CERTIFICATE NUMBER 21-2181527 -PDA
EFFECTIVE DATE 15-November-2021
EXPIRATION DATE 14-November-2026
ABS TECHNICAL OFFICE Yokohama Engineering Services

CERTIFICATE OF

Product Design Assessment

This is to certify that a representative of this Bureau did, at the request of

MITSUBISHI ELECTRIC CORPORATION FUKUYAMA WORKS

located at

FUKUYAMA CITY, JAPAN

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

Product **Molded Case Circuit Breaker**

Model **WS-V Series**

This Product Design Assessment (PDA) Certificate remains valid until 14-November-2026 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

American Bureau of Shipping

Motohiro Tamura
Engineer/Consultant

NOTE: This certificate evidences compliance with one or more of the Rules, Guides, standards or other criteria of ABS or a statutory, industrial or manufacturer's standards. It is issued solely for the use of ABS, its committees, its clients or other authorized entities. Any significant changes to the aforementioned product without approval from ABS will result in this certificate becoming null and void. This certificate is governed by ABS Rules 1-1-A3/5.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2010)

MITSUBISHI ELECTRIC CORP.
FUKUYAMA WORKS, 1-8 MIDORI-MACHI
FUKUYAMA CITY HIROSHIMA PREF.
Japan 720-8647
Telephone: 81-84-926-8156
Fax: 81-84-931-4714
Email: Okagawa.Shinichi@aj.MitsubishiElectric.co.jp
Web: www.mitsubishielectric.co.jp

Tier: 2 - PDA Issued

Product: **Molded Case Circuit Breaker**
Model: **WS-V Series**
Endorsements:

Intended Service:
Protection and switching of distribution circuits for Marine use.

Description:
Low Voltage Circuit Breakers, refer to attached list

Rating:
Rated Voltage: Max. 690V, 50/60Hz. More Detail, refer to attached list

Service Restriction:
(a) The Product Unit Certification is not required.
(b) If the manufacturer or purchaser request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.
(c) Details of each particular application including wiring diagram, location/installation of sensors are to be specifically approved by ABS.

Comments:
(a) The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.
(b) Unless specially directed by Administration, this approval is not to be construed as a substitute for flag Administration's approval.

Notes/Drawing/Documentation:
Drawing No. KGA110141 INFORMATION FOR APPLICATION,
Drawing No. LN852A551_ Characteristics curves, Rev: C
Drawing No. LN852A552_ Characteristics curves, Rev: B
Drawing No. LN852A553_ Characteristics curves, Rev: B
Drawing No. LN852A564_ Characteristics curves, Rev: B
Drawing No. LN852A691_ Characteristics curves, Rev: 0
Drawing No. LN852A692_ Characteristics curves, Rev: 0
Drawing No. LN852A693_ Characteristics curves, Rev: 0
Drawing No. LN852A694_ Characteristics curves, Rev: A
Drawing No. LN852A695_ Characteristics curves, Rev: 0
Drawing No. LN852A696_ Characteristics curves, Rev: 0
Drawing No. LN852A805_ Characteristics curves, Rev: 0
Drawing No. LN852A806_ Characteristics curves, Rev: 0
Drawing No. LN806A315_ Outline dimension, Rev: 0
Drawing No. LN806A462_ Outline dimension, Rev: 0
Drawing No. LN806A463_ Outline dimension, Rev: 0
Drawing No. LN807A124_ Outline dimension, Rev: 0
Drawing No. LN106A898_ Construction Drawing, Rev: 0
Drawing No. LN106A899_ Construction Drawing, Rev: 0
Drawing No. LN106A900_ Construction Drawing, Rev: 0
Drawing No. LN106A901_ Construction Drawing, Rev: 0
Drawing No. LN106A902_ Construction Drawing, Rev: 0
Drawing No. LN106A904_ Construction Drawing, Rev: 0
Drawing No. LN216A146_ Construction Drawing, Rev: 0
Drawing No. LN216A147_ Construction Drawing, Rev: 0
Drawing No. LN334A924_ PARTS LIST LN334A924_NF125-SXV, Rev: 0
Drawing No. LN334A925_ PARTS LIST LN334A925_NF125-LXV_HXV_160-SXV_25-32A, Rev: 0

MITSUBISHI ELECTRIC CORP.
FUKUYAMA WORKS, 1-8 MIDORI-MACHI
FUKUYAMA CITY HIROSHIMA PREF.
Japan 720-8647
Telephone: 81-84-926-8156
Fax: 81-84-931-4714
Email: Okagawa.Shinichi@aj.MitsubishiElectric.co.jp
Web: www.mitsubishielectric.co.jp

Tier: 2 - PDA Issued

Drawing No. LN334A926-1_ PARTS LIST LN334A926-1_NF125-LXV_HXV 125A, Rev: 0
Drawing No. LN334A926-2_ PARTS LIST LN334A926-2_NF160-SXV_LXV_HXV_160A, Rev: 0
Drawing No. LN334A926-3_ PARTS LIST LN334A926-3_NF250-SXV_LXV_HXV, Rev: 0
Drawing No. LN334A927-1_ PARTS LIST LN334A927-1 NF125-SGV LGV HGV, Rev: 0
Drawing No. LN334A927-2_ PARTS LIST LN334A927-2 NF125-SGV LGV HGV, Rev: 0
Drawing No. LN334A927-3_ PARTS LIST LN334A927-3_NF160-SGV LGV HGV, Rev: 0
Drawing No. LN334A927-4_ PARTS LIST LN334A927-4 NF250-SGV LGV HGV, Rev: 0
Drawing No. LN334A928-1_ PARTS LIST LN334A928-1_NF125-RGV, Rev: 0
Drawing No. LN334A928-2_ PARTS LIST LN334A928-2_NF125-RGV, Rev: 0
Drawing No. LN334A928-3_ PARTS LIST LN334A928-3_NF250-RGV, Rev: 0
Drawing No. LN334A928-4_ PARTS LIST LN334A928-4_NF250-RGV, Rev: 0
Drawing No. LN334A930_ PARTS LIST LN334A930_NF125-SXV_PLUG_IN, Rev: 0
Drawing No. LN334A931_ PARTS LIST LN334A931_NF250-SXV_PLUG_IN, Rev: 0
Drawing No. LN334A933_ PARTS LIST LN334A933_NF250-HEV_SEV, Rev: 0
Drawing No. KGA110079_NF125-SXV TEST REPORT dated 2 August 2011, issued by Mitsubishi Electric Corporation
Drawing No. KGA110080_NF125-LXV TEST REPORT dated 2 August 2011, issued by Mitsubishi Electric Corporation
Drawing No. KGA110081_NF125-HXV TEST REPORT dated 2 August 2011, issued by Mitsubishi Electric Corporation
Drawing No. KGA110082_NF160-SXV TEST REPORT dated 2 August 2011, issued by Mitsubishi Electric Corporation
Drawing No. KGA110083_NF160-LXV TEST REPORT dated 2 August 2011, issued by Mitsubishi Electric Corporation
Drawing No. KGA110084_NF160-HXV TEST REPORT dated 2 August 2011, issued by Mitsubishi Electric Corporation
Drawing No. KGA110085_NF250-SXV TEST REPORT dated 2 August 2011, issued by Mitsubishi Electric Corporation
Drawing No. KGA110086_NF250-LXV TEST REPORT dated 2 August 2011, issued by Mitsubishi Electric Corporation
Drawing No. KGA110087_NF250-HXV TEST REPORT dated 2 August 2011, issued by Mitsubishi Electric Corporation
Drawing No. KGA110088_NF125-SGV TEST REPORT dated 2 August 2011, issued by Mitsubishi Electric Corporation
Drawing No. KGA110089_NF125-LGV TEST REPORT dated 2 August 2011, issued by Mitsubishi Electric Corporation
Drawing No. KGA110090_NF125-HGV TEST REPORT dated 2 August 2011, issued by Mitsubishi Electric Corporation
Drawing No. KGA110091_NF125-RGV TEST REPORT dated 2 August 2011, issued by Mitsubishi Electric Corporation
Drawing No. KGA110093_NF250-SGV TEST REPORT dated 2 August 2011, issued by Mitsubishi Electric Corporation
Drawing No. KGA110094_NF250-LGV TEST REPORT dated 2 August 2011, issued by Mitsubishi Electric Corporation
Drawing No. KGA110095_NF250-HGV TEST REPORT dated 2 August 2011, issued by Mitsubishi Electric Corporation
Drawing No. KGA110096_NF250-RGV TEST REPORT dated 2 August 2011, issued by Mitsubishi Electric Corporation
Drawing No. KGA110099_NF125-HEV TEST REPORT dated 2 August 2011, issued by Mitsubishi Electric Corporation
Drawing No. KGA110100_NF250-SEV TEST REPORT dated 2 August 2011, issued by Mitsubishi Electric Corporation
Drawing No. KGA110101_NF250-HEV TEST REPORT dated 2 August 2011, issued by Mitsubishi Electric Corporation

MITSUBISHI ELECTRIC CORP.
FUKUYAMA WORKS, 1-8 MIDORI-MACHI
FUKUYAMA CITY HIROSHIMA PREF.
Japan 720-8647
Telephone: 81-84-926-8156
Fax: 81-84-931-4714
Email: Okagawa.Shinichi@aj.MitsubishiElectric.co.jp
Web: www.mitsubishielectric.co.jp

Tier: 2 - PDA Issued

Drawing No. KGA110147 Electromagnetic Compatibility TEST REPORT dated 12 July 2011, issued by Mitsubishi Electric Corporation

Terms of Validity:
This Product Design Assessment (PDA) Certificate remains valid until 14/Nov/2026 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

STANDARDS

ABS Rules:
2021 Marine Vessels Rules: 1-1-4/7.7, 1-1-A3, 1-1-A4, 4-8-2/9.3.7 and 4-8-3/5.3.3(a)
2021 High Speed Craft Rules: 1-1-4/11.9, 1-1-A2, 1-1-A3, 4-6-2/9.1.4(b) and 4-6-4/11.1.1
2021 Mobile Offshore Units Rules: 1-1-4/9.7, 1-1-A2, 1-1-A3 and 4-3-2/9.1.4(b)

National:
NA

International:
IEC 60947-2 Ed. 5.1 b:2019

Government:
NA

EUMED:
NA

OTHERS:
NA

Design Assessment (DA) Certificate Attachment for Component Details

DA Certificate No: 21-2181527-PDA
Entry Date: 15 November 2021
Expire Date: 14 November 2026
Company: Mitsubishi Electric Corporation
Factory or Works: Fukuyama Works
Product/Equipment: Molded Case Circuit Breaker
Model: WS-V Series

Type	Pole	Rated Current at 45°C In (Ir) (A)	Rated Voltage Ue (V)	Breaking Current (RMS) Icu(*1)/Ics(*2) (kA)	Making Current (peak asym-metrical) Icm(*3) (kA)	Power Factor or Time constant	Over current release
NF125-SXV	3	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	0.5 0.25 0.25 0.2	Thermal and Magnetic
NF125-LXV	2, 3	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	0.5 0.25 0.25 0.2 10ms	
NF125-HXV	2, 3	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	0.5 0.25 0.2 0.2 15ms	
NF160-SXV	2, 3	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	0.5 0.25 0.25 0.2 10ms	
NF160-LXV	2, 3	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	0.5 0.25 0.25 0.2 10ms	
NF160-HXV	2, 3	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	0.5 0.25 0.2 0.2 15ms	
NF250-SXV	2, 3	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	0.5 0.25 0.25 0.2 10ms	
NF250-LXV	2, 3	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	0.5 0.25 0.25 0.2 10ms	
NF250-HXV	2, 3	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	0.5 0.25 0.2 0.2 15ms	

Design Assessment (DA) Certificate Attachment for Component Details

DA Certificate No: 21-2181527-PDA
Entry Date: 15 November 2021
Expire Date: 14 November 2026
Company: Mitsubishi Electric Corporation
Factory or Works: Fukuyama Works
Product/Equipment: Molded Case Circuit Breaker
Model: WS-V Series

Type	Pole	Rated Current at 45°C In (Ir) (A)	Rated Voltage Ue (V)	Breaking Current (RMS) Icu(*1)/Ics(*2) (kA)	Making Current (peak asym-metrical) Icm(*3) (kA)	Power Factor or Time constant	Over current release
NF125-SGV	2, 3	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	0.5 0.25 0.25 0.2 10ms	Thermal and Magnetic
NF125-LGV	2, 3	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	0.5 0.25 0.25 0.2 10ms	
NF125-HGV	2, 3	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	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 15ms	
NF250-SGV	2, 3	160(125-160) 200(140-200) 250(175-250)	AC690 AC500 AC450 AC240 DC300	8/8 30/30 36/36 85/85 20/20	15.5 63.0 76.8 189 20.0	0.5 0.25 0.25 0.2 10ms	
NF250-LGV	2, 3	160(125-160) 200(140-200) 250(175-250)	AC690 AC500 AC450 AC240 DC300	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 10ms	
NF250-HGV	2, 3	160(125-160) 200(140-200) 250(175-250)	AC690 AC500 AC450 AC240 DC300	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 15ms	
NF125-RGV	3	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	125/125 150/150	278 349	0.2 0.2	
NF250-RGV	3	160(125-160) 200(160-200) 250(200-250)	AC450 AC240	125/125 150/150	278 349	0.2 0.2	

Design Assessment (DA) Certificate Attachment for Component Details

DA Certificate No: 21-2181527-PDA
Entry Date: 15 November 2021
Expire Date: 14 November 2026
Company: Mitsubishi Electric Corporation
Factory or Works: Fukuyama Works
Product/Equipment: Molded Case Circuit Breaker
Model: WS-V Series

Type	Pole	Rated Current at 45°C In (Ir) (A)	Rated Voltage (V)	Breaking Current (RMS) Icu(*1)/Ics(*2) (kA)	Making Current (peak asym-metrical) Icm(*3) (kA)	Power Factor or Time constant	Over current release
NF125-SEV	3	32(16-32),63(32-63) 125(63-125)	AC690 AC500 AC450 AC240	8/8 30/30 36/36 85/85	15.5 63.0 76.8 189	0.5 0.25 0.25 0.2	Electronic
NF125-HEV	3	32(16-32),63(32-63) 125(63-125)	AC690 AC500 AC450 AC240	10/8 50/38 65/65 100/100	19.9 114 148 219	0.5 0.25 0.2 0.2	
NF250-SEV	3	160(80-160) 250(125-250)	AC690 AC500 AC450 AC240	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	3	160(80-160) 250(125-250)	AC690 AC500 AC450 AC240	10/8 50/38 65/65 100/100	19.9 114 148 219	0.5 0.25 0.2 0.2	

Remarks
(*1) Rated ultimate short-circuit breaking capacity
(*2) Rated service short-circuit breaking capacity
(*3) Rated short-circuit making capacity

Standard: IEC 60947-2 Ed. 5.1 b:2019
Utilization category: A
Pollution degree: 3
Suitability for isolation: Suitable for isolation
Markings for line and load terminals: Unmarked
Rated frequency (for A.C.): 50-60 Hz
Number of phases (for A.C.): single phase for 2-pole, single and three phase for 3-pole