



Marine & Offshore

Certificate number: 33493/BO BV

File number: ACE1/821/1

Product code: 2505H

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

www.veristar.com

TYPE APPROVAL CERTIFICATE

This certificate is issued to

Caledonian (Shandong) Cables Ltd.

Jinan Shandong - CHINA

for the type of product

INSTRUMENTATION AND COMMUNICATION CABLES

150/250V & 600V

Type : BFOU, RFOU & UTP/FTP series

Requirements:

Bureau Veritas Rules for the Classification of Steel Ships

IEC 60092-350 (2014), IEC 60092-360 (2014), IEC 60092-376 (2017)

IEC 60228 (2004)

IEC 60331-21 (1999)

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

IEC 60754-1/2 (2011)

IEC 61034-1/2 (2013)

IEC 61156-5/6 (2012)

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: 02 Feb 2024

For Bureau Veritas Marine & Offshore,

At BV SHANGHAI, on 02 Feb 2019,

Jennifer Zhang



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.

The electronic version is available at: <http://www.veristarp.com/veristarnb/jsp/viewPublicPdfTypepec.jsp?id=vbekerke3v>

BV Mod. Ad.E 530 June 2017

This certificate consists of 3 page(s)

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION:

Instrumentation and communication cables for Marine applications.

1.1 - Specification:

Rated voltage:	150/250 V, 600V (BFOU(c)-C/P type only)
Temperature	90°C, for instrumentation cables 70°C, for transmission cables
Flame retardant:	IEC 60332-1-2 & IEC 60332-3-22 Cat.A
Fire resistant:	IEC 60331-21 (BFOU type only)
Halogen free:	IEC 60754-1/2
Low smoke:	IEC 61034-2

1.2 - Instrumentation cable construction:

Conductor:	Tinned stranded copper conductor (Class 2)
Fire resisting layer:	Mica tape (BFOU type only)
Insulation:	EPR, XLPE (BFOU(c)-C/P type only)
Screen:	Individual Cu/polyester tape or AL/polyester tape [(i) type only] Collective Cu/polyester tape or AL/polyester tape [(c) type only]
Inner covering:	Halogen free compound
Armour:	Tinned copper wire braid
Outer sheath:	SHF2

1.3 - Transmission cable construction:

Conductor:	Stranded copper conductor (Class 2)
Insulation:	HDPE
Screen:	Individual aluminium tape (U/FTP), with tinned copper wire braid (S/FTP) Overall aluminium tape (F/UTP), with tinned copper wire braid (SF/UTP)
Inner sheath:	SHF1
Armour:	Copper wire braid
Outer sheath:	SHF1, SHF2

1.4 - Range:

Instrumentation cable type	Number of cores	Cross-sect. area (mm ²)
BFOU(i) & BFOU(c)	1P to 12P	0.75 to 2.5
	1T to 12T	
RFOU(i) & RFOU(c)	1P to 12P	0.75 to 2.5
	1T to 12T	
BFOU(c)-C/P	1 to 12	1.5 to 16

Transmission cable type	Cross-sect. area	Frequency (MHZ)
Cat 5e U/UTP, F/UTP, U/FTP, SF/UTP, S/FTP	24AWG & 26AWG	1 to 100
Cat 6 U/UTP, F/UTP, U/FTP, SF/UTP, S/FTP	23AWG & 26AWG	1 to 250
Cat 6A U/UTP, U/FTP, S/FTP	23AWG & 26AWG	1 to 500
Cat 7 U/FTP, S/FTP	23AWG & 26AWG	1 to 600

2. DOCUMENTS AND DRAWINGS:

Caledonian data sheet N° PI80973 V01.2013.

Caledonian data sheet N° PD80993 V01.2013.

3. TEST REPORTS:**China National Center:**

- Tests report N° CT12-4632, dated 2012.11.02.
- Tests report N° CT10-0549, dated 2010.03.22.
- Tests report N° CT09-3775, dated 2010.03.22.
- Tests report N° CT13-0920-1, dated 2013.05.03.
- Tests report N° CT13-0920-2, dated 2013.05.03.

Caledonian:

- Tests report N° F2329-1, dated 17 Dec 2018
- Tests report N° F2329-2, dated 17 Dec 2018
- Tests report N° F2538-2, dated 09 Jun 2018
- Tests report N° F2866-3, dated 15 Oct 2018

4. APPLICATION / LIMITATION:

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

5. PRODUCTION SURVEY REQUIREMENTS:

5.1 - The INSTRUMENTATION AND COMMUNICATION CABLES are to be supplied by **Caledonian (Shandong) Cables Ltd.** 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 - **Caledonian (Shandong) Cables Ltd.** 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, **Caledonian (Shandong) Cables Ltd.** has declared to Bureau Veritas the following production site:

Caledonian (Shandong) Cables Ltd.
Northeast Plant,
Dianliu Industrial Park, Shizi Park,
Dongjia Town, Licheng District,
Jinan City, Shandong, China
Jinan Shandong
CHINA

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 through the length of cable:

- 1) - Voltage grade.
- 2) - Cable symbol and temperature class.
- 3) - Number of conductors and conductor size.
- 4) - Applicable standard(s) to flame retardant and fire resistance if any
- 5) - Manufacturer's name or trade mark.
- 6) - Year of manufacture.

7. OTHERS:

7.1 - It is **Caledonian (Shandong) Cables Ltd.**'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° 33493/A0 BV issued on 08 Nov 2013 by the Society.

*** END OF CERTIFICATE ***