

TYPE APPROVAL CERTIFICATE

Certificate No:
TAE000017G
Revision No:
3

This is to certify:

That the Low Voltage Cable

with type designation(s)

MarineSignal & MarineSignal+ YOZs 250 V, Marine(2)Com & Marine(2)Com+ YOZ(2)c 250 V

Issued to

B.V. Twentsche Kabelfabriek
Haaksbergen, Netherlands

is found to comply with

DNV GL rules for classification – Ships and offshore units

DNV GL class programme DNVGL-CP-0399 – Type approval – Electric cables

Application :

Control and instrumentation.

Products approved by this certificate are accepted for installation on all vessels classed by DNV.

Type	Rated voltage (V)	Temp. class (°C)
MarineSignal & MarineSignal+ YOZs 250 V	250	90
Marine(2)Com & Marine(2)Com+ YOZ(2)c 250 V	250	90

Issued at **Høvik** on **2021-07-08**

for **DNV**

This Certificate is valid until **2026-06-30**.

DNV local station: **Netherlands FIS**

Approval Engineer: **Ivar Bull**

Marta Alonso Pontes
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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Product description

MarineSignal & MarineSignal+ YOZs 250 V, c = common screen
 Marine(2)Com & Marine(2)Com+ YOZ(2)c 250 V 2 = individual screen
 Construction

Conductors: Plain (optional tinned) stranded copper class 2 or class 5
 Core insulation: XLPE
 Inner covering: Non hygroscopic tape or Halogen free filler (MarineSignal+)
 Metal Covering: Tinned or plain copper wire braid
 Outer sheath: SHF1

MarineSignal YOZs HALOGEN FREE 250 V

No of cores:	Cross sectional area [mm ²]
2, 3, 4, 5, 7, 12, 19, 27, 37	0,75 1,0

MarineSignal+ YOZs HALOGEN FREE 250 V

No of cores:	Cross sectional area [mm ²]
2, 3, 4, 5	0,75 1,0

Marine(2)Com -YOZ(2)c 250 V HALOGEN FREE & Marine(2)Com+ YOZ(2)c HALOGEN FREE 250 V Construction

Conductors: Plain (optional tinned) stranded copper class 2 or class 5
 Core insulation: XLPE
 Individual screen: Aluminum foil (2) types only
 Inner covering: Non hygroscopic tape or Halogen free filler (Marine(2)Com+)
 Metal Covering: Tinned or plain copper wire braid
 Outer sheath: SHF1

MarineCom -YOZc 250 V HALOGEN FREE & Marine(2)Com & Marine(2)Com+ YOZ(2)c HALOGEN FREE 250 V

No of cores:	Cross sectional area [mm ²]
1 to 27, 30, 32, 37 pairs	0,50, 0,75 1,0 1,5 2,5
1 to 27, 30, 32, 37 triples	0,50, 0,75 1,0 1,5 2,5
1 Quad	0,50, 0,75 1,0 1,5 2,5

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: [TKF Catalogue Marine & Offshore cables 2021 dated 2021-02-23](#)
 Test reports: [TKF Rapport no. RD000693-3 dated 2019-04-19](#)

Tests carried out

Standard	Release	General description	Limitation
IEC 60092-350	2020-01	Electrical installations in ships - Part 350: General construction and test methods of power, control and instrumentation cables for shipboard and offshore applications	
IEC 60092-360	2021-01	Electrical installations in ships - Part 360: Insulating and sheathing materials for shipboard and offshore units, power, control, instrumentation and telecommunication cables	
IEC 60092-376	2017-05	Cables for control and instrumentation circuits 150/250 V (300 V)	

IEC 60332-3-22	2018-07	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	Charred portion of sample does not exceed 2,5m above bottom edge of burner.
IEC 60754-1	2019-11	Test on gases evolved during combustion of materials from cables - Part 1: Determination of the halogen acid gas content	Low Halogen: <0,5% Halogen
IEC 60754-2	2019-11	Test on gases evolved during combustion of materials from cables - Part 1: Determination of the halogen acid gas content	Halogen free: pH > 4,3 Conductivity < 10µS/mm
IEC 61034-1/2	2019-11	Measurement of smoke density of cables burning under defined conditions – Part 1: Test apparatus Part 2: Test procedure and requirements	Low smoke Light transmittance >60%

Marking of product

TKF – Size – 250V – MarineSignal YOZs – {batch nr} or
 TKF – Size – 250V – MarineSignal+ YOZs – {batch nr} or

TKF – Size – 250V – MarineCom YOZc– {batch nr} or
 TKF – Size – 250V – Marine(2)Com YOZ(2)c– {batch nr}
 TKF – Size – 250V – Marine(2)Com+ YOZ(2)c– {batch nr}

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) and selected type tests (ref. to applicable class programs) checked (if not available these tests shall 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