DNV·GL

Certificate No:
TAE000036J

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Data transmission cables and systems

with type designation(s)
SIENOPYR FR PROFIBUS M-02Y(ST)CHX, SIENOPYR PROFIBUS M-02Y(ST)CHX MUD

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.

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Job Id: **262.1-008096-6**
Certificate No: **TAE000036J**

Product description

Type: M-02Y(ST)CHX 1 x 2 x 0,35 100 V or
M-02Y(ST)CHX 1 x 2 x 0,35 100 V MUD

Conductors: Plain stranded copper
Core insulation: Foamed PE
Screen Tinned copper wires
Outer sheath: SHF2 or SHF2 with extra sheath SHF MUD added by Draka Norway

Number of cores x conductor cross-section	Overall dimensions
mm^2	mm
1 x 2 x 0,35 SHF2	10,3±0,5
1 x 2 x 0,35 SHF MUD	12,5 ± 1,0

Table 107- Fieldbus cable specifications (IEC 61158-2 ed.1)

Cable parameter	**Type A**	**Type B**	**M-02Y(ST)CHX**
Impedance	135 to 165 Ω (f = 3 to 20MHz)	100 to 130 Ω (f > 100kHz)	150 +/- 15 Ω (f = 3 to 20MHz)
Capacity	< 30 pF/m	< 60 pF/m	max. 30pF/m (at 800 Hz)
Resistance	< 110 Ω/km	Not specified	max. 110 Ω/km
Conductor cross-sectional area	≥ 0,34 mm^2	≥ 0,22 mm^2	0,35 mm^2
Color of sheath non-IS	Violet	Not specified	Black
Color of inner cable conductor A (RxD/TxD-N)	Green	Not specified	Red
Color inner cable conductor B (RxD/TxD-P)	Red	Not specified	Green

Application/Limitation

SIENOPYR PROFIBUS

Voltage (kV): 0,1
Temp. class (°C): 80

By the termination of the cables the total strings of the cable to be kept through into the termination point as for coax cables.

Type Approval documentation

Tests carried out

Standard	**Issued**	**General description**	**Limitation**
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
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%

Standard	Issued	General description	Limitation
IEC 60332-1	2015-07	Tests on electric and optical fibre cables under fire conditions – Part 1-1:Test for vertical flame propagation for a single insulated wire or cable – Apparatus	Flame retardant small scale
NEK 606 Ed. 4	2009-05	Cables for offshore installations. Halogen-free and/or mud resistant. Technical specification.	Mud resistance test: IRM903 100°C 7d. Calcium Bromide 70°C 56d. Carbo Sea 70°C 56d or EDC 95/11 70°C 56d

Marking of product

Prysmian Kabel und Systeme GmbH - SIENOPYR FR PROFIBUS M-02Y(ST)CHX 1x2x0,35 mm^2 150 OHM – IEC 60332-1 or

"meter" "year" DRAKA NORSK KABEL SIENOPYR-PROFIBUS 150 ohm M-02Y(ST)CHX 1x2x0.35mm2 MUD-RESISTANT

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