

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

with type designation(s)

**Cat 6A LAN cable S/FTP SHF1 or SHF2 Unarmored Class 5 stranded conductor,
Cat 6A LAN cable S/FTP SHF1 or SHF2 Unarmored Class 1 solid 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 GL.**Issued at **Høvik** on **2019-09-04**This Certificate is valid until **2024-09-06**.DNV GL local station: **Helsinki FIS**Approval Engineer: **Ivar Bull**for **DNV GL****Trond Sjøvåg
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.



Job Id: **262.1-019121-2**
Certificate No: **TAE000004C**
Revision No: **4**

Name & Place of Manufacturer

DNV id : 10421261

Product description

Type(s): **Cat 6_A LAN cable S/FTP SHF1 or SHF2 Unarmored Class 5 stranded conductor, Cat 6_A LAN cable S/FTP SHF1 or SHF2 Unarmored Class 1 solid conductor**

Standards: Category 6_A LAN cable Installation/Horizontal cable according to:
IEC 61156-5, EN 50288-1

Conductors: Plain, stranded copper class 5 or solid conductor class 1

Core insulation: Cellular Polyolefine

Individual Screen: Al/polyester tape

Common screen: Tinned, Copper wire braid

Outer sheath: SHF1

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: 8x 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
Test report: See approval letter

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.
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:

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

Marking of product

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

APS Cables & Connectors Oy - Cat 6A LAN cable S/FTP SHF1 or SHF2 Unarmoured Class 1 solid conductor - DNV GL class programme CP-0403 - IEC 61156-5 - EN 50288-1 - 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