Certificate No.: 2501161524253878

TÜRK LOYDU

TYPE APPROVAL CERTIFICATE

This is to certify that the

SHIPBOARD INSTRUMENTATION AND COMMUNICATION CABLES

TL Project No	**23-2753**
Manufacturer	**BAŞOĞLU Kablo ve Profil Sanayi ve Tic. A.Ş.**
Address	**Merkez, Organize Sanayi Bölgesi, Akın Çakmak Blv. Bolu**
Product Type	**FMSCH, FMSCH-FR, FMX, FMX-FR, FM2X, FM2X-FR, FM2XCH, FM2XCH-FR, FMGCH, FMGCH-FR, FM2XCCH, FM2XCCH-FR (HALOGEN FREE, FLAME RETARDANT, FIRE RESISTANT -FR TYPES)** **FM2XCY, FM2XCY-FR, FM2XY, FM2XY-FR, FM2XCCY, FM2XCCY-FR (FLAME RETARDANT, FIRE RESISTANT -FR TYPES)**
Reference Rule	**TL Rules, Part B, Chapter 5, Electric, 01.07.2022** **IEC 60092-360, 04.01.2021** **IEC 60092-350, 28.01.2020** **IEC 60332-3-22, 13.07.2018** **TS IEC 60331-21 - Tests For Electric Cables Under Fire Conditions - Circuit İntegrity - Part 21: Procedures And Requirements - Cables of Rated Voltage Up to and İncluding 0,6/1,0 kV, 07.12.2006** **IEC 60092-376 , 01.04.2021** **TS EN 60228 - CONDUCTORS OF INSULATED CABLES, 01.12.2005** **IEC 60754 - 1&2 , 17.11.2011** **IEC 61034 - 1&2 , 20.04.2005**

Subject to the conditions referred to in the following pages, this certificate is valid until 30.09.2029.

Emrah SÖĞÜTCÜ

New Building Division Manager

132231

This certificate is subject to terms and conditions described below:

- Any significant change in design or construction may render this Certificate invalid. Type Approval Certificate is not valid for equipment, the design or manufacture of which has been varied or modified from the specimen tested. This certificate is not valid for products without marking above mentioned. The manufacturer should notify TÜRK LOYDU of any modifications or changes to equipment in order to obtain valid certificate. This certificate shows that tested specimens as representative of the product complies of the TÜRK LOYDU rules, and revelant international instruments that apply to it.

EN IEC 60331-1 Tests for electric cables under fire conditions - Circuit integrity - Part 1, 30.09.2019

IEC 60332-1-2 Tests on electric and optical fibre cables under fire conditions - Part 1-2: Test for vertical flame propagation for a single insulated wire or cable - Procedure for 1 kW pre-mixed flame , 27.12.2005

Expire Date of Previous Certificate	**30.09.2024**
Place and Date	**İSTANBUL / 18.02.2025**

Surveyor Name : Osman Yalçın YALMAN

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Product	: SHIPBOARD INSTRUMENTATION AND COMMUNICATION CABLES
Type of Product	: FMSCH, FMSCH-FR, FMX, FMX-FR, FM2X, FM2X-FR, FM2XCH, FM2XCH-FR, FMGCH, FMGCH-FR, FM2XCCH, FM2XCCH-FR (HALOGEN FREE, FLAME RETARDANT, FIRE RESISTANT -FR TYPES) FM2XCY, FM2XCY-FR, FM2XY, FM2XY-FR, FM2XCCY, FM2XCCY-FR (FLAME RETARDANT, FIRE RESISTANT -FR TYPES)
Approval No / Date	: PAE-EPAS/019763/23-2250/EA, 11.10.2024 PAE-EPAS/019785/23-2250/EA, 16.10.2024 PAE-EPAS/019793/23-2250/EA, 17.10.2024
Cross Section	: 0.5 mm2 to 2,5 mm2 (Pair, Triple or Quad)
Size	: Core Number: 1 to 37
Product Description	: Conductor: Electrolytic Stranded Copper (Tinned or Bare Copper) Class 5 or Class 2 (According to TS EN 60228:2005) Fire Barrier: Mica Tape (For -FR Types) Insulation: According to IEC 60092-360:2021 Halogen Free, Cross-Linked Polyolefin Compound XLPE (For -2X Types) HF 90 (For -X Types) Halogen Free, Cross-Linked Elastomeric Ethylene Propylene Rubber (EPR or HEPR)(For -G Types) S95 Silicone Insulation (For -S Types) Lay Up: Cores twisted to form pair, triple or quad for unit formation cables. Cores are Stranded in Layers (For Multicore Cables) Separator: PET Foil (Optional) Individual Screen: Electrolytic, Tinned or Bare Copper Drain Wire and Aluminum Tape Screen or Bare/Tinned Copper Wire Braid Over Each Pairs, Triples Or Quad Units (For -CC Types) Lay Up: Cores or Units are Stranded in Layers Inner Covering: PET Foil or Extruded (Optional) Screen: Bare or Tinned Copper Wire Braid or Galvanized Wire Braid (For -C Types) Separator: PET Foil (Optional) Outer Sheath: According to IEC 60092-360:2021 Halogen-Free, Flame Retardant Compound (SHF1 or SHF2) Polyvinyl chloride thermoplastic Compound (ST 2)(For -Y Types)
Type Approval Certificate Number	: TO.DEB.18-0653-03
Rated Voltage	: 150/250 V (300V)
Performed Tests	: Quality Audit Visual inspection and dimensional controls Construction and finishing control Marking control Print durability control Mechanical controls: Tensile strength and elongation tests (Insulation and sheath) Thermal effect tests: Cold bend test, Coiling test at low temperature, Hot set test, Shrinkage test, Heat shock test Flame retardant tests (single cable and cable bunch) Smoke density control Electrical controls: Conductor resistance test, High voltage test, Insulation resistance test, Halogen content control Operation under fire condition test
Test Place	: BAŞOĞLU KABLO VE PROFİL SANAYİ VE TİCARET ANONİM ŞİRKETİ-BOLU
Test Scope	: Type Tests

Surveyor Name : Osman Yalçın YALMAN

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Last Inspection Date : 28.01.2025

Approval Conditions : 1-TL Rules for the Classification of Steel Ships, Offshore Units and Yachts
2- Applications other than the "Material Used" mentioned in this certificate are not covered by this type approval certificates.
3- Naval application are not covered by this type approval certificate

Surveyor Name : Osman Yalçın YALMAN

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