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MAINTENANCE AND INSTRUCTION MANUAL FOR SELF CONTAINED SOLAR POWERED BEACON TYPE SPB70

Read this manual carefully before installing or / and operating and keep it for future reference.





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NOTICE

This instruction manual provides information regarding installation, operation and maintenance of the Solar powered light.

This manual is for installation, user and first line maintenance personnel.

For information regarding required adjustments or repair not instructed in this manual, contact

I.T.O. Vaarwegmarkering BV service department

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www.itonavaids.com

The reliability and integrity of this light system depends on the use of original I.T.O. Vaarwegmarkering BV components.

To ensure the optimum performance and reliability it is advised that only genuine I.T.O. Vaarwegmarkering BV components are used.

The use of parts which are not approved by I.T.O. Vaarwegmarkering BV will invalid warranty.

DISCLAIMER

While every effort has been made to provide a complete, up-to-date, accurate manual, no liability claims for damages resulting from any errors or omissions in this manual will be accepted by I.T.O. Vaarwegmarkering BV.

SUPPLIER

I.T.O. Vaarwegmarkering BV.

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WARRANTY

I.T.O. Vaarwegmarkering BV warrants that the solar powered beacons type SPB70 conform to the I.T.O. Vaarwegmarkering BV specifications are free from defects in material and workmanship at time of shipment.

I.T.O. Vaarwegmarkering BV will repair or replace (at its option) EXW factory, any parts or materials found to be defective when properly used for their intended purpose. Such obligation shall be limited to parts returned to the factory for inspection, properly packed and expenses prepaid, within twelve months of date of shipment and provided that inspection shall satisfactorily indicate the defects.

In no event shall I.T.O. Vaarwegmarkering BV be liable for consequences, special damages caused during transportation, installation, adjustments or other expenses, which may arise in connection with its products or parts.

In no case are parts or equipment to be returned without first obtaining the written permission of I.T.O. Vaarwegmarkering BV .

This navaid is tested at the factory and operated satisfactorily. If connected according to the Interconnection Diagram as part of the drawings, the system will operate as designed.

This warranty is to be declared null and void if I.T.O. Vaarwegmarkering BV 's inspection indicates that parts or equipment have been installed incorrectly, adjusted, rewired, modified, tampered with, etc., specifically, but not limited to the following:

- Installed with field wiring other than shown in the manual.
- Parts are substituted that are not in accordance with the manual.
- Incorrect input voltage is applied.
- The equipment is misused or abused.
- Any adjustments are made to the equipment

The warranty stated herein is exclusive. There are no other warranties, either expressed or implied, beyond those set forth herein.

I.T.O. Vaarwegmarkering BV does not assume any other obligation liability in connection with the sale or use of these products.

I.T.O. Vaarwegmarkering BV 's liability on any claim of any kind including negligence for loss or damages arising out of or connected with the manufacture, sale, delivery, repair or use of any equipment or services provided by I.T.O. Vaarwegmarkering BV shall in no case exceed the price allocable to the item or service, or part, which gives rise to the claim.



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GENERAL DESCRIPTION

This instruction manual provides information regarding installation, operation, and maintenance of the Solar Powered SPB70 beacons. All electrical connections are made within the beacon housing.

Mounting, commission and maintenance of the SPB70 beacon should be done by skilled persons equipped with personal protection devices (protection glasses, gloves, etc), smoking and open fire is prohibited.

When working on the system only non sparking tools should be used.

Injudicious procedures can cause short-circuits with high currents, with danger of fire, explosion and personal injury.

Technical specifications

Application	Self contained solar powered beacon
Type	SPB70
Manufacturer	I.T.O. Vaarwegmarkering BV
Lens material/type	Polycarbonate high impact resistant
Housing	Aluminium
Led life expectancy	Approx. 100.000 hours
Colour Chromaticity	Within IALA specifications
Horizontal spread	360 degrees
Vertical divergence	20 degrees
Light character	Programmable
Power consumption	Depending on setting
Voltage range	11,6 - 13,8 VDC
Operating temperature	-20° to + 50° Celsius
Ingress protection	IP67
Attachment	4 holes ø15 mm. on 200 mm

1 GENERAL DESCRIPTION

1.1 Electro

CAUTION: High Powered LED sources produce an extremely intense and concentrated light source and direct viewing of the LED should be avoided.

The Beacon is equipped with 4 each 12 volt 7 watt solar panels connected in parallel which charge the battery set by means of a integrated charge regulator within the lantern. The lead/acid battery set has a maximum capacity of two 12 volts 26 Ah.



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1.2 Mechanical

The SPB70 beacon is designed to withstand marine environmental conditions. Hardware parts are Stainless Steel or Aluminium.

1.3 Specifications

lantern.....	IML200AL LED
Visibility (omnidirectional)	360° horizon
Operating Temperature	-20° to +40°C
Solar panel 4 each.....	12 volt 7 watt
Battery 2 each lead/VRLA capacity.....	12 volt 26 amp.h
Height.....	636 mm..
Wide	240 mm..
Weight.....	25 kg.



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2 TECHNICAL DESCRIPTION

2.1 Electrical

The electrical system of the beacon light system comprises of solar panels, charge regulator, and navigation lantern.

2.2 Solar panels

The solar panels are high power moduls with multiply-crystalline solar cells the front side of the panel is made of low iron tempered glass, with EVA laminate and TPT backsheet.

The frame is made of anodized aluminum,

electrical specifications:

Open circuit voltage (Voc)	20.4V
Maximum Power current (Ipm)	0.41A
Maximum power voltage (Vpm)	17.3V
Power at STC (Pm)	7 watts
Short circuit current (Isc)	0.45A
Maximum system voltage	715V DC
Operating temperature	-40°C to +60°C

2.3 Charge regulator

The integrated charge regulator is an advanced battery management controller that provides all the necessary functions to ensure correct battery maintenance.

The charge regulator is set for 12V (6-cell) batteries and will charge according to the batterie charge status.

A fully charged battery will be kept at a 'float' voltage of 13,8V. This value is at 20°C .

The battery is protected against deep discharge; when the battery voltage drops below 10,8V, the load is switched off. Charging will continue as normal in this state, and when the battery voltage has reached 12,2 volt the load will be switched on again.

All values mentioned above are factory programmed be carefull to alter the values because of risk of mallfunction of the complete system.

For programming the beacon see separate programming manual.

2.4 Battery set

The battery is placed within the beacon,

The battery consists of two 12 volt 26 Ah VRLA Lead Acid battery.



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3 INSTALLATION AND SETUP

3.1 Unpacking instructions

The light system is placed in an carton box.

In every means of transport it is nessecary to give special attention not to damage the system.

Total weight of the system appr. 25 kg.

At delivery the battery of the system is fully charged.

Mounting, commission and maintenance of the beacon light system should be done by skilled persons equipped with personal protection devices (protection glasses, gloves), smoking and open fire is prohibited.

When working on the system only non sparking tools should be used.

Injudicious procedures can cause short-circuits with high currents, with danger of fire, explosion and personal injury.

3.2 Initial inspection

The light system contents include:

- Beacon light system
- Maintenance manual

3.3 Testing the light

Verify that the light supply voltage is within the range of the system voltage. Cover the daylight sensor, after about 30 secs the light will switch on. If the beacon does not emit light and supply voltage is with in range (12 - 13,8 volt DC.) the light must be replaced and send back to the factory for repair.

3.4 Installation and or storage of the light

The light is deliverd in SLEEP mode, this means that the light is turned off, the solar panels will charge the battery's in this SLEEP mode. To turn the light back ON, the black tape in front of the daylight sensor needs to be removed. When the black tape is removed from the daylight sensor, cover the daylight sensor and after about 30 secs the light will switch on. To storage the light for longer periode of time, cover the daylight sensor by means of black tape, after 24hours the light will turn off and is ready for storage, or for charging the battery's.



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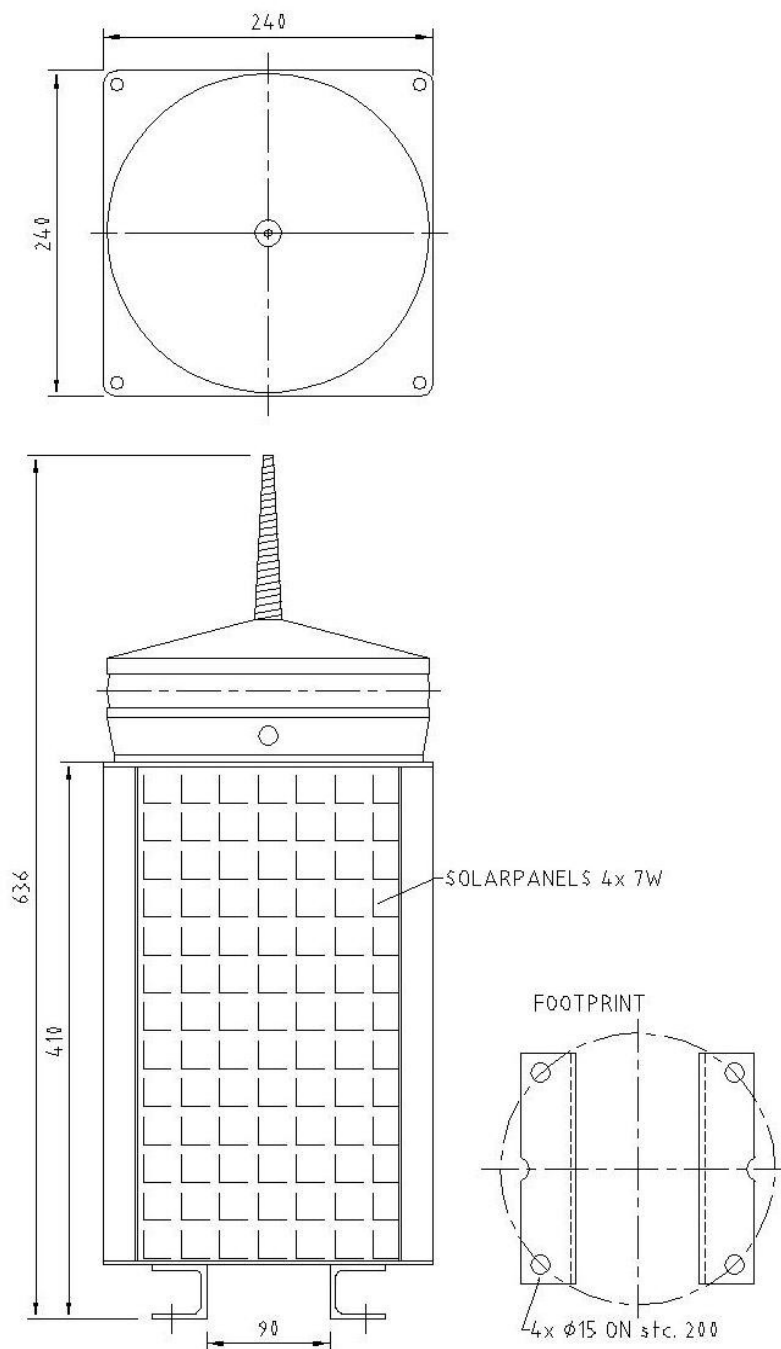


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3.5 Mounting the system

When hoisting the system to it's position special attention must be given not to damage the solar panels and battery box.

Bolt the system to the structure by means of bolts, washers and nuts.





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4 TROUBLE SHOOTING

Following is a guide for field troubleshooting the beacon light system.

4.1 Preliminary verification

4.1.1 Mechanical Verification

Verify that all bolts are firmly tightened.

Verify that all cables are intact and that all connections are firmly seated.

Verify all wiring.

4.1.2 Configuration Verification

Verify flash code.

4.1.3 Electrical Verification

Verify by means of the remote control that the power supply voltage is within range of 12 to 13,8 volt DC.

Check the proper working of the light by covering the daylight sensor on the lantern side, the lantern will emit it's character after appr. 30 secs.

4.2 Trouble shooting tips

Verify supply voltage of the battery, this voltage should be in range between 12 - 13,8 volt DC.

The maximum voltage across the battery may not be higher then 13,8 volts if a higher voltage is recognized verify the charge regulator settings, see programming manual.

If voltages of the solar panel and battery are present and in range but the lighth will not switch on when the daylight sensor is darkened check charge regulator settings, see programming manual.



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5 MAINTENANCE

CAUTION: *Do not use the following substances on the lens:* acetone, alcohol, benzene, carbon tetrachloride, fire extinguisher fluid, dry cleaning fluid, lacquer thinner, pumice soaps, or kitchen scouring compounds.

Inspect the system annually for damage. Any housing damage must be promptly repaired or replaced to minimize internal corrosion.

Inspect electrical wiring for corrosion and loose contacts.

The routine maintenance interval for the system is once per year.

The voltage controller is placed in within the navigation lantern.

5.1 Battery set

The battery is placed within the lantern house.

The battery is two each 12volt 26 AH lead acid maintenance free VRLA battery

Check the voltage range of the battery set.

5.2 Navigation light

Check the proper working of the navigation lantern.

5.3 Solar panels

Check if one of the solar panels are damaged.

6 CLEANING SCHEDULE

The solar panels, lantern lens, lantern housing surfaces should be cleaned as required by local conditions (once a year minimum).

To clean:

- Use a soft cloth or soft bristle brush, wash the solar panels, lantern lens, lantern housing, and beacon surfaces with water and a mild nonabrasive soap or detergent.
- After wetting, remove any caked dirt or mud with the hand, not with any instrument or scraper.
- Rinse with clear water.
- Remove grease or oil using hexane or kerosene. Wash with a mild non-abrasive soap or detergent and dry.



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7 EC DECLARATION OF CONFORMITY

The Manufacturer of the Product covered by this Declaration is:

I.T.O. Vaarwegmarkering BV, 's Gravendijkseweg 23
2201 CZ Noordwijk, The Netherlands

The Products Covered by this Declaration
Solar powered beacon type SPB70

The Basis on which conformity is being declared are the following directives and standards:

89/336/EEC Electromagnetic Compatibility directive, including EN-IEC61000-6-4:2007 and
EN-IEC 61000-6-2:2005

The manufacturer hereby declares under his sole responsibility that the product identified
above comply in accordance with the mentioned harmonized standards.

Signed : A.C. de Ruiter
Authority : Managing Director
Place and date of issue : Noordwijk, 13 May 2012





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DESIGN. ENGINEERING. PRODUCTION.

Inhouse-innovation, global availability.

AIDS TO NAVIGATION:
beacons, lanterns, leading lights

OFFSHORE SYSTEMS:
helideck and obstruction lighting

WIND FARM SOLUTIONS:
lighting and radar reflectors



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