

DNV

DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. E-9236

This Certificate consists of 3 pages

This is to certify that the

Low Voltage Cable

with type designation(s)

CS 90 MBZH MarineSignal & MarineSignal+ YZs 250 V

Manufactured by

Twentsche Kabelfabriek BV

HAAKSBERGEN, Netherlands

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 (2000-10)

IEC 60754-2 (1997-04)

IEC 61034-2 (2005-04)

Application

Control and instrumentation. Halogen free. Low smoke.

Voltage class (V) 250

Temp. class (°C) 90

Place and date

Høvik, 2008-11-21

for DET NORSKE VERITAS AS

Trond Sjøvåg
Head of Section



Local Office
DNV Rotterdam

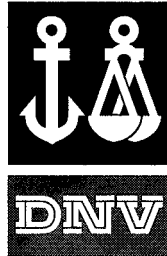
This Certificate is valid until

2012-06-30

Erik Hoffmann
Surveyor

Notice: 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.



Cert. No.: E-9236

File No.: 827.20

Product description

Type: CS 90 MBZH MarineSignal YZs HALOGEN FREE 250 V
 CS 90 MBZH MarineSignal+ YZs HALOGEN FREE 250 V

Construction

Conductors: Plain stranded copper class 2
 Core insulation: XLPE
 Inner covering: Non hygroscopic tape or Halogen free filler (MarineSignal+)
 Outer sheath: SHF1

Number of cores x conductors cross section mm ²	Nominal overall diameter mm
MarineSignal	
2 x 0,75	6,3
3 x 0,75	6,6
4 x 0,75	7,1
5 x 0,75	7,7
7 x 0,75	8,6
12 x 0,75	11,2
19 x 0,75	13,5
27 x 0,75	15,8
37 x 0,75	18,2

Number of cores x conductors cross section mm ²	Nominal overall diameter mm
2 x 1,0	6,7
3 x 1,0	7,0
4 x 1,0	7,6
5 x 1,0	8,5
7 x 1,0	9,2
12 x 1,0	12,1
19 x 1,0	14,8
27 x 1,0	17,3
37 x 1,0	20,0
MarineSignal+	

Number of cores x conductors cross section mm ²	Nominal overall diameter mm
2 x 0,75	6,7
3 x 0,75	7,0
4 x 0,75	7,5
5 x 0,75	8,2
2 x 1,0	7,3
3 x 1,0	7,5
4 x 1,0	8,2
5 x 1,0	8,9

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.

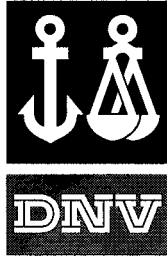
Type Approval documentation

Data sheets:

CS 90 MBZH MarineSignal YZs HALOGEN FREE 250 V dated 2008-10-31
 CS 90 MBZH MarineSignal+ YZs HALOGEN FREE 250 V dated 2008-10-31

Test reports:

TKF Rapport no. 301 dated 2004-10-10



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Tests carried out

Type tests according to IEC 60092-376, IEC 60332-3-22, IEC 60754-2 and IEC 61034-1/2.

Marking of product

Product to be marked:

TKF – Size – CS 90 MBZH MarineSignal YZs HALOGEN FREE 250 V

TKF – Size – CS 90 MBZH MarineSignal+ YZs HALOGEN FREE 250 V

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 Routines (RT) checked (if 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
- Ensuring traceability between manufacturer's product type marking and Type Approval Certificate.

Survey to be performed at least every second year.

END OF CERTIFICATE