

# TYPE APPROVAL CERTIFICATE

## This is to certify:

**That the Electric Power Cable**

with type designation(s)

**PYCY, PYOY, PYBY, PYCY(C), PYOY(C), PYBY(C), PYOY(I/C), FX-PYOY-EMC, (FX-)PYOY-VFD**

Issued to

**LS Cable & System Ltd (Donghae Plant)**  
**Donghae-si, Gangwon-do, Korea, Republic of**

is found to comply with

**DNV rules for classification – Ships, offshore units, and high speed and light craft**  
**IEC 60092-353 (2016-09)**

## Application :

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

### Power and control cable

#### Type

**PYCY, PYOY, PYBY, PYCY(C), PYOY(C), PYBY(C), PYOY(I/C), FX-PYOY-EMC  
(FX-)PYOY-VFD**

**Rated voltage  
(kV)**  
**0.6/1**

**Temp. class  
(°C)**  
**90**

**0.6/1 and 1.8/3**

**90**

Issued at **Busan** on **2021-11-22**

This Certificate is valid until **2026-11-21**.

DNV local station: **Seoul**

for **DNV**

Approval Engineer: **Eun Jin Lee**

**Hanwee Low**  
**Head of Section**

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 designation : 0.6/1kV PYCY, PYOY, PYBY, PYCY(C), PYOY(C), PYBY(C), PYOY(I/C), FX-PYOY-EMC, 0.6/1kV (FX-)PYOY-VFD, 1.8/3kV (FX-)PYOY-VFD

|               |                                                                                                                               |
|---------------|-------------------------------------------------------------------------------------------------------------------------------|
| Conductors:   | Tinned stranded copper, class 2, Class 5 for 'FX-' type                                                                       |
| Insulation:   | HF HEPR                                                                                                                       |
| Screen:       | (C): Collective screen with drain wire, Aluminium/polyester tape<br>(I): Individual screen, Tinned annealed copper wire braid |
| Inner sheath: | PVC(ST2)                                                                                                                      |
| Armor :       | Galvanized steel(C), Bronze(B) or Copper(O) wire braid                                                                        |
| Outer sheath: | -EMC or -VFD: Copper wire braid & Copper/polyester tape with 100% coverage<br>PVC(ST2)                                        |

| Cable type                                  | No. of Pairs                  | Conductor size(mm <sup>2</sup> ) |
|---------------------------------------------|-------------------------------|----------------------------------|
| PYOY, PYBY, PYOY(C), PYBY(C)                | 1C                            | 1.5~630                          |
| PYCY, PYOY, PYBY, PYCY(C), PYOY(C), PYBY(C) | 2C, 2C+E, 3C, 3C+E, 4C, 4C +E | 1.5~500                          |
|                                             | 5C, 6C, 10C                   | 1.5~6                            |
| PYOY(C), PYOY(I/C)                          | 1P, 5P, 10P                   | 1.5~6                            |
| FX-PYOY-EMC                                 | 3C                            | 1.5~300                          |
| 0.6/1kV (FX-)PYOY-VFD                       | 3C+3E                         | 2.5~300                          |
|                                             | 3C                            | 1.5~300                          |
| 1.8/3kV (FX-)PYOY-VFD                       | 3C, 3C+3E                     | 10~300                           |

## Application/Limitation

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 60092-353         | 2016    | Power cables for rated voltages 1kV and 3kV                                                                                    |                                        |
| 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 60332-3-22        | 2018    | Test for vertical flame spread of vertically mounted bunched wires or cables                                                   | Cat. A                                 |
| IEC 60092-350 Annex E | 2020    | Cold bend test and impact test for low temperature behaviour                                                                   | Cold bend: -30°C<br>Cold impact: -30°C |

## Marking of product

[HIS]-RATING-TYPE-SIZE-LS CABLE-YEAR-LENGTH-STANDARD  
EX) [HIS] 0.6/1kV PYOY(C) 1X120 LS CABLE 2015 XXXM IEC60332 CAT.A

## Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the Type approval are complied with and that no alterations are made to the product design or choice of materials.

The main elements of the assessment are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Routine tests (RT) and selected type tests (ref. to applicable class programs) checked (if not available these tests shall be carried out)
- Review of type approval documentation
- Review of possible change in design, materials 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

Job Id: **262.1-019515-2**  
Certificate No: **TAE00004CT**