



# Arctic Grade CAN Bus cable 1&2 pairs 0.75mm SHF2



**Store at :** -20 to +70 °C

**Install at :** -20 to +70 °C, **Bend minimum :** 20 times O.D.

**Operate at :** -65 to +80 °C, **Bend minimum :** 20 times O.D.

**Pull maximum :** 50N

## Design

**Conductor :** Stranded bare copper 24×0.20 (0.75mm<sup>2</sup>)

**Insulation :** Cellular polyolefin Ø2.95mm

**Pair :** No 2 insulated conductors stranded together into a pair

**Colour code :** 1.White/blue

**Screen on pair** : Aluminium/polyester tape (100%)

**Grounding wire** : Tinned copper 24×0.20 (0.75mm<sup>2</sup>) polyolefin insulated (nominal Ø2.40mm). Colour yellow/green.

**Assembling** : One screened pair with one grounding wire with fillers, wrapped with fire barrier tape

**Overall screen** : tinned copper braid (coverage ≥80%)

**Outer jacket** : black Fire Retardant and UV Resistant SHF2 material, LSZH (Ø 12.0mm)

**Marking** : APS Finland - ww/yy - ARCTIC GRADE CAN BUS Marine 1x2x0.75 +0.75mm SHF2 - IEC60332-3-22 Cat A - TK/lot + meter

## **Environmental properties and Fire Performances**

**Degree of acidity of gases** : IEC 60754-1, IEC 60754-2 (pH value ≥ 4,3 and Conductivity ≤10µS/mm)

**Halogen acid gas** : IEC 60754-1, IEC 60754-2 (Halogen acid gas emission ≤ 0.5%)

**Smoke Emission** : IEC 61034-2, EN 50268-2 (Transmittance) ≥ 60%)

**Toxicity of evolved gas** : EN 50305 9.2

**Flame retardant** : IEC 60332-1-2

**Fire retardant** : IEC 60332-3-22 Cat.A

**Ozone resistant** : IEC 60811-2-1

**LSZH SHF2** : IEC 60092-360

**Oil resistant** : IEC 60811, IRM 903

**MUD resistant** : upon request

**Water absorption** : IEC60811-1-3

**UV resistant** : IEC60811-2-1, ASTM-D-2565-92A

**Cold Bend** : CSA C22.2 (-65°C)

**Cold Impact** : CSA C22.2 (-55°C)

## Electrical characteristics (IEC60092-350, IEC61784, IEC61158)

**Operation voltage** : 100V

**Test voltage** : 1kV d.c. for 1 minute

**Resistance of the conductor @ 20°C** : ≤ 26.0 Ω/km for bare copper / ≤ 26.7 Ω/km for bare copper

**Insulation resistance @ 20°C** : ≥ 1GΩxkm (BUS conductor) / ≥ 10MΩxkm (earth conductor)

**Nominal Capacitance @ 800Hz** : 40 pF/m

**Average characteristic impedance** : 120 ± 10% @ 1MHz

**Nominal attenuation** : 13.2 dB/km @ 1MHz

## Ordering and delivery information

Pair count	P/N	O.D [mm]	Weight [kg/km]	Packaging
1 pair	OCBA1P075F2	12.0	225	drum 500m (+/-5%)
2 pairs	OCBA2P075F2	12.0	255	drum 500m (+/-5%)

## Other standards of reference

IEC 60092-370	Electrical installations in ships: Guidance on the selection of cables for telecommunication and data.
IEC 60092-360	Electrical installations in ships: Insulating and sheathing materials for shipboard and offshore units.
DNV TAP 827.50/2	Type Approval Program
ABS SVR	Rules for building and classing. Steel Vessels.
ABS SMR	Rules for building and classing. Steel vessels under 90 meters.
IEC 60811	Insulating and sheathing materials of electric cables - Test method

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# Arctic Grade Profibus cable 1&2 pairs 0.35mm<sup>2</sup> SHF2



**Store at :** -20 to +70 °C

**Install at :** -20 to +70 °C, **Bend minimum :** 20 times O.D.

**Operate at :** -65 to +80 °C, **Bend minimum :** 20 times O.D.

**Pull maximum :** 50N

## Design

**Conductor :** Stranded bare copper 7×0.25 (0.35mm<sup>2</sup> )

**Insulation :** Polyolefin Ø2.75mm

**Pair :** 2 insulated conductors stranded together into a pair

**Colour code :** 1.Green/red 2.Blue/brown

**Assembling :** No 1 pair with fillers or no 2 pairs stranded together into a compact core

**Screen :** Aluminium/polyester tape (100%) with tinned copper braid (coverage ≥60%)

**Outer jacket :** Black or purple Fire Retardant and UV Resistant SHF2 material, LSZH (Ø 9,6mm)

**Marking :** APS Finland - ww/yy - ARCTIC GRADE PROFIBUS MARINE ...x2x0.35mm<sup>2</sup>

SHF2 - IEC60332-3-22 Cat.A - TK/lot + meter

## **Environmental properties and Fire Performances**

**Degree of acidity of gases** : IEC 60754-1, IEC 60754-2 (pH value  $\geq 4,3$  and Conductivity  $\leq 10\mu\text{S}/\text{mm}$ )

**Halogen acid gas** : IEC 60754-1, IEC 60754-2 (Halogen acid gas emission  $\leq 0.5\%$ )

**Smoke Emission** : IEC 61034-2, EN 50268-2 (Transmittance)  $\geq 60\%$ )

**Toxicity of evolved gas** : EN 50305 9.2

**Flame retardant** : IEC 60332-1-2

**Fire retardant** : IEC 60332-3-22 Cat.A

**Ozone resistant** : IEC 60811-2-1

**LSZH SHF2** : IEC 60092-360

**Oil resistant** : IEC 60811, IRM 903

**MUD resistant** : upon request

**Water absorption** : IEC60811-1-3

**UV resistant** : IEC60811-2-1, ASTM-D-2565-92A

**Cold Bend** : CSA C22.2 (-65°C)

**Cold Impact** : CSA C22.2 (-55°C)

## **Electrical characteristics (IEC60092-350, IEC61784, IEC61158)**

**Operation voltage** : 100V

**Test voltage** : 1500V a.c. for 1 minute

**Resistance of the conductor @ 20°C :  $\leq 55.0 \Omega/\text{km}$**

**Insulation resistance @ 20°C :  $\geq 1\text{G}\Omega\text{xkm}$**

**Nominal Capacitance @ 800Hz :  $30 \text{ pF/m}$**

**Characteristic impedance :  $150 \Omega \pm 15 @ 1\text{MHz}$**

Nominal attenuation :	45 dB/km	@ 16MHz
	22 dB/km	@ 4MHz
	5 dB/km	@ 38,4 KHz
	3 dB/km	@ 9,6 KHz
Baudrate :	9.6 kBits/s	@ Max. 1200m
	19.2 kBits /	@ Max. 1200m
	93.75 kBits/s	@ Max. 1200m
	187.5 kBits /s	@ Max. 1000m
	500 kBits /s	@ Max. 400m
	1.5 MBits /s	@ Max. 200m
	12 MBits /s	@ Max. 100m

## Ordering and delivery information

Pair count	P/N	O.D [mm]	Weight [kg/km]	Packaging
1 pair	OPBA1P035F2	9.6	95	drum 500m (+/-5%)
2 pairs	OPBA2P035F2	9.6	120	drum 500m (+/-5%)

## Other standards of reference

IEC 60092-370	Electrical installations in ships: Guidance on the selection of cables for telecommunication and data.
IEC 60092-360	Electrical installations in ships: Insulating and sheathing materials for shipboard and offshore units.
DNV TAP 827.50/2	Type Approval Program
ABS SVR	Rules for building and classing. Steel Vessels.
ABS SMR	Rules for building and classing. Steel vessels under 90 meters.
IEC 60811	Insulating and sheathing materials of electric cables - Test method

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# Arctic Grade RS422 cables up to 4 pairs, armoured, SHF2



**Store at :** -20 to +70 °C

**Install at :** -20 to +70 °C, **Bend minimum :** 20 times O.D.

**Operate at :** -65 to +80 °C, **Bend minimum :** 20 times O.D.

**Pull maximum :** 50N

## Design

**Conductor** : stranded tinned copper 7×0.20mm AWG24 (0.60mm, 0.22mm<sup>2</sup>)

**Insulation** : polyethylene Ø1.10mm

**Pair** : no 2 insulated conductors stranded together into a pair

**Colour code** : 1.White/blue 2.White/orange 3. White/green 4.White/brown

**Assembling** : 1, 2 or 4 pairs assembled together into a compact core

**Overall screen** : aluminium/polyester tape (coverage 100%) with tinned copper drain wire 7×0.20mm.

**Inner jacket** : black Fire Retardant SHF1 material, LSZH (Ø 7.0mm)

**Armour** : galvanized steel, tinned copper or bronze wires braid (nominal coverage 85%)

**Outer jacket** : black Fire Retardant and UV Resistant SHF2 material, LSZH (nominal thickness 1.5mm)

**Marking** : APS Finland - ww/yy - ARCTIC GRADE RS422 SHF2 ARMOURED CABLE ...  
PAIRS 24AWG 100 OHM - IEC60332-3-22 Cat A - lot + m

## Environmental properties and Fire Performances

**Degree of acidity of gases** : IEC 60754-1, IEC 60754-2 (pH value ≥ 4,3 and Conductivity ≤10µS/mm)

**Halogen acid gas** : IEC 60754-1, IEC 60754-2 (Halogen acid gas emission ≤ 0.5%)

**Smoke Emission** : IEC 61034-2, EN 50268-2 (Transmittance) ≥ 60%)

**Toxicity of evolved gas** : EN 50305 9.2

**Flame retardant** : IEC 60332-1-2

**Fire retardant** : IEC 60332-3-22 Cat.A

**Ozone resistant** : IEC 60811-2-1

**LSZH SHF2** : IEC 60092-360

**Oil resistant** : IEC 60811, IRM 903

**MUD resistant** : upon request

**Water absorption** : IEC60811-1-3

**UV resistant** : IEC60811-2-1, ASTM-D-2565-92A

**Cold Bend** : CSA C22.2 (-65°C)

**Cold Impact** : CSA C22.2 (-55°C)

## Electrical characteristics

**Operation voltage** : 100V

**Test voltage** : 2000V d.c. for 1 minute

**Resistance of the conductor @ 20°C** :  $\leq 90 \Omega/\text{km}$

**Insulation resistance @ 20°C** :  $\geq 1\text{G}\Omega\text{xkm}$

**Nominal Capacitance @ 800Hz** : 52 pF/m

**Characteristic impedance** :  $100 \pm 15 \Omega @ 1\text{MHz}$

**Nominal attenuation** : 28 dB/km @ 1MHz

## Ordering and delivery information

Pair count	P/N	O.D [mm]	Weight [kg/km]	Packaging
1 pair	ORS2A1P24Fx2	12.0	195	drum 500m (+/-5%)

Pair count	P/N	O.D [mm]	Weight [kg/km]	Packaging
2 pairs	ORS2A2P24Fx2	12.0	195	drum 500m (+/-5%)
4 pairs	ORS2A4P24Fx2	12.0	215	drum 500m (+/-5%)

For armour replace x with “A” for Galvanized Steel Wire Braid, “T” for Tinned Copper Wire Braid, “B” for Bronze Wire Braid.

## Other standards of reference

IEC 60092-370	Electrical installations in ships: Guidance on the selection of cables for telecommunication and data.
IEC 60092-360	Electrical installations in ships: Insulating and sheathing materials for shipboard and offshore units.
DNV TAP 827.50/2	Type Approval Program
ABS SVR	Rules for building and classing. Steel Vessels.
ABS SMR	Rules for building and classing. Steel vessels under 90 meters.
IEC 60811	Insulating and sheathing materials of electric cables - Test method

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## Arctic Grade RS485 cables up to 4 pairs, armoured, SHF2



**Store at :** -20 to +70 °C

**Install at :** -20 to +70 °C, **Bend minimum :** 20 times O.D.

**Operate at** : -65 to +80 °C, **Bend minimum** : 20 times O.D.

**Pull maximum** : 50N

## Design

**Conductor** : stranded tinned copper 7×0.20mm AWG24 (0.60mm, 0.22mm<sup>2</sup>)

**Insulation** : polyethylene Ø1.30mm

**Pair** : 2 insulated conductors stranded together into a pair

**Colour code** : 1.White/blue 2.White/orange 3. White/green 4.White/brown

**Assembling** : 1, 2 or 4 pairs assembled together into a compact core

**Overall screen 1** : aluminium/polyester tape (coverage 100%) with stranded tinned copper drain wire 7×0.20mm.

**Overall screen 2** : tinned copper braid (nominal coverage 85%)

**Inner jacket** : black Fire Retardant SHF1 material, LSZH (Ø 8.0mm)

**Armour** : galvanized steel wires, tinned copper or bronze wires braid (nominal coverage 85%)

**Outer jacket** : black Fire Retardant and UV Resistant SHF2 material, LSZH (nominal thickness 1.5mm)

**Marking** : APS Finland - ww/yy - ARCTIC GRADE RS485 SHF2 ARMOURED CABLE ...  
PAIRS 24AWG 100 OHM - IEC60332-3-22 Cat A - lot + m

## Environmental properties and Fire Performances

**Degree of acidity of gases** : IEC 60754-1, IEC 60754-2 (pH value ≥ 4,3 and

Conductivity  $\leq 10\mu\text{S}/\text{mm}$ )

**Halogen acid gas** : IEC 60754-1, IEC 60754-2 (Halogen acid gas emission  $\leq 0.5\%$ )

**Smoke Emission** : IEC 61034-2, EN 50268-2 (Transmittance)  $\geq 60\%$ )

**Toxicity of evolved gas** : EN 50305 9.2

**Flame retardant** : IEC 60332-1-2

**Fire retardant** : IEC 60332-3-22 Cat.A

**Ozone resistant** : IEC 60811-2-1

**LSZH SHF2** : IEC 60092-360

**Oil resistant** : IEC 60811, IRM 903

**MUD resistant** : upon request

**Water absorption** : IEC60811-1-3

**UV resistant** : IEC60811-2-1, ASTM-D-2565-92A

**Cold Bend** : CSA C22.2 (-65°C)

**Cold Impact** : CSA C22.2 (-55°C)

## Electrical characteristics

**Operation voltage** : 100V

**Test voltage** : 2000V d.c. for 1 minute

**Resistance of the conductor @ 20°C** :  $\leq 90 \Omega/\text{km}$

**Insulation resistance @ 20°C** :  $\geq 1\text{G}\Omega\text{xkm}$

**Nominal Capacitance @ 800Hz** : 42 pF/m

**Characteristic impedance** :  $120 \pm 15 \Omega @ 1\text{MHz}$

**Nominal attenuation** : 22 dB/km @ 1MHz

## Ordering and delivery information

Pair count	P/N	O.D [mm]	Weight [kg/km]	Packaging
1 pair	ORS5A1P24Fx2	12.2	200	drum 500m (+/-5%)
2 pairs	ORS5A2P24Fx2	12.2	200	drum 500m (+/-5%)
4 pairs	ORS5A4P24Fx2	12.2	220	drum 500m (+/-5%)

For armour replace x with "A" for Galvanized Steel Wire Braid, "T" for Tinned Copper Wire Braid, "B" for Bronze Wire Braid.

## Other standards of reference

IEC 60092-370	Electrical installations in ships: Guidance on the selection of cables for telecommunication and data.
IEC 60092-360	Electrical installations in ships: Insulating and sheathing materials for shipboard and offshore units.
DNV TAP 827.50/2	Type Approval Program
ABS SVR	Rules for building and classing. Steel Vessels.
ABS SMR	Rules for building and classing. Steel vessels under 90 meters.



IEC 60811	Insulating and sheathing materials of electric cables - Test method
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## **MOG CAN Bus 1&2 pairs stranded conductor 0.75mm, SHF2**



**Store at:** -40 to +70 °C

**Install at:** -40 to +50 °C, **Bend minimum:** 15 times O.D.

**Operate at:** -40 to +90 °C, **Bend minimum:** 10 times O.D.

**Pull maximum:** 100N

## Design

**Conductor :** Stranded bare copper 24×0.20 (0.75mm<sup>2</sup>)

**Insulation :** Cellular polyolefin Ø2.95mm

**1 Pair :** No 2 insulated conductors stranded together into a pair (Colour code : White/blue)

**2 Pairs :** No 4 insulated conductors stranded together into a star quad

**Screen :** Aluminium/polyester tape (100%)

**Grounding wire :** Tinned copper 24×0.20 (0.75mm<sup>2</sup>) polyolefin insulated (nominal Ø2.40mm). Colour yellow/green.

**Assembling :** One screened pair or quad with one grounding wire with fillers, wrapped with fire barrier tape

**Overall screen :** tinned copper braid (coverage ≥80%)

**Outer jacket :** Grey Fire Retardant and UV Resistant SHF1 material, LSZH (Ø 11.1mm)

**Marking :** APS Finland - ww/yy - CAN BUS Marine 1x2x0.75mm<sup>2</sup> SHF2 - IEC60332-3-22 Cat A - TK/lot + meter

## Environmental properties and Fire Performances

**Degree of acidity of gases** : IEC 60754-1, IEC 60754-2 (pH value  $\geq 4,3$  and Conductivity  $\leq 10\mu\text{S}/\text{mm}$ )

**Halogen acid gas** : IEC 60754-1, IEC 60754-2 (Halogen acid gas emission  $\leq 0.5\%$ )

**Smoke Emission** : IEC 61034-2, EN 50268-2 (Transmittance)  $\geq 60\%$ )

**Toxicity of evolved gas** : YES - NES 713, CEI 20-37/7

**Flame retardant** : YES - IEC 60332-1-2

**Fire retardant** : YES - IEC 60332-3-22 Cat.A

**Fire resistant** : NO - IEC 60331-25

**Ozone resistant** : YES - DIN VDE 0472 part 805 B

**Weather resistant** : YES - ASTM G 154, EN 11507

**LSZH SHF2** : YES - IEC 60092-359:1987-03

**Oil resistant** : YES (oil, fuels and hydrocarbons) - IEC60811

**MUD resistant** : NO - NEK 606:2009

**Water resistant** : YES - IEC60502

**Water penetration** : NO - IEC 60794-1-2-F5-B

**UV resistant** : YES - ASTM-D-2565-92A

## Ordering and delivery information

Pair count	P/N	O.D [mm]	Weight [kg/km]	Packaging
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1 pair	OCB1P075F2	11.0	210	500 m (+/-5%)
2 pairs (1 quad)	OCB2P075F2	11.0	240	500 m (+/-5%)

## Electrical characteristics

**Operation voltage :** 100V

**Test voltage :** 1kV d.c. for 1 minute

**Resistance of the conductor @ 20°C :** ≤ 26.0 Ω/km for bare copper / ≤ 26.7 Ω/km for bare copper

**Insulation resistance @ 20°C :** ≥ 1GΩxkm (BUS conductor) / ≥ 10MΩxkm (earth conductor)

**Nominal Capacitance @ 800Hz :** 40 pF/m

**Average characteristic impedance :** 120 ± 10% @ 1MHz

**Nominal attenuation :** 13.2 dB/km @ 1MHz

## Other standards of reference

IEC 60092-370	Electrical installations in ships: Guidance on the selection of cables for telecommunication and data.
IEC 60092-360	Electrical installations in ships: Insulating and sheathing materials for shipboard and offshore units.
DNV TAP 827.50/2	Type Approval Program
ABS SVR	Rules for building and classing. Steel Vessels.
ABS SMR	Rules for building and classing. Steel vessels under 90 meters.
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# **MOG DeviceNet Thick, Data + Power, SHF1**



**Store at :** -30 to +60 °C

**Install at :** -10 to +50 °C, **Bend minimum:** -40 to +80 °C 8 x O.D.

**Operate at :** -40 to +80 °C, **Bend minimum :** 15 x O.D.

**Pull maximum :** 100N

## Design

### **Data Pair 1.3/3.8 (AWG15)**

**Conductor :** stranded tinned copper wire, 19×0.25mm, nom. Ø 1.3mm

**Insulation :** PE, nom. Ø 3.8mm (colour code Blue/White)

**Screen :** Alu/PE laminated foil

### **Power Pair 1.7/2.7 (AWG18)**

**Conductor :** stranded tinned copper wire, 19×0.25mm, nom. Ø 1.3mm

**Insulation :** PE, nom. Ø 3.8mm (colour code Red/Black)

**Screen :** Alu/PE laminated foil

**Assembling :** Data and power pair stranded together into a compact core, with fillers if necessary

**Shield :** Tinned copper wire braid (coverage 70%) with stranded copper drain wire.

**Outer jacket :** Fire Retardant, LSZH material SHF1. Colour according to customer's

request

## Environmental properties and Fire Performances

**Degree of acidity of gases** : IEC 60754-1, IEC 60754-2 (pH value  $\geq 4,3$  and Conductivity  $\leq 10\mu\text{S}/\text{mm}$ )

**Halogen acid gas** : IEC 60754-1, IEC 60754-2 (Halogen acid gas emission  $\leq 0.5\%$ )

**Toxicity of evolved gas** : EN50305 9.2

**Flame retardant** : IEC 60332-1-2

**Fire retardant** : IEC 60332-3-24 Cat.C

## Ordering and delivery information

Pair count	P/N	O.D [mm]	Weight [kg/km]	Packaging
1 + 1 pairs	ODNT2DPS1	12.2	100	500 m (+/-5%)

## Electrical characteristics (IEC60092-350, IEC61784, IEC61158)

**Max operating voltage:** 300 V



**Test voltage:** 1500V a.c. for 1 minute (wire/wire/screen)

**Conductor resistance:**  $\leq 22.6 \Omega/\text{km}$  (Data)  
 $\leq 11.7 \Omega/\text{km}$  (Power)

**Insulation resistance:**  $\geq 200\text{M}\Omega\cdot\text{km}$

**Nominal capacitance (wire/wire):** 39 pF/m @ 800Hz @ 1 KHz

**Characteristic impedance:**  $120 \Omega \pm 10\%$  @ 1 MHz

**Capacity unbalanced to ground:**  $\leq 3937 \text{ pF}/\text{km}$

### Typical attenuation

**125 MHz** 0.42 dB/100m

**500 MHz** 0.81 dB/100m

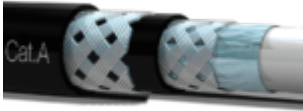
**1000 MHz** 1.31 dB/100m

## Other standards of reference

IEC 60092-370	Electrical installations in ships: Guidance on the selection of cables for telecommunication and data.
IEC 60092-360	Electrical installations in ships: Insulating and sheathing materials for shipboard and offshore units.
DNV TAP 827.50/2	Type Approval Program
ABS SVR	Rules for building and classing. Steel Vessels.
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# MOG Profibus 1&2 pairs, Fire Resistant, Armoured, SHF2



**Store at:** -40 to +70 °C

**Install at:** -40 to +50 °C, **Bend minimum:** 20 times O.D.

**Operate at:** -40 to +90 °C, **Bend minimum:** 10 times O.D.

**Pull maximum:** 150N

## Design

**Conductor :** Solid or stranded bare copper 0.35mm<sup>2</sup>

**Fire protection** : fire resistant tape

**Insulation** : Polyolefin Ø 2.75mm

**Pair** : 2 insulated conductors stranded together into a pair

**Colour code** : 1.Green/red 2.Blue/brown

**Assembling** : No 1 pair with fillers or no 2 pairs stranded together into a compact core

**Screen** : Aluminium/polyester tape (100%) with tinned copper braid (coverage  $\geq 60\%$ )

**Inner jacket** : Black or purple Fire Retardant LSZH SHF1 material (Ø 8.6mm)

**Armour** : galvanized steel, tinned copper or bronze wires braid (nominal coverage 85%)

**Outer jacket** : Black or purple Fire Retardant, LSZH and UV Resistant SHF2 material

**Marking** : APS Finland - ww/yy - ARMOURED FIRE RESISTANT PROFIBUS MARINE ...x2x0.35mm<sup>2</sup> LSZH SHF2 - IEC 60331-23 IEC60332-3-22 Cat.A - lot + meter

## **Environmental properties and Fire Performances**

**Degree of acidity of gases** : IEC 60754-1, IEC 60754-2 (pH value  $\geq 4,3$  and Conductivity  $\leq 10\mu\text{S}/\text{mm}$ )

**Halogen acid gas** : IEC 60754-1, IEC 60754-2 (Halogen acid gas emission  $\leq 0.5\%$ )

**Smoke Emission** : IEC 61034-1, IEC 61034-2 (Transmittance)  $\geq 60\%$ )

**Toxicity of evolved gas** : EN 50305 9.2

**Flame retardant** : IEC 60332-1

**Fire retardant** : IEC 60332-3-22 Cat.A

**Fire resistant** : IEC 60331-23 (Max changes in Impedance and Attenuation @ 4-16MHz :  $\pm 25\%$ )

**Ozone resistant** : IEC60811-2-1, DIN VDE 0472 part 805 B

**LSZH SHF2** : IEC 60092-360

**Oil resistant** : IEC 60811-404

**UV resistant** : ASTM-D-2565-99 (2008), 500 hours cycle 1, max change allowed in elongation after the test : 40%

**Cold bend & impact** : IEC 60092-350, CSA C22.2

## Ordering and delivery information

Pair count	P/N	O.D [mm]	Weight [kg/km]	Packaging
1 pair	OPBX1P035F1x2	12.6	220	500 m (+/-5%)
2 pairs	OPBX2P035F1x2	12.6	230	500 m (+/-5%)

x = "A" for Galvanized Steel wire braid, "T" for Tinned Copper wire braid, "B" for Bronze wire braid.

## Electrical characteristics (IEC60092-350, IEC61784, IEC61158)

**Operation voltage** : 100V

**Test voltage** : 1000V d.c.

**Resistance of the conductor @ 20°C** :  $\leq 55.0 \Omega/\text{km}$

**Insulation resistance @ 20°C** :  $\geq 1\text{G}\Omega\text{xkm}$

**Nominal Capacitance @ 800Hz : 30 pF/m** Characteristic impedance :  $150 \Omega \pm 15$   
@ 1MHz

Nominal attenuation :	45 dB/km	@ 16MHz
	22 dB/km	@ 4MHz
	5 dB/km	@ 38,4 KHz
	3 dB/km	@ 9,6 KHz
Baudrate :	9.6 kBits/s	@ Max. 1200m
	19.2 kBits /	@ Max. 1200m
	93.75 kBits/s	@ Max. 1200m
	187.5 kBits /s	@ Max. 1000m
	500 kBits /s	@ Max. 400m
	1.5 MBits /s	@ Max. 200m
	12 MBits /s	@ Max. 100m

## Other standards of reference

IEC 60092-370	Electrical installations in ships: Guidance on the selection of cables for telecommunication and data.
IEC 60092-360	Electrical installations in ships: Insulating and sheathing materials for shipboard and offshore units.
DNV TAP 827.50/2	Type Approval Program

ABS SVR	Rules for building and classing. Steel Vessels.
ABS SMR	Rules for building and classing. Steel vessels under 90 meters.
IEC 60811	Insulating and sheathing materials of electric cables - Test method

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## **MOG Profibus DP 1 & 2 pairs stranded conductor 0.35mm<sup>2</sup>, SHF2**



**Store at:** -40 to +70 °C

**Install at:** -40 to +50 °C, **Bend minimum:** 20 times O.D.

**Operate at:** -40 to +90 °C, **Bend minimum:** 10 times O.D.

**Pull maximum:** 100N



## Design

**Conductor** : Stranded bare copper 7×0.25 (0.35mm<sup>2</sup>)

**Insulation** : Polyolefin Ø2.75mm

**Pair** : No 2 insulated conductors stranded together into a pair

**Colour code** : 1.Green/red 2.Blue/brown

**Assembling** : No 1 pair with fillers or no 2 pairs stranded together into a compact core

**Screen** : Aluminium/polyester tape (100%) with tinned copper braid (coverage ≥60%)

**Outer jacket** : Black Fire Retardant and UV Resistant SHF2 material, LSZH (Ø 8.6mm)

**Marking** : APS Finland - PROFIBUS MARINE ...x2x0.35mm<sup>2</sup> SHF2 - IEC60332-3-22 Cat.A - lot + meter

## Environmental properties and Fire Performances

**Degree of acidity of gases** : IEC 60754-1, IEC 60754-2 (pH value ≥ 4,3 and Conductivity ≤10µS/mm)

**Halogen acid gas** : IEC 60754-1, IEC 60754-2 (Halogen acid gas emission ≤ 0.5%)

**Smoke Emission** : IEC 61034-2, EN 50268-2 (Transmittance) ≥ 60%)

**Toxicity of evolved gas** : YES - NES 713, CEI 20-37/7

**Flame retardant** : YES - IEC 60332-1-2

**Fire retardant** : YES - IEC 60332-3-22 Cat.A

**Fire resistant** : NO - IEC 60331-25

**Ozone resistant** : YES - DIN VDE 0472 part 805 B

**Weather resistant** : YES - ASTM G 154, EN 11507

**LSZH SHF2** : YES - IEC 60092-359:1987-03

**Oil resistant** : YES (oil, fuels and hydrocarbons) - IEC60811

**MUD resistant** : NO

**Water resistant** : YES - IEC60502

**Water penetration** : NO - IEC 60794-1-2-F5-B

**UV resistant** : YES - ASTM-D-2565-92A

## Ordering and delivery information

Pair count	P/N	O.D [mm]	Weight [kg/km]	Packaging
1 pair	OPB1P035F2	8.6	95	500 m (+/-5%)
2 pairs	OPB2P035F2	8.6	110	500 m (+/-5%)

## Electrical characteristics (IEC60092-350, IEC61784, IEC61158)

**Operation voltage** : 100V

**Test voltage** : 1500V a.c. for 1 minute

**Resistance of the conductor @ 20°C** : ≤ 55.0Ω/km

**Insulation resistance @ 20°C** : ≥ 1GΩxkm

**Nominal Capacitance @ 800Hz** : 30 pF/m

**Characteristic impedance : 150 Ω ± 15 @ 1MHz**

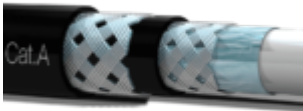
Nominal attenuation :	45 dB/km	@ 16MHz
	22 dB/km	@ 4MHz
	5 dB/km	@ 38,4 KHz
	3 dB/km	@ 9,6 KHz
Baudrate :	9.6 kBits/s	@ Max. 1200m
	19.2 kBits /	@ Max. 1200m
	93.75 kBits/s	@ Max. 1200m
	187.5 kBits /s	@ Max. 1000m
	500 kBits /s	@ Max. 400m
	1.5 MBits /s	@ Max. 200m
	12 MBits /s	@ Max. 100m

## Other standards of reference

IEC 60092-370	Electrical installations in ships: Guidance on the selection of cables for telecommunication and data.
IEC 60092-360	Electrical installations in ships: Insulating and sheathing materials for shipboard and offshore units.
DNV TAP 827.50/2	Type Approval Program
ABS SVR	Rules for building and classing. Steel Vessels.

ABS SMR	Rules for building and classing. Steel vessels under 90 meters.
IEC 60811	Insulating and sheathing materials of electric cables - Test method

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**MOG Profibus DP 1&2 pairs  
stranded conductor 0.35mm<sup>2</sup>  
Armoured SHF2**



**Store at:** -40 to +70 °C

**Install at:** -40 to +50 °C, **Bend minimum:** 20 times O.D.

**Operate at:** -40 to +90 °C, **Bend minimum:** 10 times O.D.

**Pull maximum:** 100N

## Design

**Conductor :** Stranded bare copper 7×0.25 (0.35mm<sup>2</sup>)

**Insulation :** Polyolefin Ø2.75mm

**Pair :** 2 insulated conductors stranded together into a pair

**Colour code :** 1.Green/red 2.Blue/brown

**Assembling :** No 1 pair with fillers or no 2 pairs stranded together into a compact core

**Screen :** Aluminium/polyester tape (100%) with tinned copper braid (coverage ≥60%)

**Inner jacket :** Black or purple Fire Retardant and UV Resistant SHF2 material, LSZH (Ø 8.6mm)

**Armour :** galvanized steel wires, tinned copper or bronze wires braid (nominal coverage 85%)

Outer jacket : Black or purple Fire Retardant and UV Resistant SHF2 material, LSZH

**Marking :** APS Finland - ww/yy - ARMOURED PROFIBUS MARINE ...x2x0.35mm<sup>2</sup> SHF2 - IEC60332-3-22 Cat.A - lot + meter

## Environmental properties and Fire Performances

**Degree of acidity of gases :** IEC 60754-1, IEC 60754-2 (pH value ≥ 4,3 and Conductivity ≤10µS/mm)

- Halogen acid gas** : IEC 60754-1, IEC 60754-2 (Halogen acid gas emission  $\leq 0.5\%$ )
- Smoke Emission** : IEC 61034-2, EN 50268-2 (Transmittance)  $\geq 60\%$ )
- Toxicity of evolved gas** : EN50305 9.2
- Flame retardant** : IEC 60332-1-2
- Fire retardant** : IEC 60332-3-22 Cat.A
- Fire resistant** : available upon request
- Ozone resistant** : IEC60811-2-1, DIN VDE 0472 part 805 B
- LSZH SHF2** : IEC 60092-360
- Oil resistant** : IEC60811
- MUD resistant** : available upon request
- Water absorption** : IEC60811-1-3
- Water penetration** : NO
- UV resistant** : IEC60811-2-1, ASTM-D-2565-92A
- Cold bend & impact** : CSA C22.2

## Ordering and delivery information

Pair count	P/N	O.D [mm]	Weight [kg/km]	Packaging
1 pair	OPB1P035Fx2	12.0	135	500 m (+/-5%)
2 pairs	OPB2P035Fx2	12.0	150	500 m (+/-5%)

x = "A" for Galvanized Steel wire braid, "T" for Tinned Copper wire braid, "B" for Bronze wire braid.

## Electrical characteristics (IEC60092-350, IEC61784, IEC61158)

**Operation voltage** : 100V

**Test voltage** : 1500V a.c. for 1 minute

**Resistance of the conductor @ 20°C** :  $\leq 55.0 \Omega/\text{km}$

**Insulation resistance @ 20°C** :  $\geq 1\text{G}\Omega \times \text{km}$

**Nominal Capacitance @ 800Hz** : 30 pF/m Characteristic impedance :  $150 \Omega \pm 15$   
@ 1MHz

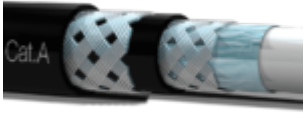
Nominal attenuation :	45 dB/km	@ 16MHz
	22 dB/km	@ 4MHz
	5 dB/km	@ 38,4 KHz
	3 dB/km	@ 9,6 KHz
Baudrate :	9.6 kBits/s	@ Max. 1200m
	19.2 kBits /	@ Max. 1200m
	93.75 kBits/s	@ Max. 1200m
	187.5 kBits /s	@ Max. 1000m
	500 kBits /s	@ Max. 400m
	1.5 MBits /s	@ Max. 200m
	12 MBits /s	@ Max. 100m



## Other standards of reference

IEC 60092-370	Electrical installations in ships: Guidance on the selection of cables for telecommunication and data.
IEC 60092-360	Electrical installations in ships: Insulating and sheathing materials for shipboard and offshore units.
DNV TAP 827.50/2	Type Approval Program
ABS SVR	Rules for building and classing. Steel Vessels.
ABS SMR	Rules for building and classing. Steel vessels under 90 meters.
IEC 60811	Insulating and sheathing materials of electric cables - Test method

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## **MOG Profibus DP 1&2 pairs stranded conductor 0.35mm<sup>2</sup>, Armoured, MUD-Resistant NEK606**



**Store at:** -40 to +90 °C

**Install at:** -40 to +50 °C, **Bend minimum:** 20 times O.D.

**Operate at:** -40 to +90 °C, **Bend minimum:** 10 times O.D.

**Pull maximum:** 100N

## Design

**Conductor** : Stranded bare copper 7×0.25 (0.35mm<sup>2</sup>)

**Insulation** : Polyolefin Ø2.75mm

**Pair** : 2 insulated conductors stranded together into a pair

**Colour code** : 1.Green/red 2.Blue/brown

**Assembling** : No 1 pair with fillers or no 2 pairs stranded together into a compact core

**Screen** : Aluminium/polyester tape (100%) with tinned copper braid (coverage ≥60%)

**Inner jacket** : Black or purple Fire Retardant and UV Resistant SHF2 material, LSZH (Ø 8.6mm) Armour : galvanized steel wires, tinned copper or bronze wires braid (nominal coverage 85%)

**Outer jacket** : Black or purple Fire Retardant and UV Resistant SHF2 material, LSZH, MUD Resistant

**Marking** : APS Finland - ww/yy - ARMOURED PROFIBUS MARINE ...x2x0.35mm<sup>2</sup> SHF2 MUD-Resistant NEK606- IEC60332-3-22 Cat.A - lot + m

## Environmental properties and Fire Performances

**Degree of acidity of gases** : IEC 60754-1, IEC 60754-2 (pH value ≥ 4,3 and Conductivity ≤10µS/mm) Halogen **acid gas** : IEC 60754-1, IEC 60754-2 (Halogen acid gas emission ≤ 0.5%)

**Smoke Emission** : IEC 61034-2, EN 50268-2 (Transmittance) ≥ 60%)

**Toxicity of evolved gas** : EN50305 9.2

**Flame retardant** : IEC 60332-1-2

**Fire retardant** : IEC 60332-3-22 Cat.A

**Fire resistant** : available upon request

**Ozone resistant** : IEC60811-2-1, DIN VDE 0472 part 805 B LSZH SHF2 : IEC 60092-360

**Oil resistant** : IEC60811

**MUD resistant** : NEK606:2009, IEC60092-360

**Water absorption** : IEC60811-1-3

**Water penetration** : NO

**UV resistant** : IEC60811-2-1, ASTM-D-2565-92A

**Cold bend & impact** : CSA C22.2

## Ordering and delivery information

Pair count	P/N	O.D [mm]	Weight [kg/km]	Packaging
1 pair	OPB1P035FxU	12.0	165	500 m (+/-5%)
2 pairs	OPB2P035FxU	12.0	180	500 m (+/-5%)

x = "A" for Galvanized Steel wire braid, "T" for Tinned Copper wire braid, "B" for Bronze wire braid.

## Electrical characteristics (IEC60092-350,

## IEC61784, IEC61158)

**Operation voltage** : 100V

**Test voltage** : 1500V a.c. for 1 minute

**Resistance of the conductor @ 20°C** :  $\leq 55.0 \Omega/\text{km}$

**Insulation resistance @ 20°C** :  $\geq 1\text{G}\Omega \times \text{km}$

**Nominal Capacitance @ 800Hz** : 30 pF/m

Nominal attenuation :	45 dB/km	@ 16MHz
	22 dB/km	@ 4MHz
	5 dB/km	@ 38,4 KHz
	3 dB/km	@ 9,6 KHz
Baudrate :	9.6 kBits/s	@ Max. 1200m
	19.2 kBits /	@ Max. 1200m
	93.75 kBits/s	@ Max. 1200m
	187.5 kBits /s	@ Max. 1000m
	500 kBits /s	@ Max. 400m
	1.5 MBits /s	@ Max. 200m
	12 MBits /s	@ Max. 100m

## Other standards of reference

IEC 60092-370	Electrical installations in ships: Guidance on the selection of cables for telecommunication and data.
IEC 60092-360	Electrical installations in ships: Insulating and sheathing materials for shipboard and offshore units.
DNV TAP 827.50/2	Type Approval Program
ABS SVR	Rules for building and classing. Steel Vessels.
ABS SMR	Rules for building and classing. Steel vessels under 90 meters.
IEC 60811	Insulating and sheathing materials of electric cables - Test method

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## **MOG Profibus DP 1&2 pairs stranded conductor 0.35mm<sup>2</sup>, SHF2 MUD NEK606**



**Store at:** -40 to +70 °C

**Install at:** -40 to +50 °C, **Bend minimum:** 20 times O.D.

**Operate at:** -40 to +90 °C, **Bend minimum:** 10 times O.D.

**Pull maximum:** 100N

## Design

**Conductor** : Stranded bare copper 7×0.25 (0.35mm<sup>2</sup>)

**Insulation** : Polyolefin Ø2,75mm

**Pair** : 2 insulated conductors stranded together into a pair

**Colour code** : 1.Green/red 2.Blue/brown

**Assembling** : No 1 pair with fillers or no 2 pairs stranded together into a compact core

**Screen** : Aluminium/polyester tape (100%) with tinned copper braid (coverage ≥60%)

**Inner jacket** : Black or purple Fire Retardant and UV Resistant material, LSZH (Ø 8.6mm)

**Outer jacket** : Black or purple Fire Retardant and UV Resistant, SHF2 and MUD Resistant material, LSZH (Ø 10.6mm)

**Marking** : APS Finland - ww/yy - PROFIBUS MARINE ...x2x0.35mm<sup>2</sup> SHF2 - IEC60332-3-22 Cat A - MUD Resistant NEK606 - TK/lot + meter

## Environmental properties and Fire Performances

**Degree of acidity of gases** : IEC 60754-1, IEC 60754-2 (pH value ≥ 4,3 and Conductivity ≤10µS/mm)

**Halogen acid gas** : IEC 60754-1, IEC 60754-2 (Halogen acid gas emission ≤ 0.5%)

**Smoke Emission** : IEC 61034-2, EN 50268-2 (Transmittance) ≥ 60%)

**Toxicity of evolved gas** : EN50305 9.2

**Flame retardant** : IEC 60332-1-2

**Fire retardant** : IEC 60332-3-22 Cat.A

**Fire resistant** : available upon request



**Ozone resistant** : IEC60811-2-1, DIN VDE 0472 part 805 B

**LSZH SHF2** : IEC 60092-360

**Oil resistant** : IEC60811, IRM 903

**MUD resistant** : NEK606:2009, IEC60092-360

**Water absorption** : IEC60811-1-3

**Water penetration** : NO

**UV resistant** : IEC60811-2-1, ASTM-D-2565-92A

**Cold bend & impact** : CSA C22.2

## Ordering and delivery information

Pair count	P/N	O.D [mm]	Weight [kg/km]	Packaging
1 pair	OPB1P035FU	10.6	145	500 m (+/-5%)
2 pairs	OPB2P035FU	10.6	160	500 m (+/-5%)

## Electrical characteristics (IEC60092-350, IEC61784, IEC61158)

**Operation voltage** : 100V

**Test voltage** : 1500V a.c. for 1 minute

**Resistance of the conductor @ 20°C** :  $\leq 55.0 \Omega/\text{km}$

**Insulation resistance @ 20°C** :  $\geq 1\text{G}\Omega\text{xkm}$

**Nominal Capacitance @ 800Hz** : 30 pF/m Characteristic impedance : 150 Ω ± 15  
@ 1MHz

Nominal attenuation :	45 dB/km	@ 16MHz
	22 dB/km	@ 4MHz
	5 dB/km	@ 38,4 KHz
	3 dB/km	@ 9,6 KHz
Baudrate :	9.6 kBits/s	@ Max. 1200m
	19.2 kBits /	@ Max. 1200m
	93.75 kBits/s	@ Max. 1200m
	187.5 kBits /s	@ Max. 1000m
	500 kBits /s	@ Max. 400m
	1.5 MBits /s	@ Max. 200m
	12 MBits /s	@ Max. 100m

## Other standards of reference

IEC 60092-370	Electrical installations in ships: Guidance on the selection of cables for telecommunication and data.
IEC 60092-360	Electrical installations in ships: Insulating and sheathing materials for shipboard and offshore units.

DNV TAP 827.50/2	Type Approval Program
ABS SVR	Rules for building and classing. Steel Vessels.
ABS SMR	Rules for building and classing. Steel vessels under 90 meters.
IEC 60811	Insulating and sheathing materials of electric cables - Test method

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# MOG RS422 1,2,4 pairs Armoured SHF1



**Store at :** -40 to +70 °C

**Install at :** -40 to +50 °C, **Bend minimum :** 15 times O.D.

**Operate at :** -40 to +90 °C, **Bend minimum :** 10 times O.D.

**Pull maximum :** 100N

## Design

**Conductor :** stranded tinned copper 7×0.20mm AWG24 (0.60mm, 0.22mm<sup>2</sup>)

**Insulation :** polyethylene Ø1.10mm

**Pair :** no 2 insulated conductors stranded together into a pair

**Colour code :** 1.White/blue 2.White/orange 3. White/green 4.White/brown

**Assembling :** 1, 2 or 4 pairs assembled together into a compact core

**Overall screen :** aluminium/polyester tape (coverage 100%) with tinned copper drain wire 7×0.20mm.

**Inner jacket :** black Fire Retardant SHF1 material, LSZH (Ø 7.0mm)

**Armour :** galvanized steel wires, tinned copper or bronze wires braid (nominal coverage 85%)

**Outer jacket** : black Fire Retardant and UV Resistant SHF1 material, LSZH (nominal Ø 11.0mm)

**Marking** : APS Finland - ww/yy - RS422 SHF1 ARMOURED MARINE CABLE ... PAIRS  
24AWG 100 OHM - IEC60332-3-22 Cat A - lot + meter

## **Environmental properties and Fire Performances**

**Degree of acidity of gases** : IEC 60754-1, IEC 60754-2 (pH value  $\geq 4,3$  and Conductivity  $\leq 10\mu\text{S}/\text{mm}$ )

**Halogen acid gas** : IEC 60754-1, IEC 60754-2 (Halogen acid gas emission  $\leq 0.5\%$ )

**Smoke Emission** : IEC 61034-2, EN 50268-2 (Transmittance)  $\geq 60\%$ )

**Toxicity of evolved gas** : EN 50305 9.2

**Flame retardant** : IEC 60332-1-2

**Fire retardant** : IEC 60332-3-22 Cat.A

**Fire resistant** : upon request

**Ozone resistant** : upon request

**Weather resistant** : upon request

**LSZH SHF2** : upon request

**Oil resistant** : intermittent splash - permanent resistance available upon request

**MUD resistant** : upon request

**Water absorption** : upon request

**Water penetration** : NO

**UV resistant** : IEC60811-2-1, ASTM-D-2565-92A

## Ordering and delivery information

Pair count	P/N	O.D [mm]	Weight [kg/km]	Packaging
1 pair	ORS21P24FA1	10.0	180	500 m (+/-5%)
2 pairs	ORS21P24FA1	10.0	180	500 m (+/-5%)
4 pairs	ORS24P24FA1	11.0	200	500 m (+/-5%)

## Electrical characteristics (IEC60092-350, IEC61784, IEC61158)

**Operation voltage** : 100V

**Test voltage** : 2000V d.c. for 1 minute

**Resistance of the conductor @ 20°C** :  $\leq 90 \Omega/\text{km}$

**Insulation resistance @ 20°C** :  $\geq 1\text{G}\Omega \times \text{km}$  Nominal Capacitance @ 800Hz : 52 pF/m

**Characteristic impedance** :  $100 \pm 15 \Omega @ 1\text{MHz}$

**Nominal attenuation** : 28 dB/km @ 1MHz

## Other standards of reference

IEC 60092-370	Electrical installations in ships: Guidance on the selection of cables for telecommunication and data.
IEC 60092-360	Electrical installations in ships: Insulating and sheathing materials for shipboard and offshore units.
DNV TAP 827.50/2	Type Approval Program
ABS SVR	Rules for building and classing. Steel Vessels.
ABS SMR	Rules for building and classing. Steel vessels under 90 meters.
IEC 60811	Insulating and sheathing materials of electric cables - Test method

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# MOG RS485 1,2,4 pairs Armoured SHF1



**Store at :** -40 to +70 °C

**Install at :** -40 to +50 °C, **Bend minimum :** 15 times O.D.

**Operate at :** -40 to +70 °C, **Bend minimum :** 10 times O.D.

**Pull maximum :** 400N



## Design

**Conductor** : stranded tinned copper 7×0.20mm AWG24 (0.60mm, 0.22mm<sup>2</sup>)

**Insulation** : polyethylene Ø1.30mm

**Pair** : 2 insulated conductors stranded together into a pair

**Colour code** : 1.White/blue 2.White/orange 3. White/green 4.White/brown

**Assembling** : 1, 2 or 4 pairs assembled together into a compact core

**Overall screen 1** : aluminium/polyester tape (coverage 100%) with stranded tinned copper drain wire 7×0.20mm.

**Overall screen 2** : tinned copper braid (nominal coverage 85%)

**Inner jacket** : black Fire Retardant SHF1 material, LSZH (Ø 8.0mm)

**Armour** : galvanized steel wires, tinned copper or bronze wires braid (nominal coverage 85%)

**Outer jacket** : black Fire Retardant and UV Resistant SHF1 material, LSZH (nominal thickness 1.5mm)

**Marking** : APS Finland - ww/yy - RS485 SHF1 ARMOURED MARINE CABLE ... PAIRS  
24AWG 100 OHM - IEC60332-3-22 Cat A - lot + meter

## Environmental properties and Fire Performances

**Degree of acidity of gases** : IEC 60754-1, IEC 60754-2 (pH value ≥ 4,3 and Conductivity ≤10µS/mm)

**Halogen acid gas** : IEC 60754-1, IEC 60754-2 (Halogen acid gas emission ≤ 0.5%)

**Smoke Emission** : IEC 61034-2, EN 50268-2 (Transmittance) ≥ 60%)

**Toxicity of evolved gas** : EN 50305 9.2

**Flame retardant** : IEC 60332-1-2

**Fire retardant** : IEC 60332-3-22 Cat.A

**Fire resistant** : upon request

**Ozone resistant** : upon request

**Weather resistant** : upon request

**LSZH SHF2** : upon request

**Oil resistant** : intermittent splash – permanent resistance available upon request

**MUD resistant** : upon request

**Water absorption** : upon request

**Water penetration** : NO

**UV resistant** : IEC60811-2-1, ASTM-D-2565-92A

## Ordering and delivery information

Pair count	P/N	O.D [mm]	Weight [kg/km]	Packaging
1 pair	ORS51P24FA1	11.2	180	500 m (+/-5%)
2 pairs	ORS52P24FA1	11.2	190	500 m (+/-5%)
4 pairs	ORS54P24FA1	12.0	230	500 m (+/-5%)

## Electrical characteristics

**Operation voltage** : 100V

**Test voltage** : 2000V d.c. for 1 minute

**Resistance of the conductor @ 20°C** : ≤ 90 Ω/km

**Insulation resistance @ 20°C :  $\geq 1\text{G}\Omega\text{km}$  Nominal Capacitance @ 800Hz : 42 pF/m**

**Characteristic impedance :  $120 \pm 15 \Omega$  @ 1MHz**

**Nominal attenuation : 22 dB/km @ 1MHz**

## Other standards of reference

IEC 60092-370	Electrical installations in ships: Guidance on the selection of cables for telecommunication and data.
IEC 60092-360	Electrical installations in ships: Insulating and sheathing materials for shipboard and offshore units.
DNV TAP 827.50/2	Type Approval Program
ABS SVR	Rules for building and classing. Steel Vessels.
ABS SMR	Rules for building and classing. Steel vessels under 90 meters.
IEC 60811	Insulating and sheathing materials of electric cables - Test method

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## **MOG RS485 1,2,4 pairs Armoured**

# SHF2 MUD NEK606



**Store at :** -20 to +70 °C

**Install at :** -20 to +50 °C, **Bend minimum :** 15 times O.D.

**Operate at :** -40 to +70 °C, **Bend minimum :** 10 times O.D.

**Pull maximum :** 400N

## Design

**Conductor :** stranded tinned copper 7×0.20mm AWG24 (0.60mm, 0.22mm<sup>2</sup>)

**Insulation :** polyethylene Ø1.30mm

**Pair :** 2 insulated conductors stranded together into a pair.

**Assembling :** 1, 2 or 4 pairs assembled together into a compact core

**Colour code :** 1.White/blue 2.White/orange 3. White/green 4.White/brown

**Overall screen 1 :** aluminium/polyester tape (coverage 100%) with stranded tinned copper drain wire 7×0.20mm.

**Overall screen 2 :** tinned copper braid (nominal coverage 85%)

**Inner jacket :** black Fire Retardant LSZH material

**Armour :** galvanized steel wires, tinned copper or bronze wires braid (nominal coverage >80%)

**Outer jacket** : black Fire Retardant LSZH material type SHF2 MUD-Resistant

**Marking** : APS Finland - ww/yy - ARMOURED RS485 MARINE CABLE ... PAIRS 24AWG  
100 OHM - SHF2 MUD IEC60332-3-22 Cat.A - lot + m

## Environmental properties and Fire Performances

**Degree of acidity of gases** : IEC 60754-1, IEC 60754-2 (pH value  $\geq 4,3$  and Conductivity  $\leq 10\mu\text{S}/\text{mm}$ )

**Halogen acid gas** : IEC 60754-1, IEC 60754-2 (Halogen acid gas emission  $\leq 0.5\%$ )

**Smoke Emission** : IEC 61034-2, EN 50268-2 (Transmittance)  $\geq 60\%$ )

**Toxicity of evolved gas** : EN50305 9.2

**Flame retardant** : IEC 60332-1-2

**Fire retardant** : IEC 60332-3-22 Cat.A

**Ozone resistant** : IEC60811-2-1, DIN VDE 0472 part 805 B

**Weather resistant** : ASTM G 154, EN 11507

**LSZH SHF2** : IEC 60092-360

**Oil resistant** : IEC60811, IRM 903

**MUD resistant** : NEK606:2009, IEC60092-350

**Water absorption** : IEC60811-1-3

**UV resistant** : IEC60811-2-1, ASTM-D-2565-92A

**Cold bend & impact** : CSA C22.2 (-40°C)

## Ordering and delivery information

Pair count	P/N	O.D [mm]	Weight [kg/km]	Packaging
1 pair	RS51P24FxU	10.0	140	500 m (+/-5%)
2 pairs	RS52P24FxU	11.0	185	500 m (+/-5%)
4 pairs	RS54P24FxU	11.5	205	500 m (+/-5%)

## Electrical characteristics

**Operation voltage** : 100V

**Test voltage** : 2000V d.c. for 1 minute

**Resistance of the conductor @ 20°C** :  $\leq 90 \Omega/\text{km}$

**Insulation resistance @ 20°C** :  $\geq 1\text{G}\Omega \times \text{km}$

**Nominal Capacitance @ 800Hz** : 42 pF/m

**Characteristic impedance** :  $120 \pm 15 \Omega @ 1\text{MHz}$

**Nominal attenuation** : 22 dB/km @ 1MHz

## Other standards of reference

IEC 60092-370	Electrical installations in ships: Guidance on the selection of cables for telecommunication and data.
IEC 60092-360	Electrical installations in ships: Insulating and sheathing materials for shipboard and offshore units.
DNV TAP 827.50/2	Type Approval Program
ABS SVR	Rules for building and classing. Steel Vessels.
ABS SMR	Rules for building and classing. Steel vessels under 90 meters.
IEC 60811	Insulating and sheathing materials of electric cables - Test method

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