard Ex e junction box 3x M20 entries (GRP)	Standard Ex e junction box 3x M20 entries (GRP)
Terminals suitable for max. 4 mm ²	Terminals suitable for max. 4 mm ²	Terminals suitable for max. 4 mm ²
Suitable for through wiring	Suitable for through wiring	Suitable for through wiring

ILED® Aquarius Bi-colour Perim.	ILED® Aquarius Repeater Light	ILED® Aquarius Signal Light
--	Group II, Category 2, Gas & Dust	Group II, Category 2, Gas & Dust
--	Category 2 (Zone 1 and 21)	Category 2 (Zone 1 and 21)
--	KEMA 08ATEX0158X	KEMA 08ATEX0158X
--	Ex II 2 G Ex e mb II T4	Ex II 2 G Ex e mb II T4
--	Ex II 2 D Ex tD A21 IP66 T100 °C	Ex II 2 D Ex tD A21 IP66 T100 °C
--	ICAO (Annex 14), CAA CAP 437 and IMO Modu Code 2009, helideck as per § 13.3.2	--
--	14-LD1100054B-PDA	14-LD1100054B-PDA
Yes	Yes	Yes

Optional

Light colour	ILED® Aquarius Perimeter & Signal Light Natural White/Warm White/Green/Blue/Royal Blue/Red/Amber
Voltage range	ILED® Aquarius Perimeter Light 24 Vdc ± 10 % – 4 W ILED® Aquarius Signal Light 130 – 360 Vdc – max. 12 W 24 Vdc ± 10 % – max. 10 W
Cable	On request
Mounting	On request
Entries	ILED® Aquarius Perimeter – 3x M25 entries
Light distribution	ILED® Aquarius Signal Light – Lambertian
Flash frequency	On request
Version	ILED® Aquarius Repeater Light Stand-alone-version – No synchronization possible

The ILED® Aquarius Perimeter light has the required light distribution according CAP 437 – but with a power consumption of just 9 watts.



CAP 437 Repeater Light



Sealed unit

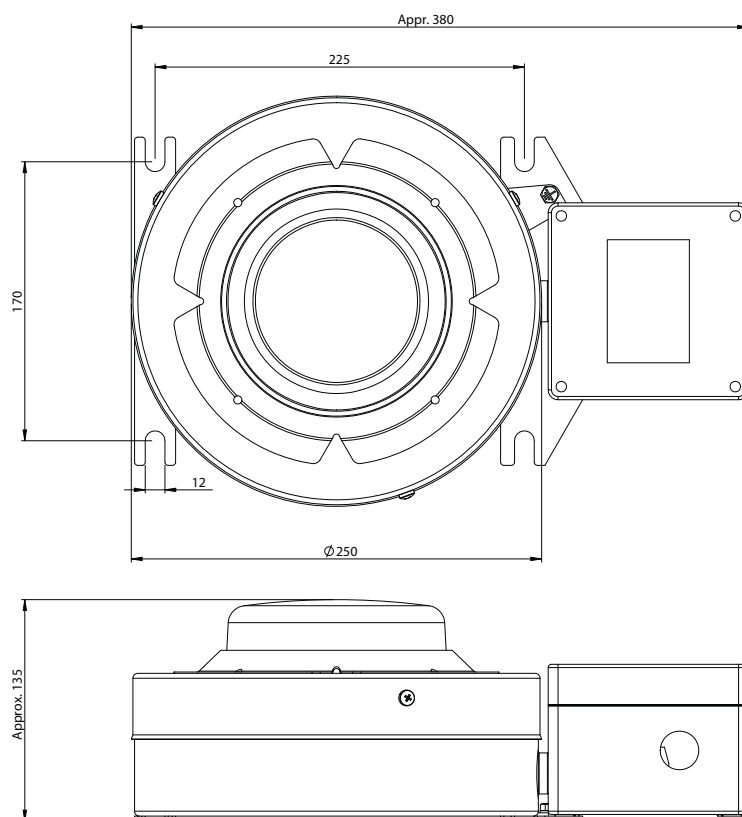


Stainless steel AISI 316L Housing



GRP Junction Box

ILED® Aquarius Perimeter/Repeater/Signal Light



Article Code	Version	Wattage	Voltage	Connection	Weight
ELPZ5APOE243	Perimeter Ex	9 W	95 – 255 Vac	Ex e junction box with 3x M20 entries	9 kg
ELPZ5APOC243	Perimeter Ex	9 W	95 – 255 Vac	Ex e junction box with 3x M25 entries	9 kg
ELPZ5APOE443	Perimeter Safe Area	9 W	95 – 255 Vac	Standard junction box with 3x M20 entries	9 kg
ELPZ5APOC443	Perimeter Safe Area	9 W	95 – 255 Vac	Standard junction box with 3x M25 entries	9 kg
ELPZ1APOE243	Perimeter Ex	4 W	24 Vdc	Ex e junction box with 3x M20 entries	9 kg
ELPZ1APOC243	Perimeter Ex	4 W	24 Vdc	Ex e junction box with 3x M25 entries	9 kg
ELPZ1APOE443	Perimeter Safe Area	4 W	24 Vdc	Standard junction box with 3x M20 entries	9 kg
ELPZ1APOC443	Perimeter Safe Area	4 W	24 Vdc	Standard junction box with 3x M25 entries	9 kg
ELPZ5PP0S443	Bi-colour Peri. Safe Area – Green/Blue	20 W	100 – 240 Vac	Standard junction box with 3x M25 entries	9 kg
ELPZ5QP0S443	Bi-colour Peri. Safe Area – Green/Yellow	10 W	100 – 240 Vac	Standard junction box with 3x M25 entries	9 kg
ELRZ1APOE443	Repeater Safe Area – System	5 W	24V	Standard junction box with 3x M20 entries	9 kg
ELRZ1APOE243	Repeater Ex – System	5 W	24V	Ex e junction box with 3x M20 entries	9 kg
ELRZHAP0E243	Repeater Ex – Stand Alone flashing	5 W	24V	Ex e junction box with 3x M20 entries	9 kg
ELSX5FP0E443	Signal Safe Area – Blue	20 W	95 – 255 Vac	Standard junction box with 3x M20 entries	9 kg
ELSX5FP0E243	Signal Ex – Blue	20 W	95 – 255 Vac	Ex e junction box with 3x M20 entries	9 kg



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ILED® Aquarius Helideck Floodlight



CAP 437 Helidecks
Offshore Industry
(Petro) Chemical Industry
General Lighting



ILED® Aquarius Helideck Floodlight

Overview

The ILED Aquarius Helideck Floodlight is made with an anodized, marine grade aluminium casting, making it highly resistant to seawater environments and therefore perfectly suitable for marine applications. The integral mounting bracket allows the unit to be easily fixed and the direction of the beam in the horizontal to be adjusted.

The light cover is made of clear toughened glass which is extremely shock resistant and break proof with a Fresnel (PMMA) lens. The high Power LEDs in combination with the fresnel lens produce a superior light output.

A special design feature of this product is in the heat management – the ILED Aquarius Floodlight has a series of cooling fins with air ducts to dissipate the heat generated from the LEDs, which means that even in conditions of direct sunlight and high temperatures, the light unit continues to be cooled.

The connection box is integral to the aluminium main housing and is manufactured with two cable entries for M25 cable glands.

The ILED Aquarius Floodlight is available as either an Ex-hazardous Area or Industrial Safe Area-version.

Charateristics

- Low maintenance
- Sealed unit
- Shock and vibration resistant
- According to ICAO Annex 14, CAA CAP 437 and IMO Modu Code 2009, helideck as per § 13.3.2



Technical Details

Model	ILED® Aquarius Helideck Floodlight
Light source	LED
Luminous intensity	15,000 cd
Average power	40 W
Light colour	White
Ambient temperature	-40 °C up to +55 °C
Burning position	Universal
(Re)ignition	Immediate
Voltage range	95 – 250 Vac
Power factor/Cos φ	>0.90
IP Rating	IP66
IEC protection classes	Class 1
Lens	Toughened glass with internal fresnel lens (PMMA)
Housing	Marine Grade Aluminium Anodized
Weight of the light fitting	11 kg
Package weight per piece	12 kg
Package dimensions	400x400x380 mm LxWxH
Standard version	Ex e junction box 2x M25x1.5 entries Terminals suitable for max. 4 mm² Suitable for through wiring

Certificate Details

Model	ILED® Aquarius Helideck Floodlight
ATEX classification	Group II, Category 2, Gas and Dust
Area classification	Category 2 (Zone 1 and 21)
Certificate (IECEX)	IECEX SIR 11.0142X
Certificate (ATEX)	SIRA 11ATEX3295X
Marking	Ex II 2 G Ex e mb IIC T4 Gb Ex II 2 D Ex tb IIIC T135 °C Db IP66
ABS Rules PDA Certificate	14-LD1100054A-PDA
CE	Yes

Optional

Voltage range	24 Vdc ± 10 % – 40 W
Lens	Without Fresnel Lens
Cable	On request
Mounting	On request

Either with the power options of multi-voltage or 24 Vdc, bright and precise light output – with a power consumption of just 40 watts.



Special Beam Patterns



Adjustable Mounting Bracket

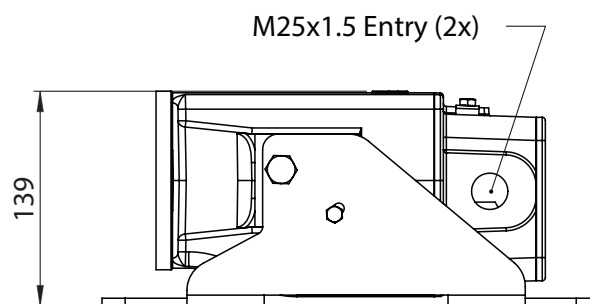
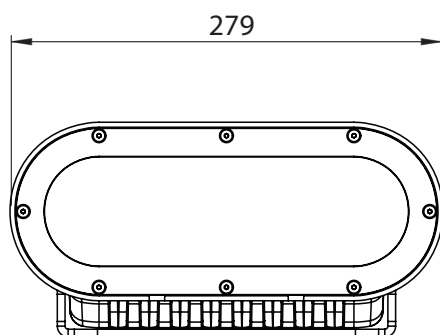
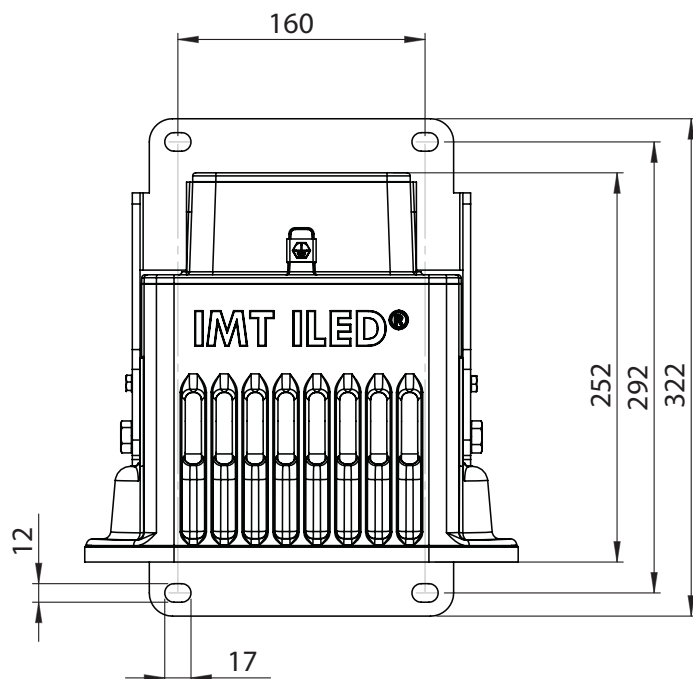


Heat Management



IMT® ILED®

ILED Aquarius Helideck Floodlight



Article Code	Version	Wattage	Voltage	Connection	Weight
ELFA1KZ0A243	Ex	40 W	24V	Ex e junction box with 2x M25x1.5 entries	11 kg
ELFA1KZ0A443	Safe Area	40 W	24V	Junction box with 2x M25x1.5 entries	11 kg
ELFA5KZ0A243	Ex	40 W	95 – 250 Vac	Ex e junction box with 2x M25x1.5 entries	11 kg
ELFA5KZ0A443	Safe Area	40 W	95 – 250 Vac	Junction box with 2x M25x1.5 entries	11 kg

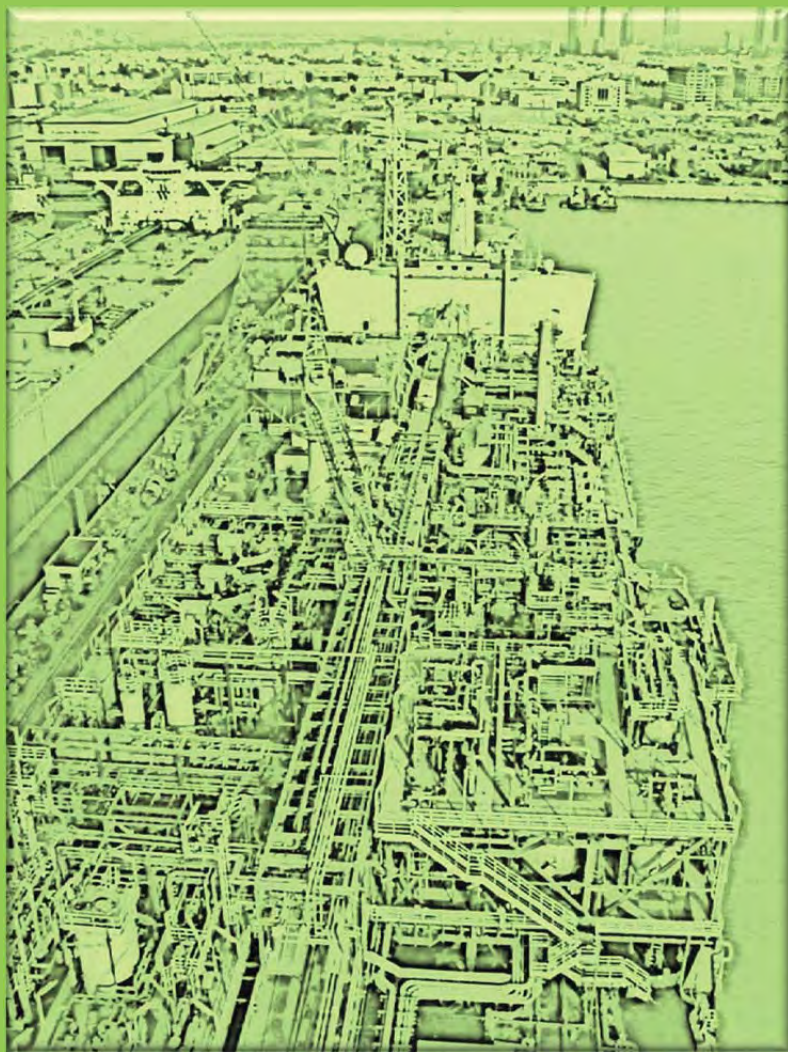


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OBSTRUCTION LIGHTS

AIRCRAFT WARNING LIGHTS

LOW INTENSITY EXPLOSION PROOF OBSTRUCTION LIGHT LIOL - A - Ex / LIOL - B - Ex



AWL - LIOL - Ex



AIRCRAFT WARNING LIGHTS

LIOL - A - Ex / LIOL - B - Ex

KEY FEATURES

- Based on LED technology
- RED steady burning light
- >10 cd LIOL - A
- >32 cd LIOL - B
- Long life time >10+ years life expectancy
- Low consumption Stabilised light output
- Lightweight and compact
- Low wind load factor
- Easy to install
- No RF-radiations
- Patented beacon (EU 001929910-0001; Canada 145189; USA D673,474)
- Ex Certificate: CESI 13ATEX037

OPTICAL FEATURES

- Cd emission +6° and +10°
- Horizontal beam radiation 360°
- Vertical beam spread >10°
- Optical reflector

OPTIONS

- Twin version: two galvanically separate circuits
- Fault alarm
- Infrared available
- Automatic changeover from normal to backup light

ELECTRICAL FEATURES

- Power Supply AC or DC
- Power consumption LIOL-B: 4W
- LED feeded at constant current

MECHANICAL FEATURES

- Painted RAL 7035 aluminium body
- Borosilicate Glass Dome
- Degree of protection: IP66
- Operating temperature: -50°C to +55°C
- Storage temperature: -50°C to +55°C
- Lamp unit weight: 6kg

APPLY TO

- Stack - Chimney - Tower crane - Flare
- Offshore Platform
- Chemical and Petrochemical Plant

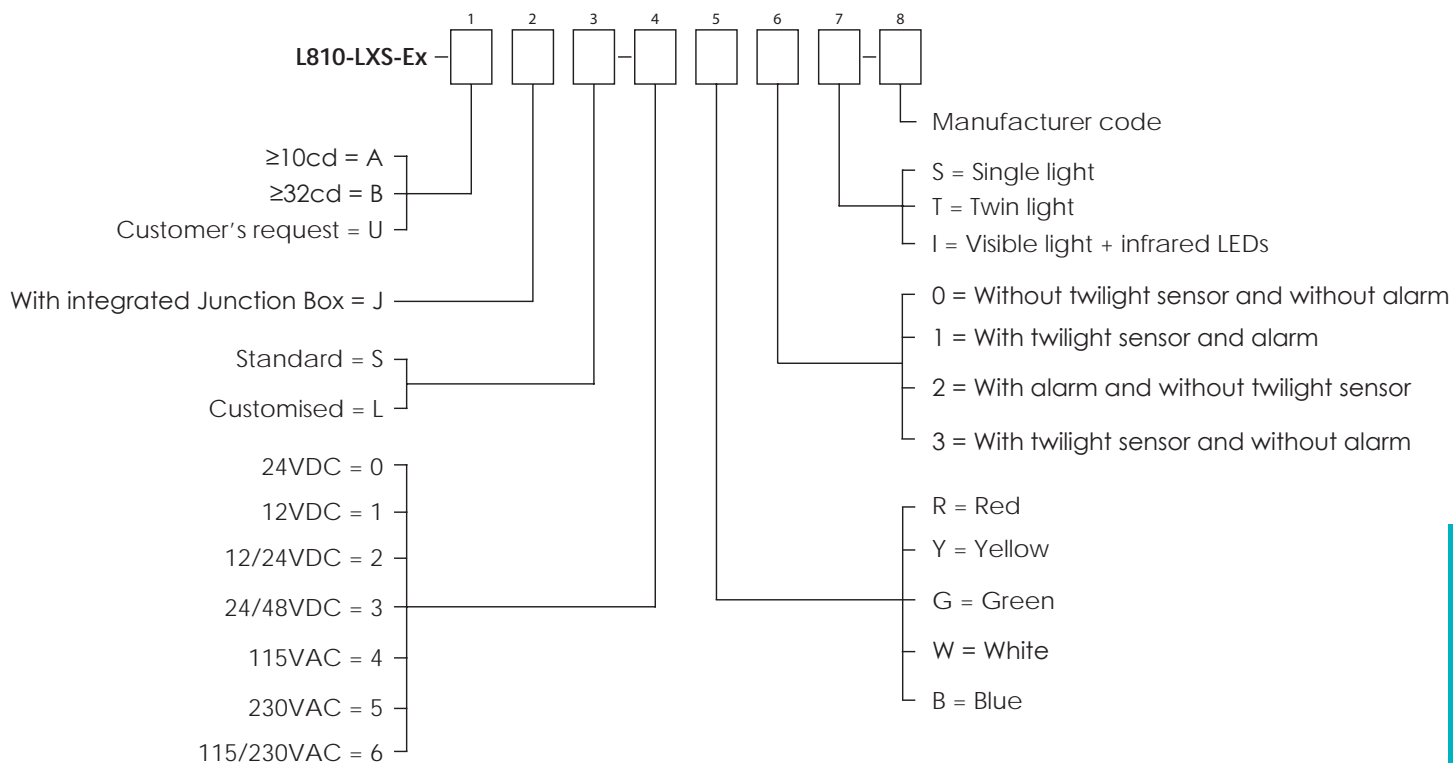
INTERNATIONAL REGULATION

- ICAO Aerodromes -Annex 14 Volume 1, 6th Edition, July 2013 Chapter 6: Low intensity, Type A-B steady burning obstacle light
- FAA AC150/5345-43F E.B. #67 Lamp type L-810
- DGAC/STAC approval nr. 2013A048
- CE marking
- ATEX

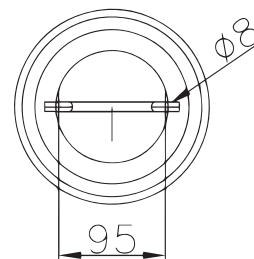
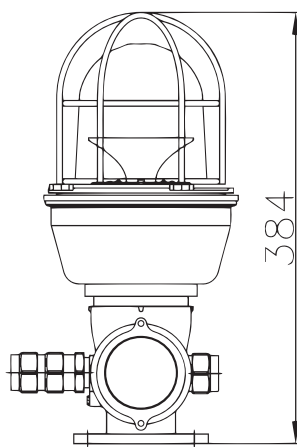
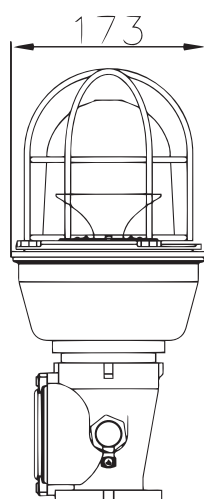
AIRCRAFT WARNING LIGHTS

LIOL - A - Ex / LIOL - B - Ex

Order code



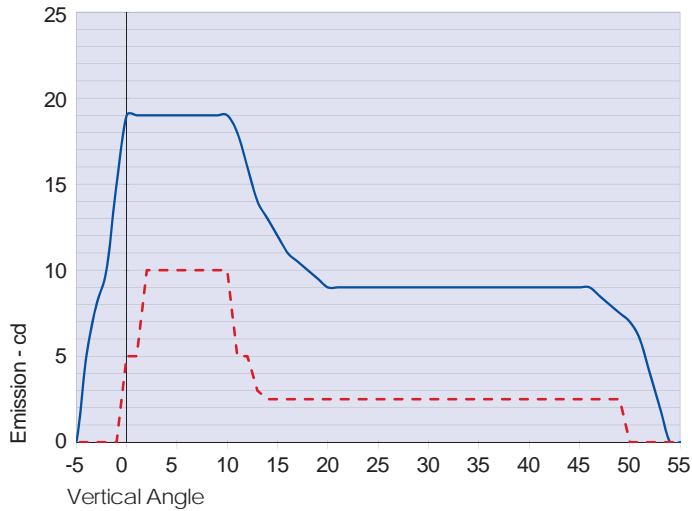
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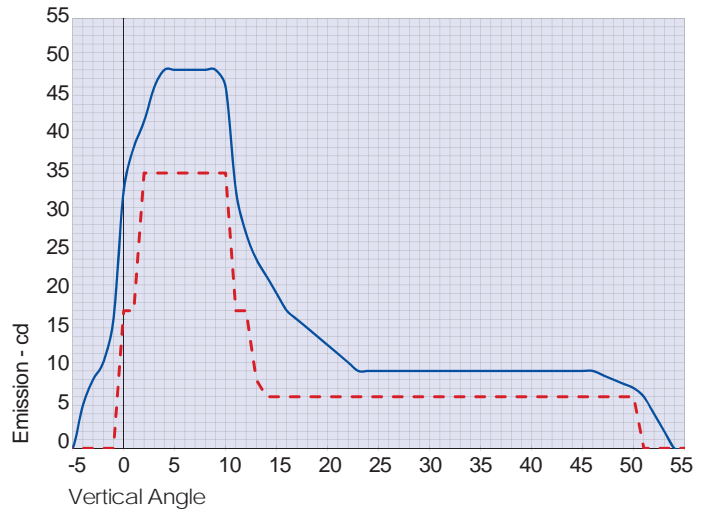
FIXING DIMENSIONS

AIRCRAFT WARNING LIGHTS

LIOL - A - Ex / LIOL - B - Ex



— L810-LXS-A average emission level
 - - ICAO ANNEX 14 low intensity type A Minimum Required Intensity



— L810-LXS-B average emission level
 - - ICAO ANNEX 14 low intensity type B Minimum Required Intensity

AWL - LIOL - Ex

CERTIFICATIONS



FEATURES



TYPICAL APPLICATION



AIRCRAFT WARNING LIGHTS

MEDIUM INTENSITY EXPLOSION PROOF OBSTRUCTION LIGHT MIOL - B - Ex / MIOL - C - Ex



AWL - MIOL - Ex



AIRCRAFT WARNING LIGHTS

MIOL - B - Ex / MIOL - C - Ex

KEY FEATURES

- Based on LED technology
- 2.000cd night mode, RED flashing for MIOL-B
- 2.000cd night mode, RED steady burning for MIOL-C
- Long life time >10+ years life expectancy
- Low consumption
- Stabilised light output
- Lightweight and compact
- Low wind load factor
- Alarm/remote status control
- Easy to install
- No RF-radiations
- Light output alignment device
- Patented beacon (EU 001929910-0001; Canada 145 189; USA D673,474)
- Stainless steel beacon support bracket
- Ex certificate: INERIS 01ATEX0019x
- ATEX execution: II 2GD Exde IIC T4 Gb

OPTICAL FEATURES

- Cd emission @ -0,5° and +4°
- Horizontal beam radiation 360°
- Vertical beam spread 4°
- PMMA lens

OPTIONS

- Twin version: two galvanically separated circuits in the same fixture
- Power supply AC or DC
- GPS (Global Position System) syncro
- Infrared available

ELECTRICAL FEATURES

- Average power consumption for MIOL-B (@20fpm): 9W
- Average power consumption for MIOL-B (@40fpm): 12W
- Average power consumption for MIOL-B (@60fpm): 15W
- Average power consumption for MIOL-C (steady burning) : 54W
- LED feeded at constant current
- Lightning protection

MECHANICAL FEATURES

- RAL7035 painted aluminium body lamp
- Borosilicate glass cover protection
- Degree of protection: IP65
- Operating temperature: -52°C to +60°C
- Storage temp. range: -45°C to +55°C
- Lamp unit weight: 15kg

APPLY TO

- Stack - Chimney - Tower crane - Flare
- Offshore platform
- Chemical and Petrochemical plant

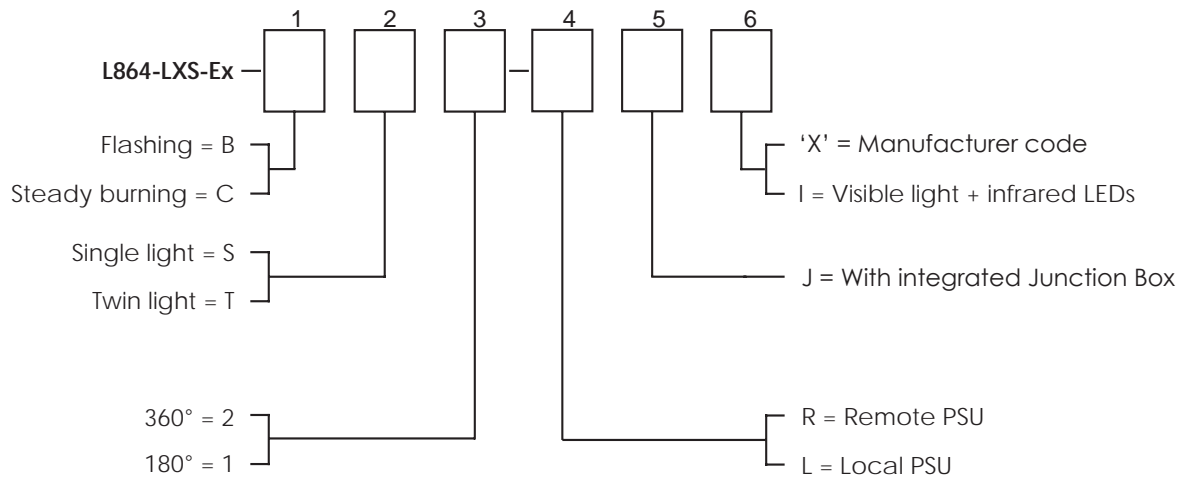
INTERNATIONAL REGULATION

- ICAO Aerodromes -Annex 14 Volume 1, 6th Edition, July 2013 Chapter 6: Medium intensity, Type B flashing obstacle light MIOL-B type or Type C steady burning obstacle light MIOL-C type
- FAA AC150/5345-43F E.B. #67 Lamp type L-864 or Twin L-864
- DGAC/STAC approval nr. 2013A037
- CE marking
- ATEX

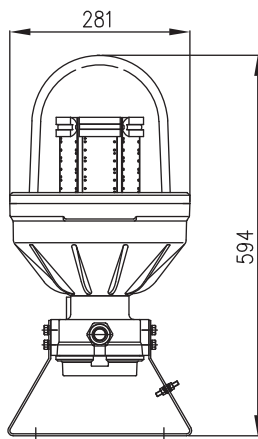
AIRCRAFT WARNING LIGHTS

MIOL - B - Ex / MIOL - C - Ex

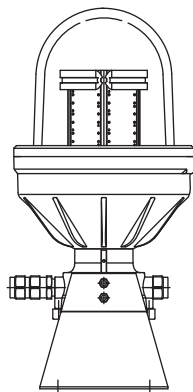
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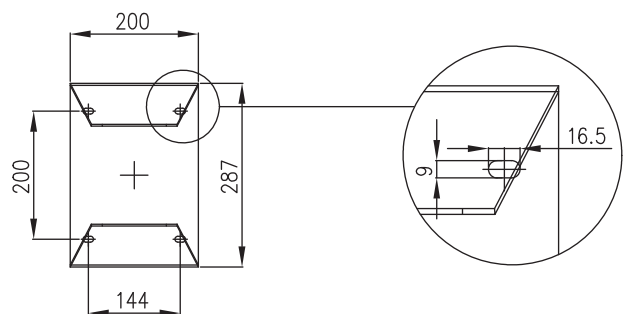
BEACON FRONT VIEW



BEACON SIDE VIEW



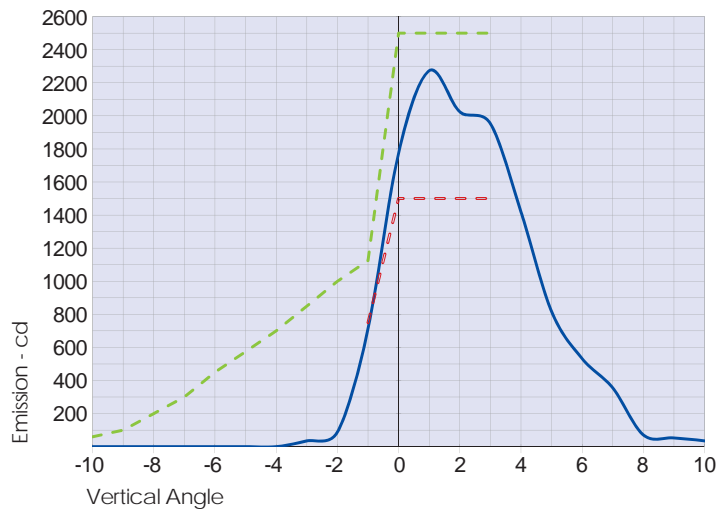
FIXING DETAILS



AWL - MIOL - Ex

AIRCRAFT WARNING LIGHTS

MIOL - B - Ex / MIOL - C - Ex



- L864-LXS-B/C average emission level at 90°C ambient temperature
- ICAO ANNEX 14 medium intensity type B/C Minimum Required Intensity
- ICAO ANNEX 14 medium intensity type B/C Maximum Required Intensity

AWL - MIOL - Ex

CERTIFICATIONS



FEATURES



TYPICAL APPLICATION



AIRCRAFT WARNING LIGHTS

MEDIUM INTENSITY EXPLOSION PROOF OBSTRUCTION LIGHT MIOL - AB - Ex / MIOL - AC - Ex



AWL - MIOL - Ex



AIRCRAFT WARNING LIGHTS

MIOL - AB - Ex / MIOL - AC - Ex

KEY FEATURES

- Based on LED technology
- 20.000cd day mode, WHITE
- 2.000cd night mode, RED
- Long life time >10+ years life expectancy
- Low consumption
- Stabilised light output
- Lightweight and compact
- Low wind load factor
- Alarm/remote status control
- Easy to install
- No RF-radiations
- Light output alignment device
- Stainless Steel Beacon support bracket
- Patented beacon (EU 001929910-0001; Canada 145189; USA D673,474)
- Ex Certificate: INERIS 01ATEX0019x
- ATEX execution: II 2GD Exde IIC T4 Gb

OPTICAL FEATURES

- Cd emission @ -0,5° and +4°
- Horizontal beam radiation 360°
- Vertical beam spread 4°
- PMMA lens

OPTIONS

- Dual AB: white flash on day, red flash on night
- Dual AC: white flash on day, red steady burning on night
- Power supply AC or DC
- GPS (Global Position System) syncro
- Infrared Available

APPLY TO

- Stack - Chimney - Tower crane - Flare
- Offshore platform
- Chemical and Petrochemical plant

ELECTRICAL FEATURES

- Average power consumption for day mode MIOL-AB/AC (@20fpm): 45W
- Average power consumption for night mode MIOL-AB (@20fpm): 10W
- Average power consumption for day mode MIOL-AB/AC (@40fpm): 110W
- Average power consumption for night mode MIOL-AB (@40fpm): 12W
- Average power consumption for day mode MIOL-AB/AC (@60fpm): 160W
- Average power consumption for night mode MIOL-AB (@60fpm): 16W
- Average power consumption for night mode MIOL-AC (steady burning): 50W
- LED feeded at constant current
- Lightning protection

MECHANICAL FEATURES

- RAL7035 painted aluminium body lamp
- Borosilicate glass cover protection
- Degree of protection: IP65
- Operating temp. range: -52°C to +60°C
- Storage temp. range: -45°C to +55°C
- Lamp unit weight: 16kg

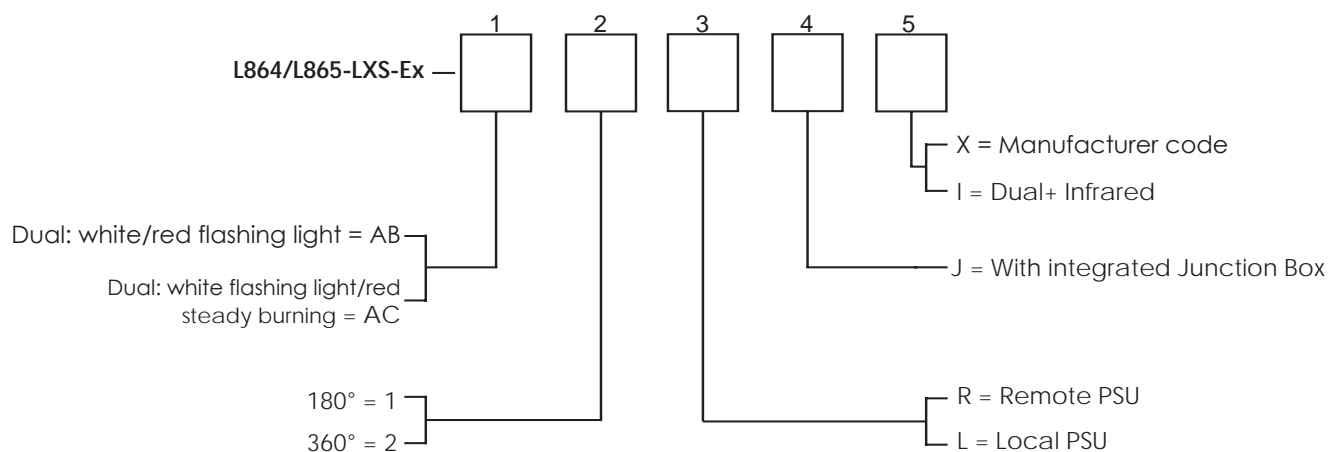
INTERNATIONAL REGULATION

- ICAO Aerodromes - Annex 14 Volume 1, 6th Edition, July 2013 Chapter 6: Medium intensity, Type B flashing obstacle light MIOL-AB type, Type AC flashing/steady burning obstacle light MIOL-AC Type
- FAA AC150/5345-43F E.B. #67 Lamp type Dual L-864/L-865
- DGAC/STAC approval nr. 2013A037/2013A038
- CE marking
- ATEX

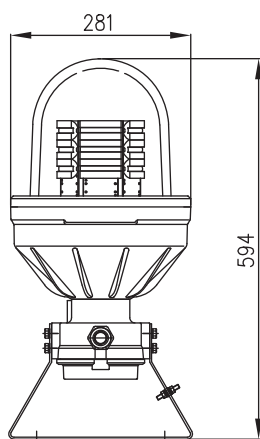
AIRCRAFT WARNING LIGHTS

MIOL - AB - Ex / MIOL - AC - Ex

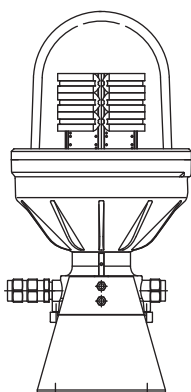
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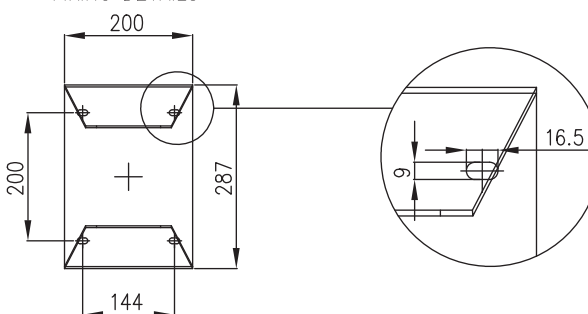
BEACON FRONT VIEW



BEACON SIDE VIEW



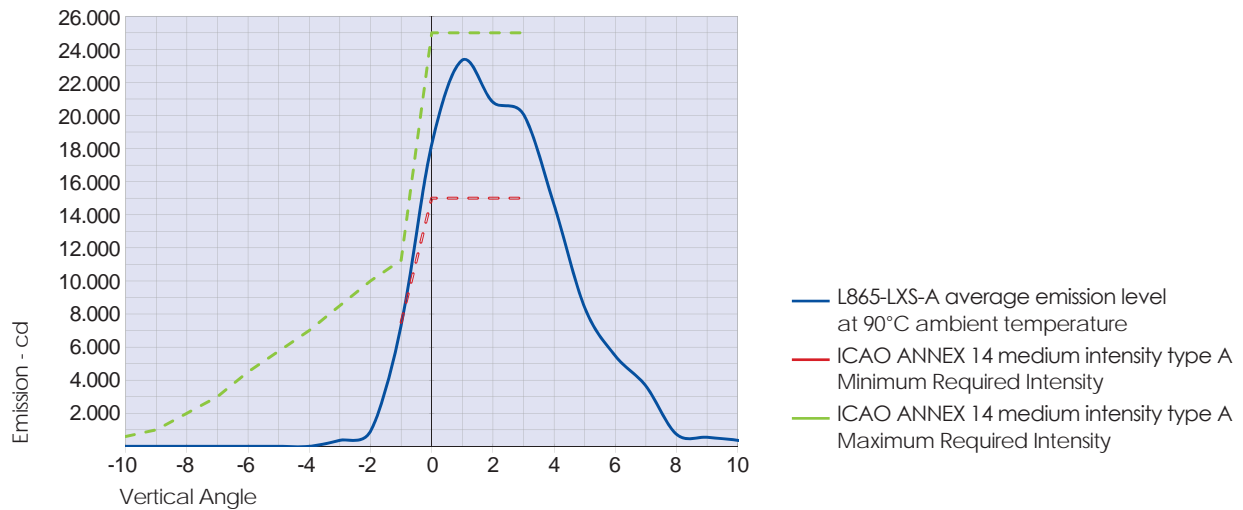
FIXING DETAILS



AWL - MIOL - Ex

AIRCRAFT WARNING LIGHTS

MIOL - AB - Ex / MIOL - AC - Ex



AWL - MIOL - Ex

CERTIFICATIONS



FEATURES



TYPICAL APPLICATION



