



# TÜRK LOYDU

## TYPE APPROVAL CERTIFICATE

This Certificate consists of 2 pages.

This is to certify that the

### SHIPBOARD POWER AND SIGNAL CABLES

With type designations

FM2XCH, M2XSH, M2XH, FM2XCH FE180, FM2XSH FE 180, FM2XH FE 180

Manufactured by

2M KABLO SANAYİ VE TİCARET A.Ş.

Is found to comply with

Türk Loydu Rules Part B Chapter 5 Jan 2021, Part E Chapter 105 Jan 2016,  
Power Cables acc. to IEC 60092-353, Signal Cables acc. to IEC 60092-376,  
IEC 60092-350, IEC 60092-360, IEC 60228, IEC 60332-1-2, IEC 60332-3-22 Cat A,  
IEC 60754-1, IEC 60754-2, IEC 60684-2, IEC 61034-1, IEC 61034-2,  
For fire resistant cables IEC 60331-21

<b>Application</b>	: Power, lighting, instrumentation, and signal cables for ships
<b>Design</b>	: Voltage rating: 0,6/1 (1.2) kV, 150/250 (300) V Maximum rated conductor temperature: Normal operation: 90°C, Short circuit: 250°C
<b>Sizes</b>	: Power cables from 1mm <sup>2</sup> to 300mm <sup>2</sup> , Signal cables from 0,75mm <sup>2</sup> to 2,5mm <sup>2</sup> .
<b>Address of Manufacturer</b>	: Gaziosmanpaşa OSB Mahallesi 4. Cadde No:18 A 59500 Çerkezköy Tekirdağ
<b>Place and date</b>	: İSTANBUL, 04.08.2021

Subject to the conditions referred to in the following pages, this certificate is valid until 03.08.2026.

**Emrah SÖĞÜTÇÜ**  
New Building Division Manager



**Product description** : Shipboard Power and Signal Cables

**Type Designation** : FM2XCH, M2XSH, M2XH, FM2XCH FE180, FM2XSH FE 180, FM2XH FE 180

M2XH 0.6/1 (1.2) kV, M2XAH 0.6/1 (1.2) kV, M2XCH EMC 0.6/1 (1.2) kV, M2XCH 0.6/1 (1.2) kV, M2XSH 0.6/1 (1.2) kV, M2XACH 0.6/1 (1.2) kV, M2XASH 0.6/1 (1.2) kV,

M2XH FE 180 0.6/1 (1.2) kV, M2XAH FE 180 0.6/1 (1.2) kV, M2XCH FE180 0.6/1 (1.2) kV, M2XSH FE 180 0.6/1 (1.2) kV, M2XACH FE 180 0.6/1 (1.2) kV, M2XASH FE 180 0.6/1 (1.2) kV,

FM2XCH 150/250 (300) V, FM2XCCH 150/250 (300) V, FM2XACH 150/250 (300) V, FM2XASH 150/250 (300) V, FM2XAACH 150/250 (300) V,

FM2XCH FE180 150/250 (300) V, FM2XCCH FE 180 150/250 (300) V, FM2XCSH FE 180 150/250 (300) V, FM2XACH FE 180 150/250 (300) V, FM2XAACH FE 180 150/250 (300) V, FM2XAASH FE 180 150/250 (300) V,

FM2XH 150/250 (300) V, FM2XH(I) 150/250 (300) V, FM2XAH 150/250 (300) V, FM2XAAH 150/250 (300) V,

FM2XH FE 180 150/250 (300) V, FM2XH(I) FE 180 150/250 (300) V, FM2XAH FE 180 150/250 (300) V, FM2XAAH FE 180 150/250 (300) V.

**Materials used** : Following materials are used where required:

Conductor: Plain annealed stranded copper wire class 2, tinned copper or class 5 (IEC 60228),

Insulation: XLPE (IEC 60092-360),

Flame Barrier: Mica tape,

Lay-up: Cores, pairs, triples, quad are stranded in layers,

Individual shielding: AL-PES tape with tinned copper drain wire,

Overall separator: Polyester tape,

Overall Shielding: AL-PES tape with tinned copper drain wire,

Inner sheath/separator: Halogen free filler or polyester tape,

Screen/Armour: Electrolytic copper wire braiding (%90 coverage) and drain wire or galvanized steel braid.

Sheath: SHF1 (Halogen free, flame retardant thermoplastic compound, IEC 60092-360)

**Application/ Limitation (Approval conditions):** For each new building ship and in service ships under major modifications, factory acceptance tests (routine tests) for cables shall be carried out before mounted to the ship with the witness of TL surveyor.

**Documentation** : 2M KABLO data sheet, TSE test reports for fluorine content dated 11.03.2016, TSE test reports for ph/conductivity dated 09.02.2016, 2M KABLO test reports dated 05.04.2016. 2M KABLO test reports for items: S6400300075, K662042050, 3M000002101, 3M000032093, 3M000032103

**Test carried out (and results)** : Test carried out according to IEC 60092-350 and for power cables acc. to IEC 60092-353, for signal cables acc. to IEC 60092-376, and for fire resistant cables IEC 60331-21

**Place of test carried out** : 2M Factory / Çerkezköy-TEKİRDAĞ

**Marking of product:** The product to be marked with lot no, cross-section, core number, length

  
**Yağız YILDIRIM**  
Surveyor for

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 the 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 relevant international instruments that apply to it.