



# DET NORSKE VERITAS

## TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. **E-12332**

This is to certify that the  
**Low Voltage Cable**

with type designation(s)  
**AFUMEX NAU XHTCUA 150/250 V, AFUMEX NAU XOTCUA 150/250V**

Manufactured by  
**PRYSMIAN SPAIN, S.A.**  
**Vilanova i la Geltrú Barcelona, Spain**

is found to comply with  
**Det Norske Veritas' Rules for Classification of Ships, High Speed & Light Craft and Det Norske Veritas' Offshore Standards**

**IEC 60092-376 (2003-05)**  
**IEC 60332-3-22 (2009-02)**  
**IEC 60754-1/2 (2011-11)**  
**IEC 61034-2 (2005-04)**

Application  
**Control and instrumentation.**  
**Flame retardant Cat. A. Halogen free. Low smoke.**

Type	Voltage class (V)	Temp. class (°C)
<b>AFUMEX NAU XHTCUA 150/250 V</b>	<b>150/250</b>	<b>90</b>
<b>AFUMEX NAU XOTCUA 150/250V</b>	<b>150/250</b>	<b>90</b>

This Certificate is valid until **2017-06-30**.

Issued at **Høvik** on **2013-04-11**

DNV local station: **Barcelona**

Approval Engineer: **Ivar Bull**

for **Det Norske Veritas AS**

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**Marit Laumann**  
**Head of Section**

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.

If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 2 million. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.

## Product description

Type: AFUMEX NAU XHTCUA 150/250 V, AFUMEX NAU XOTCUA 150/250V  
 Construction:  
 Conductors: Plain or tinned, stranded copper. Class 2 or class 5  
 Core insulation: HF XLPE  
 Screen: Individual or collective screen of Al/PE tape with tinned copper drain wire  
 Inner covering: Tape or Halogen free compound (for cables > 10 mm<sup>2</sup>)  
 Metal covering: Plain or tinned copper wire braid  
 Outer sheath: SHF1

Number of cores x conductor cross-section mm <sup>2</sup>	Overall diameter mm
1 x2 x 0,75	10,7
1 x2 x 2,5	12,6
2 x2 x 0,5	14,6
2 x2 x 0,75	15,5
3 x2 x 0,75	15,4
3 x2 x 1,5	16,8
4 x2 x 0,75	16,8
5 x2 x 0,75	18,2
6 x2 x 0,75	19,4
7 x2 x 0,75	20,4
8 x2 x 0,75	21,5
9 x2 x 0,75	22,4
10 x2 x 0,75	23,6
11 x2 x 0,75	24,4
12 x3 x 0,75	25,2
2 x2 x 0,75	15,3
2 x2 x 1	16,4
2 x2 x 1,5	17,4
3 x2 x 0,75	14,5
3 x2 x 1	14,8
3 x2 x 1,5	15,6
4 x2 x 0,75	15,6
4 x2 x 1	16,2
4 x2 x 1,5	17,3
5 x2 x 0,75	16,9
5 x2 x 1	17,5
5 x2 x 1,5	18,5
6 x2 x 0,75	17,9
6 x2 x 1	18,6
6 x2 x 1,5	19,9
7 x2 x 0,75	18,8
7 x2 x 1	19,5
7 x2 x 1,5	20,9
8 x2 x 0,75	19,8
8 x2 x 1	20,6
8 x2 x 1,5	22,2
9 x2 x 0,75	20,6
9 x2 x 1	21,4
9 x2 x 1,5	23,1
10 x2 x 0,75	21,3
10 x2 x 1	22,5

Number of cores x conductor cross-section mm <sup>2</sup>	Overall diameter mm
10 x2 x 1,5	24,2
11 x2 x 0,75	22,1
11 x2 x 1	23,3
11 x2 x 1,5	25,0
12 x2 x 0,75	23,0
12 x2 x 1	24,0
12 x2 x 1,5	25,8
13 x2 x 0,75	23,7
13 x2 x 1	24,7
13 x2 x 1,5	26,6
14 x2 x 0,75	24,3
14 x2 x 1	25,4
14 x2 x 1,5	27,3
15 x2 x 0,75	25,1
15 x2 x 1	26,2
15 x2 x 1,5	28,2
16 x2 x 0,75	25,7
16 x2 x 1	26,8
16 x2 x 1,5	28,9
17 x2 x 0,75	26,3
17 x2 x 1	27,4
17 x2 x 1,5	29,5
18 x2 x 0,75	26,8
18 x2 x 1	27,9
18 x2 x 1,5	31,0
19 x2 x 0,75	27,3
19 x2 x 1	28,5
19 x2 x 1,5	31,7
20 x2 x 0,75	29,7
20 x2 x 1	31,9
20 x2 x 1,5	35,1
21 x2 x 0,75	31,0
21 x2 x 1	32,4
21 x2 x 1,5	35,6
22 x2 x 0,75	31,9
22 x2 x 1	33,3
22 x2 x 1,5	36,3
23 x2 x 0,75	32,4
23 x2 x 1	33,8
23 x2 x 1,5	36,9
24 x2 x 0,75	32,9
24 x2 x 1	35,0

Number of cores x conductor cross-section mm <sup>2</sup>	Overall diameter mm
24 x2 x 1,5	37,7
2 x3 x 0,75	16,6
2 x3 x 1	17,3
2 x3 x 1,5	18,5
3 x3 x 0,75	17,5
3 x3 x 1	18,1
3 x3 x 1,5	19,4
4 x3 x 0,75	19,0
4 x3 x 1	19,7
4 x3 x 1,5	21,0
5 x3 x 0,75	21,1
5 x3 x 1	22,0
5 x3 x 1,5	23,7
6 x3 x 0,75	22,9
6 x3 x 1	23,9
6 x3 x 1,5	25,8
7 x3 x 0,75	23,0
7 x3 x 1	23,9
7 x3 x 1,5	25,9
8 x3 x 0,75	24,0
8 x3 x 1	25,4
8 x3 x 1,5	27,1
9 x3 x 0,75	26,1
9 x3 x 1	27,2
9 x3 x 1,5	29,3
10 x3 x 0,75	28,0
10 x3 x 1	29,5
10 x3 x 1,5	31,9
11 x3 x 0,75	28,7
11 x3 x 1	30,2
11 x3 x 1,5	32,6
12 x3 x 0,75	29,1
12 x3 x 1	30,4
12 x3 x 1,5	32,8
13 x3 x 0,75	29,8
13 x3 x 1	31,3
13 x3 x 1,5	34,2
14 x3 x 0,75	30,4
14 x3 x 1	31,8
14 x3 x 1,5	34,8
15 x3 x 0,75	31,3
15 x3 x 1	32,7

Number of cores x conductor cross-section mm <sup>2</sup>	Overall diameter mm
15 x3 x 1,5	35,7
16 x3 x 0,75	31,2
16 x3 x 1	32,6
16 x3 x 1,5	35,6
1 x2 x 0,75	10,7
1 x2 x 2,5	12,6
2 x2 x 0,5	14,6
2 x2 x 0,75	15,5
3 x2 x 0,75	15,4
3 x2 x 1,5	16,8
4 x2 x 0,75	16,8
5 x2 x 0,75	18,2
6 x2 x 0,75	19,4
7 x2 x 0,75	20,4
8 x2 x 0,75	21,5
9 x2 x 0,75	22,4
10 x2 x 0,75	23,6
11 x2 x 0,75	24,4
12 x3 x 0,75	25,2
2 x2 x 0,75	15,3
2 x2 x 1	16,4
2 x2 x 1,5	17,4
3 x2 x 0,75	14,5
3 x2 x 1	14,8
3 x2 x 1,5	15,6
4 x2 x 0,75	15,6
4 x2 x 1	16,2
4 x2 x 1,5	17,3
5 x2 x 0,75	16,9
5 x2 x 1	17,5
5 x2 x 1,5	18,5
6 x2 x 0,75	17,9
6 x2 x 1	18,6
6 x2 x 1,5	19,9
7 x2 x 0,75	18,8
7 x2 x 1	19,5
7 x2 x 1,5	20,9
8 x2 x 0,75	19,8
8 x2 x 1	20,6
8 x2 x 1,5	22,2
9 x2 x 0,75	20,6
9 x2 x 1	21,4
9 x2 x 1,5	23,1
10 x2 x 0,75	21,3

Number of cores x conductor cross-section mm <sup>2</sup>	Overall diameter mm
10 x2 x 1	22,5
10 x2 x 1,5	24,2
11 x2 x 0,75	22,1
11 x2 x 1	23,3
11 x2 x 1,5	25,0
12 x2 x 0,75	23,0
12 x2 x 1	24,0
12 x2 x 1,5	25,8
13 x2 x 0,75	23,7
13 x2 x 1	24,7
13 x2 x 1,5	26,6
14 x2 x 0,75	24,3
14 x2 x 1	25,4
14 x2 x 1,5	27,3
15 x2 x 0,75	25,1
15 x2 x 1	26,2
15 x2 x 1,5	28,2
16 x2 x 0,75	25,7
16 x2 x 1	26,8
16 x2 x 1,5	28,9
17 x2 x 0,75	26,3
17 x2 x 1	27,4
17 x2 x 1,5	29,5
18 x2 x 0,75	26,8
18 x2 x 1	27,9
18 x2 x 1,5	31,0
19 x2 x 0,75	27,3
19 x2 x 1	28,5
19 x2 x 1,5	31,7
20 x2 x 0,75	29,7
20 x2 x 1	31,9
20 x2 x 1,5	35,1
21 x2 x 0,75	31,0
21 x2 x 1	32,4
21 x2 x 1,5	35,6
22 x2 x 0,75	31,9
22 x2 x 1	33,3
22 x2 x 1,5	36,3
23 x2 x 0,75	32,4
23 x2 x 1	33,8
23 x2 x 1,5	36,9
24 x2 x 0,75	32,9
24 x2 x 1	35,0
24 x2 x 1,5	37,7
2 x3 x 0,75	16,6

Number of cores x conductor cross-section mm <sup>2</sup>	Overall diameter mm
2 x3 x 1	17,3
2 x3 x 1,5	18,5
3 x3 x 0,75	17,5
3 x3 x 1	18,1
3 x3 x 1,5	19,4
4 x3 x 0,75	19,0
4 x3 x 1	19,7
4 x3 x 1,5	21,0
5 x3 x 0,75	21,1
5 x3 x 1	22,0
5 x3 x 1,5	23,7
6 x3 x 0,75	22,9
6 x3 x 1	23,9
6 x3 x 1,5	25,8
7 x3 x 0,75	23,0
7 x3 x 1	23,9
7 x3 x 1,5	25,9
8 x3 x 0,75	24,0
8 x3 x 1	25,4
8 x3 x 1,5	27,1
9 x3 x 0,75	26,1
9 x3 x 1	27,2
9 x3 x 1,5	29,3
10 x3 x 0,75	28,0
10 x3 x 1	29,5
10 x3 x 1,5	31,9
11 x3 x 0,75	28,7
11 x3 x 1	30,2
11 x3 x 1,5	32,6
12 x3 x 0,75	29,1
12 x3 x 1	30,4
12 x3 x 1,5	32,8
13 x3 x 0,75	29,8
13 x3 x 1	31,3
13 x3 x 1,5	34,2
14 x3 x 0,75	30,4
14 x3 x 1	31,8
14 x3 x 1,5	34,8
15 x3 x 0,75	31,3
15 x3 x 1	32,7
15 x3 x 1,5	35,7
16 x3 x 0,75	31,2
16 x3 x 1	32,6
16 x3 x 1,5	35,6

### Application/Limitation

The requirements of SOLAS Amendments Chapter II-1, Part D, Reg. 45, 5.2 (provision to be taken to limit Fire Propagation along Bunches of Cables or Wires) are fulfilled without any additional measures.

**Type Approval documentation**

Data sheets: HOM-8-A Dated 09/11 and HOM-7-A Dated 09/11  
 Test reports

**Tests carried out**

Standard	Issued	General description	Limitation
IEC 60092-350	2008-02	General construction and test methods of power, control and instrumentation cables for shipboard and offshore applications	
IEC 60092-351	2004-04	Insulating materials for shipboard and offshore units, power, control, instrumentation, telecommunication and data cables	
IEC 60092-376	2003-05	Cables for control and instrumentation circuits 150/250 V (300 V)	
IEC 60092-359	1999-08	Sheathing materials for shipboard power and telecommunication cables	
IEC 60332-1-2	2004-07	Tests on electric and optical fibre cables under fire conditions - Part 1-2: Test for vertical flame propagation for a single insulated wire or cable	
IEC 60332-3-22	2009-02	Tests on electric and optical fibre cables under fire conditions – Part 3-22: Test for vertical flame spread of vertically-mounted bunched wires or cables – Category A	Bunch test Category A
IEC 60754-1	1994-01	Test on gases evolved during combustion of materials from cables – Determination of the amount of halogen acid gas	Low Halogen: <0,5% Halogen
IEC 60754-2	2011-11	Test on gases evolved during combustion of materials from cables – Determination of the degree of acidity of gases evolved during the combustion of materials taken from electric cables by measuring pH and conductivity	Halogen free: pH > 4,3 Conductivity < 10µS
IEC 61034-1/2	2011-11	Measurement of smoke density of cables burning under defined conditions – Test apparatus, procedure and requirements	Light transmittance ≥60%

**Marking of product**

PRYSMIAN SAP - AFUMEX NAU XHTCUA or AFUMEX NAU XOTCUA - size – 150/250V – IEC 60332-3-22 - Lot No.

**Certificate retention survey**

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

The main elements of the survey are:

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

Survey shall be performed at least every second year.

END OF CERTIFICATE