TYPE APPROVAL CERTIFICATE

Certificate No:
TAE00001D4
Revision No:
3

This is to certify:

That the Circuit Breaker

with type designation(s)
NF 125, NF 160 and NF 250

Issued to
Mitsubishi Electric Corporation Fukuyama Works
Fukuyama City, HIROSHIMA, Japan

is found to comply with
DNV GL rules for classification – Ships, offshore units, and high speed and light craft

Application :

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

Rated voltage (V)	**AC 240/450/500/690 (DC 300)**
Rated current (A)	**15 to 250**

Issued at **Høvik** on **2021-03-29**

This Certificate is valid until **2025-12-31**.
DNV local station: **Kobe**

Approval Engineer: **Nicolay Horn**

for **DNV**

Digitally Signed By: Low, Hanwee
Location: DNV Høvik, Norway
on behalf of

Marta Alonso Pontes
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.

Product description

Circuit breakers with the characteristics as described in the table.
Uimp: 8kV

- With overcurrent release type thermal and magnetic:

Type	Current rating at 45ºC In(Ir) (A)	Rated voltage (V)	Rated frequency AC (Hz)	Breaking current(RMS) Icu/Ics (kA)	Making current(peak asymmetrical) (kA)	Power factor or Time constant (ms)
NF125-SXV	15, 16, 20, 30, 32, 40, 50, 60, 63, 75, 80, 100, 125	AC690 AC500 AC450 AC240	50-60	8/8 23/23 36/36 75/75	15.5 50.1 76.8 167	0.5 0.25 0.25 0.2
NF125-LXV	15, 16, 20, 30, 32, 40, 50, 60, 63, 75, 80, 100, 125	AC690 AC500 AC450 AC240 DC300	50-60	8/8 36/36 50/50 90/90 20/20	15.5 83.3 115 201 20.0	0.5 0.25 0.25 0.2 10
NF125-HXV	15, 16, 20, 30, 32, 40, 50, 60, 63, 75, 80, 100, 125	AC690 AC500 AC450 AC240 DC300	50-60	10/8 50/38 65/65 100/100 40/40	19.9 114 148 219 40.0	0.5 0.25 0.2 0.2 15
NF125-CXV	15, 16, 20, 25, 30, 32, 40, 50, 60, 63, 75, 80, 100, 125	AC500 AC450 AC240	50-60	8/8 20/20 40/40	15.5 40.0 84.0	0.5 0.3 0.25
NF160-SXV	15, 16, 20, 30, 32, 40, 50, 60, 63, 75, 80, 100, 125, 150, 160	AC690 AC500 AC450 AC240 DC300	50-60	8/8 30/30 36/36 85/85 20/20	15.5 63.0 76.8 189 20.0	0.5 0.25 0.25 0.2 10
NF160-LXV	125, 150, 160	AC690 AC500 AC450 AC240 DC300	50-60	8/8 36/36 50/50 90/90 20/20	15.5 83.3 115 201 20.0	0.5 0.25 0.25 0.2 10
NF160-HXV	125, 150, 160	AC690 AC500 AC450 AC240 DC300	50-60	10/8 50/38 65/65 100/100 40/40	19.9 114 148 219 40.0	0.5 0.25 0.2 0.2 15
NF250-SXV	100, 125, 150, 175, 200, 225, 250	AC690 AC500 AC450 AC240 DC300	50-60	8/8 30/30 36/36 85/85 20/20	15.5 63.0 76.8 189 20.0	0.5 0.25 0.25 0.2 10
NF250-LXV	100, 125, 150, 175, 200, 225, 250	AC690 AC500 AC450 AC240 DC300	50-60	8/8 36/36 50/50 90/90 20/20	15.5 83.3 115 201 20.0	0.5 0.25 0.25 0.2 10

Type	Current rating at 45ºC In(Ir) (A)	Rated voltage (V)	Rated frequency AC (Hz)	Breaking current(RMS) Icu/Ics (kA)	Making current(peak asymmetrical) (kA)	Power factor or Time constant (ms)
NF250-HXV	100, 125, 150, 175, 200, 225, 250	AC690 AC500 AC450 AC240 DC300	50-60	10/8 50/38 65/65 100/100 40/40	19.9 114 148 219 40.0	0.5 0.25 0.2 0.2 15
NF250-CXV	100, 125, 150, 160, 175, 200, 225, 250	AC500 AC450 AC240	50-60	8/8 20/20 40/40	15.5 40.0 84.0	0.5 0.3 0.25
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	50-60	8/8 30/30 36/36 85/85 20/20	15.5 63.0 76.8 189 20.0	0.5 0.25 0.25 0.2 10
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	50-60	8/8 36/36 50/50 90/90 20/20	15.5 83.3 115 201 20.0	0.5 0.25 0.25 0.2 10
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 AC500 AC450 AC240 DC300	50-60	10/8 50/38 65/65 100/100 40/40	19.9 114 148 219 40.0	0.5 0.25 0.2 0.2 15
NF250-SGV	160(125-160) 200(140-200) 250(175-250)	AC690 AC500 AC450 AC240 DC300	50-60	8/8 30/30 36/36 85/85 20/20	15.5 63.0 76.8 189 20.0	0.5 0.25 0.25 0.2 10
NF250-LGV	160(125-160) 200(140-200) 250(175-250)	AC690 AC500 AC450 AC240 DC300	50-60	8/8 36/36 50/50 90/90 20/20	15.5 83.3 115 201 20.0	0.5 0.25 0.25 0.2 10
NF250-HGV	160(125-160) 200(140-200) 250(175-250)	AC690 AC500 AC450 AC240 DC300	50-60	10/8 50/38 65/65 100/100 40/40	19.9 114 148 219 40.0	0.5 0.25 0.2 0.2 15

Type	Current rating at 45ºC In(Ir) (A)	Rated voltage (V)	Rated frequency AC (Hz)	Breaking current(RMS) Icu/Ics (kA)	Making current(peak asymmetrical) (kA)	Power factor or Time constant (ms)
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 AC240	50-60	125/125 150/150	278 349	0.2 0.2
NF250-RGV	160(125-160) 200(160-200) 250(200-250)	AC450 AC240	50-60	125/125 150/150	278 349	0.2 0.2

- With electronic overcurrent release:

Type	Current rating at 45ºC In(Ir) (A)	Rated voltage (V)	Rated frequency AC (Hz)	Breaking current(RMS) Icu/Ics (kA)	Making current(peak asymmetrical) (kA)	Power factor or Time constant (ms)
NF125-SEV	32(16-32), 63(32-63), 125(63-125)	AC690 AC500 AC450 AC240	50-60	8/8 30/30 36/36 85/85	15.5 63.0 76.8 189	0.5 0.25 0.25 0.2
NF125-HEV	32(16-32), 63(32-63), 125(63-125)	AC690 AC500 AC450 AC240	50-60	10/8 50/38 65/65 100/100	19.9 114 148 219	0.5 0.25 0.2 0.2
NF250-SEV	160(80-160), 250(125-250)	AC690 AC500 AC450 AC240	50-60	8/8 30/30 36/36 85/85	15.5 63.0 76.8 189	0.5 0.25 0.25 0.2
NF250-HEV	160(80-160), 250(125-250)	AC690 AC500 AC450 AC240	50-60	10/8 50/38 65/65 100/100	19.9 114 148 219	0.5 0.25 0.2 0.2

Manufacturing place

1. Mitubishi Electric Corp., Fukuyama Works
   1-8 Midori-machi, Fuukuyama-City, Hiroshima-Pref., Japan
   Post Code : 720-8647
2. Ryoyo Electric Corp., Fuchu Works
   10530-214 Motoyama-cho, Fuchu-city, Hiroshima-Pref. Japan
   Post Code : 726-0001
3. MITSUBISHI Electric Dalian Industrial Products Co Ltd
   Dongbei 3-5, Dalian Economic & Technical Development Zone, Liaoning Province, P.R.China

Application/Limitation

Onboard ships and offshore installations. Suitable for use in an IT system.

Type Approval documentation

1. Mitsubishi type test reports nos. KGA110079-B, KGA110080-B, KGA110081-B, KGA110082-B, KGA110083-B, KGA110084-B, KGA110085-B, KGA110086-B, KGA110087-B, KGA110088-B, KGA110089-B, KGA110090-B, KGA110091-C, KGA110093-B, KGA110094-B, KGA110095-B, KGA110096-B, KGA110098-B, KGA110099-B, KGA110100-B & KGA110101-B all issued 2011-08-02, revised 2021-02-18 or 19, EMC test report no. ETR-21-160, dated 2021-01-26

2. Booklet for "Information for Application", rev A dated 2018-06-22
   - Specification of circuit-breakers applied for Type Certificate
   - Information concerning to outline dimensions
   - Ratings of internal accessories for circuit breakers
   - Constructional details

3. CD for "Type Test Data & Environmental test data" after IEC 60947-2 dated 2011-08-10
   NF125-SXV, NF125-LXV, NF125-HXV, NF160-SXV, NF160-LXV, NF160-HXV, NF250-SXV, NF250-LXV, NF250-HXV, NF125-SGV, NF125-LGV, NF125-HGV, NF250-SGV, NF250-LGV, NF250-HGV, NF125-RGV, NF125-UGV, NF250-RGV, NF250-UGV, NF125-SEV, NF125-HEV, NF250-SEV and NF250-HEV.

Tests carried out

IEC 60947-1, IEC 60947-2 Ed.5.1 (2019) Test sequence I,II,III and Annex H.
Utilization Category:A, Pollution degree;3
Environmental tests: Vibration (A), Damp heat (B) and EMC (A).

Marking of product

MITSUBISHI – Type designation – Electrical data

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.

Assessment 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