



TYPE APPROVAL CERTIFICATE

Certificate No:
TAE000004E
Revision No:
4

This is to certify:

That the Data transmission cables and systems

with type designation(s)

**Cat 5e LAN cable S/FTP SHF1 or SHF2 Armored Class 1 solid or Class 5 stranded conductor,
Cat 6 LAN cable S/FTP SHF1 or SHF2 Armored Class 1 solid or Class 5 stranded conductor,
Cat 6A LAN cable S/FTP SHF1 or SHF2 Armored Class 1 solid or Class 5 stranded conductor,
Cat 7 LAN cable S/FTP SHF1 or SHF2 Armored Class 1 solid or Class 5 stranded conductor**

Issued to

**APS Cables & Connectors Oy
Helsinki, Finland**

is found to comply with

DNV GL rules for classification – Ships, offshore units, and high speed and light craft

Application :

Data communication cable / Horizontal cable

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

Issued at **Høvik** on **2021-08-02**

for **DNV**

This Certificate is valid until **2024-09-06**.

DNV local station: **Helsinki 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.



Name & Place of Manufacturer

DNV id : 10421261

Product description

Type(s):	Cat 5e LAN cable S/FTP SHF1 or SHF2 Armored Class 1 solid or Class 5 stranded conductor, Cat 6 LAN cable S/FTP SHF1 or SHF2 Armored Class 1 solid or Class 5 stranded conductor, Cat 6A LAN cable S/FTP SHF1 or SHF2 Armored Class 1 solid or Class 5 stranded conductor, Cat 7 LAN cable S/FTP SHF1 or SHF2 Armored Class 1 solid or Class 5 stranded conductor
Standards:	Category 5e, 6, 6A, or 7 LAN cable Installation/Horizontal cable according to: IEC 61156-5/6, EN 50288 (various parts)
Conductors:	Plain, stranded copper class 5 or solid conductor class 1
Core insulation:	Cellular Polyolefin
Individual	Al/polyester tape
Screen:	
Common screen:	Tinned, Copper wire braid
Inner sheath:	SHF1
Metal covering:	Galvanized steel, tinned copper or bronze wire braid. Coverage $\geq 80\%$.
Outer sheath:	SHF1 or SHF2

Conductor resistance @20C $\leq 69,5$ Ohm/km
 Characteristic impedance 100 ± 5 Ohm @ 100MHz

For further technical data please see datasheet.

Application/Limitation

Operation:	- 30°C to +80°C
Installation:	0°C to +50°C
Minimum bending radius:	20x OD (installation)
Pull maximum:	140 N

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:	See approval letter APS MOG S/FTP 4 pairs AWG23 SHF1 or SHF2, Armoured Rev 0. Dated 25.04.2021
Test report:	See approval letter Test report witnessed by DNV for Cat 7 LAN cable S/FTP cable dated 19.01.2021

Tests carried out

Standard	Issued	General description	Limitation
Class Program CP-0403	2019-07	DNV GL class programme CP-0403 Data communication cables - category Cables.	
IEC 61156-5	2009-05	Multicore and symmetrical pair/quad cables for digital communications - Part 5: Symmetrical pair/quad cables with transmission characteristics up to 1 000 MHz - Horizontal floor wiring - Sectional specification	Reference to requirement for category cable: Cat 6A (500MHz),
IEC 60332-3-22	2018-07	Tests on electric 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.

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:
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:
IEC 61034-1/2	2013-07 2013-09	Measurement of smoke density of cables	IEC 61034-1/2

Marking of product

APS Cables & Connectors – Cat 5e or Cat 6 or Cat 6A or Cat 7 LAN cable S/FTP SHF1 or SHF2 Armoured Class 1 solid conductor or Class 5 stranded conductor - DNV GL class programme CP-0403 - IEC 61156-5/6 - EN 50288 - IEC 60332-3-22 - Batch no.- Meter marking

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