



DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. **E-11934**

This is to certify that the
Fuse links

with type designation(s)
FR10 - FR14 - FR22 AM/GG

Manufactured by
Mersen France SB
SAINT BONNET DE MURE, France

is found to comply with
Det Norske Veritas' Rules for Classification of Ships, High Speed & Light Craft and Det Norske Veritas' Offshore Standards

Application
For use onboard ships and offshore units.


Voltage class 230 V to 600 /690 V

Høvik, 2012-12-07
for **Det Norske Veritas AS**

This Certificate is valid until
2016-12-31


for **Marit Laumann**
Head of Section


DNV local office:
Le Havre


Nicolay Horn
Surveyor
Green

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.

If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 2 million. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.



Certificate No.: E-11934
 File No.: 825.10
 Job Id.: 262.1-012599-1

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	Class	Rated voltage (V)	Nominal Current (A)	Breaking Capacity (kA)
10 x 38				
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	Class	Rated voltage (V)	Nominal Current (A)	Breaking Capacity (kA)
14 x 51				
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



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Size	Class	Rated voltage (V)	Nominal Current (A)	Breaking Capacity (kA)
22 x 58				
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

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

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, Product with the trademark Ferraz-Shawmut,
And - type designation - current - power rating, Factory origin with the made in (France or Tunisia)



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Certificate Retention Survey

The scope of the retention/renewal survey 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 survey are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Production Sample Tests (PST) and Routines (RT) checked (if not available tests according to PST and 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.

Survey to be performed at least every second year.

END OF CERTIFICATE