

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Data transmission cables and systems**

with type designation(s)

SIENOPYR FR MI-VHH 2G62,5/125 3,1B200+0,8F600 + 2x1 Cu

Issued to

**Prysmian Kabel und Systeme GmbH
Neustadt b. Coburg, Bayern, Germany**

is found to comply with

DNV GL rules for classification – Ships, offshore units, and high speed and light craft**Application :****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**Issued at **Hamburg** on **2018-10-11**This Certificate is valid until **2023-10-10**.DNV GL local station: **Augsburg**for **DNV GL**Approval Engineer: **Carsten Hunsalz**

**Arne Schaarmann
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.



Product description

Type: MI-VHH 2G62,5/125 3,1B200+0,8F600 + 2x1 Cu

Conductor: Plain stranded copper
Core insulation: EPR

Fibre types: Multi-mode G62,5/125
Core diameter: $62,5 \pm 3,0 \mu\text{m}$
Cladding diameter: $125 \pm 2,0 \mu\text{m}$
Coating diameter: $245 \pm 10 \mu\text{m}$
Attenuation:
850 nm max 3,1 dB/km
1300 nm max 0,8 dB/km

Bandwidth:
850 nm min 200 MHz·km
1300 nm min 600 MHz·km
Numerical aperture: $0,275 \pm 0,015$

Metal covering: Braid copper wires
Sheath: SHF1

Number of cores x conductor cross-section	Overall dimensions
2x1,0 mm ² + 2xG62,5/125μm	13,3 ± 0,5mm

Application/Limitation

Hybrid fiber optical/Cu pair cable

Voltage (kV): 0,25
Temp. class (°C): 80

Temperature window
Operation: -20°C to +80°C
Storage: -40°C to +80°C

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

Type Approval documentation

Tests carried out

Standard	Issued	General description	Limitation
IEC 60092-376	2017-05	Cables for control and instrumentation circuits 150/250 V (300 V)	
IEC 60332-3-22	2018-03	Tests on electric 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: <0,5% Halogen

Job Id: **262.1-008096-7**
Certificate No: **TAE0000370**

Standard	Issued	General description	Limitation
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: pH > 4,3 Conductivity < 10µS/mm
IEC 61034-1/2	2013-06	Measurement of smoke density of cables burning under defined conditions – Test apparatus, procedure and requirements	Low smoke Light transmittance >60%
IEC 60794-1-1	2015-11	Optical fibre cables – Part 1-1: Generic specification – General	

Marking of product

Prysmian Kabel und Systeme GmbH – SIENOPYR FR MI-VHH 2G62,5/125 3,1B200+0,8F600 + 2x1 Cu 300 V - IEC 60332-3-22

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