DNV·GL

Certificate No:
TAE0000134

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Electric Power Cable

with type designation(s)
EXANE-ZH-CI - Circuit Integrity Multi-Conductor Cables, LSZH

Issued to
RSCC Wire & Cable LLC
East Granby CT, United States

is found to comply with
DNV GL rules for classification – Ships, offshore units, and high speed and light craft

Application :

Power. Fire resistant.

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.
Voltage class (kV) 0,6/1
Temp. class (°C) 95

Issued at **Høvik** on **2017-05-30**
This Certificate is valid until **2017-11-30**.
DNV GL local station: **New York**

Approval Engineer: **Ivar Bull**

for **DNV GL**

Andreas Kristoffersen
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.

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Job Id: **262.1-007169-4**
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Product description

Construction:	Exane-ZH-CI, Type LSX, Circuit Integrity Cables, LSZH
Conductor:	Stranded tinned copper + Mica Tape
Insulation:	XLPO (type LSX)
Shields:	Individual shield (IS) and /or overall shield (OS) aluminium mylar with drain wire or tinned copper braid (OBS). Pairs (P) & Triads (T) & Multi-Conductors (C).
Filler:	Halogen Free (as required)
Sheath:	SHF2 (type L)

Multicores:			
2,3,4,5,6,7,8,9,10,11,12,14,16,18,19,20,22,24,26,30,37,44,60	0,96	18	Exane-ZH-CI-2C18-1KV
2,3,4,5,6,7,8,9,10,11,12,14,16,18,19,20,22,24,26,30,37,44,60	1,23	16	
2,3,4,5,6,7,8,9,10,11,12,14,16,18,19,20,22,24,26,30,37,44,60	1,94	14	
2,3,4,5,6,7,8,9,10,11,12,14,16,18,19,20,22,24,26,30,37,44,60	3,08	12	
2,3,4,5,6,7,8,9,10,11,12,14,16,18,19,20,22,24,26,30,37,44,60	5,53	10	
2,3,4,5	7,6	8	
2,3,4,5	12,5	6	
2,3,4,5	18,6	5	
2,3,4,5	21,5	4	
2,3,4,5	25,8	3	
2,3,4,5	30,7	2	
2,3,4,5	46,3	1	
2,3,4,5	56,5	1/0	
2,3,4,5	66,1	2/0	
2,3,4,5	92,9	3/0	
2,3,4,5	113	4/0	
2,3,4	133	262	
2,3,4	159	313	
2,3,4	189	373	
2,3,4	225	444	
2,3,4	271	535	
2,3,4	303	600	
2,3,4	328	646	
2,3,4	394	777	
2,3,4,5,6,7,8,9,10,11,12,14,16,18,19,20,22,24,26,30,37,44,60	0,96	18	Exane-ZH-CI-2C18-OS-1KV
2,3,4,5,6,7,8,9,10,11,12,14,16,18,19,20,22,24,26,30,37,44,60	1,23	16	
2,3,4,5,6,7,8,9,10,11,12,14,16,18,19,20,22,24,26,30,37,44,60	1,94	14	
2,3,4,5,6,7,8,9,10,11,12,14,16,18,19,20,22,24,26,30,37,44,60	3,08	12	
2,3,4,5,6,7,8,9,10,11,12,14,16,18,19,20,22,24,26,30,37,44,60	5,53	10	
2,3,4,5,6,7,8,9,10,11,12,14,16,18,19,20,22,24,26,30,37,44,60	0,96	18	Exane-ZH-CI-2C18-OBS-1KV
2,3,4,5,6,7,8,9,10,11,12,14,16,18,19,20,22,24,26,30,37,44,60	1,23	16	
2,3,4,5,6,7,8,9,10,11,12,14,16,18,19,20,22,24,26,30,37,44,60	1,94	14	
2,3,4,5,6,7,8,9,10,11,12,14,16,18,19,20,22,24,26,30,37,44,60	3,08	12	
2,3,4,5,6,7,8,9,10,11,12,14,16,18,19,20,22,24,26,30,37,44,60	5,53	10	
2,3,4,5	7,6	8	
1,2,3,4,5,6,7,8,9,10,12,14,16,18,19,20,22,24 PAIRS	0,96	18	Exane-ZH-CI-2P18-ISOS-1KV
	1,23	16	
	1,94	14	Exane-ZH-CI-1P18-IS-1KV
	3,08	12	Exane-ZH-CI-1P18-OS-1KV
	5,53	10	
1,2,3,4,5,6,7,8,9,10,12,14,16,18,19,20,22,24 TRIPLES	0,96	18	Exane-ZH-CI-2T18-ISOS-1KV
	1,23	16	
	1,94	14	Exane-ZH-CI-1T18-IS-1KV
	3,08	12	Exane-ZH-CI-1T18-OS-1K
	5,53	10	

Application/Limitation

The cable may be installed and sized according to IEC 60092-352 provided Cable ends with flexible rope stranded conductors are to be terminated using approved compression terminals intended and designed for these conductors.

This type of cable is fire resistant according to IEC 60331-21.

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

Tests carried out

Standard	Issued	General description	Limitation
IEEE1580	2010	IEEE Recommended Practice for Marine Cable for Use on Shipboard and Fixed or Floating Facilities	
IEC 60331-21	1999-04	Tests for electric cables under fire conditions – Circuit integrity – Part 21: Procedures and requirements – Cables of rated voltage up to and including 0,6/1,0 kV	Minimum 90 min + 15 min cooling down time
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	2011-11	Test on gases evolved during combustion of materials from cables - Part 1: Determination of the halogen acid gas content	Low Halogen:
IEC 60754-2	2011-11	Test on gases evolved during combustion of materials from cables - Part 2: Determination of acidity (by pH measurement) and conductivity	Halogen free:
IEC 61034-1/2	2013-07 2013-09	Measurement of smoke density of cables	IEC 61034-1/2

Marking of product

EXANE-ZH-CI - Type LSX - IEEE1580 - Type designation - number and size of conductors – Voltage-
IEC 60331-21 - IEC 60332-3-22 – IEC 60754-1/2 & IEC61034-1/2 - Year

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