

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 Armored Class 5 stranded conductor, Cat 6A LAN cable S/FTP SHF1 Armored Class 1 solid conductor

Issued to

**AP Solutions Oy
Rovaniemi, Finland**

is found to comply with

**Det Norske Veritas' Rules for Classification of Ships, High Speed & Light Craft and Det Norske Veritas' Offshore Standards
Type Approval Programme No. 6-827.50-2****Application :****Data communication cable****Installation / Horizontal cable****Flame retardant in bunch Cat A. Halogen free, Low smoke****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**This Certificate is valid until **2019-09-07**.Issued at **Høvik** on **2015-10-06**DNV GL local station: **Helsinki**for **DNV GL**Approval Engineer: **Ivar Bull**

Marit Laumann
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: **262.1-019121-1**
Certificate No: **TAE000004E**

Name & Place of Manufacturer

DNV id : 10421261

Product description

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

Inner sheath: SHF1

Metal covering: Galvanized steel, tinned copper or bronze wire braid. Coverage $\geq 80\%$.

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

Tests carried out

Standard	Issued	General description	Limitation
TA Program	2014-08	DNV GL Type Approval Programme No 6-827.50-2	
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	2009-02	Flame retardance in bunch, cat. C	
IEC 60754-1	1994-01	Test on gases evolved during combustion of materials from cables – Determination of the amount of halogen acid gas	Low Halogen
IEC 60754-2	1999-07	Test on gases evolved during combustion of materials from cables – Determination of the degree of acidity of gases evolved during the combustion of materials taken	Halogen free

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Standard	Issued	General description	Limitation
		from electric cables by measuring pH and conductivity	
IEC 61034-1/2	2005-04	Measurement of smoke density of cables burning under defined conditions – Test apparatus, procedure and requirements	Low smoke Light transmittance >90%

Marking of product

APS Finland - Cat 6A LAN cable S/FTP Unarmoured Class 5 stranded conductor - DNV GL TA PROGRAMME NO. 6-827.50-2 CATEGORY - IEC 61156-5 - EN 50288-1 - IEC 60332-3-24 - Batch no.- Meter marking or

APS Finland - Cat 6A LAN cable S/FTP Unarmoured Class 1 solid conductor - DNV GL TA PROGRAMME NO. 6-827.50-2 CATEGORY - IEC 61156-5 - EN 50288-1 - IEC 60332-3-24 - Batch no.- Meter marking

Periodical assessment

The scope of the Periodical assessment is to verify that the conditions stipulated for the Type approval is 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 Production Sample Tests (PST) and Routines (RT) checked (if not available tests according to PST and 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 to be performed at least every second year.

END OF CERTIFICATE