

TYPE APPROVAL CERTIFICATE**This is to certify:****That the Fuse**with type designation(s)
FR10 - FR14 - FR22 AM/GGIssued to
MERSEN France
SAINT BONNET DE MURE, Franceis found to comply with
DNV GL rules for classification – Ships, offshore units, and high speed and light craft**Application :****For use onboard ships and offshore units.****Products approved by this certificate are accepted for installation on all vessels classed by DNV GL.****Voltage class 230 V to 600 /690 V**Issued at **Høvik** on **2017-02-21**This Certificate is valid until **2021-12-31**.DNV GL local station: **Marseille**Approval Engineer: **Nicolay Horn**for **DNV GL**Digitally Signed By: **Andreas Kristoffersen**
Location: DNV GL Høvik, Norway
Signing Date: 2017-02-24**Andreas Kristoffersen**
Head of SectionThis 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.

Name and place of manufacturer

Mersen France SB SAS
 69720 Saint Bonnet de Mure, France

Nolam Tunisia rue de nabeul lot n°4 zone
 Industrielle de M'Ghira Tunisie

Product description

Ferrule fuse-link with or without indicator for size 10 , and with or without striker for sizes 14 and 22

Technical data :

Size 10 x 38	Class	Rated voltage (V)	Nominal Current (A)	Breaking Capacity (kA)
FR10	aM	500	0.16	120
FR10	aM	500	0.25	120
FR10	aM / gG	500	0.5	120
FR10	aM / gG	500	1	120
FR10	aM / gG	500	2	120
FR10	aM / gG	500	4	120
FR10	aM / gG	500	6	120
FR10	aM / gG	500	8	120
FR10	aM / gG	500	10	120
FR10	aM / gG	500	12	120
FR10	aM / gG	500	16	120
FR10	aM / gG	500	20	120
FR10	aM / gG	400	25	120
FR10	aM / gG	400	32	120
FR10	aM / gG	600 / 690*	1	120
FR10	aM / gG	600 / 690*	2	120
FR10	aM / gG	600 / 690*	4	120
FR10	aM / gG	600 / 690*	6	120
FR10	aM / gG	600 / 690*	8	120
FR10	aM / gG	600 / 690*	10	120
FR10	aM / gG	600 / 690*	12	120

* See Application / limitation .

Fuse-holder: Modulostar CMS10 - US10

Size 14 x 51	Class	Rated voltage (V)	Nominal Current (A)	Breaking Capacity (kA)
FR14	aM	690	0.25	120
FR14	aM	690	0.5	120
FR14	aM / gG	500 - 690	1	120
FR14	aM / gG	500 - 690	2	120
FR14	aM / gG	500 - 690	4	120
FR14	aM / gG	500 - 690	6	120
FR14	aM / gG	500 - 690	8	120
FR14	aM / gG	500 - 690	10	120
FR14	aM / gG	500 - 690	12	120
FR14	aM / gG	500 - 690	16	120
FR14	aM / gG	500 - 690	20	120
FR14	aM / gG	500 - 690	25	120
FR14	aM / gG	500 - 690	32	120
FR14	aM / gG	500 - 690	40	120
FR14	aM	500 - 690	45	120
FR14	aM / gG	500 - 690	50	120

Fuse-holder: Modulostar CMS14 - US14

Job Id: **262.1-012599-3**
Certificate No: **TAE00001RW**

Size 22 x 58	Class	Rated Voltage (V)	Nominal Current (A)	Breaking Capacity (kA)
FR22	aM	690	1	120
FR22	aM / gG	690	2	120
FR22	aM / gG	690	4	120
FR22	aM / gG	690	6	120
FR22	aM / gG	690	8	120
FR22	aM / gG	690	10	120
FR22	aM / gG	690	12	120
FR22	aM / gG	690	16	120
FR22	aM / gG	690	20	120
FR22	aM / gG	690	25	120
FR22	aM / gG	690	32	120
FR22	aM / gG	690	40	120
FR22	aM / gG	690	50	120
FR22	aM / gG	500 - 690*	63	120
FR22	aM / gG	500 - 690*	80	120
FR22	aM / gG	500	100	120
FR22	aM / gG	500	125	120

* All types can be delivered with or without striker. With striker can be delivered for both 690 V & 500 V for 63 & 80A.
Fuse-holder: Modulostar CMS22 – US22

Application / limitation

For installation inside switchboards/ enclosures onboard ships and offshore units.

For size 10, Uimp = 6 kV the max. rated voltage is 600 V when used in a IT (ship) net. It can be used in applications with directly earthed systems with rated voltage of 400/690 V.

Type Approval documentation

Technical info:

"IEC Low Voltage General Purpose Protection Ferrule fuse-links" datasheet from Mersen.

Test reports:

Mersen Test Report no. 2012088 /A / B / C dated 2012-06-19 & 25, Mersen CD-R "Test report and Marine Approvals dated 2012-08.

Tests carried out

Type tests according to IEC 60269-1 and 60947-3, Environmental tests in accordance with DNV Standard for Certification No. 2.4: Vibration test, Dry heat test and Damp heat.

Marking of product

Packing with company name Mersen and Factory origin with the made in (France or Tunisia).
Product with the trademark Mersen and type designation - current - power rating.

Job Id: **262.1-012599-3**
Certificate No: **TAE00001RW**

Periodical assessment

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

The main elements of the assessments are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Routines (RT) checked (if not available tests 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.

Assessment to be performed at least 2 and 3,5 year.

END OF CERTIFICATE