



**DNV**

# DET NORSKE VERITAS

## TYPE APPROVAL CERTIFICATE

**CERTIFICATE NO. E-9239**

This Certificate consists of 3 pages

*This is to certify that the*  
**Low Voltage Cable**  
*with type designation(s)*

**CS 90 MBZH MarineCom YOZc & Marine2Com YOZ2c 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*  
Trond Sjøvåg  
Head of Section



Local Office  
DNV Rotterdam

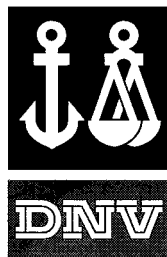
*This Certificate is valid until*

2012-06-30

*Erik Hoffmann*  
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-9239  
File No.: 827.20

## Product description

Type: CS 90 MBZH MarineCom -YOZc 250 V HALOGEN FREE  
CS 90 MBZH Marine2Com -YOZ2c 250 V HALOGEN FREE

### Construction:

Conductors: Plain stranded copper class 2  
Core insulation: XLPE  
Screen: Aluminium foil  
Inner covering: Non hygroscopic tape  
Metal covering: Tinned or plain copper wire braid  
Outer sheath: SHF1

Number of cores x conductors cross section	Nominal overall diameter
mm <sup>2</sup>	mm
<b>MarineCom</b>	
1 x 2 x 0,75	7,1
1 x 4 x 0,75	8,0
2 x 2 x 0,75	10,3
4 x 2 x 0,75	12,0
6 x 2 x 0,75	14,3
7 x 2 x 0,75	14,3
10 x 2 x 0,75	17,2
14 x 2 x 0,75	19,3
19 x 2 x 0,75	22,2

Number of cores x conductors cross section	Nominal overall diameter
mm <sup>2</sup>	mm
24 x 2 x 0,75	24,6
27 x 2 x 0,75	25,8
30 x 2 x 0,75	27,0
37 x 2 x 0,75	30,1
1 x 3 x 0,75	7,5
<b>Marine2Com</b>	
2 x 2 x 0,75	11,2
4 x 2 x 0,75	12,8

Number of cores x conductors cross section	Nominal overall diameter
mm <sup>2</sup>	mm
6 x 2 x 0,75	15,3
7 x 2 x 0,75	15,3
10 x 2 x 0,75	18,5
14 x 2 x 0,75	20,7
19 x 2 x 0,75	23,9
24 x 2 x 0,75	26,5
30 x 2 x 0,75	29,3
37 x 2 x 0,75	32,5

## 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

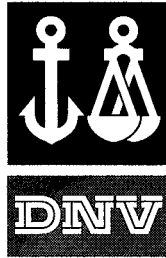
### Data sheets:

CS 90 MBZH MarineCom – YOZc 250 V HALOGEN FREE dated 2008-10-31

CS 90 MBZH Marine2Com – YOZ2c 250 V HALOGEN FREE dated 2008-10-31

### Test reports:

Rapport no. 301 dated 2004-10-12



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### Tests carried out

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

### Marking of product

Product to be marked:

TKF- Size – CS 90 MBZH MarineCom -YOZc or CS 90 MBZH Marine(2)Com –YOZ(2)c  
250 V HALOGEN FREE

### 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