



CERTIFICATE NUMBER
EFFECTIVE DATE
EXPIRY DATE
ABS TECHNICAL OFFICE

26-0700604-PDA
27-Aug-2026
26-Aug-2031
Rio de Janeiro Engineering Admin

CERTIFICATE OF Product Design Assessment

This is to certify that a representative of this Bureau did, at the request of

PAN ELECTRIC INDUSTRIA ELETROELETRONICA LTDA

located at

**RUA LUIZ PEDRO DE MARCO 799-CONCEICAO, , BENTO
GONCALVES, RIO GRANDE SUL, Brazil, 95.701-040**

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

Product: Cable, Medium Voltage
Model: PANNAV M PN, PNB and PSBSC
Endorsements:
Tier: 3 - Type Approved, unit certification not required

This Product Design Assessment (PDA) Certificate remains valid until 26/Aug/2031 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

American Bureau Of Shipping

Igor Ennes Vidal, Principal Engineer

NOTE: This certificate evidences compliance with one or more of the Rules, Guides, standards or other criteria of ABS or a statutory, industrial or manufacturer's standards. It is issued solely for the use of ABS, its committees, its clients or other authorized entities. Any significant changes to the aforementioned product without approval from ABS will result in this certificate becoming null and void. This certificate is governed by ABS Rules 1-1-A3/5.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2010)

PAN ELECTRIC INDUSTRIA ELETROELETRONICA LTDA

RUA LUIZ PEDRO DE MARCO 799-CONCEICAO

BENTO GONCALVES RIO GRANDE SUL

Brazil 95.701-040

Telephone: 55-54-2102 3333

Fax: 55-54-2102 3333

Email: carina@pan.com.br

Web: www.pan.com.br

Tier: 3 - Type Approved, unit certification not required

Product: Cable, Medium Voltage
Model: PANNAV M PN, PNB and PSBSC
Endorsements:

Intended Service:
Power Cables for Ships and Offshore Installations.

Description:
Single and three-core power cables with extruded solid insulation for rated voltages 3,6/6 kV up to 6/10 kV. Flame retardant, fire resistant, halogen free, low smoke emission cables for medium voltage power circuits.

Type: M PN
Conductor: Tinned copper class 5
Conductor semi-conducting screen
Insulation: EPR 90
Insulation screening
Inner covering: SHF1
Oversheath: SHF 1 or SHF 2

Type: M PNB
Conductor: Tinned copper class 5
Conductor semi-conducting screen
Insulation: EPR 90
Insulation screening
Inner covering: SHF1
Armour/Braid: Metal wire (tin or galvanized)
Oversheath: SHF 1 or SHF 2

Type: M PSBSC
Conductor: Tinned copper class 5
Conductor semi-conducting screen
Insulation: EPR 90
Insulation screening
Inner sheath: SHF 1 or SHF 2
Armour/Braid: Metal wire armour (tin or galvanized)

Number of cores and cross sectional areas: 1 core x 10 to 630 mm²; 2 to 4 cores x 10 to 185 mm²

Rating:
Voltage class: 3,6/6 kV, 6/10 kV
Temperature class: 90°C

Service Restriction:
1. Unit certification is not required except where they are used for electric propulsion systems. All propulsion cables, other than internal wiring in control gears and switchboards, are to be subjected to dielectric and insulation tests in the presence of the Surveyor (see 4-8-5/5.17.11 of the Marine Vessel Rules).
2. If the manufacturer or purchaser request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.

Comments:
1. The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.
2. The following markings are to be provided in accordance with IEC 60092-350: identification of origin (manufacturer's name or trade name); rated voltage (U₀/U) and construction (number of cores and cross-sectional area)

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of conductor).

Notes/Drawing/Documentation:

Drawing No. DATABOOK FOR TYPE APPROVAL PURPOSE, DATABOOK FOR TYPE APPROVAL PURPOSE, Revision: -

Drawing No. PROTOTYPE TEST FOR MEDIUM VOLTAGE ELECTRIC CABLES, PROTOTYPE TEST FOR MEDIUM VOLTAGE ELECTRIC CABLES, Revision: -

Drawing No. 2601102-0-001-1, RELATORIO DE ENSAIOS DE PRODUTOS (REP)-PRODUCT TEST REPORT, Revision: -

Drawing No. LAT-EFEI-500-2025, RELATORIO DE ENSAIO-TEST REPORT, Revision: 0, Pages:

Drawing No. 2601102-0-001, RELATORIO DE ENSAIOS DE PRODUTOS (REP)-PRODUCT TEST REPORT, Revision: -

Drawing No. 003-2026, INSPECTION REPORT, Revision: -

Drawing No. 2302019-1-002, RELATORIO DE ENSAIOS DE PRODUTOS (REP)-PRODUCT TEST REPORT, Revision: -

Drawing No. 003-05-2024, INSPECTION REPORT, Revision: -

Drawing No. 2302019-1-001, RELATORIO DE ENSAIOS DE PRODUTOS (REP)-PRODUCT TEST REPORT, Revision: -

Drawing No. 001-05-2026, INSPECTION REPORT, Revision: -

Drawing No. 7208666-A, PROTOTYPE TESTING REPORT, Revision: -

Drawing No. 136-2024, RELATORIO DE ENSAIO-TEST REPORT, Revision: 0

Drawing No. 3240625-1, RELATORIO DE ENSAIO (RAE)-TEST REPORT, Revision: -

Drawing No. 001-05-2024, INSPECTION REPORT, Revision: -

Drawing No. 3230625-1, RELATORIO DE ENSAIO (RAE)-TEST REPORT, Revision: -

Terms of Validity:

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STANDARDS**ABS Rules:**

2026 Rules for Conditions of Classification, Part 1A: 1A-1-4/7.7, 1A-1-A3, 1A-1-A4, which covers the following:

2026 Rules for Building and Classing Marine Vessel Rules: 4-8-3/9, 4-8-5/3.7.6

2026 Rules for Conditions of Classification - Offshore Units, Part 1B: 1B-1-4/9.7, 1B-1-A2, 1B-1-A3, which covers the following:

2026 Rules for Building and Classing Offshore Units: 4-3-4/7

National:

NA

International:

IEC 60092-354:2020

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IEC 60092-350:2020

IEC 60092-360:2021

IEC 60811:2012

IEC 60754-1:2011+Amd.1:2019

IEC 60754-2:2011+Amd.1:2019

IEC 60684-2: 2025

IEC 60332-1-1:2025

IEC 60332-1-2:2025

IEC 60332-3-22:2018

IEC 61034-1:2005+Amd.1:2013+Amd.2:2019

IEC 61034-2:2005+Amd.1:2013+Amd.2:2019

Government:

NA

EUMED:

NA

OTHERS:

NA