



Marine & Offshore

Certificate number: 17822/C0 BV

File number: ACE 02/130/01

Product code: 2733H

This certificate is not valid when presented without the full attached schedule composed of 7 sections

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TYPE APPROVAL CERTIFICATE

This certificate is issued to

SCHNEIDER ELECTRIC INDUSTRIES SAS

Grenoble - FRANCE

for the type of product

CIRCUIT BREAKERS (MEDIUM/HIGH VOLTAGE)

Type: LF1, LF2, LF3.

Requirements:

BV Rules for the Classification of Steel Ships
IEC 62271-100 (2017), IEC 62271-200 (2011)

This certificate is issued to attest that Bureau Veritas Marine & Offshore did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.

This certificate will expire on: 15 Mar 2024

For Bureau Veritas Marine & Offshore,

At BV LYON, on 15 Mar 2019,

Florian Aulen



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with Bureau Veritas Marine & Offshore. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of Bureau Veritas Marine & Offshore available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against Bureau Veritas Marine & Offshore for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

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BV Mod. Ad.E 530 June 2017

This certificate consists of 3 page(s)

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION:

Product Type	Number of poles	Rated Voltage 50/60Hz (kV)	Rated Current In (A)	Breaking capacity Isc (kA)	Making capacity Ip (kA)	Short time withstand current Icw (3 sec. / 1 sec.) (kA)	Remarks
LF1	3	12	1250	31.5	82	31.5	All circuit-breakers are associated with the high voltage cubicle MCset type AD1, AD2 or AD3
LF2	3	7.2	1250	50	130	50	
	3	12	1250	40	104	40	
LF3	3	12	3150	50	130	50	
	3	17.5	3150	40	104	40	

Note: The breaker operation is based on the SF6 self-expansion cubicles.

2. DOCUMENTS AND DRAWINGS:

- SCHNEIDER catalogue titled "Medium Voltage Distribution LF circuit breaker", ref. AMTED397052EN dated 30/11/2015
- Technical Data Sheet AMTED307008EN dated 03/2010.

According to drawings:

LF1	C.B. assembly drawing	03406433FO
	Fixed part assembly drawing	03406438FO
LF2	C.B. assembly drawing	03406434FO
	Fixed part assembly drawing	03406451FO
LF3	C.B. assembly drawing	03406435FO
	Fixed part assembly drawing	03406452FO

3. TEST REPORTS:

	Reference:	Issued on:
LF1 Dielectric test:	L.E.M.T n° AAA25115EA	03/04/2006
Temperature rise test:	L.E.M.T n° TFR_201102531_003	22/06/2011
Short time withstand and peak current tests:	VOLTA n° A2007-0782-00	19/03/2008
Mechanical operation tests:	L.E.M.T n° TFR_201406503_001	26/01/2015
Mechanical endurance tests:	AM38Ah	04/02/1998
Short circuit tests:	VOLTA n° A2007-0789-00	19/03/2008
Earth fault tests:	VOLTA n° A2007-1031-00	19/03/2008
LF2 Dielectric test:	LUIGI MAGRINI n° TR-LM-05/1664	16/11/2005
Temperature rise test:	L.E.M.T n° TFR_201102430_001	08/06/2011
Short time withstand and peak current tests:	VOLTA n° 201104719_001 (7.2 kV)	09/01/2012
	VOLTA n° A2008-0024-03 (12 kV)	27/05/2008
Mechanical operation tests:	L.E.M.T n° TFR_201406503_001	26/01/2015
Mechanical endurance tests:	L.E.M.T n° 51167364EB (7.2 kV)	12/01/1999
	L.E.M.T n° 51167364ED (12 kV)	13/01/1999
Short circuit tests:	VOLTA n° 201306893_001 (7.2 kV)	20/11/2013
	VOLTA n° A2008-0031-00 (12 kV)	27/05/2008
Earth fault tests:	VOLTA n° 2008-0034-04 (7.2 kV)	23/04/2013
	VOLTA n° 2008-0032-00 (12 kV)	23/04/2013
LF3 Dielectric test:	L.E.M.T n° 51253910EA	06/01/2006
Temperature rise test:	VOLTA n° T070	21/05/2005
Short time withstand and peak current tests:	VOLTA n° A2006-0284-01	17/11/2006
Mechanical operation tests:	L.E.M.T n° TFR_201406503_001	26/01/2015
Mechanical endurance tests:	L.E.M.T n° AM911h	25/07/1997
Short circuit tests:	VOLTA n° A200202266c (17.5 kV)	03/02/2003
	VOLTA n° 201107539_009 (17.5 kV)	27/01/2012
	VOLTA n° 201203398_001 (12 kV)	31/05/2012
	Technical Leaflet n°HRB7535400 issued by SCHNEIDER ELECTRIC	13/02/2013

Earth fault tests: VOLTA n° 201301234_001 03/04/2013

According to Vibrations Test Reports:	reference :	issued on:
LF1	MARIPERMAN 9576	11/03/99
LF2	MARIPERMAN 9575	11/03/99
LF3	MARIPERMAN 9574	11/03/99

According to Inclinaison test static & dynamic:	reference :	issued on:
LF1	ISMES STR-2502-RAT-STR-517/99	03/99
LF2	ISMES STR-2502-RAT-STR-518/99	03/99
LF3	ISMES STR-2502-RAT-STR-519/99	03/99

4. APPLICATION / LIMITATION:

- 4.1 - BV Rules for the Classification of Steel Ships.
 4.2 - All circuit breakers are associated with the high voltage cubicle type MCset.
 4.3 - Approval valid for ships intended to be granted with the following additional class notations: **AUT-UMS, AUT-CCS, AUT-PORT and AUT-IMS.**

5. PRODUCTION SURVEY REQUIREMENTS:

- 5.1 - The above products are to be supplied by **SCHNEIDER ELECTRIC INDUSTRIES SAS** in compliance with the type described in this certificate.
 5.2 - This type of product is within the category HBV of Bureau Veritas Rule Note NR320 and as such does not require a BV product certificate.
 5.3 - **SCHNEIDER ELECTRIC INDUSTRIES SAS** has to make the necessary arrangements to have its works recognised by Bureau Veritas in compliance with the requirements of NR320 for HBV products.
 5.4 - For information, **SCHNEIDER ELECTRIC INDUSTRIES SAS** has declared to Bureau Veritas the following production site(s):

**SOCIETE ELECTRIQUE D'AUBENAS
 ZI DE RIPOTIER
 07200 AUBENAS
 FRANCE**

6. MARKING OF PRODUCT:

- Maker's name or trade mark.
- Serial number of the units.
- Equipment type number or model identification under which it was type-tested.
- According to IEC 62271 specifications.

7. OTHERS:

- 7.1 - It is **SCHNEIDER ELECTRIC INDUSTRIES SAS's** responsibility to inform shipbuilders or their sub-contractors of the proper methods of fitting, use and general maintenance of the approved equipment and the conditions of this approval.
 7.2 - This certificate supersedes the Type Approval Certificate N° 17822/B0 BV issued on 21 Jan 2014 by the Society.

*** END OF CERTIFICATE ***