



Certificate no.:
TAE00004UN

TYPE APPROVAL CERTIFICATE

This is to certify:

that the photovoltaic panel cable penetration on yachts

with type designation(s)

Flat wire pin cover spiral type PC-S-02

issued to

Sunreef Venture S.A.

Gdańsk, Poland

is found to comply with

DNV rules for classification – Yachts

Application:

Approved for use as photovoltaic panel cable penetration on yachts. The installation is only be intended in decks / walls of the open deck, made of FRP material and not in the hull underwater area.

For further details see Application/Limitations on page 2 of this certificate.

Issued at **Høvik** on **2024-01-22**

This Certificate is valid until **2029-01-21**.

for **DNV**

DNV local unit: **Gdansk CMC**

Approval Engineer: **Carsten Hunsalz**

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Form code: TA 281

Revision: 2023-09

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Product description

Flat wire pin cover spiral type PC-S-02, according drawing number 03, dated 21.12.2023.

Approved for use as photovoltaic panel cable penetration on yachts.

Material: ROSA ABS V0 FR

Length: 10 – 100 mm

Outer Diameter: 10,5 mm (10mm)

Dimension opening for flat wire: 7,2 x 0,75 mm

The installation process is described with document No.:

04-101-Hull penetrations for Solar panels 3d pin and inner box dated 28.04.2023.

The installation is described with the drawing "Cross-section, Flat wire passage through the composite using a 3D printed pin" drawing number N669-002 Revision 02 dated 21.12.2023.

Application/Limitation

With this certificate the "3D wire pin cover including the installation process" is approved. Photovoltaic modules, wires or the junction boxes are not included.

Approved for use as photovoltaic panel cable penetration on yachts. The installation is only be intended in decks / walls of the open deck, made of FRP material and not in the hull underwater area.

The approval is intended for all types of yachts up to 500 GT and maximum 60 meters.

Approved for watertightness up to a design pressure of 0,67 bar, test pressure 1 bar

The systems must not be installed in decks / walls if fire- or gastight properties are required.

From structural point of view, the following shall be observed:

- only be used in panel areas
- not be used in areas of any supporting structure like stringers, etc. inside and outside
- not be used in area where slamming pressures are expected
- the socket shall be fully glued
- The outside e-glass panel shall be glued all over and assure the water resistant of the structure

Each product is to be supplied with its manual for installation, use and maintenance.

Type Approval documentation

Pressure Test Report for water- tightness: Sunreef Yachts No.: SP-0001, dated 23.11.2023.

Flat wire pin cover spiral type PC-S-02, drawing number 03, dated 21.12.2023.

Installation process, document No.: 04-101-Hull penetrations for Solar panels 3d pin and inner box, dated 28.04.2023.

Drawing "Cross-section, Flat wire passage through the composite using a 3D printed pin"

No.: N669-002 Revision 02 dated 21.12.2023.

Tests carried out

Pressure tests according to DNV-CP-0165 Sec. 2 Ch. 4.

Marking of product

The product or packing is to be marked with name of manufacturer and type designation.

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the Type approval are complied with and that no alterations are made to the product design or choice of materials.

The main elements of the assessment are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Routine Tests (RT) checked (if not available tests according to RT to be carried out)
- Review of type approval documentation
- Review of possible change in design, materials and performance
- Ensuring traceability between manufacturer's product type marking and Type Approval Certificate.

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE