



CERTIFICATE NUMBER 21-2192273 -PDA
EFFECTIVE DATE 16-December-2021
EXPIRATION DATE 15-December-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

YASKAWA ELECTRIC CORPORATION

located at

YUKUHASHI 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 Frequency Converter

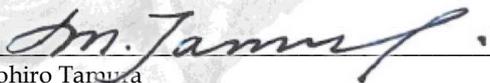
Model Matrix Converter U1000

This Product Design Assessment (PDA) Certificate remains valid until 15-December-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 Tarawa
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)

YASKAWA ELECTRIC CORPORATION

YUKUHASHI PLANT

13-1 NISHIMIYAICHI 2 CHOME

YUKUHASHI FUKUOKA

Japan 824-8511

Telephone: : +81-930-25-2548

Fax: +81-930-23-3010

Email:

Web: <http://www.yaskawa.co.jp>

Tier: 5 - Unit Certification Required

Product: Frequency Converter
Model: Matrix Converter U1000
Endorsements:

Intended Service:

Electrical drives for motors installed on Marine, Offshore Vessels and Mobile Offshore Drilling Units Rules.

Description:

A matrix converter is AC/AC converter which consists of 9 bi-directional switches that are arranged in a matrix. It converts a three-phase AC power supply directly into the required voltage and frequency.

Rating:

Rated voltage: AC400V

i) 3-phase 380-500VAC, 50/60Hz for standard model

ii) 3-phase 380-480VAC, 50/60Hz for internal EMC-filter model

Frequency Control Range: 0.01 to 400 Hz

Ambient Temperature: -10 to +50C (open-chassis)

Service Restriction:

Unit Certification is required for drive units used to control motor drives having a rated power of 100 kW (135 hp) and over intended for essential services or for services indicated in 4-8-3/Table 7 of Marine Vessel Rules.

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.

Comments:

The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.

Notes/Drawing/Documentation:

Drawing No. VGI-Q1701-11, Application Model List, Revision: 00, Pages 2, dated 15 November 2017,

Drawing No. KAEP71063602F, U1000 Product Catalog, Revision: 00, pages 52,

Drawing No. SIEPC71063602B, U1000 Series Technical Manual, Revision: 00, pages 638,

Drawing No. Z10160222733038, TUVSUD Certificate, Revision: 00, pages 5, dated 12 February 2016,

Drawing No. 73548024a, TUVSUD IEC61800-5-1 Test Report (F1-F5), Revision: 00, pages 171, dated 12 June 2014,

Drawing No. 73554553, TUVSUD IEC61800-5-1 Test Report (F6-F7), Revision: 00, pages 111, 29 July 2015,

Drawing No. VGI-Q1612-10, Flame Retardant Test of Matrix Converter U1000, Revision: 00, pages 1, dated 21 December 2016,

Drawing No. NSH-16039-02, U1000 Test Plan, Revision: 00, pages 23, dated 24 July 2017,

Drawing No. NSH-16039-03, Test Sample Selection, Revision: 01, pages 64, dated 16 February 2017,

Drawing No. NSH-16039-16, U1000 Grouping and Load Condition, Revision: 00, pages 4, dated 9 May 2017,

Drawing No. VGI-Q1612-11, Main Component List, Revision: 00, pages 22,

Drawing No. NSH-16039-18, Matrix Converter U1000 Test Report, Revision: 00, pages 264, dated 24 October 2017, issued by Yaskawa Electric Corporation

Drawing No. NA3312287, ABS survey report, Revision: 00, pages 2, dated 24 October 2017,

Drawing No. EZZ902450-EZZ902538, Outline Drawing (0011-0930, HFM) Revision: 00, pages 42,

Drawing No. DACT36931-DACT37839, Assembly Diagram (0011-0930, HFM), Revision: 00, pages 589,

Drawing No. 71636-UA4X0011XXXXR-0930XXBR, Elementary Diagram (UA4X0011-0930), Revision: 00, pages 50,

Drawing No. 71636-UA4E0011XXXXR-0414XXXXR, Elementary Diagram (UA4E0011-0414), Revision: 00, pages 28,

Drawing No. EUJ711800R-80R, Elementary Diagram (HFM), Revision: 00, pages 10,

Drawing No. 2021-018, EMC Test Report, Revision: 00, pages 20, dated 18 November 2021, issued by ADOX

YASKAWA ELECTRIC CORPORATION

YUKUHASHI PLANT

13-1 NISHIMIYAICHI 2 CHOME

YUKUHASHI FUKUOKA

Japan 824-8511

Telephone: : +81-930-25-2548

Fax: +81-930-23-3010

Email:

Web: <http://www.yaskawa.co.jp>

Tier: 5 - Unit Certification Required

FUKUOKA EMC Site,

Drawing No. 2021-019, EMC Test Report, Revision: 00, pages 17, dated 18 November 2021, issued by ADOX

FUKUOKA EMC Site,

Drawing No. VGI-T2108-15 -16, Test Results with Signature by Surveyors, Revision: 00, pages 8, dated 15 September and 4 November 2021, issued by Yaskawa Electric Corporation,

Terms of Validity:

This Product Design Assessment (PDA) Certificate remains valid until 15/Dec/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 Vessel Rules: 1-1-4/7.7, 1-1-A3 & A4, 4-8-3/8, 4-9-9/3 and 13;

2021 High-Speed Craft: 1-1-4/11.9, 1-1-A2 & A3, 4-6-4/10, 4-7-9/15,

2021 Mobile Offshore Units: 1-1-4/9.7, 1-1-A2 & A3 and 4-3-4/5;

National:

NA

International:

NA

Government:

NA

EUMED:

NA

OTHERS:

IACS UR E10 Rev.7 (Oct. 2018) & Rev.8 (Feb. 2021)

Design Assessment (DA) Certificate Attachment for Component

DA Certificate No: 21-2192273-PDA
Issue Date: 16 December 2021
Expire Date: 15 December 2026
Company: YASKAWA ELECTRIC CORPORATION
Factory or Works: -
Product/Equipment: Frequency Converter
Model: Matrix Converter U1000

Application Model List

C I M R - U 4 A
 I II III IV V VI VII VIII IX

Item	Category	Description			
I	General Purpose Inverter				
II	Basic Name of Inverter Series	U: U1000 Series			
III	Regional Specification for initial software setting	A: Japan Spec.			
		B: China Spec.			
		C: Europe Spec.			
		D: India Spec.			
		U: USA Spec.			
IV	Rated Voltage	4: 3-phase AC 400V class			
		3-phase 380-500VAC, 50/60Hz for standard model 3-phase 380-480VAC, 50/60Hz for internal EMC-filter model			
V	Customer Specification	A: Standard model (*1)			
		E: Internal EMC-filter model			
VI	Rated Output	Model	ND	HD	Customer Specification
			Rated current [A]	Rated current [A]	
		0011	11	9.6	A and E
		0014	14	11	A and E
		0021	21	14	A and E
		0027	27	21	A and E
		0034	34	27	A and E
		0040	40	34	A and E
		0052	52	40	A and E
		0065	65	52	A and E
		0077	77	65	A and E
		0096	96	77	A and E
		0124	124	96	A and E
		0156	156	124	A and E
		0180	180	156	A and E
		0216	216	180	A and E
		0240	240	216	A and E
		0302	302	240	A and E
		0361	361	302	A and E
		0414	414	361	A and E
		0477	477	414	A
0590	590	477	A		
0720	720	590	A		
0900	900	720	A		
0930	930	900	A		
VII	Enclosure	A: IP00			
VIII	Countermeasure for Environment Resistance	A: Standard			
		B to Z: Codes correspond to the combination of additional countermeasures such as			
		moisture resistant, dustproof, vibration proof, gas resistant, humidity resistant, oil resistant.			
IX	Yaskawa internal design version	Put any alphabet for a design version			

(ND: Normal duty use, HD: Heavy duty use)

(*1) Be sure to use a designated stand-alone EMC filter for Customer Specification A, standard model.

Design Assessment (DA) Certificate Attachment for Component

DA Certificate No: 21-2192273-PDA
Issue Date: 16 December 2021
Expire Date: 15 December 2026
Company: YASKAWA ELECTRIC CORPORATION
Factory or Works: -
Product/Equipment: Frequency Converter
Model: Matrix Converter U1000

Harmonic Filter Modules

Model No. (*2)	Combination with the converter (*3)
EUJ71180y	CIMR-UX4A0720
EUJ71181y	CIMR-UX4A0900
EUJ71182y	CIMR-UX4A0930
EUJ71183y	CIMR-UC4A0720
EUJ71184y	CIMR-UC4A0900
EUJ71185y	CIMR-UC4A0930
EUJ71186y	CIMR-UB4A0720
EUJ71187y	CIMR-UB4A0900
EUJ71188y	CIMR-UB4A0930

(*2) "y" is a number 0 through 9 of design version that maybe followed by a dot with an alphanumeric code of countermeasure for environment resistance. (For example: EUJ711800.M)

(*3) "X" is A, D, U, or T of Regional Specification digit.