



DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. E-8516
This Certificate consists of 4 pages

This is to certify that the
Circuit Breaker
with type designation(s)
NF 400 to NF 800


Manufactured by
Mitsubishi Electric Corporation Fukuyama Works
Fukuyama 720-8647, Japan

is found to comply with
Det Norske Veritas' Rules for Classification of Ships, High Speed & Light Craft and Det
Norske Veritas' Offshore Standards
IEC 60947

Application
Onboard ships and offshore installations.

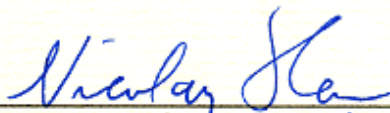
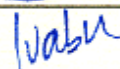
Rated Voltage (V)	500/690
Rated Current (A)	200 to 800
Frequency (Hz)	50/60

Place and date
Høvik, 2007-04-20
for DET NORSKE VERITAS AS


Frode Berntsen
Head of Section


Local Office
DNV Hiroshima

This Certificate is valid until
2011-06-30


Nicolay Horn
Surveyor 

Notice: 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.



Product description

Circuit Breakers type NF with specification as follows:

Type	400 CEP	400 SEP	630 CEP
No. of poles AC	3	3/4	3/4
Rated insulation voltage AC (V)**	600	690	600
Rated operational voltage AC(V) **	500	690	500
Rated Current (A)	200 - 400*	200 - 400*	300 - 630*
Rated Frequency Hz	50 - 60	50 - 60	50 - 60
Rated SC. Capacity Icu/Ics at 690V (A)	-	10/10	-
Rated SC. Capacity Icu/Ics at 500V (A)	15/8	30/30	18/9
Rated SC. Capacity Icu/Ics at 450V (A)	25/13	42/42	36/18
Rated SC. Capacity Icu/Ics at 440V (A)	25/13	42/42	36/18
Rated SC. Capacity Icu/Ics at 400V (A)	36/18	45/45	36/18
Rated SC. Capacity Icu/Ics at 230V(A)	50/25	85/85	50/25
Utilization category	B	B	B

Type	630 SEP	800 CEP	800 SEP
No. of poles AC	3/4	3	3/4
Rated insulation voltage AC (V)**	690	600	690
Rated operational voltage AC(V) **	690	500	690
Rated Current (A)	300 - 630*	400 - 800*	400 - 800*
Rated Frequency Hz	50 - 60	50 - 60	50 - 60
Rated SC. Capacity Icu/Ics at 690V (A)	10/10	-	10/10
Rated SC. Capacity Icu/Ics at 500V (A)	30/30	18/9	30/30
Rated SC. Capacity Icu/Ics at 450V (A)	42/42	36/18	42/42
Rated SC. Capacity Icu/Ics at 440V (A)	42/42	36/18	42/42
Rated SC. Capacity Icu/Ics at 400V (A)	45/45	36/18	45/45
Rated SC. Capacity Icu/Ics at 230V(A)	85/85	50/25	85/85
Utilization category	B	B	B

* Adjustable

** Limitation wrt. voltage for use in an IT-net. See under "Application /limitation".



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Type	400 CEW	400 SEW	630 CEW
No. of poles AC	3	3/4	3
Rated insulation voltage AC (V)**	690	690	690
Rated operational voltage AC(V) **	500	690	500
Rated Current (A)	200 - 400*	200 - 400*	300 - 630*
Rated Frequency Hz	50 - 60	50 - 60	50 - 60
Rated SC. Capacity Icu/Ics at 690V (A)	-	10/10	-
Rated SC. Capacity Icu/Ics at 500V (A)	15/8	30/30	18/9
Rated SC. Capacity Icu/Ics at 450V (A)	25/13	50/42	36/18
Rated SC. Capacity Icu/Ics at 440V (A)	25/13	50/42	36/18
Rated SC. Capacity Icu/Ics at 400V (A)	36/18	50/50	36/18
Rated SC. Capacity Icu/Ics at 230V(A)	50/25	85/85	50/25
Utilization category	B	B	B

Type	630 SEW	800 CEW	800 SEW
No. of poles AC**	3/4	3	3/4
Rated insulation voltage AC (V)**	690	690	690
Rated operational voltage AC(V) **	690	500	690
Rated Current (A)	300 - 630*	400 - 800*	400 - 800*
Rated Frequency Hz	50 - 60	50 - 60	50 - 60
Rated SC. Capacity Icu/Ics at 690V (A)	10/10	-	10/10
Rated SC. Capacity Icu/Ics at 500V (A)	30/30	18/9	30/30
Rated SC. Capacity Icu/Ics at 450V (A)	50/42	36/18	50/42
Rated SC. Capacity Icu/Ics at 440V (A)	50/42	36/18	50/42
Rated SC. Capacity Icu/Ics at 400V (A)	50/50	36/18	50/50
Rated SC. Capacity Icu/Ics at 230V(A)	85/85	50/25	85/85
Utilization category	B	B	B

* Adjustable

** Limitation wrt. voltage for use in an IT-net. See under "Application /limitation".

All test results are given according to IEC 60947.1/2

Application/ limitation

Suitable for use in an IT system with a capacity of 1.2 times the maximum trip current at 500 V AC for NF400-CEW/SEW & NF630-CEW/SEW. Up to 450 V for NF800-CEW/SEW.

Type Approval documentation

Technical Info: "Information for application – Subject: Molded Case Circuit breakers", Mitsubishi Electric Corporation, dated 2006-08-04.



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Mitsubishi Electric Corporation test report "Information for Application – Subject: Type Test Data", dated 2006-08-03.

Mitsubishi Electric Corporation test report "Information for Application – Annex H" dated 2006-11-21.

PSB report 772-9766 dated 98-03-19 for NF630 SEP, PSB report 772-9766 dated 98-03-19 for NF800 SEP, Mitsubishi report dated 98-03-03 for NF400-CP and NF400-CP, Mitsubishi report dated 98-03-13 for NF400-CEP, NF400-SEP, NF630-CEP, NF630-SEP, NF800-CEP, NF800-SEP, Mitsubishi information on application dated 99-03-13, Constructional drawings.

Tests carried out

Electrical tests according to IEC 60947-1, IEC 60947-2. Test sequence I, II, IV.
Dry heat test, Vibration test, Damp heat test

Marking of product

Label on product with technical data according to IEC 60947-2.

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)
- 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