DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. **E-12963**

This is to certify that the
Circuit Breaker

with type designation(s)
AE 630-SW - AE 4000-SWA

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

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

Application
Onboard ships and offshore installations

Rated Voltage (V)	**up to 690**
Rated Current (A)	**up to 4000**
Frequency (Hz)	**50/60**

This Certificate is valid until **2017-12-31**.

Issued at **Busan** on **2014-01-06**

DNV local station: **Hiroshima**

Approval Engineer: **Deniz Kaynar**

for **Det Norske Veritas AS**

Digitally Signed By: Choi, Baeg Soon
Location: DNV Busan, Korea
Signing Date: 1/6/2014

Baeg Soon Choi
Head of Section

Product description

Low voltage circui breakers Type AE-SW(A):

Type	AE 630-SW	AE 1000-SW	AE 1250-SW	AE 1600-SW	AE 2000-SWA
Rated insulation voltage AC (V)	1000	1000	1000	1000	1000
Rated operational voltage AC (V)	690	690	690	690	690
Rated Current (A)	125-630*	400-1000*	625-1250*	800-1600*	1000-2000*
Rated Frequency Hz	50-60	50-60	50-60	50-60	50-60
Rated Short-circuit Service Breaking cap (Icu/Ics)					
690V	65/65	65/65	65/65	65/65	65/65
Power factor	0.23	0.23	0.23	0.23	0.17/0.23
500V	65/65	65/65	65/65	65/65	65/65
Power factor	0.16	0.16	0.16	0.16	0.16
Utilization category	B	B	B	B	B
Rated Short-current withstand current cap. 1 sec. (Icw)					
690 V	65	65	65	65	65
500 V	65	65	65	65	65

Type	AE 2000-SW	AE 2500-SW	AE 3200-SW	AE 4000-SWA
Rated insulation voltage AC (V)	1000	1000	1000	1000
Rated operational voltage AC (V)	690	690	690	690
Rated Current (A)	625-2000*	1250-2500*	1600-3200*	2000-4000*
Rated Frequency Hz	50-60	50-60	50-60	50-60
Rated Short-circuit Service Breaking cap (Icu/Ics)				
690V	75/75	75/75	75/85	75/75
Power factor	0.17/0.23	0.17/0.23	0.17/0.23	0.17/0.23
500V	85/85	85/85	85/85	85/85
Power factor	0.17/0.18	0.17/0.18	0.17/0.18	0.17/0.18
Utilization category	B	B	B	B
Rated Short-current withstand current cap. 1 sec. (Icw)				
690 V	75	75	75	75
500 V	75	75	75	75

* Fixed

Type Approval documentation

Technical info: "Low voltage breaker specification", part of Mitsubishi documents "Low voltage breaker AE630-SW ~AE1600-SW AE2000-SWA, Specification and construction" and "Low voltage breaker AE2000-SW ~AE3200-SW AE4000-SWA, Specification and construction".

Test reports: Mitsubishi test report (EMC) LEN 046085-A, dated 2004-11-05, Mitsubishi environmental test report LEN04107 dated 2004-12-21.
Mitsubishi report "Type test data" for AE630-SW, AE1000-SW, AE1250-SW, AE1600-SW and AE2000-SWA dated 2004-11-2004. Mitsubishi report "Type test data" for AE2000-SW, AE2500-SW, AE3200-SW and AE4000-SWA dated 2004-11-12.

Tests carried out

IEC 60947-1, IEC 60947-2. Test sequence I, II and combined.
Environmental tests.

Marking of product

MITSUBISHI – Type designation – Electrical data

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