

TYPE APPROVAL CERTIFICATE

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

with type designation(s)

Armada® PROFINET Type B 2x2x22/7 AWG

Issued to

Belcom Cables Ltd.**Elsenham, Essex, United Kingdom**

is found to comply with

DNV GL rules for classification – Ships, offshore units, and high speed and light craft**Application :****Data communication cables for indoor use.****Products approved by this certificate are accepted for installation on all vessels classed by DNV GL.**Issued at **Høvik** on **2020-08-28**This Certificate is valid until **2025-08-27**.DNV GL local station: **Manchester**for **DNV GL**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.



Job Id: **262.1-034322-1**
Certificate No: **TAE000041G**

Product description

Type(s): Armada® PROFINET Type B 2x2x22/7 AWG (Cat 5+)

Conductors: Stranded plain or tinned copper

Core insulation: Polypropylene (PP)

Common Screen: Alulaminat foil overlapped

Tinned copper braid min coverage min 85% (S)

Outer sheath: SHF1

Electrical data at 20°C

Rated voltage: 60V

Max loop Resistance: ≤ 120 Ohm/km

Signal run time $\leq 5,3$ ns/m

Characteristic Impedance 1-100 MHz: 100 ± 15 Ohm

Surface Transfer Impedance 10 MHz : ≤ 10 mOhm/m

Please refer to technical data sheet for detailed transmission properties.

Application/Limitation

For indoor use only.
Tensile load max 150N.

Temperature window

Operation: - 40°C to +75°C

Installation: 0 °C to +50°C

Place of manufacture :

DNV GL id: 172419

Type Approval documentation

Tests carried out

Standard	Release	General description	Limitation
DNVGL-CP-0403	2019-07	Data communication cables - category Cables.	
UL 444	2014-04	Communication Cables	
IEC 61156-5	2013-01	Symmetrical pair/quad cables for digital communications – Symmetrical pair/quad cables with transmission characteristics up to 1000MHz horizontal floor wiring.	Cat. 7 – 600MHz
ISO/IEC 11801	2010-04	Information technology – Generic cabling for customer premises, incl. Amd 1 and 2.	Ref. to requirements for category cable:
EN 50173-1	2011-06	Information technology – Generic cabling systems – Part 1. General requirements.	
EN 50288-4-1	2013-06	Multi-element metallic cables used in analogue and digital communication and control - Part 4-1: Sectional specification for screened cables characterised up to 600MHz – Horizontal and building backbone cables	
IEC 60332-3-22	2018-07	Tests on electric cables under fire conditions	Charred portion of

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		- Part 3-22: Test for vertical flame spread of vertically-mounted bunched wires or cables - Category A	sample does not exceed 2,5m above bottom edge of burner.
IEC 60754-1	2019-11	Test on gases evolved during combustion of materials from cables – Determination of the amount of halogen acid gas	Low Halogen: <0,5% Halogen
IEC 60754-2	2019-11	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 from electric cables by measuring pH and conductivity	Halogen free: pH > 4,3 Conductivity < 10µS
IEC 61034-1/2	2019-11	Measurement of smoke density of cables burning under defined conditions – Test apparatus, procedure and requirements	Low smoke

Marking of product

"Sequential length in metres" Armada® Profinet Type B DNVGL Approved - SHF1 - IEC60332-3-22 - "internal lot number"

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