

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Electric Power Cable

with type designation(s)

**FEP insulated and sheathed cryogenic cable SP3880T (3 cores),
cFEP insulated and sheathed cryogenic cable SP3880U (6 cores)**

Issued to

**Meiyo Electric Co. Ltd.
Shizuoka, Shizuoka Pref., Japan**

is found to comply with

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

Application :

Cryogenic power cable for special low temperature applications.

Products approved by this certificate are accepted for installation on all vessels classed by DNV.

Type	Rated voltage (kV)	Temp. class (°C)
FEP insulated and sheathed cryogenic cable SP3880T (3 cores)	150/250	-196 to +200
FEP insulated and sheathed cryogenic cable SP3880U (6 cores)	150/250	-196 to +200

Issued at **Høvik** on **2026-02-18**

This Certificate is valid until **2031-02-17**.

DNV local station: **Japan CMC**

for **DNV**

Approval Engineer: **Ivar Bull**

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Frederik Tore Elter
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

FEP insulated and sheathed cryogenic cable SP3880T (3 cores x 0,5mm²),
FEP insulated and sheathed cryogenic cable SP3880U (6 cores x 0,5mm²)

Construction:	
Conductors:	Tinned copper 19/0.18 Cross sectional area 0,5mm ²
Core insulation:	FEP
Inner covering:	Tape
Shield:	Tinned copper wire braid
Separator:	Tape
Outer sheath:	FEP

Application/Limitation

Minimum bending diameter 40 mm.

Cryogenic cable shall be installed on cable tray with additional cover around for mechanical protection (Not delivered by Meiyo Electric Co. Ltd.)

Type Approval documentation

Tests carried out

Standard	Release	General description	Limitation
IEC 60092-350	2020-01	Electrical installations in ships - Part 350: General construction and test methods of power, control, and instrumentation cables for shipboard and offshore applications	Only applicable parts
IEC 60092-360	2021-01	Electrical installations in ships - Part 360: Insulating and sheathing materials for shipboard and offshore units, power, control, instrumentation, and telecommunication cables	Only applicable parts
IEC 60092-376	2017-05	Cables for control and instrumentation circuits 150/250 V (300 V)	Only applicable parts
IEC 60332-1-2:2004+AMD1:2015	2004	Tests on electric and optical fibre cables under fire conditions - Part 1-2: Test for vertical flame propagation for a single insulated wire or cable - Procedure for 1 kW pre-mixed flame	
IEC 60332-3-22	2018-07	Tests on electric and optical fibre cables under fire conditions - Part 3-22: Test for vertical flame spread of vertically mounted bunched wires or cables - Category A	Charred portion of sample does not exceed 2,5m above bottom edge of burner.
IEC 60811-504	2012-03	Modified Cold bend test. 3 straight cable samples of each type are immersed 16hrs in liquid Nitrogen -196°C. Cables are then removed from the -196°C condition and immediately wrapped tightly 4 times around a 40 mm diameter mandrel at a speed of 1 revolution per 5 seconds.	Min. bend diameter 40mm. After bending, a test voltage 1000V is applied for 1 minute between conductors and braid. No insulation breakdown. No visible damage/cracks of insulation or sheath material. N=3+3

Standard	Release	General description	Limitation
IEC 60811-506	2012-06	Modified Cold impact test. 3 straight cable samples of each type are immersed 16hrs in liquid Nitrogen -196C. Cables are then removed from the -196°C condition and immediately placed in the test apparatus. Apply drop load shock on cables.	Shock value 200g, 100mm. After impact, a test voltage 1000V is applied for 1 minute between conductors and braid. No insulation breakdown. No visible insulation damage like cracks. N=3+3

Marking of product

Meiyo Electric Co – Cryogenic instrument cable -196°C – Size and no of conductors - 150/250V – Year and month

Manufactured by

KURABE INDUSTRIAL CO LTD
1800 Miyaguchi Hamakita-ku Hamamatsu-shi Shizuoka-ken
JAPAN

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) checked (if not available tests according to RT to 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