



Certificate no.:
TAE00004WK

TYPE APPROVAL CERTIFICATE

This is to certify:

that the **Low Voltage Cable**

with type designation(s)

AIOI, AIOI(C), AIOI(I), AIOI(I/C), AICI, AICI(C), AICI(I), AICI(I/C)

issued to

Kukdong Electric Wire Co., Ltd.

Jincheon-gun, Chungcheongbuk-do, Korea, Republic of

is found to comply with

DNV rules for classification – Ships, offshore units, and high speed and light craft

Application:

Control and instrumentation cables

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.

Rated voltage (V) 250

Temp. class (°C) 90

Issued at **Busan** on **2024-08-14**

This Certificate is valid until **2029-08-13**.

for **DNV**

DNV local unit: **Seoul**

Approval Engineer: **Eun Jin Lee**

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Product description

Type : AIOI, AIOI(C), AIOI(I), AIOI(I/C), AICI, AICI(C), AICI(I), AICI(I/C) 250V

Conductors:	Tinned stranded copper, class 2
Insulation:	HF90 (Dual layer)
Individual screen:	AL/PS tape with drain wire('I') type only
Collective screen:	AL/PS tape with drain wire('C') type only
Inner sheath:	SHF1
Metal covering:	Copper wire braid('O'), Galvanized steel wire braid('C')
Outer sheath:	SHF1

Number of cores	Conductor cross-section(mm ²)
2~44C	1.0 (for AIOI, AIOI(C), AICI, AICI(C))
1~37 Pair	0.75, 1.0 and 1.5 (for AIOI(C), AIOI(I), AIOI(I/C), AICI(C), AICI(I), AICI(I/C))
1~24 Triad	0.75, 1.0 and 1.5 (for AIOI(C), AIOI(I), AIOI(I/C), AICI(C), AICI(I), AICI(I/C))

Application/Limitation

This type of cable is fire resistant in accordance with IEC Publication 60331.

The requirements of SOLAS Chapter II-1 Part D Reg. 45.5.2 to limit Fire Propagation along Bunches of Cables or Wires are fulfilled without any additional measures.

Type Approval documentation

Tests carried out

Standard	Release	General description	Limitation
IEC 60092-376	2017	Cables for control and instrumentation circuits 150/250V(300V)	
IEC 60092-360	2021	Insulating and sheathing materials for shipboard and offshore units, power, control, instrumentation, telecommunication cables	
IEC 60332-1	2015	Test for vertical flame propagation for a single insulated wire or cable	
IEC 60331-21	1999	Tests for electric cables under fire conditions – Circuit integrity – Part 21: Procedures and requirements – Cables of rated voltage up to 0,6/1,0 kV	@ 750°C/90 min.
IEC 60331-1/-2	2018	Fire resistance / Circuit integrity – Test method for fire <i>with shock</i> at temperature of at least 830°C for cables rated up to and including 0,6/1 kV	@ 830°C w/shock (120 min)
IEC 60332-3-22	2018	Flame retardance in bunch	Cat. A
IEC 60684-2	2011	Flexible insulating sleeving – Part 2: Methods of test.	Fluorine content <0.1%
IEC 60754-1/2	2019	Determination of the amount of halogen acid gas/ Determination of degree of acidity of gases evolved during the combustion of materials taken from electric cables by measuring pH and conductivity	Low Halogen <0,5% Halogen free ≥4,3pH, ≤10μS/mm
CSA C22.2 No. 03	2019	5.11 Flexibility at any specified temperature	Cold bend: -40°C
CSA C22.2 No. 03	2019	5.12 Abnormal low temperature – impact	Cold impact: -35°C

Marking of product

250V – Type designation – Size – IEC 60331(120) – IEC 60332 Cat. A - KUKDONG – Year of manufacture - Length

Periodical assessment

The scope of the retention/renewal survey is to verify that the conditions stipulated for the Type Approval Certificate are complied with and that no alterations are made to the design and/or the material of product.

The main elements of the survey are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Check of results from Production Sample Tests (PST) and Routine tests (RT) (if not available, PST and RT are to be carried out)
- Review of type approval documentation
- Review of possible changes in design, material and performance
- Ensuring traceability between manufacturer's product type marking and Type Approval Certificate.

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE