



Marine & Offshore

Certificate number: 25920/B0 BV

File number: ACE002/39/36

Product code: 2633H

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

MITSUBISHI ELECTRIC CORPORATION Fukuyama Works

Fukuyama - JAPAN

for the type of product

CIRCUIT BREAKERS (LOW VOLTAGE)

Molded Case Circuit Breakers NF125, NF160, NF250

Types SXV, LXV, HXV, SGV, LGV, HGV, RGV, UGV, SEV, HEV

Requirements:

Bureau Veritas Rules for the Classification of Steel Ships

IEC 60647-2 :2016

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: 16 Apr 2023

For Bureau Veritas Marine & Offshore,

At BV KOBE, on 16 Apr 2018,

Shinichi Takemoto



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.

The electronic version is available at: <http://www.veristarp.com/veristarnb/jsp/viewPublicPdfTypepec.jsp?id=aacwe6ceby>

BV Mod. Ad.E 530 June 2017

This certificate consists of 4 page(s)

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION:

Type	Current Rating at 45°C (A)	Rated Voltage (V)	Breaking Current (RMS) Icu/Ics (kA)	Making Current Icm (kA)
NF125-SXV	15, 16, 20, 30, 32, 40, 50, 60, 63, 75, 80, 100, 125	AC690 AC500 AC450 AC240	8/8 23/23 36/36 75/75	15.5 50.1 76.8 167
NF125-LXV	15, 16, 20, 30, 32, 40, 50, 60, 63, 75, 80, 100, 125	AC690 AC500 AC450 AC240 DC300	8/8 36/36 50/50 90/90 20/20	15.5 83.3 115 201 20.0
NF125-HXV	15, 16, 20, 30, 32, 40, 50, 60, 63, 75, 80, 100, 125	AC690 AC500 AC450 AC240 DC300	10/8 50/38 65/65 100/100 40/40	19.9 114 148 219 40.0
NF160-SVX	15, 16, 20, 30, 32, 40, 50, 60, 63, 75, 80, 100, 125, 150, 160	AC690 AC500 AC450 AC240 DC300	8/8 30/30 36/36 85/85 20/20	15.5 63.0 76.8 189 20.0
NF160-LXV	125, 150, 160	AC690 AC500 AC450 AC240 DC300	8/8 36/36 50/50 90/90 20/20	15.5 83.3 115 201 20.0
NF160-HXV	125, 150, 160	AC690 AC500 AC450 AC240 DC300	10/8 50/38 65/65 100/100 40/40	19.9 114 148 219 40.0
NF250-SXV	100, 125, 150, 175, 200, 225, 250	AC690 AC500 AC450 AC240 DC300	8/8 30/30 36/36 85/85 20/20	15.5 63.0 76.8 189 20.0
NF250-LXV	100, 125, 150, 175, 200, 225, 250	AC690 AC500 AC450 AC240 DC300	8/8 36/36 50/50 90/90 20/20	15.5 83.3 115 201 20.0
NF250-HXV	100, 125, 150, 175, 200, 225, 250	AC690 AC500 AC450 AC240 DC300	10/8 50/38 65/65 100/100 40/40	19.9 114 148 219 40.0
NF125-SGV	20(16-20), 25(20-25), 32(25-32), 40(32-40), 50(35-50), 63(45-63), 80(56-80), 100(70-100), 125(90-125)	AC690 AC500 AC450 AC240 DC300	8/8 30/30 36/36 85/85 20/20	15.5 63.0 76.8 189 20.0
NF125-LGV	20(16-20), 25(20-25), 32(25-32), 40(32-40), 50(35-50), 63(45-63), 80(56-80), 100(70-100), 125(90-125)	AC690 AC500 AC450 AC240 DC300	8/8 36/36 50/50 90/90 20/20	15.5 83.3 115 201 20.0

NF125-HGV	20(16-20), 25(20-25), 32(25-32), 40(32-40), 50(35-50), 63(45-63), 80(56-80), 100(70-100), 125(90-125)	AC690	10/8	19.9
		AC500	50/38	114
		AC450	65/65	148
		AC240	100/100	219
		DC300	40/40	40.0
NF250-SGV	160(125-160) 200(140-200) 250(175-250)	AC690	8/8	15.5
		AC500	30/30	63.0
		AC450	36/36	76.8
		AC240	85/85	189
		DC300	20/20	20.0
NF250-LGV	160(125-160) 200(140-200) 250(175-250)	AC690	8/8	15.5
		AC500	36/36	83.3
		AC450	50/50	115
		AC240	90/90	201
		DC300	20/20	20.0
NF250-HGV	160(125-160) 200(140-200) 250(175-250)	AC690	10/8	19.9
		AC500	50/38	114
		AC450	65/65	148
		AC240	100/100	219
		DC300	40/40	40.0
NF125-RGV	20(16-20), 25(20-25), 32(25-32), 40(32-40), 50(40-50), 63(50-63), 80(63-80), 100(80-100), 125(100-125)	AC450	125/125	278
		AC240	150/150	349
NF125-UGV	20(16-20), 25(20-25), 32(25-32), 40(32-40), 50(40-50), 63(50-63), 80(63-80), 100(80-100), 125(100-125)	AC690	15/15	31.5
		AC500	200/200	498
		AC450	200/200	498
		AC240	200/200	498
NF250-RGV	160(125-160) 200(160-200) 250(200-250)	AC450	125/125	278
		AC240	150/150	349
NF250-UGV	160(125-160) 200(160-200) 250(175-225)	AC690	15/15	31.5
		AC500	200/200	498
		AC450	200/200	498
		AC240	200/200	498
NF125-SEV	32(16-32), 63(32-63) 125(63-125)	AC690	8/8	15.5
		AC500	30/30	63.0
		AC450	36/36	76.8
		AC240	85/85	189
NF125-HEV	32(16-32), 63(32-63) 125(63-125)	AC690	10/8	19.9
		AC500	50/38	114
		AC450	65/65	148
		AC240	100/100	219
NF250-SEV	160(80-160) 250(125-250)	AC690	8/8	15.5
		AC500	30/30	63.0
		AC450	36/36	76.8
		AC240	85/85	189
NF250-HEV	160(80-160) 250(125-250)	AC690	10/8	19.9
		AC500	50/38	114
		AC450	65/65	148
		AC240	100/100	219

Rated Insulation Voltage Ui (V)	690V
Rated Impulse withstand Voltage Uimp (V)	8kV
Utilization Category	A
Over Current Release types NFxxx-SEV & NFxxx-HEV	Electronic
Over Current Release Other types	Thermal - Magnetic
Number of Poles	2 or 3

2. DOCUMENTS AND DRAWINGS:

In accordance with the manufacturer's drawings and documents, at latest and at any subsequent issue endorsed by Bureau Veritas:

- Information for Application KGA110141 dated 02-08-2011
- Operating Characteristics: LN852A691 to 696, LN852A551, 552, 553, 564, 797, 798, 799, 800, 801, 805, 806.
- Outline and dimension drawing included in file ACE002/39/36

3. TEST REPORTS:

- Mitsubishi Electric Corp. Type Test Reports N° KGA110079, KGA110080, KGA110081, KGA110082, KGA110083, KGA110084, KGA110085, KGA110086, KGA110087, KGA110088, KGA110089, KGA110090, KGA110091, KGA110092, KGA110093, KGA110094, KGA110095, KGA110096, KGA110097, KGA110098, KGA110099, KGA110100, KGA110101 dated 2.08.2011.
- Mitsubishi Electric Corp. Environmental Test Report N° KGA1100142 dated 02.08.2011.
- Mitsubishi Electric Corp. Electromagnetic Compatibility Test Report N° KGA110147 dated 12.07.2011.
- Mitsubishi Electric Corp. Electromagnetic Compatibility Test Report N° KGA110263 dated 06.12.2011.

4. APPLICATION / LIMITATION:

- 4.1 - Approval also valid for ships to be granted with the notations: AUT-UMS, AUT-CCS, AUT-PORT and AUT-IMS.
- 4.2 - According to BV Rules for the Classification of Steel Ships, IEC 60947-2.
- 4.3 - The equipment fulfils the EMC requirements for installation on the Bridge and Deck Zones.
- 4.4 - BUREAU VERITAS Environmental Category, **EC Code: 31**

5. PRODUCTION SURVEY REQUIREMENTS:

- 5.1 - The above products are to be supplied by **Mitsubishi Electric Corporation** 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 - **Mitsubishi Electric Corporation** 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 - **Mitsubishi Electric Corporation** has declared to Bureau Veritas the following production sites:

Mitsubishi Electric Corporation Fukuyama Works
1-8 Midori-machi
Fukuyama City / Hiroshima Pref
720-8647 JAPAN

Ryoyo Electric Corporation, Fuchu Works
10530-214 Motoyama-cho
Fuchu City / Hiroshima Pref
726-0001 JAPAN

6. MARKING OF PRODUCT:

According to IEC 60947 specifications.

7. OTHERS:

- 7.1 - It is **Mitsubishi Electric Corporation'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 No. 25920/A0 BV issued on 15-February-2012 by the Society.

*** END OF CERTIFICATE ***