



Certificate number: 11732/E3 BV

File number: ACE 01/126/03

Product code: 2505H

This certificate is not valid when presented without the full attached schedule composed of 7 sections

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TYPE APPROVAL CERTIFICATE

This certificate is issued to

UNTEL KABLolari SANAYI VE TICARET A/S
KOCAELI - Türkiye

for the type of product

INSTRUMENTATION AND COMMUNICATION CABLES

150/250 V

Types : FMGC & FM2X series

Requirements:

BUREAU VERITAS Rules for the Classification of Steel Ships and Naval Ships.

IEC 60092-350 (2020), IEC 60092-360 (2021), IEC 60092-376 (2017)

IEC 60228 (2023)

IEC 60332-1-2 (2015), IEC 60332-3-22 Cat.A (2018)

IEC 60331-1/2 (2018)

IEC 60754-1/2 (2011)

IEC 61034-1/2 (2013)

This certificate is issued to attest that Bureau Veritas Marine & Offshore did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.

This certificate will expire on: 13 Aug 2028

For Bureau Veritas Marine & Offshore,

At BV ISTANBUL, on 23 Mar 2026,

Gurcan Yilmaz

This certificate was created electronically and is valid without signature



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with Bureau Veritas Marine & Offshore. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of Bureau Veritas Marine & Offshore available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against Bureau Veritas Marine & Offshore for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

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BV Mod. Ad.E 530 June 2017

This certificate consists of 4 page(s)

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION:

Flame Retardant and Fire Resistant (FFR Type only) Marine Telecommunication and Signal cables.

1.1 - Common specifications:

Rated voltage:	150/250 V
Temperature class:	90°C
Flame retardant:	IEC 60332-1-2 and IEC 60332-3-22 Cat. A
Fire resistant:	IEC 60331-1/2 (FFR type)
Halogen Free:	IEC 60754-1/2 (H type only)
Low Smoke:	IEC 61034-1/2 (H type only)
Fire and water spray resistant:	IEC 60331-2 + EN 50200 (WSR/WJR type)
Fire and water jet resistant:	IEC 60331-1 + BS 8491 (WSR/WJR type)

1.2 - Construction:

Conductor:	Plain or tinned stranded copper - Class 2 or 5 (flex type)
Fire protection:	Mica glass tape (FFR Type)
Insulation:	XLPE (2X without WSR/WJR type) HEPR (G type) HF90 (WSR/WJR type)
Individual screen:	Aluminium tape screen (CC & (i+c) & AA types) Electrolytic, tinned, stranded, copper drain wire and aluminum tape screen over each pair (EMC type)
Collective screen:	Plastic coated aluminium tape and a tinned copper drain wire ((i+c) & A types) Electrolytic tinned copper braided screen (EMC type)
Screen:	Electrolytic copper braided screen (except FM2XAH & FM2XAAH types)
Shield:	Copper / polyester tape or aluminium polyester tape coverage 100% and copper wire braided screen min.coverage 90% (EMC type)
Outer Sheath:	SHF1 or SHF2 (H type) ST2 (Y type)

1.3 - Product Range:

Type	Number of conductors	Cross sectional areas [mm ²]
FMGCH FMGCH EMC FMGCH-FFR FMGCH-FFR EMC	2C to 37C 1P to 37P	0.5 to 2.5
FMGCCH FMGCCH EMC FMGCCH FFR EMC FM2XCH FM2XCH-FFR FM2XCH-FFR WSR/WJR FM2XCH-FFR (i+c) WSR/WJR FM2XCCH FM2XCCH-FFR FM2XCCH-FFR WSR/WJR FM2XCCY-FFR FM2XAH-FFR WSR/WJR FM2XAAH-FFR WSR/WJR FM2XACH-FFR WSR/WJR	1P to 24P	0.5 to 2.5
FM2XAH	2C 3C 2C, 3C 2C, 3C	0.75 1 1.5 2.5
FMGCCH FFR	1P to 37P	0.5 to 2.5
FM2XCCH EMC	1P to 24P	0.5 to 1.5

2. DOCUMENTS AND DRAWINGS:

Specification Ref: FR 70-042, Rev.01, dated 18 Jul 2019
 Specification Ref: FR 70-043, Rev.02, dated 18 Jul 2019
 Specification Ref: FR 70-052, Rev.02, dated 18 Jul 2019
 Specification Ref: 2019_07-TS_73, Rev.0, dated 18 Jul 2019
 Specification Ref: 2019-07-TS-74, Rev.0, dated 18 Jul 2019
 Specification Ref: 2019_07-TS_75, Rev.0, dated 18 Jul 2019
 Specification Ref: 2019-07-TS-94, Rev.0, dated 24 Jul 2019
 Specification Ref: 2019-02-TS-92, Rev.3
 Specification Ref: 2019-02-TS-71, Rev.0, dated 10 Apr 2019
 Specification Ref: 2019-02-TS-91, Rev.0, dated 10 Apr 2019
 Specification Ref: 2019-02-TS-97, Rev.2, dated 09 Jan 2023
 Specification Ref: 2019-02-TS-99, Rev.2, dated 09 Jan 2023
 Specification Ref: 2019-02-TS-100, Rev.2, dated 09 Jan 2023
 Specification Ref: 2019-02-TS-66, Rev.3, dated 09 Jan 2023
 Specification Ref: 2021_11-TS-36, Rev.2, dated 29 Mar 2023
 Specification Ref: 2022_12-TS-13, Rev.0, dated 06 Dec 2022
 Specification Ref: 2022_12-TS-22, Rev.0, dated 09 Dec 2022
 Specification Ref: 2022_12-TS-33, Rev.0, dated 11 Dec 2022
 Specification Ref: FR 70-033, Rev.2, dated 17 Feb 2021
 Specification Ref: 45677-9878-1, Rev.0, dated 20 Jan 2025

3. TEST REPORTS:**VDE:**

Test report Ref. 17730-9020-0001 / 32ZFM, dated 22 Aug 2001.

TSE:

Test report Ref. 016.01.05/05-1166, dated 14 Jun 2005.
 Test report Ref. 13/10/08-0.16.40.01.05/30076, dated 13 Oct 2008.
 Test report Ref. 471761/05-19, dated 27 May 2019.

UNTEL KABLOLARI SANAYI VE TICARET A/S:

Test report Ref. 01/09/301/1, dated 12 Sep 2001.
 Test report Ref. 03/11/602, dated 08 Dec 2003.
 Test report Ref. 03/11/602, dated 26 May 2005.
 Tests on rubber and elastomer, dated 26 May 2005.
 3 test reports unreferenced and dated 26 Jun 2008.
 Test report on FM2X cables, dated 28 Dec 2012.
 Test report Ref. D172480, dated 26 Jan 2018.
 Test report Ref. TT-2018-07, dated 12 Mar 2018.
 Test report Ref. P11732-1901-R0, P11732-1902-R0, T11732-1902-R0, P11732-1903-R0, T11732-1903-R0, P11732-1904-R0 and T11732-1904-R0, dated 27 Feb 2019.
 Test report Ref. T11732-1901-R0, dated 14 Mar 2019.
 Test reports Ref. T11732-1905-R0 and T11732-1908-R0, dated 22 Mar 2019.
 Test reports Ref. P11732-1905-R0, P11732-1906-R0, T11732-1906-R0, P11732-1907-R0, T11732-1907-R0 and P11732-1908-R0, dated 05 Apr 2019.
 Test reports Ref. MT1901-R0, MT1902-R0, MT1903-R0 and MT1904-R0, dated 16 May 2019.
 Test reports Ref. T19031-R00, 19032-R00, 19033-R00, T19034-R00, T19035-R00, T19036-R00, T19037-R00 and 19038-R00, dated 03 May 2023.
 Test report Ref. T230021-R00, dated 23 Oct 2023.
 Test report dated 14 Mar 2025.

4. APPLICATION / LIMITATION:

- 4.1 - BUREAU VERITAS Rules for the Classification of Steel Ships and Naval Ships.
 4.2 - ST2 insulated cables are not to be used either in refrigerated spaces, or on decks exposed to the weather of ships classed for unrestricted service.
 4.3 - ST2 material should be avoided for installation in passenger vessels and in evacuation areas.

5. PRODUCTION SURVEY REQUIREMENTS:

5.1 - The above products are to be supplied by **UNTEL KABLOLARI SANAYI VE TICARET A/S** in compliance with the type described in this certificate.

5.2 - This type of product is within the category HBV of Bureau Veritas Rule Note NR320 and as such does not require a BV product certificate.

5.3 - **UNTEL KABLOLARI SANAYI VE TICARET A/S** has to make the necessary arrangements to have its works recognised by Bureau Veritas in compliance with the requirements of NR320 for HBV products.

5.4 - For information, **UNTEL KABLOLARI SANAYI VE TICARET A/S** has declared to Bureau Veritas the following production site:

UNTEL KABLOLARI SANAYI VE TICARET A/S
DEMIRCILER KOYU
MAKINE OSB
6.CADDE NO.4 41455
DILOVASI
KOCAELI
Türkiye

6. MARKING OF PRODUCT:

The cable shall be marked on the surface outer sheath, in a durable legible and visible manner, with the following information throughout the length of cable:

- Rated voltage
- Number of cores and cross-sectional area of the conductors
- Manufacturer's name or trademark
- Applicable standards to flame retardant and fire resistance (with the category if applicable)
- Code designation (optional)

7. OTHERS:

7.1 - It is **UNTEL KABLOLARI SANAYI VE TICARET A/S**'s responsibility to inform shipbuilders or their sub-contractors of the proper methods of fitting, use and general maintenance of the approved equipment and the conditions of this approval.

7.2 - This certificate supersedes the Type Approval Certificate N° 11732/E2 BV, issued by the Society.

*** END OF CERTIFICATE ***